



SGI® Rackable™ C2112-GP2 System
User Guide

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Record of Revision

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Contents

	Record of Revision	iii
	About This Guide	xiii
	Audience	xiii
	Chapter Descriptions	xiv
	Related Publications	xv
	Conventions	xv
	Product Support	xvi
	Reader Comments	xvi
1	Introduction	1
	Server Chassis Features	2
	Serverboard Features	4
	Additional Hardware Components	7
2	System Safety	9
	Electrical Safety Precautions	9
	General Safety Precautions	11
	ESD Precautions	11
	Operating Precautions	12
3	Server Installation	13
	Unpack the System	13
	Prepare for Setup	13
	Choose a Setup Location	14
	Warnings and Precautions	14
	Rack Precautions	14
	Server Precautions	15
	Rack Mounting Considerations	15
	Ambient Operating Temperature	15

	Reduced Airflow . . . . .	. 15
	Mechanical Loading . . . . .	. 15
	Circuit Overloading . . . . .	. 16
	Reliable Ground . . . . .	. 16
	Install the System into a Rack . . . . .	. 16
	Separate the Sections of the Rack Rails and Install Outer Rack Rails . . . . .	. 16
	Install the Inner Rail Extensions. . . . .	. 18
	Install the Server in a Rack . . . . .	. 19
	Check the Serverboard Setup. . . . .	. 20
	Removing the Chassis Cover . . . . .	. 20
	Checking the Components and Setup . . . . .	. 22
	Checking the Drive Bay Setup . . . . .	. 22
	Checking the Airflow . . . . .	. 22
	Providing Power . . . . .	. 22
4	System Monitoring . . . . .	. 23
	Control Panel Components . . . . .	. 24
	Drive Carrier LEDs . . . . .	. 26
	Power Supply LED . . . . .	. 27
5	Chassis Maintenance . . . . .	. 29
	Before You Start . . . . .	. 30
	Tools and Supplies Needed . . . . .	. 30
	Left-Right and User Position . . . . .	. 30
	Removing the Chassis Cover. . . . .	. 30
	Replacing a Power Supply . . . . .	. 32
	Installing and Removing Disk Drives . . . . .	. 34
	Removing a Hard Drive Carrier from the Chassis . . . . .	. 34
	Removing a Drive from a Drive Carrier. . . . .	. 36
	Installing a Hard Drive into a Carrier . . . . .	. 37
	Replacing System Fans . . . . .	. 38
6	Troubleshooting. . . . .	. 41
	If the System Does Not Power Up . . . . .	. 42
	System Powers Up But Will Not Boot . . . . .	. 42

	No Video After System Power Up	43
	Memory Errors	43
A	Technical Specifications	45
B	BIOS Error Codes	49

Figures

Figure 1-1	The SGI Rackable C2112-GP2 Server	1
Figure 1-2	Front Chassis View	3
Figure 1-3	PCI Expansion Slots	3
Figure 1-4	Rear Chassis I/O Ports	5
Figure 1-5	Serverboard Block Diagram	6
Figure 2-1	Installing the Onboard Battery	10
Figure 3-1	Separating and Installing the Rack Rails.	17
Figure 3-2	Installing the Inner Rail Extensions	18
Figure 3-3	Installing the Server in a Rack	19
Figure 3-4	Accessing the Inside of the Chassis	21
Figure 4-1	Front Control Panel	23
Figure 4-2	Control Panel Components	24
Figure 5-1	Accessing the Inside of the Chassis	31
Figure 5-2	Power Supply Release Tab	32
Figure 5-3	Removing the Power Supply	33
Figure 5-4	Drive Carrier Release Tab	34
Figure 5-5	Removing Drive Carrier From Chassis	35
Figure 5-6	Removing a Dummy Drive	36
Figure 5-7	Mounting a Disk into a Drive Carrier	37
Figure 5-8	Replacing System Fans	39

Tables

Table 1-1	Server Chassis Features	2
Table 1-2	PCI Expansion Slots	3
Table 1-3	Serverboard Features	4
Table 4-1	Control Panel Components	25
Table 4-2	Universal Information LED States	25
Table 4-3	Disk Carrier LEDs	26
Table 4-4	Power Supply LED States	27
Table A-1	Temperature, Humidity, and Altitude Specifications	45
Table A-2	Miscellaneous System Specifications	46
Table B-1	BIOS Error Codes	49

About This Guide

This guide provides an overview of the installation, architecture, general operation, and descriptions of the major components in the SGI® Rackable™ C2112-GP2 server. It also provides basic troubleshooting and maintenance information as well as important safety and regulatory specifications.

Audience

This guide is written for owners, installers, system administrators, and users of SGI Rackable C2112-GP2 computer systems. 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, “Introduction”
Provides an overview of SGI Rackable C2112-GP2 server components.
- Chapter 2, “System Safety”
Provides system safety information.
- Chapter 3, “Server Installation”
Provides a quick setup checklist to get the server operational.
- Chapter 4, “System Monitoring”
Describes how you monitor the overall status of the system as well as the activity and health of specific components.
- Chapter 5, “Chassis Maintenance”
Describes how you replace fans, disk drives, and power supplies.
- Chapter 6, “Troubleshooting”
Describes some basic steps to troubleshoot your system.
- [Appendix A, “Technical Specifications,”](#)
Describes system component specifications.
- [Appendix B, “BIOS Error Codes,”](#)
Provides BIOS error code information.

Related Publications

The following SGI documents are relevant to the SGI Rackable C2112-GP2 server:

- 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 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 xvi.

Conventions

The following conventions are used throughout this document:

Convention	Meaning
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.
user input	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(x)	Man page section identifiers appear in parentheses after man page names.
GUI element	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.

Product Support

SGI provides a comprehensive product support and maintenance program for its products. SGI also offers services to implement and integrate Linux applications in your environment.

- Refer to <http://www.sgi.com/support/>
- If you are in North America, contact the Technical Assistance Center at +1 800 800 4SGI or contact your authorized service provider.
- If you are outside North America, contact the SGI subsidiary or authorized distributor in your country.

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SGI values your comments and will respond to them promptly.

Introduction

The SGI Rackable C2112-GP2 server is a 2U rackmount server (see [Figure 1-1](#)). It has two main subsystems: the 2U server chassis and a dual-processor serverboard.

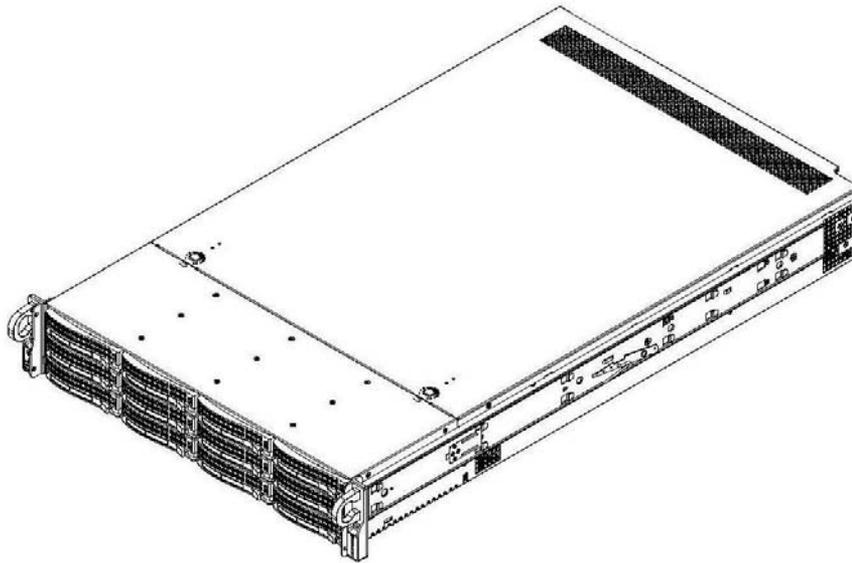


Figure 1-1 The SGI Rackable C2112-GP2 Server

This chapter describes the server using the following topics:

- “[Server Chassis Features](#)” on [page 2](#)
- “[Serverboard Features](#)” on [page 4](#)
- “[Additional Hardware Components](#)” on [page 7](#)

Server Chassis Features

Table 1-1 describes the main features of the SGI Rackable C2112-GP2 server chassis.

