

Netra SPARC T4-2 Server

Service Manual



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Using This Documentation

This service manual explains how to replace parts in the Netra SPARC T4-2 server from Oracle, and how to use and maintain the system. This document is written for technicians, system administrators, authorized service providers, and users who have advanced experience troubleshooting and replacing hardware.

- “Product Notes” on page xi
- “Related Documentation” on page xii
- “Feedback” on page xii
- “Support and Accessibility” on page xii

Product Notes

For late-breaking information and known issues about this product, refer to the product notes at:

http://www.oracle.com/pls/topic/lookup?ctx=Netra_SPARCT4-2

Related Documentation

Documentation	Links
All Oracle products	http://www.oracle.com/documentation
Netra SPARC T4-2 server	http://www.oracle.com/pls/topic/lookup?ctx=Netra_SPARCT4-2
Oracle Solaris OS and other systems software	http://www.oracle.com/technetwork/indexes/documentation/index.html#sys_sw
Oracle Integrated Lights Out Manager (Oracle ILOM) 3.0	http://www.oracle.com/pls/topic/lookup?ctx=ilom30
Oracle VTS 7.0	http://www.oracle.com/pls/topic/lookup?ctx=OracleVTS7.0

Feedback

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

Identifying Components

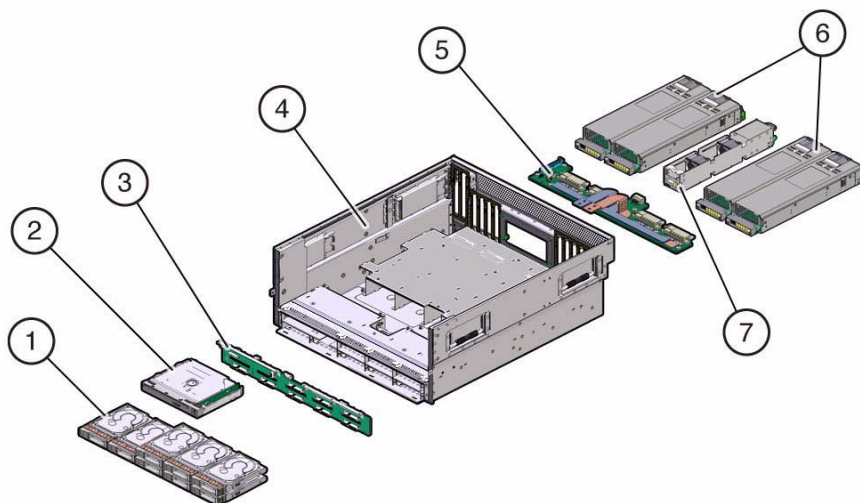
These topics identify key components of the server.

- [“Power Supply, Hard Drive, and Rear Fan Module Locations” on page 2](#)
- [“Front Fans, Subchassis, Memory Riser, and DIMM Locations” on page 4](#)
- [“Motherboard, PCIe2 Cards, and SP Locations” on page 3](#)
- [“Front Panel Components” on page 5](#)
- [“Rear Panel Components” on page 7](#)

Related Information

- [“Detecting and Managing Faults” on page 9](#)
- [“Preparing for Service” on page 59](#)
- [“Returning the Server to Operation” on page 285](#)

Power Supply, Hard Drive, and Rear Fan Module Locations



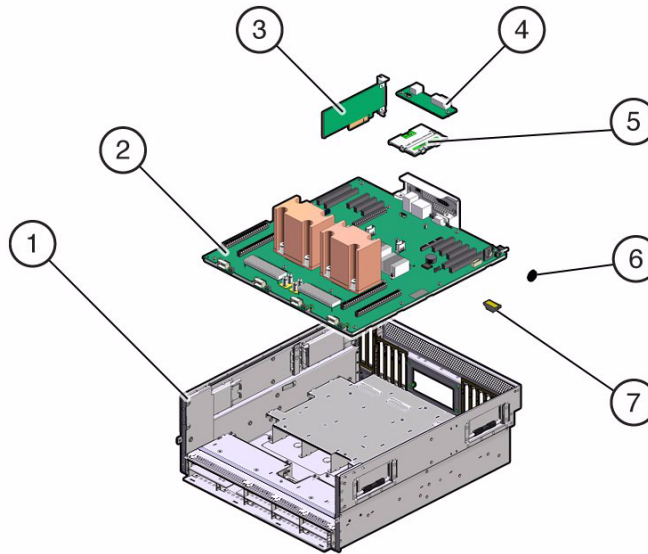
No.	Name	Service Link
1	Hard drives	“Servicing Hard Drives” on page 101
2	DVD drive	“Servicing the DVD Drive” on page 115
3	Hard drive backplane	“Servicing the Hard Drive Backplane” on page 273
4	Chassis	
5	Power distribution board	“Servicing the Power Distribution Board” on page 259
6	Power supplies	“Servicing Power Supplies” on page 125
7	Rear fan module	“Servicing the Rear Fan Module” on page 139

Related Information

- [“Front Fans, Subchassis, Memory Riser, and DIMM Locations” on page 4](#)
- [“Motherboard, PCIe2 Cards, and SP Locations” on page 3](#)
- [“Front Panel Components” on page 5](#)
- [“Rear Panel Components” on page 7](#)

- [“Component Service Task Reference” on page 65](#)

Motherboard, PCIe2 Cards, and SP Locations



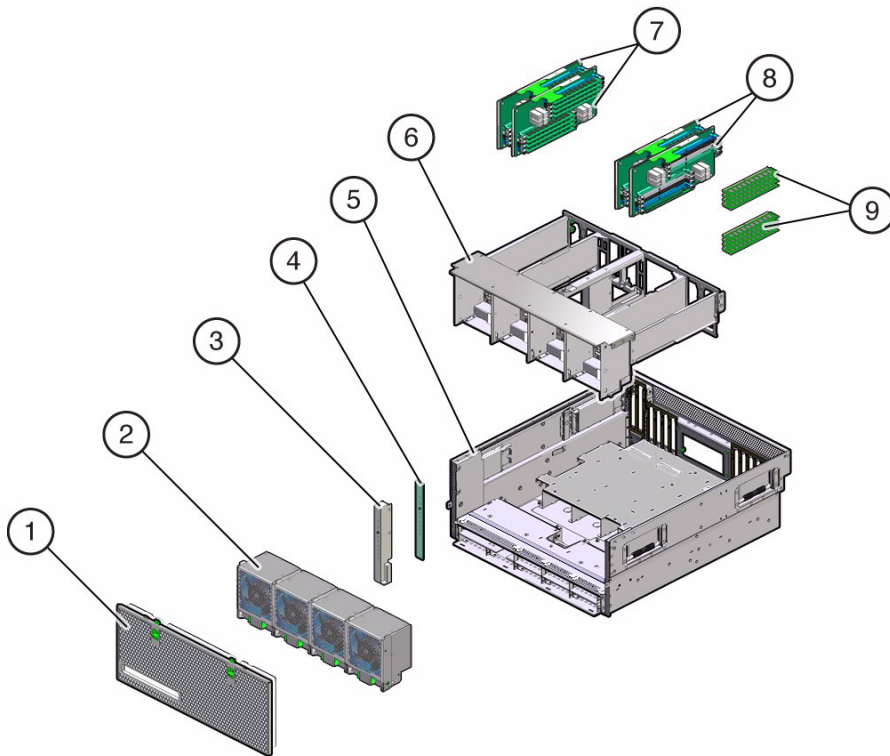
No.	Name	Service Link
1	Chassis	
2	Motherboard	“Servicing the Motherboard” on page 237
3	PCIe2 card	“Servicing PCIe2 Cards” on page 185
4	Alarm board	
5	SP	“Servicing the SP” on page 197
6	Battery	“Servicing the Battery” on page 177
7	ID PROM	“Servicing the ID PROM” on page 207

Related Information

- [“Power Supply, Hard Drive, and Rear Fan Module Locations” on page 2](#)

- “Front Fans, Subchassis, Memory Riser, and DIMM Locations” on page 4
- “Front Panel Components” on page 5
- “Rear Panel Components” on page 7
- “Component Service Task Reference” on page 65

Front Fans, Subchassis, Memory Riser, and DIMM Locations



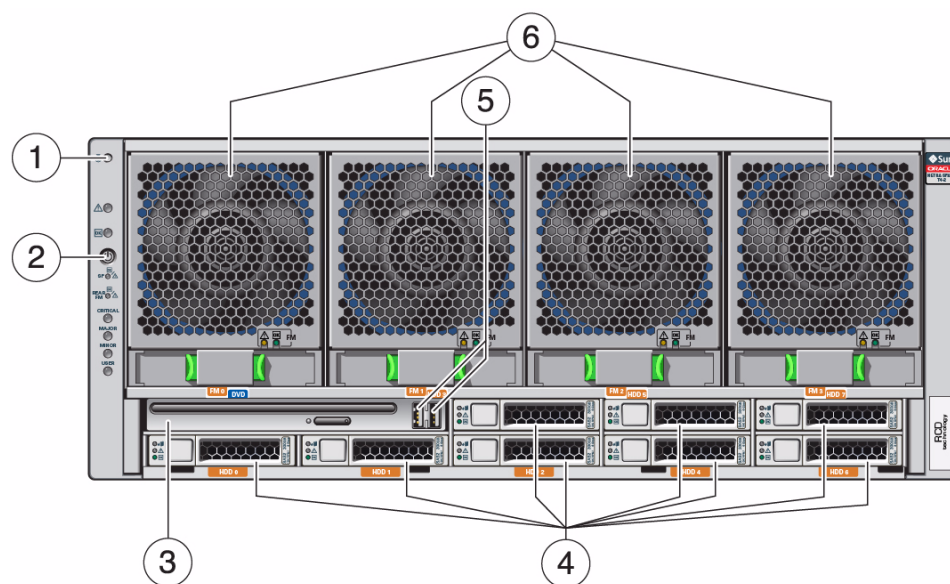
No.	Name	Service Link
1	Air filter	“Servicing the Air Filter” on page 75
2	Front fan modules	“Servicing Front Fan Modules” on page 87
3	LED board cover	“Servicing the LED Board” on page 225

No.	Name	Service Link
4	LED board	“Servicing the LED Board” on page 225
5	Chassis	
6	Subchassis	“Servicing the Subchassis” on page 215
7,8	Memory risers	“Servicing Memory Risers” on page 151
9	DIMMs	“Servicing DIMMs” on page 163

Related Information

- [“Power Supply, Hard Drive, and Rear Fan Module Locations” on page 2](#)
- [“Motherboard, PCIe2 Cards, and SP Locations” on page 3](#)
- [“Front Panel Components” on page 5](#)
- [“Rear Panel Components” on page 7](#)
- [“Component Service Task Reference” on page 65](#)

Front Panel Components

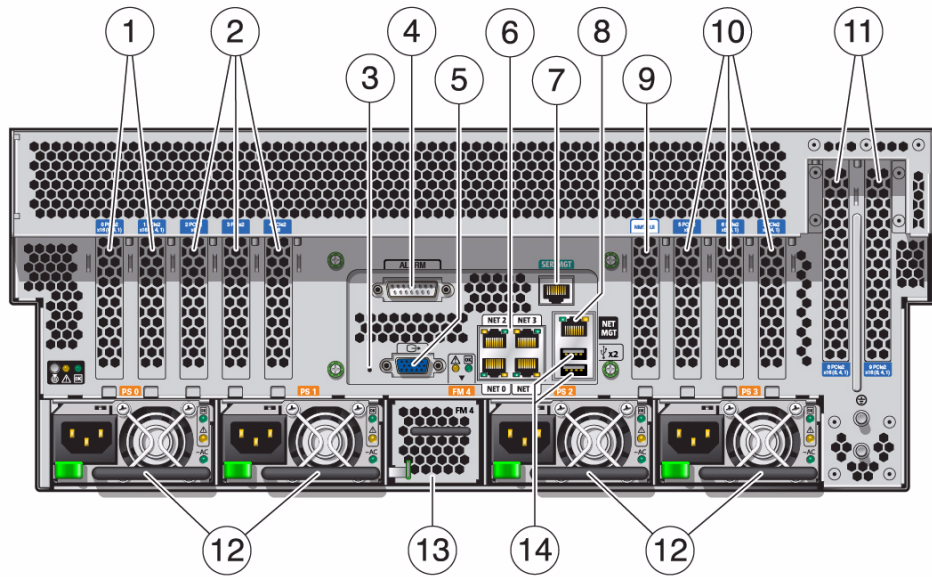


No.	Description	Links
1	Locator button	
2	Power button	“Power Off the Server (Power Button - Graceful)” on page 68 “Power Off the Server (Emergency Shutdown)” on page 68 “Power On the Server (Power Button)” on page 290
3	DVD drive	“Servicing the DVD Drive” on page 115
4	Hard drives (top row – HDD3, HDD5, HDD7, bottom row – HDD0, HDD1, HDD2, HDD4, HDD6))	“Servicing Hard Drives” on page 101
5	USB 2.0 ports (USB3, USB4)	<i>Server Installation</i> , USB ports
6	Front Fan Modules (FM0 to FM3)	“Servicing Front Fan Modules” on page 87

Related Information

- [“Power Supply, Hard Drive, and Rear Fan Module Locations” on page 2](#)
- [“Front Fans, Subchassis, Memory Riser, and DIMM Locations” on page 4](#)
- [“Motherboard, PCIe2 Cards, and SP Locations” on page 3](#)
- [“Front Panel LEDs” on page 14](#)
- [“Rear Panel Components” on page 7](#)

Rear Panel Components



No.	Description	Links
1	Expansion slots 0 and 1 (PCIe2, x16)	“Servicing PCIe2 Cards” on page 185
2	Expansion slots 2, 3, and 4 (PCIe2, x8)	“Servicing PCIe2 Cards” on page 185
3	Physical Presence button access hole	
4	Alarm port (DB-15)	<i>Server Installation</i> , alarm port
5	Video port (HD-15)	<i>Server Installation</i> , video port
6	Network 10/100/1000 ports (NET0 to NET3) for host	<i>Server Installation</i> , Gigabit Ethernet ports
7	SER MGT RJ-45 serial port for SP	<i>Server Installation</i> , SER MGT port
8	NET MGT RJ-45 network port for SP	<i>Server Installation</i> , NET MGT port
9	Expansion slot NM/XAUI	“Servicing PCIe2 Cards” on page 185
10	Expansion slots 5 to 7 (PCIe2, x8)	“Servicing PCIe2 Cards” on page 185
11	Expansion slots 8 and 9 (PCIe2, x16)	“Servicing PCIe2 Cards” on page 185
12	Power supplies (PS0 to PS3) with status (Note: AC supply shown)	“Servicing Power Supplies” on page 125

No.	Description	Links
13	Rear fan module (FM4)	“Servicing the Rear Fan Module” on page 139
14	USB 2.0 ports (USB 0, USB1)	<i>Server Installation</i> , USB ports

Related Information

- [“Power Supply, Hard Drive, and Rear Fan Module Locations” on page 2](#)
- [“Front Fans, Subchassis, Memory Riser, and DIMM Locations” on page 4](#)
- [“Motherboard, PCIe2 Cards, and SP Locations” on page 3](#)
- [“Rear Panel LEDs” on page 16](#)
- [“Front Panel Components” on page 5](#)

Detecting and Managing Faults

These topics explain how to use various diagnostic tools to monitor server status and troubleshoot faults in the server.

- [“Diagnostics Overview” on page 9](#)
- [“Diagnostics Process” on page 11](#)
- [“Interpreting Diagnostic LEDs” on page 14](#)
- [“Managing Faults \(Oracle ILOM\)” on page 18](#)
- [“Understanding Fault Management Commands” on page 29](#)
- [“Interpreting Log Files and System Messages” on page 35](#)
- [“Checking if Oracle VTS Is Installed” on page 36](#)
- [“Managing Faults \(POST\)” on page 38](#)
- [“Managing Faults \(PSH\)” on page 48](#)
- [“Managing Components \(ASR\)” on page 54](#)

Related Information

- [“Identifying Components” on page 1](#)
- [“Preparing for Service” on page 59](#)
- [“Returning the Server to Operation” on page 285](#)

Diagnostics Overview

You can use a variety of diagnostic tools, commands, and indicators to monitor and troubleshoot a server:

- **LEDs** – Provide a quick visual notification of the status of the server and of some of the FRUs.

- **Oracle ILOM 3.0** – Runs on the SP. In addition to providing the interface between the hardware and OS, Oracle ILOM also tracks and reports the health of key server components. Oracle ILOM works closely with POST and PSH to keep the system running even when there is a faulty component.
- **POST** – Performs diagnostics on system components upon system reset to ensure the integrity of those components. POST is configurable and works with Oracle ILOM to take faulty components offline if needed.
- **PSH** – Continuously monitors the health of the CPU, memory, and other components, and works with Oracle ILOM to take a faulty component offline if needed. The PSH technology enables systems to accurately predict component failures and mitigate many serious problems before they occur.
- **Log files and command interface** – Provide the standard Oracle Solaris OS log files and investigative commands that can be accessed and displayed on the device of your choice.
- **Oracle VTS** – Exercises the system, provides hardware validation, and discloses possible faulty components with recommendations for repair.

The LEDs, Oracle ILOM, PSH, and many of the log files and console messages are integrated. For example, when the Oracle Solaris OS detects a fault, the software displays the fault, logs the fault, and passes the information to Oracle ILOM, where the fault is also logged. Depending on the fault, one or more LEDs might also be illuminated.

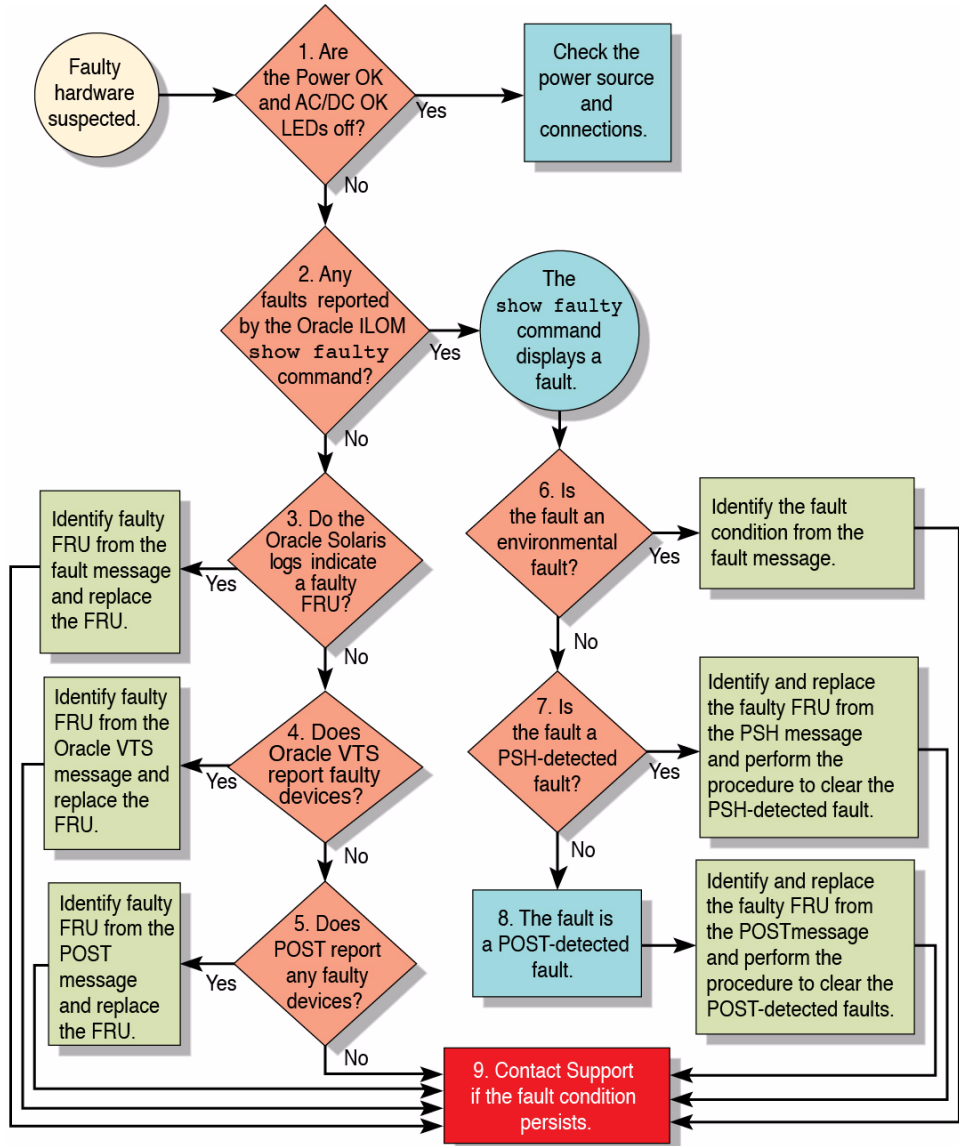
The diagnostic flowchart in [“Diagnostics Process” on page 11](#) illustrates an approach for using the server diagnostics to identify a faulty FRU. The diagnostics you use, and the order in which you use them, depend on the nature of the problem you are troubleshooting. So you might perform some actions and not others.

Related Information

- [“Diagnostics Process” on page 11](#)
- [“Interpreting Diagnostic LEDs” on page 14](#)
- [“Managing Faults \(Oracle ILOM\)” on page 18](#)
- [“Understanding Fault Management Commands” on page 29](#)
- [“Interpreting Log Files and System Messages” on page 35](#)
- [“Checking if Oracle VTS Is Installed” on page 36](#)
- [“Managing Faults \(POST\)” on page 38](#)
- [“Managing Faults \(PSH\)” on page 48](#)
- [“Managing Components \(ASR\)” on page 54](#)

Diagnostics Process

This flowchart illustrates the diagnostic process, using different diagnostic tools through a default sequence. See also the table that follows the flowchart.



Flowchart No.	Diagnostic Action	Possible Outcome	Additional Information
1.	Check Power OK and AC Present or DC Present LEDs on the server.	If these LEDs are not on, check the power source and power connections to the server.	<ul style="list-style-type: none"> • “Interpreting Diagnostic LEDs” on page 14
2.	Run the Oracle ILOM <code>show faulty</code> command to check for faults.	<p>This command displays these kinds of faults:</p> <ul style="list-style-type: none"> • Environmental • PSH-detected • POST-detected <p>Faulty FRUs are identified in fault messages using the FRU name.</p>	<ul style="list-style-type: none"> • “Service-Related Oracle ILOM Commands” on page 28 • “Check for Faults (show faulty Command)” on page 24
3.	Check the Oracle Solaris log files for fault information.	<p>The Oracle Solaris message buffer and log files record system events, and provide information about faults.</p> <ul style="list-style-type: none"> • If system messages indicate a faulty device, replace it. • For more diagnostic information, review the Oracle VTS report (see number 4). 	<ul style="list-style-type: none"> • “Interpreting Log Files and System Messages” on page 35
4.	Run the Oracle VTS software.	<ul style="list-style-type: none"> • If Oracle VTS reports a faulty device, replace it. • If Oracle VTS does not report a faulty device, run POST (see number 5). 	<ul style="list-style-type: none"> • “Checking if Oracle VTS Is Installed” on page 36
5.	Run POST.	POST performs basic tests of the server components and reports faulty FRUs.	<ul style="list-style-type: none"> • “Managing Faults (POST)” on page 38 • “Oracle ILOM Properties That Affect POST Behavior” on page 40
6.	Determine if the fault was detected by Oracle ILOM.	<p>Determine if the fault is an environmental fault or a configuration fault.</p> <p>If the fault listed by the <code>show faulty</code> command displays a temperature or voltage fault, then the fault is an environmental fault. Environmental faults can be caused by faulty FRUs (power supply or fan), or by environmental conditions such as ambient temperature that is too high or lack of sufficient airflow through the server. When the environmental condition is corrected, the fault automatically clears.</p> <p>If the fault indicates that a fan or power supply is bad, you can replace the FRU. You can also use the fault LEDs on the server to identify the faulty FRU.</p>	<ul style="list-style-type: none"> • “Check for Faults (show faulty Command)” on page 24 • “Check for Faults (fmadm faulty Command)” on page 25

Flowchart No.	Diagnostic Action	Possible Outcome	Additional Information
7.	Determine if the fault was detected by PSH.	<p>If the fault message does not begin with SPT, the fault was detected by PSH.</p> <p>For additional information on a reported fault, including corrective action, go to:</p> <p>http://support.oracle.com</p> <p>Search for the message ID contained in the fault message.</p> <p>After you replace the FRU, perform the procedure to clear PSH-detected faults.</p>	<ul style="list-style-type: none"> • “Managing Faults (PSH)” on page 48 • “Clear PSH-Detected Faults” on page 52
8.	Determine if the fault was detected by POST.	<p>POST performs basic tests of the server components and reports faulty FRUs. When POST detects a faulty FRU, POST logs the fault, and if possible, takes the FRU offline. POST-detected FRUs display this text in the fault message:</p> <p>Forced fail <i>reason</i></p> <p>In a POST fault message, <i>reason</i> is the name of the power-on routine that detected the failure.</p>	<ul style="list-style-type: none"> • “POST-Detected Fault Example (show faulty Command)” on page 33 • “Managing Faults (POST)” on page 38 • “Clear POST-Detected Faults” on page 45
9.	Contact technical support.	<p>The majority of hardware faults are detected by the server’s diagnostics. In rare cases a problem might require additional troubleshooting. If you are unable to determine the cause of the problem, contact Oracle Support or go to:</p> <p>http://support.oracle.com</p>	

Related Information

- “Diagnostics Overview” on page 9
- “Interpreting Diagnostic LEDs” on page 14
- “Managing Faults (Oracle ILOM)” on page 18
- “Understanding Fault Management Commands” on page 29
- “Interpreting Log Files and System Messages” on page 35
- “Checking if Oracle VTS Is Installed” on page 36
- “Managing Faults (POST)” on page 38
- “Managing Faults (PSH)” on page 48
- “Managing Components (ASR)” on page 54

Interpreting Diagnostic LEDs

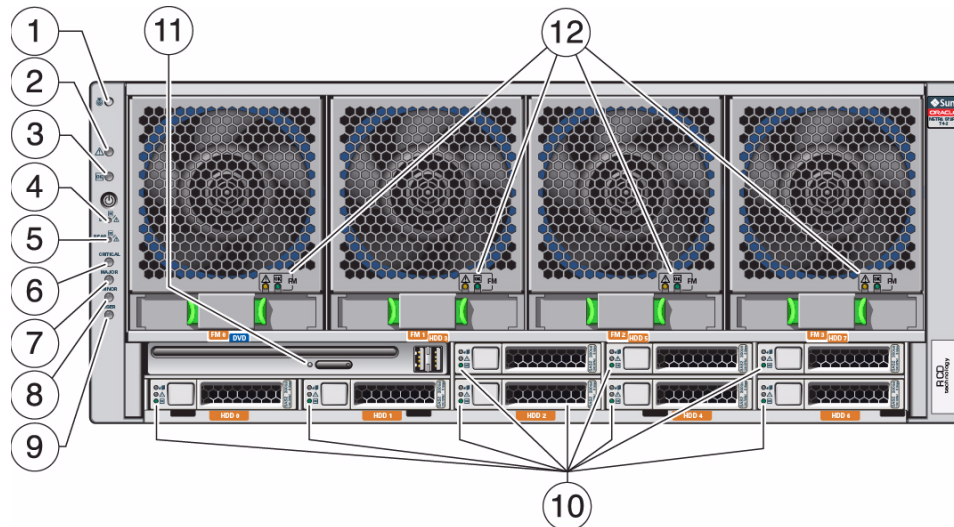
Use these diagnostic LEDs to determine if a component has failed in the server.

- “Front Panel LEDs” on page 14
- “Rear Panel LEDs” on page 16

Related Information

- “Diagnostics Overview” on page 9
- “Diagnostics Process” on page 11
- “Managing Faults (Oracle ILOM)” on page 18
- “Understanding Fault Management Commands” on page 29
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Front Panel LEDs



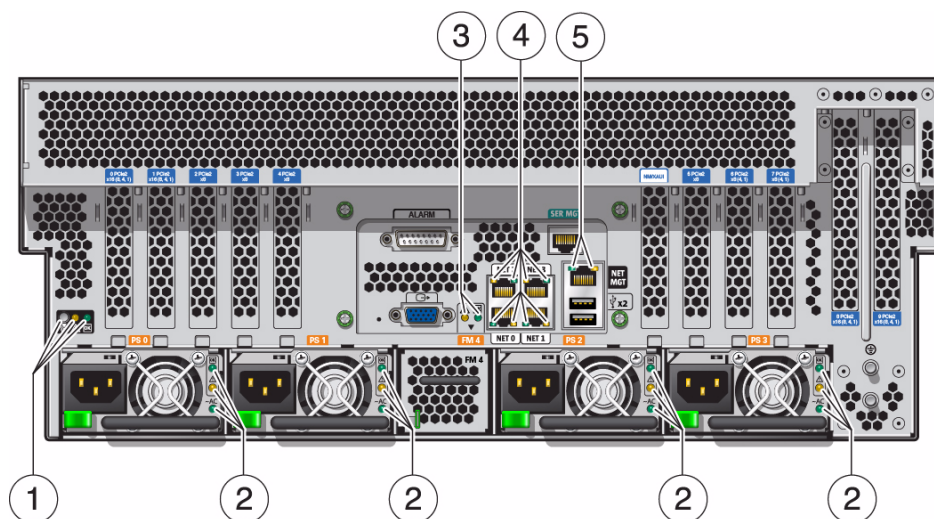
No.	LED	Description
1	Locator LED and button (white)	<p>The Locator LED can be turned on to identify a particular system. When on, the LED blinks rapidly. There are two methods for turning a Locator LED on:</p> <ul style="list-style-type: none"> • Typing the Oracle ILOM command <code>set /SYS/LOCATE value=Fast_Blink</code> • Pressing the Locator button • Through the Oracle ILOM web interface, System Monitoring > Indicators.
2	Service Action Required LED (amber)	<p>Indicates that service is required. POST and Oracle ILOM are two diagnostics tools that can detect a fault or failure resulting in this indication.</p> <p>The Oracle ILOM <code>show faulty</code> command provides details about any faults that cause this indicator to light.</p> <p>Under some fault conditions, individual component fault LEDs are turned on in addition to the Service Required LED.</p>
3	Main Power OK LED (green)	<p>Indicates these conditions:</p> <ul style="list-style-type: none"> • Off – System is not running in its normal state. System power might be off. The SP might be running. • Steady on – System is powered on and is running in its normal operating state. No service actions are required. • Fast blink – System is running in standby mode and can be quickly returned to full function. • Slow blink – A normal but transitory activity is taking place. Slow blinking might indicate that system diagnostics are running or that the system is booting.
4	SP Status LED	<p>Indicates the state of the SP:</p> <ul style="list-style-type: none"> • Green – Indicates a steady state, no service action is required. • Amber – Indicates a fault with the fan.
5	Rear Fan (FM4) Status LED	<p>Indicates the state of fan module FM4:</p> <ul style="list-style-type: none"> • Green – Indicates a steady state, no service action is required. • Amber – Indicates a fault with the SP.
6	Critical Alarm LED (red)	Indicates a critical alarm condition.
7	Major Alarm LED (red)	Indicates a major alarm condition.
8	Minor Alarm LED (amber)	Indicates a minor alarm condition.
9	User Alarm LED (amber)	Indicates a user alarm condition.
10	Hard Drive Status LEDs	<p>Ready to Remove LED (top, blue)</p> <p>Indicates that the drive can be removed during a hot-plug operation.</p> <p>Service Required LED (middle, amber)</p> <p>Indicates that the drive has experienced a fault condition.</p>

No.	LED	Description
		OK/Activity LED (bottom, green) Indicates the drive's availability for use. <ul style="list-style-type: none"> • On – Read or write activity is in progress. • Off – Drive is idle and available for use.
11	DVD Drive LED	Activity LED (green) Indicates read (fast flashing) or write (slow flashing) operation.
12	Fan Status LEDs	Service Required LED (left, amber) Indicates a fault with the fan. OK LED (right, green) Indicates a steady state, fan operating normally.

Related Information

- [“Rear Panel LEDs” on page 16](#)

Rear Panel LEDs



No.	LED	Description
1	Chassis Status LEDs	<p>Locator LED and button (left, white)</p> <p>The Locator LED can be turned on to identify a particular system. When on, the LED blinks rapidly. There are two methods for turning a Locator LED on:</p> <ul style="list-style-type: none"> • Typing the Oracle ILOM command <code>set /SYS/LOCATE value=Fast_Blink</code> • Pressing the Locator button <p>Service Action Required LED (center, amber)</p> <p>Indicates that service is required. POST and Oracle ILOM are two diagnostics tools that can detect a fault or failure resulting in this indication.</p> <p>The Oracle ILOM <code>show faulty</code> command provides details about any faults that cause this indicator to light.</p> <p>Under some fault conditions, individual component fault LEDs are turned on in addition to the Service Required LED.</p> <p>Main Power OK LED (right, green)</p> <p>Indicates these conditions:</p> <ul style="list-style-type: none"> • Off – System is not running in its normal state. System power might be off. The SP might be running. • Steady on – System is powered on and is running in its normal operating state. No service actions are required. • Fast blink – System is running in standby mode and can be quickly returned to full function. • Slow blink – A normal but transitory activity is taking place. Slow blinking might indicate that system diagnostics are running or that the system is booting.
2	Power Supply Status LEDs	<p>Output Power OK LED (top, green)</p> <p>Indicates that output power is without fault.</p> <p>Service Action Required LED (middle, amber)</p> <p>Indicates that service for the power supply is required. POST and Oracle ILOM are two diagnostic tools that can detect a fault or failure resulting in this indication.</p> <p>The Oracle ILOM <code>show faulty</code> command provides details about any faults that cause this indicator to light.</p> <p>AC or DC Input Power OK LED (bottom, green)</p> <p>Indicates that input power is without fault.</p>
3	Fan FM4 Status LEDs	<p>Service Required LED (left, amber)</p> <p>Indicates a fault with the fan.</p> <p>OK LED (right, green)</p> <p>Indicates a steady state, fan operating normally.</p>

No.	LED	Description
4	NET0 to NET3 Status LEDs	<p>Link and Activity LED (left, green)</p> <p>Indicates these conditions:</p> <ul style="list-style-type: none"> • On or blinking – A link is established. • Off – No link is established. <p>Speed LED (right, amber)</p> <p>Indicates these conditions:</p> <ul style="list-style-type: none"> • Amber – The link is operating as a Gigabit connection (1000-Mbps). • Green – The link is operating as a 100-Mbps connection. • Off – The link is operating as a 10-Mbps connection or there is no link.
5	Net Management LEDs	<p>Link and Activity LED (left, amber)</p> <p>Indicates these conditions:</p> <ul style="list-style-type: none"> • On or blinking – A link is established. • Off – No link is established. <p>Speed LED (right, green)</p> <p>Indicates these conditions:</p> <ul style="list-style-type: none"> • On or blinking – The link is operating as a 100-Mbps connection. • Off – The link is operating as a 10-Mbps connection.

Related Information

- [“Front Panel LEDs” on page 14](#)

Managing Faults (Oracle ILOM)

These topics explain how to use Oracle ILOM, the SP firmware, to diagnose faults and verify successful repairs.

- [“Oracle ILOM Troubleshooting Overview” on page 19](#)
- [“Access the SP \(Oracle ILOM\)” on page 21](#)
- [“Display FRU Information \(show Command\)” on page 23](#)
- [“Check for Faults \(show faulty Command\)” on page 24](#)
- [“Check for Faults \(fmadm faulty Command\)” on page 25](#)
- [“Clear Faults \(clear_fault_action Property\)” on page 26](#)
- [“Service-Related Oracle ILOM Commands” on page 28](#)

Related Information

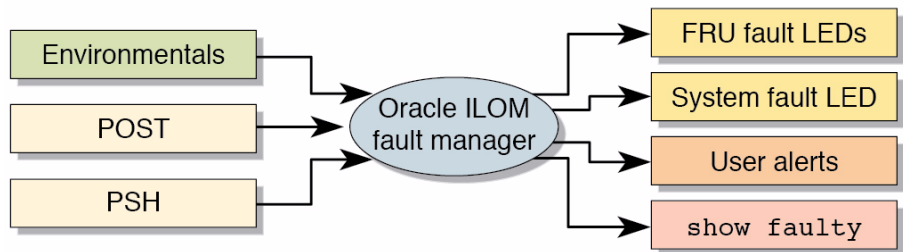
- “Diagnostics Overview” on page 9
- “Diagnostics Process” on page 11
- “Interpreting Diagnostic LEDs” on page 14
- “Understanding Fault Management Commands” on page 29
- “Interpreting Log Files and System Messages” on page 35
- “Checking if Oracle VTS Is Installed” on page 36
- “Managing Faults (POST)” on page 38
- “Managing Faults (PSH)” on page 48
- “Managing Components (ASR)” on page 54

Oracle ILOM Troubleshooting Overview

Oracle ILOM enables you to remotely run diagnostics, such as POST, that would otherwise require physical proximity to the server’s serial port. You can also configure Oracle ILOM to send email alerts of hardware failures, hardware warnings, and other events related to the server or to Oracle ILOM.

The SP runs independently of the server, using the server’s standby power. Therefore, Oracle ILOM firmware and software continue to function when the server OS goes offline or when the server is powered off.

Error conditions detected by Oracle ILOM, POST, and PSH are forwarded to Oracle ILOM for fault handling.



The Oracle ILOM fault manager evaluates error messages the manager receives to determine whether the condition being reported should be classified as an alert or a fault.

- **Alerts** – When the fault manager determines that an error condition being reported does not indicate a faulty FRU, the fault manager classifies the error as an alert.

Alert conditions are often caused by environmental conditions, such as computer room temperature, which might improve over time. Alerts might also be caused by a configuration error, such as the wrong DIMM type being installed.

If the conditions responsible for the alert go away, the fault manager detects the change and stops logging alerts for that condition.

- **Faults** – When the fault manager determines that a particular FRU has an error condition that is permanent, that error is classified as a fault. This classification causes the Service Required LEDs to be turned on, the FRUID PROMs updated, and a fault message logged. If the FRU has status LEDs, the Service Required LED for that FRU is also turned on.

A FRU identified as having a *fault* condition must be replaced.

The SP can automatically detect when a FRU has been replaced. In many cases, the SP does this action even if the FRU is removed while the system is not running (for example, if the system power cables are unplugged during service procedures). This function enables Oracle ILOM to sense that a fault, diagnosed to a specific FRU, has been repaired.

Note – Oracle ILOM does not automatically detect hard drive replacement.

PSH does not monitor hard drives for faults. As a result, the SP does not recognize hard drive faults and does not light the fault LEDs on either the chassis or the hard drive itself. Use the Oracle Solaris message files to view hard drive faults.

For general information about Oracle ILOM, refer to the Oracle ILOM 3.0 documentation.

For detailed information about Oracle ILOM features that are specific to this server, refer to *Server Administration*.

Related Information

- [“Access the SP \(Oracle ILOM\)” on page 21](#)
- [“Display FRU Information \(show Command\)” on page 23](#)
- [“Check for Faults \(show faulty Command\)” on page 24](#)
- [“Check for Faults \(fmadm faulty Command\)” on page 25](#)
- [“Clear Faults \(clear_fault_action Property\)” on page 26](#)
- [“Service-Related Oracle ILOM Commands” on page 28](#)

▼ Access the SP (Oracle ILOM)

There are two approaches to interacting with the SP:

- **Oracle ILOM CLI shell (default)** – The Oracle ILOM shell provides access to Oracle ILOM's features and functions through a CLI.
- **Oracle ILOM web interface** – The Oracle ILOM web interface supports the same set of features and functions as the shell.

Note – Unless indicated otherwise, all examples of interaction with the SP are depicted with Oracle ILOM shell commands.

Note – The CLI includes a feature that enables you to access Oracle Solaris fault manager commands, such as `fmadm`, `fmdump`, and `fmstat`, from within the Oracle ILOM shell. This feature is referred to as the Oracle ILOM `faultmgmt` shell. For more information about the Oracle Solaris fault manager commands, refer to *Server Administration* and the Oracle Solaris documentation.

You can log into multiple SP accounts simultaneously and have separate Oracle ILOM shell commands executing concurrently under each account.

1. Establish connectivity to the SP using one of these methods:

- **SER MGT** – Connect a terminal device (such as an ASCII terminal or laptop with terminal emulation) to the serial management port.

Set up your terminal device for 9600 baud, 8 bit, no parity, 1 stop bit and no handshaking. Use a null-modem configuration (transmit and receive signals crossed over to enable DTE-to-DTE communication). The crossover adapters supplied with the server provide a null-modem configuration.

- **NET MGT** – Connect this port to an Ethernet network. This port requires an IP address. By default, the port is configured for DHCP, or you can assign an IP address.

2. Decide which interface to use, the Oracle ILOM CLI or the Oracle ILOM web interface.

3. Open an SSH session and connect to the SP by specifying its IP address.

The Oracle ILOM default username is `root`, and the default password is `changeme`.

```
% ssh root@xxx.xxx.xxx.xxx
...
Are you sure you want to continue connecting (yes/no) ? yes
...
```

```
Password: password (nothing displayed)

Oracle(R) Integrated Lights Out Manager

Version 3.0.12.x rxxxxx

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reserved.

->
```

Note – To provide optimum server security, change the default server password.

The Oracle ILOM prompt (->) indicates that you are accessing the SP with the Oracle ILOM CLI.

4. Perform Oracle ILOM commands that provide the diagnostic information you need.

These Oracle ILOM commands are commonly used for fault management:

- **show command** – Displays information about individual FRUs. See [“Display FRU Information \(show Command\)” on page 23](#).
- **show faulty command** – Displays environmental, POST-detected, and PSH-detected faults. See [“Check for Faults \(show faulty Command\)” on page 24](#).

Note – You can use `fmadm faulty` in the `faultmgmt` shell as an alternative to the `show faulty` command. See [“Check for Faults \(fmadm faulty Command\)” on page 25](#).

- **clear_fault_action property of the set command** – Manually clears PSH-detected faults. See [“Clear Faults \(clear_fault_action Property\)” on page 26](#).

Related Information

- [“Oracle ILOM Troubleshooting Overview” on page 19](#)
- [“Display FRU Information \(show Command\)” on page 23](#)
- [“Check for Faults \(show faulty Command\)” on page 24](#)
- [“Check for Faults \(fmadm faulty Command\)” on page 25](#)
- [“Clear Faults \(clear_fault_action Property\)” on page 26](#)
- [“Service-Related Oracle ILOM Commands” on page 28](#)

▼ Display FRU Information (show Command)

- At the Oracle ILOM prompt, type the `show` command.

In this example, the `show` command displays information about a DIMM.

```
-> show /SYS/MB/CMP1/MR1/BOB1/CH1/D0

/SYS/MB/CMP1/MR1/BOB1/CH1/D0
Targets:
  T_AMB
  SERVICE

Properties:
  type = DIMM
  ipmi_name = P1/M1/B1/C1/D0
  component_state = Enabled
  fru_name = 8192MB DDR3 SDRAM
  fru_description = DDR3 DIMM 8192 Mbytes
  fru_manufacturer = Samsung
  fru_version = 01
  fru_part_number = 511-1617
  fru_serial_number = 00CE01104244571506
  fault_state = OK
  clear_fault_action = (none)

Commands:
  cd
  set
  show
```

Related Information

- Oracle ILOM 3.0 documentation
- [“Oracle ILOM Troubleshooting Overview”](#) on page 19
- [“Access the SP \(Oracle ILOM\)”](#) on page 21
- [“Check for Faults \(show faulty Command\)”](#) on page 24
- [“Check for Faults \(fmadm faulty Command\)”](#) on page 25
- [“Clear Faults \(clear_fault_action Property\)”](#) on page 26
- [“Service-Related Oracle ILOM Commands”](#) on page 28

▼ Check for Faults (show faulty Command)

Use the `show faulty` command to display information about faults and alerts diagnosed by the system.

See [“Understanding Fault Management Commands” on page 29](#) for examples of the kind of information the command displays for different types of faults.

- At the Oracle ILOM prompt, type the `show faulty` command.

-> show faulty		
Target	Property	Value

/SP/faultmgmt/0	fru	/SYS/PS0
/SP/faultmgmt/0/ faults/0	class	fault.chassis.power.fail
/SP/faultmgmt/0/ faults/0	sunw-msg-id	SPT-8000-MJ
/SP/faultmgmt/0/ faults/0	component	/SYS/PS0
/SP/faultmgmt/0/ faults/0	uuid	d7d67b9b-ba67-e257-8d8d-bcef2db2 971b
/SP/faultmgmt/0/ faults/0	timestamp	2011-09-13/15:47:41
/SP/faultmgmt/0/ faults/0	fru_part_number	300-2304
/SP/faultmgmt/0/ faults/0	fru_serial_number	C40003
/SP/faultmgmt/0/ faults/0	product_serial_number	1133BDN082
/SP/faultmgmt/0/ faults/0	chassis_serial_number	1133BDN082
/SP/faultmgmt/0/ faults/0	detector	/SYS/PS0/PWROK

Related Information

- [“Diagnostics Process” on page 11](#)
- [“Oracle ILOM Troubleshooting Overview” on page 19](#)
- [“Access the SP \(Oracle ILOM\)” on page 21](#)
- [“Display FRU Information \(show Command\)” on page 23](#)
- [“Check for Faults \(fmadm faulty Command\)” on page 25](#)
- [“Clear Faults \(clear_fault_action Property\)” on page 26](#)
- [“Service-Related Oracle ILOM Commands” on page 28](#)

▼ Check for Faults (fmadm faulty Command)

This is an example of the fmadm faulty command reporting on the same power supply fault as shown in the show faulty example. See [“Check for Faults \(show faulty Command\)” on page 24](#). Note that the two examples show the same UUID value.

The fmadm faulty command was run from within the Oracle ILOM faultmgmt shell.

Note – The characters SPT at the beginning of the message ID indicate that the fault was detected by Oracle ILOM.

1. At the Oracle ILOM prompt, access the faultmgmt shell.

```
-> start /SP/faultmgmt/shell
Are you sure you want to start /SP/faultmgmt/shell (y/n)? y
```

2. At the faultmgmtsp> prompt, type the fmadm faulty command.

```
faultmgmtsp> fmadm faulty
-----
-----
Time                UUID                msgid                Severity
-----
2011-09-13/15:47:41 d7d67b9b-ba67-e257-8d8d-bcef2db2971b SPT-8000-MJ    Critical

Fault class : fault.chassis.power.fail

FRU          : /SYS/PS0
              (Part Number: 300-2304)
              (Serial Number: C40003)

Description  : A Power Supply has failed and is not providing power to the
              server.

Response     : The service required LED on the chassis and on the affected
              Power Supply may be illuminated.

Impact      : Server will be powered down when there are insufficient
              Power Supply may be illuminated.

Action      : The administrator should review the ILOM event log for
              additional information pertaining to this diagnosis. Please
              refer to the Details section of the Knowledge Article for
```

```
additional information.
```

```
faultmgmtsp>
```

3. Exit the faultmgmt shell.

```
faultmgmtsp> exit  
->
```

Related Information

- [“Diagnostics Process” on page 11](#)
- [“Oracle ILOM Troubleshooting Overview” on page 19](#)
- [“Access the SP \(Oracle ILOM\)” on page 21](#)
- [“Display FRU Information \(show Command\)” on page 23](#)
- [“Check for Faults \(show faulty Command\)” on page 24](#)
- [“Clear Faults \(clear_fault_action Property\)” on page 26](#)
- [“Service-Related Oracle ILOM Commands” on page 28](#)

▼ Clear Faults (clear_fault_action Property)

Use the `clear_fault_action` property of a FRU with the `set` command to manually clear Oracle ILOM-detected faults from the SP.

If Oracle ILOM detects the FRU replacement, Oracle ILOM automatically clears the fault. For PSH-diagnosed faults, if the replacement of the FRU is detected by the system or you manually clear the fault on the host, the fault is also cleared from the SP. In such cases, you do not need to clear the fault manually.

Note – For PSH-detected faults, this procedure clears the fault from the SP but not from the host. If the fault persists in the host, clear the fault manually as described in [“Clear PSH-Detected Faults” on page 52](#).

- **At the Oracle ILOM prompt, use the `set` command with the `clear_fault_action=True` property.**

This example begins with an excerpt from the `fmadm faulty` command showing power supply 0 with a voltage failure. After the fault condition is corrected (a new power supply has been installed), the fault state is cleared.

Note – In this example, the characters SPT at the beginning of the message ID indicate that the fault was detected by Oracle ILOM.

```
[...]  
faultmgmtsp> fmadm faulty  
-----  
Time                UUID                msgid                Severity  
-----  
2010-08-11/14:54:23 59654226-50d3-cdc6-9f09-e591f39792ca SPT-8000-LC    Critical  
  
Fault class : fault.chassis.power.volt-fail  
  
Description : A Power Supply voltage level has exceeded acceptable limits.  
  
[...]  
  
-> set /SYS/PS0 clear_fault_action=true  
Are you sure you want to clear /SYS/PS0 (y/n)? y  
Set 'clear_fault_action' to 'true'  
  
-> show /SYS/PS0  
  
/SYS/PS0  
Targets:  
  PRSNT  
  VINOK  
  PWROK  
  CUR_FAULT  
  VOLT_FAULT  
  FAN_FAULT  
  TEMP_FAULT  
  V_IN  
  I_IN  
  V_OUT  
  I_OUT  
  INPUT_POWER  
  OUTPUT_POWER  
  
Properties:  
  type = Power Supply  
  ipmi_name = PS0  
  fru_name = /SYS/PS0  
  fru_description = Powersupply  
  fru_manufacturer = Delta Electronics
```

```
fru_version = 01
fru_part_number = 300-2304
fru_serial_number = C40003
fault_state = OK
clear_fault_action = (none)
```

Commands:

```
cd
set
show
```

Related Information

- [“Oracle ILOM Troubleshooting Overview” on page 19](#)
- [“Access the SP \(Oracle ILOM\)” on page 21](#)
- [“Display FRU Information \(show Command\)” on page 23](#)
- [“Check for Faults \(show faulty Command\)” on page 24](#)
- [“Check for Faults \(fmadm faulty Command\)” on page 25](#)
- [“Service-Related Oracle ILOM Commands” on page 28](#)

Service-Related Oracle ILOM Commands

These are the Oracle ILOM shell commands most frequently used when performing service-related tasks.

Oracle ILOM Command	Description
<code>help [command]</code>	Displays a list of all available commands with syntax and descriptions. Specifying a command name as an option displays help for that command.
<code>set /HOST send_break_action=break</code>	Takes the host server from the OS to either <code>kmdb</code> or <code>OPB</code> (equivalent to a Stop-A), depending on the mode Oracle Solaris software was booted.
<code>set /SYS/component clear_fault_action=true</code>	Manually clears host-detected faults.
<code>start /SP/console</code>	Connects to the host system.
<code>show /SP/console/history</code>	Displays the contents of the system’s console buffer.
<code>set /HOST/bootmode property=value</code> [where <i>property</i> is <i>state</i> , <i>config</i> , or <i>script</i>]	Controls the host server <code>OPB</code> firmware method of booting.
<code>stop /SYS; start /SYS</code>	Performs a poweroff followed by a poweron.
<code>stop /SYS</code>	Powers off the host server.

Oracle ILOM Command	Description
<code>start /SYS</code>	Powers on the host server.
<code>reset /SYS</code>	Generates a hardware reset on the host server.
<code>reset /SP</code>	Reboots the SP.
<code>set /SYS keyswitch_state=<i>value</i> normal standby diag locked</code>	Sets the virtual keyswitch.
<code>set /SYS/LOCATE value=<i>value</i> [Fast_blink Off]</code>	Turns the Locator LED on or off.
<code>show faulty</code>	Displays current system faults. See “Check for Faults (show faulty Command)” on page 24 .
<code>show /SYS keyswitch_state</code>	Displays the status of the virtual keyswitch.
<code>show /SYS/LOCATE</code>	Displays the current state of the Locator LED as either on or off.
<code>show /SP/logs/event/list</code>	Displays the history of all events logged in the SP event buffers (in RAM or the persistent buffers).
<code>show /HOST</code>	Displays information about the operating state of the host system, the system serial number, and whether the hardware is providing service.

Related Information

- [“Oracle ILOM Troubleshooting Overview” on page 19](#)
- [“Access the SP \(Oracle ILOM\)” on page 21](#)
- [“Display FRU Information \(show Command\)” on page 23](#)
- [“Check for Faults \(show faulty Command\)” on page 24](#)
- [“Check for Faults \(fmadm faulty Command\)” on page 25](#)
- [“Clear Faults \(clear_fault_action Property\)” on page 26](#)

Understanding Fault Management Commands

These topics provide example output from use of the `show faulty` and `fmadm faulty` commands.

- [“No Faults Detected Example” on page 30](#)
- [“Power Supply Fault Example \(show faulty Command\)” on page 31](#)

- “Power Supply Fault Example (fmadm faulty Command)” on page 32
- “POST-Detected Fault Example (show faulty Command)” on page 33
- “PSH-Detected Fault Example (show faulty Command)” on page 34

Related Information

- “Diagnostics Overview” on page 9
- “Diagnostics Process” on page 11
- “Interpreting Diagnostic LEDs” on page 14
- “Managing Faults (Oracle ILOM)” on page 18
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No Faults Detected Example

When no faults have been detected, the `show faulty` command output looks like this:

```
-> show faulty
```

Target	Property	Value
-----	-----	-----
-----	-----	-----

```
->
```

Related Information

- “Power Supply Fault Example (show faulty Command)” on page 31
- “Power Supply Fault Example (fmadm faulty Command)” on page 32
- “POST-Detected Fault Example (show faulty Command)” on page 33
- “PSH-Detected Fault Example (show faulty Command)” on page 34
- “Service-Related Oracle ILOM Commands” on page 28

Power Supply Fault Example (show faulty Command)

This is an example of the `show faulty` command reporting a power supply fault.

Note – The characters `SPT` at the beginning of the message ID indicate that the fault was detected by Oracle ILOM.

-> show faulty		
Target	Property	Value
/SP/faultmgmt/0	fru	/SYS/PS0
/SP/faultmgmt/0/ faults/0	class	fault.chassis.power.volt-fail
/SP/faultmgmt/0/ faults/0	sunw-msg-id	SPT-8000-LC
/SP/faultmgmt/0/ faults/0	uuid	59654226-50d3-cdc6-9f09-e591f39792ca
/SP/faultmgmt/0/ faults/0	timestamp	2010-08-11/14:54:23
/SP/faultmgmt/0/ faults/0	fru_part_number	3002235
/SP/faultmgmt/0/ faults/0	fru_serial_number	003136
/SP/faultmgmt/0/ faults/0	product_serial_number	BDL1024FDA
/SP/faultmgmt/0/ faults/0	chassis_serial_number	BDL1024FDA
/SP/faultmgmt/0/ faults/0	detector	/SYS/PS0/VOLT_FAULT

Related Information

- [“No Faults Detected Example” on page 30](#)
- [“Power Supply Fault Example \(fmadm faulty Command\)” on page 32](#)
- [“POST-Detected Fault Example \(show faulty Command\)” on page 33](#)
- [“PSH-Detected Fault Example \(show faulty Command\)” on page 34](#)
- [“Service-Related Oracle ILOM Commands” on page 28](#)

Power Supply Fault Example (fmadm faulty Command)

This is an example of the `fmadm faulty` command reporting on the same power supply fault as shown in the `show faulty` example. See [“Power Supply Fault Example \(show faulty Command\)” on page 31](#). The two examples show the same UUID value.

The `fmadm faulty` command was run from within the Oracle ILOM `faultmgmt` shell.

Note – The characters `SPT` at the beginning of the message ID indicate that the fault was detected by Oracle ILOM.

```
-> start /SP/faultmgmt/shell
Are you sure you want to start /SP/faultmgmt/shell (y/n)? y

faultmgmtsp> fmadm faulty
-----
Time                UUID                                msgid                Severity
-----
2010-08-11/14:54:23 59654226-50d3-cdc6-9f09-e591f39792ca SPT-8000-LC          Critical

Fault class : fault.chassis.power.volt-fail

Description : A Power Supply voltage level has exceeded acceptable limits.

Response    : The service required LED on the chassis and on the affected
              Power Supply might be illuminated.

Impact      : Server will be powered down when there are insufficient
              operational power supplies

Action      : The administrator should review the ILOM event log for
              additional information pertaining to this diagnosis. Please
              refer to the Details section of the Knowledge Article for
              additional information.

faultmgmtsp> exit
```

Related Information

- [“No Faults Detected Example” on page 30](#)
- [“Power Supply Fault Example \(show faulty Command\)” on page 31](#)

- [“POST-Detected Fault Example \(show faulty Command\)” on page 33](#)
- [“PSH-Detected Fault Example \(show faulty Command\)” on page 34](#)
- [“Service-Related Oracle ILOM Commands” on page 28](#)

POST-Detected Fault Example (show faulty Command)

This is an example of the `show faulty` command displaying a fault that was detected by POST. These kinds of faults are identified by the message `Forced fail reason`, where *reason* is the name of the power-on routine that detected the fault.

```
-> show faulty
```

Target	Property	Value
/SP/faultmgmt/0	fru	/SYS/MB/CMP1/MR1/BOB1/CH1/D0
/SP/faultmgmt/0	timestamp	Oct 12 16:40:56
/SP/faultmgmt/0/ faults/0	timestamp	Oct 12 16:40:56
/SP/faultmgmt/0/ faults/0	sp_detected_fault	/SYS/MB/CMP1/MR1/BOB1/CH1/D0 Forced fail (POST)

Related Information

- [“No Faults Detected Example” on page 30](#)
- [“Power Supply Fault Example \(show faulty Command\)” on page 31](#)
- [“Power Supply Fault Example \(fmadm faulty Command\)” on page 32](#)
- [“PSH-Detected Fault Example \(show faulty Command\)” on page 34](#)
- [“Service-Related Oracle ILOM Commands” on page 28](#)

PSH-Detected Fault Example (show faulty Command)

This is an example of the `show faulty` command displaying a fault that was detected by PSH. These kinds of faults are identified by the absence of the characters SPT at the beginning of the message ID.

-> show faulty		
Target	Property	Value
/SP/faultmgmt/0	fru	/SYS/PM0
/SP/faultmgmt/0/ faults/0	class	fault.cpu.generic-sparc.strand
/SP/faultmgmt/0/ faults/0	sunw-msg-id	SUN4V-8002-6E
/SP/faultmgmt/0/ faults/0	uuid	21a8b59e-89ff-692a-c4bc-f4c5cccc 7a8a
/SP/faultmgmt/0/ faults/0	timestamp	2010-08-13/15:48:33
/SP/faultmgmt/0/ faults/0	chassis_serial_number	BDL1024FDA
/SP/faultmgmt/0/ faults/0	product_serial_number	BDL1024FDA
/SP/faultmgmt/0/ faults/0	fru_serial_number	1005LCB-1018B2009T
/SP/faultmgmt/0/ faults/0	fru_part_number	541-3857-07
/SP/faultmgmt/0/ faults/0	mod-version	1.16
/SP/faultmgmt/0/ faults/0	mod-name	eft
/SP/faultmgmt/0/ faults/0	fault_diagnosis	/HOST
/SP/faultmgmt/0/ faults/0	severity	Major

Related Information

- [“No Faults Detected Example” on page 30](#)
- [“Power Supply Fault Example \(show faulty Command\)” on page 31](#)
- [“Power Supply Fault Example \(fmadm faulty Command\)” on page 32](#)
- [“POST-Detected Fault Example \(show faulty Command\)” on page 33](#)
- [“Service-Related Oracle ILOM Commands” on page 28](#)

Interpreting Log Files and System Messages

With the Oracle Solaris OS running on the server, you have the full complement of Oracle Solaris OS files and commands available for collecting information and for troubleshooting.

If POST or PSH do not indicate the source of a fault, check the message buffer and log files for notifications for faults. Hard drive faults are usually captured by the Oracle Solaris message files.

- [“Check the Message Buffer” on page 35](#)
- [“View System Message Log Files” on page 36](#)

Related Information

- [“Diagnostics Overview” on page 9](#)
- [“Diagnostics Process” on page 11](#)
- [“Interpreting Diagnostic LEDs” on page 14](#)
- [“Managing Faults \(Oracle ILOM\)” on page 18](#)
- [“Understanding Fault Management Commands” on page 29](#)
- [“Checking if Oracle VTS Is Installed” on page 36](#)
- [“Managing Faults \(POST\)” on page 38](#)
- [“Managing Faults \(PSH\)” on page 48](#)
- [“Managing Components \(ASR\)” on page 54](#)

▼ Check the Message Buffer

The `dmesg` command checks the system buffer for recent diagnostic messages and displays them.

1. **Log in as superuser.**
2. **Type.**

```
# dmesg
```

Related Information

- [“View System Message Log Files” on page 36](#)

▼ View System Message Log Files

The error logging daemon, `syslogd`, automatically records various system warnings, errors, and faults in message files. These messages can alert you to system problems such as a device that is about to fail.

The `/var/adm` directory contains several message files. The most recent messages are in the `/var/adm/messages` file. After a period of time (usually every week), a new `messages` file is automatically created. The original contents of the `messages` file are rotated to a file named `messages.1`. Over a period of time, the messages are further rotated to `messages.2` and `messages.3`, and then deleted.

1. Log in as superuser.
2. Type.

```
# more /var/adm/messages
```

3. If you want to view all logged messages, type.

```
# more /var/adm/messages*
```

Related Information

- [“Check the Message Buffer” on page 35](#)

Checking if Oracle VTS Is Installed

Oracle VTS is a validation test suite that you can use to test this server. These topics provide an overview and a way to check if the Oracle VTS software is installed. For comprehensive Oracle VTS information, refer to the SunVTS 6.1 and Oracle VTS 7.0 documentation.

