

Sun Datacenter InfiniBand Switch 36

User's Guide



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Using This Documentation

This user's guide provides detailed procedures that describe preparation, installation, administration, and service for the Sun Datacenter InfiniBand Switch 36 from Oracle. This document is written for technicians, system administrators, authorized service providers, and users who have advanced experience installing, administering, and servicing InfiniBand fabric hardware.

- [“Related Documentation” on page ix](#)
- [“Documentation, Support, and Training” on page x](#)

Related Documentation

The documents listed as online are available at:

(<http://www.oracle.com/pls/topic/lookup?ctx=E19197-01&id=homepage>)

Application	Title	Format	Location
Getting started	<i>Sun Datacenter InfiniBand Switch 36 Getting Started Guide</i>	Printed PDF	Shipping kit Online
Last-minute information	<i>Sun Datacenter InfiniBand Switch 36 Product Notes</i>	PDF	Online
Installation, administration, and service	<i>Sun Datacenter InfiniBand Switch 36 User's Guide</i>	PDF HTML	Online

Application	Title	Format	Location
Command reference	<i>Sun Datacenter InfiniBand Switch 36 Command Reference</i>	PDF HTML	Online
Compliance	<i>Sun Datacenter InfiniBand Switch 36 Safety and Compliance Guide</i>	PDF	Online
Oracle ILOM information	<i>Oracle Integrated Lights Out Manager (ILOM) 3.0 Supplement for the Sun Datacenter InfiniBand Switch 36</i>	PDF HTML	Online

The Oracle ILOM 3.0 documents listed as online are available at:

(<http://www.oracle.com/pls/topic/lookup?ctx=E19860-01&id=homepage>)

Application	Title	Format	Location
Last-minute information	<i>Oracle Integrated Lights Out Manager (ILOM) 3.0 Feature Updates and Release Notes</i>	PDF HTML	Online
Getting started	<i>Oracle Integrated Lights Out Manager (ILOM) 3.0 Getting Started Guide</i>	PDF HTML	Online
Overview	<i>Oracle Integrated Lights Out Manager (ILOM) 3.0 Concepts Guide</i>	PDF HTML	Online
Administration from web interface	<i>Oracle Integrated Lights Out Manager (ILOM) 3.0 Web Procedures Guide</i>	PDF HTML	Online
Administration from CLI interface	<i>Oracle Integrated Lights Out Manager (ILOM) 3.0 CLI Procedures Guide</i>	PDF HTML	Online
Administration from SNMP and IPMI interface	<i>Oracle Integrated Lights Out Manager (ILOM) 3.0 Management Protocols Reference Guide</i>	PDF HTML	Online

Documentation, Support, and Training

These web sites provide additional resources:

- Documentation (<http://www.oracle.com/technetwork/documentation/index.html>)
- Support (<https://support.oracle.com>)

- Training (<https://education.oracle.com>)

Installing the Switch

The following topics describe the installation of the switch. The topics are listed in the order of completion.

- “Understanding Switch Specifications” on page 1
- “Routing Service Cables” on page 7
- “Understanding InfiniBand Cabling” on page 9
- “Preparing for Installation” on page 15
- “Verify Shipping Carton Contents” on page 18
- “Install the Switch in the Rack” on page 20
- “Powering On the Switch” on page 25
- “Connecting InfiniBand Cables” on page 38
- “Verifying the InfiniBand Fabric” on page 44

Related Information

- “Administering the Switch” on page 49
- “Servicing the Switch” on page 113
- *Switch Remote Administration*
- *Switch Reference*

Understanding Switch Specifications

These topics describe the specifications of the switch, the connectors found on the switch chassis, and the pinouts of those connectors.

- “Physical Specifications” on page 2
- “Environmental Requirements” on page 3
- “Acoustic Noise Emissions” on page 3
- “Electrical Specifications” on page 4

- “Network Management Connector and Pins” on page 4
- “USB Management Connector and Pins” on page 5
- “QSFP Connector and Pins” on page 6

Related Information

- “Install the Switch in the Rack” on page 20
- “Powering On the Switch” on page 25

Physical Specifications

Dimension	Measurements
Width	17.52 in. (445.0 mm)
Depth	24 in. (609.6 mm)
Height	1.75 in. (44.5 mm)
Weight	23.0 lbs (11.4 kg)

Related Information

- “Verify Shipping Carton Contents” on page 18
- “Install the Switch in the Rack” on page 20
- “Environmental Requirements” on page 3
- “Acoustic Noise Emissions” on page 3
- “Electrical Specifications” on page 4

Environmental Requirements

Parameter	Operating
Ambient temperature	41°F to 89.6°F (5°C to 32°C)
Relative humidity	5% to 85% noncondensing, 80°F (27°C) maximum wet bulb
Elevation (Sun requirement)	Maximum 9840 feet (3000 meters) at 104°F (40°C)

Related Information

- “Physical Specifications” on page 2
- “Acoustic Noise Emissions” on page 3
- “Electrical Specifications” on page 4

Acoustic Noise Emissions

Parameter	Operating	Idling
Acoustic power LWAd (1B=10dB)	7.1 B	7.2 B
Acoustic pressure LpAm	58.9 dBA	59.0 dBA

Related Information

- “Physical Specifications” on page 2
- “Environmental Requirements” on page 3
- “Electrical Specifications” on page 4

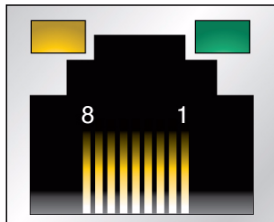
Electrical Specifications

Parameter	AC Version Requirement
Voltage	100 VAC to 240 VAC single phase, 47 to 63 Hz
Current (per input)	5.4 A maximum per input at 100 VAC
Current (total)	5.6 A maximum total for all inputs at 100 VAC
Power	550 Watts (Total input power is approximately equally divided among the operating power supplies)

Related Information

- [“Power Cord Requirements” on page 7](#)
- [“Attach the Power Cords” on page 28](#)
- [“Physical Specifications” on page 2](#)
- [“Environmental Requirements” on page 3](#)
- [“Acoustic Noise Emissions” on page 3](#)

Network Management Connector and Pins



The following table lists the pinout of the network management connector.

Pin	Signal
1	TXD+
2	TXD-
3	RXD+
4	Not used
5	Not used
6	RXD-

Pin	Signal
7	Not used
8	Not used

Related Information

- [“Management Cable Requirements” on page 8](#)
- [“Attach the Management Cables” on page 26](#)
- [“Access the Management Controller From the Network Management Port” on page 31](#)
- [“USB Management Connector and Pins” on page 5](#)
- [“QSFP Connector and Pins” on page 6](#)

USB Management Connector and Pins



The following table lists the pinout of the USB management connector.

Pin	Signal
1	+5 VDC
2	- Data
3	+ Data
4	GND

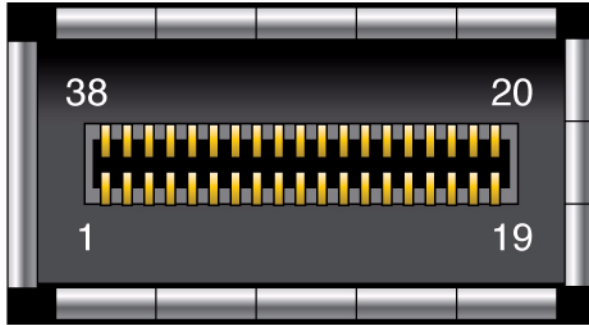
Related Information

- [“Management Cable Requirements” on page 8](#)
- [“Attach the Management Cables” on page 26](#)
- [“Access the Management Controller From the USB Management Port” on page 32](#)
- [“Network Management Connector and Pins” on page 4](#)

- “QSFP Connector and Pins” on page 6

QSFP Connector and Pins

The QSFP connector is a single InfiniBand port connection.



The following table lists the pinout for each connection.

Pin	Signal	Pin	Signal	Pin	Signal	Pin	Signal
1	GND	11	SCL	21	RX2n	31	Reserved
2	TX2n	12	SDA	22	RX2p	32	GND
3	TX2p	13	GND	23	GND	33	TX3p
4	GND	14	RX3p	24	RX4n	34	TX3n
5	TX4n	15	RX3n	25	RX4p	35	GND
6	TX4p	16	GND	26	GND	36	TX1p
7	GND	17	RX1p	27	ModPrsL	37	TX1n
8	ModSelL	18	RX1n	28	IntL	38	GND
9	LPMoDe_Reset	19	GND	29	VccTx		
10	VccRx	20	GND	30	Vcc1		

The following table provides descriptions of the QSFP signals.

Signal	Description
GND	Ground for both signal and power return
SDA	I ² C interface data

Signal	Description
SCL	I ² C interface clock
ModSelL	Module select on low - Enables reception of I ² C commands.
ResetL	Reset on low
LPMode	Low power mode
ModPrsL	Module presence on low - Identifies existence of QSFP connector.
IntL	Interrupt on low - Enables fault indication.

Related Information

- [“InfiniBand Cable Types” on page 12](#)
- [“Connecting InfiniBand Cables” on page 38](#)
- [“Network Management Connector and Pins” on page 4](#)
- [“USB Management Connector and Pins” on page 5](#)

Routing Service Cables

These topics describe cable routing requirements:

- [“Power Cord Requirements” on page 7](#)
- [“Management Cable Requirements” on page 8](#)

Related Information

- [“Understanding InfiniBand Cabling” on page 9](#)

Power Cord Requirements

The power supplies are in a N+N redundancy. Line power is provided from two sources, A and B.

Your switch country kit should contain two power cords that are specific to your country or application. The following table describes the power cords available.

Cable Part Number	Description
X311L (180-1097)	North America/Asia, IEC 320 C13 to NEMA 5-15P - 15A/125V 2.5M Black, RoHS:Y
X312E (180-1982)	China, IEC 320 C13 to GB 2099/GB 1002 - 10A/250V 2.0M, RoHS:Y
X312F (180-1999)	Argentina, IEC 320 C13 to IRAM 2073 - 10A/250V 2.0M Black, RoHS:Y
X312G (180-1662)	Korea, IEC 320 C13 to KSC 8305 - 15A/250V 2.0M Black, RoHS:Y
X312L (180-1993)	Continental Europe, IEC 320 C13 to CEE 7/7 10A/250V 2.0M Black, RoHS:Y
X314L (180-1994)	Swiss, IEC 320 C13 to SEV 1011 - 10A/250V 2.0M Black, RoHS:Y
X317L (180-1997)	U.K., IEC 320 C13 to BS 1363 - 10A/250V 2.0M Black, RoHS:Y
X332A (180-2121)	Taiwan, IEC 320 C13 to NEMA 5-15P - 10A/125V 2.5M Black, RoHS:Y
X383L (180-1995)	Danish, IEC 320 C13 to Asfnit 107 - 10A/250V 2.0M Black, RoHS:Y
X384L (180-1996)	Italian, IEC 320 C13 to CEI 23-16/VII - 10A/250V 2.0M Black, RoHS:Y
X386L (180-1998)	Australian, IEC 320 C13 to AS 3112 - 10A/250V 2.0M Black, RoHS:Y



Caution – Install and route power cabling only in a manner that complies with federal, state, and local electrical codes.

Related Information

- [“Electrical Specifications” on page 4](#)
- [“Attach the Power Cords” on page 28](#)

Management Cable Requirements

Management of the switch is done at the management console, which is either a 10/100 Ethernet connection at the NET ports or a USB-to-serial device attached to the USB port.

Typically, the NET connection (network management) is the default means of communicating with the management controller. The controller has a DHCP client in operation and requires the Ethernet network to have a DHCP server. The DHCP server must be configured with the MAC address of the management controller, so the server can provide an IP address to the management controller upon booting. If a DHCP server is not available, then the USB connection is used.

The advantage of the NET connection over the USB connection is that administration of the switch can happen from anywhere on the network. There is no cable length constraint for the network management route because of the re-amplification, filtering, and processing that happens at each hub or switch within the Ethernet network. No network management cable should be any longer than 100 meters.

The USB connection requires a USB-to-serial adapter. The adapter must be configured to communicate with your serial device management console. The serial device can be a serial terminal, a terminal server, or a serial connection running on a system or laptop. Because of the nature of the serial signal, a serial management cable cannot be used reliably if it is more than 10 meters long.

The USB-to-serial adapter is not included with your switch. You can purchase such an adapter from computer and electronics stores.

Related Information

- [“Network Management Connector and Pins” on page 4](#)
- [“USB Management Connector and Pins” on page 5](#)
- [“Attach the Management Cables” on page 26](#)

Understanding InfiniBand Cabling

These topics describe InfiniBand cabling:

- [“InfiniBand Cable Cautions” on page 10](#)
- [“InfiniBand Cable Guidelines” on page 11](#)
- [“InfiniBand Cable Types” on page 12](#)
- [“InfiniBand Cable Path Lengths” on page 12](#)
- [“InfiniBand Cable Bundling” on page 13](#)
- [“Floor and Underfloor Delivery of InfiniBand Cables” on page 14](#)
- [“Overhead Delivery of InfiniBand Cables” on page 14](#)

Related Information

- [“Routing Service Cables” on page 7](#)
- [“Connecting InfiniBand Cables” on page 38](#)

InfiniBand Cable Cautions

To prevent InfiniBand cable damage, you *must* follow these cautions:



Do not uncoil the cable, as a kink might occur. Hold the coil closed as you unroll the cable, pausing to allow the cable to relax as it is unrolled.



Do not step on the cable or connectors. Plan cable paths away from foot traffic or rolling loads.



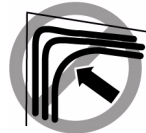
Do not pull the cable out of the shipping box, through any opening, or around any corners. Unroll the cable as you lay it down and move it through turns.



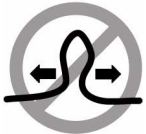
Do not bend the cables to a radius tighter than 85 mm (3.4 inches). Ensure that cable turns are as wide as possible.



Do not twist the cable to open a kink. If it is not severe, open the kink by unlooping the cable.



Do not pack the cable to fit a tight space. Use an alternative cable route.



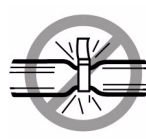
Do not straighten the cable to correct a bend that is too tight. Leave the cable bend as is.



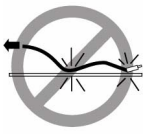
Do not hang the cable for a length more than 2 meters (7 feet). Minimize the hanging weight with intermediate retention points.



Do not drop the cable or connectors from any height. Gently set the cable down, resting the cable connectors on a stable surface.



Do not cinch the cable with hard fasteners or cable ties. Use soft hook-and-loop fastener for bundling and securing cables.



Do not drag the cable or its connectors over any surface. Carry the entire cable to and from the points of connection.



Do not force the cable connector into the receptacle by pushing on the cable. Apply connection or disconnection forces at the connector only.

Related Information

- [“Connecting InfiniBand Cables” on page 38](#)
- [“InfiniBand Cable Guidelines” on page 11](#)
- [“InfiniBand Cable Types” on page 12](#)
- [“InfiniBand Cable Path Lengths” on page 12](#)

- [“InfiniBand Cable Bundling” on page 13](#)
- [“Floor and Underfloor Delivery of InfiniBand Cables” on page 14](#)
- [“Overhead Delivery of InfiniBand Cables” on page 14](#)

InfiniBand Cable Guidelines

Proper InfiniBand cable installation requires the following:

1. Plan the cable routes and cable length needs.
Identify problematic cable route bends, minimizing the length of continuous vertical runs to no more than 2 meters (7 feet). Specify hardware to support cable routing.
[See “InfiniBand Cable Path Lengths” on page 12.](#)
2. Carry the entire cable to the points of connection and unroll the cable from the first connection point to the second.
Keep the coil closed and pause to enable the cable to relax as it is unrolled and moved through turns.
3. Ensure that cable route turns are larger than 85 mm (3.4 inches) radius for optical cables and 127 mm (5 inches) radius for copper cables.
Find alternative routes for turns that are tighter.
4. Secure the cable to hard points and bundle it with soft, hook-and-loop fasteners.
[See “InfiniBand Cable Bundling” on page 13.](#)
5. Mediate the slack between securing points to maintain minimal cable tension and proper support.
[See “Floor and Underfloor Delivery of InfiniBand Cables” on page 14](#) and [“Overhead Delivery of InfiniBand Cables” on page 14.](#)
6. Label the ends of cables to identify their routes.
7. Rest the cable connectors on a stable surface when they are not connected.

Related Information

- [“Power Cord Requirements” on page 7](#)
- [“Management Cable Requirements” on page 8](#)
- [“InfiniBand Cable Cautions” on page 10](#)
- [“InfiniBand Cable Types” on page 12](#)
- [“InfiniBand Cable Path Lengths” on page 12](#)

- [“InfiniBand Cable Bundling”](#) on page 13
- [“Floor and Underfloor Delivery of InfiniBand Cables”](#) on page 14
- [“Overhead Delivery of InfiniBand Cables”](#) on page 14

InfiniBand Cable Types

The following table lists the cables available for the switch, their length, and data rate.

Cable Type	Lengths	Data Rate
Pass-through, optical core, QSFP - QSFP	10 m	QDR
Pass-through, copper core, QSFP - QSFP	1 m, 2 m, 3 m, 5 m	QDR
Splitter, optical core, CXP - QSFP x3	10 m, 20 m	QDR
Splitter, copper core, CXP - QSFP x3	1 m, 2 m, 3 m, 5 m	QDR

Related Information

- [“QSFP Connector and Pins”](#) on page 6
- [“InfiniBand Cable Cautions”](#) on page 10
- [“InfiniBand Cable Guidelines”](#) on page 11
- [“InfiniBand Cable Path Lengths”](#) on page 12
- [“InfiniBand Cable Bundling”](#) on page 13
- [“Floor and Underfloor Delivery of InfiniBand Cables”](#) on page 14
- [“Overhead Delivery of InfiniBand Cables”](#) on page 14

InfiniBand Cable Path Lengths

Cable paths should be as short as possible. After calculating the length of a cable path, select the shortest cable to satisfy the length requirement. When specifying a cable, consider the following:

- Bends in the cable path increase the required length of the cable. Rarely does a cable travel in a straight line from connector to connector. Bends in the cable path are necessary, and each bend increases the total length.
- Bundling increases the required length of the cables. Bundling causes one or more cables to follow a common path. However, the bend radius is different in different parts of the bundle. If the bundle is large and unorganized, and there are many

bends, one cable might experience only the inner radius of bends, while another cable might experience the outer radius of bends. In this situation, the differences of the required lengths of the cables is quite substantial.

- If you are routing the InfiniBand cable under the floor, consider the height of the raised floor when calculating cable path length.

Related Information

- [“InfiniBand Cable Cautions” on page 10](#)
- [“InfiniBand Cable Guidelines” on page 11](#)
- [“InfiniBand Cable Types” on page 12](#)
- [“InfiniBand Cable Bundling” on page 13](#)
- [“Floor and Underfloor Delivery of InfiniBand Cables” on page 14](#)
- [“Overhead Delivery of InfiniBand Cables” on page 14](#)

InfiniBand Cable Bundling

When bundling InfiniBand cables in groups, use hook-and-loop straps to keep cables organized. If possible, use color-coordinated straps to help identify cables and their routing. The InfiniBand splitter and 4X copper conductor cables are fairly thick and heavy for their length. Consider the retention strength of the hook-and-loop straps when supporting cables. Bundle as few cables as reasonably possible. If the InfiniBand cables break free of their straps and fall free, the cables might break internally when they strike the floor or are jerked from tension.

You can bundle the cables using many hook-and-loop straps. Do not bundle more than 12 cables together. A fully configured switch has 36 InfiniBand cables, which is at least three bundles.

Place the hook-and-loop straps as close together as reasonably possible. For example, every 1 ft (0.3 m). If a cable breaks free from a strap, the cable cannot fall far before it is retained by another strap.

Related Information

- [“Connecting InfiniBand Cables” on page 38](#)
- [“InfiniBand Cable Cautions” on page 10](#)
- [“InfiniBand Cable Guidelines” on page 11](#)
- [“InfiniBand Cable Types” on page 12](#)
- [“InfiniBand Cable Path Lengths” on page 12](#)
- [“Floor and Underfloor Delivery of InfiniBand Cables” on page 14](#)

- [“Overhead Delivery of InfiniBand Cables”](#) on page 14

Floor and Underfloor Delivery of InfiniBand Cables

The switch accepts InfiniBand cables from floor or underfloor delivery. The cable management hardware at the rear of the switch supports the weight of the InfiniBand cables.

Floor and underfloor delivery limits the tension in the InfiniBand cable to the weight of the cable for the rack height of the switch.

Related Information

- [“Connecting InfiniBand Cables”](#) on page 38
- [“InfiniBand Cable Cautions”](#) on page 10
- [“InfiniBand Cable Guidelines”](#) on page 11
- [“InfiniBand Cable Types”](#) on page 12
- [“InfiniBand Cable Path Lengths”](#) on page 12
- [“InfiniBand Cable Bundling”](#) on page 13
- [“Overhead Delivery of InfiniBand Cables”](#) on page 14

Overhead Delivery of InfiniBand Cables

For overhead delivery, use cable shelves and lattices to support the InfiniBand cables.

If the overhead delivery has a large drop height, consider using an intermediate support for the InfiniBand cables. Use of the support can limit the tension in the InfiniBand cable to the weight of the cable for the distance between the supports and the switch.

Related Information

- [“Connecting InfiniBand Cables”](#) on page 38
- [“InfiniBand Cable Cautions”](#) on page 10
- [“InfiniBand Cable Guidelines”](#) on page 11
- [“InfiniBand Cable Types”](#) on page 12
- [“InfiniBand Cable Path Lengths”](#) on page 12

- [“InfiniBand Cable Bundling”](#) on page 13
- [“Floor and Underfloor Delivery of InfiniBand Cables”](#) on page 14

Preparing for Installation

These topics provide you with information that you need to know to prepare for the installation process.

- [“Installation Preparation”](#) on page 15
- [“Suggested Tools”](#) on page 16
- [“Antistatic Precautions”](#) on page 16
- [“Installation Responsibilities”](#) on page 17
- [“Installation Sequence”](#) on page 17

Related Information

- [“Verify Shipping Carton Contents”](#) on page 18
- [“Install the Switch in the Rack”](#) on page 20
- [“Powering On the Switch”](#) on page 25
- [“Connecting InfiniBand Cables”](#) on page 38
- [“Verifying the InfiniBand Fabric”](#) on page 44

Installation Preparation

Before installing or servicing the switch, you must prepare the following:

- The environment where the switch is to be installed must conform to the requirements found in [“Environmental Requirements”](#) on page 3.
- The rack to receive the switch must have proper power, management, and InfiniBand fabric cabling brought to it.
- The rack must have an available location for the switch.
- There must be a clean, dry, stable work surface.

Related Information

- [“Install the Switch in the Rack”](#) on page 20
- [“Suggested Tools”](#) on page 16

- “Antistatic Precautions” on page 16
- “Installation Responsibilities” on page 17
- “Installation Sequence” on page 17

Suggested Tools

The following tools are necessary or beneficial for installing the switch:

- Antistatic mat
- Antistatic wrist strap
- No. 2 Phillips screwdriver
- No. 1 Phillips screwdriver
- Flashlight
- Gloves
- Magnifying glass

Related Information

- “Install the Switch in the Rack” on page 20
- “Installation Preparation” on page 15
- “Suggested Tools” on page 16
- “Antistatic Precautions” on page 16
- “Installation Responsibilities” on page 17
- “Installation Sequence” on page 17

Antistatic Precautions

When installing the switch chassis, 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

- “Installation Preparation” on page 15
- “Suggested Tools” on page 16
- “Installation Responsibilities” on page 17

- [“Installation Sequence” on page 17](#)

Installation Responsibilities

The personnel who install the switch must be fully capable of the following tasks:

- Rackmount a heavy object
- Perform line voltage verification
- Connect delicate cables in tight spaces
- Configure network hosts and serial terminals
- Perform software tasks of an administrative nature
- Interpret screen output as it pertains to InfiniBand fabrics

Related Information

- [“Installation Preparation” on page 15](#)
- [“Suggested Tools” on page 16](#)
- [“Antistatic Precautions” on page 16](#)
- [“Installation Sequence” on page 17](#)

Installation Sequence

The process of installing the switch has a specific sequence of tasks that you must perform in order..

Step	Links
1.	“Verify Shipping Carton Contents” on page 18
2.	“Route the InfiniBand Cables” on page 19
3.	“Install the Switch in the Rack” on page 20
4.	“Attach the Management Cables” on page 26
5.	“Attach the Power Cords” on page 28
6.	“Accessing the Management Controller” on page 31
7.	“Verify the Switch Status” on page 34
8.	“Start the Subnet Manager” on page 36
9.	“Attach the InfiniBand Cables” on page 38

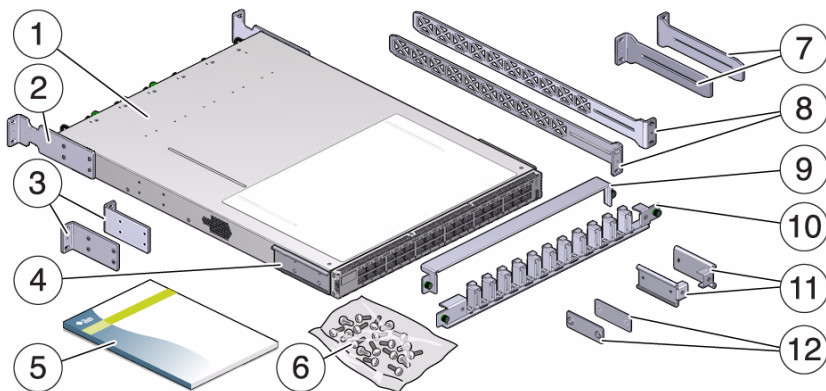
Step	Links
10.	“Check Link Status” on page 44
11.	“Discover the InfiniBand Fabric Topology” on page 45
12.	“Perform Diagnostics on the InfiniBand Fabric” on page 46
13.	“Validate the InfiniBand Fabric and Report Errors” on page 47

Related Information

- [“Install the Switch in the Rack” on page 20](#)
- [“Installation Preparation” on page 15](#)
- [“Suggested Tools” on page 16](#)
- [“Antistatic Precautions” on page 16](#)
- [“Installation Responsibilities” on page 17](#)

▼ Verify Shipping Carton Contents

1. **Open the gateway shipping carton and any additional cartons.**
Power cords and data cables are shipped separately.
2. **Compare the contents to the following figure.**



Item	Description
1	Switch

Item	Description
2	Front mounting brackets, long
3	Front mounting brackets, short
4	C-shaped brackets
5	Documentation
6	Hardware
7	Cable management extenders
8	Long rails
9	Cable management cover
10	Cable management assembly
11	Attachment brackets
12	Attachment plates
	Power cords (not pictured)

3. **After verifying the package contents, route the InfiniBand cables.**
See [“Route the InfiniBand Cables”](#) on page 19.