Table 1-1 Server Chassis Features

Feature	Description
System power	The chassis features a redundant 1KW power supply consisting of two power modules. The system does not need to be shut down when replacing or removing a single power supply module.
Hard drives	The chassis is designed to support twelve 3.5" hot-swap hard drive carriers.
PCI expansion slots	Two conventional riser cards are included in the system and support five standard PCIe x8 add-on cards. Each system comes with an additional Ultra riser card to provide added features such as extra LAN ports and PCI expansion slots. See Figure 1-3 and Table 1-2 for the location and physical profile of the slots.
Front control panel	The front control panel provides system monitoring and control. LEDs indicate system power, HDD activity, network activity (2), overheat/fan failure, and power failure. A main power button and a reset button are also included.
Cooling system	The chassis has an innovative cooling design that features four 8-cm high-performance fans. Fan speed can be determined by system temperature via IPMI. Each power supply module also includes a cooling fan.

Figure 1-2 shows the noteworthy components on the front of the server chassis.

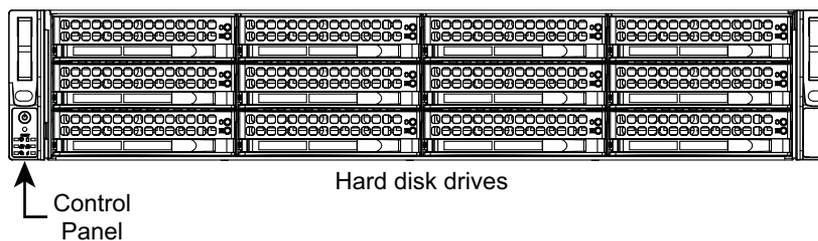


Figure 1-2 Front Chassis View

Figure 1-3 shows the location of the PCI expansion slots in the rear chassis and Table 1-2 describes the physical profile of the slots.

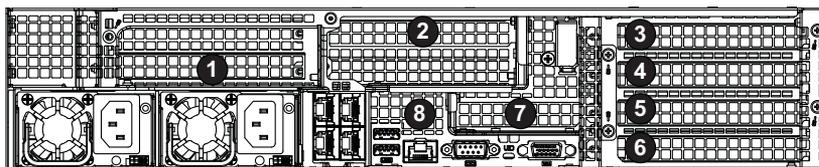


Figure 1-3 PCI Expansion Slots

Table 1-2 PCI Expansion Slots

Riser Card Slot	Physical Profile
1	Full Height (4.2"), 10" Length
2	Full Height (4.2"), 10" Length
3	Full Height (4.2"), 10" Length
4	Full Height (4.2"), 10" Length
5	Full Height (4.2"), 10" Length
6	Full Height (4.2"), 10" Length
7	Low Profile (2.536"), 6.6" Length
8	Low Profile (2.536"), 6.6" Length

Serverboard Features

At the heart of the SGI Rackable C2112-GP2 server is a dual-processor serverboard based on the Intel® C612 chipset and designed to provide maximum performance. [Table 1-3](#) describes the major features of the serverboard.

Table 1-3 Serverboard Features

Feature	Description
Processors	The serverboard supports single or dual Intel® E5-2600 v3 Series processors.
Memory	The serverboard has 24 memory sockets that can support up to 768 GB of ECC registered DDR4-1600/1333/1066/800 non-volatile RDIMM (registered DIMMs) or 1536 GB of LRDIMM (load-reduced DIMMs) DDR4-2133/1866/1600/1333 memory.
Onboard Serial ATA (SATA)	A SATA controller is integrated into the chipset to provide a ten-port SATA subsystem. Six of the ports are supported by the Intel PCH and four of the ports are supported by the Intel SCU. The SATA 3.0 ports are connected to the backplane by default. RAID 0, 1, 5 and 10 are supported.
Rear I/O ports	<ul style="list-style-type: none"> – One COM port – One VGA (monitor) port – Two USB 3.0 ports – One dedicated IPMI LAN port – Two GigE/Four 10GBase-T/Two 10GBase-T LAN ports (depending on the pre-installed Ultra riser card) <p>These ports are illustrated in Figure 1-4, along with the four Ethernet ports associated with the two GigE configuration.</p>
Graphics controller	There is an integrated ASpeed 2400 BMC graphics chip.

Figure 1-4 shows the I/O ports on the rear of the server chassis.

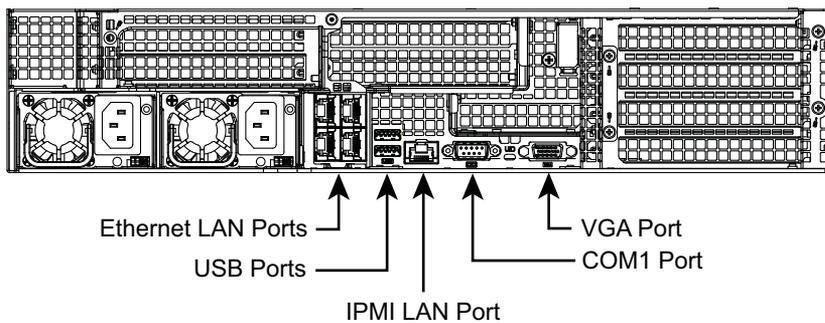


Figure 1-4 Rear Chassis I/O Ports

Figure 1-5 shows a block diagram of the serverboard.

Note: Figure 1-5 is a general block diagram and may not represent the exact features on your serverboard. See Table 1-3 for the actual specifications of your serverboard. This block diagram is intended for your reference only.

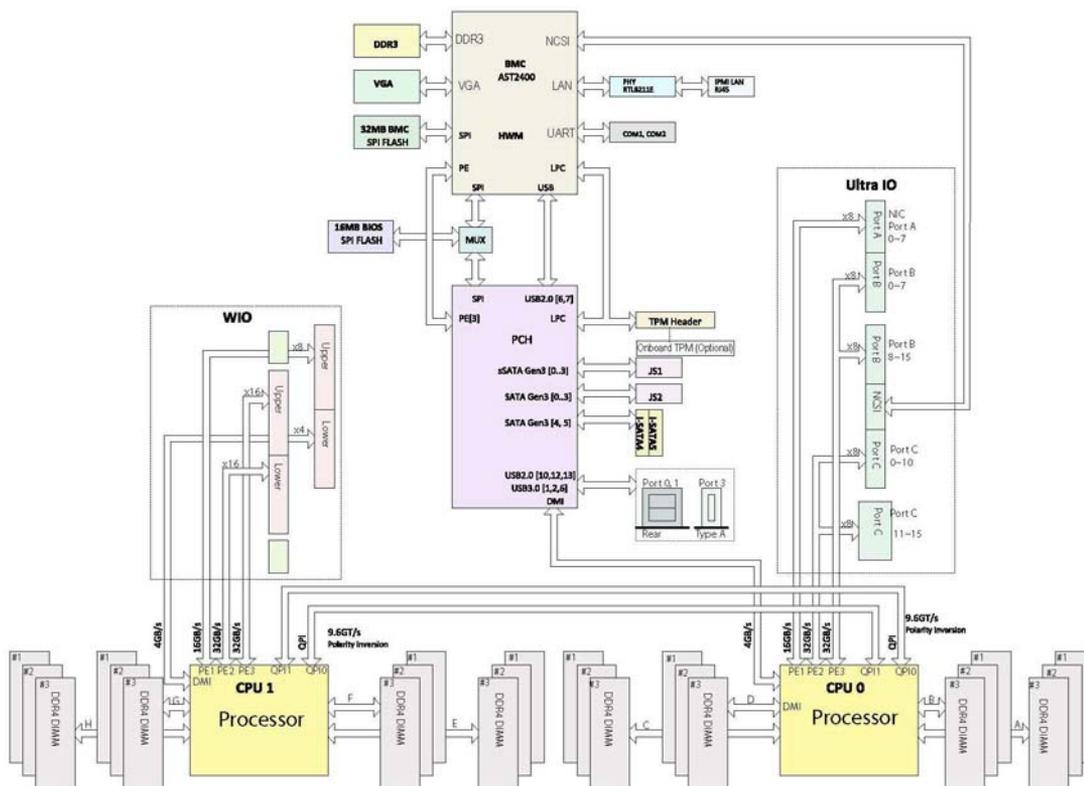


Figure 1-5 Serverboard Block Diagram

Additional Hardware Components

In addition to the serverboard and chassis, the following hardware components have been included with the server:

- Two passive CPU heat sinks
- Two conventional riser cards
- One Ultra riser card
- Four plastic air shrouds
- Four 8-cm system cooling fans
- SAS backplane
- Twelve hot-swap 3.5" HDD trays
- Four riser cards
- One rail set
- 3.5"-to-2.5" converter for disk drive trays (optionally included)

Important: SGI Rackable server systems may sometimes require driver versions that are not included in the original operating system release. When required, SGI provides these drivers on an SGI Driver CD, which may ship with the system, or on the system disk (pre-installed in the factory). For more information on this topic check with your sales or service representative.

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-GP2 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



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.

- 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.

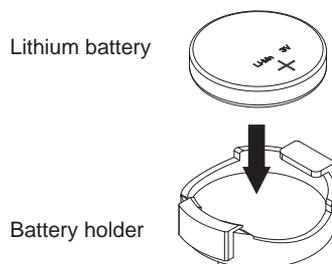


Figure 2-1 Installing the Onboard Battery

General Safety Precautions

Follow these rules to ensure general safety:

- Keep the area around the SGI Rackable C2112-GP2 system clean and free of clutter.
- The SGI Rackable C2112-GP2 system weighs approximately 55 lbs (25 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



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. The discharge can damage electronic components and printed circuit boards.

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.

Operating Precautions

The following are two noteworthy operating precautions:

- Ensure that the chassis cover is in place when the server is operating to ensure proper cooling. Out-of-warranty damage to the system can occur if this practice is not strictly followed.
- Please handle used batteries carefully. Do not damage the battery in any way. A damaged battery may release hazardous materials into the environment. Do not discard a used battery in the garbage or a public landfill. Please comply with the regulations set up by your local hazardous waste management agency to dispose of your used battery properly.

Server Installation

This chapter provides a quick setup checklist to get the SGI Rackable C2112-GP2 server operational.

Unpack the System

Inspect the shipping container used for the server and note if it was damaged in any way. If the server shows damage, file a damage claim with the carrier who delivered it.

Decide on a suitable location for the rack that supports the weight, power requirements, and environmental requirements of the server. It should be situated in a clean, dust-free environment that is well ventilated. Avoid areas where heat, electrical noise, and electromagnetic fields are generated. Place the server rack near a grounded power outlet. Refer to [“Warnings and Precautions”](#) on page 14.

Prepare for Setup

The shipping container should include two sets of rail assemblies, two rail mounting brackets and the mounting screws that you will use to install the system into a rack.

Read this section in its entirety before you begin the installation procedure.

Choose a Setup Location

Follow these guidelines:



Caution: The equipment is intended for installation only in a restricted access location.

- This product is not suitable for use with visual display work place devices according to Clause 2 of the *German Ordinance for Work with Visual Display Units* document.
- Leave enough clearance in front of the rack to enable you to open the front door completely (~25 inches) and approximately 30 inches of clearance in the back of the rack to allow for sufficient airflow and ease in servicing.

Warnings and Precautions

Rack Precautions



Warning: Failure to follow the following guidelines can result in serious injury or damage to the equipment.

- The SGI Rackable C2112-GP2 server weighs 55 lbs (25 kg). Always use proper lifting techniques when you move the server. Always get the assistance of another qualified person when you install the server in a location above your shoulders.
- Extend the leveling jacks on the bottom of the rack to the floor with the full weight of the rack resting on them.
- Attach stabilizers to the rack in single rack installations.
- Couple racks together in multiple rack installations.
- Be sure the rack is stable before extending a component from the rack.
- Extend only one component at a time. Extending two or more components simultaneously may cause the rack to tip over.

Server Precautions

- Review the electrical and general safety precautions in [Chapter 2, “System Safety.”](#)
- Determine the placement of each component in the rack before you install the rails.
- Install the heaviest server components in the bottom of the rack first, and then work up.
- Use a regulating uninterruptible power supply (UPS) to protect the server from power surges and voltage spikes and to keep your system operating in case of a power failure.
- Allow the hot-pluggable SATA drives and power supply modules to cool before touching them.
- Always keep the rack’s front door and all panels and components on the servers closed when not servicing to maintain proper cooling.

Rack Mounting Considerations

Ambient Operating Temperature

If installed in a closed or multi-unit rack assembly, the ambient operating temperature of the rack environment may be greater than the ambient temperature of the room. Therefore, consideration should be given to installing the equipment in an environment compatible with the manufacturer’s maximum rated ambient temperature (35° C or 95° F).

Reduced Airflow

Equipment should be mounted into a rack so that the amount of airflow required for safe operation is not compromised.

Mechanical Loading

Equipment should be mounted into a rack so that a hazardous condition does not arise due to uneven mechanical loading.

Circuit Overloading

Consideration should be given to the connection of the equipment to the power supply circuitry and the effect that any possible overloading of circuits might have on overcurrent protection and power supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this concern.

Reliable Ground

A reliable ground must be maintained at all times. To ensure this, the rack itself should be grounded. Particular attention should be given to power supply connections other than the direct connections to the branch circuit (for example, the use of power strips, and so on).

Install the System into a Rack

This section provides information on installing the server into a rack. If the system has already been mounted into a rack, refer to “[Check the Serverboard Setup](#)” on page 20. There are a variety of rack units on the market, which may mean the assembly procedure will differ slightly. You should also refer to the installation instructions that came with the rack unit you are using.

Note: This rail will fit a rack between 26" and 33.5" deep.

Separate the Sections of the Rack Rails and Install Outer Rack Rails

The chassis package includes two rail assemblies in the rack mounting kit. Each assembly consists of two sections: an inner fixed chassis rail that secures directly to the server chassis and an outer fixed rack rail that secures directly to the rack itself.

Steps 1–4 describe how to separate the inner and outer rails:

1. Locate the rail assembly in the chassis packaging as shown in [Figure 3-1](#).
2. Extend the rail assembly by pulling it outward.
3. Press the quick-release tab
4. Separate the inner rail from the outer rail assembly as shown in [Figure 3-1](#).