- [“Oracle VTS Overview” on page 37](#)
- [“Check if Oracle VTS Is Installed” on page 38](#)

Related Information

- [“Diagnostics Overview” on page 9](#)
- [“Diagnostics Process” on page 11](#)
- [“Interpreting Diagnostic LEDs” on page 14](#)
- [“Managing Faults \(Oracle ILOM\)” on page 18](#)
- [“Understanding Fault Management Commands” on page 29](#)
- [“Interpreting Log Files and System Messages” on page 35](#)
- [“Managing Faults \(POST\)” on page 38](#)
- [“Managing Faults \(PSH\)” on page 48](#)
- [“Managing Components \(ASR\)” on page 54](#)

Oracle VTS Overview

Oracle VTS is a validation test suite that you can use to test this server. The Oracle VTS software provides multiple diagnostic hardware tests that verify the connectivity and functionality of most hardware controllers and devices for this server. The software provides these kinds of test categories:

- Audio
- Communication (serial and parallel)
- Graphic and video
- Memory
- Network
- Peripherals (hard drives, CD-DVD devices, and printers)
- Processor
- Storage

Use the Oracle VTS software to validate a system during development, production, receiving inspection, troubleshooting, periodic maintenance, and system or subsystem stressing.

You can run the Oracle VTS software through a web browser, a terminal interface, or a CLI.

You can run tests in a variety of modes for online and offline testing.

The Oracle VTS software also provides a choice of security mechanisms.

The Oracle VTS software is provided on the preinstalled Oracle Solaris OS that shipped with the server, however, Oracle VTS might not be installed.

Related Information

- Oracle VTS documentation
- [“Check if Oracle VTS Is Installed” on page 38](#)

▼ Check if Oracle VTS Is Installed

1. Log in as superuser.
2. Check for the presence of Oracle VTS packages using the `pkginfo` command.

```
# pkginfo -l SUNvts SUNWvtsr SUNWvtsts SUNWvtsmn
```

- If information about the packages is displayed, then the Oracle VTS software is installed.
- If you receive messages reporting `ERROR: information for package was not found`, then the Oracle VTS software is not installed. You must install the software before you can use it. You can obtain the Oracle VTS software from these places:
 - Oracle Solaris OS media kit (DVDs)
 - As a download from the web.

Related Information

- [“Oracle VTS Overview” on page 37](#)
- Oracle VTS documentation

Managing Faults (POST)

These topics explain how to use POST as a diagnostic tool.

- [“POST Overview” on page 39](#)
- [“Oracle ILOM Properties That Affect POST Behavior” on page 40](#)
- [“Configure POST” on page 42](#)
- [“Run POST With Maximum Testing” on page 43](#)
- [“Interpret POST Fault Messages” on page 44](#)
- [“Clear POST-Detected Faults” on page 45](#)
- [“POST Output Reference” on page 46](#)

Related Information

- [“Diagnostics Overview” on page 9](#)
- [“Diagnostics Process” on page 11](#)
- [“Interpreting Diagnostic LEDs” on page 14](#)
- [“Managing Faults \(Oracle ILOM\)” on page 18](#)
- [“Understanding Fault Management Commands” on page 29](#)
- [“Interpreting Log Files and System Messages” on page 35](#)
- [“Checking if Oracle VTS Is Installed” on page 36](#)
- [“Managing Faults \(PSH\)” on page 48](#)
- [“Managing Components \(ASR\)” on page 54](#)

POST Overview

POST is a group of PROM-based tests that run when the server is powered on or is reset. POST checks the basic integrity of the critical hardware components in the server (CMP, memory, and I/O subsystem).

You can also run POST as a system-level hardware diagnostic tool. Use the Oracle ILOM `set` command to set the parameter `keyswitch_state` to `diag`.

You can also set other Oracle ILOM properties to control various other aspects of POST operations. For example, you can specify the events that cause POST to run, the level of testing POST performs, and the amount of diagnostic information POST displays. These properties are listed and described in [“Oracle ILOM Properties That Affect POST Behavior” on page 40](#).

If POST detects a faulty component, the component is disabled automatically. If the system is able to run without the disabled component, the system boots when POST completes its tests. For example, if POST detects a faulty processor core, the core is disabled. Once POST completes its test sequence, the system boots and runs, using the remaining cores.

Related Information

- [“Oracle ILOM Properties That Affect POST Behavior” on page 40](#)
- [“Configure POST” on page 42](#)
- [“Run POST With Maximum Testing” on page 43](#)
- [“Interpret POST Fault Messages” on page 44](#)
- [“Clear POST-Detected Faults” on page 45](#)
- [“POST Output Reference” on page 46](#)

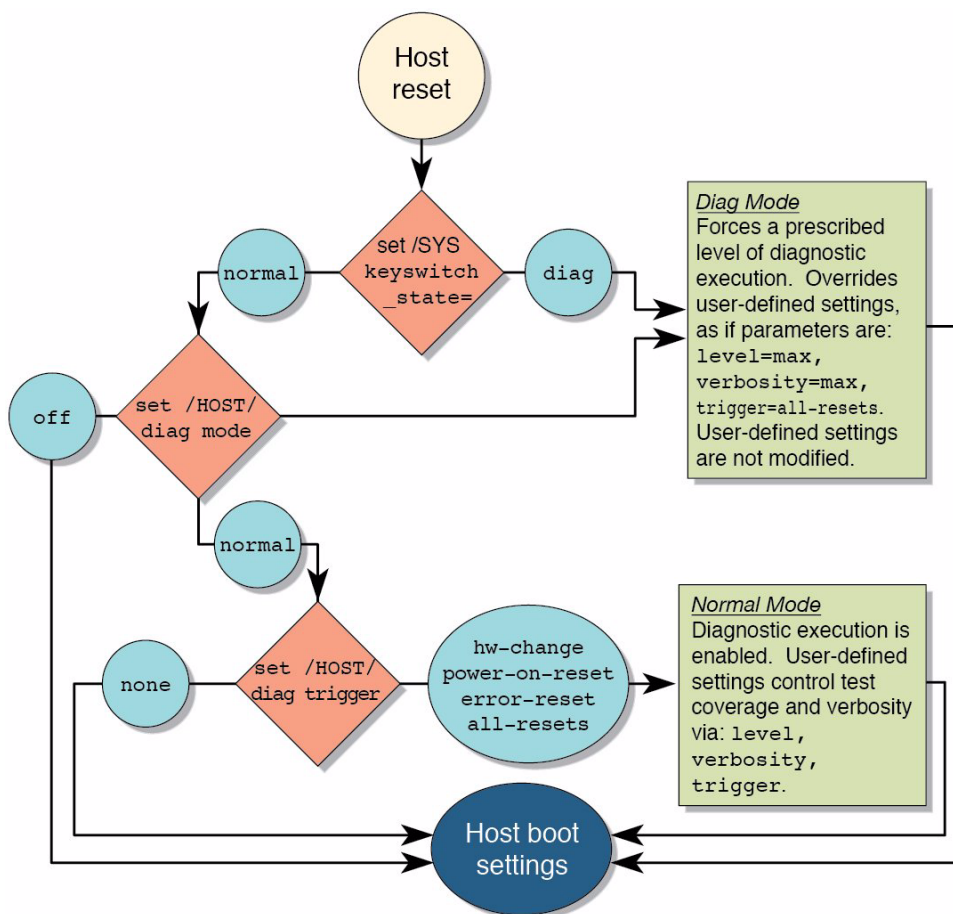
Oracle ILOM Properties That Affect POST Behavior

These Oracle ILOM properties determine how POST performs its operations. See also the flowchart that follows the table.

Note – The value of `keyswitch_state` must be `normal` when individual POST parameters are changed.

Parameter	Values	Description
/SYS keyswitch_state	normal	The system can power on and run POST (based on the other parameter settings). This parameter overrides all other commands.
	diag	The system runs POST based on predetermined settings: <code>level=max</code> , <code>verbosity=max</code> , <code>trigger=all-reset</code>
	standby	The system cannot power on.
	locked	The system can power on and run POST, but no flash updates can be made.
/HOST/diag mode	off	POST does not run.
	normal	Runs POST according to <code>diag level</code> value.
	service	Runs POST with preset values for <code>diag level</code> and <code>diag verbosity</code> .
/HOST/diag level	max	If <code>mode = normal</code> , runs all the minimum tests plus extensive processor and memory tests.
	min	If <code>mode = normal</code> , runs the minimum set of tests.
/HOST/diag trigger	none	Does not run POST on reset.
	hw-change	(Default) Runs POST following an AC power cycle and when the top cover is removed.
	power-on-reset	Runs POST only for the first power on.
	error-reset	(Default) Runs POST if fatal errors are detected.
	all-resets	Runs POST after any reset.
/HOST/diag verbosity	normal	POST output displays all test and informational messages.
	min	POST output displays functional tests with a banner and pinwheel.

Parameter	Values	Description
	max	POST displays all test and informational messages, and some debugging messages.
	debug	POST displays extensive debugging output on the system console, including the devices being tested and the debug output of each test.
	none	No POST output is displayed.



Related Information

- [“POST Overview” on page 39](#)
- [“Configure POST” on page 42](#)
- [“Run POST With Maximum Testing” on page 43](#)

- [“Interpret POST Fault Messages” on page 44](#)
- [“Clear POST-Detected Faults” on page 45](#)
- [“POST Output Reference” on page 46](#)

▼ Configure POST

1. Access the Oracle ILOM prompt.

See [“Access the SP \(Oracle ILOM\)” on page 21](#).

2. Set the virtual keyswitch to the value that corresponds to the POST configuration you want to run.

This example sets the virtual keyswitch to `normal`, which configures POST to run according to other parameter values.

```
-> set /SYS keyswitch_state=normal
Set 'keyswitch_state' to 'Normal'
```

For possible values for the `keyswitch_state` parameter, see [“Oracle ILOM Properties That Affect POST Behavior” on page 40](#).

3. If the virtual keyswitch is set to `normal`, and you want to define the `mode`, `level`, `verbosity`, or `trigger`, set the respective parameters.

Syntax:

```
set /HOST/diag property=value
```

See [“Oracle ILOM Properties That Affect POST Behavior” on page 40](#) for a list of parameters and values.

```
-> set /HOST/diag mode=normal
-> set /HOST/diag verbosity=max
```

4. To see the current values for settings, use the `show` command.

```
-> show /HOST/diag

/HOST/diag
  Targets:

  Properties:
    level = min
    mode = normal
    trigger = power-on-reset error-reset
    verbosity = normal
```

```
Commands:
  cd
  set
  show
->
```

Related Information

- [“POST Overview” on page 39](#)
- [“Oracle ILOM Properties That Affect POST Behavior” on page 40](#)
- [“Run POST With Maximum Testing” on page 43](#)
- [“Interpret POST Fault Messages” on page 44](#)
- [“Clear POST-Detected Faults” on page 45](#)
- [“POST Output Reference” on page 46](#)

▼ Run POST With Maximum Testing

1. Access the Oracle ILOM prompt:

See [“Access the SP \(Oracle ILOM\)” on page 21](#).

2. Set the virtual keyswitch to `diag` so that POST runs in service mode.

```
-> set /SYS/keyswitch_state=diag
Set 'keyswitch_state' to 'Diag'
```

3. Reset the system so that POST runs.

There are several ways to initiate a reset. This example shows a reset by using commands that power cycle the host.

```
-> stop /SYS
Are you sure you want to stop /SYS (y/n)? y
Stopping /SYS
-> start /SYS
Are you sure you want to start /SYS (y/n)? y
Starting /SYS
->
```

Note – The server takes about one minute to power off. Use the `show /HOST` command to determine when the host has been powered off. The console displays `status=Powered Off`.

4. Switch to the system console to view the POST output.

```
-> start /HOST/console
```

5. If you receive POST error messages, learn how to interpret them.

See [“Interpret POST Fault Messages”](#) on page 44.

Related Information

- [“POST Overview”](#) on page 39
- [“Oracle ILOM Properties That Affect POST Behavior”](#) on page 40
- [“Configure POST”](#) on page 42
- [“Interpret POST Fault Messages”](#) on page 44
- [“Clear POST-Detected Faults”](#) on page 45
- [“POST Output Reference”](#) on page 46

▼ Interpret POST Fault Messages

1. Run POST.

See [“Run POST With Maximum Testing”](#) on page 43.

2. View the output and watch for messages that look similar to the POST syntax.

See [“POST Output Reference”](#) on page 46.

3. To obtain more information on faults, run the `show faulty` command.

See [“Check for Faults \(show faulty Command\)”](#) on page 24.

Related Information

- [“POST Overview”](#) on page 39
- [“Oracle ILOM Properties That Affect POST Behavior”](#) on page 40
- [“Configure POST”](#) on page 42
- [“Run POST With Maximum Testing”](#) on page 43
- [“Clear POST-Detected Faults”](#) on page 45
- [“POST Output Reference”](#) on page 46

▼ Clear POST-Detected Faults

Use this procedure if you suspect that a fault was not automatically cleared. This procedure describes how to identify a POST-detected fault and, if necessary, manually clear the fault.

In most cases, when POST detects a faulty component, POST logs the fault and automatically takes the failed component out of operation by placing the component in the ASR blacklist. See [“Managing Components \(ASR\)” on page 54](#).

Usually, when a faulty component is replaced, the replacement is detected when the SP is reset or power cycled. The fault is automatically cleared from the system.

- 1. **Replace the faulty FRU.**
- 2. **At the Oracle ILOM prompt, type the `show faulty` command to identify POST-detected faults.**

POST-detected faults are distinguished from other kinds of faults by the text: `Forced fail`. No UUID number is reported. For example:

-> **show faulty**

Target	Property	Value
/SP/faultmgmt/0	fru	/SYS/MB/CMP1/MR1/BOB1/CH1/D0
/SP/faultmgmt/0	timestamp	Dec 21 16:40:56
/SP/faultmgmt/0/ faults/0	timestamp	Dec 21 16:40:56
/SP/faultmgmt/0/ faults/0	sp_detected_fault	/SYS/MB/CMP1/MR1/BOB1/CH1/D0
		Forced fail (POST)

- 3. **Take one of these actions based on the output:**
 - No fault is reported – The system cleared the fault and you do not need to manually clear the fault. Do not perform the subsequent steps.
 - Fault reported – Go to [Step 4](#).

4. Use the `component_state` property of the component to clear the fault and remove the component from the ASR blacklist.

Use the FRU name that was reported in the fault in [Step 2](#).

```
-> set /SYS/MB/CMP1/MR1/BOB1/CH1/D0 component_state=Enabled
```

The fault is cleared and should not show up when you run the `show faulty` command. Additionally, the System Fault (Service Required) LED is no longer lit.

5. Reset the server.

You must reboot the server for the `component_state` property to take effect.

6. At the Oracle ILOM prompt, type the `show faulty` command to verify that no faults are reported.

```
-> show faulty
Target          | Property          | Value
-----+-----+-----
->
```

Related Information

- [“POST Overview” on page 39](#)
- [“Oracle ILOM Properties That Affect POST Behavior” on page 40](#)
- [“Configure POST” on page 42](#)
- [“Run POST With Maximum Testing” on page 43](#)
- [“Interpret POST Fault Messages” on page 44](#)
- [“POST Output Reference” on page 46](#)

POST Output Reference

POST error messages use this syntax:

```
n:c:s > ERROR: TEST = failing-test
n:c:s > H/W under test = FRU
n:c:s > Repair Instructions: Replace items in order listed by H/W
under test above
n:c:s > MSG = test-error-message
n:c:s > END_ERROR
```

In this syntax, *n* = the node number, *c* = the core number, *s* = the strand number.

Warning messages use this syntax:

```
WARNING: message
```

Informational messages use this syntax:

```
INFO: message
```

In this example, POST reports an uncorrectable memory error affecting DIMM locations /SYS/PM0/CMP0/B0B0/CH0/D0 and /SYS/PM0/CMP0/B0B1/CH0/D0. The error was detected by POST running on node 0, core 7, strand 2.

```
2010-07-03 18:44:13.359 0:7:2>Decode of Disrupting Error Status Reg
(DESR HW Corrected) bits 00300000.00000000
2010-07-03 18:44:13.517 0:7:2>          1    DESR_SOCSRE:      SOC
(non-local) sw_recoverable_error.
2010-07-03 18:44:13.638 0:7:2>          1    DESR_SOCHCCE:      SOC
(non-local) hw_corrected_and_cleared_error.
2010-07-03 18:44:13.773 0:7:2>
2010-07-03 18:44:13.836 0:7:2>Decode of NCU Error Status Reg bits
00000000.22000000
2010-07-03 18:44:13.958 0:7:2>          1    NESR_MCU1SRE:      MCU1 issued
a Software Recoverable Error Request
2010-07-03 18:44:14.095 0:7:2>          1    NESR_MCU1HCCE:      MCU1
issued a Hardware Corrected-and-Cleared Error Request
2010-07-03 18:44:14.248 0:7:2>
2010-07-03 18:44:14.296 0:7:2>Decode of Mem Error Status Reg Branch 1
bits 33044000.00000000
2010-07-03 18:44:14.427 0:7:2>          1    MEU 61      R/W1C Set to 1
on an UE if VEU = 1, or VEF = 1, or higher priority error in same cycle.
2010-07-03 18:44:14.614 0:7:2>          1    MEC 60      R/W1C Set to 1
on a CE if VEC = 1, or VEU = 1, or VEF = 1, or another error in same cycle.
2010-07-03 18:44:14.804 0:7:2>          1    VEU 57      R/W1C Set to 1
on an UE, if VEF = 0 and no fatal error is detected in same cycle.
2010-07-03 18:44:14.983 0:7:2>          1    VEC 56      R/W1C Set to 1
on a CE, if VEF = VEU = 0 and no fatal or UE is detected in same cycle.
2010-07-03 18:44:15.169 0:7:2>          1    DAU 50      R/W1C Set to 1
if the error was a DRAM access UE.
2010-07-03 18:44:15.304 0:7:2>          1    DAC 46      R/W1C Set to 1
if the error was a DRAM access CE.
2010-07-03 18:44:15.440 0:7:2>
2010-07-03 18:44:15.486 0:7:2>          DRAM Error Address Reg for Branch
1 = 00000034.8647d2e0
2010-07-03 18:44:15.614 0:7:2>          Physical Address is
00000005.d21bc0c0
2010-07-03 18:44:15.715 0:7:2>          DRAM Error Location Reg for Branch
1 = 00000000.00000800
```

```

2010-07-03 18:44:15.842 0:7:2>          DRAM Error Syndrome Reg for Branch
1 = dd1676ac.8c18c045
2010-07-03 18:44:15.967 0:7:2>          DRAM Error Retry Reg for Branch 1
= 00000000.00000004
2010-07-03 18:44:16.086 0:7:2>          DRAM Error RetrySyndrome 1 Reg for
Branch 1 = a8a5f81e.f6411b5a
2010-07-03 18:44:16.218 0:7:2>          DRAM Error Retry Syndrome 2 Reg
for Branch 1 = a8a5f81e.f6411b5a
2010-07-03 18:44:16.351 0:7:2>          DRAM Failover Location 0 for
Branch 1 = 00000000.00000000
2010-07-03 18:44:16.475 0:7:2>          DRAM Failover Location 1 for
Branch 1 = 00000000.00000000
2010-07-03 18:44:16.604 0:7:2>
2010-07-03 18:44:16.648 0:7:2>ERROR: POST terminated prematurely. Not
all system components tested.
2010-07-03 18:44:16.786 0:7:2>POST: Return to VBSC
2010-07-03 18:44:16.795 0:7:2>ERROR:
2010-07-03 18:44:16.839 0:7:2>          POST toplevel status has the following
failures:
2010-07-03 18:44:16.952 0:7:2>          Node 0 -----
2010-07-03 18:44:17.051 0:7:2>          /SYS/PM0/CMP0/BOB1/CH1/D0 (J1001)
2010-07-03 18:44:17.145 0:7:2>          /SYS/PM0/CMP0/BOB0/CH1/D0 (J3001)
2010-07-03 18:44:17.241 0:7:2>END_ERROR

```

Related Information

- [“POST Overview” on page 39](#)
- [“Oracle ILOM Properties That Affect POST Behavior” on page 40](#)
- [“Configure POST” on page 42](#)
- [“Run POST With Maximum Testing” on page 43](#)
- [“Interpret POST Fault Messages” on page 44](#)
- [“Clear POST-Detected Faults” on page 45](#)

Managing Faults (PSH)

These topics describe PSH and how to use it.

- [“PSH Overview” on page 49](#)
- [“PSH-Detected Fault Example” on page 50](#)
- [“Check for PSH-Detected Faults” on page 51](#)
- [“Clear PSH-Detected Faults” on page 52](#)

Related Information

- [“Diagnostics Overview” on page 9](#)
- [“Diagnostics Process” on page 11](#)
- [“Interpreting Diagnostic LEDs” on page 14](#)
- [“Managing Faults \(Oracle ILOM\)” on page 18](#)
- [“Understanding Fault Management Commands” on page 29](#)
- [“Interpreting Log Files and System Messages” on page 35](#)
- [“Checking if Oracle VTS Is Installed” on page 36](#)
- [“Managing Faults \(POST\)” on page 38](#)
- [“Managing Components \(ASR\)” on page 54](#)

PSH Overview

PSH enables the server to diagnose problems while the Oracle Solaris OS is running and mitigate many problems before they negatively affect operations.

The Oracle Solaris OS uses the fault manager daemon, `fmd(1M)`, which starts at boot time and runs in the background to monitor the system. If a component generates an error, the daemon correlates the error with data from previous errors and other relevant information to diagnose the problem. Once diagnosed, the fault manager daemon assigns a UUID to the error. This value distinguishes this error across any set of systems.

When possible, the fault manager daemon initiates steps to self-heal the failed component and take the component offline. The daemon also logs the fault to the `syslogd` daemon and provides a fault notification with a MSGID. You can use the MSGID to get additional information about the problem from the knowledge article database.

The PSH technology covers these server components:

- CPU
- Memory
- I/O subsystem

The PSH console message provides this information about each detected fault:

- Type
- Severity
- Description
- Automated response
- Impact

- Suggested action for a system administrator

If PSH detects a faulty component, use the `fmadm faulty` command to display information about the fault. Alternatively, you can use the Oracle ILOM command `show faulty` for the same purpose.

Related Information

- [“PSH-Detected Fault Example” on page 50](#)
- [“Check for PSH-Detected Faults” on page 51](#)
- [“Clear PSH-Detected Faults” on page 52](#)

PSH-Detected Fault Example

When a PSH fault is detected, an Oracle Solaris console message similar to this example is displayed.

```
SUNW-MSG-ID: SUN4V-8000-DX, TYPE: Fault, VER: 1, SEVERITY: Minor
EVENT-TIME: Wed Jun 17 10:09:46 EDT 2009
PLATFORM: SUNW,system_name, CSN: -, HOSTNAME: server48-37
SOURCE: cpumem-diagnosis, REV: 1.5
EVENT-ID: f92e9fbe-735e-c218-cf87-9e1720a28004
DESC: The number of errors associated with this memory module has
exceeded acceptable levels. Refer to
http://sun.com/msg/SUN4V-8000-DX for more information.
AUTO-RESPONSE: Pages of memory associated with this memory module
are being removed from service as errors are reported.
IMPACT: Total system memory capacity will be reduced
as pages are retired.
REC-ACTION: Schedule a repair procedure to replace the affected
memory module. Use fmdump -v -u <EVENT_ID> to identify the module.
```

Note – The Service Required LED is also turned on for PSH-diagnosed faults.

Related Information

- [“PSH Overview” on page 49](#)
- [“Check for PSH-Detected Faults” on page 51](#)
- [“Clear PSH-Detected Faults” on page 52](#)

▼ Check for PSH-Detected Faults

The `fmadm faulty` command displays the list of faults detected by PSH. You can run this command either from the host or through the Oracle ILOM `fmadm` shell.

As an alternative, you can display fault information by running the Oracle ILOM command `show`.

1. Check the event log.

```
# fmadm faulty
TIME                EVENT-ID                MSG-ID                SEVERITY
Aug 13 11:48:33    21a8b59e-89ff-692a-c4bc-f4c5cccca8c8    SUN4V-8002-6E    Major

Platform      : sun4v      Chassis_id  :
Product_sn    :

Fault class   : fault.cpu.generic-sparc.strand
Affects       : cpu:///cpuid=21/serial=00000000000000000000
                faulted and taken out of service
FRU           : "/SYS/PM0"
(hc:///product-id=sun4v:product-sn=BDL1024FDA:server-id=
s4v-t5160a-bur02:chassis-id=BDL1024FDA:serial=1005LCB-1019B100A2:part=
511127809:revision=05/chassis=0/motherboard=0)
                faulty

Description   : The number of correctable errors associated with this strand has
                exceeded acceptable levels.
                Refer to http://sun.com/msg/SUN4V-8002-6E for more information.

Response      : The fault manager will attempt to remove the affected strand
                from service.

Impact        : System performance might be affected.

Action        : Schedule a repair procedure to replace the affected resource, the
                identity of which can be determined using 'fmadm faulty'.
```

In this example, a fault is displayed, indicating these details:

- Date and time of the fault (Aug 13 11:48:33).
- EVENT-ID, which is unique for every fault (21a8b59e-89ff-692a-c4bc-f4c5cccca8c8).
- MSG-ID, which can be used to obtain additional fault information (SUN4V-8002-6E).

- Faulted FRU. The information provided in the example includes the part number of the FRU (part=511127809) and the serial number of the FRU (serial=1005LCB-1019B100A2). The FRU field provides the name of the FRU (/SYS/PM0 for processor module 1 in this example).
2. Use the message ID to obtain more information about this type of fault.
 - a. Obtain the MSGID from console output or from the Oracle ILOM `show faulty` command.
 - b. Go to:
 - <http://support.oracle.com>
 - Search for the message ID in the Knowledge Base.
 3. Follow the suggested actions to repair the fault.

Related Information

- “PSH Overview” on page 49
- “PSH-Detected Fault Example” on page 50
- “Clear PSH-Detected Faults” on page 52

▼ Clear PSH-Detected Faults

When the PSH detects faults, the faults are logged and displayed on the console. In most cases, after the fault is repaired, the server detects the corrected state and automatically repairs the fault. However, you should verify this repair. In cases where the fault condition is not automatically cleared, you must clear the fault manually.

1. After replacing a faulty FRU, power on the server.
2. At the host prompt, determine whether the replaced FRU still shows a faulty state.

```
# fmadm faulty
TIME          EVENT-ID          MSG-ID          SEVERITY
Aug 13 11:48:33 21a8b59e-89ff-692a-c4bc-f4c5cccca8c8  SUN4V-8002-6E  Major

Platform      : sun4v          Chassis_id      :
Product_sn    :

Fault class   : fault.cpu.generic-sparc.strand
Affects       : cpu:///cpuid=21/serial=00000000000000000000
                faulted and taken out of service
```

FRU	: "/SYS/PM0" (hc://:product-id=sun4v:product-sn=BDL1024FDA:server-id=s4v-t5160a-bur02:chassis-id=BDL1024FDA:serial=1005LCB-1019B100A2:part=511127809:revision=05/chassis=0/motherboard=0) faulty
Description	: The number of correctable errors associated with this strand has exceeded acceptable levels. Refer to http://sun.com/msg/SUN4V-8002-6E for more information.
Response	: The fault manager will attempt to remove the affected strand from service.
Impact	: System performance might be affected.
Action	: Schedule a repair procedure to replace the affected resource, the identity of which can be determined using 'fmadm faulty'.

- If no fault is reported, you do not need to do anything else. Do not perform the subsequent steps.
- If a fault is reported, continue to [Step 3](#).

3. Clear the fault from all persistent fault records.

In some cases, even though the fault is cleared, some persistent fault information remains and results in erroneous fault messages at boot time. To ensure that these messages are not displayed, type this Oracle Solaris command:

```
# fmadm repair UUID
```

For the UUID in the example shown in [Step 2](#), type this command:

```
# fmadm repair 21a8b59e-89ff-692a-c4bc-f4c5cccc
```

4. Use the `clear_fault_action` property of the FRU to clear the fault.

```
-> set /SYS/PM0 clear_fault_action=True
Are you sure you want to clear /SYS/PM0 (y/n)? y
set 'clear_fault_action' to 'true'
```

Related Information

- [“PSH Overview” on page 49](#)
- [“PSH-Detected Fault Example” on page 50](#)
- [“Check for PSH-Detected Faults” on page 51](#)

Managing Components (ASR)

These topics explain the role played by ASR and how to manage the components that ASR controls.

- [“ASR Overview” on page 54](#)
- [“Display System Components” on page 55](#)
- [“Disable System Components” on page 56](#)
- [“Enable System Components” on page 57](#)

Related Information

- [“Diagnostics Overview” on page 9](#)
- [“Diagnostics Process” on page 11](#)
- [“Interpreting Diagnostic LEDs” on page 14](#)
- [“Managing Faults \(Oracle ILOM\)” on page 18](#)
- [“Understanding Fault Management Commands” on page 29](#)
- [“Interpreting Log Files and System Messages” on page 35](#)
- [“Checking if Oracle VTS Is Installed” on page 36](#)
- [“Managing Faults \(POST\)” on page 38](#)
- [“Managing Faults \(PSH\)” on page 48](#)

ASR Overview

The ASR feature enables the server to automatically configure failed components out of operation until they can be replaced. In the server, ASR manages these components:

- CPU strands
- Memory DIMMs
- I/O subsystem

The database that contains the list of disabled components is the ASR blacklist (`asr-db`).

In most cases, POST automatically disables a faulty component. After the cause of the fault is repaired (FRU replacement, loose connector reseated, and so on), you might need to remove the component from the ASR blacklist.

These ASR commands enable you to view, add, or remove components (*asrkeys*) from the ASR blacklist. You run these commands from the Oracle ILOM prompt.

Command	Description
<code>show components</code>	Displays system components and their current state.
<code>set <i>asrkey</i> component_state=Enabled</code>	Removes a component from the <code>asr-db</code> blacklist, where <i>asrkey</i> is the component to enable.
<code>set <i>asrkey</i> component_state=Disabled</code>	Adds a component to the <code>asr-db</code> blacklist, where <i>asrkey</i> is the component to disable.

Note – The *asrkeys* vary from system to system, depending on how many cores and memory are present. Use the `show components` command to see the *asrkeys* on a given system.

After you enable or disable a component, you must reset (or power cycle) the system for the component’s change of state to take effect.

Related Information

- [“Display System Components” on page 55](#)
- [“Disable System Components” on page 56](#)
- [“Enable System Components” on page 57](#)

▼ **Display System Components**

The `show components` command displays the system components (*asrkeys*) and reports their status.

- **At the Oracle ILOM prompt, type `show components`.**
In this example, PCI-EM3 is shown as disabled.

```
-> show components
Target                | Property                | Value
-----+-----+-----
/SYS/MB/REM0/         | component_state         | Enabled
SASHBA0 |                |
/SYS/MB/REM1/         | component_state         | Enabled
SASHBA1 |                |
/SYS/MB/VIDEO         | component_state         | Enabled
/SYS/MB/PCI-          | component_state         | Enabled
```

SWITCH0			
<...>			
/SYS/PCI-EM0		component_state	Enabled
/SYS/PCI-EM1		component_state	Enabled
/SYS/PCI-EM2		component_state	Enabled
/SYS/PCI-EM3		component_state	Disabled
/SYS/PCI-EM4		component_state	Enabled
/SYS/PCI-EM5		component_state	Enabled
/SYS/PCI-EM6		component_state	Enabled
<...>			

Related Information

- [“ASR Overview” on page 54](#)
- [“Disable System Components” on page 56](#)
- [“Enable System Components” on page 57](#)

▼ Disable System Components

You disable a component by setting its `component_state` property to `Disabled`. This action adds the component to the ASR blacklist.

1. At the Oracle ILOM prompt, set the `component_state` property to `Disabled`.

```
-> set /SYS/MB/CMP1/MR1/BOB1/CH1/D0 component_state=Disabled
```

2. Reset the server so that the ASR command takes effect.

```
-> stop /SYS
Are you sure you want to stop /SYS (y/n)? y
Stopping /SYS
-> start /SYS
Are you sure you want to start /SYS (y/n)? y
Starting /SYS
```

Note – In the Oracle ILOM shell, there is no notification when the system is powered off. Powering off takes about a minute. Use the `show /HOST` command to determine if the host has powered off.

Related Information

- [“View System Message Log Files” on page 36](#)
- [“ASR Overview” on page 54](#)

- [“Display System Components” on page 55](#)
- [“Enable System Components” on page 57](#)

▼ Enable System Components

You enable a component by setting its `component_state` property to `Enabled`. This action removes the component from the ASR blacklist.

1. **At the Oracle ILOM prompt, set the `component_state` property to `Enabled`.**

```
-> set /SYS/MB/CMP1/MR1/BOB1/CH1/D0 component_state=Enabled
```

2. **Reset the server so that the ASR command takes effect.**

```
-> stop /SYS
Are you sure you want to stop /SYS (y/n)? y
Stopping /SYS
-> start /SYS
Are you sure you want to start /SYS (y/n)? y
Starting /SYS
```

Note – In the Oracle ILOM shell, there is no notification when the system is powered off. Powering off takes about a minute. Use the `show /HOST` command to determine if the host has powered off.

Related Information

- [“View System Message Log Files” on page 36](#)
- [“ASR Overview” on page 54](#)
- [“Display System Components” on page 55](#)
- [“Disable System Components” on page 56](#)

Preparing for Service

These topics describe how to prepare the server for servicing.

Step	Description	Link
1.	Review safety and handling information.	“Safety Information” on page 59
2.	Gather the tools for service.	“Tools Needed for Service” on page 61
3.	Consider filler panel options.	“Filler Panels” on page 62
4.	Find the server serial number.	“Find the Server Serial Number” on page 63
5.	Identify the server to be serviced.	“Locate the Server” on page 64
6.	Locate the component service information.	“Component Service Task Reference” on page 65
7.	For cold-service operations, shut down the OS and move the server out of the rack.	“Removing Power From the Server” on page 66
8.	Gain access to internal components.	“Accessing Internal Components” on page 69

Related Information

- [“Identifying Components” on page 1](#)
- [“Detecting and Managing Faults” on page 9](#)
- [“Returning the Server to Operation” on page 285](#)

Safety Information

For your protection, observe these safety precautions when setting up your equipment:

- Follow all cautions and instructions marked on the equipment and described in the documentation shipped with your system.
- Follow all cautions and instructions marked on the equipment and described in the *Netra SPARC T4-2 Server Safety and Compliance Guide*.

- Ensure that the voltage and frequency of your power source match the voltage and frequency inscribed on the equipment's electrical rating label.
- Follow the electrostatic discharge safety practices as described here.

Safety Symbols

Note the meanings of these symbols that might appear in this document.



Caution – There is a risk of personal injury or equipment damage. To avoid personal injury and equipment damage, follow the instructions.



Caution – Hot surface. Avoid contact. Surfaces are hot and might cause personal injury if touched.



Caution – Hazardous voltages are present. To reduce the risk of electric shock and danger to personal health, follow the instructions.

ESD Measures

ESD-sensitive devices, such as PCI cards, hard drives, and DIMMs require special handling.



Caution – Circuit boards and hard drives contain electronic components that are extremely sensitive to static electricity. Ordinary amounts of static electricity from clothing or the work environment can destroy the components located on these boards. Do not touch the components along their connector edges.



Caution – You must disconnect all power supplies before servicing any of the components that are inside the chassis.

Antistatic Wrist Strap Use

Wear an antistatic wrist strap and use an antistatic mat when handling components such as hard drive assemblies, circuit boards, or express modules. When servicing or removing server components, attach an antistatic strap to your wrist and then to a metal area on the chassis. Following this practice equalizes the electrical potentials between you and the server.

Antistatic Mat

Place ESD-sensitive components such as motherboards, memory, and other PCBs on an antistatic mat. These items can be used as an antistatic mat:

- Antistatic bag used to wrap a replacement part
- ESD mat
- A disposable ESD mat (shipped with some replacement parts or optional system components)

Related Information

- [“Tools Needed for Service” on page 61](#)
- [“Filler Panels” on page 62](#)
- [“Find the Server Serial Number” on page 63](#)
- [“Locate the Server” on page 64](#)
- [“Component Service Task Reference” on page 65](#)
- [“Removing Power From the Server” on page 66](#)
- [“Accessing Internal Components” on page 69](#)

Tools Needed for Service

You need these tools for most service operations:

- Antistatic wrist strap
- Antistatic mat
- No. 1 Phillips screwdriver
- No. 2 Phillips screwdriver
- No. 1 flat-blade screwdriver (battery removal)

Related Information

- [“Safety Information” on page 59](#)
 - [“Tools Needed for Service” on page 61](#)
 - [“Filler Panels” on page 62](#)
 - [“Find the Server Serial Number” on page 63](#)
 - [“Locate the Server” on page 64](#)
 - [“Component Service Task Reference” on page 65](#)
 - [“Removing Power From the Server” on page 66](#)
 - [“Accessing Internal Components” on page 69](#)
-

Filler Panels

Each server is shipped with replacement filler panels for hard drives and PCI cards. A filler panel is an empty metal or plastic enclosure that does not contain any functioning system hardware or cable connectors.

The filler panels are installed at the factory and must remain in the server until you replace them with a functional component to ensure proper airflow through the system. If you remove a filler panel and continue to operate your system with an empty slot, the server might overheat due to improper airflow. For instructions on removing or installing a filler panel for a server component, refer to the topic in this document about servicing that component.

Related Information

- [“Safety Information” on page 59](#)
- [“Tools Needed for Service” on page 61](#)
- [“Find the Server Serial Number” on page 63](#)
- [“Locate the Server” on page 64](#)
- [“Component Service Task Reference” on page 65](#)
- [“Removing Power From the Server” on page 66](#)
- [“Accessing Internal Components” on page 69](#)

▼ Find the Server Serial Number

If you require technical support for your server, you will be asked to provide the chassis serial number. You can find the chassis serial number on a sticker located on the front of the server and on another sticker on the side of the server.

If it is not convenient to read either sticker, you can type the Oracle ILOM `show /SYS` command to obtain the chassis serial number.

- **Type `show /SYS` at the Oracle ILOM prompt.**

```
-> show /SYS

/SYS
  Targets:
    MB
    MB_ENV
    USBBD
    RIO
  .
  .
  .
  Properties:
    type = Host System
    ipmi_name = /SYS
    keyswitch_state = Normal
    product_name = Netra SPARC T4-2
    product_part_number = 12345678+6+1
    product_serial_number = 1133BDN082
    product_manufacturer = Oracle Corporation
    fault_state = OK
    clear_fault_action = (none)
    power_state = On

  Commands:
    cd
    reset
    set
    show
    start
    stop
->
```

Related Information

- [“Safety Information” on page 59](#)

- [“Tools Needed for Service” on page 61](#)
- [“Filler Panels” on page 62](#)
- [“Locate the Server” on page 64](#)
- [“Component Service Task Reference” on page 65](#)
- [“Removing Power From the Server” on page 66](#)
- [“Accessing Internal Components” on page 69](#)

▼ Locate the Server

You can use the Locator LEDs to pinpoint the location of a server. This procedure is helpful when you need to identify one particular server from many other servers.

1. **At the Oracle ILOM command line, type:**

```
-> set /SYS/LOCATE value=Fast_Blink
```

The white Locator LEDs (one on the front panel and one on the rear panel) blink.

2. **After locating the server with the blinking Locator LED, turn the LED off by pressing the Locator button.**

Note – Alternatively, you can turn off the Locator LED by running the Oracle ILOM `set /SYS/LOCATE value=off` command.

Related Information

- [“Safety Information” on page 59](#)
- [“Tools Needed for Service” on page 61](#)
- [“Filler Panels” on page 62](#)
- [“Find the Server Serial Number” on page 63](#)
- [“Component Service Task Reference” on page 65](#)
- [“Removing Power From the Server” on page 66](#)
- [“Accessing Internal Components” on page 69](#)

Component Service Task Reference

This table identifies the server components that are FRUs or that you must remove as part of a service operation.

Name	FRU Name	Service Link
Air filter		“Servicing the Air Filter” on page 75
Battery	<i>/SYS/MB/BAT</i>	“Servicing the Battery” on page 177
DIMM	<i>/SYS/MB/CMPv/MRw/BOBx/CHy/Dz</i>	“Servicing DIMMs” on page 163
DVD drive		“Servicing the DVD Drive” on page 115
Front fan module	<i>/SYS/FMx</i>	“Servicing Front Fan Modules” on page 87
Hard drive	<i>/SYS/HDDx</i>	“Servicing Hard Drives” on page 101
Hard drive backplane	<i>/SYS/SASBP</i>	“Servicing the Hard Drive Backplane” on page 273
LED board		“Servicing the LED Board” on page 225
Memory riser card	<i>/SYS/MB/CMPx/MRy</i>	“Servicing Memory Risers” on page 151
Motherboard	<i>/SYS/MB</i>	“Servicing the Motherboard” on page 237
ID PROM	<i>/SYS/MB/SCC</i>	“Servicing the ID PROM” on page 207
PCIe2 card	<i>/SYS/MB/PCIEx/charitable</i>	“Servicing PCIe2 Cards” on page 185
Power distribution board	<i>/SYS/PDB</i>	“Servicing the Power Distribution Board” on page 259
Power supply	<i>/SYS/PSx</i>	“Servicing Power Supplies” on page 125
Rear fan module	<i>/SYS/FM4</i>	“Servicing the Rear Fan Module” on page 139
SP	<i>/SYS/MB/SP</i>	“Servicing the SP” on page 197
Subchassis		“Servicing the Subchassis” on page 215

Related Information

- [“Safety Information” on page 59](#)
- [“Tools Needed for Service” on page 61](#)
- [“Filler Panels” on page 62](#)
- [“Find the Server Serial Number” on page 63](#)

- [“Locate the Server” on page 64](#)
- [“Removing Power From the Server” on page 66](#)
- [“Accessing Internal Components” on page 69](#)

Removing Power From the Server

These topics describe different procedures for removing power from the chassis.

Step	Description	Link
1.	Prepare the server for powering off.	“Prepare to Power Off the Server” on page 66
2.	Power off the server by one of three methods.	“Power Off the Server (SP Command)” on page 67 “Power Off the Server (Power Button - Graceful)” on page 68 “Power Off the Server (Emergency Shutdown)” on page 68
3.	Disconnect the power cords.	“Disconnect Power Cords” on page 69

Related Information

- [“Safety Information” on page 59](#)
- [“Tools Needed for Service” on page 61](#)
- [“Filler Panels” on page 62](#)
- [“Find the Server Serial Number” on page 63](#)
- [“Locate the Server” on page 64](#)
- [“Component Service Task Reference” on page 65](#)
- [“Accessing Internal Components” on page 69](#)

▼ Prepare to Power Off the Server

Perform this procedure before powering off the server.

1. Notify affected users that the server will be shut down.

Refer to the Oracle Solaris system administration documentation for additional information.

2. Save any open files and quit all running programs.

Refer to your application documentation for specific information for these processes.

3. Shut down all logical domains.

Refer to the Oracle Solaris system administration documentation for additional information.

4. Shut down the Oracle Solaris OS.

Refer to the Oracle Solaris system administration documentation for additional information.

5. Power off the server.

See:

- [“Power Off the Server \(SP Command\)” on page 67](#)
- [“Power Off the Server \(Power Button - Graceful\)” on page 68](#)
- [“Power Off the Server \(Emergency Shutdown\)” on page 68](#)

Related Information

- [“Power Off the Server \(SP Command\)” on page 67](#)
- [“Power Off the Server \(Power Button - Graceful\)” on page 68](#)
- [“Power Off the Server \(Emergency Shutdown\)” on page 68](#)
- [“Disconnect Power Cords” on page 69](#)

▼ Power Off the Server (SP Command)

You can use the SP to perform a graceful shutdown of the server. This type of shutdown ensures that all of your data is saved and that the server is ready for restart.

Note – Additional information about powering off the server is provided in *Server Administration*.

1. Log in as superuser or equivalent.

Depending on the type of problem, you might want to view server status or log files. You also might want to run diagnostics before you shut down the server.

2. Switch from the system console to the Oracle ILOM prompt by typing the #. (Hash Period) key sequence.

3. At the Oracle ILOM prompt, type the `stop /SYS` command.

Note – You can also use the Power button on the front of the server to initiate a graceful server shutdown. (See [“Power Off the Server \(Power Button - Graceful\)” on page 68](#).) This button is recessed to prevent accidental server power off.

Related Information

- [“Prepare to Power Off the Server” on page 66](#)
- [“Power Off the Server \(Power Button - Graceful\)” on page 68](#)
- [“Power Off the Server \(Emergency Shutdown\)” on page 68](#)
- [“Disconnect Power Cords” on page 69](#)

▼ Power Off the Server (Power Button - Graceful)

This procedure places the server in the power standby mode. In this mode, the Power OK LED blinks rapidly.

- **Press and release the recessed Power button.**

Related Information

- [“Prepare to Power Off the Server” on page 66](#)
- [“Power Off the Server \(SP Command\)” on page 67](#)
- [“Power Off the Server \(Emergency Shutdown\)” on page 68](#)
- [“Disconnect Power Cords” on page 69](#)

▼ Power Off the Server (Emergency Shutdown)



Caution – For this procedure, all applications and files are closed abruptly without saving changes. File system corruption might occur.

- **Press and hold the Power button for four seconds.**

Related Information

- [“Prepare to Power Off the Server” on page 66](#)
- [“Power Off the Server \(SP Command\)” on page 67](#)
- [“Power Off the Server \(Power Button - Graceful\)” on page 68](#)
- [“Disconnect Power Cords” on page 69](#)

▼ Disconnect Power Cords

1. Power off the server.

See:

- [“Power Off the Server \(SP Command\)” on page 67](#)
- [“Power Off the Server \(Power Button - Graceful\)” on page 68](#)
- [“Power Off the Server \(Emergency Shutdown\)” on page 68](#)

2. Unplug all power cords from the server.



Caution – Because 3.3 VDC standby power is always present in the system, you must unplug the power cords before accessing any cold-serviceable components.

Related Information

- [“Prepare to Power Off the Server” on page 66](#)
- [“Power Off the Server \(SP Command\)” on page 67](#)
- [“Power Off the Server \(Power Button - Graceful\)” on page 68](#)
- [“Power Off the Server \(Emergency Shutdown\)” on page 68](#)

Accessing Internal Components

These topics provide procedures and guidelines when accessing internal components.

Step	Description	Link
1.	Take antistatic precautions now.	“Prevent ESD Damage” on page 70
2.	Move the server out of the rack and gain access to the internal components.	“Remove the Top Cover” on page 70

Related Information

- [“Safety Information” on page 59](#)
- [“Tools Needed for Service” on page 61](#)
- [“Filler Panels” on page 62](#)
- [“Find the Server Serial Number” on page 63](#)

- [“Locate the Server” on page 64](#)
- [“Component Service Task Reference” on page 65](#)
- [“Removing Power From the Server” on page 66](#)

▼ Prevent ESD Damage

Many components housed within the chassis can be damaged by electrostatic discharge. To protect these components from damage, perform these steps before opening the chassis for service. See [“Safety Information” on page 59](#).

- 1. Prepare an antistatic surface to set parts on during the removal, installation, or replacement process.**

Place ESD-sensitive components such as the printed circuit boards on an antistatic mat.

- 2. Attach an antistatic wrist strap.**

When servicing or removing server components, attach an antistatic strap to your wrist and then to a metal area on the chassis.

Related Information

- [“Safety Information” on page 59](#)
- [“Remove the Top Cover” on page 70](#)

▼ Remove the Top Cover

- 1. Shut down the server.**

See [“Removing Power From the Server” on page 66](#).

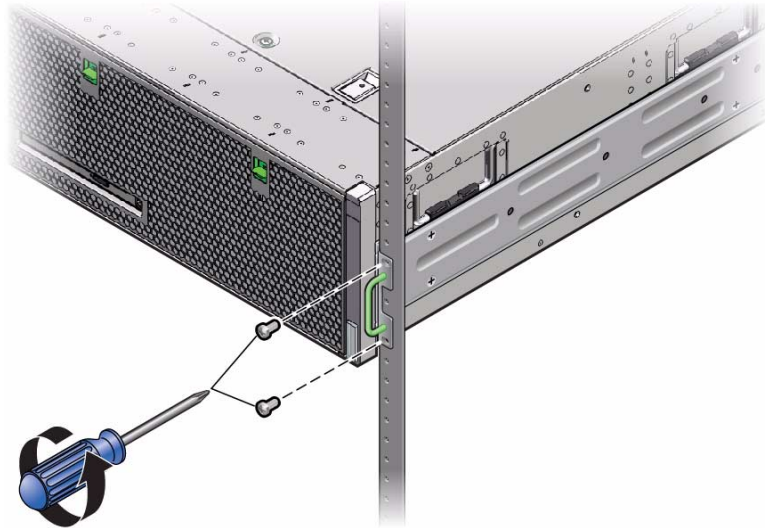
- 2. Remove the power cords from the server.**

See [“Remove a Power Supply” on page 129](#).

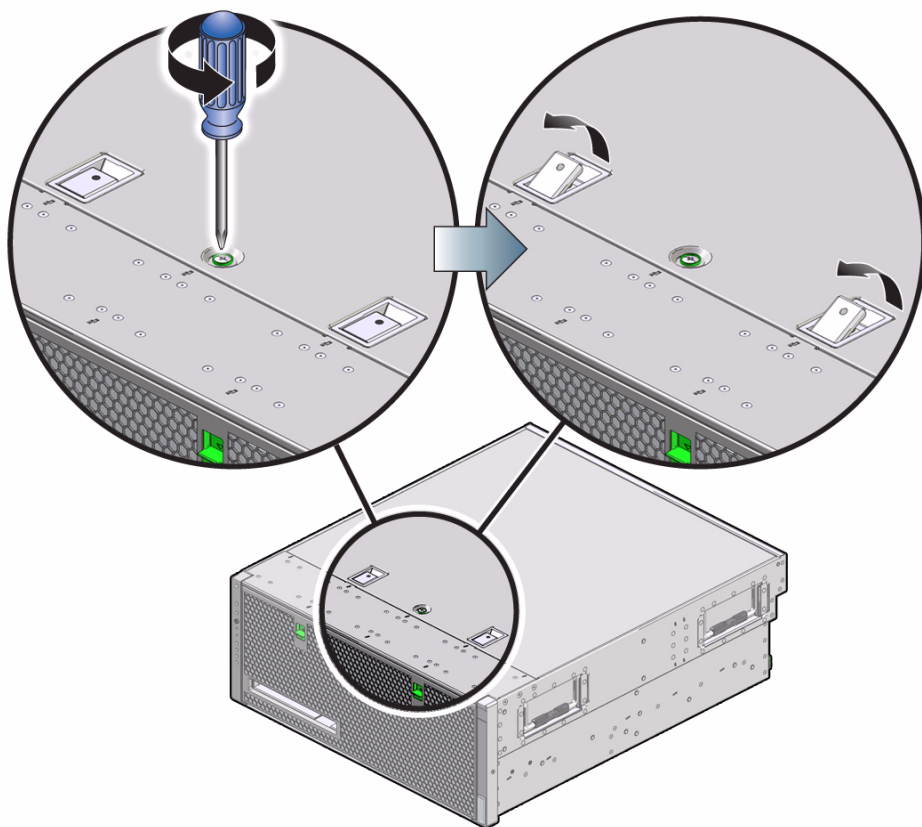
- 3. Disconnect all cables from the rear of the server.**

Label the cables for ease of reconnection.

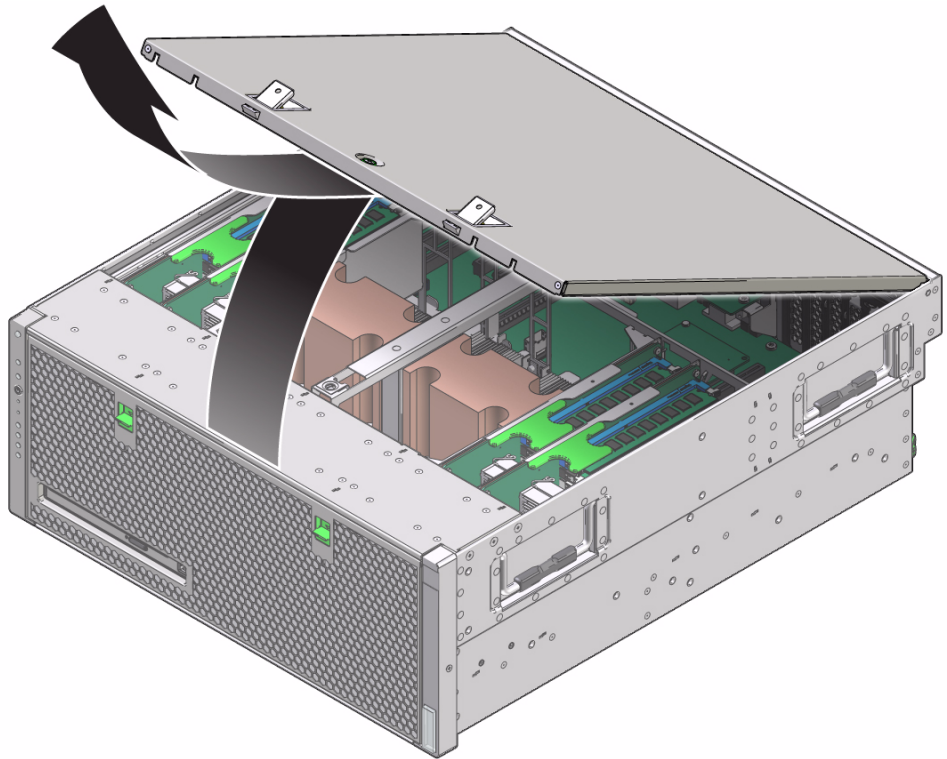
- 4. Remove the four screws at the front of the server and slide the server out of the rack to its service position.**



5. Loosen the captive screw at the front of the top cover by 1/4 turn.



6. Release the latches and lift the top cover up and off the chassis.



You are now able to perform any of these service procedures:

- “Servicing the Battery” on page 177
- “Servicing DIMMs” on page 163
- “Servicing the Hard Drive Backplane” on page 273
- “Servicing the LED Board” on page 225
- “Servicing Memory Risers” on page 151
- “Servicing the Motherboard” on page 237
- “Servicing the ID PROM” on page 207
- “Servicing PCIe2 Cards” on page 185
- “Servicing the Power Distribution Board” on page 259
- “Servicing the SP” on page 197
- “Servicing the Subchassis” on page 215

Related Information

- “Safety Information” on page 59
- “Prevent ESD Damage” on page 70

- “Install the Top Cover” on page 285

Servicing the Air Filter

The air filter is constructed of foam rubber and is used to trap larger particles from entering the server chassis. The air filter is located within the filter tray, at the air intake end of the server. See [“Front Fans, Subchassis, Memory Riser, and DIMM Locations”](#) on page 4.

Description	Links
Replace the faulty air filter.	“Remove the Air Filter” on page 75 “Install the Air Filter” on page 80
Remove the filter tray as part of another component’s service operation.	“Remove the Air Filter” on page 75
Install the filter tray as part of another component’s service operation.	“Install the Air Filter” on page 80

Related Information

- [“Identifying Components”](#) on page 1
- [“Component Service Task Reference”](#) on page 65
- [“Detecting and Managing Faults”](#) on page 9
- [“Preparing for Service”](#) on page 59
- [“Returning the Server to Operation”](#) on page 285

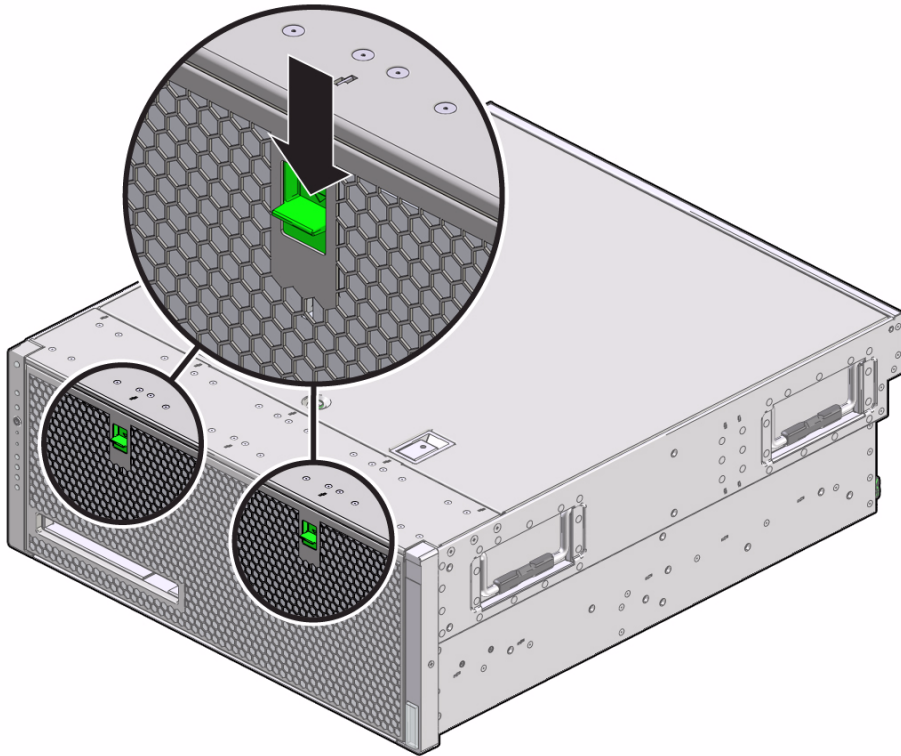
▼ Remove the Air Filter

Removing the air filter is a hot-plug operation. You do not need to power off the server before you remove the air filter.

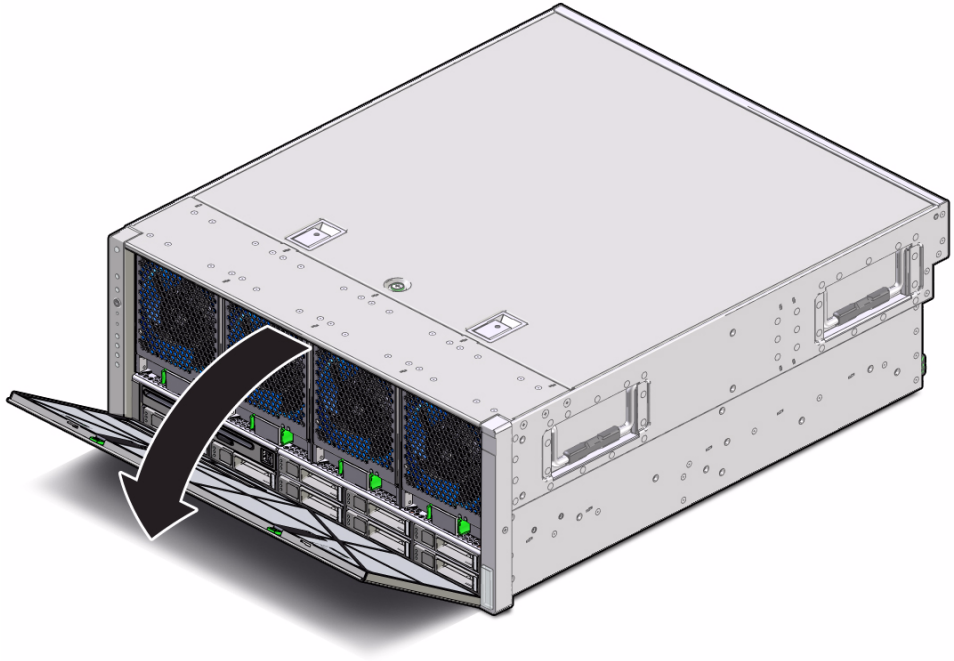
1. **Consider your first step:**

- If you have not prepared for service, do so now. See [“Preparing for Service”](#) on page 59.
- If you are removing the filter tray as part of another component’s removal or installation procedure, go to [Step 2](#).

2. Press down on the two latches to release the filter tray from the chassis.



3. Swing the filter tray down and lift it away from the chassis.



4. Consider your next steps:

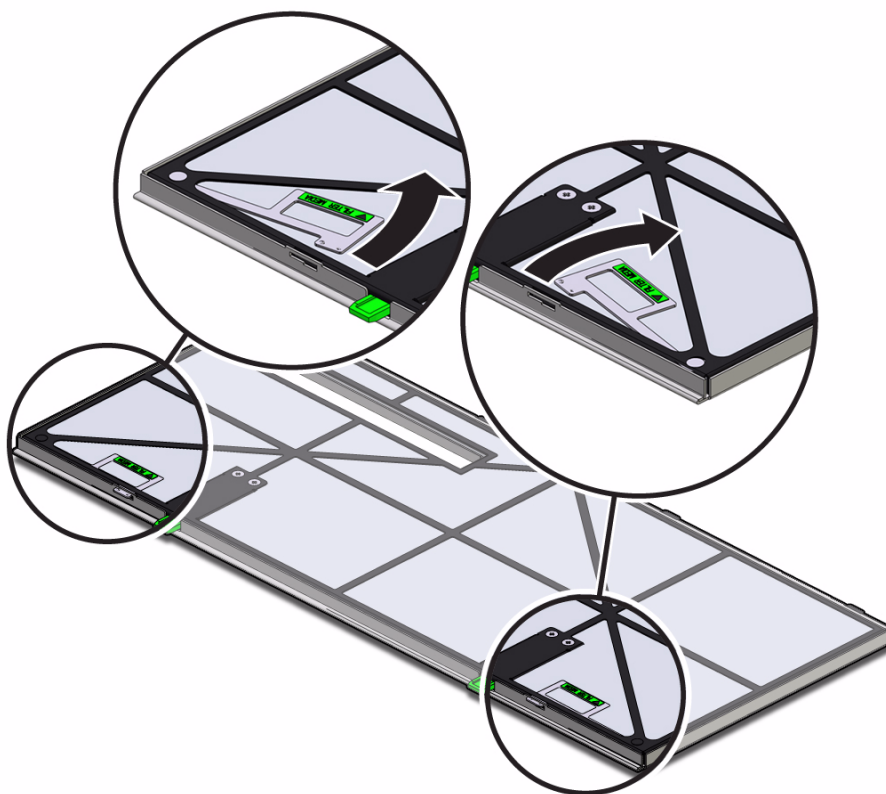
- If you removed the filter tray as part of another component's removal or installation procedure, return to that procedure. See ["Component Service Task Reference" on page 65](#) for assistance.
- If you removed the filter tray to service the air filter, go to [Step 5](#).

