

CG00201

Kontron CG1200 Carrier Grade Server

Document Revision 1.1

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1 Introduction

1.1 About this Manual

Thank you for purchasing and using the Kontron CG1200 Carrier Grade Server.

This manual is for trained system technicians who are responsible for troubleshooting, upgrading, and maintaining this server. This document provides a brief overview of the features of the system followed by a list of accessories or other components you may need or want to purchase, instructions for how to add or replace components in the CG1200 server, and troubleshooting information.

NOTE: Always be sure to search for CG1200 on the Support website at <http://us.kontron.com/support/> for the latest version of this manual with possible updates since this version was published.

1.2 Manual Organization

Chapter 2 Features

provides a brief overview of the CG1200 server. In this chapter, you will find a list of the server board features, chassis features, illustrations of the product, and product diagrams to help you identify components and their locations

Chapter 3 Standard Component Installations and Upgrades

provides instructions for adding and replacing standard components such as processors and memory DIMMs. Use this chapter for step-by-step instructions and diagrams for installing or replacing components.

Chapter 4 Optional Component Installation Procedures

provides instructions for adding optional components such as PCI add-in cards, hardware RAID5 components, and an SD flash module. Use this chapter for step-by-step instructions and diagrams for installing components.

Chapter 5 Server Component Replacements

provides instructions for replacing components such as boards and fans. Use this chapter for step-by-step instructions and diagrams for replacing components.

Chapter 6 Server Utilities

provides instructions for using the utilities that are shipped with the board or that may be required to update the system. This includes how to navigate through the BIOS (Basic Input/Output System) setup screens, how to perform a BIOS update, and how to reset the password or CMOS (Complementary Metal Oxide Semiconductor). Information about the specific BIOS settings and screens is available in the *Intel® Server Board S2400EP4 Family Technical Product Specification*.

Chapter 7 Troubleshooting

provides troubleshooting information. In this chapter, you will find BIOS error messages and POST (Power-on Self Test) code messages. You will also find suggestions for performing troubleshooting activities to identify the source of a problem.

Chapter 8 Warranty

provides the warranty information

Appendix A: Safety Information

provides the emissions disclaimer, power supply information, temperature and ventilation guidelines, and safety cautions in multiple languages.

Appendix B: Regulatory and Certification Information

presents the regulatory and safety compliances and electromagnetic compatibility notices

Appendix D: Getting Help

1.3 What Your Server Includes

Your CG1200 server includes the following components:

- One 1U chassis
- One Intel® Server Board S2400EP4 with DDR3 memory slots (memory not included)
- Four removable hard drive carriers
- One DC or AC power subsystem: one hot-swappable power supply module and a power distribution board. (The other power supply bay has a filler panel in it. For redundancy another separately orderable power supply module must be added.)
- Five dual-rotor fan assemblies for cooling the processor(s), DIMM(s), PCI slot, and other internal components in two cooling zones.
- A front panel board ,LED/switch board, telco alarms module (TAM) board, and PCIe riser assembly (for one FH/FL card)
- Internal cables and connectors

See Chapter 3 for initial installation and configuration instructions.

1.4 Product Accessories

The following list shows the separately orderable components and optional accessories available for inclusion in the initial order or to have as spares. Refer to the *CG1200 Carrier Grade Server Configuration Guide* for a complete list of orderable spares and options. The Configuration Guide can be found on the Kontron Support Website at <http://us.kontron.com/support/> (search for CG1200, click on Product Downloads, then Ordering Guide).

- LGA 2011 (socket R) support for Intel® Xeon® E5-2400 and E5-2400 v2 processors series
- Registered DDR3 Memory (RDIMM), LV-RDIMM, Unbuffered DDR3 Memory (UDIMM) with ECC and Load Reduced DDR3 Memory (LR-DIMM)
- Up to four hot-swappable 2.5" SAS HDDs or SATA SSDs
- Hard disk drive carriers (four already shipped with the server)
- Optional Intel HW RAID on chip (ROC) or SW RAID IOC available.
- Optional I/O module
- Intel® Remote Management Module 4 (RMM4) or RMM4Lite options
- One front-access SD media flash module
- Internal flash storage supported (eUSB)
- Power cord
- AC or DC power supply module (650W) for redundancy
- Rack mount kits available for purchase directly from Kontron – see Configuration Guide

For information about the accessories, memory, processors, and ordering information, refer to the *CG1200 Carrier Grade Server Configuration Guide* on <http://us.kontron.com/support/> (search for CG1200, click on Product Downloads, then Ordering Guide).

For information about third-party hardware that has been tested and can be used with your system, refer to the *CG1200 Carrier Grade Server Tested Hardware and Operating System List (THOL)* on <http://us.kontron.com/support/> (search for CG1200, click on Product Downloads, then Compatibility Matrix).

1.5 Additional Information and Software

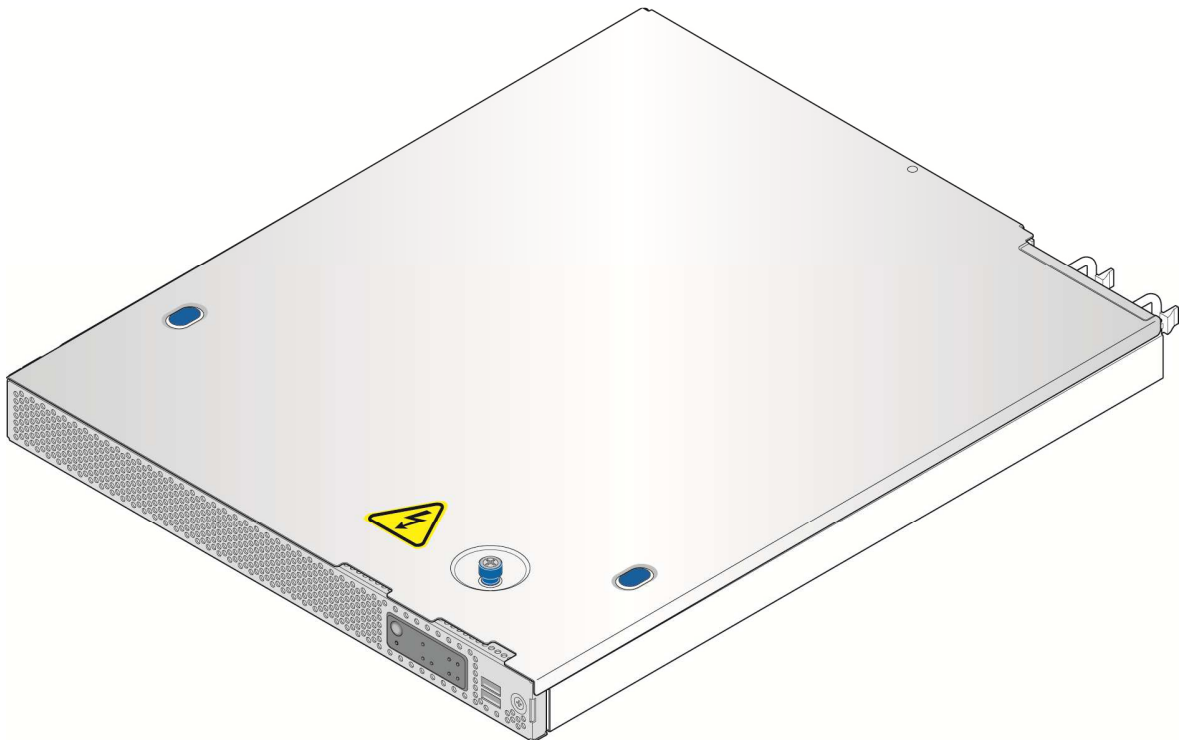
If you need more technical information or information about the accessories that can be used with this CG1200 server, refer to the Technical Product Specifications (TPS) for the system and the server board. The TPS documents are located on the Kontron support website at <http://us.kontron.com/support>. The system TPS provides in-depth technical information about the server. The server board TPS provides in-depth technical information about the server board, including BIOS settings and chipset information.

2 Features

This chapter briefly describes the main features of the Kontron CG1200 Carrier Grade Server. It provides a diagram of the product, a list of the server features, and a diagram showing the location of important components and connections on the server system.

Figure 1 shows the CG1200 server.

Figure 1: Kontron CG1200 Carrier Grade Server



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Table 1 summarizes the major features of the server system.

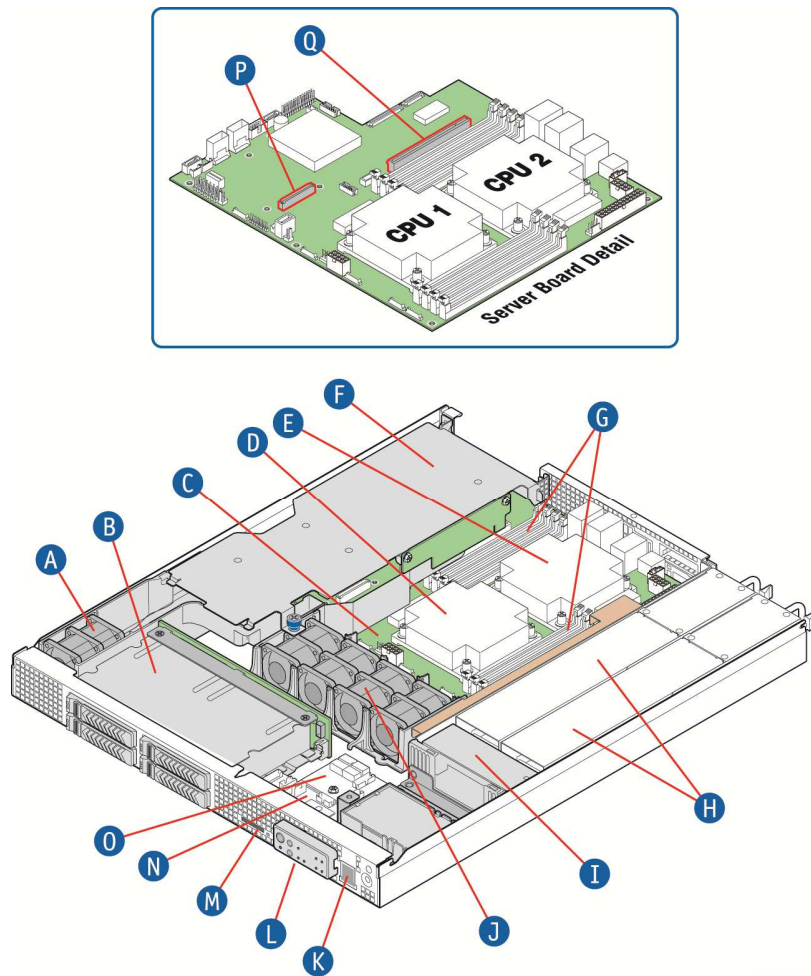
Table 1: CG1200 Server Features

Feature	Description
Peripheral Interfaces	<p>External connections:</p> <ul style="list-style-type: none"> One DE-15 video VGA connector (rear) One DB-15 TAM dry relay connector (rear) Four RJ45 10/100/1000 Mbps network connections (rear) Two USB 2.0 connectors (rear) Two USB 2.0 connectors (front) One RJ-45 serial connector (rear) One dedicated management NIC port, (optional Intel® RMM4) or personality module connector <p>Internal connections:</p> <ul style="list-style-type: none"> One internal USB header for embedded flash drives One Intel® RAID C600 upgrade key connector with RKSAS54 pre-installed One RMM4 connector for an optional Intel® Remote Management Module 4 module
Video	Integrated graphics core with 2D hardware accelerator
LAN	Four RJ-45 10/100/1000 Mbps connectors
Expansion Capabilities	One PCIe x16 Gen 3 riser slot
Hard Drive Options	<p>Up to four 2.5-inch SAS HDD or SATA SSD hard drives</p> <p>Onboard SAS SW RAID with Intel® ESRT2 RAID 0/1/10 or RSTe RAID 0/1/10</p> <p>Intel® RAID on Chip (ROC) and I/O controller (IOC) support optional</p>
Peripherals	One SD media flash module (front panel access)
Front Panel Buttons	<p>Power on/off</p> <p>System reset</p> <p>Chassis ID</p> <p>NMI</p>
Front Panel LEDs	<p>Power status</p> <p>Chassis identification</p> <p>System status</p> <p>HDD activity/fault</p> <p>NIC activity</p> <p>Alarms (critical, major, minor, power)</p>
Power Supply	<p>Up to two 650W power supply modules (AC or DC)</p> <p>PMBus 1.2 specification support</p> <p>Auxiliary I/O power dongle</p>
Fans	<p>Five 40x56mm dual rotor fans</p> <p>Redundant cooling</p>
System Management	Integrated BMC (iBMC) with advanced options

2.1 Server Components

Figure 2 shows the CG1200 server with the top cover removed to show the internal components.

Figure 2: CG1200 Server Components



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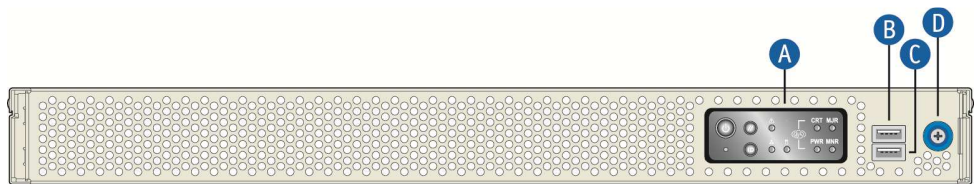
Table 2: CG1200 Server Components

Item	Description	Item	Description
A	PCI fan (one pair)	J	CPU/memory fans (four pairs)
B	SAS hard drive bay	K	USB ports (two)
C	Intel® S2400EP4 Server Board	L	Front panel switches and indicators
D	CPU 1	M	SD media slot
E	CPU 2	N	Front panel board
F	PCIe FH/FL riser card assembly	O	Telco alarm module (TAM) board
G	Eight DDR3 memory DIMM slots, two banks of four DIMMs for each processor	P	RAID module connector
H	Redundant, hot-swappable AC or DC power supply modules	Q	PCIe slot
I	Power distribution board (PDB)		

2.2 CG1200 Server Front Panel

Figure 3 shows the front panel of the CG1200 server with the bezel installed.

Figure 3: CG1200 Server Front View (Bezel Installed)

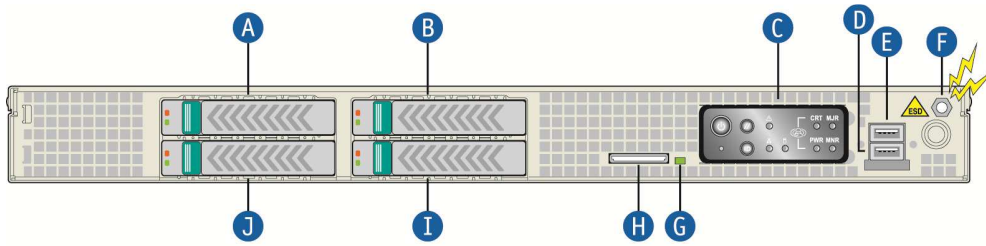


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Item	Description	Item	Description
A	Front panel control buttons and status indicator and telco alarm LEDs	C	USB port
B	USB port	D	Bezel captive screw

Figure 4 shows the front panel of the CG1200 server with the bezel removed.

Figure 4: CG1200 Server Front View (Bezel Removed)

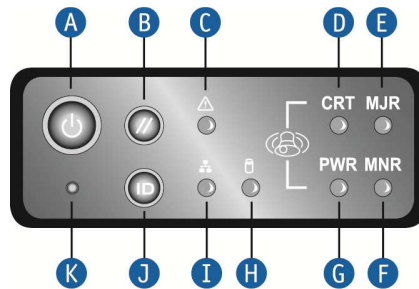


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Item	Description	Item	Description
A	Hard disk drive slot 3	F	ESD ground strap attachment
B	Hard disk drive slot 2	G	SD flash card LED
C	Mini-bezel control buttons, status indicator and telco alarm LEDs	H	SD flash card slot
D	USB port	I	Hard disk drive slot 0
E	USB port	J	Hard disk drive slot 1

Figure 5 shows the CG1200 server control panel.

Figure 5: CG1200 Server Control Panel



CG00155

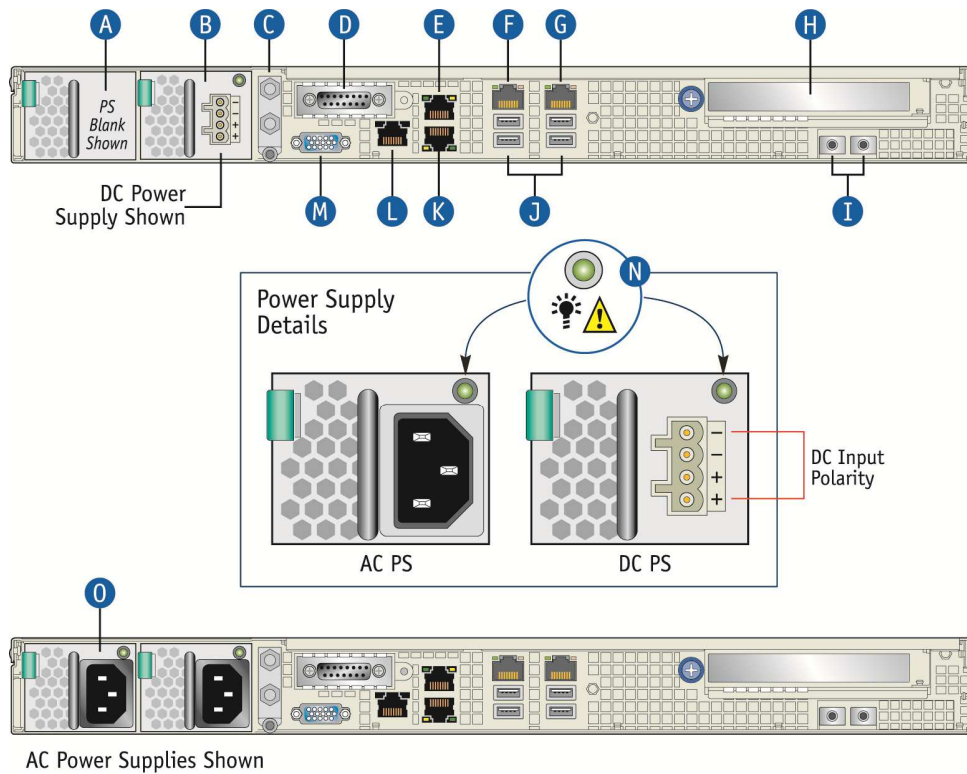
Item	Description	Item	Description
A	Power button	G	Power alarm (amber)
B	System reset button	H	HDD activity LED
C	System status indicator LED	I	NIC activity LED
D	Critical alarm (amber or red†)	J	Chassis ID button
E	Major alarm (amber or red†)	K	NMI button
F	Minor alarm (amber)		

† Critical and Major alarm indicators are bi-color LEDs that can be configured to be yellow or red by means of an SDR TAM setting. Yellow is the default color.

2.3 CG1200 Server Back Panel

Figure 6 shows the back panel of the CG1200 server.

Figure 6: CG1200 Server Rear View



CG00157

Item	Description	Item	Description
A	Optional power supply slot 2 (filler panel shown) ¹	I	I/O module (filler panel shown) ²
B	Power supply slot 1 (shown with DC power supply installed)	J	USB ports
C	DC power grounding studs	K	NIC port 2
D	Telco alarms connector	L	Serial port A
E	NIC port 1	M	Video port
F	NIC port 3	N	Power supply LEDs
G	NIC port 4	O	Power supply 2 (shown with AC power supply installed)
H	PCIe slot		
NOTES:			
1. In non-redundant configurations, power supply slot 2 must have a filler panel installed.			
2. If RMM4 NIC is not used, a filler panel occupies this space			

2.4 Front Panel Board

The front panel (FP) board is located behind the front bezel and in front of the fans. The FP board provides the following feature set:

- Two USB ports: one to drive the USB ports on the front panel USB connector and one to drive the SD flash module controller.
- Control circuitry for driving the NIC activity LED, the system status LED, the power LED, and the disk activity LED, which are all located on the LED/switch board
- On-board LED that indicates USB flash drive activity
- System power state and status indicators -- power, reset, and NMI switches

NOTE: There may be features (for future use) in addition to those in this list.

2.5 LED/Switch Board

The LED/switch board provides input selection switches and LED status indicators for the server system. The LED/switch board is connected to the FP board and receives status and alarm signals from it. The LED/switch board has the following features:

- Connects the front panel board signals to the front panel. There are four switches and five LEDs. The power status LED and the chassis ID LED are embedded in the switch and the other three LEDs are on the control panel. (See Figure 5.)
- On board switches for power, reset, chassis ID, and NMI
- On board LEDs to indicate power status, chassis ID, system status, HDD activity/fault and NIC activity

NOTE: For information about the telco alarm LEDs that are also on the front panel, see Section 7.5, Light-Guided Diagnostics

2.6 Telco Alarm Module (TAM) Board

The CG1200 server Telco Alarms Module (TAM) board provides the connector interface and supporting logic for the telco alarms function. The TAM board also provides an alarms function with fault relays and access by cable to the fault relay contacts at the back of the system. A ribbon cable connects the TAM board to the front panel board.

For detailed information about the telco alarms and fault relays, see the “Telco Alarms (TAM)” chapter in the *CG1200 Carrier Grade Server Technical Product Specification* on the Kontron support website at <http://us.kontron.com/support>.

2.7 Hard Disk Drives

The CG1200 Carrier Grade Server chassis supports up to four hard disk drives that are accessible from the front of the chassis when the bezel is removed. The hard disk drives are mounted in removable drive carriers that latch into the drive bay sub-assembly. Up to four 2.5-inch hot-swappable drives, either serial attached SCSI (SAS) rotating hard drives or SATA solid state drives (SSDs), can be mounted in the drive bay.

Each drives can consume up to 12W of power. Drives used in this server must be specified to run at a maximum ambient temperature of 40°C.

NOTES:

- 1) SATA rotating HDDs are not recommended for use in this system because they are sensitive to rotational vibration from system fan blades and other HDDs.
 - 2) The CG1200 server does not support all SAS or SATA drive models. For a list of validated hard drive manufacturers and hard drive types, refer to the Tested Hardware and Operating System List (THOL) on the Kontron website at <http://us.kontron.com/support/> (search for CG1200, click on Product Downloads, then Compatibility Matrix).
-

2.8 Software and Hardware RAID

Software RAID 0/1/10 is provided for all four SAS drives or SATA SSDs. If additional levels of software and/or HW RAID are needed, see the Configuration Guide for all orderable options.

Hardware RAID (Intel ROC) is available as a separately-orderable module and an additional separately-orderable CG1200 RAID cable kit that provides the cables and brackets required for installation.

For more information about these options, refer to the Configuration Guide located on the support website at <http://us.kontron.com/support/>, (Search for CG1200, click on Product Downloads, then Ordering Guide).

2.9 SD Flash Module

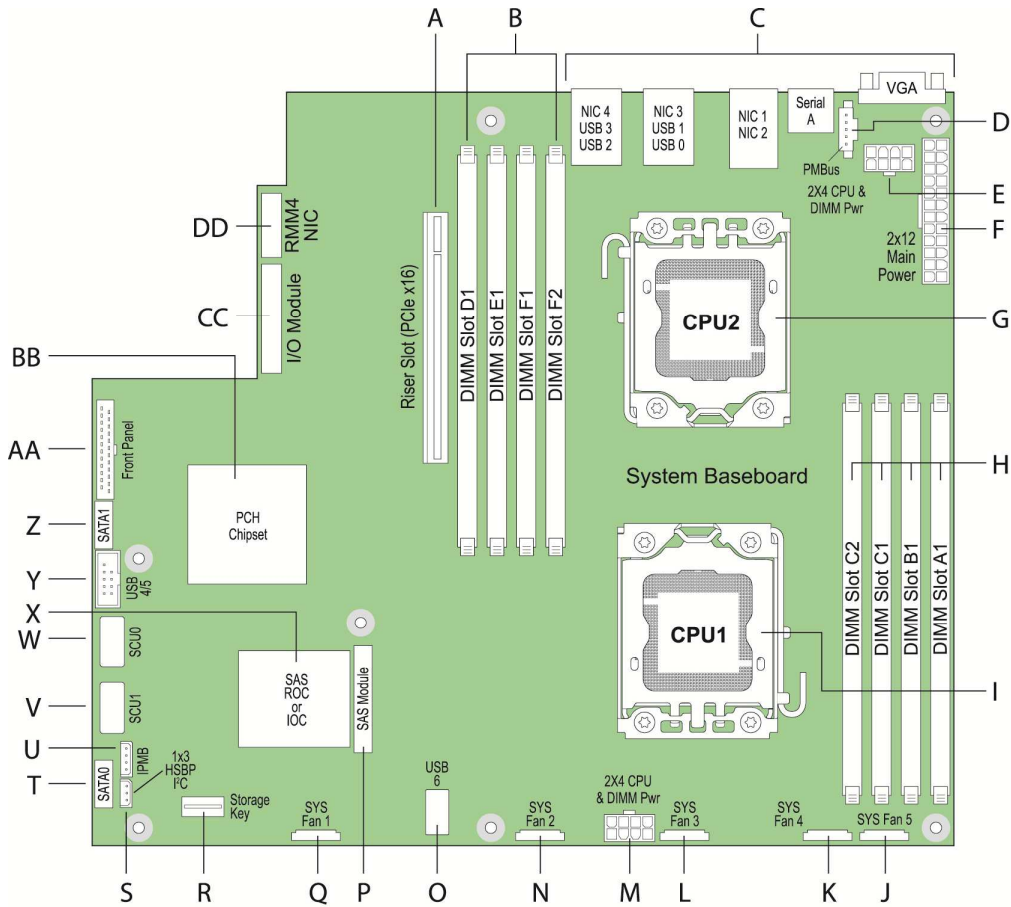
There is one front-accessible USB SD flash module. For a list of validated SD cards to use with this module, see the Tested Hardware and Operating System List (THOL) on the Kontron website at <http://us.kontron.com/support/> (search for CG1200, click on Product Downloads, and then Compatibility Matrix).

2.10 Server Board (Baseboard)

The CG1200 server uses the Intel® S2400EP4 server board for the baseboard. The processors and memory DIMMs are on the server board and support for several optional accessories, such as a PCI riser slot, the platform management subsystem, and RMM4or I/O module connectors.

Figure 7 shows the key components and connectors on the S2400EP4 server board.

Figure 7: Baseboard Components and Connectors



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Item	Description	Item	Description
A	PCIe x16 riser slot	P	SAS module
B	CPU 2 DIMM slots	Q	Fan 1 power connector
C	Rear panel I/O connectors	R	RKSAS4 storage key (pre-installed)
D	PMBus connector	S	HSBP I ² C connector
E	CPU2 processor and DIMMs power connector	T	SATA 0 connector
F	Baseboard main power connector	U	IPMB connector
G	CPU processor socket	V	SAS HDD connector SCU1
H	CPU1 DIMM slots	W	SAS HDD connector SCU0
I	CPU1 processor socket	X	SAS RAID module (ROC or IOC)
J	Fan 5 power connector	Y	Front panel USB connector
K	Fan 4 power connector	Z	SATA 1 connector
L	Fan 3 power connector	AA	Front panel connector
M	CPU1 processor and DIMMs power connector	BB	Controller hub (PCH) chipset
N	Fan 2 power connector	CC	I/O module connector
O	Internal USB 6 connector	DD	RMM4 NIC or I/O module connector

2.11 Riser Card Assembly

The Intel® Server Board S2400EP4 has one riser slot capable of supporting a full-height, full-length PCIe x16 riser card.

Once a PCI add-in card is installed and the riser card assembly is remounted in the chassis, the card is accessible from the server back panel.

2.12 Ethernet NIC Ports

The S2400EP4 server board (baseboard) provides four network interface controller (NIC) RJ-45 connectors on the chassis back panel. Additional rear-accessible GbE NIC ports can be added to the system by using a PCIe add-in card or installed as an I/O module.

2.13 Remote Management Module 4

RMM4 is a supported option on the S2400EP4 server board iBMC. To use this feature, a separately-orderable RMM4 kit must be installed. Another option is an RMM4Lite kit that enables advanced features in the iBMC without using a dedicated management NIC.

2.14 I/O Module

Space on the chassis floor with support standoffs is provided for adding an optional I/O module at the rear of the server. An I/O module connector (and use of a smaller connector also used for RMM4 support) is how the I/O module is connected to communicate with the server board.

2.15 Power Supply Subsystem

The power supply subsystem consists of up to two AC or DC hot-swappable power supply modules (two needed for redundancy) and a power distribution board (PDB). The server comes with one power supply module and a filler panel in the second power supply slot. The second redundant power supply is separately-orderable.

The power supply module is rated for 650W output capability in full AC or DC input voltage range. The minimum steady-state DC input voltage at which the equipment remains fully operational is -38 VDC. The nominal operating voltage of the DC system is -48 VDC.

The server also includes an auxiliary power dongle from the power distribution board for use with optional, additional cards.

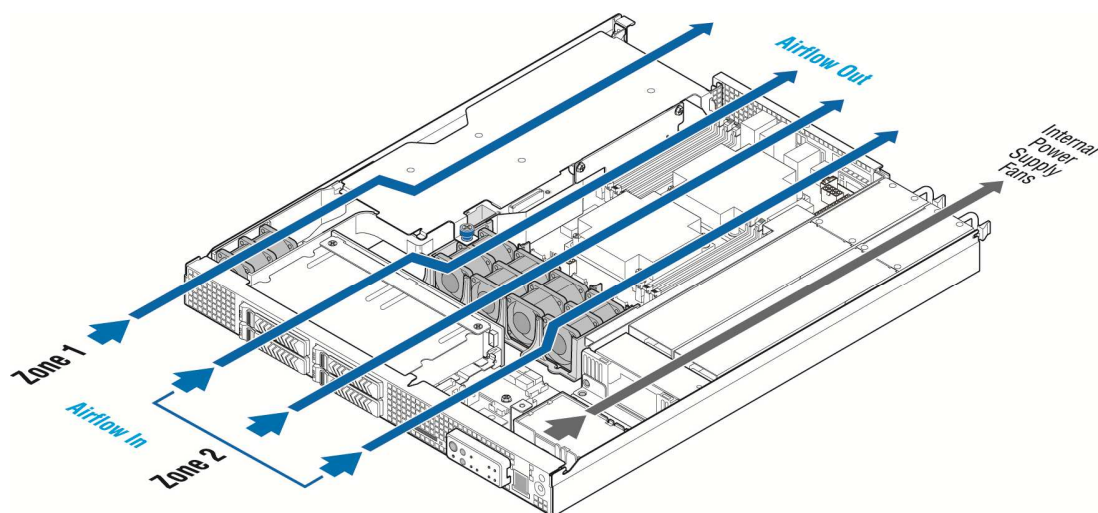
2.16 System Cooling

There are two cooling areas in the CG1200 server as illustrated in

Figure 8. All system components except the PCI riser card assembly and components under it are cooled by a set of four CPU/DIMM dual rotor fans mounted near the front of the chassis behind the SAS HDD bay. The PCI riser card assembly is cooled by a separate fan located in front of the riser assembly on the left side of the chassis

Internal power supply fans cool the power distribution board (PDB) and power supply modules.

Figure 8: CG1200 Server Cooling Areas



CG00288

The five-fan cooling subsystem is sized to provide cooling for:

- Up to two 70W server board processors
- Up to 256 GBytes of DDR3 memory
- Up to four hard disk drives
- One PCIe adapter

The cooling subsystem meets acoustic and thermal requirements at the lower fan speed settings. At the higher fan speed settings, thermal requirements are met for the maximum ambient temperatures, but acoustic requirements are not specified above 23 C+/-2 C.

2.17 Processors and Memory DIMMs

NOTE: To avoid integration difficulties and possible board damage, your server must meet the requirements outlined below. For a list of qualified processors refer to the CG1200 Carrier Grade Server Configuration Guide located on the support website at <http://us.kontron.com/support/> (search for CG1200, click on Product Downloads, then Ordering Guide). For a list of qualified DIMMs refer to the Tested Memory List at <http://us.kontron.com/support/> (search for CG1200, click on Product Downloads, then Compatibility Matrix).

2.17.1 Processors

The S2400EP4 server board accommodates FC-LGA 1356 Socket B2 support for two Intel® Xeon® E5-24XXL or E5-24XXL v2 processors. These processors can be ordered from Intel or an authorized distributor using the Kontron part numbers listed in the *CG1200 Carrier Grade Server Configuration Guide*.

2.17.2 Memory

The S2400EP4 server board supports 8 DIMM slots – one DIMM slots/channel for channels A,B,D,E and two DIMM slots/channel for channels C and F. The server board supports registered DDR3 Memory (RDIMM), Low-Voltage DDR3 memory (LVDDR3), load-reduced DIMMs (LRDIMMs), or unbuffered DDR3 memory (UDIMM) with data transfer rates of 800, 1066, 1333, and 1600 MT/s).

For detailed information about configuring memory on the server board, see the *Intel® Server Board S2400EP4 Family TPS*.

3 Standard Component Installations and Upgrades

3.1 Before You Begin

Before working with your server product, pay close attention to the safety instructions provided in this manual. See Appendix A, "Appendix A: Safety Information"

Warning: Electrostatic discharge (ESD) and ESD protection: ESD can damage disk drives, boards, and other parts. We recommend that you perform all procedures in this chapter only at an ESD workstation. If one is not available, provide some ESD protection by wearing an antistatic wrist strap attached to chassis ground (any unpainted metal surface) on your server when handling parts.

3.1.1 Tools and Supplies Needed

- #1 and #2 Phillips (cross-point) screwdrivers (or interchangeable tip screwdriver with #1 and #2 Phillips bits)
- Personal grounding device such as an anti-static wrist strap and a grounded conductive pad

3.1.2 System References

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

3.2 General Installation Procedures

The following sections present general installation and removal procedures that are required before removing or installing internal components that are not hot-swappable.

3.2.1 Removing the Chassis Cover

The CG1200 server must be operated with the top cover in place to ensure proper cooling. You will need to remove the top cover to add or replace components inside the chassis that are not hot-swappable.

CAUTION: 5V standby power is present inside the chassis whenever the power supply module(s) are connected to a power source. Before removing the top cover, always power down the server and unplug all peripheral devices and the power cable.

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

1. Observe the safety and ESD precautions in Appendix A, "Appendix A: Safety Information".
2. Turn off all external devices connected to the server.
Turn off the server.
3. Disconnect the power cord(s).

