Intel® Server Chassis P4000S Family Service Guide

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

Order Number: G20364-004

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Safety Information

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 Intel® Server Deployment Toolkit 3.0 CD and/or at http://www.intel.com/support/motherboards/server/sb/cs-010770.htm.

Wichtige Sicherheitshinweise

Lesen Sie zunächst sämtliche Warnund Sicherheitshinweise in diesem Dokument, bevor Sie eine der Anweisungen ausführen. Beachten Sie hierzu auch die Sicherheitshinweise zu Intel®-Serverplatinen und Servergehäusen auf der Intel® Server Deployment Toolkit 3.0 CD oder unter http://www.intel.com/support/motherboards/server/sb/cs-010770.htm.

Consignes de sécurité

Lisez attention toutes les consignes de sécurité et les mises en garde indiquées dans ce document avant de suivre toute instruction. Consultez Intel® Server Boards and Server Chassis Safety Information sur le Intel® Server Deployment Toolkit 3.0 CD ou bien rendez-vous sur le site http://www.intel.com/support/motherboards/server/sb/cs-010770.htm.

Instrucciones de seguridad importantes

Lea todas las declaraciones de seguridad y precaución de este documento antes de realizar cualquiera de las instrucciones. Vea Intel® Server Boards and Server Chassis Safety Information en el Intel® Server Deployment Toolkit 3.0 CD y/o en http://www.intel.com/support/motherboards/server/sb/cs-010770.htm.

重要安全指导

在执行任何指令之前，请阅读本文档中的所有注意事项及安全声明。和/或 http://www.intel.com/support/motherboards/server/sb/cs-010770.htm 上的 *Intel® Server Boards and Server Chassis Safety Information*（《Intel 服务器主板与服务器机箱安全信息》）。

Warnings

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

System power on/off: The power button DOES NOT turn off the system AC power. To remove power from the system, you must unplug the AC power cord from the wall outlet. Make sure the AC power cord is unplugged before you open the chassis, add, or remove any components.

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

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

ESD and handling boards: Always handle boards carefully. They can be extremely sensitive to ESD. Hold boards only by their edges. After removing a board from its protective wrapper or from the server, place the board component side up on a grounded, static free surface. Use a conductive foam pad if available but not the board wrapper. Do not slide board over any surface.

Installing or removing jumpers: A jumper is a small plastic encased conductor that slips over two jumper pins. Some jumpers have a small tab on top that you can grip with your fingertips or with a pair of fine needle nosed pliers. If your jumpers do not have such a tab, take care when using needle nosed pliers to remove or install a jumper; grip the narrow sides of the jumper with the pliers, never the wide sides. Gripping the wide sides can damage the contacts inside the jumper, causing intermittent problems with the function controlled by that jumper. Take care to grip with, but not squeeze, the pliers or other tool you use to remove a jumper, or you may bend or break the pins on the board.

Preface

About this Manual

Thank you for purchasing and using the Intel® Server Chassis P4000S family products.

This manual is written for system technicians who are responsible for troubleshooting, upgrading, and repairing this server chassis. This document provides a brief overview of the features of the board/chassis, a list of accessories or other components you may need, troubleshooting information, and instructions on how to add and replace components on the Intel® Server Chassis P4000S family. For the latest version of this manual, refer to http://www.intel.com/p/en_US/support.

Manual Organization

Chapter 1 provides a brief overview of the Intel® Server Chassis P4000S family. In this chapter, you will find a list of the server chassis features, photos of the product, and product diagrams to help you identify components and their locations.

Chapter 2 provides instructions on adding and replacing components. Use this chapter for step-by-step instructions and diagrams for installing or replacing components such as thefan, power supply, front panel board, and battery, among other components.

Chapter 3 provides technical reference information on cable routing, power supply specifications, and system environment requirements.

At the back of this document, you will find appendices on safety, getting help, and warranty information.

Additional Information and Software

If you need more information about this product or information about the accessories that you can use with this server chassis, use the following resources. These files are available at: http://www.intel.com/support.

Unless otherwise indicated in the following table, once on this web page, type the document or software name in the search field at the left side of the screen and select the option to search “This Product”.

