

# SPARC M8 and SPARC M7 Servers Installation Guide

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## Using This Documentation

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- **Overview** – Provides specifications and describes how to install and power on Oracle's SPARC M8-8 and SPARC M7 servers for the first time
- **Audience** – Technicians, system administrators, and authorized service providers
- **Required knowledge** – Advanced experience installing similar hardware

## Product Documentation Library

Documentation and resources for this product and related products are available at <http://www.oracle.com/goto/m8/docs> and <http://www.oracle.com/goto/m7/docs>.

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# Understanding the Servers

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These topics list the installation tasks, provide an overview of the servers, and highlight the key components.

Description	Links
Understand the differences between rackmounted servers and stand-alone servers.	<a href="#">“Rackmounted and Stand-Alone Servers” on page 16</a>
Review the tasks required to install the server.	<a href="#">“Rackmounted Server Installation Task Overview” on page 16</a> <a href="#">“Stand-Alone Server Installation Task Overview” on page 18</a>
Review the main server features.	<a href="#">“SPARC M8-8 Server Overview” on page 19</a> <a href="#">“SPARC M7-8 Server Overview” on page 22</a> <a href="#">“SPARC M8-8 and SPARC M7-8 Server Differences” on page 21</a> <a href="#">“SPARC M7-16 Server Overview” on page 23</a>
Identify the key external server components.	<a href="#">“Identifying Components (Installation)” on page 25</a>
Learn about the hardware architecture and software environment.	<a href="#">“Understanding the Hardware Architecture” on page 32</a> <a href="#">“Firmware and Software Environment” on page 38</a>

## Related Information

- [“Preparing the Site” on page 41](#)
- [“Planning Network Addresses” on page 95](#)
- [“Planning Storage Devices” on page 105](#)
- [“Identifying Components” in \*SPARC M8 and SPARC M7 Servers Service Manual\*](#)

## Rackmounted and Stand-Alone Servers

Rackmounted servers have been installed in an Oracle rack at the factory. These servers include power distribution units (PDUs) and hardware specifically designed for the servers. You must unpack, move, secure, cable, and power on these servers at your installation site.

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**Note** - The SPARC M7-16 server will always ship from the factory installed in a rack. The SPARC M7-16 server must remain in the Oracle rack it shipped in. Installing a SPARC M7-16 server in a non-Oracle rack is not supported.

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While you can order a rackmounted SPARC M8-8 or SPARC M7-8 server, you can also order the servers *stand-alone*. A stand-alone server does not ship in an Oracle rack, so you must install the server in a customer-supplied rack. You must also provide your own PDUs to supply power to the server and use your rack's cable management devices to secure the server power cords and data cables. Refer to your PDU and rack documentation for more information.

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**Note** - A rackmounted SPARC M8-8 or SPARC M7-8 server ships with one factory-installed server in a 1200mm Oracle rack containing two PDUs. A 1200mm Oracle rack can contain up to three SPARC M8-8 or SPARC M7-8 servers, so you can install up to two more servers into the same rack (all three servers can be powered by the rack's two PDUs). These additional servers ship stand-alone and you must install them into the rack at the installation site. For instructions, see [“Installing a Stand-Alone Server in a Rack” on page 135](#).

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This document provides installation instructions for both rackmounted and stand-alone servers.

### Related Information

- [“Rackmounted Server Installation Task Overview” on page 16](#)
- [“Stand-Alone Server Installation Task Overview” on page 18](#)
- [“Site Preparation Checklist” on page 41](#)
- [“Installing a Rackmounted Server” on page 119](#)

## Rackmounted Server Installation Task Overview

Perform the following tasks to install and configure a rackmounted server. Rackmounted servers have been factory installed into Oracle racks.



Step	Description	Documents or Links
1.	Review the product notes for any late-breaking news about the server.	<a href="#">SPARC M8 and SPARC M7 Servers Product Notes</a>
2.	Review the important safety and security notices.	<a href="#">SPARC M8-8 and SPARC M7-8 Server Safety and Compliance Guide</a> <a href="#">SPARC M7-16 Server Safety and Compliance Guide</a> <a href="#">SPARC M8 and SPARC M7 Servers Security Guide</a> <a href="#">Important Safety Information for Oracle's Sun Hardware Systems</a>
3.	Familiarize yourself with the server features and the main server components required for installation.	<a href="#">“SPARC M8-8 Server Overview” on page 19</a> <a href="#">“SPARC M7-8 Server Overview” on page 22</a> <a href="#">“SPARC M7-16 Server Overview” on page 23</a> <a href="#">“Identifying Components (Installation)” on page 25</a>
4.	Prepare the installation site for the server installation by reviewing the server specifications and site requirements.	<a href="#">“Preparing the Site” on page 41</a> <a href="#">“Planning Network Addresses” on page 95</a> <a href="#">“Planning Storage Devices” on page 105</a>
5.	Take ESD and safety precautions, and assemble the required tools.	<a href="#">“Preparing for Installation” on page 113</a>
6.	Confirm that the site is ready for the server. Receive and unpack the server.	<a href="#">“Confirm the Site Preparation” on page 119</a> <a href="#">“Receive the Server” on page 120</a> <a href="#">“Unpack the Server” on page 121</a> <a href="#">The rack's hardcopy unpacking guide</a>
7.	Move the server and stabilize it at the installation site.	<a href="#">“Moving the Server” on page 122</a> <a href="#">“Stabilizing the Server” on page 129</a>
8.	Install required and any optional components.	<a href="#">“Required Network Interface Card Installation” on page 192</a> <a href="#">“Optional Component Installation” on page 133</a>
9.	Install and manage data cables and power cords to the server.	<a href="#">“Connecting Cables” on page 175</a>
10.	Make serial connections to the SPs, power on, and configure the server for the first time.	<a href="#">“Powering On the Server for the First Time” on page 201</a>

## Related Information

- [“Rackmounted and Stand-Alone Servers” on page 16](#)
- [“Installing a Rackmounted Server” on page 119](#)
- [SPARC M8 and SPARC M7 Servers Administration Guide](#)
- [Sun Rack II Unpacking Guide](#) at: <http://docs.oracle.com/en/servers/options.html>

- Oracle Rack Cabinet 1242 unpacking instructions on the shipping carton and ramps

## Stand-Alone Server Installation Task Overview

Perform the following tasks to install and configure a stand-alone SPARC M8-8 or SPARC M7-8 server into your own rack. See [“Rackmounted Server Installation Task Overview” on page 16](#) if your server was factory installed in an Oracle rack.

Step	Description	Documents or Links
1.	Review the product notes for any late-breaking news about the server.	<a href="#">SPARC M8 and SPARC M7 Servers Product Notes</a>
2.	Review the important safety and security notices.	<a href="#">SPARC M8-8 and SPARC M7-8 Server Safety and Compliance Guide</a> <a href="#">SPARC M8 and SPARC M7 Servers Security Guide</a>
3.	Familiarize yourself with the server features and the main components required for installation.	<a href="#">Important Safety Information for Oracle's Sun Hardware Systems</a> <a href="#">“SPARC M8-8 Server Overview” on page 19</a> <a href="#">“SPARC M7-8 Server Overview” on page 22</a> <a href="#">“SPARC M8-8 and SPARC M7-8 Server Front Components (Installation)” on page 26</a> <a href="#">“SPARC M8-8 and SPARC M7-8 Server Rear Components (Installation)” on page 27</a>
4.	Review the server specifications and requirements and prepare for the installation.	<a href="#">“Physical Dimensions (Rackmounted Servers)” on page 45</a> <a href="#">“Reviewing the Power Requirements” on page 57</a> <a href="#">“Preparing for Cooling” on page 76</a> <a href="#">“Rackmounted Server Unpacking Area” on page 92</a> <a href="#">“Planning Network Addresses” on page 95</a> <a href="#">“Planning Storage Devices” on page 105</a>
5.	Take ESD and safety precautions, and assemble the required tools.	<a href="#">“Preparing for Installation” on page 113</a>
6.	Unpack and install the server in a rack. Prepare the power cords.	<a href="#">“Installing a Stand-Alone Server in a Rack” on page 135</a>
7.	Install required and any optional components.	<a href="#">“Required Network Interface Card Installation” on page 192</a> <a href="#">“Optional Component Installation” on page 133</a>
8.	Connect the SP and data cables to the server.	<a href="#">“Connecting SP Cables” on page 188</a> <a href="#">“Connect Network and Data Cables” on page 193</a>

Step	Description	Documents or Links
9.	Make serial connections to the SPs, power on, and configure the server for the first time.	<a href="#">“Powering On the Server for the First Time” on page 201</a>

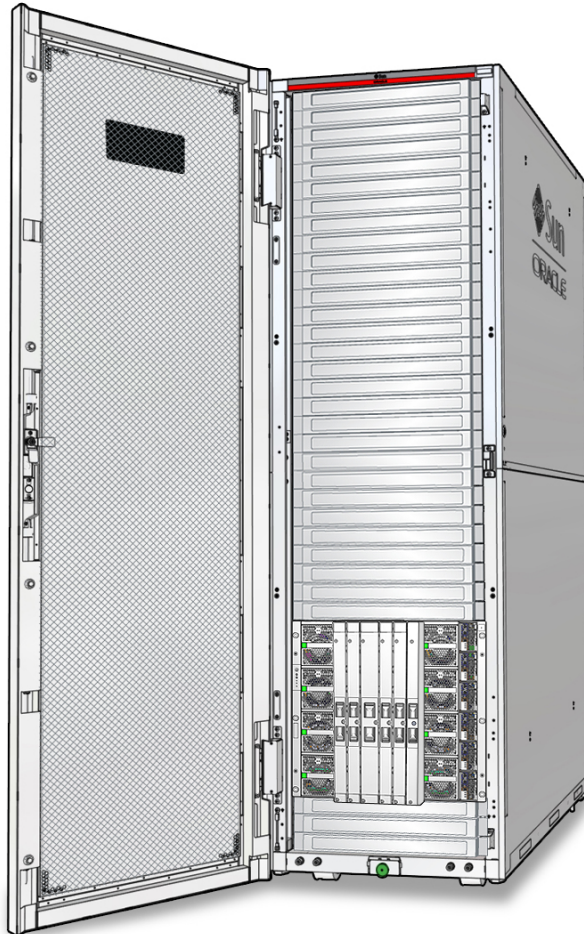
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### Related Information

- [“Rackmounted and Stand-Alone Servers” on page 16](#)
- [“Installing a Stand-Alone Server in a Rack” on page 135](#)
- [SPARC M8 and SPARC M7 Servers Administration Guide](#)

## SPARC M8-8 Server Overview

The SPARC M8-8 server is designed for mission-critical applications, and can be ordered stand-alone or factory installed inside a rack.



Feature	Description
Processor	2 to 8 SPARC M8 processors, each with 32 cores and 8 threads per core
Memory	8 or 16 DIMMs per processor
I/O expansion	6 to 24 low-profile PCIe Generation 3 card slots, depending on configuration
Storage	1 or more optional Oracle flash accelerator <a href="#">NVMe</a> cards
Service processors	2 redundant <a href="#">SPs</a> to monitor and control the server remotely

## Related Information

- [“SPARC M7-8 Server Overview” on page 22](#)

- [“SPARC M8-8 and SPARC M7-8 Server Front Components \(Installation\)”](#) on page 26
- [“SPARC M8-8 and SPARC M7-8 Server Rear Components \(Installation\)”](#) on page 27

## SPARC M8-8 and SPARC M7-8 Server Differences

The SPARC M8-8 and SPARC M7-8 servers have the following differing components and features.

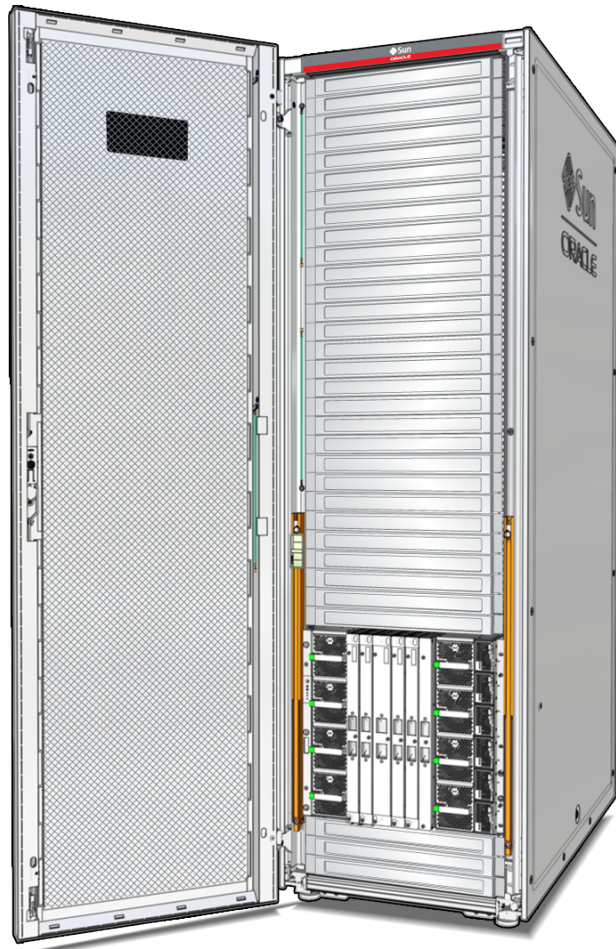
Component	SPARC M8-8	SPARC M7-8
Processor	SPARC M8	SPARC M7
CMIOUs	CMIOUs specifically designed for the SPARC M8 processor.	CMIOUs specifically designed for the SPARC M7 processor.
DIMMs	Support 32 GB and 64 GB DDR4 DIMMs	Support 16 GB, 32 GB, and 64 GB DDR4 DIMMs
Service processors (SPs)	SPs use a USB connection to the SPARC M8 CMIOUs.	SPs use a PCIe connection to the SPARC M7 CMIOUs.
Power supplies	Power supplies designed specifically for the SPARC M8-8 server.	Power supplies designed specifically for the SPARC M7 series servers.
RFID	RFID chip contains system identification number. The SPARC M8-8 RFID identification number can be accessed using the Oracle ILOM command line interface. The RFID chips can also be read using a nearby RFID reader.	RFID chip contains system identification number. The SPARC M7 server RFID chips can only be read by a nearby RFID reader.
Remote video support	Provides VNC connections to the server control domain. <a href="#">rKVMS</a> video is not supported.	Provides video support through <a href="#">rKVMS</a> .

### Related Information

- [“SPARC M8-8 Server Overview”](#) on page 19
- [“SPARC M7-8 Server Overview”](#) on page 22
- [“SPARC M8-8 and SPARC M7-8 Server Front Components \(Installation\)”](#) on page 26
- [“SPARC M8-8 and SPARC M7-8 Server Rear Components \(Installation\)”](#) on page 27
- [“Comparing the SPARC M8 and SPARC M7 Servers”](#) in *SPARC M8 and SPARC M7 Servers Administration Guide*

## SPARC M7-8 Server Overview

The SPARC M7-8 server is designed for mission-critical applications, and can be ordered stand-alone or factory installed inside a rack.



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Feature	Description
Processor	2 to 8 SPARC M7 processors, each with 32 cores and 8 threads per core

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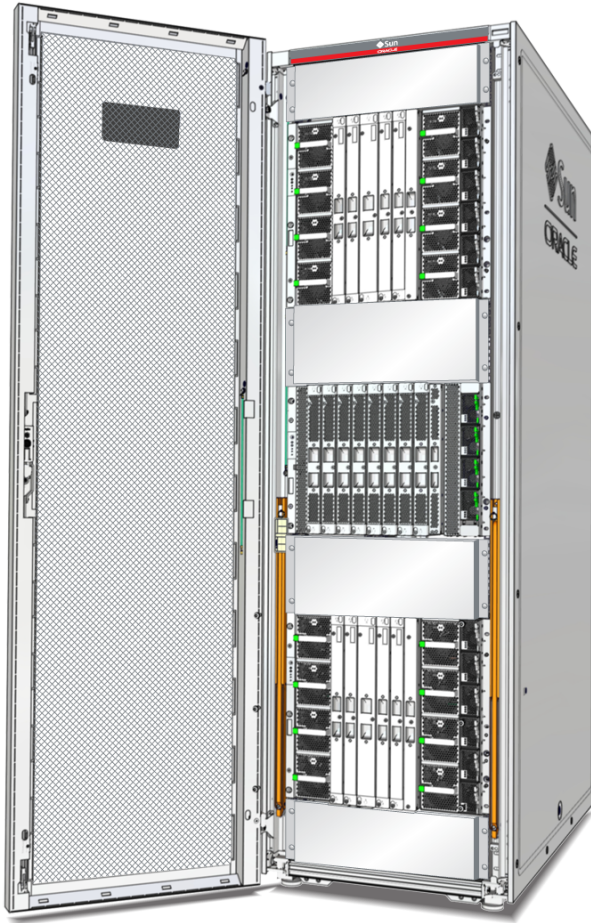
Feature	Description
Memory	8 or 16 DIMMs per processor
I/O expansion	6 to 24 low-profile PCIe Generation 3 card slots, depending on configuration
Storage	1 or more optional Oracle flash accelerator <a href="#">NVMe</a> cards
Service processors	2 redundant <a href="#">SPs</a> to monitor and control the server remotely

### Related Information

- [“SPARC M8-8 Server Overview” on page 19](#)
- [“SPARC M8-8 and SPARC M7-8 Server Front Components \(Installation\)” on page 26](#)
- [“SPARC M8-8 and SPARC M7-8 Server Rear Components \(Installation\)” on page 27](#)

## SPARC M7-16 Server Overview

The SPARC M7-16 enterprise-class server is designed for mission-critical applications. The SPARC M7-16 server components are factory-installed in a rack.



Feature	Description
Processor	8 to 16 SPARC M7 processors, each with 32 cores and 8 threads per core
Memory	8 or 16 DIMMs per processor
I/O expansion	24 to 48 low-profile PCIe Generation 3 card slots
Storage	1 or more optional Oracle flash accelerator NVMe cards
Service processors	2 redundant SPs and 4 redundant SPPs to monitor and control the server remotely

## Related Information

- [“SPARC M7-16 Server Front Components \(Installation\)” on page 29](#)



- “SPARC M7-16 Server Rear Components (Installation)” on page 31

## Identifying Components (Installation)

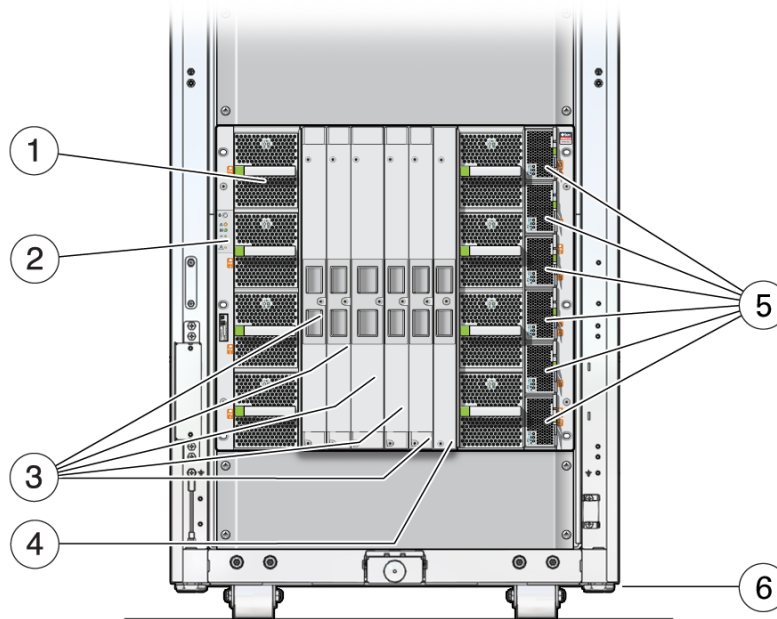
These topics identify the major front and rear components of the servers. For a complete list of the server components, refer to “Identifying Components” in *SPARC M8 and SPARC M7 Servers Service Manual*.

- “SPARC M8-8 and SPARC M7-8 Server Front Components (Installation)” on page 26
- “SPARC M8-8 and SPARC M7-8 Server Rear Components (Installation)” on page 27
- “SPARC M7-16 Server Front Components (Installation)” on page 29
- “SPARC M7-16 Server Rear Components (Installation)” on page 31

### Related Information

- *SPARC M8 and SPARC M7 Servers Service Manual*
- *Information Center (Doc ID 2071511.2)* at My Oracle Support (<https://support.oracle.com>)

## SPARC M8-8 and SPARC M7-8 Server Front Components (Installation)



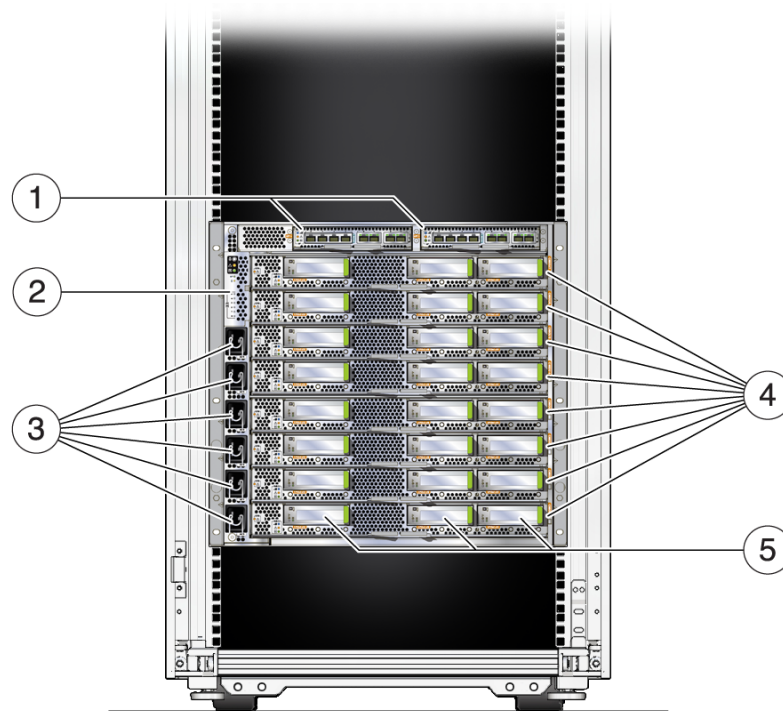
No.	Description
1	Fan modules
2	Front indicator panel
3	Interconnects
4	SP interconnect
5	Power supplies
6	Leveling feet

### Related Information

- [“SPARC M8-8 and SPARC M7-8 Server Rear Components \(Installation\)” on page 27](#)
- [“Understanding the Hardware Architecture” on page 32](#)

- “CMIU Chassis Front Components” in *SPARC M8 and SPARC M7 Servers Service Manual*

## SPARC M8-8 and SPARC M7-8 Server Rear Components (Installation)



No.	Description
1	SPs
2	Rear indicator panel
3	AC inputs
4	CMIUs
5	PCIe hot-plug carriers for low-profile PCIe cards

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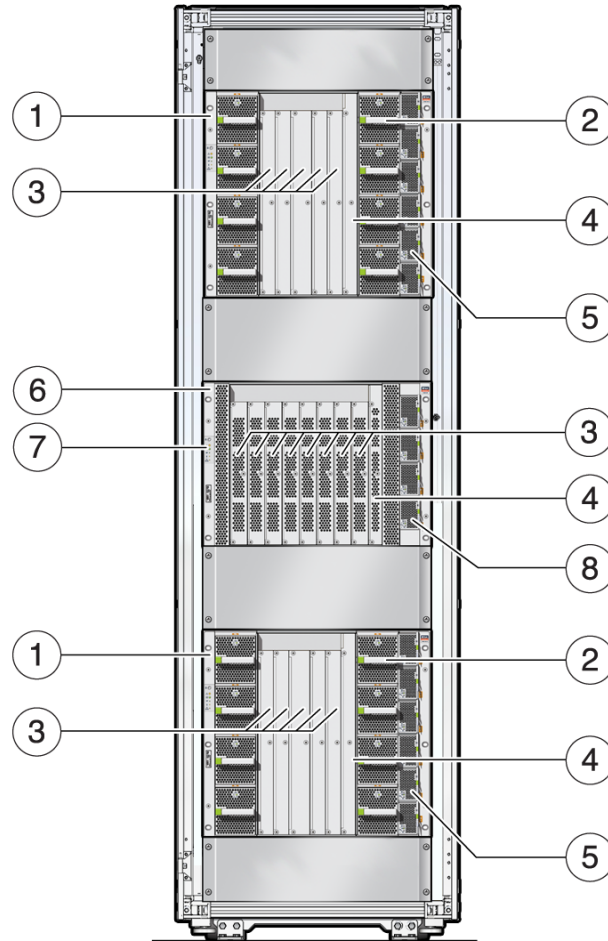
**Note** - Depending on your server configuration, the server might include one or more network interface cards and one or more optional Oracle flash accelerator NVMe cards.

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### **Related Information**

- [“SPARC M8-8 and SPARC M7-8 Server Front Components \(Installation\)” on page 26](#)
- [“Understanding the Hardware Architecture” on page 32](#)
- [“CMIOU Chassis Rear Components” in \*SPARC M8 and SPARC M7 Servers Service Manual\*](#)
- [“Connecting Cables” on page 175](#)

## SPARC M7-16 Server Front Components (Installation)



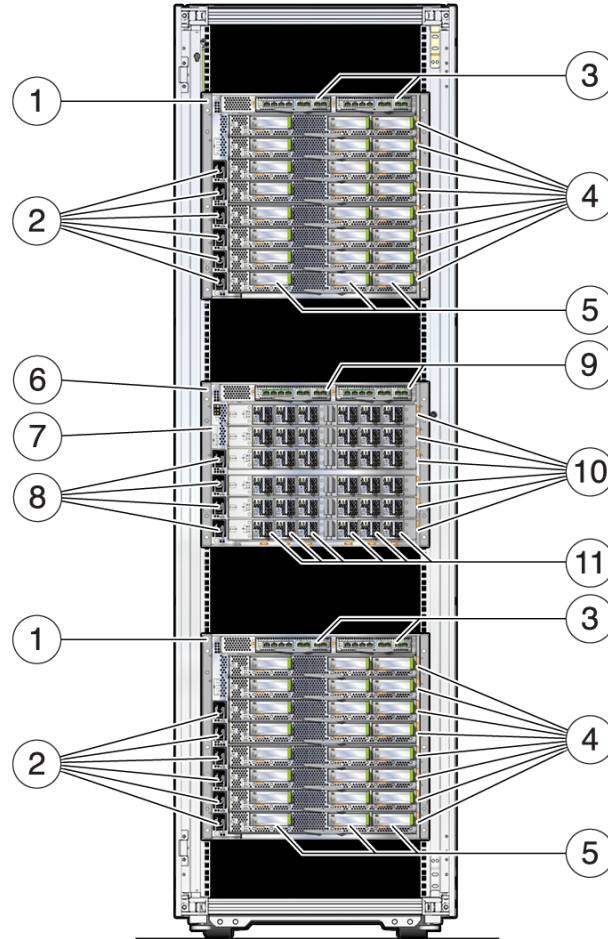
No.	Description
1	CMIU chassis
2	CMIU chassis fan modules
3	Interconnects

No.	Description
4	SP interconnects
5	Power supplies, CMIOU chassis
6	Switch chassis
7	Front indicator panel
8	Power supplies, switch chassis

### Related Information

- [“SPARC M7-16 Server Rear Components \(Installation\)” on page 31](#)
- [“Understanding the Hardware Architecture” on page 32](#)
- [“Server Front Components \(SPARC M7-16\)” in \*SPARC M8 and SPARC M7 Servers Service Manual\*](#)

## SPARC M7-16 Server Rear Components (Installation)



No.	Description
1	CMIU chassis
2	CMIU chassis AC inputs
3	SPPs

No.	Description
4	CMIOUs
5	PCIe hot-plug carriers for low-profile PCIe cards
6	Switch chassis
7	Rear indicator panel
8	Switch chassis AC inputs
9	SPs
10	Switch units
11	Switch unit fan modules

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**Note** - Depending on your server configuration, the server might include one or more network interface cards and one or more optional Oracle flash accelerator NVMe cards.

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### Related Information

- [“SPARC M7-16 Server Front Components \(Installation\)” on page 29](#)
- [“Understanding the Hardware Architecture” on page 32](#)
- [“Server Rear Components \(SPARC M7-16\)” in \*SPARC M8 and SPARC M7 Servers Service Manual\*](#)
- [“Connecting Cables” on page 175](#)

## Understanding the Hardware Architecture

Description	Link
Learn how you can manage the servers through redundant SPs and SPPs.	<a href="#">“SPs and SPPs” on page 33</a>
Understand the SPARC M8-8 and SPARC M7-8 server static PDomain configurations.	<a href="#">“SPARC M8-8 and SPARC M7-8 Server Static PDomains” on page 34</a> <a href="#">“SPARC M8-8 and SPARC M7-8 Servers DCUs” on page 34</a>
Understand the SPARC M7-16 server configurations, and learn how you can divide server resources into smaller units called PDomains to address the demands of your applications.	<a href="#">“SPARC M7-16 Server PDomains” on page 36</a> <a href="#">“SPARC M7-16 Server DCUs” on page 36</a>



## Related Information

- [“Identifying Components \(Installation\)” on page 25](#)
- [“Powering On the Server for the First Time” on page 201](#)
- [“Configuring PDomains and Hosts” in \*SPARC M8 and SPARC M7 Servers Administration Guide\*](#)

## SPs and SPPs

These servers contain two redundant SPs that enable you to manage and monitor the server components independent of the Oracle Solaris OS. To provide redundancy, one SP serves as the Active SP, and the other SP serves as the Standby SP. The Active SP manages system resources unless it can no longer do so, in which case the Standby SP assumes its role.

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**Note** - Either SP (SP0 or SP1) can take the Active SP role. After you connect AC power to the server, one of the two SPs assumes the role of the Active SP.

---

The SPARC M7-16 server contains four SPPs (two SPPs per CMIOU chassis). These SPPs off-load some of the work from the two SPs in the switch chassis. The SPs and the SPPs work together to provide a single management environment to all of the SPARC M7-16 server components.

See [“SPARC M8-8 and SPARC M7-8 Server Rear Components \(Installation\)” on page 27](#) for the location of the SPARC M8-8 and SPARC M7-8 server SPs, and [“SPARC M7-16 Server Rear Components \(Installation\)” on page 31](#) for the location of the SPARC M7-16 server SPs and SPPs.

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**Note** - *SPMs* provide the processors and circuitry that enable the SPs and SPPs to manage the server. During the server installation, you do not need to access these *SPMs* directly. For more information about *SPMs*, refer to [“Servicing SPs” in \*SPARC M8 and SPARC M7 Servers Service Manual\*](#) and [“Configuring the SP Network” in \*SPARC M8 and SPARC M7 Servers Administration Guide\*](#).

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## Related Information

- [“SPARC M8-8 and SPARC M7-8 Server Static PDomains” on page 34](#)
- [“Firmware and Software Environment” on page 38](#)

## SPARC M8-8 and SPARC M7-8 Server Static PDomains

The SPARC M8-8 and SPARC M7-8 servers can be ordered with one or two PDomains.

A SPARC M8-8 or SPARC M7-8 server with one PDomain includes all of the processors, memory, and PCIe expansion in the chassis. In this configuration, a SPARC M8-8 or SPARC M7-8 server can use up to eight processors within its single static PDomain.

In a SPARC M8-8 or SPARC M7-8 server with two PDomains, each PDomain includes half of the possible processors, memory, and PCIe expansion slots in the chassis. In this two PDomain configuration, each static PDomain operates as a separate server within the same chassis. You can configure, reboot, or manage one static PDomain while the other static PDomain continues to operate normally.

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**Note** - The SPARC M8-8 and SPARC M7-8 servers use [static PDomains](#). You cannot combine the two PDomains of a two-PDomain SPARC M8-8 or SPARC M7-8 server into a single static PDomain. Likewise, you cannot divide the single static PDomain of a one-PDomain SPARC M8-8 or SPARC M7-8 server into two PDomains.

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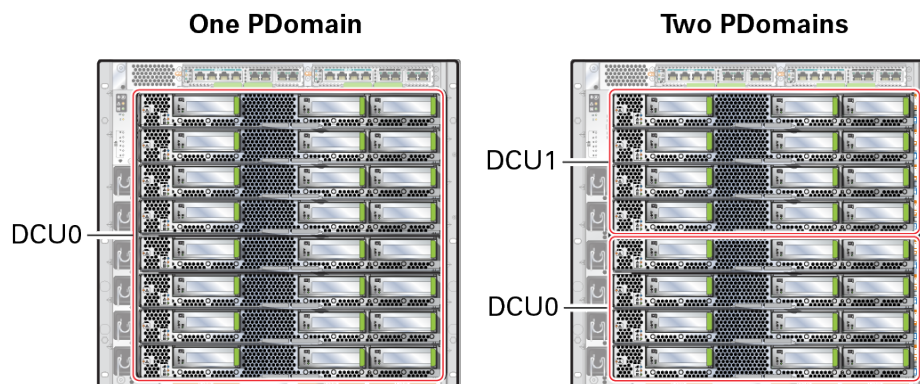
### Related Information

- [“SPARC M7-8 Server Overview” on page 22](#)
- [“SPARC M7-16 Server PDomains” on page 36](#)
- [“SPARC M8-8 and SPARC M7-8 Servers DCUs” on page 34](#)
- [“Configuring PDomains and Hosts” in \*SPARC M8 and SPARC M7 Servers Administration Guide\*](#)

## SPARC M8-8 and SPARC M7-8 Servers DCUs

A SPARC M8-8 or SPARC M7-8 server factory-configured as one PDomain contains a single [DCU](#) containing up to eight [CMIOUs](#). A SPARC M8-8 or SPARC M7-8 server factory-configured as two PDomains contains two DCUs, and each DCU contains up to four CMIOUs. Each CMIOU contains 1 processor, 16 DIMM slots, and 3 PCIe expansion slots.

While you cannot reconfigure the DCUs in SPARC M8-8 or SPARC M7-8 servers like you can in SPARC M7-16 servers, you will see the DCU term in the Oracle ILOM user interface and in system messages.



Each DCU can contain the following CMIOUs.

DCU	Available CMIOUs
<b>SPARC M8-8 server (One PDomain)</b>	
DCU0	CMIOU0, CMIOU1, CMIOU2, CMIOU3, CMIOU4, CMIOU5, CMIOU6, CMIOU7
<b>SPARC M8-8 server (Two PDomains)</b>	
DCU0	CMIOU0, CMIOU1, CMIOU2, CMIOU3
DCU1	CMIOU4, CMIOU5, CMIOU6, CMIOU7
<b>SPARC M7-8 server (One PDomain)</b>	
DCU0	CMIOU0, CMIOU1, CMIOU2, CMIOU3, CMIOU4, CMIOU5, CMIOU6, CMIOU7
<b>SPARC M7-8 server (Two PDomains)</b>	
DCU0	CMIOU0, CMIOU1, CMIOU2, CMIOU3
DCU1	CMIOU4, CMIOU5, CMIOU6, CMIOU7

**Note** - Both the SPARC M8-8 and SPARC M7-8 servers capable of two PDomains can contain a DCU0 fully-populated with CMIOUs and an empty DCU1. In this configuration, DCU1 would be available for future expansion.

**Related Information**

- [“SPARC M7-8 Server Overview” on page 22](#)
- [“SPARC M7-16 Server DCUs” on page 36](#)
- [“SPARC M8-8 and SPARC M7-8 Server Static PDomains” on page 34](#)

- [“View DCU Properties” in SPARC M8 and SPARC M7 Servers Administration Guide](#)

## SPARC M7-16 Server PDomains

A SPARC M7-16 server [PDomain](#) operates like an independent server that has full hardware isolation from other PDomains in the server. For example, you can reboot one PDomain while the other PDomains on a server continue to operate.

You can configure a SPARC M7-16 server into one to four PDomains, depending on your application requirements. For example, you can divide the server into four PDomains, each running its own applications. Or, you can configure the server into one PDomain to provide all of the hardware resources to a single set of applications.

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**Note** - You can order a SPARC M7-16 server preconfigured into one to four PDomains. Contact your Oracle Sales representative for specific ordering details.

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### Related Information

- [“SPARC M7-16 Server Overview” on page 23](#)
- [“SPARC M8-8 and SPARC M7-8 Server Static PDomains” on page 34](#)
- [“SPARC M7-16 Server DCUs” on page 36](#)
- [“Configuring PDomains and Hosts” in SPARC M8 and SPARC M7 Servers Administration Guide](#)

## SPARC M7-16 Server DCUs

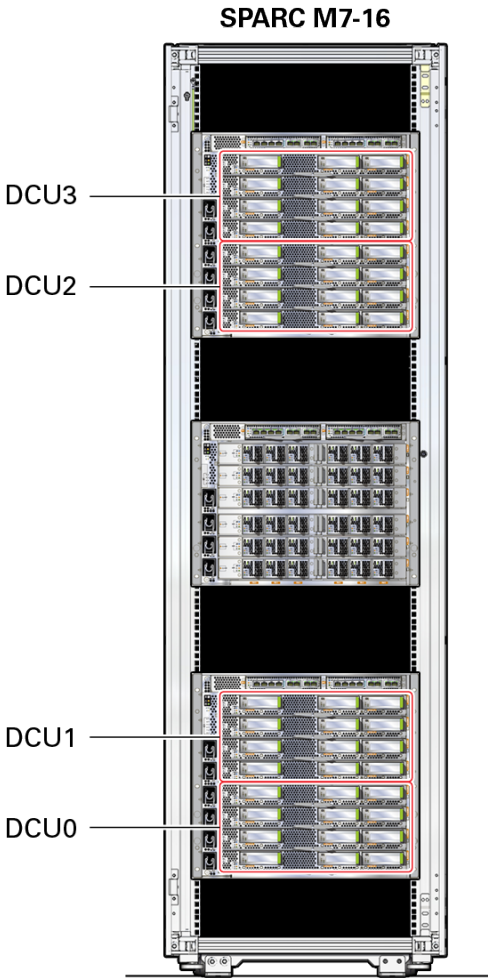
A SPARC M7-16 server is divided into four configurable units called DCUs. A DCU includes up to four CMIOUs, and each CMIOU contains 1 processor, 16 DIMM slots, and 3 PCIe expansion slots. The following illustration shows the locations of the DCUs.

DCUs are the building blocks of SPARC M7-16 server PDomains, and a PDomain can contain one to four DCUs. Using Oracle ILOM commands, you can combine DCUs into PDomains. Refer to the [SPARC M8 and SPARC M7 Servers Administration Guide](#) for instructions on creating and administering PDomains.

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**Note** - Depending on the configuration you ordered, a DCU can contain fewer than the maximum number of four CMIOUs. Contact your Oracle Sales representative for specific ordering details.

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Each DCU can contain the following CMIOUs.

DCU	Available CMIOUs
DCU0	CMIOU0, CMIOU1, CMIOU2, CMIOU3
DCU1	CMIOU4, CMIOU5, CMIOU6, CMIOU7
DCU2	CMIOU8, CMIOU9, CMIOU10, CMIOU11
DCU3	CMIOU12, CMIOU13, CMIOU14, CMIOU15

### Related Information

- “SPARC M7-16 Server Overview” on page 23
- “SPARC M8-8 and SPARC M7-8 Server Static PDomains” on page 34
- “SPARC M7-16 Server PDomains” on page 36

## Firmware and Software Environment

The server employs the following software and firmware.

Component	Description	Link
OpenBoot	The OpenBoot firmware determines the hardware configuration of the guest, provides interactive debugging facilities, and enables you to configure how the guest boots to an operating system.	<p>For information about the server-specific OpenBoot tasks, refer to the <i>SPARC M8 and SPARC M7 Servers Administration Guide</i>.</p> <p>The OpenBoot documentation at:</p> <p><a href="http://www.oracle.com/goto/openboot/docs">http://www.oracle.com/goto/openboot/docs</a></p>
Oracle ILOM	Oracle ILOM is the system management firmware that is preinstalled on the server's SPs. Oracle ILOM enables you to manage and monitor the components in the server through either a web-based or command-line interface.	<p>For information about the server-specific Oracle ILOM tasks, refer to the <i>SPARC M8 and SPARC M7 Servers Administration Guide</i>.</p> <p>For information about Oracle ILOM tasks that are common to all platforms managed by the firmware, refer to the Oracle ILOM documentation:</p> <p><a href="http://www.oracle.com/goto/ilom/docs">http://www.oracle.com/goto/ilom/docs</a></p>
Oracle Solaris OS	Each PDomain runs the Oracle Solaris OS. The Oracle Solaris OS provides many utilities to help install and administer your applications.	<p>Find information about the features of the OS, as well as links to technical reports and training courses, at:</p> <p><a href="http://www.oracle.com/goto/solaris11/">http://www.oracle.com/goto/solaris11/</a></p> <p>For information on installing and administering the OS, refer to the Oracle Solaris documentation:</p> <p><a href="http://www.oracle.com/goto/solaris11/docs">http://www.oracle.com/goto/solaris11/docs</a></p>
Oracle VM Server for SPARC	Use the Oracle VM Server for SPARC software to create virtual servers called <i>logical domains</i> . Logical domains run their own independent operating systems and use a defined portion of the available server resources. Each logical domain can be created, destroyed, reconfigured, and rebooted independently. You can virtualize resources and define network, storage, and other I/O devices as services that can be shared between domains.	<p>For information about deploying logical domains on an SPARC M7 series server, refer to:</p> <p>“Creating Virtualized Environments” in <i>SPARC M8 and SPARC M7 Servers Administration Guide</i></p> <p>Find the Oracle VM for SPARC documentation at:</p> <p>Oracle VM Server for SPARC documentation (<a href="http://www.oracle.com/goto/vm-sparc/docs">http://www.oracle.com/goto/vm-sparc/docs</a>)</p>

### **Related Information**

- [“Understanding System Administration Resources” in \*SPARC M8 and SPARC M7 Servers Administration Guide\*](#)
- [“Powering On the Server for the First Time” on page 201](#)





## Preparing the Site

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These topics discuss how to prepare to install the server at the installation site.

Step	Task	Link
1.	Review the high-level site preparation checklist and installation site guidelines before you begin.	<a href="#">“Site Preparation Checklist” on page 41</a> <a href="#">“General Installation Site Guidelines” on page 43</a>
2.	Confirm that the physical site is ready to receive the server.	<a href="#">“Reviewing the Physical Specifications” on page 44</a>
3.	Ensure that the power requirements are met.	<a href="#">“Reviewing the Power Requirements” on page 57</a>
4.	Understand the environmental requirements and ensure that the cooling system can maintain the server within the ideal operating range.	<a href="#">“Preparing for Cooling” on page 76</a>
5.	Plan how the server will get from the loading ramp to the installation site.	<a href="#">“Preparing the Unloading Route and Unpacking Area” on page 85</a>

### Related Information

- [“Preparing for Installation” on page 113](#)
- [“Installing a Rackmounted Server” on page 119](#)
- [“Installing a Stand-Alone Server in a Rack” on page 135](#)

## Site Preparation Checklist

Before installing the server, ensure that the following requirements are satisfied.

Requirement	Question	Check
Training	Have the administrators and installers reviewed the documentation and completed the necessary training courses?  The server documentation pages, which include links to Oracle University training courses, are at:  <a href="http://www.oracle.com/goto/m7/docs">http://www.oracle.com/goto/m7/docs</a>	<input type="checkbox"/>

## Site Preparation Checklist

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Requirement	Question	Check
Configurations	Have you determined the server components and configuration?	<input type="checkbox"/>
	Have you determined the total number of servers to be installed?	<input type="checkbox"/>
Access route	Have you inspected and prepared the entire access route from the loading dock to the server's final installation site?	<input type="checkbox"/>
	See <a href="#">“Preparing the Unloading Route and Unpacking Area” on page 85.</a>	
	Does the access route provide sufficient space for transporting a packaged server?	<input type="checkbox"/>
Installation site	Have you protected the access route by covering it with fiberboard or similar material?	<input type="checkbox"/>
	Does the server's installation location meet all space requirements?	<input type="checkbox"/>
	See <a href="#">“Reviewing the Physical Specifications” on page 44.</a>	
	If you are installing a stand-alone server, is your rack compatible with the included rackmount kit?	<input type="checkbox"/>
	See <a href="#">“Rack Compatibility” on page 136</a> and <a href="#">“Prepare and Stabilize the Rack” on page 145.</a>	
	Is the data center or server room located in a secured location?	<input type="checkbox"/>
	Refer to the <a href="#">SPARC M8 and SPARC M7 Servers Security Guide</a> for more information. If necessary, have you prepared the installation site floor for subfloor cabling?	<input type="checkbox"/>
Power	See <a href="#">“Cable Routing Floor Opening Specifications (Sun Rack II)” on page 55</a> and <a href="#">“Cable Routing Floor Opening Specifications (Oracle Rack)” on page 56.</a>	
	Do you understand the operating voltages and electrical current levels required to power the server and its peripherals?	<input type="checkbox"/>
	See <a href="#">“Reviewing the Power Requirements” on page 57.</a>	
	Are there enough power outlets available to power the server and peripherals?	<input type="checkbox"/>
	See <a href="#">“Understanding Power Cord-to-PDU Relationships” on page 68</a> or your rack's PDU documentation.	
	Have you prepared two facility power grids to power the server?	<input type="checkbox"/>
	See <a href="#">“Facility Power Requirements” on page 66.</a>	
	For rackmounted servers, have you prepared the appropriate facility power outlets for the PDU power cords? Are all of these outlets grounded?	<input type="checkbox"/>
See: <ul style="list-style-type: none"> <li>■ <a href="#">“Facility Power Receptacles” on page 65</a></li> <li>■ <a href="#">“Grounding Requirements” on page 75</a></li> </ul>		
For rackmounted servers, are there circuit breakers for each PDU power cord and do they meet the capacity requirements?	<input type="checkbox"/>	
See <a href="#">“Circuit Breaker Capacity Requirements” on page 75.</a>		

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Requirement	Question	Check
Operating environment and cooling	Does the data center meet the temperature and humidity requirements? See <a href="#">“Environmental Requirements” on page 76.</a>	<input type="checkbox"/>
	Does the installation site environment provide adequate ventilation and airflow to cool an operating server? See: <ul style="list-style-type: none"> <li>■ <a href="#">“Heat Dissipation and Airflow Requirements” on page 79</a></li> <li>■ <a href="#">“Cooling Airflow From Ceiling Vents” on page 81</a></li> <li>■ <a href="#">“Cooling Airflow From Perforated Floor Tiles” on page 82</a></li> </ul>	<input type="checkbox"/>
	Have you taken measures to prevent airborne contaminants from entering the installation site? See <a href="#">“Airborne Contaminates” on page 77.</a>	<input type="checkbox"/>
	Unpacking	Have you acclimated the packaged server to the data center environment prior to unpacking it? See <a href="#">“Loading Dock and Receiving Area Requirements” on page 90.</a> Have you set aside an area, away from the installation location, where you can safely unpack the server? See <a href="#">“Rackmounted Server Unpacking Area” on page 92</a> or <a href="#">“Stand-Alone Server Unpacking Area” on page 93.</a>
Data connections	Do you clearly understand the data connections required for setting up the server and connecting it to the network? See <a href="#">“Planning Network Addresses” on page 95</a>	<input type="checkbox"/>
	Have you prepared network addresses for all data connections? See: <ul style="list-style-type: none"> <li>■ <a href="#">“SP Network Addresses” on page 100</a></li> <li>■ <a href="#">“(Optional) PDU Cables and Network Addresses” on page 101</a></li> <li>■ <a href="#">“Network Interface Card Cables and Network Addresses” on page 102</a></li> </ul>	<input type="checkbox"/>

### Related Information

- [“Preparing for Installation” on page 113](#)
- [“Installing a Rackmounted Server” on page 119](#)
- [“Installing a Stand-Alone Server in a Rack” on page 135](#)

## General Installation Site Guidelines

Follow these guidelines when selecting a location for the server.

- Do not install the server in a location that is exposed to:

- Direct sunlight
- Excessive dust
- Corrosive gases
- Air with high salt concentrations
- Frequent vibrations
- Sources of strong radio frequency interference
- Static electricity
- Use power outlets that provide proper grounding.
  - A qualified electrician must perform all AC electrical and grounding work.
  - Verify the grounding method for the building.
- Observe the precautions, warnings, and notes about handling that appear on labels on the equipment.

