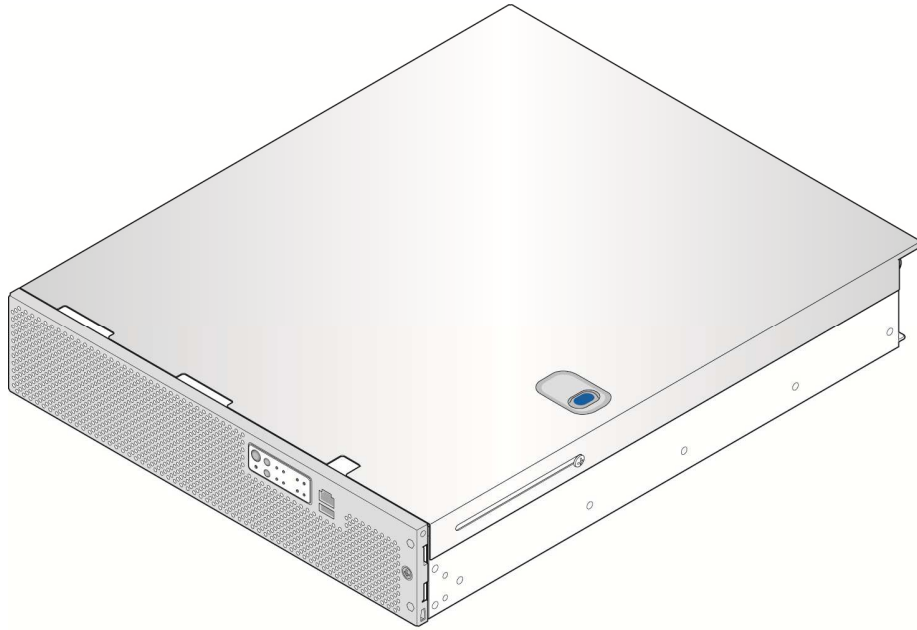


>> Kontron Installation and Maintenance Guide <<



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Kontron CG2200 Carrier Grade Server

Document Revision 1.1

» Change History «

Revision 1.0	Initial Release
Revision 1.1	Updated Section 9.2.1 – change ‘AC line voltage overcurrent protection per cord feed’ from 20A to 10A
Revision 1.2	Updated Section 4.12.2 – change ‘AC line voltage overcurrent protection per cord feed’ from 20A to 10A
Revision 1.3	Adding new E5-2600 v2 processors family

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1 Introduction

1.1 About this Manual

Thank you for purchasing and using the Kontron CG2200 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 CG2200 server, and troubleshooting information.

NOTE: Always be sure to search for CG2200 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 CG2200 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 S2600CO 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 CG2200 server includes the following components:

- One 2U chassis
- One Intel® Server Board S2600CO with DDR3 memory slots (memory not included)
- Six 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.)
- Six fan assemblies for cooling the processor(s), DIMM(s), PCI slot(s), and other internal components in three cooling zones.
- A front panel board ,LED/switch board, and telco alarms module (TAM) board
- 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 *CG2200 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 CG2200, click on Product Downloads, then Ordering Guide).

- LGA 2011 (socket R) support for Intel® Xeon® E5-2600 and E5-2600 v2 processors family
- Registered DDR3 Memory (RDIMM), LV-RDIMM, Unbuffered DDR3 Memory (UDIMM) with ECC and Load Reduced DDR3 Memory (LR-DIMM)
- Up to six hot-swappable 2.5" SAS HDDs or SATA SSDs
- Hard disk drive carriers (six already shipped with the server)
- Third-party LSI-based 6 Gbit SAS hardware RAID controller
- Two front access SD media flash modules
- Internal flash storage supported (eUSB and SATADOM)
- Two risers (four FH/FL cards) and two LP adapters for a total of six PCIe Gen2/Gen3 I/O cards
- Power cord(s)
- AC or DC power supply module (650W) for redundancy
- Intel® Remote Management Module 4 (RMM4) or RMM4Lite options
- Rack mount kits

For information about the accessories, memory, processors, and ordering information, refer to the *CG2200 Carrier Grade Server Configuration Guide* on <http://us.kontron.com/support/> (search for CG2200, 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 *CG2200 Carrier Grade Server Tested Hardware and Operating System List (THOL)* on <http://us.kontron.com/support/> (search for CG2200, click on Product Downloads, then Compatibility Matrix).

1.5 Additional Information and Software

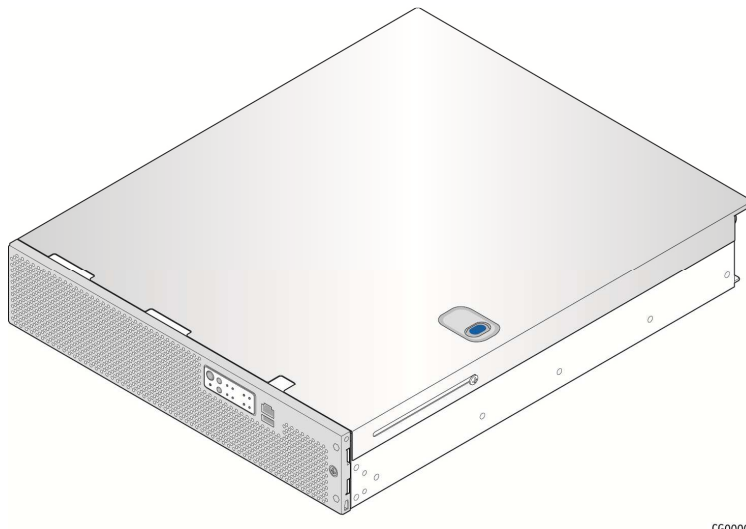
If you need more technical information or information about the accessories that can be used with this CG2200 server, refer to the Technical Product Specifications (TPSs) for the system and the server board. The TPS documents are located on the Kontron support website at <http://us.kontron.com/support>. 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 CG2200 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 CG2200 server.

Figure 1. Kontron CG2200 Carrier Grade Server



CG00001

Table 1 summarizes the major features of the server system.

Table 1. CG2200 Server Features

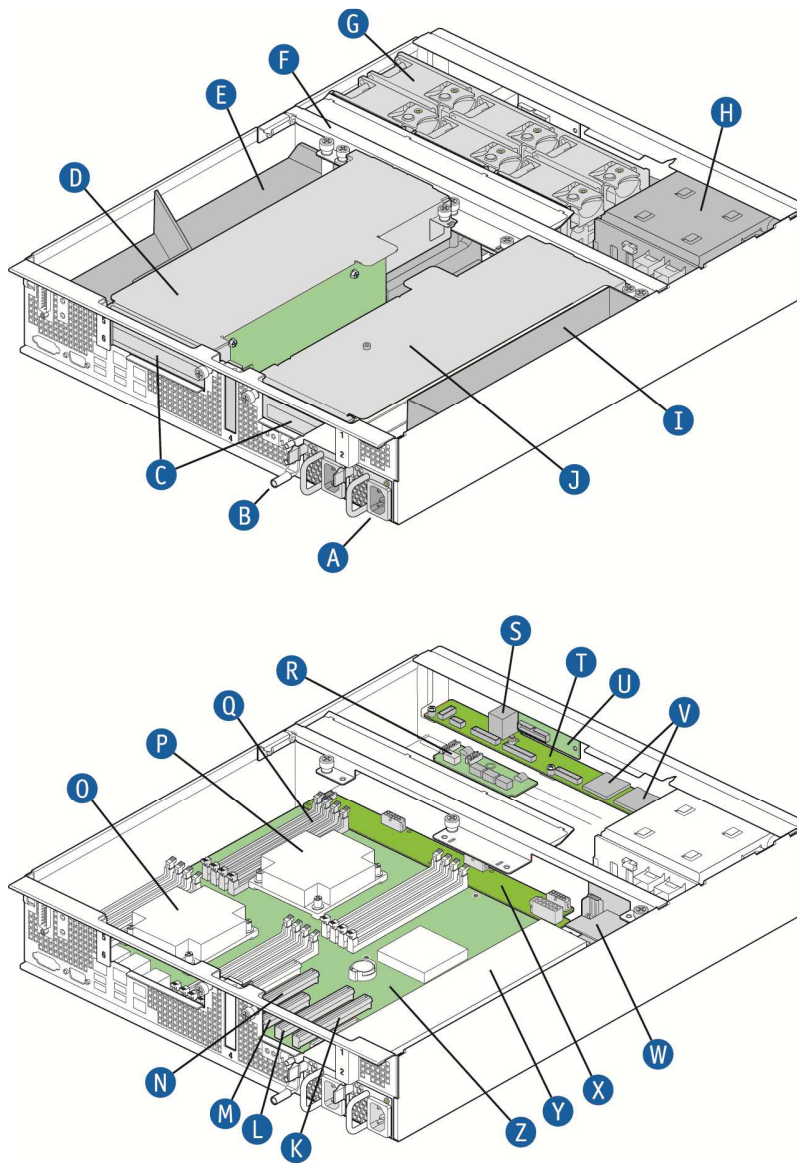
Feature	Description
Peripheral Interfaces	<p>External connections: DB-15 video VGA connector (rear) DB-15 alarms connector (rear) RJ45 COM2 connector (front) Four RJ45 10/100/1000 Mbps network connections (rear) Four USB 2.0 connectors (rear) One USB 2.0 connector (front) One DB9 COM1 connector (rear) One RMM4 dedicated management NIC (optional)</p> <p>Internal connections: One internal USB headers for embedded flash drives One RMM4 connector for an Intel® Remote Management Module 4 module (optional)</p>
Video	Integrated Matrox G200 2D video graphics controller
LAN	Four 10/100/1000 Mbps Intel® I350 PHYs
Expansion Capabilities	<p>Riser card options: Two riser slots to support a single slot PCIe x16 riser or a dual slot PCIe x8 riser (left side slot 2) a single slot PCIe x16 riser or a dual slot PCIe x8 riser or a dual PCI-X active riser (right side slot 5)</p>
Hard Drive Options	Up to six 2.5-inch SAS HDD or SATA SDD hard drives Onboard SAS SWRAID 0/1/10 via ESRTII or RSTe
Peripherals	Up to two SD flash modules (front panel access)
Front Panel Buttons	Power on/off System reset Chassis ID NMI
Front Panel LEDs	Power status Chassis identification System status Fan status HDD activity/fault NIC activity Alarms (critical, major, minor, power)
Power Supply	Up to two 650W power supply modules (AC or DC)
Fans	Two redundant, hot-swappable CPU1/memory and right-side PCI assembly area cooling fans Two redundant, hot-swappable CPU2/PCI area cooling fans

Feature	Description
	Two redundant left-side PCI assembly cooling fans
System Management	On-board Emulex Pilot III Integrated Baseboard Management Controller (Integrated BMC), IPMI 2.0-compliant

2.1 Server Components

Figure 2 shows the CG2200 server with the top cover removed to show the internal components.

Figure 2. CG2200 Server Components



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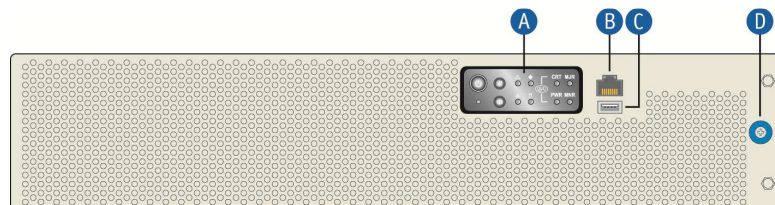
Table 2. CG2200 Server Components

Item	Description	Item	Description
A	Redundant, hot-swappable AC or DC power supply modules	N	Baseboard PCI slot 5, for right-side risers only
B	Earth Ground	O	CPU 2
C	PCI adapter external port access for five adapters	P	CPU 1
D	Right-side riser card assembly	Q	16 DDR3 memory DIMM slots, two banks of four DIMMs for each processor (CPU 1 slots shown)
E	CPU and DIMM air duct	R	Telco alarm module (TAM) board
F	Chassis support crossbeam	S	RJ45 COM1 port and USB port (2 connectors)
G	System fans (six)	T	Front panel board (FPB)
H	Hard Drive Bay	U	LED board
I	Air baffle for left-side riser card	V	SD flash card slots (2)
J	Left-side riser card assembly	W	Power distribution board (PDB)
K	Baseboard PCI slot 2 for left-side risers only	X	Fan control board
L	Baseboard PCI slot 3 for internal hardware RAID adapter only	Y	Power supply cage for two power supply modules
M	Baseboard PCI slot 4, for LP adapters only	Z	Intel® S2600CO Server Board

2.2 CG2200 Server Front Panel

Figure 3 shows the front panel of the CG2200 server with the bezel installed.

Figure 3. CG2200 Server Front View (Bezel Installed)

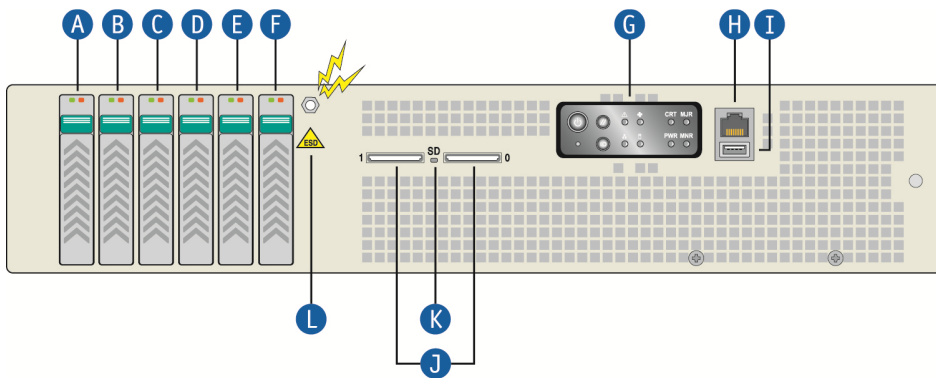


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Item	Description	Item	Description
A	Front panel control buttons and status indicator and telco alarm LEDs	C	USB port
B	RJ45 COM2 port	D	Bezel captive screw

Figure 4 shows the front panel of the CG2200 server with the bezel removed.

Figure 4. CG2200 Server Front View (Bezel Removed)

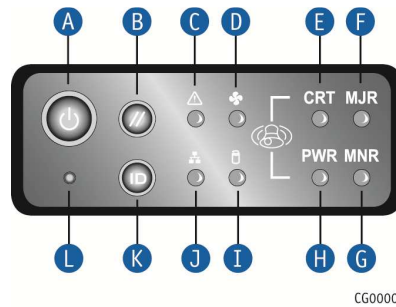


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Item	Description	Item	Description
A	Hard disk drive slot 5	G	Front panel control buttons, status indicator and telco alarm LEDs
B	Hard disk drive slot 4	H	RJ45 serial port (COM1/serial A)
C	Hard disk drive slot 3	I	USB port
D	Hard disk drive slot 2	J	SD 0 and SD 1 flash modules
E	Hard disk drive slot 1	K	SD flash LED
F	Hard disk drive slot 0	L	ESD ground strap attachment

Figure 5 shows the CG2200 server control panel.

Figure 5. CG2200 Server Control Panel



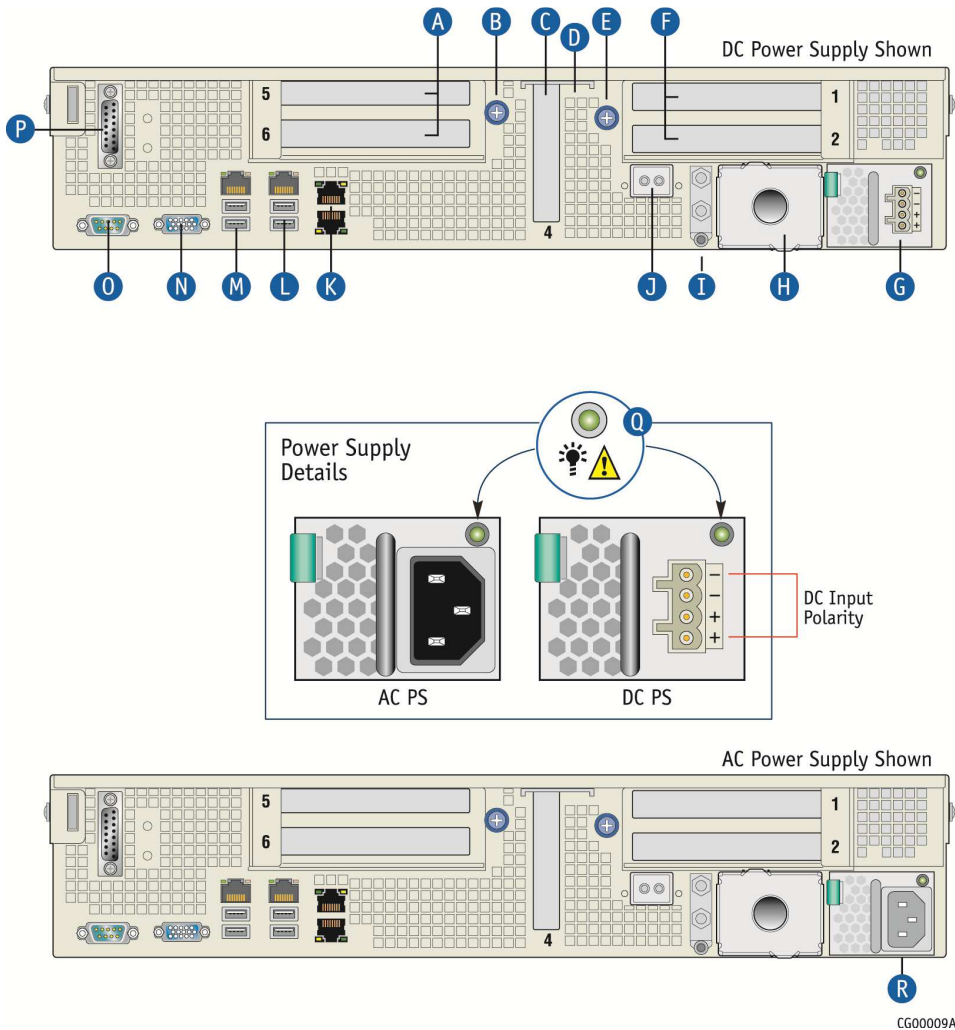
Item	Description	Item	Description
A	Power button	G	Minor alarm (amber)
B	System reset button	H	Power alarm (amber)
C	Chassis information LED	I	HDD activity LED
D	Fan status LED	J	NIC1/NIC2 activity LED
E	Critical alarm (amber or red†)	K	Chassis ID button
F	Major alarm (amber or red†)	L	NMI button

† 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 CG2200 Server Back Panel

Figure 6 shows the back panel of the CG2200 server.

Figure 6. CG2200 Server Rear View



Item	Description	Item	Description
A	Right ¹ 2-slot FL/FH PCI assembly (slots 5 and 6)	J	RMM4 NIC (optional)
B	Thumb screw to secure right PCI assembly (A)	K	GbE NIC3 and NIC 4 (NIC3 on top)
C	LP PCI adapter (slot 4)	L	GbE NIC2, USB2 and USB3 (USB2 on top)
D	Internal LP PCI adapter (baseboard slot 3, not visible from outside of chassis)	M	GbE NIC1, USB0 and USB1 (USB0 on top)
E	Thumb screw to secure left PCI assembly (F)''	N	Video connector
F	Left ¹ 2-slot FL/FH PCI assembly (slots 1 and 2)	O	DB9 Serial Connector
G	Power supply 1 (shown with PC power supply installed)	P	TAM dry relay connector
H	Optional power supply 2 (filler panel shown) ²	Q	Power supply LED signals
I	Earth Ground studs (dual hole lug shown)	R	Power supply 1 (shown with AC power supply)

Item	Description	Item	Description
			installed)

NOTES:

1. Right and left notation for PCI assemblies is when looking from the front of the system.
- 24: In non-redundant configurations, power supply slot 2 must have a filler panel installed.
3. 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:

The FP Board provides the following feature set:

- Two USB ports: one to drive the USB port on the combo RJ45 and USB connector and one to drive the SD flash module controller(s).
- Serial RS-232 signals to the front panel serial port on the combo RJ45 and USB connector
- 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 board has the following features:

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

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 CG2200 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 CG2200 Carrier Grade Server Technical Product Specification on the Kontron support website at <http://us.kontron.com/support>.

2.7 Hard Disk Drives

The CG2200 Carrier Grade Server chassis supports up to six hard disk drives which are accessible from the front of the chassis with the bezel removed. The hard disk drives are mounted in removable drive carriers that latch into the drive bay sub-assembly. Up to six 2.5-inch hot-swappable SAS technology rotating hard drives and/or SATA solid state drives can be mounted in the drive bay.

Drives can consume up to 12W of power, each. 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 CG2200 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 CG2200, click on Product Downloads, then Compatibility Matrix).

2.8 SAS Hardware RAID Controller

Software RAID 0/1/10 is supported for all six SAS drives or SATA SSDS. If additional levels of software RAID are needed, see the Configuration Guide for orderable options.

Hardware RAID is available as a separately-orderable kit and additional CG2200 RAID cable kit. This kit provides cables and brackets to support both an LSI and an Intel hardware RAID controller.

For more information about these options, refer to the Configuration Guide located on the support website at <http://us.kontron.com/support/>, (Search for CG2200, click on Product Downloads, then Ordering Guide).

2.9 SATA Disk on Module

A SATA DOM can be implemented on the server board. To use this HDD functionality, you need a separately-purchased card. 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 CG2200, 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 CG2200, click on Product Downloads, then Compatibility Matrix).

2.10 SD Flash Modules

There are two front-accessible USB SD flash modules that support two SD cards. For a list of validated SD cards to use with these modules, see the Tested Hardware and Operating System List (THOL) on the Kontron website at <http://us.kontron.com/support/> (search for CG2200, click on Product Downloads, and then Compatibility Matrix).

2.11 Embedded USB Flash Drive

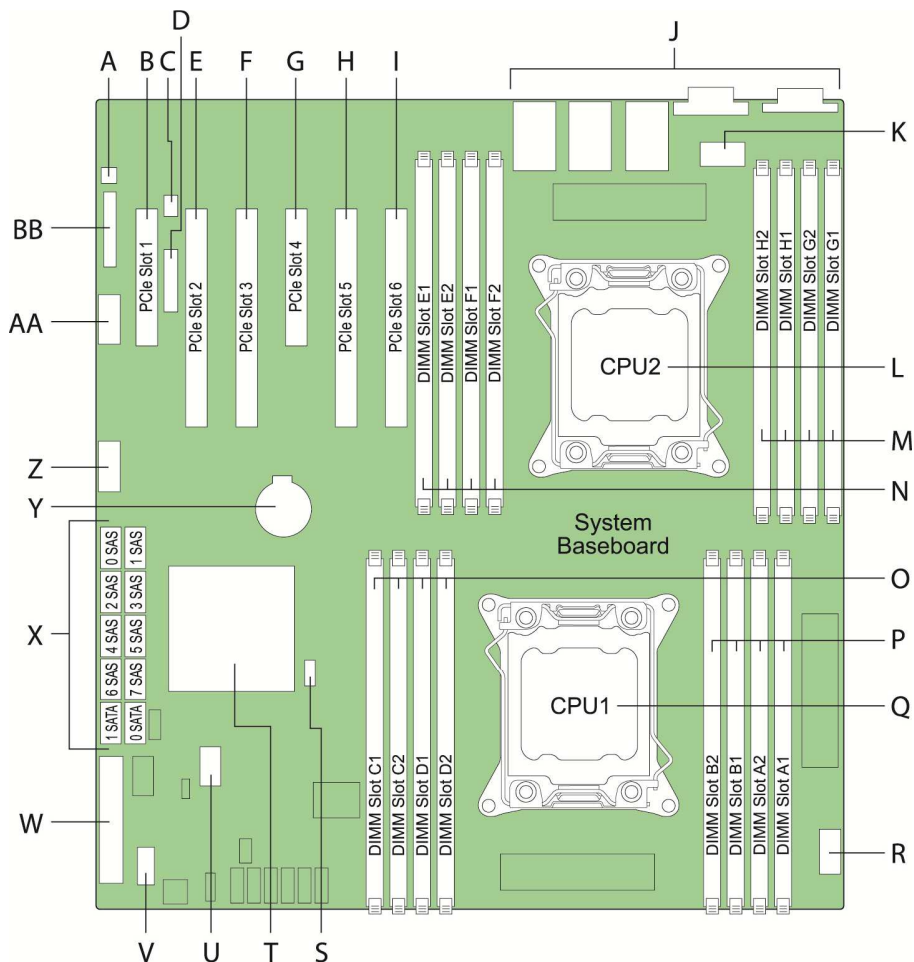
A eUSB flash drive can be installed optionally on the server board. To use this feature, you need a separately-purchased eUSB drive. For a list of qualified third party vendors, see the *Tested Hardware and Operating System List* (THOL). The latest version of the THOL is located on the support website at <http://us.kontron.com/support> (search for CG2200, click on Product Downloads, then Compatibility Matrix).

