Oracle ZFS Storage ZS3-ES

Installation Guide

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Contents

Using This Documentation

This installation guide contains hardware installation procedures and configuration procedures for the Oracle ZFS Storage ZS3-ES.

This document is written for technicians, system administrators, authorized service providers, and users who have an understanding of server systems.

This section describes the documentation and feedback, and support and accessibility information.

- "About This Documentation" on page vii
- "Related Documentation" on page viii
- "Feedback" on page viii
- "Support and Accessibility" on page viii

About This Documentation

This documentation set is available in both PDF and HTML formats. The information is presented in topic-based organization (similar to online help) and therefore does not include chapters, appendices, or section numbering.

A PDF version that includes all information on a particular topic subject (such as hardware installation or product notes) can be generated by clicking the PDF button in the upper left corner of the HTML page.

Related Documentation

Documentation	Link
All Oracle documentation	`http://www.oracle.com/documentation`
Oracle ZFS Storage ZS3-ES	`http://www.oracle.com/goto/ZS3-ES/docs`
All Oracle Disk Storage Systems documentation	`http://www.oracle.com/goto/ZFSStorage/docs`
Oracle Integrated Lights Out Manager (ILOM) 3.1	`http://www.oracle.com/pls/topic/lookup?ctx=ilom31`

Feedback

You can provide feedback on this documentation at:

`http://www.oracle.com/goto/docfeedback`

Support and Accessibility

Description	Links
Access electronic support through My Oracle Support	`http://support.oracle.com`
	For hearing impaired:
	`http://www.oracle.com/accessibility/support.html`
Learn about Oracle's commitment to accessibility	`http://www.oracle.com/us/corporate/accessibility/index.html`

About the Installation Procedure

This section provides an overview of the installation procedure.

Description	Links
Review the entire installation procedure and find links to more information about each step.	"Installation Procedure Overview" on page 1

Related Information

- "About Server Features and Components" on page 3
- "Preparing for Server Installation" on page 9
- "Installing the Server Into a Rack" on page 13
- "Cabling the Server" on page 45
- "Powering On and Initially Configuring the Server" on page 51
- "Troubleshooting Installation Issues" on page 63

Installation Procedure Overview

The following table lists the tasks you need to complete to install the Oracle ZFS Storage ZS3-ES, which is based on the Sun Server X3-2 (formerly Sun Fire X4170 M3).

Step	Description	Links
1	Review the product notes for any late-breaking news about the server.	*Sun Server X3-2 (Oracle ZFS Storage ZS3-ES) Product Notes* at http://www.oracle.com/pls/topic/lookup?ctx=SunServerX3-2

Step	Description	Links
2	Review the server site requirements, specifications, and components.	• *Sun Server X3-2 Site Planning Guide,* "Preparing the Site for Installation," at `http://docs.oracle.com/cd/E22368_01/index .html` • "About Server Features and Components" on page 3
3	Review the server features.	"About Server Features and Components" on page 3
4	Familiarize yourself with ESD and safety precautions, and assemble the required tools and equipment.	"Preparing for Server Installation" on page 9
5	Install any separately shipped optional components.	*Oracle ZFS Storage ZS3-ES Service Manual*
6	Install the server into a rack.	"Installing the Server Into a Rack" on page 13
7	Install Oracle disk shelves.	"Install Oracle Disk Shelves" on page 43
8	Attach data and cluster cables to the server.	"Cabling the Server" on page 45
9	Connect to Oracle disk shelves.	"Connect to Oracle DE2 Disk Shelves" on page 49
10	Power on and initially configure the system.	"Powering On and Initially Configuring the Server" on page 51
11	Update your system firmware and software.	"Getting Server Firmware and Software" on page 87
12	Troubleshoot installation issues.	"Troubleshooting Installation Issues" on page 63

About Server Features and Components

This section describes the components, LEDs, connectors, and disk management options for the server.

Description	Links
Review server features and components.	"Server Components" on page 4
Locate status indicators, connectors, and storage drives on the server front and back panels.	"Front Panel Status Indicators, Connectors, and Drives" on page 5
	"Back Panel Status Indicators, Connectors, and PCIe Slots" on page 6

Related Information

- "Cabling the Server" on page 45

Server Components

TABLE: Oracle ZFS Storage ZS3-ES Components

Feature	Description
Memory	Sixteen 16 GB DDR3 DIMMs occupying all DIMM slots. There are no empty DIMM slots and, therefore, no fillers. **Note -** All DIMMs must be identical within each server and for both clustered servers.
Storage	Eight 2.5-inch SAS-2 hard disk drive (HDD)/solid state disk (SSD) slots, which are occupied as follows: • Two system disks in slots 0 and 1 • Two SAS-2 Readzilla devices in slots 2 and 3 • Four HDD/SSD fillers in slots 4 through 7
PCI Express (PCIe) I/O external slots	Three PCIe Gen3 external slots occupied by: • InfiniBand card for connectivity to client servers • Clustron V2 card for connecting the Oracle ZFS Storage ZS3-ES servers together • SAS-2 HBA for disk shelf connectivity
Internal HBA	One dedicated PCIe Gen3 slot for use with an internal-only HBA card. This internal HBA is used to control and manage the storage drives.
Ethernet ports	Four 10GBASE-T RJ-45 Gigabit Ethernet (10GbE) ports on the rear panel.
USB 2.0 ports	Two front, two rear, and one internal.
VGA ports	One rear high-density DB-15 video port.

Feature	Description
Service processor (SP)	The server includes an AST2300 service processor (SP). The SP provides IPMI 2.0 compliant remote management capabilities. The SP features: • Oracle Integrated Lights Out Manager (ILOM) version 3.1. • Local Oracle ILOM command-line access using a serial connection. • Support for Ethernet access to SP through a dedicated 10/100BASE-T, management port (NET MGT) and optionally through one of the host Ethernet ports (sideband management). • Support for remote KVMS (keyboard, video, mouse, and storage) over IP.
Power supplies	Two hot-swappable and highly redundant 600W power supplies.
Cooling fans	Four 40-mm, hot-swappable fan modules for chassis cooling. Each fan module contains two counter-rotating fan pairs (four rotors total). Each power supply has its own cooling fans.

Related Information

- "Front Panel Status Indicators, Connectors, and Drives" on page 5
- "Back Panel Status Indicators, Connectors, and PCIe Slots" on page 6

Front Panel Status Indicators, Connectors, and Drives

The following figure describes the status indicators (LEDs), connectors, and drives on the front panel of the Oracle ZFS Storage ZS3-ES.
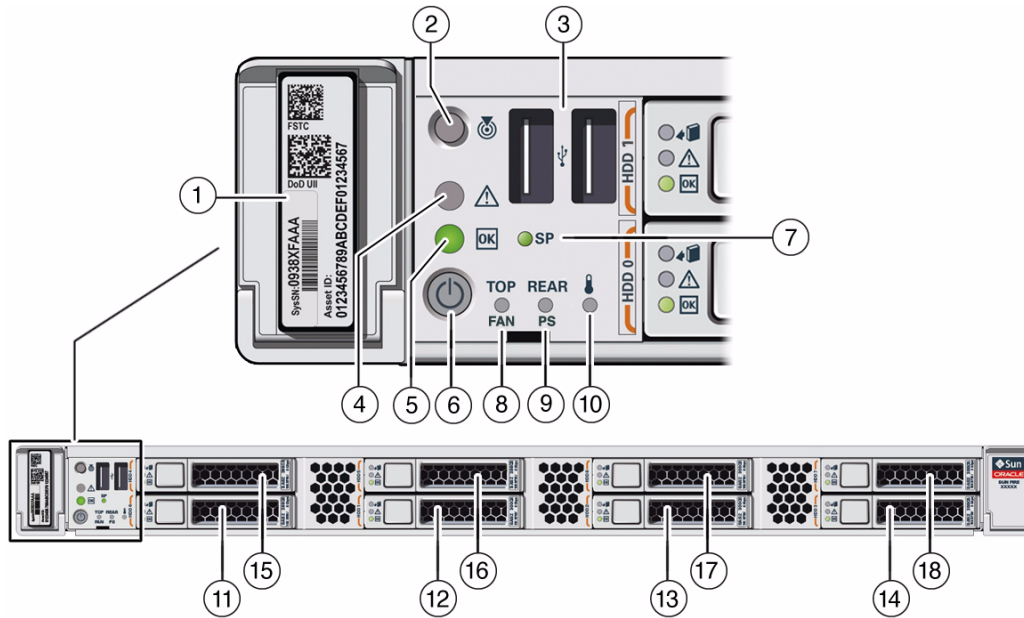
Figure Legend

1	Product Serial Number (PSN) label and Radio Frequency Identification (RFID) tag	10	System Over Temperature Warning LED: amber
2	Locate LED/button: white	11	System disk, slot 0
3	USB 2.0 connectors (2)	12	System disk, slot 1
4	Service Required LED: amber	13	Readzilla device, slot 2
5	Power/OK LED: green	14	Readzilla device, slot 3
6	Power button	15	Drive filler panel, slot 4
7	SP OK LED: green	16	Drive filler panel, slot 5
8	Fan Fault LED: amber	17	Drive filler panel, slot 6
9	Power Supply (PS) Fault LED: amber	18	Drive filler panel, slot 7

Back Panel Status Indicators, Connectors, and PCIe Slots

The following figure shows the Oracle ZFS Storage ZS3-ES back panel and the location of status indicators (LEDs), connectors, and PCIe slots.

FIGURE: Server Back Panel View
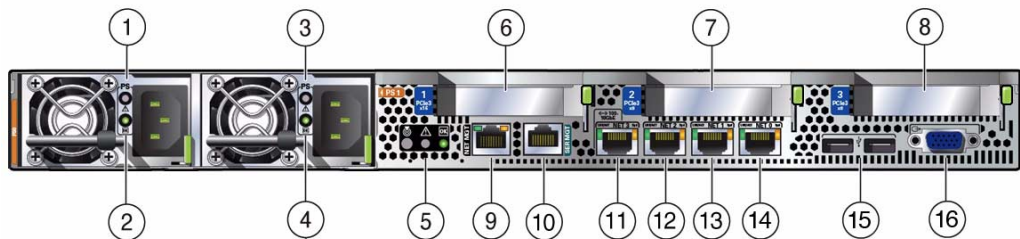
Figure Legend

1	Power Supply (PS) 0	**9**	Oracle Integrated Lights Out Manager (ILOM) service processor (SP) network management 10/100BASE-T port (NET MGT)
2	Power Supply (PS) 0 status indicators: Service Required LED: amber AC OK LED: green	**10**	Serial management (SER MGT)/RJ-45 serial port
3	Power Supply (PS) 1	**11**	Network (NET) 100/1000/10000 port: NET 3
4	Power Supply (PS) 1 status indicators: Service Required LED: amber AC OK LED: green	**12**	Network (NET) 100/1000/10000 port: NET 2
5	System status indicators: Locator LED: white Service Required LED: amber Power/OK LED: green	**13**	Network (NET) 100/1000/10000 port: NET 1
6	PCIe card slot 1 (InfiniBand card for connectivity to client servers)	**14**	Network (NET) 100/1000/10000 port: NET 0
7	PCIe card slot 2 (Clustron V2 PCIe card for connecting the Oracle ZFS Storage ZS3-ES servers together)	**15**	USB 2.0 connectors (2)
8	PCIe card slot 3 (SAS-2 host bus adapter (HBA) for disk shelf connectivity. Slot 4 is for an internal SAS-2 HBA and is not visible from the rear.)	**16**	DB-15 video connector

Preparing for Server Installation

This section provides the information you need to prepare for the server installation.

Description	Links
Unpack the server and verify the accessory kit contents.	"Shipping Inventory" on page 9
Assemble the tools required for installation.	"Tools and Equipment Needed for Installation" on page 10
Review ESD requirements and take safety precautions.	"ESD and Safety Precautions" on page 10

Related Information

- "Installation Procedure Overview" on page 1
- *Sun Server X3-2 Site Planning Guide,* "Preparing the Site for Installation" at http://docs.oracle.com/cd/E22368_01/index.html
- "About Server Features and Components" on page 3

Shipping Inventory

Inspect the shipping cartons for evidence of physical damage. If a shipping carton appears damaged, request that the carrier agent be present when the carton is opened. Keep all contents and packing material for the agent's inspection.

The accessory kit for the Oracle ZFS Storage ZS3-ES includes the following items:

- Power cords, packaged separately with country kit
- Legal and safety documents

Tools and Equipment Needed for Installation

To install the system, you must have the following tools:

- No. 2 Phillips screwdriver
- ESD mat and grounding strap

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

- ASCII terminal
- Workstation
- Terminal server
- Patch panel connected to a terminal server

Related Information

-

ESD and Safety Precautions

Electronic equipment is susceptible to damage by static electricity. Use a grounded antistatic wriststrap, footstrap, or equivalent safety equipment to prevent electrostatic discharge (ESD) when you install or service the server.

Caution – To protect electronic components from electrostatic damage, which can permanently disable the system or require repair by service technicians, place components on an antistatic surface, such as an antistatic discharge mat, an antistatic bag, or a disposable antistatic mat. Wear an antistatic grounding strap connected to a metal surface on the chassis when you work on system components.

Read the safety information in the *Sun Server X3-2 Safety and Compliance Guide* and in the *Important Safety Information for Oracle Hardware Systems* before installing the server.

Caution – Deploy the anti-tilt bar or legs on the equipment rack before beginning an installation.

Caution – The server weighs approximately 18.1 kg (39.9 pounds). Two people are required to lift and mount this 1 rack unit (1U) server into a rack enclosure when using the procedures in this document.

Caution – When completing a two-person procedure, always communicate your intentions clearly before, during, and after each step to minimize confusion.

Related Information

- "Safety Precautions When Rackmounting the Server" on page 15

Installing the Server Into a Rack

This section describes how to install the server into a rack using the rail assembly in the rackmount kit. Perform these procedures if you purchased the rail assembly.

Description	Links
Complete all installation prerequisite tasks.	"Installation Prerequisites" on page 14
Check that your rack meets the requirements for installation of this server.	"Rack Requirements" on page 14
Review safety precautions.	"Safety Precautions When Rackmounting the Server" on page 15
Verify that you have received all components of the rackmount kit.	"Rackmount Kit Contents" on page 16
Stabilize the rack.	"Stabilize the Rack for Installation" on page 17
Install mounting brackets onto the server.	"Install Mounting Brackets" on page 18
Mark the rackmount location.	"Mark the Rackmount Location" on page 20
Attach the tool-less slide-rail assembly to the rack.	"Attach Tool-less Slide-Rail Assemblies" on page 21
Install the server into the slide-rail assembly.	"Install the Server Into the Slide-Rail Assemblies" on page 24
(Optional) Install the cable management arm for routing server cables.	"Install the Cable Management Arm" on page 27
Verify that the slide-rails and cable management arm are working correctly.	"Verify Operation of Slide-Rails and CMA" on page 41
Install Oracle disk shelves.	"Install Oracle Disk Shelves" on page 43

Related Information

- "About the Installation Procedure" on page 1
- "Preparing for Server Installation" on page 9
- *Sun Server X3-2 Site Planning Guide*, "Preparing the Site for Installation," at http://docs.oracle.com/cd/E22368_01/index.html

Installation Prerequisites

Before you start the rackmount procedures, ensure that your site meets the required electrical and environmental requirements. See the *Sun Server X3-2 Site Planning Guide*, "Preparing the Site for Installation," at http://docs.oracle.com/cd/E22368_01/index.html.

Rack Requirements

The rack into which you install the Oracle ZFS Storage ZS3-ES must meet the requirements listed in the following table.

TABLE: Rack Requirements

Item	Requirement
Structure	Four-post rack (mounting at both front and rear). Supported rack types: square hole (9.5 mm) and round hole (M6 or 1/4-20 threaded only. Two-post racks are not compatible.
Rack horizontal opening and unit vertical pitch	Conforms to ANSI/EIA 310-D-1992 or IEC 60927 standards.
Distance between front and rear mounting planes	Minimum 610 mm and maximum 915 mm (24 inches to 36 inches).
Clearance depth in front of front mounting plane	Distance to front cabinet door is at least 25.4 mm (1 inch).
Clearance depth behind front mounting plane	Distance to rear cabinet door is at least 900 mm (35.43 inches) with the cable management arm, or 800 mm (31.5 inches) without the cable management arm.

