

Kontron IP Network Server NSW1U

Product Guide

December 2009

Rev. 1.4

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Revision History

Date	Revision	Description
December 2009	005	Kontron version: changed all references to Intel Z-U130 Value Solid State Drive to SMART Embedded USB Solid-State Drive
April 2008	004	Edited processor information to include Quad-Core Intel® Xeon® processors 5400 series. Removed SysCon information. Added Intel Z-U130 Solid State Drive. Minor grammar and formatting changes.
August 2007	003	Updated to add sections for additional optional components and to reflect post-SRA design changes.
December 2006	002	Updated initial version with corrections to Figure 10 components table and expanded PCI/PCI-X and PCI-Express* riser card assembly information.
November 2006	001	Initial release

1 Introduction

1.1 About this Manual

Thank you for purchasing and using the Kontron IP Network Server NSW1U.

This manual is for system technicians who are responsible for troubleshooting, upgrading, and repairing this IP network server. This document provides a brief overview of the features of the board/chassis, a list of accessories or other components you may need, troubleshooting information, and instructions on how to add and replace components on the IP network server.

Note: Check the Support web site at <http://us.kontron.com/support/> for the latest version of this manual with possible updates since this version was published.

1.1.1 Manual Organization

[Chapter 2](#) provides a brief overview of the IP network 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](#), [Chapter 4](#), and [Chapter 5](#) provide instructions for adding and replacing components. Use these chapters for step-by-step instructions and diagrams for installing or replacing components such as the memory, processor(s), front panel board, the battery, PCI add-in cards, and other components.

[Chapter 6](#) provides instructions for the utilities that are shipped with the system 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. Information about the specific BIOS settings and screens is available in the *Intel® Server Board S5000PHB Technical Product Specification*.

[Chapter 7](#) 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.

1.2 What Your Server Includes

Your Kontron IP Network Server NSW1U includes the following components:

- One Intel® Server Board S5000PHB server board
- One 1U chassis
- Two SATA hard disk drive trays
- One optical drive tray filler panel
- One optical drive mounting kit

- Two blank filler panels in the Ethernet connectors positions at the front of the chassis (NSW1U-R only) or One set of 4XGbE connectors installed and the other set is optional (NSW1U-F and NSW1U-B)
- A riser card assembly for a PCI-X* or a PCI Express* (PCIe*) add-in card
- DC or AC power subsystem (one hot-swappable PSU; for redundancy a separately orderable supply is needed) and power distribution board (PDB)
- Four single rotor fans for cooling the processor, DIMM(s), PCI slot and other internal components
- Ethernet front panel board (EFP)
- Cables and connectors

1.3 Product Accessories

You may need or want to purchase one or more of the following accessory items for your server:

- One Dual-Core Intel® Xeon® processor 5100 series or one Quad-Core Intel® Xeon® processor 5400 series
- Processor heat sink
- DDR2-667 FBD ECC memory DIMM(s)
- SATA hard disk drives (HDDs)
- An optical device and drive kit (carrier tray, interposer board, cables)
- PCI add-in card, such as a GbE LAN card
- PCI-Express* or PCI/PCI-X riser card
- AC or DC power supply (second supply is for redundancy and to permit hot-swapping)
- Cable management bracket
- Rack mount kit
- Intel® Remote Management Module 2 (Intel® RMM2)

For information about the accessories, memory, processors, and third-party hardware that has been tested and can be used with your system, and for ordering information, see the Spares and Configuration Guide at <http://us.kontron.com/products/systems+and+platforms/commuincation+rackmount+servers/ip+network+servers/ip+network+server+nsw1u.html>. Click on Downloads, and then Ordering Guide.

1.4 Additional Information and Software

If you need more technical information about this product or information about the accessories that can be used with this IP Network Server, see the Technical Product Specifications for both system and server board, and the test reports at <http://us.kontron.com/support/>. These documents contain the following types of information:

- In-depth technical information about the server board included with this IP Network Server, including BIOS settings and chipset information
- The latest product information
- Accessories or other Intel server products
- Hardware (peripheral boards, adapter cards) and operating systems that have been tested with this product
- DIMMs that have been tested with this product
- The power budget for this product
- Software to manage your IP Network Server

Introduction—NSW1U Network Server

- Diagnostics testing software
- Firmware and BIOS updates
- System drivers

2 Kontron IP Network Server NSW1U Features

This chapter briefly describes the main features of the Kontron IP Network Server NSW1U. This chapter provides a diagram of the product, a list of the server features, and diagrams showing the location of important components and connections.

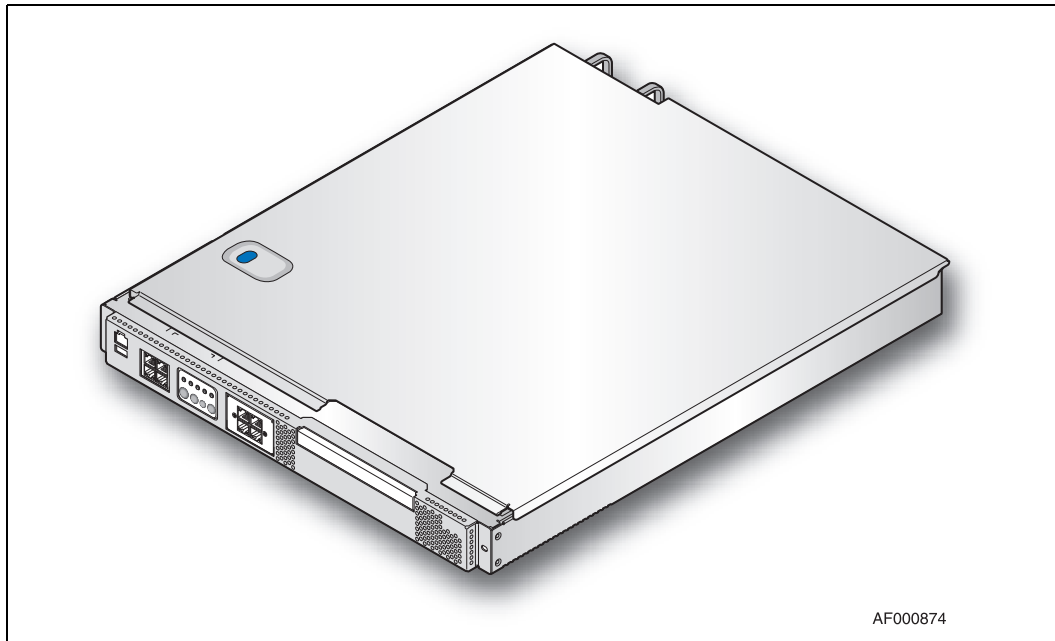
The NSW1U Network Server is available in three different configurations;

- One with front panel Ethernet NIC access, referred to in this document as NSW1U-F
- One with rear Ethernet NIC access, referred to as NSW1U-R
- One with both front panel and rear Ethernet NIC access, referred to as NSW1U-B

Unless otherwise stated, features in this document apply to all three configurations.

Figure 1 shows the Kontron IP Network Server NSW1U (-F or -B configuration with front NIC access).

Figure 1. Kontron IP Network Server NSW1U



AF000874

Table 1 summarizes the major features of the server system.

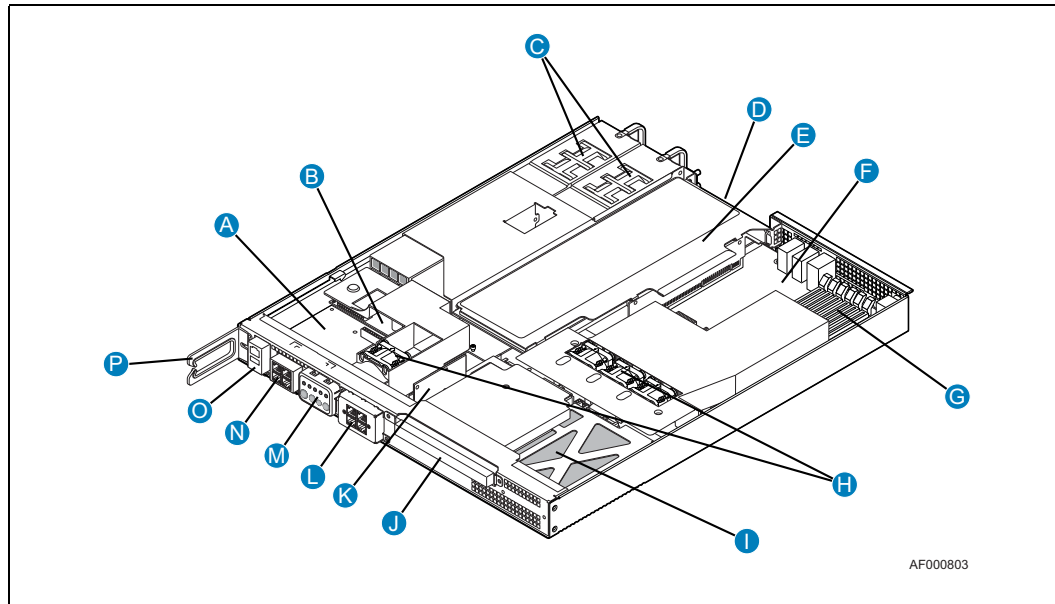
Table 1. Kontron IP Network Server NSW1U Features

Feature	Description										
Compact, high-density system	Rack-mount server with a height of 1U (1.75 inches) and a depth of 20.0 inches										
Configuration flexibility	One-way capability in low profile and cost/value-effective packaging Stand-alone system Dual-Core Intel® Xeon® processor 5100 series or Quad-Core Intel® Xeon® processor 5400 series. Note: Quad-Core Intel® Xeon® processor 5400 series support is available only on NSW1U-R and NSW1U-B that have product codes NSRA0201W, NSRD0201W, or NSRA0401W										
Serviceability	Rear access to hot-swappable power supplies Front access to optical drive										
Availability	Two hot-swappable 450 W power supplies in a redundant (1+1) configuration Integrated software RAID 0 or RAID 1 with two internal SATA disk drives Memory rank sparing										
Manageability	Remote management and diagnostics support Emergency management port (serial and LAN) IPMI 2.0 compliant Support for SMART Embedded USB Solid-State Drive (optional)										
Upgradeability and investment protection	Supports Dual-Core Intel® Xeon® processor 5100 series or Quad-Core Intel® Xeon® processor 5400 series Multi-generational chassis Supports Intel® 64 architecture										
System-level scalability	24 Gbyte DDR2-667 MHz Registered SDRAM FBDIMM memory support Single Dual-Core Intel® Xeon® processor 5100 series or Quad-Core Intel® Xeon® processor 5400 series. Note: Quad-Core Intel® Xeon® processor 5400 series support is available only on NSW1U-R and NSW1U-B that have product codes NSRA0201W, NSRD0201W, or NSRA0401W Riser cards support one full-length, full-height PCI Express or PCI/PCI-X slot Two internal fixed 3.5-inch SATA hard disk drives Support for low-profile PATA optical drive (CD or DVD)										
Front panel	<table border="0"> <tr> <td>Power switch</td> <td>Main power LED</td> </tr> <tr> <td>Reset switch</td> <td>System status LED</td> </tr> <tr> <td>NMI switch</td> <td>HDD activity LED</td> </tr> <tr> <td>ID switch</td> <td>NIC activity LED</td> </tr> <tr> <td></td> <td>ID LED</td> </tr> </table>	Power switch	Main power LED	Reset switch	System status LED	NMI switch	HDD activity LED	ID switch	NIC activity LED		ID LED
Power switch	Main power LED										
Reset switch	System status LED										
NMI switch	HDD activity LED										
ID switch	NIC activity LED										
	ID LED										
I/O	<table border="0"> <tr> <td> Front Access <ul style="list-style-type: none"> • Four standard GbE NIC ports on NSW1U-F and NSW1U-B only (no front NIC ports on NSW1U-R) • Four optional NIC ports (requires PRO/1000 PT PCI Express card) • Serial B/COM2 port (RJ45) • One USB 2.0 port </td> <td> Rear Access <ul style="list-style-type: none"> • Four standard GbE NIC ports on NSW1U-R and NSW1U-B only (no rear NIC ports on NSW1U-F) • Four optional NIC ports (requires PRO/1000 PT PCI Express card) • Serial B/COM2 port (RJ45) • Two USB 2.0 ports • GCM 100 Mbps management port (requires optional Intel® RMM2 kit) • Two PS/2 ports for keyboard and mouse • Video port </td> </tr> </table>	Front Access <ul style="list-style-type: none"> • Four standard GbE NIC ports on NSW1U-F and NSW1U-B only (no front NIC ports on NSW1U-R) • Four optional NIC ports (requires PRO/1000 PT PCI Express card) • Serial B/COM2 port (RJ45) • One USB 2.0 port 	Rear Access <ul style="list-style-type: none"> • Four standard GbE NIC ports on NSW1U-R and NSW1U-B only (no rear NIC ports on NSW1U-F) • Four optional NIC ports (requires PRO/1000 PT PCI Express card) • Serial B/COM2 port (RJ45) • Two USB 2.0 ports • GCM 100 Mbps management port (requires optional Intel® RMM2 kit) • Two PS/2 ports for keyboard and mouse • Video port 								
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2.1 Server Components

Figure 2 shows the internal components of the NSW1U Network Server (top cover and front bezel removed).

Figure 2. NSW1U Network Server Components

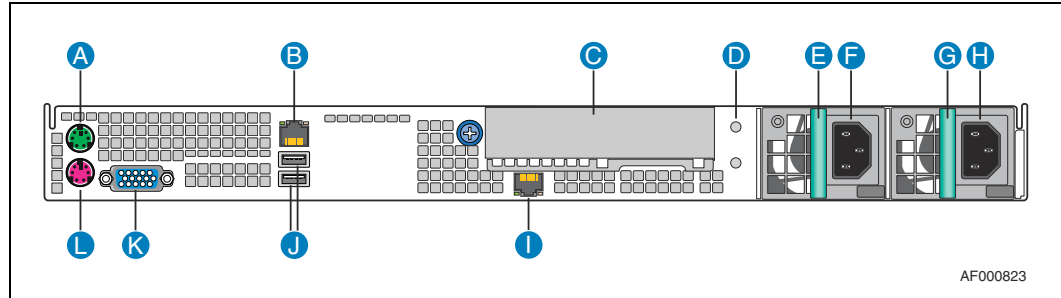


Item	Description	Item	Description
A	Ethernet front panel (EFP) board	I	SATA hard disk drive bays
B	Power distribution board (PDB)	J	Optical drive or filler panel
C	Power supplies	K	SMART Embedded USB Solid-State Drive (optional)
D	PCI card bracket	L	4xGbE ports (optional)
E	Riser card assembly (PCI-Express* or PCI-X*)	M	Front panel LEDs and switches
F	Intel® Server Board S5000PHB	N	4xGbE ports (NSW1U-F and NSW1U-B only)
G	System memory DIMMs	O	Front panel serial port (COM2/Serial B)/USB (port 2) connector
H	System fans (CPU and PCI cooling areas)	P	Cable management arm (for NSW1U-F and NSW1U-B 4xGbE LAN card)

Note: This view is of the front-NIC (NSW1U-F) or bypass (NSW1U-B) versions of the IP Network Server.

2.2 Back Panel

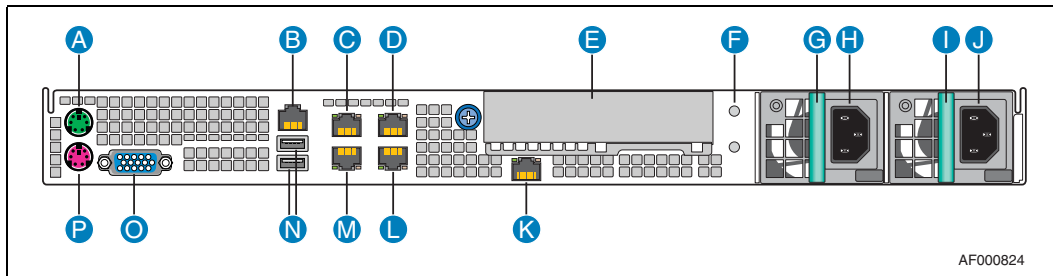
Figure 3. NSW1U-F Server Rear View



Item	Description	Item	Description
A	PS/2 mouse connector	G	Power supply #2 (optional) or filler panel (power supply 2 shown)
B	RJ45 serial port (COM2/Serial B)	H	Power input (AC-input power supply shown)
C	PCI add-in card bracket or filler panel (filler panel shown)	I	Intel® RMM GCM port (optional) or filler panel
D	Ground studs (used with DC input power supply)	J	USB0 (bottom), USB 1 (top)
E	Power Supply #1	K	Video connector
F	Power input (AC-input power supply shown)	L	PS/2 keyboard connector
Note: Figure 3 shows the AC-input power configuration. Items E-H can also be configured for DC operation.			

Note: Rear NIC ports are not accessible and are closed off by an EMI gasket

Figure 4. NSW1U-R Server and NSW1U-B Server Rear View

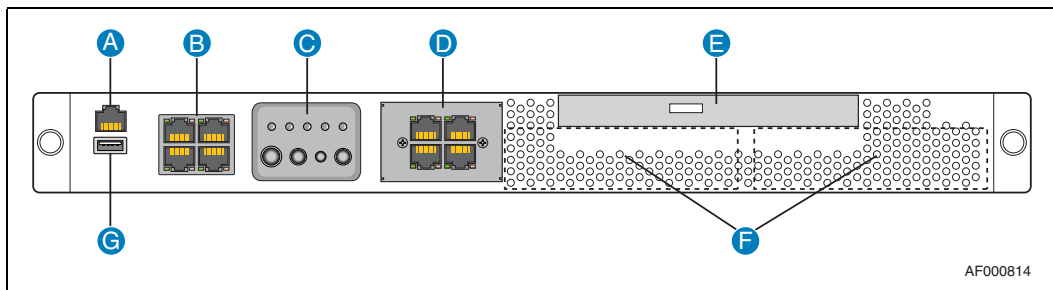


Item	Description	Item	Description
A	PS/2 mouse connector	I	Power supply #2 (optional) or filler panel (power supply #2 shown)
B	RJ45 serial port (COM2/Serial B)	J	Power input (AC-input power supply shown)
C	NIC port 3	K	Intel® RMM GCM Port (optional) or filler panel
D	NIC port 2	L	NIC port 1
E	PCI add-in card bracket or filler panel (shown)	M	NIC port 4
F	Ground studs (used for systems with DC-input power supplies)	N	USB 0 (bottom), USB 1 (top)
G	Power supply #1	O	Video connector
H	Power input (AC-input power supply shown)	P	PS/2 keyboard connector

Note: Figure 4 shows the AC-input power configuration. Items G-J can also be configured for DC operation.

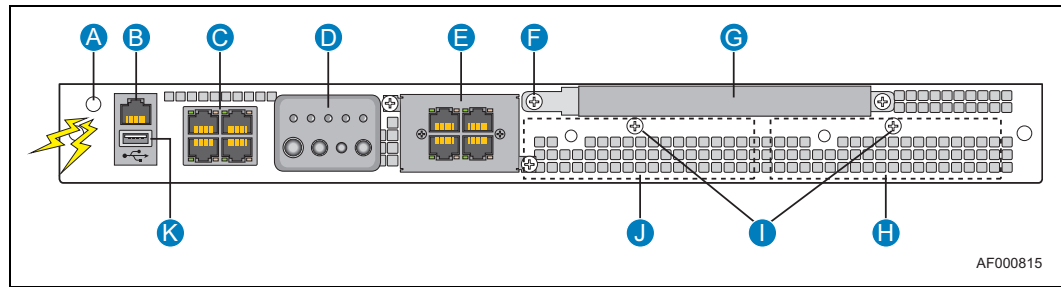
2.3 NSW1U Server Front Panels

Figure 5. NSW1U-F Server and NSW1U-B Server Front View (Bezel Installed)



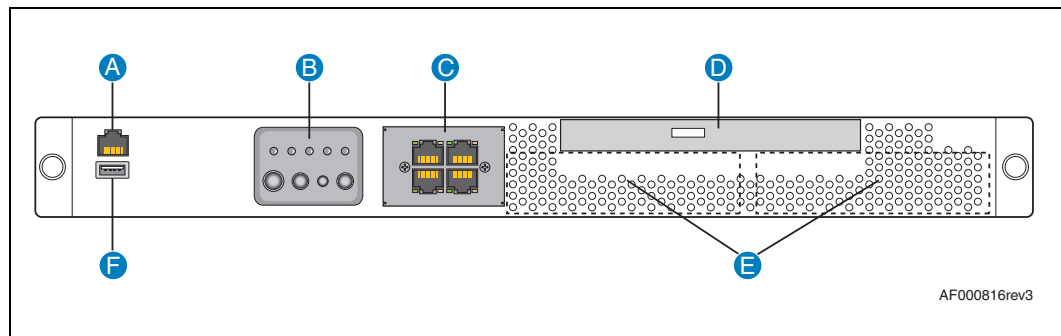
Item	Description	Item	Description
A	RJ45 serial port connector (Serial B/COM2)	E	Optical drive (optional) or filler panel
B	4xGbE NIC port connectors	F	HDD bays 0 and 1
C	Front panel control switches and status LEDs	G	USB port connector (Port 2)
D	4xGbE NIC port connectors (optional) or filler panel		

Figure 6. NSW1U-F Server and NSW1U-B Server Front View (Bezel Removed)



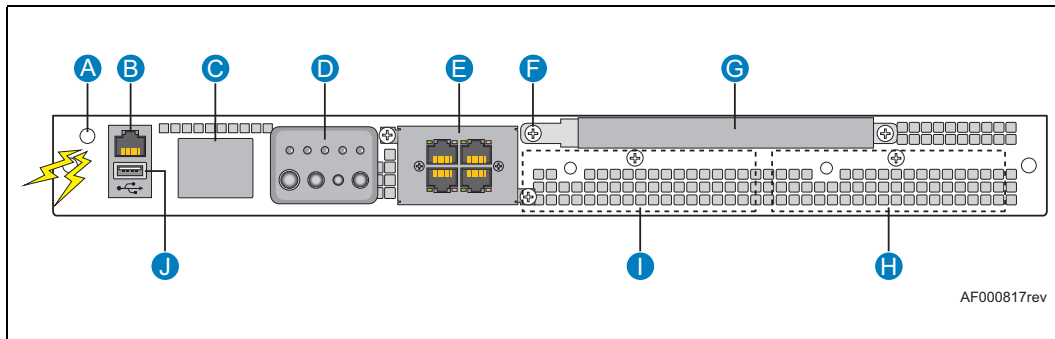
Item	Description	Item	Description
A	Ground strap attachment	G	Optical drive (optional) or filler panel (filler panel shown)
B	RJ45 serial port connector (COM2/Serial B)	H	Hard drive bay 0
C	4xGbE NIC port connectors	I	Hard drive fasteners
D	Front panel control switches and status LEDs	J	Hard drive bay 1
E	4xGbE NIC port connectors (optional) or filler panel (NIC port connectors shown)	K	USB port connector (port 2)
F	Optical drive fastener		

Figure 7. NSW1U-R Server Front View (Bezel Installed)



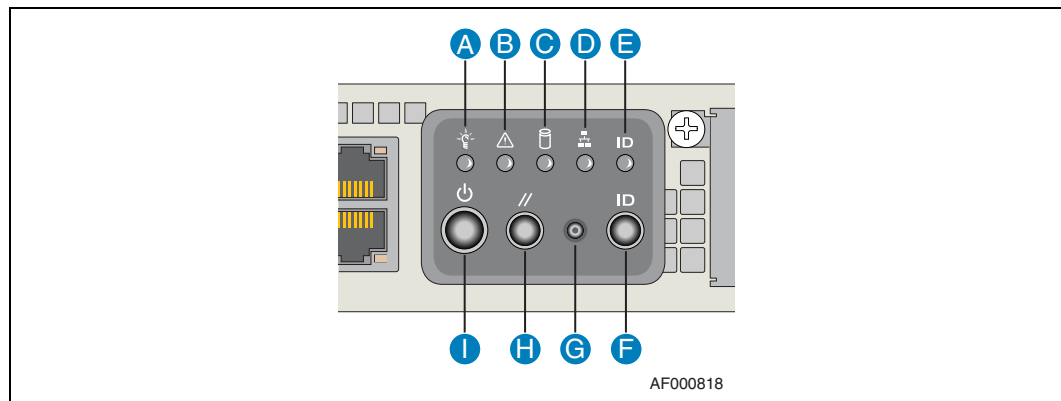
Item	Description	Item	Description
A	RJ45 serial port connector (Serial B/COM2)	D	Optical drive (optional) or filler panel
B	Front panel control switches and status LED	E	Hard drive bays
C	4xGbE NIC port connectors (optional) or filler panel (NIC port connectors shown)	F	USB port connector (port 2)

Figure 8. NSW1U-R Server Front View (Bezel Removed)



Item	Description	Item	Description
A	Ground strap attachment	F	Optical drive fastener
B	RJ45 serial port connector (Serial B/COM2)	G	Optical drive or filler panel (filler panel shown)
C	Filler panel	H	Hard drive bay 0
D	Front panel control switch and status LEDs	I	Hard drive bay 1
E	4xGbE NIC port connectors (optional) or filler panel (NIC port connectors shown)	J	USB port connector (port 2)

Figure 9. NSW1U Server Control Panel



Item	Feature	Description
Front Panel Status LEDs		
A	Main power LED (green)	When continuously lit, indicates the presence of DC power in the server. The LED goes out when the power is turned off or if the power source is disrupted.
B	System status (green/amber)	Indicates system status as follows: <ul style="list-style-type: none"> Steady green indicates system in standby or ready for operation. Blinking green indicates degraded operation (e.g., power supply non-redundancy, part of system memory mapped out by BIOS). Blinking amber indicates one or more non-critical fault conditions. Steady amber indicates one or more critical fault conditions.
C	HDD activity/fault LED (green/amber/red)	Indicates HDD activity when green, or a HDD fault when amber (non-critical) or red (critical)
D	NIC activity LED (green)	Indicates NIC activity
E	System ID LED (blue)	Can be toggled remotely or by front-panel ID switch for identification purposes
Front Panel Switches		
F	ID switch	Toggles system ID LED
G	NMI switch	Asserts NMI to server board
H	Reset switch	Resets the system
I	Power switch	Toggles the system power

2.4 NSW1U Network Server Ethernet Ports

The Kontron IP Network Server NSW1U provides for four to twelve (depending on the configuration) gigabit Ethernet ports to install external NICs. Copper and fiber options are available. For information on replacing the Ethernet controllers, see [Section 5.3, "Replacing the Ethernet Front Panel Board"](#) on page 68.

2.5 Ethernet Front Panel (EFP) Board

The Ethernet Front Panel (EFP) board is located in front of the power supplies and extends behind the fixed SATA hard drives. The SATA drives connect into the EFP board for power and signals. The EFP board also provides the user interface for the system's front panel and for the SIO (system management) serial port.

There are three different EFP board configurations that support various functions through use of component population/depopulation options. The three variations of the EFP are as follows:

- Front panel operations with the two dual-Ethernet controllers depopulated (NSW1U-R configuration).
- Front panel operation with the two dual-Ethernet controllers populated and accessible via the front panel bezel (NSW1U-F configuration).
- Front panel operations with the two dual-Ethernet controllers populated, in addition to the added capability to bypass the on-board Ethernet controllers during a system power failure (NSW1U-B configuration).

2.5.1 Front Panel Features

The NSW1U Network Server has the following front panel features:

- Four switches to control power-on, reset, NMI, and the system ID LED
- One system ID LED that can be controlled remotely or by the system ID switch
- Two system activity LEDs that indicate power-on and NIC activity
- One hard drive activity LED that indicates fault status for drives 0 and 1
- One system status LED that indicates a system error
- Two fixed SATA hard drives
- Connectors for interfacing to the server board and fans

2.6 Additional Optional Ethernet Functionality

The NSW1U-F and NSW1U-B servers provide four GbE ports that are accessible from the front of the system when the bezel is installed with a unique EFP board SKU. Four additional GbE NIC ports can be added to the NSW1U-F and NSW1U-B servers by using a quad GbE NIC PCIe card and cable harness. The cable harness interconnects the quad GbE NIC card to the additional four GbE NIC ports on the front face of the chassis. There are no GbE NIC ports accessible from the rear of the NSW1U-F system.