5. Flip the filter tray over to access the air filter.

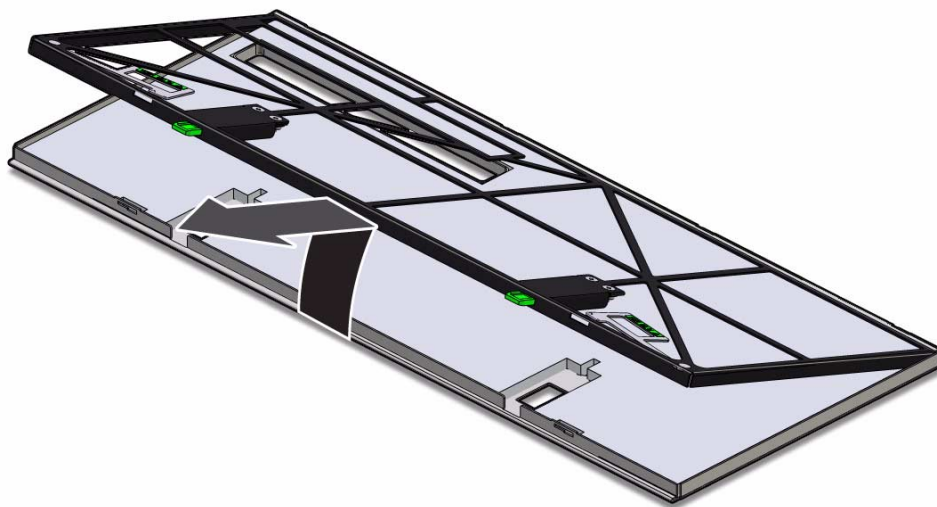
6. Consider your next steps:

- If you are cleaning the air filter, blow compressed air from the exposed surface, through the air filter, and out the grill of the filter tray. Then install the filter tray. See ["Install the Air Filter" on page 80](#).
- If you are replacing the air filter, go to [Step 7](#).

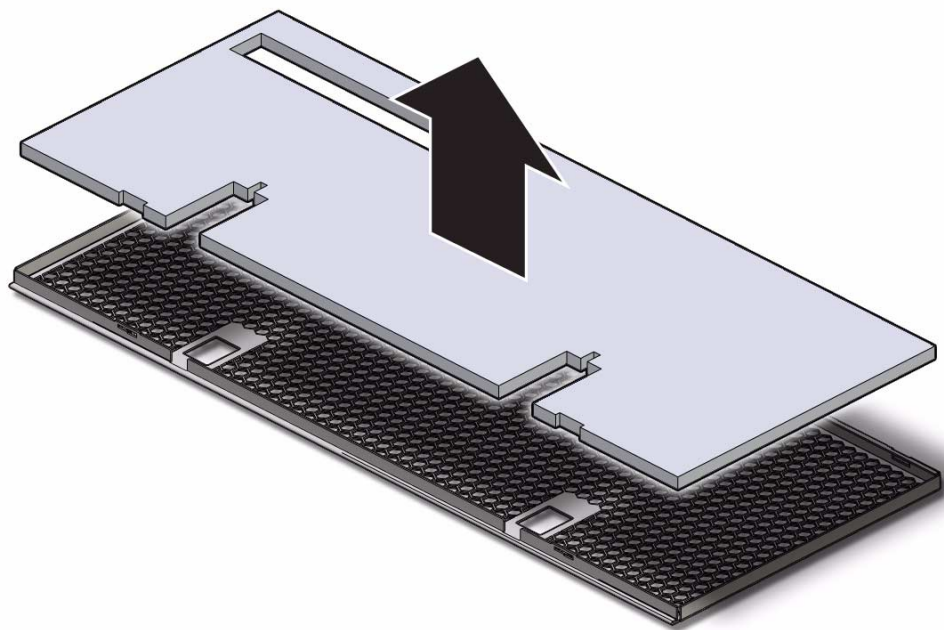
7. Swing out the two release levers to loosen the frame.



8. Lift the frame up, and remove it from the filter tray.



9. Lift the air filter out of the filter tray and set it aside.



10. Install a new air filter.

See [“Install the Air Filter”](#) on page 80.

Related Information

- [“Install the Air Filter” on page 80](#)
- [“Preparing for Service” on page 59](#)
- [“Returning the Server to Operation” on page 285](#)

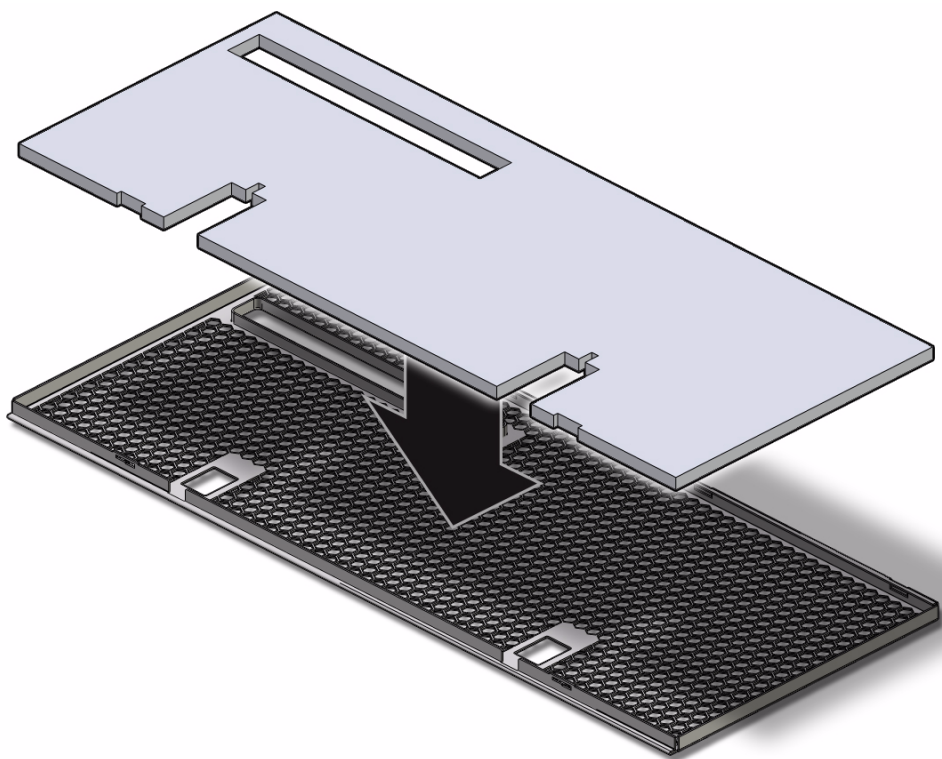
▼ Install the Air Filter

Installing the air filter is a hot-plug operation. You do not need to power off the server before installing the air filter.

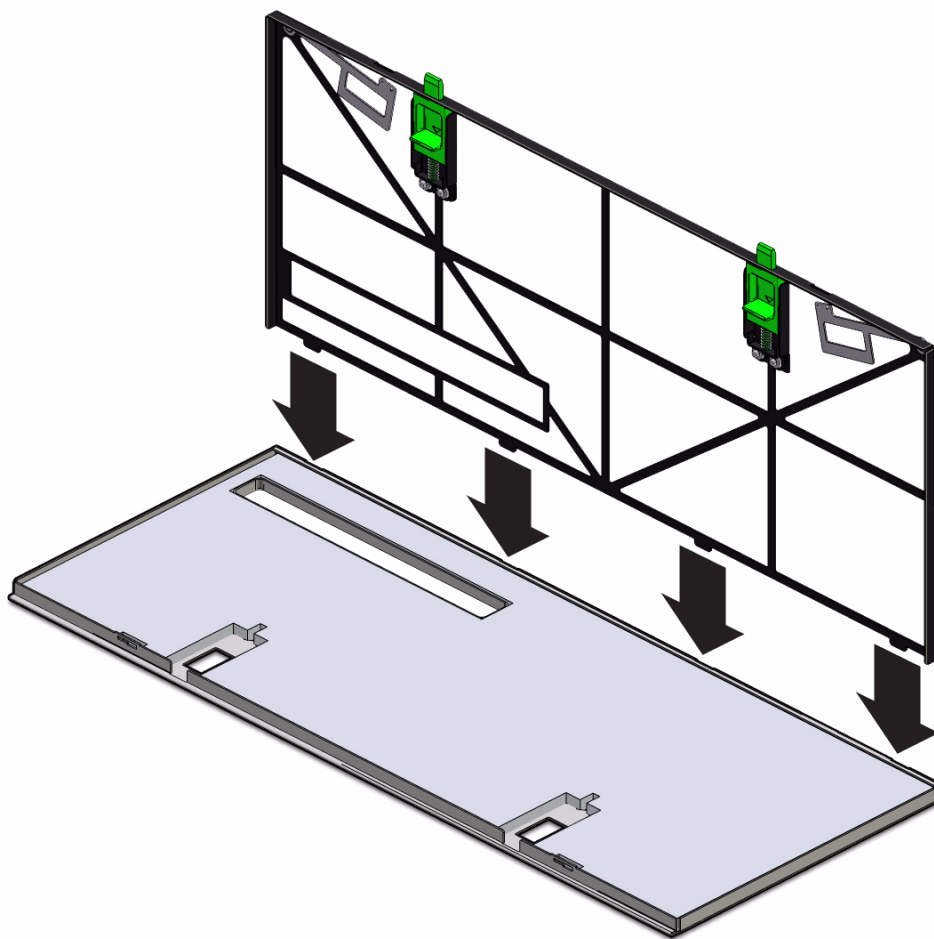
1. Consider your first steps:

- If you are replacing an air filter, remove the faulty air filter first, then return to this procedure, [Step 2](#). See [“Remove the Air Filter” on page 75](#).
- If you are installing the filter tray as part of another component’s removal or installation procedure, go to [Step 6](#).

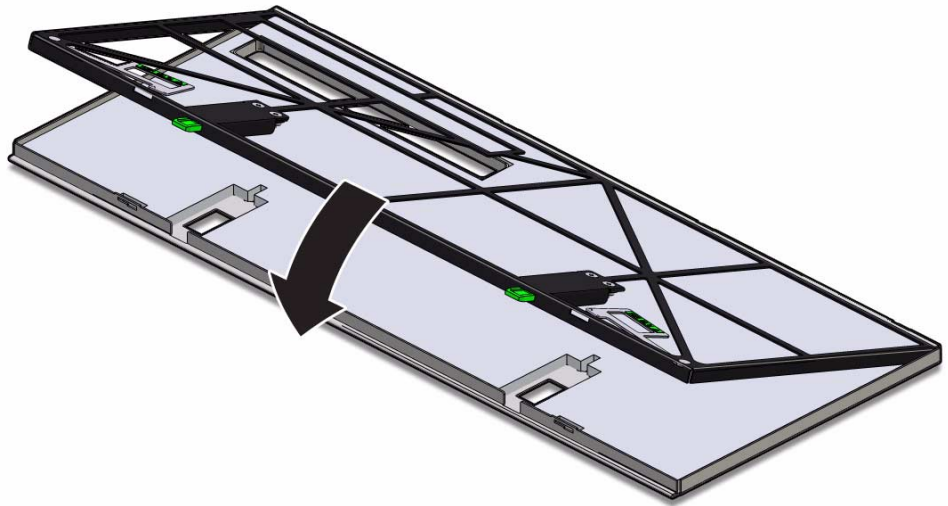
2. Lay the air filter into the filter tray.



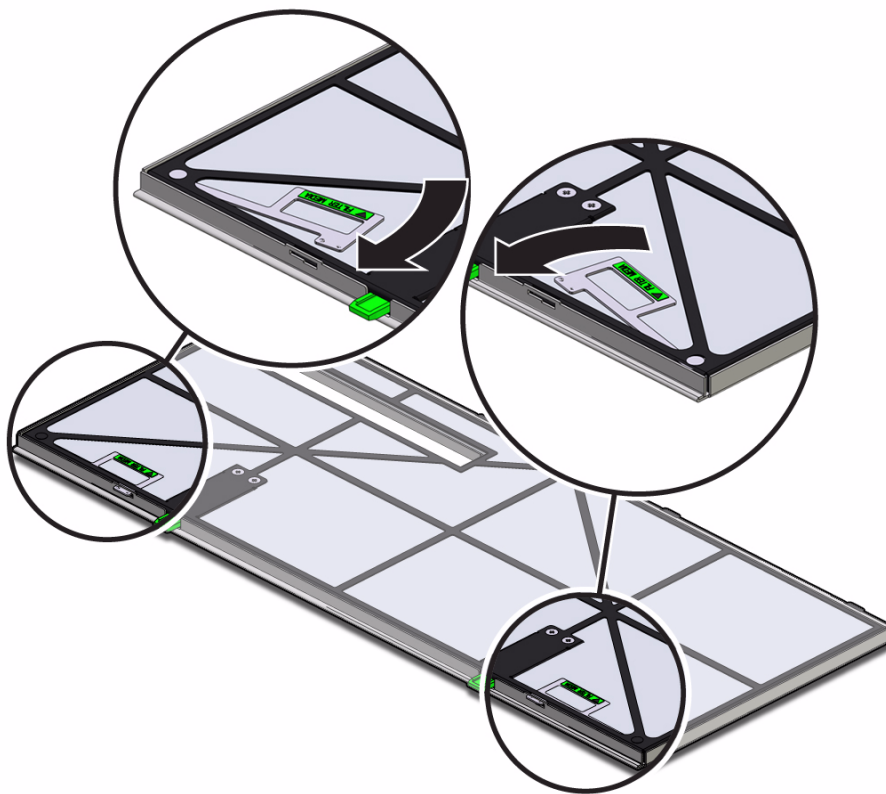
3. Insert the frame into the bottom edge of the filter tray.



4. Lower the frame down to the filter tray.

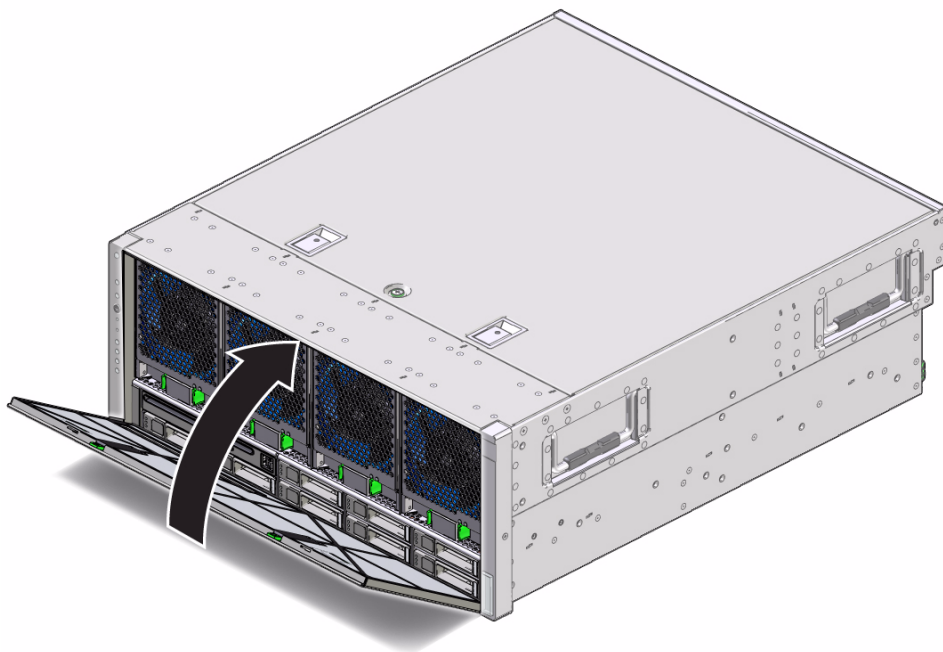


5. Return the release levers to the locked position, securing the frame in the filter tray.



6. Set the filter tray into the chassis at an angle, then swing it up so that it is vertical.

The filter tray clicks into place.



7. Consider your next steps:

- If you installed the filter tray as part of another component's removal or installation procedure, return to that procedure. See ["Component Service Task Reference" on page 65](#) for assistance.
- If you installed the air filter as part of a replacement operation, you are finished.

Related Information

- ["Remove the Air Filter" on page 75](#)
- ["Preparing for Service" on page 59](#)
- ["Returning the Server to Operation" on page 285](#)

Servicing Front Fan Modules

The front fan module is comprised of redundant fan elements. This redundancy enables the fan module to continuously supply air flow, even if one fan element fails. The four front fan modules are located behind the filter tray. See [“Power Supply, Hard Drive, and Rear Fan Module Locations”](#) on page 2. The front fan modules force air through the chassis from the front to the rear.



Description	Links
Replace a faulty front fan module.	“Locate a Faulty Front Fan Module” on page 88 “Front Fan Module LEDs” on page 88 “Remove a Front Fan Module” on page 91 “Install a Front Fan Module” on page 95 “Verify a Front Fan Module” on page 99
Remove the front fan modules as part of another component’s service operation.	“Remove a Front Fan Module” on page 91
Install the front fan modules as part of another component’s service operation.	“Install a Front Fan Module” on page 95
Identify a faulty front fan module.	“Front Fan Module LEDs” on page 88 “Locate a Faulty Front Fan Module” on page 88 “Detecting and Managing Faults” on page 9

Related Information

- [“Identifying Components”](#) on page 1
- [“Component Service Task Reference”](#) on page 65
- [“Servicing the Subchassis”](#) on page 215
- [“Detecting and Managing Faults”](#) on page 9
- [“Preparing for Service”](#) on page 59
- [“Returning the Server to Operation”](#) on page 285

Front Fan Module LEDs

The status of each front fan module is represented by the same two LEDs. The LEDs are located above each fan grille.

Icon	Location	Name	Color	State and Meaning
	Left	Service Required	Amber	On – Normal fault detected. Off – No faults detected. Flashing – No function.
	Right	OK	Green	On – Fan is functional without fault. Off – Fan is off or initializing. Flashing – No function.

Related Information

- [“Front Panel LEDs” on page 14](#)
- [“Locate a Faulty Front Fan Module” on page 88](#)
- [“Remove a Front Fan Module” on page 91](#)
- [“Install a Front Fan Module” on page 95](#)
- [“Verify a Front Fan Module” on page 99](#)

▼ Locate a Faulty Front Fan Module

You must determine if the fan module is faulty before you replace it.

- 1. Check to see if any System Service Required LEDs are lit or flashing.**
See [“Interpreting Diagnostic LEDs” on page 14](#).
- 2. Visually inspect the fan module to see if any of its status LEDs are lit or flashing.**
See [“Front Fan Module LEDs” on page 88](#).
- 3. If the fan module is faulty, replace it.**
See [“Remove a Front Fan Module” on page 91](#).

4. Within the Oracle ILOM interface, type the `show faulty` command to verify that the fan module is faulty.

If the fan module is faulty, you will see `/SYS/FMx` under the Value heading. For example:

```
-> show faulty
```

Target	Property	Value
/SP/faultmgmt/0	fru	/SYS/FM3
.		
.		
.		

```
->
```

where x is 0 (left fan module) to 3 (right fan module).

If the fan module is faulty, replace it. See [“Remove a Front Fan Module” on page 91](#).

If a FRU value different from `/SYS/FMx` is displayed, see [“Component Service Task Reference” on page 65](#) to identify which component is faulty.

5. Start the Oracle ILOM `faultmgmt shell`.

```
-> start /SP/faultmgmt/shell
```

```
Are you sure you want to start /SP/faultmgmt/shell (y/n)? y
```

```
faultmgmtsp>
```

6. Identify the faulty component.

For example:

```
faultmgmtsp> fmadm faulty
-----
Time                UUID                                msgid              Severity
-----
2010-08-11/14:54:23 59654226-50d3-cdc6-9f09-e591f39792ca SPT-8000-LC      Critical

Fault class : fault.chassis.power.volt-fail

Description : A Power Supply voltage level has exceeded acceptable limits.
.
.
.
faultmgmtsp>
```

Check the `Fault class` and `Description` fields for more information.

If the fan module is faulty, replace it. See [“Remove a Front Fan Module” on page 91](#).

7. Exit the Oracle ILOM `faultmgmt` shell.

```
faultmgmtsp> exit
->
```

8. Within the Oracle ILOM interface, verify the fan module speeds.

```
-> show /SYS/FMx/Fy/TACH value
/SYS/FM0/F0/TACH
Properties:
value = 5000.000 RPM
->
```

where:

- x is the fan module, 0 (left fan module) to 3 (right fan module).
- y is the fan element, 0 (primary) or 1 (secondary).

If the fan module is faulty, replace it. See [“Remove a Front Fan Module” on page 91](#).

9. If you are unable to identify the faulty fan module, seek further information.

See [“Detecting and Managing Faults” on page 9](#).

Related Information

- [“Front Fan Module LEDs” on page 88](#)
- [“Remove a Front Fan Module” on page 91](#)
- [“Install a Front Fan Module” on page 95](#)
- [“Verify a Front Fan Module” on page 99](#)
- [“Detecting and Managing Faults” on page 9](#)

▼ Remove a Front Fan Module

Removing a fan module is a hot-plug operation. You do not need to power off the server before you remove the fan module.

Note – For proper thermal management, there must always be at least three fan modules operating.

1. Consider your first step:

- If you have not prepared for service, do so now. See [“Preparing for Service” on page 59](#).
- If you are removing the fan module as part of another component’s removal or installation procedure, go to [Step 2](#).

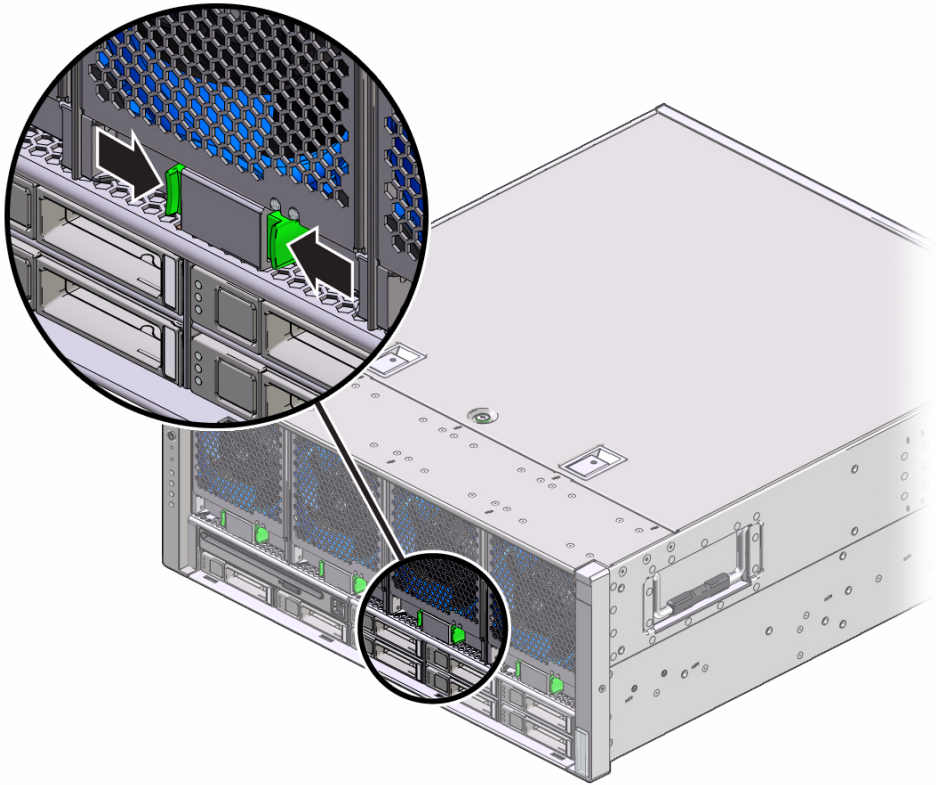
2. Remove the filter tray.

See [“Remove the Air Filter” on page 75](#).

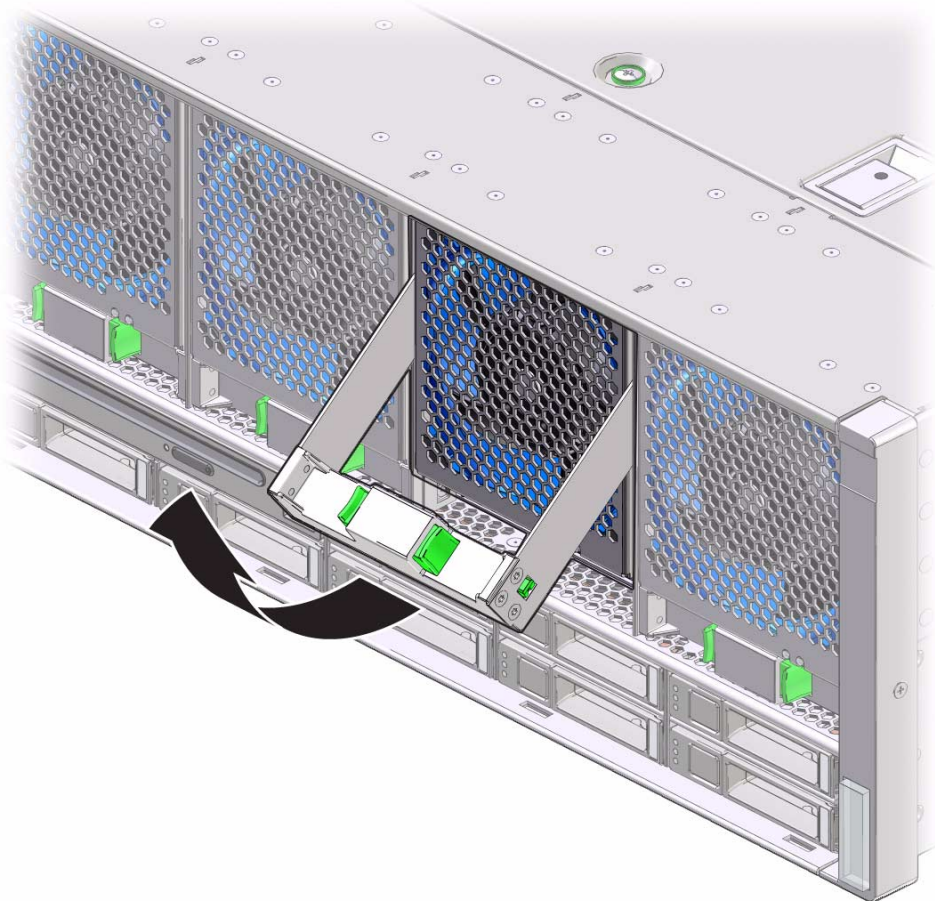
3. Determine which fan module to remove.

See [“Locate a Faulty Front Fan Module” on page 88](#).

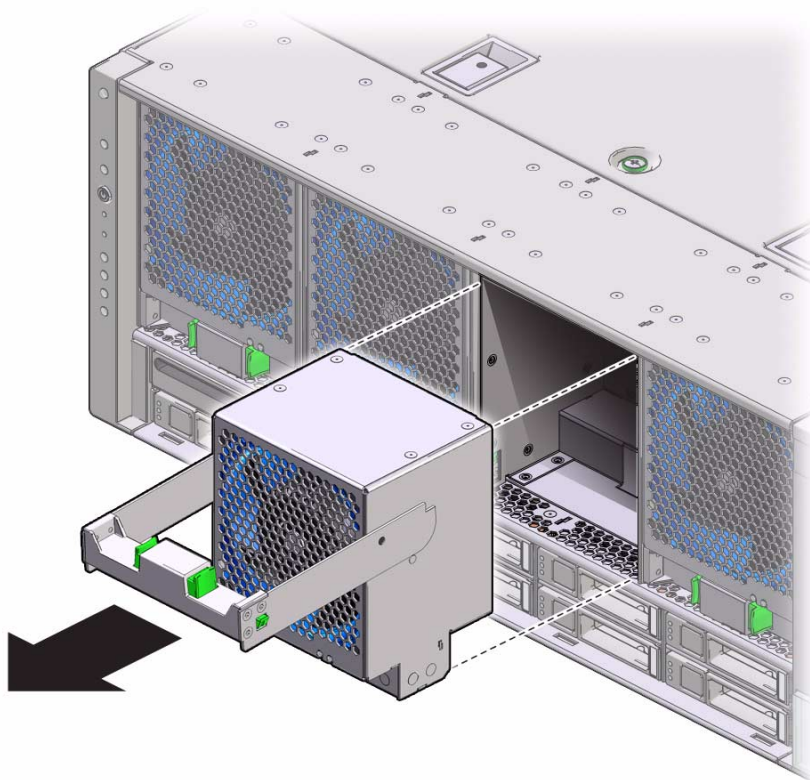
4. Pinch the lever release buttons at the bottom of the fan module.



5. Pull the release lever out and up.



6. Pull the fan module out from the chassis by the lever.



7. Set the fan module aside.

8. Consider your next steps:

- If you removed the fan module as part of a replacement operation, install a new fan module. See [“Install a Front Fan Module” on page 95](#).
- If you removed the fan module as part of another component’s removal or installation procedure, return to that procedure. See [“Component Service Task Reference” on page 65](#) for assistance.
- If you are not replacing the fan module, go to [Step 9](#).

9. Install the filter tray.

See [“Install the Air Filter” on page 80](#).

10. Finish the removal procedure.

See [“Returning the Server to Operation” on page 285](#).

Related Information

- [“Front Fan Module LEDs” on page 88](#)

- [“Locate a Faulty Front Fan Module” on page 88](#)
- [“Install a Front Fan Module” on page 95](#)
- [“Verify a Front Fan Module” on page 99](#)
- [“Preparing for Service” on page 59](#)
- [“Returning the Server to Operation” on page 285](#)

▼ Install a Front Fan Module

Installing a fan module is a hot-plug operation. You do not need to power off the server before installing the fan module.

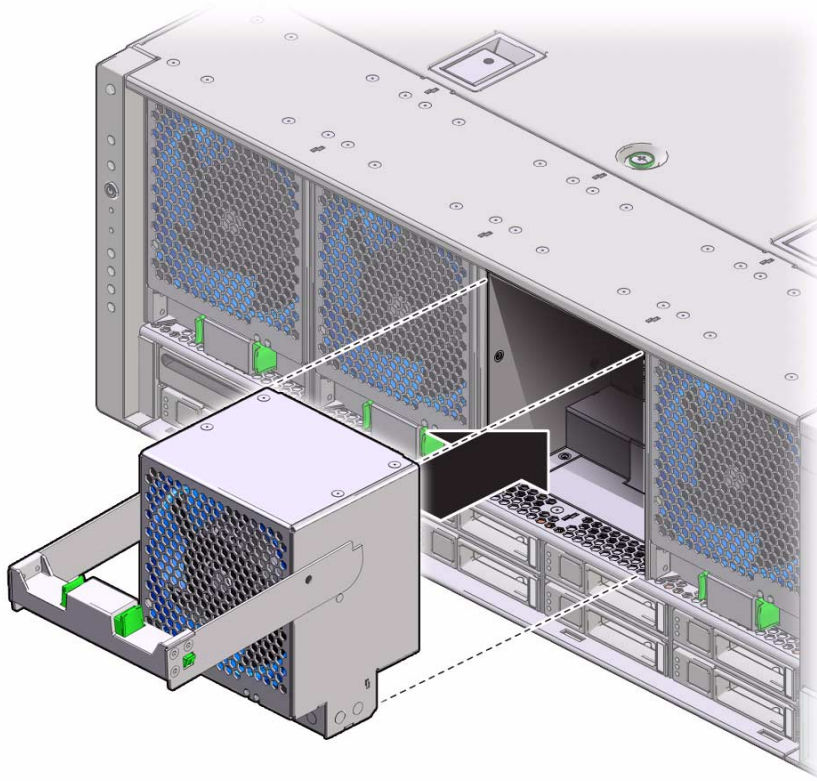
Note – The fan module automatically spins up on insertion.

1. Consider your first steps:

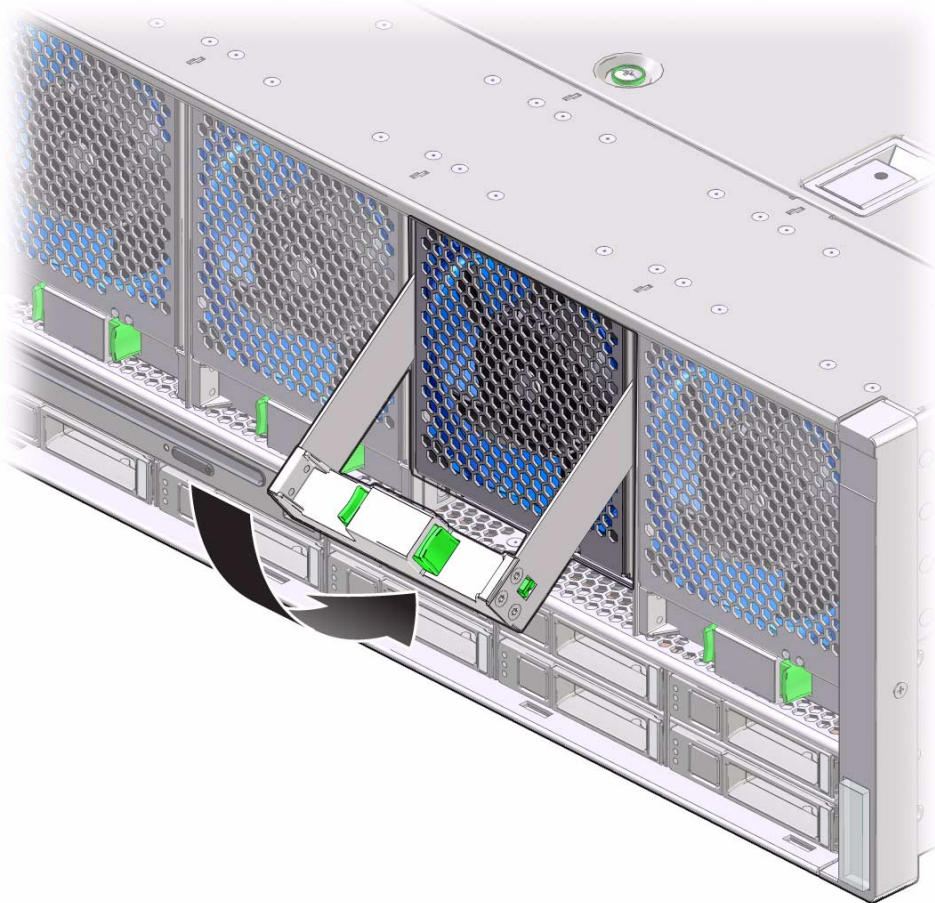
- If you are replacing a fan module, remove the faulty or obsolete fan module first, then return to this procedure, [Step 2](#). See [“Remove a Front Fan Module” on page 91](#).
- If you are installing a new or additional fan module, see these topics in order:
 - [“Remove the Air Filter” on page 75](#)
 - [“Preparing for Service” on page 59](#).
- If you are installing the fan module as part of another component’s removal or installation procedure, go to [Step 2](#).

2. Lift the lever to the raised position and align the fan module to the location where it installs into the chassis.

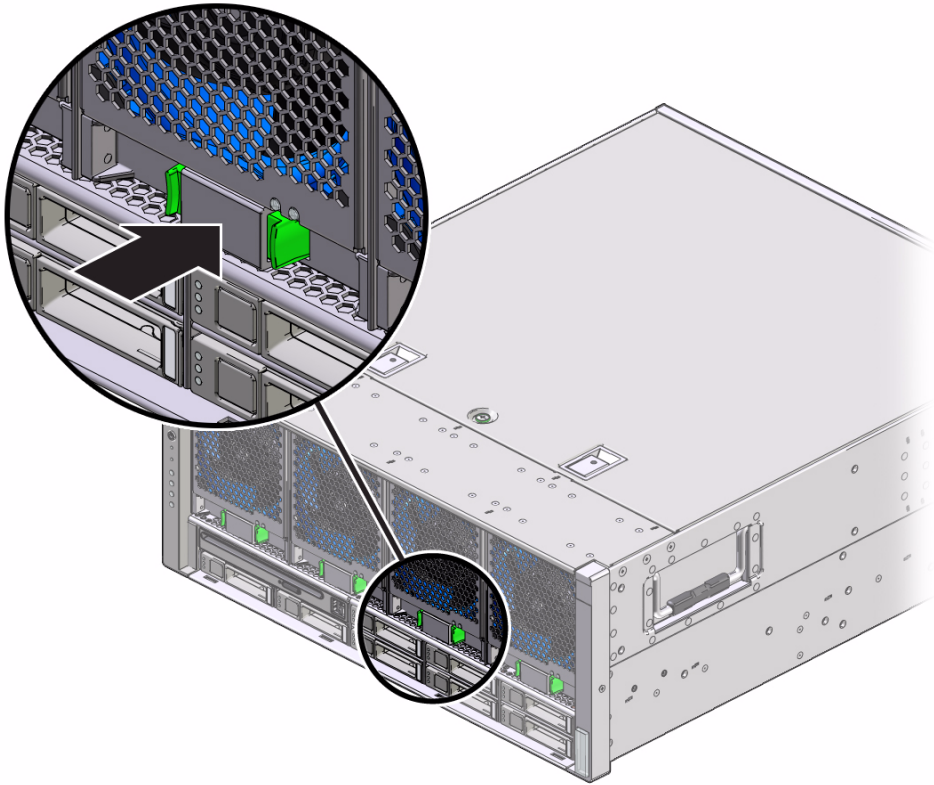
3. Push the fan module into the chassis until the lever moves slightly down.



4. Lower the lever down to secure the fan module into the chassis.



5. Push on the release lever so that it clicks.



6. Consider your next steps:

- If you installed the fan module as part of a replacement operation, go to [Step 7](#).
- If you installed the fan module as part of another component's removal or installation procedure, return to that procedure. See ["Component Service Task Reference" on page 65](#) for assistance.

7. Install the filter tray.

See ["Install the Air Filter" on page 80](#).

8. Finish the installation procedure.

See:

- ["Returning the Server to Operation" on page 285](#)
- ["Verify a Front Fan Module" on page 99](#)

Related Information

- ["Front Fan Module LEDs" on page 88](#)
- ["Locate a Faulty Front Fan Module" on page 88](#)

- [“Remove a Front Fan Module” on page 91](#)
- [“Verify a Front Fan Module” on page 99](#)
- [“Preparing for Service” on page 59](#)
- [“Returning the Server to Operation” on page 285](#)

▼ Verify a Front Fan Module

After you install a fan module, you can verify its functionality.

1. Reset the fan module.

```
-> set /SYS/FMx clear_fault_action=true  
Are you sure you want to clear /SYS/FM3 (y/n)? y  
Set 'clear_fault_action' to 'true'  
  
->
```

where x is 0 (left fan module) to 3 (right fan module).

2. Verify that the fan module is no longer considered faulty, then return to this procedure.

See [“Locate a Faulty Front Fan Module” on page 88](#).

3. Verify the fan module speeds.

```
-> show /SYS/FMx/Fy/TACH value  
/SYS/FM0/F0/TACH  
Properties:  
value = 5000.000 RPM  
  
->
```

where:

- x is the fan module, 0 (left fan module) to 3 (right fan module).
- y is the fan element, 0 (primary) or 1 (secondary).

Related Information

- [“Front Fan Module LEDs” on page 88](#)
- [“Locate a Faulty Front Fan Module” on page 88](#)
- [“Remove a Front Fan Module” on page 91](#)

- “Install a Front Fan Module” on page 95

Servicing Hard Drives

Eight hard drives are located at the lower front of the chassis, behind the filter tray. See [“Power Supply, Hard Drive, and Rear Fan Module Locations”](#) on page 2.

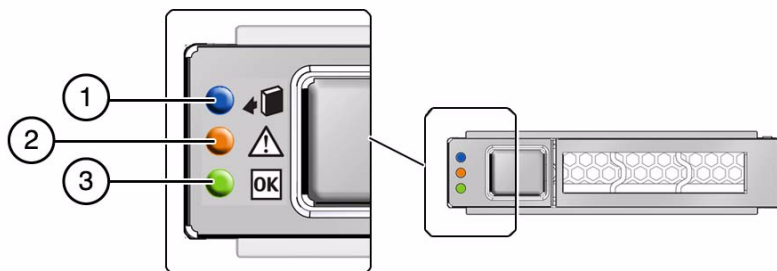
Description	Links
Replace a faulty hard drive.	“Locate a Faulty Hard Drive” on page 103 “Hard Drive LEDs” on page 102 “Remove a Hard Drive” on page 103 “Install a Hard Drive” on page 107 “Verify a Hard Drive” on page 111
Remove the hard drives as part of another component’s service operation.	“Remove a Hard Drive” on page 103
Install the hard drives as part of another component’s service operation.	“Install a Hard Drive” on page 107
Add an additional hard drive.	“Install a Hard Drive” on page 107 “Verify a Hard Drive” on page 111
Remove an existing hard drive.	“Remove a Hard Drive” on page 103
Identify a faulty hard drive.	“Hard Drive LEDs” on page 102 “Locate a Faulty Hard Drive” on page 103 “Detecting and Managing Faults” on page 9

Related Information

- [“Identifying Components”](#) on page 1
- [“Component Service Task Reference”](#) on page 65
- [“Servicing the DVD Drive”](#) on page 115
- [“Detecting and Managing Faults”](#) on page 9
- [“Preparing for Service”](#) on page 59
- [“Returning the Server to Operation”](#) on page 285

Hard Drive LEDs

The status of each drive is represented by the same three LEDs. The LEDs are located to the left of the release button of each hard drive.



No.	LED	Icon	Description
1	Ready to Remove (blue)		Indicates that a drive can be removed during a hot-plug operation.
2	Service Required (amber)		Indicates that the drive has experienced a fault condition.
3	OK/Activity (green)		Indicates the drive's availability for use. <ul style="list-style-type: none">• On – Read or write activity is in progress.• Off – Drive is idle and available for use.

Related Information

- [“Front Panel LEDs” on page 14](#)
- [“Locate a Faulty Hard Drive” on page 103](#)
- [“Remove a Hard Drive” on page 103](#)
- [“Install a Hard Drive” on page 107](#)
- [“Verify a Hard Drive” on page 111](#)

▼ Locate a Faulty Hard Drive

You must determine which if the hard drive is faulty before you replace it.

1. **Check to see if any System Service Required LEDs are lit or flashing.**
See [“Interpreting Diagnostic LEDs” on page 14.](#)
2. **Visually inspect the hard drive to see if any of its status LEDs are lit or flashing.**
See [“Hard Drive LEDs” on page 102.](#)
If the hard drive is faulty, replace it. See [“Remove a Hard Drive” on page 103.](#)
3. **If you are unable to identify the faulty hard drive, seek further information.**
See [“Detecting and Managing Faults” on page 9.](#)

Related Information

- [“Hard Drive LEDs” on page 102](#)
- [“Remove a Hard Drive” on page 103](#)
- [“Install a Hard Drive” on page 107](#)
- [“Verify a Hard Drive” on page 111](#)
- [“Detecting and Managing Faults” on page 9](#)

▼ Remove a Hard Drive

Removing the hard drive is a hot-swap operation. You must run commands on the server before you remove the hard drive.

1. **Consider your first step:**
 - If you have not prepared for service, do so now. See [“Preparing for Service” on page 59.](#)
 - If you are removing the hard drive as part of another component’s removal or installation procedure, go to [Step 2.](#)
2. **Remove the filter tray.**
See [“Remove the Air Filter” on page 75.](#)
3. **Determine which hard drive to remove.**
See [“Locate a Faulty Hard Drive” on page 103.](#)

4. Determine if you need to shut down the OS to replace the drive, and perform one of these actions:

- If the drive cannot be taken offline without shutting down the OS, follow instructions in [“Power Off the Server \(SP Command\)” on page 67](#) then go to [Step 6](#).
- If the drive can be taken offline without shutting down the OS, go to [Step 5](#).

5. Take the drive offline:

- a. At the Oracle Solaris prompt, type the `cfgadm -al` command to list all drives in the device tree, including drives that are not configured:

```
# cfgadm -al
```

This command lists dynamically reconfigurable hardware resources and shows their operational status. In this case, look for the status of the drive you plan to remove. This information is listed in the Occupant column.

For example:

Ap_id	Type	Receptacle	Occupant	Condition
.				
.				
c2	scsi-sas	connected	configured	unknown
.				
c3	scsi-sas	connected	configured	unknown
c2::w5000cca00a76d1f5,0	disk-path	connected	configured	unknown
c4	scsi-sas	connected	configured	unknown
c3::w5000cca00a772bd1,0	disk-path	connected	configured	unknown
.				
c4::w5000cca00a59b0a9,0	disk-path	connected	configured	unknown
.				
.				

You must unconfigure any drive whose status is listed as configured, as described in [Step b](#).

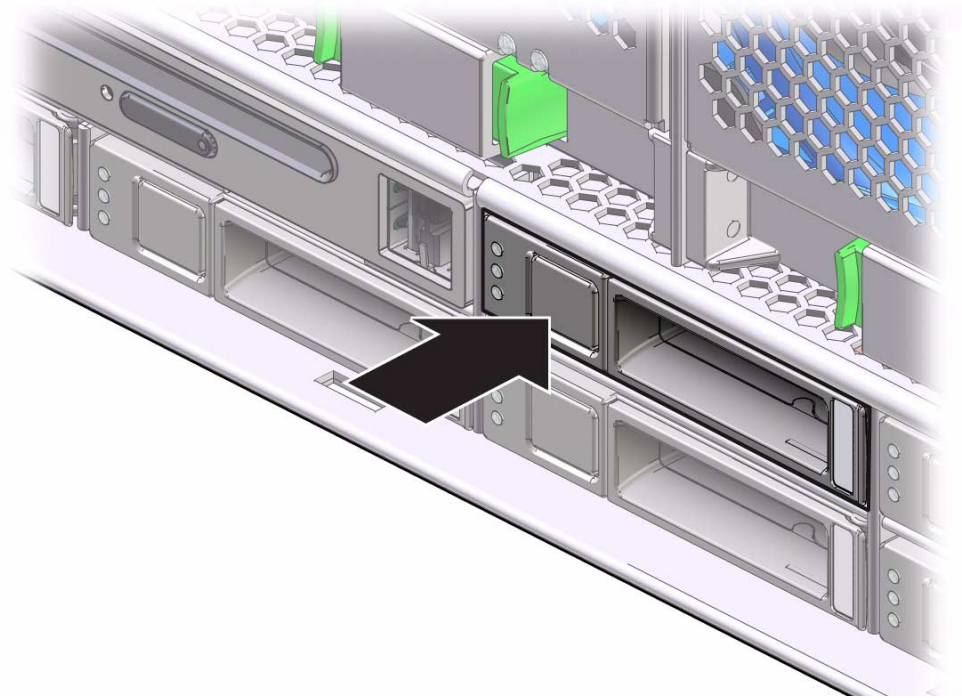
- b. Unconfigure the drive using the `cfgadm -c unconfigure` command.

For example:

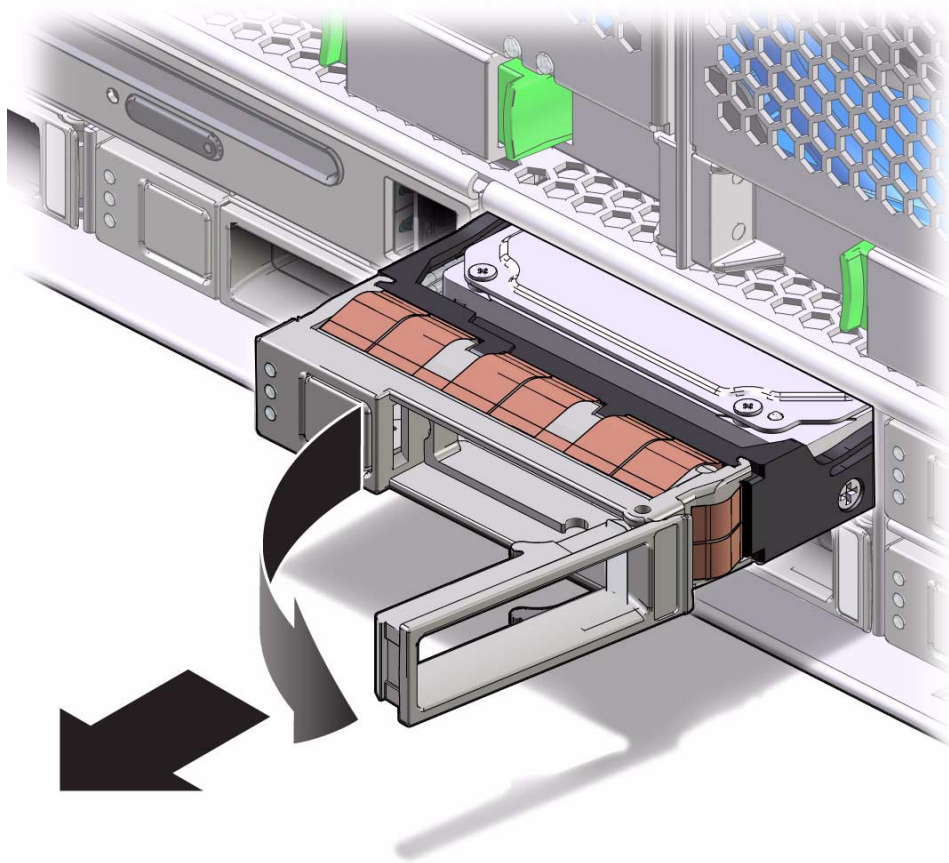
```
# cfgadm -c unconfigure c2::w5000cca00a76d1f5,0
```

Replace `c2::w5000cca00a76d1f5,0` with the drive name that applies to your situation.

- c. Verify that the drive's blue Ready-to-Remove LED is lit.
- 6. Push the release button of the hard drive and pull the release lever out.



- 7. Grasp the release lever and pull the hard drive out of the chassis.



8. Set the hard drive aside.

9. Consider your next steps:

- If you removed the hard drive as part of a replacement operation, install a new hard drive. See [“Install a Hard Drive” on page 107](#).
- If you removed the hard drive as part of another component’s removal or installation procedure, return to that procedure. See [“Component Service Task Reference” on page 65](#) for assistance.
- If you are not replacing the hard drive, go to [Step 10](#).

10. Install a hard drive filler.

See [“Install a Hard Drive” on page 107](#).

11. Install the filter tray.

See [“Install the Air Filter” on page 80](#).

12. Finish the removal procedure.

See [“Returning the Server to Operation” on page 285](#).

Related Information

- [“Hard Drive LEDs” on page 102](#)
- [“Locate a Faulty Hard Drive” on page 103](#)
- [“Install a Hard Drive” on page 107](#)
- [“Verify a Hard Drive” on page 111](#)
- [“Preparing for Service” on page 59](#)
- [“Returning the Server to Operation” on page 285](#)

▼ Install a Hard Drive

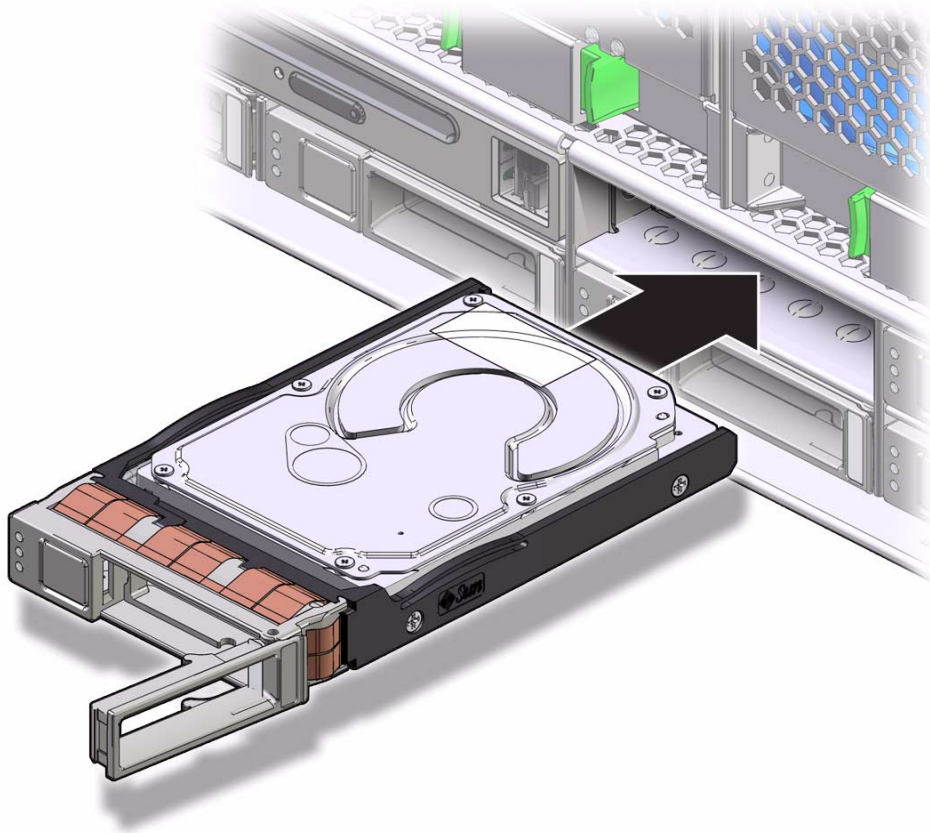
Installing the hard drive is a hot-plug operation. You do not need to power off the server before installing the hard drive.

1. Consider your first steps:

- If you are replacing a hard drive, remove the faulty or obsolete hard drive first, then return to this procedure, [Step 2](#). See [“Remove a Hard Drive” on page 103](#).
- If you are installing a new or an additional hard drive, see these topics in order:
 - [“Remove the Air Filter” on page 75](#)
 - [“Preparing for Service” on page 59](#).
- If you are installing the hard drive as part of another component’s removal or installation procedure, go to [Step 2](#).

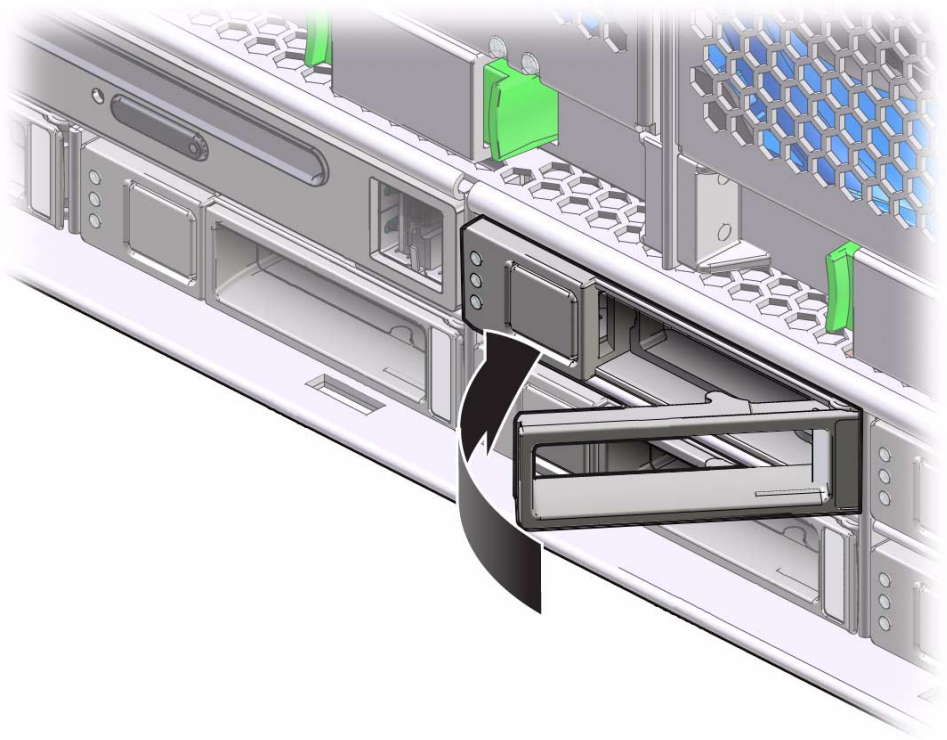
2. Push the release button of the hard drive.

3. Align the hard drive with the slot where the hard drive installs into the chassis.

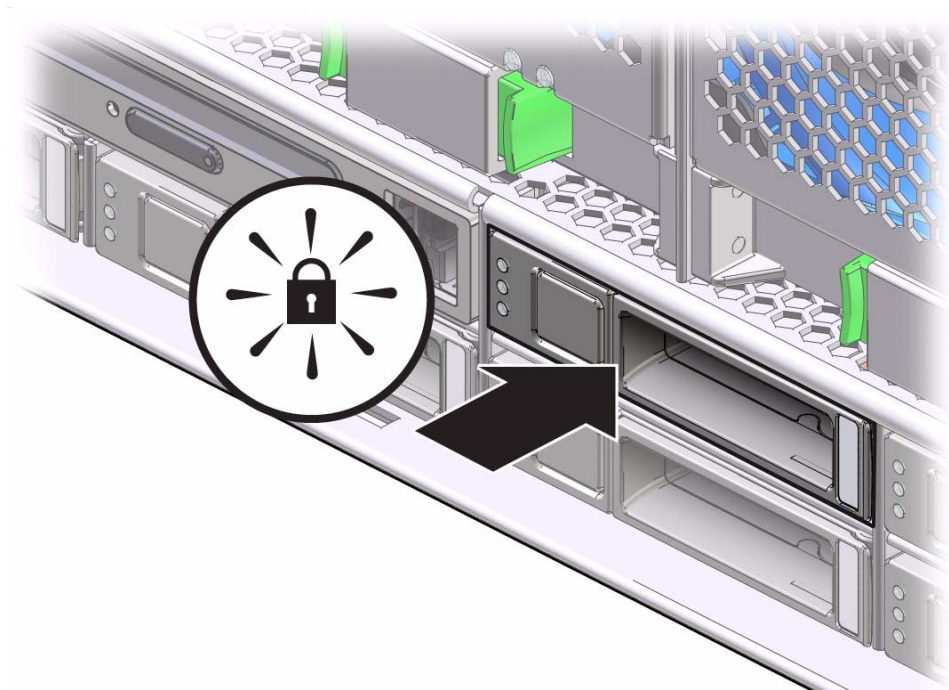


The connector is at the rear of the hard drive. The release lever is at the right front of the hard drive.

- 4. Slide the hard drive into the chassis until the release lever moves slightly.**



5. **Press the release lever closed to fully seat the hard drive into the chassis.**
The lever clicks secure.



6. Consider your next steps:

- If you installed the hard drive as part of a replacement operation, go to [Step 7](#).
- If you installed the hard drive as part of another component's removal or installation procedure, return to that procedure. See ["Component Service Task Reference"](#) on page 65 for assistance.

7. Install the filter tray.

See ["Install the Air Filter"](#) on page 80.

8. Finish the installation procedure.

See:

- ["Returning the Server to Operation"](#) on page 285
- ["Verify a Hard Drive"](#) on page 111

Related Information

- ["Hard Drive LEDs"](#) on page 102
- ["Locate a Faulty Hard Drive"](#) on page 103
- ["Remove a Hard Drive"](#) on page 103
- ["Verify a Hard Drive"](#) on page 111
- ["Preparing for Service"](#) on page 59

- [“Returning the Server to Operation” on page 285](#)

▼ Verify a Hard Drive

After you install a hard drive, you can verify its functionality.

1. Consider your first steps:

- If you installed a new hard drive as part of a replacement operation, verify that the hard drive is no longer considered faulty, then return to this procedure. See [“Locate a Faulty Hard Drive” on page 103](#).
- If you installed a new hard drive to increase functionality, go to [Step 2](#).

2. If the OS is shut down, and the drive you replaced was not the boot device, boot the OS.

Depending on the nature of the replaced drive, you might need to perform administrative tasks to reinstall software before the server can boot. Refer to the Oracle Solaris OS administration documentation for more information.

3. At the Oracle Solaris prompt, type the `cfgadm -al` command to list all drives in the device tree, including any drives that are not configured:

```
# cfgadm -al
```

This command helps you identify the drive you installed. For example:

Ap_id	Type	Receptacle	Occupant	Condition
.				
.				
c2	scsi-sas	connected	configured	unknown
.				
c3	scsi-sas	connected	configured	unknown
c2::w500cca00a76d1f5,0	disk-path	connected	configured	unknown
c4	scsi-sas	connected	configured	unknown
c3::sd2	disk-path	connected	unconfigured	unknown
.				
c4::w500cca00a59b0a9,0	disk-path	connected	configured	unknown
.				
.				

4. Configure the drive using the `cfgadm -c configure` command.

For example:

```
# cfgadm -c configure c2::w5000cca00a76d1f5,0
```

Replace `c2::w5000cca00a76d1f5,0` with the drive name for your configuration.

5. Verify that the blue Ready-to-Remove LED is no longer lit on the drive that you installed.

See [“Hard Drive LEDs” on page 102](#).

6. At the Oracle Solaris prompt, type the `cfgadm -al` command to list all drives in the device tree, including any drives that are not configured.

```
# cfgadm -al
```

The replacement drive is now listed as configured. For example:

Ap_id	Type	Receptacle	Occupant	Condition
.				
.				
c2	scsi-sas	connected	configured	unknown
.				
c3	scsi-sas	connected	configured	unknown
c2::w5000cca00a76d1f5,0	disk-path	connected	configured	unknown
c4	scsi-sas	connected	configured	unknown
c3::w5000cca00a772bd1,0	disk-path	connected	configured	unknown
.				
c4::w5000cca00a59b0a9,0	disk-path	connected	configured	unknown
.				
.				

