



SGI® Rackable™ C2112-4RP4 System  
User Guide

007-5835-002

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## Record of Revision

<b>Version</b>	<b>Description</b>
001	June 2012 Original printing.
002	September 2013 Added support for Intel® Xeon® E5-2600 and E5-2600v2 Series processors plus miscellaneous front matter changes.



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# About This Guide

This guide provides an overview of the features and the major components of the SGI® Rackable™ C2112-4RP4 server. It also provides system monitoring and maintenance information as well as important safety and regulatory specifications.

## Audience

This guide is written for owners, installers, system administrators, and users of the C2112-4RP4 server. It is written with the assumption that the reader has a good working knowledge of computers and computer systems.

## Chapter Descriptions

The following topics are covered in this guide:

- Chapter 1, “System Overview”  
Provides an overview of the server features and components.
- Chapter 2, “System Safety”  
Provides system safety information.
- Chapter 3, “System Operation and Monitoring”  
Describes control buttons and LEDs on the control panel as well as LEDs on the disk drive carriers.
- Chapter 4, “Chassis Maintenance”  
Describes procedures for replacing system components.

- [Appendix A, “Power and Environmental Specifications,”](#)  
Lists input/output voltage specifications for the power supplies and also environmental specifications for operating the system.
- [Appendix B, “Regulatory Compliance Information,”](#)  
Summarizes the product regulatory information.
- [Appendix C, “Rail Kit Installation,”](#)  
Describes the steps to install the rail kit.
- [Appendix D, “BMC Error Codes,”](#)  
Describes the BMC beep codes associated with failure conditions.

## Related Publications

The following SGI documents are relevant to the C2112-4RP4 server:

- *MegaRAID® SAS Software User’s Guide*, publication number 860-0488-xxx
- SGI Foundation Software release notes
- SGI Performance Suite release notes
- SGI InfiniteStorage series documentation
- Man pages

You can obtain SGI documentation, release notes, or man pages in the following ways:

- Refer to the SGI Technical Publications Library at <http://docs.sgi.com>. Various formats are available. This library contains the most recent set of books and man pages.
- Refer to the SGI Supportfolio™ webpage for release notes and other documents whose access require a support contract. See [“Product Support”](#) on page xiii.

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**Note:** For information on your motherboard and related system components, see the documentation provided by the manufacturer/supplier.

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## Conventions

The following conventions are used throughout this document:

<b>Convention</b>	<b>Meaning</b>
Command	This fixed-space font denotes literal items such as commands, files, routines, path names, signals, messages, and programming language structures.
<i>variable</i>	The italic typeface denotes variable entries and words or concepts being defined. Italic typeface is also used for book titles.
<b>user input</b>	This bold fixed-space font denotes literal items that the user enters in interactive sessions. Output is shown in nonbold, fixed-space font.
[ ]	Brackets enclose optional portions of a command or directive line.
...	Ellipses indicate that a preceding element can be repeated.
man page( <i>x</i> )	Man page section identifiers appear in parentheses after man page names.
<b>GUI element</b>	This font denotes the names of graphical user interface (GUI) elements such as windows, screens, dialog boxes, menus, toolbars, icons, buttons, boxes, fields, and lists.

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## System Overview

The SGI Rackable C2112-4RP4 server is a 2U rackmount server (see [Figure 1-1](#)). It has two main subsystems: the 2U server chassis and four dual-processor serverboards.



**Figure 1-1** SGI Rackable C2112-4RP4 Server

This chapter describes the main features and configuration options of the server as well as the components pertinent to monitoring and maintaining your server.

## System Features and Configuration Options

Table 1-1 summarizes the features and configuration options of the SGI Rackable C2112-4RP4 server.

**Table 1-1** Features and Configuration Options

Feature	Description
Dimensions (12-HDD Configuration)	<ul style="list-style-type: none"> <li>– Height: 3.46 inches (87.9 mm)</li> <li>– Width: 17.24 inches (438.0 mm). Top cover and emboss for front panel cable are not included.</li> <li>– Depth: 30.35 inches (771 mm). Depth of handle and HDD carrier are not included.</li> <li>– Weight: approximately 84 pounds (38kg)</li> </ul>
Dimensions (16-HDD Configuration)	<ul style="list-style-type: none"> <li>– Height: 3.46 inches (87.9 mm)</li> <li>– Width: 17.24 inches (438.0 mm). Top cover and emboss for front panel cable are not included.</li> <li>– Depth: 28.86 inches (733 mm). Depth of handle and HDD carrier are not included.</li> <li>– Weight: approximately 71 pounds (32kg)</li> </ul>
Compute Node Processor Support	Support for one or two Intel® Xeon® E5-2600 or E5-2600v2 Series processors with a Thermal Design Power (TDP) of up to 130 W(8-core and 6-core), or 80W(4-core) and below. A 135W CPU is available but with product warranty contingencies.
Compute Node Memory	<ul style="list-style-type: none"> <li>– 16 DIMM slots</li> <li>– 2 DIMM per channel</li> <li>– 4 Memory channels per processor</li> <li>– Unbuffered ECC or Registered DDR3 DIMMs</li> <li>– Memory DDR3 data transfer rates of 800, 1066, 1333 MT/s and 1600 MT/s</li> <li>– DDR3 standard I/O voltage of 1.5V (all speed) and DDR3 low voltage of 1.35V(1333MT/s or below)</li> </ul>
Chipset on Each Compute Node	Intel C600-A chipset
Compute Node External I/O Connections	<ul style="list-style-type: none"> <li>– DB-15 video connectors</li> <li>– Two RJ-45 Network Interface for 10/100/1000 LAN</li> <li>– One stacked two-port USB 2.0 (Port 0/1) connectors</li> <li>– One dedicated 1GbE management port on rIOM carrier (Optional)</li> <li>– One InfiniBand® QDR QSFP port (Optional)</li> <li>– One InfiniBand FDR QSFP port (Optional)</li> </ul>



**Table 1-1** Features and Configuration Options (continued)

Feature	Description
Compute Node Internal I/O Connectors/Headers	<ul style="list-style-type: none"> <li>– Bridge slot to extend board I/O</li> <li>- SCU0 (Four SAS 3 Gb/s ports) to backplane</li> <li>- Front control panel signals</li> <li>- One SATA (Port 0) 6 Gb/s port for DOM</li> <li>– One Type-A USB 2.0 connector (USB port 2)</li> <li>– One 2x7 pin header for system fan module</li> <li>– One DH-10 serial Port A connector</li> <li>– One SATA 6 Gb/s (Port 1)</li> </ul>
Available I/O Module Options	<p>The following I/O modules utilize a single proprietary on-board connector. An installed I/O module can be supported in addition to standard on-board features and any add-in expansion cards.</p> <ul style="list-style-type: none"> <li>– Quad Port Intel I350 GbE I/O Module</li> <li>– Dual Port Intel 82599 10GbE I/O Module</li> <li>– QDR InfiniBand ConnectX® I/O Module</li> </ul>
System Fans by Each Compute Node	<ul style="list-style-type: none"> <li>– Three sets of dual-rotor-managed system fans</li> <li>– One internal power supply fan for each installed power supply unit</li> </ul>
Compute Node Riser Cards	<p>Four PCIe Gen III x16 riser slots:</p> <ul style="list-style-type: none"> <li>– Riser slot 1 support PCIe Gen III x16 riser with LP PCIe add-in card</li> <li>– Riser slot 2 supports PCIe Gen III x 16 riser or x 8 riser (for Intel rIOM and RMM4 NIC port)</li> <li>– Riser slot 3 and riser slot 4 support PCIe Gen III x16 risers.</li> </ul> <p>Three PCIe Gen III x16 riser slots and one PCIe Gen III x(16+8) riser slots:</p> <ul style="list-style-type: none"> <li>– Riser slot 1 support PCIe Gen III x16 riser with LP PCIe add-in card</li> <li>– Riser slot 2 supports PCIe Gen III x 16 riser or x 8 riser</li> <li>– Riser slot 3 and Riser slot 4 support PCIe Gen III x16 risers.</li> </ul>
Node Video	<ul style="list-style-type: none"> <li>– Integrated 2D video controller</li> <li>– 128 MB DDR3 memory</li> </ul>
Node On-board Storage Controllers and Options	<ul style="list-style-type: none"> <li>– Two single port SATA connectors (on baseboard and bridge board) capable of supporting up to 6 Gb/sec</li> <li>– SCU0 4-port up to 3 Gb/sec SAS or 6 Gb/sec SATA through bridge board</li> </ul>