Related Information

- [“Install the Switch in the Rack”](#) on page 20

▼ Route the InfiniBand Cables

1. **Identify the prerequisite and subsequent installation tasks that you must perform in conjunction with this procedure.**
See [“Installation Sequence”](#) on page 17.
2. **At the remote hosts, begin attaching the InfiniBand cables to the appropriate connectors.**
3. **Route and bundle the InfiniBand cables.**
Follow the cautions and guidelines provided in [“Understanding InfiniBand Cabling”](#) on page 9.
4. **Bring the cables to the location in the rack where you are installing the switch.**

5. **Install the switch into the rack.**

See “Install the Switch in the Rack” on page 20.

Related Information

- “InfiniBand Cable Guidelines” on page 11

▼ Install the Switch in the Rack



Caution – The airflow through the switch is in from the fans, through the chassis, and out at the connector panel. The front of the switch chassis (fan end) intakes from the cold aisle. The rear of the switch chassis (connector end) exhausts to the hot aisle. This flow direction requires you to install the switch in an orientation that is the opposite of what you might assume.

1. Identify the prerequisite and subsequent installation tasks that you must perform in conjunction with this procedure.

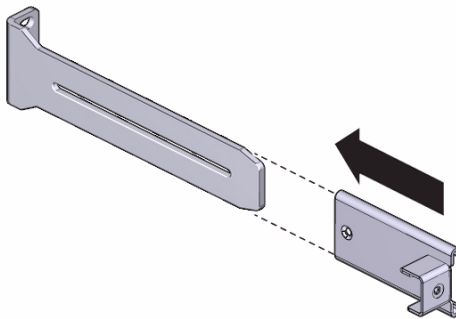
See “Installation Sequence” on page 17.

2. If installed, open the rack doors.

3. Assemble the cable management extenders.

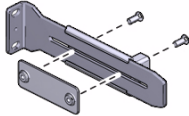
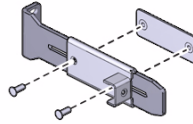
a. Slide the attachment bracket over the extender, so that the tab on the bracket is opposite the flange on the extender.

The open end of the tab is toward the flange. The flat end of the tab is toward the rear of the extender.

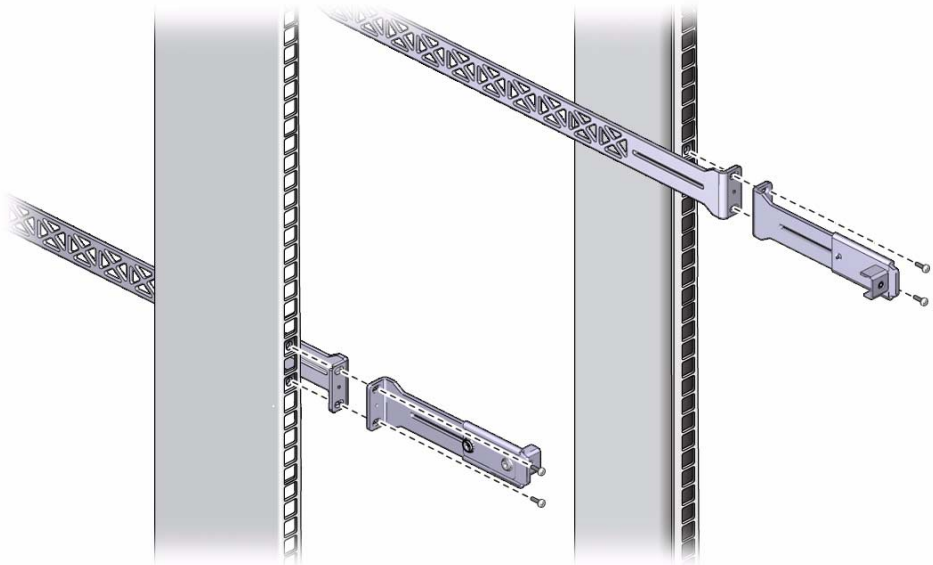


b. Place the attachment plate on the flange side of the extender, opposite the attachment bracket.

- c. Use two screws to sandwich the attachment bracket and plate to the extender, in the position farthest from the flange.



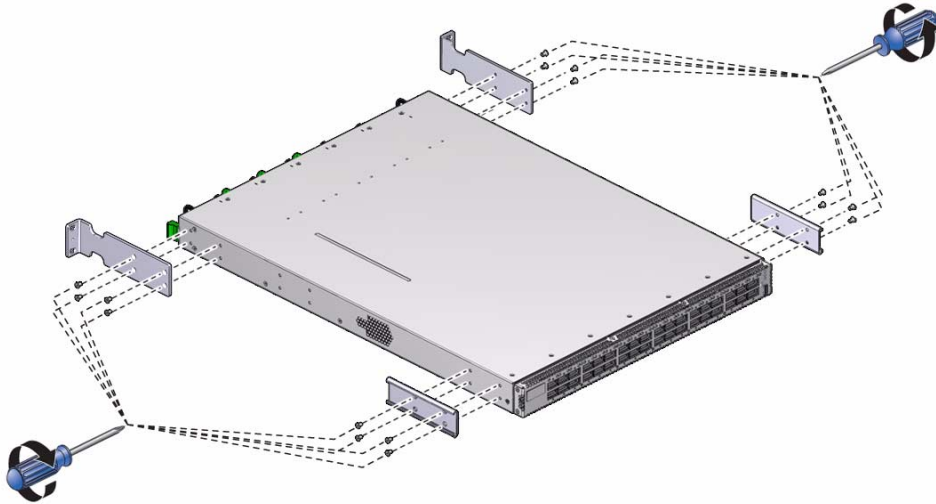
- d. Using a No. 2 Phillips screwdriver, tighten the two screws.
- e. Repeat from [Step a](#) for the other cable management extender.
4. Attach the cable management extenders and long rails to the rear of the rack.
- a. Place the long rail to the mounting location on the post of the rack.
- b. Butt the flange of the extender to the flange of the long rail.



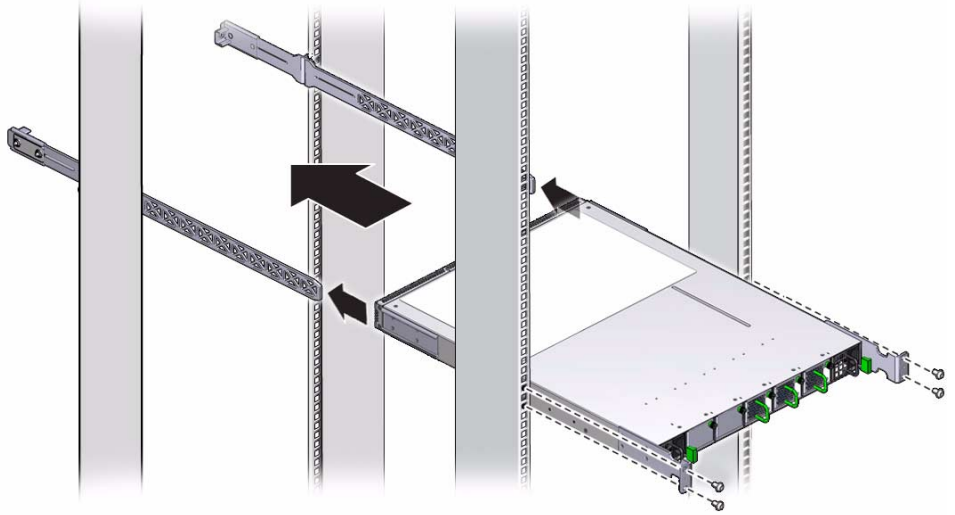
- c. Secure the assembly to the post with two captive nuts and two screws.
- d. Repeat from [Step a](#) for the other cable management extender and long rail.

5. **Attach the long front brackets (with cutouts) to the front of the switch with four screws on each side.**

The flange of the long front brackets point away from the switch.

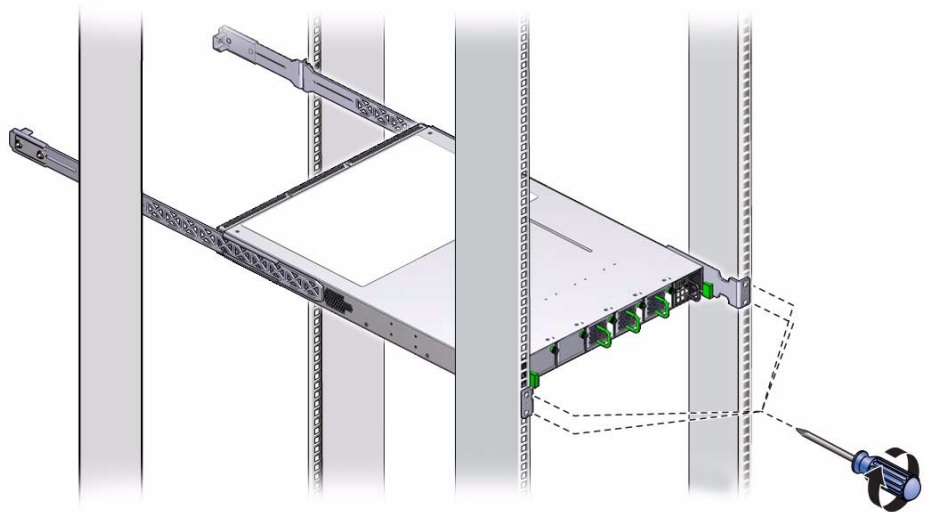


6. **Attach the C-shaped brackets to the switch with four screws on each side.**
The edge of the C-shaped bracket is flush to the rear of the chassis.
7. **Route the power cords through the rack with the female end at the front of the rack where you are installing the switch.**
Ensure that there is 24 inches (610 mm) of power cord slack at the front of the rack. This slack provides an adequate service loop when removing the switch from the rack.
8. **Carefully lift the switch and slide it into the rack, from the front rearward.**
Ensure that the ends of the long rails slide into the C-shaped brackets at the rear of the switch chassis and that the power cords fit into the cut-outs of the long front mounting brackets.

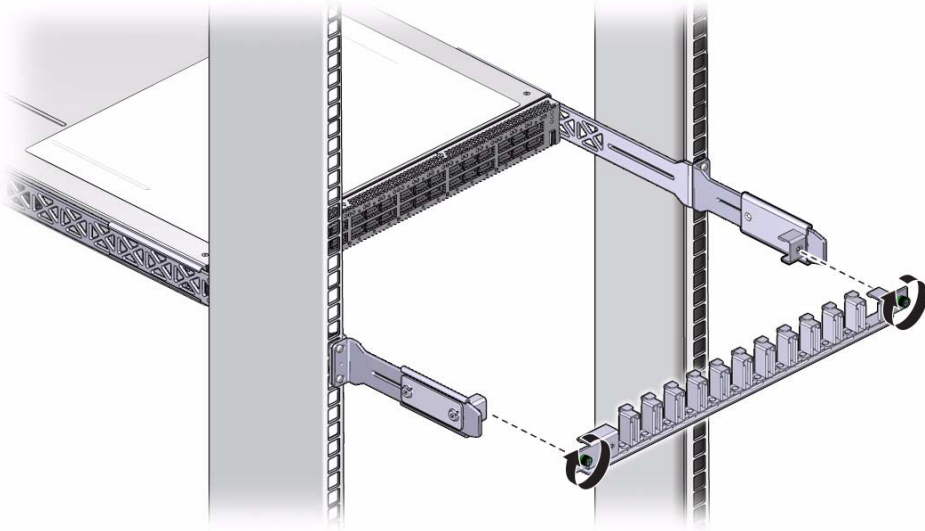


9. Mount the front of the switch chassis to the front rack posts with two captive nuts and two screws at each side.

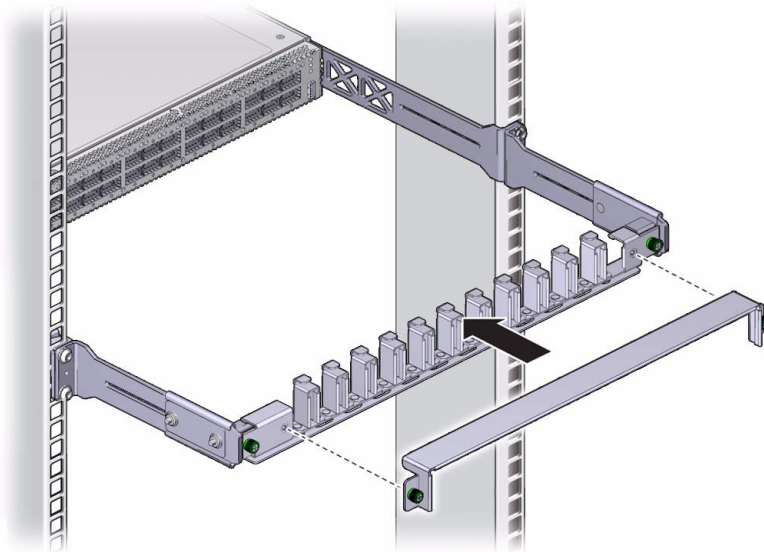
Tighten the screws securely.



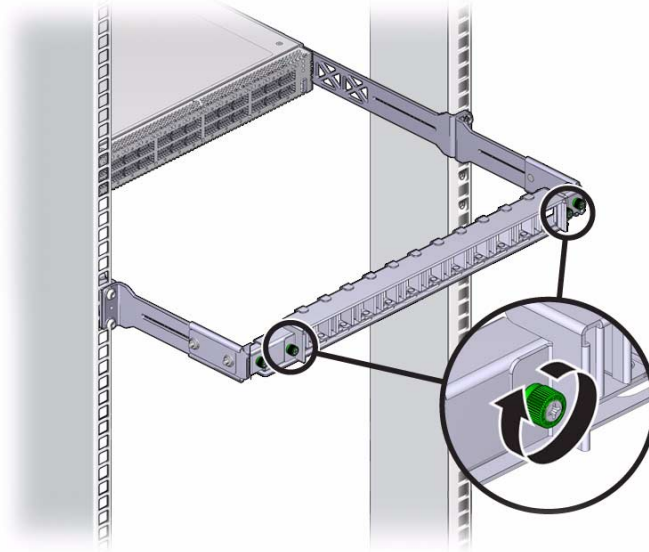
10. Install the cable management bracket to the tabs of the attachment brackets at the rear of the switch, tightening the thumbscrews on each side of the cable management bracket.



11. Install the cable management bracket cover.



12. Tighten the thumbscrews on each side of the cover.



13. Attach the management cables.

See “Attach the Management Cables” on page 26.

Related Information

- “Verify Shipping Carton Contents” on page 18
- “Powering On the Switch” on page 25
- “Connecting InfiniBand Cables” on page 38
- “Verifying the InfiniBand Fabric” on page 44

Powering On the Switch

After installing the components, enable powering on of the switch by performing these tasks.

- “Attach the Management Cables” on page 26
- “Attach the Power Cords” on page 28
- “Accessing the Management Controller” on page 31
- “Verify the Switch Status” on page 34
- “Start the Subnet Manager” on page 36

Related Information

- [“Understanding Switch Specifications” on page 1](#)
- [“Routing Service Cables” on page 7](#)
- [“Install the Switch in the Rack” on page 20](#)
- [“Connecting InfiniBand Cables” on page 38](#)
- [“Verifying the InfiniBand Fabric” on page 44](#)

▼ Attach the Management Cables

The switch has two connectors for network or serial communication with the management controller.

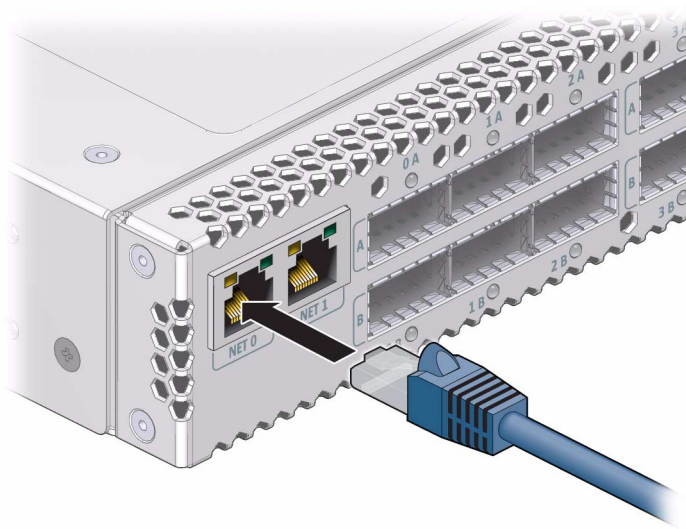
The network management connector, labeled NET, is a 100/100 BASE-T Ethernet interface. This connector is preferred because it permits remote management of the switch over the Ethernet network.

The USB management connector, labeled with the USB symbol, is the second choice for communication with the management controller in the switch. The management console can be a serial terminal, a system running a TTP connection, or other serial device which communicates with the management controller through a USB-to-serial adapter. The serial parameters for communication with the USB-to-serial adapter is typically 115600, 8, N, 1.

1. Identify the prerequisite and subsequent installation tasks that you must perform in conjunction with this procedure.

See [“Installation Sequence” on page 17](#).

2. Connect an Ethernet cable between the switch NET0 port and the network that is configured with a DHCP server.



Connections to the management controller are made through DHCP.

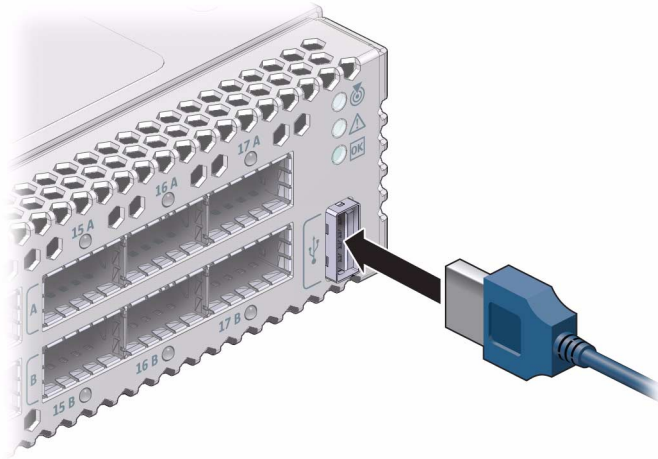
3. Configure your DHCP server.

Use the MAC address of the management controller to provide a host name and IP address for the switch.

The MAC address is printed on the customer information (yellow) sheet on the outside of the switch shipping carton and on the pull-out tab on the left front of the switch chassis, adjacent to power supply 0.

Note – If a DHCP server is not available, the management controller has a default static IP address of 169.254.0.36 with a subnet mask of 255.255.0.0. Alternatively, you can connect a USB-to-serial adapter cable between the switch's USB port and a terminal device. This connection provides alternative communication with the management controller. The terminal device must be configured 115200 baud, 8 bit, no parity, 1 stop bit.

4. (Optional) Connect the serial management cables from the management console to the USB-to-serial adapter, and from the adapter to the connector labeled with the USB symbol.



5. Route the management cables so that they do not interfere with other cables, with servicing the switch, or with other systems.
6. Prepare the management console for communication with the management controller.
7. Power on the switch.
See [“Attach the Power Cords”](#) on page 28.

Related Information

- [“Network Management Connector and Pins”](#) on page 4
- [“USB Management Connector and Pins”](#) on page 5
- [“Management Cable Requirements”](#) on page 8
- [“Attach the Power Cords”](#) on page 28
- [“Accessing the Management Controller”](#) on page 31
- [“Verify the Switch Status”](#) on page 34
- [“Start the Subnet Manager”](#) on page 36
- [“Attach the InfiniBand Cables”](#) on page 38

▼ Attach the Power Cords

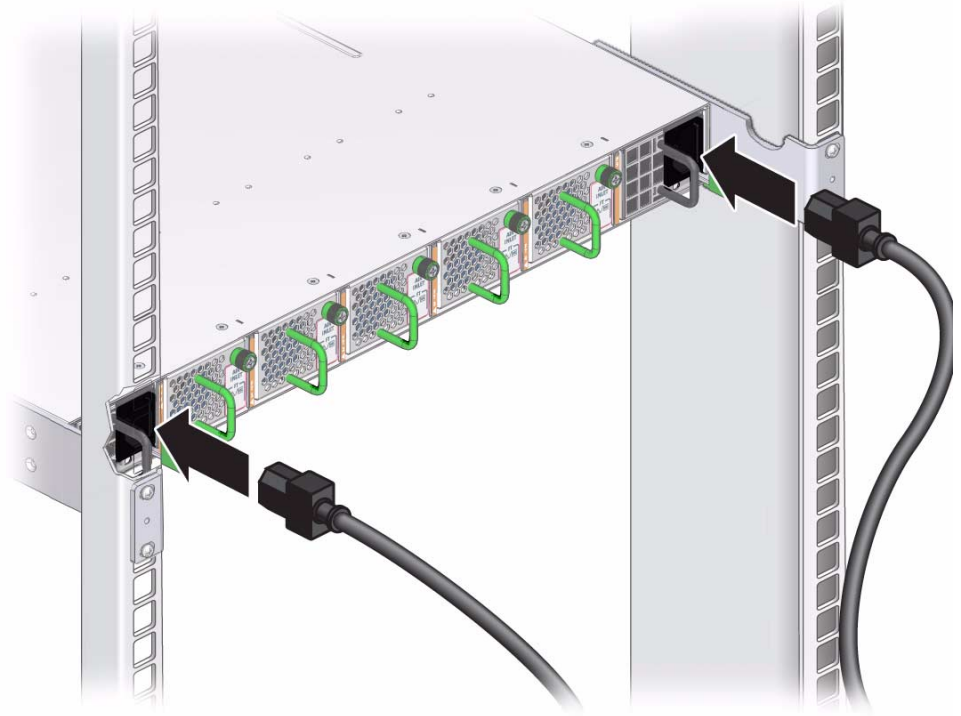
The power cords for the switch ship separately and are specific to the country of installation. See [“Power Cord Requirements”](#) on page 7. The facility power receptacles for the power cords should be located such that the power cords are routed out of the way, either to the sides of the rack or under the floor.

When live power is delivered to the receptacles at the front of the chassis, standby and main power is made available by the power supplies. When standby power is distributed to the chassis, the management controller is powered on. The main power is supplied for the switch chip and fans.

1. **Identify the prerequisite and subsequent installation tasks that you must perform in conjunction with this procedure.**

See “Installation Sequence” on page 17.

2. **Ensure that the circuit breakers for the facility power are switched off.**
3. **Plug the power cords into the receptacles at the front of the switch chassis.**



4. **Route the end of each power cord to its respective facility power receptacle.**
Use cable ties or hook and loop fastener straps to bundle and secure the cord.
5. **Plug each power cord into the receptacle.**

Note – To provide redundancy, connect each power cord to a separate power source. The switch can operate with only one power connection, but there is no redundancy in that case.

6. **Energize the circuit breakers so that the power receptacles are live.**

7. **Verify that the status LEDs for each power supply indicate normal operation.**

The AC LED on each power supply lights green. After a moment, the OK LED lights green. The Attention LED should be unlit. See [“Check Power Supply Status LEDs” on page 60](#).

- If the AC LED does not light, there is something wrong with supplied power.
- If the OK LED does not light, there is something wrong with the power supply.
- If the Attention LED on a power supply lights, there is a fault in the power supply.
- If the Attention LED on a fan lights, there is a fault with that fan.

Note – At this time, power is being supplied to the management controller. The controller is effectively on and booting up. You might see the boot sequence on the management console.

8. **Verify that the fans spin up.**

You should feel air going into the fans. The fan Attention LEDs should be unlit. See [“Check Fan Status LEDs” on page 60](#).

9. **Verify that the chassis status OK LED lights.**

See [“Check Chassis Status LEDs” on page 58](#).

10. **Access the management controller.**

See [“Accessing the Management Controller” on page 31](#).

Related Information

- [“Power Cord Requirements” on page 7](#)
- [“Electrical Specifications” on page 4](#)
- [“Attach the Management Cables” on page 26](#)
- [“Accessing the Management Controller” on page 31](#)
- [“Verify the Switch Status” on page 34](#)
- [“Start the Subnet Manager” on page 36](#)
- [“Attach the InfiniBand Cables” on page 38](#)

Accessing the Management Controller

With power applied, you can now access the management controller.

- “Access the Management Controller From the Network Management Port” on page 31
- “Access the Management Controller From the USB Management Port” on page 32

Related Information

- “Network Management Connector and Pins” on page 4
- “USB Management Connector and Pins” on page 5
- “Management Cable Requirements” on page 8
- “Attach the Management Cables” on page 26
- “Attach the Power Cords” on page 28
- “Verify the Switch Status” on page 34
- “Start the Subnet Manager” on page 36

▼ Access the Management Controller From the Network Management Port

Note – The administrator of the switch has the username of `root`.

1. **Identify the prerequisite and subsequent installation tasks that you must perform in conjunction with this procedure.**
See “Installation Sequence” on page 17.
2. **If you have not already done so, configure your DHCP server.**
Use the MAC address of the management controller to provide a host name and IP address for the switch.
See “Attach the Management Cables” on page 26.
3. **Open an SSH session and connect to the management controller by specifying the controller’s host name as configured with the DHCP server.**
For example:

```
% ssh -l root nm2name
root@nm2name's password: password
#
```

where *nm2name* is the host name of the management controller. The name might be the word `hostname`. Initially, the *password* is `changeme`.

Note – You can change the password at a later time. See [“Change the Administrator Password” on page 98](#) for instructions on how to change the administrator password.

If you do not see this output or prompt, there is a problem with the DHCP configuration, network management communication, or the management controller.

4. Verify the switch status.

See [“Verify the Switch Status” on page 34](#).

Related Information

- [“Network Management Connector and Pins” on page 4](#)
- [“Management Cable Requirements” on page 8](#)

▼ Access the Management Controller From the USB Management Port

Note – The administrator of the switch has the username of `root`.

1. Identify the prerequisite and subsequent installation tasks that you must perform in conjunction with this procedure.

See [“Installation Sequence” on page 17](#).

2. If you have not already done so, connect a USB-to-serial adapter to the USB port of the switch.

3. Connect a serial terminal, terminal server, or workstation with a T1P connection to the USB-to-serial adapter.

Configure the terminal or terminal emulator with these settings:

- 115200 baud
- 8 bits
- No parity
- 1 Stop bit
- No handshaking

4. Press the Return or Enter key on the serial device several times to synchronize the connection.

You might see text similar to the following:

```
...
CentOS release 5.2 (Final)
Kernel 2.6.27.13-nm2 on an i686

nm2name login:
```

where *nm2name* is the host name of the management controller. The name might be the word *hostname*. Even if you do not see the text, go to [Step 5](#).

5. Type `root` for the login name, followed by the `root` password of `changeme`.

```
nm2name login: root
Password: password
#
```

The # prompt is displayed.

Note – You can change the password at a later time. See [“Change the Administrator Password” on page 98](#) for instructions on how to change the administrator password.

If you do not see this output or prompt, there is a problem with the serial configuration, the USB-to-serial adapter, or the management controller.

6. Verify the switch status.

See [“Verify the Switch Status” on page 34](#).

Related Information

- [“USB Management Connector and Pins” on page 5](#)
- [“Management Cable Requirements” on page 8](#)

▼ Verify the Switch Status

You can use the following commands on the management controller to check the status of the switch.

1. Identify the prerequisite and subsequent installation tasks that you must perform in conjunction with this procedure.

See [“Installation Sequence” on page 17](#).

2. Check the overall health of the switch:

```
# showunhealthy
OK - No unhealthy sensors
#
```

An unfavorable output from the `showunhealthy` command means a hardware fault with that particular component.

