SPARC T8-1 Server Service Manual

Part No: E80510-04
January 2022

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Référence: E80510-04

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Contents

Using This Documentation

- **Overview** – Describes how to troubleshoot and maintain the server
- **Audience** – Technicians, system administrators, and authorized service providers
- **Required knowledge** – This guide is intended for trained technicians and authorized service personnel who have been instructed on the hazards within the equipment and qualified to remove and replace hardware

Product Documentation Library

Documentation and resources for this product and related products are available at http://www.oracle.com/goto/t8-1/docs.

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

Identifying Components

These topics identify key components of the server, including major boards and internal system cables, as well as front and rear panel features.

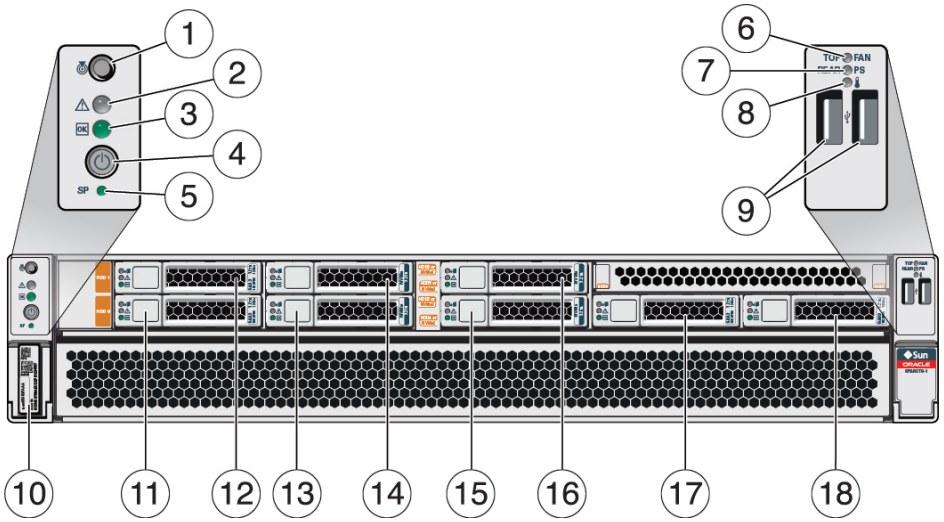
Related Information

- "Detecting and Managing Faults" on page 21
- "Preparing for Service" on page 39

Front Panel Components

The following figure shows the layout of the server front panel, including the power and server locate buttons and the various status and fault LEDs.

Note - The front panel also provides access to internal drives and the two front USB ports.

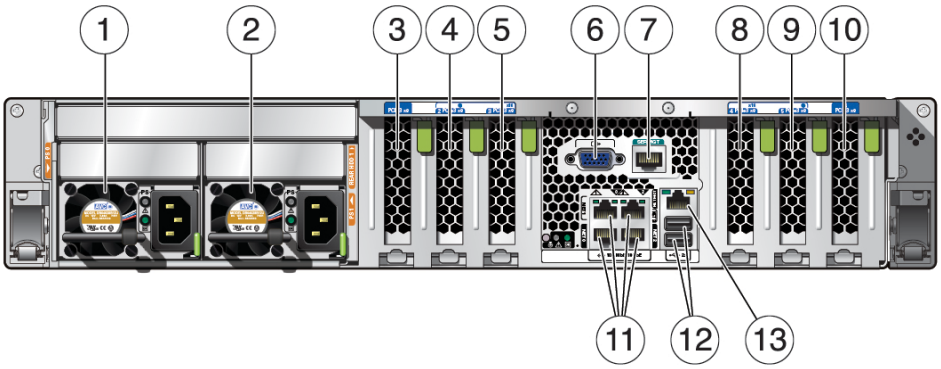


No.	Description	Links
1	Server Locate indicator and button (white)	“Front Panel Controls and LEDs” on page 28
2	Service Required LED (amber)	“Front Panel Controls and LEDs” on page 28
3	Power LED (green)	“Front Panel Controls and LEDs” on page 28
4	Server Power button	“Front Panel Controls and LEDs” on page 28
5	SP Fault LED (green)	“Front Panel Controls and LEDs” on page 28 “Servicing the SPM” on page 121
6	Fan Service LEDs (amber)	“Servicing Fan Modules” on page 69
7	Power Supply (PS) Service LED (amber)	“Servicing Power Supplies” on page 77
8	Server Overtemp LED (amber)	“Front Panel Controls and LEDs” on page 28
9	USB 2.0 connectors (2)	*“Identifying Ports” in SPARC T8-1 Server Installation Guide*
10	Serial number	“Find the Server Serial Number” on page 42
11	HDD 0	“Servicing Drives” on page 59
12	HDD 1	“Servicing Drives” on page 59
13	HDD 2 or NVMe 0	“Servicing Drives” on page 59
14	HDD 3 or NVMe 1	“Servicing Drives” on page 59
15	HDD 4 or NVMe 2	“Servicing Drives” on page 59
16	HDD 5 or NVMe 3	“Servicing Drives” on page 59
17	HDD 6 or NVMe 4	“Servicing Drives” on page 59
18	HDD 7	“Servicing Drives” on page 59

Related Information

- “Rear Panel Components” on page 13
- “Internal Component Locations” on page 14
- “Server Block Diagram” on page 17

Rear Panel Components



No.	Description	Links
1	Power supply 0	“Servicing Power Supplies” on page 77
2	Power supply 1	“Servicing Power Supplies” on page 77
3	PCIe card slot 1	“Servicing PCIe Cards” on page 107
4	PCIe card slot 2	“Servicing PCIe Cards” on page 107
5	PCIe card slot 3	“Servicing PCIe Cards” on page 107
6	DB-15 video connector	
7	Serial management (SER MGT) RJ-45 serial port	
8	PCIe card slot 4	“Servicing PCIe Cards” on page 107
9	PCIe card slot 5	“Servicing PCIe Cards” on page 107
10	PCIe card slot 6	“Servicing PCIe Cards” on page 107

No.	Description	Links
11	10GbE ports (4), NET 0 to NET 3	
12	USB 3.0 connectors (2)	
13	Network management (NET MGT) port	

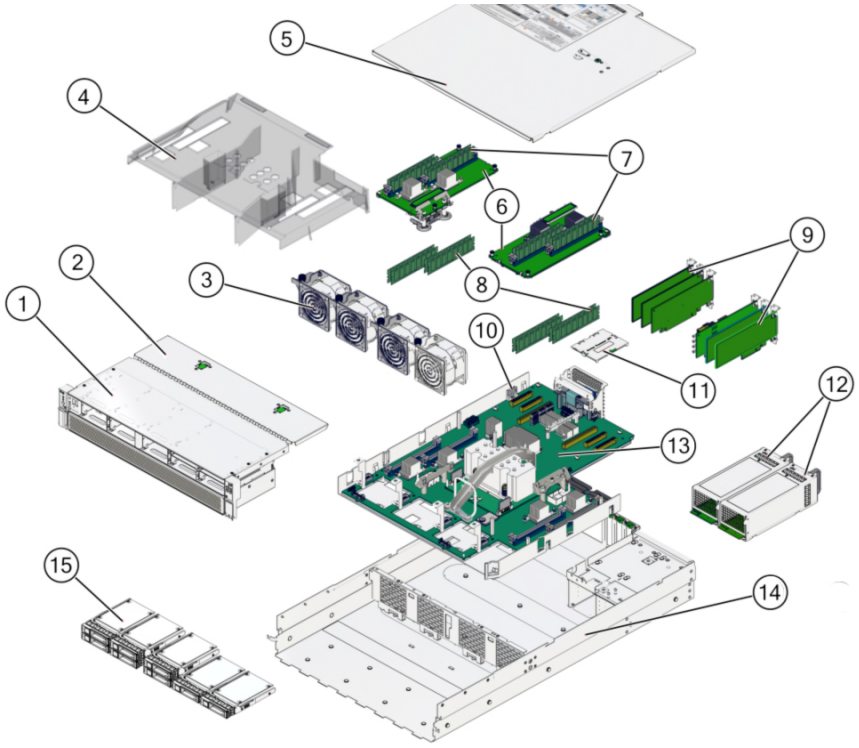
Related Information

- “Front Panel Components” on page 11
- “Internal Component Locations” on page 14
- “Server Block Diagram” on page 17

Internal Component Locations

The following figure identifies the replaceable component locations with the top cover removed.

Note - The two memory risers are optional.



No.	Component	Oracle ILOM Target	Links
1	Drive cage (drive backplane on the rear of the drive cage)	`/SYS/DBP`	"Servicing the Drive Backplane" on page 147
2	Fan module cover		"Remove the Fan Cover" on page 55 "Replace the Fan Cover" on page 154
3	Fan modules	As viewed from front of server: `/SYS/MB/FM0` (left) `/SYS/MB/FM1` (left center) `/SYS/MB/FM2` (right center) `/SYS/MB/FM3` (right)	"Servicing Fan Modules" on page 69
4	Airflow cover		"Open and Remove the Airflow Cover" on page 54 "Install and Close the Airflow Cover" on page 155
5	Top cover		"Remove the Top Cover" on page 53

No.	Component	Oracle ILOM Target	Links
			"Replace the Top Cover" on page 157
6	Memory risers	/SYS/MB/CM/CMP/MR0	"Servicing Memory Risers and DIMMs" on page 83
		/SYS/MB/CM/CMP/MR1	
7	DIMMs on memory risers	/SYS/MB/CM/CMP/MR[0-1]/BOB[0-3]1/CH[0-1]/DIMM	"Servicing Memory Risers and DIMMs" on page 83
8	DIMMs on motherboard	/SYS/MB/CM/CMP/BOB[0-3]0/CH[0-1]/DIMM	"Servicing Memory Risers and DIMMs" on page 83
9	PCIe cards	/SYS/MB/PCIE1	"Servicing PCIe Cards" on page 107
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		/SYS/MB/PCIE3	
		/SYS/MB/PCIE4	
		/SYS/MB/PCIE5	
		/SYS/MB/PCIE6	
10	Battery	/SYS/MB/BAT	"Servicing the Battery" on page 117
11	SPM	/SYS/MB/SPM	"Servicing the SPM" on page 121
12	Power supplies	/SYS/PS0 (outer)	"Servicing Power Supplies" on page 77
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13	Motherboard	/SYS/MB	"Servicing the Motherboard" on page 129
14	Chassis		
15	Drives	/SYS/DBP/HDD0 (lower left)	"Servicing Drives" on page 59
		/SYS/DBP/HDD1	
		/SYS/DBP/HDD2 or /SYS/DBP/NVME0	
		/SYS/DBP/HDD3 or /SYS/DBP/NVME1	
		/SYS/DBP/HDD4 or /SYS/DBP/NVME2	
		/SYS/DBP/HDD5 or /SYS/DBP/NVME3	
		/SYS/DBP/HDD6	
		/SYS/DBP/HDD7 (right)	
	Processor chip (replaceable only by replacing the motherboard)	/SYS/MB/CM/CMP	"Servicing the Motherboard" on page 129
	eUSB drive	/SYS/MB/EUSB_DISK	

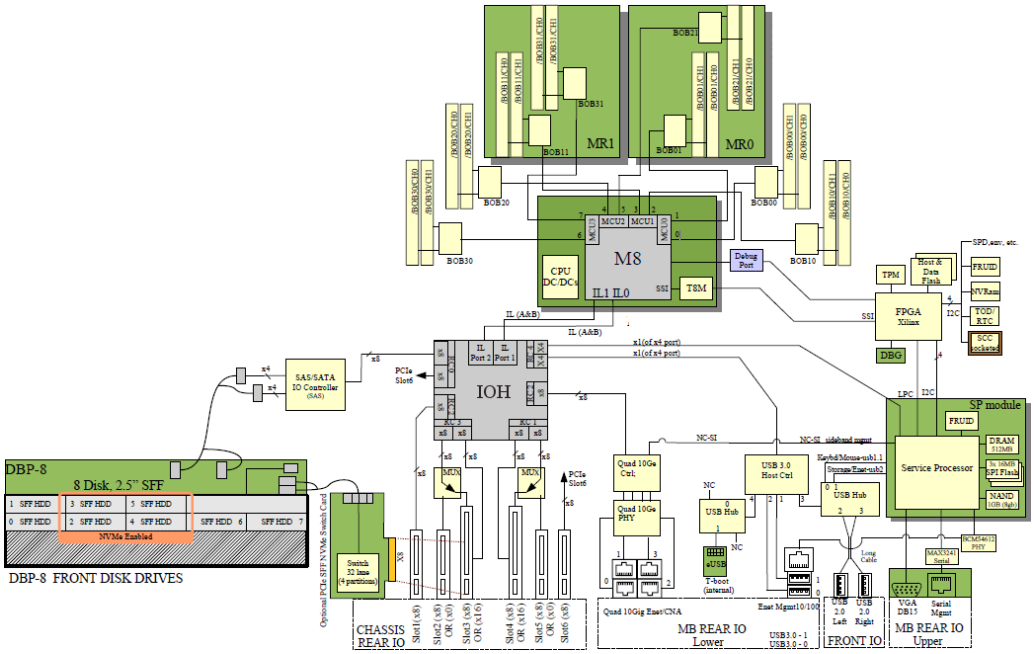
Related Information

- “Component Names Displayed by Diagnostic Software” on page 26
- “Front Panel Components” on page 11
- “Rear Panel Components” on page 13
- “Internal Component Locations” on page 14
- “Server Block Diagram” on page 17

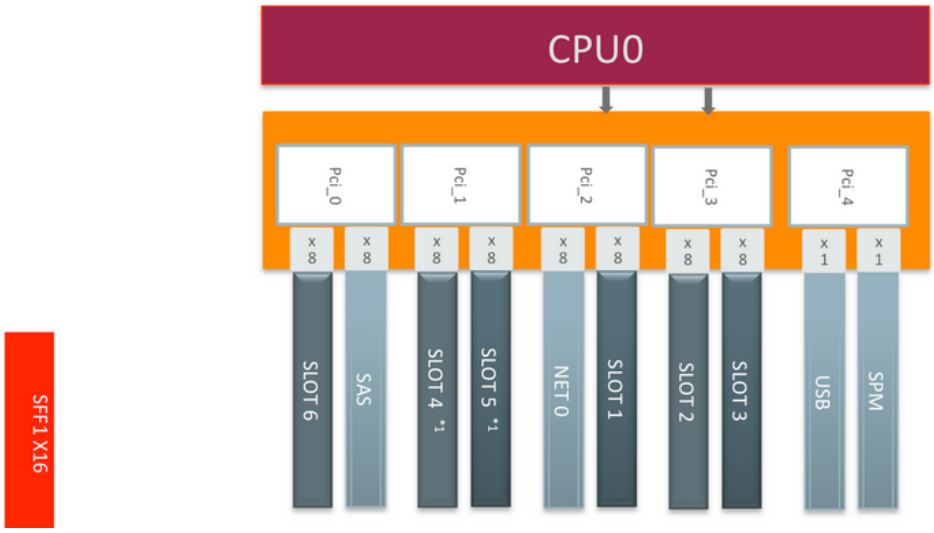
Server Block Diagram

This block diagram shows the connections between and among components and device slots on the server. Use this diagram to determine the optimum locations for optional cards or other peripherals, based on your server's configuration and intended use.

Note - For more detail on root complexes related to the PCIe slots, see “I/O Root Complex Connections” on page 108.



The following diagram shows the system device map.



Note - SLOT4 is x16 when SLOT5 is switched out. SLOT3 is x16 when SLOT2 is switched out.

This table identifies some key path names in this server.

Device	Path
PCIe 1	`/pci@300/pci@2`
PCIe 2	`/pci@303/pci@2`
PCIe 3	`/pci@303/pci@1`
PCIe 4	`/pci@302/pci@1`
PCIe 5	`/pci@302/pci@2`
PCIe 6	`/pci@301/pci@1`
NET 0	`/pci@300/pci@1/network@0`
NET 1	`/pci@300/pci@1/network@0,1`
NET 2	`/pci@300/pci@3/network@0`
NET 3	`/pci@300/pci@3/network@0,1`

Device	Path
HDD 0	/pci@301/pci@2/scsi@0/disk@p0
HDD 1	/pci@301/pci@2/scsi@0/disk@p1
HDD 2	/pci@301/pci@2/scsi@0/disk@p2
NVMe 0	/pci@303/pci@1/pci@0/pci@6/nvme@0/disk@1
HDD 3	/pci@301/pci@2/scsi@0/disk@p3
NVMe 1	/pci@303/pci@1/pci@0/pci@7/nvme@0/disk@1
HDD 4	/pci@301/pci@2/scsi@0/disk@p4
NVMe 2	/pci@303/pci@1/pci@0/pci@5/nvme@0/disk@1
HDD 5	/pci@301/pci@2/scsi@0/disk@p4
NVMe 3	/pci@303/pci@1/pci@0/pci@4/nvme@0/disk@1
HDD 6	/pci@301/pci@2/scsi@0/disk@p6
HDD 7	/pci@301/pci@2/scsi@0/disk@p7

Related Information

- “Component Names Displayed by Diagnostic Software” on page 26
- “Front Panel Components” on page 11
- “Rear Panel Components” on page 13
- “Internal Component Locations” on page 14
- “Server Block Diagram” on page 17

Detecting and Managing Faults

When a SPARC T8 server encounters a fault, the fault is recorded in a common fault database. The fault is then reported by the server in one of several ways, depending on the type and severity of the fault.

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

Step	Description	Links
1.	Check the server for detected faults and for information about components that might require service.	"Checking for Faults" on page 21 "Interpreting LEDs" on page 27
2.	Perform additional troubleshooting if needed.	"Performing Advanced Troubleshooting" on page 32
3.	Manage faults following a service procedure.	"Clear a Fault Manually" on page 37
4.	Contact technical support if the problem persists.	`https://support.oracle.com`

Related Information

- "Identifying Components" on page 11
- "Preparing for Service" on page 39
- "Returning the Server to Operation" on page 153

Checking for Faults

Use these tools to identify components that require service.

Step	Description	Links
1.	Run the `fmadm faulty` command to display information about components that require service.	"Log In to Oracle ILOM (Service)" on page 22 "Identify Faulted Components" on page 23

Step	Description	Links
2.	Run the `show disabled` command to display information about components that have been disabled either intentionally or because of a failure. Plan to service any components that are degraded or might need service soon to minimize system downtime.	“Identify Disabled Components” on page 25
3.	Identify the names of components that require service as reported by diagnostic software.	“Component Names Displayed by Diagnostic Software” on page 26

Related Information

- “Interpreting LEDs” on page 27
- “Performing Advanced Troubleshooting” on page 32
- “Clear a Fault Manually” on page 37

▼ Log In to Oracle ILOM (Service)

- **At the terminal prompt, type:**

```
ssh root@SP-IP-address
Password: password
Oracle (R) Integrated Lights Out Manager
Version Version 4.0.x
Copyright (c) 2017, Oracle and/or its affiliates, Inc. All rights reserved.
->
```

Related Information

- “Identify Faulted Components” on page 23
- “Identify Disabled Components” on page 25
- “Component Names Displayed by Diagnostic Software” on page 26

▼ Identify Faulted Components

The `fmadm faulty` command displays the list of faults detected by PSH (Predictive Self Healing). You can run this command from the host or through the Oracle ILOM fault management shell.

1. **From the Oracle ILOM prompt, start the fault management shell and type `fmadm faulty`.**

   This example shows how to check for faults through the Oracle ILOM fault management shell. You can also check for faults by typing `show faulty` at the Oracle ILOM prompt.

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

faultmgmtsp> fmadm faulty
------------------- ------------------------------------ -------------- -------
Time                UUID                                 msgid          Severity
------------------- ------------------------------------ -------------- -------
2015-01-16/17:55:26 f4ee56c-9fdd-ca19-efb5-ae39675dfee3  SPT-8000-PX    Major

Problem Status   : open
Diag Engine      : fdd 1.0
System
  Manufacturer   : Oracle Corporation
  Name           : SPARC T8-1
  Part_Number    : 12345678+11+1
  Serial_Number  : 1238BDC0DF

----------------------------------------
Suspect 1 of 1
  Fault class  : fault.component.misconfigured
  Certainty    : 100%
  Affects      : /SYS/MB/CM/CMP/BOB21/CH1/DIMM
  Status       : faulted
  FRU
     Status      : faulty
     Location    : /SYS/MB/CM/CMP/BOB21/CH1/DIMM
     Manufacturer      : Hynix Semiconductor Inc.
     Name              : 8192MB DDR4 SDRAM DIMM
     Part_Number       : 70xx001,HMA4xxR7MFRxx-TFT8
     Revision          : 01
     Serial_Number     : 465769T+02xxx102WR
     Chassis
        Manufacturer   : Oracle Corporation
        Name           : SPARC T8-1
        Part_Number    : 12345678+13+2
```

```
        Serial_Number  : 1248DC140

Description : A FRU has been inserted into a location where it is not
              supported.

Response    : The service required LED on the chassis may be illuminated.

Impact      : The FRU may not be usable in its current location.

Action      : Please refer to the associated reference document at
              http://support.oracle.com/msg/SPT-8000-PX for the latest
              service procedures and policies regarding this diagnosis.
faultmgmtsp>
```

In this example, a fault is displayed that includes these details:

- Date and time of the fault (`2015-01-16/17:55:26`).
- UUID (`f4ee56c-9fdd-ca19-efb5-ae39675dfee3`), which is unique to each fault.
- Message ID (`SPT-8000-PX`), which can be used to obtain additional fault information from Knowledge Base articles.

2. **Use the message ID to obtain more information about this type of fault.**

   a. **Obtain the message ID from console output (`SPT-8000-PX` in the example above).**

   b. **Go to `https://support.oracle.com`, and search on the message ID in the Knowledge tab, or type the URL from the Action field into a browser.**

3. **Follow the suggested actions to repair the fault.**

4. **If necessary, clear the fault manually.**

   See “Clear a Fault Manually” on page 37.

Related Information

- “Log In to Oracle ILOM (Service)” on page 22
- “Identify Disabled Components” on page 25
- “Component Names Displayed by Diagnostic Software” on page 26

Identify Disabled Components

You can run the `show disabled` command from the Oracle ILOM prompt to identify components that have been disabled either intentionally, by a user, or automatically, because of a fault.

1. **At the Oracle ILOM prompt, type:**

```
-> show disabled
Target                              | Property       | Value
------------------------------------+----------------+--------------------
...
/SYS/MB/CM0/CMP  | disable_reason | Configuration Rules
...
```

2. **For additional information about a disabled component, type the `show -t` command and the Oracle ILOM target.**

   See "Component Names Displayed by Diagnostic Software" on page 26.

   For example:

```
-> show -t /SYS/MB/CM/CMP/BOB21/CH1/DIMM
Target                              | Property               | Value
------------------------------------+------------------------+------------
...
/SYS/MB/CM/CMP/BOB21/CH1/DIMM  | type                   | DIMM
/SYS/MB/CM/CMP/BOB21/CH1/DIMM  | ipmi name              | P0/M3/B0/C1/D0
/SYS/MB/CM/CMP/BOB21/CH1/DIMM  | requested_config_state | Enabled
/SYS/MB/CM/CMP/BOB21/CH1/DIMM  | current_config_state   | Enabled
/SYS/MB/CM/CMP/BOB21/CH1/DIMM  | disable_reason         | Configuration Rules
/SYS/MB/CM/CMP/BOB21/CH1/DIMM  | fru_name               | 8192MB DDR4 SDRAM DIMM
...
```

Related Information

- "Log In to Oracle ILOM (Service)" on page 22
- "Identify Faulted Components" on page 23
- "Component Names Displayed by Diagnostic Software" on page 26

Component Names Displayed by Diagnostic Software

Use the information in this table to identify the name of a component that requires service.

Component	Oracle ILOM Target	Links
Battery	/SYS/MB/BAT	"Servicing the Battery" on page 117
DIMMs on motherboard	/SYS/MB/CM/CMP/BOB*n*/CH*n*/DIMM	"Servicing Memory Risers and DIMMs" on page 83
DIMMs on memory risers	/SYS/MB/CM/CMP/MR*n*/BOB*n*/CH*n*/DIMM	"Servicing Memory Risers and DIMMs" on page 83
Drive backplane	/SYS/DBP	"Servicing the Drive Backplane" on page 147
Drives	/SYS/DBP/HDD0 (lower left)	"Servicing Drives" on page 59
	/SYS/DBP/HDD1	
	/SYS/DBP/HDD2 or /SYS/DBP/NVME0	
	/SYS/DBP/HDD3 or /SYS/DBP/NVME1	
	/SYS/DBP/HDD4 or /SYS/DBP/NVME2	
	/SYS/DBP/HDD5 or /SYS/DBP/NVME3	
	/SYS/DBP/HDD6	
	/SYS/DBP/HDD7 (right)	
eUSB drive	/SYS/MB/EUSB_DISK	
Fan modules	As viewed from front of server:	"Servicing Fan Modules" on page 69
	/SYS/MB/FM0 (left)	
	/SYS/MB/FM1	
	/SYS/MB/FM2	
	/SYS/MB/FM3 (right)	
Memory risers	/SYS/MB/CM/CMP/MR0	"Servicing Memory Risers and DIMMs" on page 83
	/SYS/MB/CM/CMP/MR1	
Motherboard	/SYS/MB	"Servicing the Motherboard" on page 129
PCIe cards	/SYS/MB/PCIE1	"Servicing PCIe Cards" on page 107
	/SYS/MB/PCIE2	

Component	Oracle ILOM Target	Links
	/SYS/MB/PCIE3	
	/SYS/MB/PCIE4	
	/SYS/MB/PCIE5	
	/SYS/MB/PCIE6	
Power supplies	/SYS/PS0 (outer)	"Servicing Power Supplies" on page 77
	/SYS/PS1 (inner)	
SPM	/SYS/MB/SPM	"Servicing the SPM" on page 121

Related Information

- "Log In to Oracle ILOM (Service)" on page 22
- "Identify Faulted Components" on page 23
- "Identify Disabled Components" on page 25

Interpreting LEDs

Use these steps to determine if an LED indicates that a component has failed.

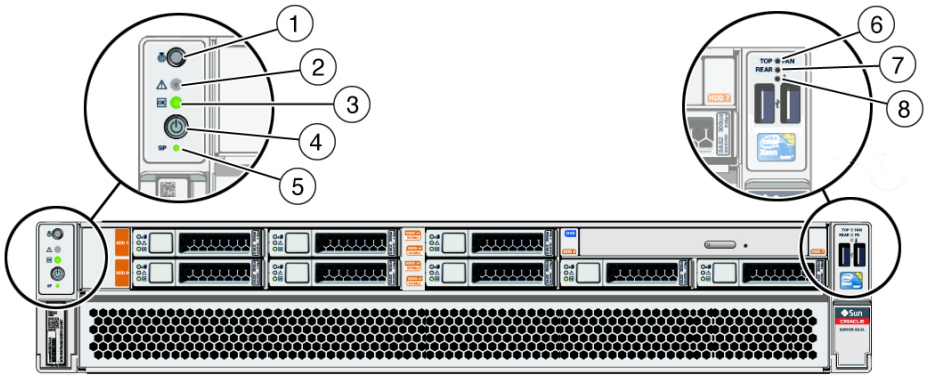
Step	Description	Links
1.	Check the LEDs on the front and rear of the server.	■ "Front Panel Controls and LEDs" on page 28 ■ "Rear Panel Controls and LEDs" on page 30
2.	Check the LEDs on the individual components. Component LEDs might not be lit even though the component is faulty. Rely on software to determine if a component is faulty, see "Identify Faulted Components" on page 23.	■ "Servicing Drives" on page 59 ■ "Servicing Fan Modules" on page 69 ■ "Servicing Power Supplies" on page 77 ■ "Servicing Memory Risers and DIMMs" on page 83 ■ "Servicing PCIe Cards" on page 107 ■ "Servicing the Motherboard" on page 129

Related Information

- "Checking for Faults" on page 21

- “Performing Advanced Troubleshooting” on page 32
- “Clear a Fault Manually” on page 37

Front Panel Controls and LEDs



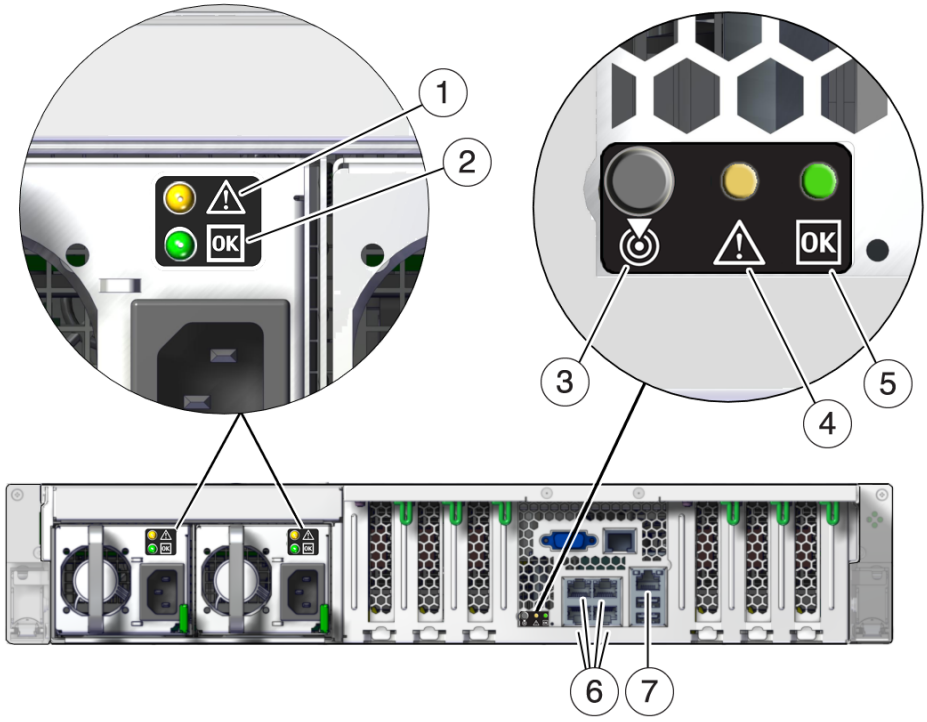
No.	LED or Control	Description
1	Locate indicator and button (white)	You can turn on the Locate indicator to identify a particular server. When lit, the LED displays as a fast blink. The blinking will time out after 15 minutes. Turn on the Locate indicator by pressing the Locate button, or see “Locate the Server” on page 43.
2	System Fault (Service Action Required) LED (amber)	The `fmadm faulty` command provides details about any faults that cause this indicator to light. See “Identify Faulted Components” on page 23. Under some fault conditions, individual component fault LEDs are lit in addition to the Service Required LED.
3	System OK indicator (green)	Indicates these conditions: ■ **Off** – Server is not running in its normal state. Server power might be off. The SP might be running. ■ **Steady on** – Server is powered on and is running in its normal operating state. No service actions are required. ■ **Slow blink** – A normal but transitory activity is taking place. Slow blinking might indicate that server diagnostics are running or that the server is booting. ■ **Standby blink** – Server is running in standby mode and can be quickly returned to full function.

No.	LED or Control	Description
4	Power Button	See "Removing Power From the Server" on page 45 and "Power On the Server (System Power Button)" on page 160.
5	SP OK indicator	Indicates these conditions: ■ **Off** – AC power might not have been connected to the power supplies, or an SPM error has occurred and service is required. ■ **Steady on** – SP is running in its normal operating state. No service actions are required. ■ **Slow Blink** – SP is initializing the Oracle ILOM firmware.
6	Fan Module Fault LED (amber)	Indicates these conditions: ■ **Off** – Steady state, no service action is required. ■ **Steady on** – A fan module failure event has been acknowledged and a service action is required on at least one of the fan modules.
7	Server Power Supply Fault LED (amber)	Indicates these conditions: ■ **Off** – Steady state, no service action is required. ■ **Steady on** – A fault has been detected on one of the two power supplies.
8	Server Overtemp LED (amber)	Indicates these conditions: ■ **Off** – Steady state, no service action is required. ■ **Steady on** – A temperature failure event has been acknowledged. A temperature limit has been exceeded, and a service action is required.

Related Information

- "Rear Panel Controls and LEDs" on page 30
- "Checking for Faults" on page 21

Rear Panel Controls and LEDs



No.	LED	Icon or Label	Description
1	PS Fault LED (amber)	⚠	Indicates these conditions: ■ **Off** – Steady state, no service action is required. ■ **Steady on** – A fault has been detected on this power supply.
2	PS DC OK LED (green)	OK	Indicates these conditions: ■ **Off** – 12V DC output from this power supply is disabled or not within specification. ■ **Steady on** – 12V DC output from this power supply is present and within specifications.

No.	LED	Icon or Label	Description
3	Locate indicator and button (white)		Turn on the Locate indicator by pressing the Locator button, or see "Locate the Server" on page 43. When lit, the LED blinks rapidly. The blinking will time out after 15 minutes.
4	Service Required LED (amber)		The `fmadm faulty` command provides details about any faults that cause this indicator to light. See "Identify Faulted Components" on page 23. Under some fault conditions, individual component fault LEDs are lit in addition to the Service Required LED.
5	System OK indicator (green)		Indicates these conditions: ■ **Off** – Server is not running in its normal state. Server power might be off. The SPM might be running. ■ **Steady on** – Server is powered on and is running in its normal operating state. No service actions are required. ■ **Slow blink** – Server is running in standby mode and can be quickly returned to full function. ■ **Fast blink** – A normal but transitory activity is taking place. Fast blinking might indicate that server diagnostics are running or that the server is booting.
6	Host Ethernet Port Link/ Activity LED (green) From left to right, NET 1, NET 0, NET 3, and NET 2.		Indicates these conditions: ■ **Off** – No link is established. ■ **Steady On** – A link is established. ■ **Blinking** – A link is established, and there is activity on the port.
7	NET MGT Port Link and Activity LED (green on left) NET MGT Port Speed LED (green on right)	LINK/ACT SPD	Indicates these conditions: ■ **Off** – No link is established. ■ **Steady On** – A link is established. ■ **Blinking** – A link is established and there is activity on the port. Indicates these conditions: ■ **Off** – The link is operating as a 10 Mbps connection. ■ **Steady On** – The link is operating as a 100 Mbps connection.

Related Information

- "Front Panel Controls and LEDs" on page 28
- "Checking for Faults" on page 21

Performing Advanced Troubleshooting

If you are unable to diagnose faults using the methods provided in “Checking for Faults” on page 21, use any of the following methods to diagnose faults on the server.

Description	Links
Generate and examine diagnostic information.	“Check the Message Buffer” on page 32
Examine log files for additional information about the server.	“View Log Files (Oracle Solaris)” on page 33 “View Log Files (Oracle ILOM)” on page 33
Generate and examine low-level diagnostic information generated by POST.	“POST Overview” on page 34 “Configure POST” on page 34 “Oracle ILOM Properties That Affect POST Behavior” on page 36

Related Information

- “Checking for Faults” on page 21
- “Interpreting LEDs” on page 27
- “Clear a Fault Manually” on page 37

▼ Check the Message Buffer

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

1. **Log in as an Oracle Solaris OS superuser.**
2. **Type:**

```
# dmesg
```

Related Information

- “View Log Files (Oracle Solaris)” on page 33
- “View Log Files (Oracle ILOM)” on page 33
- “POST Overview” on page 34

View Log Files (Oracle Solaris)

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. **To view all logged messages, type:**

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

Related Information

- “Check the Message Buffer” on page 32
- “View Log Files (Oracle Solaris)” on page 33
- “POST Overview” on page 34

View Log Files (Oracle ILOM)

1. **View the event log.**

```
-> show /SP/logs/event/list
```

2. **View the audit log.**

```
-> show /SP/logs/audit/list
```

Related Information

- “Check the Message Buffer” on page 32

- "View Log Files (Oracle Solaris)" on page 33
- "POST Overview" on page 34

POST Overview

POST is a group of PROM-based tests that run when the server is powered on or reset. POST checks the basic integrity of the critical hardware components in the server.

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. Refer to the section on setting the SPARC host keyswitch state in the *Oracle ILOM Administrator's Guide for Configuration and Maintenance Firmware Release 4.0.x* for a list of parameters and values.

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

Related Information

- "Configure POST" on page 34
- "Oracle ILOM Properties That Affect POST Behavior" on page 36

▼ Configure POST

1. **Log in to Oracle ILOM.**

   See "Log In to Oracle ILOM (Service)" on page 22.

2. **Set `/HOST/diag` to the value that corresponds to the POST configuration you want to run.**

   This example sets the `/HOST/diag default_level` to `min`, which configures POST to run according to other parameter values.

```
-> set /HOST/diag default_level=min
Set default_level to min
```

   For possible values for the `default_level` parameter, type:

```
-> help /HOST/diag

/HOST/diag : Manage Host Power On Self Test Diagnostics

Targets:

Properties:
default_level : Diag level in the default cause (no error or hw change)
default_level : Possible values = off, min, max
default_level : User role required for set = r

default_verbosity : Diag verbosity in the default cause (no error or hw change)
default_verbosity : Possible values = none, min, normal, max
default_verbosity : User role required for set = r

error_level : Diag level when running after an error reset
error_level : Possible values = off, min, max
error_level : User role required for set = r

error_verbosity : Diag verbosity when running after an error reset
error_verbosity : Possible values = none, min, normal, max
error_verbosity : User role required for set = r

hw_change_level : Diag level when running after a hw change
hw_change_level : Possible values = off, min, max
hw_change_level : User role required for set = r

hw_change_verbosity : Diag verbosity when running after a hw change
hw_change_verbosity : Possible values = none, min, normal, max
hw_change_verbosity : User role required for set = r

->
```

Note - When the verbosity value is set to *none*, the console might not display any POST test status for extended periods of time on certain configurations.

3. **(Optional) Set `/HOST/diag` to determine the diagnostic level after an error reset and after a hardware change.**

   To set `error_level`, to `max`, and to set `hw_change_level` to `max`, type:

   ```
   -> set /HOST/diag error_level=max
   -> set /HOST/diag hw_change_level=max
   ```

   Refer to the section on setting the SPARC host keyswitch state in the *Oracle ILOM Administrator's Guide for Configuration and Maintenance Firmware Release 4.0.x* for a description of parameters and values.

4. **View the current values for settings.**

   For example:

```
-> show /HOST/diag

/HOST/diag
   Targets:

   Properties:
        default_level = off
        default_verbosity = normal
        error_level = max
        error_verbosity = normal
        hw_change_level = max
        hw_change_verbosity = normal


   Commands:
        cd
        set
        show
->
```

Related Information

- “POST Overview” on page 34
- “Oracle ILOM Properties That Affect POST Behavior” on page 36

Oracle ILOM Properties That Affect POST Behavior

There are a number of Oracle ILOM commands that you can use to perform host diagnostic tests. For details about using these commands, refer to the chapter that describes configuring host server management actions in the *Oracle ILOM Administrator's Guide for Configuration and Maintenance Firmware Release 4.0.x*.

Related Information

- “POST Overview” on page 34
- “Configure POST” on page 34

Clear a Fault Manually

When the server detects faults, the faults are logged and displayed on the console. In most cases, after the faulty component is replaces the fault condition is repaired automatically. In cases where the fault condition is not automatically cleared, you must clear the fault manually.

1. **After replacing a faulty component, power on the server, and verify that the fault for that component has cleared.**

   Use the `fmadm faulty` command to confirm that the fault is clear.

2. **Determine your next step.**

   - **If no fault was detected, you do not need to do anything else. Do not perform the subsequent steps.**
   - **If a fault was detected, continue to the next step.**

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:

   ```
   faultmgmtsp> fmadm replaced FRU
   ```

   Fault UUID numbers are displayed in `fmadm faulty` output.

4. **Verify the fault is cleared.**

   Run the `show disabled` command to see if any components are still listed as faulty. If there are disabled components, repair the faults manually and continue to the next step to reset the server.

   ```
   faultmgmtsp> show disabled
   ```

5. **If required, reset the server.**

   ```
   faultmgmtsp> exit
   -> reset /System
   Are you sure you want to reset /System? y
   Resetting /System ...
   ```

6. **Clear the fault in the Oracle Enterprise Manager Ops Center software, if applicable.**

   Clearing a fault with the `fmadm aquit` command does not clear that fault in the Oracle Enterprise Manager Ops Center software. You must manually clear the fault or incident. For

more information, refer to the section on marking an incident repaired in the *Oracle Enterprise Manager Ops Center Feature Reference Guide* at:

http://www.oracle.com/pls/topic/lookup?ctx=oc122

7. **If you are servicing a component, return to the procedure for that component.**

Related Information

- “Checking for Faults” on page 21
- “Interpreting LEDs” on page 27
- “Performing Advanced Troubleshooting” on page 32

Preparing for Service

These topics describe how to prepare the server for servicing.

Note - Use only SPARC T8 components in SPARC T8 servers.

Step	Description	Links
1.	Review safety and handling information.	“Safety Information” on page 39
2.	Gather the tools needed for service.	“Tools Needed For Service” on page 41
3.	Consider filler options.	“Fillers” on page 42
4.	Review component service categories.	“Component Service Categories” on page 43
5.	Find the server serial number.	“Find the Server Serial Number” on page 42
6.	Identify the server to be serviced.	“Locate the Server” on page 43
7.	For cold-service operations, shut down the OS and remove power from the server.	“Removing Power From the Server” on page 45
8.	Move the server out of the rack and remove covers as necessary to gain access to internal components.	“Accessing Server Components” on page 48
9.	Attach devices to the server to perform service procedures.	“Attachment of Devices During Service” on page 57

Related Information

- “Identifying Components” on page 11
- “Returning the Server to Operation” on page 153

Safety Information

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

- Follow all cautions and instructions marked on the equipment and described in the documentation shipped with your server.

- Follow all cautions and instructions marked on the equipment and described in the *SPARC T8-1 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 ESD safety practices as described in this section.

Safety Symbols

Note the meanings of the following 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 the cards, drives, and DIMMS, require special handling.

Caution - Circuit boards and 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 drive assemblies, circuit boards, or PCIe cards. 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.

Note - An antistatic wrist strap is no longer included in the accessory kit for this server. However, antistatic wrist straps are still included with options.

Antistatic Mat

Place ESD-sensitive components such as motherboards, memory, and other PCBs on an antistatic mat.

Related Information

- “Prevent ESD Damage” on page 49
- “Tools Needed For Service” on page 41

Tools Needed For Service

You need the following tools for most service operations:

- Antistatic wrist strap
- Antistatic mat
- No. 2 Phillips screwdriver
- No. 1 flat-blade screwdriver (battery removal)
- T10 Torx screwdriver
- T15 Torx screwdriver
- T20 Torx screwdriver

Related Information

- “Safety Information” on page 39
- “Prevent ESD Damage” on page 49

Fillers

A filler is an empty metal or plastic enclosure that is installed at the factory or in the field into a server component slot that does not contain a functioning component. The fillers ensure proper airflow through the system. Depending on the component configuration, the server can include the following types of fillers:

- Drive filler
- PCIe filler (covering back panel, not inserted in the PCIe slot)

Caution - When you remove a server component while the server is connected to power, insert a new component or filler within 60 seconds to ensure proper system chassis cooling. After you complete cold-servicing, ensure that all fillers are in place before connecting the server to power.

Related Information

- “Servicing Drives” on page 59
- “Servicing PCIe Cards” on page 107
- “Returning the Server to Operation” on page 153

▼ Find the Server Serial Number

You need the serial number of the server's chassis to obtain technical support for the system.

Note - When a drive backplane, SPM, or motherboard is replaced, the chassis serial number and part number might need to be programmed into the new component. This must be done in a special service mode by trained service personnel.

- **Locate the serial number using one of the following methods:**
  - **Read the serial number from a sticker located on the front of the server or another sticker on the side of the server.**
  - **At the Oracle ILOM prompt, type.**

```
-> show /System
```

```
/System
   Targets:
. . .
```

In the output look for a line under Properties that identifies the product serial number. For example:

```
product_serial_number = BDL1026F8F
```

Related Information

- “Front Panel Components” on page 11

▼ Locate the Server

You can use the Server Locate indicators to identify one particular server from many other servers.

1. **At the Oracle ILOM prompt, type:**

```
-> set /System/locator_indicator=on
```

The white Server Locate indicators (one on the front panel and one on the rear panel) blink for about 30 minutes before turning off.

2. **After locating the server with the blinking Locate indicator, turn it off by pressing the Server Locator button.**

Alternatively, you can type an Oracle ILOM command to turn off the Locate indicator.

```
-> set /System/locator_indicator=off
```

Related Information

- “Front Panel Components” on page 11

Component Service Categories

The server components and assemblies that can be replaced in the field fall into three categories:

- Hot-service, replaceable by customer
- Cold-service, replaceable by customer
- Cold-service, replaceable by authorized service personnel

Cold-service procedures require that you shut the server down and unplug the power cables that connect the power supplies to the power source.

Although hot-service procedures can be performed while the server is running, you should usually bring it to standby mode as the first step in the replacement procedure. See "Power Off the Server (Server Power Button - Graceful)" on page 47 for instructions.

The following table identifies the components in each category.

Component service Category	Component	Service information	Notes
Hot-service, replaceable by customer	Drive	"Servicing Drives" on page 59	Drive must be offline.
	Drive filler	"Servicing Drives" on page 59	Needed to preserve proper interior air flow.
	Power supply	"Servicing Power Supplies" on page 77	Hot-service if two power supplies are in use. Otherwise, cold-service.
	Fan	"Servicing Fan Modules" on page 69	Removal of a fan requires replacement within 30 seconds to avoid overheating.
Cold-service, replaceable by customer	Memory risers and DIMMs	"Servicing Memory Risers and DIMMs" on page 83	
	PCIe cards	"Servicing PCIe Cards" on page 107	
	Battery	"Servicing the Battery" on page 117	
	SPM	"Servicing the SPM" on page 121	
	SC PROM	"Servicing the Motherboard" on page 129	
	eUSB Drive		
Cold-service, replaceable by authorized service personnel	Motherboard	"Servicing the Motherboard" on page 129	Transfer system configuration PROM to new motherboard.
	Drive backplane	"Servicing the Drive Backplane" on page 147	
	LED indicator modules (front left and front right)		

Related Information

- "Internal Component Locations" on page 14

Removing Power From the Server

These topics describe how to power off the server.

Step	Description	Links
1.	Prepare the server for powering off.	“Prepare to Power Off the Server” on page 45
2.	Power off the server by one of three methods.	“Power Off the Server (Oracle ILOM)” on page 46 “Power Off the Server (Server Power Button - Graceful)” on page 47 “Power Off the Server (Emergency Shutdown)” on page 47
3.	Disconnect the power cords from the server.	“Disconnect Power Cords” on page 48

Related Information

- “Front Panel Components” on page 11
- *“Booting and Shutting Down Oracle Solaris” in SPARC T8 Series Servers Administration Guide*

▼ Prepare to Power Off the Server

Perform this procedure before powering off the server.

1. **Log in to the OS 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. **Notify affected users that the server will be shut down.**

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

3. **Save any open files and quit all running programs.**

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

4. **Shut down all LDoms.**

   Refer to Oracle Solaris system administration and Oracle VM Server for SPARC documentation for additional information.

5. **Shut down the Oracle Solaris OS.**

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

Related Information

- “Power Off the Server (Server Power Button - Graceful)” on page 47
- “Power Off the Server (Emergency Shutdown)” on page 47
- “Front Panel Components” on page 11

▼ Power Off the Server (Oracle ILOM)

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

Note - Additional information about powering off the server is provided in *“Booting and Shutting Down Oracle Solaris” in SPARC T8 Series Servers Administration Guide*.

---

1. **Prepare to power off the server.**

   See “Prepare to Power Off the Server” on page 45.

2. **If you are consoled to the host, switch from the system console to the Oracle ILOM prompt by typing the `#.` (Hash-Dot) key sequence.**

3. **Power off the server.**