TABLE: Rack Requirements *(Continued)*

Item	Requirement
Clearance width between front and rear mounting planes	Distance between structural supports and cable troughs is at least 456 mm (18 inches).
Minimum clearance for service access	• Clearance, front of server: 123.2 cm (48.5 inches) • Clearance, rear of server: 91 cm (36 inches)
Server dimensions	Depth: (not including PSU handle): 737.0 mm (29.0 inches). Width: (not including ears): 436.5 mm (17.19 inches). Height: 42.6 mm (1.68 inches).

Related Information

- "Preparing for Server Installation" on page 9
- *Sun Server X3-2 Site Planning Guide,* "Preparing the Site for Installation," at http://docs.oracle.com/cd/E22368_01/index.html

Safety Precautions When Rackmounting the Server

This section describes safety precautions you must follow when installing the server into a rack.

Caution – Deploy the anti-tilt bar or legs on the equipment rack before beginning an installation.

Caution – Always load equipment into a rack from the bottom up so that the rack will not become top-heavy and tip over. Deploy your rack's anti-tilt bar to prevent the rack from tipping during equipment installation.

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, consideration should be given to installing the equipment in an environment compatible with the maximum ambient temperature (Tma) specified for the server.

For server environmental requirements, refer to *Sun Server X3-2 Site Planning Guide,* "Preparing the Site for Installation," at http://docs.oracle.com/cd/E22368_01/index.html.

Caution – Reduced airflow: Installation of the equipment in a rack should be such that the amount of airflow required for safe operation of the equipment is not compromised.

Caution – Mechanical loading: Mounting of the equipment in the rack should be such that a hazardous condition is not created due to uneven mechanical loading.

Caution – Circuit overloading: Consideration should be given to the connection of the equipment to the supply circuit and the effect that overloading of the circuits might have on over-current protection and supply wiring. Appropriate consideration of equipment nameplate power ratings should be used when addressing this concern.

Caution – Reliable earthing: Reliable earthing of rackmounted equipment should be maintained. Particular attention should be given to supply connections other than direct connections to the branch circuit (for example, use of power strips).

Caution – Slide-rail-mounted equipment is not to be used as a shelf or a work space.

Related Information

- "ESD and Safety Precautions" on page 10

Rackmount Kit Contents

The rackmount kit contains two slide-rails, two mounting brackets, and optional securing screws.

FIGURE: Tool-less Rackmount Kit Contents
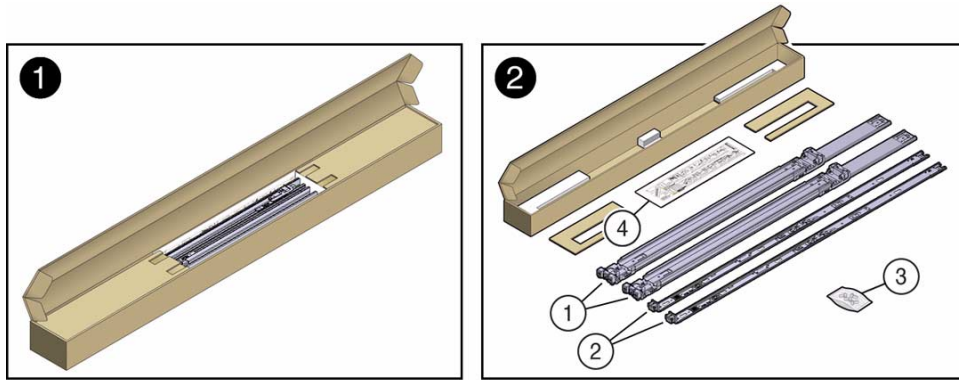
Figure Legend

1	Slide-rails
2	Mounting brackets
3	Four M4 x 5 fine-pitch mounting bracket securing screws (optional)
4	Installation card

Related Information

■ "Rack Requirements" on page 14

▼ Stabilize the Rack for Installation

⚠ **Caution –** To reduce the risk of personal injury, stabilize the expansion rack cabinet, and extend all anti-tilt devices before installing the server.

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

1. Open and remove the front and rear doors from the rack cabinet.

Note – The front and rear doors need to be removed only if they impinge on the mounting bay.

2. **To prevent the rack cabinet from tipping during the installation, fully extend the rack cabinet's anti-tilt legs or anti-tilt bar, which are located at the bottom front of the rack cabinet.**

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

Related Information

- "Safety Precautions When Rackmounting the Server" on page 15
- Your rack cabinet documentation
- *Sun Server X3-2 Safety and Compliance Guide* at http://docs.oracle.com/cd/E22368_01/index.html
- *Sun Server X3-2 Site Planning Guide,* "Preparing the Site for Installation," at http://docs.oracle.com/cd/E22368_01/index.html

▼ Install Mounting Brackets

To install the mounting brackets onto the sides of the server:

1. **Position a mounting bracket against the chassis so that the slide-rail lock is at the server front, and the five keyhole openings on the mounting bracket are aligned with the five locating pins on the side of the chassis.**

FIGURE: Aligning the Mounting Bracket with the Server Chassis
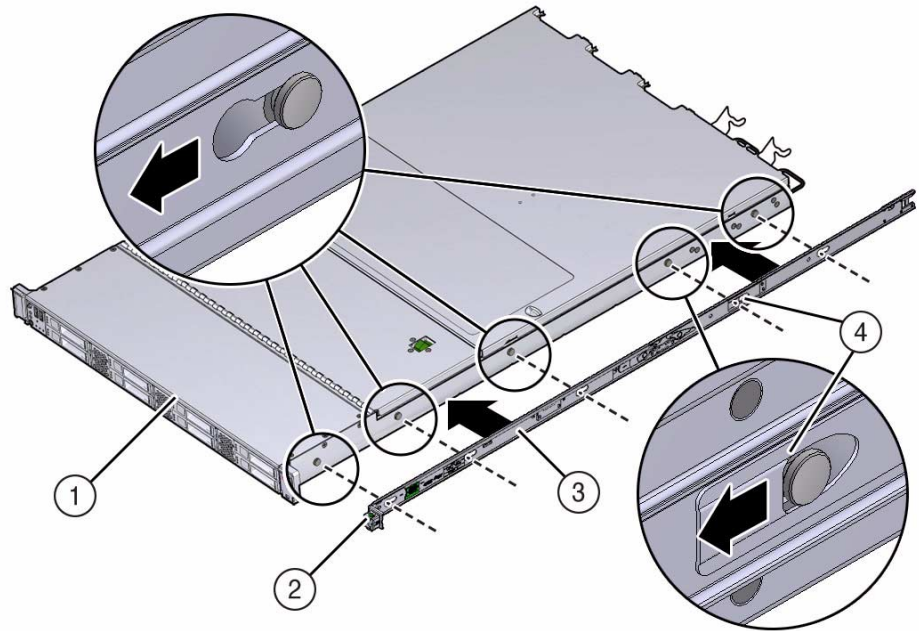
Figure Legend

1	Chassis front
2	Slide-rail lock
3	Mounting bracket
4	Mounting bracket clip

2. **With the heads of the five chassis locating pins protruding through the five keyhole openings in the mounting bracket, pull the mounting bracket toward the front of the chassis until the mounting bracket clip locks into place with an audible click.**

3. **Verify that the rear locating pin has engaged the mounting bracket clip.**

4. **Repeat** Step 1 **through** Step 3 **to install the remaining mounting bracket on the other side of the server.**

Related Information

- "Mark the Rackmount Location" on page 20
- "Attach Tool-less Slide-Rail Assemblies" on page 21

▼ Mark the Rackmount Location

Use the rackmount installation card to identify the correct mounting holes for the slide-rails.

Note – Load the rack from bottom to top.

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1. **Ensure that there is at least 1 rack unit (1U) of vertical space in the rack cabinet to install the server.**

   See "Rack Requirements" on page 14.

2. **Place the rackmount installation card against the front rails.**

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

FIGURE: Rackmount Installation Card Template
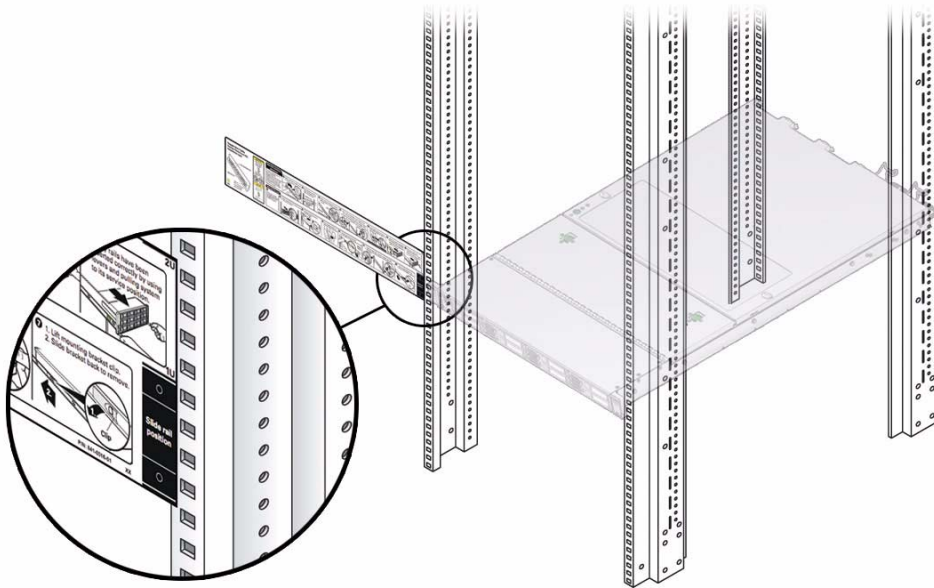
3. **Mark the mounting holes for the front slide-rails.**

4. **Mark the mounting holes for the rear slide-rails.**

Related Information

▼ Attach Tool-less Slide-Rail Assemblies

Use this procedure to attach tool-less slide-rail assemblies to the rack.

1. **Orient the slide-rail assembly so that the ball bearing track is forward and locked in place.**

FIGURE: Orienting the Slide-Rail with the Ball-Bearing Track
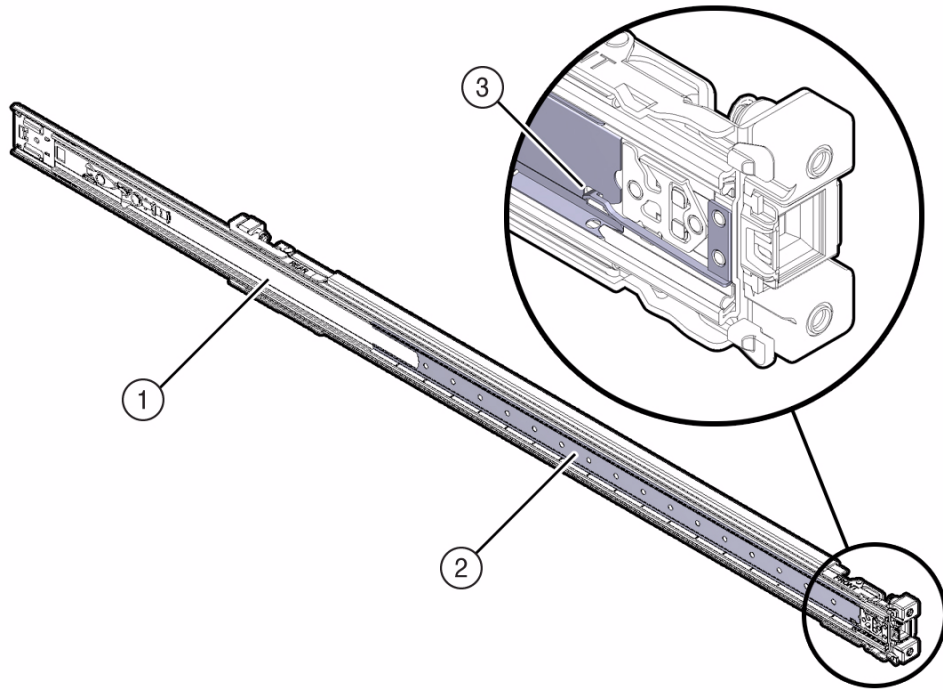
Figure Legend

1	Slide-rail
2	Ball-bearing track
3	Locking mechanism

2. Starting with either the left or right side of the rack, align the rear of the slide-rail assembly against the inside of the rear rack rail, and push until the assembly locks into place with an audible click.

FIGURE: Aligning the Slide-Rail Assembly with the Rack
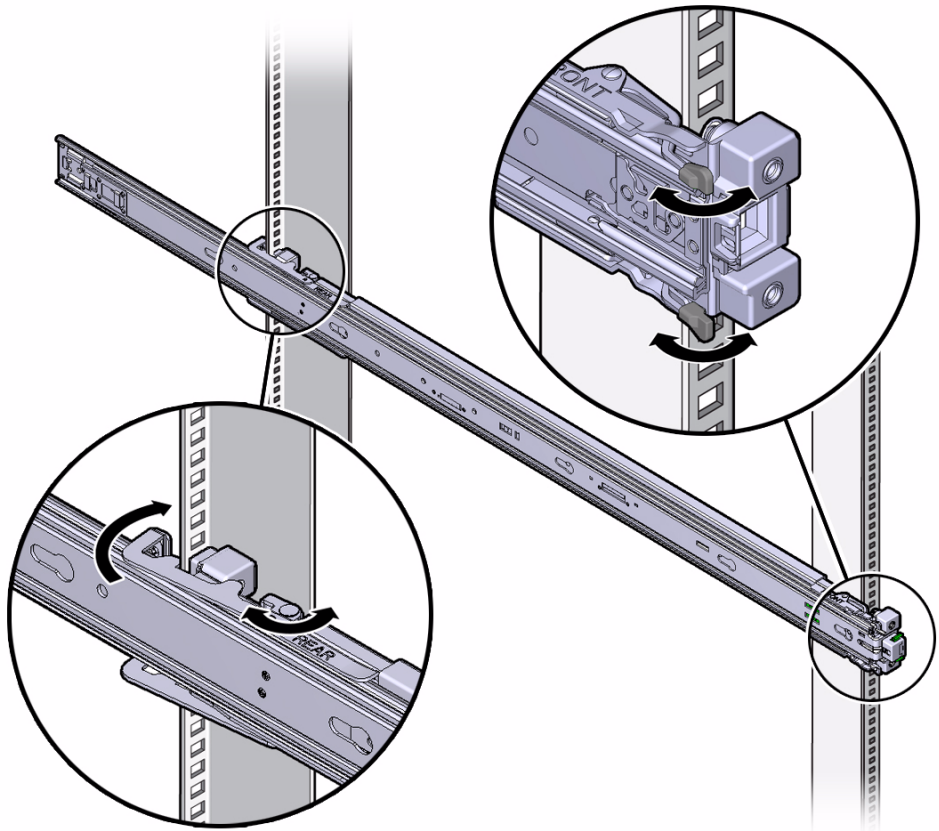
3. **Align the front of the slide-rail assembly against the outside of the front rack rail, and push until the assembly locks into place with an audible click.**

4. **Repeat** Step 1 **through** Step 3 **to attach the slide-rail assembly to the other side of the rack.**

Related Information

- "Install Mounting Brackets" on page 18
- "Mark the Rackmount Location" on page 20
- "Install the Server Into the Slide-Rail Assemblies" on page 24

▼ Install the Server Into the Slide-Rail Assemblies

Use this procedure to install the server chassis, with mounting brackets, into the slide-rail assemblies that are mounted to the rack.

Caution – This procedure requires a minimum of two people because of the weight of the server. Attempting this procedure alone could result in equipment damage or personal injury.

Caution – Always load equipment into a rack from the bottom up so that the rack will not become top-heavy and tip over. Extend your rack's anti-tilt bar to prevent the rack from tipping during equipment installation.