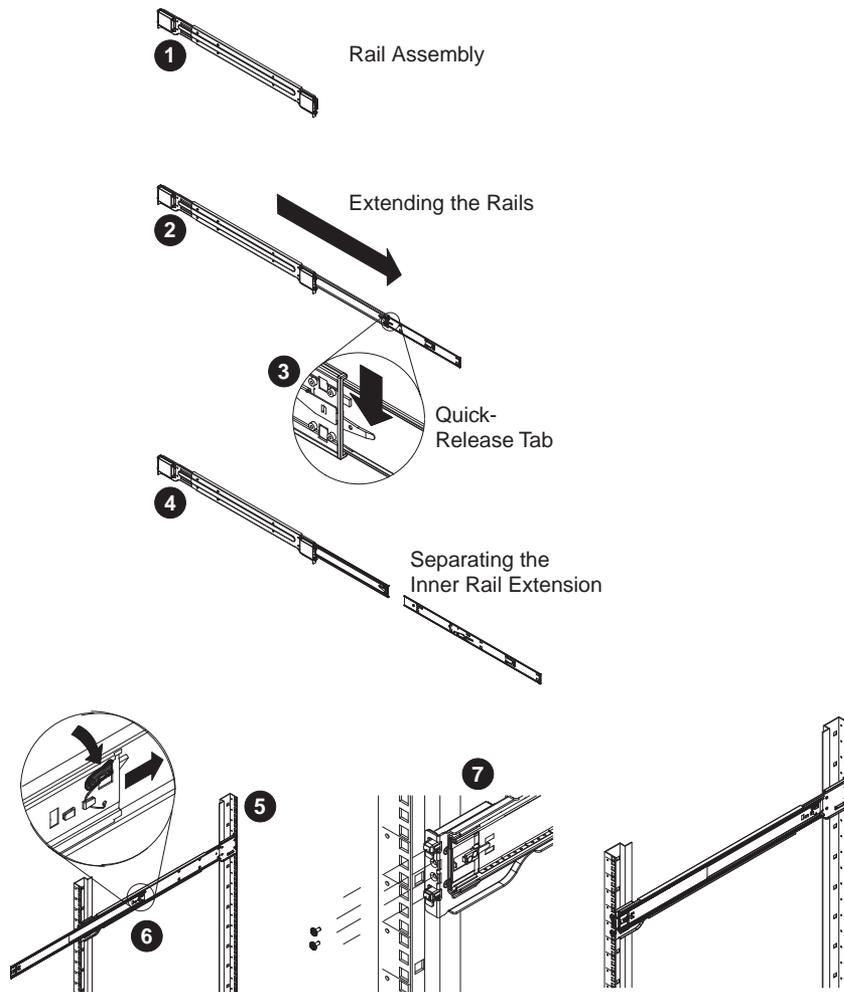


Figure 3-1 Separating and Installing the Rack Rails

Outer rails attach to the rack and hold the chassis in place. The outer rails for the chassis extend between 30 inches and 33 inches.

Steps 5–8 describe how to install the outer rails to the rack (see [Figure 3-1](#)):

5. Secure the back end of the outer rail to the rack, using the screws provided.

6. Press the button where the two outer rails are joined to retract the smaller outer rail.
7. Hang the hooks of the rails onto the rack holes and if desired, use screws to secure the front of the outer rail onto the rack.
8. Repeat steps 5-7 for the remaining outer rail.

Install the Inner Rail Extensions

The server chassis includes a set of inner rails in two sections: inner rails and inner rail extensions. The inner rails are pre-attached to the chassis, and do not interfere with normal use of the chassis if you decide not to use a server rack. The inner rail extensions are attached to the inner rails to mount the chassis in the rack.

Perform the following steps to install the inner rail extensions as illustrated in [Figure 3-2](#):

1. Place the inner rail extensions on the side of the chassis aligning the hooks of the chassis with the rail extension holes. Make sure the extension faces outward just like the pre-attached inner rail.
2. Slide the extension toward the front of the chassis.
3. Secure the chassis with two screws as illustrated.
4. Repeat the prior steps for the other inner rail extension.

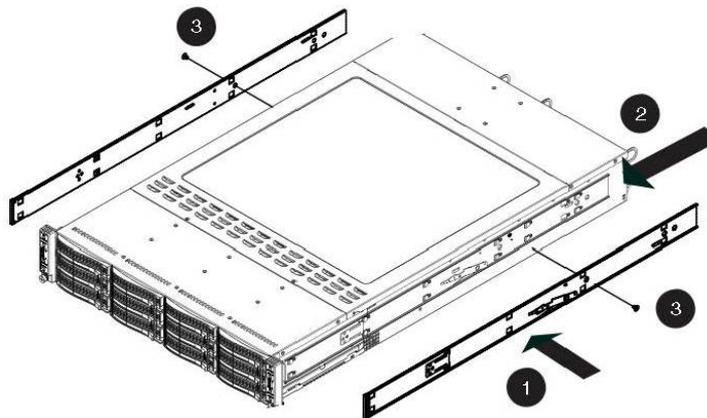


Figure 3-2 Installing the Inner Rail Extensions

Install the Server in a Rack



Warning: The SGI Rackable C2112-GP2 server weighs 55 lbs (25 kg). Always use proper lifting techniques when you move the server. Always get the assistance of another qualified person when you install the sever in a location above your shoulders. Failure to do so may result in serious personal injury or damage to the equipment.

You should now have rails attached to both the server chassis and the rack unit. The next step is to install the server into the rack (refer to [Figure 3-3](#)).

1. Extend the outer rails as shown in [Figure 3-3](#).
2. Align the inner rails of the chassis with the outer rails on the rack.
3. Slide the inner rails into the outer rails, keeping the pressure even on both sides. When the chassis has been pushed completely into the rack, it should click into the locked position.
4. Optional screws may be used to secure the to hold the front of the chassis to the rack.

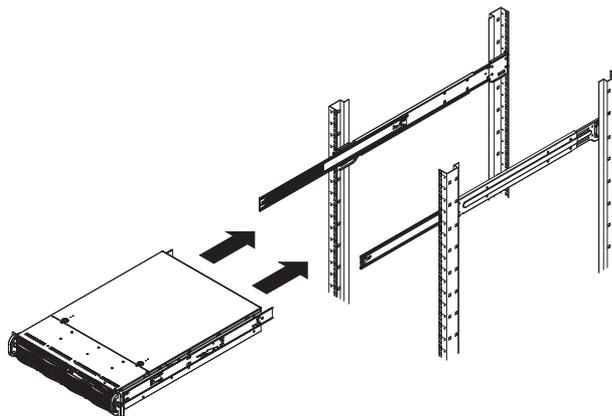


Figure 3-3 Installing the Server in a Rack

Note: The figure above is for illustration purposes. Always install servers to the rack in a bottom-to-top fashion.

Check the Serverboard Setup

After you install the server in the rack, you will need to open the unit to make sure the serverboard is properly installed and all the connections have been made. Before operating the server for the first time, it is important to remove any protective film covering the top of the chassis. The removal of this film allows for proper ventilation and cooling.

Removing the Chassis Cover

Use the following procedure for removing the chassis cover as illustrated in [Figure 3-4](#).

1. If rack mounted, first, grasp the two handles on either side and pull the system straight out until it locks.
You will hear a click when it locks.
2. Remove the two screws on each side of the cover.
3. Press the both release tabs at the same time to remove the cover from the locked position.
4. Once the top cover is released from the locked position, slide the cover toward the rear of the chassis.
5. Lift the cover off the chassis.

Note: To remove the system from the rack completely, depress the locking tabs on the chassis rails (push the right-side tab down and the left-side tab up) to continue to pull the system out past the locked position.

