Sun Server X2-8 (formerly Sun Fire X4800 M2) Service Manual

Contents

Using This Documentation

This section provides product information, documentation and feedback links, and a document change history.

Sun Server X2-8 Name Change

The Sun Server X2-8 was formerly named the Sun Fire X4800 M2 server. This former name might still appear in the software. The name change does not indicate any change in system features or functionality.

The new name identifies the following:

- X identifies an x86 product.
- The first number, 2, identifies the generation of the server.
- The second number, 8, identifies the number of processors.

Product Downloads

You can find downloads for all Oracle x86 servers and server modules (blades) on My Oracle Support (MOS). On MOS you can find two type of downloads:

- Software release bundles specific to the rackmount server, server module, modular system (blade chassis), or NEM. These software release bundles include Oracle ILOM, Oracle Hardware Installation Assistant and other platform software and firmware.

- Standalone software common across multiple types of hardware. This includes the Hardware Management Pack.

▼ Get Software and Firmware Downloads

1   Go to `http://support.oracle.com`.

2   Sign in to My Oracle Support.

The Patches and Updates screen appears.

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

Search fields appear.

4   In the Patch Search box, click Product or Family (Advanced Search).

Alternatively, type a full or partial product name (for example Sun Server X2–8) until a match appears.

5   In the Release pull-down list, select the release from the drop-down list.

Expand the folders to see component offerings.

6   Click Search.

A list of updates (patches) appears.

7   To select a patch, click the check boxes next to the patch name (you can select more than one patch).

A popup action panel appears. The panel lists several action options.

8   To download the update, click Download in the popup panel.

The download appears automatically.

Documentation and Feedback

Documentation	Link
All Oracle products	`http://www.oracle.com/documentation`
Sun Server X2-8	`http://www.oracle.com/pls/topic/lookup?ctx=sfx4800m2`
Oracle ILOM 3.0	`http://www.oracle.com/goto/ILOM/docs`

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

About This Documentation

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

You can get a PDF that includes all information about a particular topic subject (such as hardware installation or product notes) by clicking the PDF button on the top of the page.

Change History

The following lists the release history of this documentation set:

- July 2011 – Initial publication.
- October 2011 – Revised for SW1.1.
- April 2012 – Revised to add preinstalled Oracle VM, and additional rack mounting instructions.
- June 2012 – Revided for SW1.1.1. Revised to add the preinstalled Oracle Solaris 11 operating system.
- July 2012 – Revised to change the product name to Sun Server X2–8 and to add 32 GB DIMM support.
- September 2012 – Added firmware versions to Product Notes.
- December 2012 – Revised for SW1.1.2. Added support for dual-ranked and quad-ranked 16 GB DIMMs.
- December 2012 – Removed erroneous listing of Windows Server 2008 pre-R2 as a supported OS. For Microsoft Windows, only Windows Server 2008 R2 SP1 is supported.
- January 2013 – Minor edit to Service Manual and Product Notes for memory DIMM population rules.
- January 2013 – Minor editorial corrections to Product Notes and Service Manual.
- March 2013 – Support for Windows Server 2012 added to Product Notes. Installation Guide revised to add the preinstalled Oracle Linux operating system.
- July 2013 – Revised for SW1.2. Updated information in Product Notes on operating system support, finding Windows Server 2008 drivers, and new CRs. Updated Service Manual to add procedure animation links and make minor editorial changes.

Sun Server X2-8 Service Manual Overview

The *Sun Server X2-8 Service Manual* provides information and procedures for maintaining your server. The following table describes how this content is organized.

Section	Link
General server feature and component overview information	"Server and Component Overview" on page 11
Power-related information and procedures	"Power and Reset" on page 45
Safety information and component removal and installation tasks	"Removing and Installing Components" on page 51
Maintenance procedures and information	"Sun Server X2-8 Service Procedures and Information" on page 147
System specifications	"Sun Server X2-8 Specifications" on page 195

Note – The Sun Server X2-8 was formerly named the Sun Fire X4800 M2 server. This former name might still appear in the software. The name change does not indicate any change in system features or functionality.

Server and Component Overview

This section provides an overview of the Sun Server X2-8 and its components.

Sun Server X2-8 Overview

The Sun Server X2-8 is composed of a chassis component, a CPU module (CMOD) component, and a subassembly module component.
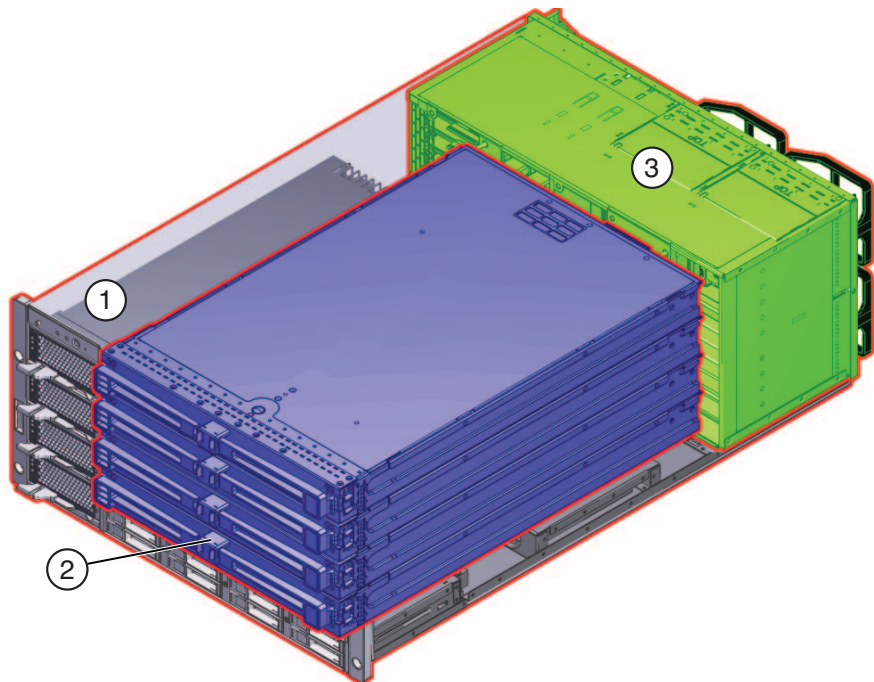
	Legend	
	Component	**Link**
1	Chassis module (includes chassis, power supplies, and hard drives)	"Sun Server X2-8 Chassis Overview" on page 12
2	CPU module (CMOD)	"About Sun Server X2-8 CPU Modules and CMOD Filler Modules" on page 13
3	Subassembly module	"Sun Server X2-8 Subassembly Module Overview" on page 17

Sun Server X2-8 Chassis Overview

The Sun Server X2-8 has a five RU chassis that contains the following:
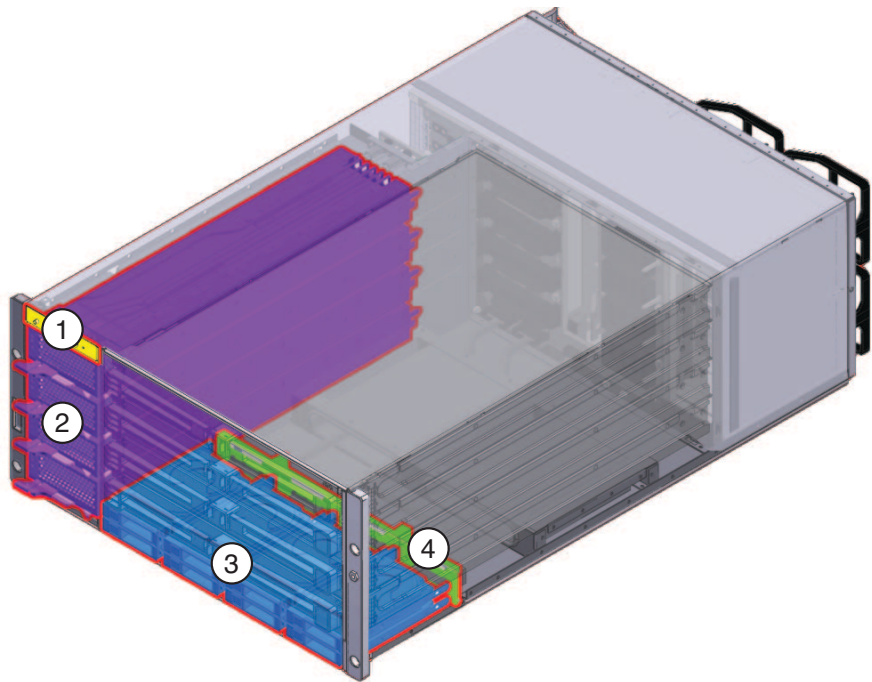
Note – For the most up-to-date information regarding hardware and software support, refer to *Sun Server X2-8 (formerly Sun Fire X4800 M2) Product Notes*.

	Chassis Contents	Link
1	Front-panel indicator assembly	"Front Panel Indicator Module Overview" on page 21
2	Four slots for 2000W hot-pluggable, load-sharing power supplies	"Power Supply Overview" on page 22
3	Drive bay support for eight 2.5 inch small form-factor SAS-2 hot-pluggable, dual-port, enterprise-class hard drives	"Hard Drive and XL Bracket Assembly Overview" on page 24
4	Hard drive backplane	"Drive Backplane Overview" on page 25

See also:

- "Sun Server X2-8 Overview" on page 11
- "About Sun Server X2-8 CPU Modules and CMOD Filler Modules" on page 13
- "Sun Server X2-8 Subassembly Module Overview" on page 17

About Sun Server X2-8 CPU Modules and CMOD Filler Modules

- "CMOD Incompatibility Between Versions of Sun Server X2-8" on page 13
- "CPU Modules and Filler Modules" on page 14
- "CMOD Internal Components" on page 16
- "CMOD Connectivity" on page 17

CMOD Incompatibility Between Versions of Sun Server X2-8

The CPU modules for the Sun Server X2-8 are unique to the M2 model of the server family and are *not* interchangeable with the CPU modules used in the Sun Fire X4800 server. Likewise, CPU modules designed for the Sun Fire X4800 server are *not* compatible with the Sun Server X2-8.

The CMODs designed for use with the Sun Server X2-8 are distinguishable from non-M2 servers by the 5-2M designation label that is affixed to the outer edge of the CMOD locking levers near the hinge. This distinguishing characteristic is viewable on the CMOD front panel. The following illustration shows a comparison of the CMOD front panels for the two servers.
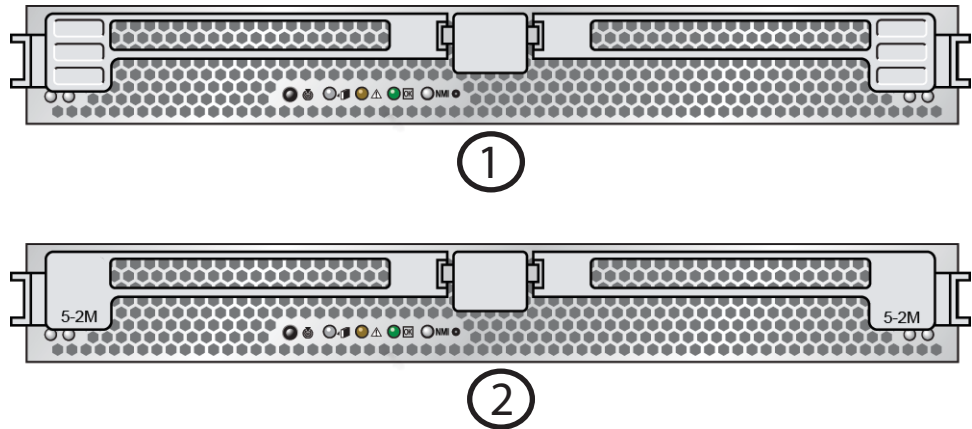
Legend	
1	Sun Fire X4800 CMOD
2	Sun Server X2-8 CMOD (formerly Sun Fire X4800 M2 CMOD)

See Also: "CPU Modules and Filler Modules" on page 14

CPU Modules and Filler Modules

The CPU modules (CMODs) are the processing engines for the Sun Server X2-8. Each CMOD contains two processors (CPUs), memory, and I/O capabilities for PCIe and GigabitEthernet.

The CMOD bay of the Sun Server X2-8 can contain up to four CMODs. The server supports two configurations, a two-module configuration and a fully loaded four-module configuration. In both configurations, CMOD 0 (BL 0) is the master CMOD. In the two-module configuration, a filler module *must* be used for slots that do not contain a CMOD. CMODs and filler modules have a lever mechanism that is used for removal and installation. The lever is held in place by a locking latch.

Note – CMODs and CPU filler modules are designated as customer-replaceable units (CRU).
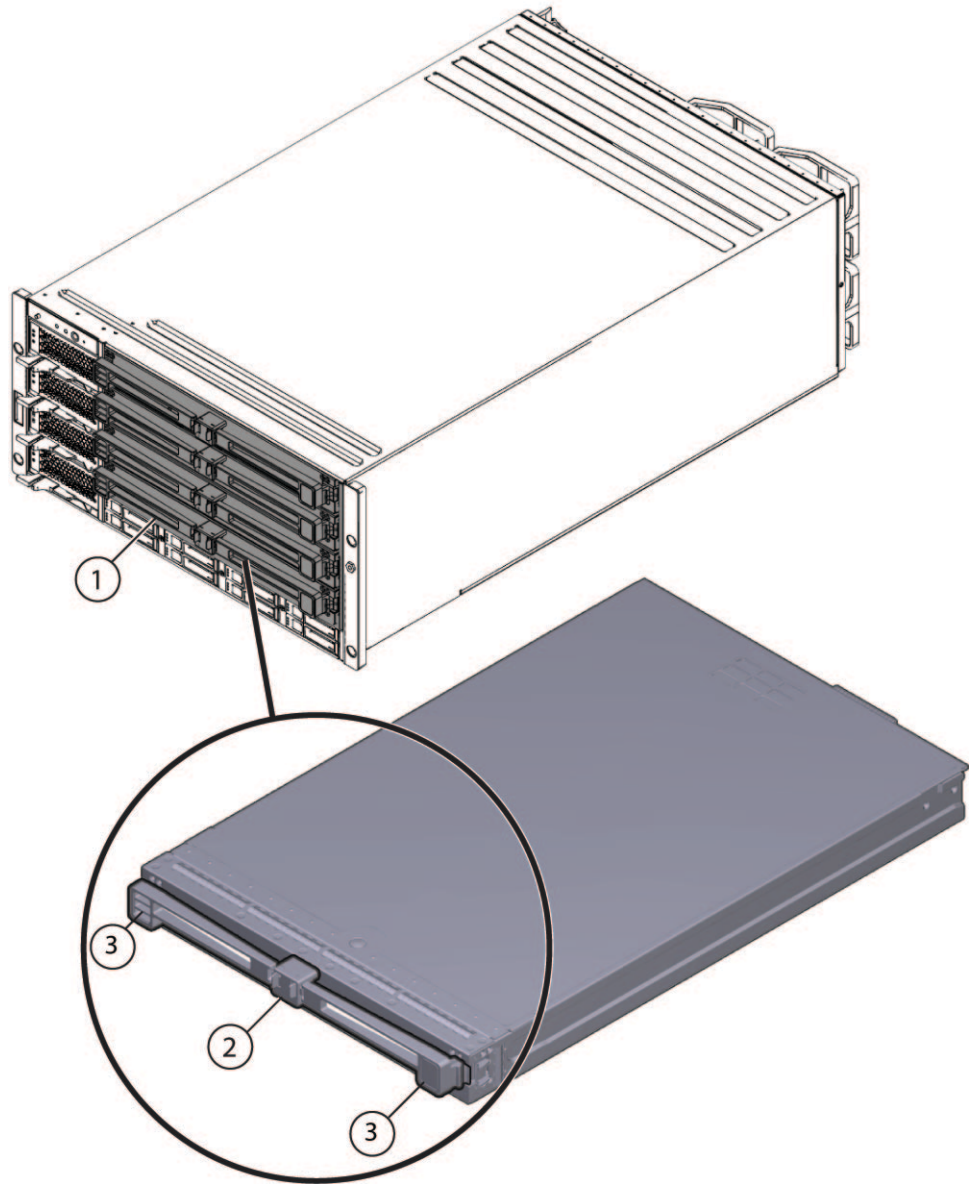
1	CPU modules (CMODs)
2	Lever release latch
3	5-2M designation

See also:

- "CMOD Internal Components" on page 16
- "Sun Server X2-8 Chassis Overview" on page 12
- "Sun Server X2-8 Subassembly Module Overview" on page 17

CMOD Internal Components

The following illustration shows the internal components of the CMOD.
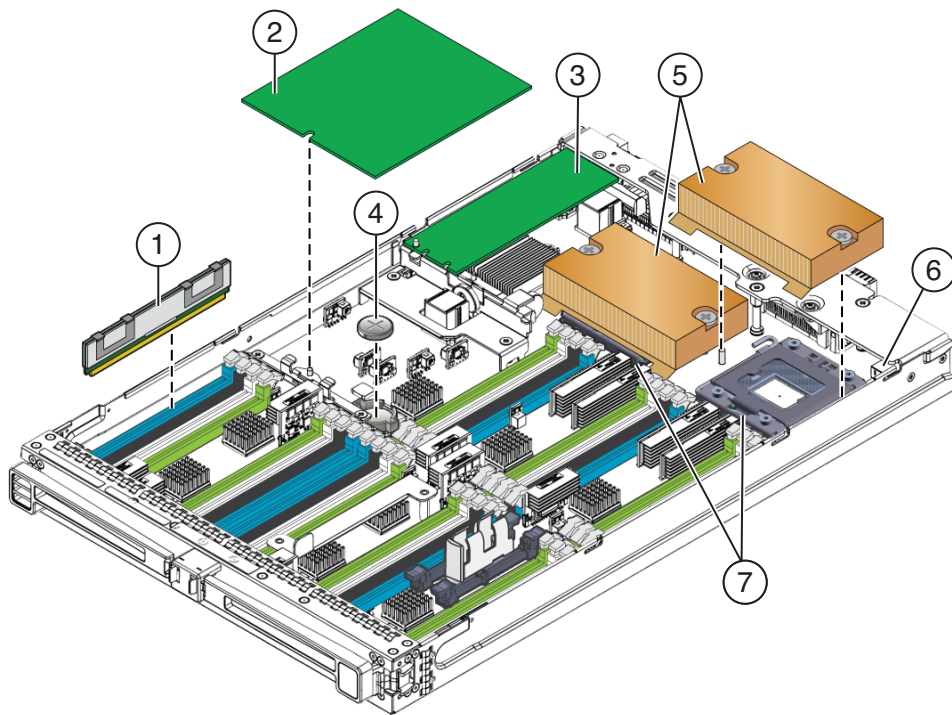
Component	Link
1	32 DIMM slots. Support for single, dual, or quad-rank 4, 8, 16, and 32 GB DDR3 low voltage ECC RDIMMs.	"DIMM Overview" on page 27
2	SAS-2 RAID expansion module (REM)	"RAID Expansion Module Overview" on page 28
3	Fabric expansion module (FEM) (FEM 0 only)	"Fabric Expansion Module Overview" on page 29

Component	Link
4 System battery	"How to Replace the CMOD Battery (CRU)" on page 90
5 Heat sinks (2)	"CPU and Heatsink Assembly Overview" on page 31
6 Internal USB (partially obstructed)	"Internal USB Port Overview" on page 33
7 Two Intel Xeon X75xx CPU sockets (up to 130W TDP SKU per CPU)	"CPU and Heatsink Assembly Overview" on page 31

CMOD Connectivity

CMOD Connectivity
USB connectivity: ■ One internal USB port for flash memory stick (connects to server storage fabric)   ■ One through the server midplane to SP module KVM   PCIe connectivity: ■ Interconnect to two 8x PCIe (2.0) ExpressModules (PCIe EM)   ■ Interconnect to PCIe (2.0) network express module (NEM) with two on-board 10 GbE 10/100/1000BaseT ports   GigabitEthernet connectivity: Interconnect to network express module (NEM) with four GigabitEthernet ports

Sun Server X2-8 Subassembly Module Overview

The subassembly module (SAM) resides inside the chassis and contains the midplane on the internal front-facing side of the SAM and the back side server components on the external rear-facing side of the SAM.
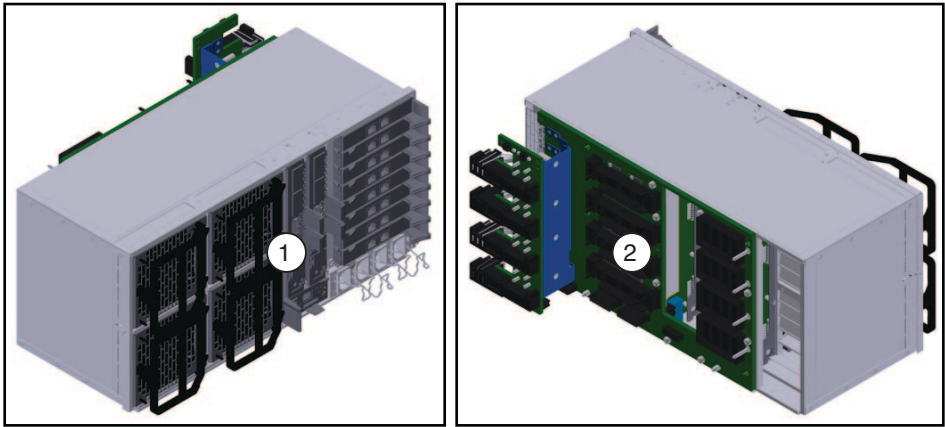
Legend	
1	SAM (external) rear-facing side showing back side components
2	SAM (internal) front-facing side showing midplane board

The SAM provides the interconnect between the AC power input lines and the power supply. It also provides the midplane interconnect between the back-end components (EMs, NEMs, and SP) and the front-side components (hard drives and CPU modules). Additionally, the SAM contains the cooling system for the CPU modules (CMODs). Cooling to the EMs, NEMs, and the SP module is provided by the power supply fans.

Note – The SAM is designated as a field-replaceable unit (FRU).
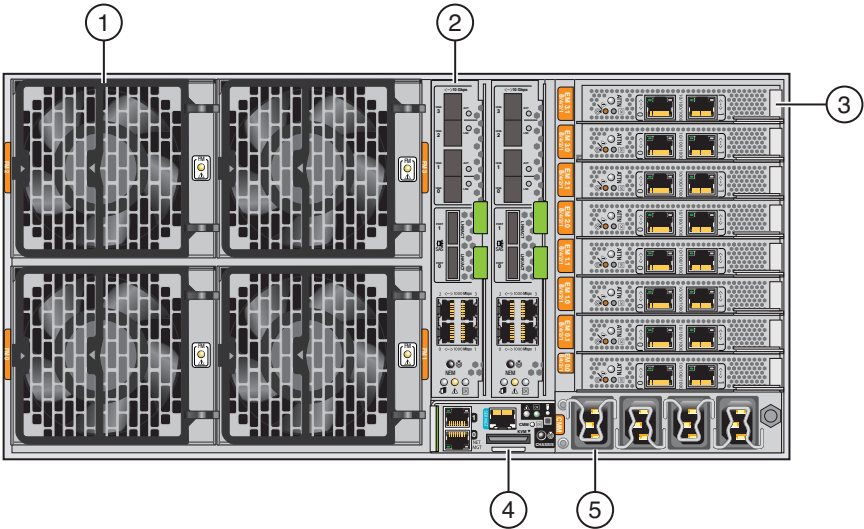
Item	Description	Overview
1	Four hot-pluggable fan modules (FMs) controlled by two fan module controller boards (FBs) provide chassis cooling capability for up to 800W per CMOD (front-to-back air flow).	"Fan Module Overview" on page 33
2	Two hot-pluggable network express modules (NEMs) with four 10/100/1000Base-T Ethernet ports (per NEM), four 10 GigabitEthernet SFP+: SR, LR, LRM, Twin-ax (per NEM), and two (unsupported) 4x mini SAS connectors (6.0 Gb/s, 3.0 Gb/s, 1.5 Gb/s) (per NEM).	"Network Express Module Overview" on page 34
3	Eight hot-pluggable Constellation PCIe ExpressModules with 8x PCIe 5 GT/s or 2.5 GT/s.	"PCIe ExpressModule Overview" on page 38
4	A hot-pluggable SP module with two 10/100/1000Base-T chassis management ports, a serial console port (RJ-45), and a UCP (universal connector port) for a multiport cable that provides KVMS access.	"Service Processor (SP) Module Overview" on page 36
5	AC power block. Four AC power connectors with latching mechanisms.	"AC Power Block Overview" on page 39
	Midplane interconnect board (not shown)	"Midplane Overview" on page 41

See also:

Component Overviews

This section provides overviews for the server chassis, CMOD, and subassembly module components.

Note – Some components might not be supported initially. For the most up-to-date information about supported hardware, refer to *Sun Server X2-8 (formerly Sun Fire X4800 M2) Product Notes*.

Overviews	
Chassis components	"Front Panel Indicator Module Overview" on page 21 "Power Supply Overview" on page 22 "Hard Drive and XL Bracket Assembly Overview" on page 24 "Drive Backplane Overview" on page 25
CPU module (CMOD) components	"DIMM Overview" on page 27 "RAID Expansion Module Overview" on page 28 "Fabric Expansion Module Overview" on page 29 "System Battery Overview" on page 30 "CPU and Heatsink Assembly Overview" on page 31 "Internal USB Port Overview" on page 33
Subassembly module components	"Fan Module Overview" on page 33 "Network Express Module Overview" on page 34 "Service Processor (SP) Module Overview" on page 36 "SP Module Multiport Cable Overview" on page 37 "PCIe ExpressModule Overview" on page 38 "AC Power Block Overview" on page 39 "Fan Module Controller Board (FB) Overview" on page 40 "Midplane Overview" on page 41
Removal and installation levers	"Component Removal and Installation Levers" on page 42

Front Panel Indicator Module Overview

The indicator module is located on the front panel of the chassis. Use the front panel to power on and off the server and discern the server operating status.
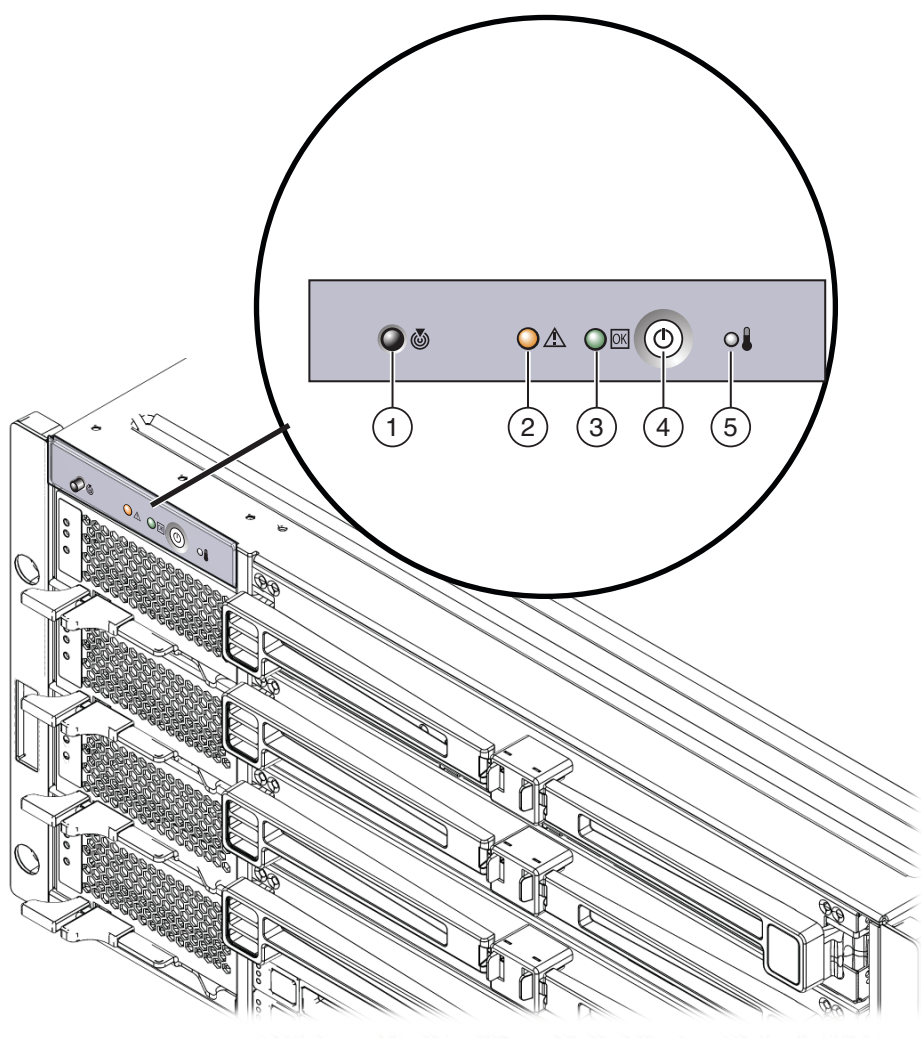
Legend

1	Locate LED button	2	Service Action Required (fault) LED

Legend			
3	OK (power state) LED	4	Power button
5	Over-temperature LED		

See also:

- "Sun Server X2-8 Chassis Overview" on page 12
- "Front Indicator Panel LEDs" on page 183
- "Power and Reset" on page 45

Power Supply Overview

The Sun Server X2-8 chassis has the capability for up to four 2000W hot-pluggable, load-sharing power supplies. This configuration provides a 2+2 power redundancy. The server requires two power supplies to operate. The power supply fans assist in the cooling of the PCIe EMs and the NEMs. Airflow through power supplies is front-to-back. All four power supples should be present for proper I/O cooling.

Each power supply has an LED panel that reports on its status and a locking lever that assists in the removal and installation of the component. If a power supply is not present, the front and back Service Action Required LEDs will light. The AC power inlet connectors for the power supplies are located on the back side of the server on the subassembly module on the AC power block. When four power supplies are installed in the server (recommended configuration), the AC power must come from two separate and distinct circuits.

Note – Power supplies are designated as customer-replaceable units (CRU).
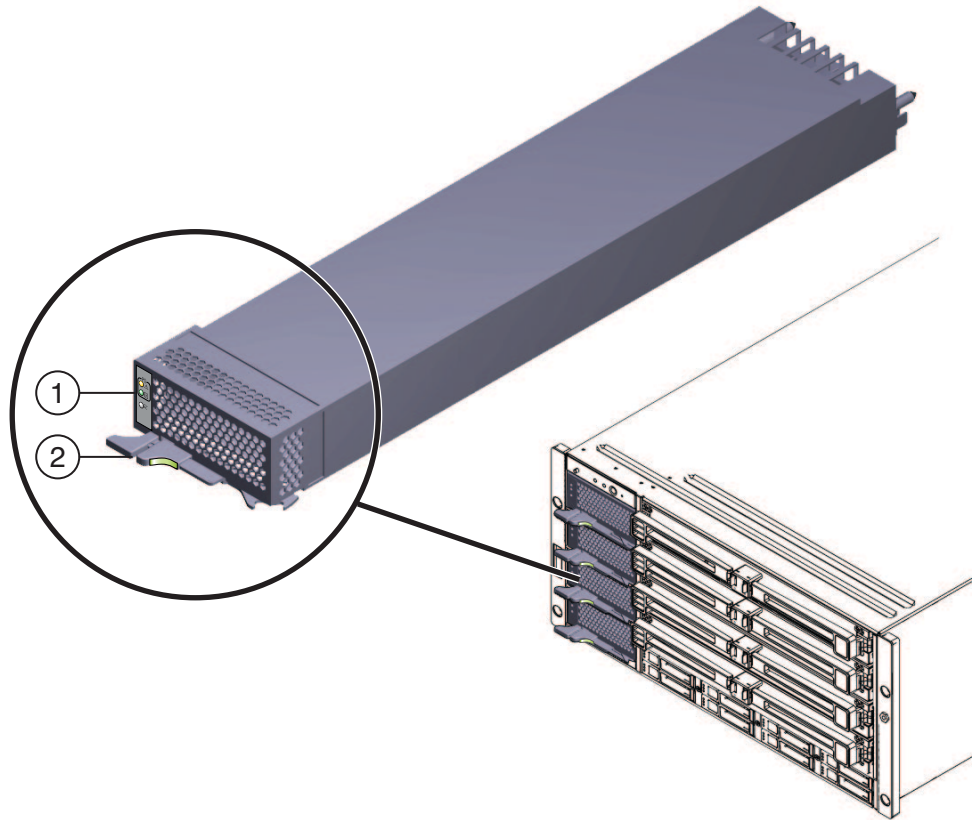
Legend			
1	LED indicator panel	2	Locking lever

See also:

- "Sun Server X2-8 Chassis Overview" on page 12
- "Front Panel Power Supply LED's" on page 186
- "AC Power Block Overview" on page 39
- "Removing and Installing a Power Supply (CRU)" on page 59
- "CRU and FRU List" on page 52

Hard Drive and XL Bracket Assembly Overview

Note – For the most up-to-date information about hardware and software support, refer to *Sun Server X2-8 (formerly Sun Fire X4800 M2) Product Notes*.

The hard drive and bracket assembly is located in the chassis at the front of the server. The Sun Server X2-8 drive bay can support up to eight SAS-2 drives. Each drive must be mounted in an XL bracket (XL brackets are longer than standard size HD brackets). The XL bracket has a status indicator panel and lever that assists in the removal of the drive. To maintain the integrity of the server cooling system, drive slots not occupied by a HD *must* be populated with a hard drive filler. The base Sun Server X2-8 system supplies adequate power for maximum drive configurations.

Note – Drives are designated as customer-replaceable units (CRU).
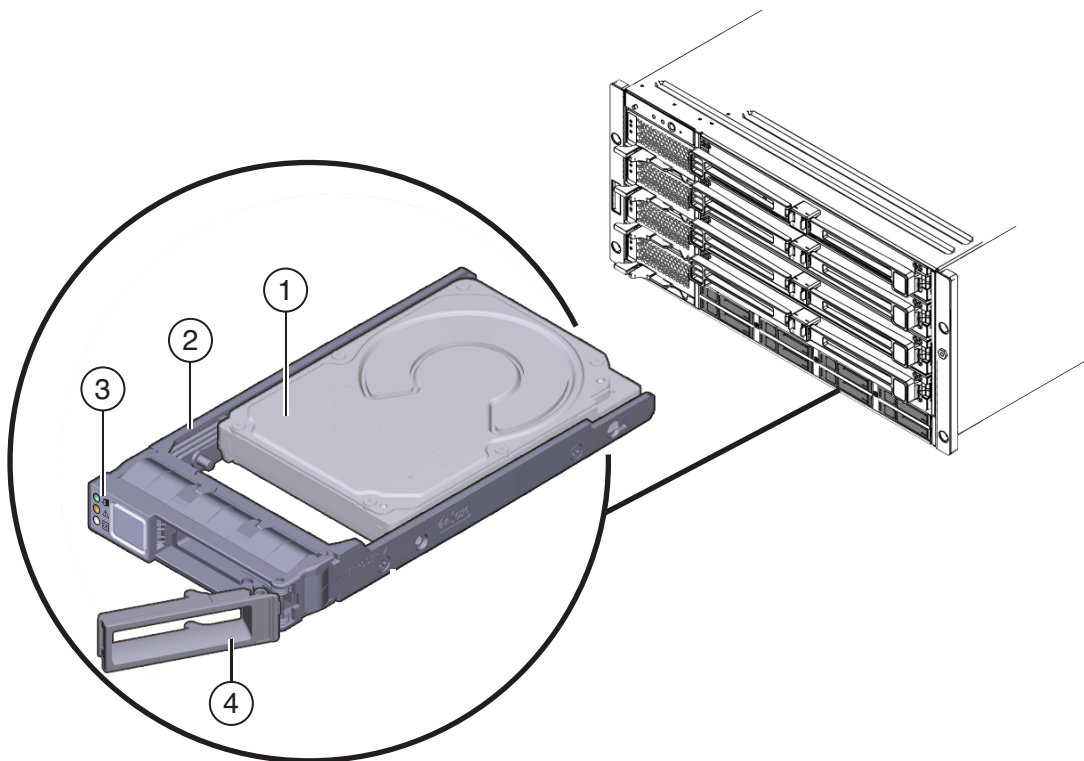
Legend			
1	Hard drive	2	Drive bracket
3	Indicator panel	4	Lever

See also:

Drive Backplane Overview

The Sun Server X2-8 drive backplane supplies signal interconnects from the drive bay to the midplane and ultimately to the CPU module (CMOD) and the back-side server components.

Note – The drive backplane is designated as a field-replaceable units (FRU).
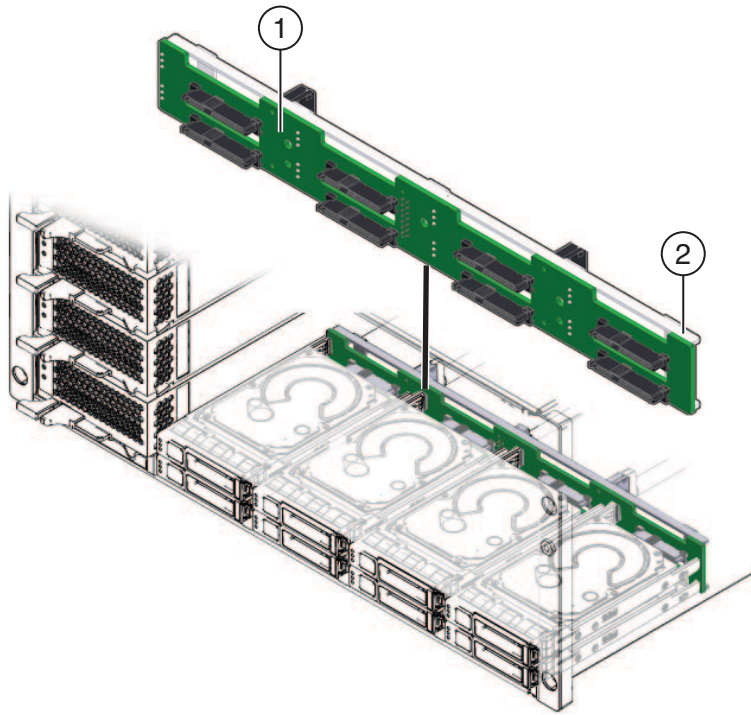
Legend	
1	Drive backplane board
2	Drive backplane support bracket

See also:

- "Sun Server X2-8 Chassis Overview" on page 12
- "Midplane Overview" on page 41
- "Replacing the Hard Drive Backplane (FRU)" on page 72
- "CRU and FRU List" on page 52

DIMM Overview

Note – For the most up-to-date information regarding hardware and software support, refer to *Sun Server X2-8 (formerly Sun Fire X4800 M2) Product Notes*.

Each CPU module (CMOD) can support up to 32 DIMMs in two possible configurations: 16 or 32 total DIMMs. Supported DIMMs include single-, dual-, or quad-rank 4 GB, 8 GB, 16 GB and 32 GB JEDEC-standard, DDR3 low voltage ECC RDIMMs.

For specific details on supported DIMM configurations, refer to .
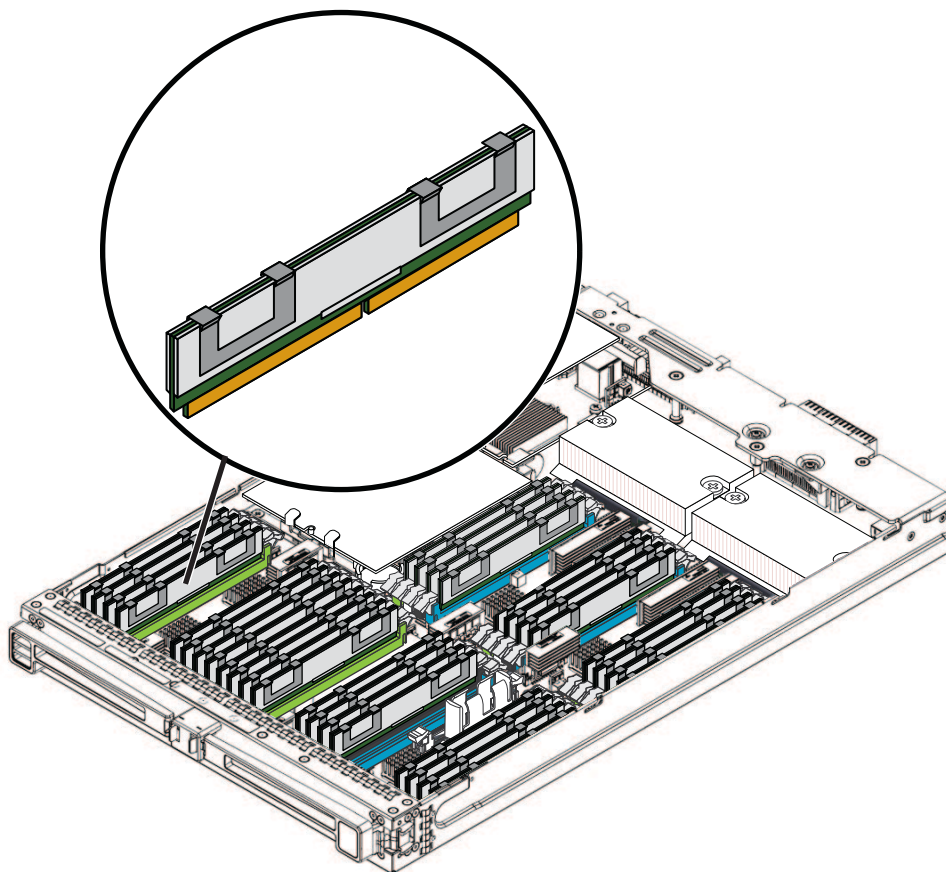
Note – DIMMs are designated as a customer-replaceable unit (CRU).

