Oracle® SuperCluster M8 and SuperCluster M7 Installation Guide

Part No: E58634-08
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Oracle SuperCluster M8 and SuperCluster M7 Installation Guide

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Contents

Using This Documentation

- **Overview** – Provides site planning specifications and installation instructions for the Oracle SuperCluster M8, SuperCluster M7, and expansion racks
- **Audience** – Technicians, system administrators, and authorized service providers
- **Required knowledge** – Advanced experience installing and configuring computer hardware

Product Documentation Library

Documentation and resources for this product and related products are available at http://www.oracle.com/goto/sc-m7/docs.

Feedback

Provide feedback about this documentation at http://www.oracle.com/goto/docfeedback.

Installing SuperCluster M8 and SuperCluster M7 Systems

Because Oracle SuperCluster M8 and SuperCluster M7 are engineered systems, comprising various Oracle products that are documented individually, this document only provides installation information that is not described in other documents.

These topics provide an overview and a list of resources for installing SuperCluster M8 and SuperCluster M7 hardware:

Related Information

Hardware Installation Task Overview

This table provides a summary of the installation process that is performed by Oracle service personnel.

Because SuperCluster M8 and SuperCluster M7 comprise various Oracle products that are documented individually, this document only provides installation information that is not described in other documents.

Use this table in conjunction with the installation documents listed in "Hardware Installation Documents" on page 14.

Steps	Links
1. Learn about the system.	
1. Locate documentation. 2. Identify major components. 3. Review the item included in the spares kit.	■ "Hardware Installation Documents" on page 14 ■ "Single-Server Hardware Overview" on page 15 ■ "Dual-Server Hardware Overview" on page 17 ■ "Spares Kit" on page 19
2. Prepare the site.	
1. Ensure that the site meets all the requirements for the system. Specifications for these requirements are listed in the*SPARC M8 and SPARC M7 Servers Installation Guide*: - Physical space, receiving area, and access route - Facility power, circuit breakers, and receptacles - Cooling 2. Review the completed*Oracle SuperCluster M8 and SuperCluster M7 Site Checklists* and *Oracle SuperCluster M8 and SuperCluster M7 Configuration Worksheets*. 3. Review the network requirements.	■ Compute server – *SPARC M8 and SPARC M7 Servers Installation Guide* at: http://docs.oracle.com/cd/E55211_01/ ■ "Network Infrastructure Requirements" on page 43
3. Prepare for installation.	
1. Review the safety precautions, guidelines, site checklists, and site requirements. 2. Gather the tools and equipment needed for installation. 3. Ensure that power intended for the system is disconnected at the facility circuit breakers. 4. Route network drops to the installation area. 5. Prepare DNS for the system	■ "Preparing the Site" on page 21 ■ "Preparing the Networks" on page 41
4. Unpack and place the SuperCluster rack and any optional expansion racks in their intended locations.	
1. Unpack the racks as described in the unpacking guides that are attached to the shipping cartons. 2. Using two or more people, push the system to the allocated space. 3. If additional expansion racks are included (up to 17), position them adjacent to the SuperCluster rack. Note – Due to cable length restrictions, expansion racks must be installed adjacent to the server. 4. Stabilize and level all racks.	■ Compute server – *SPARC M8 and SPARC M7 Servers Installation Guide* at: http://docs.oracle.com/cd/E55211_01/ ■ Expansion racks – *Sun Rack II User's Guide* at: http://docs.oracle.com/cd/E19657-01
5. (Optional) Install any optional components.	

1. Install additional PCIe cards. 2. Install any IB switches that shipped separately (typically installed as spine switches in U1 as required for most configurations). **Note -** For new installations, the IB switch in U1 (spine switch) is installed at the factory. **Note -** Do not connect SuperCluster to any external networks at this time.	■ "Install Optional Fibre Channel PCIe Cards" on page 46 ■ IB switch – *Sun Datacenter InfiniBand Switch 36 HTML Collection for Firmware Version 2.1* at: `http://docs.oracle.com/cd/E36265_01`
6. Apply power to the SuperCluster racks.	

1. Connect all of the rack power cords to the facility power source, routing the power cords either through the top or bottom of the cabinet, and connecting and securing each cord to the rack.
2. Connect the SP serial cables to both SPs.
3. Switch on the facility circuit breakers.
4. Wait several minutes for the SPs to boot.
5. Verify that compute server standby power is on, and that no fault indicators are illuminated.
6. Verify that power is applied to the Ethernet management switch.
7. Verify that power is applied to the IB switches.
8. Either press the Power On buttons, or turn on the storage servers through Oracle ILOM.
9. If the ZFS storage controllers do not start up, press the switches located on the front of the two ZFS storage controllers.
10. Inspect and verify the hardware.
 	
Note - Do not connect SuperCluster to any external networks at this time.
	■ Compute server –
	SPARC M8 and SPARC M7 Servers Installation Guide at:
	`http://docs.oracle.com/cd/E55211_01/`
	■ *Sun Rack II User's Guide* at:
	`http://docs.oracle.com/cd/E19657-01`

7. (If present) Apply power to expansion racks.	
1. Connect the expansion racks to the facility power source, routing the power cord either through the top or bottom of the cabinet. 2. Switch on the facility circuit breakers. 3. Switch on the expansion rack PDU breakers. 4. Wait several minutes for all SPs to boot. 5. Verify that standby power is on, and that no fault indicators are illuminated. 6. Either press the Power On buttons, or turn on the storage servers through Oracle ILOM. 7. Inspect and verify the expansion rack storage hardware.	■ Expansion racks – *Sun Rack II User's Guide* at: `http://docs.oracle.com/cd/E19657-01`
8. (If present) Cable additional SuperCluster racks and expansion racks to the first SuperCluster rack.	
1. Cable additional SuperCluster racks. 2. Cable the expansion racks to SuperCluster and to each other. 3. Route and dress the cables with Velcro ties so that components can be serviced. **Note -** Do not connect SuperCluster to any external networks at this time.	■ "Connecting Multiple SuperCluster M8 or SuperCluster M7 Systems" on page 75 ■ "Connecting Expansion Racks" on page 103
9. Authorized Oracle service personnel configure SuperCluster software according to site requirements.	Contact your Oracle support representative for details.

10. Connect the SuperCluster rack to external networks. 1. Ensure that the default factory installed IP addresses do not conflict with the site IP addresses. 2. Connect the SuperCluster Ethernet management switch to the facility management network. 3. Connect the SuperCluster 10GbE ports to the facility network.	■ "Connect SuperCluster to the Facility Networks" on page 51
11. Log in to one of the SuperCluster nodes. There are a variety of methods you can use to log in to SuperCluster M8 and SuperCluster M7. The method you choose depends on the state of system. Refer to the *SPARC M8 and SPARC M7 Servers Administration Guide* for details.	■ "Hardware Installation Documents" on page 14

Related Information

- "Single-Server Hardware Overview" on page 15
- "Dual-Server Hardware Overview" on page 17
- "Hardware Installation Documents" on page 14

Hardware Installation Documents

Use the documents in this table for detailed installation instructions. For a summary of the installation process, see "Hardware Installation Task Overview" on page 11.

Information	Document	Location
Safety and compliance	*Important Safety Information for Oracle's Hardware Systems* *Oracle SuperCluster M8 and SuperCluster M7 Safety and Compliance Guide*	Hard copy document shipped with SuperCluster M8 and SuperCluster M7 `/opt/oracle/node/doc/E58626_01`
Security	*Oracle SuperCluster M8 and SuperCluster M7 Security Guide*	`/opt/oracle/node/doc/E58626_01`
Late-breaking information	*Oracle SuperCluster M8 and SuperCluster M7 Product Notes*	`/opt/oracle/node/doc/E58626_01`
Site planning specifications, installation preparation, installation procedures, and applying power	Refer to base product documentation: ■ Compute server – *SPARC M8 and SPARC M7 Servers Installation Guide* ■ Expansion racks – This document, *Sun Rack II User's Guide*, and	`http://docs.oracle.com/cd/E55211_01/` "Preparing the Site" on page 21

Information	Document	Location
	Exadata Storage Server Software User's Guide	http://docs.oracle.com/cd/E19657-01 /opt/oracle/cell/doc
	■ ZFS storage appliance – ■ SuperCluster M7: *Oracle ZFS Storage ZS3-ES Installation Guide* ■ SuperCluster M8: *Oracle ZFS Storage ZS5-ES Installation Guide* ■ IB switch – *Sun Datacenter InfiniBand Switch 36 HTML Collection for Firmware Version 2.1*	■ SuperCluster M7: https://docs.oracle.com/cd/E37831_01 ■ SuperCluster M8:https://docs.oracle.com/cd/E59597_01 http://docs.oracle.com/cd/E36265_01
Additional SuperCluster M8 and SuperCluster M7 requirements	*Oracle SuperCluster M8 and SuperCluster M7 Site Checklists*, *Oracle SuperCluster M8 and SuperCluster M7 Configuration Worksheets*	/opt/oracle/node/doc/E58626_01
Preparing the network	This document	“Preparing the Networks” on page 41
Cabling the racks	This document	“Cabling SuperCluster” on page 49
Logging in	*SPARC M8 and SPARC M7 Servers Administration Guide*	http://docs.oracle.com/cd/E55211_01/

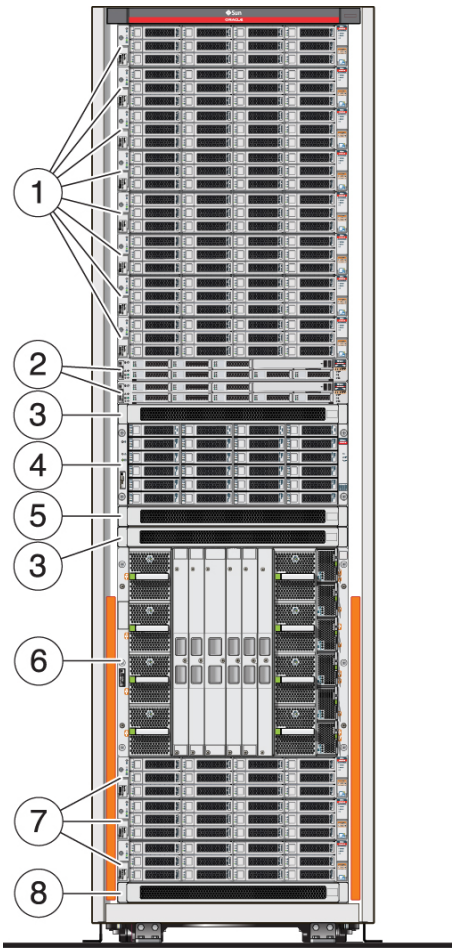
Related Information

- “Single-Server Hardware Overview” on page 15
- “Hardware Installation Task Overview” on page 11

Single-Server Hardware Overview

Installing SuperCluster M8 and SuperCluster M7 hardware involves installing individual products (shown in this illustration), then cabling them together through network switches (see “Cabling SuperCluster” on page 49).

For more detailed configuration information, refer to the *Oracle SuperCluster M8 and SuperCluster M7 Overview Guide*.



No.	Major Component
1	Space for up to 8 additional storage servers (in addition to the standard 3 in lower rack)
2	ZFS storage controllers (2)
3	Sun Datacenter IB Switch 36 leaf switches (2)
4	ZFS Disk Shelf
5	Ethernet management switch
6	SPARC M8 or SPARC M7 server (compute server)
7	Storage servers (3)
8	Optional IB spine switch (1)

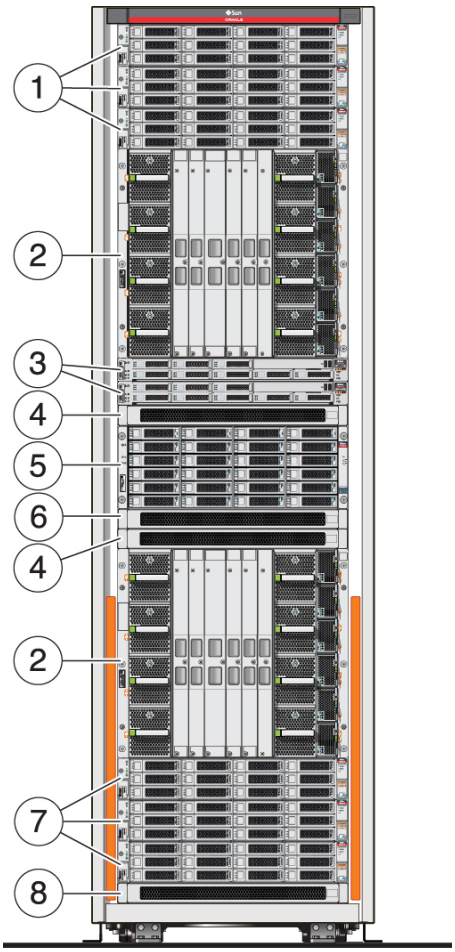
Related Information

- “Hardware Installation Task Overview” on page 11
- “Hardware Installation Documents” on page 14
- “SuperCluster Rack Components” on page 50

Dual-Server Hardware Overview

Installing SuperCluster M8 and SuperCluster M7 hardware involves installing individual products (shown in this illustration), then cabling them together through network switches (see “Cabling SuperCluster” on page 49).

For more detailed configuration information, refer to the *Oracle SuperCluster M8 and SuperCluster M7 Overview Guide*.



No.	Major Component
1	Space for up to 3 additional storage servers
2	SPARC M8 or SPARC M7 servers (compute servers) (2)
3	ZFS storage controllers (2)
4	Sun Datacenter IB Switch 36 leaf switches (2)
5	ZFS Disk Shelf
6	Ethernet management switch
7	Storage servers (3)
8	IB spine switch (1)

No.	Major Component
	(Might not be present in minimum configurations)

Related Information

- “Hardware Installation Task Overview” on page 11
- “Hardware Installation Documents” on page 14
- “SuperCluster Rack Components” on page 50

Spares Kit

SuperCluster systems ship with a spares kit that includes the following components:

- One storage server drive
- One ZFS storage appliance drive
- One Exadata Smart Flash Cache card
- IB cables, used to connect multiple racks together

The type and size of the spare drives varies according to the SuperCluster model.

Store the spares kit in a secure place.

Related Information

- “Hardware Installation Task Overview” on page 11
- “Hardware Installation Documents” on page 14
- “SuperCluster Rack Components” on page 50

Preparing the Site

These topics provide basic server specifications you can use to prepare your site for the installation.

Note - For detailed information on how to prepare the site, refer to the *SPARC M8 and SPARC M7 Servers Installation Guide*. For document access information see "Hardware Installation Documents" on page 14.

Related Information

- "Installing SuperCluster M8 and SuperCluster M7 Systems" on page 11
- "Preparing the Networks" on page 41
- "Cabling SuperCluster" on page 49
- "Connecting Expansion Racks" on page 103

▼ Prepare the Site

1. **Ensure that there is enough space to accommodate each rack.**
   See "Physical Specifications (SuperCluster M8 and Expansion Rack)" on page 22.
2. **Provide required power for each rack.**
   See "Reviewing Power Requirements" on page 25.
3. **Provide proper cooling for each rack.**
   See "Preparing for Cooling" on page 34.

Related Information

- “Physical Specifications (SuperCluster M8 and Expansion Rack)” on page 22
- “Reviewing Power Requirements” on page 25
- “Preparing for Cooling” on page 34
- “Connecting Expansion Racks” on page 103

Physical Specifications (SuperCluster M8 and Expansion Rack)

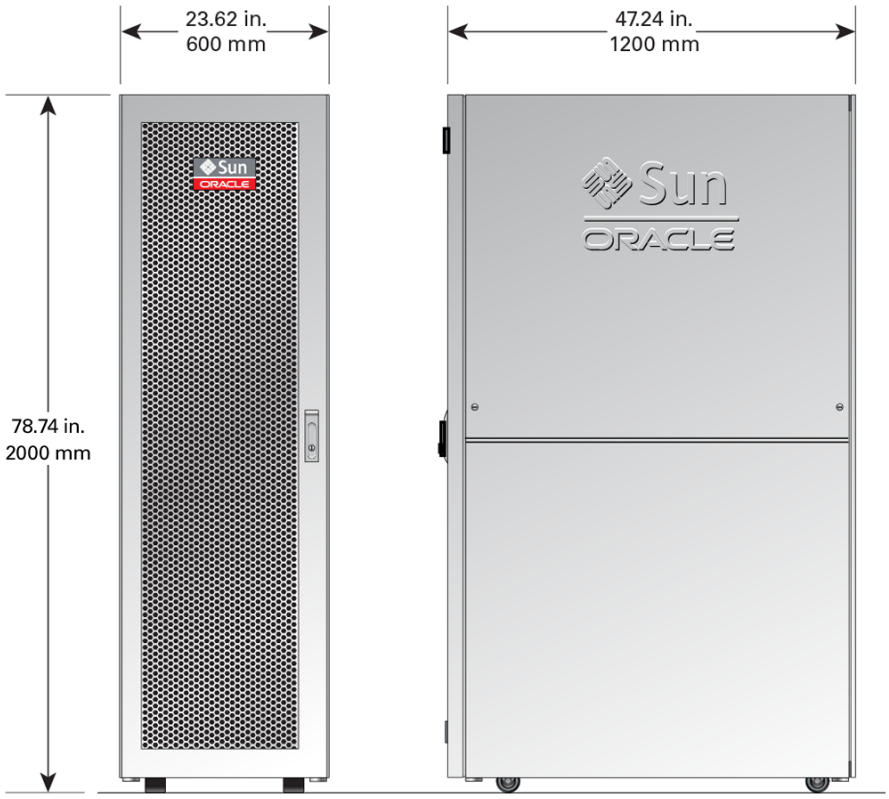


TABLE 1 SuperCluster M8 and Expansion Rack Physical Specifications

No.	Description	English	Metric
1	Height	78.74 in.	2000 mm
2	Width	23.62 in.	600 mm
3	Depth (front door handle to rear door handle)	47.24 in.	1200 mm
	Depth (with doors removed)	44.33 in.	1126 mm
	Shipping package height	85 in.	2159 mm
	Shipping package width	48 in.	1219 mm
	Shipping package depth	62 in.	1575 mm

TABLE 2 Required Clearance

Parameter	English	Metric
Minimum ceiling height	90 in.	2300 mm
Minimum space between top of cabinet and ceiling	36 in.	914 mm
Minimum space in front of rack for installation and service	48.5 in.	1232 mm
Minimum space in back of rack for installation and service	36 in.	914 mm

TABLE 3 SuperCluster M8 Weight Specifications

Product	Weight		Shipping Weight	
	English	Metric	English	Metric
Single compute server with 3 storage servers	1543 lbs	700 kg	1960 lbs	889 kg
Single compute server with 11 storage servers	2043 lbs	927 kg	2460 lbs	1116 kg
Dual compute servers with 6 storage servers	2124 lbs	963 kg	2541 lbs	1153 kg
Expansion rack (quarter-rack), with extreme flash (EF)	804lbs	365 kg	950lbs	431kg
Expansion rack (quarter-rack), with high-capacity drives (HC)	848 lbs	384 kg	848 lbs	384 kg
Individual storage server	EF: 62 lbs	28.1 kg	EF: 62 lbs	28.1 kg
	HC: 73 lbs	33.1 kg	HC: 73 lbs	33.1 kg

Related Information

- “Prepare the Site” on page 21
- “Reviewing Power Requirements” on page 25
- “Preparing for Cooling” on page 34
- “Connecting Expansion Racks” on page 103

Physical Specifications (SuperCluster M7 and Expansion Rack)

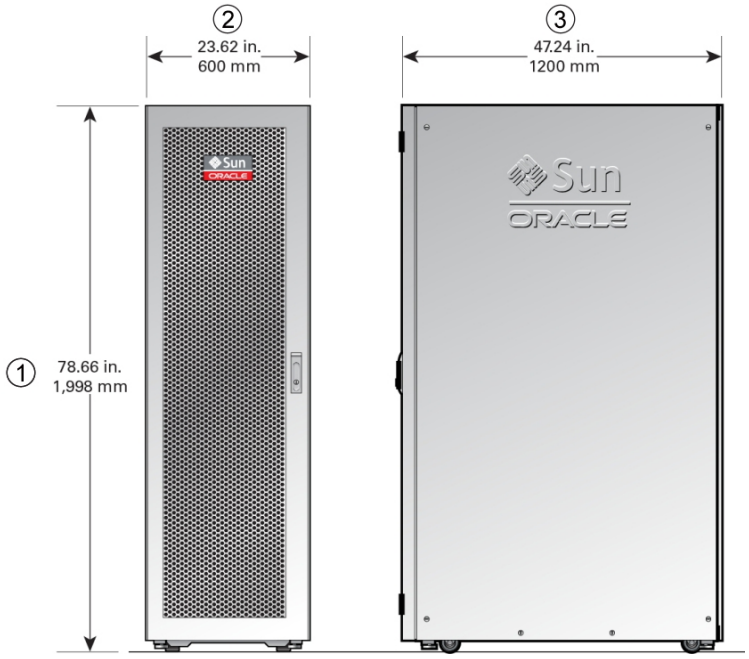


TABLE 4 SuperCluster M7 and Expansion Rack Physical Specifications

No.	Description	English	Metric
1	Height	78.66 in.	1998 mm
2	Width with side panels	23.62 in.	600 mm
3	Depth (front door handle to rear door handle)	47.24 in.	1200 mm
	Depth without doors	43.78 in.	1112 mm
	Shipping package height	85 in.	2159 mm
	Shipping package width	48 in.	1219 mm
	Shipping package depth	62 in.	1575 mm

TABLE 5 Required Clearance

Parameter	English	Metric
Minimum ceiling height	90 in.	2300 mm
Minimum space between top of cabinet and ceiling	36 in.	914 mm
Minimum space in front of rack for installation and service	48.5 in.	1232 mm
Minimum space in back of rack for installation and service	36 in.	914 mm

TABLE 6 SuperCluster M7 Weight Specifications

Product	Weight		Shipping Weight	
	English	Metric	English	Metric
Single compute server with 3 storage servers	1410 lbs	640 kg	1680 lbs	762 kg
Single compute server with 11 storage servers	1886 lbs	855 kg	2150 lbs	975 kg
Dual compute servers with 3 storage servers	1824 lbs	828 kg	2150 lbs	975 kg
Dual compute servers with 6 storage servers	1971 lbs	894 kg	2298 lbs	1042 kg
Expansion rack (quarter-rack), with extreme flash (EF)	804lbs	365 kg	950lbs	431kg
Expansion rack (quarter-rack), with high-capacity drives (HC)	848 lbs	384 kg	848 lbs	384 kg
Shipping weight	994lbs	451kg	994lbs	451kg
Individual storage server	EF: 62 lbs	28.1 kg	EF: 62 lbs	28.1 kg
	HC: 73 lbs	33.1 kg	HC: 73 lbs	33.1 kg

Related Information

- “Prepare the Site” on page 21
- “Reviewing Power Requirements” on page 25
- “Preparing for Cooling” on page 34
- “Connecting Expansion Racks” on page 103

Reviewing Power Requirements

These topics list the expansion rack power requirements.

- “Power Consumption” on page 26
- “Facility Power Requirements” on page 27
- “Grounding Requirements” on page 27

- "SuperCluster M8 and SuperCluster M7 PDU Power Specifications" on page 28
- "Expansion Rack PDU Power Specifications" on page 30
- "Facility Power Requirements" on page 31
- "Reviewing PDU Thresholds" on page 32

Related Information

- "Prepare the Site" on page 21
- "Physical Specifications (SuperCluster M8 and Expansion Rack)" on page 22
- "Preparing for Cooling" on page 34
- "Connecting Expansion Racks" on page 103

Power Consumption

These tables describe power consumption of SuperCluster M8, SuperCluster M7 and expansion racks.

These are measured values and not the rated power for the rack. For rated power specifications, see "SuperCluster M8 and SuperCluster M7 PDU Power Specifications" on page 28 and "Expansion Rack PDU Power Specifications" on page 30.

TABLE 7 SuperCluster M8

Product		KW	kVA
Single compute server with 3 storage servers	Maximum	12,523	13,182
	Typical	9,969	10,494
Single compute server with 11 storage servers	Maximum	17,153	18,056
	Typical	13,542	14,255
Dual compute servers with 6 storage servers	Maximum	22,693	23,887
	Typical	17,828	18,767

TABLE 8 SuperCluster M7

Product		W	VA
Single compute server with 3 storage servers	Maximum	12,088	12,724
	Typical	8,419	8,862

Product		W	VA
Single compute server with 11 storage servers	Maximum	15,888	16,724
	Typical	12,874	13,552
Dual compute servers with 3 storage servers	Maximum	20,258	21,324
	Typical	17,174	18,078
Dual compute servers with 6 storage servers	Maximum	21,683	22,824
	Typical	18,126	19,080

TABLE 9 Expansion Rack

Product		kW	kVA
EF quarter rack	Maximum	3.6	3.7
	Typical	2.5	2.6
HC quarter rack	Maximum	3.4	3.4
	Typical	2.4	2.4
Individual EF storage server	Maximum	.6	.6
	Typical	.4	.4
Individual HC storage server	Maximum	.5	.5
	Typical	.4	.4

Facility Power Requirements

Provide a separate circuit breaker for each power cord.

Use dedicated AC breaker panels for all power circuits that supply power to the PDU. Breaker switches and breaker panels should not be shared with other high-powered equipment.

Balance the power load between AC supply branch circuits.

To protect the rack from electrical fluctuations and interruptions, you should have a dedicated power distribution system, an uninterruptible power supply (UPS), power-conditioning equipment, and lightning arresters.

Grounding Requirements

Always connect the cords to grounded power outlets. Computer equipment requires electrical circuits to be grounded to the Earth.

Because different grounding methods vary by locality, refer to documentation such as IEC documents for the correct grounding method. Ensure that the facility administrator or qualified electrical engineer verifies the grounding method for the building, and performs the grounding work.

SuperCluster M8 and SuperCluster M7 PDU Power Specifications

When ordering SuperCluster M8 or SuperCluster M7, you must provide two specifications for the racks:

- Low or high voltage
- Single- or three-phase power

Use one of these tables to identify the PDU power specifications for your type of rack.

TABLE 10 Low-Voltage, Single-Phase PDUs

Specification	Requirement for Each PDU
Voltage	200 to 240 VAC
Frequency	50/60 Hz
Current	35.4A max. per input
Power rating	22 kVA
Output current	120A (6 x 20A)
Outlets	42 x C13, 6 x C19
Outlet groups	6
Group protection (UL489 2-pole circuit breaker)	20A
Datacenter receptacle	Hubbell CS8264C
Number of inputs	3 x 50A 1ph

TABLE 11 Low-Voltage, Three-Phase PDUs

Specification	Requirement for Each PDU
Voltage	200 to 208 VAC 3ph
Frequency	50/60 Hz
Current	34.6A max. per phase
Power rating	25 kVA
Output current	120A (6 x 20A)

Specification	Requirement for Each PDU
Outlets	42 x C13, 6 x C19
Outlet groups	6
Group protection (UL489 2-pole circuit breaker)	20A
Datacenter receptacle	IEC309 60A 4-pin 250VAC 3ph IP67
Number of inputs	2 x 60A 3ph

TABLE 12 High-Voltage, Single-Phase PDUs

Specification	Requirement for Each PDU
Voltage	220 to 240 VAC
Frequency	50/60 Hz
Current	32A maximum per input
Power rating	22 kVA
Output current	96A (3 x 32A)
Outlets	42 x C13, 6 x C19
Outlet groups	6
Group protection (UL489 1-pole circuit breaker)	20A
Datacenter receptacle	IEC 60309 32A with 3-pin 250 VAC IP44
Number of inputs	3x32A 1ph

TABLE 13 High-Voltage, Three-Phase PDUs

Specification	Requirement for Each PDU
Voltage	220/380 to 240/415 VAC 3ph
Frequency	50/60 Hz
Current	18A maximum per input
Power rating	25 kVA
Output current	109A (6 x 18.1A)
Outlets	42 x C13, 6 x C19
Outlet groups	6
Group protection (UL489 1-pole circuit breaker)	20A
Datacenter receptacle	IEC309 32A 5-pin 230/400V 3ph IP44
Number of inputs	2 x 25A 3ph

Related Information

- “Facility Power Requirements” on page 31
- “Expansion Rack PDU Power Specifications” on page 30

- "Reviewing PDU Thresholds" on page 32

Expansion Rack PDU Power Specifications

Use one of these tables to identify the PDU power specifications for your type of expansion rack.

TABLE 14 Low-Voltage, Single-Phase PDUs

Specification	Requirement for Each PDU
Voltage	200 to 240 VAC
Frequency	50/60 Hz
Current	24A maximum per input
Power rating (11 or fewer storage servers)	15 kVA
Output current	72A (3 inputs x 24A)
Outlets	42 x C13, 6 x C19
Outlet groups	6
Group protection (UL489 2-pole circuit breaker)	20A
Datacenter receptacle	NEMA L6-30R

TABLE 15 Low-Voltage, Three-Phase PDUs

Specification	Requirement for Each PDU
Voltage	200 to 220 VAC
Frequency	50/60 Hz
Current	40A maximum per phase
Power rating	15 kVA
Output current	69.3A (3 x 23.1A)
Outlets	42 x C13, 6 x C19
Outlet groups	6
Group protection (UL489 2-pole circuit breaker)	20A
Datacenter receptacle	IEC 60309 60A 4-pin 250 VAC three-phase IP67

TABLE 16 High-Voltage, Single-Phase PDUs

Specification	Requirement for Each PDU
Voltage	220 to 240 VAC
Frequency	50/60 Hz
Current	32A maximum per input

Specification	Requirement for Each PDU
Power rating	22 kVA
Output current	96A (3 x 32A)
Outlets	42 x C13, 6 x C19
Outlet groups	6
Group protection (UL489 1-pole circuit breaker)	20A
Datacenter receptacle	IEC 60309 32A with 3-pin 250 VAC IP44

TABLE 17 High-Voltage, Three-Phase PDUs

Specification	Requirement for Each PDU
Voltage	220/380 to 240/415 VAC 3 ph
Frequency	50/60 Hz
Current	25A maximum per input
Power rating	15 kVA
Output current	62.7A (3 x 20.9A)
Outlets	42 x C13, 6 x C19
Outlet groups	6
Group protection (UL489 1-pole circuit breaker)	20A
Datacenter receptacle	IEC 60309 32A with 5-pin 230/400V, three-phase IP44

Related Information

- “Facility Power Requirements” on page 31
- “SuperCluster M8 and SuperCluster M7 PDU Power Specifications” on page 28
- “Reviewing PDU Thresholds” on page 32

Facility Power Requirements

Electrical work and installations must comply with applicable local, state, or national electrical codes. Contact your facilities manager or qualified electrician to determine what type of power is supplied to the building.