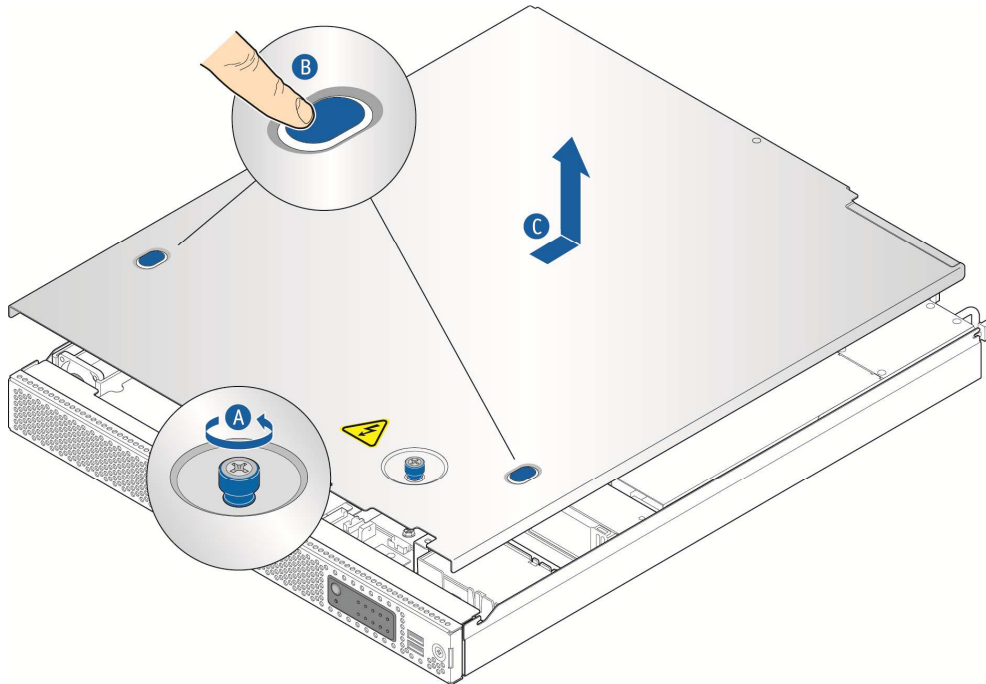
Figure 9 shows the top cover and how it is removed.

Removing the Cover

1. Loosen the captive thumb screw at the front of the cover ("A").
2. Using the blue contact points on each side of the top cover ("B"), slide the cover backwards.

3. Lift the cover straight up to remove it from the chassis ("C").

Figure 9: Removing the Cover



CG00206

3.2.2 Re-installing the Chassis Cover

When you are finished working inside the chassis, you must put the cover back on before turning the server back on. This step is required to ensure proper cooling.

Re-Installing the Cover

1. Starting from the rear of the chassis, place the cover down over the chassis with the side edges outside the chassis walls.
2. Slide the cover forward until it is flush with the front panel.
3. Tighten the blue thumbscrew at the front of the top cover.
4. Reconnect any external devices and the power cord(s).

CAUTION: This unit must have the cover installed when it is running to ensure proper cooling.

3.2.3 Removing the Front Bezel

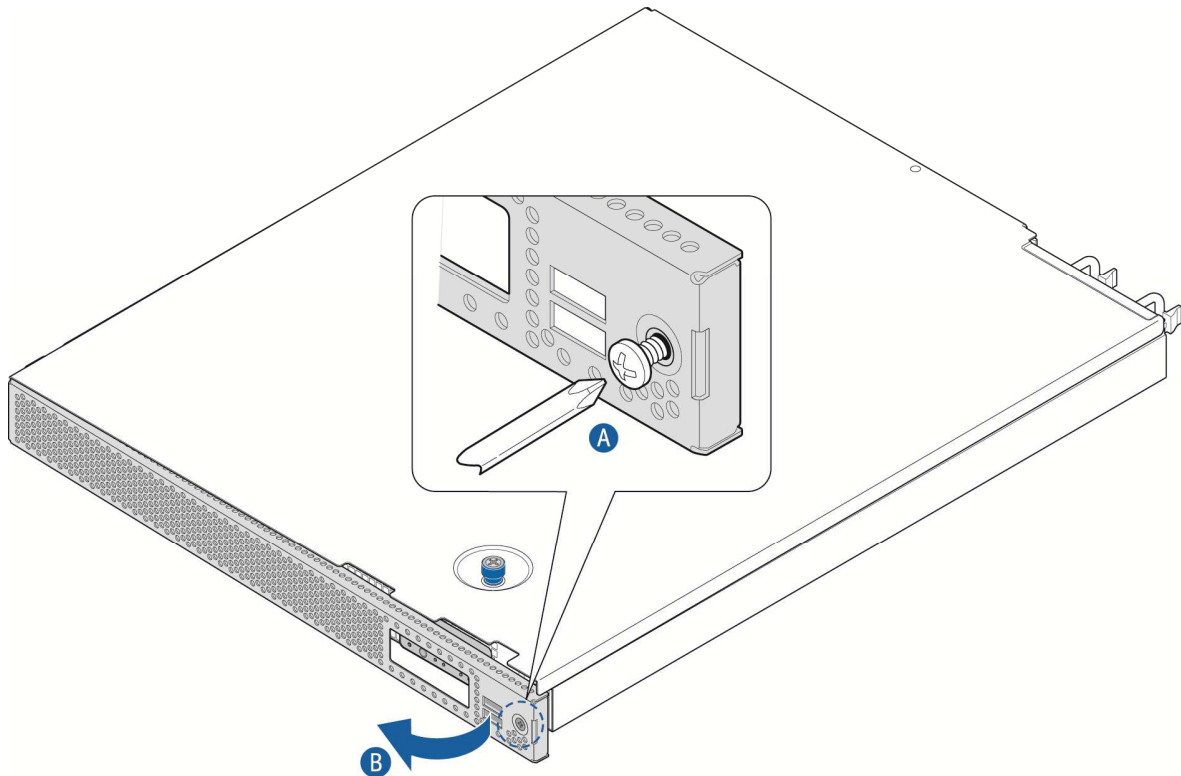
You need to remove the front bezel for tasks such as:

- Installing or removing hard disk drives
- Observing the individual hard disk drive activity/fault indicators on the drive carriers
- Replacing the control panel LED/switch board
- Accessing SD card slot

NOTE: The server does not have to be powered down just to remove the front bezel.

1. Loosen the captive bezel retention screw on the right side of the bezel (Figure 10, "A").
2. Rotate the bezel to the left to free it from the pins on the front panel, ("B") and remove it.

Figure 10: Removing the Front Bezel



CG00207

3.2.4 Re-Installing the Front Bezel

1. Insert the tabs on the left side of the bezel into the slots on the front panel of the chassis.
2. Move the bezel toward the right and align it around the control panel and the USB ports.
3. Tighten the retention screw to secure the bezel. (Torque to 8lbf*in)

3.2.5 Removing the Riser Card Assembly

The riser card assembly has to be removed from the chassis to perform tasks such as:

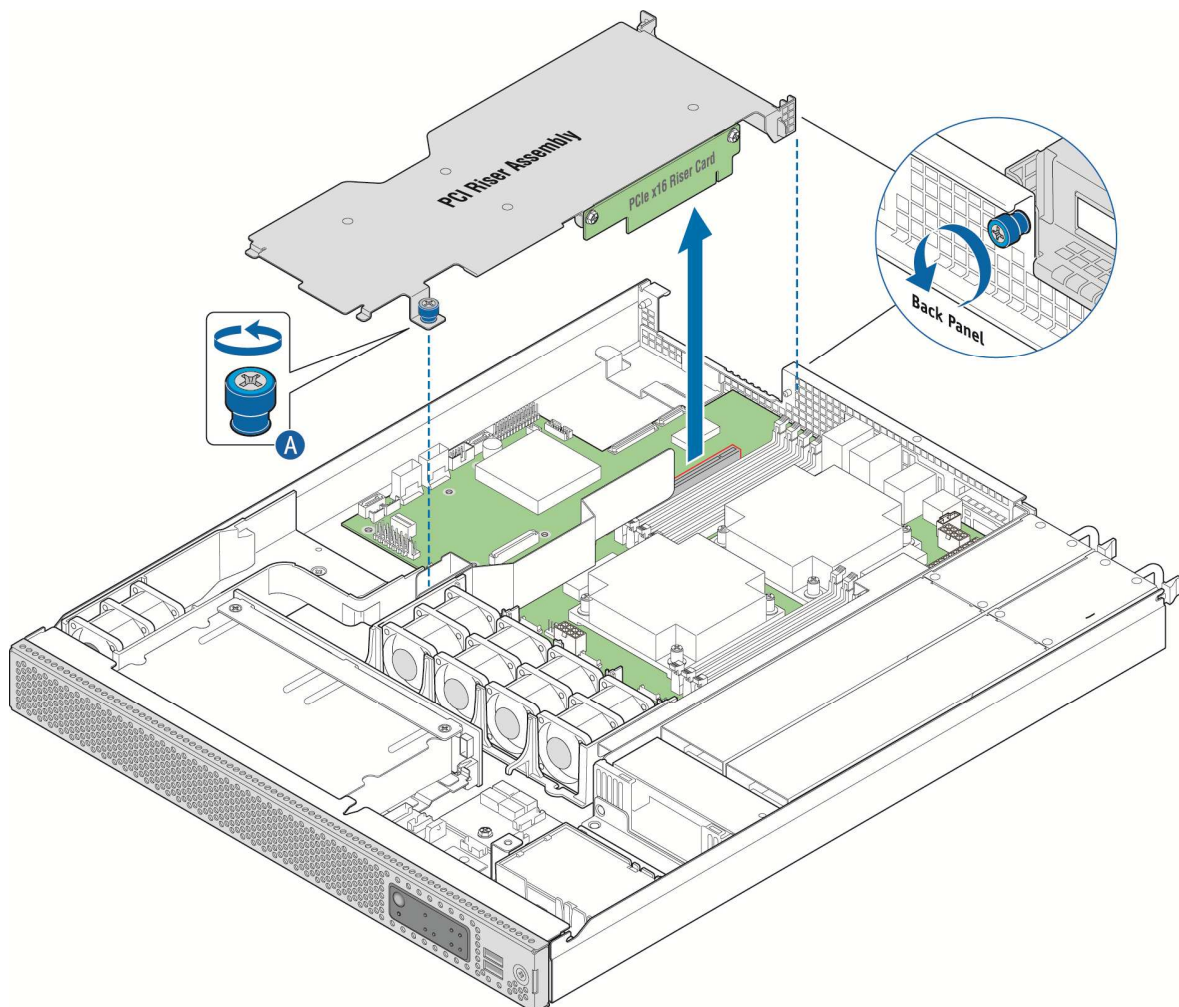
- Replacing a riser card
- Installing or replacing a PCI add-in card
- Installing or replacing a hardware RAID controller
- Working with any components on the server board that are near the riser card assembly, such as the CPU2 DIMMs, an I/O module, or an RMM4 card
- Replacing the server board

To remove the riser card assembly:

1. Power down the server and remove all external devices and the power cord(s)

2. Remove the chassis cover. For instructions, see Section 3.2.1 "Removing the Chassis Cover".
3. Loosen the blue captive retention screw (
4. Figure 11, "A") at the front of the riser assembly and the blue captive screw at the back panel of the chassis.
5. Unhook the rear of the assembly from the guide pin on the back panel and lift the riser card assembly out of the chassis.

Figure 11: Removing the Riser Card Assembly



CG00208

3.2.6 Re-Installing the Riser Card Assembly

To re-install the riser card assembly:

1. Align the riser card with the card slot on the server board.
2. Position the riser front tab/captive screw over the stand-off on the chassis floor.
Make sure the tab at the rear of the assembly hooks over the guide pin on the chassis back panel.

3. Press down to mate the riser card with the slot on the server board.

NOTE: To avoid damaging the card edge, be sure that the card is lined up straight with the header, not on an angle.

4. Tighten the blue captive retention screws at the front of the assembly and on the back panel.
5. Replace the chassis cover. For instructions see Section 3.2.2“Re-Installing the Cover”.

3.3 Internal System Components Configuration and Installation Procedures

This section covers separately-orderable components that must be installed for your server to operate. It also covers replacing these components and where relevant, such as with memory DIMMs, how to configure them.

You install your separately-orderable DIMMs and processors on the Intel® Server Board S2400EP4, which is the baseboard for this server.

NOTE: Be sure to read the information about the configuration rules and memory feature options in the *Intel® Server Board S2400EP4 Family Technical Product Specification* before you begin.

3.3.1 Configuring Memory DIMMs

The memory DIMM slots are located in two separate banks on the S2400EP4 server board. Detailed information about the memory subsystem in the CG1200 server can be found in the *Intel® Server Board S2400EP4 Family Technical Product Specification* located on the Kontron support website <http://us.kontron.com/support> (search for CG1200, click on Product Downloads, then Technical Info).

3.3.2 Supported Memory

The Intel® Server Board S2400EP4 supports eight DIMM slots with three memory channels for each processor. There is one DIMM slot per channel for channels A, B, D, and E and two DIMM slots per channel for channels C and F. Up to eight DIMMs can be used with dual-processor sockets giving a maximum memory capacity of 256 GB.

The server board supports DDR3 800, DDR3 1066, DDR3 1333, and DDR3 1600 memory transfer rates. Memory modules of mixed speed are supported by automatic selection of the highest common frequency of all memory modules.

For detailed information about UDIMM, RDIMM and LRDIMM support guidelines, see Section 3.2.2.1, “Supported Memory” in the *Intel® Server Board S2400EP4 Family TPS*.

Memory Map and Population Rules

The nomenclature for DIMM sockets implemented on the Intel® Server Board S2400EP4 is shown in Table 4.

Table 3: Memory Map

Processor Socket 1				Processor Socket 2			
(0) Channel A	(1) Channel B	(2) Channel C		(0) Channel D	(1) Channel E	(2) Channel F	
A1	B1	C1	C2	D1	E1	F1	F2

NOTE: Although mixed DIMM configurations may be functional, platform validations are performed only on systems configured with identical DIMMs.

The S2400EP4 server board memory is implemented according to the following rules

- DIMMs are organized into physical slots on DDR3 memory channels that belong to processor sockets.
- The memory channels from processor socket 1 are identified as Channel A, B, C. The memory channels from processor socket 2 are identified as Channel E, F.
- Each memory slot on the server board is identified by channel and slot number within the channel. For example, DIMM_A1 is the first slot on Channel A on processor 1; DIMM_D1 is the first DIMM socket on Channel E on processor 2.
- The memory slots associated with a given processor are unavailable if the given processor socket is not populated.
- A processor can be installed without populating the associated memory slots, provided the other processor is installed with associated memory. In this case, the memory is shared by the processors. However, the platform suffers performance degradation and latency because of the remote memory accesses.
- Processor sockets are self-contained and autonomous. However, all memory subsystem support (i.e., Memory RAS, Error Management, etc.) in the BIOS setup is applied commonly across processor sockets.
- The blue memory slots on the server board identify the first memory slot for each memory channel.
- For more information about population considerations, see Section 3.2.2.2 “Memory Slot Identification and Population Rules” in the *Intel® Server Board S2400EP4 Family TPS*.

For information about what memory has been tested on the CG1200 server, see CG1200 Tested Memory List on the Kontron website at <http://us.kontron.com/support/> (Search for CG1200, click on Product Downloads, then Tested Memory.)

3.3.3 Installing Memory DIMMs

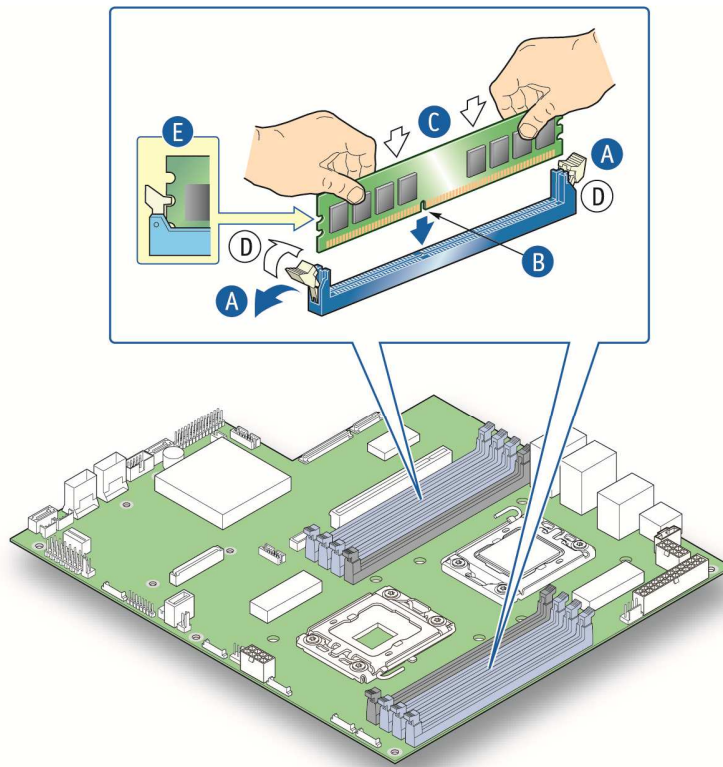
NOTE: To reduce the risk of electrostatic discharge (ESD) damage to the processor or the DIMM, be sure to use a ground strap attached to the front panel (with the bezel removed).

To install DIMMs in the S2400EP4 server board slots:

1. Power down the server and remove all peripheral devices and the power cord(s)
2. Remove the chassis cover. For instructions, see Section 3.2.1 “Removing the Chassis Cover”.
3. Note the location of the alignment notch. (Figure 12, “B”)
4. Insert the DIMM, making sure the connector edge of the DIMM aligns correctly with slot. (“E”)

5. Using both hands, push down firmly and evenly on both sides of the DIMM until it snaps into place and the levers close. ("C")
IMPORTANT: Visually check that each latch is fully closed and correctly engaged with the notch on the DIMM edge. ("D")
6. Replace the riser card assembly and the chassis cover if you have completed all work inside of the server.

Figure 12: Memory DIMM Installation



CG00209

3.3.4 Replacing or Removing Memory DIMMs

NOTE: To reduce the risk of electrostatic discharge (ESD) damage to the processor or the DIMM, use a ground strap attached to the front panel (with the bezel removed).

To remove a DIMM from the S2400EP4 server board, follow these steps:

1. Power down the server and remove all peripheral devices and the power cord(s)
2. Remove the chassis cover. For instructions, see Section 3.2.1, "Removing the Cover".
3. Open the DIMM slot levers for the DIMM you want to remove. ()
4. Using both hands, hold the DIMM by the edges and lift it up from the slot. Store the DIMM in an anti-static package.
5. If you are installing a replacement DIMM in this slot, return to Step 5 in "Installing Memory DIMMs".

Otherwise, replace the chassis cover if you have completed all work inside the server. See Section 3.2.2, "Re-installing the Chassis Cover" for instructions.

3.3.5 Adding or Replacing a Processor

CAUTION: The processor must be appropriate: You could damage the server board if you install a processor that is inappropriate for your server. Refer to the Configuration Guide located on the support web page <http://us.kontron.com/support/> (search for CG1200, click on Product Downloads, and then Ordering Guide) for a list of compatible processors for the CG1200 server.

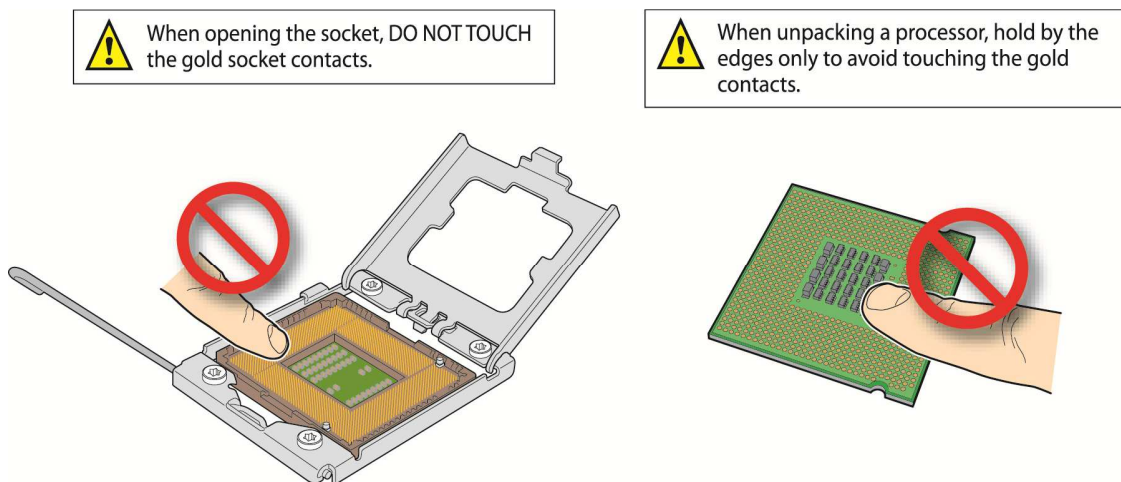
Use the instructions provided below to add or replace a processor instead of using the instructions that came with the processor.

Follow the instructions below to remove and then install a processor, referring to Figure 13 through Figure 22.

ESD and Processor Handling Precautions

NOTE: When handling the processors and sockets, to reduce the risk of electrostatic discharge (ESD) damage to the processor use a ground strap attached to the front panel (with the bezel removed.)

Figure 13: Cautions for Handling Processors

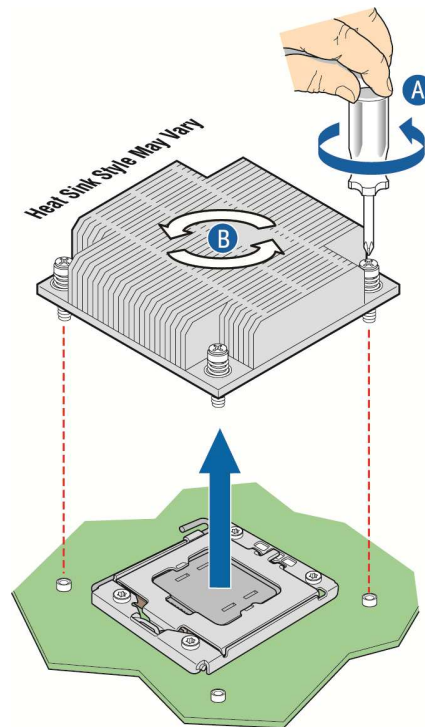


CG00239

Removing a Processor

1. Loosen the four captive screws on the corners of the heat sink with a #2 Phillips screwdriver. (Figure 14, "A")
2. Twist the heat sink slightly to break the seal between the heat sink and the processor. ("B")
3. Lift the heat sink from the processor. If it does not pull up easily, twist the heat sink again.

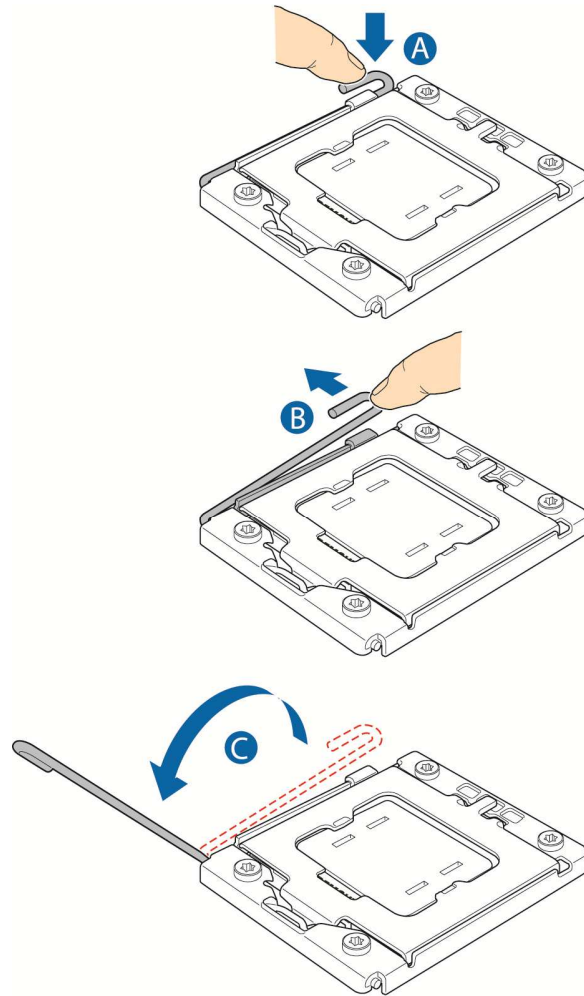
NOTE: Do not force the heat sink from the processor. Doing so could damage the processor.

Figure 14: Removing the Heat Sink

CG00240

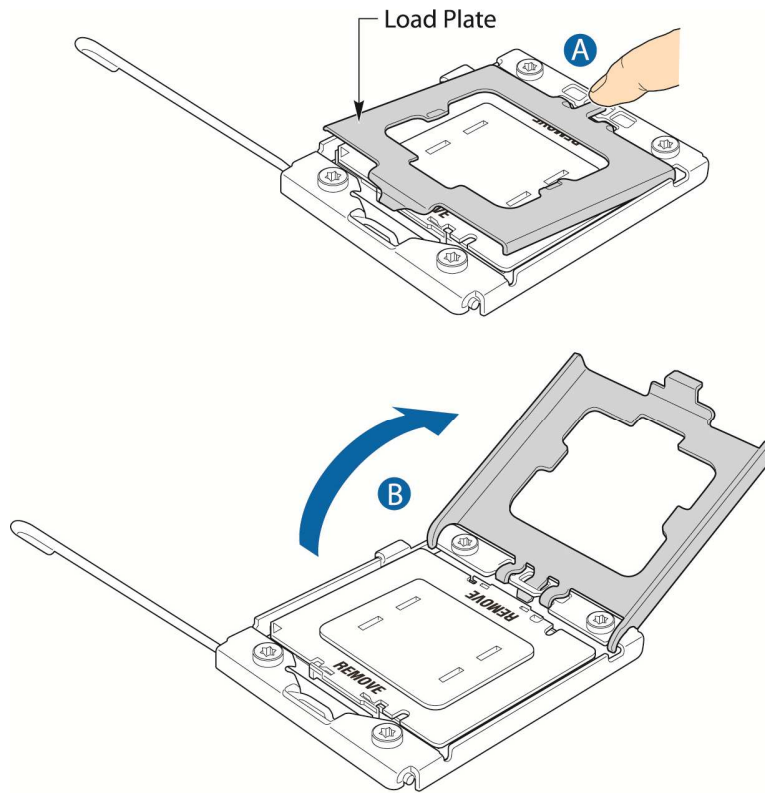
4. Open the socket by pushing the lever handle down and away from the socket to release it. (Figure 16)

Figure 15: Using the Socket Lever



CG00241

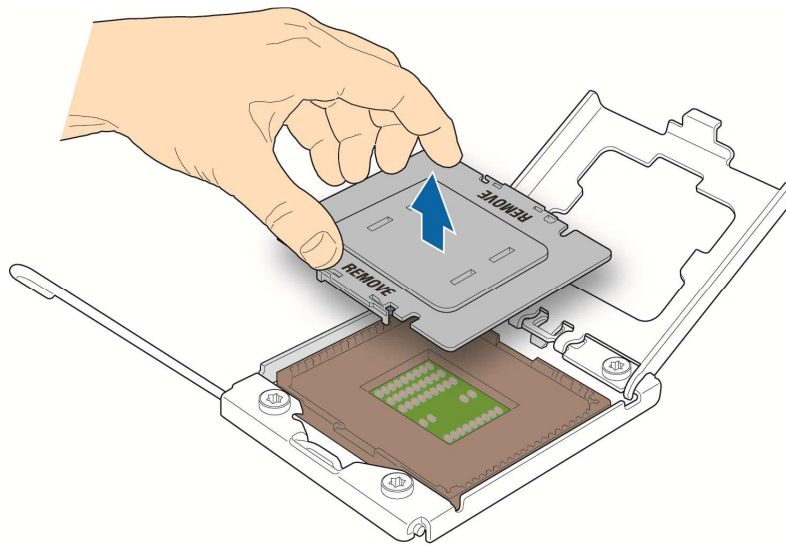
5. Lift the load plate up off the processor. (Figure 16)

Figure 16. Opening the Load Plate

CG00242

6. Remove the protective cover in the socket (Figure 17) or the processor if you are replacing an existing one.

Figure 17 Removing the Socket Protective Cover



CG00243

Installing a New Processor

NOTE: Follow the ESD precautions covered in “ESD and Processor Handling Precautions”.

To install a processor, follow these instructions:

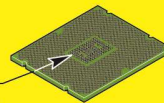
1. Take the processor out of its packaging and remove the protective shipping cover by grasping the cover tab and pulling it away from the load plate. Store the protective cover for future use (
2. Figure 18).

Figure 18: Removing the Shipping Cover



CAUTION: When unpacking a processor, hold at the edges only, to avoid touching the gold contact pins.

Components



CAUTION: The underside of the processor has components that may damage the socket pins if installed improperly.



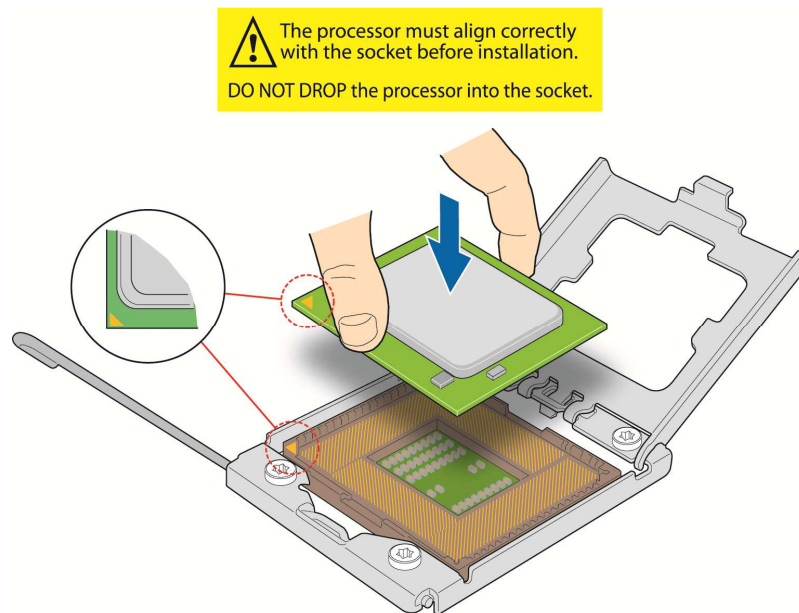
Save the protective cover

CG00078

CAUTION: The underside of the processor has components that may damage the socket pins if installed improperly. The processor must align correctly with the socket opening before installation. Gently place the processor onto the socket surface. Do not drop the processor into the socket!

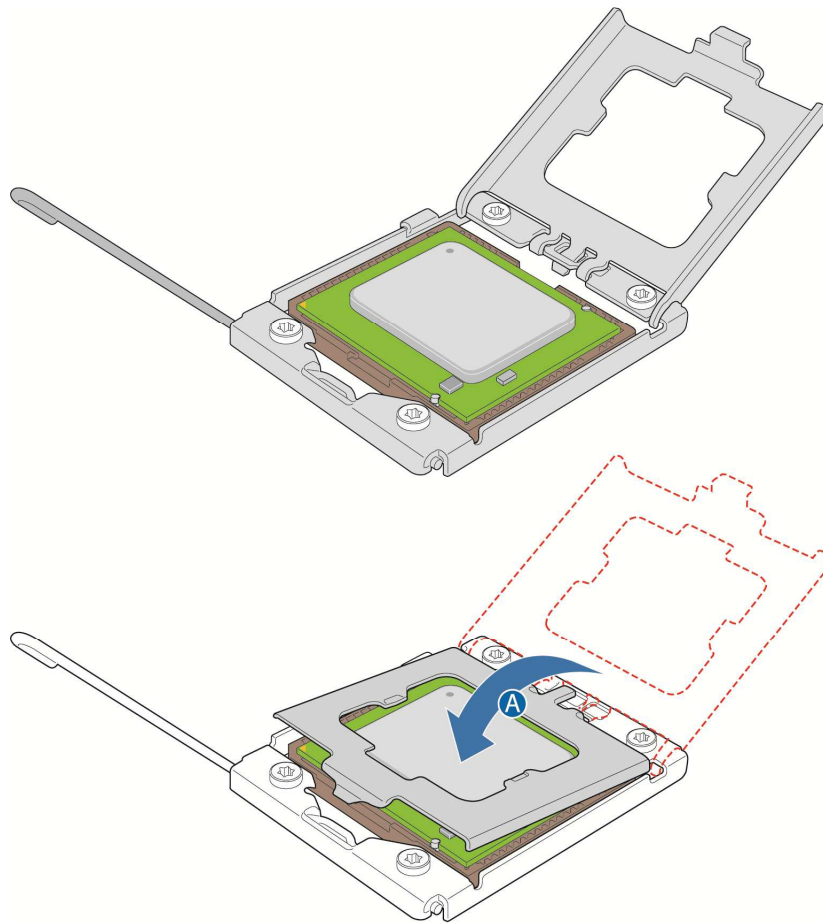
3. Orient the processor with the socket so that the processor cutouts match the socket notches (
4. Figure 19).
5. Gently place the processor in the socket.

Figure 19: Installing the Processor in the Processor Socket



CG00245

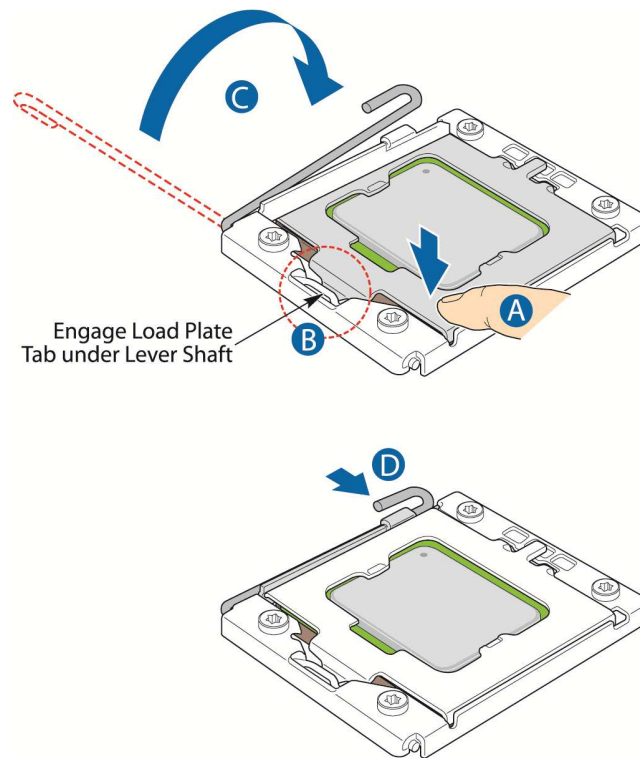
6. Carefully close the load plate (Figure 20).
7. Close the socket lever and ensure that the load plate tab engages under the socket lever when fully closed.

Figure 20: Closing the Processor Load Plate

CG00246

6. When the load plate comes down and the lever is latched, the socket cover pops off. Save it for future use if the processor is removed (
7. Figure 21).

Figure 21: Closing the Socket Lever



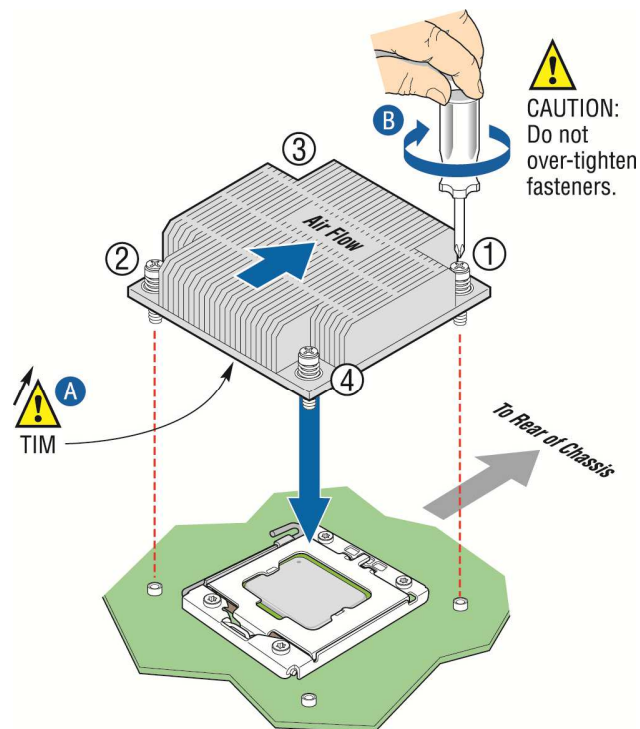
CG00247

3.3.6 Installing the Heat Sink

1. If this is a new heat sink (not the one you removed above), remove the protective film, if present, on the Thermal Interface Material (TIM) located on the bottom of the heat sink (Figure 22, "A").
2. Set the heat sink over the processor, lining up the four captive screws with the four posts surrounding the processor. Align the heat sink fins to the front and back of the chassis for correct airflow (front to back). Use caution and make sure that no cables are pinched beneath the heat sink.
3. Loosely screw in the captive screws on the heat sink corners and then tighten one, then the one diagonally opposite, and so on until each one is firmly tightened ("B").

