

Sun Network QDR InfiniBand Gateway Switch
Installation Guide



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Using This Documentation

This installation guide provides detailed procedures that describe the preparation and installation of the Sun Network QDR InfiniBand Gateway Switch from Oracle. This document is written for technicians, system administrators, and users who have advanced experience installing and administering InfiniBand fabric hardware.

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

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 Network QDR Infiniband Gateway Switch Getting Started Guide</i>	Printed PDF	Shipping kit Online
Last-minute information	<i>Sun Network QDR Infiniband Gateway Switch Product Notes</i>	PDF	Online
Installation, administration, and service	<i>Sun Network QDR Infiniband Gateway Switch User's Guide</i>	PDF HTML	Online

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

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

(<http://www.oracle.com/pls/topic/lookup?ctx=E21459-01&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 Quick Start Guide</i>	PDF HTML	Online
Overview	<i>Oracle Integrated Lights Out Manager (ILOM) 3.0 Daily Management -- Concepts Guide</i>	PDF HTML	Online
Administration from web interface	<i>Oracle Integrated Lights Out Manager (ILOM) 3.0 Daily Management -- Web Procedures Guide</i>	PDF HTML	Online
Administration from CLI interface	<i>Oracle Integrated Lights Out Manager (ILOM) 3.0 Daily Management -- CLI Procedures Guide</i>	PDF HTML	Online
Administration from SNMP and other interfaces	<i>Oracle Integrated Lights Out Manager (ILOM) 3.0 Protocol Management -- SNMP, IPMI, CIM, WS-MAN</i>	PDF HTML	Online
Maintenance operations and diagnostics	<i>Oracle Integrated Lights Out Manager (ILOM) 3.0 Maintenance and Diagnostics -- CLI and Web Guide</i>	PDF HTML	Online
Remote redirection consoles	<i>Oracle Integrated Lights Out Manager (ILOM) 3.0 Remote Redirection Consoles -- CLI and Web Guide</i>	PDF HTML	Online

Documentation, Support, and Training

These web sites provide additional resources:

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

Understanding the Gateway

These topics describe the purpose and specifications of the gateway, and the connectors found on the gateway chassis.

- [“Gateway Overview” on page 1](#)
- [“Physical Specifications” on page 2](#)
- [“Environmental Requirements” on page 2](#)
- [“Acoustic Noise Emissions” on page 3](#)
- [“Electrical Specifications” on page 3](#)
- [“Network Management Connector and Pins” on page 4](#)
- [“USB Management Connector and Pins” on page 5](#)
- [“Data QSFP Connector and Pins” on page 5](#)

Related Information

- [“Understanding Cabling” on page 9](#)
- [“Preparing to Install the Gateway” on page 19](#)
- [“Installing the Gateway” on page 29](#)

Gateway Overview

The Sun Network QDR InfiniBand Gateway Switch provides both InfiniBand fabric switching and management capabilities and in-band access to 10GbE networks. The gateway utilizes the OFED InfiniBand software stack and the BXOFED BridgeX software stack through an internally configured management controller. The gateway has 32 physical InfiniBand QDR ports and eight 10GbE ports available through splitter cables.

Monitoring the many aspects of the gateway is simplified by a web-based Fabric Monitor, allowing point and click polling and verification of settings, parameters, and status.

Related Information

- [“Understanding Cabling” on page 9](#)
- [“Preparing to Install the Gateway” on page 19](#)
- [“Installing the Gateway” on page 29](#)

Physical Specifications

The following table lists the physical dimensions of the gateway.

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 23](#)
- [“Install the Gateway in the Rack” on page 29](#)

Environmental Requirements

The following table lists the gateway operating environment parameters.

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)

Acoustic Noise Emissions

The following table lists the permitted noise emissions of the gateway..

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

Electrical Specifications

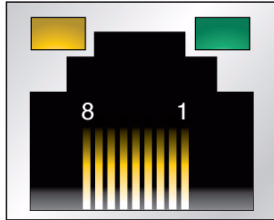
The following table lists the electrical requirements of the gateway.

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 9](#)
- [“Attach the Power Cords” on page 38](#)

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-
7	Not used
8	Not used

Related Information

- [“Management Cable Requirements” on page 10](#)
- [“Attach the Management Cables” on page 35](#)
- [“Access the Management Controller From the Network Management Port” on page 40](#)

USB Management Connector and Pins



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

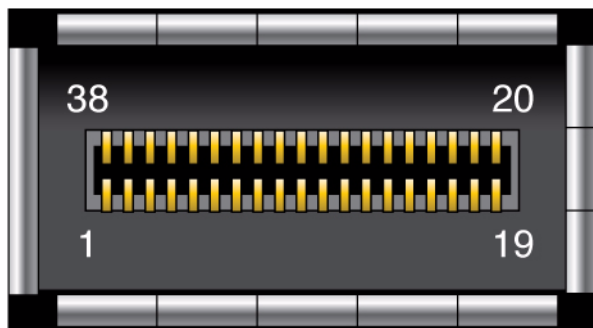
Pin	Signal
1	+5 VDC
2	- Data
3	+ Data
4	GND

Related Information

- [“Management Cable Requirements” on page 10](#)
- [“Attach the Management Cables” on page 35](#)
- [“Access the Management Controller From the USB Management Port” on page 41](#)

Data QSFP Connector and Pins

The QSFP connector is a single InfiniBand port connection and can carry InfiniBand or Ethernet data.



The following table lists the pinout for the connector.

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
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

Signal	Description
IntL	Interrupt on low - enables fault indication

Related Information

- [“Data Cable Types” on page 14](#)
- [“Connecting Data cables” on page 48](#)

Understanding Cabling

These topics provide information that helps you understand the cabling requirements of the gateway.

- [“Routing Service Cables” on page 9](#)
- [“Understanding Data Cabling” on page 11](#)

Related Information

- [“Understanding the Gateway” on page 1](#)
- [“Preparing to Install the Gateway” on page 19](#)
- [“Installing the Gateway” on page 29](#)

Routing Service Cables

These topics describe cable routing requirements:

- [“Power Cord Requirements” on page 9](#)
- [“Management Cable Requirements” on page 10](#)

Related Information

- [“Understanding Data Cabling” on page 11](#)

Power Cord Requirements

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

Your gateway 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 to federal, state, and local electrical codes.

Related Information

- [“Electrical Specifications” on page 3](#)
- [“Attach the Power Cords” on page 38](#)

Management Cable Requirements

Management of the gateway 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 boot. 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 gateway 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 gateway. 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 35](#)

Understanding Data Cabling

These topics describe data (InfiniBand, Ethernet) cabling:

- [“Data Cable Cautions” on page 12](#)
- [“Data Cable Guidelines” on page 13](#)
- [“Data Cable Types” on page 14](#)
- [“Data Cable Path Lengths” on page 14](#)
- [“Data Cable Bundling” on page 15](#)
- [“Floor and Underfloor Delivery of Data Cables” on page 16](#)
- [“Overhead Delivery of Data Cables” on page 16](#)

Related Information

- [“Routing Service Cables” on page 9](#)
- [“Connecting Data cables” on page 48](#)

Data Cable Cautions

To prevent data 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.



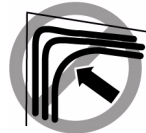
Do not pull the cable out of the shipping box, through any opening, or around any corners. Unroll the cable as you lay it down and move it through turns.



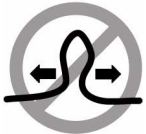
Do not bend the cables to a radius tighter than 85 mm (3.4 inches). Ensure that cable turns are as wide as possible.



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.



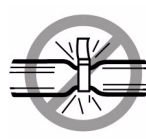
Do not straighten the cable to correct a bend that is too tight. Leave the cable bend as is.



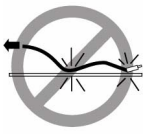
Do not hang the cable for a length more than 2 meters (7 feet). Minimize the hanging weight with intermediate retention points.