#### **Related Information**

- [“Handling Precautions” on page 113](#)
- [“Oracle Safety Information” on page 115](#)

## **Reviewing the Physical Specifications**

Ensure that the installation site can properly accommodate the server by reviewing its physical specifications and space requirements.

- [“Physical Dimensions \(Rackmounted Servers\)” on page 45](#)
- [“Physical Dimensions \(Stand-Alone Servers\)” on page 46](#)
- [“Installation and Service Area Dimensions \(Sun Rack II\)” on page 48](#)
- [“Installation and Service Area Dimensions \(Oracle Rack\)” on page 49](#)
- [“Leveling Feet and Caster Dimensions \(Sun Rack II\)” on page 51](#)
- [“Leveling Feet and Caster Dimensions \(Oracle Rack\)” on page 53](#)
- [“Rackmounted Server Turning Radius” on page 50](#)
- [“Raised Floor Load-Bearing Weight Requirements” on page 54](#)
- [“Cable Routing Floor Opening Specifications \(Sun Rack II\)” on page 55](#)
- [“Cable Routing Floor Opening Specifications \(Oracle Rack\)” on page 56](#)

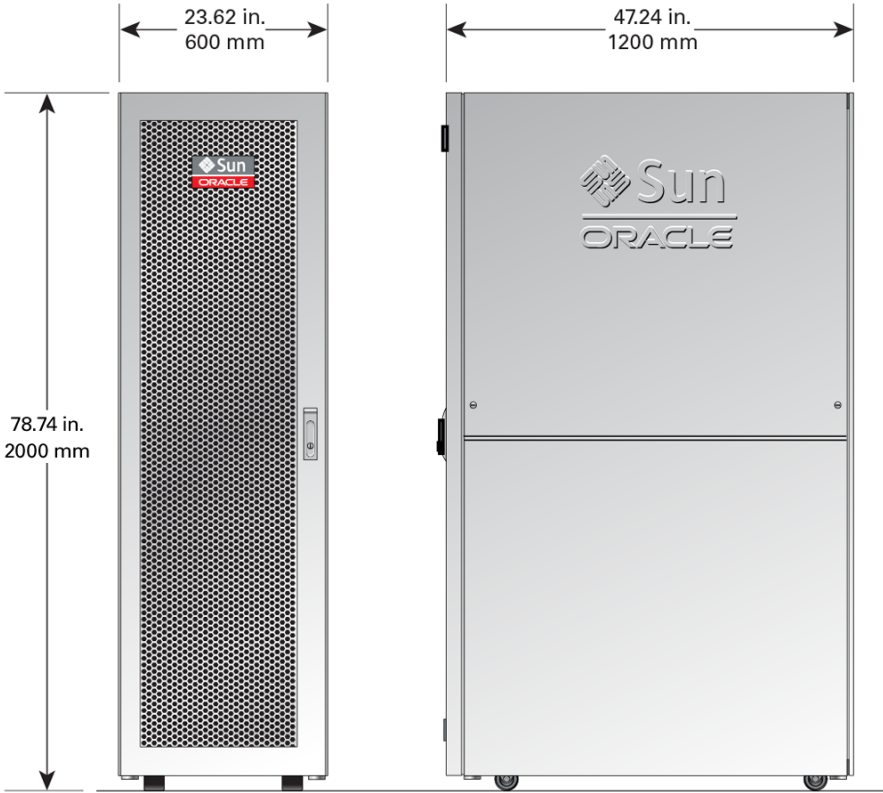
#### **Related Information**

- [“Preparing the Unloading Route and Unpacking Area” on page 85](#)

- “Installing a Rackmounted Server” on page 119
- “Installing a Stand-Alone Server in a Rack” on page 135

## Physical Dimensions (Rackmounted Servers)

The SPARC M7-16 server and the rackmounted SPARC M7-8 server ship from the factory preinstalled in a rack. For the dimensions of a stand-alone server, see “Physical Dimensions (Stand-Alone Servers)” on page 46.



Server Dimension	Sun Rack II 1242		Oracle Rack Cabinet 1242	
	U.S.	Metric	U.S.	Metric
Height	78.66 in.	1998 mm	78.74 in.	2000 mm

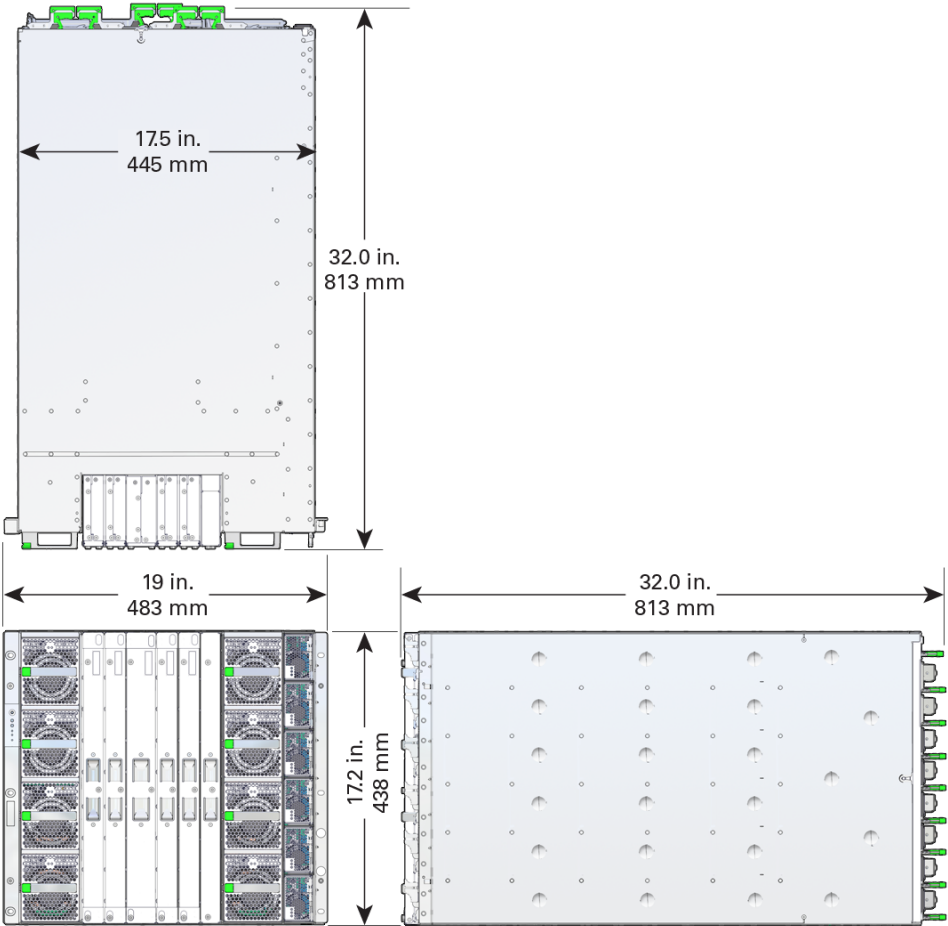
Server Dimension	Sun Rack II 1242		Oracle Rack Cabinet 1242	
	U.S.	Metric	U.S.	Metric
Width	23.62 in.	600 mm	23.62 in.	600 mm
Depth (front door handle to rear door handle)	47.24 in.	1200 mm	47.24 in.	1200 mm
Depth (with doors removed)	43.78 in.	1112 mm	44.33 in.	1126 mm
SPARC M8-8 server (maximum weight varies by configuration)	N/A	N/A	Approx. 917 lbs	Approx. 416 kg
SPARC M7-8 server (maximum weight varies by configuration)	Approx. 824 lbs	Approx. 374 kg	Approx. 892 lbs	Approx. 405 kg
SPARC M7-16 server (maximum weight varies by configuration)	Approx. 1650 lbs	Approx. 749 kg	N/A	N/A

### Related Information

- [“Rackmounted Server Shipping Container Specifications” on page 87](#)
- [“Installing a Rackmounted Server” on page 119](#)

## Physical Dimensions (Stand-Alone Servers)

Stand-alone SPARC M8-8 and SPARC M7-8 servers do not ship in a rack. For rackmounting instructions, see [“Installing a Stand-Alone Server in a Rack” on page 135](#).



Description	U.S.	Metric
Rack units	10U	10U
Height	17.2 in.	438 mm
Width of server chassis	17.5 in.	445 mm
Width of server bezel	19.0 in.	483 mm
Depth of server chassis	30.2 in.	767 mm
Depth to rear component ejector levers	32.0 in.	813 mm
SPARC M8-8 server weight (chassis with 8 CMIOUs)	425 lbs	193 kg
SPARC M8-8 server weight (chassis with 4 CMIOUs)	353 lbs	160 kg
SPARC M7-8 server weight (chassis with 8 CMIOUs)	405 lbs	184 kg

Description	U.S.	Metric
SPARC M7-8 server weight (chassis with 4 CMIOUs)	300 lbs	136 kg
Rack kit weight	17 lbs	7.7 kg

### Related Information

- [“Rackmounted and Stand-Alone Servers” on page 16](#)
- [“Stand-Alone Server Shipping Container Dimensions” on page 89](#)
- [“Installing a Stand-Alone Server in a Rack” on page 135](#)

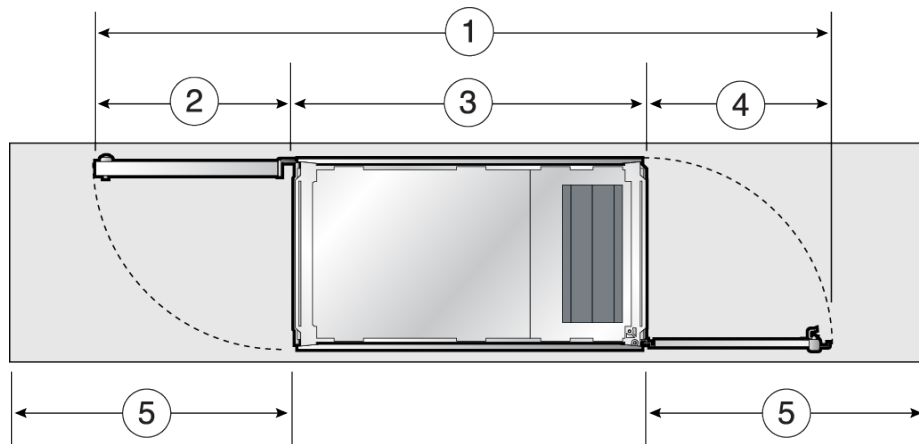
## Installation and Service Area Dimensions (Sun Rack II)

Prior to installing the server, prepare a service area that provides enough room to install and service the server.



**Caution** - You must provide the following service area for the server. Do not attempt to operate the server in a smaller service area.

In the following illustration, the front of the server is on the left and the rear of the server is on the right.





---

No.	U.S.	Metric
1	86.8 in.	2204 mm
2	25.1 in.	638 mm
3	43.78 in.	1112 mm
4	23.2 in.	590 mm
5	36 in.	914 mm

---

**Related Information**

- [“Moving the Server” on page 122](#)
- [SPARC M8 and SPARC M7 Servers Service Manual](#)

## Installation and Service Area Dimensions (Oracle Rack)

Prior to installing the server, prepare a service area that provides enough room to install and service the server.

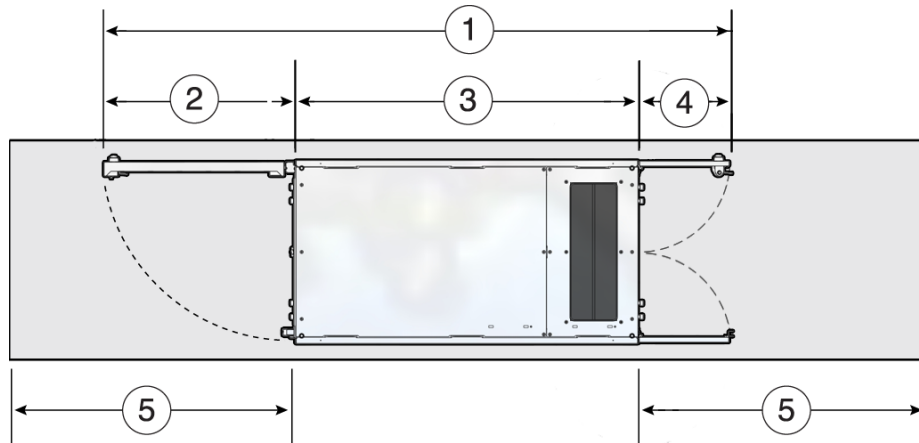


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**Caution** - You must provide the following service area for the server. Do not attempt to operate the server in a smaller service area.

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In the following illustration, the front of the server is on the left and the rear of the server is on the right.



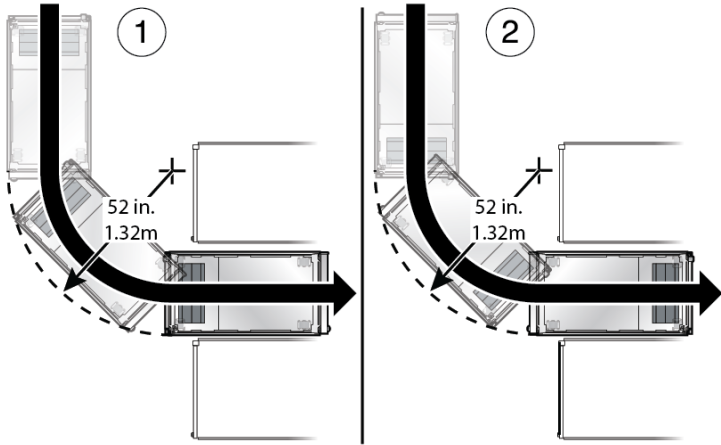
No.	U.S.	Metric
1	79.92 in.	2030 mm
2	23.42 in.	595 mm
3	44.33 in.	1126 mm
4	12.17 in.	309 mm
5	36 in.	914 mm

### Related Information

- [“Moving the Server” on page 122](#)
- [SPARC M8 and SPARC M7 Servers Service Manual](#)

## Rackmounted Server Turning Radius

When turning the server, temporarily provide additional space in front or rear of the installation site beyond the minimum aisle width. The server requires at least 52 in. (1.32m) of space to turn.



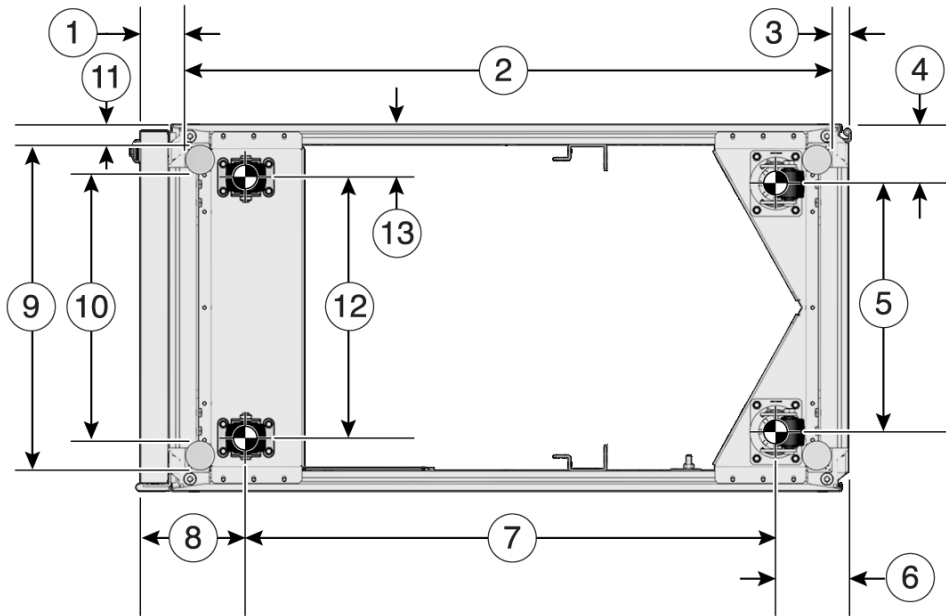
No.	Description
1	Turning the front of the server into the installation site
2	Turning the rear of server into the installation site

**Related Information**

- [“Moving the Server” on page 122](#)
- [“Installation and Service Area Dimensions \(Sun Rack II\)” on page 48](#)
- [“Installation and Service Area Dimensions \(Oracle Rack\)” on page 49](#)

**Leveling Feet and Caster Dimensions (Sun Rack II)**

This illustration shows the bottom view of the rack.



No.	Description	U.S.	Metric
1	Distance from the edge of the feet to the front rack surface	2.90 in.	73.75 mm
2	Depth of the outside edges of the leveling feet	41.67 in.	1058.5 mm
3	Distance from the edge of the leveling feet to the rear rack surface	1.33 in.	33.75 mm
4	Distance from the center of front casters to the side of the rack	3.41 in.	86.7 mm
5	Width between the center of the front casters	16.80 in.	426.6 mm
6	Distance from the center of the rear casters to the rear of the rack	6.83 in.	173.7 mm
7	Depth between the front and rear casters	32.62 in.	828.6 mm
8	Distance between the center of the rear casters and the rear of the rack	6.39 in.	162.4 mm
9	Width from the outside edges of the leveling feet	20.96 in.	532.5 mm
10	Width from the inside edges of the leveling feet	16.89 in.	429 mm
11	Distance from the edge of the mounting feet to the side of the rack	1.33 in.	33.75 mm
12	Width between the center of the rear casters	16.03 in.	407.2 mm
13	Distance from the center of rear casters to the side of the rack	3.80 in.	96.4 mm

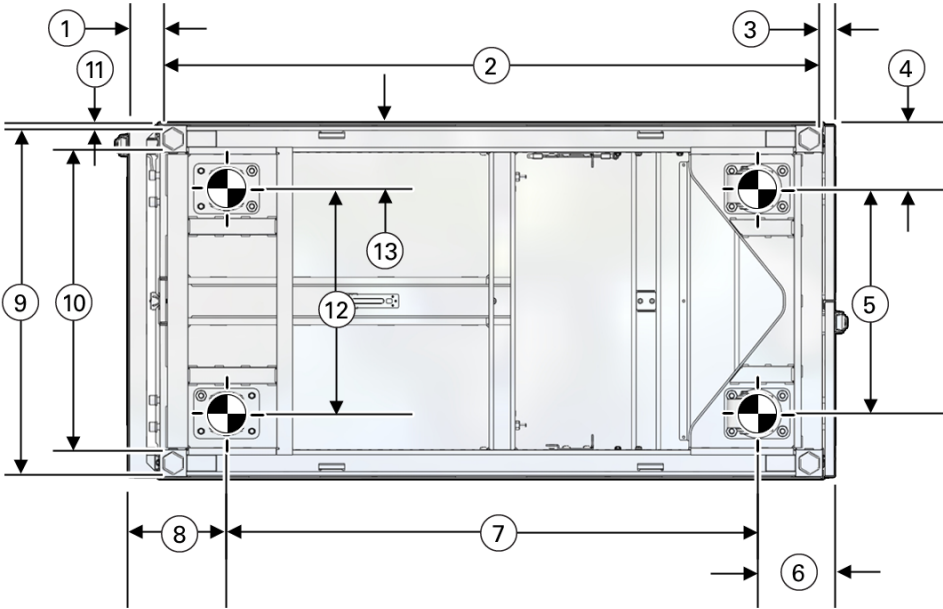
### Related Information

- [“Raised Floor Load-Bearing Weight Requirements” on page 54](#)
- [“Cable Routing Floor Opening Specifications \(Sun Rack II\)” on page 55](#)

- [“Stabilizing the Server” on page 129](#)

## Leveling Feet and Caster Dimensions (Oracle Rack)

This illustration shows the bottom view of the rack.



No.	Description	U.S.	Metric
1	Distance from the edge of the feet to the front rack surface	2.32 in.	59 mm
2	Depth of the outside edges of the leveling feet	43.90 in.	1115 mm
3	Distance from the edge of the leveling feet to the rear rack surface	1.02 in.	26 mm
4	Distance from the center of front casters to the side of the rack	3.78 in.	96 mm
5	Width between the center of the front casters	16.06 in.	408 mm
6	Distance from the center of the rear casters to the rear of the rack	16.06 in.	146 mm
7	Depth between the front and rear casters	35.04 in.	890 mm
8	Distance between the center of the rear casters and the rear of the rack	6.46 in.	164 mm

No.	Description	U.S.	Metric
9	Width from the outside edges of the leveling feet	23.07 in.	586 mm
10	Width from the inside edges of the leveling feet	20.04 in.	509 mm
11	Distance from the edge of the mounting feet to the side of the rack	0.28 in.	7 mm
12	Width between the center of the rear casters	16.14 in.	410 mm
13	Distance from the center of rear casters to the side of the rack	3.74 in.	95 mm

### Related Information

- [“Raised Floor Load-Bearing Weight Requirements” on page 54](#)
- [“Cable Routing Floor Opening Specifications \(Sun Rack II\)” on page 55](#)
- [“Stabilizing the Server” on page 129](#)

## Raised Floor Load-Bearing Weight Requirements

A fully configured SPARC M7-16 server weighs approximately 1650 lbs (749 kg), a fully-configured, rackmounted SPARC M8-8 server weighs approximately 917 lbs (416 kg), and a fully-configured, rackmounted SPARC M7-8 server weighs approximately 824 lbs. (374 kg), and each server could weigh more depending on how you cable them. While the loading is over an area of around 23.62 in (600 mm) x 47.24 in. (1200 mm), the true stress of the server weight is over the four casters and four leveling feet.

The server has a caster and an adjacent leveling foot at each corner of the server, so each corner bears approximately 415 lbs (188.2 kg) of a SPARC M7-16 server's weight, approximately 230 lbs (104.3 kg) of a SPARC M8-8 server's weight, or approximately 200 lbs (90.7 kg) of a SPARC M7-8 server's weight. If a caster and leveling foot are located in the center of a raised floor tile, that tile bears this entire weight. The floor tile and underlying supports must be able to accommodate this load.

### Related Information

- [“Physical Dimensions \(Rackmounted Servers\)” on page 45](#)
- [“Stabilizing the Server” on page 129](#)

## Cable Routing Floor Opening Specifications (Sun Rack II)

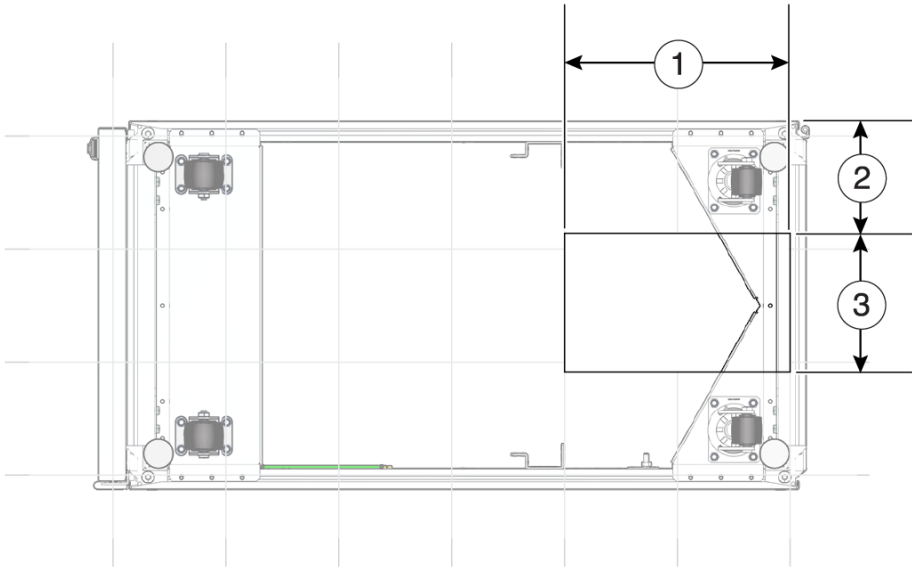
This illustration shows the bottom view of the server with an *example* floor opening. This example opening extends under the server and between the two rear casters. Depending on your raised-floor cabling requirements, your data center might require a different opening. Contact your facilities manager for more information.



**Caution** - If your floor opening is near the leveling feet, ensure that the surrounding floor tiles can support the weight of the server. See [“Raised Floor Load-Bearing Weight Requirements” on page 54](#) for more information.



**Caution** - Be careful when moving the server near floor openings. If the server's casters fall into a floor opening, the floor and the server could be severely damaged.



No.	Description	U.S.	Metric
1	Depth of cable-routing floor opening	11 in.	280 mm

No.	Description	U.S.	Metric
2	Distance between the floor opening and the edge of the rack	5.3 in.	135 mm
3	Width of cable-routing floor opening	13 in.	330 mm

### Related Information

- “Physical Dimensions (Rackmounted Servers)” on page 45
- “Leveling Feet and Caster Dimensions (Sun Rack II)” on page 51
- “Connecting Cables” on page 175
- *Sun Rack II User's Guide* at <http://www.oracle.com/goto/sunrackii/docs>

## Cable Routing Floor Opening Specifications (Oracle Rack)

This illustration shows the bottom view of the server with an *example* floor opening. This example opening extends under the server and between the two rear casters. Depending on your raised-floor cabling requirements, your data center might require a different opening. Contact your facilities manager for more information.




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**Caution** - If your floor opening is near the leveling feet, ensure that the surrounding floor tiles can support the weight of the server. See “[Raised Floor Load-Bearing Weight Requirements](#)” on page 54 for more information.

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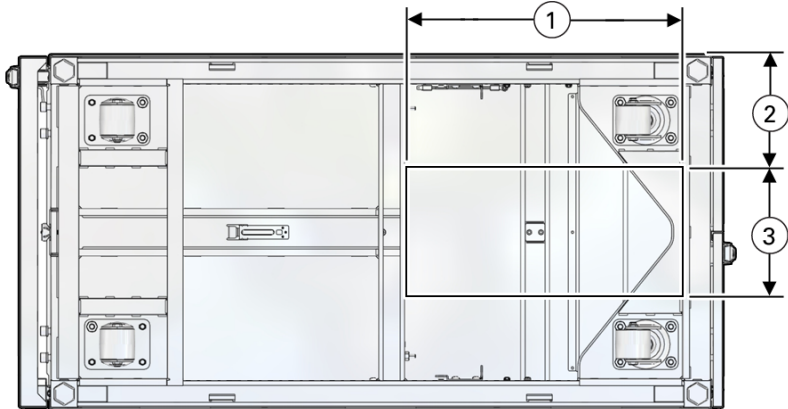



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**Caution** - Be careful when moving the server near floor openings. If the server's casters fall into a floor opening, the floor and the server could be severely damaged.

---





No.	Description	U.S.	Metric
1	Depth of cable-routing floor opening	18.5 in.	470 mm
2	Distance between the floor opening and the edge of the rack	5.1 in.	135 mm
3	Width of cable-routing floor opening	13 in.	330 mm

**Related Information**

- “Physical Dimensions (Rackmounted Servers)” on page 45
- “Leveling Feet and Caster Dimensions (Sun Rack II)” on page 51
- “Connecting Cables” on page 175
- *Sun Rack II User's Guide* at <http://www.oracle.com/goto/sunrackii/docs>

# Reviewing the Power Requirements

Description	Link
Review the power supply specifications.	“Power Supply Specifications” on page 58
Understand the server's total power consumption.	“Server Power Consumption” on page 59
Review the PDU and PDU power cord specifications. Understand the facility power receptacle requirements.	“PDU Specifications” on page 60 “PDU Power Cord Specifications” on page 61

Description	Link
	<a href="#">“PDU Power Cord Plugs” on page 63</a>
	<a href="#">“Facility Power Receptacles” on page 65</a>
Power the server using two facility power grids, and ensure that the facility meets these power requirements.	<a href="#">“Facility Power Requirements” on page 66</a>
Understand the relationship between the power cords and the power supplies.	<a href="#">“Understanding Power Cord-to-PDU Relationships” on page 68</a>
When installing a stand-alone server, understand the power cord requirements.	<a href="#">“Stand-Alone Server Power Cord Requirements” on page 73</a>
Understand the server grounding requirements.	<a href="#">“Grounding Requirements” on page 75</a>
Understand the circuit breaker capacity requirements.	<a href="#">“Circuit Breaker Capacity Requirements” on page 75</a>

### Related Information

- [“Connecting Cables” on page 175](#)
- [“Supply Power to the Server” on page 206](#)

## Power Supply Specifications

The servers contain hot-swappable, redundant power supplies. The SPARC M8-8 and SPARC M7-8 servers contain 6 power supplies, and the SPARC M7-16 server has 16 power supplies. These specifications are for each power supply and not for the entire server.

---

**Note** - All power supplies must be installed, and all power cords must be connected, to power the server.

---

Use these power supply specifications only as a planning aid. For more precise power values, use the online power calculator to determine the power consumption of the server with your configuration. To locate the appropriate power calculator, go to the following web site and navigate to the specific server page:

<http://www.oracle.com/goto/powercalculators/>

Specification	Measurement
Rated power supply output capacity	3.0 KW
Nominal AC operating voltage range	200–240 VAC
Input current	16A @ 208 VAC

Specification	Measurement
Nominal frequencies	50/60 Hz
Output rating	+12.3V @ 244A output
Efficiency	90% efficient (20% to 100% load)
Inrush current	<ul style="list-style-type: none"> <li>■ 50A peak (excluding EMI filter charging)</li> <li>■ Less than 20A RMS over one cycle</li> </ul>
Protective earth current	Less than 2 mA

### Related Information

- [“Server Power Consumption” on page 59](#)
- [“Power Cord-to-PDU Relationship \(SPARC M7-16\)” on page 71](#)
- [“Prepare the Stand-Alone Server Power Cords” on page 172](#)

## Server Power Consumption

The following table lists the server power ratings for fully-configured servers.

Use the online power calculator to determine the power consumption of the server with your configuration. To locate the appropriate power calculator, go to the following web site and navigate to the server page:

<http://www.oracle.com/goto/powercalculators/>

---

**Note** - The maximum power consumption rating requires that both power grids are operational.

---

Server	Maximum	Typical
SPARC M8-8 server	10,400W	6,800W
SPARC M7-8 server	10,400W	6,800W
SPARC M7-16 server	22,800W	14,800W

### Related Information

- [“Power Supply Specifications” on page 58](#)
- [“PDU Specifications” on page 60](#)
- [“Circuit Breaker Capacity Requirements” on page 75](#)

## PDU Specifications

The rackmounted servers ship with two redundant three-phase PDUs. To support the power requirements of all geographical regions, the PDUs can be either low voltage or high voltage.

- Low-voltage PDU – North America, Japan, and Taiwan.
- High-voltage PDU – Europe, Middle East, Africa, rest of the world.

**TABLE 1** Low-Voltage 3 Phase PDU Specifications

Low Voltage PDU Specification	Details	Comments
Power rating	26 kVA	Grounded neutral provided in input cords, but not connected in PDU
Type of input	Three phase (4W+GND)	
Number of inputs	Three inputs each with a 30A plugs per PDU, or six total inputs/plugs for system	
Source voltage	190V 220VAC (208V nominal phase to phase voltage) 50/60 Hz	
Line current per phase	24A max. per phase	PDU rated at 26KVA phase voltage 208V Nominal current equals 26000/208
Amps per PDU	125A	
Number of groups of outlets	9	
Outlets types	C13 and C19	Per group: five C13 and one C19. Total per PDU: forty five C13 and nine C19
Data center receptacle	NEMA L21-30R	
Usable PDU power cord length	2m (6.6 feet)	PDU power cords are 4m long (13 feet), but sections are used for internal routing in the rack

**TABLE 2** High-Voltage 3 Phase PDU Specifications

High-Voltage PDU Specifications	Details	Comments
Power rating	33 kVA	
Type of input	Three phase (4W+GND)	
Number of inputs	Three inputs each with a 16A plug or six inputs/plugs for system	
Source voltage	220 - 240VAC (230V nominal line to neutral voltage), 50/60 Hz, maximum	
Line current per phase	16A max. per phase	
Amps per PDU	144A	PDU rated at 33KVA phase

High-Voltage PDU Specifications	Details	Comments
		Line voltage: 220V
		Nominal current equals 33000/220
Number of groups of outlets	9	
Outlet types	C13 and C19	Per group: five C13 and one C19
		Total per PDU: forty five C13 and nine C19.
Data center receptacle	IEC 60309 16/20A 200-240VAC	Hubbell C520R6S or equivalent.
Usable PDU power cord length	2m (6.6 feet)	PDU power cords are 4m long (13 feet), but sections are used for internal routing in the rack

### Related Information

- [“Server Power Consumption” on page 59](#)
- [“PDU Power Cord Specifications” on page 61](#)
- [“PDU Power Cord Plugs” on page 63](#)

## PDU Power Cord Specifications

Six AC PDU power cords deliver power to the server. Two types of PDU power cords are available to support regional power source connections.

---

**Note** - All six PDU power cords must be connected to the facility AC power receptacles to power the server.

---

Region	Length	Facility AC Outlet Plug
North America, Japan, and Taiwan	4m (13 ft, 1.5 in.)	30A, 120/208V, 3-phase, NEMA L21-30P
Europe, Middle East, Africa, and the rest of the world	4m (13 ft, 1.5 in.)	16/20A, 400V, IEC 60309 IP44 (516P6S)

---

**Note** - While the PDU power cords are 4m (13.12 ft.) long, 1 to 1.5m (3.3 to 4.9 ft.) of the cords will be routed within the rack cabinet. The facility AC power receptacles must be within 2m (6.6 ft.) of the rack.

---



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**Caution** - The installation site must have a local power disconnect (for example, circuit breakers) between the power source and the power cords. You will use this local disconnect to supply or remove AC power from the server. See [“Circuit Breaker Capacity Requirements” on page 75](#) for more information.

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**Caution** - Ensure that you install the server near your power grid's electrical outlets, and ensure that these outlets are easily accessible in case you must detach the power cords in an emergency.

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**Note** - Electrical work and installations must comply with applicable local, state, or national electrical codes. Your facility manager or a qualified electrician must connect these power cords to the facility power grids.

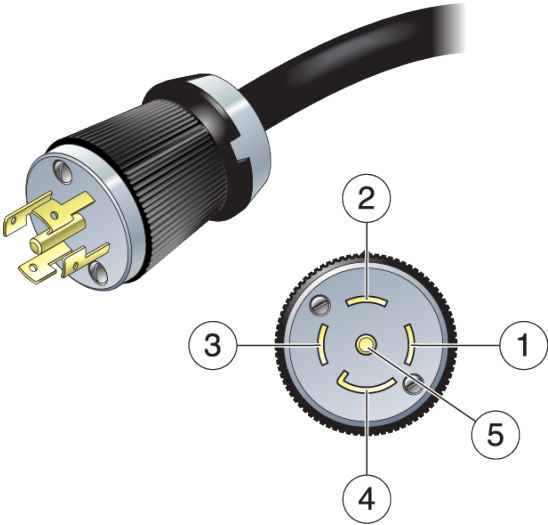
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### Related Information

- [“PDU Specifications” on page 60](#)
- [“PDU Power Cord Plugs” on page 63](#)
- [“Supply Power to the Server” on page 206](#)

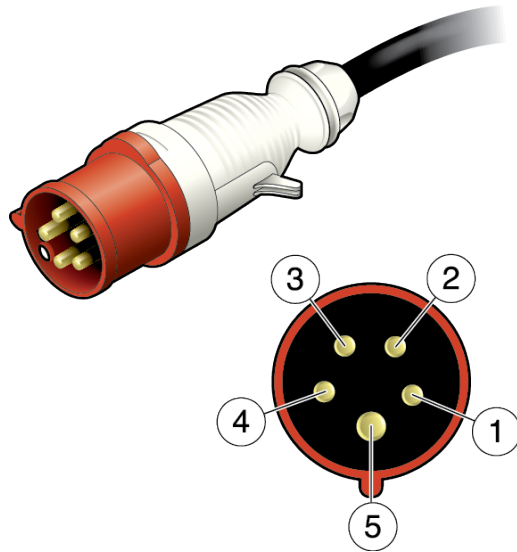
# PDU Power Cord Plugs

**FIGURE 1** Low-Voltage PDU Power Cord AC Plug (NEMA L21-30P)



No.	Description
1	L1, R, X
2	L2, S, Y
3	L3, T, Z
4	Neutral – not connected
5	Ground

**FIGURE 2** High-Voltage PDU Power Cord AC Plug (516P6S)



No.	Description
1	L1, R, X
2	L2, S, Y
3	L3, T, Z
4	Neutral
5	Ground

### Related Information

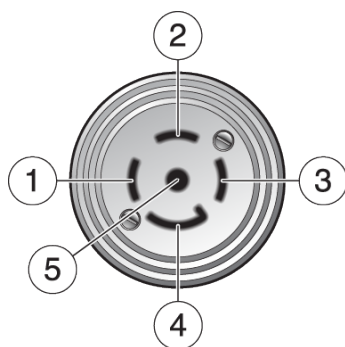
- [“PDU Power Cord Specifications” on page 61](#)
- [“Facility Power Receptacles” on page 65](#)



## Facility Power Receptacles

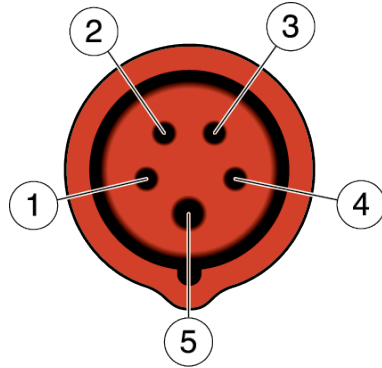
You must provide six power connectors or receptacles to connect to the server's AC PDU power cords. The following illustrations show the pin layout of the appropriate female connectors or receptacles.

**FIGURE 3** Low-Voltage PDU Power Cord AC Receptacle (NEMA L21-30R)



No.	Description
1	L1, R, X
2	L2, S, Y
3	L3, T, Z
4	Neutral – not connected
5	Ground

**FIGURE 4** High-Voltage PDU Power Cord AC Receptacle (516C6S)



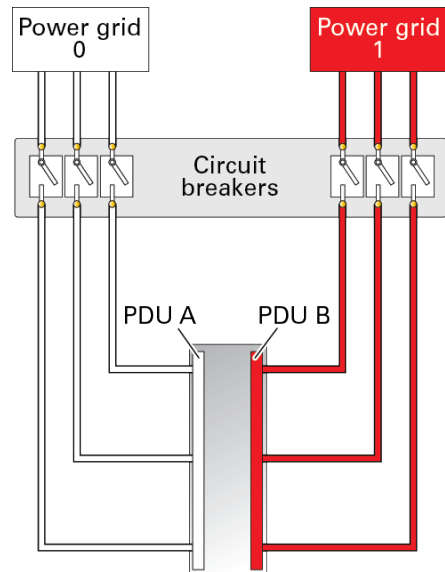
No.	Description
1	L1, R, X
2	L2, S, Y
3	L3, T, Z
4	Neutral
5	Ground

### Related Information

- [“PDU Power Cord Specifications” on page 61](#)
- [“PDU Power Cord Plugs” on page 63](#)

## Facility Power Requirements

The server is designed to be powered by two utility power grids. Connect the three power cords from PDU A to one power grid, and connect the three power cords from PDU B to a second power grid. (When facing the rear of the server, PDU A is on the left and PDU B is on the right.) All six power cords must be connected when operating the server.




---

**Note** - With this dual-power feed setup, every power cord connected to the server is used to supply power, and the power load is balanced. When power loads are greater than 5% of the power supply capacity, the power loads are balanced at  $\pm 10\%$ .

---

Using 3-phase, sine-wave uninterruptible power supplies, you can create two separate power grids from one facility power source.

To prevent catastrophic failures, design your input power sources to ensure that adequate power is provided to the server. Use dedicated circuit breakers for all power circuits that supply power to the server.

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

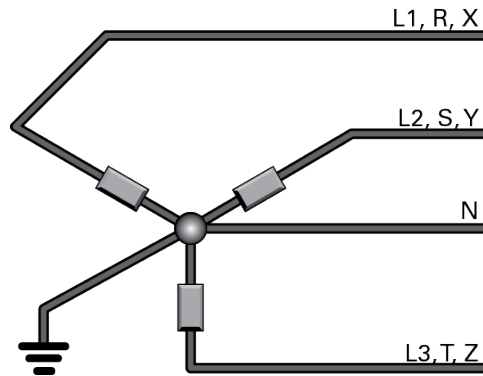



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**Caution** - To protect your server from electrical fluctuations and interruptions, use a dedicated power distribution system, uninterruptible power supplies, power conditioning equipment, and lightning arresters.

---

The three-phase AC power source must be a center-point grounded star configuration (type TN-C per IEC 60950). When using the 26 kVA PDU, the server is powered phase-to-phase, so the neutral line of the 5-wire power cord is not connected. When using the 33 kVA PDU, the server is powered phase-to-neutral, so the neutral line of the 5-wire power cord is connected inside the PDU.



### Related Information

- [“PDU Specifications” on page 60](#)
- [“Understanding Power Cord-to-PDU Relationships” on page 68](#)

## Understanding Power Cord-to-PDU Relationships

These topics describe the relationship of the server power cords to the rack PDUs.

- [“PDU Power Cord Facility Grid Relationship” on page 68](#)
- [“Power Cord-to-PDU Relationship \(SPARC M8-8 and SPARC M7-8\)” on page 69](#)
- [“Power Cord-to-PDU Relationship \(SPARC M7-16\)” on page 71](#)

### Related Information

- [“PDU Specifications” on page 60](#)
- [“PDU Power Cord Specifications” on page 61](#)
- [“Facility Power Requirements” on page 66](#)

## PDU Power Cord Facility Grid Relationship

Six PDU power cords provide power to the two PDUs in the rack. The server power cords within the rack connect to the PDUs.

When facing the rear of the server, the three PDU A (left) power cords connect to one facility AC power grid, and the three PDU B (right) power cords connect to another AC power grid. See [“Facility Power Requirements” on page 66](#) for more information.

---

**Note** - To ensure the redundant operation of the power supplies, connect the server chassis power cords to alternate the PDUs. When connected to alternate PDUs, the power supplies provide 1+1 (2N) redundancy in case of a power failure to a single AC power grid.

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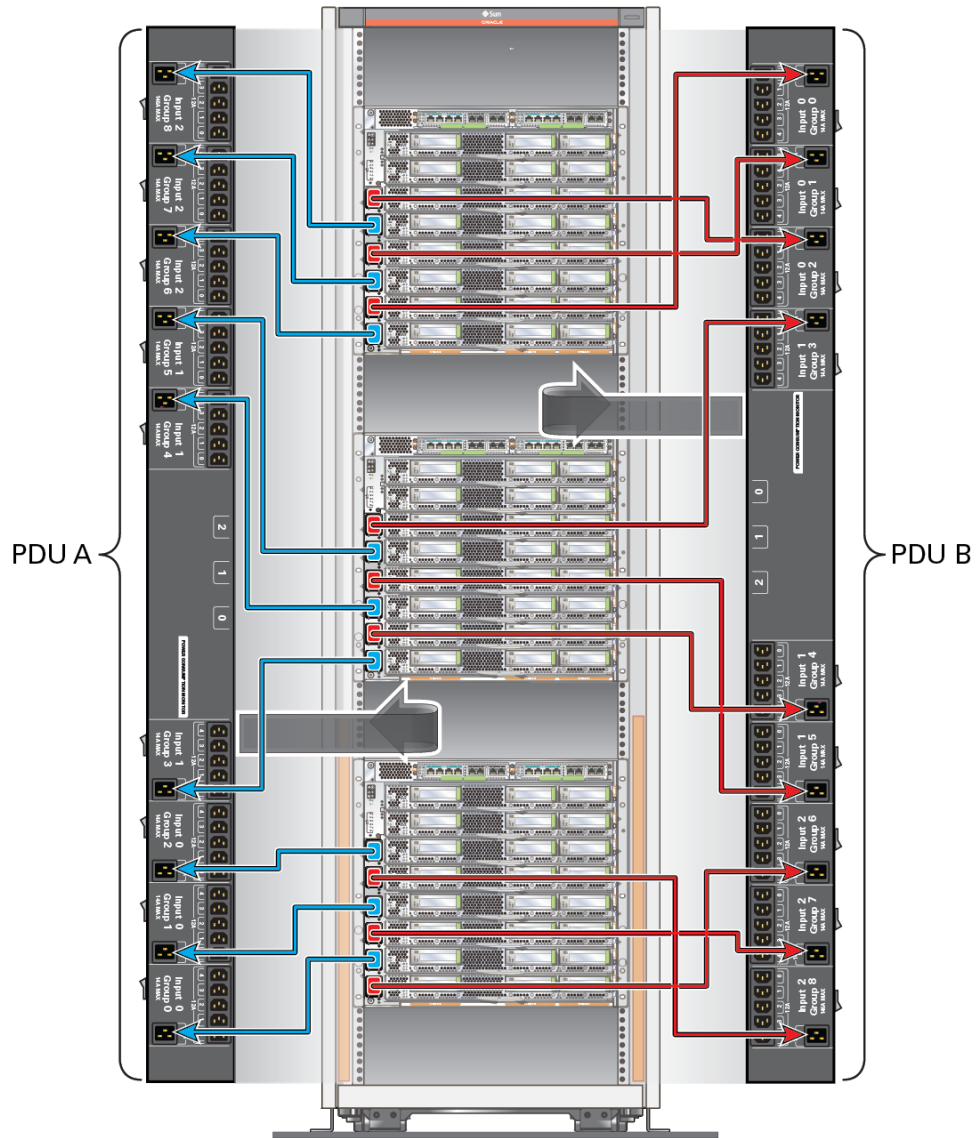
### Related Information

- [“Power Cord-to-PDU Relationship \(SPARC M8-8 and SPARC M7-8\)” on page 69](#)
- [“Power Cord-to-PDU Relationship \(SPARC M7-16\)” on page 71](#)
- [“Facility Power Requirements” on page 66](#)

## Power Cord-to-PDU Relationship (SPARC M8-8 and SPARC M7-8)

A rackmounted SPARC M8-8 or SPARC M7-8 server ships with one factory-installed server in a Sun Rack II 1242 rack. A Sun Rack II 1242 rack can contain up three stand-alone servers, so you can install up to two more stand-alone servers into the same rack. For the proper installation locations, see [“SPARC M8-8 and SPARC M7-8 Server Locations in an Oracle Rack” on page 138](#).

When facing the rear of the rack, the stand-alone server power cord-to-PDU connections are as follows.



