Intel® Server Chassis SR2300 Subassembly Product Guide

A Guide for Technically Qualified Assemblers of Intel® Identified Subassemblies/Products

Order Number: A86100-003

Important Safety Instructions

Read all caution and safety statements in this document before performing any of the instructions. See also *Intel Server Boards and Server Chassis Safety Information* on the Resource CD and/or at http:\\support.intel.com.

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1 Chassis Description

Your Intel® Server Chassis SR2300 kit is designed to support the Intel® Server Board SE7500WV2 or SE7501WV2. The fan module and riser cards are installed for shipment, but you must remove and reinstall them when you install the server board.

What Your Kit Includes

Your kit includes the following components:

- 2U rack-mount chassis featuring:
  - Four hard drive bays with carriers and two bays with plugs
  - Two hard drive bay plugs
  - One bay for an optional DVD/CD-ROM drive/FDD module (comes with filler panel and plug)
  - One bay for optional tape drive (comes with carrier and filler panel)
- One 480 W SSI PFC non-redundant power supply or a 500 W 1+0 SSI PFC redundant power supply with one module and one blank
- Two PCI riser cards for use with the Intel Server Board SE7500WV2 or SE7501WV2
- Three system fans
- One internal USB cable, (connecting server board to front panel board)
- One internal flex circuit cable, 100-pin (connecting server board to backplane board)
- One internal SCSI cable (connecting server board to backplane board)
- One internal front panel cable, 34-pin (connecting front panel board to backplane board)
- One Resource CD-ROM containing drivers, utilities, and product guide
- Mounting screws (server board)
- Front, mid, or 4-post rack mounting kit

Items You Must Purchase Separately

The following components must be purchased separately:

- Front bezel (optional)
- Intel Server Board SE7500WV2 or SE7501WV2 (SCSI)
- Minimum of one Intel® Xeon™ processor
- Registered ECC DDR RAM memory DIMMs
- SCSI hard disk drives (HDD)
- Slimline DVD/CD-ROM drive/floppy disk drive module (optional)
- PCI add-in cards
- Hard drive carriers (over the four supplied)
- 500 W power supply module for redundancy
- System fan for redundancy
- Other peripheral devices
- Power cord (If not included in the kit. This kit ships with a power cord in North America only.)

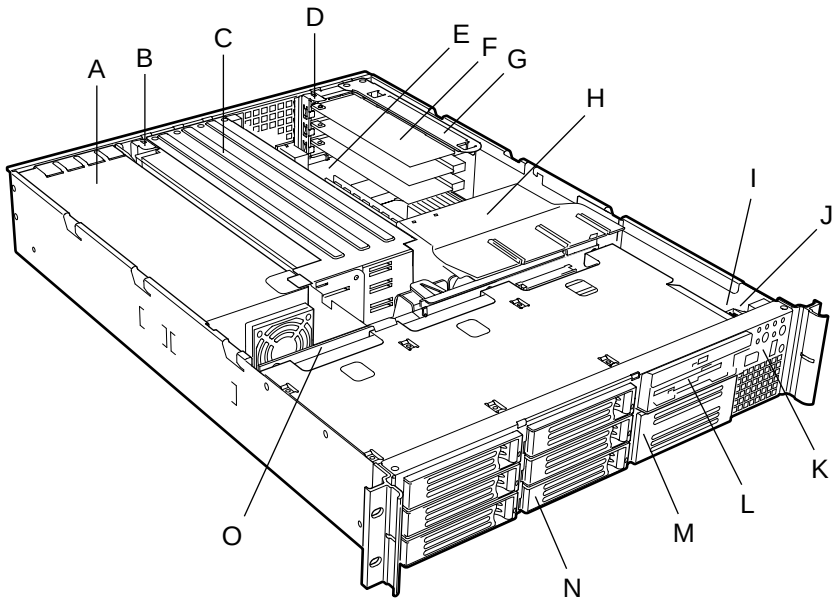
NOTES

You can install a slimline DVD drive in place of a CD-ROM drive.

If you install a NIC in the top slot of either the low profile riser or full height riser, you may encounter difficulty removing network cables connected to the card.

Feature Summary

System Components

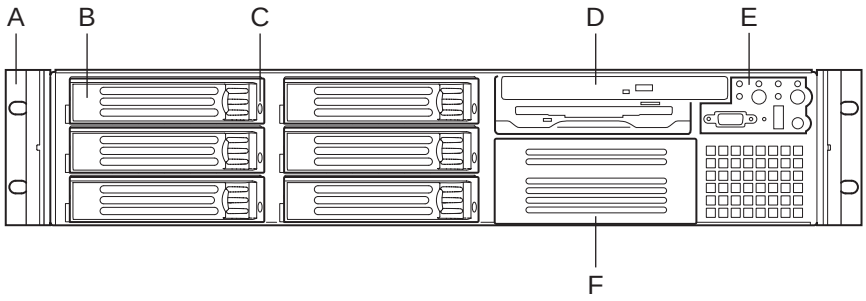


A. Power supply
B. PCI card bracket (full-length)
C. Riser card assembly (full-length)
D. PCI card bracket (low-profile)
E. Server board (accessory to system)
F. PCI add-in card (accessory to system)
G. Riser card assembly (low-profile)
H. Processor air duct
I. Front panel board
J. Intrusion switch
K. Control panel
L. Flex bay (optional DVD/CD-ROM drive/FDD module available)
M. Tape drive bay (tape drive available from others)
N. Hard drive bay (one of six, accessory to system)
O. Backplane board

Figure 1. System Components

Chassis Front Panel and Peripheral Bays

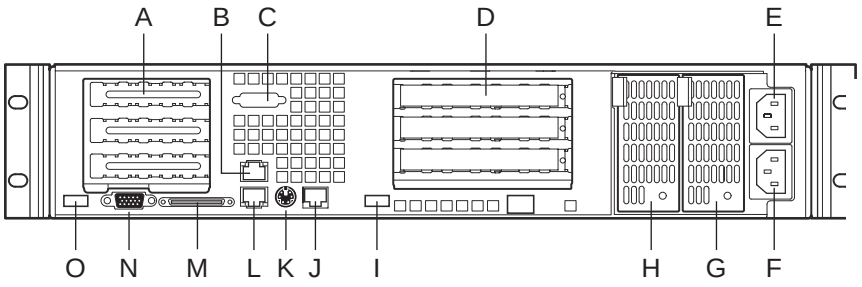
To access the system controls and peripherals when a front bezel is installed, grasp the bezel and gently pull it towards you until it unsnaps from the chassis.



A. Chassis handles (2)
B. Drive bay (1-inch)
C. HDD activity/fault Indicator
D. Flex bay (optional DVD/CD-ROM drive/FDD module shown installed)
E. Front panel indicator lights
F. Tape drive bay (tape drive not included)

Figure 2. Chassis Front

Chassis Back I/O Ports and Features



A. PCI card bracket (low profile)
B. RJ45 NIC 2 connector
Green Status LED/Yellow Status LED
C. Serial A port mounting hole
(cable not provided)
D. PCI card bracket (full-height)
E. AC power input (primary)*
F. AC power input (redundant)*
G. Power supply module, redundant
(system accessory)*
H. Power supply module, primary*
I. USB connector 2
J. RJ45 serial port
K. PS/2* mouse/keyboard connector
L. RJ45 NIC 1 connector
M. SCSI channel A connector
(If available)
N. Video connector
O. USB connector 1

*480 Watt redundant power supply shown. Your power supply may be different.

Figure 3. Chassis Back

Front Panel Controls and Indicators

Shown with optional DVD/CD-ROM drive/floppy disk drive installed.

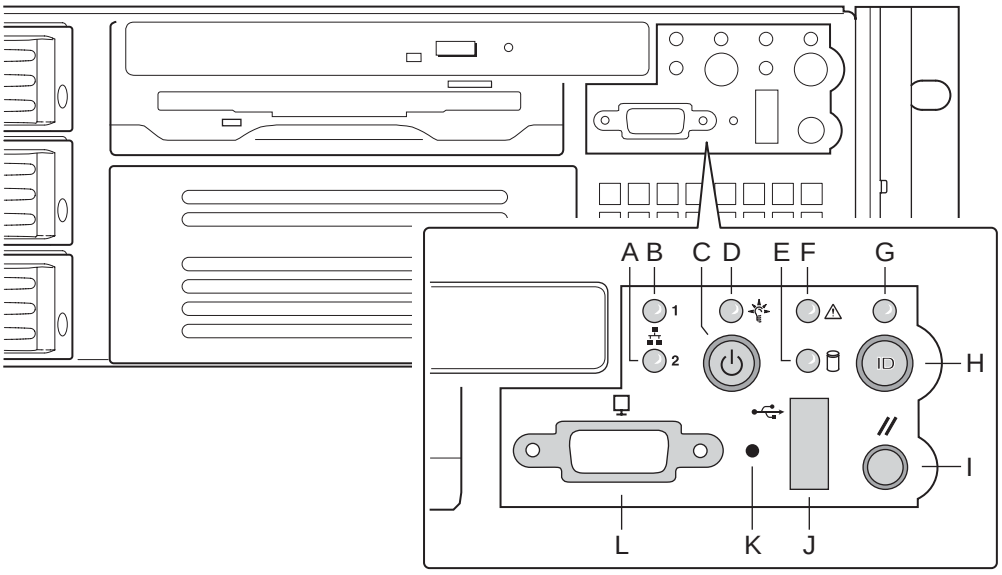


Figure 4. Controls and Indicators

A. NIC 2 activity LED
B. Power button
C. Power/sleep LED
D. Fixed disk drive status LED
E. System status LED
F. ID LED
G. ID button
H. Reset button
I. USB Connector
J. NMI button
K. Video Connector

Table 1. Control Button Functions

Power/Sleep button	Toggles the system power on/off. Or sleep button for ACPI compliant operating systems.
Reset button	Reboots and initializes the system.
NMI button	Pressing the recessed button with a paper clip or pin issues a non-maskable interrupt and puts the server in a halt state for diagnostic purposes.
ID button	Toggles on/off the front panel ID LED and the baseboard ID LED. The baseboard ID LED is visible through the rear of the chassis and allows you to locate the server you're working on from behind a rack of servers.

Table 2. LED Indicator Status

Power/sleep LED	*Continuous green light* indicates the system has power applied to it. *Blinking green light* (Note 4) indicates the system is sleeping. *No light* indicates the system does not have power applied to it (other than 5 V standby power).
NIC 1 activity LED **NIC 2 activity LED**	*Continuous green light* indicates activity between the system and the network to which it is connected.
System status LED	*Continuous green light* indicates the system is operating normally. *Blinking green light* indicates the system is operating in a degraded condition. *Continuous amber light* (Note 1) indicates the system is in a critical or nonrecoverable condition. *Blinking amber light* (Note 1) indicates the system is in a non-critical condition. *No light* indicates POST/system stop.
Fixed disk drive status LED	*Random blinking green light* indicates fixed disk drive activity (SCSI or IDE). *Continuous amber light* (Note 2) indicates fixed disk drive fault (SCSI or IDE). *No light* (Note 3) indicates no fixed disk drive activity nor fault (SCSI or IDE).
ID LED	*Continuous blue light* indicates ID button is depressed. *No light* indicates ID button is not depressed.

Notes:

1 The Amber status takes precedence over the Green status. When the Amber LED is on or blinking, the Green LED is off.

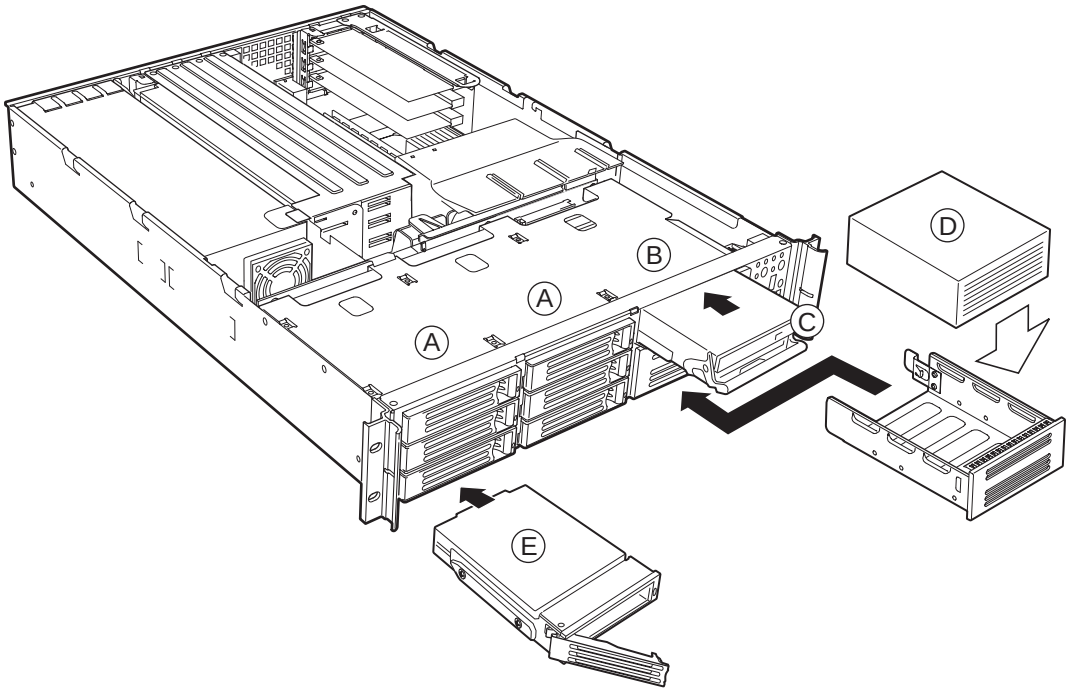
2 In order for a hard disk fault indication to occur, either an Intelligent Platform Management Interface (IPMI) based satellite management controller must send a Set Fault Indication command to the Baseboard Management Controller (BMC), or the system board must be used with the 2U SR2300 hot swappable backplane.

3 Also off when the system is powered off or in a sleep state.

4 The Power LED sleep indication is maintained on standby by the chipset. If the system is powered down without going through BIOS, the LED state in effect at the time of power off will be restored when the system is powered on until the BIOS clears it. If the system is not powered down normally, it is possible that the Power LED will be blinking at the same time that the System Status LED is off due to a failure or configuration change that prevents the BIOS from running.

Peripherals

The chassis provides external bays for peripherals that can be purchased separately and added to the system. The following describes the available options.



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A. Hard drive bays (6)
B. Flex bay (1)
C. DVD/CD-ROM drive/floppy disk drive module
D. Tape drive
E. Hard disk drive

Figure 5. Peripherals

Hot Swappable SCSI Hard Drives

The chassis ships with four drive carriers for mounting SCSI hard drives in the hard drive bays. For information on how to install these drives, see “Installing a Hard Drive” on page 38.

The SCSI hard drives are hot swappable. When a drive fails, the SCSI backplane detects the failure, reports it, and powers down the failed drive. The drive fault LED becomes a continuous amber light. After the failed drive is removed and a new drive is inserted, there is a short wait before power is applied to the drive and the drive fault LED becomes a random blinking green light.

NOTE

Drives can consume up to 17W of power each. Drives must be specified to run at a maximum ambient temperature of 50 °C.

Flex Bay

The flex bay can be used with either the optional DVD/FDD module, CD-ROM/FDD module, or a seventh hot swappable SCSI HDD.

The DVD/CD-ROM/FDD module may only be inserted or removed from the flex bay when system power is turned off. It is NOT hot swappable. For information on installation, see “Installing a DVD drive/FDD or CD-ROM drive/FDD Module” on page 40.

500 Watt Redundant Power Supply

The power supply consists of the power supply bay and one power supply module. A second power supply module can be purchased to provide a redundant, 1+1 system. With either configuration, the power supply provides 500 W of power and is designed to minimize EMI. The power supply operates within the following voltage ranges and is rated as follows:

- 90-132 V~ at 50/60 Hertz (Hz); 5.2 A maximum
- 180-264 V~ at 50/60 Hz; 2.6 A maximum

The power subsystem supports implementation of remote management features including remote enable that permits power to be activated from a variety of sources.

480 Watt Power Supply

The power supply consists of the power supply; no modules are available. The power supply provides 480W of power and is designed to minimize EMI. The power supply operates within the following voltage ranges and is rated as follows:

- 90-132 V~ at 50/60 Hz; 6.8 A maximum
- 180-264 V~ at 50/60 Hz; 3.4 A maximum

The power subsystem supports implementation of remote management features including remote enable that permits power to be activated from a variety of sources.

System Cooling

The chassis includes three 60-mm non-hot-swappable system fans for cooling the processor(s), hard drives, and add-in cards. A fourth fan may be added to provide cooling redundancy for system components. The system fans are mounted in a fan module located in the middle of the chassis to pull cooling air through the chassis. The power supply contains a single fan for cooling.

Chassis Security

To help prevent unauthorized access to the system's peripherals and control panel, install the optional front bezel, which provides a key lock. The chassis also includes a preinstalled intrusion switch for the top access cover that can be monitored by server management software. When the cover is opened, the switch, located on the front panel board, transmits a signal to the Baseboard Management Controller (BMC) on the server board, where server management software processes the signal.