CAUTION: the torque spec for these screws is 8 inch pounds. Be careful not to exceed it.

Figure 22: Installing a Heat Sink



3.3.7 Configuring Jumpers on the Server Board

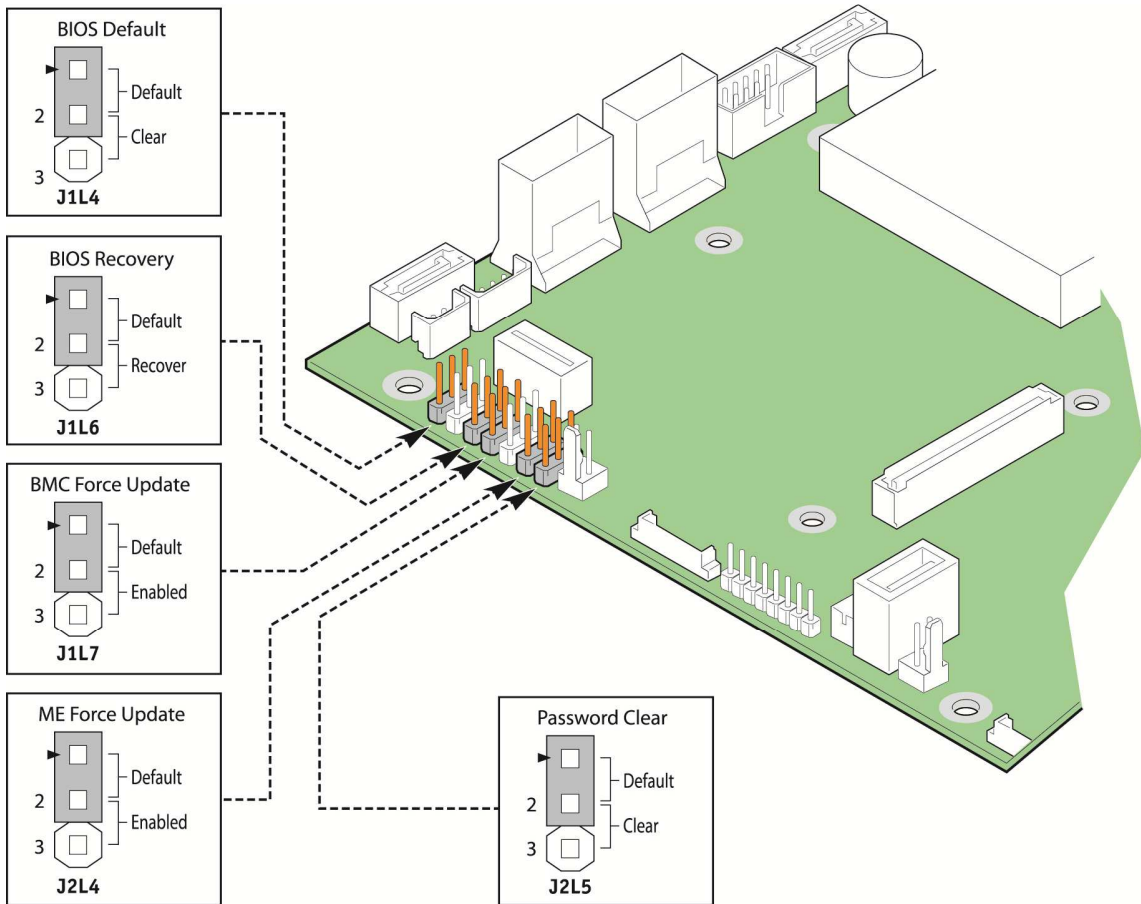
The jumpers are located on the S2400EP4 server board. The system comes with the baseboard jumpers configured in the default position for normal system operation. Only change the jumper position for performing the desired recovery procedures outlined in this section. To work with the jumpers defined in this section, you must first power down the chassis, remove the cover, remove riser card assembly as described in Section 3.2 "General Installation Procedures", and any optional modules or cables that might be in the way. The other components on the server board can remain in place.

These 3-pin jumper blocks can be used to configure, protect, or recover specific features of the server board. This section shows the jumper blocks available and what they do. For detailed information about using these jumpers, see the *Intel® Server Board S2400EP4 Family Technical Product Specification*, Chapter 9, "Reset and Recovery Jumpers".

Pin 1 on each jumper block is identified by this symbol on the silkscreen: ▼

Figure 23 shows the jumper blocks.

Figure 23: Jumper Blocks (J1L4, J1L6, J1L7, J2L4, J2L5)



CG00210

Table 4: Server Board Jumpers (J1L4, J1L6, J1L7, J2L4, J2L5)

Jumper Name	Pins	System Results
J1L4: BIOS Default	1 - 2	These pins should be jumpered for normal system operation (Default)
	2 - 3	If pins 2 – 3 are jumpered when AC power is unplugged, the CMOS settings are cleared within five seconds. Pins 2 - 3 should not be jumpered for normal operation.
J1L6: BIOS Recovery	1 - 2	These pins should be jumpered for normal system operation (Default)
	2 - 3	The main system BIOS does not boot with pins 2 – 3 connected. The system only boots from EFI-bootable recovery media with the recovery BIOS image.
J1L7: BMC Force Update	1 - 2	BMC Firmware Force Update Mode – Disabled (Default)
	2 - 3	BMC Firmware Force Update Mode – Enabled
J2L4: ME Force Update	1 - 2	ME Firmware Force Update Mode – Disabled (Default)
	2 - 3	ME Firmware Force Update Mode – Enabled
J2L5: Password Clear	1 - 2	These pins should be jumpered for normal system operation (Default)
	2 - 3	To clear administrator and user passwords, power on the system with pins 2 – 3 connected. The administrator and user passwords clear in 5 – 10 seconds after power on. Pins 2 – 3 should not be connected for normal system operation.

See Chapter 9, “Jumper Blocks” in the *Intel® Server Board S400EP4 Family TPS* on the Kontron Support website for more information about the recovery features.

4 Optional Component Installation Procedures

This chapter covers separately-orderable components that you may want to add or replace in your Kontron CG1200 Carrier Grade Server. Most of these components can be ordered as accessories from Kontron and some are from third party vendors. For more information about what is available from Kontron, see the *CG1200 Carrier Grade Server Configuration Guide*. For a list of qualified third party vendors, see the *Tested Hardware and Operating System List* (THOL). The latest version of the Configuration Guide is located on the Kontron support website at <http://us.kontron.com/support/> (search for CG1200, click on Product Downloads, then Ordering Guide). The latest version of the THOL is located on the support website at <http://us.kontron.com/support> (search for CG1200, click on Product Downloads, then Compatibility Matrix).

4.1 Before You Begin

Before working with your server product, pay close attention to the safety instructions provided in this manual. See Appendix A: Safety Information”.

WARNING: Electrostatic discharge (ESD) and ESD protection: ESD can damage disk drives, boards, and other parts. We recommend that you perform all procedures in this chapter only at an ESD workstation. If one is not available, provide some ESD protection by wearing an antistatic wrist strap attached to chassis ground (any unpainted metal surface) on your server when handling parts.

4.1.1 Tools and Supplies Needed

- #1 and #2 Phillips (cross-point) screwdrivers (or interchangeable tip screwdriver with #1 and #2 Phillips bits)
- Personal grounding device such as an anti-static wrist strap and a grounded conductive pad

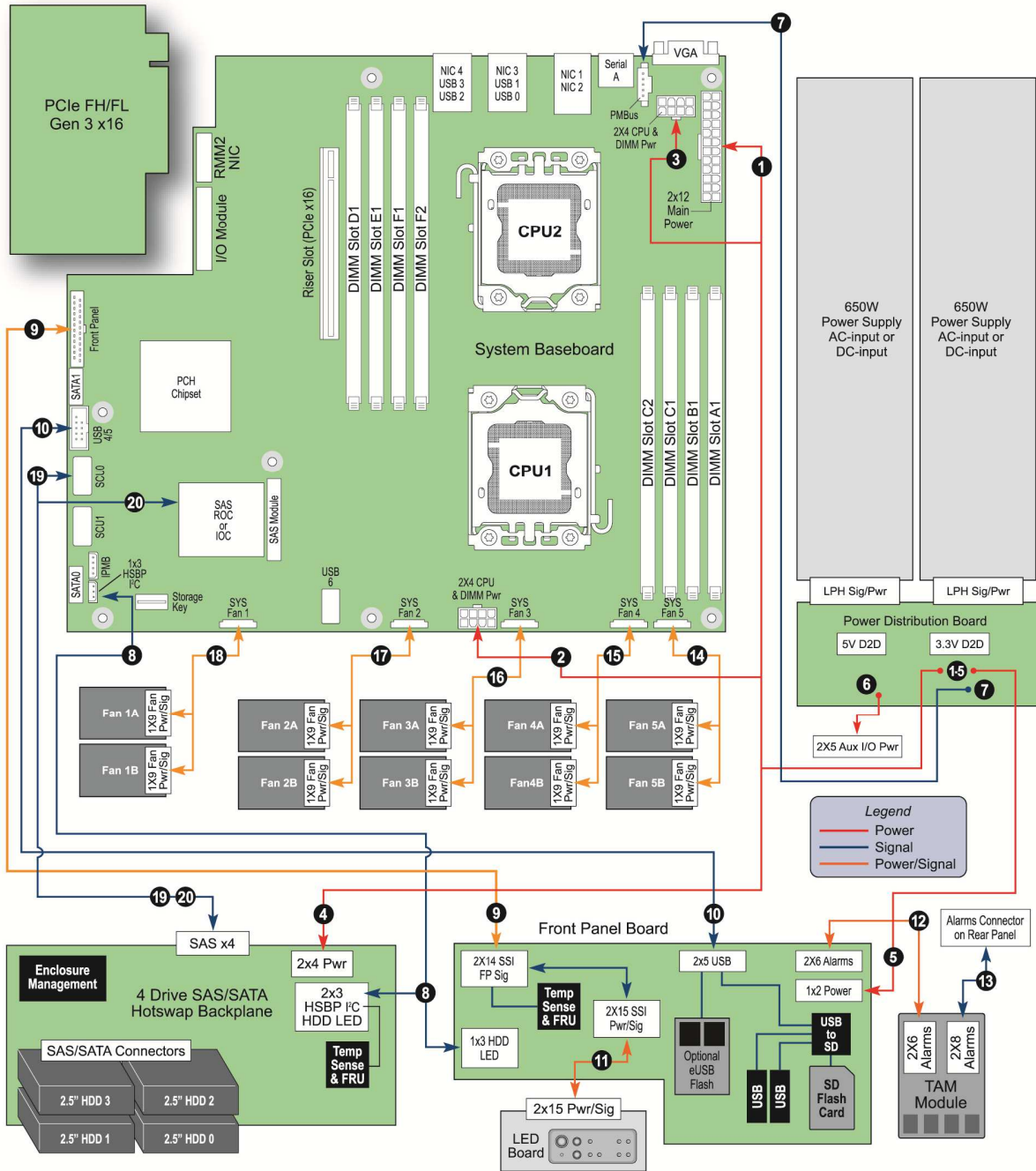
4.1.2 System References

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

4.1.3 Cable Routing Reference

It is important for cables to be connected correctly. See Figure 24 and Table 5 for cable routing and for more detailed information, see the *Kontron CG1200 Carrier Grade Server Technical Product Specification*.

Figure 24: Cable Routing



CG00152

Table 5: System Cables

Interconnect #: Name:	End #1 Connection End #2 Connection	End #3 Connection End #4 Connection
1. Baseboard SSI Main Power	End #1: Power Distribution Board End #2: Baseboard	End #3: NA End #4: NA
2. CPU 1 and DIMM Power	End #1: Power Distribution Board End #2: Baseboard	End #3: NA End #4: NA
3. CPU 2 and DIMM Power	End #1: Power Distribution Board End #2: Baseboard	End #3: NA End #4: NA
4. SAS HDD Backplane Board Power	End #1: Power Distribution Board End #2: SAS HDD Backplane	End #3: NA End #4: NA
5. SSI Front Panel Board Power	End #1: Power Distribution Board End #2: Front Panel Board	End #3: NA End #4: NA
6. Auxiliary I/O Power Dongle Baseboard SSI Power Control Signal	End #1: Power Distribution Board End #2: Cable to Cable connector Baseboard	End #3: NA End #4: NA
7. PMBus Signal	End #1: Power Distribution Board Front Panel Board End #2: Baseboard	End #3: N/A End #4: N/A
8. HSBP I2C / HDD LED	End #1: SAS HDD Backplane Board End #2: Baseboard HSBP I ² C	End #3: C-2-C (HDD-LED) End #4:
9. Front Panel Signal	End #1: Baseboard End #2: Front Panel Board	End #3: NA End #4: NA
10. Front Panel Board USB	End #1: Baseboard End #2: Front Panel Board	End #3: NA End #4: NA
11. LED/Switch Board Power and Signal	End #1: Front Panel Board End #2: LED/Switch Board	End #3: NA End #4: NA
12. TAM Signal	End #1: Front Panel Board End #2: TAM Module	End #3: NA End #4: NA
13. Alarms	End #1: TAM Module End #2: System Rear Panel Alarms Connector	End #3: NA End #4: NA
14. Fan Power and Signal (Fans 5A-5B)	End #1: Baseboard End #2: Fan Pair (5A-5B)	End #3: NA End #4: NA
15. Fan Power and Signal (Fans 4A-4B)	End #1: Baseboard End #2: Fan Pair (4A-4B)	End #3: NA End #4: NA

Interconnect #: Name:	End #1 Connection End #2 Connection	End #3 Connection End #4 Connection
16. Fan Power and Signal (Fans 3A-3B)	End #1:Baseboard End #2: Fan Pair (3A-3B)	End #3: NA End #4: NA
17. Fan Power and Signal (Fans 2A-2B)	End #1:Baseboard End #2: Fan Pair (2A-2B)	End #3: NA End #4: NA
18. Fan Power and Signal (Fans 1A-1B)	End #1:Baseboard End #2: Fan Pair (1A-1B)	End #3: NA End #4: NA
19. Mini-SAS Signal (HDD 0-1 /SCU0)	End #1:SAS HDD Backplane Board End #2: Baseboard SAS 0-3 SCU0 Connector	End #3: N/A End #4: NA

4.2 Installing or Replacing Hard Disk Drives

Up to four hot-swappable SAS hard disk drives can be installed in your CG1200 server. The drives go into carriers that connect to the SAS backplane board once the carriers with drives attached are inserted back into the drive bay slots. The CG1200 server ships with four drive carriers.

CAUTION: If you install fewer than four hard disk drives, the unused drive slots must contain the empty carriers with filler panels that ship with the server to maintain proper cooling.

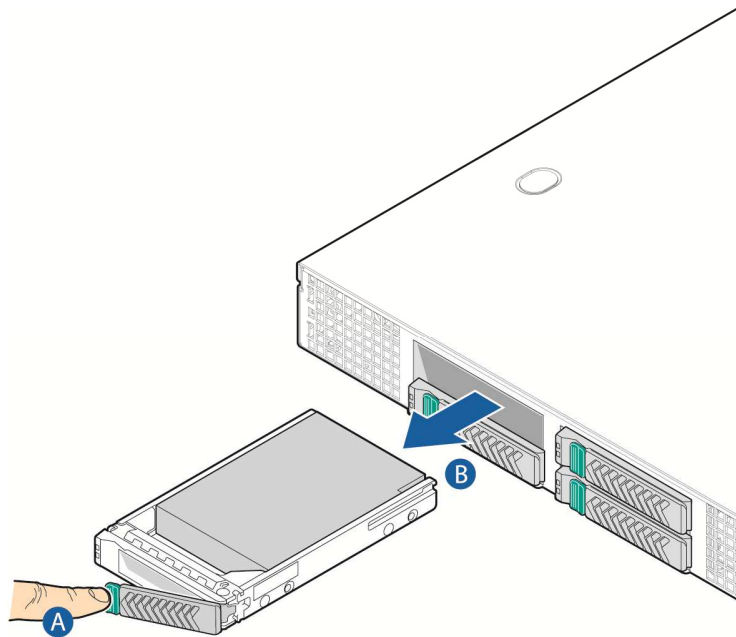
The CG1200 server does not support all SAS HDD or SATA SDD disk drives. To see a list of validated manufacturers and drive models, refer to the THOL. The latest version of the THOL is located on the Kontron support website at <http://us.kontron.com/support/>. (Search for CG1200, click on Product Downloads, then Compatibility Matrix).

NOTE: SATA rotating HDDs are not recommended for use in this system because they are sensitive to rotational vibration from system fan blades and other HDDs.

You must remove the front bezel to add or replace a hard drive in one of the drive slots. It is not necessary to remove the chassis cover or to power down the system. The hard drives are hot-swappable.

4.2.1 Removing an HDD Carrier from the Chassis

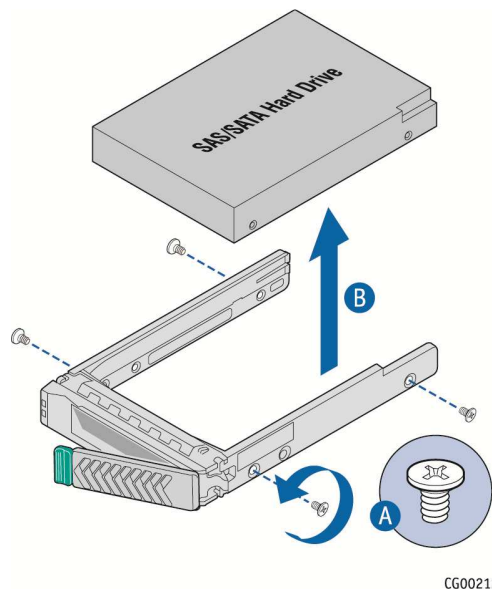
1. Remove the front bezel. For instructions, see 3.2.3, "Removing the Front Bezel".
2. Select the drive slot where you want to install/replace the drive.
Drive slot 0 must be used first, then drive slot 1 and so on.
(Drive slot numbers are printed on the front panel to identify the drive slots.)
3. Remove the drive carrier from the drive bay by pressing the green button to open the lever that engages the drive to the backplane (Figure 25, "A").
4. Pull the drive carrier out of the chassis ("B").

Figure 25: Removing the Drive Carrier

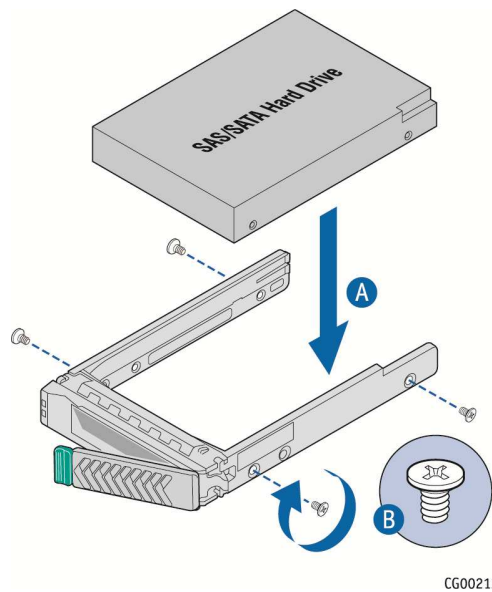
CG00211A

4.2.2 Installing a Hard Drive in a Carrier

1. If the drive carrier is empty (that is, if you are installing a drive in it for the first time), remove the black plastic filler panel by unfastening the four screws that attach it to the carrier (Figure 26, "A"). Set the screws aside for use with the new drive.
2. If a drive is already installed (that is, if you are replacing the drive), remove it by unfastening the four screws that attach the drive to the drive carrier (Figure 26, "A"). Set the screws aside for use with the new drive.
3. Lift the drive (or filler panel) out of the carrier ("B").

Figure 26: Removing a Hard Drive

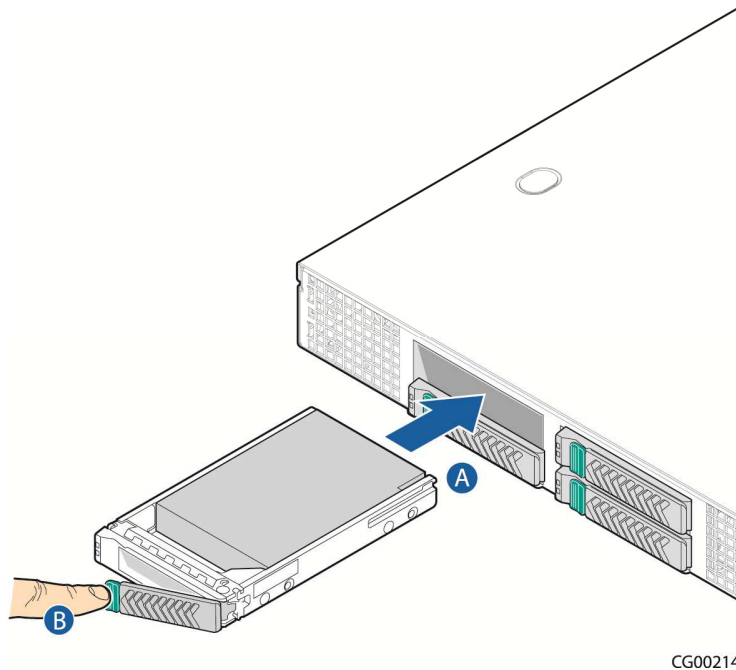
4. Install the new drive in the drive carrier (Figure 27, "A") and secure the drive with the four screws that come with the carrier ("B").

Figure 27: Installing a Hard Drive

5. With the drive carrier locking lever fully open, push the hard drive carrier into the drive slot in the chassis until it stops (Figure 28 "A").
6. Press the locking lever until it snaps shut and secures the drive in the slot ("B").

Replace the front bezel. For instructions, see 3.2.4, "

7. Re-Installing the Front Bezel”.

Figure 28: Inserting a New Hard Drive into the Chassis

CG00214

4.3 Installing a Hardware RAID Controller

The CG1200 server supports the use of a RAID-on-chip (ROC) hardware RAID controller. This option is separately orderable. The ROC module can be used with or without a SuperCap maintenance-free backup module. If you are using the SuperCap module, the ROC module must be installed first, then the SuperCap module.

Before you can install the ROC you must first remove the chassis cover, the front bezel, the PCIe fan duct, and the riser card assembly.

4.3.1 Installing the ROC Module

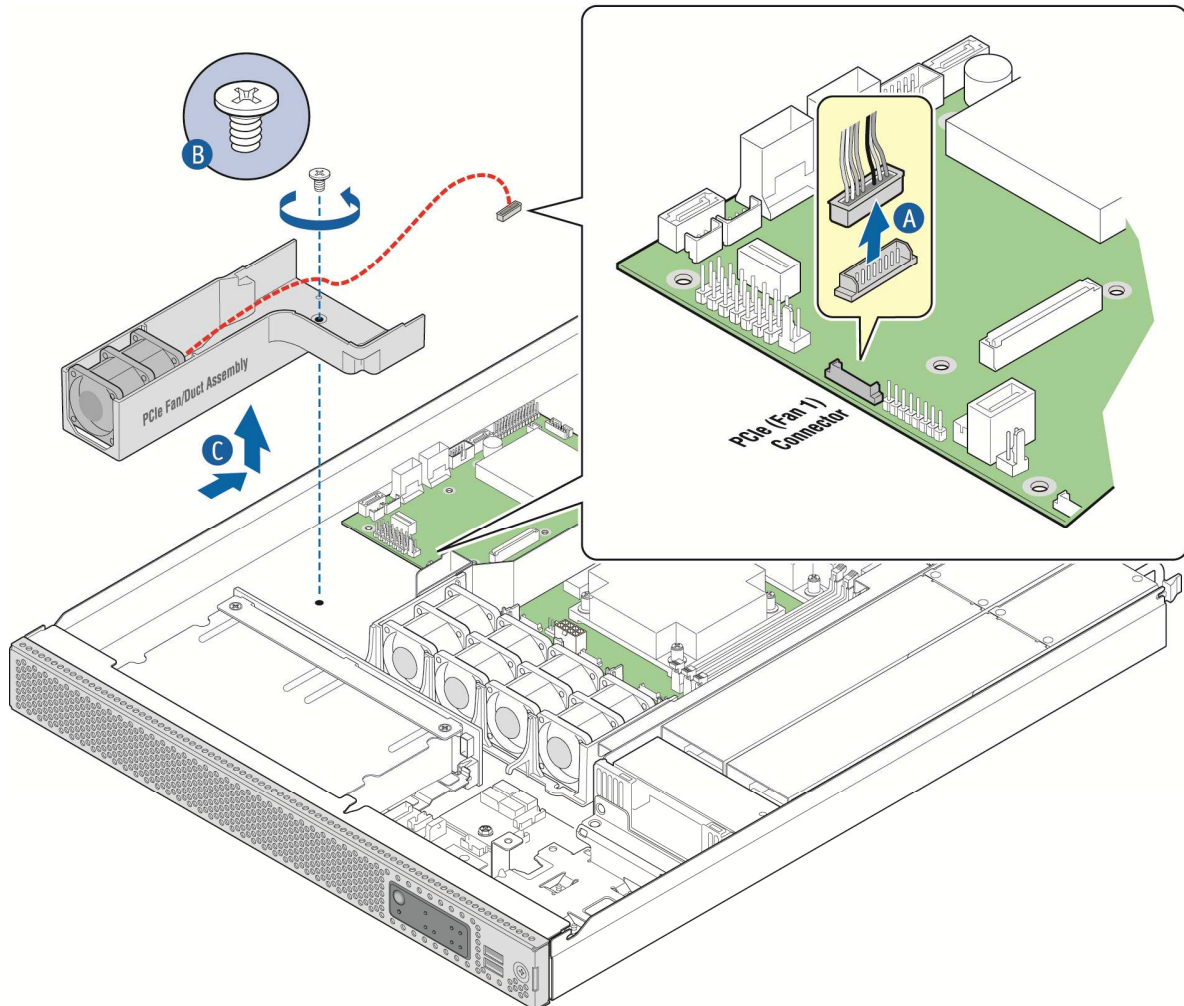
1. Power down the server and remove all external devices and the power cord(s).
2. Remove the chassis cover. For instructions, see Section 3.2.1 “Removing the Chassis Cover”.
3. Remove the front bezel if you will be using the ESD ground attachment on the server for your anti-static wrist strap grounding. For instructions, see section 3.2.3, “Removing the Front Bezel”.
4. Remove the riser card assembly. For instructions, see section 3.2.5, “Removing the Riser Card Assembly”.
5. Remove the black plastic PCIe fan duct assembly:

NOTE: The fan does not need to be removed from the duct.

 - a. Disconnect the fan power/signal cable from the server board. (Figure 29, “A”)

- b. Unfasten the screw at the back of the duct assembly ("B") and slide the assembly up and away from the chassis retention bracket ("C").

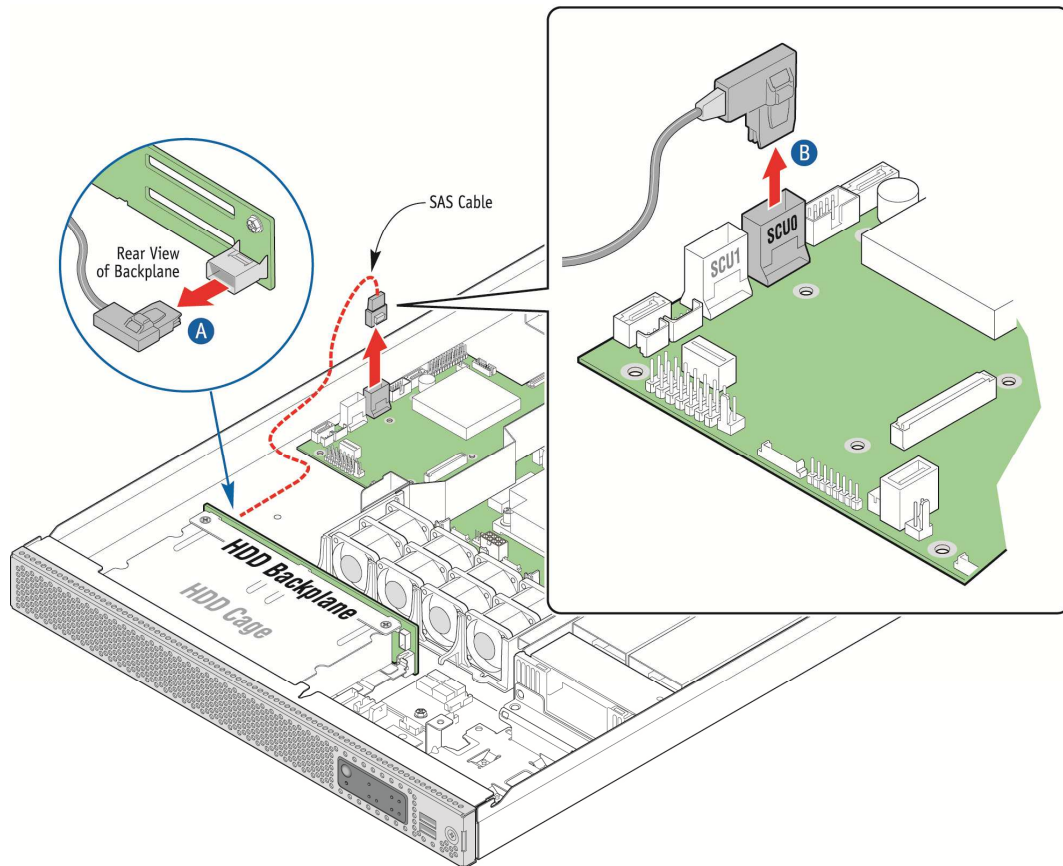
Figure 29: Removing the PCIe Fan Duct



CG00265

6. Disconnect the mini-SAS cable from both the SAS HDD backplane ("A") and the SCU0 connector on the server board ("B"). The ROC module uses a different cable that comes in the cable kit.

Figure 30: Removing the Mini-SAS Cable

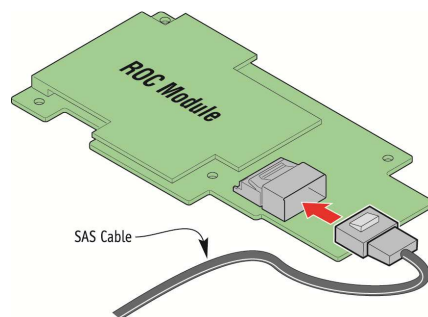


CG00267

7. Install the ROC module:

- a. Firmly fasten the connector on the new SAS cable provided in the cable kit to the ROC module. (Figure 31)

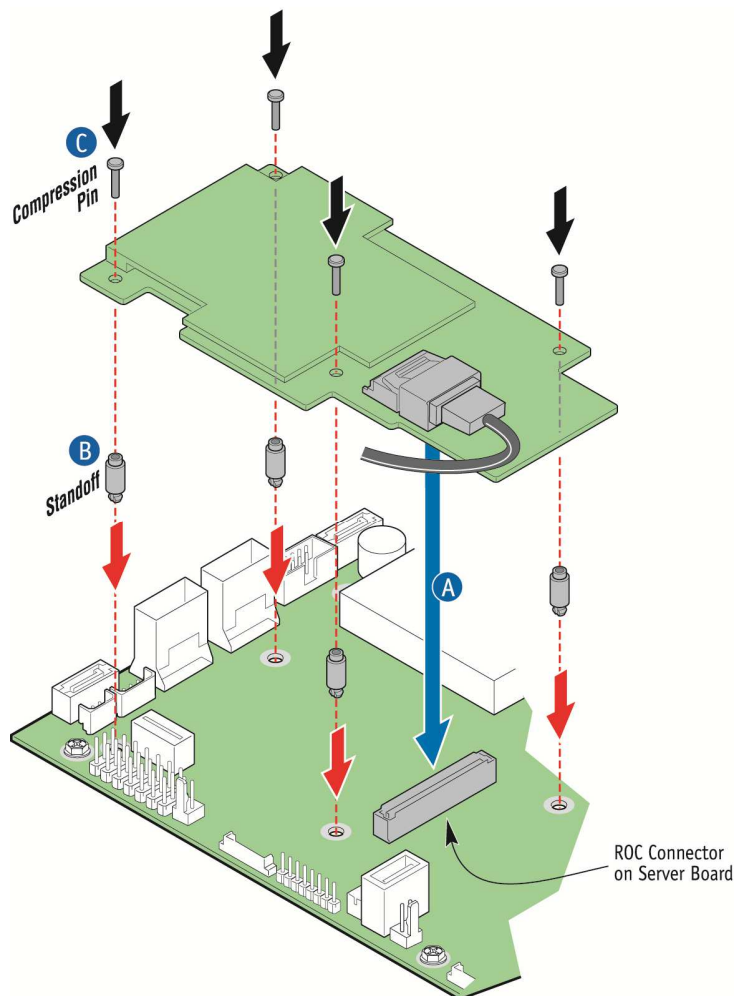
Figure 31: Connecting the SAS Cable to the ROC Module



CG00268

- b. Snap the four plastic standoffs from the RAID kit into the holes on the server board (Figure 32, "B").
- c. Align the ROC module with the four standoffs and press down on the module to secure it in place ("A").
- d. Install the four plastic compression pins through the holes on the ROC card and into the standoffs. Press and tighten each pin in the standoffs to firmly secure the module to the server board ("C").