2.12 Server Board (Baseboard)

The CG2200 server uses the Intel® S2600CO server board for the baseboard. The processors and memory DIMMs are on the server board and support for several optional accessories, such as two PCI riser slots, the platform management subsystem, and RMM4 Lite and RMM4 DMN connectors, also .

Figure 7 shows the key components and connectors on the S2600CO server board.

Figure 7. Baseboard Components and Connectors



CG00068

Item	Description	Item	Description
A	Chassis intrusion header (not supported on the CG2200 server)	O	CPU1 DIMM slots (C, D)
B	PCIe slot 1, PCI Express* Gen3	P	CPU1 DIMM slots (A, B)
C	RMM4Lite key	Q	CPU1
D	RMM4 NIC	R	CPU1 power connector
E	PCIe slot 2, PCI Express* Gen3	S	SAS software RAID key
F	PCIe slot 3, PCI Express* Gen3	T	PCH chipset
G	PCIe slot 4, PCI Express* Gen3	U	eUSB connector
H	PCIe slot 5, PCI Express* Gen3	V	SMBus
I	PCIe slot 6, PCI Express* Gen3	W	Main power connector
J	Rear I/O ports	X	SAS/SATA connectors
K	CPU2 power connector	Y	CMOS battery
L	CPU2	Z	Front panel USB connector
M	CPU2 DIMM slots (G, H)	AA	Serial B connector
N	CPU2 DIMM slots (E, F)	BB	SSI front panel connector

2.13 Riser Card Assembly

The Intel® Server Board S26000CO has two riser slots capable of supporting riser cards on the right side and left side of the chassis. Baseboard PCIe slot 2 and PCIe slot 5 support the riser boards in the CG2200 system. Baseboard PCIe slot 2 supports a single slot PCIe X16 riser and a dual slot PCIe X8 riser. These risers are referred to as the “left side” risers since the boards plug in on the left side of the chassis as viewed from the front of the server. Baseboard PCIe slot 5 supports a single slot PCIe X16 riser, a dual slot PCIe X8 riser, and a dual PCI-X active riser. These risers are referred to as the “right side” risers since the boards plug in on the right side of the chassis.

Once PCI add-in cards are installed and the riser card assembly is remounted in the chassis, the cards are accessible from the rear of the server chassis.

Table 3 identifies the card configurations and the connector types used.

Table 3. Riser Card Configuration Options

Riser Card Option	Slot Configuration
PCI Express passive riser single slot x16 Right-side riser (baseboard slot 5)	Single full-height PCI Express connector
PCI Express passive riser dual slot x8 Right-side riser (baseboard slot 5)	Two full height PCI Express x8 connectors
PCI Express/PCI-X active riser Right-side riser (baseboard slot 5)	Two full-height PCI-X 133 connectors
PCI Express passive riser single slot x16 Left-side riser (baseboard slot 2)	Single full-height PCI Express connector
PCI Express passive riser dual slot x8 Left side riser (baseboard slot 2)	Two Full height PCI Express x8 connectors

2.14 Ethernet NIC Ports

The S2600CO server board (baseboard) provides four dual network interface controller (NIC) RJ45 connectors oriented side-by-side on the back edge of the board and accessible at the rear I/O panel. Additional rear-accessible GbE NIC ports can be added to the system by using full-height PCI-X/PCIe add-in cards or low-profile PCIe add-in cards

2.15 Remote Management Module 4

RMM4 can be implemented optionally on the iBMC on the S2600CO server board. To use this feature, a separately-orderable RMM4 kit must be installed. An RMM4Lite kit can also be purchased to enable advanced features in the iBMC without a dedicated management NIC.

2.16 Power Supply Subsystem

The power supply subsystem consists of up to two AC or DC power supply modules (two needed for redundancy) and a power distribution board (PDB). One power supply module is included with the server with a filler panel in the second power supply slot.

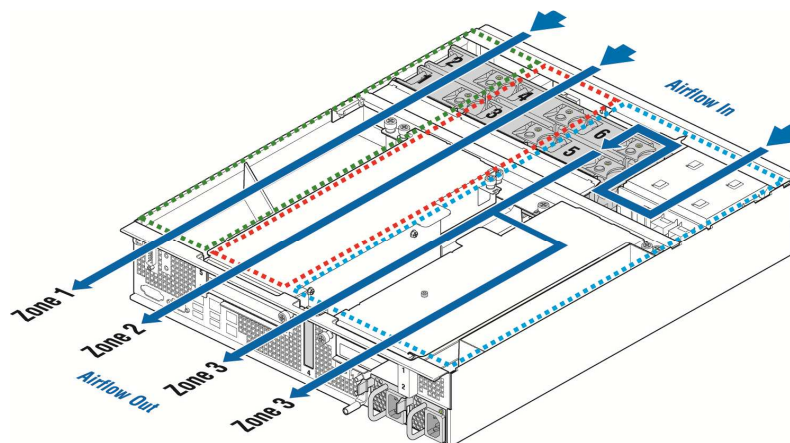
The power supply module is rated for 650W output capability in full AC or DC input voltage range. The minimum steady-state DC input voltage at which the equipment remains fully operational is -38 VDC. The nominal operating voltage of the DC system is -48 VDC.

2.17 System Cooling

There are three main cooling areas in the CG2200 server as illustrated in Figure 8.

- Zone 1 (green dotted lines) contains fans 1 and 2, which cool CPU1, CPU2, DIMMs A1, A2, B1, B2, G1, G2, H1, H2 and all other components in this zone. Air flows through the front bezel to the rear of the chassis (zone 1 arrow).
- Zone 2 (red dotted lines) contains fans 3 and 4 which cool DIMMs C1, C2, D1, D2, E1, E2, F1, F2, the right-side PCI assembly, and all other components in this zone. . Air flows through the front bezel to the rear of the chassis (zone 2 arrow).
- Zone 3 (blue dotted lines) contains fans 5 and 6 which cool the six HDDs, the two LP PCI adapters in baseboard slots 3 and 4, the left-side PCI assembly and all the other components in this area. Air flow takes two routes for this zone; from the front bezel over the drive bay to the fans and straight back to the rear of the chassis (left zone 3 arrow) or over the drive bay to the fans and then back over the power supplies to the rear of the chassis. (right zone 3 arrow).
- Internal power supply fans as well as system fans 5 and 6 cool the power distribution board (PDB) and power supply modules.

Figure 8. CG2200 Server Cooling Areas



CG00013

The three-zone cooling subsystem is sized to provide cooling for:

- Up to two server board processors
- Up to 256 GBytes of DDR3 memory
- Up to six SAS hard disk drives

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 met.

2.18 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 Configuration Guide located on the support website at <http://us.kontron.com/support/> (search for CG2200, 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 CG2200, click on Product Downloads, then Compatibility Matrix).

2.18.1 Processors

The S2600CO server board accommodates two processors from Intel® Xeon® E5-2600 and E5-2600 v2 processor series. These processors can be ordered from Intel or an authorized distributor using the Kontron part numbers listed in the *CG2200 Carrier Grade Server Configuration Guide*.

2.18.2 Memory

The S2600CO server board supports 16 DIMM slots – two DIMM slots/channel – four memory channels/processor. Support for Registered DDR3 Memory (RDIMM), LV-RDIMM, Unbuffered DDR3 Memory (UDIMM) with ECC and Load Reduce DDR3 Memory (LR-DIMM). Memory DDR3 data transfer rates of 800, 1066, 1333, and 1600 MT/s.

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 CG2200 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 peripheral devices connected to the server.
Turn off the server.
3. Disconnect the power cord(s).

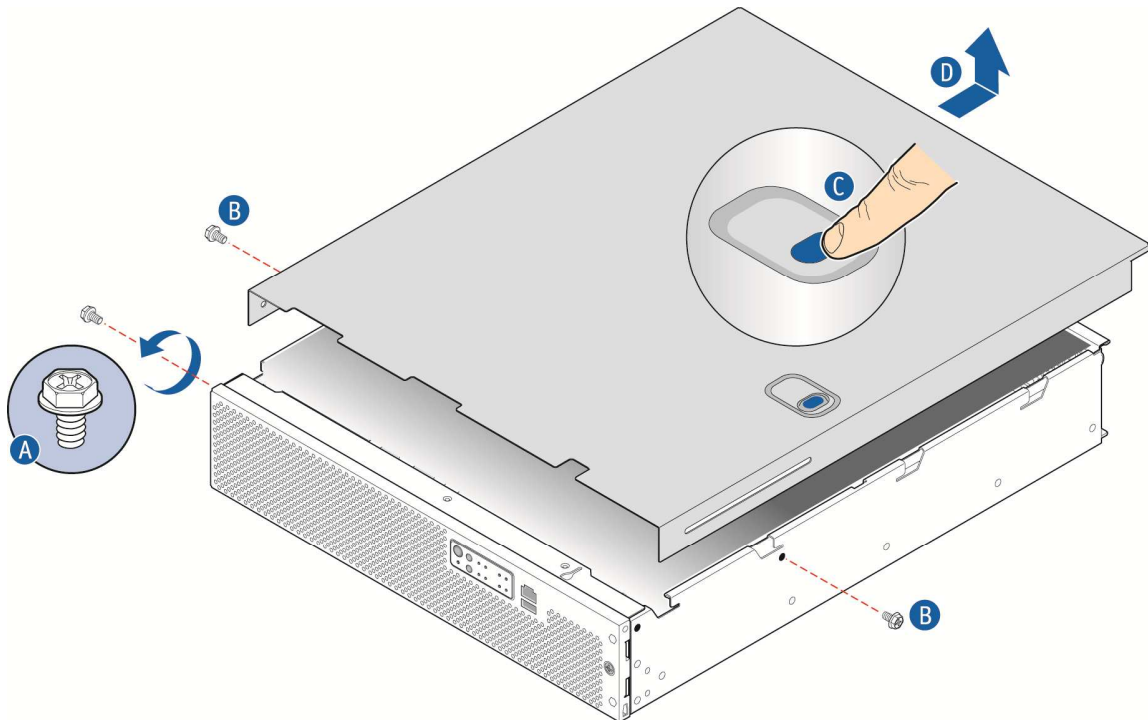
Figure 9 shows the top cover and how it is removed.

Removing the Cover

1. Remove the hex HD Phillips 6-32 shipping screw at the front left side of the cover, if it is still attached, and save it for future use. (
2. Figure 9, "A")

3. Remove the two shoulder screws (one on each side) from the cover. ("B")
4. While holding the blue unlocking button at the middle of the top cover ("C"), slide the cover backwards until it stops and the edge clears the lock bracket on the rear panel of the chassis
5. Lift the cover straight up to remove it from the chassis. ("D")

Figure 9. Removing the Cover



CG00069

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, align the tab on the rear right edge of the cover with the lock bracket on the outside of the rear panel and place the cover down over the chassis with the side edges outside the chassis walls.
2. Slide the cover forward until it clicks into place.
3. Install the shipping screw if tooled entry is required or if the unit will be shipped.
4. Replace the two shoulder screws (one on each side) to fasten the cover to the chassis frame.
5. Torque screws to 8lbf*in.
6. Reconnect all peripheral 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

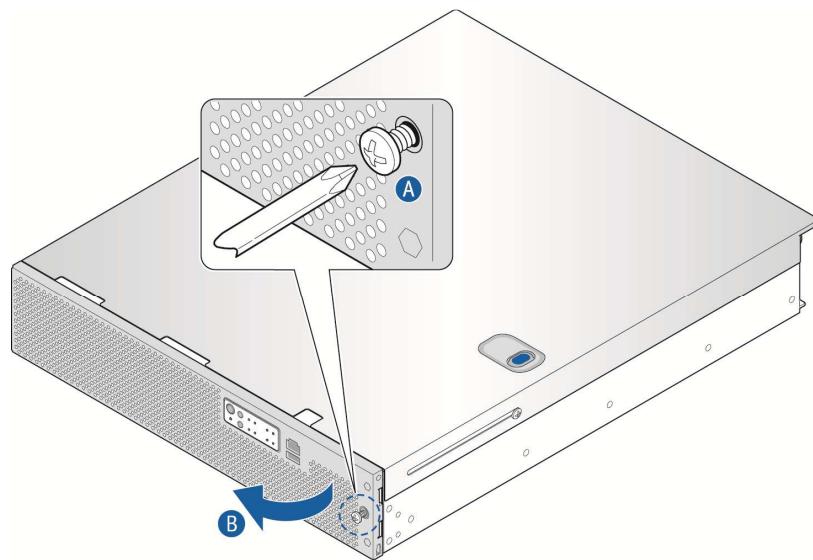
You need to remove the front bezel for tasks such as:

- Installing or removing hard disk drives or an SD flash card
- Observing the individual hard disk drive activity/fault indicators
- Replacing the control panel LED/switch board

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



CG00070

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 on the front panel pins.
3. Snap the bezel into place and tighten the retention screw to secure it.

3.2.5 Removing a Riser Card Assembly

One or both of the riser card assemblies has to be removed from the chassis to perform tasks such as:

- Installing or replacing a riser card and any PCI add-in card(s)
- Working with any components on the server board that are near the riser card assembly
- Installing or replacing processors or memory DIMMs
- Removing the server board

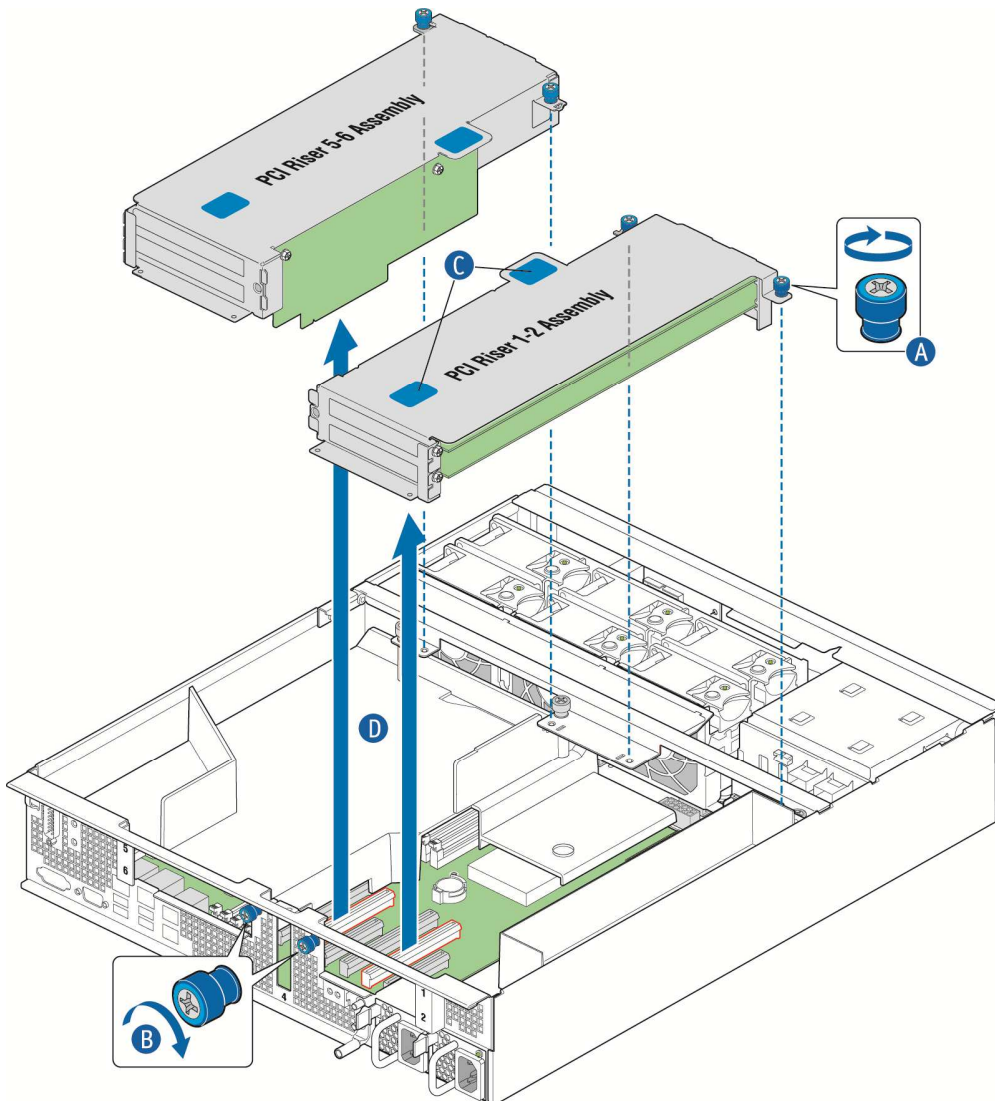
To remove a riser card assembly:

1. Power down the server and remove all peripheral devices and the power cord(s)
2. Remove the chassis cover. For instructions, see "Removing the Chassis Cover" in Section 3.2.

Loosen the two blue captive retention screws (

3. Figure 11, "A") at the front of the riser assembly and the blue captive screw at the rear of the chassis ("B").
4. Using the two blue touch points ("C"), lift the riser card assembly out of the chassis ("D").

Figure 11. Removing the Riser Card Assemblies



CG00071

3.2.6 Re-Installing a Riser Card Assembly

To re-install the riser card assembly:

1. Position the riser front tabs over the holes on the PCI support cross bar. (Figure 11, "A").

- Using the blue touch points on the top of the assembly (“C”), press down to mate the riser card with the header on the server board (Slot 2 for the left-side riser and slot 5 for the right-side riser.)

NOTES: 1) To avoid damaging the card edge, be sure that the card is lined up straight with the header, not on an angle.
2) If a hardware RAID controller card is installed in PCI slot 4, be careful not to damage the diagnostic pins at the back of the card next to the rear chassis panel when re-installing the left-side riser assembly.

- Align and then tighten the blue captive retention screws at the front of the assembly with the holes on the support cross bar (“A”) and on the rear of the chassis. (“B”).
- Replace the chassis cover. For instructions see “Re-Installing the Cover” in Section 3.2.

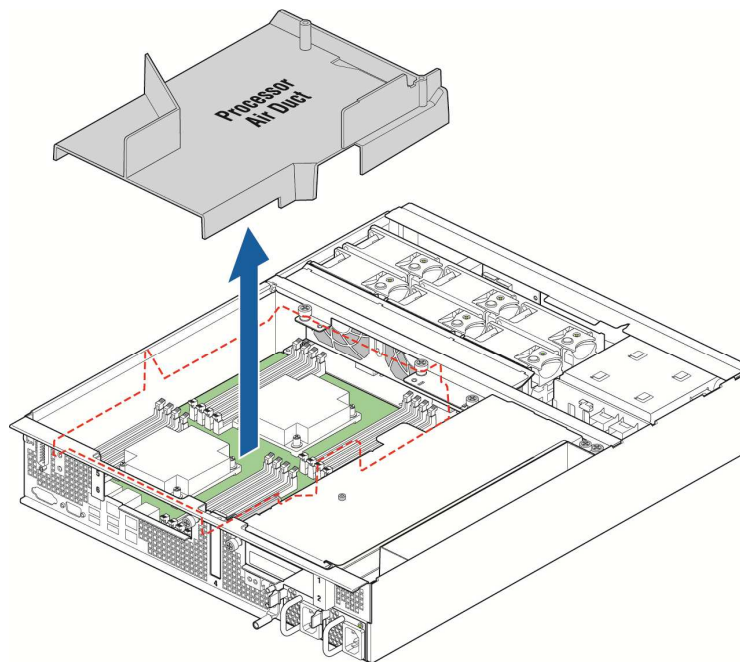
3.2.7 Removing the Processor Air Duct

The black plastic processor air duct must be removed to access the processors and the memory DIMMs. The air duct is required to ensure proper air flow within the chassis, so be sure that it is in place again before re-installing the chassis cover.

To remove the processor air duct:

- Power down the server and remove all peripheral devices and the power cord(s)
- Remove the chassis cover. For instructions, see “Removing the Chassis Cover”.
- Remove the right-side (slot 5) riser card assembly. For instructions, see “Removing a Riser Card Assembly”.
- Loosen the captive retention screw on the support cross bar that secures the air duct.
- Rotate the air duct slightly to the left to clear the notch on the PCI riser assembly connector and slide the air duct backwards. Lift the air duct straight up to remove it. (Figure 12)

Figure 12. Removing the Processor Air Duct



CG00072

3.2.8 Re-Installing the Processor Air Duct

The air duct is required to ensure proper air flow within the chassis, so be sure that it is in place again before re-installing the chassis cover.

1. Place the processor air duct over the processor sockets and DIMMs. Align the standoff on the top right with the captive screw on the support cross bar. Tighten the screw to secure the air duct.
2. Re-install the riser card assembly. For instructions, see “Re-Installing a Riser Card Assembly”.
3. Replace the chassis cover and reconnect all power cords and external peripheral devices. For instructions, see “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 S2600CO, which is the baseboard for this server.

NOTE: Be sure to read the following information about the configuration rules and memory feature options before you begin.

3.3.1 Configuring Memory DIMMs

The memory DIMM slots are located in two separate banks on the S2600CO server board. Detailed information about the memory subsystem in the CG2200 server can be found in the *Intel® Server Board S2600CO Family Technical Product Specification* located on the Kontron support website

<http://us.kontron.com/support> (search for CG2200, click on Product Downloads, then Technical Info). The following sections give an overview of the memory system.

Intel® QuickPath Memory

The Intel® QuickPath Interconnect is a high-speed, packetized, point-to-point interconnect that offers much higher bandwidth with low latency. It has a snoop protocol optimized for low latency and high scalability, as well as packet and lane structures enabling quick completions of transactions. Reliability, availability, and serviceability features (RAS) are built into the architecture.

Integrated Memory Controller (IMC) and Memory Subsystem.

A memory controller is integrated into the processor. Each processor provides four DDR3 channels that support the following features.

- Both registered DIMMs (RDIMMs) and unbuffered DIMMs (UDIMMs)
- LR DIMM (Load Reduced DIMM) for buffered memory solutions demanding higher capacity memory subsystems
- Independent channel mode or lockstep mode
- Memory DDR3 data transfer rates of 800, 1066, 1333, and 1600 MT/s
- 64-bit wide channels plus 8 bits of ECC support for each channel

For detailed information about additional features supported, see Section 3.2.2, “Integrated Memory Controller (IMC) and Memory Subsystem” in the *Intel® Server Board S2600C) Family TPS*.

3.3.2 Supported Memory

The Intel® Server Board S2600CO supports eight DDR3 memory channels (four per processor socket) with two DIMM slots per channel. Up to 16 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 S2600CO Family TPS*.

Memory Map and Population Rules

The nomenclature for DIMM sockets implemented on the Intel® Server Board S2600CO is shown in Table 4.

Table 4. Memory Map

Processor Socket 1								Processor Socket 2							
Channel A		Channel B		Channel C		Channel D		Channel E		Channel F		Channel G		Channel H	
A1	A2	B1	B2	C1	C2	D1	D1	E1	E2	F1	F2	G1	G2	H1	H2

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

The S2600CO 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, and D. The memory channels from processor socket 2 are identified as Channel E, F, G, and H.
- 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_E1 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 S2600CO Family TPS*.

3.3.3 Publishing System Memory

The BIOS displays the “Total Memory” of the system during POST if “Display Logo” is disabled in the BIOS setup. This is the total size of memory discovered by the BIOS during POST and it is the sum of the individual installed DDR3 DIMMs in the system. The BIOS provides the total memory of the system in the main page of the BIOS setup.

The BIOS displays the “Effective Memory” of the system in the BIOS setup. The term “Effective Memory” refers to the total size of all DDR3 DIMMs that are active (not disabled) and not used as redundant units.

3.3.4 Integrated Memory Controller Operating Modes.

The following operating modes are supported:

- Independent channel mode
- Lockstep channel mode
- Mirror mode

For detailed information about these different operating modes, see Section 3.2.2.4, “Integrated Memory Controller Operating Modes” in the *Intel® Server Board S2600CO Family TPS*.

3.3.5 Memory RAS

The server board supports the following memory RAS modes:

- Single Device Data Correction (SDDC)
- Error Correction Code (ECC) memory
- Demand scrubbing for ECC memory
- Patrol scrubbing for ECC memory
- Rank sparing mode
- Mirrored channel mode
- Lockstep channel mode

For detailed information about these different memory RAS modes, see Section 3.2.2.5, “Memory RAS” in the *Intel® Server Board S2600CO Family TPS*.