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

- [“Data Cable Guidelines” on page 13](#)
- [“Data Cable Types” on page 14](#)
- [“Data Cable Path Lengths” on page 14](#)
- [“Data Cable Bundling” on page 15](#)

- [“Floor and Underfloor Delivery of Data Cables” on page 16](#)
- [“Overhead Delivery of Data Cables” on page 16](#)

Data Cable Guidelines

Proper data 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), and specify hardware to support cable routing.
See [“Data Cable Path Lengths” on page 14](#).
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 [“Data Cable Bundling” on page 15](#).
5. Mediate the slack between securing points to maintain minimal cable tension and proper support.
See [“Floor and Underfloor Delivery of Data Cables” on page 16](#) and [“Overhead Delivery of Data Cables” on page 16](#).
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 9](#)
- [“Management Cable Requirements” on page 10](#)
- [“Data Cable Cautions” on page 12](#)
- [“Data Cable Types” on page 14](#)
- [“Data Cable Path Lengths” on page 14](#)
- [“Data Cable Bundling” on page 15](#)

- [“Floor and Underfloor Delivery of Data Cables”](#) on page 16
- [“Overhead Delivery of Data Cables”](#) on page 16

Data Cable Types

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

Note – Copper core 10GbE splitter cables are not supported on the gateway.

Cable Type	Cable Characteristics	Lengths	Data Rate
InfiniBand	Pass-through, optical core, QSFP - QSFP	10 m	QDR
	Pass-through, copper core, QSFP - QSFP	1 m, 2 m, 3 m, 5 m	QDR
Ethernet	Splitter, optical core, QSFP - MTB - LC x4	1 m, 2 m, 10 m	QDR

Related Information

- [“Data QSFP Connector and Pins”](#) on page 5
- [“Data Cable Cautions”](#) on page 12
- [“Data Cable Guidelines”](#) on page 13
- [“Data Cable Path Lengths”](#) on page 14
- [“Data Cable Bundling”](#) on page 15
- [“Floor and Underfloor Delivery of Data Cables”](#) on page 16
- [“Overhead Delivery of Data Cables”](#) on page 16

Data 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 data cable under the floor, consider the height of the raised floor when calculating cable path length.

Related Information

- [“Data Cable Cautions” on page 12](#)
- [“Data Cable Guidelines” on page 13](#)
- [“Data Cable Types” on page 14](#)
- [“Data Cable Bundling” on page 15](#)
- [“Floor and Underfloor Delivery of Data Cables” on page 16](#)
- [“Overhead Delivery of Data Cables” on page 16](#)

Data Cable Bundling

When bundling data 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 data 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 gateway has 34 data 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 Data cables” on page 48](#)
- [“Data Cable Cautions” on page 12](#)
- [“Data Cable Guidelines” on page 13](#)
- [“Data Cable Types” on page 14](#)
- [“Data Cable Path Lengths” on page 14](#)
- [“Floor and Underfloor Delivery of Data Cables” on page 16](#)

- [“Overhead Delivery of Data Cables” on page 16](#)

Floor and Underfloor Delivery of Data Cables

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

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

Related Information

- [“Connecting Data cables” on page 48](#)
- [“Data Cable Cautions” on page 12](#)
- [“Data Cable Guidelines” on page 13](#)
- [“Data Cable Types” on page 14](#)
- [“Data Cable Path Lengths” on page 14](#)
- [“Data Cable Bundling” on page 15](#)
- [“Overhead Delivery of Data Cables” on page 16](#)

Overhead Delivery of Data Cables

For overhead delivery, it is suggested that cable shelves and lattices be used to support the data cables.

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

Related Information

- [“Connecting Data cables” on page 48](#)
- [“Data Cable Cautions” on page 12](#)
- [“Data Cable Guidelines” on page 13](#)
- [“Data Cable Types” on page 14](#)
- [“Data Cable Path Lengths” on page 14](#)
- [“Data Cable Bundling” on page 15](#)
- [“Floor and Underfloor Delivery of Data Cables” on page 16](#)

Preparing to Install the Gateway

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

- [“Installation Preparation”](#) on page 19
- [“Suggested Tools for Installation”](#) on page 20
- [“Antistatic Precautions for Installation”](#) on page 21
- [“Installation Responsibilities”](#) on page 21
- [“Installation Sequence”](#) on page 22
- [“Verify Shipping Carton Contents”](#) on page 23
- [“Assemble the Ethernet Splitter Data Cables”](#) on page 24
- [“Route the Data Cables”](#) on page 27

Related Information

- [“Understanding the Gateway”](#) on page 1
- [“Understanding Cabling”](#) on page 9
- [“Installing the Gateway”](#) on page 29

Installation Preparation

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

- The environment where the gateway is to be installed must conform to the requirements found in [“Environmental Requirements”](#) on page 2.
- The rack to receive the gateway must have proper power, management, and InfiniBand fabric cabling brought to it.
- The rack must have an available location for the gateway.
- There must be a clean, dry, stable work surface.

Related Information

- “Suggested Tools for Installation” on page 20
- “Antistatic Precautions for Installation” on page 21
- “Installation Responsibilities” on page 21
- “Installation Sequence” on page 22
- “Verify Shipping Carton Contents” on page 23
- “Assemble the Ethernet Splitter Data Cables” on page 24
- “Route the Data Cables” on page 27

Suggested Tools for Installation

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

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

Related Information

- “Installation Preparation” on page 19
- “Antistatic Precautions for Installation” on page 21
- “Installation Responsibilities” on page 21
- “Installation Sequence” on page 22
- “Verify Shipping Carton Contents” on page 23
- “Assemble the Ethernet Splitter Data Cables” on page 24
- “Route the Data Cables” on page 27

Antistatic Precautions for Installation

When installing the gateway 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 gateway chassis.

Related Information

- [“Installation Preparation”](#) on page 19
- [“Suggested Tools for Installation”](#) on page 20
- [“Installation Responsibilities”](#) on page 21
- [“Installation Sequence”](#) on page 22
- [“Verify Shipping Carton Contents”](#) on page 23
- [“Assemble the Ethernet Splitter Data Cables”](#) on page 24
- [“Route the Data Cables”](#) on page 27

Installation Responsibilities

The personnel who install the gateway 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 19
- [“Suggested Tools for Installation”](#) on page 20
- [“Antistatic Precautions for Installation”](#) on page 21
- [“Installation Sequence”](#) on page 22

- [“Verify Shipping Carton Contents” on page 23](#)
- [“Assemble the Ethernet Splitter Data Cables” on page 24](#)
- [“Route the Data Cables” on page 27](#)

Installation Sequence

The process of installing the gateway has a specific sequence of tasks that must be performed in order. The following table describes the gateway installation task sequence and provides links to those procedures.

Step	Links
1.	“Verify Shipping Carton Contents” on page 23
2.	“Assemble the Ethernet Splitter Data Cables” on page 24
3.	“Route the Data Cables” on page 27
4.	“Install the Gateway in the Rack” on page 29
5.	“Attach the Management Cables” on page 35
6.	“Attach the Power Cords” on page 38
7.	“Accessing the Management Controller” on page 40
8.	“Verify the Gateway Status” on page 43
9.	“Start the Subnet Manager” on page 46
10.	“Attach the Data Cables” on page 48
11.	“Check Link Status” on page 54
12.	“Discover the InfiniBand Fabric Topology” on page 55
13.	“Perform Diagnostics on the InfiniBand Fabric” on page 56
14.	“Validate the InfiniBand Fabric and Report Errors” on page 58

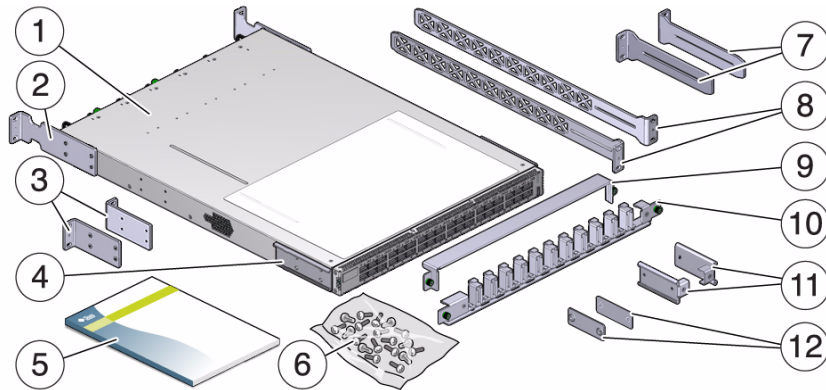
Related Information

- [“Installation Preparation” on page 19](#)
- [“Suggested Tools for Installation” on page 20](#)
- [“Antistatic Precautions for Installation” on page 21](#)
- [“Installation Responsibilities” on page 21](#)
- [“Verify Shipping Carton Contents” on page 23](#)

- “Assemble the Ethernet Splitter Data Cables” on page 24
- “Route the Data Cables” on page 27

▼ 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	Gateway
2	Front mounting brackets, long
3	Front mounting brackets, short
4	C-shaped brackets
5	Documentation
6	Hardware
7	Cable management extenders
8	Long side brackets
9	Cable management cover
10	Cable management assembly
11	Attachment brackets

Item	Description
12	Attachment plates Power cords and data cables (not pictured)

3. After verifying the package contents, assemble the Ethernet splitter data cables.

See [“Assemble the Ethernet Splitter Data Cables”](#) on page 24.