To prevent catastrophic failures, design the input power sources to ensure that adequate power is provided to the PDUs.

In the United States and Canada, ensure that the overall system AC input current load does not exceed 80 percent of the branch circuit AC current rating.

When planning for power distribution requirements, balance the power load between available AC supply branch circuits.

The installation site AC power receptacle must be within 6.6 feet (2m) of the rack.

Circuit Breaker Requirements

Provide dedicated AC breaker panels for all power circuits that supply power to the racks.

In addition to circuit breakers, provide a stable power source, such as a UPS, to reduce the possibility of component failures. If computer equipment is subjected to repeated power interruptions and fluctuations, then it is susceptible to a higher rate of component failure.

Grounding Guidelines

Electrical circuits must be grounded to the earth.

The racks are shipped with grounding-type power cords. Always connect the cords to grounded power outlets. Because different grounding methods are used, depending on location, check the grounding type. Also refer to documentation, such as IEC documents, for the correct grounding method. Ensure that the facility administrator or qualified electrical engineer verifies the grounding method for the building, and performs the grounding work.

Reviewing PDU Thresholds

This section provides the default PDU current thresholds for warnings and alarms for several SuperCluster M8 and SuperCluster M7 configurations.

You can also view the values by accessing the PDU metering unit as described in the *Sun Rack II Power Distribution Units User's Guide*. To access this guide, see “Hardware Installation Documents” on page 14.

View the PDU thresholds and alarm values based on the configuration of SuperCluster M8 or SuperCluster M7:

- “PDU Thresholds (Single- and Dual-Server Models With 3 Storage Servers)” on page 33
- “PDU Thresholds (Single-Server Model With 11 Storage Servers)” on page 33
- “PDU Thresholds (Dual-Server Model With 6 Storage Servers)” on page 34

PDU Thresholds (Single- and Dual-Server Models With 3 Storage Servers)

TABLE 18 22 kVA Single-Phase PDUs

PDU A	PDU B	Low Voltage Warning (Amps)	Low Voltage Alarm (Amps)	High Voltage Warning (Amps)	High Voltage Alarm (Amps)
M1-3	M1-1	3	4	3	4
M1-2	M1-2	18	23	17	21
M1-1	M1-3	29	36	26	32

TABLE 19 24 kVA 3-Phase PDUs

PDU A	PDU B	Low Voltage Warning (Amps)	Low Voltage Alarm (Amps)	High Voltage Warning (Amps)	High Voltage Alarm (Amps)
M2-3	M1-3	3	4	0	1
M2-2	M1-2	8	10	3	4
M2-1	M1-1	5	7	6	8
M1-3	M2-3	24	31	13	16
M1-2	M2-2	24	30	13	17
M1-1	M2-1	23	30	12	16

PDU Thresholds (Single-Server Model With 11 Storage Servers)

TABLE 20 22 kVA Single-Phase PDUs

PDU A	PDU B	Low Voltage Warning (Amps)	Low Voltage Alarm (Amps)	High Voltage Warning (Amps)	High Voltage Alarm (Amps)
M1-3	M1-1	20	25	18	23
M1-2	M1-2	21	26	19	24
M1-1	M1-3	29	36	26	32

TABLE 21 24 kVA 3-Phase PDUs

PDU A	PDU B	Low Voltage Warning (Amps)	Low Voltage Alarm (Amps)	High Voltage Warning (Amps)	High Voltage Alarm (Amps)
M2-3	M1-3	17	22	9	12

PDU A	PDU B	Low Voltage Warning (Amps)	Low Voltage Alarm (Amps)	High Voltage Warning (Amps)	High Voltage Alarm (Amps)
M2-2	M1-2	16	20	9	12
M2-1	M1-1	16	20	8	10
M1-3	M2-3	24	31	13	16
M1-2	M2-2	24	30	13	17
M1-1	M2-1	23	30	12	16

PDU Thresholds (Dual-Server Model With 6 Storage Servers)

TABLE 22 22 kVA Single-Phase PDUs

PDU A	PDU B	Low Voltage Warning (Amps)	Low Voltage Alarm (Amps)	High Voltage Warning (Amps)	High Voltage Alarm (Amps)
M1-3	M1-1	28	36	26	32
M1-2	M1-2	27	35	25	32
M1-1	M1-3	29	36	26	32

TABLE 23 24 kVA 3-Phase PDUs

PDU A	PDU B	Low Voltage Warning (Amps)	Low Voltage Alarm (Amps)	High Voltage Warning (Amps)	High Voltage Alarm (Amps)
M2-3	M1-3	25	31	13	17
M2-2	M1-2	25	32	13	17
M2-1	M1-1	25	32	14	18
M1-3	M2-3	24	31	13	16
M1-2	M2-2	24	30	13	17
M1-1	M2-1	23	30	12	16

Preparing for Cooling

These topics describe how to prepare the site with adequate cooling.

- “Heat Dissipation Specifications” on page 35
- “Airflow Requirements” on page 36
- “Perforated Floor Tiles” on page 39

- “Environmental Specifications” on page 39

Related Information

- “Prepare the Site” on page 21
- “Physical Specifications (SuperCluster M8 and Expansion Rack)” on page 22
- “Reviewing Power Requirements” on page 25
- “Connecting Expansion Racks” on page 103

Heat Dissipation Specifications

TABLE 24 SuperCluster M8 Rack Specifications

Configuration		BTU/Hour	Kj/Hour
Single compute server with 3 storage servers	Maximum	44,978	47,407
	Typical	35,807	37,740
Single compute server with 11 storage servers	Maximum	61,609	64,936
	Typical	48,639	51,265
Dual compute server with 6 storage servers	Maximum	81,505	85,906
	Typical	64,034	67,492

TABLE 25 SuperCluster M7 Rack Specifications

Configuration		BTU/Hour	Kj/Hour
Single compute server with 3 storage servers	Maximum	43,416	45,780
	Typical	30,238	31,871
Single compute server with 11 storage servers	Maximum	57,064	60,145
	Typical	46,241	48,738
Dual compute server with 3 storage servers	Maximum	72,760	76,689
	Typical	61,684	65,015
Dual compute server with 6 storage servers	Maximum	77,878	82,083
	Typical	65,103	68,618

TABLE 26 Expansion Rack Specifications

Configuration		BTU/Hour	Kj/Hour
EF quarter rack	Maximum	12,362	13,042

Configuration		BTU/Hour	Kj/Hour
	Typical	8,654	9,129
HC quarter rack	Maximum	11,516	12,149
	Typical	8,061	8,505
Individual EF storage server	Maximum	2,037	2,149
	Typical	1,426	1,504
Individual HC storage server	Maximum	1,825	1,926
	Typical	1,278	1,348

Related Information

- “Airflow Requirements” on page 36
- “Perforated Floor Tiles” on page 39
- “Environmental Specifications” on page 39

Airflow Requirements

In order to cool the system properly, ensure that adequate airflow travels through the racks.

Caution - Do not restrict the movement of cool air from the air conditioner to the rack, or the movement of hot air out of the rear of the rack.

Observe these requirements:

- Allow a minimum clearance of 48.5 inches (1232 mm) at the front of the rack, and 36 inches (914 mm) at the rear of the rack for ventilation. There is no airflow requirement for the left and right sides, or the top of the rack.
- If the rack is not completely filled with components, cover the empty sections with filler panels.

FIGURE 1 Direction of Airflow Is Front to Back

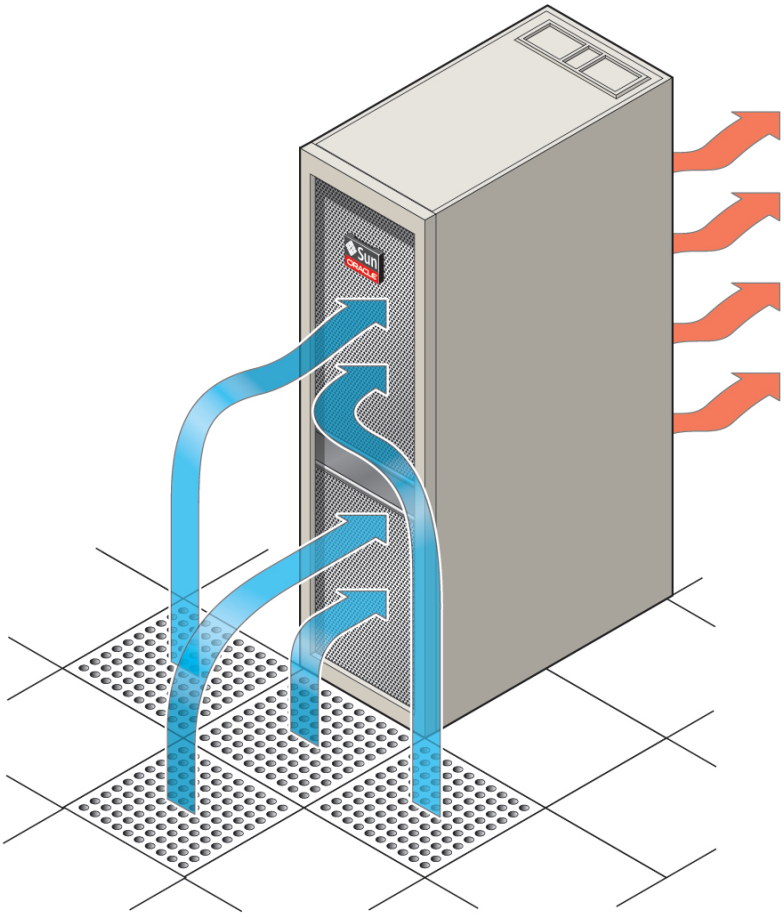


TABLE 27 SuperCluster M8 Airflow

Configuration		Approx. CFM
Single compute server with 3 storage servers	Maximum	2,082
	Typical	1,658

Configuration		Approx. CFM
Single compute server with 11 storage servers	Maximum	2,852
	Typical	2,252
Dual compute server with 6 storage servers	Maximum	3,773
	Typical	2,965

TABLE 28 SuperCluster M7 Airflow

Configuration		Approx. CFM
Single compute server with 3 storage servers	Maximum	2,010
	Typical	1,400
Single compute server with 11 storage servers	Maximum	2,642
	Typical	2,141
Dual compute server with 3 storage servers	Maximum	3,369
	Typical	2,865
Dual compute server with 6 storage servers	Maximum	3,605
	Typical	3,014

TABLE 29 Expansion Rack Airflow

Configuration		Approximate CFM
Expansion rack, EF quarter rack	Maximum	572
	Typical	401
Expansion rack, HC quarter rack	Maximum	533
	Typical	373
Individual EF storage server	Maximum	94
	Typical	66
Individual HC storage server	Maximum	85
	Typical	59

Related Information

- “Heat Dissipation Specifications” on page 35

- “Perforated Floor Tiles” on page 39
- “Environmental Specifications” on page 39

Perforated Floor Tiles

If you install the system on a raised floor, use perforated tiles in front of the rack to supply cold air to the system. Each tile should support an airflow of approximately 400 CFM.

Perforated tiles can be arranged in any order in front of the rack, as long as cold air from the tiles can flow into the rack.

This table lists the recommended number of floor tiles.

Rack	Number of Tiles
Dual compute server models	6
Single compute server models	4
Expansion Rack, Quarter rack	2

Related Information

- “Heat Dissipation Specifications” on page 35
- “Airflow Requirements” on page 36
- “Environmental Specifications” on page 39

Environmental Specifications

Condition	Operating Requirement	Nonoperating Requirement	Comments
Temperature	5 to 32°C (41 to 89.6°F)	-40 to 70°C (-40 to 158°F)	For optimal rack cooling, use data center temperatures from 21 to 23°C (70 to 74°F).
Relative humidity	10 to 90% relative humidity, noncondensing	Up to 93% relative humidity	For optimal data center rack cooling, 45 to 50%, noncondensing.
Altitude	3048 m (10000 ft.) maximum	12000 m (40000 ft)	Ambient temperature is reduced by 1 degree Celsius per 300m above 900m altitude above sea level.

Related Information

- “Heat Dissipation Specifications” on page 35
- “Airflow Requirements” on page 36
- “Perforated Floor Tiles” on page 39

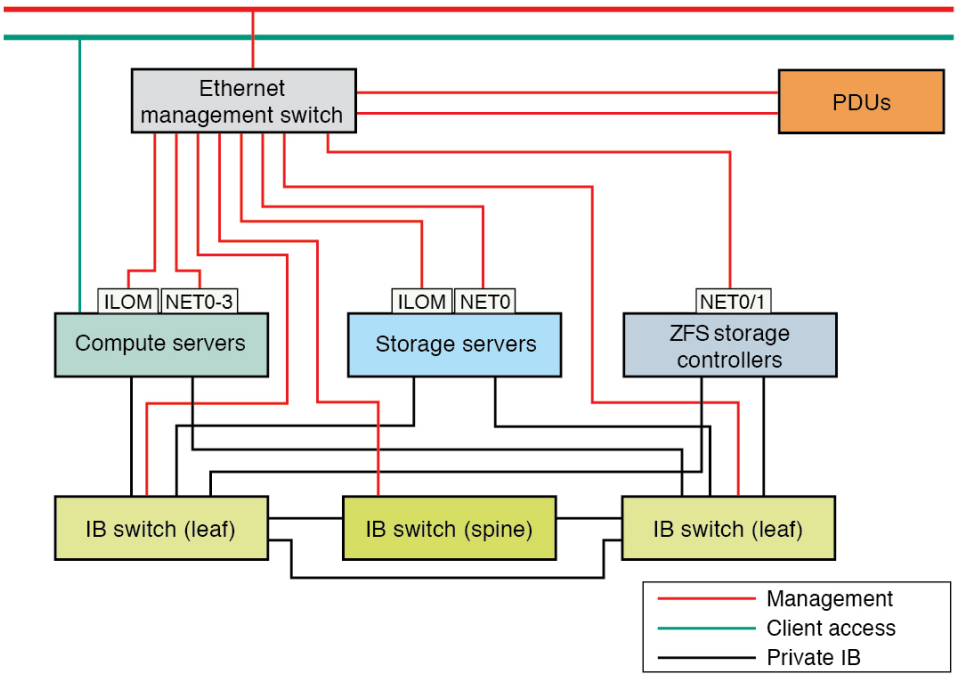
Preparing the Networks

These topics describe how to prepare the network.

Related Information

- “Installing SuperCluster M8 and SuperCluster M7 Systems” on page 11
- “Preparing the Site” on page 21
- “Cabling SuperCluster” on page 49
- “Connecting Expansion Racks” on page 103

Network Topology



Each network must be on a distinct and separate subnet from the others.

- **Client access network** – Connects SuperCluster to your existing client network and provides client access to the system. Database applications access the database through this network using SCAN and Oracle RAC VIP addresses.
- **Management network** – Connects your existing management network to SuperCluster and is used for administrative access. This network consists of the servers, SPs, and IB switches connected through the Ethernet management switch. There is one uplink from the Ethernet management switch in the rack to your existing management network.

  Each storage server provides two network interfaces for management. The 1GbE host management interface provides management access to the OS, and the NET MGT port provides access to Oracle ILOM.
- **Private IB network** – Connects the storage servers and ZFS storage controllers to the compute servers through the IB switches. This nonrouting network is internal to SuperCluster M8 or SuperCluster M7 and does not connect to your existing network.

- **(Optional and not shown) Serial access to Oracle ILOM** – Connects the compute server SP SER MGT ports to your terminal server (or equivalent) for direct access to the Oracle ILOM CLI.

Related Information

- *Oracle SuperCluster M8 and SuperCluster M7 Overview Guide*
- "Network Infrastructure Requirements" on page 43
- "Connect SuperCluster to the Facility Networks" on page 51
- "Prepare DNS" on page 47

Network Infrastructure Requirements

The exact network infrastructure requirements depend on the domain and network configuration that was specified in the Configuration Worksheets for your SuperCluster.

The installation site must provide these network infrastructure items:

- Client access network.

  The mandatory (and if desired, optional) client network connections, must be made prior to the initialization of the SuperCluster Virtual Assistant. In most cases, the network configuration cannot be changed after the initialization of the assistant.

  All root domain client access network resources are managed after the installation using the SuperCluster Virtual Assistant to assign resources to I/O Domains.

  Application and Database Domains client network resources are configured during the installation based on specifications in the Configuration Worksheets.

  - **SuperCluster M7** – The default client network interface is provided by one dual-port 10GbE NIC per CMIOU. Each 10GbE NIC includes transceivers and a 4-way splitter cable.

    For client network planning purposes:

    Mandatory connections – Each dedicated domain has two connections to the facility's client network.

    Optional connections – Each dedicated domain can have an two additional connections (for a total of four connections) to the facility's client network.
  - **SuperCluster M8** – The default client network interface is provided by one quad-port 10bE NIC per CMIOU. Each 10GbE NIC includes transceivers and two 2-way

splitter cables. This interface has two physical ports, each connected to a splitter cable providing two connectors that make up a port pair.

All root domains in a PDomain must be cabled identically.

For client network planning purposes:

Mandatory connections – For each dedicated domain, both cables in port pair 1 must be connected to the facility client network.

Optional connections – You can connect port pair 2 to the same client network or to a different network if physical network isolation is needed.

- 10GbE switch for connectivity from the compute server 10GbE ports to your client access network.

  You can use the provided transceivers and optical cables, or use your own transceivers and cables. See "Connect SuperCluster to the Facility Networks" on page 51.

Note - At the time of installation, if you do not have a 10GbE client access network infrastructure set up at the site, you must provide a 10GbE network switch that SuperCluster can connect to, even if the network speed drops from 10Gb to 1Gb on the other side of the switch.

- (If additional expansion cabinets are included) Adequate space to install the all of the cabinets adjacent to each other.

  Due to cable length restrictions, expansion racks must be installed adjacent to the SuperCluster rack.
- (If additional expansion cabinets are included) Adequate space above or below the racks to accommodate rack-to-rack cabling.

Note - If your installation site cannot accommodate these restrictions, you can order longer IB cables (10m or longer) and replace the Ethernet cables with industry standard cables in appropriate lengths. See "Cabling SuperCluster" on page 49. Contact your sales representative for ordering details.

Related Information

- *Oracle SuperCluster M8 and SuperCluster M7 Configuration Worksheets*
- "Network Topology" on page 42
- "Connect SuperCluster to the Facility Networks" on page 51
- "Prepare DNS" on page 47

Installing Optional Fibre Channel PCIe Cards

These topics provide information about optional Fibre Channel PCIe cards.

Fibre Channel PCIe Card Overview

Note - The optional Fibre Channel PCIe cards are not included in standard configurations and must be purchased separately.

These cards are supported:

- StorageTek 8 Gb* and 16 Gb FC PCI-Express HBA, Qlogic
- StorageTek 8 Gb* and 16 Gb FC PCI-Express HBA, Emulex

Fibre Channel PCIe cards facilitate migration of data from legacy storage subsystems to these SuperCluster M8 and SuperCluster M7 subsystems:

- Storage servers for Database Domains
- SAN-based storage for Application Domains

The optional Fibre Channel PCIe cards can be installed in CMIOUs in any PCIe card slot 1 that is not populated by a 1GbE NIC. However, for a SuperCluster system with I/O Domains, there are software and firmware requirements, and slot dependencies. For details, refer to MOS document 2180265.1 at `https://support.oracle.com`.

Caution - PCIe cards are not hot-pluggable in SuperCluster M8 or SuperCluster M7. Plan a shutdown of the physical domain to add PCIe cards. For shutdown instructions, refer to the *Oracle SuperCluster M8 and SuperCluster M7 Administration Guide*.

Once you have installed the optional Fibre Channel PCIe card, it will be associated with a specific domain, depending on the slot it was installed in and your domain configuration. Refer to the *Oracle SuperCluster M8 and SuperCluster M7 Overview Guide* for more information.

Note the following restrictions when using the optional Fibre Channel PCIe cards:

- When installed in slots associated with Application Domains, the Fibre Channel PCIe cards can be used for any purpose, including database file storage for supported databases other than Oracle Database 11gR2.

- When installed in slots associated with Database Domains, the Fibre Channel PCIe cards can be used for data migration only, and not for storage of Oracle Database 11gR2 data.
- Oracle discourages the use of additional network interfaces based on the GbE ports on the Fibre Channel PCIe cards. Oracle does not support questions or issues with networks based on these ports.

* Supported, but no longer orderable.

Related Information

- “Install Optional Fibre Channel PCIe Cards” on page 46
- “Connect SuperCluster to the Facility Networks” on page 51

▼ Install Optional Fibre Channel PCIe Cards

If optional Fibre Channel PCIe cards are purchased for SuperCluster M8 or SuperCluster M7, use this procedure to install the cards.

Each CMIOU in the compute node has three slots, each of which can hold one PCIe hot-plug card carrier. Each of these carriers contains a single low-profile PCIe card. For the location of the PCIe cards, refer to the *Oracle SuperCluster M8 and SuperCluster M7 Overview Guide*.

Additional installation details are available in these documents:

- The documentation provided with the PCIe card.
- The *SPARC M7 Series Servers Service Manual*. See “Hardware Installation Documents” on page 14.

1. **Ensure that you take proper antistatic measures.**
2. **Remove the PCIe carrier from the slot.**
   a. **Open the carrier's green extraction lever.**
      Swing the lever out 90 degrees until the far end of the lever begins to push the carrier out of the slot.
   b. **Pull the carrier from the slot.**
3. **Open the carrier.**
   a. **Press the green tab to unlock the carrier latch.**

b. **Swing the carrier arm open.**

c. **If present, remove the filler panel from the carrier.**

4. **Insert the PCIe card until the bottom connector is firmly seated in the carrier's connector.**

   The card is correctly seated only when the notch at the top of the card bracket fits around a guide post on the carrier.

   If the PCIe card includes a mounting screw, do not use the mounting screw. The carrier does not accept mounting screws.

5. **Close the carrier arm.**

   The green latch clicks, locking the card in the carrier.

6. **Install the carrier into the CMIOU slot.**

   a. **Push evenly on both sides of the carrier so that the carrier slides straight into the slot.**

      If the carrier slides correctly into the slot, you feel a slight resistance as the carrier starts to seat in the connector.

Caution - Do not push the extraction lever while you insert the carrier into the slot. The carrier can enter at an angle and damage the connectors.

   b. **Lock the carrier's extraction lever.**

7. **Attach I/O cables to the card.**

Related Information

- “Fibre Channel PCIe Card Overview” on page 45
- “Connect SuperCluster to the Facility Networks” on page 51

▼ Prepare DNS

You must prepare DNS before installing SuperCluster M8 or SuperCluster M7. Installation and the initial configuration cannot proceed until these tasks are finished.

Note - DNS is not configured on SuperCluster M8 or SuperCluster M7 systems until after initial configuration.

1. **Provide the necessary information in these documents:**

   - *Oracle SuperCluster M8 and SuperCluster M7 Site Checklists*
   - *Oracle SuperCluster M8 and SuperCluster M7 Configuration Worksheets*

2. **Use the host names and IP addresses specified in the completed configuration worksheets document to create and register DNS addresses for SuperCluster M8 and SuperCluster M7 systems.**

   You must register all public addresses, SCAN addresses, and VIP addresses in DNS prior to installation.

   Note - The configuration worksheets document defines the SCAN as a single name with three IP addresses on the client access network.

3. **Configure all addresses registered in DNS for both forward resolution and reverse resolution.**

   Reverse resolution must be forward confirmed (forward-confirmed reverse DNS), such that both the forward and reverse DNS entries match each other.

   The SCAN name to the three SCAN addresses must be configured in DNS for round-trip resolution.

Related Information

- “Hardware Installation Documents” on page 14
- *Oracle Grid Infrastructure Installation Guide for Linux* for additional information about SCAN addresses
- Your DNS vendor documentation for additional information about configuring round-trip name resolution
- “Network Topology” on page 42
- “Network Infrastructure Requirements” on page 43
- “Connect SuperCluster to the Facility Networks” on page 51

Cabling SuperCluster

These topics describe how the SuperCluster M8 and SuperCluster M7 components are interconnected. The majority of these connections are made in the factory.

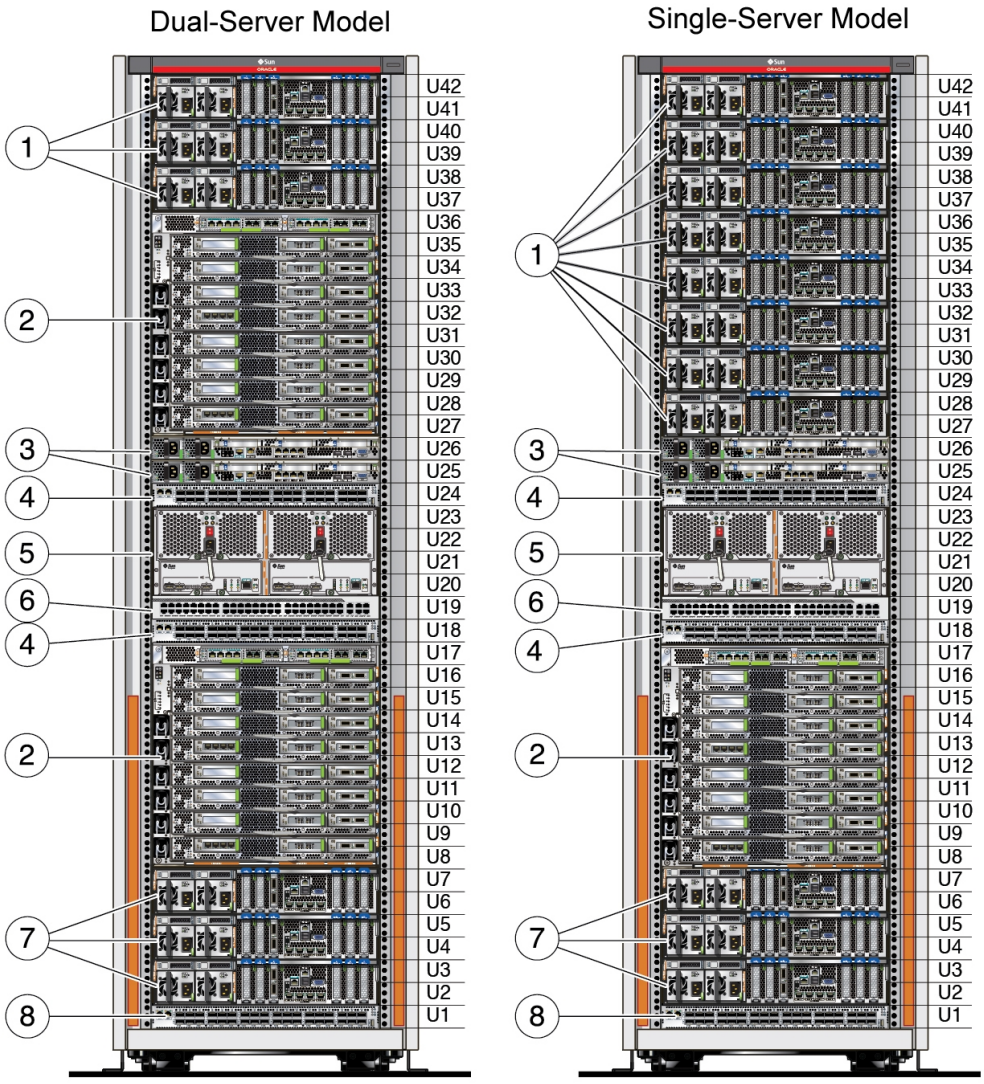
Description	Links
Identify where the components are located.	“SuperCluster Rack Components” on page 50
Connect SuperCluster M8 or SuperCluster M7 systems to the facility networks.	“Connect SuperCluster to the Facility Networks” on page 51
Identify factory installed cable connections.	“Compute Server Cabled Components” on page 53 “Storage Server Cabled Components” on page 55 “Power Cabling (Single Phase)” on page 57 “Power Cabling (Three Phase)” on page 59 “ZFS Storage Appliance Cabling” on page 70 “Leaf Switch Cabling (Single Server)” on page 60 “Leaf Switch Cabling (Dual Servers)” on page 63 “IB Switch-to-Switch Cabling Reference” on page 66 “Ethernet Management Switch Cabling Reference” on page 68

Related Information

- “Installing SuperCluster M8 and SuperCluster M7 Systems” on page 11
- “Preparing the Site” on page 21
- “Preparing the Networks” on page 41
- “Connecting Expansion Racks” on page 103

SuperCluster Rack Components

Use this illustration and table to identify the locations of the main components in the SuperCluster M8 and SuperCluster M7 rack.



No.	Network Component or Port	Links
1	(Optional) 1 to 8 additional storage servers	"Storage Server Cabled Components" on page 55
2	1 or 2 compute servers	"Compute Server Cabled Components" on page 53
3	2 ZFS storage controllers	"ZS3-ES Cabling Reference (SuperCluster M7)" on page 70
4	2 IB leaf switches	"Leaf Switch Cabling (Single Server)" on page 60 "Leaf Switch Cabling (Dual Servers)" on page 63
5	ZFS disk shelf	"ZS3-ES Cabling Reference (SuperCluster M7)" on page 70
6	1 48-port 10/100/1000 Ethernet management switch	"Ethernet Management Switch Cabling Reference" on page 68
7	3 storage servers	"Storage Server Cabled Components" on page 55
8	1 IB spine switch	"IB Switch-to-Switch Cabling Reference" on page 66

Related Information

- "Connecting Expansion Racks" on page 103
- "Connect SuperCluster to the Facility Networks" on page 51

▼ Connect SuperCluster to the Facility Networks

Caution - Do not connect SuperCluster to the facility network before the facility-specific IP addresses are configured in all the SuperCluster components. Normally, the facility-specific addresses are configured by Oracle personnel during the installation. Instructions for making the facility connections are in "Connect SuperCluster to the Facility Networks" on page 51.