3.3.6 Installing Memory DIMMs

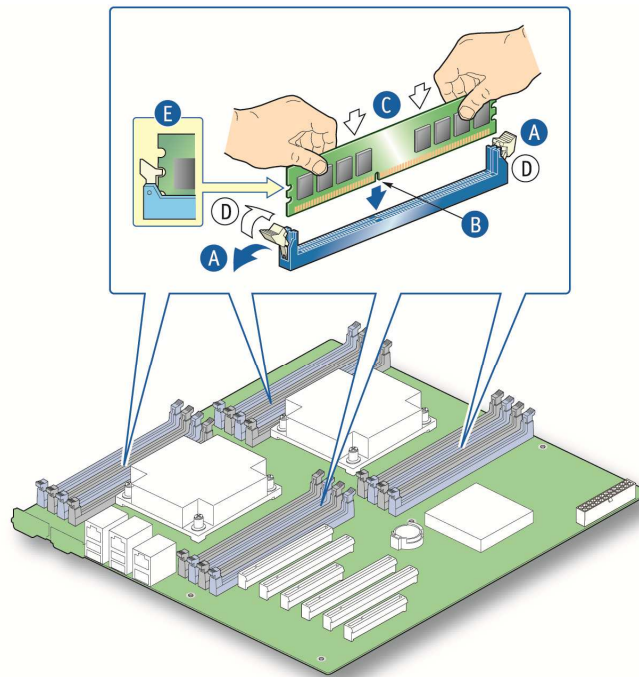
NOTE: To reduce the risk of electrostatic discharge (ESD) damage to the processor or the DIMM, be sure to follow these procedures:

- 1) Touch the metal chassis before touching the DIMM or server board.
- 2) Keep part of your body in contact with the metal chassis to dissipate the static charge while handling the DIMM.
- 3) Avoid moving around unnecessarily.
- 4) Use a ground strap attached to the front panel (with the bezel removed).

To install DIMMs in the S2600CO server board slots, 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 “Removing the Chassis Cover” in Section 3.2.
3. Remove the right-side riser card assembly. For instructions, see “Removing a Riser Card Assembly”.
4. Remove the processor air duct. For instructions, see “Removing the Processor Air Duct”.
5. Note the location of the alignment notch. (“B”)
6. Insert the DIMM, making sure the connector edge of the DIMM aligns correctly with slot. (“E”)
7. Using both hands, push down firmly and evenly on both sides of the DIMM until it snaps into place and the levers close.
 (“C” and “D”)
IMPORTANT: Visually check that each latch is fully closed and correctly engaged with the notch on the DIMM edge. (“E”)
8. Replace the air duct, riser card assembly, and the chassis cover if you have completed all work inside of the server.

Figure 13. Memory DIMM Installation



CG00073

3.3.7 Replacing or Removing Memory DIMMs

NOTE: To reduce the risk of electrostatic discharge (ESD) damage to the processor or the DIMM, be sure to follow these procedures:

- 1) Touch the metal chassis before touching the DIMM or server board.
- 2) Keep part of your body in contact with the metal chassis to dissipate the static charge while handling the DIMM.
- 3) Avoid moving around unnecessarily.
- 4) Use a ground strap attached to the front panel (with the bezel removed).

To remove a DIMM from the S2600CO 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 "Removing the Cover".
3. Remove the right-side riser card assembly. For instructions see "Removing a Riser Card Assembly".
4. Remove the processor air duct. For instructions, see "Removing the Processor Air Duct".
5. Open the DIMM slot levers for the DIMM you want to remove. (Figure 13)
6. Using both hands, hold the DIMM by the edges and lift it up from the slot. Store the DIMM in an anti-static package.
7. If you are installing a replacement DIMM in this slot, return to Step 5 in "Installing Memory DIMMs".

Otherwise, replace the air duct, riser card assemblies, and chassis cover if you have completed all work inside the server.

3.3.8 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 CG2200, click on Product Downloads, and then Ordering Guide) for a list of compatible processors for the CG2200 server.

Use the instructions provided below to add or replace a processor instead of using the instructions that came with the processor. Before you begin, remove the right-side riser card assembly and processor air duct from the chassis. For instructions, see “Removing a Riser Card Assembly” and “Removing the Processor Air Duct”.

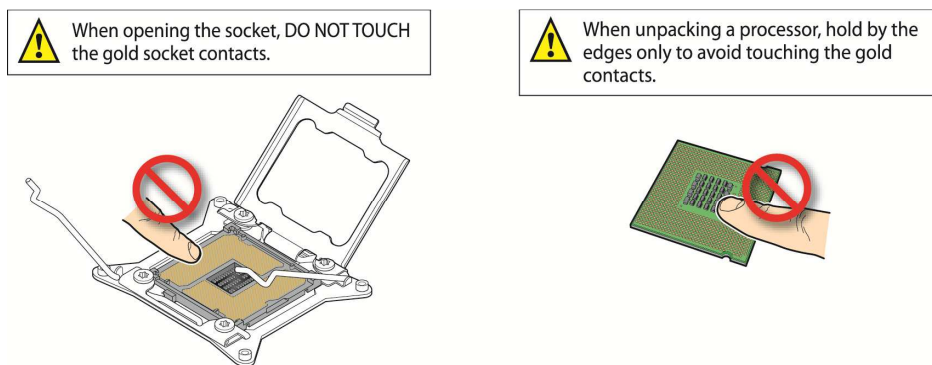
Follow the instructions below to remove and then install a processor, referring to Figure 25 through Figure 32.

ESD and Processor Handling Precautions

Be mindful of the following points when handling the processors and sockets to reduce the risk of electrostatic discharge (ESD) damage to the processor:

- Touch the metal chassis before touching the processor or server board.
- Keep part of your body in contact with the metal chassis to dissipate the static charge while handling the processor.
- Avoid moving around unnecessarily.
- Use a ground strap attached to the front panel (with the bezel removed.)

Figure 14. Cautions for Handling Processors



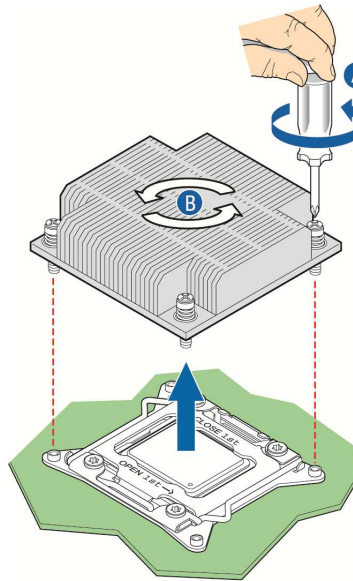
CG00074

Removing a Processor

1. Loosen the four captive screws on the corners of the heat sink with a #2 Phillips screwdriver. (Figure 15, “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.

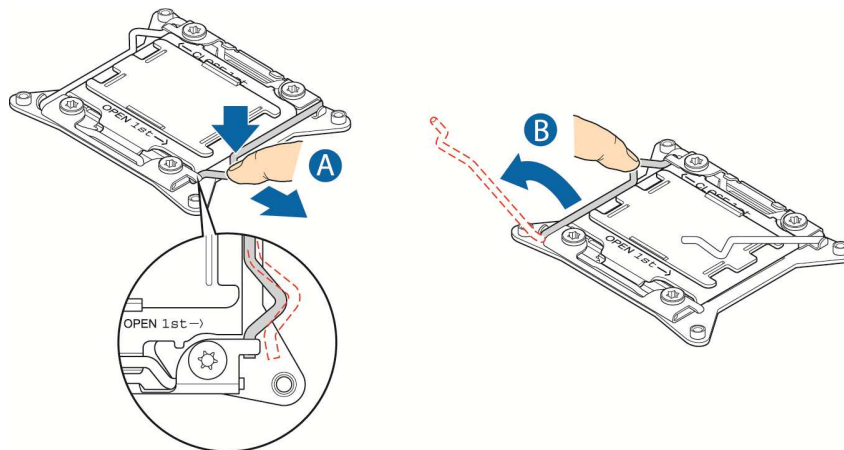
Figure 15. Removing the Heat Sink



CG00075

4. Open the socket by pushing the lever handles down and away from the socket to release it. (Figure 16, "A" and "B")

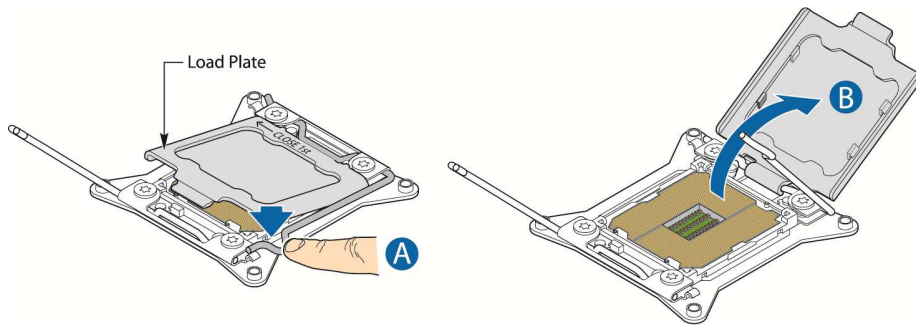
Figure 16. Using the Socket Levers



CG00076

5. Pull the levers and open the load plate all the way. (Figure 17, "A" and "B")

Figure 17. Opening the Load Plate



CG00077

6. Remove the processor.

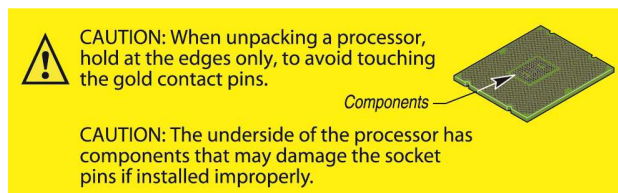
Installing a New Processor

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

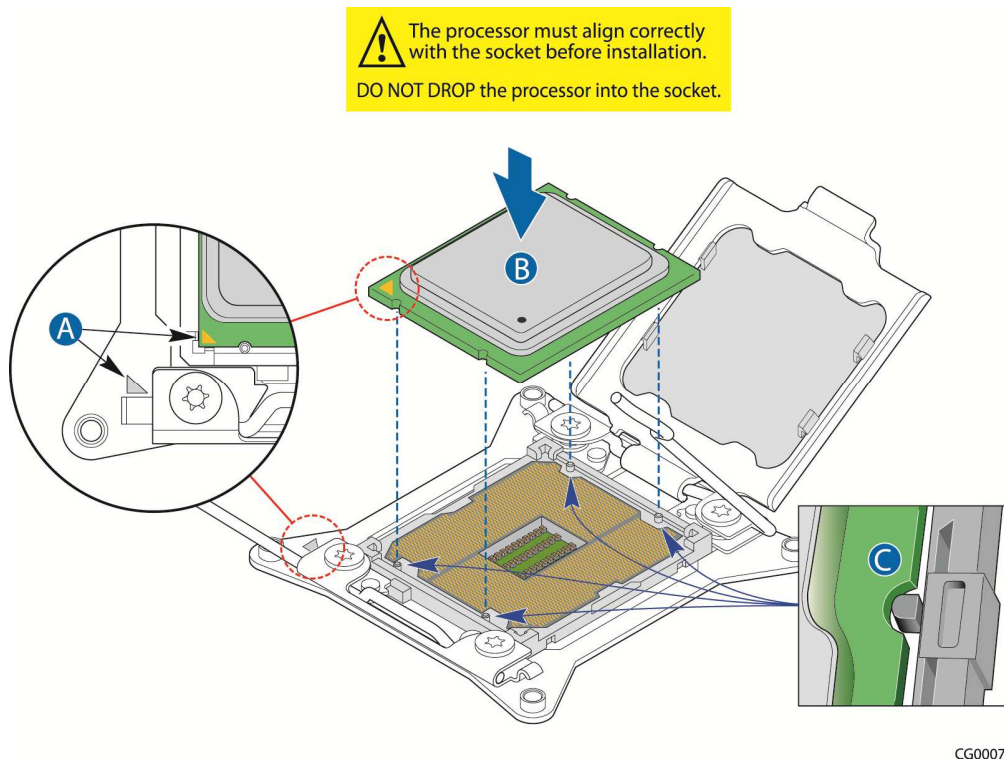


CG00078

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!

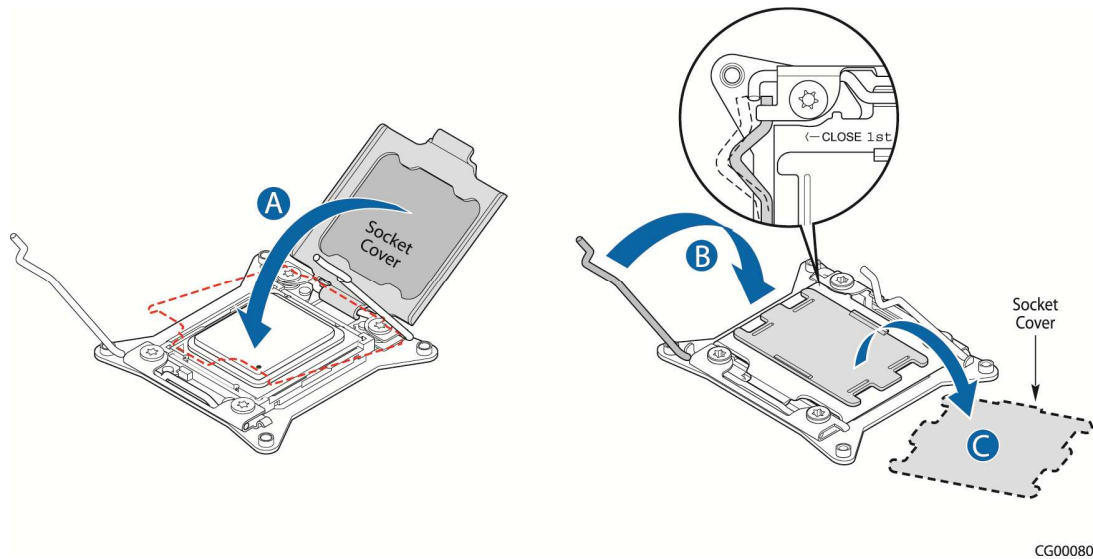
3. Orient the processor with the socket so that the processor cutouts match the socket notches. (
4. Figure 19, "A")
5. Gently place the processor in the socket. ("B")

Figure 19. Installing the Processor in the Processor Socket



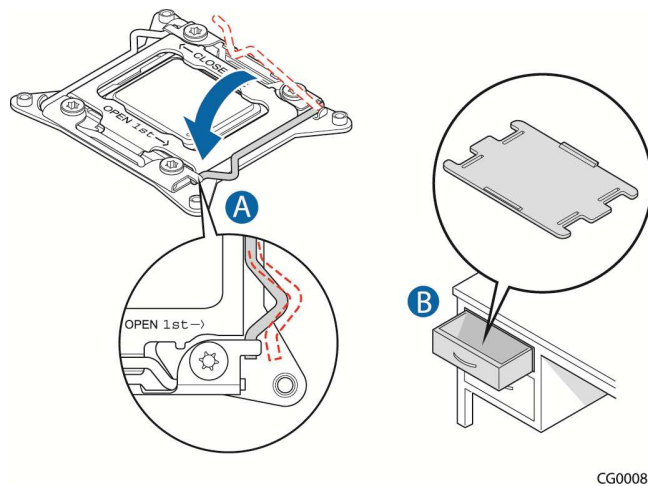
6. Carefully close the load plate.
7. Close the "Close 1st" socket lever and ensure that the load plate tab engages under the socket lever when fully closed. (Figure 20 "B")

Figure 20. Closing the Processor Load Plate



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 from the socket. (
7. Figure 21 “A” and “B”)

Figure 21. Closing the Last Socket Lever



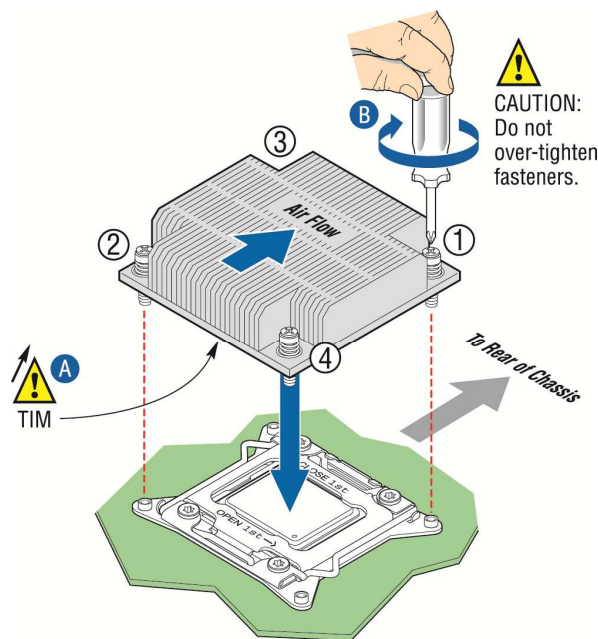
3.3.9 Inserting the Heat Sink

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 21, “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 cables are not pinched beneath the heat sink. (See Figure 22.)
3. Loosely screw in the captive screws on the heat sink corners by tightening one, then the one diagonally opposite, and so on. ("B")
4. Gradually and equally tighten each captive screw in diagonal order until each one is firmly tightened. See Figure 22 for the order.

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

Figure 22: Installing a Heat Sink



CG00075A

3.3.10 Configuring Jumpers on the Server Board

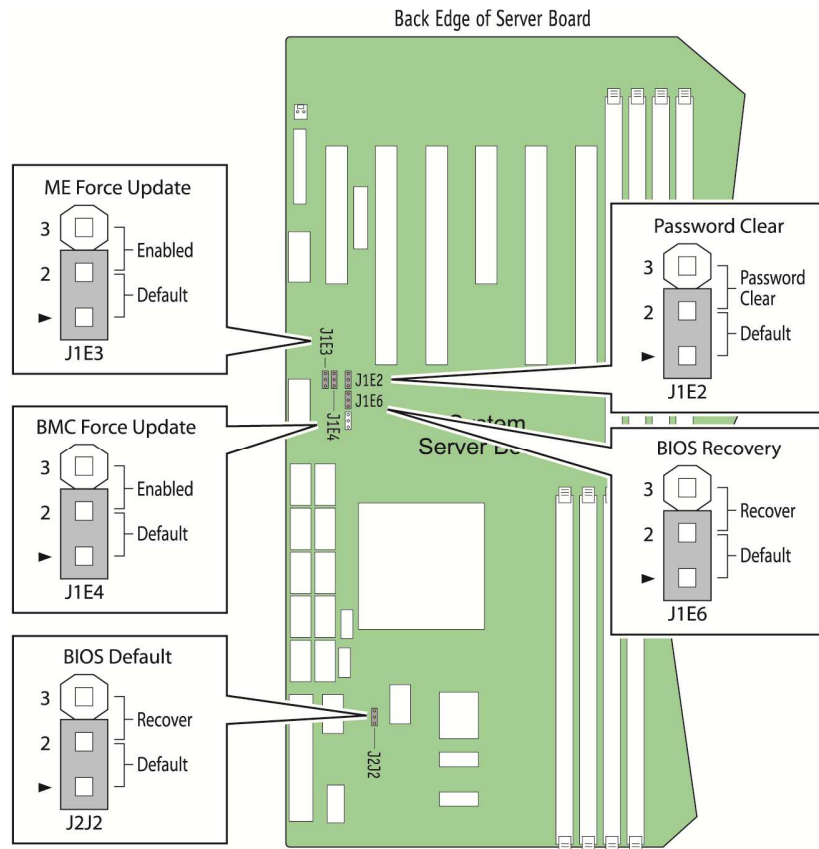
The jumpers are located on the S2600CO server board. To work with the jumpers defined in this section, you must first power down the chassis, remove the cover, remove the right-side riser card assembly, and remove the processor air duct, as described in Section "General Installation Procedures". The other components on the server board can remain in place.

The server board has several 3-pin jumper blocks that 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 S2600CO 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 (J1C3, J1D1, J1D2, J1E32)



CG00107

Table 5. Server Board Jumpers (J1E2, J1E4, J1E3, J1E6, J2J2)

Jumper Name	Pins	System Results
J1E2: Password Clear	1 - 2	These pins should have a jumper in place 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.
J1E4: BMC Force Update	1 - 2	BMC Firmware Force Update Mode – Disabled (Default)
	2 - 3	BMC Firmware Force Update Mode – Enabled
J1E3: ME Force Update	1 - 2	ME Firmware Force Update Mode – Disabled (Default)
	2 - 3	ME Firmware Force Update Mode – Enabled
J1E6: BIOS Recovery	1 - 2	These pins should have a jumper in place 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.
J2J2: BIOS Default (CMOS Clear)	1 - 2	These pins should have a jumper in place for normal system operation (Default)
	2 - 3	If these pins are connected when AC power is unplugged, the CMOS settings are cleared within five seconds. Pins 2 - 3 should not be connected for normal operation.

See Section 9.1, “BIOS Defaults (CMOS Clear) and Password Reset Usage Procedure” in the *Intel® Server Board S2600CO 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 CG2200 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 *CG2200 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 CG2200, 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 CG2200, 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

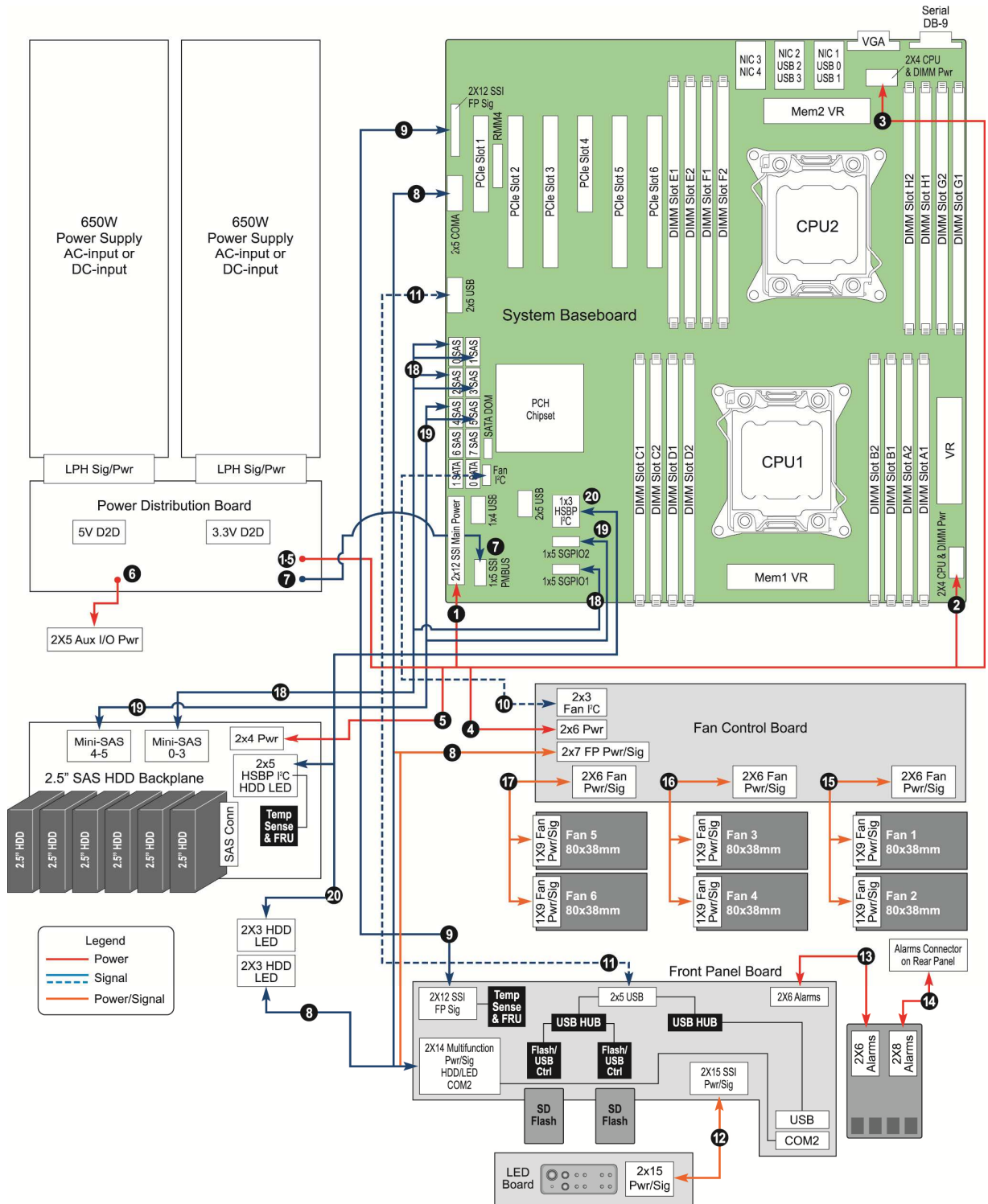
4.1.2 System References

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 6 for cable routing and for more detailed information, see the *Kontron CG2200 Carrier Grade Server Technical Product Specification*.