Related Information

- [“Installation Preparation”](#) on page 19
- [“Suggested Tools for Installation”](#) on page 20
- [“Antistatic Precautions for Installation”](#) on page 21
- [“Installation Responsibilities”](#) on page 21
- [“Installation Sequence”](#) on page 22
- [“Assemble the Ethernet Splitter Data Cables”](#) on page 24
- [“Route the Data Cables”](#) on page 27

▼ Assemble the Ethernet Splitter Data Cables

If the Ethernet *splitter* data cables are unassembled, you must assemble the cables before attaching them to the gateway.

Note – The ends of the optical fiber cable and the receptacles of the transceivers must be clean and optically clear before assembly. Do not remove the protective caps from the optical fiber cable or the plugs from the transceivers until instructed to do so.

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

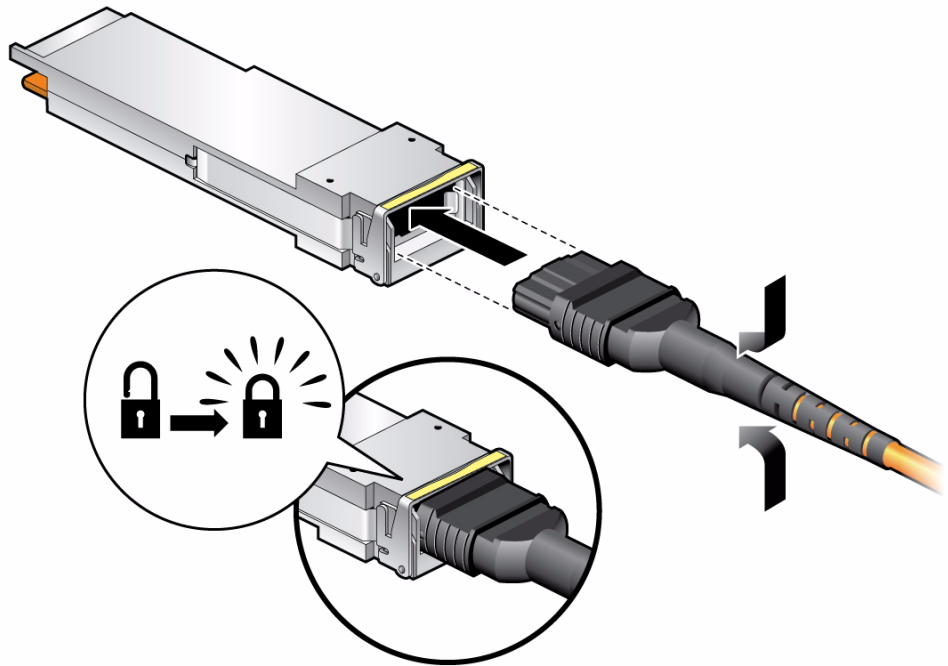
See [“Installation Sequence”](#) on page 22.

2. Remove the QSFP optical transceiver, SFP+ optical transceivers, and fiber optic splitter cable from their packaging.

3. Remove the plug from the QSFP optical transceiver.

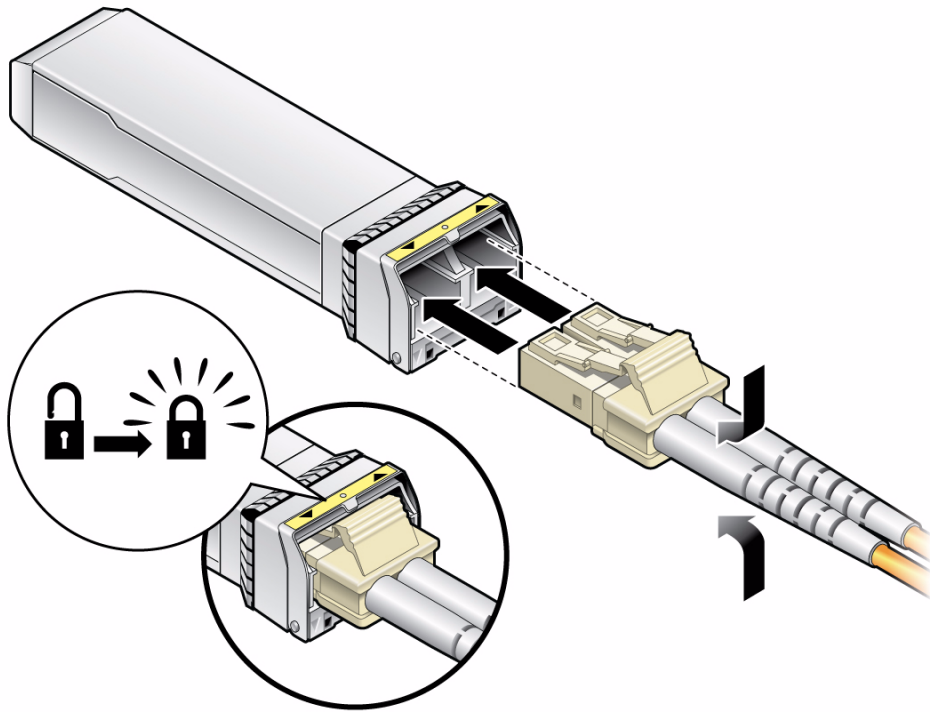
4. Remove the cap from the MTP connector of the fiber optic cable.

5. Holding the shaft of the MTP connector, insert the MTP connector into the receptacle of the QSFP transceiver.



Note – The MTP connector and QSFP receptacle are keyed for proper fitting.

6. Push the connector into the transceiver until it clicks.
7. Remove the plug from an SFP+ transceiver.
8. Remove the caps from an LC connector of the fiber optic cable.
9. Holding the shafts of the LC connector, insert the LC connector into the receptacles of the SFP+ transceiver.



Note – The LC connector and SFP+ receptacles are keyed for proper fitting.

10. Push the connector into the transceiver until it clicks.
11. Repeat from [Step 7](#) for all SFP+ transceivers and LC connectors.
12. Repeat from [Step 2](#) for all transceivers and splitter cables.
13. Route the data cables.
See [“Route the Data Cables”](#) on page 27.

Related Information

- [“Understanding Data Cabling”](#) on page 11
- [“Installation Preparation”](#) on page 19
- [“Suggested Tools for Installation”](#) on page 20
- [“Antistatic Precautions for Installation”](#) on page 21
- [“Installation Responsibilities”](#) on page 21
- [“Installation Sequence”](#) on page 22
- [“Verify Shipping Carton Contents”](#) on page 23

- [“Route the Data Cables” on page 27](#)

▼ Route the Data Cables

1. **Identify the prerequisite and subsequent installation tasks that you must perform in conjunction with this procedure.**
See [“Installation Sequence” on page 22](#).
2. **At the remote hosts, begin attaching the data cables to the appropriate connectors.**
3. **Route and bundle the data cables following the cautions and guidelines provided in [“Understanding Data Cabling” on page 11](#).**
4. **Bring the cables to the location in the rack where the gateway will install.**
5. **Install the gateway into the rack.**
See [“Install the Gateway in the Rack” on page 29](#).