For this information or software	Use this Document or Software
For in-depth technical information about this product.	*Intel® Server Chassis P4000S Family Technical Product Specification* See the section on the web page titled, “Technical Specifications”.
If you just received this product and need to install it.	*Intel® Server Chassis P4000S Family Quick Installation User’s Guide* See the section on the web page titled, “Installation and Use”.
Accessories or other Intel® server products.	*Spares and Configuration Guide* See the section on the web page titled, “Installation and Use”.
To quickly and efficiently select compatible components to design a complete system.	Intel® Server Configurator tool A link to the Intel® Server Configurator tool is available under “Other Resources” at the right side of the web page screen

For this information or software	Use this Document or Software
Hardware (peripheral boards, adapter cards, and so on) and operating systems tested with this product.	Tested Hardware and Operating System List See the section on the compatible server/workstation board web page titled, “Compatibility”.
To make sure your system falls within the allowed power budget.	Power Budget Analysis Tool See the section on the web page titled, “Installation and Use”.
For software to manage your Intel® server.	Intel Server Management Software See the section on the web page titled, “Installation and Use”.
For firmware and drivers.	Firmware and Drivers See the section on the web page titled, “Software and Drivers”.

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1 Server Chassis Features

This chapter briefly describes the main features of the Intel® Server Chassis P4000S family. This chapter provides a list of the server chassis features, and diagrams showing the location of important components and connections on the server chassis.

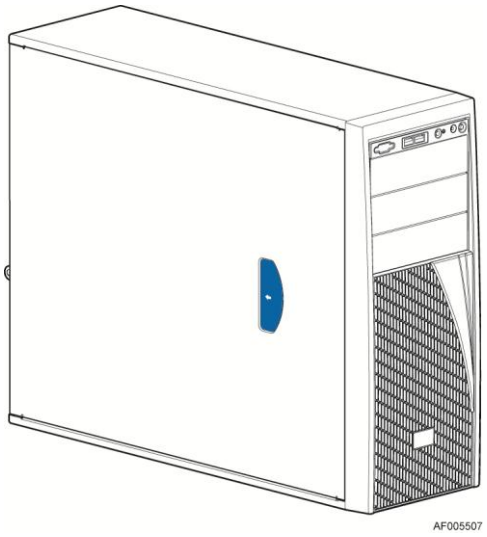
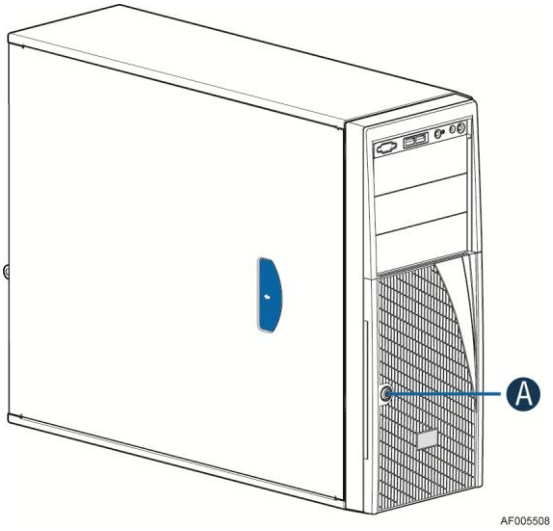