1. **Push the slide-rails as far as possible into the slide-rail assemblies in the rack.**

2. **Position the server so that the rear ends of the mounting brackets are aligned with the slide-rail assemblies that are mounted in the rack.**

3. **Insert the mounting brackets into the slide-rails, and then push the server into the rack until the mounting brackets encounter the slide-rail stops (approximately 30 cm, or 12 inches).**

FIGURE: Inserting the Server with Mounting Brackets Into the Slide-Rails
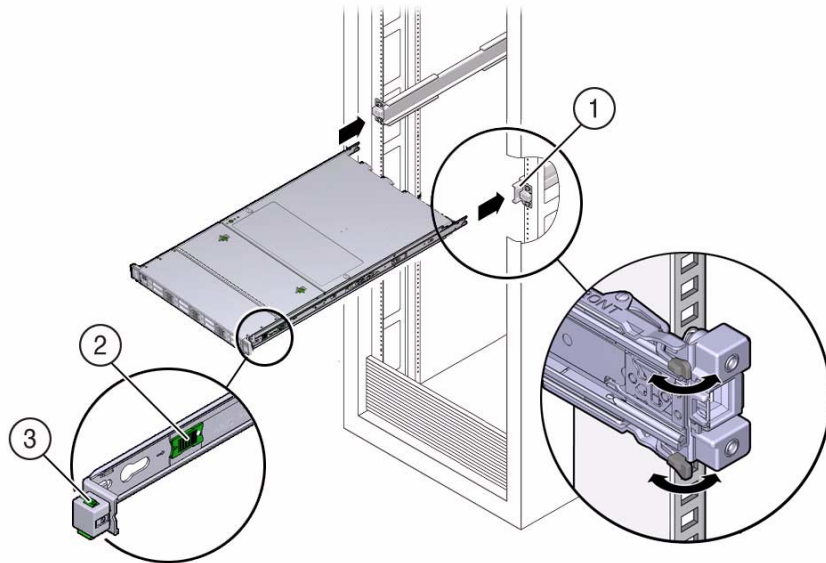
Figure Legend

1	Inserting mounting bracket into slide-rail
2	Slide-rail release button
3	Slide-rail lock

4. **Simultaneously push and hold the green slide-rail release buttons on each mounting bracket while you push the server into the rack. Continue pushing the server into the rack until the slide-rail locks (on the front of the mounting brackets) engage the slide-rail assemblies.**

   You will hear an audible click.

FIGURE: Sliding the Server Into the Rack
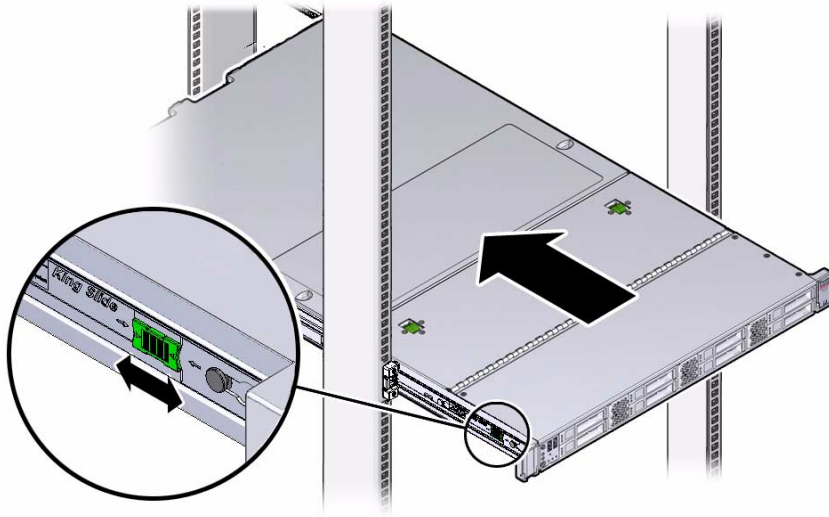
⚠️ **Caution –** Verify that the server is securely mounted in the rack and that the slide-rail locks are engaged with the mounting brackets before you install the optional cable management arm.

Related Information

- "Install the Cable Management Arm" on page 27
- "Verify Operation of Slide-Rails and CMA" on page 41

▼ Install the Cable Management Arm

Follow this procedure to install the cable management arm (CMA), which you can use to manage cables connected to the rear of the server.

1. **Unpack the CMA.**

   The following figure shows the CMA components.

FIGURE: CMA Components
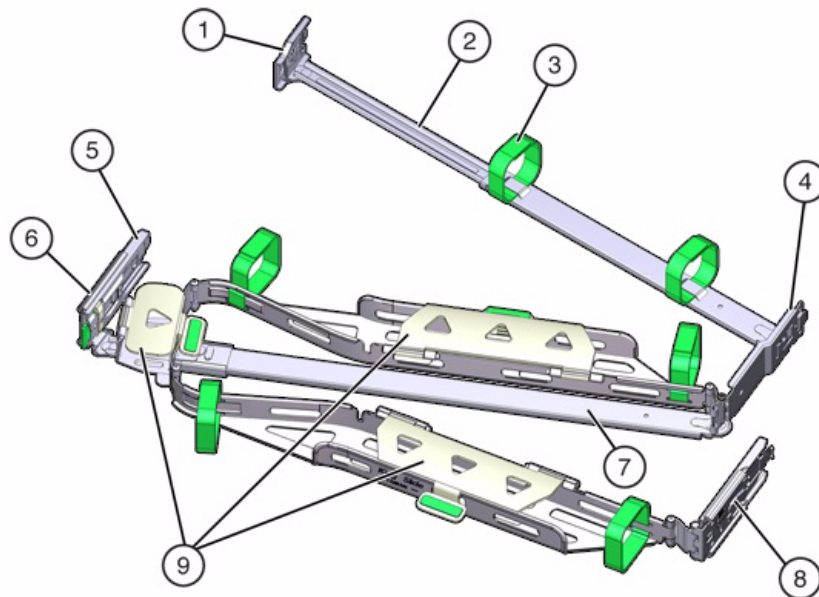
Figure Legend

1	Connector A	**6**	Connector D
2	Front slide bar	**7**	Slide-rail latching bracket (used with connector D)
3	Velcro straps (6)	**8**	Rear slide bar
4	Connector B	**9**	Cable covers
5	Connector C	**10**	not applicable

2. **Ensure that the six Velcro straps are threaded into the CMA as shown in** FIGURE: CMA Components on page 27**.**

Note – Ensure that the two Velcro straps located on the front slide bar are threaded through the opening in the top of the slide bar as shown in FIGURE: CMA Components on page 27. This prevents the Velcro straps from interfering with the expansion and contraction of the slide bar when the server is extended out of the rack and returned into the rack.

3. **To make it easier to install the CMA, extend the server approximately 13 cm (5 inches) out of the front of the rack.**

4. **Take the CMA to the back of the equipment rack, and ensure that you have adequate room to work at the back of the server.**

Note – References to "left" or "right" in this procedure assume that you are facing the back of the equipment rack.

Note – Throughout this installation procedure, support the CMA and do not allow it to hang under its own weight until it is secured at all four attachment points.

5. **Insert CMA connector A into the front slot on the left slide-rail until it locks into place with an audible click [frames 1 and 2].**

   The connector A tab (see callout 1) goes into the slide-rail front slot (callout 2).

   Gently tug on the left side of the front slide bar to verify that connector A is properly seated.

FIGURE: Installing Connector A Into the Left Slide-Rail
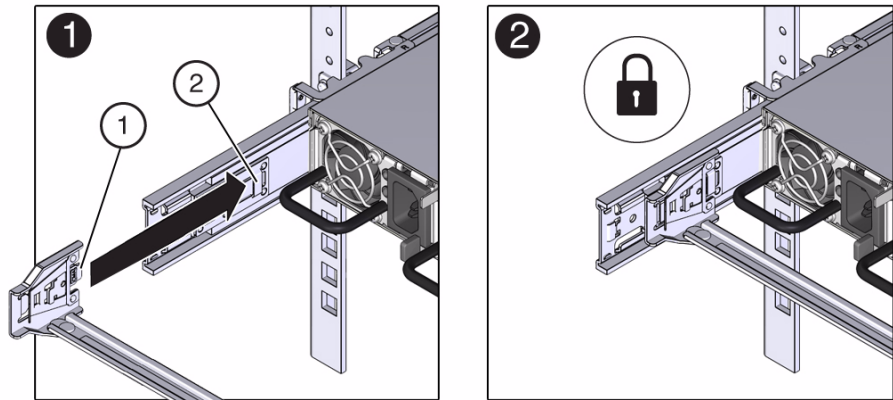
Figure Legend

1	Connector A tab
2	Left slide-rail front slot

6. **Insert CMA connector B into the front slot on the right slide-rail until it locks into place with an audible click [frames 1 and 2].**

   The connector B tab (callout 1) goes into the slide-rail front slot (callout 2).

   Gently tug on the right side of the front slide bar to verify that connector B is properly seated.

FIGURE: Installing Connector B Into the Right Slide-Rail
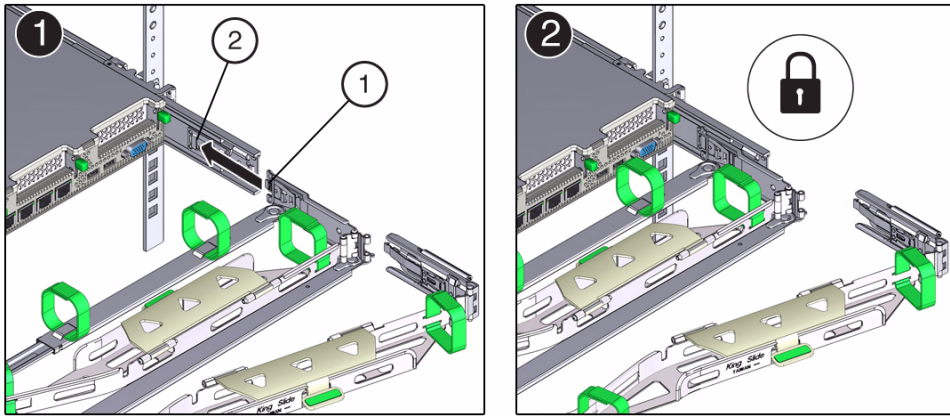
Figure Legend

1	Connector B tab
2	Right slide-rail front slot

7. **To install CMA connector C into the right slide-rail, perform the following steps:**

   a. **Align connector C with the slide-rail so that the locking spring (callout 1) is positioned inside (server side) of the right slide-rail [frame 1].**

FIGURE: Installing Connector C Into the Right Side-Rail
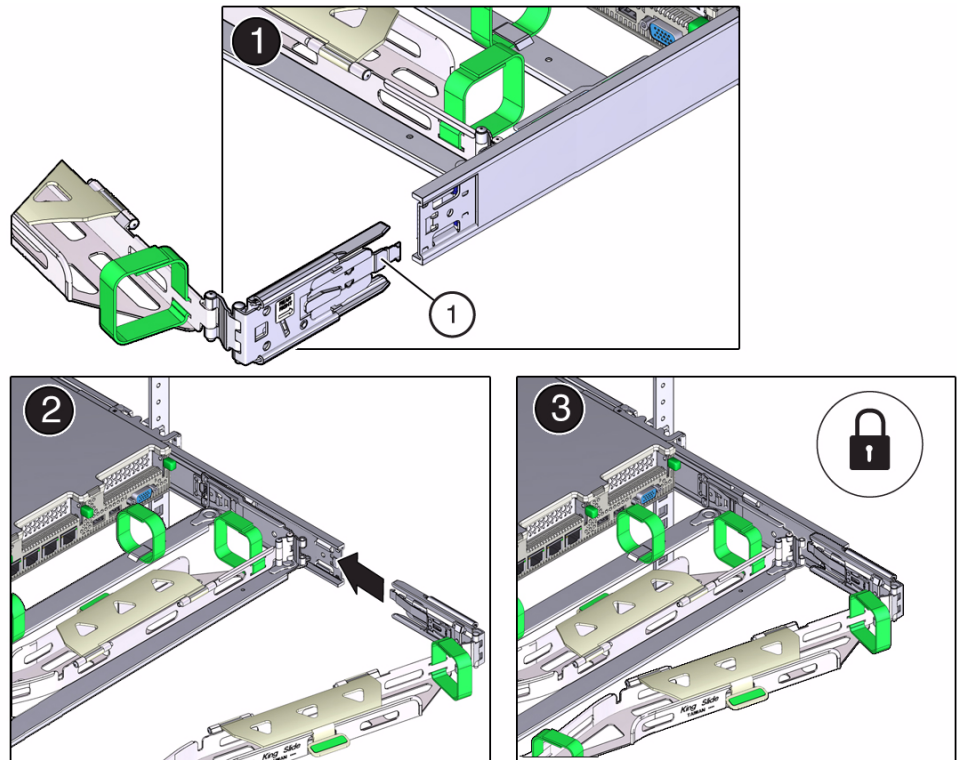
Figure Legend

1	Connector C locking spring

    b. **Insert connector C into the right side-rail until it locks into place with an audible click [frames 2 and 3].**

    c. **Gently tug on the right side of the CMA rear slide bar to verify that connector C is properly seated.**

8. **To prepare CMA connector D for installation, remove the tape that secures the slide-rail latching bracket to connector D and ensure that the latching bracket is properly aligned with connector D [frames 1 and 2].**

Note –   The CMA is shipped with the slide-rail latching bracket taped to connector D. You must remove the tape before you install this connector.

FIGURE: Aligning the CMA Slide-Rail Latching Bracket with Connector D
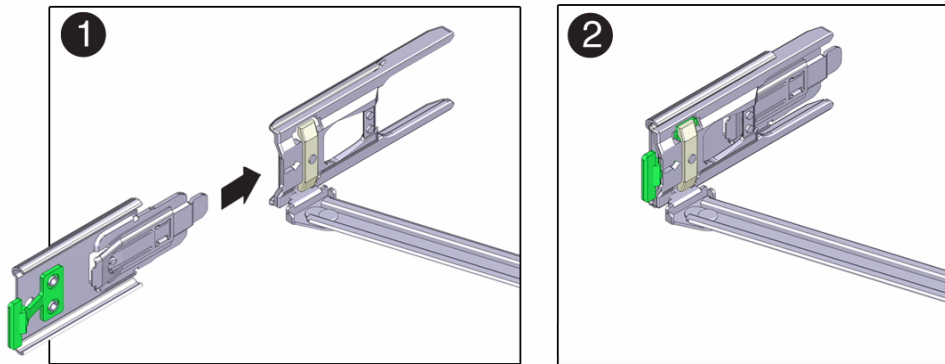
9. **While holding the slide-rail latching bracket in place, insert connector D and its associated slide-rail latching bracket into the left slide-rail until connector D locks into place with an audible click [frames 1 and 2].**

Note – When inserting connector D into the slide-rail, the preferred and easier method is to install connector D and the latching bracket as one assembly into the slide-rail.

FIGURE: Installing Connector D Into the Left Slide-Rail
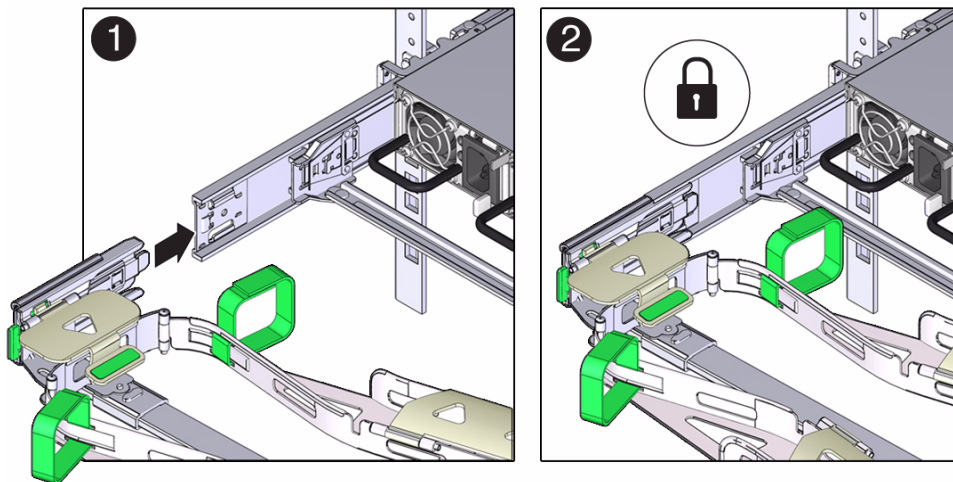
10. **Gently tug on the left side of the CMA rear slide bar to verify that connector D is properly seated.**

> **Note –** The slide-rail latching bracket has a green release tab. This tab is used to release and remove the latching bracket so that you can remove connector D.