Locking and Unlocking the Front Bezel

To unlock the bezel, insert the key in the lock and turn the lock counterclockwise until it stops (about a quarter turn). The bezel is now unlocked and can be opened again.

To lock the bezel, insert the key in the lock. Turn the lock clockwise until it stops (about a quarter turn). The bezel is now locked and cannot be opened.

2 Assembling the System

Before the server chassis SR2300 can be installed for use, you must assemble the hardware components that make up your particular system. Additionally, you will want to add any peripherals and add-in cards purchased for the system. The following procedures help guide you through this assembly process and create your desired system configuration.

NOTE

To maintain and ensure regulation compliance, the fully integrated system should be tested, certified and/or documented to illustrate compliance to the regional regulations and laws for where the product will be sold. The peripherals and add-in cards chosen for integration should have individual regulatory approvals.

Before You Begin

Supplies Needed

Before beginning your work, make sure you have the following supplies available:

- Anti-static wrist strap (recommended)
- Server Chassis SR2300 accessory kit (included)
- Server Board SE7500WV2 or SE7501WV2 SCSI kit
- Processors and memory you purchased separately to add to the server board
- Optional peripherals and add-in cards you want to include in the system

Installation/Assembly Safety Instructions

Before you start the assembly process, you will need to make sure you follow certain basic safety precautions.

⚠ CAUTION

Only technically qualified persons shall perform integration/servicing of this chassis sub-assembly.

Follow these guidelines to meet and maintain safety and product regulatory requirements when integrating this chassis subassembly.

Read and adhere to all of these instructions and the instructions supplied with this assembly. If you do not follow these instructions, the UL listing and other regulatory approvals will be void, and the product will most likely be non-compliant with regional product laws and regulations.

Use Only for Intended Applications

This product was evaluated as Information Technology Equipment (ITE) that may be installed in offices, schools, computer rooms and similar locations. The suitability of this product for other Product Categories and Environments other than ITE applications, (such as medical, industrial, alarm systems, and test equipment) may require further evaluation.

When you integrate this subassembly, observe all warnings and cautions in the Installation Guide.

To avoid injury, be careful of:

- Sharp pins on connectors
- Sharp pins on printed circuit assemblies
- Rough edges and sharp corners on the chassis
- Hot components (like processors, heat sinks, and power supply modules)
- Damage to wires that could cause a short circuit

Checking the Power Cord

WARNING

Do not attempt to modify or use the supplied AC power cords if they are not the exact type required.

The power supply cords are the main disconnect to AC power. The socket outlets must be installed near the equipment and readily accessible.

Power cords are supplied with chassis only in North America. If a power cord is supplied with your system and it is not compatible with the AC wall outlet in your region, get one that meets the following criteria:

- The power cord must be rated for the available AC voltage and have a current rating that is at least 125% of the current rating of the server.
- The plug on the power cord that plugs into the wall outlet must be a grounding-type male plug designed for use in your region. It must have certification marks showing certification by an agency acceptable in your region.
- The connector that plugs into the AC receptacle on the power supply must be an IEC 320, sheet C13, type female connector.
- In Europe, the cord must be less than 4.5 meters (14.76 feet) long, and it must be flexible <HAR> (harmonized) or VDE certified cordage to comply with the chassis' safety certifications.

Warnings and Cautions

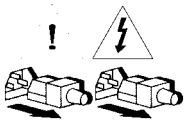
These warnings and cautions apply whenever you remove the chassis cover to access components inside the server. Only a technically qualified person should integrate and configure the server.

Read all caution and safety statements in this document before performing any of the instructions. See also *Intel Server Boards and Server Chassis Safety Information* on the Resource CD and/or at http:\\support.intel.com.

WARNING / BEFORE YOU REMOVE THE ACCESS COVER

Before removing the access cover for any reason, observe these safety guidelines:

1. **Turn off all peripheral devices connected to the server.**
2. **Turn off the server by pressing the power button on the front of the chassis. Then unplug all AC power cords from the chassis or wall outlet.**
3. **Label and disconnect all peripheral cables and all telecommunication lines connected to I/O connectors or ports on the back of the chassis.**
4. **Provide some electrostatic discharge (ESD) protection by wearing an antistatic wrist strap attached to chassis ground—any unpainted metal surface—when handling components.**



WARNING

The power button on the front panel DOES NOT turn off the AC power. To disconnect power from the server, you must unplug all AC power cords from the wall outlet or the chassis.

WARNING

Hazardous electrical conditions may be present on power, telephone, and communication cables. Turn off the server and disconnect the power cords, telecommunications systems, networks, and modems attached to the server before opening it. Otherwise, personal injury or equipment damage can result.

WARNING

Do not open the power supply. Hazardous voltage, current and energy levels are present inside the power supply. Refer servicing of the power supply to qualified technical service personnel.

Installing System Components

Remove the Cover

1. While pressing the blue latch button (A) with your left thumb, slide the top cover back using the heel of your right hand on the blue pad.

NOTE

A non-skid surface or a stop behind the chassis may be needed if attempting to remove the top cover on a flat surface.

2. Set the cover aside and away from the immediate work area.

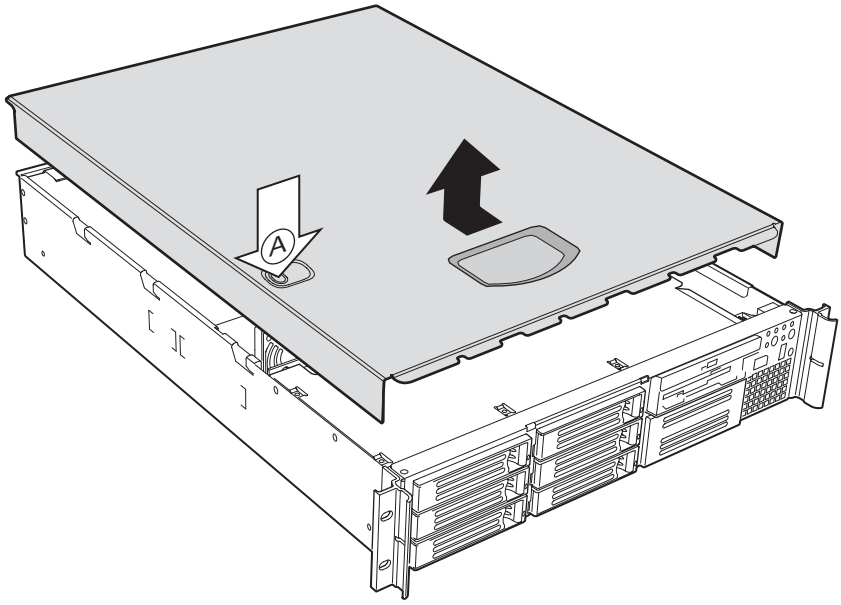


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Figure 6. Removing the Cover

Remove the Processor Air Duct

Lift the processor air duct out of the chassis.

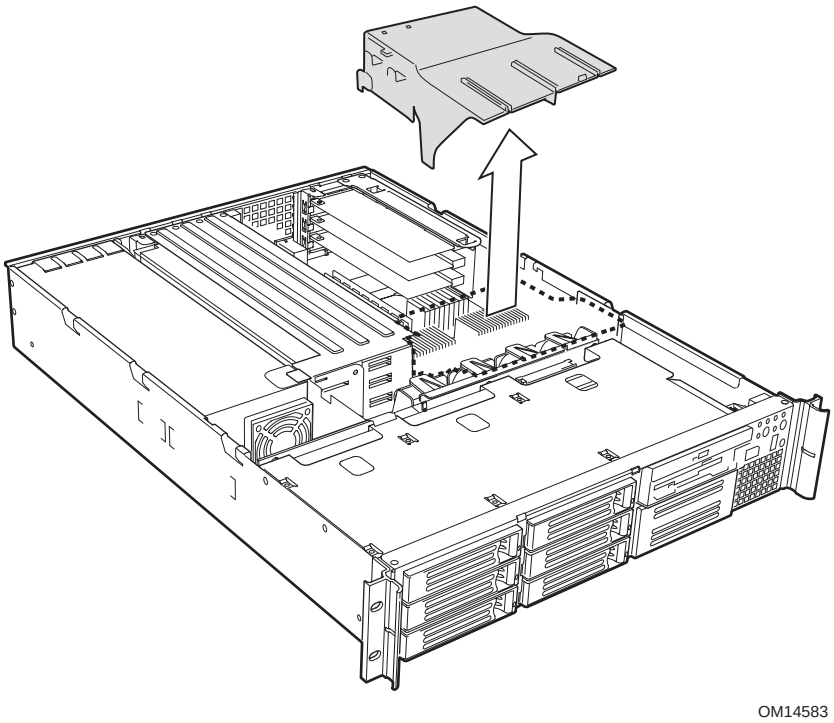


Figure 7. Removing the Processor Air Duct

Remove the Riser Cards

1. Insert your finger in the plastic loop. On riser card (A), also grasp the opposite end at (C).
2. Pull straight up and remove the riser card from the chassis.
3. Discard the protective blocks.

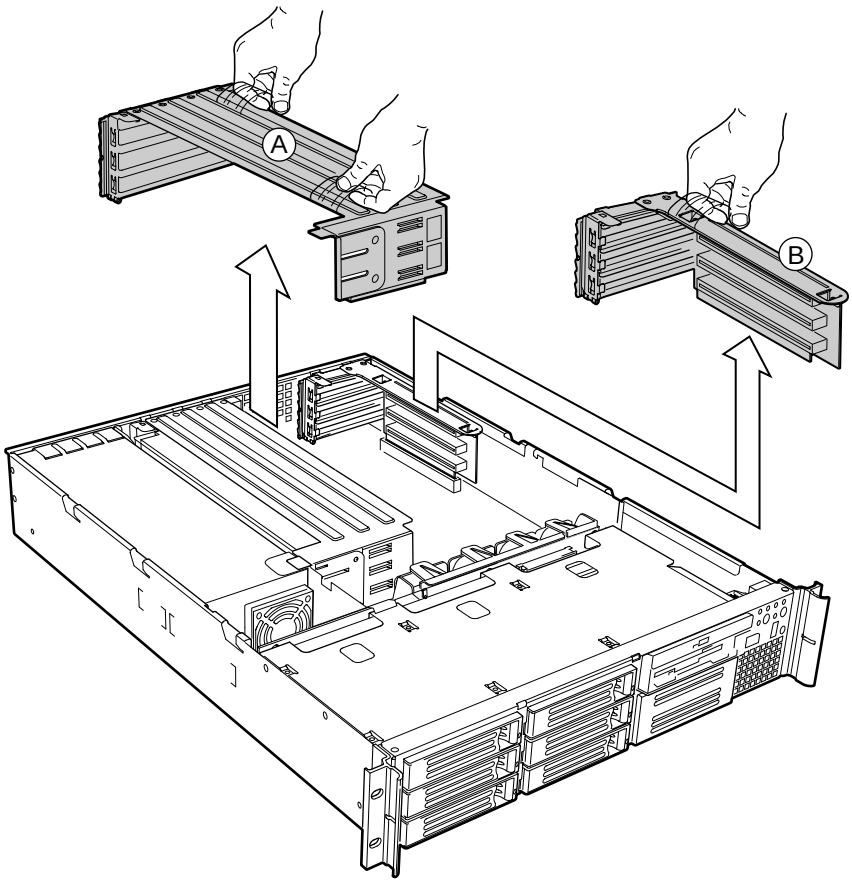


Figure 8. Removing a Riser Card

Remove the Fan module

1. Lift the processor duct out of the chassis.
2. If it is installed, remove the 100-pin flex circuit.
3. At the end of the fan module closest to the chassis centerline, push on the tab to release it from the chassis (A).
4. While pushing on the tab, lift up on the module to clear the retention stub.
5. Slide the module towards the power supply until it comes free.
6. Lift the fan module out of the chassis.

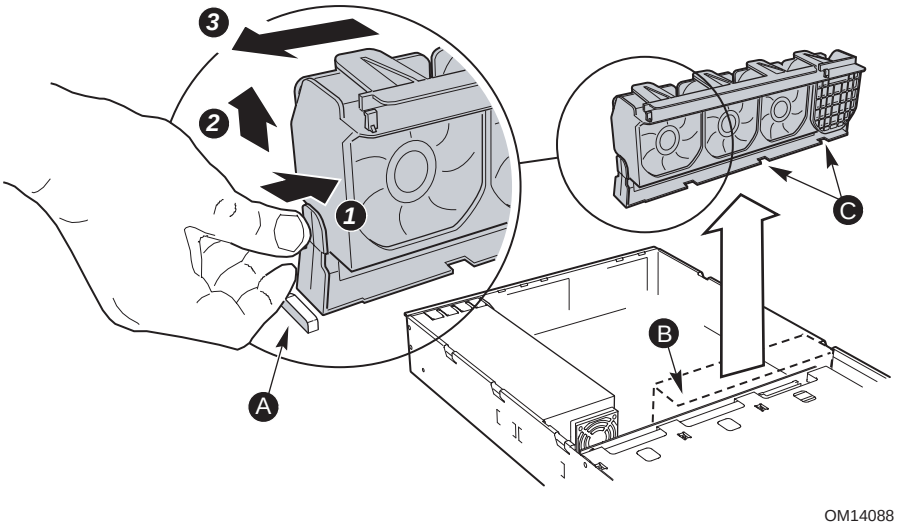


Figure 9. Removing the Fan module

Install the Server Board

CAUTION

Do not install any server board support bumpers in the SR2300 chassis.

System components must be installed in the order presented below. If installed in a different order, component damage may occur.

1. Ensure that the insulator sheet is seated securely over the standoffs, is laying flat on the chassis floor, and that the edge of the sheet is seated below the studs in the rear chassis wall. (Figure 10, A.)
2. Remove the server board from its packaging and antistatic bag.
3. While placing the board on the chassis standoffs, carefully position the board I/O connectors (Figure 10, B) in the rear chassis I/O openings.
4. Adjust board position so that the mounting holes rest securely on the corresponding shouldered standoffs (Figure 10, C).
5. Attach the board to the chassis using the three screws shipped in the chassis accessory kit (Figure 10, D).

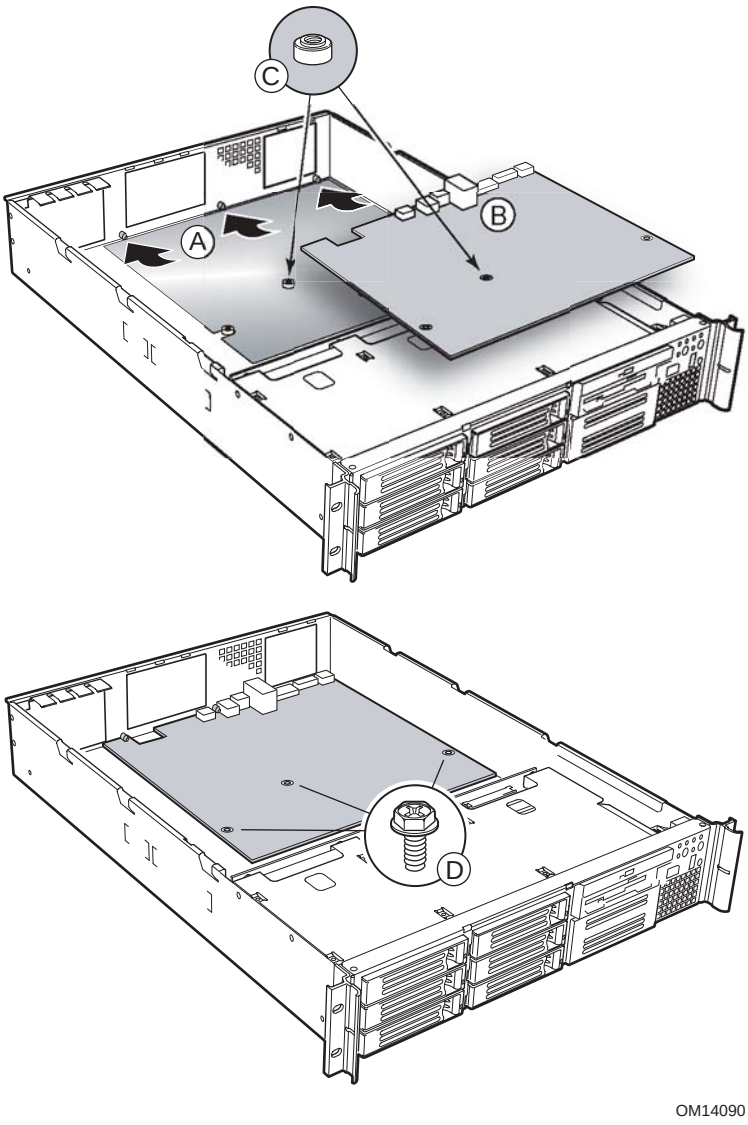


Figure 10. Mounting the Server Board SE7500WV2/SE7501WV2

6. Install processors and memory, following the directions on the *Quick Start User's Guide for SE7500WV2 or SE7501WV2.*
7. If you only install one processor, you must install the processor air dam.
   a. Attach processor retention piece (B) to the server board (C) using the provided screws (A).
   b. Put the air dam (D) into place.