```
-> stop /System
```

Note - You can also use the Server Power button on the front of the server to initiate a graceful server shutdown. (See “Power Off the Server (Server Power Button - Graceful)” on page 47.)

Related Information

- “Prepare to Power Off the Server” on page 45
- “Power Off the Server (Server Power Button - Graceful)” on page 47
- “Power Off the Server (Emergency Shutdown)” on page 47
- “Front Panel Components” on page 11

▼ Power Off the Server (Server Power Button - Graceful)

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

1. **Prepare to power off the server.**

   See “Prepare to Power Off the Server” on page 45.

2. **Press and release the Power button.**

   You might need to use a pointed object, such as a pen or pencil.

Related Information

- “Prepare to Power Off the Server” on page 45
- “Power Off the Server (Oracle ILOM)” on page 46
- “Power Off the Server (Emergency Shutdown)” on page 47
- “Front Panel Components” on page 11

▼ Power Off the Server (Emergency Shutdown)

Caution - All applications and files will be closed abruptly without saving changes. File system corruption might occur.

1. **Prepare to power off the server.**

   See “Prepare to Power Off the Server” on page 45.

2. **Press and hold the Power button for five seconds.**

Related Information

- “Prepare to Power Off the Server” on page 45
- “Power Off the Server (Oracle ILOM)” on page 46
- “Power Off the Server (Server Power Button - Graceful)” on page 47
- “Front Panel Components” on page 11

Disconnect Power Cords

Remove the power cords from the server only after powering off the server.

- **Unplug all power cords from the server.**

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

Related Information

- “Safety Information” on page 39
- “Power Off the Server (Oracle ILOM)” on page 46
- “Power Off the Server (Server Power Button - Graceful)” on page 47
- “Power Off the Server (Emergency Shutdown)” on page 47
- “Rear Panel Components” on page 13

Accessing Server Components

These topics explain how to access components on the outside and the inside of the server. Perform these tasks in this order, as needed.

- “Prevent ESD Damage” on page 49
- “Extend the Server to the Service Position” on page 49
- “Release the CMA” on page 51
- “Remove the Server From the Rack” on page 52
- “Remove the Top Cover” on page 53
- “Open and Remove the Airflow Cover” on page 54
- “Remove the Fan Cover” on page 55

Related Information

- “Safety Information” on page 39

Prevent ESD Damage

Many components housed within the chassis can be damaged by ESD. To protect these components from damage, perform the following steps before opening the chassis for service.

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

   Place ESD-sensitive components such as the printed circuit boards on an antistatic mat. The following items can be used as an antistatic mat:

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

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.

   See “Safety Information” on page 39.

Related Information

- “Safety Information” on page 39

Extend the Server to the Service Position

You can service the following components with the server in the service position:

- Drives or fillers
- Power supplies
- Fans
- Memory risers
- DIMMs
- PCIe cards
- SPM
- eUSB drive
- Battery

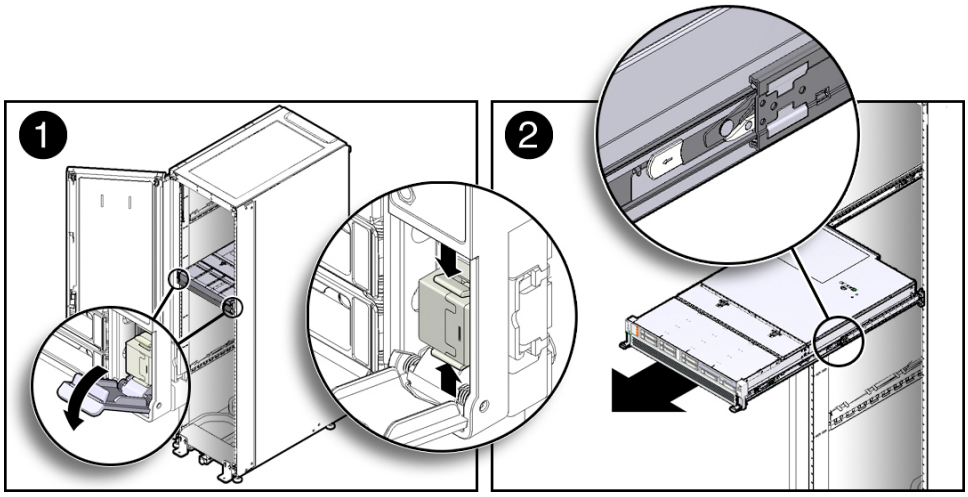
Note - You can replace the drives and rear power supplies without extending the server into the service position.

1. **Verify that no cables will be damaged or will interfere when the server is extended.**

   Although the CMA that is supplied with the server is hinged to accommodate extending the server, you should ensure that all cables and cords are capable of extending.

2. **From the front of the server, release the two slide release latches.**

   Squeeze the green slide release latches to release the slide rails.



3. **While squeezing the slide release latches, slowly pull the server forward until the slide rails latch.**

Related Information

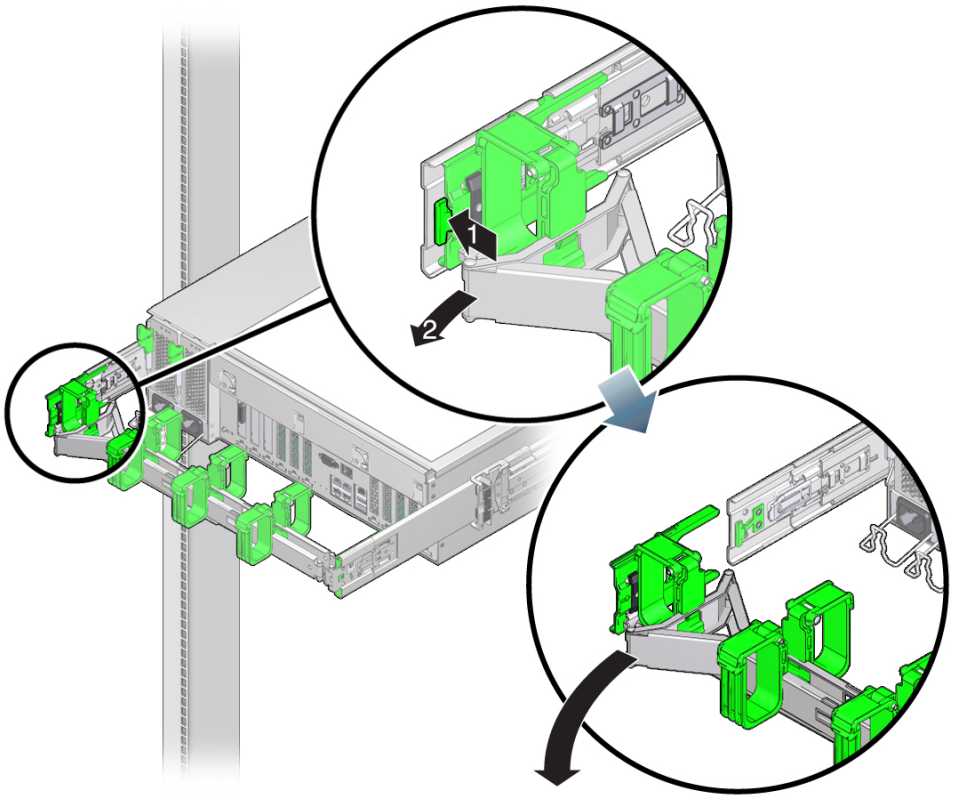
- “Release the CMA” on page 51
- “Remove the Server From the Rack” on page 52

Release the CMA

For some service procedures, such as replacing a power supply, if you are using a CMA, you might need to release the CMA to gain access to the rear of the chassis.

Note - For instructions on how to install the CMA for the first time, refer to "Prepare the CMA for Installation" in *SPARC T8-1 Server Installation Guide*.

1. **Press and hold the tab.**
   The tab is on the inside rear of the left side of the CMA.



2. **Swing the CMA out of the way.**
   Do not allow the CMA to hang unsupported while it is unattached.

3. **When you have finished the service steps that require the CMA to be out of the way, swing the CMA closed and latch it to the left rack rail.**

   Check that the CMA and the cables are functioning properly after completing service.

Related Information

- “Extend the Server to the Service Position” on page 49
- “Remove the Server From the Rack” on page 52
- “Returning the Server to Operation” on page 153

▼ Remove the Server From the Rack

You must remove the server from the rack to remove or install these components:

- Motherboard
- Drive backplane

Caution - The server chassis is heavy. To avoid personal injury, use two people to remove the server from the rack.

1. **Shut down the host.**
2. **Remove power from the server.**

   See “Removing Power From the Server” on page 45.
3. **Disconnect all the cables and power cords from the server.**
4. **Extend the server to the maintenance position.**

   See “Extend the Server to the Service Position” on page 49.
5. **Release the CMA from the rail assembly.**

   The CMA is still attached to the cabinet, but the server chassis is now disconnected from the CMA. See “Release the CMA” on page 51.
6. **From the front of the server, pull the release tabs forward and pull the server forward until it is free of the rack rails.**

   A release tab is located on each rail.
7. **Set the server on a sturdy work surface.**

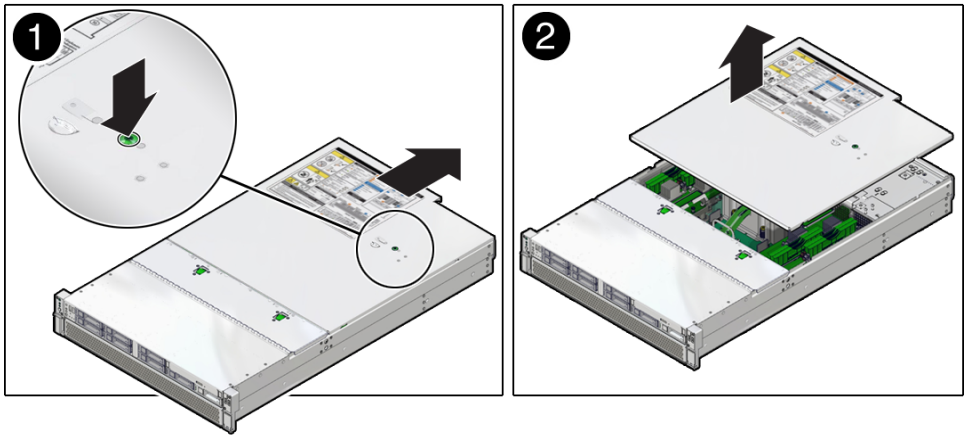
Related Information

- “Extend the Server to the Service Position” on page 49
- “Release the CMA” on page 51
- “Remove the Top Cover” on page 53

▼ Remove the Top Cover

Caution - Removing the top cover without properly powering down the server and disconnecting the AC power cords from the power supplies results in a chassis intrusion switch failure. This failure causes the server to be immediately powered off. Any changes you make to the memory riser or DIMM configurations will not be properly reflected in the service processor's inventory until you replace the top cover.

1. **Ensure that the AC power cords are disconnected from the server power supplies.**
2. **Press the green button to release the top cover (panel 1).**



3. **Slide the cover towards the rear of the server chassis about 0.5 inch (12 mm).**
4. **Lift up and remove the top cover (panel 2).**

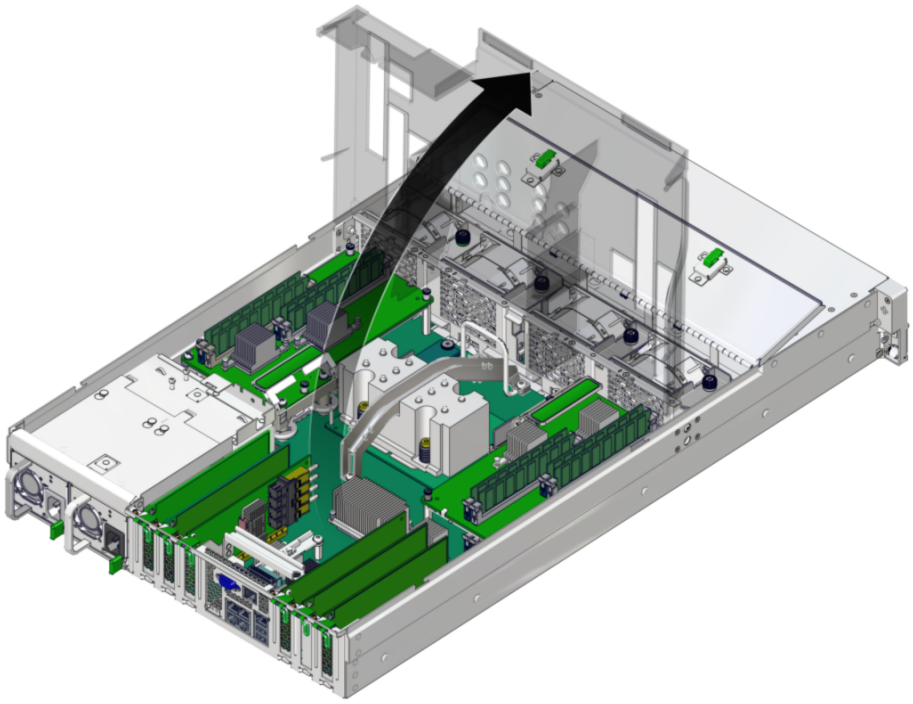
Related Information

- “Replace the Top Cover” on page 157
- “Open and Remove the Airflow Cover” on page 54
- “Remove the Fan Cover” on page 55

▼ Open and Remove the Airflow Cover

To access some components, you must open or remove the transparent airflow cover.

1. **Lift the edge of the airflow cover closest to the rear of the server.**

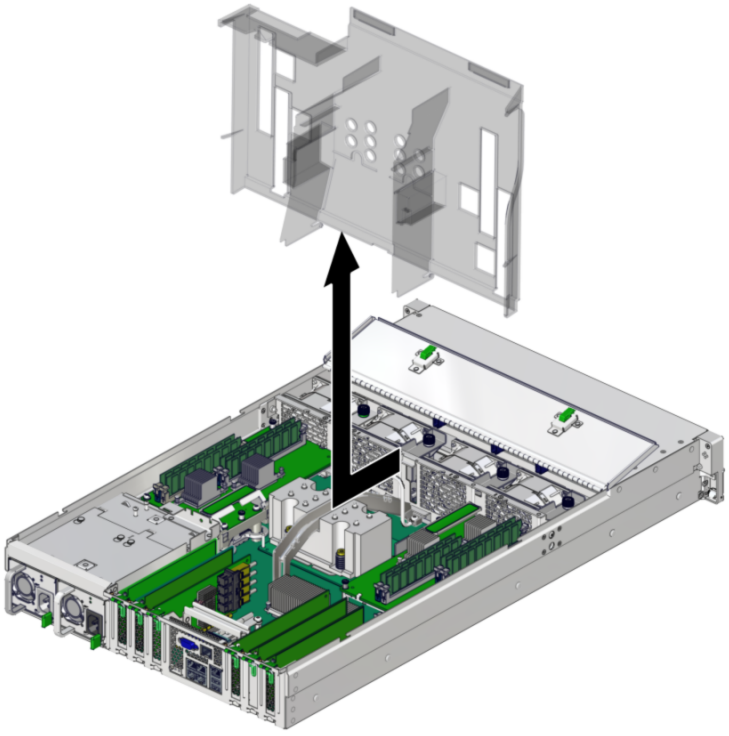


The airflow cover can stand in its upright position.

Perform the next steps if you need to remove the airflow cover.

2. **Open the fan cover.**

3. **Pull open the plastic tabs to release the airflow cover's hinge edge from the server.**



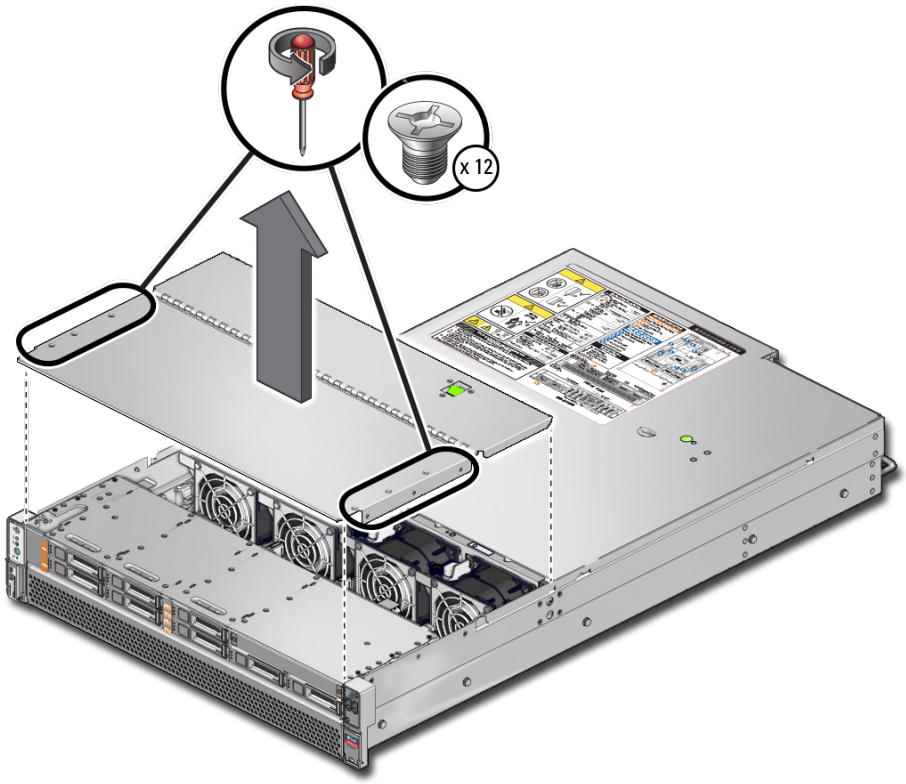
Related Information

- “Install and Close the Airflow Cover” on page 155
- “Remove the Top Cover” on page 53
- “Remove the Fan Cover” on page 55

▼ Remove the Fan Cover

To access some components, you must remove the fan cover.

1. **Remove the twelve No. 2 Phillips screws on the top and side of the fan cover.**



2. **Lift the fan cover from the server.**

Related Information

- “Replace the Fan Cover” on page 154
- “Open and Remove the Airflow Cover” on page 54
- “Remove the Top Cover” on page 53

Attachment of Devices During Service

During service procedures, you might have to connect devices to the server.

- For OS support, connect an Ethernet cable to the one of the Ethernet connectors (NET 0, NET 1, NET 2, or NET 3).
- If you plan to interact with the system console directly, you can connect additional external devices, such as a mouse and keyboard, to the server's USB connectors, and connect a monitor to the rear DB-15 video connector. For more details on connecting to the video port, refer to “Identifying Ports” in *SPARC T8-1 Server Installation Guide*.
- If you plan to connect to the Oracle ILOM software over the network, connect an Ethernet cable to the Ethernet port labeled NET MGT.

Note - The SP uses the NET MGT (out-of-band) port by default. You can configure the SP to share one of the sever's four Ethernet ports instead. The SP uses only the configured Ethernet port.

- If you plan to access the Oracle ILOM CLI through the management port, connect a serial null modem cable to the RJ-45 serial port labeled SER MGT.
- The USB connectors on the front panel support USB 2.0. The USB connectors on the rear panel support USB 3.0.

Related Information

- “Front Panel Components” on page 11
- “Rear Panel Components” on page 13
- “Detecting and Managing Faults” on page 21
- “Connect Cables” in *SPARC T8-1 Server Installation Guide*

Servicing Drives

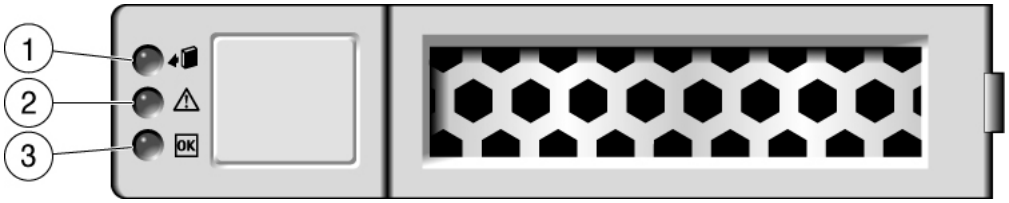
The server provides eight 2.5-inch drive bays, accessible through the front panel. See “Front Panel Components” on page 11. Drives can be removed and installed while the server is running. This feature, referred to as being *hot-serviceable*, depends on how the drives are configured.

Note - The server supports traditional, disk-based storage devices and Flash SSDs, which are diskless storage devices based on solid-state memory. The server also can support NVMe drives in four of the drive bays. Either type of drive can be a boot device. The term “drive” is used in a generic sense to refer to both types of internal storage devices.

These topics explain how to service drives.

Related Information

Drive LEDs



The following table explains how to interpret the drive status LEDs.

	LED		Color	Description
1	Ready to Remove		Blue	Indicates that a drive can be removed during a hot-service operation.
2	Service Required		Amber	Indicates that the drive has experienced a fault condition.
3	OK/Activity (hard drives)	OK	Green	Indicates the drive's availability for use. ■ **On –** Read or write activity is in progress. ■ **Off –** Drive is idle and available for use.
3	OK/Activity (SSDs)	OK	Green	Indicates the drive's availability for use. ■ **On –** Read or write activity is in progress. ■ **Off –** Drive is idle and available for use. ■ **Flashes on and off –** This situation occurs during hot-service operations. You can ignore this situation.

Note - The front and rear panel Service Required LEDs are also lit when the server detects a drive fault. See “Front Panel Components” on page 11 and “Rear Panel Components” on page 13.

Related Information

- “Front Panel Components” on page 11
- “Rear Panel Components” on page 13
- “Remove a Drive or Drive Filler” on page 61

- “Install a Drive or Drive Filler” on page 65
- “Verify a Drive” on page 66

Determine Which Drive Is Faulty

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

1. **Check to see if any System Service Required LEDs are lit or flashing.**
   See “Interpreting LEDs” on page 27.
2. **Visually inspect the drive to see if any of its status LEDs are lit or flashing.**
   See “Drive LEDs” on page 60.
   If the drive is faulty, replace it. See “Remove a Drive or Drive Filler” on page 61.
3. **If you are unable to identify the faulty drive, seek further information.**
   See “Detecting and Managing Faults” on page 21.
4. **Remove the faulty drive.**
   See “Remove a Drive or Drive Filler” on page 61.

Related Information

- “Drive LEDs” on page 60
- “Remove a Drive or Drive Filler” on page 61
- “Install a Drive or Drive Filler” on page 65
- “Verify a Drive” on page 66
- “Detecting and Managing Faults” on page 21

Remove a Drive or Drive Filler

You can perform this procedure while the server is running. See “Component Service Categories” on page 43 for more information about hot-service procedures.

To hot-service a drive, you must first take it offline. This action prevents applications from accessing the drive and removes software links to it.

1. **Determine which drive needs to be removed.**
   See “Determine Which Drive Is Faulty” on page 61.

2. **Determine if you need to shut down the OS to replace the drive, and perform one of the following actions:**

   - **If the drive contains the sole image of the OS or cannot be logically isolated from the server's online operations, shut down the OS as described in "Power Off the Server (Oracle ILOM)" on page 46. Then go to Step 4.**
   - **If the drive can be taken offline without shutting down the OS, go to Step 3.**

3. **Take the drive offline.**

   a. **At the Oracle Solaris prompt, 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.

   ```
   Ap_id                    Type         Receptacle   Occupant       Condition
   c0                       scsi-bus     connected    configured     unknown
   c0::dsk/c1t0d0           disk         connected    configured     unknown
   c0::dsk/c1t0d0           disk         connected    configured     unknown
   usb0/1                   unknown      empty        unconfigured   ok
   usb0/2                   unknown      empty        unconfigured   ok
   ...
   ```

   You must unconfigure any drive whose status is listed as configured, as described in Step 3b.

   b. **Unconfigure the drive.**

   For example, where the drive to be unconfigured is the first drive listed in Step 3a:

   ```
   # cfgadm -c unconfigure c0::dsk/c1t1d0
   ```

   Replace `c0:dsk/c1t1d0` with the drive name that applies to your situation.

   c. **Verify that the drive's blue Ready-to-Remove LED is lit.**

4. **Determine whether you can replace the drive using the hot-service procedure or whether you need to power off the server using the cold-service procedure.**

   The cold-service procedure is required if the drive has one of these characteristics:

   - Contains the OS, and the OS is not mirrored on another drive.

- Cannot be logically isolated from the online operations of the server.

5. **Take one of the following actions:**

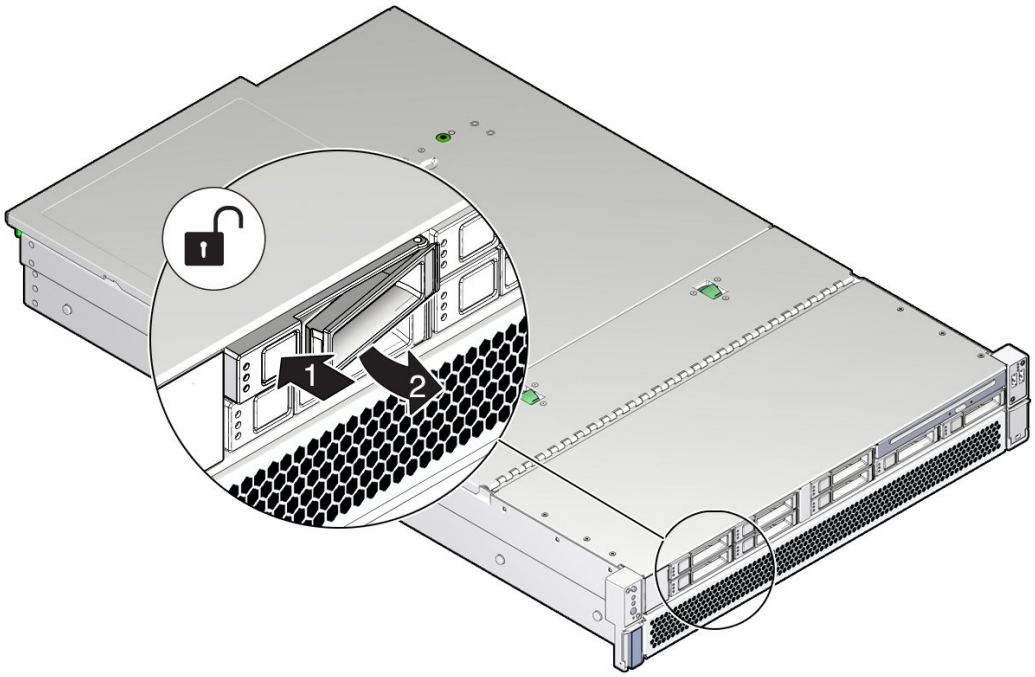
   - **To cold-service the drive, power off the server. Complete one of the procedures described in "Removing Power From the Server" on page 45.**

   - **To hot-service the drive, take the drive offline using one of the procedures in "Power Off the Server (Server Power Button - Graceful)" on page 47. This action removes the logical software links to the drive and prevents any applications from accessing it.**

6. **If you are hot-servicing the drive, locate the drive that displays the amber Fault LED and ensure that the blue Ready-to-Remove LED is lit.**

7. **Attach an antistatic wrist strap.**

8. **On the drive or drive filler you want to remove, complete the following tasks.**

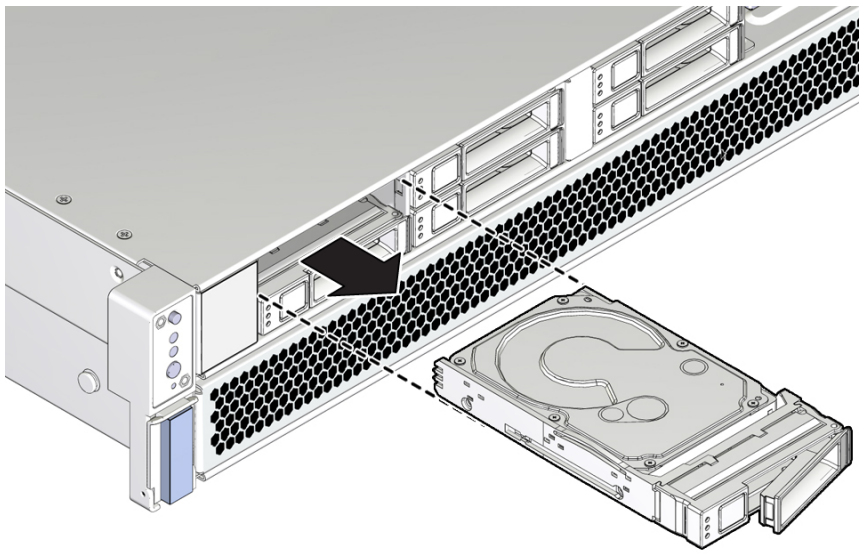


Caution - The latch is not an ejector. Do not bend it too far to the right. Doing so can damage the latch.

a. **Push the release button to open the latch.**

b. **Unlock the drive by moving the latch to the right.**

c. **Grasp the latch and pull the drive out of the slot.**



Caution - When you remove a drive, replace it with a drive filler or another drive. Otherwise, the server might overheat due to improper airflow.

9. **Install a replacement drive or a drive filler.**

See "Install a Drive or Drive Filler" on page 65.

Related Information

- "Determine Which Drive Is Faulty" on page 61
- "Install a Drive or Drive Filler" on page 65

- “Verify a Drive” on page 66

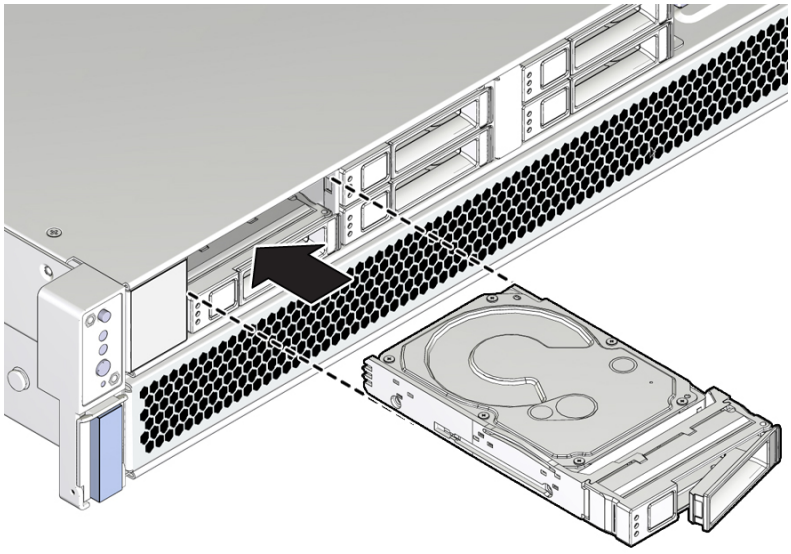
Install a Drive or Drive Filler

Installing a drive into a server is a two-step process. You must first install the drive into the drive slot and then configure that drive to the server.

Note - If you removed an existing drive from a slot in the server, you must install the replacement drive in the same slot as the drive that was removed. Drives are physically addressed according to the slot in which they are installed.

---

1. **Unpack the drive and place it on an antistatic mat.**
2. **Fully open the release lever on the drive.**
3. **Install the drive or drive filler by completing the following tasks.**



   a. **Slide the drive or drive filler into the drive slot until it is fully seated.**

   b. **Close the latch to lock the drive or drive filler in place.**

4. **Return the drive to operation by doing one of the following tasks:**

   - **If you cold-serviced the drive, restore power to the server. Complete the procedure described in "Power On the Server (Oracle ILOM)" on page 159 or "Power On the Server (System Power Button)" on page 160.**

   - **If you hot-serviced the drive, configure it using the `cfgadm -c configure` command. The following example shows the drive at `c0::dsk/c1t1d0` being configured.**

     ```
     # cfgadm -c configure c0::dsk/c1t1d0
     ```

     Replace `c0:dsk/c1t1d0` with the drive name that applies to your situation.

5. **Verify the drive functionality.**

   See "Verify a Drive" on page 66.

Related Information

- "Determine Which Drive Is Faulty" on page 61
- "Remove a Drive or Drive Filler" on page 61
- "Verify a Drive" on page 66

▼ Verify a Drive

Perform these steps after replacing a drive or installing a new drive.

1. **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.

2. **At the Oracle Solaris prompt, 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.

   ```
   Ap_id            Type        Receptacle   Occupant       Condition
   ```

```
c0                scsi-bus    connected    configured     unknown
c0::dsk/c1t0d0    disk        connected    configured     unknown
c0::sd1           disk        connected    unconfigured   unknown
usb0/1            unknown     empty        unconfigured   ok
usb0/2            unknown     empty        unconfigured   ok
...
```

3. **Configure each drive that is not already configured.**

   For example, to configure the second disk listed in Step 2, type:

   ```
   # cfgadm -c configure c0::sd1
   ```

   Replace `c0::sd1` with the drive name for your configuration.

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

   See "Determine Which Drive Is Faulty" on page 61.

5. **At the Oracle Solaris prompt, list all drives in the device tree, including any drives that are not configured.**

   ```
   # cfgadm -al
   ```

   The replacement drive is now listed as configured, as shown in the following example.