See also:

- "About Sun Server X2-8 CPU Modules and CMOD Filler Modules" on page 13
- "DIMM Population Rules" on page 97
- "Removing and Installing DIMMs (CRU)" on page 93
- "CRU and FRU List" on page 52

RAID Expansion Module Overview

Note – Some components or functions might not be supported initially. For the most up-to-date information about supported hardware, refer to *Sun Server X2-8 (formerly Sun Fire X4800 M2) Product Notes*.

To connect to the server storage fabric, the Sun Server X2-8 on-board storage capabilities include support for a battery-backed 6-gigabit-per-second SAS-2 RAID expansion module (REM) HBA in CPU module 0 (CMOD 0).

Note – The REM is designated as a customer-replaceable unit (CRU).
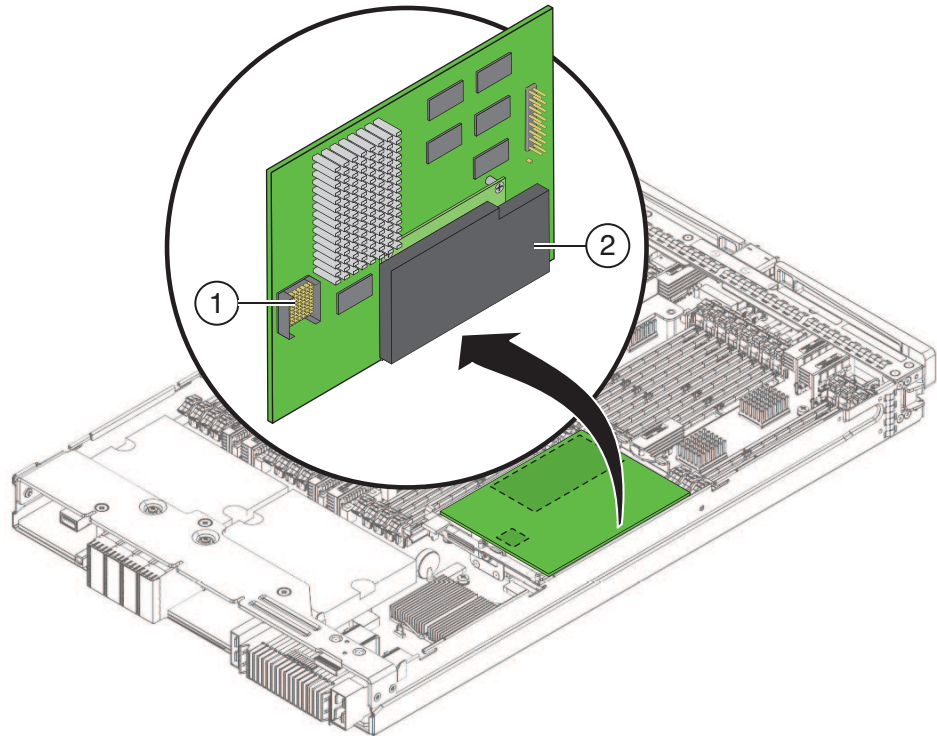
Legend	
1	Connector
2	Battery

See also:

- "About Sun Server X2-8 CPU Modules and CMOD Filler Modules" on page 13
- "Removing and Installing a RAID Expansion Module (CRU)" on page 100
- "CRU and FRU List" on page 52

Fabric Expansion Module Overview

Note – Some components or functions might not be supported initially. For the most up-to-date information about supported hardware, refer to *Sun Server X2-8 (formerly Sun Fire X4800 M2) Product Notes*.

The Sun Server X2-8 CPU modules contain the capability to support one fabric expansion module (FEM) in slot 0 *only*.

Note – The FEM is designated as a customer-replaceable unit (CRU).
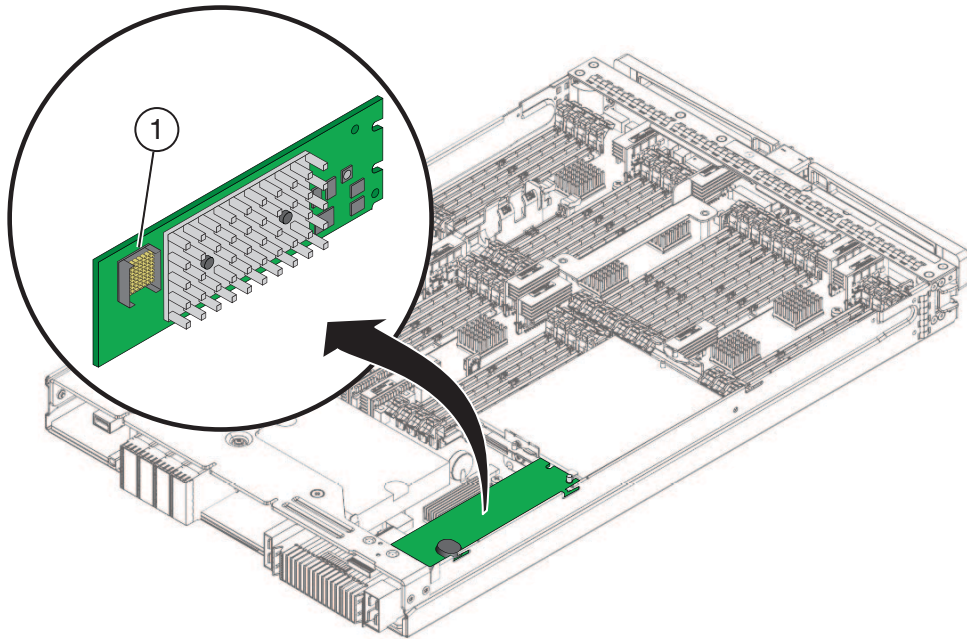
See also:

- "About Sun Server X2-8 CPU Modules and CMOD Filler Modules" on page 13
- "Removing and Installing a Fabric Expansion Module (CRU)" on page 102
- "CRU and FRU List" on page 52

System Battery Overview

The system battery is located on the motherboard. If a REM is installed, you must remove to access the battery. The battery type is CR2032.
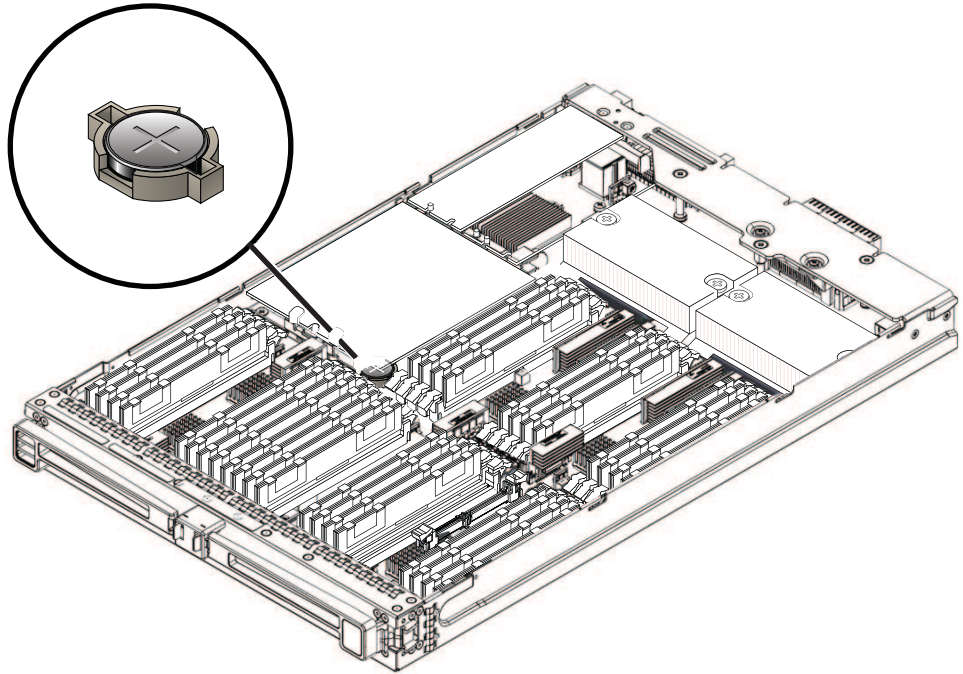
CPU and Heatsink Assembly Overview

Each CPU module (CMOD) for the Sun Server X2-8 can contain either two 8-core or two 6-core Intel Xeon model CPUs. Each CPU is paired with a passive heatsink. The CPU and heatsink assemblies are cooled by a front-to-back airflow provided by the four fan modules (FM) in the subassembly module (SAM) on the back side of the server.
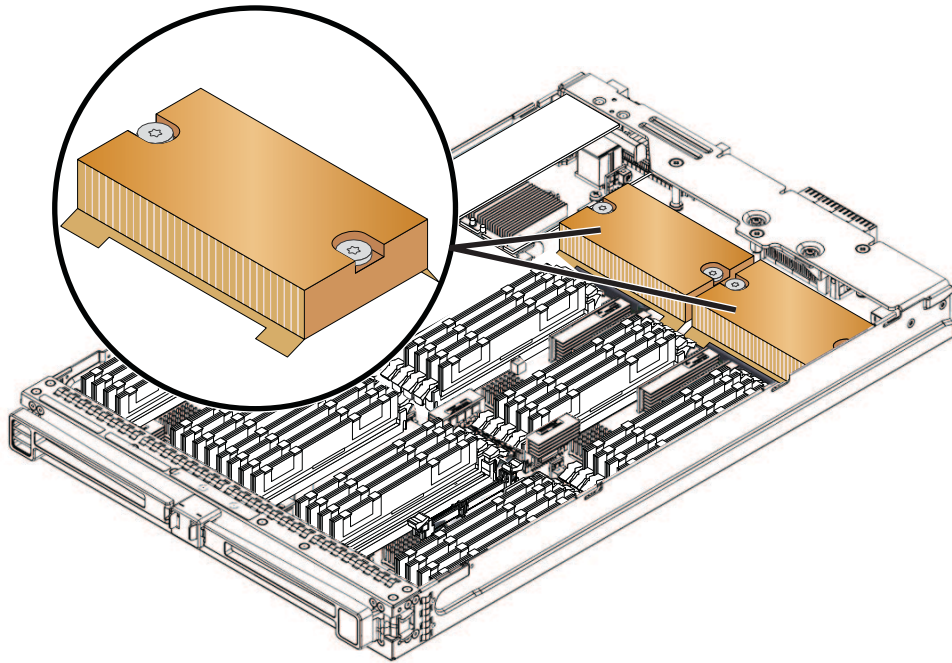
Supported Intel Xeon CPUs
Intel Xeon X7560 (2.26 GHz, 8 cores, 130 W) processor
Intel Xeon X7550 (2.00 GHz, 8 cores, 130 W) processor
Intel Xeon E7540 (2.00 GHz, 6 cores, 105 W) processor
Intel Xeon X7542 (2.6 GHz, 6 cores) processor

Note – The CPU and heatsink assembly is a field-replaceable unit (FRU).

See also:

- "About Sun Server X2-8 CPU Modules and CMOD Filler Modules" on page 13
- "Replacing a CPU and Heatsink Assembly (FRU)" on page 105
- "CRU and FRU List" on page 52

Internal USB Port Overview

The Sun Server X2-8 CPU module (CMOD) has an internal USB port that you can use to boot a supported operating system (supported for CMOD 0/BL 0 only). The port is located on the back of the CMOD.
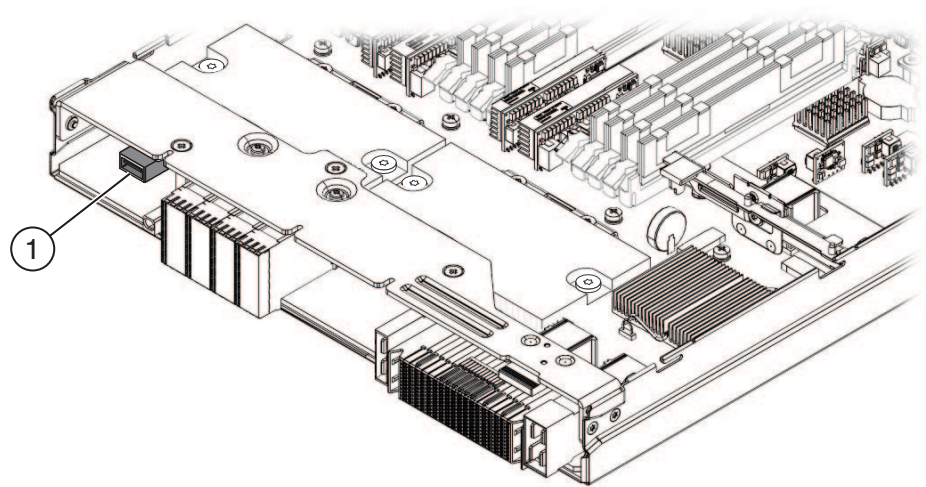
Legend	
1	Internal USB port

See also: "About Sun Server X2-8 CPU Modules and CMOD Filler Modules" on page 13

Fan Module Overview

The four fan modules (FMs) provide cooling to the CPU modules (CMODs) by pulling air out of the server. The FMs are hot-pluggable and provide N+1 redundancy. Additional server cooling is performed by the power supply fans.

Note – FMs are designated as customer-replaceable units (CRU).
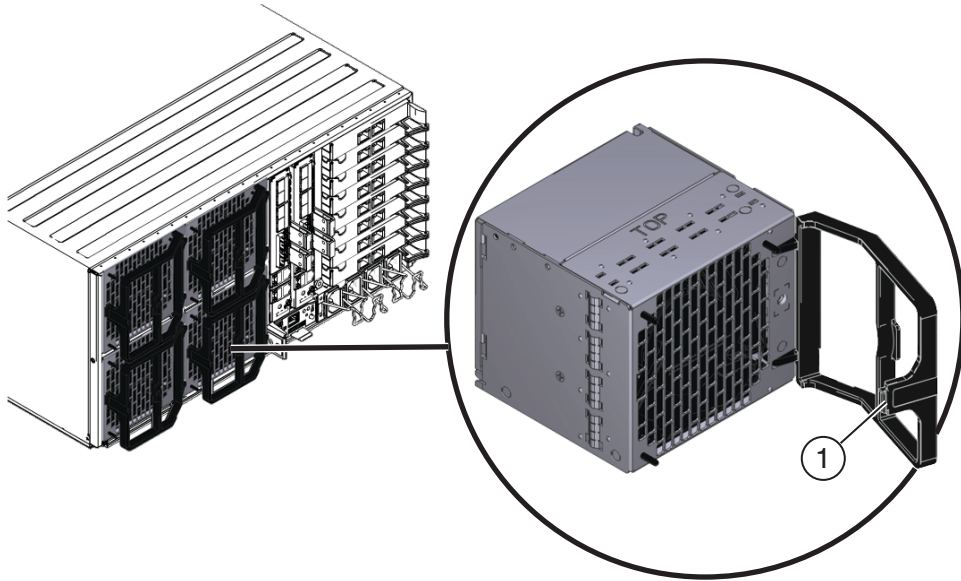
Legend	
1	Handle and locking latch

See also:

- "Sun Server X2-8 Subassembly Module Overview" on page 17
- "Removing and Installing a Fan Module (CRU)" on page 112
- "CRU and FRU List" on page 52

Network Express Module Overview

Note – Some components or functions might not be supported initially. For the most up-to-date information about supported hardware, refer to *Sun Server X2-8 (formerly Sun Fire X4800 M2) Product Notes*.

The network express modules (NEMs) provide server network connectivity options. In addition to the four 10 GigabitEthernet ports and the four 10/100/1000Base-T ports, the NEMs have a indicator panel.

Note – network express modules are designated as customer-replaceable units (CRU).
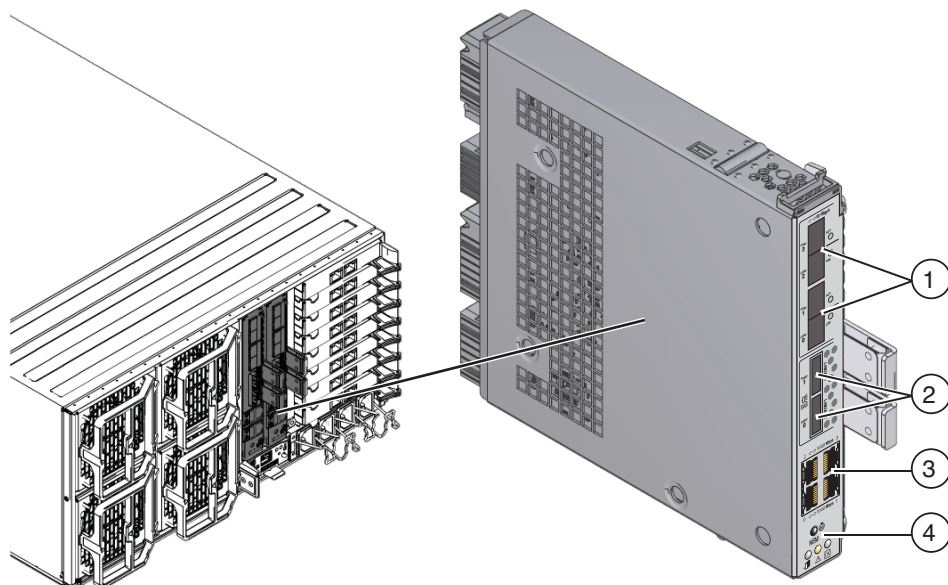
Legend

1   10 GigabitEthernet ports (4)

2   Mini SAS-2 ports (2) (not supported)

3   10/100/1000Base-T Ethernet ports (4)

4   Indicator panel

See also:

- "Sun Server X2-8 Subassembly Module Overview" on page 17
- "Removing and Installing a NEM or a NEM Filler (CRU)" on page 120
- "CRU and FRU List" on page 52

Service Processor (SP) Module Overview

The service processor (SP) module ensures lights-out manageability of the entire server by providing an aggregate point for monitoring server components using Oracle Integrated Lights Out Management (ILOM), which resides on the SP module. The SP module reduces cabling by providing a single management connection panel that includes 10/100/1000Base-T management (NET MGT) port, an RJ-45 serial port, and a universal connector port (UCP) for the multiport cable. The SP module also contains chassis status LEDs and has 1280 x 1024 video resolution (maximum) with 8 MB of video memory.

Note – The SP module is designated as a customer-replaceable units (CRU).
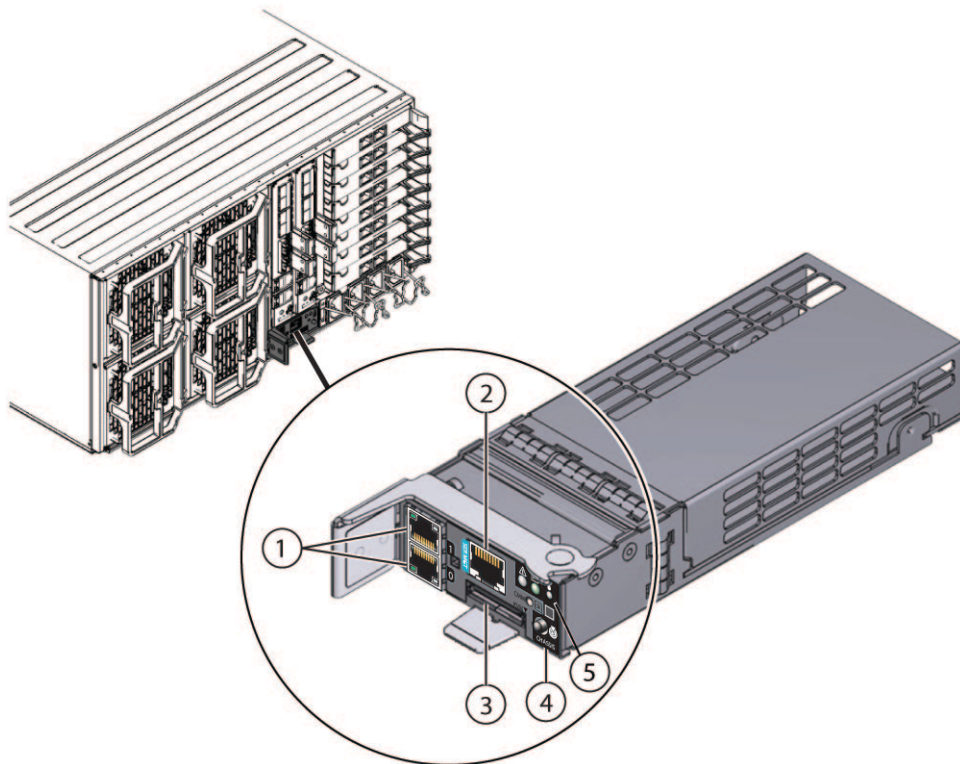
Legend			
1	10/100/1000Base-T NET MGT ports (2) (NET MGT port 1 not used)	2	RJ-45 (serial) SER MGT console port
3	Universal connector port (UCP)	4	Chassis indicator panel
5	SP status indicator panel		

See also:

- "Sun Server X2-8 Subassembly Module Overview" on page 17
- "Removing and Installing the Service Processor Module (CRU)" on page 133
- "SP Module Multiport Cable Overview" on page 37
- "CRU and FRU List" on page 52

SP Module Multiport Cable Overview

The multiport cable connects to the UCP (universal connector port) on the SP module at the rear of the server. The cable enables local access to Oracle ILOM.
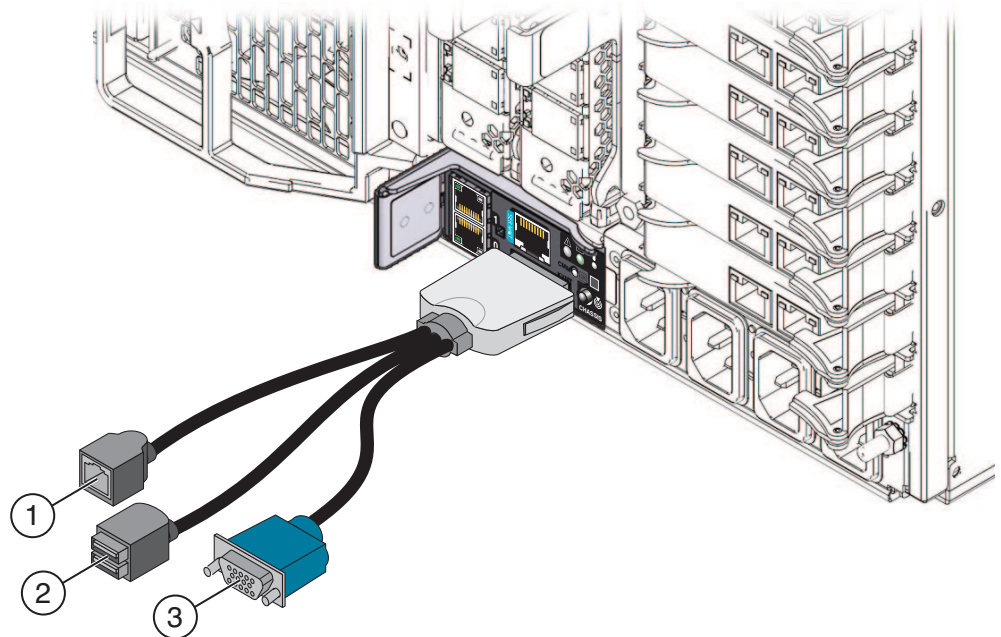
Legend	
1	RJ-45 serial port
2	USB ports (2)
3	Video port

See also:

- "Sun Server X2-8 Subassembly Module Overview" on page 17
- "Service Processor (SP) Module Overview" on page 36

PCIe ExpressModule Overview

Note – Some components or functions might not be supported initially. For the most up-to-date information about supported hardware, refer to *Sun Server X2-8 (formerly Sun Fire X4800 M2) Product Notes*.

The Sun Server X2-8 has eight PCIe Express Module (PCIe EM) slots. The PCIe EMs have a lever mechanism that is used for removal and installation. The lever is held in place by a release latch.

Note – PCIe EMs are designated as customer-replaceable units (CRU).

Note – The PCIe EMs shown in this topic might differ from the model supplied with your server.
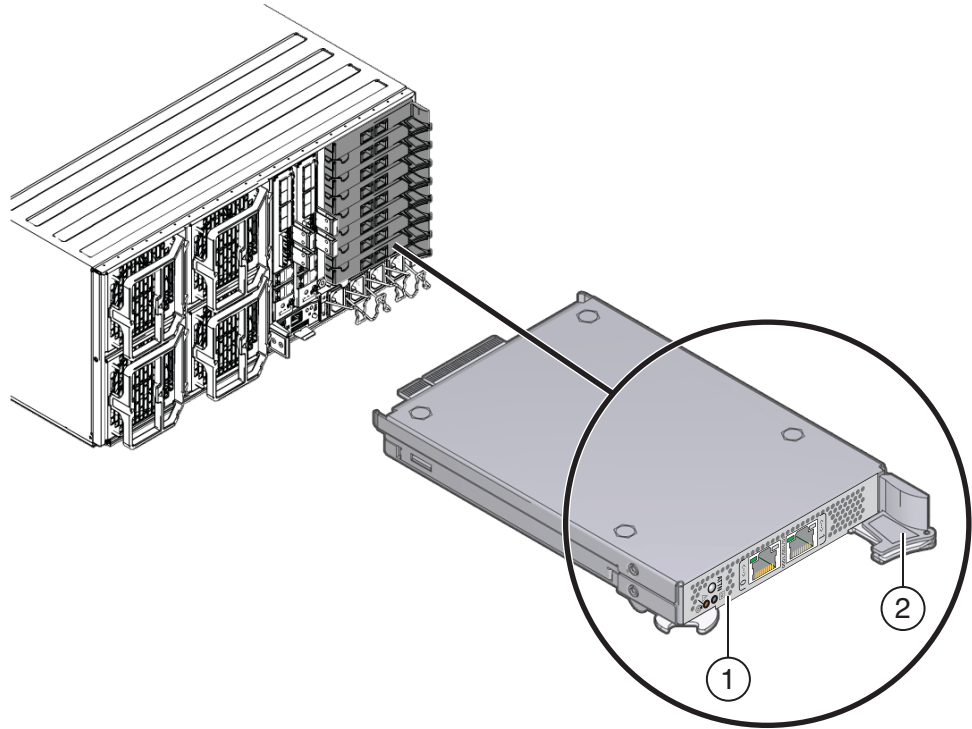
Legend	
1	Indicator panel
2	Locking lever and release latch

See also:

- "Sun Server X2-8 Subassembly Module Overview" on page 17
- "Removing and Installing a PCIe EM (CRU)" on page 125
- "CRU and FRU List" on page 52

AC Power Block Overview
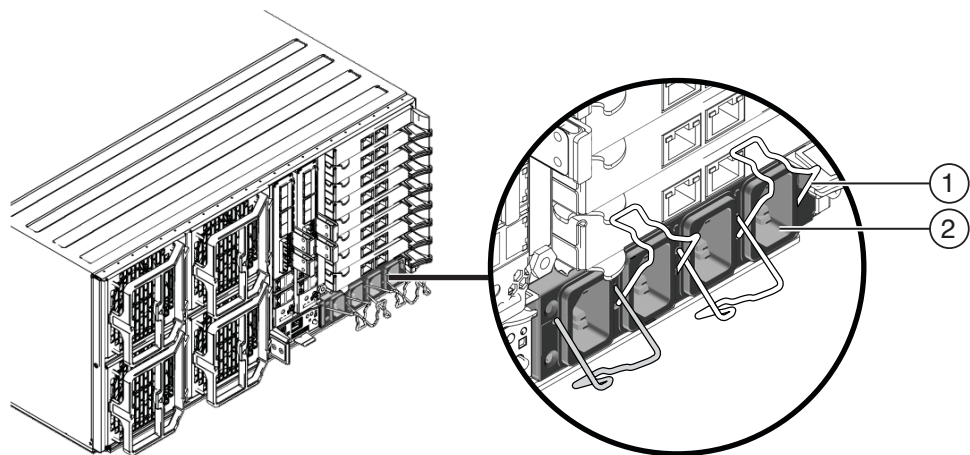
Legend	
1	Retaining clip (4)
2	AC power inlet (4)

Each AC input connector supplies power to one of the power supply slots at the front of the machine. The input connectors are designated from left to right. The left-most connector is designated as 0 and supplies power to power supply slot 0 (the bottom slot at the front of the server). The right most connector is designated as 3 and supplies power to power supply slot 3 (the top slot at the front of the server). The following table shows the relationship between the power supply slots and AC input connectors.

Power slot (bottom to top)	PS 0	PS 1	PS 2	PS 3
AC input connector (left to right)	AC 0	AC 1	AC 2	AC 3

See also:

- "Sun Server X2-8 Subassembly Module Overview" on page 17
- "Power Supply Overview" on page 22

Fan Module Controller Board (FB) Overview

The server contains two fan module controller boards. Each FB controls two fan modules (FMs). The fan module controller boards are backside server components and are located in the SAM behind the fan modules.

Note – The FBs are designated as field-replaceable units (FRU).
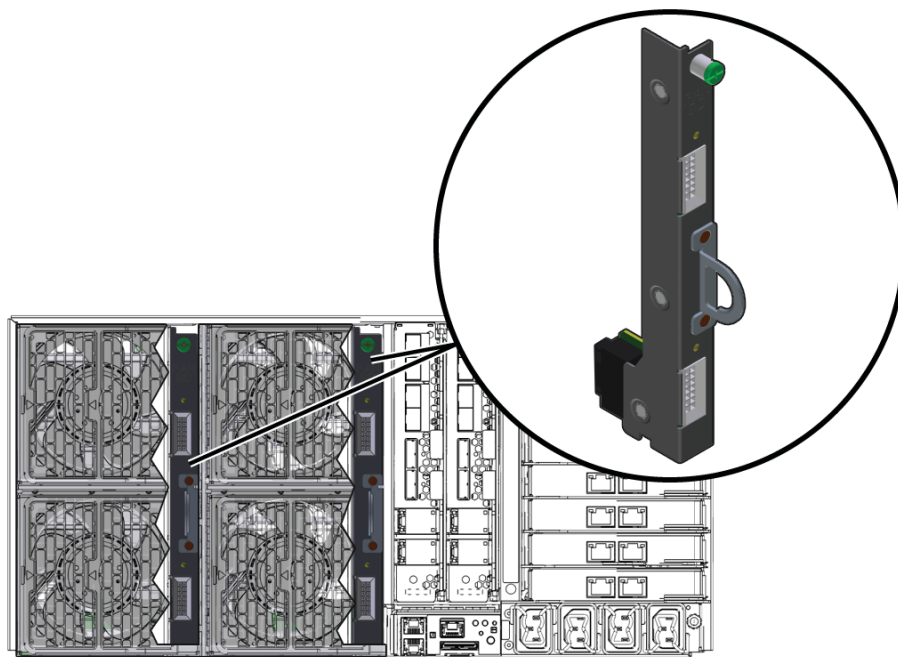
See also:

- "Sun Server X2-8 Subassembly Module Overview" on page 17
- "Fan Module Overview" on page 33
- "Replacing a Fan Module Controller Board (FRU)" on page 116.
- "CRU and FRU List" on page 52

Midplane Overview

The Sun Server X2-8 midplane resides on the internal (front-facing) side of the subassembly module (SAM) and is inaccessible unless the SAM is removed. The midplane provides power and signal interconnects between back side server components and the front-end server components. The midplane and the SAM are considered a single unit. To replace the midplane you must replace the SAM.

Note – The SAM is designated as a field-replaceable unit (FRU).
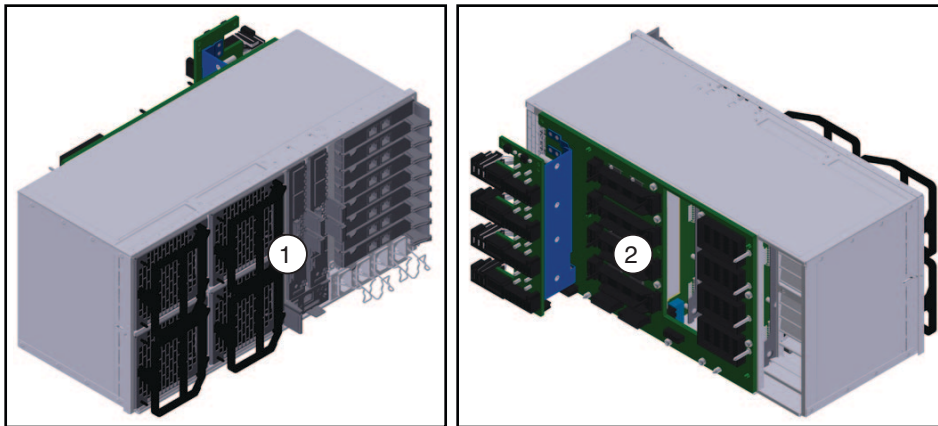
Legend

1	Rear side (external) of SAM showing the back-end server components.
2	Front side (internal) of SAM showing the midplane interconnect board.

See also:

- "Sun Server X2-8 Subassembly Module Overview" on page 17
- "CRU and FRU List" on page 52

Component Removal and Installation Levers

Many of the components in the Sun Server X2-8 use installation and removal levers. The levers assist in the removal of components by providing enough force to disengage the component from an internal connector. The levers also provide enough component server clearance to allow for easy removal by hand.

The levers assist in the installation of components by providing an evenly distributed amount of force to ensure proper engagement between the component connector and an internal connector.

The leverage is achieved through the use of a pawl on the end of the lever. For a pry point, the pawl needs to engage a slot in the sidewall. The following illustration shows an example of one type of lever and pawl used with the server.
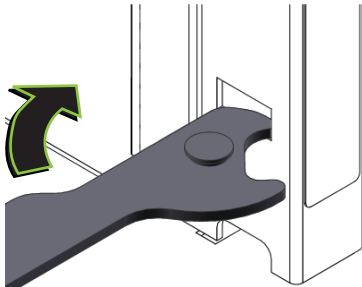
Power and Reset

This section contains the following power-related topics for the Sun Server X2-8:

Power Modes

The Sun Server X2-8 has two power modes, *full power mode* and *standby power mode*.

Full power mode is the normal operational mode for the server. When the server enters full power mode, power is supplied to all the server components, the server boots, and the operating system (OS) functions. You achieve full power mode by pressing the recessed Power button on the upper left-hand corner on the front of the server when the server is in standby power mode. Once the server is operating in full power mode, the Power OK LED is on continuously (does *not* blink).

Standby power is a non-operating mode, where minimum power is supplied to the components that are required to run the SP, but the OS is not booted or started.

To enter standby power mode, connect the server to an AC supply using the AC power cords, but do *not* press the recessed front panel Power button on the upper left-hand corner of the front of the server. You can also enter standby power mode by powering off the server (from an operational mode) using one of the power-off methods.

In standby power mode, the front panel Power LED blinks quickly while the SP is booting, and slowly when the SP has booted. The OK LED on each of the CPU modules (CMODs) blinks while the SP is initializing the CMOD, and remains on when it is done.

See also:

- "Controlling Server Power Remotely" on page 48

Power Button and Power OK LED
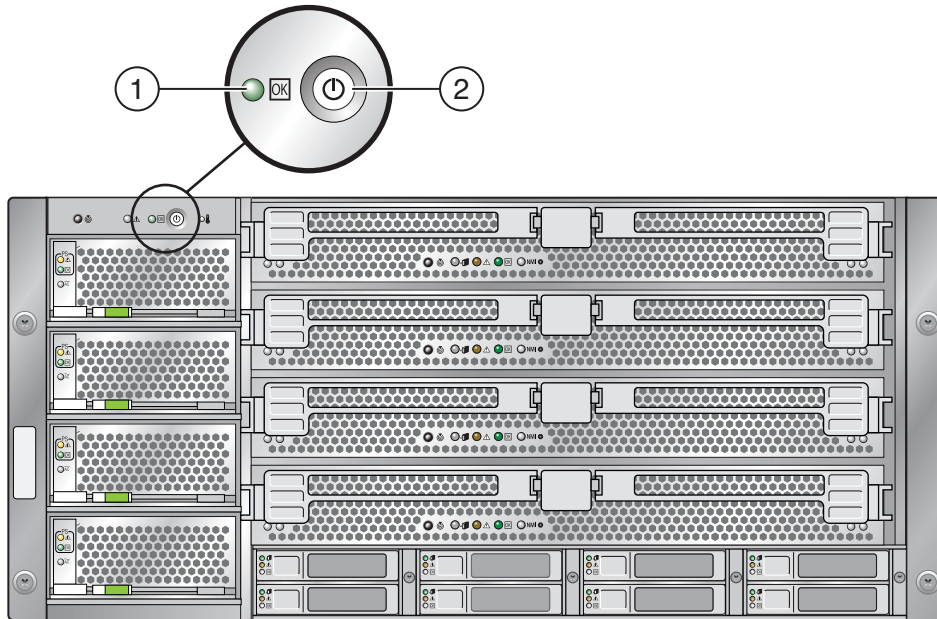
Legend

1	Power OK LED
2	Power button

See also:

- "Front Panel Power Supply LED's" on page 186
- "How to Power On the Server" on page 46
- "How to Power Off the Server" on page 47

▼ How to Power On the Server

This procedure describes how to power on the server from standby power mode to full power mode.

1   Verify that the server power supplies are connected to an AC power source and that the server is in standby power mode.

When the server is in standby power mode, the Power OK LED on the front panel blinks.

2   To power on the server to full power mode, press the recessed Power button in the upper left-hand corner of the front panel.

This action supplies full power to the server. The server boots to the operating system.

See Also
- "Power Button and Power OK LED" on page 46
- "Power Modes" on page 45
- "Controlling Server Power Remotely" on page 48
- "How to Power Off the Server" on page 47

▼ How to Power Off the Server

1   To gracefully power off the server from full power mode to standby power mode, use one of the following methods:

- Use the operating system–specific shutdown procedure for the OS running on your server. Most operating systems have a shutdown procedure. This shutdown procedure provides a graceful shutdown of the OS, and it should be your first choice for powering off the server.

- Use the Oracle ILOM web interface or command-line interface. See "Controlling Server Power Remotely" on page 48.

- To gracefully power off the server from main power mode to standby power mode using the Power button, quickly press and release the recessed Power button in the upper left-hand corner of the front panel.

> ⚠ **Caution** – Potential data loss. Pressing and releasing the Power button causes Advanced Configuration and Power Interface (ACPI)–enabled operating systems to perform an orderly shutdown of the operating system. Servers *not* running ACPI–enabled operating systems perform an emergency shut down to standby power mode.

When the main power is off and the server is in standby power mode, the Power OK LED on the front panel blinks, indicating that standby power is still available.

> **Note** – When the server is in standby power mode, power is still directed to some components. To completely power off the server, you must disconnect the AC power cords from the back panel of the server.

2. **To perform an emergency shutdown of the server power, press and hold the Power button for four seconds to force main power off.**

   The server enters standby power mode.

⚠️ **Caution** – Potential data loss. Pressing and holding the Power button for four seconds performs an *immediate shutdown* of the server. The system does not prompt for confirmation, nor are you allowed to save and exit open applications.

See Also
- "Power Modes" on page 45
- "Controlling Server Power Remotely" on page 48
- "How to Power On the Server" on page 46
- "How to Prepare for Service" on page 55

Controlling Server Power Remotely

- "How to Use the Oracle ILOM Command-Line Interface to Control Power" on page 48
- "How to Use the Oracle ILOM Web Interface to Control Power" on page 49
- "How to Use IPMItool to Control Power" on page 50

▼ How to Use the Oracle ILOM Command-Line Interface to Control Power

You can access the command-line interface (CLI) remotely using SSH or locally using the serial console port and the multiport cable.

Before You Begin
- This procedure assumes that you are set up to access the server using the command-line interface (CLI). For CLI connection procedures, refer to "Communicating With Oracle ILOM and the System Console" in *Sun Server X2-8 (formerly Sun Fire X4800 M2) Installation Guide*.

- For commands and general information about the Oracle ILOM CLI, refer to *Oracle Integrated Lights Out Manager (ILOM) 3.0 Daily Management CLI Procedures Guide*, which is accessible online with the Sun Server X2-8 documentation (`http://download.oracle.com/docs/cd/E20815_01/index.html`).

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

   The CLI prompt appears.