3. Check the status of the power supplies:

```
# checkpower
PSU 0 present status: OK
PSU 1 present status: OK
#
```

A power supply output that is not OK from the `checkpower` command means that there is a problem with that power supply. See [“Check Power Supply Status LEDs” on page 60](#) for assistance.

4. Check the status of the fans:

```
# getfanspeed
Fan 0 not present
Fan 1 running at rpm 11212
Fan 2 running at rpm 11313
Fan 3 running at rpm 11521
Fan 4 not present
#
```

- A stopped or low speed in the output of the `getfanspeed` command means there is a problem with that particular fan.
- If `not present` is in the output of the `getfanspeed` command, yet a fan is installed at that particular slot, there is a problem with that fan.

For either condition, check the fan. See [“Servicing Fans” on page 125](#).

5. Check the status of the switch chip:

```
# checkboot
Switch OK
#
```

If the output of the `checkboot` command is *not* OK, there is a problem with the switch chip. Try resetting the switch chip. See [“Reset the Switch Chip” on page 94](#).

6. Alternatively, you can use the `env_test` command to perform the preceding checks and more:

```
# env_test
Environment test started:
Starting Voltage test:
Voltage ECB OK
Measured 3.3V Main = 3.28 V
Measured 3.3V Standby = 3.37 V
Measured 12V = 12.06 V
Measured 5V = 5.03 V
Measured VBAT = 3.25 V
Measured 2.5V = 2.52 V
Measured 1.8V = 1.80 V
Measured I4 1.2V = 1.22 V
Voltage test returned OK
Starting PSU test:
PSU 0 present
PSU 1 present
PSU test returned OK
Starting Temperature test:
Back temperature 23.00
Front temperature 32.62
SP temperature 26.12
Switch temperature 34, maxtemperature 36
Temperature test returned OK
Starting FAN test:
Fan 0 not present
Fan 1 running at rpm 11212
Fan 2 running at rpm 11313
Fan 3 running at rpm 11521
Fan 4 not present
FAN test returned OK
Starting Connector test:
Connector test returned OK
Starting onboard ibdevice test:
Switch OK
All Internal ibdevices OK
onboard ibdevice test returned OK
Environment test PASSED
#
```

Note – If in the output of the `env_test` command a voltage deviates more than 10% from the provided specification, there is a problem with the respective component.

7. Once the switch has an operational status, start the Subnet Manager.

See “Start the Subnet Manager” on page 36.

Related Information

- *Switch Reference*, showunhealthy command
- *Switch Reference*, checkpower command
- *Switch Reference*, getfanspeed command
- *Switch Reference*, checkboot command
- *Switch Reference*, env_test command
- “Attach the Management Cables” on page 26
- “Attach the Power Cords” on page 28
- “Accessing the Management Controller” on page 31
- “Start the Subnet Manager” on page 36

▼ Start the Subnet Manager

If you have no Subnet Managers other than the one within the management controller, you need not set the Subnet Manager priority. If you have other Subnet Managers in your InfiniBand fabric, you must decide which is to be the primary Subnet Manager. The primary (or master) Subnet Manager has the highest priority. All other Subnet Managers are secondary Subnet Managers, and *must* have a lower priority.

1. Identify the prerequisite and subsequent installation tasks that you must perform in conjunction with this procedure.

See “Installation Sequence” on page 17.

2. Enable the Subnet Manager:

```
# enablesm
Starting IB Subnet Manager.           [ OK ]
#
```

3. (Optional) Configure the priority of the Subnet Manager within the management controller.

a. Set the priority of the Subnet Manager:

```
# setsmpriority priority
```

where *priority* is 0 (lowest) to 13 (highest). For example, to set the Subnet Manager to priority 13:

```
# setsmpriority 13
-----
OpenSM 3.2.6_20090717
Reading Cached Option File: /etc/opensm/opensm.conf
Loading Cached Option:routing_engine = ftree
Loading Cached Option:sminfo_polling_timeout = 1000
Loading Cached Option:polling_retry_number = 3
Command Line Arguments:
Priority = 13
Creating config file template '/tmp/osm.conf'.
Log File: /var/log/opensm.log
-----
#
```

b. Restart the Subnet Manager:

```
# disableesm
Stopping IB Subnet Manager.           [ OK ]
# enableesm
Starting IB Subnet Manager.          [ OK ]
#
```

4. Attach the InfiniBand cables.

See “[Attach the InfiniBand Cables](#)” on page 38.

Related Information

- *Switch Reference*, `setsmpriority` command
- *Switch Reference*, `enableesm` command
- *Switch Reference*, `opensm` command
- “[Attach the Management Cables](#)” on page 26
- “[Attach the Power Cords](#)” on page 28
- “[Accessing the Management Controller](#)” on page 31
- “[Verify the Switch Status](#)” on page 34

Connecting InfiniBand Cables

After verifying the switch operational status, you can begin attaching the InfiniBand cables.

- “Attach the InfiniBand Cables” on page 38
- “Check Link Status” on page 44

Related Information

- “Understanding InfiniBand Cabling” on page 9
- “Install the Switch in the Rack” on page 20
- “Powering On the Switch” on page 25
- “Verifying the InfiniBand Fabric” on page 44

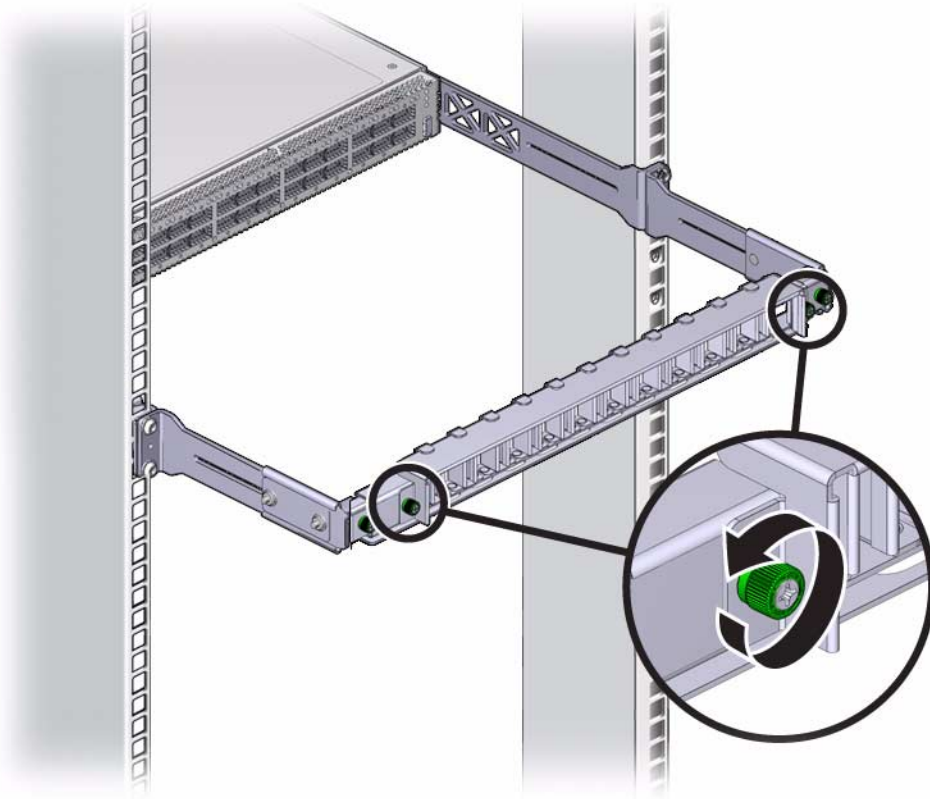
▼ Attach the InfiniBand Cables



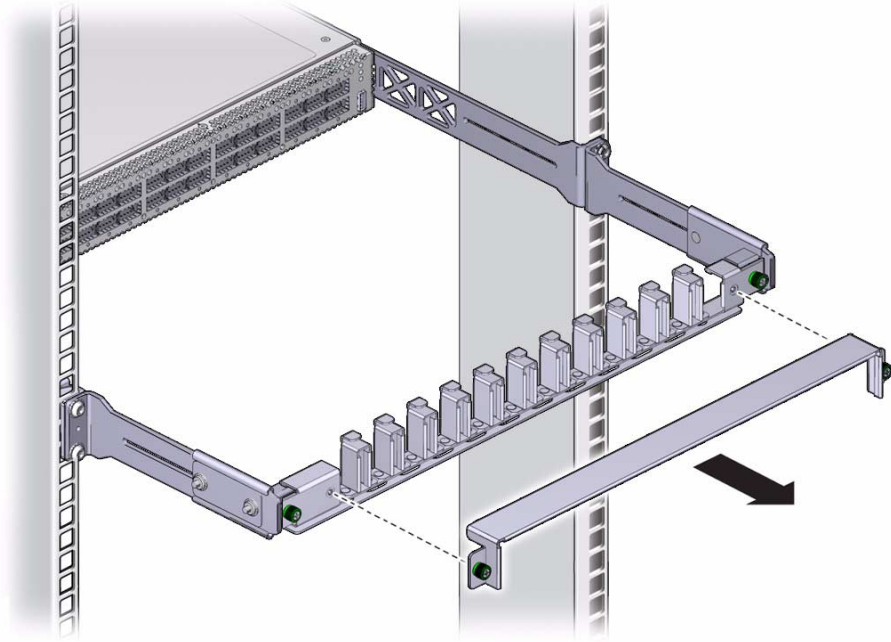
Caution – InfiniBand cables must never turn tighter than a 5-inch (127 mm) radius. A tighter radius damages the wires and fibers inside the cable.

Note – When you install the InfiniBand cables, connect cables to the lower connectors first. Then connect cables to the upper connectors.

1. **Identify the prerequisite and subsequent installation tasks that you must perform in conjunction with this procedure.**
See “Installation Sequence” on page 17.
2. **Loosen the two captive thumbscrews that secure the cover to the cable management bracket.**



3. Lift the cover off.



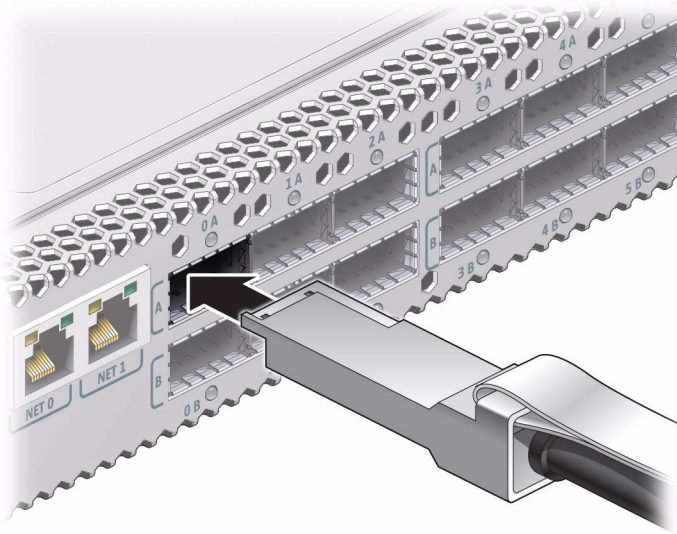
- 4. Remove the protective cap from the connector and visually inspect the cable connector.**

The shell should not be bent and should be parallel to the inner boards. If the connector is bent or damaged, use a different cable.

- 5. Ensure that the retraction strap is folded back against the cable.**

- 6. Orient the cable connector to the QSFP receptacle squarely and horizontally.**

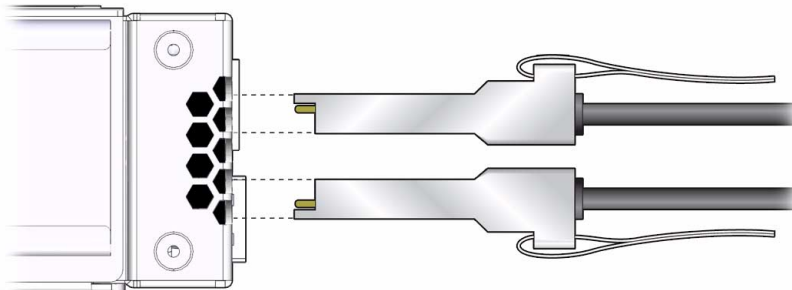
Ensure that the L groove is up for the top row of receptacles, or that the L groove is down for the bottom row of receptacles.



Note – On some QSFP cable connectors, there is a retraction strap. Both the retraction strap and L groove indicate the reference surface for the connector. When installing QSFP cables in the top row of receptacles (0A, 1A, 2A, and so on), ensure that the L groove and retraction strap are up. When installing QSFP cables in the bottom row of receptacles (0B, 1B, 2B, and so on), ensure that the L groove and retraction strap are down. See “Identify the InfiniBand Cable” on page 133.

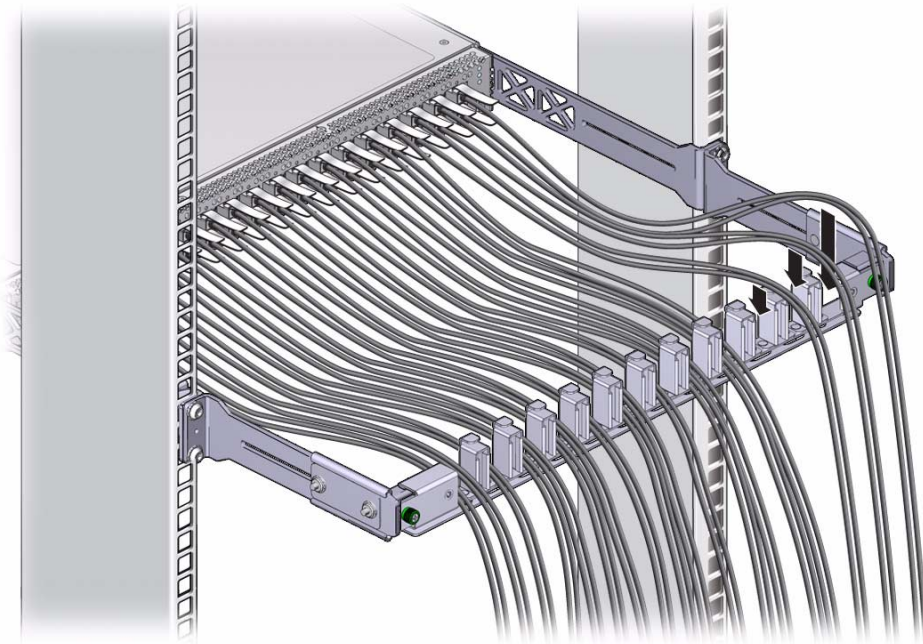
7. Slowly move the connector in.

As you slide the connector in, the shell should be in the center of the QSFP receptacle.

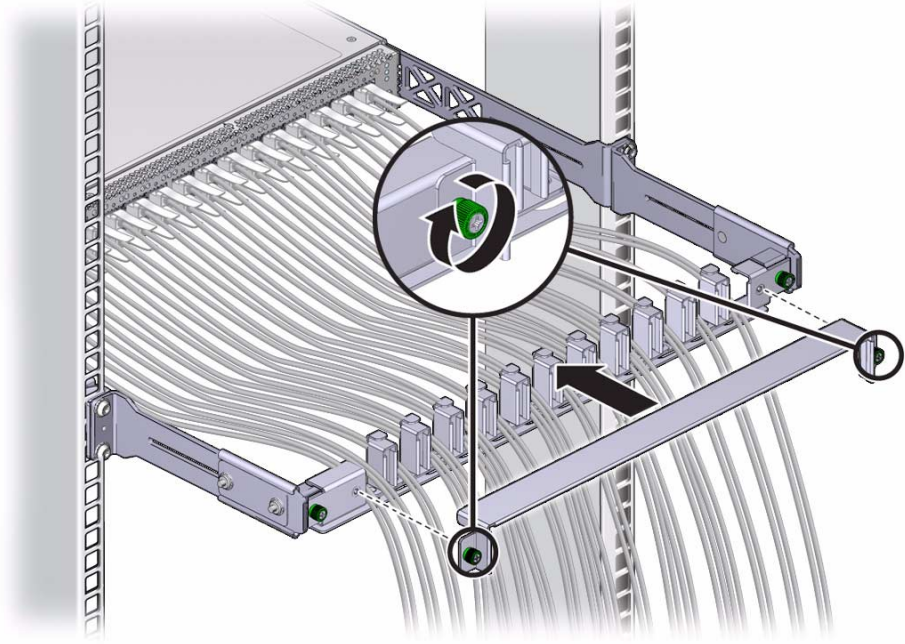


- If the connector stops or binds after about 1/4 in. (5 mm) travel, back out and repeat from [Step 6](#).

- If the connector stops or binds with about 1/8 in. (2 mm) still to go, back out and repeat [Step 7](#).
8. Continue to push the connector in until you feel a detent.
 9. Place the cable into the open slot on the cable management bracket.



10. Repeat [Step 4](#) through [Step 9](#) for all cables to be installed.
11. Replace the cover for the cable management bracket and tighten the thumbscrews.



12. **Route the InfiniBand cables so that they do not interfere with other cables, or with servicing the switch or other systems.**

Use hook and loop fastener straps to bundle and secure the cables.

Note – Do not use cable zip ties to bundle or secure the cable, because the ties damage the fibers inside the cable.

13. **Check that the Link LEDs for cabled links are lit green.**
If the Link LED is unlit, the link is down. If the Link LED flashes, there are symbol errors. See [“Check Link Status LEDs”](#) on page 59.
14. **If possible, close the rack doors to maintain EMI compliance.**
15. **Check the link status.**
See [“Check Link Status”](#) on page 44.

Related Information

- [“Understanding InfiniBand Cabling”](#) on page 9
- [“Attach the Management Cables”](#) on page 26
- [“Attach the Power Cords”](#) on page 28
- [“Check Link Status”](#) on page 44

▼ Check Link Status

1. **Identify the prerequisite and subsequent installation tasks that you must perform in conjunction with this procedure.**

See [“Installation Sequence”](#) on page 17.

2. **On the management controller, determine the state of the links:**

```
# listlinkup
```

- If the link for a connector is reported as `Not present`, there is no cable attached, or the link at either end of the cable is down.
- If a port is `down`, use the `enableswitchport` command to bring the port up. Alternatively, use the `ibdevreset` command to reset the entire switch chip. See [“Enable a Switch Chip Port”](#) on page 97 and [“Reset the Switch Chip”](#) on page 94.

3. **Verify the InfiniBand fabric.**

See [“Discover the InfiniBand Fabric Topology”](#) on page 45.

Related Information

- *Switch Reference*, `listlinkup` command
- *Switch Reference*, `enableswitchport` command
- *Switch Reference*, `ibdevreset` command
- [“Verify the Switch Status”](#) on page 34
- [“InfiniBand Cable Cautions”](#) on page 10
- [“InfiniBand Cable Guidelines”](#) on page 11
- [“Attach the InfiniBand Cables”](#) on page 38

Verifying the InfiniBand Fabric

Use the `ibnetdiscover`, `ibdiagnet`, and `ibcheckerrors` commands to initially determine the operational status of your switch in the InfiniBand fabric.

- [“Discover the InfiniBand Fabric Topology”](#) on page 45
- [“Perform Diagnostics on the InfiniBand Fabric”](#) on page 46
- [“Validate the InfiniBand Fabric and Report Errors”](#) on page 47

Related Information

- [“Install the Switch in the Rack”](#) on page 20
- [“Powering On the Switch”](#) on page 25
- [“Connecting InfiniBand Cables”](#) on page 38

▼ Discover the InfiniBand Fabric Topology

The `ibnetdiscover` command enables you to see the InfiniBand fabric topology and build a topology file, which is used by the OpenSM Subnet Manager.

1. Identify the prerequisite and subsequent installation tasks that you must perform in conjunction with this procedure.

See [“Installation Sequence”](#) on page 17.

2. On the management controller, type:

```
# ibnetdiscover
#
# Topology file: generated on Sat Apr 13 22:28:55 2002
#
# Max of 1 hops discovered
# Initiated from node 0021283a8389a0a0 port 0021283a8389a0a0
vendid=0x2c9
devid=0xbd36
sysimgguid=0x21283a8389a0a3
switchguid=0x21283a8389a0a0(21283a8389a0a0)
Switch 36 "S-0021283a8389a0a0" # "Sun DCS 36 QDR switch localhost" enhanced port
0 lid 15 lmc 0
[23] "H-0003ba000100e388"[2](3ba000100e38a) # "nsn33-43 HCA-1" lid 14 4xQDR

vendid=0x2c9
devid=0x673c
sysimgguid=0x3ba000100e38b
caguid=0x3ba000100e388
Ca 2 "H-0003ba000100e388" # "nsn33-43 HCA-1"
[2](3ba000100e38a) "S-0021283a8389a0a0"[23] # lid 14 lmc 0 "Sun DCS 36 QDR
switch localhost" lid 15 4xQDR
#
```

Note – The output for your InfiniBand fabric will differ from that in the example.

3. Perform InfiniBand fabric diagnostics.

See [“Perform Diagnostics on the InfiniBand Fabric”](#) on page 46.

Related Information

- *Switch Reference*, `ibnetdiscover` command
- “Perform Diagnostics on the InfiniBand Fabric” on page 46
- “Validate the InfiniBand Fabric and Report Errors” on page 47

▼ Perform Diagnostics on the InfiniBand Fabric

The `ibdiagnet` command performs a collection of tests on the InfiniBand fabric and generates several files that contain parameters and aspects of the InfiniBand fabric.

1. Identify the prerequisite and subsequent installation tasks that you must perform in conjunction with this procedure.

See “Installation Sequence” on page 17.

2. On the management controller, type:

```
# ibdiagnet
```

In the following example, the `ibdiagnet` command is minimized to determine which links are underperforming:

```
# ibdiagnet -lw 4x -ls 10 -skip all
Loading IBDIAGNET from: /usr/lib/ibdiagnet1.2
-W- Topology file is not specified.
  Reports regarding cluster links will use direct routes.
Loading IBDM from: /usr/lib/ibdm1.2
-I- Using port 0 as the local port.
-I- Discovering ... 2 nodes (1 Switches & 1 CA-s) discovered.
.
.
.
-I- Links With links width != 4x (as set by -lw option)
-I-----
-I- No unmatched Links (with width != 4x) were found
-I-----
-I- Links With links speed != 10 (as set by -ls option)
-I-----
-I- No unmatched Links (with speed != 10) were found
.
.
.
-I- Stages Status Report:
      STAGE                               Errors Warnings
      Bad GUIDS/LIDs Check                 0         0
```

```
Link State Active Check           0      0
Performance Counters Report       0      0
Specific Link Width Check         0      0
Specific Link Speed Check         0      0
Partitions Check                  0      0
IPoIB Subnets Check              0      0
Please see /tmp/ibdiagnet.log for complete log
-----
-I- Done. Run time was 1 seconds.
#
```

Note – The output for your InfiniBand fabric will differ from that in the example.

3. Validate and check errors for the InfiniBand fabric.

See [“Validate the InfiniBand Fabric and Report Errors”](#) on page 47.

Related Information

- *Switch Reference*, `ibdiagnet` command
- [“Discover the InfiniBand Fabric Topology”](#) on page 45
- [“Validate the InfiniBand Fabric and Report Errors”](#) on page 47

▼ Validate the InfiniBand Fabric and Report Errors

The `ibcheckerrors` command uses the topology file to scan the InfiniBand fabric and validate the connectivity as described in the topology file, and to report errors as indicated by the port counters.

1. Identify the prerequisite and subsequent installation tasks that you must perform in conjunction with this procedure.

See [“Installation Sequence”](#) on page 17.

2. On the management controller, type:

Note – The output for your InfiniBand fabric will differ from that in the example.

```
# ibcheckerrors
## Summary: 4 nodes checked, 0 bad nodes found
##          34 ports checked, 0 ports have errors beyond threshold
#
```

Note – The thresholds are dependent of time since the last reset. If you see a lot of errors, reset the counters with the `ibclearerrors` command. Check the errors a few minutes later with the `ibcheckerrors` command.

Related Information

- *Switch Reference*, `ibcheckerrors` command
- “Discover the InfiniBand Fabric Topology” on page 45
- “Perform Diagnostics on the InfiniBand Fabric” on page 46

Administering the Switch

The following topics describe the administration of the switch.

- [“Troubleshooting the Switch” on page 49](#)
- [“Understanding Administrative Commands” on page 65](#)
- [“Monitoring the Hardware” on page 67](#)
- [“Monitoring the InfiniBand Fabric” on page 80](#)
- [“Monitoring the Subnet Manager” on page 89](#)
- [“Controlling the Hardware” on page 92](#)
- [“Controlling the InfiniBand Fabric” on page 98](#)
- [“Controlling the Subnet Manager” on page 108](#)

Related Information

- [“Installing the Switch” on page 1](#)
- [“Servicing the Switch” on page 113](#)
- [Switch Remote Administration](#)
- [Switch Reference](#)

Troubleshooting the Switch

The following topics help you resolve some basic problems that might occur with your switch.

- [“Switch Hardware Problems” on page 50](#)
- [“InfiniBand Fabric Problems” on page 53](#)
- [“Identifying LEDs” on page 56](#)
- [“Understanding Routing Through the Switch” on page 61](#)
- [“Switch GUIDs Overview” on page 64](#)

Related Information

- “Understanding Administrative Commands” on page 65
- “Monitoring the Hardware” on page 67
- “Monitoring the InfiniBand Fabric” on page 80
- “Monitoring the Subnet Manager” on page 89
- “Controlling the Hardware” on page 92
- “Controlling the InfiniBand Fabric” on page 98
- “Controlling the Subnet Manager” on page 108

Switch Hardware Problems

The following table lists situations that might occur with switch hardware and corrective steps that you can take to resolve the problem.

Situation	Corrective Steps
The Attention LED on a power supply is lit or the power supply seems dysfunctional.	<ol style="list-style-type: none">1. Check the power supply status. See “Display Power Supply Status” on page 69.2. Unplug the respective power cord, wait 15 minutes, then reattach the power cord.3. If the previous steps do not rectify the situation, replace the power supply. See “Servicing Power Supplies” on page 115.
There is no network communication with the management controller.	<ol style="list-style-type: none">1. Verify that the management controller is powered without faults. See “Check Chassis Status LEDs” on page 58.2. Verify that there is a LinkUp condition at the network management port. See “Check Network Management Port Status LEDs” on page 59.3. Verify that the DHCP server is providing the IP address you are using to access the management controller. See DHCP server documentation.4. If you are able to access the management controller through the USB connector, restart the management controller. See “Access the Management Controller From the USB Management Port” on page 32 and “Restart the Management Controller” on page 92.5. If you are unable to access the management controller through the USB connector, power cycle the switch. See “Power Off a Power Supply” on page 118 and “Power On a Power Supply” on page 123.6. If the previous steps do not rectify the situation, replace the switch. See “Remove the Switch From the Rack” on page 140 and “Installing the Switch” on page 1.