Figure 24. Cable Routing



CG00014

Table 6. System Cables

Interconnect #: Name:	KAI Cable P/N	End #1 Connection End #2 Connection	End #3 Connection End #4 Connection
1. Baseboard SSI Main Power	K00597-002	End #1: Power Distribution Board End #2: Baseboard	End #3: NA End #4: NA
2. CPU 1 + DIMM Power	K00597-002	End #1: Power Distribution Board End #2: Baseboard	End #3: NA End #4: NA
3. CPU 2 + DIMM Power	K00597-002	End #1: Power Distribution Board End #2: Baseboard	End #3: NA End #4: NA
4. Fan Control Board Power	K00597-002	End #1: Power Distribution Board End #2: Fan Control Board	End #3: NA End #4: NA
5. SAS HDD Backplane Board Power	K00597-002	End #1: Power Distribution Board End #2: SAS HDD Backplane	End #3: NA End #4: NA
6. Aux I/O Power Dongle	K00597-002	End #1: Power Distribution Board End #2: Cable-to-cable connector	End #3: NA End #4: NA
7. Baseboard SSI Power Control Signal	K00597-002	End #1: Power Distribution Board End #2: Baseboard	End #3: NA End #4: NA
8. Multifunction Front Panel Board (Pwr/Sig, HDD LED, COM2)	K00539-001	End #1: Front Panel Board (multifunction) End #2: Fan Control Board (pwr/sig)	End #3: Baseboard (COM2) End #4: C-2-C (HDD-LED)
9. SSI Front Panel Board †	K00540-001	End #1: Baseboard End #2: Front Panel Board	End #3: NA End #4: NA
10. Fan I2C	K00542-001	End #1: Baseboard End #2: Fan Control Board	End #3: NA End #4: NA
11. Front Panel Board USB	K00543-001	End #1: Baseboard End #2: Front Panel Board	End #3: NA End #4: NA
12. LED/Switch Board Power and Signal	E36035-001	End #1: Front Panel Board End #2: LED/Switch Board	End #3: NA End #4: NA
13. TAM Signal	K00544-001	End #1: Front Panel Board End #2: TAM Module	End #3: NA End #4: NA
14. Alarms	K00545-001	End #1: TAM Module End #2: System Rear Panel Alarms Connector	End #3: NA End #4: NA
15. Fan (Fans 1-2)	K00546-001 Used 3	End #1: Fan Control Board End #2: Fan Pair (1-2)	End #3: NA End #4: NA

Interconnect #: Name:	KAI Cable P/N	End #1 Connection End #2 Connection	End #3 Connection End #4 Connection
	places		
16. Fan (Fans 3-4)	K00546-001	End #1: Fan Control Board End #2: Fan Pair (3-4)	End #3: NA End #4: NA
17. Fan (Fans 5-6)	K00546-001	End #1: Fan Control Board End #2: Fan Pair (5-6)	End #3: NA End #4: NA
18. Mini-SAS 1 (HDD 0-3 / SGPIO1)	K00547-001	End #1: SAS HDD Backplane Board End #2: Baseboard SAS 0-3 Conn	End #3: Baseboard SGPIO1 End #4: NA
19. Mini SAS 2 (HDD 4-5 / SGPIO2)	K00548-001	End #1: SAS HDD Backplane Board End #2: Baseboard SAS 4-5 Conn	End #3: Baseboard SGPIO2 End #4: NA
20. HSBP I2C / HDD LED	K00549-001	End #1: SAS HDD Backplane Board End #2: Baseboard HSBP I ² C	End #3: C-2-C (HDD-LED) End #4:

4.2 Installing or Replacing Hard Disk Drives

Up to six hot-swappable SAS hard disk drives can be installed in your CG2200 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 CG2200 server ships with six drive carriers.

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

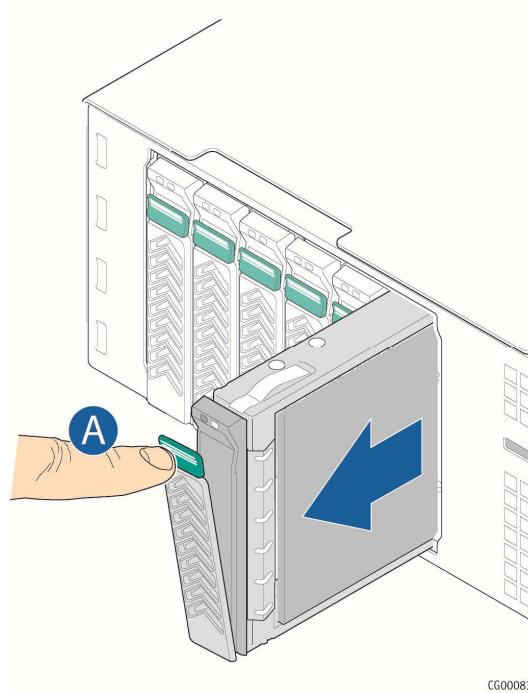
The CG2200 server does not support all SAS HDD or SATA SDD disk drives. To see a list of validated manufacturers and drive models, refer to the THOL. The latest version of the THOL is located on the Kontron support website at <http://us.kontron.com/support/>. (Search for CG2200, click on Product Downloads, 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 “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 below the drive slots.)
3. Remove the drive carrier 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.

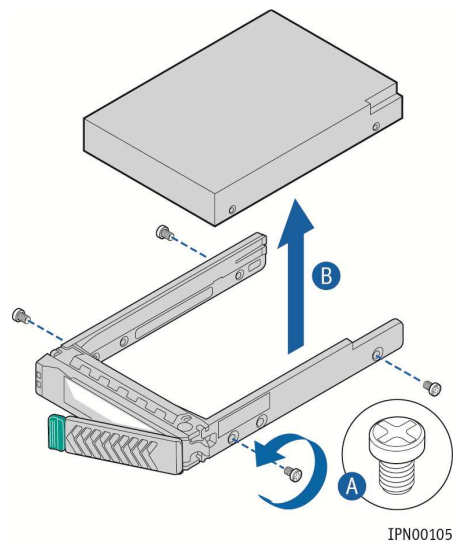
Figure 25. Removing the Drive Carrier

CG00083

4.2.2 Installing a Hard Drive in a Carrier

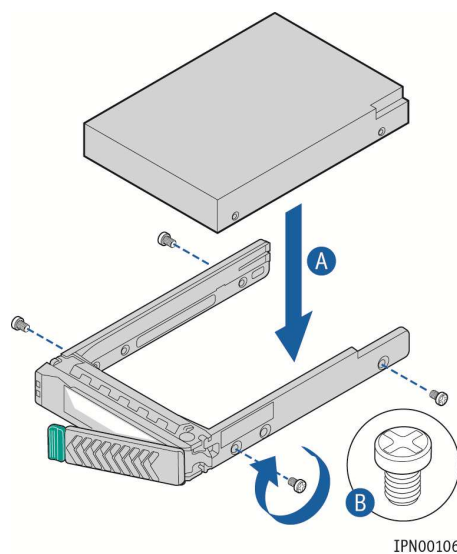
1. If the drive carrier is empty (that is, if you are installing a drive in it for the first time), remove the black plastic filler panel by unfastening the four screws that attach it to the carrier. (Figure 26, "A"). Set the screws aside for use with the new drive.
2. If a drive is already installed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

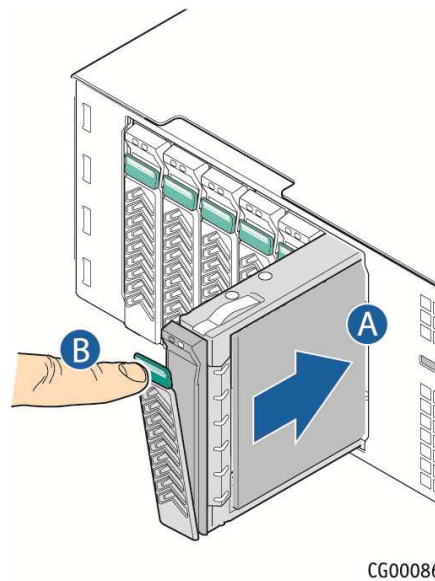


4. Install the new drive in the drive carrier (Figure 27, "A") and secure the drive with the four screws that come with the carrier. ("B")

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")
7. Replace the front bezel. For instructions, see "Re-Installing the Front Bezel" in Section 3.2.

Figure 28. Inserting a New Hard Drive into the Chassis

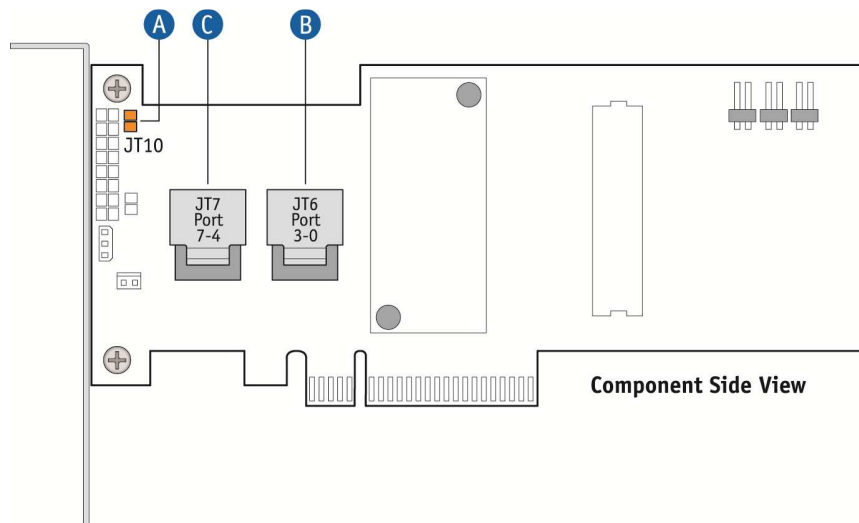
4.3 Installing a Hardware RAID Controller

Hard disk drives are supported with SAS software RAID 0/1/10 on the CG2200 server by default. Hardware RAID support requires a separately-orderable SAS hardware RAID controller, which is described in this section.

The components used as examples in this section are from the Intel® RS2VB080 hardware RAID 5 controller kit and the RAID cable kit that is tailored for use with this RAID controller.

Figure 29 shows the SAS hardware RAID controller board, which provides SAS RAID functionality for the server. The board's gold edge connector attaches to a header on the baseboard as shown in Figure 29.

Figure 29. Hardware RAID Adapter Layout



CG00101

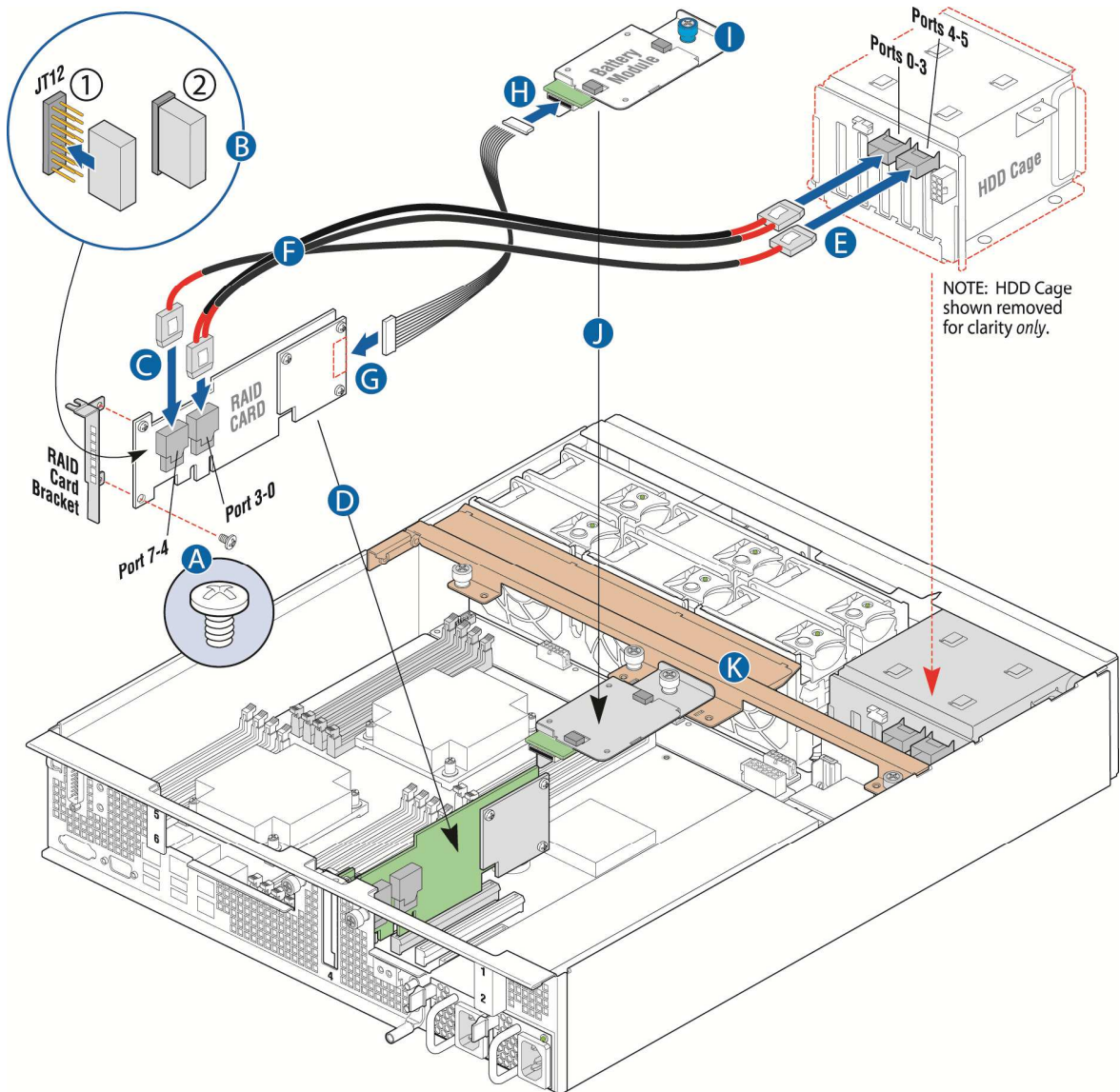
Before you can install the hardware RAID controller board, you need to remove the chassis cover, the left-side riser assembly and the two mini-SAS cables that are connected to the SAS backplane board and the baseboard for default software RAID.

1. Power down the server and remove all peripheral devices and the power cord(s)
2. Remove the chassis cover. For instructions, see “Removing the Cover”.
3. Remove the left-side riser assembly. For instructions, see “Removing a Riser Card Assembly”.
4. Disconnect the mini-SAS 1 cable from the SAS 0-3 connector and the SGPIO1 connector on the baseboard and the SAS HDD backplane board.
5. Disconnect the mini-SAS 2 cable from the SAS 4-5 connector and the SGPIO2 connector on the baseboard and the SAS HDD backplane board.

For the locations of these connectors, see Figure 24, “Cable Routing” earlier in this chapter.

6. Fasten the RAID controller board to the bracket for the chassis rear, using the two screws in the kit. (Figure 30, “A”)
7. Attach the plastic protective cover on the JT10 connector. (Figure 30, “B”)
8. Connect the mini-SAS 1 cable end labeled Controller Ports 0-3 into the JT6 connector (right) on the RAID controller board. (“C”)
9. Connect the mini-SAS 2 cable end labeled Controller Ports 4-5 plugs into the JT7 connector (left). (“C”)
10. Press down on the RAID controller board to mate it with the blue PCI header 3 on the left side of the baseboard. (Figure 30, “D”)

Figure 30: Installing the RAID Controller Board



CG00100

11. Make sure the mini-SAS cables are routed along the rear of the RAID controller and under the support cross bar up to the SAS backplane board. Keep the cables low so they will fit under the chassis cover. ("F")
12. Connect the mini-SAS 1 cable into the right header on the SAS backplane board marked "Ports 0-3" on the sheet metal cover plate. ("E")
13. Connect the mini-SAS 2 cable into the left header on the SAS backplane board marked "Ports 4-5" on the sheet metal cover plate. ("E")

14. Ensure that the mini-SAS cables are routed under the support cross bar to provide sufficient airflow clearance for the PCI assembly when it is re-installed. ("K")

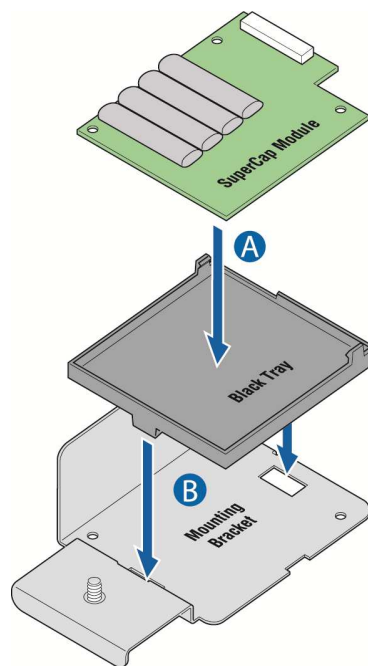
4.4 Installing the SuperCap Module

The Supercap module is a flash-based battery backup module for SAS drives. It comes with the Intel RS2VB080 RAID controller kit and is not compatible with other RAID products. The mounting bracket and cable for this module are included in the CG2200 RAID cable kit.

To install the SuperCap module:

1. Insert the SuperCap module into the black plastic tray. (Figure 31, "A")
2. Fasten the SuperCap and tray assembly to the sheet metal bracket by inserting the tabs into the cut-outs on bracket. ("B")
3. Holding the locking lever on the plastic tray out, slide the board towards the back of the bracket until the module/tray assembly locks into place.

Figure 31. Setting Up the SuperCap Assembly



CG00102

4. Connect the signal/power pigtail cable to the front of the hardware RAID controller board ("G") and the rear of the SuperCap assembly. (Figure 30, "H")
5. Place the SuperCap assembly on the support cross bar, lining it up with the center hole on the middle shelf. ("J")
6. Use the blue retention screw to fasten the SuperCap assembly to the cross bar. (Figure 30, "I").

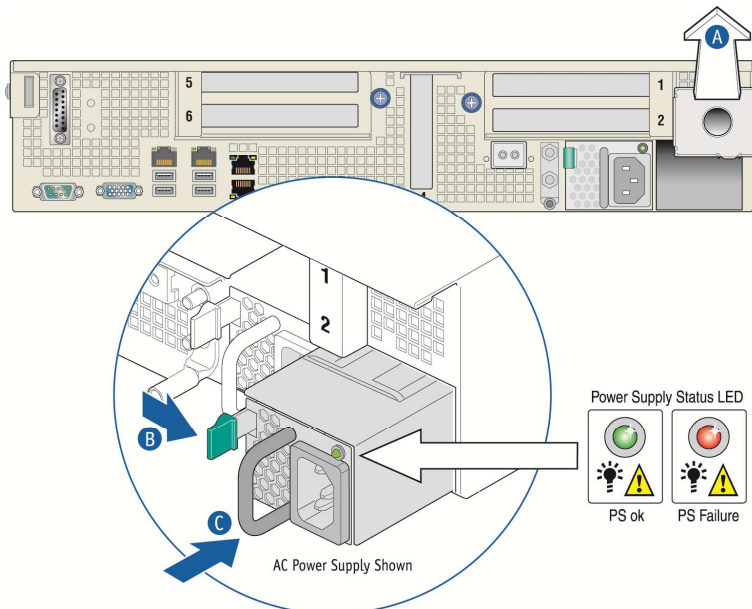
- If this is the last task you are performing, re-install the left-side riser card assembly and the chassis cover. For instructions, see Section 3.2.
Reconnect all the external devices and plug in the power cord(s).

4.5 Adding a Second Power Supply Module

Depending on which model you order, your server has one AC or one DC power supply module. A second power supply provides redundancy. The power supply modules are hot-swappable, so no chassis components have to be removed to add or replace a module. To add a second power supply module:

- Remove the filler panel. (Figure 32, “A”)
- Press and hold the green safety lock downward (“B”) and using the handle, slide the power supply into the slot until it latches into place. (“C”)

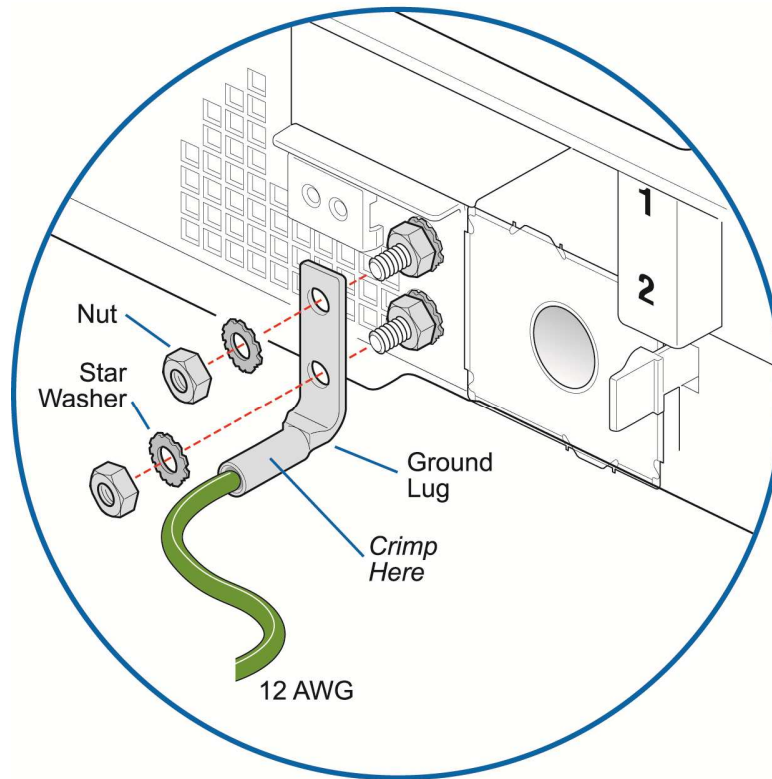
Figure 32. AC and DC Power Supplies



CG00087

- 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.

Figure 33: DC Power Supply Grounding



CG00054A

4.6 Installing a PCI Riser Card

The CG2200 server does not ship with a PCI riser card, just the sheet metal bracket where the riser card and PCI add-in cards are housed. The server board has two riser slots: riser cards on the right side and left side of the chassis. Baseboard PCIe slot 2 and PCIe slot 5 support the riser boards in the CG2200 system. Baseboard PCIe slot 2 supports a single slot PCIe X16 riser and a dual slot PCIe X8 riser. These risers are referred to as the “left side” risers since the boards plug in on the left side of the chassis as viewed from the front of the server. Baseboard PCIe slot 5 supports a single slot PCIe X16 riser, a dual slot PCIe X8 riser, and a dual PCI-X active riser. These risers are referred to as the “right side” risers since the boards plug in on the right side of the chassis. :

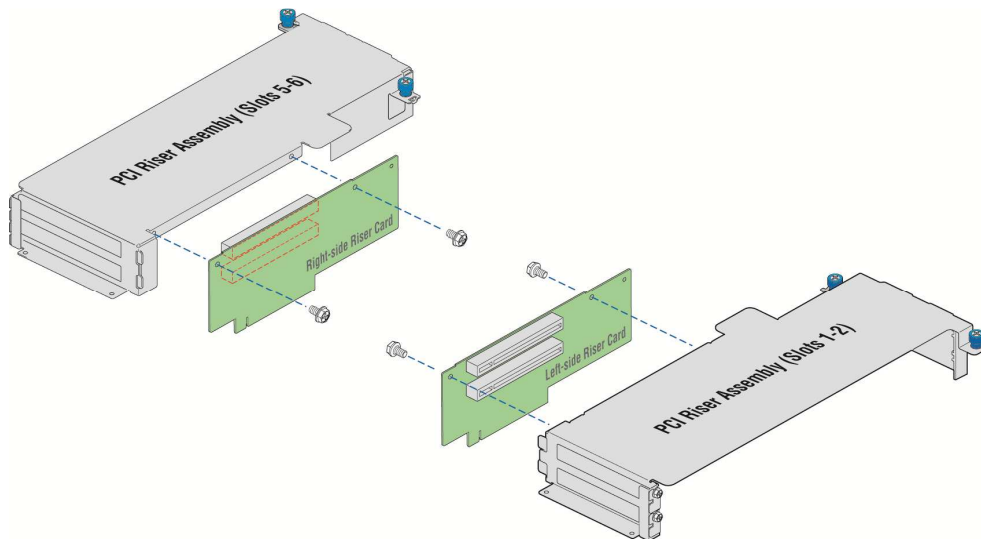
Table 7 identifies the card configurations and the connector types used.

Table 7 Riser Card Configurations

Riser Card Option	Slot Configuration
PCI Express passive riser, single slot x16 Right side riser (baseboard slot 5)	Single full-height PCI Express x16 connector
PCI Express passive riser, dual slot x8 Right side riser (baseboard slot 5)	Two full-height PCI Express x8 connectors
PCI Express/PCI-X active riser Right side riser (baseboard slot 5)	Two full-height PCI-X 133 connectors
PCI Express passive riser, single slot x16 Left side riser (baseboard slot 2)	Single full-height PCI Express connector
PCI Express passive riser, dual slot x8 Left side riser (baseboard slot 2)	Two full-height PCI Express x8 connectors

NOTE: The riser plugged into slot 5 can run at PCIe Gen3 speeds.

Figure 41 shows how a riser card is installed into the metal bracket.

Figure 34: Adding Riser Cards

CG00011B

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

To install the riser card in the sheet metal bracket:

1. Power down the server and remove all peripheral devices and the power cord(s)
2. Remove the chassis cover. For instructions, see “Removing the Chassis Cover” in Section 3.2.
3. Remove the riser card assembly from the chassis. For instructions, see “Removing a Riser Card Assembly” in Section 3.2.
4. Fasten the riser card to the bracket with the two 6/32 screws as shown in Figure 34
Torque screws to 8 lbf*in.