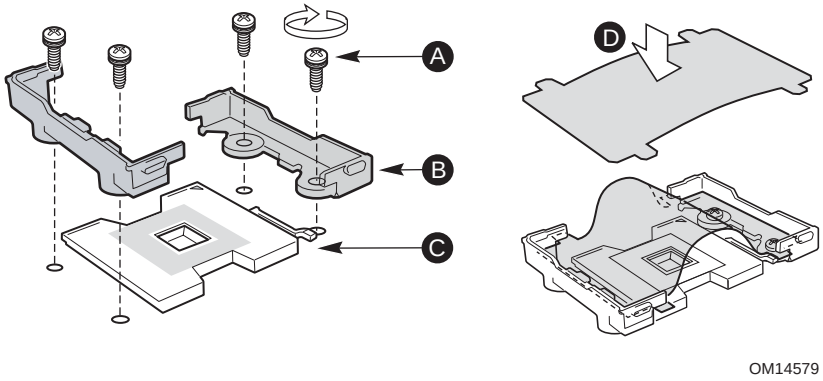
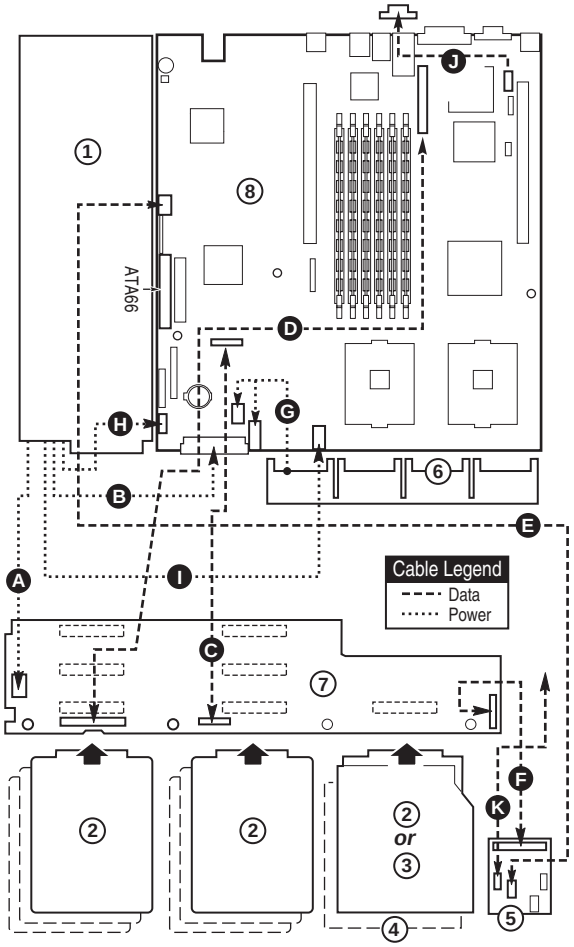


Figure 11. Installing the Processor Air Dam

Routing Cables



1. Power Supply
2. SCSI Hard Disk Drives
3. DVD/CD-ROM/FDD module
4. Tape Drive (optional)
5. Front Panel Board
6. Fan Module
7. SCSI Backplane (shown horizontal for clarity)
8. Server Board

A. To backplane power connector from power supply
B. To server board primary power connector from power supply
C. Floppy/FP/IDE flex circuit cable from server board to backplane
D. SCSI cable from server board to backplane
E. USB ribbon cable from front panel board to server board
F. Ribbon cable from front panel board to backplane
G. Fan module to server board fan connectors (2)
H. To server board auxiliary signal connector from power supply
I. To server board auxiliary power connector from power supply
J. Serial cable from server board to knockout on back of chassis

Figure 12. Cable Routing

Connect Power Cables

1. Verify that the P6 backplane power cable is routed from the power supply to the backplane board and is connected to the white 6-pin connector.
2. Connect the main server board power cable to the white 24-pin connector on the server board. Firmly press the two connectors together until they are fully seated.

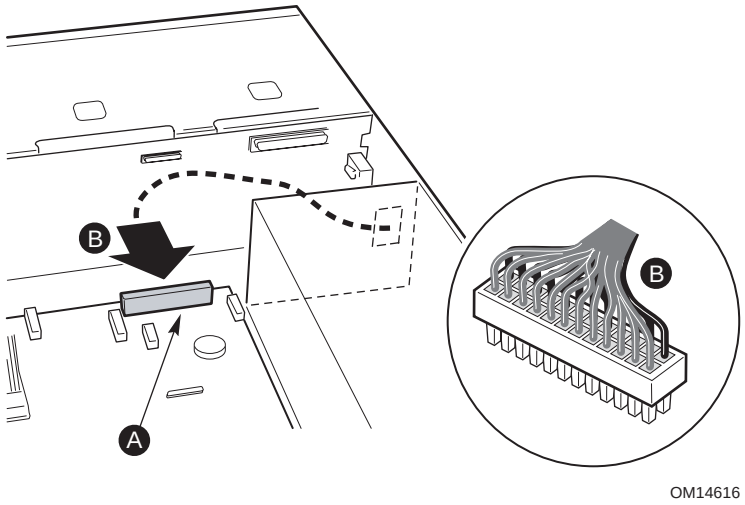


Figure 13. Connecting the Main Power Cable

Install the Fan module

⚠ CAUTION

When installing the fan module, avoid pinching cables routed in the area.

1. Note the raised tabs on the chassis floor and the corresponding holes in the bottom of the fan module.
2. Lower the fan module until it is just above the chassis floor.
3. Align the holes in the fan module with the raised tabs on the chassis and lower the fan module onto the floor.
4. While pressing down on the fan module, slide it in the direction of arrow (2) until the latch snaps into place.

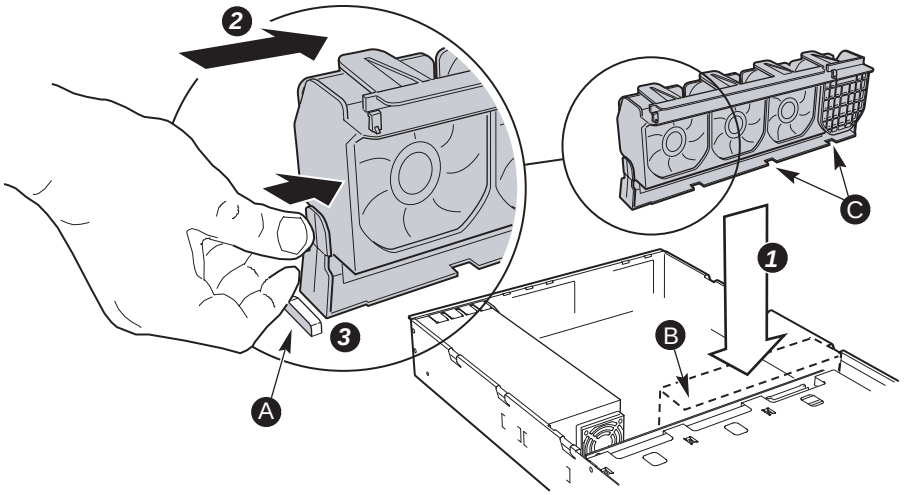


Figure 14. Installing the Fan module

5. Connect the fan power cables to the server board (Figure 15).

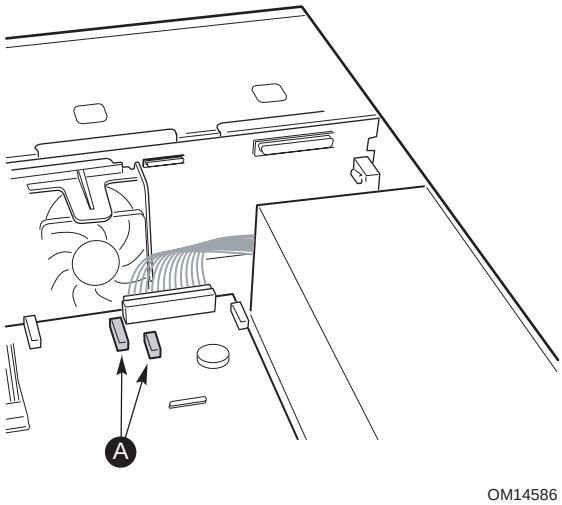


Figure 15. Connecting Fans to the Server Board

Connect Flex Circuit Cable

1. Remove the flex circuit cable from the cable bag in the accessory kit. Connect the end marked "P1-Motherboard" to the floppy/front panel/IDE connector on the server board. Route the cable to the backplane board and connect the other cable end to the matching connector on the backplane.

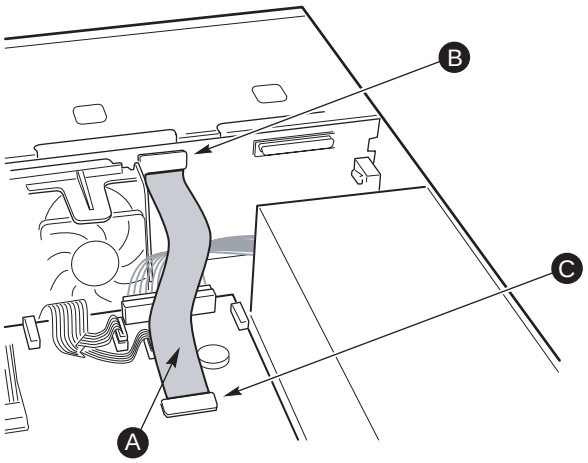


Figure 16. Connecting the Flex Circuit Cable

⚠ CAUTION

Ensure that each cable connector is properly seated in the board connector. The connector should be parallel to its board connector and not cocked to one side. If in doubt, remove, reinsert, and recheck.

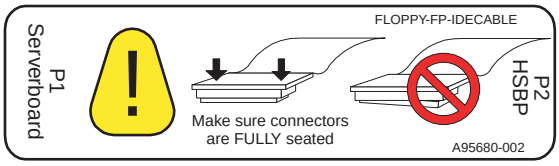


Figure 17. Floppy/FP/IDE Cable Caution

2. Install the flex circuit cable retention clip. It snaps into place over the backplane and flex circuit cable.

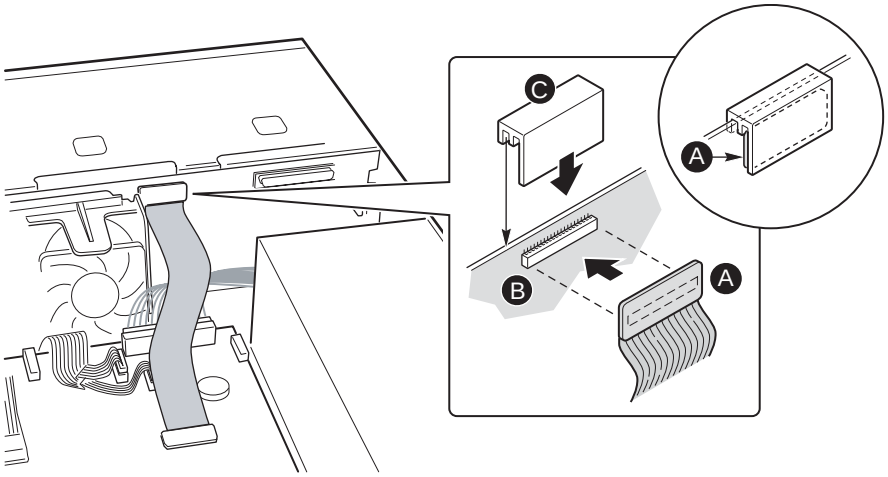


Figure 18. Installing the Flex Circuit Retention Clip

Connect Auxiliary Power Cables

1. Connect the auxiliary power cable to the 8-pin auxiliary power connector on the server board (A).
2. Connect the signal cable to the 5-pin signal connector on the server board (B).

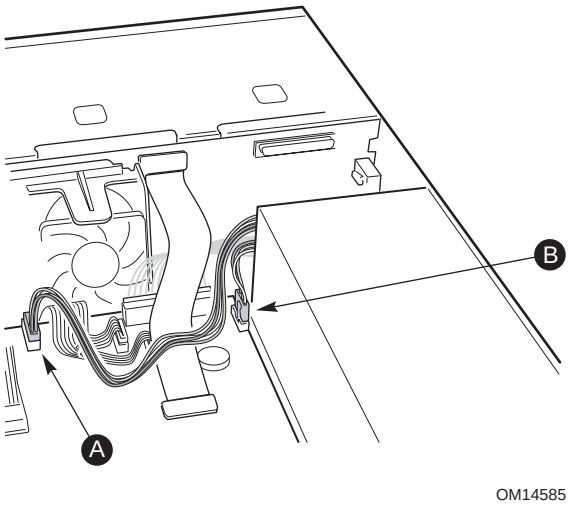


Figure 19. Connecting the Auxiliary Power Cables

Finish Cable Routing

1. Connect the USB cable to the USB connector on the front panel. Route the cable along the top of the fan module and connect it to the server board. Make sure the cable does not lay on top of the corner of the backplane or it will get damaged when you install the top cover.
2. Install the processor duct.

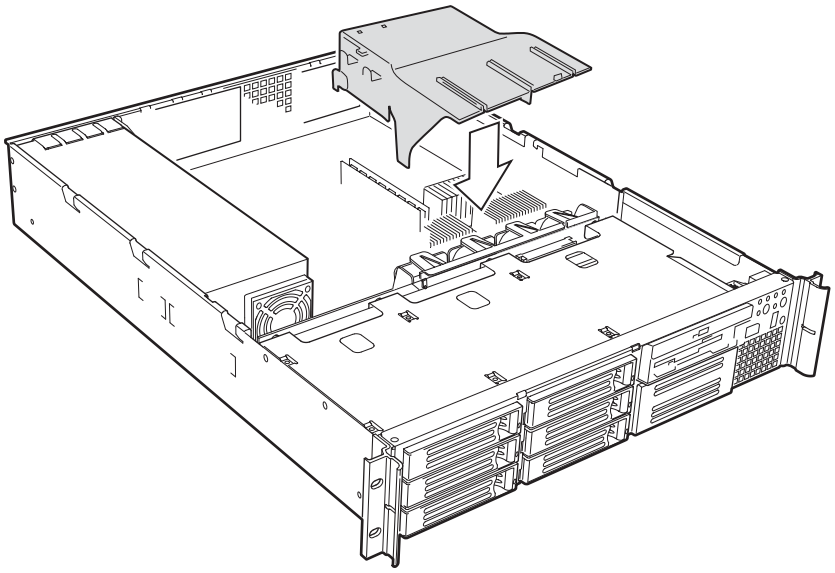


Figure 20. Installing the Processor Duct

3. Install the power supply air baffle if it has not been installed already. All cables from the power supply should route through the notch in the bottom of the baffle.

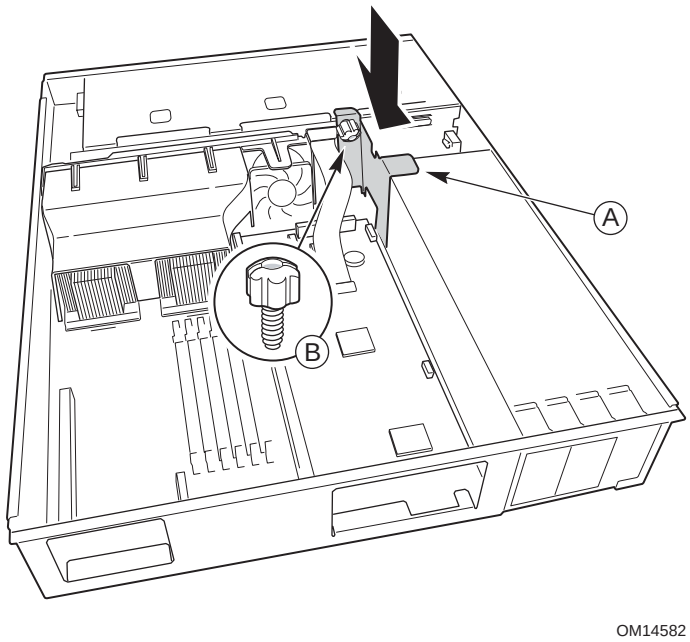


Figure 21. Installing the Power Supply Air Baffle

4. Connect the SCSI cable to the SCSI connector on the server board. Route the cable between the memory connectors and the full height PCI riser, through the clips on the side of the processor duct, through the notch in the top of the power supply air baffle, to the connector on the backplane board.

NOTE

It may be easier to route the SCSI cable after the full length PCI riser card is installed.

5. Ensure that the front panel cable is connected to the front panel board, routed over USB cable to the backplane, and connected to the matching connector.

Installing Peripherals

Peripherals and add-in cards are not included in your system and must be purchased separately. The following sections describe how to install PCI add-in cards, hard disk drives, a DVD/CD-ROM drive/floppy disk drive, and a tape drive.

Installing a PCI Card on a Riser Card

The riser card nearest the chassis sidewall (see Figure 24, B, on page 37) supports three Low Profile (LP) PCI add-in cards. The riser card on the chassis centerline (see Figure 24, A, on page 37) supports three full-length, full-height PCI add-in cards or three LP cards (an LP card must be equipped with a standard full-height PCI mounting bracket).