**TABLE 3** Third SPARC M8-8 or SPARC M7-8 Server Power Cord Connections (Top)

Power Supply No.	AC input No.	PDU Outlet Group	AC Power Grid No.
5	5	PDU B group 2	1
4	4	PDU A group 8	0

Power Supply No.	AC input No.	PDU Outlet Group	AC Power Grid No.
3	3	PDU B group 1	1
2	2	PDU A group 7	0
1	1	PDU B group 0	1
0	0	PDU A group 6	0

**TABLE 4** Second SPARC M8-8 or SPARC M7-8 Server Power Cord Connections (Middle)

Power Supply No.	AC input No.	PDU Outlet Group	AC Power Grid No.
5	5	PDU B group 3	1
4	4	PDU A group 5	0
3	3	PDU B group 5	1
2	2	PDU A group 4	0
1	1	PDU B group 4	1
0	0	PDU A group 3	0

**TABLE 5** Rackmounted SPARC M8-8 or SPARC M7-8 Server Power Cord Connections (Bottom)

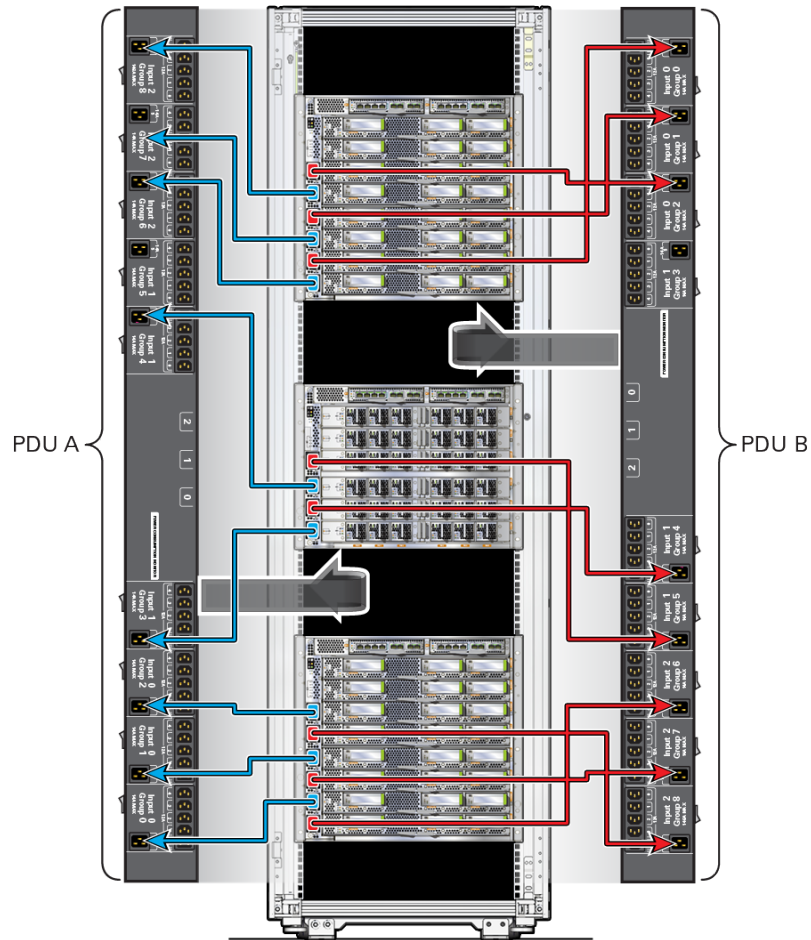
Power Supply No.	AC input No.	PDU Outlet Group	AC Power Grid No.
5	5	PDU A group 2	0
4	4	PDU B group 8	1
3	3	PDU A group 1	0
2	2	PDU B group 7	1
1	1	PDU A group 0	0
0	0	PDU B group 6	1

### Related Information

- [“PDU Specifications” on page 60](#)
- [“PDU Power Cord Specifications” on page 61](#)
- [“Facility Power Requirements” on page 66](#)
- [“Stand-Alone Server Power Cord Requirements” on page 73](#)

### Power Cord-to-PDU Relationship (SPARC M7-16)

When facing the rear of the server, the SPARC M7-16 server power cord-to-PDU connections are as follows.



**TABLE 6** Top SPARC M7-16 Server CMIU Chassis Power Cord Connections

Power Supply No.	AC input No.	PDU Outlet Group	AC Power Grid No.
15	15	PDU B group 2	1
14	14	PDU A group 8	0
13	13	PDU B group 1	1
12	12	PDU A group 7	0
11	11	PDU B group 0	1
10	10	PDU A group 6	0



**TABLE 7** SPARC M7-16 Server Switch Chassis Power Cord Connections

Power Supply No.	AC input No.	PDU Outlet Group	AC Power Grid No.
9	9	PDU B group 5	1
8	8	PDU A group 4	0
7	7	PDU B group 4	1
6	6	PDU A group 6	0

**TABLE 8** Bottom SPARC M7-16 Server CMIOU Chassis Power Cord Connections

Power Supply No.	AC input No.	PDU Outlet Group	AC Power Grid No.
5	5	PDU A group 2	0
4	4	PDU B group 8	1
3	3	PDU A group 1	0
2	2	PDU B group 7	1
1	1	PDU A group 0	0
0	0	PDU B group 6	1

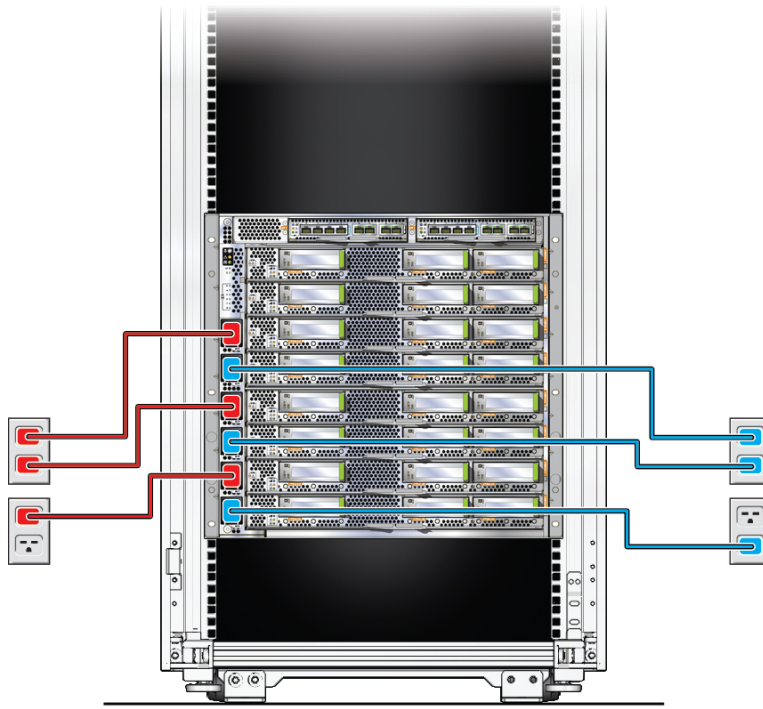
### Related Information

- [“PDU Specifications” on page 60](#)
- [“PDU Power Cord Specifications” on page 61](#)
- [“Facility Power Requirements” on page 66](#)

## Stand-Alone Server Power Cord Requirements

Six AC power cords supply power to the six power supplies of a stand-alone SPARC M8-8 or SPARC M7-8 server. These server power cords connect the rear IEC 60320-C19 AC inputs to your facility AC power sources.

To ensure the redundant operation of the power supplies, connect the server power cords to alternate power sources. For example, connect server power cords from AC inputs labeled AC0, AC2, and AC4 to one power source and from AC inputs labeled AC1, AC3, AC5 to another power source. When connected to alternate power sources, the server has 2N redundancy in case of a power failure to a single power source.



Region-specific server power cords are available for different locales.

Region	Length	Facility AC Outlet Plug
North America and Asia	4m (13 ft, 1.5 in.)	20A, NEMA L6-20P plug
International	4m (13 ft, 1.5 in.)	16A, IEC 60309-IP44 plug
Argentina	4m (13 ft, 1.5 in.)	16A, IRAM2073 plug
Europe	4m (13 ft, 1.5 in.)	16A, CEE7/VII plug
For use with PDUs	2.5m (8 ft 2.4 in.)	20A, IEC 60320-2-2 sheet I (C20) plug, straight plug-connector
For use with PDUs	1.5m (4 ft 11 in.)	20A, IEC 60320-2-2 sheet I (C20) plug, straight plug-connector

### Related Information

- [“Power Supply Specifications” on page 58](#)
- [“Power Cord-to-PDU Relationship \(SPARC M8-8 and SPARC M7-8\)” on page 69](#)

- [“Prepare the Stand-Alone Server Power Cords” on page 172](#)

## Grounding Requirements

Always connect the PDU input power cords to grounded power outlets. The servers require electrical circuits to be grounded to Earth ground, and connecting the PDU power cords to grounded outlets completes the server grounding. No additional cabinet grounding is required.

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 electrician verifies the grounding method for the building and performs the grounding work.

### Related Information

- [“Rackmounted and Stand-Alone Servers” on page 16](#)
- [“PDU Power Cord Specifications” on page 61](#)
- [“\(Optional\) Attach a Grounding Cable” on page 186](#)

## Circuit Breaker Capacity Requirements

Provide a separate circuit breaker for each PDU power cord connected to the server. These circuit breakers must accommodate the facility fault current ratings for the power infrastructure. Standard 3-pole circuit breakers are acceptable. The server has no specific time-to-trip requirements.

Contact your facilities manager or a qualified electrician to determine what type of circuit breakers accommodate your facility power infrastructure.

PDU Voltage Input	Circuit Breaker Capacity
200–220 VAC line-to-line (L-L) 3-pole	30A
220/380–240/415 VAC line-to-line (L-L) 3-pole	20A (USA and Japan)
	16A (Europe and the rest of the world)

### Related Information

- [“Facility Power Requirements” on page 66](#)

- [“Connect the PDU Power Cords” on page 177](#)

## Preparing for Cooling

Review the environmental requirements and ensure that the installation site provides adequate cooling.

- [“Environmental Requirements” on page 76](#)
- [“Airborne Contaminates” on page 77](#)
- [“Heat Dissipation and Airflow Requirements” on page 79](#)
- [“Cooling Airflow From Ceiling Vents” on page 81](#)
- [“Cooling Airflow From Perforated Floor Tiles” on page 82](#)
- [“Ambient Temperature and Humidity Measurement” on page 84](#)

### Related Information

- [“Site Preparation Checklist” on page 41](#)
- [“Installing a Rackmounted Server” on page 119](#)

## Environmental Requirements

These environmental requirements are for both the SPARC M8-8 and the SPARC M7 series servers.

Requirement	Operating Range	Nonoperating Range	Optimum Range
Altitude	Up to 3000m (10000 ft) <b>Note</b> - Except in China markets, where regulations might limit installations to a maximum altitude of 2 km (6560 ft.).	Up to 12000m (40000 ft)	
Relative humidity	20% to 80%, 27°C (81°F) max wet bulb temperature, noncondensing. <b>Note</b> - Humidity ramp rate must not exceed 30% per hour.	Up to 85%, 40°C (104°F) max wet bulb temperature, noncondensing. Max dew point: 28°C (82°F). <b>Note</b> - Humidity ramp rate must not exceed 20% per hour.	45% to 50%
Ambient temperature	5° to 35°C (41° to 95°F)	In shipping container: -40° to 65°C (-40° to 149°F)	21° to 23°C (70° to 74°F)

Requirement	Operating Range	Nonoperating Range	Optimum Range
	<b>Note</b> - Temperature ramp rate must not exceed 15°C (27°F) per hour.	Unpacked: 0° to 50°C (32° to 122°F) <b>Note</b> - Temperature ramp rate must not exceed 20°C (36°F) per hour.	
Maximum ambient temperature ranges per elevation	<ul style="list-style-type: none"> <li>■ 5° to 35°C (41° to 95°F) at 0 to 1640 ft)</li> <li>■ 5° to 33°C (41° to 93.2°F) at 501 to 1000m (1664 to 3281 ft)</li> <li>■ 5° to 31°C (41° to 87.7°F) at 1001 to 1500m (3284 ft to 4921 ft)</li> <li>■ 5° to 29°C (41° to 84.2°F) at 1501 to 3000m (4924 to 10000 ft)</li> </ul> <p><b>Note</b> - Except in China markets, where regulations might limit installations to a maximum altitude of 2km (6560 ft.).</p>		
Vibration	0.15G (vertical), 0.10G (horizontal), 5 to 500 Hz, swept-sine	0.5G (vertical), 0.25G (horizontal), 5 to 500 Hz, swept-sine	
Shock	3.0G, 11 ms, half-sine	<b>Roll-off:</b> 1-inch roll-off free fall, front-to-back rolling directions  <b>Threshold:</b> 25 mm threshold height at 0.75m/s impact velocity	
Incline	5 degrees max. (9% grade max.)	5 degrees max. (9% grade max.)	

## Related Information

- [“Airborne Contaminates” on page 77](#)
- [“Heat Dissipation and Airflow Requirements” on page 79](#)
- [“Ambient Temperature and Humidity Measurement” on page 84](#)
- [“Set the Server Altitude” on page 219](#)

## Airborne Contaminates

Excessive concentrations of certain airborne contaminants can cause the server's electronic components to corrode and fail. Take measures to prevent contaminants such as metal particles, atmospheric dust, solvent vapors, corrosive gases, soot, airborne fibers, or salts from entering, or being generated within, the data center.

Avoid locating the data center near print rooms, machine shops, wood shops, loading docks, and areas that involve the use of chemicals or that generate toxic vapors or dust. Ensure that the exhaust from generators or other sources of exhaust do not enter the intakes of air

conditioning systems serving the data center. If the data center must be located near these hazardous locations, add and regularly maintain adequate filtering systems.

---

**Note** - To avoid introducing airborne contaminants to the data center, unpack the server outside of the data center, and then move the server to its final location.

---

**TABLE 9** Maximum Allowable Contaminate Levels

Contaminate	Tolerable Limit
Hydrogen sulfide (H <sub>2</sub> S)	Up to 7.1 ppb
Sulfur dioxide (sulfur oxide) (SO <sub>2</sub> )	Up to 37 ppb
Hydrogen chloride (HCl)	Up to 6.6 ppb
Chlorine (Cl <sub>2</sub> )	Up to 3.4 ppb
Hydrogen fluoride (HF)	Up to 3.6 ppb
Nitrogen dioxide (nitrogen oxide) (NO <sub>2</sub> )	Up to 52 ppb
Ammonia (NH <sub>3</sub> )	Up to 420 ppb
Ozone (O <sub>3</sub> )	Up to 5 ppb
Oil vapor	Up to 0.2 mg/m <sup>3</sup>
Dust	Up to 0.15 mg/m <sup>3</sup>
Seawater (salt damage)	Do not install the server within 0.5 km (0.31 miles) of the ocean or coastal areas, unless the computer room uses air conditioners to filter out airborne sea salt particles from the outside air.

**TABLE 10** Maximum Gaseous Contaminate Severity Levels for Copper and Silver

Reactivity Rate	Maximum Gaseous Contamination Severity Level
Copper (Cu) reactivity rate	Less than 30 nm/month
Silver (Ag) reactivity rate	Less than 20 nm/month

For more information, refer to the ASHRAE Technical Committee 9.9 document, *Gaseous and Particulate Contamination Guidelines for Data Centers* and the *iNEMI Position Statement on the Limits of Temperature, Humidity and Gaseous Contamination in Data Centers and Telecommunication Rooms to Avoid Creep Corrosion on Printed Circuit Boards* (April 20, 2012).

### Related Information

- [“Environmental Requirements” on page 76](#)
- [“Heat Dissipation and Airflow Requirements” on page 79](#)

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## Heat Dissipation and Airflow Requirements

The maximum rate of heat released from a fully-configured SPARC M8-8 or SPARC M7-8 server is 35,500 BTUs/hr (37,455 kJ/hr). The maximum rate of heat released from a fully-configured SPARC M7-16 server is 77,800 BTUs/hr (82,084 kJ/hr). To cool the server properly, ensure that adequate airflow travels through the server.

The direction of the airflow is from the front to the back of the server. The approximate server airflow is:

SPARC M8-8 server:

- Maximum: 860 CFM
- Typical: 590 CFM

SPARC M7-8 server:

- Maximum: 860 CFM
- Typical: 590 CFM

SPARC M7-16 server:

- Maximum: 2240 CFM
- Typical: 1400 CFM

To ensure adequate airflow:

- Allow a minimum clearance of 36 inches (914 mm) at the front and the rear of the server for ventilation.
- If the server is not completely populated with components, cover the empty slots with filler panels.
- Manage cables to minimize interference with the server exhaust.



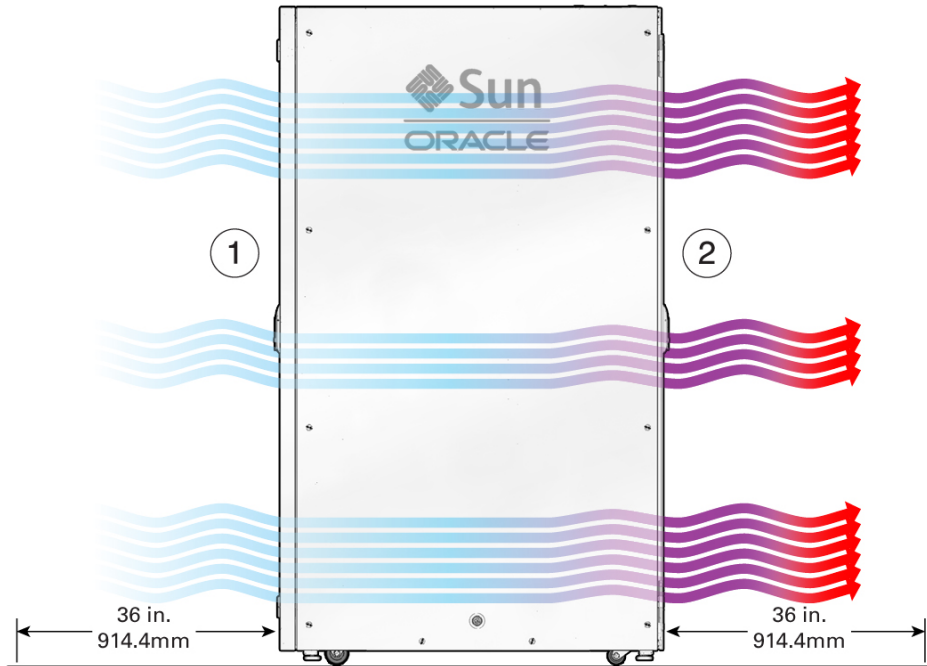
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**Caution** - When installing three SPARC M8-8 or SPARC M7-8 servers in the same rack, you must cover all empty rack slots using 3U metal filler panels. You must also use 3U metal filler panels when installing a combination of three of these servers in the same rack (for example, two SPARC M8-8 servers and one SPARC M7-8 server). Contact your Oracle Sales representative to order the correct 3U filler panel for Oracle racks (part number: 7326328). See [“Install Filler Panels” on page 170](#) for installation instructions.

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**Note** - There are no airflow requirements for the left and right sides or the top and bottom of the server.

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No.	Description
1	Front of server
2	Rear of server

### Related Information

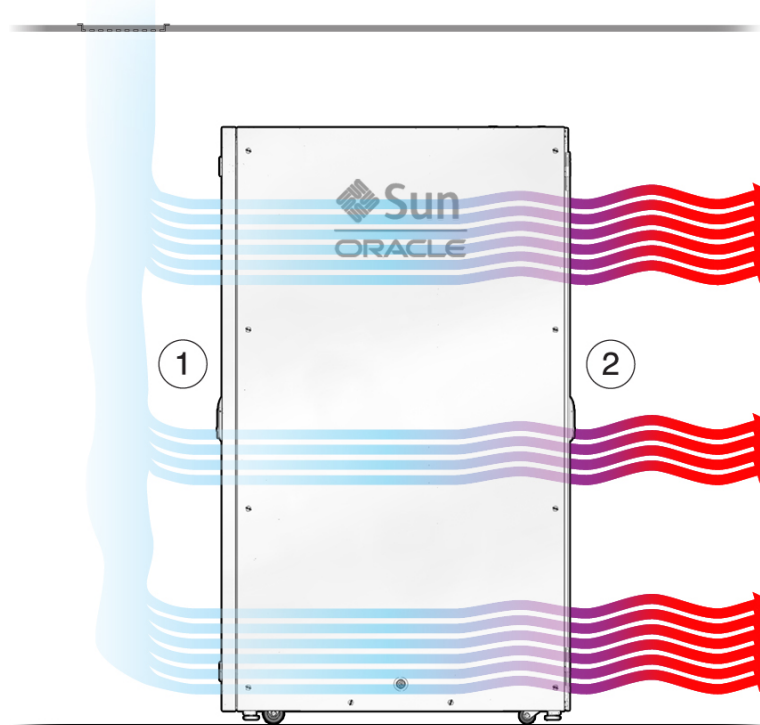
- [“Environmental Requirements” on page 76](#)
- [“Cooling Airflow From Ceiling Vents” on page 81](#)
- [“Cooling Airflow From Perforated Floor Tiles” on page 82](#)



## Cooling Airflow From Ceiling Vents

When cooling the data center using ceiling vents, install the vents in front of the server so that conditioned air flows through the server. To provide maximum cooling, the airflow should be approximately:

- SPARC M8-8 server: 860 CFM
- SPARC M7-8 server: 860 CFM
- SPARC M7-16 server: 2240 CFM



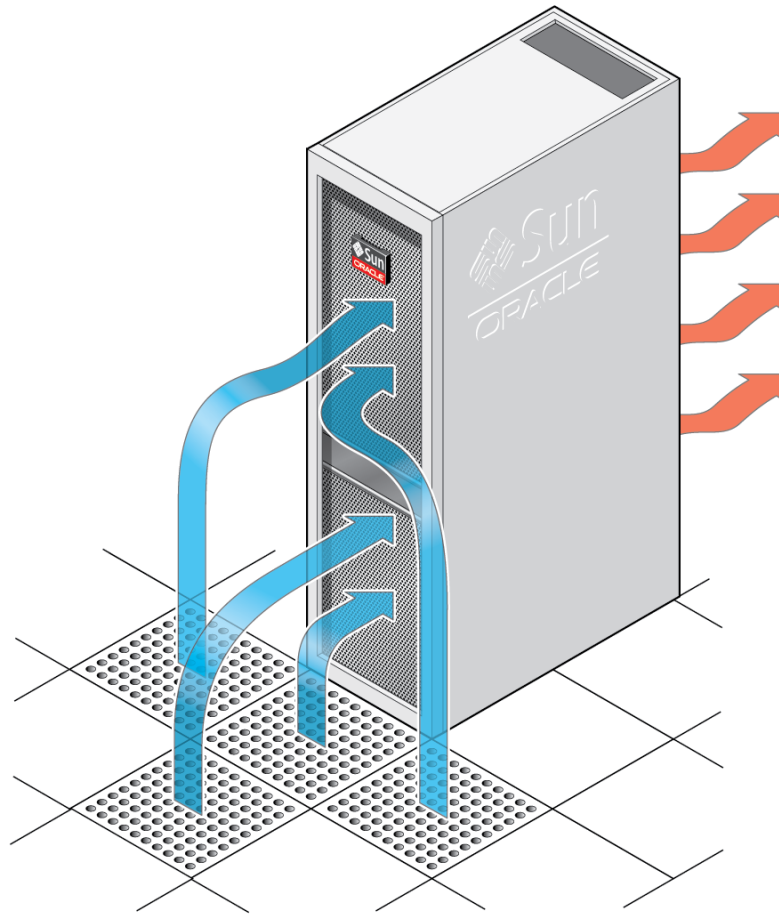
No.	Description
1	Front of server
2	Rear of server

### **Related Information**

- [“Heat Dissipation and Airflow Requirements” on page 79](#)
- [“Cooling Airflow From Perforated Floor Tiles” on page 82](#)

## **Cooling Airflow From Perforated Floor Tiles**

If you install the server on a raised floor and you provide underfloor cooling, install perforated tiles in front of the server to cool it. The following illustration shows an example arrangement of four perforated floor tiles providing cooling air to the server.



Server	Notes
SPARC M8-8 server	<p>In this example floor tile arrangement, each perforated tile provides 215 CFM of cooling air in order to provide the 860 CFM maximum total cooling airflow.</p> <p>If your perforated floor tiles provide cooling air greater than 215 CFM, you can use fewer tiles to cool the server. For example, if the perforated floor tiles produce 450 CFM of cooling air, install two floor tiles in front of the server.</p>
SPARC M7-8 server	<p>In this example floor tile arrangement, each perforated tile provides 215 CFM of cooling air in order to provide the 860 CFM maximum total cooling airflow.</p>

Server	Notes
SPARC M7-16 server	<p data-bbox="930 369 1422 499">If your perforated floor tiles provide cooling air greater than 215 CFM, you can use fewer tiles to cool the server. For example, if the perforated floor tiles produce 450 CFM of cooling air, install two floor tiles in front of the server.</p> <p data-bbox="930 510 1422 583">In this example floor tile arrangement, each perforated tile provides 560 CFM of cooling air in order to provide the 2240 CFM maximum total cooling airflow.</p> <p data-bbox="930 604 1422 730">If your perforated floor tiles provide cooling air greater than 560 CFM, you can use fewer tiles to cool the server. For example, if the perforated floor tiles produce 750 CFM of cooling air, install three floor tiles in front of the server.</p>

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**Note** - The exact arrangement of these floor tiles depends on the space available in front of your server. Contact your facility manager for information about the proper arrangement of these tiles for your facility.

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### Related Information

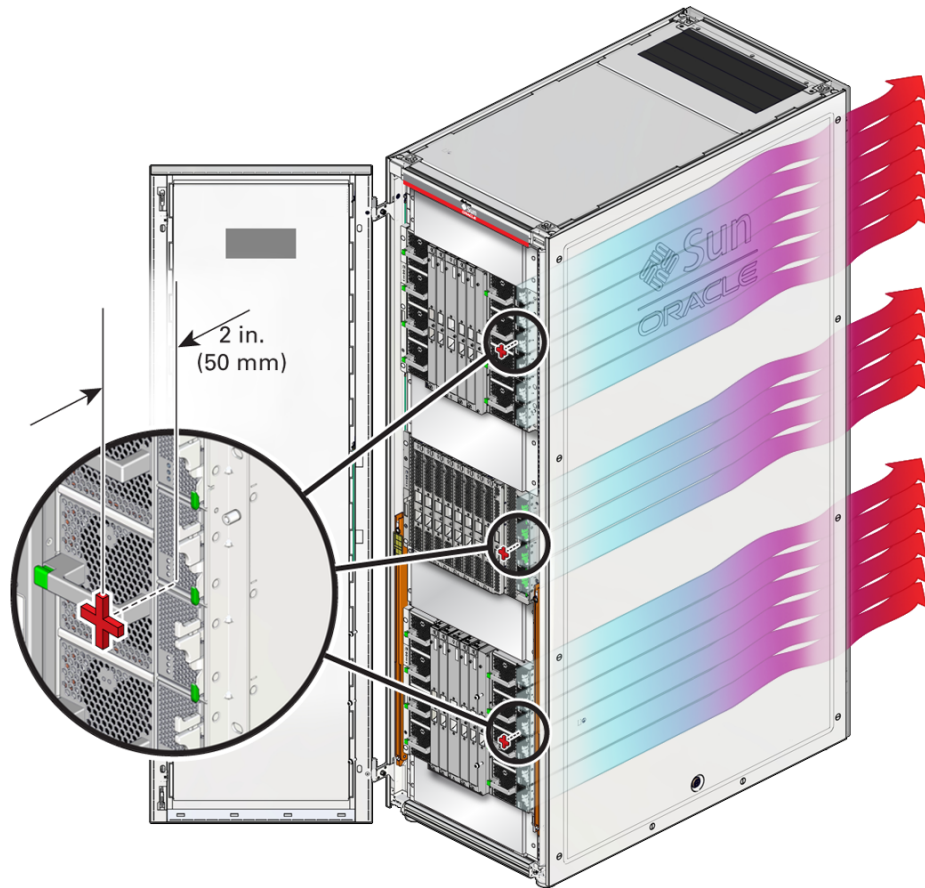
- [“Heat Dissipation and Airflow Requirements” on page 79](#)
- [“Cooling Airflow From Ceiling Vents” on page 81](#)

## Ambient Temperature and Humidity Measurement

The server exhausts heat out the rear of the server. As shown in the following illustration, always measure the ambient airflow temperature and humidity 2 inches (50 mm) in front of the server and between the power supplies.

- For a SPARC M8-8 or SPARC M7-8 server, measure the temperature 2 inches (50 mm) in front of the power supplies of the server.
- For the SPARC M7-16 server, measure the temperature 2 inches (50 mm) in front of the power supplies of the switch and the two CMIOU chassis.

See [“Environmental Requirements” on page 76](#) for the ambient temperature and humidity ranges.



### Related Information

- [“Environmental Requirements” on page 76](#)
- [“Heat Dissipation and Airflow Requirements” on page 79](#)

## Preparing the Unloading Route and Unpacking Area

Use the information in these topics to plan how the server will get from the loading ramp to the installation site.

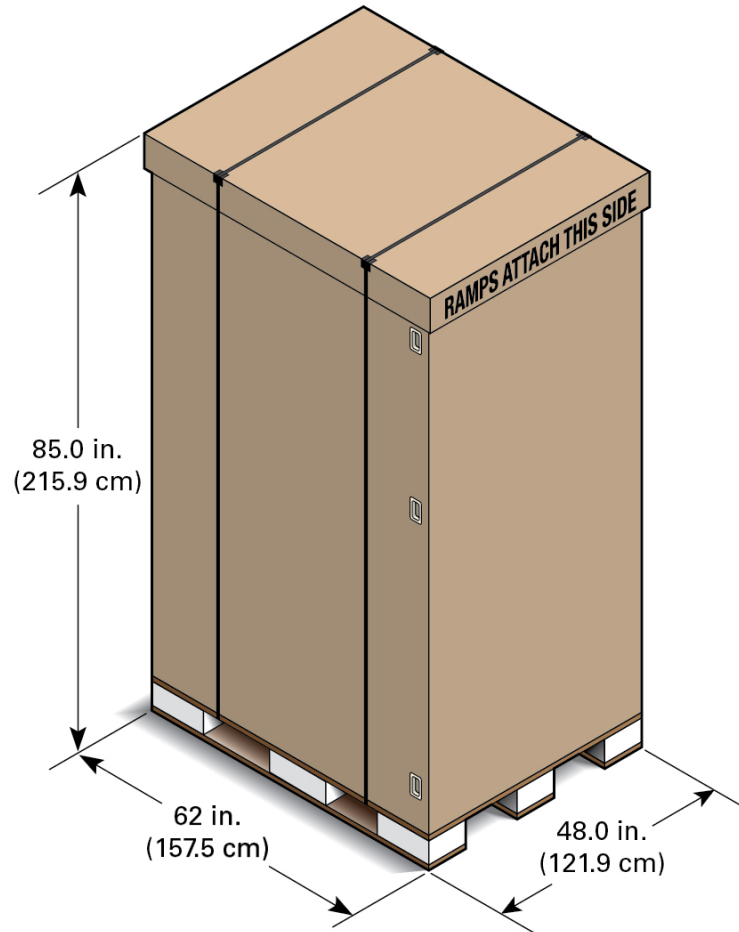
- [“Rackmounted Server Shipping Container Specifications” on page 87](#)

- [“Stand-Alone Server Shipping Container Dimensions” on page 89](#)
- [“Loading Dock and Receiving Area Requirements” on page 90](#)
- [“Access Route Requirements” on page 91](#)
- [“Rackmounted Server Unpacking Area” on page 92](#)
- [“Stand-Alone Server Unpacking Area” on page 93](#)

### **Related Information**

- [“Installing a Rackmounted Server” on page 119](#)
- [“Installing a Stand-Alone Server in a Rack” on page 135](#)

## Rackmounted Server Shipping Container Specifications



Shipping Container Dimension	U.S.	Metric
Shipping height	85 in.	2159 mm
Shipping width	48.0 in.	1219 mm
Shipping depth	62 in.	1575 mm

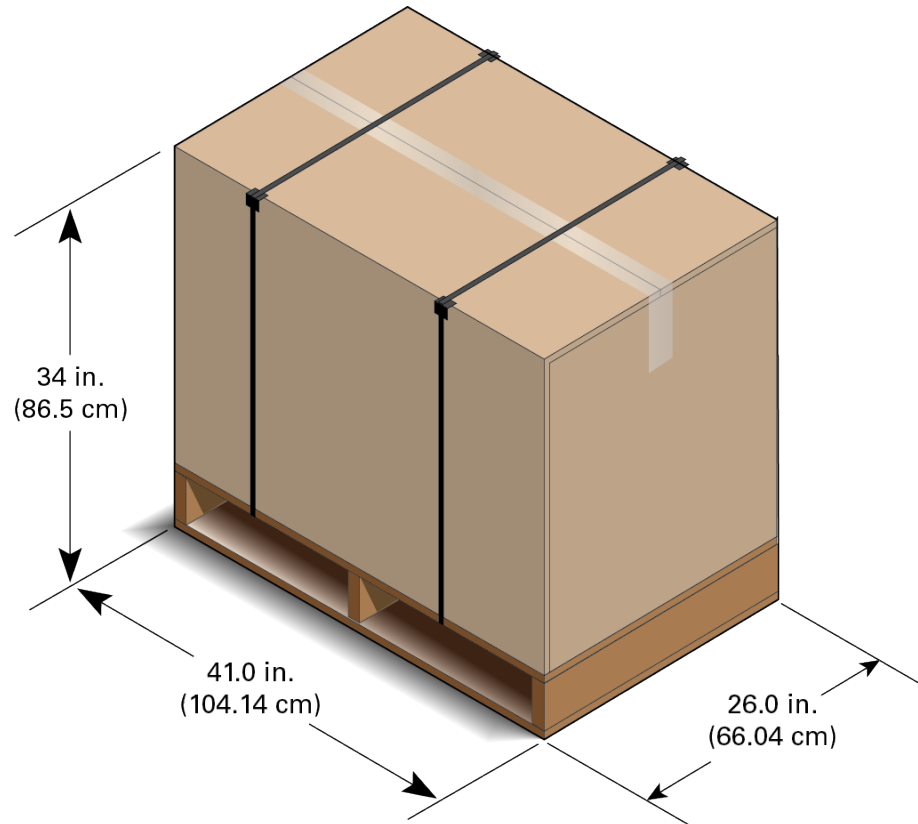
<b>Shipping Container Dimension</b>	<b>U.S.</b>	<b>Metric</b>
SPARC M8-8 Server shipping weight (varies by configuration)	Approx. 1193lbs (maximum)	Approx. 541 kg (maximum)
SPARC M7-8 Server shipping weight (varies by configuration)	Approx. 1100 lbs (maximum)	Approx. 499 kg (maximum)
SPARC M7-16 Server shipping weight (varies by configuration)	Approx. 1950 lbs (maximum)	Approx 885 kg (maximum)
Weight of shipping container alone	Approx. 261 lbs	Approx. 118 kg

### **Related Information**

- [“Physical Dimensions \(Rackmounted Servers\)” on page 45](#)
- [“Loading Dock and Receiving Area Requirements” on page 90](#)
- [“Access Route Requirements” on page 91](#)
- [“Unpack the Server” on page 121](#)



## Stand-Alone Server Shipping Container Dimensions



Shipping Container Dimension	U.S.	Metric
Shipping height	34 in.	865 mm
Shipping width	26 in.	660 mm
Shipping depth	41 in.	1041 mm
Stand-alone SPARC M8-8 server shipping weight (varies by configuration)	Approx. 545 lbs (maximum)	Approx. 247 kg (maximum)
Stand-alone SPARC M7-8 server shipping weight (varies by configuration)	Approx. 525 lbs (maximum)	Approx. 238 kg (maximum)

Shipping Container Dimension	U.S.	Metric
Weight of shipping container alone	96 lbs	44.9 kg

### Related Information

- [“Rackmounted and Stand-Alone Servers” on page 16](#)
- [“Physical Dimensions \(Stand-Alone Servers\)” on page 46](#)
- [“Stand-Alone Server Unpacking Area” on page 93](#)
- [“Unpack the Stand-Alone Server” on page 147](#)

## Loading Dock and Receiving Area Requirements

Before the server arrives, ensure that the receiving area is large enough for the shipping package.

If your loading dock meets the height and ramp requirements for a standard freight carrier truck, you can use a pallet jack to unload the server. If the loading dock does not meet the requirements, provide a standard forklift or other means to unload the server. Alternatively, you can request that the server be shipped in a truck with a lift gate.

When the server arrives, leave the server in its shipping container until it arrives at suitable area to unpack it. To avoid introducing airborne contaminants to the data center, unpack the server outside of the data center and then move the server to its final location.

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**Note - Acclimatization:** If the shipping container is very cold or hot, place the unopened container in an environment similar to the data center overnight, or as long as 24 hours, until the container reaches the same temperature of the data center. Never place the unopened shipping container inside the data center.

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### Related Information

- [“Access Route Requirements” on page 91](#)
- [“Installing a Rackmounted Server” on page 119](#)
- [“Installing a Stand-Alone Server in a Rack” on page 135](#)

## Access Route Requirements

Carefully plan the access route from the loading dock to the location where you will unpack the server, and then to its final installation site. Check for any gaps, obstructions, or irregularities in the floor throughout the access route. The entire access route should be free of raised patterns that can cause vibration.

Use a pallet jack or forklift to move the server from the loading dock to an appropriate unpacking area. The unpacking area should be a conditioned space away from the final installation site to reduce airborne particles entering the data center.

After unpacking the rackmounted server, use two or more people to push the server to its final installation site. For more information, see [“Moving the Server” on page 122](#).

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**Note** - Select an access route free of perforated tiles, as they can be damaged by the server's wheels. Whenever possible, protect the entire access route with heavy fiberboard or another material that is strong enough to support the full weight of the packaged server (see [“Rackmounted Server Shipping Container Specifications” on page 87](#)).

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**Note** - Always use a 3/16-inch (4.8-mm) thick A36 metal plate with beveled edges as a bridge over holes and gaps in the access route. Otherwise the server's wheels might get stuck in the gap. For example, always use a metal plate when entering or exiting an elevator.

---

The following access route dimensions are the minimum space required to pass through doors or around obstacles. Add additional space for people or equipment required to move the server. These dimensions are for flat surfaces only. If the doorway is located at the top or bottom of an incline, increase the doorway clearance to 88 inches (2235 mm) for packaged servers and 80 inches (2032 mm) for unpacked servers.

**TABLE 11** Access Route Requirements for Rackmounted Servers

Dimension	In Shipping Container	Unpacked
Minimum door height	86 in. (2184 mm)	78.7 in. (2000 mm)
Minimum door width	48 in. (1220 mm)	24.6 in. (600 mm)
Minimum passage width	48 in. (1220 mm)	24.6 in. (600 mm)
Maximum incline	6 degrees (10.5% grade max.)	6 degrees (10.5% grade max.)
Minimum elevator depth	62 in. (1575 mm)	59 in. (1499 mm)
Minimum elevator, shipping container, and floor loading capacity (maximum weight)	The approximate maximum weights of the fully-configured, packaged servers are as follows:	

Dimension	In Shipping Container	Unpacked
	<ul style="list-style-type: none"><li>■ SPARC M8-8 – 1193 lbs (541 kg)</li><li>■ SPARC M7-8 – 1100 lbs (499 kg)</li><li>■ SPARC M8-16 – 1950 lbs (885 kg)</li></ul>	
	Verify the weight capacities of elevators and shipping equipment before using them to transport the server.	

### Related Information

- [“Rackmounted Server Shipping Container Specifications” on page 87](#)
- [“Stand-Alone Server Shipping Container Dimensions” on page 89](#)
- [“Loading Dock and Receiving Area Requirements” on page 90](#)

## Rackmounted Server Unpacking Area

Prior to unpacking a rackmounted server from its shipping container, ensure that you provide a 6 ft (182.9 cm) by 15 ft (445.1 cm) area to unpack the server. Refer to the rack's unpacking guide, which is attached to the rackmounted server shipping carton, for unpacking instructions for the rackmounted servers.



---

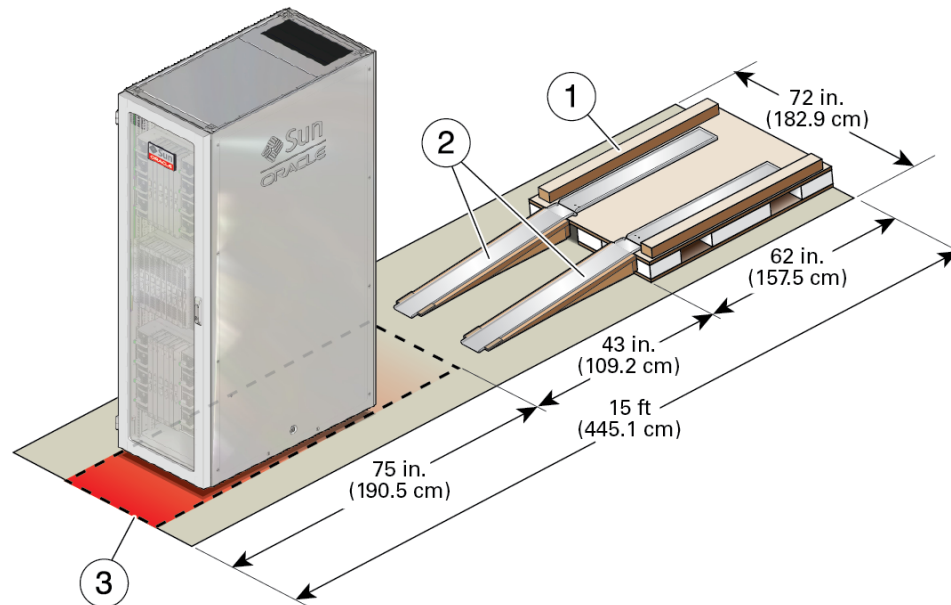
**Caution** - You must provide 75 in. (190.5 cm) as a stopping zone to slow and stop a rackmounted server after it rolls down the shipping pallet ramps. Failure to provide this stopping zone could lead to equipment damage or serious physical injury.

---

---

**Note** - Remove the shipping container in a conditioned space away from the final installation site to reduce airborne particles entering the data center.

---



### Related Information

- [“Rackmounted Server Shipping Container Specifications” on page 87](#)
- [“Unpack the Server” on page 121](#)

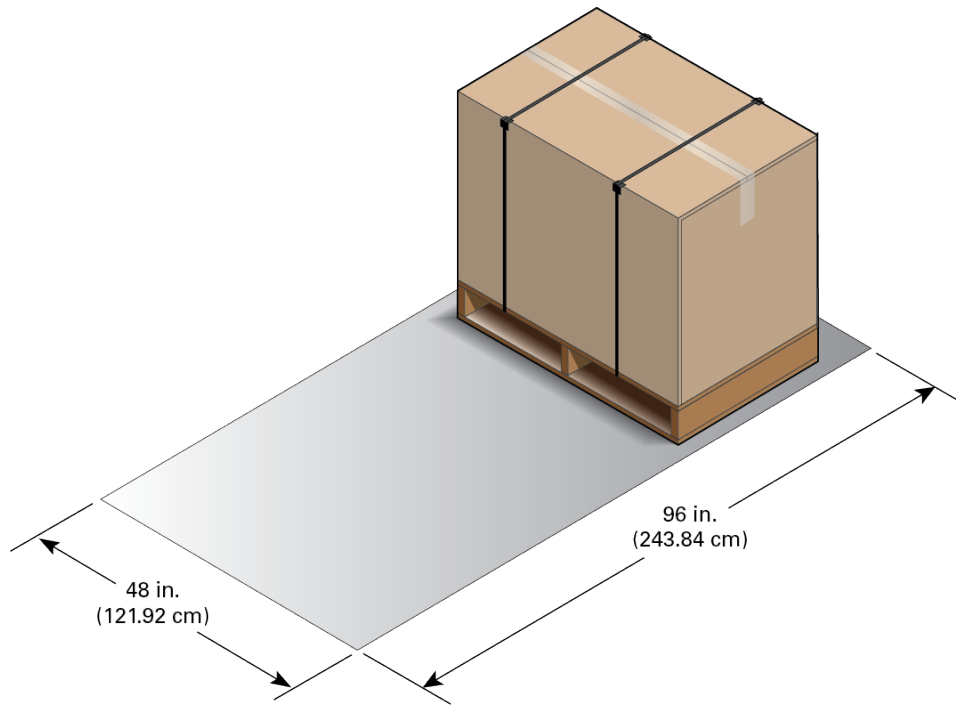
## Stand-Alone Server Unpacking Area

Stand-alone SPARC M8-8 and SPARC M7-8 servers ship in their own shipping carton. A 48 in. (122 cm) x 96 in. (244 cm) unpacking area is large enough to remove the packaging and to provide access to a mechanical lift. Use a mechanical lift to move the server from the unpacking area to the installation site. For unpacking and rackmounting instructions, see [“Installing a Stand-Alone Server in a Rack” on page 135](#).

---

**Note** - Remove the shipping container in a conditioned space away from the final installation site to reduce airborne particles entering the data center.

---



### Related Information

- [“Rackmounted and Stand-Alone Servers” on page 16](#)
- [“Stand-Alone Server Shipping Container Dimensions” on page 89](#)
- [“Unpack the Stand-Alone Server” on page 147](#)

# Planning Network Addresses

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Description	Link
Review the list of cable connections and network addresses required during the initial installation.	<a href="#">“Cable Connections and Network Addresses” on page 95</a>
Provide network addresses to the SP components.	<a href="#">“Planning SP Cables and Network Addresses” on page 96</a>
(Optional) Provide network addresses to the PDU metering units.	<a href="#">“(Optional) PDU Cables and Network Addresses” on page 101</a>
Provide network addresses to each network interface card.	<a href="#">“Network Interface Card Cables and Network Addresses” on page 102</a>
Provide network addresses to the Oracle VM Server for SPARC logical domains.	<a href="#">“Oracle VM Server for SPARC Network Addresses” on page 103</a>

## Related Information

- [“Planning Storage Devices” on page 105](#)
- [“Connecting Cables” on page 175](#)
- [“Powering On the Server for the First Time” on page 201](#)

## Cable Connections and Network Addresses

These cable connections and network addresses are required when first installing the server. Depending on your hardware and software configuration, the server might require additional cable connections and network addresses.

Type	Description	Link
SPs	Required cables: <ul style="list-style-type: none"><li>▪ Two Category 5, or better, serial cables</li><li>▪ Two Category 6, or better, network cables</li></ul>	<a href="#">“Planning SP Cables and Network Addresses” on page 96</a>

Type	Description	Link
	<p>Required network addresses:</p> <ul style="list-style-type: none"> <li>■ Three network addresses</li> <li>■ One additional network address per PDomain</li> </ul>	
PDU metering units in factory-installed servers	<p>Attaching serial and network cables to the PDUs is optional.</p> <p>Optional cables:</p> <ul style="list-style-type: none"> <li>■ Two Category 5, or better, serial cables</li> <li>■ Two Category 6, or better, network cables</li> </ul> <p>Two optional network addresses (one per PDU).</p>	<a href="#">“(Optional) PDU Cables and Network Addresses” on page 101</a>
Network connections	<p>At least one network interface card, network cable, and network address for each PDomain.</p> <p>Prepare additional cables and addresses for each optional network interface card.</p>	<a href="#">“Network Interface Card Cables and Network Addresses” on page 102</a>
Oracle VM Server for SPARC logical domains	<p>At least one network address for each logical domain.</p>	<a href="#">“Oracle VM Server for SPARC Network Addresses” on page 103</a>

### Related Information

- [“Connecting SP Cables” on page 188](#)
- [“Connecting Network and Data Cables” on page 192](#)
- [“Setting Oracle ILOM Network Addresses” on page 213](#)

## Planning SP Cables and Network Addresses

Understand the SP cabling requirements and plan network addresses for SP components.

- [“SP Cable Requirements” on page 97](#)
- [“SP Network Examples” on page 97](#)
- [“SP Network Addresses” on page 100](#)

### Related Information

- [“SPs and SPPs” on page 33](#)
- [“Connecting SP Cables” on page 188](#)
- [“Setting Oracle ILOM Network Addresses” on page 213](#)



## SP Cable Requirements

The server contains two redundant SPs. One of these SPs functions as the Active SP to manage the server, while the other one acts as a Standby SP that will assume the Active SP role in the event of an SP failure.

---

**Note** - Either SP (SP0 or SP1) can take the Active SP role. You cannot assume that SP0 will take the Active SP role and that SP1 will take the Standby SP role.

---

Each SP contains two types of ports:

- SER MGT 0 port – Connect a Category 5 or better serial cable from the SER MGT port 0 to a terminal device. During the initial server power on, use this serial connection to monitor the boot process and perform the initial Oracle ILOM configuration.
- NET MGT 0 port – Connect a Category 6 or better cable from the 1-GbE NET MGT port 0 to your Ethernet network. After the initial server configuration, use this Ethernet connection to monitor and administer the server through the Oracle ILOM console.

---

**Note** - The SPs and the SPARC M7-16 server SPPs contain other ports that are inaccessible and covered by port covers. Do not attempt to use these ports unless instructed to do so by an Oracle Service representative.