   ```
   ->
   ```

2. **Enter one of the commands:**

   –> **start /SYS** (powers on to full power mode)

–> **stop /SYS** (gracefully powers down to standby power mode)

–> **stop –f /SYS** (immediate powers off to standby power mode)

–> **reset /SYS** (immediately reboots)

3 To exit the CLI, type:

-> **exit**

See Also
- "Preparing for Service and Operation" on page 51
- "How to Use the Oracle ILOM Web Interface to Control Power" on page 49
- "Power Modes" on page 45

▼ How to Use the Oracle ILOM Web Interface to Control Power

Before You Begin
- You need to know the IP address of the server's service processor.
- For more information about the Oracle ILOM web interface, refer to *Oracle Integrated Lights Out Manager (ILOM) 3.0 Daily Management—Web Interface Procedures Guide,* which is accessible online with the Sun Server X2-8 documentation (`http://download.oracle.com/docs/cd/E20815_01/index.html`).

1 Log in to the Oracle ILOM web interface.

The Oracle ILOM main screen appears.

2 Click the Remote Control tab.

The Remote Control submenu tabs appear.

3 Click the Remote Power Control tab.

The Remote Power Control screen appears.

4 Select a power state from the drop-down list.

Choices are Immediate Power Off, Graceful Shutdown and Power Off, Power On, Power Cycle , and Reset.

5 To exit the Oracle ILOM web interface, click the Logout button at the top of the screen.

See Also
- "Preparing for Service and Operation" on page 51
- "How to Use the Oracle ILOM Command-Line Interface to Control Power" on page 48
- "Power Modes" on page 45

▼ How to Use IPMItool to Control Power

● **For information about using SNMP and IPMI to manage your server, refer to** *Oracle Integrated Lights Out manager (ILOM) 3.0 SNMP and IPMI Procedures Guide*, **which is accessible online with the Sun Server X2-8 documentation (`http://download.oracle.com/docs/cd/E20815_01/index.html`).**

See Also
- "Preparing for Service and Operation" on page 51
- "Power Modes" on page 45

Removing and Installing Components

This section contains topics and tasks for the safe and efficient removal and installation of components in the Sun Server X2-8.

Description	Task
Preparation tasks and topics, including assessing the scope of the service task, reviewing safety information, and preparing the server for service and operation.	"Preparing for Service and Operation" on page 51
Replacement and installation tasks and topics for all customer-replaceable and field-replaceable components.	"Removal and Installation Procedures" on page 57

Preparing for Service and Operation

Use this section to assess the scope of the service or maintenance task and prepare the server for service and operation.

- "Service Task Table" on page 51
- "CRU and FRU List" on page 52
- "Hot-Plug Components" on page 53
- "Required Service Tools" on page 53
- "Important Safety Information" on page 54
- "Antistatic Precautions and Procedures" on page 54
- "How to Prepare for Service" on page 55
- "How to Prepare for Operation" on page 56

Service Task Table

The following task table provides an overview of the service sequencing instructions and links to the relevant topics and tasks.

Step	Task	Description	Topic or Task
1	Assess the scope of the task.	Understand the scope of the task by reviewing the CRU and FRU list, the list of Hot-Plug components, and the required tools.	■ "CRU and FRU List" on page 52 ■ "Hot-Plug Components" on page 53 ■ "Required Service Tools" on page 53
2	Review the important safety information.	Always review the safety and ESD procedures *before* servicing the equipment in any capacity.	■ "Important Safety Information" on page 54 ■ "Antistatic Precautions and Procedures" on page 54
3	Prepare the server for service.	Follow the routine procedures for preparing the equipment for service. This procedure is referenced at the beginning of every task.	"How to Prepare for Service" on page 55
4	Follow the component replacement or installation procedures.	The component replacement and installation procedures provide the step-by-step instructions for the safe and efficient servicing of your Sun Server X2-8.	"Removal and Installation Procedures" on page 57
5	Prepare the server for operation.	Follow the routine procedures for preparing the equipment for operation. This procedure is referenced at the end of every task.	"How to Prepare for Operation" on page 56

CRU and FRU List

The replaceable components in your Sun Server X2-8 are designated as either field-replaceable units (FRU) or customer-replaceable units (CRU). A part designated as an FRU must be replaced by an Oracle-qualified service technician. A part designated as a CRU can be replaced by a person who is not an Oracle-qualified service technician. This table lists the FRU and CRU components of the Sun Server X2-8.

Component	Designation
CPU modules (CMODs) (4 maximum)	CRU
Note – If you are replacing a CMOD with another, you must replace components on the CMOD, including the CPU and heatsink assembly, which is a FRU.	

Component	Designation
DIMM	CRU
RAID expansion module	CRU
Fabric expansion module	CRU
Power supplies (4)	CRU
Hard drive (8 maximum)	CRU
PCIe ExpressModules Gen 2 (8 maximum)	CRU
Network express module (2 maximum)	CRU
Fan modules (4)	CRU
SP module (SP)	CRU
Fan module controller board (2)	FRU
Subassembly module (SAM) and midplane	FRU
CPU and heatsink assembly	FRU

See also:

Hot-Plug Components

The following is a list of Sun Server X2-8 hot-pluggable components:

- Power supplies
- Hard drives
- fan modules
- SP module
- NEMs
- PCIe EMs

Next:

See:

Required Service Tools

The following is a list of the required tools:

- No. 1 Phillips screwdriver
- No. 2 Phillips screwdriver

■ No. 2 long Phillips screwdriver (10 inches or longer)

See also: "Service Task Table" on page 51

Important Safety Information

This section describes important safety information that you need to know prior to removing or installing parts in your Sun Fire server.

⚠️ **Caution** – Hazardous voltage present. Never attempt to run the server with the covers removed. You *must* disconnect the power supply before servicing any of the components documented in this section.

⚠️ **Caution** – Equipment damage possible. The covers must be in place for proper air flow.

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

■ Follow all Sun cautions, warnings, and instructions marked on the equipment and described in *Important Safety Information for Sun Hardware Systems*.

■ Follow all cautions, warnings, and instructions marked on the equipment and described in the *Sun Server X2-8 Safety and Compliance Guide*.

■ Ensure that the voltage and frequency of your power source match the voltage and frequency inscribed on the equipment electrical rating label.

■ Follow the electrostatic discharge safety practices as described in this document.

See also: "Antistatic Precautions and Procedures" on page 54

Antistatic Precautions and Procedures

⚠️ **Caution** – Component damage. Circuit boards and hard drives contain electronic components that are extremely sensitive to static electricity. Ordinary amounts of static electricity from clothing or the work environment can destroy the components located on these devices. Do not touch the components without antistatic precautions, especially along the connector edges.

Electrostatic discharge (ESD) can damage your processor, hard drives, expansion boards, and other components. ESD-sensitive devices, such as the motherboards, PCI cards, hard drives, and memory modules, require special handling. Always observe the following precautions before you install a system component:

- Do not remove a component from its protective packaging until you are ready to install it.
- Wear a wrist strap and attach it to the system chassis ground or to any metal part of the system before handling components or working in the interior compartment of the workstation.
- Use an antistatic mat. See "How to Use an Antistatic Mat" on page 55.

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

▼ How to Use an Antistatic Mat

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

Place static-sensitive components such as the printed circuit boards, memory modules, and CPUs on an antistatic mat. The following items can be used as an antistatic mat:

- Antistatic bag used to wrap a Sun replacement part
- Oracle antistatic mat, part number 250-1088
- A disposable antistatic mat (shipped with some replacement parts or optional system components)

2 Attach an antistatic wrist strap.

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

See Also "Service Task Table" on page 51

Next Steps "How to Prepare for Service" on page 55

▼ How to Prepare for Service

1 Review the service task table for service sequencing and important safety information. See "Service Task Table" on page 51.

2 Review the *Sun Server X2-8 (formerly Sun Fire X4800 M2) Product Notes* **document for up-to-date information about hardware-, software- and firmware-related issues.**

3 If necessary, quiesce the OS.

Note – Removal of some hot-plug components might cause disruption to network or storage access. Take the necessary precautions to prepare the OS for the inaccessibility of network communications or storage access.

4   **If necessary, place the server in standby power mode or power off the server. See "Power Modes" on page 45.**

Note – Before powering off the server to perform the removal or installation of a component, review the removal and installation procedures. Some components are hot-pluggable, and it might not be necessary to power off the server (see "Hot-Plug Components" on page 53).

Next Steps   "Removal and Installation Procedures" on page 57

▼ How to Prepare for Operation

1   **If necessary, remove any service-related cabling and devices.**

2   **Remove tools from the interior and exterior of the server, the chassis, and the rack.**
Account for all tools used to service the server.

3   **Ensure that components are properly seated and cabled and that all cables are properly routed and secured.**

4   **Ensure that server front and back air vents are not obstructed or clogged.**
Use a vacuum to remove dust and debris from the server vents and chassis.

⚠ **Caution –** Possible component damage. The use of liquids or spray cleaners within the interior of the server, the chassis, and the rack can cause component damage. Do *not* use liquids or spray cleaners to clean the interior of the server.

5   **Connect the AC power cables to the server AC power block.**
The server enters standby mode.

6   **Power on the server. See "How to Power On the Server" on page 46.**

7   **Ensure that all components power on properly.**
Use the component LEDs to verify correct operation. See "Component LED Locations and Functions" on page 182.

8   **Prepare the rack for operation.**

9   **Do the following:**

- **Check the fault status of new and replaced components. If you added a new component, check that it is not faulted. If you replaced a faulted component, check that the fault is cleared, and clear it manually if it is not. See** "Identifying and Clearing Faults" in *Oracle Integrated Lights Out Manager (ILOM) 3.0 Supplement for the Sun Server X2-8 (formerly Sun Fire X4800 M2)***.**

- **To verify and test the operation and performance of new and replaced components, use the tools and procedures described in the** *Sun Server X2-8 (formerly Sun Fire X4800 M2) Diagnostics Guide***.**

- **To update component firmware, use the firmware update procedures in the** *Oracle Integrated Lights Out Manager (ILOM) 3.0 Supplement for the Sun Server X2-8 (formerly Sun Fire X4800 M2)***.**

See Also

Removal and Installation Procedures

Chassis Components	Related Tasks and Topics
Power supplies	"Removing and Installing a Power Supply (CRU)" on page 59
Power supply designations	"Power Supply Designations" on page 59
AC power cables	"How to Remove and Install AC Power Cables" on page 63
Hard drive	"Removing and Installing a Hard Drive (CRU)" on page 64
Hard drive designations	"Hard Drive Designation" on page 64
Hard drive filler	"Removing and Installing a Hard Drive Filler" on page 69
Hard drive backplane	"Replacing the Hard Drive Backplane (FRU)" on page 72
Hard drive backplane cable routing	"Hard Drive Backplane Cable Routing and Designations" on page 72

CPU module (CMOD) and Internal Components	Related Tasks and Topics
CMOD	"Adding, Removing, and Installing a CMOD (CRU)" on page 77

CPU module (CMOD) and Internal Components	Related Tasks and Topics
CMOD rules	"CPU Module (CMOD) Designation and Population Rules" on page 85
CMOD filler	"Removing and Installing a CMOD Filler" on page 87
CMOD battery	"How to Replace the CMOD Battery (CRU)" on page 90
DIMMs	"Removing and Installing DIMMs (CRU)" on page 93
DIMM rules	"DIMM Population Rules" on page 97
RAID expansion module (REM)	"Removing and Installing a RAID Expansion Module (CRU)" on page 100
Fabric expansion module (FEM)	"Removing and Installing a Fabric Expansion Module (CRU)" on page 102
CPU and heatsink assembly	"Replacing a CPU and Heatsink Assembly (FRU)" on page 105

Subassembly Module Components	Related Tasks and Topics
Fan module (FM)	"Removing and Installing a Fan Module (CRU)" on page 112
FM designations	"Fan Module Designations" on page 112
Fan module controller board (FB)	"Replacing a Fan Module Controller Board (FRU)" on page 116
FB designations	"Fan Module Controller Board (FB) Designations" on page 117
Network express module (NEM)	"Removing and Installing a NEM or a NEM Filler (CRU)" on page 120
NEM designations and assignments	"Network Express Module Designations and Assignments" on page 120
PCIe EM	"Removing and Installing a PCIe EM (CRU)" on page 125
PCIe EM designation and population rules	"PCIe EM Designations, Slot Numbering, and Population Rules" on page 125
Service processor (SP) module	"Removing and Installing the Service Processor Module (CRU)" on page 133
Multiport cable	"Removing and Installing the Multiport Cable" on page 136
Subassembly module (SAM)	"Removing and Installing the Subassembly Module (FRU)" on page 138

Removing and Installing a Power Supply (CRU)

This section contains topics and tasks related to the removal and installation of power supplies:

- "Power Supply Designations" on page 59
- "How to Remove a Power Supply" on page 59
- "How to Install a Power Supply" on page 61
- "How to Remove and Install AC Power Cables" on page 63

Power Supply Designations

The server contains four power supplies (PS0–PS3). The power supplies are designated PS0–PS3, with PS0 residing in the bottom slot and PS3 residing in the top slot.
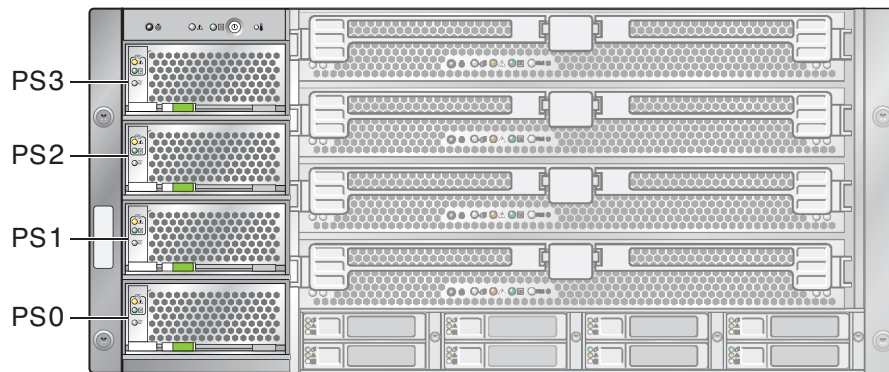
See also:

- "Power Supply Overview" on page 22
- "AC Power Block Overview" on page 39

▼ How to Remove a Power Supply

Power supplies are hot-pluggable. That is, the server does not need to be powered off to remove or replace a power supply. However, the two power supply configuration is the minimum configuration for the server (not recommended). The server *cannot* operate on one power supply.

An animation of the procedure to remove a power supply is available. See animation showing power supply installation.

Before You Begin   ■ "Sun Server X2-8 Chassis Overview" on page 12

1   Prepare the server for service. See "How to Prepare for Service" on page 55.

2   Locate the power supply that you need to remove.

If the power supply is in a fault state, the amber Service Action Required LED is on.

3   To unlock the power supply, firmly squeeze the end of the release handle.

The power supply release handle is located at the bottom of the power supply. The handle clicks when the locking mechanism is released.
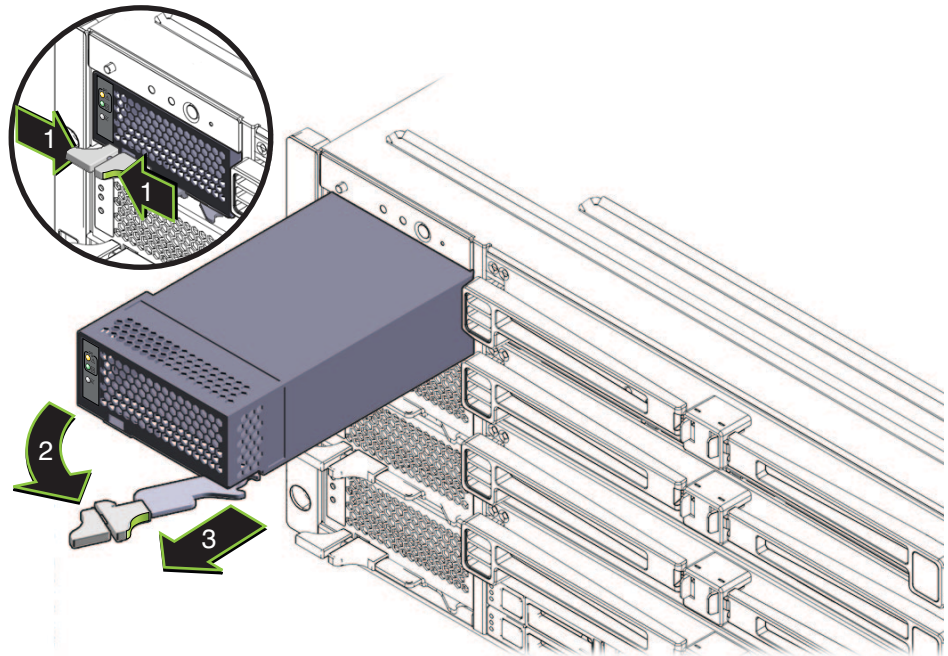
4   Pull the release handle out and to the right until the handle is fully extended.

This action removes the pawl from the locking slot.

5   Use the handle to pull the unit partially out of the slot.

Pull the unit out far enough to grab it with your hands.

6   Close the release handle by moving it to the left until it locks.

7   To remove the power supply, slowly slide it out of the slot with one hand while supporting it with the other hand.

> ⚠️ **Caution –** Airflow and temperature-related issues. Power supply slots contain an air vane that lowers when a power supply is removed from its slot. This device maintains proper airflow and cooling within the server.

See Also
- "How to Install a Power Supply" on page 61
- "Front Panel Power Supply LED's" on page 186
- "Sun Server X2-8 Chassis Overview" on page 12

▼ How to Install a Power Supply

An animation of the procedure to install a power supply is available. See animation showing power supply installation.

Before You Begin
- "Sun Server X2-8 Chassis Overview" on page 12
- "Power Supply Overview" on page 22
- "Power Supply Designations" on page 59

1 Prepare the server for service. See **"How to Prepare for Service" on page 55.**

2 Ensure that the release handle on the power supply is in its fully open position.

The handle should extend away from the power supply.

3   Position the power supply at the opening with the LEDs to the left and the release handle at the bottom.

Correct positioning ensures that the connector on the power supply is aligned with the connector on the internal backplane of the server.
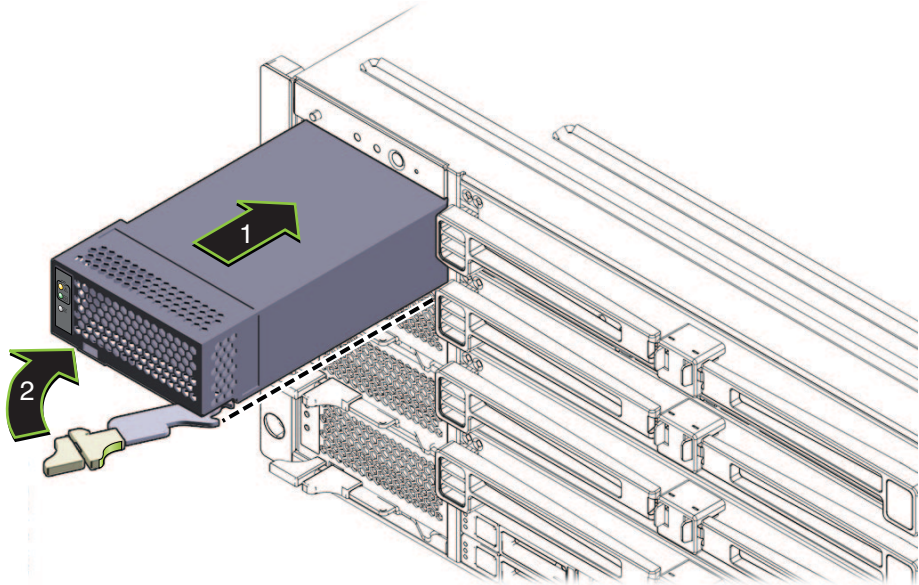
4   Slide the power supply into the opening until it stops.

Note – In this position, the power supply is *not* flush with the face of the server, and the connectors on the power supply are not engaged with the connectors on the internal midplane. Do *not* attempt to force the power supply into the server any farther.

5   Ensure that the pawl on the end of the handle is aligned with the opening on the side of the power supply slot.

6   To engage and set the power supply connector with the connector on the internal backplane, push the end of the release handle to the left.

Caution – Pinch point. When operating the lever, keep your fingers clear of the back side of the lever and the lever hinges.

This action draws the power supply into the slot and engages the connector on the power supply with the connectors on the internal backplane.

7   Continue to push the release handle until the handle locks into place under the bottom edge of the power supply.

This action produces a click when the lock engages. In this position, the power supply cannot be slid out of the server unless the release handle is unlocked and lifted first.

8   Attach and lock the AC cable to the appropriate power supply slot (see "How to Remove and Install AC Power Cables" on page 63).

Next Steps   "How to Prepare for Operation" on page 56

See Also   ■ "How to Remove a Power Supply" on page 59
             ■ "Front Panel Power Supply LED's" on page 186
             ■ "AC Power Block Overview" on page 39

▼ How to Remove and Install AC Power Cables

Your Sun Server X2-8 has an AC power block on the back panel. The block has four connectors. Each connector has a retaining clip to ensure that the AC connection is secure. Additionally, each power cable supplies power to a power supply slot. For more information, see "AC Power Block Overview" on page 39.

1   To unlock an AC power cable, push down or lift the retaining clip.

The arrangement of the clips alternates. To remove the first and third cables (counting from the left), push down on the clip. To remove the second and fourth cables, lift up the clips.
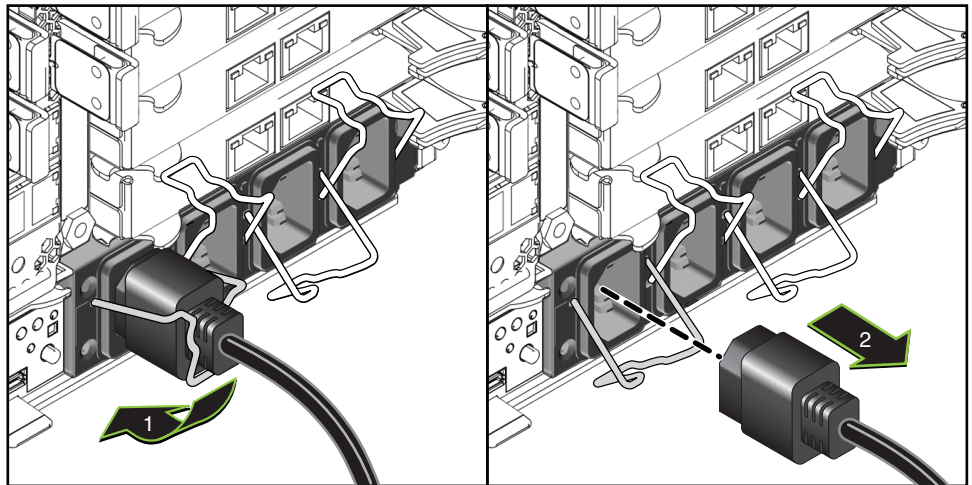
2   To remove the cable, pull it out of the socket.

3 **To install and secure an AC power cable, ensure that the retaining clip is in its open position, connect the AC cord to the AC power block, and engage the clip.**

The arrangement of the clips alternates. To engage the first and third cables (counting from the left), firmly lift up on the clip. To engage the second and fourth cables, firmly push down on the clip.
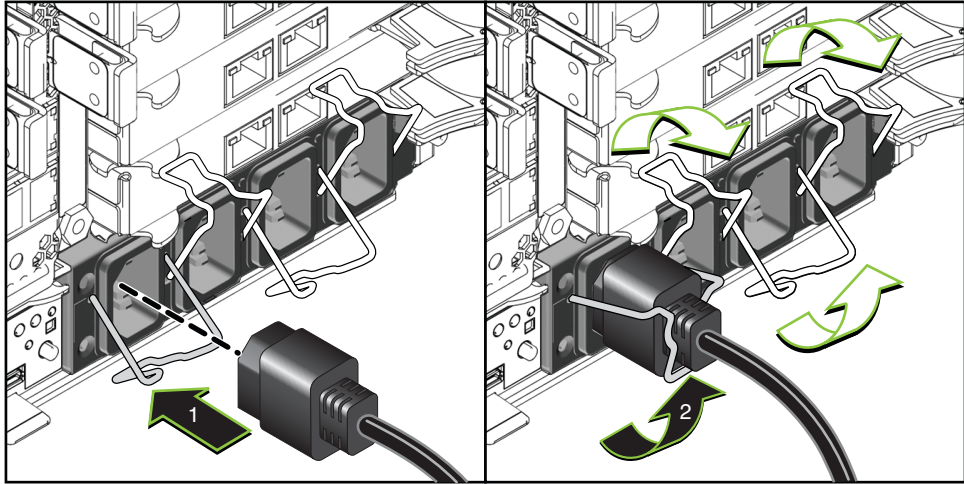
See Also ■ "How to Remove a Power Supply" on page 59
■ "How to Install a Power Supply" on page 61

Removing and Installing a Hard Drive (CRU)

This section contains topics and tasks related to the removal and installation of hard drives:

Note – The hard drives in the Sun Server X2-8 are hot-plug components.

■ "Hard Drive Designation" on page 64
■ "How to Remove a Hard Drive " on page 65
■ "How to Install a Hard Drive" on page 67

Hard Drive Designation

The Sun Server X2-8 can support up to eight hard drives. The hard drive slots are arranged along the lower front side of the server in two rows of four slots. The slots are labeled HDD 0 to HDD 7. The bottom row consists of slots HDD 0 to HDD 3. The top row consists of slots HDD 4 to HDD 7.

HDD4   HDD5   HDD6   HDD7

HDD0   HDD1   HDD2   HDD3
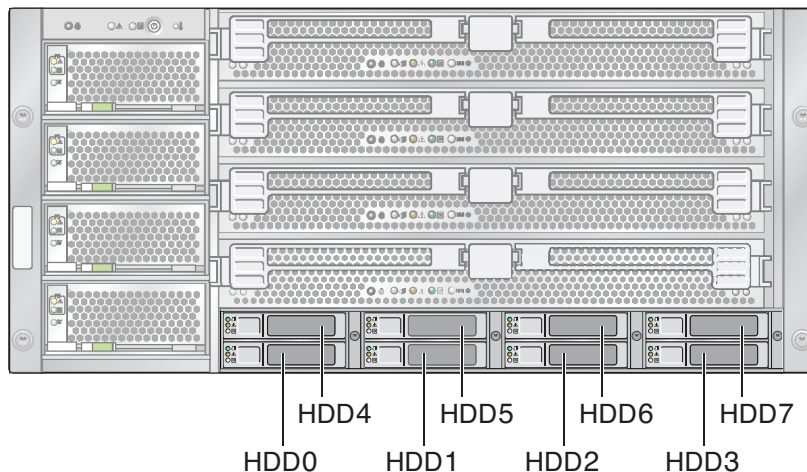
See also:

- "How to Remove a Hard Drive " on page 65
- "How to Install a Hard Drive" on page 67
- "Drive Backplane Overview" on page 25

▼ How to Remove a Hard Drive

Use this procedure to remove a hard drive (HD).

Note – The hard drives in the Sun Server X2-8 are hot-plug components.

⚠️ **Caution** – If you are removing more than one HD and not replacing the drives, label each HD to indicate its slot (see "Hard Drive Designation" on page 64). Drives *must* be installed in their original slot.

An animation of the procedure to remove a hard drive is available. See animation showing power supply installation.

1 Prepare the server for service. See "How to Prepare for Service" on page 55.

2 To unlock the handle on the front of the hard drive assembly, push the handle release button.

This action causes the handle to unlock and spring open.
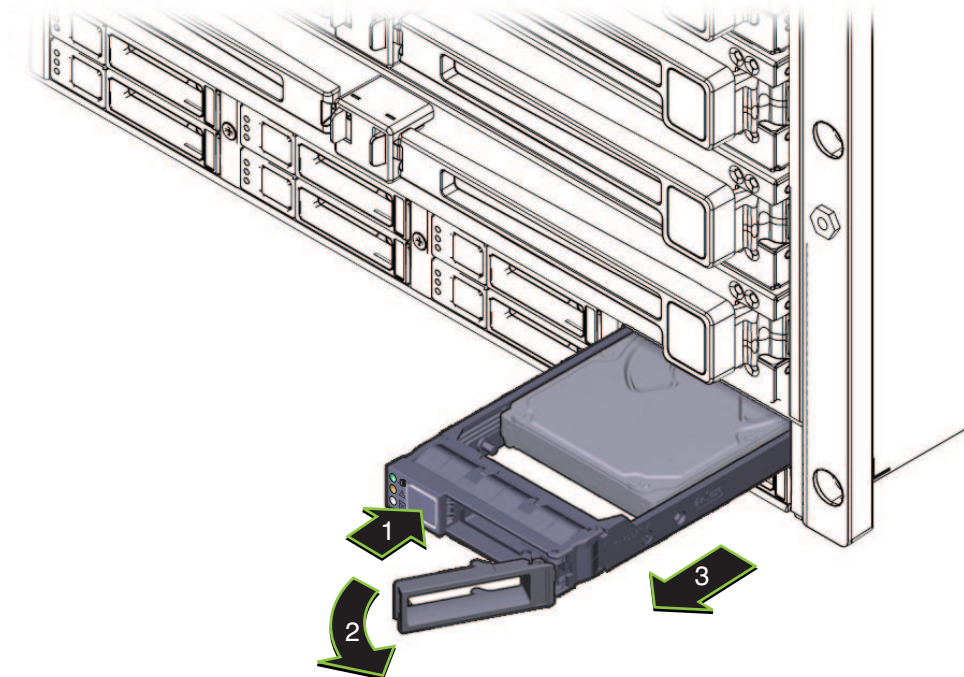
3 To remove the hard drive, pull the drive out of the server using the handle.

Note – Do not remove the HD from the XL bracket assembly.

⚠ **Caution –** Airflow and temperature control–related issues. Do *not* leave a hard drive slot unoccupied. Hard drive slots *must* contain either a drive or a HD filler.

Next Steps
- "How to Install a Hard Drive" on page 67

  –or–
- "How to Install a Hard Drive Filler" on page 70

See Also
- "Hard Drive and XL Bracket Assembly Overview" on page 24
- "Hard Drive Designation" on page 64
- "How to Prepare for Operation" on page 56

- "Front Panel Hard Drive LED's" on page 186

▼ How to Install a Hard Drive

Use this procedure to install a hard drive (HD).

Note – The hard drives in the Sun Server X2-8 are hot-plug components.

⚠ **Caution –** Airflow and temperature control–related issues. If you are removing more than one HD and not replacing the drives, label each HD to indicate its slot (see "Hard Drive Designation" on page 64). Drives *must* be installed in their original slots.

An animation of the procedure to install a hard drive is available. See animation showing hard drive installation.

Before You Begin
- "Hard Drive Designation" on page 64.
- "Hard Drive and XL Bracket Assembly Overview" on page 24

1 Prepare the server for service. See "How to Prepare for Service" on page 55.

For information about how to remove a hard drive or an HD filler carrier, see "How to Remove a Hard Drive " on page 65 or "How to Remove a Hard Drive Filler" on page 69.

2 **Press the lever release button on the front of the hard drive carrier and extend the lever to its fully open position.**
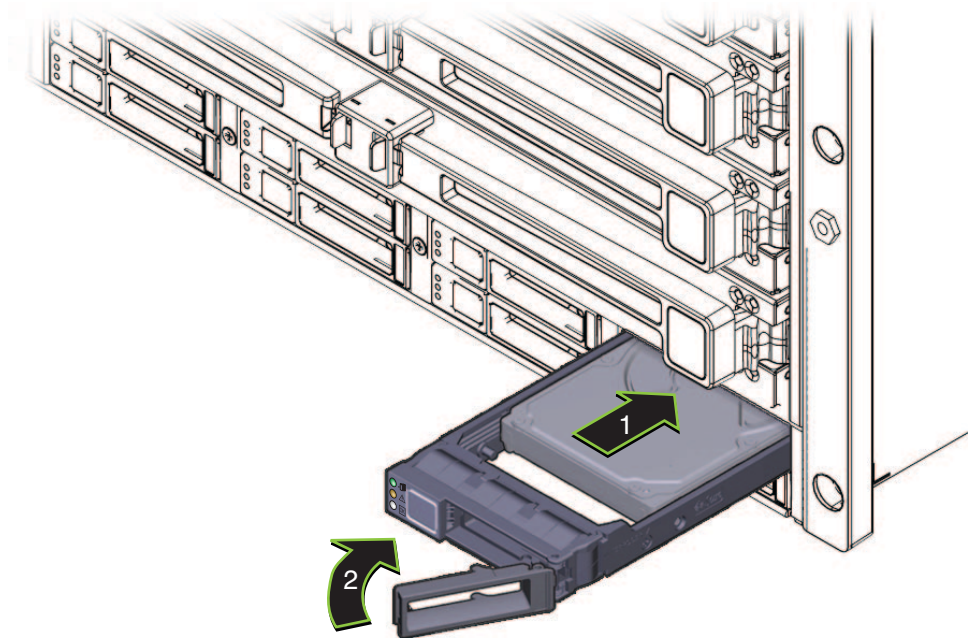
3 **Slide the hard drive carrier assembly into the slot until it stops. Do not push the drive into the slot any farther.**

4 **Align the pawl on the lever with the opening in the side wall of the slot.**

5 **To install the hard drive, close the lever until it locks and is flush with the front of the carrier.**

This action pushes the hard drive carrier assembly into the slot and engages the connector on the hard drive with the connector on the hard drive backplane.

Next Steps

See Also

Removing and Installing a Hard Drive Filler

▼ How to Remove a Hard Drive Filler

Use this procedure to remove a hard drive (HD) filler.

⚠ **Caution** – Air flow and temperature control–related issues . Do *not* leave a hard drive slot unoccupied. Hard drive slots *must* contain either a drive or a HD filler.

The HD filler is designed specifically to occupy empty drive slots for the purpose of maintaining server cooling. It does not contain electronics, and it is not a hard drive carrier.

An animation of the procedure to remove a hard drive filler is available. See animation showing hard drive removal.

1   Prepare the server for service. See "How to Prepare for Service" on page 55.

2   To unlock the spring-loaded handle, lift the locking latch.
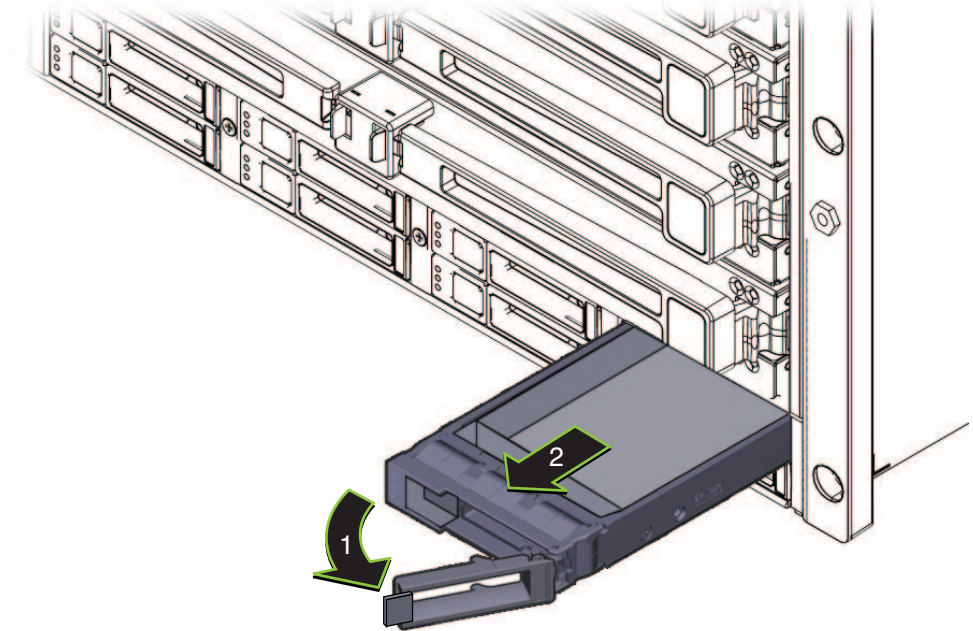
3   To remove the HD filler, extend the handle to its open position and pull the filler out of the slot.

⚠ **Caution –** Possible component damage. The handle does not extend to a 90-degree angle. Do not extend the handle beyond its limitation.

Drive slots *must* contain either a hard drive (HD) or an HD filler.

Next Steps   ■ "How to Install a Hard Drive" on page 67
■ "How to Install a Hard Drive Filler" on page 70

▼ How to Install a Hard Drive Filler

Use this procedure to install a hard drive (HD) filler.

⚠ **Caution –** Airflow and temperature control–related issues. Do *not* leave a hard drive slot unoccupied. Hard drive slots *must* contain either a drive or an HD filler.

The HD filler is designed specifically to occupy empty drive slots for the purpose of maintaining server cooling. It does not contain electronics, and is not a hard drive carrier.

An animation of the procedure to install a hard drive filler is available. See animation showing hard drive installation.

1   **Prepare the server for service. See "How to Prepare for Service" on page 55.**

2   **If necessary, remove the HD occupying the slot.**

3   **To extend the HD filler spring-loaded handle, lift the locking latch.**

> ⚠ **Caution** – Possible component damage. The handle does not extend to a 90–degree angle. Do not extend the handle beyond its limitation.

4   **To install the HD filler, slide it into the vacant slot until it is flush with the front of the server.**
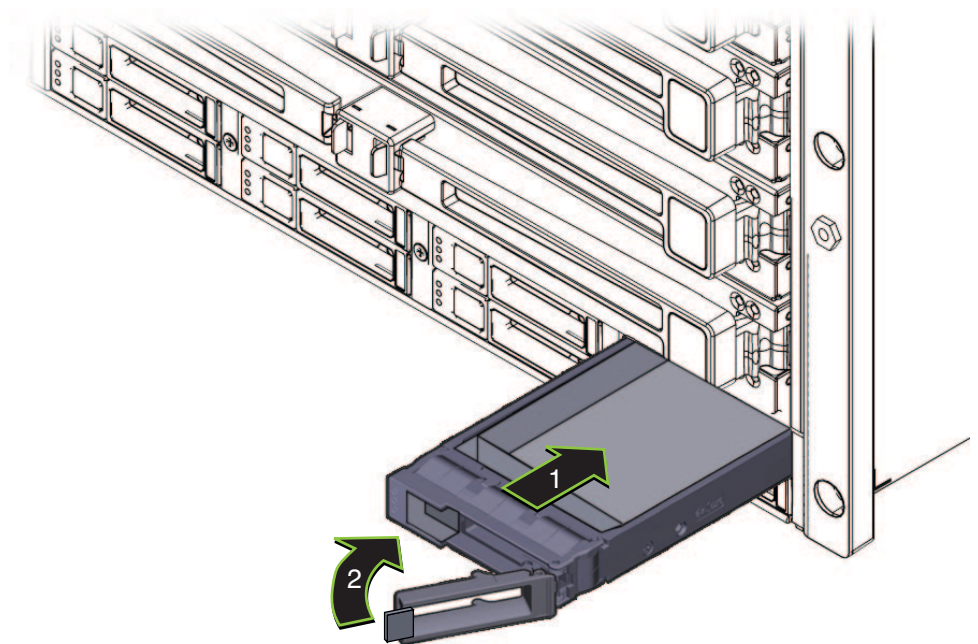
5   **Close the spring-loaded handle.**

Replacing the Hard Drive Backplane (FRU)

This section contains topics and tasks related to the removal and installation of the hard drive backplane:

- "Hard Drive Backplane Cable Routing and Designations" on page 72
- "How to Remove the Hard Drive Backplane" on page 73
- "How to Install the Hard Drive Backplane" on page 75

Hard Drive Backplane Cable Routing and Designations
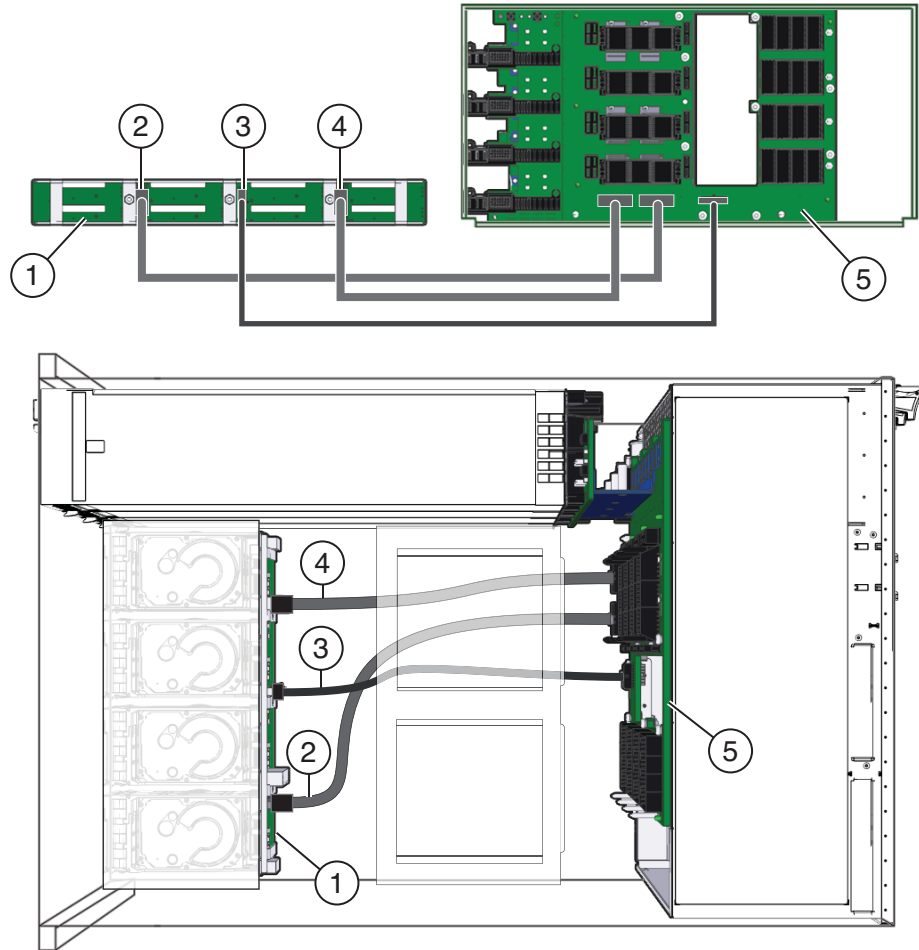
Legend

1	Hard drive backplane and frame assembly	2	SAS 0
3	SAS power	4	SAS 1
5	Midplane		

▼ How to Remove the Hard Drive Backplane

An animation of the procedure to remove the hard drive backplane is available. See animation showing hard drive backplane removal.