1. **Run cables from the facility network infrastructure to the installation site.**

   The number cables varies depending on the type of configuration you choose. For more information, refer to the appropriate configuration worksheet.

2. **Before connecting SuperCluster to any external networks, verify that the site-specific network parameters have been applied.**

   Consult your Oracle representative and network administrator.

3. **Ensure that the facility network is prepared to connect to SuperCluster.**

   See "Preparing the Networks" on page 41.

4. **Label the cables used to connect to the facility Ethernet networks.**

5. **Route and connect one facility management network cable to an available Ethernet management switch port.**

   The Ethernet management switch is in U19. See "SuperCluster Rack Components" on page 50.

6. **Route and connect all client access network cables to the compute server 10GbE Ethernet ports.**

   Each dedicated domain must have a minimum of 2 10GbE NIC connections to the facility network. The exact number of 10GbE NIC connections depends on the configuration of SuperCluster. Refer to the configuration worksheets for details.

   For 10GbE NIC locations, see "SuperCluster Rack Components" on page 50.

   SuperCluster M7

   If the domain only has one CMIOU, two connections are made from the 10GbE NIC to the facility client access switch.

   If the domain has more than one CMIOU:

   - Connect the first CMIOU's first 10GbE NIC port to the facility client access network.
   - Connect the last CMIOU's last 10GbE NIC port to the facility client access network.
   - Optionally, the customer configuration might specify a second client access connection. If so, connect the other two splitter cable connectors to the facility client access network.

   SuperCluster M8

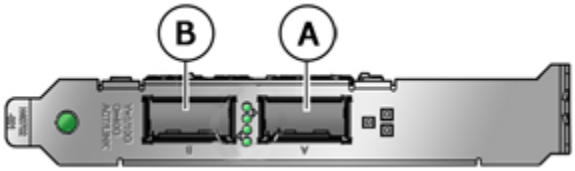
   For each domain, connect both Port A connectors to the facility client access network. The exact number of 10GbE NIC connections depends on the configuration of SuperCluster. Refer to the configuration worksheets for details.

   On the domain's first 10GbE NIC, connect both port A connectors to the facility client access network 1.

   Optionally, the customer configuration might specify a second client access connection. If so, connect both Port B connectors to the facility client access network 2. Rather than connecting to client access network 2, this connection can be set up as a second link to client access network 1, delivering additional ports and additional bandwidth on the same network.

   Note, all 10GbE NIC cable configurations must be the same within a PDomain.

This figure shows the port orientation for the quad-port 10GbE NIC in SuperCluster M8.



7. **Use cable ties to secure cable bundles so that components can be serviced.**

   Locate excess cable length either on top of the cabinets or under the raised floor.

8. **Log into SuperCluster M8 or SuperCluster M7 and verify network connectivity to the site.**

   Refer to the *SPARC M7 Series Administration Guide*. See "Hardware Installation Documents" on page 14.

Related Information

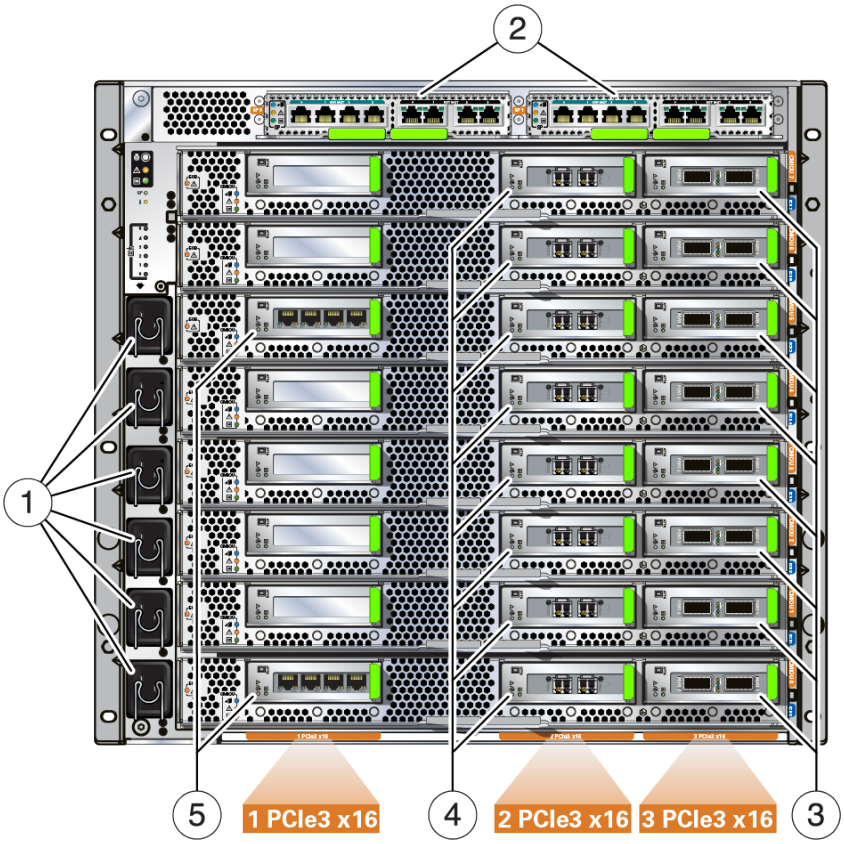
- "Network Infrastructure Requirements" on page 43
- "Prepare DNS" on page 47
- "Hardware Installation Task Overview" on page 11
- "SuperCluster Rack Components" on page 50

Compute Server Cabled Components

Use this illustration and table to identify the factory-cabled compute server components.

The illustration shows network components for a compute server that is fully populated with CMIOUs and PCIe cards. Other configurations have fewer components. For information on all the types of configurations, refer to *Oracle SuperCluster M8 and SuperCluster M7 Overview Guide*.

This figure shows the component locations for SuperCluster M7. SuperCluster M8 is similar with the differences are listed in the table.



No.	Network Component or Port (Default)	Chassis Location	Connector and Cable Type	Links
1	6 power inlets per compute server	U8 and optionally U27	Power cords. Receptacle varies based on locale.	"Power Cabling (Single Phase)" on page 57 "Power Cabling (Three Phase)" on page 59
2	2 SPs per compute server, each providing: ■ 1 10/100/10000BASE-T port (NET MGT) ■ 1 serial port (SER MGT)	U17 and optionally U36	NET MGT – RJ-45, use Cat.5 or better cables. SER MGT – RJ-45, use serial cables.	"Ethernet Management Switch Cabling Reference" on page 68
3	2, 4, or 8 IB HCA PCIe cards per compute server, 2 ports per card	Installed in the PCIe 3 carrier on each CMIOU	Standard IB connectors supporting cables with QSFP + connectors.	"Leaf Switch Cabling (Single Server)" on page 60

No.	Network Component or Port (Default)	Chassis Location	Connector and Cable Type	Links
				"Leaf Switch Cabling (Dual Servers)" on page 63
4	**SuperCluster M7**: 1 10GbE dual-port PCIe card for each CMIOU **SuperCluster M8**: 1 10GbE quad-port PCIe card for each CMIOU	Installed in the PCIe 2 carrier on each CMIOU	**SuperCluster M7**: SFP+ optical splitter cable (10m, MPO to 4 LC) **SuperCluster M8**: QFSP+ optical Splitter Cable (10m, MPO/MTP to 2 LC)	"Network Infrastructure Requirements" on page 43 "Connect SuperCluster to the Facility Networks" on page 51
5	1 or 2 Sun Quad-Port GbE PCIe cards	Installed in CMIOU 0, PCIe 1 carrier, and optionally in CMIOU 5, PCIe 1 carrier.	RJ-45, use Cat.5 or better cables.	"Ethernet Management Switch Cabling Reference" on page 68

Related Information

- "Hardware Installation Task Overview" on page 11
- "Preparing the Networks" on page 41
- "Storage Server Cabled Components" on page 55
- "SuperCluster Rack Components" on page 50

Storage Server Cabled Components

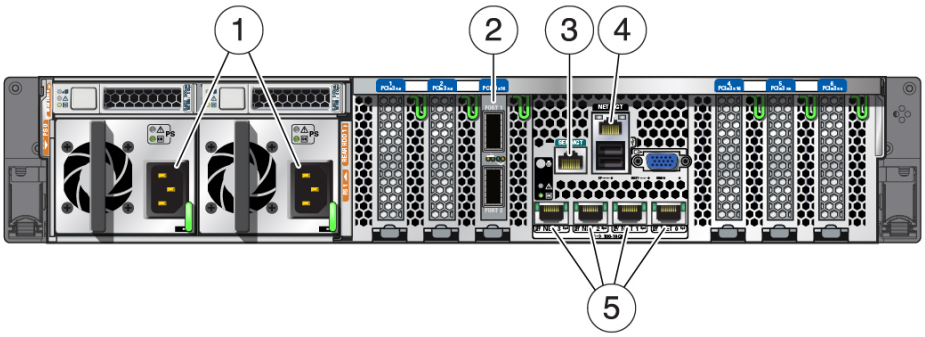
Use one of these cabling references based on the model of your SuperCluster:

- "X6-2L Storage Server (SuperCluster M7)" on page 55
- "X7-2L Storage Server (SuperCluster M8)" on page 56

X6-2L Storage Server (SuperCluster M7)

Use this illustration and table to identify the factory-cabled storage server components.

The illustration shows a high-capacity storage server, but the illustration can also be used to identify components on the extreme flash storage server.



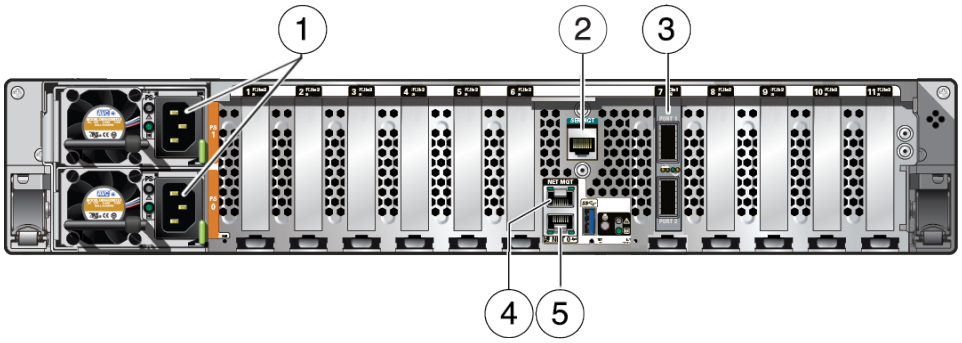
No.	Network Component or Port	Links
1	2 power inlets	"Power Cabling (Single Phase)" on page 57 "Power Cabling (Three Phase)" on page 59
2	1 dual-port IB HCA	"Leaf Switch Cabling (Single Server)" on page 60 "Leaf Switch Cabling (Dual Servers)" on page 63
3	SP SER MGT port – serial connection to Oracle ILOM	
4	SP NET MGT port – Ethernet connection to Oracle ILOM	"Ethernet Management Switch Cabling Reference" on page 68
5	4 1GbE/10GbE ports (NET 0, NET 1, NET 2, NET 3)	"Ethernet Management Switch Cabling Reference" on page 68

When adding additional storage servers to the rack, add them in this order: 41, 39, 37, 35, 33, 31, 29, 27.

X7-2L Storage Server (SuperCluster M8)

Use this illustration and table to identify the factory-cabled storage server components in SuperCluster M8.

The illustration shows a high-capacity storage server, but the illustration can also be used to identify components on the extreme flash storage server.



No.	Network Component or Port	Links
1	2 power inlets	"Power Cabling (Single Phase)" on page 57 "Power Cabling (Three Phase)" on page 59
2	SP SER MGT port – serial connection to Oracle ILOM	
3	1 dual-port IB HCA	"Leaf Switch Cabling (Single Server)" on page 60 "Leaf Switch Cabling (Dual Servers)" on page 63
4	SP NET MGT port – Ethernet connection to Oracle ILOM	"Ethernet Management Switch Cabling Reference" on page 68
5	Network (NET) 10/100/1000BASE-T RJ-45 Gigabit Ethernet (GbE) port: NET 0	"Ethernet Management Switch Cabling Reference" on page 68

Power Cabling (Single Phase)

Depending on the configuration, some components might not be present. Slots U27 - U35 might contain a compute server, or storage servers, or nothing. See "SuperCluster Rack Components" on page 50.

From Slot	From Component	To PDU-A	To PDU-B
U41	(optional) Storage server 4	G5-4	G0-2
U39	(optional) Storage server 5	G5-3	G0-3
U37	(optional) Storage server 6	G4-5	G1-1

From Slot	From Component	To PDU-A	To PDU-B
U35	(optional) Storage server 7	G5-1	G0-5
U33	(optional) Storage server 8	G5-0	G0-6
U31	(optional) Storage server 9	G4-4	G1-2
U29	(optional) Storage server 10	G4-3	G1-3
U27	(optional) Storage server 11	G3-4	G2-2
U27	(optional) Compute server:		
	AC0	G3-7	
	AC2	G4-7	
	AC4	G5-7	
	AC1		G2-7
	AC3		G1-7
	AC5		G0-7
U26	ZFS storage controller	G4-0	G1-0
U25	ZFS storage controller	G3-6	G2-0
U24	IP switch (leaf)	G2-6	G3-0
U20	ZFS disk shelf	G3-5	G2-1
U19	Ethernet management switch	G1-6	G4-0
U18	IB switch (leaf)	G2-5	G3-1
U8	Compute server:		
	AC0	G0-7	
	AC2	G1-7	
	AC4	G2-7	
	AC1		G5-7
	AC3		G4-7
	AC5		G3-7
U6	Storage server 3	G1-0	G4-6
U4	Storage server 2	G0-2	G5-4
U2	Storage server 1	G0-1	G5-5
U1	IB spine switch (if present)	G0-0	G5-6

Related Information

- “Hardware Installation Task Overview” on page 11
- “Power Cabling (Three Phase)” on page 59

- “SuperCluster Rack Components” on page 50

Power Cabling (Three Phase)

Depending on the configuration, some components might not be present. Slots U27 - U35 might contain a compute server, or storage servers, or nothing. See “SuperCluster Rack Components” on page 50.

From Slot	From Component	To PDU-A	To PDU-B
U41	(optional) Storage server 4	G5-4	G2-2
U39	(optional) Storage server 5	G5-3	G2-3
U37	(optional) Storage server 6	G4-6	G1-0
U35	(optional) Storage server 7	G5-1	G2-5
U33	(optional) Storage server 8	G5-0	G2-6
U31	(optional) Storage server 9	G4-4	G1-2
U29	(optional) Storage server 10	G4-3	G1-3
U27	(optional) Storage server 11	G3-4	G0-2
U27	(optional) Compute server:		
	AC0	G3-7	
	AC2	G4-7	
	AC4	G5-7	
	AC1		G0-7
	AC3		G1-7
	AC5		G2-7
U26	ZFS storage controller	G4-5	G1-1
U25	ZFS storage controller	G3-6	G0-0
U24	IP switch (leaf)	G2-6	G5-0
U20	ZFS disk shelf	G3-5	G0-1
U19	Ethernet management switch	G2-5	G5-1
U18	IB switch (leaf)	G2-4	G5-2
U8	Compute server:		
	AC0	G0-7	
	AC2	G1-7	
	AC4	G2-7	

From Slot	From Component	To PDU-A	To PDU-B
	AC1		G3-7
	AC3		G4-7
	AC5		G5-7
U6	Storage server 3	G1-1	G4-5
U4	Storage server 2	G1-0	G4-6
U2	Storage server 1	G0-1	G3-5
U1	IB spine switch (if present)	G0-0	G3-6

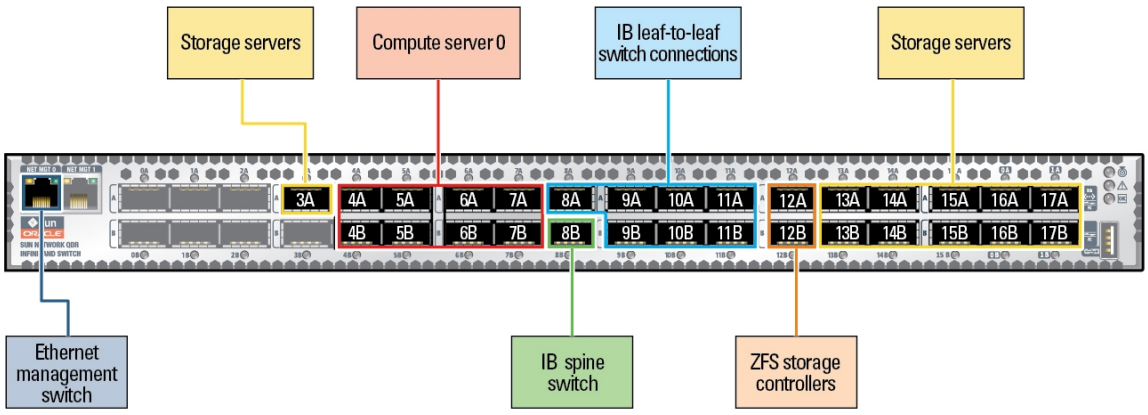
Related Information

- “Hardware Installation Task Overview” on page 11
- “Power Cabling (Single Phase)” on page 57
- “SuperCluster Rack Components” on page 50

Leaf Switch Cabling (Single Server)

These two IB switches are factory installed and cabled:

- Leaf switch 1 in U18
- Leaf switch 2 in U24



This table lists the factory cable connections for leaf switch 1 and 2 for single-server configurations.

The table includes connections for the maximum number of CMIOUs and storage servers (11), but not all SuperCluster M8 or SuperCluster M7 models contain the maximum number of CMIOUs and storage servers.

From	To Location	To Component	To Port
U18 (Leaf 1)			
0A			
0B			
1A			
1B			
2A			
2B			
3A	U27	Storage server 11	PCIe 3, P1
3B			
4A	U8	Compute server 0, CMIOU 6	P1
4B	U8	Compute server 0, CMIOU 7	P1
5A	U8	Compute server 0, CMIOU 4	P1
5B	U8	Compute server 0, CMIOU 5	P1
6A	U8	Compute server 0, CMIOU 2	P1
6B	U8	Compute server 0, CMIOU 3	P1
7A	U8	Compute server 0, CMIOU 0	P1
7B	U8	Compute server 0, CMIOU 1	P1
8A	U24	IB leaf switch 2	8A
8B	U1	IB spine switch (if present)	1B
9A	U24	IB leaf switch 2	9B
9B	U24	IB leaf switch 2	9A
10A	U24	IB leaf switch 2	10B
10B	U24	IB leaf switch 2	10A
11A	U24	IB leaf switch 2	11B
11B	U24	IB leaf switch 2	11A
12A	U26	ZFS storage controller 2	PCIe 0, P2
12B	U25	ZFS storage controller 1	PCIe 0, P1
13A	U31	Storage server 9	PCIe 3, P1
13B	U29	Storage server 10	PCIe 3, P2

From	To Location	To Component	To Port
14A	U33	Storage server 8	PCIe 3, P2
14B	U35	Storage server 7	PCIe 3, P1
15A	U39	Storage server 5	PCIe 3, P1
15B	U37	Storage server 6	PCIe 3, P2
16A	U41	Storage server 4	PCIe 3, P2
16B	U6	Storage server 3	PCIe 3, P1
17A	U2	Storage server 1	PCIe 3, P1
17B	U4	Storage server 2	PCIe 3, P2
U24 (Leaf 2)			
0A			
0B			
1A			
1B			
2A			
2B			
3A	U27	Storage server 11	PCIe 3, P2
3B			
4A	U8	Compute server 0, CMIOU 6	P2
4B	U8	Compute server 0, CMIOU 7	P2
5A	U8	Compute server 0, CMIOU 4	P2
5B	U8	Compute server 0, CMIOU 5	P2
6A	U8	Compute server 0, CMIOU 2	P2
6B	U8	Compute server 0, CMIOU 3	P2
7A	U8	Compute server 0, CMIOU 0	P2
7B	U8	Compute server 0, CMIOU 1	P2
8A	U18	IB leaf switch 1	8A
8B	U1	IB spine switch (if present)	0B
9A	U18	IB leaf switch 1	9B
9B	U18	IB leaf switch 1	9A
10A	U18	IB leaf switch 1	10B
10B	U18	IB leaf switch 1	10A
11A	U18	IB leaf switch 1	11B
11B	U18	IB leaf switch 1	11A
12A	U26	ZFS storage controller 2	PCIe 0, P1
12B	U25	ZFS storage controller 1	PCIe 0, P2
13A	U31	Storage server 9	PCIe 3, P2

From	To Location	To Component	To Port
13B	U29	Storage server 10	PCIe 3, P1
14A	U33	Storage server 8	PCIe 3, P1
14B	U35	Storage server 7	PCIe 3, P2
15A	U39	Storage server 5	PCIe 3, P2
15B	U37	Storage server 6	PCIe 3, P1
16A	U41	Storage server 4	PCIe 3, P1
16B	U6	Storage server 3	PCIe 3, P2
17A	U2	Storage server 1	PCIe 3, P2
17B	U4	Storage server 2	PCIe 3, P1

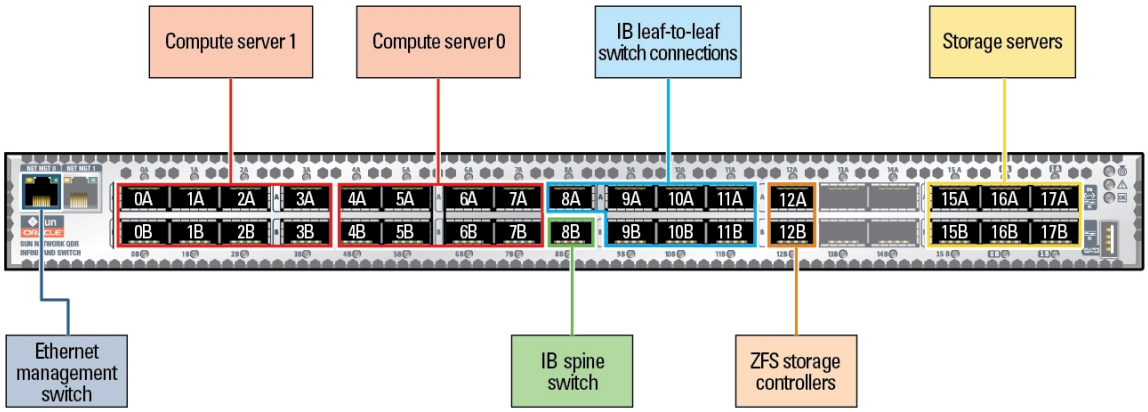
Related Information

- “Hardware Installation Task Overview” on page 11
- “Leaf Switch Cabling (Dual Servers)” on page 63
- “IB Switch-to-Switch Cabling Reference” on page 66
- “SuperCluster Rack Components” on page 50

Leaf Switch Cabling (Dual Servers)

These two IB switches are factory installed and cabled:

- Leaf switch 1 in U18
- Leaf switch 2 in U24



This table lists the factory cable connections for leaf switch 1 and 2 for dual-server configurations.

The table includes connections for the maximum number of CMIOUs and storage servers (6), but not all SuperCluster models contain the maximum number of CMIOUs and storage servers.

From	To Location	To Component	To Port
U18 (Leaf 1)			
0A	U27	Compute server 1, CMIOU 6	P2
0B	U27	Compute server 1, CMIOU 7	P2
1A	U27	Compute server 1, CMIOU 4	P2
1B	U27	Compute server 1, CMIOU 5	P2
2A	U27	Compute server 1, CMIOU 2	P2
2B	U27	Compute server 1, CMIOU 3	P2
3A	U27	Compute server 1, CMIOU 0	P2
3B	U27	Compute server 1, CMIOU 1	P2
4A	U8	Compute server 0, CMIOU 6	P1
4B	U8	Compute server 0, CMIOU 7	P1
5A	U8	Compute server 0, CMIOU 4	P1
5B	U8	Compute server 0, CMIOU 5	P1
6A	U8	Compute server 0, CMIOU 2	P1
6B	U8	Compute server 0, CMIOU 3	P1
7A	U8	Compute server 0, CMIOU 0	P1
7B	U8	Compute server 0, CMIOU 1	P1

From	To Location	To Component	To Port
8A	U24	IB leaf switch 2	8A
8B	U1	IB spine switch (if present)	1B
9A	U24	IB leaf switch 2	9B
9B	U24	IB leaf switch 2	9A
10A	U24	IB leaf switch 2	10B
10B	U24	IB leaf switch 2	10A
11A	U24	IB leaf switch 2	11B
11B	U24	IB leaf switch 2	11A
12A	U26	ZFS storage controller 2	PCIe 0, P2
12B	U25	ZFS storage controller 1	PCIe 0, P1
13A			
13B			
14A			
14B			
15A	U39	Storage server 5	PCIe 3, P1
15B	U37	Storage server 6	PCIe 3, P2
16A	U41	Storage server 4	PCIe 3, P2
16B	U6	Storage server 3	PCIe 3, P1
17A	U2	Storage server 1	PCIe 3, P1
17B	U4	Storage server 2	PCIe 3, P2
U24 (Leaf 2)			
0A	U27	Compute server 1, CMIOU 6	P1
0B	U27	Compute server 1, CMIOU 7	P1
1A	U27	Compute server 1, CMIOU 4	P1
1B	U27	Compute server 1, CMIOU 5	P1
2A	U27	Compute server 1, CMIOU 2	P1
2B	U27	Compute server 1, CMIOU 3	P1
3A	U27	Compute server 1, CMIOU 0	P1
3B	U27	Compute server 1, CMIOU 1	P1
4A	U8	Compute server 0, CMIOU 6	P2
4B	U8	Compute server 0, CMIOU 7	P2
5A	U8	Compute server 0, CMIOU 4	P2
5B	U8	Compute server 0, CMIOU 5	P2
6A	U8	Compute server 0, CMIOU 2	P2
6B	U8	Compute server 0, CMIOU 3	P2
7A	U8	Compute server 0, CMIOU 0	P2

From	To Location	To Component	To Port
7B	U8	Compute server 0, CMIOU 1	P2
8A	U18	IB leaf switch 1	8A
8B	U1	IB spine switch (if present)	0B
9A	U18	IB leaf switch 1	9B
9B	U18	IB leaf switch 1	9A
10A	U18	IB leaf switch 1	10B
10B	U18	IB leaf switch 1	10A
11A	U18	IB leaf switch 1	11B
11B	U18	IB leaf switch 1	11A
12A	U26	ZFS storage controller 2	PCIe 0, P1
12B	U25	ZFS storage controller 1	PCIe 0, P2
13A			
13B			
14A			
14B			
15A	U39	Storage server 5	PCIe 3, P2
15B	U37	Storage server 6	PCIe 3, P1
16A	U41	Storage server 4	PCIe 3, P1
16B	U6	Storage server 3	PCIe 3, P2
17A	U2	Storage server 1	PCIe 3, P2
17B	U4	Storage server 2	PCIe 3, P1

Related Information

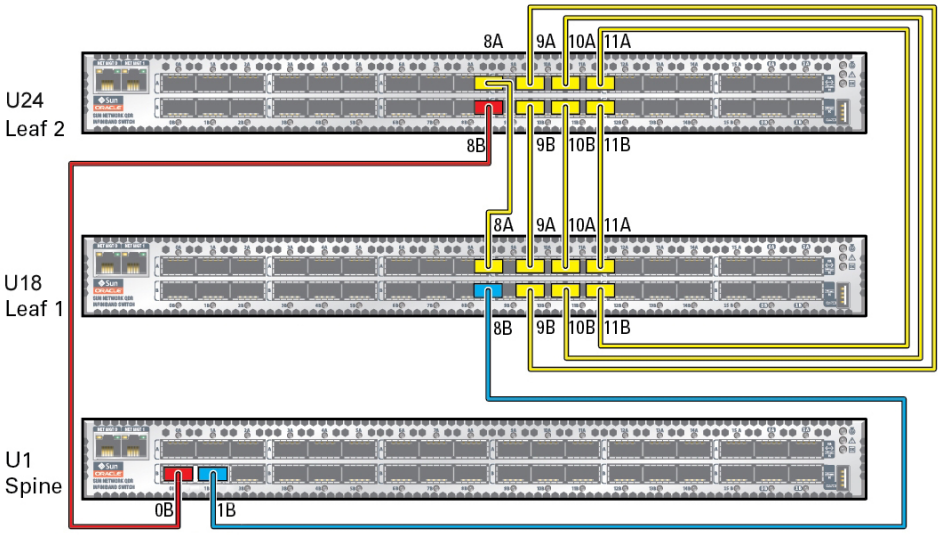
- “Hardware Installation Task Overview” on page 11
- “Leaf Switch Cabling (Single Server)” on page 60
- “IB Switch-to-Switch Cabling Reference” on page 66
- “SuperCluster Rack Components” on page 50

IB Switch-to-Switch Cabling Reference

The IB switches are cabled together at the factory as shown in this figure and table.

Note - For information about IB switches, refer to the *Sun Datacenter InfiniBand Switch 36 HTML Collection for Firmware Version 2.1* at `http://docs.oracle.com/cd/E36265_01`.

Note - For information about interconnecting multiple racks, see "Connecting Multiple SuperCluster M8 or SuperCluster M7 Systems" on page 75 and "Connecting Expansion Racks" on page 103.