---

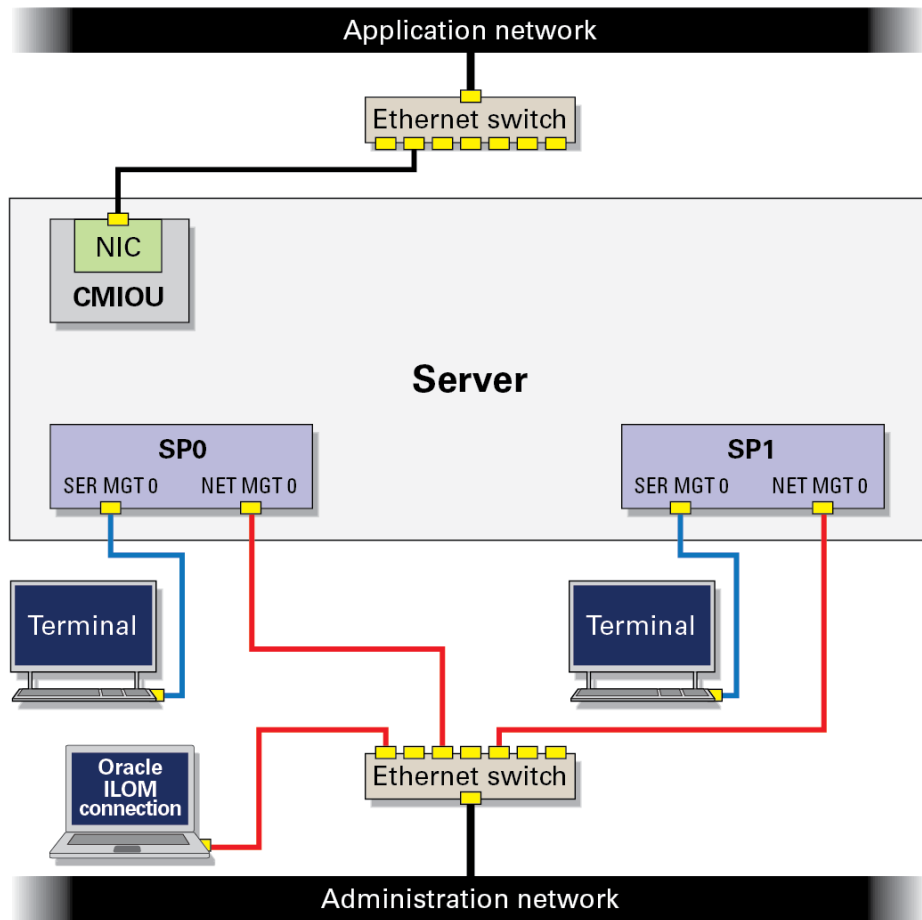
### Related Information

- [“SPs and SPPs” on page 33](#)
- [“SP Network Examples” on page 97](#)
- [“SP Network Addresses” on page 100](#)
- [“Setting Oracle ILOM Network Addresses” on page 213](#)

## SP Network Examples

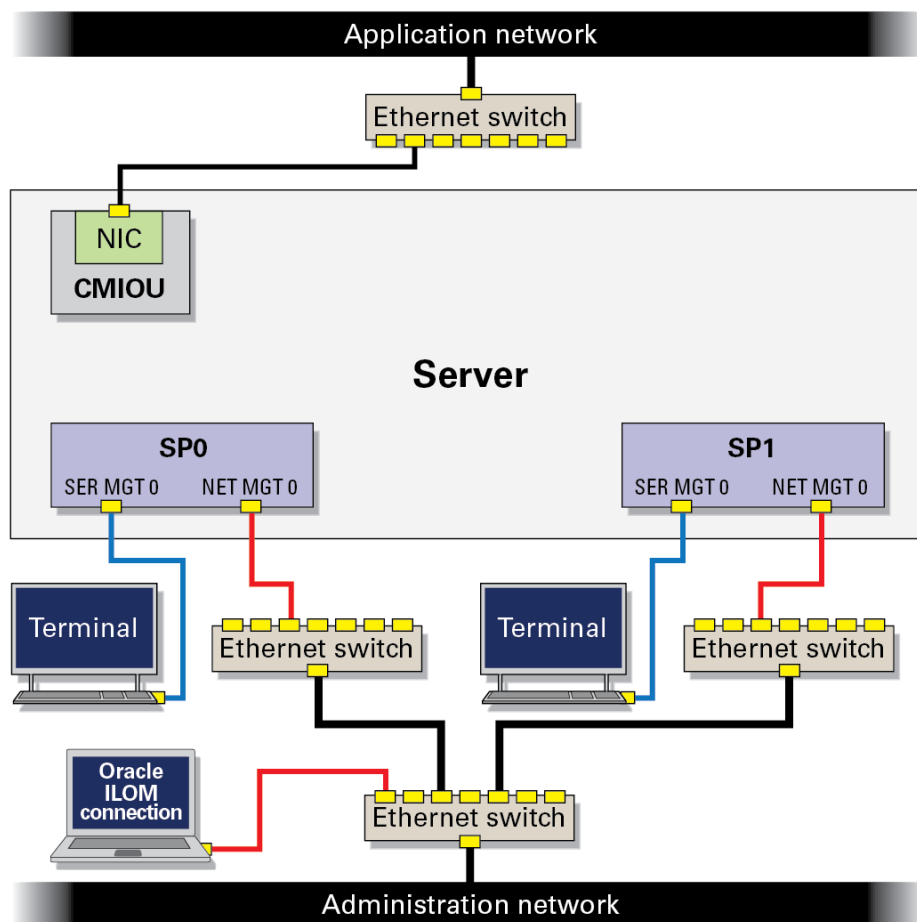
To isolate the Oracle ILOM administration network, connect the SP NET MGT cables to a network separate from networks used for server applications. By connecting both NET MGT 0 ports to an Ethernet switch, you can make an Oracle ILOM network connection to either SP. See [“Connect SP Cables” on page 190](#) for the location of the SER MGT 0 and NET MGT 0 ports on both SPs.

**FIGURE 5** SP Administration Network With One Ethernet Switch



To add redundancy, connect each SP to a different Ethernet switch. Connect these two switches to a third switch, and connect that third switch to the Oracle ILOM console.

**FIGURE 6** SP Administration Network With Two Redundant Ethernet Switches



### Related Information

- “SP Cable Requirements” on page 97
- “SP Network Addresses” on page 100
- “Connecting SP Cables” on page 188

## SP Network Addresses

During the initial Oracle ILOM configuration, assign network addresses to the following SP components:

- SP0 NET MGT port 0
- SP1 NET MGT port 0
- Active SP

If you want the PDomains to support rKVMS functionality, assign IP addresses to each PDomain SPM host.

- PDomain0 SPM
- PDomain1 SPM (if your SPARC M8-8 or SPARC M7-8 server contains 2 PDomains or if your SPARC M7-16 server configuration includes 2 or more PDomains)
- PDomain2 SPM (if your SPARC M7-16 server configuration includes 3 or more PDomains)
- PDomain3 SPM (if your SPARC M7-16 server configuration includes 4 PDomains)

---

**Note** - The Oracle ILOM SPs do not support DHCP. You must assign static network addresses to these components.

---

For the preceding SP components, provide the following network address information:

- Host name (optional)
- IP address
- Network domain
- Netmask
- IP address of the network gateway
- IP address of the network name server

---

**Note** - The SPs, Active SP, and all PDomain SPMs should share the same IP network, with unique IP addresses assigned to each.

---

### Related Information

- [“SPs and SPPs” on page 33](#)
- [“Connecting SP Cables” on page 188](#)

- [“Setting Oracle ILOM Network Addresses” on page 213](#)

## (Optional) PDU Cables and Network Addresses

Rackmounted SPARC M7 series servers are factory-installed in Oracle racks. The Oracle rack contains two PDUs that distribute power to the installed equipment. Each PDU contains a metering unit that enables you to monitor voltage, power, apparent power, energy, and the current being used by the connected equipment.

Before you can monitor a PDU remotely, you must first connect the PDU metering unit to the network. You can then monitor the PDU and connected equipment using a web interface.

---

**Note** - Connecting the PDU metering units to the network is optional. You do not need to connect cables to the PDUs during the installation. You can monitor the PDUs and the connected equipment using the metering unit's LCD screen.

---

Each PDU metering unit contains two ports:

- SER MGT port – Connect a Category 5 or better serial cable from this port to a terminal device. Use this serial connection to configure the metering unit's NET MGT port.
- NET MGT port – Connect a Category 6 or better cable to this 10/100 Mbps port. After the initial server configuration, use this Ethernet connection to monitor the PDU and connected equipment through the PDU web interface.

See [“\(Optional\) Connect PDU Management Cables” on page 184](#) for an illustration of these PDU metering unit ports.

The PDU metering unit NET MGT ports support DHCP, so you are not required to set static IP addresses. However, if you prefer to configure the NET MGT ports with static IP addresses, you must provide the following network information for each port:

- Host name (optional)
- IP address
- Network domain
- Netmask
- IP address of the network gateway
- IP address of the network name server

For complete instructions on configuring the PDU metering units and monitoring the PDUs and connected equipment using a web interface, refer to the sections about enhanced PDUs

in the *Sun Rack II Power Distribution Unit User's Guide* at <http://www.oracle.com/goto/sunrackii/docs>.

### Related Information

- “Power Cord-to-PDU Relationship (SPARC M7-16)” on page 71
- “(Optional) Connect PDU Management Cables” on page 184

## Network Interface Card Cables and Network Addresses

The server does not include integrated network ports. In order for the server to connect to the network, each PDomain must contain at least one network interface PCIe card.

---

**Note** - Each server PDomain must contain at least one network interface card that is cabled to the network. Otherwise, the PDomain will not be able to access the network.

---

When ordering the server, you can select network interface cards to be installed at the factory prior to delivery. Refer to the following web site for a list of supported PCIe cards:

[https://community.oracle.com/community/server\\_%26\\_storage\\_systems/systems-io/sparc-servers](https://community.oracle.com/community/server_%26_storage_systems/systems-io/sparc-servers)

Follow the instructions that came with your network interface card to connect the appropriate network cable and to assign at least one IP address to each card installed in the server.

During the Oracle Solaris OS configuration, you will be prompted to supply the following networking information for each network connection:

- Host name
- IP address
- Network domain
- Netmask
- IP address of the network gateway
- IP address of the network name server

---

**Note** - If you install additional network interface cards to provide redundant networking connections, provide the additional networking addresses for those cards. Certain network interface cards contain more than one network connection, so, depending on your application and configuration, provide additional network addresses for those connections. Refer to the PCIe card documentation and the Oracle Solaris OS documentation for additional instructions.

---

### Related Information

- Network interface card documentation
- “Oracle Solaris OS Configuration Parameters” on page 229
- *Administering TCP/IP Networks, IPMP, and IP Tunnels in Oracle Solaris* and *Managing Network Datalinks in Oracle Solaris* in the Oracle Solaris OS documentation at <http://www.oracle.com/goto/solaris11/docs>

## Oracle VM Server for SPARC Network Addresses

The Oracle VM Server for SPARC server enables you to create and administer multiple virtual servers, called *logical domains*, on each server PDomain. Every logical domain can run its own independent operating system.

Provide *at least* one IP address for each logical domain you create using the Oracle VM Server for SPARC software.

For additional information about the Oracle VM Server for SPARC software, refer to [Oracle VM Server for SPARC product page \(https://www.oracle.com/virtualization/vm-server-for-sparc/\)](https://www.oracle.com/virtualization/vm-server-for-sparc/).

### Related Information

- Oracle VM Server for SPARC documentation (<http://www.oracle.com/goto/vm-sparc/docs>)
- “Creating Virtualized Environments” in *SPARC M8 and SPARC M7 Servers Administration Guide*





# Planning Storage Devices

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The server does not include integrated storage devices like drives or disk arrays. Each server PDomain must have access to a bootable storage device so that it can run the Oracle Solaris OS, run applications, and store data.

Each bootable storage option requires you to install a PCIe card in the PDomain to access the storage device. Refer to the following site for a list of supported PCIe cards:

[https://community.oracle.com/community/server\\_%26\\_storage\\_systems/systems-io/sparc-servers](https://community.oracle.com/community/server_%26_storage_systems/systems-io/sparc-servers)

Description	Link
Use an Oracle Flash Accelerator PCIe Card as a local storage device.	<a href="#">“Oracle Flash Accelerator PCIe Cards” on page 106</a> <a href="#">“Oracle Flash Accelerator PCIe Card Device Paths” on page 107</a>
Use an <a href="#">FC</a> adapter to boot an external storage device over a <a href="#">FC SAN</a> .	<a href="#">“FC Storage Devices” on page 108</a>
Use a SAS HBA to boot an external SAS storage device cabled to the HBA.	<a href="#">“SAS Storage Devices” on page 109</a>
Use a network interface card to boot an external storage device over an Ethernet network.	<a href="#">“iSCSI Storage Devices” on page 110</a>
Use an InfiniBand adapter to boot off an external storage device in an <a href="#">InfiniBand</a> environment.	<a href="#">“InfiniBand Storage Devices” on page 110</a> <a href="#">“Oracle Solaris Boot Pool and IPoIB Documentation” on page 111</a>

## Related Information

- [“Understanding the Hardware Architecture” on page 32](#)
- [“Preparing the Site” on page 41](#)
- [“Powering On the Server for the First Time” on page 201](#)
- [SPARC M8 and SPARC M7 Servers Product Notes](#)

## Oracle Flash Accelerator PCIe Cards

The optional Oracle Flash Accelerator PCIe Card provides solid-state storage on a low-profile PCIe card. When ordered with the server, the Oracle Solaris OS, and other required software, will be preinstalled on this card. Each server PDomain can contain at least one card in order to boot the OS for the first time.

---

**Note** - If you did not order Oracle Flash Accelerator PCIe Cards with your server, you must configure each server PDomain to boot off an external storage device.

---

The number and location of optional preinstalled Oracle Flash Accelerator PCIe cards depend on your server configuration. Depending on the options you selected during your order, your server could contain additional Oracle Flash Accelerator PCIe Cards. However, the Oracle Solaris OS will be installed on only one card per PDomain.

---

**Note** - Each Oracle Flash Accelerator 640 PCIe card has two device paths, which is different compared to the previous generation of the cards. See [“Oracle Flash Accelerator PCIe Card Device Paths” on page 107](#) for more information.

---

Server	Default Factory-Installed Locations	Device Paths
SPARC M8-8 server or SPARC M7-8 server (one PDomain)	CMI0U0, PCIe slot 3	<b>F160 and F320:</b> /pci@301/pci@1/nvme@0  <b>F640:</b> /pci@301/pci@1/pci@0/pci@0/nvme@0 and /pci@301/pci@1/pci@0/pci@1/nvme@0
	SPARC M8-8 server or SPARC M7-8 server (two PDomains)	<b>F160 and F320:</b> /pci@301/pci@1/nvme@0  <b>F640:</b> /pci@301/pci@1/pci@0/pci@0/nvme@0 and /pci@301/pci@1/pci@0/pci@1/nvme@0
SPARC M7-16 server (one to four PDomains)	CMI0U4, PCIe slot 3	<b>F160 and F320:</b> /pci@315/pci@1/nvme@0  <b>F640:</b> /pci@315/pci@1/pci@0/pci@0/nvme@0 and /pci@315/pci@1/pci@0/pci@1/nvme@0
	CMI0U0, PCIe slot 3	<b>F160 and F320:</b> /pci@301/pci@1/nvme@0  <b>F640:</b> /pci@301/pci@1/pci@0/pci@0/nvme@0 and /pci@301/pci@1/pci@0/pci@1/nvme@0
	CMI0U4, PCIe slot 3	<b>F160 and F320:</b> /pci@315/pci@1/nvme@0  <b>F640:</b> /pci@315/pci@1/pci@0/pci@0/nvme@0 and /pci@315/pci@1/pci@0/pci@1/nvme@0
	CMI0U8, PCIe slot 3	<b>F160 and F320:</b> /pci@329/pci@1/nvme@0

Server	Default Factory-Installed Locations	Device Paths
	CMIOU12, PCIe slot 3	<b>F640:</b> /pci@329/pci@1/pci@0/pci@0/nvme@0 and /pci@329/pci@1/pci@0/pci@1/nvme@0 <b>F160 and F320:</b> /pci@33f/pci@1/nvme@0 <b>F640:</b> /pci@33f/pci@1/pci@0/pci@0/nvme@0 and /pci@33f/pci@1/pci@0/pci@1/nvme@0

**Note** - You can order the SPARC M8-8 or SPARC M7-8 server with one static PDomain populated with CMIOUs and one empty static PDomain empty. In this configuration, the SPARC M8-8 or SPARC M7-8 server will not ship with an Oracle Flash Accelerator PCIe Card installed in CMIOU4, PCIe slot 3.

For complete information about the Oracle Flash Accelerator PCIe Card, including specifications, optimization guidelines, and troubleshooting procedures, refer to the card documentation.

### Related Information

- “Identifying Components (Installation)” on page 25
- “Configure the Oracle Flash Accelerator PCIe Card” on page 222
- “Oracle Flash Accelerator PCIe Card Device Paths” on page 107
- “Understanding PCIe Card Device and Service Paths” in *SPARC M8 and SPARC M7 Servers Service Manual*
- Oracle Flash Accelerator PCIe Card Documentation at <http://www.oracle.com/technetwork/documentation/oracle-system-options-190050.html#solid>

## Oracle Flash Accelerator PCIe Card Device Paths

The Oracle Flash Accelerator F160 and F320 PCIe cards contain one PCIe controller per card, so there is one device path per card. For example, the `probe-nvme-all` output for an Oracle Flash Accelerator F160 card installed in CMIOU0, PCIe slot 3 is:

```
ok probe-nvme-all
/pci@301/pci@1/nvme@0
  NVME Controller VID: 8086 SSVID: 108e SN:CVMD512100F81P6N MN: INTEL SSDPEDME016T4S FR: 8DV1RA13 NN: 1
  Namespace ID:1 Size: 1.600 TB
```

The Oracle Flash Accelerator F640 PCIe card contains two PCIe controllers per card. There is two device paths per card, each sharing the same PCIe root complex. For example, the `probe-`

nvme-all output for an Oracle Flash Accelerator F640 card installed in CMIOU0, PCIe slot 3 is:

```
ok probe-nvme-all
/pci@301/pci@1/pci@0/pci@2/nvme@0
  NVME Controller VID: 8086 SSVID: 108e SN: PHLE713400SU6P4B MN: 7335943:ICDPC5ED20RA6.4T FR: QDV1RD06
  NN: 1
  Namespace ID: 1 Size: 3.200 TB
/pci@301/pci@1/pci@0/pci@1/nvme@0
  NVME Controller VID: 8086 SSVID: 108e SN: PHLE713400SU6P4B MN: 7335943:ICDPC5ED20RA6.4T FR: QDV1RD06
  NN: 1
  Namespace ID: 1 Size: 3.200 TB
```

Refer to the following site for a list of Oracle Flash Accelerator PCIe cards supported by your server:

[https://community.oracle.com/community/server\\_%26\\_storage\\_systems/systems-io/sparc-servers](https://community.oracle.com/community/server_%26_storage_systems/systems-io/sparc-servers)

### Related Information

- “Configure the Oracle Flash Accelerator PCIe Card” on page 222
- “Understanding PCIe Card Device and Service Paths” in *SPARC M8 and SPARC M7 Servers Service Manual*
- Oracle Flash Accelerator PCIe Card Documentation at <http://www.oracle.com/technetwork/documentation/oracle-system-options-190050.html#solid>

## FC Storage Devices

FC provides a fast and reliable method to access external storage devices. After installing a FC HBA into a PDomain PCIe slot, the PDomain can access FC storage devices over a FC network.

A typical FC SAN includes the following hardware:

- FC HBA installed in the each of the server's PDomains
- FC cables connecting the HBA to a FC switch
- FC cables connecting the FC switch to a FC storage device

After installing and connecting the appropriate hardware, you will configure each PDomain to boot off a FC storage device over the FC SAN. Once configured, you can install the Oracle Solaris OS on the device.

In this FC environment, each server PDomain requires access to a FC storage device. Installing and cabling more than one HBA in each PDomain can provide redundant connections to a FC switch.

### Related Information

- Supported PCIe cards: [https://community.oracle.com/community/server\\_%26\\_storage\\_systems/systems-io/sparc-servers](https://community.oracle.com/community/server_%26_storage_systems/systems-io/sparc-servers)
- Oracle storage products: <https://www.oracle.com/storage/>
- Oracle's storage networking products: <http://www.oracle.com/us/products/servers-storage/storage/storage-networking/overview/>

## SAS Storage Devices

SAS provides a direct method of accessing external storage devices. A PDomain can access an external SAS storage device after installing a SAS HBA into a PDomain PCIe slot, and then cabling the SAS HBA to the storage device using the device-appropriate SAS cables. Refer to the SAS HBA and SAS storage device documentation for selecting the correct SAS cables and for instructions on cabling the HBA to the storage device.

Each server PDomain must be configured to boot off of a storage device. During the server installation, configure the PDomain to boot off a SAS target (for example, a drive or a partition) in the external storage device. Once configured, you can install the Oracle Solaris OS on the device. Refer the SAS HBA and storage device documentation for instructions specific to your devices.

### Related Information

- *Managing SAN Devices and Multipathing in Oracle Solaris* in the [Oracle Solaris Documentation](http://www.oracle.com/goto/solaris11/docs) (<http://www.oracle.com/goto/solaris11/docs>)
- *Installing Oracle Solaris 11.3 Systems*
- Oracle Storage 12 Gb/s SAS PCIe HBA, External documentation library ([http://docs.oracle.com/cd/E52365\\_01/](http://docs.oracle.com/cd/E52365_01/))

## iSCSI Storage Devices

iSCSI storage devices provide a cost effective method to access remote external storage devices over an Ethernet network. After installing a network interface card into a PDomain PCIe slot, and connecting the card to an Ethernet network, the PDomain can access external iSCSI storage devices.

Typically, a network interface card is installed in a PDomain that is cabled to an Ethernet switch on the network. After connecting to the network, the PDomain can access a network storage device, attached to the same network, which supports iSCSI protocols (for example, an Oracle ZFS storage appliance). Alternatively, a PDomain network interface card can be cabled directly to the network storage device using Ethernet cables.

During the server installation, you will configure the PDomain to boot off an iSCSI target (for example, a drive or partition) in the external storage device. Once configured, you can install the Oracle Solaris OS on the device.

Each server PDomain must be configured to boot off of a storage device. Installing and cabling additional network interface cards, especially in different CMIOUs within the PDomain, can provide redundant connections to the Ethernet switch or networked storage device.

### Related Information

- Supported PCIe cards: [https://community.oracle.com/community/server\\_%26\\_storage\\_systems/systems-io/sparc-servers](https://community.oracle.com/community/server_%26_storage_systems/systems-io/sparc-servers)
- *Managing SAN Devices and Multipathing in Oracle Solaris* in the [Oracle Solaris Documentation](http://www.oracle.com/goto/solaris11/docs) (<http://www.oracle.com/goto/solaris11/docs>)
- Oracle storage products: <https://www.oracle.com/storage/>

## InfiniBand Storage Devices

InfiniBand connections provide high performance and secure connections to external storage devices. After installing an InfiniBand host bus adapter into a PDomain PCIe slot, and cabling the adapter to an InfiniBand switch, the PDomain can access external InfiniBand storage devices.

In an InfiniBand environment, an InfiniBand host bus adapter installed in a PDomain is connected to an InfiniBand switch using InfiniBand cables. The InfiniBand switch is cabled

using InfiniBand cables to an external storage device (for example, an Oracle ZFS storage appliance). Alternatively, the InfiniBand switch can be connected to an Ethernet network, so the external storage device will access the switch through the network.

During the server installation, you will configure the PDomain to boot off an iSCSI target (for example, a drive or partition) on the storage device using the IPoIB protocol. Once configured, you can install the Oracle Solaris OS on the iSCSI target device.

Each server PDomain must be configured to boot off of a storage device. Installing and cabling additional InfiniBand adapters, especially in different CMIOUs within the PDomain, can provide redundant connections to one or more InfiniBand switches.

### Related Information

- [“Oracle Solaris Boot Pool and IPoIB Documentation” on page 111](#)
- [“iSCSI Devices Using IPoIB” in \*SPARC M8 and SPARC M7 Servers Administration Guide\*](#)
- [“Booting and Shutting Down the OS” in \*SPARC M8 and SPARC M7 Servers Administration Guide\*](#)
- Supported PCIe cards: [https://community.oracle.com/community/server\\_%26\\_storage\\_systems/systems-io/sparc-servers](https://community.oracle.com/community/server_%26_storage_systems/systems-io/sparc-servers)
- Oracle storage products: <https://www.oracle.com/storage/>

## Oracle Solaris Boot Pool and IPoIB Documentation

Oracle Solaris boot process enhancements enable the booting and configuring of iSCSI devices using [IPoIB](#). Refer to the following Oracle Solaris documentation links for additional information about booting and configuring iSCSI targets using IPoIB.

Description	Link
Describes how to manage <a href="#">boot pools</a> .	<a href="#">Chapter 6, “Managing Systems with Boot Pools” in <i>Booting and Shutting Down Oracle Solaris 11.3 Systems</i></a>
The SPARC M7 series servers uses boot pools to boot firmware-inaccessible storage devices like iSCSI targets using IPoIB.	
Describes the changes to Oracle Solaris boot process, including how the server can boot a fallback miniroot image located on the Active SP if a boot pool is not available.	<a href="#">“Changes to the Boot Process” in <i>Booting and Shutting Down Oracle Solaris 11.3 Systems</i></a>
<b>Note</b> - You must update the fallback miniroot image that is on the Active SP when you update the Oracle Solaris	<a href="#">“Booting From a Fallback Image” in <i>Booting and Shutting Down Oracle Solaris 11.3 Systems</i></a>

Description	Link
OS <a href="#">SRU</a> levels. For instructions on updating the miniroot image, refer to the <i>Oracle ILOM Administrator's Guide for Configuration and Maintenance</i> in the Oracle ILOM documentation. If you replace an SP, the Active SP automatically updates the miniroot image on the replacement SP.	
Documents how to configure iSCSI devices using IPoIB when installing the Oracle Solaris OS.	<a href="#">“How to Perform a Text Installation”</a> in <i>Installing Oracle Solaris 11.3 Systems</i>
An example <a href="#">AI</a> manifest that specifies both a root pool and a boot pool.	<a href="#">“Specifying a Root Pool and Boot Pool in an AI Manifest”</a> in <i>Installing Oracle Solaris 11.3 Systems</i>
System configuration profile example that specifies an InfiniBand link.	<a href="#">“Specifying an IB Link in a System Configuration Profile”</a> in <i>Installing Oracle Solaris 11.3 Systems</i>

### Related Information

- [“InfiniBand Storage Devices”](#) on page 110
- [“Oracle Solaris Installation Considerations”](#) on page 227
- [“Deferred Dump”](#) in *SPARC M8 and SPARC M7 Servers Administration Guide*
- [“iSCSI Devices Using IPoIB”](#) in *SPARC M8 and SPARC M7 Servers Administration Guide*
- [“Booting and Shutting Down the OS”](#) in *SPARC M8 and SPARC M7 Servers Administration Guide*



# Preparing for Installation

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These topics detail the precautions to follow and the tools to assemble prior to installing the server.

Description	Link
Prevent equipment damage and personal injury by understanding the server handling cautions.	<a href="#">“Handling Precautions” on page 113</a>
Prevent damage to components by taking the ESD precautions.	<a href="#">“ESD Precautions” on page 114</a>
Observe all of the Oracle safety and security warnings.	<a href="#">“Oracle Safety Information” on page 115</a>
Assemble all of the tools and equipment required for the server installation.	<a href="#">“Tools and Equipment Needed for Installation” on page 115</a>
Attach an antistatic wrist strap when installing and cabling the server.	<a href="#">“Attach an Antistatic Wrist Strap” on page 116</a>

## Related Information

- [“Installing a Rackmounted Server” on page 119](#)
- [“Installing a Stand-Alone Server in a Rack” on page 135](#)

## Handling Precautions



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**Caution** - A minimum of two people are required to move the server to the installation site. Additional people will be required to push the server up ramps or over rough surfaces.

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**Caution** - Do not remove components from the chassis to reduce the weight of the server during transportation or installation.

---



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**Caution** - To minimize the potential risk of equipment damage or personal injury, consider using professional movers when moving or relocating the server.

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**Caution** - Avoid tipping or rocking the server, as the server can fall over, causing equipment damage and serious personal injury.

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**Caution** - At the installation site, secure the server to the floor using the leveling feet.

---

### Related Information

- [“ESD Precautions” on page 114](#)
- [“Oracle Safety Information” on page 115](#)

## ESD Precautions

Electronic equipment is susceptible to damage by static electricity. Use a grounded antistatic wrist strap, foot strap, or equivalent safety equipment to prevent electrostatic discharge damage when you install or service the server.



---

**Caution** - To protect electronic components from ESD, which can permanently disable the server or require repair by service technicians, place components on an antistatic surface, such as a grounded antistatic discharge mat. Wear an antistatic grounding strap connected to a metal surface on the chassis when you work on server components.

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**Caution** - ESD is easily generated and less easily dissipated in areas where the relative humidity is below 35%, and becomes critical when levels drop below 30%.

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### Related Information

- [“Handling Precautions” on page 113](#)
- [“Oracle Safety Information” on page 115](#)

## Oracle Safety Information

Become familiar with Oracle's safety information before installing any Oracle server or equipment:

- Read the safety notices printed on the product shipping container.
- Read the *Important Safety Information for Oracle's Sun Hardware Systems* document that is included with the server.
- Read all safety notices in either the *SPARC M8-8 and SPARC M7-8 Server Safety and Compliance Guide* or *SPARC M7-16 Server Safety and Compliance Guide*.
- Read the security information in the [SPARC M8 and SPARC M7 Servers Security Guide](#).
- Read the safety labels that are on the equipment.

### Related Information

- [“Handling Precautions” on page 113](#)
- [“ESD Precautions” on page 114](#)

## Tools and Equipment Needed for Installation

Assemble the following resources before installing the server:

- Two or more people to unpack, move, and install the server
- Antistatic wrist strap, required when installing or servicing components (included in shipping kit)
- T25 Torx screwdriver, used to unpack the PDUs from shipping brackets (included in shipping kit)
- 6-mm hexagon key or driver, used when unpacking the server from shipping pallet (included in the rack shipping kit)
- 8-mm hexagon key or driver, used when unpacking the server from the Oracle Rack Cabinet 1242 shipping pallet (included in the rack shipping kit)
- 17-mm wrench, used when unpacking the server from shipping pallet (included in rack shipping kit)
- 12-mm wrench, used to lower or raise the Sun Rack II leveling feet (included in Sun Rack II shipping kit)
- cage nut tool, optionally used to install cage nuts into the RETMA rails

- Plastic tie-downs and tie-wraps to secure cables
- A tool to cut plastic strapping tape on the shipping container

Tools specific for rackmounted servers:

- Forklift, pallet jack, or trolley to move packaged server to the unpacking area
- 3/16-inch (4.8-mm) A36 metal plate with beveled edges that is large enough to bridge gaps in the floor
- Eight bolts and washers to secure the server to the floor (optional)

---

**Note** - For the tools required to install to stand-alone servers in racks, see [“Tools Required for Stand-Alone Server Installation”](#) on page 141.

---

In addition, you must provide a system console device, such as one of the following:

- ASCII terminal, workstation, or laptop
- Terminal server
- Patch panel connected to a terminal server

### Related Information

- [“Attach an Antistatic Wrist Strap”](#) on page 116
- [“Installing a Rackmounted Server”](#) on page 119

## ▼ Attach an Antistatic Wrist Strap

Always wear an antistatic wrist strap connected to a metal surface on the chassis when you work on server components.

- **Attach an antistatic wrist strap to one of the ESD grounding jacks on the server.**

Rackmounted servers contain ESD grounding jacks in the front and rear of the rack.

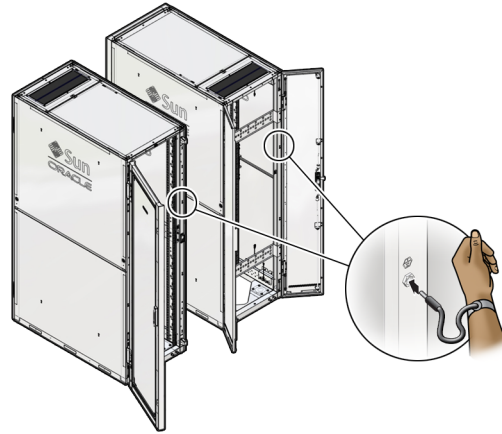
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**Note** - If you are installing a stand-alone server into a non-Oracle rack, refer to the rack's documentation for the ESD jack locations.

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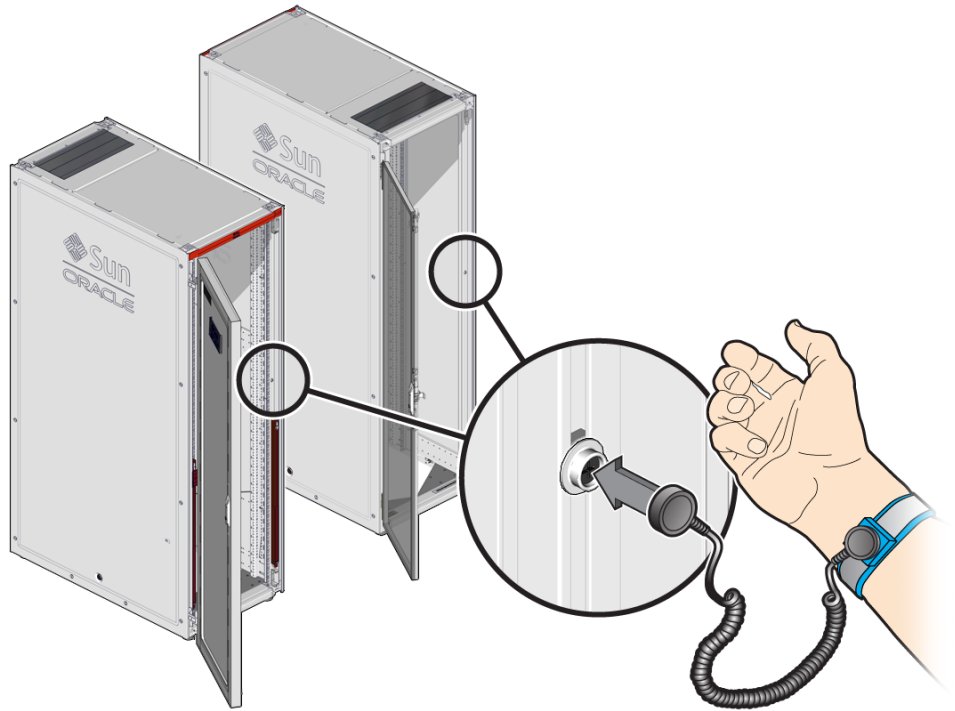
- **The Oracle Rack Cabinet 1242 contains eight ESD grounding jacks, four in the front and two in the rear of the rack.**

These grounding jacks accommodate 4-mm (0.16-in.) banana plug connectors.



- The Sun Rack II 1242 rack contains two ESD grounding jacks, one in the front and one in the rear of the rack.

These grounding jacks accommodate 10-mm (0.39-in.) snap connectors.



### Related Information

- [“ESD Precautions” on page 114](#)
- [“Installing a Rackmounted Server” on page 119](#)
- [“Installing a Stand-Alone Server in a Rack” on page 135](#)
- [SPARC M8 and SPARC M7 Servers Service Manual](#)

# Installing a Rackmounted Server

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Follow these procedures to prepare and secure a rackmounted server at the installation site.

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**Note** - These procedures are for servers factory-installed in an Oracle rack. If you are installing a stand-alone server into your own rack, go to [“Installing a Stand-Alone Server in a Rack” on page 135](#) for the rackmounting instructions.

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Step	Description	Link
1.	Inspect the installation site and prepare it for the server installation.	<a href="#">“Confirm the Site Preparation” on page 119</a>
2.	Receive and unload the server from the delivery truck.	<a href="#">“Receive the Server” on page 120</a>
3.	Unpack the server from the shipping container.	<a href="#">“Unpack the Server” on page 121</a>
4.	Safely move the server to the installation site.	<a href="#">“Moving the Server” on page 122</a>
5.	Stabilize the server to the installation site's floor using the leveling feet.	<a href="#">“Stabilizing the Server” on page 129</a>
6.	Install any optional hardware.	<a href="#">“Optional Component Installation” on page 133</a>

## Related Information

- [“Preparing the Site” on page 41](#)
- [“Preparing for Installation” on page 113](#)

## ▼ Confirm the Site Preparation

1. **Review the safety guidelines.**  
See [“Oracle Safety Information” on page 115](#) for more information.
2. **Note problems or peculiarities at the site that require special equipment.**  
For example, ensure that the doors are tall enough and wide enough for the server.  
See [“Rackmounted Server Shipping Container Specifications” on page 87](#) and [“Physical Dimensions \(Rackmounted Servers\)” on page 45](#) for more information.

3. **Install all necessary electrical equipment, and ensure that sufficient power is provided for the server.**  
See [“Reviewing the Power Requirements” on page 57](#).
4. **If you will be routing power cords or data cables down through the floor, prepare a floor opening for these cables.**  
See [“Cable Routing Floor Opening Specifications \(Sun Rack II\)” on page 55](#) for the floor opening dimensions.
5. **Ensure that the installation site provides adequate air conditioning.**  
See [“Preparing for Cooling” on page 76](#) for more information.
6. **Prepare the entire route from the loading dock to the installation site.**  
See [“Access Route Requirements” on page 91](#).
7. **Prepare a 3/16-inch (4.8-mm) thick A36 metal plate with beveled edges that is large enough to support the server when it rolls over gaps or holes in the floor.**  
See [“Use a Metal Plate to Cross Gaps in the Floor” on page 125](#) for more information.
8. **If necessary, prepare a metal ramp to go up or down minor elevation changes.**  
See [“Move Server Up or Down a Ramp” on page 127](#) for more information.
9. **Operate the air conditioning system for 48 hours to bring the room temperature to the appropriate level.**
10. **Clean and vacuum the area thoroughly in preparation for installation.**

#### Related Information

- [“Rackmounted Server Installation Task Overview” on page 16](#)
- [“Site Preparation Checklist” on page 41](#)

## ▼ Receive the Server

1. **Before the server arrives, ensure that the receiving area is large enough for the shipping package.**  
For more information, see:
  - [“Rackmounted Server Shipping Container Specifications” on page 87](#)
  - [“Loading Dock and Receiving Area Requirements” on page 90](#)



- [“Access Route Requirements” on page 91](#)
2. **Unload the packaged server from the delivery truck.**
    - If your loading dock meets the height and ramp requirements for a standard freight carrier truck, you can use a pallet jack to unload the server.
    - If the loading dock does not meet the requirements, provide a standard forklift or other means to unload the server.
    - Alternatively, you can request that the server be shipped in a truck with a lift gate.
  3. **When the server arrives, leave the server in its shipping container and move it to a location where it can acclimate to the same temperature as the data center.**

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**Note - Acclimatization time:** If the shipping package is very cold or hot, allow the shipping container to stand unopened in the computer room or a similar environment to come to the same temperature as the computer room. Acclimatization might require up to 24 hours.

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#### Related Information

- [“Loading Dock and Receiving Area Requirements” on page 90](#)
- [“Access Route Requirements” on page 91](#)

## ▼ Unpack the Server



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**Caution** - Always use at least three people to unpack the server from its shipping container.

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**Note** - Remove the shipping container materials in a conditioned space away from the final installation site to reduce the amount of airborne particles from entering the data center.

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1. **Ensure that you have enough space to unpack the server safely.**  
See [“Rackmounted Server Unpacking Area” on page 92](#).
2. **Locate the unpacking instructions.**
  - **On an Oracle Rack Cabinet 1242, the unpacking instructions are silk screened on the shipping carton and ramps.**
  - **On a Sun Rack II 1242, the unpacking instructions are attached to the outside of the shipping package.**

**3. Follow the unpacking instructions to unpack the server.**

The following illustration displays the major components of the shipping package.



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**Caution** - Never stand in front of the server as it is being rolled down the shipping pallet ramp.

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**Related Information**

- [“Cable Routing Floor Opening Specifications \(Sun Rack II\)” on page 55](#)
- [“Cable Routing Floor Opening Specifications \(Oracle Rack\)” on page 56](#)
- *Sun Rack II Unpacking Guide* located on the Sun Rack II shipping carton
- The unpacking instructions located on the Oracle Rack Cabinet 1242 shipping carton, ramps, and pallet

## Moving the Server

The SPARC M7-16 server can weigh nearly 1650 lbs (749 kg), a rackmounted SPARC M7-8 server can weigh 917 lbs (416 kg), and a rackmounted SPARC M7-8 server can weigh 824 lbs (374 kg). Take extra precautions when moving the server to the installation site.



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**Caution** - To minimize the potential risk of equipment damage or personal injury, consider using professional movers when moving or relocating the server.

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**Caution** - Do not remove components from the rack to reduce the weight of the server during transportation or installation.

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- [“Move the Server to the Installation Site” on page 123](#)
- [“Use a Metal Plate to Cross Gaps in the Floor” on page 125](#)
- [“Move Server Up or Down a Ramp” on page 127](#)

**Related Information**

- [“Preparing the Unloading Route and Unpacking Area” on page 85](#)
- [“Stabilizing the Server” on page 129](#)
- [“Rackmounted Server Turning Radius” on page 50](#)

## ▼ Move the Server to the Installation Site



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**Caution** - Ensure that the route to the installation site is free of obstacles, and always use two or more people to move the server.

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---

**Caution** - Avoid rolling the server over metal plates that contain tear drop or diamond patterns. These patterns can cause the casters to spin and force the server to move off course.

---

### 1. Plan and prepare the entire route to the installation site.

Walk the entire route and note any obstacles that must be avoided. Ensure that all floors along the route can support the full weight of the server.

Cover raised data center flooring with fiberboard to protect it, prepare a metal sheet to cross any gaps in the floor (for example, when entering an elevator), and prepare a metal ramp to go up or down minor floor elevations.

For more information, see:

- [“Access Route Requirements” on page 91](#)
- [“Use a Metal Plate to Cross Gaps in the Floor” on page 125](#)
- [“Move Server Up or Down a Ramp” on page 127](#)

### 2. Ensure that the server doors are closed and secured.

### 3. Ensure that all four leveling feet on the bottom of the server are raised and out of the way.

See [“Raise the Leveling Feet \(Sun Rack II\)” on page 131](#) for instructions.

### 4. Using two or more people, push the server to the installation site.

Always push the server along its edges. Move the server slowly, at approximately two feet per second (0.65 meters per second) or slower.

**Note** - The front casters do not swivel. Turn using the rear casters to steer the server around corners and obstacles. The following illustration shows the server being pushed from the rear.

---



**5. Avoid damaging the server when moving it.**



**Caution** - Never tip or rock the server. Tipping or rocking the server, or pushing on the side panels, can tip the server over.

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**Caution** - Never push the server by pressing in the center of a door. The door might bend under the pressure.

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**Caution** - Be careful when moving the server near floor openings. If the server's casters fall into a floor opening, the floor and the server could be severely damaged.

---



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**Caution** - When maneuvering around corners, always turn the server gradually.

---

**6. Avoid all obstacles on the floor when moving the server.**

When necessary, use a metal plate to cross gaps on the floor, and use a metal ramp to cross slight bumps on the floor or stairs. For more information, see:

- [“Use a Metal Plate to Cross Gaps in the Floor” on page 125](#)
- [“Move Server Up or Down a Ramp” on page 127](#)

**Related Information**

- [“Reviewing the Physical Specifications” on page 44](#)
- [“Access Route Requirements” on page 91](#)

▼ **Use a Metal Plate to Cross Gaps in the Floor**

To prevent the server wheels from falling into holes or gaps in the floor, always use a 3/16-inch (4.8-mm) thick A36 metal plate with beveled edges to cross these gaps. The plate must be wide enough to bridge the gap in the floor.



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**Caution** - A metal plate thinner than 3/16 inches (4.8 mm) will not support the weight of the server.

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**Caution** - If the gap the server must cross is wider than 2 inches (51 mm), or has an elevation of greater than 1 inch (25.4 mm), consult with your facilities manager to design and use a metal plate that will bridge the gap while supporting the full weight of the server.

---

- Use a 3/16-in. (4.8-mm) thick A36 metal plate with beveled edges when crossing gaps in the floor.



### Related Information

- [“Move the Server to the Installation Site” on page 123](#)
- [“Move Server Up or Down a Ramp” on page 127](#)

## ▼ Move Server Up or Down a Ramp



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**Caution** - Always use four people to push the server up or down a ramp.

---

Create a metal ramp long enough to cross small changes in elevation and strong enough to support the weight of the server.

---

**Note** - The maximum allowable incline of an unpackaged server is 6 degrees (10.5% grade). Design a ramp long enough to achieve this incline level and strong enough to support the weight of the server. If you cannot achieve this 5-degree incline level, consider an alternate route to the installation site.

---

### 1. Design a ramp that supports the weight of the server.

Consult with your facilities manager to design and create a ramp with the following characteristics:

- Strong enough to support the full weight of the server over the entire span of the ramp.
- Be at least 36-in. (914-mm) wide, or as wide as the passageway.
- Long enough to extend over the elevation and remain under the 5 degree (9% grade) maximum incline.
- Designed to ensure that the server does not fall over the sides of the ramp (for example, add railings, stops, or bend the edges of the ramp upward 90 degrees).

---

**Note** - If the ramp has railings, cover these railings with heavy fabric to avoid scratching the surfaces of the server.

---



---

**Caution** - Never use metal plates that contain tear drop or diamond patterns. These patterns can cause the casters to spin and make the server to move off course.

---

Avoid using wooden ramps, as they cannot support the weight of the server.

The casters can have difficulty rolling over ramps coated with sticky or rubberized surfaces. Use additional people to push the server up or down ramps with these surfaces.

### 2. Ensure that all four leveling feet on the bottom of the server are raised and out of the way.

See [“Raise the Leveling Feet \(Sun Rack II\)” on page 131.](#)

3. **Position the ramp so that the server can successfully go up or down the elevation.**
4. **Use four or more people either to push the server up the ramp or to slow the server rolling down the ramp.**

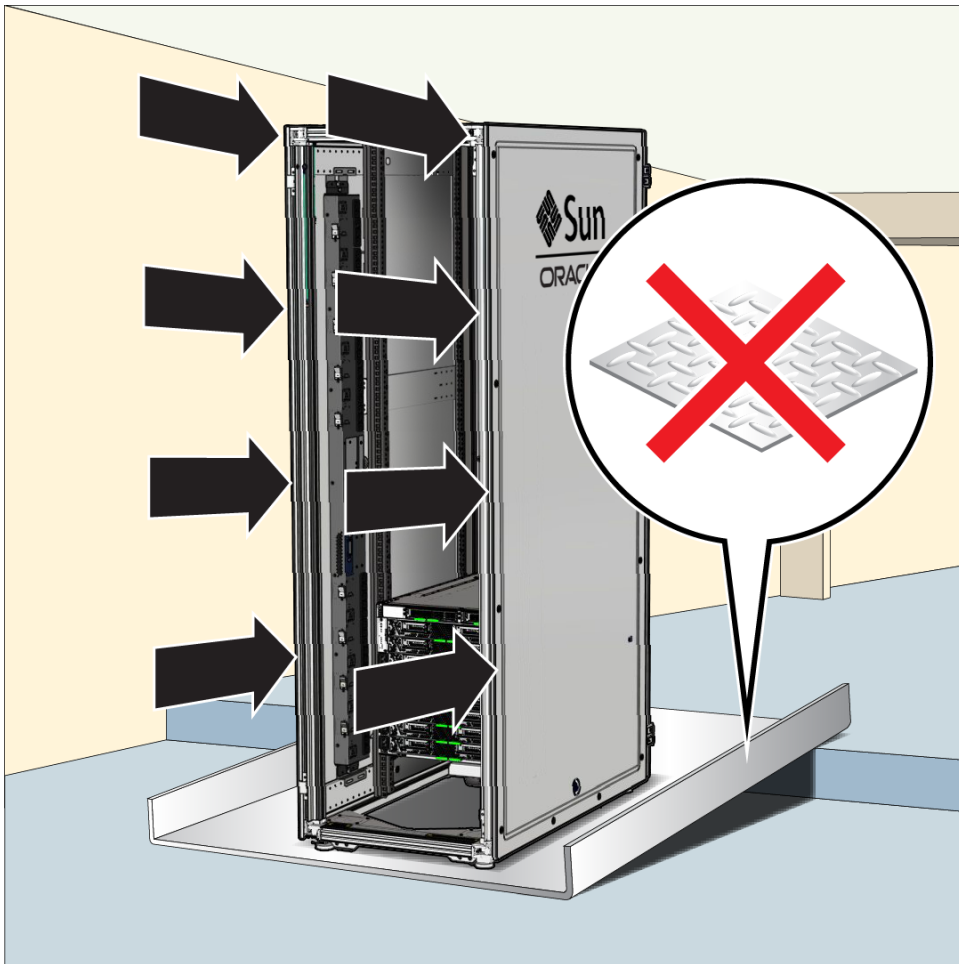
Push or slow the server along the edges of the server.