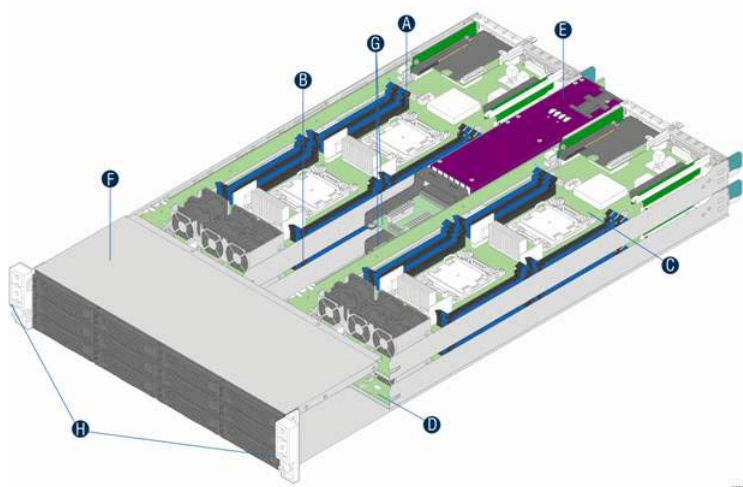
**Table 1-1** Features and Configuration Options **(continued)**

Feature	Description
Power Supply Options	1200 W AC Common Redundant Power Supply (CRPS), 80 plus Platinum with PFC, supporting CRPS configuration Note: The two power supplies shipped with your configuration might not be redundant if the power requirement of your configuration exceeds the capability of a single power supply.
Storage Bay Options	– 12 x 3.5-inch SATA/SAS HDD bays – 16 x 2.5-inch SATA/SAS HDD bays
Rack Mount Kit Options	Basic slide rail kit, bundled with system package

## Server Components

This section describes the server components pertinent to monitoring and maintaining your server. There are also quick reference labels inside of the chassis cover to assist you in identifying components.

The C2112-4RP4 server has four compute nodes in the chassis. [Figure 1-2](#) provides an overhead view of the server with the top cover removed.



**Figure 1-2** Overhead View of Server with the Top Cover Removed

Table 1-2 identifies the components labeled in the Figure 1-2.

**Table 1-2** Server Components Shown in Overhead View

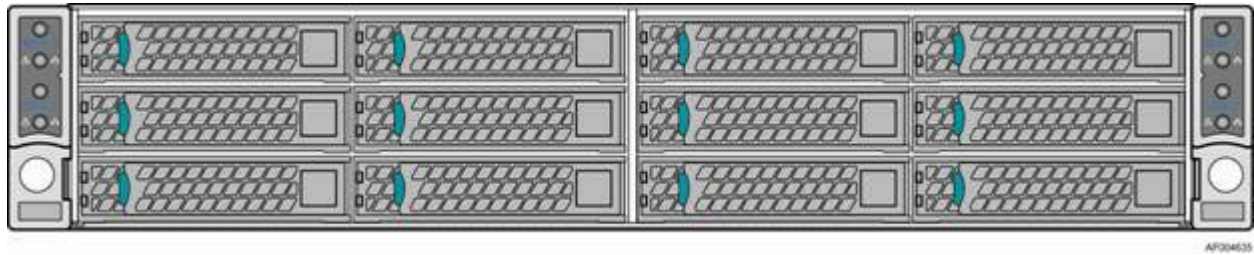
Label	Description
A	Compute Node 3 tray
B	Compute Node 1 tray
C	Compute Node 4 tray
D	Compute Node 2 tray
E	Common Redundant Power Supply (CRPS)
F	HDD bays with hot-swap backplane
G	Upper and lower power distribution boards
H	Front control panels

## Hard Disk Drive Bays

There are two configurations of hard disk drives for the C2112-4RP4 server:

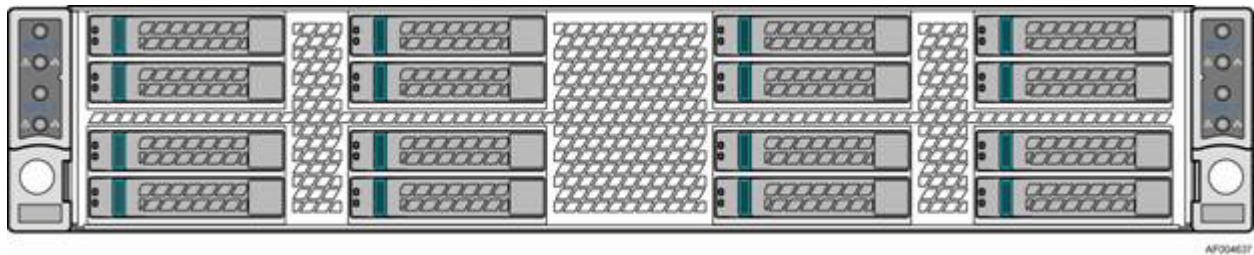
- 12 x 3.5" HDD bays
- 16 x 2.5" HDD bays

Figure 1-3 illustrates the 12-bay configuration.



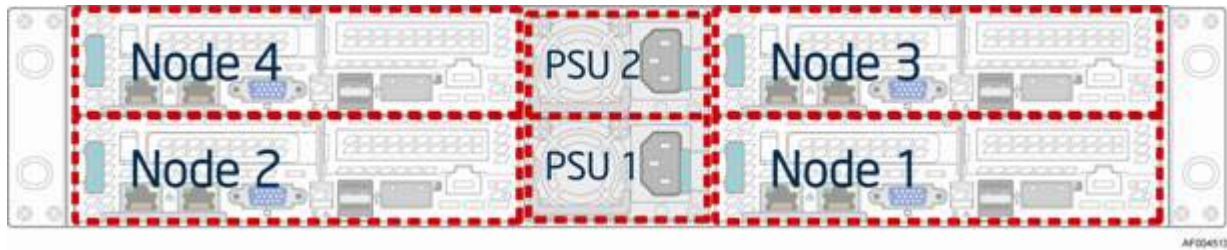
**Figure 1-3** 12-HDD Configuration

Figure 1-4 illustrates the 16-bay configuration.



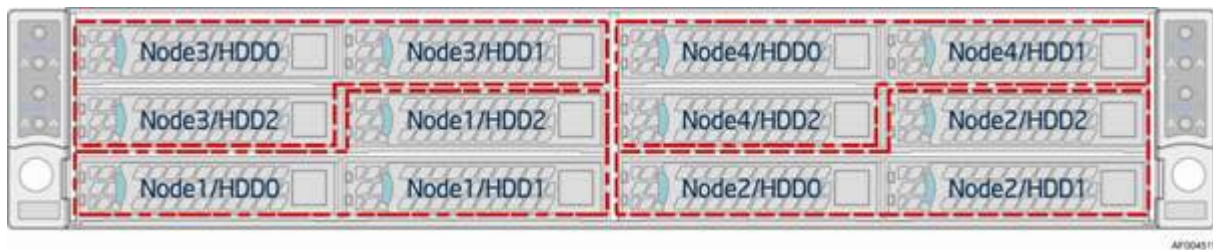
**Figure 1-4** 16-HDD Configuration

The compute nodes in the chassis are numbered by position as shown in Figure 1-5.

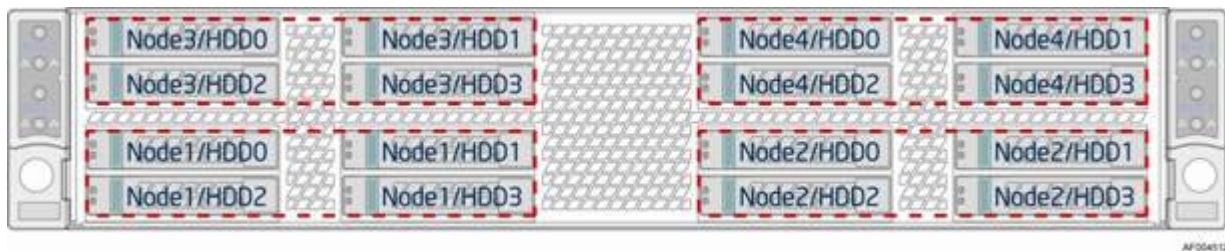


**Figure 1-5** Compute Node Numbering (Rear View)

Each compute node has a dedicated HDD array. Figure 1-6 and Figure 1-7 show the schemes for HDD arrays and the corresponding compute nodes.