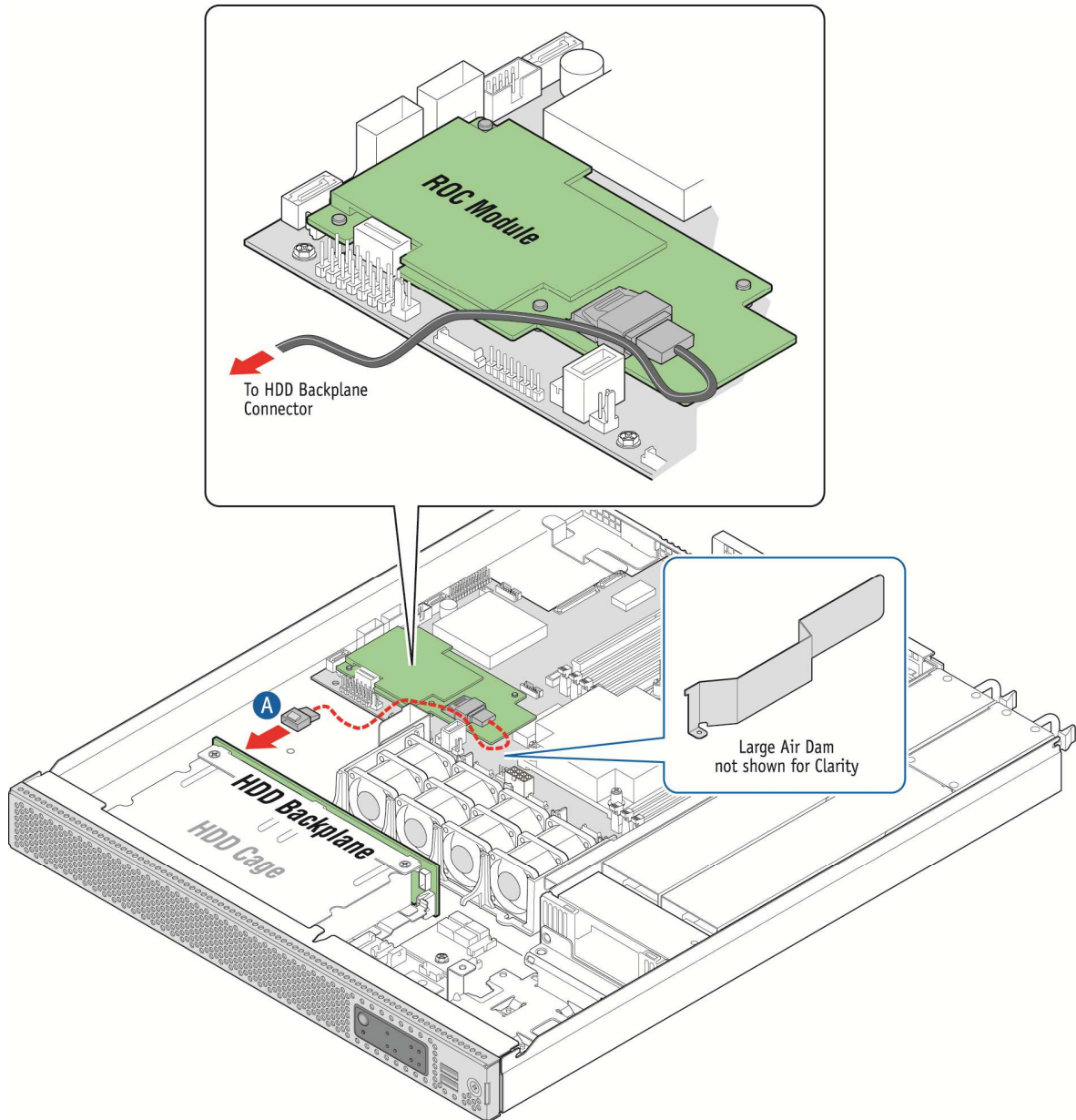
Figure 32: Installing the ROC Module on the Server Board



CG00269

- e. Firmly fasten the other end of the SAS cable to the connector on the SAS HDD backplane. Make sure the cable routes under the small air baffle to the right of the fan duct assembly location.

Figure 33: Connecting the Mini-SAS Cable to the Backplane



CG00270

If you are not installing a SuperCap module, then re-install the fan duct assembly, re-connect the fan power cable to the server board, replace the riser card assembly, the front bezel, and the chassis cover, and re-connect the power cord(s) and any external devices.

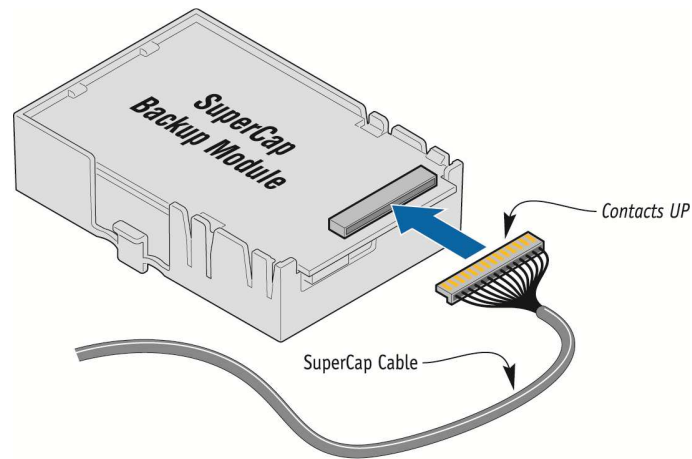
4.3.2 Installing the SuperCap Module

The SuperCap module is a flash-based backup module for hardware RAID. It comes in the optional accessory kit, AXXRMBFU2, and is only supported when connected to the ROC module, RMS25CB040.

To install the SuperCap module:

1. Connect the SuperCap cable to the SuperCap module (Figure 34). The module connector is keyed and the contacts face upwards.

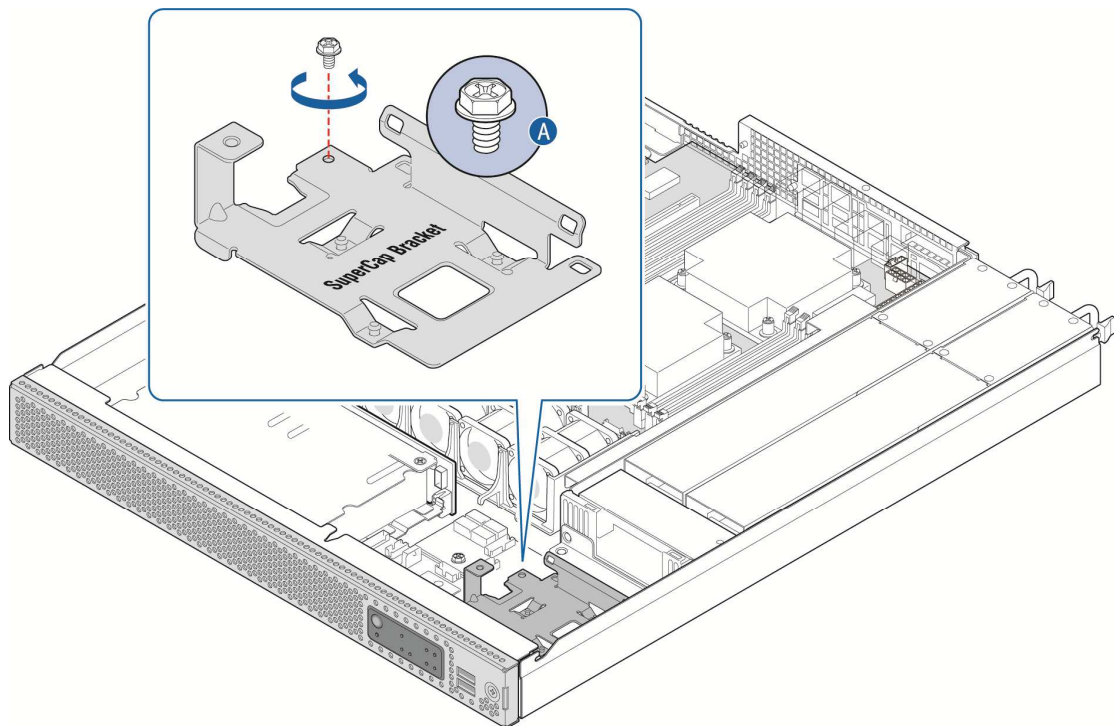
Figure 34: Connecting the SuperCap Cable to the SuperCap Module



CG00271

2. Unfasten the module retention screw from the mounting bracket on the chassis floor (Figure 35, "A"). Move the power distribution board cables out of the way, if necessary.

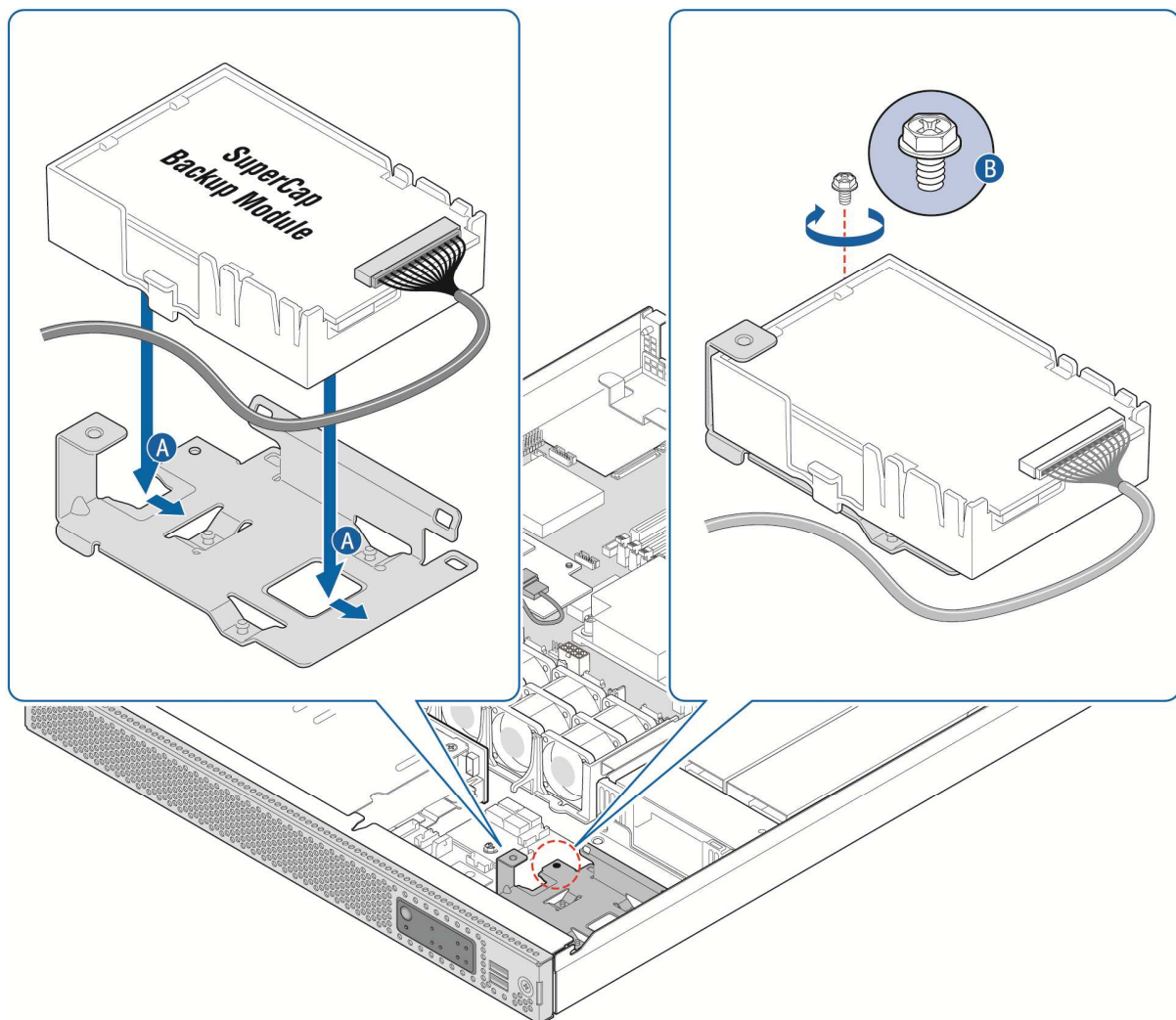
Figure 35: Removing the Retention Screw from the SuperCap Bracket



CG00272

3. Align the tabs on the bottom of the SuperCap module with the mating connectors on the bracket and slide the module to the right to secure the SuperCap module to the bracket (Figure 36, "A").
4. Fasten the SuperCap module to the bracket with the module retention screw ("B") to ensure that the module does not disengage from the bracket. (The retention screw will only tighten in place if the module is properly installed in the bracket.)

Figure 36: Fastening the SuperCap Module to the Bracket

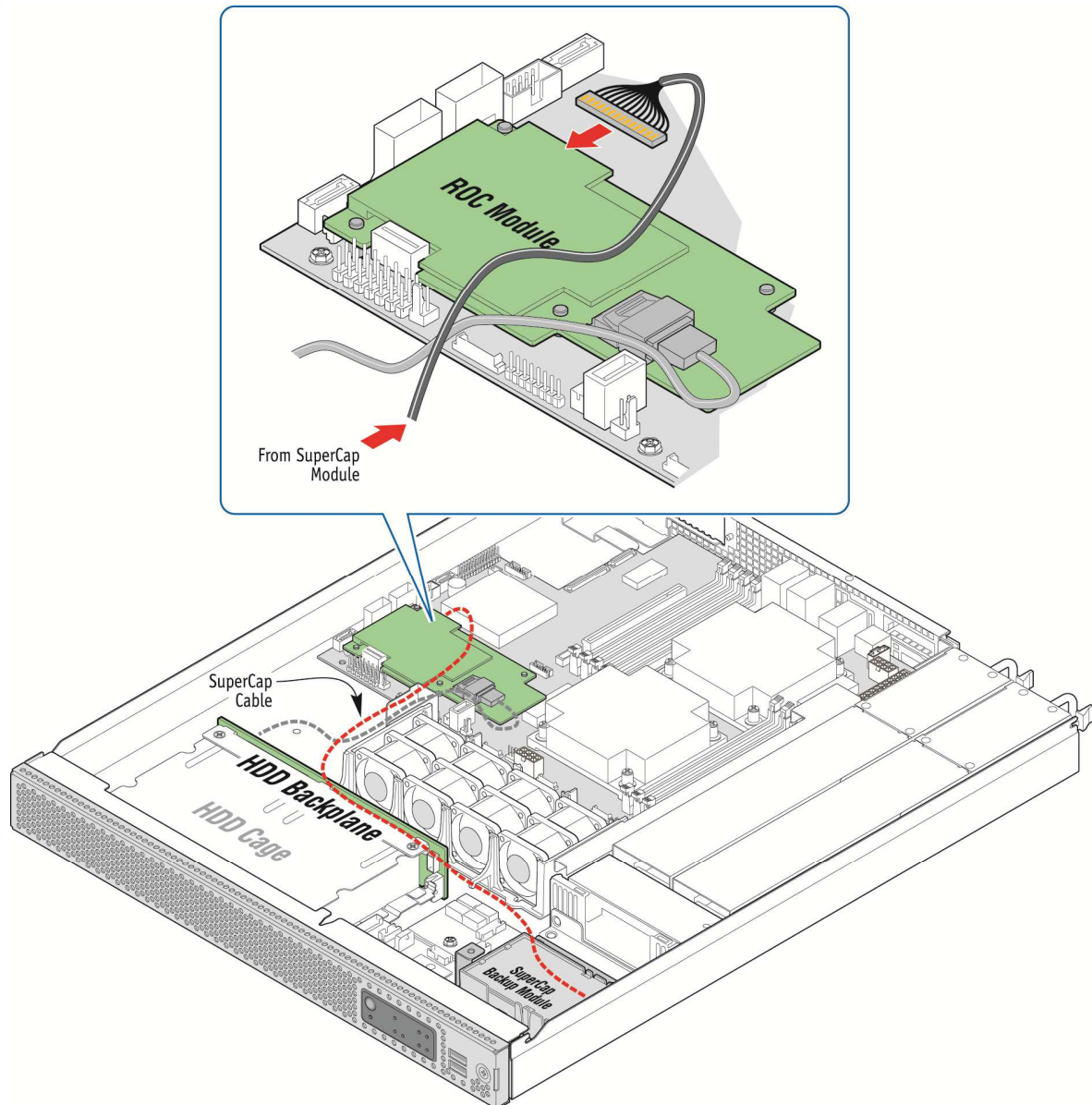


CG00273

5. If the alarms cable from the TAM board is in the way, disconnect the cable and move it out of the way. If the front panel power cable is in the way, disconnect the cable from the FPB and move it out of the way. (See 4.1.3, "Cable Routing Reference" for the cable connector locations)

6. Route the SuperCap cable from the SuperCap module between the main fan assembly and the HDD backplane, and then past the small U-shaped air baffle to the ROC module on the server board (Figure 37).

Figure 37: Routing the SuperCap Cable to the ROC Module



CG00274

7. Re-connect the front panel power cable and the TAM alarms cable if you moved them out of the way.
8. Re-install the PCIe fan duct assembly and connect the fan power cable to fan header 1 on the server board.
9. Re-install the PCI riser card assembly and replace the front bezel and the chassis cover. Re-connect any external devices and the power cord(s).

4.4 Adding or Replacing a Power Supply Module

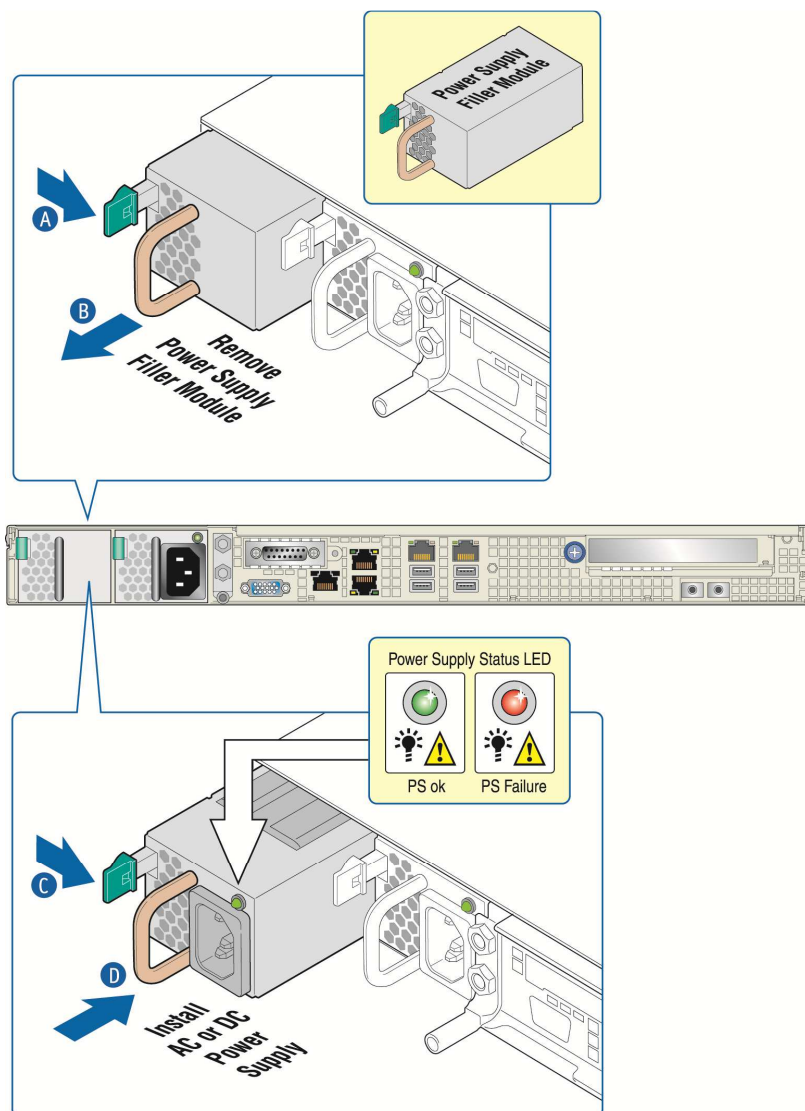
Depending on which model you order, your server comes with one AC or one DC power supply module. A second power supply provides redundancy.

NOTE: The CG1200 power supply units are hot-swappable, but you must unplug the power cord(s) from the power source before adding them or removing them from the chassis.

4.4.1 Adding a Second Power Supply Module

Since the power supply modules are hot-swappable, no chassis components have to be removed to add or replace a module. To add a second power supply module:

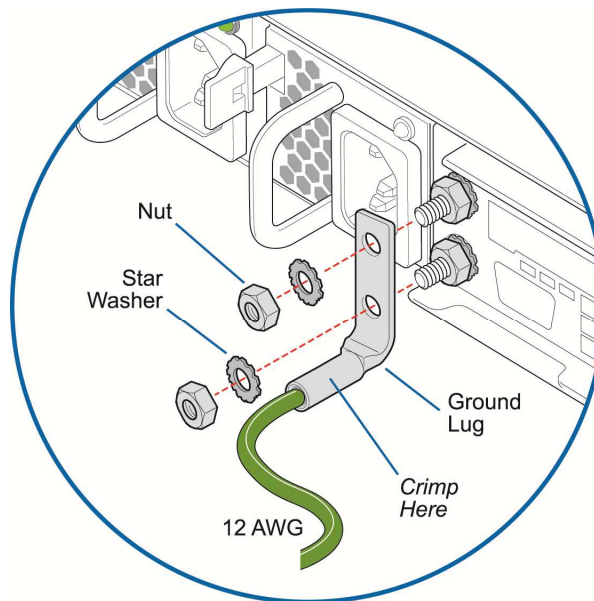
Figure 38: Adding a Power Supply



CG00219A

1. If you are installing a DC power supply, there are two threaded studs for chassis enclosure grounding.
A 90° standard barrel, two-hole, compression terminal lug with 5/8-inch pitch suitable for a #14-10 AWG conductor must be used for proper safety grounding. A crimping tool may be needed to secure the terminal lug to the grounding cable.
2. Connect the power cord to the power supply module.

Figure 39: DC Power Supply Grounding



CG00261

4.4.2 Replacing a Power Supply

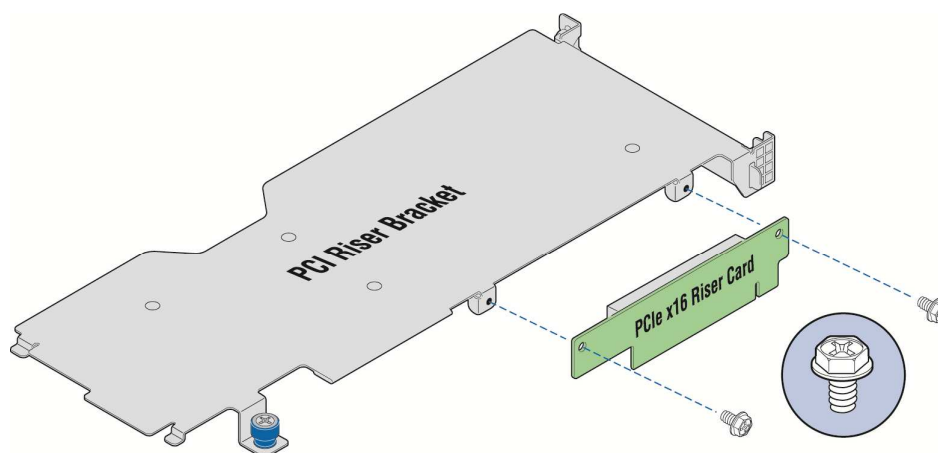
1. Disconnect the power cord from the existing power supply module and the power source.
2. Remove the old power supply module by pressing on the safety lock lever and using the handle, pulling the module out of the chassis. See Figure 38.
3. Add the new power supply module by pressing and holding the safety lock lever (Figure 38, "C") and using the handle ("B"), sliding the new module into the chassis until it locks into place.
4. Plug the power cord into the new power supply and then connect it to the power source.

4.5 Replacing a PCI Riser Card

The server board PCIe slot supports a single slot riser for a PCIe X16 add-in card.

Figure 40 shows how a riser card is installed or removed from the sheet metal bracket.

Figure 40: Adding a Riser Card



CG00221

CAUTION: When handling the riser card, observe normal safety and ESD precautions. (See Appendix A: Safety Information” for more information.)

4.5.1 Removing the Old Riser Card

To replace the riser card:

1. Power down the server and remove all external devices and the power cord(s)
2. Remove the chassis cover. For instructions, see Section 3.2.1 “Removing the Chassis Cover”.
3. Remove the front bezel if you will use the ESD ground attachment with your anti-static wrist strap. For instructions, see Section 3.2.3, “Removing the Front Bezel”.
4. Remove the riser card assembly from the chassis. For instructions, see Section 3.2.5, “Removing the Riser Card Assembly”.
5. Unfasten the riser card from the bracket by loosening the two 6/32 screws shown in Figure 40.
6. If a PCI add-in adapter card is attached that you want to reuse, remove it and save it for use with the new riser card.

4.5.2 Installing a new Riser Card

1. Fasten the new riser card to the bracket with the two 6/32 screws as shown in Figure 40. Torque screws to 8 lbf*in.

At this point the riser card is ready for you to install an add-in card.

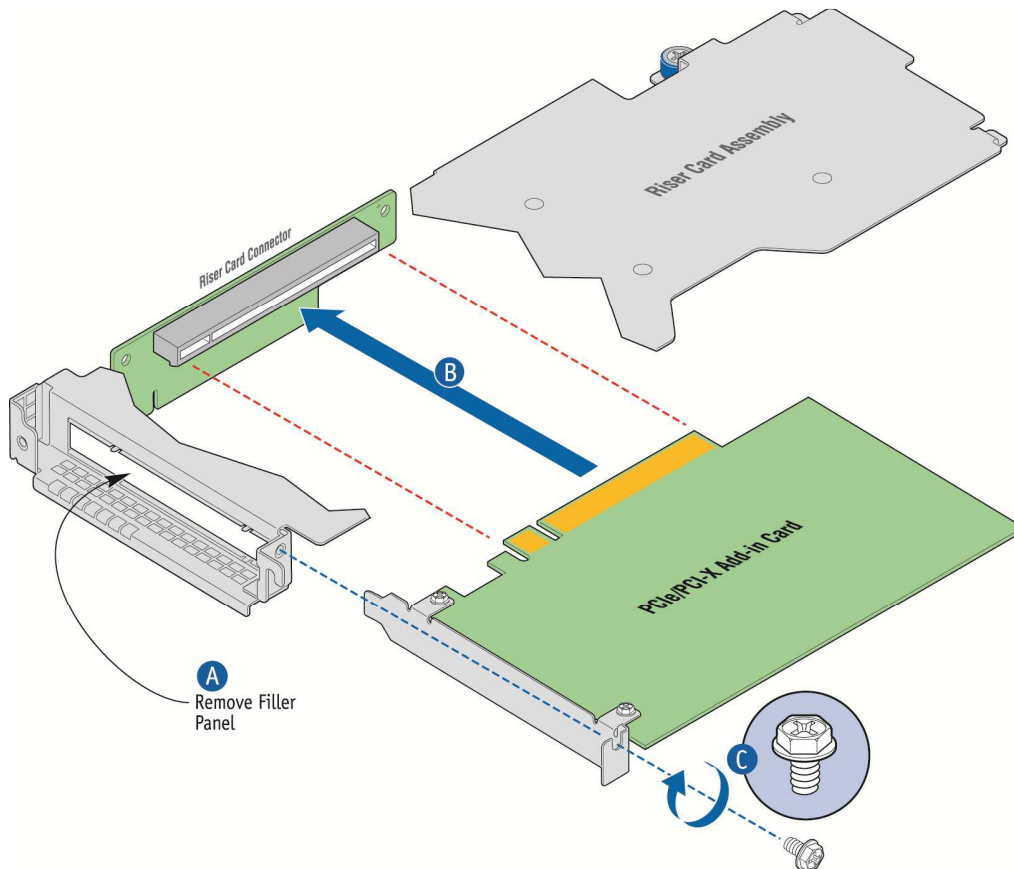
4.6 Installing a PCI Add-in Card

CAUTION: When handling a PCI add-in card, observe the normal safety and ESD precautions. See Appendix A: Safety Information for more information.

To install a PCI add-in card, you must first remove the riser card assembly from the server chassis. See Section 3.2.5, “Removing the Riser Card Assembly” for more information. If you haven’t done so already, you must also install the riser card in the sheet metal cage.

1. Power down the server and remove all peripheral devices and the power cord(s)
2. Remove the chassis cover. For instructions, see Section 3.2.1 "Removing the Chassis Cover".
3. Remove the riser card assembly from the chassis. For instructions, see Section 3.2.5, "Removing the Riser Card Assembly".
4. Turn the riser card assembly upside down so it is resting on the top of the sheet metal cage.
If you are replacing a card in the slot, remove the existing card from the riser card socket.
If you are adding a PCI card, not replacing one, remove the blank filler panel from the rear bracket of the riser card assembly by loosening the screw at the side of the bracket (Figure 41, "A").
5. Attach the add-in card to the riser card connector ("B").
Be sure that the add-in card edge connector is seated in the riser card connector correctly.
6. Fasten the add-in card to the riser card assembly bracket using the screw reserved from removing the filler panel ("C").

Figure 41: Installing a PCIe Add-In Card in the Riser Card Assembly

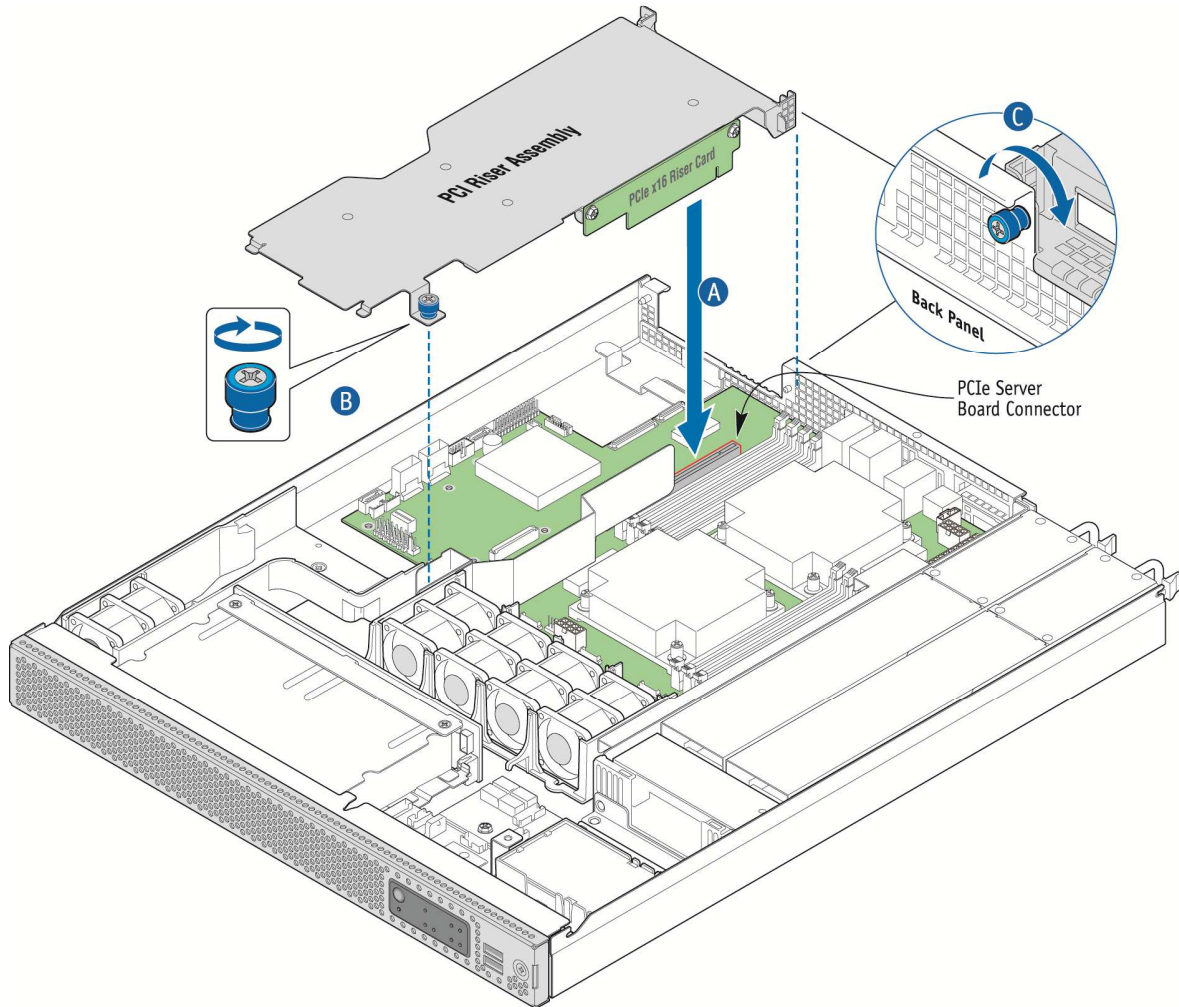


CG00222

7. Re-install the riser card assembly into its slot on the baseboard (Figure 42, "A").
8. Secure the riser card assembly by tightening the captive screws ("B" and "C").

9. If this is the last task you are performing, re-install the riser card assembly and replace the front bezel and the chassis cover.
Reconnect all the external devices and plug in the power cord(s).

Figure 42: Installing and Securing the Riser Card Assembly



CG00260

4.7 Installing a Remote Management Module 4

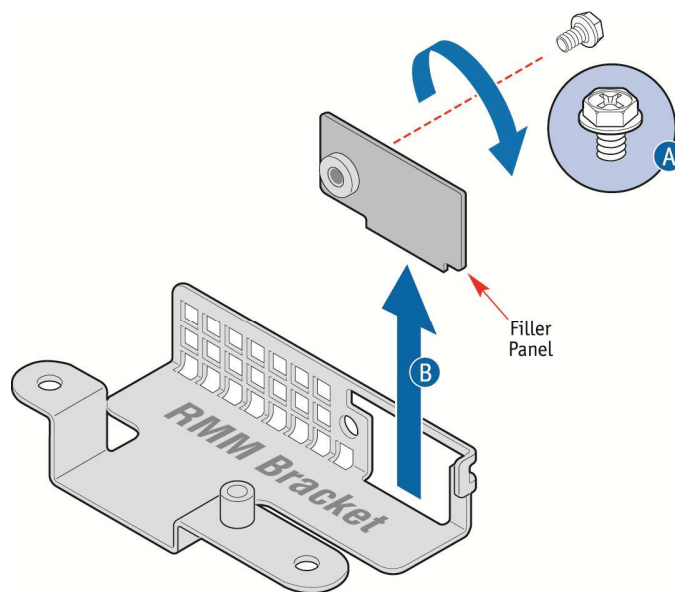
The Remote Management Module (RMM) solution for the CG1200 server uses RMM4 in the iBMC on the S2400EP4 server board. There are two options: the Intel® Remote Management Module 4 kit and the Intel® Remote Management 4 Lite. This procedure shows how to install RMM4 Lite first and then full RMM4.

The RMM4 kit includes a dedicated NIC module and a small key card to enable full functionality. (It also contains other hardware and cables that are not used for installation in the CG1200 system.)

To install the RMM4 module you must first remove the chassis cover and the riser card assembly.

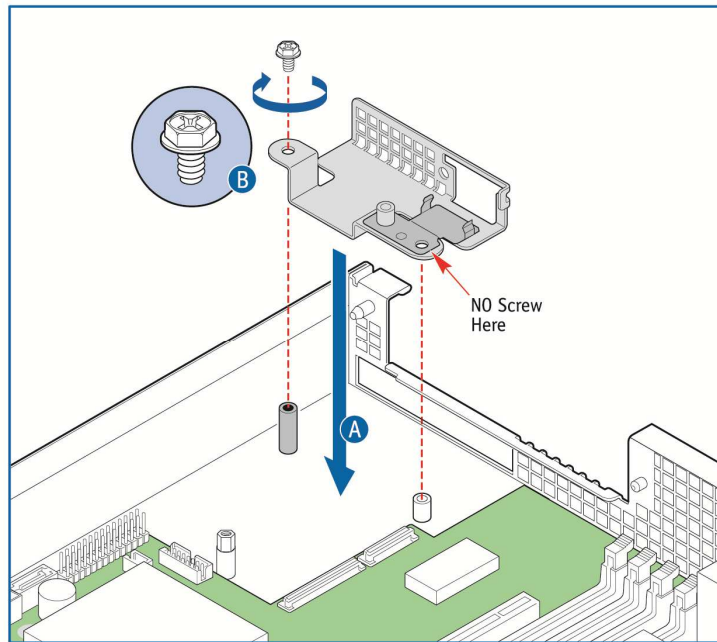
1. Power down the server and remove all external devices and the power cord(s).
2. Remove the chassis cover. For instructions, see Section 3.2.1, "Removing the Chassis Cover".
3. Remove the front bezel if you will be using the ESD ground attachment for your anti-static wrist strap. For instructions, see Section 3.2.3, "Removing the Front Bezel".
4. Remove the riser card assembly. For instructions see Section 3.2.5, "Removing the Riser Card Assembly".
5. Unscrew the metal bracket behind the filler panel and remove it from the chassis (Figure 43, "B"). Unscrew the metal filler panel from the rear of the bracket ("A").