7. Perform one of these tasks based on your verification results:

- If the previous steps did not verify the drive, see [“Diagnostics Process” on page 11](#).
- If the previous steps indicate that the drive is functioning properly, perform the tasks required to configure the drive. These tasks are covered in the Oracle Solaris OS administration documentation.

For additional drive verification, you can run the Oracle VTS software. Refer to the Oracle VTS documentation for details.

Related Information

- “Hard Drive LEDs” on page 102
- “Locate a Faulty Hard Drive” on page 103
- “Remove a Hard Drive” on page 103
- “Install a Hard Drive” on page 107

Servicing the DVD Drive

The DVD drive is an SATA optical storage device with DVD DL-RW capabilities. The DVD drive is located above the hard drives at the front left of the chassis. See [“Front Fans, Subchassis, Memory Riser, and DIMM Locations”](#) on page 4.

Description	Links
Replace the faulty DVD drive.	“Determine if the DVD Drive Is Faulty” on page 116 “Remove the DVD Drive” on page 116 “Install the DVD Drive” on page 119 “Verify the DVD Drive” on page 123
Remove the DVD drive as part of another component’s service operation.	“Remove the DVD Drive” on page 116
Install the DVD drive as part of another component’s service operation.	“Install the DVD Drive” on page 119
Determine whether the DVD drive is faulty.	“Determine if the DVD Drive Is Faulty” on page 116 “Detecting and Managing Faults” on page 9

Related Information

- [“Identifying Components”](#) on page 1
- [“Component Service Task Reference”](#) on page 65
- [“Servicing Hard Drives”](#) on page 101
- [“Detecting and Managing Faults”](#) on page 9
- [“Preparing for Service”](#) on page 59
- [“Returning the Server to Operation”](#) on page 285

▼ Determine if the DVD Drive Is Faulty

You must determine if the DVD drive is faulty before you replace it.

1. **Check to see if any System Service Required LEDs are lit or flashing.**
See [“Interpreting Diagnostic LEDs” on page 14.](#)
2. **Visually inspect the DVD drive to see if its status LED is lit or flashing.**
If the DVD drive is faulty, replace it. See [“Remove the DVD Drive” on page 116.](#)
3. **Within the Oracle ILOM interface, verify the presence of the DVD drive.**

```
-> show /SYS/SASBP/DVD type
/SYS/SASBP/DVD
Properties:
  type = DVD
->
```

If the DVD drive is not recognized, replace it. See [“Remove the DVD Drive” on page 116.](#)

4. **If you are unable to determine if the DVD drive is faulty, seek further information.**
See [“Detecting and Managing Faults” on page 9.](#)

Related Information

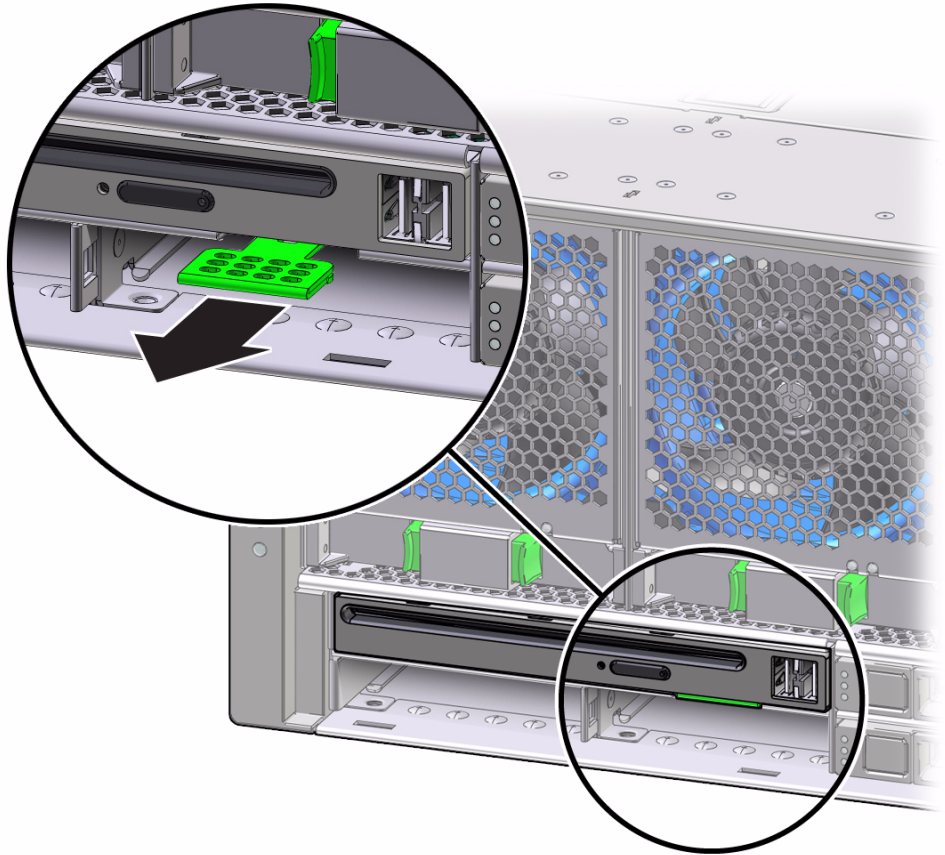
- [“Remove the DVD Drive” on page 116](#)
- [“Install the DVD Drive” on page 119](#)
- [“Verify the DVD Drive” on page 123](#)
- [“Detecting and Managing Faults” on page 9](#)

▼ Remove the DVD Drive

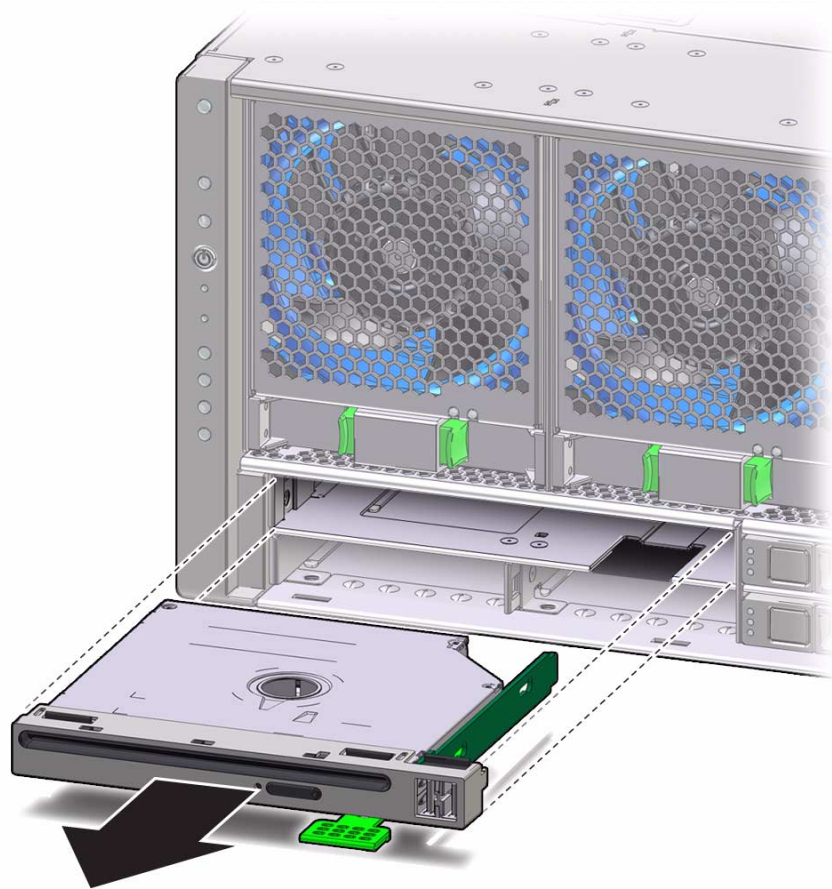
Removing the DVD drive is a hot-plug operation. You do not need to power off the server before you remove the DVD drive.

1. **Consider your first step:**

- If you have not prepared for service, do so now. See [“Preparing for Service”](#) on page 59.
 - If you are removing the DVD drive as part of another component’s removal or installation procedure, go to [Step 2](#).
2. Remove the two hard drives located beneath the DVD drive.
See [“Remove a Hard Drive”](#) on page 103.
 3. Grasp the tab under the right side of the DVD drive and pull the tab out.



4. Continue to pull the tab, to slide the DVD drive out of the chassis.



5. Set the DVD drive aside.

6. Consider your next steps:

- If you removed the DVD drive as part of a replacement operation, install a new DVD drive. See [“Install the DVD Drive” on page 119](#).
- If you removed the DVD drive as part of another component’s removal or installation procedure, return to that procedure. See [“Component Service Task Reference” on page 65](#) for assistance.

Related Information

- [“Determine if the DVD Drive Is Faulty” on page 116](#)
- [“Install the DVD Drive” on page 119](#)
- [“Verify the DVD Drive” on page 123](#)
- [“Preparing for Service” on page 59](#)

- [“Returning the Server to Operation” on page 285](#)

▼ Install the DVD Drive

Installing the DVD drive is a hot-plug operation. You do not need to power off the server before installing the DVD drive.

1. Consider your first steps:

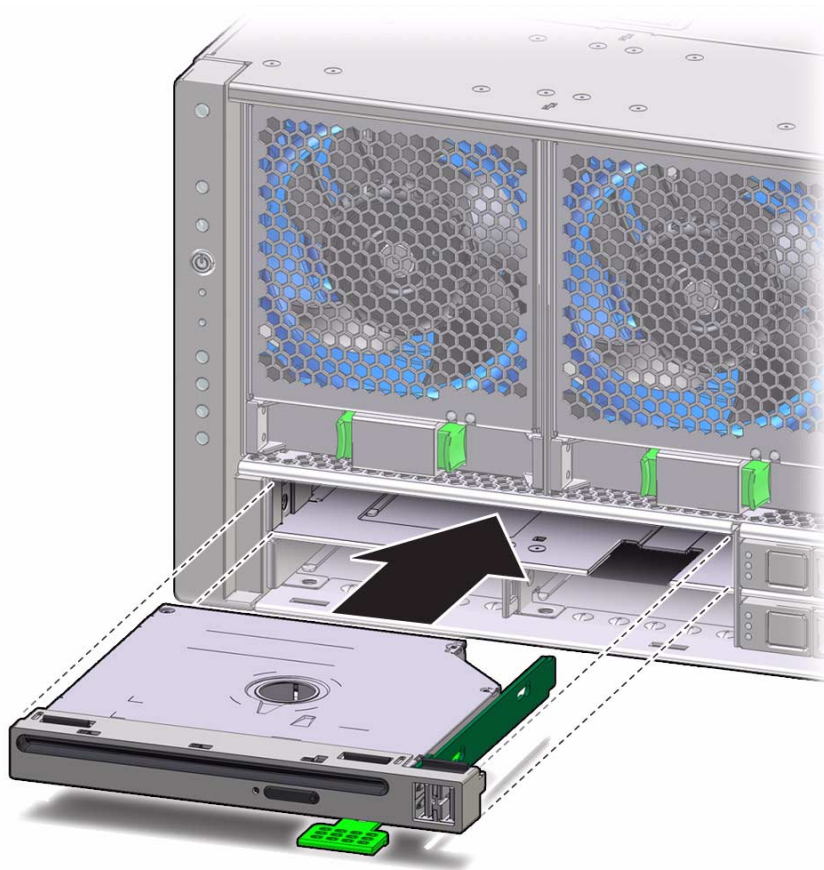
- If you are replacing a DVD drive, remove the faulty or obsolete DVD drive first, then return to this procedure, [Step 2](#). See [“Remove the DVD Drive” on page 116](#).
- If you are installing the DVD drive as part of another component’s removal or installation procedure, go to [Step 2](#).

2. Extend the tab out from the underside of the DVD drive.

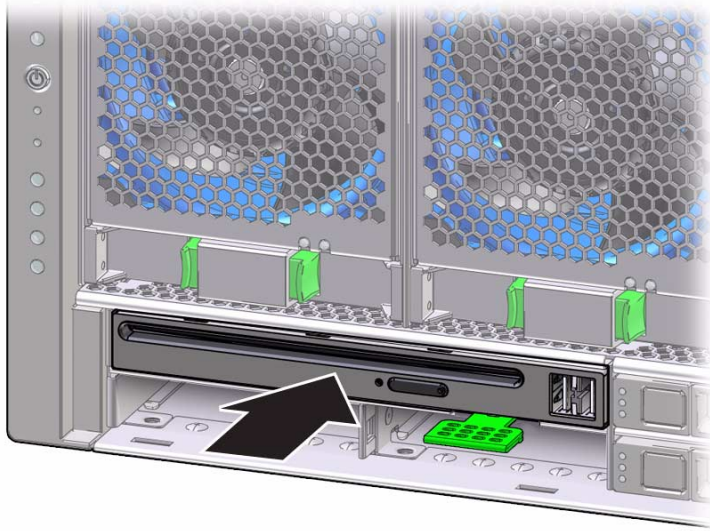
3. Align the DVD drive to the location where it installs into the chassis.

The DVD drive is oriented with the tab at the right front.

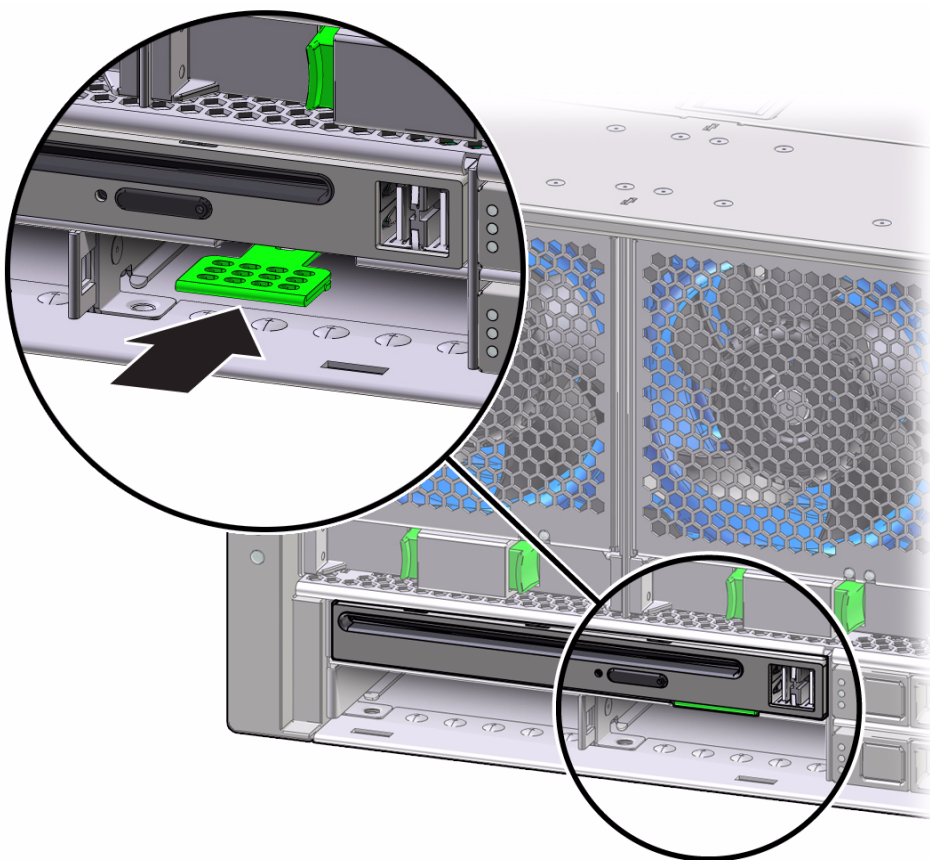
4. Slide the DVD drive into the chassis.



5. Press on the right side of the DVD drive to firmly seat it into the slot.



6. Push the tab in under the DVD drive.



7. Consider your next steps:

- If you installed the DVD drive as part of a replacement operation, go to [Step 8](#).
- If you installed the DVD drive as part of another component's removal or installation procedure, return to that procedure. See ["Component Service Task Reference"](#) on page 65 for assistance.

8. Finish the installation procedure.

See:

- ["Returning the Server to Operation"](#) on page 285
- ["Verify the DVD Drive"](#) on page 123

Related Information

- ["Determine if the DVD Drive Is Faulty"](#) on page 116
- ["Remove the DVD Drive"](#) on page 116
- ["Verify the DVD Drive"](#) on page 123

- [“Preparing for Service” on page 59](#)
- [“Returning the Server to Operation” on page 285](#)

▼ Verify the DVD Drive

After you install a DVD drive, you can verify its functionality.

- **Verify the presence of the DVD drive.**

```
-> show /SYS/SASBP/DVD type  
/SYS/SASBP/DVD  
Properties:  
    type = DVD  
->
```

Related Information

- [“Determine if the DVD Drive Is Faulty” on page 116](#)
- [“Remove the DVD Drive” on page 116](#)
- [“Install the DVD Drive” on page 119](#)

Servicing Power Supplies

The power supply takes the supplied AC or DC input and converts the power to 12 VDC main power and 3.3 VDC standby power. The four power supplies are located at the rear of the chassis, across the lower half. See [“Power Supply, Hard Drive, and Rear Fan Module Locations”](#) on page 2. Fans within the power supplies draw air from the chassis interior and expel the air out the rear of the chassis.




Description	Links
Replace a faulty power supply.	“Locate a Faulty Power Supply” on page 126 “Power Supply LEDs” on page 126 “Remove a Power Supply” on page 129 “Install a Power Supply” on page 133 “Verify a Power Supply” on page 137
Remove the power supplies as part of another component’s service operation.	“Remove a Power Supply” on page 129
Install the power supplies as part of another component’s service operation.	“Install a Power Supply” on page 133
Identify a faulty power supply.	“Power Supply LEDs” on page 126 “Locate a Faulty Power Supply” on page 126 “Detecting and Managing Faults” on page 9

Related Information

- [“Identifying Components”](#) on page 1
- [“Component Service Task Reference”](#) on page 65
- [“Detecting and Managing Faults”](#) on page 9
- [“Preparing for Service”](#) on page 59
- [“Returning the Server to Operation”](#) on page 285

Power Supply LEDs

The status of each power supply is represented by the same three LEDs. The LEDs are located to the right of the fan of each power supply.

Icon	Location	Name	Color	State and Meaning
	Top	OK	Green	On – Power supply is functional without fault. Off – Power supply is off or initializing. Flashing – No function.
	Middle	Attention	Amber	On – Normal fault detected. Off – No faults detected. Flashing – No function.
	Bottom	AC or DC	Green	On – Input power present and good. Off – Input power not present. Flashing – No function.

Related Information

- [“Rear Panel LEDs” on page 16](#)
- [“Locate a Faulty Power Supply” on page 126](#)
- [“Remove a Power Supply” on page 129](#)
- [“Install a Power Supply” on page 133](#)
- [“Verify a Power Supply” on page 137](#)

▼ Locate a Faulty Power Supply

You must determine which power supply is faulty before you replace it.

1. **Check to see if any System Service Required LEDs are lit or flashing.**
See [“Interpreting Diagnostic LEDs” on page 14.](#)

2. Visually inspect the power supply to see if any of its status LEDs are lit or flashing.
See [“Power Supply LEDs” on page 126](#).
If the power supply is faulty, replace it. See [“Remove a Power Supply” on page 129](#).
3. Within the Oracle ILOM interface, type the `show faulty` command to verify that the power supply is faulty.
If the power supply is faulty, you will see `/SYS/PSx` under the Value heading.
For example:

```
-> show faulty
```

Target	Property	Value
/SP/faultmgmt/0	fru	/SYS/PS0
.		
.		
.		

```
->
```

where x is 0 (left power supply) to 3 (right power supply).

If the power supply is faulty, replace it. See [“Remove a Power Supply” on page 129](#).

If a FRU value different from `/SYS/PSx` is displayed, see [“Component Service Task Reference” on page 65](#) to identify which component is faulty.

4. Start the Oracle ILOM `faultmgmt shell`.

```
-> start /SP/faultmgmt/shell
```

```
Are you sure you want to start /SP/faultmgmt/shell (y/n)? y
```

```
faultmgmtsp>
```

5. Identify the faulty component.

For example:

```
faultmgmtsp> fmadm faulty
-----
Time                UUID                                msgid              Severity
-----
2010-08-11/14:54:23 59654226-50d3-cdc6-9f09-e591f39792ca SPT-8000-LC      Critical

Fault class : fault.chassis.power.volt-fail

Description : A Power Supply voltage level has exceeded acceptable limits.
.
.
.
faultmgmtsp>
```

Check the `Fault class` and `Description` fields for more information.

If the power supply is faulty, replace it. See [“Remove a Power Supply” on page 129](#).

6. Exit the Oracle ILOM `faultmgmt` shell.

```
faultmgmtsp> exit
->
```

7. Within the Oracle ILOM interface, verify the voltage output.

```
-> show /SYS/PSx/V_OUT value
/SYS/PS0/V_OUT
Properties:
value = 12.000 Volts
->
```

where *x* is 0 (left power supply) to 3 (right power supply).

If the power supply is faulty, replace it. See [“Remove a Power Supply” on page 129](#).

8. If you are unable to identify the faulty power supply, seek further information.

See [“Detecting and Managing Faults” on page 9](#).

Related Information

- [“Power Supply LEDs” on page 126](#)
- [“Remove a Power Supply” on page 129](#)

- [“Install a Power Supply” on page 133](#)
- [“Verify a Power Supply” on page 137](#)
- [“Detecting and Managing Faults” on page 9](#)

▼ Remove a Power Supply

Removing the power supply is a hot-plug operation. You do not need to power off the server before you remove the power supply.

Note – The server can still function with one power supply, however removing all four power supplies effectively powers off the server.

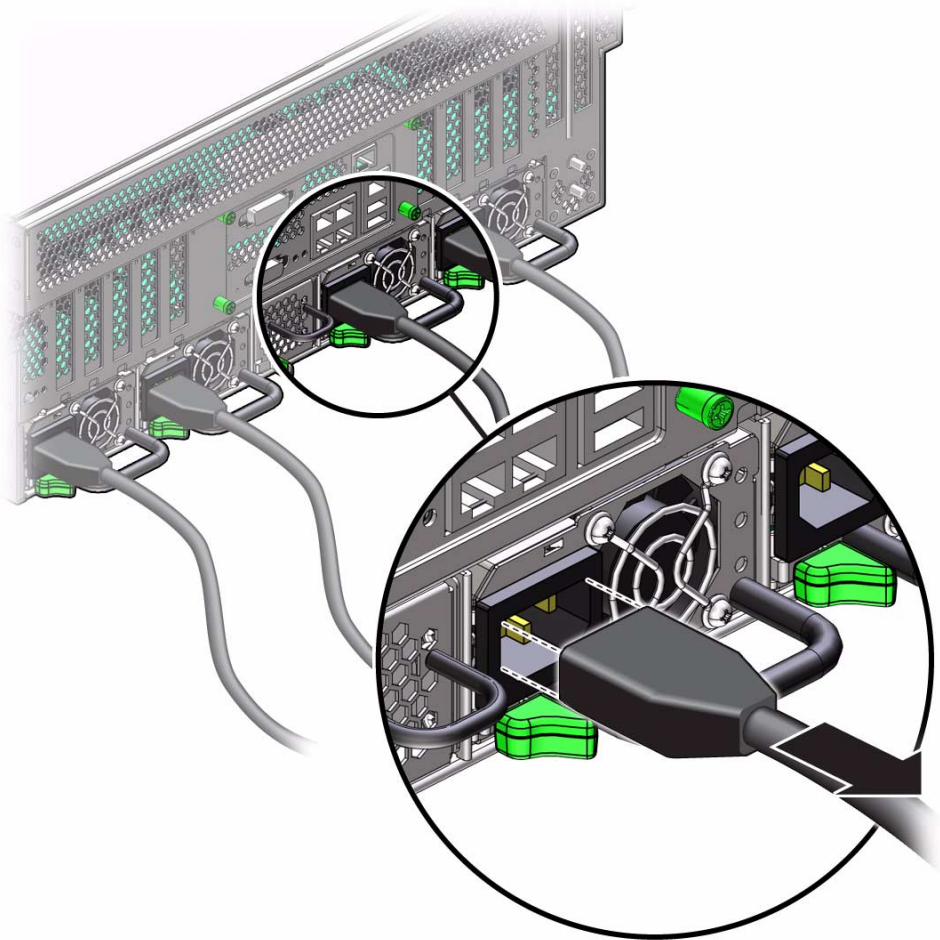
1. Consider your first step:

- If you have not prepared for service, do so now. See [“Preparing for Service” on page 59](#).
- If you are removing the power supply as part of another component’s removal or installation procedure, go to [Step 2](#).

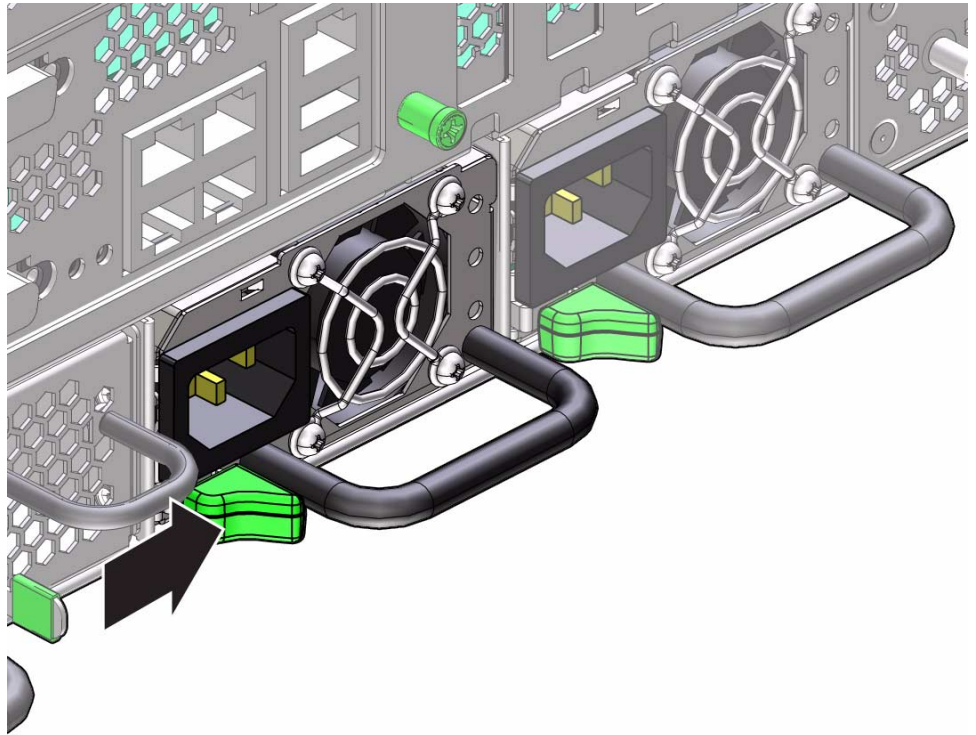
2. Determine which power supply to remove.

See [“Locate a Faulty Power Supply” on page 126](#).

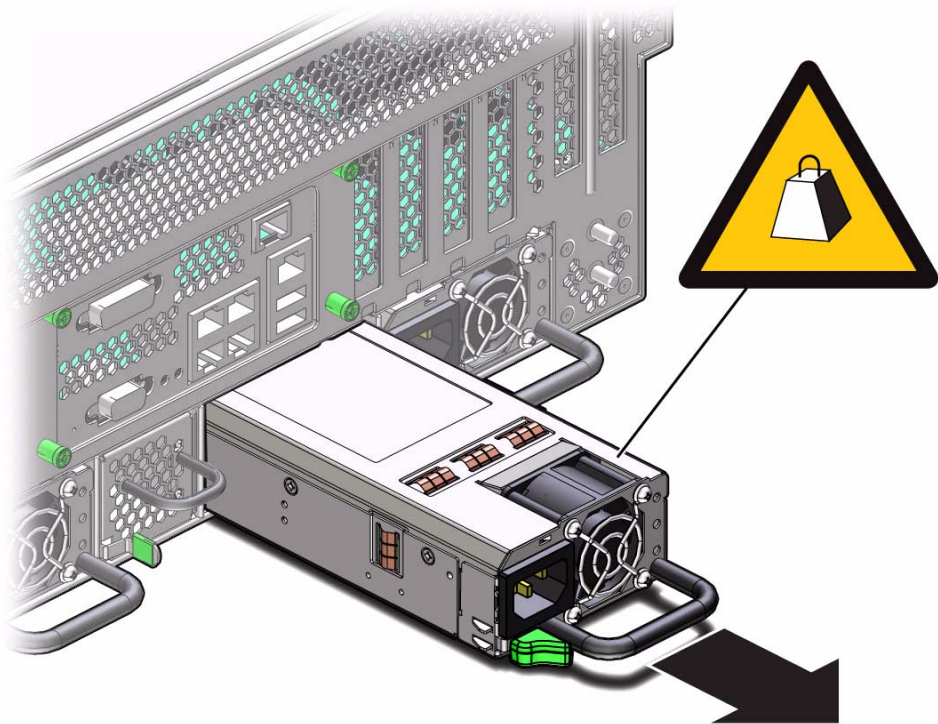
3. Disconnect the power cord from the power supply.



4. Move the release tab to the right and pull on the handle.



5. Continue to pull on the handle to slide the power supply out of the chassis.



6. When the power supply is almost free of the chassis, use your other hand to support the weight of the power supply.
7. Set the power supply aside.
8. Consider your next steps:
 - If you removed the power supply as part of a replacement operation, install a new power supply. See [“Install a Power Supply” on page 133](#).
 - If you removed the power supply as part of another component’s removal or installation procedure, return to that procedure. See [“Component Service Task Reference” on page 65](#) for assistance.
 - If you are not replacing the power supply, go to [Step 9](#).
9. Finish the removal procedure.
See [“Returning the Server to Operation” on page 285](#).

Related Information

- [“Power Supply LEDs” on page 126](#)
- [“Locate a Faulty Power Supply” on page 126](#)
- [“Install a Power Supply” on page 133](#)

- [“Verify a Power Supply” on page 137](#)
- [“Preparing for Service” on page 59](#)
- [“Returning the Server to Operation” on page 285](#)

▼ Install a Power Supply

Installing the power supply is a hot-plug operation. You do not need to power off the server before installing the power supply.

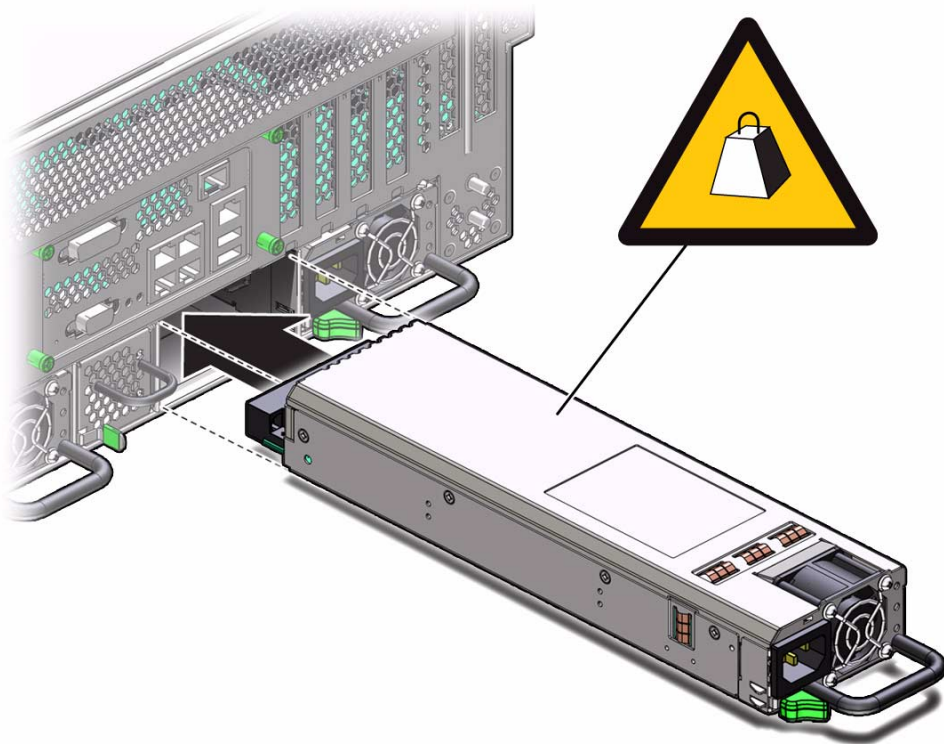
Note – The power supply automatically transitions from standby voltage to main power when you attach the power cord.

1. Consider your first steps:

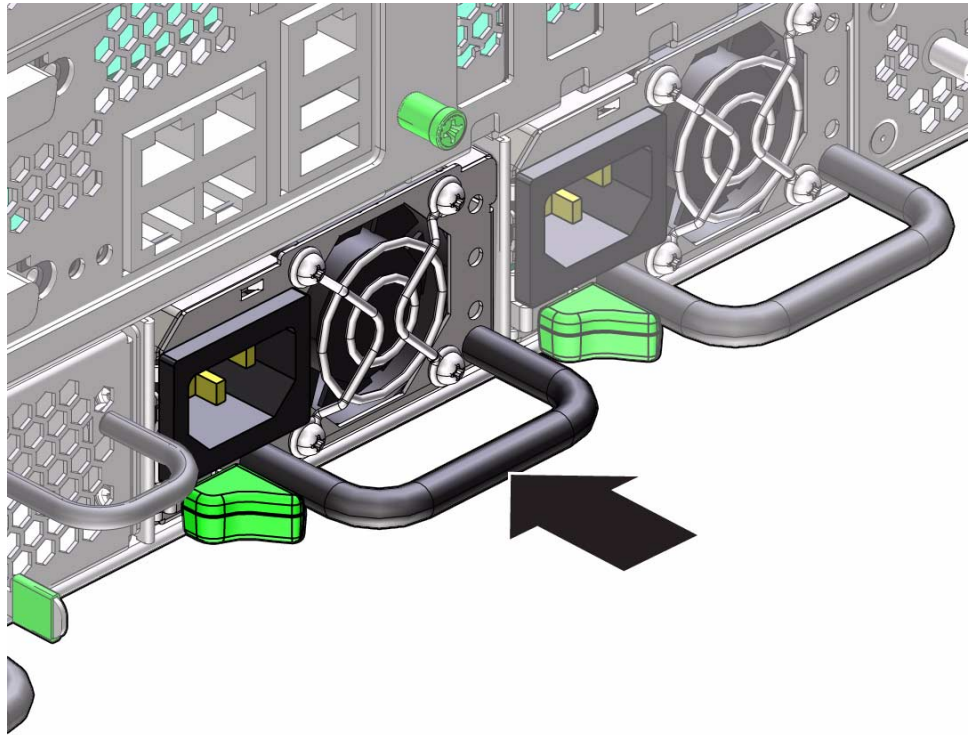
- If you are replacing a power supply, remove the faulty or obsolete power supply first, then return to this procedure, [Step 2](#). See [“Remove a Power Supply” on page 129](#).
- If you are installing a new or an additional power supply, see [“Preparing for Service” on page 59](#).
- If you are installing the power supply as part of another component’s removal or installation procedure, go to [Step 2](#).

2. Align the power supply to the location where it installs into the chassis.

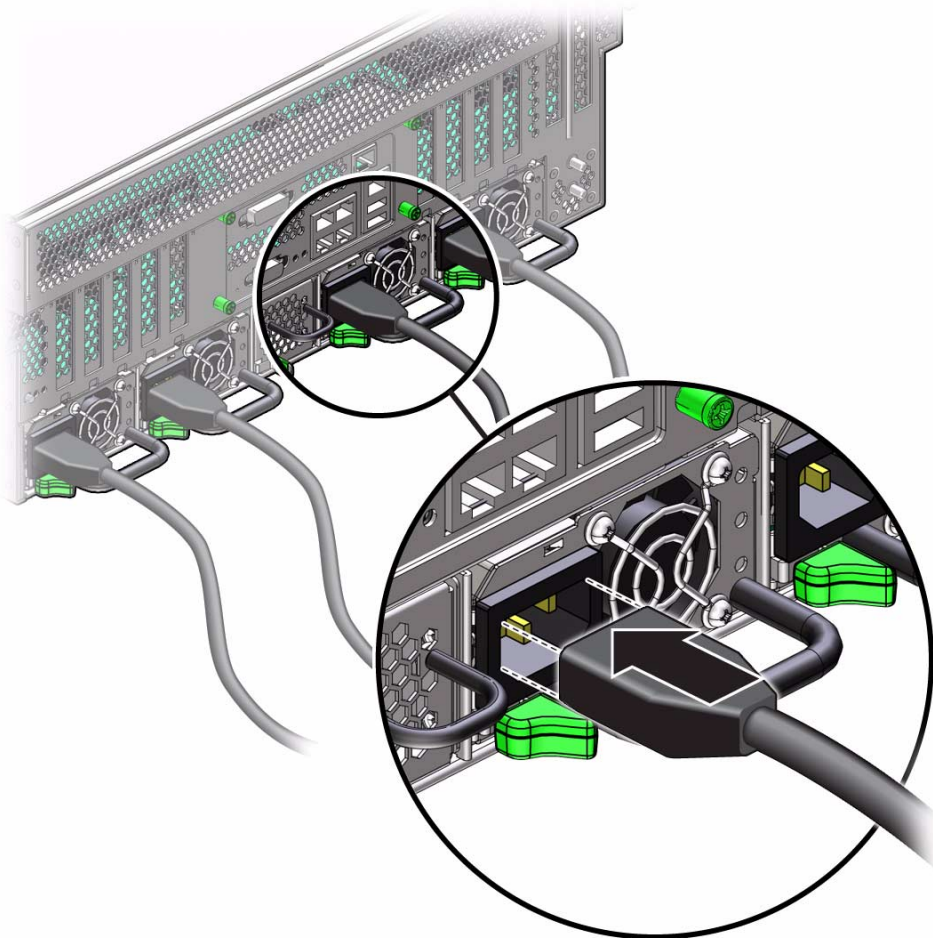
The power distribution board connector is toward the chassis, and the release tab is on the left.



3. Slide the power supply into the chassis until the power supply seats and the release tab clicks.



4. Attach the power cord.



5. Consider your next steps:

- If you installed the power supply as part of a replacement operation, go to [Step 6](#).
- If you installed the power supply as part of another component's removal or installation procedure, return to that procedure. See ["Component Service Task Reference" on page 65](#) for assistance.

6. Finish the installation procedure.

See:

- ["Returning the Server to Operation" on page 285](#)
- ["Verify a Power Supply" on page 137](#)

Related Information

- [“Power Supply LEDs” on page 126](#)
- [“Locate a Faulty Power Supply” on page 126](#)
- [“Remove a Power Supply” on page 129](#)
- [“Verify a Power Supply” on page 137](#)
- [“Preparing for Service” on page 59](#)
- [“Returning the Server to Operation” on page 285](#)

▼ Verify a Power Supply

After you install a power supply, you can verify its functionality.

1. Reset the power supply.

```
-> set /SYS/PSx clear_fault_action=true  
Are you sure you want to clear /SYS/PS0 (y/n)? y  
Set 'clear_fault_action' to 'true'  
  
->
```

where x is 0 (left power supply) to 3 (right power supply).

2. Verify that the power supply is no longer considered faulty, then return to this procedure.

See [“Locate a Faulty Power Supply” on page 126](#).

3. Within the Oracle ILOM interface, verify the voltage output.

```
-> show /SYS/PSx/V_OUT value  
/SYS/PS0/V_OUT  
Properties:  
value = 12.000 Volts  
  
->
```

where x is 0 (left power supply) to 3 (right power supply).

Related Information

- [“Power Supply LEDs” on page 126](#)
- [“Locate a Faulty Power Supply” on page 126](#)

- “Remove a Power Supply” on page 129
- “Install a Power Supply” on page 133

Servicing the Rear Fan Module

The fan module is comprised of redundant fan elements. This redundancy enables the fan module to continuously supply air flow, even if one fan element fails. The rear fan module is located at the rear of the chassis, between power supplies 1 and 2. See [“Power Supply, Hard Drive, and Rear Fan Module Locations” on page 2](#). The rear fan module draws air through the chassis from the front to the rear.



Description	Links
Replace the faulty rear fan module.	“Determine if the Rear Fan Module Is Faulty” on page 140 “Rear Fan Module LEDs” on page 140 “Remove the Rear Fan Module” on page 143 “Install the Rear Fan Module” on page 146 “Verify the Rear Fan Module” on page 149
Remove the rear fan module as part of another component’s service operation.	“Remove the Rear Fan Module” on page 143
Install the rear fan module as part of another component’s service operation.	“Install the Rear Fan Module” on page 146
Determine whether the rear fan module is faulty.	“Rear Fan Module LEDs” on page 140 “Determine if the Rear Fan Module Is Faulty” on page 140 “Detecting and Managing Faults” on page 9

Related Information

- [“Identifying Components” on page 1](#)
- [“Component Service Task Reference” on page 65](#)
- [“Servicing the Power Distribution Board” on page 259](#)
- [“Detecting and Managing Faults” on page 9](#)
- [“Preparing for Service” on page 59](#)
- [“Returning the Server to Operation” on page 285](#)

Rear Fan Module LEDs

The status of the rear fan module is represented by two LEDs. The LEDs are located above the rear fan module.

Icon	Location	Name	Color	State and Meaning
	Left	Service Required	Amber	On – Normal fault detected. Off – No faults detected. Flashing – No function.
	Right	OK	Green	On – Fan is functional without fault. Off – Fan is off or initializing. Flashing – No function.

Related Information

- [“Rear Panel LEDs” on page 16](#)
- [“Determine if the Rear Fan Module Is Faulty” on page 140](#)
- [“Remove the Rear Fan Module” on page 143](#)
- [“Install the Rear Fan Module” on page 146](#)
- [“Verify the Rear Fan Module” on page 149](#)

▼ Determine if the Rear Fan Module Is Faulty

You must determine if the fan module is faulty before you replace it.

1. **Check to see if any System Service Required LEDs are lit or flashing.**
See [“Interpreting Diagnostic LEDs” on page 14.](#)
2. **Visually inspect the fan module to see if any of its status LEDs are lit or flashing.**
See [“Rear Fan Module LEDs” on page 140.](#)

3. If the fan module is faulty, replace it.

See [“Remove the Rear Fan Module” on page 143](#).

4. Within the Oracle ILOM interface, type the `show faulty` command to verify that the fan module is faulty.

If the fan module is faulty, you will see `/SYS/FMx` under the Value heading. For example:

```
-> show faulty
```

Target	Property	Value
/SP/faultmgmt/0	fru	/SYS/FM4
.		
.		
.		

```
->
```

If the fan module is faulty, replace it. See [“Remove the Rear Fan Module” on page 143](#).

If a FRU value different from `/SYS/FM4` is displayed, see [“Component Service Task Reference” on page 65](#) to identify which component is faulty.

5. Start the Oracle ILOM `faultmgmt shell`.

```
-> start /SP/faultmgmt/shell
```

```
Are you sure you want to start /SP/faultmgmt/shell (y/n)? y
```

```
faultmgmtsp>
```

6. Identify the faulty component.

For example:

```
faultmgmtsp> fmadm faulty
-----
Time                UUID                                msgid              Severity
-----
2010-08-11/14:54:23 59654226-50d3-cdc6-9f09-e591f39792ca SPT-8000-LC      Critical

Fault class : fault.chassis.power.volt-fail

Description : A Power Supply voltage level has exceeded acceptable limits.
.
.
.
faultmgmtsp>
```

Check the `Fault class` and `Description` fields for more information.

If the fan module is faulty, replace it. See [“Remove the Rear Fan Module” on page 143](#).

7. Exit the Oracle ILOM `faultmgmt` shell.

```
faultmgmtsp> exit
->
```

8. Within the Oracle ILOM interface, verify the fan module speeds.

```
-> show /SYS/FM4/Fy/TACH value
/SYS/FM4/F0/TACH
Properties:
value = 5000.000 RPM
->
```

where *y* is the fan element, 0 (primary) or 1 (secondary).

If the fan module is faulty, replace it. See [“Remove the Rear Fan Module” on page 143](#).

9. If you are unable to identify the faulty fan module, seek further information.

See [“Detecting and Managing Faults” on page 9](#).

Related Information

- [“Rear Fan Module LEDs” on page 140](#)
- [“Remove the Rear Fan Module” on page 143](#)

- [“Install the Rear Fan Module” on page 146](#)
- [“Verify the Rear Fan Module” on page 149](#)
- [“Detecting and Managing Faults” on page 9](#)

▼ Remove the Rear Fan Module

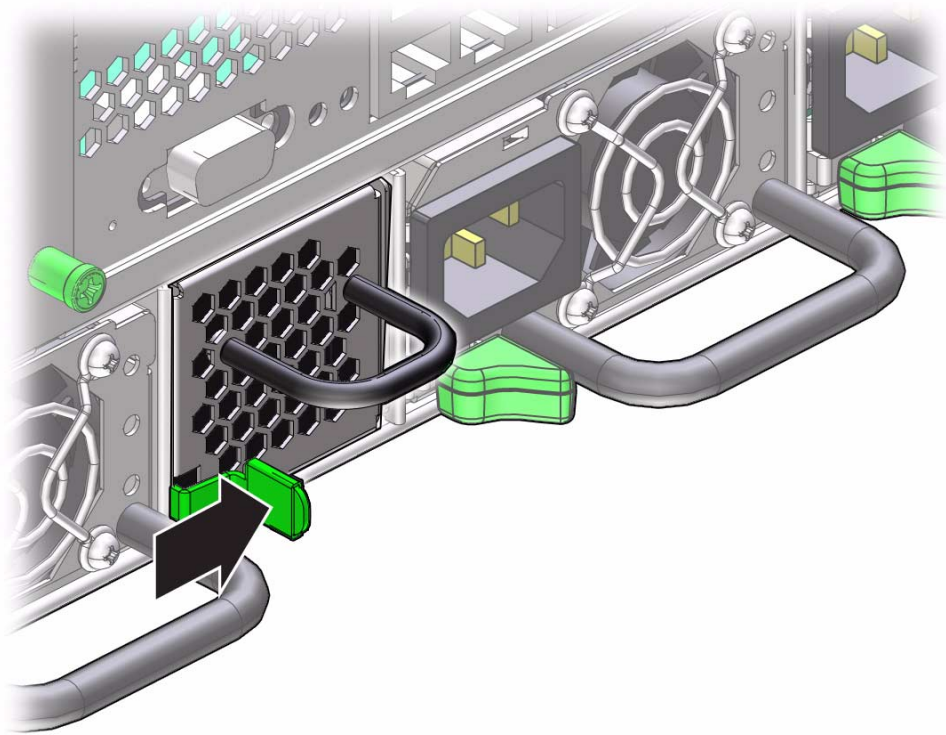
Removing a fan module is a hot-plug operation. You do not need to power off the server before you remove the fan module.

Note – For proper thermal management, there must always be at least three fan modules operating.

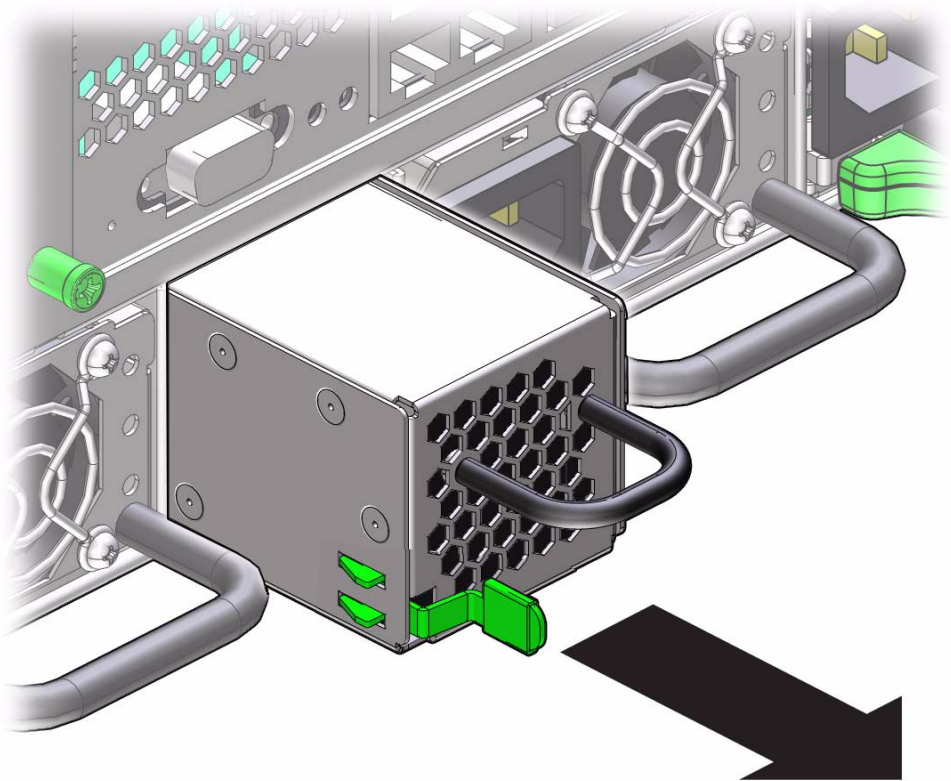
1. Consider your first step:

- If you have not prepared for service, do so now. See [“Preparing for Service” on page 59](#).
- If you are removing the fan module as part of another component’s removal or installation procedure, go to [Step 2](#).

2. Grasp the handle of the fan module and move the lever to the right (pane 1).



3. Pull the fan module out from the chassis by the lever (pane 2).



4. Set the fan module aside.

5. Consider your next steps:

- If you removed the fan module as part of a replacement operation, install a new fan module. See [“Install the Rear Fan Module”](#) on page 146.
- If you removed the fan module as part of another component’s removal or installation procedure, return to that procedure. See [“Component Service Task Reference”](#) on page 65 for assistance.
- If you are not replacing the fan module, go to [Step 6](#).

6. Finish the removal procedure.

See [“Returning the Server to Operation”](#) on page 285.

Related Information

- [“Rear Fan Module LEDs”](#) on page 140
- [“Determine if the Rear Fan Module Is Faulty”](#) on page 140
- [“Install the Rear Fan Module”](#) on page 146

- [“Verify the Rear Fan Module” on page 149](#)
- [“Preparing for Service” on page 59](#)
- [“Returning the Server to Operation” on page 285](#)

▼ Install the Rear Fan Module

Installing a fan module is a hot-plug operation. You do not need to power off the server before installing the fan module.

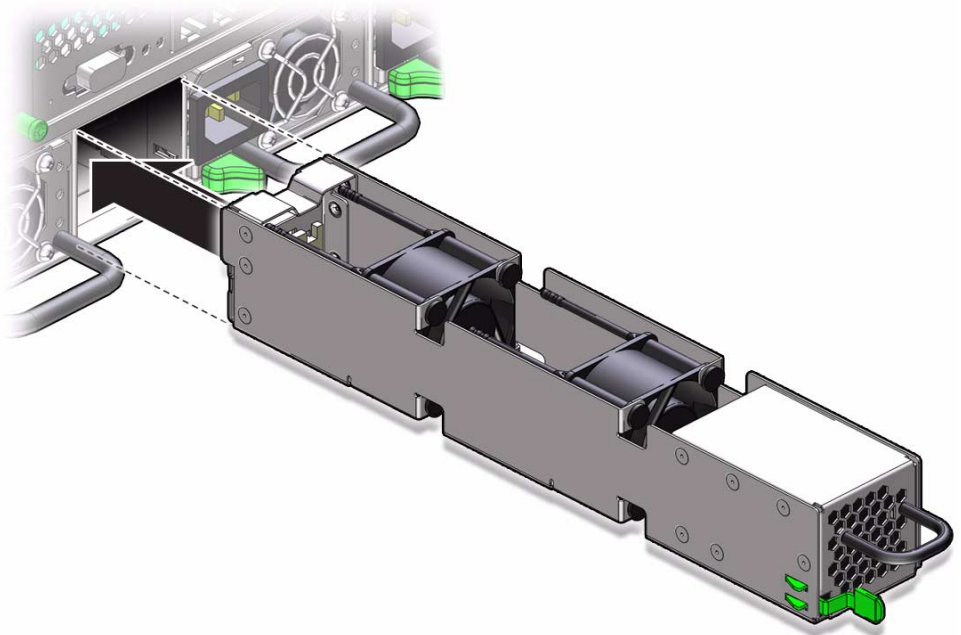
Note – The fan module automatically spins up on insertion.

1. Consider your first steps:

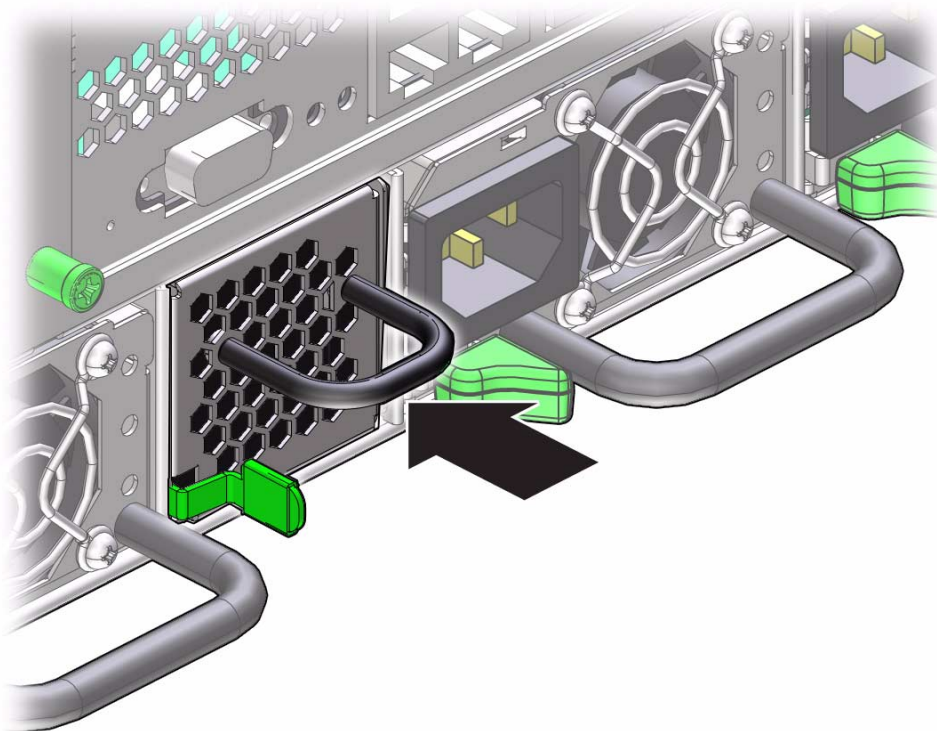
- If you are replacing a fan module, remove the faulty or obsolete fan module first, then return to this procedure, [Step 2](#). See [“Remove the Rear Fan Module” on page 143](#).
- If you are installing a new or additional fan module, see these topics in order:
 - [“Remove the Air Filter” on page 75](#)
 - [“Preparing for Service” on page 59](#).
- If you are installing the fan module as part of another component’s removal or installation procedure, go to [Step 2](#).

2. Align the fan module to the location where it installs into the chassis.

The lever is on the bottom rear of the fan module, the connector is on the top front.



3. Slide the fan module into the chassis until the lever clicks, securing the fan module in place.



4. Consider your next steps:

- If you installed the fan module as part of a replacement operation, go to [Step 5](#).
- If you installed the fan module as part of another component's removal or installation procedure, return to that procedure. See ["Component Service Task Reference" on page 65](#) for assistance.

5. Install the filter tray.

See ["Install the Air Filter" on page 80](#).

6. Finish the installation procedure.

See:

- ["Returning the Server to Operation" on page 285](#)
- ["Verify the Rear Fan Module" on page 149](#)

Related Information

- ["Rear Fan Module LEDs" on page 140](#)
- ["Determine if the Rear Fan Module Is Faulty" on page 140](#)
- ["Remove the Rear Fan Module" on page 143](#)

- [“Verify the Rear Fan Module” on page 149](#)
- [“Preparing for Service” on page 59](#)
- [“Returning the Server to Operation” on page 285](#)

▼ Verify the Rear Fan Module

After you install a fan module, you can verify its functionality.

1. Reset the fan module.

```
-> set /SYS/FM4 clear_fault_action=true  
Are you sure you want to clear /SYS/FM4 (y/n)? y  
Set 'clear_fault_action' to 'true'  
  
->
```

2. Verify that the fan module is no longer considered faulty, then return to this procedure.

See [“Determine if the Rear Fan Module Is Faulty” on page 140](#).

3. Verify the fan module speeds.

```
-> show /SYS/FM4/Fy/TACH value  
/SYS/FM4/F0/TACH  
Properties:  
value = 5000.000 RPM  
  
->
```

where *y* is the fan element, 0 (primary) or 1 (secondary).

Related Information

- [“Rear Fan Module LEDs” on page 140](#)
- [“Determine if the Rear Fan Module Is Faulty” on page 140](#)
- [“Remove the Rear Fan Module” on page 143](#)
- [“Install the Rear Fan Module” on page 146](#)

Servicing Memory Risers

Memory risers are a receptacle for DIMMs. The memory risers are located symmetrically on both the left and right sides of the CPU. See [“Motherboard, PCIe2 Cards, and SP Locations”](#) on page 3.

Description	Links
Replace a faulty memory riser.	“Memory Riser Configuration” on page 152 “Locate a Faulty Memory Riser” on page 154 “Memory Riser LEDs” on page 152 “Remove a Memory Riser” on page 156 “Install a Memory Riser” on page 158 “Verify a Memory Riser” on page 160
Remove the memory risers as part of another component’s service operation.	“Remove a Memory Riser” on page 156
Install the memory risers as part of another component’s service operation.	“Install a Memory Riser” on page 158
Add an additional memory riser.	“Memory Riser Configuration” on page 152 “Install a Memory Riser” on page 158 “Verify a Memory Riser” on page 160
Remove an existing memory riser.	“Remove a Memory Riser” on page 156
Identify a faulty memory riser.	“Memory Riser LEDs” on page 152 “Locate a Faulty Memory Riser” on page 154 “Detecting and Managing Faults” on page 9

Related Information

- [“Identifying Components”](#) on page 1
- [“Component Service Task Reference”](#) on page 65
- [“Servicing the Subchassis”](#) on page 215
- [“Detecting and Managing Faults”](#) on page 9
- [“Preparing for Service”](#) on page 59
- [“Returning the Server to Operation”](#) on page 285

Memory Riser Configuration

You must follow these rules when configuring memory risers into the server.

- All four memory risers must be configured identically.
- All memory risers must be of the same Sun or Oracle part number.

Use this table as a guide when facing the front of the system chassis.

Memory Riser Location	Oracle ILOM Target*
Far left	/SYS/MB/CMP0/MR0
Left of center	/SYS/MB/CMP0/MR1
Right of center	/SYS/MB/CMP1/MR0
Far right	/SYS/MB/CMP1/MR1

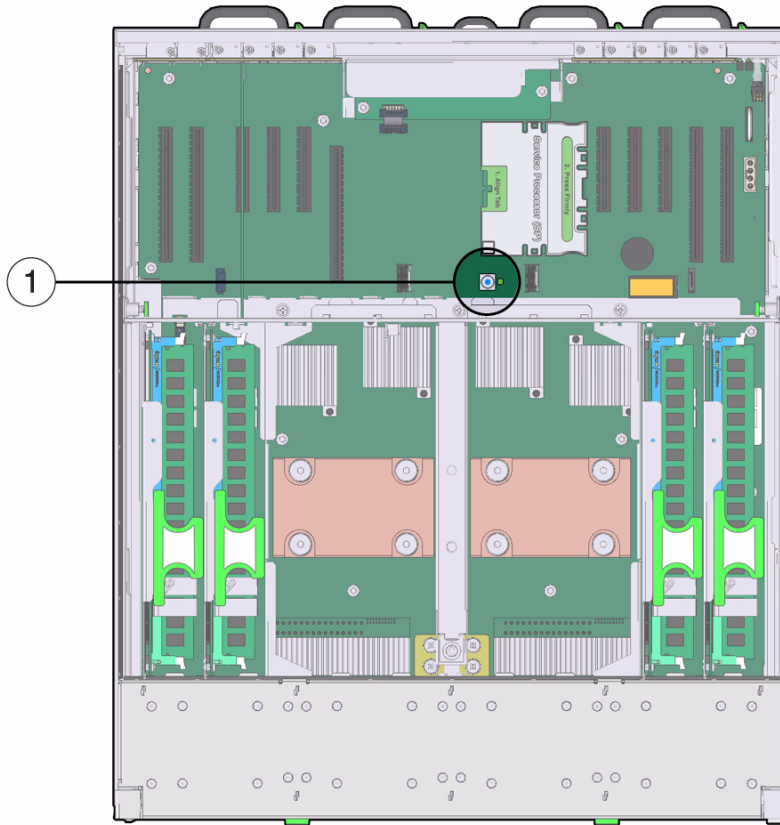
* The memory riser target is also the prefix for the DIMM target.

Related Information

- [“DIMM Configuration” on page 164](#)
- [“Memory Riser LEDs” on page 152](#)
- [“Locate a Faulty Memory Riser” on page 154](#)
- [“Remove a Memory Riser” on page 156](#)
- [“Install a Memory Riser” on page 158](#)
- [“Verify a Memory Riser” on page 160](#)

Memory Riser LEDs

The motherboard has a feature that enables you to locate a faulty memory riser, even when power has been removed from the system. A SuperCapacitor provides sufficient current to keep the faulty memory riser locating circuit active for several minutes after the power cords have been disconnected. If you see the system Fault Remind LED illuminated, the feature is still available. By pressing the system Fault Remind button adjacent to the lit LED, any faulty memory riser are identified by their respective LEDs lighting.