---

**Caution** - Ensure that the server remains on the ramp. If a castor falls off a side of the ramp, the server can tip over and damage the equipment and cause serious physical injury.

---





### Related Information

- [“Rackmounted Server Turning Radius” on page 50](#)
- [“Move the Server to the Installation Site” on page 123](#)
- [“Use a Metal Plate to Cross Gaps in the Floor” on page 125](#)

## Stabilizing the Server

These topics describe how to stabilize the server using the leveling feet.

Task	Link
Lower the leveling feet to stabilize the server at the installation site.	<a href="#">“Lower the Leveling Feet (Sun Rack II)” on page 129</a>
	<a href="#">“Lower the Leveling Feet (Oracle Rack)” on page 130</a>
Raise the leveling feet before moving the server to another site.	<a href="#">“Raise the Leveling Feet (Sun Rack II)” on page 131</a>
	<a href="#">“Raise the Leveling Feet (Sun Rack II)” on page 131</a>

### Related Information

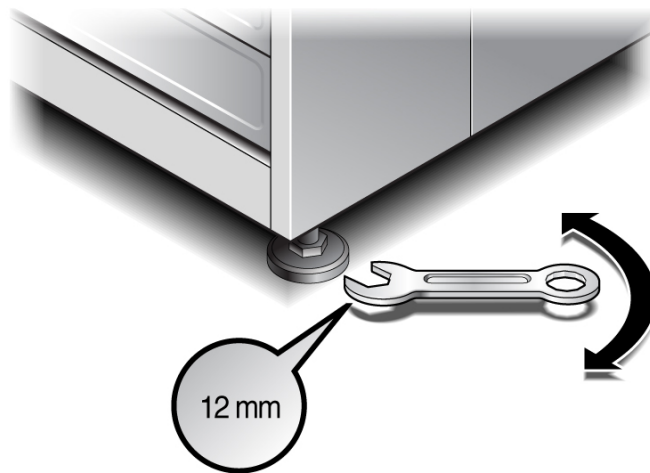
- [“Leveling Feet and Caster Dimensions \(Sun Rack II\)” on page 51](#)
- [“Cable Routing Floor Opening Specifications \(Sun Rack II\)” on page 55](#)

## ▼ Lower the Leveling Feet (Sun Rack II)

Use leveling feet at the four corners of the server to stabilize the server to the floor.

1. **Open the server doors.**
2. **Use a 12-mm wrench to lower the leveling feet to the floor.**

Turn the wrench clockwise to lower the leveling feet. When lowered correctly, the four leveling feet should support the full weight of the server.



3. Close the server doors.

#### Related Information

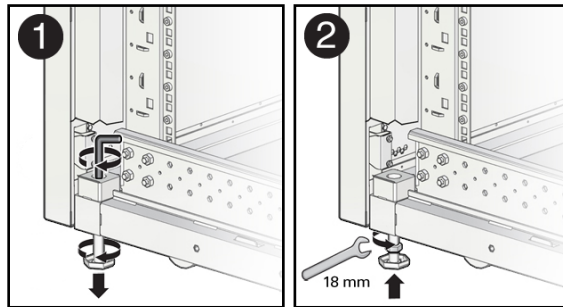
- [“Leveling Feet and Caster Dimensions \(Sun Rack II\)” on page 51](#)
- [“Raise the Leveling Feet \(Sun Rack II\)” on page 131](#)

## ▼ Lower the Leveling Feet (Oracle Rack)

Use leveling feet at the four corners of the server to stabilize the server to the floor.

1. Open the server doors.
2. Insert a 6-mm hex wrench in the hole on top of the leveling foot. Turn the wrench clockwise to lower the leveling foot to the floor.

Alternatively, you can use your fingers to turn the leveling foot clockwise to lower it to the floor. When lowered correctly, the four leveling feet should support the full weight of the server.



3. **Use a 18-mm wrench to secure the locking nut to the rack.**  
Turn the wrench counter-clockwise to secure the locking nut.
4. **Close the server doors.**

#### Related Information

- [“Leveling Feet and Caster Dimensions \(Oracle Rack\)” on page 53](#)
- [“Raise the Leveling Feet \(Sun Rack II\)” on page 131](#)

## ▼ Raise the Leveling Feet (Sun Rack II)

Before moving or repositioning the server, make sure that you raise all four leveling feet.

---

**Note** - The leveling feet must remain securely down on the floor at the installation site. Only raise the leveling feet before moving the server.

---

1. **Open the server doors.**
2. **Use a 12-mm wrench to raise the leveling feet.**  
Turn the wrench counter-clockwise to raise the leveling feet.
3. **Close the server doors.**

### Related Information

- [“Leveling Feet and Caster Dimensions \(Sun Rack II\)” on page 51](#)
- [“Lower the Leveling Feet \(Sun Rack II\)” on page 129](#)

## ▼ Raise the Leveling Feet (Oracle Rack)

Before moving or repositioning the server, make sure that you raise all four leveling feet.

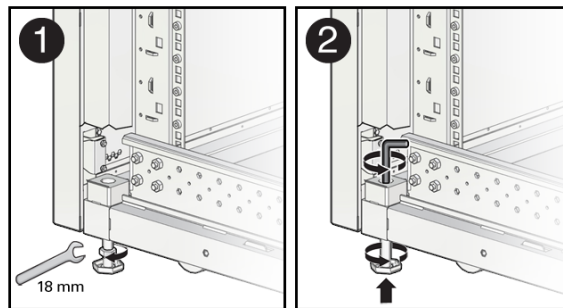
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**Note** - The leveling feet must remain securely down on the floor at the installation site. Only raise the leveling feet before moving the server.

---

1. **Open the server doors.**
2. **Use a 18-mm wrench to loosen the locking nuts securing leveling foot to the rack.**

Turn the wrench clockwise to loosen the locking nut.



3. **Insert a 6-mm hex wrench in the hole on top of the leveling foot. Turn the wrench counter-clockwise to raise the leveling foot from the floor.**

Alternatively, you can use your fingers to turn the leveling foot counter-clockwise to raise it from the floor.

4. **Close the server doors.**

**Related Information**

- [“Leveling Feet and Caster Dimensions \(Oracle Rack\)” on page 53](#)
- [“Lower the Leveling Feet \(Oracle Rack\)” on page 130](#)

## Optional Component Installation

The standard server components are installed at the factory. Any additional components you order, such as optional PCIe cards, might ship separately. Refer to the [SPARC M8 and SPARC M7 Servers Service Manual](#) and the component documentation for installation instructions.

Contact your Oracle Sales representative for component ordering instructions.

**Related Information**

- [“Planning Network Addresses” on page 95](#)
- [“Planning Storage Devices” on page 105](#)
- [“Connecting Cables” on page 175](#)
- [System Option Documentation](#)



## Installing a Stand-Alone Server in a Rack

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These topics describe how to install a stand-alone SPARC M8-8 or SPARC M7-8 server into a rack.

---

**Note** - If you are installing a SPARC M7-16 server, a rackmounted SPARC M8-8 server, or a rackmounted SPARC M7-8 server, go to [“Connecting Cables” on page 175](#) to continue the installation.

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Step	Description	Link
1.	Ensure that your rack is compatible with the server requirements.	<a href="#">“Rack Compatibility” on page 136</a> <a href="#">“Oracle Rack Requirements” on page 137</a> <a href="#">“SPARC M8-8 and SPARC M7-8 Server Locations in an Oracle Rack” on page 138</a> <a href="#">“Rack Cautions” on page 140</a>
2.	Understand the rackmount kit, assemble tools, and stabilize the rack.	<a href="#">“Rackmount Kit” on page 141</a> <a href="#">“Rackmount Kit Comparison” on page 143</a> <a href="#">“Tools Required for Stand-Alone Server Installation” on page 141</a> <a href="#">“Prepare and Stabilize the Rack” on page 145</a>
3.	Unpack the server from its shipping container.	<a href="#">“Unpack the Stand-Alone Server” on page 147</a> <a href="#">“Raise Server Using a Mechanical Lift” on page 152</a>
4.	Install the rackmount kit hardware.	<a href="#">“Mark the Rail Mounting Hole Locations” on page 154</a> <a href="#">“Install the Rackmount Shelf Rails” on page 155</a> <a href="#">“Insert Cage Nuts Into Rail Holes” on page 159</a> <a href="#">“Install the Lower Rear Bracket” on page 160</a>

Step	Description	Link
5.	Install and secure the server and filler panels in the rack.	<a href="#">“Install and Secure the Server” on page 162</a> <a href="#">“Install Filler Panels” on page 170</a>
6.	Prepare the power cords for the initial power on.	<a href="#">“Prepare the Stand-Alone Server Power Cords” on page 172</a>

### Related Information

- [“Rackmounted and Stand-Alone Servers” on page 16](#)
- [“Stand-Alone Server Installation Task Overview” on page 18](#)
- [“Preparing for Installation” on page 113](#)
- Oracle Sun Rack II 1242 Documentation at <http://www.oracle.com/goto/sunrackii/docs>

## Rack Compatibility

The SPARC M8-8 and SPARC M7-8 servers, and the associated rackmounting hardware kit, are compatible with 1200-mm Oracle racks only (either the Sun Rack II 1242 rack or the Oracle Rack Cabinet 1242). The servers have not been tested in non-Oracle racks.

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**Note** - The SPARC M8-8 and SPARC M7-8 servers were designed to be installed into racks with a 1200-mm depth. 1000-mm deep racks will not provide enough space to service the stand-alone server components, or to route and secure the server power cords and data cables safely.

---

If you will install the server in a non-Oracle rack, ensure that the non-Oracle rack meets the server installation requirements, which include (but are not limited to) the following:

- The stand-alone server must be placed on a rack shelf in the non-Oracle rack
- The rack shelf must be capable of supporting a minimum weight of 425 lbs (193 kg)
- The rack shelf must be designed for the rack being used

Obtain the rack shelf from the rack vendor. Installing a stand-alone server in non-Oracle racks using the included rackmounting hardware kit is not supported.

### Related Information

- [“Physical Dimensions \(Stand-Alone Servers\)” on page 46](#)



- “Oracle Rack Requirements” on page 137
- Oracle Sun Rack II 1242 Documentation at <http://www.oracle.com/goto/sunrackii/docs>

## Oracle Rack Requirements

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**Note** - The SPARC M8-8 and SPARC M7-8 servers were designed to be installed into a 1200-mm Oracle rack (either the Sun Rack II 1242 or the Oracle Rack Cabinet 1242). The 1000-mm Sun Rack II 1042 does not provide enough space to service SPARC M8-8 or SPARC M7-8 server components, or to route and secure the server power cords and data cables safely. Installing a stand-alone SPARC M8-8 or SPARC M7-8 server into a Sun Rack II 1042 rack is not supported.

---

When installing a stand-alone server in a 1200mm Oracle rack, the rack must meet the following requirements.

Item	Requirement
Rack type	1200-mm racks only. (The 1000-mm Sun Rack II 1042 rack is not compatible.)
Structure	Four-post rack (mounting at both front and rear). Two-post racks are not compatible.
Rack horizontal opening and unit vertical pitch	Conforms to ANSI/EIA 310-D-1992 standards.
Rack rail mounting hole sizes	Only 9.5-mm square holes are supported. No other sizes are supported.
Distance between front and rear mounting planes	27 in. (686 mm).
Clearance depth in front of front mounting plane	Distance of rackmounting plane to front rack door is at least 2.75 in. (70 mm).
Clearance depth behind front mounting plane	Distance of rackmounting plane to inside rear rack door is 15.75 in (400 mm).
Clearance width between the rack's vertical rails	Distance between inside vertical structural supports is 19 in. (482.60 mm).
Clearance width for the server opening	Distance between RETMA rail to RETMA rail edges is 17.72 in. (450 mm).
Stand-alone server dimensions	Depth: 32.0 in. (813 mm)
	Width of chassis: 17.5 in. (445 mm)
	Width of front bezel: 19 in. (483 mm)
	Height: 17.2 in. (438.0 mm)

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Item	Requirement
	SPARC M8-8 weight (with 8 CMIOUs): 425 lbs (193 kg)
	SPARC M7-8 weight (with 8 CMIOUs): 405 lbs (184 kg)

### Related Information

- [“Physical Dimensions \(Stand-Alone Servers\)” on page 46](#)
- [“Prepare and Stabilize the Rack” on page 145](#)
- [Oracle Cabinets and Racks Documentation](#)

## SPARC M8-8 and SPARC M7-8 Server Locations in an Oracle Rack

You can install up to three SPARC M8-8 or SPARC M7-8 servers into an Oracle rack. If you do so:

- Ensure that the site can provide enough power to the rack.
- Provide space between each server in the rack to ensure proper system cooling and install cover plates to prevent air recirculation.
- Ensure that the Oracle-supplied cables will be able to reach the C19 outlets on the rack PDUs.



**Caution** - When installing three SPARC M8-8 or SPARC M7-8 servers in the same rack, you must cover all empty rack slots using metal 3U filler panels. You must also use 3U filler panels when installing a combination of three of these servers in the same rack (for example, two SPARC M8-8 servers and one SPARC M7-8 server). Contact your Oracle Sales representative to order the correct 3U filler panel for Oracle racks (part number: 7326328). See [“Install Filler Panels” on page 170](#) for instructions.

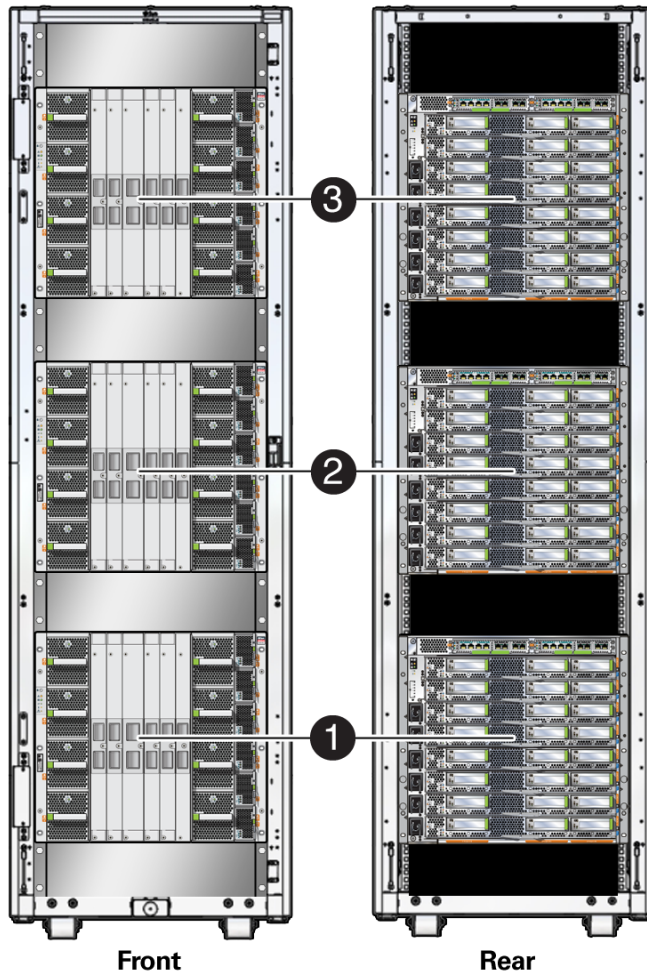
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Install the servers in the following locations.



**Caution** - A rackmounted SPARC M8-8 or SPARC M7-8 server will be factory-installed at the lowest location shown. To prevent the rack from becoming top heavy, always install the second server in the middle location before installing a third server in the top location.

---



Server Location	RETMA Rail Rack Unit Locations
3	<ul style="list-style-type: none"> <li>■ Top of third server: 39U</li> <li>■ Bottom of third server: 30U</li> </ul>
2	<ul style="list-style-type: none"> <li>■ Top of second server: 26U</li> <li>■ Bottom of second server: 17U</li> </ul>
1	<ul style="list-style-type: none"> <li>■ Top of first server: 13U</li> <li>■ Bottom of first server: 4U</li> </ul>

### Related Information

- “Heat Dissipation and Airflow Requirements” on page 79
- “Oracle Rack Requirements” on page 137
- Oracle Sun Rack II 1242 Documentation at <http://www.oracle.com/goto/sunrackii/docs>

## Rack Cautions



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**Caution - Equipment Loading:** Always load equipment into a rack from the bottom up so that the rack does not become top-heavy and tip over. Deploy the rack's anti-tilt device to prevent the rack from tipping during equipment installation.

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**Caution - Elevated Operating Ambient Temperature:** If the server is installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment might be greater than room ambient temperature. Therefore, install the equipment only in an environment compatible with the maximum ambient temperature (T<sub>max</sub>) specified for the server.

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**Caution - Reduced Air Flow:** Install the equipment in a rack so that the amount of air flow is adequate for the safe operation of the equipment.

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**Caution - Mechanical Loading:** Mount the equipment in the rack so that the weight is distributed evenly. A hazardous condition can exist with uneven mechanical loading.

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**Caution - Circuit Overloading:** Do not overload the power supply circuits. Before connecting the server to the supply circuit, review the equipment nameplate power ratings and consider the effect that circuit overloading might have on overcurrent protection and supply wiring.

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**Caution - Reliable grounding:** Maintain reliable grounding of rackmounted equipment. Give particular attention to supply connections other than direct connections to the branch circuit (for example, use of power strips).

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**Caution -** Do not attempt to move or install the server without a lift.

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**Caution -** Do not use slide rail mounted equipment as a shelf or a work space.

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### Related Information

- [“Handling Precautions” on page 113](#)
- [“Oracle Safety Information” on page 115](#)

## Tools Required for Stand-Alone Server Installation

Before installing the server into a rack, assemble the following tools:

- Two or more people to unpack, move, and install the server
- Mechanical lift capable of lifting 1000 lbs (454 kg) up to 60 in. (1524 mm)
- A tool to cut the banding straps on the shipping container
- A box cutter to cut the tape on the shipping container
- A pen or pencil to mark the rackmounting holes
- 12-mm wrench, used to lower or raise the leveling feet (included in Sun Rack II shipping kit)
- T30 Torx screwdriver
- T20 Torx screwdriver
- *Rackmount Guide*

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**Note** - When installing the stand-alone server into a non-Oracle rack, refer to the rack documentation for the installation instructions, including the number of people and the list of tools required.

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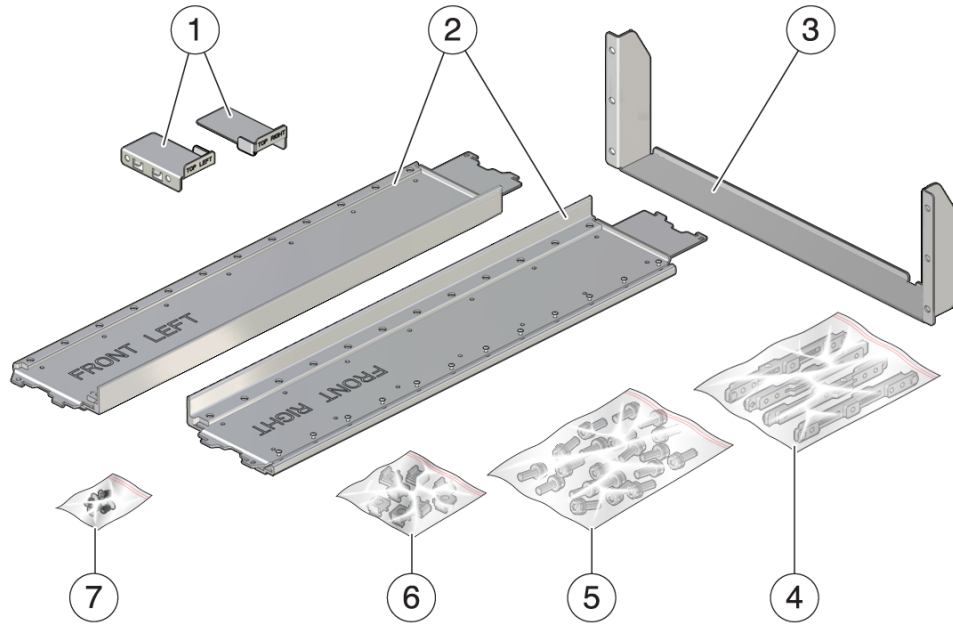
### Related Information

- [“Tools and Equipment Needed for Installation” on page 115](#)
- [“Install the Rackmount Shelf Rails” on page 155](#)

## Rackmount Kit

The rackmount kit has two shelf rails, one for each side of the rack. Each shelf rail is marked LEFT or RIGHT.

The shelf rails are mounted to the rack with four adapter brackets.



No.	Description
1	Top rear brace (right and left)
2	Shelf rails
3	Lower rear bracket
4	Adapter brackets (4)
5	M6 20-mm screws (22)
6	Cage nuts (8)
7	M4 10-mm flathead screws (4)

### Related Information

- [“Rack Compatibility” on page 136](#)
- [“Tools Required for Stand-Alone Server Installation” on page 141](#)
- [“Install the Rackmount Shelf Rails” on page 155](#)
- [“Install the Lower Rear Bracket” on page 160](#)
- [“Install and Secure the Server” on page 162](#)

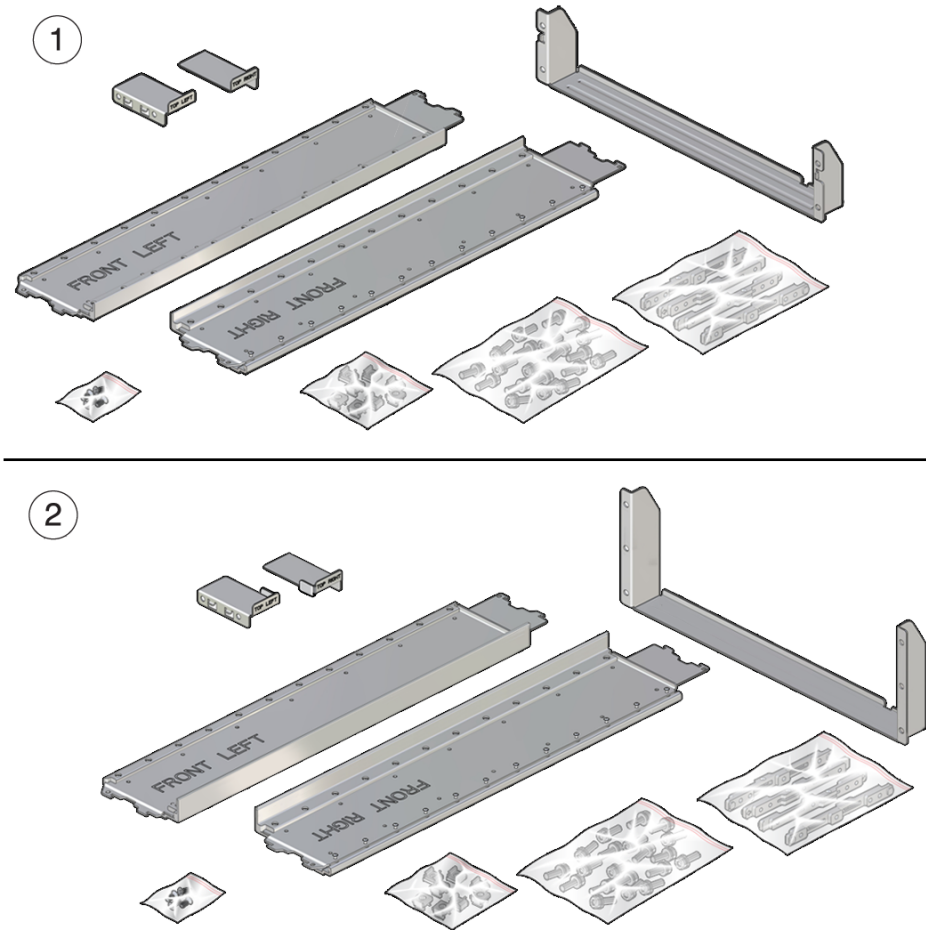
## Rackmount Kit Comparison

The rackmount kit was updated in late 2016. The new rackmount kit includes wider shelf rails, a stronger lower rear bracket, and top rear brackets that enclose the top corners of the server.

---

**Note** - If your server was installed using the original rackmount kit, continue to use this original rackmount kit when relocating the server to another rack. For installation instructions, refer to the *Rackmount Guide* that shipped with your server. Whenever relocating the server, observe all cautions listed in [“Rack Cautions” on page 140](#).

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No.	Description
1	Original rackmount kit
2	New rackmount kit

### Related Information

- [“Install the Rackmount Shelf Rails” on page 155](#)
- [“Install the Lower Rear Bracket” on page 160](#)
- [“Install and Secure the Server” on page 162](#)



## ▼ Prepare and Stabilize the Rack



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**Caution** - To reduce the risk of personal injury, stabilize the rack by extending all anti-tilt devices before installing the server.

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Refer to the rack documentation for detailed instructions for the following steps.

**1. Read the rack cautions and stabilize the rack.**

See [“Rack Cautions” on page 140](#).

**2. Open and remove the front and rear doors from the rack.**

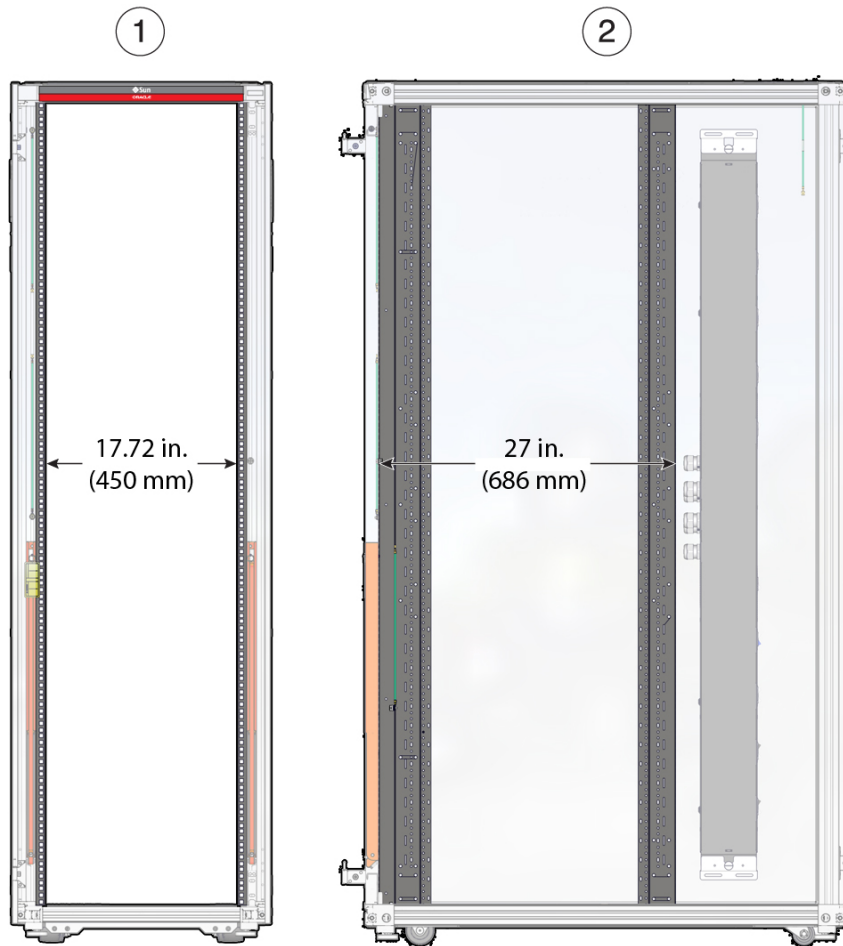
**3. Ensure that the RETMA rails are installed in the proper location.**

The width between the right and left RETMA rails must be 17.72 in. (450 mm), and the length from the front plane of the front RETMA rail and the rear plane of the rear RETMA rail must be 27 in. (686 mm).



**Caution** - If the RETMA rail depth is greater than 27 in. (686 mm), the server will not fully rest on the rear mounting bracket, and you will not be able to install the top rear braces. If the RETMA rail depth is less than 27 in. (686 mm), the server will be stopped by the rear mounting bracket during installation. In this case, you will be unable to secure the server to the rack using the front panel screws.

---



4. If there are leveling feet beneath the rack to prevent it from rolling, extend these leveling feet fully downward to the floor.

For Oracle's Sun Rack II rack, see [“Lower the Leveling Feet \(Sun Rack II\)” on page 129](#) for instructions.

5. **To prevent the rack from tipping during the installation, stabilize the rack using all anti-tilt mechanisms provided.**



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**Caution** - The Sun Rack II anti-tilt legs can inhibit the installation of the server when installing the server into the lower quarter of the rack. Ensure that you have extended the rack's four leveling feet completely, and use a third person to support the rack while installing the server.

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**Note** - The Oracle Rack Cabinet 1242 has an anti-tilt bar that extends from the bottom of the rack. It will not inhibit the installation of the stand-alone server.

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6. **Continue with the installation by unpacking the server from its shipping container.**

See [“Unpack the Stand-Alone Server” on page 147](#).

#### Related Information

- [“Rack Compatibility” on page 136](#)
- [“Install and Secure the Server” on page 162](#)

## ▼ Unpack the Stand-Alone Server

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**Note** - This task describes how to unpack the stand-alone SPARC M8-8 and SPARC M7-8 servers. If your server was factory installed in an Oracle rack, see [“Unpack the Server” on page 121](#) and the rack's printed *Unpacking Guide* for unpacking instructions.

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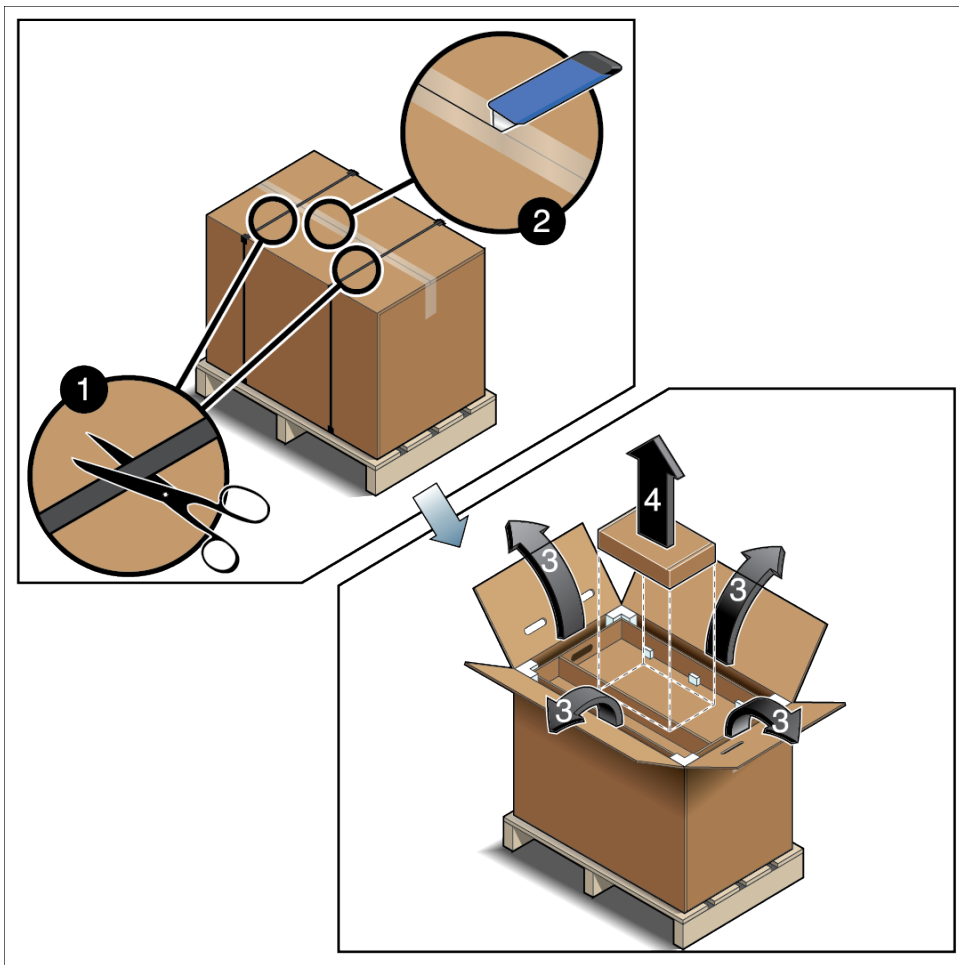
**Note** - Remove the shipping container in a conditioned space away from the final installation site to reduce airborne particles entering the data center.

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1. **Prepare an unpacking area large enough to remove the shipping container and access the unpacked server using a mechanical lift.**

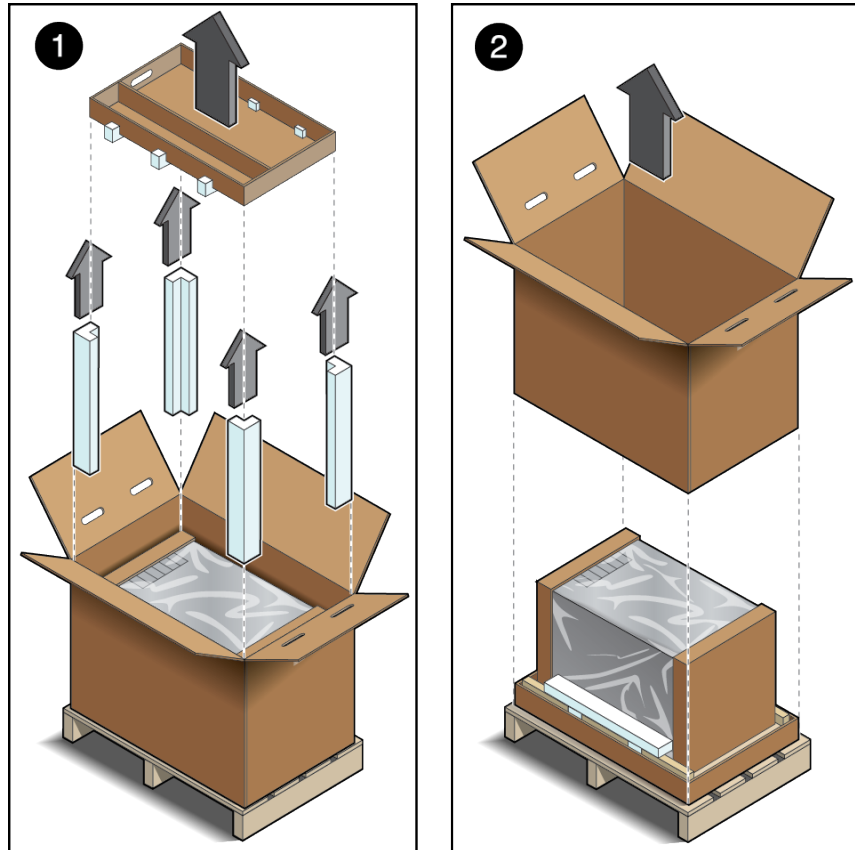
The unpacking area must be at least 4 ft (122 cm) by 8 ft (244 cm). See [“Rackmounted Server Unpacking Area” on page 92](#) for more information.
2. **Using shears, or a similar tool, cut and remove the banding securing the outer packaging from the shipping pallet.**

3. Cut the tape securing the top of the shipping carton and open carton to expose the accessory tray containing the rackmount kit and power cords.



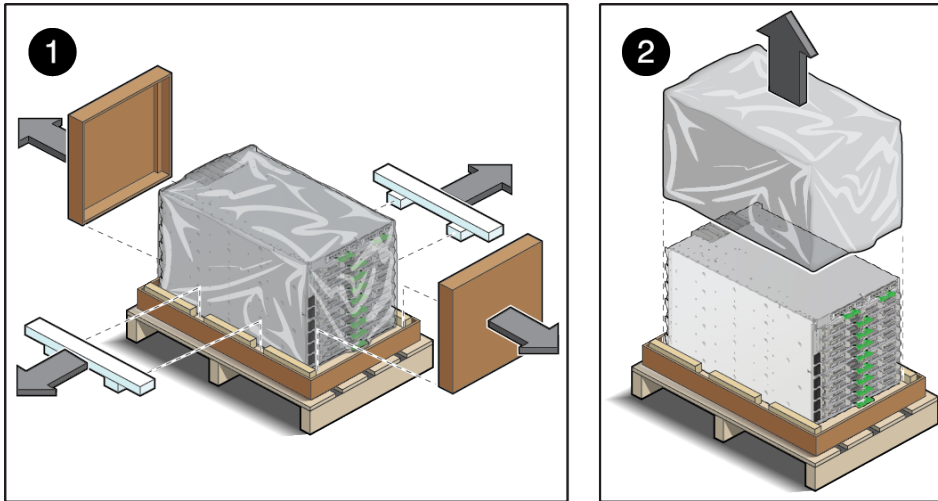
4. Lift the accessory tray out of the shipping pallet and place it in a safe location.

**5. Remove the Styrofoam corners and the top cushions.**

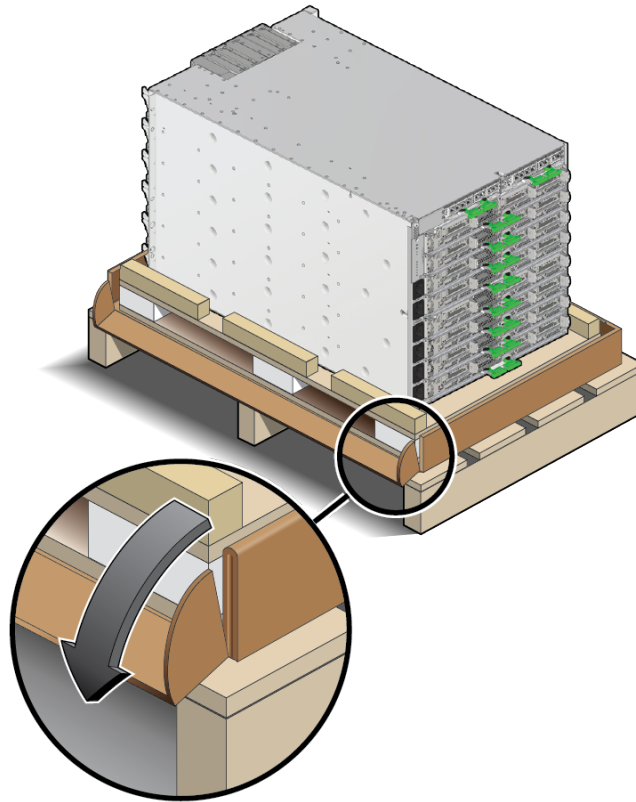


**6. Lift the outer packaging up and off of the pallet.**

7. Remove the cardboard end caps, bottom Styrofoam cushions, and the plastic bag covering from the server.



8. Lower the cardboard tray corners of the outer pallet to expose the inner pallet.



9. Continue the installation by raising the server on a mechanical lift.  
See [“Raise Server Using a Mechanical Lift”](#) on page 152.

#### Related Information

- [“Rackmounted and Stand-Alone Servers”](#) on page 16
- [“Stand-Alone Server Shipping Container Dimensions”](#) on page 89
- [“Stand-Alone Server Unpacking Area”](#) on page 93

## ▼ Raise Server Using a Mechanical Lift

The stand-alone server shipping container includes two stacked pallets. If your mechanical lift contains forks, and not a flat tray, lift and move the server to the final installation site using the inner pallet. The inner pallet contains polished boards to enable you to push the server off of the pallet and into the rack.

If your mechanical lift includes a flat tray, move the server off of the inner pallet and place it on the lift's flat tray.

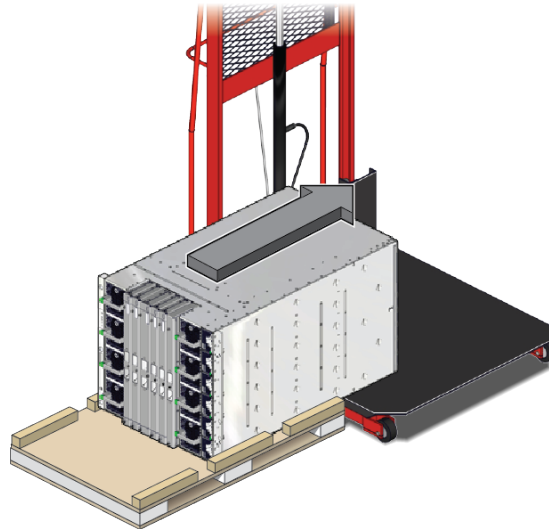
1. **Determine the type of mechanical lift you are using.**
  - **If your mechanical lift contains a flat tray, push the server off of the inner pallet and on top of the lift's flat tray.**



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**Caution** - To reduce the risk of personal injury, always use two or more people to push the server onto the lift tray.

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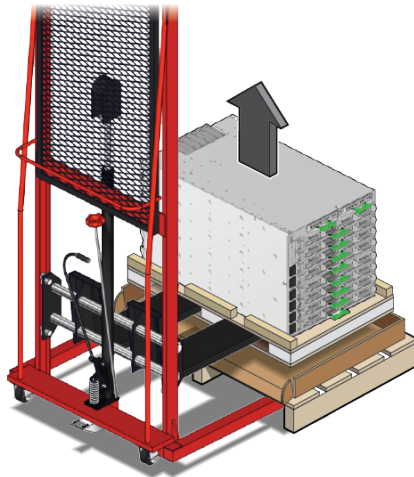
- **If your mechanical lift contains forks, raise the server off of the exterior pallet using the inner pallet.**





**Caution** - The inner pallet weighs 33.5 lbs (15.2 kg). The combined weight of the SPARC M8-8 server and inner pallet is approximately 459 lbs (208.2 kg) and the combined weight of the SPARC M7-8 and inner pallet is 439 lbs (199.1 kg). You must use a mechanical lift capable of lifting 1000 lbs (454 kg) up to 60 in. (1524 mm).

---



2. **Carefully move the server to the installation site using the mechanical lift.**



**Caution** - Take care when moving the server up or down ramps and around corners. The server could slide off the lift's flat tray or the inner pallet's polished boards.

---

3. **Continue the installation by locating and marking the mounting hole locations for the rackmount kit rails and cage nuts.**

See [“Mark the Rail Mounting Hole Locations”](#) on page 154.

### Related Information

- [“Physical Dimensions \(Stand-Alone Servers\)”](#) on page 46
- [“Unpack the Stand-Alone Server”](#) on page 147
- [“Install and Secure the Server”](#) on page 162
- [“Access Route Requirements”](#) on page 91

## ▼ Mark the Rail Mounting Hole Locations

Use the *Rackmount Guide* (alternatively known as the *rack template*) to identify the correct mounting holes for the shelf rails and cage nuts.

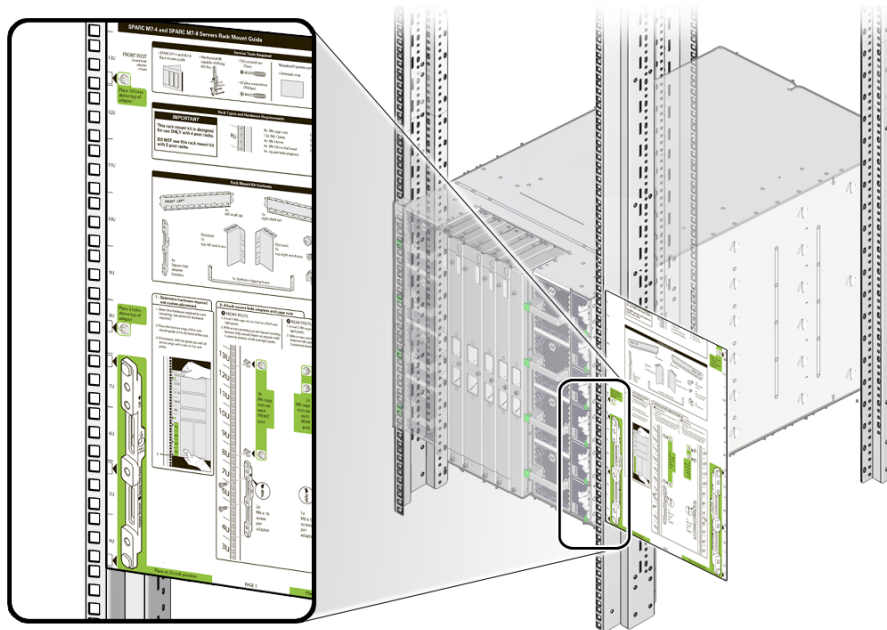
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**Note** - To ensure the stability of the rack, always install equipment into a rack from the bottom to the top.

---

1. **Ensure that there is enough vertical space in the rack to install the server.**
2. **Place the *Rackmount Guide* template against the front rails.**

The bottom edge of the template corresponds to the bottom edge of the server. Measure up from the bottom of the template.



3. **Mark the mounting holes for the front shelf rails.**  
Refer to the *Rackmount Guide* template for instructions.

4. **Place the template against the rear rails, and mark the mounting holes for the rear shelf rails.**
5. **Continue with the installation by installing the shelf rails.**  
See [“Install the Rackmount Shelf Rails” on page 155](#).

#### Related Information

- The *Rack Mount Guide* included in the server shipping kit.
- [“Rack Compatibility” on page 136](#)
- [“Prepare and Stabilize the Rack” on page 145](#)

## ▼ Install the Rackmount Shelf Rails



---

**Caution** - If you are relocating the server to another rack, you must use the latest rackmount kit to install the server. For a comparison of the original and the latest rackmount kits, see [“Rackmount Kit Comparison” on page 143](#). Contact your Oracle Service representative for information about ordering the new rackmount kit.

---

1. **Repeat the following steps for both the left and right front mounting points:**
  - a. **Place the adapter bracket in the marked location.**

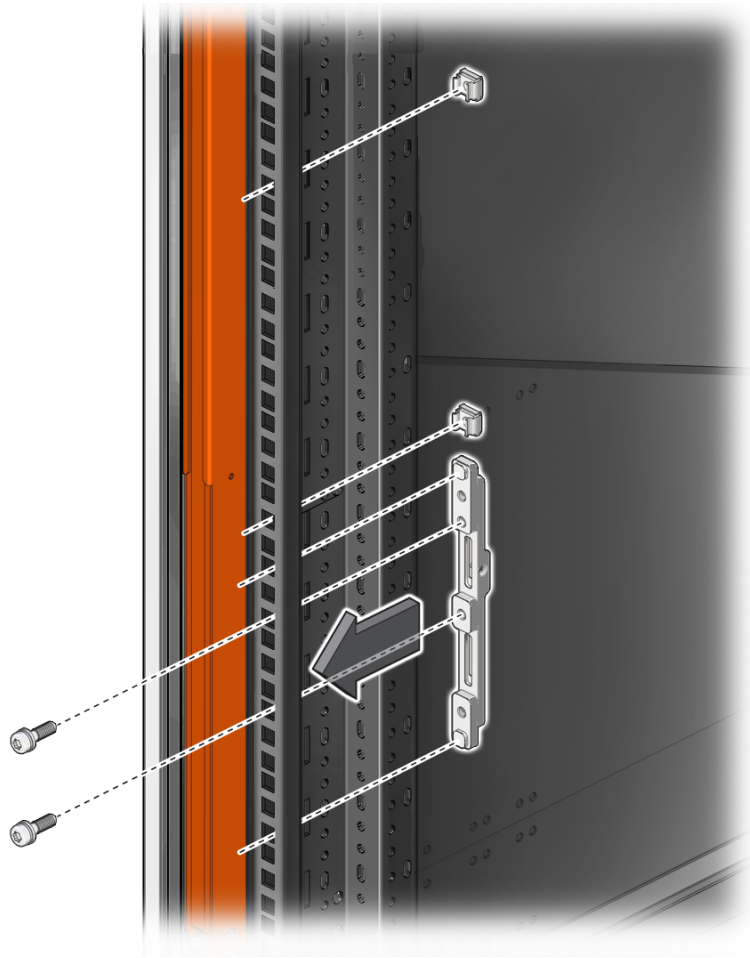
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**Note** - Each adapter bracket has an *up* arrow to indicates its proper orientation.

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- b. **Use a T30 Torx screwdriver to secure the adapter bracket using two M6 screws.**

Secure the screws in the center and the second from the top adapter bracket screw holes.