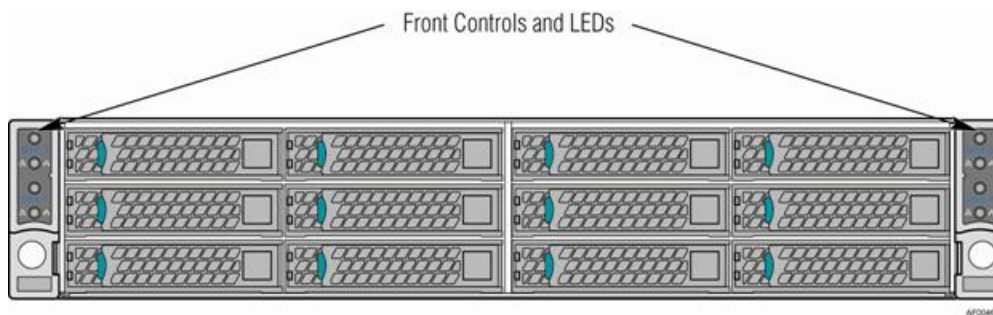
**Figure 1-6** Compute Node-HDD Mapping for the 12-HDD Configuration



**Figure 1-7** Compute Node-HDD Mapping for the 16-HDD Configuration

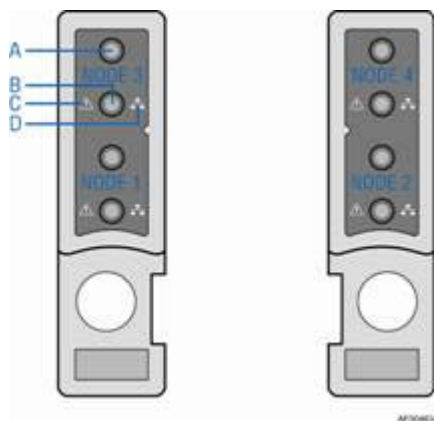
## Front Control Panels

The chassis contains two control panels, one on the left rack handle and one on the right. Each control panel contains two sets of control buttons and LEDs for two designated compute nodes. [Figure 1-8](#) shows the location of the control panels.



**Figure 1-8** Front Control Panels

Figure 1-9 shows the components of the two control panels.



**Figure 1-9** Front Control Panel Components

Table 1-3 identifies the labels shown in Figure 1-9.

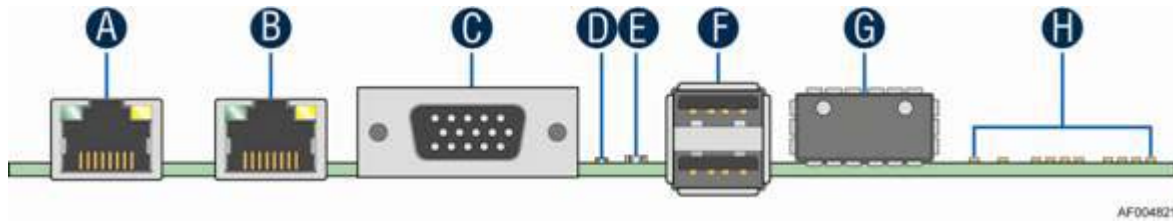
**Table 1-3** Front Control Panel Buttons and LEDs

Label	Description
A	System Power Button with LED
B	System ID LED Button
C	System Status LED
D	Network Link/Activity LED

For a description of the function of these buttons and LEDs, see Chapter 3, “System Operation and Monitoring.”

## Back Panel of Compute Nodes

Figure 1-10 shows the components on the back panel of compute nodes.



**Figure 1-10** Back Panel of Compute Nodes

Table 1-4 describes the components shown in Figure 1-10.

**Table 1-4** Back Panel Components of Compute Nodes

Label	Description
A	NIC Port 1 (RJ45)
B	NIC Port 2 (RJ45)
C	DB15 video out
D	ID LED. The system identification LED on the front and back panel helps identify the server from among several servers. The ID LED is off by default, and blue when activated by its button or software.
E	Status LED. Shows the overall health of the system (green, blinking green, blinking amber, amber, off).
F	Dual-port USB connector
G	QSFP Connector
H	InfiniBand Status and Diagnostic LED



## System Safety

This chapter describes basic safety precautions.

### Electrical Safety Precautions

Basic electrical safety precautions should be followed to protect yourself from harm and the SGI Rackable C2112-4RP4 system from damage, as follows:

- Be aware of the locations of the power on/off switch on the chassis as well as the room's emergency power-off switch, disconnection switch or electrical outlet. If an electrical accident occurs, you can then quickly remove power from the system.
- Do not work alone when working with high voltage components.
- Power should always be disconnected from the system when removing or installing main system components, such as the serverboard, memory modules and disk drives. When disconnecting power, you should first power down the operating system first and then unplug the power cords. The unit has more than one power supply cord. Disconnect two power supply cords before servicing to avoid electrical shock.
- When working around exposed electrical circuits, another person who is familiar with the power-off controls should be nearby to switch off the power if necessary.
- Use only one hand when working with powered-on electrical equipment. This is to avoid making a complete circuit, which will cause electrical shock. Use extreme caution when using metal tools, which can easily damage any electrical components or circuit boards they come into contact with.
- Do not use mats designed to decrease static electrical discharge as protection from electrical shock. Instead, use rubber mats that have been specifically designed as electrical insulators.
- The power supply power cords must include a grounding plug and must be plugged into grounded electrical outlets.

- Serverboard Battery

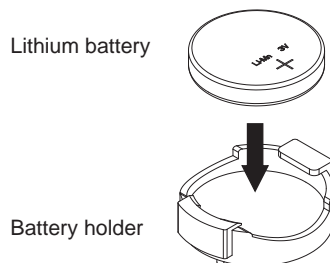


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**Caution:** There is a danger of explosion if the onboard battery is installed upside down, which will reverse its polarities (see [Figure 2-1](#)). This battery must be replaced only with the same or an equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.

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- Mainboard replaceable soldered-in fuses: Self-resetting PTC (Positive Temperature Coefficient) fuses on the mainboard must be replaced by trained service technicians only. The new fuse must be the same or equivalent as the one replaced. Contact technical support for details and support.



**Figure 2-1** Installing the Onboard Battery

## General Safety Precautions

Follow these rules to ensure general safety:

- Keep the area around the SGI Rackable C2112-4RP4 system clean and free of clutter.
- The SGI Rackable C2112-4RP4 system might approach 100 lbs (45 kg) when fully loaded. When lifting the system, two people at either end should lift slowly with their feet spread out to distribute the weight. Always keep your back straight and lift with your legs.
- Place the chassis top cover and any system components that have been removed away from the system or on a table so that they won't accidentally be stepped on.
- While working on the system, do not wear loose clothing such as neckties and unbuttoned shirt sleeves, which can come into contact with electrical circuits or be pulled into a cooling fan.
- Remove any jewelry or metal objects from your body, which are excellent metal conductors that can create short circuits and harm you if they come into contact with printed circuit boards or areas where power is present.
- After accessing the inside of the system, close the system back up and secure it to the rack unit with the retention screws after ensuring that all connections have been made.

## ESD Precautions



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**Caution:** Electrostatic discharge (ESD) is generated by two objects with different electrical charges coming into contact with each other. An electrical discharge is created to neutralize this difference, which can damage electronic components and printed circuit boards.

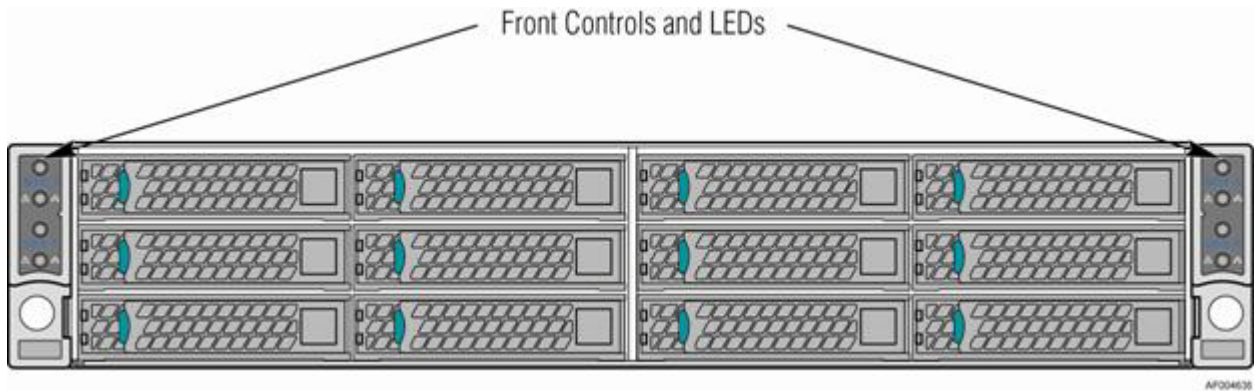
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The following measures are generally sufficient to neutralize this difference before contact is made to protect your equipment from ESD:

- Use a grounded wrist strap designed to prevent static discharge.
- Keep all components and printed circuit boards (PCBs) in their antistatic bags until ready for use.
- Touch a grounded metal object before removing the board from the antistatic bag.
- Do not let components or PCBs come into contact with your clothing, which may retain a charge even if you are wearing a wrist strap.
- Handle a board by its edges only; do not touch its components, peripheral chips, memory modules or contacts.
- When handling chips or modules, avoid touching their pins.
- Put the serverboard and peripherals back into their antistatic bags when not in use.
- For grounding purposes, make sure your computer chassis provides excellent conductivity between the power supply, the case, the mounting fasteners and the serverboard.

