

Sun Oracle Database Machine Installation Guide



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Preface

This *Sun Oracle Database Machine Installation Guide* provides detailed procedures for installing Sun Oracle Database Machine rack systems.

How This Document Is Organized

This manual contains the following chapters.

TABLE P-1 Sun Oracle Database Machine Installation Guide Chapters

Chapter	Describes:
Chapter 1	Installation Workflow contains an overview for installing the Sun Oracle Database Machine.
Chapter 2	Preparing to Install the Sun Oracle Database Machine describes what you should know about the Sun Oracle Database Machine before installation.
Chapter 3	Installing the Sun Oracle Database Machine provides detailed procedures on how to place and cable a Sun Oracle Database Machine for the first time.
Chapter 4	Powering On the Sun Oracle Database Machine describes how to supply electrical power to a Sun Oracle Database Machine for the first time.

Documents Online

The following table shows where to find documents online.

TABLE P-2 Sun Oracle Database Machine Online Documents

Sun Function	URL	Description
Documentation	http://docs.sun.com	Navigate to the product page, download PDF and view HTML documents.
Support	http://www.sun.com/support/	Obtain technical support and download patches.
Training	http://www.sun.com/training/	Learn about Sun courses.
Feedback	http://www.sun.com/hwdocs/feedback/	Submit your comments.

Related Documentation

The following table lists the available documents.

TABLE P-3 Sun Oracle Database Machine Related Documentation

Application	Title	Part Number
Rack site planning	<i>Sun Oracle Database Machine Site Planning Guide</i>	E17431
Rack installation	<i>Sun Oracle Database Machine Installation Guide</i>	E17432
Rack service	<i>Sun Oracle Database Machine Service Manual</i>	E17433
Rack upgrade	<i>Sun Oracle Database Machine Upgrade Guide</i>	E17434
Inter-rack cabling	<i>Sun Oracle Database Machine Multi-Rack Cabling Guide</i>	E17435

We Welcome Your Comments

We are interested in improving its documentation and welcome your comments and suggestions. You can submit your comments by going to:

<http://www.sun.com/hwdocs/feedback>

Please include the title and part number of your document with your feedback:

Sun Oracle Database Machine Installation Guide, part number
E17432-01

Installation Workflow

This chapter describes the workflow from the Sun Oracle Database Machine arrival at the data center site to hardware operation verification. Read this chapter before performing the installation.

Follow these general steps when installing a Sun Oracle Database Machine at an installation site.

- 1. Unpack the Sun Oracle Database Machine.**
- 2. Place the Sun Oracle Database Machine in its allocated space.**
- 3. Connect the Sun Oracle Database Machine power cords.**
- 4. Power on the Sun Oracle Database Machine Power Distribution Units.**
- 5. Power on the Sun Oracle Database Machine servers and equipment.**
- 6. Connect to the customer network.**
- 7. Configure Management, Infiniband, and customer network connections.**
- 8. Verify all of the hardware.**
- 9. Configure Oracle Exadata software.**
- 10. Perform final verification of the Sun Oracle Database Machine.**
- 11. Hand off to the customer.**

Preparing to Install the Sun Oracle Database Machine

This chapter contains an overview for installing and starting the Sun Oracle Database Machine. This chapter contains the following topics.

- [Section 2.1, “Before You Begin” on page 2-1](#)
- [Section 2.2, “Safety Precautions” on page 2-2](#)
- [Section 2.3, “Observing Safety Guidelines and Warnings” on page 2-3](#)
- [Section 2.4, “About the Sun Oracle Database Machine” on page 2-3](#)
- [Section 2.5, “Tools Required For Installation” on page 2-4](#)
- [Section 2.6, “Preparing the Installation Site” on page 2-4](#)

2.1 Before You Begin

Complete the checklist in the *Sun Oracle Database Machine Site Planning Guide* before you begin installing the Sun Oracle Database Machine. Verify the site space, access route, power, grounding, air flow, and network requirements that are provided in the *Sun Oracle Database Machine Site Planning Guide*.

Before installing the Sun Oracle Database Machine, you must know the system configuration and obtain all the prerequisite information for system installation. Follow all safety precautions. Ensure that you read the entire *Sun Oracle Database Machine Installation Guide* before beginning installation.

2.2 Safety Precautions

Observe the following precautions when setting up the Sun Oracle Database Machine. Otherwise, the equipment can be damaged or a malfunction can result.