```
Ap_Id             Type         Receptacle   Occupant      Condition
c0                scsi-bus     connected    configured    unknown
c0::dsk/c1t0d0    disk         connected    configured    unknown
c0::dsk/c1t1d0    disk         connected    configured    unknown
usb0/1            unknown      empty        unconfigured  ok
usb0/2            unknown      empty        unconfigured  ok
...
```

6. **Perform one of the following tasks based on your verification results:**

   - **If the previous steps did not verify the drive, see "Detecting and Managing Faults" on page 21.**
   - **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 Oracle VTS. Refer to the Oracle VTS documentation for details.

Related Information

- “Determine Which Drive Is Faulty” on page 61
- “Remove a Drive or Drive Filler” on page 61
- “Install a Drive or Drive Filler” on page 65

Servicing Fan Modules

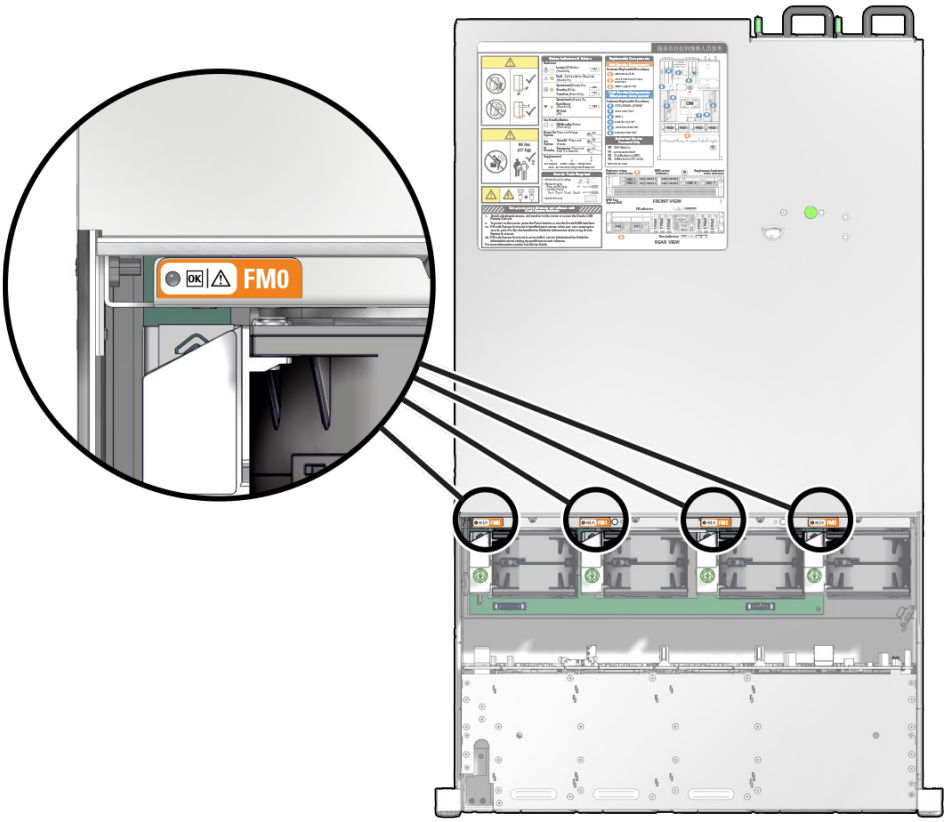
The four fan modules in the server are located behind the drives near the middle of the chassis. See “Identifying Components” on page 11. You can access the fan modules without removing the server cover. You might need to extend the server from the rack to access the fans. Each fan module contains two fans mounted in an integrated, hot-serviceable component.

These topics describe how to service faulty fan modules.

Related Information

- “Preparing for Service” on page 39

Fan Module LEDs



LED		Color	Status When Lit
Power OK	OK	Green	The server is powered on, and the fan module is functioning correctly.
Service Required	⚠	Amber	The fan module is faulty.

Related Information

- “Determine Which Fan Module Is Faulty” on page 71
- “Detecting and Managing Faults” on page 21

▼ Determine Which Fan Module Is Faulty

- **View the following LEDs, which are lit when a fan fault is detected.**
  - Fan (FAN) Fault LED on the front of the server. See “Front Panel Components” on page 11.
  - Fan Fault LED on or adjacent to the faulty fan. See “Fan Module LEDs” on page 70. Each fan contains an LED. When the Service Required LED is lit, a fault has occurred on that fan module.

Note - The front and rear panel Service Required LEDs are also lit when the server detects a fan fault. The Server Overtemp LED might also light if a fan fault causes an increase in server operating temperature.

Related Information

- “Front Panel Components” on page 11
- “Rear Panel Components” on page 13
- “Extend the Server to the Service Position” on page 49
- “Remove a Fan Module” on page 71
- “Detecting and Managing Faults” on page 21

▼ Remove a Fan Module

Caution - While the fans provide some cooling redundancy, if a fan module fails, replace it as soon as possible to maintain server availability. When you remove one of the fan modules, you must replace it within 30 seconds to prevent overheating of the server.

Caution - The fan module contains hazardous moving parts. Unless the power to the server is completely shut down, replacing the fan module is the only service permitted in the fan compartment.

You can perform this procedure while the server is running. See “Component Service Categories” on page 43 for more information about hot-service procedures.

1. **Prepare for servicing.**

   a. **Attach an antistatic wrist strap.**

      See “Prevent ESD Damage” on page 49.

   b. **Extend the server to the maintenance position.**

      See “Extend the Server to the Service Position” on page 49.

2. **Open the fan door.**

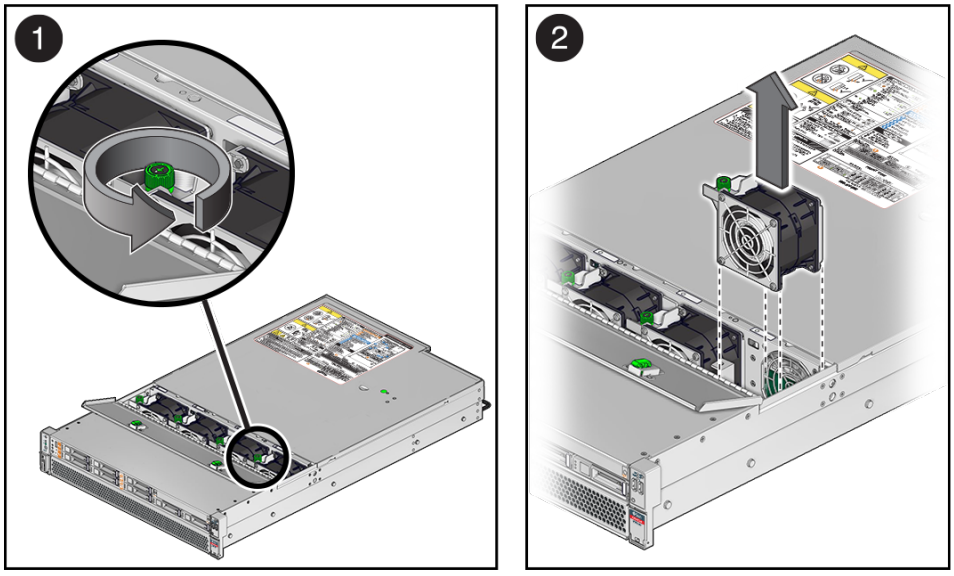
   Slide the two green buttons to unlock the fan door, then swing it open.

3. **Identify the faulty fan module with a corresponding Service Required LED.**

   The Service Required LEDs are located near the fan modules as shown in “Determine Which Fan Module Is Faulty” on page 71.

4. **Loosen the screw on the fan module (panel 1).**

   The screws should only be finger tight. If you have difficulty loosening a screw by hand, use a No. 2 Phillips screwdriver.



5. **Grasp the fan module and lift it out of the server (panel 2).**

Caution - When removing a fan module, do not rock it back and forth. Rocking fans can damage the fan module connectors.

Caution - When changing fan modules, note that only the fan modules can be removed or replaced. Do not service any other components in the fan compartment unless the server is shut down and the power cords are removed.

6. **Install a new fan module.**

   See “Install a Fan Module” on page 73.

Related Information

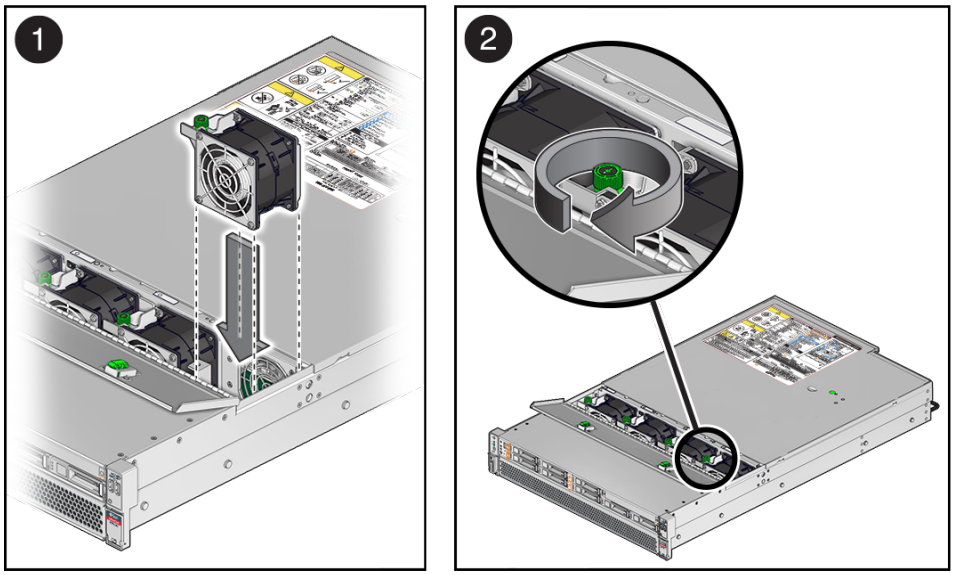
- “Determine Which Fan Module Is Faulty” on page 71
- “Extend the Server to the Service Position” on page 49
- “Install a Fan Module” on page 73

▼ Install a Fan Module

Caution - To ensure proper cooling, ensure that you install the replacement fan module in the same slot from which the faulty fan was removed.

1. **Unpack the replacement fan module and place it on an antistatic mat.**
2. **Open the fan door.**

3. **Install the replacement fan module into the server by completing the following tasks.**



   a. **Align the fan module and slide it into the fan slot (panel 1).**

Note - Fan modules are keyed to ensure that they are installed in the correct orientation.

   Ensure that the cables threaded between the two middle fan modules are not caught.

   b. **Apply firm pressure to fully seat the fan module.**

   You will hear a click when the fan modue is properly seated.

   c. **Tighten the green screw to hold the fan module in place (panel 2).**

   This screw should only be finger tight. Do not use a screwdriver to tighten it.

4. **If the server is powered during this procedure, verify the new fan module.**

See “Verify a Fan Module” on page 75.

5. **Close the fan door.**

   Press down until the latches engage.

6. **Return the Server to Operation.**

7. **When the server is powered, verify the new fan module. See "Verify a Fan Module" on page 75.**

Related Information

- "Return the Server to the Normal Operating Position" on page 158.
- "Remove a Fan Module" on page 71
- "Verify a Fan Module" on page 75

▼ Verify a Fan Module

1. **Verify that the Service Required LED on the replaced fan module is not lit.**
   See "Fan Module LEDs" on page 70.

2. **Verify that the Top Fan LED and the Service Required LED on the front of the server are not lit.**
   See "Front Panel Controls and LEDs" on page 28.

Note - If you are replacing a fan module when the server is powered down, the LEDs might stay lit until power is restored to the server and the server can determine that the fan module is functioning properly.

---

3. **Use the Oracle ILOM `show faulty` command to verify that the fault has been cleared.**
   See "Identify Faulted Components" on page 23 for more information on using the `show faulty` command.
   Consider these two possibilities.

   - **If the previous steps did not clear the fault, see "Detecting and Managing Faults" on page 21 for information about the tools and methods you can use to diagnose component faults.**
   - **If the previous steps indicate that no faults have been detected, then the component has been replaced successfully. No further action is required.**

Related Information

- "Determine Which Fan Module Is Faulty" on page 71

- “Front Panel Components” on page 11
- “Rear Panel Components” on page 13

Servicing Power Supplies

The server has redundant hot-serviceable power supplies. You can remove and replace a power supply without shutting the server down, provided that the other power supply is online and working.

For information about power configuration policies, refer to “Configuring Policy Settings” in *SPARC T8 Series Servers Administration Guide* and the Oracle ILOM documentation.

These topics describe how to service power supply modules.

Related Information

- “Rear Panel Components” on page 13

▼ Locate a Faulty Power Supply

- **View the following LEDs, which are lit when a power supply fault is detected.**
  - Rear PS Fault LED on the front bezel of the server. See “Front Panel Controls and LEDs” on page 28.
  - Service Required LED on the faulted power supply. See “Rear Panel Controls and LEDs” on page 30.

Note - The front and rear panel Service Required LEDs are also lit when the server detects a power supply fault. See “Front Panel Controls and LEDs” on page 28 and “Rear Panel Controls and LEDs” on page 30.

Related Information

- “Front Panel Components” on page 11
- “Rear Panel Components” on page 13
- “Remove a Power Supply” on page 78

▼ Remove a Power Supply

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

Caution - If a power supply fails and you do not have a replacement available, to ensure proper airflow, leave the failed power supply installed in the server until you replace it with a new power supply.

You can perform this procedure while the server is running. See “Component Service Categories” on page 43 for more information about hot service procedures.

1. **Prepare for servicing.**

   a. **Attach an antistatic wrist strap.**

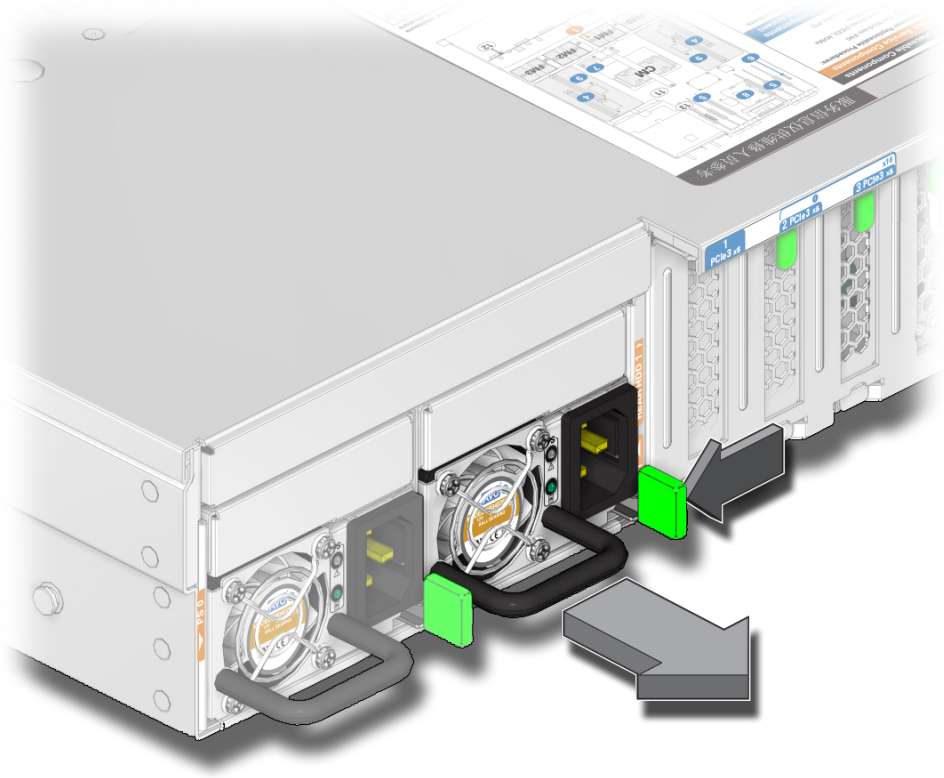
   b. **If necessary, release the CMA to access the power supplies.**

      See “Release the CMA” on page 51.

      Do not allow the CMA to hang unsupported while it is unattached.

2. **Disconnect the power cord from the power supply that displays a lit amber Service Required LED.**

3. **Press the release latch to the left to open the ejector arm.**



4. **Slide the power supply out of the chassis.**

Caution - There is no restraint mechanism on the power supply to prevent it from sliding completely out of the chassis. Use care when removing the power supply to prevent it from falling.

Caution - Whenever you remove a power supply, you should replace it with another power supply. Otherwise, the server might overheat due to improper airflow. If a new power supply is not available, leave the failed power supply installed until it can be replaced.

5. **Install a new power supply.**

   See “Install a Power Supply” on page 80.

Related Information

- “Locate a Faulty Power Supply” on page 77
- “Install a Power Supply” on page 80

▼ Install a Power Supply

1. **If necessary, release the CMA to access the power supplies.**

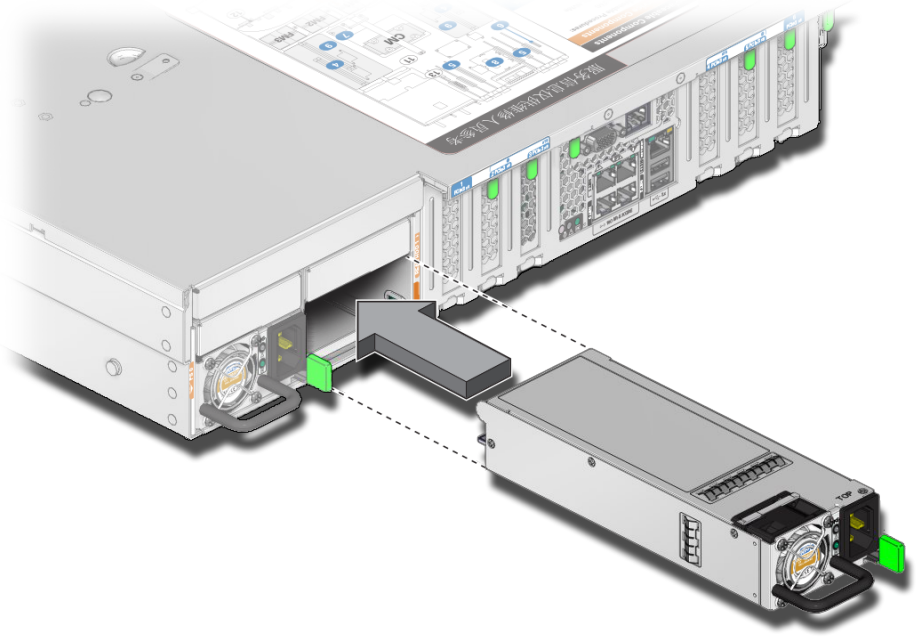
   See “Release the CMA” on page 51.

   Do not allow the CMA to hang unsupported while it is unattached.

2. **Align the power supply with the empty power supply chassis bay.**

3. **Slide the power supply into the bay until it is fully seated.**

You will hear an audible click when the power supply is fully seated.



4. **Reconnect the power cord to the power supply.**

5. **If you disconnected the two CMA left-side connectors, reconnect the CMA.**
   For instructions on reconnecting the CMA see "Attach the CMA to the Server" in *SPARC T8-1 Server Installation Guide*.

6. **Verify that the AC OK LED is lit.**
   See "Locate a Faulty Power Supply" on page 77.

7. **Verify that the following LEDs are not lit:**
   - Service Required LED on the power supply
   - Front and rear Service Required LEDs
   - Rear PS Failure LED on the bezel of the server

   See "Interpreting LEDs" on page 27.

8. **"Verify a Power Supply" on page 82.**

Related Information

- “Remove a Power Supply” on page 78
- “Verify a Power Supply” on page 82

▼ Verify a Power Supply

1. **Verify that the amber Service Required LED on the replaced power supply is not lit.**
2. **Verify that the PS Fault LED on the front of the server is not lit.**
3. **Use the Oracle ILOM `show faulty` command to verify that the fault has been cleared.**

   See “Identify Faulted Components” on page 23 for more information on using the `show faulty` command.

   Consider these possibilities.

   - If the previous steps did not clear the fault, see “Detecting and Managing Faults” on page 21 for information about the tools and methods you can use to diagnose component faults.
   - If the previous steps indicate that no faults have been detected, then the component has been replaced successfully. No further action is required.

Related Information

- “Locate a Faulty Power Supply” on page 77
- “Front Panel Components” on page 11
- “Rear Panel Components” on page 13

Servicing Memory Risers and DIMMs

These topics describe how to remove and install memory risers and DIMMs in the server.

Memory Riser and DIMM Configuration

The motherboard provides eight slots for DIMMs. You can add a pair of memory risers, each with four DIMM slots, making a total of 16 DIMMs in the server.

The memory configuration rules for the server are as follows:

- In all configurations, DIMMs must be identical (same size, same rank classification).
- In base configurations, all DIMM slots on the motherboard must be fully occupied (eight DIMMs).
- In upgrade configurations (16 DIMMs):
  - DIMM slots on the motherboard must be fully occupied.

- Both memory risers must be installed, and both fully occupied.

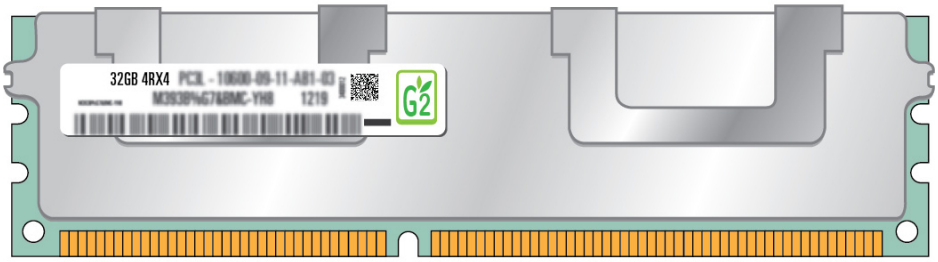
Note - The DIMM sparing feature is available only when the optional memory risers are installed and fully occupied.

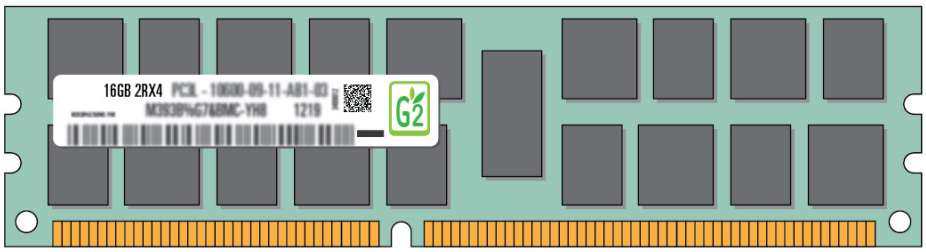
Related Information

- “Checking DIMM Compatibility” on page 84
- “Memory Riser and DIMM FRU Names” on page 85
- “Locate a Faulty DIMM (Fault Remind Button)” on page 90
- “Remove a Memory Riser” on page 91
- “Remove a DIMM” on page 95
- “Install a DIMM” on page 96

Checking DIMM Compatibility

Each DIMM is affixed with an identifying label. The first four characters on the label describe the DIMM memory capacity; the second four characters describe the rank classification. Use these labels to identify the DIMMs installed in the server, to verify that any replacement DIMMs are compatible, or to confirm that upgrade DIMMs may be installed in a supported configuration.





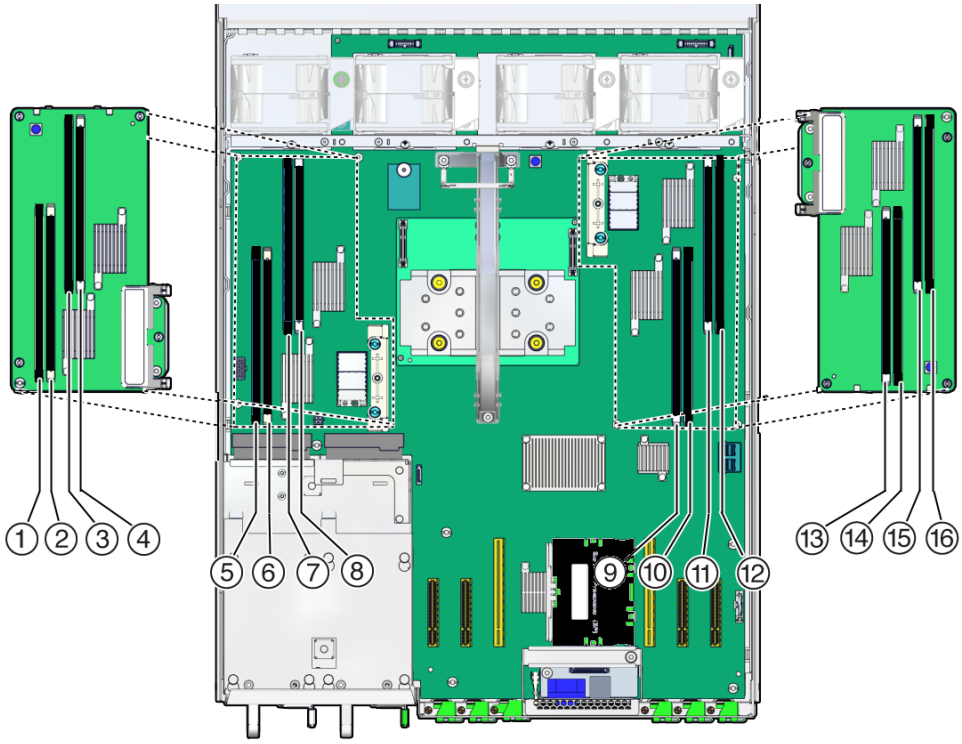
As of System Firmware version 9.10.3, the following DIMM configurations are supported.

DIMM Capacity	DRAM Density	Rank Classification	Label
16 Gbyte	4 Gbit	Dual-rank x4	2Rx4
32 Gbyte	4 Gbit	Quad-rank x4	4Rx4
32 Gbyte	8 Gbit	Dual-rank x4	2Rx4
64 Gbyte	8 Gbit	Quad-rank x4	4Rx4
128 Gbyte	16 Gbit	Quad-rank x4	2S2Rx4

Memory Riser and DIMM FRU Names

The server can contain 16 DIMMs. Eight DIMMs are installed on the motherboard. An optional eight DIMMs can be installed on two memory risers, mounted on the motherboard above the initial DIMMs. Four DIMMs are installed on each memory riser.

Labels on the transparent airflow cover identify the naming of memory risers and DIMMs.



DIMM FRU names are based on the location of the DIMM on the motherboard or on one of the two memory risers. For example, the full FRU name for the DIMM slot on the motherboard farthest from the power supplies is `/SYS/MB/CM/CMP/BOB00/CH0`.

Note - DIMM names that include `CH0` have black ejectors and DIMM names that include `CH1` have white ejectors.

Physical Location (Seen From Rear)	Memory Riser or DIMM FRU Name
Left Memory Riser	`/SYS/MB/CM/CMP/MR1` (riser)
1	`/SYS/MB/CM/CMP/MR1/BOB11/CH0`
2	`/SYS/MB/CM/CMP/MR1/BOB11/CH1`
3	`/SYS/MB/CM/CMP/MR1/BOB31/CH0`
4	`/SYS/MB/CM/CMP/MR1/BOB31/CH1`
Left motherboard	`/SYS/MB/CM/CMP/BOB30/CH0`

Physical Location (Seen From Rear)	Memory Riser or DIMM FRU Name
5	/SYS/MB/CM/CMP/BOB30/CH1
6	/SYS/MB/CM/CMP/BOB20/CH0
7	/SYS/MB/CM/CMP/BOB20/CH1
8	
Right motherboard	/SYS/MB/CM/CMP/BOB10/CH1
9	/SYS/MB/CM/CMP/BOB10/CH0
10	/SYS/MB/CM/CMP/BOB00/CH1
11	/SYS/MB/CM/CMP/BOB00/CH0
12	
Right memory riser	/SYS/MB/CM/CMP/MR0 (riser)
13	/SYS/MB/CM/CMP/MR0/BOB01/CH1
14	/SYS/MB/CM/CMP/MR0/BOB01/CH0
15	/SYS/MB/CM/CMP/MR0/BOB21/CH1
16	/SYS/MB/CM/CMP/MR0/BOB21/CH0

Related Information

- “Memory Riser and DIMM Configuration” on page 83
- “Checking DIMM Compatibility” on page 84
- “Locate a Faulty DIMM (Fault Remind Button)” on page 90
- “Locate a Faulty DIMM (Oracle ILOM)” on page 89
- “Enable and Verify a DIMM” on page 103

▼ Add Memory to the Server

Caution - These procedures require that you handle components that are sensitive to ESD. Follow antistatic practices to avoid damage or component failure.

Customers can perform this procedure, but the server must first be completely powered down and all power cords unplugged. See “Component Service Categories” on page 43 for more information about cold-service procedures.

1. **Review the memory riser and DIMM configuration rules.**
2. **Prepare the system for service.**
3. **Unplug the power cords.**
4. **Remove the memory risers.**
5. **Determine your upgrade path.**
   - **If you are adding DIMMs to the memory risers only, ensure the new DIMMs have the same rank classification as the DIMMs already installed on the motherboard.**
   - **If you are upgrading all of the memory in the server, remove all of the existing DIMMs on the memory risers and the motherboard.**
6. **Install the new DIMMs.**
7. **Install the memory risers.**
8. **Return the server to operation.**
9. **Enable and verify the new DIMMs.**

▼ Replace a Faulty DIMM

Caution - This procedure requires handling components that are sensitive to ESD. Follow antistatic practices to avoid damage or component failure.

Customers can perform this procedure, but the system must first be completely powered down and all power cords unplugged. See “Component Service Categories” on page 43 for more information about cold-service procedures.

Perform this procedure to replace a faulty DIMM on the motherboard or a memory riser.

1. **Identify the faulty DIMM to be removed using the ILOM `show faulty` command.**
2. **Prepare the system for service.**

3. **Unplug the power cords.**

   Once you remove power from the server, you must perform the next step within a few minutes to ensure that the server retains enough power to light the DIMM fault LEDs.

4. **Remove the appropriate memory riser.**

   To remove a DIMM from the motherboard, you must remove the memory riser above that DIMM to enable access.

5. **Locate the faulty DIMM on the motherboard or memory riser using the DIMM fault LEDs.**

6. **Remove the faulty DIMM.**

7. **Ensure the replacement DIMM has the same rank classification as the faulty DIMM.**

8. **Install the replacement DIMM.**

9. **Install the memory riser that you removed.**

10. **Return the server to operation.**

11. **Enable and verify the replacement DIMM.**

▼ Locate a Faulty DIMM (Oracle ILOM)

The Oracle ILOM `show faulty` command displays current faults, including DIMM failures.

1. **Type `show faulty` at the Oracle ILOM prompt.**

   If a DIMM is faulty, the `show faulty` output is similar to this example.