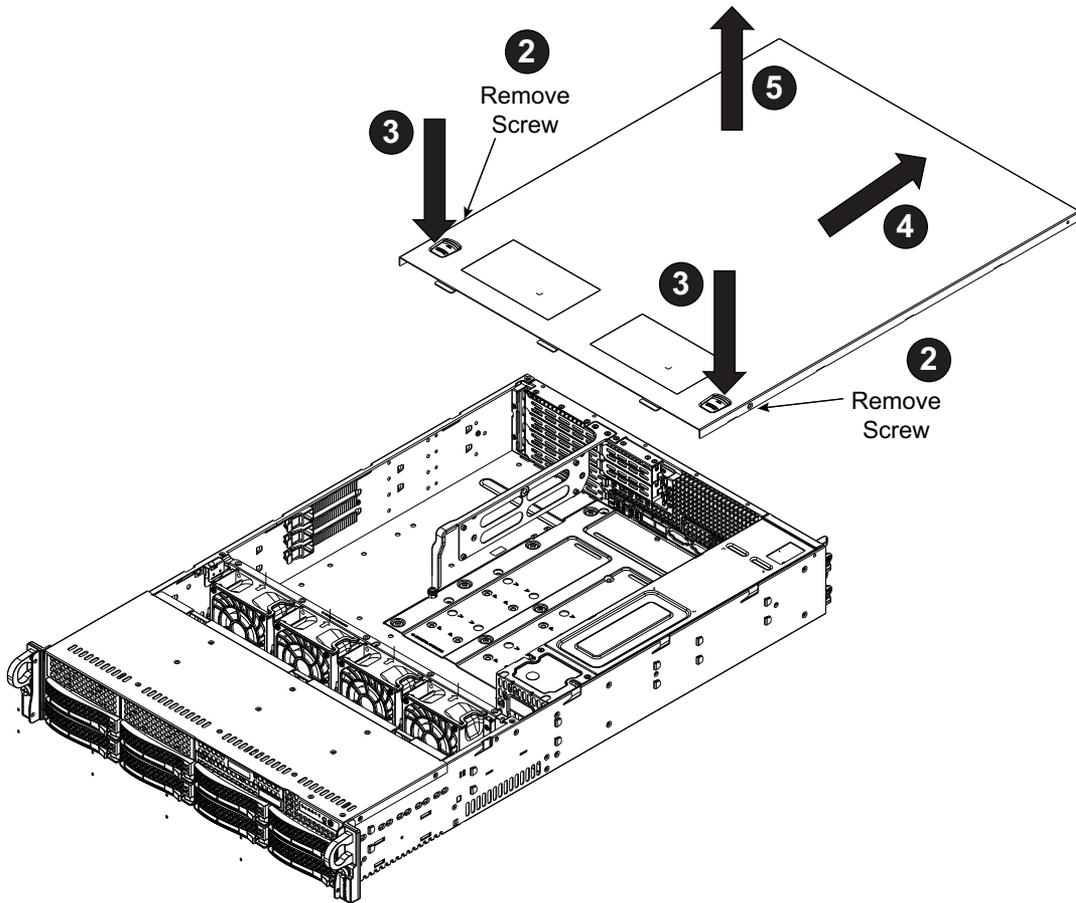


Figure 3-4 Accessing the Inside of the Chassis

Checking the Components and Setup

You may have one or two processors already installed in your serverboard. Ensure that the serverboard is populated per your order.

Your server system comes with system memory already installed. Make sure all DIMMs are fully seated in their slots.

Ensure that all power and data cables are properly connected and not blocking the chassis airflow. Also, make sure that no cables are positioned in front of the fans.

Checking the Drive Bay Setup

Ensure that the peripheral drives and the disk drives have been properly installed and all connections have been made.

Do not operate the server without drives or drive trays in the drive bays. Depending upon your system's configuration, your system may have one or more drives already installed. All drives are accessible from the front of the server. If you need to install hard drives, see [“Installing and Removing Disk Drives” on page 34](#). Use only recommended server parts.

Checking the Airflow

Airflow is provided by four hot-swappable 8-cm chassis cooling fans. The system component layout was carefully designed to direct sufficient cooling airflow to the components that generate the most heat.

Ensure that all power and data cables have been routed in such a way that they do not block the airflow generated by the fans.

Providing Power

Plug the power cord(s) from the power supply unit(s) into a high-quality power strip that offers protection from electrical noise and power surges. It is recommended that you use an uninterruptible power supply (UPS).

Depress the power button on the control panel, located on the front of the chassis. See [“Control Panel Components” on page 24](#).

System Monitoring

There are several buttons and LEDs on the control panel, drive carriers, and power supplies to keep you constantly informed of the overall status of the system. As shown in [Figure 4-1](#), the control panel is on the left handle of the chassis.

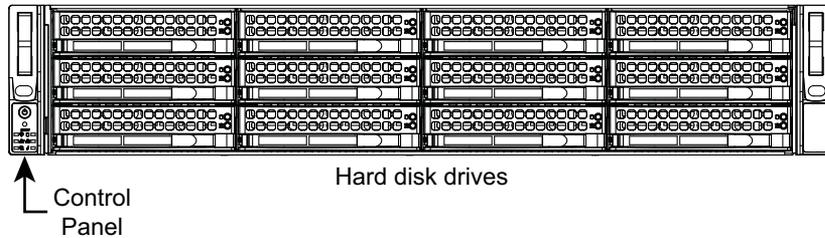


Figure 4-1 Front Control Panel

This chapter describes the functions of the buttons and LEDs and the appropriate responses you may need to take.

Control Panel Components

Figure 4-2 shows the components of the control panel.

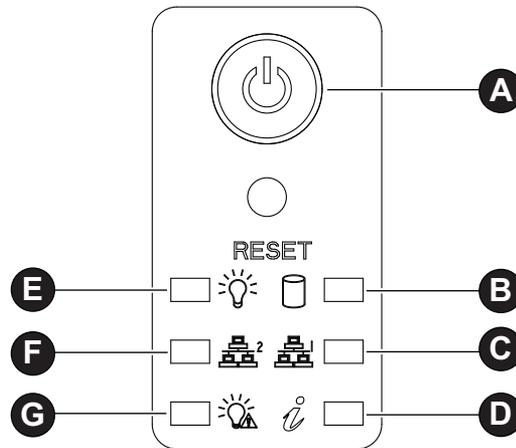


Figure 4-2 Control Panel Components

Table 4-1 describes the functions of the components.

Table 4-1 Control Panel Components

Component	Description
A	The main power button is used to apply or remove power from the power supply to the server. Turning off system power with this button removes the main power but keeps standby power supplied to the system. Therefore, you must unplug the server before servicing.
RESET	Depressing this button resets all registers and reboots the operating system.
B	When flashing, this LED indicates HDD activity.
C, F	When flashing, these LEDs indicates network activity on the LAN1 and LAN2, respectively.
D	<p>This is the Universal Information LED. It can indicate an overheat condition, fan failure, power failure, or the UID button activation. See Table 4-2.</p> <p>For an overheat condition, consider the following:</p> <ul style="list-style-type: none"> - Ensure that the ambient room temperature is not too warm. - Check the routing of cables and make sure all fans are present and operating. - Ensure that the chassis cover and air shrouds are installed. - Verify that the heatsinks are installed properly. <p>This LED will remain solid red or continue to flash as long as the temperature is too high or a fan does not function properly.</p>
E	When illuminated, this LED indicates that power is being supplied by the power supply units. This LED should be illuminated when the system is operating.
G	When illuminated, this LED indicates a power failure.

Table 4-2 Universal Information LED States

LED State	Condition
Fast-blinking red (1x/sec)	Fan failure
Solid red	CPU overheat
Slow-blinking red (1x/4 sec)	Power failure

Table 4-2 Universal Information LED States

LED State	Condition
Solid blue	Local UID button depressed
Blinking blue	IPMI-activated UID

Drive Carrier LEDs

Each hard drive carrier has two LEDs. [Table 4-3](#) describes the functions of the two LEDs.

Table 4-3 Disk Carrier LEDs

LED	Description
Blue	Each drive carrier has a blue LED. When illuminated, this blue LED (on the front of the drive carrier) indicates drive activity. A connection to the backplane enables this LED to blink on and off when that particular drive is being accessed.
Red	An illuminated red LED indicates a drive failure. If one of the drives fails, you should be notified by your system management software.

Refer to [“Installing and Removing Disk Drives”](#) on page 34 for instructions on replacing failed drives.