11. Gently tug on the four CMA connection points to ensure that the CMA connectors are fully seated before you allow the CMA to hang by its own weight.

12. To verify that the slide-rails and the CMA are operating properly before routing cables through the CMA, perform the following steps:

   a. To prevent the rack from tipping forward when the server is extended, extend all rack anti-tilt devices.

> **Caution –** To reduce the risk of personal injury, stabilize the expansion rack cabinet and extend all anti-tilt devices before extending the server from the rack.

   For instructions for stabilizing the rack, see "Stabilize the Rack for Installation" on page 17.

   b. Extend the server from the front of the rack until the CMA is fully extended.

FIGURE: CMA Fully Extended
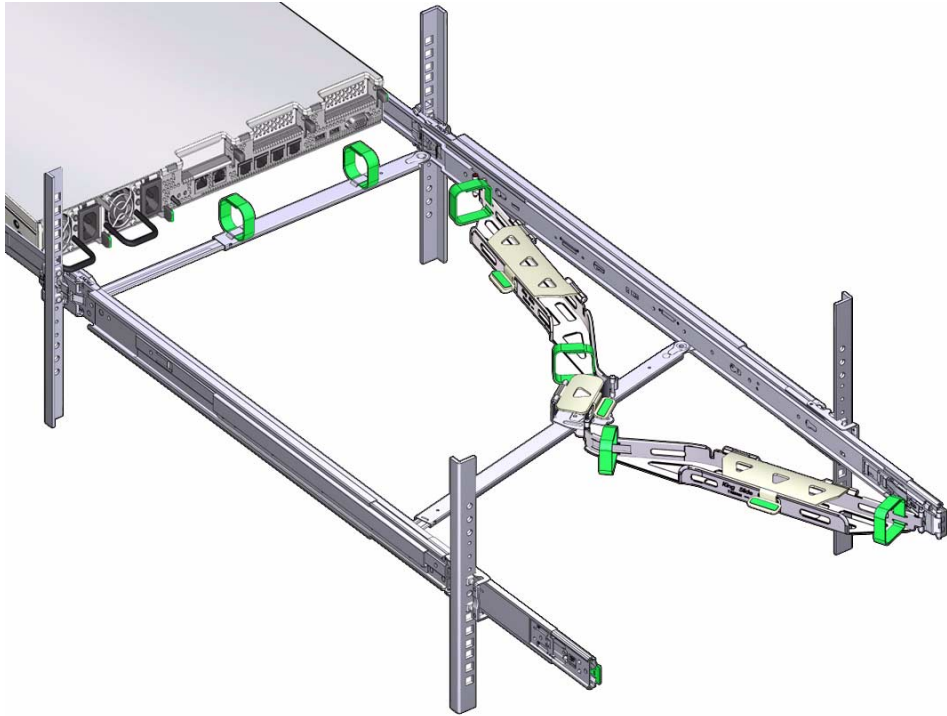
13. **To return the server to the rack, perform the following steps:**

    a. **Simultaneously pull and hold the two green release tabs (one on each side of the server) toward the front of the server (see the following figure) while you push the server into the rack. As you push the server into the rack, verify that the CMA retracts without binding.**

Note – To pull the green release tabs, place your finger in the center of each tab, not on the end, and apply pressure as you pull the tab toward the front of the server.

FIGURE: Location of Slide-Rail Release Tabs
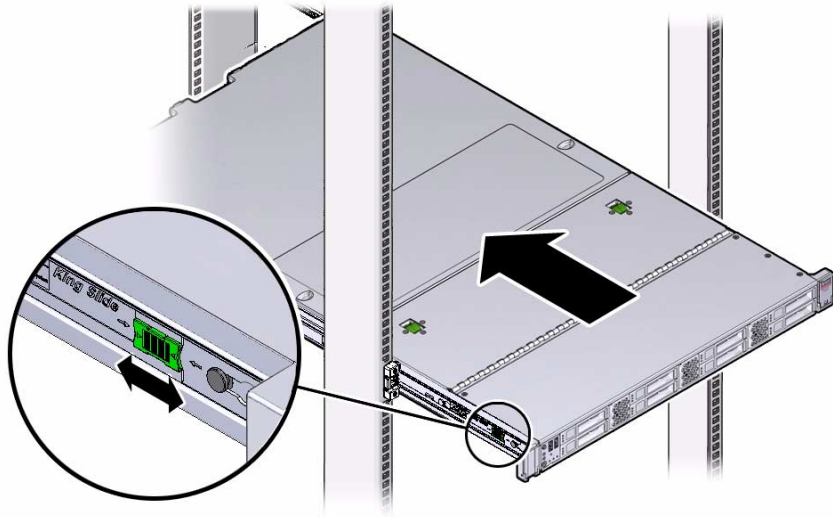
b. Continue pushing the server into the rack until the slide-rail locks (on the front of the server) engage the slide-rail assemblies.

You will hear an audible click when the server is in the normal rack position.

14. Connect cables to the server, as required.

Instructions for connecting the server cables are provided in "Cabling the Server" on page 45.

15. Open the CMA cable covers, route server cables through the CMA cable troughs, close the cable covers, and secure the cables with the six Velcro straps.

Route the cables through the cable troughs in this order:

a. First through the front-most cable trough.

b. Then through the small cable trough.

c. Then through the rear-most cable trough

Note – When securing the cables with the Velcro straps located on the front slide bar, ensure that the Velcro straps do not wrap around the bottom of the slide bar; otherwise, expansion and contraction of the slide bar might be hindered when the server is extended from the rack and returned to the rack.

FIGURE: CMA with Cables Installed, Cable Covers Closed, and Cables Secured with Velcro Straps
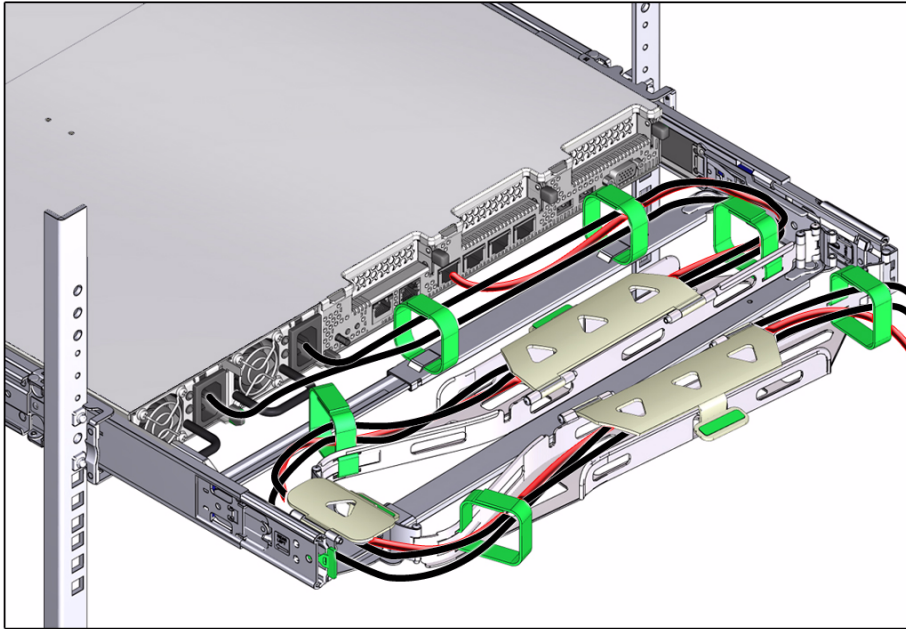
16. **Ensure that the secured cables do no extend above the top or below the bottom of the server to which they are attached; otherwise, the cables might snag on other equipment installed in the rack when the server is extended from the rack or returned to the rack.**

Note – If necessary, bundle the cables with additional Velcro straps to ensure that they stay clear of other equipment. If you need to install additional Velcro straps, wrap the straps around the cables only, not around any of the CMA components; otherwise, expansion and contraction of the CMA slide bars might be hindered when the server is extended from the rack and returned to the rack.

17. **Proceed to** "Verify Operation of Slide-Rails and CMA" on page 41 **and verify the operation of the slide-rails and the CMA.**

Related Information

- "Verify Operation of Slide-Rails and CMA" on page 41
- "Remove the Cable Management Arm" on page 37

▼ Remove the Cable Management Arm

Follow this procedure to remove the cable management arm (CMA).

Before you begin this procedure, refer to FIGURE: CMA Components on page 27and identify CMA connectors A, B, C, and D. You should disconnect the CMA connectors in the reverse order in which you installed them, that is, disconnect connector D first, then C, then B, and finally A.

Note – References to "left" or "right" in this procedure assume that you are facing the back of the equipment rack.

Note – Throughout this procedure, after you disconnect any of the CMA four connectors, do not allow the CMA to hang under its own weight.

---

1. **To prevent the rack from tipping forward when the server is extended, extend all rack anti-tilt devices.**

Caution – To reduce the risk of personal injury, stabilize the expansion rack cabinet and extend all anti-tilt devices before extending the server from the rack.

   For instructions for stabilizing the rack, see "Stabilize the Rack for Installation" on page 17.

2. **To make it easier to remove the CMA, extend the server approximately 13 cm (5 inches) out of the front of the rack.**

3. **To remove the cables from the CMA, do the following:**

   a. **Disconnect all cables from the rear of the server.**

   b. **If applicable, remove any additional Velcro straps that were installed to bundle the cables.**

   c. **Unwrap the six Velcro straps that are securing the cables.**

   d. **Open the three cable covers to the fully opened position.**

   e. **Remove the cables from the CMA and set them aside.**

4. **To disconnect connector D, perform the following steps:**

a. **Press the green release tab (callout 1) on the slide-rail latching bracket toward the left and slide the connector D out of the left slide-rail [frames 1 and 2].**

Note – When you slide connector D out of the left slide-rail, the slide-rail latching bracket portion of the connector remains in place. You will disconnect it in the next step.

Note – After you have disconnected connector D, you must not allow the CMA to hang under its own weight. Throughout the remainder of this procedure, the CMA must be supported until all the remaining connectors are disconnected and the CMA can be placed on a flat surface.

FIGURE: Disconnecting Connector D
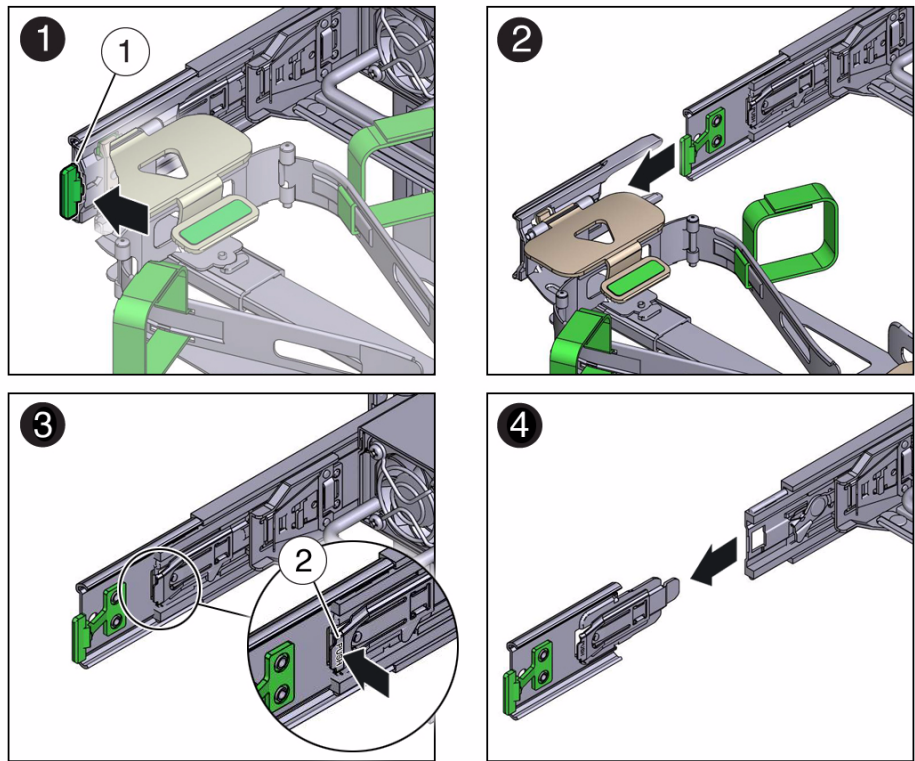
Figure Legend

1	Connector D release tab (green)
2	Slide-rail latching bracket release tab (labeled PUSH)

    b. **Use your right hand to support the CMA and use your left thumb to push in (toward the left) on the connector D latching bracket release tab labeled PUSH (callout 2), and pull the latching bracket out of the left slide-rail and put it aside [frames 3 and 4].**

5. **To disconnect connector C, perform the following steps:**

    a. **Place your left arm under the CMA to support it.**

    b. **Use your right thumb to push in (toward the right) on the connector C release tab labeled PUSH (callout 1), and pull connector C out of the right slide-rail [frame 1 and 2].**

FIGURE: Disconnecting Connector C
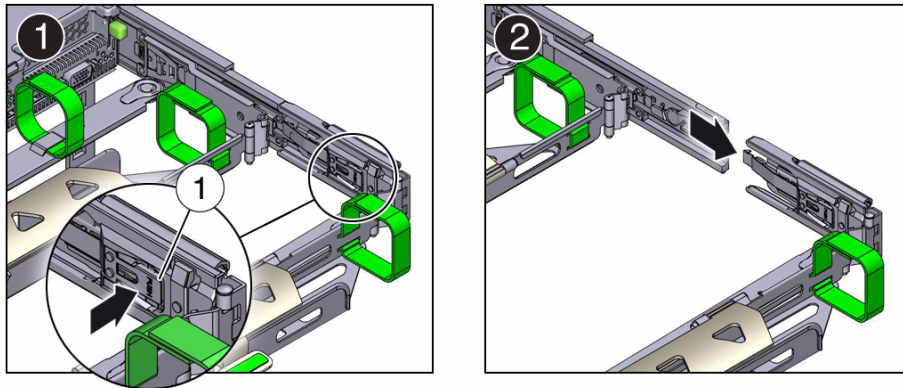
Figure Legend

1	Connector C release tab (labeled PUSH)

6. **To disconnect connector B, perform the following steps:**

   a. **Place your right arm under the CMA to support it and grasp the rear end of connector B with your right hand.**

   b. **Use your left thumb to pull the connector B release lever to the left away from the right slide-rail (callout 1) and use your right hand to pull the connector out of the slide-rail [frames 1 and 2].**

FIGURE: Disconnecting Connector B
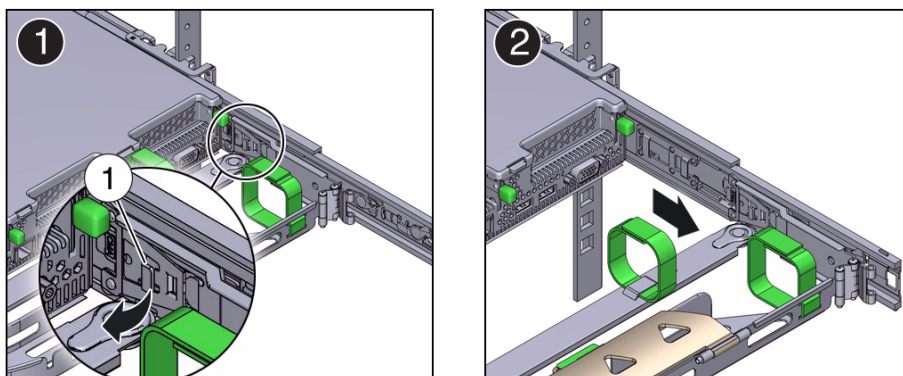
Figure Legend

1	Connector B release lever

7. **To disconnect connector A, perform the following steps:**

   a. **Place your left arm under the CMA to support it and grasp the rear end of connector A with your left hand.**

   b. **Use your right thumb to pull the connector A release lever to the right away from the left slide-rail (callout 1), and use your left hand to pull the connector out of the slide-rail [frames 1 and 2].**

FIGURE: Disconnecting Connector A
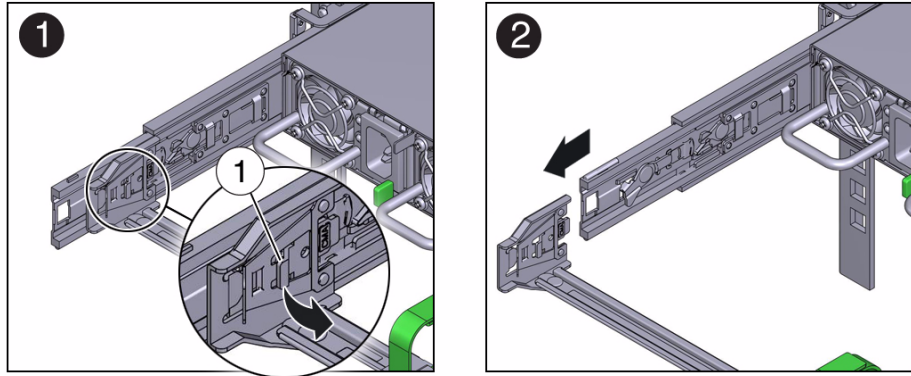
Figure Legend

1	Connector A release lever

8. **Remove the CMA from the rack and place it on a flat surface.**

9. **Go to the front of the server and push it back into the rack.**

Related Information

"Install the Cable Management Arm" on page 27

▼ Verify Operation of Slide-Rails and CMA

Use the following procedure to ensure that the slide-rails and CMA are operating correctly.