- Do not block any ventilation holes.
- Do not install the server in a location exposed to direct sunlight or near a device that may become hot.
- Do not install the server in a location that has a lot of dust or that is exposed to corrosive gases or air with a high salt concentration.
- Do not install the server in a location exposed to frequent vibrations. Install the server on a flat and level surface.
- Use a power outlet that uses the correct grounding method. When using shared grounding, the grounding resistance must not be greater than 10 Ω . Make sure that the facility administrator or a qualified electrical engineer verifies the grounding method for the building and performs the grounding work.
- Be sure that each grounding wire used for the server is used exclusively. Also be sure to observe the precautions, warnings, and notes on handling shown on the equipment.
- Do not place cables under the equipment or have cables stretched tight. Also, do not disconnect a power cord from the equipment while its power is on.
- When disconnecting a LAN cable, you might not be able to reach the connector lock with your fingers. If that is the case, press the connector lock with a flathead screwdriver to disconnect the cable. You could damage the system board if you force your fingers into the gap rather than using a flathead screwdriver.
- Do not place anything on top of the system or perform any work directly above it.
- Do not allow the ambient temperature to rise sharply in winter. Such a sudden temperature change can cause condensation to form inside the server. Allow for a sufficient warm-up period prior to server operation.
- Do not install the server near a copy machine, air conditioner, welding machine, or any other loud equipment generating electronic noise.
- Take measures to prevent static electricity from being generated at the installation location. Note especially that static electricity is likely to be generated on carpets, and this could lead to a malfunction.
- Confirm that the supply voltage and frequency match the electrical ratings indicated on the Sun Oracle Database Machine.

- Do not insert anything into any opening in the Sun Oracle Database Machine. The Sun Oracle Database Machine contains high-voltage parts. If a metal object or another conductor were inserted into an opening in the Sun Oracle Database Machine, it can cause a short circuit that could cause fire, electric shock, or equipment damage.
- For details on maintenance of the server, contact a certified service engineer.

2.3 Observing Safety Guidelines and Warnings

Before installing the Sun Oracle Database Machine, or installing any server or equipment into the rack, read the *Important Safety Information for Sun Hardware Systems* (816-7190) document included with the rack.

Observe all safety notices printed on the packaging and listed in the *Sun Rack II Safety and Compliance Guide* (820-4762) and the *Sun Rack II Power Distribution Units Users Guide* (820-4760). Go to docs.sun.com to download this guide.

The Sun Oracle Database Machine cabinets can enclose a variety of rackmountable Sun servers, storage products, and other third-party equipment.

Note – Contact your Sun Service representative to confirm that Sun has qualified your equipment for installation and use in a Sun Oracle Database Machine. Sun is not liable for any issues when installing or using non-qualified equipment.

2.4 About the Sun Oracle Database Machine

The Sun Oracle Database Machine provides an optimal solution for all database workloads, ranging from scan-intensive data warehouse applications to highly concurrent OLTP applications. With its combination of smart Oracle Exadata Storage Server Software, complete and intelligent Oracle Database software, and the latest industry standard hardware components from Sun, the Database Machine delivers extreme performance in a highly available, highly secure environment.

With Oracle's unique clustering and workload management capabilities, the Database Machine is also well suited for consolidating multiple databases onto a single grid. Delivered as a complete preoptimized and preconfigured package of software, servers, and storage, the Sun Oracle Database Machine is simple and fast to implement and ready to tackle your large-scale business applications.

2.5 Tools Required For Installation

The shipping kit contains the following tools and equipment that you use to install and service the Sun Oracle Database Machine:

- 16 mm long No. 2 philips head screw
- T30 Torx cranked wrench key
- T25 Torx cranked wrench key
- 6 mm hexagon Allen wrench key
- SW 12 mm single-headed wrench
- 2 square jumpering brackets with 4 M5 Torx screws
- 2 cable management hooks with 4 spring nuts
- Side panel removal tool
- Keys to the front door, rear door, and side panel locks
- 32 M6 cage nuts
- 32 M6 screws
- Cage nut mounting tool

Not included in the shipping kit are the following:

- No. 2 Phillips screwdriver
- Antistatic wrist strap

A SW 17 mm single-headed wrench is included on the shipping pallet.

2.6 Preparing the Installation Site

It is the customer's responsibility to prepare the site prior to installing the Sun Oracle Database Machine. If available, refer to the *Sun Oracle Database Machine Site Planning Guide* for any server or equipment you plan to install in the rack for additional site preparation requirements.

Prior to installing the Sun Oracle Database Machine, perform the following tasks:

1. Thoroughly clean and vacuum the area in preparation for the installation.
2. Note any problems or peculiarities at the site that require special equipment.
3. Verify that the installation site flooring has a high enough strength rating to withstand the combined weight of the Sun Oracle Database Machine and any installed equipment.
4. Install all necessary electrical equipment and ensure that sufficient power is provided.

Refer to the *Sun Rack II Power Distribution Units User's Guide* for the power requirements of the Sun Rack II power distribution units (PDUs).

5. Ensure that the installation site provides adequate air conditioning.
6. Operate the air conditioning system for 48 hours to bring the room to the appropriate temperature.