## System Operation and Monitoring

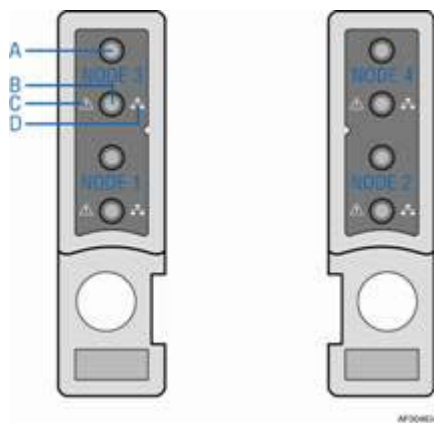
As shown in [Figure 3-1](#), there are two front control panels. There are several LEDs on the control panel as well as others on the hard drive carriers and power supplies. The LEDs keep you constantly informed of the overall status of the system as well as the activity and health of specific components. There are also two sets of control buttons on each chassis control panel to control the four compute nodes. This chapter describes the buttons and LEDs.



**Figure 3-1** Front Control Panels

## Front Panel Controls and LEDs

Each control panel contains two sets of node control buttons and status LEDs. [Figure 3-2](#) shows the components of a control panel.



**Figure 3-2** Control Panel Components

Table 3-1 describes the control panel components and their functions.

**Table 3-1** Control Panel Components and Functions

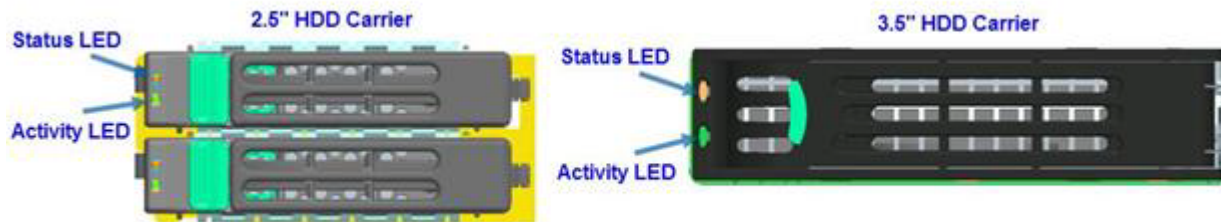
Label	Button/LED	Color	Condition	Function
A	System Power Button with LED	Green	On	Power On/ACPI S0 state
			Blink	Sleep/ACPI S1 state
			Off	Power Off/ACPI S5 state
B	System ID Button with LED	Blue	On	Highlights targeted system. Can be activated by the button or software.
C	System Status LED	Green	On	System ready/No alarm.
			Blink	System ready, but degraded: <ul style="list-style-type: none"> <li>– Redundancy lost such as the power supply or fan failure.</li> <li>– Non-critical temp/voltage threshold.</li> <li>– Battery failure.</li> <li>– Predictive power supply failure.</li> </ul>
		Amber	On	Critical Alarm: critical power modules failure, critical fans failure, voltage (power supply), critical temperature and voltage
			Blink	Non-Critical Alarm: Redundant fan failure, redundant power module failure, non-critical temperature and voltage
			Off	– Power off: System unplugged. – Power on: System powered off and in standby, no prior degraded/non-critical/critical state.
		D	Network Link/Activity LED	Green
Blink	LAN activity.			
Off	No link.			

**Notes:**

- Blink rate is ~1 Hz at 50% duty cycle.
- It is also off when the system is powered off (S5) or in a sleep state (S1).
- The power LED sleep indication is maintained on standby by the chipset. If the system is powered down without going through the BIOS, the LED state in effect at the time of power off is restored when the system is powered on until the BIOS clear it.
- If the system is not powered down normally, it is possible the Power LED will blink at the same time the system status LED is off due to a failure or configuration change that prevents the BIOS from running.

## Hard Disk Drive (HDD) LEDs

Figure 3-3 shows the location of the LEDs for both the 2.5" and 3.5" HDD carriers.



**Figure 3-3** HDD Carrier LEDs



Table 3-2 describes the functions of the Status LED.

**Table 3-2** HDD Status LED Functions

LED Color	LED Behavior	Drive Status
Amber	Off	No access and no fault.
	Solid On	Hard drive fault has occurred.
	Blink	– RAID rebuild in progress (1Hz). – Identify (2Hz).

Table 3-3 describes the functions of the Activity LED.

**Table 3-3** HDD Activity LED Functions

LED Color	Drive Condition	Drive Type	LED Behavior
Green	Power on with no drive activity.	SAS	LED stays on.
		SATA	LED stays off.
	Power on with drive activity.	SAS	LED blinks off when processing a command.
		SATA	LED blinks off when processing a command.
	Power on and drive spun down.	SAS	LED stays off.
		SATA	LED stays off.
	Power on and drive spinning up.	SAS	LED blinks.
		SATA	LED stays off.

## Power Supply LED

There is a single bi-color LED (green/amber) to indicate the power supply status. [Table 3-4](#) describes the different states of the LED.

**Table 3-4** Power Supply LED States

LED State	Power Supply (PS) State
Off	No AC power to any PS.
Green	Output on and Ok.
Green, 1Hz blink	AC present (only 12VSB on). PS off or PS in cold redundant state.
Green, 2Hz blink	PS firmware updating.
Amber	<ul style="list-style-type: none"><li>– PS critical event causing a shutdown/failure (OCP, OVP, fan failure)</li><li>– AC cord unplugged or AC power lost. A second power supply in parallel still has AC input power.</li></ul>
Amber, 1Hz blink	PS warning events where the power supply continues to operate (high temperature, high power, high current, slow fan).

## Chassis Maintenance

This chapter describes the following chassis maintenance activities:

- “Removing the System Top Cover” on page 23
- “Replacing the System Cover” on page 24
- “Replacing a Common Redundant Power Supply (CRPS) Unit” on page 26
- “Installing and Removing Hot-Swap Hard Drives” on page 28
- “Replacing a Fan Set in a Node Tray” on page 31
- “Replacing the Backup Battery” on page 33
- “Mounting the Chassis to a Rack” on page 34
- “Removing the Chassis from a Rack” on page 37

Before working with your server product, read the safety information in [Chapter 2, “System Safety.”](#)

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**Note:** Whenever you service the system, you must first power down the server and unplug all peripheral devices and the AC power cord.

---

**Tools and Supplies Needed:**

- Phillips (cross head) screwdriver (#1 bit and #2 bit)
- Needle-nosed pliers
- Anti-static wrist strap and conductive foam pad (recommended)

**Left-Right and User Position**

All references to left, right, front, top, and bottom assume you are facing the front of the chassis as it would be positioned for normal operation.

## Removing the System Top Cover

The server system must be operated with the system cover in place to ensure proper cooling. You will need to remove the top cover to add or replace components inside of the server. Before removing the top cover, power down the server and unplug all peripheral devices and the power cable(s).

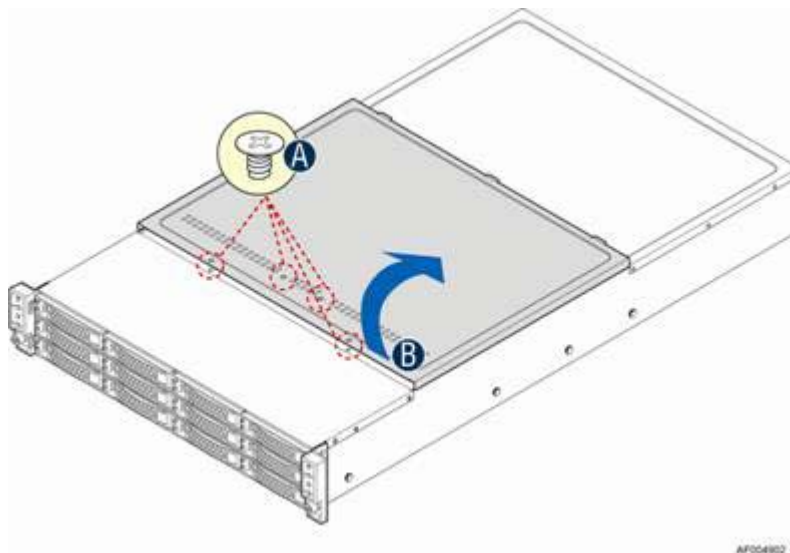
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**Note:** A non-skid surface or a stop behind the server system may be needed to prevent the server system from sliding on your work surface.

---

To remove the system cover, use the following steps:

1. Observe the safety and ESD precautions in [Chapter 2, “System Safety.”](#)
2. Turn off all peripheral devices connected to the server.
3. Turn off the server.
4. Disconnect the power cord.
5. Remove the screws.  
See **A** in [Figure 4-1](#).
6. Lift upwards from the **B** edge.  
See **B** in [Figure 4-1](#).