PCI add-in cards must be installed on a riser card while the riser card is removed from the chassis. If you do not have PCI cards to install, proceed to page 37, "Installing the Riser Cards on the Server Board".

NOTES

If you install a NIC in the top slot of either the low profile riser or full height riser, you may encounter difficulty removing network cables connected to the card.

1. Open the retainer clip (Figure 22 or Figure 23, A) and remove the desired filler panel from the rear retention bracket (B) of the riser card.
   — If your full-length card has a card guide attached to the end opposite the metal bracket, remove the guide.
2. Insert the edge connector of the PCI card into the desired slot of the riser card (D) while inserting the end of the card's metal bracket in opening (C).
   — If you are installing a full-length card, insert the end opposite the metal bracket into the full-length card lock.
3. Firmly push the PCI card's edge connector into the riser card slot until it is fully seated.
4. Close the retainer clip (E). Ensure the clip is latched.

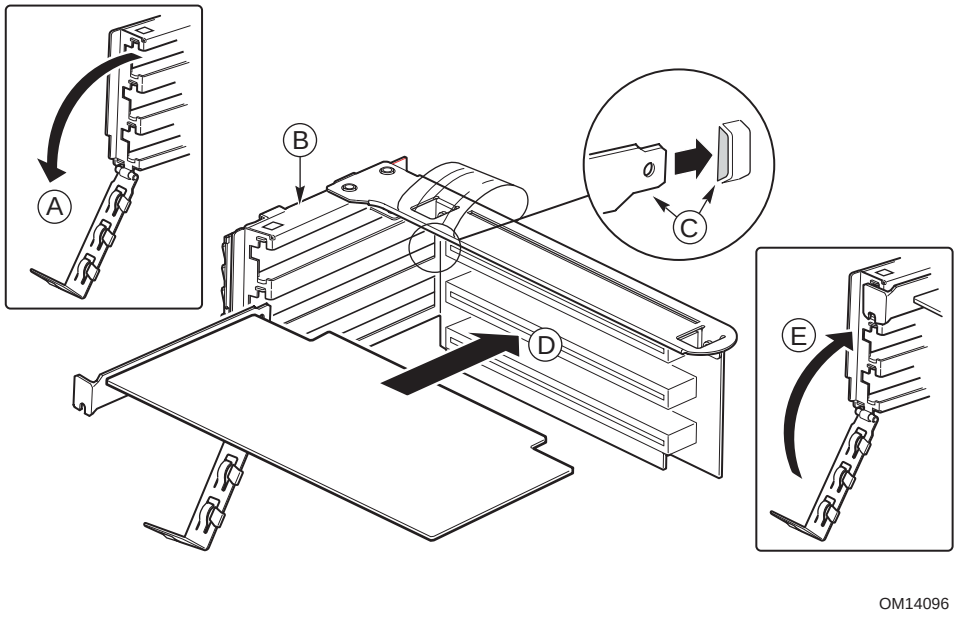


Figure 22. Installing a Low-Profile PCI Card in a Riser Card

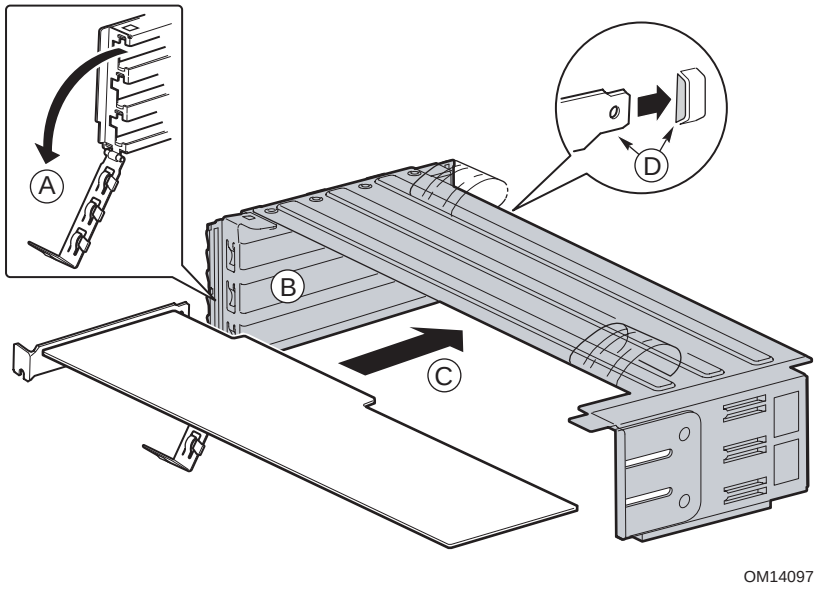
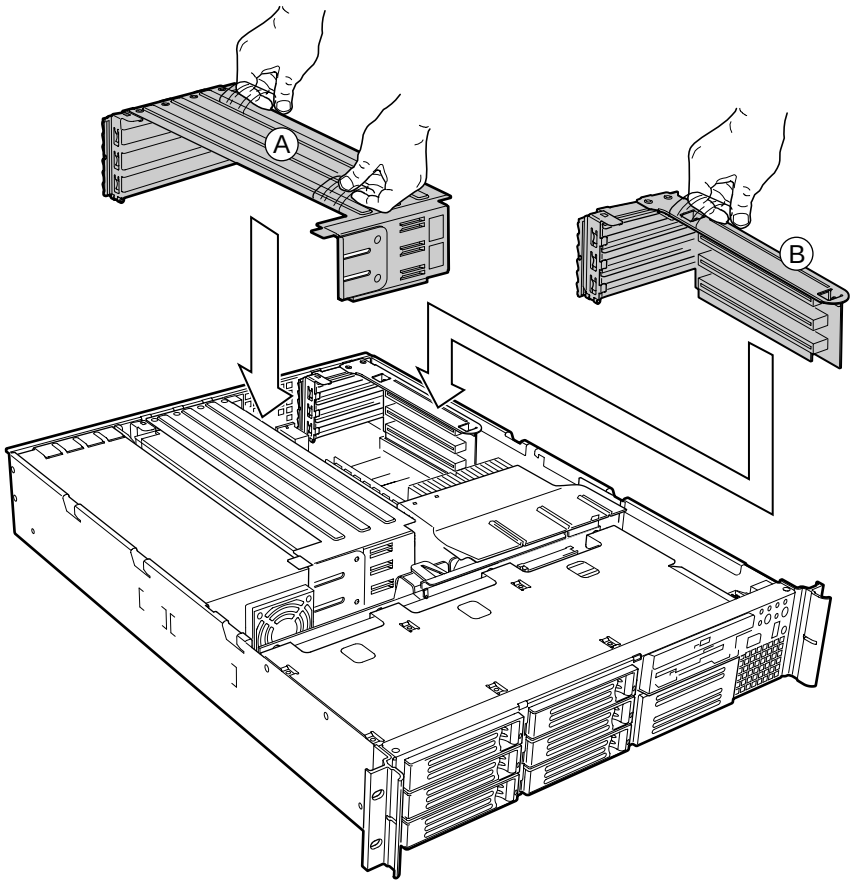


Figure 23. Installing a Full-Length PCI Card in a Riser Card

Installing the Riser Cards on the Server Board

1. Align the riser card connector with the server board slot.
2. Firmly press the riser card straight down until it is fully seated in the server board slot. Make sure the tabs on the rear retention bracket are aligned with the holes in the chassis.
3. Install the other riser card in the same manner.



A. Full-length riser card
B. Low-profile riser card

Figure 24. Installing the Riser Cards

Installing a Hard Drive

The server can support up to seven hot swappable hard drives: six hard drives in the drive bays, plus one in the flex bay.

⚠ CAUTION

To allow proper airflow and server cooling, all drive bays must contain either a carrier with a hard drive installed or a carrier with an air baffle installed.

1. If present, remove the front bezel.
2. If the drive carrier is installed in the drive bay, remove it.
3. Remove the air baffle (Figure 25, A) from the drive carrier by removing the four screws (B) from the slide track (C).
4. Store the air baffle for future reinstallation in the event you must operate your server without a drive in one of the bays.

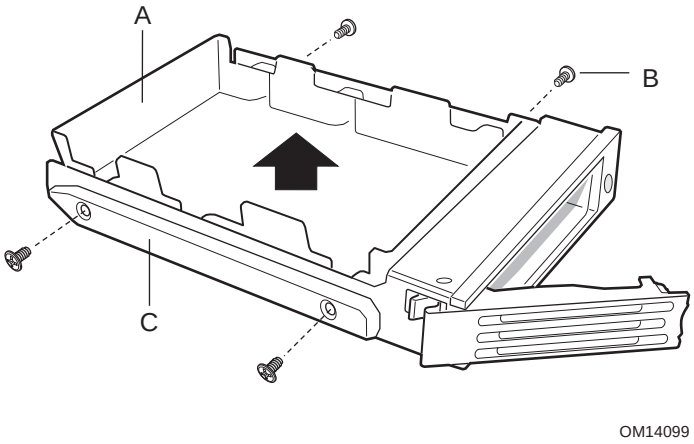


Figure 25. Removing an Air Baffle from a Drive Carrier

5. Remove the hard drive from its wrapper and place it on an anti-static surface.
6. Set any jumpers and/or switches on the drive according to the drive manufacturer's instructions.
7. With the drive circuit-side-down (Figure 26, A), position the connector end (E) so that it is facing the back of the carrier (B).
8. Align the holes in the drive to the holes in the drive carrier slide track (C), insert the screws (D) that you previously removed, and attach the carrier to the drive.

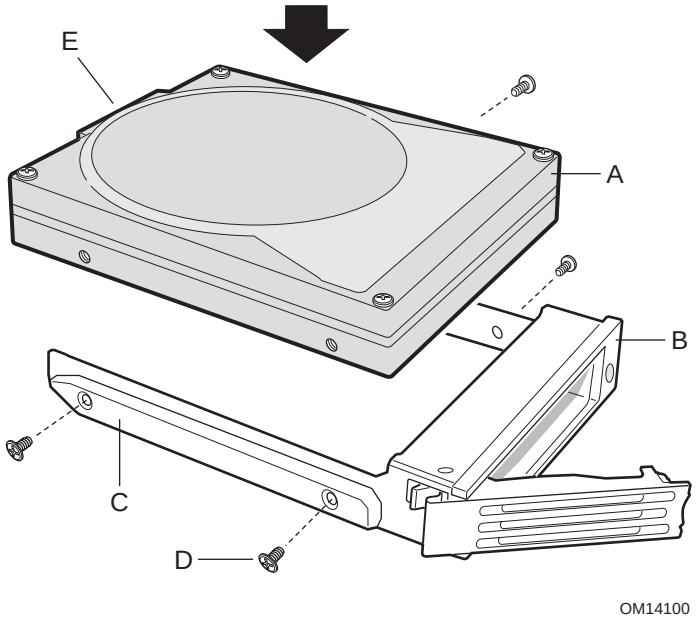


Figure 26. Attaching the Drive to the Carrier

9. Slide the carrier/drive all the way into the drive bay with the retention lever in the fully open position.
10. Push the retention lever closed to secure the carrier/drive in the bay.
11. Reinstall a carrier/air baffle in any bays where you are not installing a carrier/drive.

Installing a DVD drive/FDD or CD-ROM drive/FDD Module

Your server does not come with a DVD drive, CD-ROM drive or floppy disk drive. As an accessory, Intel offers slim-line DVD drive/FDD and CD-ROM drive/FDD modules that you may purchase and install in the flex bay.

1. Remove the filler panel (Figure 27, A) and plug (B) from the front of the chassis.
2. Ensure the handle bar (C) on the front of the module is rotated to the down position.
3. Insert the module into the flex bay and slide it back until you feel the connectors touch.
4. With your thumbs positioned above the handle bar indentations (D), push the module in until it locks in place.

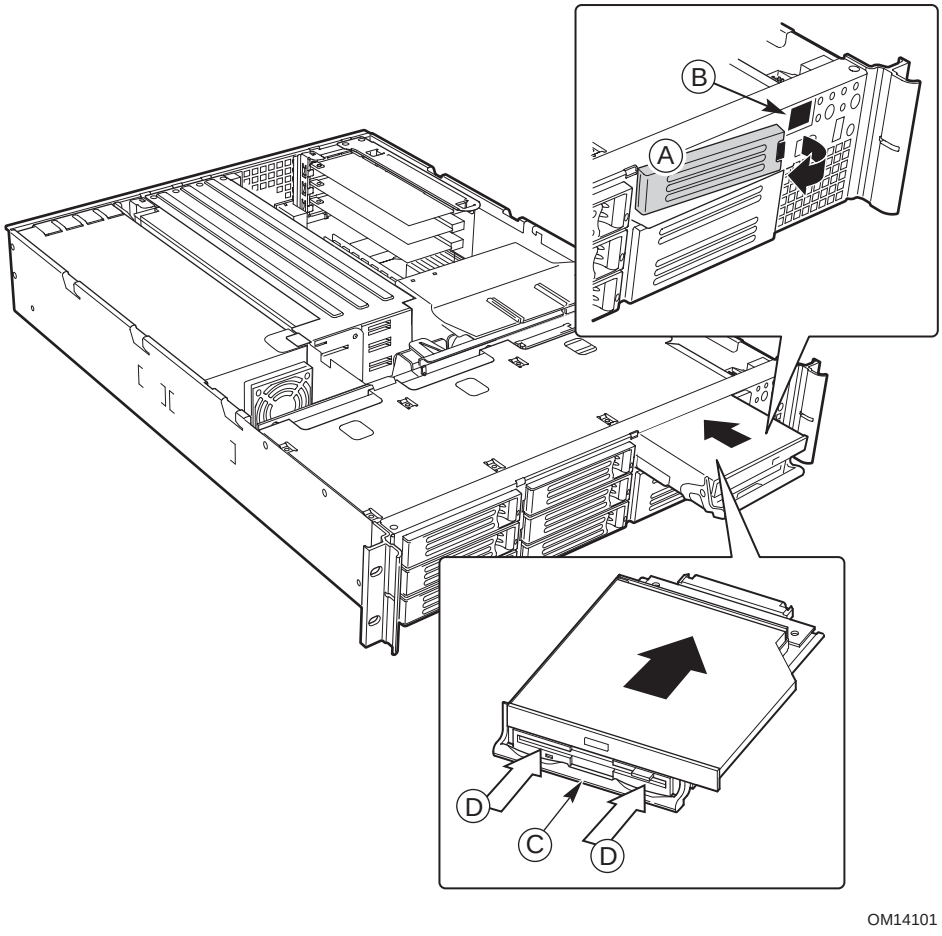


Figure 27. Installing a DVD/CD-ROM drive/FDD Module

Finishing Installation

Installing a Serial A port in the Rear I/O

Using a standard DH-10 to DB-9 COM cable, you may install a Serial A port in the opening provided in the rear I/O (see Figure 3, C, on page 10). Connect the other end to the COM 1 serial port header on the server board (see the documentation that shipped with your server board).

Install the Cover

1. Place the cover over the chassis.
2. Slide it forwards until it latches into place.

Installing the Power Cord and Strain Relief Strap

NOTE

If you are placing the server in a rack, wait to install the power cord until after the server is in the rack.

1. Attach the strain relief strap to the chassis (A).
2. Plug the power cord into the power supply but not into the power source.
3. Insert the power cord into the plastic loop (B) of the strain relief.
4. Pull the plastic band (C) until it tightens around the power cord.

To release the plastic loop and free the cord, squeeze the release lever (D).

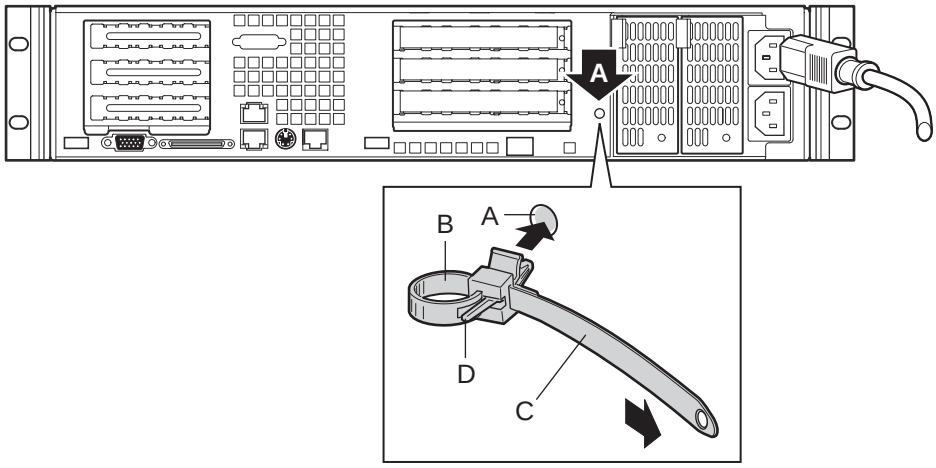


Figure 28. Installing the Power Cord and Strain Relief Strap

Install the Bezel

Place the bezel between the chassis handles and push it toward the front of the chassis until it snaps into place.