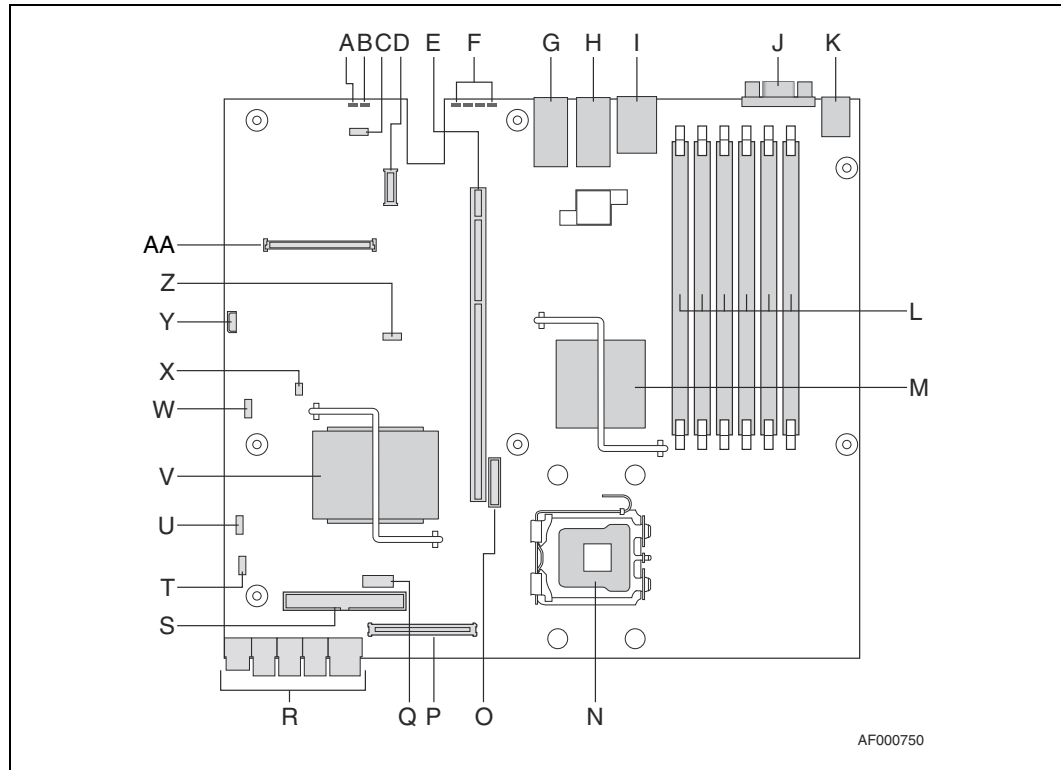
The NSW1U-R and NSW1U-B servers have four GbE NIC ports mounted on the server board that are accessible from the rear of the chassis. An additional set of four rear-accessible GbE NIC ports can be added to the NSW1U-R system by using a quad GbE NIC PCIe card with rear I/O panel access ports. There are no GbE NIC ports accessible from the front of the NSW1U-R system.

The GbE NIC ports are intended to be installed with shielded cabling that is grounded at both ends of the cable.

Warning: The intra-building port(s) of the equipment or subassembly is suitable for connection to intra-building or unexposed wiring or cabling only. The intra-building port(s) of the equipment or subassembly **MUST NOT** be metallically 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-CORE, Issue 4) and require isolation from the exposed OSP cabling. The addition of Primary Protectors is not sufficient protection in order to connect these interfaces metallically to OSP wiring.

2.7 Server Board Connector and Component Locations

Figure 10. IP Network Server NSW1U Components and Connector Location Diagram



Item	Description	Item	Description
A	System Identification LED (blue)	O	Battery
B	Status LED (green / amber)	P	Flex connector to EFP board
C	Serial Port B DSR / DCD jumper (J2A2)	Q	Serial Port A header
D	GCM connector	R	Main power connector
E	PCI Express/PCI-X riser card slot	S	PATA (IDE) connector
F	POST code gigantic LEDs	T	Password Clear jumper (J1H2)
G	Dual-port LAN connector (NSW1U-R and NSW1U-B)	U	BIOS Bank Select jumper (J1G1)
H	Dual-port LAN connector (NSW1U-R and NSW1U-B)	V	Intel® ESB2-E I/O controller hub
I	USB 2.0/RJ-45 serial port connector	W	CMOS Clear jumper (J1F1)
J	Video connector	X	BMC Force Update Jumper (J1E3)
K	PS/2 keyboard and mouse connector	Y	3-pin IPMB header
L	FBDIMM slots	Z	Processor select jumper
M	Intel® 500P memory controller hub	AA	Remote management connector
N	Processor socket		

2.8 Hard Disk Drives

The server ships with two fixed drive trays for mounting SATA hard disk drives in the chassis. For information on how to install these drives, see [Section 4.2, “Installing or Replacing a Hard Drive”](#) on page 47.

Drives can consume up to 17 W of power each. Drives must be specified to run at a maximum ambient temperature of 45° C.

Note: The NSW1U Network Server does not support all SATA hard drives. For a list of validated hard drive manufacturers and hard drive types, see the *Tested Hardware and Operating Systems List* (THOL) on the Kontron support website at <http://us.kontron.com/support/>. (Search for NSW1U, click on Product Downloads, and then Compatibility Matrix.)

2.9 Riser Card Assembly

The S5000PHB server board implements a PCI super slot that contains the signals necessary for a PCI/PCI-X* or PCI Express* (PCIe*) expansion slot. One of two different low-profile riser cards is inserted into the super slot to access the appropriate signals and provide the appropriate connector for a PCI/PCI-X or PCI Express riser card. The IP Network Server NSW1U is designed to accommodate a full-length, full-height adapter card with the card's I/O bracket accessible through an opening in the rear panel of the system. (See [Figure 10](#) for this location.)

The PCI/PCI-X riser card supports speeds of 33 or 66 MHz PCI and 100 or 133 MHz PCI-X.

The PCI Express riser card implements a x8 link interface, and can be used with add-in cards that implement x1, x4, or x8 interfaces.

The IP Network Server NSW1U supports either a PCI-X and a PCI-Express riser card.

2.9.1 PCI/PCI-X Riser Card

The PCI/PCI-X riser card supports one 3.3 V 64-bit slot and speeds of 33 or 66 MHz for PCI and 66, 100, or 133 MHz for PCI-X. The bus speed varies from 66 MHz to 100 MHz depending on the type of PCI adapters configured in the PCI-X riser card. For detailed information about the pinouts and electrical specifications, see the *Kontron IP Network Server NSW1U Technical Product Specification*.

2.9.2 PCI-Express Riser Card

PCI Express (PCIe) riser card implements a x8 link interface and can be used with add-in cards with an x1, x4, or x8 interface. For detailed information about the pinouts and electrical specifications, see the *Kontron IP Network Server NSW1U Technical Product Specification*.

2.10 Power Supply

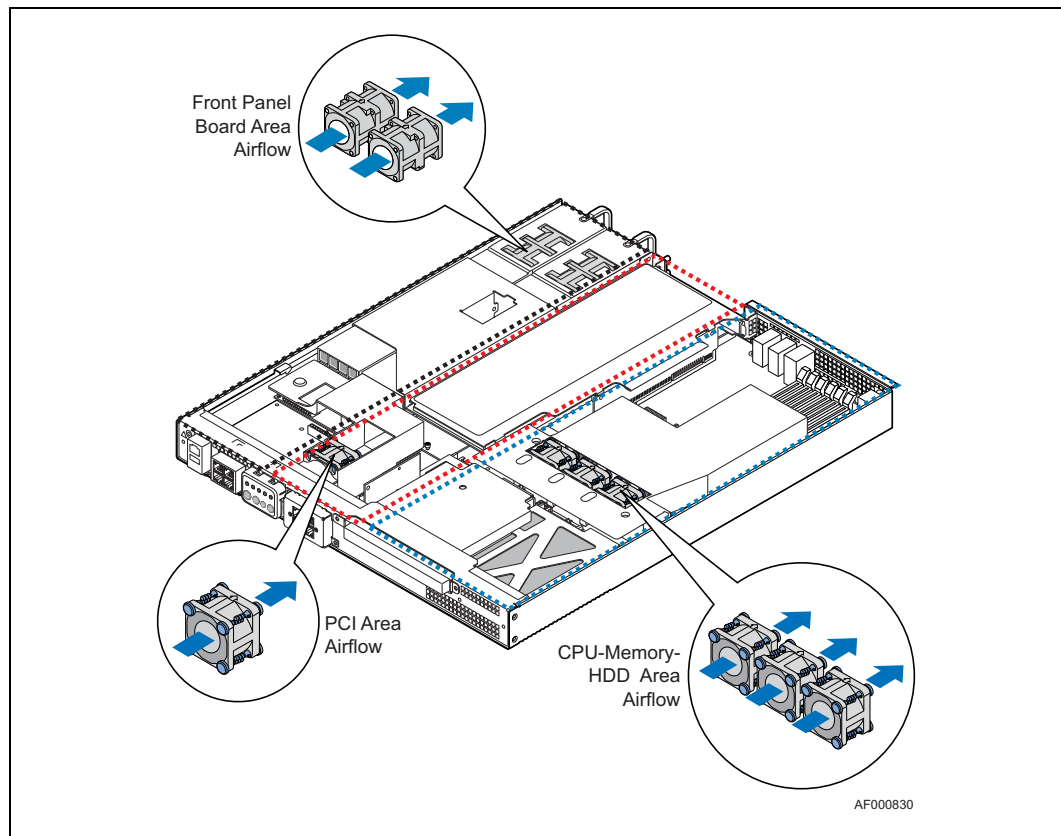
The power subsystem can have up to two power supply modules capable of operating in redundant mode and a power distribution board (PDB). A power supply filler panel for the empty power supply site is supplied for systems without redundancy.

The power supply is rated for 450 W output capability in full AC or DC input voltage range.

2.11 System Cooling

There are three cooling areas in the NSW1U systems: front panel board area, PCI area, and the CPU/Memory/HDD area.

Figure 11. Cooling Areas



2.11.1 Front Panel Cooling Area

The left one-fourth of the EFP front panel board and the portion of the PDB in this area are cooled by 40 × 40 × 56 mm dual-rotor fans internal to the PSUs. One PSU is sufficient to cool this portion of the front panel board area and two PSUs provide cooling redundancy for this area.

PSU fans draw air in through the bezel from the front of the system and from vents in the left front side of the chassis over this portion of the front panel board and PDB, through and exhausting out the rear of the PSUs. The left wall of the PCI fan air duct and the PSU guide wall provide an air flow barrier between the front panel board cooling area and the PCI cooling area

2.11.2 PCI Cooling Area

The 40 × 40 × 28 mm single-rotor PCI fan cools the portions of the BB, PDB, and EFP that are in this area as well as any PCI adapter card installed in the riser card assembly.

The PCI fan draws in air through the front bezel exhausts it out the rear of the system. A plastic air duct directs the air flow in this area, houses the PCI fan, and provides air flow barriers between:

- The front panel board and the PCI cooling areas
- The PCI and the CPU-Memory-HDD cooling areas.

A second plastic part located behind the PCI air duct continues the air flow barrier between the PCI cooling area and the CPU/memory/HDD cooling area. The riser card provides the third and final portion of the air flow barrier between the PCI cooling area and the CPU/memory/HDD cooling area.

2.11.3 CPU/Memory/HDD Cooling Area

The NSW1U system uses three 40 × 40 × 28 mm single-rotor fans that are assembled to a sheet metal bracket.

The NSW1U system draws air in through the front bezel and exhausts out the rear of the chassis. The CPU/memory/HDD cooling area air flow path is isolated from the rest of the system by the PCI air ducts and riser card. The hard drives pre-heat the air entering the CPU/memory air duct.

2.12 Hardware Requirements

To avoid integration difficulties and possible board damage, your system must meet the requirements outlined below. For a list of qualified components, see [Section 1.4, "Additional Information and Software"](#) on page 10.

2.12.1 Processor

The server board accommodates a Dual-Core Intel® Xeon® processor 5100 series or a Quad-Core Intel® Xeon® processor 5400 series.

2.12.2 Memory

The S5000PHB server board supports up to six DDR2-533 or DDR2-667 Fully Buffered DIMMs (FBD memory) in six DIMM slots across two channels, Channel 0 and Channel 1. Channel 0 consists of DIMM sockets A1, A2, and A3. Channel 1 consists of DIMM sockets B1, B2, and B3. See [Section 3.3.2, "Configuring Memory DIMMs"](#) on page 32 for population rules and configuration information.

3 Server 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 [Section A, “Safety Information”](#).

3.1.1 Tools and Supplies Needed

- #1 and # Phillips* (cross-point) screwdrivers (or interchangeable-bit screwdriver with #1 and #2 Phillips bits)
- Anti-static wrist strap and conductive foam pad

3.1.2 System References

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

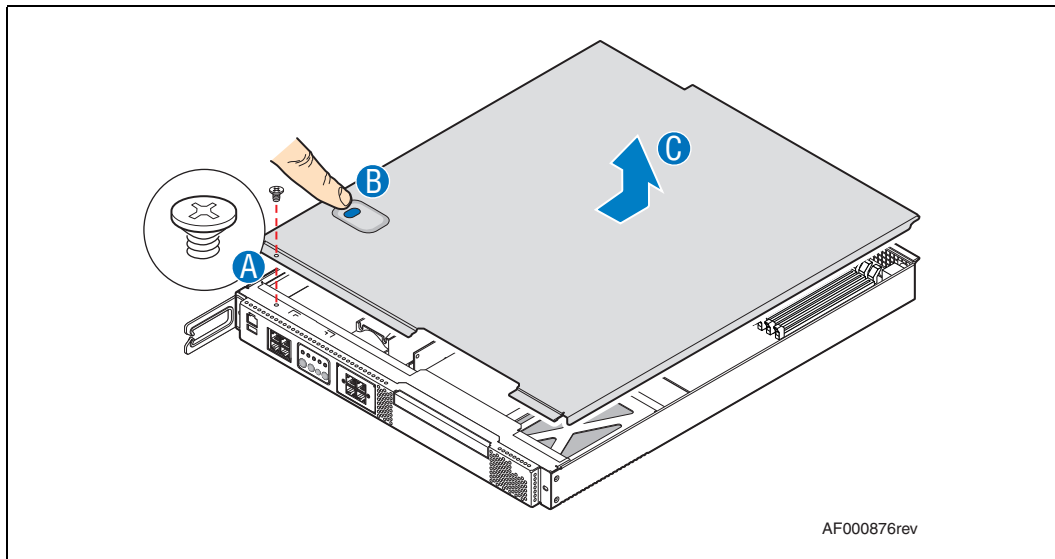
3.2 General Installation Procedures

3.2.1 Removing the Chassis Cover

The IP network 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 of the server. Before removing the top cover, power down the server system and unplug all peripheral devices and the power cable. None of the components inside the server are hot-swappable.

Note: 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, “Safety Information”](#).
2. Turn off all peripheral devices connected to the server.
3. Turn off the server.
4. Disconnect the power cord.
5. Remove the shipping screw from the front of the chassis on the left side ([Figure 12, “A”](#)).
6. While holding in the blue button at the top of the chassis (“B”), slide the top cover back until it stops (“C”).
7. Lift the cover straight up to remove it from the server.

Figure 12. Removing the Chassis Cover

AF000876rev

3.2.2 Installing the Chassis Cover

1. Place the cover over the chassis so that the side edges of the cover sit just inside the chassis sidewalls, with the front of the cover showing an approximate 1/8-inch (3 mm) gap between the chassis cover and the sheet-metal at the front of the chassis.
2. Press down slightly on the chassis cover behind the front bezel area and slide the cover forward until it clicks into place.
3. Install the shipping screw if desired.
4. Reconnect all peripheral devices and the power cord.

Caution: This unit must always be operated with the top cover installed to ensure proper cooling.

3.2.3 Removing the Front Bezel

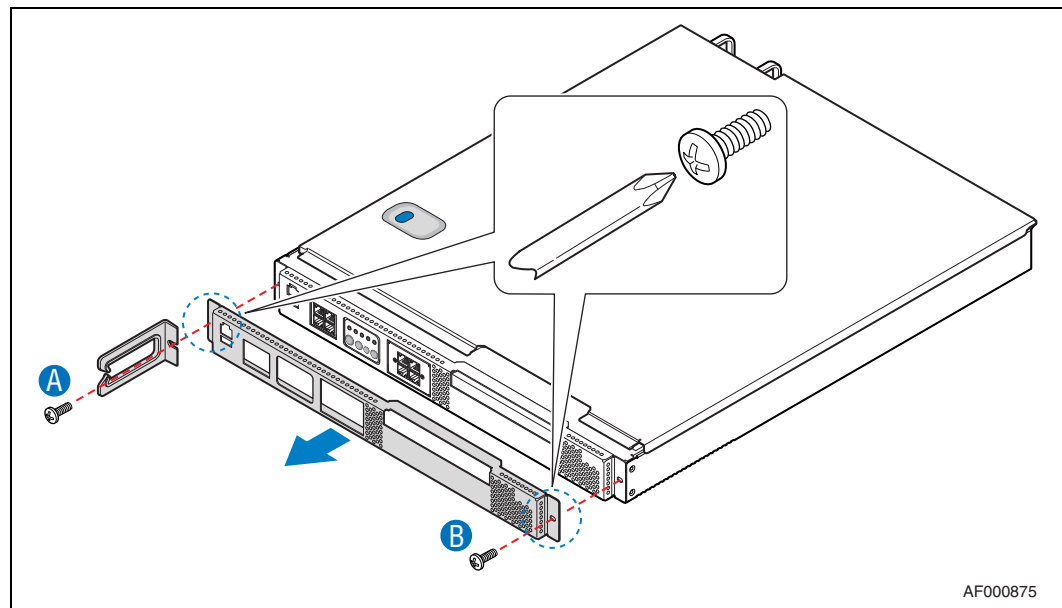
Remove the front bezel to install or remove an optical device. For the NSW1U-F and NSW1U-B servers, the front bezel must also be removed to install the optional 4xGbE LAN card.

1. Remove the left-side screw and cable management arm, if installed. (Figure 13, "A").
2. Remove the right-side screw to release the bezel. ("B")

Note: Hold the bezel in place while you loosen the screws. After both screws are loosened, the bezel will drop from the chassis.

3. Lift the front bezel from the chassis.

Figure 13. Removing the Front Bezel



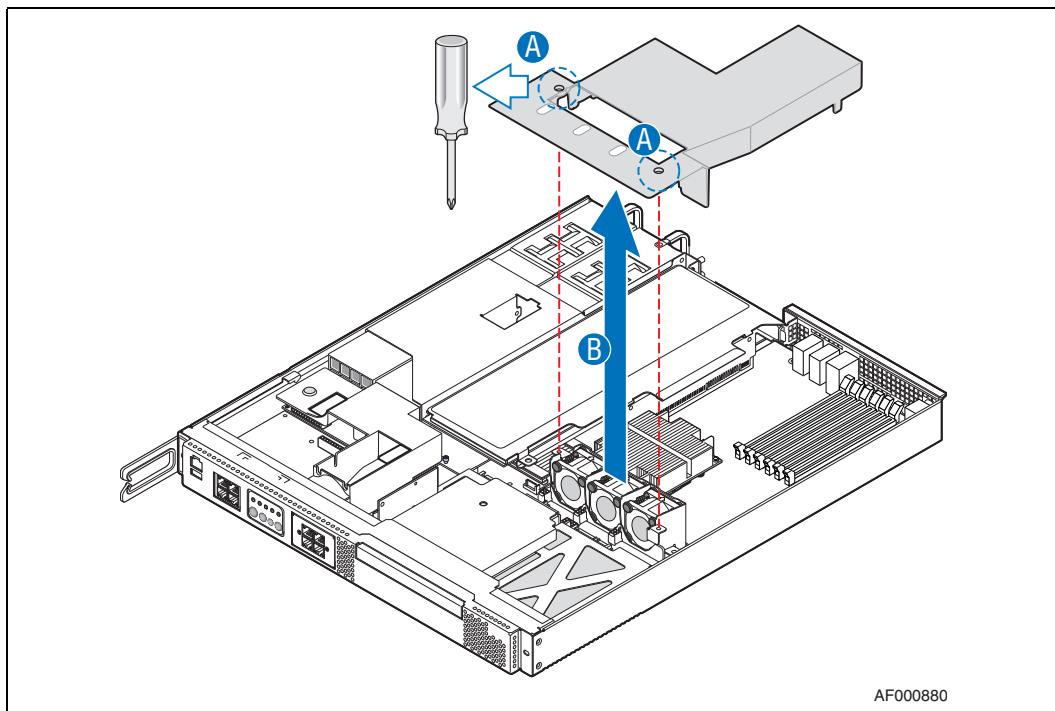
3.2.4 Installing the Front Bezel

1. While holding the front bezel in place, tighten the screws at the left and right edges of the bezel.

3.2.5 Removing the Processor Air Duct

The air duct must be removed to access the processor assembly and the fan assembly. The processor air duct is required for proper airflow within the chassis. Be sure the air duct is in place before installing the chassis cover.

1. Power down the server system and unplug all peripheral devices and the power cord.
2. Remove the chassis cover. For instructions, see [Section 3.2.1, "Removing the Chassis Cover" on page 25](#).
3. Remove the screws at the top of the air duct ([Figure 14, "A"](#)).
4. Lift the air duct from the server platform ("B").

Figure 14. Removing the Air Duct

3.2.6 Installing the Processor Air Duct

1. Place the processor air duct over the processor socket and three-fan assembly, using caution to make sure you do not pinch any wires beneath the edges of the air duct.
2. Tighten the screws at the top of the air duct. (Figure 14, "A")
The top of the installed air duct should be flush with the top surface of PCI adapter assembly.
3. Replace the chassis cover if you have completed all work inside of the chassis.

3.3 Internal Configuration and Installation Procedures

The procedures in this section assume that you have powered down the server and removed the chassis cover as described in [Section 3.2, "General Installation Procedures"](#) on page 25.

3.3.1 Configuring Jumpers on the Server Board

The jumpers are located on the S5000PHB server board server board, which is in the rear left side of the NSW1U Network Server chassis. To configure the jumpers on the server board, besides removing the chassis cover, you also must remove the processor air duct (see [Section 3.2.5, "Removing the Processor Air Duct"](#) on page 27) and the PCI riser card assembly (see [Section 4.4.1, "Removing the PCI Riser Card Assembly"](#) on page 52). All other components installed on the server board can remain in place.

The jumpers that can be configured differently are:

- J2A2 (Serial Port B DSR/DCD jumper)
- J1H2 (Password Clear jumper)
- J1G1 (BIOS Bank Select jumper)
- J1F1 (CMOS Clear jumper)
- J1E3 (BMC Force Update jumper)
- J3E2 (Processor select jumper)

See [Figure 10](#) for the location of these jumpers. The following sections give more detailed information about the settings.

3.3.1.1 Jumper Blocks

The server board has several 2-pin and 3-pin jumper blocks that can be used to configure, protect, or recover specific features of the server board. Pin 1 on each jumper block is denoted by an “*” or “ ”.

Table 2. Jumpers

Jumper Name	Pins	What happens at system reset...
J1E3: BMC Force Update	No Jumper	BMC Firmware Force Update Mode – Disabled (Default)
	Jumper	BMC Firmware Force Update Mode – Enabled
J1H2: Password Clear	1-2	These pins should have a jumper in place for normal system operation. (Default)
	2-3	If these pins are jumpered, administrator and user passwords will be cleared on the next reset. These pins should not be jumpered for normal operation.
J1G1: Bank Select	1-2	Force to lower flash bank during boot-up
	2-3	Normal operation/use primary flash bank (Default)
J1F1: CMOS Clear	1-2	These pins should have a jumper in place for normal system operation. (Default)
	2-3	If these pins are jumpered, the CMOS settings will be cleared on the next reset. These pins should not be jumpered for normal operation
J3E2: Processor	1-2	If these pins are jumpered, the system is configured for a Dual-Core Intel® Xeon® processors 5100 series. (Default) Caution: Pins 2-3 should never be jumpered. The system will not function correctly if these pins are jumpered.
	No Jumper	If no pins are jumpered, the system is configured for a Quad-Core Intel® Xeon® processors 5300 series.
Note: Bold entry in “Pins” column indicates default configuration.		

3.3.1.2 CMOS Clear and Password Reset Procedures

The CMOS Clear and Password Reset recovery features are designed to achieve the desired operation with minimal system down time. The procedure is identical for these two features, but has changed from previous generation server boards. The following steps outline the new procedure for both operations.

1. Power the server down and remove the power cable. (Standby power is present on the server board when power is turned off but still connected.)
2. Open the server.

3. Move the jumper from the default operating position (Pins 1-2) to the Reset/Clear position (Pins 2-3) on the appropriate jumper (J1F1 for CMOS Clear or J1H2 for Password Reset).
4. Wait 5 seconds.
5. Move the jumper back to the default position (Pins 1-2).
6. Close the server.
7. Reconnect the power source and power up the server.
8. The password and/or CMOS is now cleared and can be reset by going into BIOS setup.

3.3.1.3 BMC Force Update Procedure

When performing a standard BMC firmware update procedure, the update utility places the BMC into update mode, allowing the firmware to load safely onto the flash device. If the BMC firmware update process fails because the BMC not being in the proper update state, the server board provides a BMC Force Update jumper that forces the BMC into the update state. The following procedure should be followed if the standard BMC firmware update process fails.

1. Power down the server and remove the power cable. (Standby power is present on the server board when power is turned off but still connected.)
2. Open the server.
3. Place a jumper on the J1E3 header.
4. Close the server.
5. Reconnect the power source and power up the server.
6. Perform standard BMC firmware update procedure as documented in README.TXT file that is included in the given BMC Firmware Update package.
7. After successful completion of the firmware update process, the firmware update utility may generate an error stating that the BMC is still in update mode.
8. Power down the server and remove the power cable.
9. Open the server.
10. Remove jumper from J1E3.
11. Close the server.
12. Reconnect power source and power up the server.

Note: Normal BMC functionality is disabled when the Force BMC Update jumper is populated. The server should never be run with the BMC Force Update jumper populated and should only be used when the standard firmware update process fails. This header should remain unpopulated by default when the server is running normally.

3.3.1.4 BIOS Select Jumper

The jumper block at J1G1 selects which BIOS image the system will boot. Pin 1 on the jumper is identified with a “ ”. This jumper should only be moved if you wish to force the BIOS to boot to the secondary bank that may hold a different version of the BIOS.

The rolling BIOS feature of the server board will automatically alternate the Boot BIOS to the secondary bank in the event the BIOS image in the primary bank is corrupted and cannot boot for any reason.

3.3.1.5 Serial B Port Configuration Jumper

The rear of the IP Network Server NSW1U provides an RJ45 connector for the Serial B port, which is intended for direct connection to serial devices such as serial port concentrators using a standard Cat 5 cable. But various serial devices which use RJ45 connectors differ in the signal they require on Pin

7. For example, standard modems typically require the DSR signal, while many serial concentrators (including models from Cisco) require the DCD signal. Jumper J2A2 allows the serial port to be configured to provide either of these two signals as described in Table 3.

Table 3. Serial B Port Configuration Jumper

Jumper Name	Pins	Description of Configuration
J2A2: Serial Port	1-2	DCD (Data Carrier Detect) signal routed to Pin 7 of rear RJ45 Serial B port connector. This configuration provides compatibility with Cisco serial concentrators. (Default)
	2-3	DSR (Data Set Ready) signal routed to Pin 7 of rear RJ45 Serial B port connectors. This configuration provides compatibility with standard modems.
Note: Bold entry in "Pins" column indicates default configuration.		