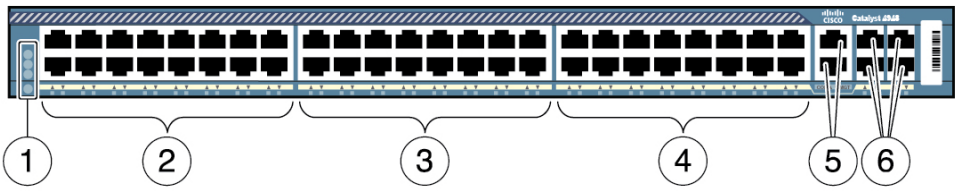
X = Factory Installed	From Component	From Location	From Port	To Component	To Location	To Port
X	Spine switch	U1	0B	Leaf switch 2	U24	8B
X	Spine switch	U1	1B	Leaf switch 1	U24	8B
X	Leaf switch 1	U18	8A	Leaf switch 2	U24	8A
X	Leaf switch 1	U18	9A	Leaf switch 2	U24	9B
X	Leaf switch 1	U18	9B	Leaf switch 2	U24	9A
X	Leaf switch 1	U18	10A	Leaf switch 2	U24	10B
X	Leaf switch 1	U18	10B	Leaf switch 2	U24	10A
X	Leaf switch 1	U18	11A	Leaf switch 2	U24	11B
X	Leaf switch 1	U18	11B	Leaf switch 2	U24	11A

Related Information

- “Hardware Installation Task Overview” on page 11
- “Leaf Switch Cabling (Single Server)” on page 60
- “Leaf Switch Cabling (Dual Servers)” on page 63
- “SuperCluster Rack Components” on page 50

Ethernet Management Switch Cabling Reference

The Ethernet management switch is located in U19 and is factory cabled.



No.	Description	No.	Description
1	Indicators and reset switch	4	Ports 33-48, 10/100/1000BASE-T Ethernet
2	Ports 1 to 16, 10/100/1000BASE-T Ethernet	5	CON (upper), MGT (lower)
3	Ports 17 to 32, 10/100/1000BASE-T Ethernet	6	Ports 45-48, 10GbE

In the cabling table, use the To column that corresponds to the type of SuperCluster that you are cabling.

From Switch Port No.	Cable	To Single-Server Models	To Port	To Dual-Server Models	To Port
1	Red	U27 – If present, storage server 11	NET MGT		
2	Red	U31 – If present, storage server 9	NET MGT		
3	10 ft black	U27 – If present, storage server 11	NET 0	U27 – Compute server, GbE 1	1
4	10 ft black	U31 – If present, storage server 9	NET 0	U27 – Compute server, GbE 1	3

From Switch Port No.	Cable	To Single-Server Models	To Port	To Dual-Server Models	To Port
5	10 ft black			U27 – Compute server, GbE 1	0
6	10 ft black			U27 – Compute server, GbE 1	2
7	10 ft black			U27 – Compute server, GbE 0	1
8	10 ft black			U27 – Compute server, GbE 0	3
9	10 ft black	U29– If present, storage server 10	NET 0	U27 – Compute server, GbE 0	0
10	10 ft black	U33 – If present, storage server 8	NET 2	U27 – Compute server, GbE 0	2
11	10 ft red	U29 – If present, storage server 10	NET 0	U27 – Compute server, SP 0	NET MGT
12	10 ft red	U33 – If present, storage server 8	NET MGT	U27 – Compute server, SP 1	NET MGT
13	10 ft black	U8 – Compute server, GbE 1	1	U8 – Compute server, GbE 1	1
14	10 ft black	U8 – Compute server, GbE 1	3	U8 – Compute server, GbE 1	3
15	10 ft black	U8 – Compute server, GbE 1	0	U8 – Compute server, GbE 1	0
16	10 ft black	U8 – Compute server, GbE 1	2	U8 – Compute server, GbE 1	2
17	10 ft black	U8 – Compute server, GbE 0	1	U8 – Compute server, GbE 0	1
18	10 ft black	U8 – Compute server, GbE 0	3	U8 – Compute server, GbE 0	3
19	10 ft black	U8 – Compute server, GbE 0	0	U8 – Compute server, GbE 0	0
20	10 ft black	U8 – Compute server, GbE 0	2	U8 – Compute server, GbE 0	2
21	10 ft red	U8 – Compute server, SP 0	NET MGT	U8 – Compute server, SP 0	NET MGT
22	10 ft red	U8 – Compute server, SP 1	NET MGT	U8 – Compute server, SP 1	NET MGT
23	1m white	PDU B	NET MGT	PDU B	NET MGT
24	1m white	PDU A	NET MGT	PDU A	NET MGT
25					
26					
27	10 ft blue	U25 – ZFS storage server 1	NET 1	U25 – ZFS storage server 1	NET 1
28	10 ft blue	U26 – ZFS storage server 2	NET 1	U26 – ZFS storage server 2	NET 1
29	10 ft blue	U25 – ZFS storage server 1	NET 0	U25 – ZFS storage server 1	NET 0
30	10 ft blue	U26 – ZFS storage server 2	NET 0	U26 – ZFS storage server 2	NET 0
31	10 ft black	U35 – If present, storage server 7	NET 0		
32	10 ft red	U35 – If present, storage server 7	NET MGT		
33	10 ft black	U37 – If present, storage server 6	NET 0	U37 – If present, storage server 6	NET 0
34	10 ft red	U37 – If present, storage server 6	NET MGT	U37 – If present, storage server 6	NET MGT
35	10 ft black	U39 – If present, storage server 5	NET 0	U39 – If present, storage server 5	NET 0
36	10 ft red	U39 – If present, storage server 5	NET MGT	U39 – If present, storage server 5	NET MGT
37	10 ft black	U41 – If present, storage server 4	NET 0	U41 – If present, storage server 4	NET 0
38	10 ft red	U41 – If present, storage server 4	NET MGT	U41 – If present, storage server 4	NET MGT
39	10 ft black	U6 – Storage server 3	NET 0	U6 – Storage server 3	NET 0

From Switch Port No.	Cable	To Single-Server Models	To Port	To Dual-Server Models	To Port
40	10 ft red	U6 – Storage server 3	NET MGT	U6 – Storage server 3	NET MGT
41	10 ft black	U4 – Storage server 2	NET 0	U4 – Storage server 2	NET 0
42	10 ft red	U4 – Storage server 2	NET MGT	U4 – Storage server 2	NET MGT
43	10 ft black	U2 – Storage server 1	NET 0	U2 – Storage server 1	NET 0
44	10 ft red	U2 – Storage server 1	NET MGT	U2 – Storage server 1	NET MGT
45	10 ft black	U24 – IB switch, leaf 2	NET 0	U24 – IB switch, leaf 2	NET 0
46	10 ft black	U18 – IB switch, leaf 1	NET 0	U18 – IB switch, leaf 1	NET 0
47	10 ft black	U1 – IB switch, spine	NET 0	U1 – IB switch, spine	NET 0
48		unused		unused	

Related Information

- “Hardware Installation Task Overview” on page 11
- “ZS3-ES Cabling Reference (SuperCluster M7)” on page 70
- “SuperCluster Rack Components” on page 50

ZFS Storage Appliance Cabling

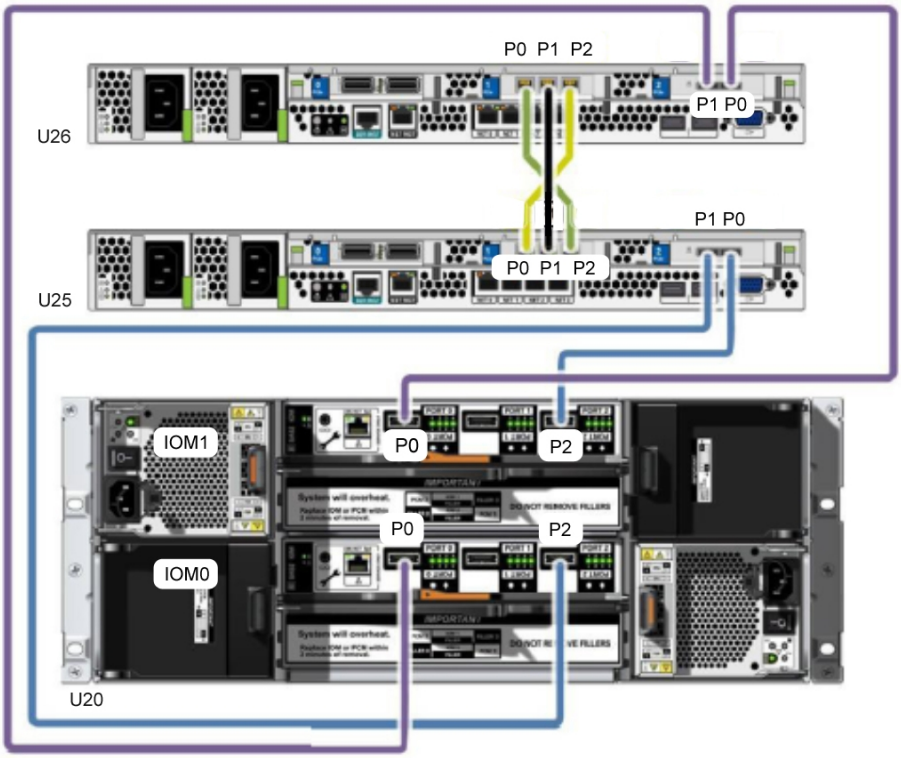
Use one of these cabling references based on the model of your SuperCluster:

- “ZS3-ES Cabling Reference (SuperCluster M7)” on page 70
- “ZS5-ES Cabling Reference (SuperCluster M8)” on page 72

ZS3-ES Cabling Reference (SuperCluster M7)

Use this illustration and table to connect the ZFS storage controllers and disk shelf.

Note - For cable connections from the ZFS storage appliance to the Ethernet management switch, see “Ethernet Management Switch Cabling Reference” on page 68. For IB switch connections, see “Leaf Switch Cabling (Single Server)” on page 60 and “Leaf Switch Cabling (Dual Servers)” on page 63.



From Location	From Port	To Location	To Port	Cable
U25	PCIe 2, P0	U26	PCIe 2, P2	Yellow
U25	PCIe 2, P1	U26	PCIe 2, P1	Black
U25	PCIe 2, P2	U26	PCIe 2, P0	Green
U25	PCIe 3, P1	U20	IOM 0, P2	Black
U25	PCIe 3, P0	U20	IOM 1, P2	Black
U26	PCIe 3, P1	U20	IOM 0, P0	Black
U26	PCIe 3, P0	U20	IOM 1, P0	Black

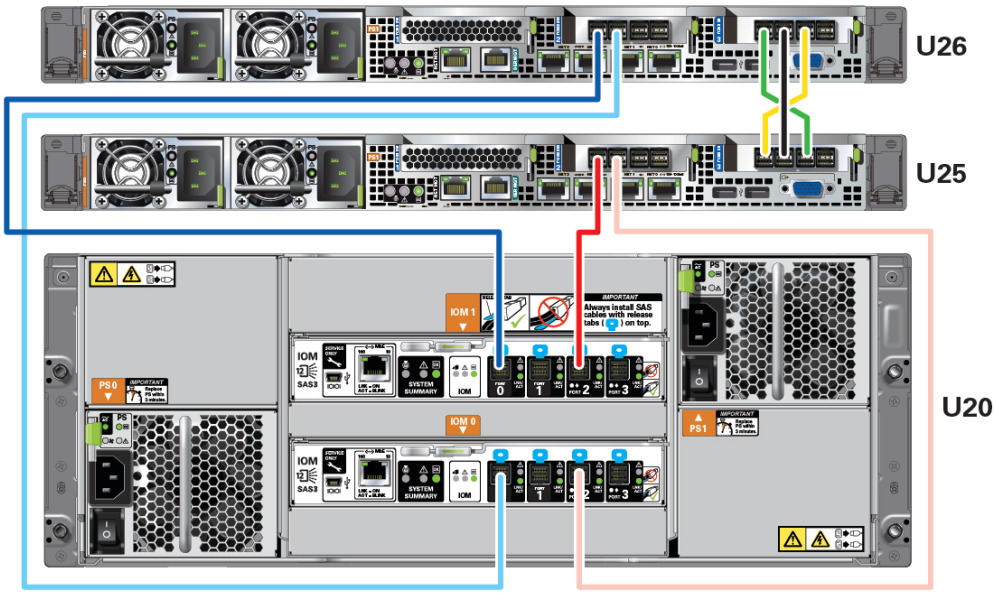
Related Information

- “Hardware Installation Task Overview” on page 11
- “SuperCluster Rack Components” on page 50

ZS5-ES Cabling Reference (SuperCluster M8)

Use this illustration and table to connect the ZFS storage controllers and disk shelf.

Note - For cable connections from the ZFS storage appliance to the Ethernet management switch, see "Ethernet Management Switch Cabling Reference" on page 68. For IB switch connections, see "Leaf Switch Cabling (Single Server)" on page 60 and "Leaf Switch Cabling (Dual Servers)" on page 63.



From Location	From Port	To Location	To Port	Cable
U25	PCIe 3, P0	U26	PCIe 3, P2	Yellow
U25	PCIe 3, P1	U26	PCIe 3, P1	Black
U25	PCIe 3, P2	U26	PCIe 3, P0	Green
U26	PCIe 2, P1	U20	IOM 0, P0	Black
U25	PCIe 2, P1	U20	IOM 0, P2	Black
U26	PCIe 2, P0	U20	IOM 1, P0	Black

From Location	From Port	To Location	To Port	Cable
U25	PCIe 2, P0	U20	IOM 1, P2	Black

Related Information

- “Hardware Installation Task Overview” on page 11
- “SuperCluster Rack Components” on page 50

Connecting Multiple SuperCluster M8 or SuperCluster M7 Systems

These topics provide instructions for connecting one SuperCluster M8 or SuperCluster M7 system to one or more SuperCluster M8 or SuperCluster M7 systems.

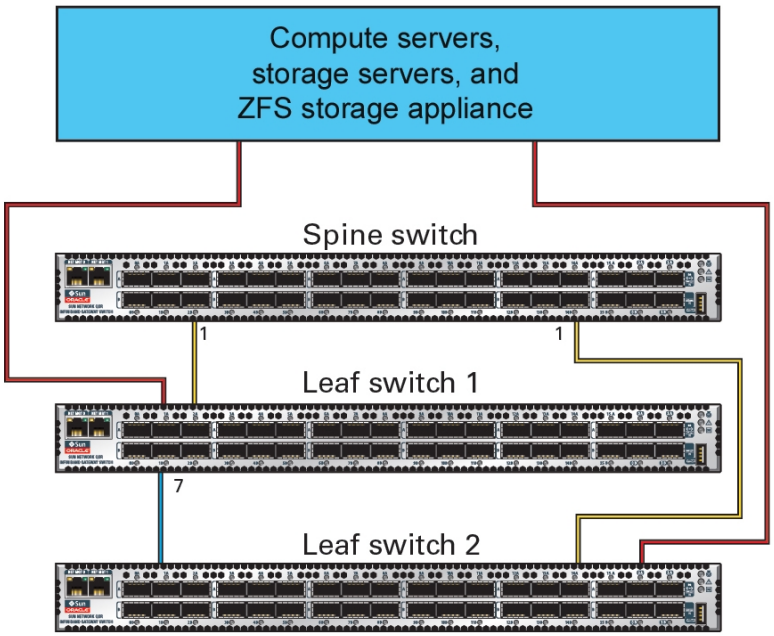
Multirack Cabling Overview

You connect multiple SuperCluster M8 or SuperCluster M7 systems together using IB switches that are installed in the racks.

All SuperCluster M8 or SuperCluster M7 systems have two IB switches, a leaf switch 1 in U18 and a leaf switch 2 in U24. Depending on how the system was ordered, a third IB switch (spine switch) is installed in U1. If the spine switch is not present in the system, you must install a spine switch before you can connect another SuperCluster M8 or SuperCluster M7 system.

IB switches use standard IB cables with QSFP connectors. The procedures in this section assume that the racks are adjacent to each other. If they are not, then longer cables might be required for the connections.

In a single rack, the two leaf switches are interconnected using seven connections. Each leaf switch has one connection to the spine switch as shown in this graphic.



When you connect multiple racks, some of these factory IB switch cable connections must be reconfigured as described in "Connect Additional SuperCluster M8 or SuperCluster M7 Racks" on page 77.

Note - For information about using Subnet Manager to manage the IB switches, refer to this section `http://docs.oracle.com/cd/E50790_01/doc/doc.121/e51951/components.htm#DBMMN21291` in the *Oracle Exadata Database Machine Maintenance Guide*.

Related Information

- "Hardware Installation Task Overview" on page 11
- "Leaf Switch Cabling (Single Server)" on page 60
- "Leaf Switch Cabling (Dual Servers)" on page 63
- "IB Switch-to-Switch Cabling Reference" on page 66

Connect Additional SuperCluster M8 or SuperCluster M7 Racks

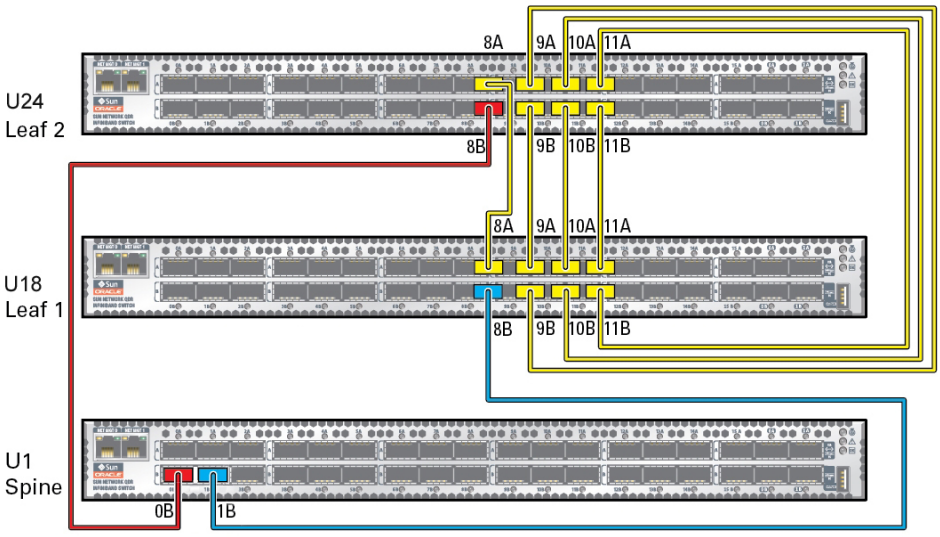
Use this procedure to connect multiple SuperCluster M8 or SuperCluster M7 racks together.

1. **Ensure that a spine switch is installed in U1 of each rack.**

   If spine switches shipped separately, install them in U1 of each rack. For installation instructions, refer to the IB switch document titled, *Sun Datacenter InfiniBand Switch 36 HTML Collection for Firmware Version 2.1* at `http://docs.oracle.com/cd/E36265_01`

2. **In the SuperCluster M8 or SuperCluster M7 rack, disconnect the IB switch-to-switch cables.**

   Remove the seven existing inter-switch connections between each leaf switch, and the two connections between the leaf switches and the spine switch as shown in this diagram.



   The disconnected ports are used to make connections to the IB switches in the additional SuperCluster racks.

3. **Based on the number of racks you plan to connect, connect IB cables.**

Note - For SuperCluster M8, the leaf to leaf switches are factory installed with 1 meter cables. After removing the factory cables, use the 3 or 5 meter cables in the ship kit to cable additional systems.

Use one of these cable reference sections for connection details:

- "Two-Rack Cabling" on page 78
- "Three-Rack Cabling" on page 80
- "Four-Rack Cabling" on page 82
- "Five-Rack Cabling" on page 85
- "Six-Rack Cabling" on page 88
- "Seven-Rack Cabling" on page 92
- "Eight-Rack Cabling" on page 97

Two-Rack Cabling

This table shows the cable connections for the first spine switch (R1-U1) when cabling two full racks together.

TABLE 30 Leaf Switch Connections for the First Rack in a Two-Rack System

Leaf Switch	Connection	Cable Length
R1-U24 within Rack 1	R1-U24-P8A to R1-U1-P3A	3m
	R1-U24-P8B to R1-U1-P4A	
	R1-U24-P9A to R1-U1-P5A	
	R1-U24-P9B to R1-U1-P6A	
R1-U24 to Rack 2	R1-U24-P10A to R2-U1-P7A	5m
	R1-U24-P10B to R2-U1-P8A	
	R1-U24-P11A to R2-U1-P9A	
	R1-U24-P11B to R2-U1-P10A	
R1-U18 within Rack 1	R1-U18-P8A to R1-U1-P3B	3m
	R1-U18-P8B to R1-U1-P4B	
	R1-U18-P9A to R1-U1-P5B	
	R1-U18-P9B to R1-U1-P6B	

Leaf Switch	Connection	Cable Length
R1-U18 to Rack 2	R1-U18-P10A to R2-U1-P7B	5m
	R1-U18-P10B to R2-U1-P8B	
	R1-U18-P11A to R2-U1-P9B	
	R1-U18-P11B to R2-U1-P10B	

This table shows the cable connections for the second spine switch (R2-U1) when cabling two full racks together.

TABLE 31 Leaf Switch Connections for the Second Rack in a Two-Rack System

Leaf Switch	Connection	Cable Length
R2-U24 within Rack 2	R2-U24-P8A to R2-U1-P3A	3m
	R2-U24-P8B to R2-U1-P4A	
	R2-U24-P9A to R2-U1-P5A	
	R2-U24-P9B to R2-U1-P6A	
R2-U24 to Rack 1	R2-U24-P10A to R1-U1-P7A	5m
	R2-U24-P10B to R1-U1-P8A	
	R2-U24-P11A to R1-U1-P9A	
	R2-U24-P11B to R1-U1-P10A	
R2-U18 within Rack 2	R2-U18-P8A to R2-U1-P3B	3m
	R2-U18-P8B to R2-U1-P4B	
	R2-U18-P9A to R2-U1-P5B	
	R2-U18-P9B to R2-U1-P6B	
R2-U18 to Rack 1	R2-U18-P10A to R1-U1-P7B	5m
	R2-U18-P10B to R1-U1-P8B	
	R2-U18-P11A to R1-U1-P9B	
	R2-U18-P11B to R1-U1-P10B	

Related Information

- “Hardware Installation Task Overview” on page 11
- “Multirack Cabling Overview” on page 75
- “Connect Additional SuperCluster M8 or SuperCluster M7 Racks” on page 77

Three-Rack Cabling

This table shows the cable connections for the first spine switch (R1-U1) when cabling three full racks together.

TABLE 32 Leaf Switch Connections for the First Rack in a Three-Rack System

Leaf Switch	Connection	Cable Length
R1-U24 within Rack 1	R1-U24-P8A to R1-U1-P3A	3m
	R1-U24-P8B to R1-U1-P4A	
	R1-U24-P9A to R1-U1-P5A	
R1-U24 to Rack 2	R1-U24-P9B to R2-U1-P6A	5m
	R1-U24-P10A to R2-U1-P7A	
	R1-U24-P10B to R2-U1-P8A	
R1-U24 to Rack 3	R1-U24-P11A to R3-U1-P9A	5m
	R1-U24-P11B to R3-U1-P10A	
R1-U18 within Rack 1	R1-U18-P8A to R1-U1-P3B	3m
	R1-U18-P8B to R1-U1-P4B	
	R1-U18-P9A to R1-U1-P5B	
R1-U18 to Rack 2	R1-U18-P9B to R2-U1-P6B	5m
	R1-U18-P10A to R2-U1-P7B	
	R1-U18-P10B to R2-U1-P8B	
R1-U18 to Rack 3	R1-U18-P11A to R3-U1-P9B	5m
	R1-U18-P11B to R3-U1-P10B	

This table shows the cable connections for the second spine switch (R2-U1) when cabling three racks together.

TABLE 33 Leaf Switch Connections for the Second Rack in a Three-Rack System

Leaf Switch	Connection	Cable Length
R2-U24 within Rack 2	R2-U24-P8A to R2-U1-P3A	3m
	R2-U24-P8B to R2-U1-P4A	
	R2-U24-P9A to R2-U1-P5A	
R2-U24 to Rack 1	R2-U24-P11A to R1-U1-P9A	5m
	R2-U24-P11B to R1-U1-P10A	

Leaf Switch	Connection	Cable Length
R2-U24 to Rack 3	R2-U24-P9B to R3-U1-P6A	5m
	R2-U24-P10A to R3-U1-P7A	
	R2-U24-P10B to R3-U1-P8A	
R2-U18 within Rack 2	R2-U18-P8A to R2-U1-P3B	3m
	R2-U18-P8B to R2-U1-P4B	
	R2-U18-P9A to R2-U1-P5B	
R2-U18 to Rack 1	R2-U18-P11A to R1-U1-P9B	5m
	R2-U18-P11B to R1-U1-P10B	
R2-U18 to Rack 3	R2-U18-P9B to R3-U1-P6B	5m
	R2-U18-P10A to R3-U1-P7B	
	R2-U18-P10B to R3-U1-P8B	

This table shows the cable connections for the third spine switch (R3-U1) when cabling three full racks together.

TABLE 34 Leaf Switch Connections for the Third Rack in a Three-Rack System

Leaf Switch	Connection	Cable Length
R3-U24 within Rack 3	R3-U24-P8A to R3-U1-P3A	3m
	R3-U24-P8B to R3-U1-P4A	
	R3-U24-P9A to R3-U1-P5A	
R3-U24 to Rack 1	R3-U24-P9B to R1-U1-P6A	5m
	R3-U24-P10A to R1-U1-P7A	
	R3-U24-P10B to R1-U1-P8A	
R3-U24 to Rack 2	R3-U24-P11A to R2-U1-P9A	5m
	R3-U24-P11B to R2-U1-P10A	
R3-U18 within Rack 3	R3-U18-P8A to R3-U1-P3B	3m
	R3-U18-P8B to R3-U1-P4B	
	R3-U18-P9A to R3-U1-P5B	
R3-U18 to Rack 1	R3-U18-P9B to R1-U1-P6B	5m
	R3-U18-P10A to R1-U1-P7B	
	R3-U18-P10B to R1-U1-P8B	
R3-U18 to Rack 2	R3-U18-P11A to R2-U1-P9B	5m

Leaf Switch	Connection	Cable Length
	R3-U18-P11B to R2-U1-P10B	

Related Information

- “Hardware Installation Task Overview” on page 11
- “Multirack Cabling Overview” on page 75
- “Connect Additional SuperCluster M8 or SuperCluster M7 Racks” on page 77

Four-Rack Cabling

This table shows the cable connections for the first spine switch (R1-U1) when cabling four full racks together.

TABLE 35 Leaf Switch Connections for the First Rack in a Four-Rack System

Leaf Switch	Connection	Cable Length
R1-U24 within Rack 1	R1-U24-P8A to R1-U1-P3A	3m
	R1-U24-P8B to R1-U1-P4A	
R1-U24 to Rack 2	R1-U24-P9A to R2-U1-P5A	5m
	R1-U24-P9B to R2-U1-P6A	
R1-U24 to Rack 3	R1-U24-P10A to R3-U1-P7A	5m
	R1-U24-P10B to R3-U1-P8A	
R1-U24 to Rack 4	R1-U24-P11A to R4-U1-P9A	10m
	R1-U24-P11B to R4-U1-P10A	
R1-U18 within Rack 1	R1-U18-P8A to R1-U1-P3B	3m
	R1-U18-P8B to R1-U1-P4B	
R1-U18 to Rack 2	R1-U18-P9A to R2-U1-P5B	5m
	R1-U18-P9B to R2-U1-P6B	
R1-U18 to Rack 3	R1-U18-P10A to R3-U1-P7B	5m
	R1-U18-P10B to R3-U1-P8B	
R1-U18 to Rack 4	R1-U18-P11A to R4-U1-P9B	10m
	R1-U18-P11B to R4-U1-P10B	

This table shows the cable connections for the second spine switch (R2-U1) when cabling four full racks together.

TABLE 36 Leaf Switch Connections for the Second Rack in a Four-Rack System

Leaf Switch	Connection	Cable Length
R2-U24 within Rack 2	R2-U24-P8A to R2-U1-P3A	3m
	R2-U24-P8B to R2-U1-P4A	
R2-U24 to Rack 1	R2-U24-P11A to R1-U1-P9A	5m
	R2-U24-P11B to R1-U1-P10A	
R2-U24 to Rack 3	R2-U24-P9A to R3-U1-P5A	5m
	R2-U24-P9B to R3-U1-P6A	
R2-U24 to Rack 4	R2-U24-P10A to R4-U1-P7A	5m
	R2-U24-P10B to R4-U1-P8A	
R2-U18 within Rack 2	R2-U18-P8A to R2-U1-P3B	3m
	R2-U18-P8B to R2-U1-P4B	
R2-U18 to Rack 1	R2-U18-P11A to R1-U1-P9B	5m
	R2-U18-P11B to R1-U1-P10B	
R2-U18 to Rack 3	R2-U18-P9A to R3-U1-P5B	5m
	R2-U18-P9B to R3-U1-P6B	
R2-U18 to Rack 4	R2-U18-P10A to R4-U1-P7B	5m
	R2-U18-P10B to R4-U1-P8B	

This table shows the cable connections for the third spine switch (R3-U1) when cabling four full racks together.

TABLE 37 Leaf Switch Connections for the Third Rack in a Four-Rack System

Leaf Switch	Connection	Cable Length
R3-U24 within Rack 3	R3-U24-P8A to R3-U1-P3A	3m
	R3-U24-P8B to R3-U1-P4A	
R3-U24 to Rack 1	R3-U24-P10A to R1-U1-P7A	5m
	R3-U24-P10B to R1-U1-P8A	
R3-U24 to Rack 2	R3-U24-P11A to R2-U1-P9A	5m
	R3-U24-P11B to R2-U1-P10A	
R3-U24 to Rack 4	R3-U24-P9A to R4-U1-P5A	5m
	R3-U24-P9B to R4-U1-P6A	
R3-U18 within Rack 3	R3-U18-P8A to R3-U1-P3B	3m
	R3-U18-P8B to R3-U1-P4B	

Leaf Switch	Connection	Cable Length
R3-U18 to Rack 1	R3-U18-P10A to R1-U1-P7B	5m
	R3-U18-P10B to R1-U1-P8B	
R3-U18 to Rack 2	R3-U18-P11A to R2-U1-P9B	5m
	R3-U18-P11B to R2-U1-P10B	
R3-U18 to Rack 4	R3-U18-P9A to R4-U1-P5B	5m
	R3-U18-P9B to R4-U1-P6B	

This table shows the cable connections for the fourth spine switch (R4-U1) when cabling four full racks together.