Note – Two people should perform this procedure: one to move the server in and out of the rack, and one to observe the cables and CMA.

1. **To prevent the rack from tipping forward when the server is extended, extend all rack anti-tilt devices.**

Caution – To reduce the risk of personal injury, stabilize the expansion rack cabinet and extend all anti-tilt devices before extending the server from the rack.

For instructions for stabilizing the rack, see "Stabilize the Rack for Installation" on page 17.

2. **Slowly pull the server out of the rack until the slide-rails reach their stops.**

3. **Inspect the attached cables for any binding or kinks.**

4. **Verify that the CMA extends fully with the slide-rails.**

5. **Push the server back into the rack, as described in the following steps.**

   a. **Simultaneously pull and hold the two green release tabs (one on each side of of the server) toward the front of the server (see the following figure) while you push the server into the rack. As you push the server into the rack, verify that the CMA retracts without binding.**

Note – To pull the green release tab, place your finger in the center of the tab, not on the end, and apply pressure as you pull the tab toward the front of the server.

FIGURE: Location of Slide-Rail Release Tabs
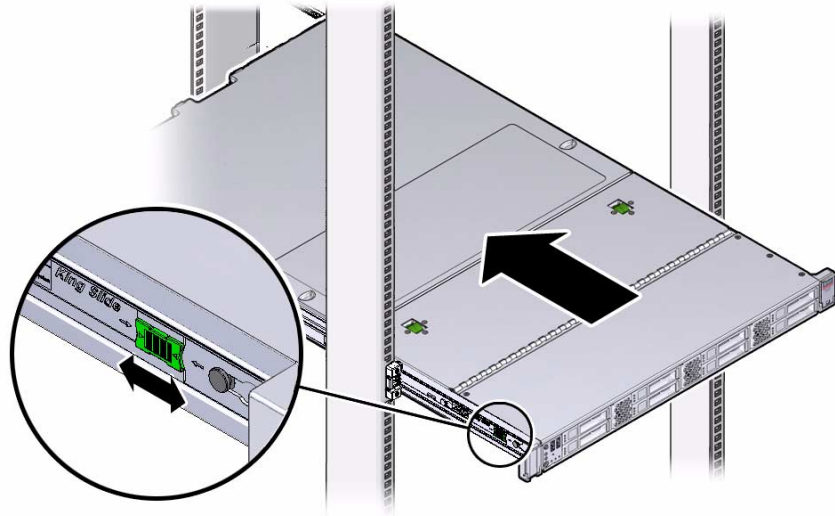
b. Continue pushing the server into the rack until the slide-rail locks (on the front of the server) engage the slide-rail assemblies.

You will hear an audible click when the server is in the normal rack position.

6. Adjust the cable straps and the CMA, as required.

Related Information

- "Install the Server Into the Slide-Rail Assemblies" on page 24
- "Install the Cable Management Arm" on page 27

Install Oracle Disk Shelves

To install supported Oracle disk shelves for this server, see the *Oracle ZFS Storage Appliance Installation Guide* for the latest software release. Oracle ZFS Storage Appliance documentation combines both hardware and software information, and documentation sets are differentiated by the software release number.

Presently, the Oracle ZFS Storage ZS3-ES supports the Oracle Storage Drive Enclosure DE2-24C and the Oracle Storage Drive Enclosure DE2-24P.

Cabling the Server

This section contains procedures for connecting data and server management cables and power cords to the server.

Description	Links
Review connector port locations.	"Rear Cable Connections and Ports" on page 45
Learn about server Ethernet ports.	"Ethernet Ports" on page 47
Connect data cables to the server.	"Connect Data Cables to the Server" on page 48
Connect the cluster cables between the two servers.	"Connect the Cluster Cables" on page 48
Connect Oracle disk shelves.	"Connect to Oracle DE2 Disk Shelves" on page 49

Related Information

- "Installation Procedure Overview" on page 1
- "Powering On and Initially Configuring the Server" on page 51

Rear Cable Connections and Ports

The following figure shows the locations of cable connectors and ports on the back of the Oracle ZFS Storage ZS3-ES and the cables and devices that you would typically connect to them.

FIGURE: Rear Panel Cabling Reference
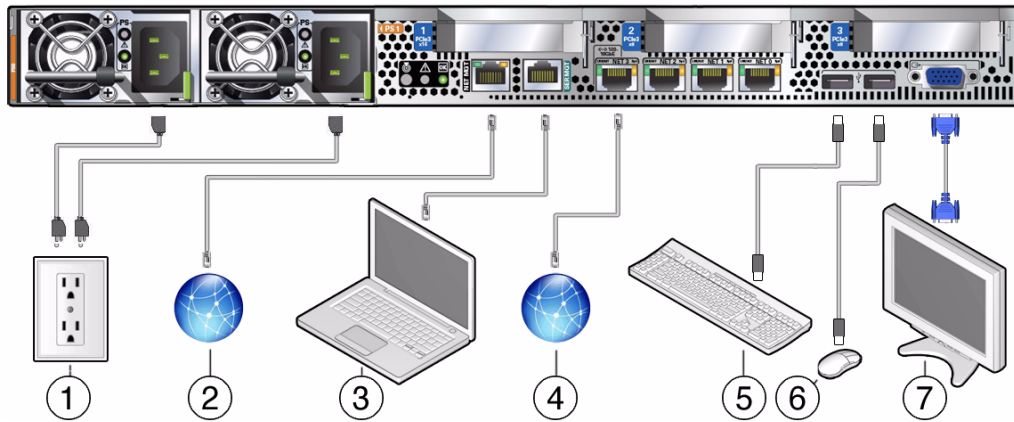
No.	Cable Port or Expansion Slot	Description
1	Power supply 0 input power Power supply 1 input power	The server has two power supply connectors, one for each power supply. Do not attach power cords to any installed power supplies until you have finished connecting the data cables, have connected the server to a serial terminal or a terminal emulator (PC or workstation), have connected to the Oracle disk shelves, and have applied power to the Oracle disk shelves. The server goes into standby power mode and the Oracle ILOM service processor initializes when the AC power cables are connected to the power source. System messages might be lost after 60 seconds if the server is not connected to a terminal, PC, or workstation. **Note -** Oracle ILOM will signal a fault on any installed power supply that is not connected to an AC power source, since it might indicate a loss of redundancy.
2	Network management port (NET MGT)	The service processor NET MGT port is the optional connection to the Oracle ILOM service processor. The NET MGT port is configured by default to use Dynamic Host Configuration Protocol (DHCP). The service processor NET MGT port uses an RJ-45 cable for a 10/100BASE-T connection.
3	Serial management port (SER MGT)	The service processor SER MGT port uses an RJ-45 cable and is the default connection to the Oracle ILOM service processor. This port supports local connections to the server and only recognizes Oracle ILOM command-line interface (CLI) commands. Typically you connect a terminal or a terminal emulator to this port. **Note -** This port does not support network connections.

No.	Cable Port or Expansion Slot	Description
4	Ethernet ports (NET 3, NET 2, NET 1, NET 0)	The four 10-Gigabit Ethernet ports enable you to connect the system to the network. See "Ethernet Ports" on page 47 for more information.
5, 6	USB ports (USB 0, USB 1)	The two USB ports support hot-plugging. You can connect and disconnect USB cables and peripheral devices while the server is running, without affecting system operations.
7	Video port (VGA, DB-15)	Use a 15-pin video cable to connect a VGA video device to the server. Optionally, you can connect to the VGA port when installing the operating system.

Related Information

- "Ethernet Ports" on page 47
- "Connect Data Cables to the Server" on page 48

Ethernet Ports

The server has four RJ-45, 10-Gigabit Ethernet (10GbE) network connectors, labeled NET3, NET2, NET1, and NET0 from left to right on the server rear panel. Use these ports to connect the server to the network.

The LEDs located above each NET port are Link/Activity (left) and Speed (right) indicators for each port. The following table lists the Ethernet transfer rates and the Speed LED color.

Connection Type	IEEE Terminology	Speed LED Color	Transfer Rate
Fast Ethernet	100BASE-T	Off	100 Mbits/sec
Gigabit Ethernet	1000BASE-T	Amber	1,000 Mbits/sec
10 Gigabit Ethernet	10GBASE-T	Green	10,000 Mbits/sec

Related Information

- "Rear Cable Connections and Ports" on page 45
- "Connect Data Cables to the Server" on page 48

▼ Connect Data Cables to the Server

1. **Connect an Ethernet cable from your network to the 10-Gigabit Ethernet NET0 port on the back panel of the server. Repeat for the second server.**

   To locate the port, see "Back Panel Status Indicators, Connectors, and PCIe Slots" on page 6.

2. **Connect other cables as necessary for your Engineered System.**

   The following sections describe how to connect the cluster cables and disk shelf cables. Connect cables other than these as needed for your Engineered System.

   ⚠ **Caution –** Do not connect power cords at this time; neither to the servers nor the disk shelves. The power-on sequence must be followed to ensure proper configuration.

3. **If you plan to interact with the system console directly, connect any external devices, such as mouse and keyboard to the server USB connectors and/or a monitor to the DB-15 video connector.**

Related Information

- "Rear Cable Connections and Ports" on page 45
- "Back Panel Status Indicators, Connectors, and PCIe Slots" on page 6
- "Ethernet Ports" on page 47

▼ Connect the Cluster Cables

This section describes how to attach the three cluster cables to connect the two servers together for communication. These cables connect two serial links (outer connectors) and one Ethernet link (middle connector).

1. **Locate PCIe card slot 2, which has three cluster connectors.**

   To locate PCIe card slot 2, see "Back Panel Status Indicators, Connectors, and PCIe Slots" on page 6.

2. **Identify the three cluster cables.**

   These are straight-through Cat-5-or-better Ethernet cables, and are typically 1m in length.

3. **Connect the cables as shown in the following figure. Both outside cables cross over, and the middle cable connects straight through.**

FIGURE: Connecting the Cluster Cables

▼ Connect to Oracle DE2 Disk Shelves

This section describes connecting the servers to the Oracle DE2 disk shelf(ves).

Note – Do not connect the servers to **Sun** Disk Shelves.

For the most up-to-date cabling diagrams, refer to the *Oracle ZFS Storage Appliance Cabling Guide* for the latest software release at http://www.oracle.com/goto/ZFSStorage/docs, and follow the procedure to connect the disk shelves to clustered servers (controllers) with one HBA. Oracle ZFS Storage Appliance documentation combines both hardware and software information, and documentation sets are differentiated by the software release number.

Note – The Oracle ZFS Storage ZS3-ES is similar to the Oracle ZFS Storage ZS3-2 for connecting to Oracle DE2 disk shelves.

Observe the following guidelines:

- If connecting to more than one disk shelf, balance the number of disk shelves across the disk chains in your system.
- Disks with different capacities or rotation speeds **cannot** be mixed within a single disk shelf.
- Maximize the number of disk chains before adding disk shelves to an individual chain.

1. **Locate the four-port HBA in PCIe card slot 3.**

   To locate PCIe card slot 3, see "Back Panel Status Indicators, Connectors, and PCIe Slots" on page 6.

2. **Use the following figure to connect to one Oracle DE2 disk shelf.**

   FIGURE: Connecting to One Oracle Disk Shelf in One Chain
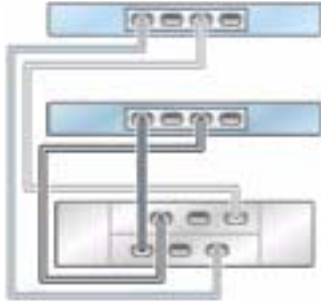
3. **Use the following figure to connect two Oracle DE2 disk shelves in two chains.**

   FIGURE: Connecting to Two Oracle Disk Shelves in Two Chains
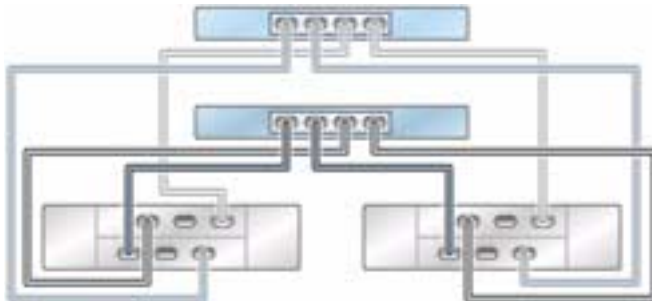
Powering On and Initially Configuring the Server

This section describes powering on the Oracle disk shelves and the servers, and configuring the primary network interface using the Oracle Integrated Lights Out Manager (ILOM) service processor (SP). Next you configure the remaining initial system parameters and set up clustering using the browser user interface (BUI) from any client on the same network. Clustering guidelines are also provided to help ensure a successful clustered environment for the two servers.

Description	Links
Read the prerequisites.	"Prerequisites" on page 52
Read the clustering guidelines to ensure a successful clustered environment.	"Clustering Guidelines" on page 54
Power on the Oracle Disk Shelves and the servers.	"Power on the Oracle Disk Shelves and Servers" on page 55
Configure the primary network interface.	"Configure the Primary Network Interface" on page 58
Perform the initial configuration.	"Initial Configuration" on page 59

Related Information

- "Installation Procedure Overview" on page 1
- "Connect Data Cables to the Server" on page 48
- Oracle Integrated Lights Out Manager (ILOM) 3.1 Documentation Library at
  http://www.oracle.com/pls/topic/lookup?ctx=ilom31

Prerequisites

The servers and disk shelves are configured and administered either directly using an administrative client (terminal or terminal emulator) connected to the serial management (SER MGT) port on the server, or indirectly via your network and the network management (NET MGT) port. To access the servers remotely, your network must have a Dynamic Host Configuration Protocol (DHCP) server. Both methods use Oracle ILOM to access the service processor (SP) in the server. For detailed instructions on connecting to Oracle ILOM, see "Connecting to Oracle ILOM" on page 63.

Note – Remote network access is preferred when connecting to Oracle ILOM because it allows better data collection than a direct serial connection. Per your environment, it might be preferable to make a serial connection for the initial configuration, and a network connection thereafter.

While you must make an Oracle ILOM connection to one server in preparation for initial configuration, it is recommended that you make the connection for both servers and keep them in place for future access to the SPs through Oracle ILOM.