Figure 43: Removing the RMM4 Port Filler Panel



CG00284

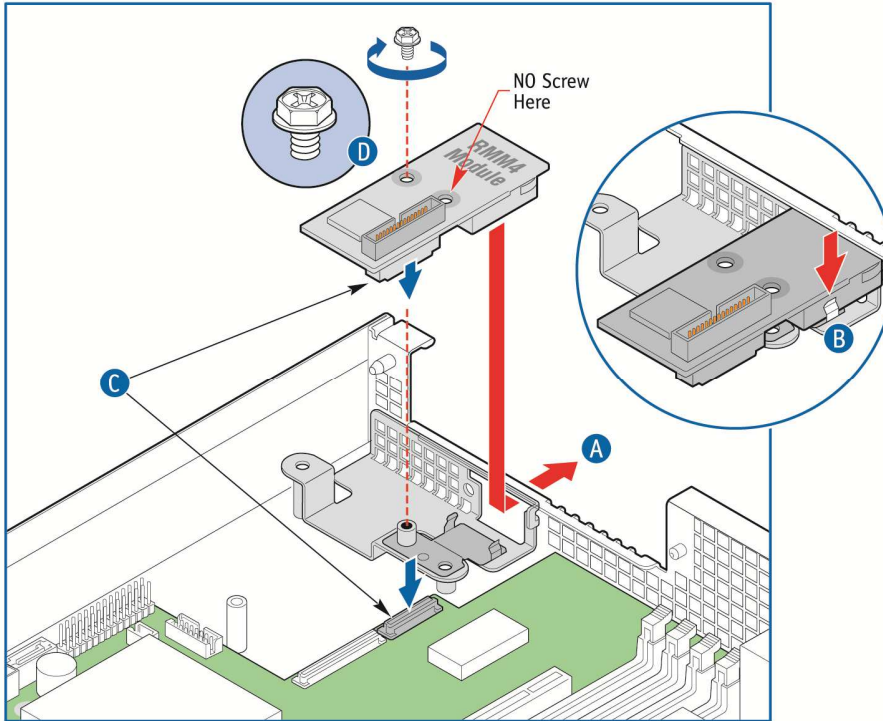
6. After removing the filler panel, reinstall the RMM4 bracket in the chassis (Figure 44, "A").
7. Re-fasten the bracket to the chassis base with the screw that fastens the bracket to the chassis on the left side and the screw for the standoff on the right side ("B").

Figure 44: Re-installing the RMM4 Bracket

CG00285

8. Install the RMM4 module into the slot in the bracket just installed (Figure 45, "A"). Make sure the module fits within bracket clip ("B").
9. Line up the edge connector on the module with the connector on the server board ("C").
10. Fasten the module to the bracket using the screw removed previously ("D").
At this point the installation is RMM4 lite.

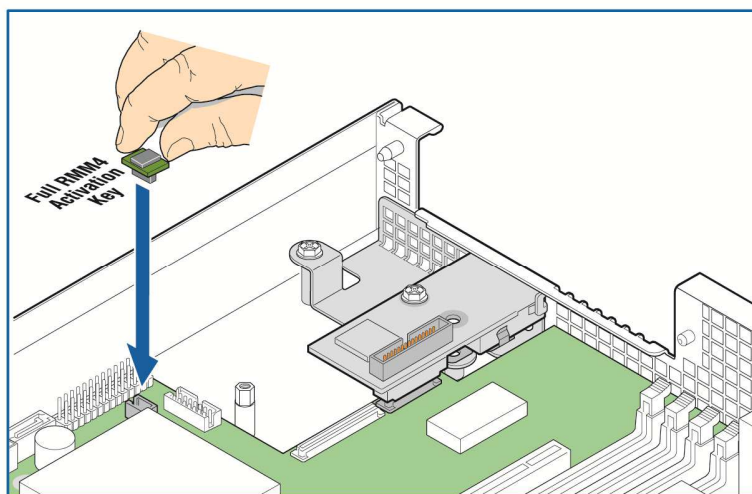
Figure 45: Installing the RMM4 Board



CG00286

11. To install full RMM4, install the small key card to the connector on the server board (Figure 46)

Figure 46: Installing the Full RMM4 Activation Key



CG00287

12. If this is the last task you are performing, replace the riser card assembly and the chassis cover. Reconnect all the external devices and plug in the power cord(s).

4.8 Installing an I/O Module

The CG1200 server supports the use of a separately purchased, optional I/O module, such as the Quad GbE Ethernet Adapter listed in the THOL and Configuration Guide.

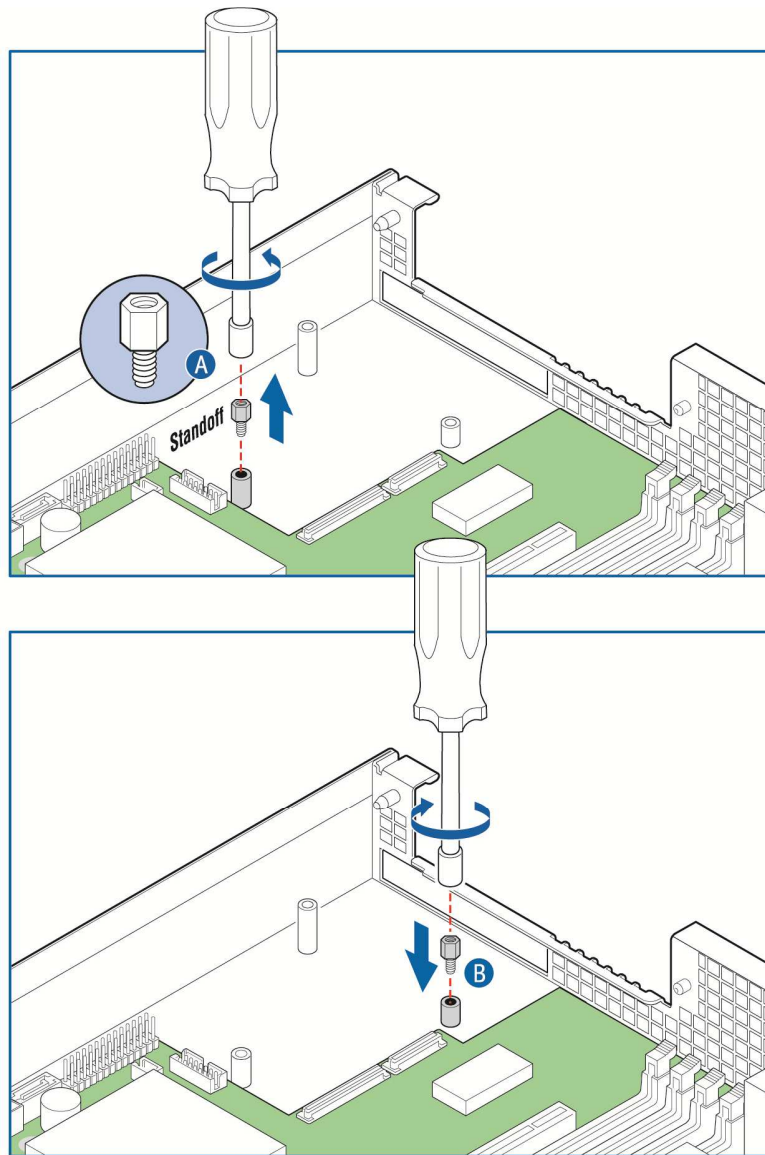
The I/O module is installed on the chassis floor at the rear of the chassis to the left of the server board. It uses one or both of the white connectors on the edge of the server board. Before you can install an I/O module, you must power down the system, remove the chassis cover and the PCI riser card assembly.

NOTE: I/O modules and RMM4 modules use the same rear panel slot and have overlapping real estate on the chassis floor, so you can install one or the other, not both.

The Quad GbE adapter is used as the I/O module in this procedure.

1. Power down the server and remove all peripheral devices and the power cord(s).
2. Remove the chassis cover. For instructions, see Section 3.2.1, "Removing the Chassis Cover".
3. Remove the front bezel to use the ESD ground attachment with your anti-static wrist strap. For instructions, see Section 3.2.3, "Removing the Front Bezel".
4. Remove the riser card assembly. For instructions, see Section 3.2.5, "Removing the Riser Card Assembly".
5. Remove the RMM4 module bracket by unfastening the two screws. See Figure 43, "Removing the RMM4 Port Filler Panel" for the location of the bracket and the screws that fasten it to the chassis floor.
6. Remove the top hex standoff on the chassis floor (Figure 47, "A") and fasten it to the standoff where the RMM4 bracket was installed ("B").

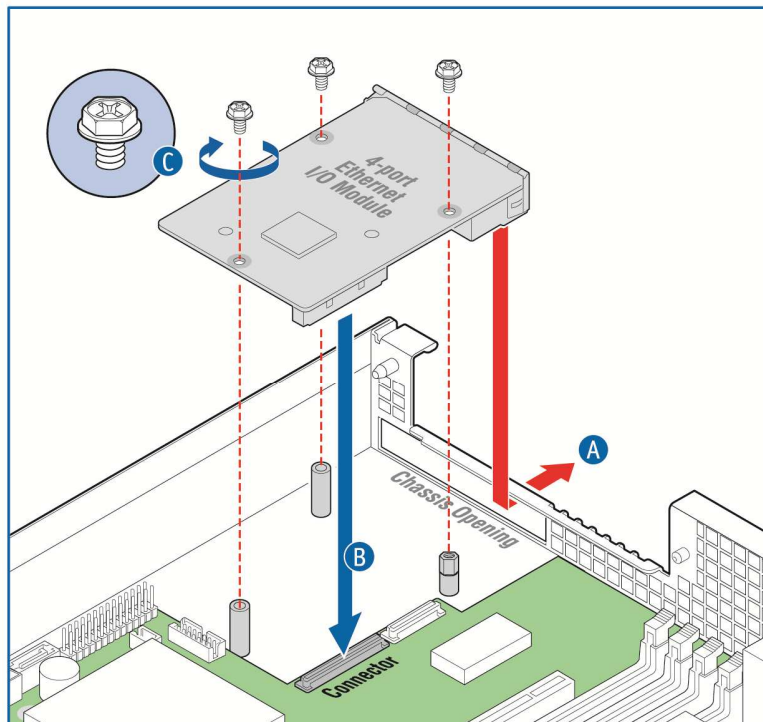
Figure 47: Adjusting the I/O Module Standoffs



CG00283

7. Install the I/O module into the rear of the chassis by lining up the three holes on the board with the three standoffs and the module connector with the connector at the edge of the server board (Figure 48, "A" and "B").
8. Secure the I/O module to the chassis by fastening the three screws that shipped with module into the three standoffs. ("C").
9. If this is the last task you are performing, replace the riser card assembly and the chassis cover. Reconnect any external devices and plug in the power cord(s).

Figure 48: Installing the I/O Module



CG00282

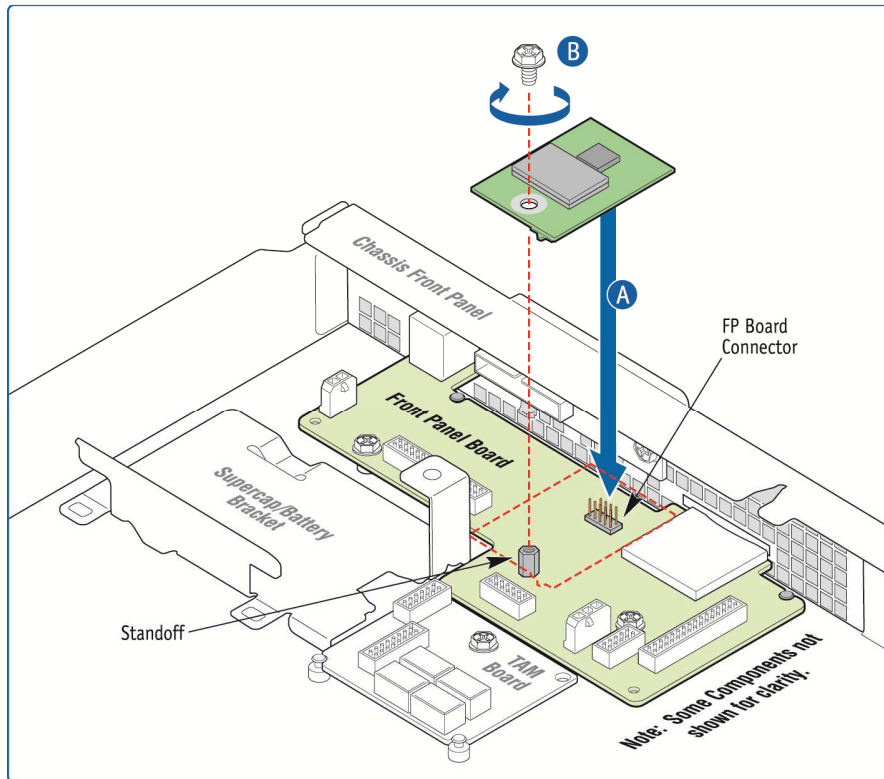
4.9 Installing an eUSB Flash Drive

A separately purchased, optional Embedded USB flash drive (eUSB) provides local USB flash memory storage for various uses, such as system information, diagnostic partitions, and configuration data. The eUSB is installed on the front panel board.

Before you can install an eUSB module, you must power down the system and remove the chassis cover. (You may also have to disconnect some of the cables on the front panel board if they are in the way or remove the front panel board from the chassis in order to do this installation in such a small crowded area.)

1. Power down the server and disconnect any external devices and the power cord(s).
2. Remove the chassis cover. For instructions, see Section 3.2.1, "Removing the Chassis Cover".
3. Remove the front bezel if you will be using the ESD ground attachment with your anti-static wrist strap. For instructions, see Section 3.2.3, "Removing the Front Bezel".
4. Locate the standoff and connector on the front panel board, to the right of the SD flash module (Figure 49).
5. Install the eUSB module onto the front panel board by plugging the USB connector on the eUSB module onto the USB header on the FPB ("A") and fastening the module to the metal hex standoff on the FPB ("B").
6. If this is the last task you are performing, re-install the front bezel and the chassis cover. Reconnect all external devices and the power cord(s).

Figure 49: Installing an eUSB Flash Module on the Front Panel Board



CG00276

4.10 Installing the Server into a Rack

Several different rack mounting kits are available, depending on whether you need 2-post or 4-post mounting and whether you need 19-inch or 23-inch rack widths. Also available are a basic slide rail kit and a rail enabling kit. For detailed information about the rack mounting kits and how to order them, see the *CG1200 Carrier Grade Server Configuration Guide*. The latest version of the Configuration Guide is located on the Kontron support website at <http://us.kontron.com/support/> (search for CG1200, click on Product Downloads, then Ordering Guide).

NOTE: This equipment should be installed and serviced in a restricted access area by trained technical personnel. The knurled thumbscrew must be tightened with a #2 Phillips head screwdriver after installation of the top cover.

Installation instructions are included in each of the rack mounting kits.

4.10.1 Connecting the Power Cord

NOTE: When using a rack, wait to install the power cord(s) until after the server is in the rack.

4.10.2 Tools and Supplies Needed

- #1 and #2 Phillips (cross-point) screwdrivers (or interchangeable tip screwdriver with #1 and #2 Phillips bits)

- Personal grounding device such as an anti-static wrist strap and a grounded conductive pad

4.10.3 Equipment Rack Precautions

CAUTION: ANCHOR THE EQUIPMENT RACK — The equipment rack must be anchored to an unmovable support to prevent it from falling over when one or more servers are extended in front of it on slide assemblies. The equipment rack must be installed according to the manufacturer's instructions. You must also consider the weight of any other device installed in the rack.

Mains power disconnect — The power cord(s) is considered the mains disconnect for the server and must be readily accessible when installed. If the individual server power cord(s) will not be readily accessible for disconnection then you are responsible for installing a power disconnect for the entire rack unit. This main disconnect must be readily accessible, and it must be labeled as controlling power to the entire rack, not just to the server(s). To remove all power, two power cords must be removed.

Grounding the rack installation — To avoid the potential for an electrical shock hazard, for AC power you must include a third wire safety ground conductor with the rack installation. For DC power the two studs for chassis enclosure grounding must be used for proper safety grounding. See "E" in Figure 6 for the location of the ground studs. With AC power, if the server power cord is plugged into an outlet that is part of the rack, then you must provide proper grounding for the rack itself. If the server power cord is plugged into a wall outlet, the safety ground conductor in the power cord provides proper grounding only for the server. You must provide additional, proper grounding for the rack and other devices installed in it.

AC overcurrent protection — When AC power is used, the server is designed for a line voltage source with up to 15 amperes of overcurrent protection per cord feed. If the power system for the equipment rack is installed on a branch circuit with more than 15 amperes of protection, you must provide supplemental protection for the server. The overall current rating of a server configured with two power supplies is less than 6 amperes.

CAUTION: Temperature — The operating temperature of the server, when installed in an equipment rack, must not go below 5°C (41°F) or rise above 40°C (104°F). Extreme fluctuations in temperature can cause a variety of problems in your server.

5 Server Component Replacements

This chapter covers separately-orderable replacement spare components that you may need to replace in your Kontron CG1200 Carrier Grade Server if they fail. For information about what is available from Kontron, see the *CG1200 Carrier Grade Server Configuration Guide*. The latest version of the Configuration Guide is located on the Kontron support website at <http://us.kontron.com/support/> (search for CG1200, click on Product Downloads, then Ordering Guide).

5.1 Before You Begin

Before working with your server product, pay close attention to the safety instructions provided in this manual. See Appendix A: Safety Information.

WARNING: Electrostatic discharge (ESD) and ESD protection: ESD can damage disk drives, boards, and other parts. We recommend that you perform all procedures in this chapter only at an ESD workstation. If one is not available, provide some ESD protection by wearing an anti-static wrist strap attached to chassis ground (any unpainted metal surface) on your server when handling parts.

5.1.1 System References

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

5.1.2 Cable Routing Reference

It is important for cables to be connected correctly. See Figure 24 and

Table 5 for cable routing and for more detailed information, see the *Kontron CG1200 Carrier Grade Server Technical Product Specification*.

5.2 Replacing Fans

The fan replacement spare kit for the CG1200 server contains five 40mm dual-rotor fans with their power cables attached. For ordering information, see the *CG1200 Carrier Grade Server Configuration Guide*. The latest version of the Configuration Guide is located on the Kontron support website at <http://us.kontron.com/support/> (search for CG1200, click on Product Downloads, then Ordering Guide).

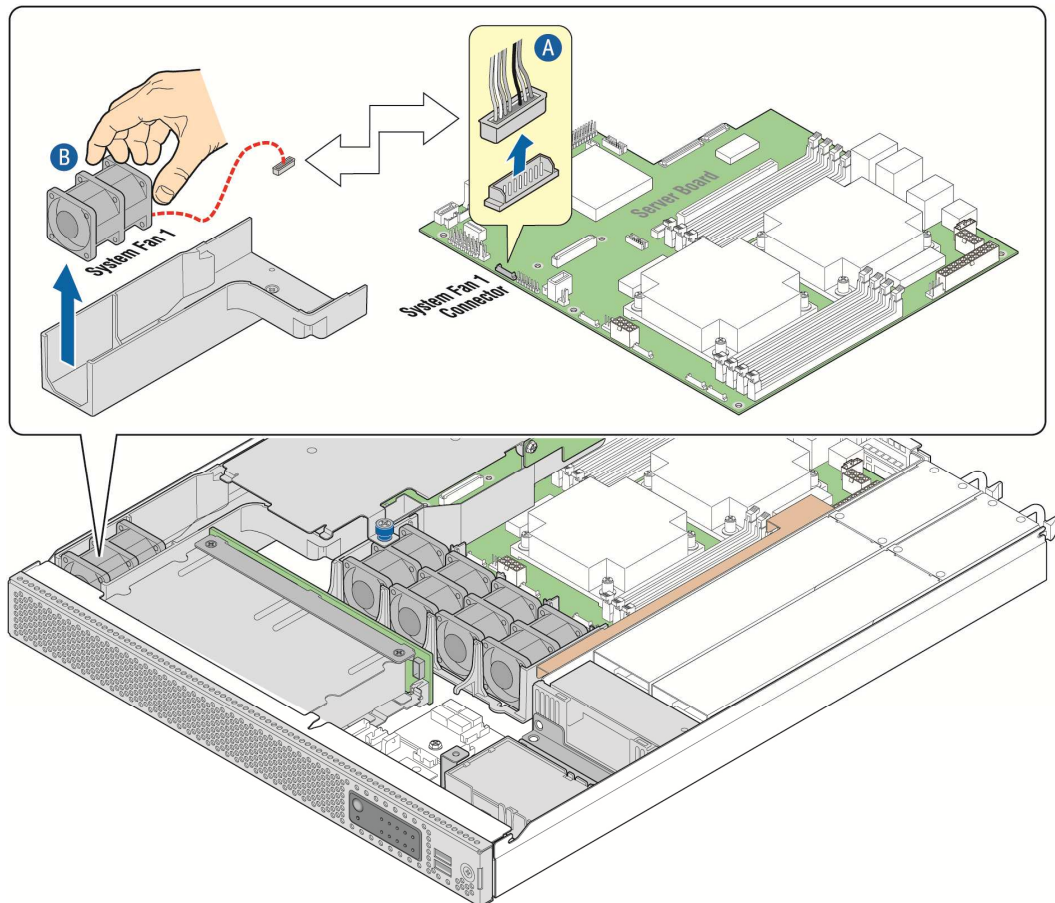
Four of the 40x38mm dual-rotor fans are located in front of the server board and the two CPUs. These fans provide cooling for the CPUs, memory DIMMs, and the HDD drives. The fifth fan is located at the front left of the chassis. This fan cools the PCI riser card assembly area.

To replace a fan:

1. Power down the server and remove all peripheral devices and the power cord(s).
2. Remove the chassis cover. For instructions, see Section 3.2.1, "Removing the Chassis Cover".
3. Remove the front bezel if you will be using the ESD ground attachment with your anti-static wrist strap. For instructions, see Section 3.2.3, "Removing the Front Bezel".
4. If you are replacing the PCIe riser card assembly fan (system fan 1), you must first remove the PCIe riser card assembly. For instructions, see Section 3.2.5, "Removing the Riser Card Assembly".

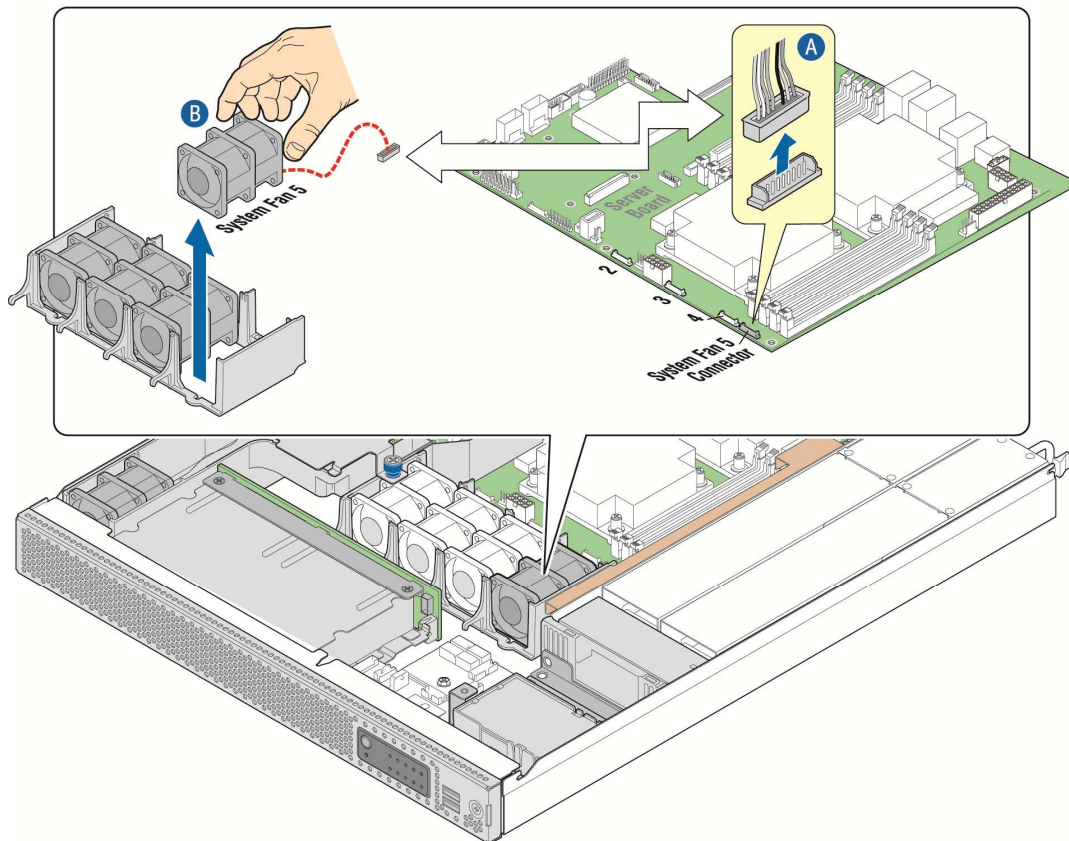
5. Unplug the fan power cable from the server board connector (Figure 50 or Figure 51, "A").
6. Remove each fan by grasping both sides of the fan assembly and pulling the fan out of the black plastic enclosure ("B").

Figure 50: Removing the PCIe Riser Assembly Fan (System Fan 1)



CG00235

Figure 51: Removing a Processor Fan (System Fan 5)



CG00236

7. Replace the fan by connecting the power cable on the server board and then inserting the new fan into the empty slot. .
8. If this is the last task you are performing, replace the chassis cover and re-connect any external devices and the power cord(s).

5.3 Replacing the Front Panel Board

The front panel board provides the interface to the controls at the front of the server, the power interconnect for the server board, the USB and COM2 interfaces, and the SD flash module. The FP board also houses the LED/switch board that controls the front panel LEDs.

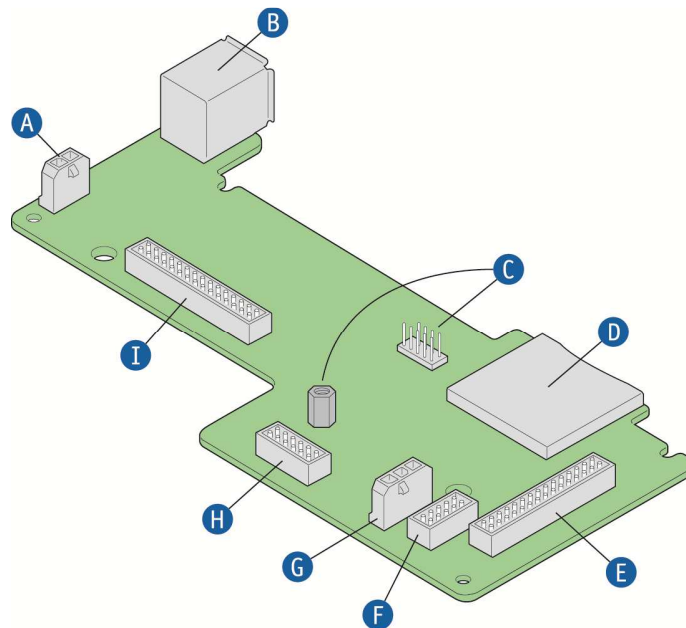
To replace the FP board, you must first remove the following components:

- The chassis cover
- The front bezel
- All cable connections on the FP board
 - SSI FPB cable
 - Front panel power cable
 - Front panel board USB cable
 - HDD LED cable

- LED/Switch board power and signal cable
- TAM signal cable

Figure 52 shows the location of all the connectors on the FP board. There are also three standoffs that fasten the board to the chassis floor. This includes the hex standoff on the FP board that is used to support an optional eUSB module.

Figure 52: Front Panel Board Connectors



CG00237

Item	Description	Item	Description
A	Front panel board power cable	F	FP board USB cable
B	Dual USB ports	G	HDD LED signal cable
C	eUSB flash connector and standoff (optional)	H	TAM signal cable
D	SD Module	I	LED/switch board power and signal cable
E	SSI front panel board power		

CAUTION: Before replacing any of the boards on the CG1200 server, you must first take the server out of service, turn off all peripheral devices connected to the server, turn off the server by pressing the power button, and unplug the power cord(s) from the system and wall outlet.

When handling the FP board, observe the normal safety and ESD precautions. See Appendix A: Safety Information for more information.

5.3.1 Removing the Old Front Panel Board

1. Power down the server and remove all peripheral devices and the power cord(s)
2. Remove the chassis cover. For instructions, see Section 3.2.1, “Removing the Chassis Cover”.
3. Remove the front bezel. For instructions, see Section 3.2.3, “Removing the Front Bezel”.
4. If there is an SD flash card in the SD module slot, remove it and save it for use with the new FP board.
5. If an eUSB module is installed, remove it from the FP board and save it for use with the new FP board. For assistance with removing the module, see Section 4.9, “Installing an eUSB Flash Drive”.
6. Disconnect all of the cables connected to the FP board. See Figure 7: Baseboard Components and Connectors” and Table 5: System Cables” for the cable routing. For the location of each connector on the FP board, see Figure 52.

Disconnect the SSI front panel board power cable that comes from the power distribution board.

Disconnect the LED/switch board power and signal ribbon cable.

Disconnect the TAM signal cable.

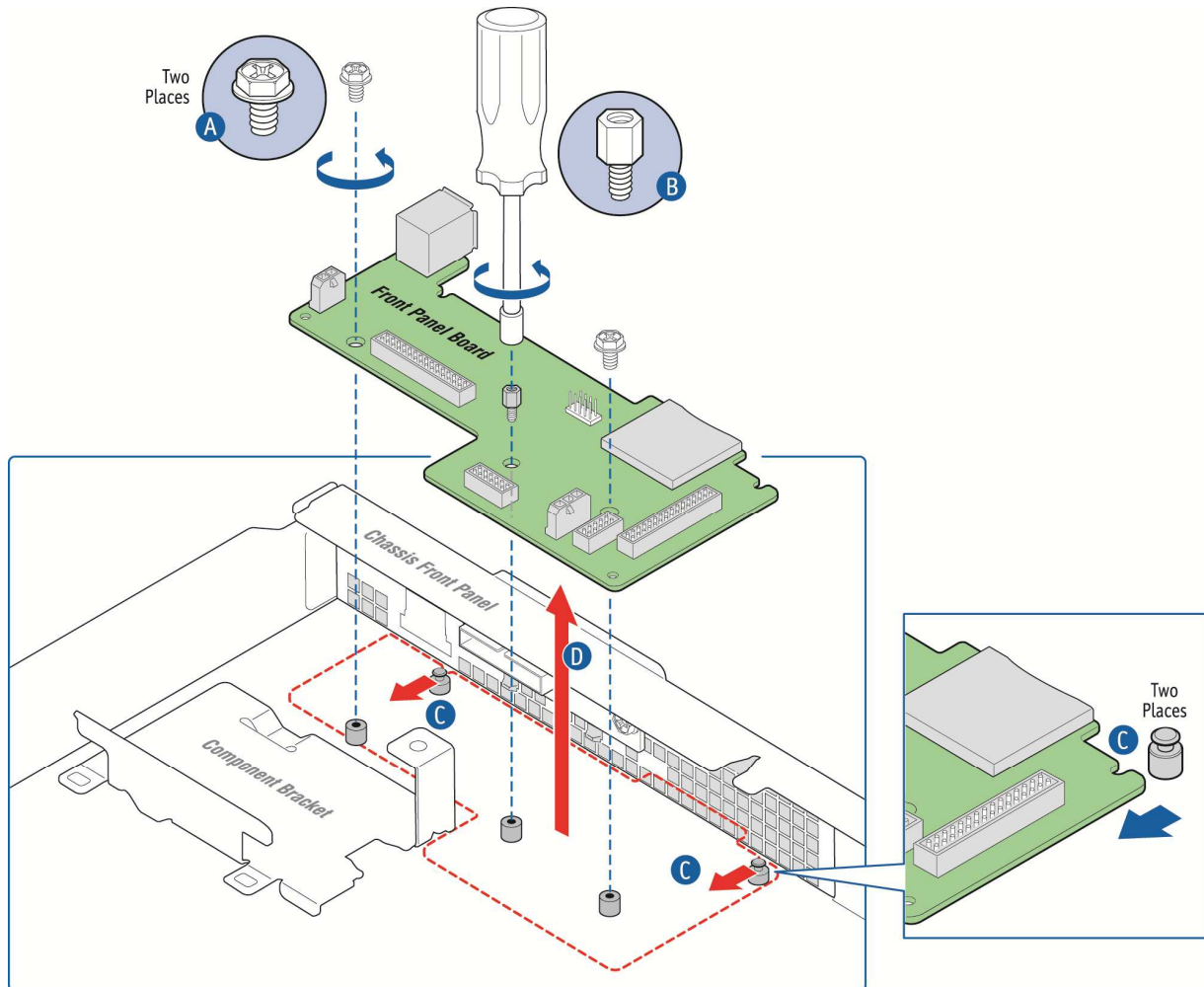
Disconnect the FP signal cable that comes from the baseboard.

Disconnect the USB cable that comes from the baseboard

Disconnect the LED HDD cable that comes from the SAS HDD backplane.

7. Unscrew the two fasteners on the FP board (Figure 53, “A”) and the hex standoff used to support an eUSB module (“B”).
Slide the board away from the front of the chassis and over the two keyhole standoffs (“C”) to lift it up and out of the chassis. (“D”).
Save the screws and hex standoff for reuse with the new replacement FP board.

Figure 53: Removing the Front Panel Board from the Chassis



CG00238

5.3.2 Installing the New Front Panel Board

1. Tilt the new FP board and slide it toward the front of the chassis so the USB connectors fit through the slot on the front panel of the chassis and the two keyhole slots fit over the standoffs on the chassis floor. For assistance, see Figure 53 "A" and "B".
2. Replace and tighten the screws and eUSB standoff on the board to secure the board to the chassis floor.
3. Reconnect all of the cables on the FP board. For locations of each header on the board, see Figure 52.
 - 3.1. Re connect the SSI front panel board power cable that comes from the power distribution board.
 - 3.2. Reconnect the FP signal cable that comes from the baseboard.
 - 3.3. Reconnect the LED/switch board ribbon cable.

- 3.4. Reconnect the TAM signal cable.
- 3.5. Reconnect the FP USB cable that comes from the baseboard.
- 3.6. Reconnect the LED HDD cable that comes from the SAS HDD backplane.
4. Re-install the eUSB module if used.
5. Replace the SD flash card in the SD module slot, if one was saved from the old FP board.
6. Replace the eUSB module if one was removed and saved from the old FP board.
7. If this is the last task you are performing inside the chassis, replace the front bezel and top chassis cover and reconnect the power cord(s).