Figure 1. Chassis Front View for Fixed Hard Drive Configuration



A. Front Door Lock

Figure 2. Chassis Front View for Hot-swap Hard Drive Configuration

Table 1. Breakdown of Intel® Server Chassis P4000S family

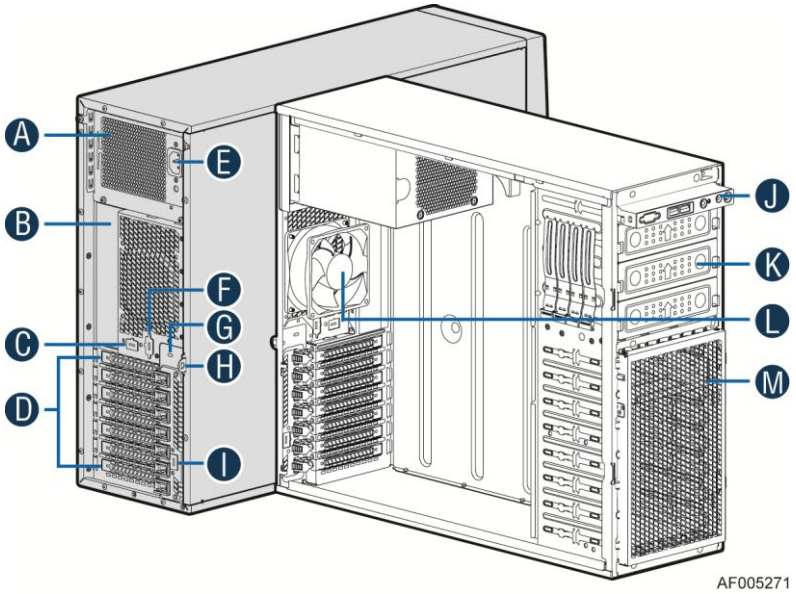
Intel® Server Chassis	Configuration Intel® Server Board
Intel® Server Chassis P4304XXSFCN	Intel® Server Board S1200BTL, S1200BTS
Intel® Server Chassis P4304XXSHCN	Intel® Server Board S1200BTL
Intel® Server Chassis P4304XXSFEN Intel® Server Chassis P4304XXSHEN Intel® Server Chassis P4304XXSFDR Intel® Server Chassis P4304XXSHDR Intel® Server Chassis P4304XXSFDN Intel® Server Chassis P4304XXSHDN	Intel® Server Board S2400SC

Chassis Features

Table 2. Intel® Server Chassis P4000S Family Base Features

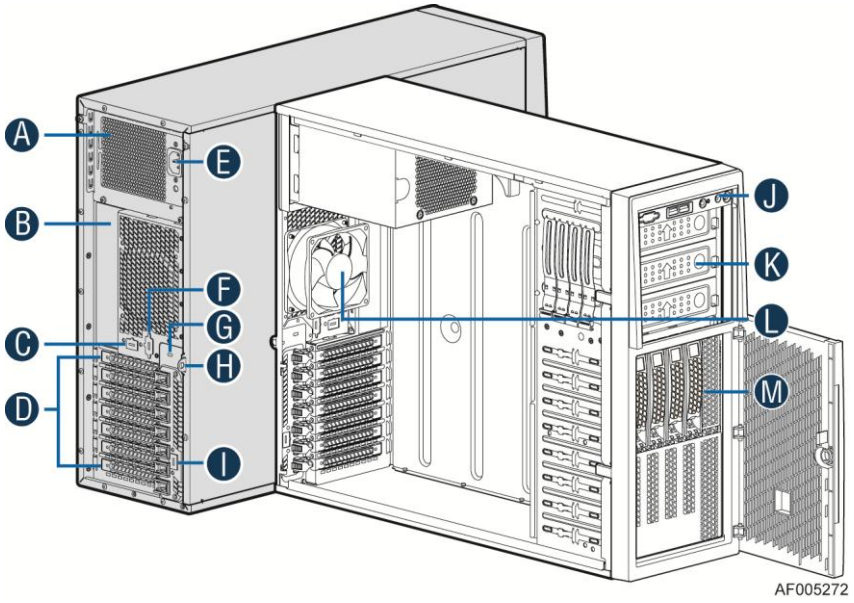
Feature	Description
Dimensions	▪ 17.2 inches high ▪ 6.8 inches wide ▪ 22 inches deep (without bezel: 21.5 inches)
Hard Drives	▪ Supports up to 4 fixed/hot-swap HDDs
Peripherals	▪ Three multi-mount 5.25 peripheral bays
Control Panel (dependent on option selected)	▪ Front Control Panel ▪ Intel® Local Control Panel (Optional)
LEDs and displays (dependent on option selected)	▪ With Front Control Panel o NIC1 Activity o NIC2 Activity o NIC3 Activity o NIC4 Activity o Power/Sleep o System Status o System Chassis Identification o Hard Drive Activity
Power Supply Options	▪ One fixed 365-W ▪ One fixed 550-W ▪ One hot-swap 460W with low current PDB ▪ Two hot-swap 460-W common redundant power supply with low current PDB
System Fans Option	▪ One 92x38mm fixed system rear fan ▪ Two 92x32mm fixed system fans
USB 2.0	▪ Two front panel USB ports with Front Control Panel ▪ Four Back panel USB ports (depending on server/workstation board)
Video	▪ One rear panel video port