When initially configuring the servers, you connect to either one, but not both. The server you connect to is referred to as the primary server, and the other server is the peer server. It does not matter which server you choose as the primary server.

Each server should be assigned a unique management interface so that it is not used as a cluster data interface. For example, the primary server could use interface igb0 (a typical name) and the peer server could use interface igb1 as the management interfaces. After the system is initially configured, you should lock the management interfaces as described in "Clustering Guidelines" on page 54.

To prepare for connecting to your network and configuring the primary network interface, gather the following information:

- Host name
- Default router IP address
- IP address/netmask for management interface on primary server
- IP address/netmask for management interface on peer server
- IP address/netmask for data interface on primary server (InfiniBand IPMP interface #1)
- IP address/netmask for data interface on peer server (InfiniBand IPMP interface #2)
- DNS parameters:

- – DNS IP address #1/#2
- – DNS IP address #3/#4
- – DNS/NIS/LDAP domain name
- NTP server IP address
- LDAP parameters:
  - – Use SSL/TLS? (Yes/No)
  - – LDAP server IP address #1/#2 (port)
  - – LDAP server IP address #3/#4 (port)
  - – LDAP base search DN
  - – LDAP search scope recursive? (Yes/No)
  - – LDAP authentication method: Simple, SASL/Digest MD5, or SASL/GSSAPI
  - – LDAP proxy DN (or anonymous)
  - – LDAP proxy DN password
- NIS server IP address #1/#2
- Desired Administrator account password

Network interfaces configured via DHCP cannot be failed over between servers and, therefore, cannot be used by clients to access storage. Be sure to assign **static** IP addresses to any network interfaces which will be used by clients to access storage, including, if applicable, the network interface used for configuration in section "Configure the Primary Network Interface" on page 58.

Note – This must be done before performing the configuration.

To prepare for a serial connection, configure an administrative client with the following settings:

- 8N1: eight data bits, no parity, one stop bit
- 9600 baud
- Disable hardware flow control (CTS/RTS)
- Disable software flow control (XON/XOFF)

Ensure you have met the power source requirements for the servers as stated in *Sun Server X3-2 Site Planning Guide*, "Preparing the Site for Installation," at http://docs.oracle.com/cd/E22368_01/index.html.

Ensure you have met the power source requirements for the Oracle disk shelves:

- Provide a suitable power source with electrical overload protection to meet the power supply input voltage range of 100-240 VAC, 50-60 Hz. The disk shelves are compatible with 100-120 VAC or 200-240 VAC sources. The power source must not be overloaded by the total number of disk shelves in the cabinet. At full load, each DE2-24 draws 707.8W.

- The power source must provide a reliable earth connection for each disk shelf and the cabinet.

- Ensure that the power source is easily accessible because the power cord is the main disconnect device for the disk shelf.

Before applying power to the disk shelves or servers, read the section "Clustering Guidelines" on page 54. Also read how to configure storage in the *Oracle ZFS Storage Appliance Administration Guide* for the appropriate software release at http://www.oracle.com/goto/ZFSStorage/docs.

Note – After power is applied, the system is ready for configuration. Therefore, ensure you are ready for configuration before applying power.

Clustering Guidelines

Use the following guidelines to ensure a successful clustered environment.

- After the system is initially configured, you should lock the management interfaces, which makes them private network interfaces, to enable administration via either server over the network (BUI or CLI) regardless of the cluster state. If interfaces are not locked and cluster takeover occurs, there is no way to access diagnostic information on the failed server because interfaces are taken over by the other server. A locked interface displays a lock icon next to its name in the BUI Configuration > Cluster screen. To lock interfaces, in the BUI, navigate to Configuration > Cluster. In the Resource list, choose the management interface for the server and set it to a private, locked interface by clicking the unlock icon. The interface then displays a lock icon next to its name in the Resource list.

- **Important:** If routes are needed, be sure to create a route on each interface that is assigned to a server.

- Each storage pool can be taken over, along with the network interfaces clients use to reach that storage pool, by the cluster peer when takeover occurs.

- If you create two storage pools, each server normally provides access to the pool assigned to it. If one of the servers fails, the other server provides clients with access to both pools.

- If you create a single pool, the server that is not assigned a pool provides service to clients only when its peer has failed.

- Storage pools are assigned to servers at the time of creation; the Storage configuration screen offers the option of creating a pool assigned to each server independently.

- If you create two pools, they do not have to be the same size. Any subdivision of storage is permitted.

- After completing basic configuration, you can assign resources to each server. Typically, you assign only network interfaces because storage pools are automatically assigned during the storage configuration step.

- For more information, especially clustering considerations, see the *Oracle ZFS Storage Appliance Administration Guide*.

▼ Power on the Oracle Disk Shelves and Servers

Power on all Oracle disk shelves and both servers. While you must make an Oracle ILOM connection to one server in preparation for initial configuration, it is recommended that you make the connection for both servers and keep them in place for future access to the SPs through Oracle ILOM.

Note – Remote network access is preferred when connecting to Oracle ILOM because it allows better data collection than a direct serial connection. Per your environment, it might be preferable to make a serial connection for the initial configuration, and a network connection thereafter.

---

1. **If necessary, extend the servers to the maintenance position so you can access the back of the servers.**

2. **Ensure that each server has an Ethernet cable connected from your network to the 10-Gigabit Ethernet NET0 port on the back panel of the server.**

   To locate the port, see "Back Panel Status Indicators, Connectors, and PCIe Slots" on page 6.

   This task should have been performed when attaching cables to the servers as described in "Connect Data Cables to the Server" on page 48.

3. **Connect to both servers using Oracle ILOM.**

> **Note –** It is recommended that you do not disconnect these cables after initial configuration, so there is readily available access to the SPs through Oracle ILOM. It is also recommended that you make a connection to each server.

- For a network connection, connect an Ethernet cable from the NET MGT port on the back of the server to your network. This is the preferred connection method to Oracle ILOM for data collection.
- For a serial connection, connect a serial cable from the SER MGT port on the back of the server to the serial port on the administrative client. Use a DB9 to RJ45 adpater if necessary. Ensure that the client has been prepared as outlined in "Prerequisites" on page 52.

4. **If using the optional cable management arm (CMA), route all cables, except the server cluster cables, through the CMA and secure with the Velcro straps.**

5. **Power on the disk shelf(ves) by plugging the two power cords into the power supply connectors, connecting the cords to the external power source, applying external power, and turning on the disk shelf power switch(es) (the "|" position).**

> **Note –** To guarantee redundancy, power cords must be connected to two separate and independent power sources.

Wait several minutes until the system power indicator on the front, and the power supply status indicator for each power supply on the back are lit a steady green.

FIGURE: Disk Shelf Power Supply Status Indicator

6. **There are two power cords for each server. Connect one end of each server power cord to a grounded electrical outlet.**

Note – To guarantee redundancy, power cords must be connected to two separate and independent power sources.

7. Connect the server power cords to the power supply AC connectors on the back panel of the server and use the Velcro strap to secure them.

Shortly after power is applied to the system, the SP OK LED blinks as the service processor (SP) is booting. The SP OK LED is illuminated solid green after the SP has successfully booted. After the SP has booted, the Power/OK LED on the front panel begins flashing slowly, indicating the host is in standby power mode. In standby power mode, the server is not yet initialized or powered on.
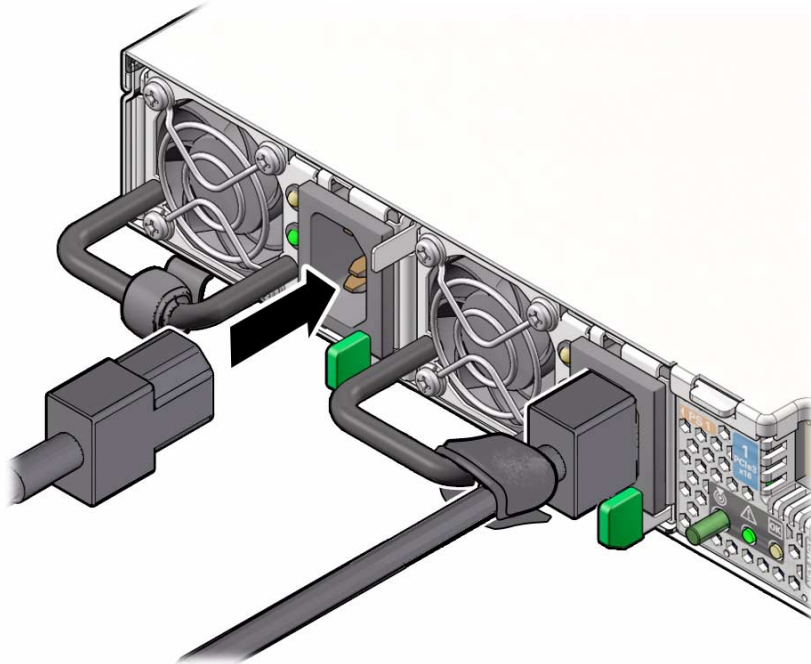
Caution – Do not operate the server unless all fans, component heatsinks, air baffles, and the top cover are installed. Damage to server components can occur if the server is operated without adequate cooling mechanisms.

Note – At this point, power is supplied only to the SP and the power supply fans. After the Power/OK LED is lit a steady green, the server has full power and is ready for initial configuration.

8. **If after a few minutes the Power/OK LED on the front panel is not lit a steady green, apply the remaining power manually by pressing the Power button on the server front panel.**

9. **If you extended the servers to the maintenance position, push the servers into the rack until the slide-rail locks (on the front of the servers) engage the slide-rail assemblies.**

   You will hear an audible click when the server is in the normal rack position.

▼ Configure the Primary Network Interface

On the primary server, connect to the service processor (SP) and configure the primary network interface with the network parameters you gathered in

1. **Open a terminal window or terminal emulator and issue the appropriate command, as follows:**

   - For a serial port concentrator (for example, using telnet), connect and use **root** as the user name, and replace *serial-concentrator portnumber* with the appropriate value, for example: **telnet** *serial-concentrator portnumber*

   - For a network connection, connect using SSH and use **root** as the user name, and determine the IP address by accessing your DHCP server for the address assigned to the service processor MAC address (see the label on the server), for example: **ssh root@192.168.128.256**.

   a. **Type the password `changeme` when prompted.**

   b. **At the command prompt, enter `start /HOST/console`**

   c. **Type `y` to confirm that you want to start the console.**

2. **Press any key to begin configuring the primary network interface. The shell interface configuration screen is displayed. The "=" character is displayed next to NET-0 at the top of the screen. If "X" appears by NET-0, check that all cable connections are tight.**

   To exit the shell interface before completing configuration, enter **exit**.

3. **Verify the information on the screen, or enter values that do not appear.**

4. **After typing and re-typing a new Administrator account password, press Enter (or ESC-1 or the F1 key) to complete this stage of the configuration.**

   The final shell configuration screen appears, confirming that your system is ready for further configuration using the BUI.

▼ Initial Configuration

Configure the remaining system parameters and set up clustering on the primary server through the BUI using a browser running on any client on the same network as the initial interface.

During cluster initialization, the software propagates the configuration from the primary server to the peer server. After the cluster is initialized, you can administer the system from either server. However, do not attempt initial configuration on both servers independently. Refer to the *Oracle ZFS Storage Appliance Administration Guide* for the appropriate software release at http://www.oracle.com/goto/ZFSStorage/docs for more information on setting up a clustered environment. Also refer to the administration guide for detailed configuration information.

The management software is designed to be fully featured and functional on a variety of web browsers.

Note – Do not use Internet Explorer version 6 or earlier.

There are six steps for initially configuring the:

- Network
- DNS
- Time
- Name Services (NIS, LDAP, Active Directory)
- Storage
- Registration and Support

Ensure that you have met all prerequisites, including reading the section "Clustering Guidelines" on page 54, and storage configuration considerations in the *Oracle ZFS Storage Appliance Administration Guide*.

1. **Direct your browser to the system using either the IP address or host name you assigned to the NET-0 port as follows:** `https://`*ipaddress*`:215` **or** `https://`*hostname*`:215`. **The login screen is displayed.**

   If the login screen does not appear and the message `Secure Connection Failed` is displayed, click the button to add an exception, download the certificate, and click `Confirm Security Exception`.

   Note – Only perform this initial configuration on the primary server.

   ---

2. **Type** `root` **into the Username field, your administrative password, and press the Enter key. The Welcome screen is displayed.**

3. **To begin configuring the system, click Start on the Welcome screen.**

   You are guided through the initial configuration, one step at a time.

4. **Click Cluster. When a diagram of the active cluster links is displayed, ensure that three solid blue lines are shown. If not, ensure that the three cluster cables connecting the two servers together are properly connected and tight in their connectors.**

5. **When prompted for the peer server information, enter its unique name and the default Administrator account password (`changeme`).**

6. **After completing each configuration step, click Commit to save your information and continue.**

   Arrows beneath the Commit button can be used to revisit previous steps and change the configuration, if desired.

7. **When the Network configuration screen is displayed, add four interfaces: one management interface for each server (typically igb0 and igb1) and two InfiniBand interfaces (typically ibp0, ibp1).**

   To add an interface, drag a device from the Devices column to the Datalinks column. Then drag it from the Datalinks column to the Interfaces column and add the IP address, along with other configuration data. Lock the management interfaces to make them private network interfaces.

8. **When configuring the InfiniBand interfaces, use this IP address and mask: `0.0.0.0/8`. Select the checkbox** `IB Partition`, **enter the partition key** `ffff`, **and select** `Connected Mode` **for the link mode.**

9. **Click the Routing submenu and ensure that the default route is using the first interface, which is typically igb0. Configure a second default gateway, which is typically igb1. All data interface routes must be configured manually; there are no default routes.**

10. **When the DNS configuration screen is displayed, verify the settings against the parameters you gathered in** "Prerequisites" on page 52**.**

    You must enter values for the DNS server. To enter additional DNS servers, click the "+" character and add them.

11. **When the NTP configuration screen is displayed, ensure that the correct server and client times are shown under the Clock heading, and enter the NTP server IP address.**

    To synchronize the client time to the NTP server time, click `Sync`.

12. **When the Name Services configuration screen is displayed, click the Configure button next to the desired service to edit its settings. Enter the parameters you gathered in** "Prerequisites" on page 52**.**

    a. **For NIS, instead of entering the IP address for the two NIS servers, you may select** `Search using broadcast` **if this matches your network.**

    b. **For LDAP, select the checkbox to protect LDAP traffic with SSL/TLS, use the distinguished name (DN) in LDAP notation, select Anonymous or Proxy for the bind credential level, enter the DN and password of the account to be used if selecting Proxy, and add the certificate if configured and present. To add another LDAP server, click the "+" character next to Servers.**

    c. **For Active Directory, if selecting Join Workgroup, enter the workgroup name and click Apply. If selecting Join Domain and you have an AD site name or a preferred domain controller, add it to the CIFS configuration page. The user account to join the server to the domain must have sufficient privileges to do so. If the AD domain and the DNS domain do not match, enter the DNS domain in the field Additional DNS search path. Also ensure that the times on the system and the AD server match within five minutes.**

    d. **When the summary of settings is displayed, click Commit if all settings are correct. Otherwise, click Return to Services and correct the settings.**

13. **To complete the Storage configuration screen, refer to the** *Oracle ZFS Storage Appliance Administration Guide***.**

14. **After completing the Registration and Support step, the configuration is then propagated to the peer server, including the new administrative password.**

Note – The initial configuration can be repeated at a later time by navigating to the Maintenance > System BUI screen and clicking the "INITIAL SETUP" button.

---

15. **To ensure that your system has the most up-to-date firmware and software, see** "Getting Server Firmware and Software" on page 87**.**

Troubleshooting Installation Issues

This section describes how to connect to Oracle ILOM, power down the server, reset the server, and provides troubleshooting information, as well as a technical support worksheet and information on how to locate the system serial number.