Before You Begin ■ "Sun Server X2-8 Chassis Overview" on page 12

- "Drive Backplane Overview" on page 25

1 Prepare the server for service. See "How to Prepare for Service" on page 55.

2 Disconnect the AC power cables from the AC power block. See "How to Remove and Install AC Power Cables" on page 63.

3 Label the CMODs and module fillers with their respective slot designations, and remove them from their slots.

See "How to Remove a CPU Module (CMOD)" on page 78.

4 Label and remove the hard drives and any HD fillers.

See "How to Remove a Hard Drive " on page 65 or "How to Remove a Hard Drive Filler" on page 69.

5 To remove the three SAS connectors from the hard drive backplane, squeeze the connector lock clips and pull the connectors toward the back of the server (1).

As you face the server, the lock clips are on the left side of the connector. From left to right, the cables are SAS 1, SAS Power, and SAS 0.
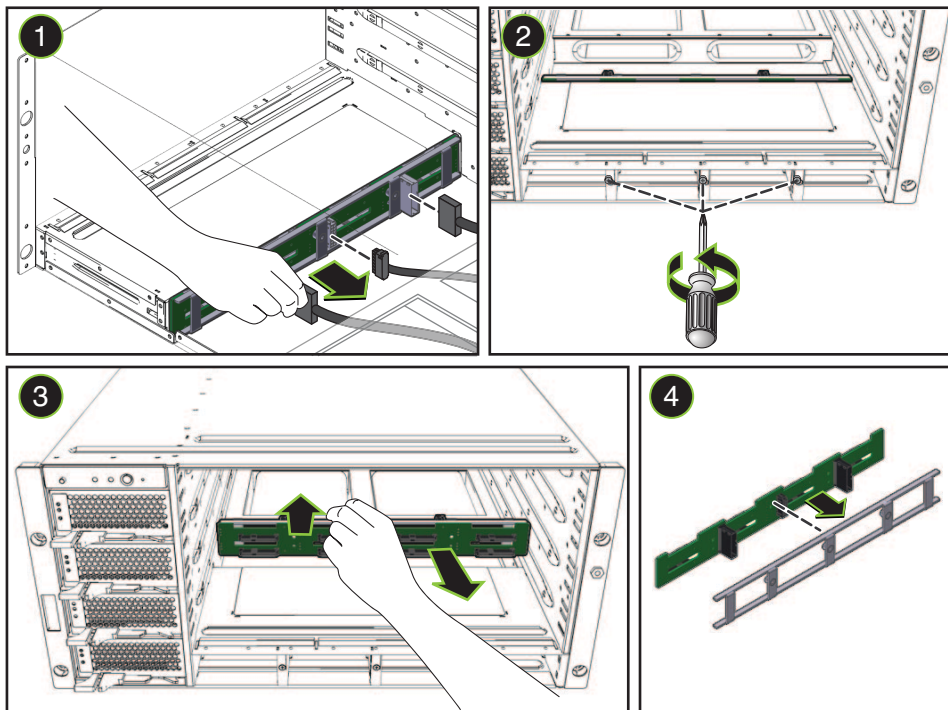
6   From the front of the machine, use a No. 1 Phillips screwdriver to loosen the three captive hard drive backplane retaining screws (2).

7   To remove the hard drive backplane and frame assembly from the server, slide it toward the back of the server, tilt the right side upward, and pull it out leading with the right edge (3).

8   Separate the hard drive backplane from the frame (4).

Next Steps   "How to Install the Hard Drive Backplane" on page 75

See Also   "Hard Drive Backplane Cable Routing and Designations" on page 72

▼ How to Install the Hard Drive Backplane

An animation of the procedure to install the hard drive backplane is available. See animation showing hard drive backplane installation.

Before You Begin   ■ "Sun Server X2-8 Chassis Overview" on page 12
                    ■ "Drive Backplane Overview" on page 25

1   Prepare the server for service. See "How to Prepare for Service" on page 55.

2   Remove the hard drive backplane. See "How to Remove the Hard Drive Backplane" on page 73.

3 **Join together the backplane and the frame (1).**
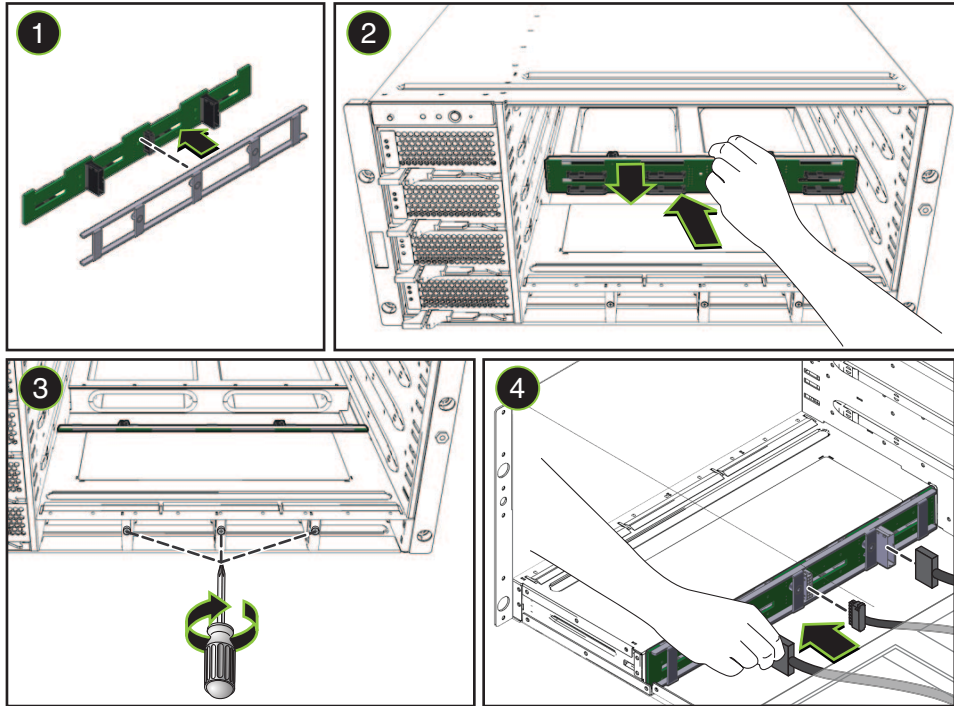
4 **Orient the hard drive backplane assembly with the connectors on the backplane facing toward the back of the server.**

5 **Insert the hard drive backplane into the server and position it against the back wall of the drive bay (2).**

6 **Hold the hard drive backplane assembly flat against the back wall of the drive bay and align the screw holes in the assembly with the captive screws.**

For ease of installation, align the center screw first.

7 **From the front of the server, use a No. 1 Phillips screwdriver to tighten the three captive screws and secure the hard drive backplane assembly (3).**

8 Connect the SAS cables and the one SAS power cable to the hard drive backplane (4).

See "Hard Drive Backplane Cable Routing and Designations" on page 72 for cable routing and designations.

9 Install the hard drives and HD fillers into their original slots. See "How to Install a Hard Drive" on page 67.

10 Install the CMODs and filler modules into their original slots. See "How to Install a CPU Module (CMOD)" on page 82.

11 Install the AC power cables. See "How to Remove and Install AC Power Cables" on page 63.

Next Steps "How to Prepare for Operation" on page 56

Adding, Removing, and Installing a CMOD (CRU)

This section contains topics and tasks related to the removal and installation of CPU modules (CMODs):

- "How to Add a CPU Module (CMOD) to the Server Using the Upgrade Kit" on page 77
- "How to Remove a CPU Module (CMOD)" on page 78
- "How to Remove the CPU Module (CMOD) Cover" on page 80
- "How to Install the CPU Module (CMOD) Cover" on page 81
- "How to Install a CPU Module (CMOD)" on page 82
- "How to Verify CPLD Versions" on page 85

▼ How to Add a CPU Module (CMOD) to the Server Using the Upgrade Kit

Use this procedure to change the configuration of your server using the CPU module upgrade kit.

Before You Begin
- See "CMOD Incompatibility Between Versions of Sun Server X2-8" on page 13.
- For firmware compatibility issues, see "SP Module and CMOD Firmware Compatibility Considerations" on page 150.
- For CMOD designation and population rules, see "CPU Module (CMOD) Designation and Population Rules" on page 85.

1 Prepare the server for service. See "How to Prepare for Service" on page 55.

2 Place the server in standby power mode. See "Power Modes" on page 45.

3 Remove the filler module from the slot. See "How to Remove a CMOD Filler" on page 88.

4   **Install the CMOD into the slot. See "How to Install a CPU Module (CMOD)" on page 82.**

5   **Prepare the server for operation. See "How to Prepare for Operation" on page 56.**

6   **Boot to the BIOS Setup utility and configure the server for the new CMOD.**

See Also   "How to Remove a CPU Module (CMOD)" on page 78

▼ How to Remove a CPU Module (CMOD)

An animation of the procedure to remove a CMOD is available. See animation showing CMOD removal.

⚠ **Caution –** Airflow and temperature-related issues. For proper airflow and cooling, all CMOD slots *must* contain either a CMOD or a filler module. Do *not* operate the server with unoccupied CMOD slots.

⚠ **Caution –** The CMOD is *not* a hot-plug component.

Before You Begin
- See the "About Sun Server X2-8 CPU Modules and CMOD Filler Modules" on page 13.
- See "CMOD Incompatibility Between Versions of Sun Server X2-8" on page 13.
- If you are replacing or removing a CMOD, you need a replacement module or a filler module.

1   **Prepare for service. See "How to Prepare for Service" on page 55.**

2   To unlock the CMOD, squeeze together the green tabs between the lever handles.

This action produces a click sound and releases the handles.
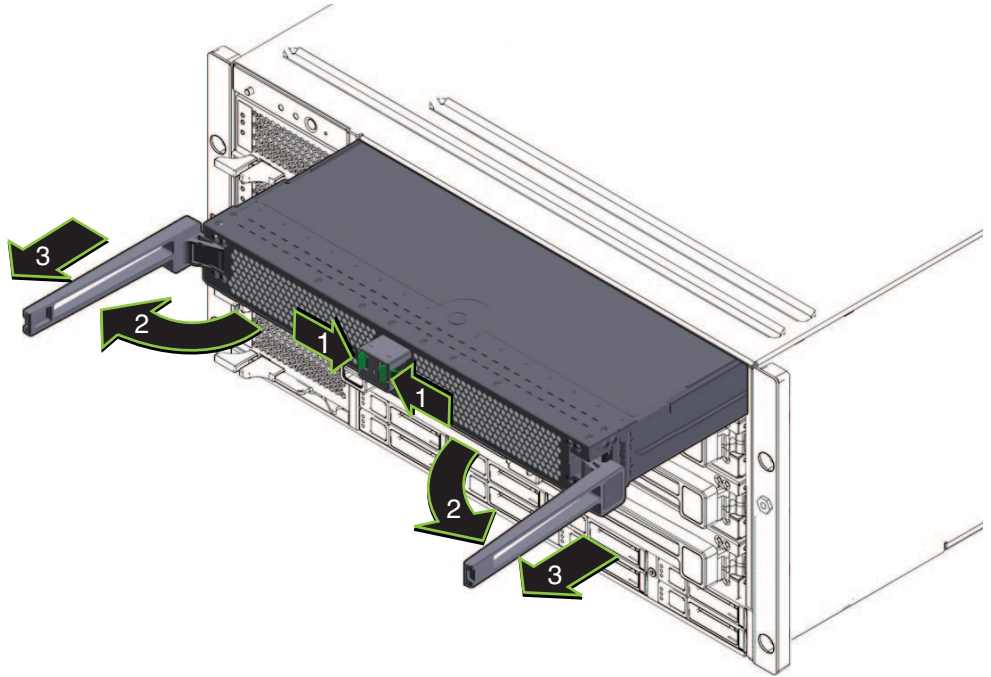
3   To disengage the CMOD, simultaneously rotate both levers outward away from the center of the module. Do *not* attempt to remove the CMOD now.

Rotating the levers outward causes the pawls on the end of the levers to engage the sidewall of the chassis and pull the CMOD out of its internal connector.

4   Use the handles to pull the CMOD *partially* out of its slot.

Pull the CMOD out so that approximately 6 inches extends from the front of the chassis.

5   Rotate the levers inward until they are closed and locked.

⚠ **Caution** – Potential physical harm or component damage. Because of the length and weight of the CMOD, one or more people should assist in the removal of the CMOD at this point.

6   To remove the CMOD, have an assistant support the CMOD as you slowly pull it out the slot.

⚠️ **Caution** – Potential overheat condition. Unoccupied module slots disrupt air flow and temperature control within the server. Replace the module with a filler module or another CMOD.

Next Steps ■ "How to Install a CMOD Filler" on page 89

–or-

■ "How to Install a CPU Module (CMOD)" on page 82.

See Also ■ "How to Verify CPLD Versions" on page 85
■ "CPU Module (CMOD) Designation and Population Rules" on page 85
■ "How to Remove the CPU Module (CMOD) Cover" on page 80
■ "How to Prepare for Operation" on page 56

▼ How to Remove the CPU Module (CMOD) Cover

⚠️ **Caution** – Component damage due to static electricity. Electronic components are extremely sensitive to static electricity. Ordinary amounts of static electricity from clothing or the work environment can destroy the components. Do not touch the components without antistatic precautions, especially along the connector edges. See "Antistatic Precautions and Procedures" on page 54.

Before You Begin "About Sun Server X2-8 CPU Modules and CMOD Filler Modules" on page 13

1 Remove the CMOD. See **"How to Remove a CPU Module (CMOD)" on page 78.**

2   Press the cover release button on the top of the cover.
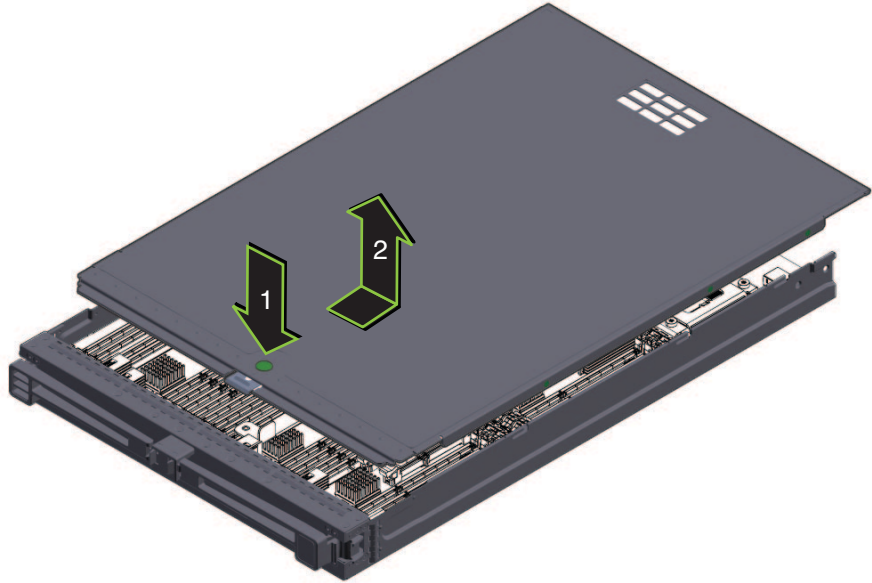
3   Slide the cover toward the back of the CMOD until it stops (approximately 0.5 inch).

4   To remove, lift the cover straight up.

See Also
- "CMOD Internal Components" on page 16
- "About Sun Server X2-8 CPU Modules and CMOD Filler Modules" on page 13
- "How to Install the CPU Module (CMOD) Cover" on page 81

▼ How to Install the CPU Module (CMOD) Cover

Before You Begin   "About Sun Server X2-8 CPU Modules and CMOD Filler Modules" on page 13

1 Set the cover on top of the CMOD with the cover release button toward the front of the module and with approximately 0.5 inch of the cover overhanging the rear of the module.

This leaves a gap of approximately 0.5 inch between lead edge of the cover and front top edge of the CMOD chassis. The cover should sit evenly on top of the module.
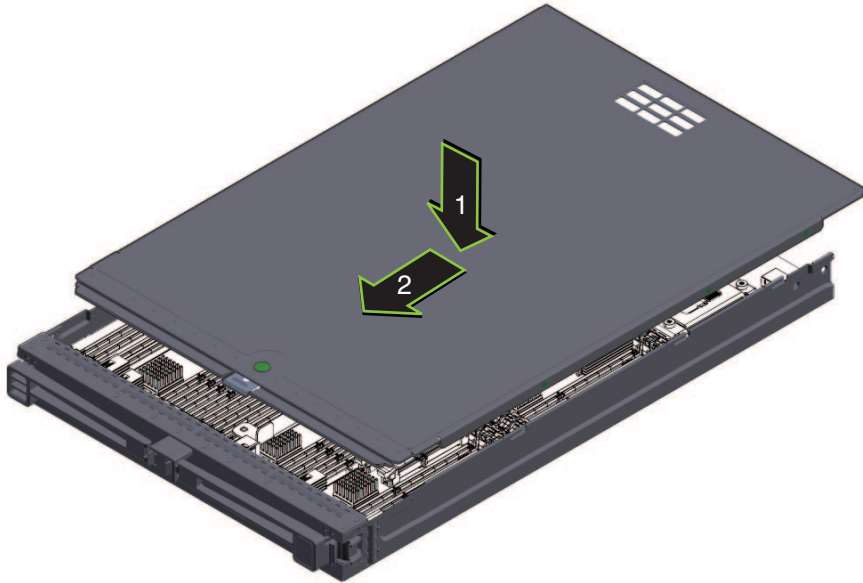
2 Slide the cover toward the front of the module until it stops, taking care that the lead edge of the cover slides under the front top edge of the CMOD.

When the cover is properly installed, this action produces a click sound as the cover latch engages and locks the cover.

3 Ensure that the cover is locked in place.

The cover should not move unless the release button is pressed.

Next Steps   "How to Install a CPU Module (CMOD)" on page 82

See Also   "How to Remove the CPU Module (CMOD) Cover" on page 80

▼ How to Install a CPU Module (CMOD)

An animation of the procedure to install a CMOD is available. See animation showing CMOD installation.

Before You Begin   ■   See "About Sun Server X2-8 CPU Modules and CMOD Filler Modules" on page 13.

- See "CMOD Incompatibility Between Versions of Sun Server X2-8" on page 13.

1   Locate the module slot that you need to populate.

For slot designations and population rules, see "CPU Module (CMOD) Designation and Population Rules" on page 85.

2   If necessary, remove the filler or CMOD that occupies the slot. See "How to Remove a CMOD Filler" on page 88 or "How to Remove a CPU Module (CMOD)" on page 78.

3   Orient the CMOD so that the cover faces upward.

4   Carefully slide the module into the chassis until it stops.

Do not force the module into the chassis in an attempt to engage the connectors on the chassis midplane.

5   Open the CMOD levers to the fully open position by squeezing together the green locking tabs on the lever handles and rotating both handles outward, away from the center of the module.

The levers do not extend beyond 90 degrees.

6   Ensure that the pawl on the end of each lever is aligned with the rectangular slot in the chassis sidewall.

Caution – Pinch point. Keep your fingers clear of the back side of the lever, the lever hinges, and the edges of the module.

7   To install the CMOD, simultaneously rotate both levers inward toward the center of the module until the levers lock into place.

This action pushes the module into the chassis and engages the connector on the back of the module with the connector on the interior midplane. When the levers are locked, you cannot rotate the levers outward.
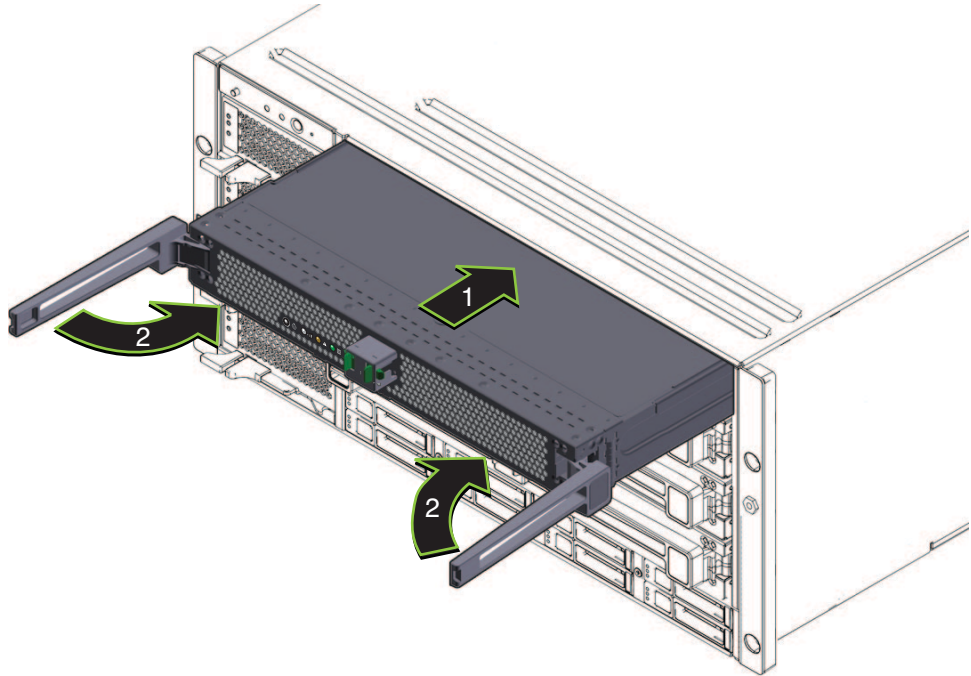
8   With the levers in the locked position, ensure that the internal connectors are fully engaged by pushing the ends of the levers inward and releasing when lever ends touch the front of the CMOD.

Note – Do not unlock the leversNow therto perform this action.

9   To latch and lock a filler module, keep your fingers clear of the back side of the handle and push the lever inward and to the left until the lock clicks into place.

Caution – Pinch point. When operating the lever, keep your fingers clear of the back side of the lever, the lever hinges, and the edges of the module.

This action pushes the filler module into the chassis. When the handle is locked, you cannot lift the levers without first releasing the lock on the handle.

▼ How to Verify CPLD Versions

All CMODs must have identical CPLD levels. After installing a CMOD, you must verify the CPLD levels for all CMODs in the chassis.

Before You Begin   All CMODs in the chassis must be installed, and the chassis must be in standby power mode. The green LED on all CMODs must be steady ON.

For more on standby power, see "Power Modes" on page 45.

1   Log in to the Oracle ILOM.

2   Enter the following command for each node in the chassis:

show /SYS/BL*n*/CPLD

where *n* is the node number.

3   Verify that all nodes return the same value.

If all nodes do not return the same value, contact Oracle service.

CPU Module (CMOD) Designation and Population Rules

CPU Module (CMOD) Designations

Note – The CPU modules for the Sun Server X2-8 are unique to the M2 model of the server family and are *not* interchangeable with the CPU modules used in the Sun Fire X4800 server. For more information, see "CMOD Incompatibility Between Versions of Sun Server X2-8" on page 13.

On the front of the server chassis and within the Oracle ILOM interfaces (web and command-line), the CMODs are designated as BL 0–BL 3.

Chassis and Oracle ILOM Designation	
CMOD 3	BL 3
CMOD 2	BL 2
CMOD 1	BL 1
CMOD 0	BL 0

On the front of the server chassis, the bottommost slot is CMOD 0, designated as BL 0.
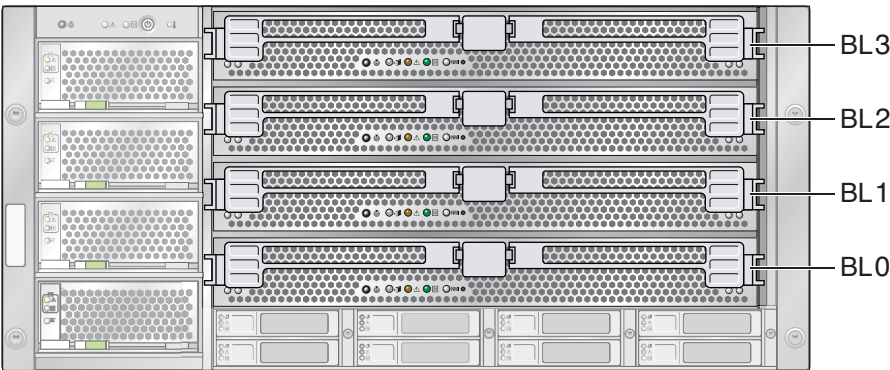
See also:

- "CMOD Incompatibility Between Versions of Sun Server X2-8" on page 13
- "About Sun Server X2-8 CPU Modules and CMOD Filler Modules" on page 13.
- "Adding, Removing, and Installing a CMOD (CRU)" on page 77

CPU Module (CMOD) Population Rules

Note – The CPU modules for the Sun Server X2-8 are unique to the M2 model of the server family and are *not* interchangeable with the CPU modules used in the Sun Fire X4800 server. For more information, see "CMOD Incompatibility Between Versions of Sun Server X2-8" on page 13.

- The Sun Server X2-8 supports two configurations, minimum and fully populated.
- For all configurations a CMOD *must* be installed slot 0.

- A slot must contain either a CMOD or a filler module.

Configuration	Component Population
Minimum	- CMODs in BL 0 and BL 3 - Filler modules in BL1 and BL 2
Fully populated	All slots populated with CMODs

The following illustration shows a sever in a minimum configuration. Slots BL 1 and BL 2 are occupied with CMOD fillers.
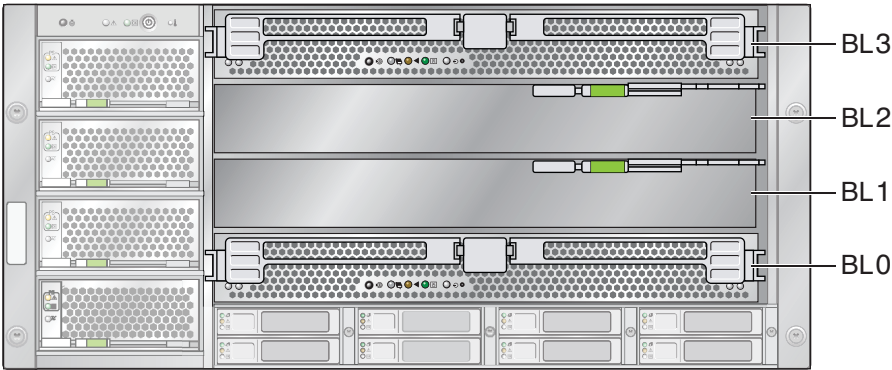
See also:

- "About Sun Server X2-8 CPU Modules and CMOD Filler Modules" on page 13.
- "Adding, Removing, and Installing a CMOD (CRU)" on page 77

Removing and Installing a CMOD Filler

This section contains topics and tasks related to the removal and installation of CMOD filler:

- "How to Remove a CMOD Filler" on page 88
- "How to Install a CMOD Filler" on page 89

▼ How to Remove a CMOD Filler

![Caution icon] **Caution –** Airflow and temperature-related issues. For proper airflow and cooling, all CMOD slots *must* contain either a CMOD or a filler module. Do *not* operate the server with unoccupied CMOD slots.

1   Prepare the server for service. See "How to Prepare for Service" on page 55.

2   To unlock the CMOD filler lever, squeeze the green tabs on the end of the lever.
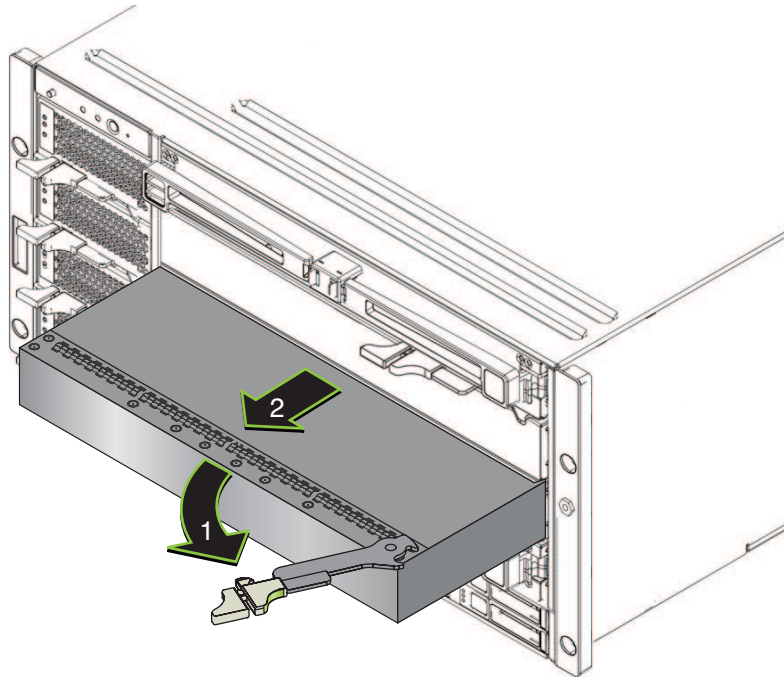
3   Rotate the lever to the right to its fully open position.

The lever does not extend beyond 90 degrees. Rotating the lever to the right causes the pawl on the lever to engage the sidewall and release the filler.

4   To remove, use the handle to slide the filler out of the slot.

Next Steps   ■ "How to Install a CPU Module (CMOD)" on page 82

–or-

■ "How to Install a CMOD Filler" on page 89

▼ How to Install a CMOD Filler

> ⚠ **Caution** – Airflow and temperature-related issues. For proper airflow and cooling, all CMOD slots *must* contain either a CMOD or a filler module. Do *not* operate the server with unoccupied CMOD slots.

1 **Prepare the server for service. See "How to Prepare for Service" on page 55.**

2 **If necessary, remove the CMOD. See "How to Remove a CPU Module (CMOD)" on page 78.**

3 **To unlock the CMOD filler lever, squeeze the green-colored tabs on the end of the lever.**

4 **Rotate the lever to the right to its fully open position.**

The lever does not extend beyond 90 degrees.

5 **Position the filler in the slot with the lever to the right.**

6 **Slide the filler into the slot until it stops.**

Do not push the filler beyond this point.
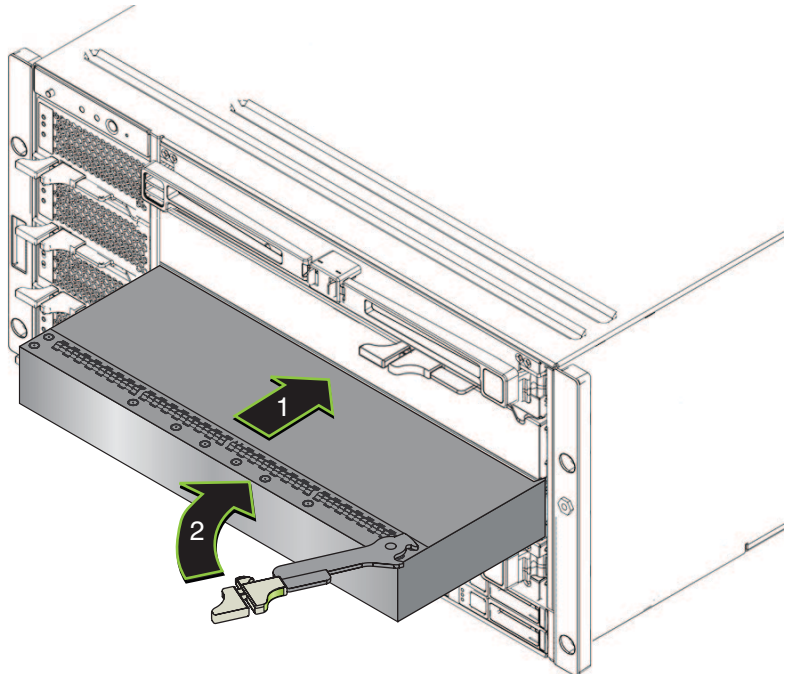
7 **Ensure that the pawl on the lever is aligned with the slot in the CMOD sidewall.**

8 **To install the filler, rotate the lever to the left and firmly push it until it is flush with the front of the filler.**

⚠️ **Caution** – Pinch point. Keep hands and fingers clear of the back side of the lever.

Rotating the lever to the left causes the pawl to engage the sidewall . Push the filler into the slot until it is seated.

9 **To lock the lever, push the lever until you hear the locking latch click.**

Next Steps "How to Prepare for Operation" on page 56.

▼ How to Replace the CMOD Battery (CRU)

The battery (type CR2032) is located on the motherboard. If a RAID expansion module (REM) is installed in the server, you must first remove it to access the battery.

Before You Begin "About Sun Server X2-8 CPU Modules and CMOD Filler Modules" on page 13

1 **Prepare the server for service. See "How to Prepare for Service" on page 55.**

2 **Remove the CMOD from the server. See "How to Remove a CPU Module (CMOD)" on page 78.**

3 **Set the CMOD on a flat antistatic surface with ample surrounding space and light.**

4 **Remove the CMOD cover. See "How to Remove the CPU Module (CMOD) Cover" on page 80.**

5 **If the CMOD has a REM card installed, you must remove it to access the battery. See "How to Remove a RAID Expansion Module" on page 100.**
The REM card is supported for CMOD 0 (BL 0) only.

6 **Pry the battery out of the battery socket and remove from the server.**

Note – Dispose of or recycle the battery in accordance with your local regulations and facility procedures.
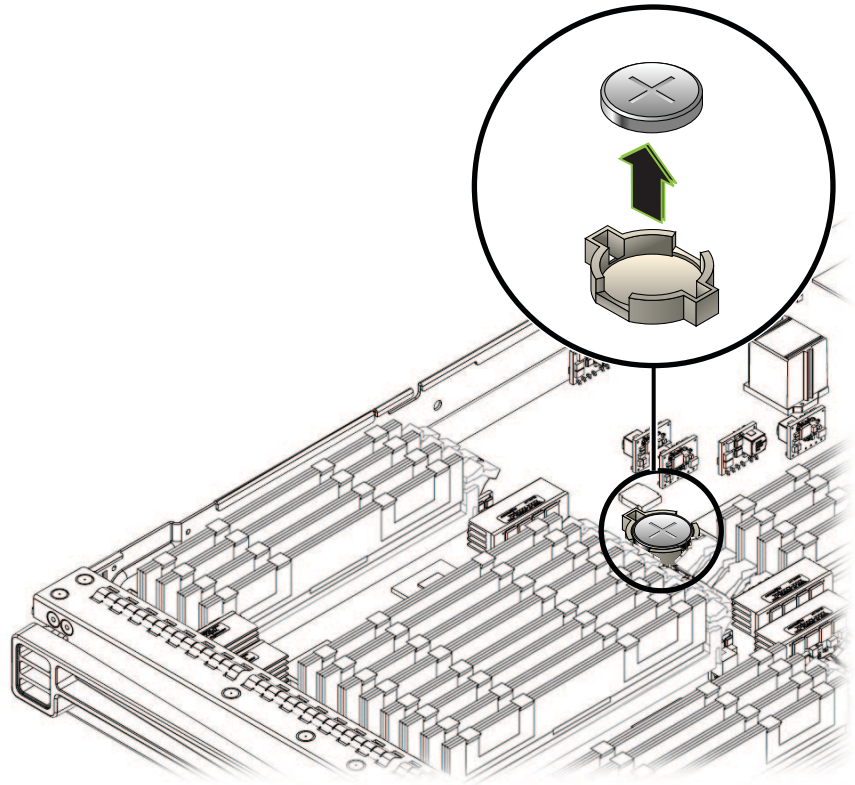
7 To install the new battery, place the battery on top of the battery socket with the positive terminal (+) side facing upward, and carefully push the battery into the socket until it sits flat.
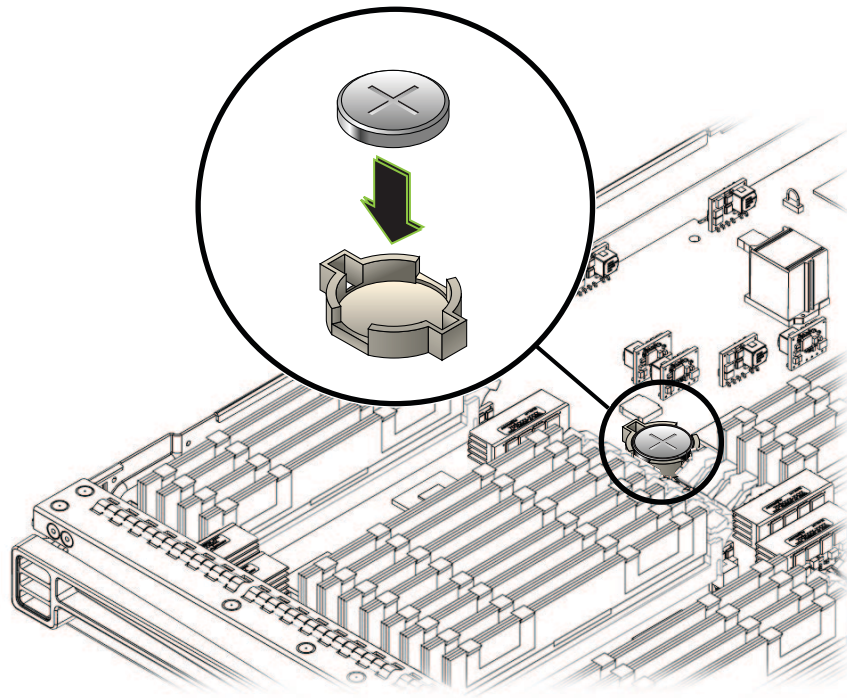
8 If necessary, install the REM card. See **"How to Install a RAID Expansion Module" on page 101**.

9 Install the cover. See **"How to Install the CPU Module (CMOD) Cover" on page 81**.

10 Install the CMOD into the server. See **"How to Install a CPU Module (CMOD)" on page 82**.

11 Place the server in standby power mode. See **"Power Modes" on page 45**.

12 Set the system clock and other BIOS settings. See **"How to Access the BIOS Setup Utility" on page 150**.

Next Steps "How to Prepare for Operation" on page 56

Removing and Installing DIMMs (CRU)

For information about using the on-board fault LEDs to troubleshoot DIMMs, refer to *Sun Server X2-8 (formerly Sun Fire X4800 M2) Diagnostics Guide*.

This section contains topics and tasks related to the removal and installation of DIMMs:

- "DIMM Population Rules" on page 97
- "How to Remove a DIMM" on page 93
- "How to Install a DIMM" on page 95

▼ How to Remove a DIMM

An animation of the procedure to remove a DIMM is available. See animation showing DIMM removal.

Before You Begin
- For DIMM troubleshooting information, refer to *Sun Server X2-8 (formerly Sun Fire X4800 M2) Diagnostics Guide*.
- "DIMM Overview" on page 27
- "About Sun Server X2-8 CPU Modules and CMOD Filler Modules" on page 13

1 Prepare the server for service. See "How to Prepare for Service" on page 55.

2 Remove the CMOD from the server. See "How to Remove a CPU Module (CMOD)" on page 78.

3 Set the module on a flat antistatic surface with ample surrounding space and light.

4 Remove the CMOD cover. See "How to Remove the CPU Module (CMOD) Cover" on page 80.

5 To identify DIMM failure, press the Fault Remind button on the CMOD motherboard.
The Fault Remind button activates the LEDs for the DIMM pairs that contain faulty DIMMs.

Note – For more DIMM troubleshooting information, refer to *Sun Server X2-8 (formerly Sun Fire X4800 M2) Diagnostics Guide*.