Related Information

- [“Data Cable Guidelines” on page 13](#)
- [“Installation Preparation” on page 19](#)
- [“Suggested Tools for Installation” on page 20](#)
- [“Antistatic Precautions for Installation” on page 21](#)
- [“Installation Responsibilities” on page 21](#)
- [“Installation Sequence” on page 22](#)
- [“Verify Shipping Carton Contents” on page 23](#)
- [“Assemble the Ethernet Splitter Data Cables” on page 24](#)

Installing the Gateway

These topics provide procedures that instruct you how to install the gateway.

- [“Install the Gateway in the Rack”](#) on page 29
- [“Powering On the Gateway”](#) on page 35
- [“Connecting Data cables”](#) on page 48
- [“Verifying the InfiniBand Fabric”](#) on page 54

Related Information

- [“Understanding the Gateway”](#) on page 1
- [“Understanding Cabling”](#) on page 9
- [“Preparing to Install the Gateway”](#) on page 19

▼ Install the Gateway in the Rack

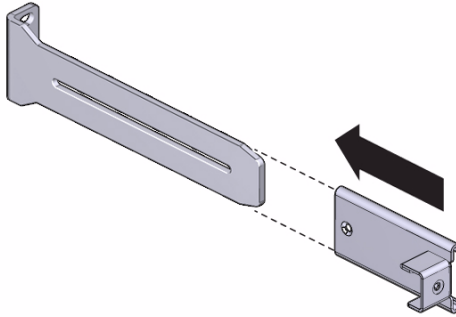


Caution – The airflow through the gateway is in from the fans, through the chassis, and out at the connector panel. The front of the gateway chassis (fan end) intakes from the cold aisle, and the rear of the gateway chassis (connector end) exhausts to the hot aisle. This flow direction requires you to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

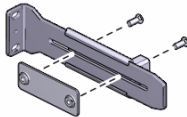
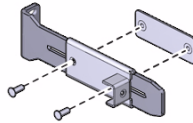
1. **Identify the prerequisite and subsequent installation tasks that you must perform in conjunction with this procedure.**
See [“Installation Sequence”](#) on page 22.
2. **If installed, open the rack doors.**
3. **Assemble the cable management extenders.**

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

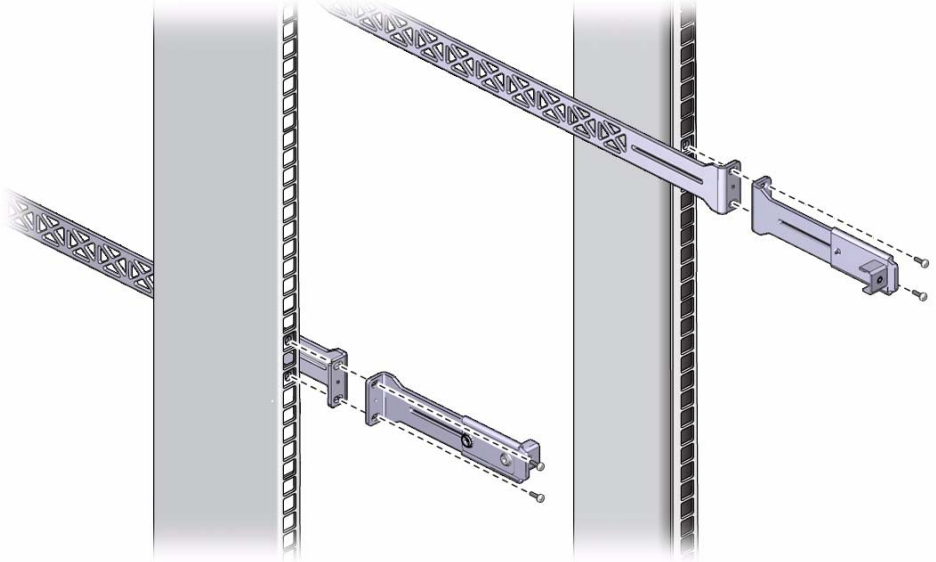
The open end of the tab is toward the flange. The flat end of the tab is toward the rear of the extender.



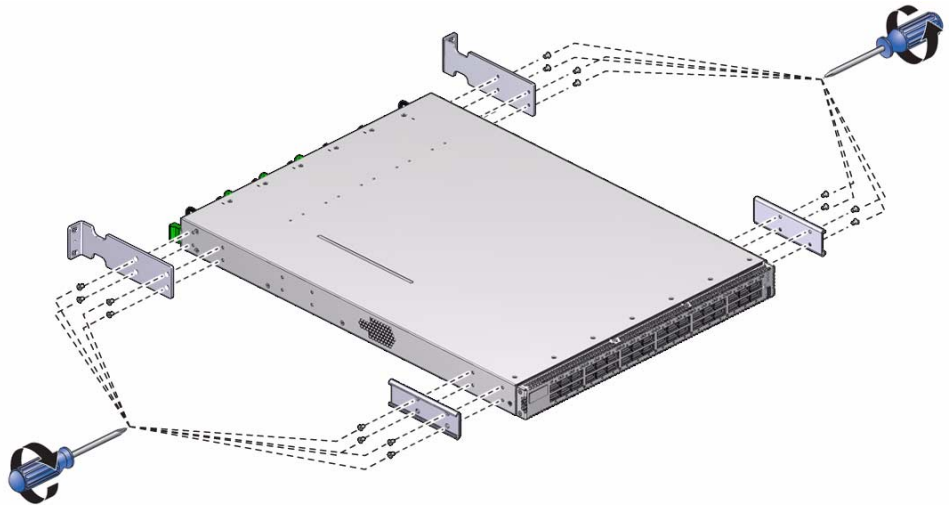
- b. Place the attachment plate on the flange side of the extender, opposite the attachment bracket.
- c. Use two screws to sandwich the attachment bracket and plate to the extender, in the position farthest from the flange.



- 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 gateway with four screws on each side.
The flange of the long front brackets point away from the gateway.



6. Attach the C-shaped brackets to the gateway with four screws on each side.

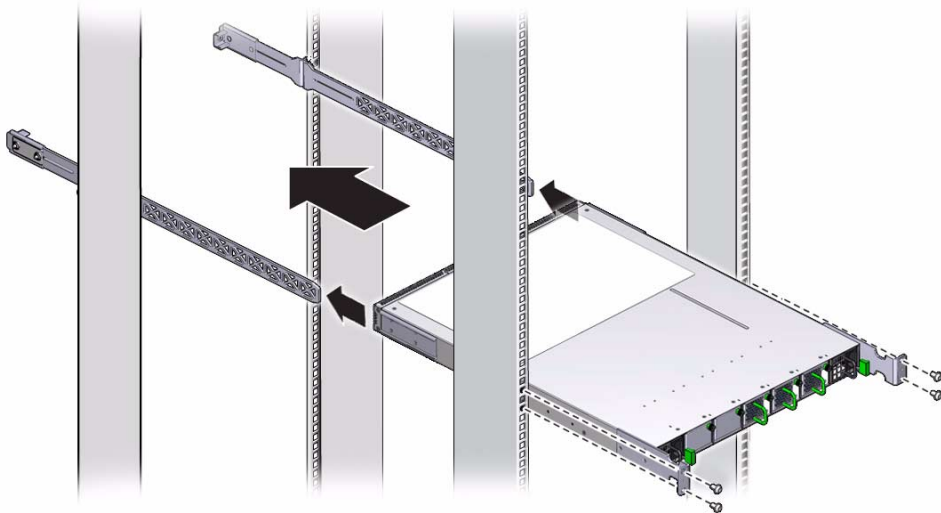
The edge of the C-shaped bracket is flush to the rear of the chassis.

7. Route the power cords through the rack with the female end at the front of the rack where the gateway will install.

Ensure that there is 24 inches (610 mm) of power cord slack at the front of the rack to provide an adequate service loop when removing the gateway from the rack.