**Figure 4-1** Removing the System Top Cover

## Replacing the System Cover

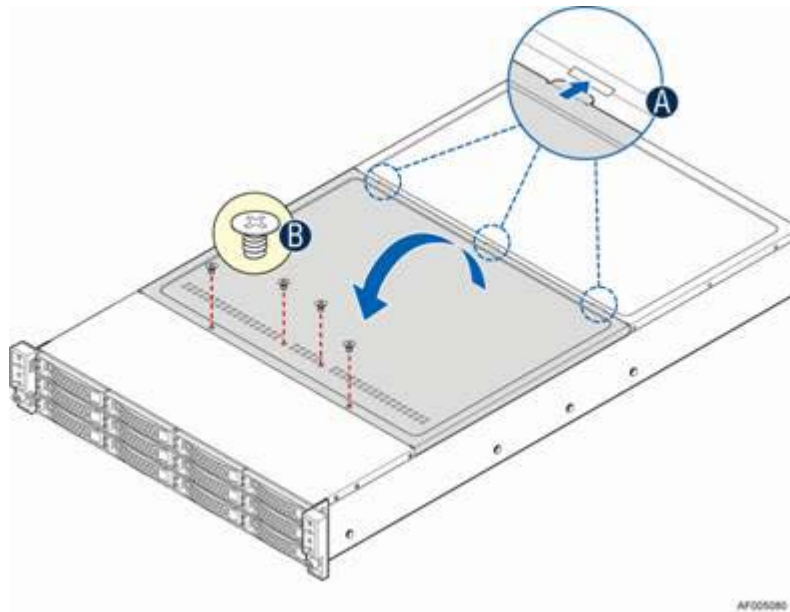
To replace the system cover, use the following steps:

1. Place the system cover onto the chassis and engage the recessed edge at the rear of the cover.

See **A** in [Figure 4-2](#).

2. Put the cover down from the **B** edge and tighten the screw at the front.

See **B** in [Figure 4-2](#).



**Figure 4-2** Installing the System Cover

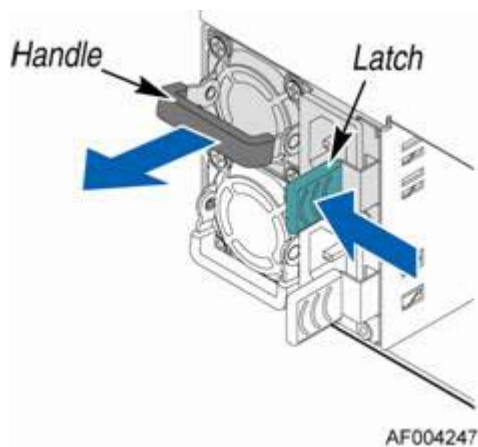
## Replacing a Common Redundant Power Supply (CRPS) Unit

The system is equipped with two CRPSs for redundancy. Each of them are hot-swappable.

### Removing a Power Supply Unit

To remove a power supply unit, use the following steps:

1. Carefully push in the latch on the right-hand side of the unit as shown in [Figure 4-3](#).
2. Pull the handle of the unit while still pressing the latch.



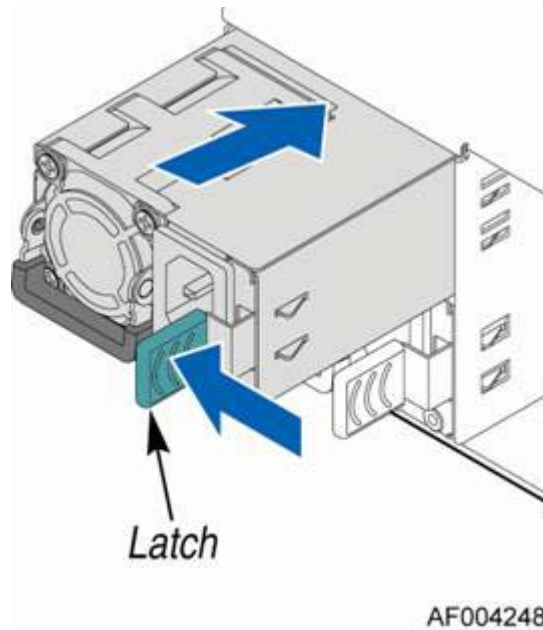
**Figure 4-3** Removing the Power Supply Unit



## Installing the Power Supply Unit

To install the power supply unit, use the following steps:

1. Align and slide in the unit to the power cage rail as shown in [Figure 4-4](#).
2. Push the unit along the rail until the latch locks in position with a click.



**Figure 4-4** Installing the Power Supply Unit

## Installing and Removing Hot-Swap Hard Drives

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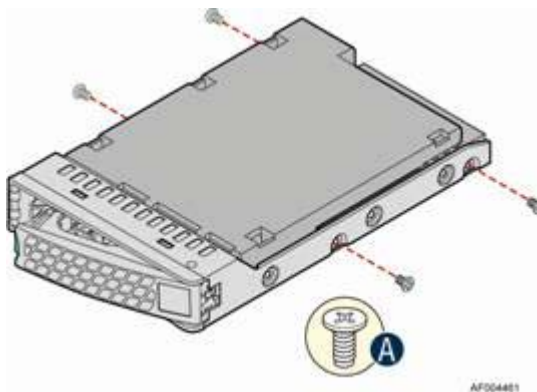
**Caution:** To maintain proper system cooling, use drive carriers with plastic drive blanks to populate drive bays that would be otherwise empty.

---

### Installing a 3.5” Hard Disk Drive

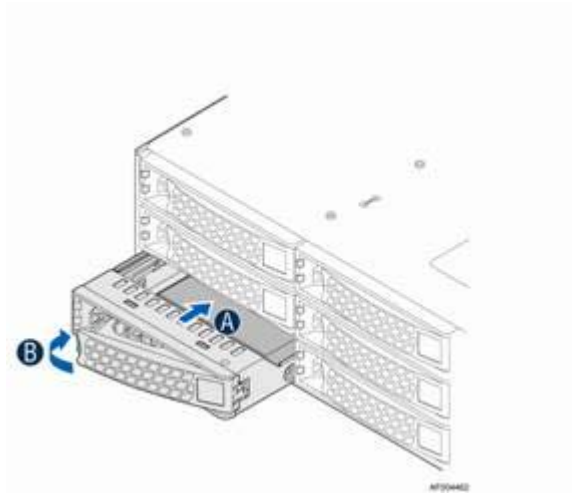
To install a HDD into a 3.5” HDD carrier, use the following steps.

1. Remove the four screws securing the HDD interface bracket and install the HDD with the screws shown in [Figure 4-5](#).



**Figure 4-5** Installing 3.5” HDD into Carrier

2. With the lever open, insert the hard disk drive assembly into the chassis.  
See **A** in Figure 4-6.
3. Push in the lever to lock it into place.  
See **B** in Figure 4-6.

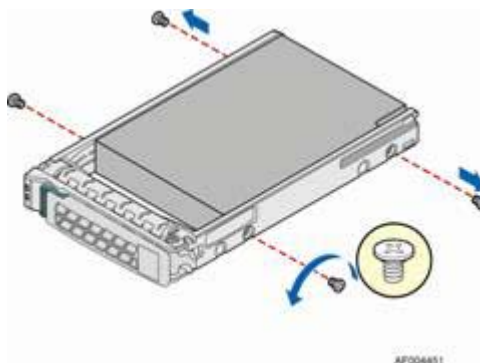


**Figure 4-6** Inserting 3.5” HDD into Chassis

## Installing a 2.5” Hard Disk Drive

To install a HDD into a 2.5” HDD carrier, use the following steps.

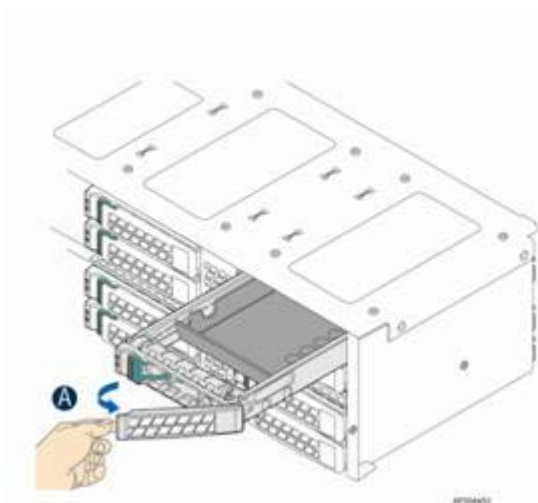
1. Remove the four screws securing the plastic drive blank from the HDD carrier and install the HDD with the screws shown in [Figure 4-7](#).



**Figure 4-7** Installing 2.5" HDD into Carrier

2. With the lever open, insert the hard disk drive assembly into the chassis, then push in the lever to lock it into place.

See [Figure 4-8](#).