```
-> show faulty
Target              | Property          | Value
--------------------+-------------------+------------------
/SP/faultmgmt/0     | fru               | /SYS/MB/CM/CMP/BOB21/CH0
/SP/faultmgmt/0     | timestamp         | Dec 21 16:40:56
/SP/faultmgmt/0/    | timestamp         | Dec 21 16:40:56 faults/0
/SP/faultmgmt/0/    | sp_detected_fault | /SYS/MB/CM/CMP/BOB21/CH0
faults/0            |                   | Forced fail(POST)
```

2. **Locate the DIMM that corresponds to the listed FRU name.**

   In this example, `/SYS/MB/CM/CMP/BOB21/CH0` indicates the DIMM slot on the motherboard that is farthest from the power supplies.

Related Information

- "Locate a Faulty DIMM (Fault Remind Button)" on page 90
- "Checking DIMM Compatibility" on page 84
- "Memory Riser and DIMM FRU Names" on page 85
- "Remove a Memory Riser" on page 91
- "Remove a DIMM" on page 95

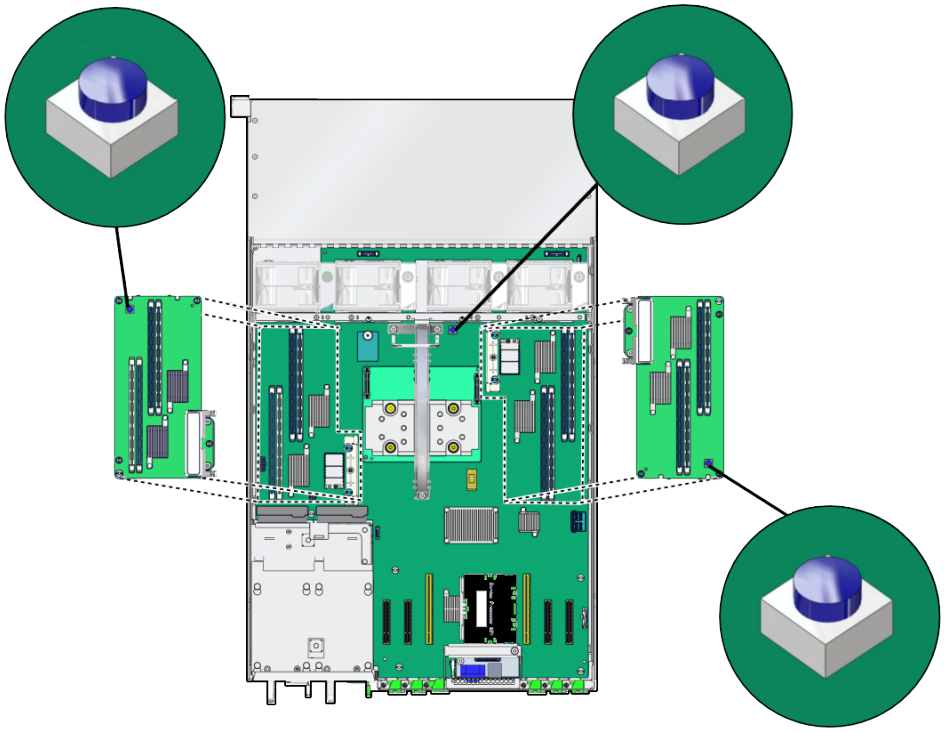
▼ Locate a Faulty DIMM (Fault Remind Button)

This procedure describes how to identify faulty DIMMs using the DIMM fault indicator button, after you have prepared the system for service. These buttons are located on both the motherboard and the memory riser cards.

- **Press the DIMM fault indicator button to illuminate the faulty DIMM.**

  Pressing any of these buttons activates the amber LED for all faulty DIMMs on the motherboard and memory risers.

Note - You must press the button with a few minutes of shutting the system down to ensure there is enough stored power available to light fault LEDs.



Related Information

- “Locate a Faulty DIMM (Oracle ILOM)” on page 89
- “Remove a Memory Riser” on page 91
- “Remove a DIMM” on page 95

▼ Remove a Memory Riser

Caution - These procedures require that you handle components that are sensitive to ESD. Follow antistatic practices to avoid damage or component failure.

You can perform this procedure, but the system must first be completely powered down and all power cords unplugged. See “Component Service Categories” on page 43 for more information about cold-service procedures.

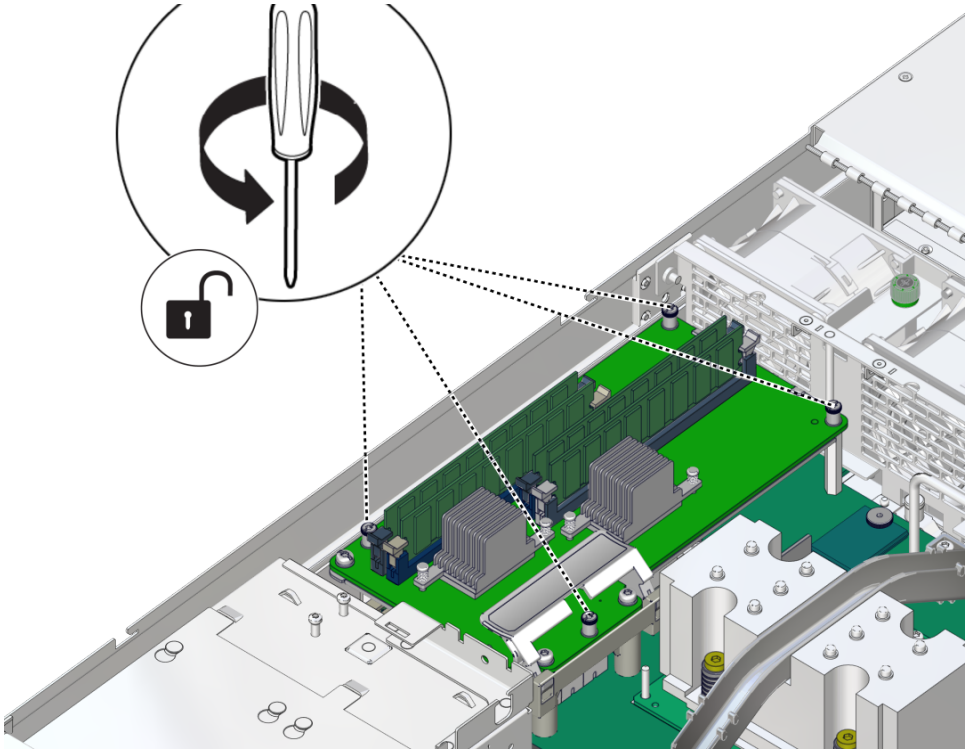
Perform this procedure to replace a faulty memory riser or to access the DIMMs on the motherboard below a memory riser.

1. **Prepare the system for service.**

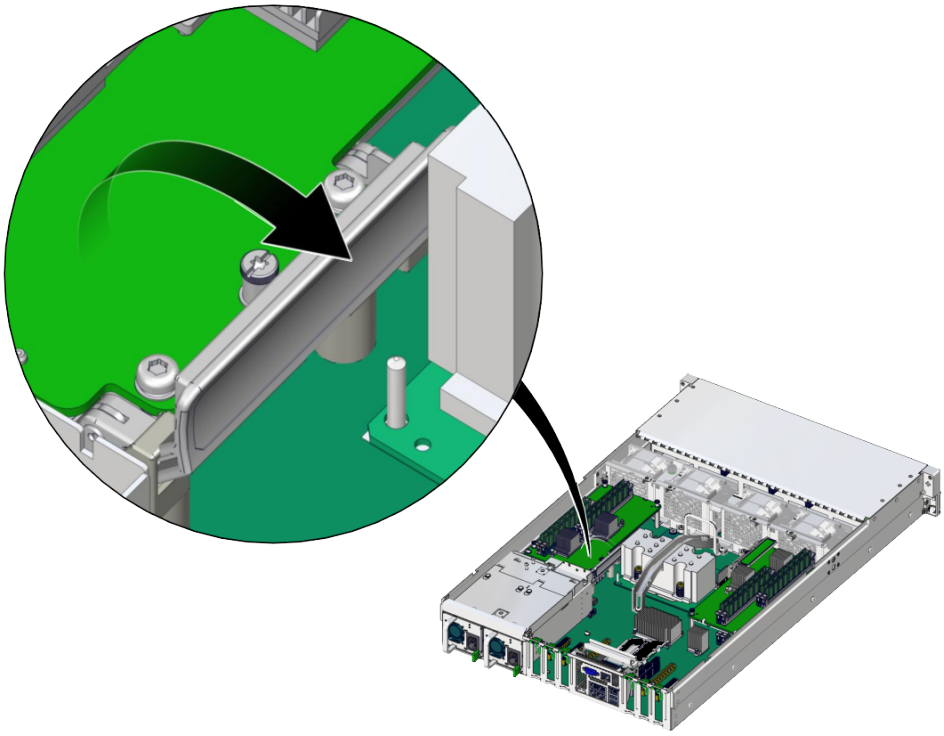
   See “Preparing for Service” on page 39.

2. **Loosen the four screws that attach the memory riser to the standoffs.**

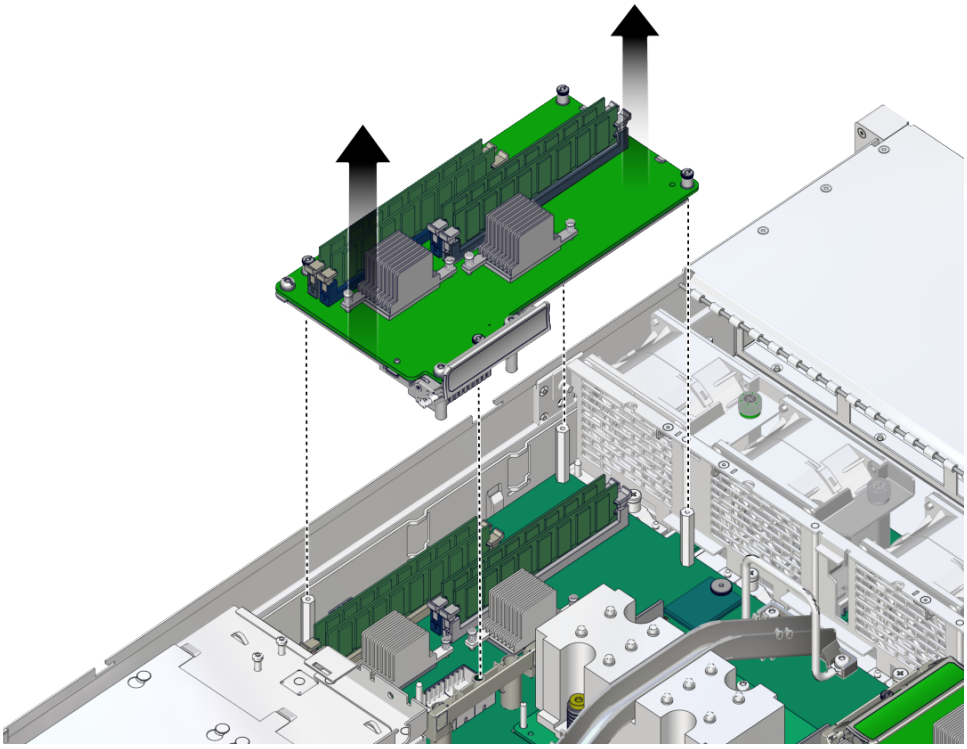
   Use a T15 Torx driver to loosen the captive screws.



3. **Lift the handle on the memory riser to release it from the connector.**



4. **Lift the memory riser from the four standoffs attached to the motherboard.**



5. **Place the memory riser on an antistatic mat.**

6. **Install a new memory riser or continue with the service task that required removing the memory riser for access.**

Related Information

- “Remove a DIMM” on page 95
- “Install a DIMM” on page 96
- “Install a Memory Riser” on page 99

Remove a DIMM

Caution - This procedure requires handling components that are sensitive to ESD. Follow antistatic practices to avoid damage or component failure.

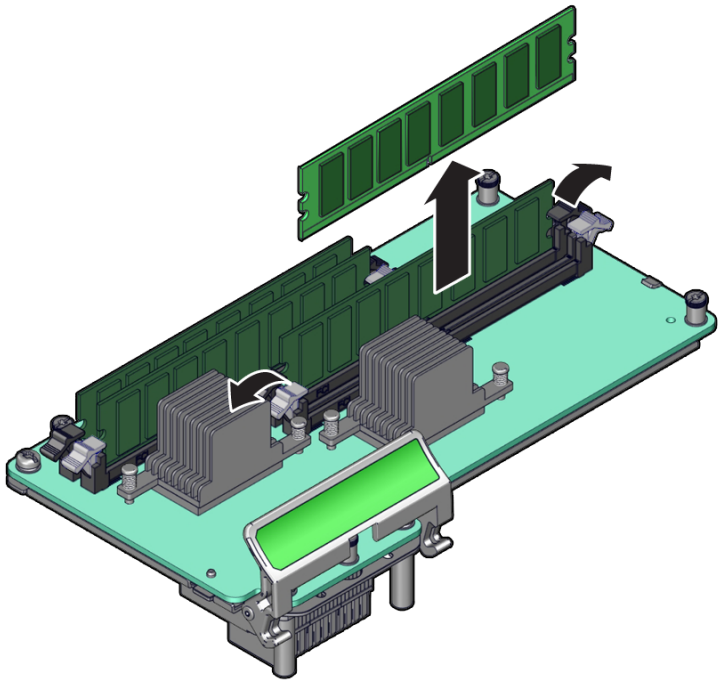
DIMMs or DIMM fillers must be removed:

- When adding memory to the server.
- When replacing faulty DIMMs.
- When replacing a faulty motherboard.

You can perform this procedure, but the server must first be completely powered down and all power cords unplugged. See “Component Service Categories” on page 43 for more information about cold-service procedures.

Caution - Whenever you remove a DIMM or a DIMM filler, you should replace it with another DIMM or DIMM filler before powering on the server. Otherwise, the server might overheat due to improper airflow.

1. **Press down both DIMM slot ejector tabs as far as they can go.**



2. **Carefully lift the DIMM straight up and place it on an antistatic mat.**

Related Information

- “Install a DIMM” on page 96
- “Remove a Memory Riser” on page 91
- “Install a Memory Riser” on page 99

▼ Install a DIMM

Caution - This procedure requires handling components that are sensitive to ESD. Follow antistatic practices to avoid damage or component failure.

DIMMs are installed:

- When adding memory to the server.
- When replacing faulty DIMMs.
- When replacing a faulty motherboard.

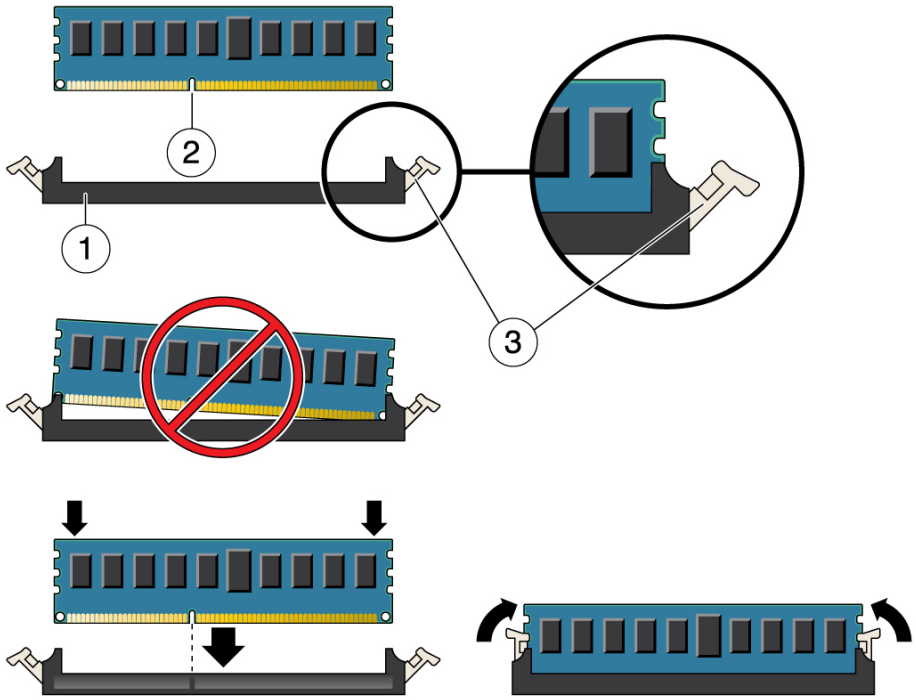
You can perform this procedure, but the server must first be completely powered down and all power cords unplugged. See “Component Service Categories” on page 43 for more information about cold-service procedures.

Caution - Whenever you remove a DIMM, you should replace it with another DIMM before applying power to the server. Otherwise, the server might overheat due to improper airflow.

1. **Attach an antistatic wrist strap.**

   Then unpack the DIMMs and place them on an antistatic mat.

2. **Ensure that the ejector levers are fully open at both ends of the DIMM slot.**



No.	Description
1	DIMM connector slot
2	DIMM connector key
3	DIMM ejector lever

3. **Align each DIMM with the empty connector slot, aligning the notch in the DIMM with the key in the connector.**

   The notch ensures that the DIMM is oriented correctly.

4. **Gently press the DIMM into the slot until the ejector tabs lock the DIMM in place.**

Related Information

- “Memory Riser and DIMM Configuration” on page 83

- “Checking DIMM Compatibility” on page 84
- “Remove a Memory Riser” on page 91
- “Remove a DIMM” on page 95
- “Install a Memory Riser” on page 99
- “Enable and Verify a DIMM” on page 103

▼ Install a Memory Riser

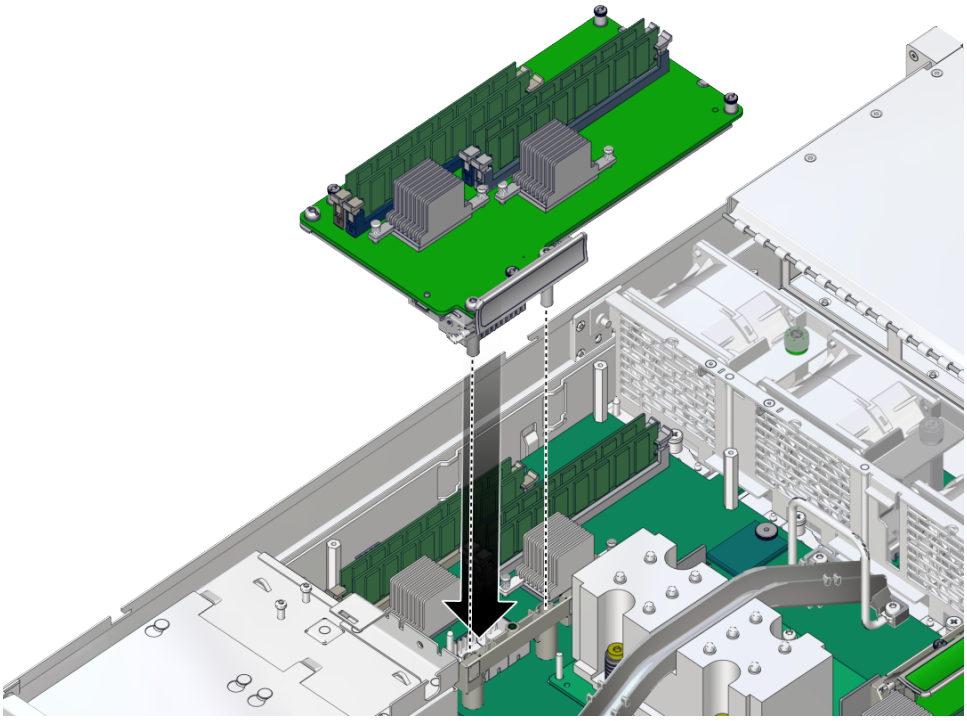
Caution - This procedure requires handling components that are sensitive to ESD. Follow antistatic practices to avoid damage or component failure.

The system must be completely powered down before performing this procedure. See “Component Service Categories” on page 43 for more information about cold-service procedures.

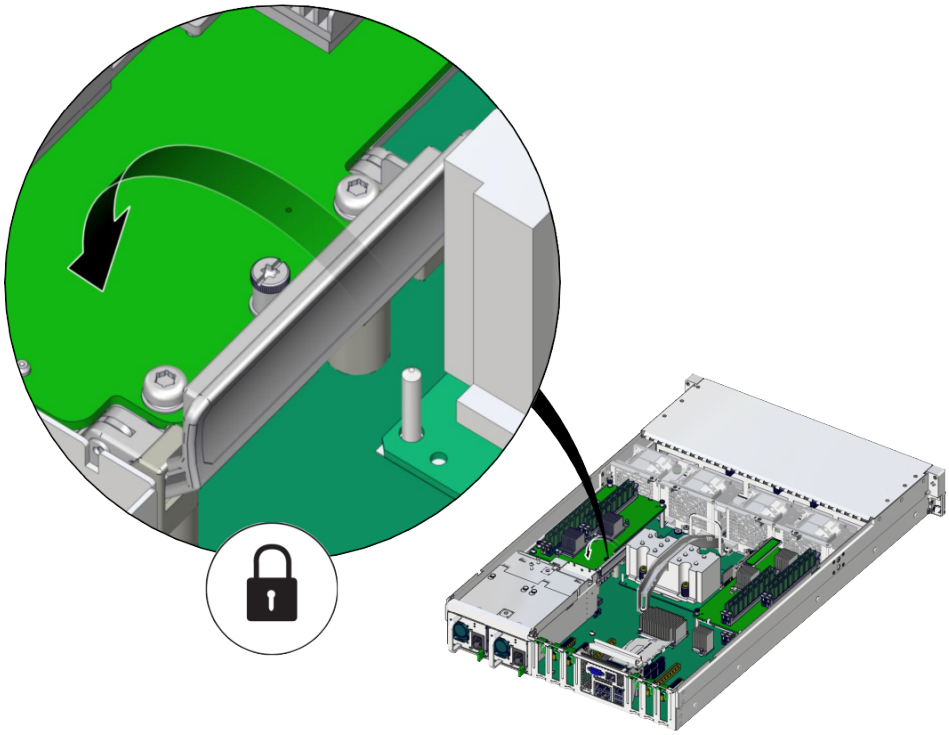
Perform this procedure to install a memory riser in order to replace a faulty memory riser or to install a memory riser you removed to access other components, such as the DIMMs on the motherboard.

1. **Align the memory riser with the four standoffs.**

The handle on the memory riser is closest to the center of the server.

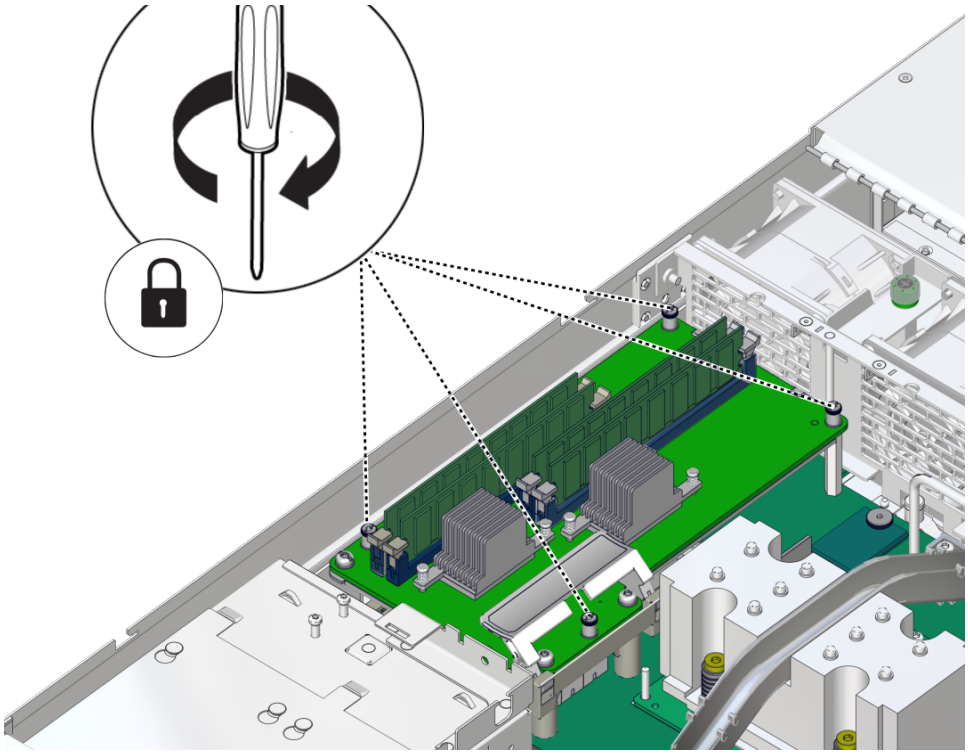


2. **Lower the handle on the memory riser to seat the connector.**



3. **Tighten the four screws that secure the memory riser to the standoffs.**

Use a T15 Torx driver to tighten the captive screws.



4. **Install any remaining DIMMs in the memory riser slots.**

   See “Install a DIMM” on page 96.

5. **Return the Server to Operation.**

Related Information

- “Memory Riser and DIMM Configuration” on page 83
- “Checking DIMM Compatibility” on page 84
- “Remove a Memory Riser” on page 91
- “Remove a DIMM” on page 95
- “Install a Memory Riser” on page 99
- “Enable and Verify a DIMM” on page 103

Enable and Verify a DIMM

1. **Use the `show faulty` command to determine how to clear the fault.**

   - **If the output indicates a POST-detected fault, go to Broken Link (Target ID: Z40006B61395820).**
   - **If the output displays a UUID, which indicates a host-detected fault, skip Broken Link (Target ID: Z40006B61395820) and go directly to Broken Link (Target ID: Z40006B61390176).**

2. **Use the `set` command to enable the DIMM that was disabled by POST.**

   In most cases, replacement of a faulty DIMM is detected when the SPM is power cycled. In those cases, the fault is automatically cleared from the server. If `show faulty` still displays the fault, the `set` command clears it.

   ```
   -> set /SYS/MB/CM0/CMP/MR0/BOB1/CH0/DIMM clear_fault_action=true
   Are you sure you want to clear /SYS/MB/CM0/CMP/MR0/BOB1/CH0/DIMM (y/n)? y
   Set 'clear_fault_action' to ‘true’
   ```

3. **For a host-detected fault, perform the following steps to verify the new DIMM.**

   a. **Set the virtual keyswitch to `diag` so that POST runs in Service mode.**

   ```
   -> set /HOST keyswitch_state=Diag
   Set 'keyswitch_state' to 'Diag'
   ```

   b. **Stop the host.**

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

   c. **Check if the host has been powered off.**

   Allow approximately one minute before performing this step. Type the `show /HOST` command. When the host is powered off, the console displays `status=Powered Off`.

   d. **Start the host.**

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

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

Watch the POST output for possible fault messages. The following output indicates that POST did not detect any faults:

```
-> start /HOST/console
...
0:0:0>INFO:
0:0:0>    POST Passed all devices.
0:0:0>POST:    Return to VBSC.
0:0:0>Master set ACK for vbsc runpost command and spin...
```

Note - The server might boot automatically at this point. If so, go to step f. If the server remains at the OpenBoot prompt (`ok`) go to the next step.

f. If the server remains at the OpenBoot prompt, type `boot`.

g. Return the virtual keyswitch to Normal mode.

```
-> set /HOST keyswitch_state=Normal
Set 'keyswitch_state' to 'Normal'
```

h. Switch to the system console and type:

```
# fmadm faulty
```

If any faults are reported, refer to the diagnostics instructions described in “Identify Faulted Components” on page 23.

4. Switch to the Oracle ILOM command shell.

5. Type:

```
-> show faulty
Target              | Property               | Value
--------------------+------------------------+------------------------------
/SP/faultmgmt/0     | fru                    | /SYS/MB/CM/CMP/BOB21/CH0
/SP/faultmgmt/0     | timestamp              | Dec 14 22:43:59
/SP/faultmgmt/0/    | sunw-msg-id            | SUN4V-8000-DX
faults/0            |                        |
/SP/faultmgmt/0/    | uuid                   | 3aa7c854-9667-e176-efe5-e487e520
faults/0            |                        | 7a8a
/SP/faultmgmt/0/    | timestamp              | Dec 14 22:43:59
faults/0            |                        |
```

If the output reports a fault with a UUID go to Step 6. If the output does *not* report a fault with a UUID, you are done with the verification process.

6. **Switch to the system console and type the `fmadm repair` command with the UUID.**

   Use the same UUID that was displayed from the output of the Oracle ILOM `show faulty` command.

   ```
   # fmadm repair 3aa7c854-9667-e176-efe5-e487e520
   ```

Related Information

- "Memory Riser and DIMM Configuration" on page 83
- "Checking DIMM Compatibility" on page 84
- "Memory Riser and DIMM FRU Names" on page 85
- "Locate a Faulty DIMM (Fault Remind Button)" on page 90
- "Locate a Faulty DIMM (Oracle ILOM)" on page 89

DIMM Configuration Errors

When the server boots, system firmware checks the memory configuration against the rules described in "Memory Riser and DIMM Configuration" on page 83. Any violations of these rules produce a general error message:

```
Please refer to the service documentation for supported memory
configurations.
```

In some cases, the server boots a degraded state:

```
WARNING: Running with a nonstandard DIMM configuration. Refer to service document for
 details.
```

In other cases, the configuration error is fatal:

```
Fatal configuration error - forcing power-down
```

In addition to these general memory configuration errors, one or more rule-specific messages is displayed, indicating the type of configuration error detected. To identify the DIMMs affected, use the `fmadm faulty` command as described in "Checking for Faults" on page 21.

Servicing PCIe Cards

These topics describe how to service PCIe cards and PCIe fillers.

PCIe Card Configuration

Note - Before installing PCIe cards, refer to the *SPARC T8-1 Server Product Notes* and the documentation for each PCIe card for detailed information about known issues and configuration limitations.

This server has six PCIe 3.0 slots that accommodate low-profile PCIe cards. All slots support x8 PCIe cards and two slots can support x16 PCIe cards.

To determine the slot in which to install a PCIe card, follow these guidelines:

- Install cards that require a specific slot. Refer to the *SPARC T8-1 Server Product Notes* and the documentation for each card to determine if there are slot requirements.

  The switch card supporting NVMe drives must be in slot 3, because of cable lengths.
- x16 cards can only be in slots 3 and 4.

  If a x16 card is in slot 3, any card in slot 2 is ignored.

  If a x16 card is in slot 4, any card in slot 5 is ignored.

Related Information

- "I/O Root Complex Connections" on page 108
- "Rear Panel Components" on page 13
- "Remove a PCIe Card or Filler" on page 108

- “Install a PCIe Card or Filler” on page 110

I/O Root Complex Connections

The single IOH connects to all six of the PCIe slots.

The `pci@` values reported in the OpenBoot `show-devs` command output are paths in the I/O root complex topology.

PCIe Slot	IOS	RP	Root Complex Path	Oracle ILOM Target
1	4	0	`/pci@300/pci@2`	`/SYS/MB/PCIE1`
2	3	1	`/pci@303/pci@2`	`/SYS/MB/PCIE2`
3	3	0	`/pci@303/pci@1`	`/SYS/MB/PCIE3`
4	1	0	`/pci@302/pci@1`	`/SYS/MB/PCIE4`
5	1	1	`/pci@302/pci@2`	`/SYS/MB/PCIE5`
6	0	0	`/pci@301/pci@1`	`/SYS/MB/PCIE6`

Related Information

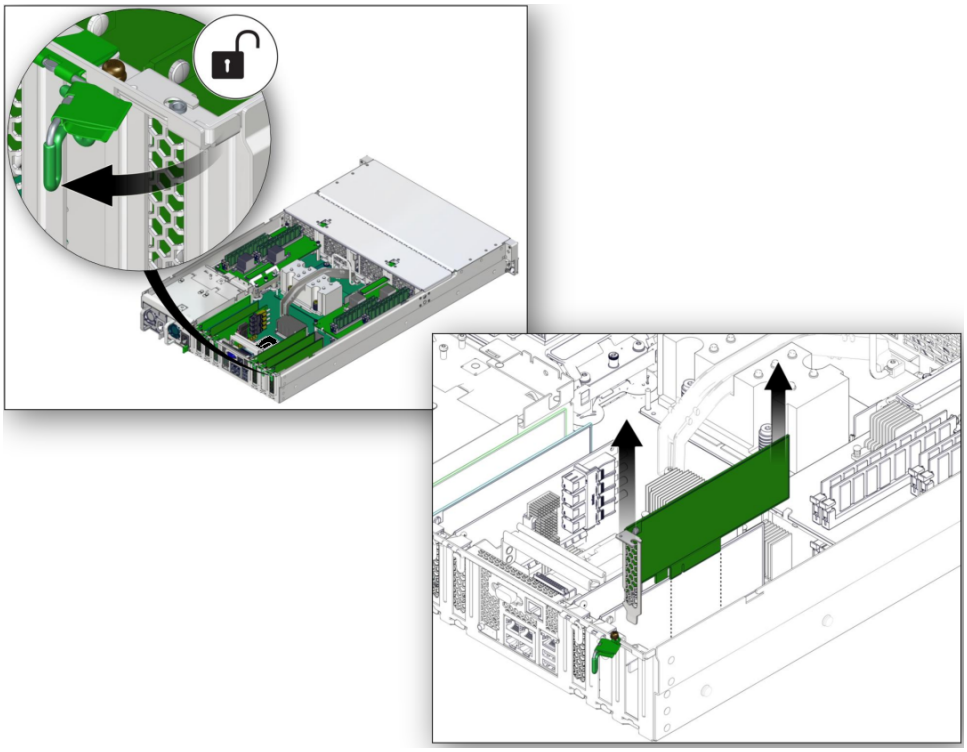
- “Rear Panel Components” on page 13
- “Server Block Diagram” on page 17
- “PCIe Card Configuration” on page 107
- “Remove a PCIe Card or Filler” on page 108
- “Install a PCIe Card or Filler” on page 110

▼ Remove a PCIe Card or Filler

Caution - This procedure requires that you handle components that are sensitive to ESD. This sensitivity can cause the component to fail. To avoid damage, ensure that you follow antistatic practices as described in “ESD Measures” on page 40.

This is a cold-service procedure that can be performed by a customer. Power down the server completely before performing this procedure. See “Component Service Categories” on page 43 for more information about cold-service procedures.

1. **Locate the PCIe card or filler that you want to remove.**
   See "Rear Panel Components" on page 13 for information about PCIe slots and their locations.
   If you are removing a PCIe filler, go to Step 5.
2. **Note the slot location for each PCIe card you plan to remove.**
3. **Unplug all data cables from the PCIe card.**
   Note the location of all cables for reinstallation later.
4. **Remove any transceivers from the PCIe card before removing the card.**
5. **Remove the PCIe card by completing the following tasks.**



   a. **Rotate the PCIe card locking mechanism (panel 1).**
   b. **Carefully lift the PCIe card or filler from the card slot (panel 2).**

6. **Replace with another PCIe card or filler before the server is connected to power again.**

   See “Install a PCIe Card or Filler” on page 110.

Related Information

- “Install a PCIe Card or Filler” on page 110

▼ Install a PCIe Card or Filler

Caution - This procedure requires that you handle components that are sensitive to ESD. This sensitivity can cause the component to fail. To avoid damage, ensure that you follow antistatic practices as described in “ESD Measures” on page 40.

Note - Always update optional PCIe card firmware to the latest supported version. Refer to the PCIe card documentation for firmware update instructions.

1. **Prepare the system for service.**

   See “Preparing for Service” on page 39.

2. **Attach an antistatic wrist strap, unpack the PCIe card or PCIe filler, and place on an antistatic mat.**

3. **Remove any transceivers from the PCIe card before installing the card.**

4. **Ensure that the server is powered off and all power cords are disconnected from the server power supplies.**

   See “Removing Power From the Server” on page 45.

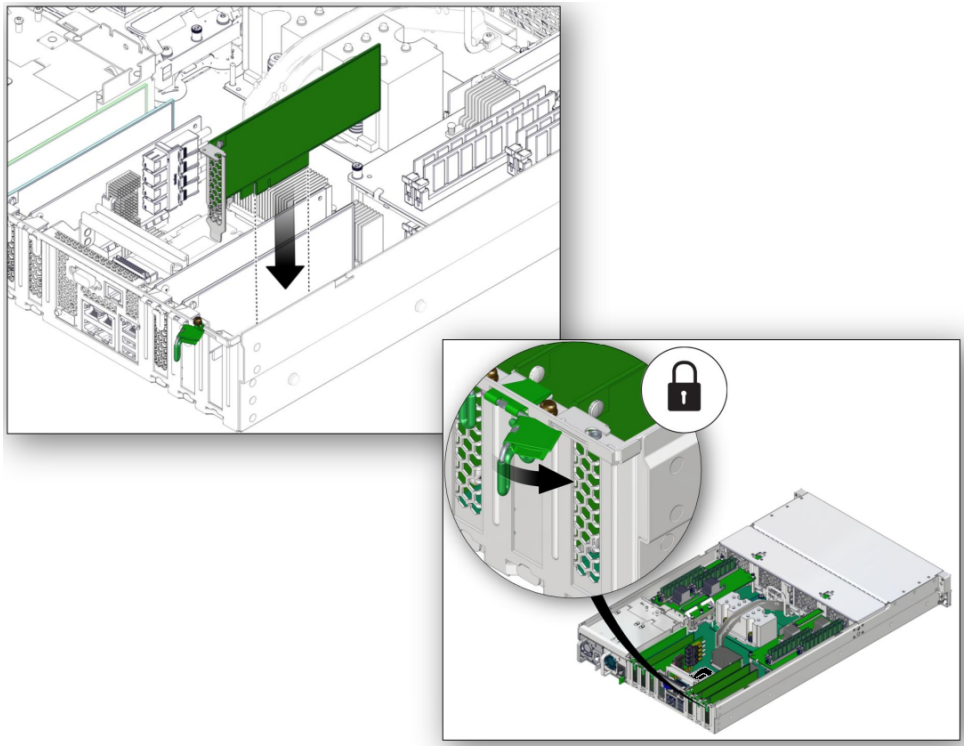
5. **Determine which slot to install the PCIe card in.**

   If you are not replacing an existing PCIe card and need information about deciding which slot to install the card in, see “PCIe Card Configuration” on page 107.

6. **Open the PCIe card locking mechanism for this PCIe card slot.**

   The locking mechanism might already be disengaged if you removed a PCIe card or filler from that slot.

7. **Install the PCIe card or filler into the slot (panel 1) and rotate the PCIe locking mechanism to secure the PCIe card or filler in place (panel 2).**



8. **Return the server to operation.**

   See “Returning the Server to Operation” on page 153.

9. **Refer to the documentation shipped with the PCIe card for information about configuring the PCIe card, including installing required operating systems.**

   To create or recover RAID configurations, refer to the *LSI MegaRAID SAS Software User's Guide*, which is available at:

   `https://www.broadcom.com/support/oem/oracle/`

Related Information

- “PCIe Card Configuration” on page 107
- “Remove a PCIe Card or Filler” on page 108

Servicing the eUSB Drive

The eUSB drive is mounted on the motherboard towards the front on the power supply side.

These topics describe how to service the eUSB drive.

- “Install the eUSB Drive” on page 115
- “Remove the eUSB Drive” on page 113

Related Information

- “Detecting and Managing Faults” on page 21

▼ Remove the eUSB Drive

You can perform this cold-service procedure. Power down the server completely before performing this procedure.

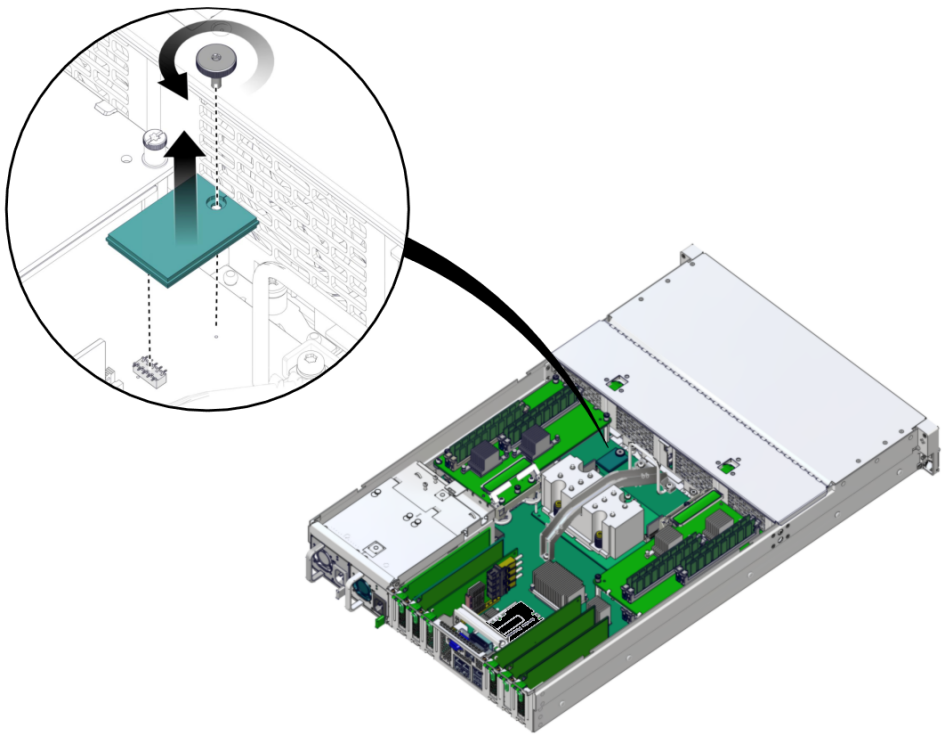
Caution - This procedure requires that you handle components that are sensitive to ESD. This sensitivity can cause the components to fail. To avoid damage, ensure that you follow antistatic practices as described in “Prevent ESD Damage” on page 49.

1. **Prepare the system for service.**

   See “Preparing for Service” on page 39.

2. **Remove the screw that attaches the eUSB drive to the motherboard.**

This screw is not a captive screw, so be careful not to drop it inside the server. Retain the screw to use with the new eUSB drive.



If the screw is too tight to remove by hand, use a Torx 10 driver to loosen it.

3. **Lift the eUSB drive up to disconnect it from the motherboard.**

4. **Install a new eUSB drive.**

   See “Install the eUSB Drive” on page 115.

Related Information

- “Install the eUSB Drive” on page 115

Install the eUSB Drive

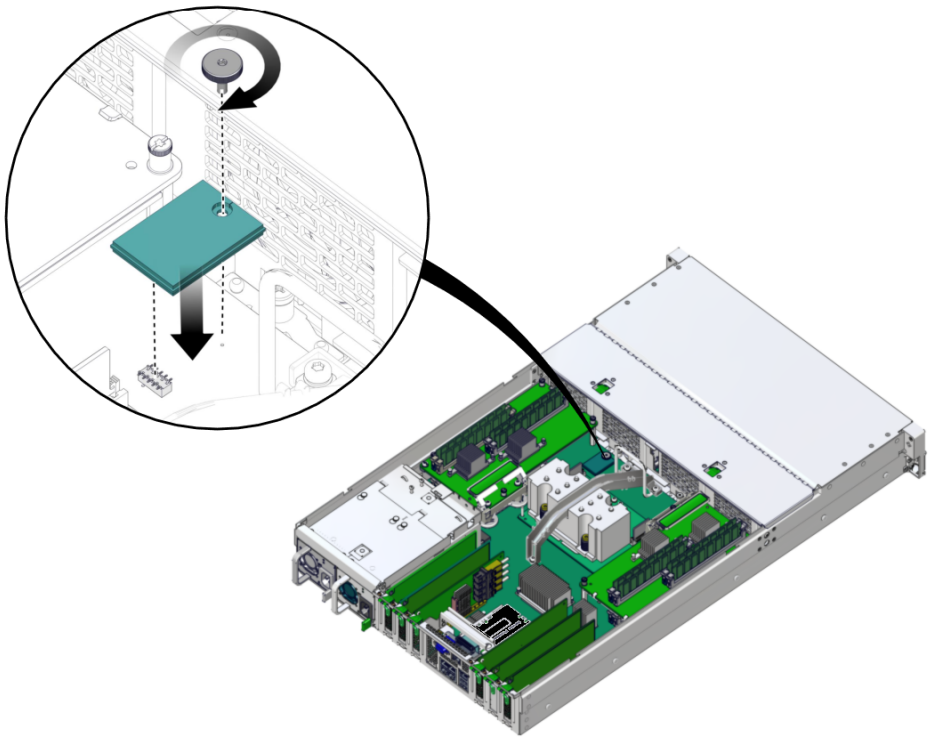
You can perform this cold-service procedure. Power down the server completely before performing this procedure.

Caution - This procedure requires that you handle components that are sensitive to ESD. This sensitivity can cause the components to fail. To avoid damage, ensure that you follow antistatic practices as described in "Prevent ESD Damage" on page 49.

1. **Ensure you are taking all ESD precautions before handling the eUSB drive.**

   See "Prevent ESD Damage" on page 49.

2. **Press the eUSB drive into the socket on the motherboard.**



3. **Hand tighten the screw to secure the drive to the motherboard.**

Do not use a tool to tighten the screw further.

4. **Return the Server to Operation.**

Related Information

- “Remove the eUSB Drive” on page 113

Servicing the Battery

The battery is located inside the chassis. See “Internal Component Locations” on page 14. The battery maintains system time when the server is powered off and disconnected from AC power. If the IPMI logs indicate a battery failure, replace the battery.

Caution - Ensure that all power is removed from the server before removing or installing the battery. You must disconnect the power cords from the server before performing these procedures.

- “Replace the Battery” on page 117

Related Information

- “Detecting and Managing Faults” on page 21

▼ Replace the Battery

1. **Prepare the host for battery replacement.**

   To correctly reset the date and time before replacing a battery, you must prevent the host from automatically powering on and disable any NTP connections.

   a. **Check the `HOST_AUTO_POWER_ON` property.**

   ```
   -> show /SP/policy HOST_AUTO_POWER_ON
     Properties:
        HOST_AUTO_POWER_ON = enabled
   ```

   b. **If enabled, set the `HOST_AUTO_POWER_ON` property to `disabled`.**

   ```
   -> set /SP/policy HOST_AUTO_POWER_ON=disabled
   ```

   c. **Check the NTP policy for the `/SP/clock`.**

```
-> show /SP/clock usentpserver
   Properties:
      usentpserver = enabled
```

d. If enabled, set the property to `disabled`.

```
-> set /SP/clock usentpserver=disabled
```

2. Replace the battery.

Replacing the battery is a cold-service procedure. The server must be completely powered off and power cables disconnected before performing this procedure.

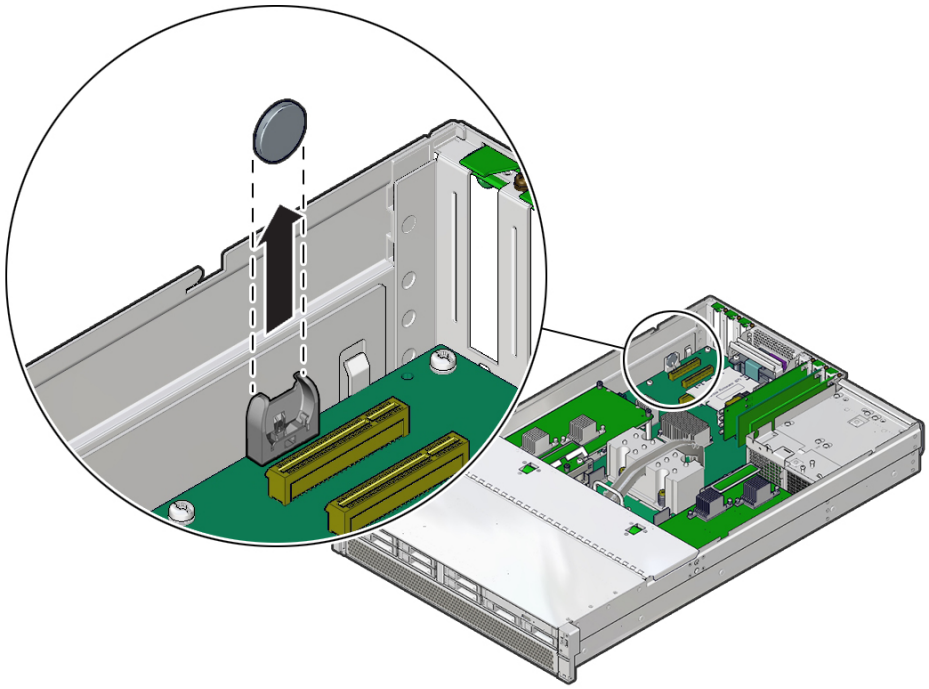
a. Prepare the server for service.

b. If a PCIe card is in slot 6, remove it to improve access to the battery.

See “Remove a PCIe Card or Filler” on page 108.

c. Remove the old battery

Gently push the battery toward the service processor to release it from the retention clip.



d. **Unpack and install the new battery.**
   Press the new battery into the battery holder with the positive side (+) facing the side of the server.

e. **If you needed to remove a PCIe card from slot 6, replace that card.**
   See "Install a PCIe Card or Filler" on page 110.

f. **Return the Server to Operation.**

3. **Reset the system clock.**

   a. **Use the Oracle ILOM `clock` command to reset the system clock.**
      The following example sets the date to August 22, 2016, and the timezone to EDT.

```
-> set /SP/clock datetime=081221302016 timezone=EDT
```

```
Set 'datetime' to '081221302016'
set 'timezone' to 'EDT'

-> show -d properties /SP/clock
 Properties
    datetime = Mon Aug 22 13:20:16 2016
    timezone = EDT (EST5EDT)
    uptime = 2 days 19:56:49
    usentpserver = disabled
```

b. If the SP policy `HOST_POWER_ON` was enabled before you replaced the battery, you must re-enable it.

```
-> set /SP/policy HOST_POWER_ON=enabled
```

c. If the `/SP/clock` `usentpserver` property was enabled before you replaced the battery, you must re-enable it.

```
-> set /SP/clock usentpserver=enabled
```

4. Verify the battery.

```
-> show /SYS/MB/BAT
```

Related Information

- “Identify Faulted Components” on page 23

Servicing the SPM

These topics describe how to service the SPM.

SPM Firmware and Configuration

System firmware consists of two components, an SP component and a host component. The SP firmware component is located on the SPM, and the host component is located on the motherboard. For the server to operate correctly, the firmware in these two components must be compatible.

When replacing the SPM, you must restore the configuration settings maintained in the SPM. Before replacing the SPM, save the configuration using the Oracle ILOM backup utility. Refer to the Oracle ILOM documentation for instructions on backing up and restoring the Oracle ILOM configuration.

After replacing the SPM, the new SPM firmware component and the existing host firmware component must be consistent with each other. To ensure that the firmware is compatible throughout the server, load new system firmware as described in "Install the SPM" on page 123.

Related Information

- Oracle ILOM documentation
- "Servicing the Motherboard" on page 129
- "Remove the SPM" on page 122
- "Install the SPM" on page 123

Remove the SPM

Caution - Ensure that all power is removed from the server before removing or installing the motherboard assembly. You must disconnect the power cables from the server before performing these procedures.

Caution - These procedures require that you handle components that are sensitive to ESD. This sensitivity can cause the component to fail. To avoid damage, ensure that you follow antistatic practices as described in "ESD Measures" on page 40.

Replacing the SPM is a cold-service procedure that can be performed by customers. The server must be completely powered down before performing this procedure.

See "Component Service Categories" on page 43 for more information about this category of service procedures.

The SP OK indicator on the front panel will be off when an SPM fault is detected.

1. **If possible, back up the Oracle ILOM configuration before removing the SPM.**

   After you replace the SPM, restoring the SPM configuration will be easier if you previously saved the configuration using the Oracle ILOM backup utility. Refer to the Oracle ILOM documentation for instructions on backing up and restoring the Oracle ILOM configuration.

   To retain the same version of the system firmware with the new SPM, note the current version before removing the SPM.

2. **Prepare the system for service.**

   See "Preparing for Service" on page 39.

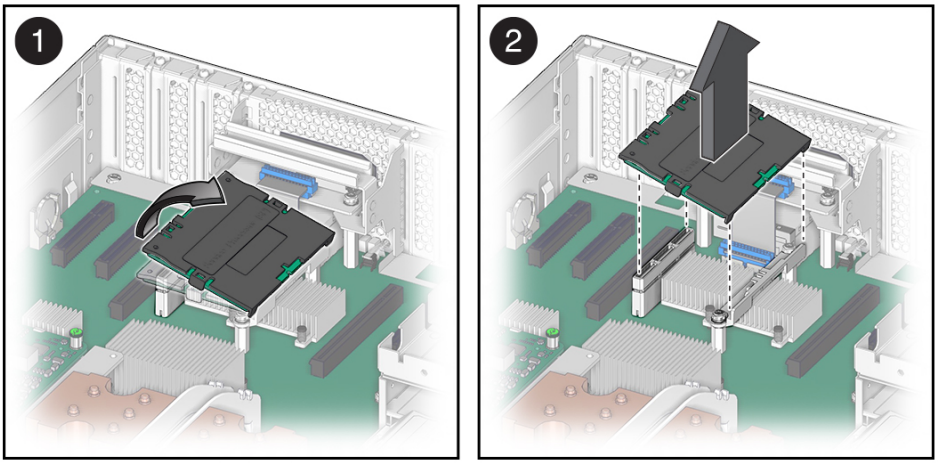
3. **Locate the SPM, near the rear of the server.**

4. **Remove the SPM.**

   Note - If you are removing the SPM because you are replacing the motherboard, set the SPM aside where it is protected from static. You must reinstall the SPM on the new motherboard.

   a. **Grasp the SPM by the two grasp points (panel 1) and tilt up to disengage the SPM from the connectors on the motherboard.**

b. Lift the SPM up and away from the motherboard (panel 2).



5. Install a new SPM.

See “Install the SPM” on page 123.

Related Information

- “SPM Firmware and Configuration” on page 121
- “Install the SPM” on page 123

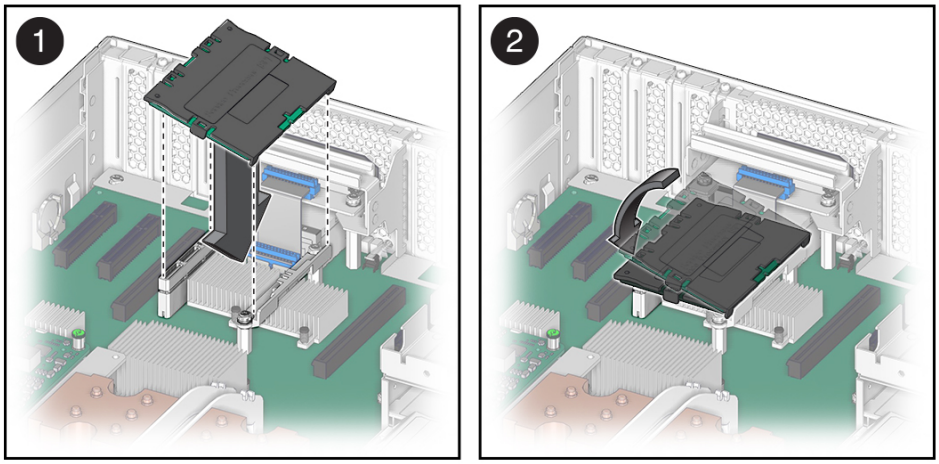
▼ Install the SPM

You can perform this cold-service procedure. The server must be completely powered down before performing this procedure. See “Component Service Categories” on page 43 for more information about this category of service procedures.

1. Remove a defective SPM or remove the SPM you will install in a new motherboard.

See “Remove the SPM” on page 122.

2. **Lower the side of the SPM with the Align Tab sticker at an angle onto the SPM support on the motherboard (panel 1).**



3. **Press the SPM straight down until it is fully seated in its socket (panel 2).**
   Ensure that the notched tab at the other end of the SPM is held in place.

4. **Return the server to an operational condition.**

   a. **Install the top cover.**
      See "Replace the Top Cover" on page 157.

   b. **Return the server to the normal operating position.**
      See "Return the Server to the Normal Operating Position" on page 158.

   c. **Reconnect the power cords to the power supplies.**
      See "Attach Power Cords" on page 159.

5. **Prior to powering on the server, connect a terminal or a terminal emulator (PC or workstation) to the SER MGT port.**
   If the replacement SPM detects that the SPM firmware is not compatible with the existing host firmware, further action will be suspended and the following message will be 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.
```

Note - Whenever you replace the SPM or the motherboard, update the firmware on the server so the portions of firmware in the two components remain consistent.

6. **Configure the NET MGT port so that it can access the network, and log in to the SPM through the NET MGT port.**

   Refer to "Configuring SP and Host Network Addresses" in *SPARC T8 Series Servers Administration Guide*, or the Oracle ILOM documentation for network configuration instructions.

7. **Download the system firmware.**

   Follow the firmware download instructions in "Updating the System Firmware" in *SPARC T8 Series Servers Administration Guide*, or the Oracle ILOM documentation.

   Note - You can load any supported system firmware version, including the firmware version that was installed prior to replacing the SPM.

8. **If you created a backup of your Oracle ILOM configuration, use the Oracle ILOM restore utility to restore the configuration of the replacement SPM.**

   Refer to the Oracle ILOM documentation for instructions.

9. **Power on the server.**

   See "Power On the Server (Oracle ILOM)" on page 159 or "Power On the Server (System Power Button)" on page 160.

10. **If TPM was initialized on the replaced SPM, complete these steps:**

    a. **Reinitialize TPM and reset the `tpmadm failover` command if it was previously in use.**

       For information about initializing TPM using the Oracle ILOM interface to enable failover, see Securing Systems and Attached Devices in Oracle Solaris 11.3.

    b. **Restore the TPM data and keys that were backed up to the new SP you install.**

       For information about migrating or restoring TPM data and keys, see Securing Systems and Attached Devices in Oracle Solaris 11.3.

11. **Verify the SPM.**

    See "Verify the SPM" on page 126.

12. **Verify that the SPM date is correct.**

```
-> show /SP/clock

/SP/clock
   Properties:
        datetime = Tue Sep 07 08:09:59 2013
        timezone = GMT (GMT)
        uptime = 0 days, 00:01:18
        usentpserver = disabled
->
```

   a. **Set the `datetime` property, if necessary.**

      ```
      -> set /SP/clock datetime=MMDDhhmmYYYY
      ```

   b. **Set the `timezone` property, if necessary.**

      ```
      -> set /SP/clock timezone=3-to-4-characters
      ```

      where the `timezone` value equals a three- or four-character timezone abbreviation, such as EST.

Related Information

- Oracle ILOM documentation
- “Remove the SPM” on page 122
- “Verify the SPM” on page 126

▼ Verify the SPM

1. **Verify that the SP Status LED is illuminated green.**

   Note that the LED flashes green while the SPM initializes the Oracle ILOM firmware. See “Interpreting LEDs” on page 27 for information about the status of the SP LED.

2. **Use the Oracle ILOM `show faulty` command to verify that the fault has been cleared.**

   See “Identify Faulted Components” on page 23 for more information on using the `show faulty` command.

   Consider these possibilities.

- **If the previous steps did not clear the fault, see “Detecting and Managing Faults” on page 21 for information about the tools and methods you can use to diagnose component faults.**

- **If the previous steps indicate that no faults have been detected, then the component has been replaced successfully. No further action is required.**

Related Information

- Oracle ILOM documentation
- “Install the SPM” on page 123

Servicing the Motherboard

The motherboard includes one CMP module, memory control subsystems, and all SP (Oracle ILOM) logic. The motherboard hosts a removable SC PROM, which contains MAC addresses and host ID.

These topics describe how to service the motherboard.

Related Information

- "Component Service Categories" on page 43
- "Servicing the SPM" on page 121

▼ Remove the Motherboard

Caution - Ensure that all power is removed from the server before removing or installing the motherboard assembly. You must disconnect the power cables from the server before performing these procedures.

Caution - These procedures require that you handle components that are sensitive to ESD. This sensitivity can cause the component to fail. To avoid damage, ensure that you follow antistatic practices as described in "ESD Measures" on page 40.

This is a cold-service procedure that must be performed by qualified service personnel. The server must be completely powered down before performing this procedure. See "Component Service Categories" on page 43 for more information about this category of service procedures.

Note - When replacing the motherboard, remove the SPM and SC PROM from the old motherboard, and install these components on the new motherboard. The SPM contains the Oracle ILOM system configuration data, and the SC PROM contains the system host ID and MAC address. Transferring these components preserves the system-specific information stored on these modules. Whenever you replace the motherboard or the SPM, you must update the firmware so the portions of firmware in the SPM and on the motherboard are consistent.