Installing the Sun Oracle Database Machine

This chapter describes tasks needed to install the Sun Oracle Database Machine.

This chapter contains the following topics:

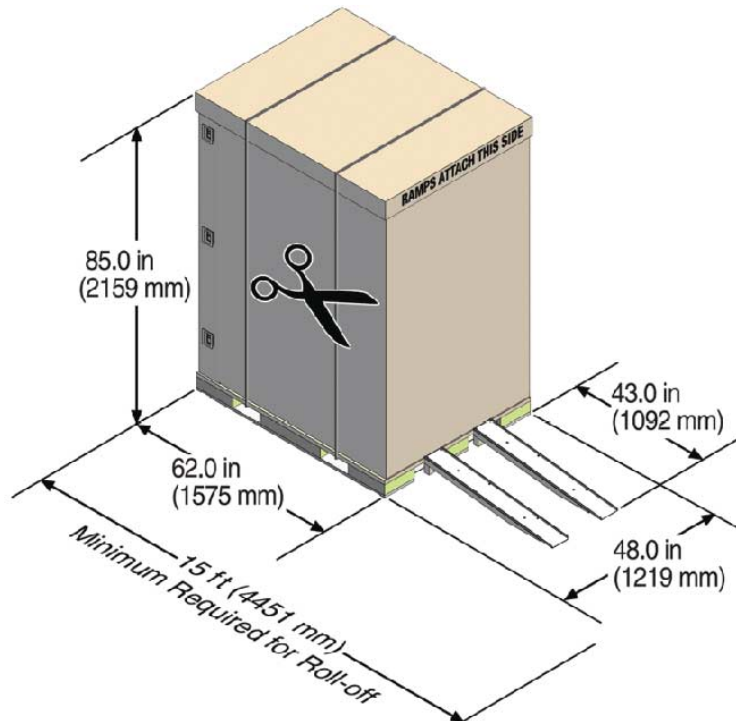
- [Section 3.1, “Unpacking the Sun Oracle Database Machine” on page 3-1](#)
- [Section 3.2, “Placing the Sun Oracle Database Machine in Its Allocated Space” on page 3-4](#)

3.1 Unpacking the Sun Oracle Database Machine

The location of unpacking is determined in the site planning process.

Refer to the Sun Rack II unpacking instructions included with the packaging. [FIGURE 3-1](#) shows the Sun Oracle Database Machine shipping crate.

FIGURE 3-1 Sun Oracle Database Machine in Shipping Crate



Caution – Sun strongly recommends that you use professional movers when unpacking and installing the Sun Oracle Database Machine.

To unpack the Sun Oracle Database Machine:

1. **Carefully unpack the Sun Oracle Database Machine from the packaging and shipping pallet.**

Refer to the Sun Rack II unpacking instructions included with the packaging.

- a. **Remove the shipping carton bands.**
- b. **Remove the yellow fasteners and carton top.**
- c. **Remove the carton sides and inner top.**



Caution – Rocking or tilting the rack can cause it to fall over and cause serious injury or death.

2. Remove the shipping kit.
3. Attach the ramps to the shipping pallet.
 - a. Remove the ramps from the pallet sides.
 - b. Obtain the parts bag from inside the cabinet.
 - c. Adjust the leveling bolts on the ramps and connect the ramps to the pallet wheel track.
4. Carefully roll the Sun Oracle Database Machine off the shipping pallet.
 - a. Unfasten the exterior mounting brackets from the pallet.
 - b. Unfasten the interior mounting brackets from the pallet.



Caution – Exercise care when removing the mounting brackets from underneath the populated Sun Oracle Database Machine. Access to the inside mounting brackets might be limited.

- c. Roll the cabinet down the ramps to the level floor.

It is preferred to have 3 people move the rack down the ramp - two on both sides to help guide the rack and one in back.

5. Save the mounting brackets used to secure the rack to the shipping pallet.

Note – You can use these mounting brackets to secure the Sun Oracle Database Machine permanently to the installation site floor. Do not dispose of these brackets, because you will not be able to order replacement brackets from Sun.

6. Recycle the packaging properly.

Follow local laws and guidelines to dispose of the material.

3.2 Placing the Sun Oracle Database Machine in Its Allocated Space

This section describes how to position, stabilize, and ground the Sun Oracle Database Machine.

This section contains the following topics:

- [Section 3.2.1, “Moving the Sun Oracle Database Machine” on page 3-4](#)
- [Section 3.2.2, “Stabilizing the Sun Oracle Database Machine” on page 3-5](#)
- [Section 3.2.3, “Attaching a Ground Cable \(Optional\)” on page 3-9](#)

3.2.1 Moving the Sun Oracle Database Machine

1. **Ensure that the doors are closed and secure.**
2. **Check to make sure that the leveling/stabilizing feet on the rack are up and out of the way.**
3. **Push the Sun Oracle Database Machine from behind to the installation site.**

When moving the Sun Oracle Database Machine to the installation site, the rack's front castors are fixed, so you must steer using the rear casters. You will be able to maneuver the Sun Oracle Database Machine safely by pushing it from behind. (FIGURE 3-1)

It is preferred to have 2 people move the rack - one in front and one in back to help guide the rack.