**Figure 4-8** Inserting 2.5" HDD into Chassis

## Replacing a Fan Set in a Node Tray

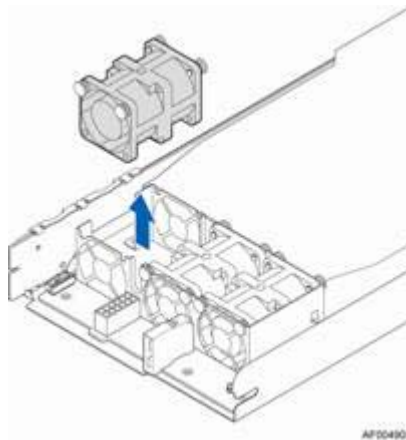
Each compute node has three sets of system fans.

### Removing a Fan Set

To remove a fan set, use the following steps:

1. Disconnect the fan cable from the node power dock (NPD) board.
2. Remove the fan set from the dock.

See [Figure 4-9](#).

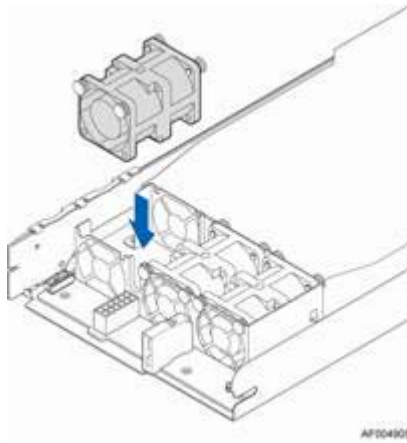


**Figure 4-9** Removing a Fan Set

## Installing a Fan Set

To install a fan set, use the following steps:

1. Place the fan set into dock.  
See [Figure 4-10](#).
2. Connect the fan set cable to connector on the NPD board.



**Figure 4-10** Installing a Fan Set

## Replacing the Backup Battery

The lithium battery on the serverboard powers the RTC for up to 10 years in the absence of power. When the battery starts to weaken, it loses voltage and the server settings stored in CMOS RAM in the RTC (for example, the date and time) may be wrong. Contact your customer service representative or dealer for a list of approved devices.

---

**Warning:** Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the equipment manufacturer. Discard used batteries according to manufacturer's instructions.

---

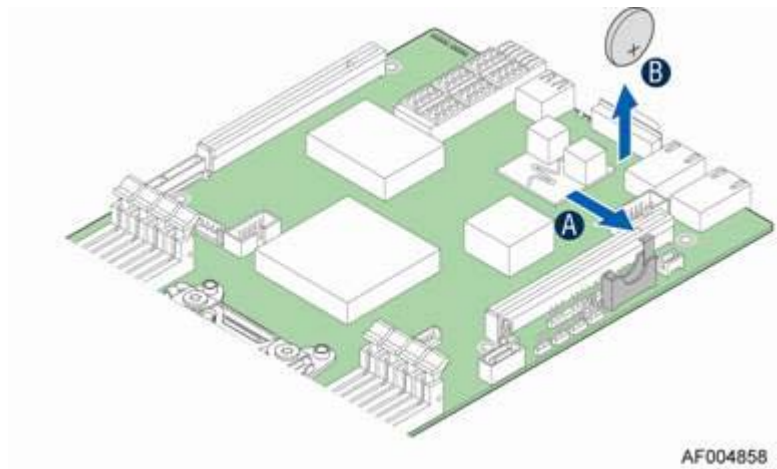
To replace the backup battery, use the following steps:

1. Locate the battery on the server board.
2. Gently press the metal clip as shown to release the battery.

See **A** Figure 4-11.

3. Remove the battery from the plastic socket.

See **B** in Figure 4-11.



**Figure 4-11** Replacing the Backup Battery

4. Dispose of the battery according to local ordinance.
5. Using the correct polarity, insert the new lithium battery in the battery socket.

---

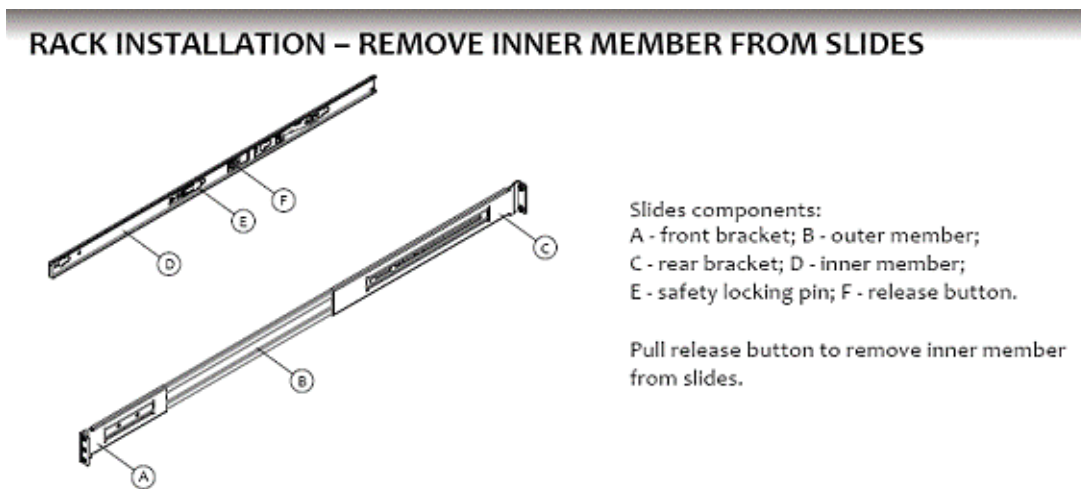
**Note:** You will need to run the BIOS setup to restore the configuration settings to the real-time clock (RTC).

---

## Mounting the Chassis to a Rack

A slide rail kit is bundled with the server and is packed in the same shipping box with the chassis. Use the following steps to install the chassis in the rack.

1. Remove the inner member from the slides as shown in [Figure 4-12](#).

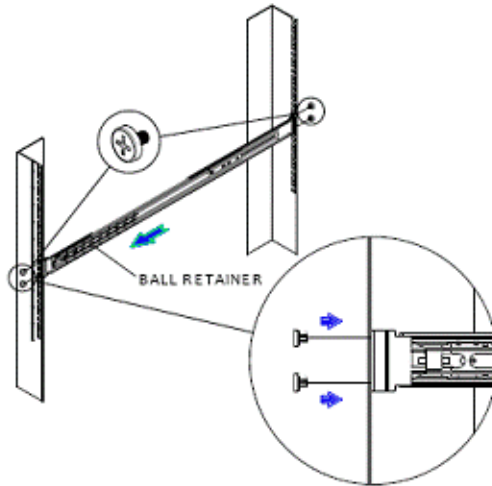


**Figure 4-12** Removing Inner Member from Slides



2. Attach the slides to the rack as shown in [Figure 4-13](#).

### RACK INSTALLATION – INSTALL SLIDES TO RACK

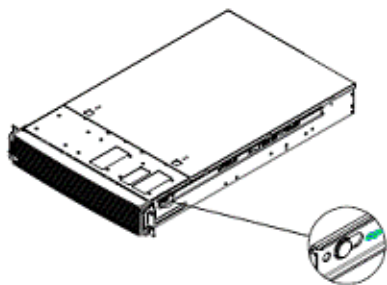


Align brackets to desired vertical position on rack and insert fasteners.  
Move ball retainer to the front of slides.

**Figure 4-13** Attaching Slides to the Rack

3. Install the inner members to the chassis as shown in [Figure 4-14](#).

### CHASSIS INSTALLATION – INSTALL INNER MEMBER TO CHASSIS

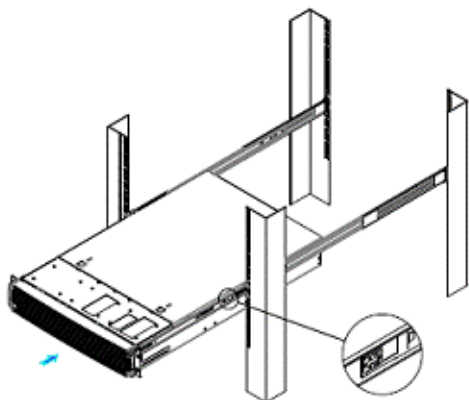


Align inner member key holes to standoffs on chassis, move inner member following the direction in left pictures.

**Figure 4-14** Installing the Inner Members to the Chassis

4. Install the chassis to the fixed slides as shown in [Figure 4-15](#).

### CHASSIS INSTALLATION – INSTALL CHASSIS TO FIXED SLIDES



Pull the release button in the inner member to release the lock and allow the chassis to close.

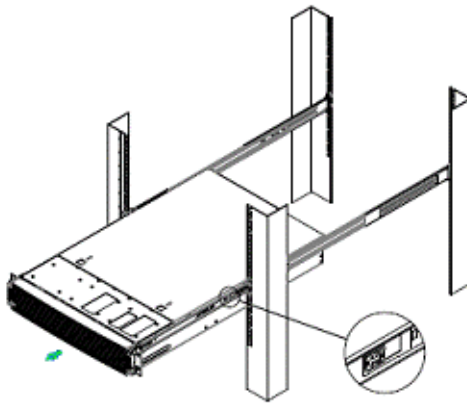
**Figure 4-15** Installing the Chassis in the Rack

## Removing the Chassis from a Rack

To remove the chassis from a rack, use the following steps:

1. Extend the slides as shown in [Figure 4-16](#).

### CHASSIS REMOVAL – EXTEND SLIDES



Fully extend the slides until it is in the locked position, pull the release button to release lock and disconnect inner member from slides.