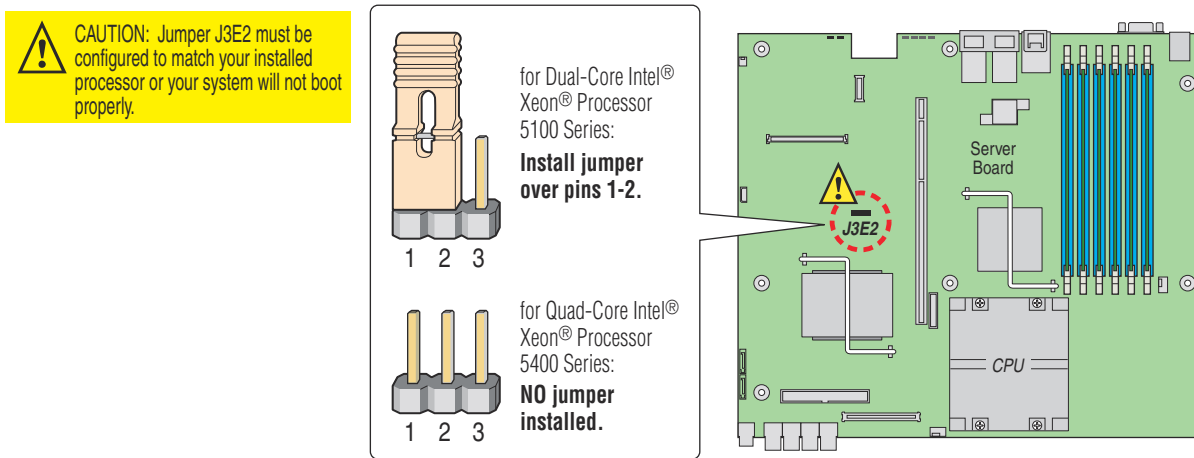
3.3.1.6 Processor Select Jumper

The server system is pre-configured for the Dual-Core Intel® Xeon® processor 5100 series, but the following server system product codes support both the Dual-Core Intel® Xeon® processor 5100 series and the Quad-Core Intel® Xeon® processor 5400 series. These product codes have an "R" in the third position:

- NSRA0201W: IP Network Server NSW1U, rear NIC port, AC
- NSRD0201W: IP Network Server NSW1U, rear NIC port, DC
- NSRA0401W: IP Network Server NSW1U, bypass, AC

If you have a product with one of these product codes and you want to use a Quad-Core Intel® Xeon® processor 5400 series, you must remove the jumper from pins 1-2 on the processor select jumper. This jumper is located at position J3E2 on the server board. See the following figure.

Caution: Never install the jumper on pins 2-3. Your system will not boot if these pins are jumpered.



Regardless of the processor model you install, you must use BIOS version R0085 or later with any server that has one of the above product codes.

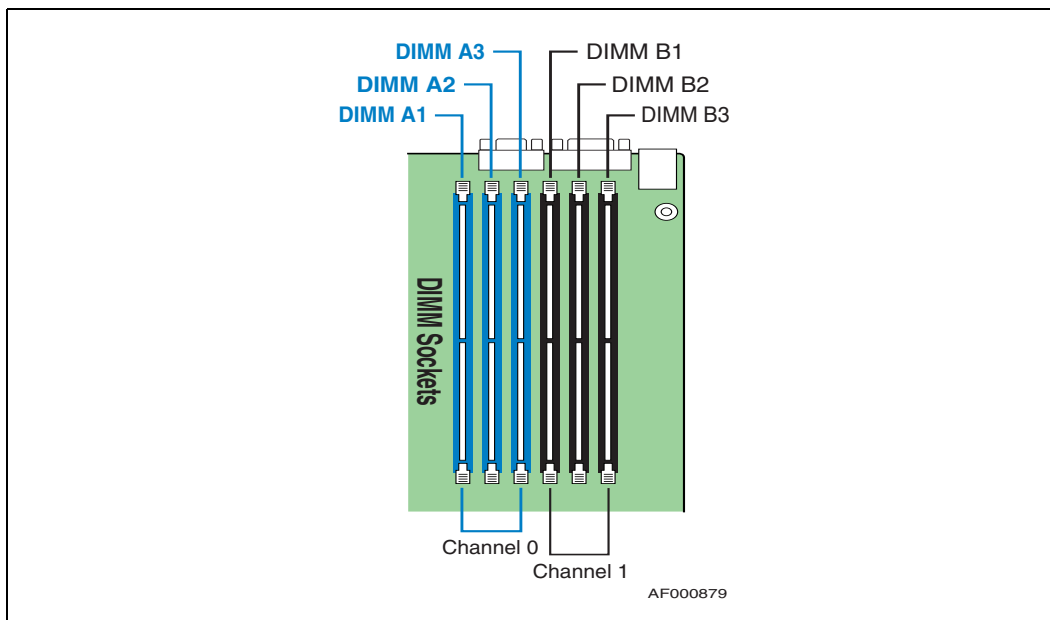
Caution: If your server has one of the above product codes, then configuring it with a BIOS version lower than R0085 will cause system instabilities and your system may not boot.

3.3.2 Configuring Memory DIMMs

The Server Board S5000PHB server board supports up to six DDR2-533 or DDR2-667 Fully Buffered DIMMs (FBD memory) in six DIMM slots across two channels, Channel 0 and Channel 1.

Channel 0 consists of DIMM sockets A1, A2, and A3. Channel 1 consists of DIMM sockets B1, B2, and B3. See Figure 15.

Figure 15. Memory Sparring DIMM Configuration



The two channels support registered DDR2-533 and DDR2-667 FBDIMM memory (stacked or unstacked). Peak theoretical memory data bandwidth is 6.4 Gbytes/s with DDR2-533 or 8.0 Gbytes/s with DDR2-667.

Table 4 and Table 5 show the maximum memory configurations supported using the specified memory technology.

Table 4. Maximum Six-DIMM System Memory Configuration - x8 Single Rank

DRAM Technology x8 Single Rank	Maximum Capacity
256 Mb	1.5 GB
512 Mb	3 GB
1024 Mb	6 GB
2048 Mb	12 GB

Table 5. Maximum Six-DIMM System Memory Configuration - x4 Dual Rank

DRAM Technology x4 Dual Rank	Maximum Capacity
256 Mb	6 GB
512 Mb	12 GB
1024 Mb	24 GB
2048 Mb	48 GB

3.3.2.1 DIMM Population Rules

DIMM population rules depend on the operating mode of the memory controller, which is determined by the number of DIMMs installed. DIMM pairs are populated in the following DIMM slot order: A1 and B1, A2 and B2, A3 and B3.

DIMMs within a given pair must be identical with respect to size, speed, and organization. However, DIMM capacities can be different between different DIMM pairs. For example, a valid mixed DIMM configuration may have 512 Mbyte DIMMs installed in DIMM slots A1 and B1, and 1 Gbyte DIMMs installed in DIMM slots A2 and B2. Single DIMM operation is supported with the DIMM populated in slot A1 only, but populating in pairs is recommended.

3.3.2.2 Supported DIMM Configurations

Supported DIMM configurations for this server board are shown in Table 6.

Table 6. FBDIMM Population Options

Channel 0			Channel 1			Sparring Possible
DIMM_1A	DIMM_1B	DIMM_1C	DIMM_2A	DIMM_2B	DIMM_2C	
						NO
						NO
						YES
						NO

■ = Slot is populated.
■ = Slot is not populated.

3.3.2.3 Sparing Mode Memory Configuration

The Memory Controller Hub (MCH) provides memory sparing capabilities. Sparing is a RAS feature that involves configuring a DIMM to be placed in reserve so it can be used to replace a DIMM that fails. The following conditions apply:

- DIMMA1 and DIMMB1 must be identical in organization, size and speed.
- DIMMA2 and DIMMB2 must be identical in organization, size and speed.
- DIMMA1 and DIMMA2 need not be identical in organization, size and speed.
- DIMMB1 and DIMMB2 need not be identical in organization, size and speed.
- Sparing should be enabled in the BIOS setup; the BIOS will configure Rank Sparing Mode.
- The larger of the pairs {DIMMA1, DIMMB1} and {DIMMA2, DIMMB2} will be selected as the spare pair unit.

3.3.3 Installing and Removing Memory DIMMs

The silkscreen on the board for the DIMMs displays DIMMA1, DIMMA2, DIMMA3, DIMMB1, DIMMB2 and DIMMB3, starting from the inside (left side) of the server board. DIMMB3 is the socket closest to the outside edge of the server board.

3.3.3.1 Installing DIMMs

Reduce the risk of electrostatic discharge (ESD) damage to the processor by doing the following:

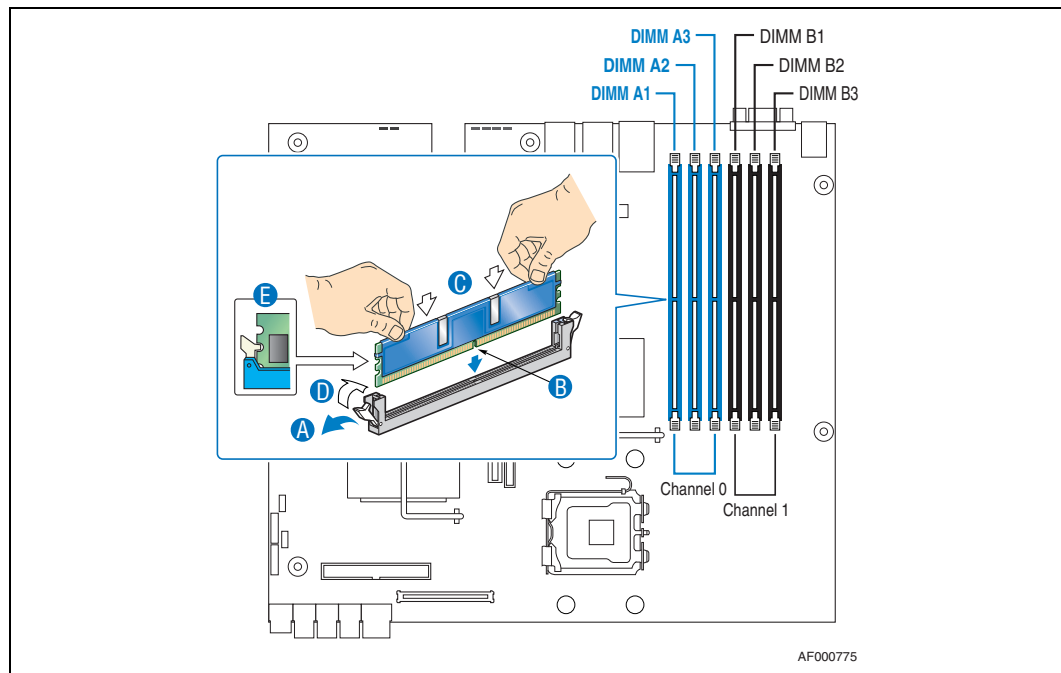
- Touch the metal chassis before touching the DIMM or server board.
- Keep part of your body in contact with the metal chassis to dissipate the static charge while handling the DIMM.
- Avoid moving around unnecessarily.
- Use a ground strap attached to the front panel (with the bezel removed.)

To install DIMMs, follow these steps:

1. Power down the server system and unplug all peripheral devices and the power cable.
2. Remove the chassis cover. For instructions, see [Section 3.2.1, “Removing the Chassis Cover” on page 25](#).
3. Remove the air duct. For instructions, see [Section 3.2.5, “Removing the Processor Air Duct” on page 27](#).
4. Locate the DIMM sockets on the server board and select the slot where you want to install the DIMM. (See [Figure 15](#) and [Figure 16](#).)
5. Open both DIMM socket levers. ([Figure 16, “A”](#))
6. Note the location of the alignment notch. (“B”)
7. Insert the DIMM making sure the connector edge of the DIMM aligns correctly with the slot. (“E”)
8. Using both hands, push down firmly and evenly on the DIMM until it snaps into place and both levers close. (“C” and “D”)

IMPORTANT: Visually check that each latch is fully closed and correctly engaged with the locking notch in the DIMM edge.

Figure 16. Installing Memory DIMMs



3.3.3.2 Removing DIMMs

To remove a DIMM, follow these steps:

1. Power down the server system and unplug all peripheral devices and the power cord.
2. Remove the chassis cover. For instructions, see [Section 3.2.1, "Removing the Chassis Cover"](#) on page 25.
3. Remove the air duct. For instructions, see [Section 3.2.5, "Removing the Processor Air Duct"](#) on page 27.
4. Locate the DIMM(s) on the server board and select the one(s) you want to remove. See [Figure 16](#).
5. Open the DIMM socket levers.
6. Holding the DIMM by the edges, lift it away from the socket, and store it in an anti-static package.
7. Replace the chassis cover if you have completed all work inside of the server.

3.3.4 Installing or Replacing the Processor

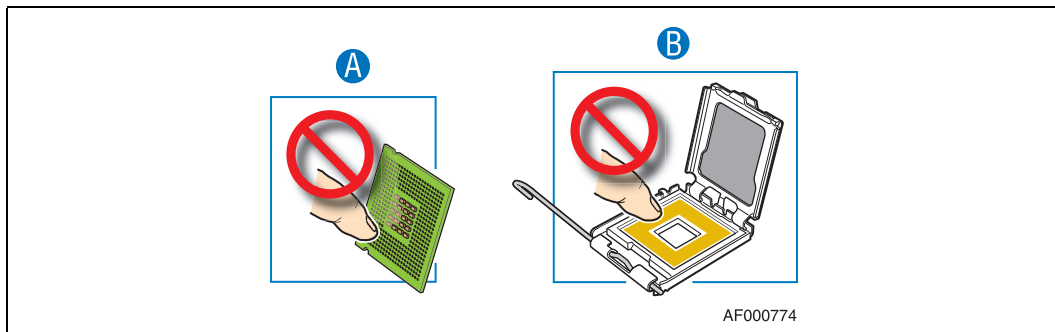
Note: Use the instructions provided below to replace a processor instead of using the instructions that came with the processor.

Caution: The processor must be appropriate: You could damage the server board if you install a processor that is inappropriate for your server. For a list of compatible processors for the NSW1U Network Server, go to <http://us.kontron.com/products/systems+and+platforms/communication+rackmount+servers/ip+network+servers/ip+network+server+nsw1u.html>. Click on Downloads, and then click on Ordering Guide.

3.3.4.1 ESD and Processor Handling Precautions

- Reduce the risk of electrostatic discharge (ESD) damage to the processor by doing the following:
 - 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.)
- When opening a socket, do not touch the gold socket wires.
- When unpacking a processor, hold it only at the edges to avoid touching the gold contacts.

Figure 17. Cautions for Handling Processors



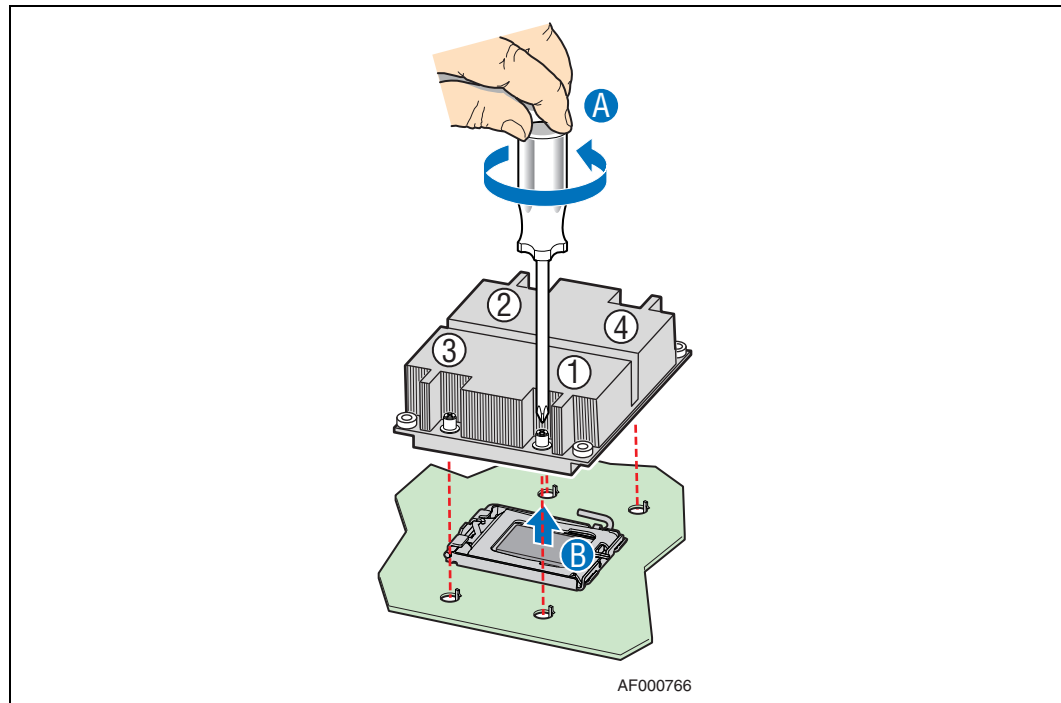
Follow the instructions below to remove and then install a processor, referring to [Figure 18](#) through [Figure 24](#).

3.3.4.2 Removing the Processor

1. Power down the server system and unplug all peripheral devices and the power cord.
2. Remove the chassis cover. For instructions, see [Section 3.2.1, "Removing the Chassis Cover" on page 25](#).
3. Remove the processor air duct that covers the processor. For instructions, [Section 3.2.5, "Removing the Processor Air Duct" on page 27](#).
4. Loosen the four captive screws on the corners of the heat sink with a #2 Phillips screwdriver. (Figure 18, "A").
5. Twist the heat sink slightly to break the seal between the heat sink and the processor. ("B")
6. Lift the heat sink from the processor. If it does not pull up easily, twist the heat sink again.

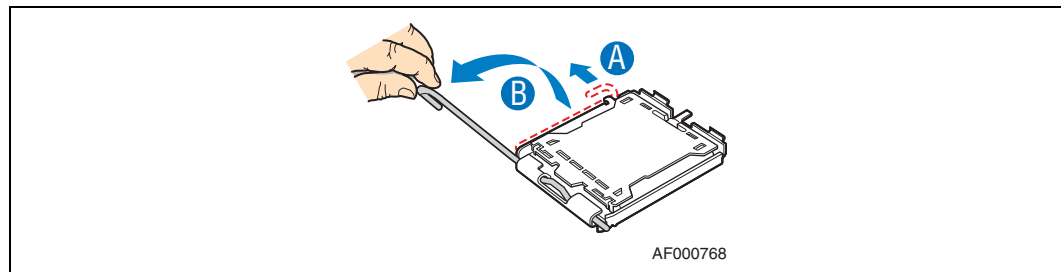
Note: Do not force the heat sink from the processor. Doing so could damage the processor.

Figure 18. Removing the Heat Sink

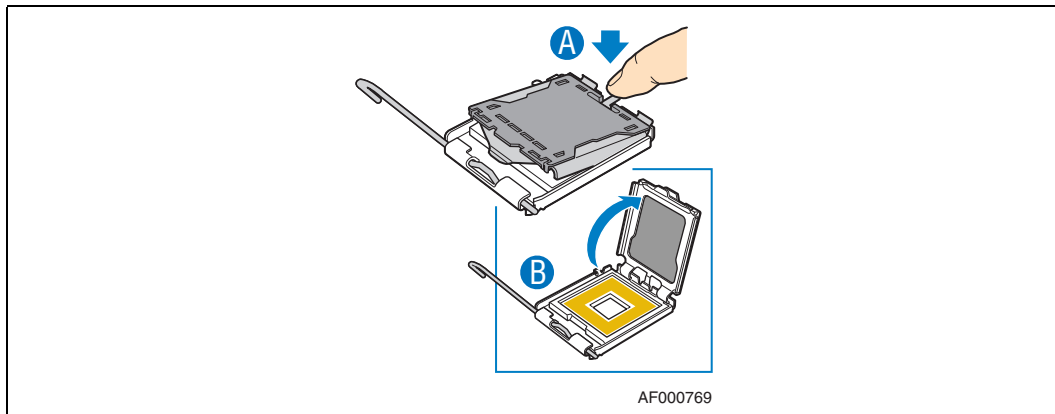


7. Open the socket by pushing the lever handle down and away from the socket to release it. (Figure 19, "A" and "B")

Figure 19. Using the Socket Lever



8. Pull the lever and open the load plate all the way. (Figure 20, "A" and "B")

Figure 20. Opening the Load Plate

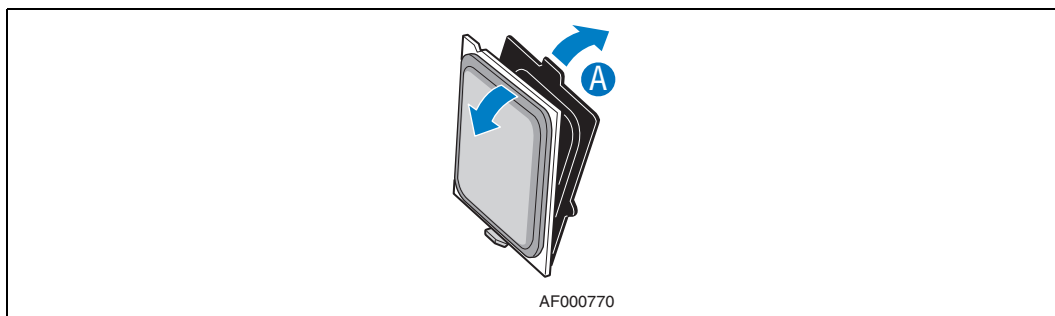
9. Lift the processor from the socket.

3.3.4.3 Installing the New Processor

Note: Follow the ESD precautions covered in [Section 3.3.4.1, “ESD and Processor Handling Precautions”](#) on page 36.

To install a processor, follow these instructions:

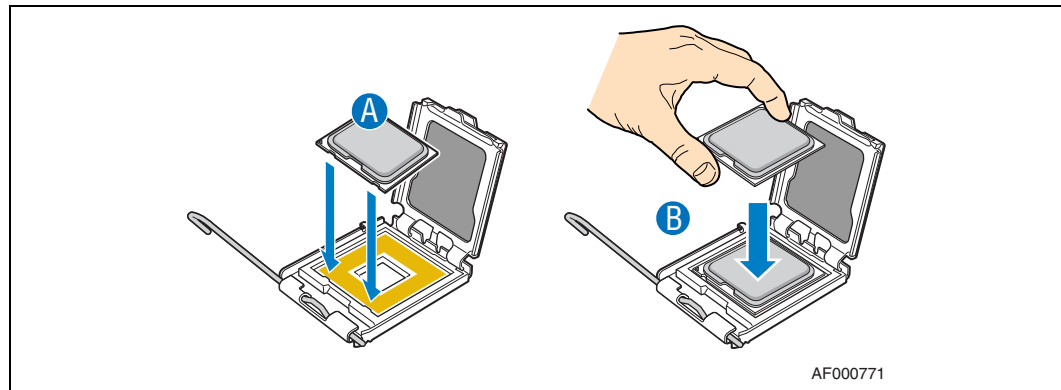
1. Take the processor out of its packaging and remove the protective shipping cover. (“A”)

Figure 21. Removing the Processor Protective Cover

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. Do not drop the processor into the socket!

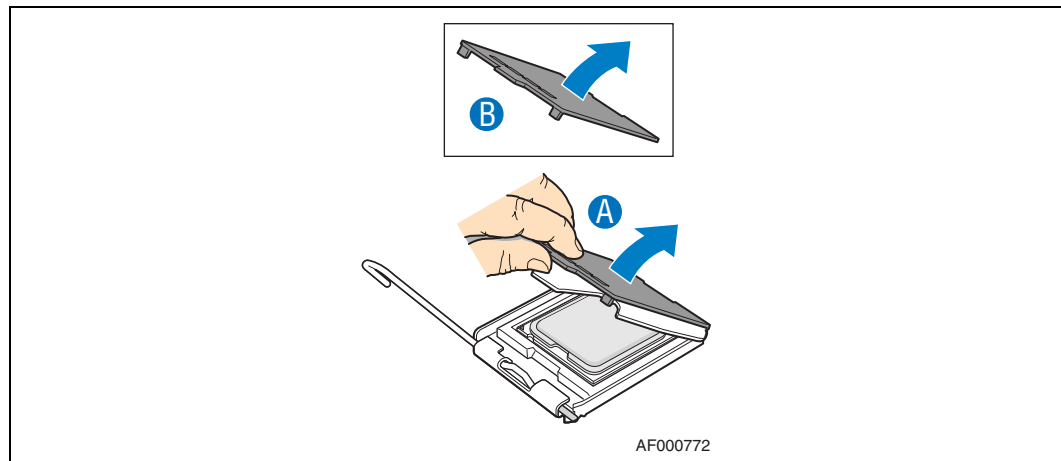
2. Orient the processor with the socket so that the processor cutouts match the socket notches. ([Figure 22, “A”](#).)
3. Gently place the processor in the socket. (“B”)

Figure 22. Installing the Processor in the Processor Socket



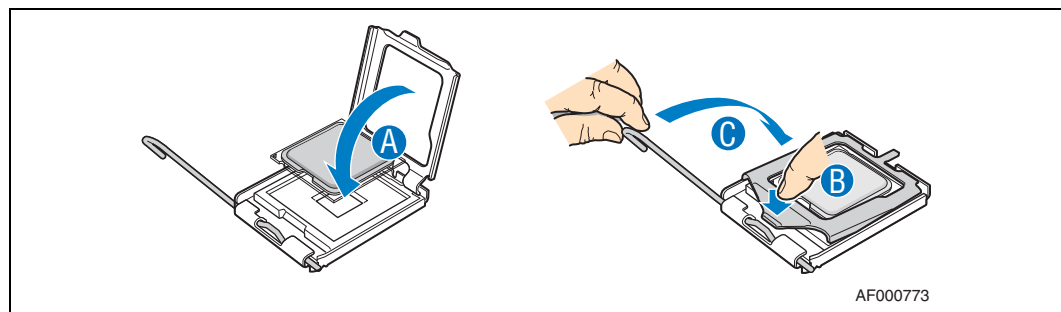
4. Remove the socket protective cover by grasping the cover tab and pulling away from the load plate. Store the protective cover for future use. (Figure 23, "A" and "B")

Figure 23. Removing the Socket Protective Cover



5. Close the load plate completely. (Figure 24, "A")

Figure 24. Closing the Processor Load Plate and Socket Lever



6. Close the socket lever and ensure that the load plate tab engages under the socket lever when fully closed. ("B" and "C")

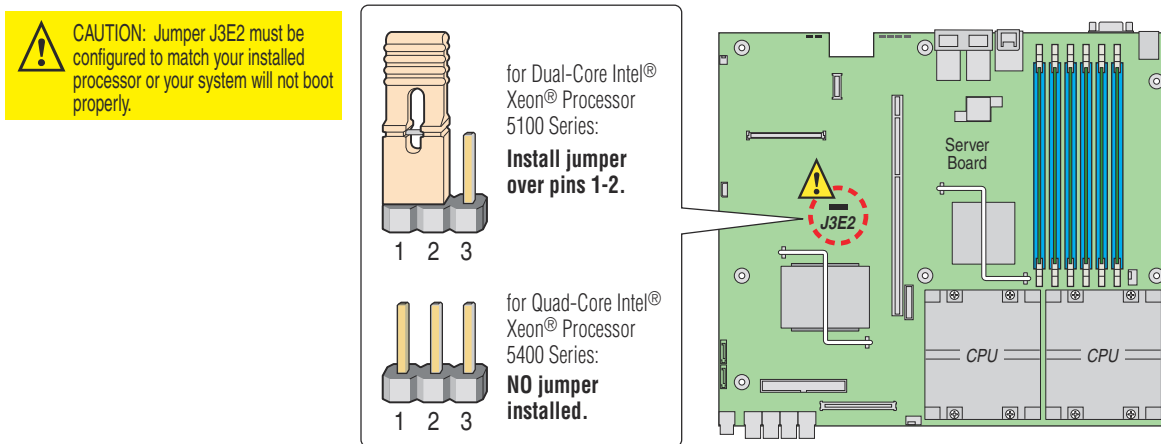
3.3.4.4 Setting the Processor Select Jumper

The server ships pre-configured for the Dual-Core Intel® Xeon® processor 5100 series. To use a Quad-Core Intel® Xeon® processor 5400 series, If you change the type of processor that is installed you must appropriately configure the processor select jumper.