Situation	Corrective Steps
The Attention LED on the switch chassis is lit or the management controller seems dysfunctional.	<ol style="list-style-type: none"> 1. If you are unable to access the management controller, power cycle the switch. See “Power Off a Power Supply” on page 118 and “Power On a Power Supply” on page 123. 2. If you are able to access the management controller, restart the management controller. See “Restart the Management Controller” on page 92. 3. Check overall switch health. See “Display the State of the Chassis Status LEDs” on page 68 4. Verify that the switch is within operating temperatures and voltages. See “Display Switch Environmental and Operational Data” on page 72. 5. If the previous steps do not rectify the situation, replace the switch. See “Remove the Switch From the Rack” on page 140 and “Installing the Switch” on page 1.
The Attention LED on a fan is lit or the fan seems dysfunctional.	<ol style="list-style-type: none"> 1. Check the fan speed. See “Display Fan Status” on page 71. 2. If the previous step does not rectify the situation, replace the fan. See “Servicing Fans” on page 125. 3. If the previous step does not rectify the situation, install the fan into another available slot. See “Servicing Fans” on page 125 4. If no other slots are available, replace the switch. See “Remove the Switch From the Rack” on page 140 and “Installing the Switch” on page 1.
After installation, no links are operational.	<ol style="list-style-type: none"> 1. Verify that there is at least one Subnet Manager active on the InfiniBand Fabric. See “Display Subnet Manager Status” on page 89. 2. If no Subnet Manager is active, start the Subnet Manager within the switch. See “Start the Subnet Manager” on page 36. 3. If the previous steps do not rectify the situation, restart the Subnet Manager. See “Disable the Subnet Manager” on page 112 and “Enable the Subnet Manager” on page 111.
After installation, not all links are operational.	<ol style="list-style-type: none"> 1. Determine which links are nonoperational. See “Display Link Status” on page 77. 2. For links that are <code>Down</code>, disable and re-enable the respective ports. See “Disable a Switch Chip Port” on page 96 and “Enable a Switch Chip Port” on page 97. 3. If the previous steps do not rectify the situation, disable the respective port. See “Disable a Switch Chip Port” on page 96.

Situation	Corrective Steps
There was a power outage during a firmware update.	<ol style="list-style-type: none"><li data-bbox="368 201 1179 279">1. If you are able to access the management controller, restart the management controller. See “Restart the Management Controller” on page 92.<li data-bbox="368 296 1239 374">2. If you are unable to access the management controller, power cycle the switch. See “Power Off a Power Supply” on page 118 and “Power On a Power Supply” on page 123.<li data-bbox="368 392 801 444">3. Reperform the firmware upgrade. See “Firmware Upgrades” on page 146.

Related Information

- [“InfiniBand Fabric Problems”](#) on page 53
- [“Identifying LEDs”](#) on page 56
- [“Understanding Routing Through the Switch”](#) on page 61
- [“Switch GUIDs Overview”](#) on page 64

InfiniBand Fabric Problems

The following table lists situations that might occur with the InfiniBand fabric and corrective steps that you can take to resolve the problem.

Situation	Corrective Steps
Performance of the InfiniBand fabric seems diminished.	<ol style="list-style-type: none"><li data-bbox="394 371 1119 394">1. Determine if there are errors or problems with the InfiniBand fabric. See:<ul style="list-style-type: none"><li data-bbox="418 435 1148 458">“Perform Comprehensive Diagnostics for the Entire Fabric” on page 99<li data-bbox="418 470 996 493">“Find 1x, SDR, or DDR Links in the Fabric” on page 101<li data-bbox="418 505 1186 527">“Determine Which Links Are Experiencing Significant Errors” on page 102<li data-bbox="394 539 1253 621">2. Locate the affected nodes by the GUID provided in the output of the <code>ibdiagnet</code> command. See “Locate a Switch Chip or Connector From the GUID” on page 76.<li data-bbox="394 633 1310 715">3. If the problem is at a cable connection, swap the suspect cable with a known good cable or reconnect the cable to a known good remote port and repeat Step 1. See “Servicing InfiniBand Cables” on page 132.<li data-bbox="394 727 1310 808">4. If the problem still remains at the cable connection, disable and re-enable the respective port and repeat Step 1. See “Disable a Port” on page 106 and “Enable a Port” on page 107. <p data-bbox="394 821 601 843">Temporary solution:</p> <ul style="list-style-type: none"><li data-bbox="394 855 962 913">• If the problem still remains, disable the affected port. See “Disable a Port” on page 106. <p data-bbox="394 925 601 947">Permanent solution:</p> <ul style="list-style-type: none"><li data-bbox="394 960 1176 1107">• If the problem still remains, replace the affected component or the switch. See “Servicing InfiniBand Cables” on page 132. See remote port’s documentation for replacement procedures. See “Remove the Switch From the Rack” on page 140 and “Installing the Switch” on page 1.

Situation	Corrective Steps
An InfiniBand Link LED is blinking.	<ol style="list-style-type: none"> <li data-bbox="322 197 1168 253">1. Disconnect and properly reconnect both ends of the respective InfiniBand cable. See <i>Switch Service</i>, servicing an InfiniBand cable. <li data-bbox="322 265 1239 352">2. If the LED is still blinking, determine the significance of the errors through use of the <code>ibdiagnet</code> command. See “Determine Which Links Are Experiencing Significant Errors” on page 102. <li data-bbox="322 361 1196 447">3. Determine which connectors map to the affected link by deconstructing the node’s GUID and port. See “Locate a Switch Chip or Connector From the GUID” on page 76. <li data-bbox="322 456 1239 508">4. If some of the links are running at 1x or SDR, use that situation elsewhere in this table to rectify the problem. <li data-bbox="322 517 1032 578">5. Disable and re-enable the respective ports. See “Disable a Port” on page 106 and “Enable a Port” on page 107. <li data-bbox="322 586 1239 638">6. If the errors are still significant, swap the cable with a known good one or reconnect the cable to a known good remote port, and repeat from 2. <li data-bbox="322 647 1218 741">7. Depending upon what does or does not rectify the problem, replace that component. See “Servicing InfiniBand Cables” on page 132. See the remote port’s documentation for replacement procedures.

Situation	Corrective Steps
Some InfiniBand links are running at 1x or SDR.	<p>For a temporary solution:</p> <ol style="list-style-type: none"> Identify the suspect links using the <code>ibdiagnet</code> command. See “Find 1x, SDR, or DDR Links in the Fabric” on page 101. Look for text like the following: <pre>-W- link with SPD=2.5 found at direct path "1,19" From: a Switch PortGUID=0x00066a00d80001dd Port=19 To: a Switch PortGUID=0x00066a00d80001dd Port=24</pre> Determine which connectors map to the affected link by deconstructing the node’s GUID and port. See “Locate a Switch Chip or Connector From the GUID” on page 76. Verify the cable connection at both ends. See “Servicing InfiniBand Cables” on page 132. Disable and re-enable the respective ports. See “Disable a Port” on page 106 and “Enable a Port” on page 107. If the previous steps do not rectify the problem, disable the port. See “Disable a Port” on page 106. <p>For a permanent solution:</p> <ol style="list-style-type: none"> Perform the steps for a temporary solution, steps 1 to step 4. Swap the cable with a known good one or reconnect the cable to a known good remote port, and repeat from Step 1. Depending upon what does or does not rectify the problem, replace that component or the switch. See “Servicing InfiniBand Cables” on page 132. See the remote port’s documentation for replacement procedures. See “Remove the Switch From the Rack” on page 140 and “Installing the Switch” on page 1.
There are errors on some InfiniBand links.	<ol style="list-style-type: none"> Clear the error counters. See “Clear Error Counters” on page 103. Start a fabric stress test. Identify the suspect links using the <code>ibdiagnet</code> command. See “Determine Which Links Are Experiencing Significant Errors” on page 102. Look for text like the following: <pre>-W- lid=0x0006 guid=0x0021283a8816c0a0 dev=48438 Port=34 Performance Monitor counter : Value link_recovery_error_counter : 0x1 symbol_error_counter : 0x25 (Increase by 3 during ibdiagnet)</pre> For links that are experiencing recovery errors or substantial symbol errors, see other parts of this table to help identify the cause and rectify the problem.

Situation	Corrective Steps
Output of InfiniBand commands provides only GUID and port, not switch chip or QSFP connectors.	<ol style="list-style-type: none"> 1. Find the location of a node in the switch, by deconstructing the node's GUID and port. See "Locate a Switch Chip or Connector From the GUID" on page 76. 2. Use the <code>dcspport</code> command to provide a mapping of port-to-connector or connector-to-port. See "Display the Switch Chip Port to QSFP Connector Mapping" on page 75.

Related Information

- ["Switch Hardware Problems"](#) on page 50
- ["Identifying LEDs"](#) on page 56
- ["Understanding Routing Through the Switch"](#) on page 61
- ["Switch GUIDs Overview"](#) on page 64

Identifying LEDs

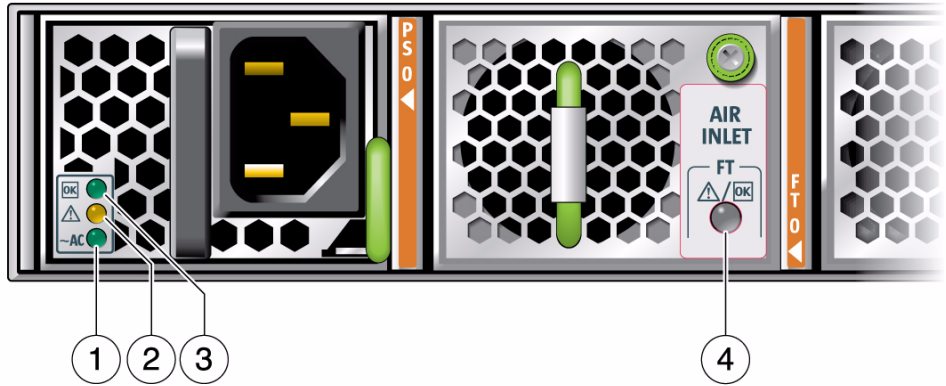
Status LEDs are used on many components of the switch chassis as a means of indicating the component's state.

- ["Front Status LEDs"](#) on page 57
- ["Rear Status LEDs"](#) on page 57
- ["Check Chassis Status LEDs"](#) on page 58
- ["Check Network Management Port Status LEDs"](#) on page 59
- ["Check Link Status LEDs"](#) on page 59
- ["Check Power Supply Status LEDs"](#) on page 60
- ["Check Fan Status LEDs"](#) on page 60

Related Information

- ["Switch Hardware Problems"](#) on page 50
- ["InfiniBand Fabric Problems"](#) on page 53
- ["Understanding Routing Through the Switch"](#) on page 61
- ["Switch GUIDs Overview"](#) on page 64

Front Status LEDs

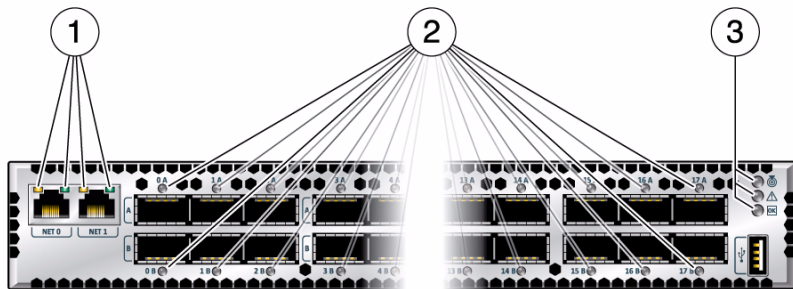


-
- | | |
|---|----------------------------|
| 1 | Power supply AC LED |
| 2 | Power supply Attention LED |
| 3 | Power supply OK LED |
| 4 | Fan Attention LED |
-

Related Information

- “Check Power Supply Status LEDs” on page 60
- “Check Fan Status LEDs” on page 60

Rear Status LEDs



-
- | | |
|---|------------------|
| 1 | NET status LEDs |
| 2 | Link status LEDs |
-




Related Information

- [“Check Chassis Status LEDs” on page 58](#)
- [“Check Network Management Port Status LEDs” on page 59](#)
- [“Check Link Status LEDs” on page 59](#)

▼ Check Chassis Status LEDs

The chassis status LEDs are located on the left side of the rear panel. See [“Rear Status LEDs” on page 57](#).

1. **Visually inspect the chassis status LEDs.**
2. **Compare what you see to the following table.**

Icon	Location	Name	Color	State and Meaning
	Top	Locator	White	On – No function. Off – Disabled. Flashing – The switch is identifying itself.
	Middle	Attention	Amber	On – Normal fault detected. Off – No faults detected. Flashing – No function.
	Bottom	OK	Green	On – Switch is functional without fault. Off – Switch is off or initializing. Flashing – No function.

Related Information

- *Switch Reference*, `chassis_led` command
- [“Display Switch Environmental and Operational Data” on page 72](#)

▼ Check Network Management Port Status LEDs

The network management port status LEDs are located on the network management connector of the rear panel. See [“Rear Status LEDs” on page 57](#).

1. **Visually inspect the NET status LEDs.**

2. Compare what you see to the following table.

Name	Position	Color	State
Link speed	Left	Amber or green	Amber on – 100BASE-T. Green on – 1000BASE-T. Off – No link or link down. Flashing – No function.
Activity	Right	Green	On – No function. Off – No activity. Flashing – Packet activity.

▼ Check Link Status LEDs

The link status LEDs are located at the InfiniBand connectors of the rear panel. See [“Rear Status LEDs” on page 57](#).

1. Visually inspect the link status LEDs.
2. Compare what you see for a particular link to the following table.

Name	Color	State and Meaning
Link	Green	On – Link established. Off – No link or link down. Flashing – Symbol errors.

Related Information




- [“Display Link Status” on page 77](#)
- [“Display the Link Status of a Node” on page 83](#)
- [“Display Counters for a Node” on page 85](#)

▼ Check Power Supply Status LEDs

The power supply status LEDs are located on the power supply at the front of the chassis. See [“Front Status LEDs” on page 57](#).

1. Visually inspect the power supply’s status LEDs.

2. Compare what you see on the power supply to the following table.

Icon	Location	Name	Color	State and Meaning
	Top	OK	Green	On – 12 VDC is supplied. Off – No DC voltage is present. Flashing – No function.
	Middle	Attention	Amber	On – Fault detected, 12 VDC shut down. Off – No faults detected. Flashing – No function.
	Bottom	AC	Green	On – AC power present and good. Off – AC power not present. Flashing – No function.



Caution – If a power supply has shut down because of a thermal or overcurrent condition, signified by the amber Attention LED lighting, remove the respective power cord from the chassis. Allow the power supply to completely cool for at least 15 minutes. A shorter cooling time might cause damage to the power supply when the power cord is reattached. If the Attention LED lights amber upon reattaching the power cord, replace the power supply.

Related Information

- [“Display Power Supply Status” on page 69](#)
- [“Check Board-Level Voltages” on page 70](#)

▼ Check Fan Status LEDs

The fan status LEDs are located in the lower right corner of the fans at the front of the switch chassis. See [“Front Status LEDs” on page 57](#).

1. **Visually inspect the fan status LEDs.**
2. **If the LED is lit, there is a problem with that fan.**

Related Information

- [“Display Fan Status” on page 71](#)

Understanding Routing Through the Switch

The tables in the following topics describe the routing through the switch. The first table maps the switch chip port to a QSFP connector. The second table provides a reverse map. When command output provides a switch chip port, you can use these tables to determine the route that link is following.

- [“Switch Chip Port to QSFP Connectors and Link LED Routes”](#) on page 62
- [“QSFP Connectors and Link LEDs to Switch Chip Port Routes”](#) on page 62
- [“Signal Route Through the Switch”](#) on page 63

Related Information

- [“Switch Hardware Problems”](#) on page 50
- [“InfiniBand Fabric Problems”](#) on page 53
- [“Identifying LEDs”](#) on page 56
- [“Switch GUIDs Overview”](#) on page 64

Switch Chip Port to QSFP Connectors and Link LED Routes

Port	Connector	Port	Connector	Port	Connector	Port	Connector
1	17A	10	13B	19	0B	28	4A
2	17B	11	12A	20	0A	29	5B
3	16A	12	12B	21	1B	30	5A
4	16B	13	9B	22	1A	31	8A
5	15A	14	9A	23	2B	32	8B
6	15B	15	10B	24	2A	33	7A
7	14A	16	10A	25	3B	34	7B
8	14B	17	11B	26	3A	35	6A
9	13A	18	11A	27	4B	36	6B

Related Information

- [“Display the Switch Chip Port to QSFP Connector Mapping”](#) on page 75
- [“Display Link Status”](#) on page 77
- [“Display Switch Chip Port Status”](#) on page 78

- [“QSFP Connectors and Link LEDs to Switch Chip Port Routes”](#) on page 62
- [“Signal Route Through the Switch”](#) on page 63

QSFP Connectors and Link LEDs to Switch Chip Port Routes

The following table provides a mapping of the QSFP connector and its link LED to the respective switch chip port.

Connector Group	Connector A Port	Connector B Port	Connector Group	Connector A Port	Connector B Port
0	20	19	9	14	13
1	22	21	10	16	15
2	24	23	11	18	17
3	26	25	12	11	12
4	28	27	13	9	10
5	30	29	14	7	8
6	35	36	15	5	6
7	33	34	16	3	4
8	31	32	17	1	2

Related Information

- [“Display the Switch Chip Port to QSFP Connector Mapping”](#) on page 75
- [“Display Link Status”](#) on page 77
- [“Display Switch Chip Port Status”](#) on page 78
- [“Switch Chip Port to QSFP Connectors and Link LED Routes”](#) on page 62
- [“Signal Route Through the Switch”](#) on page 63

Signal Route Through the Switch

By combining the information from the tables in [“Switch Chip Port to QSFP Connectors and Link LED Routes”](#) on page 62 and [“QSFP Connectors and Link LEDs to Switch Chip Port Routes”](#) on page 62, it is possible to determine a route through the switch. This topic describes a sample situation that might occur.

1. A route is initiated at connector 2A. The LED blinks.

2. Using “[QSFP Connectors and Link LEDs to Switch Chip Port Routes](#)” on page 62, it is determined that the link routes to the switch chip through port 24.
3. The Subnet Manager instructs the switch chip to use port 4 to forward the link.
4. Using “[Switch Chip Port to QSFP Connectors and Link LED Routes](#)” on page 62, it is determined that the link routes to connector 16B. The LED blinks.

Related Information

- “[Switch Chip Port to QSFP Connectors and Link LED Routes](#)” on page 62
- “[QSFP Connectors and Link LEDs to Switch Chip Port Routes](#)” on page 62
- “[Display the Switch Chip Port to QSFP Connector Mapping](#)” on page 75
- “[Display a Route Through the Fabric](#)” on page 83
- “[Perform Comprehensive Diagnostics for a Route](#)” on page 99

Switch GUIDs Overview

Global unit identifiers (GUIDs) are unique 64-bit strings that identify nodes such as switches and channel adapters. For the Sun Datacenter InfiniBand switches, GUIDs are modified to identify the node’s role and location. The following table describes the GUID’s structure.

63	16	15	12	11	8	7	4	3	0
MAC (48 bits)						Type	Pos	Device	Num

The five fields of the GUID are described as follows:

- MAC – Bits 63 through 16 are the MAC address. A standard for network components, the MAC address is typically provided by manufacturers in a 6-byte, colon delimited string. For example, 00:11:22:33:44:55.
- Type – Bits 15 through 12 are the type of board on which the node resides.
- Pos – Bits 11 through 8 identify the position of the board within the switch.
- Device – Bits 7 through 4 identify which device on the board has that node.
- Num – Bits 3 through 0 are numbers reserved for the programs that modify the GUID. In most occurrences, the value is 0x2.

The following table provides values for Type, Pos, Device.

Board	Type	Position	Device
Fabric card	0xF	0x0 (Fabric card 0) – 0x8 (Fabric card 8)	0xA (I4 chip 0) – 0xB (I4 chip 1)

Board	Type	Position	Device
Line card	0x1	0x0 (Line card 0) – 0x8 (Line card 8)	0xA (I4 chip 0) – 0xD (I4 chip 3)
Gateway	0xC	0x0	0xA (I4 chip 0), 0x0 (BX chip 0), 0x4 (BX chip 1)
36-port	0xA	0x0	0xA (I4 chip 0)
72-port	0xB	0x0	0xA (I4 chip 0) – 0xF (I4 chip 5)

For example, given the following output from the `ibswitches` command:

```
[16] -> switch port {0x0021283a831da0a2}[21] lid 214-214 "Sun DCS 36 QDR FC
switch 2.0"
```

The GUID is 0x0021283a831da0a2 or 0021283A831D A 0 A 2. Using the information provided in this topic:

- The MAC address is 0x0021283A831D or 00:21:28:3A:83:1D.
- The type is 0xA, or a 36-port board.
- The position is 0x0.
- The device is 0xA, or a solitary I4 chip.
- The number is 2.

Related Information

- *Switch Reference*, `ibnetdiscover` command
- *Switch Reference*, `ibnodes` command
- *Switch Reference*, `ibswitches` command
- *Switch Reference*, `ibhosts` command
- “Identify All Switches in the Fabric” on page 80
- “Switch Hardware Problems” on page 50
- “InfiniBand Fabric Problems” on page 53
- “Identifying LEDs” on page 56
- “Understanding Routing Through the Switch” on page 61

Understanding Administrative Commands

The following topics provide an overview of administrative tasks and the command sets to perform those tasks. Administering the switch requires accessing the management controller.

- [“Hardware Command Overview” on page 66](#)
- [“InfiniBand Command Overview” on page 66](#)
- [“ILOM Command Overview” on page 66](#)

Related Information

- [“Troubleshooting the Switch” on page 49](#)
- [“Monitoring the Hardware” on page 67](#)
- [“Monitoring the InfiniBand Fabric” on page 80](#)
- [“Monitoring the Subnet Manager” on page 89](#)
- [“Controlling the Hardware” on page 92](#)
- [“Controlling the InfiniBand Fabric” on page 98](#)
- [“Controlling the Subnet Manager” on page 108](#)

Hardware Command Overview

The management controller uses a simplified Linux OS and file system. From the # prompt on the management controller, you can type hardware commands to perform some administrative and management tasks. Hardware commands are user-friendly and can perform some testing upon the switch chip, enabling greater control of the switch and its operation.

After you log in to the `root` account, the shell prompt (`#`) appears, and you can enter shell commands. Enter the hardware commands in the following format:

```
# command [arguments] [arguments] . . .
```

Related Information

- [Switch Reference](#), understanding hardware commands
- [“InfiniBand Command Overview” on page 66](#)
- [“ILOM Command Overview” on page 66](#)

InfiniBand Command Overview

The InfiniBand commands are a means of monitoring and controlling aspects of the InfiniBand fabric. These commands are also installed on and run from the management controller, which is also the host of the Subnet Manager. Use of these commands requires thorough knowledge of InfiniBand architecture and technology.

After you log in to the `root` account, the shell prompt (`#`) appears, and you can enter shell commands. Enter the InfiniBand commands in the following format:

```
# command [option] [option] . . .
```

Related Information

- *Switch Reference*, understanding InfiniBand commands
- [“Hardware Command Overview” on page 66](#)
- [“ILOM Command Overview” on page 66](#)

ILOM Command Overview

When you upgrade the management controller firmware to version 1.1.3 or higher, Oracle ILOM 3.0 support is also installed. The Oracle ILOM CLI, web, SNMP, and IPMI interfaces enable additional administration features and capabilities. The Oracle ILOM CLI, SNMP, and IPMI interfaces use remote clients for command-line administration of many Oracle ILOM targets. Alternatively, the Oracle ILOM web interface permits point-and-click administration of the Oracle ILOM components and services.

After you log in to the `ilom-admin` account, the Oracle ILOM prompt (`->`) appears, and you can enter Oracle ILOM commands. Enter the Oracle ILOM commands in the following format:

```
-> command [option] [target] [property=value] . . .
```

Information about Oracle ILOM support of the switch is available in the *Oracle Integrated Lights Out Manager (ILOM) 3.0 Supplement for the Sun Datacenter InfiniBand Switch 36*, available online at:

<http://www.oracle.com/pls/topic/lookup?ctx=E19197-01&id=homepage>

Overall information about Oracle ILOM 3.0 is available online at:

<http://www.oracle.com/pls/topic/lookup?ctx=E19860-01&id=homepage>

Related Information

- *Switch Remote Access*, understanding the Oracle ILOM commands
- “Hardware Command Overview” on page 66
- “InfiniBand Command Overview” on page 66

Monitoring the Hardware

The following topics enable you to display and check the operation and status of the switch.

- “Display Switch General Health” on page 68
- “Display the State of the Chassis Status LEDs” on page 68
- “Display Power Supply Status” on page 69
- “Check Board-Level Voltages” on page 70
- “Display Internal Temperatures” on page 71
- “Display Fan Status” on page 71
- “Display Switch Environmental and Operational Data” on page 72
- “Display Chassis FRU ID” on page 73
- “Display Power Supply FRU ID” on page 73
- “Display Switch Firmware Versions” on page 74
- “Display the Switch Chip Port to QSFP Connector Mapping” on page 75
- “Locate a Switch Chip or Connector From the GUID” on page 76
- “Display Switch Chip Boot Status” on page 76
- “Display Link Status” on page 77
- “Display Switch Chip Port Status” on page 78

Related Information

- “Monitoring the Hardware” on page 67
- “Monitoring the InfiniBand Fabric” on page 80
- “Monitoring the Subnet Manager” on page 89
- “Controlling the Hardware” on page 92

▼ Display Switch General Health

The `showunhealthy` command provides an easy way to perform a quick check of the switch's operation.

- **On the management controller, type:**

```
# showunhealthy
OK - No unhealthy sensors
#
```

Related Information

- *Switch Reference*, `showunhealthy` command
- [“Display Switch Environmental and Operational Data” on page 72](#)

▼ Display the State of the Chassis Status LEDs

You can check the state of the chassis status LEDs remotely with the `chassis_led` command.

- **On the management controller, type:**

```
# chassis_led
LED values:
Green on
Yellow off
White off
#
```

See [“Check Chassis Status LEDs” on page 58](#) for a description of the LED states.

Related Information

- *Switch Reference*, `showunhealthy` command
- [“Display Switch Environmental and Operational Data” on page 72](#)

▼ Display Power Supply Status

The `checkpower` command performs a simple pass-fail test on the power supplies.

1. On the management controller, type:

```
# checkpower
PSU 0 present status: OK
PSU 1 present status: Alert
#
```

2. If you see the words `Alert` or `Not Present` in the command output, perform the following steps for the affected power supply.

a. Remove the power cord from the affected power supply.

See [“Power Off a Power Supply”](#) on page 118.

b. Remove the affected power supply from the switch chassis.

See [“Remove a Power Supply”](#) on page 119.

c. Wait one minute.

d. Reinstall the power supply.

See [“Install a Power Supply”](#) on page 121.

e. Reattach the power cord.

See [“Power On a Power Supply”](#) on page 123.

f. If the power supply’s **Attention LED lights** or the `checkpower` command still reports `Alert` or `Not Present` for the power supply, replace the power supply.

See [“Servicing Power Supplies”](#) on page 115.

Related Information

- [Switch Reference](#), `checkpower` command
- [“Check Board-Level Voltages”](#) on page 70
- [“Display Switch Environmental and Operational Data”](#) on page 72

▼ Check Board-Level Voltages

When you want to know if the voltages used by the various components within the switch are within nominal values, use the `checkvoltages` command. If a voltage deviates more than 10% of its nominal value, there is a problem. This check also reports if a battery has failed.