TABLE 38 Leaf Switch Connections for the Fourth Rack in a Four-Rack System

Leaf Switch	Connection	Cable Length
R4-U24 within Rack 4	R4-U24-P8A to R4-U1-P3A	3m
	R4-U24-P8B to R4-U1-P4A	
R4-U24 to Rack 1	R4-U24-P9A to R1-U1-P5A	10m
	R4-U24-P9B to R1-U1-P6A	
R4-U24 to Rack 2	R4-U24-P10A to R2-U1-P7A	5m
	R4-U24-P10B to R2-U1-P8A	
R4-U24 to Rack 3	R4-U24-P11A to R3-U1-P9A	5m
	R4-U24-P11B to R3-U1-P10A	
R4-U18 within Rack 4	R4-U18-P8A to R4-U1-P3B	3m
	R4-U18-P8B to R4-U1-P4B	
R4-U18 to Rack 1	R4-U18-P9A to R1-U1-P5B	10m
	R4-U18-P9B to R1-U1-P6B	
R4-U18 to Rack 2	R4-U18-P10A to R2-U1-P7B	5m
	R4-U18-P10B to R2-U1-P8B	
R4-U18 to Rack 3	R4-U18-P11A to R3-U1-P9B	5m
	R4-U18-P11B to R3-U1-P10B	

Related Information

- “Hardware Installation Task Overview” on page 11
- “Multirack Cabling Overview” on page 75

■ “Connect Additional SuperCluster M8 or SuperCluster M7 Racks” on page 77

Five-Rack Cabling

This table shows the cable connections for the first spine switch (R1-U1) when cabling five full racks together.

TABLE 39 Leaf Switch Connections for the First Rack in a Five-Rack System

Leaf Switch	Connection	Cable Length
R1 U24 within Rack 1	R1-U24-P8A to R1-U1-P3A	3m
	R1-U24-P8B to R1-U1-P4A	
R1 U24 to Rack 2	R1-U24-P9A to R2-U1-P5A	5m
	R1-U24-P9B to R2-U1-P6A	
R1 U24 to Rack 3	R1-U24-P10A to R3-U1-P7A	5m
	R1-U24-P10B to R3-U1-P8A	
R1 U24 to Rack 4	R1-U24-P11A to R4-U1-P9A	10m
R1 U24 to Rack 5	R1-U24-P11B to R5-U1-P10A	10m
R1 U18 within Rack 1	R1-U18-P8A to R1-U1-P3B	3m
	R1-U18-P8B to R1-U1-P4B	
R1 U18 to Rack 2	R1-U18-P9A to R2-U1-P5B	3m
	R1-U18-P9B to R2-U1-P6B	
R1 U18 to Rack 3	R1-U18-P10A to R3-U1-P7B	5m
	R1-U18-P10B to R3-U1-P8B	
R1 U18 to Rack 4	R1-U18-P11A to R4-U1-P9B	10m
R1 U18 to Rack 5	R1-U18-P11B to R5-U1-P10B	10m

This table shows the cable connections for the second spine switch (R2-U1) when cabling five full racks together.

TABLE 40 Leaf Switch Connections for the Second Rack in a Five-Rack System

Leaf Switch	Connection	Cable Length
R2 U24 within Rack 2	R2-U24-P8A to R2-U1-P3A	3m
	R2-U24-P8B to R2-U1-P4A	
R2 U24 to Rack 1	R2-U24-P11B to R1-U1-P10A	5m
R2 U24 to Rack 3	R2-U24-P9A to R3-U1-P5A	5m

Leaf Switch	Connection	Cable Length
	R2-U24-P9B to R3-U1-P6A	
R2 U24 to Rack 4	R2-U24-P10A to R4-U1-P7A	5m
	R2-U24-P10B to R4-U1-P8A	
R2 U24 to Rack 5	R2-U24-P11A to R5-U1-P9A	10m
R2 U18 within Rack 2	R2-U18-P8A to R2-U1-P3B	3m
	R2-U18-P8B to R2-U1-P4B	
R2 U18 to Rack 1	R2-U18-P11B to R1-U1-P10B	5m
R2 U18 to Rack 3	R2-U18-P9A to R3-U1-P5B	5m
	R2-U18-P9B to R3-U1-P6B	
R2 U18 to Rack 4	R2-U18-P10A to R4-U1-P7B	5m
	R2-U18-P10B to R4-U1-P8B	
R2 U18 to Rack 5	R2-U18-P11A to R5-U1-P9B	10m

This table shows the cable connections for the third spine switch (R3-U1) when cabling five full racks together.

TABLE 41 Leaf Switch Connections for the Third Rack in a Five-Rack System

Leaf Switch	Connection	Cable Length
R3 U24 within Rack 3	R3-U24-P8A to R3-U1-P3A	3m
	R3-U24-P8B to R3-U1-P4A	
R3 U24 to Rack 1	R3-U24-P11A to R1-U1-P9A	5m
R3 U24 to Rack 2	R3-U24-P11B to R2-U1-P10A	5m
R3 U24 to Rack 4	R3-U24-P9A to R4-U1-P5A	5m
	R3-U24-P9B to R4-U1-P6A	
R3 U24 to Rack 5	R3-U24-P10A to R5-U1-P7A	5m
	R3-U24-P10B to R5-U1-P8A	
R3 U18 within Rack 3	R3-U18-P8A to R3-U1-P3B	3m
	R3-U18-P8B to R3-U1-P4B	
R3 U18 to Rack 1	R3-U18-P11A to R1-U1-P9B	5m
R3 U18 to Rack 2	R3-U18-P11B to R2-U1-P10B	5m
R3 U18 to Rack 4	R3-U18-P9A to R4-U1-P5B	5m
	R3-U18-P9B to R4-U1-P6B	
R3 U18 to Rack 5	R3-U18-P10A to R5-U1-P7B	5m
	R3-U18-P10B to R5-U1-P8B	

This table shows the cable connections for the fourth spine switch (R4-U1) when cabling five full racks together.

TABLE 42 Leaf Switch Connections for the Fourth Rack in a Five-Rack System

Leaf Switch	Connection	Cable Length
R4 U24 within Rack 4	R4-U24-P8A to R4-U1-P3A	3m
	R4-U24-P8B to R4-U1-P4A	
R4 U24 to Rack 1	R4-U24-P10A to R1-U1-P7A	10m
	R4-U24-P10B to R1-U1-P8A	
R4 U24 to Rack 2	R4-U24-P11A to R2-U1-P9A	5m
R4 U24 to Rack 3	R4-U24-P11B to R3-U1-P10A	5m
R4 U24 to Rack 5	R4-U24-P9A to R5-U1-P5A	5m
	R4-U24-P9B to R5-U1-P6A	
R4 U18 within Rack 4	R4-U18-P8A to R4-U1-P3B	3m
	R4-U18-P8B to R4-U1-P4B	
R4 U18 to Rack 1	R4-U18-P10A to R1-U1-P7B	10m
	R4-U18-P10B to R1-U1-P8B	
R4 U18 to Rack 2	R4-U18-P11A to R2-U1-P9B	5m
R4 U18 to Rack 3	R4-U18-P11B to R3-U1-P10B	5m
R4 U18 to Rack 5	R4-U18-P9A to R5-U1-P5B	5m
	R4-U18-P9B to R5-U1-P6B	

This table shows the cable connections for the fifth spine switch (R5-U1) when cabling five full racks together.

TABLE 43 Leaf Switch Connections for the Fifth Rack in a Five-Rack System

Leaf Switch	Connection	Cable Length
R5 U24 within Rack 5	R5-U24-P8A to R5-U1-P3A	3m
	R5-U24-P8B to R5-U1-P4A	
R5 U24 to Rack 1	R5-U24-P9A to R1-U1-P5A	10m
	R5-U24-P9B to R1-U1-P6A	
R5 U24 to Rack 2	R5-U24-P10A to R2-U1-P7A	10m
	R5-U24-P10B to R2-U1-P8A	
R5 U24 to Rack 3	R5-U24-P11A to R3-U1-P9A	5m
R5 U24 to Rack 4	R5-U24-P11B to R4-U1-P10A	5m

Leaf Switch	Connection	Cable Length
R5 U18 within Rack 5	R5-U18-P8A to R5-U1-P3B	3m
	R5-U18-P8B to R5-U1-P4B	
R5 U18 to Rack 1	R5-U18-P9A to R1-U1-P5B	10m
	R5-U18-P9B to R1-U1-P6B	
R5 U18 to Rack 2	R5-U18-P10A to R2-U1-P7B	10m
	R5-U18-P10B to R2-U1-P8B	
R5 U18 to Rack 3	R5-U18-P11A to R3-U1-P9B	5m
R5 U18 to Rack 4	R5-U18-P11B to R4-U1-P10B	5m

Related Information

- “Hardware Installation Task Overview” on page 11
- “Multirack Cabling Overview” on page 75
- “Connect Additional SuperCluster M8 or SuperCluster M7 Racks” on page 77

Six-Rack Cabling

This table shows the cable connections for the first spine switch (R1-U1) when cabling six full racks together.

TABLE 44 Leaf Switch Connections for the First Rack in a Six-Rack System

Leaf Switch	Connection	Cable Length
R1 U24 within Rack 1	R1-U24-P8A to R1-U1-P3A	3m
	R1-U24-P8B to R1-U1-P4A	
R1 U24 to Rack 2	R1-U24-P9A to R2-U1-P5A	5m
	R1-U24-P9B to R2-U1-P6A	
R1 U24 to Rack 3	R1-U24-P10A to R3-U1-P7A	5m
R1 U24 to Rack 4	R1-U24-P10B to R4-U1-P8A	10m
R1 U24 to Rack 5	R1-U24-P11A to R5-U1-P9A	10m
R1 U24 to Rack 6	R1-U24-P11B to R6-U1-P10A	10m
R1 U18 within Rack 1	R1-U18-P8A to R1-U1-P3B	3m
	R1-U18-P8B to R1-U1-P4B	
R1 U18 to Rack 2	R1-U18-P9A to R2-U1-P5B	5m

Leaf Switch	Connection	Cable Length
	R1-U18-P9B to R2-U1-P6B	
R1 U18 to Rack 3	R1-U18-P10A to R3-U1-P7B	5m
R1 U18 to Rack 4	R1-U18-P10B to R4-U1-P8B	10m
R1 U18 to Rack 5	R1-U18-P11A to R5-U1-P9B	10m
R1 U18 to Rack 6	R1-U18-P11B to R6-U1-P10B	10m

This table shows the cable connections for the second spine switch (R2-U1) when cabling six full racks together.

TABLE 45 Leaf Switch Connections for the Second Rack in a Six-Rack System

Leaf Switch	Connection	Cable Length
R2 U24 within Rack 2	R2-U24-P8A to R2-U1-P3A	3m
	R2-U24-P8B to R2-U1-P4A	
R2 U24 to Rack 1	R2-U24-P11B to R1-U1-P10A	5m
R2 U24 to Rack 3	R2-U24-P9A to R3-U1-P5A	5m
	R2-U24-P9B to R3-U1-P6A	
R2 U24 to Rack 4	R2-U24-P10A to R4-U1-P7A	5m
R2 U24 to Rack 5	R2-U24-P10B to R5-U1-P8A	10m
R2 U24 to Rack 6	R2-U24-P11Ato R6-U1-P9A	10m
R2 U18 within Rack 2	R2-U18-P8A to R2-U1-P3B	3m
	R2-U18-P8B to R2-U1-P4B	
R2 U18 to Rack 1	R2-U18-P11B to R1-U1-P10B	5m
R2 U18 to Rack 3	R2-U18-P9A to R3-U1-P5B	5m
	R2-U18-P9B to R3-U1-P6B	
R2 U18 to Rack 4	R2-U18-P10A to R4-U1-P7B	5m
R2 U18 to Rack 5	R2-U18-P10B to R5-U1-P8B	10m
R2 U18 to Rack 6	R2-U18-P11Ato R6-U1-P9B	10m

This table shows the cable connections for the third spine switch (R3-U1) when cabling six full racks together.

TABLE 46 Leaf Switch Connections for the Third Rack in a Six-Rack System

Leaf Switch	Connection	Cable Length
R3 U24 within Rack 3	R3-U24-P8A to R3-U1-P3A	3m
	R3-U24-P8B to R3-U1-P4A	

Leaf Switch	Connection	Cable Length
R3 U24 to Rack 1	R3-U24-P11A to R1-U1-P9A	5m
R3 U24 to Rack 2	R3-U24-P11B to R2-U1-P10A	5m
R3 U24 to Rack 4	R3-U24-P9A to R4-U1-P5A	5m
	R3-U24-P9B to R4-U1-P6A	
R3 U24 to Rack 5	R3-U24-P10A to R5-U1-P7A	5m
R3 U24 to Rack 6	R3-U24-P10B to R6-U1-P8A	5m
R3 U18 within Rack 3	R3-U18-P8A to R3-U1-P3B	3m
	R3-U18-P8B to R3-U1-P4B	
R3 U18 to Rack 1	R3-U18-P11A to R1-U1-P9B	5m
R3 U18 to Rack 2	R3-U18-P11B to R2-U1-P10B	5m
R3 U18 to Rack 4	R3-U18-P9A to R4-U1-P5B	5m
	R3-U18-P9B to R4-U1-P6B	
R3 U18 to Rack 5	R3-U18-P10A to R5-U1-P7B	5m
R3 U18 to Rack 6	R3-U18-P10B to R6-U1-P8B	5m

This table shows the cable connections for the fourth spine switch (R4-U1) when cabling six full racks together.

TABLE 47 Leaf Switch Connections for the Fourth Rack in a Six-Rack System

Leaf Switch	Connection	Cable Length
R4 U24 within Rack 4	R4-U24-P8A to R4-U1-P3A	3m
	R4-U24-P8B to R4-U1-P4A	
R4 U24 to Rack 1	R4-U24-P10B to R1-U1-P8A	10m
R4 U24 to Rack 2	R4-U24-P11A to R2-U1-P9A	5m
R4 U24 to Rack 3	R4-U24-P11B to R3-U1-P10A	5m
R4 U24 to Rack 5	R4-U24-P9A to R5-U1-P5A	5m
	R4-U24-P9B to R5-U1-P6A	
R4 U24 to Rack 6	R4-U24-P10A to R6-U1-P7A	5m
R4 U18 within Rack 4	R4-U18-P8A to R4-U1-P3B	3m
	R4-U18-P8B to R4-U1-P4B	
R4 U18 to Rack 1	R4-U18-P10B to R1-U1-P8B	10m
R4 U18 to Rack 2	R4-U18-P11A to R2-U1-P9B	5m
R4 U18 to Rack 3	R4-U18-P11B to R3-U1-P10B	5m
R4 U18 to Rack 5	R4-U18-P9A to R5-U1-P5B	5m
	R4-U18-P9B to R5-U1-P6B	

Leaf Switch	Connection	Cable Length
R4 U18 to Rack 6	R4-U18-P10A to R6-U1-P7B	5m

This table shows the cable connections for the fifth spine switch (R5-U1) when cabling six full racks together.

TABLE 48 Leaf Switch Connections for the Fifth Rack in a Six-Rack System

Leaf Switch	Connection	Cable Length
R5 U24 within Rack 5	R5-U24-P8A to R5-U1-P3A	3m
	R5-U24-P8B to R5-U1-P4A	
R5 U24 to Rack 1	R5-U24-P10A to R1-U1-P7A	10m
R5 U24 to Rack 2	R5-U24-P10B to R2-U1-P8A	10m
R5 U24 to Rack 3	R5-U24-P11A to R3-U1-P9A	5m
R5 U24 to Rack 4	R5-U24-P11B to R4-U1-P10A	5m
R5 U24 to Rack 6	R5-U24-P9A to R6-U1-P5A	5m
	R5-U24-P9B to R6-U1-P6A	
R5 U18 within Rack 5	R5-U18-P8A to R5-U1-P3B	3m
	R5-U18-P8B to R5-U1-P4B	
R5 U18 to Rack 1	R5-U18-P10A to R1-U1-P7B	10m
R5 U18 to Rack 2	R5-U18-P10B to R2-U1-P8B	10m
R5 U18 to Rack 3	R5-U18-P11A to R3-U1-P9B	5m
R5 U18 to Rack 4	R5-U18-P11B to R4-U1-P10B	5m
R5 U18 to Rack 6	R5-U18-P9A to R6-U1-P5B	5m
	R5-U18-P9B to R6-U1-P6B	

This table shows the cable connections for the sixth spine switch (R6-U1) when cabling six full racks together.

TABLE 49 Leaf Switch Connections for the Sixth Rack in a Six-Rack System

Leaf Switch	Connection	Cable Length
R6 U24 within Rack 6	R6-U24-P8A to R6-U1-P3A	3m
	R6-U24-P8B to R6-U1-P4A	
R6 U24 to Rack 1	R6-U24-P9A to R1-U1-P5A	10m
	R6-U24-P9B to R1-U1-P6A	
R6 U24 to Rack 2	R6-U24-P10A to R2-U1-P7A	10m

Leaf Switch	Connection	Cable Length
R6 U24 to Rack 3	R6-U24-P10B to R3-U1-P8A	5m
R6 U24 to Rack 4	R6-U24-P11A to R4-U1-P9A	5m
R6 U24 to Rack 5	R6-U24-P11B to R5-U1-P10A	5m
R6 U18 within Rack 6	R6-U18-P8A to R6-U1-P3B	3m
	R6-U18-P8B to R6-U1-P4B	
R6 U18 to Rack 2	R6-U18-P10A to R2-U1-P7B	10m
R6 U18 to Rack 1	R6-U18-P9A to R1-U1-P5B	10m
	R6-U18-P9B to R1-U1-P6B	
R6 U18 to Rack 3	R6-U18-P10B to R3-U1-P8B	5m
R6 U18 to Rack 4	R6-U18-P11A to R4-U1-P9B	5m
R6 U18 to Rack 5	R6-U18-P11B to R5-U1-P10B	5m

Related Information

- “Hardware Installation Task Overview” on page 11
- “Multirack Cabling Overview” on page 75
- “Connect Additional SuperCluster M8 or SuperCluster M7 Racks” on page 77

Seven-Rack Cabling

This table shows the cable connections for the first spine switch (R1-U1) when cabling seven full racks together.

TABLE 50 Leaf Switch Connections for the First Rack in a Seven-Rack System

Leaf Switch	Connection	Cable Length
R1 U24 within Rack 1	R1-U24-P8A to R1-U1-P3A	3m
	R1-U24-P8B to R1-U1-P4A	
R1 U24 to Rack 2	R1-U24-P9A to R2-U1-P5A	5m
R1 U24 to Rack 3	R1-U24-P9B to R3-U1-P6A	5m
R1 U24 to Rack 4	R1-U24-P10A to R4-U1-P7A	10m
R1 U24 to Rack 5	R1-U24-P10B to R5-U1-P8A	10m
R1 U24 to Rack 6	R1-U24-P11A to R6-U1-P9A	10m
R1 U24 to Rack 7	R1-U24-P11B to R7-U1-P10A	10m
R1 U18 within Rack 1	R1-U18-P8A to R1-U1-P3B	3m

Leaf Switch	Connection	Cable Length
	R1-U18-P8B to R1-U1-P4B	
R1 U18 to Rack 2	R1-U18-P9A to R2-U1-P5B	5m
R1 U18 to Rack 3	R1-U18-P9B to R3-U1-P6B	5m
R1 U18 to Rack 4	R1-U18-P10A to R4-U1-P7B	10m
R1 U18 to Rack 5	R1-U18-P10B to R5-U1-P8B	10m
R1 U18 to Rack 6	R1-U18-P11A to R6-U1-P9B	10m
R1 U18 to Rack 7	R1-U18-P11B to R7-U1-P10B	10m

This table shows the cable connections for the second spine switch (R2-U1) when cabling seven full racks together.

TABLE 51 Leaf Switch Connections for the Second Rack in a Seven-Rack System

Leaf Switch	Connection	Cable Length
R2 U24 within Rack 2	R2-U24-P8A to R2-U1-P3A	3m
	R2-U24-P8B to R2-U1-P4A	
R2 U24 to Rack 1	R2-U24-P11B to R1-U1-P10A	5m
R2 U24 to Rack 3	R2-U24-P9A to R3-U1-P5A	5m
R2 U24 to Rack 4	R2-U24-P9B to R4-U1-P6A	5m
R2 U24 to Rack 5	R2-U24-P10A to R5-U1-P7A	10m
R2 U24 to Rack 6	R2-U24-P10B to R6-U1-P8A	10m
R2 U24 to Rack 7	R2-U24-P11A to R7-U1-P9A	10m
R2 U18 within Rack 2	R2-U18-P8A to R2-U1-P3B	3m
	R2-U18-P8B to R2-U1-P4B	
R2 U18 to Rack 1	R2-U18-P11B to R1-U1-P10B	5m
R2 U18 to Rack 3	R2-U18-P9A to R3-U1-P5B	5m
R2 U18 to Rack 4	R2-U18-P9B to R4-U1-P6B	5m
R2 U18 to Rack 5	R2-U18-P10A to R5-U1-P7B	10m
R2 U18 to Rack 6	R2-U18-P10Bto R6-U1-P8B	10m
R2 U18 to Rack 7	R2-U18-P11A to R7-U1-P9B	10m

This table shows the cable connections for the third spine switch (R3-U1) when cabling seven full racks together.

TABLE 52 Leaf Switch Connections for the Third Rack in a Seven-Rack System

Leaf Switch	Connection	Cable Length
R3 U24 within Rack 3	R3-U24-P8A to R3-U1-P3A	3m

Leaf Switch	Connection	Cable Length
	R3-U24-P8B to R3-U1-P4A	
R3 U24 to Rack 1	R3-U24-P11A to R1-U1-P9A	5m
R3 U24 to Rack 2	R3-U24-P11B to R2-U1-P10A	5m
R3 U24 to Rack 4	R3-U24-P9A to R4-U1-P5A	5m
R3 U24 to Rack 5	R3-U24-P9B to R5-U1-P6A	5m
R3 U24 to Rack 6	R3-U24-P10A to R6-U1-P7A	10m
R3 U24 to Rack 7	R3-U24-P10B to R7-U1-P8A	10m
R3 U18 within Rack 3	R3-U18-P8A to R3-U1-P3B	3m
	R3-U18-P8B to R3-U1-P4B	
R3 U18 to Rack 1	R3-U18-P11A to R1-U1-P9B	5m
R3 U18 to Rack 2	R3-U18-P11B to R2-U1-P10B	5m
R3 U18 to Rack 4	R3-U18-P9A to R4-U1-P5B	5m
R3 U18 to Rack 5	R3-U18-P9B to R5-U1-P6B	5m
R3 U18 to Rack 6	R3-U18-P10A to R6-U1-P7B	10m
R3 U18 to Rack 7	R3-U18-P10B to R7-U1-P8B	10m

This table shows the cable connections for the fourth spine switch (R4-U1) when cabling seven full racks together.

TABLE 53 Leaf Switch Connections for the Fourth Rack in a Seven-Rack System

Leaf Switch	Connection	Cable Length
R4 U24 within Rack 4	R4-U24-P8A to R4-U1-P3A	3m
	R4-U24-P8B to R4-U1-P4A	
R4 U24 to Rack 1	R4-U24-P10B to R1-U1-P8A	10m
R4 U24 to Rack 2	R4-U24-P11A to R2-U1-P9A	5m
R4 U24 to Rack 3	R4-U24-P11B to R3-U1-P10A	5m
R4 U24 to Rack 5	R4-U24-P9A to R5-U1-P5A	5m
R4 U24 to Rack 6	R4-U24-P9B to R6-U1-P6A	5m
R4 U24 to Rack 7	R4-U24-P10A to R7-U1-P7A	10m
R4 U18 within Rack 4	R4-U18-P8A to R4-U1-P3B	3m
	R4-U18-P8B to R4-U1-P4B	
R4 U18 to Rack 1	R4-U18-P10B to R1-U1-P8B	10m
R4 U18 to Rack 2	R4-U18-P11A to R2-U1-P9B	5m
R4 U18 to Rack 3	R4-U18-P11B to R3-U1-P10B	5m
R4 U18 to Rack 5	R4-U18-P9A to R5-U1-P5B	5m
R4 U18 to Rack 6	R4-U18-P9B to R6-U1-P6B	5m

Leaf Switch	Connection	Cable Length
R4 U18 to Rack 7	R4-U18-P10A to R7-U1-P7B	10m

This table shows the cable connections for the fifth spine switch (R5-U1) when cabling seven full racks together.

TABLE 54 Leaf Switch Connections for the Fifth Rack in a Seven-Rack System

Leaf Switch	Connection	Cable Length
R5 U24 within Rack 5	R5-U24-P8A to R5-U1-P3A	3m
	R5-U24-P8B to R5-U1-P4A	
R5 U24 to Rack 1	R5-U24-P10A to R1-U1-P7A	10m
R5 U24 to Rack 2	R5-U24-P10B to R2-U1-P8A	10m
R5 U24 to Rack 3	R5-U24-P11A to R3-U1-P9A	5m
R5 U24 to Rack 4	R5-U24-P11B to R4-U1-P10A	5m
R5 U24 to Rack 6	R5-U24-P9A to R6-U1-P5A	5m
R5 U24 to Rack 7	R5-U24-P9B to R7-U1-P6A	5m
R5 U18 within Rack 5	R5-U18-P8A to R5-U1-P3B	3m
	R5-U18-P8B to R5-U1-P4B	
R5 U18 to Rack 1	R5-U18-P10A to R1-U1-P7B	10m
R5 U18 to Rack 2	R5-U18-P10B to R2-U1-P8B	10m
R5 U18 to Rack 3	R5-U18-P11A to R3-U1-P9B	5m
R5 U18 to Rack 4	R5-U18-P11B to R4-U1-P10B	5m
R5 U18 to Rack 6	R5-U18-P9A to R6-U1-P5B	5m
R5 U18 to Rack 7	R5-U18-P9B to R7-U1-P6B	5m

This table shows the cable connections for the sixth spine switch (R6-U1) when cabling seven full racks together.

TABLE 55 Leaf Switch Connections for the Sixth Rack in a Seven-Rack System

Leaf Switch	Connection	Cable Length
R6 U24 within Rack 6	R6-U24-P8A to R6-U1-P3A	3m
	R6-U24-P8B to R6-U1-P4A	
R6 U24 to Rack 1	R6-U24-P9B to R1-U1-P6A	10m
R6 U24 to Rack 2	R6-U24-P10A to R2-U1-P7A	10m
R6 U24 to Rack 3	R6-U24-P10B to R3-U1-P8A	5m
R6 U24 to Rack 4	R6-U24-P11A to R4-U1-P9A	5m

Leaf Switch	Connection	Cable Length
R6 U24 to Rack 5	R6-U24-P11B to R5-U1-P10A	5m
R6 U24 to Rack 7	R6-U24-P9A to R7-U1-P5A	5m
R6 U18 within Rack 6	R6-U18-P8A to R6-U1-P3B	3m
	R6-U18-P8B to R6-U1-P4B	
R6 U18 to Rack 1	R6-U18-P9B to R1-U1-P6B	10m
R6 U18 to Rack 2	R6-U18-P10A to R2-U1-P7B	10m
R6 U18 to Rack 3	R6-U18-P10B to R3-U1-P8B	5m
R6 U18 to Rack 4	R6-U18-P11A to R4-U1-P9B	5m
R6 U18 to Rack 5	R6-U18-P11B to R5-U1-P10B	5m
R6 U18 to Rack 7	R6-U18-P9A to R7-U1-P5B	5m

This table shows the cable connections for the seventh spine switch (R7-U1) when cabling seven full racks together.

TABLE 56 Leaf Switch Connections for the Seventh Rack in a Seven-Rack System

Leaf Switch	Connection	Cable Length
R7 U24 within Rack 7	R7-U24-P8A to R7-U1-P3A	3m
	R7-U24-P8B to R7-U1-P4A	
R7 U24 to Rack 1	R7-U24-P9A to R1-U1-P5A	10m
R7 U24 to Rack 2	R7-U24-P9B to R2-U1-P6A	10m
R7 U24 to Rack 3	R7-U24-P10A to R3-U1-P7A	10m
R7 U24 to Rack 4	R7-U24-P10B to R4-U1-P8A	10m
R7 U24 to Rack 5	R7-U24-P11A to R5-U1-P9A	5m
R7 U24 to Rack 6	R7-U24-P11B to R6-U1-P10A	5m
R7 U18 within Rack 7	R7-U18-P8A to R7-U1-P3B	3m
	R7-U18-P8B to R7-U1-P4B	
R7 U18 to Rack 1	R7-U18-P9A to R1-U1-P5B	10m
R7 U18 to Rack 2	R7-U18-P9B to R2-U1-P6B	10m
R7 U18 to Rack 3	R7-U18-P10A to R3-U1-P7B	10m
R7 U18 to Rack 4	R7-U18-P10B to R4-U1-P8B	10m
R7 U18 to Rack 5	R7-U18-P11A to R5-U1-P9B	5m
R7 U18 to Rack 6	R7-U18-P11B to R6-U1-P10B	5m

Related Information

- “Hardware Installation Task Overview” on page 11

- "Multirack Cabling Overview" on page 75
- "Connect Additional SuperCluster M8 or SuperCluster M7 Racks" on page 77

Eight-Rack Cabling

This table shows the cable connections for the first spine switch (R1-U1) when cabling eight full racks together.

TABLE 57 Leaf Switch Connections for the First Rack in an Eight-Rack System

Leaf Switch	Connection	Cable Length
R1 U24 within Rack 1	R1-U24-P8A to R1-U1-P3A	3m
R1 U24 to Rack 2	R1-U24-P8B to R2-U1-P4A	5m
R1 U24 to Rack 3	R1-U24-P9A to R3-U1-P5A	5m
R1 U24 to Rack 4	R1-U24-P9B to R4-U1-P6A	10m
R1 U24 to Rack 5	R1-U24-P10A to R5-U1-P7A	10m
R1 U24 to Rack 6	R1-U24-P10B to R6-U1-P8A	10m
R1 U24 to Rack 7	R1-U24-P11A to R7-U1-P9A	10m
R1 U24 to Rack 8	R1-U24-P11B to R8-U1-P10A	10m
R1 U18 within Rack 1	R1-U18-P8A to R1-U1-P3B	3m
R1 U18 to Rack 2	R1-U18-P8B to R2-U1-P4B	5m
R1 U18 to Rack 3	R1-U18-P9A to R3-U1-P5B	5m
R1 U18 to Rack 4	R1-U18-P9B to R4-U1-P6B	10m
R1 U18 to Rack 5	R1-U18-P10A to R5-U1-P7B	10m
R1 U18 to Rack 6	R1-U18-P10B to R6-U1-P8B	10m
R1 U18 to Rack 7	R1-U18-P11A to R7-U1-P8B	10m
R1 U18 to Rack 8	R1-U18-P11B to R8-U1-P10B	10m

This table shows the cable connections for the second spine switch (R2-U1) when cabling eight full racks together.