- For a Dual-Core Intel® Xeon® processor 5100 series, make sure the jumper is installed on pins 1-2 on the processor select jumper.
- For a Quad-Core Intel® Xeon® processor 5400 series, remove the jumper.

Caution: Never install the jumper on pins 2-3. Your system will not boot if these pins are jumpered.

This jumper is located at position J3E2 on the server board. See the following figure.



3.3.4.5 Installing the Heat Sink

1. If this is a new heat sink (not the one you removed above), remove the protective film, if present, on the Thermal Interface Material (TIM) located on the bottom of the heat sink.
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 18](#).)
3. Loosely screw in the captive screws on the heat sink corners by tightening one, then the one diagonally opposite, and so on.
4. Gradually and equally tighten each captive screw in diagonal order until each is firmly tightened. See [Figure 18](#) for the order.

Caution: The torque spec for these screws is 8 inch-pounds. Be careful not to exceed it.

3.3.5 Replacing the Power Supply

Caution: Your server does not have a redundant power supply unless you have purchased the optional second power supply. If there is no second supply, before replacing the power supply you must first take the server out of service, turn off all peripheral devices connected to the system, turn off the system by pressing the power button, and unplug the AC power cord from the system or wall outlet

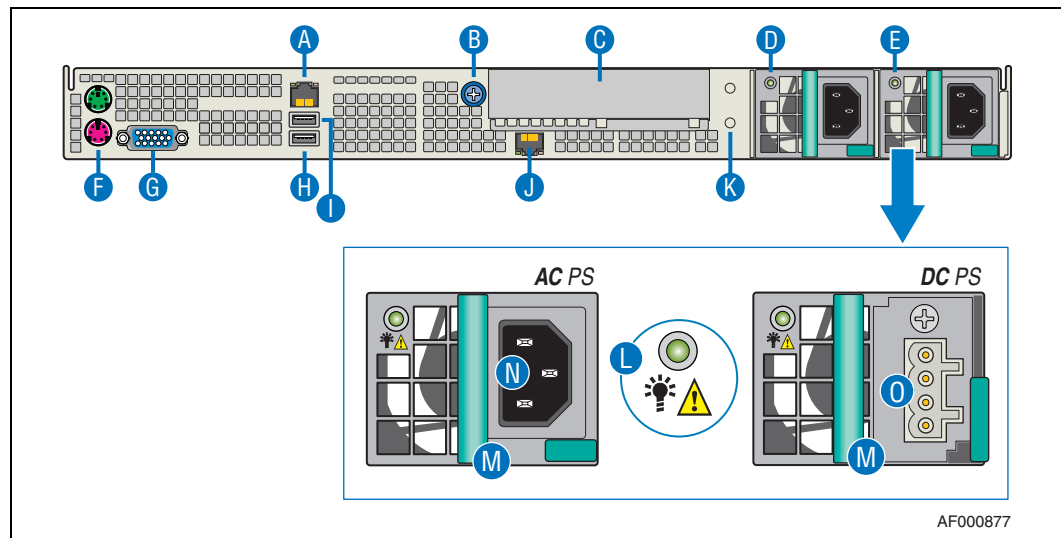
If you have a second power supply in your server, you can skip step one in the instructions below

To maintain hot-swap capability, make sure that there is an active power supply module in both chassis slots before replacing (hot-swapping) a power supply module. Check the status LED to determine which power supply has failed.

3.3.5.1 Removing the Power Supply

1. If you do not have a second, redundant power supply, power down the server system and unplug all peripheral devices.
2. Disconnect the appropriate power cable.
3. Press and hold the green safety lock to the left to disengage the power supply.
4. Grasp the handle and pull the power supply from the chassis. (“M”)

Figure 25. AC and DC Power Supplies



Item	Description	Item	Description
A	RJ45 serial port (COM2/Serial B)	I	USB 1
B	PCI cage thumbscrew	J	Intel® RMM GCM port (optional) or filler panel (GCM port shown)
C	PCI add-in card bracket or filler panel (shown)	K	Ground studs (used with DC input power supply)
D	Power supply #1	L	Power supply status LED
E	Power supply #2 (optional) or filler panel	M	Handle to remove power supply

Item	Description	Item	Description
F	PS/2 mouse connector (top) PS/2 keyboard connector (bottom)	N	AC power IN
G	Video connector	O	DC power IN
H	USB 0		

3.3.5.2 Installing the Power Supply

When inserting the new power supply, make sure the green safety lock is pressed toward the left while sliding the module into the power supply cage.

3.3.6 Grounding a DC-Powered System

The DC chassis provides two #10-32 threaded studs for chassis enclosure grounding. A single 90° standard barrel, two-hole, compression terminal lug with 5/8-inch pitch suitable for #14-10 AWG conductor (such as the Thomas & Betts* terminal lug p/n 256-31426-141) must be used for proper safety grounding. The two grounding studs are shown to the left of the power supply modules in [Figure 25](#).

Note: A crimping tool may be needed to secure the terminal lug to the grounding cable.

3.4 Installing or Replacing the Power Cord

Note: If you will be placing your server in a rack, wait to install the power cord until after the server is in the rack.

Plug the power cord into the power supply.

3.5 Installing the Server into a Rack

Installation instructions for the standard bracket kit and the optional rail kit are included with each kit. These instructions can also be found on the Kontron Deployment Assistant CD and at <http://us.kontron.com/support/>. (Search for NSW1U, click on Product Downloads, and then click on Ordering Guide.)

3.5.1 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 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). To remove all power, the AC cord(s) 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 "D" in [Figure 3](#) 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, then 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: The server is designed for an AC line voltage source with up to 20 amperes of overcurrent protection per cord feed. If the power system for the equipment rack is installed on a branch circuit with more than 20 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 4 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 35° C (95° F). Extreme fluctuations in temperature can cause a variety of problems in your server.

Ventilation: The equipment rack must provide sufficient airflow to the front of the server to maintain proper cooling. It must also include ventilation sufficient to exhaust a maximum of 1200 BTU per hour for a fully loaded Kontron IP Network Server NSW1U system.

It is important to note that this measurement is the maximum, and a minimum or typical system could be much less. You may want to calculate the BTU/hr measurement more accurately for your configuration. An extra 500 BTU/hr over many systems would translate into a large error calculating air conditioning capacity.

4 Optional Component Installation Procedures

4.1 Before You Begin

4.1.1 Tools and Supplies Needed

- #1 and #2 Phillips* (cross-point) screwdrivers (or interchangeable-bit screwdriver with #1 and #2 Phillips bits)
- Anti-static wrist strap and conductive foam pad

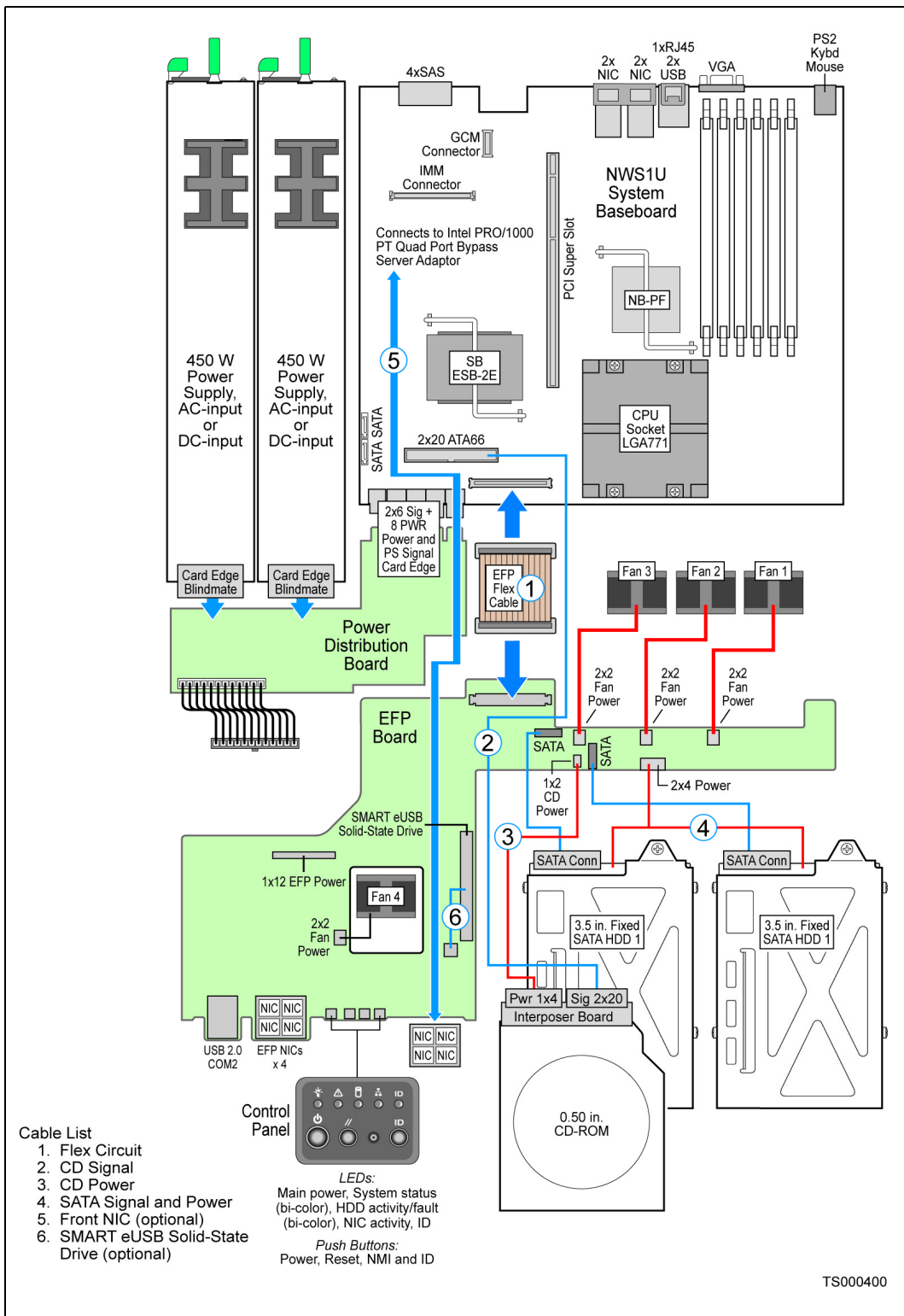
4.1.2 System References

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 routed correctly. [Figure 26](#) shows the power and signal connections for all system components.

Figure 26. System Cable Routing



4.2 Installing or Replacing a Hard Drive

Up to two 3.5-inch SATA drives can be installed in your IP Network Server NSW1U. The drives are mounted in fixed drive trays that are secured to the chassis base with two screws. The chassis cover and the front bezel must be removed to add or replace a hard drive.

Caution: These drives are NOT hot-swappable. Before removing or replacing a drive, you must first take the system out of service, turn off all peripheral devices connected to the system, turn off the system by pressing the power button, and unplug the power cord(s) from the system or wall outlet.

The IP Network Server NSW1U does not support all SATA drive models. To see a list of validated manufacturers and hard drive types, see: <http://us.kontron.com/support/>. (Search for NSW1U, click on Product Downloads, and then click on Compatibility Matrix.)

4.2.1 Removing the Drive Tray Assembly

1. Remove the chassis cover. For instructions, see [Section 3.2.1, "Removing the Chassis Cover" on page 25](#).
2. Remove the front bezel. For instructions, see [Section 3.2.3, "Removing the Front Bezel" on page 26](#).
3. Remove the processor air duct that covers the processor and cooling area behind the drive trays. For instructions, see [Section 3.2.5, "Removing the Processor Air Duct" on page 27](#).
4. Remove the optical device tray. (See [Figure 2, "J"](#).)

Refer to [Figure 27](#) for the following steps.

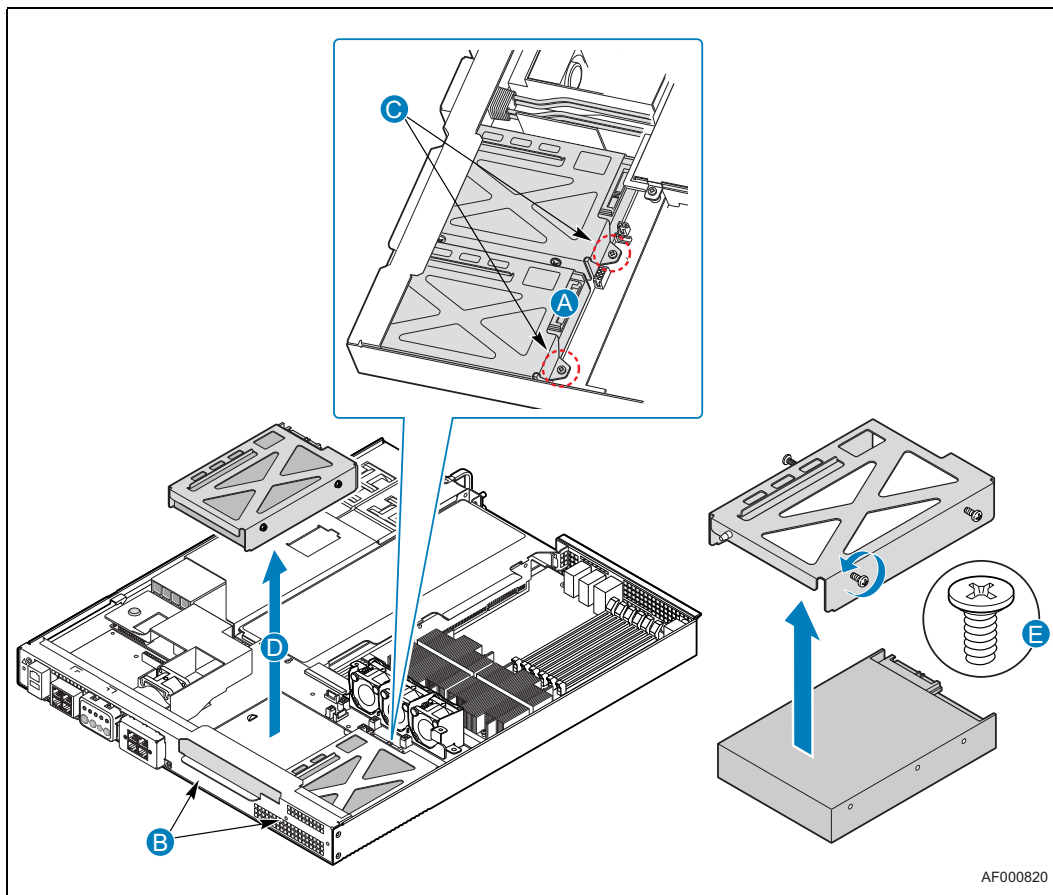
5. Unplug the cable (combined power and signal) from the rear of the drive assembly if a drive is already installed in the bay and you are replacing it. ("A")
6. Loosen the captive screw at the rear of the drive tray assembly ("C").
7. Remove the front panel screw that secures the drive tray assembly. ("B")
8. Remove the drive tray from the chassis by sliding it rearward and lifting up. ("D")

4.2.2 Installing a Drive into the Drive Tray

1. Remove the hard drive from its wrapper and place it on an anti-static surface.
2. Set any jumpers and/or switches on the drive according to the drive manufacturer's instructions.
3. Lower the tray onto the drive and engage the side with the two spring-loaded screws first. ("E")
4. Gently deflect the single screw on the other side of the tray out of the way, then lower the tray onto the drive.
5. Tighten the three screws to fasten the tray to the hard drive.

Note: Tighten the screws with a regular screw driver, not a powered one, to prevent cross-threading.

Figure 27. Attaching a Hard Disk Drive to a Drive Tray



4.2.3 Installing the Drive in the Chassis

1. Use the guide pin to insert the drive tray into the front panel. Insert the primary drive in the right bay.
2. Fasten the front panel screw and rear screw. ("B" and "C")
3. Attach the combination data/power connector to the back of the drive and plug into the EFP board. (See [Figure 2](#) for cable routing.)
4. If this is the last task you are performing, replace the front panel, the processor air duct, and the top cover of the chassis. Reconnect all the external devices and plug in the power cord(s).

4.3 Installing an Optical Device

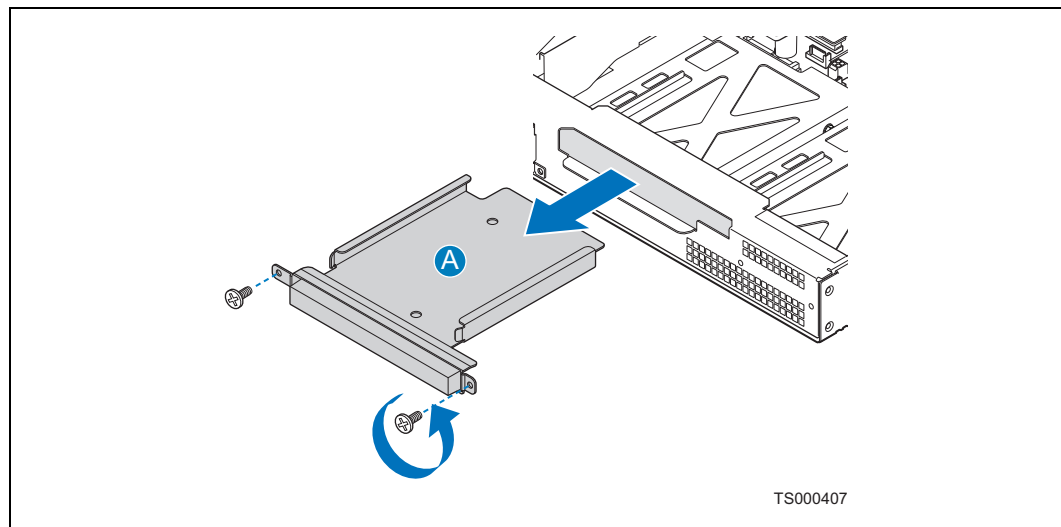
Caution: The optical device is NOT hot-swappable. Before installing or replacing an optical drive, you must first take the system out of service, turn off all peripheral devices connected to the system, turn off the system by pressing the power button, and unplug the power cord(s) from the system or wall outlet.

To install an optical device in the NSW1U Network Server, you need the carrier tray, interposer board and the signal and power cables from the accessory kit that shipped with the system.

4.3.1 Removing the Optical Device Filler Panel from the Chassis

1. Remove the chassis cover. For instructions, see [Section 3.2.1, “Removing the Chassis Cover”](#) on [page 25](#).
2. Remove the front bezel. For instructions, see [Section 3.2.3, “Removing the Front Bezel”](#) on [page 26](#).
3. Remove the two screws on the front panel and remove the filler panel from the chassis. ([Figure 28, “A”](#))

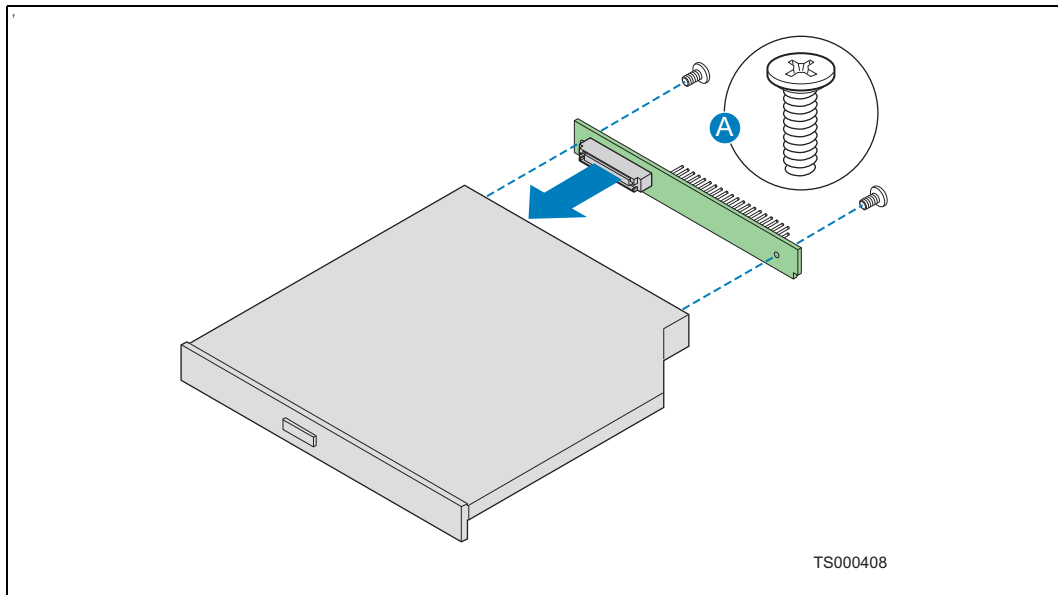
Figure 28. Removing the Optical Device Filler Panel



4.3.2 Installing the Optical Device in the Chassis

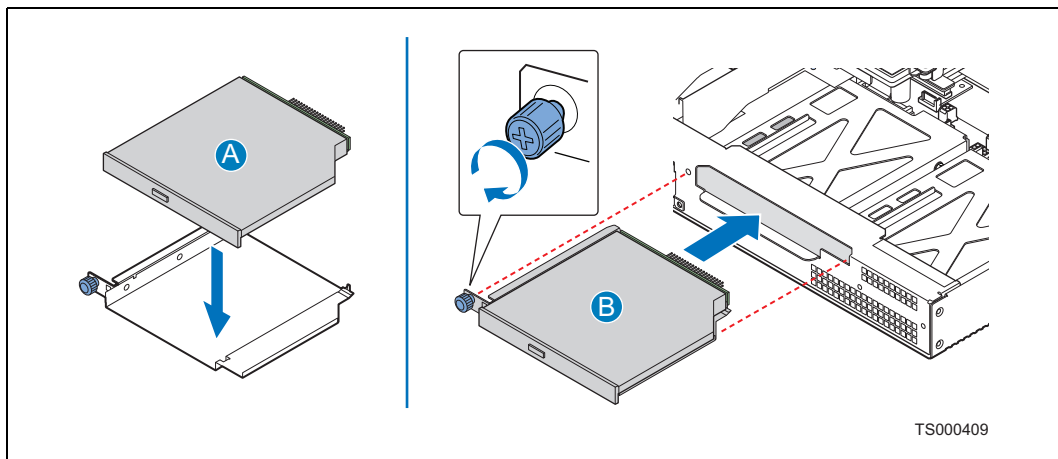
1. Insert the interposer board connector into the port on the back of the optical drive.
2. Secure the interposer board connection with two screws, as shown. ([Figure 29, “A”](#))

Figure 29. Connecting the Interposer Board



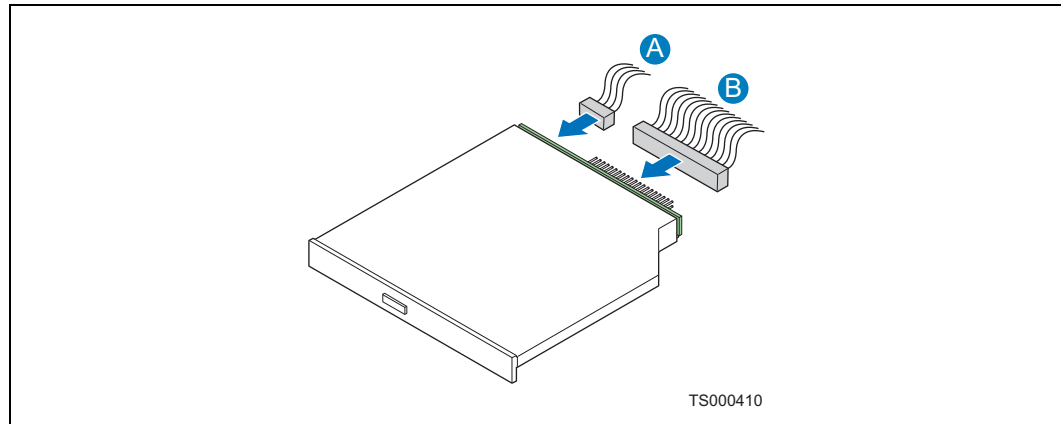
3. Place the optical device in the drive tray.
4. Insert the optical device/tray/interposer board assembly into the chassis and tighten the blue thumbscrew. (Figure 30, "A" and "B").

Figure 30. Installing the Optical Device



5. Connect the power and data cables onto the interposer board. (Figure 31, “A” and “B”)

Figure 31. Connecting the Optical Device Power and Data Cables



6. If this is the last task you are performing, replace the front panel and the top cover of the chassis. Reconnect all the external devices and plug in the power cord(s). For information about mounting the server in a rack, see Section 3.5, “Installing the Server into a Rack” on page 42.

4.4 Installing or Replacing a PCI Add-in Card

The riser card assembly is installed in the super slot located in the middle of the S5000PHB server board. (See Figure 10 on page 21 for this location.) The system is delivered with a PCI Express* riser card attached to the riser card assembly. To use PCI-X* cards, this riser must be replaced with the PCI-X riser card, which can be ordered as an accessory.

Note: PCI/PCI-X/PCI Express add-in cards are referred to generically as “PCI cards” in the following procedures.

To add a PCI card, remove the riser card assembly from the system. Ensure that the appropriate riser card is attached to the assembly (PCIe by default) or replace it with the correct one (e.g, PCI-X instead of PCIe), remove the I/O filler panel, then add the PCI or PCIe add-in card. This assembly is then plugged back into the super slot connector on the S5000PHB server board server board. Refer to the *Intel® Server Board S5000PHB Technical Product Specification* for the electrical characteristics for the PCI/PCIe riser card assembly super slot.

Note: Using a supported PCI/PCIe card is recommended. For a list of tested and supported cards, see the *Tested Hardware and Operating System List (THOL)* at <http://us.kontron.com/support/>. Search for NSW1U, click on Product Downloads, and then click on Compatibility Matrix.

4.4.1 Removing the PCI Riser Card Assembly

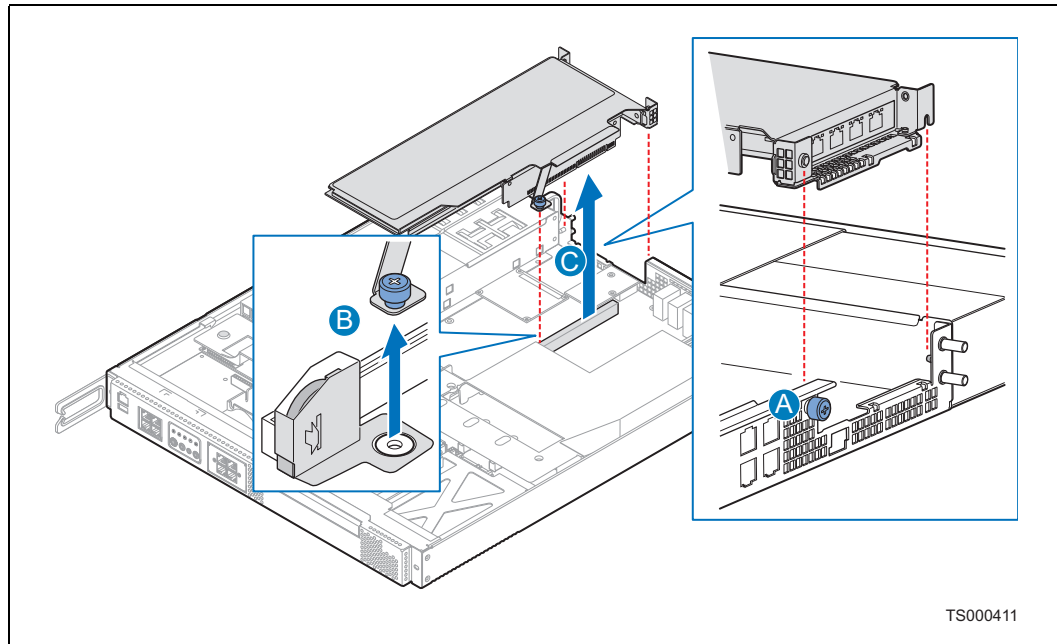
To remove an installed riser card assembly, follow these steps:

1. Loosen the blue captive screw that secures the riser card assembly to the server board. ("A" in Figure 32)
2. Loosen the blue captive thumb screw on the rear panel of the chassis. ("B")

Caution: Touching the battery with a metallic object, such as any part of the PCI riser assembly, can momentarily short the battery.