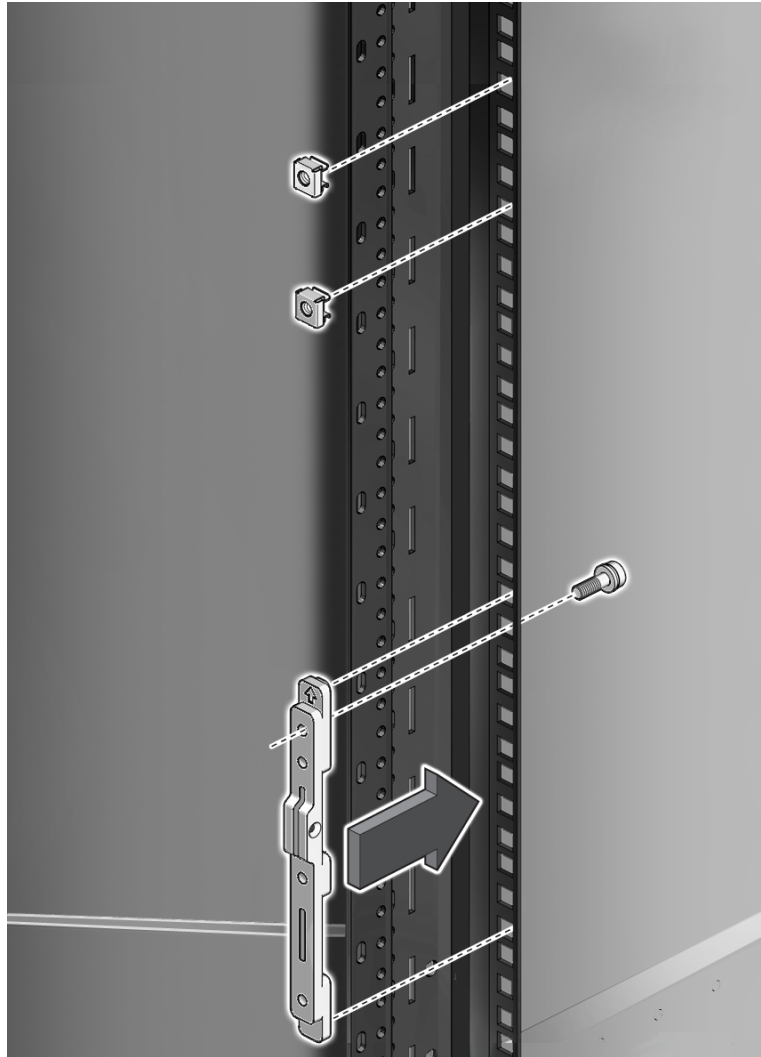


- c. **Insert two cage nuts in the second and 16th holes above the top of the adapter bracket.**

For instructions on inserting cage nuts, see [“Insert Cage Nuts Into Rail Holes” on page 159.](#)

2. **Repeat the following steps for both the left and right rear mounting points:**

- a. Place the adapter bracket in the marked location.
- b. Use a T30 Torx screwdriver to secure the adapter bracket using one M6 screw in the second-from-the-top bracket hole.



- c. Insert two cage nuts, in the 13th holes and the 17th holes above the top of the adapter bracket.

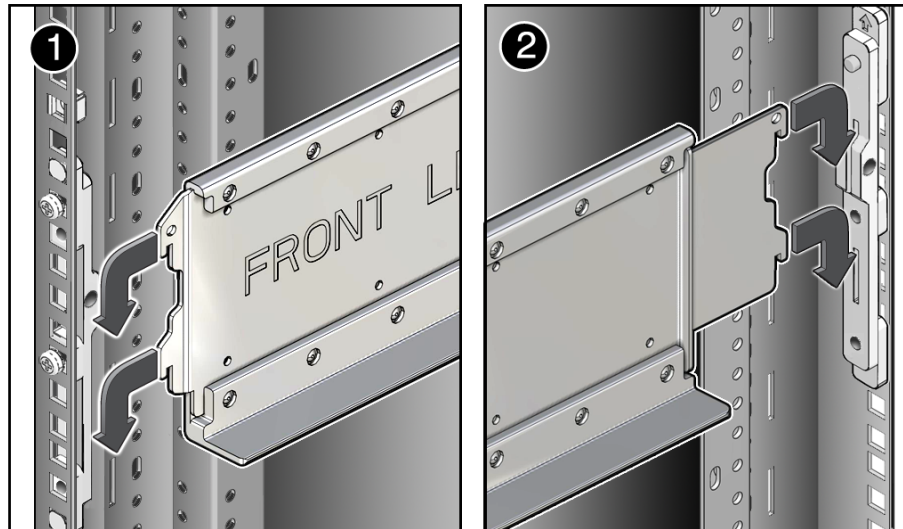
**3. Repeat the following steps to install the left and right shelf rails.**

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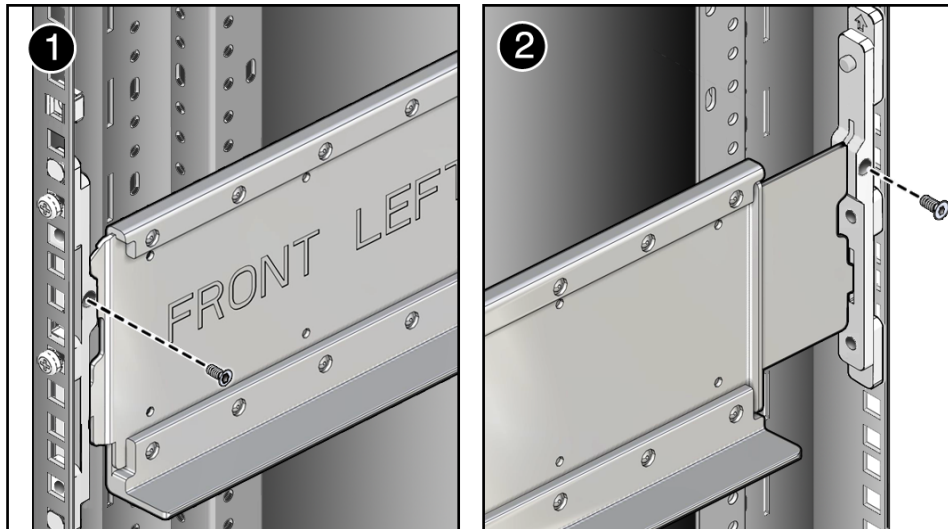
**Note** - The shelf rails are marked "FRONT LEFT" and "FRONT RIGHT" (as viewed from the front of the server).

---

- a. Position the shelf rail between the front and rear rack rails.
- b. Extend the shelf rail and insert the rear hooks into the adapter slots.
- c. Push the shelf rail down to engage the hooks.
- d. Insert the front hooks into the adapter slots.
- e. Push the shelf rail down to engage the hooks.
- f. Confirm that all of the rail hooks are fully engaged in the front and rear adapters.



- g. Use a T20 Torx screwdriver to secure each shelf rail with two rail lock screws (one M4 flathead screw on each adapter bracket).



4. Continue the installation by installing the lower rear bracket. See [“Install the Lower Rear Bracket”](#) on page 160.

#### Related Information

- [“Rack Compatibility”](#) on page 136
- [“Rackmount Kit”](#) on page 141
- [“Prepare and Stabilize the Rack”](#) on page 145

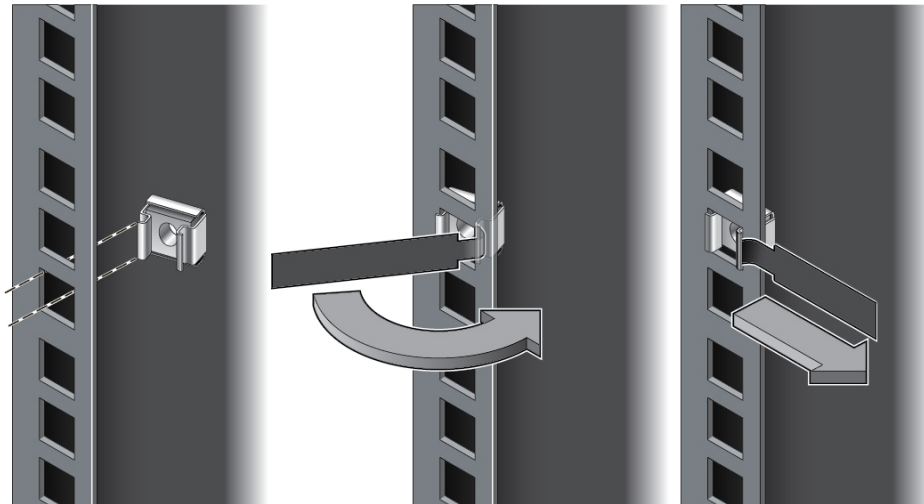
## ▼ Insert Cage Nuts Into Rail Holes

In addition to using the included square hole adapter brackets, install cage nuts at specific locations in the front and rear RETMA rails. The Sun Rack II rack shipping kit contains a cage nut insertion tool that helps install the included M6 cage nuts into square RETMA rail holes.

1. Retrieve a cage nut and align it with the desired RETMA rail hole from inside the rack.

Ensure that the lips of the cage nut face the outside of the rack.

2. **Hook one lip of the cage nut in the square rail hole.**



3. **Insert the tip of the cage nut insertion tool through the rail hole and hook the other lip of the cage nut.**
4. **Using the insertion tool, pull the cage nut through the hole until the other lip snaps into place.**

## ▼ Install the Lower Rear Bracket

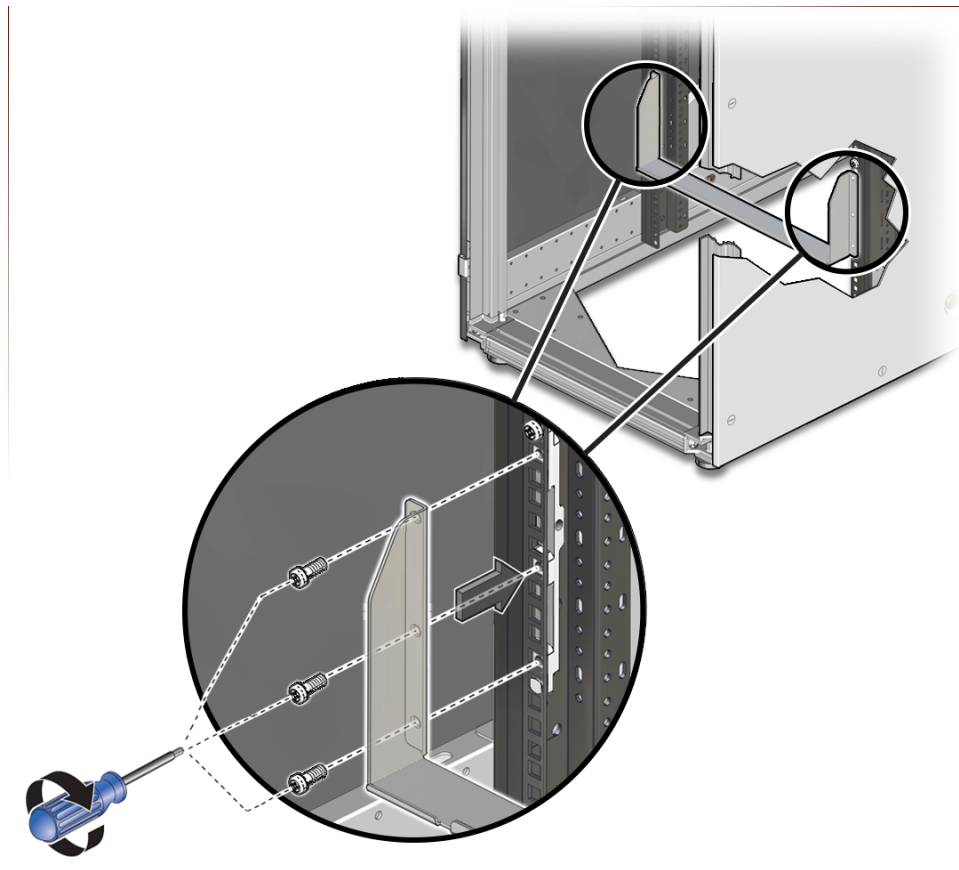
To support the full weight of the server, you must install the lower rear bracket to the rear rack rails.

1. **Align the lower rear bracket to the rear rack rails.**

The lower rear bracket will support the bottom rear of the server, so it must align with the installed shelf rail supports.



2. Using a T30 Torx screwdriver, secure the lower rear bracket to the rack with six M6 screws (three M6 screws for each side of the bracket).



3. Continue with the installation by installing and securing the server in the rack.  
See [“Install and Secure the Server”](#) on page 162.

### Related Information

- [“Rackmount Kit”](#) on page 141
- [“Prepare and Stabilize the Rack”](#) on page 145

## ▼ Install and Secure the Server



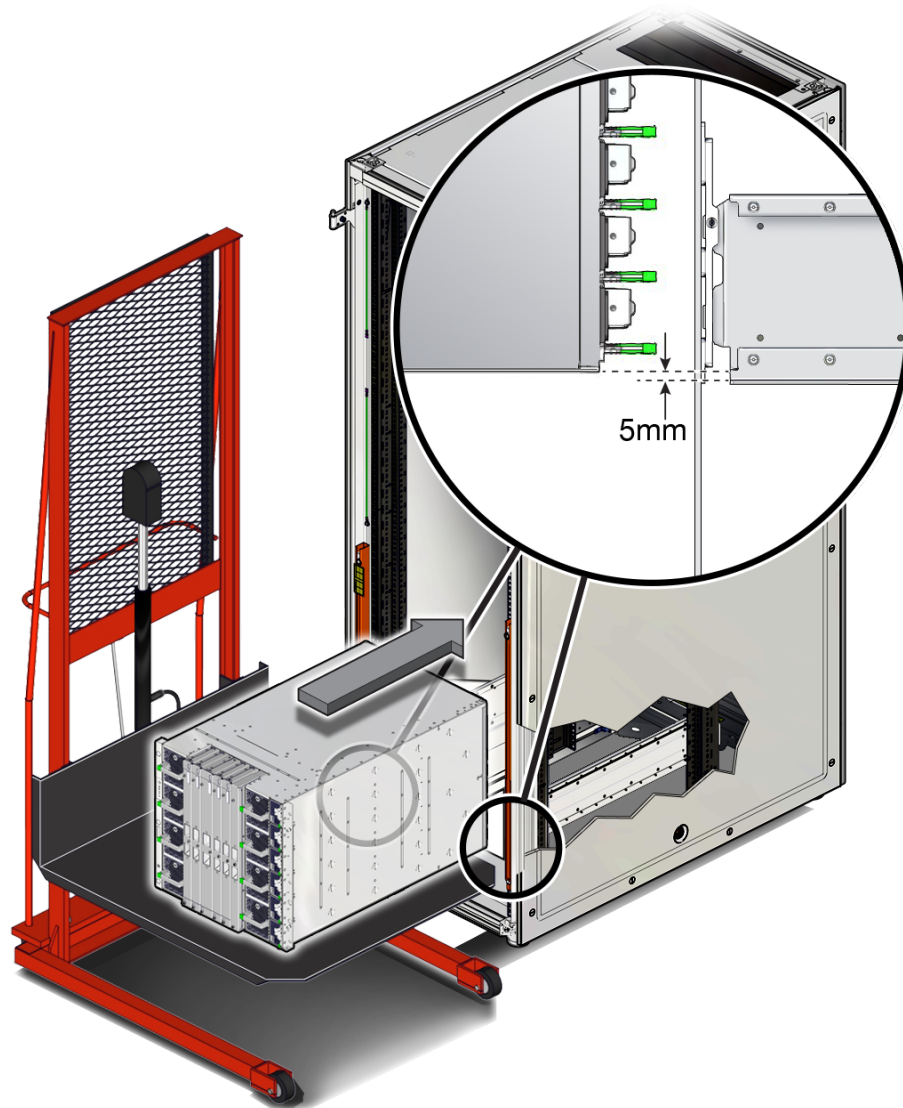
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**Caution** - You must use a mechanical lift that can support 1000 lbs (454 kg) when installing the server into a rack. Do not attempt to lift the server into a rack without a mechanical lift. The combined weight of a SPARC M8-8 server and inner pallet is around 459 lbs (208.2 kg), and the weight of a SPARC M7-8 server and inner pallet is around 439 lbs (199.1 kg).

---

1. **Ensure that the mechanical lift is level and stable.**
2. **Lift the server up so that it is around 0.2 in (5 mm) above the surface of the shelf rails.**

Ensure that the edge of the mechanical lift's tray is as close to the front of the rack as possible. If you lifted the server on its inner pallet, ensure that the edge of the pallet is as close to the rack as possible.



3. Carefully install the server into the front of the rack.



---

**Caution** - Always push the server directly into the rack. Never rock the server back and forth into the rack.

---



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**Caution** - To reduce the risk of personal injury, never reach or walk under the server while it is raised on a mechanical lift.

---

- **Slide the server a quarter of the way into the rack.**



---

**Caution** - Always push the server at the sides of the chassis. *Never* push on the front interconnects.

---

Ensure that the bottom edge of the server clears the bottom of the rack rails.

- **Lower the server slightly to where its weight is borne evenly between the slide rails and the pan of the mechanical lift.**
- **Slide the server until it is three-quarters of the way into the rack.**
- **Lower the mechanical lift pan slightly so that the weight of the server is borne entirely by the slide rails.**

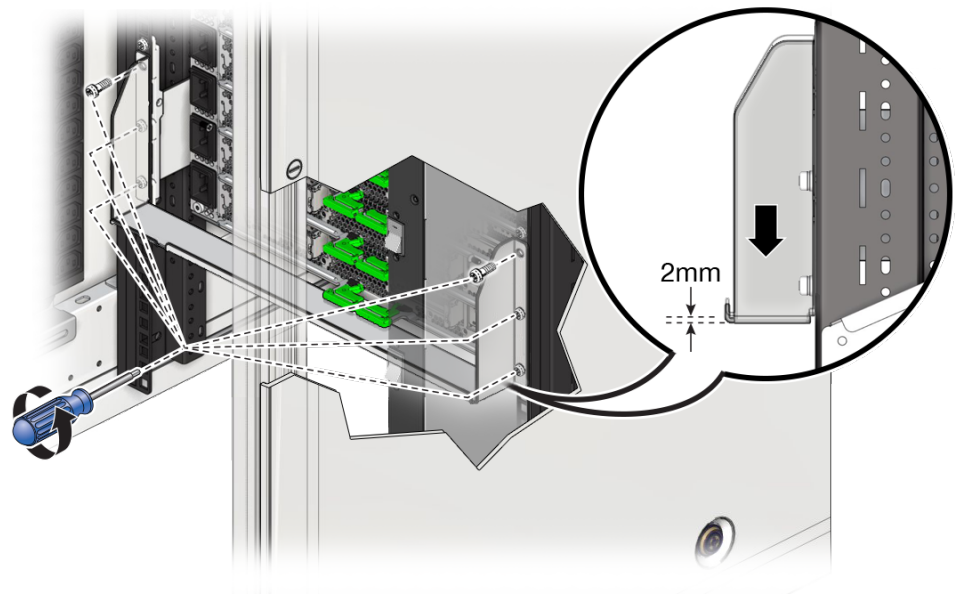
- Push the server the rest of the way into the rack.



4. If the rear of the server stops at the rear mounting bracket, follow these steps to push the server the rest of the way into the rack.

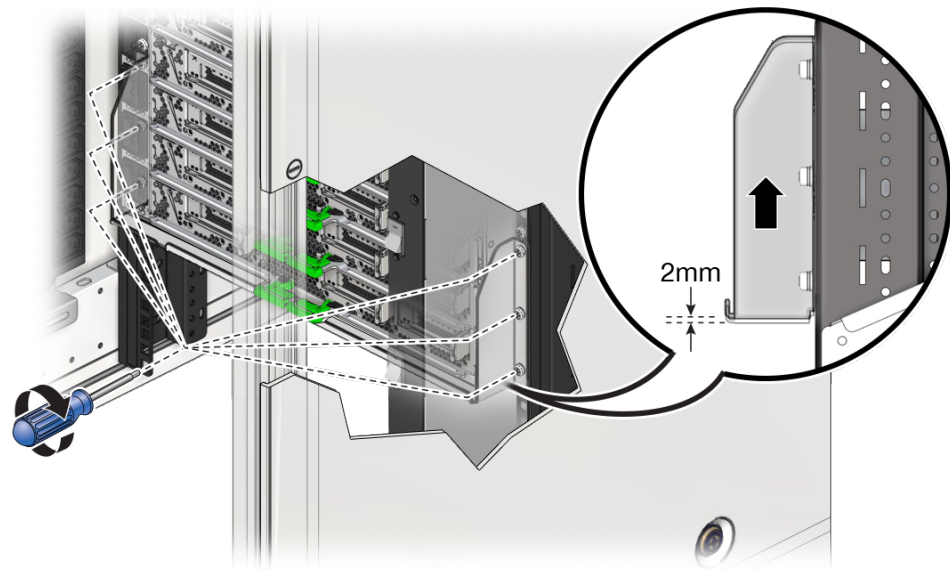
- **Using a T30 Torx screwdriver, remove the two top screws of the lower rear bracket and loosen the remaining four screws. Slide the lower rear bracket down and then securely tighten the lower four screws.**

The lower rear bracket should now be around 0.01 in. (2 mm) below the surface of the shelf rails.

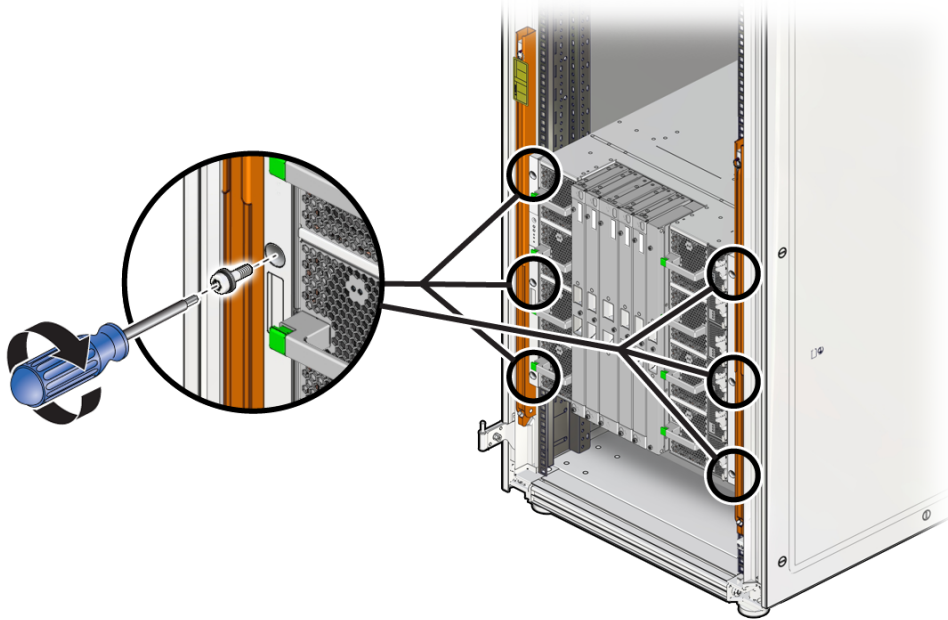


- **Push the server the rest of the way into the rack.**
- **Using a T30 Torx screwdriver, loosen the four screws on the lower rear bracket and slide the bracket up against the chassis. Securely tighten the**

top screws on each side of the lower rear bracket, and then securely tighten the remaining four screws.



5. Using a T30 Torx screwdriver, secure the server front panel to the rack using six M6 screws (three per side).



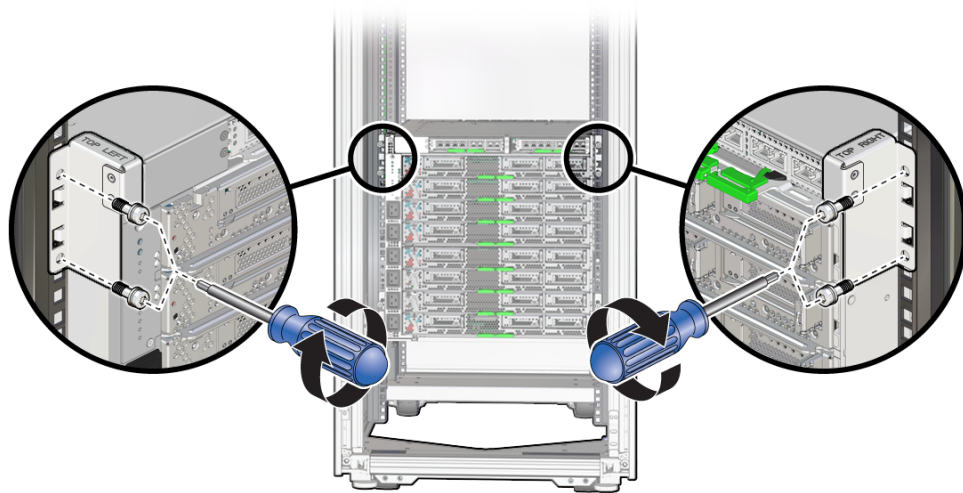
6. Repeat the following steps to install the left and right rear braces.
  - a. Place a rear brace on the top rear corner of the server and align it with the rear RETMA rail.



---

**Note** - The rear braces are labeled "TOP LEFT" and "TOP RIGHT" as viewed from the rear of the rack.

---



- b. Using a T30 Torx screwdriver, secure the rear brace to the rail using two M6 screws.

---

**Note** - Before tightening the screws, slide the top rear brackets down until they contact the top surface of the chassis.

---

7. If you ordered optional hardware like PCIe cards, install them in the server.  
Refer to [“Optional Component Installation”](#) on page 133 and [“Servicing PCIe Cards”](#) in *SPARC M8 and SPARC M7 Servers Service Manual* for more information.
8. Continue the installation by preparing the server power cords.  
See [“Prepare the Stand-Alone Server Power Cords”](#) on page 172.

### Related Information

- [“Rackmount Kit”](#) on page 141
- [“Unpack the Stand-Alone Server”](#) on page 147

## ▼ Install Filler Panels

To ensure adequate airflow through the server, always cover the empty rack space with filler panels. Plastic 1U filler panels snap into place in the rack. Follow these instructions to install the metal 3U filler panels into the rack.



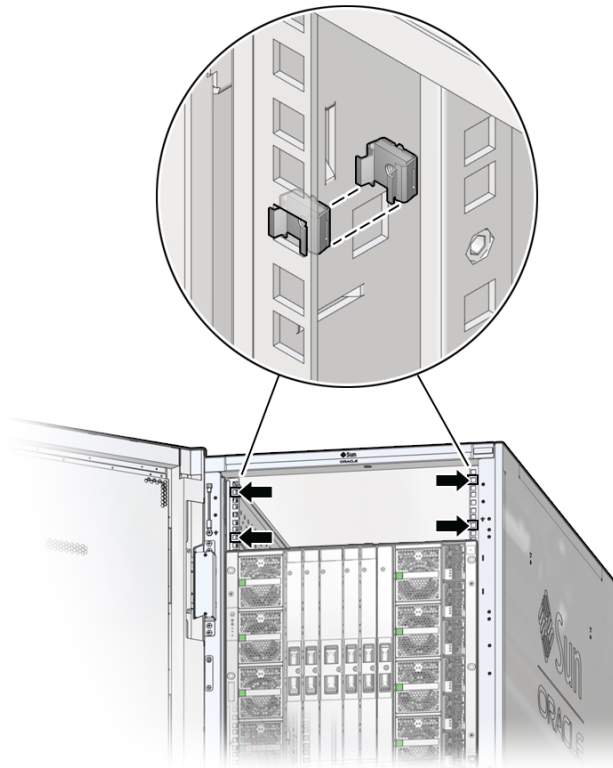
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**Caution** - When installing three SPARC M8-8 or SPARC M7-8 servers in the same rack, you must cover all empty rack slots using metal 3U filler panels. You must also use 3U filler panels when installing a combination of three of these servers in the same rack (for example, two SPARC M8-8 servers and one SPARC M7-8 server). Contact your Oracle Sales representative to order the correct 3U filler panel for Oracle racks (part number: 7326328).

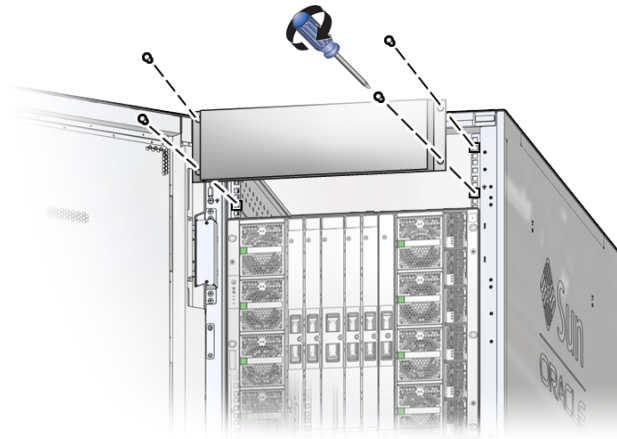
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1. **In each RETMA rail, insert two cage nuts in the second and eighth holes above what will be the bottom of the filler panel.**

Install four total cage nuts (two in each RETMA rail). For instructions on installing cage nuts, see [“Insert Cage Nuts Into Rail Holes”](#) on page 159.



2. Place the filler panel on the rack, and use a T30 Torx driver to secure the filler panel using four M6 screws.



### Related Information

- [“Heat Dissipation and Airflow Requirements” on page 79](#)
- [“SPARC M8-8 and SPARC M7-8 Server Locations in an Oracle Rack” on page 138](#)
- [“Install and Secure the Server” on page 162](#)
- [Oracle Cabinet and rack documentation](#)

## ▼ Prepare the Stand-Alone Server Power Cords

---

**Note** - This task is for preparing power cords for a stand-alone SPARC M8-8 or SPARC M7-8 server that you have installed in your own rack. If you are installing a rackmount server that has been factory installed in an Oracle rack, see [“Connect the PDU Power Cords” on page 177](#) for PDU power cord instructions.

---

Prepare the power cords by routing them from the AC power source to the server. To provide redundancy, route the server power cords to alternate power sources. For power cord requirements, see [“Power Cord-to-PDU Relationship \(SPARC M8-8 and SPARC M7-8\)” on page 69](#) and [“Stand-Alone Server Power Cord Requirements” on page 73](#).



---

**Caution** - Use only the power cords provided with the server.

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**Caution** - Do not attach power cables to the power supplies until you have connected the server to a serial terminal or a terminal emulator (PC or workstation). The server goes into Standby mode and the Oracle ILOM firmware on the SP initializes as soon as two power cables connect two power supplies to an external power source. System messages might be lost after 60 seconds if a terminal or terminal emulator is not connected before power is applied.

---

---

**Note** - Oracle ILOM will signal a fault if the power supplies are not cabled at the same time, since it will be a nonredundant condition.

---

- 1. Route the power cords from the AC power sources to the rear of the server.**  
Do not attach the power cords to the power supplies at this time.
- 2. Secure the power cords to the rack using any available cabling device provided by your rack.**  
Refer to your rack documentation for instructions.
- 3. Continue the installation by connecting the data cables.**  
See [“Connecting Cables” on page 175](#).

#### **Related Information**

- [“Power Supply Specifications” on page 58](#)
- [“Routing and Securing Cables” on page 194](#)
- [“Powering On the Server for the First Time” on page 201](#)



# Connecting Cables

---

These topics describe how to connect and secure the power cords, SP cables, and data cables located at the rear of the server.

Step	Description	Link
1.	Understand the maximum number of cables supported by the server.	<a href="#">“Maximum Cable Connections” on page 175</a>
2.	For factory-rackmounted servers, connect the PDU power cords, and optionally connect PDU metering unit and earth ground cables.	<a href="#">“Connecting Rack Cables” on page 176</a>
3.	Connect serial and network cables to the SPs.	<a href="#">“Connecting SP Cables” on page 188</a>
4.	Connect network and data cables to installed PCIe cards.	<a href="#">“Connecting Network and Data Cables” on page 192</a>
5.	For factory-rackmounted servers, route and secure power cords and data cables.	<a href="#">“Routing and Securing Cables” on page 194</a>

## Related Information

- [“Preparing the Site” on page 41](#)
- [“Planning Network Addresses” on page 95](#)

## Maximum Cable Connections

Type	Maximum Number	Description
SPs	Four cables required. <ul style="list-style-type: none"><li>■ Two category 5, or better, serial cables.</li><li>■ Two category 6, or better, network cables.</li></ul>	These cables provide serial and network connections to the two redundant SPs. All four SP cables are required.

Type	Maximum Number	Description
PDU power cords (rackmounted servers only)	Six required.	Factory-installed servers require six PDU power cords (three from each PDU) to operate.
Server power cords	<ul style="list-style-type: none"> <li>■ <b>SPARC M8-8 servers:</b> 6</li> <li>■ <b>SPARC M7-8 servers:</b> 6</li> <li>■ <b>SPARC M7-16 server:</b> 16</li> </ul>	<p>All server power cords must be connected from the rack PDUs to the AC inputs.</p> <p><b>Note</b> - For stand-alone SPARC M8-8 and SPARC M7-8 servers, connect the six server power cords to your rack or facility power sources.</p>
PCIe expansion slots	Maximum number of cables varies by configuration.	The number and type of required cables depends on the installed PCIe cards.

**Note** - To ensure the redundant operation of the power supplies on a stand-alone SPARC M8-8 or SPARC M7-8 server, connect the server power cords to alternate power sources. For example, connect server power cords from AC inputs labeled AC0, AC2, and AC4 to one power source and from AC inputs labeled AC1, AC3, AC5 to another power source. See [“Stand-Alone Server Power Cord Requirements” on page 73](#) for more information.

### Related Information

- [“Reviewing the Power Requirements” on page 57](#)
- [“Planning Network Addresses” on page 95](#)
- [“Prepare the Stand-Alone Server Power Cords” on page 172](#)

## Connecting Rack Cables

**Note** - The procedures in this topic are for SPARC M7-16 servers and factory-rackmounted SPARC M8-8 and SPARC M7-8 servers. If you are installing a stand-alone server, go to [“Connecting SP Cables” on page 188](#) to continue the installation.

Description	Link
Unpack and connect the six PDU power cords to the facility AC power grids.	<a href="#">“Connect the PDU Power Cords” on page 177</a>
Optionally connect serial and network cables to the PDU metering units to monitor the voltage and current of the connected equipment over the network.	<a href="#">“(Optional) Connect PDU Management Cables” on page 184</a>



Description	Link
For additional grounding, optionally attach a chassis earth ground cable to the rack.	<a href="#">“(Optional) Attach a Grounding Cable” on page 186</a>

## Related Information

- [“Reviewing the Power Requirements” on page 57](#)
- [“Routing and Securing Cables” on page 194](#)

## ▼ Connect the PDU Power Cords

**Note** - If you are installing a stand-alone SPARC M8-8 or SPARC M7-8 server into your own rack, see [“Prepare the Stand-Alone Server Power Cords” on page 172](#) for instructions on preparing the server power cords.



**Caution** - Your site must have a local power disconnect (for example, circuit breakers) between the power source and the power cords. Ensure that these circuit breakers are set to off before connecting the power cords.



**Caution** - Ensure that you install the server near your power grid's electrical outlets, and ensure that these outlets are easily accessible in case you must detach the power cords in an emergency.

The server receives power from six PDU power cords. The server is designed to receive power from two separate power grids, with three PDU power cords receiving power from one power grid and the remaining three PDU power cords receiving power from a second power grid. You must connect all six PDU power cords.

**Note** - To aid installing and servicing the PDU power cords, label both ends of the cords with the PDU letter and the cord number (PDUA-0, PDUA-1, PDUA-2, PDUB-0, and so on) or with a number specific to your facility. When facing the rear of the server, PDU-A is at the left side and PDU-B is at the right side.

**Note** - To maintain the ability to hot service the PDUs, route and secure all PDU power cords and data cables within the rack to enable the PDUs to be removed from the rear of the rack. Route and secure these cables so that the PDUs can be replaced without removing the side panels of the rack.

**1. Prepare to connect the PDU power cords:**

- Review the “[PDU Power Cord Specifications](#)” on page 61 and “[Facility Power Receptacles](#)” on page 65 to ensure that you received the correct power cords for your facility.
- Review the “[Understanding Power Cord-to-PDU Relationships](#)” on page 68 to understand which power cord supplies power to which power supply.
- Review the “[Facility Power Requirements](#)” on page 66.
- Review the “[Circuit Breaker Capacity Requirements](#)” on page 75 to ensure that the circuit breakers accommodate your facility power infrastructure.

**2. Confirm that all facility circuit breakers are set to the OFF position.**

Consult with your facilities manager or a qualified electrician for the specific instructions on how to use the circuit breakers at your data center.

**3. Open the rear door and attach an antistatic wrist strap.**

See “[Attach an Antistatic Wrist Strap](#)” on page 116.

**4. Determine the rack type.**

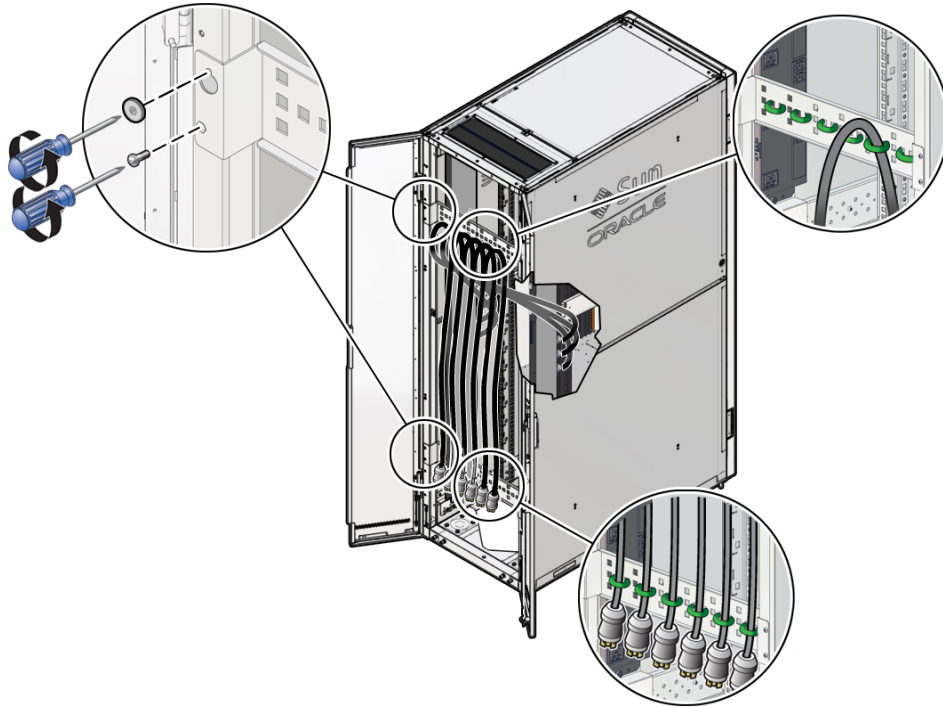
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**Note** - Each side of an Oracle Rack Cabinet 1242 has two panels. If you see a seam between the two side panels, your server shipped in an Oracle Rack Cabinet 1242.

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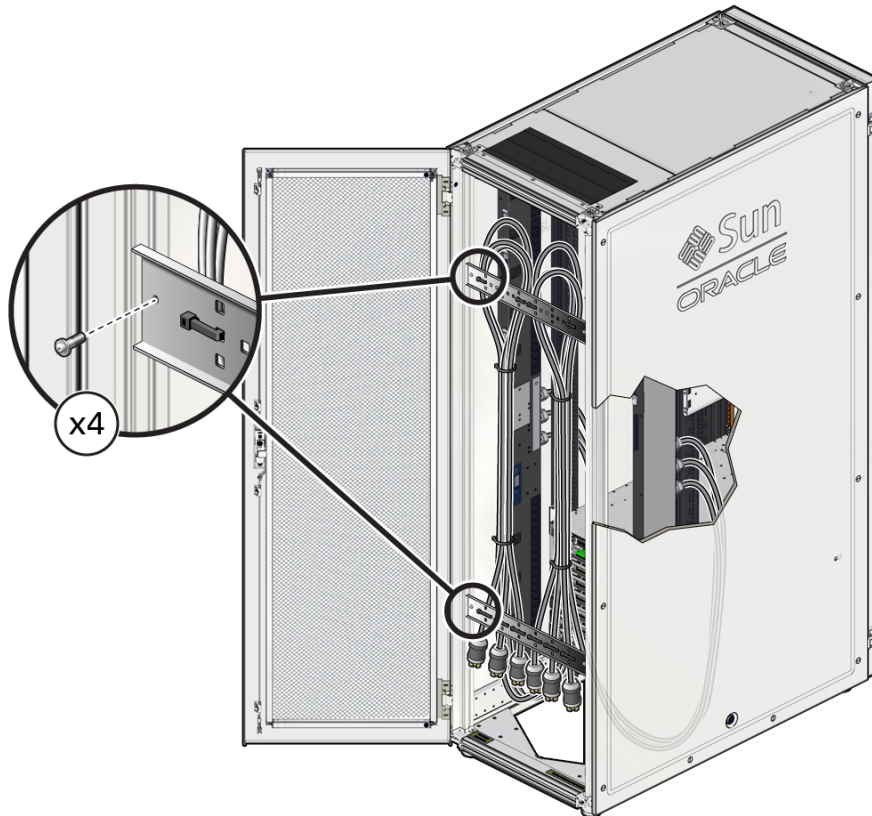
- **If the server shipped in a Sun Rack II 1242, skip to [Step 8](#).**
- **If the server shipped in an Oracle Rack Cabinet 1242, continue to the next step.**

5. On Oracle Rack Cabinet 1242, open the Velcro straps securing the PDU power cords to the shipping brackets.



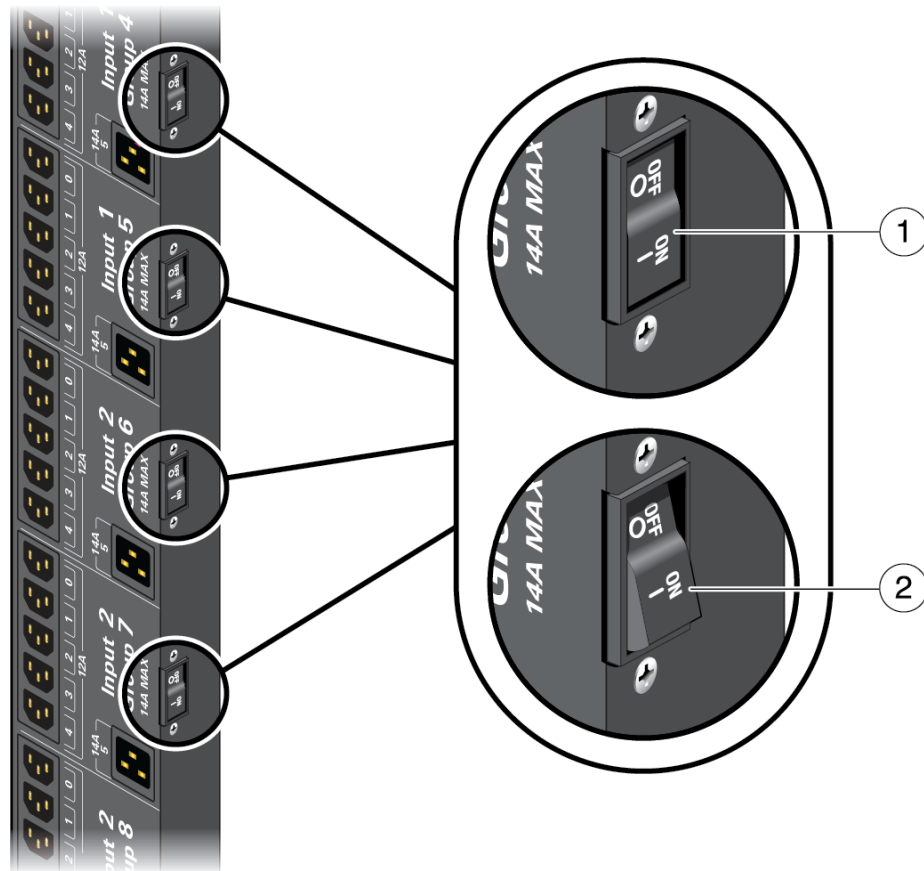
6. Use a T25 Torx wrench key to remove the screws securing the two shipping brackets to the rack.  
Remove the shipping brackets.
7. Skip to [Step 10](#).

8. On a Sun Rack II 1242, use a box cutter to cut the tie-wraps securing the PDU power cords to the shipping brackets.



9. Use a T25 Torx wrench key to remove the screws securing the two shipping brackets to the rack.  
Remove the shipping brackets.
10. Confirm that all PDU circuit breakers are switched off.  
Ensure that both PDUs are turned completely off.

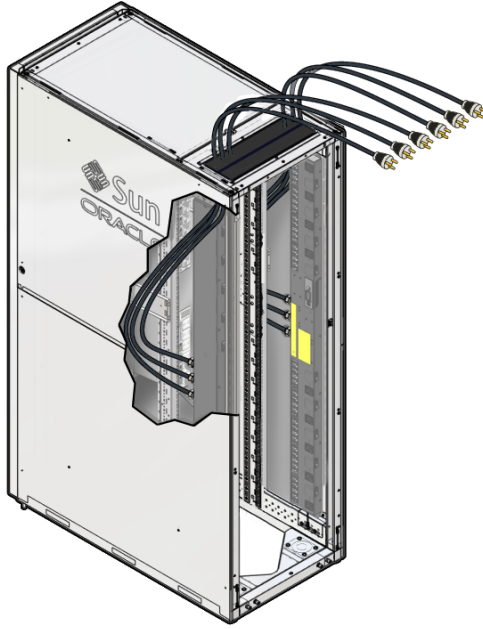
When facing the rear of the server, PDU-A is at the left side and PDU-B is at the right side. Each PDU has nine circuit breakers, one for each socket group.



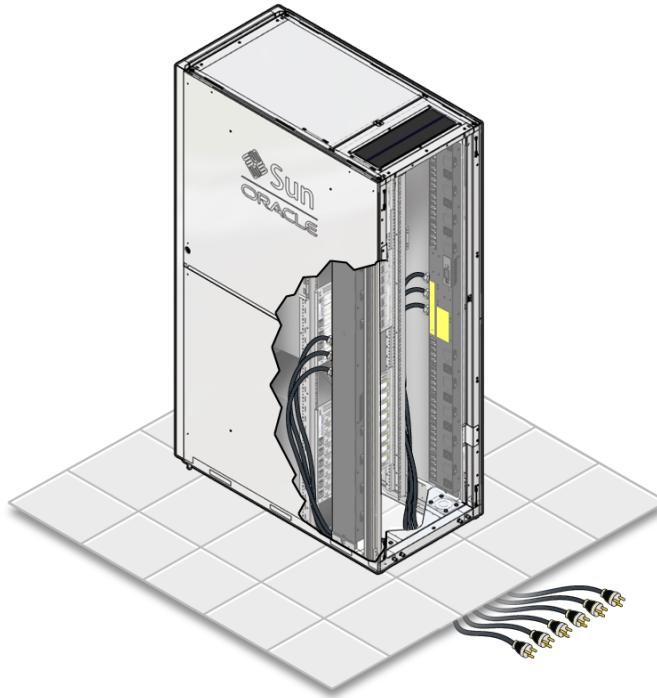
No.	Description
1	Circuit breaker switch lies flat in the On position.
2	Circuit breaker switch is tilted in the Off position.

11. Route the power cords to the facility receptacles either up through the top of the rack or below the flooring.

When routing the PDU power cord up, route the cord out through the top cable-routing window.



When routing the PDU power cord down, route the cord down through the floor opening.



**12. Connect the PDU power cord connectors into the facility AC receptacles.**

Consult with your facilities manager or a qualified electrician for the specific instructions on how to connect the power cords at your data center.

**13. Label both ends of the PDU power cords, the facility AC receptacles, and the facility circuit breakers with the PDU letter number and cord number (PDUA-0, PDUA-1, and so on) or with a unique facility number.**

By labeling these components, you will be able to return the power cords to the appropriate outlets after servicing the server.