5.4 Replacing the LED/Switch Board

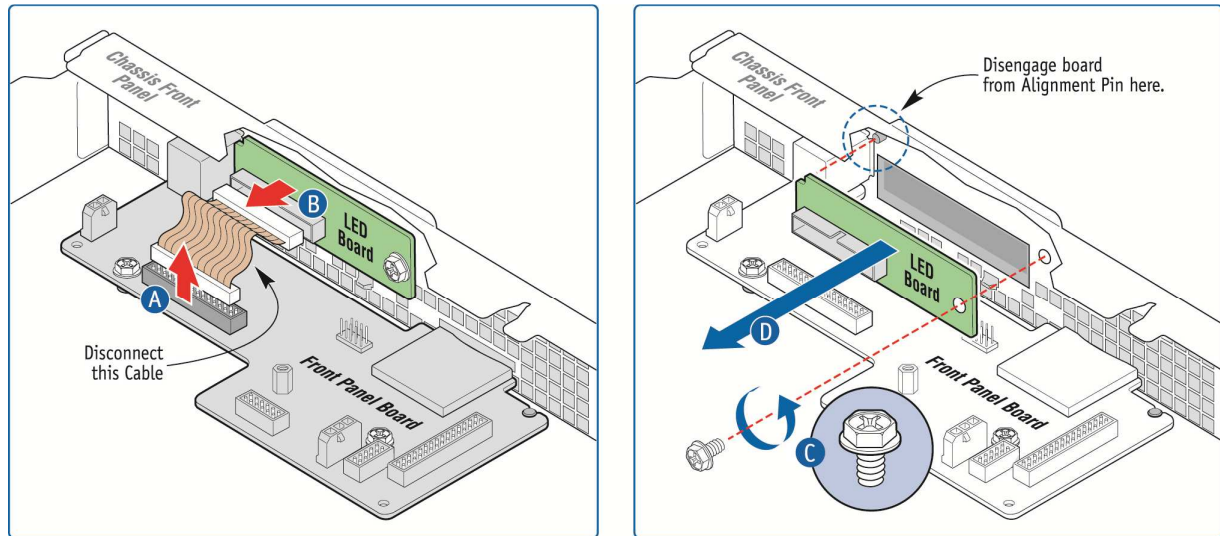
The LED/switch board is mounted against the front panel of the CG1200 server chassis because it supports the LEDs and switches that are on the control panel on the front of the chassis. Before you can replace the LED/switch board, you must remove the chassis cover and the front bezel. You may also have to loosen the front panel board and slide it back, in order to access the LED/switch board retaining screw.

5.4.1 Removing the Old LED/Switch Board

To remove the LED/Switch board:

1. Power down the server and remove all peripheral devices and the power cord(s)
2. Remove the chassis cover. For instructions, see Section 3.2.1, "Removing the Cover".
3. Remove the front bezel. For instructions, see Section 3.2.3, "Removing the Front Bezel".
4. From behind the front panel, disconnect the LED/switch board power and signal ribbon cable from the LED/switch board (Figure 54, "A" and "B").
5. Remove the optional eUSB module on the FP board if it is installed so there is enough room to unfasten the retainer screw on the top right side of the LED/switch board ("C").
If you still do not have enough room to access this screw, remove (or at least slide back) the FP board. For instructions, see Section 5.3.1, "Removing the Old Front Panel Board".
6. The LED/switch board is also attached to the front of the chassis by two standoffs. Once the retaining screw is removed, you need to slide the LED/switch board to the left and away from these standoffs to remove it ("D").

Figure 54: Removing the LED/Switch Board



CG00259

5.4.2 Installing the New LED/Switch Board

1. Connect the LED/switch board power and signal ribbon cable to the new LED/switch board. See Figure 54, "A".
2. Align the left side of the LED/switch board with the two standoffs on the inside of the front panel of the chassis and gently push the board to secure it to the chassis frame ("D").
3. Fasten the screw at the right of the LED/switch board to hold the board in place ("C").
4. Replace the front panel board if you removed it or slid it out to work on the LED/switch board installation. For instructions, see Section 5.3.2, "Installing the New Front Panel Board".
5. Reconnect the LED/switch board ribbon cable on the FP board if you unfastened it before.

Replace the front bezel. For instructions, see Section 3.2.4, "

6. Re-Installing the Front Bezel".
7. If this is the last task you are performing inside the server chassis, replace the chassis cover, reconnect any external devices and the power cord(s).

5.4.3 Replacing the LED/Switch Light Pipe Assembly

1. Remove the black control panel module from the front of the chassis by lifting up from the bottom and then pulling down to release the top tabs holding it into the chassis frame.
2. Position the new control panel module with the top tabs in the appropriate slots. Gently push down and in to secure the bottom of the panel to attach it to the LED/switch board.

5.5 Replacing the Telco Alarms Module (TAM)

The TAM board is located behind the front panel board. Before you can replace the TAM board, you must remove the chassis cover. (You do not have to remove the front panel board in order to access the

TAM board, but you may want to move some of the FP cables that cross over the TAM board out of the way.)

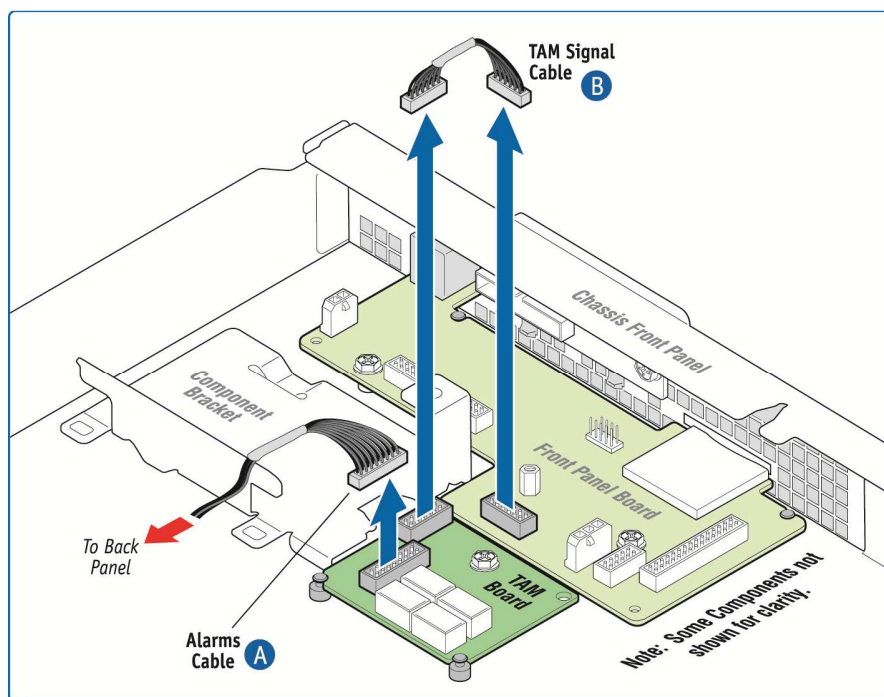
CAUTION: Before replacing any of the boards on the CG1200 server, you must first take the server out of service, turn off all peripheral devices connected to the server, turn off the server by pressing the power button, and unplug the power cord(s) from the system and wall outlet.

5.5.1 Removing the Old Telco Alarms Module

To remove the TAM board:

1. Power down the server and remove any external devices and the power cord(s)
2. Remove the chassis cover. For instructions, see Section 3.2.1, “Removing the Chassis Cover”.
3. Remove the front bezel if you will be using the ESD ground with your wrist strap. For instructions, see Section 3.2.3, “Removing the Front Bezel”.

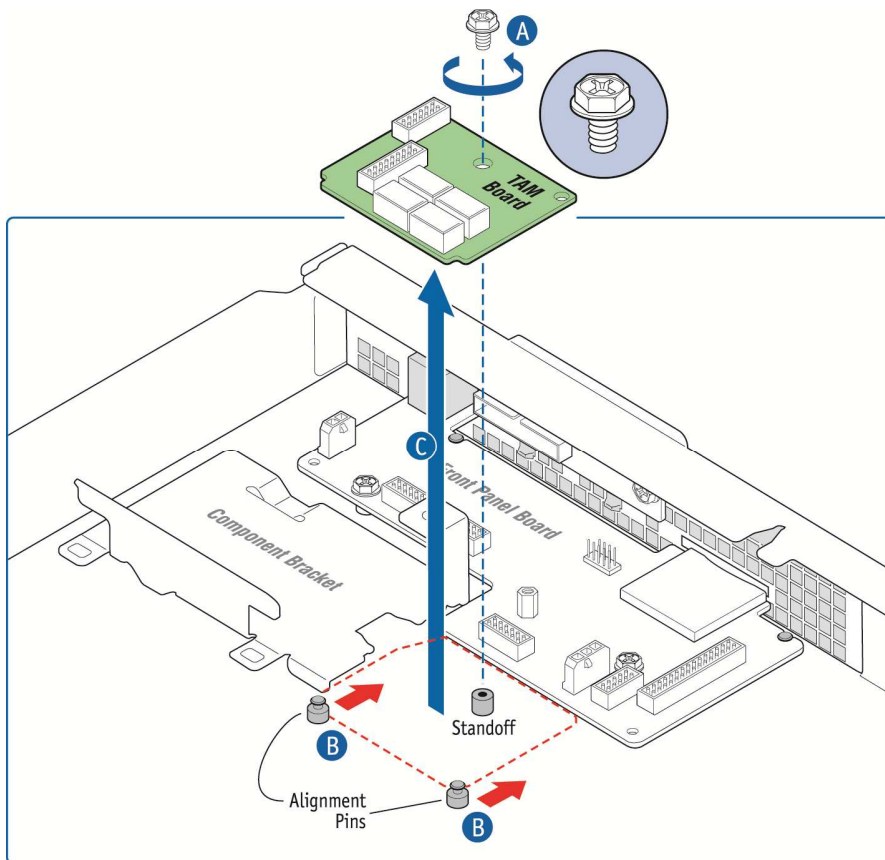
Figure 55: Disconnecting the TAM Board Cables



CG00262

4. Disconnect the TAM alarms cable that is routed to the rear of the chassis (Figure 55. “A”)
5. Disconnect the TAM signal cable that connects to the front panel board (“B”).
6. Remove the TAM board from the chassis by unfastening the retaining screw that secures the board to the chassis floor (Figure 56, “A”).
7. Slide the board away from the two alignment pins (“B”) and lift it out of the chassis (“C”).

Figure 56: Removing the TAM Board



CG00263

5.5.2 Installing the New Telco Alarms Module

1. Slide the new TAM board toward the alignment pins.
2. Fasten the retaining screw to secure the module to the chassis floor (Figure 56, "A").
3. Connect the signal cable from the FP board to the TAM board. (See Figure 55.)
4. Connect the alarms cable from the rear of the chassis to the TAM board. (See Figure 55.)
5. If this is the last task you are performing inside the server chassis, replace the chassis cover and reconnect any external devices and the power cord(s).

5.6 Replacing the SAS Backplane Board

The four-slot SAS backplane board is located at the rear of the HDD drive bay assembly. A sheet metal bracket fastens the backplane to the top of the HDD drive bay assembly. In order to access the SAS backplane board to replace it, you need to first remove the following components:

- Chassis cover
- Front bezel
- Any hard disk drives installed
- The bracket connecting the backplane to the drive bay assembly

- The SAS cable on the rear of the backplane that connects to the baseboard
- The HDD LED cable on the front of the backplane that connects to the front panel board
- The HSBP/LED cable on the front of the backplane that connects to the baseboard
- The HDD backplane power cable that connects to the power distribution board

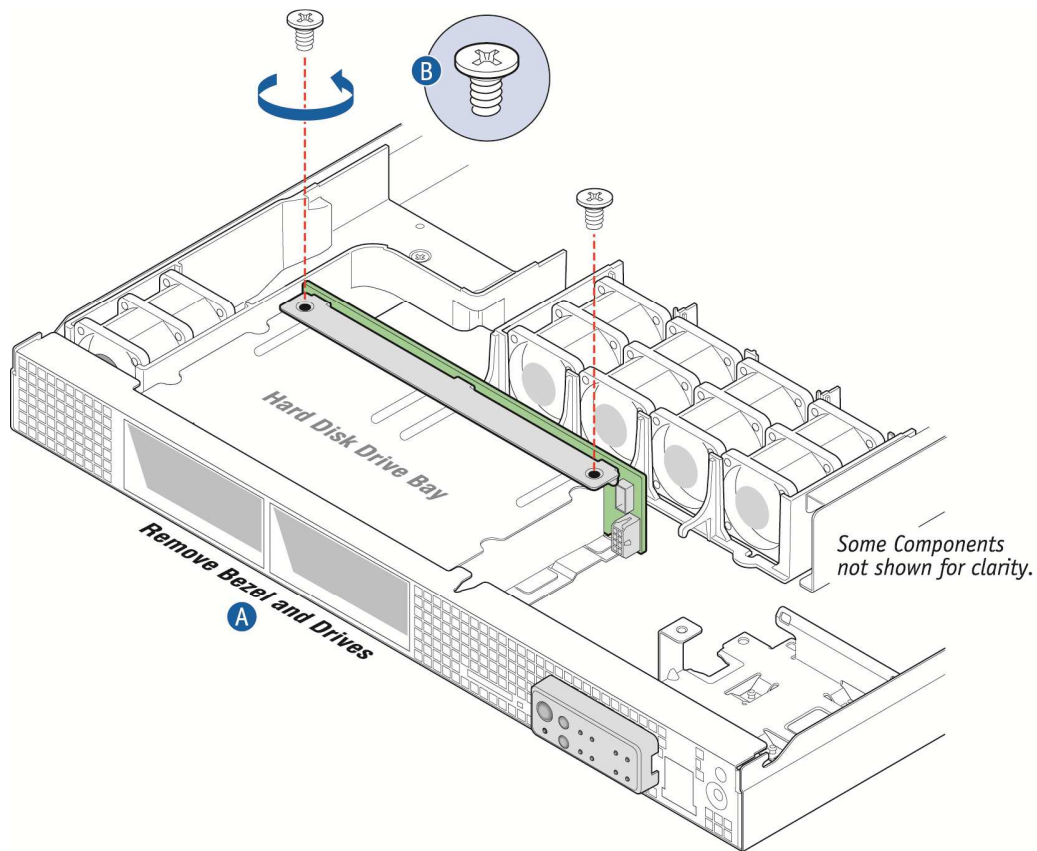
CAUTION: Before replacing any of the boards on the CG1200 server, you must first take the server out of service, turn off all peripheral devices connected to the server, turn off the server by pressing the power button, and unplug the power cord(s) from the system and wall outlet.

When handling the SAS backplane board, observe the normal safety and ESD precautions. See “Appendix A: Safety Information” for more information.

5.6.1 Removing the Old SAS Backplane Board

1. Power down the server and remove any external devices and the power cord(s)
2. Remove the top chassis cover. For instructions, see Section 3.2.1, “Removing the Chassis Cover”.
3. Remove the front panel bezel. For instructions, see Section 3.2.3, “Removing the Front Bezel”.
4. Remove any hard disk drives from the drive bay slots to disengage them from the backplane (Figure 57, “A”).
5. Remove the bracket that fastens the backplane board to the HDD bay assembly by loosening the two screws that fastens it to the drive bay cover (“B”).

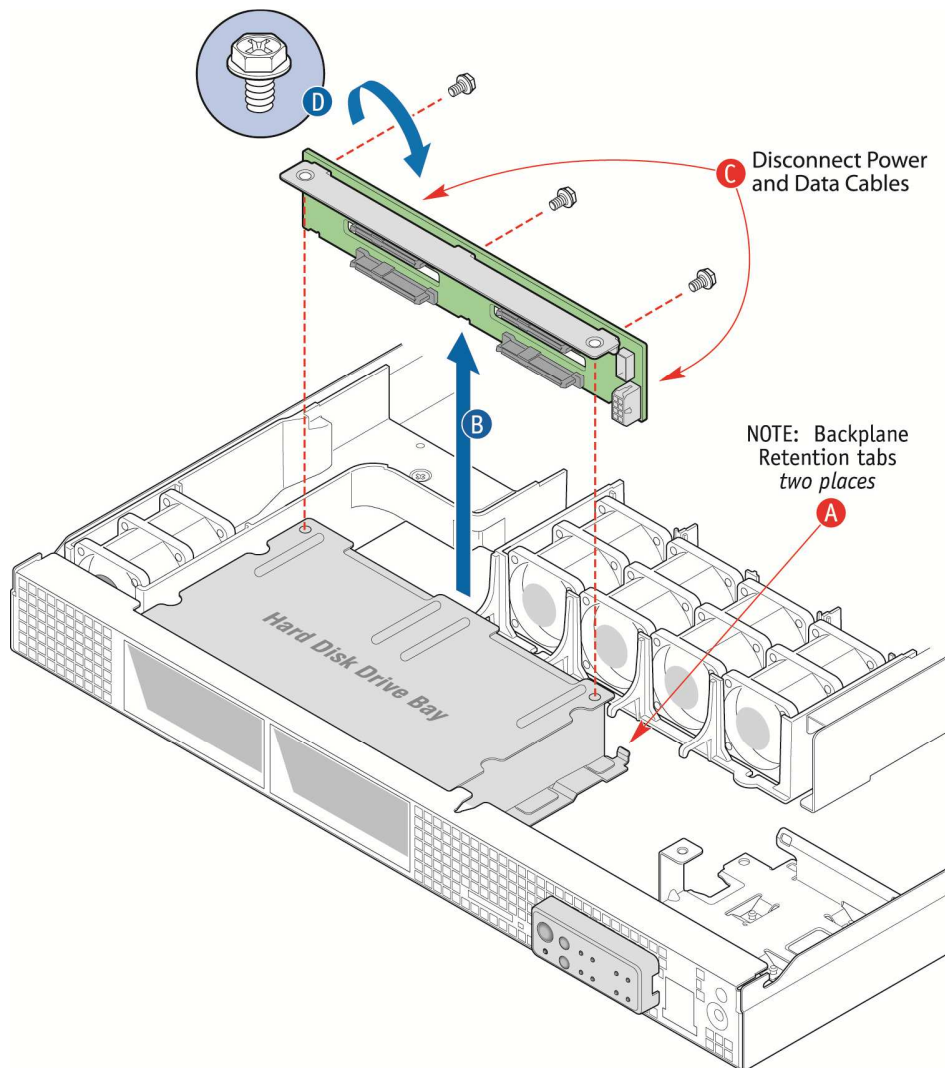
Figure 57: Removing the SAS Backplane Board



CG00250

6. Disengage the backplane board from the retention tabs (Figure 58, "A") and lift the backplane board and bracket up and out of the chassis ("B").
7. Disconnect the SAS cable from the rear of the backplane board and the HDD LED HSBP LED cable and the HDD power cable from the front of the backplane board ("C").
8. Separate the sheet metal bracket from the backplane board by removing the three screws that fasten it to the board ("D").
9. Save the bracket and screws to reuse with the new backplane board.

Figure 58: Removing the Bracket from the Backplane Board



CG00251

5.6.2 Installing the New SAS Backplane Board

1. Fasten the sheet metal bracket to the new backplane board using the three screws saved from the old board.
2. Connect the three cables back into the new backplane board.
3. Secure the backplane board to the HDD drive bay assembly by aligning it with the retention tabs and placing the bracket over the HDD bay assembly. Re-fasten the two screws that hold the bracket in place on the top of the HDD drive bay. (See Figure 57 for the location.)
4. Lock in all the hard drives so they engage with the new backplane.

Re-attach the front bezel. For instructions, see Section 3.2.4, “

5. Re-Installing the Front Bezel”.

6. If this is the last task you are performing inside the server chassis, replace the chassis cover and reconnect any external devices and the power cord(s).

5.7 Replacing the Power Distribution Board

The power distribution board (PDB) routes power from the power supply module(s) to the rest of the server through an integral wiring harness.

To replace the PDB, you must first remove the following components:

- Top cover
- All cables connections from the PDB at the other end (The cables are soldered onto the PDB and the new board has a new set of cables attached.)
 - HDD backplane board power cable (from the backplane board, soldered on the PDB)
 - Baseboard SSI main power cable (from the 24-pin connector on the baseboard; bundle soldered on the PDB)
 - CPU and DIMM power cables (one for each CPU, from the 8-pin connectors on the baseboard; soldered on the PDB)
 - Auxiliary I/O power dongle (from any auxiliary PCI adapters installed and out of the PCI air baffle, soldered on the PDB)
 - Baseboard power control signal cable (from the baseboard, soldered on the PDB)
- Front panel power cable

Refer to Figure 7: Baseboard Components and Connectors” and Table 5, for the location of the connectors where the cables are to be unplugged.

CAUTION: Before replacing any of the boards on the CG1200 server, you must first take the server out of service, turn off all peripheral devices connected to the server, turn off the server by pressing the power button, and unplug the power cord(s) from the system and wall outlet.

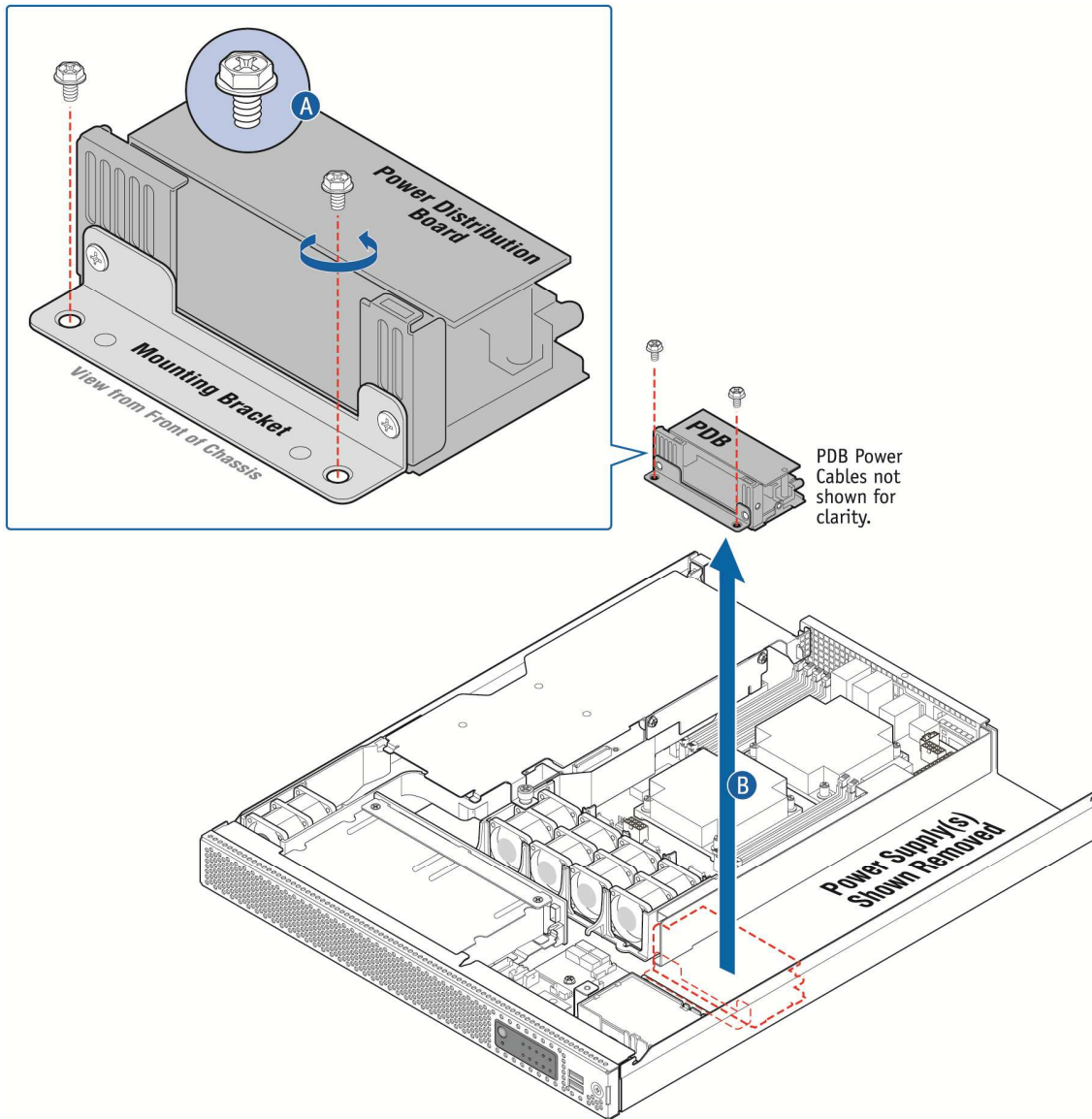
When handling the power distribution board, observe the normal safety and ESD precautions. See Appendix A: Safety Information for more information.

5.7.1 Removing the Old Power Distribution Board

1. Power down the server and unplug any external devices and the power cable(s).
2. Remove the chassis cover. For instructions, see Section 3.2.1, “Removing the Chassis Cover”.
3. Slide the power supply module(s) out a few inches to disengage it from the PDB connector(s).
4. Remove the front bezel if you will be using the ESD ground with your wrist strap. For instructions, see Section 3.2.3, “Removing the Front Bezel”..
5. Disconnect all of the cables soldered on the PDB where they are connected on other components in the server, starting with the cables that run along the side of the server board, under a protective plastic sheath:
 - 5.1. Lift the black plastic sheath up and pull it up and out of the way.
 - Lift the cables up so you can see where they are connected on the server board.
 - 5.1.1. Disconnect the 2x4 CPU2 power connector. For the location, see Figure 7, “E”.
 - 5.1.2. Disconnect the 2x12 main power connector. For the location, see Figure 7 “F”.

- 5.1.3. Disconnect the PMBus connector. For the location see Figure 7.
- 5.2. Disconnect the 2x4 CPU 1 power connector. For the location, see Figure 7, "M".
- 5.3. Disconnect the HDD backplane power connector. For the location, see Figure 58.
- 5.4. Disconnect any optional I/O devices connected to the auxiliary cable/dongle in the front right side of the chassis.
- 5.5. Disconnect the front panel board power connector. For the location, see Figure 52, "A".
6. Loosen the two screws that secure the PDB bracket to the chassis and save them for re-installing the new PDB assembly. (Figure 59, "A")
7. Gently pull the PDB and all its attached cables (not shown in this figure) out of the chassis. ("B")

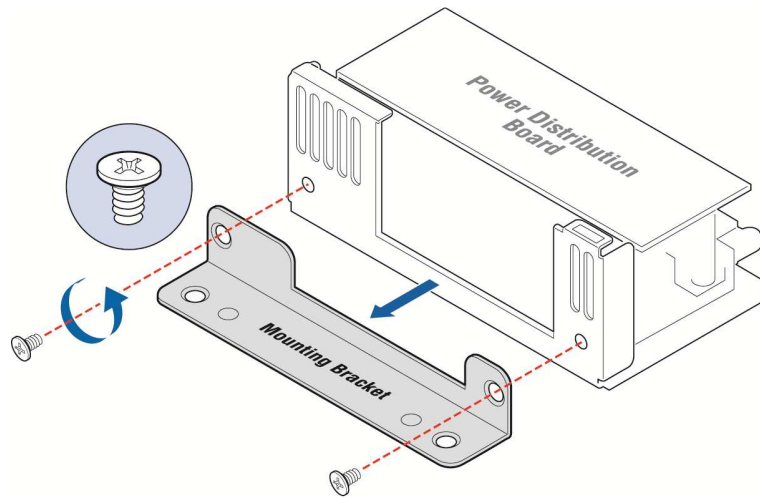
Figure 59: Removing the PDB from the Chassis



CG00252

8. Remove the bracket from the PDB and save it and the two screws for use with the new PDB (Figure 60).

Figure 60: Removing the PDB Mounting Bracket

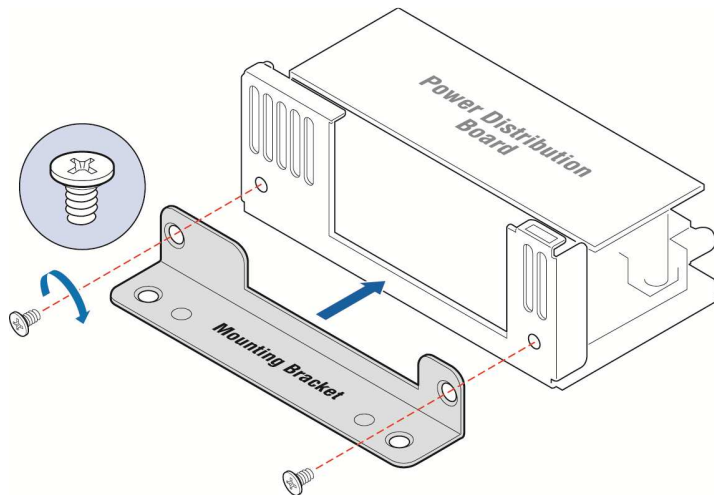


CG00253

5.7.2 Installing the New Power Distribution Board

1. Fasten the PDB bracket to the new PDB with the two screws reserved from removing the old PDB. (Figure 61)

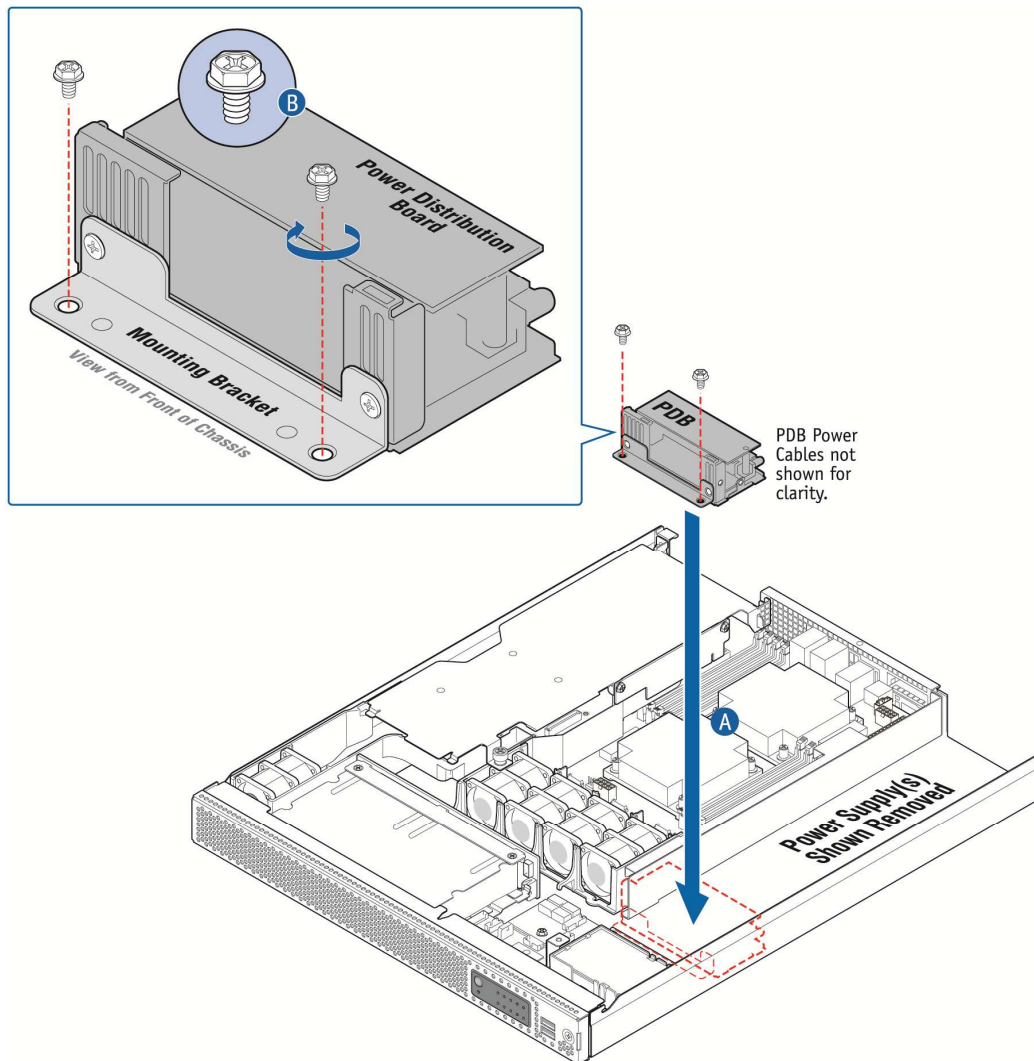
Figure 61: Attaching the PDB Mounting Bracket



CG00254

2. Place the PDB back into the chassis and fasten the bracket to the chassis floor with the remaining two screws. (Figure 62, "A" and "B").

Figure 62: Installing the New PDB in the Chassis



CG00255

3. Connect all of the new cables on the new PDB to their connectors on the SAS backplane, server board, and front panel board, being careful to route them as low as possible so as not to interfere with other components or air flow.
For connector locations and cable routing assistance, see Figure 24: Cable Routing” and Figure 7: Baseboard Components and Connectors”
4. Replace the black plastic sheath over the cables that run along the right side of the server board.
5. Push the power supply module(s) back into place so they are mated with the PDB.
6. If this is the last task you are performing inside the server chassis, replace the chassis cover and reconnect any external devices and the power cord(s).

5.8 Replacing the S2400EP4 Server Board

The CG1200 Carrier Grade Server uses the Intel® server board S2400EP4. To replace the server board, the following components must be removed or disconnected first:

- Top chassis cover
 - Riser card assembly
 - RMM4 module (if used)
 - I/O module (if used)
 - Hardware RAID controller module and SuperCap (if used)
 - Any cables attached to the server board or routed over it
 - Baseboard SSI main power cable from the power distribution board
 - CPU1 and DIMM power cable from the power distribution board
 - CPU2 and DIMM power cable from the power distribution board
 - PMBus signal cable
 - Baseboard SSI power control signal cable
 - Front panel board USB cable
 - SSI front panel board cable
 - Fan set power cables (5)
 - Mini-SAS cable from the SAS HDD backplane (if not connected to a hardware RAID controller)
 - HSBP I²C/HDD LED cable from the SAS backplane

In addition, you will probably want to remove the following components for reuse on the replacement server board if it hasn't already been populated with spare components:

- Heat sink(s)
- Processor(s)
- All DIMMs

CAUTION: Before replacing any of the boards on the CG1200 server, you must first take the server out of service, turn off all peripheral devices connected to the server, turn off the server by pressing the power button, and unplug the power cord(s) from the system and wall outlet.

When handling the power distribution board, observe the normal safety and ESD precautions. See Appendix A: Safety Information for more information.