3. Lift the riser card assembly straight up and remove it from the chassis. ("C")

Figure 32. Removing the Riser Card Assembly

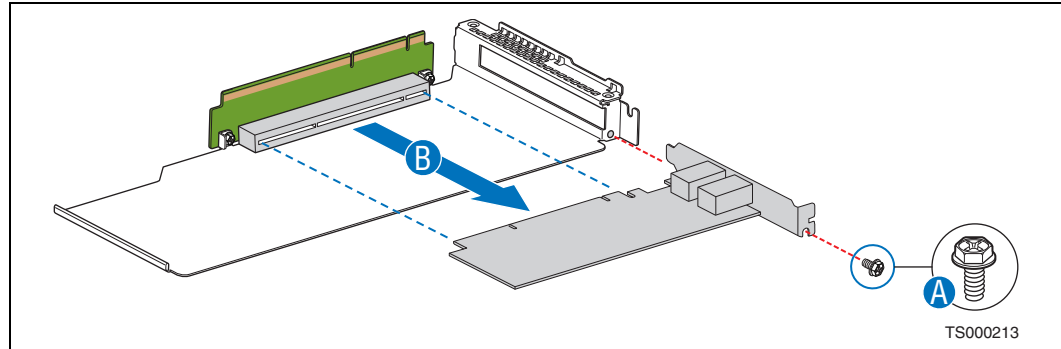


4.4.2 Removing a PCI card from the Riser Card Assembly

Caution: When handling a PCI card, observe the normal safety and ESD precautions. See [Appendix A, "Safety Information"](#) for more information.

1. Turn the riser card assembly upside-down to remove the PCI card.
2. Remove the rear retention screw from the riser card. ("A" in [Figure 33](#))
3. Detach the PCI card from the riser card connector. ("B")

Figure 33. Removing a PCI-X Card from the Riser Card Assembly



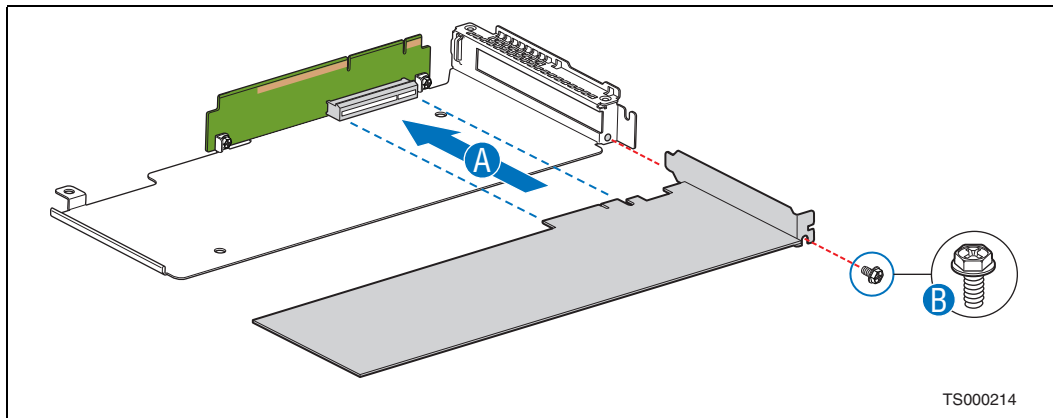
4.4.3 Installing an Add-In Card in the Riser Card Assembly

Caution: When handling an add-in card, observe the normal safety and ESD precautions. See [Appendix A, "Safety Information"](#) for more information.

The following procedure uses a PCIe card as the example.

1. If the current riser card in the assembly is not correct for the PCI card you are installing, i.e., in this example, the PCI-X riser card instead of a PCIe riser card, do the following:
 - a. With the riser card assembly upside-down, remove the riser card by loosening the two screws that attach it to the riser card assembly sheet metal top.
 - b. Fasten the new riser card, i.e., the PCIe riser card in this example, using the two screws.
2. If the add-in card slot was empty before installing the new card, remove the filler panel from the rear bracket.
3. With the riser card assembly upside-down, slide the PCI card onto the sheet metal and attach it to the riser card connector. ("A" in [Figure 34](#))
Be sure that the PCI card edge connector is seated in the riser card connector correctly.
4. Fasten the PCI card to the riser card assembly bracket using the retention screw. ("B")

Figure 34. Adding a PCI Express* Card into the Riser Card Assembly



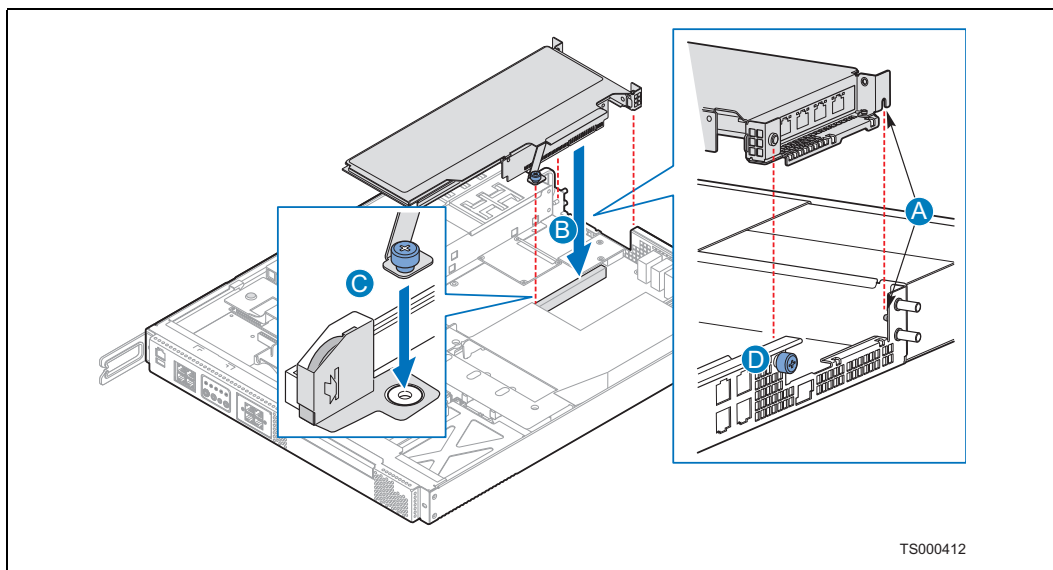
4.4.4 Installing the Riser Card Assembly onto the Server Board

1. Align the fork on the riser card assembly with the pin on the rear chassis panel. ("A" in Figure 35)
2. Attach the riser card assembly to the server board by inserting the riser card edge connector into the super slot header on the server board. ("B")
3. Fasten the blue captive screw on the riser card assembly to the server board. ("C").

Caution: Touching the battery with a metallic object, such as any part of the PCI riser assembly, can momentarily short the battery.

4. If this is the last task you are performing, replace the processor air duct and the top cover of the chassis. Reconnect all the external devices and plug in the power cord(s).

Figure 35. Reinstalling the Riser Card Assembly



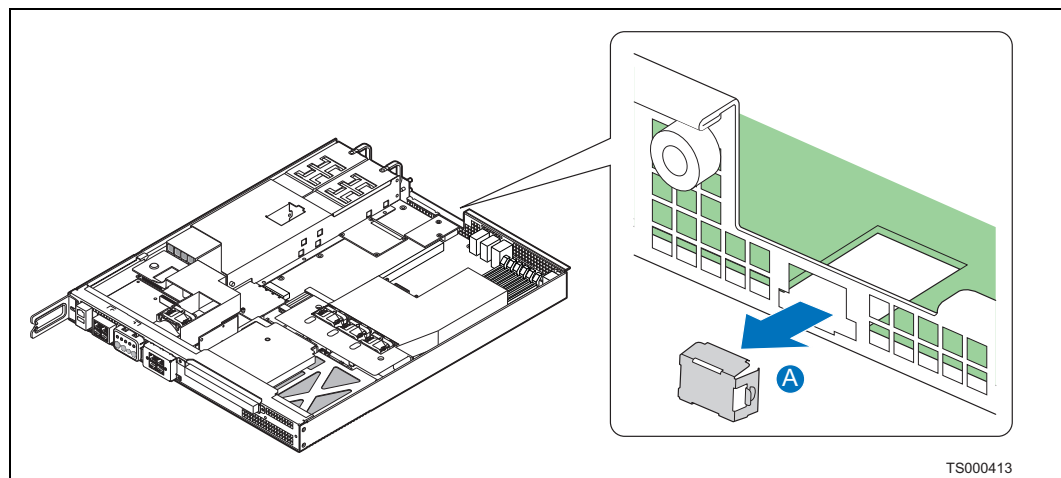
4.5 Installing the Remote Management Module 2

To install the GCM module and the Intel® Remote Management Module 2 (Intel® RMM2), you must first remove the chassis top cover, the processor air duct, and PCI riser card assembly. For instructions, see Chapter 3, “Server Installations and Upgrades” and Section 4.4.1, “Removing the PCI Riser Card Assembly” on page 52.

4.5.1 Installing the GCM Module

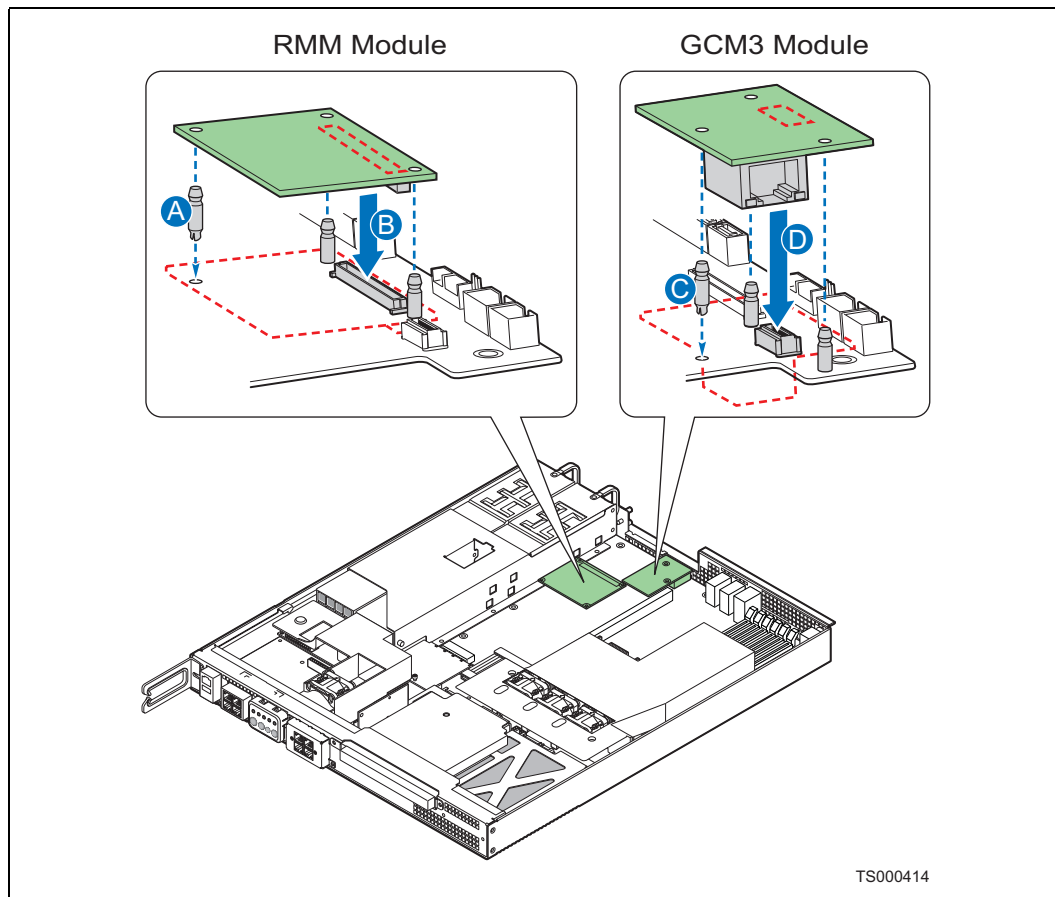
1. Remove the filler panel from the rear panel of the chassis by squeezing the side edges and pushing it out from inside the chassis. (Figure 36, “A”)
2. Snap the two standoffs into the S5000PHB server board server board. (Figure 37, “C”)
3. Attach the GCM module to the server board using the connector. (“D”)

Figure 36. Removing the GCM Port Filler Panel



4.5.2 Installing the RMM2

1. Insert the standoff into the hole labeled “TH4” on the RMM2. (Figure 37, “A”) The standoff fastens to the bottom side of the module.
2. Fasten the RMM2 to the S5000PHB server board site using the Advanced Server Management Interface (ASMI) connector (“B”) and snap the standoff into the matching hole in the server board.
3. If this is the last task you are performing, replace the riser card assembly, the processor air duct, and the top cover of the chassis. Reconnect all the external devices and plug in the power cord(s).

Figure 37. Installing the Remote Management Module

4.6 Installing the Quad Port Bypass Server Adapter (Copper) for Front Panel Access

The NSW1U-F and NSW1U-B IP network servers come with a front panel filler panel that has to be removed and replaced with an escutcheon when installing a GbE LAN card, such as the Intel® PRO/1000 AT Quad Port Bypass Server Adapter for Copper (NIC in front), for the first time. The chassis cover and the front bezel must be removed to install or replace the LAN card and to connect the GbE cables to the escutcheon. In addition, a special LAN card support bracket with a cable opening must be used, replacing the factory-installed support bracket.

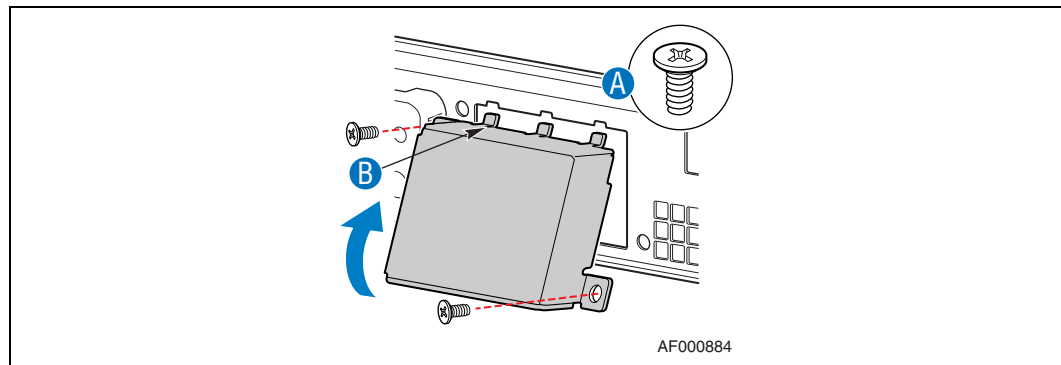
4.6.1 Installing the 4xGbE LAN Card

Note: This section details the instructions for installing the card for copper GbE connectors only.

4.6.1.1 Removing the Filler Panel

1. Power down the server system and unplug all peripheral devices and the power cord.
2. Remove the chassis cover. For instructions, see [Section 3.2.1, “Removing the Chassis Cover”](#) on [page 25](#).
3. Remove the front bezel. For instructions, see [Section 3.2.3, “Removing the Front Bezel”](#) on [page 26](#).
4. Remove both screws from either side of the filler panel and save for future use. (“A” in [Figure 38](#))
5. Rotate the bottom edge of the filler panel outwards, lower the panel slightly to disengage the retention tabs at the top, and remove the panel. (“B”)

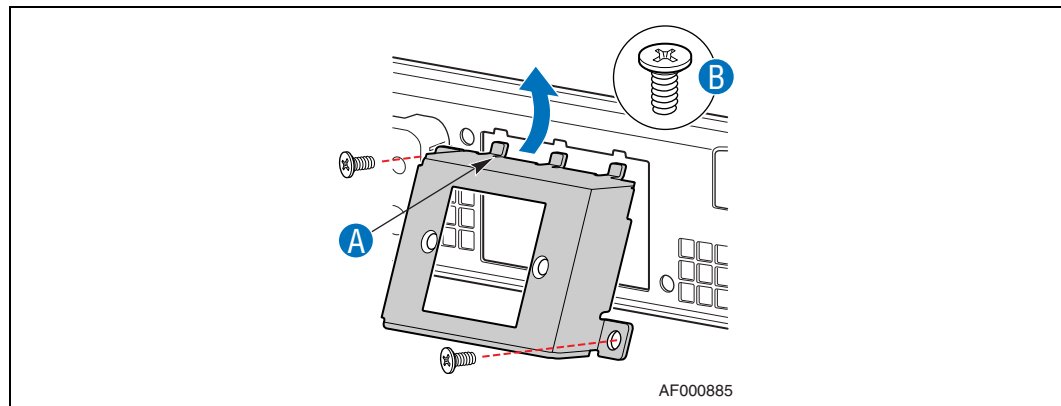
Figure 38. Removing the 4xGbE Filler Panel from the Chassis



4.6.1.2 Installing the Escutcheon

1. Insert the retention tabs located at the top of the escutcheon into the front panel notches, then rotate the bottom edges toward the chassis. (“A”)
2. Attach the escutcheon with two screws as shown. (“B”)

Figure 39. Installing the 4xGbE Escutcheon

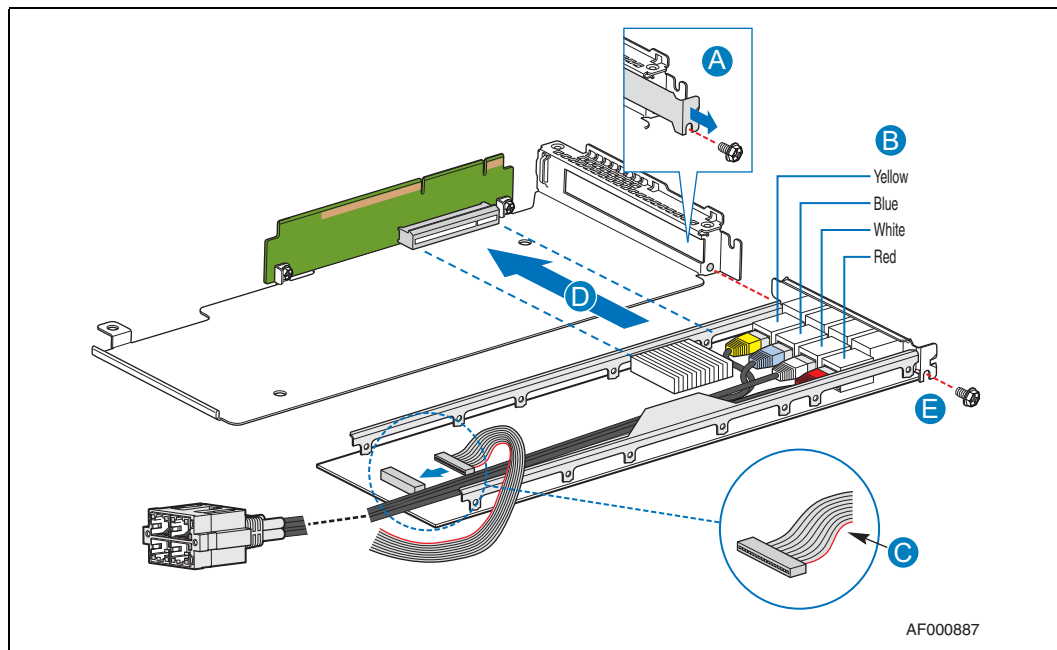


4.6.1.3 Installing the LAN Card in the PCI Riser

See [Figure 40](#) when performing the steps below.

1. Remove the PCI riser card assembly from the chassis and turn it upside down. For instructions, see [Section 4.4.1, "Removing the PCI Riser Card Assembly" on page 52](#).
2. Remove the add-in card filler panel from the rear panel of the chassis and save the screw. ("A")
3. Connect the four GbE cables to the LAN card as shown in the color coding portion of [Figure 40](#). ("B")
4. Connect the LED ribbon cable to the LAN card. Note where the red stripe is for a proper connection. ("C")
5. Install the LAN card into the PCI riser assembly slot. ("D")
6. Route the cables around the heat sink and straight back close to the LAN card rail. Be careful not to pull the cables too tight.
7. Secure the LAN card in the riser with the screw from the filler panel that was removed. ("E")

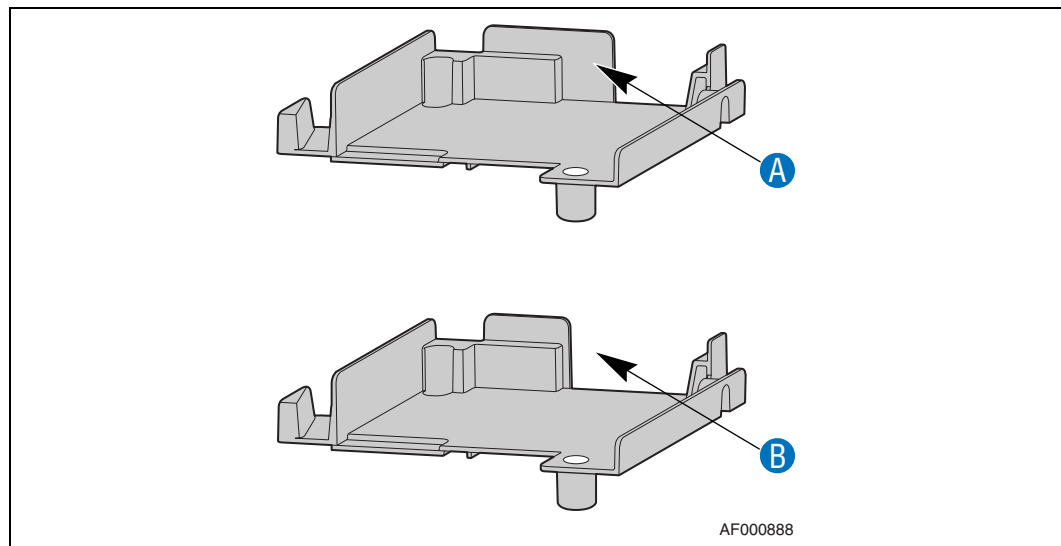
Figure 40. Configuring and Installing the LAN Card



4.6.1.4 Routing the LAN Card Cables to the Front Panel

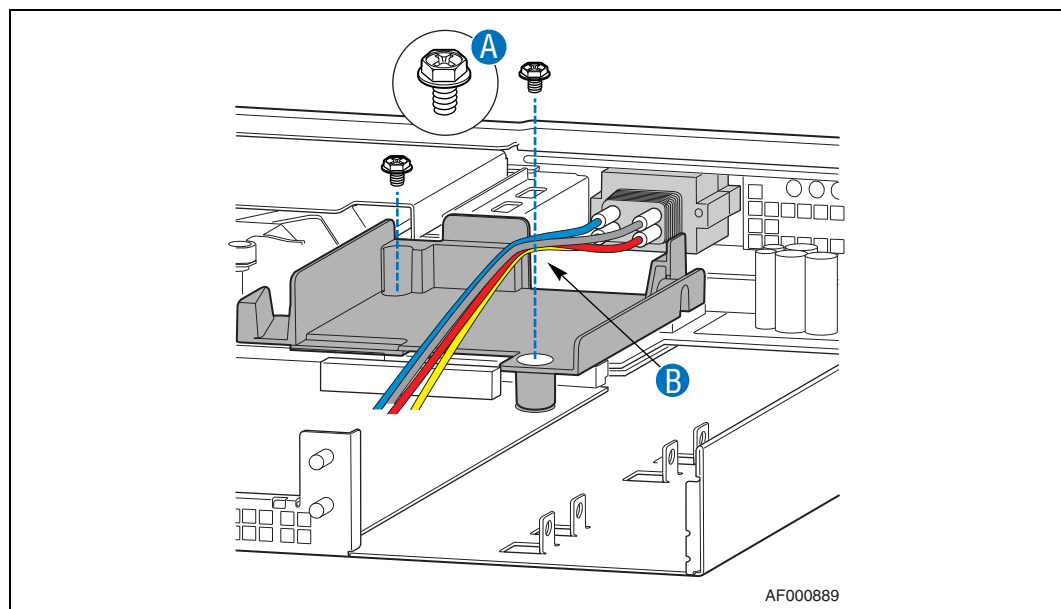
1. Remove the factory-installed PCI support bracket by loosening the two screws. ([Figure 41, "A"](#))
2. Replace the bracket with the LAN card support bracket accessory that has an opening for routing the LAN card cables. ("B")

Figure 41. PCI Support Brackets



3. Fasten the LAN card bracket with both screws. (Figure 42, "A")
4. Install the riser card assembly back into the server board slot and fasten the thumbscrew. For instructions, see [Section 4.4.4, "Installing the Riser Card Assembly onto the Server Board"](#) on page 54
5. Guide the cables through the support bracket opening toward the front panel. ("B").

Figure 42. LAN Card Cables in Support Bracket

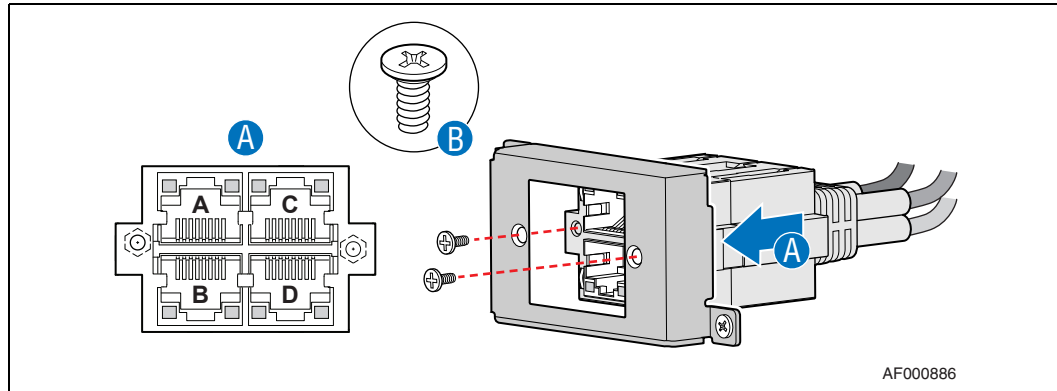


6. Insert the GbE cable connector from the rear of the front panel into the escutcheon as shown in [Figure 43](#).

Note: When viewed from the front, each port has a letter. Be sure to install the connector with "A" and "C" at the top. *Do not install the connector upside-down.* ("A")

7. Attach the connector using two screws, as shown. ("B")

Figure 43. Installing the Cable Connector into the Front Panel Escutcheon



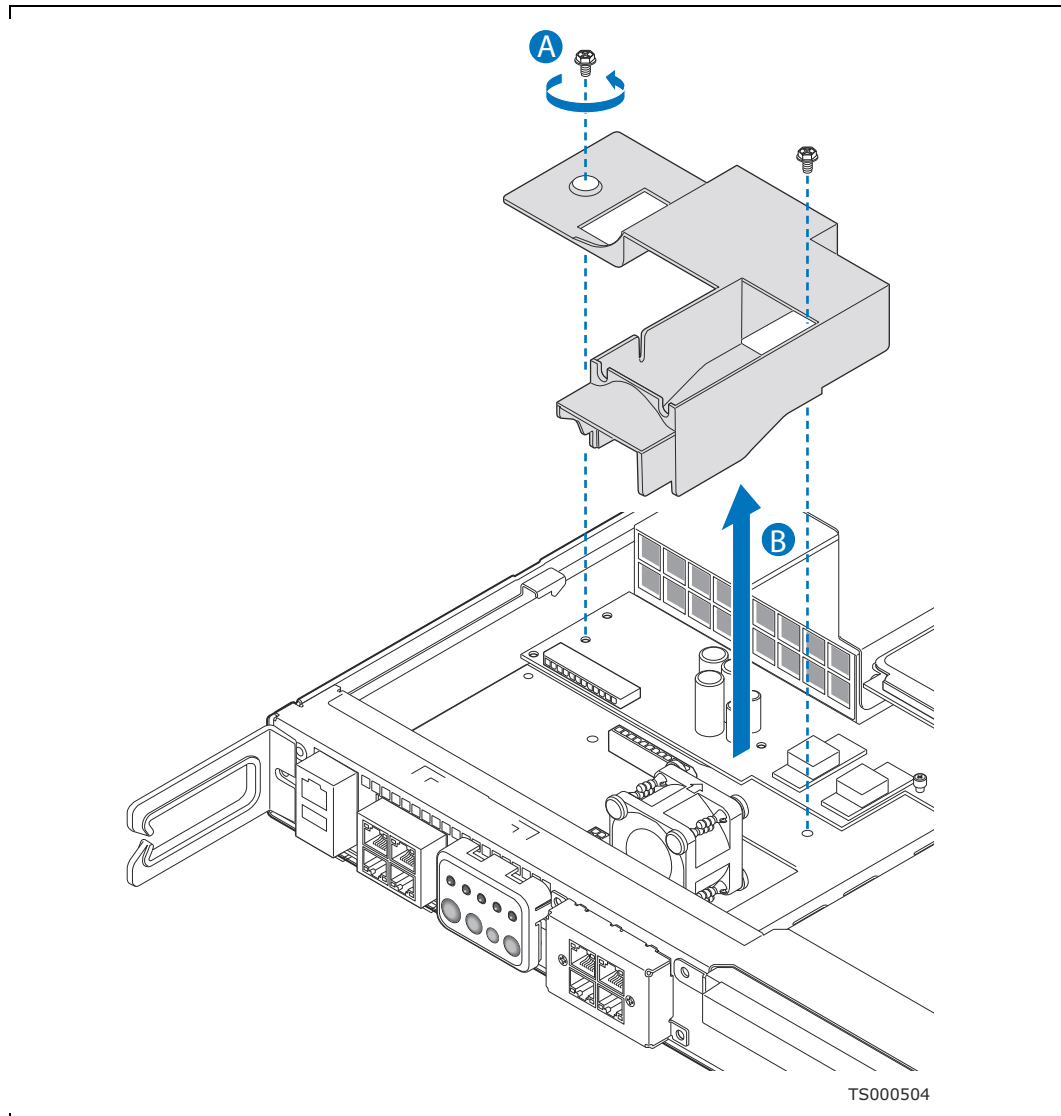
8. If this is the last task you are performing, replace the front panel, the processor air duct and the top cover of the chassis. Reconnect all the external devices and plug in the power cord(s).