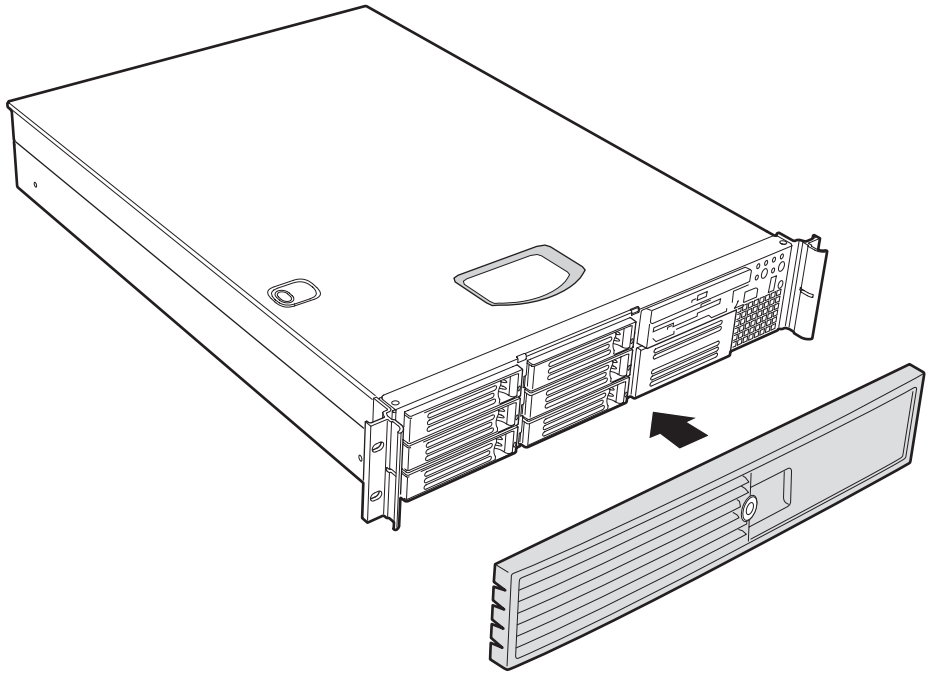


Figure 29. Installing the Bezel

3 Installing the System in a Rack

Your SR2300 chassis comes equipped with a rack mount kit that can be configured for front-mount, mid-mount, or 4-post racks. An optional slide rail kit may be purchased separately.

Each kit contains instructions for installation into a rack or cabinet. If you need additional copies, the order numbers are:

- SR1200 and SR2300 Rail Kit Installation Guide—A61347-003
- SR1200 and SR2300 Bracket Kit Installation Guide—A61346-004

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.

MAIN AC POWER DISCONNECT: 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 unit, 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 grounding conductor with the rack installation. If server power cords are plugged into AC outlets that are part of the rack, then you must provide proper grounding for the rack itself. If server power cords are plugged into wall AC outlets, the safety grounding conductor in each power cord provides proper grounding only for the server. You must provide additional, proper grounding for the rack and other devices installed in it.

OVER CURRENT PROTECTION: The server is designed for an AC line voltage source with up to 20 amperes of over current protection. 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. If more than one server is installed in the rack, the power source for each server must be from a separate branch circuit.

⚠ 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 2110 Btu's per hour for a fully loaded SR2300 server.

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

4 Working Inside Your Server

This chapter describes how to replace components in your server after it has been set up. All references to left, right, front and rear are based on the reader facing the front of the chassis.

Tools and Supplies Needed

- Antistatic wrist strap (recommended)

Safety: Before You Remove the Cover

Before removing the system cover to work inside the system, observe these safety guidelines:

1. Turn off all peripheral devices connected to the system.
2. Turn off the system by pressing the power button on the front of the system. Then unplug the AC power cord from the system or wall outlet.
3. Label and disconnect all peripheral cables and all telecommunication lines connected to I/O connectors or ports on the back of the system.
4. Attach a wrist strap to a chassis ground of the system—any unpainted metal surface—before handling components.

Warnings and Cautions

Read all caution and safety statements in this document before performing any of the instructions. See also *Intel Server Boards and Server Chassis Safety Information* on the Resource CD and/or at http:\\support.intel.com.

These warnings and cautions apply whenever you remove the chassis cover to access components inside the server. Only a technically qualified person should integrate and configure the server.

Lithium Battery Replacement

⚠ CAUTION

Refer to technically qualified persons only for replacement of battery.

The following warning is provided on the server board configuration label, which is provided with the Intel server board boxed product. There is insufficient space on the server board to place this label. Therefore, the label must be placed permanently on the inside of the chassis, as close to the battery as possible.

⚠ WARNING

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

⚠ ADVARSEL!

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.

⚠ VARNING

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.

Replacing Components

Replacing a Hard Drive

CAUTION

To allow proper airflow and cooling during operation, all drive bays must contain either a carrier/drive or a carrier with air baffle installed.

1. Before removing the cover to work inside the system, observe the safety guidelines on page 45.
2. Remove the bezel from the front of the chassis.
3. Pull the retention lever (A) toward you until the tab end (B) of the lever is free of the housing slot (C).
4. Pull the carrier/drive forward and out of the drive bay.

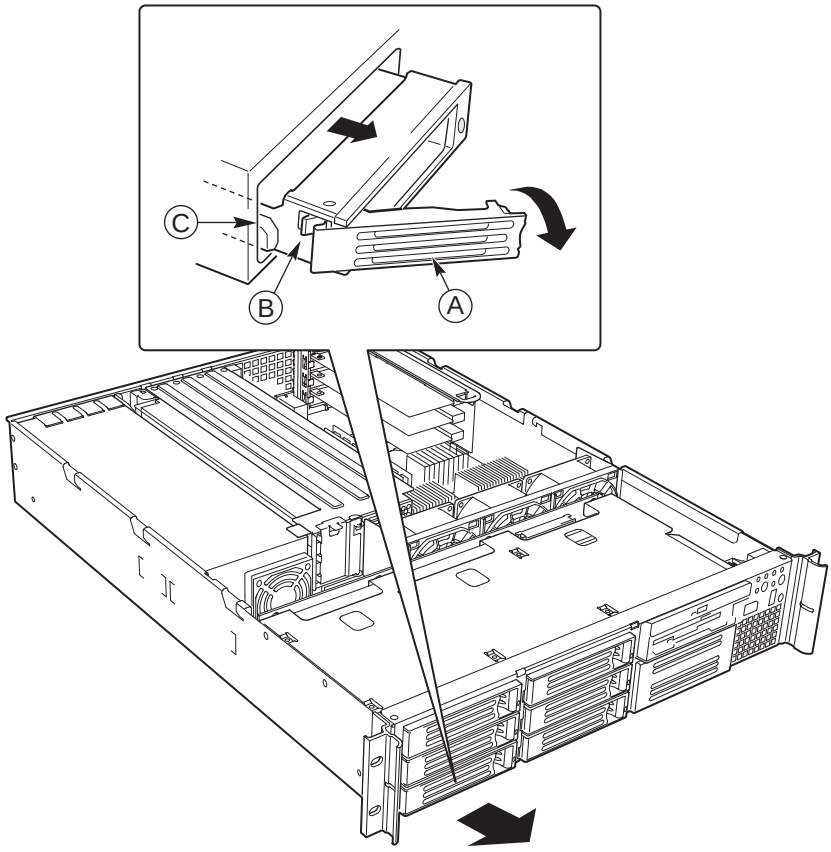


Figure 30. Removing a Carrier and Hard Drive from a Drive Bay

5. Remove the hard drive from the carrier (A) by removing the four screws (D) from the slide track (C). Lift the drive out of the carrier (B).
6. Remove the new hard drive from its wrapper and place it on an anti-static surface.

7. Set any jumpers and/or switches on the drive according to the drive manufacturer's instructions.

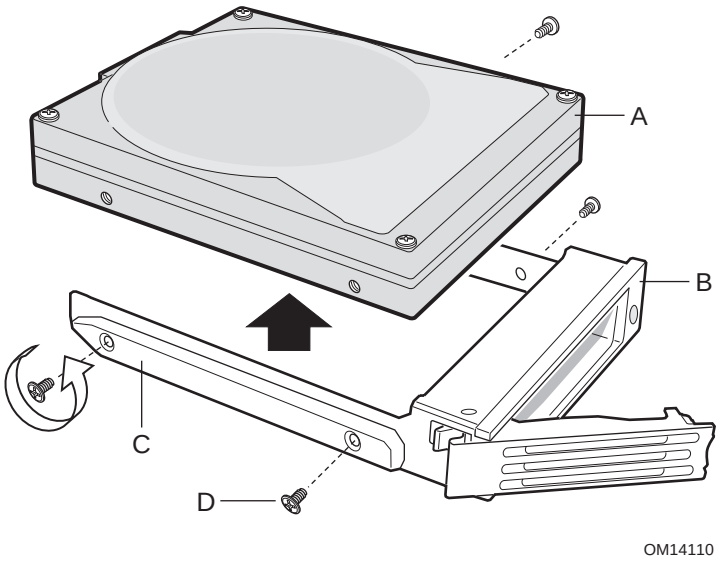


Figure 31. Removing a Hard Drive from a Carrier

8. Install the new drive in the carrier and the carrier/drive into the drive bay (see "Installing a Hard Drive" on page 38).
9. Reinstall a carrier/air baffle in any bays where you are not reinstalling a carrier/drive.

Replacing a DVD/CD-ROM drive/FDD Module

CAUTION

A DVD/CD-ROM drive/FDD module is NOT hot swappable. Before replacing it, 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.

1. Remove the bezel from the front of the chassis.
2. Rotate the handle bar (A) up about ¼-inch (6-mm) to unlatch the module from the bay.
3. Grasp the handle bar at both ends and firmly pull out to disengage the connector. (When you first pull, resistance will be high until the connector disengages.)
4. Slide the module out of the flex bay.
5. On the replacement module, rotate the handle bar down.
6. Insert the replacement module into the flex bay and slide it back until you feel the connectors touch.
7. With your thumbs positioned above the handle bar indentations (B), push the module in until it locks in place.
8. Reinstall the bezel.

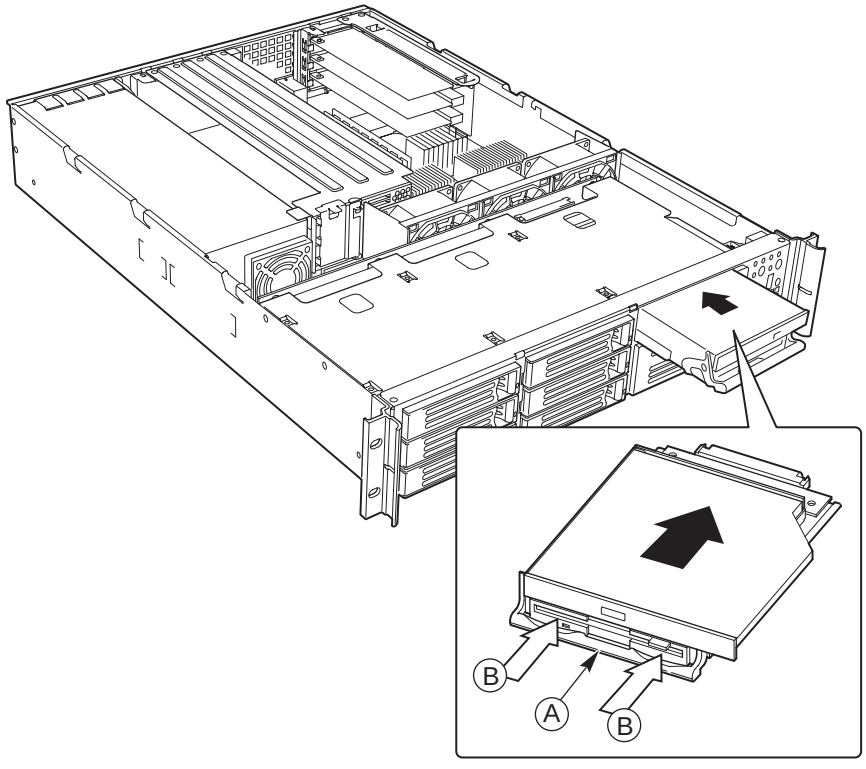


Figure 32. Replacing a DVD/CD-ROM drive/FDD Module

Replacing a PCI Add-in Card

If you will be replacing a low-profile PCI add-in card, see Figure 33 on page 51.
If you will be replacing a full-length PCI add-in card, see Figure 34, page 52.

1. Before removing the cover to work inside the system, observe the safety guidelines on page 45.
2. Insert your finger in loop A and remove the riser card assembly that contains the add-in card you desire to replace.
   — If you are removing a full-length card, also grasp the opposite end.
3. Open the retainer clip on the riser card retention bracket.
4. Pull the PCI card out of the riser card assembly.
5. Insert the edge-connector of the replacement PCI card into the slot of the riser card while inserting the end of the PCI card's metal bracket in opening.
   — If you are installing a full-length card, also insert the end of the card opposite the metal bracket into the slots of the full-length card lock.
7. Firmly push the PCI card's edge-connector into the riser card slot until it is fully seated.
8. Close the retainer clip and ensure it is latched.
9. Insert the riser card connector in the server board slot while aligning the tabs on the rear retention bracket with the holes in the chassis.
10. Firmly press the riser card straight down until it is seated in the server board slot.

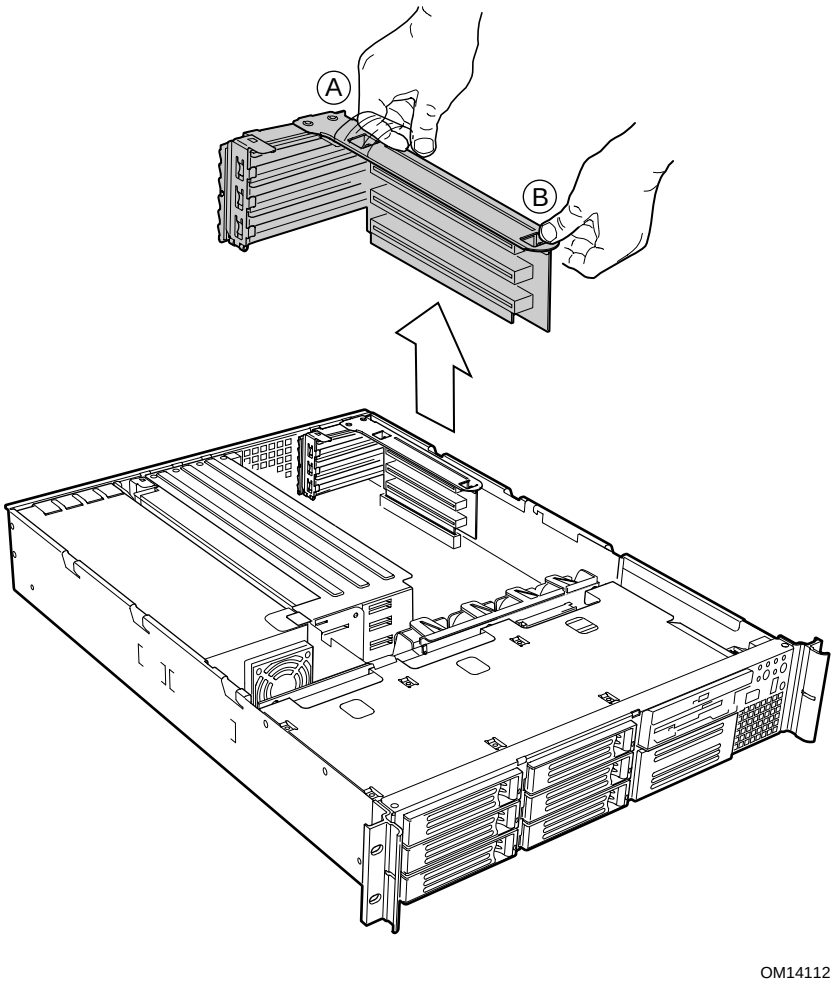


Figure 33. Removing the Low-Profile PCI Riser Card

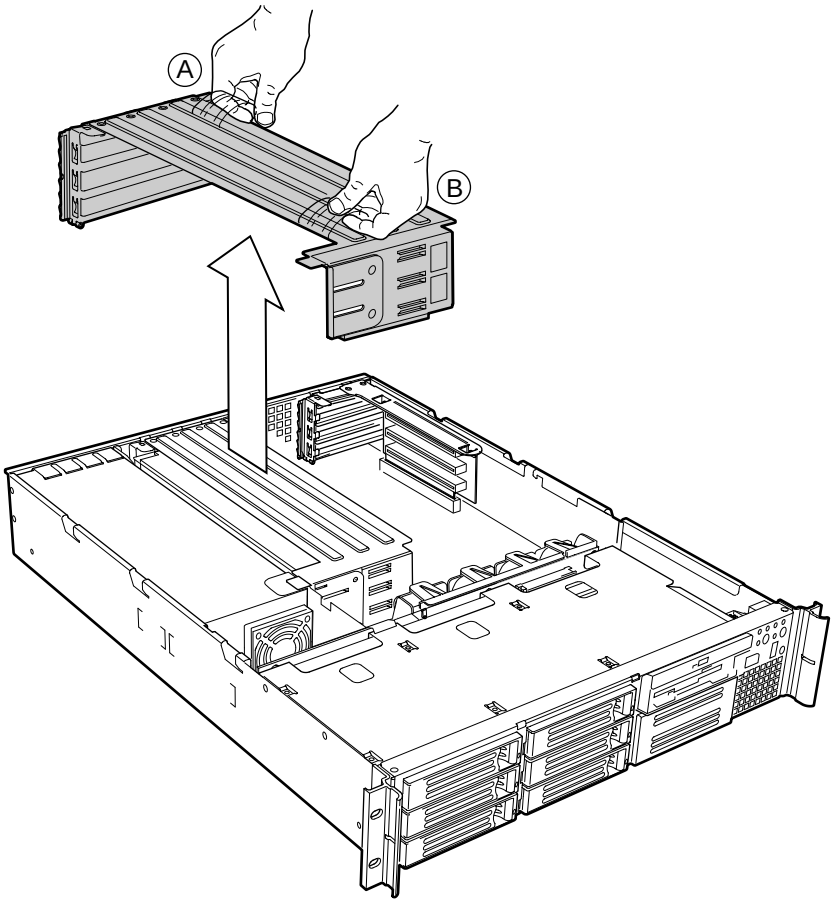


Figure 34. Removing the Full-Length PCI Riser Card

Replacing a 500 Watt Power Supply Module

The 500 Watt redundant power supply system consists of the power supply bay and either one or two power supply modules. The optional second module provides a redundant, 1+1 system.