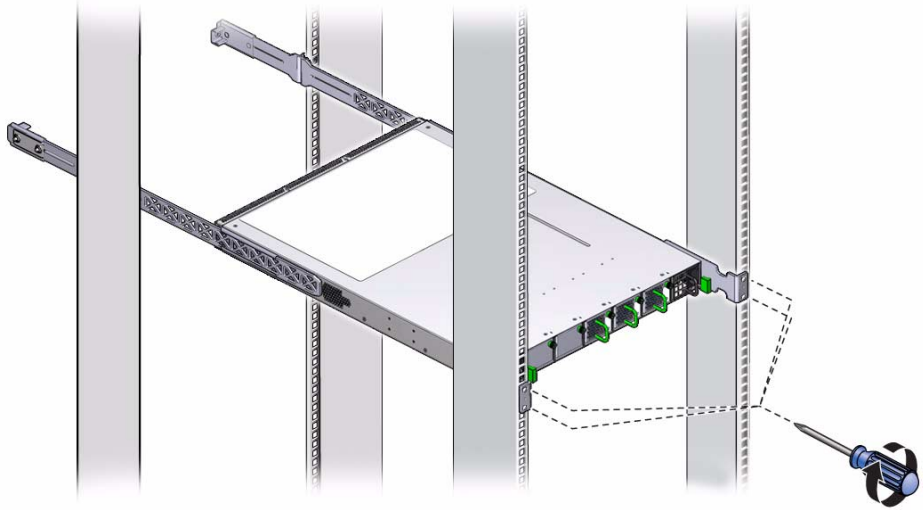
8. Carefully lift the gateway and slide it into the rack, from the front rearward.

Ensure that the ends of the long rails slide into the C-shaped brackets at the rear of the gateway chassis and that the power cords lay into the cut-outs of the long front mounting brackets.

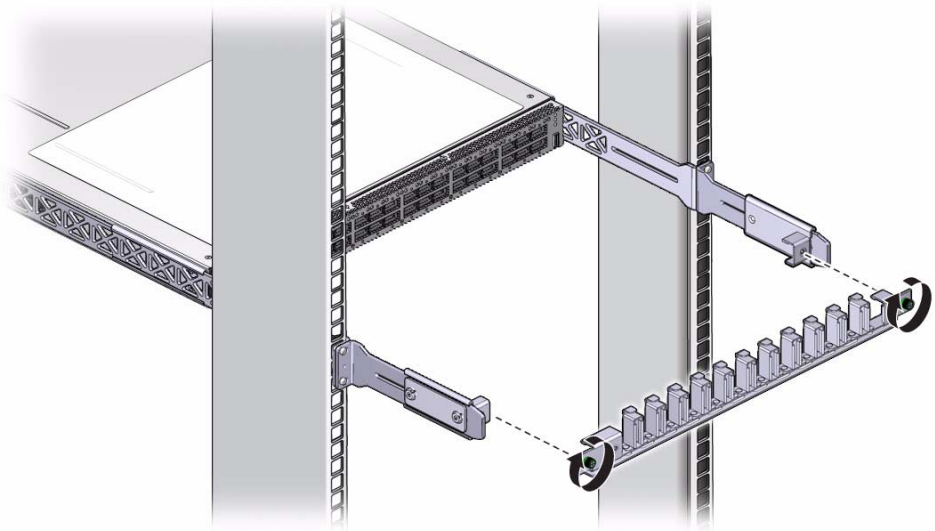


9. Mount the front of the gateway chassis to the front rack posts with two captive nuts and two screws at each side.

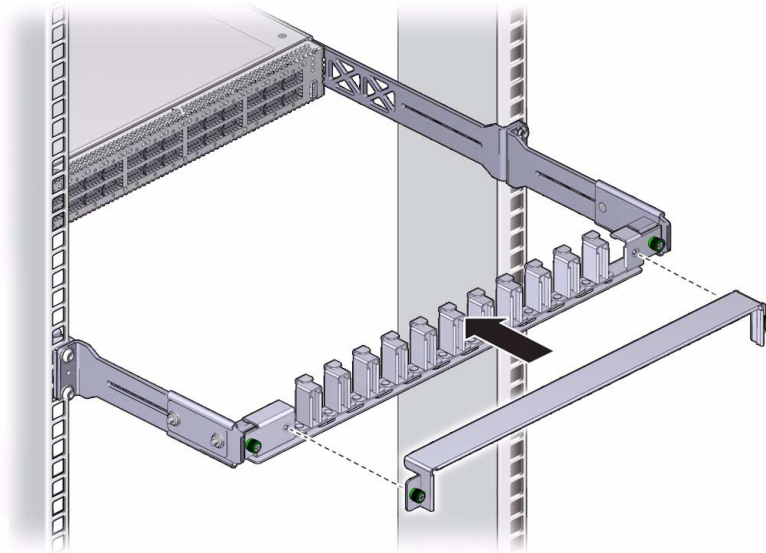
Tighten the screws securely.



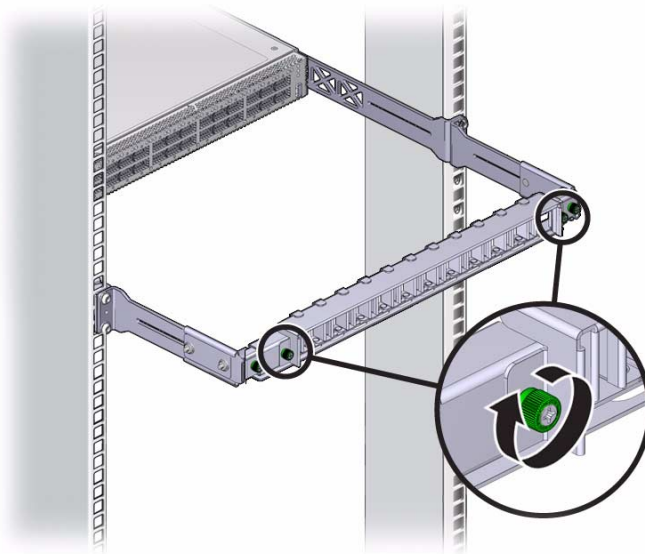
10. Install the cable management bracket to the tabs of the attachment brackets at the rear of the gateway, tightening the thumbscrews on each side of the cable management bracket.



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 35.

Related Information

- [“Powering On the Gateway”](#) on page 35
- [“Connecting Data cables”](#) on page 48
- [“Verifying the InfiniBand Fabric”](#) on page 54

Powering On the Gateway

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

- [“Attach the Management Cables”](#) on page 35
- [“Attach the Power Cords”](#) on page 38
- [“Accessing the Management Controller”](#) on page 40
- [“Verify the Gateway Status”](#) on page 43
- [“Start the Subnet Manager”](#) on page 46

Related Information

- [“Electrical Specifications”](#) on page 3
- [“Routing Service Cables”](#) on page 9
- [“Install the Gateway in the Rack”](#) on page 29
- [“Connecting Data cables”](#) on page 48
- [“Verifying the InfiniBand Fabric”](#) on page 54

▼ Attach the Management Cables

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

The network management connector, labeled NET, is a 100/1000 BASE-T Ethernet interface. This connector is preferred because it permits remote management of the gateway over the Ethernet network.

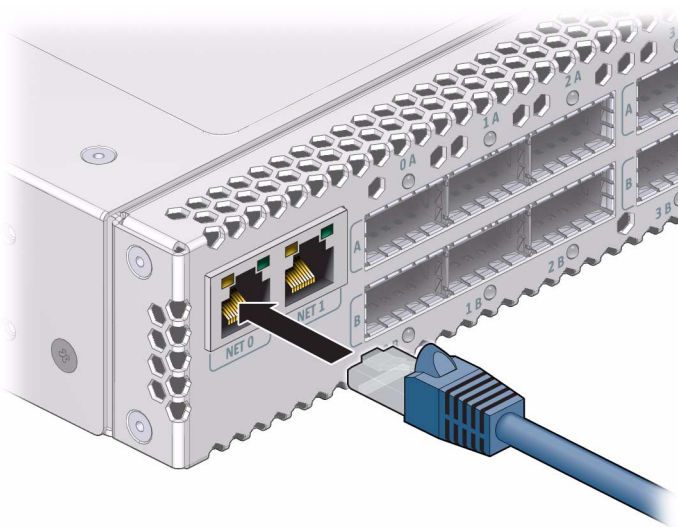
The USB management connector, labeled with the USB symbol, is the second choice for communication with the management controller in the gateway. The management console can be a serial terminal, a system running a TIP connection, or other serial

device that 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 22.