**Figure 4-16** Extending Slides to Remove the Chassis

2. Remove the inner members from the chassis as shown in [Figure 4-17](#).

### CHASSIS REMOVAL – REMOVE INNER MEMBER FROM CHASSIS



**Figure 4-17** Removing the Inner Member from the Chassis

## Power and Environmental Specifications

This appendix describes the following:

- “Power Supply Input Voltages” on page 39
- “Power Supply Output Voltages” on page 40
- “Environmental Specifications” on page 40

### Power Supply Input Voltages

Table A-1 lists the input voltage specifications for the Common Redundant Power Supply (CRSP).

**Table A-1** CRPS Input Voltage

Parameter	Min	Rated	Max	Start up VAC	Power Off VAC
110 VAC	90 Vrms	100-127 Vrms	140 Vrms	85 VAC +/- 4 VAC	70 VAC +/- 5 VAC
220 VAC	180 Vrms	200-240 Vrms	264 Vrms		
Frequency	47 Hz	50/60 Hz	63 Hz		

## Power Supply Output Voltages

Table A-2 lists the output voltage specifications for the CRSP.

**Table A-2** CRPS Output Voltage

Parameter	Min	Nom	Max	Unit	Tolerance
+12VSTB	+11.40V	+12.000V	+12.60V	Vrms	+/-5%
+12V	+11.40V	+12.000V	+12.60V	Vrms	+/-5%

## Environmental Specifications

Table A-3 lists allowable ranges for temperature, humidity, and altitude for the server.

**Table A-3** Temperature, Humidity, and Altitude Specifications

Attribute	Specification	Rate of Change Constraints
<b>While Product Operating</b>		
Temperature	– Up to 1500m (5000ft) +5°C (41°F) to +35°C (95°F) – 1525m (5000ft) to 3050m (10,000ft) Reduce max temperature (35°C) by 1°C per 305m (1000ft) of altitude above 1525m (5000ft).	Maximum: 10°C/hour (18°F/hour)
Humidity	20% to 80% Non-condensing	Maximum: 10% relative humidity/hour
Altitude	3050m (10,000ft)	
<b>While Product Power Off</b>		
Temperature	+5°C (41°F) to +45°C (113°F)	Maximum: 20°C/hour (36°F/hour)
Humidity	8% to 80% Non-condensing	
Altitude	3050m (10,000ft)	

**Table A-3** Temperature, Humidity, and Altitude Specifications (continued)

Attribute	Specification	Rate of Change Constraints
<b>While Product Packaged for Shipping</b>		
Temperature	-40°C (-40°F) to +60°C (140°F)	Maximum: 20°C/hour (36°F/hour)
Humidity	8% to 80% Non-condensing	
Altitude	12,200m (40,000ft)	

Table A-4 lists additional environmental limits.

**Table A-4** Miscellaneous Environmental Specifications

Attribute	Limits
Acoustic noise	Sound power: – 3.5” HDD SKU: 6.9BA at idle and 7.4BA at active mode – 2.5” HDD SKU: 6.5BA at idle and 7.07BA at active mode.
Shock, operating	Half sine, 2 g peak, 11 milliseconds
Shock, unpackaged	Trapezoidal, 25 g, velocity change 136 inches/second (40 lbs to less than 80 lbs)
Shock, packaged	Non-palletized free fall in height 24 inches (40 lbs to less than 80 lbs)
Vibration, unpackaged	5 Hz to 500 Hz, 2.20 g RMS random
ESD	+/-12 KV, except I/O port +/- 8 KV per test specification
System cooling requirement in BTU/Hr	1200 Watt Max – 4095 BTU/hour 1600 Watt Max – 5459 BTU/hour





## Regulatory Compliance Information

Table B-1 summarizes the product regulatory compliance.

**Table B-1** Product Regulatory Compliance

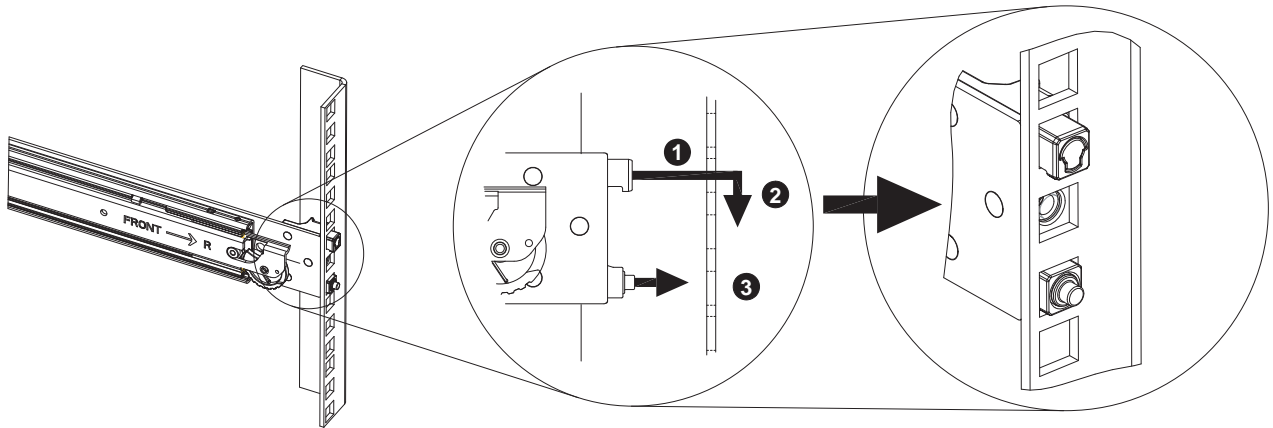
Category	Compliance Information
Electromagnetic Emissions	FCC Class A, EN 55022 Class A, EN 61000-3-2/-3-3, CISPR 22 Class A
Electromagnetic Immunity	EN 55024/CISPR 24, (EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 61000-4-8, EN 61000-4-11)
Safety	CSA/EN/IEC/UL 60950-1 Compliant, UL or CSA Listed (USA and Canada), CE Marking (Europe)
Perchlorate Materials	California Best Management Practices Regulations for Perchlorate Materials:  ”This Perchlorate warning applies only to products containing CR (Manganese Dioxide) Lithium coin cells. Special handling for perchlorate material may apply. See <a href="http://www.dtsc.ca.gov/hazardouswaste/perchlorate">www.dtsc.ca.gov/hazardouswaste/perchlorate</a> .”



## Rail Kit Installation

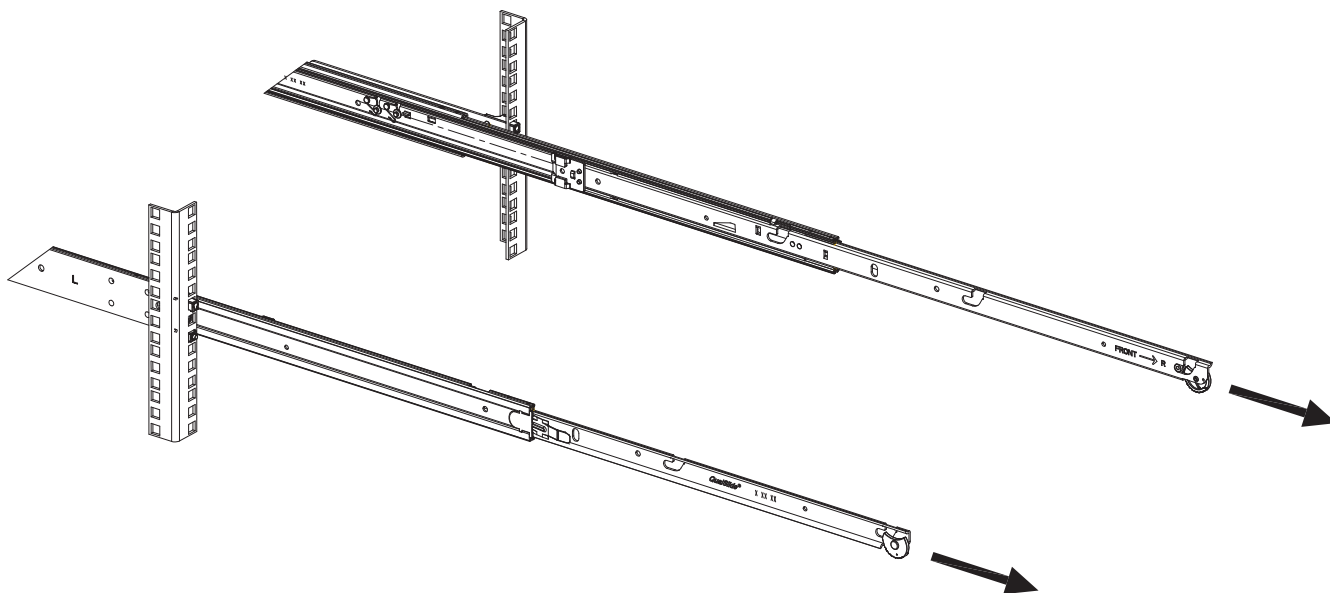
If the chassis for your server does not have pre-installed rail slides, SGI provides a rail kit. Use the following steps to install the rail kit.