---

6 **To unlock the DIMM,** *simultaneously* **rotate the two release levers outward fully away from the DIMM.**

This action unlocks and ejects the DIMM from the DIMM slot.
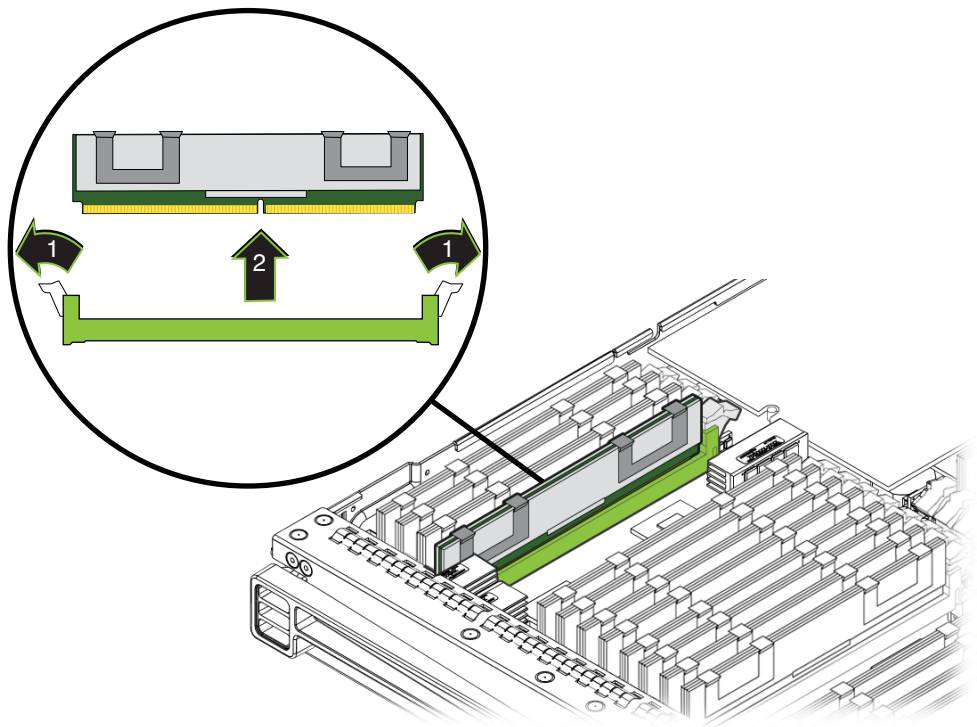
7 **Remove the DIMM from the server.**

8 **If you are replacing the DIMM, see "How to Install a DIMM" on page 95.**

9 **Install the CMOD top cover. See "How to Install the CPU Module (CMOD) Cover" on page 81.**

10 **Insert the CMOD into the server. See "How to Install a CPU Module (CMOD)" on page 82.**

Next Steps "How to Prepare for Operation" on page 56

See Also "Supported Memory Configurations" on page 98

▼ How to Install a DIMM

An animation of the procedure to install a DIMM is available. See animation showing DIMM installation.

Before You Begin
- "CPU Module (CMOD) Designation and Population Rules" on page 85.
- "DIMM Overview" on page 27
- "About Sun Server X2-8 CPU Modules and CMOD Filler Modules" on page 13

1 Prepare the server for service. See **"How to Prepare for Service" on page 55.**

2 Remove the CMOD from the server. See **"How to Remove a CPU Module (CMOD)" on page 78.**

3 Set the CMOD on a flat antistatic surface with ample surrounding space and light.

4 Remove the CMOD cover. See **"How to Remove the CPU Module (CMOD) Cover" on page 80.**

5 Ensure that the DIMM slot locking levers are in the fully open position.

6   Align the DIMM within the slot.

The DIMM is notched to accommodate the key (protrusion) in the slot. The key ensures correct DIMM installation. The DIMM can be correctly installed only one way.
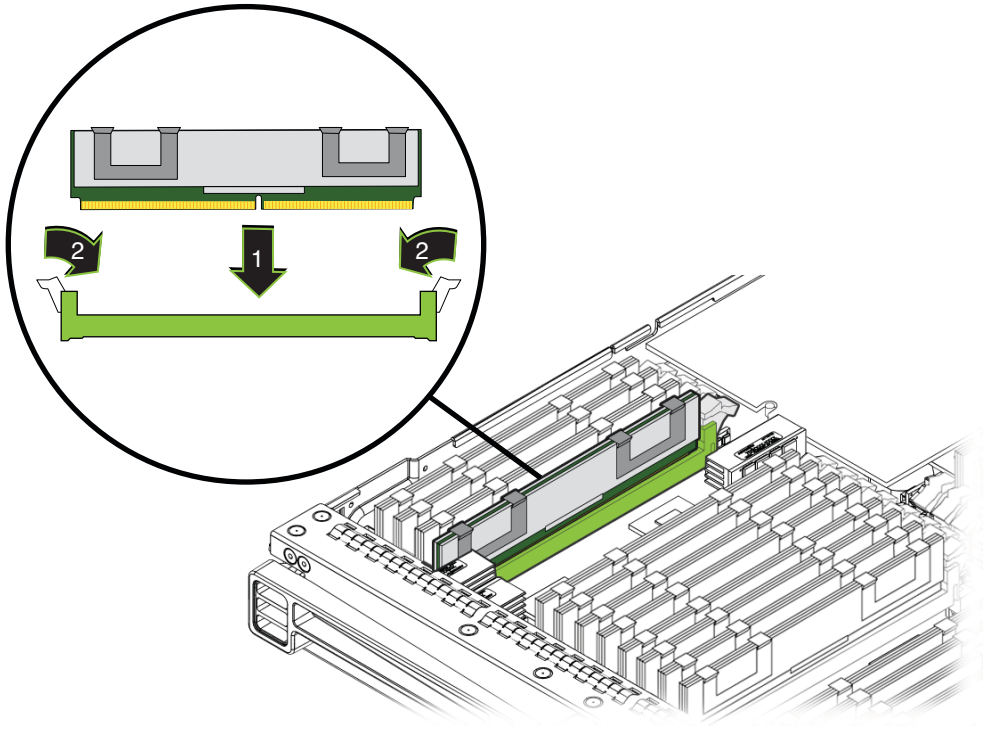
7   To install the DIMM, *simultaneously* **press down on both ends of the DIMM to push the it into the slot.**

This action causes the DIMM locking levers to lift and lock into place on the DIMM.

8   Verify that the DIMM is properly installed and locked.

When properly locked in place, the DIMM cannot be removed.

9   Install the CMOD cover. See "How to Install the CPU Module (CMOD) Cover" on page 81.

10   Install the CMOD into the server. See "How to Install a CPU Module (CMOD)" on page 82.

Next Steps   "How to Prepare for Operation" on page 56.

See Also   "How to Remove a DIMM" on page 93

DIMM Population Rules

This section contains information about adding DIMMs to the Sun Server X2-8:

Population Rules

- Maximum memory operating speed is 1066 MHz. This also applies to supported DIMMs rated for higher speeds.

- Supported DIMMs include single-, dual-, or quad-rank 4 GB, 8 GB, 16 GB and 32 GB JEDEC–standard, DDR3 low voltage ECC RDIMMs.

- All DIMMs on a CMOD must be the same density and organization.

  Do not mix dual-rank 16 GB DIMMs with quad-rank 16 GB DIMMs on a CMOD. Mixing DIMMs of different rank or density degrades performance.

  - Single-rank DIMMs (marked 1Rx8) and dual-rank DIMMs (marked 2Rx4) do not include heat spreaders.

  - Quad-rank DIMMs are marked 4Rx4 and include heat spreaders. DIMMs with heat spreaders have two U-shaped metal clips on the top of the DIMM.

  The following figure shows a DIMM with heat spreaders.
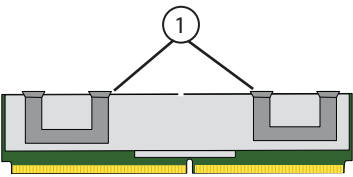
Legend

1	Heat spreader clips

- Each CMOD supports up to 32 DIMMs in two possible configurations: 16 or 32 total DIMMs.

  - Maximum of 128 DIMMs for an 8-socket Sun Server X2-8
  - Maximum 64 DIMMs for a 4-socket Sun Server X2-8

Note that when using the 16 DIMM per CMOD configuration, only the blue and white sockets should be populated to maximize performance.

- DIMM slots are colored coded with the following population order:

    1. Blue
    2. White
    3. Black
    4. Green

- DIMM slots must be populated in matching pairs of identical DIMMs (from the same memory kit) within a processor:

    1. D0/D4
    2. D1/D5
    3. D2/D6
    4. D3/D7
    5. D8/D12
    6. D9/D13
    7. D10/D14
    8. D11/D15

Supported Memory Configurations

The following is a list of supported memory configurations.

Fully Populated Systems

- Fully populated 8-socket configuration:
    - Dual-rank DIMMs:
        - 512 GB (128 x 4 GB DIMMs)
        - 1 TB (128 x 8 GB DIMMs)
        - 2 TB (128 x 16 GB DIMMs)
    - Quad-rank DIMMs:
        - 2 TB (128 x 16 GB DIMMs)
        - 4 TB (128 x 32 GB DIMMs)
- Fully populated 4-socket configuration:
    - Dual-rank DIMMs:
        - 256 GB (64 x 4 GB DIMMs)
        - 512 GB (64 x 8 GB DIMMs)
        - 1 TB (64 x 16 GB DIMMs)
    - Quad-rank DIMMs:
        - 1 TB (64 x 16 GB DIMMs)
        - 2 TB (64 x 32 GB DIMMs)

Half Populated Systems

- Half populated 8-socket configuration:
  - Dual-rank DIMMs:
    - 256 GB (64 x 4 GB DIMMs)
    - 512 GB (64 x 8 GB DIMMs)
    - 1 TB (64 x 16 GB DIMMs)
  - Quad-rank DIMMs:
    - 1 TB (64 x 16 GB DIMMs)
    - 2 TB (64 x 32 GB DIMMs)
- Half populated 4-socket configuration:
  - Dual-rank DIMMs:
    - 128 GB (32 x 4 GB DIMMs)
    - 256 GB (32 x 8 GB DIMMs)
    - 512 GB (32 x 16 GB DIMMs)
  - Quad-rank DIMMs:
    - 512 GB (32 x 16 GB DIMMs)
    - 1 TB (32 x 32 GB DIMMs)

Note – 16 GB DIMMs can be dual rank or quad rank. Do not mix dual-rank and quad-rank DIMMs in the same CMOD. Dual-rank DIMMs are marked 2Rx4. Quad-rank DIMMs are marked 4Rx4, and include metal heat spreaders. These DIMMs have two U-shaped metal clips on the top of the DIMM.

See also:

- "DIMM Overview" on page 27.
- "Removing and Installing DIMMs (CRU)" on page 93

Unsupported DIMMs

The Sun Server X2-8 does not support the following DIMMs:

- MetaRAMs
- LR-DIMMs or UDIMM
- DIMMs using 256 Mb or 512 Mb DRAM technologies
- DDR3-800 MHz RDIMMs
- DDR3-978 MHz RDIMMs

See also:

- "DIMM Overview" on page 27.

Removing and Installing a RAID Expansion Module (CRU)

> **Note –** The RAID expansion module (REM) is supported only in CMOD 0 (BL 0).

This section contains topics and tasks related to the removal and installation of a RAID expansion module (REM):

▼ How to Remove a RAID Expansion Module

An animation of the procedure to remove a REM is available. See animation showing REM removal.

> **Note –** The RAID expansion module (REM) is supported only in CMOD 0 (BL 0).

Before You Begin   "RAID Expansion Module Overview" on page 28

1. **Prepare the server for service. See "How to Prepare for Service" on page 55.**

2. **Remove the CMOD from the server. See "How to Remove a CPU Module (CMOD)" on page 78.**

3. **Set the CMOD on a flat antistatic surface with ample surrounding space and light.**

4. **Remove the CMOD cover. See "How to Remove the CPU Module (CMOD) Cover" on page 80.**

5 Lift the REM ejector handle and rotate it to its fully open position.

This action ejects the REM from its connector on the motherboard.
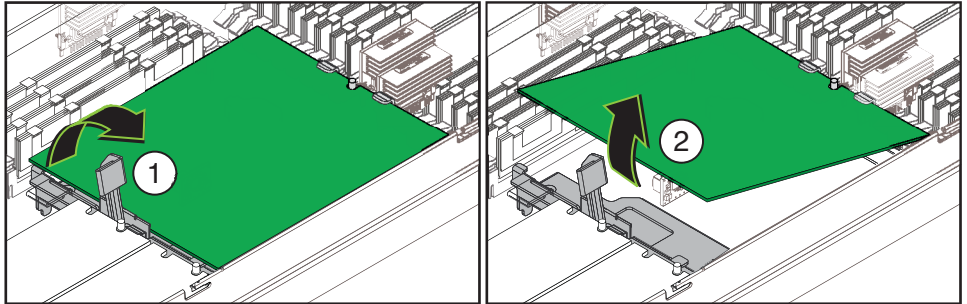
6 Lift the connector end of the REM and pull the REM away from the retaining clip on the front support bracket.

Next Steps "How to Install a RAID Expansion Module" on page 101

See Also
- "About Sun Server X2-8 CPU Modules and CMOD Filler Modules" on page 13
- "How to Prepare for Operation" on page 56

▼ How to Install a RAID Expansion Module

An animation of the procedure to install a REM is available. See animation showing REM installation.

Note – The RAID expansion module (REM) is supported only in CMOD 0 (BL 0).

Before You Begin
- "About Sun Server X2-8 CPU Modules and CMOD Filler Modules" on page 13
- "RAID Expansion Module Overview" on page 28

1 Prepare the server for service. See "How to Prepare for Service" on page 55.

2 Remove the CMOD from the server. See "How to Remove a CPU Module (CMOD)" on page 78.

3 Set the CMOD on a flat antistatic surface with ample surrounding space and light.

4 Remove the CMOD cover. See "How to Remove the CPU Module (CMOD) Cover" on page 80.

5 If necessary, remove the protective cap from the REM connector on the motherboard.

6 Remove the RAID expansion module (REM) from its packaging.

7   Ensure that the REM ejector lever is in the closed position.

The lever should be flat with the REM support bracket.

8   Position the REM so that the battery is facing downward and the connector is aligned with the connector on the motherboard.
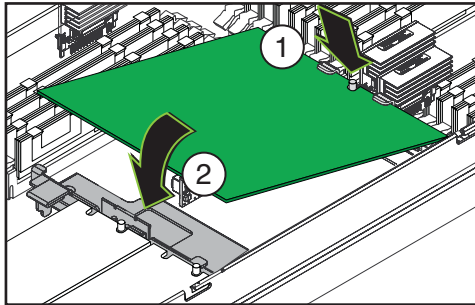
9   Slip the opposite end of the REM under the retaining clips on the front support bracket and ensure that the notch on the edge of the REM is positioned around the alignment post on the bracket.

10   Carefully lower and position the connector end of the REM until the REM contacts the connector on the motherboard.

11   Ensure that the connectors are aligned.

12   To seat the connector, carefully push the REM downward until it is in a level position.

13   Install the CMOD cover. See "How to Install the CPU Module (CMOD) Cover" on page 81.

Note – For component firmware update instructions, refer to the *Oracle Integrated Lights Out Manager (ILOM) 3.0 Supplement for the Sun Server X2-8 (formerly Sun Fire X4800 M2)*.

Next Steps   "How to Prepare for Operation" on page 56

Removing and Installing a Fabric Expansion Module (CRU)

This section contains topics and tasks related to the removal and installation of the fabric expansion module (FEM):

- "How to Remove a Fabric Expansion Module" on page 103
- "How to Install a Fabric Expansion Module" on page 104

▼ How to Remove a Fabric Expansion Module

An animation of the procedure to remove a FEM is available. See animation showing FEM removal.

Before You Begin
- "About Sun Server X2-8 CPU Modules and CMOD Filler Modules" on page 13
- "Fabric Expansion Module Overview" on page 29

1 Prepare the server for service. See "How to Prepare for Service" on page 55.

2 Remove the CMOD from the server. See "How to Remove a CPU Module (CMOD)" on page 78.

3 Set the CMOD on a flat antistatic surface with ample surrounding space and light.

4 Remove the CMOD cover. See "How to Remove the CPU Module (CMOD) Cover" on page 80.

5 To disconnect the FEM from the connector on the motherboard, push down on the FEM release button on the rear of the server.

This action ejects the FEM from its connector.
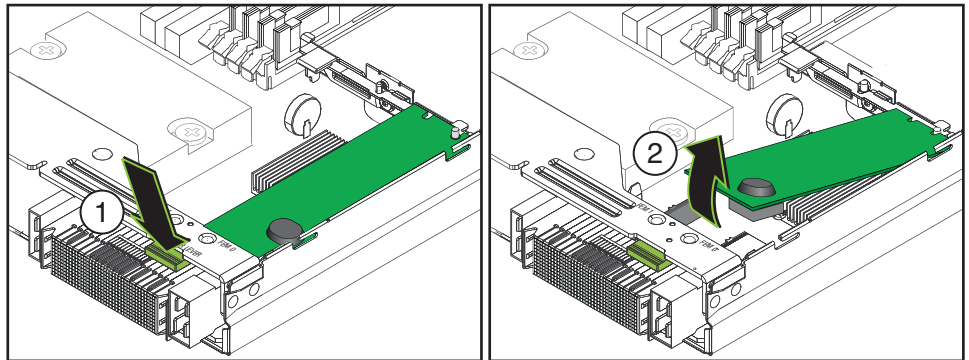
6 Carefully lift the FEM at the connector end.

The FEM is secured at the opposite end by a retaining clip on the front support bracket.

7 To remove the FEM, slide it away from the retaining clip and out of the server.

Next Steps   "How to Install a Fabric Expansion Module" on page 104.

See Also
- "How to Install the CPU Module (CMOD) Cover" on page 81
- "How to Prepare for Operation" on page 56.

▼ How to Install a Fabric Expansion Module

An animation of the procedure to install a FEM is available. See animation showing FEM installation.

Before You Begin
- "About Sun Server X2-8 CPU Modules and CMOD Filler Modules" on page 13
- "Fabric Expansion Module Overview" on page 29

1 Prepare the server for service. See **"How to Prepare for Service" on page 55**.

2 Remove the CMOD from the server. See **"How to Remove a CPU Module (CMOD)" on page 78**.

3 Set the CMOD on a flat antistatic surface with ample surrounding space and light.

4 Remove the CMOD cover. See **"How to Remove the CPU Module (CMOD) Cover" on page 80**.

5 Remove the protective cover from the FEM connector.

Note – The connector on your server might not have a protective cap.

---

6 Remove the FEM from its packaging.

7 Align the FEM in the server so that the connector on the FEM is positioned over the connector on the motherboard.

8 Slip the opposite end into the retaining clip on the front support bracket and ensure that the notch on the edge of the FEM is positioned around the alignment post on the bracket.
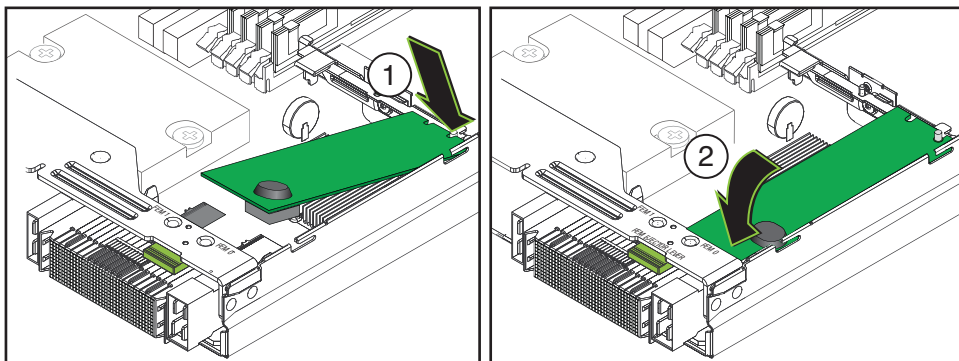
9 To install the FEM, carefully push the connector on the FEM onto the connector on the motherboard.

When fully seated, the FEM is in a level position.

10   Install the CMOD cover. See "How to Install the CPU Module (CMOD) Cover" on page 81.

Next Steps   "How to Prepare for Operation" on page 56.

Replacing a CPU and Heatsink Assembly (FRU)

This section contains the following topics and tasks for the removal and installation of a CPU and heatsink assembly:

- "CPU Designations" on page 105
- "How to Remove a CPU and Heatsink Assembly (FRU)" on page 106
- "How to Install a CPU and Heatsink Assembly (FRU)" on page 108

CPU Designations

The CPUs are designated as CPU 0 and CPU 1. From the front of the CMOD, CPU 0 is on the right and CPU 1 is on the left:
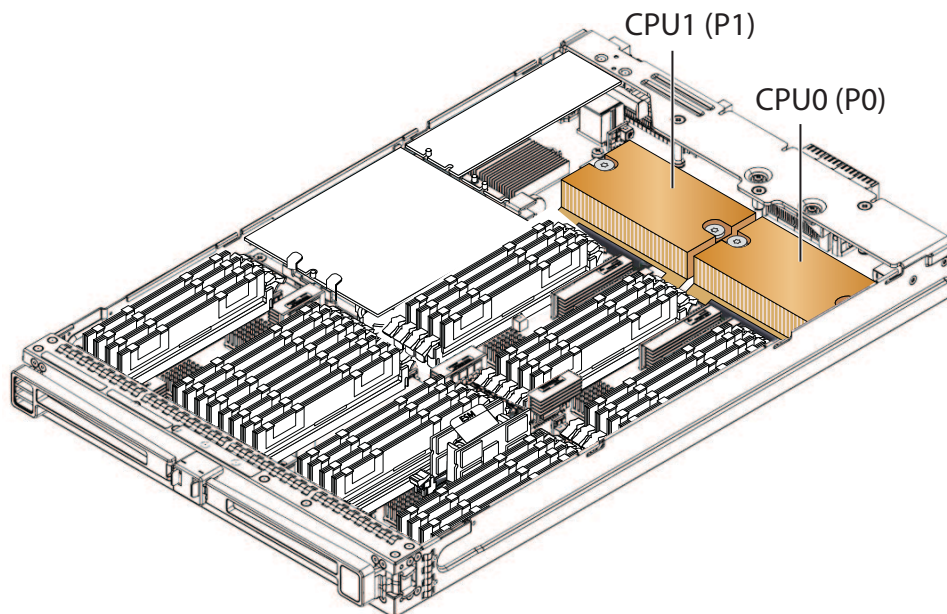
▼ How to Remove a CPU and Heatsink Assembly (FRU)

Use this procedure to replace a CPU. A CPU replacement kit contains a CPU, an alcohol wipe, and a syringe of thermal compound. When you replace a CPU, the heatsink is reused. Do *not* discard the heatsink.

A procedure for using the Fault Remind button to diagnose CPU failure is available in the *Sun Server X2-8 (formerly Sun Fire X4800 M2) Diagnostics Guide*.

An animation of the procedure to remove a CPU is available. See animation showing CPU removal.

Before You Begin
- "About Sun Server X2-8 CPU Modules and CMOD Filler Modules" on page 13
- "CPU and Heatsink Assembly Overview" on page 31
- "CPU Designations" on page 105

1   **Prepare the server for service. See "How to Prepare for Service" on page 55.**

2   **Remove the CMOD from the server. See "How to Remove a CPU Module (CMOD)" on page 78.**

3   **Set the CMOD on a flat antistatic surface with ample surrounding space and light.**

4   **Remove the CMOD cover. See "How to Remove the CPU Module (CMOD) Cover" on page 80.**

5   **Use the motherboard-mounted blue Fault Remind button to identify the CPU and heatsink assembly that you need to remove.**

6 **Press down on the center of the heatsink and use a No. 2 Phillips screwdriver to completely loosen the two spring-loaded captive heatsink retaining screws.**

Pressing down on the heatsink relieves the pressure generated by the spring-loaded screws.
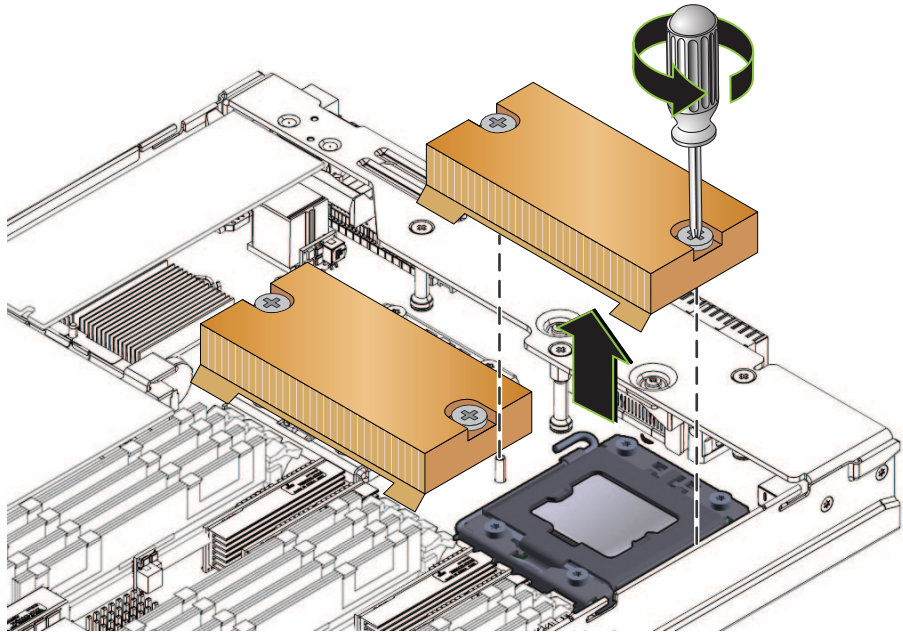
7 **To remove the heatsink, slightly twist it left and right to break the adhesive seal created by the thermal compound.**

The thermal compound between the top of the CPU and the bottom of the heatsink acts as a mild adhesive.

8 **Set aside and retain the heatsink, taking care that you do not allow the residual thermal compound on the bottom of the heatsink to contaminate other components or the work space.**

9   **To unlock the CPU retaining cover, push down on the spring-loaded release lever and move it slightly away from the CPU and the release lever retaining clip.**
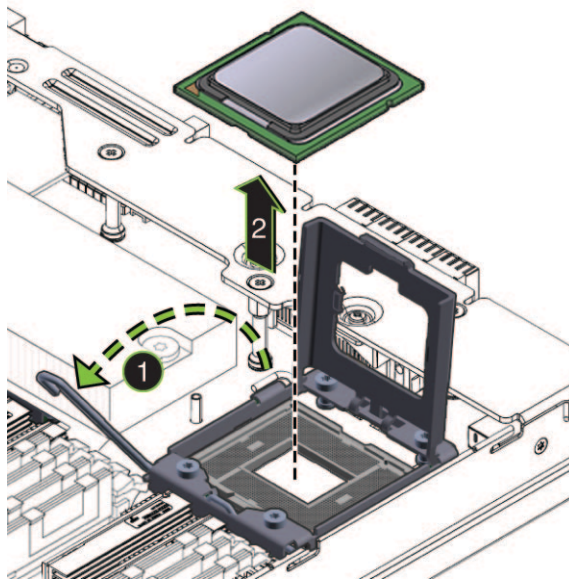
10 **Lift the release lever to its fully upright position.**

11 **Lift the CPU retaining cover to its fully upright position.**

12 **Lift the CPU from the socket.**

13 **Set the CPU aside, taking care that you do not allow the residual thermal compound on the top of the CPU to contaminate other components or the work space.**

See Also   "How to Install a CPU and Heatsink Assembly (FRU)" on page 108

▼ How to Install a CPU and Heatsink Assembly (FRU)

Use this procedure to install a CPU. A CPU replacement kit contains a CPU, an alcohol wipe, and a syringe of thermal compound. When you replace a CPU, the heatsink is reusable. Do *not* discard the heatsink.

An animation of the procedure to install a CPU is available. See animation showing CPU installation.

Before You Begin   ■ "About Sun Server X2-8 CPU Modules and CMOD Filler Modules" on page 13
   ■ "CPU and Heatsink Assembly Overview" on page 31

1   Prepare the server for service. See **"How to Prepare for Service" on page 55**.

2   Remove the CMOD from the server. See **"How to Remove a CPU Module (CMOD)" on page 78**.

3   Set the CMOD on a flat antistatic surface with ample surrounding space and light.

4   Remove the CMOD cover. See **"How to Remove the CPU Module (CMOD) Cover" on page 80**.

5   Remove the CPU and heatsink assembly. See **"How to Remove a CPU and Heatsink Assembly (FRU)" on page 106**.

6   Use the alcohol wipe that comes with the CPU replacement kit to remove the residual thermal compound on the underside of the heatsink.

The underside of the heatsink contacts the top of the CPU.

7   Ensure that the CPU retaining cover and the release lever are in their fully open upright position.
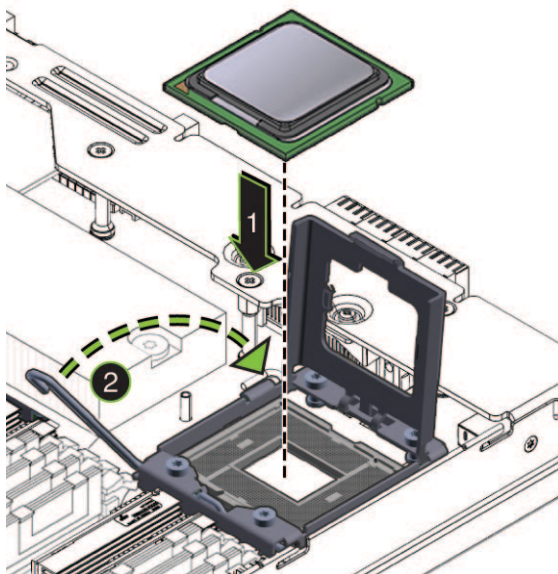
8   To ensure correct installation, align the keying on the CPU with the keying on the socket.

One corner of the CPU is marked with a triangle, and one corner of the socket is also marked with a triangle. These two triangles must align. When these are aligned, the keying notches in the CPU and tabs on the socket line up as well.

9   *Carefully* **set the CPU in the socket ensuring that the notches and indents in the socket and CPU line up and that the CPU sits flat within the socket.**

When properly installed, the CPU fits snugly within the socket.

⚠ **Caution** – Possible component damage. The pins in the CPU socket can be easily damaged if touched or if the CPU is installed incorrectly. Do *not* drop the CPU onto the socket. The CPU sits atop the socket and does *not* require insertion. Do *not* press down on the CPU.

10 **Close the CPU retaining cover.**

11 **Lower the release lever and secure it under the retaining clip.**

12 **Evenly apply the entire contents of the syringe of thermal compound (included in the CPU replacement kit) to the top of the CPU.**

To ensure an even application of compound, apply the contents in the shape of an asterisk.

⚠ **Caution** – Possible thermal-related component damage. To ensure the proper transfer of heat away from the surface of the CPU, apply the *entire* contents of the syringe.

13 Position the bottom of the heatsink over the CPU so that the captive screws in the heatsink align with the threaded standoffs on the motherboard.
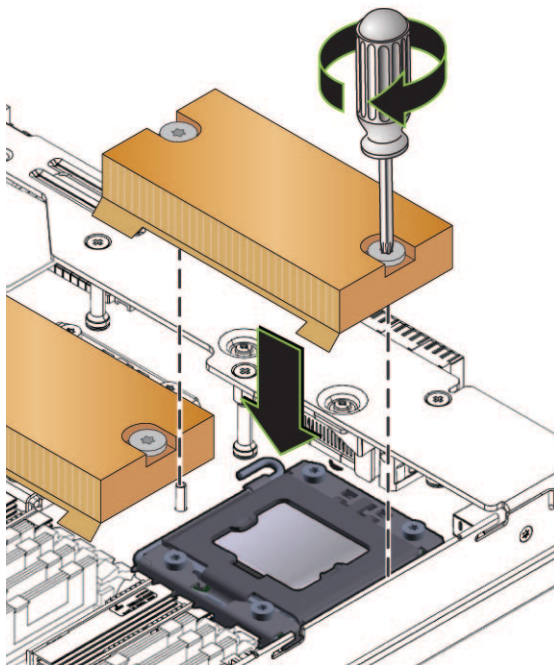
14 Lower the heatsink onto the top of the CPU.

⚠ **Caution** – System thermal failure or component damage. Once the bottom of the heatsink contacts the top of the CPU, do not move the heatsink. Excessive heatsink movement can cause the thermal compound to smear and become uneven. This can result in voids in the compound that can negatively impact the transfer of heat away from the CPU.

15 Press down on the center of the heatsink to engage the captive screws with the threaded standoffs on the motherboard.

16 To secure the heatsink, *alternately* tighten the captive screws until both screws are fully tightened.

Turn each screw one-half a turn at a time.

17 Install the CMOD cover. See "How to Install the CPU Module (CMOD) Cover" on page 81.

Next Steps "How to Prepare for Operation" on page 56

Removing and Installing a Fan Module (CRU)

Note – The fan module is a customer-replaceable unit (CRU).

This section contains topics and tasks related to the removal and installation of a fan module (FM):

Fan Module Designations

The four fan modules (FMs) are designated FM 0–FM 3 with FM 0 and FM 1 on the bottom and FM 2 and FM 3 on the top:
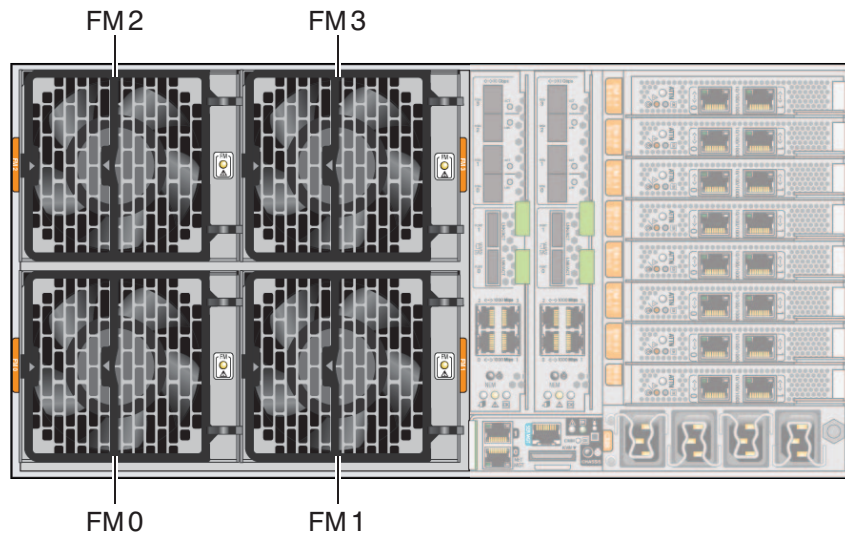
▼ How to Remove a Fan Module

⚠ **Caution –** Potential for system over-temperature and component damage. Do not attempt to operate the system with insufficient cooling. Maintain the integrity of a properly functioning cooling system by *immediately* replacing nonworking components and ensuring unobstructed airflow.

Note – The fan module is a hot-plug component.

An animation of the procedure to remove a fan module is available. See animation showing fan module removal.

Before You Begin
- "Fan Module Overview" on page 33
- "Fan Module Designations" on page 112

1   **If necessary, prepare the server for service. See "How to Prepare for Service" on page 55.**

2   **Access the back of the server and identify the fan module (FM) that you need to replace.**

3 To release the FM handle, gently squeeze at the two green-colored release points and pull the handle outward to its fully opened position.
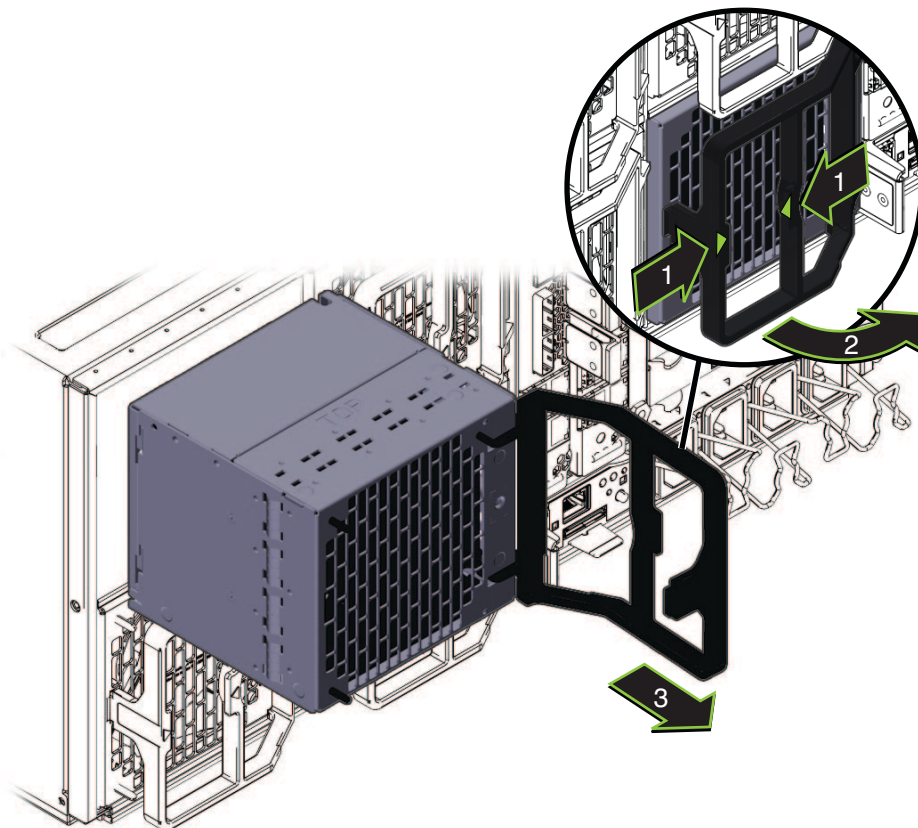
4 To remove, pull the FM out of the server.

⚠ **Caution** – Server over-temperature condition. When a fan module is removed, the airflow vanes in the subassembly module automatically close to maintain the integrity of the server cooling system. Do not defeat the purpose of the airflow vanes.

5 If you are replacing the fan module, see "How to Install a Fan Module" on page 115.

See Also ■ "How to Prepare for Operation" on page 56
■ "Sun Server X2-8 Subassembly Module Overview" on page 17

▼ How to Install a Fan Module

⚠️ **Caution** – Potential for system over-temperature and component damage. Do not attempt to operate the system with insufficient cooling. Maintain the integrity of a properly functioning cooling system by *immediately* replacing nonworking components and ensuring unobstructed airflow.

Note – The fan module is a hot-plug component.

An animation of the procedure to install a fan module is available. See animation showing fan module installation.

Before You Begin
- "Sun Server X2-8 Subassembly Module Overview" on page 17.
- "Fan Module Overview" on page 33
- "How to Remove a Fan Module" on page 113

1   **If necessary, prepare the server for service. See "How to Prepare for Service" on page 55.**

2   **Access the back of the server.**

3   **Ensure that the fan module handle is in its fully open position.**

To release the fan module handle, gently squeeze the two green-colored release points and pull the handle outward to its fully opened position.

4   **To install the fan module, hold the module by the handle and insert it into the vacant module bay (1).**
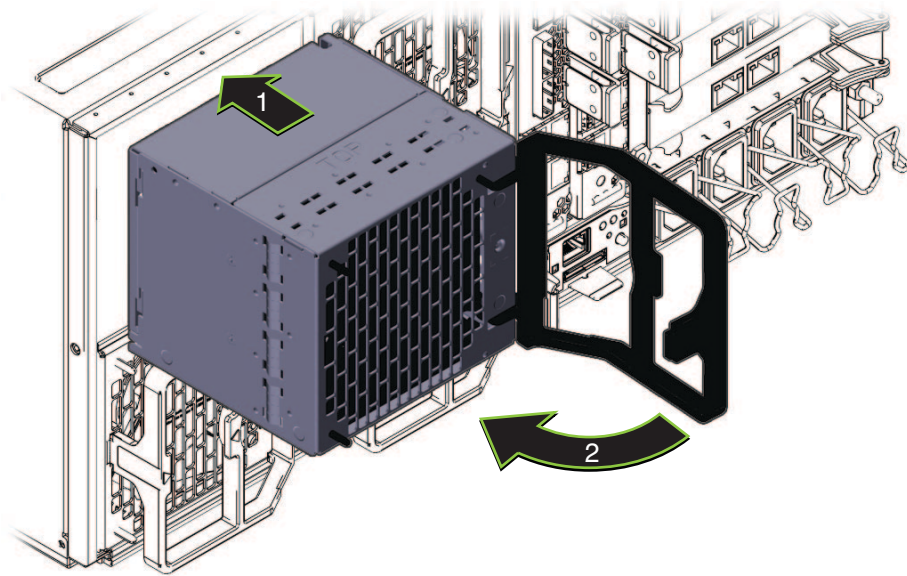
5   **To engage the module with the internal connector on the FB, firmly push the module inward until it stops.**

6   **Move the handle to its fully closed position (2).**

This action produces an audible click as the handle locks into place.