1. **Prepare the system for service.**

   See "Preparing for Service" on page 39.

2. **Remove the airflow cover.**

   See "Open and Remove the Airflow Cover" on page 54.

3. **Remove all PCIe cards.**

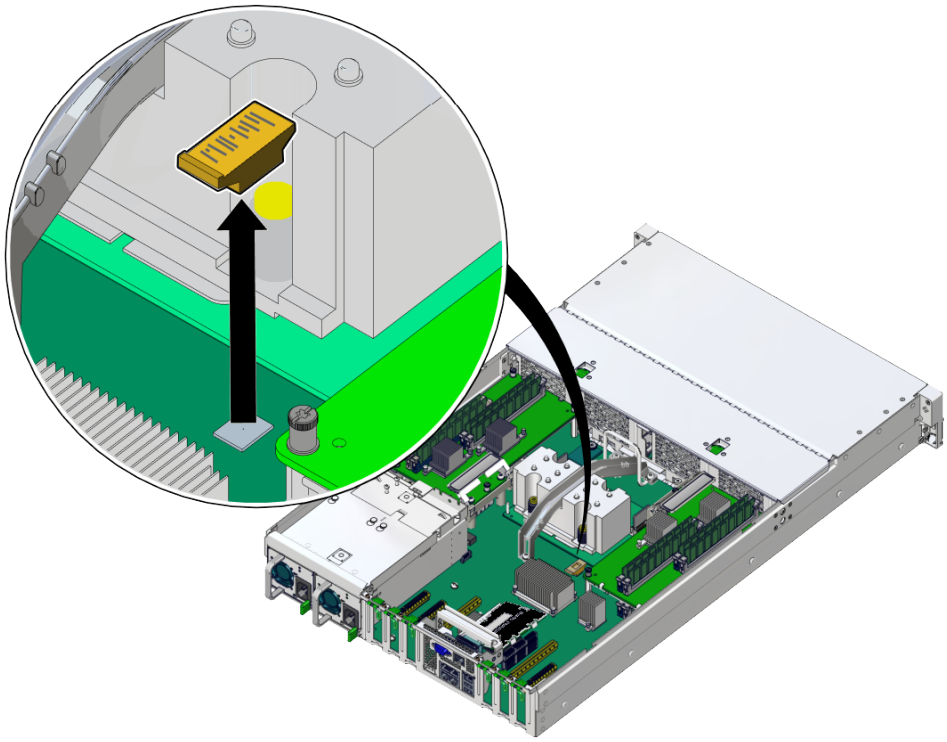
   See "Remove a PCIe Card or Filler" on page 108.

   Always remove transceivers from a PCIe card before removing the card from the server.

   Keep track of which slot each PCIe card was in so you can return them to their original positions.

4. **Remove the SC PROM from the motherboard.**

You will reinstall it on the new motherboard.



5. **Remove the SPM.**

   You will reinstall the SPM on the new motherboard. See “Remove the SPM” on page 122.

6. **Remove any memory risers.**

   See “Remove a Memory Riser” on page 91.

   You will reinstall the memory risers on the new motherboard. Keep track of which side each memory riser came from and return them to their original position.

7. **Remove DIMMs from the motherboard.**

   See “Remove a DIMM” on page 95.

   You will reinstall the DIMMs on the new motherboard. Keep track of which slot each DIMM came from and return them to their original position.

8. **Remove the eUSB drive.**

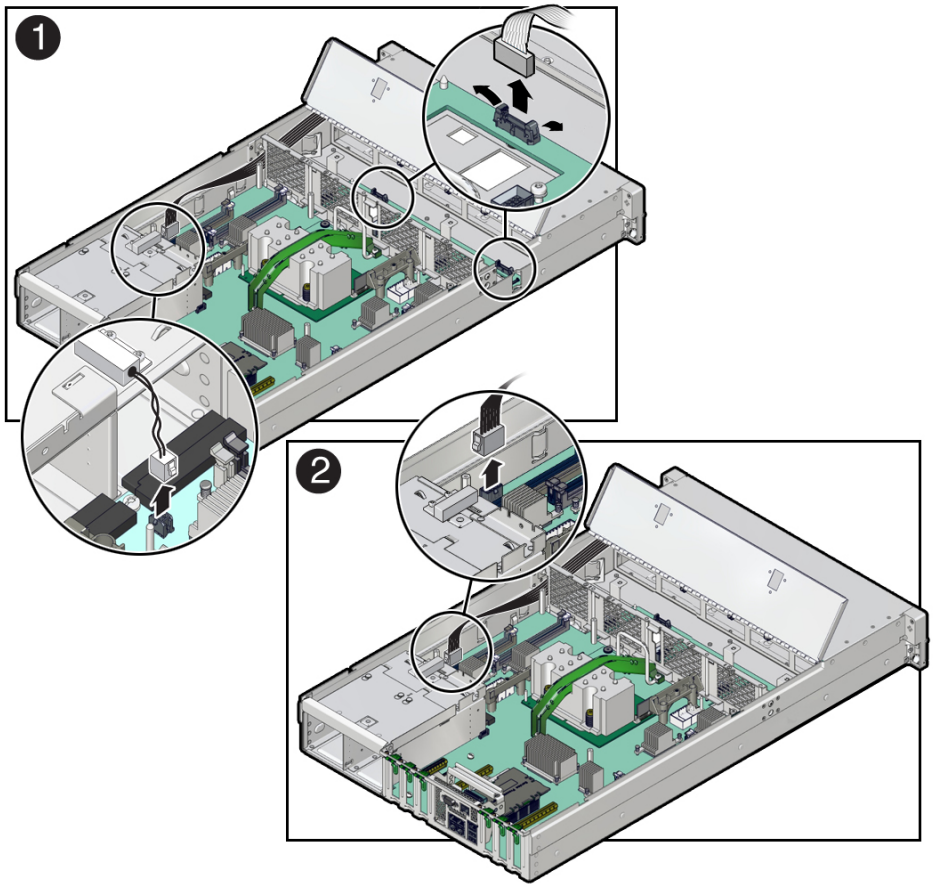
   You will reinstall the eUSB drive on the new motherboard. See "Remove the eUSB Drive" on page 113.

9. **Open the fan cover and remove the fan modules.**

10. **Disconnect the ribbon cables from the motherboard that go to the left and right LED indicator modules (panel 1).**

    The right LED indicator module include the front USB 2.0 ports. The left and right LED indicator modules do not need to be removed to replace the motherboard.

11. **Disconnect the cable from the server intrusion switch (panel 1).**

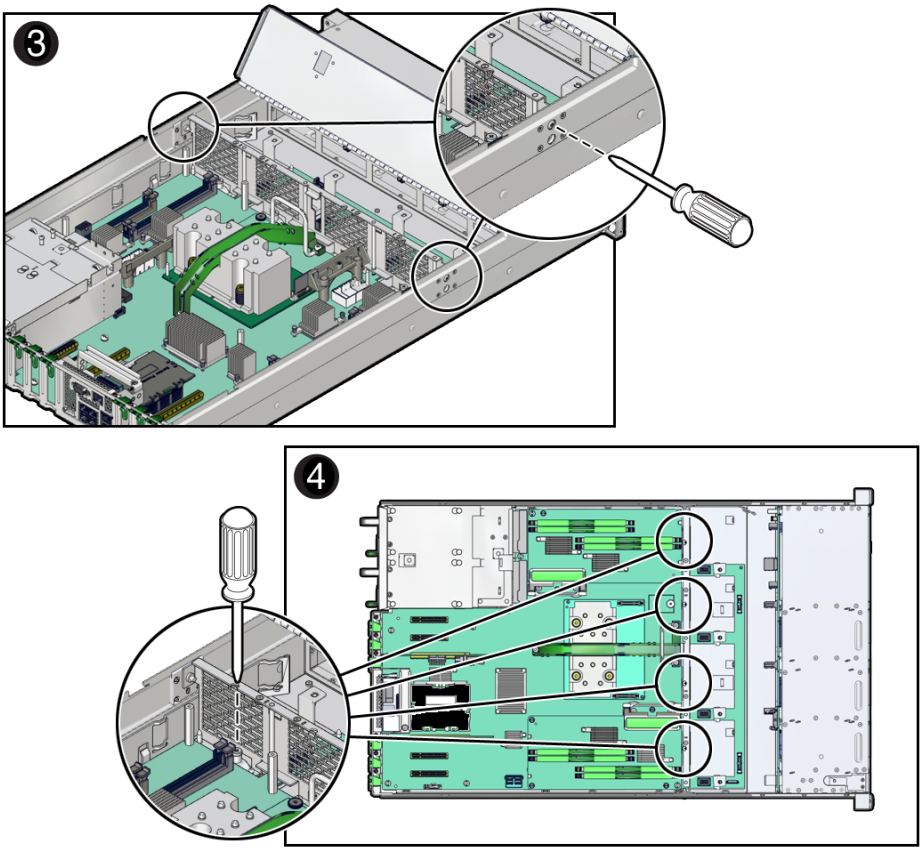


12. **Disconnect the signal cable and power cable from the motherboard to the drive backplane.**

    See “Remove the Drive Backplane” on page 147.

13. **Disconnect the mid-wall from the chassis.**

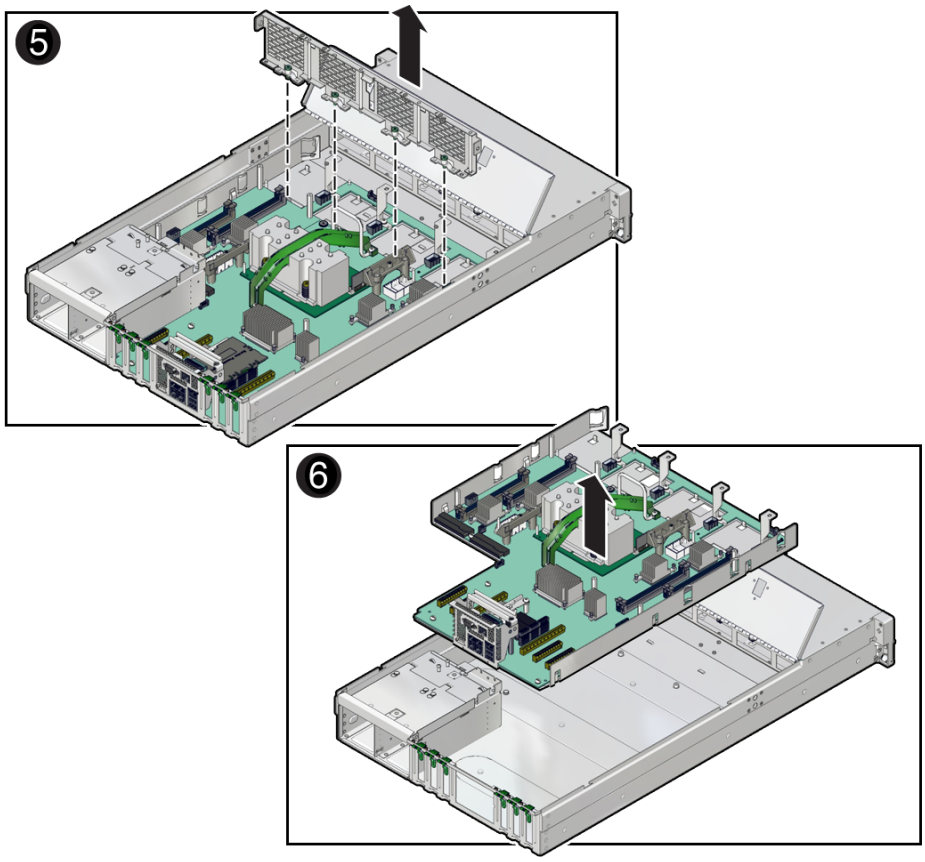
    a. **Remove the screw, using a T20 Torx driver, on each side of the chassis that secures the mid-wall to the chassis (panel 3).**



    b. **Loosen the four green captive screws that secure the mid-wall to the bottom of the chassis (panel 4).**

Use a No. 2 Phillips screwdriver to loosen the captive screws.

14. **Lift the mid-wall out of the chassis (panel 5)**



15. **Release the power supplies and pull them slightly out of the server.**

    The power supplies do not need to be removed from the chassis to lift out the motherboard.

16. **Lift the motherboard out of the chassis (panel 6).**

    You can use the bar by the rear I/O panel and the metal handle in front of the cable channel as handles to lift the motherboard.

17. **Place the motherboard on an antistatic mat.**

18. **Install a new motherboard.**

    See “Install the Motherboard” on page 135.

Related Information

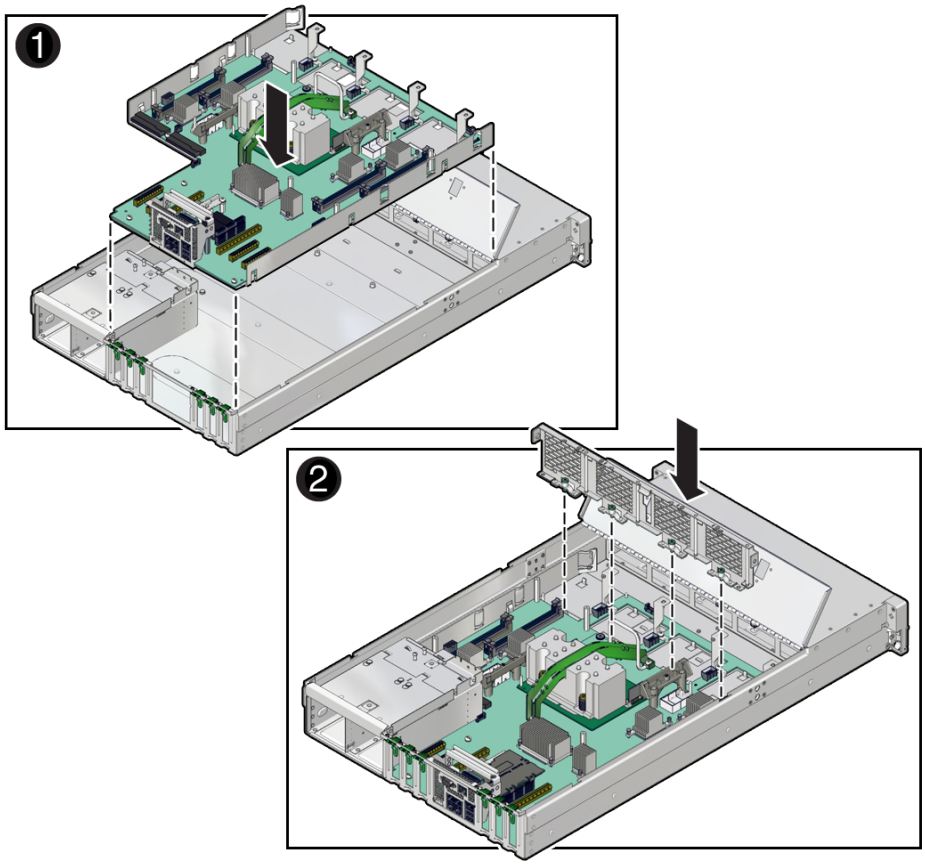
- “Verify the Motherboard” on page 145

▼ Install the Motherboard

When replacing the motherboard, remove the SPM and SC PROM from the old motherboard and install these components on the new motherboard. The SPM contains the Oracle ILOM system configuration data, and the SC PROM contains the system host ID and MAC address. Transferring these components preserves the system-specific information stored on these modules. Whenever you replace the motherboard or the SPM, you must update the firmware so the portions of firmware in the SPM and on the motherboard are consistent.

1. **Unpack the replacement motherboard and place it on an antistatic mat.**

2. **Grasp the motherboard by the handle and place it into the chassis (panel 1).**



You can use the metal handle in front of the cable channel and the bar by the rear I/O panel as handles to lift the motherboard.

Ensure that the remaining cables do not get caught on edges of the motherboard.

a. **Tilt the motherboard to the right side so it gets under the power supplies.**

   Be sure the power supplies are pulled out slightly from their slots when you insert the motherboard.

b. **Level the motherboard in the server chassis.**

c. **Slide the motherboard to the rear of the server to engage the raised standoffs.**

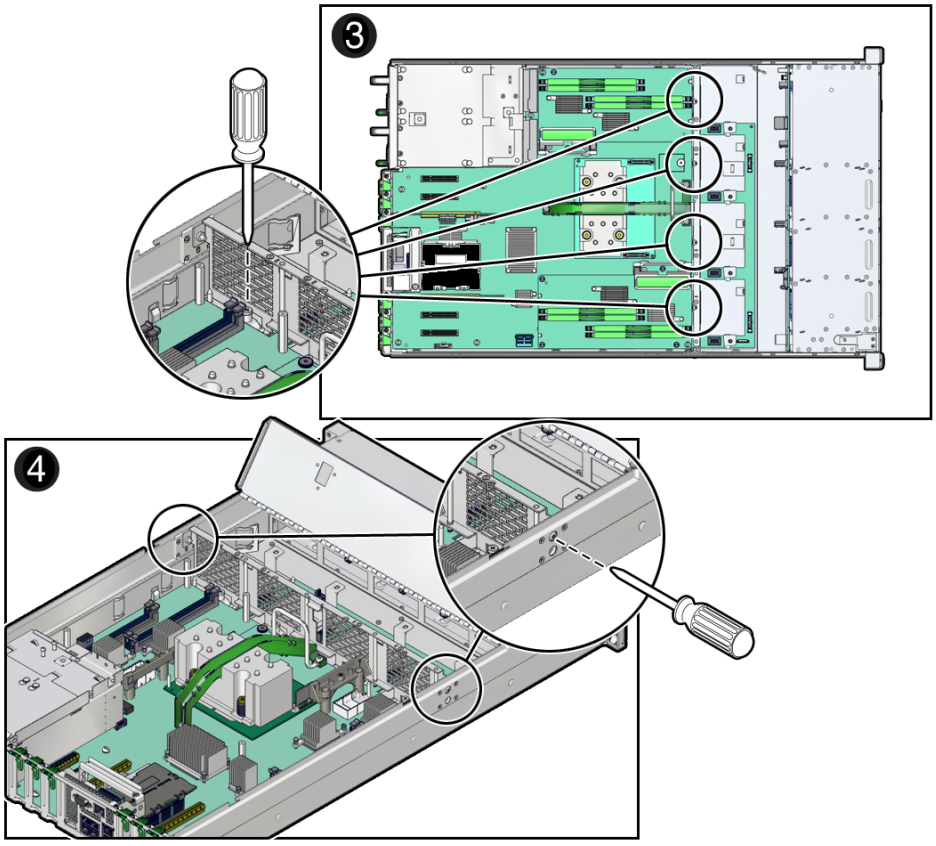
d. **Push the power supplies in to engage securely with the motherboard.**

3. **Insert the mid-wall into the chassis (panel 2).**

4. **Fasten the mid-wall to the chassis.**

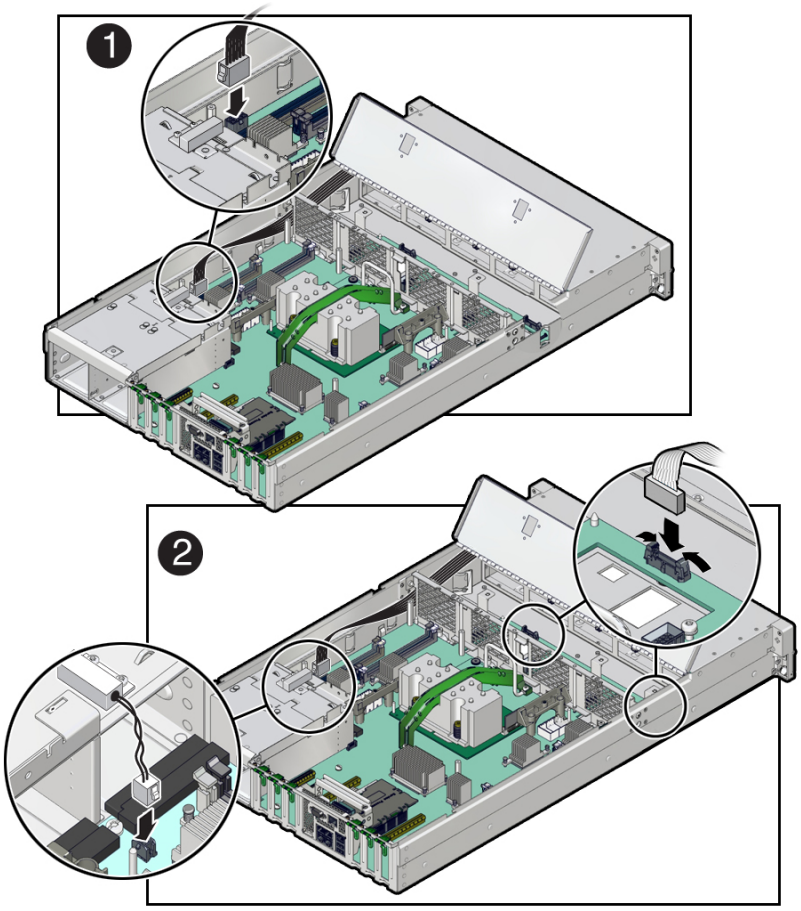
a. **Tighten the four green captive screws that secure the mid-wall to the bottom of the chassis (panel 3).**

Use a No. 2 Phillips screwdriver to tighten the captive screws.



b. Fasten a screw, using a T20 Torx driver, on each side of the chassis to secure the mid-wall to the chassis (panel 4).

5. **Reconnect the cable from the server intrusion switch (panel 1).**



6. **Reconnect the ribbon cables to the motherboard from the left and right LED indicator modules (panel 2).**

7. **Reconnect the signal cable and power cable from the motherboard to the drive backplane.**

   See “Install the Drive Backplane” on page 149.

8. **Install the four fan modules.**

   See “Install a Fan Module” on page 73.

9. **Install DIMMs on the motherboard.**

   Place each DIMM in the same motherboard slot where it had been before.

10. **Install the SPM on the motherboard.**

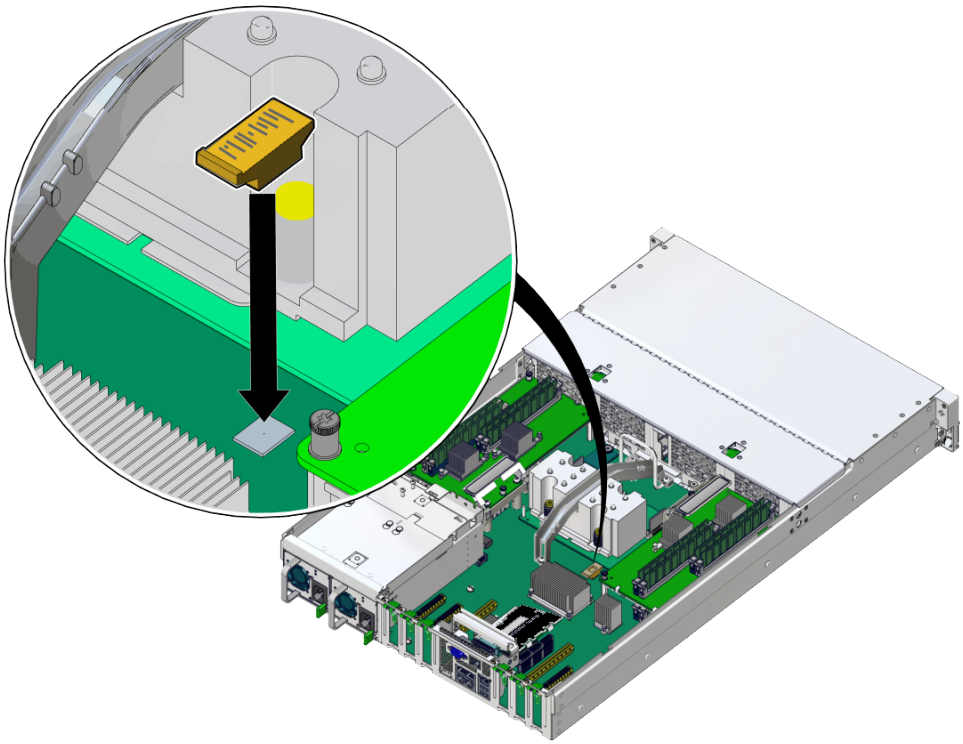
    Use the SPM you removed from a motherboard. See “Install the SPM” on page 123.

11. **Remove the eUSB device that comes with the new motherboard, and install it onto the old motherboard.**

    Install the eUSB drive that you removed from the old motherboard onto the new motherboard. See “Remove the eUSB Drive” on page 113 and “Install the eUSB Drive” on page 115.

12. **Install the SC PROM on the motherboard.**

    Use the SC PROM you removed from a motherboard.



13. **Install any memory risers.**

Install each memory riser on the side where it had been located. See “Install a DIMM” on page 96.

Always install a transceiver in a PCIe card after installing the card in the server.

14. **Install all PCIe cards.**

    Place each PCIe card in the slot where it had been located.

    See “Install a PCIe Card or Filler” on page 110.

15. **Install the airflow cover.**

    See “Install and Close the Airflow Cover” on page 155.

16. **Attach the top cover.**

    See “Replace the Top Cover” on page 157.

17. **Return the server to the normal operating position.**

    See “Return the Server to the Normal Operating Position” on page 158.

18. **Reconnect the power cords to the power supplies.**

    See “Attach Power Cords” on page 159.

19. **Prior to powering on the server, connect a terminal or a terminal emulator (PC or workstation) to the SP through the SER MGT port.**

    The SP detects the host firmware on the replacement motherboard is not compatible with the existing SP firmware, further action will be suspended and the following message will be 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.
    ```

    Note - Whenever you replace the motherboard or the SPM, update the firmware on the server so the portions of firmware in the two components remain consistent.

20. **Prepare to download the system firmware.**

    If necessary, configure the server's NET MGT port so that it can access the network. Log in to the SP through the NET MGT port.

    Refer to the Oracle ILOM documentation for network configuration instructions.

21. **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 motherboard.

---

22. **If necessary, reactivate any RAID volumes that existed prior to replacing the motherboard.**

    If your server contained RAID volumes prior to replacing the motherboard, see “Reactivate RAID Volumes” on page 142 for instructions.

23. **Power on the server.**

    See “Power On the Server (Oracle ILOM)” on page 159 or “Power On the Server (System Power Button)” on page 160.

24. **(Optional) Transfer the serial number and product number to the FRUID of the new motherboard.**

    If the replacement motherboard must have the same serial number as the server prior to servicing, trained service personnel must take this action in a special service mode.

Related Information

- Oracle ILOM documentation
- “Remove the Motherboard” on page 129
- “Reactivate RAID Volumes” on page 142
- “Verify the Motherboard” on page 145

▼ Reactivate RAID Volumes

Perform this task only if your server had RAID volumes prior to replacing the motherboard.

1. **Prior to powering on the server, log in to the SP.**

   Refer to “Log In to Oracle ILOM” in *SPARC T8 Series Servers Administration Guide* for instructions.

2. **At the Oracle ILOM prompt, disable `auto-boot` so that the server will not boot the OS when the server powers on.**

   ```
   -> set /HOST/bootmode script="setenv auto-boot? false"
   ```

3. **Power on the server.**

See “Power On the Server (Oracle ILOM)” on page 159 or “Power On the Server (System Power Button)” on page 160.

4. **At the OpenBoot prompt, list the device paths on the server.**

```
ok show-devs
...
/pci@301/pci@2/scsi@0/disk@p0
...
```

You can also use the `devalias` command to locate device paths specific to your server.

```
ok devalias
...
scsi0                    /pci@301/pci@2/scsi@0
scsi                     /pci@301/pci@2/scsi@0
...
```

5. **Choose the RAID module on the motherboard.**

```
ok select scsi
```

Instead of using the alias name `scsi`, you could type the full device path name (such as `/pci@301/pci@2/scsi@0`).

6. **List all connected logical RAID volumes to determine which volumes are in an inactive state.**

```
ok show-volumes
```

For example, the following output shows an inactive volume:

```
ok show-volumes
Volume 0 Target 389  Type RAID1 (Mirroring)
  WWID 03b2999bca4dc677
  Optimal  Enabled  Inactive
  2 Members                   583983104 Blocks, 298 GB
  Disk 1
    Primary  Optimal
    Target 9      HITACHI  H103030SCSUN300G A2A8
  Disk 0
    Secondary  Optimal
    Target c      HITACHI  H103030SCSUN300G A2A8
```

7. **For each RAID volume listed as inactive, type the following command to activate that volume.**

```
ok inactive_volume activate-volume
```

where *inactive_volume* is the name of the RAID volume that you are activating. For example:

```
ok 0 activate-volume
Volume 0 is now activated
```

Note - For more information on configuring hardware RAID on the server, refer to "Configuring Hardware RAID" in *SPARC T8 Series Servers Administration Guide*.