Description	Links
Connect to Oracle ILOM to monitor and manage system components.	"Connecting to Oracle ILOM" on page 63
Power down the server if an error occurs.	"Powering Down the Server" on page 77
Reset the server.	"Reset the Server" on page 82
Review solutions to common problems.	"Installation Troubleshooting" on page 83
Gather information and contact technical support.	"Technical Support Information Worksheet" on page 85
Locate the system serial number.	"Locating the System Serial Number" on page 86

Related Information

- "Installation Procedure Overview" on page 1
- Oracle Integrated Lights Out Manager (ILOM) 3.1 Information Library at: http://docs.oracle.com/cd/E24707_01/index.html

Connecting to Oracle ILOM

Oracle Integrated Lights Out Manager (ILOM) is embedded on firmware in the Oracle ZFS Storage ZS3-ES. The server supports Oracle ILOM version 3.1, which provides extensitve management and monitoring capabilities for the server.

For complete information about Oracle ILOM, refer to the Oracle Integrated Lights Out Manager (ILOM) 3.1 Documentation Library at http://www.oracle.com/pls/topic/lookup?ctx=ilom31.

This section describes how to access and get started using Oracle ILOM for your server.

Description	Links
Learn about Oracle ILOM hardware and interfaces.	"Oracle ILOM Hardware and Interfaces" on page 64
Learn about network ports.	"Network Defaults" on page 65
Log in directly to Oracle ILOM using a terminal connected to the serial port.	"Logging In to Oracle ILOM Using a Local Serial Connection" on page 65
Log in to Oracle ILOM over the network using an Ethernet connection.	"Logging In to Oracle ILOM Using a Remote Ethernet Connection" on page 67
Troubleshoot the service processor connection.	"Troubleshooting the Service Processor Connection" on page 74

Oracle ILOM Hardware and Interfaces

The following table lists the components and functions of Oracle ILOM. For complete information about Oracle ILOM, refer to the Oracle Integrated Lights Out Manager (ILOM) 3.1 Documentation Library at http://www.oracle.com/pls/topic/lookup?ctx=ilom31.

Component	Function
Hardware	• Embedded service processor (SP) chipset that monitors the status and configuration of components such as fans, storage drives, and power supplies. • Two rear panel external connections: NET MGT port Ethernet connection and SER MGT RJ-45 serial management port.
Interfaces	• Web browser interface • SSH command-line interface (CLI) • IPMI v2.0 CLI • SNMP v3 interface

With Oracle ILOM, you can monitor and manage the server components. Oracle ILOM lets you perform the following tasks-:

- Configure network information
- View and edit hardware configurations for the SP
- Monitor vital system information and view logged events
- Manage Oracle ILOM user accounts

Network Defaults

The Oracle ZFS Storage ZS3-ES supports dual-stack IPv4 and IPv6 settings, which enable Oracle ILOM to fully operate in an IPv4 and IPv6 network environment. For IPv4 configurations, DHCP is enabled by default, allowing a DHCP server on the network to automatically assign network settings to the server. For IPv6 configurations, IPv6 stateless auto-configuration is enabled by default, allowing an IPv6 router on the network to assign the network settings. In a typical configuration, you will accept these settings assigned by the DHCP server or IPv6 router.

Note – To determine the IP address or host name assigned by the DHCP server, use the network tools provided with the DHCP server or IPv6 router.

The following procedures enable you to test that the assigned settings are working correctly and to establish a connection to Oracle ILOM locally and remotely.

- To log in locally, see "Logging In to Oracle ILOM Using a Local Serial Connection" on page 65.
- To log in remotely, use the IP address, host name, or IPv6 local link name assigned to the server SP and follow the instructions in "Logging In to Oracle ILOM Using a Remote Ethernet Connection" on page 67.

Logging In to Oracle ILOM Using a Local Serial Connection

To log in to Oracle ILOM locally using a serial connection, you need to connect a serial null modem cable to the RJ-45 serial port labeled SER MGT and to a terminal or terminal emulator. Ensure that the following serial communication settings are configured:

- 8N1: eight data bits, no parity, one stop bit

- 9600 baud
- Disable hardware flow control (CTS/RTS)
- Disable software flow control (XON/XOFF)

This section includes the following procedure:

- "Logging In to Oracle ILOM Using a Local Serial Connection" on page 65

Related Information

- "Logging In to Oracle ILOM Using a Remote Ethernet Connection" on page 67

▼ Log In to Oracle ILOM Using a Local Serial Connection

This procedure does not require that you know the IP address of the sever SP. It does require that you have an Oracle ILOM Administrator account. You must be present at the server to perform this procedure.

Note – The default Oracle ILOM Administrator account shipped with the server is root and its password is changeme. If this default Administrator account has since been changed, contact your system administrator for an Oracle ILOM user account with Administrator privileges.

---

1. **To ensure that your server has the necessary connections for local access to Oracle ILOM, follow the instructions in** "Connect Data Cables to the Server" on page 48**.**

2. **To establish a connection between your serial console and Oracle ILOM, press Enter on the terminal.**

   A login prompt to Oracle ILOM appears.

3. **Log in to the Oracle ILOM command-line interface (CLI) using an Administrator account.**

   Oracle ILOM displays a default command prompt (->), indicating that you have successfully logged in to Oracle ILOM.

Related Information

- "Log In to Oracle ILOM Remotely Using the Web Interface" on page 67
- "Log In to Oracle ILOM Remotely Using the Command-Line Interface" on page 69

Logging In to Oracle ILOM Using a Remote Ethernet Connection

To log in to Oracle ILOM remotely using either the command-line interface (CLI) or the web interface, you must know the IP address of the server SP. The following sections describe how you can determine the IP address (if you do not know it), how to log in to Oracle ILOM, and how to view and modify the SP IP address:

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Determining the IP Address of the Server SP

If a DHCP server or IPv6 router cannot be reached after ten seconds, the SP requests will timeout. After the timeout, the SP then only periodically checks for a DHCP server or IPv6 router.

If you do not have a DHCP server or IPv6 router on your network, or you need to view or assign an IP address to the SP, follow the procedures in these sections:

-
-

▼ Log In to Oracle ILOM Remotely Using the Web Interface

This procedure requires that you have an Oracle ILOM Administrator account and that you know the IP address or host name of the server SP.

To improve response times, disable the web browser proxy server (if used).

1. **To ensure that your server has the necessary connections for remote access to Oracle ILOM, follow the instructions in** **.**

2. **Type the IP address of the server's SP into your web browser address field.**

   For example: **https://172.16.82.26**

   The Oracle ILOM web interface login page appears.

3. **Type your user name and password.**

   The default Oracle ILOM Administrator account shipped with the server is `root` and its password is `changeme`. If this default Administrator account has since been changed, contact your system administrator for an Oracle ILOM user account with Administrator privileges.

4. **Click Log In.**

   The System Information Summary page appears.
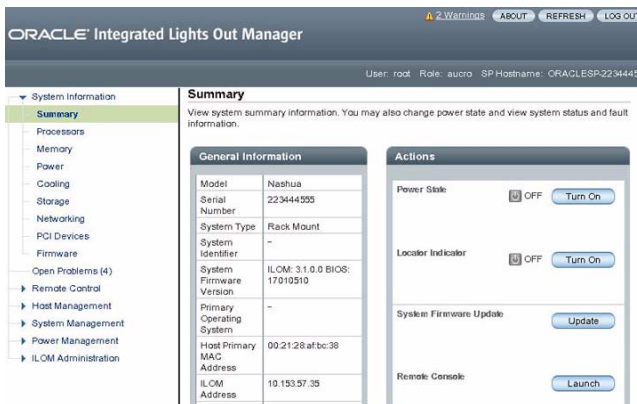
   You are now logged in to the server's Oracle ILOM. For information about using Oracle ILOM, refer to the Oracle Integrated Lights Out Manager (ILOM) 3.1 Documentation Library at http://www.oracle.com/pls/topic/lookup?ctx=ilom31.

Related Information

- "Logging In to Oracle ILOM Using a Local Serial Connection" on page 65
- "View or Modify an SP IPv4 Address" on page 70
- "View or Modify an SP IPv6 Address" on page 72

▼ Log In to Oracle ILOM Remotely Using the Command-Line Interface

This procedure requires that you have an ILOM Administrator account and that you know the IP address or host name of the server SP.

1. **To ensure that your server has the necessary connections for remote access to Oracle ILOM, follow the instructions in** "Connect Data Cables to the Server" on page 48.

2. **Using a Secure Shell (SSH) session, log in to Oracle ILOM by specifying your Administrator account user name and the IP address or host name of the server SP.**

   The login command syntax can be either of the following:

   ssh -l *username host*

   or

   ssh *username***@***host*

   Where *host* is either the IP address or the host name of the server SP (when using DNS).

   For example:

   ssh root@172.16.82.26

   The Oracle ILOM password prompt appears.

3. **Type a password for the Administrator account.**

   root@172.16.82.26's password: **changeme**

Note – The default Oracle ILOM Administrator account shipped with the server is root and its password is changeme. If this default Administrator account has since been changed, contact your system administrator for an Oracle ILOM user account with Administrator privileges.

Oracle ILOM displays a default command prompt (->), indicating that you have successfully logged in to Oracle ILOM. For information about using Oracle ILOM, refer to the Oracle Integrated Lights Out Manager (ILOM) 3.1 Documentation Library at http://www.oracle.com/pls/topic/lookup?ctx=ilom31.

Related Information

- "Logging In to Oracle ILOM Using a Local Serial Connection" on page 65
- "View or Modify an SP IPv4 Address" on page 70
- "View or Modify an SP IPv6 Address" on page 72

▼ View or Modify an SP IPv4 Address

To view or modify the IPv4 address currently assigned to the Oracle ILOM SP:

Note – You can also change network settings using the BIOS Setup Utility.

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1. **Log in to Oracle ILOM using one of the following procedures:**
   - "Logging In to Oracle ILOM Using a Local Serial Connection" on page 65
   - "Log In to Oracle ILOM Remotely Using the Command-Line Interface" on page 69

Note – If you log in to Oracle ILOM using an Ethernet connection, after you modify the network settings, your connection will be terminated, and you will have to log in again using the new settings.

---

2. **To navigate to the** /SP/network **directory, use the** cd **command:**

   -> **cd /SP/network**

3. **Do one of the following:**
   - If you have a DHCP server on the network, to view the settings assigned to the server by the DHCP server, type the following command:

     -> **show /SP/network**
   - If there is no DHCP server, or if you want to assign settings, use the set command to assign values for the properties listed in the table in Step 4. For example:

     -> **set /SP/network/pendingipdiscovery=static**

     -> **set /SP/network/pendingipaddress=10.8.183.106**

     -> **set /SP/network/pendingipnetmask=10.255.255.255**

     -> **set /SP/network/pendingipgateway=10.8.183.254**

     -> **set /SP/network/commitpending=true**

Note – If you are logged in to Oracle ILOM using an Ethernet connection, when you set commitpending to true to commit the changes to the network settings, your Oracle ILOM connection will be terminated and you will have to log in again using the new settings.

4. **If you want to enable sideband management, type the following commands:**

   -> **set /SP/network/pendingmanagementport=/System/MB/NET***n*

   Where *n* equals 0, 1, 2, or 3.

Note – Ethernet ports NET2 and NET3 are nonfunctional in single-processor systems and, therefore, cannot be used for sideband management.

   -> **set /SP/network/commitpending=true**

   The following table describes the network settings.

Property and Set Property Value	Description
Property: state **Set Property Value:** set state=enabled	The network state is enabled by default.
Property: pendingipdiscovery **Set Property Value:** set pendingipdiscovery=static	To enable a static network configuration, set pendingipdiscovery to static. By default, pendingipdiscovery is set to dhcp.
Property: pendingmanagement port **Set Property Value:** set pendingmanagementport=/System/SP/NET0	By default, pendingmanagementport is set to the NET MGT port (/System/SP/NET0). To enable sideband management, set pendingmanagementport to an available 10-Gigabit Ethernet port. Set pendingmanagementport to /System/MB/NET*n*, where *n* represents 3, 2, 1, or 0.
Property: pendingipaddress **Set Property Value:** set pendingipaddress=*<ip_address>* **Property:** pendingipnetmask **Set Property Value:** set pendingipnetmask=*<netmask>* **Property:** pendingipgateway **Set Property Value:** set pendingipgateway=*<gateway>*	To assign multiple static network settings, type the set command followed by the pending command for each property value (IP address, netmask, and gateway), then type the static value that you want to assign.

Related Information

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▼ View or Modify an SP IPv6 Address

To view or modify the IPv6 address currently assigned to the Oracle ILOM SP:

Note – You can also change network settings using the BIOS Setup Utility.

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1. **Log in to Oracle ILOM using one of the following procedures:**
   - "Logging In to Oracle ILOM Using a Local Serial Connection" on page 65
   - "Log In to Oracle ILOM Remotely Using the Command-Line Interface" on page 69

Note – If you log in to Oracle ILOM using an Ethernet connection, after you modify the network settings, your connection will be terminated, and you will have to log in again using the new settings.

---

2. **To navigate to the** /SP/network/ipv6 **directory, use the** cd **command:**

   -> **cd /SP/network/ipv6**.

3. **To view the IPv6 network settings configured on the device, type the** show **command.**

   For example, see the following sample output values for the IPv6 properties on a server SP device.

```
-> show
/SP/network/ipv6
Targets:

Properties:
 state = enabled
 autoconfig = stateless
 dhcpv6_server_duid = (none)
 link_local_ipaddress = 2001:DB8:n:n
 static_ipaddress = ::/128
 ipgateway = 2001:DB8:n:n
 pending_static_ipaddress = ::/128
 dynamic_ipaddress_1 2001:DB8:n:n

Commands:
 cd
 show
 set
```

4. **To configure an IPv6 auto-configuration option, use the** set **command to specify the following auto-configuration property values:**

Property	Set Property Value	Description
state	set state=enabled	The IPv6 network state is enabled by default. To enable an IPv6 auto-configuration option, set this state to enabled.
autoconfig	set autoconfig=<*value*>	Specify this command followed by the autoconfig value you want to set. Options include: • stateless (default setting) Automatically assigns IP address learned from IPv6 network router. • dhcpv6_stateless Automatically assigns DNS information learned from the DHCPv6 server. • dhcpv6_stateful Automatically assigns the IPv6 address learned from the DHCPv6 server. • disabled Disables all auto-configuration property values and sets the read-only property value for Link Local address.

Note – The IPv6 configuration options listed in the above table take effect after they are set, that is, you do not need to commit these changes under the /network target.

Note – You can enable the stateless auto-configuration option to run at the same time the option for dhcpv6_stateless is enabled or the option for dhcpv6_stateful is enabled. However, the auto-configuration options for dhcpv6_stateless and dhcpv6_stateful should not be enabled to run at the same time.

5. To set a static IPv6 address, specify the following property types:

Property and Set Property Value	Description
Property: state **Set Property Value:** set state=enabled	The IPv6 network state is enabled by default. To enable a static IP address set this state to enabled.
Property: pending_static_ipaddress **Set Property Value:** set pending_static_ipaddress/<*subnet mask length_in_bits*>	Type this command followed by the property value for the static IPv6 address and subnet netmask that you want to assign to the device. IPv6 address example: 2001:DB8:*n:n*
Property: commitpending **Set Property Value:** set commitpending=true	Type set commitpending=true to commit changes.

Note – Assigning a new static IP address to the device will end all active Oracle ILOM sessions to the device. To log in again to Oracle ILOM, you will need to create a new session using the newly assigned IP address.

Related Information

- "Determining the IP Address of the Server SP" on page 67
- "View or Modify an SP IPv4 Address" on page 70

Troubleshooting the Service Processor Connection

This section addresses two issues that might occur regarding the Oracle ILOM service processor (SP):

- The Oracle ILOM SP is hung and needs to be reset.
- As the system administrator, you have forgotten the root account password and you need to recover it.

For instructions on how to handle each of these problems, see the following sections:

- "Resetting the Service Processor Using Oracle ILOM" on page 75
- "Reset the Service Processor From the Server Back Panel" on page 75
- "Recover Root Account Password" on page 76

Resetting the Service Processor Using Oracle ILOM

If the Oracle ILOM service processor (SP) is hung, Oracle ILOM provides two methods to reset it:

- From the Oracle ILOM command-line interface (CLI), type: `reset /SP`.
- From the Oracle ILOM web interface, click Administration > Maintenance > Reset SP.