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

4.7 Installing PCI Add-in Cards

The right-side and left-side riser card options support different combinations of PCIe and/or PCI-X add-in cards. See Table 7 for the possible configurations. The figures in this section use the left-side slot 2 riser card assembly, a PCI Express passive riser, dual slot x8 and full-height x8 add-in card options as the example.

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 “Removing a Riser Card Assembly” in Section 3.2 for more information.

1. Power down the server and remove all peripheral devices and the power cord(s)
2. Remove the chassis cover. For instructions, see “Removing the Chassis Cover”.
3. Remove the riser card assembly from the chassis. For instructions, see “Removing a 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 PCI card in a slot, remove the rear retention screw that fastens the add-in card to the riser card. (

5. Figure 35 “D”).
For a full-length card, also open the card edge retainer in the front of the assembly by loosening the blue captive screw (“B”)
6. Remove the card from the riser card socket.

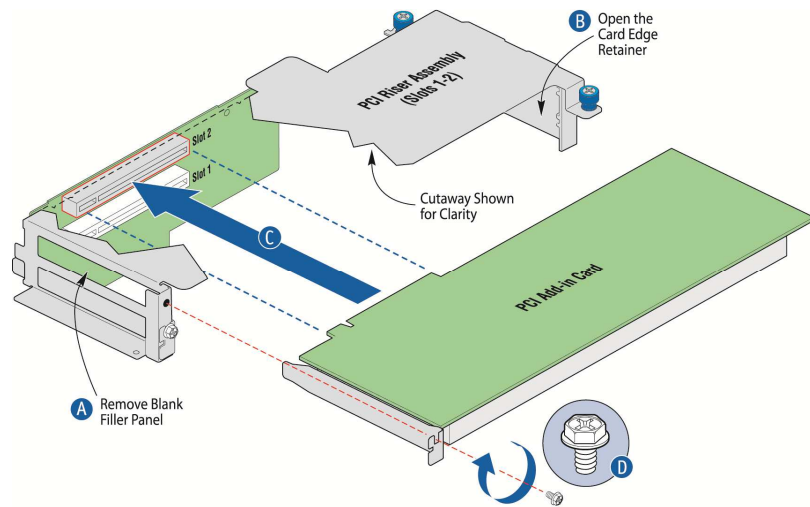
If you are adding a PCI card, not replacing one, in your selected slot, remove the blank filler panel from the rear bracket of the riser card assembly. (

7. Figure 35, “A”)
8. For a full-length add-in card, open the card edge retainer by loosening the blue captive screw (“B”).
9. Attach the add-in card to the appropriate riser card connector. (“C”)

Be sure that the add-in card edge connector is seated in the riser card connector correctly.
10. Fasten the add-in card to the riser card assembly bracket using the rear retention screw. (“D”)

For full-length cards, also secure the card in the grooves at the slot level on the retainer bracket and tighten the blue captive thumb screw. (“D”)

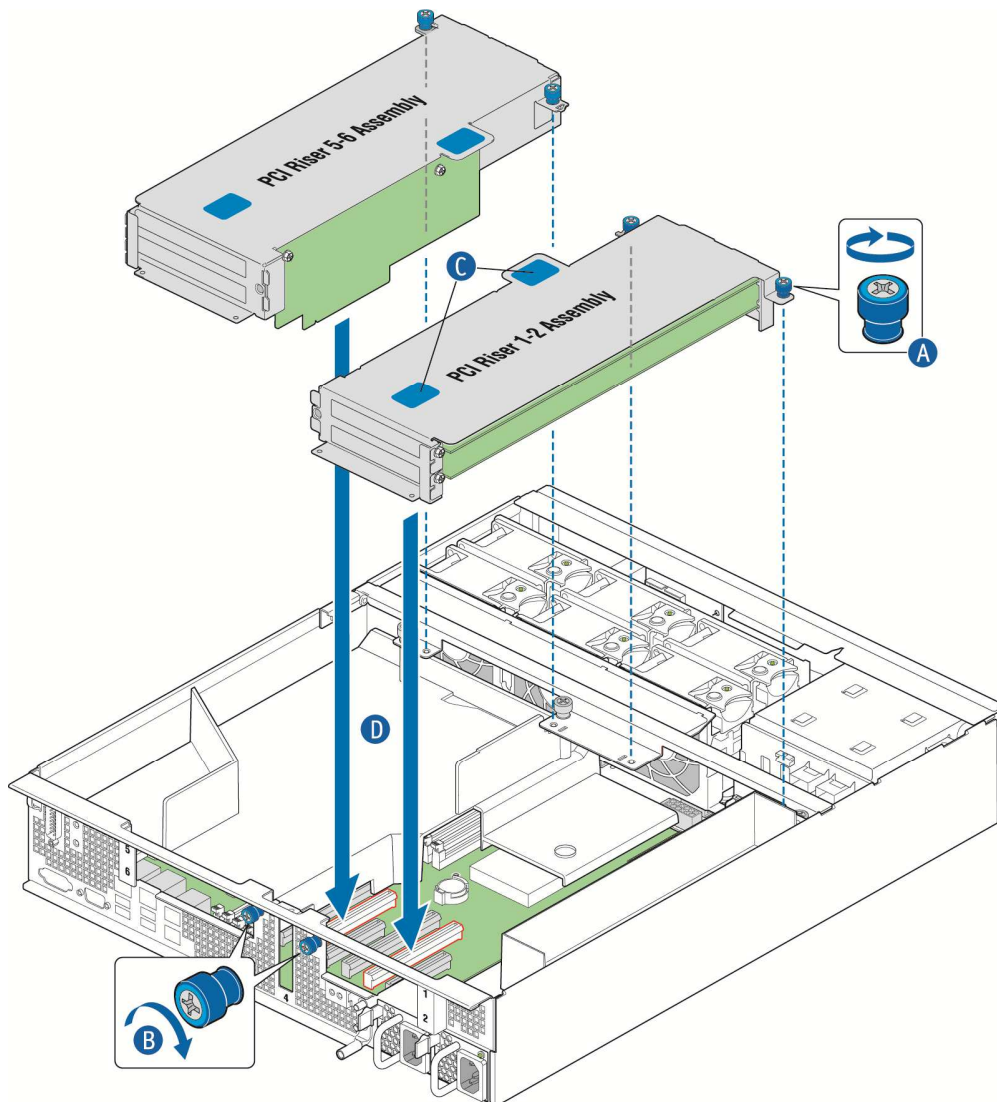
Figure 35. Installing a PCIe/PCI-X Add-In Card in the Riser Card Assembly



CG00088

11. Using the two blue touch points, install the riser card assembly into its slot (slot 2 or slot 5) on the baseboard. (Figure 36, "C" and "D")
12. Secure the riser card assembly by tightening the captive screws ("A" and "B").
13. If this is the last task you are performing, replace the processor air duct, the riser card assembly, and the back chassis cover.
Reconnect all the external devices and plug in the power cord(s)

Figure 36: Installing and Securing the Riser Card Assembly



CG00089

4.8 Installing a Remote Management Module 4

The Remote Management Module (RMM) solution for the CG2200 server uses RMM4 in the iBMC on the S2600CO server board. There are two options: the Intel® Remote Management Module 4 kit and the Intel® Remote Management 4 Lite kit. The example used in this section is the RMM4 option. This RMM4 kit includes the module, mounting brackets, a long and short ribbon cable to connect the module to the server board, and a small key card.

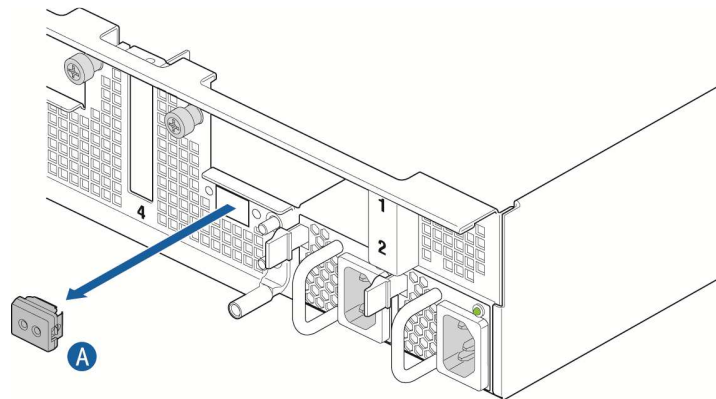
To install the RMM4 module you must first remove the chassis cover and the left-side, slot 2 riser card assembly.

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

2. Remove the chassis cover. For instructions see “Removing the Chassis Cover”.
3. Remove the left-side, slot 2 riser card assembly. For instructions see “Removing a Riser Card Assembly”.

Remove the plastic filler panel from the rear panel of the chassis by squeezing the side edges and pulling the panel out. (Figure 37, “A”)

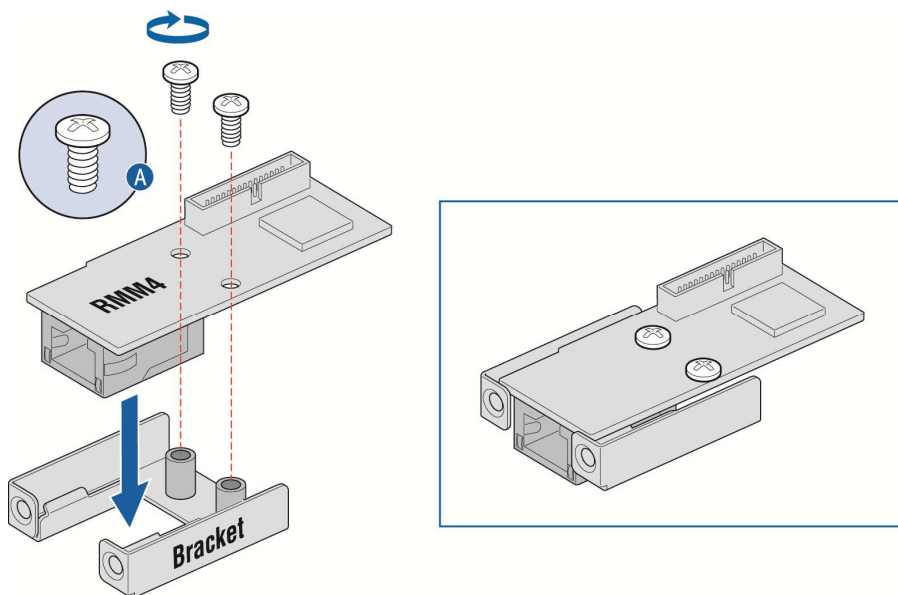
Figure 37. Removing the RMM4 Port Filler Panel



CG00103

4. Install the small RMM4 key card on the server board. (Figure 41)
5. Attach the bracket to the bottom of the module with the two larger screws in the package. (Figure 38)

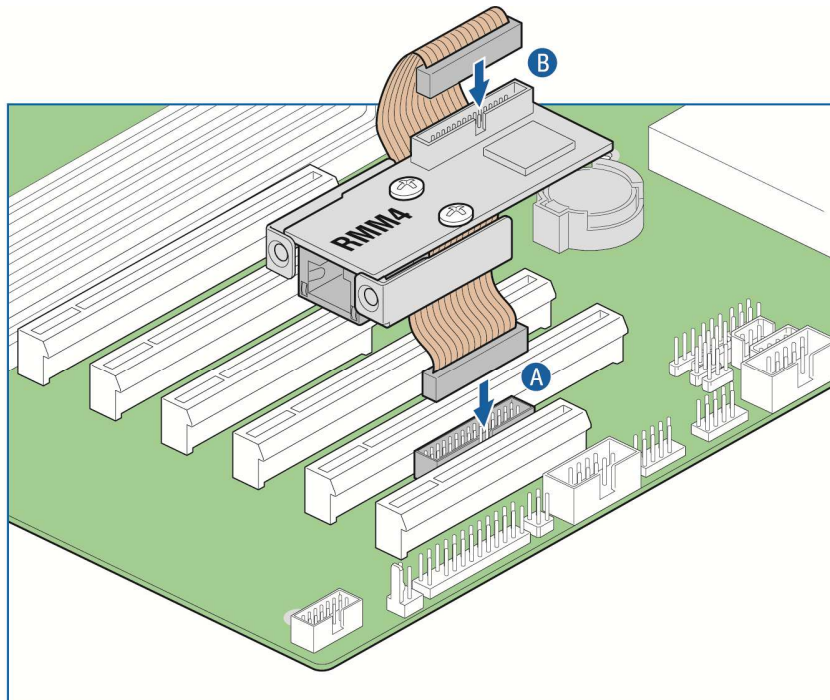
Figure 38. Fastening the RMM4 Board to the Bracket



CG00109

- Attach one end of the cable to the top of the module and the other end to the connector on the server board. (Figure 39, "A" and "B")

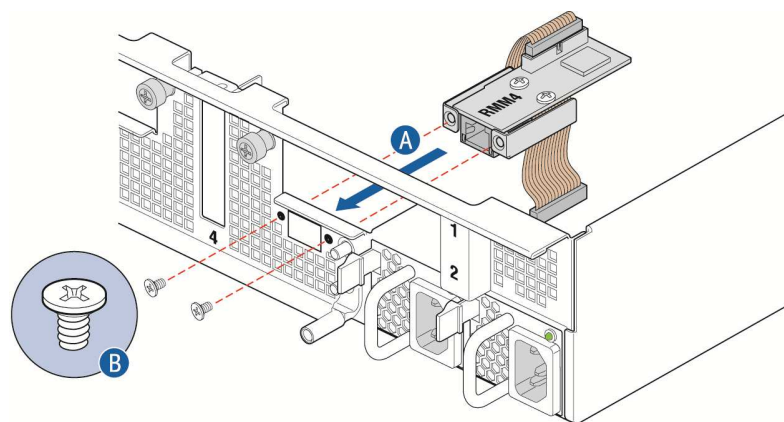
Figure 39. Connecting the RMM4 Cable



CG00108

- Line the module up with rear panel of the chassis so that the NIC is positioned in the connector slot. (Figure 40, "A")
Use the two smaller screws in the package to fasten the bracket to the rear panel below the NIC. ("B")

Figure 40. Installing the RMM4 NIC Module



CG00104

8. 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).

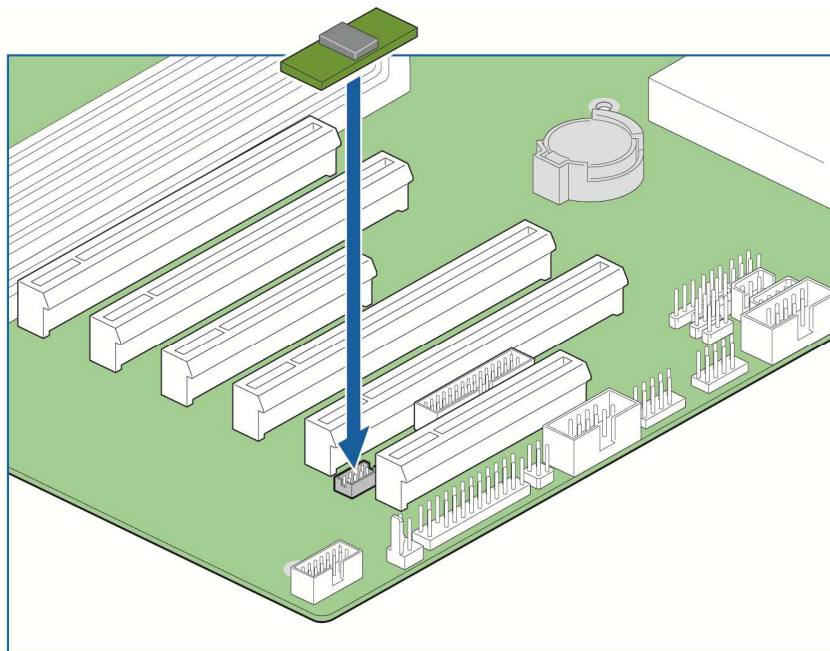
4.9 Installing RMM4Lite

The Remote Management Module (RMM) solution for the CG2200 server uses RMM4 in the iBMC on the S2600CO server board. To use the RMM4 functionality either a separately orderable RMM4 NIC must be installed at the rear of the chassis (the Intel® Remote Management Module 4 kit in the previous procedure) or the Intel® Remote Management 4 Lite kit, which is only the RMM4 key card.

To enable RMM4Lite you must first remove the chassis cover and the left-side, slot 2 riser card assembly.

1. Power down the server and remove all peripheral devices and the power cord(s)
2. Remove the chassis cover. For instructions, see “Removing the Chassis Cover”.
3. Remove the left-side, slot 2 riser card assembly. For instructions, see “Removing a Riser Card Assembly”.
4. Install the RMM4 key. (Figure 41)

Figure 41 Installing the RMM4 Key



CG00110

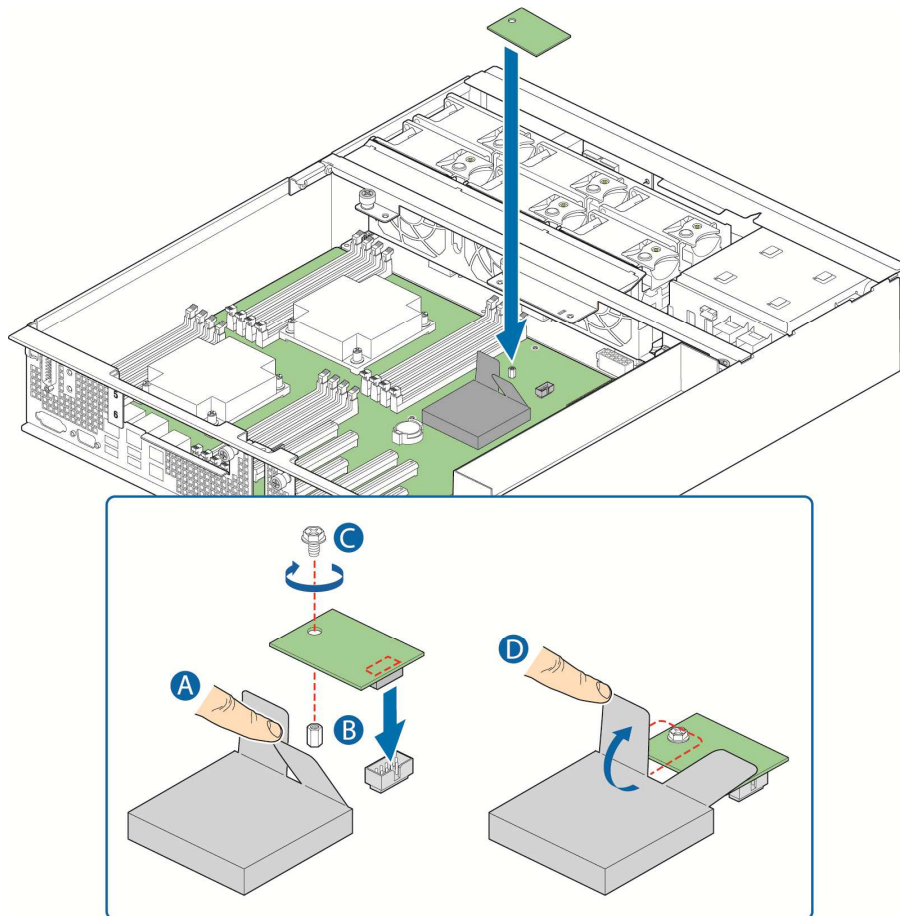
4.10 Installing a eUSB Flash Drive

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 S2600CO server board in front of the chipset.

Before you can install an eUSB module, you must power down the system, remove the chassis cover, remove the left-side riser assembly, and if present, the hardware RAID backup battery assembly.

1. Power down the server and remove all peripheral devices and the power cord(s)
2. Remove the chassis cover. For instructions, see “Removing the Chassis Cover”.
3. Remove the left-side riser card assembly. For instructions, see “Removing a Riser Card Assembly”.
4. Locate the standoff and connector on the baseboard, in front of the PCH chipset. (Figure 42)
5. Fold back the two flaps on the black insulator covering the PCH (“A”)
6. Install the eUSB module onto the server board by plugging the USB connector on the eUSB module onto the server board USB header (“B”) and fastening the module to the metal standoff on the server board (“C”).
7. When finished with the eUSB installation, ensure that the flaps on the PCH chipset insulator are once more folded down over the eUSB location. (“D”)
8. If this is the last task you are performing, re-install the processor air duct, the right-side riser card assembly, and the chassis cover. Reconnect all external devices and the power cord(s).

Figure 42. Installing a eUSB Flash Module on the Server Board



CG00105

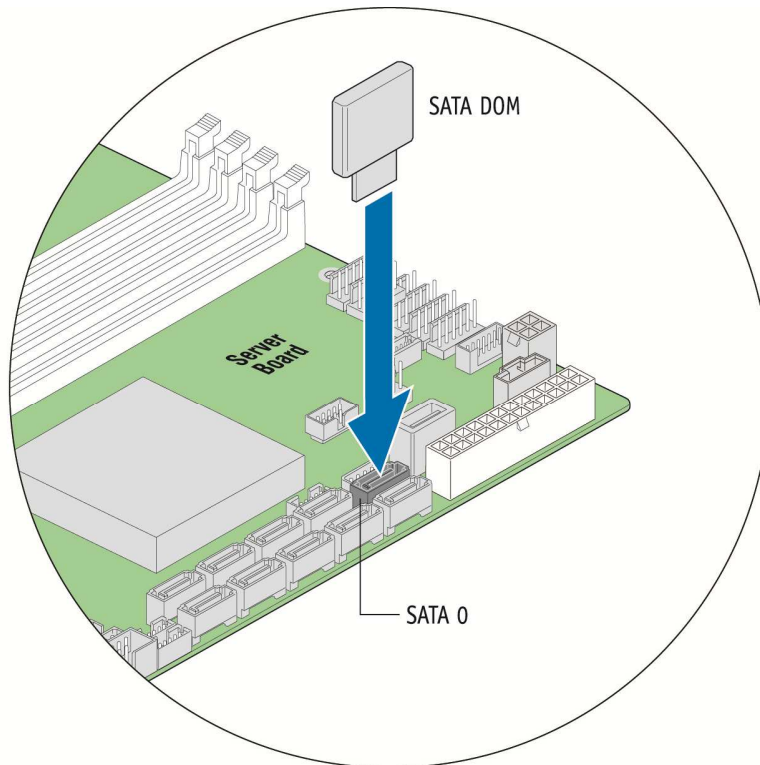
4.11 Installing a SATA Disk on Module (SATA DOM)

A separately purchased, optional SATA DOM provides SATA disk storage. The SATA DOM is installed on the S2600CO.

Before you can install a SATA DOM module, you must power down the system, remove the chassis cover, and remove the left-side riser assembly.

1. Power down the server and remove all peripheral devices and the power cord(s)
2. Remove the chassis cover. For instructions, see “Removing the Chassis Cover” in Section 3.2.
3. Remove the left-side riser card assembly. For instructions, see “Removing a Riser Card Assembly” in Section 3.2.
4. Press in the metal clip on the SATA DOM and plug the module into the white SATA 0 connector, which is behind the main power connector in the left front section of the baseboard.

Figure 43. Installing a SATA DOM on the Server Board



CG00106

4.12 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 *CG2200 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 CG2200, click on Product Downloads, then Ordering Guide).

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

4.12.1 Connecting the Power Cord

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

4.12.2 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 10 amperes of overcurrent protection per cord feed. If the power system for the equipment rack is installed on a branch circuit with more than 10 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 CG2200 Carrier Grade Server if they fail. For information about what is available from Kontron, see the *CG2200 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 CG2200, 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 antistatic wrist strap attached to chassis ground (any unpainted metal surface) on your server when handling parts.

5.1.1 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

5.1.2 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.

5.1.3 Cable Routing Reference

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

Table 6 for cable routing and for more detailed information, see the *Kontron CG2200 Carrier Grade Server Technical Product Specification*.

5.2 General Replacement Procedures

This section covers a few general procedures for components that have to be removed before other components in this chapter can be replaced.

5.2.1 Removing the Support Cross Bar

The support cross bar secures several components, some optional, in the rear section of the chassis. It is the divider between the front and back. Some components in the front of the chassis, such as the front panel board or the power distribution board, cannot be replaced without first removing the cross bar (along with all the components attached to it). This procedure is necessary in order to have enough space to access these front chassis components.