Power Supply LED

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

Table 4-4 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. Note: This is the normal state for a redundant PS.
Green, 2Hz blink	PS firmware updating.
Amber	– PS critical event causing a shutdown/failure (OCP, OVP, fan failure) – AC cord unplugged or AC power lost. A second power supply in parallel still has AC input power.
Amber, 1Hz blink	PS warning events where the power supply continues to operate (high temperature, high power, high current, slow fan).

Chassis Maintenance

For warranty and safety considerations, SGI designates the following chassis components as customer-replaceable units:

- Power supplies
- Fans
- Disk drives

The disk drives and power supplies are hot-swappable; that is, you can replace them without powering down the server. As a safety precaution, replacing the fans requires a system power-down. A trained service technician should install and replace all other components.

This chapter describes the following chassis maintenance activities:

- “Removing the Chassis Cover” on page 30
- “Replacing a Power Supply” on page 32
- “Installing and Removing Disk Drives” on page 34
- “Replacing System Fans” on page 38

Before You Start



Warning: Review the warnings and precautions listed in this manual before setting up or servicing this chassis. These include the items described in [Chapter 2, “System Safety.”](#)

Tools and Supplies Needed

- Phillips (cross head) screwdriver
- 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 Chassis Cover

Caution: Except for short periods of time, do not operate the server without the cover in place. The chassis cover must be in place to allow proper airflow and prevent overheating.

Use the following procedure for removing the chassis cover as illustrated in [Figure 5-1](#).

1. If rack mounted, first, grasp the two handles on either side and pull the system straight out until it locks.
You will hear a click when it locks.
2. Remove the two screws on each side of the cover.
3. Press the both release tabs at the same time to remove the cover from the locked position.
4. Once the top cover is released from the locked position, slide the cover toward the rear of the chassis.
5. Lift the cover off the chassis.

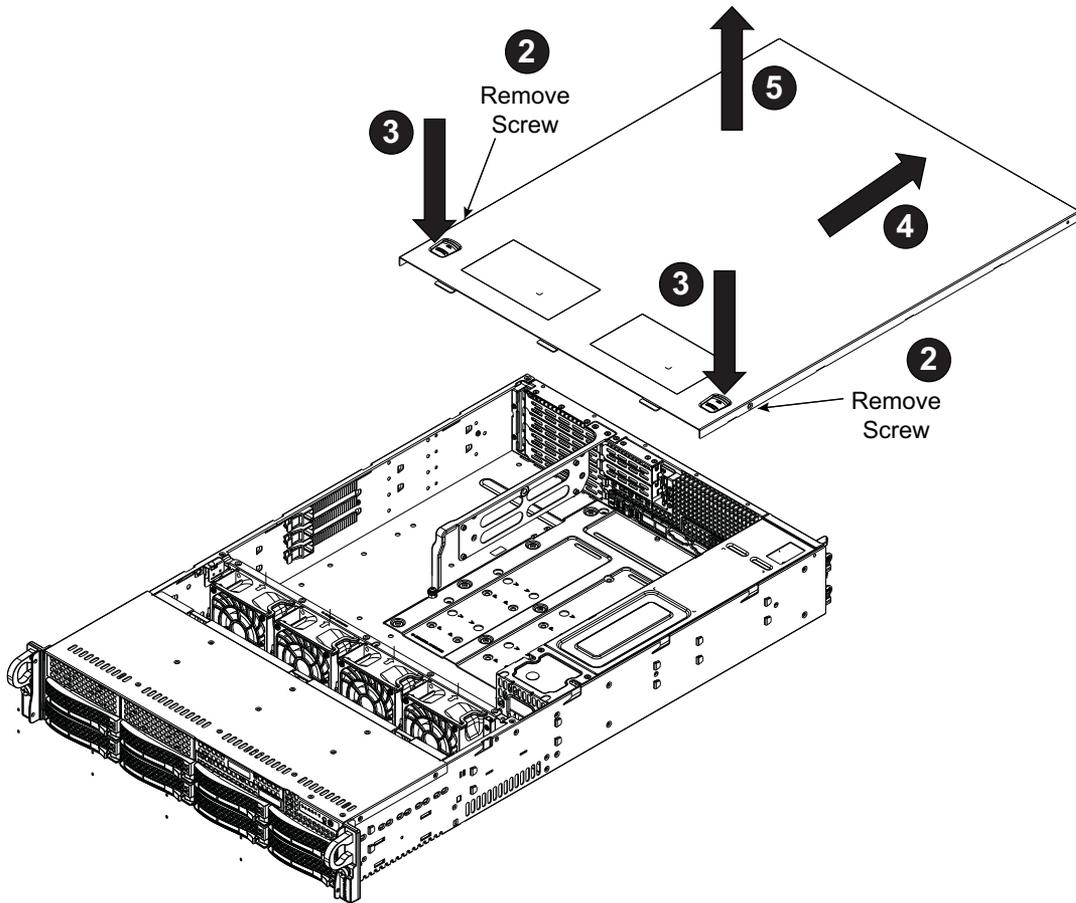


Figure 5-1 Accessing the Inside of the Chassis

Note: To remove the system from the rack completely, depress the locking tabs on the chassis rails (push the right-side tab down and the left-side tab up) to continue to pull the system out past the locked position.

Replacing a Power Supply

The server chassis includes two redundant 1000-Watt power supplies. These power supplies are auto-switching-capable. This enables them to automatically sense and operate at a 100V to 240V input voltage. An amber light will be illuminated on the power supply when the power is off. An illuminated green light indicates that the power supply is operating.

In the unlikely event that a power supply unit needs to be replaced, one power supply can be removed without powering down the system. Use the following steps to replace a power supply:

1. Unplug the AC power cord from the failed power supply module.
2. Push the release tab (on the back of the power supply) as illustrated in [Figure 5-2](#).
3. As shown in [Figure 5-3](#), pull the power supply out using the handle provided.
4. Push the new power supply module into the power bay until you hear a click.
5. Plug the AC power cord back into the module.

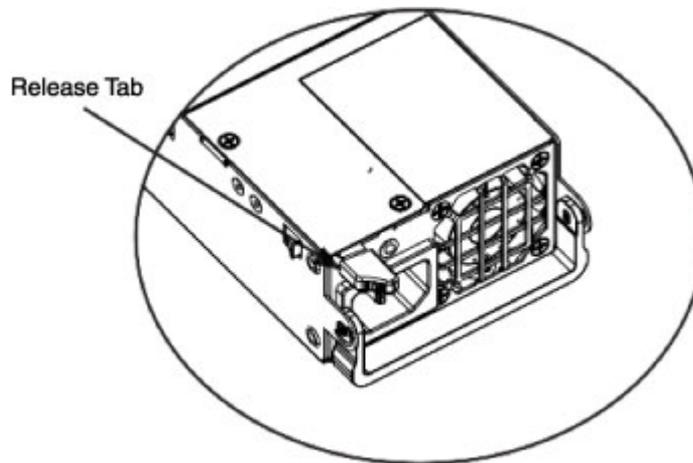


Figure 5-2 Power Supply Release Tab

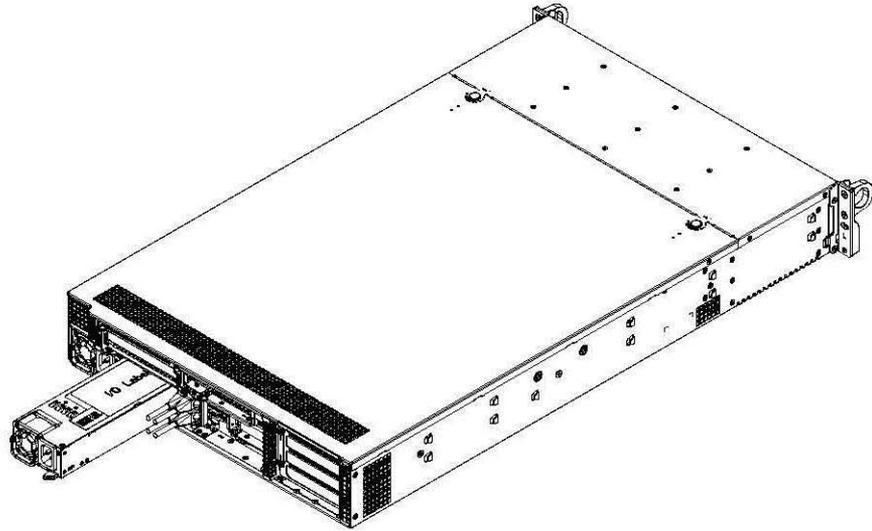


Figure 5-3 Removing the Power Supply

Installing and Removing Disk Drives

You do not need to access the inside of the chassis or remove power to install or replace hard disk drives.