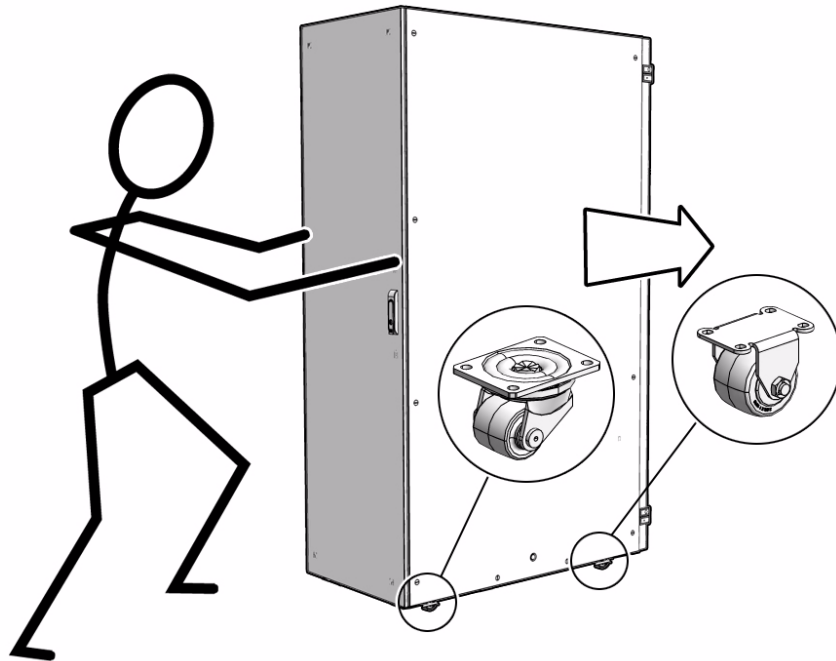
When transporting configured racks from one location to another, care should be taken to move them at slow speeds, 0.65 m/s 1.5 mph or slower.

Special attention should be given to the transportation path. Obstacles such as doorway or elevator thresholds that can cause an abrupt stop and shock to the system should be avoided or circumvented by use of ramps or lifts to enable smooth egress over such obstacles.



Caution – Never attempt to move the Sun Oracle Database Machine by pushing on the side panels. Pushing on the side panels can make the rack tip over, which can damage the equipment and cause serious personal injury or death.

FIGURE 3-2 Push the Sun Oracle Database Machine From Behind



Caution – Never tip or rock the Sun Oracle Database Machine, because the rack can fall over.

3.2.2 Stabilizing the Sun Oracle Database Machine

After moving the Sun Oracle Database Machine to the installation site, you can stabilize the rack to ensure that it does not move or tip over when installing equipment. You can stabilize the rack permanently using mounting brackets, extending the rack's leveling feet, or both. After installation, you can use these brackets and feet to stabilize the Sun Oracle Database Machine during everyday use.

▼ Stabilize Sun Oracle Database Machine With Leveling Feet

The Sun Oracle Database Machine contains four leveling feet that you can lower to the floor to stabilize the Sun Oracle Database Machine. You can lower these leveling feet even if you have permanently secured the Sun Oracle Database Machine to the floor using the mounting brackets.

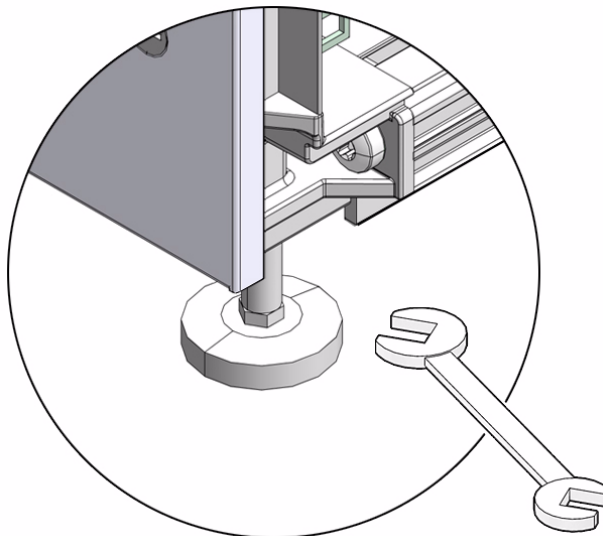
1. **Locate the four leveling feet located at the bottom four corners of the Sun Oracle Database Machine.**

Refer to the *Sun Oracle Database Machine Site Planning Guide* for the location and dimensions of the leveling feet.