- On the management controller, type:

```
# checkvoltages
Voltage ECB OK
Measured 3.3V Main = 3.28 V
Measured 3.3V Standby = 3.37 V
Measured 12V = 12.06 V
Measured 5V = 5.03 V
Measured VBAT = 3.25 V
Measured 2.5V = 2.52 V
Measured 1.8V = 1.80 V
Measured I4 1.2V = 1.22 V
All voltages OK
#
```

Related Information

- *Switch Reference*, checkvoltages command
- [“Display Power Supply Status” on page 69](#)
- [“Display Switch Environmental and Operational Data” on page 72](#)

▼ Display Internal Temperatures

If you are concerned with the internal temperature of the switch, you can use the showtemps command to display nominal and measured temperatures. If there is a great deviation, there might not be enough cooling.

- On the management controller, type:

```
# showtemps
Back temperature 29
Front temperature 30
SP temperature 36
Switch temperature 52, maxtemperature 56
All temperatures OK
#
```

Related Information

- *Switch Reference*, showtemps command
- [“Display Fan Status” on page 71](#)
- [“Display Switch Environmental and Operational Data” on page 72](#)

▼ Display Fan Status

The output of the `get fanspeed` command can help you determine fan speed inconsistencies, which might indicate a future failure.

- On the management controller, type:

```
# getfanspeed
Fan 0 not present
Fan 1 running at rpm 11212
Fan 2 running at rpm 11313
Fan 3 running at rpm 11521
Fan 4 not present
#
```

Related Information

- *Switch Reference*, `get fanspeed` command
- [“Display Switch Environmental and Operational Data” on page 72](#)

▼ Display Switch Environmental and Operational Data

The `env_test` command enables you to perform several investigative tasks, helping you determine the internal environment and operational status of the switch.

- On the management controller, type:

```
# env_test
Environment test started:
Starting Environment Daemon test:
Environment daemon running
Environment Daemon test returned OK
Starting Voltage test:
Voltage ECB OK
Measured 3.3V Main = 3.28 V
Measured 3.3V Standby = 3.37 V
Measured 12V = 12.06 V
Measured 5V = 5.03 V
Measured VBAT = 3.25 V
Measured 2.5V = 2.52 V
Measured 1.8V = 1.80 V
Measured I4 1.2V = 1.22 V
Voltage test returned OK
Starting PSU test:
```

```

PSU 0 present OK
PSU 1 present OK
PSU test returned OK
Starting Temperature test:
Back temperature 28
Front temperature 29
SP temperature 35
Switch temperature 34, maxtemperature 36
Temperature test returned OK
Starting FAN test:
Fan 0 not present
Fan 1 running at rpm 11212
Fan 2 running at rpm 11313
Fan 3 running at rpm 11521
Fan 4 not present
FAN test returned OK
Starting Connector test:
Connector test returned OK
Starting onboard ibdevice test:
Switch OK
All Internal ibdevices OK
onboard ibdevice test returned OK
Environment test PASSED
#

```

Related Information

- *Switch Reference*, `env_test` command

▼ Display Chassis FRU ID

The `showfruinfo` command displays switch chassis FRU ID information.

- **On the management controller, type:**

```

# showfruinfo
UNIX_Timestamp32           : Fri Apr 16 16:42:09 2010
Sun_Fru_Description        : ASSY,NM2-36P
Vendor_ID_Code             : 01 2C
Vendor_ID_Code_Source      : 01
Vendor_Name_And_Site_Location : Celestica San Jose
Sun_Part_Number            : 5111232
Sun_Serial_Number          : 0110SJC-0945NG0036
Serial_Number_Format       : 4V3F1-2Y2W2X4S
Initial_HW_Dash_Level      : 06
Initial_HW_Rev_Level       : 01
Sun_Fru_Shortname          : NM2, 36 ports

```

```
Sun_Hazard_Class_Code      : Y
Sun_SpecPartNo             : 885-1507-06
#
```

Related Information

- *Switch Reference*, showfruinfo command
- [“Display Power Supply FRU ID” on page 73](#)

▼ Display Power Supply FRU ID

The showpsufru command displays power supply FRU ID information.

- **On the management controller, type:**

```
# showpsufru slot
```

where *slot* is the power supply slot (0 or 1). For example:

```
# showpsufru 0
Sun_SpecPartNo             : 885-1165-02
UNIX_Timestamp32          : Wed May 6 09:18:21 2009
Sun_Part_Number           : 3002143
Sun_Serial_No             : BF0CG5
Vendor_ID_Code            : 02a2
Initial_HW_Dash_Level     : 02
PSU_Voltage 1             : 0x04b0 (1200)
PSU_Current 1             : 0x186a (6250)
PSU_Voltage 2             : 0x014a (330)
PSU_Current 2             : 0x012c (300)
Sun_Hazard_Class_Code     : Y
IPMI_Board_Manufacturer   : EMERSON
IPMI_Board_Product_Name   : A237
IPMI_Board_Serial_Number  : 1357ZHO-0919BF0CG5
IPMI_Board_Part_Number    : 300-2143-02
#
```

Related Information

- *Switch Reference*, showpsufru command
- [“Display Chassis FRU ID” on page 73](#)

▼ Display Switch Firmware Versions

In time, newer or updated switch firmware might become available. The `version` command displays the versions of the firmware within the switch chassis.

- **On the management controller, type:**

```
# version
SUN DCS 36p version: 1.3.0-1
Build time: Aug 17 2010 14:36:41
SP board info:
Manufacturing Date: 2010.01.22
Serial Number: "NCD4J0165"
Hardware Revision: 0x0100
Firmware Revision: 0x0102
BIOS version: NOW1R112
BIOS date: 04/24/2009
#
```

Related Information

- *Switch Reference*, `version` command
- *Switch Remote Administration*, `version` command

▼ Display the Switch Chip Port to QSFP Connector Mapping

You can use the `dcSPORT` command to display the mapping of a switch chip port to its respective QSFP connector and to display the mapping of a QSFP connector to its switch chip port.

- On the management controller, type:

```
# dcsport -port port
```

where *port* is the number of the port (1–36).

Alternatively, type:

```
# dcsport -connector connector
```

where *connector* is the number of the QSFP connector (0A–17B).

For example:

```
# dcsport -port 7
DCS-36P Switch port 7 maps to connector 14A
# dcsport -connector 14A
Connector 14A maps to Switch port 7
#
```

Note – For a complete mapping of all ports to all connectors, use the `dcsport -printconnectors` command.

Related Information

- *Switch Reference*, `dcsport` command
- [“Understanding Routing Through the Switch” on page 61](#)

▼ Locate a Switch Chip or Connector From the GUID

The output of some InfiniBand commands identify a node by its GUID. You can determine the switch chip or InfiniBand cable connection associated with that GUID using this procedure.

1. **In the output of the InfiniBand command, identify the GUID and port in question.**

For example, given the following output from the `ibdiagnet` command:

```
-W- lid=0x0055 guid=0x0021283a8389a0a0 dev=48438 Port=21
```

In this example, the GUID is 0x0021283a8389a0a0 and the port is 21.

2. Truncate all digits of the GUID except the four digits on the right.

For example, GUID 0x0021283a8389a0a0 is truncated to a0a0.

The a0 means that the node is inside of a Sun Datacenter InfiniBand Switch 36.

The a means that the node is located in I4 switch chip A, the only switch chip. The port is 21.

3. Use the tables in “Understanding Routing Through the Switch” on page 61 to cross-reference the routing between ports and to connections.

For example, using “Switch Chip Port to QSFP Connectors and Link LED Routes” on page 62, I4 switch chip, port 21 routes to connector 1B.

4. Alternatively, you can use the `dcsport` command to display routing between ports and connections.

See “Display the Switch Chip Port to QSFP Connector Mapping” on page 75.

Related Information

- “Switch GUIDs Overview” on page 64

▼ Display Switch Chip Boot Status

If you believe there is a problem with a switch chip, the `checkboot` command provides a quick pass-fail check of the switch chip. Should a switch chip fail the test, you can use the `ibdevreset` command in an attempt to reboot the switch chip.

- **On the management controller, type:**

```
# checkboot
Switch OK
#
```

Related Information

- *Switch Reference*, `checkboot` command
- “Reset the Switch Chip” on page 94
- “Display Switch Environmental and Operational Data” on page 72

▼ Display Link Status

In some situations, you might need to know the status of each route through the switch. Additionally, the `listlinkup` command displays where InfiniBand cables are connected to the switch.

- On the management controller, type:

```
# listlinkup
Connector 0A Present <-> Switch Port 20 up (Enabled)
Connector 1A Not present
Connector 2A Not present
Connector 3A Not present
Connector 4A Not present
.
.
Connector 0B Not present
Connector 1B Not present
.
.
Connector 17B Not present
#
```

Related Information

- *Switch Reference*, listlinkup command
- [“Display the Link Status of a Node” on page 83](#)

▼ Display Switch Chip Port Status

If by using other procedures it seems that a particular port of a switch chip is problematic, you can use the `getportstatus` command to provide the port state, width, and speed.

- On the management controller, type:

```
# getportstatus Switch port
```

where *port* is the number of the port on the switch chip (1–36).

Alternatively, type:

```
# getportstatus connector
```

where *connector* is the number of the QSFP connector (0A–17B).

For example:

Note – The parameters with the string *Active* indicate the current conditions.

```
# getportstatus Switch 7
Port status for connector 14A Switch Port 7
Adminstate:.....Enabled
LinkWidthEnabled:.....1X or 4X
LinkWidthSupported:.....1X or 4X
LinkWidthActive:.....4X
LinkSpeedSupported:.....2.5 Gbps or 5.0 Gbps or 10.0 Gbps
LinkState:.....Active
PhysLinkState:.....LinkUp
LinkSpeedActive:.....10.0 Gbps
LinkSpeedEnabled:.....2.5 Gbps or 5.0 Gbps or 10.0 Gbps
#
```

Related Information

- *Switch Reference*, `getportstatus` command
- [“Display the Link Status of a Node” on page 83](#)

▼ Display Switch Chip Port Counters

You can check the errors and throughput of a switch chip port using the `getportcounters` command.

- **On the management controller, type:**

```
# getportcounters port | connector
```

where:

- *port* is the number of the port (1–36).
- *connector* is the name of the connector (0A – 15A, 0A-ETH, 1A-ETH, 0B – 15B).

Note – The subordinate names of the 10GbE connectors, 0A-ETH-1 to 0A-ETH-4 and 1A-ETH-1 to 1A-ETH-4 are also valid *connector* names.

For example, for port 1:

```
# getportcounters 1
# Port counters: Lid 6 port 1
PortSelect:.....1
```

```

CounterSelect:.....0x1b01
SymbolErrors:.....65535
LinkRecovers:.....0
LinkDowned:.....1
RcvErrors:.....0
RcvRemotePhysErrors:.....0
RcvSwRelayErrors:.....0
XmtDiscards:.....1
XmtConstraintErrors:.....0
RcvConstraintErrors:.....0
LinkIntegrityErrors:.....0
ExcBufOverrunErrors:.....0
VL15Dropped:.....0
XmtData:.....277670000
RcvData:.....321584043
XmtPkts:.....4395402
RcvPkts:.....5137415
#

```

Related Information

- *Switch Reference*, `getportcounters` command
- [“Display Counters for a Node” on page 85](#)

Monitoring the InfiniBand Fabric

The following tasks enable you to display and check the operation and status of the InfiniBand fabric and components.

- [“Identify All Switches in the Fabric” on page 80](#)
- [“Identify All HCAs in the Fabric” on page 81](#)
- [“Display the InfiniBand Fabric Topology \(Simple\)” on page 82](#)
- [“Display the InfiniBand Fabric Topology \(Detailed\)” on page 82](#)
- [“Display a Route Through the Fabric” on page 83](#)
- [“Display the Link Status of a Node” on page 83](#)
- [“Display Counters for a Node” on page 85](#)
- [“Display Data Counters for a Node” on page 86](#)
- [“Display Low-Level Detailed Information About a Node” on page 86](#)
- [“Display Low-Level Detailed Information About a Port” on page 87](#)

Related Information

- “Monitoring the Hardware” on page 67
- “Monitoring the Subnet Manager” on page 89
- “Controlling the InfiniBand Fabric” on page 98

▼ Identify All Switches in the Fabric

If you need to know identity information about the switches in the InfiniBand fabric, you can use the `ibswitches` command. This command displays the GUID, name, LID, and LMC for each switch. The output of the command is a mapping of GUID to LID for switches in the fabric.

Note – The output for your InfiniBand fabric will differ greatly from that in the example.

- On the management controller, type:

```
# ibswitches
Switch : 0x0021283a8389a0a0 ports 36 "Sun DCS 36 QDR switch localhost" enhanced
port 0 lid 15 lmc 0
#
```

Related Information

- *Switch Reference*, `ibhosts` command
- *Switch Reference*, `ibswitches` command
- “Identify All HCAs in the Fabric” on page 81

▼ Identify All HCAs in the Fabric

Similar to the `ibswitches` command, the `ibhosts` command displays identity information about the HCAs in the InfiniBand fabric. The output contains the GUID and name for each HCA.

Note – Unlike the `ibswitches` command, the `ibhosts` command does not display the LIDs.

- On the management controller, type:

Note – The output in the example is just a portion of the full output and varies for each InfiniBand topology.

```
# ibhosts
Ca      : 0x0003ba000100e388 ports 2 "nsn33-43 HCA-1"
Ca      : 0x5080020000911310 ports 1 "nsn32-20 HCA-1"
Ca      : 0x50800200008e532c ports 1 "ib-71 HCA-1"
Ca      : 0x50800200008e5328 ports 1 "ib-70 HCA-1"
Ca      : 0x50800200008296a4 ports 2 "ib-90 HCA-1"
.
.
.
#
```

Related Information

- *Switch Reference*, `ibhosts` command
- *Switch Reference*, `ibswitches` command
- [“Identify All Switches in the Fabric” on page 80](#)

▼ Display the InfiniBand Fabric Topology (Simple)

To understand the routing that happens within your InfiniBand fabric, the `showtopology` command displays the node-to-node connectivity. The output of the command depends on the size of your fabric.

- **On the management controller, type:**

```
# showtopology
```

Related Information

- *Switch Command Reference*, `showtopology` command
- [“Determine Changes to the InfiniBand Fabric Topology” on page 100](#)
- [“Perform Comprehensive Diagnostics for the Entire Fabric” on page 99](#)

▼ Display the InfiniBand Fabric Topology (Detailed)

To understand the routing that happens within your InfiniBand fabric, the `ibnetdiscover` command displays the node-to-node connectivity. The output of the command is dependent upon the size of your fabric.

Note – You can use the `ibnetdiscover` command to determine the LIDs of the HCAs.

- On the management controller, type:

```
# ibnetdiscover
```

Related Information

- *Switch Reference*, `ibnetdiscover` command
- [“Perform Comprehensive Diagnostics for the Entire Fabric” on page 99](#)

▼ Display a Route Through the Fabric

Often you need to know the route between two nodes. The `ibtracert` command can provide that information by displaying the GUIDs, ports, and LIDs of the nodes along the route.

- On the management controller, type:

```
# ibtracert slid dlid
```

where:

- *slid* is the LID of the source node.
- *dlid* is the LID of the destination node.

For example:

```
# ibtracert 15 14
From switch {0x0021283a8389a0a0} portnum 0 lid 15-15 "Sun DCS 36 QDR switch
localhost"
[23] -> ca port {0x0003ba000100e38a}[2] lid 14-14 "nsn33-43 HCA-1"
To ca {0x0003ba000100e388} portnum 2 lid 14-14 "nsn33-43 HCA-1"
#
```

Note – The output for your InfiniBand fabric will differ from that in the example.

For this example:

- The route starts at switch with GUID 0x0021283a8389a0a0 and is using port 0. The switch is LID 15. In the description, the switch host's name is Sun_DCS_36_QDR_switch_localhost.
- The route enters at port 23 of the CA with GUID 0x0003ba000100e38a and exits at port 2. The CA is LID 14.

Related Information

- *Switch Reference*, `ibtracert` command
- [“Perform Comprehensive Diagnostics for a Route” on page 99](#)

▼ Display the Link Status of a Node

If you want to know the link status of a node in the InfiniBand fabric, the `ibportstate` command can tell you the state, width, and speed of that node.

- On the management controller, type:

```
# ibportstate lid port
```

where:

- *lid* is the LID of the node.

- *port* is the port of the node.

For example:

```
# ibportstate 15 23
PortInfo:
# Port info: Lid 15 port 23
LinkState:.....Active
PhysLinkState:.....LinkUp
LinkWidthSupported:.....1X or 4X
LinkWidthEnabled:.....1X or 4X
LinkWidthActive:.....4X
LinkSpeedSupported:.....2.5 Gbps or 5.0 Gbps or 10.0 Gbps
LinkSpeedEnabled:.....2.5 Gbps or 5.0 Gbps or 10.0 Gbps
LinkSpeedActive:.....10.0 Gbps
Peer PortInfo:
# Port info: Lid 15 DR path slid 15; dlid 65535; 0,23
LinkState:.....Active
PhysLinkState:.....LinkUp
LinkWidthSupported:.....1X or 4X
LinkWidthEnabled:.....1X or 4X
LinkWidthActive:.....4X
LinkSpeedSupported:.....2.5 Gbps or 5.0 Gbps or 10.0 Gbps
LinkSpeedEnabled:.....2.5 Gbps or 5.0 Gbps or 10.0 Gbps
LinkSpeedActive:.....10.0 Gbps
#
```

In the output, the Active parameters are the current state of the port.

Related Information

- *Switch Reference*, `ibportstate` command
- “Display Switch Chip Port Status” on page 78
- “Display Link Status” on page 77
- “Find 1x, SDR, or DDR Links in the Fabric” on page 101
- “Set Port Speed” on page 105

▼ Display Counters for a Node

To help ascertain the health of a node, the `perfquery` command displays the performance, error, and data counters for that node.

- On the management controller, type:

```
# perfquery lid port
```

where:

- *lid* is the LID of the node.
- *port* is the port of the node.

Note – If a *port* value of 255 is specified for a switch node, the counters are the total for all switch ports.

For example:

Note – The output in the example is just a portion of the full output.

```
# perfquery 15 23
# Port counters: Lid 15 port 23
PortSelect:.....23
CounterSelect:.....0x1b01
SymbolErrors:.....0
.
.
.
VL15Dropped:.....0
XmtData:.....20232
RcvData:.....20232
XmtPkts:.....281
RcvPkts:.....281
#
```

Related Information

- *Switch Reference*, `perfquery` command
- [“Clear Error Counters” on page 103](#)
- [“Display Data Counters for a Node” on page 86](#)

▼ Display Data Counters for a Node

If you want to know the data counters for a node, the `ibdatacounts` command provides that subset of the `perfquery` command output.

- On the management controller, type:

```
# ibdatacounts lid port
```

where:

- *lid* is the LID of the node.
- *port* is the port of the node.

Note – If no *port* or port 255 is specified for a switch node, the counters are the total for all switch ports.

For example:

```
# ibdatacounts 15 23  
# Port counters: Lid 15 port 23  
XmtData:.....6048  
RcvData:.....6048  
XmtPkts:.....84  
RcvPkts:.....84  
#
```

Related Information

- *Switch Reference*, `ibdatacounts` command
- [“Clear Data Counters” on page 103](#)
- [“Display Counters for a Node” on page 85](#)

▼ Display Low-Level Detailed Information About a Node

If intensive troubleshooting is necessary to resolve a problem, the `smpquery` command can provide very detailed information about a node.

- On the management controller, type:

```
# smpquery switchinfo lid
```

where *lid* is the LID of the node.

For example, to see detailed information about a switch with LID 15, type:

```
# smpquery switchinfo 15
# Switch info: Lid 15
LinearFdbCap:.....49152
RandomFdbCap:.....0
McastFdbCap:.....4096
LinearFdbTop:.....16
DefPort:.....0
DefMcastPrimPort:.....255
DefMcastNotPrimPort:.....255
LifeTime:.....18
StateChange:.....0
LidsPerPort:.....0
PartEnforceCap:.....32
InboundPartEnf:.....1
OutboundPartEnf:.....1
FilterRawInbound:.....1
FilterRawOutbound:.....1
EnhancedPort0:.....1
#
```

Related Information

- *Switch Reference*, smpquery command
- [“Display Low-Level Detailed Information About a Port” on page 87](#)

▼ Display Low-Level Detailed Information About a Port

The smpquery command can provide very detailed information about a port.

- On the management controller, type:

```
# smpquery portinfo lid port
```

where:

- *lid* is the LID of the node.

- *port* is the port of the node.

For example, to see detailed information about port 23 on the switch with LID 15, type:

Note – The output in the example is just a portion of the full output.

```
# smpquery portinfo 15 23
# Port info: Lid 15 port 23
Mkey:.....0x0000000000000000
GidPrefix:.....0x0000000000000000
Lid:.....0x0000
SMLid:.....0x0000
CapMask:.....0x0
DiagCode:.....0x0000
MkeyLeasePeriod:.....0
LocalPort:.....0
LinkWidthEnabled:.....1X or 4X
LinkWidthSupported:.....1X or 4X
LinkWidthActive:.....4X
LinkSpeedSupported:.....2.5 Gbps or 5.0 Gbps or 10.0 Gbps
LinkState:.....Active
PhysLinkState:.....LinkUp
LinkDownDefState:.....Polling
ProtectBits:.....0
LMC:.....0
.
.
.
SubnetTimeout:.....0
RespTimeVal:.....0
LocalPhysErr:.....8
OverrunErr:.....8
MaxCreditHint:.....85
RoundTrip:.....16777215
#
```

Related Information

- *Switch Reference*, `smpquery` command
- [“Display Low-Level Detailed Information About a Node” on page 86](#)

Monitoring the Subnet Manager

The following topics describe how to monitor the Subnet Manager.

- [“Display Subnet Manager Status” on page 89](#)
- [“Display Recent Subnet Manager Activity” on page 90](#)
- [“Display Subnet Manager Priority, Prefix, and Controlled Handover State” on page 90](#)
- [“Display the Subnet Manager Log” on page 91](#)

Related Information

- [“Monitoring the Hardware” on page 67](#)
- [“Monitoring the InfiniBand Fabric” on page 80](#)
- [“Controlling the Subnet Manager” on page 108](#)

▼ Display Subnet Manager Status

If you want to quickly determine your Subnet Manager’s priority and state, the `sminfo` command can also provide the LID and GUID of the hosting HCA.

- **On the management controller, type:**

```
# sminfo
sminfo: sm lid 15 sm guid 0x21283a8389a0a0, activity count 32046 priority 13
state 3 SMINFO_MASTER
#
```

In the example output, the Subnet Manager’s hosting HCA has LID 25 and GUID 0x21283a8620b0f0. The Subnet Manager has a priority of 13 (high) and its state is 3 (master).

Related Information

- [Switch Command Reference, sminfo command](#)
- [“Display Recent Subnet Manager Activity” on page 90](#)
- [“Display Subnet Manager Priority, Prefix, and Controlled Handover State” on page 90](#)
- [“Display the Subnet Manager Log” on page 91](#)
- [“Controlling the Subnet Manager” on page 108](#)

▼ Display Recent Subnet Manager Activity

- On the management controller, type:

```
# getmaster -l
Local SM enabled and running
Last ring buffer history listed:
20100824 20:35:43 whereismaster started
20100824 20:35:44 Master SubnetManager on sm lid 0 sm guid 0x21283a83eea0a0 :
20100824 20:36:01 Master SubnetManager on sm lid 2 sm guid 0x21283a83eea0a0 :
SUN DCS 36P QDR nsn34-170
20100827 09:27:45 No Master SubnetManager seen in the system
20100908 15:00:18 Master SubnetManager on sm lid 2 sm guid 0x21283a83eea0a0 :
SUN DCS 36P QDR nsn34-170
#
```

Related Information

- *Switch Command Reference*, `getmaster` command
- [“Display Subnet Manager Status” on page 89](#)
- [“Display Subnet Manager Priority, Prefix, and Controlled Handover State” on page 90](#)
- [“Display the Subnet Manager Log” on page 91](#)
- [“Controlling the Subnet Manager” on page 108](#)

▼ Display Subnet Manager Priority, Prefix, and Controlled Handover State

If you want to know your Subnet Manager’s priority, prefix, and controlled handover state, use the list option of the `setsmpriority` command.

- On the management controller, type:

```
# setsmpriority list
Current SM settings:
smpriority 0
controlled_handover FALSE
subnet_prefix 0xfe80000000000000
#
```

Related Information

- *Switch Command Reference*, `setsmpriority` command

- “Display Subnet Manager Status” on page 89
- “Display Recent Subnet Manager Activity” on page 90
- “Display the Subnet Manager Log” on page 91
- “Controlling the Subnet Manager” on page 108

▼ Display the Subnet Manager Log

1. On the management controller, type:

```
# showsmlog
Aug 13 15:58:22 679655 [B75F1B90] 0x01 -> __osm_mcmr_rcv_join_mgrp: ERR 1B11:
method = Subn
AdmSet, scope_state = 0x1, component mask = 0x0000000000010003, expected comp
mask = 0x0000
0000000130c7, MGID: ff12:e01b:2::22:2000 from port 0x0003ba000100e371 (nsn34-60
HCA-1)
Aug 13 15:58:22 692653 [B75F1B90] 0x01 -> __osm_mcmr_rcv_join_mgrp: ERR 1B11:
method = Subn
AdmSet, scope_state = 0x1, component mask = 0x0000000000010003, expected comp
mask = 0x0000
0000000130c7, MGID: ff12:e01b:3::22:b000 from port 0x00212800013ece9f (nsn34-55
HCA-1)
.
.
.
```

2. Tap the space bar to display the next screen of the log.

3. Type the Q key to quit.

Related Information

- *Switch Command Reference*, showsmlog command
- “Display Subnet Manager Status” on page 89
- “Display Recent Subnet Manager Activity” on page 90
- “Display Subnet Manager Priority, Prefix, and Controlled Handover State” on page 90
- “Controlling the Subnet Manager” on page 108

Controlling the Hardware

The following topics describe how you can manage the switch and its components.

Note – To use the commands described in these topics, you must be the `root` user of the management controller.

- [“Restart the Management Controller” on page 92](#)
- [“Restart the Entire Switch” on page 93](#)
- [“Reset the Switch Chip” on page 94](#)
- [“Recover Ports After Switch Chip Reset” on page 94](#)
- [“Disable a Switch Chip Port” on page 96](#)
- [“Enable a Switch Chip Port” on page 97](#)
- [“Change the Administrator Password” on page 98](#)

Related Information

- [“Monitoring the Hardware” on page 67](#)
- [“Controlling the Hardware” on page 92](#)
- [“Controlling the InfiniBand Fabric” on page 98](#)
- [“Controlling the Subnet Manager” on page 108](#)

▼ Restart the Management Controller

Should the management controller enter an indeterminate state, you can reboot it. The Subnet Manager and other services are also restarted. Additionally, the links to the I4 switch chip are disabled and then re-enabled when the management controller reboots.

Note – The `reboot` command severs any management console link to the management controller. You must reaccess the management controller to regain administrative control.