1. Attach the slide rails to the racks as shown in [Figure C-1](#).



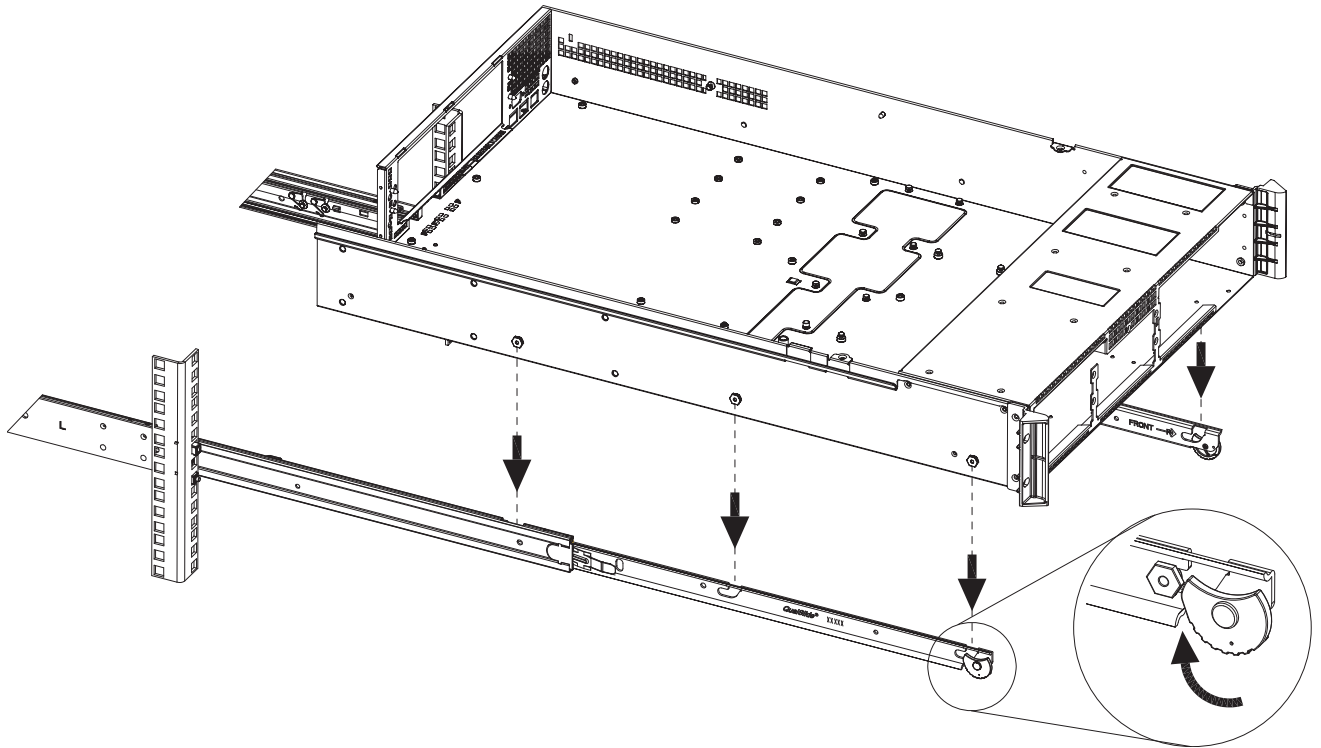
**Figure C-1** Attaching Rail Slides to Rack

2. Fully extend the rail slides as shown in [Figure C-2](#).



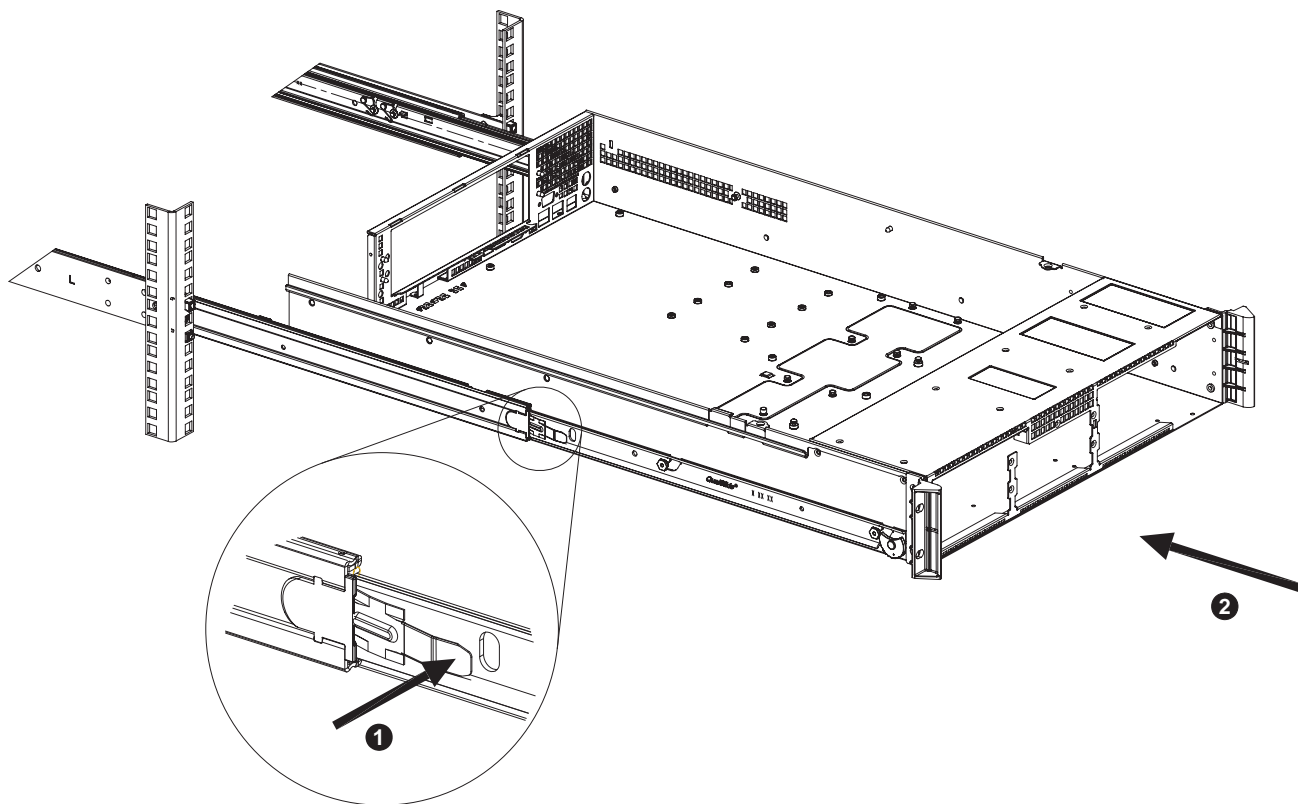
**Figure C-2** Extending Rail Slides

3. Attach the chassis to the rail slides as shown in [Figure C-3](#).



**Figure C-3** Attaching Chassis to Rail Slides

4. Push the release tab and push the chassis into the rack as shown in [Figure C-4](#).



**Figure C-4** Rail Slide Release Tab

## BMC Error Codes

The BMC may generate beep codes upon detection of failure conditions. Beep codes are sounded each time the problem is discovered (for example, on each power-up attempt) but are not sounded continuously. Common supported codes are listed in [Table D-1](#).

In [Table D-1](#), each digit in the code is represented by a sequence of beeps whose count is equal to the digit.

**Table D-1** BMC Beep Codes

Beep Code	Reason for Beep	Associated Sensors	Supported
1-5-2-1	No CPUs installed or first CPU socket is empty.	CPU Missing sensor	Yes
1-5-2-4	MSID Mismatch.	MSID Mismatch sensor.	Yes
1-5-4-2	Power fault: DC power is unexpectedly lost (power good dropout).	Power unit—power unit failure offset.	Yes
1-5-4-4	Power control fault (power good assertion timeout).	Power unit—soft power control failure offset.	Yes
1-5-1-2	VR Watchdog Timer sensor assertion	VR Watchdog timer	
1-5-1-4	The system does not power on or unexpectedly powers off and a power supply unit (PSU) is present that is an incompatible model with one or more other PSUs in the system.	PSU status	