2. **Lower the leveling feet down to the floor (see [FIGURE 3-3](#)). Use the SW 12 mm wrench.**

When lowered correctly, the four leveling feet should support the full weight of the Sun Oracle Database Machine.

FIGURE 3-3 Securing the Sun Oracle Database Machine Using the Leveling Feet



▼ Stabilize Sun Oracle Database Machine With Mounting Brackets

Before stabilizing the Sun Oracle Database Machine permanently using the mounting brackets, you must have pre-drilled mounting holes. Refer to the *Sun Oracle Database Machine Site Planning Guide*.

Obtain four bolts and washers to be used to mount the Sun Oracle Database Machine to the floor. The bolt holes in the mounting brackets have a diameter of 10.0 mm. Sun does not provide mounting bolts because different floors require different bolt types and strengths.

1. **Position the Sun Oracle Database Machine over the pre-drilled holes at the installation site.**

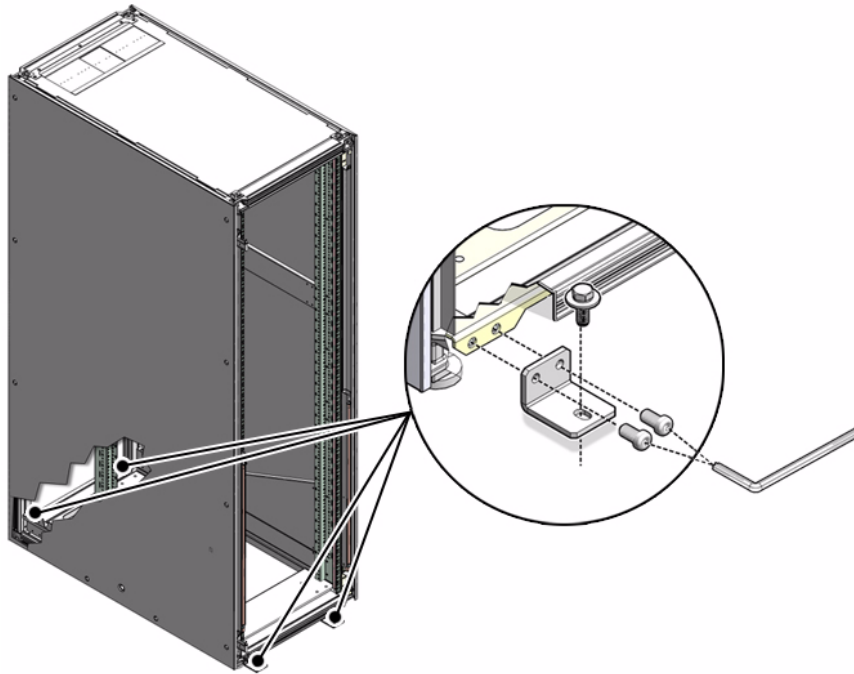
Refer to the *Sun Oracle Database Machine Site Planning Guide* for the hole spacing diagram.

2. **Open the front and rear Sun Oracle Database Machine doors.**

3. **Install the mounting brackets to the rack (see [FIGURE 3-4](#)).**

Use a 6 mm hexagon Allen wrench key.

FIGURE 3-4 Securing the Sun Oracle Database Machine Using Mounting Brackets



4. Using bolts and washers appropriate for your installation site, permanently mount the system to the floor through the four mounting brackets (see [FIGURE 3-4](#)).

Note – The bolts required for securing the Sun Oracle Database Machine to the floor vary depending on the installation location. Select bolts appropriate for your location.

5. Firmly tighten all bolts securing the mounting brackets to the Sun Oracle Database Machine and to the floor.

3.2.3 Attaching a Ground Cable (Optional)

Sun Oracle Database Machine power distribution units (PDUs) achieve earth ground through their power cords. Final chassis ground is achieved when the power cord is connected to a receptacle, where the ground prong contacts the power receptacle.

For additional grounding, you can attach a chassis earth ground cable to the Sun Oracle Database Machine. The additional ground point will allow current leakage to dissipate more efficiently.