1. On the management controller, type:

```
# reboot
Broadcast message from root (pts/0) (Mon Nov 23 12:19:17 2009):
The system is going down for reboot NOW!
# Connection to 123.45.67.89 closed by remote host.
Connection to 123.45.67.89 closed.
#
```

The management controller power cycles and reinitializes.

2. Reaccess the management controller and reset the symbol error counters:

```
# getportcounters 1 -R;getportcounters 2 -R;getportcounters 3
-R;getportcounters 4 -R;
#
```

Related Information

- [“Restart the Entire Switch” on page 93](#)
- [“Reset the Switch Chip” on page 94](#)

▼ Restart the Entire Switch

Should you need to restart the entire switch, you can use the `managementreset` command. Resetting the entire switch disrupts the InfiniBand fabric. All services are reinitialized and all links will retrain. Perform this task only when absolutely necessary.

Note – By rebooting the management controller, the link to the management console is severed. You must reaccess the management controller to regain administrative control.

● On the management controller, type:

```
# managementreset
Stopping Environment daemon, please wait
Resetting CPLD, please wait
Restarting Environment daemon
Reboot needed to reconnect to I4 and enable IB ports
Do you want do reboot now [yes/no]:yes
Broadcast message from root (pts/0) (Fri Nov 20 17:10:27 2009):
The system is going down for reboot NOW!
```

```
# Connection to 123.45.67.89 closed by remote host.
Connection to 123.45.67.89 closed.
#
```

Related Information

- [“Restart the Management Controller” on page 92](#)
- [“Reset the Switch Chip” on page 94](#)

▼ Reset the Switch Chip

If a switch chip does not boot properly, or a large quantity of its ports are problematic, the `ibdevreset` command might correct the situation.

- **On the management controller, type:**

```
# ibdevreset Switch
Stopping IB Subnet Manager..                [ OK ]
Stopping whereismaster daemon.             [ OK ]
Stopping Environment daemon.               [ OK ]
Resetting Switch
Starting Environment daemon.                [ OK ]
Starting whereismaster daemon.             [ OK ]
Starting IB Subnet Manager.                 [ OK ]
#
```

Related Information

- *Switch Reference*, `ibdevreset` command
- [“Display Switch Chip Boot Status” on page 76](#)
- [“Display Link Status” on page 77](#)
- [“Reset a Port” on page 104](#)

▼ Recover Ports After Switch Chip Reset

If after resetting the switch chip some ports are still identified as down, restart the environment daemon.

1. On the management console, identify the ports that are down:

```
# listlinkup
Connector 0A Present <-> Switch Port 20 down (Enabled)
Connector 1A Not present
.
.
.
```

In this example, port 20 is down.

2. If ports are still down, restart the environment daemon:

```
# /etc/init.d/envd stop; /etc/init.d/envd start
#
```

Wait one minute for the links to retrain.

3. Verify that the ports are up:

```
# listlinkup
Connector 0A Present <-> Switch Port 20 up (Enabled)
Connector 1A Not present
.
.
.
```

Note – If the ports do not come up, repeat this procedure a second time. Additionally, investigate if the respective cable or the InfiniBand device at the other end of the cable is at fault.

Related Information

- *Switch Reference*, listlinkup command
- *Switch Reference*, ibdevreset command
- [“Reset the Switch Chip” on page 94](#)
- [“Display Link Status” on page 77](#)

▼ Disable a Switch Chip Port

On occasion, you might need to turn off a port. For example, a cable might become damaged and cause symbol errors that affect the switch chip's performance. Use the `disableswitchport` command to disable a switch chip port and its respective cable connection.

- **On the management controller, type:**

```
# disableswitchport [--reason=reason] Switch port
```

where:

- *reason* is the reason for disabling the port, Blacklist or Partition.
- *port* is the number of the port (1–36).

Alternatively, type:

```
# disableswitchport [--reason=reason] connector
```

where *connector* is the number of the QSFP connector (0A–17B).

For example:

```
# disableswitchport Switch 14
Disable Switch port 14
Initial PortInfo:
# Port info: DR path slid 65535; dlid 65535; 0 port 14
LinkState:.....Active
PhysLinkState:.....LinkUp
LinkWidthSupported:.....1X or 4X
LinkWidthEnabled:.....1X or 4X
LinkWidthActive:.....4X
LinkSpeedSupported:.....2.5 Gbps or 5.0 Gbps or 10.0 Gbps
LinkSpeedEnabled:.....2.5 Gbps or 5.0 Gbps or 10.0 Gbps
LinkSpeedActive:.....10.0 Gbps
After PortInfo set:
# Port info: DR path slid 65535; dlid 65535; 0 port 14
LinkState:.....Down
PhysLinkState:.....Disabled
#
```

Related Information

- *Switch Reference*, `disableswitchport` command
- [“Disable a Port” on page 106](#)
- [“Enable a Switch Chip Port” on page 97](#)

▼ Enable a Switch Chip Port

You can enable a disabled switch chip port with the `enableswitchport` command.

- On the management controller, type:

```
# enableswitchport [--reason=reason] Switch port
```

where:

- *reason* is the reason for disabling the port, `Blacklist` or `Partition`.
- *port* is the number of the port (1–36).

Note – If the port was disabled with the `--reason` option, (as seen with the `listlinkup` command) it can only be enabled with the same reason option.

Alternatively, type:

```
# enableswitchport [--reason=reason] connector
```

where *connector* is the number of the QSFP connector (0A–17B).

For example:

```
# enableswitchport Switch 14
Enable Switch port 14
Initial PortInfo:
# Port info: DR path slid 65535; dlid 65535; 0 port 14
LinkState:.....Down
PhysLinkState:.....Disabled
LinkWidthSupported:.....1X or 4X
LinkWidthEnabled:.....1X or 4X
LinkWidthActive:.....4X
LinkSpeedSupported:.....2.5 Gbps or 5.0 Gbps or 10.0 Gbps
LinkSpeedEnabled:.....2.5 Gbps or 5.0 Gbps or 10.0 Gbps
LinkSpeedActive:.....2.5 Gbps
After PortInfo set:
# Port info: DR path slid 65535; dlid 65535; 0 port 14
LinkState:.....Down
PhysLinkState:.....PortConfigurationTraining
#
```

Related Information

- *Switch Reference*, `enableswitchport` command
- [“Enable a Port” on page 107](#)

- [“Disable a Switch Chip Port” on page 96](#)

▼ Change the Administrator Password

The default password for the `root` user is `changeme`. You can use the `passwd` command to make the password unique and more secure.

- **On the management controller, type:**

```
# passwd user
```

where *user* is the user name whose password is to be changed. For example:

```
# passwd root
Changing password for user root.
New UNIX password: new_password
Retype new UNIX password: new_password
passwd: all authentication tokens updated successfully.
#
```

Related Information

- [“Access the Management Controller From the Network Management Port” on page 31](#)
- [“Access the Management Controller From the USB Management Port” on page 32](#)

Controlling the InfiniBand Fabric

You can perform the following tasks to manage the InfiniBand fabric and its components.

Note – To use the commands described in these topics, you must be the `root` user of the management controller.

- [“Perform Comprehensive Diagnostics for the Entire Fabric” on page 99](#)
- [“Perform Comprehensive Diagnostics for a Route” on page 99](#)
- [“Find 1x, SDR, or DDR Links in the Fabric” on page 101](#)
- [“Determine Which Links Are Experiencing Significant Errors” on page 102](#)

- “Clear Error Counters” on page 103
- “Clear Data Counters” on page 103
- “Check All Ports” on page 103
- “Reset a Port” on page 104
- “Set Port Speed” on page 105
- “Disable a Port” on page 106
- “Enable a Port” on page 107

Related Information

- “Monitoring the InfiniBand Fabric” on page 80
- “Controlling the Hardware” on page 92
- “Controlling the Subnet Manager” on page 108

▼ Perform Comprehensive Diagnostics for the Entire Fabric

If you require a full testing of your InfiniBand fabric, the `ibdiagnet` command can perform many tests with verbose results. The command is a useful tool to determine the general overall health of the InfiniBand fabric.

- On the management controller, type:

```
# ibdiagnet -v -r
```

The `ibdiagnet.log` file contains the log of the testing.

Related Information

- *Switch Reference*, `ibdiagnet` command
- *Switch Reference*, `ibdiagpath` command
- “Display the InfiniBand Fabric Topology (Detailed)” on page 82

▼ Perform Comprehensive Diagnostics for a Route

Similar to the `ibdiagnet` command, the `ibdiagpath` command can perform some of the same tests for a particular route.

- On the management controller, type:

```
# ibdiagpath -v -l slid,dlid
```

where:

- *slid* is the LID of the source node.
- *dlid* is the LID of the destination node.

The `ibdiagpath.log` file contains the log of the testing.

Related Information

- *Switch Reference*, `ibdiagnet` command
- *Switch Reference*, `ibdiagpath` command
- [“Display a Route Through the Fabric” on page 83](#)

▼ Determine Changes to the InfiniBand Fabric Topology

If your fabric has a number of nodes that are suspect, the `generatetopology` command enables you to take a snapshot of your fabric. At a later time, use the `matchtopology` command to compare the topology file to the present conditions.

Note – Though this procedure is most useful after initializing the Subnet Manager, you can perform it at any time.

1. Enable the Subnet Manager.

See [“Enable the Subnet Manager” on page 111](#).

2. Take a snapshot of the fabric topology.

```
# generatetopology date.topo
```

where *date* is the date of the snapshot. For example:

```
# generatetopology Sept8.topo
It will take some time to generate a topology file. Please wait!
topo.conf exist! will move it to topo.conf.old
will create new topo.conf
Topo.conf file is created. Will now start generating the topo file
Wrote Topology file:Sept8.topo
#
```


3. After an event, compare the present topology to that saved in the topology file:

```
# matchtopology date.topo
```

where *date* is the date of the snapshot. For example:

```
# matchtopology Sept8.topo  
Topology matching will take some time. Please wait!  
-I-----  
-I- Topology matching results  
-I-----  
-I- The topology defined in ib_topology.topo perfectly matches the  
discovered fabric.  
-----  
#
```

Related Information

- *Switch Command Reference*, generatetopology command
- *Switch Command Reference*, matchtopology command
- [“Display the InfiniBand Fabric Topology \(Simple\)” on page 82](#)

▼ Find 1x, SDR, or DDR Links in the Fabric

You can use the `ibdiagnet` command to determine which links are at 1x bandwidth, 2.5 Gbps, or 5 Gbps data rate.

- On the management controller, type:

```
# ibdiagnet -lw 4x -ls 10 -pc -pm -skip all
```

In this instance of the `ibdiagnet` command, there is a check for all links to be at 4x QDR (`-lw 4x -ls 10`), and if not, to report those links that are not 4x QDR.

Note – Additionally, the `ibdiagnet.log` file contains the log of the testing.

Related Information

- *Switch Reference*, `ibdiagnet` command
- [“Display the Link Status of a Node” on page 83](#)
- [“Determine Which Links Are Experiencing Significant Errors” on page 102](#)

▼ Determine Which Links Are Experiencing Significant Errors

You can use the `ibdiagnet` command to determine which links are experiencing symbol errors and recovery errors by injecting packets.

1. On the management controller, type.

```
# ibdiagnet -c 1000 -P all=1
```

In this instance of the `ibdiagnet` command, 1000 test packets are injected into each link. The `-P all=1` option returns all Performance Monitor counters that increment during the test, respective to the GUID and port of the InfiniBand device.

2. In the output of the `ibdiagnet` command, search for the `symbol_error_counter` string.

That line contains the symbol error count in hexadecimal. The preceding lines identify the node and port with the errors. Symbol errors are minor errors, and if there are relatively few during the diagnostic, they can be monitored.

Note – According to the InfiniBand specification 10E-12 BER, the maximum allowable symbol error rate is 120 errors per hour.

3. Also in the output of the `ibdiagnet` command, search for the `link_error_recovery_counter` string.

That line contains the recovery error count in hexadecimal. The preceding lines identify the node and port with the errors. Recovery errors are major errors and the respective links must be investigated for the cause of the rapid symbol error propagation.

Note – Additionally, the `ibdiagnet.log` file contains the log of the testing.

Related Information

- *Switch Reference*, `ibdiagnet` command
- [“Find 1x, SDR, or DDR Links in the Fabric” on page 101](#)
- [“Display Counters for a Node” on page 85](#)

▼ Clear Error Counters

If you are troubleshooting a port, the `perfquery` command provides counters of errors occurring at that port. To determine if the problem has been resolved, you can reset all of the error counters to 0 with the `ibclearerrors` command.

- On the management controller, type:

```
# ibclearerrors
## Summary: 5 nodes cleared 0 errors
#
```

Related Information

- *Switch Reference*, `ibclearerrors` command
- *Switch Reference*, `perfquery` command
- [“Display Counters for a Node” on page 85](#)
- [“Clear Data Counters” on page 103](#)

▼ Clear Data Counters

When you are optimizing the InfiniBand fabric for performance, you might want to know how the throughput increases or decreases according to changes you are making to the fabric and Subnet Manager. The `ibclearcounters` command enables you to reset the data counters for all ports to 0.

- On the management controller, type:

```
# ibclearcounters
## Summary: 5 nodes cleared 0 errors
#
```

Related Information

- *Switch Reference*, `ibclearcounters` command
- [“Display Data Counters for a Node” on page 86](#)
- [“Clear Error Counters” on page 103](#)

▼ Check All Ports

To perform a quick check of all ports of all nodes in your InfiniBand fabric, you can use the `ibcheckstate` command.

- On the management controller, type:

```
# ibcheckstate -v
# Checking Switch: nodeguid 0x0021283a8389a0a0
Node check lid 15: OK
Port check lid 15 port 23: OK
Port check lid 15 port 19: OK
.
.
.
# Checking Ca: nodeguid 0x0003ba000100e388
Node check lid 14: OK
Port check lid 14 port 2: OK

## Summary: 5 nodes checked, 0 bad nodes found
##          10 ports checked, 0 ports with bad state found
#
```

Note – The `ibcheckstate` command requires time to complete, depending upon the size of your InfiniBand fabric. Without the `-v` option, the output contains only failed ports. The output in the example is only a small portion of the actual output.

Related Information

- *Switch Reference*, `ibcheckstate` command
- [“Display Link Status” on page 77](#)

▼ Reset a Port

You might need to reset a port to determine its functionality.

- On the management controller, type:

```
# ibportstate lid port reset
```

where:

- *lid* is the LID of the node.

- *port* is the port of the node.

For example:

```
# ibportstate 15 23 reset
Initial PortInfo:
# Port info: Lid 15 port 23
LinkState:.....Down
PhysLinkState:.....Disabled
LinkWidthSupported:.....1X or 4X
LinkWidthEnabled:.....1X or 4X
LinkWidthActive:.....4X
LinkSpeedSupported:.....2.5 Gbps or 5.0 Gbps or 10.0 Gbps
LinkSpeedEnabled:.....2.5 Gbps or 5.0 Gbps or 10.0 Gbps
LinkSpeedActive:.....2.5 Gbps

After PortInfo set:
# Port info: Lid 15 port 23
LinkState:.....Down
PhysLinkState:.....Disabled

After PortInfo set:
# Port info: Lid 15 port 23
LinkState:.....Down
PhysLinkState:.....PortConfigurationTraining
#
```

Related Information

- *Switch Reference*, `ibportstate` command
- [“Reset the Switch Chip” on page 94](#)
- [“Disable a Port” on page 106](#)
- [“Enable a Port” on page 107](#)

▼ Set Port Speed

You can manually set the speed of a single port to help determine symbol error generation. The `ibportstate` command can set the speed to 2.5, 5.0, or 10.0 Gbyte/sec.

- On the management controller, type:

```
# ibportstate lid port speed speed
```

where:

- *lid* is the LID of the node.
- *port* is the port of the node.
- *speed* is the speed of the port: 1 for 2.5 Gbyte/sec, 2 for 5.0 Gbyte/sec, and 4 for 10.0 Gbyte/sec.

Note – Adding speed values enables either speed. For example, speed 7 is 2.5, 5.0, and 10.0 Gbyte/sec.

For example:

```
# ibportstate 15 23 speed 1
Initial PortInfo:
# Port info: Lid 15 port 23
LinkSpeedEnabled:.....2.5 Gbps or 5.0 Gbps or 10.0 Gbps

After PortInfo set:
# Port info: Lid 15 port 23
LinkSpeedEnabled:.....2.5 Gbps
# ibportstate 15 23 speed 7
Initial PortInfo:
# Port info: Lid 15 port 23
LinkSpeedEnabled:.....2.5 Gbps
After PortInfo set:
# Port info: Lid 15 port 23
LinkSpeedEnabled:.....2.5 Gbps or 5.0 Gbps or 10.0 Gbps
#
```

Related Information

- *Switch Reference*, `ibportstate` command
- [“Display the Link Status of a Node” on page 83](#)

▼ Disable a Port

If a port is found to be problematic, you can disable it.

Note – State changes made with the `ibportstate` command are not recognized by the `disableswitchport`, `enableswitchport`, or `listlinkup` commands.

- On the management controller, type:

```
# ibportstate lid port disable
```

where:

- *lid* is the LID of the node.
- *port* is the port of the node.

For example:

```
# ibportstate 15 23 disable
Initial PortInfo:
# Port info: Lid 15 port 23
LinkState:.....Active
PhysLinkState:.....LinkUp
LinkWidthSupported:.....1X or 4X
LinkWidthEnabled:.....1X or 4X
LinkWidthActive:.....4X
LinkSpeedSupported:.....2.5 Gbps or 5.0 Gbps or 10.0 Gbps
LinkSpeedEnabled:.....2.5 Gbps or 5.0 Gbps or 10.0 Gbps
LinkSpeedActive:.....10.0 Gbps

After PortInfo set:
# Port info: Lid 15 port 23
LinkState:.....Down
PhysLinkState:.....Disabled
#
```

Related Information

- *Switch Reference*, `ibportstate` command
- “Disable a Switch Chip Port” on page 96
- “Enable a Port” on page 107
- “Reset a Port” on page 104

▼ Enable a Port

After disabling a port, you can enable the port with the `ibportstate` command.

Note – State changes made with the `ibportstate` command are not recognized by the `disableswitchport`, `enableswitchport`, or `listlinkup` commands.

- On the management controller, type:

```
# ibportstate lid port enable
```

where:

- *lid* is the LID of the node.
- *port* is the port of the node.

For example:

```
# ibportstate 15 23 enable
Initial PortInfo:
# Port info: Lid 15 port 23
LinkState:.....Down
PhysLinkState:.....Disabled
LinkWidthSupported:.....1X or 4X
LinkWidthEnabled:.....1X or 4X
LinkWidthActive:.....4X
LinkSpeedSupported:.....2.5 Gbps or 5.0 Gbps or 10.0 Gbps
LinkSpeedEnabled:.....2.5 Gbps or 5.0 Gbps or 10.0 Gbps
LinkSpeedActive:.....2.5 Gbps

After PortInfo set:
# Port info: Lid 15 port 23
LinkState:.....Down
PhysLinkState:.....PortConfigurationTraining
#
```

Related Information

- *Switch Reference*, `ibportstate` command
- “Enable a Switch Chip Port” on page 97
- “Disable a Port” on page 106
- “Reset a Port” on page 104

Controlling the Subnet Manager

You can enable the OpenSM Subnet Manager with the `enablesm` command. When the Subnet Manager starts, it reads the `/etc/opensm/opensm.conf` file for configuration information. You can disable the Subnet Manager with the `disablesm` command.

The following topics describe how to control the Subnet Manager:

Note – To use the commands described in these topics, you must be the `root` user of the management controller.

- “Set the Subnet Manager Priority” on page 109
- “Set the Subnet Manager Prefix” on page 110
- “Enable Subnet Manager Controlled Handover” on page 111
- “Enable the Subnet Manager” on page 111
- “Disable the Subnet Manager” on page 112

Related Information

- “Monitoring the Subnet Manager” on page 89
- “Controlling the Hardware” on page 92
- “Controlling the InfiniBand Fabric” on page 98

▼ Set the Subnet Manager Priority

By default, the Subnet Manager within the management controller is set to 0 priority. If there is more than one Subnet Manager in your InfiniBand fabric, you must set the priority of each Subnet Manager appropriately. The Subnet Manager with the highest priority is the primary (or master) Subnet Manager.

1. On the management controller, type:

```
# setsmpriority priority
```

where *priority* is 0 (lowest) to 13 (highest). For example:

```
# setsmpriority 3
-----
OpenSM 3.2.6_20090717
  Reading Cached Option File: /etc/opensm/opensm.conf
  Loading Cached Option:routing_engine = ftree
  Loading Cached Option:sm_priority = 13
  Loading Cached Option:sminfo_polling_timeout = 1000
  Loading Cached Option:polling_retry_number = 3
Command Line Arguments:
  Priority = 3
  Creating config file template '/tmp/osm.conf'.
```

```
Log File: /var/log/opensm.log
```

```
-----  
#
```

2. Restart the Subnet Manager:

```
# disablesm  
Stopping partitiond daemon.           [ OK ]  
Stopping IB Subnet Manager..         [ OK ]  
# enablesm  
Starting IB Subnet Manager.          [ OK ]  
Starting partitiond daemon.          [ OK ]  
#
```

Related Information

- *Switch Command Reference*, `setsmpriority` command
- [“Display Subnet Manager Priority, Prefix, and Controlled Handover State” on page 90](#)

▼ Set the Subnet Manager Prefix

The `setsubnetprefix` command writes a prefix value to the `subnet_prefix` parameter of the `/etc/opensm/opensm.conf` file.

1. On the management controller, type:

```
# setsubnetprefix 0xabababab  
#
```

2. Restart the Subnet Manager:

```
# disablesm  
Stopping partitiond daemon.           [ OK ]  
Stopping IB Subnet Manager..         [ OK ]  
# enablesm  
Starting IB Subnet Manager.          [ OK ]  
Starting partitiond daemon.          [ OK ]  
#
```

Related Information

- *Switch Command Reference*, `setsubnetprefix` command
- [“Display Subnet Manager Priority, Prefix, and Controlled Handover State” on page 90](#)

▼ Enable Subnet Manager Controlled Handover

If your InfiniBand fabric has two or more Subnet Managers, you can force a constrained fallback protocol should the master Subnet Manager fail. See *Switch Reference*, `setcontrolledhandover` command for more information.

1. On the management controller, type:

```
# setcontrolledhandover TRUE
Current SM settings:
smpriority 0
controlled_handover TRUE
subnet_prefix 0xfe80000000000000
#
```

2. Restart the Subnet Manager:

```
# disableesm
Stopping partitiond daemon.           [ OK ]
Stopping IB Subnet Manager..         [ OK ]
# enableesm
Starting IB Subnet Manager.           [ OK ]
Starting partitiond daemon.           [ OK ]
#
```

Related Information

- *Switch Command Reference*, `setcontrolledhandover` command
- [“Display Subnet Manager Priority, Prefix, and Controlled Handover State” on page 90](#)

▼ Enable the Subnet Manager

The Subnet Manager within the management controller is not enabled by default. Use the `enableesm` command to enable and start the Subnet Manager.

● On the management controller, type:

```
# enableesm
Starting IB Subnet Manager.           [ OK ]
Starting partitiond daemon.           [ OK ]
#
```

Related Information

- *Switch Command Reference*, `enablesm` command

▼ Disable the Subnet Manager

If your InfiniBand fabric has too many Subnet Managers, you can disable and stop the Subnet Manager within the management controller by using the `disablesm` command.

- **On the management controller, type:**

```
# disablesm
Stopping partitiond daemon.           [ OK ]
Stopping IB Subnet Manager..         [ OK ]
#
```

Related Information

- *Switch Command Reference*, `disablesm` command

Servicing the Switch

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

A component addition means installing a component to increase the functionality of the switch. Component replacement means removing a failed component and installing a functional one. Component subtraction means removing a component.

Once a failed part is identified, it can be replaced. The topics listed here help you service switch chassis components.

- [“Replaceable Components”](#) on page 113
- [“Servicing Power Supplies”](#) on page 115
- [“Servicing Fans”](#) on page 125
- [“Servicing InfiniBand Cables”](#) on page 132
- [“Servicing the Battery”](#) on page 139
- [“Firmware Upgrades”](#) on page 146

Related Information

- [“Installing the Switch”](#) on page 1
- [“Administering the Switch”](#) on page 49
- *Switch Remote Administration*
- *Switch Reference*

Replaceable Components

The following illustration identifies the replaceable components of the switch.



1	Battery
2	Fan
3	Power supply

Related Information

- [“Servicing Power Supplies” on page 115](#)
- [“Servicing Fans” on page 125](#)
- [“Servicing InfiniBand Cables” on page 132](#)
- [“Servicing the Battery” on page 139](#)
- [“Firmware Upgrades” on page 146](#)

Servicing Power Supplies

These topics provide procedures for servicing the power supplies.

Description	Links
Add a power supply.	“Inspecting a Power Supply” on page 115 “Install a Power Supply” on page 121 “Power On a Power Supply” on page 123
Replace a power supply.	“Inspecting a Power Supply” on page 115 “Power Off a Power Supply” on page 118 “Remove a Power Supply” on page 119 “Install a Power Supply” on page 121 “Power On a Power Supply” on page 123
Subtract a power supply.	“Power Off a Power Supply” on page 118 “Remove a Power Supply” on page 119

Related Information

- [“Replaceable Components” on page 113](#)
- [“Servicing Fans” on page 125](#)
- [“Servicing InfiniBand Cables” on page 132](#)
- [“Servicing the Battery” on page 139](#)

Inspecting a Power Supply

Before installing a power supply, perform the following tasks to verify its suitability for installation.

Step	Description	Links
1.	Identify the power supply.	“Identify the Power Supply” on page 116
2.	Inspect the hardware.	“Inspect the Power Supply Hardware” on page 117
3.	Inspect the connectors.	“Inspect the Power Supply Connectors” on page 117

Related Information

- [“Inspecting a Fan” on page 126](#)
- [“Inspecting the InfiniBand Cables” on page 132](#)

▼ Identify the Power Supply

1. Identify the prerequisite and subsequent service tasks you must perform in conjunction with this procedure.

See [“Inspecting a Power Supply” on page 115](#).

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



1	AC connector
2	Release tab
3	Status LEDs

3. Inspect the power supply hardware.

See [“Inspect the Power Supply Hardware”](#) on page 117.

Related Information

- [“Identify the Fan”](#) on page 126
- [“Identify the InfiniBand Cable”](#) on page 133

▼ **Inspect the Power Supply Hardware**

1. Identify the prerequisite and subsequent service tasks you must perform in conjunction with this procedure.

See [“Inspecting a Power Supply”](#) on page 115.

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 tab moves freely and smoothly.

5. Inspect the power supply connectors.

See [“Inspect the Power Supply Connectors”](#) on page 117.