Removing a Hard Drive Carrier from the Chassis

The drives are mounted in drive carriers to simplify their installation and removal from the chassis. These carriers also help promote proper airflow for the drive bays.

Use the following steps to remove the HDD carrier:

1. Press the release tab on the drive carrier.

See [Figure 5-4](#). This extends the drive bay handle.

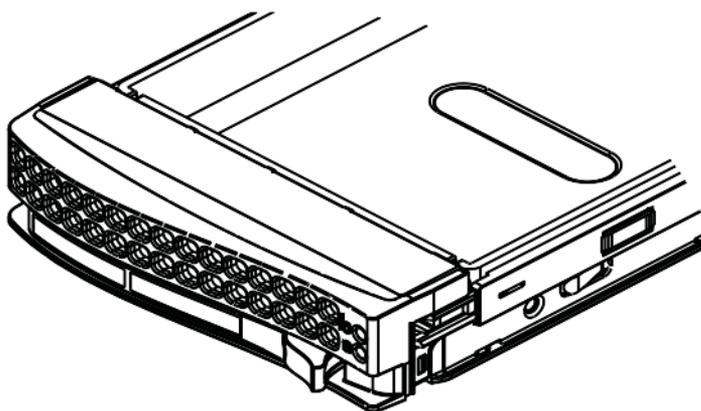


Figure 5-4 Drive Carrier Release Tab

2. Use the handle to pull the drive out of the chassis.
See [Figure 5-5](#).

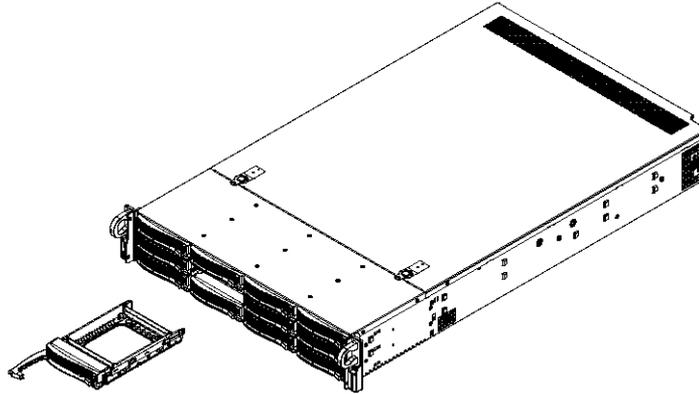


Figure 5-5 Removing Drive Carrier From Chassis

Removing a Drive from a Drive Carrier

If you are replacing a failed drive or dummy drive, use the following steps:

1. Remove the screws connecting the drive (or dummy drive) to the carrier.
See [Figure 5-6](#) and [Figure 5-7](#).
2. Slide the drive from the carrier.

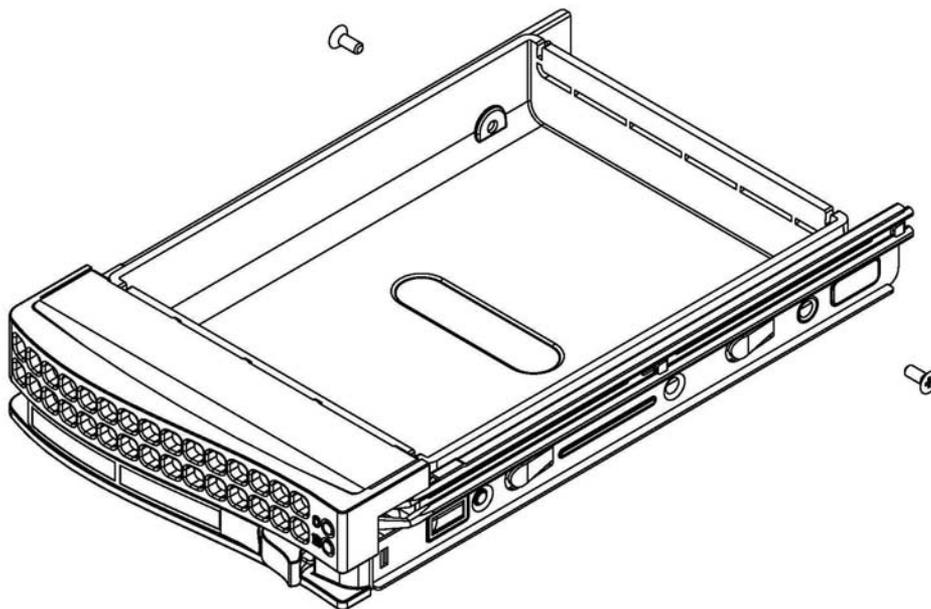


Figure 5-6 Removing a Dummy Drive

Caution: Except for short periods of time while swapping hard drives, do not operate the server with the hard drive carriers empty.

Installing a Hard Drive into a Carrier

To install a hard drive into a hard drive carrier, perform the following steps after removing the hard drive carrier from the chassis:

1. Place the hard drive carrier on a flat, stable surface such as a desk, table, or work bench.
2. Slide the hard drive into the carrier with the printed circuit board side facing down (see [Figure 5-7](#)).
3. Carefully align the mounting holes in the hard drive and the carrier. Make sure the bottom of the hard drive and bottom of the hard drive carrier are flush.
4. Secure the hard drive using all six screws (see [Figure 5-7](#)).
5. Replace the drive carrier into the chassis. Make sure to close the drive carrier using the drive carrier handle.

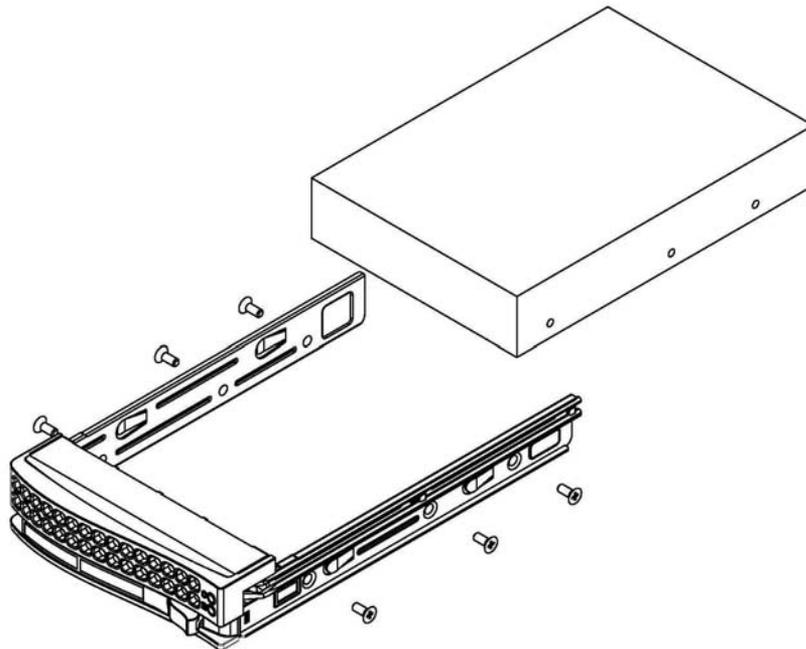


Figure 5-7 Mounting a Disk into a Drive Carrier

Replacing System Fans

The chassis contains four 8-cm high-performance fans. Fan speed is controlled by system temperature via IPMI. If a fan fails, the remaining fans will ramp up to full speed and the overheat/fan fail LED on the control panel will turn on. Replace any failed fan at your earliest convenience with the same type and model. The system can continue to run with a failed fan.