Note – Resetting the Oracle ILOM SP disconnects your current Oracle ILOM session. You must log in again to continue working in Oracle ILOM.

For more information about resetting the SP from the Oracle ILOM CLI or web interface, refer to the *Oracle Integrated Lights Out Manager (ILOM) 3.1 Configuration and Maintenance Guide* at `http://www.oracle.com/pls/topic/lookup?ctx=ilom31`.

▼ Reset the Service Processor From the Server Back Panel

If the Oracle ILOM SP is hung and you cannot reset it using the Oracle ILOM web interface or the Oracle ILOM CLI command, use the following procedure to reset the SP from the server back panel.

- **Using a stylus, press the Reset SP pinhole button that is located on the server back panel.**

FIGURE: SP Reset Pinhole Button Location

Figure Legend

1	SP Reset pinhole button

The SP reboots. You must log in again to continue working in Oracle ILOM.

▼ Recover Root Account Password

If necessary, system administrators can recover the preconfigured Oracle ILOM local root account or the password for the local root account by using the preconfigured Oracle ILOM default password.

To recover the root account password you need a local serial management port (SER MGT) connection to Oracle ILOM. In addition, if the Physical Presence State is enabled (the default) in Oracle ILOM, you must prove that you are physically present at the server.

The recover the root account password, perform these steps:

1. Establish a local serial management connection to Oracle ILOM and log in to Oracle ILOM using the default user account.

For example: SUNSP-000000000 login: **default**

Press and release the physical presence button

Press return when this is completed...

2. Prove physical presence at the server.

To prove physical presence at the server, press the Locator button on the front of the server.

For the exact location of the Locator button, see .

3. Return to your serial console and press Enter.

You will be prompted for a password.

4. Type the password for the default user account: defaultpassword.

5. **Reset the account password or re-create the** `root` **account.**

   For more information, refer to the section on "Configuring Local User Accounts" in the *Oracle Integrated Lights Out Manager (ILOM) 3.1 Configuration and Maintenance Guide* at `http://www.oracle.com/pls/topic/lookup?ctx=ilom31`.

Powering Down the Server

Determine how you want to power down the server. A graceful power down is strongly recommended to avoid possible data loss or corruption. It also ensures that all resources are taken over by the server that is not being powered off.

Description	Link
Power down the server gracefully to move its resources to the other server, and to preserve data and its integrity.	• "Graceful Server Power Down" on page 77
If the server is not responding, or you must shut down the server quickly, perform an immediate power down. These procedures risk data loss and integrity, and possibly the configuration of the server.	• "Emergency Server Power Down Using the Power Button" on page 79 • "Emergency Server Power Down Using the Oracle ILOM CLI" on page 80 • "Emergency Server Power Down Using the Oracle ILOM Web Interface" on page 81

Related Information

- "Power on the Oracle Disk Shelves and Servers" on page 55

▼ Graceful Server Power Down

Performing a graceful shutdown ensures that data is saved and not corrupted, and that resources are assigned to the other server. This is the preferred method for powering down a server for component replacement.

1. **Ensure that Ethernet cables are connected from your network to the NET0 port on the back of each server.**

2. **Direct your web browser to the server to be serviced by using either the IP address or host name assigned to the NET0 port as follows:**
   `https://`*ipaddress***`:215`**

   or

   `https://`*hostname***`:215`**

3. **Log in with the Administrator account.**

   The username and password defaults are `root` and `changeme`.

4. **Depending on the nature of the problem, you might want to view system status (Maintenance > System and Maintenance > Problems) or log files (Maintenance > Logs), or run diagnostics or view analytics before you shut down the server.**

5. **Go to Maintenance > Hardware.**

6. **Click the** `Show Details` **link for the server.**

   Before proceeding, you can view the status of server components by clicking the appropriate submenu, such as `DIMM`.

7. **Click the power icon for the server and select** `Power off` **from the pull-down list.**

   Wait for the server to power down.

8. **Disconnect the power cords from the server.**

<div style="display:flex;align-items:center;">
<div>⚠️</div>
<div>

Caution – To completely power off the server, you must disconnect the power cords from the back panel of the server.

</div>
</div>

Related Information

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▼ Emergency Server Power Down Using the Power Button

This emergency power down task using the Power button is preferred to the other emergency tasks, which use the Oracle ILOM CLI or web interface, because it allows the operating system to gracefully shut down. However, because this task has risks, attempt the graceful power down first.

Caution – This task forces the main power off. You might corrupt or lose system data, or lose the server configuration (the resources assigned to it) during an immediate power down.

1. **Press and quickly release the Power button on the front panel.**

   This action causes an orderly shutdown of the operating system, and the server enters the standby power mode.

   If the server did not respond or you need a more immediate shutdown, press and hold the Power button for four seconds, which forces the main power off and enters the standby power mode immediately.

   When the main power is off, the Power/OK LED on the front panel begins flashing, indicating that the server is in standby power mode. See "About Server Features and Components" on page 3.

Caution – When you press the Power button to enter standby power mode, power is still directed to the service processor remote management subsystem and power supply fans. To completely power off the server, you must disconnect the power cords from the back of the power supplies.

2. **Disconnect the power cords from the server.**

Related Information

- "About Server Features and Components" on page 3
- "Graceful Server Power Down" on page 77
- "Emergency Server Power Down Using the Oracle ILOM CLI" on page 80
- "Emergency Server Power Down Using the Oracle ILOM Web Interface" on page 81
- "Power on the Oracle Disk Shelves and Servers" on page 55

▼ Emergency Server Power Down Using the Oracle ILOM CLI

This emergency power down task using the Oracle ILOM CLI is not a preferred power down method. If possible, attempt the graceful power down task first. If that fails or a more immediate power down is needed, use the task "Emergency Server Power Down Using the Power Button" on page 79 because it allows the operating system to gracefully shut down. If this is not possible because you are not physically located at the system, then use either this emergency task or "Emergency Server Power Down Using the Oracle ILOM Web Interface" on page 81.

⚠ **Caution –** This task forces the main power off. You might corrupt or lose system data, or lose the server configuration (the resources assigned to it) during an immediate power down.

1. **Log in to the Oracle ILOM command-line interface (CLI) using an Administrator account.**

   Oracle ILOM displays the default command prompt (->), indicating that you have successfully logged in to Oracle ILOM.

2. **From the CLI prompt, type the following command:**

   `-> stop -f /System`

   The server powers down immediately.

3. **Disconnect the power cords from the server.**

⚠ **Caution –** To completely power off the server, you must disconnect the power cords from the back panel of the server.

Related Information

- "Graceful Server Power Down" on page 77
- "Emergency Server Power Down Using the Power Button" on page 79
- "Emergency Server Power Down Using the Oracle ILOM Web Interface" on page 81
- "Power on the Oracle Disk Shelves and Servers" on page 55

▼ Emergency Server Power Down Using the Oracle ILOM Web Interface

This emergency power down task using the Oracle ILOM web interface is not a preferred power down method. If possible, attempt the graceful power down task first. If that fails or a more immediate power down is needed, use the task "Emergency Server Power Down Using the Power Button" on page 79 because it allows the operating system to gracefully shut down. If this is not possible because you are not physically located at the system, then use either this emergency task or "Emergency Server Power Down Using the Oracle ILOM CLI" on page 80.

Caution – This task forces the main power off. You might corrupt or lose system data, or lose the server configuration (the resources assigned to it) during an immediate power down.

1. **Log in to the Oracle ILOM web interface using an Administrator account.**

   The Oracle ILOM web interface System Information page appears.

2. **In the left pane, click Host Management > Power Control, and in the Actions list, click Immediate Power Off.**

3. **Click Save, and then click OK.**

   The server powers down immediately.

4. **Disconnect the power cords from the server.**

Caution – To completely power off the server, you must disconnect the power cords from the back panel of the server.

Related Information
- "Graceful Server Power Down" on page 77
- "Emergency Server Power Down Using the Power Button" on page 79
- "Emergency Server Power Down Using the Oracle ILOM CLI" on page 80
- "Power on the Oracle Disk Shelves and Servers" on page 55

Reset the Server

It is not necessary to power the server off and on to simply reset (power cycle) the server. Use the procedures in one of the following sections to reset the server.

⚠️ **Caution –** This method will cause any unsaved data on the server to be lost; for example, this procedure might corrupt the server file systems.

- "Use the Oracle ILOM Command-Line Interface to Reset the Server" on page 82
- "Use the Oracle ILOM Web Interface to Reset the Server" on page 82

▼ Use the Oracle ILOM Command-Line Interface to Reset the Server

1. **Log in to the Oracle ILOM SP command-line interface (CLI) using an Administrator account.**

   Oracle ILOM displays the default command prompt (–>), indicating that you have successfully logged in to Oracle ILOM.

2. **From the CLI prompt, type the following command to reset the server:**

   -> **reset /System**

   The server resets.

Related Information
- "Use the Oracle ILOM Web Interface to Reset the Server" on page 82

▼ Use the Oracle ILOM Web Interface to Reset the Server

1. **Log in to the Oracle ILOM web interface using an Administrator account.**

   The Oracle ILOM web interface System Information Summary page appears.

2. **In the left pane, click Host Management > Power Control, and in the Select Action list box, click Reset.**

3. **Click Save, and then click OK.**

   The server resets.

Related Information

Installation Troubleshooting

If you experience problems while setting up your server, see the troubleshooting information in the following table.

Note – For additional troubleshooting information, refer to the *Oracle ZFS Storage ZS3-ES Service Manual*, "Troubleshooting the Server".

Problem	Possible Solution
Server powers on, but the monitor does not.	• Is the Power button for the monitor turned on? • Is the monitor power cord connected to a wall outlet? • Is the monitor power cord connected to the monitor? • Does the wall outlet have power? Test by plugging in another device.
DVD does not eject from the media tray when you press the Eject button.	• Move the mouse, or press any key on the keyboard. The drive might be in low power mode. • Use the utility software installed on your server to eject the DVD. • Ensure that the media in the device is not in use and is not mounted by the operating system.
No video is displayed on the monitor screen.	• Is the monitor cable attached to the video connector? • Does the monitor work when connected to another system? • If you have another monitor, does it work when connected to the original system? • If, after POST and BIOS are complete, you no longer see video output on your monitor and see only a flashing cursor, check the configuration of the operating system to determine if it is configured to redirect its output exclusively over the serial line.

Problem	Possible Solution
Server does not power on when the front panel Power button is pressed.	Keep notes on the following situations in case you need to call Oracle Service Personnel: • Is the Power/OK LED illuminated on the front of the system? (Ensure that the power cord is connected to the system and to a grounded power receptacle.) • Does the wall outlet have power? Test by plugging in another device. • Does the monitor sync within five minutes after power-on? (The green LED on the monitor stops flashing and remains illuminated.) • Check Oracle ILOM fault management settings to ensure that there are no faulty components or incorrect power management settings that might be preventing the system from powering on.
Keyboard or mouse does not respond to actions.	• Verify that the mouse and keyboard cables are connected to the on-board USB 2.0 connectors on the server. • Verify that the server is powered on and the front Power/OK LED is illuminated.
Hung or frozen server: No response from mouse or keyboard or any application.	Try to access your system from a different server on the network: 1. On another system, type **ping** *IP-address-of-server*. 2. If a response is returned, then try logging in to the server using telnet, ssh, or rlogin. 3. If you successfully log in, list the running processes using the ps command. 4. Kill any processes that appear unresponsive or should not be running, by using the kill *process-ID* command. 5. Check the responsiveness of the server after each process is killed. If this procedure does not work, power cycle the server: 1. Press the Power button to power off the server, and wait 20 to 30 seconds. 2. Press the Power button again to power the system back on.

Related Information

- "Installation Procedure Overview" on page 1
- "About Server Features and Components" on page 3
- *Oracle ZFS Storage ZS3-ES Service Manual*, "Troubleshooting the Server"

Technical Support Information Worksheet

If the troubleshooting information fails to solve your problem, use the following table to collect information that you might need to communicate to the Oracle Service personnel.

System Configuration Information Needed	Your Information
Service contract number	
System model	
Operating system	
System serial number (For instructions for locating this number, see "Locating the System Serial Number" on page 86.)	
Peripherals attached to the system	
Email address and phone number for you and a secondary contact	
Street address where the system is located	
Superuser password	
Summary of the problem and the work being done when the problem occurred	
IP address	
Server name (system host name)	
Network or Internet domain name	
Proxy server configuration	

Related Information

- *Oracle ZFS Storage ZS3-ES Service Manual*, "About System Components"
- *Oracle x86 Servers Diagnostics, Applications, and Utilities Guide For Servers with Oracle ILOM 3.1* at: http://www.oracle.com/pls/topic/lookup?ctx=x86diag

Locating the System Serial Number

You might need to have your server serial number when you ask for service on your system. Record this number for future use. Use one of the following methods to locate your server's serial number:

- On the front panel of the server, look to the left of the status indicators.

  For the exact location of the serial number, see "Front Panel Status Indicators, Connectors, and Drives" on page 5.

- In the BUI, click the Oracle label in the masthead.

- In the CLI, issue the command `maintenance hardware show`

- From the Oracle ILOM web interface, go to the System Information > Summary page in the Oracle ILOM browser interface.

- From the Oracle ILOM CLI, type the `show /System` command.

Related Information

- "Front Panel Status Indicators, Connectors, and Drives" on page 5

Getting Server Firmware and Software

This section explains the options for accessing server firmware and software.

Description	Links
Learn about server firmware and software updates.	"Firmware and Software Updates" on page 87
Learn about the options for accessing firmware and software.	"Firmware and Software Access Options" on page 88
Access the firmware and software packages through My Oracle Support.	"Download Firmware and Software Using My Oracle Support" on page 88

Firmware and Software Updates

Firmware and software, such as hardware drivers and tools for the server, are updated periodically. These are made available as a software release. The software release is a set of downloads (patches) that includes all available firmware, hardware drivers, and utilities for the server. All these have been tested together.

You should update your server firmware and software as soon as possible after the software release becomes available. Software releases often include bug fixes, and updating ensures that your server software is compatible with the latest server firmware and other component firmware and software.

Firmware and Software Access Options

Use one of the following options to obtain the latest set of firmware and software for your server:

- **My Oracle Support** – All system firmware and software are available from My Oracle Support at `http://support.oracle.com`.

  For instructions on how to download software releases from My Oracle Support, see "Download Firmware and Software Using My Oracle Support" on page 88.

- **Oracle Wiki** – View release notes and download firmware and software at `https://wikis.oracle.com/display/FishWorks/Software+Updates`.

▼ Download Firmware and Software Using My Oracle Support

1. **Go to the following web site:** `http://support.oracle.com`

2. **Sign in to My Oracle Support.**

3. **At the top of the page, click the Patches & Updates tab.**

   The Patches and Updates screen appears.

4. **In the Search screen, click Product or Family (Advanced), which is near the top.**

   The screen appears with search fields.

5. **In the Product field, select the product from the drop-down list.**

   Alternatively, type a full or partial product name until a match appears.

6. **In the Release field, select a software release from the drop-down list.**

7. **Click Search.**

   The patches available for downloading are listed.

8. **To select a patch for downloading, click on the Patch Name (you can use the shift key to select more than one patch).**

   A pop-up action panel appears. The pop-up panel contains several action options, including the Add to Plan and Download options. For information about the Add to Plan option, click on the associated drop-down button and select "Why use a plan?"

9. **View the Read Me file, which contains the Release Notes, by clicking the Read Me button. Read the information and address any release-specific requirements.**

10. **To download the patch(es), click the Download button.**

    The file(s) is downloaded locally.

11. **Unzip the patch file using an archive manager or by issuing the unzip command.**

    The file is expanded into the `All_Supported_Platforms` directory, and has a `.pkg.gz` file name extension.

Note – Do not attempt to open/unpack/decompress the zip file inside your server's system archive.

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12. **To upload and apply the patch, go to the BUI Maintenance > System online help page, and click the link for information on updating the system software. Pay special attention to the section describing how to update a clustered system.**

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