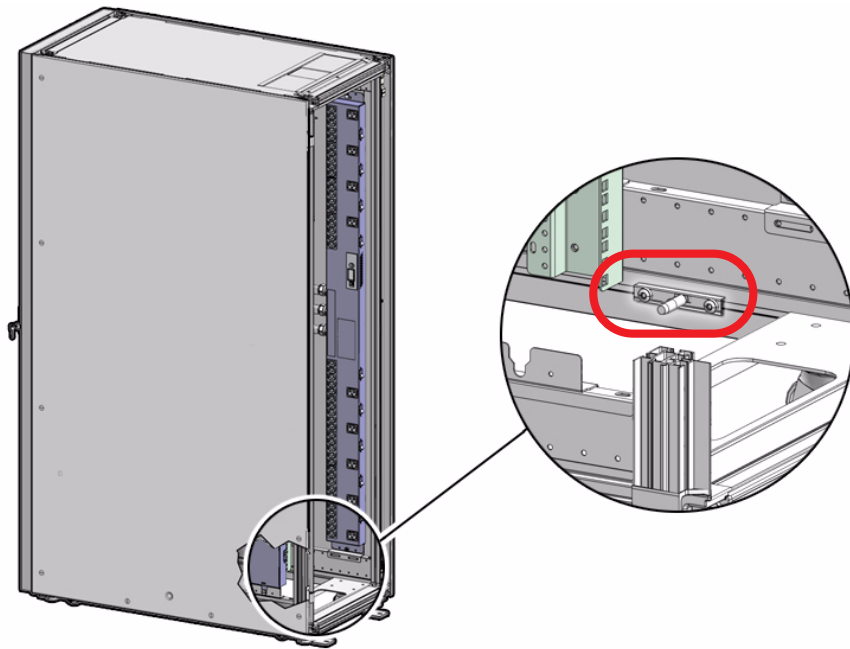
Caution – The PDU power input lead cords and the ground cable must reference a common earth ground. Otherwise, a difference in ground potential can be introduced. If you are unsure of the facility PDU receptacle grounding, *do not install* a ground cable until a proper PDU receptacle grounding has been confirmed. If a difference in ground potential is apparent, *you must take corrective action*.

Note – A grounding cable is not shipped with the system.

1. **Ensure that the installation site has properly grounded facility power in the data center.**
The facility PDU must be earth ground.
2. **Ensure that all grounding points (raised floors and power receptacles) reference the facility ground.**
3. **During manufacturing, the ground cable attachment area might be a painted surface. Ensure that metal-to-metal solid contact is made for this installation.**
4. **Attach the ground cable to one of the attachment points located at the bottom rear of the system frame as shown in [FIGURE 3-5](#).**

The attachment point is an adjustable bolt that you can find just inside the rear of the Sun Oracle Database Machine cabinet on the right side.

FIGURE 3-5 Earth Ground Attachment Bolt Location



Powering On the Sun Oracle Database Machine

This chapter describes how to apply power to the Sun Oracle Database Machine for the first time.

This chapter contains the following topics:

- [Section 4.1, “Preliminary Checks” on page 4-1](#)
- [Section 4.2, “Connecting the Power Cords” on page 4-2](#)
- [Section 4.3, “Powering On the Sun Oracle Database Machine for the First Time” on page 4-3](#)
- [Section 4.4, “What’s Next” on page 4-7](#)

4.1 Preliminary Checks

Perform a visual check of the Sun Oracle Database Machine physical system after it is in place, but before power is applied.

- 1. Check the rack for damage.**
- 2. Check the rack for loose or missing screws.**
- 3. Check the Sun Oracle Database Machine for the ordered configuration.**
Refer to the CIS (Customer Information Sheet) on the side of the packaging.
- 4. Check that all cable connections are secure and well seated.**
 - a. Check power cables.**
Ensure that the correct connectors have been supplied for the data center facility power source.

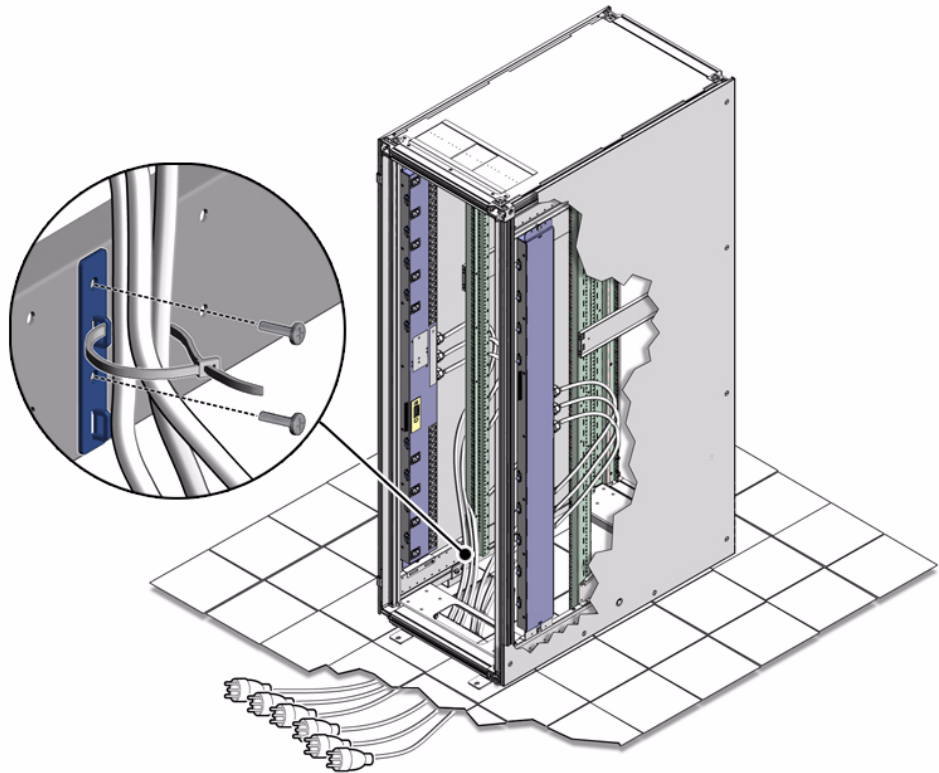
- b. Check network data cables**
 - 5. Check the site location tile arrangement for cable access and airflow.**
Refer to the *Sun Oracle Database Machine Site Planning Guide*.
 - 6. Check the data center airflow into the front of the Sun Oracle Database Machine.**
Refer to the *Sun Oracle Database Machine Site Planning Guide*.
-