No.	Name	Links
1	System Fault Remind button	“Memory Riser LEDs” on page 152 “Locate a Faulty DIMM (LEDs)” on page 169

The memory riser Fault LEDs are located on the top of each memory riser. Each memory raiser has a faulty DIMM Remind button to identify any onboard faulty DIMMs. See [“DIMM LEDs” on page 168](#).

Related Information

- [“Memory Riser Configuration” on page 152](#)
- [“Locate a Faulty Memory Riser” on page 154](#)
- [“Remove a Memory Riser” on page 156](#)
- [“Install a Memory Riser” on page 158](#)

- [“Verify a Memory Riser” on page 160](#)

▼ Locate a Faulty Memory Riser

You must determine which memory riser is faulty before you replace it.

1. **Check to see if any System Service Required LEDs are lit or flashing.**

See [“Interpreting Diagnostic LEDs” on page 14](#).

2. **Visually inspect the memory riser to see if any of its status LEDs are lit or flashing.**

See [“Memory Riser LEDs” on page 152](#).

If the memory riser is faulty, replace it. See [“Remove a Memory Riser” on page 156](#).

3. **Within the Oracle ILOM interface, type the `show faulty` command to verify that the memory riser is faulty.**

If the memory riser is faulty, you will see `/SYS/MB/CMPx/MRy` under the `Value` heading where:

- `x` is 0 or 1.
- `y` is 0 or 1.

For example:

```
-> show faulty
Target          | Property          | Value
-----+-----+-----
/SP/faultmgmt/0 | fru               | /SYS/MB/CMP0/MR1
.
.
.
->
```

If the memory riser is faulty, replace it. See [“Remove a Memory Riser” on page 156](#).

If a FRU value different from `/SYS/MB/CMPx/MRy` is displayed, see [“Component Service Task Reference” on page 65](#) to identify which component is faulty.

4. Start the Oracle ILOM faultmgmt shell.

```
-> start /SP/faultmgmt/shell  
Are you sure you want to start /SP/faultmgmt/shell (y/n)? y  
  
faultmgmtsp>
```

5. Identify the faulty component.

For example:

```
faultmgmtsp> fmadm faulty  
-----  
Time                UUID                msgid                Severity  
-----  
2010-08-11/14:54:23 59654226-50d3-cdc6-9f09-e591f39792ca SPT-8000-LC    Critical  
  
Fault class : fault.chassis.power.volt-fail  
  
Description : A Power Supply voltage level has exceeded acceptable limits.  
.  
.  
.  
faultmgmtsp>
```

Check the `Fault class` and `Description` fields for more information.

If the memory riser is faulty, replace it. See [“Remove a Memory Riser” on page 156](#).

6. Exit the Oracle ILOM faultmgmt shell.

```
faultmgmtsp> exit  
->
```

7. If you are unable to identify the faulty memory riser, seek further information.

See [“Detecting and Managing Faults” on page 9](#).

Related Information

- [“Memory Riser Configuration” on page 152](#)
- [“Memory Riser LEDs” on page 152](#)
- [“Remove a Memory Riser” on page 156](#)
- [“Install a Memory Riser” on page 158](#)
- [“Verify a Memory Riser” on page 160](#)
- [“Detecting and Managing Faults” on page 9](#)

▼ Remove a Memory Riser

Removing a memory riser is a cold-service operation. You must power off the server before you remove the memory riser.

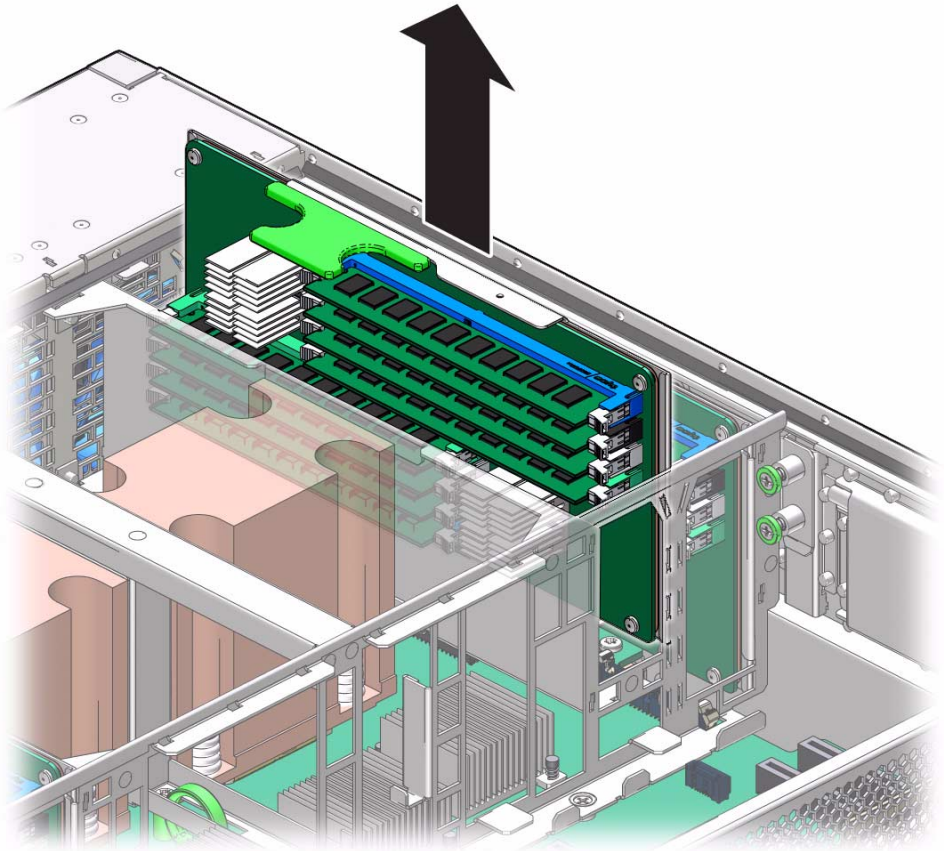
1. Determine which memory riser to remove.

See [“Locate a Faulty Memory Riser” on page 154](#).

2. Consider your next step:

- If you have not prepared for service, do so now. See [“Preparing for Service” on page 59](#).
- If you are removing the memory riser as part of another component’s removal or installation procedure, go to [Step 3](#).

3. Grasp the handle of the memory riser and lift it straight up and out of the chassis.



4. Set the memory riser aside.
5. Repeat from [Step 3](#) for any additional memory risers to be removed.
6. Consider your next steps:
 - If you removed the memory riser as part of a replacement operation, install a new memory riser. See [“Install a Memory Riser”](#) on page 158.
 - If you removed the memory riser as part of another component’s removal or installation procedure, return to that procedure. See [“Component Service Task Reference”](#) on page 65 for assistance.
 - If you are not replacing the memory riser, go to [Step 7](#).
7. Finish the removal procedure.

See [“Returning the Server to Operation”](#) on page 285.

Related Information

- “Memory Riser Configuration” on page 152
- “Memory Riser LEDs” on page 152
- “Locate a Faulty Memory Riser” on page 154
- “Install a Memory Riser” on page 158
- “Verify a Memory Riser” on page 160
- “Preparing for Service” on page 59
- “Returning the Server to Operation” on page 285

▼ Install a Memory Riser

Installing a memory riser is a cold-service operation. You must power off the server before installing a memory riser.

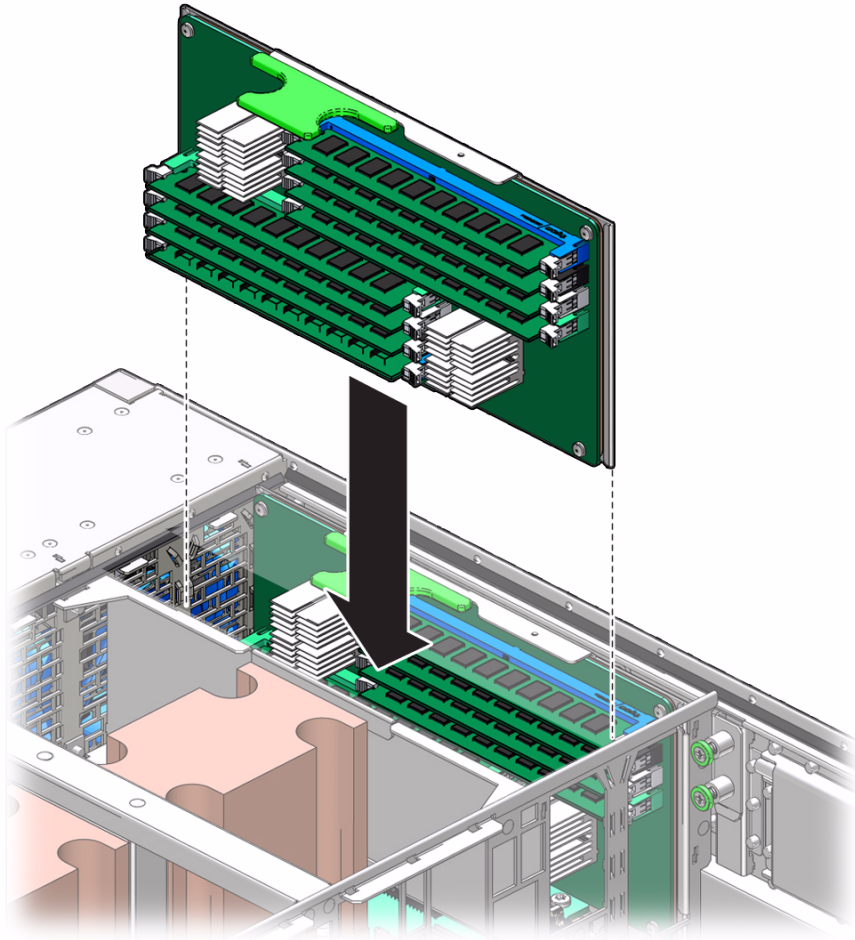
1. Consider your first steps:

- If you are replacing a memory riser, remove the faulty or obsolete memory riser first, then return to this procedure, [Step 2](#).
See “[Remove a Memory Riser](#)” on page 156.
- If you are installing a new or an additional memory riser, see “[Preparing for Service](#)” on page 59.
- If you are installing the memory riser as part of another component’s removal or installation procedure, go to [Step 2](#).

2. Align the memory riser to the location where it installs into the chassis.

Ensure that the notch in the memory riser lines up with the key in the slot.

3. Lower the memory riser into the slot, pressing firmly so that it is seated into the motherboard.



4. Repeat from [Step 2](#) for any additional memory risers to be installed.
5. Consider your next steps:
 - If you installed the memory riser as part of a replacement operation, go to [Step 6](#).
 - If you installed the memory riser as part of another component's removal or installation procedure, return to that procedure. See [“Component Service Task Reference” on page 65](#) for assistance.
 - If you have installed a new memory riser, go to [Step 6](#).
6. Finish the installation procedure.

See:

 - [“Returning the Server to Operation” on page 285](#)

- “Verify a Memory Riser” on page 160

Related Information

- “Memory Riser Configuration” on page 152
- “Memory Riser LEDs” on page 152
- “Locate a Faulty Memory Riser” on page 154
- “Remove a Memory Riser” on page 156
- “Verify a Memory Riser” on page 160
- “Preparing for Service” on page 59
- “Returning the Server to Operation” on page 285

▼ Verify a Memory Riser

After you install a memory riser, you can verify its functionality.

1. Reset the memory riser.

```
-> set /SYS/MB/CMPx/MRy clear_fault_action=true
Are you sure you want to clear /SYS/MB/CMPx/MRy (y/n)? y
Set 'clear_fault_action' to 'true'

->
```

where:

- x is 0 or 1.
- y is 0 or 1.

2. Consider your next steps:

- If you installed a new memory riser as part of a replacement operation, verify that the memory riser is no longer considered faulty, then return to this procedure. See “Locate a Faulty Memory Riser” on page 154.
- If you installed a new memory riser to increase functionality, go to [Step 3](#).

3. Verify that the memory riser can provide the DIMM temperature.

```
-> show /SYS/MB/CMPx/MRy/BOB1/CH1/D0/T_AMB value  
/SYS/MB/CMPx/MRy/BOB1/CH1/D0/T_AMB  
Properties:  
value = 32.000 degree C  
->
```

where:

- x is 0 or 1.
- y is 0 or 1.

Related Information

- [“Memory Riser Configuration” on page 152](#)
- [“Memory Riser LEDs” on page 152](#)
- [“Locate a Faulty Memory Riser” on page 154](#)
- [“Remove a Memory Riser” on page 156](#)
- [“Install a Memory Riser” on page 158](#)

Servicing DIMMs

DIMMs are random access memory devices. The DIMMs are located symmetrically on the memory risers. See [“Motherboard, PCIe2 Cards, and SP Locations”](#) on page 3.

Description	Links
Replace a faulty DIMM.	“DIMM Configuration” on page 164 “DIMM IDs” on page 166 “DIMM LEDs” on page 168 “Locate a Faulty DIMM (LEDs)” on page 169 “Locate a Faulty DIMM (Oracle ILOM)” on page 169 “Remove a DIMM” on page 172 “Install a DIMM” on page 173 “Verify a DIMM” on page 175
Remove the DIMMs as part of another component’s service operation.	“Remove a DIMM” on page 172
Install the DIMMs as part of another component’s service operation.	“Install a DIMM” on page 173
Add additional DIMMs.	“DIMM Configuration” on page 164 “Install a DIMM” on page 173 “Verify a DIMM” on page 175
Remove existing DIMMs.	“Remove a DIMM” on page 172
Identify a faulty DIMM.	“DIMM IDs” on page 166 “DIMM LEDs” on page 168 “Locate a Faulty DIMM (LEDs)” on page 169 “Locate a Faulty DIMM (Oracle ILOM)” on page 169 “Detecting and Managing Faults” on page 9

Related Information

- [“Identifying Components”](#) on page 1
- [“Component Service Task Reference”](#) on page 65

- “Detecting and Managing Faults” on page 9
- “Preparing for Service” on page 59
- “Returning the Server to Operation” on page 285

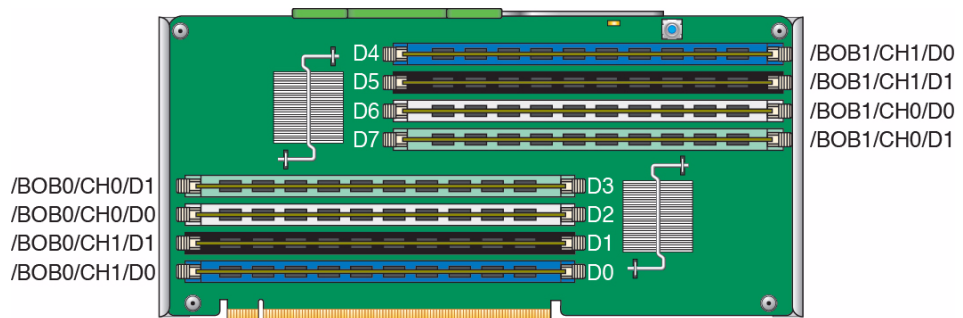
DIMM Configuration

You must follow these rules when configuring DIMMs into the memory risers.

- Only 4 GB, 8 GB and 16 GB DIMM capacities are supported.
- All DIMMs must be of the same Sun or Oracle part number.
- All DIMMs must be of the same capacity and rank.
 - 16 GB dual-rank (2Rx4) DIMMs can not be mixed with the 16 GB quad-rank (4Rx4) DIMMs.
 - The 16 GB dual-rank (2Rx4) DIMMs require system firmware version 8.2.1.b or newer.
- All memory risers must be identically populated.
- For half configuration, populate the two blue slots and two white slots on each memory riser.
- For a full configuration, populate all of the slots on each memory riser.

Use this table and illustration as a guide.

Configuration	Slot Color	Slot on Riser Labels	Oracle ILOM Slot on Riser Target	Memory Riser Capacity With 4 GB DIMMs	Memory Riser Capacity With 8 GB DIMMs	Memory Riser Capacity With 16 GB DIMMs
Half	Blue	D0	BOB0/CH1/D0	4 x 4 GB = 16 GB	4 x 8 GB = 32 GB	4 x 16 GB = 64 GB
		D4	BOB1/CH1/D0			
	White	D2	BOB0/CH0/D0			
		D6	BOB1/CH0/D0			
Full	Blue	D0	BOB0/CH1/D0	8 x 4 GB = 32 GB	8 x 8 GB = 64 GB	8 x 16 GB = 128 GB
		D4	BOB1/CH1/D0			
	White	D2	BOB0/CH0/D0			
		D6	BOB1/CH0/D0			
	Black	D1	BOB0/CH1/D1			
		D5	BOB1/CH1/D1			
	Green	D3	BOB0/CH0/D1			
		D7	BOB1/CH0/D1			
System capacity full				4 x 32 = 128 GB	4 x 64 = 256 GB	4 x 128 = 512 GB



The Oracle ILOM target for individual DIMMs is of this format:

memory_riser_target / *slot_on_riser_target*

where:

- *memory_riser_target* is of the form /SYS/MB/CMP*v*/MR*w*.
- *slot_on_riser_target* is of the form /BOB*x*/CH*y*/D*z*.
- *v*, *w*, *x*, *y*, and *z* can each be either 0 or 1.

For example, the complete Oracle ILOM target for the DIMM in the lower blue slot (BOB0/CH1/D0) in the memory riser on the far right of the chassis (/SYS/MB/CMP1/MR1), is /SYS/MB/CMP1/MR1/BOB0/CH1/D0.

Related Information

- [“Memory Riser Configuration” on page 152](#)
- [“DIMM IDs” on page 166](#)
- [“DIMM LEDs” on page 168](#)
- [“Locate a Faulty DIMM \(Oracle ILOM\)” on page 169](#)
- [“Remove a DIMM” on page 172](#)
- [“Install a DIMM” on page 173](#)
- [“Verify a DIMM” on page 175](#)

DIMM IDs

DIMMs can be identified differently by different programs, reports, and tools.

Node Name	System NAC (Oracle ILOM Target)	Memory Riser [Dx]	Error Log DIMM_ID
CMP0/BOB2/CH0/D1	/SYS/MB/CMP0/MR0/BOB0/CH0/D1	[D3]	9
CMP0/BOB2/CH0/D0	/SYS/MB/CMP0/MR0/BOB0/CH0/D0	[D2]	8
CMP0/BOB2/CH1/D1	/SYS/MB/CMP0/MR0/BOB0/CH1/D1	[D1]	11
CMP0/BOB2/CH1/D0	/SYS/MB/CMP0/MR0/BOB0/CH1/D0	[D0]	10
CMP0/BOB0/CH0/D1	/SYS/MB/CMP0/MR0/BOB1/CH0/D1	[D7]	1
CMP0/BOB0/CH0/D0	/SYS/MB/CMP0/MR0/BOB1/CH0/D0	[D6]	0
CMP0/BOB0/CH1/D1	/SYS/MB/CMP0/MR0/BOB1/CH1/D1	[D5]	3
CMP0/BOB0/CH1/D0	/SYS/MB/CMP0/MR0/BOB1/CH1/D0	[D4]	2
CMP0/BOB3/CH0/D1	/SYS/MB/CMP0/MR1/BOB0/CH0/D1	[D3]	13
CMP0/BOB3/CH0/D0	/SYS/MB/CMP0/MR1/BOB0/CH0/D0	[D2]	12
CMP0/BOB3/CH1/D1	/SYS/MB/CMP0/MR1/BOB0/CH1/D1	[D1]	15
CMP0/BOB3/CH1/D0	/SYS/MB/CMP0/MR1/BOB0/CH1/D0	[D0]	14
CMP0/BOB1/CH0/D1	/SYS/MB/CMP0/MR1/BOB1/CH0/D1	[D7]	5
CMP0/BOB1/CH0/D0	/SYS/MB/CMP0/MR1/BOB1/CH0/D0	[D6]	4
CMP0/BOB1/CH1/D1	/SYS/MB/CMP0/MR1/BOB1/CH1/D1	[D5]	7
CMP0/BOB1/CH1/D0	/SYS/MB/CMP0/MR1/BOB1/CH1/D0	[D4]	6

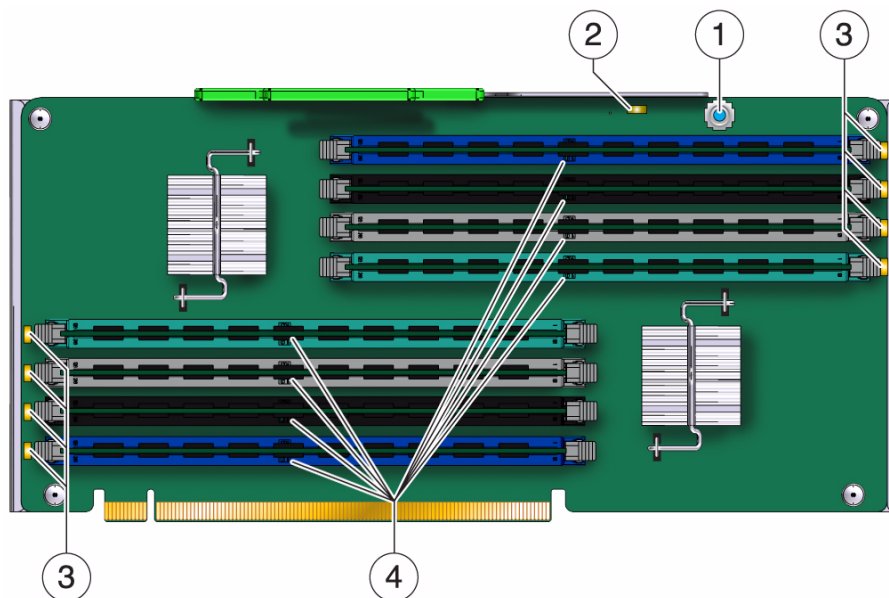
Node Name	System NAC (Oracle ILOM Target)	Memory Riser [Dx]	Error Log DIMM_ID
CMP1/BOB0/CH0/D1	/SYS/MB/CMP1/MR0/BOB0/CH0/D1	[D3]	17
CMP1/BOB0/CH0/D0	/SYS/MB/CMP1/MR0/BOB0/CH0/D0	[D2]	16
CMP1/BOB0/CH1/D1	/SYS/MB/CMP1/MR0/BOB0/CH1/D1	[D1]	19
CMP1/BOB0/CH1/D0	/SYS/MB/CMP1/MR0/BOB0/CH1/D0	[D0]	18
CMP1/BOB2/CH0/D1	/SYS/MB/CMP1/MR0/BOB1/CH0/D1	[D7]	25
CMP1/BOB2/CH0/D0	/SYS/MB/CMP1/MR0/BOB1/CH0/D0	[D6]	24
CMP1/BOB2/CH1/D1	/SYS/MB/CMP1/MR0/BOB1/CH1/D1	[D5]	27
CMP1/BOB2/CH1/D0	/SYS/MB/CMP1/MR0/BOB1/CH1/D0	[D4]	26
CMP1/BOB1/CH0/D1	/SYS/MB/CMP0/MR1/BOB0/CH0/D1	[D3]	21
CMP1/BOB1/CH0/D0	/SYS/MB/CMP0/MR1/BOB0/CH0/D0	[D2]	20
CMP1/BOB1/CH1/D1	/SYS/MB/CMP1/MR1/BOB0/CH1/D1	[D1]	23
CMP1/BOB1/CH1/D0	/SYS/MB/CMP1/MR1/BOB0/CH1/D0	[D0]	22
CMP1/BOB3/CH0/D1	/SYS/MB/CMP1/MR1/BOB1/CH0/D1	[D7]	29
CMP1/BOB3/CH0/D0	/SYS/MB/CMP1/MR1/BOB1/CH0/D0	[D6]	28
CMP1/BOB3/CH1/D1	/SYS/MB/CMP1/MR1/BOB1/CH1/D1	[D5]	31
CMP1/BOB3/CH1/D0	/SYS/MB/CMP1/MR1/BOB1/CH1/D0	[D4]	30

Related Information

- [“Memory Riser Configuration” on page 152](#)
- [“DIMM Configuration” on page 164](#)
- [“DIMM LEDs” on page 168](#)
- [“Locate a Faulty DIMM \(Oracle ILOM\)” on page 169](#)
- [“Remove a DIMM” on page 172](#)

DIMM LEDs

Each memory riser has a Power LED, a Remind button, and DIMM Fault LEDs. Pressing the system Remind button on the motherboard illuminates the Power LED on a memory riser with a faulty DIMM. Pressing the memory riser Remind button illuminates the LED next to a faulty DIMM.



No.	LED	Color	Description
1	Memory riser Remind button	Blue	Push this button to identify the faulty or misconfigured DIMMs.
2	Memory riser Fault LED	Green Amber	Indicates that the riser is operating normally. Indicates that the riser has a fault.
3	DIMM Fault LED	Amber	Identifies a faulty or misconfigured DIMM.
4	DIMM keys		Notches that ensure the DIMMs are correctly oriented.

Related Information

- [“DIMM Configuration” on page 164](#)
- [“Locate a Faulty DIMM \(Oracle ILOM\)” on page 169](#)

- [“Remove a DIMM” on page 172](#)
- [“Install a DIMM” on page 173](#)
- [“Verify a DIMM” on page 175](#)

▼ Locate a Faulty DIMM (LEDs)

Each memory riser has a Remind button, a Power LED, and Fault LEDs adjacent to each DIMM. See [“DIMM LEDs” on page 168](#). This procedure describes how to identify a faulty DIMM using these buttons and LEDs.

1. **Press the system Remind button to identify the memory riser that contains the faulty DIMM.**
See [“Memory Riser LEDs” on page 152](#) for location of system Remind button.
2. **Lift and remove the faulty memory riser.**
See [“Remove a Memory Riser” on page 156](#).
3. **Press the Remind button on the memory riser to identify the faulty DIMM. An amber Fault LED will light next to the faulty DIMM.**

Note – The front and rear panel Service Required LEDs are also lit when the system detects a DIMM fault.

Related Information

- [“Locate a Faulty DIMM \(Oracle ILOM\)” on page 169](#)
- [“Remove a DIMM” on page 172](#)
- [“DIMM LEDs” on page 168](#)
- [“Memory Riser LEDs” on page 152](#)

▼ Locate a Faulty DIMM (Oracle ILOM)

You must determine which DIMM is faulty before you replace it.

1. **Check to see if any System Service Required LEDs are lit or flashing.**
See [“Interpreting Diagnostic LEDs” on page 14](#).

2. Within the Oracle ILOM interface, type the `show faulty` command to verify that the DIMM is faulty.

If the DIMM is faulty, you will see `/SYS/MB/CMPv/MRw/BOBx/CHy/Dz` under the Value heading where:

- v is 0 or 1.
- w is 0 or 1.
- x is 0 or 1.
- y is 0 or 1.
- z is 0 or 1.

For example:

-> show faulty		
Target	Property	Value
-----+-----+-----		
/SP/faultmgmt/0	fru	/SYS/MB/CMP1/MR1/BOB1/CH1/D0
.		
.		
.		
->		

If the DIMM is faulty, replace it. See [“Remove a DIMM” on page 172](#).

If a FRU value different from `/SYS/MB/CMPv/MRw/BOBx/CHy/Dz` is displayed, see [“Component Service Task Reference” on page 65](#) to identify which component is faulty.

3. Start the Oracle ILOM `faultmgmt shell`.

```
-> start /SP/faultmgmt/shell
Are you sure you want to start /SP/faultmgmt/shell (y/n)? y

faultmgmtsp>
```

4. Identify the faulty component.

For example:

```
faultmgmtsp> fmadm faulty
-----
Time                UUID                                msgid                Severity
-----
2010-08-11/14:54:23 59654226-50d3-cdc6-9f09-e591f39792ca SPT-8000-LC    Critical

Fault class : fault.chassis.power.volt-fail

Description : A Power Supply voltage level has exceeded acceptable limits.
.
.
.
faultmgmtsp>
```

Check the `Fault class` and `Description` fields for more information.

If the DIMM is faulty, replace it. See [“Remove a DIMM” on page 172](#).

5. Exit the Oracle ILOM `faultmgmt` shell.

```
faultmgmtsp> exit
->
```

6. Within the Oracle ILOM interface, verify that the DIMM temperature is normal.

```
-> show /SYS/MB/CMPv/MRw/BOBx/CHy/Dz/T_AMB value
/SYS/MB/CMPv/MRw/BOBx/CHy/Dz/T_AMB
Properties:
value = 32.000 degree C
->
```

where:

- v is 0 or 1.
- w is 0 or 1.
- x is 0 or 1.
- y is 0 or 1.
- z is 0 or 1.

If the DIMM is faulty, replace it. See [“Remove a DIMM” on page 172](#).

7. If you are unable to identify the faulty DIMM, seek further information.

See [“Detecting and Managing Faults” on page 9](#).

Related Information

- [“DIMM Configuration” on page 164](#)
- [“DIMM LEDs” on page 168](#)
- [“Remove a DIMM” on page 172](#)
- [“Install a DIMM” on page 173](#)
- [“Verify a DIMM” on page 175](#)
- [“Detecting and Managing Faults” on page 9](#)

▼ Remove a DIMM

Removing a DIMM is a cold-service operation. You must power off the server before you remove the DIMM.

1. Determine which DIMM to remove.

See [“Locate a Faulty DIMM \(Oracle ILOM\)” on page 169](#).

2. Consider your next step:

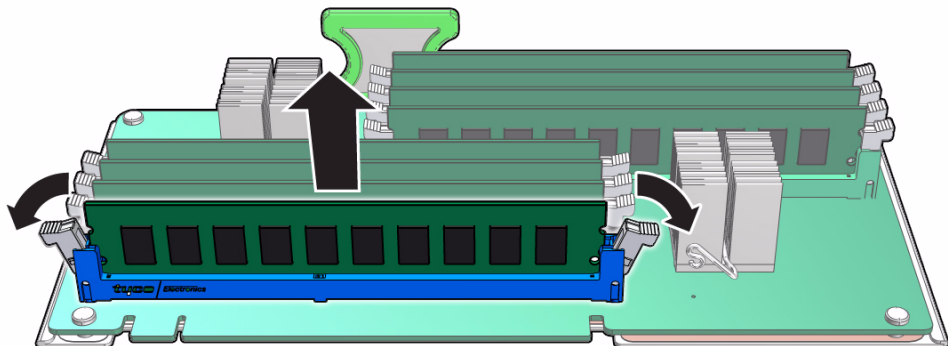
- If you have not prepared for service, do so now. See [“Preparing for Service” on page 59](#).
- If you are removing the DIMM as part of another component’s removal or installation procedure, go to [Step 3](#).

3. Remove the appropriate memory riser.

See [“Remove a DIMM” on page 172](#).

4. Locate the DIMM to remove.

5. Press down and out on the release levers at both ends of the DIMM slot.



6. Lift the DIMM up and out the memory riser.
7. Set the DIMM aside.
8. Repeat from [Step 5](#) for any additional DIMMs to be removed.
9. Consider your next steps:
 - If you removed the DIMM as part of a replacement operation, install a new DIMM. See [“Install a DIMM” on page 173](#).
 - If you removed the DIMM as part of another component’s removal or installation procedure, return to that procedure. See [“Component Service Task Reference” on page 65](#) for assistance.
 - If you are not replacing the DIMM, go to [Step 10](#).
10. Finish the removal procedure.

See [“Returning the Server to Operation” on page 285](#).

Related Information

- [“DIMM Configuration” on page 164](#)
- [“DIMM LEDs” on page 168](#)
- [“Locate a Faulty DIMM \(Oracle ILOM\)” on page 169](#)
- [“Install a DIMM” on page 173](#)
- [“Verify a DIMM” on page 175](#)
- [“Preparing for Service” on page 59](#)
- [“Returning the Server to Operation” on page 285](#)

▼ Install a DIMM

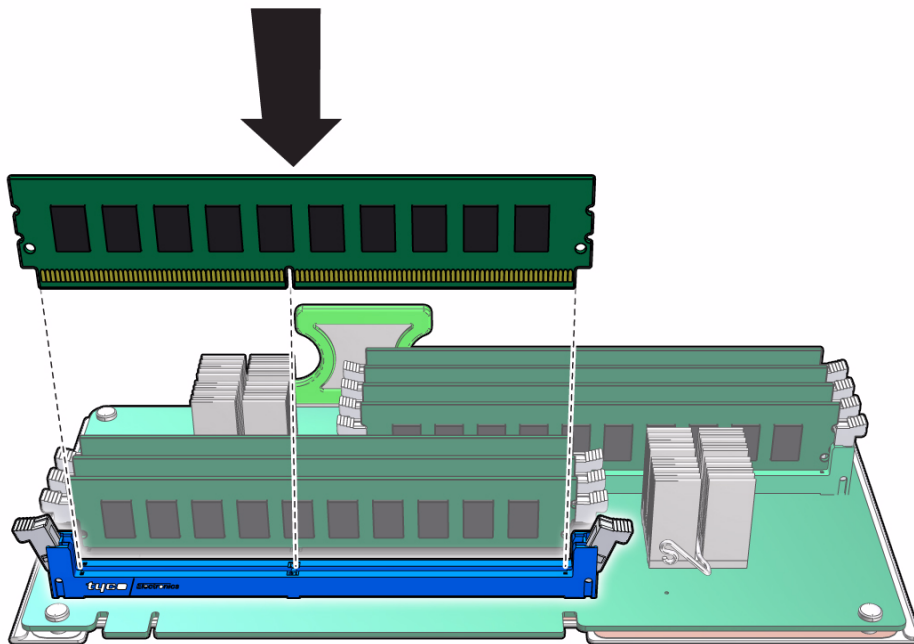
Installing a DIMM is a cold-service operation. You must power off the server before installing a DIMM.

1. Consider your first steps:
 - If you are replacing a DIMM, remove the faulty or obsolete DIMM first, then return to this procedure, [Step 2](#).

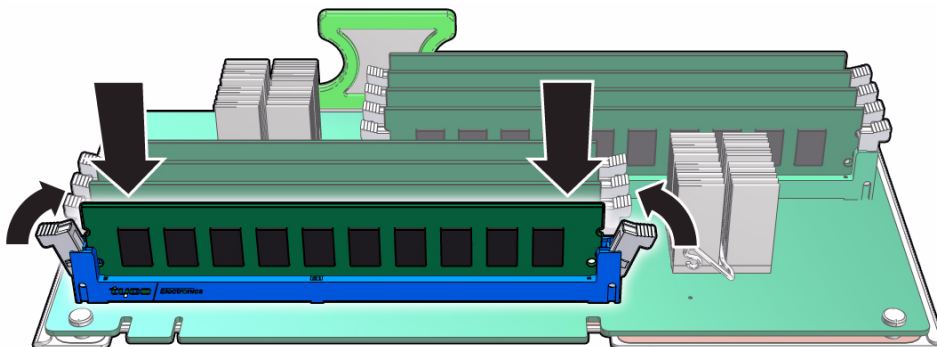
See [“Remove a DIMM” on page 172](#).
 - If you are installing a new or an additional DIMM, prepare for service.

See [“Preparing for Service” on page 59](#).

- If you are installing the DIMM as part of another component's removal or installation procedure, go to [Step 2](#).
2. Open the release levers of the slot where you are installing the DIMM.
 3. Align the DIMM to the location where it installs into the memory riser.
Ensure that the notch in the DIMM lines up with the key in the slot.



4. Insert the DIMM into the slot, pressing firmly so that both release levers click closed.



5. Repeat from [Step 2](#) for any additional DIMMs to be installed.

6. Consider your next steps:

- If you installed the DIMM as part of a replacement operation, go to [Step 7](#).
- If you installed the DIMM as part of another component's removal or installation procedure, return to that procedure. See ["Component Service Task Reference" on page 65](#) for assistance.
- If you have installed a new DIMM, go to [Step 7](#).

7. Finish the installation procedure.

See:

- ["Returning the Server to Operation" on page 285](#)
- ["Verify a DIMM" on page 175](#)

Related Information

- ["DIMM Configuration" on page 164](#)
- ["DIMM LEDs" on page 168](#)
- ["Locate a Faulty DIMM \(Oracle ILOM\)" on page 169](#)
- ["Remove a DIMM" on page 172](#)
- ["Verify a DIMM" on page 175](#)
- ["Preparing for Service" on page 59](#)
- ["Returning the Server to Operation" on page 285](#)

▼ Verify a DIMM

After you install a DIMM, you can verify its functionality.

1. Reset the DIMM.

```
-> set /SYS/MB/CMPv/MRw/BOBx/CHy/Dz clear_fault_action=true
Are you sure you want to clear /SYS/MB/CMPv/MRw/BOBx/CHy/Dz (y/n)?
y
Set 'clear_fault_action' to 'true'

->
```

2. Consider your next steps:

- If you installed a new DIMM as part of a replacement operation, verify that the DIMM is no longer considered faulty, then return to this procedure. See ["Locate a Faulty DIMM \(Oracle ILOM\)" on page 169](#).

- If you installed a new DIMM to increase functionality, go to [Step 3](#).

3. Within the Oracle ILOM interface, verify the DIMM temperature is normal.

```
-> show /SYS/MB/CMPv/MRw/BOBx/CHy/Dz/T_AMB value  
/SYS/MB/CMPv/MRw/BOBx/CHy/Dz/T_AMB  
Properties:  
value = 32.000 degree C  
->
```

where:

- v is 0 or 1.
- w is 0 or 1.
- x is 0 or 1.
- y is 0 or 1.
- z is 0 or 1.

Related Information

- [“DIMM Configuration” on page 164](#)
- [“DIMM LEDs” on page 168](#)
- [“Locate a Faulty DIMM \(Oracle ILOM\)” on page 169](#)
- [“Remove a DIMM” on page 172](#)
- [“Install a DIMM” on page 173](#)

Servicing the Battery

The battery is a type CR2032 3 volt lithium disc battery. The battery is located vertically at the right rear of the motherboard. See [“Motherboard, PCIe2 Cards, and SP Locations”](#) on page 3.

Description	Links
Replace the faulty battery.	“Determine if the Battery Is Faulty” on page 177 “Remove the Battery” on page 179 “Install the Battery” on page 181 “Verify the Battery” on page 183
Determine whether the battery is faulty.	“Determine if the Battery Is Faulty” on page 177 “Detecting and Managing Faults” on page 9

Related Information

- [“Identifying Components”](#) on page 1
- [“Component Service Task Reference”](#) on page 65
- [“Detecting and Managing Faults”](#) on page 9
- [“Preparing for Service”](#) on page 59
- [“Returning the Server to Operation”](#) on page 285

▼ Determine if the Battery Is Faulty

You must determine if the battery is faulty before you replace it.

1. **Check to see if any System Service Required LEDs are lit or flashing.**
See [“Interpreting Diagnostic LEDs”](#) on page 14.

2. Within the Oracle ILOM interface, type the `show faulty` command to verify that the battery is faulty.

If the battery is faulty, you will see `/SYS/MB/BAT` under the Value heading. For example:

```
-> show faulty
```

Target	Property	Value
/SP/faultmgmt/0	fru	/SYS/MB/BAT
.		
.		
.		

```
->
```

If the battery is faulty, replace it. See [“Remove the Battery” on page 179](#).

If a FRU value different from `/SYS/MB/BAT` is displayed, see [“Component Service Task Reference” on page 65](#) to identify which component is faulty.

3. Start the Oracle ILOM `faultmgmt shell`.

```
-> start /SP/faultmgmt/shell
```

Are you sure you want to start /SP/faultmgmt/shell (y/n)?	y
---	---

```
faultmgmtsp>
```

4. Identify the faulty component.

For example:

```
faultmgmtsp> fmadm faulty
```

Time	UUID	msgid	Severity
2010-08-11/14:54:23	59654226-50d3-cdc6-9f09-e591f39792ca	SPT-8000-LC	Critical

```
Fault class : fault.chassis.power.volt-fail
```

```
Description : A Power Supply voltage level has exceeded acceptable limits.
```

```
.
```

```
.
```

```
.
```

```
faultmgmtsp>
```

Check the `Fault class` and `Description` fields for more information.

If the battery is faulty, replace it. See [“Remove the Battery” on page 179](#).

5. Exit the Oracle ILOM `faultmgmt` shell.

```
faultmgmtsp> exit  
->
```

6. Within the Oracle ILOM interface, verify the battery voltage.

```
-> show /SYS/MB/V_BAT value  
/SYS/MB/V_BAT  
Properties:  
value = 3.120 Volts  
->
```

If the battery voltage is below 2.95 VDC, replace the battery. See [“Remove the Battery” on page 179](#).

7. If you are unable to determine if the battery is faulty, seek further information.
See [“Detecting and Managing Faults” on page 9](#).

Related Information

- [“Remove the Battery” on page 179](#)
- [“Install the Battery” on page 181](#)
- [“Verify the Battery” on page 183](#)
- [“Detecting and Managing Faults” on page 9](#)

▼ Remove the Battery

Removing the battery is a cold-service operation. You must power off the server before you remove the battery.

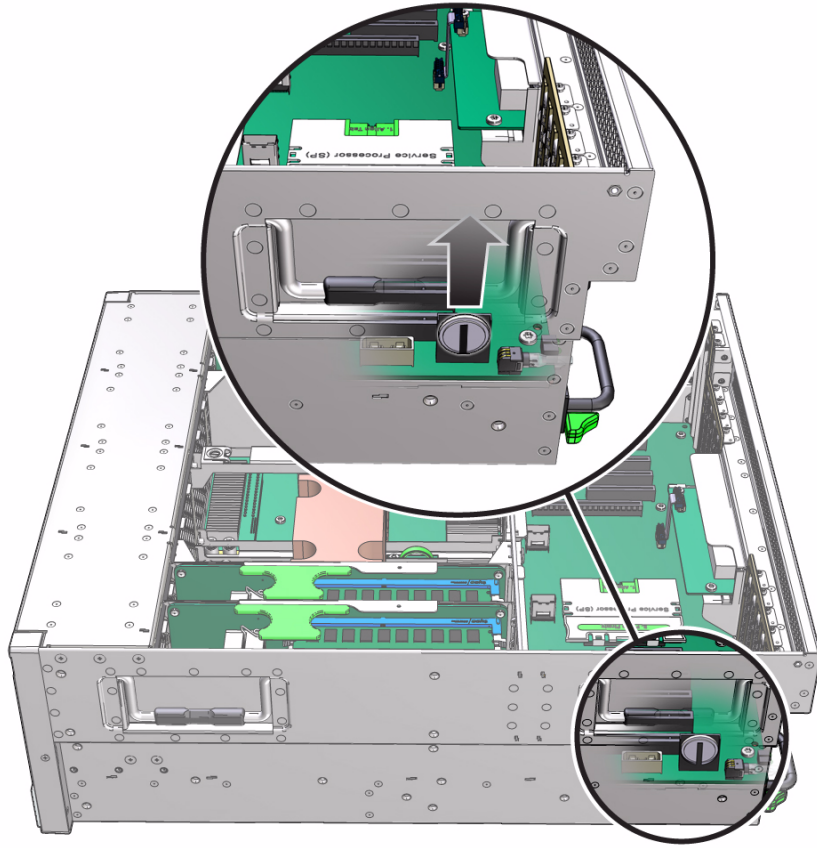
1. Consider your first step:

- If you have not prepared for service, do so now. See [“Preparing for Service” on page 59](#).
- If you are removing the battery as part of another component’s removal or installation procedure, go to [Step 2](#).

2. Remove the PCI card in slot 0PCIe2, if installed.

See [“Remove a PCIe2 Card” on page 188](#).

3. Grasp the battery, and pull it straight up and out of its receptacle.



4. Set the battery aside.

5. Consider your next steps:

- If you removed the battery as part of a replacement operation, install a new battery. See [“Install the Battery” on page 181](#).
- If you removed the battery as part of another component’s removal or installation procedure, return to that procedure. See [“Component Service Task Reference” on page 65](#) for assistance.

Related Information

- [“Determine if the Battery Is Faulty” on page 177](#)
- [“Install the Battery” on page 181](#)
- [“Verify the Battery” on page 183](#)
- [“Preparing for Service” on page 59](#)
- [“Returning the Server to Operation” on page 285](#)

▼ Install the Battery

Installing the battery is a cold-service operation. You must power off the server before installing the battery.

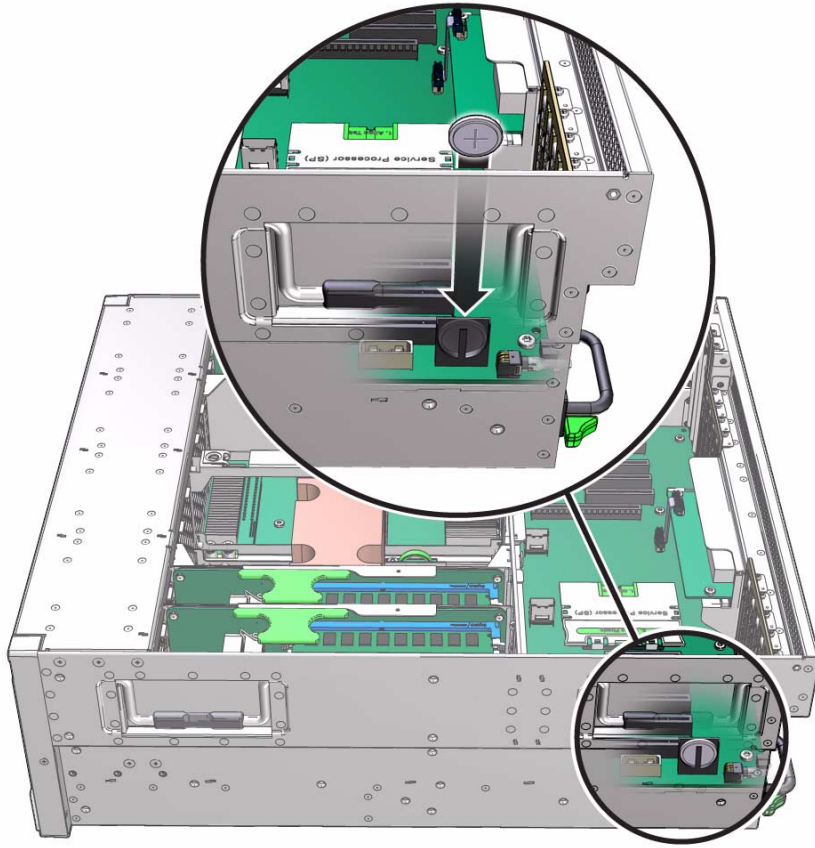
1. Consider your first steps:

- If you are replacing a battery, remove the faulty or obsolete battery first, then return to this procedure, [Step 2](#). See “[Remove the Battery](#)” on [page 179](#).
- If you are installing the battery as part of another component’s removal or installation procedure, go to [Step 2](#).

2. Align the battery to the location where it installs into the chassis.

The positive (+) side of the battery is toward the center of the chassis.

3. Insert the battery into the receptacle.



4. Consider your next steps:

- If you installed the battery as part of a replacement operation, go to [Step 5](#).
- If you installed the battery as part of another component's removal or installation procedure, return to that procedure. See ["Component Service Task Reference"](#) on page 65 for assistance.

5. Install the PCIe2 card into slot 0PCIe2, if it was removed previously.

See ["Install a PCIe2 Card"](#) on page 191.

6. Finish the installation procedure.

See:

- ["Returning the Server to Operation"](#) on page 285
- ["Verify the Battery"](#) on page 183

Related Information

- [“Determine if the Battery Is Faulty” on page 177](#)
- [“Remove the Battery” on page 179](#)
- [“Verify the Battery” on page 183](#)
- [“Preparing for Service” on page 59](#)
- [“Returning the Server to Operation” on page 285](#)

▼ Verify the Battery

After you install a battery, you can verify its functionality.

1. Reset the battery.

```
-> set /SYS/MB/BAT clear_fault_action=true
Are you sure you want to clear /SYS/MB/BAT (y/n)? y
Set 'clear_fault_action' to 'true'

->
```

2. Verify that the battery is no longer considered faulty, then return to this procedure.

See [“Determine if the Battery Is Faulty” on page 177](#).

3. Verify the battery voltage.

```
-> show /SYS/MB/V_BAT value
/SYS/MB/V_BAT
Properties:
value = 3.120 Volts

->
```

Related Information

- [“Determine if the Battery Is Faulty” on page 177](#)
- [“Remove the Battery” on page 179](#)
- [“Install the Battery” on page 181](#)

Servicing PCIe2 Cards

PCIe2 cards are industry-standard form factor peripheral components. PCIe2 cards can be of either PCIe or PCIx technology. The PCIe2 cards are located at the rear of the motherboard. See [“Motherboard, PCIe2 Cards, and SP Locations”](#) on page 3.

Description	Links
Replace a faulty PCIe2 card.	“Locate a Faulty PCIe2 Card” on page 186 “Remove a PCIe2 Card” on page 188 “Install a PCIe2 Card” on page 191 “Verify a PCIe2 Card” on page 195
Remove the PCIe2 cards as part of another component’s service operation.	“Remove a PCIe2 Card” on page 188
Install the PCIe2 cards as part of another component’s service operation.	“Install a PCIe2 Card” on page 191
Add an additional PCIe2 card.	“Install a PCIe2 Card” on page 191
Install SAS cable for Sun Storage 6 Gb SAS PCIe RAID HBA, Internal card	“Install SAS Cable for Sun Storage 6 Gb SAS PCIe RAID HBA, Internal” on page 194 “Verify a PCIe2 Card” on page 195
Remove an existing PCIe2 card.	“Remove a PCIe2 Card” on page 188
Identify a faulty PCIe2 card.	“Locate a Faulty PCIe2 Card” on page 186 “Detecting and Managing Faults” on page 9

Related Information

- [“Identifying Components”](#) on page 1
- [“Component Service Task Reference”](#) on page 65
- [“Detecting and Managing Faults”](#) on page 9
- [“Preparing for Service”](#) on page 59
- [“Returning the Server to Operation”](#) on page 285

▼ Locate a Faulty PCIe2 Card

You must determine which PCIe2 card is faulty before you replace it.

1. Check to see if any System Service Required LEDs are lit or flashing.

See [“Interpreting Diagnostic LEDs” on page 14.](#)

2. Visually inspect the PCIe2 card to see if any of its status LEDs are lit or flashing.

If the PCIe2 card is faulty, replace it. See [“Remove a PCIe2 Card” on page 188.](#)

3. Within the Oracle ILOM interface, type the `show faulty` command to verify that the PCIe2 card is faulty.

If the PCIe2 card is faulty, you will see `/SYS/MB/PCIEx/card_type` under the Value heading. For example:

```
-> show faulty
```

Target	Property	Value
/SP/faultmgmt/0	fru	/SYS/MB/PCIE0/XAUI0
.		
.		
.		
.		

where:

- `x` is 0 to 9.
- `card_type` is the Oracle ILOM target for the type of PCIe2 card.

If the PCIe2 card is faulty, replace it. See [“Remove a PCIe2 Card” on page 188.](#)

If a FRU value different from `/SYS/MB/PCIEx/card_type` is displayed, see [“Component Service Task Reference” on page 65](#) to identify which component is faulty.

4. Start the Oracle ILOM `faultmgmt` shell.

```
-> start /SP/faultmgmt/shell
```

```
Are you sure you want to start /SP/faultmgmt/shell (y/n)? y
```

```
faultmgmtsp>
```

5. Identify the faulty component.

For example:

```
faultmgmtsp> fmadm faulty
-----
Time                UUID                                msgid                Severity
-----
2010-08-11/14:54:23 59654226-50d3-cdc6-9f09-e591f39792ca SPT-8000-LC    Critical

Fault class : fault.chassis.power.volt-fail

Description : A Power Supply voltage level has exceeded acceptable limits.
.
.
.
faultmgmtsp>
```

Check the `Fault class` and `Description` fields for more information.

If the PCIe2 card is faulty, replace it. See [“Remove a PCIe2 Card” on page 188](#).

6. Exit the Oracle ILOM `faultmgmt` shell.

```
faultmgmtsp> exit
->
```

7. Within the Oracle ILOM interface, verify the presence of the PCIe2 card.

```
-> show -d targets /SYS/MB/PCIE $x$ 
/SYS/MB/PCI_MEZZ/PCIE4
Targets:
XAUI0
.
.
.
->
```

where x is the PCIe2 slot, 0 (left slot) to 9 (right slot).

If the PCIe2 card is faulty, replace it. See [“Remove a PCIe2 Card” on page 188](#).

8. If you are unable to identify the faulty PCIe2 card, seek further information.

See [“Detecting and Managing Faults” on page 9](#).

Related Information

- [“Remove a PCIe2 Card” on page 188](#)

- [“Install a PCIe2 Card” on page 191](#)
 - [“Verify a PCIe2 Card” on page 195](#)
 - [“Detecting and Managing Faults” on page 9](#)
-

▼ Remove a PCIe2 Card

Removing the PCIe2 card is a cold-service operation. You must power off the server before you remove the PCIe2 card.

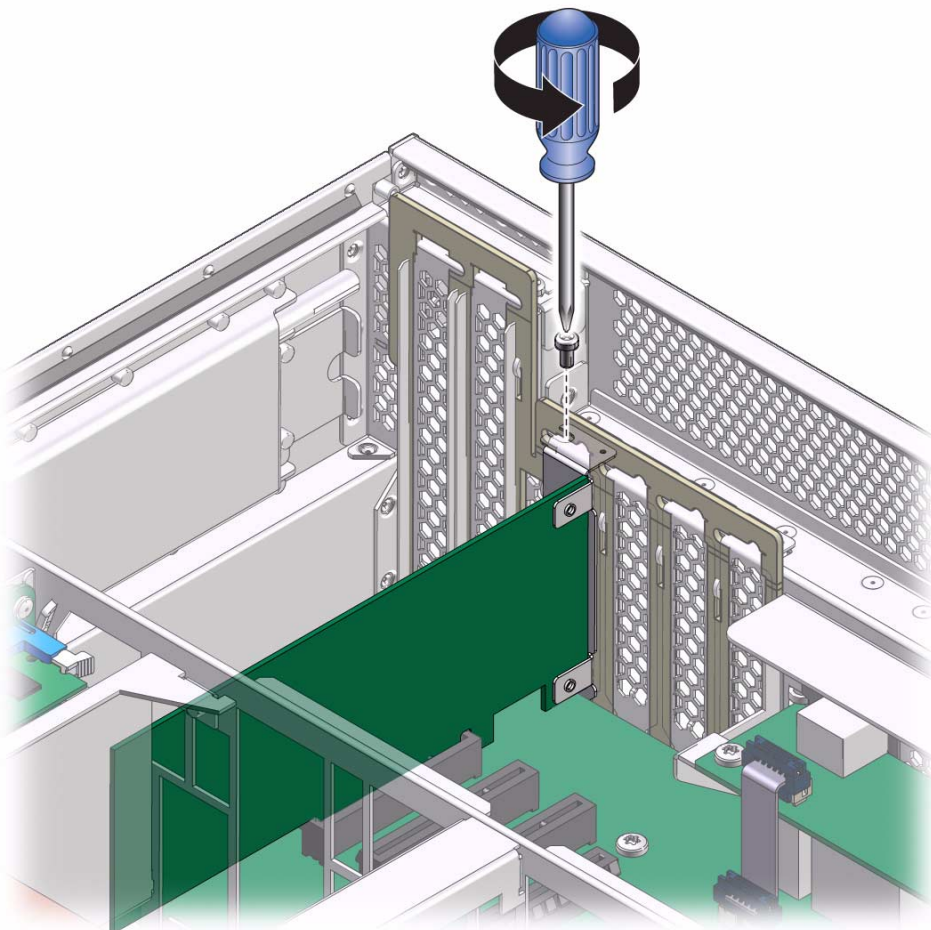
1. Consider your first step:

- If you have not prepared for service, do so now. See [“Preparing for Service” on page 59](#).
- If you are removing the PCIe2 card as part of another component’s removal or installation procedure, go to [Step 2](#).
- If you are removing a Sun Storage 6 Gb SAS PCIe RAID HBA, Internal, see [“Install SAS Cable for Sun Storage 6 Gb SAS PCIe RAID HBA, Internal” on page 194](#) for the SAS cable connections.

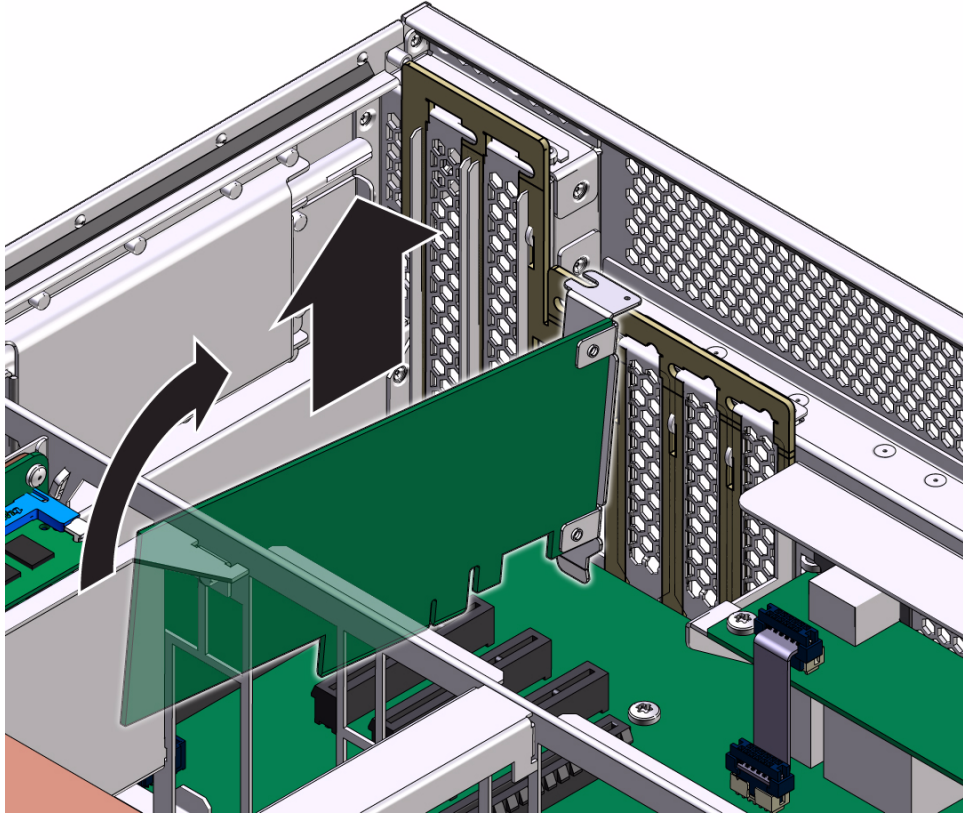
2. Determine which PCIe2 card to remove.

See [“Locate a Faulty PCIe2 Card” on page 186](#) if necessary.

3. Remove the screw securing the PCIe2 card to the chassis.



4. Unseat the PCIe2 card from the card edge connector, lift the PCIe2 card out of the chassis, and set the PCIe2 card aside.



5. Consider your next steps:

- If you removed the PCIe2 card as part of a replacement operation, install a new PCIe2 card. See [“Install a PCIe2 Card” on page 191](#).
- If you removed the PCIe2 card as part of another component’s removal or installation procedure, return to that procedure. See [“Component Service Task Reference” on page 65](#) for assistance.
- If you are not replacing the PCIe2 card, go to [Step 6](#).

6. Finish the removal procedure.

See [“Returning the Server to Operation” on page 285](#).

Related Information

- [“Locate a Faulty PCIe2 Card” on page 186](#)
- [“Install a PCIe2 Card” on page 191](#)
- [“Verify a PCIe2 Card” on page 195](#)
- [“Preparing for Service” on page 59](#)

- [“Returning the Server to Operation” on page 285](#)
- *Sun Storage 6 Gb SAS PCIe RAID HBA, Internal Installation Guide*

▼ Install a PCIe2 Card

Installing the PCIe2 card is a cold-service operation. You must power off the server before installing the PCIe2 card.

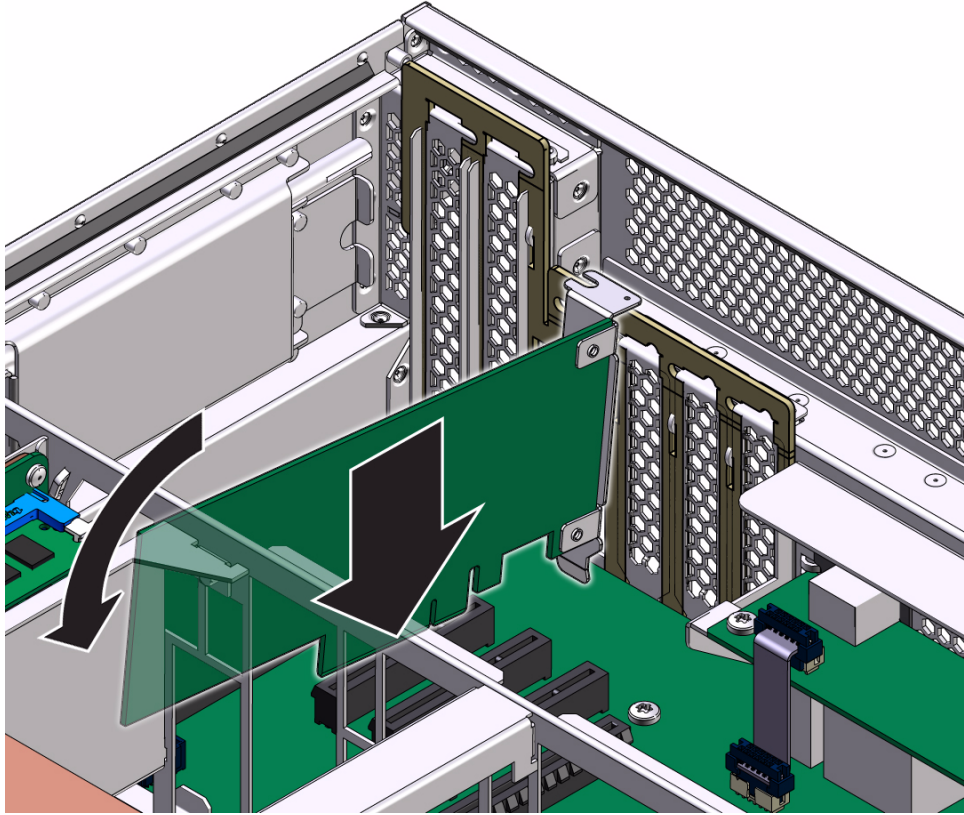
1. Consider your first steps:

- If you are replacing a PCIe2 card, remove the faulty or obsolete PCIe2 card first, then return to this procedure, [Step 2](#). See [“Remove a PCIe2 Card” on page 188](#).
- If you are installing a new or an additional PCIe2 card, see [“Preparing for Service” on page 59](#).
- If you are installing a Sun Storage 6 Gb SAS PCIe RAID HBA, Internal, go to [“Install SAS Cable for Sun Storage 6 Gb SAS PCIe RAID HBA, Internal” on page 194](#).
- If you are installing the PCIe2 card as part of another component’s removal or installation procedure, go to [Step 2](#).