7   **If necessary, prepare the server for operation. See "How to Prepare for Operation" on page 56.**

See Also   "Sun Server X2-8 Subassembly Module Overview" on page 17

Replacing a Fan Module Controller Board (FRU)

This section contains these topics and tasks related to the removal and installation of a fan module controller board (FB):

- "Fan Module Controller Board (FB) Designations" on page 117
- "How to Remove a Fan Module Controller Board" on page 117
- "How to Install a Fan Module Controller Board" on page 118

Fan Module Controller Board (FB) Designations

There are two fan module controller boards, FB 0 and FB 1. Each fan module controller board (FB) controls two fan modules. The FBs are located at the back of the server, in the SAM, behind fan modules:
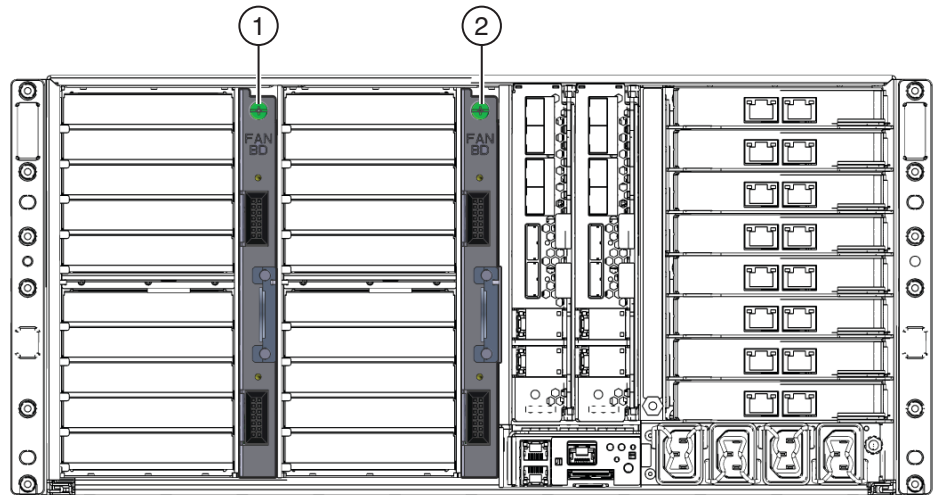
Fan Controller Boards

1	FB 0 (controls FM 0 and FM 2)
2	FB 1 (controls FM 1 and FM 3)

▼ How to Remove a Fan Module Controller Board

An animation of the procedure to remove a fan module controller board is available. See animation showing fan module controller board removal.

⚠ **Caution** – Potential for system over-temperature and component damage. Do not attempt to operate the system with insufficient cooling. Maintain the integrity of a properly functioning cooling system by *immediately* replacing nonworking components and ensuring unobstructed airflow.

Before You Begin
- "Fan Module Controller Board (FB) Overview" on page 40
- "Fan Module Designations" on page 112

1 **Prepare the server for service. See "How to Prepare for Service" on page 55.**

2   **Access the back of the server.**

3   **Remove the FMs that are controlled by the FB that you need to replace. See "Fan Module Controller Board (FB) Designations" on page 117.**

4   **To remove the fan shelf, press down on the green release tab and slide the shelf out of the fan bay (1).**
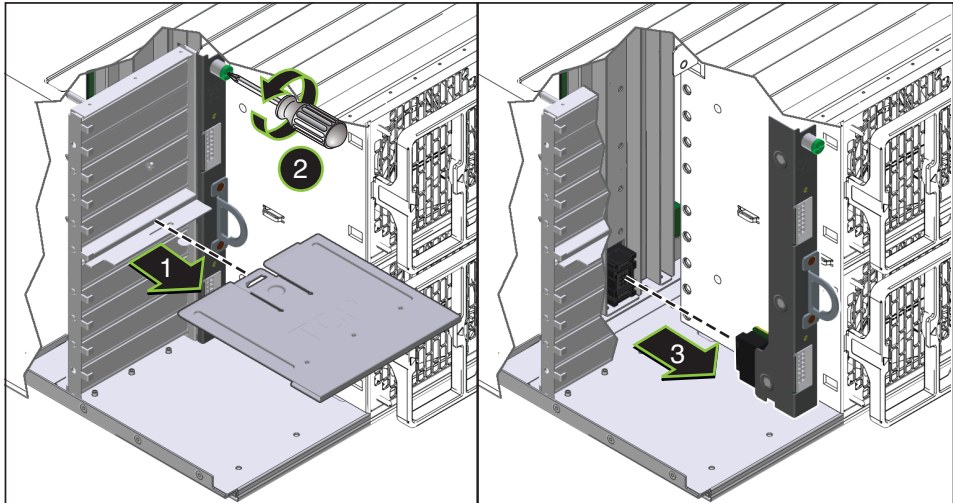
5   **Completely loosen the green captive screw that secures the FB (2).**

6   **To remove the FB, pull the handle on the controller board assembly (3).**

Next Steps   "How to Install a Fan Module Controller Board" on page 118

See Also   "Sun Server X2-8 Subassembly Module Overview" on page 17

▼ How to Install a Fan Module Controller Board

⚠️ **Caution** – Potential for system over-temperature and component damage. Do not attempt to operate the system with insufficient cooling. Maintain the integrity of a properly functioning cooling system by *immediately* replacing nonworking components and ensuring unobstructed airflow.

An animation of the procedure to install a fan module controller board is available. See animation showing fan module controller board installation.

Before You Begin
- "Fan Module Controller Board (FB) Overview" on page 40
- "How to Remove a Fan Module Controller Board" on page 117

1 **Prepare the server for service. See "How to Prepare for Service" on page 55.**

2 **Access the back of the server.**

3 **If you are replacing an FB, see "How to Remove a Fan Module Controller Board" on page 117.**

4 **Use the handle to insert the FB into the server (1).**

Ensure that the connector on the FB engages with the connector on the SAM.
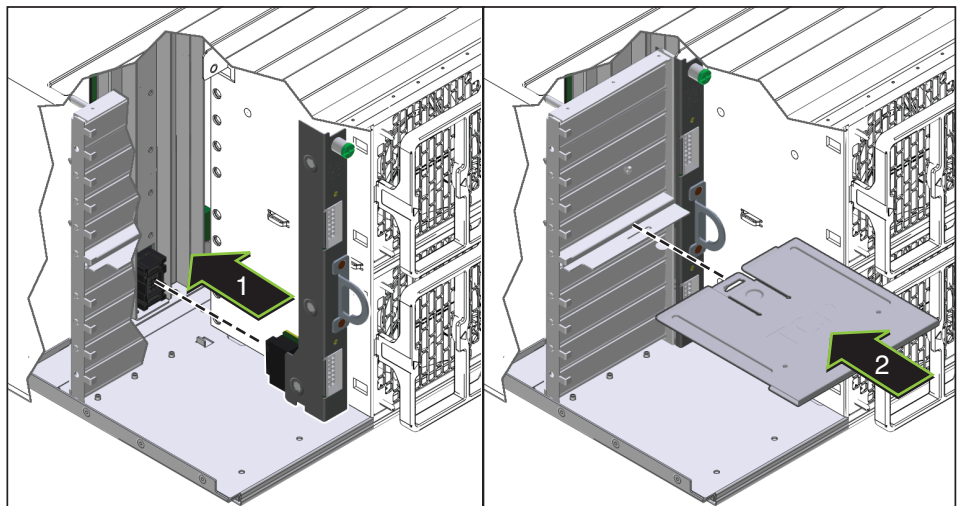
5 **To secure the FB assembly, fully tighten the green captive screw.**

6 **Orient the fan shelf with the green release tab facing upward.**

7 **To install the fan shelf, align it with the guides in the fan bay and slide it in until it locks into place (2).**

This action creates a click sound as the shelf locks into place.

8 **Install the FMs. See "How to Install a Fan Module" on page 115.**

Next Steps "How to Prepare for Operation" on page 56

See Also "Sun Server X2-8 Subassembly Module Overview" on page 17

Removing and Installing a NEM or a NEM Filler (CRU)

Note – The NEM is a hot-pluggable component.

This section contains topics and tasks related to the removal and installation of a network express module (NEM):

Network Express Module Designations and Assignments

The network express modules (NEMs) are designated as NEM 0 and NEM 1. NEM 0 is on the left, and NEM 1 is on the right:
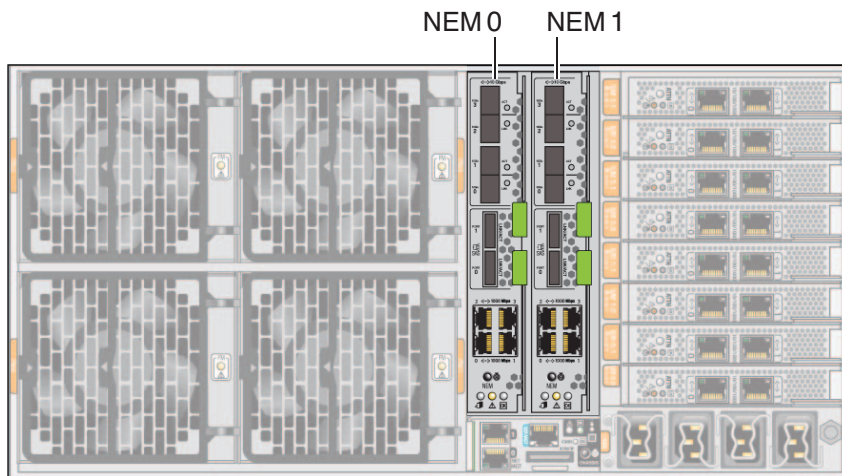
The ports of each NEM are allocated to the ports on a particular CMOD:

NEM 0   NEM 1
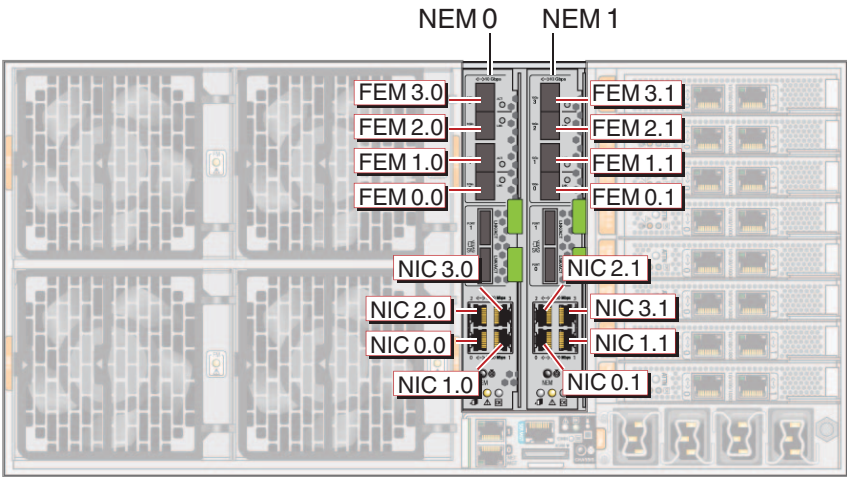
The numerical designations correspond to the CPU module (CMOD) position within the chassis.

Note – The first digit of the designation refers to the CMOD. The second digit refers to the port.

Designation	CPU Module
3.0 and 3.1	CMOD 3 (BL 3)
2.0 and 2.1	CMOD 2 (BL 2)
1.0 and 1.1	CMOD 1 (BL 1)
0.0 and 0.1	CMOD 0 (BL 0)

▼ How to Remove a NEM or a NEM Filler

An animation of the procedure to remove a NEM is available. See animation showing NEM removal.

Note – The NEM is a hot-pluggable component.

Before You Begin
- "Sun Server X2-8 Subassembly Module Overview" on page 17
- "Network Express Module Overview" on page 34

1. If necessary, prepare the server for service. See **"How to Prepare for Service" on page 55**.

2. Access the back of the server.

3 **Label and disconnect any cables attached to the network express module (NEM).**

4 **To release the NEM, squeeze and extend the release handles outward in opposite directions.**
Pull the lower handle downward and lift the upper handle until both are in their fully open position.
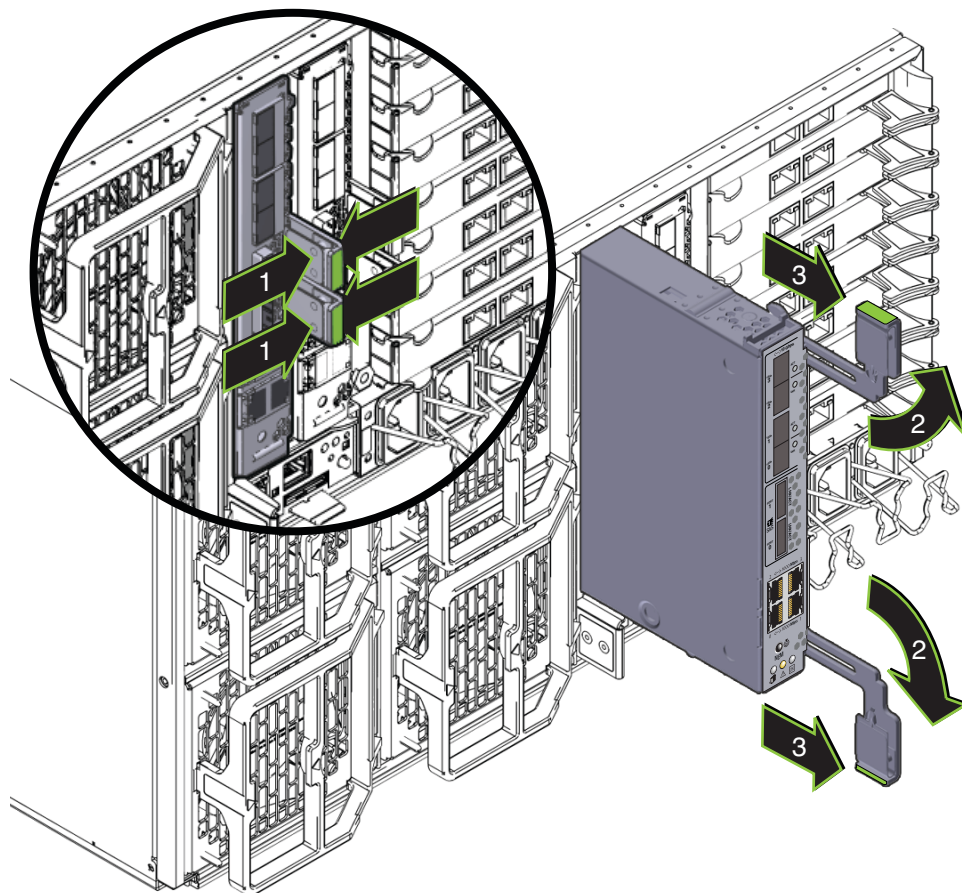
5 **To remove the NEM, pull it out of its slot using the handles.**

Next Steps "How to Install a NEM or a NEM Filler" on page 123

See Also "How to Prepare for Operation" on page 56

▼ How to Install a NEM or a NEM Filler

An animation of the procedure to install a NEM is available. See animation showing NEM installation.

Note – The NEM is a hot plug component.

Before You Begin
- "Sun Server X2-8 Subassembly Module Overview" on page 17
- "Network Express Module Overview" on page 34

1 If necessary, prepare the server for service. See **"How to Prepare for Service" on page 55.**

2 Access the back of the server.

3 If necessary remove a network express module (NEM) or a NEM filler. See **"How to Remove a NEM or a NEM Filler" on page 121.**

4 Ensure that the NEM release handles are in their fully open position.

Extend the release handles outward in opposite directions to their fully open position. Pull the lower handle downward and lift the upper handle.

5   To install the NEM, use the handles to slide the NEM into its slot until it stops (1).
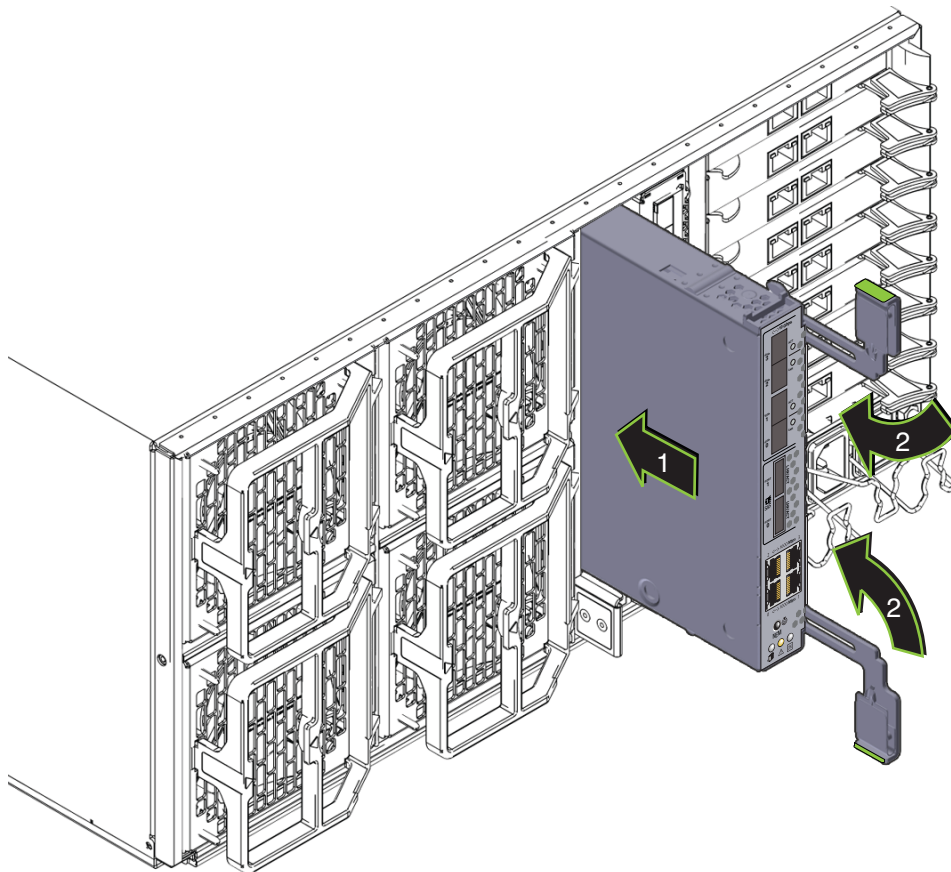
6   Ensure that the pawls on the levers are aligned with the slot in the side wall.

7   Rotate both handles inward toward the NEM (2).

⚠️   **Caution** – Pinch point. Keep your fingers clear of the back side of the lever, the lever hinges, and the edges of the module.

This action draws the NEM into the slot, engaging the NEM with its internal connector.

8   If necessary, install a 10 GE transceiver.

9   Attach the necessary cables to the NEM.

Note – For component firmware update instructions, refer to the *Oracle Integrated Lights Out Manager (ILOM) 3.0 Supplement for the Sun Server X2-8 (formerly Sun Fire X4800 M2)*.

Next Steps "How to Prepare for Operation" on page 56.

Removing and Installing a PCIe EM (CRU)

Note – The PCIe ExpressModule (PCIe EM) is a hot-pluggable component.

This section contains topics and tasks related to the removal and installation of a PCIe EM:

- "PCIe EM Designations, Slot Numbering, and Population Rules" on page 125
- "Preparing a PCIe EM for Hot Plug Removal and Installation" on page 127
- "How to Remove a PCIe EM" on page 129
- "How to Install a PCIe EM or PCIe EM Filler" on page 131

PCIe EM Designations, Slot Numbering, and Population Rules

Note – The PCIe EMs shown in this topic might be different from those supplied with your server.

The PCIe EM slots are designated starting from the bottom as, EM 0.0–EM 3.1:
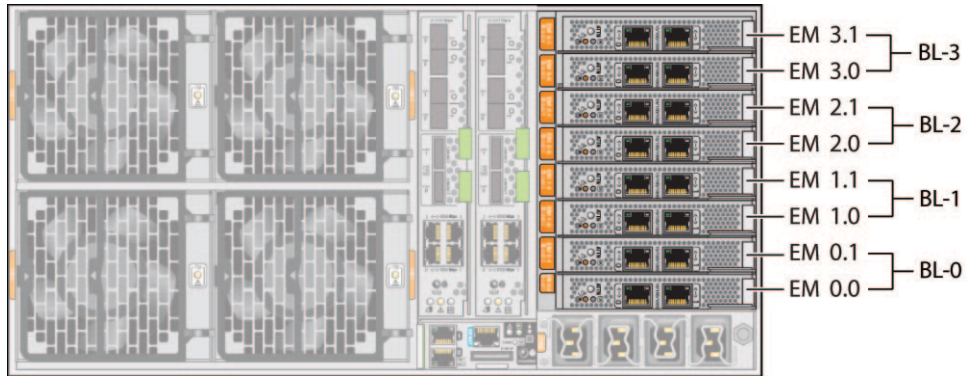
PCIe EM slots are paired and allocated to a single CMOD. The slots-to-CMOD pairing is as follows:

- Slots EM 0.0 and 0.1 are paired to CMOD 0 (BL 0).
- Slots EM 1.0 and 1.1 are paired to CMOD 1 (BL 1).
- Slots EM 2.0 and 2.1 are paired to CMOD 2 (BL 2).
- Slots EM 3.0 and 3.1 are paired to CMOD 3 (BL 3).

For slot number referencing, the PCIe EM slots are numbered as such:
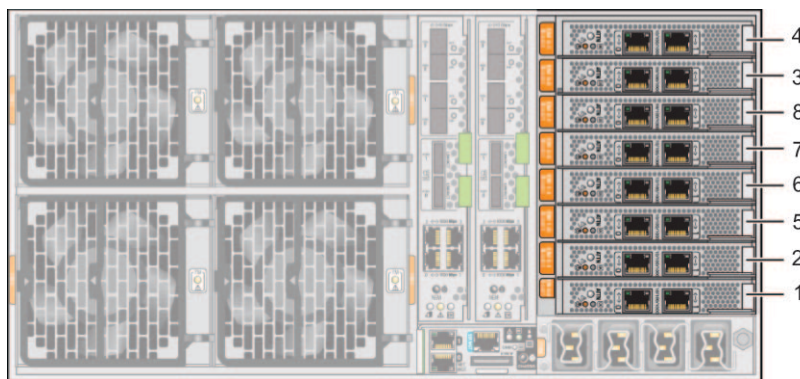
PCIe EM population order for a minimum configuration 4-socket server and a full configuration 8-socket server:

- 4-socket servers:
    - Slot 3.0 (IOH 0 on CMOD 3/BL 3)
    - Slot 0.0 (IOH 0 on CMOD 0/BL 0)—Shared if REM (x4) is present
    - Slot 3.1 (IOH 1 on CMOD 3/BL 3)
    - Slot 0.1 (IOH 1 on CMOD 0/BL 0)

- 8-socket servers:
    - Slot 3.0 (IOH 1 on CMOD 3/BL 3)
    - Slot 1.0 (IOH 2 on CMOD 1/BL 1)
    - Slot 0.0 (IOH 0 on CMOD 0/BL 0)—Shared if REM (x4) is present
    - Slot 2.0 (IOH 3 on CMOD 2/BL 2)
    - Slot 3.1 (IOH 1 on CMOD 3/BL 3)
    - Slot 1.1 (IOH 2 on CMOD 1/BL 1)
    - Slot 0.1 (IOH 0 on CMOD 0/BL 0)
    - Slot 2.1 (IOH 3 on CMOD 2/BL 2)

Note – For proper airflow and cooling slots not containing a PCIe EM must be populated with a filler panel.

Preparing a PCIe EM for Hot Plug Removal and Installation

Hot-plug components can be removed from a fully powered and operational system. Some hot-plug components require OS preparation before removal or installation. A PCIe EM that is hosting non-vital system resources can be removed at any time using these instructions. If the PCIe EM is a vital system resource, such as the only network interface, removing it might cause an unacceptable interruption in service. This section contains the following hot plug removal procedure:

-

▼ Prepare a PCIe EM for Hot Plug in Oracle Solaris 10 and Solaris 11

The PCIe EM hot plug capability is built into the supported Oracle Solaris OS for your server. Use this procedure to prepare the server with Oracle Solaris OS for hot-plugging PCIe EMs.

Before You Begin Before you remove a PCIe EM, ensure that dependent critical resources are accessible through an alternate path, or plan for service downtime.

1 **Log in to the superuser account.**

2 **To verify that the hotplug service is running:**

    # **svcs hotplug**

    ```
    STATE         STIME       FMRI
    online        15:47:02        svc:/system/hotplyg:default
    ```

3   If the hotplug is not running (disabled), start it:

```
# svcadm enable hotplug
```

4   To determine the PCIe EM slot number, use the cfgadm command.

For example:

```
# cfgadm -s "match=partial,select=ap_id"
```

Sample output from the command:

```
Ap_Id  Type     Receptacle  Occupant      Condition
slot1  unknown  etherne/hp  configured    ok
slot2  unknown  etherne/hp  configured    ok
slot3  unknown  etherne/hp  configured    ok
slot4  unknown  etherne/hp  configured    ok
slot5  unknown  empty       unconfigured  unknown
slot6  unknown  empty       unconfigured  unknown
slot7  unknown  empty       unconfigured  unknown
slot8  unknown  empty       unconfigured  unknown
```

The sample output shows populated and unpopulated devices.

5   Identify the slot number in the Ap_Id column.

For more information about PCIe EM designations, see "PCIe EM Designations, Slot Numbering, and Population Rules" on page 125.

6   To stop the application that has the device open, do one of the following:

- **Press the PCIe EM's Attention button.**

   The LED blinks for approximately five seconds and then turns off.

   —*or*—

- **To unconfigure the device manually, use the cfgadm command :**

   a. Enter the command:

   ```
   # cfgadm -c unconfigure slot#
   ```

   where *slot#* is the Ap_Id as determined in the previous steps.

   For example:

   ```
   cfgadm -c unconfigure slot4
   ```

   b. Confirm that the device has been unconfigured:

   For example:

   ```
   # cfgadm -s "match=partial,select=ap_id"
   ```

Sample output from the command:

```
Ap_Id   Type     Receptacle  Occupant      Condition
slot1   unknown  etherne/hp  configured    ok
slot2   unknown  etherne/hp  configured    ok
slot3   unknown  etherne/hp  configured    ok
slot4   unknown  etherne/hp  unconfigured  unknown
slot5   unknown  empty       unconfigured  unknown
slot6   unknown  empty       unconfigured  unknown
slot7   unknown  empty       unconfigured  unknown
slot8   unknown  empty       unconfigured  unknown
```

In the output from the command, verify that the Type and Condition are shown as unknown, and that the Occupant value indicates that the device is unconfigured.

c. Disconnect the device from the slot:

cfgadm -c disconnect *slot#*

d. Confirm that the device has been disconnected.

cfgadm -s "match=partial,select=ap_id"

Sample output from the command:

```
Ap_Id   Type     Receptacle    Occupant      Condition
slot1   unknown  etherne/hp    configured    ok
slot2   unknown  etherne/hp    configured    ok
slot3   unknown  etherne/hp    configured    ok
slot4   unknown  disconnected  unconfigured  unknown
slot5   unknown  empty         unconfigured  unknown
slot6   unknown  empty         unconfigured  unknown
slot7   unknown  empty         unconfigured  unknown
slot8   unknown  empty         unconfigured  unknown
```

In the output of the command, verify that the Receptacle value is shown as disconnected.

7   Remove the PCIe EM from the system. See "How to Remove a PCIe EM" on page 129.

Next Steps ■ "How to Remove a PCIe EM" on page 129
■ "How to Install a PCIe EM or PCIe EM Filler" on page 131

▼ How to Remove a PCIe EM

An animation of the procedure to remove a PCIe EM is available. See animation showing PCIe EM removal.

Note – The PCIe EMs shown in this topic might be different from those supplied with your server.

Before You Begin ■ "PCIe ExpressModule Overview" on page 38

- "PCIe EM Designations, Slot Numbering, and Population Rules" on page 125
- For hot-plug preparation procedures on an Oracle Solaris 10 OS system, see "Prepare a PCIe EM for Hot Plug in Oracle Solaris 10 and Solaris 11" on page 127

1   **If necessary, prepare the server for service. See "How to Prepare for Service" on page 55.**

2   **Access the back of the server.**

3   **For hot-plug removal, press the ATTN button on the PCIe EM.**

    The LED blinks for approximately five seconds and then turns off indicating that the component is ready for removal.

    For button location, see "Back Panel PCIe EM LEDs" on page 190.

4   **Disconnect cables from the PCIe EM.**

5   **To unlock the PCIe EM, pull out on the underside of the release handle and rotate the handle to the left to its fully open position (1).**
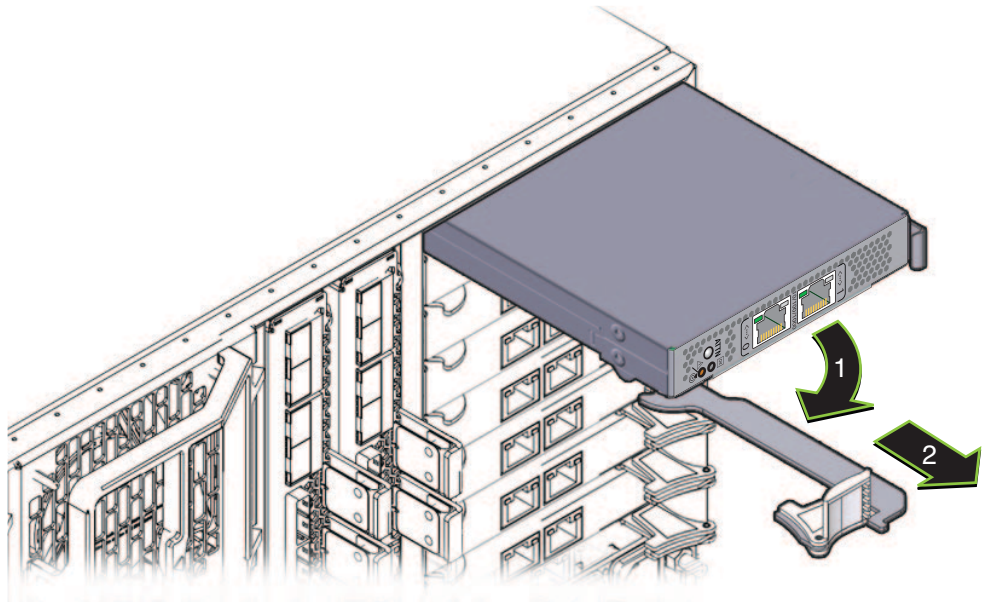
6   **To remove the PCIe EM, use the handle to pull the PCIe EM from its slot (2).**

7   **If you are replacing a PCIe EM, see "How to Install a PCIe EM or PCIe EM Filler" on page 131.**

Next Steps   "How to Install a PCIe EM or PCIe EM Filler" on page 131

See Also   "Sun Server X2-8 Subassembly Module Overview" on page 17

▼ How to Install a PCIe EM or PCIe EM Filler

An animation of the procedure to install a PCIe EM is available. See animation showing PCIe EM installation.

Note – The PCIe EMs shown in this topic might be different from those supplied with your server.

Before You Begin
- "PCIe ExpressModule Overview" on page 38
- "PCIe EM Designations, Slot Numbering, and Population Rules" on page 125
- For PCIe EM hot-plug preparation procedures on an Oracle Solaris 10 OS system, see "Prepare a PCIe EM for Hot Plug in Oracle Solaris 10 and Solaris 11" on page 127

1   Prepare the server for service. See "How to Prepare for Service" on page 55.

2   If necessary, remove a PCIe EM or PCIe EM filler. See "How to Remove a PCIe EM" on page 129.

3   Ensure that the PCIe EM handles are in their fully open position.
To unlock and extend the handle, pull up on the underside of the release handle and lift the handle to its fully open position.

4   Position the PCIe EM at the slot with the handle at the bottom.

5   Slide the PCIe EM into the slot until it stops.
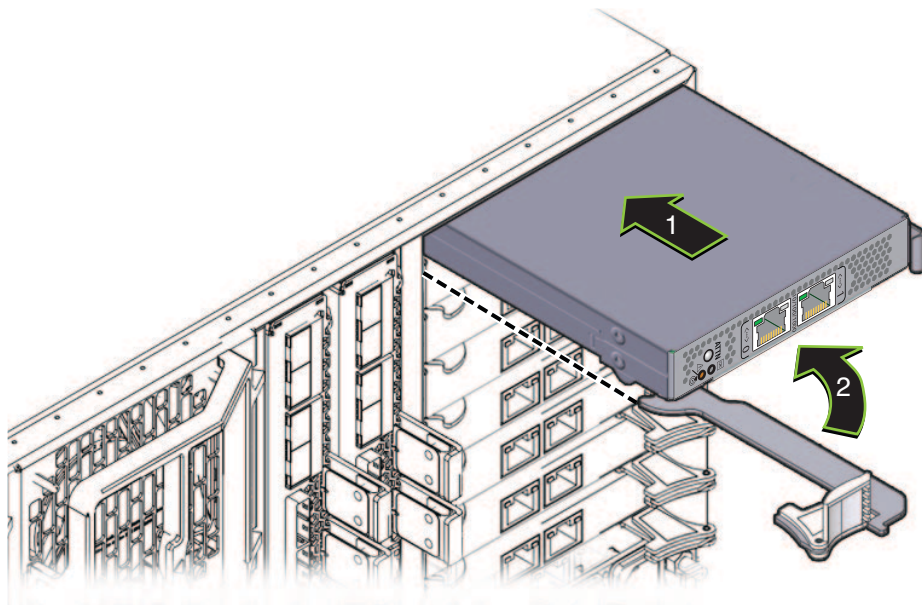
6   Ensure that the pawl on the end of the handle is aligned with the slot sidewall.

7   Rotate the handle downward until it is flush with PCIe EM.

⚠ **Caution –** Pinch point. Keep your fingers clear of the back side of the lever, the lever hinges, and the edges of the module.

This action draws the PCIe EM into the slot, engaging the PCIe EM with its internal connector.

8   Attach the necessary cables.

9   For hot-plug insertion, press the ATTN button.

The LED blinks for approximately five seconds and then turns off.

For button location, see "Back Panel PCIe EM LEDs" on page 190.

Note – For component firmware update instructions, refer to the *Oracle Integrated Lights Out Manager (ILOM) 3.0 Supplement for the Sun Server X2-8 (formerly Sun Fire X4800 M2)*.

Next Steps   "How to Prepare for Operation" on page 56

See Also   "How to Remove a PCIe EM" on page 129

Removing and Installing the Service Processor Module (CRU)

Note – The SP module is a hot-swap-capable component.

This section contains topics and tasks related to the removal and installation of the service processor (SP) module:

- "How to Remove the SP Module" on page 133
- "How to Install the SP Module" on page 134

▼ How to Remove the SP Module

An animation of the procedure to remove an SP module is available. See animation showing SP module removal.

Before You Begin
- "Sun Server X2-8 Subassembly Module Overview" on page 17
- "Service Processor (SP) Module Overview" on page 36

1 If necessary, prepare the server for service. See **"How to Prepare for Service" on page 55.**

2 Access the rear of the server.

3 If necessary, remove the multiport cable and any other cables connected to the SP module. See **"How to Remove the Multiport Cable" on page 136.**

4   To unlock the SP module, squeeze the green tab (1) and rotate the handle to the right (2).
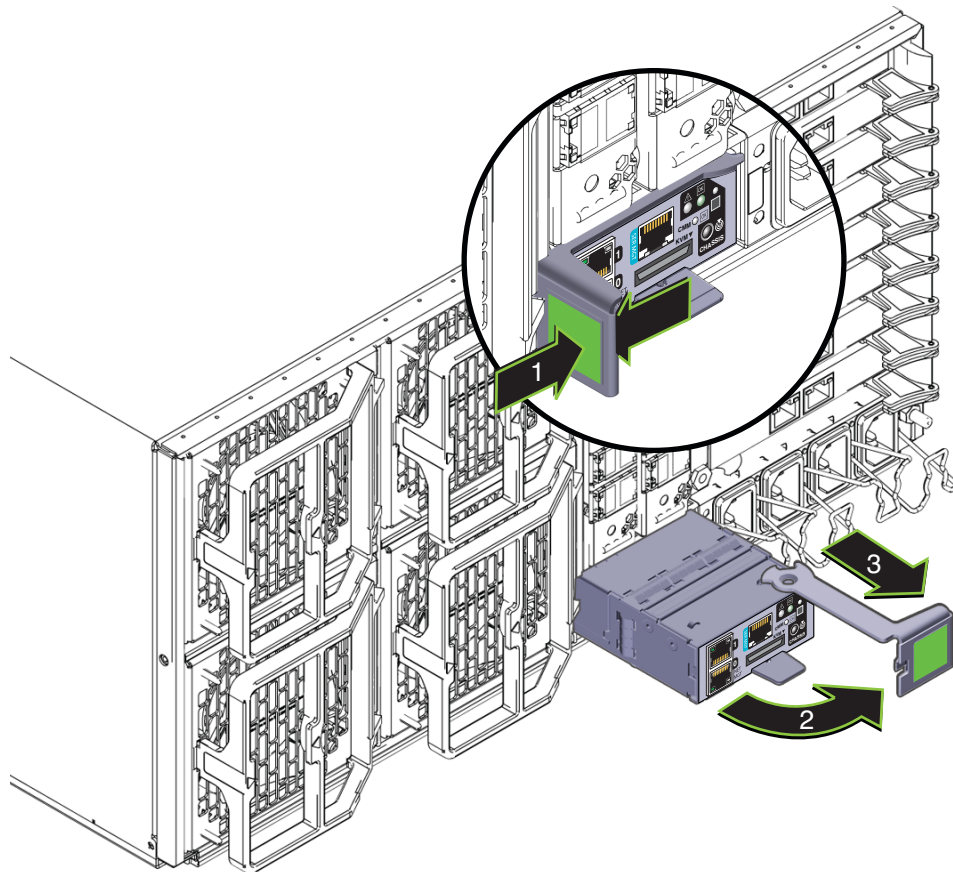
5   To remove the SP module, use the handle to pull it out of the slot (3).

Next Steps

▼ How to Install the SP Module

An animation of the procedure to install an SP module is available. See animation showing SP module installation.

Before You Begin   ■ "SP Module and CMOD Firmware Compatibility Considerations" on page 150
■ "Sun Server X2-8 Subassembly Module Overview" on page 17
■ "Service Processor (SP) Module Overview" on page 36

1 **If necessary, prepare the server for service. See "How to Prepare for Service" on page 55.**

2 **To remove the SP module, see "How to Remove the SP Module" on page 133.**

3 **Ensure that the SP module handle is in its fully open position.**

4 **Slide the SP module into its slot until it stops (1).**

Do *not* push the SP module any farther into the slot.
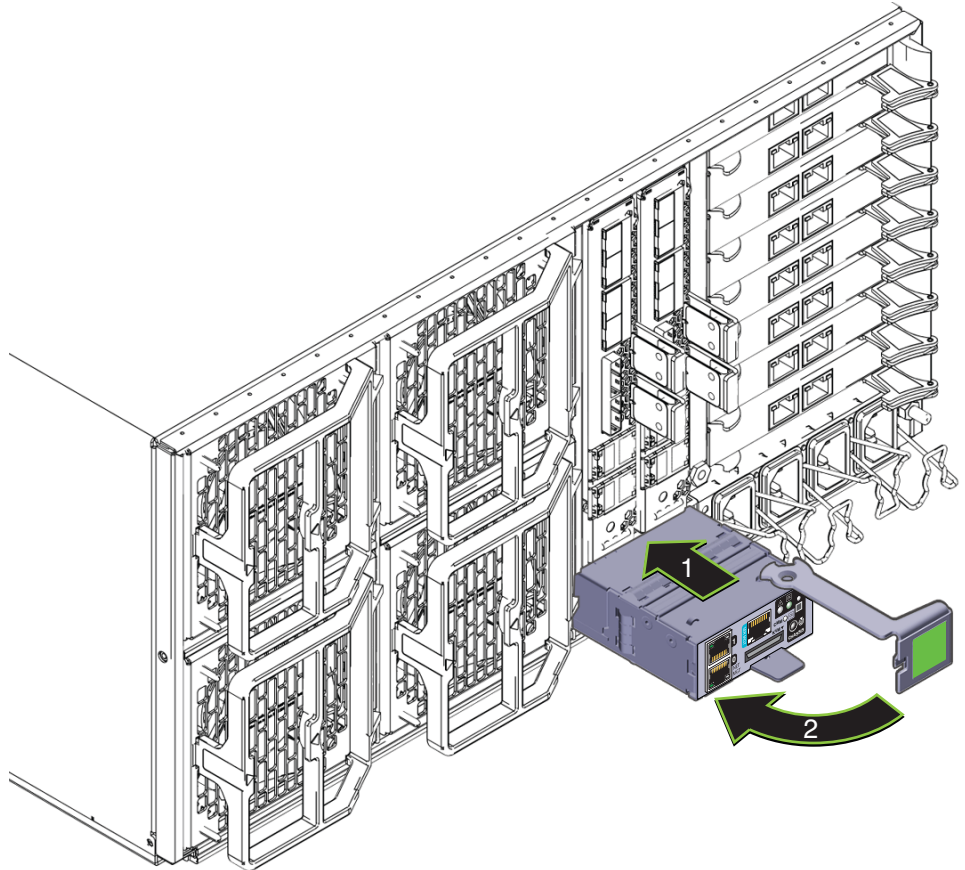
5 **Ensure that the pawl on the handle is aligned with and engages the slot in the wall.**

6 **Rotate the handle to the left until it is flush with the SP module (2).**

⚠️ **Caution –** Pinch point. Keep your fingers clear of the back side of the lever, the lever hinges, and the edges of the module.

This action pushes the SP module into the server and engages the connectors on the rear of the SP module with the internal connector in the SAM.