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



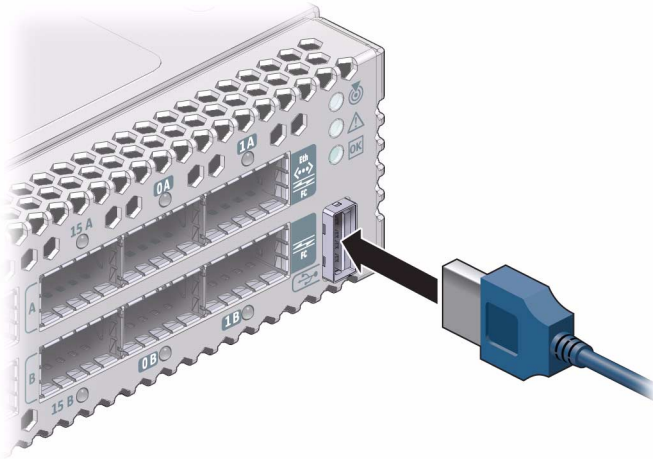
Connections to the management controller are made through DHCP.

3. **Configure your DHCP server with the MAC address of the management controller and to provide a host name and IP address to the gateway.**

The MAC address is printed on the customer information (yellow) sheet on the outside of the gateway shipping carton and on the pull-out tab on the left side front of the gateway 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 gateway’s USB port and a terminal device. This connection provides alternative communication with the management controller. The terminal device must be configured for 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 gateway, or with other systems.
6. Prepare the management console for communication with the management controller.
7. Power on the gateway.
See “Attach the Power Cords” on page 38.

Related Information

- “Network Management Connector and Pins” on page 4
- “USB Management Connector and Pins” on page 5
- “Management Cable Requirements” on page 10
- “Attach the Power Cords” on page 38
- “Accessing the Management Controller” on page 40
- “Verify the Gateway Status” on page 43
- “Start the Subnet Manager” on page 46
- “Attach the Data Cables” on page 48

▼ Attach the Power Cords

The power cords for the gateway ship separately and are specific to the country of installation. See [“Power Cord Requirements” on page 9](#). 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.

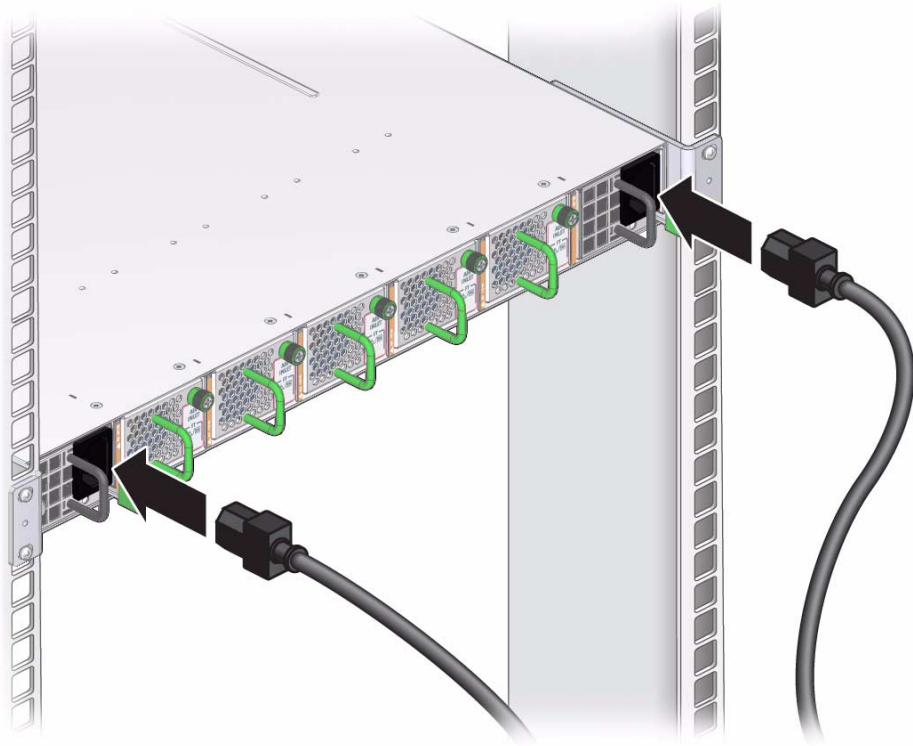
When live power is delivered to the receptacles at the rear of the chassis, standby and main power is made available by the power supplies. When standby power is distributed to the chassis, the management controller is powered on. The main power is supplied for the switch chip and fans.

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

See [“Installation Sequence” on page 22](#).

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 gateway 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 gateway 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. A moment later, the OK LED lights green. The Attention LED should be unlit. See *Gateway Administration*, checking power supply status LEDs.

- 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, and the fan Attention LEDs should be unlit. See *Gateway Administration*, checking fan status LEDs.

9. Verify that the chassis status OK LED lights.

See *Gateway Administration*, checking chassis status LEDs.

10. Access the management controller.

See [“Accessing the Management Controller” on page 40](#).

Related Information

- [“Power Cord Requirements” on page 9](#)
- [“Electrical Specifications” on page 3](#)
- [“Attach the Management Cables” on page 35](#)
- [“Accessing the Management Controller” on page 40](#)
- [“Verify the Gateway Status” on page 43](#)
- [“Start the Subnet Manager” on page 46](#)
- [“Attach the Data Cables” on page 48](#)

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 40
- [“Access the Management Controller From the USB Management Port”](#) on page 41

Related Information

- [“Network Management Connector and Pins”](#) on page 4
- [“USB Management Connector and Pins”](#) on page 5
- [“Management Cable Requirements”](#) on page 10
- [“Attach the Management Cables”](#) on page 35
- [“Attach the Power Cords”](#) on page 38
- [“Verify the Gateway Status”](#) on page 43
- [“Start the Subnet Manager”](#) on page 46

▼ Access the Management Controller From the Network Management Port

Note – The administrator of the gateway 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 22.

- 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 gateway.

See [“Attach the Management Cables”](#) on page 35.

3. Open a 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. Initially, the password is *changeme*.

Note – You can change the *password* at a later time. See *Gateway Administration*, changing the administrator password, 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 gateway status.

See [“Verify the Gateway Status”](#) on page 43.

Related Information

- [“Network Management Connector and Pins”](#) on page 4
- [“Management Cable Requirements”](#) on page 10
- [“Access the Management Controller From the USB Management Port”](#) on page 41

▼ Access the Management Controller From the USB Management Port

Note – The administrator of the gateway 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 22.

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

3. Connect a serial terminal, terminal server, or workstation with a TIP 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. 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 *Gateway Administration*, changing the administrator password, 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 gateway status.

See “[Verify the Gateway Status](#)” on page 43.

Related Information

- “[USB Management Connector and Pins](#)” on page 5
- “[Management Cable Requirements](#)” on page 10

- “Access the Management Controller From the Network Management Port” on page 40

▼ Verify the Gateway Status

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

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

See “Installation Sequence” on page 22.