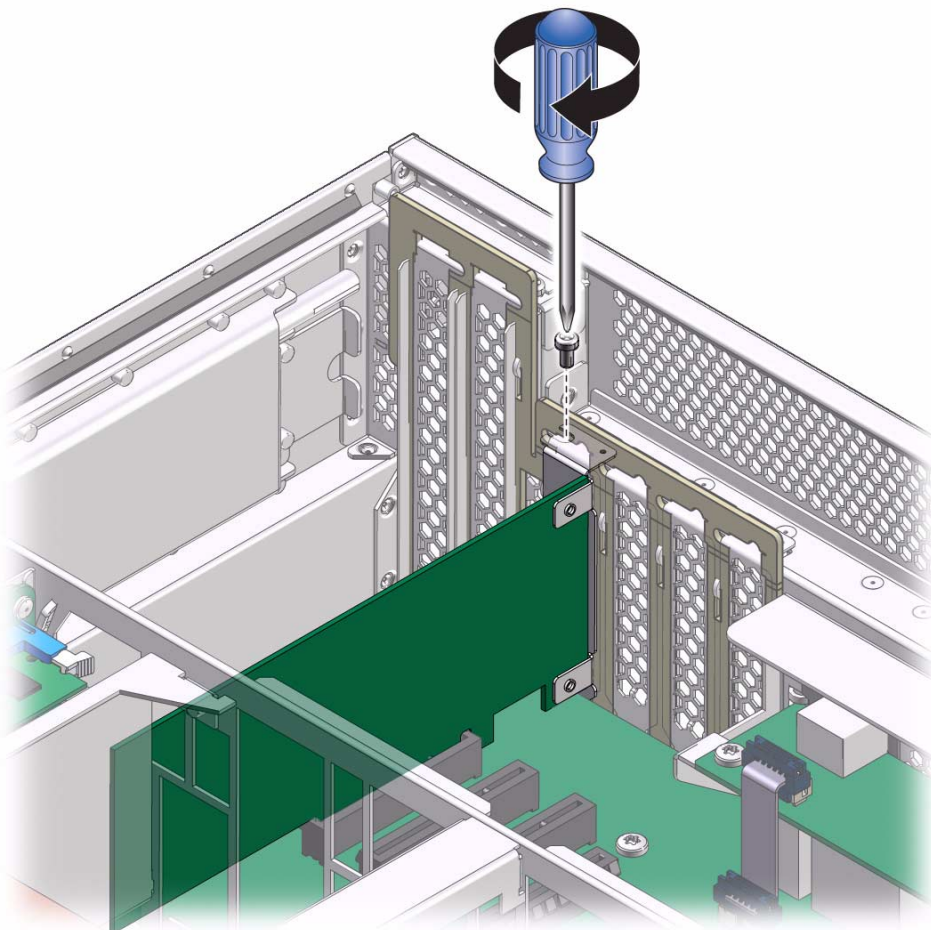
2. Align the PCIe2 card to the location where it installs into the motherboard.

The PCIe2 card bracket is to the rear of the chassis.

Note – The Sun Storage 6 Gb SAS PCIe RAID HBA, Internal PCIe card must be installed in **PCIe slot 5 only**. This HBA also requires a special SAS cable. See [“Install SAS Cable for Sun Storage 6 Gb SAS PCIe RAID HBA, Internal” on page 194](#) for more information.



3. Press the PCIe2 card into the card edge connector so that the PCIe2 card is fully seated.
4. Secure the PCIe2 card to the chassis with the screw.



5. Consider your next steps:

- If you installed the PCIe2 card as part of a replacement operation, go to [Step 6](#).
- If you installed the PCIe2 card as part of another component's removal or installation procedure, return to that procedure. See ["Component Service Task Reference" on page 65](#) for assistance.
- If you are installed a Sun Storage 6 Gb SAS PCIe RAID HBA, Internal, go to ["Install SAS Cable for Sun Storage 6 Gb SAS PCIe RAID HBA, Internal" on page 194](#).
- If you have installed a new PCIe2 card, go to [Step 6](#).

6. Finish the installation procedure.

See:

- [“Returning the Server to Operation” on page 285](#)
- [“Verify a PCIe2 Card” on page 195](#)

Related Information

- [“Remove a PCIe2 Card” on page 188](#)
- [“Verify a PCIe2 Card” on page 195](#)
- [“Preparing for Service” on page 59](#)
- [“Returning the Server to Operation” on page 285](#)

▼ Install SAS Cable for Sun Storage 6 Gb SAS PCIe RAID HBA, Internal

Refer to the *Sun Storage 6 Gb SAS PCIe RAID HBA, Internal Installation Guide* for additional details.

1. Install the card in PCIe slot 5.

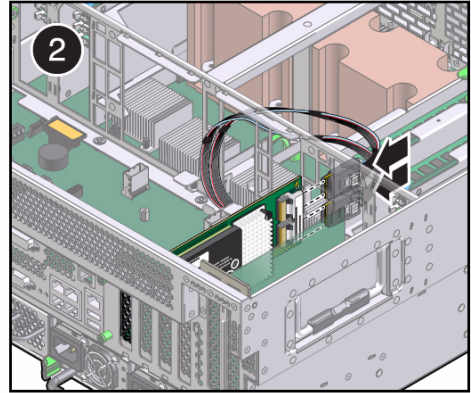
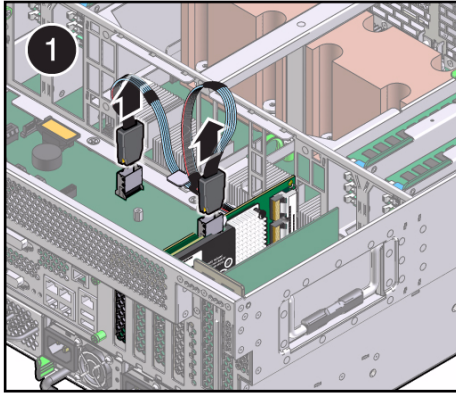
See [“Install a PCIe2 Card” on page 191](#).

2. Disconnect the existing SAS cable from the Disk 4-7 connector on the motherboard (pane 1).

3. Route the SAS cable as shown and connect to the Port 4-7 connector (or lower connector) on the HBA card (pane 2).

4. Disconnect the existing SAS cable from the Disk 0-3 connector on the motherboard (pane 1).

5. Route the SAS cable as shown and connect to the Port 0-3 connector (or upper connector) on the HBA card (pane 2).



6. Finish the installation procedure.

See:

- [“Returning the Server to Operation” on page 285](#)
- [“Verify a PCIe2 Card” on page 195](#)

Related Information

- [“Remove a PCIe2 Card” on page 188](#)
- [“Install a PCIe2 Card” on page 191](#)
- [“Verify a PCIe2 Card” on page 195](#)
- [“Preparing for Service” on page 59](#)
- [“Returning the Server to Operation” on page 285](#)
- *Sun Storage 6 Gb SAS PCIe RAID HBA, Internal Installation Guide*

▼ Verify a PCIe2 Card

After you install a PCIe2 card, you can verify its functionality.

1. Reset the PCIe2 card.

```
-> set /SYS/MB/PCIEx/card_type clear_fault_action=true
Are you sure you want to clear /SYS/MB/PCIE4/XAUI0 (y/n)? y
Set 'clear_fault_action' to 'true'

->
```

where:

- *x* is 0 to 9.
- *card_type* is the Oracle ILOM target for the type of PCIe2 card.

2. Consider your next steps:

- If you installed a new PCIe2 card as part of a replacement operation, verify that the PCIe2 card is no longer considered faulty, then return to this procedure. See [“Locate a Faulty PCIe2 Card” on page 186](#).
- If you installed a new PCIe2 card to increase functionality, go to [Step 3](#).

3. Verify the presence of the PCIe2 card.

```
-> show -d targets /SYS/MB/PCIEx
/SYS/MB/PCIE4
Targets:
XAUI0
.
.
.
->
```

where *x* is the PCIe2 slot, 0 (left slot) to 9 (right slot).

Related Information

- [“Locate a Faulty PCIe2 Card” on page 186](#)
- [“Remove a PCIe2 Card” on page 188](#)
- [“Install a PCIe2 Card” on page 191](#)

Servicing the SP

The SP is an independent server management device providing Oracle ILOM control of the server. The SP is socketed at the left rear of the motherboard. See [“Motherboard, PCIe2 Cards, and SP Locations”](#) on page 3.

Description	Links
Replace the faulty SP.	“Determine if the SP Is Faulty” on page 197 “Remove the SP” on page 200 “Install the SP” on page 202 “Verify the SP” on page 205
Remove the SP as part of another component’s service operation.	“Remove the SP” on page 200
Install the SP as part of another component’s service operation.	“Install the SP” on page 202
Determine whether the SP is faulty.	“Determine if the SP Is Faulty” on page 197 “Detecting and Managing Faults” on page 9

Related Information

- [“Identifying Components”](#) on page 1
- [“Component Service Task Reference”](#) on page 65
- [“Detecting and Managing Faults”](#) on page 9
- [“Preparing for Service”](#) on page 59
- [“Returning the Server to Operation”](#) on page 285

▼ Determine if the SP Is Faulty

You must determine if the SP is faulty before you replace it.

1. Check to see if any System Service Required LEDs are lit or flashing.

See [“Interpreting Diagnostic LEDs” on page 14](#).

2. Within the Oracle ILOM interface, type the `show faulty` command to verify that the SP is faulty.

If the SP is faulty, you will see `/SYS/MB/SP` under the Value heading. For example:

```
-> show faulty
```

Target	Property	Value
/SP/faultmgmt/0	fru	/SYS/MB/SP
.		
.		
.		

```
->
```

If the SP is faulty, replace it. See [“Remove the SP” on page 200](#).

If a FRU value different from `/SYS/MB/SP` is displayed, see [“Component Service Task Reference” on page 65](#) to identify which component is faulty.

3. Start the Oracle ILOM `faultmgmt shell`.

```
-> start /SP/faultmgmt/shell
```

```
Are you sure you want to start /SP/faultmgmt/shell (y/n)? y
```

```
faultmgmtsp>
```


4. Identify the faulty component.

For example:

```
faultmgmtsp> fmadm faulty
-----
Time                UUID                                msgid              Severity
-----
2010-08-11/14:54:23 59654226-50d3-cdc6-9f09-e591f39792ca SPT-8000-LC      Critical

Fault class : fault.chassis.power.volt-fail

Description : A Power Supply voltage level has exceeded acceptable limits.
.
.
.
faultmgmtsp>
```

Check the `Fault class` and `Description` fields for more information.

If the SP is faulty, replace it. See [“Remove the SP” on page 200](#).

5. Exit the Oracle ILOM `faultmgmt` shell.

```
faultmgmtsp> exit
->
```

6. Within the Oracle ILOM interface, verify the presence of the SP.

```
-> show /SYS/MB/SP type
/SYS/MB/SP
Properties:
    type = SP Board Module
->
```

If the SP does not report its type, replace it. See [“Remove the SP” on page 200](#).

7. If you are unable to determine if the SP is faulty, seek further information.

See [“Detecting and Managing Faults” on page 9](#).

Related Information

- [“Remove the SP” on page 200](#)
- [“Install the SP” on page 202](#)
- [“Verify the SP” on page 205](#)
- [“Detecting and Managing Faults” on page 9](#)

▼ Remove the SP

Note – If you are removing the SP as part of a replacement operation, you must first backup the current SP's Oracle ILOM configuration. Refer to the Oracle ILOM documentation for instructions on backing up and restoring the Oracle ILOM configuration. Also note the current version of the SP firmware.

Removing the SP is a cold-service operation. You must power off the server before you remove the SP.

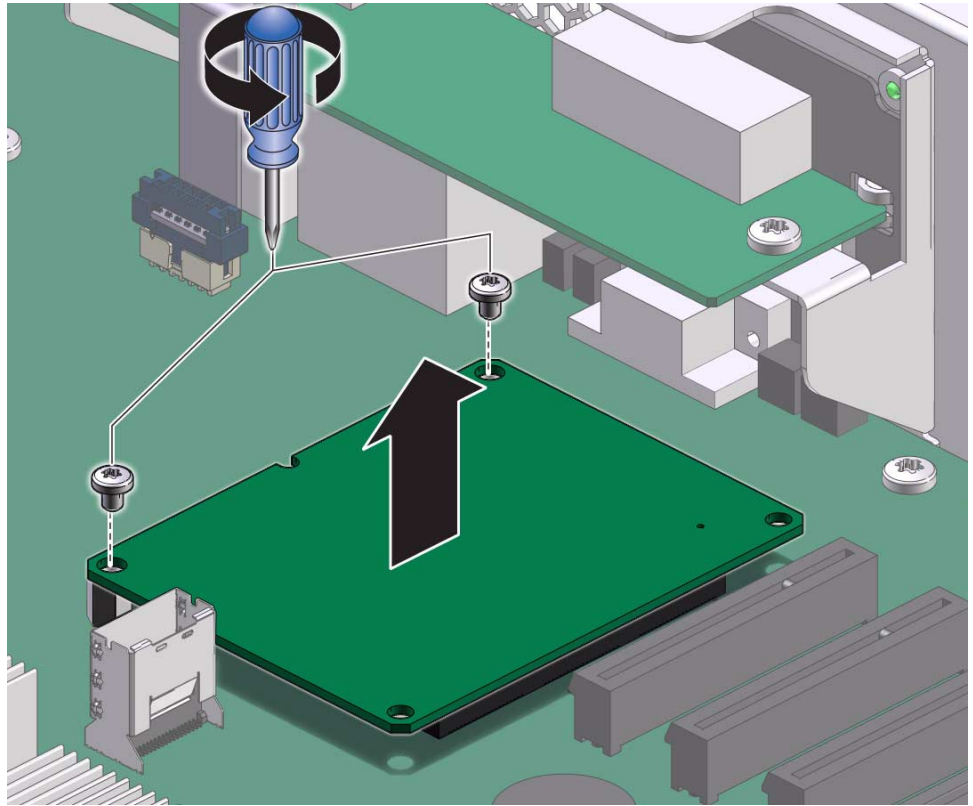
1. Consider your first step:

- If you have not prepared for service, do so now. See [“Preparing for Service” on page 59](#).
- If you are removing the SP as part of another component's removal or installation procedure, go to [Step 2](#).

2. Remove the PCIe2 card in slot 4PCIe2, if installed.

See [“Remove a PCIe2 Card” on page 188](#).

3. Remove the two screws securing the SP to the motherboard.



4. Lift the SP out of the chassis and set the SP aside.

5. Consider your next steps:

- If you removed the SP as part of a replacement operation, install a new SP. See [“Install the SP” on page 202](#).
- If you removed the SP as part of another component’s removal or installation procedure, return to that procedure. See [“Component Service Task Reference” on page 65](#) for assistance.

Related Information

- [“Determine if the SP Is Faulty” on page 197](#)
- [“Install the SP” on page 202](#)
- [“Verify the SP” on page 205](#)
- [“Preparing for Service” on page 59](#)
- [“Returning the Server to Operation” on page 285](#)

▼ Install the SP

Installing the SP is a cold-service operation. You must power off the server before installing the SP.

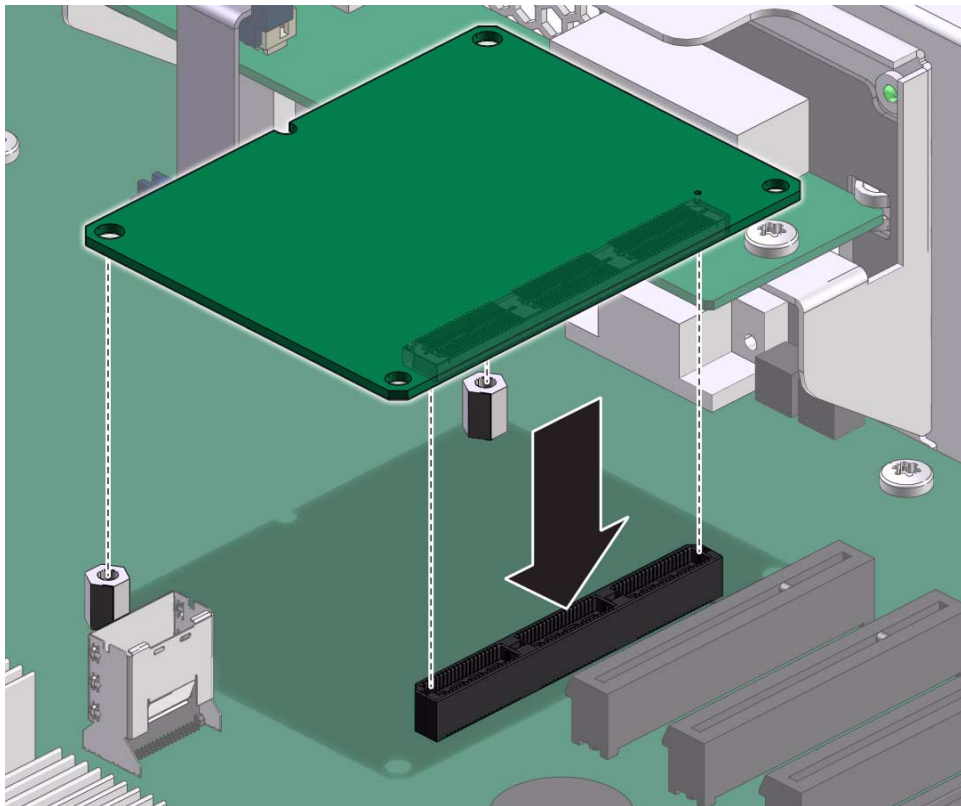
1. Consider your first steps:

- If you are replacing a SP, remove the faulty or obsolete SP first, then return to this procedure, [Step 2](#). See [“Remove the SP” on page 200](#).
- If you are installing the SP as part of another component’s removal or installation procedure, go to [Step 2](#).

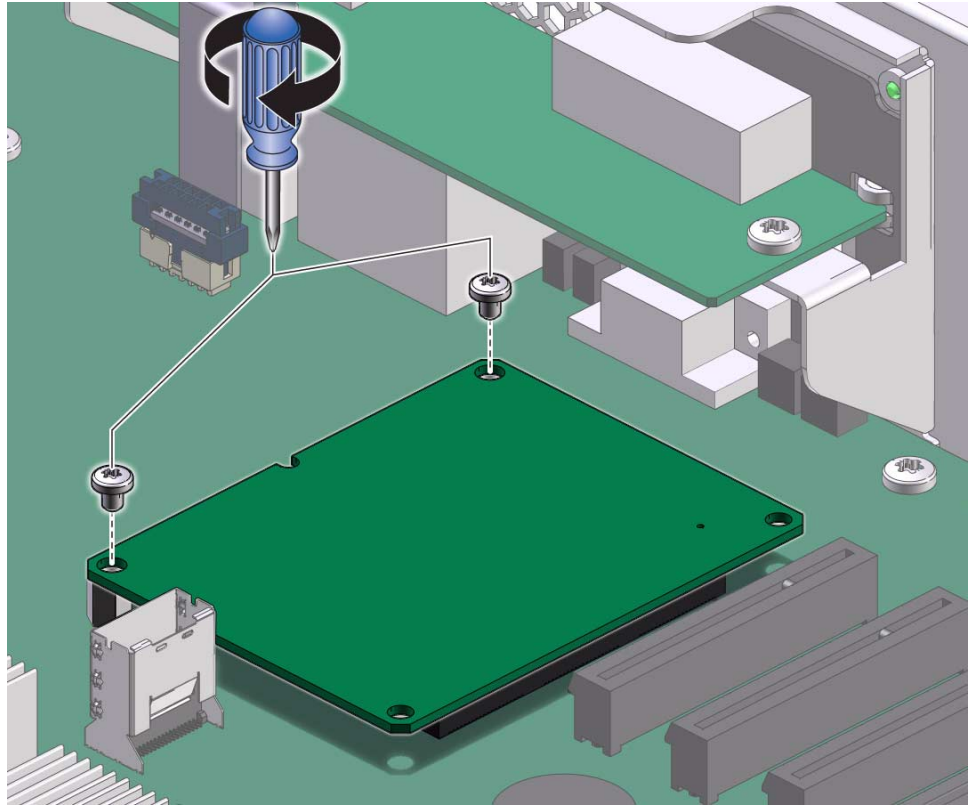
2. Align the SP to where it installs into the chassis.

The connector on the bottom of the SP aligns to the connector left of the left PCIe2 socket.

3. Press the right side of the SP down firmly into the connector.



4. Secure the SP in place with the two screws.



5. Consider your next steps:

- If you installed the SP as part of a replacement operation, go to [Step 6](#).
- If you installed the SP as part of another component's removal or installation procedure, return to that procedure. See ["Component Service Task Reference" on page 65](#) for assistance.

6. Install the PCIe2 card into slot 4PCIe2, if it was removed previously.

See ["Install a PCIe2 Card" on page 191](#).

7. Return the SP to an operational condition.

a. Install the top cover and install the server into the rack.

See ["Install the Top Cover" on page 285](#).

b. Connect the power cords.

See ["Connect Power Cords" on page 289](#)

8. **Prior to powering on the server, connect a terminal or a terminal emulator (PC or workstation) to the SER MGT port.**

Refer to *Server Installation* for instructions.

If the replacement SP detects that the SP firmware is not compatible with the existing host firmware, further action is suspended and the following message is displayed:

Unrecognized Chassis: This module is installed in an unknown or unsupported chassis. You must upgrade the firmware to a newer version that supports this chassis.

If you see the this message, continue to the next step. Otherwise, skip to [Step 10](#).

9. **Download the system firmware.**

- a. **Configure the NET MGT port so that it can access the network, and log in to the SP through the NET MGT port.**

Refer to the Oracle ILOM documentation for network configuration instructions.

- b. **Download the system firmware.**

Follow the firmware download instructions in the Oracle ILOM documentation.

Note – You can load any supported system firmware version, including the firmware version that was installed prior to replacing the SP.

10. **If you created a backup of your Oracle ILOM configuration, use the Oracle ILOM restore utility to restore the configuration to the replacement SP.**

Refer to the Oracle ILOM documentation for instructions.

11. **Power on the server.**

See [“Power On the Server \(Oracle ILOM\)”](#) on page 290

12. **Verify the SP.**

See: [“Verify the SP”](#) on page 205

Related Information

- [“Determine if the SP Is Faulty”](#) on page 197
- [“Remove the SP”](#) on page 200
- [“Verify the SP”](#) on page 205
- [“Preparing for Service”](#) on page 59
- [“Returning the Server to Operation”](#) on page 285

▼ Verify the SP

After you install a SP, you can verify its functionality.

1. Reset the SP.

```
-> set /SYS/MB/SP clear_fault_action=true  
Are you sure you want to clear /SYS/MB/SP (y/n)? y  
Set 'clear_fault_action' to 'true'  
  
->
```

2. Verify that the SP is no longer considered faulty, then return to this procedure.

See [“Determine if the SP Is Faulty” on page 197](#).

3. Verify the presence of the SP.

```
-> show /SYS/MB/SP type  
/SYS/MB/SP  
Properties:  
    type = SP Board Module  
  
->
```

Related Information

- [“Determine if the SP Is Faulty” on page 197](#)
- [“Remove the SP” on page 200](#)
- [“Install the SP” on page 202](#)

Servicing the ID PROM

The ID PROM is a nonvolatile memory device that stores basic boot and network configuration information. The ID PROM is socketed at the right rear of the motherboard. See [“Motherboard, PCIe2 Cards, and SP Locations”](#) on page 3.

Description	Links
Replace the faulty ID PROM.	“Determine if the ID PROM Is Faulty” on page 208 “Remove the ID PROM” on page 210 “Install the ID PROM” on page 212 “Verify the ID PROM” on page 213
Remove the ID PROM as part of another component’s service operation.	“Remove the ID PROM” on page 210
Install the ID PROM as part of another component’s service operation.	“Install the ID PROM” on page 212
Determine whether the ID PROM is faulty.	“Determine if the ID PROM Is Faulty” on page 208 “Detecting and Managing Faults” on page 9

Related Information

- [“Identifying Components”](#) on page 1
- [“Component Service Task Reference”](#) on page 65
- [“Detecting and Managing Faults”](#) on page 9
- [“Preparing for Service”](#) on page 59
- [“Returning the Server to Operation”](#) on page 285

▼ Determine if the ID PROM Is Faulty

You must determine if the ID PROM is faulty before you replace it.

1. Check to see if any System Service Required LEDs are lit or flashing.

See [“Interpreting Diagnostic LEDs” on page 14](#).

2. Within the Oracle ILOM interface, type the `show faulty` command to verify that the ID PROM is faulty.

If the ID PROM is faulty, you will see `/SYS/MB/SCC` under the Value heading. For example:

```
-> show faulty
```

Target	Property	Value
/SP/faultmgmt/0	fru	/SYS/MB/SCC
.		
.		
.		
.		
->		

If the ID PROM is faulty, replace it. See [“Remove the ID PROM” on page 210](#).

If a FRU value different from `/SYS/MB/SCC` is displayed, see [“Component Service Task Reference” on page 65](#) to identify which component is faulty.

3. Start the Oracle ILOM `faultmgmt shell`.

```
-> start /SP/faultmgmt/shell
```

```
Are you sure you want to start /SP/faultmgmt/shell (y/n)? y
```

```
faultmgmtsp>
```

4. Identify the faulty component.

For example:

```
faultmgmtsp> fmadm faulty
-----
Time                UUID                                msgid              Severity
-----
2010-08-11/14:54:23 59654226-50d3-cdc6-9f09-e591f39792ca SPT-8000-LC      Critical

Fault class : fault.chassis.power.volt-fail

Description : A Power Supply voltage level has exceeded acceptable limits.
.
.
.
faultmgmtsp>
```

Check the `Fault class` and `Description` fields for more information.

If the ID PROM is faulty, replace it. See [“Remove the ID PROM” on page 210](#).

5. Exit the Oracle ILOM `faultmgmt` shell.

```
faultmgmtsp> exit
->
```

6. Within the Oracle ILOM interface, verify the presence of the ID PROM.

```
-> show /SP/network macaddress
/SP/network
Properties:
    macaddress = 00:21:28:A6:1A:23
-> show /SP/clock datetime
/SP/clock
Properties:
    datetime = Wed Jan 12 03:50:33 2011
->
```

If the ID PROM does not report its MAC address or time, replace it. See [“Remove the ID PROM” on page 210](#).

7. If you are unable to determine if the ID PROM is faulty, seek further information.

See [“Detecting and Managing Faults” on page 9](#).

Related Information

- [“Remove the ID PROM” on page 210](#)
- [“Install the ID PROM” on page 212](#)
- [“Verify the ID PROM” on page 213](#)
- [“Detecting and Managing Faults” on page 9](#)

▼ Remove the ID PROM

Removing the ID PROM is a cold-service operation. You must power off the server before you remove the ID PROM.

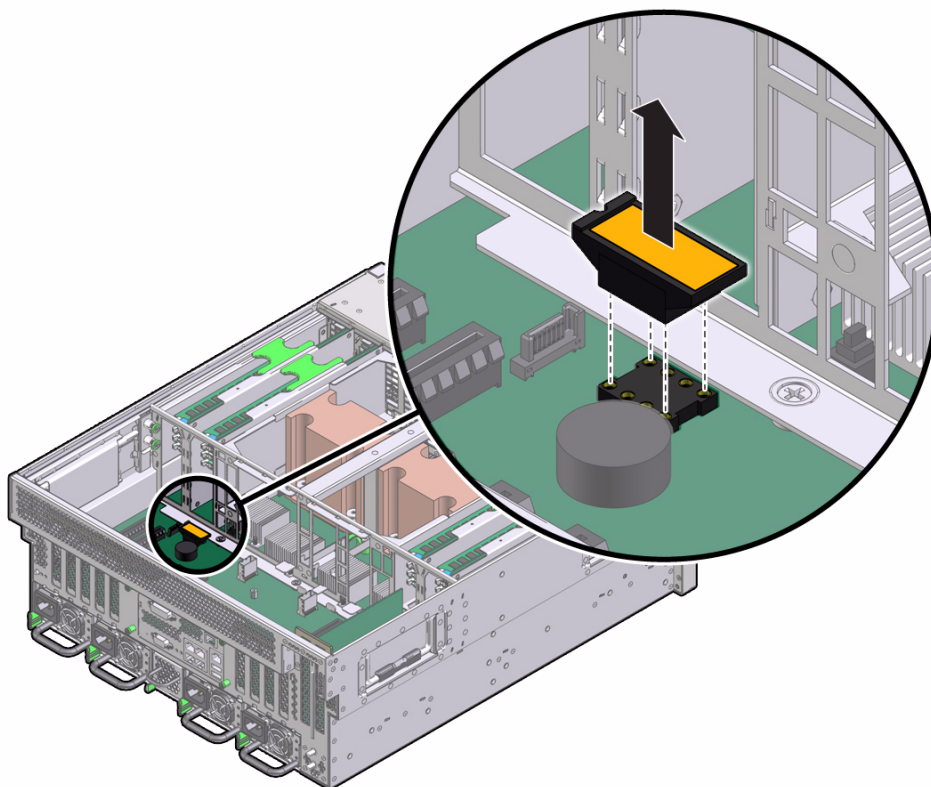
1. Consider your first step:

- If you have not prepared for service, do so now. See [“Preparing for Service” on page 59](#).
- If you are removing the ID PROM as part of another component’s removal or installation procedure, go to [Step 2](#).

2. Remove the PCIe2 cards in slots 1PCIe2, 2PCIe2, and 3PCIe2, if installed.

See [“Remove a PCIe2 Card” on page 188](#).

3. Grasp the left and right of the ID PROM and pull straight up.



4. Lift the ID PROM out of the chassis and set the ID PROM aside.
5. Consider your next steps:
 - If you removed the ID PROM as part of a replacement operation, install a new ID PROM. See [“Install the ID PROM” on page 212](#).
 - If you removed the ID PROM as part of another component’s removal or installation procedure, return to that procedure. See [“Component Service Task Reference” on page 65](#) for assistance.

Related Information

- [“Determine if the ID PROM Is Faulty” on page 208](#)
- [“Install the ID PROM” on page 212](#)
- [“Verify the ID PROM” on page 213](#)
- [“Preparing for Service” on page 59](#)
- [“Returning the Server to Operation” on page 285](#)

▼ Install the ID PROM

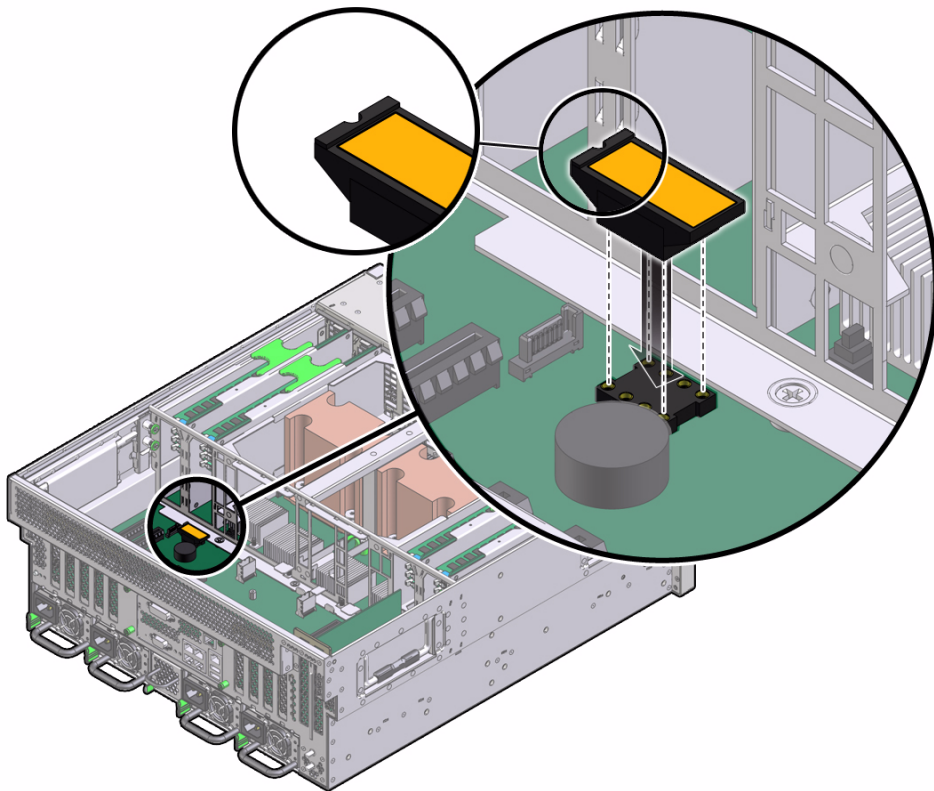
Installing the ID PROM is a cold-service operation. You must power off the server before installing the ID PROM.

1. Consider your first steps:

- If you are replacing a ID PROM, remove the faulty or obsolete ID PROM first, then return to this procedure, [Step 2](#). See [“Remove the ID PROM”](#) on page 210.
- If you are installing the ID PROM as part of another component’s removal or installation procedure, go to [Step 2](#).

2. Align the ID PROM to the location where it installs into the chassis.

The key on the underside of the ID PROM lines up with the notch at the rear of the socket.



3. Press the center of the ID PROM straight into the socket.

4. Consider your next steps:

- If you installed the ID PROM as part of a replacement operation, go to [Step 5](#).
- If you installed the ID PROM as part of another component's removal or installation procedure, return to that procedure. See ["Component Service Task Reference" on page 65](#) for assistance.

5. Install the PCIe2 cards into slots 1PCIe2, 2PCIe2, and 3PCIe2, if removed previously.

See ["Install a PCIe2 Card" on page 191](#).

6. Finish the installation procedure.

See:

- ["Returning the Server to Operation" on page 285](#)
- ["Verify the ID PROM" on page 213](#)

Related Information

- ["Determine if the ID PROM Is Faulty" on page 208](#)
- ["Remove the ID PROM" on page 210](#)
- ["Verify the ID PROM" on page 213](#)
- ["Preparing for Service" on page 59](#)
- ["Returning the Server to Operation" on page 285](#)

▼ Verify the ID PROM

After you install an ID PROM, you can verify its functionality.

1. Reset the ID PROM.

```
-> set /SYS/MB/SCC clear_fault_action=true
Are you sure you want to clear /SYS/MB/SCC (y/n)? y
Set 'clear_fault_action' to 'true'

->
```

2. Verify that the ID PROM is no longer considered faulty, then return to this procedure.

See ["Determine if the ID PROM Is Faulty" on page 208](#).

3. Verify the presence of the ID PROM.

```
-> show /SP/network macaddress
/SP/network
Properties:
    macaddress = 00:21:28:A6:1A:23
-> show /SP/clock datetime
/SP/clock
Properties:
    datetime = Wed Jan 12 03:50:33 2011
->
```

Related Information

- [“Determine if the ID PROM Is Faulty” on page 208](#)
- [“Remove the ID PROM” on page 210](#)
- [“Install the ID PROM” on page 212](#)

Servicing the Subchassis

The subchassis provides a supportive structure for the front fan modules and memory risers, and is located at the front of the chassis. See [“Power Supply, Hard Drive, and Rear Fan Module Locations”](#) on page 2.

Description	Links
Remove the subchassis as part of another component’s service operation.	“Remove the Subchassis” on page 215
Install the subchassis as part of another component’s service operation.	“Install the Subchassis” on page 219

Related Information

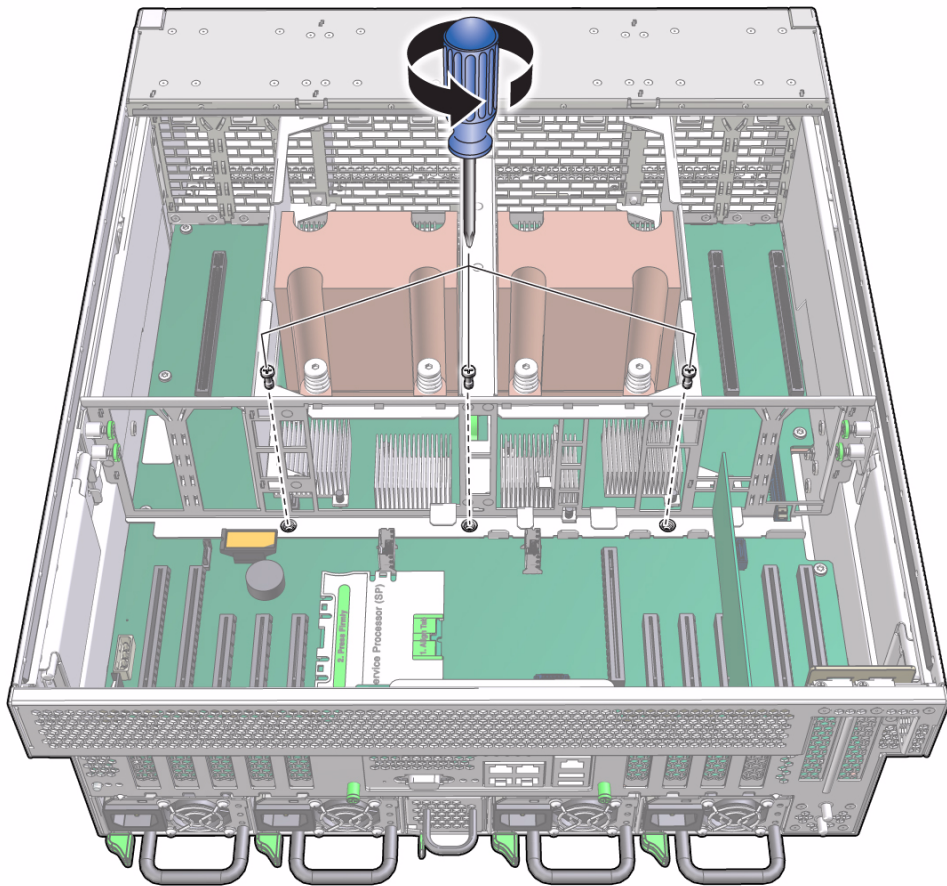
- [“Identifying Components”](#) on page 1
- [“Component Service Task Reference”](#) on page 65
- [“Servicing Front Fan Modules”](#) on page 87
- [“Servicing Memory Risers”](#) on page 151
- [“Detecting and Managing Faults”](#) on page 9
- [“Preparing for Service”](#) on page 59
- [“Returning the Server to Operation”](#) on page 285

▼ Remove the Subchassis

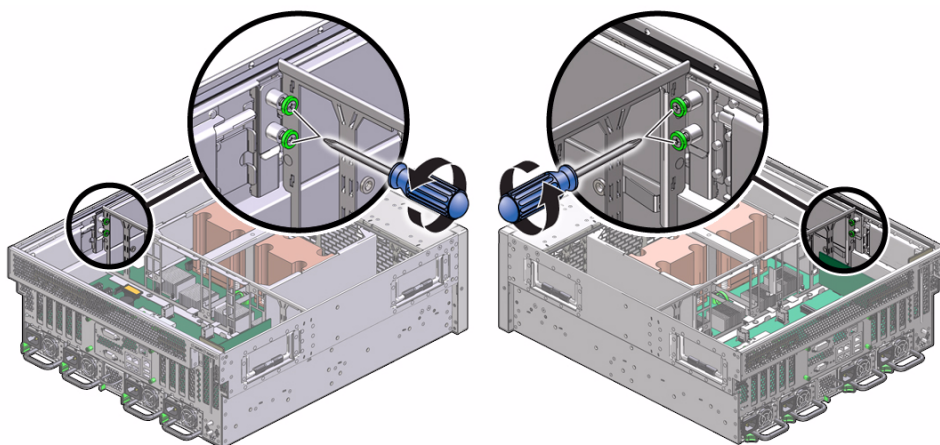
Removing the subchassis is a cold-service operation. You must power off the server before you remove the subchassis.

1. **Consider your first step:**

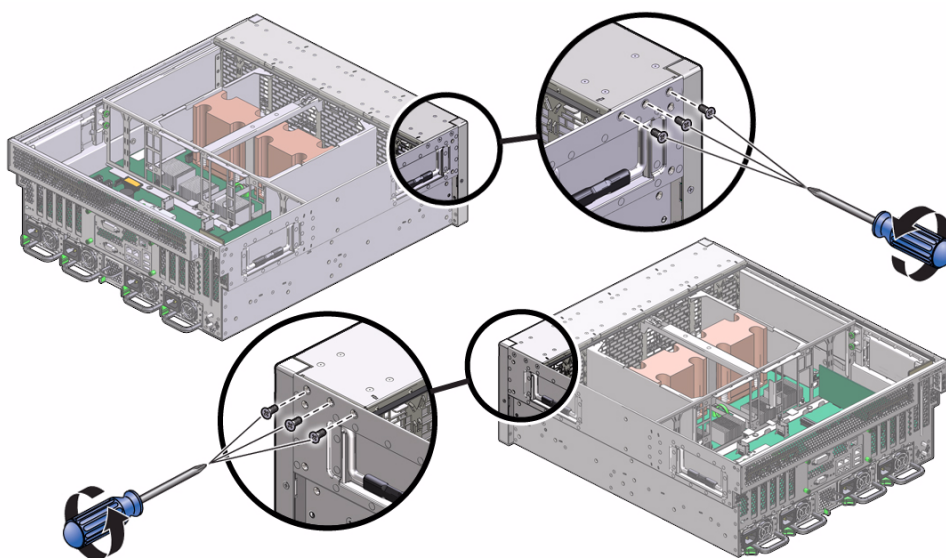
- If you have not prepared for service, do so now. See [“Preparing for Service”](#) on page 59.
 - If you are removing the subchassis as part of another component’s removal or installation procedure, go to [Step 2](#).
2. **Remove the fan modules.**
See [“Remove a Front Fan Module”](#) on page 91.
 3. **Remove the memory risers.**
See [“Remove a Memory Riser”](#) on page 156.
 4. **Remove the three screws from the rear of the subchassis, freeing it from the motherboard.**



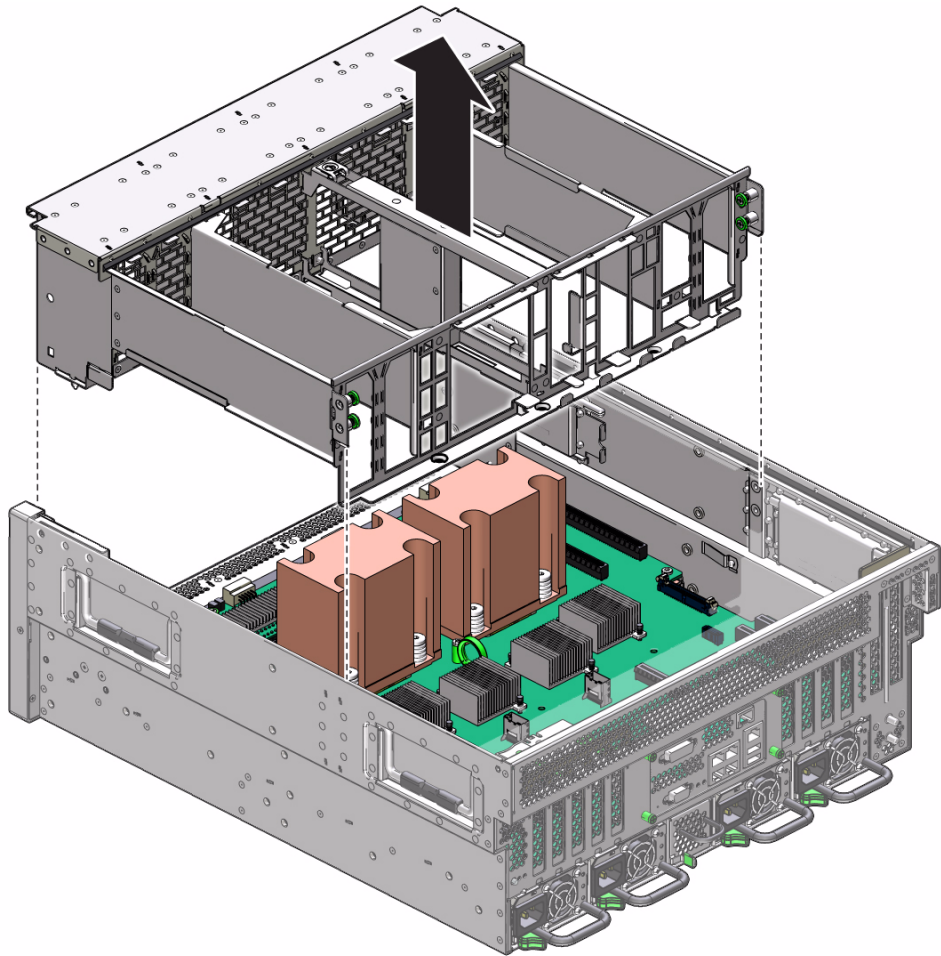
5. **Loosen the two captive screws from the inside left and right of the subchassis.**



6. Remove the three countersunk screws from the upper left and right sides of the chassis.



7. Lift the subchassis straight up and out of the chassis.



8. Set the subchassis aside.

9. Consider your next steps:

- If you removed the subchassis as part of a replacement operation, install a new subchassis. See [“Install the Subchassis” on page 219](#).
- If you removed the subchassis as part of another component’s removal or installation procedure, return to that procedure. See [“Component Service Task Reference” on page 65](#) for assistance.

Related Information

- [“Install the Subchassis” on page 219](#)
- [“Preparing for Service” on page 59](#)
- [“Returning the Server to Operation” on page 285](#)

▼ Install the Subchassis

Installing the subchassis is a cold-service operation. You must power off the server before installing the subchassis.

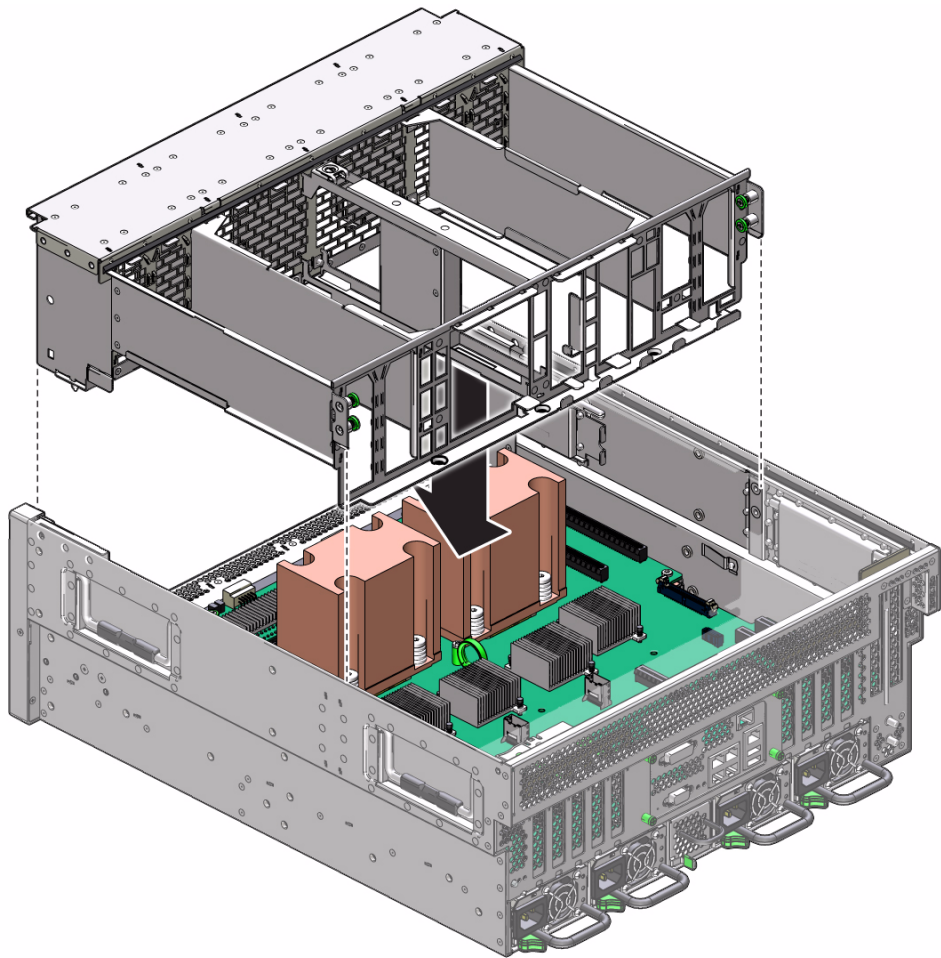
1. Consider your first steps:

- If you are replacing a subchassis, remove the faulty or obsolete subchassis first, then return to this procedure, [Step 2](#). See [“Remove the Subchassis” on page 215](#).
- If you are installing the subchassis as part of another component’s removal or installation procedure, go to [Step 2](#).

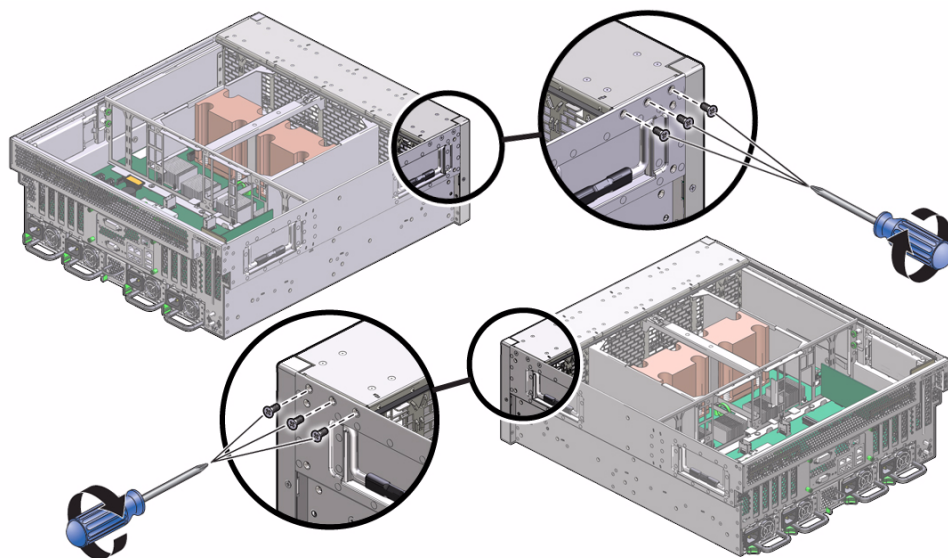
2. Align the subchassis to the location where it installs into the chassis.

The front fan module bays are toward the front of the chassis.

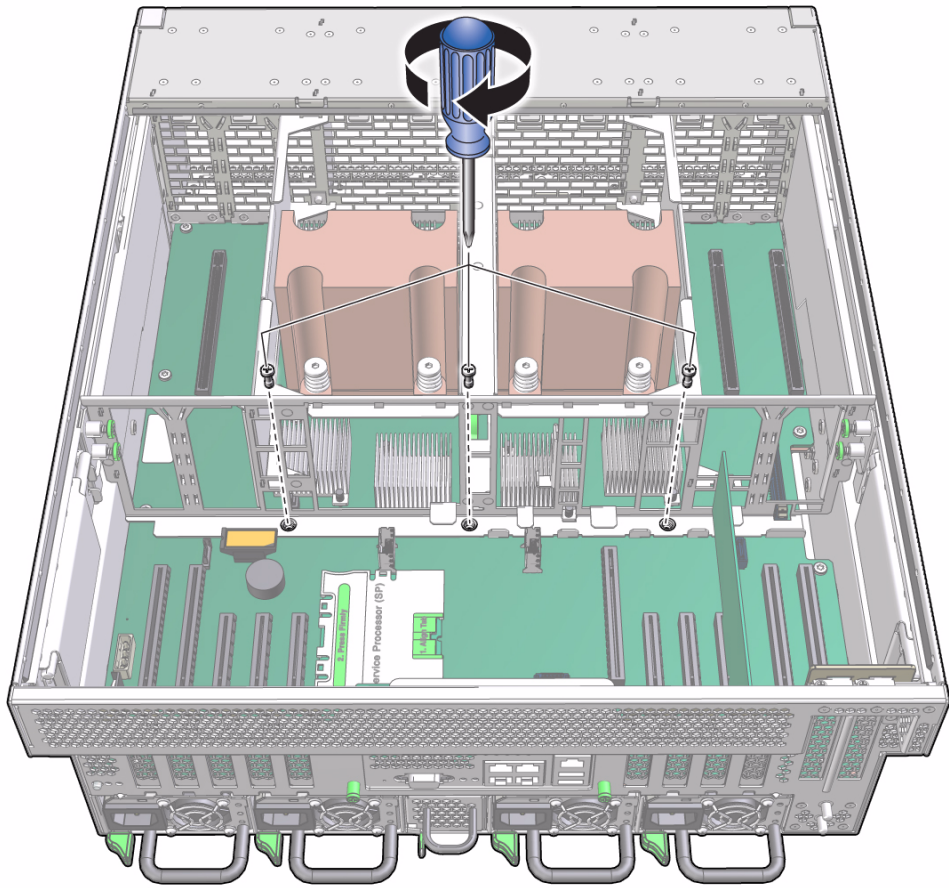
3. Lower the subchassis into the chassis.



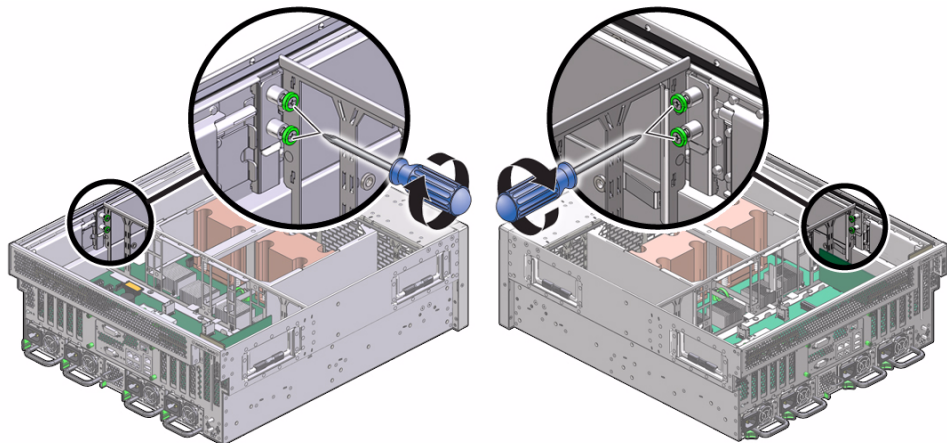
4. Loosely install the three countersunk screws at the upper left and right sides of the chassis.



5. Loosely install the three screws at the rear of the subchassis.



6. Tighten two captive screws at the inside left and right of the subchassis.



7. Tighten all loose screws.

See [Step 4](#) and [Step 5](#).

8. Consider your next steps:

- If you installed the subchassis as part of a replacement operation, go to [Step 9](#).
- If you installed the subchassis as part of another component's removal or installation procedure, return to that procedure. See ["Component Service Task Reference"](#) on [page 65](#) for assistance.

9. Install the memory risers.

See ["Install a Memory Riser"](#) on [page 158](#).

10. Install the fan modules.

See ["Install a Front Fan Module"](#) on [page 95](#).

11. Finish the installation procedure.

See: ["Returning the Server to Operation"](#) on [page 285](#)

Related Information

- ["Remove the Subchassis"](#) on [page 215](#)
- ["Preparing for Service"](#) on [page 59](#)
- ["Returning the Server to Operation"](#) on [page 285](#)

Servicing the LED Board

The LED board provides indicators of chassis and alarm status. The LED board is located vertically at the front left of the chassis. See [“Power Supply, Hard Drive, and Rear Fan Module Locations”](#) on page 2.

Description	Links
Replace the faulty LED board.	“Determine if the LED Board Is Faulty” on page 225 “Remove the LED Board” on page 226 “Install the LED Board” on page 231 “Verify the LED Board” on page 235
Determine whether the LED board is faulty.	“Determine if the LED Board Is Faulty” on page 225 “Detecting and Managing Faults” on page 9

Related Information

- [“Identifying Components”](#) on page 1
- [“Component Service Task Reference”](#) on page 65
- [“Servicing the Subchassis”](#) on page 215
- [“Detecting and Managing Faults”](#) on page 9
- [“Preparing for Service”](#) on page 59
- [“Returning the Server to Operation”](#) on page 285

▼ Determine if the LED Board Is Faulty

You must determine if the LED board is faulty before you replace it.

1. **Check to see if any System Service Required LEDs are lit or flashing.**
See [“Interpreting Diagnostic LEDs”](#) on page 14.

2. Within the Oracle ILOM interface, turn on the LED board LEDs.

```
-> set /SYS/USER_ALARM value=On
Set 'value' to 'On'
-> set /SYS/MINOR_ALARM value=On
Set 'value' to 'On'
-> set /SYS/MAJOR_ALARM value=On
Set 'value' to 'On'
-> set /SYS/CRITICAL_ALARM value=On
Set 'value' to 'On'
-> set /SYS/LOCATE value=fast_blink
Set 'value' to 'fast_blink'
->
```

3. Go to the server and verify the LED board operation.

With the exception of the Service Required LED, all LEDs on the left side of the front panel should be on or flashing.

If the LED board is faulty, replace it. See [“Remove the LED Board”](#) on page 226.

Related Information

- [“Remove the LED Board”](#) on page 226
- [“Install the LED Board”](#) on page 231
- [“Verify the LED Board”](#) on page 235
- [“Detecting and Managing Faults”](#) on page 9

▼ Remove the LED Board

Removing the LED board is a cold-service operation. You must power off the server before you remove the LED board.

1. Consider your first step:

- If you have not prepared for service, do so now. See [“Preparing for Service”](#) on page 59.
- If you are removing the LED board as part of another component’s removal or installation procedure, go to [Step 2](#).

2. Remove the fan modules.

See [“Remove a Front Fan Module”](#) on page 91.

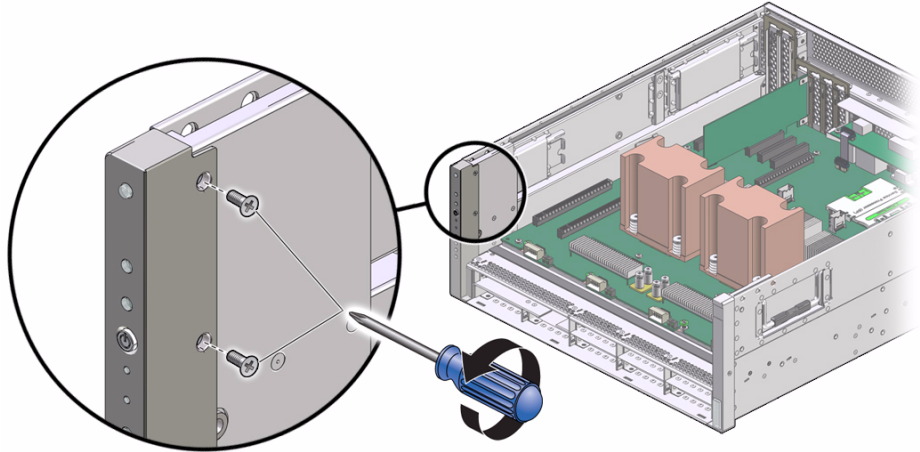
3. Remove the memory risers.

See [“Remove a Memory Riser”](#) on page 156.

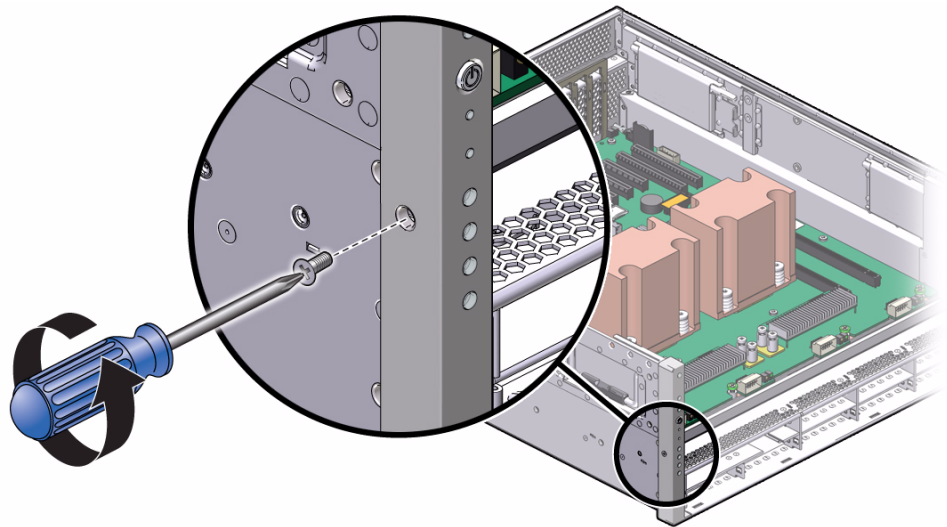
4. Remove the subchassis.