---

**Note** - If you have labeled these components using a numbering sequence unique to your facility, ensure that you can still determine which PDU power cord is associated with each facility receptacle and circuit breaker.

---

### Related Information

- [“PDU Specifications” on page 60](#)
- [“PDU Power Cord Specifications” on page 61](#)
- [“PDU Power Cord Plugs” on page 63](#)
- [“Facility Power Receptacles” on page 65](#)
- [“Servicing PDUs” in \*SPARC M8 and SPARC M7 Servers Service Manual\*](#)

## ▼ (Optional) Connect PDU Management Cables

You can optionally connect serial and network cables to the PDU metering units so that you can monitor the PDU and the connected equipment over the network. For instructions on configuring the PDU metering unit's network connections and using its web interface, refer to the *enhanced PDU* sections of the *Sun Rack II Power Distribution Unit User's Guide*.

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**Note** - Connecting cables to the PDU metering units is optional. You can monitor the PDUs and equipment using the PDU metering unit's LCD screen.

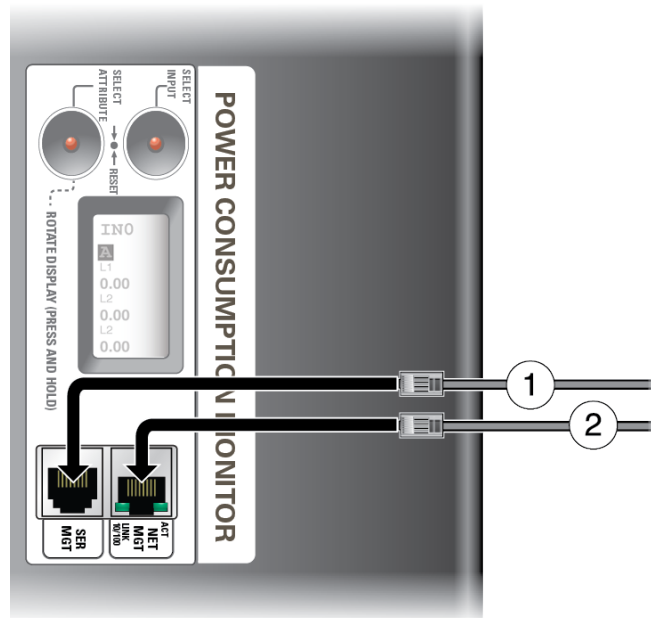
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### 1. Locate the metering unit on each PDU.

The metering units are labeled "Power Consumption Monitor" and are located at the center of each PDU.



2. **Connect Category 5 (or better) cables from the PDU metering unit is SER MGT RJ-45 port to a terminal device.**



No.	Description
1	Attach a serial cable to the SER MGT port.
2	Attach a network cable to the NET MGT port.

3. **Connect Category 6 (or better) cables from the PDU metering unit is NET MGT RJ-45 port to a network switch or hub.**

These 10/100 Mbps NET MGT ports will autonegotiate to the speed of your network. If available, connect this cable to an administration network to separate the metering unit network traffic from the application network.

### Related Information

- “(Optional) PDU Cables and Network Addresses” on page 101
- *Sun Rack II Power Distribution Unit User's Guide* at <http://www.oracle.com/goto/sunrackii/docs>

## ▼ (Optional) Attach a Grounding Cable

The PDUs achieve earth ground through their power cords. For additional grounding, optionally attach a chassis earth ground cable to the rack. The additional ground point enables electrical current leakage to dissipate more efficiently.



---

**Caution** - Do not install a ground cable until you confirm that there is proper facility AC receptacle grounding. The PDU power cords and the ground cable must reference a common earth ground.

---

---

**Note** - A grounding cable is not shipped with the server.

---

**1. Ensure that the installation site has properly grounded the power source in the data center.**

An earth ground is required. See [“Grounding Requirements” on page 75](#). Consult with your facilities manager or a qualified electrician for the specific instructions at your data center.

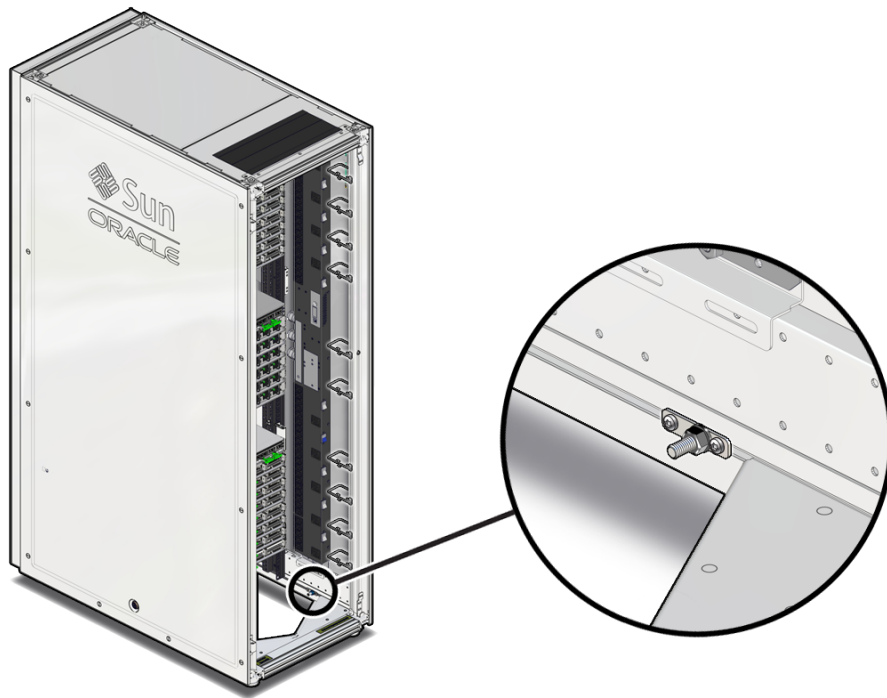
**2. Ensure that all grounding points, such as raised floors and power receptacles, reference the facilities ground.**

**3. Ensure that direct, metal-to-metal contact is made for this installation.**

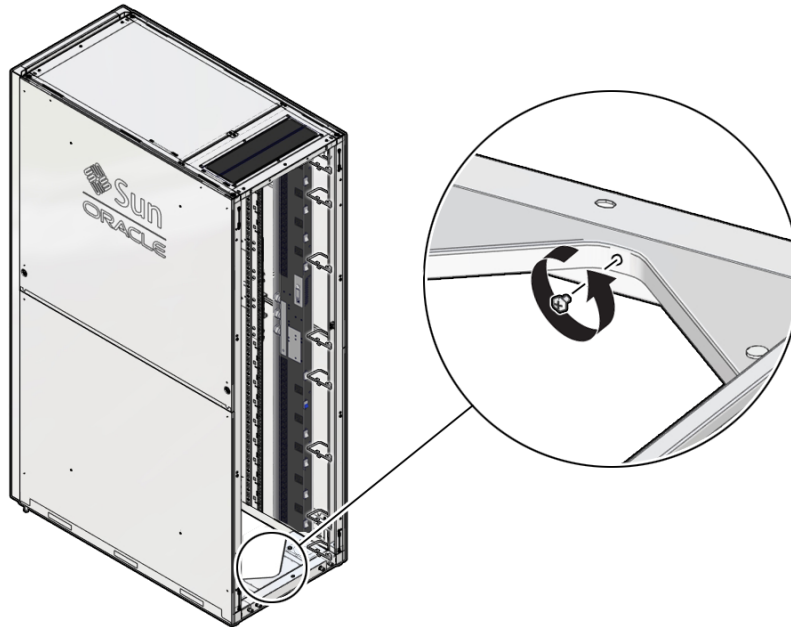
The ground cable attachment area might have a painted or coated surface that must be removed to ensure solid contact.

**4. Attach the ground cable to one of the attachment points on the rack frame.**

- On a Sun Rack II 1242 rack, locate the attachment points at the bottom rear of the rack frame.



- On an Oracle Rack Cabinet 1242, locate the attachment point at the bottom rear of the rack, inside the V-shaped support.



### Related Information

- [“Grounding Requirements” on page 75](#)
- [“Oracle Safety Information” on page 115](#)

## Connecting SP Cables

Connect the serial and network cables required for your server and server configuration.

Description	Link
When installing a SPARC M7-16 server, confirm that the CMIOU chassis SPPs are properly cabled to the SPs in the switch chassis.	<a href="#">“Confirm SPP Cable Connections (SPARC M7-16 Server)” on page 189</a>

---

Description	Link
Connect serial and network cables to the two SPs.	<a href="#">“Connect SP Cables” on page 190</a>

---

### Related Information

- [“SP Cable Requirements” on page 97](#)
- [“SP Network Addresses” on page 100](#)
- Oracle ILOM documentation at <http://www.oracle.com/goto/ilom/docs>

## ▼ Confirm SPP Cable Connections (SPARC M7-16 Server)

---

**Note** - If you are installing a SPARC M8-8 or SPARC M7-8 server, skip to [“Connect SP Cables” on page 190](#) to continue your installation.

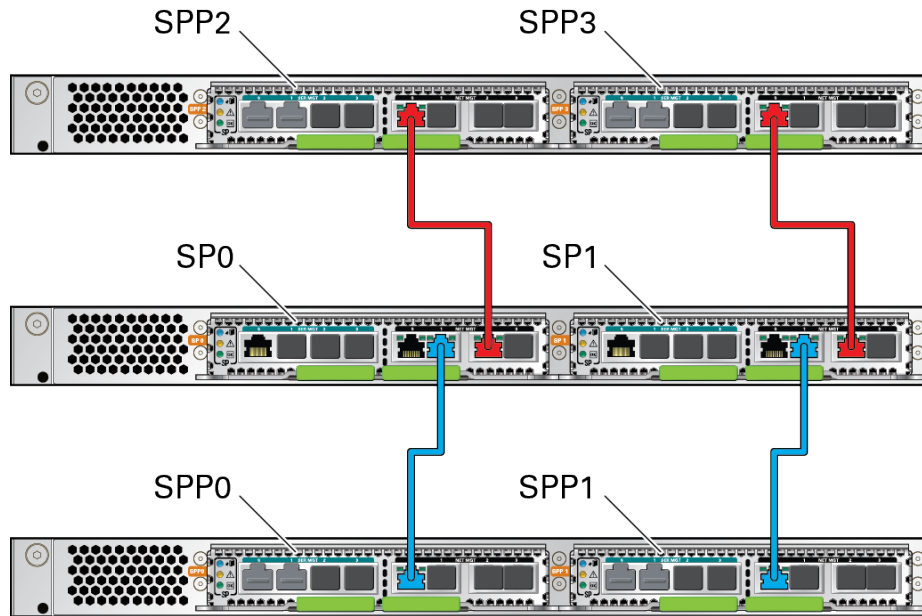
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A SPARC M7-16 server contains two CMIOU chassis and one switch chassis. Each CMIOU chassis contains two SPPs, and the switch chassis contains two SPs. The four SPPs are cabled to the two SPs at the factory. Before connecting the SP cables, confirm that the SPP to SP cables are connected and secured properly.

- 1. Locate the SPPs and the SPs on the SPARC M7-16 server.**

See [“SPARC M7-16 Server Rear Components \(Installation\)” on page 31](#).

2. Confirm that the SPPs are securely cabled to the SPs.



SPP Port	SP Port
SPP2 – NET MGT 0	SP0 – NET MGT 2
SPP3 – NET MGT 0	SP1 – NET MGT 2
SPP0 – NET MGT 0	SP0 – NET MGT 1
SPP1 – NET MGT 0	SP1 – NET MGT 1

**Related Information**

- [“SPARC M7-16 Server Rear Components \(Installation\)” on page 31](#)
- [“Understanding the Hardware Architecture” on page 32](#)

▼ **Connect SP Cables**

You must connect serial and network cables to both SPs.

**1. Locate the two SPs at the rear of the server.**

- On the SPARC M8-8 and SPARC M7-8 servers, the two SPs are located at the top of the server. See [“SPARC M8-8 and SPARC M7-8 Server Rear Components \(Installation\)”](#) on page 27.
- On a SPARC M7-16 server, the two SPs are located at the top of the switch chassis. See [“SPARC M7-16 Server Rear Components \(Installation\)”](#) on page 31.

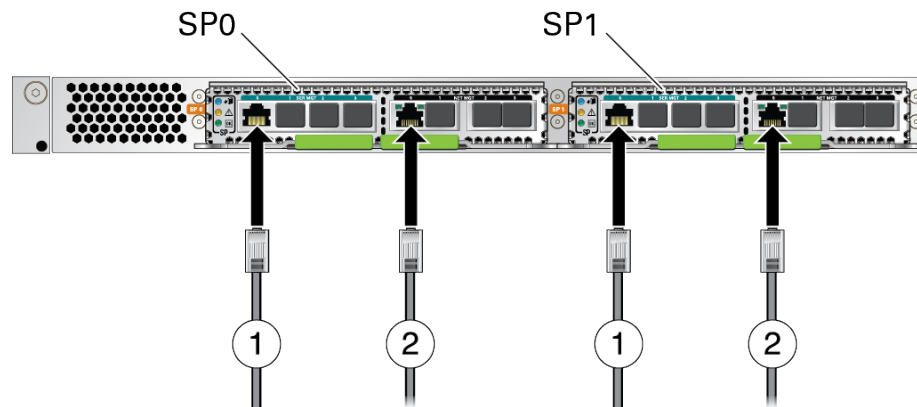
**2. Connect Category 5 (or better) cables from the SP0 and SP1 SER MGT 0 ports to separate terminal devices.**

Connecting each serial cable to different terminal devices provides redundancy in case one terminal device fails.

---

**Note** - Each SP has four SER MGT ports, labeled 0 to 3. Connect the serial cables to the SER MGT port 0 on each SP. Unused ports are blocked by port covers.

---



No.	Description
1	Attach serial cables to the SP SER MGT 0 ports.
2	Attach network cables to the SP NET MGT 0 ports.

**3. Connect Category 6 (or better) cables from the SP0 and SP1 NET MGT 0 RJ-45 ports to separate network switches or hubs.**

To achieve 1-GbE network speeds, use Category 6 (or better) cables and network devices that support 1000BASE-T networks. These 10/100/1000 Mbps NET MGT ports will autonegotiate to the speed of your network.

---

**Note** - Each SP has four NET MGT ports, labeled 0 to 3. Connect the network cables to the NET MGT port 0 on each SP. On SPARC M7-16 servers, some of these NET MGT ports will be cabled to SPPs in the server. Unused ports are blocked by port covers.

---

### Related Information

- [“SP Cable Requirements” on page 97](#)
- [“Maximum Cable Connections” on page 175](#)

## Connecting Network and Data Cables

Connect network cables and data cables to the server.

Description	Link
Confirm that each PDomain contains at least one network interface card.	<a href="#">“Required Network Interface Card Installation” on page 192</a>
Connect network and data cables to installed PCIe cards in the server.	<a href="#">“Connect Network and Data Cables” on page 193</a>

### Related Information

- [“Planning Network Addresses” on page 95](#)
- [“Routing and Securing Cables” on page 194](#)

## Required Network Interface Card Installation

Depending on your order, your server might contain factory-installed network interface cards. If these cards were not factory-installed, you must install your own cards so that the server can access the network. Each PDomain must contain at least one network interface card and this card, must be cabled to your network. See [“Network Interface Card Cables and Network Addresses” on page 102](#) for more information.

Follow these guidelines when installing the primary network interface card for each server PDomain.



Server	Primary Network Interface Card Locations
SPARC M8-8 server (1 PDomain)	First static PDomain – CMIOU1, PCIe slot 3
SPARC M8-8 server (2 PDomains)	First static PDomain – CMIOU1, PCIe slot 3
	Second static PDomain – CMIOU5, PCIe slot 3
SPARC M7-8 server (1 PDomain)	First static PDomain – CMIOU1, PCIe slot 3
SPARC M7-8 server (2 PDomains)	First static PDomain – CMIOU1, PCIe slot 3
	Second static PDomain – CMIOU5, PCIe slot 3
SPARC M7-16 server	CMIOU1, PCIe slot 3
	CMIOU5, PCIe slot 3
	CMIOU9, PCIe slot 3
	CMIOU13, PCIe slot 3

Refer to [“Servicing PCIe Cards”](#) in *SPARC M8 and SPARC M7 Servers Service Manual* for installation instructions.

### Related Information

- [“SPARC M8-8 and SPARC M7-8 Server Static PDomains”](#) on page 34
- [“SPARC M7-16 Server PDomains”](#) on page 36
- [“Network Interface Card Cables and Network Addresses”](#) on page 102

## ▼ Connect Network and Data Cables

In order for the server to access the network, you must install at least one network interface card into each server PDomain. Connect network cables from all network interface cards to the network, and connect data cables to any additional installed PCIe card. See [“Network Interface Card Cables and Network Addresses”](#) on page 102 for more information.

### 1. Locate the PCIe cards installed in the rear of the server.

If you need to install PCIe cards in the server, refer to the [“Servicing PCIe Cards”](#) in *SPARC M8 and SPARC M7 Servers Service Manual* for installation instructions.

### 2. Connect appropriate network cables from the installed network interface cards to the network.

Refer to the network interface card documentation for information about the required network cable type and length.

**3. If your server configuration includes optional PCIe cards, connect the appropriate I/O cables to their connectors.**

Refer to the PCIe card documentation for specific instructions.

**4. If applicable, connect cables to external expansion units, storage products, or any other peripheral devices.**

Refer to the external device documentation for the appropriate cabling instructions.

**Related Information**

- [“Network Interface Card Cables and Network Addresses” on page 102](#)
- [“Optional Component Installation” on page 133](#)
- [“Required Network Interface Card Installation” on page 192](#)
- [“Routing and Securing Cables” on page 194](#)

## Routing and Securing Cables

These topics describe how to secure and route cables out of rackmounted servers that have been factory-installed in Oracle racks. If you installed a stand-alone SPARC M8-8 or SPARC M7-8 server in your own rack, refer to your rack documentation for instructions on managing cables.

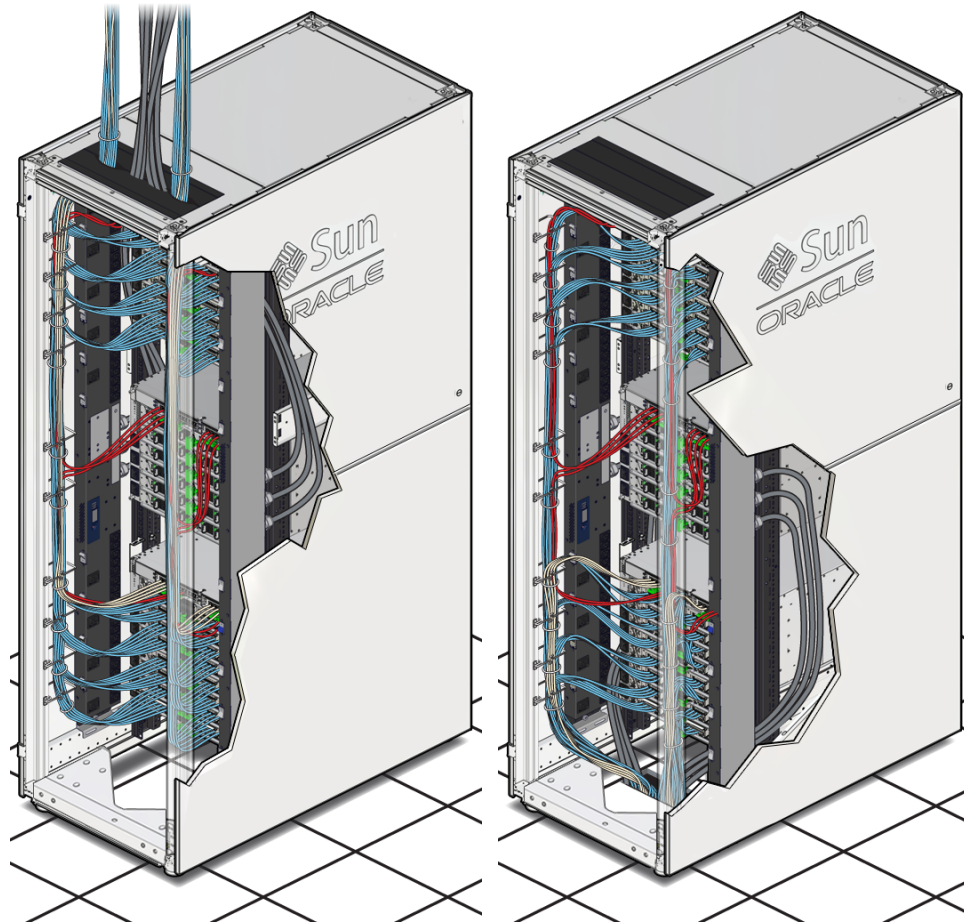
- [“Rear Cable Routing Options” on page 195](#)
- [“Cable Management Devices” on page 196](#)
- [“Secure Cables” on page 197](#)

**Related Information**

- [“Connecting Rack Cables” on page 176](#)
- [“Connecting SP Cables” on page 188](#)
- [“Connecting Network and Data Cables” on page 192](#)

## Rear Cable Routing Options

The data cables, SP cables, and power cords connected to the rear of the server can be routed up through the top of the server, down through a floor opening, or both. Consult with your facility manager to determine the best method to route the cables and power cords at your site.



### Related Information

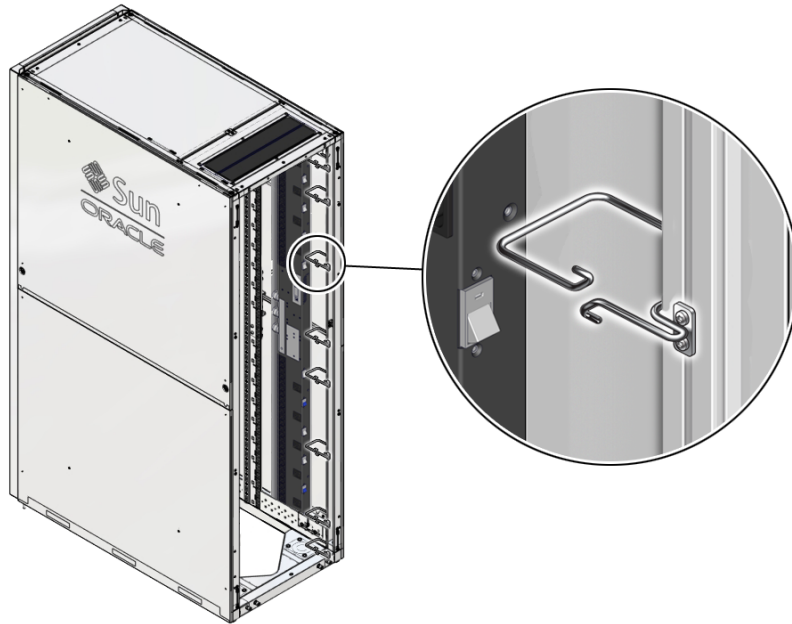
- [“Maximum Cable Connections” on page 175](#)

- *Sun Rack II User's Guide* at <http://www.oracle.com/goto/sunrackii/docs>

## Cable Management Devices

Depending on your server configuration and the number of installed PCIe cards, you will route multiple cables and power cords either up to overhead cable trays or down under the floor.

Rackmounted servers include hooks in the right and left cable channels that enable you to securely route the cables through the server.



### Related Information

- “Rear Cable Routing Options” on page 195
- “Secure Cables” on page 197

## ▼ Secure Cables

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**Note** - If you installed a stand-alone SPARC M8-8 or SPARC M7-8 server into your own rack, use the cable management devices included with the rack. Refer to the rack documentation for instructions.

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After attaching cables to the server, use the cable channel hooks to secure and support the cables up through the top or down through the bottom of the server.

**1. Confirm that you completed the following:**

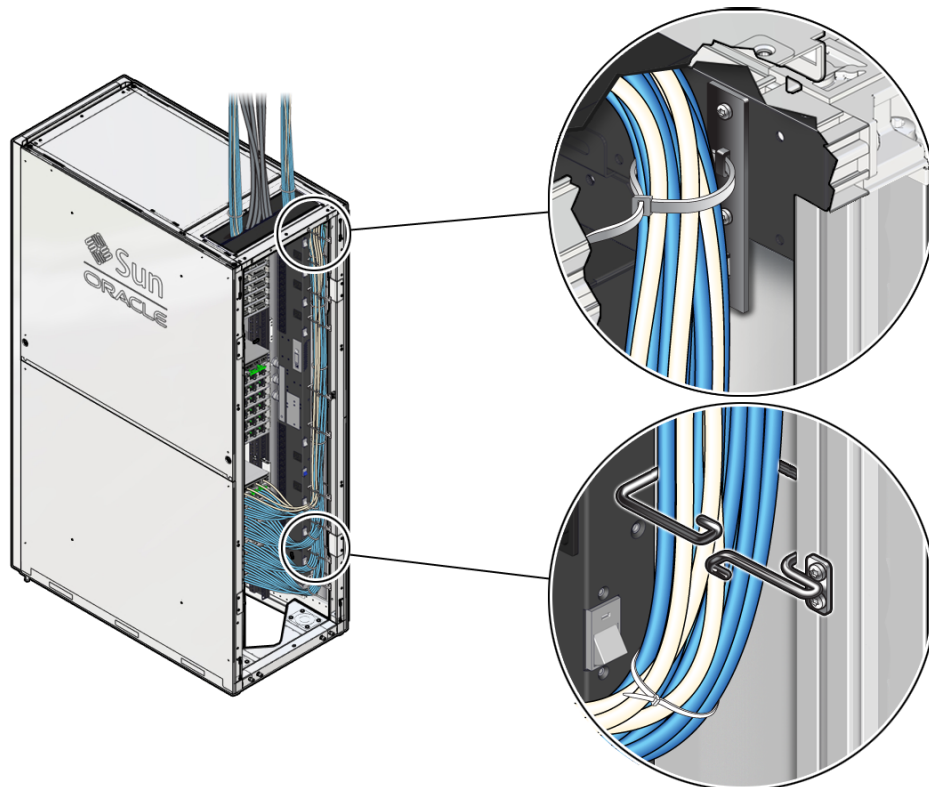
- **Review the server's cable management devices** – see [“Cable Management Devices” on page 196](#).
- **Stabilize the server to the installation site** – see [“Stabilizing the Server” on page 129](#).
- **If you will be routing the cables down through the bottom of the server, prepare a floor opening** – see [“Cable Routing Floor Opening Specifications \(Sun Rack II\)” on page 55](#)
- **Confirm that all SP, network, and data cables have been connected to the server** – see [“Connect SP Cables” on page 190](#) and [“Connect Network and Data Cables” on page 193](#).

**2. Determine how you will route the cables out of the server.**

You can route the cables up and out through the top cable window, or down through the bottom of the server. Begin to route the cables in that general direction. See [“Rear Cable Routing Options” on page 195](#) for two cable routing examples.

**3. Carefully insert the cables through openings of the cable channel hooks installed in the cable channel.**

Avoid pinching or damaging the cables when routing the cables through the cable channel hooks.



**4. Route the cables out of the server.**

Either route the cables through the top cable window or down through the bottom of the server.

**5. Use tie-wraps to secure the cables into bundles throughout the rack.**

Ensure that the cables are secured and routed away from the installed equipment and the PDU circuit breaker switches. The cables must not obstruct any PDU circuit breaker or serviceable components like the CMIOWs or the SP tray.

**6. Use tie-wraps to secure the cables to the tie-down brackets.**

When routing upward, ensure that the cables are secured and routed away from the equipment in the rack.

**7. Secure the cables outside of the server.**

Securing the cables outside of the server depends on the devices available at your data center. For example:

- If you are routing the cables up, secure the cables to a cable tray or device installed above the server.
- If you are routing the cables down, secure the cables to your facility cable management devices in the crawl space under the server.

---

**Note** - Contact your facilities manager for more information about routing and securing cables in your data center.

---

**Related Information**

- [“Rear Cable Routing Options” on page 195](#)
- [“Cable Management Devices” on page 196](#)
- [“Servicing CMIOUs” in \*SPARC M8 and SPARC M7 Servers Service Manual\*](#)
- [“Servicing SP Trays” in \*SPARC M8 and SPARC M7 Servers Service Manual\*](#)





# Powering On the Server for the First Time

---

Step	Description	Link
1.	Review the software requirements.	<a href="#">“Software Requirements” on page 202</a>
2.	Understand the redundant SPs and make serial connections to the SER MGT 0 ports on the two SPs.	<a href="#">“SP Redundancy Considerations” on page 202</a> <a href="#">“Connect Terminals or Emulators to the SP SER MGT Ports” on page 203</a> <a href="#">“RJ45 Crossover Pinouts” on page 204</a>
3.	Connect power to make the server go into standby power mode.	<a href="#">“Supply Power to the Server” on page 206</a> <a href="#">“Monitor LEDs” on page 209</a>
4.	Log in to the Active SP.	<a href="#">“Log In to the Active SP” on page 212</a>
5.	Assign the required network addresses for the Oracle ILOM software, and set the server altitude.	<a href="#">“Setting Oracle ILOM Network Addresses” on page 213</a> <a href="#">“Set the Server Altitude” on page 219</a>
6.	Start each PDomain.	<a href="#">“Power On a Server PDomain for the First Time” on page 220</a> <a href="#">“Configure the Oracle Flash Accelerator PCIe Card” on page 222</a> <a href="#">“Configure External Storage Devices” on page 225</a> <a href="#">“Oracle Solaris Installation Considerations” on page 227</a> <a href="#">“Oracle Solaris OS Configuration Parameters” on page 229</a>
7.	Download and enable Oracle Auto Service Request software.	<a href="#">“Oracle Auto Service Request Software” on page 230</a>
8.	Explore and test the software environment.	<a href="#">“Additional Software Configuration and Testing” on page 231</a>

## Related Information

- [“Rackmounted Server Installation Task Overview” on page 16](#)
- [“Stand-Alone Server Installation Task Overview” on page 18](#)

## Software Requirements

The following software must be installed on each server PDomain:

- Oracle Solaris OS
- Oracle VM Server for SPARC software
- Oracle VTS software

---

**Note** - If you ordered Oracle Flash Accelerator PCIe cards with your server, the preceding software will be preinstalled on one of these cards per PDomain. Otherwise, you must install this software on storage devices attached to each PDomain.

---

The two SPs are preinstalled with the Oracle ILOM firmware.

Refer to the [SPARC M8 and SPARC M7 Servers Product Notes](#) for the list of the latest supported versions of the software and firmware.

### Related Information

- [“Firmware and Software Environment” on page 38](#)
- [“Oracle Solaris Installation Considerations” on page 227](#)
- [Oracle ILOM documentation \(http://www.oracle.com/goto/ilom/docs\)](http://www.oracle.com/goto/ilom/docs)
- [Oracle Solaris OS documentation \(http://www.oracle.com/goto/solaris11/docs\)](http://www.oracle.com/goto/solaris11/docs)
- [Oracle VTS documentation \(http://www.oracle.com/goto/vts/docs\)](http://www.oracle.com/goto/vts/docs)
- [Oracle VM Server for SPARC documentation \(http://www.oracle.com/goto/vm-sparc/docs\)](http://www.oracle.com/goto/vm-sparc/docs)

## SP Redundancy Considerations

The server has a pair of redundant SPs labeled SP0 and SP1. One SP functions as the Active SP to manage the server, while the other acts as a Standby SP that assumes the Active SP role in the event of a failure.

When you power on the server, the boot process begins under the control of the Oracle ILOM system console. The system console displays status and error messages generated by firmware-based tests that run during the system startup.

---

**Note** - To see these status and error messages, connect a terminal or terminal emulator to the SER MGT 0 ports on the two SPs prior to applying power to the server.

---

After the system console finishes its low-level system diagnostics, the Active SP initializes and runs a suite of higher level diagnostics. When you access the SP using a terminal device connected to the Active SP SER MGT 0 port, you see the diagnostic and startup messages.

For a detailed discussion on configuring the system console, refer to the [SPARC M8 and SPARC M7 Servers Administration Guide](#) and the Oracle ILOM documentation.

### Related Information

- [“Connect Terminals or Emulators to the SP SER MGT Ports” on page 203](#)
- [SPARC M8 and SPARC M7 Servers Administration Guide](#)
- [Oracle ILOM documentation \(http://www.oracle.com/goto/ilom/docs\)](http://www.oracle.com/goto/ilom/docs)

## ▼ Connect Terminals or Emulators to the SP SER MGT Ports

Prior to powering on the server for the first time, make serial connections to the two SPs. After making these serial connections, you will be able to view the system status and error messages when you supply power to the server.

---

**Note** - If you supply power to the server without first connecting terminals to the SER MGT 0 ports, you will not see the system power-on messages.

---

1. **Confirm that you have connected cables to the SER MGT 0 ports on the two SPs located at the rear of the server.**

See [“Connect SP Cables” on page 190](#).

2. **Connect terminals or a terminal emulators (PC or workstation) to the two serial connections.**

Configure the terminal or terminal emulator with these settings:

Parameter	Setting
Connector	SER MGT

Parameter	Setting
Rate	9600 baud
Parity	None
Stop bits	1
Data bits	8

where port pin signals are as follows, from left to right:

Pin	Signal Description	Pin	Signal Description
1	Request to Send	5	Ground
2	Data Terminal Ready	6	Receive Data
3	Transmit Data	7	Data Set Ready
4	Ground	8	Clear to Send

**3. Press the Enter or Return key on the terminal devices connected to the SPs.**

This action establishes the serial connections to the SER MGT 0 ports on the server.

**4. Continue with the installation by supplying power to the server for the first time.**

See [“Supply Power to the Server”](#) on page 206.

**Related Information**

- [“SP Cable Requirements”](#) on page 97
- [“SP Network Addresses”](#) on page 100
- [“Connecting SP Cables”](#) on page 188
- [“SP Redundancy Considerations”](#) on page 202
- [“RJ45 Crossover Pinouts”](#) on page 204

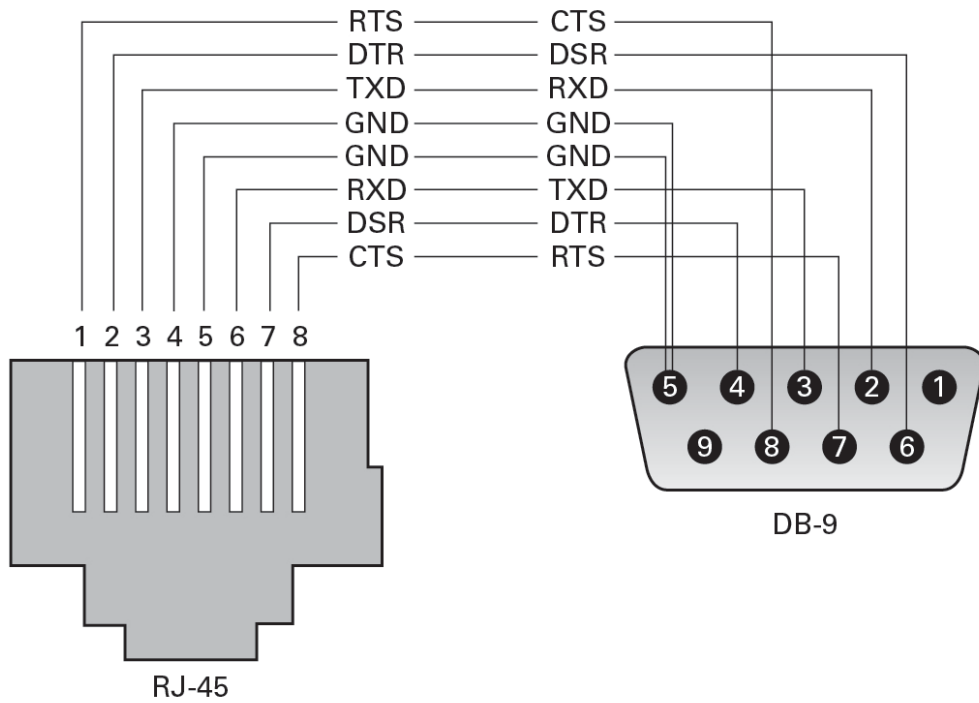
## RJ45 Crossover Pinouts

Use this table to identify the appropriate crossover cable or adapter.

Signal	Server Side	Terminal Side		Signal
	Console Port (DTE) RJ-45	Adapter DB-9 Pin	Adapter DB-25 Pin	
RTS	1	8	5	CTS

Signal	Server Side	Terminal Side		Signal
	Console Port (DTE) RJ-45	Adapter DB-9 Pin	Adapter DB-25 Pin	
DTR	2	6	6	DSR
TxD	3	2	3	RxD
Ground	4	5	7	Ground
Ground	5	5	7	Ground
RxD	6	3	2	TxD
DSR	7	4	20	DTR
CTS	8	7	4	RTS

This example shows a diagram of an RJ-45 to DB-9 conversion.



## ▼ Supply Power to the Server

---

**Note** - Do not switch on the PDU circuit breakers until you have connected the SPs to terminals or terminal emulators (PCs or workstations). If you power on the server without first connecting terminal devices to the SP SER MGT 0 ports, you will not see the system power-on messages.

---

1. **Determine your first step.**
  - **If your rackmounted server was factory-installed in an Oracle rack, continue with Step 2.**
  - **If you installed a stand-alone SPARC M8-8 or SPARC M7-8 server in your own rack, do the following:**
    - a. **Connect the power cords from your rack's AC power sources to the stand-alone server AC inputs.**

Consult with your facilities manager or a qualified electrician for the specific instructions for your data center.
    - b. **Skip to Step 10 to monitor the SP LEDs.**
2. **Confirm that you have properly installed and secured the server.**

See [“Installing a Rackmounted Server” on page 119.](#)
3. **Confirm that the PDU power cords are connected to the facility power outlets.**

See [“Connect the PDU Power Cords” on page 177.](#)
4. **Open the front and rear doors.**
5. **Visually inspect the server power cords to confirm that they are securely connected to the PDU outlets.**

See [“Understanding Power Cord-to-PDU Relationships” on page 68.](#)
6. **Confirm that you have properly connected and secured the SP, network, and data cables to the server.**

See [“Connecting Cables” on page 175.](#)
7. **If necessary, switch on the facility circuit breakers to supply power to the PDUs.**

Consult with your facilities manager or a qualified electrician for the specific instructions on how to use the circuit breakers at your data center.

**8. Power on all storage devices, expansion boxes, or peripherals connected to the server.**

Refer to the peripheral device documentation for instructions.

**9. At the rear of the server, switch on the PDU circuit breakers in the following sequence.**

Each PDU circuit breaker controls the power to one outlet group. The PDU outlet groups are labeled Group 0 to Group 8. When facing the rear of the server, the left PDU is labeled PDU A and the right PDU is labeled PDU B (see [“Understanding Power Cord-to-PDU Relationships” on page 68](#)). To review the PDU specifications, see [“PDU Specifications” on page 60](#).

■ **For SPARC M8-8 and SPARC M7-8 servers, switch on the circuit breakers as follows:**

- Left PDU - group 2, left PDU - group 1, left PDU - group 0
- Right PDU - group 6, right PDU - group 7, right PDU - group 8

---

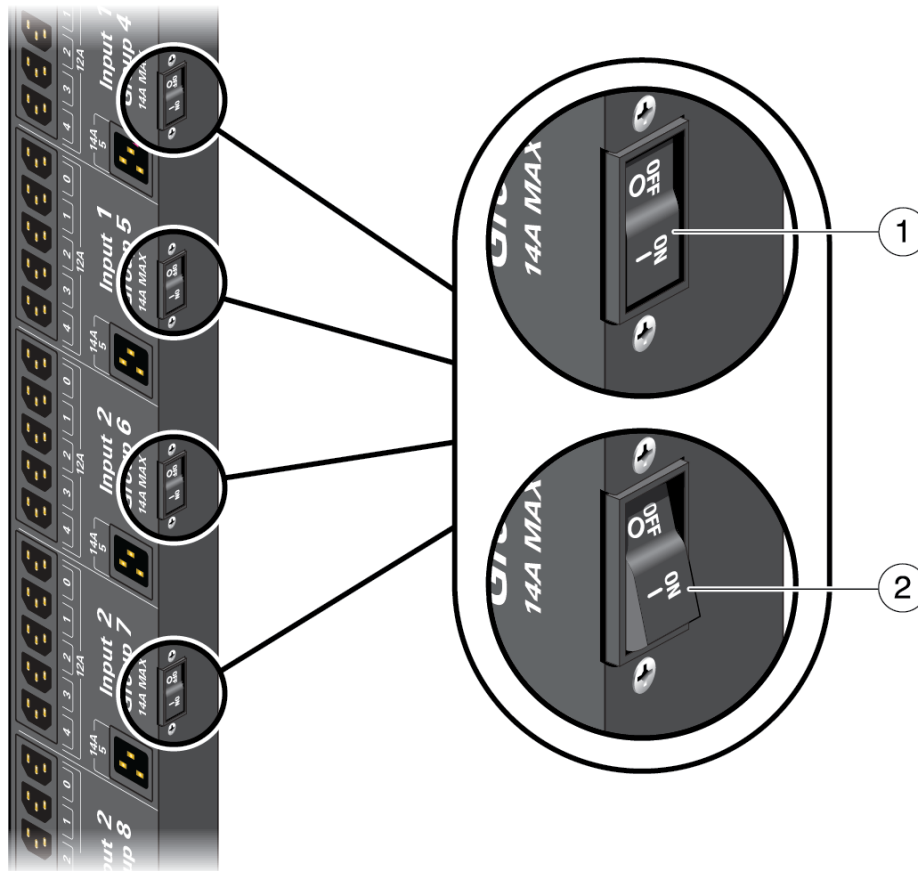
**Note** - If you have installed one or two additional stand-alone servers in the same rack, switch on the circuit breakers to the outlets cabled to those servers. First, provide power to the even numbered supplies. Next, provide power to the odd numbered supplies.

---

■ **For SPARC M7-16 servers, switch on the circuit breakers as follows:**

- Right PDU - group 4, right PDU - group 5, left PDU - group 5, left PDU - group 4
- Right PDU - group 0, right PDU - group 1, right PDU - group 2
- Left PDU - group 8, left PDU - group 7, left PDU - group 6
- Right PDU - group 6, right PDU - group 7, right PDU - group 8
- Left PDU - group 2, left PDU - group 1, left PDU - group 0

When switched on, a circuit breaker lies flush with the side of the PDU, as No. 1 shows in the following illustration. No. 2 shows the circuit breaker in the off position.



10. **Continue the installation by monitoring LEDs on the server.**  
See [“Monitor LEDs”](#) on page 209.

### Related Information

- [“Reviewing the Power Requirements”](#) on page 57
- [SPARC M8 and SPARC M7 Servers Service Manual](#)



- [“Removing Power From the Server or Domain” in SPARC M8 and SPARC M7 Servers Service Manual](#)

## ▼ Monitor LEDs

After supplying power to the server, monitor the power supply LEDs and other LEDs located on the front and rear indicator panels.

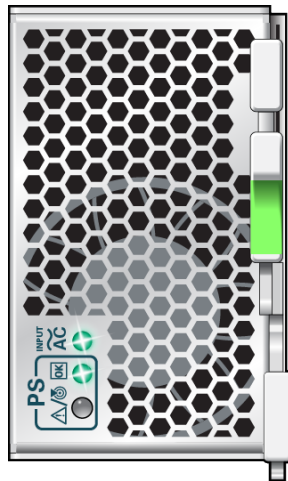
1. **At the front of the server, confirm that the green OK and AC present LEDs are lit on all power supplies.**

See [“Identifying Components \(Installation\)” on page 25](#) for the location of the power supplies.

---

**Note** - Do not proceed to the next step until you have confirmed that the power supplies are operating normally. Refer to [“Servicing Power Supplies” in SPARC M8 and SPARC M7 Servers Service Manual](#) if a power supply does not start properly.

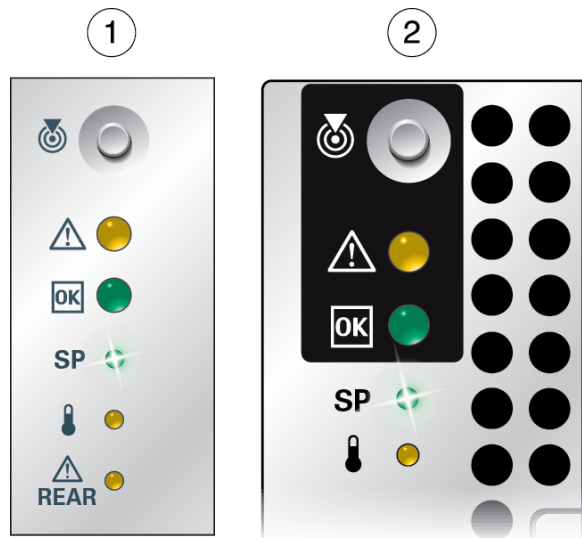
---



2. **Monitor the SP LEDs on the front or rear indicator panel.**

Soon after you connect AC power to the server, one of the two SPs will assume the role of the Active SP. The front and rear SP LEDs blink as the Active SP powers on, runs diagnostics, and initializes the Oracle ILOM firmware. See [“Identifying Components \(Installation\)” on page 25](#)

for the location of the indicator panels, and refer to “Interpreting LEDs” in *SPARC M8 and SPARC M7 Servers Service Manual* for a description of these indicators.



No.	Description
1	Front system status indicator panel
2	Rear system status indicator panel

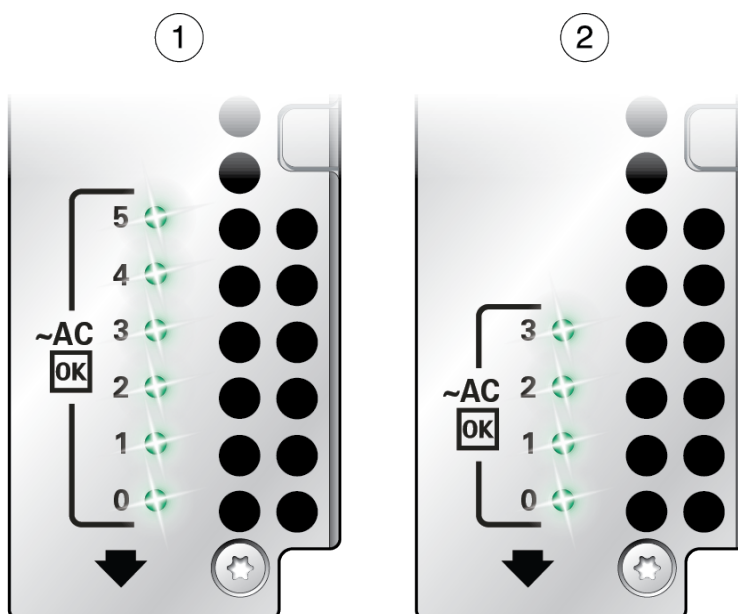
**3. At the rear of the server, confirm that the AC OK LEDs on the rear indicator panel are lit for each power supply.**

Once the Active SP initializes, the AC OK LEDs on the rear indicator panel light, indicating that AC power is being supplied to the labeled power supplies, and that the power supplies are under Oracle ILOM control.

---

**Note** - On SPARC M8-8 and SPARC M7-8 servers, there are six AC OK LEDs. On SPARC M7-16 servers, there are sixteen AC OK LEDs.

---



No.	Description
1	AC OK LEDs on the SPARC M8-8 and SPARC M7-8 servers and the SPARC M7-16 server CMIU chassis
2	AC OK LEDs on the SPARC M7-16 server switch chassis

**4. At the front or rear of the server, confirm that the SP LEDs on the indicator panels have stopped flashing and remain lit.**

When the Active SP is ready, the SP LEDs remain lit and the Oracle ILOM login prompt displays on the Active SP terminal device.

---

**Note** - Even though the Active SP is ready, the host has not yet powered on.

---

**5. Continue with the installation by logging in to the Active SP.**

See [“Log In to the Active SP” on page 212.](#)

## Related Information

- [“Reviewing the Power Requirements” on page 57](#)
- [SPARC M8 and SPARC M7 Servers Service Manual](#)

## ▼ Log In to the Active SP

After switching the facility circuit breakers on, one of the two SPs will assume the Active SP role, while the other SP assumes the Standby SP role. To continue with the installation, log in to the Oracle ILOM firmware through a serial connection to the Active SP.