Related Information

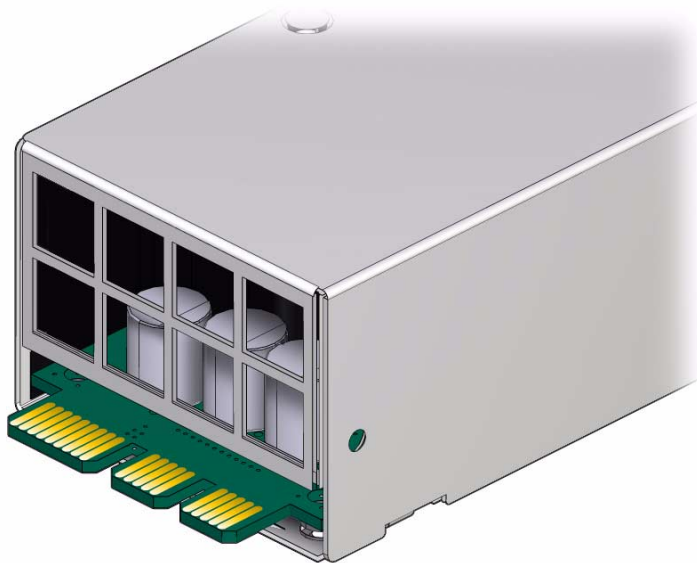
- [“Inspect the Fan Hardware”](#) on page 127
- [“Inspect the InfiniBand Cable Hardware”](#) on page 133

▼ **Inspect the Power Supply Connectors**

1. Identify the prerequisite and subsequent service tasks you must perform in conjunction with this procedure.

See [“Inspecting a Power Supply”](#) on page 115.

2. Verify that the connectors are clean and without damage.



3. The power supply is ready for installation.

See [“Install a Power Supply”](#) on page 121.

Related Information

- [“Inspect the Fan Connector”](#) on page 127
- [“Inspect the InfiniBand Cable Connectors”](#) on page 134

▼ Power Off a Power Supply

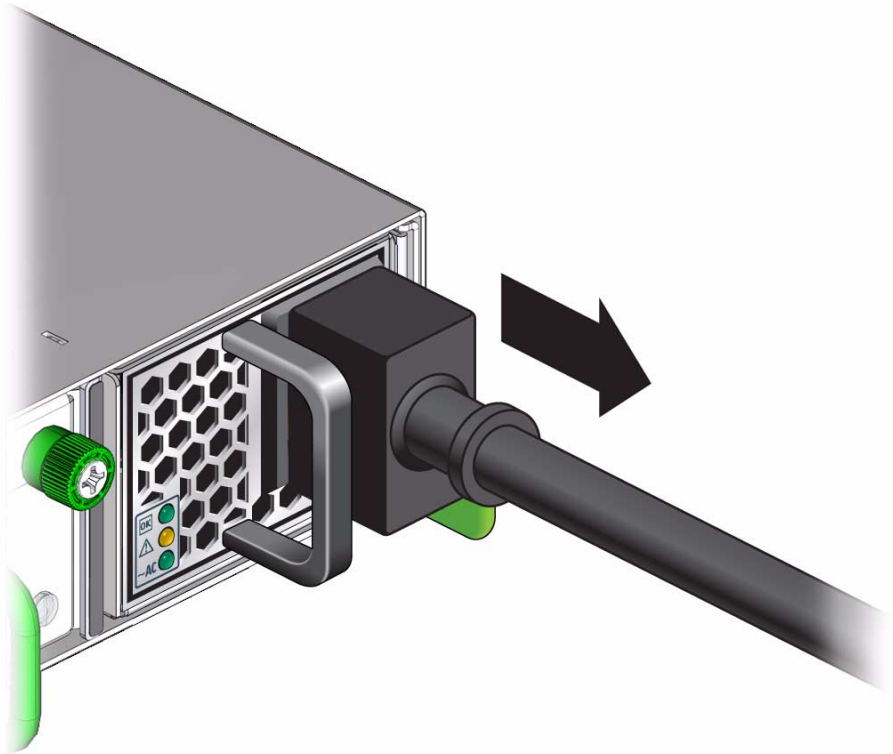
Note – Powering off both power supplies powers off the switch.

1. Identify the prerequisite and subsequent service tasks you must perform in conjunction with this procedure.

See [“Servicing Power Supplies”](#) on page 115.

2. Determine which power supply is to be removed.

3. At the front of the switch chassis, remove the power cord from the respective power supply.



The power supply is completely powered off.

4. Remove the power supply.

See [“Remove a Power Supply”](#) on page 119.

Related Information

- [“Power On a Power Supply”](#) on page 123

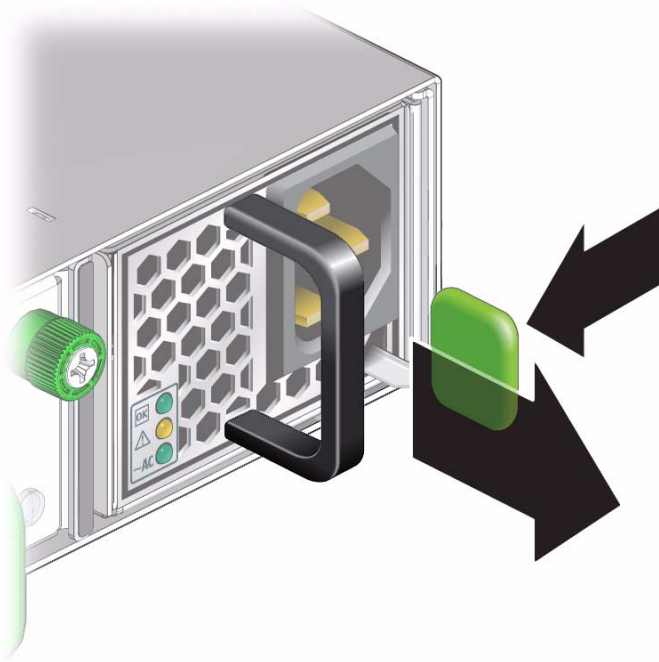
▼ Remove a Power Supply

1. Identify the prerequisite and subsequent service tasks you must perform in conjunction with this procedure.

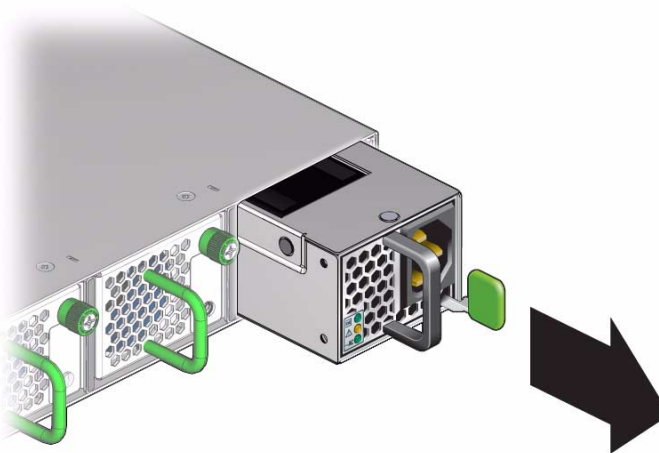
See [“Servicing Power Supplies”](#) on page 115.

2. Locate the power supply to be removed.

3. Press and hold the release tab to the left and pull on the handle of the power supply.



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



5. Set the power supply aside.

6. Install a replacement power supply.

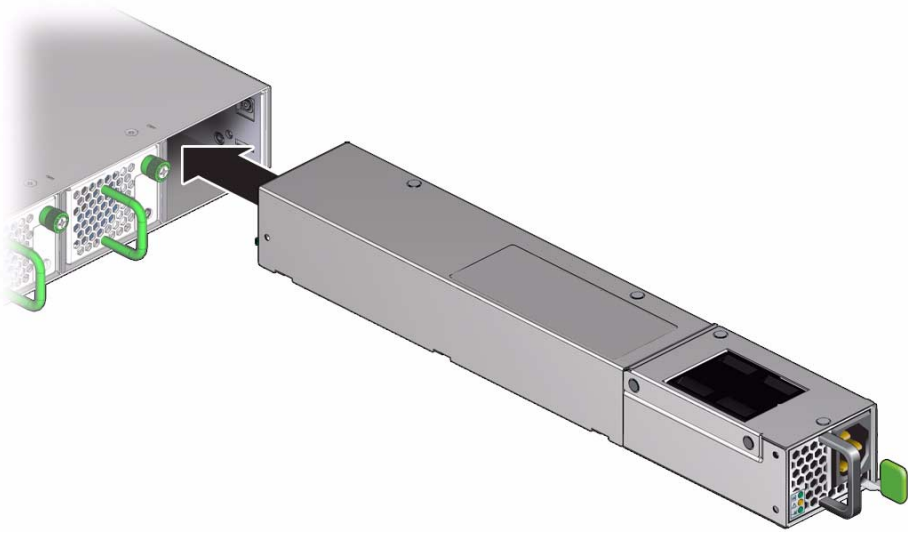
See “Install a Power Supply” on page 121.

Related Information

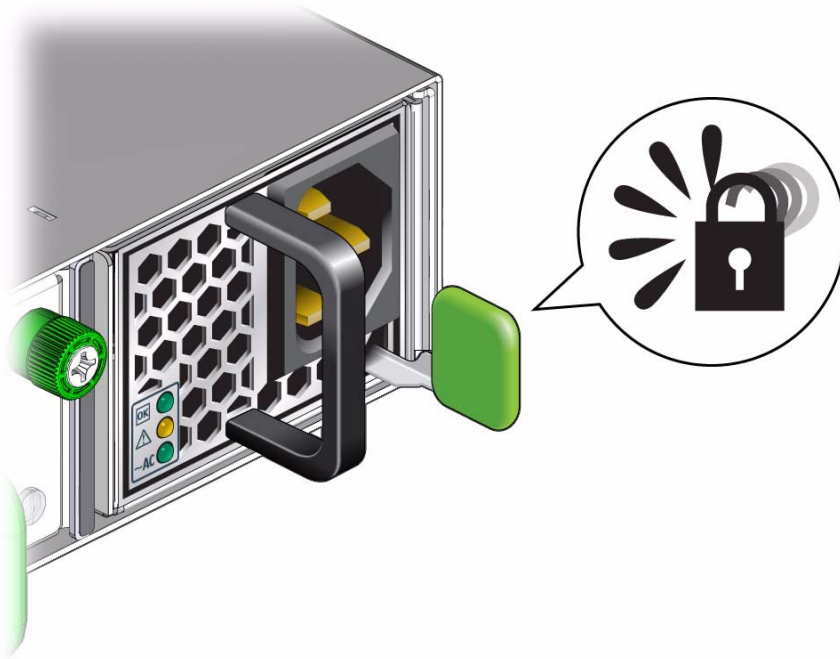
- “Remove a Fan” on page 128
- “Remove an InfiniBand Cable” on page 134
- “Remove the Switch From the Rack” on page 140
- “Replace the Battery” on page 141

▼ Install a Power Supply

1. **After removing a power supply, wait at least one minute before installing another power supply.**
2. **Identify the prerequisite and subsequent service tasks you must perform in conjunction with this procedure.**
See “Servicing Power Supplies” on page 115.
3. **Inspect the replacement power supply.**
See “Inspecting a Power Supply” on page 115.
4. **Verify that the slot where the power supply installs is clean and free of debris.**
5. **Verify that the slot connector pins are straight and not missing.**
6. **Verify that the slot connector receptacles are free from obstructions.**
7. **Orient the power supply with the status LEDs on the left and the release tab on the right.**
8. **Slide the power supply into the open slot, pushing at the handle.**



9. When the power supply seats, push firmly so that the release tab clicks to secure the power supply into the chassis.



10. Power on the power supply.

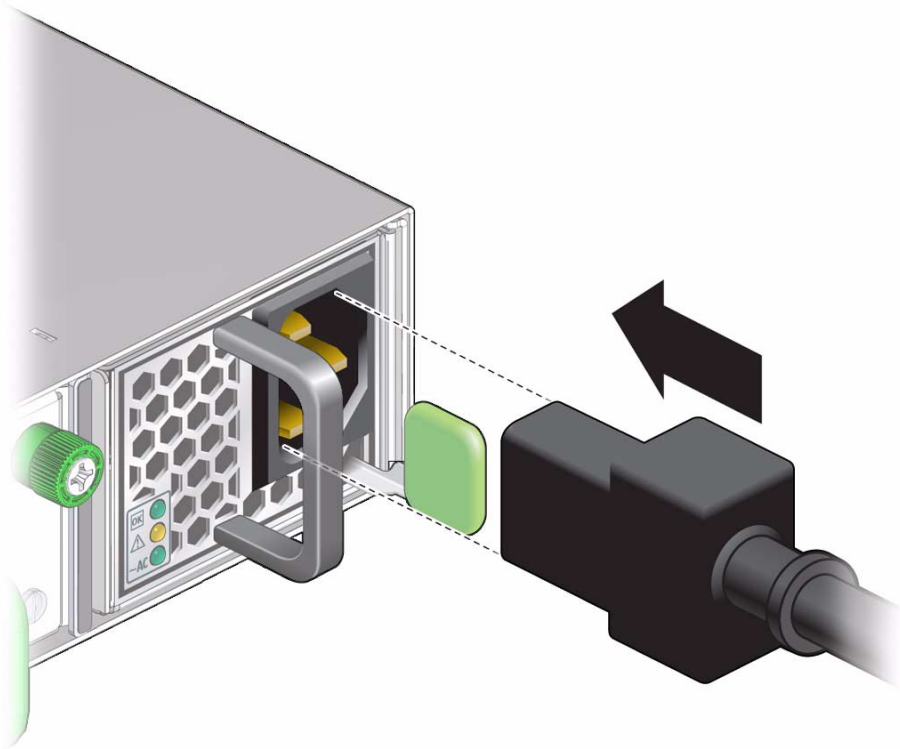
See “Power On a Power Supply” on page 123.

Related Information

- [“Install a Fan” on page 130](#)
- [“Install an InfiniBand Cable” on page 137](#)
- [“Replace the Battery” on page 141](#)

▼ **Power On a Power Supply**

1. **For residual power discharge, the power cord must remain unattached to the power supply for at least one minute before powering on a power supply.**
2. **Identify the prerequisite and subsequent service tasks you must perform in conjunction with this procedure.**
[See “Servicing Power Supplies” on page 115.](#)
3. **Reconnect the power cord to the power supply.**



The AC LED lights green to indicate that the power supply is connected to facility power. A moment later, the OK LED lights green to indicate the power supply is at full power.

4. Verify the power supply's operation with the `checkpower` and `checkvoltages` commands on the management controller.

For example, to check the power supplies:

```
# checkpower  
PSU 0 present status: OK  
PSU 1 present status: OK  
All PSUs OK  
#
```

```
# checkvoltages  
Voltage ECB OK  
Measured 3.3V Main = 3.28 V  
Measured 3.3V Standby = 3.37 V
```



```
Measured 12V = 12.06 V
Measured 5V = 5.03 V
Measured VBAT = 3.25 V
Measured 2.5V = 2.52 V
Measured 1.8V = 1.80 V
Measured I4 1.2V = 1.22 V
All voltages OK
#
```

Related Information

- *Switch Reference*, `checkpower` command
- *Switch Reference*, `checkvoltages` command
- [“Power Off a Power Supply” on page 118](#)

Servicing Fans

These topics provide procedures for servicing the fans.

Description	Links
Add a fan.	“Inspecting a Fan” on page 126 “Install a Fan” on page 130
Replace a fan.	“Inspecting a Fan” on page 126 “Remove a Fan” on page 128 “Install a Fan” on page 130
Subtract a fan.	“Remove a Fan” on page 128

Related Information

- [“Replaceable Components” on page 113](#)
- [“Servicing Power Supplies” on page 115](#)
- [“Servicing InfiniBand Cables” on page 132](#)
- [“Servicing the Battery” on page 139](#)

Inspecting a Fan

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

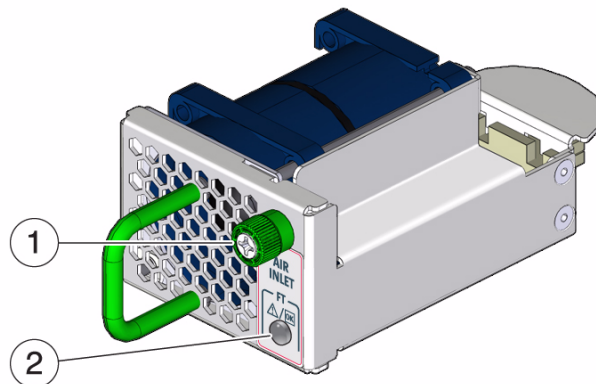
Step	Description	Links
1.	Identify the fan.	“Identify the Fan” on page 126
2.	Inspect the hardware.	“Inspect the Fan Hardware” on page 127
3.	Inspect the connector.	“Inspect the Fan Connector” on page 127

Related Information

- [“Inspecting a Power Supply” on page 115](#)
- [“Inspecting the InfiniBand Cables” on page 132](#)

▼ Identify the Fan

1. Identify the prerequisite and subsequent service tasks you must perform in conjunction with this procedure.
See [“Inspecting a Fan” on page 126](#).
2. Use the following illustration to identify the various features of a fan.



1	Thumbscrew
2	Attention LED

3. Inspect the fan hardware.

See [“Inspect the Fan Hardware”](#) on page 127.

Related Information

- [“Identify the Power Supply”](#) on page 116
- [“Identify the InfiniBand Cable”](#) on page 133

▼ Inspect the Fan Hardware

1. Identify the prerequisite and subsequent service tasks you must perform in conjunction with this procedure.

See [“Inspecting a Fan”](#) on page 126.

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 thumbscrew spins freely and smoothly.
5. Inspect the fan connector.
See [“Inspect the Fan Connector”](#) on page 127.

Related Information

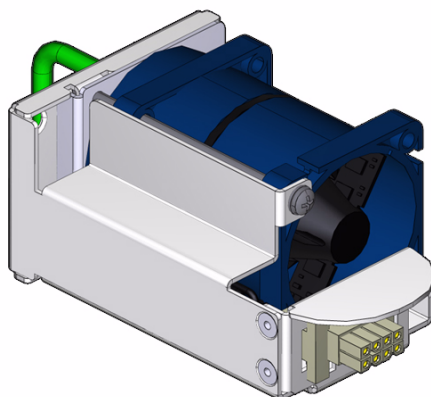
- [“Inspect the Power Supply Hardware”](#) on page 117
- [“Inspect the InfiniBand Cable Hardware”](#) on page 133

▼ Inspect the Fan Connector

1. Identify the prerequisite and subsequent service tasks you must perform in conjunction with this procedure.

See [“Inspecting a Fan”](#) on page 126.

2. Verify that the connector is clean and without damage.
3. Verify that the connector receptacles are free from obstructions.



4. Verify that the connector freely floats in its mounting.

5. The fan is ready for installation.

See “Install a Fan” on page 130.

Related Information

- “Inspect the Power Supply Connectors” on page 117
- “Inspect the InfiniBand Cable Connectors” on page 134

▼ Remove a Fan

Note – Fans are hot-swappable and do not require powering off. Additionally, if there are fewer than two operational fans, the switch shuts down to prevent thermal overload.

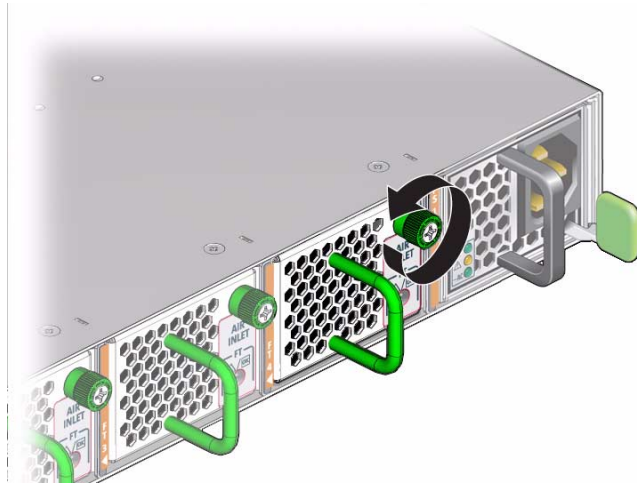
1. Identify the prerequisite and subsequent service tasks you must perform in conjunction with this procedure.

See “Servicing Fans” on page 125.

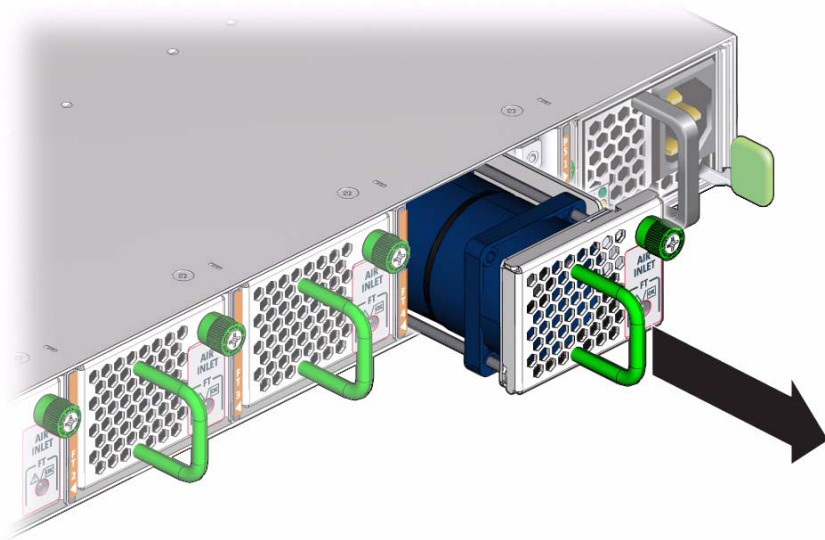
2. Determine which fan is to be removed.

If a fan has failed, its Attention LED lights.

3. Loosen the captive thumbscrew at the right side of the fan.



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



5. Set the fan aside.

6. Consider your next steps:

- If you are removing the fan for replacement, install a new fan.
See [“Install a Fan” on page 130](#).
- If you are removing the fan and not replacing it, you are finished.

Related Information

- [“Remove a Power Supply” on page 119](#)
- [“Remove an InfiniBand Cable” on page 134](#)
- [“Remove the Switch From the Rack” on page 140](#)
- [“Replace the Battery” on page 141](#)

▼ **Install a Fan**

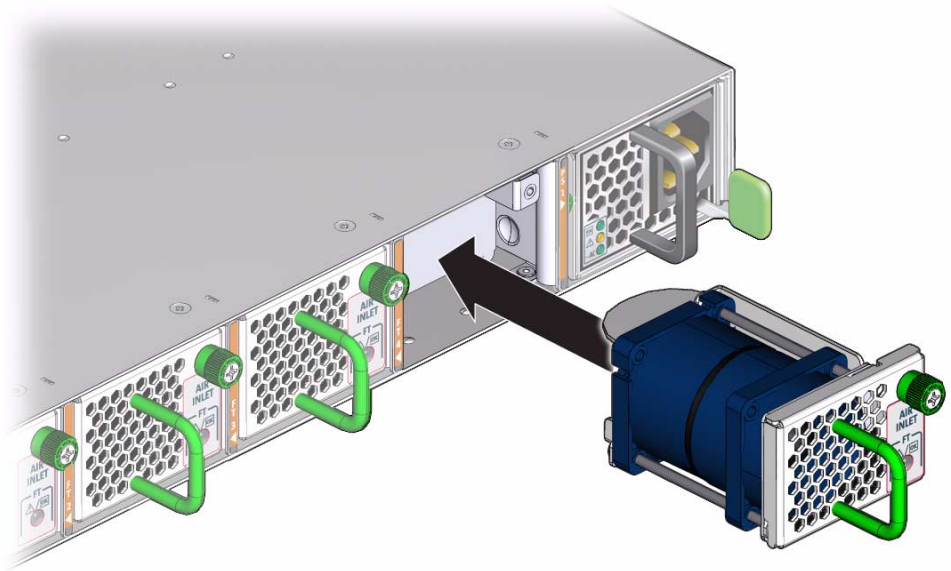
- 1. Identify the prerequisite and subsequent service tasks you must perform in conjunction with this procedure.**

See [“Servicing Fans” on page 125](#).

- 2. Inspect the replacement fan.**

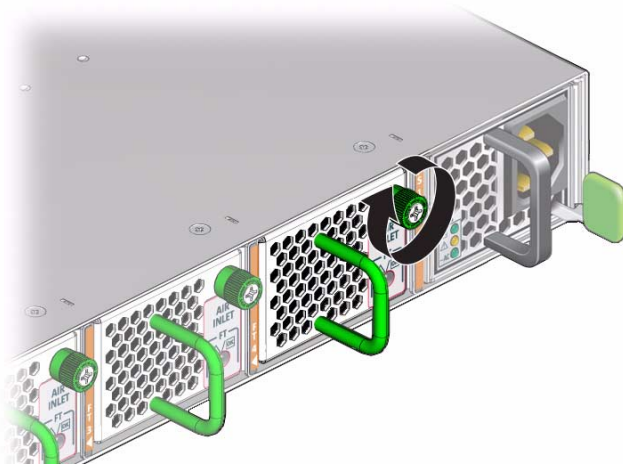
See [“Inspecting a Fan” on page 126](#).

- 3. Verify that the slot where the fan installs is clean and free of debris.**
- 4. Verify that the slot connector pins are straight and not missing.**
- 5. Orient the fan over the opening in the switch chassis with the thumbscrew on the right.**
- 6. Firmly slide the fan into the chassis until the fan stops.**



The fan might immediately power on.

7. Tighten the captive thumbscrew to secure the fan in the switch chassis.



8. Verify that the fan Attention LED goes out.

9. Use the `getfanspeed` command on the management controller to verify the fan's operation.

For example, to check the fans:

```
# getfanspeed
Fan 0 not present
Fan 1 running at rpm 11212
Fan 2 running at rpm 11313
Fan 3 running at rpm 11521
Fan 4 not present
#
```

Note – You should see a fan speed for the fan you just installed.

Related Information

- *Switch Reference*, `getfanspeed` command
- [“Install a Power Supply” on page 121](#)
- [“Install an InfiniBand Cable” on page 137](#)
- [“Replace the Battery” on page 141](#)

Servicing InfiniBand Cables

These topics provide procedures for servicing the InfiniBand cables.

Description	Links
Add an InfiniBand cable.	“Inspecting the InfiniBand Cables” on page 132 “Install an InfiniBand Cable” on page 137
Replace an InfiniBand cable.	“Inspecting the InfiniBand Cables” on page 132 “Remove an InfiniBand Cable” on page 134 “Install an InfiniBand Cable” on page 137
Subtract an InfiniBand cable.	“Remove an InfiniBand Cable” on page 134

Related Information

- [“Replaceable Components” on page 113](#)
- [“Servicing Power Supplies” on page 115](#)

- [“Servicing Fans” on page 125](#)
- [“Servicing the Battery” on page 139](#)

Inspecting the InfiniBand Cables

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

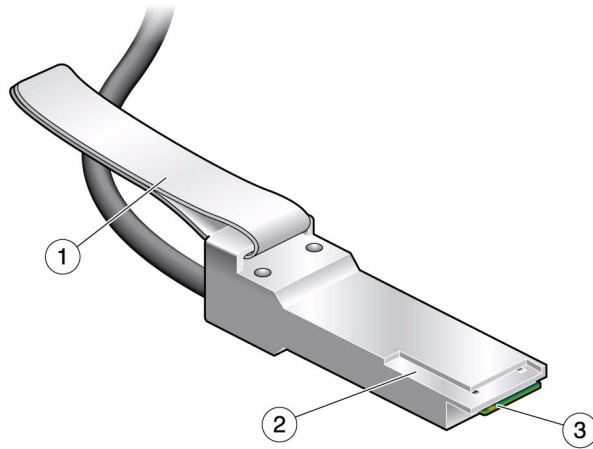
Step	Description	Links
1.	Identify the cable.	“Identify the InfiniBand Cable” on page 133
2.	Inspect the hardware.	“Inspect the InfiniBand Cable Hardware” on page 133
3.	Inspect the connectors.	“Inspect the InfiniBand Cable Connectors” on page 134

Related Information

- [“Inspecting a Power Supply” on page 115](#)
- [“Inspecting a Fan” on page 126](#)

▼ Identify the InfiniBand Cable

1. **Identify the prerequisite and subsequent service tasks you must perform in conjunction with this procedure.**
See [“Inspecting the InfiniBand Cables” on page 132](#).
2. **Use the following illustration to identify the various features of the InfiniBand cable.**



1	Retraction strap
2	L groove
3	Paddle board

3. Inspect the InfiniBand cable hardware.

See [“Inspect the InfiniBand Cable Hardware”](#) on page 133.