To remove the support cross bar:

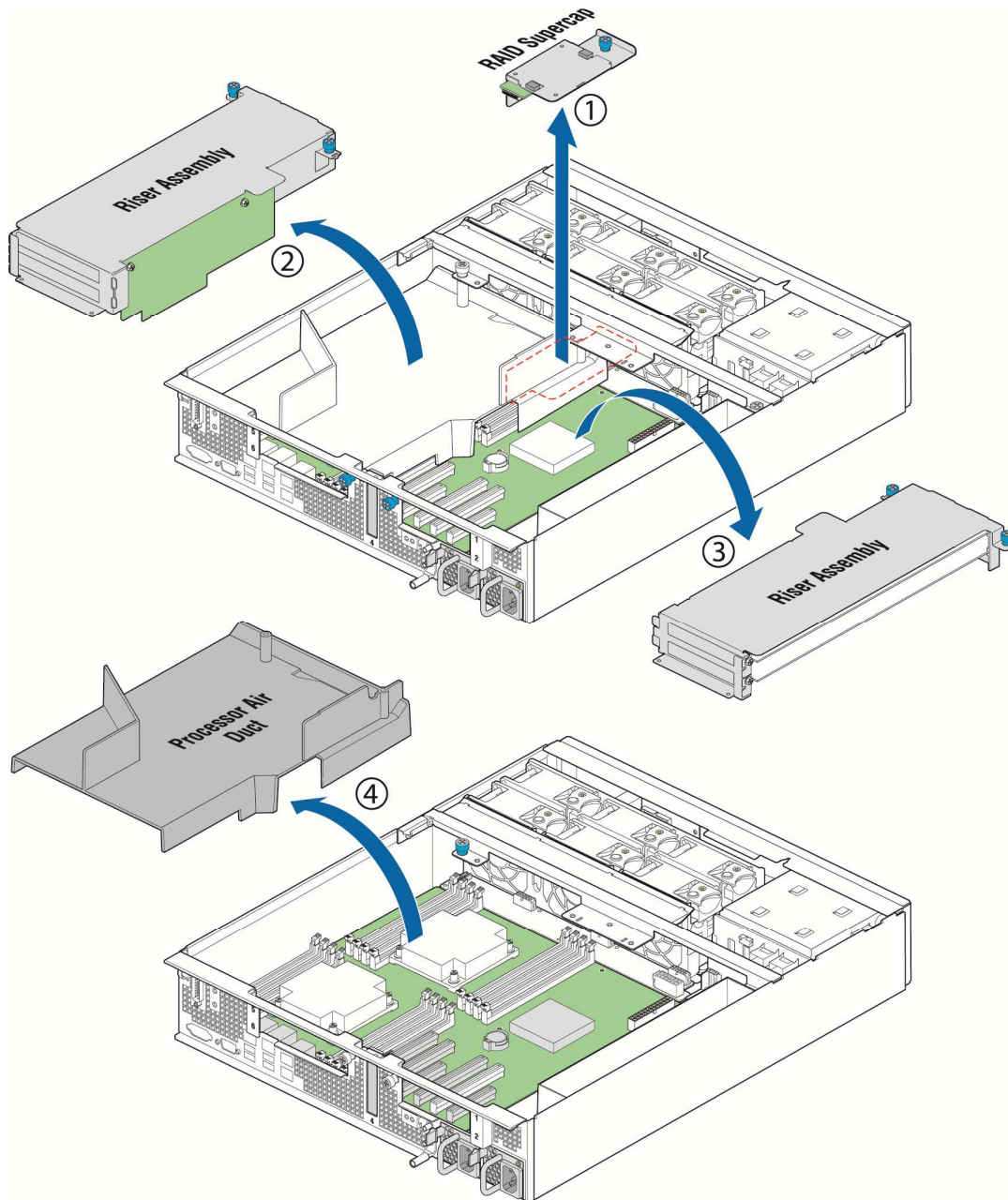
1. Power down the server and remove all peripheral devices and the power cord(s)
2. Remove the chassis cover. For instructions, see “Removing the Chassis Cover” in Section 3.2.
3. Loosen the blue captive retention screws all across the cross bar and where they are securing components in the rear part of the chassis, remove these components from the chassis, also. (Figure 45, “A”)

For more information about removing the riser card assemblies, see “Removing a Riser Card Assembly” in section 3.2.

For more information about removing the processor air duct, see “Removing the Processor Air Duct” in section 3.2.

For more information about removing the hardware RAID controller SuperCap battery assembly, see Section 4.4, “Installing the SuperCap Module”.

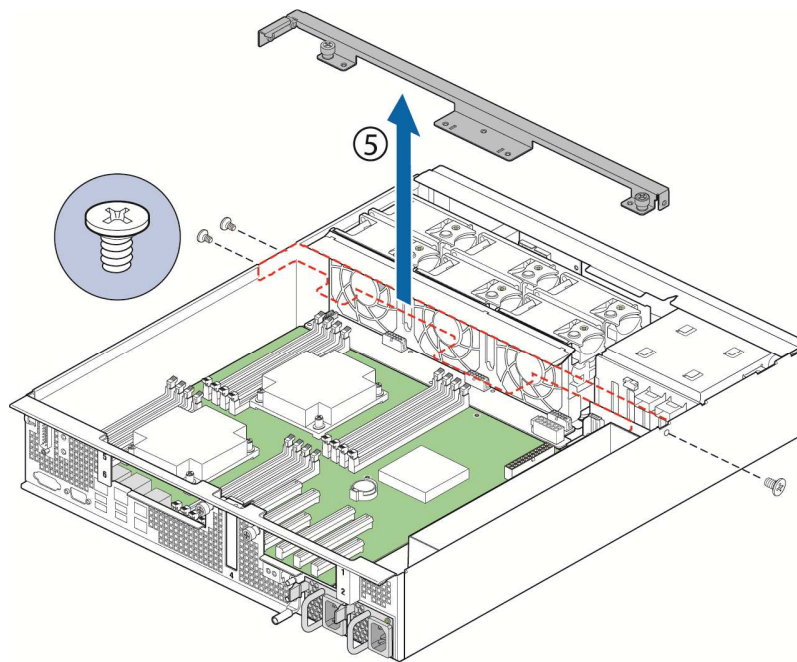
Figure 44. Disconnecting Components from the Support Cross Bar



CG00112

4. Remove the small flat screws that fasten the cross bar to the sides of the chassis. There is one screw on the left side and two on the right side. (Figure 45)
5. Remove the support cross bar from the chassis and set it aside. (Figure 45)

Figure 45. Removing the Support Cross Bar from the Chassis



CG00113

- Return to the procedure for replacing the component where this cross bar step was called out.

5.2.2 Removing the CPU1 and CPU2 Power Cables

The CPU1 and CPU2 power cables bring power from the power distribution board where they are soldered on to the CPUs (and their DIMMs). The cables are routed along the fan cage just behind the support cross bar. They are covered by a protective black insulator. The CPU1 cable connects to the server board in the right front corner. The CPU2 cable is routed through another black insulator along the right chassis wall. The CPU2 connector on the baseboard is at the rear right side of the board.

The CPU power cables must be disconnected on the server board side and pulled out of the way before some other components, such as the front panel board, the power distribution board, and the server board can be replaced.

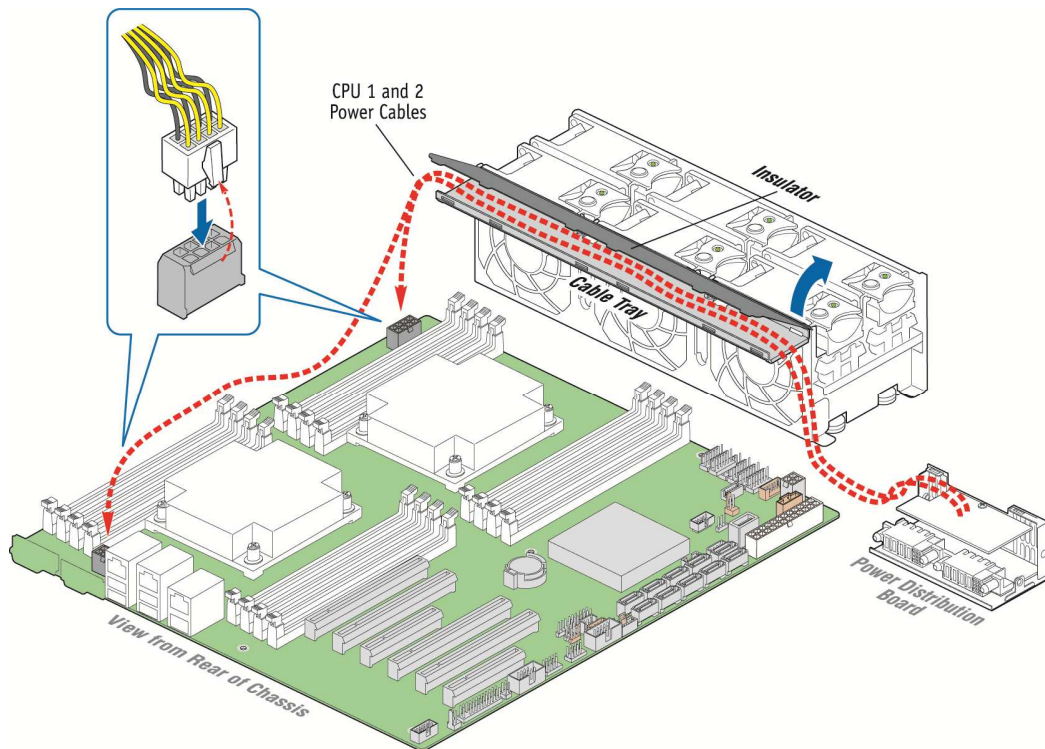
To disconnect the CPU1 and CPU2 power cables:

- Power down the server and remove all peripheral devices and the power cord(s)
- Remove the chassis cover. For instructions, see “Removing the Chassis Cover” in Section 3.2.
- Remove the right-side slot 5 riser card assembly. For instructions, see “Removing a Riser Card Assembly” in Section 3.2.
- Remove the processor air duct. For instructions, see “Removing the Processor Air Duct” in Section 3.2.
- Carefully uncover the black insulator covering the CPU 1 and CPU 2 power cables behind the fan cage. (Figure 46)
- Disconnect the CPU power cables from the server board and pull them out of the system. (Since they are soldered onto the power distribution board, you cannot remove them from the chassis,

but you can pull them over to the left side, out of the way when working with components in the front of the chassis.)

- Return to the procedure where this step was called out.

Figure 46. Disconnecting the CPU Power Cables



CG00119

5.2.3 Removing the Fan Cage

The sheet metal fan cage has to be removed in order to replace the telco alarms module board, the front panel board, the LED/switch board, and the fan control board.

Before you can remove the fan cage, you need to remove the chassis cover, remove all six fans from the cage, remove the support cross bar, remove the CPU cables from the protective insulator and unplug them, and unplug all three fan cables from the fan control board.

To remove the fan cage:

- Power down the server and remove all peripheral devices and the power cord(s)
- Remove the chassis cover. For instructions, see "Removing the Chassis Cover" in Section 3.2.
- Remove all six fans from the sheet metal fan cage. Grasp both sides of the fan assembly, using the plastic finger guard on the left side and pulling the fan out of its section of the fan cage. Set the fans aside.
- Remove the support cross bar behind the fan cage and all of the components attached to it. For instructions, see "Removing the Support Cross Bar" earlier in Section 5.2.
- Disconnect the CPU1 and CPU2 power cables and move them out of the way of the fan control board. For instructions, see "Removing the CPU1 and CPU2 Power Cables" earlier in Section 5.2.

6. Unplug the three fan connectors on the fan control board by pinching the sides of the connectors and pulling them up and off the headers on the fan control board. For assistance, see Figure 52 in “Replacing the Fan Control Board”.
7. Unfasten the two screws that fasten the fan cage to the chassis floor. Pull the cage up out of the chassis and set it and the screws aside.
8. Return now to the replacement procedure where this step was called out.

5.3 Replacing Fans

The fan replacement spare kit for the CG2200 server contains six 80mm fans. Each fan module is exactly like the fans in the server, i.e., the bracket and plastic finger guard are attached. For ordering information, see the *CG2200 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 CG2200, click on Product Downloads, then Ordering Guide). The fans are hot-swappable, so no service interruption is usually required. However, if service interruption is required for installation considerations, fan replacement by a skilled technician should take 15 minutes or less.

CAUTION: Because the fans are hot-swappable, you do not need to shut down the server system and disconnect the power and external devices. Instead of removing the chassis cover, as is customary for working with internal components, you can simply press the blue unlock button on the cover and slide the cover backwards on the shoulder screws to access the fan area.

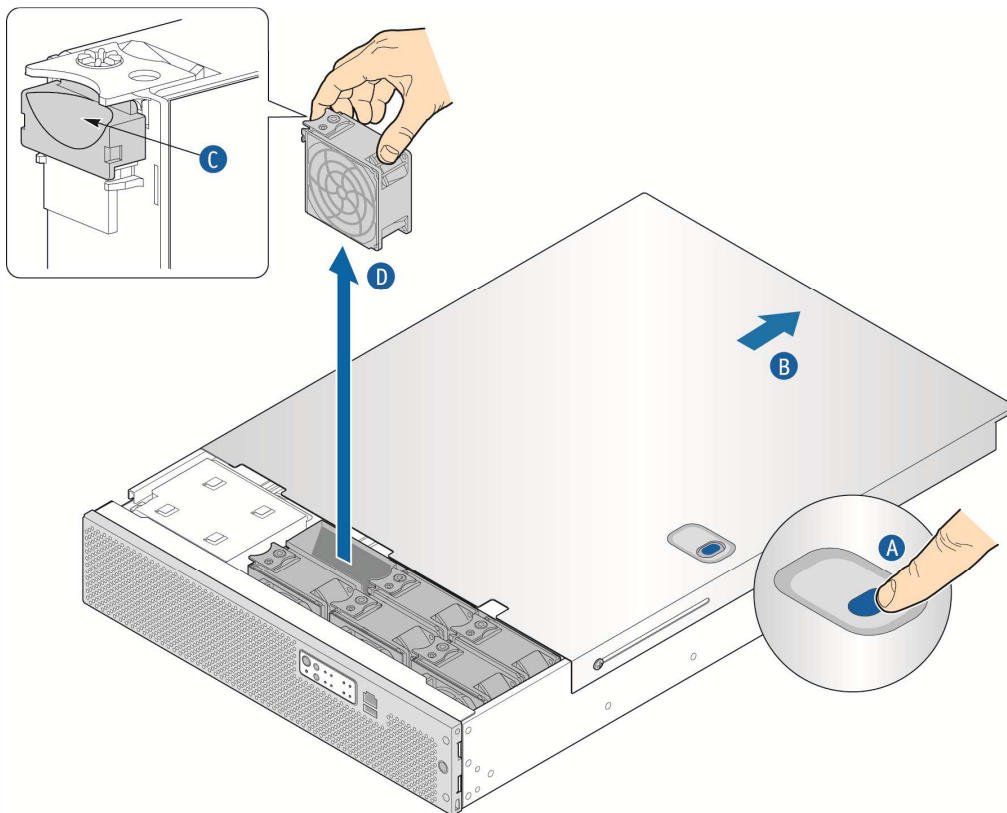
Do not completely remove the top cover while the system is running because there is a 12V energy hazard in the server when power is on. If the top cover has been removed to access components internal to the system other than the hot-swappable fans, you must power off the server and remove the power cords.

The six 80x38mm fans, configured as three redundant pairs are located behind the front panel board. (See Figure 2, “Q”) These fans are in front of the support cross bar and the fan control board. They provide cooling for the CPUs, memory DIMMs, PCI riser assemblies, and HDD drives.

To replace a fan:

1. Unfasten the shipping screw, if used, on the left side of the chassis cover.
2. Slide the top cover back to the support cross bar so the fans and the CPU cables behind them are visible.
3. Determine which fan has failed by finding the LED that is amber. (The LED is next to the blue grommet on the top of each fan assembly. (Figure 47, “A”)
4. Remove the failing fan by grasping both sides of the fan assembly, using the plastic finger guard on the left side and pulling the fan out of the metal enclosure that houses the fans and the power cables. (“B”)

Figure 47. Removing a Fan from the Chassis



CG00114

5. Replace the fan by inserting it into the same slot. Use the edges of the metal enclosure to align the fan assembly properly and to make sure the power connector is seated properly in the header on the left side of the metal enclosure.
6. If this is the last task you are performing, close the chassis cover by sliding it forward until it clicks into place. Replace the shipping screw, if used.

5.4 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 SD flash modules. The FP board also houses the LED/switch board that controls the front panel LEDs and the telco alarm manager.

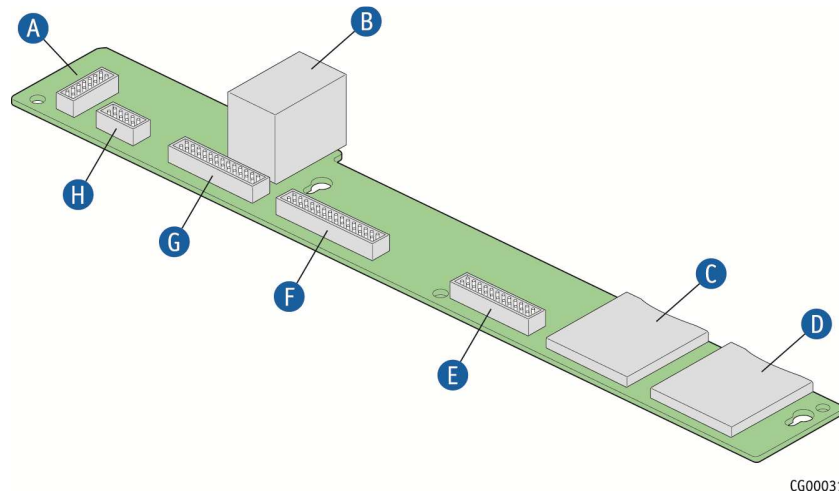
To replace the FP board, you must first remove the following components:

- The chassis cover
- The front bezel
- The support cross bar and all components attached to it
- The CPU1 and CPU2 power cables
- The fan cage
- All cable connections on the FP board
 - Multifunction (power and signal, HDD LED, COM2)cable
 - SSI FPB cable

- Front panel USB cable
- LED/Switch board power and signal cable
- TAM signal cable

Figure 48 shows the location of all the connectors on the FP board.

Figure 48. Front Panel Board Connectors



Item	Description	Item	Description
A	TAM signal cable connector	E	SSI front panel power cable connector
B	USB/RJ45 serial stacked header	F	LED/switch board power/signal cable connector
C	SD 0 flash module	G	Multifunction power/signal cable connector
D	SD 1 flash module	H	Front panel board USB cable connector

CAUTION: Before replacing any of the boards on the CG2200 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.

5.4.1 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 "Removing the Chassis Cover".
3. Remove the front bezel. For instructions, see "Removing the Front Bezel".
4. Remove any SD flash cards in the SD module slots to save for use with the new FP board.

5. Remove the sheet metal fan cage. For instructions, see “Removing the Fan Cage”.
6. Disconnect all of the cables connected to the FP board. See Figure 7 and Table 6 for the cable routing. For the location of each connector on the FP board, see Figure 48.

Disconnect the multifunction power and signal cable that connects to the fan control board.

Disconnect the SSI front panel board cable that comes from the baseboard.

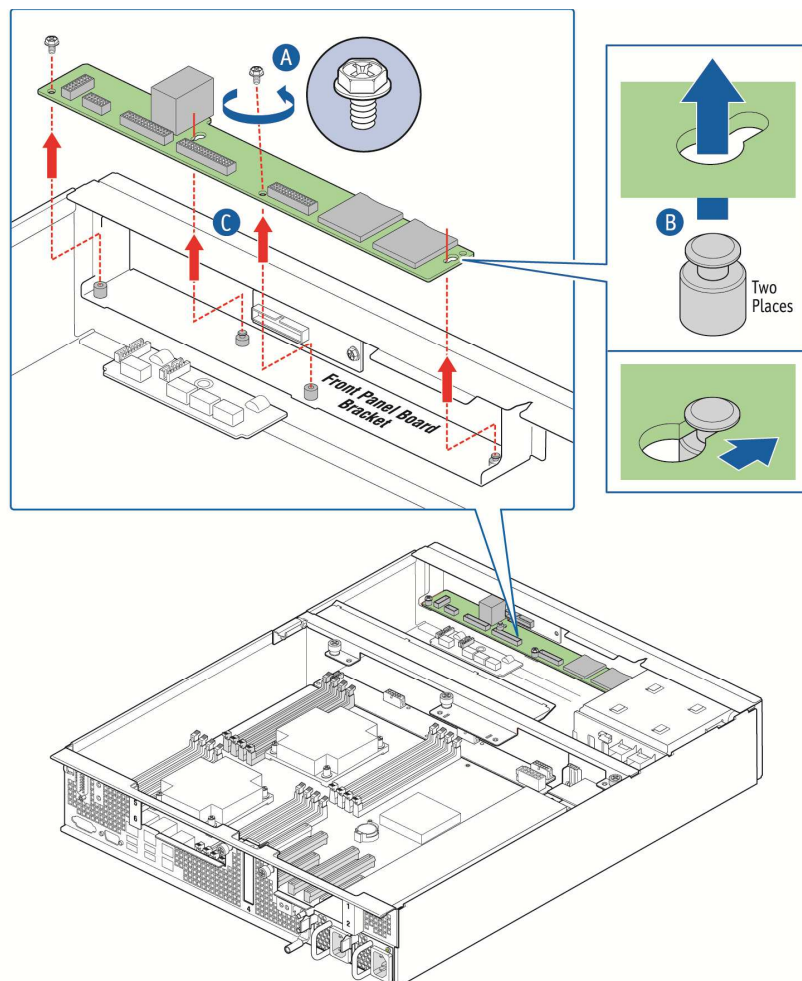
Disconnect the LED/switch board power and signal ribbon cable.

Disconnect the TAM signal cable.

Disconnect the USB cable that comes from the baseboard

7. Unscrew the two fasteners on the FP board (Figure 49, “A”) and slide the board away from the front of the chassis and over the two keyhole standoffs (“B”) to lift it up and out of the chassis. (“C”) Save the screws for reuse with the new replacement FP board.

Figure 49. Removing the Front Panel Board from the Chassis

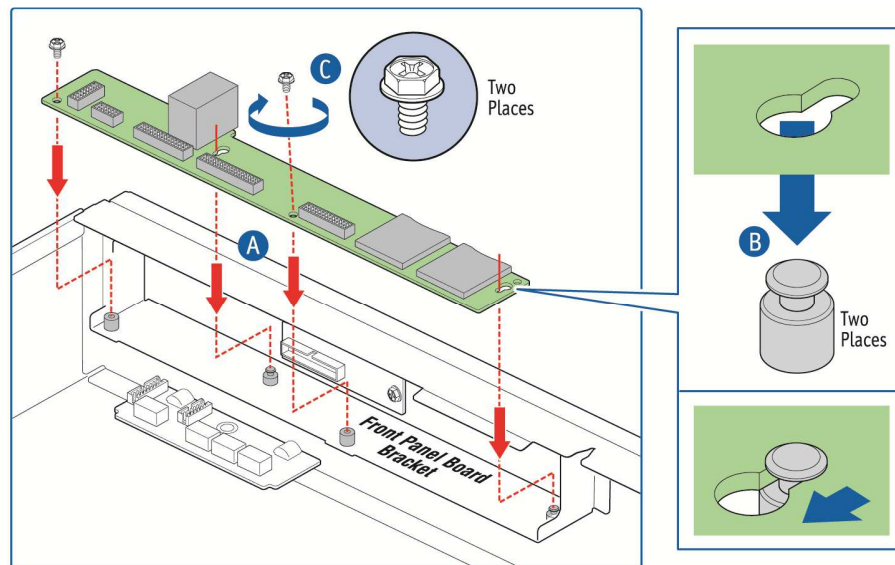


CG00091

5.4.2 Installing the New Front Panel Board

1. Tilt the new FP board and slide it toward the front of the chassis so the RJ45 COM2 and USB connectors fit through the slot on the front panel of the chassis and the two keyhole slots fit over the standoffs on the front panel board shelf bracket. (Figure 50, "A" and "B").
2. Replace and tighten the screws on the board to secure the board to the front panel shelf bracket. ("C")

Figure 50. Installing the New FP Board



CG00092

3. Reconnect all of the cables on the FP board. For locations of each header on the board, see Figure 48.
 - 3.1. Reconnect the multifunction power and signal cable that comes from fan control board.
 - 3.2. Re connect the SSI front panel board cable that comes from the baseboard.
 - 3.3. Reconnect the LED/switch board power and signal cable.
 - 3.4. Reconnect the TAM module alarms cable.
 - 3.5. Reconnect the SD flash module USB cable.
4. Re-install the sheet metal fan cage. For assistance, see "Removing the Fan Cage".
5. Replace all six fans back into the cage. For instructions, see "Replacing Fans".
6. Replace the support cross bar and any components that were attached to it, such as the CPU air duct and the riser card assemblies. For assistance, see "Removing the Support Cross Bar".
7. Route the CPU1 and CPU2 cables back across the fan cage and fold the protective insulator back over them. Route the CPU2 cable through the insulator along the chassis wall. Re-connect the cables to the connectors on the server board. For assistance, see "Removing the CPU1 and CPU2 Power Cables".

8. If this is the last task you are performing inside the chassis, replace the top chassis cover and reconnect the power cord(s).

5.5 Replacing the LED/Switch Board

The LED/switch board is mounted against the front panel of the CG2200 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, the front bezel, and the fan cage so you can access the board from the back. You may also have to loosen the front panel board and slide it back, in order to access the LED/switch board retaining screw.