5.8.1 Removing the Old Server Board from the Chassis

1. Power down the server and unplug any external devices and the power cable(s).
2. Remove the chassis cover. For instructions, Section 3.2.1, "Removing the Chassis Cover".
3. Remove the riser card assembly. For instructions, Section 3.2.5, "Removing the Riser Card Assembly".
4. Disconnect all the cables attached to the server board or routed over it:
 - Baseboard SSI main power cable from the power distribution board
 - CPU1 and DIMM power cable from the power distribution board
 - CPU2 and DIMM power cable from the power distribution board
 - PMBus signal cable
 - Baseboard SSI power control signal cable
 - Front panel board USB cable
 - SSI front panel board cable
 - Fan set power cables (5)
 - Mini-SAS cable from the SAS HDD backplane (if not connected to a hardware RAID controller)
 - HSBP I²C/HDD LED cable from the SAS backplane

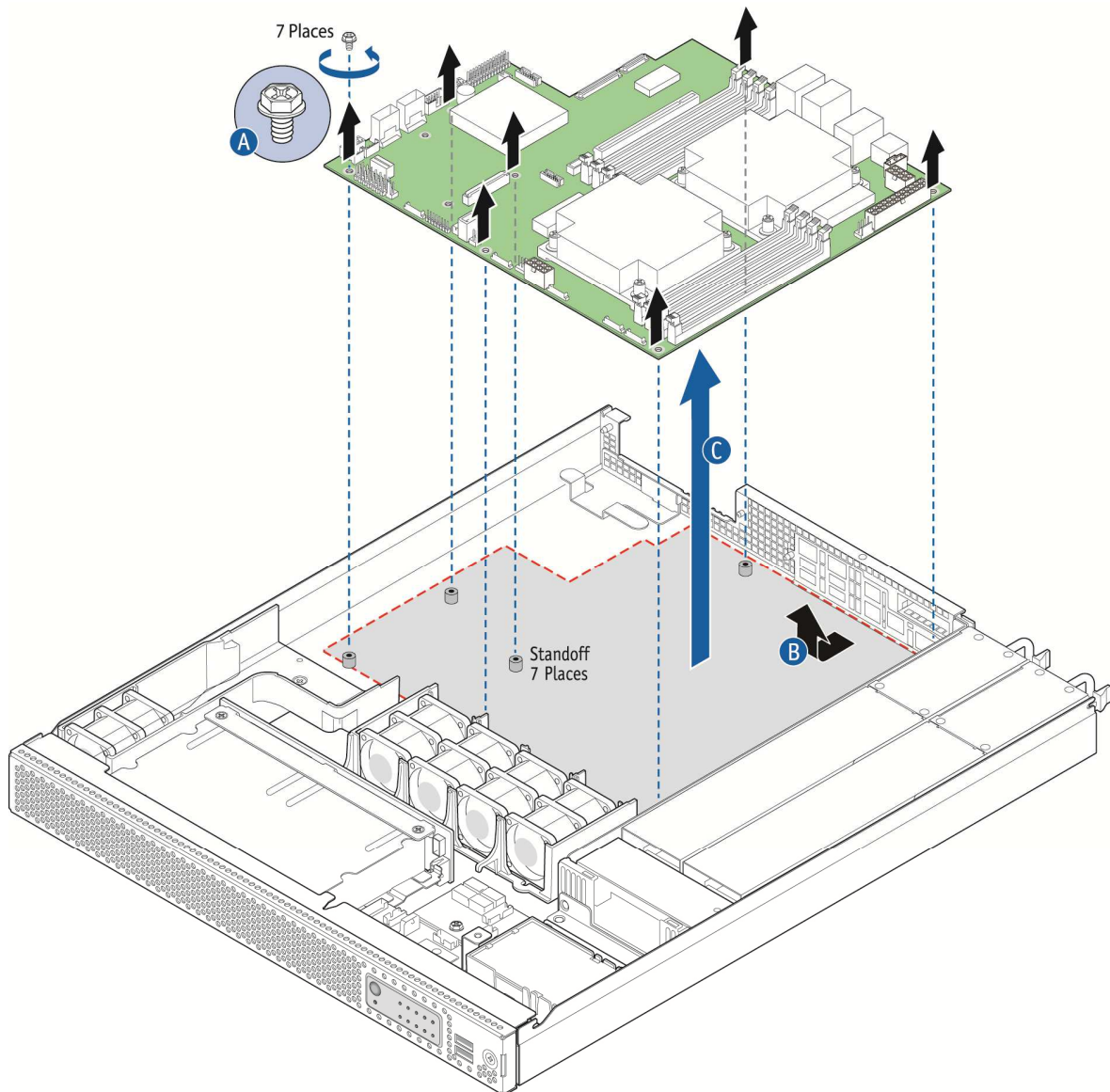
For the locations of these cable connectors on the server board and information about how the cables are routed, see Figure 24: Cable Routing” and Figure 7: Baseboard Components and Connectors”.

5. Disconnect the TAM alarms cable from the video connector on the rear panel of the chassis to get it out of the way. For instructions. See 5.5.1, “ Removing the Old Telco Alarms Module”.
6. Remove the hardware RAID module (ROC) and SuperCap backup module, if installed. For assistance, see Section 4.3.1 ” Installing the ROC Module”.
7. Remove the RMM4 module or RMM4Lite, if installed. For assistance, see Section 4.7, “Installing a Remote Management Module 4”.
8. Remove the I/O module, if installed. For assistance, see Section 4.8 “Installing an I/O Module”.

If you want to reuse components from this server board on the new replacement board, you can remove them now or after you have removed the server board from the chassis.

- To remove memory DIMMs, see Section 3.3.4, “Replacing or Removing Memory DIMMs”.
 - To remove the heat sink(s) and processor(s), see “Removing a Processor” in Section 3.3.5.
9. Loosen all seven screws holding the server board to the chassis and save them for use with the new server board. See Figure 63, “A” for the location of these screws.
 10. Tilt the server board up at the front edge and lift it from the chassis being careful to clear the rear panel of the chassis. (Figure 63, “B” and “C”)

Figure 63: Removing the Server Board



CG00264

5.8.2 Installing the New Server Board

1. Set the replacement server board in place.
Insert the rear edge of the board first and line up the I/O ports with the slots in the rear panel of the chassis.
2. Make sure all three self-aligning standoffs go through the holes at the front of the board.

NOTE: If the standoffs are misaligned when the board is screwed down the holes will be damaged and the standoffs may be cross-threaded.

3. Fasten the server board to the chassis base with the seven screws that were removed and saved.
4. If the new server board does not have components pre-installed and you are re-using components from the old server board, install components as follows:

To install memory DIMMs, see Section 3.3.3, “Installing Memory DIMMs”.

To install heat sink(s) and processor(s), see Section 3.3.5, “Adding or Replacing a Processor”

5. Re-install all cables disconnected when the old server board was removed:
 - Baseboard SSI main power cable from the power distribution board
 - CPU1 and DIMM power cable from the power distribution board
 - CPU2 and DIMM power cable from the power distribution board
 - PMBus signal cable
 - Baseboard SSI power control signal cable
 - Front panel board USB cable
 - SSI front panel board cable
 - Fan set power cables (5)
 - Mini-SAS cable from the SAS HDD backplane (if not connected to a hardware RAID controller)
 - HSBP I²C/HDD LED cable from the SAS backplane
6. Re-install the RMM4 module or RMM4Lite, if used. For instructions, see Section 4.7, “Installing a Remote Management Module 4”.
7. Re-install the I/O module, if used. For instructions, see Section 4.8, “Installing an I/O Module”.
8. Re-install the hardware RAID ROC module, if used. For instructions, see Section 4.3 “Installing a Hardware RAID Controller”.
9. Re-install the riser card assembly. For instructions, see Section 3.2.6, “ Re-Installing the Riser Card Assembly”.
10. Re-connect the TAM alarms cable to the alarms connector on the chassis rear panel. See Figure 6: CG1200 Server Rear View”.
11. If this is the last task you are performing inside the server chassis, replace the chassis cover and reconnect any external devices and the power cord(s).

6 Server Utilities

6.1 Using the BIOS Setup Utility

This section describes the BIOS Setup Utility, which is used to change configuration values for the Kontron CG1200 Carrier Grade Server. You can run BIOS Setup with or without an operating system present

6.1.1 Using BIOS Setup

You may want to use BIOS Setup for the following purposes:

- Selecting a particular boot device
- Adjusting settings for the processor, memory, and other devices
- Configuring RAS, acoustic, and performance settings
- Setting security and server management options
- Viewing hardware and system information
- Restoring settings after replacing the baseboard battery

NOTE: Most modern devices do not require manual configuration, so many users will never need to use BIOS Setup.

6.1.2 Starting Setup

After you turn on or reset the server, BIOS prepares the server to boot an operating system. During this time, you will see the prompt:

```
Press <F2> to enter SETUP
```

Pressing F2 when prompted invokes BIOS setup. The BIOS continues to perform necessary initialization procedures and then displays the BIOS Setup menus.

6.1.3 If You Cannot Access Setup

If you are not able to access BIOS Setup, you might need to restore the BIOS options to their factory settings. For instructions on restoring factory defaults, see Section 6.3, "Restoring Factory Default Settings".

6.1.4 Setup Menus

Each BIOS Setup menu page has a number of features. Except for features that only display automatically configured information, each feature is associated with a value field with user-selectable parameters. These parameters can be changed if you have adequate security rights. Value fields are inaccessible if the value cannot be changed.

Table 6 describes the keyboard commands you can use in the BIOS Setup menus.

Table 6: Keyboard Commands

Key	Description
<F1>	Help - Pressing F1 on any menu invokes the general Help window.
← →	The left and right arrow keys are used to move between the major menu pages. The keys have no effect if a submenu or pick list is displayed.

Key	Description
↑	Select Item up - The up arrow is used to select the previous value in a menu item's option list, or a value field pick list. Pressing the Enter key activates the selected item.
↓	Select Item down - The down arrow is used to select the next value in a menu item's option list, or a value field pick list. Pressing the Enter key activates the selected item.
F5/-	Change Value - The minus key or the F5 function key is used to change the value of the current item to the previous value. This key scrolls through the values in the associated pick list without displaying the full list.
F6/+	Change Value - The plus key or the F6 function key is used to change the value of the current menu item to the next value. This key scrolls through the values in the associated pick list without displaying the full list. On 106-key Japanese keyboards, the plus key has a different scan code than the plus key on the other keyboard, but it has the same effect.
<Enter>	Execute Command - The Enter key is used to activate submenus when the selected feature is a submenu, or to display a pick list if a selected feature has a value field, or to select a sub-field for multi-valued features like time and date. If a pick list is displayed, the Enter key undoes the pick list and allows another selection in the parent menu.
<Esc>	Exit - The ESC key provides a mechanism for backing out of any field. This key undoes pressing the Enter key. When the ESC key is pressed while editing a field or selecting menu features, the parent menu is re-entered. When the ESC key is pressed in any submenu, the parent menu is re-entered. When the ESC key is pressed in any major menu, the exit confirmation window is displayed and the user is asked whether changes can be discarded.
<F9>	Setup Defaults - Pressing F9 causes the following message to appear: Setup Confirmation Load default configuration now? [Yes] [No] If Yes is selected and the Enter key is pressed, all Setup fields are set to their default values. If No is selected and the Enter key is pressed, or if the ESC key is pressed, you are returned to where you were before F9 was pressed without affecting any existing field values.
<F10>	Save and Exit - Pressing F10 causes the following message to appear: Setup Confirmation Save Configuration changes and exit now? [Yes] [No] If Yes is selected and the Enter key is pressed, all changes are saved and Setup is exited. If No is selected and the Enter key is pressed, or the ESC key is pressed, you are returned to where you were before F10 was pressed without affecting any existing values.

6.2 Upgrading the BIOS

The upgrade utility lets you upgrade the BIOS in flash memory. The code and data in the upgrade file include the following:

- On-board system BIOS, including the recovery code
- BIOS Setup Utility and strings.
- On-board video BIOS, SCSI BIOS, and other option ROMs for devices embedded on the server board.
- OEM binary area
- Microcode
- Splash Screen

6.2.1 Preparing for the Upgrade

The steps below explain how to prepare to upgrade the BIOS, including how to record the current BIOS settings and how to obtain the upgrade utility.

NOTE: In the unlikely event that a BIOS error occurs during the BIOS update process, a recovery process may need to be followed to return the system to service. See Section 1.4, “Additional Information and Software” for additional information.

6.2.2 Updating the System Firmware

To update the firmware, go to the Kontron Support Website at <http://us.kontron.com/support/> search for CG1200, and then click on BIOS.

WARNING: Do not power down the system during the BIOS update process!
Do not interrupt the BIOS POST during the first system reboot.

6.3 Restoring BIOS Default Settings

If you are not able to access the BIOS setup screens, you may need to restore the BIOS settings to their factory defaults by clearing the CMOS. This procedure requires physical access to the inside of the server.

1. Power down the system but do not disconnect the power cord.
2. Open the server. See “Removing the Chassis Cover”, in Section 3.2 for instructions.
3. Remove the riser assembly. For instructions, see “Removing the Riser Card Assembly”.
4. Locate the “BIOS Default” jumper (J1L4) as shown in Figure 23.
5. Move jumper (J1L4) from the normal position covering pins 1-2 to the reset/clear position covering pins 2-3.
6. Wait five seconds and remove power.
7. Move the jumper (J1L4) back to the normal default position (pins 1-2).
8. Re-install the riser assembly and close the server chassis. See “Re-installing the Chassis Cover” in Section 3.2 for instructions.
9. Power up the server.

The CMOS is now cleared and can be reset by going into the BIOS setup.

NOTE: Removing power before performing the CMOS clear operation causes the system to automatically power up and immediately power down after the procedure is followed and power is re-applied. If this happens, remove the power cord again, wait 30 seconds, and reconnect the power cord. Then you can power up the system and proceed to the <F2> BIOS Setup utility to reset the settings.

6.4 Clearing the Password

Passwords can be reset by moving the “Password Clear” jumper (J2L5) into the “clear” position. The “Password Clear” jumper must be restored to its original position before a new password(s) can be set. The “Password Clear” jumper is shown in Figure 23.

1. Power down the server. Do not disconnect the power cord(s).
2. Open the server chassis. See “Removing the Chassis Cover”, in Section 3.2 for instructions.
3. Remove riser assembly. For instructions, see “Removing the Riser Card Assembly”.
4. Move the jumper (J2L5) from the normal operation position covering pins 1 and 2 to the “Password Clear” position, covering pins 2 and 3.
5. Close the server chassis.
6. Power up the server and wait 10 seconds or until POST completes.
7. Power down the server.
8. Open the chassis and move the jumper back to the default position covering pins 1 and 2.
9. Re-install the riser card assembly.
10. Close the server chassis. See” Re-installing the Chassis Cover” in Section 3.2 for instructions.
11. Power up the server.

The password is now cleared and can be reset by going into the BIOS setup.

6.5 BMC Force Update Procedure

In the standard integrated BMC firmware update procedure, the update utility places the integrated BMC into an update mode that allows the firmware to load safely onto the flash device. In the unlikely event the integrated BMC firmware update process fails because the integrated BMC is not in the proper update state, the server board provides an “Integrated BMC Force Update” jumper (J1L7)) that forces the integrated BMC into the proper update state. See Figure 23 for the location of this jumper. Use the following procedure if the standard integrated BMC firmware update process fails.

1. Power down the server and unplug the power cord(s).
2. Open the server chassis. See “Removing the Chassis Cover”, in Section 3.2 for instructions.
3. Remove the riser assembly. For instructions, see “Removing the Riser Card Assembly”.
4. Locate jumper block (J1L7) and move the jumper from the default position covering pins 1-2 to the “Enable” position covering pins 2-3.
5. Close the server chassis. See” Re-installing the Chassis Cover” in Section 3.2 for instructions.
6. Reconnect the power cord(s) and power up the server.
7. Now perform the Integrated BMC firmware update procedure as documented in the README.TXT file included in the BMC Firmware Update package. After the firmware update process completes successfully, the firmware update utility may generate an error stating that the Integrated BMC is still in update mode.

NOTE: Normal Integrated BMC functionality is disabled when the Force BMC Update jumper is set to the “enabled” position. The server should never be run with the Integrated BMC Force Update jumper set in this position. This jumper setting should only be used when the standard firmware update process fails. This jumper should remain in the default/disabled position when the server is running normally.

8. When the update has finished, power down the system and remove the power cord(s).
9. Open the server chassis (remove the top cover).
10. Locate the jumper block (J1L7) and move the jumper to the disabled position (pins 1-2).
11. Re-install the riser assembly and close the server chassis. See “Re-installing the Chassis Cover” in Section 3.2 for instructions.
12. Reconnect the power cord(s) and power up the server.

6.6 ME Force Update Procedure

In the standard ME force update procedure, the update utility places the ME into an update mode that allows the ME to load safely onto the flash device. In the unlikely event that the ME firmware update process fails because the ME is not in the proper update state, the server board provides an ME Force Update jumper (J2L4) that forces the ME into the proper update state. Use this procedure if the standard ME firmware update process fails.

1. Power down the server and unplug the power cord(s).
2. Open the server chassis. See “Removing the Chassis Cover”, in Section 3.2 for instructions.
3. Remove the riser assembly. For instructions, see “Removing the Riser Card Assembly”.
4. Locate jumper block (J2L4) and move the jumper from the default position covering pins 1-2 to the “Enable” position covering pins 2-3.
5. Close the server chassis. See “Re-installing the Chassis Cover” in Section 3.2 for instructions.
6. Reconnect the power cord(s) and power up the server.
7. Now perform the ME firmware update procedure as documented in the README.TXT file included in the ME Firmware Update package (same package as the BIOS).
8. When the update has finished, power down the system and remove the power cord(s).
9. Open the server chassis (remove the top cover).
10. Locate the jumper block (J2L4) and move the jumper to the disabled position (pins 1-2).
11. Re-install the riser assembly and close the server chassis. See “Re-installing the Chassis Cover” in Section 3.2 for instructions.
12. Reconnect the power cord(s) and power up the server.

7 Troubleshooting

NOTE: This chapter has not been edited or reviewed for this draft. The information here is subject to change.

This chapter helps you identify and solve problems that might occur while you are using the Kontron CG1200 Carrier Grade Server.

For any issue, first ensure you are using the latest firmware and files. Firmware upgrades include updates for BIOS and the baseboard management controller (BMC). Go to <http://us.kontron.com/products/systems+and+platforms/communication+rackmount+servers/+carrier+grade+servers/iCG1200+carrier+grade+server.html>, click on downloads, BIOS for information about the latest updates. In addition to the server firmware and files, also update any drivers used for components you have installed in your system, such as video drivers, network drivers, and SAS drivers.

If you are unable to resolve your server problems on your own, see Appendix D: Getting Help” for assistance.

7.1 Resetting the System

Before going through in-depth troubleshooting, first attempt to reset your system using one of the methods below.

To do this:	Press:
Soft boot reset to clear the system memory and reload the operating system	<Ctrl+Alt+Del>
Clear system memory, restart POST, and reload the operating system	Reset button
Cold boot reset. Turn the system power off and then on. This clears system memory, restarts POST, reloads the operating system, and halts power to all peripherals	Power on/off

7.2 Problems Following Initial System Installation

Problems that occur at initial system startup are usually caused by an incorrect installation or configuration. Hardware failure is a less frequent cause. If the problem you are experiencing is with a specific software application, see “Problems with Newly Installed Application Software”.

7.2.1 First Steps Checklist

- Are all jumper settings on the server board correct?
- Are all jumper and switch settings on add-in boards and peripheral devices correct?
- To check these settings, refer to the manufacturer's documentation that comes with them. If applicable, ensure that there are no conflicts—for example, two add-in boards sharing the same interrupt.
- Are all peripheral devices installed correctly?
- Are the hard disk drives (up to 4) properly formatted or configured?
- Are all device drivers properly installed?

- Are the configuration settings made in Setup correct?
- Is the operating system properly loaded? Refer to the operating system documentation.
- Did you press the system power on/off switch on the front panel to turn the server on (power on light should be lit)?

Are all integrated components from the tested components lists? Check the tested memory list and the supported hardware and operating system list. Go to <http://us.kontron.com/products/systems+and+platforms/communication+rackmount+servers/carrier+grade+servers/cg1200+carrier+grade+server.html> for links to the tested component lists.

7.3 Hardware Diagnostic Testing

This section provides a more detailed approach to identifying a hardware problem and locating its source.

CAUTION: Turn off devices before disconnecting cables.

1. Before disconnecting any peripheral cables from the system, turn off the system and any external devices. Failure to do so can cause permanent damage to the system and/or the peripheral devices.
2. Disconnect each of devices from the system, except for the keyboard and the video monitor.
3. Make sure the system power cord is plugged into a properly grounded AC outlet.
4. Make sure your video display monitor and keyboard are correctly connected to the system. Turn on the video monitor. Set its brightness and contrast controls to at least two thirds of their maximum ranges (see the documentation supplied with your video display monitor).
5. Turn on the system. If the power LED does not light, see Section 7.4.1, “Power Light does not Light”.

7.3.1 Verifying Proper Operation of Key System Lights

As POST determines the system configuration, it tests for the presence of each mass storage device installed in the system. As each device is checked, its activity light should turn on briefly.

Check for the following:

If system LEDs are illuminated, see Section 7.5, “LED Information” for a description of the LED lights and steps that need to be taken to correct the problem.

7.3.2 Confirming the Operating System Load

Once the system boots up, the operating system prompt appears on the screen. The prompt varies according to the operating system. If the operating system prompt does not appear, see “No Characters Appear on Screen”.

7.4 Specific Problems and Corrective Actions

This section provides possible solutions for specific problems:

Try the solutions below in the order given. If you cannot correct the problem, contact your service representative or authorized dealer for help. See “Appendix D: Getting Help” for contact details.

7.4.1 Power Light does not Light

Check the following:

- Did you press the power-on button?

- Is the system operating normally? If so, the power LED might be defective or the cable from the front panel to the server board might be loose.
- Have you securely plugged the server power cord into the power supply?
- For AC, will other items plugged into the same power outlet function correctly?
- Remove all add-in cards and see if the system boots. If successful, re-insert the cards one at a time with a reboot between each addition.
- Make sure the memory DIMMs comply with the system requirements.
- Make sure the memory DIMMs have been populated according to the system requirements.
- Remove the memory DIMMs and re-seat them.
- Make sure the processor complies with the system requirements.
- Remove the processor and re-seat it.

7.4.2 No Characters Appear on Screen

Check the following:

- Is the keyboard functioning? Test it by turning the “Num Lock” function on and off to make sure the Num Lock light is functioning.
- Is the video monitor plugged in and turned on? If you are using a switch box, is it switched to the correct system?
- Are the brightness and contrast controls on the video monitor properly adjusted?
- Is the video monitor signal cable properly installed?
- Does this video monitor work correctly if plugged into a different system?
- Is the onboard video controller enabled in the BIOS?
- Remove all add-in cards and see if the video returns. If successful, re-insert the cards one at a time with a reboot between each addition.
- Make sure the memory DIMMs comply with the system requirements.
- Make sure the memory DIMMs have been populated according to the system requirements.
- Remove the memory DIMMs and re-seat them.
- Make sure the processor complies with the system requirements.
- Remove the processor and re-seat it.

7.4.3 Characters are Distorted or Incorrect

Check the following:

- Are the brightness and contrast controls properly adjusted on the video monitor?
See the manufacturer’s documentation.
- Are the video monitor’s signal and power cables properly installed?
- Does this video monitor work correctly if plugged into a different system?

7.4.4 System Cooling Fans do not Rotate Properly

If the system cooling fans are not operating properly, it is an indication of possible system component failure.

Check the following:

- Is the power-on light lit? If not, see Section 7.4.1, “Power Light does not Light”.
- Are any other front panel LEDs lit?
- Have any of the fan motors stopped? Use the server management subsystem to check the fan status.
- Have the fans sped up in response to an overheating situation?
 - Have the fans sped up in response to a fan that has failed?
 - Are the fan power connectors properly connected to the system baseboard?
 - Are the power supply cables properly connected to the FP board?
 - Are there any shorted wires caused by pinched-cables or have power connector plugs been forced into power connector sockets the wrong way?

7.4.5 Cannot Connect to a Server

- Make sure the network cable is securely attached to the correct connector at the system back panel.
- Try a different network cable.
- Make sure you are using the correct and the current drivers. Go to <http://us.kontron.com/products/systems+and+platforms/communication+rackmount+servers/carrier+grade+servers/cg1200+carrier+grade+server.html> for a link to the drivers.
- Make sure the driver is loaded and the protocols are bound.
- Make sure the hub port is configured for the same duplex mode as the network controller.
- Make sure the correct networking software is installed.

If you are directly connecting two servers (without a hub), you will need a crossover cable.

7.4.6 Diagnostics Pass but the Connection Fails

- Make sure the network cable is securely attached.
- Make sure you specify the correct frame type in your NET.CFG file.

7.4.7 The (NIC) Controller Stopped Working When an Add-in Adapter was Installed

- Make sure the cable is connected to the port from the onboard network controller.
- Make sure your BIOS is current. Go to <http://us.kontron.com/products/systems+and+platforms/communication+rackmount+servers/carrier+grade+servers/cg1200+carrier+grade+server.html> for a link to the current version.
- Try reseating the add-in adapter.

7.4.8 The Add-in Adapter Stopped Working without Apparent Cause

- Try reseating the adapter.
- The network driver files may be corrupt or deleted. Delete and then reinstall the drivers.
- Run the diagnostics.

7.4.9 System Boots When Installing a PCI Card

System Server Management features require full-time “standby” power. This means some parts of the system have power going to them whenever the power cord is plugged in, even if you have turned the system power off with the power button on the front panel. If you install a PCI card with the power cord plugged in, a signal may be sent to command the system to boot. Before installing a PCI card, you should always:

1. Turn off the server power by using the power button on the front of the system.
2. Unplug the power cord from the server.

7.4.10 Problems with Newly Installed Application Software

Problems that occur when you run new application software are usually related to the software, not the server hardware. Faulty equipment is unlikely, especially if other software runs correctly.

Check the following:

- Make sure the system meets the minimum hardware requirements for the software. See the software documentation.
- Make sure the software is properly installed and configured for the system. See the software documentation.
- Use only an authorized copy. Unauthorized copies often do not work.
- Make sure the correct device drivers installed.

If the problems persist, contact the software vendor’s customer service representative.

7.4.11 Problems with Application Software that Ran Correctly Earlier

Problems that occur after the system hardware and software have been running correctly sometimes indicate equipment failure. However, they can also be caused by file corruption or changes to the software configuration.

Check the following:

- Uninstall and reinstall the software. Make sure all necessary files are installed.
- If the problems are intermittent, there may be a loose cable, dirt in the keyboard (if keyboard input is incorrect), a marginal power supply, or other random component failures.
- If you suspect that a transient voltage spike, power outage, or brownout might have occurred, reload the software and try running it again. Symptoms of voltage spikes include a flickering video display, unexpected system reboots, and the system not responding to user commands.

NOTE: For AC power, if you are getting random errors in your data files, they may be getting corrupted by voltage spikes on your power line. If you are experiencing any of the above symptoms that might indicate voltage spikes on the power line, you may want to install a surge suppressor between the power outlet and the system power cord.

7.4.12 Devices are not Recognized under Device Manager (Windows*OS)

The Windows* operating systems do not include all of the drivers for the Intel® chipsets, onboard NICs, and other components. Check the Kontron Deployment CD that came with your server or go to <http://us.kontron.com/products/systems+and+platforms/communication+rackmount+servers/carrier+grade+servers/cg1200+carrier+grade+server.html> for a link to the current drivers and chipset files.

7.4.13 Hard Drive(s) are not Recognized

Check the following:

- Make sure the drive is not disabled in BIOS Setup.
- Make sure the drive is compatible. Go to <http://us.kontron.com/products/systems+and+platforms/communication+rackmount+servers/carrier+grade+servers/CG1200+carrier+grade+server.html> for a link to the list tested drives.
- Make sure you have not exceeded the power budget for the server. Go to <http://us.kontron.com/products/systems+and+platforms/communication+rackmount+servers/carrier+grade+servers/cg1200+carrier+grade+server.html> for a link to software to check your power budget.

7.5 Light-Guided Diagnostics

The server board includes several on-board LED indicators to aid with troubleshooting various board-level faults. This section describes the function of each LED on the server board. For more information and the location of each LED on the board, see the *Intel® Server Board S2400EP4 Family TPS* on the Kontron website at <http://us.kontron.com/support/>.

7.5.1 5 Volt Stand-by LED

Several server management features on the S2400EP4 server board require a 5V stand-by voltage supplied from the power supply. The features and components that require this voltage must be present when the server is powered down. The LED is illuminated when power is applied to the platform and 5V stand-by voltage is supplied to the server board by the power supply. This LED is located next to the power connector for CPU 2.

7.5.2 DIMM Fault LEDs

The server board provides a memory fault LED for each DIMM socket. These LEDs are located at the bottom side of each CPU 2 DIMM slot (D1, E1, F1, F2) and at the top of each CPU 1 DIMM slot (C2, C1, B1, A1). A DIMM fault LED lights if the corresponding DIMM slot has memory installed and a memory error occurs.

7.5.3 System ID LED, System Status LED, and POST Code Diagnostic LED

These LEDs are located at the rear of the S2400EP4 server board, to the left of the I/O ports.

System ID LED

To light the System ID LED, use one of the following two methods:

- Press the System ID button on the front control panel of the chassis. The ID LED displays as solid white on the front panel and solid blue on the rear of the server until the button is pressed again.
- Issue the appropriate hex IPMI “Chassis Identify” value. The ID LED will either blink for 15 seconds and turn off or will blink indefinitely until the hex IPMI “Chassis Identify” value is re-issued to turn it off.

System Status LED

The bicolor (green/amber) System Status LED

Table 7. System Status LED Definitions

Color	State	Criticality	Description
Green	Solid on	System OK	System booted and ready
Green	Blink	Degraded	<p>System degraded:</p> <ul style="list-style-type: none"> • Non-critical temperature threshold asserted • Non-critical voltage threshold asserted • Non-critical fan threshold asserted • Fan redundancy lost, sufficient system cooling maintained. This does not apply to non-redundant systems. • Power supply predictive failure • Power supply redundancy lost. This does not apply to non-redundant systems. • Corrective errors over a threshold of 10 and migrating to a mirrored DIMM (memory mirroring). This indicates the user no longer has spare DIMMs indicating a redundancy lost condition. The corresponding DIMM LED should light up
Amber	Blink	Non-critical	<p>Non-fatal alarm – system is likely to fail:</p> <ul style="list-style-type: none"> • Critical temperature threshold asserted • CATERR asserted • Critical voltage threshold asserted • VRD Hot asserted • SMI timeout asserted
Amber	Solid on	Critical, non-recoverable	<p>Fatal alarm – system has failed or shut down</p> <ul style="list-style-type: none"> • CPU missing • Thermal Trip asserted • Non-recoverable temperature threshold asserted • Non-recoverable voltage threshold asserted • Power fault/power control failure • Fan redundancy lost, insufficient system cooling. This does not apply to non-redundant systems. • Power supply redundancy lost, insufficient system power. This does not apply to non-

Color	State	Criticality	Description
			redundant systems. (NOTE: This state also occurs when power is first applied to the system. This indicates the BMC is booting)
Off	N/A	Not ready	Power off, if no degraded, non-critical, critical, or non-recoverable conditions exist.

Post Code Diagnostic LEDs

During the system boot process, the BIOS executes a number of platform configuration processes, each of which is assigned a specific hex POST code number. As each configuration routine is started, the BIOS displays the given POST code to the POST code diagnostic LEDs on the back edge of the server board. To assist in troubleshooting a system failure during the POST process, you can use the diagnostic LEDs to identify the last POST process executed.

7.5.4 POST Error Beep Codes

Table 8 lists the POST error beep codes. Prior to system video initialization, the BIOS uses these beep codes to inform users of error conditions. Please note that not all error conditions are supported by BIOS beep codes.

Table 8. POST Error Beep Codes

Beeps	Error Message	Post Progress Code	Description
1	USB device action	N/A	Short beep sounded whenever a USB device is discovered in POST or inserted or removed during runtime
1	Intel® TXT security violation	0xAE, 0xAF	System halted because the Intel® Trusted Execution Technology detected a potential violation of system security
3	Memory error	Multiple	System halted because a fatal error related to the memory was detected
The following Beep Codes are sounded during BIOS recovery			
2	BIOS Recovery started	N/A	Recovery boot has been initiated
4	BIOS Recovery failure	N/A	BIOS recovery has failed. This typically happens so quickly after recovery is initiated that it sounds like a 2 – 4 beep code.

The Integrated BMC may generate beep codes upon detection of failure conditions. Beep codes are sounded each time the problem is discovered, such as on each power-up attempt, but are not sounded continuously. Codes that are common across all Intel server boards and systems that use the same generation chipset are listed in the following table. Each digit in the code is represented by a sequence of beeps whose count is equal to the digit.

Table 9. Integrated BMC Beep Codes

Beep Code	Reason for Beep	Associated Sensors
1-5-2-1	CPU socket population error	CPU1 socket is empty or sockets are populated incorrectly CPU1 must be populated before CPU2
1-5-2-4	MSID mismatch	MSID mismatch occurs if a processor is installed into a system board that has incompatible power capabilities
1-5-4-2	Power fault	DC power unexpectedly lost (power good dropout) Power unit sensors report power unit failure offset
1-5-4-4	Power control fault	Power good assertion timeout Power unit sensors report soft power control failure offset
1-5-1-2	VR watchdog timer	VR controller DC power on sequence was not completed in time
1-5-1-4	Power supply status	The system does not power on or unexpectedly powers off and a Power Supply Unit (PSU) is present that is an incompatible model with the other PSU in the system.

8 Warranty

This Kontron product is warranted against defects in material and workmanship for the warranty period from the date of shipment. During the warranty period, Kontron will at its discretion decide to repair or replace defective products.

Within the warranty period, the repair of products is free of charge as long as warranty conditions are observed.

The warranty does not apply to defects resulting from improper or inadequate maintenance or handling by the buyer, unauthorized modification or misuse, operation outside of the product's environmental specifications or improper installation or maintenance.

Kontron will not be responsible for any defects or damages to other products not supplied by Kontron that are caused by a faulty Kontron product.

9 Appendix A: Safety Information

Warning: Although you may be using this guide or another resource as a reference, before working with your server product pay close attention to these safety instructions. You must adhere to the assembly instructions in this guide to ensure and maintain compliance with existing product certifications and approvals. Use only the described, regulated components specified in this guide. Use of other products / components will void the UL listing and other regulatory approvals of the product and will most likely result in non-compliance with product regulations in the region(s) in which the product is sold.

9.1 Emissions Disclaimer

To ensure EMC (Electromagnetic Compatibility) compliance with your local regional rules and regulations, the final configuration of your end system product may require additional EMC compliance testing. For more information, please contact your local Kontron Representative. See Appendix B, "Regulatory and Certification Information" for product Safety and EMC regulatory compliance information. This is an FCC (Federal Communications Commission) Class A device.

9.2 Intended Uses

This product was evaluated as Information Technology Equipment (ITE), which may be installed in Central Offices, Telecommunication Centers, offices, schools, computer rooms, and similar commercial type locations. The suitability of this product for other product categories and environments (medical, industrial, telecommunications, residential, alarm systems, test equipment, etc.), other than an ITE application, may require further evaluation.

WARNING: Anchor the equipment rack: The equipment rack must be anchored to an unmovable support to prevent it from falling over when one or more servers are extended in front of the rack on slides. You must also consider the weight of any other device installed in the rack. A crush hazard exists should the rack tilt forward which could cause serious injury.

9.2.1 If AC power supplies are installed:

Mains AC power disconnect: The AC power cord(s) is considered the mains disconnect for the server and must be readily accessible when installed. If the individual server power cord(s) will not be readily accessible for disconnection then you must install an AC power disconnect for the entire rack unit. This main disconnect must be readily accessible, and it must be labeled as controlling power to the entire rack, not just to the server(s).

Grounding the rack installation: To avoid the potential for an electrical shock hazard, you must include a third wire safety ground conductor with the rack installation. If the server power cord is plugged into an AC outlet that is part of the rack, then you must provide proper grounding for the rack itself. If the server power cord is plugged wall AC outlet, the safety ground conductor in the power cord provides proper grounding only for the server. You must provide additional, proper grounding for the rack and other devices installed in it.

Overcurrent protection: The server is designed for an AC line voltage source with up to 15 amperes of overcurrent protection per cord feed. If the power system for the equipment rack is installed on a branch circuit with more than 15 amperes of protection, you must provide supplemental protection for the server. The overall current rating of a configured server is less than 6 amperes.