4.7 Installing a SMART Embedded USB Solid-State Drive

The optional SMART Embedded USB Solid-State Drive (eUSB SSD) provides local memory storage for various options such as system information, diagnostic partitions, and configuration data. The eUSB SSD is positioned perpendicular to the EFP board and fastens to the PCI fan air duct.

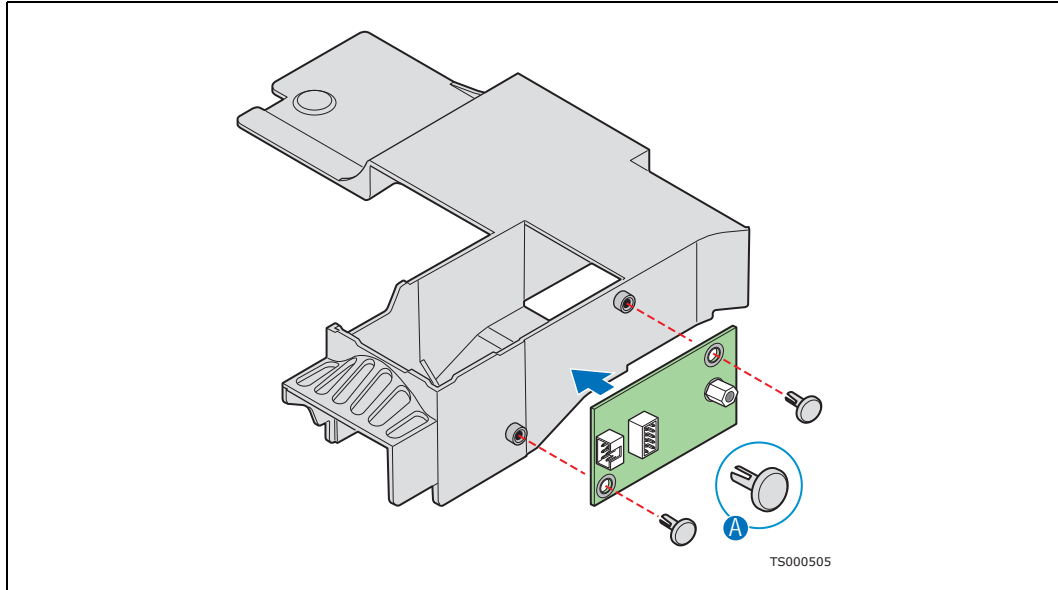
1. Remove the chassis top cover. For instructions see [Section 3.2.1, “Removing the Chassis Cover”](#) on page 25.
2. Remove the PCI fan air duct as shown in [Figure 44](#).

Figure 44. Removing the PCI Fan Air Duct



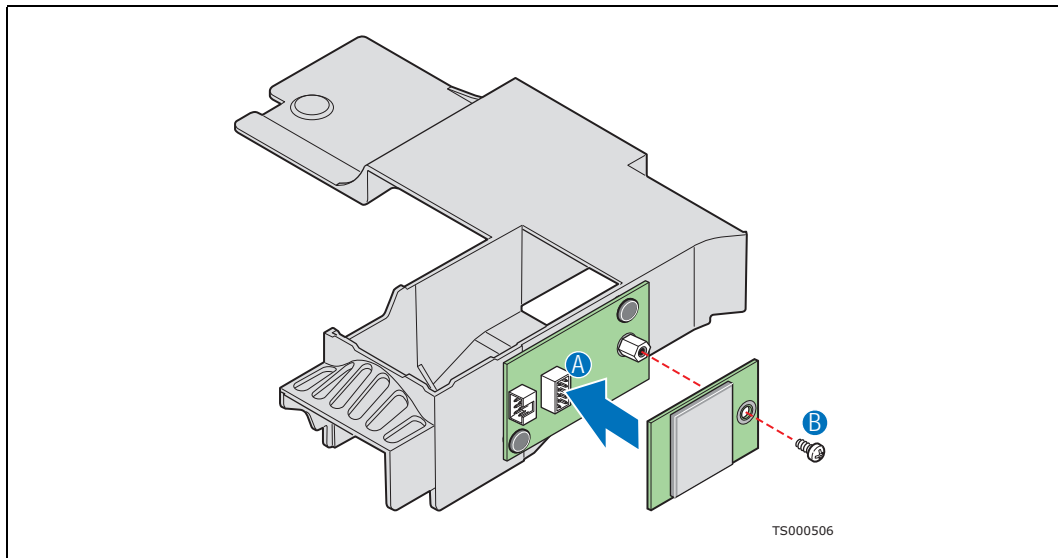
3. Attach the interposer card to the PCI fan air duct with the two black push rivets in the kit. ("A" in Figure 45)

Figure 45. Attaching the Interposer Card to the Air Duct



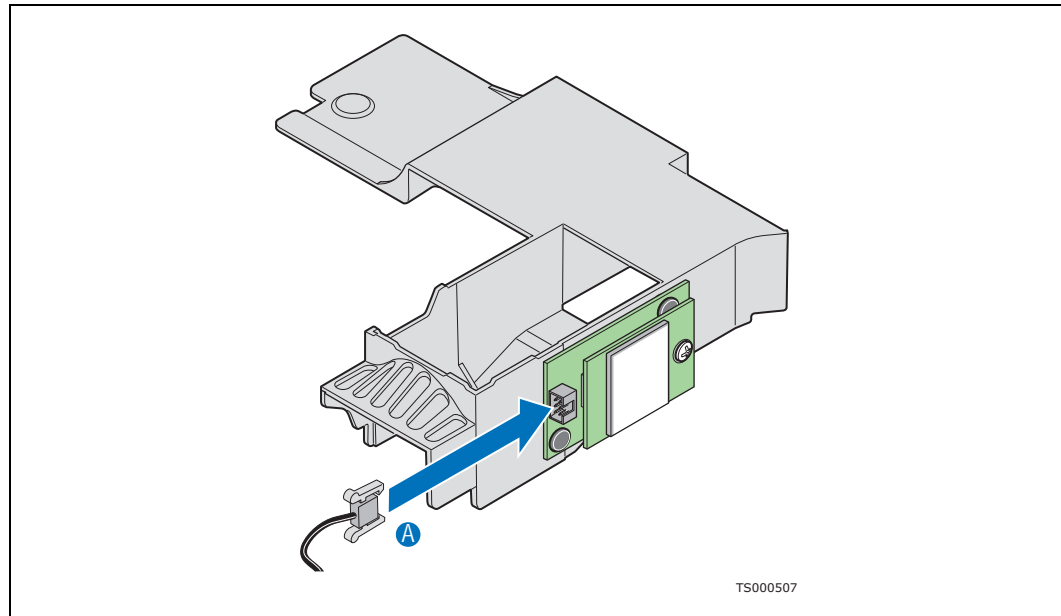
4. Attach the eUSB SSD to the interposer card. ("A" in Figure 46). Insert and tighten the screw that will secure the eUSB SSD to the interposer card. ("B" in Figure 46)

Figure 46. Attaching the VSSD to the Interposer Card



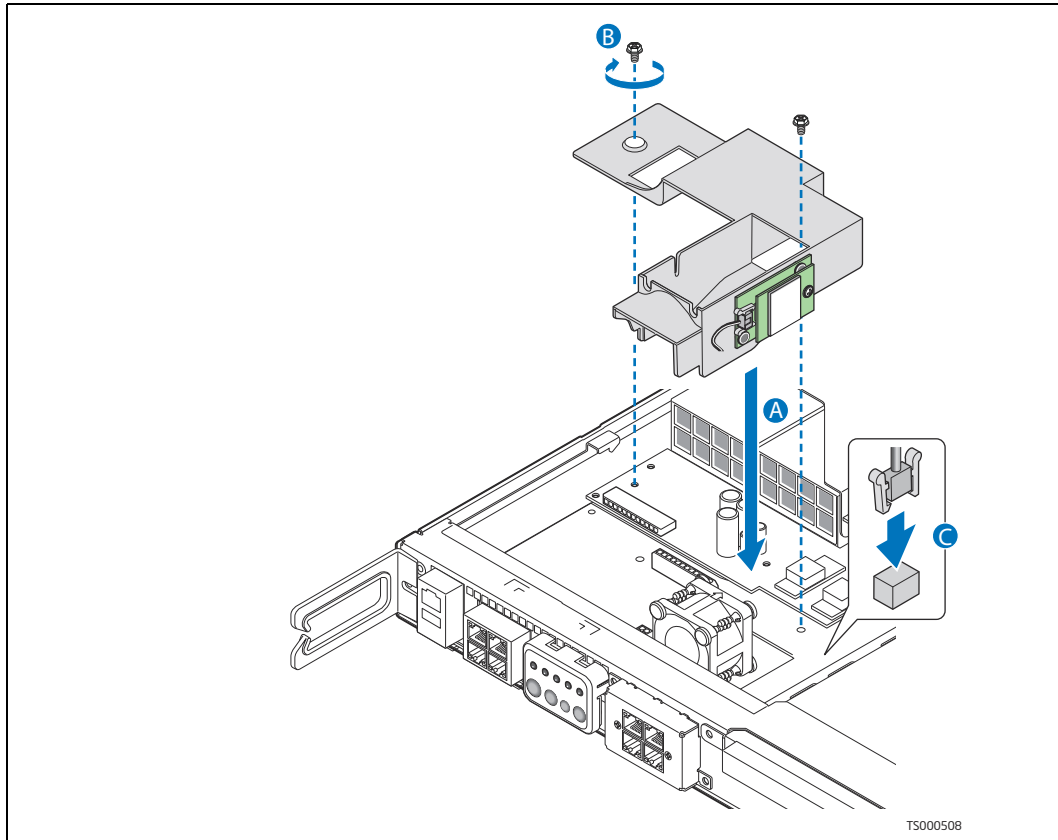
5. Plug one end of the cable labeled "SysCon" into the interposer card. ("A" in Figure 47)

Figure 47. Attaching the SysCon Cable to the Interposer Card



6. Place the PCI fan air duct back into the chassis ("A" in Figure 48) and replace the screws that hold the air duct in place ("B" in Figure 48).
7. Plug the other end of the SysCon cable into the connector on the front panel (EFP) board. ("C" in)

Figure 48. Re-Installing the PCI Fan Air Duct with the Solid-State Drive Attached



8. If this is the last task you are performing, replace the top cover of the chassis. Reconnect all the external devices and plug in the power cord(s).

5 Server Component Replacements

5.1 Before You Begin

5.1.1 Tools and Supplies Needed

- #1 and #2 Phillips* (cross-point) screwdrivers (or interchangeable-bit screwdriver with #1 and #2 Phillips bits)
- Anti-static wrist strap and conductive foam 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.

5.2 Replacing the Fan Assemblies

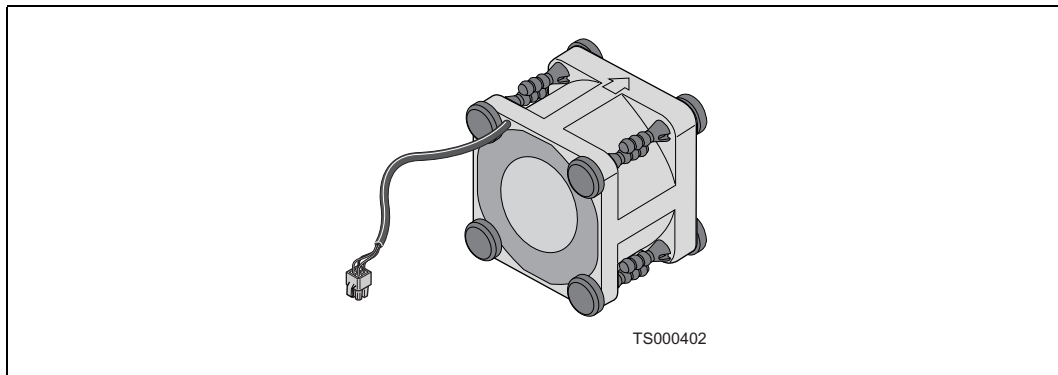
Caution: Your server does not have hot-swappable fans. Before replacing any of the fans, you must first take the server out of service, turn off all peripheral devices connected to the system, turn off the system by pressing the power button, and unplug the power cord from the system or wall outlet.

The replacement/spare fan set consists of one PCI fan and three CPU fans with resilient fan bumpers installed to isolate fan vibration from the rest of the system.

5.2.1 Replacing the CPU Fans

1. Remove the chassis cover. For instructions, see [Section 3.2.1, “Removing the Chassis Cover” on page 25](#).
2. Remove the processor air duct that covers the processor and cooling area behind the drive trays. For instructions, see [Section 3.2.5, “Removing the Processor Air Duct” on page 27](#).
3. Disconnect the three fan cables from the Ethernet front panel (EFP) board by squeezing the latch on each of the three fan cable connectors. See [Figure 26](#) for the location.
4. Remove the fans from the bracket.

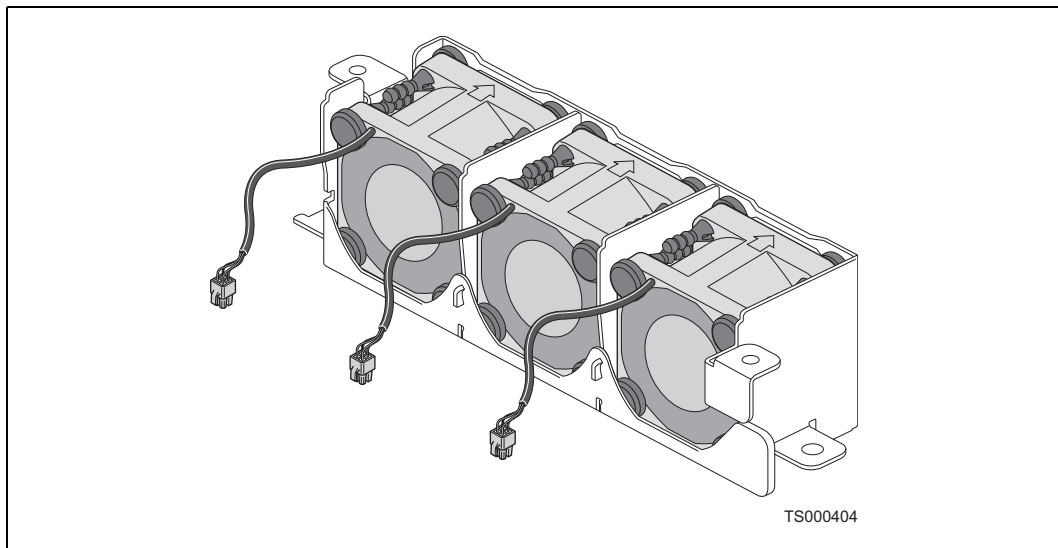
Figure 49. Fan with Isolation Bumpers Installed



5.2.2 Installing the New CPU Fans into the Bracket

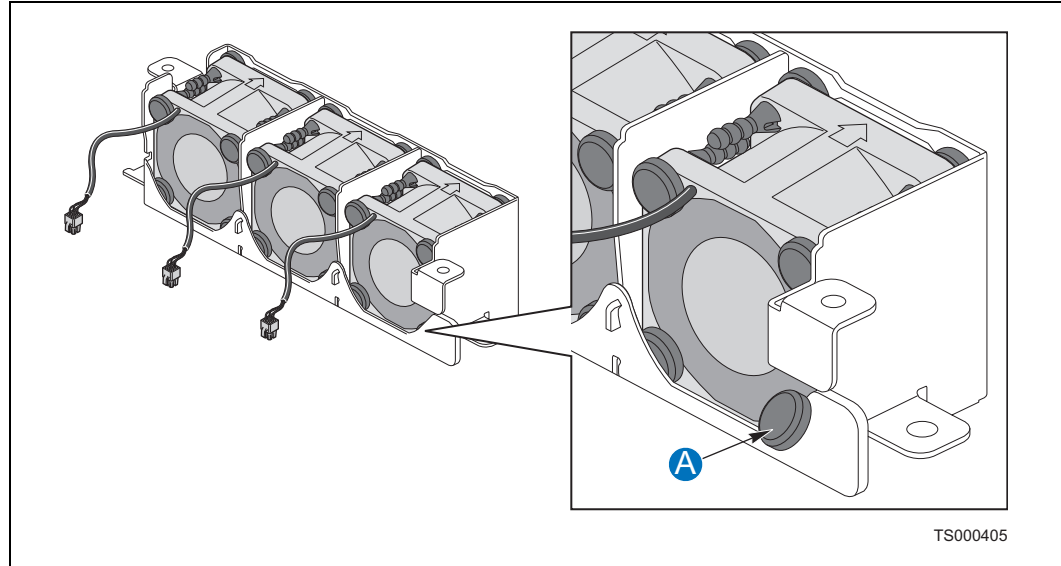
1. Align each fan with the air flow arrow facing the rear of the chassis and the power cable facing the front and routed away from the fan blades.
2. Push each of the three fans into one of the pockets in the fan assembly bracket. The power cables should exit the bracket as shown in [Figure 50](#).

Figure 50. Fans Properly Installed in the Bracket



3. Connect the fan cables to the correct fan connectors as labeled on the Ethernet front panel board.
4. Check to be sure that none of the bumpers are caught on the bracket. (Figure 51, "A")

Figure 51. Fan Improperly Installed

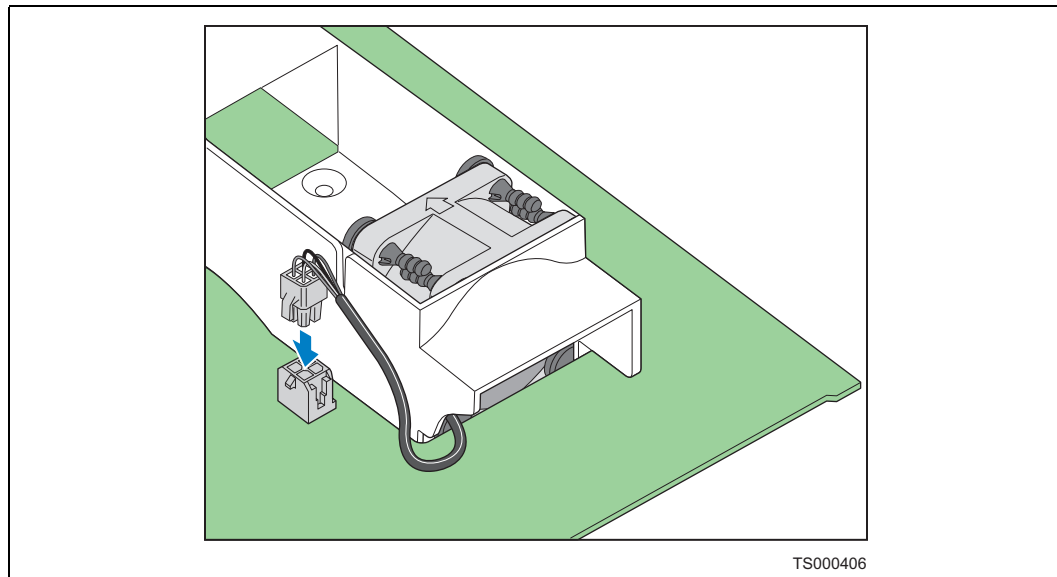


5.2.3 Removing the PCI Fan

1. Unplug the PCI fan power cable from the EFP board.
2. Remove the fan from the bracket.

5.2.4 Installing the PCI Fan

1. Route the power cable to the front of the bracket before seating the fan in the bracket. Be sure the air flow is toward the rear of the chassis.
2. Plug the power cable into the connector on the EFP board as shown in Figure 52.

Figure 52. New PCI Fan Installed

3. If this is the last task you are performing, replace the processor air duct and the top cover of the chassis. Reconnect all the external devices and plug in the power cord(s).

5.3 Replacing the Ethernet Front Panel Board

The Ethernet Front Panel (EFP) board provides an interface to the controls at the front of the server system, the power interconnect for the server board, the USB2 and Serial B interface, and the front panel LED interface connection.

To replace the EFP board, the following components must be removed:

- All cable connections on the EFP board and any connections to the front panel, such as 4xGbE LAN card cables, if installed.
- PCI fan assembly (and SMART Embedded USB Solid-State Drive, if installed)

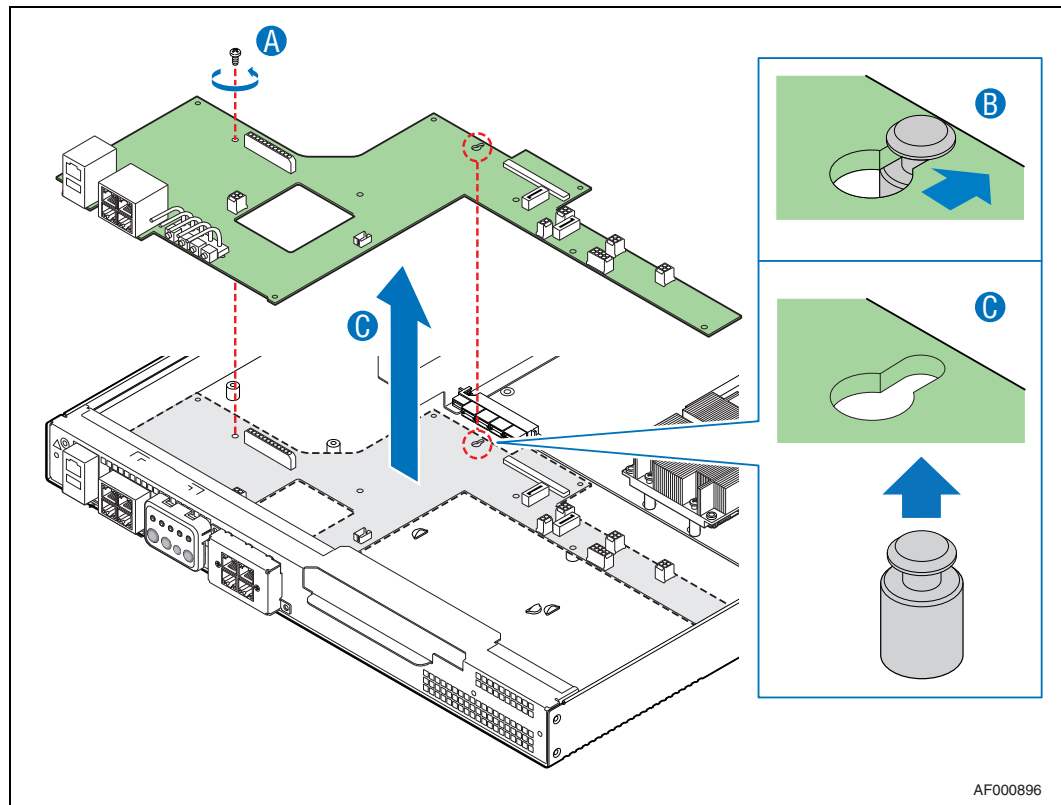
Caution: Before replacing any of the NSW1U Network Server boards, you must first take the server out of service, turn off all peripheral devices connected to the system, turn off the system by pressing the power button, and unplug the power cord from the system or wall outlet.

5.3.1 Removing the Ethernet Front Panel (EFP) Board

1. Power down the server system and unplug all peripheral devices and the power cable.
2. Remove the chassis cover. For instructions, see [Section 3.2.1, "Removing the Chassis Cover" on page 25](#).
3. Remove the PCI fan assembly. For instructions, see ["Section 5.2.3, "Removing the PCI Fan" on page 67](#).

4. Disconnect the following cables on the EFP board:
 - All fan power cables (three CPU/memory fans and PCI fan)
 - Flex cable
 - Optical device power cable
 - SATA hard drive connectors
 - SMART Embedded USB Solid-State Drive cable, if installed
 - 4xGbE LAN card cables, if installed
 - Power interconnect to PDB
5. Remove the screws (Figure 53, "A").
6. Gently work the EFP board backward ("B"), toward the rear of the chassis to disengage the light pipe assembly from behind the front control panel bezel.
7. Pull the front panel I/O board up over the placement pegs ("C") and lift it from the chassis.

Figure 53. Removing the EFP Board



5.3.2 Replacing the Light Pipes

Light pipe replacement instructions are included as part of the instructions for replacing the EFP board. To transfer the light pipe assembly from EFP board just removed, use the procedures that follow.