5.5.1 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 “Removing the Cover”.
3. Remove the front bezel. For instructions, see “Removing the Front Bezel”.
4. Remove the sheet metal fan cage. For instructions, see “Removing the Fan Cage”.
5. From behind the front panel, disconnect the LED/switch board power and signal ribbon cable from the LED/switch board.
6. Disconnect the multifunction cable on the FP board so there is enough room to unfasten the retainer screw on the top right side of the LED/switch board.
If you still do not have enough room to access this screw, remove (or at least slide back) the FP board. For instructions, see “Removing the Old Front Panel Board”.
7. 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 pry the LED/switch board loose from these standoffs to remove it.

5.5.2 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.

5.5.3 Installing the New LED/Switch Board

1. Connect the LED/switch board power and signal ribbon cable to the new LED/switch board.
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.
3. Fasten the screw at the right of the LED/switch board to hold the board in place.
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 “Installing the New Front Panel Board”.
5. Reconnect the multifunction cable on the FP board.
6. Replace the fan cage.
7. Replace the front bezel. For instructions, see “Re-Installing the Front Bezel”.
8. If this is the last task you are performing inside the server chassis, replace the chassis cover, reconnect the power cord(s), and reconnect any external devices.

5.6 Replacing the Telco Alarms Module (TAM)

The TAM board is on the right side of the CG2200 server chassis floor, just below the front panel. Before you can replace the TAM board, you must remove the chassis cover, the fan cage, the CPU power cables, and the support cross bar. (You do not have to remove the front panel board in order to access the TAM board).

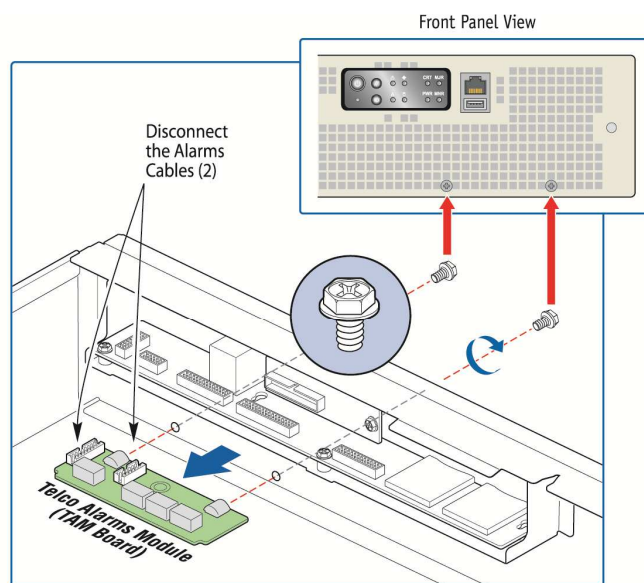
CAUTION: Before replacing any of the boards on the CG2200 server, you must first take the server out of service, turn off all peripheral devices connected to the server, turn off the server by pressing the power button, and unplug the power cord(s) from the system and wall outlet.

5.6.1 Removing the Old Telco Alarms Module

To remove the TAM board:

1. Power down the server and remove all peripheral devices and the power cord(s)
2. Remove the chassis cover. For instructions, see “Removing the Cover”.
3. Remove the front bezel. For instructions, see “Removing the Front Bezel”.
4. Remove the sheet metal fan cage.

Figure 51. Removing the TAM Board



CG00093

5. Unfasten the two retaining screws from the front of the chassis. (Figure 51)
6. Disconnect the TAM signal cable that is connected to the FP board. (Figure 51)
7. Disconnect the alarms cable that is routed to the rear of the chassis. (Figure 51)
8. Remove the TAM board from the chassis by pulling it away from the front panel of the chassis. (Figure 51)

5.6.2 Installing the New Telco Alarms Module

1. Slide the new TAM board toward the front panel and align it with the two holes for the retaining screws. (Figure 51)
2. Fasten the retaining screws from the front panel of the chassis to hold the board in place. (Figure 51)
3. Replace the front panel board if you removed it or slid it out to work on the TAM board installation. For instructions, see “Installing the New Front Panel Board”.
4. Connect the alarms cable from the FP board to the TAM board. (Figure 51)
5. Connect the alarms cable from the rear of the chassis to the TAM board. (Figure 51)
6. Re-install the fan cage.
7. If this is the last task you are performing inside the server chassis, replace the chassis cover and the front bezel, reconnect the power cord(s), and reconnect any external devices.

5.7 Replacing the Fan Control Board

The fan control board is located on the chassis floor in front of the server board and just behind the fan cage. The fan control functions are controlled by the fan controller IC. This controller monitors the “Fan Present” signals from each of the fan positions, drives the “Fan PWM” signals, monitors the “Fan Tach” signals, and drives the “Fan Fail” signals. Fan speed is controlled using temperature sensors located on the server board. When a fan fault is detected the fan controller drives the “Fan Fault” signal “ON” in the fault LED on the fan assembly. Simultaneously, a composite fan fault LED, visible at the chassis front bezel, is turned “ON” on the front panel LED board.

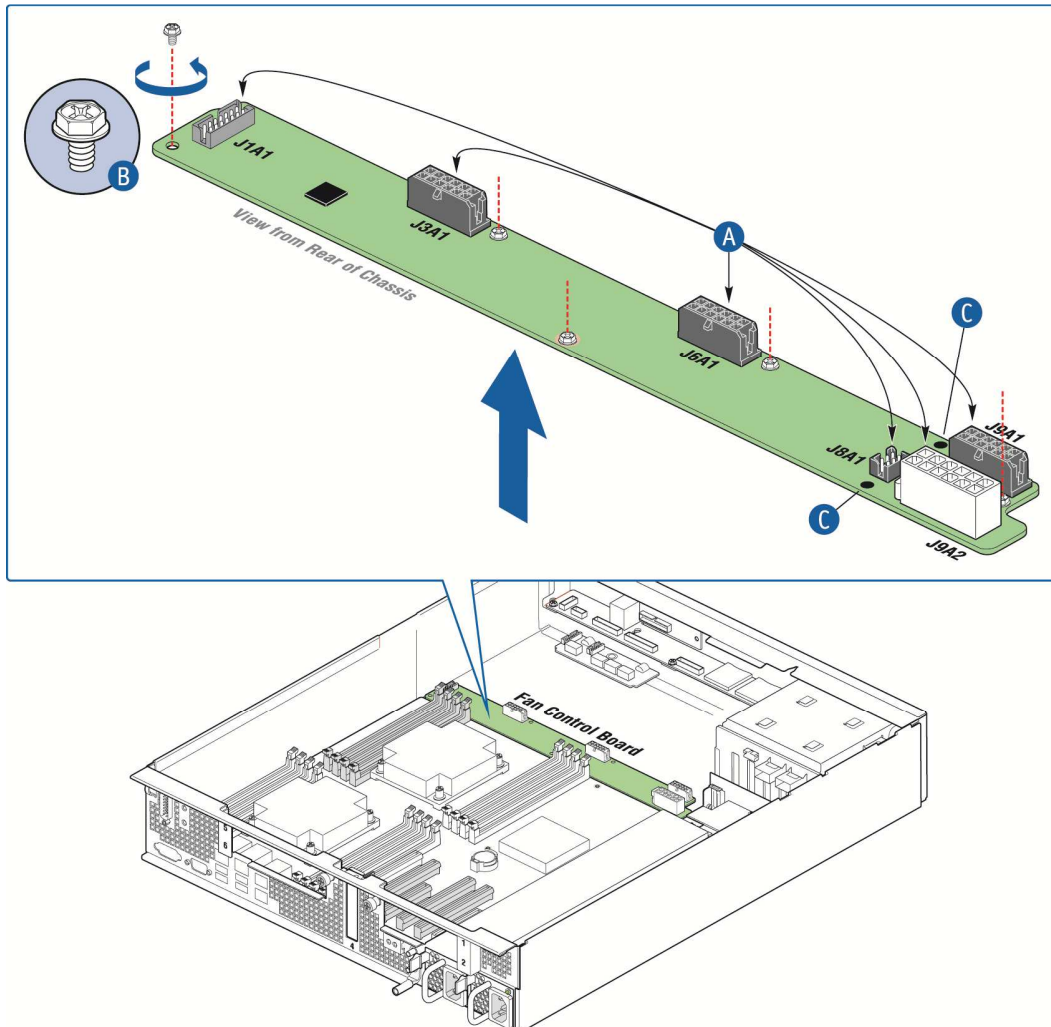
Before you can replace the fan control board, you need to remove the chassis cover, the fan cage, the support cross bar (and all components attached to it), and the CPU power cables that are routed above the fan control board inside an insulator cover.

5.7.1 Removing the Old Fan Control Board

To remove the fan control board from the chassis:

1. Power down the server and remove all peripheral devices and the power cord(s)
2. Remove the chassis cover. For instructions, see “Removing the Cover”.
3. Disconnect the CPU power cables and move them out of the way. For instructions, see “Removing the CPU1 and CPU2 Power Cables”.
4. Remove the sheet metal fan cage.
5. Disconnect all of the cables connected to the fan control board: See Figure 52, “A” for the connector locations on the board.
 - Input power connector
 - I2C connector
 - Multifunction output power and signal cable
 - Three fan cables for the fan pairs (if not already disconnected when removing the fan cage).
6. Unfasten the five screws on the fan control board that fasten it to the chassis floor. See Figure 52 for the locations of these screws. Save the screws for use with installing the new fan control board.
7. Lift the fan control board out of the chassis.

Figure 52. Fan Control Board Layout



CG00111

5.7.2 Installing the New Fan Control Board

To install the new fan control board:

1. Using the five screws saved from removing the old board, fasten the new fan control board to the chassis floor. (Figure 52).
2. Re-connect all of the cables removed from the old board. (Figure 52).
3. Re-install the fan cage.
4. Route the CPU1 and CPU2 cables back across the fan cage and fold the protective insulator back over them. Route the CPU2 cable through the insulator along the chassis wall. Re-connect the cables to the connectors on the server board. For assistance, see "Removing the CPU1 and CPU2 Power Cables".

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

5.8 Replacing the SAS Backplane Board

The six-slot SAS backplane board is located at the rear of the HDD drive bay assembly. It is held in place by a cover plate on top of the HDD bay assembly that goes over the top edge of the backplane board. There is also a black plastic air duct surrounding the drive bay on the right side and rear of the 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
- HDD bay assembly cover plate
- The power cable connecting the power distribution board to the front of the backplane board
- The two mini-SAS connectors on the backplane

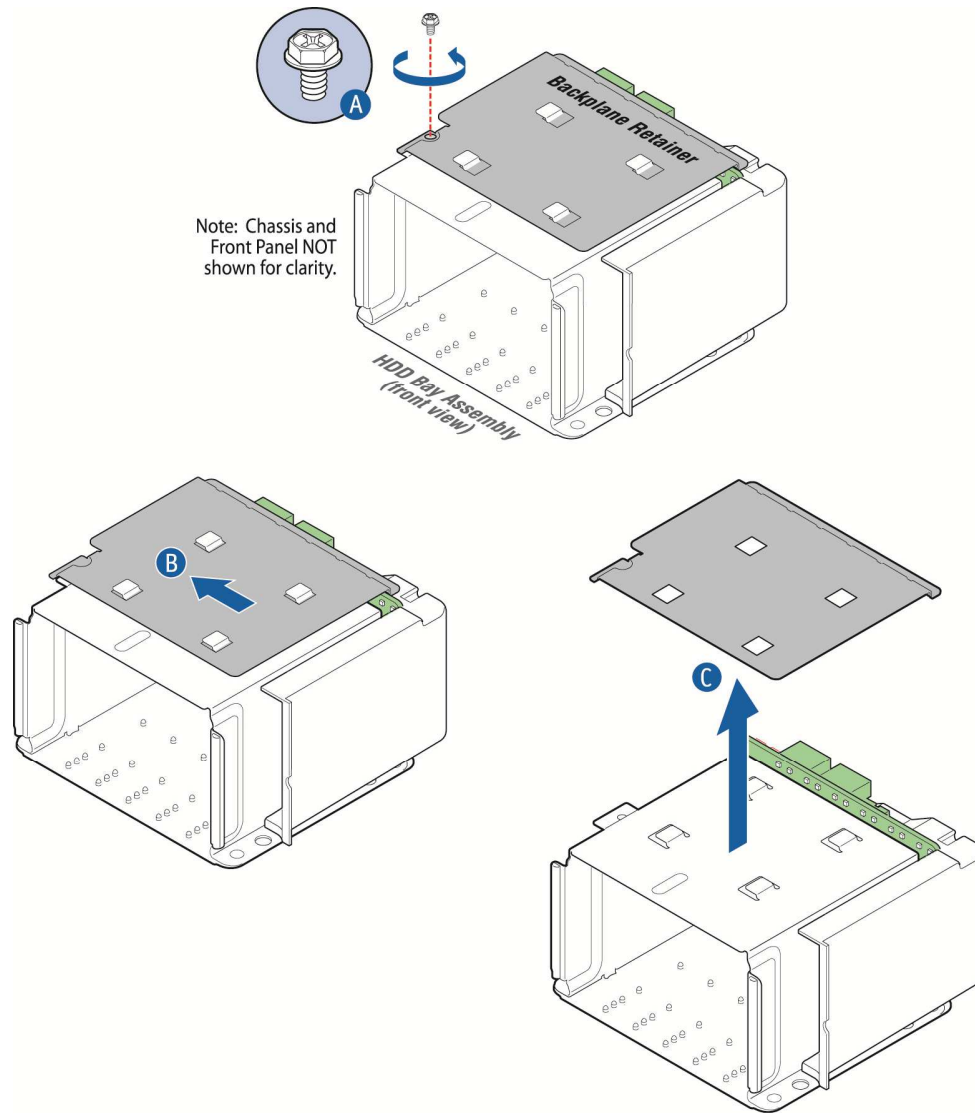
CAUTION: Before replacing any of the boards on the CG2200 server, you must first take the server out of service, turn off all peripheral devices connected to the server, turn off the server by pressing the power button, and unplug the power cord(s) from the system and wall outlet.

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

5.8.1 Removing the Old SAS Backplane Board

1. Power down the server and remove all peripheral devices and the power cord(s)
2. Remove the front chassis cover. For instructions, see “Removing the Cover” in Section 3.2.
3. Remove the front panel bezel. For instructions, see “Removing the Front Bezel” in Section 3.2.
4. Slide any hard disk drives out from the drive bay slots to disengage them from the backplane.
5. Remove the cover plate on the HDD bay assembly by loosening the screw that fastens it to the drive bay and sliding it to the left towards the chassis wall to release the tabs. (Figure 53, “A” and “B”)
6. Lift the cover plate off of the HDD bay assembly. (“C”)

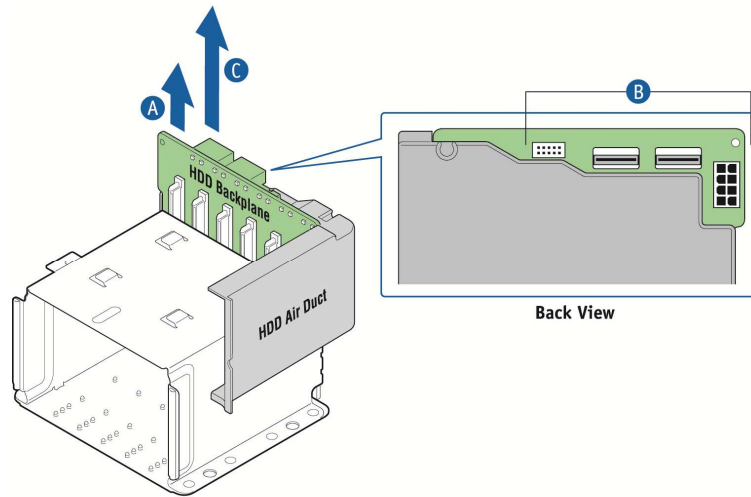
Figure 53. Removing the Cover Plate



CG00095

7. Lift the backplane board and HDD air duct assembly up to access the connectors on the back of the board. (Figure 54, "A")
8. Disconnect the four cables attached to the backplane board ("B"):
 - SAS HDD backplane board power cable
 - Mini-SAS 1 and Mini-SAS 2 cables
 - HSBP I²C/HDD LED cable
9. Lift the backplane board and air duct up and out of the chassis. ("C")

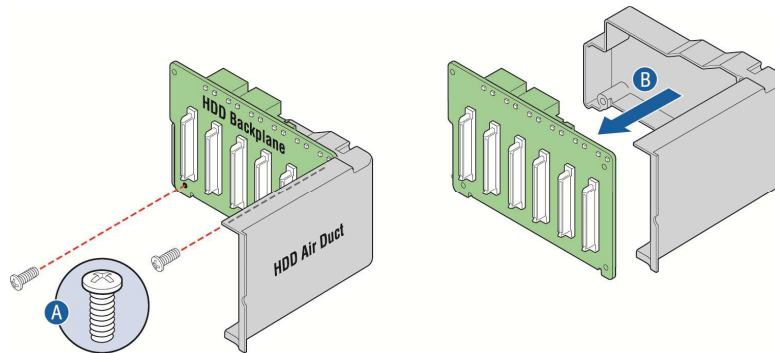
Figure 54. Removing the Backplane Board



CG00096

10. Remove the HDD air duct from the old backplane board by loosening the two screws on the backplane. (Figure 55, “A”)
11. Save the air duct to reuse with the new board. (“B”)

Figure 55. Removing the Air Duct from the Backplane Board



CG00097

5.8.2 Installing the New SAS Backplane Board

1. Attach the HDD air duct to the new SAS backplane board. (Figure 55, “A”)
2. Connect the four cables into the back of the backplane board. Be careful that the HSBP I²C/HDD LED cable does not catch on corner of the backplane board or the air duct.
3. Secure the six-slot HDD backplane in place by placing the cover plate over the HDD bay assembly, the backplane and the air duct.
Re-fasten the screw that holds the cover plate in place. (See Figure 53, “A” for the location.)

4. Lock in all the hard drives so they engage with the new backplane.
5. Re-attach the front panel bezel. For instructions, see “Re-Installing the Front Bezel” in Section 3.2.
6. If this is the last task you are performing inside the server chassis, replace the front top chassis cover, reconnect the power cord(s), and reconnect any external devices.

5.9 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
- Support cross bar and all components attached to it
- SAS HDD backplane board
- 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)
 - Fan control board power cable (from the 12-pin connector on the fan control board, 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)

Refer to Figure 24. Cable Routing” and Figure 7. Baseboard Components and Connectors” for the location of the connectors where the cables are unplugged.

CAUTION: Before replacing any of the boards on the CG2200 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.

5.9.1 Removing the Old Power Distribution Board

1. Power down the server and unplug all peripheral devices and the power cable(s).
2. Remove the chassis cover. For instructions, see “Removing the Chassis Cover” in Section 3.2.
3. Slide the power supply module(s) out a few inches to disengage it from the PDB.
4. Remove the support cross bar and all components attached to it. For instructions, see “Removing the Support Cross Bar” in Section 5.2.

5. Remove the SAS HDD backplane board and surrounding air baffle. For instructions, see “Removing the Old SAS Backplane Board”.

6. Disconnect all of the cables that come from the PDB:

Disconnect the HDD backplane power connector. For the location, see Figure 54.

Disconnect the CPU1 and CPU2 power connectors. For instructions, see “Removing the CPU1 and CPU2 Power Cables”.

Disconnect the main power connector on the baseboard. For the location, see Figure 7 (“W”)

Disconnect the fan control board power connector. For the location, see Figure 52 (“A”)

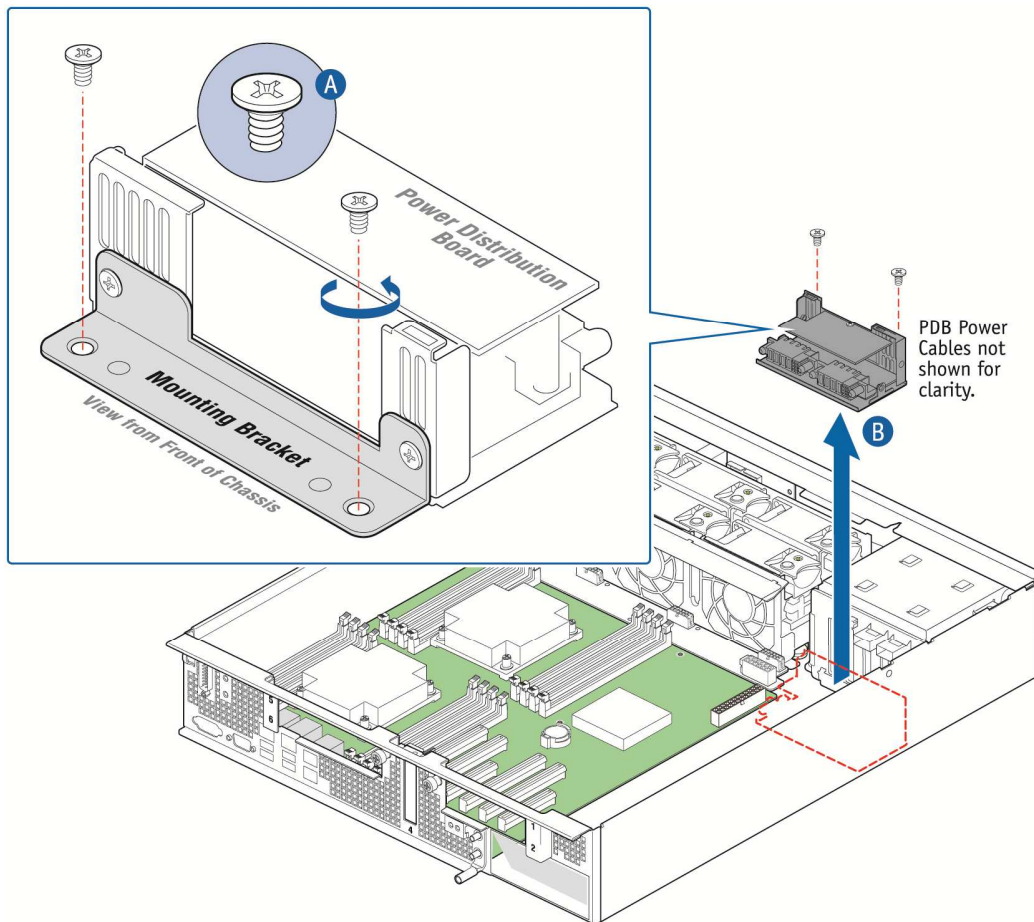
Disconnect any optional I/O devices connected to the auxiliary cable and remove the auxiliary I/O connector/dongle from the PCI air baffle. For the location, see Figure 2, “I”.

The baffle is loose once the cross bar is removed. Tilt the baffle out from the groove in the chassis wall that secures it and remove the auxiliary cable.