Related Information

- [“Identify the Power Supply”](#) on page 116
- [“Identify the Fan”](#) on page 126

▼ **Inspect the InfiniBand Cable Hardware**

1. Identify the prerequisite and subsequent service tasks you must perform in conjunction with this procedure.

See [“Inspecting the InfiniBand Cables”](#) on page 132.

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 134.

Related Information

- [“Inspect the Power Supply Hardware” on page 117](#)
- [“Inspect the Fan Hardware” on page 127](#)

▼ **Inspect the InfiniBand Cable Connectors**

1. **Identify the prerequisite and subsequent service tasks you must perform in conjunction with this procedure.**
See [“Inspecting the InfiniBand Cables” on page 132](#).
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 is adequate to remove the connector from the receptacle.**
5. **Identify the reference surface by the L groove in the surface at the connector tip.**
6. **The cable is ready for installation.**
See [“Install an InfiniBand Cable” on page 137](#).

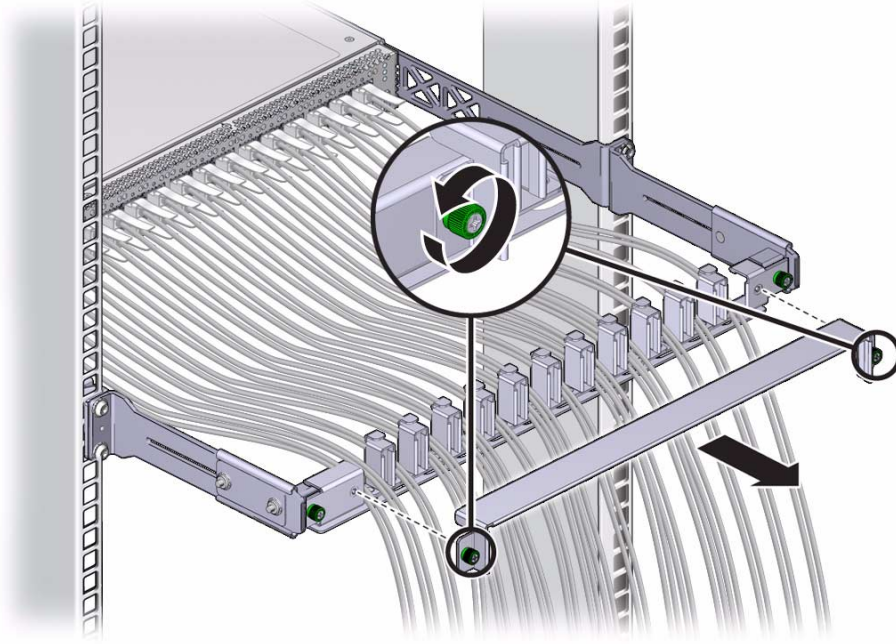
Related Information

- [“Inspect the Power Supply Connectors” on page 117](#)
- [“Inspect the Fan Connector” on page 127](#)

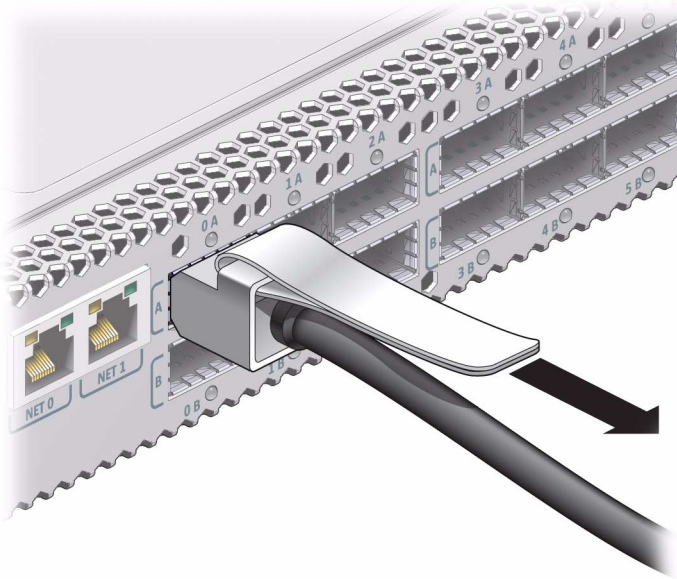
▼ **Remove an InfiniBand Cable**

This procedure describes how to remove the cables from the switch chassis, so that you can replace the cable. If you are removing all cables for switch replacement, start removing the cables from the left side of the switch, working your way to the right.

1. **Identify the prerequisite and subsequent service tasks you must perform in conjunction with this procedure.**
See [“Servicing InfiniBand Cables” on page 132](#).
2. **Loosen the thumbscrews and remove the cover for the cable management bracket.**



3. **Locate the cable to be removed.**
4. **Grasp the cable connector to support its weight and apply the removal force.**
5. **Pull on the retractor strap while simultaneously pulling on the cable connector.**
The cable connector comes free.



6. Carefully move the cable out of the cable management hardware.
7. Open hook-and-loop fasteners from bundles and securing hard points to 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.

8. Consider your next steps:

- If you are removing a single cable for replacement, install the new cable. See “Install an InfiniBand Cable” on page 137.
- If you are disconnecting all cables for switch replacement, repeat from [Step 4](#) for all cables.

Related Information

- “Remove a Power Supply” on page 119
- “Remove a Fan” on page 128
- “Remove the Switch From the Rack” on page 140
- “Replace the Battery” on page 141

▼ Install an InfiniBand Cable

1. **Identify the prerequisite and subsequent service tasks you must perform in conjunction with this procedure.**

See “[Servicing InfiniBand Cables](#)” on page 132.

2. **Determine your next steps:**

- If you are cabling an entire switch after a replacement procedure, locate the cable for connector 17B and go to [Step 5](#).
- If you are installing a replacement cable to the switch, start the procedure at [Step 3](#).

3. **Inspect the replacement InfiniBand cable.**

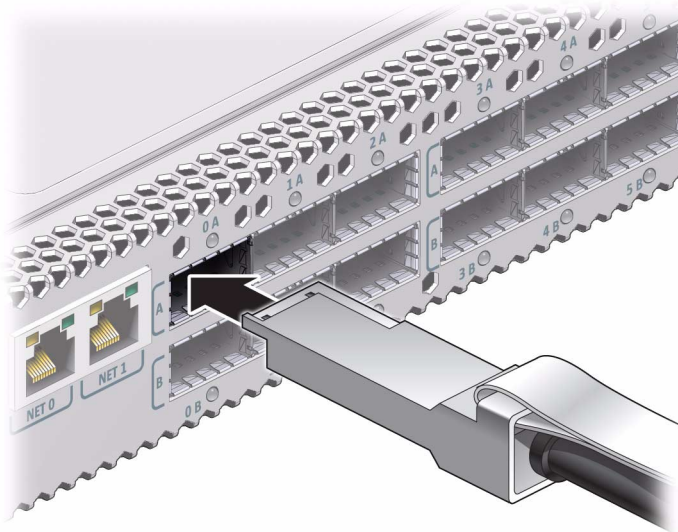
See “[Inspecting the InfiniBand Cables](#)” on page 132.

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

5. **Feed the cable through the cable management hardware.**

6. **Orient the cable connector to the QSFP receptacle squarely and horizontally.**

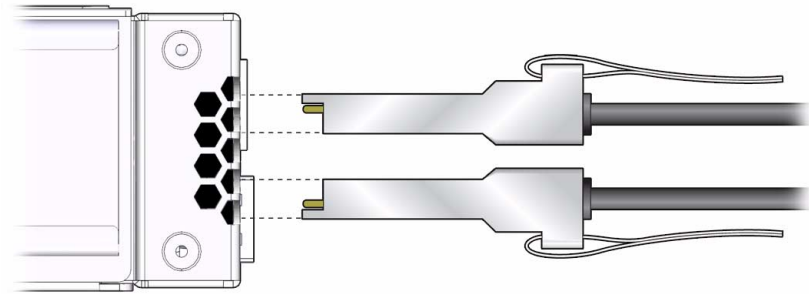
Ensure that the L groove is up for the top row of receptacles, or that the L groove is down for the bottom row of receptacles.



Note – On some QSFP cable connectors, there is a retraction strap. Both the retraction strap and L groove indicate the reference surface for the connector. When installing QSFP cables in the top row of receptacles (0A, 1A, 2A, and so on), ensure that the L groove and retraction strap are up. When installing QSFP cables in the bottom row of receptacles (0B, 1B, 2B, and so on) ensure that the L groove and retraction strap are down. See “Identify the InfiniBand Cable” on page 133.

7. Slowly move the connector in.

As you slide the connector in, the shell should be in the center of the QSFP receptacle.



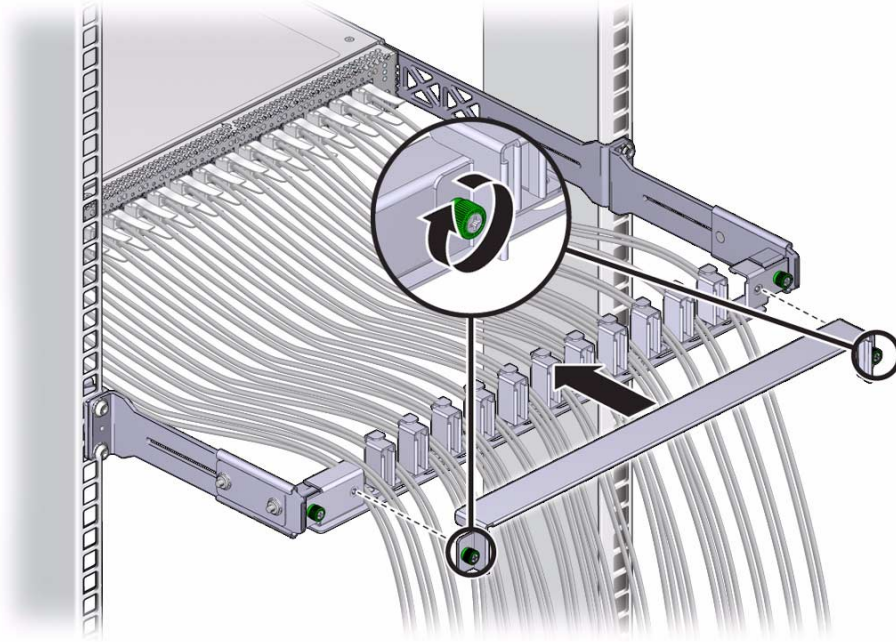
- If the connector stops or binds after about 1/4 in. (5 mm) travel, back out and repeat from [Step 6](#).
- If the connector stops or binds with about 1/8 in. (2 mm) still to go, back out and repeat [Step 7](#).

8. Continue to push the connector in until you feel a detent.

9. Secure the cable into the cable management hardware.

Close hook-and-loop fasteners at bundles and securing hard points.

- 10. If you are installing all cables as part of a switch replacement procedure, repeat from [Step 5](#) for all cables, working your way from right to left.**
- 11. Replace the cover for the cable management bracket and tighten the thumbscrews.**



Related Information

- [“Install a Power Supply” on page 121](#)
- [“Install a Fan” on page 130](#)
- [“Replace the Battery” on page 141](#)

Servicing the Battery

Oracle’s Sun Datacenter InfiniBand Switch 36 has a battery on the main board that supports the management controller. You can only replace the battery because the management controller is dependent upon the battery. You cannot add or subtract the battery. Perform these tasks in order to replace the battery.

Step	Description	Links
1.	Remove all IB cables.	“Remove an InfiniBand Cable” on page 134
2.	Power off both power supplies.	“Power Off a Power Supply” on page 118

Step	Description	Links
3.	Remove the switch from the rack.	“Remove the Switch From the Rack” on page 140
4.	Replace the battery.	“Replace the Battery” on page 141
5.	Install the switch in the rack.	“Installing the Switch” on page 1

Related Information

- [“Replaceable Components” on page 113](#)
- [“Servicing Power Supplies” on page 115](#)
- [“Servicing Fans” on page 125](#)
- [“Servicing InfiniBand Cables” on page 132](#)

▼ Remove the Switch From the Rack

Note – This procedure assumes that you have removed all data cables from the gateway and have powered down both power supplies by removing both power cords. If not, see [“Remove an InfiniBand Cable” on page 134](#) and [“Power Off a Power Supply” on page 118](#).

1. **Identify the prerequisite and subsequent service tasks you must perform in conjunction with this procedure.**
See [“Servicing the Battery” on page 139](#).
2. **Disconnect the management cables.**
3. **Use a No. 2 Phillips screwdriver to remove the four screws that secure the front of the switch into the rack.**
4. **Slide the switch out of the front of the rack.**
5. **Set the switch chassis onto a stable work surface.**

Related Information

- [“Install the Switch in the Rack” on page 20](#)
- [“Remove a Power Supply” on page 119](#)
- [“Remove a Fan” on page 128](#)
- [“Remove an InfiniBand Cable” on page 134](#)
- [“Replace the Battery” on page 141](#)

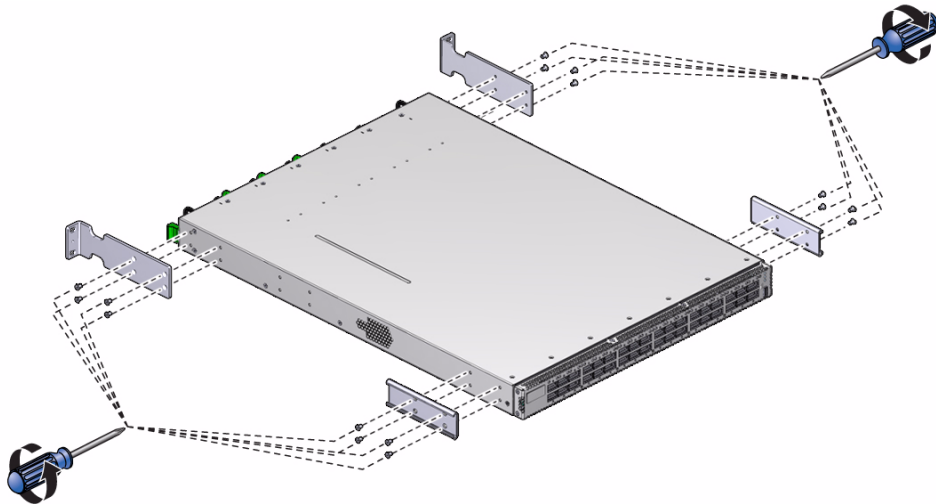
▼ Replace the Battery

Note – This procedure assumes that you have removed the switch from the rack. If not, see [“Remove the Switch From the Rack”](#) on page 140.

1. Identify the prerequisite and subsequent service tasks you must perform in conjunction with this procedure.

See [“Servicing the Battery”](#) on page 139.

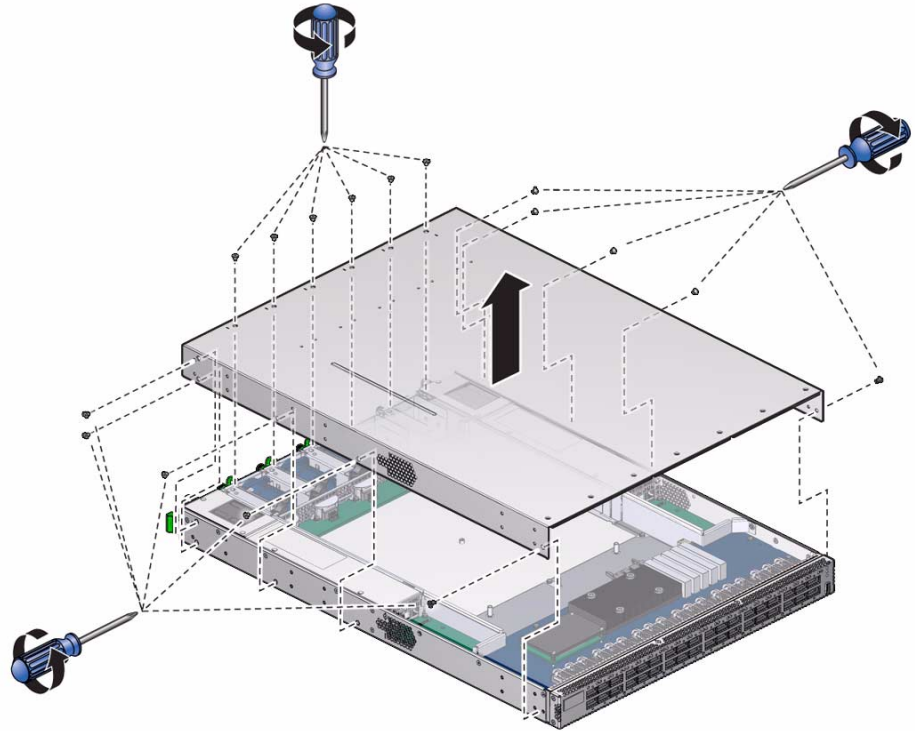
2. Use a No. 1 Phillips screwdriver to remove the eight screws that secure the C-shaped brackets at the rear sides of the switch chassis.



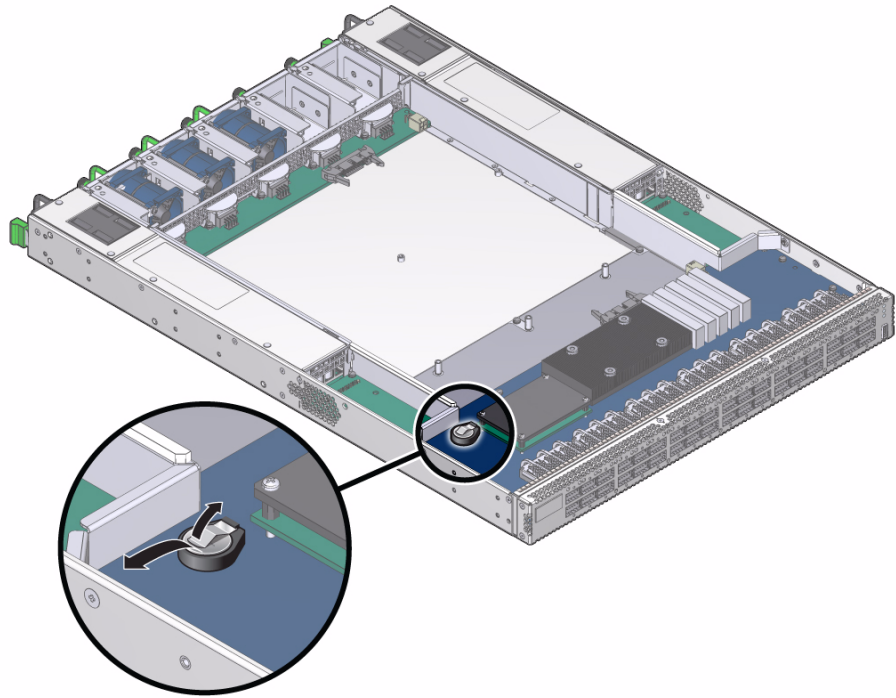
3. Remove the eight screws that secure the long front brackets at the front sides of the switch chassis.

4. Remove the 16 screws that secure the top cover to the chassis.

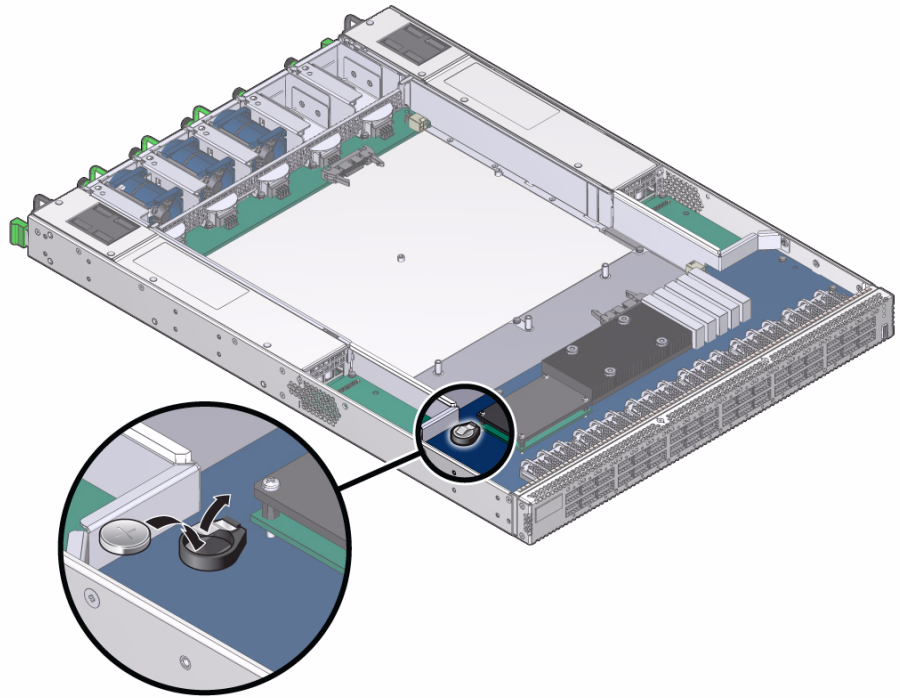
There are five screws on each side and six screws across the top front of the cover.



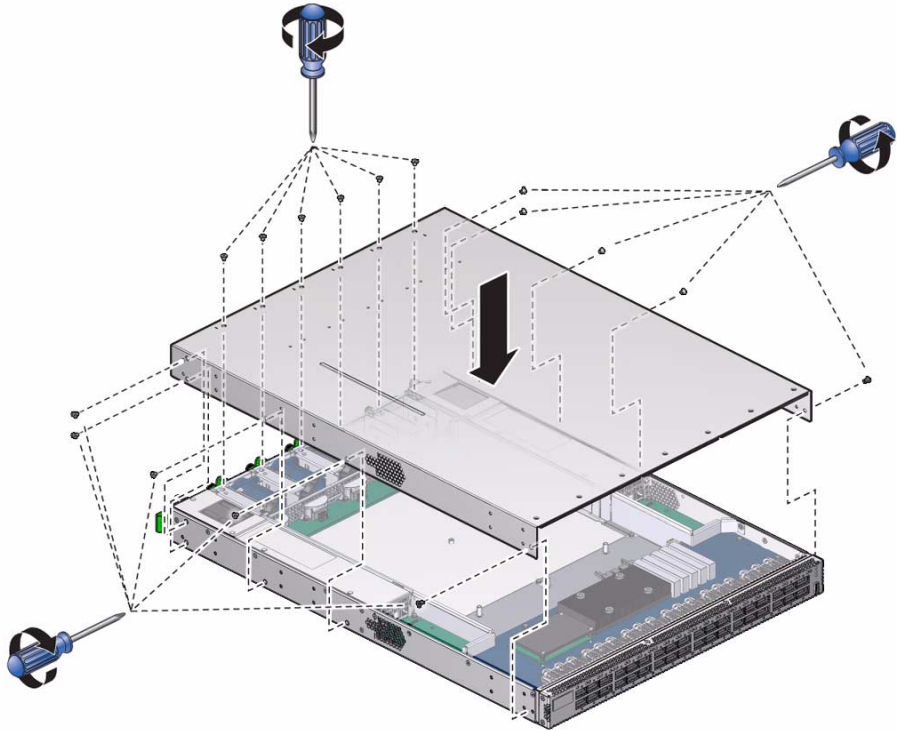
5. Slide the cover forward and lift it off.
6. Depress the clip that retains the battery and release the battery from the main board.



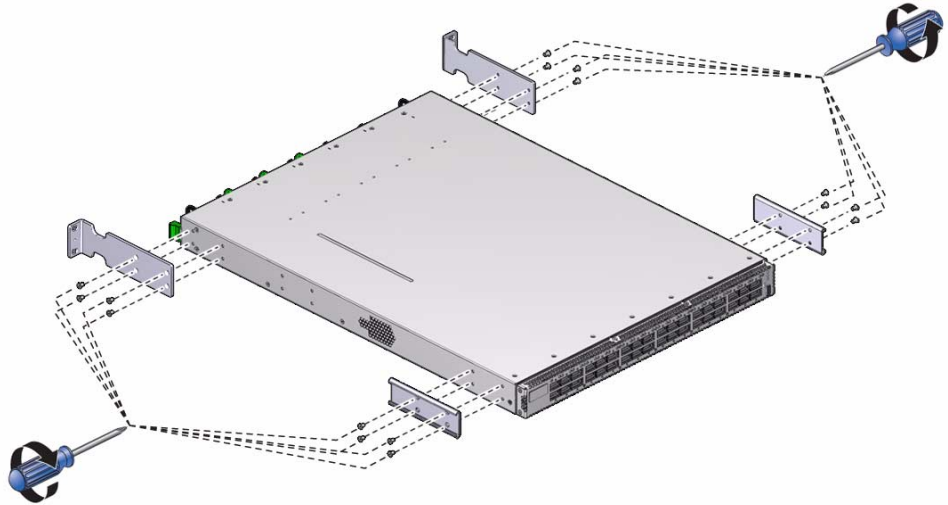
7. Properly dispose of the old battery.
8. Unwrap the replacement battery from its antistatic packaging.
9. Install the replacement battery into the main board with the + side up.



10. **Orient the cover over the chassis and lower it in to place.**
11. **Slide the cover rearward so that it engages at the rear panel.**
Ensure that the screw holes in the cover align with the holes in the chassis.



12. Use a No. 1 Phillips screwdriver to install the 16 screws that secure the cover to the chassis.
13. Use eight screws to attach the two long front brackets to the front sides of the chassis.



14. Use eight screws to attach the two C-shaped brackets to the rear sides of the chassis.
15. Install the switch into the rack.
See “Installing the Switch” on page 1.

Firmware Upgrades

Periodically, a newer version of firmware for the management controller or the I4 switch chip might become available. When you upgrade the management controller firmware to version 1.1.3 or higher, Oracle ILOM 3.0 support is also installed. With Oracle ILOM support, upgrades of management controller and I4 switch chip firmware become a much simpler task. For instructions to upgrade firmware through Oracle ILOM, see the *Oracle Integrated Lights Out Manager (ILOM) 3.0 Supplement for the Sun Datacenter InfiniBand Switch 36*.

Related Information

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

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