8. **Unselect the SCSI device.**

```
ok unselect-dev
```

9. **Confirm that you reactivated the volume.**

```
ok probe-scsi-all
/pci@301/pci@2/scsi@0

FCode Version 1.00.54, MPT Version 2.00, Firmware Version 5.00.17.00

Target a
  Unit 0   Removable Read Only device   TEAC    DV-W28SS-R      1.0C
  SATA device  PhyNum 3
Target b
GB  Unit 0   Disk   SEAGATE  ST914603SSUN146G 0868    286739329 Blocks, 146
  SASDeviceName 5000c50016f75e4f  SASAddress 5000c50016f75e4d  PhyNum 1
Target 389 Volume 0
  Unit 0   Disk   LSI      Logical Volume   3000    583983104 Blocks, 298 GB
  VolumeDeviceName 33b2999bca4dc677  VolumeWWID 03b2999bca4dc677

/pci@300/pci@2/usb@0/hub@3/storage@1/disk@0
  Unit 0   Removable Read Only device    AMI     Virtual CDROM   1.00

ok probe-nvme-all
/pci@303/pci@2/pci@0/pci@7/nvme@0
NVME Controller VID: 8086 SSVID: 108e SN: PHLE719200D06P4O MN: 7335940:ICDPC2DD2ORA6.4T
 FR: QDV1RD06 NN: 1
Namespace ID: 1 Size: 6.401 TB

/pci@303/pci@2/pci@0/pci@6/nvme@0
NVME Controller VID: 8086 SSVID: 108e SN: PHLE7192009Z6P4O MN: 7335940:ICDPC2DD2ORA6.4T
 FR: QDV1RD06 NN: 1
Namespace ID: 1 Size: 6.401 TB

/pci@303/pci@2/pci@0/pci@5/nvme@0
NVME Controller VID: 8086 SSVID: 108e SN: PHLE719200736P4O MN: 7335940:ICDPC2DD2ORA6.4T
 FR: QDV1RD06 NN: 1
Namespace ID: 1 Size: 6.401 TB
```

```
/pci@303/pci@2/pci@0/pci@4/nvme@0
NVME Controller VID: 8086 SSVID: 108e SN: PHLE7192003G6P4O MN: 7335940:ICDPC2DD2ORA6.4T
 FR: QDV1RD06 NN: 1
Namespace ID: 1 Size: 6.401 TB
```

10. **Set the server to boot the OS when powered on.**

```
ok setenv auto-boot? true
```

11. **Reboot the server.**

See *Server Administration*, booting and shutting down Oracle Solaris.

Related Information

- "Install the Motherboard" on page 135
- "Verify the Motherboard" on page 145

▼ Verify the Motherboard

1. **Use the Oracle ILOM `show faulty` command to verify that the fault has been cleared.**

See "Identify Faulted Components" on page 23 for more information on using the `show faulty` command.

2. **Perform one of the following tasks based on your verification results:**

- **If the previous steps did not clear the fault, see "Detecting and Managing Faults" on page 21 for information about the tools and methods you can use to diagnose component faults.**
- **If the previous steps indicate that no faults have been detected, then the component has been replaced successfully. No further action is required.**

Related Information

- "Install the Motherboard" on page 135
- "Reactivate RAID Volumes" on page 142

Servicing the Drive Backplane

This board provides connectors for the drive signal cables.

These topics describe how to service the drive backplane.

▼ Remove the Drive Backplane

1. **Prepare the system for service.**

   See "Preparing for Service" on page 39.

2. **Pull each drive out far enough to disengage it from the drive backplane.**

   See "Remove a Drive or Drive Filler" on page 61.

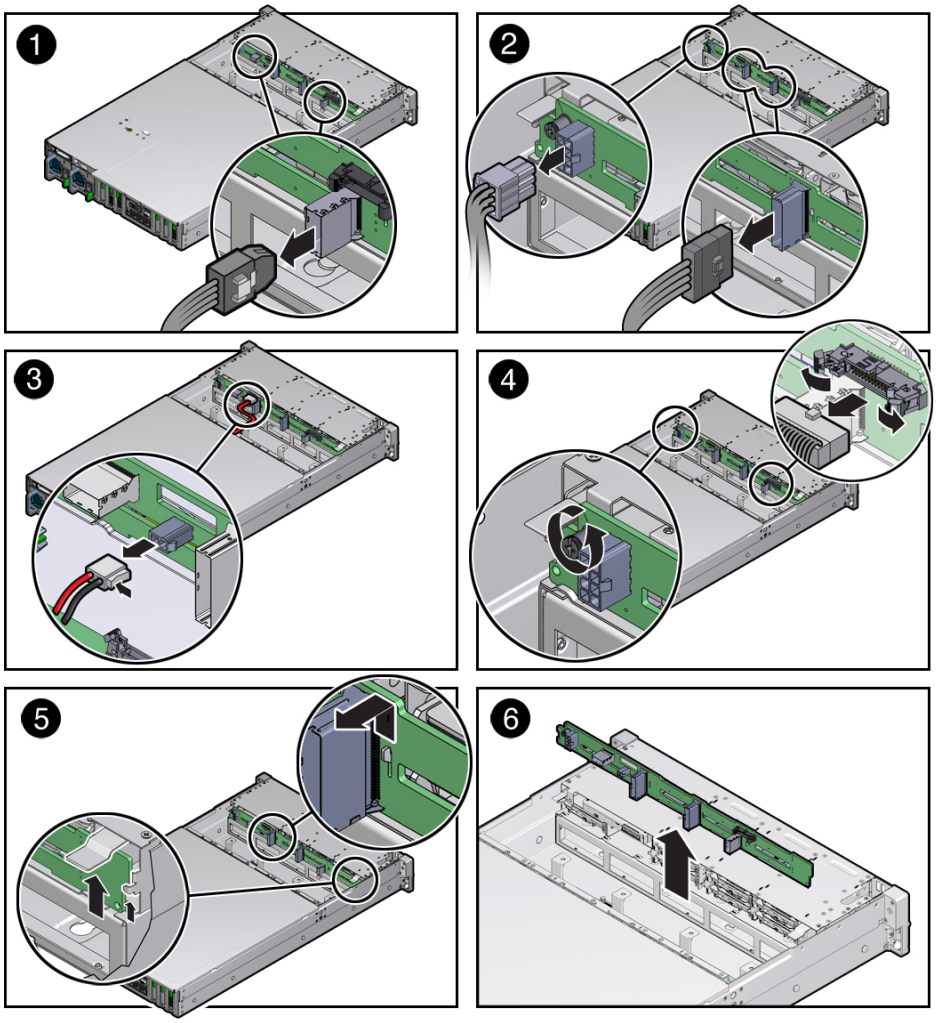
Note - You do not need to completely remove the storage drives from the server. Simply pull them out far enough to disengage them from the drive backplane. If you do remove the storage drives from the server, record their locations so that you can reinstall them in the same locations.

---

3. **Disconnect the cables from the drive backplane.**

   a. **Disconnect the two SAS cables from the drive backplane to the motherboard (panel 1).**

Note the cable connections in order to ease proper reconnection of the cables.



b. Disconnect the power cable from the drive backplane (panel 2).

c. If present, disconnect the two optional NVMe cables from the drive backplane (panel 2).

d. **Disconnect the auxiliary signal cable from the drive backplane (panel 4).**

4. **Using a No. 2 Phillips screwdriver, loosen the right-side spring-mounted screw (on the power supply side of the server) that secures the drive backplane to the chassis [4].**

5. **Lift up on the left-side spring tab, and then gently release the drive backplane from the standoff hooks and out from under the spring tab (panel 5).**

6. **Pull the drive backplane away from the standoff hooks and spring tab and out of the chassis (panel 6).**

7. **Place the drive backplane on an antistatic mat.**

8. **Install a drive backplane or continue the service procedure that required aceess.**

   See “Install the Drive Backplane” on page 149.

Related Information

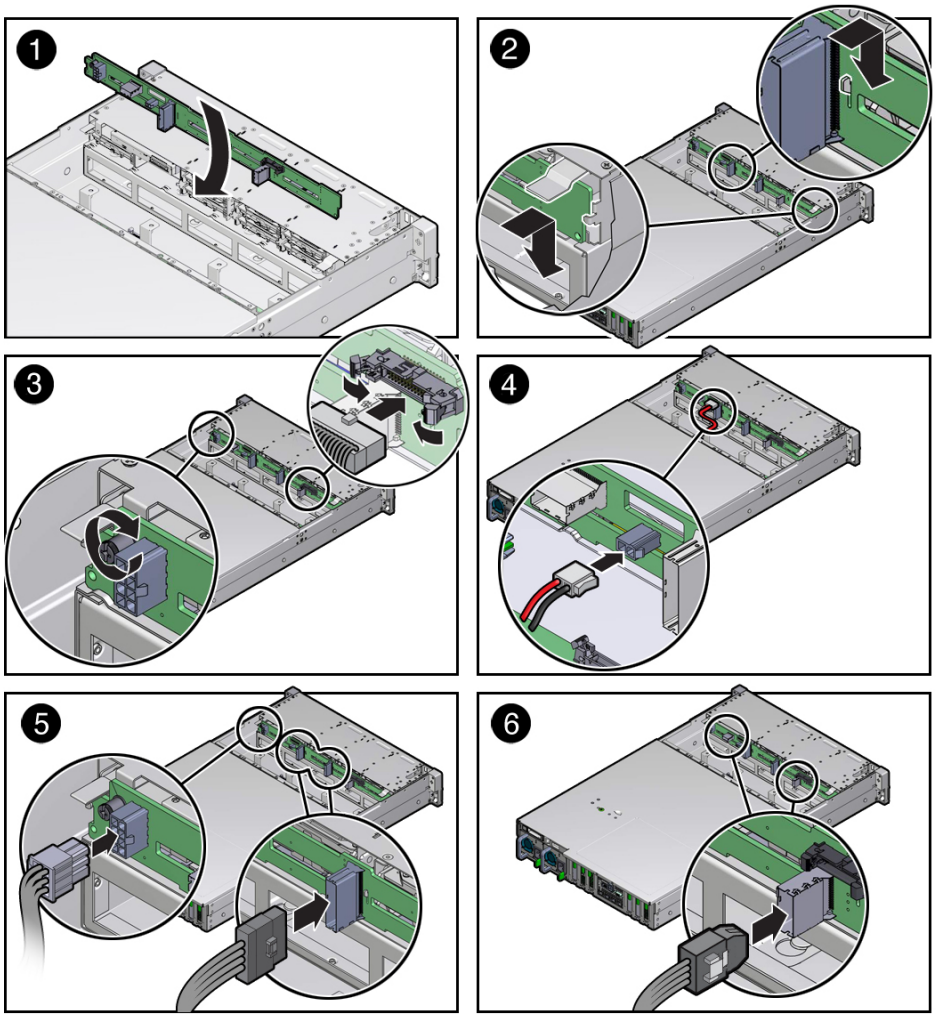
- “Internal Component Locations” on page 14
- “Install the Drive Backplane” on page 149

▼ Install the Drive Backplane

1. **Lower the drive backplane into the server, and then position it under the spring tab to engage the standoff hooks (panels 1 and 2).**

   The standoff hooks fit into small openings in the drive backplane.

Ensure that ribbon cables aren't caught under the drive backplane.



2. **Using a No. 2 Phillips screwdriver, install and tighten the spring-mounted screw (on the power supply side of the server) to secure the drive backplane to the chassis (panel 3).**

3. **Reconnect the cables to the drive backplane.**

a. **Reconnect the auxiliary signal cable to the drive backplane (panel 3).**

b. **Reconnect the power cable to the drive backplane (panel 5).**

c. **If present, reconnect the two optional NVMe cables to the storage drive backplane (panel 5).**

d. **Reconnect the two SAS cables to the drive backplane from the motherboard (panel 6).**

4. **Return the Server to Operation.**

5. **"Verify the Drive Backplane" on page 151.**

Related Information

- "Internal Component Locations" on page 14
- "Remove the Drive Backplane" on page 147

▼ Verify the Drive Backplane

1. **Use the Oracle ILOM `show faulty` command to verify that the fault has been cleared.**

   See "Identify Faulted Components" on page 23 for more information on using the `show faulty` command.

2. **Perform one of the following tasks based on your verification results:**

   - **If the previous steps did not clear the fault, see "Detecting and Managing Faults" on page 21 for information about the tools and methods you can use to diagnose component faults.**
   - **If the previous steps indicate that no faults have been detected, then the component has been replaced successfully. No further action is required.**

Related Information

- "Remove the Drive Backplane" on page 147
- "Install the Drive Backplane" on page 149

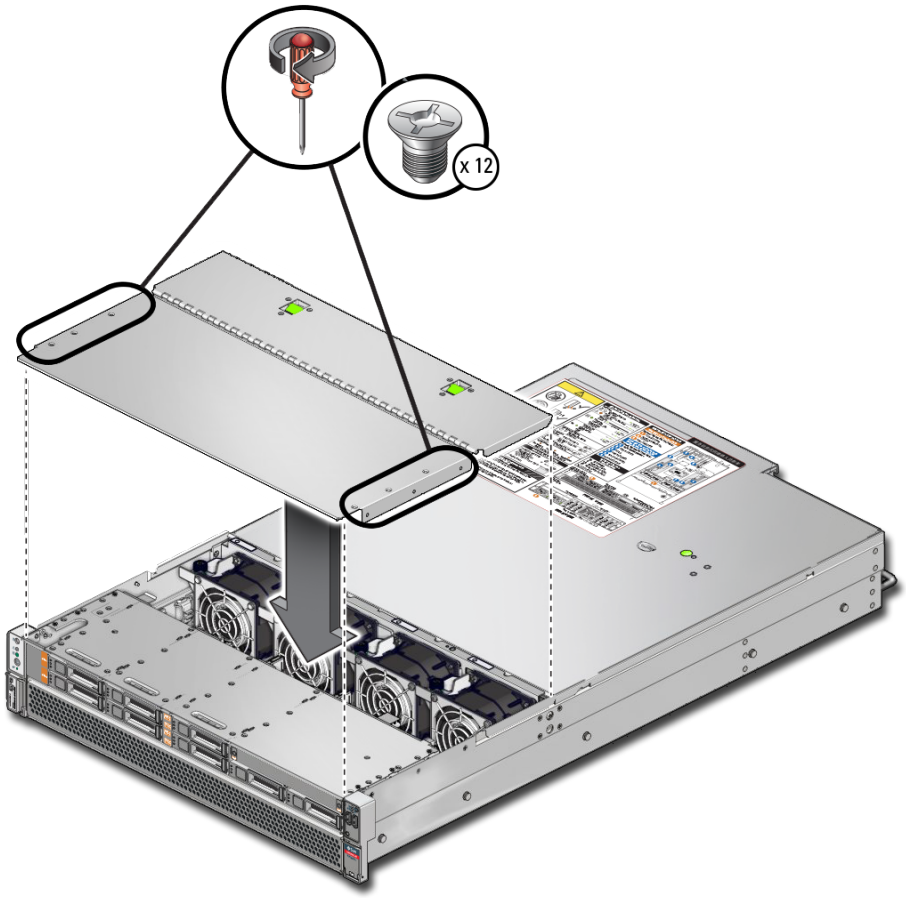
Returning the Server to Operation

These topics describe how to return the server to operation.

Step	Description	Links
1.	Replace (as necessary) the fan cover, airflow cover, and top cover and return the server to its normal operating position	“Replace the Fan Cover” on page 154 “Install and Close the Airflow Cover” on page 155 “Replace the Top Cover” on page 157 “Return the Server to the Normal Operating Position” on page 158
2.	Connect the power cords to the server.	“Attach Power Cords” on page 159
3.	Power on the server.	“Power On the Server (Oracle ILOM)” on page 159 “Power On the Server (System Power Button)” on page 160

Replace the Fan Cover

1. **Align the fan cover with the screw holes and fasten the 12 No. 2 Phillips screws to the top and side.**



2. **Check that the two latches engage when you close the fan cover.**

Related Information

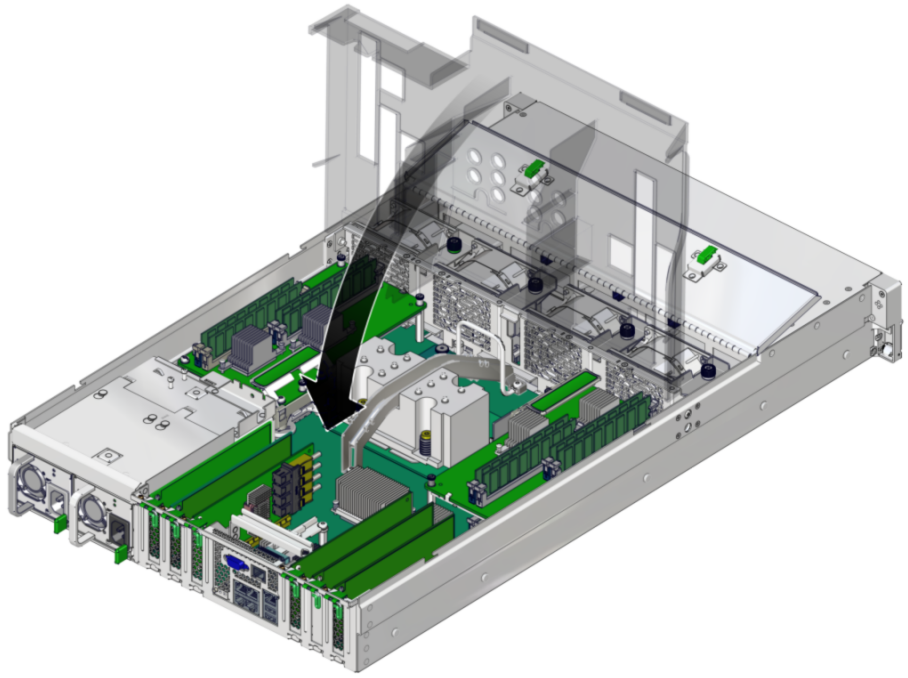
- “Replace the Top Cover” on page 157

Install and Close the Airflow Cover

Follow this procedure to reattach or install an airflow cover and to lower and secure the airflow cover.

1. **If you need to reattach the airflow cover, open the fan cover.**

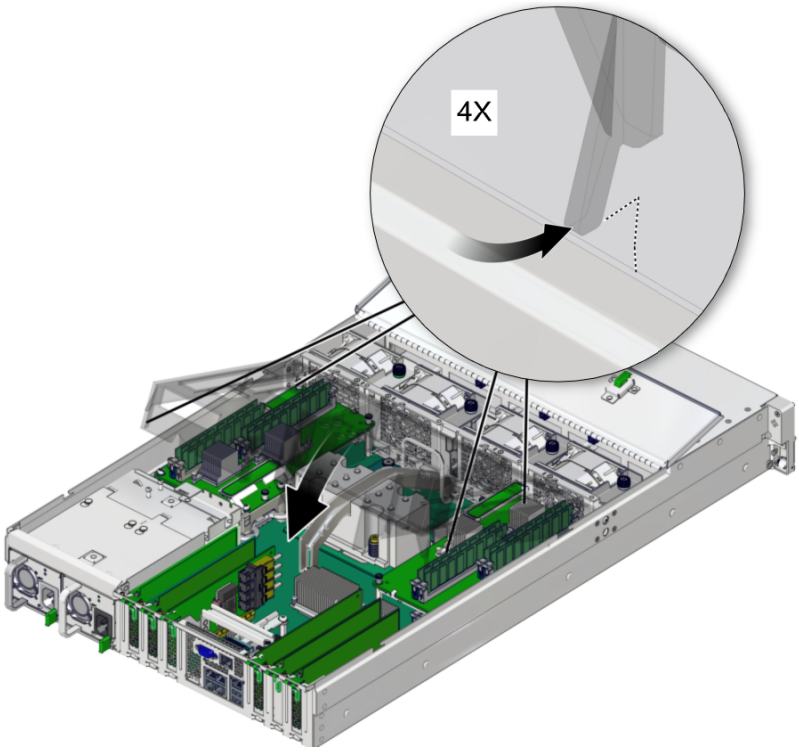
2. **Align the airflow cover on its hinge edge.**



3. **Attach the hinged tabs to the server.**

4. **Lower the airflow cover.**

Make sure the two pairs of side tabs clear the sides of the server.

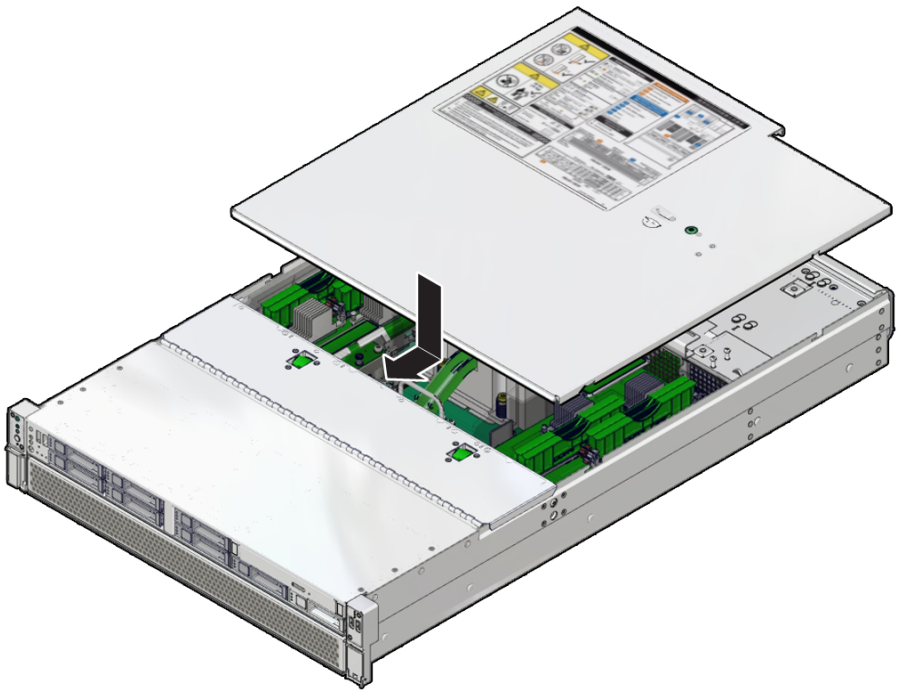


Related Information

- “Replace the Top Cover” on page 157

Replace the Top Cover

1. **Place the top cover on the chassis.**



Set the cover down so that it is about 1 inch (2.5 cm) forward of the rear of the server.

2. **Slide the top cover toward the rear of the chassis until the rear cover lip engages with the rear of the chassis.**

When the top cover is seated, the green button clicks into place.

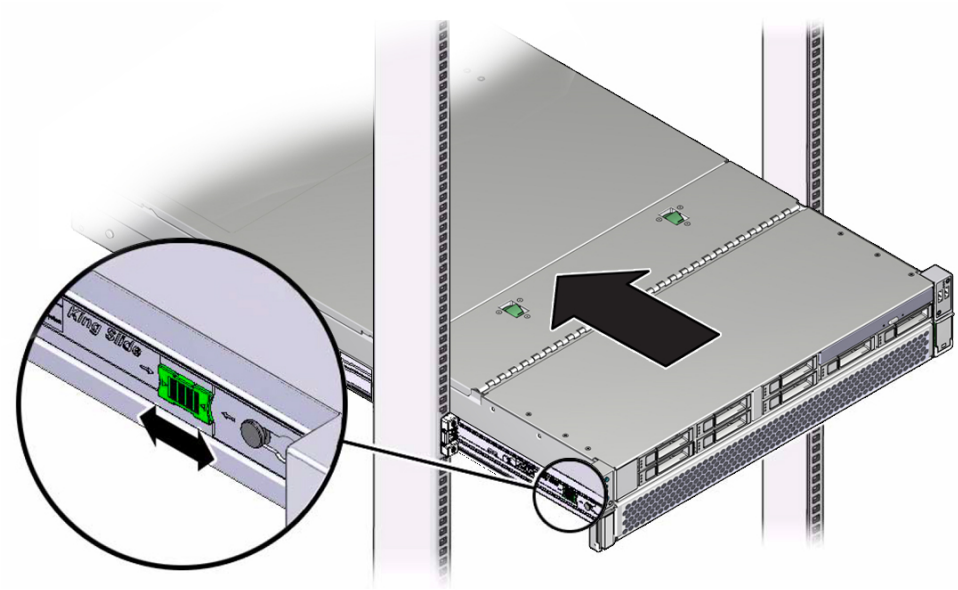
Related Information

- “Remove the Top Cover” on page 53
- “Return the Server to the Normal Operating Position” on page 158

Return the Server to the Normal Operating Position

Caution - The chassis is heavy. To avoid personal injury, use two people to lift the server and set it in the rack.

1. **Release the slide rails from the fully extended position by pushing the release tabs on the side of each rail.**



2. **While pushing on the release tabs, slowly push the server into the rack.**

   Ensure that the cables do not get in the way.

3. **Reconnect the cables to the rear of the server.**

   If the CMA is in the way, disconnect the left CMA release and swing the CMA open. See “Release the CMA” on page 51.

4. **Reconnect the CMA.**

   Swing the CMA closed and latch it to the left rack rail. Refer to “Attach the CMA to the Server” in *SPARC T8-1 Server Installation Guide*.

Related Information

- “Remove the Server From the Rack” on page 52
- “Attach Power Cords” on page 159

▼ Attach Power Cords

1. **Attach both power cords to the power supplies.**

   Note - As soon as the power cords are connected to a power source, standby power is applied in the server. Depending on how the firmware is configured, the server might boot at this time.

2. **Power on the server.**

   See “Power On the Server (Oracle ILOM)” on page 159 or “Power On the Server (System Power Button)” on page 160.

Related Information

- “Power On the Server (Oracle ILOM)” on page 159
- “Power On the Server (System Power Button)” on page 160

▼ Power On the Server (Oracle ILOM)

- **Type this command at the Oracle ILOM prompt.**

  ```
  -> start /System
  ```

  You will see an `alert` message on the system console. This message indicates that the server is reset.

Related Information

- “Power On the Server (System Power Button)” on page 160
- “Clear a Fault Manually” on page 37

Power On the Server (System Power Button)

Caution - Do not operate the server without all fans, component heat sinks, air baffles, fillers, and the cover installed. Severe damage to server components can occur if the server is operated without adequate cooling mechanisms.

1. **Verify that the power cords are connected and that standby power is on.**

   Shortly after power is applied to the server, the SP OK indicator blinks as the SP boots. The SP OK indicator is illuminated solid green when the SP has successfully booted. After the SP has booted, the Power OK/LED on the front panel begins flashing slowly, indicating that the host is in standby power mode.

2. **Press and release server power button on the server front panel.**

   You might need to use a pointed object, such as a pen or pencil.

   When main power is applied to the server, the main Power/OK LED begins to blink more quickly while the server boots and lights solidly once the operating system boots.

   Each time the server powers on, POST can take several minutes to complete tests.

Related Information

- “Power On the Server (Oracle ILOM)” on page 159
- “Clear a Fault Manually” on page 37

Glossary

B

BOB Memory buffer on board.

C

chassis Server enclosure.

CMA Cable management arm (SPARC T8-1 and SPARC T8-2). Cable management assembly (SPARC T8-4).

CMP Chip multiprocessor.

CRU Customer-replaceable unit.

E

ESD Electrostatic discharge.

eUSB drive Embedded universal serial bus drive.

F

FRU Field-replaceable unit.

H

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

IP Internet Protocol.

L

LDom Logical domain managed by Oracle VM Server for SPARC. *See* Oracle VM Server for SPARC.

M

MAC Machine access code.

MAC address Media access controller address.

MSGID Message identifier.

N

NET MGT Network management port. An Ethernet port on the server SP.

NMI Nonmaskable interrupt.

NVMe Nonvolatile memory express controller. The optional NVMe switch card provides NVMe services in the server.

O

OBP OpenBoot PROM. Sometimes OBP is used in file names and messages to indicate a relationship to OpenBoot.

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.

Oracle VM Server for SPARC Virtualization server for SPARC platforms.

P

PCI Peripheral component interconnect.

PCIe PCI Express, an industry-standard bus architecture that supports high-bandwidth peripherals and I/O devices.

POST Power-on self-test.

PROM Programmable read-only memory.

PSH Predictive self healing.

S

SAS Serial attached SCSI.

SCC System configuration chip.

SCC PROM System configuration chip on programmable read-only memory. Removable module containing system configuration data.

SER MGT port Serial management port. A serial port on the server SP.

SP Service processor. In the server, the SP is a card with its own OS that is operating and accessible whenever the server power cords are connected and energized, regardless of host power state. The SP processes Oracle ILOM commands providing lights out management control of the host. *See* host.

SPM Service processor module. This is the physical component that contains the service processor firmware.

SSD Solid-state drive.

SSH Secure shell.

U

UUID Universal unique identifier.

Index

N

O

P

R