- 1. Confirm that you have made serial connections to the two SPs and that the server is running on standby power.**

See:

- [“Connect Terminals or Emulators to the SP SER MGT Ports” on page 203](#)
- [“Supply Power to the Server” on page 206](#)

- 2. Determine which terminal or terminal emulator is connected to the Active SP.**

While both terminals display Oracle ILOM login prompts, the terminal connected to the Active SP displays system status messages while the Oracle ILOM firmware initializes. The following example system status messages are from a SPARC M7-16 server.

```
ORACLE-SPX-SPMX-XXXXXXXXXX login: *** PLEASE WAIT BEFORE LOGIN ***
waiting for proxies ...
2015-09-16 22:05:30: /SYS/SP0/SPM0 inventory is available
2015-09-16 22:05:33: /SYS/SP1/SPM0 inventory is available
2015-09-16 22:05:33: /SYS/SPP0/SPM0 inventory is available
2015-09-16 22:05:33: /SYS/SPP0/SPM1 inventory is available
2015-09-16 22:05:33: /SYS/SPP1/SPM0 inventory is available
2015-09-16 22:05:33: /SYS/SPP1/SPM1 inventory is available
2015-09-16 22:05:33: /SYS/SPP2/SPM0 inventory is available
2015-09-16 22:05:33: /SYS/SPP2/SPM1 inventory is available
2015-09-16 22:05:33: /SYS/SPP3/SPM0 inventory is available
2015-09-16 22:05:34: /SYS/SPP3/SPM1 inventory is available
done (took 63 secs)
*** YOU CAN LOGIN NOW ***
```

- 3. Log in to the Active SP as root user with the changeme password.**

The server includes a root user account that you use to log in to the Oracle ILOM software initially. This account has administrative privileges (read and write) for all Oracle ILOM features, functions, and commands.

---

**Note** - To prevent unauthorized access, change the root account password as soon as possible. Refer to the Oracle ILOM documentation for instructions.

---

```
ORACLE-SPX-SPMX-XXXXXXXXXX login: root
Password: changeme
```

#### 4. Confirm that you are connected to the Active SP.

```
-> show /SP/redundancy status
status = Active
```

- If the command displays `status = Active`, you are logged in to the Active SP.
- If the command displays `status = Standby`, you are logged in to the Standby SP.  
Type `exit` to log out of the Standby SP, and then log in to the Active SP using the other terminal or terminal emulator.
- If the command displays `status = Standalone`, you are logged in to the Active SP, but the Standby SP has failed to respond or has failed to join the network.  
Refer to “[Servicing SPs](#)” in *SPARC M8 and SPARC M7 Servers Service Manual* for instructions on replacing the failed SP.

#### 5. Continue the installation by assigning IP addresses to the SP components.

See “[Setting Oracle ILOM Network Addresses](#)” on page 213.

#### Related Information

- “[Accessing the Server](#)” in *SPARC M8 and SPARC M7 Servers Administration Guide*
- [Oracle ILOM documentation \(http://www.oracle.com/goto/ilom/docs\)](http://www.oracle.com/goto/ilom/docs)

## Setting Oracle ILOM Network Addresses

In order to manage the server using the Oracle ILOM firmware over the network, assign network addresses to the two SPs and the SP components. Depending on your network configuring, assign IPv4 or IPv6 network addresses.

- “[Required Oracle ILOM Network Addresses](#)” on page 214
- “[Set Oracle ILOM Network Addresses \(IPv4\)](#)” on page 215
- “[Set Oracle ILOM Network Addresses \(IPv6\)](#)” on page 217

## Related Information

- [“Planning SP Cables and Network Addresses” on page 96](#)
- [Oracle ILOM documentation \(http://www.oracle.com/goto/ilom/docs\)](http://www.oracle.com/goto/ilom/docs)

## Required Oracle ILOM Network Addresses

The SPs do not support DHCP. Assign static network addresses to SP0, SP1, and Active\_SP so that you can access the Oracle ILOM firmware over a network connection, either using the web interface or the command line interface.

---

**Note** - Assign static network addresses to the PDomain SPM hosts (HOSTx) if you require the PDomains to support the rKVMS functionality. These addresses are not required to access the SPs over the network.

---

SP Component	Description
SP0	The NET MGT 0 port on SP0.
SP1	The NET MGT 0 port on SP1.
Active_SP	The IP address for the Active SP. If the Active SP fails, the Standby SP will be assigned this address.
HOST0	The IP address for the PDomain0-SPM host.
HOST1	The IP address for the PDomain1-SPM host (if your server configuration includes two or more PDomains).
HOST2	The IP address for the PDomain2-SPM host (if your SPARC M7-16 server configuration includes three or more PDomains).
HOST3	The IP address for the PDomain3-SPM host (if your SPARC M7-16 server configuration includes four PDomains).

## Related Information

- [“Planning SP Cables and Network Addresses” on page 96](#)
- [“Set Oracle ILOM Network Addresses \(IPv4\)” on page 215](#)
- [“Set Oracle ILOM Network Addresses \(IPv6\)” on page 217](#)
- [Oracle ILOM documentation \(http://www.oracle.com/goto/ilom/docs\)](http://www.oracle.com/goto/ilom/docs)

## ▼ Set Oracle ILOM Network Addresses (IPv4)

Assign static network addresses to the following components prior to powering on the server for the first time.

---

**Note** - This task documents how to assign IPv4 network addresses to the SP components. To assign IPv6 network addresses, see [“Set Oracle ILOM Network Addresses \(IPv6\)” on page 217](#).

---

### 1. Confirm that you are logged in to the Active SP.

See [“Log In to the Active SP” on page 212](#).

### 2. Set the gateway IP address for all SP addresses.

```
-> set /SP/network pendingipgateway=xxx.xxx.xxx.xxx
Set "pendingipgateway" to "xxx.xxx.xxx.xxx"
```

### 3. Set the netmask IP address for all SP addresses.

```
-> set /SP/network pendingipnetmask=255.255.255.0
Set "pendingipnetmask" to "255.255.255.0"
```

This example uses 255.255.255.0 to set the netmask. Your network environment subnet might require a different netmask. Use a netmask number most appropriate to your environment.

### 4. Assign the required IP addresses for the SP components.

#### ■ SP0:

```
-> set /SP/network/SP0/ pendingipaddress=xxx.xxx.xxx.xxx
Set "pendingipaddress" to "xxx.xxx.xxx.xxx"
```

#### ■ SP1:

```
-> set /SP/network/SP1/ pendingipaddress=xxx.xxx.xxx.xxx
Set "pendingipaddress" to "xxx.xxx.xxx.xxx"
```

#### ■ Active SP:

```
-> set /SP/network/ACTIVE_SP/ pendingipaddress=xxx.xxx.xxx.xxx
Set "pendingipaddress" to "xxx.xxx.xxx.xxx"
```

#### ■ Assign one address for each PDomain SPM:

```
-> set /SP/network/HOSTx/ pendingipaddress=xxx.xxx.xxx.xxx
Set "pendingipaddress" to "xxx.xxx.xxx.xxx"
```

---

**Note** - Assign network addresses to the PDomain SPM hosts (HOSTx) if you require the PDomains to support rKVMS functionality. These addresses are not required to access the SPs over the network.

---

**5. Verify that you have set the network addresses correctly.**

For brevity, this SPARC M7-16 server example shows only the output for the IP address properties.

```
-> show /SP/network -level 2 -output table pendingipaddress pendingipnetmask
pendingipgateway
Target | Property | Value
-----+-----+-----
/SP/network | pendingipgateway | xxx.xxx.xxx.xxx
/SP/network | pendingipnetmask | xxx.xxx.xxx.xxx
/SP/network/ACTIVE_SP | pendingipaddress | xxx.xxx.xxx.xxx
/SP/network/HOST0 | pendingipaddress | xxx.xxx.xxx.xxx
/SP/network/HOST1 | pendingipaddress | xxx.xxx.xxx.xxx
/SP/network/HOST2 | pendingipaddress | xxx.xxx.xxx.xxx
/SP/network/HOST3 | pendingipaddress | xxx.xxx.xxx.xxx
/SP/network/SP0 | pendingipaddress | xxx.xxx.xxx.xxx
/SP/network/SP1 | pendingipaddress | xxx.xxx.xxx.xxx
. . .
```

**6. Type the following command to make the new addresses take affect.**

```
-> set /SP/network commitpending=true
```

**7. Display the IP addresses to confirm that they have been updated.**

```
-> show /SP/network -level 2 -output table ipaddress ipnetmask ipgateway
```

**8. Continue the installation by specifying the altitude of the server.**

See [“Set the Server Altitude” on page 219](#).

### Related Information

- [“Required Oracle ILOM Network Addresses” on page 214](#)
- [“Planning SP Cables and Network Addresses” on page 96](#)
- [Oracle ILOM documentation \(http://www.oracle.com/goto/ilom/docs\)](http://www.oracle.com/goto/ilom/docs)



## ▼ Set Oracle ILOM Network Addresses (IPv6)

Assign static network addresses to the following components prior to powering on the server for the first time.

---

**Note** - This task documents how to assign IPv6 network addresses to the SP components. To assign IPv4 network addresses, see [“Set Oracle ILOM Network Addresses \(IPv4\)” on page 215](#).

---



---

**Note** - Use the Oracle ILOM `help` command to display additional information about these settings. For example, type `help /SP/network/SP0/ipv6` displays information about the network settings of SP0.

---

### 1. Confirm that you are logged in to the Active SP.

See [“Log In to the Active SP” on page 212](#).

### 2. Disable the Oracle ILOM `autoconfig` property.

Disable the IPv6 `autoconfig` property so that Oracle ILOM will not determine its IPv6 dynamic address prefixes from an IPv6 router. Refer to the Oracle ILOM documentation for information about this property.

```
-> set /SP/network/ipv6 autoconfig=disabled
```

### 3. Set the IP address and gateway IP for the Active SP.

```
-> set /SP/network/ACTIVE_SP/ipv6 pending_static_ipaddress=IPv6_address/subnet_mask_value
```

Replace *IPv6\_address/subnet\_mask\_value* with the IPv6 address and decimal subnet mask value required for your network (for example, 2606:b400:418:2773:210:e0ff:fe36:e011/64).

### 4. Set the IP address for the NET MGT 0 port on SP0.

Enable the IPv6 `state` property when setting the SP0 and SP1 IPv6 addresses. Enabling the `state` property permits Oracle ILOM to operate in an IPv6 network environment or in a dual-stack IPv4 and IPv6 network environment. Refer to the Oracle ILOM documentation for more information about this property.

```
-> set /SP/network/SP0/ipv6 state=enabled
    pending_static_ipaddress=IPv6_address/subnet_mask_value
```

Replace *IPv6\_address/subnet\_mask\_value* with the IPv6 address and decimal subnet mask value required for your network (for example, 2606:b400:418:2773:210:e0ff:fe36:e012/64).

**5. Set the IP address for the NET MGT 0 port on SP1.**

```
-> set /SP/network/SP1/ipv6 state=enabled
    pending_static_ipaddress=IPv6_address/subnet_mask_value
```

Replace *IPv6\_address/subnet\_mask\_value* with the IPv6 address and decimal subnet mask value required for your network (for example, 2606:b400:418:2773:210:e0ff:fe36:e013/64).

**6. Assign an IP address for each PDomain SPM.**

---

**Note** - Assign network addresses to the PDomain SPM hosts (HOSTx) if you require the PDomains to support rKVMS functionality. These addresses are not required to access the SPs over the network.

---

```
-> set /SP/network/HOSTx/ipv6 state=enabled
    pending_static_ipaddress=IPv6_address/subnet_mask_value
```

Replace *x* with the PDomain number (for example, use HOST0 for PDomain 0). Replace *IPv6\_address/subnet\_mask\_value* with the IPv6 address and decimal subnet mask value required for your network (for example, 2606:b400:418:2773:210:e0ff:fe36:e014/64).

**7. Verify that you have set the network addresses correctly.**

Use the show command to display the pending IP addresses of each SP component.

■ **SPARC M8-8 and SPARC M7-8 servers (One PDomain):**

```
-> show /SP/network/SP0/ipv6
-> show /SP/network/SP1/ipv6
-> show /SP/network/Active_SP/ipv6
-> show /SP/network/HOST0/ipv6
```

■ **SPARC M8-8 and SPARC M7-8 servers (Two PDomains):**

```
-> show /SP/network/SP0/ipv6
-> show /SP/network/SP1/ipv6
-> show /SP/network/Active_SP/ipv6
-> show /SP/network/HOST0/ipv6
-> show /SP/network/HOST1/ipv6
```

■ **SPARC M7-16 servers:**

Display the pending IP addresses of the SP components required for your server configuration. For example, if your server contains two PDomains, show only the pending addresses for PDomain SPM (HOST0) and PDomain SPM (HOST1).

```
-> show /SP/network/SP0/ipv6
```

```

-> show /SP/network/SP1/ipv6
-> show /SP/network/Active_SP/ipv6
-> show /SP/network/HOST0/ipv6
-> show /SP/network/HOST1/ipv6
-> show /SP/network/HOST2/ipv6
-> show /SP/network/HOST3/ipv6

```

8. **Type the following command to make the new addresses take affect.**

```
-> set /SP/network commitpending=true
```

9. **Continue the installation by specifying the altitude of the server.**

See [“Set the Server Altitude” on page 219](#).

### Related Information

- [“Required Oracle ILOM Network Addresses” on page 214](#)
- [“Planning SP Cables and Network Addresses” on page 96](#)
- [Oracle ILOM documentation \(http://www.oracle.com/goto/ilom/docs\)](http://www.oracle.com/goto/ilom/docs)

## ▼ Set the Server Altitude

You must set the server altitude so that the server can adjust its fan speeds and monitor the surrounding environmental conditions required for its elevation.

Set the server altitude using the SP `system_altitude` property.

Setting the `system_altitude` property causes the server to adjust the temperature thresholds so it can more accurately detect any abnormality in the air intake temperature. However, even if you do not set the system altitude, the server still detects and responds to any abnormality in the air temperature, such as the temperature of the processors.

1. **Confirm that you are logged in to the Active SP.**  
See [“Log In to the Active SP” on page 212](#).
2. **If you see the OpenBoot (ok) prompt, type the #. key sequence to display the Oracle ILOM (->) prompt.**

```
ok #.
->
```

3. **Type the following command to set the server's altitude.**

```
-> set /SP system_altitude=altitude
```

Replace *altitude* with the altitude of the data center in meters. The possible values are 0 to 3000 meters. The default value is 200m.

**4. Continue the installation by powering on the server.**

See “Power On a Server PDomain for the First Time” on page 220.

**Related Information**

- “Environmental Requirements” on page 76
- Oracle ILOM documentation (<http://www.oracle.com/goto/ilom/docs>)

## ▼ Power On a Server PDomain for the First Time

After configuring the network addresses for the SP components, power on each PDomain for the first time at the Oracle ILOM prompt. This task requires two connections to the Active SP, one using a serial connection and another using a network connection.

---

**Note** - Perform this task for each PDomain on your server. A SPARC M8-8 or SPARC M7-8 server can contain one or two static PDomains, and a SPARC M7-16 server can contain one to four PDomains.

---

---

**Note** - Oracle Solaris Verified Boot is an antimalware and integrity feature that checks the cryptographic signatures of the firmware, boot system, kernel, and kernel modules. For information about enabling the verified boot feature, refer to “Using Verified Boot” in *Securing Systems and Attached Devices in Oracle Solaris 11.3*. The *Securing Systems and Attached Devices in Oracle Solaris* manual is included with the [Oracle Solaris documentation \(http://www.oracle.com/goto/solaris11/docs\)](http://www.oracle.com/goto/solaris11/docs).

---

**1. Confirm that you are logged in to the Active SP through a serial connection.**

See “Log In to the Active SP” on page 212.

**2. Log in to the Active SP as a root user through a network connection.**

```
$ ssh root@Active-SP-IP-address
```

Replace *Active-SP-IP-address* with the Active SP IP address you set in “Setting Oracle ILOM Network Addresses” on page 213. When prompted, type the default changeme root password to log in.

Refer to the *Oracle ILOM Administrator's Guide for Configuration and Maintenance*, configuring local user accounts, for more information.

**3. Using the network connection, connect to the PDomain console to view the messages.**

```
-> start /Servers/PDomains/PDomain_x/HOST/console
Are you sure you want to start /Servers/PDomains/PDomain_x/HOST/console (y/n) y
```

Replace *x* with the PDomain number. For example, use PDomain\_0 for PDomain 0.

**4. Using the serial connection, power on the PDomain.**

```
-> start /Servers/PDomains/PDomain_x/HOST
Are you sure you want to start /Servers/PDomains/PDomain_x/HOST (y/n) y
```

Replace *x* with the PDomain number.

The PDomain initialization can take time to complete.

**5. (Optional) To display the status of the initialization, type the following command.**

```
-> show /Servers/PDomains/PDomain_x/HOST status
```

Replace *x* with the PDomain number.

You can type this command at regular intervals (for example, every 10 minutes) to check the status of the initialization.

**6. Wait until the console displays the OpenBoot ok prompt after the PDomain has completed the POST diagnostics.**

Once the POST diagnostics have completed, the console displays the OpenBoot banner and a OpenBoot boot-device variable message. You must set this variable before continuing with the installation. The following example is from a SPARC M7-8 server.

```
SPARC M7-8, No Keyboard Copyright (c) 1998, 2015, Oracle and/or its affiliates. All
rights reserved. OpenBoot 4.37.3.a, 1.8632 TB memory available, Serial #109999304.
Ethernet address 0:10:e0:99:99:64, Host ID: 8699998.
```

```
Evaluating: No viable default device found in boot-device variable.
ok
```

**7. Determine if your PDomain contains a factory-installed Oracle Flash Accelerator PCIe card:**

- **If your PDomain contains an Oracle Flash Accelerator PCIe card, the Oracle Solaris OS has been preinstalled on the card, so you can configure the PDomain to boot this card automatically.**

Continue to [“Configure the Oracle Flash Accelerator PCIe Card”](#) on page 222.

- **If your PDomain does not contain this card, you must configure a bootable storage device for the PDomain.**

Continue to [“Configure External Storage Devices”](#) on page 225.

### Related Information

- [SPARC M8 and SPARC M7 Servers Product Notes](#)
- [“Oracle Flash Accelerator PCIe Cards”](#) on page 106
- [“Controlling the System, Hosts, and SPs”](#) in *SPARC M8 and SPARC M7 Servers Administration Guide*
- [Oracle ILOM documentation \(http://www.oracle.com/goto/ilom/docs\)](http://www.oracle.com/goto/ilom/docs)
- [Oracle Solaris OS documentation \(http://www.oracle.com/goto/solaris11/docs\)](http://www.oracle.com/goto/solaris11/docs)
- [“Using Verified Boot”](#) in *Securing Systems and Attached Devices in Oracle Solaris 11.3*

## ▼ Configure the Oracle Flash Accelerator PCIe Card

An Oracle Flash Accelerator PCIe card contains NVMe solid-state storage. If you ordered these cards with your server, one card per PDomain will be preinstalled with the Oracle Solaris OS and the other required software. You must set the factory-installed card as the PDomain boot device and boot the PDomain before you can configure the preinstalled Oracle Solaris OS.

---

**Note** - If you did not order an Oracle Flash Accelerator PCIe card with the server, configure a bootable storage device for each server PDomain. For guidance on configuring external storage devices and installing the Solaris OS on these devices, see [“Configure External Storage Devices”](#) on page 225.

---

1. **Confirm that the PDomain contains an Oracle Flash Accelerator PCIe card and a network interface card cabled to the network.**

Visually inspect the server and note the PCIe slots where the cards are installed in the PDomain.

In this example, the PDomain has two Oracle Flash Accelerator F160 PCIe cards installed; one in CMIOU0, PCIe slot 3, and the other in CMIOU4, PCIe Slot 3. The PDomain also contains a network interface card installed in CMIOU1, PCIe slot 3.

**2. At the OpenBoot ok prompt, list the Oracle Flash Accelerator PCIe cards installed in the PDomain.**

Use the following examples to determine the path to the Oracle Flash Accelerator PCIe card.

---

**Note** - See [“Oracle Flash Accelerator PCIe Cards” on page 106](#) for the default locations and device paths for factory-installed Oracle Flash Accelerator PCIe cards.

---

■ **Example with a SPARC M7-8 server with two Oracle Flash Accelerator F320 PCIe cards.**

In this SPARC M7-8 server with one PDomain example, there are two factory-installed Oracle Flash Accelerator F320 PCIe cards. In this example, the lowest numbered card contains the preinstalled Oracle Solaris OS software. The lowest-numbered card is installed in CMIOU0, PCIe slot 3 and has the `/pci@301/pci@1/nvme@0` device path.

```
ok probe-nvme-all
/pci@315/pci@1/nvme@0
    NVME Controller VID: 8086 SSVID: 108e SN:CVMD512100AA1P6N MN: INTEL
    SSDPEDME032T4S FR: 8DV1RA13 NN: 1
    Namespace ID:1 Size: 3.200 TB
/pci@301/pci@1/nvme@0
    NVME Controller VID: 8086 SSVID: 108e SN:CVMD512100F81P6N MN: INTEL
    SSDPEDME032T4S FR: 8DV1RA13 NN: 1
    Namespace ID:1 Size: 3.200 TB
```

■ **Example with a SPARC M8-8 server with one Oracle Flash Accelerator F640 PCIe card.**

In this SPARC M8-8 server with one PDomain example, there is one factory-installed Oracle Flash Accelerator F640 PCIe card installed in CMIOU0, PCIe slot 3. Each Oracle Flash Accelerator F640 PCIe card contains two PCIe controllers, so the `probe-nvme-all` output will show two device paths (one for each controller). Refer to the Oracle Flash Accelerator F640 PCIe card [documentation](#) for more information.

```
ok probe-nvme-all
/pci@301/pci@1/pci@0/pci@2/nvme@0
    NVME Controller VID: 8086 SSVID: 108e SN: PHLE713400SU6P4B MN:
    7335943:ICDPC5ED2ORA6.4T FR: QDV1RD06 NN: 1
    Namespace ID: 1 Size: 3.200 TB

/pci@301/pci@1/pci@0/pci@1/nvme@0
    NVME Controller VID: 8086 SSVID: 108e SN: PHLE713400SU6P4B MN:
    7335943:ICDPC5ED2ORA6.4T FR: QDV1RD06 NN: 1
    Namespace ID: 1 Size: 3.200 TB
```

**3. Set the Oracle Flash Accelerator PCIe card as the boot device.**

■ **Oracle Flash Accelerator F320 PCIe card example:**

```
ok setenv boot-device /pci@301/pci@1/nvme@0/disk@1:a
```

■ **Oracle Flash Accelerator F6400 PCIe card example:**

```
ok setenv boot-device /pci@301/pci@1/pci@0/pci@1/nvme@0/disk@1:a
```

**4. List the network devices in the PDomain.**

In this example, the show-nets command lists the four network ports of a quad Ethernet card installed in CMIOU1, PCIe slot 3. For a list of the PCIe device paths for the server, refer to [“Understanding PCIe Card Device and Service Paths”](#) in *SPARC M8 and SPARC M7 Servers Service Manual*.

```
ok show-nets
a) /pci@306/pci@1/network@0,3
b) /pci@306/pci@1/network@0,2
c) /pci@306/pci@1/network@0,1
d) /pci@306/pci@1/network@0
q) NO SELECTION
Enter Selection, q to quit: q
```

**5. Set the primary network device.**

In this example, port 0 of the card is set as the primary network device.

```
ok nvalias net /pci@306/pci@1/network@0
```

**6. Boot the PDomain to start the Oracle Solaris OS configuration.**

```
ok boot
```

**7. When prompted, follow the onscreen instructions to configure the Oracle Solaris OS.**

You will be prompted to confirm the configuration several times. If you are not sure how to respond to a particular value, you can accept the default, and make future changes when the Oracle Solaris OS is running.

See [“Oracle Solaris OS Configuration Parameters”](#) on page 229 and refer to [“How to Reconfigure Using the SCI Tool”](#) in *Installing Oracle Solaris 11.3 Systems* for more information.

**8. After configuring the Oracle Solaris OS, explore other Oracle Solaris OS and Oracle ILOM features.**

See [“Additional Software Configuration and Testing”](#) on page 231.



## Related Information

- “Identifying Components (Installation)” on page 25
- “Oracle Flash Accelerator PCIe Cards” on page 106
- *SPARC M8 and SPARC M7 Servers Product Notes*
- “Controlling the System, Hosts, and SPs” in *SPARC M8 and SPARC M7 Servers Administration Guide*
- Oracle Solaris OS documentation (<http://www.oracle.com/goto/solaris11/docs>)
- Oracle Flash Accelerator PCIe Card Documentation <http://www.oracle.com/technetwork/documentation/oracle-system-options-190050.html#solid>

## ▼ Configure External Storage Devices

The server does not include integrated storage devices like drives or disk arrays, so you must configure a bootable storage device for each server PDomain. If you ordered Oracle Flash Accelerator F160 PCIe cards with your server, one card per PDomain will be preinstalled with the Oracle Solaris OS. For instructions on setting up a factory-installed Oracle Flash Accelerator F160 PCIe card, see “[Configure the Oracle Flash Accelerator PCIe Card](#)” on page 222.

---

**Note** - The following task provides guidelines for configuring external storage devices with a PDomain. For complete instructions on configuring your external storage device, refer to your storage device documentation and the *Installing Oracle Solaris 11.3 Systems* document. See “[Oracle Solaris Installation Considerations](#)” on page 227 for the Oracle Solaris download location and information specific to the SPARC M7 series servers.

---

### 1. Prepare an Oracle Solaris OS AI server on the network.

An AI server provides a customizable method to install the OS over the network. Refer to the following sections of the *Installing Oracle Solaris 11.3 Systems* document for instructions on preparing an AI server and an install service:

- “Configuring an AI Server” in *Installing Oracle Solaris 11.3 Systems*
- “Creating an Install Service” in *Installing Oracle Solaris 11.3 Systems*
- Chapter 10, “Defining AI Client Installation Parameters” in *Installing Oracle Solaris 11.3 Systems*

### 2. Confirm that the PDomain contains a network interface card cabled to the network and an appropriate PCIe card cabled so that the PDomain can access the external storage device.

See the [“Connecting Network and Data Cables” on page 192](#), and refer to the PCIe card, and the external storage device documentation for complete instructions on cabling the PCIe cards.

**3. Configure a network device so that the PDomain can access the Oracle Solaris AI server on the network.**

In order to start the Oracle Solaris OS installation, the PDomain must be able to boot the AI server. The following steps provide an example of configuring a quad Ethernet card installed in CMIOU1, PCIe slot 3. Refer to your network interface card documentation for instructions on configuring the network interface card device installed in your server's PDomain.

■ **At the OpenBoot ok prompt, list the network devices in the PDomain.**

For a list of the PCIe device paths for the server, refer to [“Understanding PCIe Card Device and Service Paths” in SPARC M8 and SPARC M7 Servers Service Manual](#).

```
ok show-nets
a) /pci@306/pci@1/network@0,3
b) /pci@306/pci@1/network@0,2
c) /pci@306/pci@1/network@0,1
d) /pci@306/pci@1/network@0
q) NO SELECTION
Enter Selection, q to quit: q
```

■ **Set the primary network device.**

In this example, port 0 of the card is set as the primary network device.

```
ok nvalias net /pci@306/pci@1/network@0
```

**4. Configure a primary boot device for the PDomain.**

Depending on your external storage device, you might be required to configure the OpenBoot boot-device parameter. Refer to [“How To Set the Boot Disk From OBP” in Installing Oracle Solaris 11.3 Systems, Booting and Shutting Down Oracle Solaris 11.3 Systems](#), and your external storage device documentation for instructions.

**5. Boot the PDomain using the AI client on the network to start the Oracle Solaris OS installation.**

In this example, the boot net:dhcp command starts an interactive OS installation using an AI client that is accessible to the PDomain using DHCP. Refer to the [Installing Oracle Solaris 11.3 Systems](#) for instructions on performing a “hands-free” OS installation.

```
ok boot net:dhcp
```

---

**Note** - To access an AI client in a non-DHCP environment, refer to “[Installing a SPARC AI Client Without Using DHCP](#)” in *Installing Oracle Solaris 11.3 Systems*.

---

**6. When prompted, follow the onscreen instructions to configure the Oracle Solaris OS.**

If you have prepared an AI manifest, the installation will proceed without prompts. Refer to *Installing Oracle Solaris 11.3 Systems* for complete installation instructions.

During the OS installation, ensure that you install the Oracle VM Server for SPARC and Oracle VTS software packages.

**7. After configuring the Oracle Solaris OS, explore other Oracle Solaris OS and Oracle ILOM features.**

See “[Additional Software Configuration and Testing](#)” on page 231.

---

**Note** - Refer to the *SPARC M8 and SPARC M7 Servers Administration Guide* to configure the PDomain booting and restart behavior.

---

### Related Information

- “[Identifying Components \(Installation\)](#)” on page 25
- “[Planning Storage Devices](#)” on page 105
- “[Oracle Solaris OS Configuration Parameters](#)” on page 229
- *SPARC M8 and SPARC M7 Servers Product Notes*
- Oracle Solaris OS documentation (<http://www.oracle.com/goto/solaris11/docs>)

## Oracle Solaris Installation Considerations

Each PDomain requires a bootable storage device running the Oracle Solaris OS. Since the server does not contain integrated storage devices like drives or disk arrays, you must configure a storage device for each server PDomain. If you ordered the server with at least one Oracle Flash Accelerator PCIe card per PDomain, the Oracle Solaris OS is preinstalled on the card. If your server PDomain uses an external storage device, you must download the Oracle Solaris installation image and install the OS on the external storage device.

The Oracle Solaris 11 OS installation image downloads are located at:

<http://www.oracle.com/technetwork/server-storage/solaris11/downloads/index.html>

For instructions on installing the Oracle Solaris OS, refer to the [Installing Oracle Solaris 11.3 Systems](#) document, which is part of the Oracle Solaris documentation. Refer to the [SPARC M8 and SPARC M7 Servers Product Notes](#) for OS and firmware requirements and late-breaking information. Refer to the storage device documentation for further requirements and instructions.

---

**Note** - When you update Solaris OS [SRU](#) levels, you must update the miniroot image that is on the Active SP-emulated eUSB device. The miniroot image is not part of the OS or firmware image. You must download the miniroot image separately from My Oracle Support at <https://support.oracle.com>, and load it onto the Active SP. For instructions on updating the miniroot image, refer to the *Oracle ILOM Administrator's Guide for Configuration and Maintenance Firmware Release 3.2.x* in the [Oracle ILOM documentation](#) (<http://www.oracle.com/goto/i1om/docs>). If you replace an SP, the Active SP automatically updates the miniroot image.

---



---

**Caution** - Always download and use a supported version of the Oracle Solaris OS install image to perform fresh OS installations. You cannot install a previous version of the Oracle Solaris OS and then use the `pkg update` command to upgrade the OS to the latest version. The installation will fail if you attempt to install an earlier, unsupported version of the Oracle Solaris OS. Refer to the [SPARC M8 and SPARC M7 Servers Product Notes](#) for the minimum required Oracle Solaris OS version permitted for fresh installations.

---

---

**Note** - By default, the installer selects the first drive it finds with enough space for the OS as the boot disk and installs the OS on it. Since these series servers do not include integrated drives, the installation might fail or the installer might install the OS on the first drive of an external storage device, even if that first drive is not appropriate for your environment. To ensure that the OS is installed on the correct drive, specify the target drive in the AI manifest file. Otherwise, set the boot disk at the OpenBoot prompt. Refer to [“How To Set the Boot Disk From OBP”](#) in [Installing Oracle Solaris 11.3 Systems](#) and the `ai_manifest(4)` man page for instructions.

---

## Related Information

- [“SPs and SPPs” on page 33](#)
- [“Software Requirements” on page 202](#)
- [“Oracle Solaris Boot Pool and IPoIB Documentation” on page 111](#)
- [Oracle Solaris documentation \(http://www.oracle.com/goto/solaris11/docs\)](http://www.oracle.com/goto/solaris11/docs)

# Oracle Solaris OS Configuration Parameters

When configuring the Oracle Solaris OS, you will be prompted for the following configuration parameters. For more information about these settings, refer to the Oracle Solaris documentation.

Parameter	Description
Language	Select a number from the displayed languages list.
Locale	Select a number from the displayed locale list.
Terminal Type	Select a terminal type that corresponds with your terminal device.
Network?	Select Yes.
Multiple Network Interfaces	Select the network interfaces that you plan to configure. If you are not sure, select the first one in the list.
DHCP?	Select Yes or No according to your network environment.
Host Name	Type the host name for the server.
IP Address	Type the IP address for this Ethernet interface.
Subnet?	Select Yes or No according to your network environment.
Subnet Netmask	If your answer to Subnet? was Yes, type the netmask for the subnet for your network environment.
IPv6?	Specify whether or not to use IPv6. If you are not sure, select No to configure the Ethernet interface for IPv4.
Security Policy	Select either standard UNIX security (no) or Kerberos Security (Yes). If you are not sure, select No.
Confirm	When prompted, review the onscreen information and change it if needed. Otherwise, continue.
Name Service	Select the name service according to your network environment. <b>Note</b> - If you select a name service other than None, you will be prompted for additional name service configuration information.
NFSv4 Domain Name	Select the type of domain name configuration according to your environment. If you are not sure, select Use the NFSv4 domain derived by the system.
Time Zone (Continent)	Select your continent.
Time Zone (Country or Region)	Select your country or region.
Time Zone	Select the time zone.
Date and Time	Accept the default date and time, or change the values.
root Password	Type the root password twice. This password is for the superuser account for the Oracle Solaris OS on this server. This password is not the SP password.

## Related Information

- [“Oracle Solaris Boot Pool and IPoIB Documentation” on page 111](#)

- “Software Requirements” on page 202
- <http://www.oracle.com/goto/solaris11/docs>

## Oracle Auto Service Request Software

Oracle Auto Service Request (ASR) (<http://www.oracle.com/us/support/auto-service-request/>) software provides the ability to notify Oracle Support automatically, and to open a service request on your behalf when specific hardware faults are detected.

ASR is a feature of the Oracle hardware warranty, [Oracle Premier Support for Systems \(https://www.oracle.com/support/premier/index.html\)](https://www.oracle.com/support/premier/index.html), and [Oracle Platinum Services \(https://www.oracle.com/support/premier/engineered-systems/platinum-services.html\)](https://www.oracle.com/support/premier/engineered-systems/platinum-services.html).

ASR resolves problems faster by automatically opening service requests for Oracle's qualified server, storage, and Engineered Systems when specific faults occur.

Oracle Auto Service Request is integrated with [My Oracle Support \(https://support.oracle.com/\)](https://support.oracle.com/), and you must use My Oracle Support to activate your ASR Assets.

Oracle systems with Oracle Auto Service Request securely transport electronic fault telemetry data to Oracle automatically to help expedite the diagnostic process.

The event notification is one-way, requiring no incoming Internet connections or remote access mechanism, and only includes the information needed to solve the problem.

Replacement parts are dispatched upon receipt of the service request, and in many cases, Oracle engineers are already working to resolve the issue before you're even aware the problem exists.

For more information on setting up and installing support automation on your server, refer to <http://www.oracle.com/us/support/auto-service-request/>.

Find the *Oracle ASR Manager Installation and Operations Guide*, the *Oracle ASR Manager Quick Installation Guide*, and the *Oracle ASR Security White Paper* at the ASR documentation site: [http://docs.oracle.com/cd/E37710\\_01/index.htm](http://docs.oracle.com/cd/E37710_01/index.htm). Also, find instructions on downloading the Oracle ASR Manager software at this site.

### Related Information

- [How To Manage and Approve Pending ASR Assets In My Oracle Support \(Doc ID 1329200.1\)](#)
- [Oracle Auto Service Request \(http://www.oracle.com/us/support/auto-service-request/\)](http://www.oracle.com/us/support/auto-service-request/)

- [Oracle Auto Service Request documentation \(http://docs.oracle.com/cd/E37710\\_01/\)](http://docs.oracle.com/cd/E37710_01/)
- [My Oracle Support \(https://support.oracle.com\)](https://support.oracle.com)

## Additional Software Configuration and Testing

Refer to the following links for optional software testing, configuration, and administration tasks you can perform after powering on the server.

Task	Documentation Links
Configure the Oracle ILOM software to:	<a href="#">SPARC M8 and SPARC M7 Servers Administration Guide</a>
<ul style="list-style-type: none"> <li>■ Create and manage PDomains</li> <li>■ Assign and manage Oracle ILOM users</li> <li>■ Redirect KVMS devices</li> <li>■ Power on and off the entire server or specific PDomains</li> </ul>	Oracle ILOM documentation: <a href="http://www.oracle.com/goto/ilom/docs">http://www.oracle.com/goto/ilom/docs</a>
Update the system firmware.	<a href="#">“Updating the Firmware” in SPARC M8 and SPARC M7 Servers Administration Guide</a>
Explore and configure the Oracle Solaris OS.	Oracle Solaris OS documentation: <a href="http://www.oracle.com/goto/solaris11/docs">http://www.oracle.com/goto/solaris11/docs</a>  Refer to the preceding Oracle Solaris documentation link for information about specific topics like: <ul style="list-style-type: none"> <li>■ Oracle Solaris release notes</li> <li>■ Installation</li> <li>■ Common administration tasks</li> <li>■ Updating software</li> <li>■ Security</li> <li>■ Oracle Solaris Zones</li> </ul>
After completing all system configuration tasks, back up the data required for service procedures.	For information about backing up and restoring filesystems and data, refer to the Oracle Solaris documentation at: <a href="http://www.oracle.com/goto/solaris11/docs">http://www.oracle.com/goto/solaris11/docs</a>
Create and manage logical domains (virtual servers) using the Oracle VM Server for SPARC software. You can run a variety of applications in different logical domains and keep them separate for performance and security purposes.	Oracle VM Server for SPARC documentation: <a href="http://www.oracle.com/goto/vm-sparc/docs">http://www.oracle.com/goto/vm-sparc/docs</a>

### Related Information

- [SPARC M8 and SPARC M7 Servers Administration Guide](#)

- <http://docs.oracle.com/>



# Glossary

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## A

- A36 steel** A standard steel alloy commonly used in the United States.
- Active SP** An SP selected by Oracle ILOM to manage server resources. When an Active SP can no longer serve this role, the Standby SP assumes its role. See also [SP](#) and [Standby SP](#).
- AI** Automated installer. AI provides a customizable mechanism for installing the Oracle Solaris OS using an installation parameters file called an AI manifest.
- ASR** Auto Service Request. Oracle software that provides the ability to notify Oracle Support automatically.

## B

- BE** Boot environment. A bootable instance of the Oracle Solaris image. A BE can contain additional installed software packages.
- boot pool** A special pool on firmware-accessible devices that contains the set of files required to boot the Oracle Solaris kernel for a BE. Each dataset in the boot pool is linked to a BE. See also [BE](#) and [pool](#).

## C

- CMIOU** CPU, memory, and I/O unit. Each CMIOU contains 1 [CMP](#), 16 [DIMM](#) slots, and 1 [IOH](#) chip. Each CMIOU also hosts an [eUSB](#) device.
- CMP** Chip multiprocessing. Each CMIOU contains 1 CMP. A SPARC M8-8 or SPARC M7-8 server can contain a maximum of 8 CMPs. The SPARC M7-16 server can contain a maximum of 16 CMPs.

**CMT** Chip multithreading. Processor technology enabling multiple hardware threads (also known as strands) to execute on the same chip, through multiple cores per chip, multiple threads per core, or through a combination of both.

## D

**dataset** A generic term used to refer to a [ZFS](#) file system, snapshot, clone, or volume.

**DCU** Domain configurable unit. The smallest building block for PDomains. The SPARC M8-8 and SPARC M7-8 servers can have one or two DCUs. Those DCUs are static. Their assignment cannot be changed. The SPARC M7-16 server has four DCUs that you can assign to the host in any one of the four possible PDomains. See also [PDomain](#).

**DCU SPM** In a SPARC M7 series server, Oracle ILOM identifies one SPM from an SPM pair to manage DCU activity. See also [SPM](#), [SPP](#), and [DCU](#).

**deferred dump** If a server crashes, the crash dump is preserved in memory until after the server reboots. During the reboot, the crash dump files are extracted from memory to a predefined file system location.

**DHCP** Dynamic Host Configuration Protocol. Software that automatically assigns IP addresses to clients on a TCP/IP network. The SPs do not support DHCP. You must assign static IP addresses to SP components.

**DIMM** Dual in-line memory module.

**DLMP** Datalink multipathing aggregations. An Oracle Solaris feature enabling you to configure several interfaces on a system as a single, logical unit to increase throughput of network traffic.

**dynamic PDomain** A SPARC M7-16 PDomain. After stopping the host, you can assign or unassign DCUs to or from a dynamic PDomain. See also [static PDomain](#) and [PDomain](#).

## E

**EMI** Electromagnetic interference.

**ESD** Electrostatic discharge.

**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.

**F**

**FC** Fibre Channel. High-speed network technology primarily used to connect computer data storage.

**G**

**GB** Gigabyte. 1 gigabyte = 1024 megabytes.

**GbE** Gigabit Ethernet.

**H**

**HBA** Host bus adapter. Provides I/O processing and physical connectivity between a server and a storage or network device.

**HCA** Host channel adapter. Primarily used to describe [InfiniBand](#) interface cards.

**I**

**ILOM** See [Oracle ILOM](#).

**InfiniBand** A networking communications standard that features very high throughput and very low latency.

**IOH** I/O hub.

**IPMP** IP network multipathing. An Oracle Solaris feature providing multipathing and load-balancing capabilities for IP network interfaces.

**IPoIB** Internet protocol over [InfiniBand](#).

**iSCSI** Internet small computer system interface. An IP-based storage networking standard that enables a server to access storage across a network. In an iSCSI network, the remote storage is called the iSCSI target.

**iSCSI using IPoIB** A boot process that enables a server to boot an [iSCSI](#) target accessible using IP over an [InfiniBand](#) network. See also [IPoIB](#).

**K**

<b>KVM</b>	Keyboard video mouse.
<b>KVMS</b>	Keyboard video mouse storage.
<b>KW</b>	Kilowatt.

**L**

<b>L-L</b>	Line-to-line. The type of voltage between any two phases of an AC generator.
<b>LDAP</b>	Lightweight Directory Access Protocol.
<b>logical domain</b>	A virtual machine comprising a discrete logical grouping of resources that has its own operating system and identity within a single computer system.
<b>LUN</b>	Logical unit number. The term LUN is often used to denote a disk presented to a computer system by a storage array.

**M**

<b>MIB</b>	Management information base.
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**N**

<b>NET MGT</b>	Network management. The NET MGT ports provide Ethernet connections to the SPs. Dedicated SPARC M7-16 server NET MGT ports connect the four SPPs to the two SPs.
<b>NTP</b>	Network Time Protocol.
<b>NVMe</b>	Non-Volatile Memory Express. A specification for accessing solid-state drives attached through the PCIe bus.

**O**

<b>OpenBoot</b>	Oracle firmware that enables a PDomain to boot the Oracle Solaris OS. Provides an interface for testing hardware and software interactively.
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**Oracle ILOM** Oracle Integrated Lights Out Manager. The system management firmware that is preinstalled on the server SPs.

**Oracle VTS** Oracle Validation Test Suite. An application that exercises the system, provides hardware validation, and identifies possible faulty components.

## P

**PCIe** Peripheral Component Interconnect Express.

**PDECB** Power distribution electronic circuit breaker.

**PDomain** Physical domain. The SPARC M7-8 server can be order with one or two PDomains. These PDomains are static and cannot be reconfigured. The SPARC M7-16 server can have one to four configured PDomains. These PDomains are dynamic. With dynamic PDomains, you can assign or unassign the DCUs in the PDomains as long as you stop and start the host.

See also [DCU](#), [dynamic PDomain](#), [static PDomain](#), and [switch unit](#).

**PDomain SPM** The lead SPM of a PDomain. The PDomain SPM manages tasks and provides rKVMS service for that PDomain. In a SPARC M7-16 server, Oracle ILOM identifies one of the DCU SPMs from the pool of DCU SPMs on the same PDomain as the PDomain SPM to manage activity on that host. See also [PDomain](#) and [SPM](#).

**PDU** Power distribution unit.

**Ph-N** Phase to neutral.

**Ph-Ph** Phase to phase.

**pool** A logical group of devices describing the layout and physical characteristics of the available storage. Storage space for datasets is allocated from a pool. [ZFS](#) uses a model where storage devices are aggregated into a storage pool. See also [boot pool](#), [root pool](#), and [dataset](#).

**POST** Power-on self-test. Diagnostic software that runs when the server boots.

## R

**rackmounted** A server that is factory-installed in an Oracle rack. The SPARC M8-8 and SPARC M7-8 servers can be ordered rackmounted or stand-alone. See also [stand-alone](#).

<b>RFID</b>	Radio-frequency identification.
<b>rKVMS</b>	Remote keyboard video mouse and storage.
<b>RMS</b>	Root mean square.
<b>root pool</b>	A <a href="#">dataset</a> containing a complete Oracle Solaris image or a <a href="#">BE</a> . See also <a href="#">pool</a> .

## S

<b>SAN</b>	Storage area network. A dedicated network providing access to computer storage devices.
<b>SAS</b>	Serial attached SCSI.
<b>scalability</b>	The ability to increase (or <i>scale up</i> ) processing power in a server by combining the server's physical configurable hardware (see <a href="#">DCU</a> ) into one or more logical groups (see <a href="#">PDomain</a> ).
<b>SCI Tool</b>	System configuration interactive tool. Enables you to specify configuration parameters on newly installed Oracle Solaris installations.
<b>SER MGT</b>	Serial management. The SER MGT ports provide serial connections to the SPs.
<b>SLL</b>	Secure Socket Layer.
<b>SP</b>	Service processor. For redundancy, the server contains two service processors, one active and one on standby.
<b>SPM</b>	Service processor module. A component of the SPs and SPPs. SPMs contain processors that enable the SPs and SPPs to manage the server resources. See also <a href="#">DCU SPM</a> and <a href="#">PDomain SPM</a> .
<b>SPP</b>	Service processor proxy. One SPP is assigned to manage each <a href="#">PDomain</a> . SPPs monitor environmental sensors and manage the CMIOUs, memory controllers, and DIMMs within the DCU. See also <a href="#">DCU SPM</a> and <a href="#">PDomain SPM</a> .
<b>SRU</b>	Support repository updates. Oracle customers with an active Oracle support plan can access the Oracle Solaris support package repository. This repository provides support releases called SRUs, which contain updates to Oracle Solaris OS software packages.
<b>SSH</b>	Secure shell. A program for logging in and executing commands on a system or service processor.
<b>stand-alone</b>	A server that is not factory-installed in an Oracle rack. You must install a stand-alone SPARC M8-8 or SPARC M7-8 server in your own rack. See also <a href="#">rackmounted</a> .

<b>Standby SP</b>	A redundant SP that will manage server resources if the Active SP fails. See also <a href="#">SP</a> and <a href="#">Active SP</a> .
<b>static PDomain</b>	A SPARC M8-8 or SPARC M7-8 server PDomain. Static PDomains cannot be reconfigured. See also <a href="#">dynamic PDomain</a> and <a href="#">PDomain</a> .
<b>switch unit</b>	A device that enables the CMIOUs to communicate with each other. The SPARC M7-16 server switch contains six switch units.
<b>system</b>	In the SPARC M7 series servers documentation, system refers to the /System level in the Oracle ILOM firmware.

## T

<b>TB</b>	Terabyte. 1 terabyte = 1024 gigabytes.
<b>Torx</b>	A type of screw head characterized by a 6-point star-shaped pattern.

## U

<b>UPS</b>	Uninterruptible power supply.
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## V

<b>VAC</b>	Voltage alternating current.
<b>VNC</b>	Virtual network computing. The <a href="#">Oracle ILOM Remote System VNC Console</a> is a VNC system implementation that enables you to remotely redirect the host server <a href="#">KVM</a> events to a graphical shared desktop display.
<b>VTs</b>	See <a href="#">Oracle VTs</a> .

## W

<b>WWN</b>	World wide name.
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## Z

**ZFS** Zettabyte file system. A file system that uses storage pools to manage physical storage. See also [BE](#), [pool](#), [boot pool](#), and [root pool](#).



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