⚠ CAUTION

If you do not have the second, redundant power supply module, you must take the server out of service before replacing the single module.

1. Squeeze the module handle to depress the latch (Figure 35, A) that is the right side of the handle.
2. Rotate the handle down (B) while pulling the module toward you (C). As you pull the module out, support the module with your free hand.
3. Insert a new power supply module in the bay.
4. Grip the module handle, rotate it down, and push the module into the bay.
5. When the module is nearly all of the way in, the handle will rotate up. At this time, push firmly on the front of the handle to lock the latch.
6. The power supply module is now functional and the power supply fault indicator should not be lit.

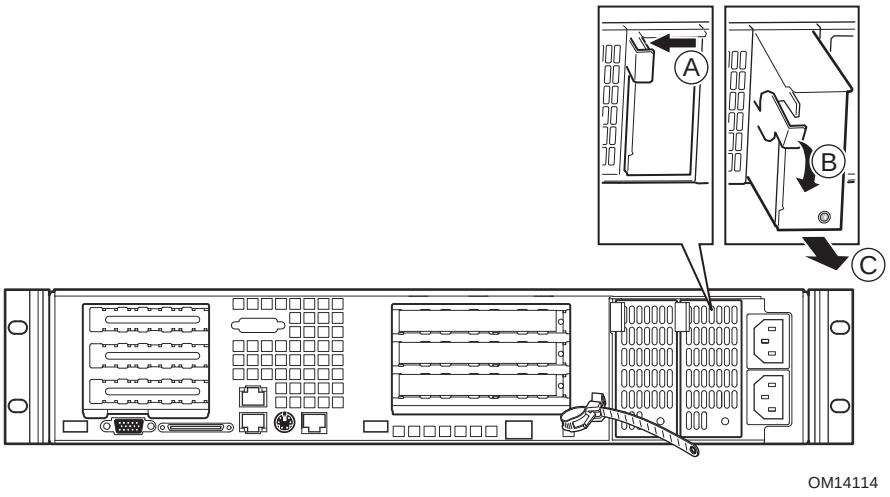


Figure 35. Replacing a Power Supply Module

Replacing a Power Supply Cage

The following procedures apply to both the redundant and the non-redundant power supply.

1. Unplug the power cord from the power source.
2. At the rear of the server, release the strain relief(s) and unplug the power cord(s) from the power supply.
3. Remove the power supply modules (redundant power supply only).
4. Remove the chassis cover.
5. Remove the full-height PCI riser card.
6. Remove the fan module.
7. Disconnect and remove all data cabling necessary to gain access to the power cables.
8. Disconnect the main power connector from the server board.
9. Disconnect all other power cables from their devices.
10. At the rear of the chassis, remove the two screws (A) that secure the power supply.

NOTE

In Figure 36, B, the power cables are not shown for clarity.

11. At the fan end of the power supply, remove the screw (C) that attaches the power supply to the standoff in the chassis floor.

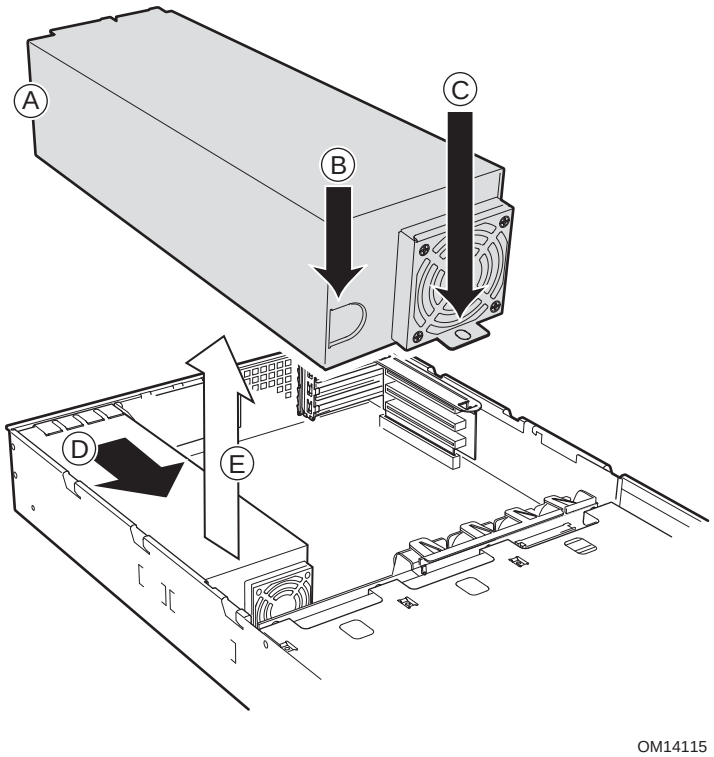


Figure 36. Replacing a Power Supply Cage

12. Lift the fan end of the power supply above the chassis standoff and slide it toward the front of the server (D). Lift the power supply out of the chassis (E).
13. Place the new power supply in the chassis and slide it to the rear as far as it will go.
14. Install the two screws at the rear of the chassis and the one screw at the fan end of the power supply.
15. Plug the main power connector into the server board.
16. Connect all other power cables to their devices.
17. Install the fan module and connect the fan power cables to the server board.
18. Install the full-height PCI riser card.
19. Route and connect all cables.

⚠ CAUTION

Carefully route cables in their original paths to minimize airflow blockage and cooling problems.

20. Install the chassis cover.
21. Connect the power cord(s) to the power cord receptacle(s) and plug the cord(s) back into the power source.

Installing a Redundant Fan

1. Before removing the cover to work inside the system, observe the safety guidelines on page 45.
2. Remove the cover from the chassis.
3. Remove the full-height PCI riser card.
4. Remove the flex circuit cable retention clip.
5. Disconnect the flex circuit cable from the backplane.
6. At the end of the fan module closest to the chassis centerline, push on the tab to release it from the chassis (A).
7. While pushing on the tab, lift up on the module to clear the retention stub.
8. Slide the module towards the power supply until it comes free.
9. Lift the fan module out of the chassis.

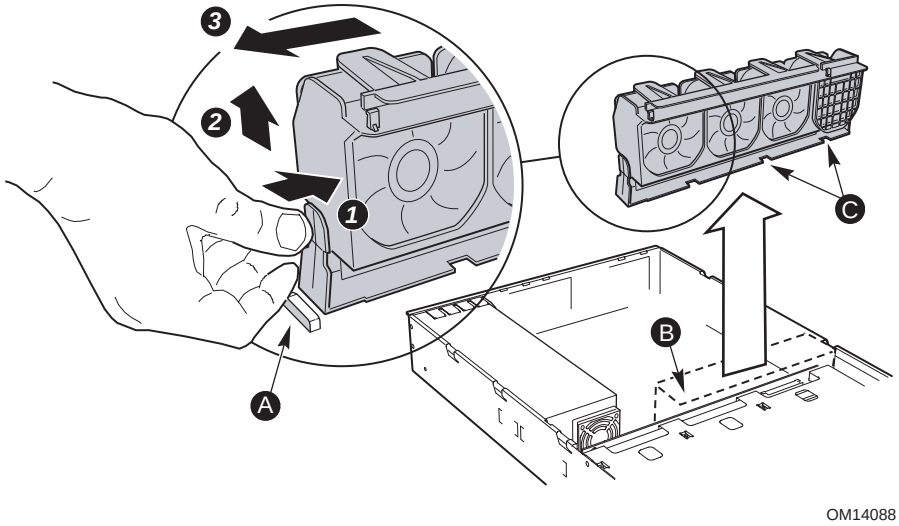


Figure 37. Removing the Fan module

10. Remove the fan blank from the fan module.

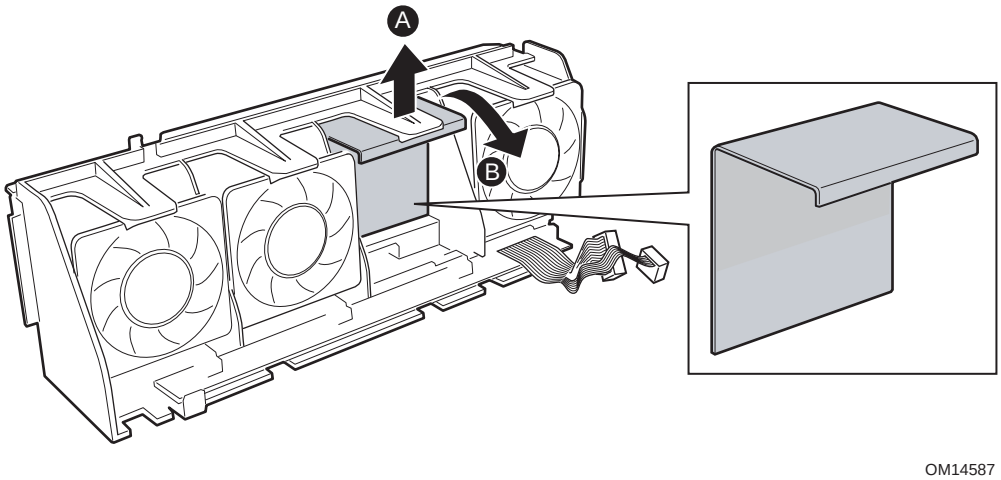


Figure 38. Removing the Fan Blank

11. Connect the new fan's cable to the connector on the fan module.
12. Insert the top of a new fan into the fan module and rotate the bottom in until tab (B) locks it in place.

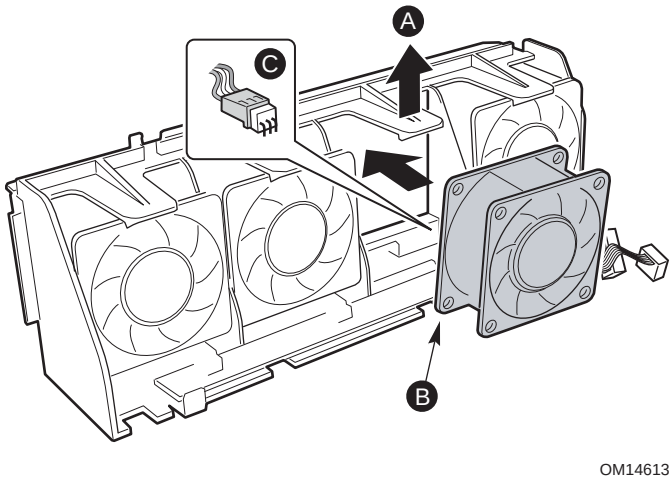


Figure 39. Installing the New Fan

13. Align the holes in the fan module with the raised tabs on the chassis and lower the fan module onto the chassis floor.
14. Slide the fan module toward the chassis sidewall until it has locked in place.
15. Plug the fan cables into the server board system fan connectors.
16. Make sure the USB cable is routed along the top of the fan module.
17. Connect the flex circuit cable to the backplane.
18. Install the flex circuit cable retention clip.
19. Install the full-height PCI riser card.
20. Replace the chassis cover.

Replacing the Fan Module

1. Before removing the cover to work inside the system, observe the safety guidelines on page 45.
2. Remove the cover from the chassis.
3. Remove the full-height PCI riser card.
4. Remove the flex circuit cable retention clip.
5. Disconnect the flex circuit cable from the backplane.
6. At the end of the fan module closest to the chassis centerline, push on the tab to release it from the chassis (A).
7. While pushing on the tab, lift up on the module to clear the retention stub.
8. Slide the module towards the power supply until it comes free.
9. Lift the fan module out of the chassis.

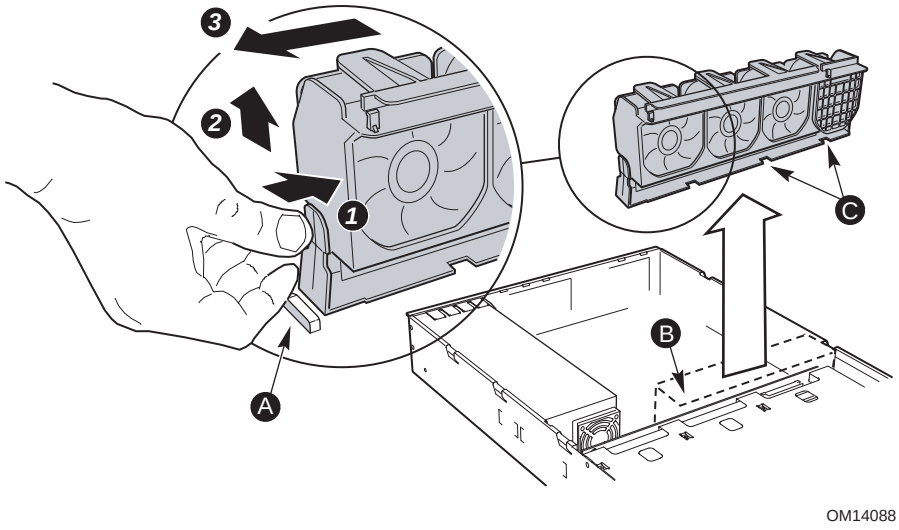


Figure 40. Removing the Fan module

10. Align the holes in the new fan module with the raised tabs on the chassis and lower the fan module onto the chassis floor.
11. Slide the fan module toward the chassis sidewall until it has locked in place.
12. Plug the fan cables into the server board system fan connectors.
13. Make sure the USB cable is routed along the top of the fan module.
14. Connect the flex circuit cable to the backplane.
15. Install the flex circuit cable retention clip.
16. Install the full-height PCI riser card.
17. Replace the chassis cover.

Replacing a Backplane Board

1. Before removing the cover to work inside the system, observe the safety guidelines on page 45.
2. Remove the cover from the chassis.
3. Remove all hard drives and peripherals from their bays.
4. Remove the full-height PCI riser card assembly.
5. Remove the fan module.
6. Unplug all cables connected to the backplane board.
7. Remove the thumbscrew (Figure 41, A) along the top of the board and lift it out of the chassis.
8. Lower the replacement backplane board into the chassis, inserting the lower corners (B) and (C) into their slotted chassis tabs.
9. Install and tighten the thumscrew.

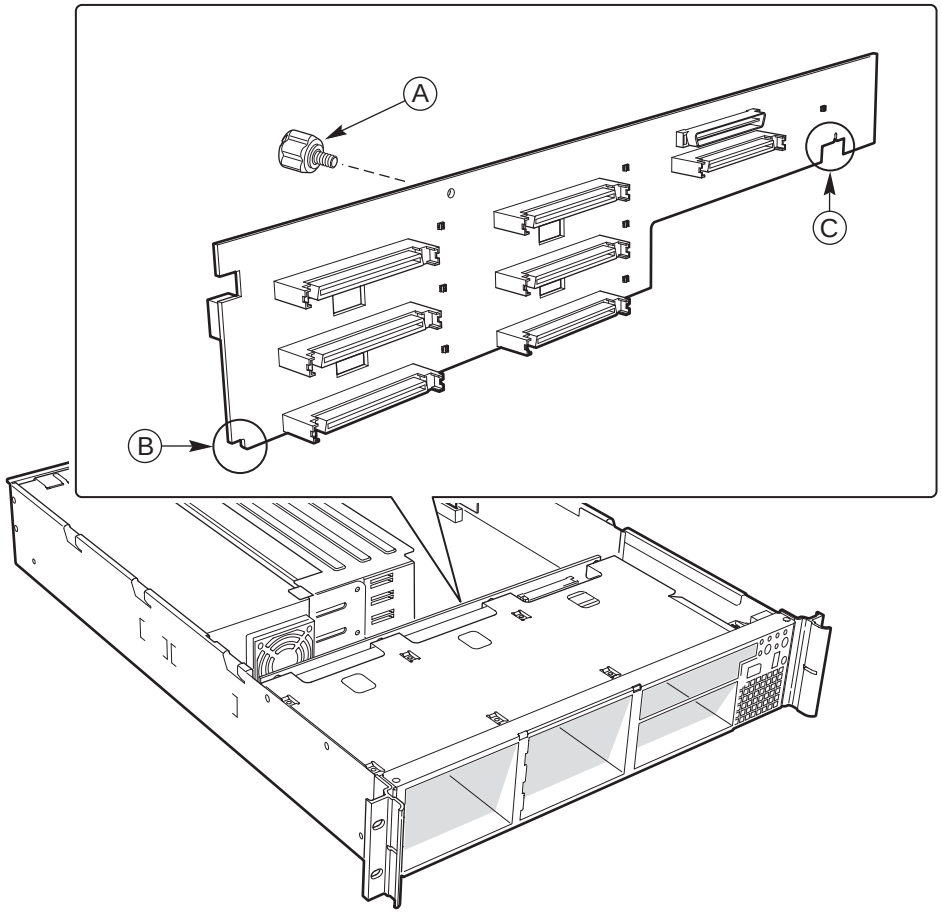


Figure 41. Replacing a Backplane Board

⚠ CAUTION

Carefully route cables in their original paths to minimize airflow blockage and cooling problems.