2. **Check the overall health of the gateway:**

```
# 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 *Gateway Administration*, checking power supply status LEDs, 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 *Gateway Service*, servicing fans.

5. Check the status of the switch chip and BridgeX chips:

```
# checkboot
Switch OK
Bridge-0 OK
Bridge-1 OK
#
```

If in the output of the `checkboot` command a component is *not* OK, there is a problem with that component. Try resetting the component. See *Gateway Administration*, resetting the switch chip and *Gateway Administration*, resetting the BridgeX chips.

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 1.0V = 1.01 V
Measured I4 1.2V = 1.22 V
Measured 2.5V = 2.52 V
Measured V1P2 DIG = 1.17 V
Measured V1P2 AND = 1.16 V
Measured 1.2V BridgeX = 1.21 V
Measured 1.8V = 1.80 V
Measured 1.2V Standby = 1.20 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 45, maxtemperature 45
```

```
Bridge-0 temperature 41, maxtemperature 42
Bridge-1 temperature 43, maxtemperature 44
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
Bridge-0 OK
Bridge-1 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. (Optional) Set the gateway instance numbers.

Note – If there is only one gateway in your InfiniBand fabric, you do not need to perform this step.

If there is more than one gateway in your InfiniBand fabric, you must verify that each gateway's instance number is unique.

a. For each gateway, display its instance number:

```
# setgwinstance --list
No BXM system name set, using 6 last bits of the ip-address, value: 34
#
```

The instance number for this example is 34.

b. If the instance number is a duplicate, change it:

```
# setgwinstance number
```

where number is the instance number, from 0 to 63. For example:

```
# setgwinstance 3
Stopping Bridge Manager.. [ OK ]
Starting Bridge Manager. [ OK ]
#
```

c. Repeat from [Step a](#) for all remaining gateways in the InfiniBand subnet.

8. Once the gateway has an operational status, you can start the Subnet Manager.

See “[Start the Subnet Manager](#)” on page 46.

Related Information

- [Gateway Command Reference](#), showunhealthy command
- [Gateway Command Reference](#), getfanspeed command
- [Gateway Command Reference](#), checkboot command
- [Gateway Command Reference](#), env_test command
- “[Attach the Management Cables](#)” on page 35
- “[Attach the Power Cords](#)” on page 38
- “[Accessing the Management Controller](#)” on page 40
- “[Start the Subnet Manager](#)” on page 46

▼ Start the Subnet Manager

Note – If you do not need either a primary or secondary Subnet Manager running on the gateway, you can skip this procedure and attach the data cables. See “[Attach the Data Cables](#)” on page 48.

Your InfiniBand fabric requires only one primary (or master) Subnet Manager, and it has the highest priority. If any other Subnet Managers exist, they are secondary Subnet Managers, and *must* have a lower priority. You must determine which gateway, switch, or InfiniBand device hosts the primary Subnet Manager, and if there are secondary Subnet Managers. If you have only one gateway in your InfiniBand fabric, and there are no Subnet Managers other than the one within the management controller, you do not need to set the Subnet Manager priority.

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

See “Installation Sequence” on page 22.

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:

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

4. Attach the data cables.

See “Attach the Data Cables” on page 48.

Related Information

- *Gateway Command Reference*, `setsmpriority` command
- *Gateway Command Reference*, `enablesm` command
- “Attach the Management Cables” on page 35
- “Attach the Power Cords” on page 38
- “Accessing the Management Controller” on page 40
- “Verify the Gateway Status” on page 43

Connecting Data cables

After verifying the gateway operational status, you can begin attaching the data cables.

- “Attach the Data Cables” on page 48
- “Check Link Status” on page 54

Related Information

- “Understanding Data Cabling” on page 11
- “Install the Gateway in the Rack” on page 29
- “Powering On the Gateway” on page 35
- “Verifying the InfiniBand Fabric” on page 54

▼ Attach the Data Cables



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

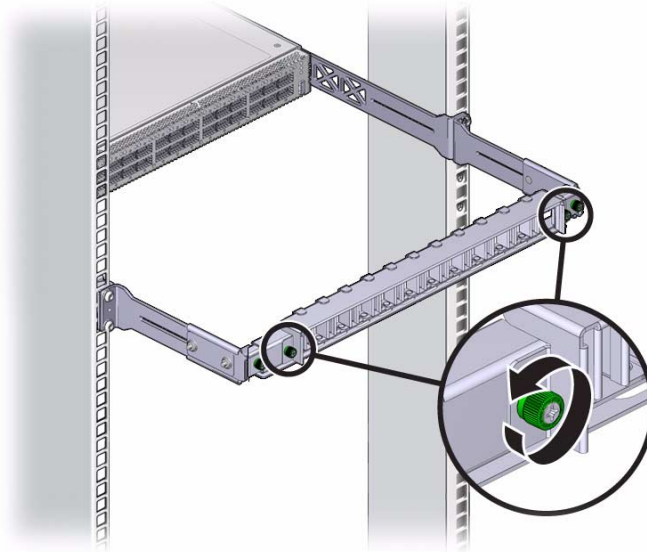
Note – When you install the data cables, connect cables to the lower connectors first, then connect cables to the upper connectors.

Note – Though the illustrations in the following procedure picture only InfiniBand data cables, the process is identical for both InfiniBand data cables and Ethernet splitter data cables.

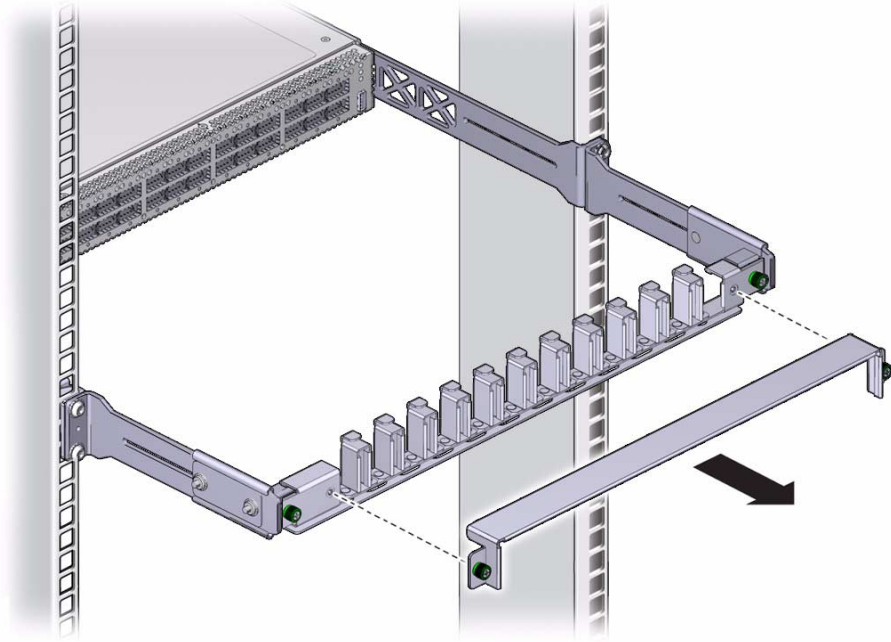
1. **Identify the prerequisite and subsequent installation tasks that you must perform in conjunction with this procedure.**

See “Installation Sequence” on page 22.

2. **Loosen the two captive thumbscrews that secure the cover to the cable management bracket.**



3. **Lift the cover off.**



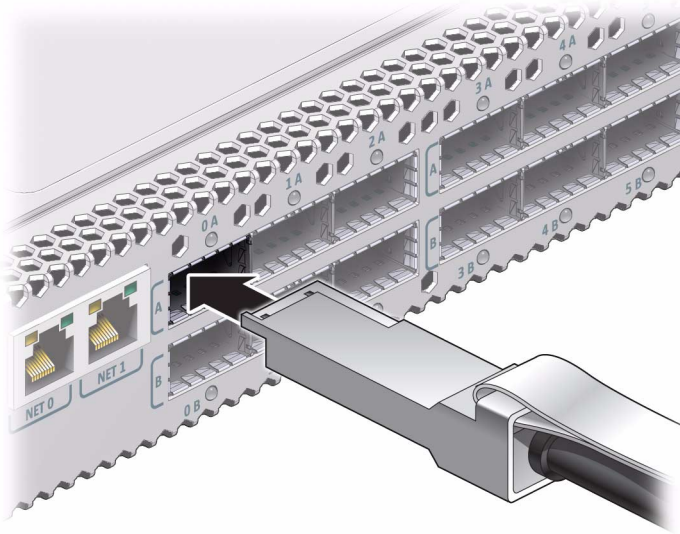
4. Remove the protective cap from the connector and visually inspect the cable connector.

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.

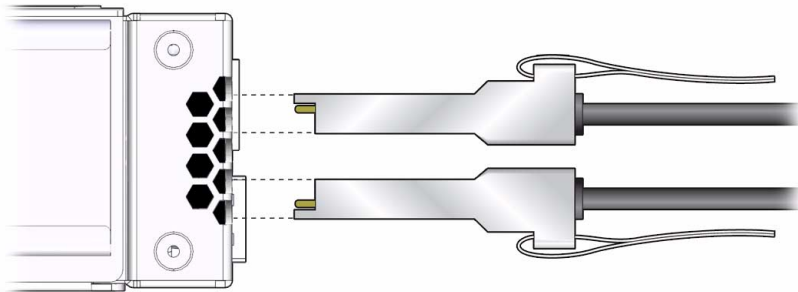
Ensure that the L groove is up for the top row of receptacles, or that the L groove is down for the bottom row of receptacles.



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 *Gateway Service*, identifying the data cable.

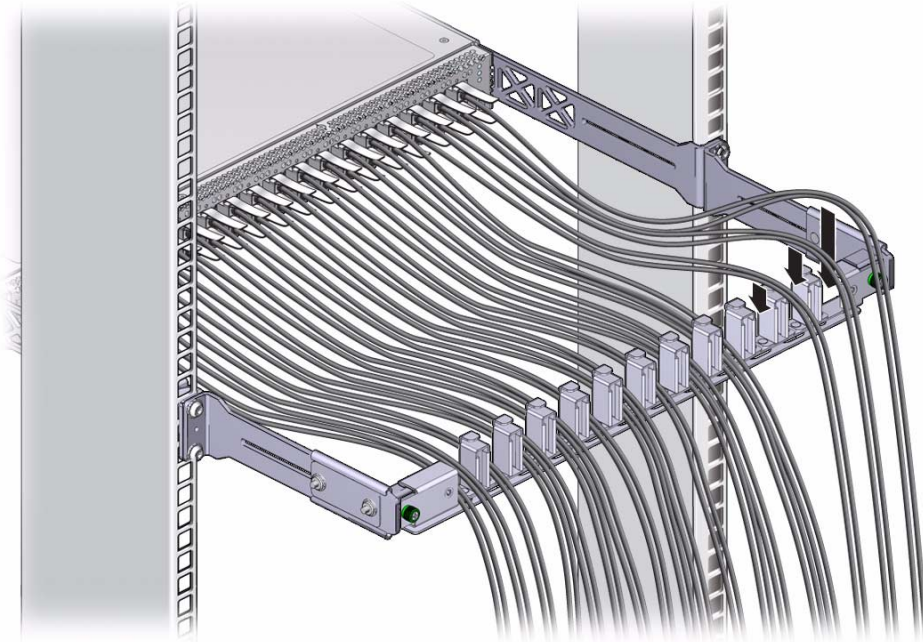
7. Slowly move the connector in.

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

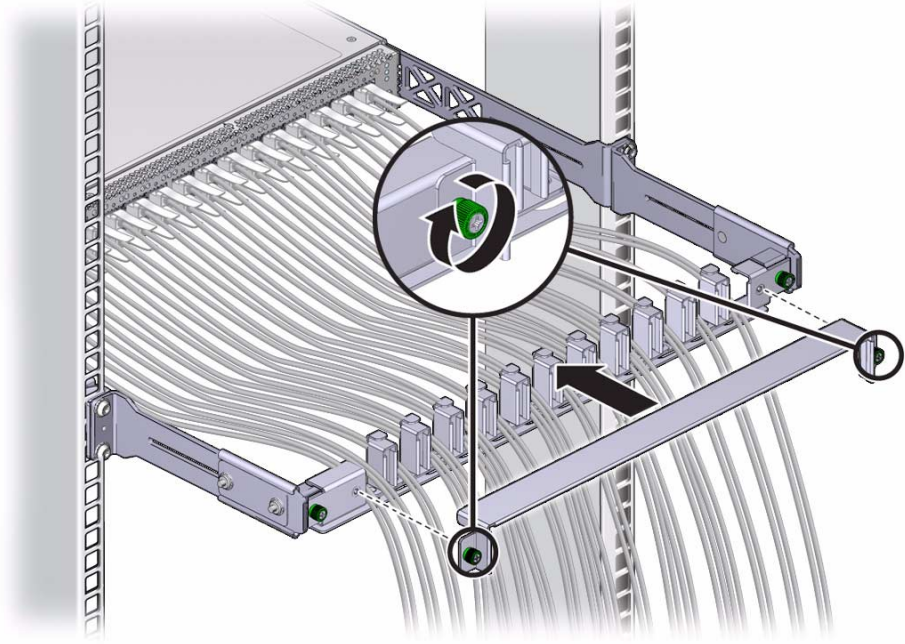


- If the connector stops or binds after about 1/4 in. (5 mm) travel, back out and repeat from [Step 6](#).

- 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, including the Ethernet splitter data cables at connectors 0A and 1A on the right side of the rear panel.
11. Replace the cover for the cable management bracket and tighten the thumbscrews.



12. **Route the data cables so that they do not interfere with other cables, or with servicing the gateway 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 *Gateway Administration*, checking the link status LEDs.
14. **If possible, close the rack doors to maintain EMI compliance.**
15. **Check the link status.**
See “[Check Link Status](#)” on page 54.

Related Information

- “[Understanding Data Cabling](#)” on page 11
- “[Attach the Management Cables](#)” on page 35
- “[Attach the Power Cords](#)” on page 38
- “[Check Link Status](#)” on page 54

▼ 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 22.

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 *Gateway Administration*, enabling a switch chip port and *Gateway Administration*, resetting the switch chip.

3. **Verify the InfiniBand fabric.**

See [“Discover the InfiniBand Fabric Topology”](#) on page 55.

Related Information

- *Gateway Command Reference*, `listlinkup` command
- *Gateway Command Reference*, `enableswitchport` command
- *Gateway Command Reference*, `ibdevreset` command
- [“Verify the Gateway Status”](#) on page 43
- [“Data Cable Cautions”](#) on page 12
- [“Data Cable Guidelines”](#) on page 13
- [“Attach the Data Cables”](#) on page 48

Verifying the InfiniBand Fabric

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

- [“InfiniBand Node Description”](#) on page 55
- [“Discover the InfiniBand Fabric Topology”](#) on page 55
- [“Perform Diagnostics on the InfiniBand Fabric”](#) on page 56
- [“Validate the InfiniBand Fabric and Report Errors”](#) on page 58

Related Information

- [“Install the Gateway in the Rack” on page 29](#)
- [“Powering On the Gateway” on page 35](#)
- [“Connecting Data cables” on page 48](#)

InfiniBand Node Description

In the output of some hardware and InfiniBand commands, the gateway is identified by its node description. The node description is of the following format:

```
SUN IB QDR GW switch hostname.domain
```

where:

- *hostname* is the host name of the management controller.
- *domain* is the fully qualified domain name where the host name resides.

An example node description might be:

```
SUN IB QDR GW mnm34-97.example.com
```

Related Information

- [“Discover the InfiniBand Fabric Topology” on page 55](#)
- [“Perform Diagnostics on the InfiniBand Fabric” on page 56](#)
- [“Validate the InfiniBand Fabric and Report Errors” on page 58](#)

▼ Discover the InfiniBand Fabric Topology

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

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

See [“Installation Sequence” on page 22](#).

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) # "mnm33-43 HCA-1" lid 14 4xQDR

vendid=0x2c9
devid=0x673c
sysimgguid=0x3ba000100e38b
caguid=0x3ba000100e388
Ca 2 "H-0003ba000100e388" # "mnm33-43 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 56.

Related Information

- [Gateway Command Reference, ibnetdiscover](#) command
- [“InfiniBand Node Description”](#) on page 55
- [“Perform Diagnostics on the InfiniBand Fabric”](#) on page 56
- [“Validate the InfiniBand Fabric and Report Errors”](#) on page 58

▼ 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 22.

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 58.

Related Information

- *Gateway Command Reference*, `ibdiagnet` command
- “InfiniBand Node Description” on page 55
- “Discover the InfiniBand Fabric Topology” on page 55
- “Validate the InfiniBand Fabric and Report Errors” on page 58

▼ 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 22.

2. On the management controller, type:

```
# 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, and check the errors a few minutes later with the `ibcheckerrors` command.

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

3. The gateway is installed, however full functionality is not attained until VNICs are configured.

See *Gateway Administration*, administering gateway resources.

Related Information

- *Gateway Command Reference*, `ibcheckerrors` command
- *Gateway Command Reference*, `ibclearerrors` command
- “InfiniBand Node Description” on page 55
- “Discover the InfiniBand Fabric Topology” on page 55

- “Perform Diagnostics on the InfiniBand Fabric” on page 56

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