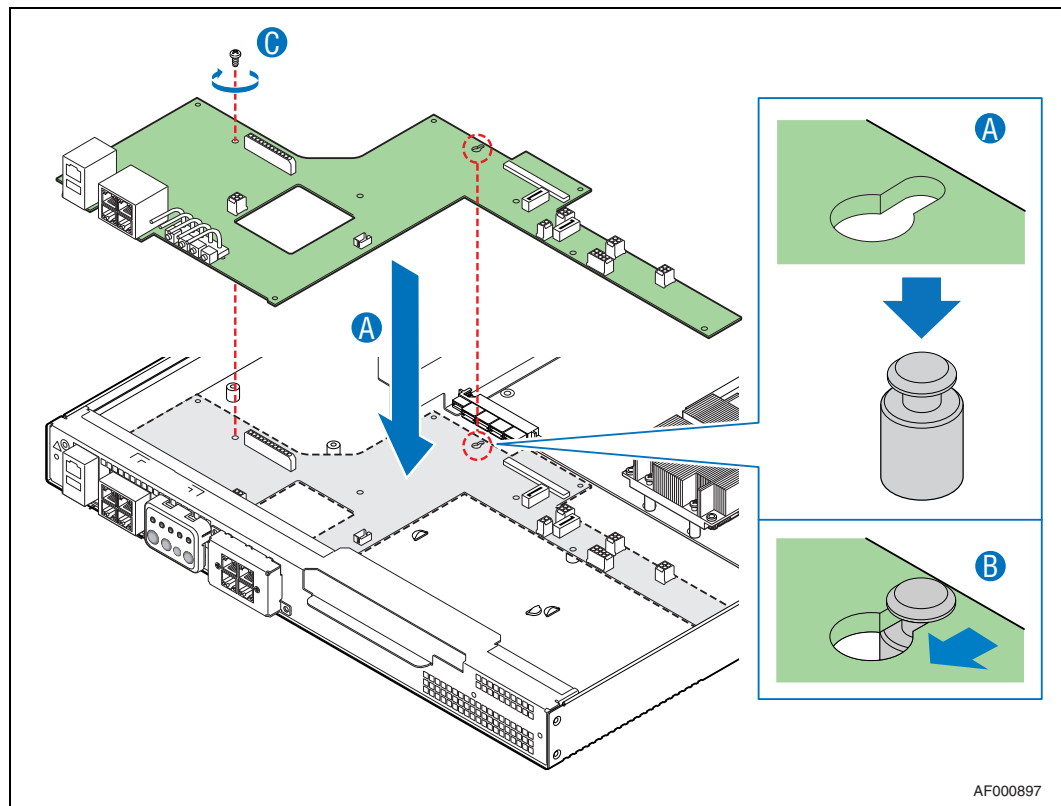
To replace the light pipes on the existing EFP board when you are not installing a replacement EFP board, you still need to follow the same procedures:

- [“Removing the Ethernet Front Panel \(EFP\) Board”](#)
 - [“Replacing the Light Pipes”](#) (the steps below)
 - [“Installing the EFP Board”](#)
1. Note the position of the light pipes so that you will be able to correctly position the assembly on the EFP board during the re-installation process. The pipes extend outward from the EFP board to the front panel control panel.
 2. Remove the light pipe assembly by gently pressing the four plastic clips from the underside of the EFP board until the bottom of the clips are flush with the bottom of the EFP board.
 3. Gently ease the light pipes from the EFP board.
 4. Insert the four plastic clips on the light pipe assembly or the replacement light pipes into the matching holes in the new EFP board. Insert the clips gently and evenly—do not insert one clip fully without first partially pressing the others into place.

5.3.3 Installing the EFP Board

1. Lower the replacement EFP board into the chassis.
2. While holding the rear edge of the board, ease the board forward, sliding the NIC connector (NSW1U-F and NSW1U-B) and USB port through the matching cutout at the front panel of the chassis.
3. Lower the rear of the board into position, fitting the board over the placement pegs. ([Figure 54, “A”](#))
4. Push the board forward, locking the board onto the placement pegs. (“B”)
5. Replace the screws you removed previously. (“C”)
6. Reinstall the PCI fan assembly. For instructions see [Section 5.2.4, “Installing the PCI Fan” on page 67](#).
7. Reinstall the eUSB SSD if you are using it. For instructions see [Section 4.7, “Installing a SMART Embedded USB Solid-State Drive” on page 61](#).
8. Reconnect all of the cables that were disconnected when removing the old EFP board:
 - All fan power cables (3 CPU/memory fans and PCI fan)
 - Flex cable
 - Optical device power cable
 - SATA hard drive connectors
 - eUSB solid-state drive cable, if installed
 - 4xGbE LAN card cables, if installed
 - Power interconnect to PDB
9. If this is the last task you are performing, replace the top cover of the chassis. Reconnect all the external devices and plug in the power cord(s).

Figure 54. Installing the EFP Board



5.4 Replacing the Power Distribution Board

The power distribution board routes power from the power supply to the rest of the server system. It also contains regulators and DC-to-DC converters to generate several supply voltages from the 12V that comes from the PSU. Use the following instructions to replace the PDB.

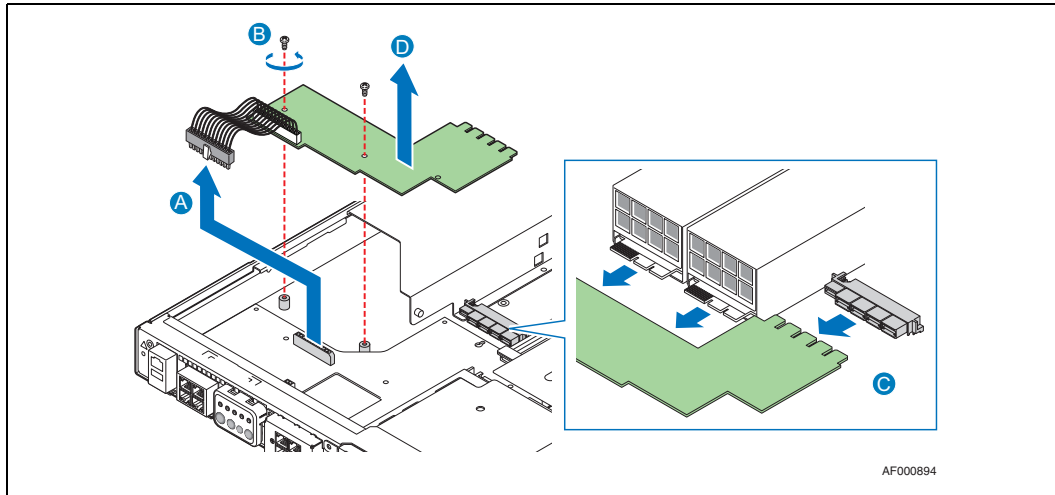
Caution: Before replacing any of the server components, you must first take the server out of service, turn off all peripheral devices connected to the system, turn off the system by pressing the power button, and unplug the power cord from the system or wall outlet.

5.4.1 Removing the Power Distribution Board

1. Power down the server system and unplug all peripheral devices and the power cord(s).
2. Remove the chassis cover. For instructions, see [Section 3.2.1, "Removing the Chassis Cover" on page 25](#).
3. Remove the processor air duct. For instructions, see [Section 3.2.5, "Removing the Processor Air Duct" on page 27](#).
4. Remove the PCI fan assembly. For instructions, see [Section 5.2.3, "Removing the PCI Fan" on page 67](#).
5. Remove the PCI riser card assembly and any add-in card cable connections to the front panel. For instructions, see [Section 4.4.1, "Removing the PCI Riser Card Assembly" on page 52](#).
6. Unscrew the fastening screws. ("A")

7. Disconnect the EFP power cable on the EFP board and gently pull the PDB away from the power supply connectors and the server board power connector. ("B")
8. Lift the power distribution board from the chassis ("C").

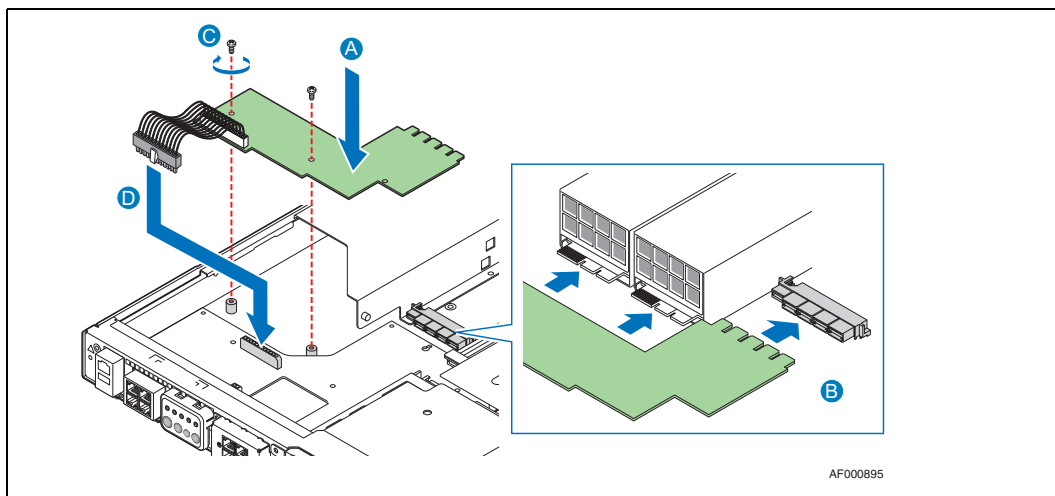
Figure 55. Removing the PDB



5.4.2 Installing the Power Distribution Board

1. Lower the replacement power distribution board (PDB) into place. ("A")
2. Connect the PDB to the server board power connector and the power supply module connectors. ("B")
3. Make sure that the PDB is placed over the placement pegs and gently push down. ("C")

Figure 56. Installing the PDB



4. Reconnect the EFP board power cable.
5. Re-install the PCI fan assembly and reconnect it.

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

5.5 Replacing the Server Board

The Kontron IP Network Server NSW1U uses the Intel® S5000PHB server board. To replace the server board, the following components must be removed before removing the board from the chassis:

- Cable connections on the server board
- Processor air duct
- PCI riser card assembly
- Remote Management Module 2, if installed

In addition, once the server board is removed from the chassis, the following components should be removed so they can be reused on the new server board if it hasn't already been configured:

- Heat sink
- Processor
- All DIMMs
- Battery

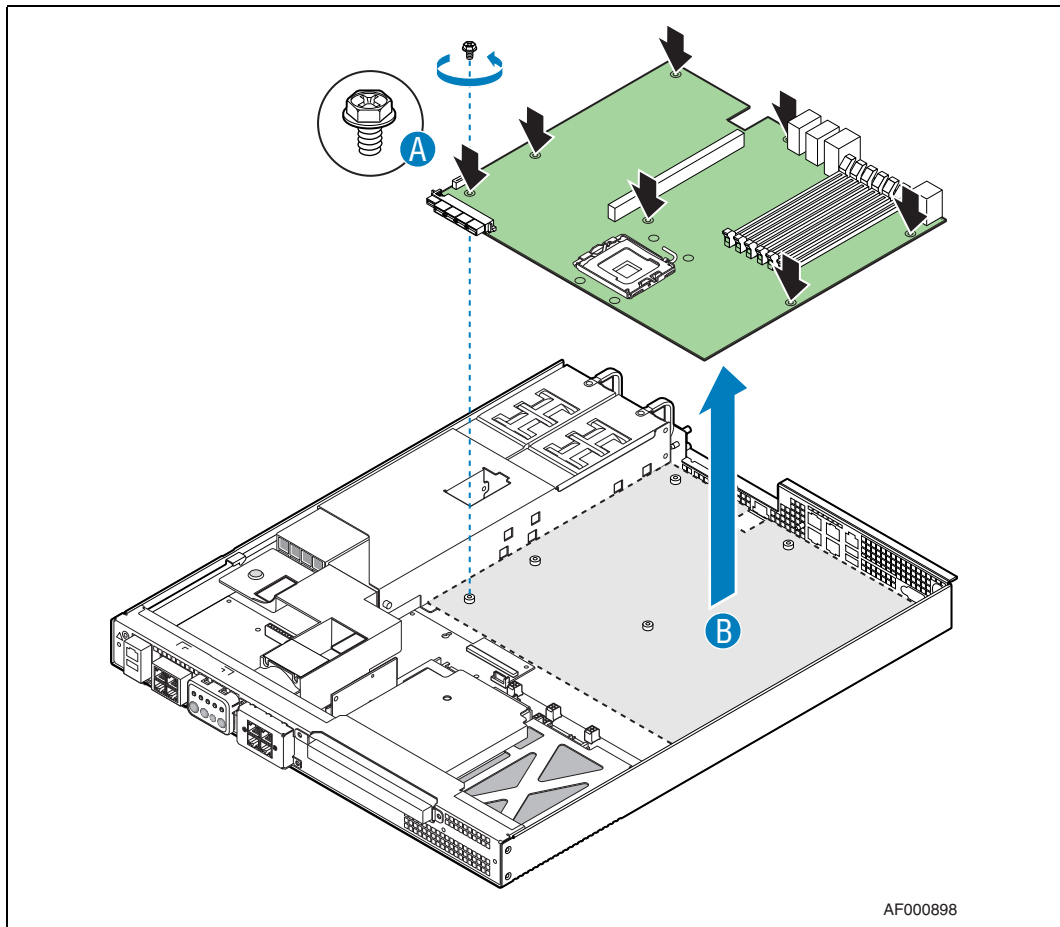
To replace the server board, use the following instructions.

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

5.5.1 Removing the Server Board

1. Power down the server system and unplug all peripheral devices and the power cable.
2. Remove the chassis cover. For instructions, see [Section 3.2.1, "Removing the Chassis Cover" on page 25](#).
3. Remove the PCI riser assembly. For instructions, see [Section 4.2.2, "Installing a Drive into the Drive Tray" on page 47](#)
4. Remove the processor air duct. For instructions, see [Section 3.2.5, "Removing the Processor Air Duct" on page 27](#).
5. Remove the power distribution board. For instructions, see [Section 5.4.1, "Removing the Power Distribution Board" on page 71](#).
6. Remove the Intel® Remote Management Module 2 if installed. For information, see [Section 4.5.2, "Installing the RMM2" on page 55](#).
7. Disconnect any cables from the server board.
8. Remove the seven screws that attach the server board to the chassis. ("A")
9. Tilt the server board and lift it from the chassis. Use caution in pulling it out from beneath the rear panel.

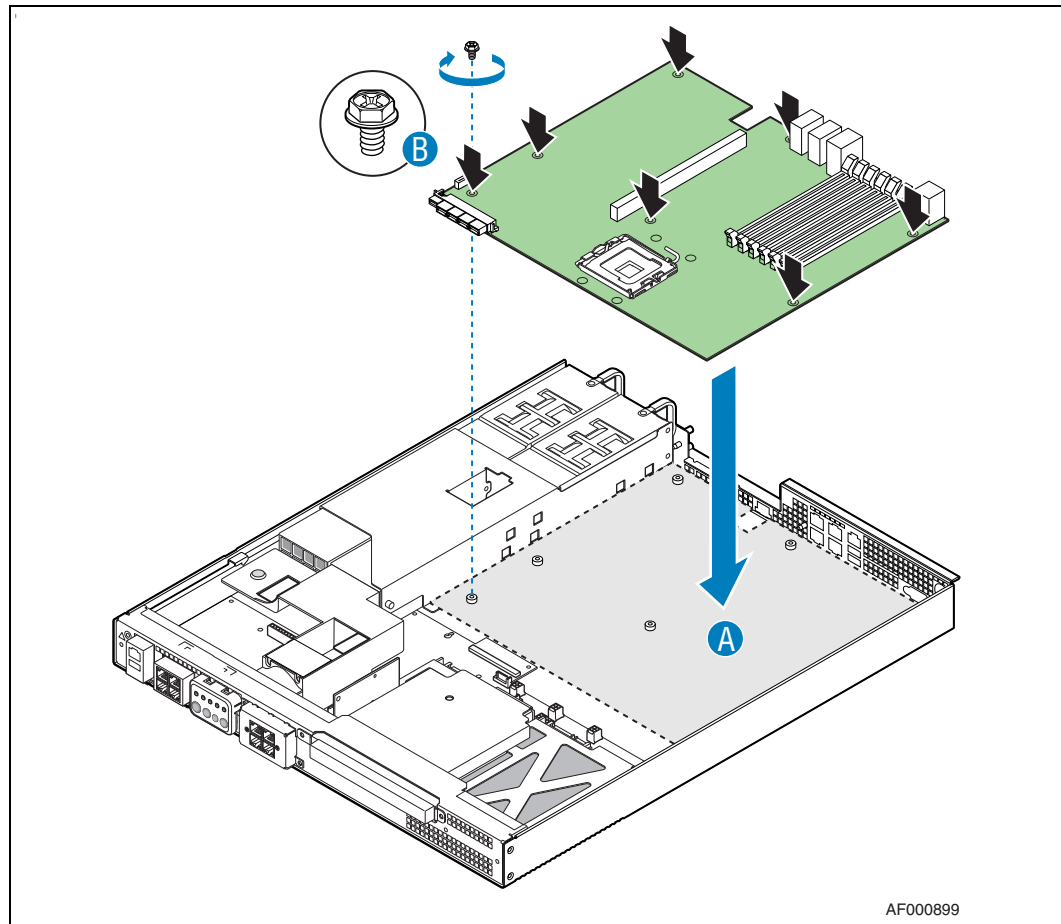
Figure 57. Removing the Server Board from the Chassis



5.5.2 Installing the Server Board

1. Set the replacement board into place ("B"). Insert the rear edge of the board first, and line up the I/O ports at the rear of the system.
2. Make sure the standoff locations line up correctly and reinsert the seven screws removed previously. ("A")

Figure 58. Installing the Server Board



3. Connect all cables to the server board.
4. Re-install the PDB. For instructions, see [Section 5.4.2, "Installing the Power Distribution Board" on page 72](#).
5. Re-install the battery and then the battery insulator that comes with the server board accessory/spare. For instructions, see [Section 5.6.1, "Installing the Battery Insulator" on page 78](#).
6. Install the PCI riser assembly. For instructions, see [Section 4.4.4, "Installing the Riser Card Assembly onto the Server Board" on page 54](#).
7. If this is the last task you are performing, replace the processor air duct and the top cover of the chassis. Reconnect all the external devices and plug in the power cord(s).

5.6 Replacing the CMOS Battery

The lithium battery on the server board powers the real-time clock (RTC) for up to 10 years in the absence of power. When the battery starts to weaken, it loses voltage, and the server settings (for example, the date and time) stored in CMOS RAM in the RTC may be lost or corrupted.

Contact your Kontron sales representative or dealer for a list of approved replacement batteries.

Caution: Before replacing the battery, you must first take the server out of service, turn off all peripheral devices connected to the system, turn off the system by pressing the power button, and unplug the power cord from the system or wall outlet.

WARNING

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

WARNING

Lithiumbatteri - Eksplosionsfare ved fejlagtig håndtering. Udskiftning må kun ske med batteri af samme fabrikat og type. Levér det brugte batteri tilbage til leverandøren.

ADVARSEL

Lithiumbatteri - Eksplosjonsfare. Ved utskifting benyttes kun batteri som anbefalt av apparatfabrikanten. Brukt batteri returneres apparatleverandøren.

WARNING

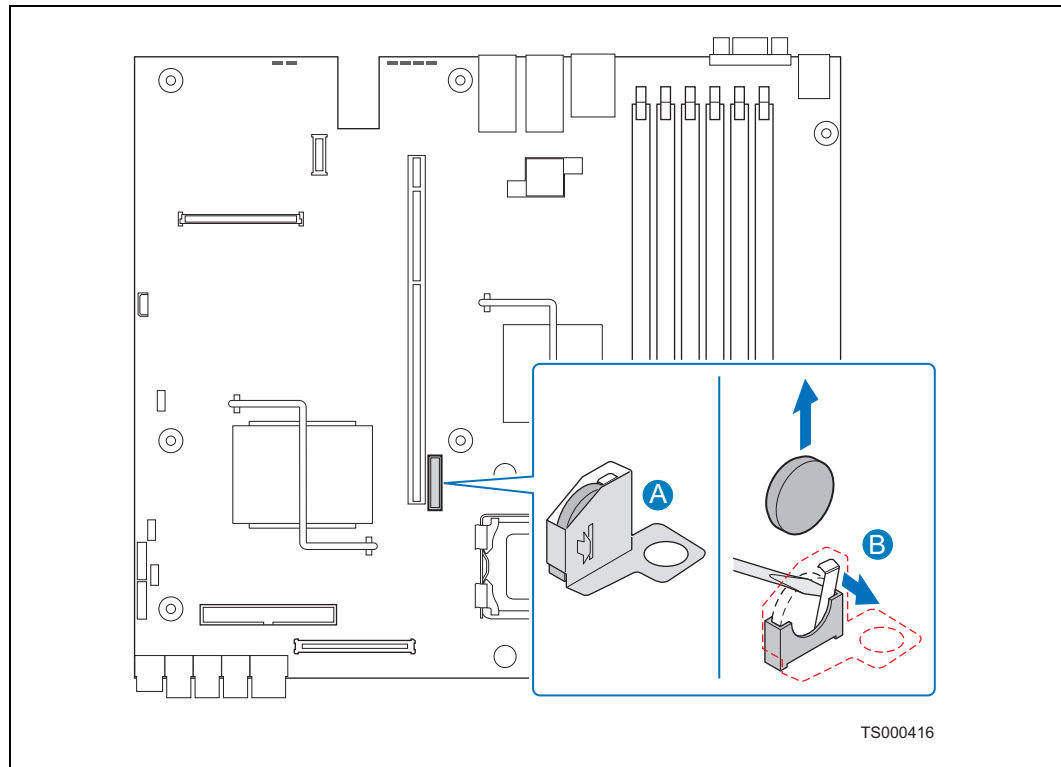
Explosionsfara vid felaktigt batteribyte. Använd samma batterityp eller en ekvivalent typ som rekommenderas av apparattillverkaren. Kassera använt batteri enligt fabrikantens instruktion.

VAROITUS

Paristo voi räjähtää, jos se on virheellisesti asennettu. Vaihda paristo ainoastaan laitevalmistajan suosittelemaan tyyppiin. Hävitä käytetty paristo valmistajan ohjeiden mukaisesti.

1. Power down the server system and unplug all peripheral devices and the power cords.
2. Remove the chassis cover. For instructions, see [Section 3.2.1, "Removing the Chassis Cover" on page 25](#).
3. Remove the processor air duct that covers the processor and cooling area behind the drive trays. For instructions, see [Section 3.2.5, "Removing the Processor Air Duct" on page 27](#).
4. Remove the riser card assembly. For instructions see [Section 4.4.1, "Removing the PCI Riser Card Assembly" on page 52](#).
5. Locate the battery. (See [Figure 59](#).)
6. Insert the tip of a small flat bladed screwdriver, or an equivalent, under the tab in the plastic retainer. Gently push down on the screwdriver to lift the battery.
7. Remove the battery from its socket.

Figure 59. Replacing the Battery



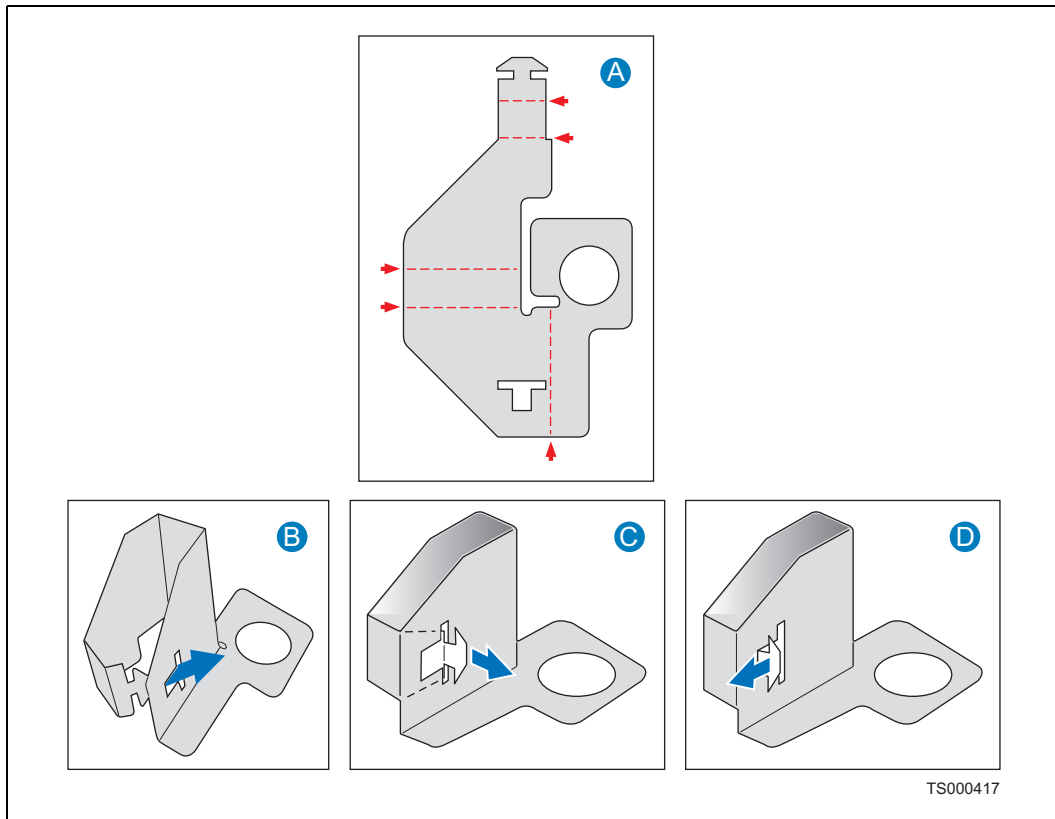
8. Dispose of the battery according to local ordinance.
9. Remove the new lithium battery from its package, and, being careful to observe the correct polarity, insert it in the battery socket.

5.6.1 Installing the Battery Insulator

If you are installing the battery on a new server board or replacing it on a server board that does not have the protective insulator surrounding the battery, use the following procedure to install the insulator.

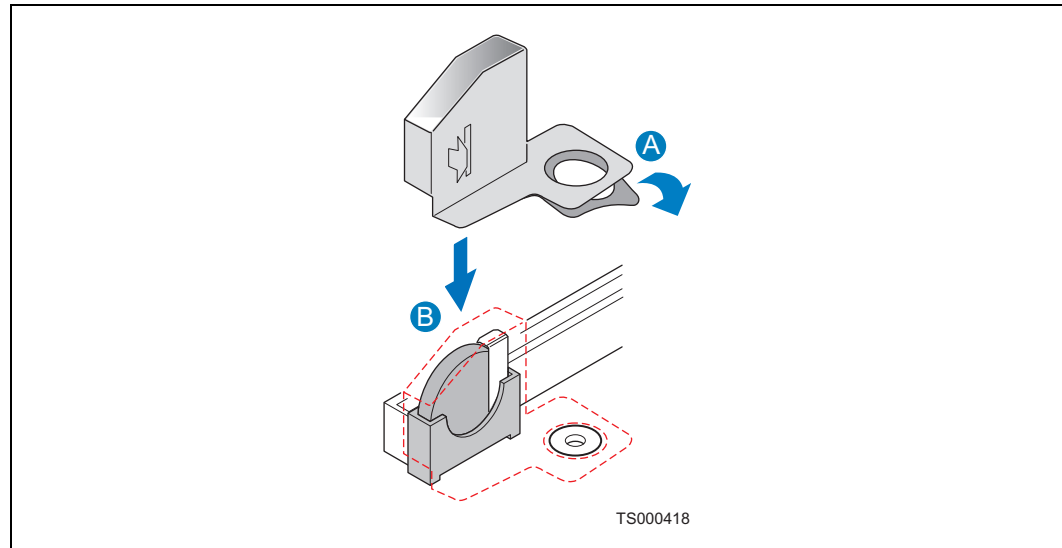
1. Fold the battery insulator along the scored bend lines as shown in [Figure 60](#) and insert the tab in the slot to fasten the insulator.

Figure 60. Folding the Battery Insulator



2. Remove the adhesive cover from the bottom of the insulator.
Place the insulator around the battery, lining up the hole with the riser card assembly hole. See [Figure 61](#).

Figure 61. Attaching the Battery Insulator



5.6.2 Running Setup

3. If this is the last task you are performing, replace the riser card assembly, the processor air duct and the top cover of the chassis. Reconnect all the external devices and plug in the power cord(s).
4. Run Setup to restore the configuration settings to the RTC. For more information, see [Section 6.1, "Using the BIOS Setup Utility" on page 80](#).

6 Server Utilities

6.1 Using the BIOS Setup Utility

This section describes the BIOS Setup Utility options, which is used to change configuration defaults for the Kontron IP Network Server NSW1U. You can run BIOS Setup with or without an operating system being present. See the *Kontron IP Network Server NSW1U Technical Product Specification* for details about specific BIOS setup screens.

6.1.1 Starting Setup

You can enter and start BIOS Setup under several conditions:

- When you turn on the server, after POST completes the memory test
- When you have moved the CMOS jumper on the server board to the “Clear CMOS” position (enabled)

In the two conditions listed above, during the Power On Self Test (POST), you will see the prompt
Press <F2> to enter SETUP

In a third condition, when CMOS/NVRAM has been corrupted, you will see other prompts but not the <F2> prompt:

```
Warning: CMOS checksum invalid
Warning: CMOS time and date not set
```

In this condition, the BIOS will load default values for CMOS and attempt to boot.