4.2 Connecting the Power Cords

To provide power to the Sun Oracle Database Machine for the first time:

- 1. Open the rear cabinet door.**
- 2. Ensure that the correct power connectors have been supplied.**
Refer to the *Sun Oracle Database Machine Site Planning Guide*.
- 3. Unfasten the power cord cable ties.**
The ties are for shipping only.
- 4. Route the power cords to the facility receptacles.** (see [FIGURE 4-1](#))
- 5. Secure the power cords.** (see [FIGURE 4-1](#))
- 6. Plug in the PSU power cord connectors into the facility receptacles.**

FIGURE 4-1 Power Cord Routing Example



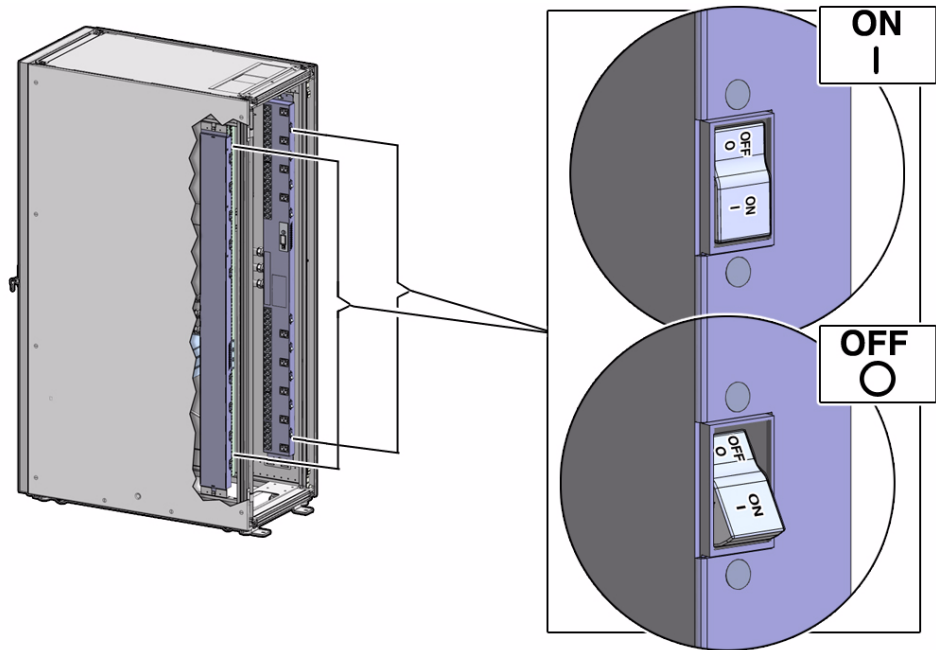
4.3 Powering On the Sun Oracle Database Machine for the First Time

To power on the Sun Oracle Database Machine for the first time:

1. **Switch on all of the power distribution unit circuit breakers inside the Sun Oracle Database Machine.**

The circuit breakers face the rear of the Sun Oracle Database Machine cabinet (see [FIGURE 4-2](#)). Press down on the ON (I) toggle switch.

FIGURE 4-2 PDU Switch Locations



2. Open the front cabinet door.
3. Open the KVM tray (Keyboard, Video, Mouse):
 - a. Unscrew the two KVM thumbscrews.
 - b. Slide out the KVM tray.
 - c. Open the KVM screen.
4. Verify that the KVM and KMM are operational.
5. Close the KVM tray:
 - a. Press Exit.
 - b. Close the KVM screen.
 - c. Push the left and right rail tabs together and slide the KVM tray in.
 - d. Secure the KVM tray thumbscrews.
6. Verify that power is applied to the Ethernet switch.