TABLE 58 Leaf Switch Connections for the Second Rack in an Eight-Rack System

Leaf Switch	Connection	Cable Length
R2 U24 within Rack 2	R2-U24-P8A to R2-U1-P3A	3m
R2 U24 to Rack 1	R2-U24-P11B to R1-U1-P10A	5m
R2 U24 to Rack 3	R2-U24-P8B to R3-U1-P4A	5m
R2 U24 to Rack 4	R2-U24-P9A to R4-U1-P5A	5m

Leaf Switch	Connection	Cable Length
R2 U24 to Rack 5	R2-U24-P9B to R5-U1-P6A	10m
R2 U24 to Rack 6	R2-U24-P10A to R6-U1-P7A	10m
R2 U24 to Rack 7	R2-U24-P10B to R7-U1-P8A	10m
R2 U24 to Rack 8	R2-U24-P11A to R8-U1-P9A	10m
R2 U18 within Rack 2	R2-U18-P8A to R2-U1-P3B	3m
R2 U18 to Rack 1	R2-U18-P11B to R1-U1-P10B	5m
R2 U18 to Rack 3	R2-U18-P8B to R3-U1-P4B	5m
R2 U18 to Rack 4	R2-U18-P9A to R4-U1-P5B	5m
R2 U18 to Rack 5	R2-U18-P9B to R5-U1-P6B	10m
R2 U18 to Rack 6	R2-U18-P10A to R6-U1-P7B	10m
R2 U18 to Rack 7	R2-U18-P10B to R7-U1-P8B	10m
R2 U18 to Rack 8	R2-U18-P11A to R8-U1-P9B	10m

This table shows the cable connections for the third spine switch (R3-U1) when cabling eight full racks together.

TABLE 59 Leaf Switch Connections for the Third Rack in an Eight-Rack System

Leaf Switch	Connection	Cable Length
R3 U24 within Rack 3	R3-U24-P8A to R3-U1-P3A	3m
R3 U24 to Rack 1	R3-U24-P11A to R1-U1-P9A	5m
R3 U24 to Rack 2	R3-U24-P11B to R2-U1-P10A	5m
R3 U24 to Rack 4	R3-U24-P8B to R4-U1-P4A	5m
R3 U24 to Rack 5	R3-U24-P9A to R5-U1-P5A	5m
R3 U24 to Rack 6	R3-U24-P9B to R6-U1-P6A	5m
R3 U24 to Rack 7	R3-U24-P10A to R7-U1-P7A	10m
R3 U24 to Rack 8	R3-U24-P10B to R8-U1-P8A	10m
R3 U18 within Rack 3	R3-U18-P8A to R3-U1-P3B	3m
R3 U18 to Rack 1	R3-U18-P11A to R1-U1-P9B	5m
R3 U18 to Rack 2	R3-U18-P11B to R2-U1-P10B	5m
R3 U18 to Rack 4	R3-U18-P8B to R4-U1-P4B	5m
R3 U18 to Rack 5	R3-U18-P9A to R5-U1-P5B	5m
R3 U18 to Rack 6	R3-U18-P9B to R6-U1-P6B	5m
R3 U18 to Rack 7	R3-U18-P10A to R7-U1-P7B	10m
R3 U18 to Rack 8	R3-U18-P10B to R8-U1-P8B	10m

This table shows the cable connections for the fourth spine switch (R4-U1) when cabling eight full racks together.

TABLE 60 Leaf Switch Connections for the Fourth Rack in an Eight-Rack System

Leaf Switch	Connection	Cable Length
R4 U24 within Rack 4	R4-U24-P8A to R4-U1-P3A	3m
R4 U24 to Rack 1	R4-U24-P10B to R1-U1-P8A	10m
R4 U24 to Rack 2	R4-U24-P11A to R2-U1-P9A	5m
R4 U24 to Rack 3	R4-U24-P11B to R3-U1-P10A	5m
R4 U24 to Rack 5	R4-U24-P8B to R5-U1-P4A	5m
R4 U24 to Rack 6	R4-U24-P9A to R6-U1-P5A	5m
R4 U24 to Rack 7	R4-U24-P9B to R7-U1-P6A	10m
R4 U24 to Rack 8	R4-U24-P10A to R8-U1-P7A	10m
R4 U18 within Rack 4	R4-U18-P8A to R4-U1-P3B	3m
R4 U18 to Rack 1	R4-U18-P10B to R1-U1-P8B	10m
R4 U18 to Rack 2	R4-U18-P11A to R2-U1-P9B	5m
R4 U18 to Rack 3	R4-U18-P11B to R3-U1-P10B	5m
R4 U18 to Rack 5	R4-U18-P8B to R5-U1-P4B	5m
R4 U18 to Rack 6	R4-U18-P9A to R6-U1-P5B	5m
R4 U18 to Rack 7	R4-U18-P9B to R7-U1-P6B	10m
R4 U18 to Rack 8	R4-U18-P10A to R8-U1-P7B	10m

This table shows the cable connections for the fifth spine switch (R5-U1) when cabling eight full racks together.

TABLE 61 Leaf Switch Connections for the Fifth Rack in an Eight-Rack System

Leaf Switch	Connection	Cable Length
R5 U24 within Rack 5	R5-U24-P8A to R5-U1-P3A	3m
R5 U24 to Rack 1	R5-U24-P10A to R1-U1-P7A	10m
R5 U24 to Rack 2	R5-U24-P10B to R2-U1-P8A	10m
R5 U24 to Rack 3	R5-U24-P11A to R3-U1-P9A	5m
R5 U24 to Rack 4	R5-U24-P11B to R4-U1-P10A	5m
R5 U24 to Rack 6	R5-U24-P8B to R6-U1-P4A	5m
R5 U24 to Rack 7	R5-U24-P9A to R7-U1-P5A	5m
R5 U24 to Rack 8	R5-U24-P9B to R8-U1-P6A	10m
R5 U18 within Rack 5	R5-U18-P8A to R5-U1-P3B	3m
R5 U18 to Rack 1	R5-U18-P10A to R1-U1-P7B	10m
R5 U18 to Rack 2	R5-U18-P10B to R2-U1-P8B	10m
R5 U18 to Rack 3	R5-U18-P11A to R3-U1-P9B	5m
R5 U18 to Rack 4	R5-U18-P11B to R4-U1-P10B	5m
R5 U18 to Rack 6	R5-U18-P8B to R6-U1-P4B	5m

Leaf Switch	Connection	Cable Length
R5 U18 to Rack 7	R5-U18-P9A to R7-U1-P5B	5m
R5 U18 to Rack 8	R5-U18-P9B to R8-U1-P6B	10m

This table shows the cable connections for the sixth spine switch (R6-U1) when cabling eight full racks together.

TABLE 62 Leaf Switch Connections for the Sixth Rack in an Eight-Rack System

Leaf Switch	Connection	Cable Length
R6 U24 within Rack 6	R6-U24-P8A to R6-U1-P3A	3m
R6 U24 to Rack 1	R6-U24-P9B to R1-U1-P6A	10m
R6 U24 to Rack 2	R6-U24-P10A to R2-U1-P7A	10m
R6 U24 to Rack 3	R6-U24-P10B to R3-U1-P8A	5m
R6 U24 to Rack 4	R6-U24-P11A to R4-U1-P9A	5m
R6 U24 to Rack 5	R6-U24-P11B to R5-U1-P10A	5m
R6 U24 to Rack 7	R6-U24-P8B to R7-U1-P4A	5m
R6 U24 to Rack 8	R6-U24-P9A to R8-U1-P5A	5m
R6 U18 within Rack 6	R6-U18-P8A to R6-U1-P3B	3m
R6 U18 to Rack 1	R6-U18-P9B to R1-U1-P6B	10m
R6 U18 to Rack 2	R6-U18-P10A to R2-U1-P7B	10m
R6 U18 to Rack 3	R6-U18-P10B to R3-U1-P8B	5m
R6 U18 to Rack 4	R6-U18-P11A to R4-U1-P9B	5m
R6 U18 to Rack 5	R6-U18-P11B to R5-U1-P10B	5m
R6 U18 to Rack 7	R6-U18-P8B to R7-U1-P4B	5m
R6 U18 to Rack 8	R6-U18-P9A to R8-U1-P5B	5m

This table shows the cable connections for the seventh spine switch (R7-U1) when cabling eight full racks together.

TABLE 63 Leaf Switch Connections for the Seventh Rack in an Eight-Rack System

Leaf Switch	Connection	Cable Length
R7 U24 within Rack 7	R7-U24-P8A to R7-U1-P3A	3m
R7 U24 to Rack 1	R7-U24-P9A to R1-U1-P5A	10m
R7 U24 to Rack 2	R7-U24-P9B to R2-U1-P6A	10m
R7 U24 to Rack 3	R7-U24-P10A to R3-U1-P7A	10m
R7 U24 to Rack 4	R7-U24-P10B to R4-U1-P8A	10m
R7 U24 to Rack 5	R7-U24-P11A to R5-U1-P9A	5m

Leaf Switch	Connection	Cable Length
R7 U24 to Rack 6	R7-U24-P11B to R6-U1-P10A	5m
R7 U24 to Rack 8	R7-U24-P8B to R8-U1-P4A	5m
R7 U18 within Rack 7	R7-U18-P8A to R7-U1-P3B	3m
R7 U18 to Rack 1	R7-U18-P9A to R1-U1-P5B	10m
R7 U18 to Rack 2	R7-U18-P9B to R2-U1-P6B	10m
R7 U18 to Rack 3	R7-U18-P10A to R3-U1-P7B	10m
R7 U18 to Rack 4	R7-U18-P10B to R4-U1-P8B	10m
R7 U18 to Rack 5	R7-U18-P11A to R5-U1-P9B	5m
R7 U18 to Rack 6	R7-U18-P11B to R6-U1-P10B	5m
R7 U18 to Rack 8	R7-U18-P8B to R8-U1-P4B	5m

This table shows the cable connections for the eighth spine switch (R8-U1) when cabling eight full racks together.

TABLE 64 Leaf Switch Connections for the Eighth Rack in an Eight-Rack System

Leaf Switch	Connection	Cable Length
R8 U24 within Rack 8	R8-U24-P8A to R8-U1-P3A	3m
R8 U24 to Rack 1	R8-U24-P8B to R1-U1-P4A	10m
R8 U24 to Rack 2	R8-U24-P9A to R2-U1-P5A	10m
R8 U24 to Rack 3	R8-U24-P9B to R3-U1-P6A	10m
R8 U24 to Rack 4	R8-U24-P10A to R4-U1-P7A	10m
R8 U24 to Rack 5	R8-U24-P10B to R5-U1-P8A	5m
R8 U24 to Rack 6	R8-U24-P11A to R6-U1-P9A	5m
R8 U24 to Rack 7	R8-U24-P11B to R7-U1-P10A	5m
R8 U18 within Rack 8	R8-U18-P8A to R8-U1-P3B	3m
R8 U18 to Rack 1	R8-U18-P8B to R1-U1-P4B	10m
R8 U18 to Rack 2	R8-U18-P9A to R2-U1-P5B	10m
R8 U18 to Rack 3	R8-U18-P9B to R3-U1-P6B	10m
R8 U18 to Rack 4	R8-U18-P10A to R4-U1-P7B	10m
R8 U18 to Rack 5	R8-U18-P10B to R5-U1-P8B	5m
R8 U18 to Rack 6	R8-U18-P11A to R6-U1-P9B	5m
R8 U18 to Rack 7	R8-U18-P1B to R7-U1-P10B	5m

Related Information

- “Hardware Installation Task Overview” on page 11
- “Multirack Cabling Overview” on page 75

- “Connect Additional SuperCluster M8 or SuperCluster M7 Racks” on page 77

Connecting Expansion Racks

These topics describe how to add optional expansion racks to Oracle SuperCluster M8 or SuperCluster M7.

Description	Links
Learn about adding expansion racks.	“Expansion Rack Overview” on page 104
View the location of expansion rack components.	“Expansion Rack Components” on page 105
Install expansion racks.	“Install Expansion Racks” on page 107
Review the cabling information for different quantities of expansion racks.	“One Expansion Rack Cabling” on page 109 “Two Expansion Racks Cabling” on page 111 “Three Expansion Racks Cabling” on page 113 “Four Expansion Racks Cabling” on page 116 “Five Expansion Racks Cabling” on page 119 “Six Expansion Racks Cabling” on page 123 “Seven Expansion Racks Cabling” on page 128
Review expansion rack default IP addresses.	“Expansion Rack Default IP Addresses” on page 132

Related Information

- “Installing SuperCluster M8 and SuperCluster M7 Systems” on page 11
- “Preparing the Site” on page 21
- “Preparing the Networks” on page 41
- “Cabling SuperCluster” on page 49

Expansion Rack Overview

Expansion racks provide additional storage for SuperCluster M8 or SuperCluster M7. The additional storage can be used for more storage servers and grid disks, for backups, historical data, and unstructured data.

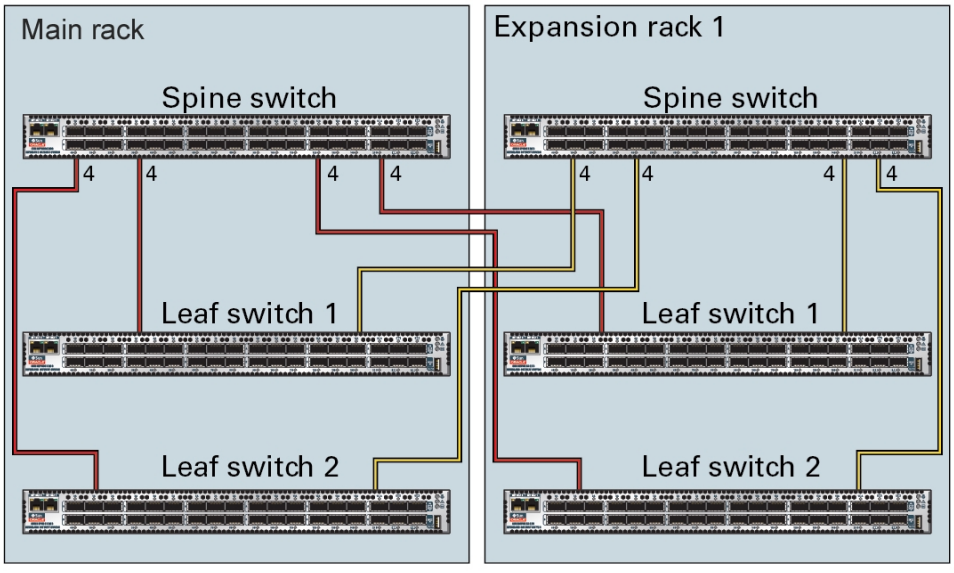
Expansion racks are available with a maximum of 19 storage servers. See "Expansion Rack Components" on page 105.

Expansion racks provide the same types of storage servers as the SuperCluster M8 or SuperCluster M7 rack:

- **EF storage server** – Contains Extreme Flash devices, 2 IB 4x QDR ports, GbE ports, and 1 Ethernet port.
- **HC storage server** – Contains high capacity drives, 2 IB 4x QDR ports, GbE ports, and 1 Ethernet port.

Expansion racks are connected to the SuperCluster M8 or SuperCluster M7 rack and to each other through leaf and spine switches.

This figure shows how the IB switches are connected across two racks.



Each leaf switch in a rack connects to these switches:

- Four connections to its internal spine switch
- Four connections to the spine switch in rack 2

The spine switch in rack 1 connects to these switches:

- Eight connections to both internal leaf switches
- Eight connections to both leaf switches in rack 2

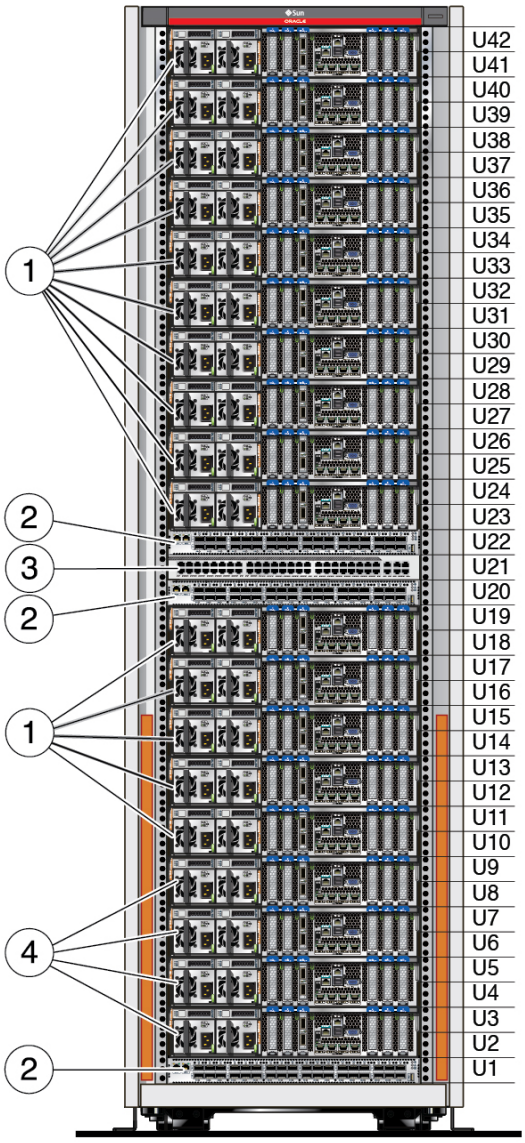
Related Information

- “Preparing the Site” on page 21
- “Expansion Rack Components” on page 105
- “Install Expansion Racks” on page 107
- “Expansion Rack Default IP Addresses” on page 132

Expansion Rack Components

Use this illustration and table to identify the locations of the main components in the expansion rack.

This illustration shows a fully populated expansion rack. Expansion racks might have fewer components.



No.	Network Component	Rack Location	Connector and Cable Type	Links
1	(Optional) 1 to 15 additional storage servers with these network components:	U10 - U19 U23 - U42	10GbE uses CAT6A or better.	

No.	Network Component	Rack Location	Connector and Cable Type	Links
	■ 4 1GbE/10GbE ports (NET 0, NET 1, NET 2, NET 3) ■ 1 dual-port 4X QDR (40 Gb/s) IB HCA ■ 1 SP Ethernet port for Oracle ILOM connectivity		Other RJ-45 connections can use CAT5 or better cables. IB ports use standard IB cables with QSFP connectors.	
2	3 IB switches	U1 (spine) U20 (leaf 1) U22 (leaf 2)	Standard IB cables with QSFP connectors.	"Cabling Multiple Expansion Racks" on page 109
3	1 48-port 10/100/1000 Ethernet management switch	U21	RJ-45 uses CAT5 or better cables.	
4	4 storage servers, with these network components: ■ 4 1GbE/10GbE ports (NET 0, NET 1, NET 2, NET 3) ■ 1 dual-port 4X QDR (40 Gb/s) IB HCA ■ 1 SP Ethernet port for Oracle ILOM connectivity	U2 - U9	10GbE uses CAT6A or better. Other RJ-45 connections can use CAT5 or better cables. IB ports use standard IB cables with QSFP connectors.	

Related Information

- "Preparing the Site" on page 21
- "Expansion Rack Overview" on page 104
- "Expansion Rack Components" on page 105
- "Install Expansion Racks" on page 107
- "Expansion Rack Default IP Addresses" on page 132

▼ Install Expansion Racks

Note - For information about preparing the site for expansion racks see "Preparing the Site" on page 21.

Use this procedure to add storage expansion racks to SuperCluster M8 or SuperCluster M7. Depending on the number of expansion racks and their distance from the SuperCluster rack, you might need to obtain longer cables than those internally installed in the SuperCluster rack.

1. **Position the expansion racks adjacent to SuperCluster.**

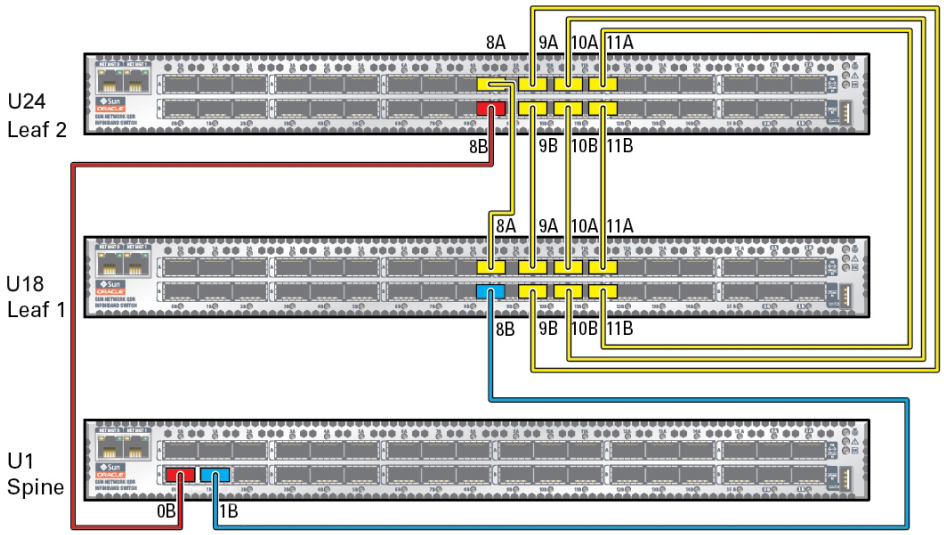
   See “Hardware Installation Task Overview” on page 11.

2. **Connect the expansion rack power cords to facility power and apply power.**

   This action enables the expansion racks to initialize while you perform the remaining installation steps. Refer to the *Sun Rack II User's Guide*. To locate this document, see “Hardware Installation Documents” on page 14.

3. **In the SuperCluster rack, disconnect the IB switch-to-switch cables.**

   Remove the seven existing inter-switch connections between each leaf switch, and the two connections between the leaf switches and the spine switch as shown in this diagram.



   The disconnected ports are used to make connections to the IB switches in the racks.

4. **Cable the expansion racks to the IB switches in SuperCluster and to each other.**

   Note - For SuperCluster M8, the leaf to leaf switches are factory installed with 1 meter cables. After removing the factory cables, use the 3 or 5 meter cables in the ship kit to cable expansion racks.

Use one of these sections based on the number of expansion racks you are adding:

- “One Expansion Rack Cabling” on page 109
- “Two Expansion Racks Cabling” on page 111
- “Three Expansion Racks Cabling” on page 113
- “Four Expansion Racks Cabling” on page 116
- “Five Expansion Racks Cabling” on page 119
- “Six Expansion Racks Cabling” on page 123
- “Seven Expansion Racks Cabling” on page 128

5. **Continue to the next installation step.**

   See “Hardware Installation Task Overview” on page 11.

Related Information

- “Preparing the Site” on page 21
- “Expansion Rack Overview” on page 104
- “Expansion Rack Components” on page 105
- “Expansion Rack Default IP Addresses” on page 132

Cabling Multiple Expansion Racks

Use one of these topics based on the number of expansion racks:

- “One Expansion Rack Cabling” on page 109
- “Two Expansion Racks Cabling” on page 111
- “Three Expansion Racks Cabling” on page 113
- “Four Expansion Racks Cabling” on page 116
- “Five Expansion Racks Cabling” on page 119
- “Six Expansion Racks Cabling” on page 123
- “Seven Expansion Racks Cabling” on page 128

One Expansion Rack Cabling

These abbreviations are used in the tables:

- **R***n* – Rack *n* (R1 is the SuperCluster M8 or SuperCluster M7 rack, R2 is the first expansion rack, and so on.)
- **U*n*** – Unit location in the rack
- **P***n* – Port *n*

TABLE 65 Leaf Switch Connections for Rack 1 (SuperCluster M8 or SuperCluster M7 Rack)

Leaf Switch	Connection	Cable Length
R1-U24 within Rack 1	R1-U24-P8A to R1-U1-P3A	3m
	R1-U24-P8B to R1-U1-P4A	
	R1-U24-P9A to R1-U1-P5A	
	R1-U24-P9B to R1-U1-P6A	
R1-U24 to Rack 2	R1-U24-P10A to R2-U1-P7A	5m
	R1-U24-P10B to R2-U1-P8A	
	R1-U24-P11A to R2-U1-P9A	
	R1-U24-P11B to R2-U1-P10A	
R1-U18 within Rack 1	R1-U18-P8A to R1-U1-P3B	3m
	R1-U18-P8B to R1-U1-P4B	
	R1-U18-P9A to R1-U1-P5B	
	R1-U18-P9B to R1-U1-P6B	
R1-U18 to Rack 2	R1-U18-P10A to R2-U1-P7B	5m
	R1-U18-P10B to R2-U1-P8B	
	R1-U18-P11A to R2-U1-P9B	
	R1-U18-P11B to R2-U1-P10B	

TABLE 66 Leaf Switch Connections for the First Expansion Rack

Leaf Switch	Connection	Cable Length[†]
R2-U22 within Rack 2	R2-U22-P8A to R2-U1-P3A	3m
	R2-U22-P8B to R2-U1-P4A	
	R2-U22-P9A to R2-U1-P5A	
	R2-U22-P9B to R2-U1-P6A	
R2-U22 to Rack 1	R2-U22-P10A to R1-U1-P7A	5m
	R2-U22-P10B to R1-U1-P8A	
	R2-U22-P11A to R1-U1-P9A	

Leaf Switch	Connection	Cable Length†
	R2-U22-P11B to R1-U1-P10A	
R2-U20 within Rack 2	R2-U20-P8A to R2-U1-P3B	3m
	R2-U20-P8B to R2-U1-P4B	
	R2-U20-P9A to R2-U1-P5B	
	R2-U20-P9B to R2-U1-P6B	
R2-U20 to Rack 1	R2-U20-P10A to R1-U1-P7B	5m
	R2-U20-P10B to R1-U1-P8B	
	R2-U20-P11A to R1-U1-P9B	
	R2-U20-P11B to R1-U1-P10B	

†Factory default length. Longer cables might be needed.

Related Information

- “Install Expansion Racks” on page 107
- “Expansion Rack Default IP Addresses” on page 132

Two Expansion Racks Cabling

These abbreviations are used in the tables:

- **R***n* – Rack *n* (R1 is the SuperCluster M8 or SuperCluster M7 rack, R2 is the first expansion rack, and so on.)
- **Un** – Unit location in the rack
- **P***n* – Port *n*

TABLE 67 Leaf Switch Connections for Rack 1 (SuperCluster M8 or SuperCluster M7 Rack)

Leaf Switch	Connection	Cable Length†
R1-U24 within Rack 1	R1-U24-P8A to R1-U1-P3A	5m
	R1-U24-P8B to R1-U1-P4A	
	R1-U24-P9A to R1-U1-P5A	
R1-U24 to Rack 2	R1-U24-P9B to R2-U1-P6A	5m
	R1-U24-P10A to R2-U1-P7A	

Leaf Switch	Connection	Cable Length[†]
R1-U24 to Rack 3	R1-U24-P10B to R2-U1-P8A R1-U24-P11A to R3-U1-P9A R1-U24-P11B to R3-U1-P10A	5m
R1-U18 within Rack 1	R1-U18-P8A to R1-U1-P3B R1-U18-P8B to R1-U1-P4B R1-U18-P9A to R1-U1-P5B	5m
R1-U18 to Rack 2	R1-U18-P9B to R2-U1-P6B R1-U18-P10A to R2-U1-P7B R1-U18-P10B to R2-U1-P8B	5m
R1-U18 to Rack 3	R1-U18-P11A to R3-U1-P9B R1-U18-P11B to R3-U1-P10B	5m

[†]Factory default length. Longer cables might be needed.

TABLE 68 Leaf Switch Connections for Rack 2 of 3

Leaf Switch	Connection	Cable Length[†]
R2-U22 within Rack 2	R2-U22-P8A to R2-U1-P3A R2-U22-P8B to R2-U1-P4A R2-U22-P9A to R2-U1-P5A	5m
R2-U22 to Rack 1	R2-U22-P11A to R1-U1-P9A R2-U22-P11B to R1-U1-P10A	5m
R2-U22 to Rack 3	R2-U22-P9B to R3-U1-P6A R2-U22-P10A to R3-U1-P7A R2-U22-P10B to R3-U1-P8A	5m
R2-U20 within Rack 2	R2-U20-P8A to R2-U1-P3B R2-U20-P8B to R2-U1-P4B R2-U20-P9A to R2-U1-P5B	5m
R2-U20 to Rack 1	R2-U20-P11A to R1-U1-P9B R2-U20-P11B to R1-U1-P10B	5m
R2-U20 to Rack 3	R2-U20-P9B to R3-U1-P6B R2-U20-P10A to R3-U1-P7B R2-U20-P10B to R3-U1-P8B	5m

[†]Factory default length. Longer cables might be needed.

TABLE 69 Leaf Switch Connections for Rack 3 of 3

Leaf Switch	Connection	Cable Length[†]
R3-U22 within Rack 3	R3-U22-P8A to R3-U1-P3A	5m
	R3-U22-P8B to R3-U1-P4A	
	R3-U22-P9A to R3-U1-P5A	
R3-U22 to Rack 1	R3-U22-P9B to R1-U1-P6A	5m
	R3-U22-P10A to R1-U1-P7A	
	R3-U22-P10B to R1-U1-P8A	
R3-U22 to Rack 2	R3-U22-P11A to R2-U1-P9A	5m
	R3-U22-P11B to R2-U1-P10A	
R3-U20 within Rack 3	R3-U20-P8A to R3-U1-P3B	5m
	R3-U20-P8B to R3-U1-P4B	
	R3-U20-P9A to R3-U1-P5B	
R3-U20 to Rack 1	R3-U20-P9B to R1-U1-P6B	5m
	R3-U20-P10A to R1-U1-P7B	
	R3-U20-P10B to R1-U1-P8B	
R3-U20 to Rack 2	R3-U20-P11A to R2-U1-P9B	5m
	R3-U20-P11B to R2-U1-P10B	

[†]Factory default length. Longer cables might be needed.