6.1.2 If You Cannot Access Setup

If you are not able to access BIOS Setup, you might need to clear the CMOS memory. For instructions on clearing the CMOS, see [Section 6.3, “Clearing the CMOS” on page 82](#).

6.1.3 Setup Menus

Each BIOS Setup menu page contains a number of features. Except for those features that are provided only to display automatically configured information, each feature is associated with a value field that contains user-selectable parameters. These parameters can be changed if the user has adequate security rights. If a value cannot be changed for any reason, the feature's value field is inaccessible.

[Table 7](#) describes the keyboard commands you can use in the BIOS Setup menus.

Table 7. 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.
↑	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 will undo the pick list, and allow another selection in the parent menu.
<Esc>	Exit - The ESC key provides a mechanism for backing out of any field. This key will undo the pressing of the Enter key. When the ESC key is pressed while editing any field or selecting features of a menu, 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 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, the user is returned to where they 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, the user is returned to where they were before F10 was pressed without affecting any existing values.

6.2 Updating the BIOS

The update utility allows you to update the BIOS in flash memory. The code and data in the update 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
- A means to change the BIOS language

6.2.1 Preparing for the Update

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

6.2.1.1 Recording the Current BIOS Settings

1. Boot the computer and press <F2> when you see the message:
Press <F2> Key if you want to run SETUP
2. Write down the current settings in the BIOS Setup program.

Note: Do not skip step 2. You will need these settings to configure your computer at the end of the procedure.

6.2.1.2 Obtaining the Update

Download the BIOS image file to a temporary folder on your hard drive. See [Section 1.4, “Additional Information and Software”](#) for additional information.

Note: Review the instructions and release notes that are provided in the readme file distributed with the BIOS image file before attempting a BIOS update. The release notes contain critical information regarding jumper settings, specific fixes, or other information to complete the update.

6.2.2 Updating the BIOS

Follow the instructions in the readme file that came with the BIOS update. When the update completes, remove the bootable media from which you performed the update.

Note: Do not power down the system during the BIOS update process! The system will reset automatically when the BIOS update process is completed.

Note: You may encounter a CMOS Checksum error or other problem after reboot. If this happens, shut down the system and boot it again. CMOS checksum errors require that you enter Setup, check your settings, save your settings, and exit Setup.

6.3 Clearing the CMOS

If you are not able to access the BIOS setup screens, the CMOS Clear jumper will need to be used to reset the configuration RAM. The CMOS clear jumper (J1F1) is shown in [Figure 10 on page 21](#).

1. Power down the system and disconnect the power cord.
2. Open the server. See [Section 3.2.1, “Removing the Chassis Cover” on page 25](#) for instructions.
3. Move jumper (J1F1) from the normal operation position, CMOS Clear by BMC, at pins 1 and 2 to the CMOS Clear Force Erase position, covering pins 2 and 3.
4. Wait five seconds.
5. Move the jumper (J1F1) back to the default position (pins 1-2).
6. Close the server chassis. See [Section 3.2.2, “Installing the Chassis Cover” on page 26](#) for instructions.
7. Reconnect the power and restart the system.

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

6.4 Clearing the Password

If the user or administrator password(s) is lost or forgotten, moving the password clear jumper into the “clear” position clears both passwords. The password clear jumper must be restored to its original position before a new password(s) can be set. The password clear jumper (J1H2) is shown in [Figure 10 on page 21](#).

1. Power down the system and disconnect the power cord.
2. Open the server chassis. See [Section 3.2.1, “Removing the Chassis Cover” on page 25](#) for instructions.
3. Move the jumper (J1H2) from the normal operation position, Password Clear Protect, at pins 1 and 2 to the Password Clear Erase position, covering pins 2 and 3.
4. Wait 5 seconds.
5. Return the Password Clear jumper (J1H2) to the normal operational position, covering pins 1 and 2.
6. Close the server chassis. See [Section 3.2.2, “Installing the Chassis Cover” on page 26](#) for instructions.
7. Reconnect the power and restart the system.

6.5 BMC Force Update Procedure

When performing a standard BMC firmware update procedure, the update utility places the BMC into an update mode to allow the firmware to load safely onto the flash device. In the unlikely event that the BMC firmware update process fails because the BMC is not in the proper update state, the server board provides a BMC Force Update jumper that can force the BMC into the proper update state. Use the following procedure if the standard BMC firmware update process fails.

1. Power down and remove AC Power.
2. Open the server chassis. Open the server. See [Section 3.2.1, “Removing the Chassis Cover” on page 25](#) for instructions.
3. Put a jumper on the J1E3 header.
4. Close the server chassis.
5. Reconnect the power and restart the system.
6. Perform the standard BMC firmware update procedure as documented in the README.TXT file included in the BMC Firmware Update package.
7. When the update has finished, power down the system and remove the power cord.
8. Open the server chassis (remove the top cover).
9. Remove the jumper from J1E3.
10. Close the server chassis.
11. Reconnect the power and restart the system.

Note: Normal BMC functionality is disabled when the Force BMC Update jumper is populated. The server should never be run with the BMC Force Update jumper populated and should only be used when the standard firmware update process fails. This header should remain unpopulated when the server is running normally.

7 Troubleshooting

This chapter helps you identify and solve problems that might occur while you are using the Kontron IP Network Server NSW1U.

For any issue, first ensure you are using the latest firmware and files. Firmware updates include updates for BIOS and the baseboard management controller (BMC). Go to <http://us.Kontron.com/support/> 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 SCSI drivers.

Kontron provides a package called the “Platform Confidence Test” that may help with your diagnostics. For a link to this software, go to <http://us.kontron.com/products/systems+and+platforms/communication+rackmount+servers/ip+network+servers/ip+network+server+nsw1u.html>. Click on Downloads, then Tools, and then PCT.

If you are unable to resolve your server problems on your own, see [Appendix C, “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 off/on

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 [Section 7.4.10, “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.
- For AC systems, is the power cord properly connected to the system and plugged into a NEMA (National Electrical Manufacturing Association) 5-15R outlet for 100-120 V or a NEMA 6-15R outlet for 200-240 V?
- 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?
- If an add-in PCI board is used, is it fully seated in the riser card and is the riser card fully seated on the server board?
- 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.
- Are all peripheral devices installed correctly?
- If the system has a hard disk drive, is it 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/support/> 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 to correct the problem.

7.3.2 Confirming Loading of the Operating System

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 [Section 7.4.2, "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 C, "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?
- 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 any add-in card and see if the video returns.
- 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.

If you are using an add-in video controller board, do the following:

1. Verify that the video works using the onboard video controller.
2. Verify that the video controller board is fully seated in the server board connector.
3. Reboot the system for changes to take effect.
4. If there are still no characters on the screen after you reboot the system and POST emits a beep code, write down the beep code you hear. This information is useful for your service representative.

5. If you do not receive a beep code and characters do not appear, the video display monitor or video controller may have failed. Contact your service representative or authorized dealer for help.

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 your fans speeded up in response to an overheating situation?
- Have your fans speeded up in response to a fan that has failed?
- Are the fan power connectors properly connected to the front panel 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 server 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 cables are securely attached to the correct connectors at the system front or back panel.
- Try different network cables.
- Make sure you are using the correct and the current drivers. Go to <http://us.kontron.com/support/> 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.
- Check the network controller LEDs next to the NIC connectors for activity.

7.4.6 Diagnostics Pass but Connection(s) Fail

- Make sure the network cables are securely attached.
- Make sure your network settings are correct.

7.4.7 The 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/support/> for a link to the current version.
- ❑ Make sure the other adapter supports shared interrupts. Make sure your operating system supports shared interrupts.
- ❑ Try reseating the add-in adapter.

7.4.8 The Add-in Adapter Stopped Working Without Apparent Cause

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

7.4.9 System Boots when Installing 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* Operating System)

The Windows* operating systems do not include all of the drivers for the Intel® chipsets, onboard NICs, and other components. See Go to <http://us.kontron.com/support/> 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 connected correctly and that it is plugged into the power supply.
- ❑ Make sure the drive is compatible. Go to <http://us.kontron.com/support/> 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/support/> for a link to software to check your power budget.

7.5 LED Information

The Intel® Server Board S5000PHB server board includes LEDs that can aid in troubleshooting your system. A table of these LEDs with a description of their use is listed below.

Table 8. LED Definitions

LED Name	Function	Location	Color	Notes
ID	Aid in server identification from the back panel	Control panel and board rear left corner	Blue	Press ID LED button or user Server Management software to turn on the LED.
System fault	Visible fault warning	Control panel and board rear left corner	Green or Amber	Green = No Fault Green blinking = degraded Amber = critical error or non-recoverable Amber blinking = non-critical error
SATA drive activity	Control panel	Control panel	Green	Blinking = Activity. No action required.
Memory fault 1-6	Identify failing memory module	DIMM end rear of board	Amber	On = Fault
Diagnostic LEDs. 1-4 (LSB, bit1, bit2, MSB)	Displays port 80 POST codes	Center back edge of board	Each LED can be Off, Green, Amber, Red	See the POST code table
CPU Fan Fault	Identify fan failure	EFP board by the fan power connector	Amber	On = Fault

Table 8. LED Definitions

LED Name	Function	Location	Color	Notes
CPU Fault	Identify processor failure	front center of server board (DS4J1)	Amber	On = Fault
5v Standby	Identify 5v standby power on state	Front left board	Amber	On = 5v standby power on
Power LED	Identify the power state of the system	Control Panel	Green	Off = Power is off (off or S5) On = Power on or S0) Slow Blink = Low power state (S1 – S3)

7.6 BIOS Error Messages

When a recoverable error occurs during the POST, the BIOS displays an error message describing the problem.

Table 9. BIOS Error Messages (Sheet 1 of 2)

Error Message	Explanation
GA20 Error	An error occurred with Gate A20 when switching to protected mode during the memory test.
Pri Master HDD Error Pri Slave HDD Error Sec Master HDD Error Sec Slave HDD Error	Could not read sector from corresponding drive.
Pri Master Drive - ATAPI Incompatible Pri Slave Drive - ATAPI Incompatible Sec Master Drive - ATAPI Incompatible Sec Slave Drive - ATAPI Incompatible	Corresponding drive is not an ATAPI (Advanced Technology Attachment Packet Interface) device. Run Setup to make sure device is selected correctly.
A: Drive Error	No response from diskette drive.
CMOS Battery Low	The battery may be losing power. Replace the battery soon.
CMOS Display Type Wrong	The display type is different from what has been stored in CMOS. Check Setup to make sure type is correct.
CMOS Checksum Bad	The CMOS checksum is incorrect. CMOS memory may have been corrupted. Run Setup to reset values.
CMOS Settings Wrong	CMOS values are not the same as the last boot. Either these values have been corrupted or the battery has failed.
CMOS Date/Time Not Set	The time and/or date values stored in CMOS are invalid. Run Setup to set correct values.
DMA Error	Error during read/write test of DMA (Direct Memory Access) controller.
FDC Failure	Error occurred trying to access diskette drive controller.
HDC Failure	Error occurred trying to access hard disk controller.
Checking NVRAM.....	NVRAM (Non-Volatile Random Access Memory) is being checked to see if it is valid.
Update OK!	NVRAM was invalid and has been updated.
Updated Failed	NVRAM was invalid but was unable to be updated.
Keyboard Error	Error in the keyboard connection. Make sure keyboard is connected properly.
KB/Interface Error	Keyboard interface test failed.

Table 9. BIOS Error Messages (Sheet 2 of 2)

Error Message	Explanation
Memory Size Decreased	Memory size has decreased since the last boot. If no memory was removed, then memory may be bad.
Memory Size Increased	Memory size has increased since the last boot. If no memory was added, there may be a problem with the system.
Memory Size Changed	Memory size has changed since the last boot. If no memory was added or removed, then memory may be bad.
No Boot Device Available	System did not find a device to boot.
Off Board Parity Error	A parity error occurred on an off-board card. This error is followed by an address.
On Board Parity Error	A parity error occurred in onboard memory. This error is followed by an address.
Parity Error	A parity error occurred in onboard memory at an unknown address.
NVRAM / CMOS / PASSWORD cleared by Jumper	NVRAM, CMOS, and passwords have been cleared. The system should be powered down and the jumper removed.
<CTRL_N> Pressed	CMOS is ignored and NVRAM is cleared. User must enter Setup.

7.6.1 BIOS POST Beep Codes

The table below 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

Number of Beeps	Reason for the beeps and action to take
1, 2, or 3	Memory error. Reseat the memory or replace the DIMMs with known good modules.
4 - 7 or 9 - 11	Fatal error indicating a possible serious system problem. Remove all add-in cards and re-start the system. If the error still occurs, contact your system manufacturer. If the beep codes are not generated after the add-in cards are removed, insert the cards one at a time, booting the system between each card addition, until the beeps again occur to reveal the malfunctioning card.
8	Replace or reseat the system video add-in card. If on-board video is being used, the server board may be faulty.
6	BIOS rolling back error; The system has detected a corrupted BIOS in the flash part, and is rolling back to the last good BIOS.

Table 11. BMC Beep Codes

Beep Code	Reason for the beeps and action to take
1	Control panel CMOS clear has been initiated.
1-5-1-1	Processor failure. Reseat or replace the failed processor.
1-5-2-1	No processor is installed or the CPU 1 socket is empty. Reseat or replace the failed processor.
1-5-2-3	Processor configuration error or CPU 1 socket is empty. Reseat or replace the failed processor. In a two-processor system, make sure the processors are identical.
1-5-2-4	Front-side bus select configuration error.

Table 11. BMC Beep Codes

Beep Code	Reason for the beeps and action to take
1-5-4-2	DC power unexpectedly lost.
1-5-4-3	Chipset control failure.
1-5-4-4	Power control failure.

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.

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 noncompliance with product regulations in the region(s) in which the product is sold.

A.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.

A.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.

A.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 are responsible for installing 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 into a 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 20 Amperes of overcurrent protection per cord feed. If the power system for the equipment rack is installed on a branch circuit with more than 20 Amperes of protection, you must provide supplemental protection for the server. The overall current rating of a configured server is less than 6 amperes.

Warning: Do not attempt to modify or use an AC power cordset that is not the exact type required. You must use a power cordset 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 (Verband Deutscher Elektrotechniker, German Institute of Electrical Engineers) certified cord with 3 x 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 125% of 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.

A.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 110-271 of the National Electric Code, ANSI/NFPA 70. The DC source must be electrically isolated by double or reinforced insulation from any hazardous AC source. The DC source must be capable of providing up to 7 Watts of continuous power per feed pair.

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 10 Amps.

Grounding the server: 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 14 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 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.

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 75Vdc, 10 A maximum per feed pair. If the DC power system for the equipment rack is installed with more than 10 amperes of protection, you must provide supplemental protection for the server. The overall current rating of a server configured is 7 amperes.

A.2.3 Temperature and Ventilation

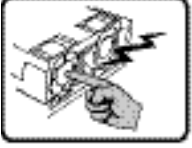
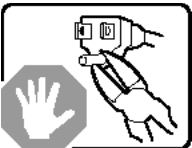


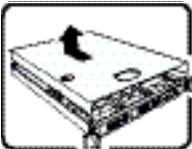
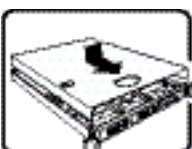
Caution: Temperature: The temperature, in which the server operates when installed in an equipment rack, must not go below 5° C (41° F) or rise above 35° C (95° F). Extreme fluctuations in temperature can cause a variety of problems in your server.

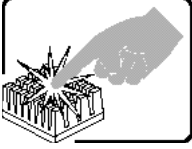
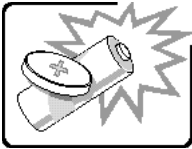
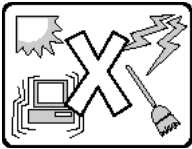
Caution: Ventilation: The equipment rack must provide sufficient airflow to the front of the server to maintain proper cooling. The rack must also include ventilation sufficient to exhaust a maximum of 1023 BTUs (British Thermal Units) per hour for the server. The

rack selected and the ventilation provided must be suitable to the environment in which the server will be used.

A.3 Safety Cautions

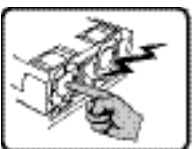
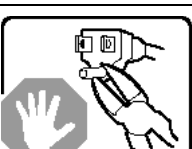

Read all caution and safety statements in this document before performing any of the instructions. See also Server Boards and Server Chassis Safety Information provided on the CD and at <http://us.kontron.com/support/>


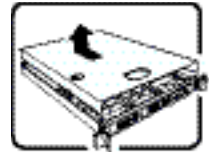
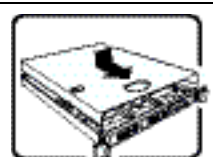
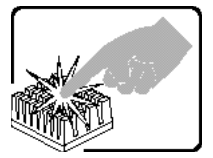
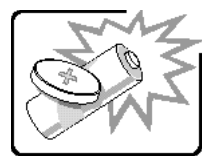
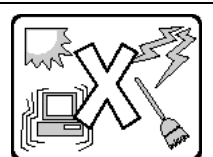
	<p>The power supply in this product contains no user-serviceable parts. There may be more than one supply in this product. Refer servicing only to qualified personnel.</p>
	<p>Do not attempt to modify or use the supplied AC power cord if it is not the exact type required. A product with more than one 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. 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. 6.
	<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.

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

Wichtige Sicherheitshinweise

Lesen Sie zunächst sämtliche Warn- und Sicherheitshinweise in diesem Dokument, bevor Sie eine der Anweisungen ausführen. Beachten Sie hierzu auch die Sicherheitshinweise zu Kontron-Serverplatinen und -Servergehäusen unter <http://us.kontron.com/support/>

	<p>Benutzer können am Netzgerät dieses Produkts keine Reparaturen vornehmen. Das Produkt enthält möglicherweise mehrere Netzgeräte. Wartungsarbeiten müssen von qualifizierten Technikern ausgeführt werden.</p>
	<p>Versuchen Sie nicht, das mitgelieferte Netzkabel zu ändern oder zu verwenden, wenn es sich nicht genau um den erforderlichen Typ handelt. Ein Produkt mit mehreren Netzgeräten hat für jedes Netzgerät ein eigenes Netzkabel.</p>
	<p>Der Wechselstrom des Systems wird durch den Ein-/Aus-Schalter für Gleichstrom nicht ausgeschaltet. Ziehen Sie jedes Wechselstrom-Netzkabel aus der Steckdose bzw. dem Netzgerät, um den Stromanschluß des Systems zu unterbrechen.</p>

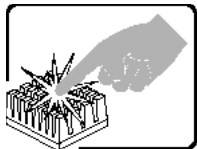
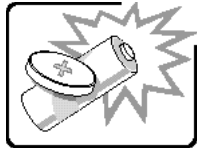
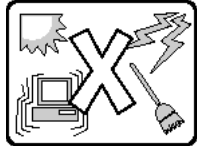
	<p>SICHERHEISSMASSNAHMEN: Immer wenn Sie die Gehäuseabdeckung abnehmen um an das Systeminnere zu gelangen, sollten Sie folgende Schritte beachten:</p> <ol style="list-style-type: none"> 1. Schalten Sie alle an Ihr System angeschlossenen Peripheriegeräte aus. 2. Schalten Sie das System mit dem Hauptschalter aus. 3. Ziehen Sie den Stromanschlußstecker Ihres Systems aus der Steckdose. 4. Auf der Rückseite des Systems beschrifteten und ziehen Sie alle Anschlußkabel von den I/O Anschlüssen oder Ports ab. 5. Tragen Sie ein geerdetes Antistatik Gelenkband, um elektrostatische Ladungen (ESD) über blanke Metallstellen bei der Handhabung der Komponenten zu vermeiden. 6. Schalten Sie das System niemals ohne ordnungsgemäß montiertes Gehäuse ein.
	<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; • 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.

Consignes de sécurité

Lisez attention toutes les consignes de sécurité et les mises en garde indiquées dans ce document avant de suivre toute instruction. Consultez Server Boards and Server Chassis Safety Information sur le site

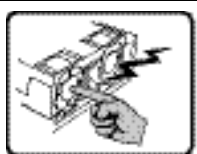
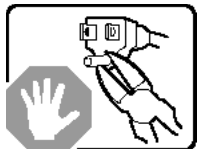

<http://us.kontron.com/support/>

	<p>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.</p>
	<p>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.</p>
	<p>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>
	<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 au système.

	<p>Le microprocesseur et le dissipateur de chaleur peuvent être chauds si le système a été sous tension. Faites également attention aux broches aiguës des cartes et aux bords tranchants du capot. Nous vous recommandons l'usage de gants de protection.</p>
	<p>Danger d'explosion si la batterie n'est pas remontée correctement. Remplacer uniquement avec une batterie du même type ou d'un type équivalent recommandé par le fabricant. Disposez des piles usées selon les instructions du fabricant.</p>
	<p>Le système a été conçu pour fonctionner dans un cadre de travail normal. L'emplacement choisi doit être:</p> <ul style="list-style-type: none"> • Propre et dépourvu de poussière en suspension (sauf la poussière normale). • Bien aéré et loin des sources de chaleur, y compris du soleil direct. • A l'abri des chocs et des sources de vibrations. • Isolé de forts champs électromagnétiques géénérés 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).

Instrucciones de seguridad importantes

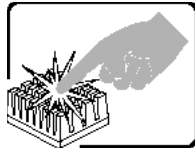
Lea todas las declaraciones de seguridad y precaución de este documento antes de realizar cualquiera de las instrucciones. Vea Server Boards and Server Chassis Safety Information en <http://us.kontron.com/support/>

	<p>El usuario debe abstenerse de manipular los componentes de la fuente de alimentación de este producto, cuya reparación debe dejarse exclusivamente en manos de personal técnico especializado. Puede que este producto disponga de más de una fuente de alimentación.</p>
	<p>No intente modificar ni usar el cable de alimentación de corriente alterna, si no corresponde exactamente con el tipo requerido. El número de cables suministrados se corresponden con el número de fuentes de alimentación de corriente alterna que tenga el producto.</p>
	<p>Nótese que el interruptor activado/desactivado en el panel frontal no desconecta la corriente alterna del sistema. Para desconectarla, deberá desenchufar todos los cables de corriente alterna de la pared o desconectar la fuente de alimentación.</p>

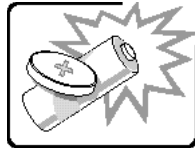
	<p>INSTRUCCIONES DE SEGURIDAD: Cuando extraiga la tapa del chasis para acceder al interior del sistema, siga las siguientes instrucciones:</p> <ol style="list-style-type: none"> 1. Apague todos los dispositivos periféricos conectados al sistema. 2. Apague el sistema presionando el interruptor encendido/apagado. 3. Desconecte todos los cables de alimentación CA del sistema o de las tomas de corriente alterna. 4. Identifique y desconecte todos los cables enchufados a los conectores E/S o a los puertos situados en la parte posterior del sistema. 5. Cuando manipule los componentes, es importante protegerse contra la descarga electrostática (ESD). Puede hacerlo si utiliza una muñequera antiestática sujeta a la toma de tierra del chasis - o a cualquier tipo de superficie de metal sin pintar. 6. No ponga en marcha el sistema si se han extraído las tapas del chasis.
	<p>Después de completar las seis instrucciones de SEGURIDAD mencionadas, ya puede extraer las tapas del sistema. Para ello:</p> <ol style="list-style-type: none"> 1. Desbloquee y extraiga el bloqueo de seguridad de la parte posterior del sistema, si se ha instalado uno. 2. Extraiga y guarde todos los tornillos de las tapas. 3. Extraiga las tapas.
	<p>Para obtener un enfriamiento y un flujo de aire adecuados, reinstale siempre las tapas del chasis antes de poner en marcha el sistema. Si pone en funcionamiento el sistema sin las tapas bien colocadas puede dañar los componentes del sistema. Para instalar las tapas:</p> <ol style="list-style-type: none"> 1. Asegúrese primero de no haber dejado herramientas o componentes sueltos dentro del sistema. 2. Compruebe que los cables, las placas adicionales y otros componentes se hayan instalado correctamente. 3. Incorpore las tapas al chasis mediante los tornillos extraídos anteriormente, tensándolos firmemente. 4. Inserte el bloqueo de seguridad en el sistema y bloquéelo para impedir que pueda accederse al mismo sin autorización. 5. Conecte todos los cables externos y los cables de alimentación CA al sistema.
	<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

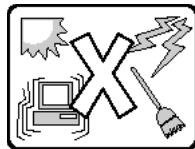
	<p>Rivolgersi ad un tecnico specializzato per la riparazione dei componenti dell'alimentazione di questo prodotto. È possibile che il prodotto disponga di più fonti di alimentazione.</p>
	<p>Non modificare o utilizzare il cavo di alimentazione in c.a. fornito dal produttore, se non corrisponde esattamente al tipo richiesto. Ad ogni fonte di alimentazione corrisponde un cavo di alimentazione in c.a. separato.</p>
	<p>L'interruttore attivato/disattivato nel pannello anteriore non interrompe l'alimentazione in c.a. del sistema. Per interromperla, è necessario scollegare tutti i cavi di alimentazione in c.a. dalle prese a muro o dall'alimentazione di corrente.</p>
	<p>PASSI DI SICUREZZA: Qualora si rimuovano le coperture del telaio per accedere all'interno del sistema, seguire i seguenti passi:</p> <ol style="list-style-type: none"> 1. Spegner tutti i dispositivi periferici collegati al sistema. 2. Spegner il sistema, usando il pulsante spento/acceso 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 componenti 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 avvitarle 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.



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.



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.



Il sistema è progettato per funzionare in un ambiente di lavoro tipo. Scegliere una postazione che sia:

- 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.
- 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.

Appendix B: Regulatory and Certification Information

B.1 Product Regulatory Compliance

B.1.1 Product Safety Compliance

The IP network 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)

B.1.2 Product EMC Compliance - Class A Compliance

The IP network 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)
- RRL Approval (Korea)
- CCC Certification (China)

B.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)
- RRL Certification (Korea)
- CNCA Certification (China)
- Ecology Declaration (International)




B.1.4 Product Regulatory Compliance Markings

This product is marked with the following Product Certification Markings:

Table 12. Product Certification Markings

Regulatory Compliance	Country	Marking
cULus Listing Marks	USA/Canada	
GS Mark	Germany	
CE Mark	Europe	
FCC Marking (Class A)	USA	This device complies with Part 15 of the FCC Rules. Operation of this device 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. Manufactured by Intel Corporation
EMC Marking (Class A)	Canada	CANADA ICES-003 CLASS A CANADA NMB-003 CLASSE A
VCCI Marking (Class A)	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
BSMI Certification Number & Class A Warning	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

Table 12. Product Certification Markings

GOST R Marking	Russia	
RRL MIC Mark	Korea	
China Compulsory Certification Mark	China	

B.2 Electromagnetic Compatibility Notices

B.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 your local Kontron sales representative.

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.

B.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 Canadian 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.

B.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 (89/336/EEC). The product has been marked with the CE Mark to illustrate its compliance.

B.2.4 VCCI (Japan)

この装置は、情報処理装置等電波障害自主規制協議会（VCCI）の基準に基づくクラス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。

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.

B.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.

B.2.6 Korean RRL Compliance



1. 기기의 명칭(모델명) :
2. 인증번호 :
3. 인증받은 자의 상호 :
4. 제조년월일 :
5. 제조자/제조국가 :

English translation of the notice above:

1. Type of Equipment (Model Name): On License and Product
2. Certification No.: On RRL certificate. Obtain certificate from local representative
3. Name of Certification Recipient: Intel Corporation
4. Date of Manufacturer: Refer to date code on product
5. Manufacturer/Nation: Intel Corporation/Refer to country of origin marked on product

B.2.7 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.

Appendix C: Getting Help

C.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/](http://us.kontron.com/support/) for the latest product documentation, utilities, drivers and support contacts or to obtain an RMA/return form.

C.2 Telephone

(800) 480-0044

C.3 Email

support@us.kontron.com