Note – The Ethernet switch is inside a vented filler panel.

7. Verify that power is applied to the Sun Datacenter 36-port Managed QDR InfiniBand switch.

The main power is supplied after the management processor boots.

Note – The Sun Datacenter 36-port Managed QDR InfiniBand switch is inside a vented filler panel.

8. Verify that server standby power is on for each server.

When live power is delivered to the receptacles at the rear of the server chassis, standby power is made available by the power supplies. When standby power is distributed to the chassis, the service processor (SP) powers on and boots to manage the system. The main power is supplied for the remainder of the chassis and fans when the power button on the front of the server chassis is pressed. The power button is disabled while the SP is booting. This state is indicated by a steady on 1 second off 1 second blinking pattern of the Power/OK LED on the front of the system. After the SP has booted, the power button is enabled and the system is placed in standby power mode.

In standby power mode, the Power/OK LED on the front panel blinks green in a 0.1 second on, 2.9 seconds off pattern. See [FIGURE 4-3](#) and [FIGURE 4-4](#).

FIGURE 4-3 Sun Fire X4170 Oracle Database Server

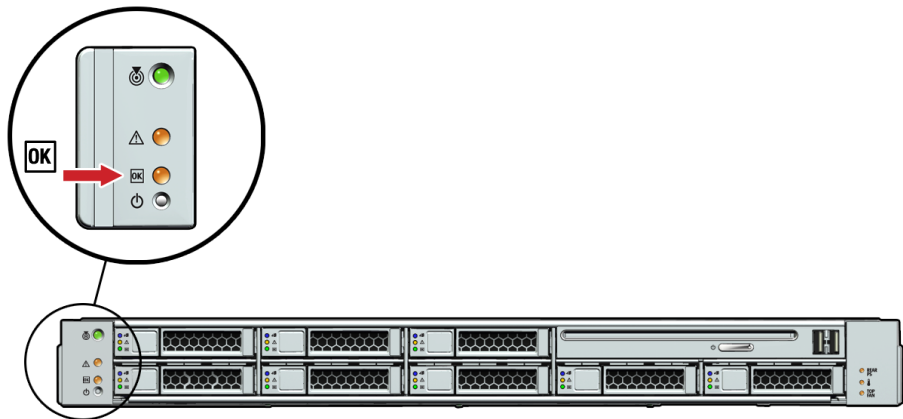
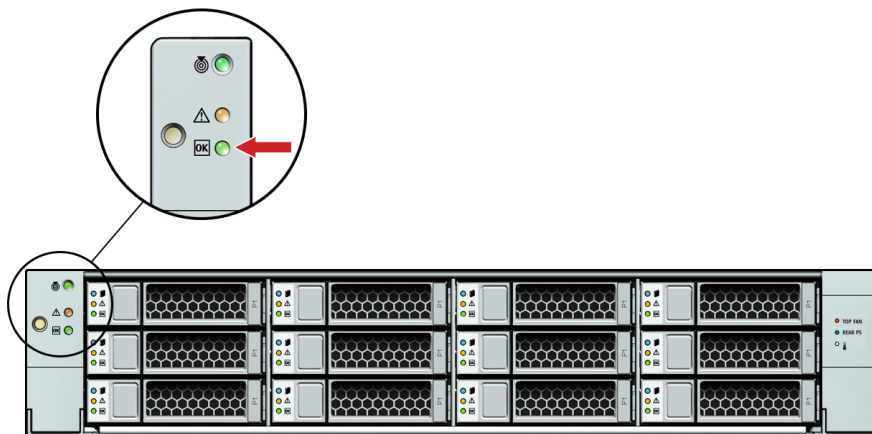


FIGURE 4-4 Exadata Storage Servers



9. Connect to the customer network.
10. Power on all Sun Fire X4170 Oracle Database Servers and Exadata Storage Servers installed in the Sun Oracle Database Machine.

Press the Power button on each server. See [FIGURE 4-3](#) and [FIGURE 4-4](#).

11. Verify that server main power is on for each server.

In main power mode, the Power/OK LED on the front panel blinks in a 1 second on and 1 second off pattern while the system BIOS boots. After BIOS initialization completes and the operating system starts booting, the Power/OK LED illuminates steady green. See [FIGURE 4-3](#) and [FIGURE 4-4](#).

4.4 What's Next

The Sun Oracle Database Machine physical installation is complete. Proceed to the Sun Oracle Database Machine Storage Cell configuration.

1. **Configure Management, Infiniband, and customer network connections.**
2. **Verify all of the hardware.**
3. **Turn over the Sun installation checklist to the onsite ACS engineer.**
4. **Configure Oracle Exadata software.**
5. **Perform final verification of the Sun Oracle Database Machine.**
6. **Hand off to the customer.**