Related Information

- “Install Expansion Racks” on page 107
- “Expansion Rack Default IP Addresses” on page 132

Three Expansion Racks Cabling

These abbreviations are used in the tables:

- **R***n* – Rack *n* (R1 is the SuperCluster M8 or SuperCluster M7 rack, R2 is the first expansion rack, and so on.)
- **U***n* – Unit location in the rack
- **P***n* – Port *n*

TABLE 70 Leaf Switch Connections for Rack 1 (SuperCluster M8 or SuperCluster M7 Rack)

Leaf Switch	Connection	Cable Length†
R1-U24 within Rack 1	R1-U24-P8A to R1-U1-P3A	5m
	R1-U24-P8B to R1-U1-P4A	
R1-U24 to Rack 2	R1-U24-P9A to R2-U1-P5A	5m
	R1-U24-P9B to R2-U1-P6A	
R1-U24 to Rack 3	R1-U24-P10A to R3-U1-P7A	5m
	R1-U24-P10B to R3-U1-P8A	
R1-U24 to Rack 4	R1-U24-P11A to R4-U1-P9A	10m
	R1-U24-P11B to R4-U1-P10A	
R1-U18 within Rack 1	R1-U18-P8A to R1-U1-P3B	5m
	R1-U18-P8B to R1-U1-P4B	
R1-U18 to Rack 2	R1-U18-P9A to R2-U1-P5B	5m
	R1-U18-P9B to R2-U1-P6B	
R1-U18 to Rack 3	R1-U18-P10A to R3-U1-P7B	5m
	R1-U18-P10B to R3-U1-P8B	
R1-U18 to Rack 4	R1-U18-P11A to R4-U1-P9B	10m
	R1-U18-P11B to R4-U1-P10B	

†Factory default length. Longer cables might be needed.

TABLE 71 Leaf Switch Connections for Rack 2 of 4

Leaf Switch	Connection	Cable Length†
R2-U22 within Rack 2	R2-U22-P8A to R2-U1-P3A	5m
	R2-U22-P8B to R2-U1-P4A	
R2-U22 to Rack 1	R2-U22-P11A to R1-U1-P9A	5m
	R2-U22-P11B to R1-U1-P10A	
R2-U22 to Rack 3	R2-U22-P9A to R3-U1-P5A	5m
	R2-U22-P9B to R3-U1-P6A	
R2-U22 to Rack 4	R2-U22-P10A to R4-U1-P7A	5m
	R2-U22-P10B to R4-U1-P8A	
R2-U20 within Rack 2	R2-U20-P8A to R2-U1-P3B	5m
	R2-U20-P8B to R2-U1-P4B	
R2-U20 to Rack 1	R2-U20-P11A to R1-U1-P9B	5m
	R2-U20-P11B to R1-U1-P10B	

Leaf Switch	Connection	Cable Length†
R2-U20 to Rack 3	R2-U20-P9A to R3-U1-P5B	5m
	R2-U20-P9B to R3-U1-P6B	
R2-U20 to Rack 4	R2-U20-P10A to R4-U1-P7B	5m
	R2-U20-P10B to R4-U1-P8B	

†Factory default length. Longer cables might be needed.

TABLE 72 Leaf Switch Connections for Rack 3 of 4

Leaf Switch	Connection	Cable Length†
R3-U22 within Rack 3	R3-U22-P8A to R3-U1-P3A	5m
	R3-U22-P8B to R3-U1-P4A	
R3-U22 to Rack 1	R3-U22-P10A to R1-U1-P7A	5m
	R3-U22-P10B to R1-U1-P8A	
R3-U22 to Rack 2	R3-U22-P11A to R2-U1-P9A	5m
	R3-U22-P11B to R2-U1-P10A	
R3-U22 to Rack 4	R3-U22-P9A to R4-U1-P5A	5m
	R3-U22-P9B to R4-U1-P6A	
R3-U20 within Rack 3	R3-U20-P8A to R3-U1-P3B	5m
	R3-U20-P8B to R3-U1-P4B	
R3-U20 to Rack 1	R3-U20-P10A to R1-U1-P7B	5m
	R3-U20-P10B to R1-U1-P8B	
R3-U20 to Rack 2	R3-U20-P11A to R2-U1-P9B	5m
	R3-U20-P11B to R2-U1-P10B	
R3-U20 to Rack 4	R3-U20-P9A to R4-U1-P5B	5m
	R3-U20-P9B to R4-U1-P6B	

†Factory default length. Longer cables might be needed.

TABLE 73 Leaf Switch Connections for Rack 4 of 4

Leaf Switch	Connection	Cable Length†
R4-U22 within Rack 4	R4-U22-P8A to R4-U1-P3A	5m
	R4-U22-P8B to R4-U1-P4A	
R4-U22 to Rack 1	R4-U22-P9A to R1-U1-P5A	10m
	R4-U22-P9B to R1-U1-P6A	

Leaf Switch	Connection	Cable Length†
R4-U22 to Rack 2	R4-U22-P10A to R2-U1-P7A	5m
	R4-U22-P10B to R2-U1-P8A	
R4-U22 to Rack 3	R4-U22-P11A to R3-U1-P9A	5m
	R4-U22-P11B to R3-U1-P10A	
R4-U20 within Rack 4	R4-U20-P8A to R4-U1-P3B	5m
	R4-U20-P8B to R4-U1-P4B	
R4-U20 to Rack 1	R4-U20-P9A to R1-U1-P5B	10m
	R4-U20-P9B to R1-U1-P6B	
R4-U20 to Rack 2	R4-U20-P10A to R2-U1-P7B	5m
	R4-U20-P10B to R2-U1-P8B	
R4-U20 to Rack 3	R4-U20-P11A to R3-U1-P9B	5m
	R4-U20-P11B to R3-U1-P10B	

†Factory default length. Longer cables might be needed.

Related Information

- “Install Expansion Racks” on page 107
- “Expansion Rack Default IP Addresses” on page 132

Four Expansion Racks Cabling

These abbreviations are used in the tables:

- **R***n* – Rack *n* (R1 is the SuperCluster M8 or SuperCluster M7 rack, R2 is the first expansion rack, and so on.)
- **Un** – Unit location in the rack
- **P***n* – Port *n*

TABLE 74 Leaf Switch Connections for Rack 1 (SuperCluster M8 or SuperCluster M7 Rack)

Leaf Switch	Connection	Cable Length†
R1 U24 within Rack 1	R1-U24-P8A to R1-U1-P3A	3m
	R1-U24-P8B to R1-U1-P4A	
R1 U24 to Rack 2	R1-U24-P9A to R2-U1-P5A	5m

Leaf Switch	Connection	Cable Length†
	R1-U24-P9B to R2-U1-P6A	
R1 U24 to Rack 3	R1-U24-P10A to R3-U1-P7A	5m
	R1-U24-P10B to R3-U1-P8A	
R1 U24 to Rack 4	R1-U24-P11A to R4-U1-P9A	10m
R1 U24 to Rack 5	R1-U24-P11B to R5-U1-P10A	10m
R1 U18 within Rack 1	R1-U18-P8A to R1-U1-P3B	3m
	R1-U18-P8B to R1-U1-P4B	
R1 U18 to Rack 2	R1-U18-P9A to R2-U1-P5B	3m
	R1-U18-P9B to R2-U1-P6B	
R1 U18 to Rack 3	R1-U18-P10A to R3-U1-P7B	5m
	R1-U18-P10B to R3-U1-P8B	
R1 U18 to Rack 4	R1-U18-P11A to R4-U1-P9B	10m
R1 U18 to Rack 5	R1-U18-P11B to R5-U1-P10B	10m

†Factory default length. Longer cables might be needed.

TABLE 75 Leaf Switch Connections for Rack 2 of 5

Leaf Switch	Connection	Cable Length†
R2 U22 within Rack 2	R2-U22-P8A to R2-U1-P3A	3m
	R2-U22-P8B to R2-U1-P4A	
R2 U22 to Rack 1	R2-U22-P11B to R1-U1-P10A	5m
R2 U22 to Rack 3	R2-U22-P9A to R3-U1-P5A	5m
	R2-U22-P9B to R3-U1-P6A	
R2 U22 to Rack 4	R2-U22-P10A to R4-U1-P7A	5m
	R2-U22-P10B to R4-U1-P8A	
R2 U22 to Rack 5	R2-U22-P11A to R5-U1-P9A	10m
R2 U20 within Rack 2	R2-U20-P8A to R2-U1-P3B	3m
	R2-U20-P8B to R2-U1-P4B	
R2 U20 to Rack 1	R2-U20-P11B to R1-U1-P10B	5m
R2 U20 to Rack 3	R2-U20-P9A to R3-U1-P5B	5m
	R2-U20-P9B to R3-U1-P6B	
R2 U20 to Rack 4	R2-U20-P10A to R4-U1-P7B	5m
	R2-U20-P10B to R4-U1-P8B	
R2 U20 to Rack 5	R2-U20-P11A to R5-U1-P9B	10m

†Factory default length. Longer cables might be needed.

TABLE 76 Leaf Switch Connections for Rack 3 of 5

Leaf Switch	Connection	Cable Length†
R3 U22 within Rack 3	R3-U22-P8A to R3-U1-P3A	3m
	R3-U22-P8B to R3-U1-P4A	
R3 U22 to Rack 1	R3-U22-P11A to R1-U1-P9A	5m
R3 U22 to Rack 2	R3-U22-P11B to R2-U1-P10A	5m
R3 U22 to Rack 4	R3-U22-P9A to R4-U1-P5A	5m
	R3-U22-P9B to R4-U1-P6A	
R3 U22 to Rack 5	R3-U22-P10A to R5-U1-P7A	5m
	R3-U22-P10B to R5-U1-P8A	
R3 U20 within Rack 3	R3-U20-P8A to R3-U1-P3B	3m
	R3-U20-P8B to R3-U1-P4B	
R3 U20 to Rack 1	R3-U20-P11A to R1-U1-P9B	5m
R3 U20 to Rack 2	R3-U20-P11B to R2-U1-P10B	5m
R3 U20 to Rack 4	R3-U20-P9A to R4-U1-P5B	5m
	R3-U20-P9B to R4-U1-P6B	
R3 U20 to Rack 5	R3-U20-P10A to R5-U1-P7B	5m
	R3-U20-P10B to R5-U1-P8B	

†Factory default length. Longer cables might be needed.

TABLE 77 Leaf Switch Connections for Rack 4 of 5

Leaf Switch	Connection	Cable Length†
R4 U22 within Rack 4	R4-U22-P8A to R4-U1-P3A	3m
	R4-U22-P8B to R4-U1-P4A	
R4 U22 to Rack 1	R4-U22-P10A to R1-U1-P7A	10m
	R4-U22-P10B to R1-U1-P8A	
R4 U22 to Rack 2	R4-U22-P11A to R2-U1-P9A	5m
R4 U22 to Rack 3	R4-U22-P11B to R3-U1-P10A	5m
R4 U22 to Rack 5	R4-U22-P9A to R5-U1-P5A	5m
	R4-U22-P9B to R5-U1-P6A	
R4 U20 within Rack 4	R4-U20-P8A to R4-U1-P3B	3m
	R4-U20-P8B to R4-U1-P4B	
R4 U20 to Rack 1	R4-U20-P10A to R1-U1-P7B	10m
	R4-U20-P10B to R1-U1-P8B	
R4 U20 to Rack 2	R4-U20-P11A to R2-U1-P9B	5m

Leaf Switch	Connection	Cable Length†
R4 U20 to Rack 3	R4-U20-P11B to R3-U1-P10B	5m
R4 U20 to Rack 5	R4-U20-P9A to R5-U1-P5B	5m
	R4-U20-P9B to R5-U1-P6B	

†Factory default length. Longer cables might be needed.

TABLE 78 Leaf Switch Connections for Rack 5 of 5

Leaf Switch	Connection	Cable Length†
R5 U22 within Rack 5	R5-U22-P8A to R5-U1-P3A	3m
	R5-U22-P8B to R5-U1-P4A	
R5 U22 to Rack 1	R5-U22-P9A to R1-U1-P5A	10m
	R5-U22-P9B to R1-U1-P6A	
R5 U22 to Rack 2	R5-U22-P10A to R2-U1-P7A	10m
	R5-U22-P10B to R2-U1-P8A	
R5 U22 to Rack 3	R5-U22-P11A to R3-U1-P9A	5m
R5 U22 to Rack 4	R5-U22-P11B to R4-U1-P10A	5m
R5 U20 within Rack 5	R5-U20-P8A to R5-U1-P3B	3m
	R5-U20-P8B to R5-U1-P4B	
R5 U20 to Rack 1	R5-U20-P9A to R1-U1-P5B	10m
	R5-U20-P9B to R1-U1-P6B	
R5 U20 to Rack 2	R5-U20-P10A to R2-U1-P7B	10m
	R5-U20-P10B to R2-U1-P8B	
R5 U20 to Rack 3	R5-U20-P11A to R3-U1-P9B	5m
R5 U20 to Rack 4	R5-U20-P11B to R4-U1-P10B	5m

†Factory default length. Longer cables might be needed.

Related Information

- “Install Expansion Racks” on page 107
- “Expansion Rack Default IP Addresses” on page 132

Five Expansion Racks Cabling

These abbreviations are used in the tables:

- **R***n* – Rack *n* (R1 is the SuperCluster M8 or SuperCluster M7 rack, R2 is the first expansion rack, and so on.)
- **Un** – Unit location in the rack
- **P***n* – Port *n*

TABLE 79 Leaf Switch Connections for Rack 1 (SuperCluster M8 or SuperCluster M7 Rack)

Leaf Switch	Connection	Cable Length†
R1 U24 within Rack 1	R1-U24-P8A to R1-U1-P3A	3m
	R1-U24-P8B to R1-U1-P4A	
R1 U24 to Rack 2	R1-U24-P9A to R2-U1-P5A	5m
	R1-U24-P9B to R2-U1-P6A	
R1 U24 to Rack 3	R1-U24-P10A to R3-U1-P7A	5m
R1 U24 to Rack 4	R1-U24-P10B to R4-U1-P8A	10m
R1 U24 to Rack 5	R1-U24-P11A to R5-U1-P9A	10m
R1 U24 to Rack 6	R1-U24-P11B to R6-U1-P10A	10m
R1 U18 within Rack 1	R1-U18-P8A to R1-U1-P3B	3m
	R1-U18-P8B to R1-U1-P4B	
R1 U18 to Rack 2	R1-U18-P9A to R2-U1-P5B	5m
	R1-U18-P9B to R2-U1-P6B	
R1 U18 to Rack 3	R1-U18-P10A to R3-U1-P7B	5m
R1 U18 to Rack 4	R1-U18-P10B to R4-U1-P8B	10m
R1 U18 to Rack 5	R1-U18-P11A to R5-U1-P9B	10m
R1 U18 to Rack 6	R1-U18-P11B to R6-U1-P10B	10m

†Factory default length. Longer cables might be needed.

TABLE 80 Leaf Switch Connections for Rack 2 of 6

Leaf Switch	Connection	Cable Length†
R2 U22 within Rack 2	R2-U22-P8A to R2-U1-P3A	3m
	R2-U22-P8B to R2-U1-P4A	
R2 U22 to Rack 1	R2-U22-P11B to R1-U1-P10A	5m
R2 U22 to Rack 3	R2-U22-P9A to R3-U1-P5A	5m
	R2-U22-P9B to R3-U1-P6A	
R2 U22 to Rack 4	R2-U22-P10A to R4-U1-P7A	5m
R2 U22 to Rack 5	R2-U22-P10B to R5-U1-P8A	10m
R2 U22 to Rack 6	R2-U22-P11Ato R6-U1-P9A	10m
R2 U20 within Rack 2	R2-U20-P8A to R2-U1-P3B	3m

Leaf Switch	Connection	Cable Length†
	R2-U20-P8B to R2-U1-P4B	
R2 U20 to Rack 1	R2-U20-P11B to R1-U1-P10B	5m
R2 U20 to Rack 3	R2-U20-P9A to R3-U1-P5B	5m
	R2-U20-P9B to R3-U1-P6B	
R2 U20 to Rack 4	R2-U20-P10A to R4-U1-P7B	5m
R2 U20 to Rack 5	R2-U20-P10B to R5-U1-P8B	10m
R2 U20 to Rack 6	R2-U20-P11Ato R6-U1-P9B	10m

†Factory default length. Longer cables might be needed.

TABLE 81 Leaf Switch Connections for Rack 3 of 6

Leaf Switch	Connection	Cable Length†
R3 U22 within Rack 3	R3-U22-P8A to R3-U1-P3A	3m
	R3-U22-P8B to R3-U1-P4A	
R3 U22 to Rack 1	R3-U22-P11A to R1-U1-P9A	5m
R3 U22 to Rack 2	R3-U22-P11B to R2-U1-P10A	5m
R3 U22 to Rack 4	R3-U22-P9A to R4-U1-P5A	5m
	R3-U22-P9B to R4-U1-P6A	
R3 U22 to Rack 5	R3-U22-P10A to R5-U1-P7A	5m
R3 U22 to Rack 6	R3-U22-P10B to R6-U1-P8A	5m
R3 U20 within Rack 3	R3-U20-P8A to R3-U1-P3B	3m
	R3-U20-P8B to R3-U1-P4B	
R3 U20 to Rack 1	R3-U20-P11A to R1-U1-P9B	5m
R3 U20 to Rack 2	R3-U20-P11B to R2-U1-P10B	5m
R3 U20 to Rack 4	R3-U20-P9A to R4-U1-P5B	5m
	R3-U20-P9B to R4-U1-P6B	
R3 U20 to Rack 5	R3-U20-P10A to R5-U1-P7B	5m
R3 U20 to Rack 6	R3-U20-P10B to R6-U1-P8B	5m

†Factory default length. Longer cables might be needed.

TABLE 82 Leaf Switch Connections for Rack 4 of 6

Leaf Switch	Connection	Cable Length†
R4 U22 within Rack 4	R4-U22-P8A to R4-U1-P3A	3m
	R4-U22-P8B to R4-U1-P4A	
R4 U22 to Rack 1	R4-U22-P10B to R1-U1-P8A	10m

Leaf Switch	Connection	Cable Length†
R4 U22 to Rack 2	R4-U22-P11A to R2-U1-P9A	5m
R4 U22 to Rack 3	R4-U22-P11B to R3-U1-P10A	5m
R4 U22 to Rack 5	R4-U22-P9A to R5-U1-P5A	5m
	R4-U22-P9B to R5-U1-P6A	
R4 U22 to Rack 6	R4-U22-P10A to R6-U1-P7A	5m
R4 U20 within Rack 4	R4-U20-P8A to R4-U1-P3B	3m
	R4-U20-P8B to R4-U1-P4B	
R4 U20 to Rack 1	R4-U20-P10B to R1-U1-P8B	10m
R4 U20 to Rack 2	R4-U20-P11A to R2-U1-P9B	5m
R4 U20 to Rack 3	R4-U20-P11B to R3-U1-P10B	5m
R4 U20 to Rack 5	R4-U20-P9A to R5-U1-P5B	5m
	R4-U20-P9B to R5-U1-P6B	
R4 U20 to Rack 6	R4-U20-P10A to R6-U1-P7B	5m

†Factory default length. Longer cables might be needed.

TABLE 83 Leaf Switch Connections for Rack 5 of 6

Leaf Switch	Connection	Cable Length†
R5 U22 within Rack 5	R5-U22-P8A to R5-U1-P3A	3m
	R5-U22-P8B to R5-U1-P4A	
R5 U22 to Rack 1	R5-U22-P10A to R1-U1-P7A	10m
R5 U22 to Rack 2	R5-U22-P10B to R2-U1-P8A	10m
R5 U22 to Rack 3	R5-U22-P11A to R3-U1-P9A	5m
R5 U22 to Rack 4	R5-U22-P11B to R4-U1-P10A	5m
R5 U22 to Rack 6	R5-U22-P9A to R6-U1-P5A	5m
	R5-U22-P9B to R6-U1-P6A	
R5 U20 within Rack 5	R5-U20-P8A to R5-U1-P3B	3m
	R5-U20-P8B to R5-U1-P4B	
R5 U20 to Rack 1	R5-U20-P10A to R1-U1-P7B	10m
R5 U20 to Rack 2	R5-U20-P10B to R2-U1-P8B	10m
R5 U20 to Rack 3	R5-U20-P11A to R3-U1-P9B	5m
R5 U20 to Rack 4	R5-U20-P11B to R4-U1-P10B	5m
R5 U20 to Rack 6	R5-U20-P9A to R6-U1-P5B	5m
	R5-U20-P9B to R6-U1-P6B	

†Factory default length. Longer cables might be needed.

TABLE 84 Leaf Switch Connections for Rack 6 of 6

Leaf Switch	Connection	Cable Length[†]
R6 U22 within Rack 6	R6-U22-P8A to R6-U1-P3A	3m
	R6-U22-P8B to R6-U1-P4A	
R6 U22 to Rack 1	R6-U22-P9A to R1-U1-P5A	10m
	R6-U22-P9B to R1-U1-P6A	
R6 U22 to Rack 2	R6-U22-P10A to R2-U1-P7A	10m
R6 U22 to Rack 3	R6-U22-P10B to R3-U1-P8A	5m
R6 U22 to Rack 4	R6-U22-P11A to R4-U1-P9A	5m
R6 U22 to Rack 5	R6-U22-P11B to R5-U1-P10A	5m
R6 U20 within Rack 6	R6-U20-P8A to R6-U1-P3B	3m
	R6-U20-P8B to R6-U1-P4B	
R6 U20 to Rack 2	R6-U20-P10A to R2-U1-P7B	10m
R6 U20 to Rack 1	R6-U20-P9A to R1-U1-P5B	10m
	R6-U20-P9B to R1-U1-P6B	
R6 U20 to Rack 3	R6-U20-P10B to R3-U1-P8B	5m
R6 U20 to Rack 4	R6-U20-P11A to R4-U1-P9B	5m
R6 U20 to Rack 5	R6-U20-P11B to R5-U1-P10B	5m

[†]Factory default length. Longer cables might be needed.

Related Information

- “Install Expansion Racks” on page 107
- “Expansion Rack Default IP Addresses” on page 132

Six Expansion Racks Cabling

These abbreviations are used in the tables:

- **R***n* – Rack *n* (R1 is the SuperCluster M8 or SuperCluster M7 rack, R2 is the first expansion rack, and so on.)
- **Un** – Unit location in the Rack
- **P***n* – Port *n*

TABLE 85 Leaf Switch Connections for Rack 1 (SuperCluster M8 or SuperCluster M7 Rack)

Leaf Switch	Connection	Cable Length[†]
R1 U24 within Rack 1	R1-U24-P8A to R1-U1-P3A	3m
	R1-U24-P8B to R1-U1-P4A	
R1 U24 to Rack 2	R1-U24-P9A to R2-U1-P5A	5m
R1 U24 to Rack 3	R1-U24-P9B to R3-U1-P6A	5m
R1 U24 to Rack 4	R1-U24-P10A to R4-U1-P7A	10m
R1 U24 to Rack 5	R1-U24-P10B to R5-U1-P8A	10m
R1 U24 to Rack 6	R1-U24-P11A to R6-U1-P9A	10m
R1 U24 to Rack 7	R1-U24-P11B to R7-U1-P10A	10m
R1 U18 within Rack 1	R1-U18-P8A to R1-U1-P3B	3m
	R1-U18-P8B to R1-U1-P4B	
R1 U18 to Rack 2	R1-U18-P9A to R2-U1-P5B	5m
R1 U18 to Rack 3	R1-U18-P9B to R3-U1-P6B	5m
R1 U18 to Rack 4	R1-U18-P10A to R4-U1-P7B	10m
R1 U18 to Rack 5	R1-U18-P10B to R5-U1-P8B	10m
R1 U18 to Rack 6	R1-U18-P11A to R6-U1-P9B	10m
R1 U18 to Rack 7	R1-U18-P11B to R7-U1-P10B	10m

[†]Factory default length. Longer cables might be needed.

TABLE 86 Leaf Switch Connections for Rack 2 of 7

Leaf Switch	Connection	Cable Length[†]
R2 U22 within Rack 2	R2-U22-P8A to R2-U1-P3A	3m
	R2-U22-P8B to R2-U1-P4A	
R2 U22 to Rack 1	R2-U22-P11B to R1-U1-P10A	5m
R2 U22 to Rack 3	R2-U22-P9A to R3-U1-P5A	5m
R2 U22 to Rack 4	R2-U22-P9B to R4-U1-P6A	5m
R2 U22 to Rack 5	R2-U22-P10A to R5-U1-P7A	10m
R2 U22 to Rack 6	R2-U22-P10B to R6-U1-P8A	10m
R2 U22 to Rack 7	R2-U22-P11A to R7-U1-P9A	10m
R2 U20 within Rack 2	R2-U20-P8A to R2-U1-P3B	3m
	R2-U20-P8B to R2-U1-P4B	
R2 U20 to Rack 1	R2-U20-P11B to R1-U1-P10B	5m
R2 U20 to Rack 3	R2-U20-P9A to R3-U1-P5B	5m
R2 U20 to Rack 4	R2-U20-P9B to R4-U1-P6B	5m
R2 U20 to Rack 5	R2-U20-P10A to R5-U1-P7B	10m
R2 U20 to Rack 6	R2-U20-P10Bto R6-U1-P8B	10m

Leaf Switch	Connection	Cable Length†
R2 U20 to Rack 7	R2-U20-P11A to R7-U1-P9B	10m

†Factory default length. Longer cables might be needed.

TABLE 87 Leaf Switch Connections for Rack 3 of 7

Leaf Switch	Connection	Cable Length†
R3 U22 within Rack 3	R3-U22-P8A to R3-U1-P3A	3m
	R3-U22-P8B to R3-U1-P4A	
R3 U22 to Rack 1	R3-U22-P11A to R1-U1-P9A	5m
R3 U22 to Rack 2	R3-U22-P11B to R2-U1-P10A	5m
R3 U22 to Rack 4	R3-U22-P9A to R4-U1-P5A	5m
R3 U22 to Rack 5	R3-U22-P9B to R5-U1-P6A	5m
R3 U22 to Rack 6	R3-U22-P10A to R6-U1-P7A	10m
R3 U22 to Rack 7	R3-U22-P10B to R7-U1-P8A	10m
R3 U20 within Rack 3	R3-U20-P8A to R3-U1-P3B	3m
	R3-U20-P8B to R3-U1-P4B	
R3 U20 to Rack 1	R3-U20-P11A to R1-U1-P9B	5m
R3 U20 to Rack 2	R3-U20-P11B to R2-U1-P10B	5m
R3 U20 to Rack 4	R3-U20-P9A to R4-U1-P5B	5m
R3 U20 to Rack 5	R3-U20-P9B to R5-U1-P6B	5m
R3 U20 to Rack 6	R3-U20-P10A to R6-U1-P7B	10m
R3 U20 to Rack 7	R3-U20-P10B to R7-U1-P8B	10m

†Factory default length. Longer cables might be needed.

TABLE 88 Leaf Switch Connections for Rack 4 of 7

Leaf Switch	Connection	Cable Length†
R4 U22 within Rack 4	R4-U22-P8A to R4-U1-P3A	3m
	R4-U22-P8B to R4-U1-P4A	
R4 U22 to Rack 1	R4-U22-P10B to R1-U1-P8A	10m
R4 U22 to Rack 2	R4-U22-P11A to R2-U1-P9A	5m
R4 U22 to Rack 3	R4-U22-P11B to R3-U1-P10A	5m
R4 U22 to Rack 5	R4-U22-P9A to R5-U1-P5A	5m
R4 U22 to Rack 6	R4-U22-P9B to R6-U1-P6A	5m
R4 U22 to Rack 7	R4-U22-P10A to R7-U1-P7A	10m
R4 U20 within Rack 4	R4-U20-P8A to R4-U1-P3B	3m
	R4-U20-P8B to R4-U1-P4B	

Leaf Switch	Connection	Cable Length†
R4 U20 to Rack 1	R4-U20-P10B to R1-U1-P8B	10m
R4 U20 to Rack 2	R4-U20-P11A to R2-U1-P9B	5m
R4 U20 to Rack 3	R4-U20-P11B to R3-U1-P10B	5m
R4 U20 to Rack 5	R4-U20-P9A to R5-U1-P5B	5m
R4 U20 to Rack 6	R4-U20-P9B to R6-U1-P6B	5m
R4 U20 to Rack 7	R4-U20-P10A to R7-U1-P7B	10m

†Factory default length. Longer cables might be needed.

TABLE 89 Leaf Switch Connections for Rack 5 of 7

Leaf Switch	Connection	Cable Length†
R5 U22 within Rack 5	R5-U22-P8A to R5-U1-P3A	3m
	R5-U22-P8B to R5-U1-P4A	
R5 U22 to Rack 1	R5-U22-P10A to R1-U1-P7A	10m
R5 U22 to Rack 2	R5-U22-P10B to R2-U1-P8A	10m
R5 U22 to Rack 3	R5-U22-P11A to R3-U1-P9A	5m
R5 U22 to Rack 4	R5-U22-P11B to R4-U1-P10A	5m
R5 U22 to Rack 6	R5-U22-P9A to R6-U1-P5A	5m
R5 U22 to Rack 7	R5-U22-P9B to R7-U1-P6A	5m
R5 U20 within Rack 5	R5-U20-P8A to R5-U1-P3B	3m
	R5-U20-P8B to R5-U1-P4B	
R5 U20 to Rack 1	R5-U20-P10A to R1-U1-P7B	10m
R5 U20 to Rack 2	R5-U20-P10B to R2-U1-P8B	10m
R5 U20 to Rack 3	R5-U20-P11A to R3-U1-P9B	5m
R5 U20 to Rack 4	R5-U20-P11B to R4-U1-P10B	5m
R5 U20 to Rack 6	R5-U20-P9A to R6-U1-P5B	5m
R5 U20 to Rack 7	R5-U20-P9B to R7-U1-P6B	5m

†Factory default length. Longer cables might be needed.