WARNING: Do not attempt to modify or use an AC power cord set that is not the exact type required. You must use a power cord set that meets the following criteria:

- Rating: In the U.S. and Canada, cords must be UL (Underwriters Laboratories, Inc.) Listed/CSA (Canadian Standards Organization) Certified type SJT, 18-3 AWG (American Wire Gauge). Outside of the U.S. and Canada, cords must be flexible harmonized (<HAR>) or VDE (Verbena Deutscher Elektrotechniker, German Institute of Electrical Engineers) certified cord with 3x 0.75 mm conductors rated 250 VAC.
- Connector, wall outlet end: Cords must be terminated in grounding-type male plug designed for use in your region. The connector must have certification marks showing certification by an agency acceptable in your region and for U.S. must be listed and rated for 125% of the overall current rating of the server.
- Connector, server end: The connectors that plug into the AC receptacle on the server must be an approved IEC (International Electrotechnical Commission) 320, sheet C13, type female connector.
- Cord length and flexibility: Cords must be less than 4.5 meters (14.8 feet) long.

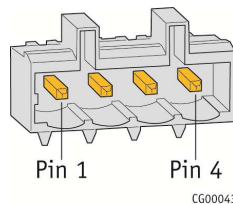
9.2.2 If DC power supplies are installed:

Connection with a DC (Direct Current) source should only be performed by trained service personnel. The server with DC input is to be installed in a Restricted Access Location in accordance with articles 110-26 and 110-27 of the National Electric Code, ANSI/NFPA 70. The DC source must be electrically isolated from any hazardous AC source by double or reinforced insulation. The DC source must be capable of providing up to 300 watts of continuous power per feed pair.

Mains DC power connect: Kontron recommends using all 4 pins on the DC input connector for redundancy purposes.

The input connector on the DC power supply is a 4-pin Molex 55757-0420. This connector is rated at 16A/pin. An earth ground pin is not required because the system provides two earth ground studs on the rear panel of the chassis. Figure 64, the input connector mechanical drawing and table, show the DC input power connector and pin-out.

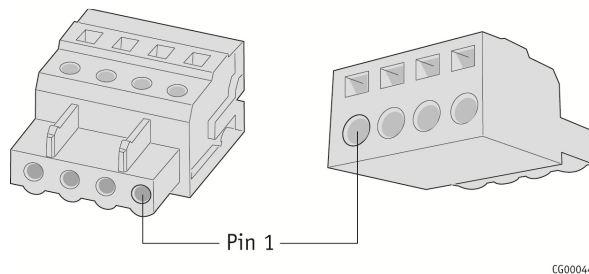
Figure 64. DC Power Supply Input Connector



Pin#	Description
1 +	RTN
2 +	RTN
3 -	-48V
4 -	-48V

9.2.3 DC Power Supply 48V Input Power Mating Connector

The mating connector for the DC power supply module input connector, a Molex 54927-0420 4-pin connector shown in Figure 65 provides a -48V input power connection to the system. The input wiring connections are shown in the table in Figure 64.

Figure 65: DC Power Supply Mating Connector

9.2.4 DC Power Supply Earth Grounding Studs on Chassis

For instructions about how the safety earth grounding wire is attached to the chassis for use with DC power supplies, see Figure 39, "DC Power Supply Grounding" in the "Adding or Replacing a Power Supply Module" section.

Mains DC power disconnect: You are responsible for installing a properly rated DC power disconnect for the server system. This mains disconnect must be readily accessible, and it must be labeled as controlling power to the server. The UL listed circuit breaker of a centralized DC power system may be used as a disconnect device when easily accessible and should be rated no more than 15 amps.

Grounding the server: This server is intended for installation with an isolated DC return (DC-I per NEBS GR-1089, Issue 3). To avoid the potential for an electrical shock hazard, you must reliably connect an earth grounding conductor to the server. The earth grounding conductor must be a minimum 12 AWG connected to the earth ground stud(s) on the rear of the server. The safety ground conductor should be connected to the chassis stud with a Listed closed two-hole crimp terminal having 5/8-inch pitch. The nuts on the chassis earth ground studs should be installed with a 10 in lbs of torque. The safety ground conductor provides proper grounding only for the server. You must provide additional, proper grounding for the rack and other devices installed in it.

9.2.5 Overcurrent protection

Overcurrent protection UL Listed circuit breakers must be provided as part of each host equipment rack and must be incorporated in the field wiring between the DC source and the server. The branch circuit protection shall be rated minimum 75 VDC, 15A maximum per feed pair. If the DC power system for the equipment rack is installed with more than 15 amperes of protection, you must provide supplemental protection for the server. The overall current rating of a maximum configured server is 13 amperes.

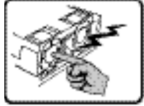
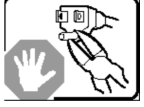
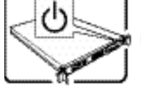

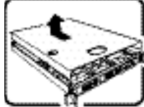
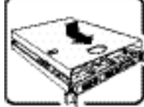
9.2.6 Temperature and Ventilation

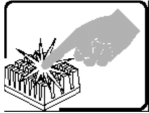

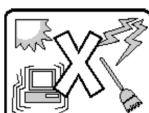
CAUTION: Temperature -- The temperature, in which the server operates when installed in an equipment rack, must not go below 5°C (41°F) or rise above 40°C (104°F). Extreme fluctuations in temperature can cause a variety of problems in your server.

CAUTION: Ventilation -- The equipment rack must provide sufficient airflow to the front of the server to maintain proper cooling. The rack must also include ventilation sufficient to exhaust a maximum of 1023 BTUs (British Thermal Units) per hour for the server. The rack selected and the ventilation provided must be suitable to the environment in which the server will be used.

9.3 Safety Cautions

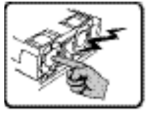
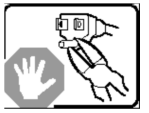
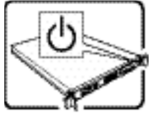

Read all caution and safety statements in this document before performing any of the instructions.

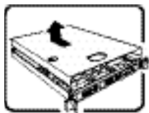
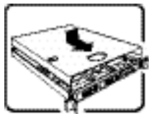
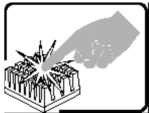

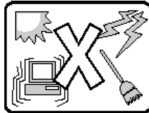
	<p>The power supply in this product contains no user-serviceable parts. There may be more than one supply in this product. Refer servicing only to qualified personnel.</p>
	<p>Do not attempt to modify or use the supplied AC power cord if it is not the exact type required. A product with more than one power supply will have a separate AC power cord for each supply.</p>
	<p>The power button on the system does not turn off system AC power. To remove AC power from the system, you must unplug each AC power cord from the wall outlet or power supply.</p> <p>The power cord(s) is considered the disconnect device to the main (AC) power. The socket outlet that the system plugs into must be installed near the equipment and must be easily accessible.</p>
 	<p>SAFETY STEPS: Whenever you remove the chassis covers to access the inside of the system, follow these steps:</p> <ol style="list-style-type: none"> 1. Turn off all peripheral devices connected to the system. 2. Turn off the system by pressing the power button. 3. Unplug all AC power cords from the system or from wall outlets. 4. Label and disconnect all cables connected to I/O connectors or ports on the back of the system. 5. Provide electrostatic discharge (ESD) protection by wearing an anti-static wrist strap attached to chassis ground of the system—any unpainted metal surface—when handling components. <p>After you have completed the six SAFETY STEPS above, you can remove the system covers. To do this:</p> <ol style="list-style-type: none"> 1. Unlock and remove the padlock from the back of the system if a padlock has been installed. 2. Remove and save all screws from the covers. 3. Remove the covers. 4. Do not operate the system with the chassis covers removed.
	<p>For proper cooling and airflow, always reinstall the chassis covers before turning on the system. Operating the system without the covers in place can damage system parts. To install the covers:</p> <ol style="list-style-type: none"> 1. Check first to make sure you have not left loose tools or parts inside the system. 2. Check that cables, add-in boards, and other components are properly installed. 3. Attach the covers to the chassis with the screws removed earlier, and tighten them firmly.

	<p>4. Insert and lock the padlock to the system to prevent unauthorized access inside the system.</p> <p>5. Connect all external cables and the AC power cord(s) to the system.</p>
	<p>A microprocessor and heat sink may be hot if the system has been running. Also, there may be sharp pins and edges on some board and chassis parts. Contact should be made with care. Consider wearing protective gloves.</p>
	<p>Danger of explosion if the battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the equipment manufacturer. Dispose of used batteries according to manufacturer's instructions.</p>
	<p>The system is designed to operate in a typical office environment. Choose a site that is:</p> <ul style="list-style-type: none"> • Clean and free of airborne particles (other than normal room dust). • Well ventilated and away from sources of heat including direct sunlight. • Away from sources of vibration or physical shock. • Isolated from strong electromagnetic fields produced by electrical devices. • In regions that are susceptible to electrical storms, we recommend you plug your system into a surge suppressor and disconnect telecommunication lines to your modem during an electrical storm. • Provided with a properly grounded wall outlet. • Provided with sufficient space to access the power supply cord(s), because they serve as the product's main power disconnect.

9.3.1 Wichtige Sicherheitshinweise

Lesen Sie zunächst sämtliche Warn- und Sicherheitshinweise in diesem Dokument, bevor Sie eine der Anweisungen ausführen.

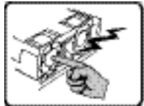
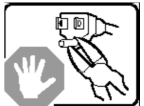


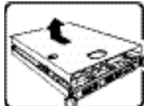
	<p>Benutzer können am Netzgerät dieses Produkts keine Reparaturen vornehmen. Das Produkt enthält möglicherweise mehrere Netzgeräte. Wartungsarbeiten müssen von qualifizierten Technikern ausgeführt werden.</p>
	<p>Versuchen Sie nicht, das mitgelieferte Netzkabel zu ändern oder zu verwenden, wenn es sich nicht genau um den erforderlichen Typ handelt. Ein Produkt mit mehreren Netzgeräten hat für jedes Netzgerät ein eigenes Netzkabel.</p>
	<p>Der Wechselstrom des Systems wird durch den Ein-/Aus-Schalter für Gleichstrom nicht ausgeschaltet. Ziehen Sie jedes Wechselstrom-Netzkabel aus der Steckdose bzw. dem Netzgerät, um den Stromanschluß des Systems zu unterbrechen.</p>
	<p>SICHERHEISSMASSNAHMEN: Immer wenn Sie die Gehäuseabdeckung abnehmen um an das Systeminnere zu gelangen, sollten Sie folgende Schritte beachten:</p> <ol style="list-style-type: none"> 1. Schalten Sie alle an Ihr System angeschlossenen Peripheriegeräte aus. 2. Schalten Sie das System mit dem Hauptschalter aus.

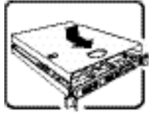
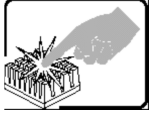

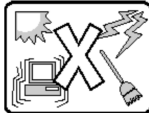
	<p>3. Ziehen Sie den Stromanschlußstecker Ihres Systems aus der Steckdose.</p> <p>4. Auf der Rückseite des Systems beschriften und ziehen Sie alle Anschlußkabel von den I/O Anschlüssen oder Ports ab.</p> <p>5. Tragen Sie ein geerdetes Antistatik Gelenkband, um elektrostatische Ladungen (ESD) über blanke Metallstellen bei der Handhabung der Komponenten zu vermeiden.</p> <p>6. Schalten Sie das System niemals ohne ordnungsgemäß montiertes Gehäuse ein.</p> <p>Nachdem Sie die oben erwähnten ersten sechs SICHERHEITSSCHRITTE durchgeführt haben, können Sie die Abdeckung abnehmen, indem Sie:</p> <ol style="list-style-type: none"> 1. Öffnen und entfernen Sie die Verschlusseinrichtung (Padlock) auf der Rückseite des Systems, falls eine Verschlusseinrichtung installiert ist. 2. Entfernen Sie alle Schrauben der Gehäuseabdeckung. 3. Nehmen Sie die Abdeckung ab.
	<p>Zur ordnungsgemäßen Kühlung und Lüftung muß die Gehäuseabdeckung immer wieder vor dem Einschalten installiert werden. Ein Betrieb des Systems ohne angebrachte Abdeckung kann Ihrem System oder Teile darin beschädigen. Um die Abdeckung wieder anzubringen:</p> <ol style="list-style-type: none"> 1. Vergewissern Sie sich, daß Sie keine Werkzeuge oder Teile im Innern des Systems zurückgelassen haben. 2. Überprüfen Sie alle Kabel, Zusatzkarten und andere Komponenten auf ordnungsgemäßen Sitz und Installation. 3. Bringen Sie die Abdeckungen wieder am Gehäuse an, indem Sie die zuvor gelösten Schrauben wieder anbringen. Ziehen Sie diese gut an. 4. Bringen Sie die Verschlusseinrichtung (Padlock) wieder an und schließen Sie diese, um ein unerlaubtes Öffnen des Systems zu verhindern. 5. Schließen Sie alle externen Kabel und den AC Stromanschlußstecker Ihres Systems wieder an.
	<p>Der Mikroprozessor und der Kühler sind möglicherweise erhitzt, wenn das System in Betrieb ist. Außerdem können einige Platinen und Gehäuseteile scharfe Spitzen und Kanten aufweisen. Arbeiten an Platinen und Gehäuse sollten vorsichtig ausgeführt werden. Sie sollten Schutzhandschuhe tragen.</p>
	<p>Bei falschem Einsetzen einer neuen Batterie besteht Explosionsgefahr. Die Batterie darf nur durch denselben oder einen entsprechenden, vom Hersteller empfohlenen Batterietyp ersetzt werden. Entsorgen Sie verbrauchte Batterien den Anweisungen des Herstellers entsprechend.</p>
	<p>Das System wurde für den Betrieb in einer normalen Büroumgebung entwickelt. Der Standort sollte:</p> <ul style="list-style-type: none"> • sauber und staubfrei sein (Hausstaub ausgenommen); • gut gelüftet und keinen Heizquellen ausgesetzt sein (einschließlich direkter Sonneneinstrahlung);

	<ul style="list-style-type: none"> • keinen Erschütterungen ausgesetzt sein; • keine starken, von elektrischen Geräten erzeugten elektromagnetischen Felder aufweisen; • in Regionen, in denen elektrische Stürme auftreten, mit einem Überspannungsschutzgerät verbunden sein; während eines elektrischen Sturms sollte keine Verbindung der Telekommunikationsleitungen mit dem Modem bestehen; • mit einer geerdeten Wechselstromsteckdose ausgerüstet sein; • über ausreichend Platz verfügen, um Zugang zu den Netzkabeln zu gewährleisten, da der Stromanschluß des Produkts hauptsächlich über die Kabel unterbrochen wird.
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9.3.2 Consignes de sécurité

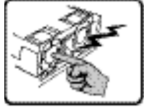
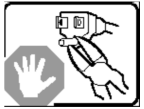
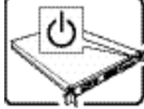

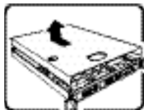
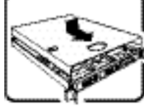
Lisez attention toutes les consignes de sécurité et les mises en garde indiquées dans ce document avant de suivre toute instruction.

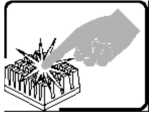

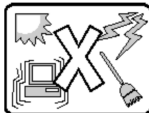
	Le bloc d'alimentation de ce produit ne contient aucune pièce pouvant être réparée par l'utilisateur. Ce produit peut contenir plus d'un bloc d'alimentation. Veuillez contacter un technicien qualifié en cas de problème.
	Ne pas essayer d'utiliser ni modifier le câble d'alimentation CA fourni, s'il ne correspond pas exactement au type requis. Le nombre de câbles d'alimentation CA fournis correspond au nombre de blocs d'alimentation du produit.
	Notez que le commutateur CC de mise sous tension /hors tension du panneau avant n'éteint pas l'alimentation CA du système. Pour mettre le système hors tension, vous devez débrancher chaque câble d'alimentation de sa prise.
	<p>CONSIGNES DE SÉCURITÉ -Lorsque vous ouvrez le boîtier pour accéder à l'intérieur du système, suivez les consignes suivantes:</p> <ol style="list-style-type: none"> 1. Mettez hors tension tous les périphériques connectés au système. 2. Mettez le système hors tension en mettant l'interrupteur général en position OFF (bouton-poussoir). 3. Débranchez tous les cordons d'alimentation c.a. du système et des prises murales. 4. Identifiez et débranchez tous les câbles reliés aux connecteurs d'E-S ou aux accès derrière le système. 5. Pour prévenir les décharges électrostatiques lorsque vous touchez aux composants, portez une bande antistatique pour poignet et reliez-la à la masse du système (toute surface métallique non peinte du boîtier). 6. Ne faites pas fonctionner le système tandis que le boîtier est ouvert.
	<p>Une fois TOUTES les étapes précédentes accomplies, vous pouvez retirer les panneaux du système. Procédez comme suit:</p> <ol style="list-style-type: none"> 1. Si un cadenas a été installé sur à l'arrière du système, déverrouillez-le et retirez-le.

	<p>2. Retirez toutes les vis des panneaux et mettez-les dans un endroit sûr.</p> <p>3. Retirez les panneaux.</p>
	<p>Afin de permettre le refroidissement et l'aération du système, réinstallez toujours les panneaux du boîtier avant de mettre le système sous tension. Le fonctionnement du système en l'absence des panneaux risque d'endommager ses pièces. Pour installer les panneaux, procédez comme suit:</p> <ol style="list-style-type: none"> 1. Assurez-vous de ne pas avoir oublié d'outils ou de pièces démontées dans le système. 2. Assurez-vous que les câbles, les cartes d'extension et les autres composants sont bien installés. 3. Revissez solidement les panneaux du boîtier avec les vis retirées plus tôt. 4. Remettez le cadenas en place et verrouillez-le afin de prévenir tout accès non autorisé à l'intérieur du système. 5. Rebranchez tous les cordons d'alimentation c. a. et câbles externes au système.
	<p>Le microprocesseur et le dissipateur de chaleur peuvent être chauds si le système a été sous tension. Faites également attention aux broches aiguës des cartes et aux bords tranchants du capot. Nous vous recommandons l'usage de gants de protection.</p>
	<p>Danger d'explosion si la batterie n'est pas remontée correctement. Remplacer uniquement avec une batterie du même type ou d'un type équivalent recommandé par le fabricant. Disposez des piles usées selon les instructions du fabricant.</p>
	<p>Le système a été conçu pour fonctionner dans un cadre de travail normal. L'emplacement choisi doit être:</p> <ul style="list-style-type: none"> • Propre et dépourvu de poussière en suspension (sauf la poussière normale). • Bien aéré et loin des sources de chaleur, y compris du soleil direct. • A l'abri des chocs et des sources de vibrations. • Isolé de forts champs électromagnétiques géenérés par des appareils électriques. • Dans les régions sujettes aux orages magnétiques il est recomandé de brancher votre système à un supresseur de surtension, et de débrancher toutes les lignes de télécommunications de votre modem durant un orage. • Muni d'une prise murale correctement mise à la terre. • Suffisamment spacieux pour vous permettre d'accéder aux câbles d'alimentation (ceux-ci étant le seul moyen de mettre le système hors tension).

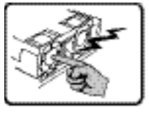
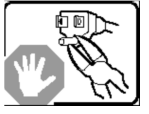
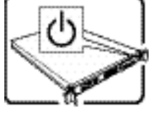
9.3.3 Instrucciones de seguridad importantes


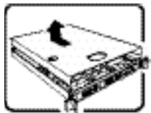
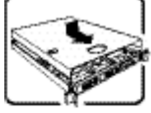
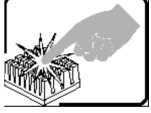

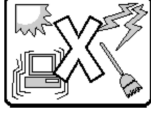
Lea todas las declaraciones de seguridad y precaución de este documento antes de realizar cualquiera de las instrucciones.

	<p>El usuario debe abstenerse de manipular los componentes de la fuente de alimentación de este producto, cuya reparación debe dejarse exclusivamente en manos de personal técnico especializado. Puede que este producto disponga de más de una fuente de alimentación.</p>
	<p>No intente modificar ni usar el cable de alimentación de corriente alterna, si no corresponde exactamente con el tipo requerido. El número de cables suministrados se corresponden con el número de fuentes de alimentación de corriente alterna que tenga el producto.</p>
	<p>Nótese que el interruptor activado/desactivado en el panel frontal no desconecta la corriente alterna del sistema. Para desconectarla, deberá desenchufar todos los cables de corriente alterna de la pared o desconectar la fuente de alimentación.</p>
	<p>INSTRUCCIONES DE SEGURIDAD: Cuando extraiga la tapa del chasis para acceder al interior del sistema, siga las siguientes instrucciones:</p> <ol style="list-style-type: none"> 1. Apague todos los dispositivos periféricos conectados al sistema. 2. Apague el sistema presionando el interruptor encendido/apagado. 3. Desconecte todos los cables de alimentación CA del sistema o de las tomas de corriente alterna. 4. Identifique y desconecte todos los cables enchufados a los conectores E/S o a los puertos situados en la parte posterior del sistema. 5. Cuando manipule los componentes, es importante protegerse contra la descarga electrostática (ESD). Puede hacerlo si utiliza una muñequera antiestática sujeta a la toma de tierra del chasis - o a cualquier tipo de superficie de metal sin pintar. 6. No ponga en marcha el sistema si se han extraído las tapas del chasis.
	<p>Después de completar las seis instrucciones de SEGURIDAD mencionadas, ya puede extraer las tapas del sistema. Para ello:</p> <ol style="list-style-type: none"> 1. Desbloquee y extraiga el bloqueo de seguridad de la parte posterior del sistema, si se ha instalado uno. 2. Extraiga y guarde todos los tornillos de las tapas. 3. Extraiga las tapas.
	<p>Para obtener un enfriamiento y un flujo de aire adecuados, reinstale siempre las tapas del chasis antes de poner en marcha el sistema. Si pone en funcionamiento el sistema sin las tapas bien colocadas puede dañar los componentes del sistema. Para instalar las tapas:</p> <ol style="list-style-type: none"> 1. Asegúrese primero de no haber dejado herramientas o componentes sueltos dentro del sistema. 2. Compruebe que los cables, las placas adicionales y otros componentes se hayan instalado correctamente. 3. Incorpore las tapas al chasis mediante los tornillos extraídos anteriormente, tensándolos firmemente. 4. Inserte el bloqueo de seguridad en el sistema y bloquéelo para impedir que pueda

	<p>accederse al mismo sin autorización.</p> <p>5. Conecte todos los cables externos y los cables de alimentación CA al sistema.</p>
	<p>Si el sistema ha estado en funcionamiento, el microprocesador y el disipador de calor pueden estar aún calientes. También conviene tener en cuenta que en el chasis o en el tablero puede haber piezas cortantes o punzantes. Por ello, se recomienda precaución y el uso de guantes protectores.</p>
	<p>Existe peligro de explosión si la pila no se cambia de forma adecuada. Utilice solamente pilas iguales o del mismo tipo que las recomendadas por el fabricante del equipo. Para deshacerse de las pilas usadas, siga igualmente las instrucciones del fabricante.</p>
	<p>El sistema está diseñado para funcionar en un entorno de trabajo normal. escoja un lugar:</p> <ul style="list-style-type: none"> • Limpio y libre de partículas en suspensión (salvo el polvo normal). • Bien ventilado y alejado de fuentes de calor, incluida la luz solar directa. • Alejado de fuentes de vibración. • Aislado de campos electromagnéticos fuertes producidos por dispositivos eléctricos. • En regiones con frecuentes tormentas eléctricas, se recomienda conectar su sistema a un eliminador de sobrevoltage y desconectar el módem de las líneas de telecomunicación durante las tormentas. • Provisto de una toma de tierra correctamente instalada. • Provisto de espacio suficiente como para acceder a los cables de alimentación, ya que éstos hacen de medio principal de desconexión del sistema.

Informazioni di Sicurezza importanti

	<p>Rivolgersi ad un tecnico specializzato per la riparazione dei component dell'alimentazione di questo prodotto. È possibile che il prodotto disponga di più fonti di alimentazione.</p>
	<p>Non modificare o utilizzare il cavo di alimentazione in c.a. fornito dal produttore, se non corrisponde esattamente al tipo richiesto. Ad ogni fonte di alimentazione corrisponde un cavo di alimentazione in c.a. separato.</p>
	<p>L'interruttore attivato/disattivato nel pannello anteriore non interrompe l'alimentazione in c.a. del sistema. Per interromperla, è necessario scollegare tutti i cavi di alimentazione in c.a. dalle prese a muro o dall'alimentazione di corrente.</p>

	<p>PASSI DI SICUREZZA: Qualora si rimuovano le coperture del telaio per accedere all'interno del sistema, seguire i seguenti passi:</p> <ol style="list-style-type: none"> 1. Spegner tutti i dispositivi periferici collegati al sistema. 2. Spegner il sistema, usando il pulsante spento/accesso dell'interruttore del sistema. 3. Togliere tutte le spine dei cavi del sistema dalle prese elettriche. 4. Identificare e sconnettere tutti i cavi attaccati ai collegamenti I/O od alle prese installate sul retro del sistema. 5. Qualora si tocchino i componenti, proteggersi dallo scarico elettrostatico (SES), portando un cinghia anti-statica da polso che è attaccata alla presa a terra del telaio del sistema - qualsiasi superficie non dipinta - . 6. Non far operare il sistema quando il telaio è senza le coperture.
	<p>Dopo aver seguito i sei passi di SICUREZZA sopracitati, togliere le coperture del telaio del sistema come segue:</p> <ol style="list-style-type: none"> 1. Aprire e rimuovere il lucchetto dal retro del sistema qualora ve ne fosse uno installato. 2. Togliere e mettere in un posto sicuro tutte le viti delle coperture. 3. Togliere le coperture.
	<p>Per il giusto flusso dell'aria e raffreddamento del sistema, rimettere sempre le coperture del telaio prima di riaccendere il sistema. Operare il sistema senza le coperture al loro proprio posto potrebbe danneggiare i componenti del sistema. Per rimettere le coperture del telaio:</p> <ol style="list-style-type: none"> 1. Controllare prima che non si siano lasciati degli attrezzi o dei component dentro il sistema. 2. Controllare che i cavi, dei supporti aggiuntivi ed altri componenti siano stati installati appropriatamente. 3. Attaccare le coperture al telaio con le viti tolte in precedenza e avvitare strettamente. 4. Inserire e chiudere a chiave il lucchetto sul retro del sistema per impedire l'accesso non autorizzato al sistema. 5. Ricollegare tutti i cavi esterni e le prolunghe AC del sistema.
	<p>Se il sistema è stato a lungo in funzione, il microprocessore e il dissipatore di calore potrebbero essere surriscaldati. Fare attenzione alla presenza di piedini appuntiti e parti taglienti sulle schede e sul telaio. È consigliabile l'uso di guanti di protezione.</p>
	<p>Esiste il pericolo di un esplosione se la pila non viene sostituita in modo corretto. Utilizzare solo pile uguali o di tipo equivalente a quelle consigliate dal produttore. Per disfarsi delle pile usate, seguire le istruzioni del produttore.</p>
	<p>Il sistema è progettato per funzionare in un ambiente di lavoro tipo. Scegliere una postazione che sia:</p> <ul style="list-style-type: none"> • Pulita e libera da particelle in sospensione (a parte la normale polvere presente nell'ambiente). • Ben ventilata e lontana da fonti di calore, compresa la luce solare diretta.

- | | |
|--|---|
| | <ul style="list-style-type: none">• Al riparo da urti e lontana da fonti di vibrazione.• Isolata dai forti campi magnetici prodotti da dispositivi elettrici.• In aree soggette a temporali, è consigliabile collegare il sistema ad un limitatore di corrente.
In caso di temporali, scollegare le linee di comunicazione dal modem.• Dotata di una presa a muro correttamente installata.• Dotata di spazio sufficiente ad accedere ai cavi di alimentazione, i quali rappresentano il mezzo principale di scollegamento del sistema. |
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10 Appendix B: Regulatory and Certification Information

NOTE: This chapter has not been edited or reviewed yet for this CG1200 manual. The information here is subject to change.

10.1 Product Regulatory Compliance

10.1.1 Product Safety Compliance

The Carrier Grade server complies with the following safety requirements:

- UL60950-1 /CSA 60950-1 (USA / Canada)
- EN60950-1 (Europe)
- IEC60950-1 (International), CB Certificate & Report including all international deviations
- GS Certificate (Germany)
- GOST R Approval (Russia)
- CE - Low Voltage Directive 73/23/EEE (Europe)
- CCC Certification (China)
- BSMI CNS 13436 (Taiwan)

10.1.2 Product EMC Compliance - Class A Compliance

The Carrier Grade server has been tested and verified to comply with the following electromagnetic compatibility (EMC) regulations.

- FCC /ICES-003 - Emissions (USA/Canada)
- CISPR 22 - Emissions (International)
- EN55022 - Emissions (Europe)
- EN55024 - Immunity (Europe)
- EN61000-3-2 - Harmonics (Europe)
- EN61000-3-3 - Voltage Flicker (Europe)
- CE- EMC Directive 89/336/EEC (Europe)
- VCCI Emissions (Japan)
- AS/NZS: CISPR 22 Emissions (Australia / New Zealand)
- BSMI CNS13438 Emissions (Taiwan)
- GOST R Approval Emissions and Immunity (Russia)
- KCC Approval (Korea)
- CCC Certification (China)

10.1.3 Certifications/Registrations/Declarations

- UL Listing (US/Canada)
- CE Declaration of Conformity (Europe)
- FCC/ICES-003 Class A Verification Report (USA/Canada)
- VCCI Certification (Japan)
- C-Tick Declaration of Conformity (Australia)
- BSMI Certification (Taiwan)
- GOST R Certification / License (Russia)
- KCC Certification (Korea)
- CNCA Certification (China)
- Ecology Declaration (International)

10.2 Electromagnetic Compatibility Notices

10.2.1 FCC (USA)

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

For questions related to the EMC performance of this product, contact:

Kontron America, Inc.
14118 Stowe Drive
Poway, CA 92064-7147
(888) 294-4558

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment to an outlet on a circuit other than the one to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Any changes or modifications not expressly approved by the grantee of this device could void the user's authority to operate the equipment. The customer is responsible for ensuring compliance of the modified product.

Only peripherals (computer input/output devices, terminals, printers, etc.) that comply with FCC Class A or B limits may be attached to this computer product. Operation with noncompliant peripherals is likely to result in interference to radio and TV reception.

All cables used to connect to peripherals must be shielded and grounded. Operation with cables connected to peripherals that are not shielded and grounded may result in interference to radio and TV reception.

10.2.2 Industry Canada (ICES-003)

Cet appareil numérique respecte les limites bruits radioélectriques applicables aux appareils numériques de Classe A prescrites dans la norme sur le matériel brouilleur: "Appareils Numériques", NMB-003 édictée par le Ministre Canadien des Communications.

English translation of the notice above:

This digital apparatus does not exceed the Class A limits for radio noise emissions from digital apparatus set out in the interference-causing equipment standard entitled "Digital Apparatus", ICES-003 of the Canadian Department of Communications.

10.2.3 Europe (CE Declaration of Conformity)

This product has been tested in accordance to, and complies with, the Low Voltage Directive (73/23/EEC) and EMC Directive (2004/108/EC). The product has been marked with the CE Mark to illustrate its compliance.

10.2.4 VCCI (Japan)

この装置は、クラスA情報技術装置です。この装置を家庭環境で使用すると電波妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求されることがあります。

VCCI- A

English translation of the notice above:

This is a Class A product based on the standard of the Voluntary Control Council for Interference (VCCI) from Information Technology Equipment. If this is used near a radio or television receiver in a domestic environment, it may cause radio interference.

Install and use the equipment according to the instruction manual.

10.2.5 BSMI (Taiwan)

警告使用者：
這是甲類的資訊產品，在居住的環境中使用時，可能會造成射頻干擾，在這種情況下，使用者會被要求採取某些適當的對策

The BSMI Certification Marking and EMC warning is located on the outside rear area of the product.

10.2.6 Regulated Specified Components

To maintain the UL listing and compliance to other regulatory certifications and/or declarations, the following conditions must be adhered to and the following regulated components must be used. Interchanging or using other components will void the UL listing and other product certifications and approvals.

1. Add-in boards must have a printed wiring board flammability rating of minimum UL94V-1. Add-in boards containing external power connectors and/or lithium batteries must be UL recognized or UL listed. Any add-in board containing modem telecommunication circuitry must be UL listed. In addition, the modem must have the appropriate telecommunications, safety, and EMC approvals for the region in which it is sold.
2. Peripheral Storage Devices must be a UL recognized or UL listed accessory and TUV or VDE licensed. Maximum power rating of any one device is 19 watts. Total server configuration is not to exceed the maximum loading conditions of the power supply.

11 Appendix C: NEBS Considerations

WARNING: The CG1200 intra-building Ethernet RJ-45 ports, COM ports, and/or Telco Alarms port are suitable for connection to intra-building or unexposed wiring or cabling only. The intra-building ports of the CG1200 MUST NOT be metalically connected to interfaces that connect to the OSP or its wiring. These interfaces are designed for use as intra-building interfaces only (Type 2 or Type 4 ports as described in GR-1089) and require isolation from the exposed OSP cabling. The addition of Primary Protectors is not sufficient protection in order to connect these interfaces metalically to OSP wiring.

WARNING: The CG1200 intra-building Ethernet RJ-45 ports, COM ports, and/or Telco Alarms port must use shielded intra-building cabling/wiring that is grounded at both ends.

The CG1200 server is suitable for installation in either the Common Bonding Network (CBN) or an Isolated Bonding Network (IBN).

The CG1200 server is suitable for installation in Network Telecommunication Facilities (NTF) and locations where the National Electric Code (NEC) applies, but is not suitable for installation in Outside Plant (OSP) installations.

The Battery Return (BR) for the -48V DC powered CG1200 systems is suitable for installation as either Isolation DC return (DC-I) or Common DC return (DC-C). Where the CG1200 is installed with a common DC return, the ampacity of the conductor connecting the equipment frame to the battery return conductor shall be equal to or greater than 13 amps.

This active alarm provides an indication that the air filter should be inspected and/or replaced.

12 Appendix D: Getting Help

12.1 World Wide Web

Technicians and engineers from Kontron and/or its subsidiaries are available for technical support. We are committed to making our product easy to use and will help you use our products in your systems.

Please consult our Web site at <http://us.kontron.com/support> for the latest product documentation, utilities, drivers and support contacts.

12.2 Telephone

(800) 480-0044

12.3 Email

support@us.kontron.com

Corporate Offices

Europe, Middle East & Africa	North America	Asia Pacific
Oskar-von-Miller-Str. 1 85386 Eching/Munich Germany Tel.: +49 (0)8165/ 77 777 Fax: +49 (0)8165/ 77 219 info@kontron.com	14118 Stowe Drive Poway, CA 92064-7147 USA Tel.: +1 888 294 4558 Fax: +1 858 677 0898 info@us.kontron.com	17 Building, Block #1, ABP. 188 Southern West 4th Ring Road Beijing 100070, P.R.China Tel.: + 86 10 63751188 Fax: + 86 10 83682438 info@kontron.cn