10. Connect all cables to the board.
11. Install the fan module.
12. Install the full-height PCI riser card.
13. Install all hard drives and peripherals in their bays.
14. Install the chassis cover.

Replacing a Front Panel Board

1. Before removing the cover to work inside the system, observe the safety guidelines on page 45.
2. Remove the cover from the chassis.
3. Unplug the USB and backplane cables from the front panel board (A).

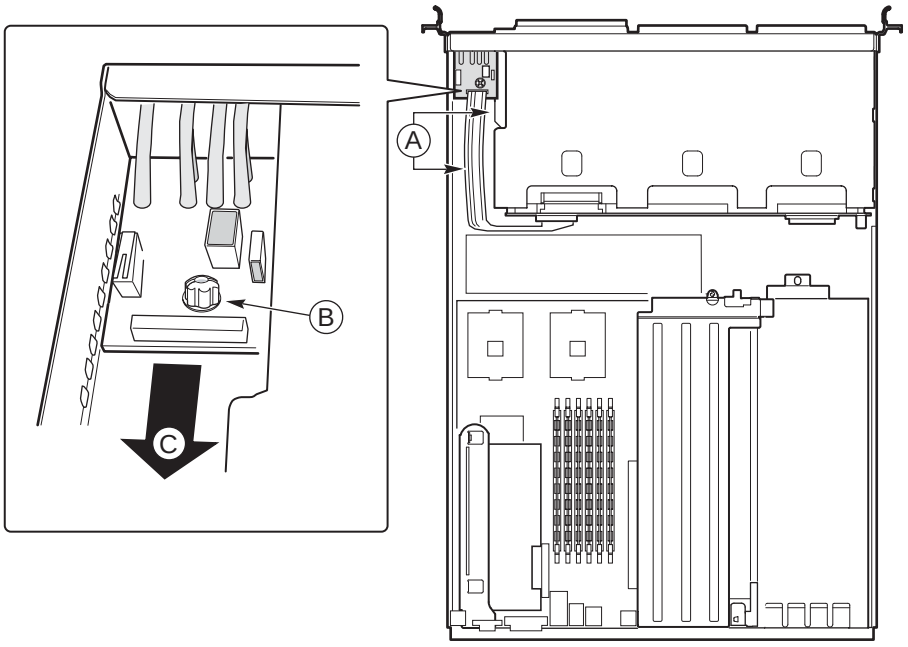


Figure 42. Removing the Front Panel Board

4. Remove the thumbscrew (B) from the board.
5. Remove the front panel board from the chassis (C).
6. Install the new board in the chassis being careful to insert the LED light pipes into the front panel holes.
7. Secure the board to the chassis with the thumbscrew.
8. Plug the USB and backplane cables back into the front panel board.
9. Replace the chassis cover.

Replacing a Server Board

1. Before removing the cover to work inside the system, observe the safety guidelines on page 45.
2. Disconnect all cables from the rear I/O of the chassis.
3. Remove the cover from the chassis.
4. Remove the PCI riser cards.
5. Remove the fan module.
6. Unplug all cables connected to the server board.
7. Remove any processors and DIMMs that you wish to use with the new board. (See the documentation that shipped with your server board.)
8. Remove the three mounting screws that secure the server board to the chassis (Figure 43).

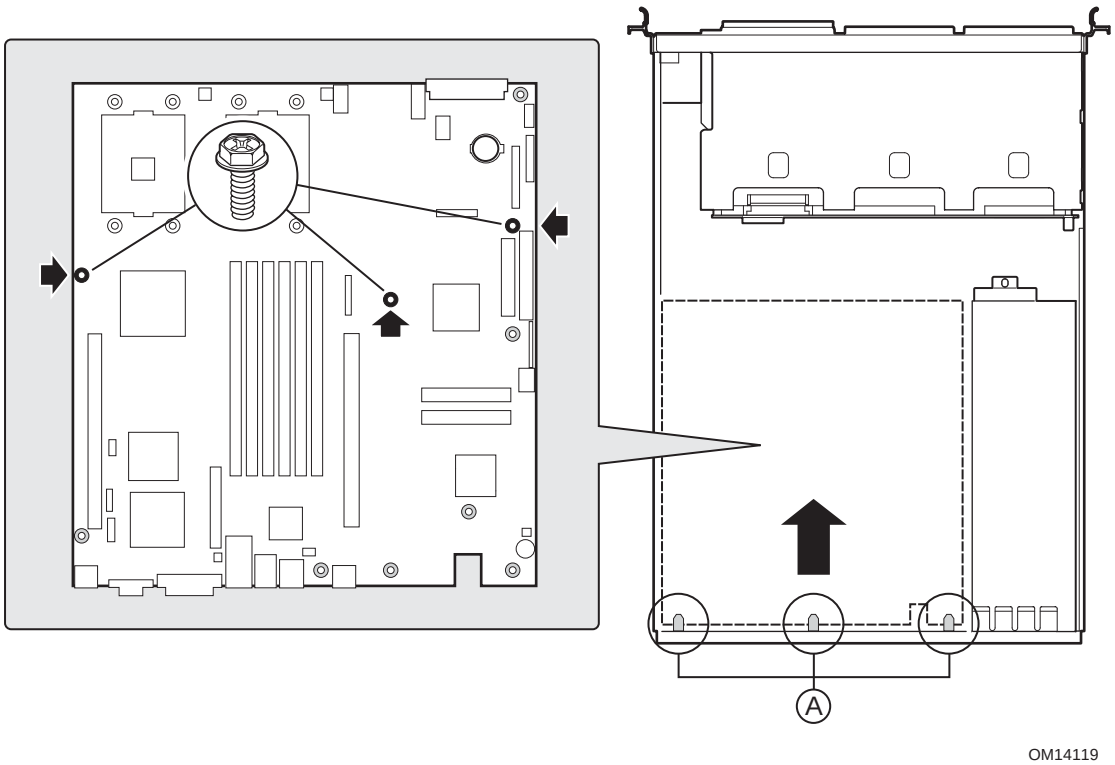


Figure 43. Removing the Server Board

9. Slide the board toward the front of the chassis until the I/O connectors are clear of the chassis I/O openings and lift it from the chassis.
10. Ensure that the edge of the insulator sheet is below the studs in the rear chassis wall and that the sheet is laying flat on the chassis floor.
11. Place the new server board on the chassis standoffs, being careful to position the board I/O connectors in the rear chassis I/O openings.
12. Adjust board position so that the two mounting holes near the board edges rest securely on the two corresponding shouldered standoffs.
13. Attach the board to the chassis using the three screws.
14. Install the processor(s), terminator, and memory cards that you wish to use with the new board.

CAUTION

Carefully route cables in their original paths to minimize airflow blockage and cooling problems.

15. Cable the new server board to the other system components.
16. Install the fan module.
17. Install the PCI riser cards.
18. Replace the chassis cover.
19. Connect any cables removed from the rear I/O of the chassis.

A Regulatory and Certification Information

WARNING

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.

Product Regulatory Compliance

The server chassis SR2300 subassembly, when correctly integrated per this guide, complies with the following safety and electromagnetic compatibility (EMC) regulations.

Product Safety Compliance

- UL 1950 - CSA 950 (US/Canada)
- EN 60 950 (European Union)
- IEC60 950 (International)
- CE – Low Voltage Directive (73/23/EEC) (European Union)
- EMKO-TSE (74-SEC) 207/94 (Nordics)
- GOST R 50377-92 (Russia)
- IRAM Type Certification (Argentina)

Product EMC Compliance

- FCC /ICES-003, Class A Emissions (USA/Canada) Verification
- CISPR 22, 3rd Edition, Class A Emissions (International)
- EN55022, Class A Emissions (CENELEC Europe)
- EN55024: 1998, Immunity (CENELEC Europe)
- EN61000-3-2, Harmonics (CENELEC Europe)
- EN61000-3-3, Voltage Flicker (CENELEC Europe)
- CE – EMC Directive 89/336/EEC (CENELEC Europe)
- VCCI, Class A Emissions (Japan)
- AS/NZS 3548 Class A Emissions (Australia / New Zealand)
- BSMI CNS13438 Class A Emissions (Taiwan)
- GOST R 29216-91, Class A Emissions (Russia)
- GOST R 50628-95, Immunity (Russia)
- RRL, MIC Notice No. 1997-41 (EMC) & 1997-42 (EMI) (Korea)

Product Regulatory Compliance Markings

The server chassis SR2300 will be marked with the following regulatory markings.

cULus Listing Marks	
German GS Mark	
CE Mark	
FCC Marking (Class A)	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
Canada EMC Marking (Class A)	CANADA ICES-003 CLASS A CANADA NMB-003 CLASSE A
Japan VCCI Marking (Class A)	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	檢磁 3912I901
Taiwan BSMI Marking (Class A)	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
Russia GOST R Marking	
Korea RRL MIC Mark	
China Compulsary Certification	

Electromagnetic Compatibility Notices

FCC Verification Statement (USA)

Product Type: SR2300

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.

Intel Corporation
5200 N.E. Elam Young Parkway
Hillsboro, OR 97124-6497
Phone: 1-800-628-8686

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 into an outlet on a circuit different from that 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.

ICES-003 (Canada)

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

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

Europe (CE Declaration of Conformity)

This product has been tested in accordance too, 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.

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.

BSMI (Taiwan)

The BSMI ID certification number 3902I901 and the following EMC warning are located on the outside rear area of the product.

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

Korea – RRL Certification Information

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

The English translation for the above is as follows:

1. Type of Equipment (Model Name): SR2300
2. Certification No.: On RRL Certificate. Obtain certificate from Local Intel 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

Regulated Specified Components

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

Updated product information for configurations can be found on Intel's Server Builder Web-site at: *http://channel.intel.com/go/serverbuilder*
If you do not have access to Intel's web address please contact your local Intel representative.

- **Server Chassis SR2300** (base chassis is provided with power supply and fans)—UL listed.
- **Server board**—you must use an Intel Server Board – UL Recognized.
- **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.
- **Peripheral storage devices**—must be UL Recognized or UL listed accessory and TUV or VDE licensed. Maximum power rating of any one device is 19W. Total server configuration is not to exceed maximum loading conditions of power supply.
  - When using a UL Recognized Peripheral Storage Device, the plastic bezel must be made of a UL recognized plastic with flammability rating of UL94V-1.

B Equipment Log and Worksheets

Equipment Log

Use the blank equipment log provided here to record information about your system. You will need some of this information when you run the SSU.

Item	Manufacturer Name and Model Number	Serial Number	Date Installed
Chassis			
Server Board			
Processor Speed and Cache			
Video Display			
Video Controller			
Keyboard			
Mouse			
3.5-inch Drive			
CD-ROM Drive			
Hard Disk Drive 1			
Hard Disk Drive 2			
Hard Disk Drive 3			
Hard Disk Drive 4			
Hard Disk Drive 5			
Hard Disk Drive 6			

continued

Equipment Log (continued)

Item	Manufacturer Name and Model Number	Serial Number	Date Installed
Hard Disk Drive 7			
DAT Tape Drive			

Current Usage

Calculating Power Usage

The total combined power consumption for your configuration **must be less than 500W**, with any combination of loads not to exceed maximum current on any one channel as defined in Table 1. The combined power consumption on 5 V and 3.3 V should not be more then 150W. Use the two worksheets in this section to calculate the total used by your configuration. For current and voltage requirements of add-in boards and peripherals, see your vendor documents.

Worksheet, Calculating DC Power Usage

1. List the current for each board and device in the appropriate voltage level column.
2. Add the current in each column, then go to the next worksheet.

Table 3. Power Usage Worksheet 1

	Current (maximum) at voltage level:				
Device	**+5 Vsb**	**+3.3 V**	**+5 V**	**+12 V**	**–12 V**
Boards, processors, and memory (get totals from your board manual)					
SCSI backplane and front panel			0.40		
3.5-inch drive			0.30		
CD-ROM drive			0.60		
3.5-inch tape drive or other peripheral					
1st hot swap hard drive					
2nd hot swap hard drive					
3rd hot swap hard drive					
4th hot swap hard drive					
5th hot swap hard drive					
6th hot swap hard drive					
7th hot swap hard drive					
Cooling fans (3 or 4) 60 mm, 1.2 A each on 12 V					
Total Current					
Maximum Ratings (for comparison) 480W[1,2]	2A	24A	20A	32A	.5A
500W[3]	2A	20A	20A	36A	.5A

Notes:

1 Maximum continuous total DC power output should not exceed 480W.

2 Maximum continuous combined load for +3.3V and +5V must not exceed 115W.

3 Maximum continuous combined load for +3.3V and +5V must not exceed 120W.

Worksheet, Total Combined Power Used by the System

1. From the previous worksheet, enter the total current for each column.
2. Multiply the voltage by the total current to get the total wattage for each voltage level.
3. Add the total wattage for each voltage level to arrive at a total combined power usage on the power supply.

Table 4. Power Usage Worksheet 2

Voltage level and total current (V X A = W)	Total Watts for each voltage level
(+5 Vsb) X (_____ A)	_____ W
(+3.3 V) X (_____ A)	_____ W
(+5 V) X (_____ A)	_____ W
(+12 V) X (_____ A)	_____ W
(–12 V) X (_____ A)	_____ W
Total Combined Wattage	_____ **W**

CAUTION

Do not overload: As an overall current usage limitation on the power supply, do not exceed a combined power output of 250W for all DC outputs.

C Safety Warnings

Read all caution and safety statements in this document before performing any of the instructions. See also *Intel Server Boards and Server Chassis Safety Information* on the Resource CD and/or at http:\\support.intel.com.

WARNING: English (US)

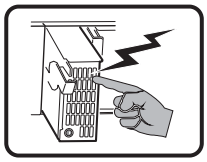
AVERTISSEMENT: Français

WARNUNG: Deutsch

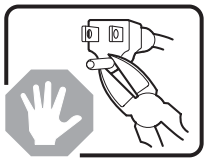
AVVERTENZA: Italiano

ADVERTENCIAS: Español

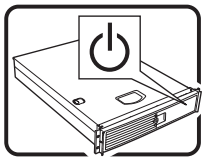
WARNING: English (US)



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.



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.

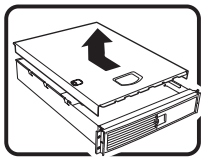


The power button on the system does not turn off system AC power. To remove AC power from the system, you must unplug each AC power cord from the wall outlet or power supply.

The power cord(s) is considered the disconnect device to the mains (AC) power. The socket outlet that the system plugs into shall be installed near the equipment and shall be easily accessible.

SAFETY STEPS: Whenever you remove the chassis covers to access the inside of the system, follow these steps:

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 some 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. Do not operate the system with the chassis covers removed.

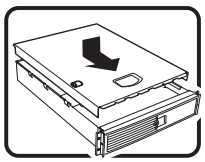


After you have completed the six SAFETY steps above, you can remove the system covers. To do this:

1. Remove and save all screws from the covers.
2. Remove the covers.

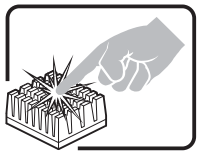
continued

WARNING: English (continued)

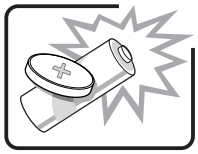


For proper cooling and airflow, always reinstall the chassis covers before turning on the system. Operating the system without the covers in place can damage system parts. To install the covers:

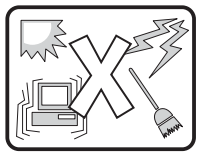
1. Check first to make sure you have not left loose tools or parts inside the system.
2. Check that cables, add-in boards, and other components are properly installed.
3. Attach the covers to the chassis with the screws removed earlier, and tighten them firmly.
4. Connect all external cables and the AC power cord(s) to the system.