TABLE 90 Leaf Switch Connections for Rack 6 of 7

Leaf Switch	Connection	Cable Length†
R6 U22 within Rack 6	R6-U22-P8A to R6-U1-P3A	3m
	R6-U22-P8B to R6-U1-P4A	
R6 U22 to Rack 1	R6-U22-P9B to R1-U1-P6A	10m
R6 U22 to Rack 2	R6-U22-P10A to R2-U1-P7A	10m
R6 U22 to Rack 3	R6-U22-P10B to R3-U1-P8A	5m
R6 U22 to Rack 4	R6-U22-P11A to R4-U1-P9A	5m

Leaf Switch	Connection	Cable Length†
R6 U22 to Rack 5	R6-U22-P11B to R5-U1-P10A	5m
R6 U22 to Rack 7	R6-U22-P9A to R7-U1-P5A	5m
R6 U20 within Rack 6	R6-U20-P8A to R6-U1-P3B	3m
	R6-U20-P8B to R6-U1-P4B	
R6 U20 to Rack 1	R6-U20-P9B to R1-U1-P6B	10m
R6 U20 to Rack 2	R6-U20-P10A to R2-U1-P7B	10m
R6 U20 to Rack 3	R6-U20-P10B to R3-U1-P8B	5m
R6 U20 to Rack 4	R6-U20-P11A to R4-U1-P9B	5m
R6 U20 to Rack 5	R6-U20-P11B to R5-U1-P10B	5m
R6 U20 to Rack 7	R6-U20-P9A to R7-U1-P5B	5m

†Factory default length. Longer cables might be needed.

TABLE 91 Leaf Switch Connections for Rack 7 of 7

Leaf Switch	Connection	Cable Length†
R7 U22 within Rack 7	R7-U22-P8A to R7-U1-P3A	3m
	R7-U22-P8B to R7-U1-P4A	
R7 U22 to Rack 1	R7-U22-P9A to R1-U1-P5A	10m
R7 U22 to Rack 2	R7-U22-P9B to R2-U1-P6A	10m
R7 U22 to Rack 3	R7-U22-P10A to R3-U1-P7A	10m
R7 U22 to Rack 4	R7-U22-P10B to R4-U1-P8A	10m
R7 U22 to Rack 5	R7-U22-P11A to R5-U1-P9A	5m
R7 U22 to Rack 6	R7-U22-P11B to R6-U1-P10A	5m
R7 U20 within Rack 7	R7-U20-P8A to R7-U1-P3B	3m
	R7-U20-P8B to R7-U1-P4B	
R7 U20 to Rack 1	R7-U20-P9A to R1-U1-P5B	10m
R7 U20 to Rack 2	R7-U20-P9B to R2-U1-P6B	10m
R7 U20 to Rack 3	R7-U20-P10A to R3-U1-P7B	10m
R7 U20 to Rack 4	R7-U20-P10B to R4-U1-P8B	10m
R7 U20 to Rack 5	R7-U20-P11A to R5-U1-P9B	5m
R7 U20 to Rack 6	R7-U20-P11B to R6-U1-P10B	5m

†Factory default length. Longer cables might be needed.

Related Information

- “Install Expansion Racks” on page 107
- “Expansion Rack Default IP Addresses” on page 132

Seven Expansion Racks Cabling

These abbreviations are used in the tables:

- **R***n* – Rack *n* (R1 is the SuperCluster M8 or SuperCluster M7 rack, R2 is the first expansion rack, and so on.)
- **Un** – Unit location in the rack
- **P***n* – Port *n*

TABLE 92 Leaf Switch Connections for Rack 1 (SuperCluster M8 or SuperCluster M7 Rack)

Leaf Switch	Connection	Cable Length[†]
R1 U24 within Rack 1	R1-U24-P8A to R1-U1-P3A	3m
R1 U24 to Rack 2	R1-U24-P8B to R2-U1-P4A	5m
R1 U24 to Rack 3	R1-U24-P9A to R3-U1-P5A	5m
R1 U24 to Rack 4	R1-U24-P9B to R4-U1-P6A	10m
R1 U24 to Rack 5	R1-U24-P10A to R5-U1-P7A	10m
R1 U24 to Rack 6	R1-U24-P10B to R6-U1-P8A	10m
R1 U24 to Rack 7	R1-U24-P11A to R7-U1-P9A	10m
R1 U24 to Rack 8	R1-U24-P11B to R8-U1-P10A	10m
R1 U18 within Rack 1	R1-U18-P8A to R1-U1-P3B	3m
R1 U18 to Rack 2	R1-U18-P8B to R2-U1-P4B	5m
R1 U18 to Rack 3	R1-U18-P9A to R3-U1-P5B	5m
R1 U18 to Rack 4	R1-U18-P9B to R4-U1-P6B	10m
R1 U18 to Rack 5	R1-U18-P10A to R5-U1-P7B	10m
R1 U18 to Rack 6	R1-U18-P10B to R6-U1-P8B	10m
R1 U18 to Rack 7	R1-U18-P11A to R7-U1-P8B	10m
R1 U18 to Rack 8	R1-U18-P11B to R8-U1-P10B	10m

[†]Factory default length. Longer cables might be needed.

TABLE 93 Leaf Switch Connections for Rack 2 of 8

Leaf Switch	Connection	Cable Length[†]
R2 U22 within Rack 2	R2-U22-P8A to R2-U1-P3A	3m
R2 U22 to Rack 1	R2-U22-P11B to R1-U1-P10A	5m
R2 U22 to Rack 3	R2-U22-P8B to R3-U1-P4A	5m
R2 U22 to Rack 4	R2-U22-P9A to R4-U1-P5A	5m
R2 U22 to Rack 5	R2-U22-P9B to R5-U1-P6A	10m
R2 U22 to Rack 6	R2-U22-P10A to R6-U1-P7A	10m
R2 U22 to Rack 7	R2-U22-P10B to R7-U1-P8A	10m

Leaf Switch	Connection	Cable Length†
R2 U22 to Rack 8	R2-U22-P11A to R8-U1-P9A	10m
R2 U20 within Rack 2	R2-U20-P8A to R2-U1-P3B	3m
R2 U20 to Rack 1	R2-U20-P11B to R1-U1-P10B	5m
R2 U20 to Rack 3	R2-U20-P8B to R3-U1-P4B	5m
R2 U20 to Rack 4	R2-U20-P9A to R4-U1-P5B	5m
R2 U20 to Rack 5	R2-U20-P9B to R5-U1-P6B	10m
R2 U20 to Rack 6	R2-U20-P10A to R6-U1-P7B	10m
R2 U20 to Rack 7	R2-U20-P10B to R7-U1-P8B	10m
R2 U20 to Rack 8	R2-U20-P11A to R8-U1-P9B	10m

†Factory default length. Longer cables might be needed.

TABLE 94 Leaf Switch Connections for Rack 3 of 8

Leaf Switch	Connection	Cable Length†
R3 U22 within Rack 3	R3-U22-P8A to R3-U1-P3A	3m
R3 U22 to Rack 1	R3-U22-P11A to R1-U1-P9A	5m
R3 U22 to Rack 2	R3-U22-P11B to R2-U1-P10A	5m
R3 U22 to Rack 4	R3-U22-P8B to R4-U1-P4A	5m
R3 U22 to Rack 5	R3-U22-P9A to R5-U1-P5A	5m
R3 U22 to Rack 6	R3-U22-P9B to R6-U1-P6A	5m
R3 U22 to Rack 7	R3-U22-P10A to R7-U1-P7A	10m
R3 U22 to Rack 8	R3-U22-P10B to R8-U1-P8A	10m
R3 U20 within Rack 3	R3-U20-P8A to R3-U1-P3B	3m
R3 U20 to Rack 1	R3-U20-P11A to R1-U1-P9B	5m
R3 U20 to Rack 2	R3-U20-P11B to R2-U1-P10B	5m
R3 U20 to Rack 4	R3-U20-P8B to R4-U1-P4B	5m
R3 U20 to Rack 5	R3-U20-P9A to R5-U1-P5B	5m
R3 U20 to Rack 6	R3-U20-P9B to R6-U1-P6B	5m
R3 U20 to Rack 7	R3-U20-P10A to R7-U1-P7B	10m
R3 U20 to Rack 8	R3-U20-P10B to R8-U1-P8B	10m

†Factory default length. Longer cables might be needed.

TABLE 95 Leaf Switch Connections for Rack 4 of 8

Leaf Switch	Connection	Cable Length†
R4 U22 within Rack 4	R4-U22-P8A to R4-U1-P3A	3m
R4 U22 to Rack 1	R4-U22-P10B to R1-U1-P8A	10m
R4 U22 to Rack 2	R4-U22-P11A to R2-U1-P9A	5m
R4 U22 to Rack 3	R4-U22-P11B to R3-U1-P10A	5m

Leaf Switch	Connection	Cable Length†
R4 U22 to Rack 5	R4-U22-P8B to R5-U1-P4A	5m
R4 U22 to Rack 6	R4-U22-P9A to R6-U1-P5A	5m
R4 U22 to Rack 7	R4-U22-P9B to R7-U1-P6A	10m
R4 U22 to Rack 8	R4-U22-P10A to R8-U1-P7A	10m
R4 U20 within Rack 4	R4-U20-P8A to R4-U1-P3B	3m
R4 U20 to Rack 1	R4-U20-P10B to R1-U1-P8B	10m
R4 U20 to Rack 2	R4-U20-P11A to R2-U1-P9B	5m
R4 U20 to Rack 3	R4-U20-P11B to R3-U1-P10B	5m
R4 U20 to Rack 5	R4-U20-P8B to R5-U1-P4B	5m
R4 U20 to Rack 6	R4-U20-P9A to R6-U1-P5B	5m
R4 U20 to Rack 7	R4-U20-P9B to R7-U1-P6B	10m
R4 U20 to Rack 8	R4-U20-P10A to R8-U1-P7B	10m

†Factory default length. Longer cables might be needed.

TABLE 96 Leaf Switch Connections for Rack 5 of 8

Leaf Switch	Connection	Cable Length†
R5 U22 within Rack 5	R5-U22-P8A to R5-U1-P3A	3m
R5 U22 to Rack 1	R5-U22-P10A to R1-U1-P7A	10m
R5 U22 to Rack 2	R5-U22-P10B to R2-U1-P8A	10m
R5 U22 to Rack 3	R5-U22-P11A to R3-U1-P9A	5m
R5 U22 to Rack 4	R5-U22-P11B to R4-U1-P10A	5m
R5 U22 to Rack 6	R5-U22-P8B to R6-U1-P4A	5m
R5 U22 to Rack 7	R5-U22-P9A to R7-U1-P5A	5m
R5 U22 to Rack 8	R5-U22-P9B to R8-U1-P6A	10m
R5 U20 within Rack 5	R5-U20-P8A to R5-U1-P3B	3m
R5 U20 to Rack 1	R5-U20-P10A to R1-U1-P7B	10m
R5 U20 to Rack 2	R5-U20-P10B to R2-U1-P8B	10m
R5 U20 to Rack 3	R5-U20-P11A to R3-U1-P9B	5m
R5 U20 to Rack 4	R5-U20-P11B to R4-U1-P10B	5m
R5 U20 to Rack 6	R5-U20-P8B to R6-U1-P4B	5m
R5 U20 to Rack 7	R5-U20-P9A to R7-U1-P5B	5m
R5 U20 to Rack 8	R5-U20-P9B to R8-U1-P6B	10m

†Factory default length. Longer cables might be needed.

TABLE 97 Leaf Switch Connections for Rack 6 of 8

Leaf Switch	Connection	Cable Length†
R6 U22 within Rack 6	R6-U22-P8A to R6-U1-P3A	3m

Leaf Switch	Connection	Cable Length†
R6 U22 to Rack 1	R6-U22-P9B to R1-U1-P6A	10m
R6 U22 to Rack 2	R6-U22-P10A to R2-U1-P7A	10m
R6 U22 to Rack 3	R6-U22-P10B to R3-U1-P8A	5m
R6 U22 to Rack 4	R6-U22-P11A to R4-U1-P9A	5m
R6 U22 to Rack 5	R6-U22-P11B to R5-U1-P10A	5m
R6 U22 to Rack 7	R6-U22-P8B to R7-U1-P4A	5m
R6 U22 to Rack 8	R6-U22-P9A to R8-U1-P5A	5m
R6 U20 within Rack 6	R6-U20-P8A to R6-U1-P3B	3m
R6 U20 to Rack 1	R6-U20-P9B to R1-U1-P6B	10m
R6 U20 to Rack 2	R6-U20-P10A to R2-U1-P7B	10m
R6 U20 to Rack 3	R6-U20-P10B to R3-U1-P8B	5m
R6 U20 to Rack 4	R6-U20-P11A to R4-U1-P9B	5m
R6 U20 to Rack 5	R6-U20-P11B to R5-U1-P10B	5m
R6 U20 to Rack 7	R6-U20-P8B to R7-U1-P4B	5m
R6 U20 to Rack 8	R6-U20-P9A to R8-U1-P5B	5m

†Factory default length. Longer cables might be needed.

TABLE 98 Leaf Switch Connections for Rack 7 of 8

Leaf Switch	Connection	Cable Length†
R7 U22 within Rack 7	R7-U22-P8A to R7-U1-P3A	3m
R7 U22 to Rack 1	R7-U22-P9A to R1-U1-P5A	10m
R7 U22 to Rack 2	R7-U22-P9B to R2-U1-P6A	10m
R7 U22 to Rack 3	R7-U22-P10A to R3-U1-P7A	10m
R7 U22 to Rack 4	R7-U22-P10B to R4-U1-P8A	10m
R7 U22 to Rack 5	R7-U22-P11A to R5-U1-P9A	5m
R7 U22 to Rack 6	R7-U22-P11B to R6-U1-P10A	5m
R7 U22 to Rack 8	R7-U22-P8B to R8-U1-P4A	5m
R7 U20 within Rack 7	R7-U20-P8A to R7-U1-P3B	3m
R7 U20 to Rack 1	R7-U20-P9A to R1-U1-P5B	10m
R7 U20 to Rack 2	R7-U20-P9B to R2-U1-P6B	10m
R7 U20 to Rack 3	R7-U20-P10A to R3-U1-P7B	10m
R7 U20 to Rack 4	R7-U20-P10B to R4-U1-P8B	10m
R7 U20 to Rack 5	R7-U20-P11A to R5-U1-P9B	5m
R7 U20 to Rack 6	R7-U20-P11B to R6-U1-P10B	5m
R7 U20 to Rack 8	R7-U20-P8B to R8-U1-P4B	5m

†Factory default length. Longer cables might be needed.

TABLE 99 Leaf Switch Connections for Rack 8 of 8

Leaf Switch	Connection	Cable Length[†]
R8 U22 within Rack 8	R8-U22-P8A to R8-U1-P3A	3m
R8 U22 to Rack 1	R8-U22-P8B to R1-U1-P4A	10m
R8 U22 to Rack 2	R8-U22-P9A to R2-U1-P5A	10m
R8 U22 to Rack 3	R8-U22-P9B to R3-U1-P6A	10m
R8 U22 to Rack 4	R8-U22-P10A to R4-U1-P7A	10m
R8 U22 to Rack 5	R8-U22-P10B to R5-U1-P8A	5m
R8 U22 to Rack 6	R8-U22-P11A to R6-U1-P9A	5m
R8 U22 to Rack 7	R8-U22-P11B to R7-U1-P10A	5m
R8 U20 within Rack 8	R8-U20-P8A to R8-U1-P3B	3m
R8 U20 to Rack 1	R8-U20-P8B to R1-U1-P4B	10m
R8 U20 to Rack 2	R8-U20-P9A to R2-U1-P5B	10m
R8 U20 to Rack 3	R8-U20-P9B to R3-U1-P6B	10m
R8 U20 to Rack 4	R8-U20-P10A to R4-U1-P7B	10m
R8 U20 to Rack 5	R8-U20-P10B to R5-U1-P8B	5m
R8 U20 to Rack 6	R8-U20-P11A to R6-U1-P9B	5m
R8 U20 to Rack 7	R8-U20-P1B to R7-U1-P10B	5m

[†]Factory default length. Longer cables might be needed.

Related Information

- “Install Expansion Racks” on page 107
- “Expansion Rack Default IP Addresses” on page 132

Expansion Rack Default IP Addresses

Component	NET 0 IP Addresses	Oracle ILOM IP Addresses	IB Active Bonded IP Addresses
Storage Server 18	192.168.1.68	192.168.1.168	192.168.10.86 192.168.10.85
Storage Server 17	192.168.1.67	192.168.1.167	192.168.10.84 192.168.10.83
Storage Server 16	192.168.1.66	192.168.1.166	192.168.10.82 192.168.10.81

Component	NET 0 IP Addresses	Oracle ILOM IP Addresses	IB Active Bonded IP Addresses
Storage Server 15	192.168.1.65	192.168.1.165	192.168.10.80 192.168.10.79
Storage Server 14	192.168.1.64	192.168.1.164	192.168.10.78 192.168.10.77
Storage Server 13	192.168.1.63	192.168.1.163	192.168.10.76 192.168.10.75
Storage Server 12	192.168.1.62	192.168.1.162	192.168.10.74 192.168.10.73
Storage Server 11	192.168.1.61	192.168.1.161	192.168.10.72 192.168.10.71
Storage Server 10	192.168.1.60	192.168.1.160	192.168.10.70 192.168.10.69
Storage Server 9	192.168.1.59	192.168.1.159	192.168.10.68 192.168.10.67
Storage Server 8	192.168.1.58	192.168.1.158	192.168.10.66 192.168.10.65
Storage Server 7	192.168.1.57	192.168.1.157	192.168.10.64 192.168.10.63
Storage Server 6	192.168.1.56	192.168.1.156	192.168.10.62 192.168.10.61
Storage Server 5	192.168.1.55	192.168.1.155	192.168.10.60 192.168.10.59
Storage Server 4	192.168.1.54	192.168.1.154	192.168.10.58 192.168.10.57
Storage Server 3	192.168.1.53	192.168.1.153	192.168.10.56 192.168.10.55
Storage Server 2	192.168.1.52	192.168.1.152	192.168.10.54 192.168.10.53
Storage Server 1	192.168.1.51	192.168.1.151	192.168.10.52 192.168.10.51
IB switch 3	192.168.1.223	NA	NA

Component	NET 0 IP Addresses	Oracle ILOM IP Addresses	IB Active Bonded IP Addresses
IB switch 2	192.168.1.222	NA	NA
IB switch 1	192.168.1.221	NA	NA
Ethernet switch	192.168.1.220	NA	NA
PDU-A	192.168.1.212	NA	NA
PDU-B	192.168.1.213	NA	NA

Related Information

- “Preparing the Site” on page 21
- “Expansion Rack Overview” on page 104
- “Expansion Rack Components” on page 105
- “Install Expansion Racks” on page 107

Glossary

A

Application Domain — A domain that runs Oracle Solaris and client applications.

ASMM — Automatic shared memory management.

ASR — Auto Service Request. A feature of Oracle or Sun hardware that automatically opens service requests when specific hardware faults occur. ASR is integrated with MOS and requires a support agreement. See also MOS.

C

CFM — Cubic feet per minute.

Cisco Catalyst Ethernet switch — Provides the SuperCluster M8 and SuperCluster M7 management network. Referred to in this documentation using the shortened name “Ethernet management switch.” See also Ethernet management switch.

CMIOU — CPU, memory, and I/O unit. Each CMIOU contains 1 CMP, 16 DIMM slots, and 1 I/O hub chip. Each CMIOU also hosts an eUSB device.

COD — Capacity on Demand.

compute server — Shortened name for the SPARC M8 server, a major component of SuperCluster M8, or SPARC M7 server, a major component of SuperCluster M7.

D

Database Domain — The domain that contains the SuperCluster M8 or SuperCluster M7 database.

DB Oracle Database.

DCM Domain configuration management. The reconfiguration of boards in PDomains for Enterprise-class systems. See also PDomain.

dedicated domain A SuperCluster LDom category that includes the domains configured at installation time as either a Database Domain or an Application Domain (running the Oracle Solaris 11 OS). Dedicated domains have direct access to the 10GbE NICs and IB HCAs (and Fibre Channel cards, if present). See also Database Domain and Application Domain.

DHCP Dynamic Host Configuration Protocol. Software that automatically assigns IP addresses to clients on a TCP/IP network. See also TCP.

DIMM Dual in-line memory module.

DISM Dynamic intimate shared memory.

E

EECS Oracle Exalogic Elastic Cloud software.

EPO switch Emergency power-off switch.

ESD Electrostatic discharge.

Ethernet management switch Shortened name for the Cisco Catalyst Ethernet switch. See also Cisco Catalyst Ethernet switch.

eUSB Embedded USB. A flash-based drive designed specifically to be used as a boot device. An eUSB does not provide storage for applications or customer data.

expansion rack Shortened name for optional Oracle Exadata Storage Expansion Racks (up to 17) that can be added to SuperCluster M8 or SuperCluster M7. See also Oracle Exadata Storage Expansion Rack.

F

FAN Fast application notification event.

FCoE Fibre Channel over Ethernet.

FM Fan module.

FMA Fault management architecture. A feature of Oracle Solaris servers that includes error handlers, structured error telemetry, automated diagnostic software, response agents, and messaging.

FRU Field-replaceable unit.

G

GB Gigabyte. 1 gigabyte = 1024 megabytes.

GbE Gigabit Ethernet.

GNS Grid Naming Service.

H

HCA Host channel adapter.

HDD Hard disk drive. In Oracle Solaris OS output, HDD can refer to hard disk drives or SSDs.

I

I/O Domain If you have Root Domains, you create I/O Domains with your choice of resources at the time of your choosing. The I/O Domain Creation tool enables you to assign resources to I/O Domains from the CPU and memory repositories, and from virtual functions hosted by Root Domains. When you create an I/O Domain, you assign it as a Database Domain or Application Domain running the Oracle Solaris 11 OS. See also Root Domain.

IB InfiniBand.

IB switch Shortened name for the Sun Datacenter InfiniBand Switch 36. See also leaf switch, spine switch, and Sun Datacenter InfiniBand Switch 36.

ILOM See Oracle ILOM.

IPMI Intelligent Platform Management Interface.

IPMP IP network multipathing.

iSCSI Internet Small Computer System Interface.

K

KVMS Keyboard video mouse storage.

L

LDom Logical domain. A virtual machine comprising a discrete logical grouping of resources that has its own operating system and identity within a single computer system. LDoms are created using Oracle VM Server for SPARC software. See also Oracle VM Server for SPARC.

leaf switch Two of the IB switches are configured as leaf switches, the third is configured as a spine switch. See also IB switch.

M

MIB Management information base.

MOS My Oracle Support.

N

NET MGT The network management port on an SP. See also SP.

NIC Network interface card.

NUMA Nonuniform memory access.

O

OBP OpenBoot PROM. Firmware on SPARC servers that enables the server to load platform-independent drivers directly from devices, and provides an interface through which you can boot the compute server and run low-level diagnostics.

OCM Oracle Configuration Manager.

ONS Oracle Notification Service.

Oracle ASM	Oracle Automatic Storage Management. A volume manager and a file system that supports Oracle databases.
Oracle Exadata Storage Expansion Rack	Optional expansion racks that can be added to SuperCluster M8 and SuperCluster M7 systems that require additional storage. Referred to in this documentation using the shortened name “expansion rack.” See also expansion rack.
Oracle ILOM	Oracle Integrated Lights Out Manager. Software on the SP that enables you to manage a server independently from the operating system. See also SP.
Oracle Solaris OS	Oracle Solaris operating system.
Oracle SuperCluster	Refers to all Oracle SuperCluster models.
Oracle SuperCluster M7	The full name of the SuperCluster M7 systems. Referred to in this documentation using the shortened name “SuperCluster M7.” See also SuperCluster M7.
Oracle SuperCluster M8	The full name of the SuperCluster M8 systems. Referred to in this documentation using the shortened name “SuperCluster M8.” See also SuperCluster M8.
Oracle VM Server for SPARC	SPARC server virtualization and partitioning technology. See also LDom.
Oracle VTS	Oracle Validation Test Suite. An application, preinstalled with Oracle Solaris, that exercises the system, provides hardware validation, and identifies possible faulty components.
Oracle XA	Oracle's implementation of the X/Open distributed transaction processing XA interface that is included in Oracle DB software.
Oracle ZFS ZS3-ES storage appliance	Provides SuperCluster M7 with shared storage capabilities. Referred to in this documentation using the shortened name “ZFS storage appliance.” See also ZFS storage appliance.
Oracle ZFS ZS5-ES storage appliance	Provides SuperCluster M8 with shared storage capabilities. Referred to in this documentation using the shortened name “ZFS storage appliance.” See also ZFS storage appliance.

OS Operating system.

P

parked resources CPU and memory resources that are set aside in the CPU and memory repositories. You assign parked resources to I/O Domains with the I/O Domain Creation tool.

PCIe Peripheral Component Interconnect Express.

PDomain Physical domain. Each PDomain on the compute server is an independently configurable and bootable entity with full hardware domain isolation for fault isolation and security purposes. See also compute server and SSB.

PDomain-SPP The lead SPP of a PDomain. The PDomain-SPP on the compute server manages tasks and provides rKVMS service for that PDomain. See also PDomain.

PDU Power distribution unit.

PF Physical function. Functions provided by physical I/O devices, such as the IB HCAs, 10GbE NICs, and any Fibre Channel cards installed in the PCIe slots. Logical devices, or virtual functions (VFs), are created from PFs, with each PF hosting 32 VFs.

POST Power-on self-test. A diagnostic that runs when the compute server is powered on.

PS Power supply.

PSDB Power system distribution board.

PSH Predictive self healing. An Oracle Solaris OS technology that continuously monitors the health of the compute server and works with Oracle ILOM to take a faulty component offline if needed.

Q

QMU Quarterly maintenance update.

QSFP Quad small form-factor, pluggable. A transceiver specification for 10GbE technology.

R

RAC Real Application Cluster.

RCLB Runtime connection load balancing.

rKVMS Remote keyboard video mouse and storage.

root complex CMP circuitry that provides the base to a PCIe I/O fabric. Each PCIe I/O fabric consists of the PCIe switches, PCIe slots, and leaf devices associated with the root complex.

Root Domain A logical domain that is configured at installation time. Root Domains are required if you plan to configure I/O Domains. Root Domains host PFs from which I/O Domains derive VFs. The majority of Root Domain CPU and memory resources are parked for later use by I/O Domains.

S

SAS Serial attached SCSI.

SATA Serial advance technology attachment.

scalability The ability to increase (or scale up) processing power in a compute server by combining the server's physical configurable hardware into one or more logical groups (see also PDomain).

SCAN Single Client Access Name. A feature used in RAC environments that provides a single name for clients to access any Oracle Database running in a cluster. See also RAC.

SDP Session Description Protocol.

SER MGT The serial management port on an SP. See also SP.

SFP+ Small form-factor pluggable standard. SFP+ is a specification for a transceiver for 10GbE technology.

SGA System global area.

SMF Service Management Facility.

SNEEP Serial number in EEPROM.

SNMP Simple Management Network Protocol.

SP Service processor. A processor, separate from the host, that monitors and manages the host no matter what state the host is in. The SP runs Oracle ILOM, which provides remote lights out management. In SuperCluster M8 and SuperCluster M7, SPs are located on the compute servers, storage servers, ZFS storage appliance controllers, and IB switches. See also Oracle ILOM.

SPARC M7-8 server	A major component of SuperCluster M7 that provides the main compute resources. Referred to in this documentation using the shortened name “compute server.” See also compute server.
SPARC M8 server	A major component of SuperCluster M8 that provides the main compute resources. Referred to in this documentation using the shortened name “compute server.” See also compute server.
spine switch	One of the SuperCluster M8 and SuperCluster M7 IB switches that is configured as a spine switch. See also IB switch and leaf switch.
SPP	Service processor proxy. One SPP in the compute server is assigned to manage each PDomain. SPPs monitor environmental sensors and manage the CMIOUs, memory controllers, and DIMMs. See also PDomain-SPP.
SR-IOV Domain	Single-Root I/O Virtualization Domain. A SuperCluster logical domain category that includes Root Domains and I/O Domains. This category of domains support single-root I/O virtualization. See also I/O Domain and Root Domain.
SSB	Scalability switch board in the compute server.
SSD	Solid state drive.
STB	Oracle Services Tool Bundle.
storage server	Storage servers in SuperCluster M8 and SuperCluster M7.
Sun Datacenter InfiniBand Switch 36	Interconnects SuperCluster M8 and SuperCluster M7 components on a private network. Referred to in this documentation using the shortened name “IB switch.” See also IB switch, leaf switch, and spine switch.
SuperCluster M7	Shortened name for Oracle SuperCluster M7 systems. See also Oracle SuperCluster M7.
SuperCluster M8	Shortened name for Oracle SuperCluster M8 systems. See also Oracle SuperCluster M8.

T

TCP	Transmission Control Protocol.
TNS	Transparent Network Substrate.
TPM	Trusted platform module.

U

UPS Uninterruptible power supply.

V

VAC Voltage alternating current.

VF Virtual function. Logical I/O devices that are created from PFs, with each PF hosting 32 VFs.

VIP Virtual IP.

VLAN Virtual local area network.

VNET Virtual network.

W

WWN World Wide Name.

X

XA See Oracle XA.

Z

ZFS A file system with added volume management capabilities. ZFS is the default file system in Oracle Solaris 11.

ZFS disk shelf A component of the ZFS storage appliance that contains the storage. The ZFS disk shelf is controlled by the ZFS storage controllers. See also ZFS storage appliance and ZFS storage controller.

ZFS storage appliance Shortened name for Oracle ZFS Storage ZS5-ES storage appliance in SuperCluster M8 or Oracle ZFS Storage ZS3-ES storage appliance in SuperCluster M7. See also Oracle ZFS ZS5-ES storage appliance or Oracle ZFS ZS3-ES storage appliance.

ZFS storage controller Servers in the Oracle ZFS ZS3-ES storage appliance that manage the storage appliance. See also ZFS storage appliance.

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