7   **If necessary, attach the multiport cable (see "How to Install the Multiport Cable" on page 137) and any other cables.**

See Also   "How to Remove the SP Module" on page 133

Removing and Installing the Multiport Cable

This section contains tasks related to the removal and installation of the multiport cable:

- "How to Remove the Multiport Cable" on page 136
- "How to Install the Multiport Cable" on page 137

▼ How to Remove the Multiport Cable

The multiport cable connects to the universal connector port (UCP) on the SP module.

1   **Access the rear of the server.**

2   **If necessary, label and remove any cables attached to the multiport cable.**

3 **To remove the cable, squeeze the edges of the multiport cable connector and pull the it out of the UCP on the SP module.**
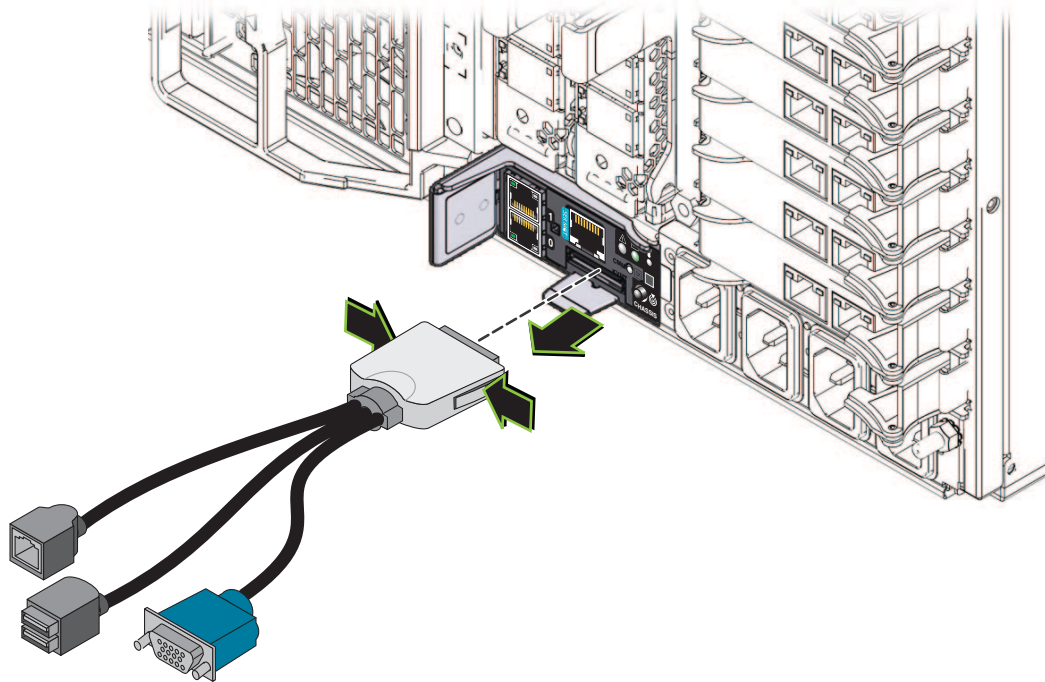
▼ How to Install the Multiport Cable

The multiport cable connects to the universal connector port (UCP) on the SP module.

1 **Access the rear of the server.**

2   To install the multiport cable, orient the cable, squeeze the sides, and insert the connector into the UCP connector on the SP module.
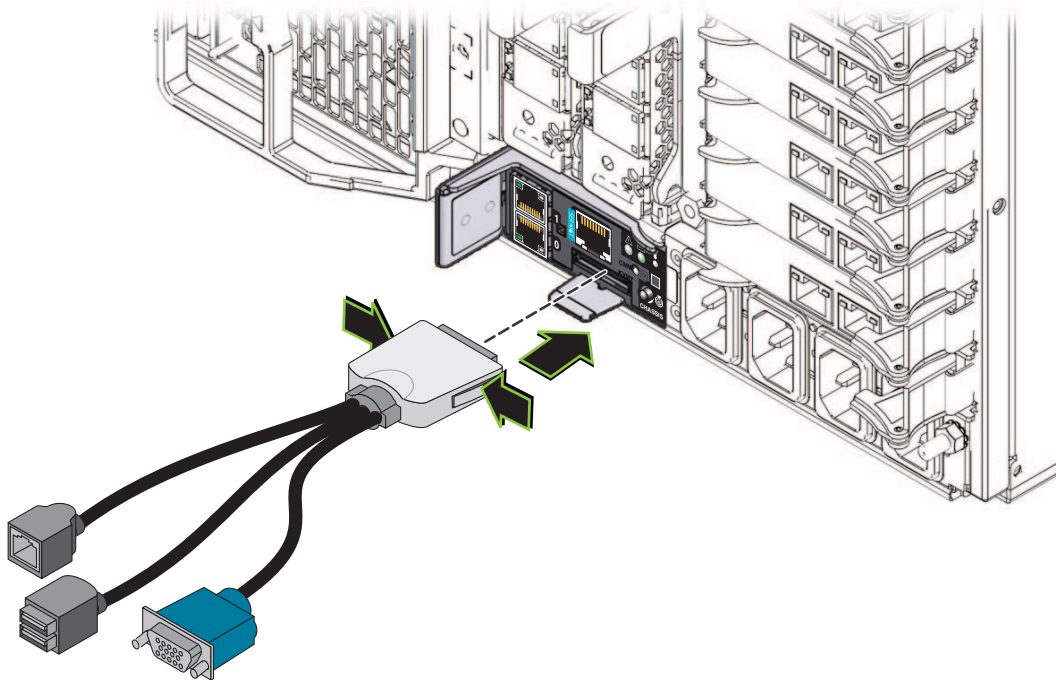
Removing and Installing the Subassembly Module (FRU)

This section contains tasks related to the removal and installation of the subassembly module:

- "How to Remove the Subassembly Module" on page 138
- "How to Install the Subassembly Module" on page 143

▼ How to Remove the Subassembly Module

An animation of the procedure to remove a subassembly module is available. See animation showing subassembly module removal.

Before You Begin   "Sun Server X2-8 Subassembly Module Overview" on page 17

1   Before replacing this component, backup the motherboard FRUID information. See "Managing FRUID Information" on page 147.

2   Prepare the server for service. See "How to Prepare for Service" on page 55.

3   Disconnect the AC power cables from the rear of the server.

The AC power connectors are retained by a wire latch. Lift the retaining latch and pull the connector out of its socket (see "AC Power Block Overview" on page 39).

4   Disengage the power supplies. See "How to Remove a Power Supply" on page 59.

Partially remove the power supplies. This action ensures that the power supplies are disconnected from the midplane connectors.

5   Label and remove the CMODs and CPU filler modules. See "How to Remove a CPU Module (CMOD)" on page 78.

CMODs and CPU filler modules must be returned to their original slots. For CMOD slot designations, see "CPU Module (CMOD) Designations" on page 85.

6   Disconnect the three hard drive backplane cables *from the server midplane*.

Note – Do *not* disconnect the cables from the hard drive backplane.
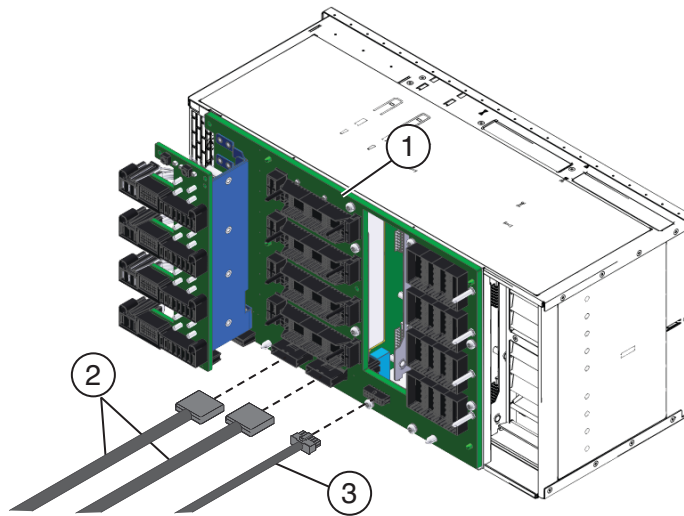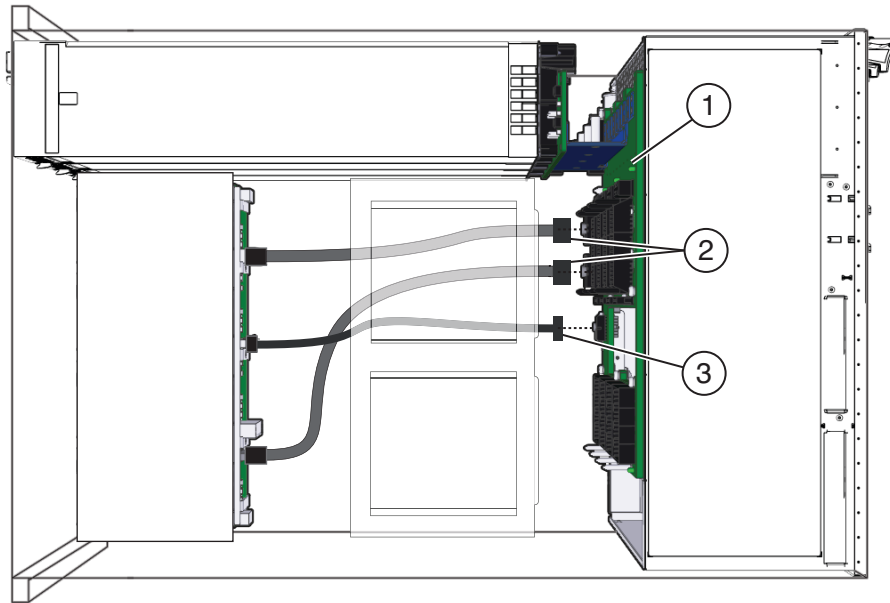
7   **Label and disconnect the cables connected to the *rear* of the server.**

Note – Do *not* disconnect the cables at the hard drive backplane.

8   **Remove the four fan modules. See "How to Remove a Fan Module" on page 113.**

9   Remove the fan controller boards. See "How to Remove a Fan Module Controller Board" on page 117.

10 Remove the network express modules or network express module fillers. See "How to Remove a NEM or a NEM Filler" on page 121.

    If you are not replacing the SAM, removal of this component is optional but recommended.

11 Remove the PCIe EMs or PCIe EM fillers. See "How to Remove a PCIe EM" on page 129.

    If you are not replacing the SAM, removal of this component is optional but recommended.

12 Remove the SP module. See "How to Remove the SP Module" on page 133.

    If you are not replacing the SAM, removal of this component is optional but recommended.

13   Use a long No. 2 screwdriver to loosen the five green captive screws that secure the SAM to the server chassis.

Two of the captive screws are accessible through the airflow vanes of fan module bays FM 0 and FM 2. To access the screws lift open the top and bottom air flow vanes.
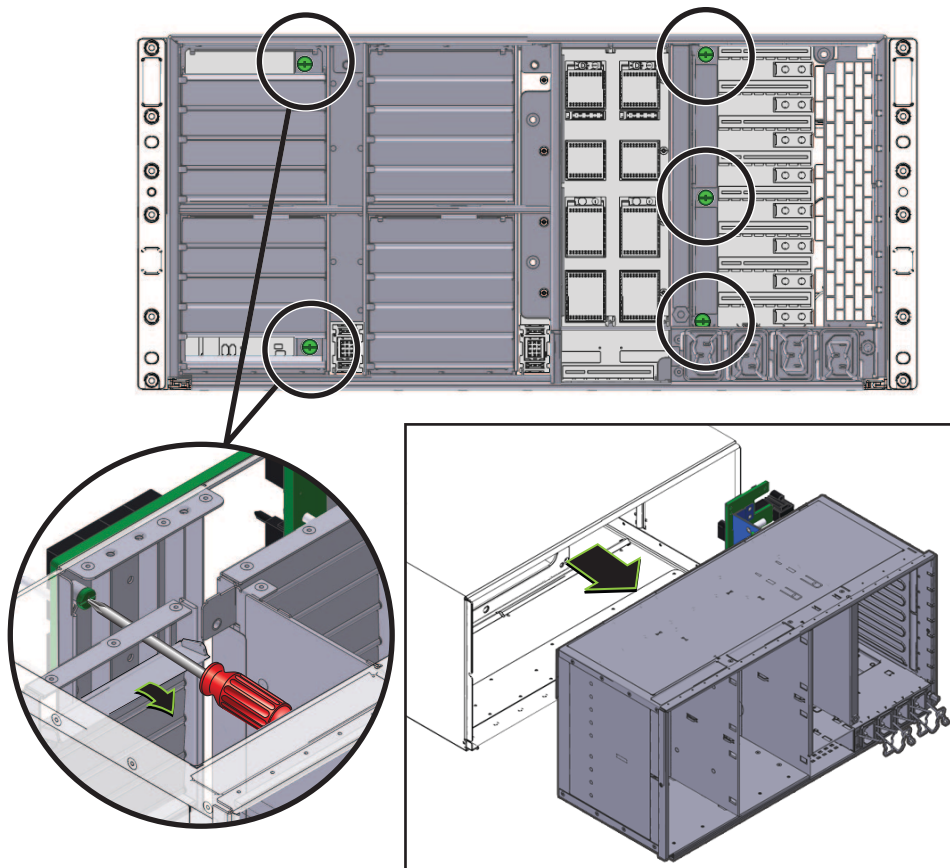
14   To remove the SAM, carefully slide it out of the chassis.

Note – The approximate weight of the SAM is 16 pounds.

Next Steps

▼ How to Install the Subassembly Module

An animation of the procedure to install a subassembly module is available. See animation showing subassembly module installation.

Before You Begin   "Sun Server X2-8 Subassembly Module Overview" on page 17

1   Prepare the server for service. See **"How to Prepare for Service" on page 55**.

2   Remove the SAM. See .**"How to Remove the Subassembly Module" on page 138**.

3   From the back of the server, ensure that the hard drive backplane cables are correctly routed. See **"Hard Drive Backplane Cable Routing and Designations" on page 72**.

4   Position the SAM with the fan module drive bay on the left.

5   Insert the SAM into rear of the server chassis.

6   Carefully slide the SAM into the chassis until it stops.

In this position the screws that secure the SAM to the interior chassis might not be touching their corresponding screw holes.

7   To ensure that the SAM mounting screws touch the interior screw holes on the chassis, firmly push the SAM inward until you can engage the screws.

8   To partially secure the SAM in the server, use a long No. 2 screwdriver to tighten the three right–most green captive screws.

Two of the captive screws are accessible through the airflow vanes of fan module bays FM 0 and FM 2. To access the screws lift open the top and bottom airflow vanes.
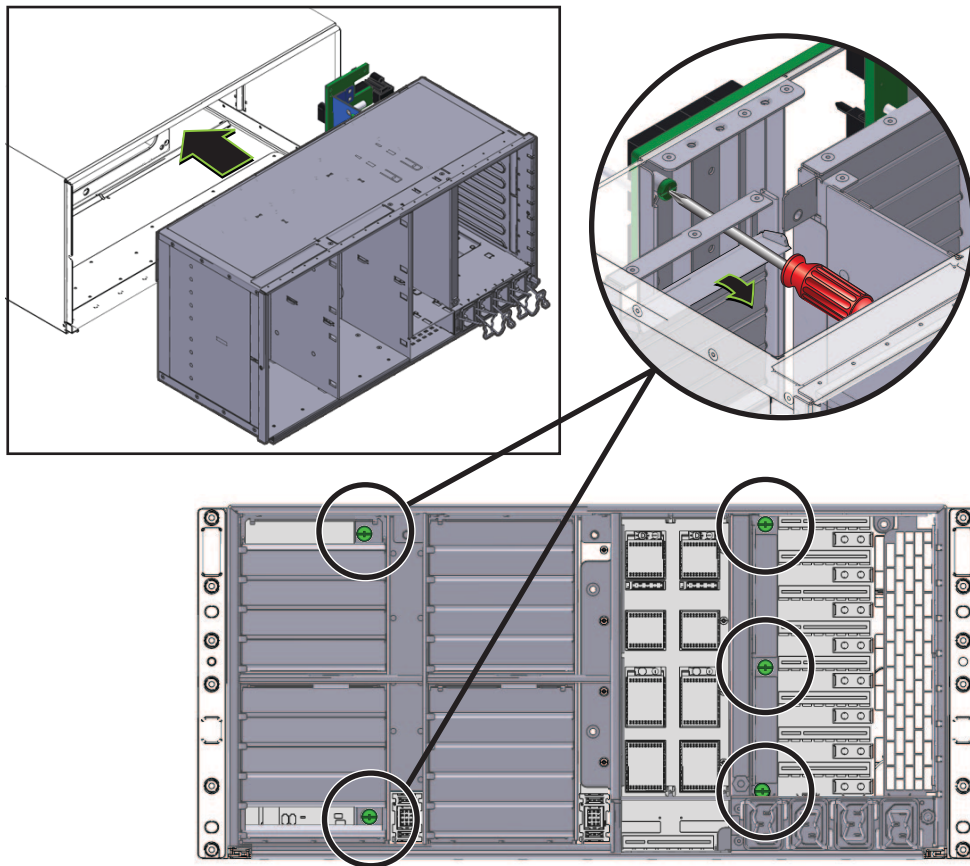
9   To fully secure the SAM in the server, carefully open the air vanes of the two left FMs and tighten the two green captive screws.

10   From the front of the server, connect the three hard drive backplane cables to the midplane.
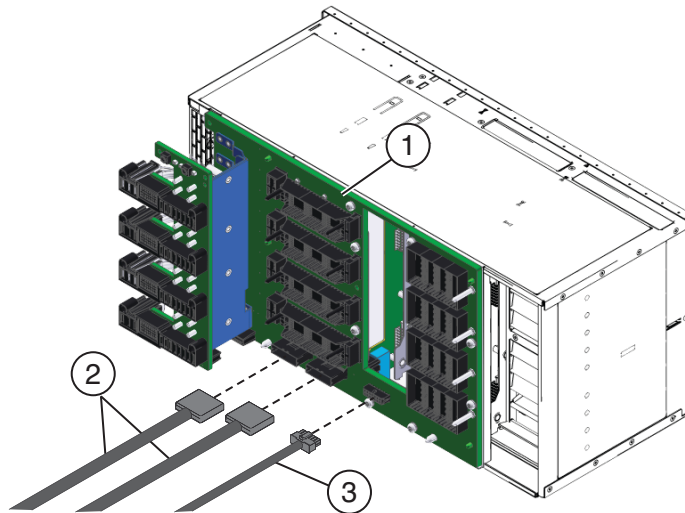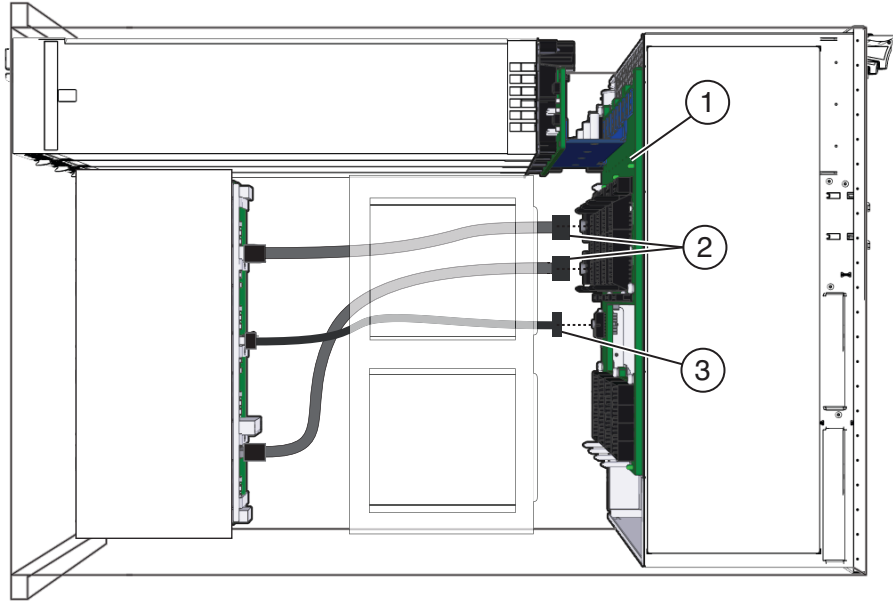
11   At the rear of the server, install the fan controller boards. See "How to Install a Fan Module Controller Board" on page 118.

12   Install the four fan modules. See "How to Install a Fan Module" on page 115.

13 Install the network express modules or network express module fillers. See **"How to Install a NEM or a NEM Filler" on page 123**.

14 Install the PCIe EMs or PCIe EM fillers. See **"How to Install a PCIe EM or PCIe EM Filler" on page 131**.

15 Install the SP module. See **"How to Install the SP Module" on page 134**.

16 Connect any cables network cables to the rear of the server.

17 Prepare the server for operation. See **"How to Prepare for Operation" on page 56**.

18 Backup and update the FRUID for the SAM serial number. See **"Managing FRUID Information" on page 147**.

Sun Server X2-8 Service Procedures and Information

This section contains topics and tasks related updating firmware, accessing the BIOS Setup utility, and locating thermal sensors and component LEDs:

-
-
-
-
-
-

Managing FRUID Information

This section contains tasks for managing the FRUID information of components in the server. The FRUID information is retained on the motherboard. This information should be backed up and updated whenever a major component is replaced.

Note – These tasks are intended for Oracle Service personnel only.

-
-
-

▼ How to Backup Motherboard FRUID Information

Note – This information is for Oracle Service personnel only.

The server supports TLI and stores the TLI records in the motherboard (MB) FRUID container, called PRIMARY and in a file on the service processor (SP) filesystem, called BACKUP1. After adding or replacing a component in your server, you can initiate a backup of the latest TLI record information in the MB FRUID PRIMARY container to BACKUP1 on the SP filesystem using this procedure.

1   **Enter Service mode.**

2   **To backup the PRIMARY container to the SP filesystem, enter the following command:**
`copypsnc PRIMARY BACKUP1`

See Also

▼ How to Restore Motherboard FRUID Information

Note – This information is for Oracle Service personnel only.

This procedure restores the FRUID backup.

●   **To restore FRUID information, enter Service mode and type the following command:**
`copypsnc BACKUP1 PRIMARY`

The MAC address stored in BACKUP1 is incorrect, because it is the address for the old MB.

▼ How to Update Motherboard FRUID Information

Note – This information is for Oracle Service personnel only.

After replacing a FRU, update the FRUID information that resides on the motherboard.

1   **Use ILOM to obtain the information for the new component.**
For example, to obtain the MAC address of a new motherboard from the CLI, use the `show` command:

`show /SYS/MB/NET0`

The MAC address appears in the list.

2   **Make note of the component information.**

3   **Enter Service mode and use the `setpsnc` command to update the FRUID information:**
For example, to change the motherboard MAC address:

`setpsnc -m` *new-mac_address*

where, *new-mac_address* is the MAC address of the new motherboard.

4   Backup the MB FRUID information. See "How to Backup Motherboard FRUID Information" on page 147.

Firmware Information and Procedures

This section contains topics and tasks related to updating firmware:

- "How to Update Firmware" on page 149
- "How to Use the Tools and Drivers CD" on page 149
- "SP Module and CMOD Firmware Compatibility Considerations" on page 150

▼ How to Update Firmware

● **For detailed information about updating server and component firmware, refer to** *Oracle Integrated Lights Out Manager (ILOM) 3.0 Supplement for the Sun Server X2-8 (formerly Sun Fire X4800 M2)***.**

▼ How to Use the Tools and Drivers CD

The Sun Server X2-8 Tools and Drivers CD contains software applications, utilities, and BIOS and Oracle ILOM firmware updates. For the most up-to-date information about the contents of the Tools and Drivers CD, refer to *Sun Server X2-8 (formerly Sun Fire X4800 M2) Product Notes*.

The Tools and Drivers CD is available online as an ISO image from the Sun Server X2-8 product page.

1   Download the latest Tools and Drivers CD ISO image, and do one of the following:

- Use the ISO image to burn a CD.
- Mount the ISO image as a virtual CD.

2   Boot the server from the CD or browse the contents of the CD.

SP Module and CMOD Firmware Compatibility Considerations

Note – To ensure compatibility and optimal performance, You should update your server to the latest version of firmware.

Firmware resides on both the SP module and the CPU modules (CMOD). The firmware versions on both components must match. You can perform firmware updates only on the SP module. The firmware that resides on the CMODs is maintained by the SP module. The SP module automatically updates all CMODs to its version of firmware. If a CMOD is replaced and its version is different from the firmware version that resides on the SP module, then the SP module will update or downgrade the new CMOD to the version of firmware that resides on the SP module. If the SP module is replaced and its firmware is different from the firmware on the CMODs, it will update or downgrade the CMODs to the version of firmware that resides on the SP module.

The following table shows the resulting SP module response to user-initiated firmware updates and component replacements.

User Action	SP Response
Updates the SP module firmware	Updates the firmware of all CMODs to the version of firmware that resides on the SP module.
Replaces or adds a CMOD	Updates the new CMOD firmware to the version of firmware that resides on the SP module.
Installs an SP module with downgraded firmware	Downgrades the firmware of all CMODs to the downgraded version of firmware that resides on the SP module.
Installs an SP module with updated firmware	Updates the firmware of all CMODs to the updated version of firmware that resides on the SP module.

▼ How to Access the BIOS Setup Utility

Before You Begin   Set up the server to view POST and boot messages.

1   **Reboot or power on the server.**

   Watch the POST messages for the prompt to press the F2 key.

2   **When the prompt appears, press F2.**

   The BIOS Setup utility main menu appears.

3   Use the left and right arrow keys or the Tab key to navigate the top level of the utility.

4   Use the down and up arrow keys to navigate the submenus.

5   Use the Help information for instructions about how to change options, save setups, and exit the utility.

See Also   "BIOS Setup Utility Screens" on page 151

BIOS Setup Utility Screens

This section provides searchable representations of the BIOS Setup Utility screens. For information about how to access the BIOS Setup Utility, see "How to Access the BIOS Setup Utility" on page 150.

- "Main" on page 152
- "Advanced" on page 153
- "PCIPnP" on page 167
- "Boot" on page 168
- "Security" on page 171
- "RC Settings" on page 172
- "Chipset" on page 175
- "Exit" on page 182

Main

BIOS Setup Utility Main Screen

```
********************************************************************************
* Main     Advanced   PCIPnP    Boot    Security   RC Settings   Chipset    *
*                                                                           *
* System Overview                                 ** Use [ENTER], [TAB]    *
* ************************************************** or [SHIFT-TAB] to      *
* AMIBIOS                                          ** select a field.      *
* Version   :08.00.16                              **                      *
* Build Date:06/01/11                              ** Use [+] or [-] to     *
* Sun BIOS Revision: 15.01.23.00                   ** configure system Time. *
*                                                  **                      *
* Product Name:   Sun Fire X4800 M2                **                      *
* BMC Firmware Revision: 3.0.14.25                 **                      *
* CPLD Revision: 7.8                               **                      *
*                                                  **                      *
* Processor                                        **                      *
* Intel(R) Xeon(R) CPU E7- 8870  @ 2.40GHz         ** *    Select Screen    *
* Speed    :2400MHz                                ** **    Select Item     *
* Count    :8                                      ** +-    Change Field    *
*                                                  ** Tab   Select Field    *
* System Memory                                    ** F1    General Help    *
* Size     :128.0 GB                               **(CTRL+Q from remote kbd)*
*                                                  ** F10   Save and Exit   *
* System Time                [12:21:15]            **(CTRL+S from remote kbd)*
* System Date                [Mon 06/06/2011]      ** F10   Save and Exit   *
*                                                  **(CTRL+S from remote kbd)*
* * Serial Number Information                      ** ESC   Exit            *
********************************************************************************
```

Advanced

Advanced Settings Main Screen

```
*******************************************************************************
* Main     Advanced    PCIPnP    Boot    Security    RC Settings    Chipset    *
*                                                                             *
* Advanced Settings                                   * Configure CPU.        *
* ************************************************** *                         *
* WARNING: Setting wrong values in below sections     *                       *
*          may cause system to malfunction.           *                       *
*                                                     *                       *
* * CPU Configuration                                 *                       *
* * ACPI Configuration                                *                       *
* * I/O Virtualization                                *                       *
* * IPMI Configuration                                *                       *
* * PCI Express Configuration                         *                       *
* * Remote Access Configuration                       *                       *
* * Trusted Computing                                 *                       *
* * USB Configuration                                 * *    Select Screen    *
* * Intel VT-d Configuration                          * **    Select Item     *
*                                                     * Enter Go to Sub Screen *
*                                                     * F1    General Help     *
*                                                     *(CTRL+Q from remote kbd)*
*                                                     * F10   Save and Exit    *
*                                                     *(CTRL+S from remote kbd)*
*                                                     * ESC   Exit             *
*******************************************************************************
```

Advanced Settings > CPU Configuration

```
*******************************************************************************
*         Advanced                                                           *
*                                                                            *
* Configure advanced CPU settings              ** For UP platforms,      *
* Module Version:01.0E                          ** leave it enabled.      *
* *************************************************** For DP/MP servers,    *
* Manufacturer:Intel                            ** it may use to tune    *
* Intel(R) Xeon(R) CPU E7- 8870  @ 2.40GHz      ** performance to the    *
* Frequency   :2.40GHz                          ** specific application. *
* BCLK Speed  :133MHz                            **                        *
* Cache L1    :640 KB                            **                        *
* Cache L2    :2560 KB                           **                        *
* Cache L3    :30720 KB                          **                        *
* Ratio Status:Unlocked (Min:08, Max:18)        **                        *
* Ratio Actual Value:18                          **                        *
*                                                **  *    Select Screen   *
* Hardware Prefetcher       [Enabled]           **  **   Select Item      *
* Adjacent Cache Line Prefetch [Enabled]        **  +-   Change Option    *
* ACPI MADT ordering        [Modern ordering]   **  F1   General Help     *
* Max CPUID Value Limit     [Disabled]          ** (CTRL+Q from remote kbd)*
* Intel(R) Virtualization Tech [Enabled]        **  F10  Save and Exit    *
* x2APIC                    [Enabled]           ** (CTRL+S from remote kbd)*
* Intel(R) HT Technology    [Enabled]           ** ESC   Exit             *
*   Core 0                  [Enabled]           **                        *
*   Core 1                  [Enabled]           **                        *
*   Core 2                  [Enabled]           **                        *
*   Core 3                  [Enabled]           **                        *
*   Core 4                  [Enabled]           **                        *
*   Core 5                  [Enabled]           **                        *
*   Core 6                  [Enabled]           **                        *
*   Core 7                  [Enabled]           **                        *
*   Core 8                  [Enabled]           **                        *
*   Core 9                  [Enabled]           **                        *
* A20M                      [Disabled]          ** *    Select Screen     *
* MTRR Mapping              [Continuous]        ** **   Select Item       *
* Intel(R) SpeedStep(tm) tech [Enabled]         ** +-   Change Option     *
* Performance/Watt select   [Traditional]       **(CTRL+Q from remote kbd) *
* Intel(R) C-State tech     [Enabled]           ** F10  Save and Exit     *
* C3 State                  [Disabled]          **(CTRL+S from remote kbd) *
* C6 State                  [Enabled]           ** ESC  Exit              *
* C State package limit setting [Auto]          ** F1   General Help      *
* C1 Auto Demotion          [Enabled]           **(CTRL+Q from remote kbd) *
* C3 Auto Demotion          [Enabled]           ** F10  Save and Exit     *
* ACPI T State              [Enabled]           **(CTRL+S from remote kbd) *
* DCU Mode                  [16KB, 4-way, ECC]  ** ESC  Exit              *
*******************************************************************************
```

Advanced Settings > ACPI Settings

```
********************************************************************************
*          Advanced                                                          **
*                                                                            **
* ACPI Settings                                    * Advanced ACPI          **
* *********************************************** * Configuration settings **
* * Advanced ACPI Configuration                    *                        **
* * General WHEA Configuration                     * Use this section to    **
*                                                  * configure additional   **
*                                                  * ACPI options.          **
*                                                  *                        **
*                                                  *                        **
*                                                  *                        **
*                                                  *                        **
*                                                  *                        **
*                                                  * *    Select Screen     **
*                                                  * **     Select Item     **
*                                                  * Enter Go to Sub Screen **
*                                                  * F1    General Help      **
*                                                  *(CTRL+Q from remote kbd)**
*                                                  * F10   Save and Exit     **
*                                                  *(CTRL+S from remote kbd)**
*                                                  * ESC   Exit              **
********************************************************************************
```

Advanced Settings > ACPI Settings > Advanced ACPI Configuration

```
*******************************************************************************
*       Advanced                                                            **
*                                                                           **
* Advanced ACPI Configuration                    * Include OEMB table       **
* ********************************************** * pointer to R(X)SDT        **
* AMI OEMB table               [Enabled]         * pointer lists            **
* Headless mode                [Enabled]         *                          **
* EMS support(SPCR)            [Enabled]          *                          **
*                                                *                          **
*                                                *                          **
*                                                *                          **
*                                                *                          **
*                                                *                          **
*                                                *                          **
*                                                * *    Select Screen       **
*                                                * **    Select Item        **
*                                                * +-    Change Option       **
*                                                * F1    General Help        **
*                                                *(CTRL+Q from remote kbd)**
*                                                * F10   Save and Exit      **
*                                                *(CTRL+S from remote kbd)**
*                                                * ESC   Exit               **
*******************************************************************************
```

Advanced Settings > ACPI Settings > General WHEA Configuration

```
*******************************************************************************
*         Advanced                                                          **
*                                                                           **
* General WHEA Configuration                      * Enable or disable       **
* *********************************************** * Windows Hardware         **
* WHEA Support                      [Enabled]     * Error Architecture.      **
*                                                 *                          **
*                                                 *                          **
*                                                 *                          **
*                                                 *                          **
*                                                 *                          **
*                                                 *                          **
*                                                 *                          **
*                                                 *                          **
*                                                 * *     Select Screen      **
*                                                 * **    Select Item        **
*                                                 * +-    Change Option       **
*                                                 * F1    General Help       **
*                                                 *(CTRL+Q from remote kbd)**
*                                                 * F10   Save and Exit      **
*                                                 *(CTRL+S from remote kbd)**
*                                                 * ESC   Exit               **
*******************************************************************************
```

Advanced

Advanced Settings > I/O Virtualization

```
*******************************************************************************
*         Advanced                                                          **
*                                                                           **
* Configure I/O Virtualization Parameters          * Configure SR-IOV       **
* *********************************************** *                          **
* SR-IOV Supported               [Enabled]        *                         **
* BIOS ARI Support               [Disabled]       *                         **
*                                                 *                         **
*                                                 *                         **
*                                                 *                         **
*                                                 *                         **
*                                                 *                         **
*                                                 *                         **
*                                                 *                         **
*                                                 *                         **
*                                                 * *    Select Screen       **
*                                                 * **    Select Item        **
*                                                 * +-    Change Option       **
*                                                 * F1    General Help        **
*                                                 *(CTRL+Q from remote kbd)**
*                                                 * F10   Save and Exit      **
*                                                 *(CTRL+S from remote kbd)**
*                                                 * ESC   Exit               **
*******************************************************************************
```

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Advanced Settings > IPMI Configuration

```
*******************************************************************************
*        Advanced                                                           **
*                                                                           **
* IPMI Configuration                            * View all events in the **
* ********************************************** * BMC Event Log.          **
* Status Of BMC                 Working         * It will take a max. of **
* * View BMC System Event Log                   * 15 seconds to read all **
* Clear BMC System Event Log                    * BMC SEL records.        **
* * Set LAN Configuration                       *                         **
* BMC Watch Dog Timer Action     [Disabled]     *                         **
*                                               *                         **
*                                               *                         **
*                                               *                         **
*                                               *                         **
*                                               *                         **
*                                               * *    Select Screen      **
*                                               * **    Select Item       **
*                                               * Enter Go to Sub Screen **
*                                               * F1    General Help      **
*                                               *(CTRL+Q from remote kbd)**
*                                               * F10   Save and Exit     **
*                                               *(CTRL+S from remote kbd)**
*                                               * ESC   Exit              **
*******************************************************************************
```

Advanced Settings > IPMI Configuration > View BMC System Event Log

```
********************************************************************************
*        Advanced                                                            **
*                                                                            **
* Total Number Of Entries:       909            * Use +/- to traverse       **
* ************************************************ * the event log.           **
* SEL Entry Number:            [  1]             *                           **
* SEL Record ID:              040B               *                           **
* SEL Record Type:            02 (System Event)  *                           **
* Event Timestamp:            Apr 12, 2000 04:38:55 *                        **
* Generator ID:               0020               *                           **
* Event Message Format Ver:   04 (IPMI ver 2.0)  *                           **
* Event Sensor Type:          25 (Entity Presence) *                         **
* Event Sensor Number:        11                 *                           **
* Event Dir Type:             08                 *                           **
* Event Data:                 00 FF FF           *                           **
*                                                * *    Select Screen        **
*                                                * **    Select Item         **
*                                                * +-    Change Option       **
*                                                * F1    General Help        **
*                                                *(CTRL+Q from remote kbd)**
*                                                * F10   Save and Exit       **
*                                                *(CTRL+S from remote kbd)**
*                                                * ESC   Exit                **
********************************************************************************
```

Advanced Settings > IPMI Configuration > Set LAN Configuration

```
********************************************************************************
*        Advanced                                                            **
*                                                                            **
* LAN Configuration.                              * Enter channel number     **
* *********************************************** * for SET LAN Config        **
* Channel Number                [01]             * Command.                  **
* IP Assignment                 [DHCP]           * Proper value below 16.    **
*                                                *                           **
* Current IP address in BMC:    010.006.143.240  *                           **
* Current MAC address in BMC:   00.21.28.4F.2C.9A *                          **
* Current Subnet Mask in BMC:   255.255.255.000  *                           **
* Current Gateway in BMC:       010.006.143.001  *                           **
*                                                *                           **
* Refresh                                        *                           **
*                                                *                           **
* IP Address                    [010.006.143.240] * *    Select Screen       **
* Subnet Mask                   [255.255.255.000] * **     Select Item       **
* Default Gateway               [010.006.143.001] * Enter Update             **
*                                                * F1    General Help        **
* Commit                                         *(CTRL+Q from remote kbd)**
*                                                * F10   Save and Exit       **
*                                                *(CTRL+S from remote kbd)**
*                                                * ESC   Exit                **
********************************************************************************
```

Advanced Settings > PCI Express Configuration

```
********************************************************************************
*         Advanced                                                          **
*                                                                           **
* PCI Express Configuration                       * Enable/Disable PCIe     **
* ************************************************ * hotplug support by      **
* PCIe Hotplug Support           [Enabled]        * allocating additional   **
* HotPlug Reserve I/O Port Size  [Auto]           * bus, memory and I/O     **
* HotPlug Reserve Memory Size    [Auto]           * resource for hotplug    **
* HotPlug Reserve PFMemory Size  [Auto]           * slots.                  **
*                                                 *                         **
* Setting De-emphasis on REMs    [-3.5dB ]        *                         **
* Setting De-emphasis on FEMs    [-3.5dB ]        *                         **
* Setting De-emphasis on EMs     [-3.5dB ]        *                         **
*                                                 *                         **
* E-Sync on REM cards            [Disabled]       *                         **
* E-Sync on FEM cards            [Disabled]       * *    Select Screen       **
* E-Sync on EM cards             [Disabled]       * **   Select Item         **
*                                                 * +-   Change Option       **
*                                                 * F1   General Help        **
*                                                 *(CTRL+Q from remote kbd)**
*                                                 * F10  Save and Exit       **
*                                                 *(CTRL+S from remote kbd)**
*                                                 * ESC  Exit                **
********************************************************************************
```

Advanced Settings > Remote Access Configuration

```
*******************************************************************************
*          Advanced                                                         **
*                                                                           **
* Configure Remote Access type and parameters     * Select Remote Access    **
* ************************************************* * type.                  **
* Remote Access                [Enabled]           *                        **
*                                                  *                        **
* Serial port number           [COM1]              *                        **
*     Base Address, IRQ        [3F8h, 4]           *                        **
* Serial Port Mode             [09600 8,n,1]       *                        **
* Flow Control                 [None]              *                        **
* Redirection After BIOS POST  [Always]            *                        **
* Terminal Type                [ANSI]              *                        **
* VT-UTF8 Combo Key Support     [Enabled]          *                        **
* Sredir Memory Display Delay   [No Delay]         *                        **
*                                                  * *     Select Screen     **
*                                                  * **    Select Item       **
*                                                  * +-    Change Option      **
*                                                  * F1    General Help       **
*                                                  *(CTRL+Q from remote kbd)**
*                                                  * F10   Save and Exit      **
*                                                  *(CTRL+S from remote kbd)**
*                                                  * ESC   Exit               **
*******************************************************************************
```