A microprocessor and heat sink may be hot if the system has been running. Also, there may be sharp pins and edges on some board and chassis parts. Contact should be made with care. Consider wearing protective gloves.



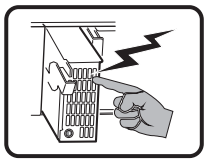
Danger of explosion if the battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the equipment manufacturer. Dispose of used batteries according to manufacturer's instructions.



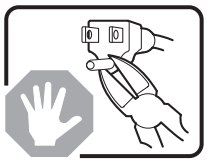
The system is designed to operate in a typical office environment. Choose a site that is:

- 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 suppresser 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.

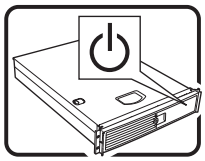
AVERTISSEMENT: Français



Le bloc d'alimentation de ce produit ne contient aucune pièce pouvant être réparée par l'utilisateur. Ce produit peut contenir plus d'un bloc d'alimentation. Veuillez contacter un technicien qualifié en cas de problème.



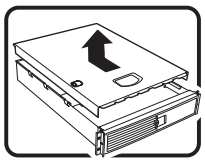
Ne pas essayer d'utiliser ni modifier le câble d'alimentation CA fourni, s'il ne correspond pas exactement au type requis. Le nombre de câbles d'alimentation CA fournis correspond au nombre de blocs d'alimentation du produit.



Notez que le commutateur CC de mise sous tension /hors tension du panneau avant n'éteint pas l'alimentation CA du système. Pour mettre le système hors tension, vous devez débrancher chaque câble d'alimentation de sa prise.

CONSIGNES DE SÉCURITÉ -Lorsque vous ouvrez le boîtier pour accéder à l'intérieur du système, suivez les consignes suivantes:

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.

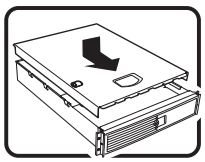


Une fois TOUTES les étapes précédentes accomplies, vous pouvez retirer les panneaux du système. Procédez comme suit:

1. Retirez toutes les vis des panneaux et mettez-les dans un endroit sûr.
2. Retirez les panneaux.

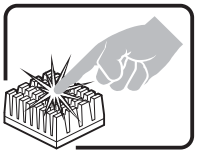
suite

AVERTISSEMENT: Français (suite)

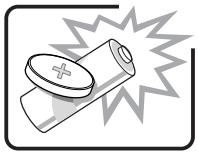


Afin de permettre le refroidissement et l'aération du système, réinstallez toujours les panneaux du boîtier avant de mettre le système sous tension. Le fonctionnement du système en l'absence des panneaux risque d'endommager ses pièces. Pour installer les panneaux, procédez comme suit:

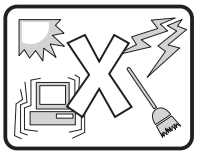
1. Assurez-vous de ne pas avoir oublié d'outils ou de pièces démontées dans le système.
2. Assurez-vous que les câbles, les cartes d'extension et les autres composants sont bien installés.
3. Revissez solidement les panneaux du boîtier avec les vis retirées plus tôt.
4. Rebranchez tous les cordons d'alimentation c. a. et câbles externes au système.



Le microprocesseur et le dissipateur de chaleur peuvent être chauds si le système a été sous tension. Faites également attention aux broches aiguës des cartes et aux bords tranchants du capot. Nous vous recommandons l'usage de gants de protection.



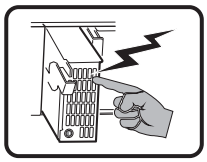
Danger d'explosion si la batterie n'est pas remontée correctement. Remplacer uniquement avec une batterie du même type ou d'un type équivalent recommandé par le fabricant. Disposez des piles usées selon les instructions du fabricant.



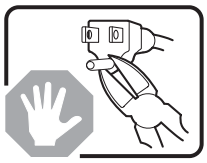
Le système a été conçu pour fonctionner dans un cadre de travail normal. L'emplacement choisi doit être:

- 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 générés par des appareils électriques.
- Dans les régions sujettes aux orages magnétiques il est recommandé 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).

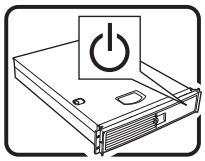
WARNUNG: Deutsch



Benutzer können am Netzgerät dieses Produkts keine Reparaturen vornehmen. Das Produkt enthält möglicherweise mehrere Netzgeräte. Wartungsarbeiten müssen von qualifizierten Technikern ausgeführt werden.



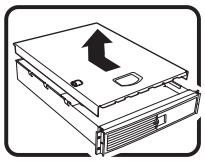
Versuchen Sie nicht, das mitgelieferte Netzkabel zu ändern oder zu verwenden, wenn es sich nicht genau um den erforderlichen Typ handelt. Ein Produkt mit mehreren Netzgeräten hat für jedes Netzgerät ein eigenes Netzkabel.



Der Wechselstrom des Systems wird durch den Ein-/Aus-Schalter für Gleichstrom nicht ausgeschaltet. Ziehen Sie jedes Wechselstrom-Netzkabel aus der Steckdose bzw. dem Netzgerät, um den Stromanschluß des Systems zu unterbrechen.

SICHERHEISMASSNAHMEN: Immer wenn Sie die Gehäuseabdeckung abnehmen um an das Systeminnere zu gelangen, sollten Sie folgende Schritte beachten:

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 beschriften 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.

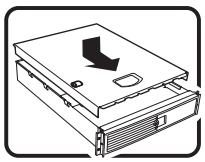


Nachdem Sie die oben erwähnten ersten sechs SICHERHEITSSCHRITTE durchgeführt haben, können Sie die Abdeckung abnehmen, indem Sie:

1. Entfernen Sie alle Schrauben der Gehäuseabdeckung.
2. Nehmen Sie die Abdeckung ab.

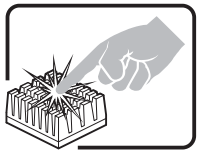
Fortsetzung

WARNUNG: Deutsch (Fortsetzung)

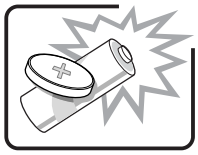


Zur ordnungsgemäßen Kühlung und Lüftung muß die Gehäuseabdeckung immer wieder vor dem Einschalten installiert werden. Ein Betrieb des Systems ohne angebrachte Abdeckung kann Ihrem System oder Teile darin beschädigen. Um die Abdeckung wieder anzubringen:

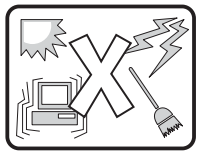
1. Vergewissern Sie sich, daß Sie keine Werkzeuge oder Teile im Innern des Systems zurückgelassen haben.
2. Überprüfen Sie alle Kabel, Zusatzkarten und andere Komponenten auf ordnungsgemäßen Sitz und Installation.
3. Bringen Sie die Abdeckungen wieder am Gehäuse an, indem Sie die zuvor gelösten Schrauben wieder anbringen. Ziehen Sie diese gut an.
4. Schließen Sie alle externen Kabel und den AC Stromanschlußstecker Ihres Systems wieder an.



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.



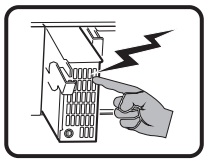
Bei falschem Einsetzen einer neuen Batterie besteht Explosionsgefahr. Die Batterie darf nur durch denselben oder einen entsprechenden, vom Hersteller empfohlenen Batterietyp ersetzt werden. Entsorgen Sie verbrauchte Batterien den Anweisungen des Herstellers entsprechend.



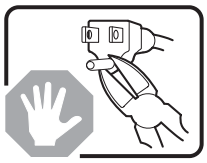
Das System wurde für den Betrieb in einer normalen Büroumgebung entwickelt. Der Standort sollte:

- 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.

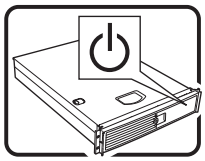
AVVERTENZA: Italiano



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.



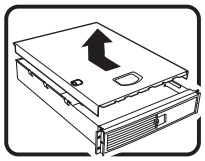
Non modificare o utilizzare il cavo di alimentazione in c.a. fornito dal produttore, se non corrisponde esattamente al tipo richiesto. Ad ogni fonte di alimentazione corrisponde un cavo di alimentazione in c.a. separato.



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.

PASSI DI SICUREZZA: Qualora si rimuovano le coperture del telaio per accedere all'interno del sistema, seguire i seguenti passi:

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

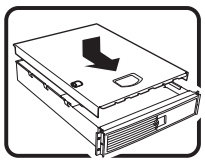


Dopo aver seguito i sei passi di SICUREZZA sopracitati, togliere le coperture del telaio del sistema come seque:

1. Togliere e mettere in un posto sicuro tutte le viti delle coperture.
2. Togliere le coperture.

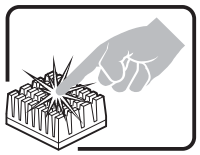
continua

AVVERTENZA: Italiano (continua)

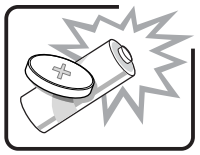


Per il giusto flusso dell'aria e raffreddamento del sistema, rimettere sempre le coperture del telaio prima di riaccendere il sistema. Operare il sistema senza le coperture al loro proprio posto potrebbe danneggiare i componenti del sistema. Per rimettere le coperture del telaio:

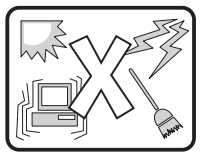
1. Controllare prima che non si siano lasciati degli attrezzi o dei componenti dentro il sistema.
2. Controllare che i cavi, dei supporti aggiuntivi ed altri componenti siano stati installati appropriatamente.
3. Attaccare le coperture al telaio con le viti tolte in precedenza e avvitarle strettamente.
4. 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.



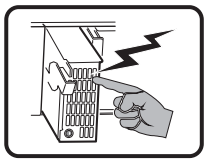
Esiste il pericolo di un esplosione se la pila non viene sostituita in modo corretto. Utilizzare solo pile uguali o di tipo equivalente a quelle consigliate dal produttore. Per disfarsi delle pile usate, seguire le istruzioni del produttore.



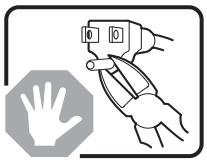
Il sistema è progettato per funzionare in un ambiente di lavoro tipo. Scegliere una postazione che sia:

- 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.

ADVERTENCIAS: Español

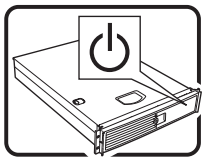


El usuario debe abstenerse de manipular los componentes de la fuente de alimentación de este producto, cuya reparación debe dejarse exclusivamente en manos de personal técnico especializado. Puede que este producto disponga de más de una fuente de alimentación.



No intente modificar ni usar el cable de alimentación de corriente alterna, si no corresponde exactamente con el tipo requerido.

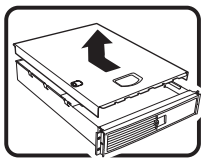
El número de cables suministrados se corresponden con el número de fuentes de alimentación de corriente alterna que tenga el producto.



Nótese que el interruptor activado/desactivado en el panel frontal no desconecta la corriente alterna del sistema. Para desconectarla, deberá desenchufar todos los cables de corriente alterna de la pared o desconectar la fuente de alimentación.

INSTRUCCIONES DE SEGURIDAD: Cuando extraiga la tapa del chasis para acceder al interior del sistema, siga las siguientes instrucciones:

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 sujetada 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.

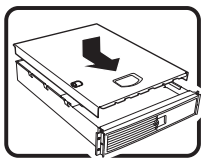


Después de completar las seis instrucciones de SEGURIDAD mencionadas, ya puede extraer las tapas del sistema. Para ello:

1. Extraiga y guarde todos los tornillos de las tapas.
2. Extraiga las tapas.

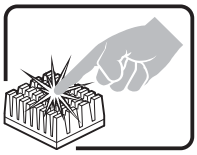
continúa

ADVERTENCIAS: Español (continúa)

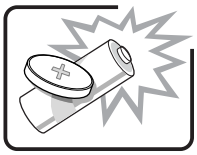


Para obtener un enfriamiento y un flujo de aire adecuados, reinstale siempre las tapas del chasis antes de poner en marcha el sistema. Si pone en funcionamiento el sistema sin las tapas bien colocadas puede dañar los componentes del sistema. Para instalar las tapas:

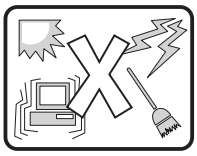
1. Asegúrese primero de no haber dejado herramientas o componentes sueltos dentro del sistema.
2. Compruebe que los cables, las placas adicionales y otros componentes se hayan instalado correctamente.
3. Incorpore las tapas al chasis mediante los tornillos extraídos anteriormente, tensándolos firmemente.
4. Conecte todos los cables externos y los cables de alimentación CA al sistema.



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.



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.



El sistema está diseñado para funcionar en un entorno de trabajo normal. Escoja un lugar:

- 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.

D Warranty

Limited Warranty for Intel® Chassis Subassembly Products

Intel warrants that the Products (defined herein as the Intel® chassis subassembly and all of its various components and software delivered with or as part of the Products) to be delivered hereunder, if properly used and installed, will be free from defects in material and workmanship and will substantially conform to Intel's publicly available specifications for a period of three (3) years after the date the Product was purchased from an Intel authorized distributor. Software of any kind delivered with or as part of products is expressly provided "as is" unless specifically provided for otherwise in any software license accompanying the software.

If any Product furnished by Intel that is the subject of this Limited Warranty fails during the warranty period for reasons covered by this Limited Warranty, Intel, at its option, will:

- **REPAIR** the Product by means of hardware and/or software; OR
- **REPLACE** the Product with another Product; OR
- **REFUND** the then-current value of the Product if Intel is unable to repair or replace the Product.

If such Product is defective, Intel will pay transportation charges for the return of Product to buyer within the USA. For all other locations, the warranty excludes all costs of shipping, customs clearance, and other related charges. Intel will have a reasonable time to make repairs or to replace Product or to refund the then-current value of the Product.

In no event will Intel be liable for any other costs associated with the replacement or repair of Product, including labor, installation or other costs incurred by buyer and in particular, any costs relating to the removal or replacement of any product soldered or otherwise permanently affixed to any printed circuit board.

This Limited Warranty, and any implied warranties that may exist under state law, apply only to the original purchaser of the Product.

Extent of Limited Warranty

Intel does not warrant that Products to be delivered hereunder, whether delivered stand-alone or integrated with other Products, including without limitation semiconductor components, will be free from design defects or errors known as "errata". Current characterized errata are available upon request.

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This limited warranty gives you specific legal rights, and you may also have other rights that vary from jurisdiction to jurisdiction.

Any and all disputes arising under or related to this Limited Warranty shall be adjudicated in the following forums and governed by the following laws: for the United States of America, Canada, North America and South America, the forum shall be Santa Clara, California, USA and the applicable law shall be that of the State of California, USA; for the Asia Pacific region, the forum shall be Singapore and the applicable law shall be that of Singapore; for Europe and the rest of the world, the forum shall be London and the applicable law shall be that of the United Kingdom.

In the event of any conflict between the English language version and any other translated version(s) of this Limited Warranty, the English language version shall control.

How to Obtain Warranty Service

To obtain warranty service for this Product, you may contact Intel or your authorized distributor.

North America & Latin America—To obtain warranty repair for the product, please go to this website to obtain instructions:
http://support.intel.com/support/motherboards/draform.htm

In Europe and in Asia—Contact your original authorized distributor for warranty service.

Any replacement Product is warranted under this written warranty and is subject to the same limitations and exclusions for the remainder of the original warranty period.

Telephone Support

If you can't find the information you need on Intel's World Wide Web site (*http://www.intel.com*), call your local distributor or an Intel Customer Support representative.

Country	Customer Support Telephone Number	Hours (Monday-Friday)	Billing
United States & Canada	1-800-404-2284	7:00 - 17:00 PST	Credit card calls $25.00/incident
UK France Germany Italy Spain Finland Denmark Norway Sweden Holland	0870 6072439 01 41 918529 069 9509 6099 02 696 33276 91 377 8166 9 693 79297 38 487077 23 1620 50 08 445 1251 020 487 4562	UK time 8:00 - 17:00 (M, Th, F) 8:00 - 16:00 (Tu - W)	Credit Card Calls $25.00/incident Levied in local currency at the applicable credit card exchange rate plus applicable VAT
Asia-Pacific Australia Hong Kong Korea Philippines PRC Singapore Taiwan Malaysia New Zealand Indonesia Thailand Vietnam India Pakistan	 +1-800-649-931 +852-2-844-4456 +822-767-2595 1800-1-651-0117 (800)8201100 (65)2131311 2 27189915 1800-801390 0800-444365 803-65-7249 800-6310003 IDD call +63(2)6368416 (0006517) 830-3634 Manual toll free. From India, you need an IDD-equipped phone. IDD call +63(2)6368415	Singapore local time Oct-April: 6:00 - 16:00 April-Oct: 5:00 - 16:00	

Returning a Defective Product

Before returning any product, call your authorized dealer/distribution authority.