Use the following procedure to replace a failed fan:

1. Remove the top chassis cover while the system is still running to determine which of the fans has failed.
See [“Removing the Chassis Cover” on page 30](#).
2. Power down the system.
3. Remove the power cord(s) as a safety precaution.
4. Unplug the fan wiring from the serverboard and remove the failed fan.

5. Press the fan release tab to lift the failed fan from the chassis and pull it completely from the chassis.

See [Figure 5-8](#).

6. Place the new fan into the vacant space in the housing while making sure the arrows on the top of the fan (indicating air direction) point in the same direction as the arrows on the other fans.
7. Power up the system and ensure that the fan is working properly before replacing the chassis cover.

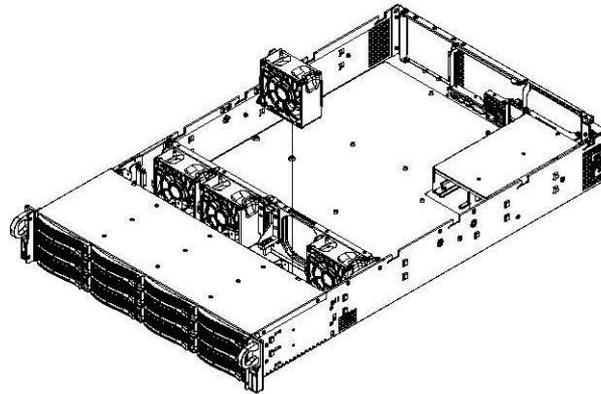


Figure 5-8 Replacing System Fans

Troubleshooting

This chapter describes troubleshooting for the problems listed below. [Chapter 4](#) describes use of the control panel to monitor the overall system status and the status of specific components. [Chapter 5](#), “Chassis Maintenance” describes how to replace defective components.

- “If the System Does Not Power Up” on page 42
- “System Powers Up But Will Not Boot” on page 42
- “No Video After System Power Up” on page 43
- “Memory Errors” on page 43

If you follow all of the prescribed procedures and still need assistance, check with your authorized support organization.

If the System Does Not Power Up

If the system will not power up when the front power button is pushed, use the following checklist to identify common sources for the problem:

- Make sure that both ends of each system power cable are firmly connected to the power supply and the corresponding power source(s) or power distribution unit (PDU).
- Check that the LED on each power supply is properly lit. The power supply has one status LED located on the left side of the front of the power supply. The status LED has three states as follows:
 - Dark or off—Indicates no AC power present.
 - Yellow—AC power is present. The server is not turned on (no DC power).
 - Flashes slowly (about four seconds on/off)—Power supply has failed.
 - Green—AC power is present and the server is turned on (DC power present).
- Open the system cover, remove the air shroud, and check to make sure that no obvious short circuits exist between the serverboard and chassis.

If you must replace the power supply, refer to [“Replacing a Power Supply”](#) on page 32.

System Powers Up But Will Not Boot

If the system powers up but will not boot the operating system, check the following:

- Check the system order document(s) - the server may have been ordered with no operating system. If so, check with your system administrator for OS loading information.
- Check the system disk for drive activity and confirm that it is firmly seated in the disk bay. A red light on the front of the disk indicates a functional error. Check with your service provider or local system administrator.

No Video After System Power Up

If the system powers up and appears to be booting normally but no video is present, try the following basic solutions:

- Confirm your monitor is plugged in and switched on.
- Check all video cables and ensure they are properly connected.
- If using an optional PCIe video card check the back of the card for LED activity or a fault indicator. Try opening the system, reseating the PCI card, and rebooting.

If you cannot get a video signal after trying basic solutions contact your support provider.

Memory Errors

If your system experiences memory related errors, try these basic troubleshooting steps to resolve or better identify the problem:

- Confirm that the power supply LED is not indicating an error.
- Shut the system down, remove the covers over the serverboard and make sure that all the DIMM modules are properly and fully installed.
- You should be using registered ECC DDR4 memory. Also, it is recommended that you use the same memory type and speed for all DIMMs in the system.
- Check for bad DIMM modules or slots by swapping modules between slots and noting the results.

Contact your administrator or support provider if the memory errors continue.

Technical Specifications

Table A-1 lists allowable ranges for temperature, humidity, and altitude for the C2112-GP2 server.

Table A-1 Temperature, Humidity, and Altitude Specifications

Attribute	Specification	Rate of Change Constraints
While Product Operating		
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)	
While Product Power Off		
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)	
While Product Packaged for Shipping		
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-2 lists other key specifications for the server.

Table A-2 Miscellaneous System Specifications

Attribute	Specification
Processors	Single or dual Intel Xeon E5-2600 v3 Series processors
Chipset	One Intel C612 chipset
BIOS	16 MB AMI® SPI Flash EEPROM
Memory Capacity	The serverboard has 24 DIMM slots supporting up to 768 GB of DDR4-1600/1333/1066/800 non-volatile RDIMM or 1536 GB of LRDIMM DDR4-2133/1866/1600/1333 memory.
SATA Controller	Intel chipset-based controller for 10 SATA 3.0 ports (RAID 0, 1, 5, and 10 supported)
Drive Bays	12 hot-swap drive bays to house 12 standard 3.5” drives
PCI Expansion Slots	Two conventional riser cards support five PCIe® 3.0 x8 slots (2 low-profile). An Ultra riser card supports a PCIe 3.0 x16 slot and up to two more PCIe 3.0 x8 slots.
Serverboard	Dual-socket Dimensions: 17 x 16.8 in. (431.8 x 426.7 mm)
Chassis	2U standard-depth rackmount Dimensions: (WxHxD) 17.2 x 3.5 x 27.75 in. (437 x 89 x 705 mm)
Weight	Gross: 55 lbs (25 kg)
System Cooling	Four 8-cm fans
System Input Requirements	AC Input Voltage: 100–240V AC auto-range Rated Input Current: 13–4A max Rated Input Frequency: 50–60 Hz

Table A-2 Miscellaneous System Specifications **(continued)**

Attribute	Specification
Power Supply	Rated Output Power: 920W Rated Output Voltages: +12V (75A), +5Vsb (4A)
Regulatory Compliance	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) 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 the webpage www.dtsc.ca.gov/hazardouswaste/perchlorate .”

BIOS Error Codes

During Power-On Self-Test (POST) routines, which are performed each time the system is powered on, errors may occur.

Non-fatal errors are those which, in most cases, allow the system to continue the boot-up process. The error messages normally appear on the screen.

Fatal errors are those which will not allow the system to continue the boot-up procedure. If a fatal error occurs, you should consult with your system manufacturer for possible repairs.

These fatal errors are usually communicated through a series of audible beeps. The numbers on the fatal error list correspond to the number of beeps for the corresponding error.

Table B-1 BIOS Error Codes

Beep Code	Error Message	Description
1 beep	Refresh	Circuits have been reset. Ready to power up.
5 short beeps + 1 long beep	Memory error	No memory detected in the system
5 beeps	No Con-In or Con-Out devices	Con-In includes USB or PS/2 keyboard, PCI or serial console redirection, and IPMI KVM or SOL. Con-Out includes video controller, PCI or serial console redirection, and IPMI SOL.
1 beep per device	Refresh	1 beep for each USB device detected
1 continuous beep with the front panel overheat LED on	System OH	System overheat