Disconnect the baseboard SSI power control cable from the baseboard. For the location, see Figure 7 (“V”)

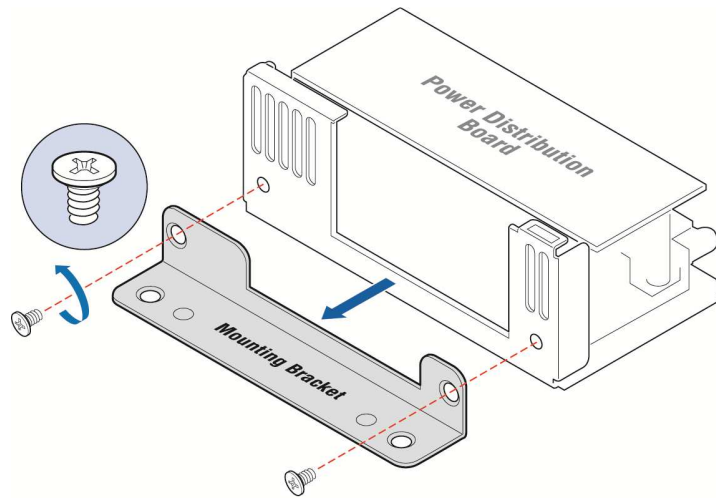
7. Loosen the two screws that secure the PDB bracket to the chassis and save them for re-installing the new PDB assembly. (Figure 56, “A”)
8. Gently pull the PDB and all its attached cables out of the chassis. (“B”)

Figure 56. Removing the PDB from the Chassis



CG00115

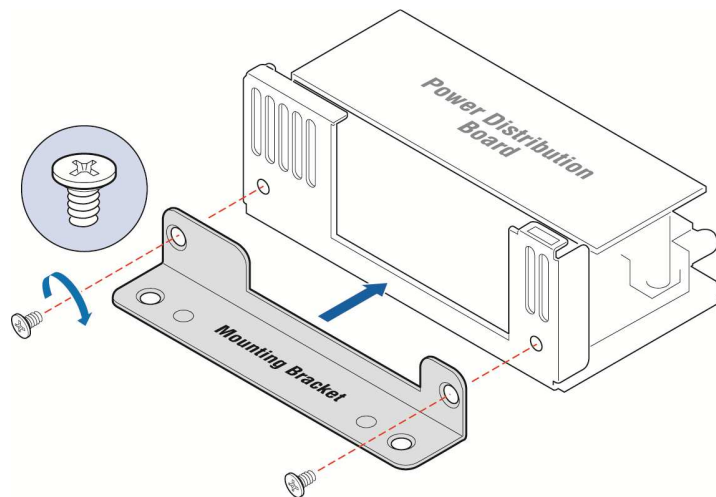
9. Remove the bracket from the PDB and save it and the two screws for use with the new PDB. (

Figure 57. Removing the PDB Mounting Bracket

CG00116

5.9.2 Installing the New Power Distribution Board

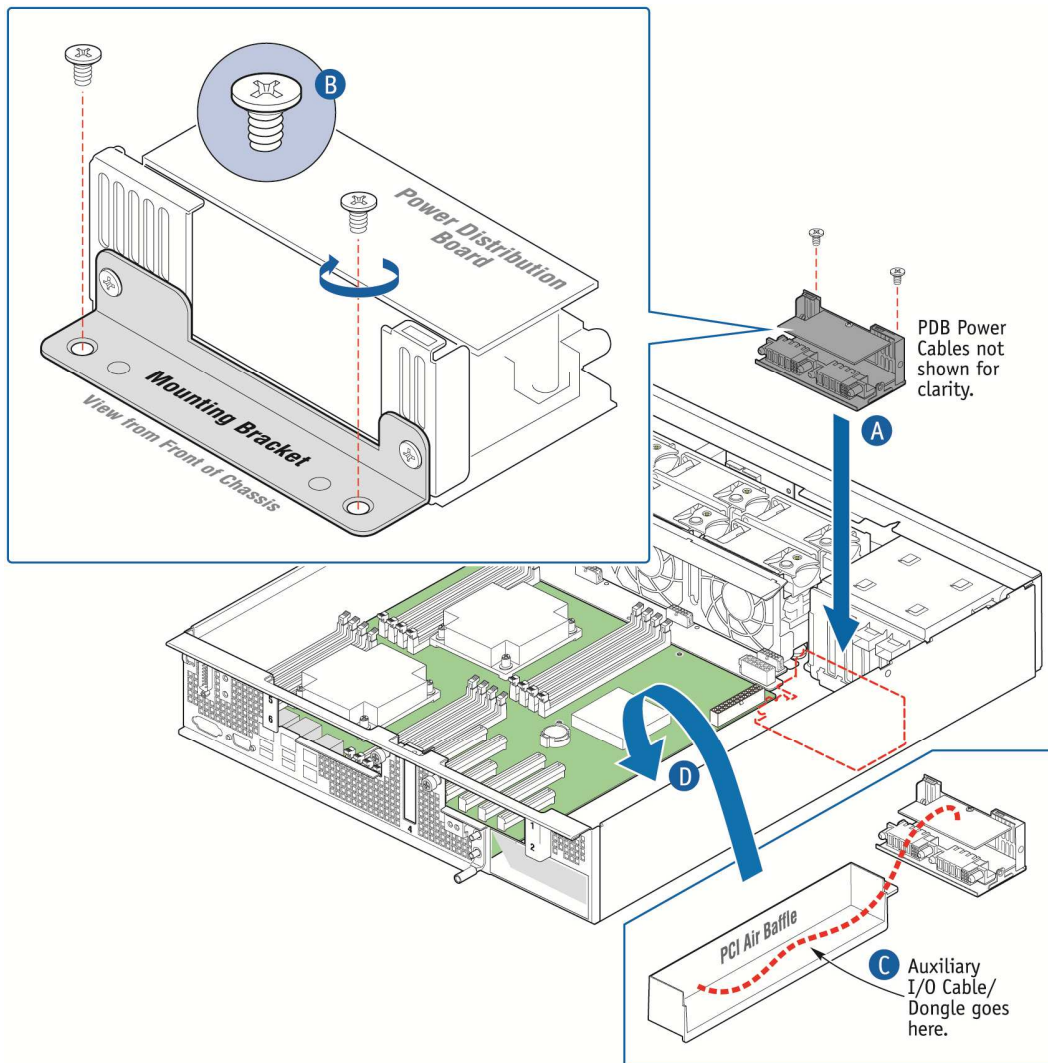
1. Fasten the PDB bracket to the new PDB with the two screws reserved from removing the old PDB. (Figure 58)

Figure 58. Attaching the PDB Mounting Bracket

CG00117

2. Place the PDB back into the chassis and fasten the bracket to the chassis floor with the remaining two screws. (Figure 59, "A" and "B").

Figure 59. Installing the New PDB in the Chassis



CG00118

3. Connect all of the new cables on the new PDB to their connectors on the SAS backplane, server board, and fan control 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. Place the new auxiliary I/O cable/dongle in the PCI air baffle and re-attach the baffle to the side wall of the chassis. (Figure 59, "C" and "D")
5. Replace the SAS HSS backplane board and surrounding air baffle. For instructions, see "Installing the New SAS Backplane Board".
6. Replace the support cross bar. For assistance, see "Removing the Support Cross Bar".
7. Push the power supply module(s) back into place so they are mated with the PDB.

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

5.10 Replacing the S2600CO Server Board

The CG2200 Carrier Grade Server uses the Intel® server board S2600CO. To replace the server board, the following components must be removed first:

- Top chassis cover
- Riser card assemblies
- Processor air duct
- RMM4 module (if used)
- Hardware RAID controller board (if used)
- eUSB module (if used)
- SATADOM (if used)
- Any cables attached to the server board or routed over it
 - Baseboard SSI main power cable
 - CPU1 and DIMM power cable
 - CPU 2 and DIMM power cable
 - Baseboard SSI power control signal cable
 - Multifunction front panel board cable
 - SSI front panel board cable
 - Fan I²C cable
 - Front panel board USB cable
 - Mini-SAS 1 cable
 - Mini-SAS 2 cable
 - HSBP I²C/HDD LED cable

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 CG2200 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.

5.10.1 Removing the Old Server Board from the Chassis

1. Power down the server and unplug all peripheral devices and the power cable(s).
2. Remove the chassis cover. For instructions, see "Removing the Chassis Cover" in Section 3.2.
3. Remove the riser card assemblies. For instructions, see "Removing a Riser Card Assembly" in Section 3.2.
4. Remove the processor air duct. For instructions, see "Removing the Processor Air Duct" in Section 3.2.
5. Disconnect all the cables attached to the server board or routed over it:
 - CPU1 and DIMM power cable
 - CPU 2 and DIMM power cable

- Baseboard SSI power control signal cable
- Multifunction front panel board cable
- SSI front panel board cable
- Fan I²C cable
- Front panel board USB cable
- Mini-SAS 1 cable and Mini-SAS 2 cable (which will be on the hardware RAID board, if used)
- HSBP I²C/HDD LED cable

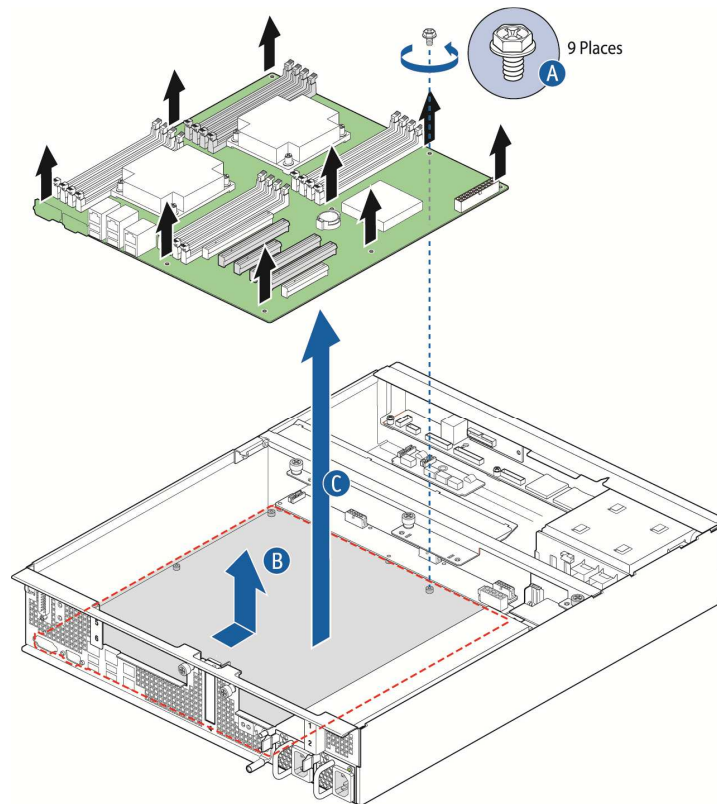
For the locations of these cable connectors on the server board and information about how the cables are routed, see Figure 24. "Cable Routing" and Figure 7. "Baseboard Components and Connectors"

6. Disconnect the TAM alarms cable from the alarms connector on the rear panel of the chassis. For instructions. See "Removing the Old Telco Alarms Module" in Section 5.6.
7. Remove the hardware RAID controller board and SuperCap battery module, if installed. For assistance, see Section 4.3 "Installing a Hardware RAID Controller".
8. Remove the RMM4 module or RMM4Lite, if installed. For assistance, see Section 4.8, "Installing a Remote Management Module 4".
9. Remove the eUSB module, if installed. For assistance, see Section 4.10 "Installing a eUSB Flash Drive".
10. Remove the SATA DOM, if installed. For assistance, see Section 4.11, "Installing a SATA Disk on Module (SATA DOM)".

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 "Replacing or Removing Memory DIMMs" in Section 3.3.
 - To remove the heat sink(s) and processor(s), see "Removing a Processor" in Section 3.3.
11. Loosen all nine screws holding the server board to the chassis and save them for use with the new server board. See Figure 60. "A" for the location of these screws.
 12. Unscrew the metal standoff for the eUSB module and save it for reuse with the new server board.
 13. 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 60, "B" and "C")

Figure 60. Removing the Server Board



CG00094

5.10.2 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 nine screws that were removed and saved.
4. Remove the white plastic standoff (for the eUSB module) that comes with the server board and replace it with the metal standoff saved from the old server board.

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 “Installing Memory DIMMs” in Section 3.3.

To install heat sink(s) and processor(s), see “

- Installing a New Processor” in Section 3.3.

Re-install the RMM4 module or RMM4Lite, if used. For information about how this card is installed, see Section 4.8, “Installing a Remote Management Module 4” or Section 4.9, “Installing RMM4Lite”.

5. Re-install the hardware RAID controller board, if used. For instructions, see Section 4.3 “Installing a Hardware RAID Controller”.
6. Re-install the eUSB module, if used. For instructions, see Section 4.10, “Installing a eUSB Flash Drive”.
7. Re-install the SATA DOM, if used. For instructions, see Section 4.11, “Installing a SATA Disk on Module (SATA DOM)”.
8. Re-install the processor air duct. For instructions, see “Re-Installing the Processor Air Duct” in Section 3.2.
9. Re-install the riser card assemblies. See “Re-Installing a Riser Card Assembly” in Section 3.2.
10. Re-install all cables disconnected when the old server board was removed:
 - CPU1 and DIMM power cable
 - CPU 2 and DIMM power cable
 - Baseboard SSI power control signal cable
 - Multifunction front panel board cable
 - SSI front panel board cable
 - Fan I²C cable
 - Front panel board USB cable
 - Mini-SAS 1 cable
 - Mini-SAS 2 cable
 - HSBP I²C/HDD LED cable
11. Re-connect the TAM alarms cable to the alarms connector on the chassis rear panel. See Figure 6. CG2200 Server Rear View”.
12. If this is the last task you are performing inside the server chassis, replace the chassis cover, reconnect the power cord(s), and reconnect any external devices.

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 CG2200 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 8 describes the keyboard commands you can use in the BIOS Setup menus.

Table 8. 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 CG2200, 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 right-side, slot 5 riser assembly. For instructions, see “Removing a Riser Card Assembly”.
4. Remove the processor air duct. For instructions, see “Removing the Processor Air Duct”.
5. Locate the “BIOS Default” jumper (J2J2) as shown in Figure 23.
6. Move jumper (J2J2) from the normal position covering pins 1-2 to the reset/clear position covering pins 2-3.
7. Wait five seconds and remove power.
8. Move the jumper (J2J2) back to the normal default position (pins 1-2).
9. Re-install the processor air duct and the right-side 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 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 (J1E2) 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. Remove the right-side, slot 5 riser assembly. For instructions, see “Removing a Riser Card Assembly”.
3. Remove the processor air duct. For instructions, see “Removing the Processor Air Duct”.
4. Open the server chassis. See “Removing the Chassis Cover”, in Section 3.2 for instructions.
5. Move the jumper (J1E2) from the normal operation position covering pins 1 and 2 to the “Password Clear” position, covering pins 2 and 3.
6. Close the server chassis.
7. Power up the server and wait 10 seconds or until POST completes.
8. Power down the server.
9. Open the chassis and move the jumper back to the default position covering pins 1 and 2.
10. Re-install the processor air duct and the right-side riser card assembly.
11. Close the server chassis. See” Re-installing the Chassis Cover” in Section 3.2 for instructions.
12. 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 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 right-side, slot 5 riser assembly. For instructions, see “Removing a Riser Card Assembly”.
4. Remove the processor air duct. For instructions, see “Removing the Processor Air Duct”.
5. Locate jumper block (J1E4) and move the jumper from the default position covering pins 1-2 to the “Enable” position covering pins 2-3.
6. Close the server chassis. See” Re-installing the Chassis Cover” in Section 3.2 for instructions.

7. Reconnect the power cord(s) and power up the server.
8. 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.

9. When the update has finished, power down the system and remove the power cord(s).
10. Open the server chassis (remove the top cover).
11. Locate the jumper block (J1E4) and move the jumper to the disabled position (pins 1-2).
12. Re-install the processor air duct and the right-side riser card assembly
13. Close the server chassis. See “Re-installing the Chassis Cover” in Section 3.2 for instructions.
14. 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 (J1E3) 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 right-side, slot 5 riser assembly. For instructions, see “Removing a Riser Card Assembly”.
4. Remove the processor air duct. For instructions, see “Removing the Processor Air Duct”.
5. Locate jumper block (J1E3) and move the jumper from the default position covering pins 1-2 to the “Enable” position covering pins 2-3.
6. Close the server chassis. See “Re-installing the Chassis Cover” in Section 3.2 for instructions.
7. Reconnect the power cord(s) and power up the server.
8. 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).
9. When the update has finished, power down the system and remove the power cord(s).
10. Open the server chassis (remove the top cover).
11. Locate the jumper block (J1E4) and move the jumper to the disabled position (pins 1-2).
12. Re-install the processor air duct and the right-side riser card assembly
13. Close the server chassis. See “Re-installing the Chassis Cover” in Section 3.2 for instructions.
14. Reconnect the power cord(s) and power up the server.

7 Troubleshooting

This chapter helps you identify and solve problems that might occur while you are using the Kontron CG2200 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/iCG2200+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

- Is power available at the source?
- Are the power supplies plugged in? Check the power cable on the back of the server and at the power source.
- Is the system power cord properly connected to the system? For AC-powered systems, is the power cord plugged into a NEMA (National Electrical Manufacturing Association) 5-15R outlet for 100-120V or a NEMA 6-15R outlet for 200-240V
- Are all cables correctly connected and secured?
- Are the processors fully seated in their sockets on the server board?

- Are all standoffs in the proper location and not touching any components, causing a potential short?
- Are all PCI-X* and PCI Express* (PCIe*) add-in cards fully seated in their slots in the respective riser cards?
- 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 6) 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/cg2200+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.

Before disconnecting any peripheral cables from the system, turn off the system and any external peripheral devices. Failure to do so can cause permanent damage to the system and/or the peripheral devices.

1. Turn off the system and all external peripheral devices. Disconnect each of devices from the system, except for the keyboard and the video monitor.
2. Make sure the system power cord is plugged into a properly grounded AC outlet.
3. 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).
4. 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 front panel (FP) board?
- Is the cable from the front panel board connected to the both the front panel board and to the server board?
- 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+rack+mount+servers/carrier+grade+servers/cg2200+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/cg2200+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 first; then try a different slot if necessary.
- 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/cg2200+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/CG2200+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/cg2200+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 S2600CO 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 S2600CO 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 just below the internal USB connector.

7.5.2 DIMM Fault LEDs

The server board provides a memory fault LED for each DIMM socket. These LEDs are located at the top left side of each CPU 2 DIMM slot (E, F, G, H) and at the top right side of each CPU 1 DIMM slot (A, B, C, D). 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 S2600CO 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 9. 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 <ul style="list-style-type: none"> • 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 not 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 <ul style="list-style-type: none"> • 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,

Color	State	Criticality	Description
			insufficient system power. This does not apply to non-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 10 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 10. 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 11. 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 10 amperes of overcurrent protection per cord feed. If the power system for the equipment rack is installed on a branch circuit with more than 10 amperes of protection, you must provide supplemental protection for the server. The overall current rating of a configured server is typically 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 (Verbenen 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.

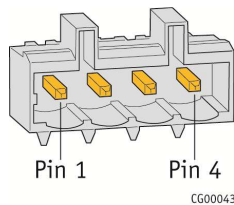
9.2.2 If DC power supplies are installed:

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 61, the input connector mechanical drawing and table, show the DC input power connector and pin-out.

Figure 61. DC Power Supply Input Connector

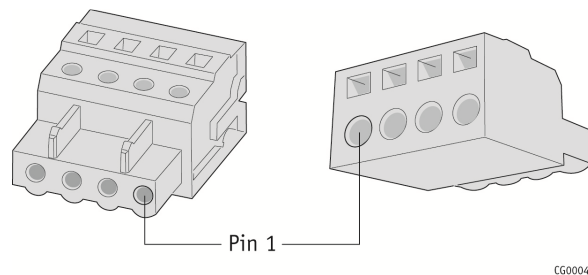


Pin#	Description
1 +	RTN
2 +	RTN
3 -	-48V
4 -	-48V

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 62 provides a -48V input power connection to the system. The input wiring connections are shown in the table in Figure 61.

Figure 62: 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 33, "DC Power Supply Grounding" in the "Adding a Second 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.

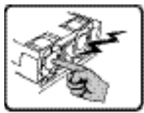
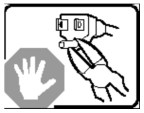
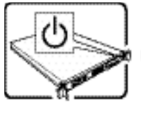

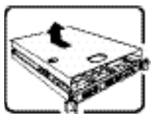
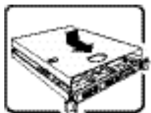
9.2.6 Temperature and Ventilation

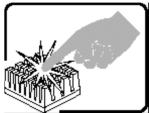
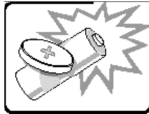
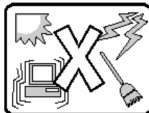
CAUTION: Temperature -- The temperature, in which the server operates when installed in an equipment rack, must not go below 5°C (41°F) or rise above 40°C (104°F). Extreme fluctuations in temperature can cause a variety of problems in your server.

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

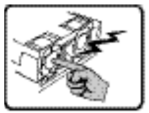
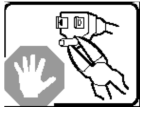
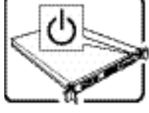

Read all caution and safety statements in this document before performing any of the instructions.

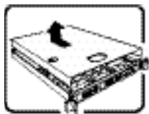
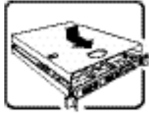
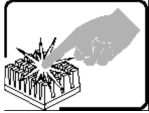

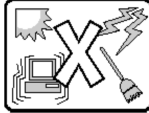
	<p>The power supply in this product contains no user-serviceable parts. There may be more than one supply in this product. Refer servicing only to qualified personnel.</p>
	<p>Do not attempt to modify or use the supplied AC power cord if it is not the exact type required. A product with more than one 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 antistatic 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. 4. Insert and lock the padlock to the system to prevent unauthorized access inside the system.

	5. Connect all external cables and the AC power cord(s) to the system.
	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.
	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.
	The system is designed to operate in a typical office environment. Choose a site that is: <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.

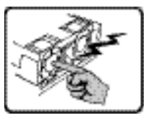
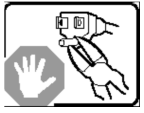
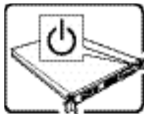

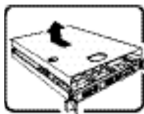
	Benutzer können am Netzgerät dieses Produkts keine Reparaturen vornehmen. Das Produkt enthält möglicherweise mehrere Netzgeräte. Wartungsarbeiten müssen von qualifizierten Technikern ausgeführt werden.
	Versuchen Sie nicht, das mitgelieferte Netzkabel zu ändern oder zu verwenden, wenn es sich nicht genau um den erforderlichen Typ handelt. Ein Produkt mit mehreren Netzgeräten hat für jedes Netzgerät ein eigenes Netzkabel.
	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.
	SICHERHEISSMASSNAHMEN: Immer wenn Sie die Gehäuseabdeckung abnehmen um an das Systeminnere zu gelangen, sollten Sie folgende Schritte beachten: <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. 3. Ziehen Sie den Stromanschlußstecker Ihres Systems aus der Steckdose.

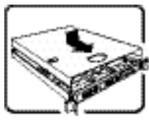
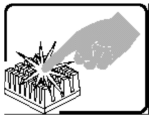

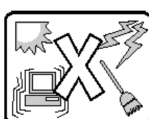
	<p>4. Auf der Rückseite des Systems beschriften und ziehen Sie alle Anschlußkabel von den I/O Anschlüssen oder Ports ab.</p> <p>5. Tragen Sie ein geerdetes Antistatik Gelenkband, um elektrostatische Ladungen (ESD) über blanke Metallstellen bei der Handhabung der Komponenten zu vermeiden.</p> <p>6. Schalten 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); • keinen Erschütterungen ausgesetzt sein;

	<ul style="list-style-type: none"> • 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

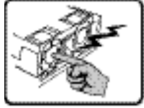
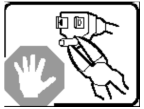
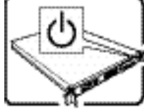

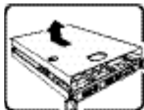
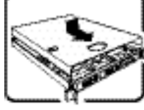
Lisez attention toutes les consignes de sécurité et les mises en garde indiquées dans ce document avant de suivre toute instruction.

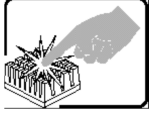

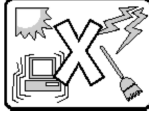
	Le bloc d'alimentation de ce produit ne contient aucune pièce pouvant être réparée par l'utilisateur. Ce produit peut contenir plus d'un bloc d'alimentation. Veuillez contacter un technicien qualifié en cas de problème.
	Ne pas essayer d'utiliser ni modifier le câble d'alimentation CA fourni, s'il ne 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. 2. Retirez toutes les vis des panneaux et mettez-les dans un endroit sûr.

	3. Retirez les panneaux.
	<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 ausystème.
	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.
	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>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).

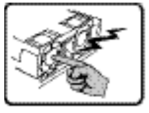
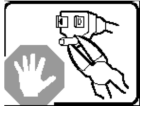
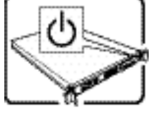
9.3.3 Instrucciones de seguridad importantes


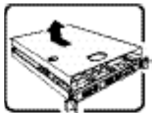

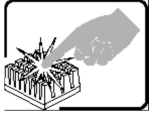
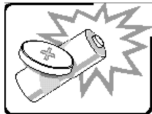
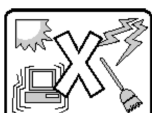
Lea todas las declaraciones de seguridad y precaución de este documento antes de realizar cualquiera de las instrucciones.

	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.
	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.
	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>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. Spegnere tutti i dispositivi periferici collegati al sistema. 2. Spegnere 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

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 CG2200 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 CG2200 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 CG2200 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 CG2200 is suitable for installation in either the Common Bonding Network (CBN) or an Isolated Bonding Network (IBN).

The CG2200 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 CG2200 systems is suitable for installation as either Isolation DC return (DC-I) or Common DC return (DC-C). Where the CG2200 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.

The CG2200 can be configured with an optional air filter that is installed behind the front bezel.

The air filter material is UAF Quadrafoam (25 PPI), has a thickness of 6.35mm, flammability rating of UL94-HF1, and meets the minimum dust arrestance of 65% (ASHRAE 52.1-1992) per documentation found at <http://www.uaf.com>. The air filter can be purchased directly from Universal Air Filter (UAF) by calling (618) 271-7300 or emailing uaf@uaf.com and ordering part number K00737-001. When placing an order provide the attached drawing to verify receipt of the proper air filter.



k00737_rev01.pdf

Recommended Air Filter Replacement Schedule: Every 6 months

The CG2200 is equipped with thermal sensors to monitor the internal temperature of the system. If the air filter gets clogged so that the fans are not able to pull air through the system, the internal temperature will rise causing a MNR and/or MJR telco alarms manager (TAM) LED to be asserted. 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

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