Advanced Settings > Trusted Computing

```
********************************************************************************
*         Advanced                                                           **
*                                                                            **
* Trusted Computing                              * Enable/Disable TPM        **
* *********************************************** * TCG (TPM 1.1/1.2) supp    **
* TCG/TPM Support Enabled          [No]          * in BIOS                   **
*                                                *                           **
*                                                *                           **
*                                                *                           **
*                                                *                           **
*                                                *                           **
*                                                *                           **
*                                                *                           **
*                                                *                           **
*                                                * *    Select Screen        **
*                                                * **    Select Item         **
*                                                * +-    Change Option        **
*                                                * F1    General Help        **
*                                                *(CTRL+Q from remote kbd)**
*                                                * F10   Save and Exit       **
*                                                *(CTRL+S from remote kbd)**
*                                                * ESC   Exit                **
********************************************************************************
```

Advanced Settings > USB Configuration

```
*******************************************************************************
*        Advanced                                                          **
*                                                                          **
* USB Configuration                              * Enable/Disable          **
* ********************************************** * USB HUB for Multiport    **
* Module Version - 2.24.5-13.4                   *                         **
*                                                *                         **
* USB Devices Enabled :                          *                         **
*   2 Keyboards, 2 Mice, 2 Hubs                  *                         **
*                                                *                         **
*                                                *                         **
* Multiport Cable USB            [Enabled]       *                         **
*                                                *                         **
*                                                *                         **
*                                                *                         **
*                                                * *     Select Screen     **
*                                                * **    Select Item       **
*                                                * +-    Change Option      **
*                                                * F1    General Help       **
*                                                *(CTRL+Q from remote kbd)**
*                                                * F10   Save and Exit     **
*                                                *(CTRL+S from remote kbd)**
*                                                * ESC   Exit              **
*******************************************************************************
```

Advanced Settings > Intel VT-d Configuration

```
********************************************************************************
*         Advanced                                                           **
*                                                                            **
* Intel VT-d Configuration                        * Intel VT-d feature       **
* ********************************************** * Enabled/Disabled           **
*                                                *                           **
* Intel VT-d                   [Enabled]         *                           **
* Coherency Support           [Disabled]         *                           **
*                                                *                           **
*                                                *                           **
*                                                *                           **
*                                                *                           **
*                                                *                           **
*                                                *                           **
*                                                * *    Select Screen        **
*                                                * **    Select Item         **
*                                                * +-    Change Option        **
*                                                * F1    General Help        **
*                                                *(CTRL+Q from remote kbd)**
*                                                * F10   Save and Exit       **
*                                                *(CTRL+S from remote kbd)**
*                                                * ESC   Exit                **
********************************************************************************
```

PCIPnP

Advanced PCI/PnP Settings

```
********************************************************************************
* Main      Advanced    PCIPnP    Boot    Security    RC Settings    Chipset    **
*                                                                               **
* Advanced PCI/PnP Settings                           * Clear NVRAM during      **
*************************************************** * System Boot.               **
* WARNING: Setting wrong values in below sections     *                         **
*          may cause system to malfunction.           *                         **
*                                                     *                         **
* Clear NVRAM                   [No]                  *                         **
* PCI Latency Timer             [64]                  *                         **
*                                                     *                         **
*                                                     *                         **
* MAC Address NIC 0:   00:21:28:A7:8D:9C              *                         **
* MAC Address NIC 1:   00:21:28:A7:8D:9D              *                         **
* MAC Address NIC 2:   00:21:28:A7:90:D8              *                         **
* MAC Address NIC 3:   00:21:28:A7:90:D9              * *     Select Screen      **
* MAC Address NIC 4:   00:21:28:A7:91:10              * **    Select Item        **
* MAC Address NIC 5:   00:21:28:A7:91:11              * +-    Change Option      **
* MAC Address NIC 6:   00:21:28:A7:8D:90              * F1    General Help       **
* MAC Address NIC 7:   00:21:28:A7:8D:91              *(CTRL+Q from remote kbd)**
*                                                     * F10   Save and Exit      **
*                                                     *(CTRL+S from remote kbd)**
*                                                     * ESC   Exit               **
********************************************************************************
```

Boot

Boot Settings

```
********************************************************************************
* Main     Advanced   PCIPnP    Boot    Security   RC Settings   Chipset    **
*                                                                           **
* Boot Settings                                  * Configure Settings       **
* *********************************************** * during System Boot.      **
* * Boot Settings Configuration                  *                          **
*                                                *                          **
* * Boot Device Priority                         *                          **
*                                                *                          **
*                                                *                          **
*                                                *                          **
* Prompt on Config Change        [Disabled]      *                          **
*                                                *                          **
*                                                *                          **
*                                                *                          **
*                                                * *    Select Screen        **
*                                                * **     Select Item        **
*                                                * Enter Go to Sub Screen    **
*                                                * F1    General Help        **
*                                                *(CTRL+Q from remote kbd)** 
*                                                * F10   Save and Exit       **
*                                                *(CTRL+S from remote kbd)** 
*                                                * ESC   Exit                **
********************************************************************************
```

Boot Settings > Boot Settings Configuration

```
********************************************************************************
*                             Boot                                           **
*                                                                            **
* Boot Settings Configuration                      * Allows BIOS to skip     **
* ************************************************* * certain tests while     **
* Quick Boot                     [Enabled]         * booting. This will      **
* Quiet Boot                     [Disabled]        * decrease the time       **
* AddOn ROM Display Mode         [Force BIOS]      * needed to boot the      **
* Wait For 'F1' If Error         [Disabled]        * system.                 **
* Retry Boot List                [Enabled]         *                         **
*                                                  *                         **
*                                                  *                         **
*                                                  *                         **
*                                                  *                         **
*                                                  *                         **
*                                                  * *    Select Screen      **
*                                                  * **    Select Item       **
*                                                  * +-    Change Option      **
*                                                  * F1    General Help       **
*                                                  *(CTRL+Q from remote kbd)**
*                                                  * F10   Save and Exit      **
*                                                  *(CTRL+S from remote kbd)**
*                                                  * ESC   Exit               **
********************************************************************************
```

Boot Settings > Boot Device Priority

```
*******************************************************************************
*                            Boot                                           **
*                                                                           **
* Boot Device Priority                          * Specifies the boot        **
* *********************************************  * sequence from the         **
* 1st [RAID:(Bus 01 Dev 00)PCI RAID Adapter]     * available devices.        **
* 2nd [PXE:IBA GE Slot 1000 v1331]               *                           **
* 3rd [PXE:IBA GE Slot 1001 v1331]               * A device enclosed in      **
* 4th [PXE:IBA GE Slot 4100 v1331]               * parenthesis has been      **
* 5th [PXE:IBA GE Slot 4101 v1331]               * disabled in the           **
* 6th [PXE:IBA GE Slot 8100 v1331]               * corresponding type        **
* 7th [PXE:IBA GE Slot 8101 v1331]               * menu.                     **
* 8th [PXE:IBA GE Slot C100 v1331]               *                           **
* 9th [PXE:IBA GE Slot C101 v1331]               *                           **
*                                                *                           **
*                                                * *    Select Screen        **
*                                                * **    Select Item         **
*                                                * +-    Change Option        **
*                                                * F1    General Help        **
*                                                *(CTRL+Q from remote kbd)**
*                                                * F10   Save and Exit       **
*                                                *(CTRL+S from remote kbd)**
*                                                * ESC   Exit                **
*******************************************************************************
```

Security

Security Settings

```
*******************************************************************************
* Main      Advanced    PCIPnP    Boot    Security   RC Settings    Chipset    **
*                                                                              **
* Security Settings                               * Install or Change the  **
* ***********************************************  * password.               **
* Supervisor Password :Not Installed              *                          **
* User Password       :Not Installed              *                          **
*                                                 *                          **
* Change Supervisor Password                      *                          **
* Change User Password                            *                          **
*                                                 *                          **
*                                                 *                          **
*                                                 *                          **
*                                                 *                          **
*                                                 *                          **
*                                                 * *    Select Screen       **
*                                                 * **    Select Item        **
*                                                 * Enter Change             **
*                                                 * F1    General Help       **
*                                                 *(CTRL+Q from remote kbd)**
*                                                 * F10   Save and Exit      **
*                                                 *(CTRL+S from remote kbd)**
*                                                 * ESC   Exit               **
*******************************************************************************
```

RC Settings

RC Settings

```
********************************************************************************
* Main     Advanced   PCIPnP    Boot    Security   RC Settings    Chipset    **
*                                                              *            **
* RC Settings for QPI and Memory configurations    * Configure QPI features **
* ************************************************** *            **
*                                                   *            **
* * QPI Configuration                               *            **
* * Integrated Memory Controller Configuration      *            **
*                                                   *            **
*                                                   *            **
*                                                   *            **
*                                                   *            **
*                                                   *            **
*                                                   *            **
*                                                   * *    Select Screen   **
*                                                   * **     Select Item   **
*                                                   * Enter Go to Sub Screen **
*                                                   * F1    General Help    **
*                                                   *(CTRL+Q from remote kbd)**
*                                                   * F10   Save and Exit   **
*                                                   *(CTRL+S from remote kbd)**
*                                                   * ESC   Exit            **
********************************************************************************
```

RC Settings > QPI Configuration

```
********************************************************************************
*                                          RC Settings               **
*                                                                    **
* QPI Configuration                        * MMIOH Size to be         **
* *********************************************** * allocated per IOH   **
* Current QPI Frequency      :6.400GT       *                         **
*                                          *                         **
* MMIOH Size Per IOH          [2G]          *                         **
* Logical Interrupt Mode      [Flat Mode]   *                         **
* Cluster Mode Check Sampling  [Enabled]    *                         **
* QPI Debug Message Output Level [Err/Warn/Info0|1] *                 **
* CRC Mode                    [8bit CRC]    *                         **
* QPI Scrambling              [Enabled]     *                         **
*                                          *                         **
*                                          *                         **
*                                          * *    Select Screen       **
*                                          * **    Select Item        **
*                                          * +-    Change Option       **
*                                          * F1    General Help        **
*                                          *(CTRL+Q from remote kbd)**
*                                          * F10   Save and Exit       **
*                                          *(CTRL+S from remote kbd)**
*                                          * ESC   Exit               **
********************************************************************************
```

RC Settings > Integrated Memory Controller Configuration

```
*******************************************************************************
*                                          RC Settings           **
*                                                                 **
* Integrated Memory Controller Configuration      * This would select how  **
* ************************************************ * many memory nodes are   **
*                                          * included in            **
* InterleaveType              [Automatic]  * Interleaving.          **
* Interleave order            [Low High 0] *                        **
* Mapper Mode                 [Close]      *                        **
* Initialization mode         [Parallel]   *                        **
* Page Policy                 [Close]      *                        **
* Scheduler Policy            [Adaptive]   *                        **
*                                          *                        **
*                                          *                        **
*                                          *                        **
*                                          * *    Select Screen      **
*                                          * **    Select Item       **
*                                          * +-    Change Option      **
*                                          * F1    General Help       **
*                                          *(CTRL+Q from remote kbd)**
*                                          * F10   Save and Exit      **
*                                          *(CTRL+S from remote kbd)**
*                                          * ESC   Exit              **
*******************************************************************************
```

Chipset

Advanced Chipset Settings

```
*******************************************************************************
* Advanced    PCIPnP    Boot    Security    RC Settings    Chipset    Exit    **
*                                                                             **
* Advanced Chipset Settings                          * Configure CPU Bridge   **
* ************************************************* * features.               **
* WARNING: Setting wrong values in below sections    *                        **
*          may cause system to malfunction.          *                        **
*                                                    *                        **
* * CPU Bridge Configuration                         *                        **
* * North Bridge Configuration                       *                        **
* * South Bridge Configuration                       *                        **
*                                                    *                        **
*                                                    *                        **
*                                                    *                        **
*                                                    * *    Select Screen     **
*                                                    * **    Select Item      **
*                                                    * Enter Go to Sub Screen **
*                                                    * F1    General Help     **
*                                                    *(CTRL+Q from remote kbd)**
*                                                    * F10   Save and Exit    **
*                                                    *(CTRL+S from remote kbd)**
*                                                    * ESC   Exit             **
*******************************************************************************
```

Advanced Chipset Settings > CPU Bridge Configuration

```
*******************************************************************************
*                                                 Chipset          **
*                                                                  **
* CPU Bridge Chipset Configuration                * Spread spectrum **
* ********************************************** *  modulation.     **
*                                                *                  **
*                                                *                  **
* Spread Spectrum Mode          [Enabled]        *                  **
*                                                *                  **
*                                                *                  **
*                                                *                  **
*                                                *                  **
*                                                *                  **
*                                                *                  **
*                                                *                  **
*                                                * *    Select Screen **
*                                                * **    Select Item  **
*                                                * +-    Change Option **
*                                                * F1    General Help  **
*                                                *(CTRL+Q from remote kbd)**
*                                                * F10   Save and Exit **
*                                                *(CTRL+S from remote kbd)**
*                                                * ESC   Exit          **
*******************************************************************************
```

Advanced Chipset Settings > NorthBridge Chipset Configuration

```
*******************************************************************************
* NorthBridge Chipset Configuration              * Configure Option ROM   **
* *********************************************** *                        **
*                                                *                        **
*                                                *                        **
* * Option ROM Scan for PCIe devices            *                        **
* * I/O Allocation for PCIe devices             *                        **
* * Resource Rebalancing features               *                        **
*                                                *                        **
* MMIOL Reclaim               [Enabled]         *                        **
* PCI MMIO 64 Bits Support    [Disabled]        *                        **
*                                                *                        **
*                                                *                        **
*                                                * *    Select Screen     **
*                                                * **     Select Item     **
*                                                * Enter Go to Sub Screen **
*                                                * F1    General Help     **
*                                                *(CTRL+Q from remote kbd)**
*                                                * F10   Save and Exit    **
*                                                *(CTRL+S from remote kbd)**
*                                                * ESC   Exit             **
*******************************************************************************
```

Advanced Chipset Settings > CPU Bridge Configuration > Option ROM Scan for PCIe devices

```
*******************************************************************************
*                                                 Chipset           **
*                                                                    **
* Option ROM Scan for PCIe devices                ** Enable/Disable loading **
* **************************************************** of the Option ROM for  **
*                                                 ** PCIe NIC3.0      **
* Scanning OPROM on BL3 NIC0      [Enabled]       **                  **
* Scanning OPROM on BL3 NIC1      [Enabled]       **                  **
* Scanning OPROM on BL3 FEM0      [Disabled]      **                  **
* Scanning OPROM on BL3 FEM1      [Disabled]      **                  **
* Scanning OPROM on BL3 EM0       [Disabled]      **                  **
* Scanning OPROM on BL3 EM1       [Disabled]      **                  **
*                                                 **                  **
* Scanning OPROM on BL2 NIC0      [Enabled]       **                  **
* Scanning OPROM on BL2 NIC1      [Enabled]       **                  **
* Scanning OPROM on BL2 FEM0      [Disabled]      ** *     Select Screen   **
* Scanning OPROM on BL2 FEM1      [Disabled]      ** **    Select Item     **
* Scanning OPROM on BL2 EM0       [Disabled]      ** +-    Change Option   **
* Scanning OPROM on BL2 EM1       [Disabled]      ** F1    General Help    **
*                                                 **(CTRL+Q from remote kbd)**
* Scanning OPROM on BL1 NIC0      [Enabled]       ** F10   Save and Exit    **
* Scanning OPROM on BL1 NIC1      [Enabled]       **(CTRL+S from remote kbd)**
* Scanning OPROM on BL1 FEM0      [Disabled]      ** ESC   Exit            **
* Scanning OPROM on BL1 FEM1      [Disabled]      **                  **
* Scanning OPROM on BL1 EM0       [Disabled]      **                  **
* Scanning OPROM on BL1 EM1       [Disabled]      **                  **
*                                                 **                  **
* Scanning OPROM on BL0 REM       [Enabled]       ** *     Select Screen   **
* Scanning OPROM on BL0 NIC0      [Enabled]       ** **    Select Item     **
* Scanning OPROM on BL0 NIC1      [Enabled]       ** +-    Change Option   **
* Scanning OPROM on BL0 FEM0      [Disabled]      ** F1    General Help    **
* Scanning OPROM on BL0 FEM1      [Disabled]      **(CTRL+Q from remote kbd)**
* Scanning OPROM on BL0 EM0       [Disabled]      ** F10   Save and Exit    **
* Scanning OPROM on BL0 EM1       [Disabled]      **(CTRL+S from remote kbd)**
*                                                 ** ESC   Exit            **
*******************************************************************************
```

Advanced Chipset Settings > CPU Bridge Configuration > I/O Allocation for PCIe devices

```
********************************************************************************
*                                                    Chipset           **
*                                                                      **
* I/O Allocation for PCIe devices                    ** This can prevent I/O **
* ****************************************************** resources from       **
*                                                    ** being assigned       **
* I/O Allocation for BL3 NIC    [Enabled]            ** to NIC3.0 & NIC3.1    **
* I/O Allocation for BL3 REM    [Enabled]            **                       **
* I/O Allocation for BL3 EM0    [Enabled]            **                       **
* I/O Allocation for BL3 EM1    [Enabled]            **                       **
* I/O Allocation for BL3 FEM0   [Enabled]            **                       **
* I/O Allocation for BL3 FEM1   [Enabled]            **                       **
*                                                    **                       **
* I/O Allocation for BL2 NIC    [Enabled]            **                       **
* I/O Allocation for BL2 REM    [Enabled]            **                       **
* I/O Allocation for BL2 EM0    [Enabled]            **                       **
* I/O Allocation for BL2 EM1    [Enabled]            **                       **
* I/O Allocation for BL2 FEM0   [Enabled]            **                       **
* I/O Allocation for BL2 FEM1   [Enabled]            **                       **
*                                                    **                       **
* I/O Allocation for BL1 NIC    [Enabled]            **                       **
* I/O Allocation for BL1 REM    [Enabled]            **                       **
* I/O Allocation for BL1 EM0    [Enabled]            **                       **
* I/O Allocation for BL1 EM1    [Enabled]            **                       **
* I/O Allocation for BL1 FEM0   [Enabled]            **                       **
* I/O Allocation for BL1 FEM1   [Enabled]            **                       **
*                                                    ** *    Select Screen    **
* I/O Allocation for BL0 NIC    [Enabled]            ** **   Select Item       **
* I/O Allocation for BL0 REM    [Enabled]            ** +-   Change Option     **
* I/O Allocation for BL0 EM0    [Enabled]            ** F1    General Help      **
* I/O Allocation for BL0 EM1    [Enabled]            **(CTRL+Q from remote kbd)**
* I/O Allocation for BL0 FEM0   [Enabled]            ** F10   Save and Exit     **
* I/O Allocation for BL0 FEM1   [Enabled]            **(CTRL+S from remote kbd)**
*                                                    ** ESC   Exit             **
********************************************************************************
```

Advanced Chipset Settings > CPU Bridge Configuration > Resource Rebalancing features

```
*******************************************************************************
*                                                    Chipset          **
*                                                                     **
* Resource Rebalancing features                      * Total IO Ratio value **
* *********************************************** * in all Processor   **
*                                                    * Modules should add up **
*                                                    * to 8. IO Ratio value 0 **
* BL3 IO RATIO                  [Auto]               * is not supported. The **
* BL2 IO RATIO                  [Auto]               * granularity is 8Kb.  **
* BL1 IO RATIO                  [Auto]               *                     **
* BL0 IO RATIO                  [Auto]               *                     **
*                                                    *                     **
* BL3 MMIO RATIO                [Auto]               *                     **
* BL2 MMIO RATIO                [Auto]               *                     **
* BL1 MMIO RATIO                [Auto]               *                     **
* BL0 MMIO RATIO                [Auto]               * *     Select Screen  **
*                                                    * **     Select Item   **
*                                                    * +-    Change Option  **
*                                                    * F1    General Help   **
*                                                    *(CTRL+Q from remote kbd)**
*                                                    * F10   Save and Exit  **
*                                                    *(CTRL+S from remote kbd)**
*                                                    * ESC   Exit           **
*******************************************************************************
```

Advanced Chipset Settings > South Bridge Chipset Configuration

```
********************************************************************************
*                                                     Chipset          **
*                                                                      **
* South Bridge Chipset Configuration                  *    Options      **
* ************************************************** *                  **
* SMBUS Controller               [Enabled]          * Enabled          **
*                                                    * Disabled         **
* Restore on AC Power Loss       [Last State]        *                  **
* SATA Master Break Event        [Disabled]          *                  **
*                                                    *                  **
*                                                    *                  **
*                                                    *                  **
*                                                    *                  **
*                                                    *                  **
*                                                    *                  **
*                                                    * *    Select Screen **
*                                                    * **    Select Item  **
*                                                    * +-    Change Option **
*                                                    * F1    General Help  **
*                                                    *(CTRL+Q from remote kbd)**
*                                                    * F10   Save and Exit **
*                                                    *(CTRL+S from remote kbd)**
*                                                    * ESC   Exit          **
********************************************************************************
```

Exit

Exit Options

```
*********************************************************************************
* Advanced    PCIPnP    Boot    Security    RC Settings    Chipset    Exit    **
*                                                                             **
* Exit Options                                         * Exit system setup    **
* *********************************************** * after saving the          **
* Save Changes and Exit                                * changes.             **
* Discard Changes and Exit                             *                      **
* Discard Changes                                      * F10 key can be used  **
*                                                      * for this operation.  **
* Load Optimal Defaults                                *                      **
*                                                      *                      **
*                                                      *                      **
*                                                      *                      **
*                                                      *                      **
*                                                      *                      **
*                                                      * *    Select Screen    **
*                                                      * **     Select Item    **
*                                                      * Enter Go to Sub Screen **
*                                                      * F1    General Help    **
*                                                      *(CTRL+Q from remote kbd)**
*                                                      * F10   Save and Exit    **
*                                                      *(CTRL+S from remote kbd)**
*                                                      * ESC   Exit            **
*********************************************************************************
```

Component LED Locations and Functions

This section provides information about the locations and meanings of component LED's on the Sun Server X2-8.

Front Indicator Panel LEDs
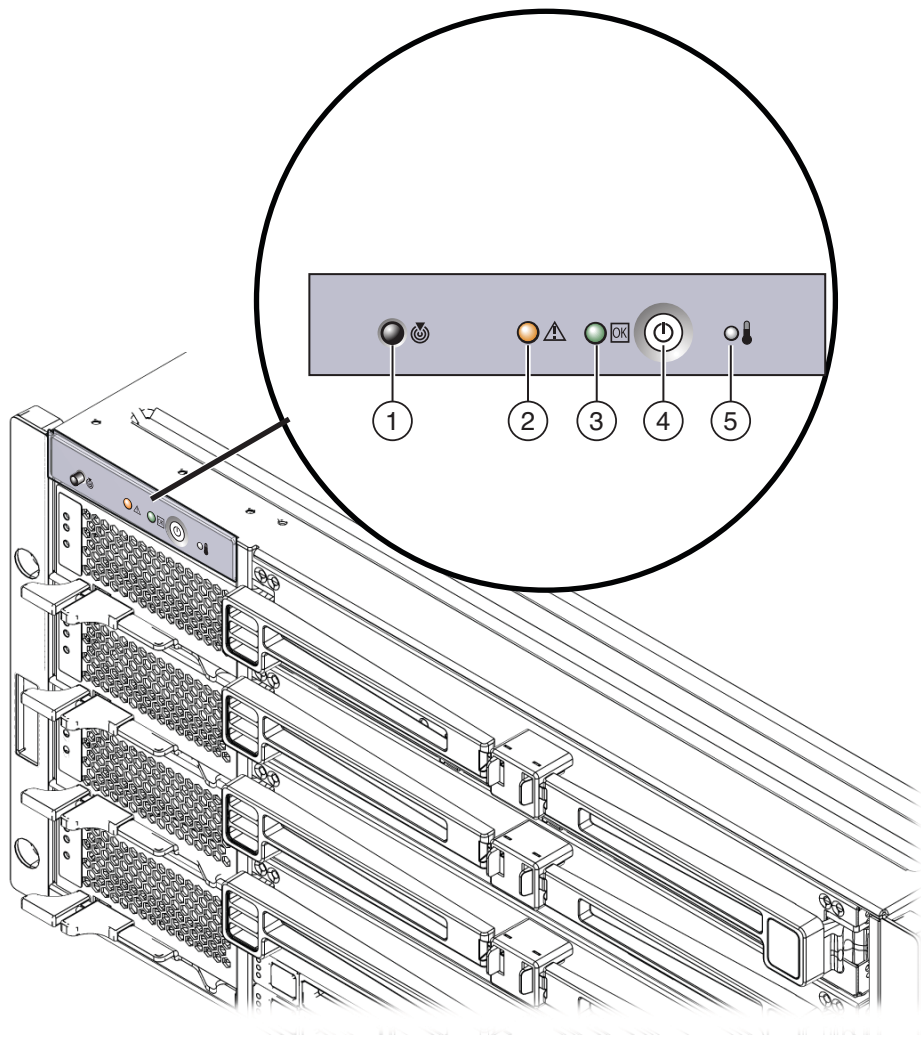
LED Name	Color	Activity
1 Locate	White	Identifies the server in a rack. ■ Off normally. ■ Blinks when activated by the Locate button or Oracle ILOM.

LED	Name	Color	Activity
2	Fault	Amber	Indicates a fault condition in the chassis. ■ Off normally. ■ On solid when a component is in a fault state.
3	OK/Power	Green	Indicates the power status of the server. ■ Off when AC power cords are disconnected. ■ Blinks at one second intervals when the host BIOS is booting, until BIOS finishes POST. ■ Blinks quickly during SP boot (when AC power cords are connected to the server. ■ Blinks slowly (2900 ms off, 100 ms on) in standby power mode (post SP boot). ■ On solid when in full power mode. ■ See "Power and Reset" on page 45
4	Power button	None	■ Press once to power on to full power mode from standby power mode. ■ Press once to perform a graceful power-off from full power mode to standby power mode. ■ Press and hold for four seconds to perform an immediate shutdown from full power to standby power mode. ■ See "Power Button and Power OK LED" on page 46.
5	Over-temperature	Amber	Indicates an over-temperature condition within the server. ■ Off normally. ■ On solid when the server ambient temperature exceeds the upper threshold.

CPU Module (CMOD) LEDs

LED Name		Color	Activity
1	CMOD Locate LED	White	- Off normally. - Blinks when activated by the Locate button or Oracle ILOM.
2	Ready to Remove	Blue	Not used. Cold service.
3	CMOD Service Action Required (fault)	Amber	Indicates a CMOD fault condition. - Off normally. - On solid when the CMOD is in a fault state.
4	CMOD OK LED	Green	Indicates the state of the CMOD. - Off when AC power is disconnected. - Blinks quickly when the SP is initializing the CMOD (when the server is connected to AC power). - On solid when in standby power mode. - See "Power and Reset" on page 45.
5	NMI button	n/a	Service use only.

Front Panel Power Supply LED's
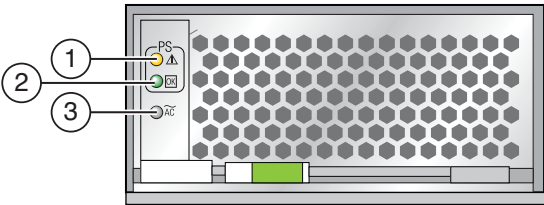
	LED Name	Color	Activity
1	PSU Fault	Amber	Indicates a power supply fault condition. ■ Off normally. ■ On solid when the power supply is in a fault state.
2	PSU OK LED	Green	On when the PSU is on. Otherwise it is off.
3	AC LED	Green	■ On. AC is connected. ■ Off. AC is not connected.

Front Panel Hard Drive LED's
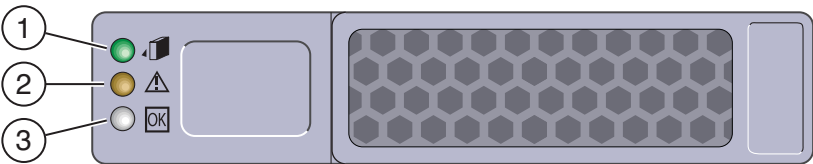
	LED Name	Color	Activity
1	Hot Swap LED	Blue	■ Off: Normal operation. ■ Steady on: The system indicates that the drive is ready to be removed.

	LED Name	Color	Activity
2	Fault	Amber	■ Off: Normal operation. ■ Steady on: The system has detected a fault with the HD.
3	Activity	Green	■ Blinking: Drive activity, standby. ■ Off: Power is off or no drive activity.

Back Panel Network Express Module LED's
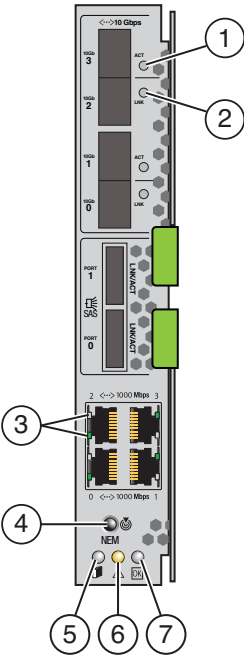
	LED Name	Color	Activity
1	10 GigabitEthernet port Activity LED	Green	On: Link established at 100 megabits.
		Amber	On: Link established at 10 megabits.

LED Name		Color	Activity
2	10 GigabitEthernet port Link LED	Green	On: Link activity.
			Note – Amber LED indicates that the link established is *not* at full capacity for that port.
3	10/1000/1000Base-T Ethernet LED (top)	Green	On: Link established at 1 gigabit.
		Amber	On: Link established at 100 megabits.
			Note – Amber LED indicates that the link established is *not* at full capacity for that port.
			Off: Link established at 10 megabits.
			Note – Amber LED indicates that the link established is *not* at full capacity for that port.
	10/1000/1000Base-T Ethernet LED (bottom)	Green	On: Link activity.
4	NEM Locate LED	White	■ Off normally. ■ Blinking when activated by the Locate button or Oracle ILOM.
5	OK to Remove LED	Blue	Off. Not used.
6	Service Action Required (fault) LED	Amber	Indicates a fault condition. ■ Off normally. ■ On solid when in a fault state.
7	Power OK LED	Green	Off when host is off.
			On when host is on.

Back Panel SP Module LEDs
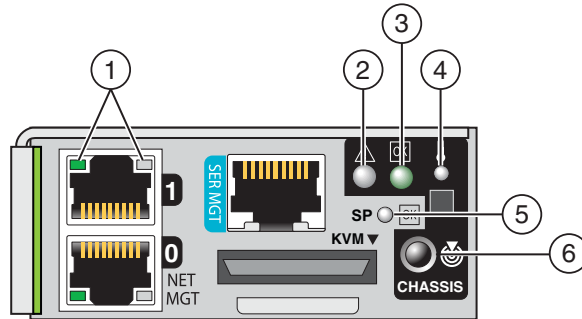
LED Name		Color	Activity
1	10/1000/1000Base-T Ethernet LED (left)	Green	On: Link established at 1 gigabit.
		Amber	On: Link established at 100 megabits.
			Note – Amber LED indicates that the link established is *not* at full capacity for that port.
		Amber	Off: Link established at 10 megabits.
			Note – Amber LED indicates that the link established is *not* at full capacity for that port.
	10/1000/1000Base-T Ethernet LED (right)	Green	On: Link activity.
2	Chassis Service Action Required (fault) LED	Amber	Indicates a server fault condition. ■ Off normally. ■ On solid when the server is in a fault state.

LED Name		Color	Activity
3	Chassis Power OK LED	Green	Indicates the power status of the server. ■ Off when AC power cords are disconnected. ■ Blinks quickly during SP boot (when AC power cords are connected to the server. ■ Blinks slowly in standby power mode (post SP boot). ■ On solid when in full power mode. ■ See "Power and Reset" on page 45.
4	Chassis Over-temperature LED	Amber	Indicates an over-temperature condition within the server. ■ Off normally. ■ On solid when the internal server temperature exceeds the upper threshold.
5	SP module OK LED	Green or yellow	Indicates the power status of the SP module. ■ Off when AC power cords are disconnected. ■ Blinks three times when SP module first receives power. ■ Off while SP is booting. ■ On when SP is functional. ■ Yellow when SP is not functional. ■ See "Power and Reset" on page 45.
6	Chassis Locate LED	White	Identifies the server in a rack: ■ Off normally. ■ Blinks when activated by the Locate button or Oracle ILOM.

Back Panel PCIe EM LEDs
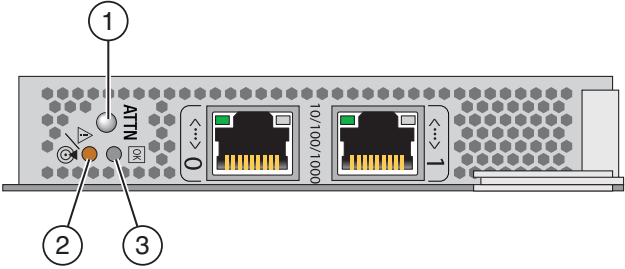
LED Name		Color	Activity
1	ATTN button	n/a	Press to hot remove and to add.
2	Service Action Required (fault) LED	Amber	Indicates a fault condition. ■ Off normally. ■ On solid when in a fault state.
3	OK LED	Green	Solid when SP is ready. Off when SP is not ready.

Thermal Sensor Locations

This section contains information about the location and designations of thermal sensors in the server. The Sun Server X2-8 has thermal sensors located in four areas of the server: the CMODs, the power supplies, the mid-plane, and the NEMs.

To perform optimally, a continuous internal flow of air through the server to maintain internal temperatures at operating specifications. Do not allow the air inlets and outlets to become blocked. See the following sections for the locations of thermals sensors within each area:

Power Supply Inlet Thermal Sensors

Each power supply has an internal air inlet thermal sensor mounted near the lower right front of the unit behind the air intake grill. Do not allow the air intake grill to become blocked. There are no user-serviceable parts in the power supply. Do not attempt to open the power supply.
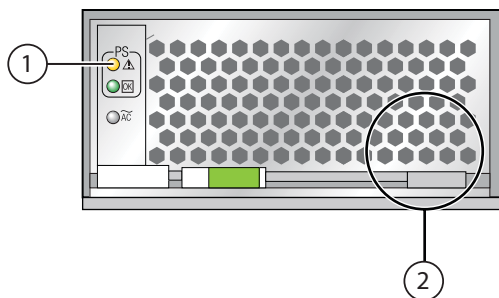
Figure Legend

1	Service Action Required (Fault) LED
2	General location of the internal thermal sensor

Power Supply Outlet Thermal Sensors

The midplane board has two sensors mounted on the left side behind the connectors for the power supples . These are the power supply outlet thermal sensors designated as U1 and U2.
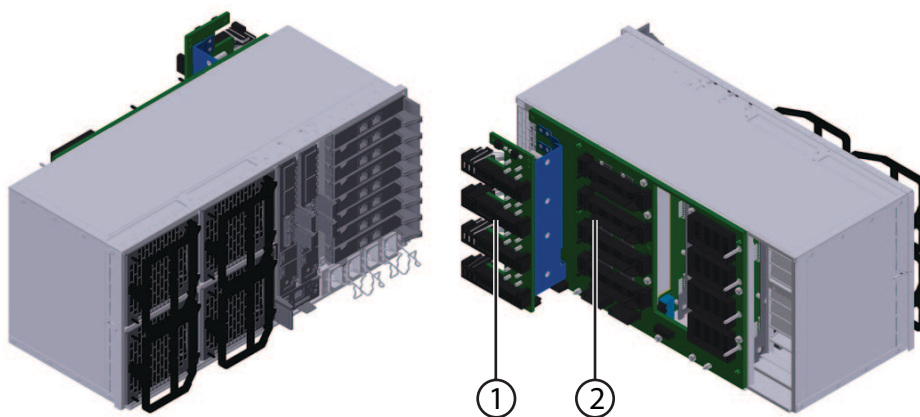
Figure Legend

1	Internal power supply connectors
2	Midplane board

CMOD Inlet Thermal Sensors

Each CMOD has an internal motherboard-mounted thermal sensor at the front right side just behind the air intake grill. This is the CMOD inlet thermal sensor, designated as U3005. The CMOD inlet thermal sensor is not a serviceable part. Do not allow dust to build up on the sensor or allow blockage to occur at the CMOD air intake grill.
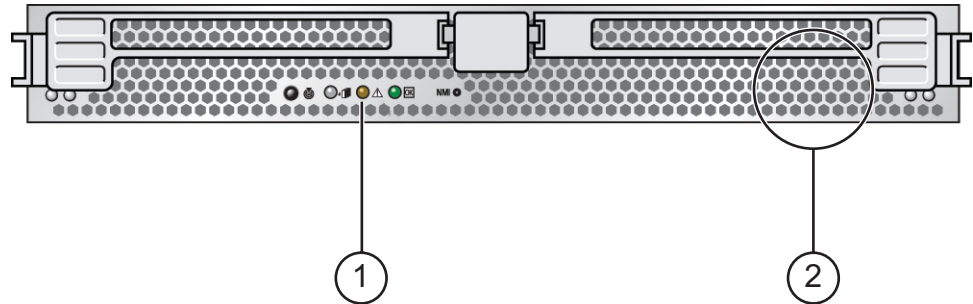
Figure Legend

1	Service Action Required (Fault) LED
2	General location of the internal thermal sensor (as seen from the front of the CMOD)

NEM Thermal Sensors

Each NEM has an internal board-mounted thermal sensor, designated as U2741. The thermal sensor is not a serviceable part. Do not allow dust to build up on the sensor or allow blockage around the sensor.

Sun Server X2-8 Specifications

-
-
-

Physical Specifications

Specification	Value
Width	17.5 inches (445 mm)
Height	8.61 inches (218.75 mm)
Depth	27.56 inches (700 mm)
Weight	180 pounds

Power Specifications

Note – The power dissipation numbers listed in the following table are the maximum rated power numbers for the power supplies used in the server. The numbers are not a rating of the actual power consumption of the system. For up-to-date information about power consumption, go to the following web site and navigate to the appropriate page: http://www.oracle.com/goto/X2-8.

Specification	Value
Universal AC input	200–240 VAC
Maximum current at 200 VAC	20 A
Maximum power available	3500 W
Maximum power consumed	3800 W

Specification	Value
Volt-Ampere rating	3878 VA @ 240 VAC, 0.98 P.F.

Environmental Specifications

Specification	Value
Temperature (operating)	5°–35° C up to 10,000 feet
Humidity	10–90% RH non-condensing
Altitude (operating)	10,000 feet
	35° C from sea level to 900 m, maximum temperature lowers 1° C per 300 m increase in altitude
	28° C at 3,000 m
Airflow (maximum possible)	552 CFM
Airflow (typical)	250 CFM

Requesting Physical Media

If you choose, you can access the latest software release through a physical media request (PMR), either online or on the telephone.

▼ How to Request Physical Media Online

Before You Begin Gather the information you need to obtain the correct release. For more information, refer to "Updating Firmware" in *Oracle Integrated Lights Out Manager (ILOM) 3.0 Supplement for the Sun Server X2-8 (formerly Sun Fire X4800 M2)*.

1 **Go to `http://support.oracle.com`.**

2 **Select the Flash interface and sign in.**

3 **Click on the Contact Us link in the upper right corner of the page.**

4 **In the Request Description section:**

   a. **In the Request Category drop-down list, select:**
   Software & OS Media Requests

   b. **In the Request Summary field, type: .**
   `PMR for latest software release for Sun Server X2-8`

5 **In the Request Details section, answer the questions shown in the following table:**

Question	Your Answer
Is this a physical software media shipment request?	Yes
Which product line does the media request involve?	Sun Products

Question	Your Answer
Are you requesting a required password for a patch download?	No
Are you requesting a patch on CD/DVD?	Yes
If requesting a patch on CD/DVD, please provide the patch number and OS/platform?	Enter the patch number for each download that you want from the software release.
List the product name and version requested for the physical media shipment?	*Product Name*: Sun Server X2–8. *Version*: Latest software release number.
What is the OS/platform for the requested media?	If you are requesting OS-specific downloads, specify the OS here. If you are requesting system firmware only, enter Generic.
Are any languages required for this shipment?	No

6 Fill in the Ship-To contact, phone number, email address, company name, and shipping address information.

7 Click Next.

The Relevant Files view appears.

8 (Optional) Under Relevant Files, you can browse for files or type in any relevant knowledge-based article, for example `Knowledge Article 1357561.1`.

9 Click Next

The Related Knowledge view appears. It might display information related to your request.

10 Click Submit Request.

Note – If the Submit Request button is not selectable (grayed-out), check if any required fields are missing. If the number corresponding to a panel on the left-hand side of the screen is red, that panel is missing some required information. When all three numbers are green, the Submit Request button should be selectable.

▼ How To Request Physical Media by Phone

Before You Begin   Gather the information you need to obtain the correct release. For more information, refer to "Updating Firmware" in *Oracle Integrated Lights Out Manager (ILOM) 3.0 Supplement for the Sun Server X2-8 (formerly Sun Fire X4800 M2)*.

1   **Call Oracle support, using the appropriate number from the Oracle Global Customer Support Contacts Directory:**

http://www.oracle.com/us/support/contact-068555.html

2   **Tell Oracle support that you want to make a physical media request (PMR) for the Sun Server X2–8.**

   - **If you are able to access the specific software release and patch number information from My Oracle Support, provide this information to the support representative.**

   - **If you are not able to access the software release information, request the latest software release for the Sun Server X2–8.**

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