See [“Remove the LED Board”](#) on page 226.

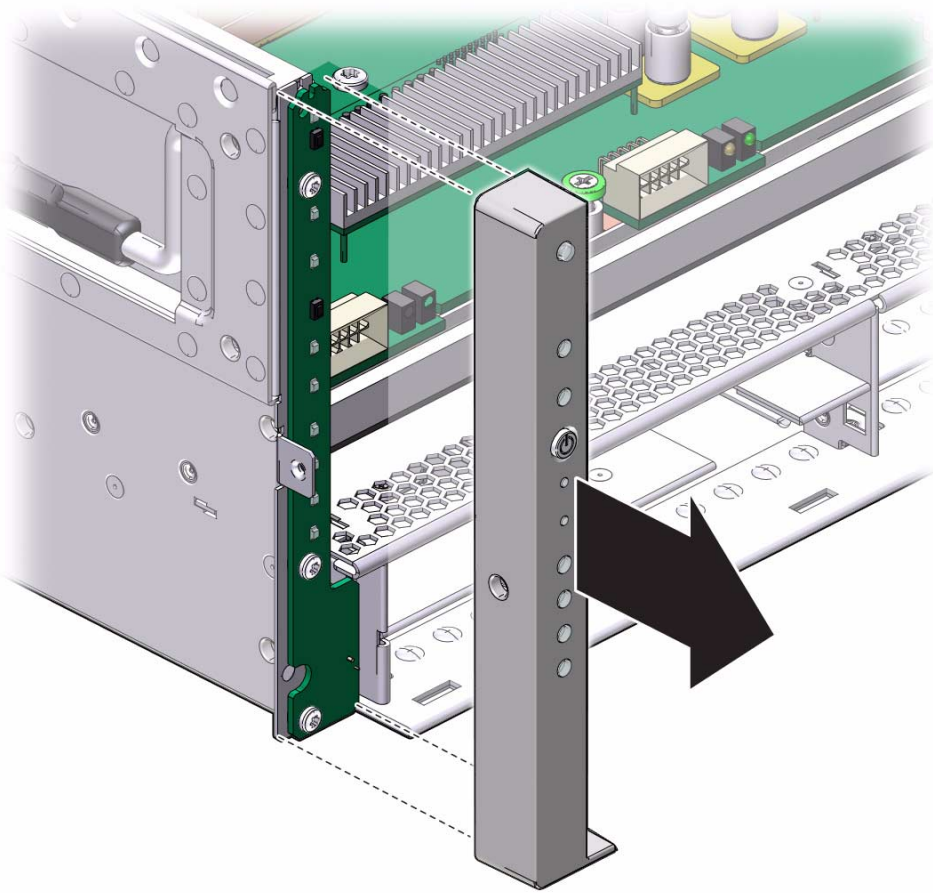
5. Remove the two screws from the right side of the LED board cover.



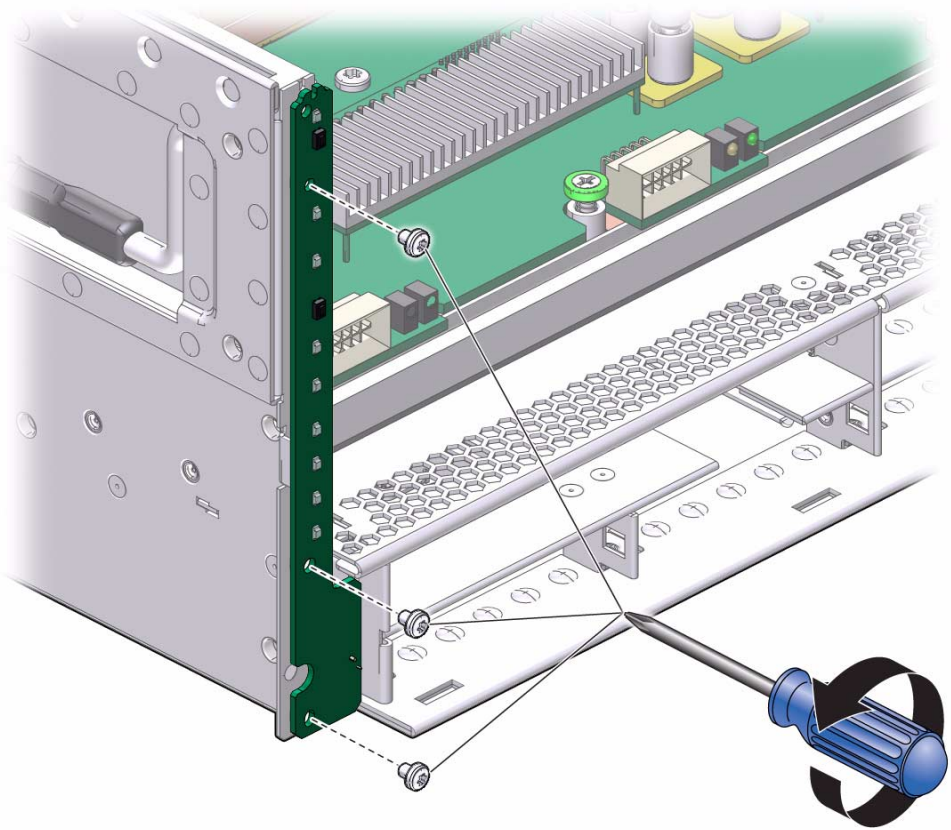
6. Remove the screw from the left side of the LED board cover.



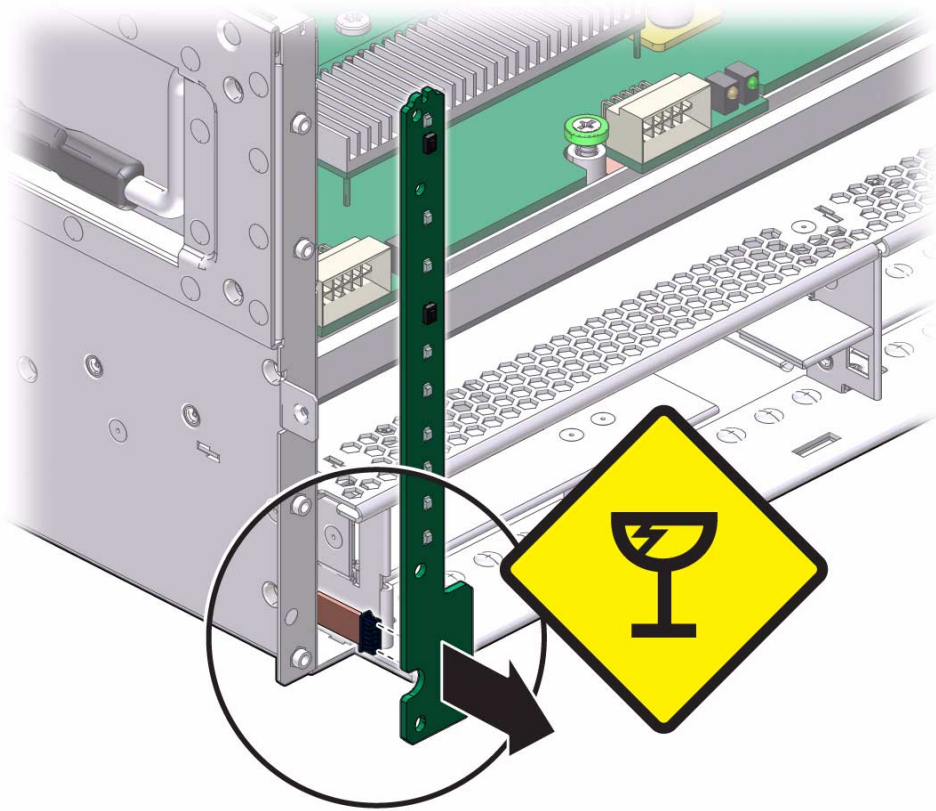
7. Remove the LED board cover.



8. Remove the three screws that secure the LED board to the chassis.



9. Gently disconnect the cable from the LED board.



10. Set the LED board aside.

11. Install a new LED board.

See [“Install the LED Board” on page 231](#).

Related Information

- [“Determine if the LED Board Is Faulty” on page 225](#)
- [“Install the LED Board” on page 231](#)
- [“Verify the LED Board” on page 235](#)
- [“Preparing for Service” on page 59](#)
- [“Returning the Server to Operation” on page 285](#)

▼ Install the LED Board

Installing the LED board is a cold-service operation. You must power off the server before installing the LED board.

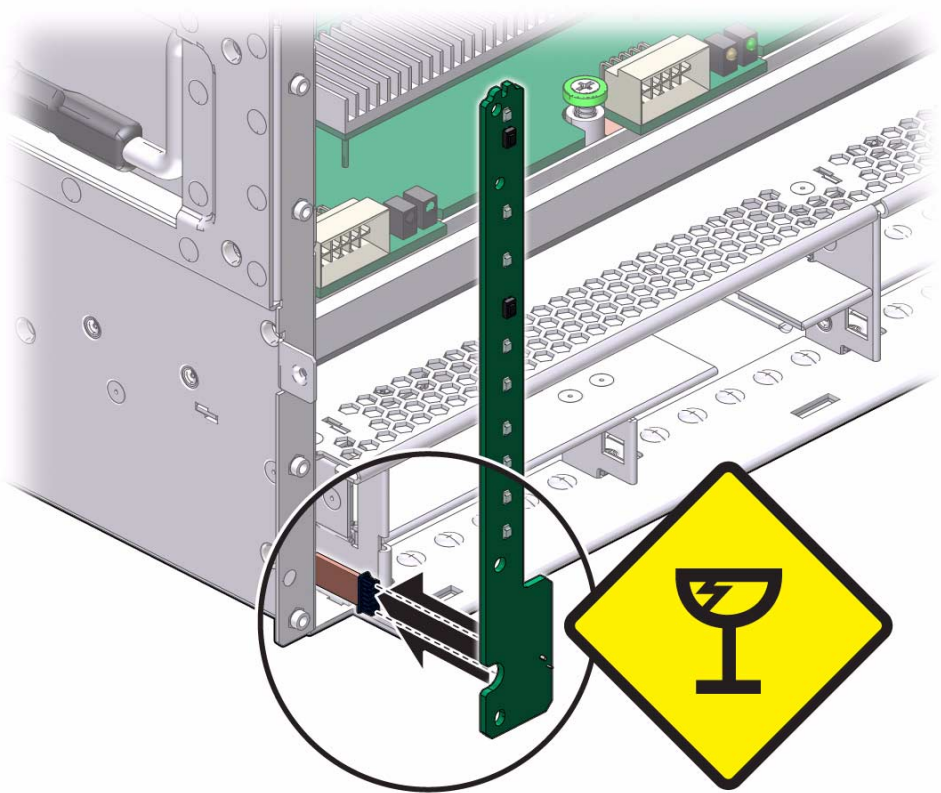
1. Consider your first steps:

- If you are replacing a LED board, remove the faulty or obsolete LED board first, then return to this procedure, [Step 2](#). See [“Remove the LED Board”](#) on page 226.
- Otherwise, go to [Step 2](#).

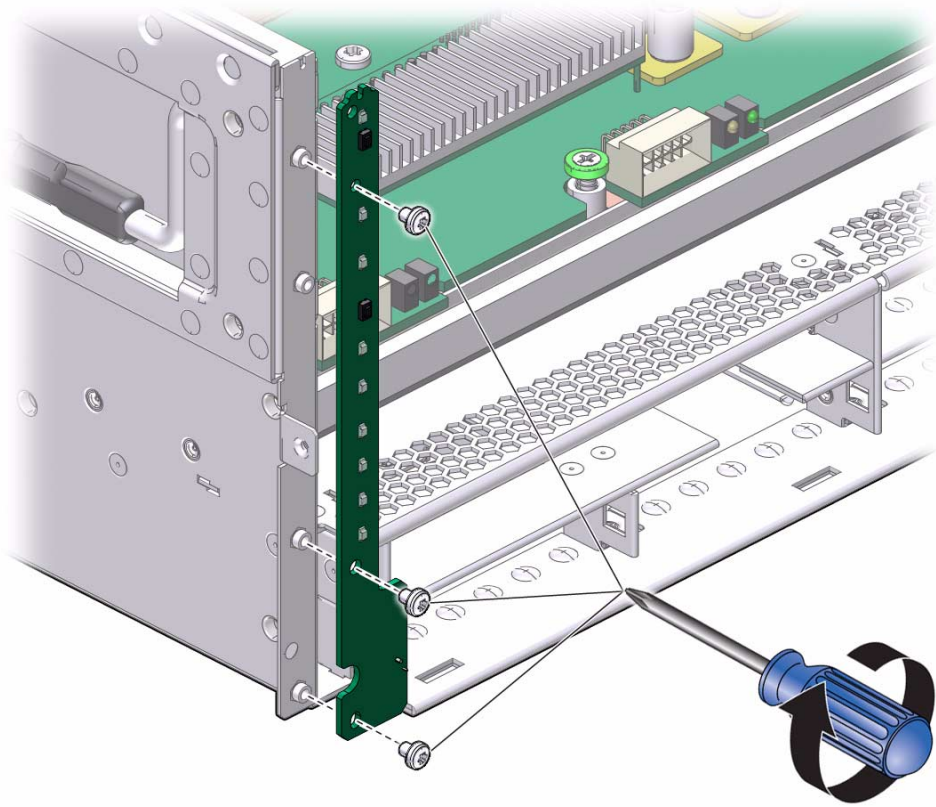
2. Align the LED board to the location where it installs into the chassis.

The connector is at the lower rear of the LED board.

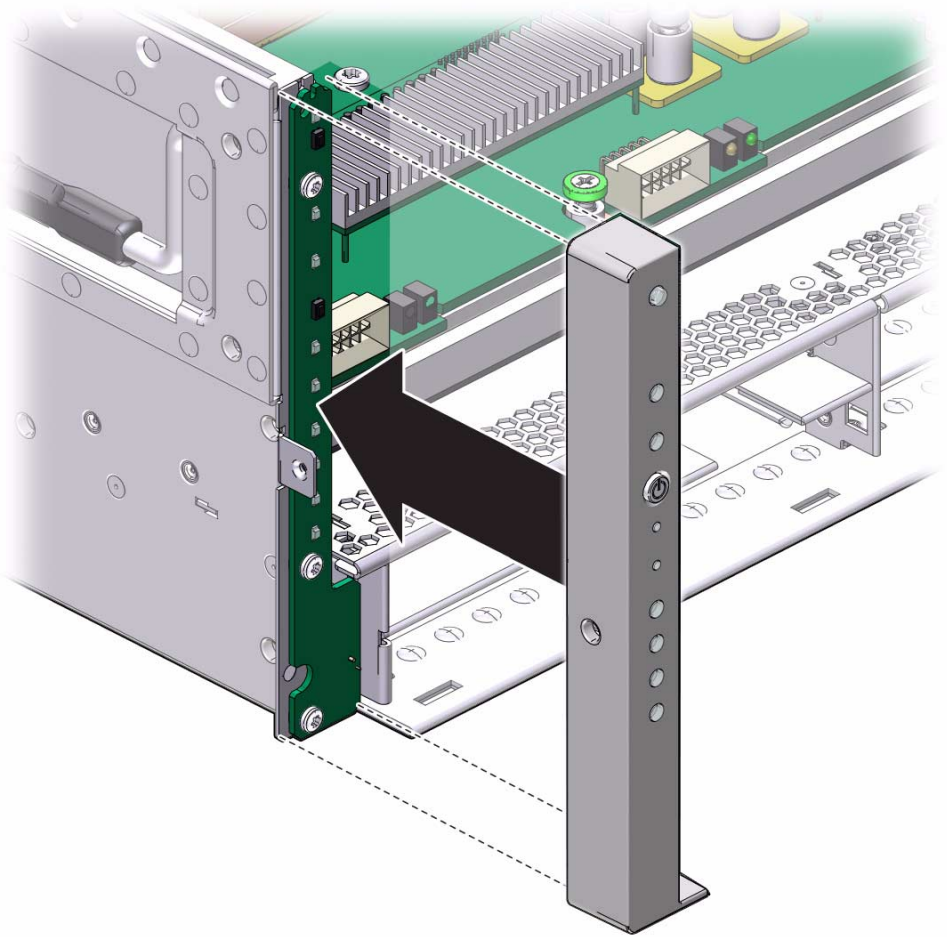
3. Attach the cable to the LED board.



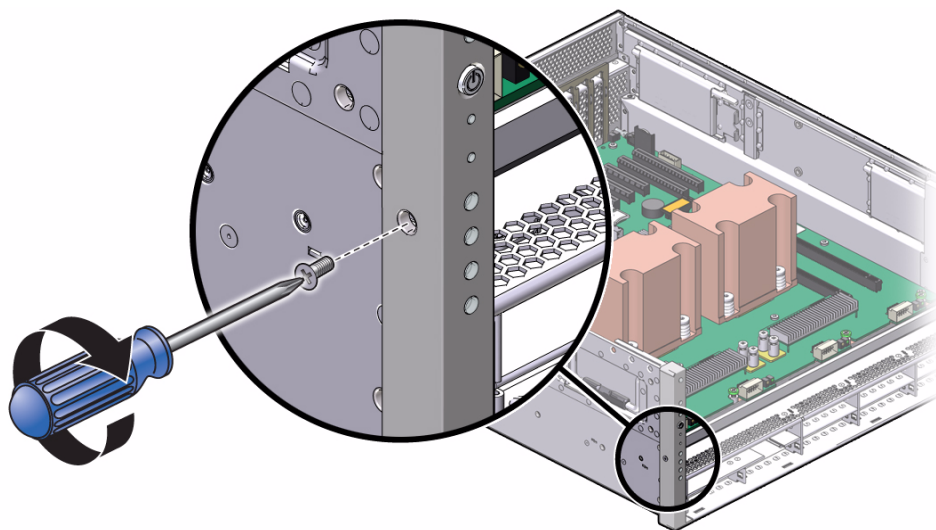
4. Install the three screws that secure the LED board to the chassis.



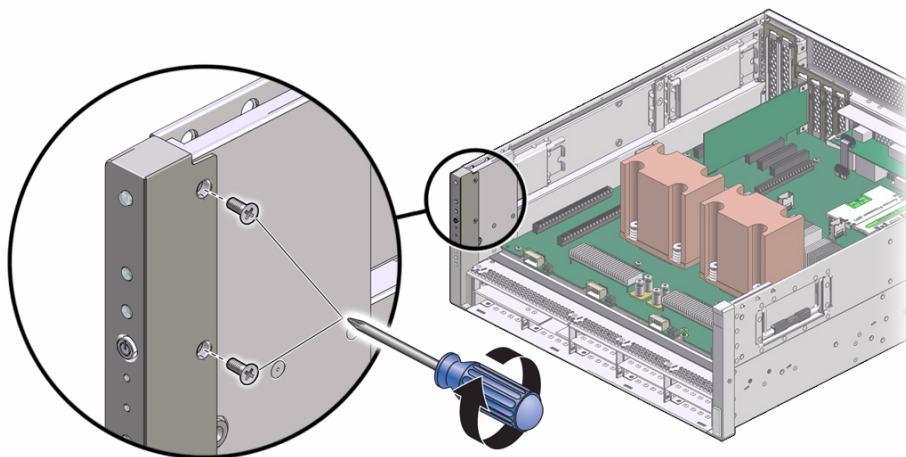
5. Install the LED board cover.



6. Install the screw on the left side of the LED board cover.



7. Install the two screws on the right side of the LED board cover.



8. Install the subchassis.

See [“Install the LED Board”](#) on page 231.

9. Install the memory risers.

See [“Install a Memory Riser”](#) on page 158.

10. Install the fan modules.

See [“Install a Front Fan Module”](#) on page 95.

11. Finish the installation procedure.

See:

- [“Returning the Server to Operation” on page 285](#)
- [“Verify the LED Board” on page 235](#)

Related Information

- [“Determine if the LED Board Is Faulty” on page 225](#)
- [“Remove the LED Board” on page 226](#)
- [“Verify the LED Board” on page 235](#)
- [“Preparing for Service” on page 59](#)
- [“Returning the Server to Operation” on page 285](#)

▼ Verify the LED Board

After you install the LED board, you can verify its functionality.

1. Within the Oracle ILOM interface, turn on the LED board LEDs.

```
-> set /SYS/USER_ALARM value=On
Set 'value' to 'On'
-> set /SYS/MINOR_ALARM value=On
Set 'value' to 'On'
-> set /SYS/MAJOR_ALARM value=On
Set 'value' to 'On'
-> set /SYS/CRITICAL_ALARM value=On
Set 'value' to 'On'
-> set /SYS/LOCATE value=fast_blink
Set 'value' to 'fast_blink'
->
```

2. Go to the server and verify the LED board operation.

With the exception of the Service Required LED, all LEDs on the left side of the front panel should be on or flashing.

Related Information

- [“Determine if the LED Board Is Faulty” on page 225](#)
- [“Remove the LED Board” on page 226](#)
- [“Install the LED Board” on page 231](#)

Servicing the Motherboard

The motherboard is the main hardware component of the server. The motherboard is located at the bottom of the chassis. See [“Motherboard, PCIe2 Cards, and SP Locations”](#) on page 3.

Description	Links
Replace the faulty motherboard.	“Determine if the Motherboard Is Faulty” on page 238 “Remove the Motherboard” on page 240 “Install the Motherboard” on page 246 “Verify the Motherboard” on page 256
Remove the motherboard as part of another component’s service operation.	“Remove the Motherboard” on page 240
Install the motherboard as part of another component’s service operation.	“Install the Motherboard” on page 246
Determine whether the motherboard is faulty.	“Determine if the Motherboard Is Faulty” on page 238 “Detecting and Managing Faults” on page 9

Related Information

- [“Identifying Components”](#) on page 1
- [“Component Service Task Reference”](#) on page 65
- [“Detecting and Managing Faults”](#) on page 9
- [“Preparing for Service”](#) on page 59
- [“Returning the Server to Operation”](#) on page 285

▼ Determine if the Motherboard Is Faulty

You must determine if the motherboard is faulty before you replace it.

1. Check to see if any System Service Required LEDs are lit or flashing.

See [“Interpreting Diagnostic LEDs” on page 14](#).

2. Within the Oracle ILOM interface, type the `show faulty` command to verify that the motherboard is faulty.

If the motherboard is faulty, you will see `/SYS/MB` under the Value heading. For example:

```
-> show faulty
```

Target	Property	Value
/SP/faultmgmt/0	fru	/SYS/MB
.		
.		
.		

```
->
```

If the motherboard is faulty, replace it. See [“Remove the Motherboard” on page 240](#).

If a FRU value different from `/SYS/MB` is displayed, see [“Component Service Task Reference” on page 65](#) to identify which component is faulty.

3. Start the Oracle ILOM `faultmgmt shell`.

```
-> start /SP/faultmgmt/shell
```

```
Are you sure you want to start /SP/faultmgmt/shell (y/n)? y
```

```
faultmgmtsp>
```


4. Identify the faulty component.

For example:

```
faultmgmtsp> fmadm faulty
-----
Time                UUID                                msgid                Severity
-----
2010-08-11/14:54:23 59654226-50d3-cdc6-9f09-e591f39792ca SPT-8000-LC         Critical

Fault class : fault.chassis.power.volt-fail

Description : A Power Supply voltage level has exceeded acceptable limits.
.
.
.
faultmgmtsp>
```

Check the `Fault class` and `Description` fields for more information.

If the motherboard is faulty, replace it. See [“Remove the Motherboard” on page 240](#).

5. Exit the Oracle ILOM `faultmgmt shell`.

```
faultmgmtsp> exit
->
```

6. Within the Oracle ILOM interface, verify the presence of the motherboard.

```
-> show /SYS/MB type
/SYS/MB
Properties:
    type = Motherboard
->
```

If the motherboard does not report its presence, replace it. See [“Remove the Motherboard” on page 240](#).

7. If you are unable to determine if the motherboard is faulty, seek further information.

See [“Detecting and Managing Faults” on page 9](#).

Related Information

- [“Remove the Motherboard” on page 240](#)
- [“Install the Motherboard” on page 246](#)

- [“Verify the Motherboard” on page 256](#)
- [“Detecting and Managing Faults” on page 9](#)

▼ Remove the Motherboard

Flash memory on the motherboard stores this information:

- OBP NVRAM configuration variables
- POST configuration variables
- SC configuration variables (IO reconfig, power mgmt, boot mode)
- ASR database
- Saved Oracle VM Server for SPARC logical domains configuration
- Console log
- System error report log
- Time of day data (`tod-offset`)

If you are removing the motherboard for replacement, this information will be lost. Record the information as necessary before powering off the server. Refer to the Oracle Solaris documentation for more information.

Removing the motherboard is a cold-service operation. You must power off the server before you remove the motherboard.

1. Consider your first step:

- If you have not prepared for service, do so now. See [“Preparing for Service” on page 59](#).
- If you are removing the motherboard as part of another component’s removal or installation procedure, go to [Step 2](#).

2. Remove the front fan modules.

See [“Remove a Front Fan Module” on page 91](#).

3. Remove the PCIe2 cards.

See [“Remove a PCIe2 Card” on page 188](#).

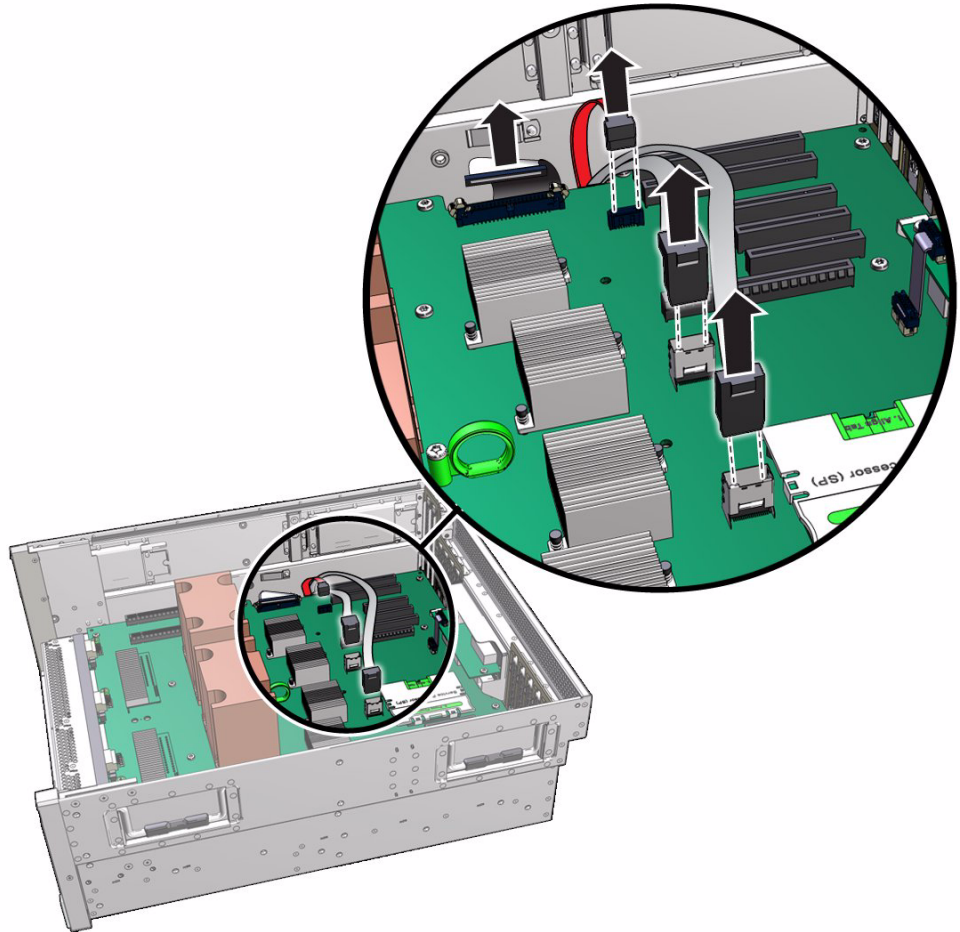
4. Remove the SP.

See [“Remove the SP” on page 200](#).

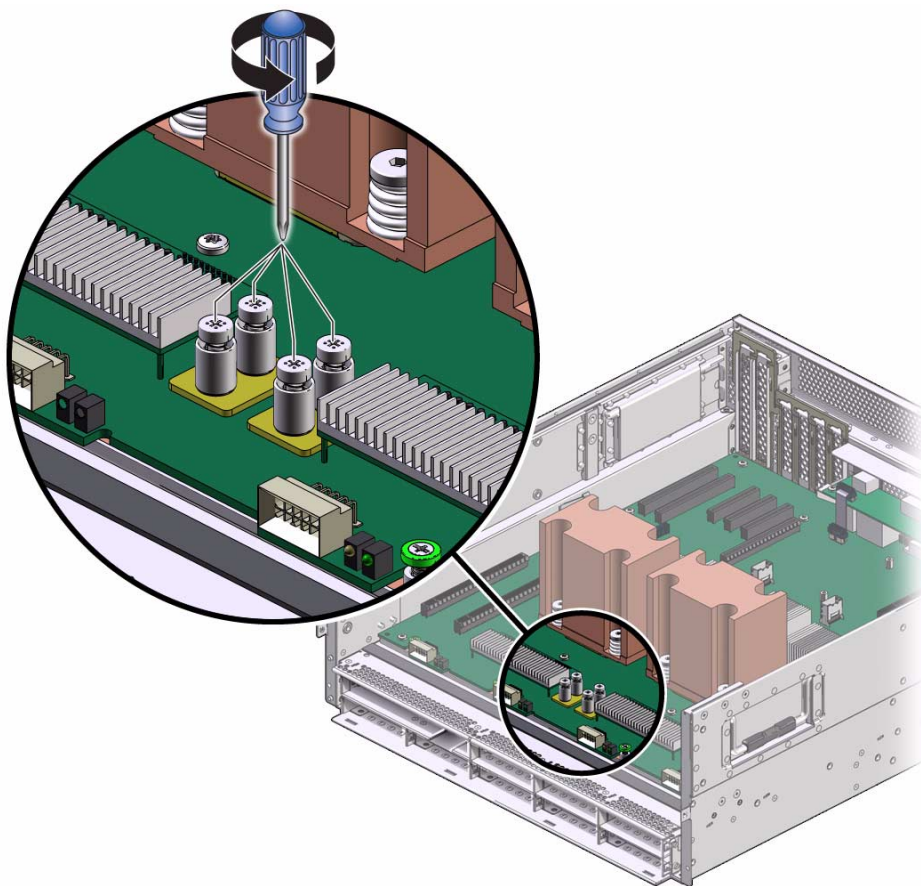
5. Remove the NVRAM.

See [“Remove the ID PROM” on page 210](#).

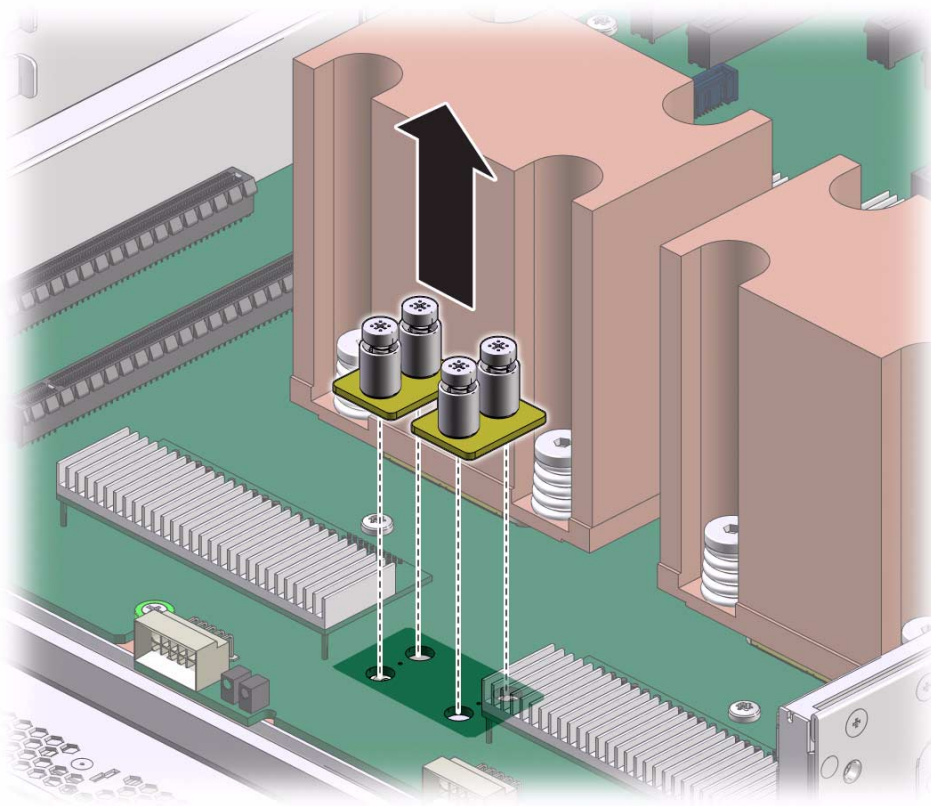
6. Remove the memory risers.
See [“Remove a Memory Riser”](#) on page 156.
7. Remove the subchassis.
See [“Remove the Subchassis”](#) on page 215.
8. Disconnect all cables from the motherboard.



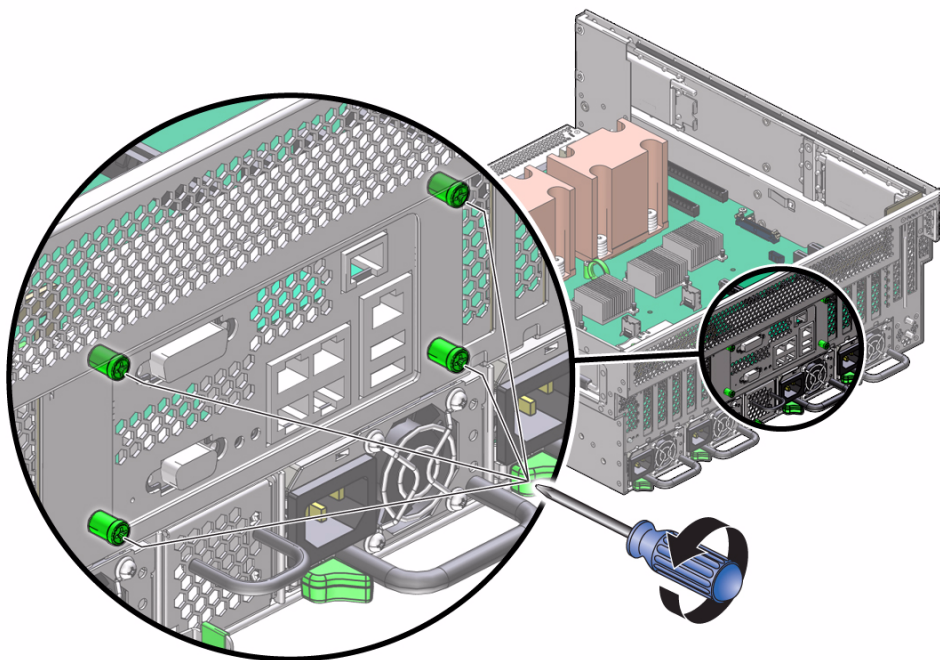
9. Loosen the four captive screws of the bus bar blocks.



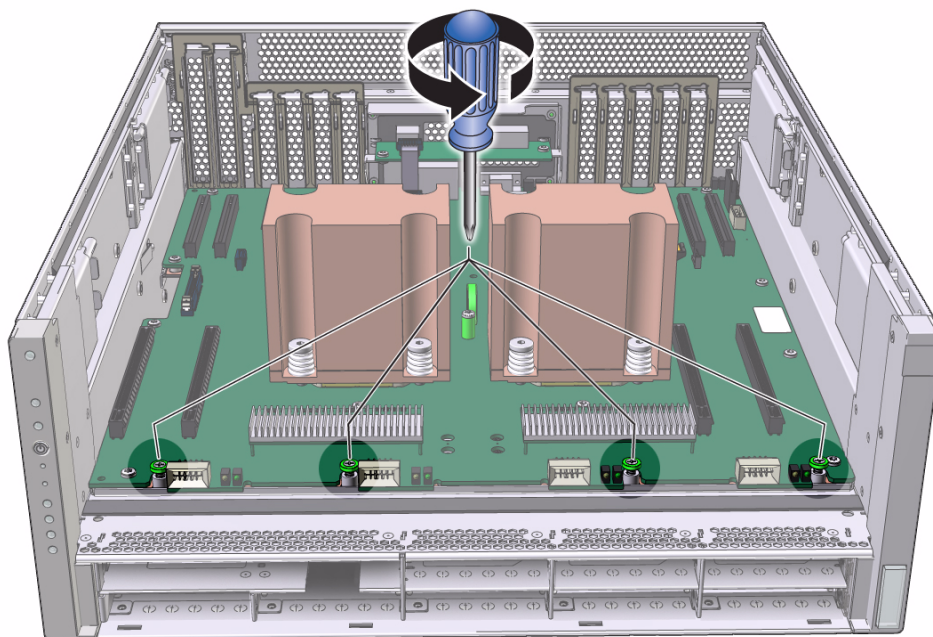
10. Remove the two bus bar blocks.



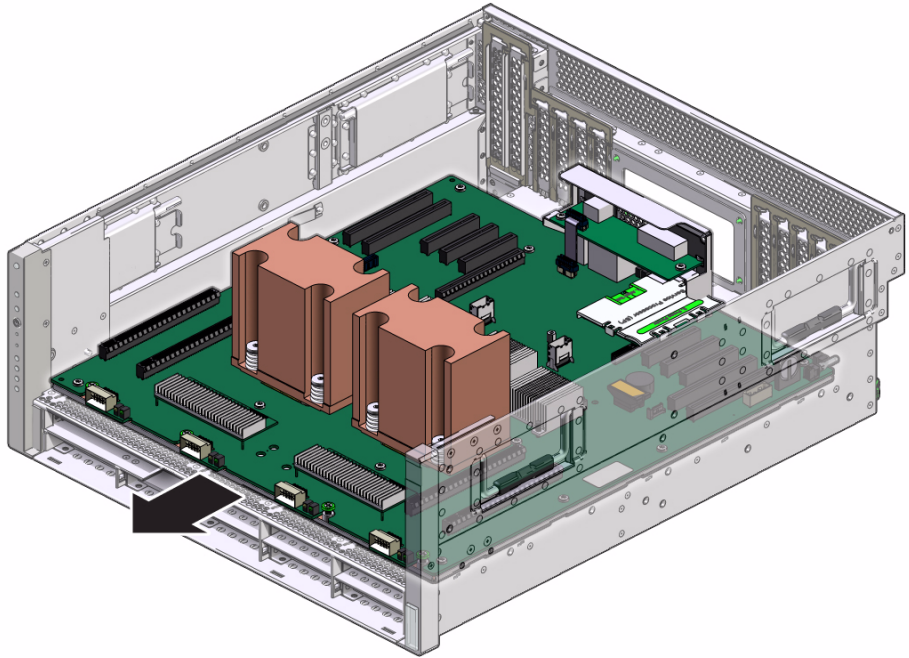
11. Loosen the 4 captive screws at the rear panel of the chassis.



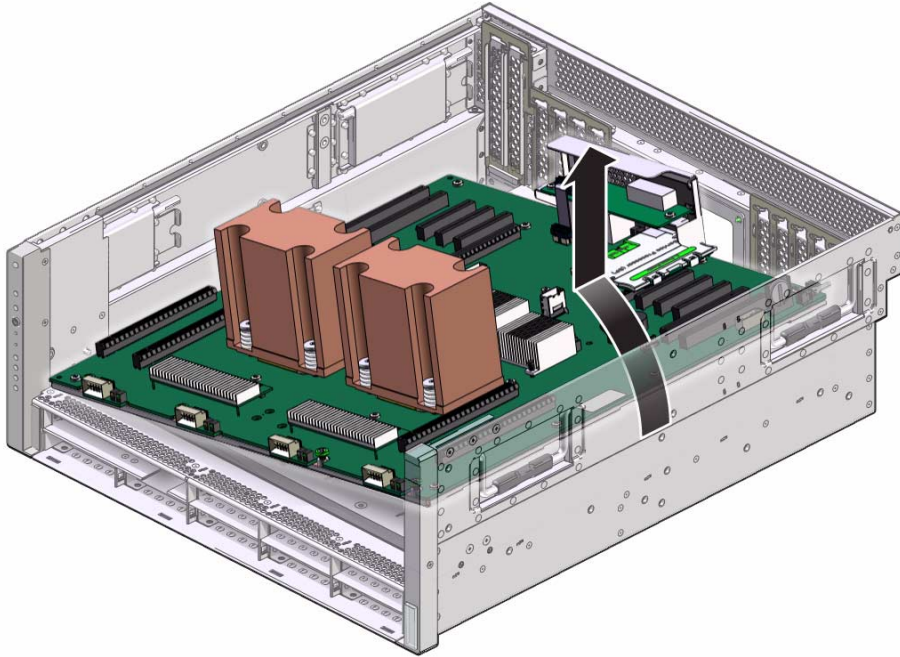
12. Loosen the four captive screws at the front edge of the motherboard.



13. Slide the motherboard forward and lift it slightly.



14. Raise the right side of the motherboard up and lift the motherboard out of the chassis, toward the right.



15. Consider your next steps:

- If you removed the motherboard as part of a replacement operation, install a new motherboard. See [“Install the Motherboard” on page 246](#).
- If you removed the motherboard as part of another component’s removal or installation procedure, return to that procedure. See [“Component Service Task Reference” on page 65](#) for assistance.

Related Information

- [“Determine if the Motherboard Is Faulty” on page 238](#)
- [“Install the Motherboard” on page 246](#)
- [“Verify the Motherboard” on page 256](#)
- [“Preparing for Service” on page 59](#)
- [“Returning the Server to Operation” on page 285](#)

▼ Install the Motherboard

Flash memory on the motherboard stores this information:

- OBP NVRAM configuration variables
- POST configuration variables
- SC configuration variables (IO reconfig, power mgmt, boot mode)
- ASR database
- Saved Oracle VM Server for SPARC logical domains configuration
- Console log
- System error report log
- Time of day data (`tod-offset`)

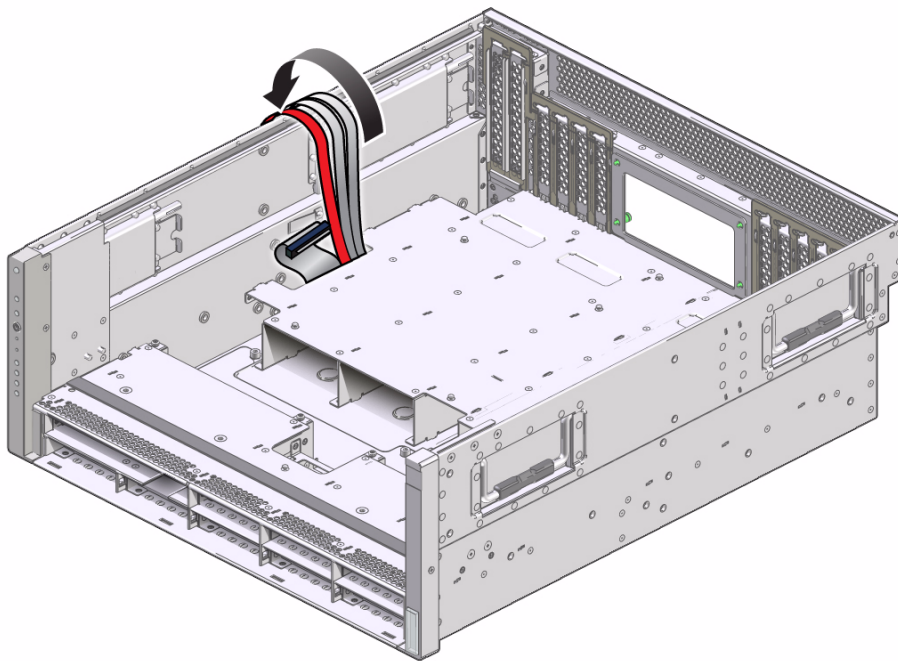
Note – If you are installing a new motherboard as a replacement operation, you can restore this information from values you recorded previously. Refer to the Oracle Solaris documentation for more information.

Installing the motherboard is a cold-service operation. You must power off the server before installing the motherboard.

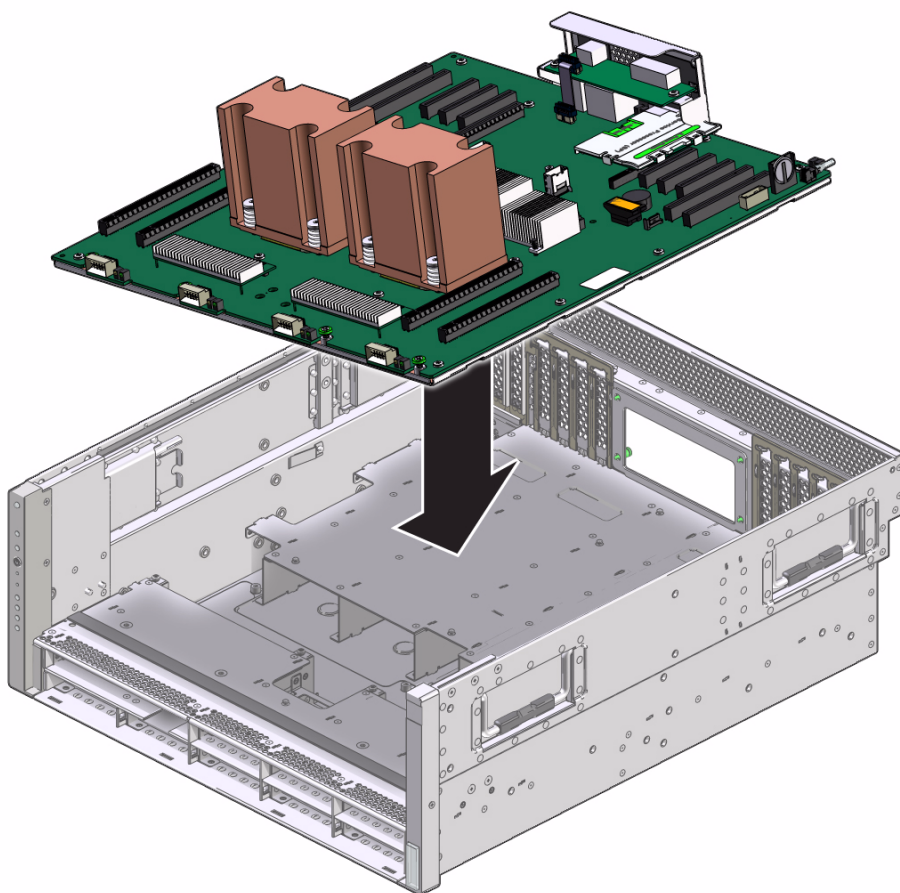
1. Consider your first steps:

- If you are replacing a motherboard, remove the faulty or obsolete motherboard first, then return to this procedure, [Step 2](#). See [“Remove the Motherboard” on page 240](#).
- If you are installing the motherboard as part of another component’s removal or installation procedure, go to [Step 2](#).

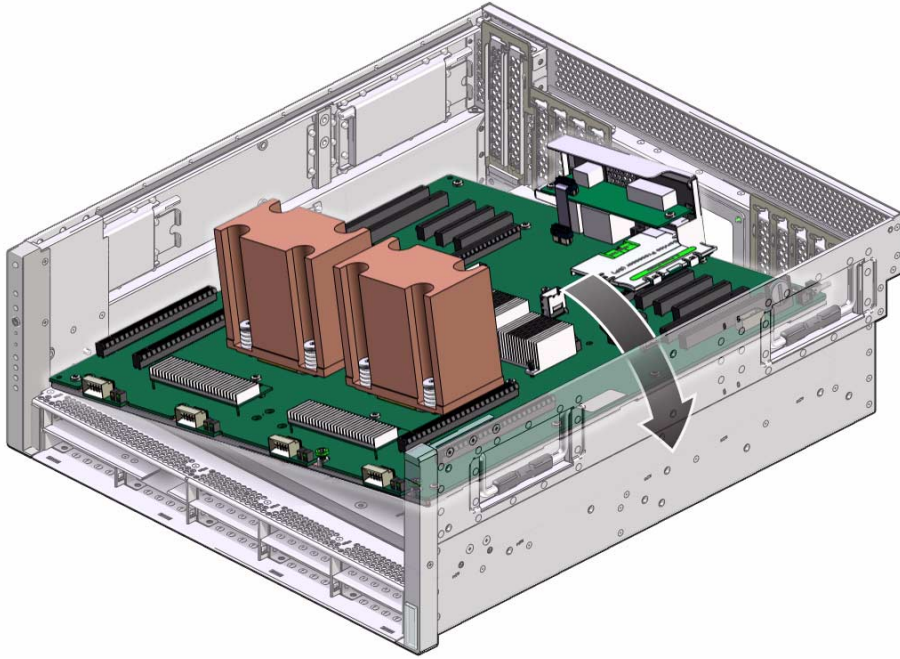
2. Collect the cables to the left of the chassis.



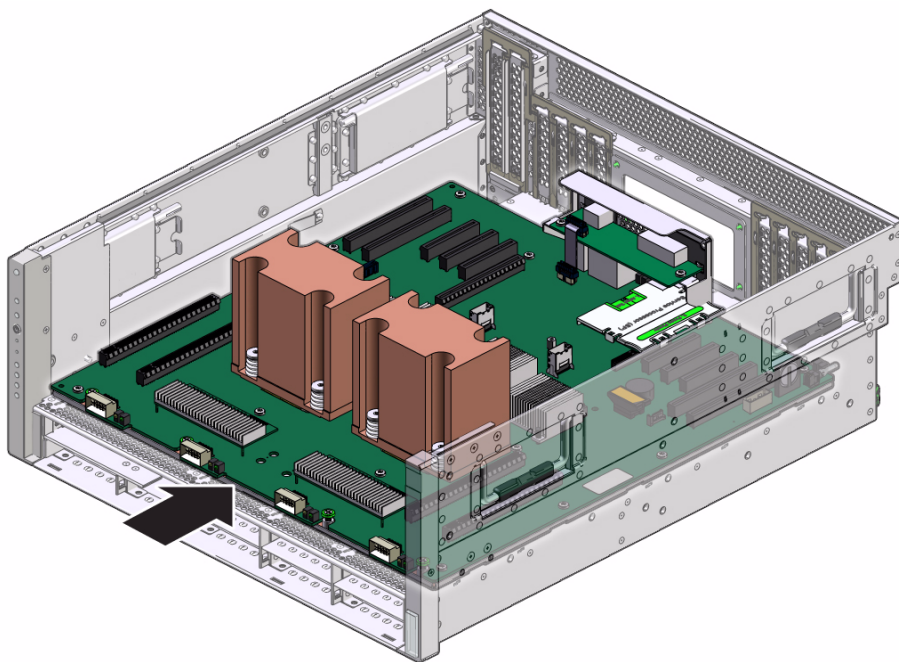
- 3. Align the motherboard to the location where it installs into the chassis.**
The components point up, and the connectors are at the rear of the chassis.



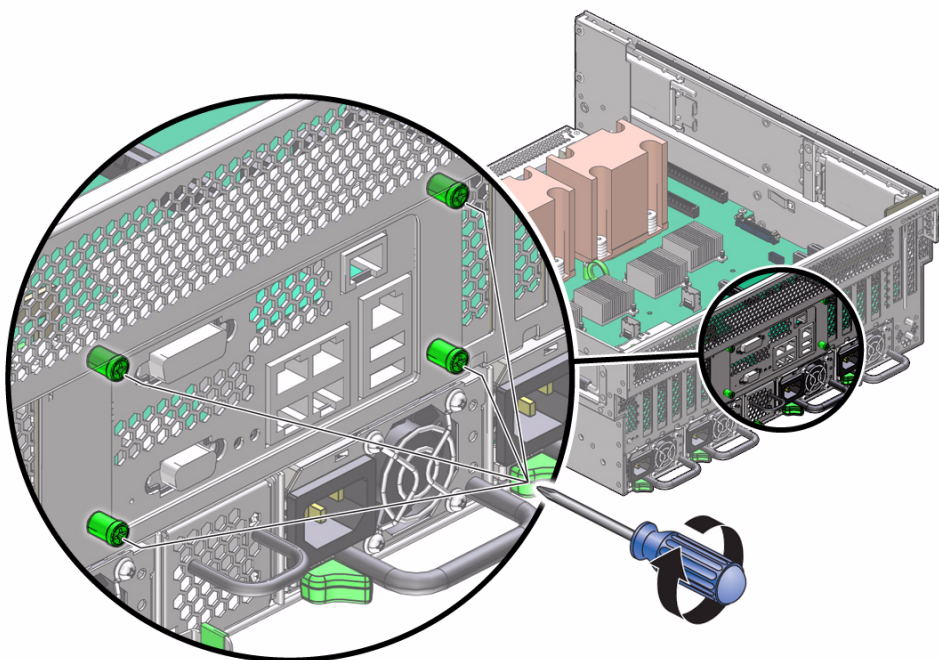
4. Lower the left side of the motherboard, so that the edge rests in the left corner.



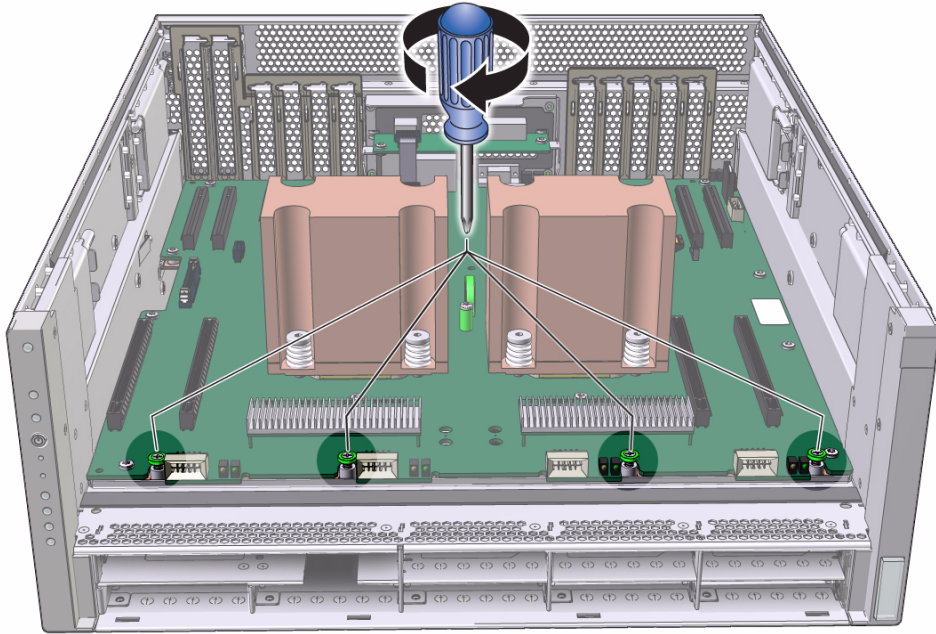
5. Lower the motherboard completely into the chassis, and slide it back toward the rear of the chassis.



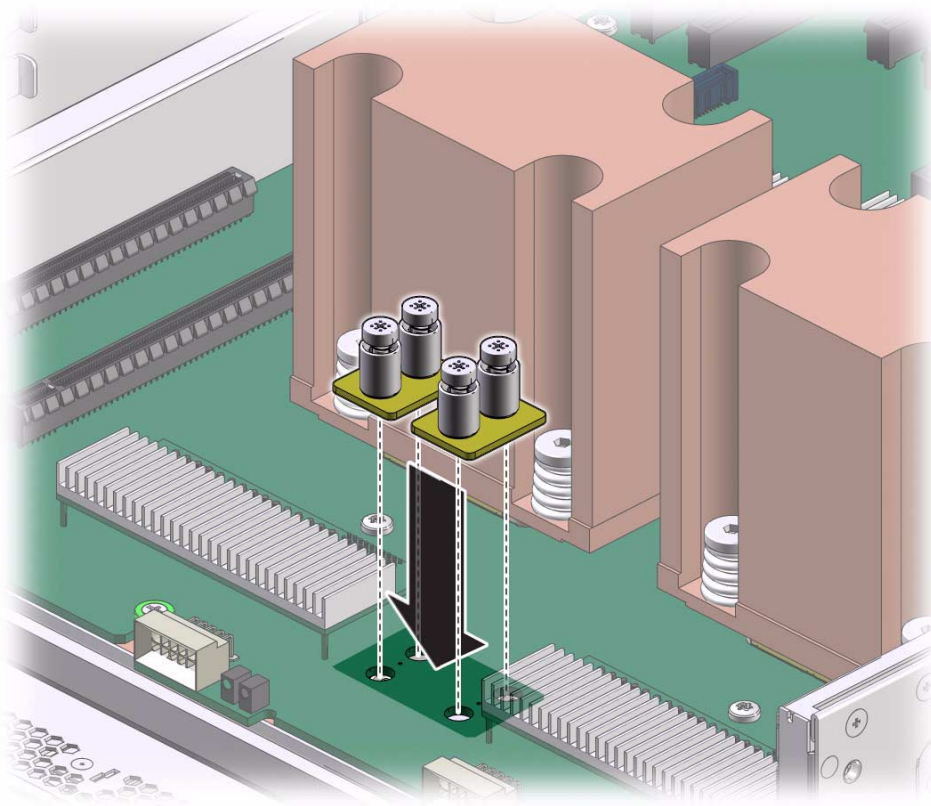
6. Secure the 4 captive screws at the rear panel of the chassis.



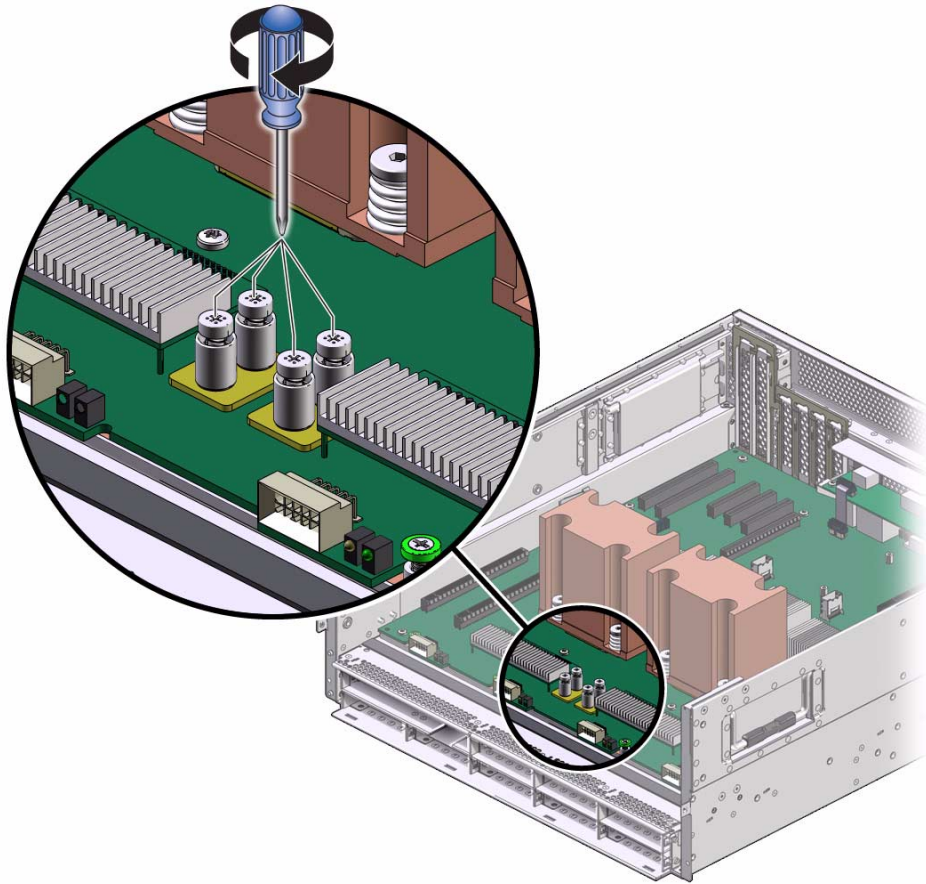
7. Secure the four captive screws at the front edge of the motherboard.



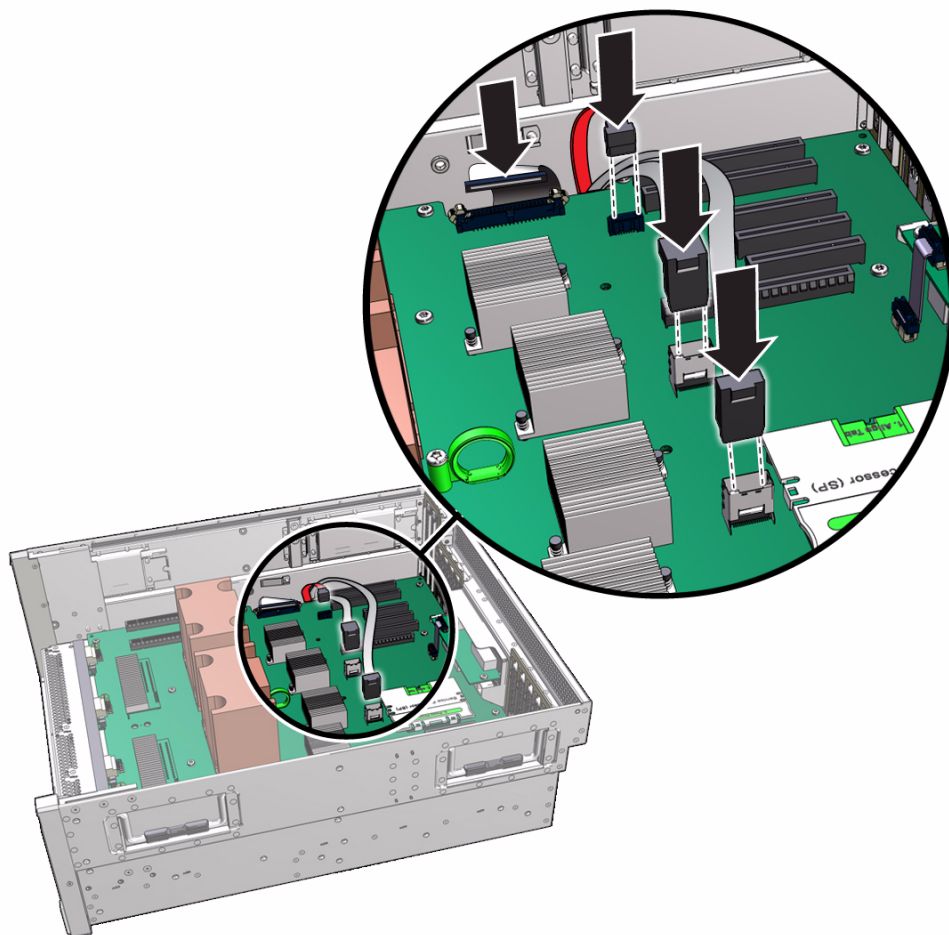
8. Install the two bus bar blocks.



9. Tighten the four captive screws of the bus bar blocks.



10. Connect all cables to the motherboard.



11. Consider your next steps:

- If you installed the motherboard as part of a replacement operation, go to [Step 12](#).
- If you installed the motherboard as part of another component's removal or installation procedure, return to that procedure. See ["Component Service Task Reference" on page 65](#) for assistance.

12. Install the subchassis.

See ["Install the Subchassis" on page 219](#).

13. Install the memory risers.

See ["Install a Memory Riser" on page 158](#).

14. Install the NVRAM.

See [“Install the ID PROM”](#) on page 212.

15. Install the SP.

See [“Install the SP”](#) on page 202.

16. Install the PCIe2 cards.

See [“Install a PCIe2 Card”](#) on page 191.

17. Install the front fan modules.

See [“Install a Front Fan Module”](#) on page 95.

18. Finish the installation procedure.

See:

- [“Returning the Server to Operation”](#) on page 285
- [“Verify the Motherboard”](#) on page 256

Related Information

- [“Determine if the Motherboard Is Faulty”](#) on page 238
- [“Remove the Motherboard”](#) on page 240
- [“Verify the Motherboard”](#) on page 256
- [“Preparing for Service”](#) on page 59
- [“Returning the Server to Operation”](#) on page 285

▼ Verify the Motherboard

After you install a motherboard, you can verify its functionality.

1. Reset the motherboard.

```
-> set /SYS/MB clear_fault_action=true
Are you sure you want to clear /SYS/MB (y/n)? y
Set 'clear_fault_action' to 'true'

->
```

2. Verify that the motherboard is no longer considered faulty, then return to this procedure.

See [“Determine if the Motherboard Is Faulty”](#) on page 238.

3. Verify the presence of the motherboard.

```
-> show /SYS/MB type  
/SYS/MB  
Properties:  
    type = Motherboard  
->
```

Related Information

- [“Determine if the Motherboard Is Faulty” on page 238](#)
- [“Remove the Motherboard” on page 240](#)
- [“Install the Motherboard” on page 246](#)

Servicing the Power Distribution Board

The power distribution board is routes power and signals from the power supplies to the bus bars and the motherboard. The power distribution board is centrally located underneath the motherboard. See [“Power Supply, Hard Drive, and Rear Fan Module Locations”](#) on page 2.

Description	Links
Replace the faulty power distribution board.	“Determine if the Power Distribution Board Is Faulty” on page 260 “Remove the Power Distribution Board” on page 261 “Install the Power Distribution Board” on page 266 “Verify the Power Distribution Board” on page 270
Remove the power distribution board as part of another component’s service operation.	“Remove the Power Distribution Board” on page 261
Install the power distribution board as part of another component’s service operation.	“Install the Power Distribution Board” on page 266
Determine whether the power distribution board is faulty.	“Determine if the Power Distribution Board Is Faulty” on page 260 “Detecting and Managing Faults” on page 9

Related Information

- [“Identifying Components”](#) on page 1
- [“Component Service Task Reference”](#) on page 65
- [“Servicing Power Supplies”](#) on page 125
- [“Servicing the Rear Fan Module”](#) on page 139
- [“Detecting and Managing Faults”](#) on page 9
- [“Preparing for Service”](#) on page 59
- [“Returning the Server to Operation”](#) on page 285

▼ Determine if the Power Distribution Board Is Faulty

You must determine if the power distribution board is faulty before you replace it.

1. Check to see if any System Service Required LEDs are lit or flashing.

See [“Interpreting Diagnostic LEDs” on page 14.](#)

2. Within the Oracle ILOM interface, verify the power distribution board.

```
-> show /SYS/MB/V_+12V0_MAIN value
/SYS/MB/V_+12V0_MAIN
Properties:
value = 12.036 Volts
-> show /SYS/MB/V_+3V3_STBY value
/SYS/MB/V_+3V3_STBY
Properties:
value = 3.360 Volts
->
```

If the power distribution board is faulty, replace it. See [“Remove the Power Distribution Board” on page 261.](#)

3. Start the Oracle ILOM faultmgmt shell.

```
-> start /SP/faultmgmt/shell
Are you sure you want to start /SP/faultmgmt/shell (y/n)? y

faultmgmtsp>
```

4. Identify the faulty component.

```
faultmgmtsp> fmadm faulty
-----
Time                UUID                                msgid                Severity
-----
2010-08-11/14:54:23 59654226-50d3-cdc6-9f09-e591f39792ca SPT-8000-LC        Critical

Fault class : fault.chassis.power.volt-fail

Description : A Power Supply voltage level has exceeded acceptable limits.
.
.
.
faultmgmtsp>
```

Check the `Fault class` and `Description` fields for more information.

If the power distribution board is faulty, replace it. See [“Remove the Power Distribution Board” on page 261](#).

5. Exit the Oracle ILOM `faultmgmt` shell.

```
faultmgmtsp> exit
->
```

6. If you are unable to determine if the power distribution board is faulty, seek further information.

See [“Detecting and Managing Faults” on page 9](#).

Related Information

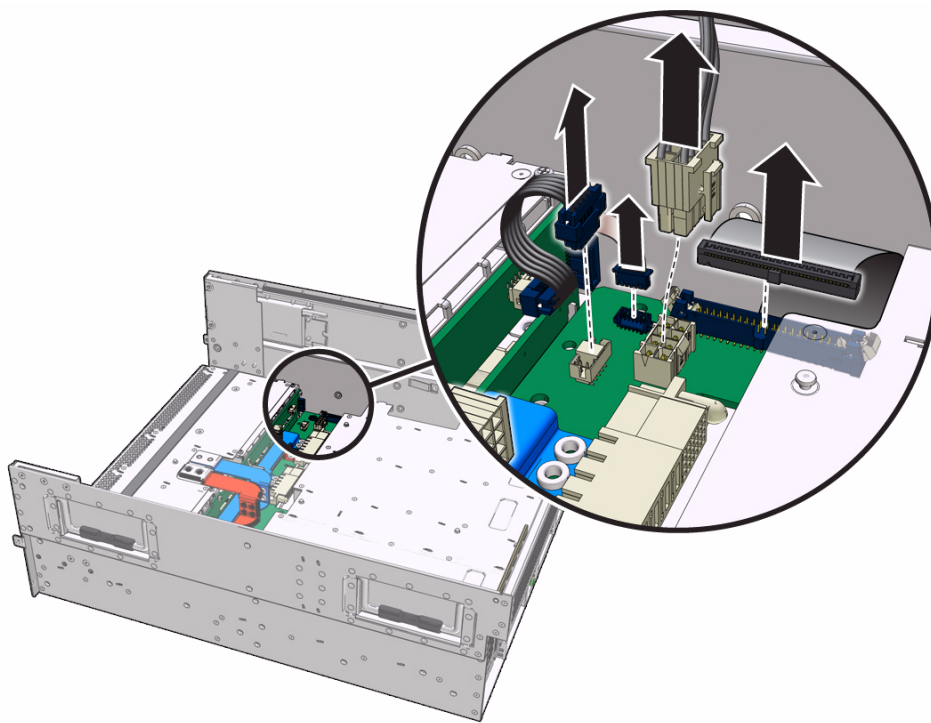
- [“Remove the Power Distribution Board” on page 261](#)
- [“Install the Power Distribution Board” on page 266](#)
- [“Verify the Power Distribution Board” on page 270](#)
- [“Detecting and Managing Faults” on page 9](#)

▼ Remove the Power Distribution Board

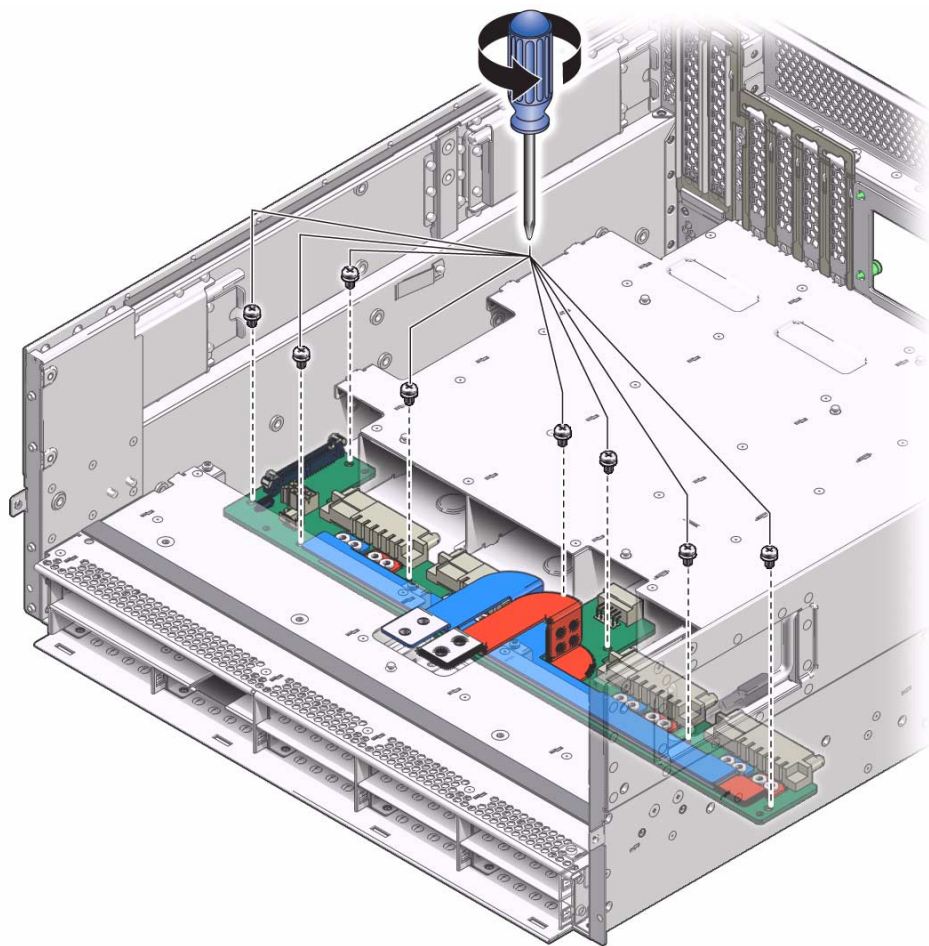
Removing the power distribution board is a cold-service operation. You must run commands on the server before you remove the power distribution board.

1. Consider your first step:

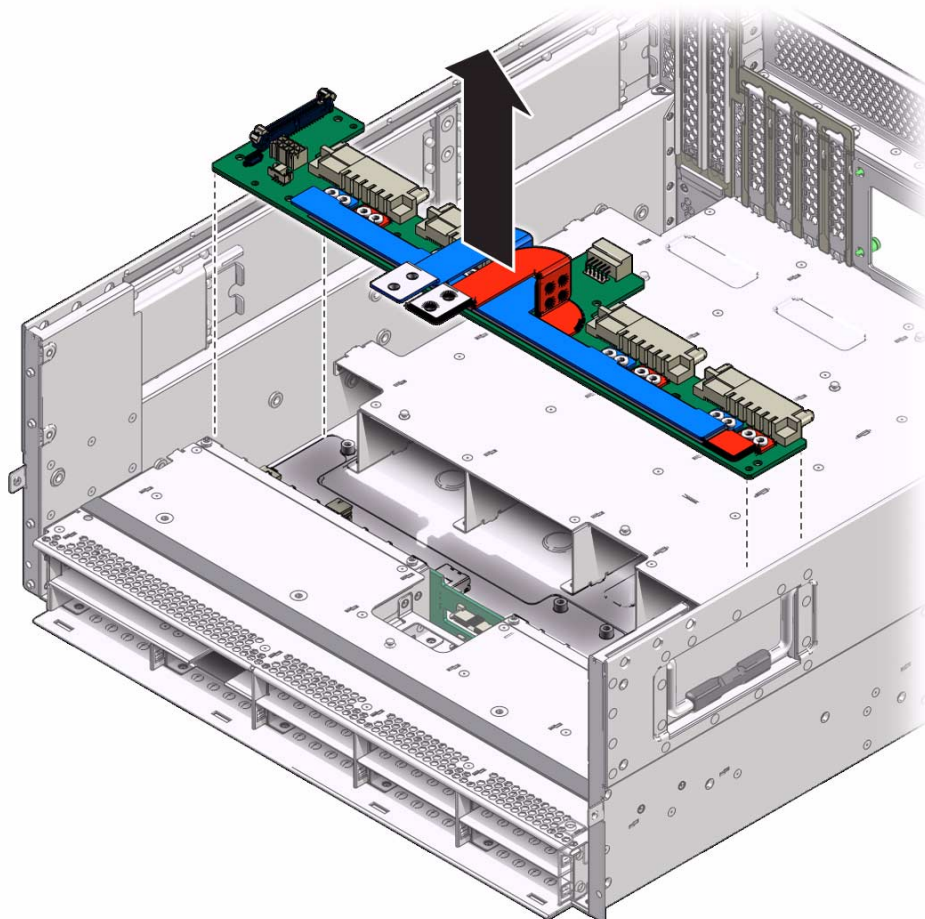
- If you have not prepared for service, do so now. See [“Preparing for Service”](#) on page 59.
 - If you are removing the power distribution board as part of another component’s removal or installation procedure, go to [Step 2](#).
- 2. Remove the power supplies.**
See [“Remove a Power Supply”](#) on page 129.
 - 3. Remove the rear fan module.**
See [“Remove the Rear Fan Module”](#) on page 143.
 - 4. Remove the front fan modules.**
See [“Remove a Front Fan Module”](#) on page 91.
 - 5. Remove the PCIe2 cards.**
See [“Remove a PCIe2 Card”](#) on page 188.
 - 6. Remove the memory risers.**
See [“Remove a Memory Riser”](#) on page 156.
 - 7. Remove the subchassis.**
See [“Remove the Subchassis”](#) on page 215.
 - 8. Remove the motherboard.**
See [“Remove the Motherboard”](#) on page 240.
 - 9. Disconnect the cables from the power distribution board.**



10. Remove the eight screws from the power distribution board.



11. Lift the power distribution board out of the chassis.



12. Separate the power distribution board from the hard drive backplane and set them aside.
13. Consider your next steps:
 - If you removed the power distribution board as part of a replacement operation, install a new power distribution board. See [“Install the Power Distribution Board”](#) on page 266.
 - If you removed the power distribution board as part of another component’s removal or installation procedure, return to that procedure. See [“Component Service Task Reference”](#) on page 65 for assistance.

Related Information

- [“Determine if the Power Distribution Board Is Faulty”](#) on page 260

- “Install the Power Distribution Board” on page 266
- “Verify the Power Distribution Board” on page 270
- “Preparing for Service” on page 59
- “Returning the Server to Operation” on page 285

▼ Install the Power Distribution Board

Installing the power distribution board is a cold-service operation.

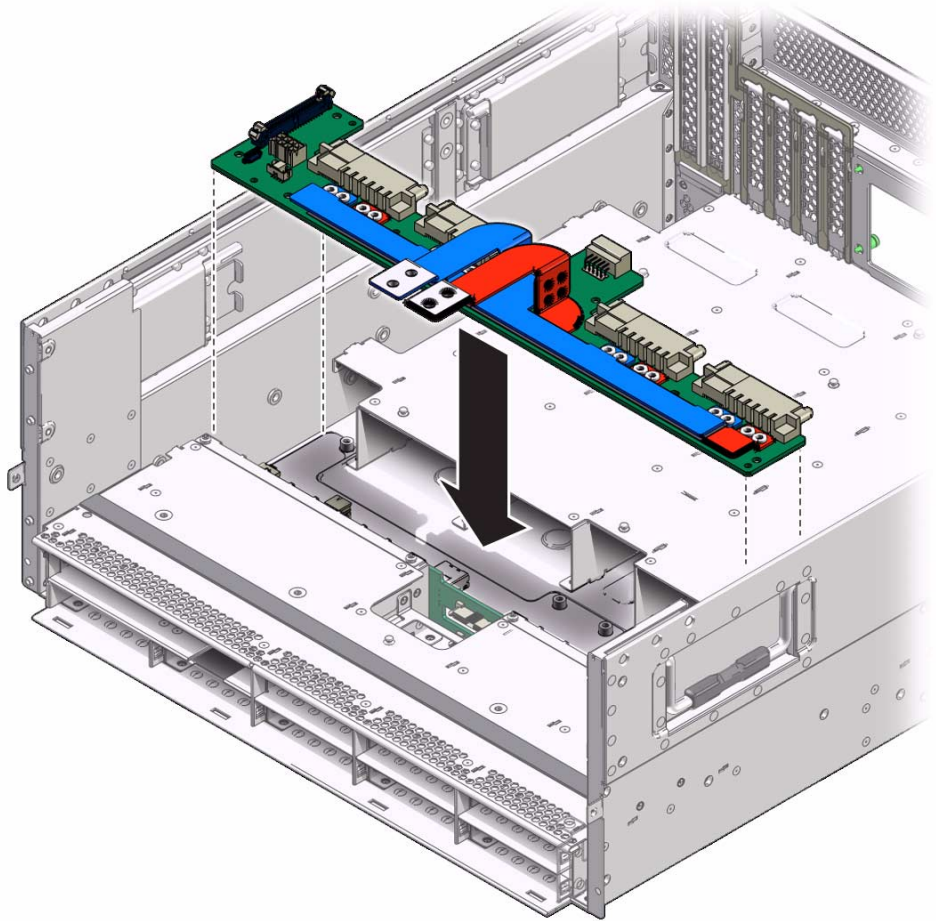
1. Consider your first steps:

- If you are replacing a power distribution board, remove the faulty or obsolete power distribution board first, then return to this procedure, [Step 2](#). See [“Remove the Power Distribution Board” on page 261](#).
- If you are installing the power distribution board as part of another component’s removal or installation procedure, go to [Step 2](#).

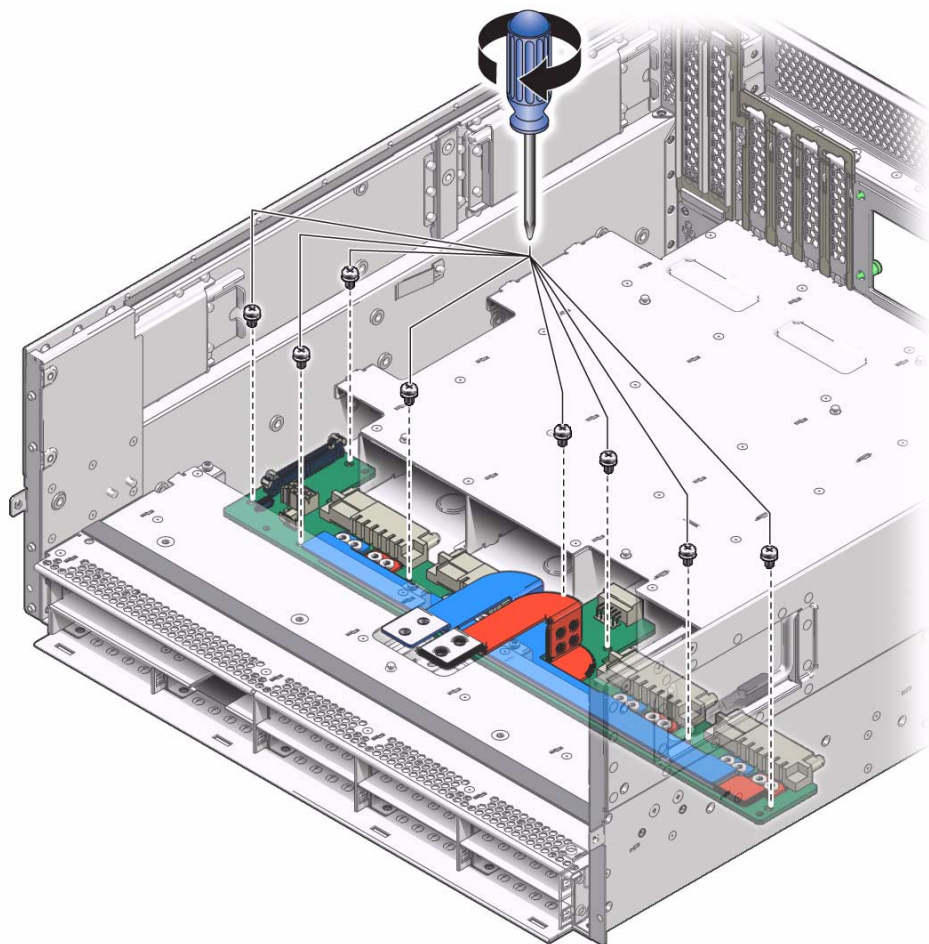
2. Position power distribution board over the location where it installs into the chassis.

The bus bars of the power distribution board lie over the hard drive backplane and point toward the front of the chassis. The bracket of the hard drive backplane is up and points toward the front of the chassis.

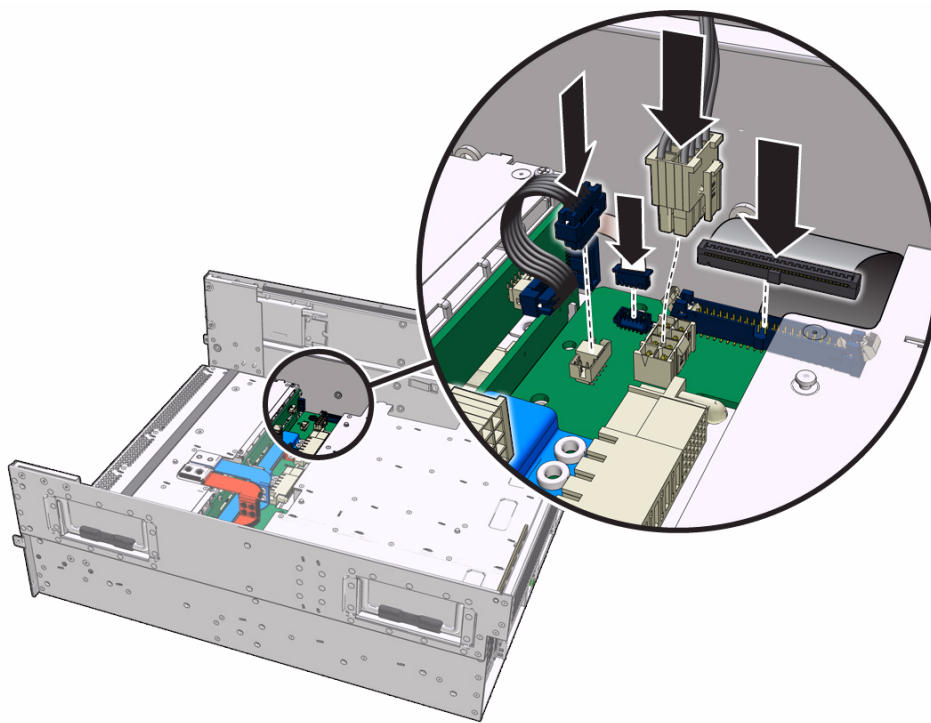
3. Lower the hard drive backplane and power distribution board into the chassis, aligning the screw holes.



4. Install the eight screws into the power distribution board.



5. Connect the cables to the power distribution board.



6. Consider your next steps:

- If you installed the power distribution board as part of a replacement operation, go to [Step 7](#).
- If you installed the power distribution board as part of another component's removal or installation procedure, return to that procedure. See ["Component Service Task Reference"](#) on page 65 for assistance.

7. Install the motherboard.

See ["Install the Motherboard"](#) on page 246.

8. Install the subchassis.

See ["Install the Subchassis"](#) on page 219.

9. Install the memory risers.

See ["Install a Memory Riser"](#) on page 158.

10. Install the PCIe2 cards.

See ["Install a PCIe2 Card"](#) on page 191.

11. Install the front fan modules.

See ["Install a Front Fan Module"](#) on page 95.

12. Install the rear fan module.

See [“Install the Rear Fan Module”](#) on page 146.

13. Install the power supplies.

See [“Install a Power Supply”](#) on page 133.

14. Finish the installation procedure.

See:

- [“Returning the Server to Operation”](#) on page 285
- [“Verify the Power Distribution Board”](#) on page 270

After replacing the power distribution board, you might see this message in either the CLI or web interface:

Warning: Product identification data missing. System may not function properly.
Service must update product identification data. Contact Service immediately.

If you see this message, schedule a service call as soon as possible.

Related Information

- [“Determine if the Power Distribution Board Is Faulty”](#) on page 260
- [“Remove the Power Distribution Board”](#) on page 261
- [“Verify the Power Distribution Board”](#) on page 270
- [“Preparing for Service”](#) on page 59
- [“Returning the Server to Operation”](#) on page 285

▼ Verify the Power Distribution Board

After you install a power distribution board, you can verify its functionality.

- **Verify the power distribution board.**

```
-> show /SYS/MB/V_+12V0_MAIN value
/SYS/MB/V_+12V0_MAIN
Properties:
value = 12.036 Volts
-> show /SYS/MB/V_+3V3_STBY value
/SYS/MB/V_+3V3_STBY
```



```
Properties:  
value = 3.360 Volts  
->
```

Related Information

- [“Determine if the Power Distribution Board Is Faulty” on page 260](#)
- [“Remove the Power Distribution Board” on page 261](#)
- [“Install the Power Distribution Board” on page 266](#)

Servicing the Hard Drive Backplane

The hard drive backplane is a mechanical interconnect for hard drives to the motherboard. The hard drive backplane is located vertically between the power distribution board and the hard drives. See [“Power Supply, Hard Drive, and Rear Fan Module Locations”](#) on page 2.

Description	Links
Replace the faulty hard drive backplane.	“Determine if the Hard Drive Backplane Is Faulty” on page 273 “Remove the Hard Drive Backplane” on page 275 “Install the Hard Drive Backplane” on page 279 “Verify the Hard Drive Backplane” on page 283
Determine whether the hard drive backplane is faulty.	“Determine if the Hard Drive Backplane Is Faulty” on page 273 “Detecting and Managing Faults” on page 9

Related Information

- [“Identifying Components”](#) on page 1
- [“Component Service Task Reference”](#) on page 65
- [“Servicing Hard Drives”](#) on page 101
- [“Detecting and Managing Faults”](#) on page 9
- [“Preparing for Service”](#) on page 59
- [“Returning the Server to Operation”](#) on page 285

▼ Determine if the Hard Drive Backplane Is Faulty

You must determine if the hard drive backplane is faulty before you replace it.

1. Check to see if any System Service Required LEDs are lit or flashing.

See [“Interpreting Diagnostic LEDs” on page 14.](#)

2. Within the Oracle ILOM interface, type the `show faulty` command to verify that the hard drive backplane is faulty.

If the hard drive backplane is faulty, you will see `/SYS/SASBP` under the Value heading. For example:

```
-> show faulty
```

Target	Property	Value
/SP/faultmgmt/0	fru	/SYS/SASBP
.		
.		
.		

```
->
```

If the hard drive backplane is faulty, replace it. See [“Remove the Hard Drive Backplane” on page 275.](#)

If a FRU value different from `/SYS/SASBP` is displayed, see [“Component Service Task Reference” on page 65](#) to identify which component is faulty.

3. Start the Oracle ILOM `faultmgmt shell`.

```
-> start /SP/faultmgmt/shell
Are you sure you want to start /SP/faultmgmt/shell (y/n)? y

faultmgmtsp>
```

4. Identify the faulty component.

For example:

```
faultmgmtsp> fmadm faulty
-----
Time                UUID                                msgid                Severity
-----
2010-08-11/14:54:23 59654226-50d3-cdc6-9f09-e591f39792ca SPT-8000-LC         Critical

Fault class : fault.chassis.power.volt-fail

Description : A Power Supply voltage level has exceeded acceptable limits.
.
.
.
faultmgmtsp>
```

Check the `Fault class` and `Description` fields for more information.

If the hard drive backplane is faulty, replace it. See [“Remove the Hard Drive Backplane” on page 275](#).

5. Exit the Oracle ILOM `faultmgmt` shell.

```
faultmgmtsp> exit
->
```

6. If you are unable to determine if the hard drive backplane is faulty, seek further information.

See [“Detecting and Managing Faults” on page 9](#).

Related Information

- [“Remove the Hard Drive Backplane” on page 275](#)
- [“Install the Hard Drive Backplane” on page 279](#)
- [“Verify the Hard Drive Backplane” on page 283](#)
- [“Detecting and Managing Faults” on page 9](#)

▼ Remove the Hard Drive Backplane

Removing the hard drive backplane is a cold-service operation. You must power off the server before you remove the hard drive backplane.

1. **Consider your first step:**
 - If you have not prepared for service, do so now. See [“Preparing for Service”](#) on page 59.
 - Otherwise, go to [Step 2](#).
2. **Remove the power supplies.**

See [“Remove a Power Supply”](#) on page 129.
3. **Remove the rear fan module.**

See [“Remove the Rear Fan Module”](#) on page 143.
4. **Remove the front fan modules.**

See [“Remove a Front Fan Module”](#) on page 91.
5. **Remove the hard drives.**

See [“Remove a Hard Drive”](#) on page 103.
6. **Remove the DVD drive.**

See [“Remove the DVD Drive”](#) on page 116.
7. **Remove the PCIe2 cards.**

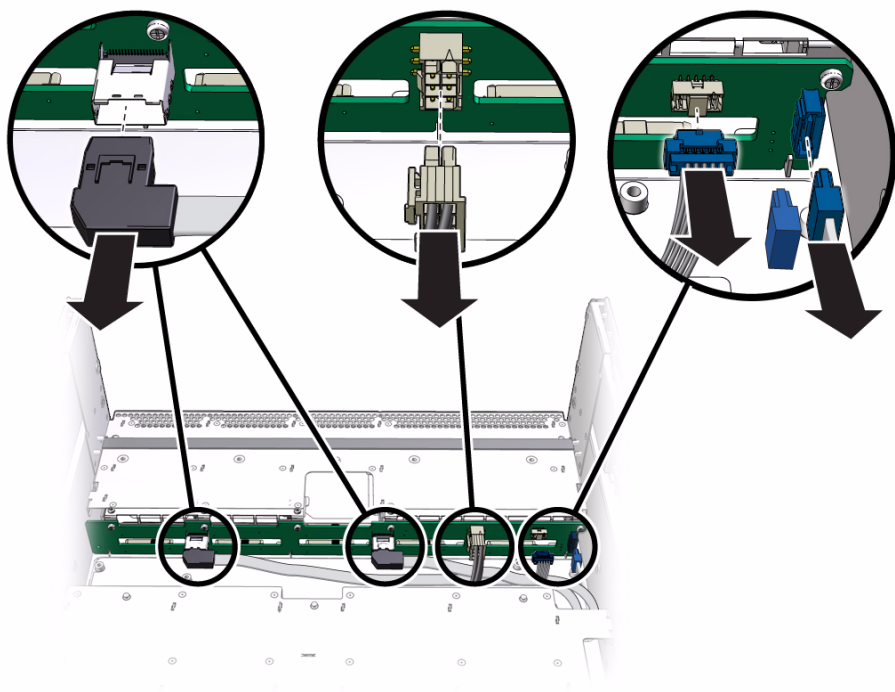
See [“Remove a PCIe2 Card”](#) on page 188.
8. **Remove the memory risers.**

See [“Remove a Memory Riser”](#) on page 156.
9. **Remove the subchassis.**

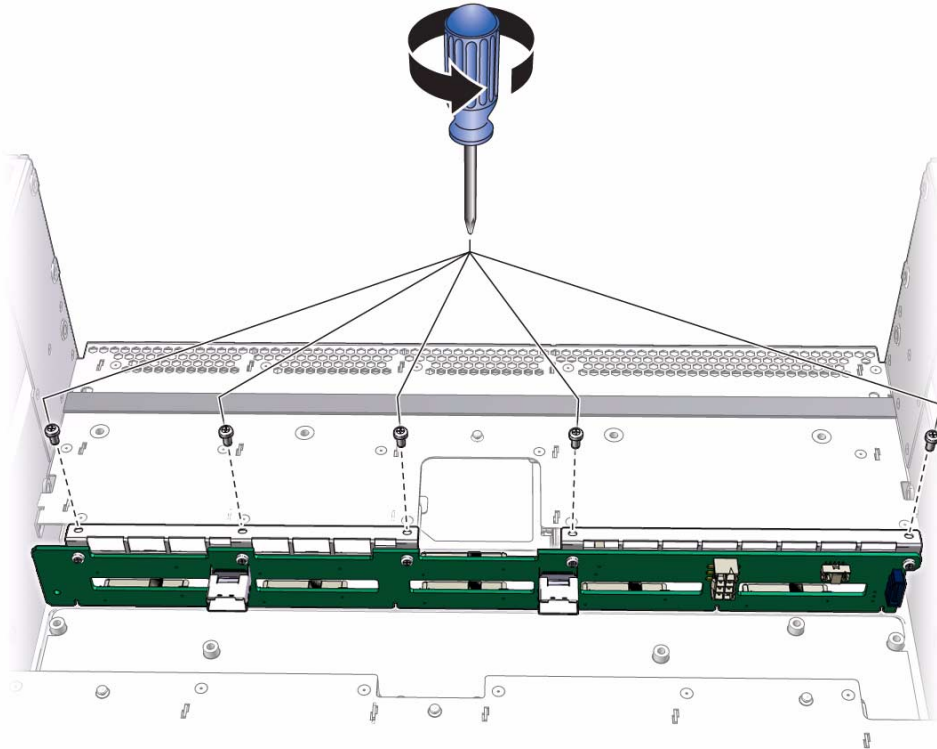
See [“Remove the Subchassis”](#) on page 215.
10. **Remove the motherboard.**

See [“Remove the Motherboard”](#) on page 240.
11. **Remove the power distribution board.**

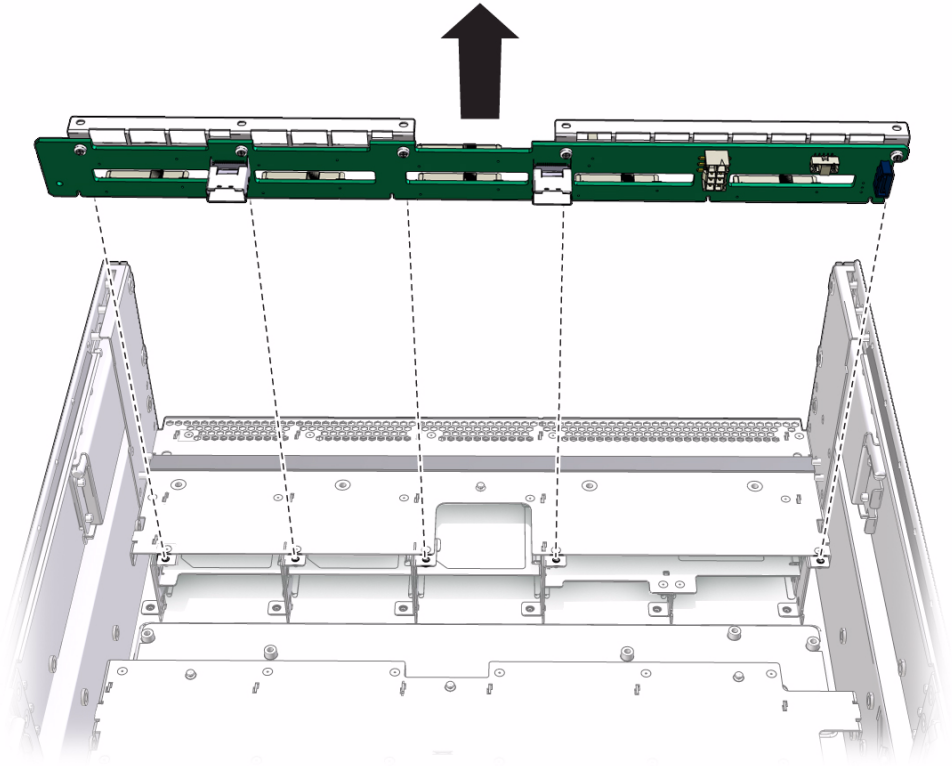
See [“Remove the Power Distribution Board”](#) on page 261.
12. **Disconnect the cables from the hard drive backplane.**



13. Remove the five screws from the hard drive backplane.



14. Lift the hard drive backplane out of the chassis.



15. Install a new hard drive backplane.

See [“Install the Hard Drive Backplane”](#) on page 279.

Related Information

- [“Determine if the Hard Drive Backplane Is Faulty”](#) on page 273
- [“Install the Hard Drive Backplane”](#) on page 279
- [“Verify the Hard Drive Backplane”](#) on page 283
- [“Preparing for Service”](#) on page 59
- [“Returning the Server to Operation”](#) on page 285

▼ Install the Hard Drive Backplane

Installing the hard drive backplane is a cold-service operation. You must power off the server before installing the hard drive backplane.

1. Consider your first steps:

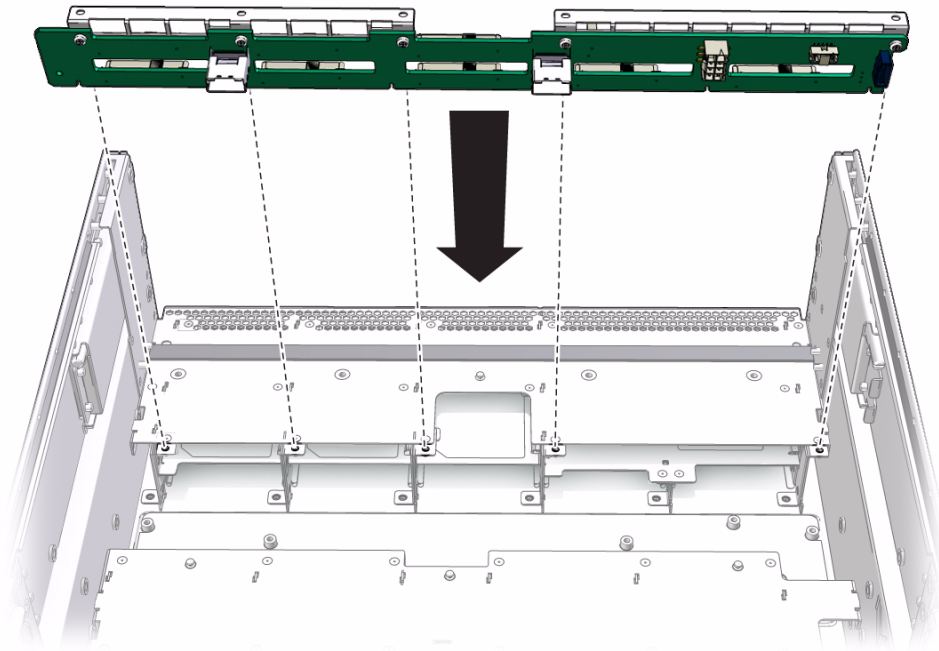
- If you are replacing a hard drive backplane, remove the faulty or obsolete hard drive backplane first, then return to this procedure, [Step 2](#). See [“Remove the Hard Drive Backplane”](#) on page 275.
- If you have already removed the faulty hard drive backplane, go to [Step 2](#).

2. Bring the hard drive backplane and the power distribution board together.

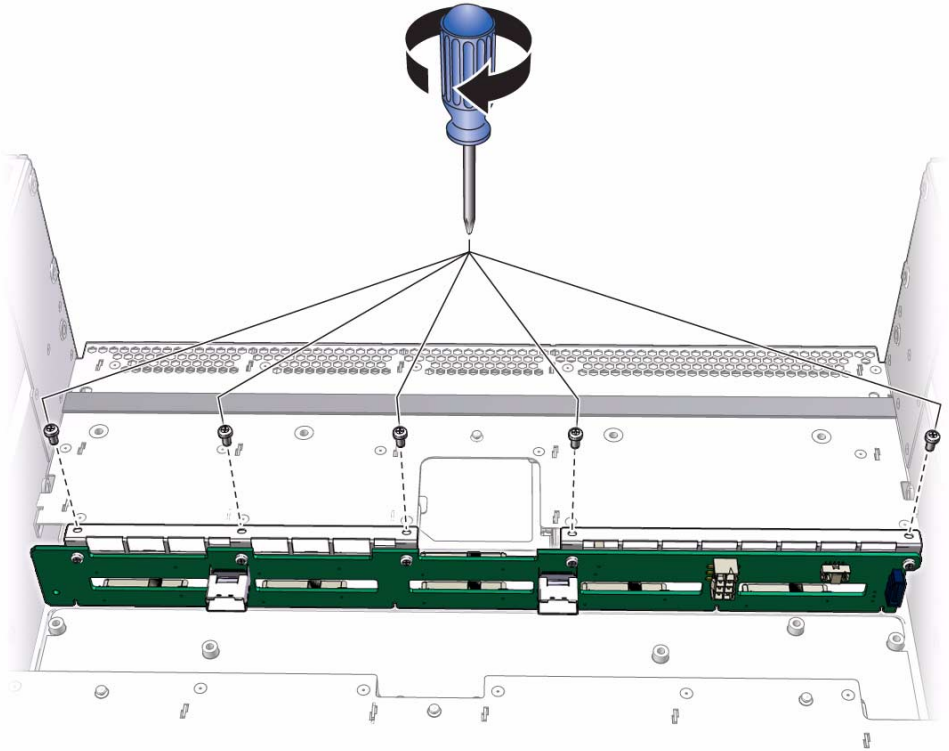
3. Position the hard drive backplane over the location where it installs into the chassis.

The bracket of the hard drive backplane is up and points toward the front of the chassis.

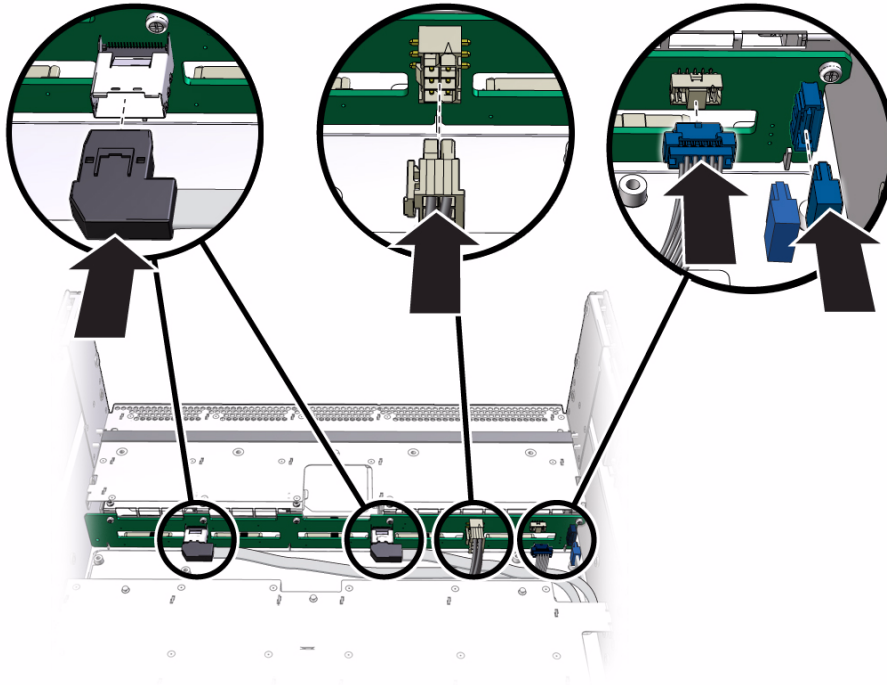
4. Lower the hard drive backplane and power distribution board into the chassis, aligning the screw holes.



5. Install the five screws into the hard drive backplane.



6. Connect the cables to the hard drive backplane and to the power distribution board.



7. **Install the power distribution board.**
See [“Install the Power Distribution Board”](#) on page 266.
8. **Install the motherboard.**
See [“Install the Motherboard”](#) on page 246.
9. **Install the subchassis.**
See [“Install the Subchassis”](#) on page 219.
10. **Install the memory risers.**
See [“Install a Memory Riser”](#) on page 158.
11. **Install the PCIe2 cards.**
See [“Install a PCIe2 Card”](#) on page 191.
12. **Install the DVD drive.**
See [“Install the DVD Drive”](#) on page 119.
13. **Install the hard drives.**
See [“Install a Hard Drive”](#) on page 107.

14. Install the front fan modules.

See [“Install a Front Fan Module”](#) on page 95.

15. Install the rear fan module.

See [“Install the Rear Fan Module”](#) on page 146.

16. Install the power supplies.

See [“Install a Power Supply”](#) on page 133.

17. Finish the installation procedure.

See:

- [“Returning the Server to Operation”](#) on page 285
- [“Verify the Hard Drive Backplane”](#) on page 283

After replacing the hard drive backplane, you might see this message in either the CLI or web interface:

Warning: Product identification data missing. System may not function properly.
Service must update product identification data. Contact Service immediately.

If you see this message, schedule a service call as soon as possible.

Related Information

- [“Determine if the Hard Drive Backplane Is Faulty”](#) on page 273
- [“Remove the Hard Drive Backplane”](#) on page 275
- [“Verify the Hard Drive Backplane”](#) on page 283
- [“Preparing for Service”](#) on page 59
- [“Returning the Server to Operation”](#) on page 285

▼ Verify the Hard Drive Backplane

After you install a hard drive backplane, you can verify its functionality.

1. Reset the hard drive backplane.

```
-> set /SYS/SASBP clear_fault_action=true
Are you sure you want to clear /SYS/SASBP (y/n)? y
Set 'clear_fault_action' to 'true'

->
```

2. Verify that the hard drive backplane is no longer considered faulty, then return to this procedure.

See [“Determine if the Hard Drive Backplane Is Faulty” on page 273](#).

3. Verify the hard drive backplane by reporting each installed drive’s presence.

```
-> show /SYS/SASBP/HDDx type
/SYS/HDD0
Properties.
    type = Hard Disk
->
```

where x is 0 to 7.

Related Information

- [“Determine if the Hard Drive Backplane Is Faulty” on page 273](#)
- [“Remove the Hard Drive Backplane” on page 275](#)
- [“Install the Hard Drive Backplane” on page 279](#)

Returning the Server to Operation

These topics explain how to return the Netra SPARC T4-2 server from Oracle to operation after you perform service procedures.

Step	Description	Link
1.	Install the top cover and move the server back into the rack.	“Install the Top Cover” on page 285
2.	Connect power cords to the server.	“Connect Power Cords” on page 289
3.	Power on the server by one of two methods.	“Power On the Server (Oracle ILOM)” on page 290 “Power On the Server (Power Button)” on page 290

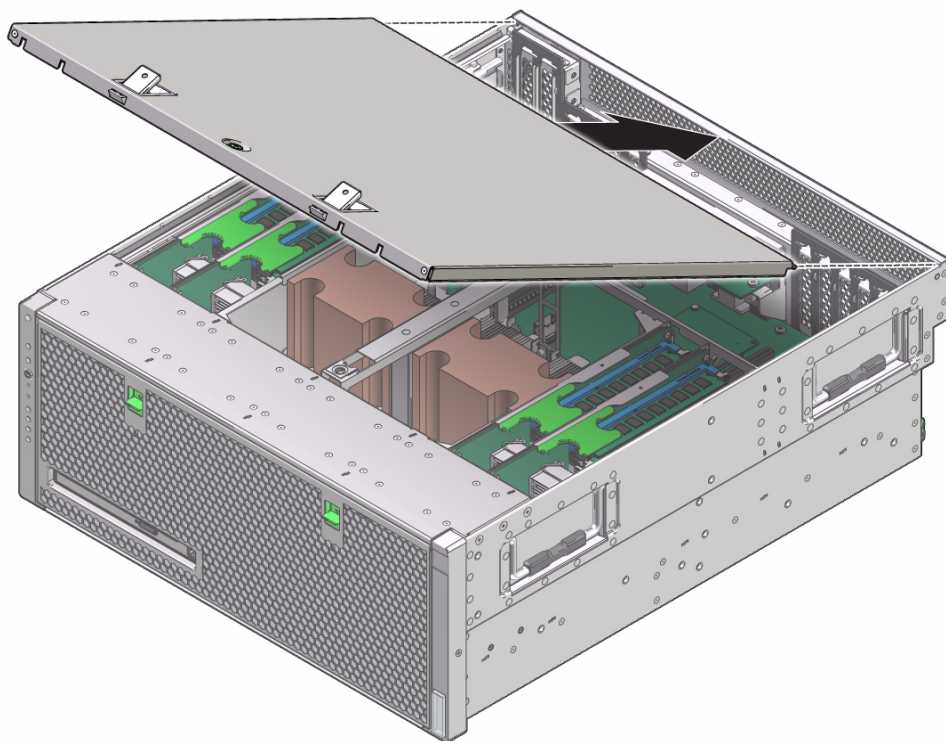
Related Information

- [“Identifying Components” on page 1](#)
- [“Detecting and Managing Faults” on page 9](#)
- [“Preparing for Service” on page 59](#)

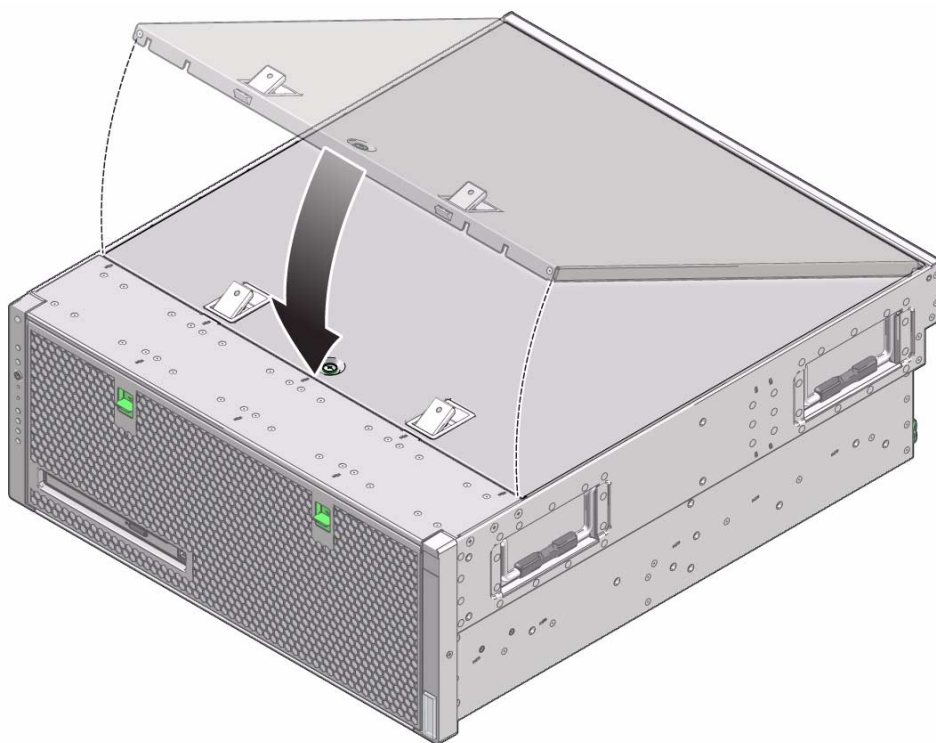
▼ Install the Top Cover

Perform this task when you have previously removed the top cover.

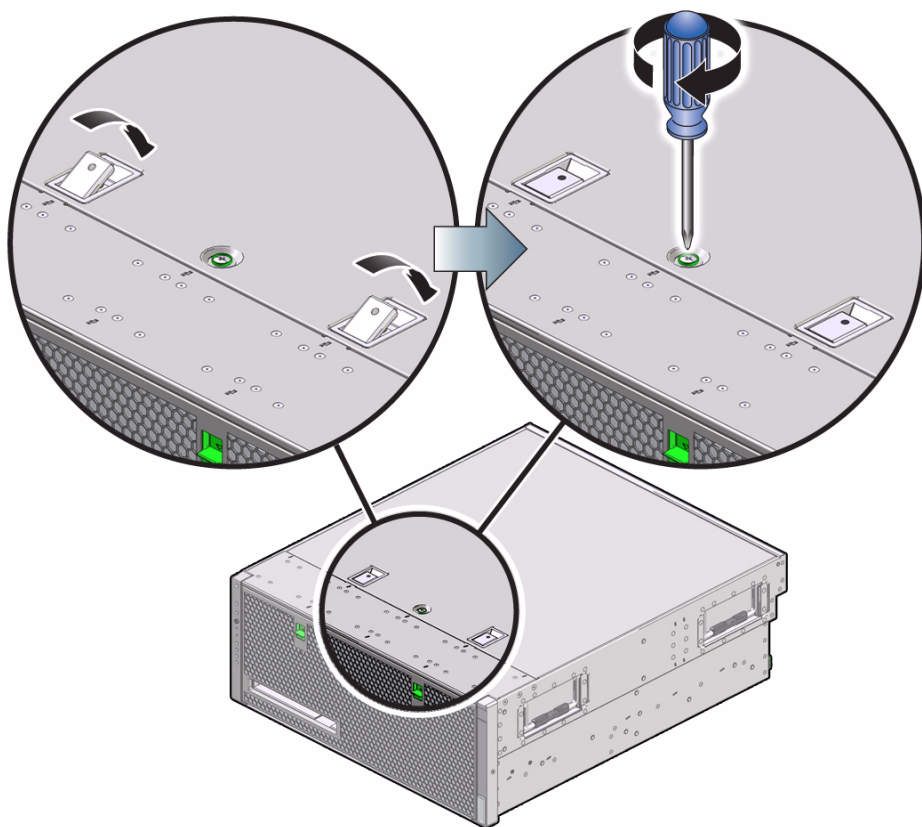
1. **Fit the rear of top cover to the rear of the chassis.**



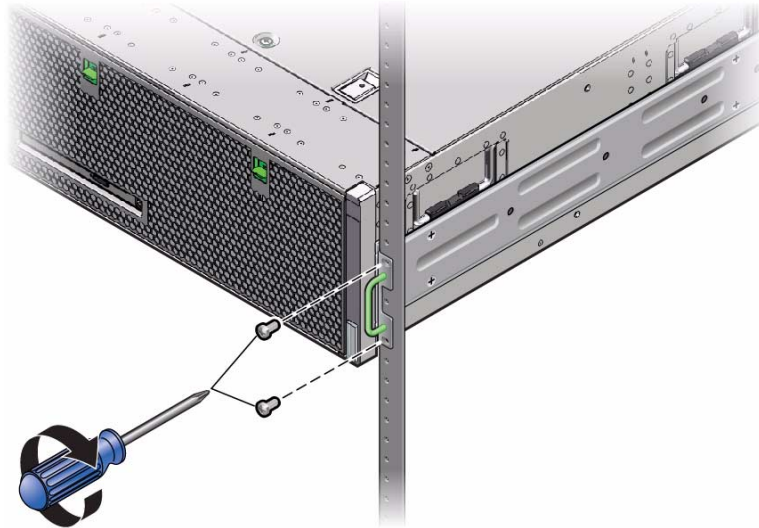
2. Lower the top cover into place.



3. Secure the top cover with the captive screw.



4. Slide the server back into the rack and secure it into position with the four screws.



5. Reconnect all cables to the rear of the server.

6. Connect the power cords to the server.

See [“Connect Power Cords”](#) on page 289.

7. Power on the server.

See [“Power On the Server \(Oracle ILOM\)”](#) on page 290 or [“Power On the Server \(Power Button\)”](#) on page 290.

Related Information

- [“Remove the Top Cover”](#) on page 70
- [“Connect Power Cords”](#) on page 289
- [“Power On the Server \(Oracle ILOM\)”](#) on page 290
- [“Power On the Server \(Power Button\)”](#) on page 290

▼ Connect Power Cords

- Reconnect the power cords to the power supplies.

Note – As soon as the power cords are connected, standby power is applied. Depending on how the firmware is configured, the system might boot at this time.

Related Information

- [“Install the Top Cover” on page 285](#)
- [“Power On the Server \(Oracle ILOM\)” on page 290](#)
- [“Power On the Server \(Power Button\)” on page 290](#)

▼ Power On the Server (Oracle ILOM)

- At the SP prompt, type.

```
-> start /SYS
```

Related Information

- [“Install the Top Cover” on page 285](#)
- [“Connect Power Cords” on page 289](#)
- [“Power On the Server \(Power Button\)” on page 290](#)

▼ Power On the Server (Power Button)

- Momentarily press and release the Power button on the front panel.
See [“Front Panel Components” on page 5](#) for the location of the Power button.

Related Information

- [“Install the Top Cover” on page 285](#)
- [“Connect Power Cords” on page 289](#)
- [“Power On the Server \(Oracle ILOM\)” on page 290](#)

Glossary

A

ANSI SIS	American National Standards Institute Status Indicator Standard.
ASF	Alert standard format (Netra products only).
ASR	Automatic system recovery.
AWG	American wire gauge.

B

blade	Generic term for server modules and storage modules. See <i>server module</i> and <i>storage module</i> .
blade server	Server module. See <i>server module</i> .
BMC	Baseboard management controller.
BOB	Memory buffer on board.

C

chassis	For servers, refers to the server enclosure. For server modules, refers to the modular system enclosure.
CMA	Cable management arm.

CMM Chassis monitoring module. The CMM is the service processor in the modular system. Oracle ILOM runs on the CMM, providing lights out management of the components in the modular system chassis. *See [Modular system](#) and [Oracle ILOM](#).*

CMM Oracle ILOM Oracle ILOM that runs on the CMM. *See [Oracle ILOM](#).*

D

DHCP Dynamic Host Configuration Protocol.

disk module or disk blade Interchangeable terms for storage module. *See [storage module](#).*

DTE Data terminal equipment.

E

EIA Electronics Industries Alliance.

ESD Electrostatic discharge.

F

FEM Fabric expansion module. FEMs enable server modules to use the 10GbE connections provided by certain NEMs. *See [NEM](#).*

FRU Field-replaceable unit.

H

HBA Host bus adapter.

host The part of the server or server module with the CPU and other hardware that runs the Oracle Solaris OS and other applications. The term *host* is used to distinguish the primary computer from the SP. *See [SP](#).*

I

ID PROM	Chip that contains system information for the server or server module.
IP	Internet Protocol.

K

KVM	Keyboard, video, mouse. Refers to using a switch to enable sharing of one keyboard, one display, and one mouse with more than one computer.
------------	---

L

LwA	Sound power level.
------------	--------------------

M

MAC	Machine access code.
MAC address	Media access controller address.
Modular system	The rackmountable chassis that holds server modules, storage modules, NEMs, and PCI EMs. The modular system provides Oracle ILOM through its CMM.
MSGID	Message identifier.

N

NAC	Network Access Control.
name space	Top-level Oracle ILOM CMM target.

NEBS Network Equipment-Building System (Netra products only).

NEM Network express module. NEMs provide 10/100/1000 Mbps Ethernet, 10GbE Ethernet ports, and SAS connectivity to storage modules.

NET MGT Network management port. An Ethernet port on the server SP, the server module SP, and the CMM.

NIC Network interface card or controller.

NMI Nonmaskable interrupt.

O

OBP OpenBoot PROM.

Oracle ILOM Oracle Integrated Lights Out Manager. Oracle ILOM firmware is preinstalled on a variety of Oracle systems. Oracle ILOM enables you to remotely manage your Oracle servers regardless of the state of the host system.

Oracle Solaris OS Oracle Solaris operating system.

P

PCI Peripheral component interconnect.

PCI EM PCIe ExpressModule. Modular components that are based on the PCI Express industry-standard form factor and offer I/O features such as Gigabit Ethernet and Fibre Channel.

POST Power-on self-test.

PROM Programmable read-only memory.

PSH Predictive self healing.

Q

QSFP Quad small form-factor pluggable.

R

REM RAID expansion module. Sometimes referred to as an HBA *See* [HBA](#). Supports the creation of RAID volumes on drives.

S

SAS Serial attached SCSI.

SCC System configuration chip.

SER MGT Serial management port. A serial port on the server SP, the server module SP, and the CMM.

server module Modular component that provides the main compute resources (CPU and memory) in a modular system. Server modules might also have onboard storage and connectors that hold REMs and FEMs.

SP Service processor. In the server or server module, the SP is a card with its own OS. The SP processes Oracle ILOM commands providing lights out management control of the host. *See* [host](#).

SSD Solid-state drive.

SSH Secure shell.

storage module Modular component that provides computing storage to the server modules.

T

TIA Telecommunications Industry Association (Netra products only).

Tma Maximum ambient temperature.

U

UCP Universal connector port.

UI	User interface.
UL	Underwriters Laboratory Inc.
US NEC	United States National Electrical Code.
UTC	Coordinated Universal Time.
UUID	Universal unique identifier.

W

WWN	World wide name. A unique number that identifies a SAS target.
------------	--

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