Component Identification



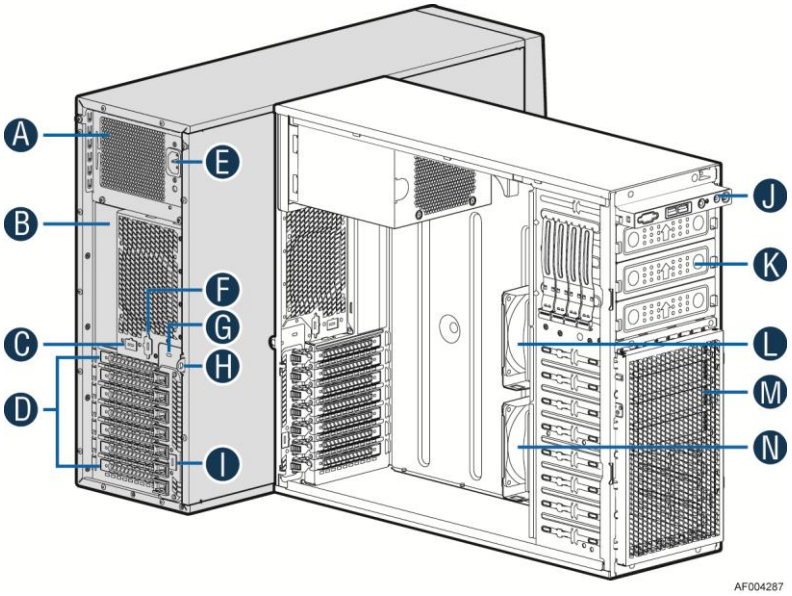
A. 365W Fixed Power supply
B. I/O Ports
C. Alternate RMM4 Knockout
D. PCI Add-in Board Slot Covers
E. AC Input Power Connector
F. Serial Port Knockout
G. A Kensington* Cable Lock Mounting Hole
H. Padlock Loop
I. Alternate RMM4 Knockout
J. Front Control Panel
K. Alternate 5.25” Peripheral Bays
L. 92x38mm System Rear Fan
M. Fixed Hard Drive Bays

Figure 3. Internal Chassis View of Intel® Server Chassis P4304XXSFCN



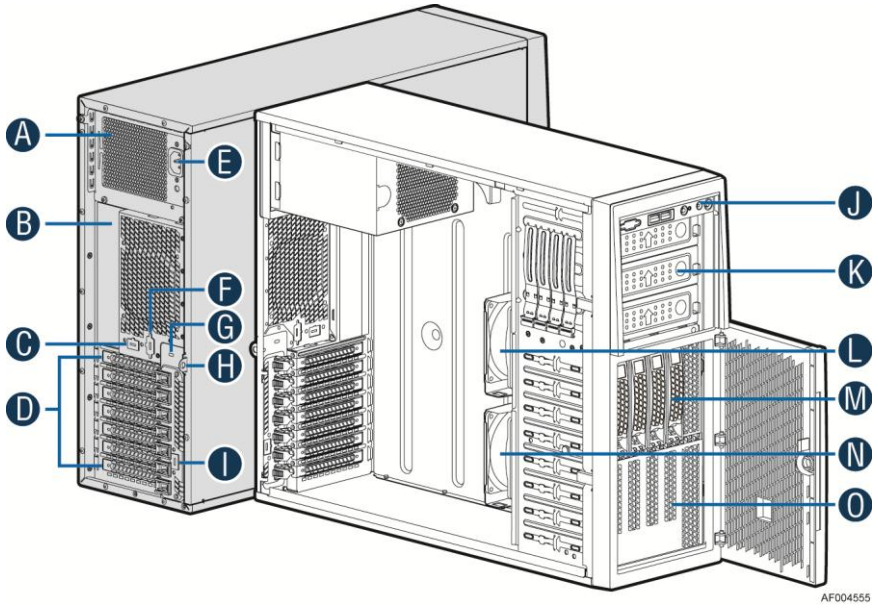
A. 365W Fixed Power Supply
B. I/O Ports
C. Alternate RMM4 Knockout
D. PCI Add-in Board Slot Covers
E. AC Input Power Connector
F. Serial Port Knockout
G. A Kensington* Cable Lock Mounting Hole
H. Padlock Loop
I. Alternate RMM4 Knockout
J. Front Control Panel
K. 5.25” Peripheral Bays
L. 92x38mm System Rear Fan
M. 4x3.5” Hot-swap HDD Cage

Figure 4. Internal Chassis View of Intel® Server Chassis P4304XXSHCN



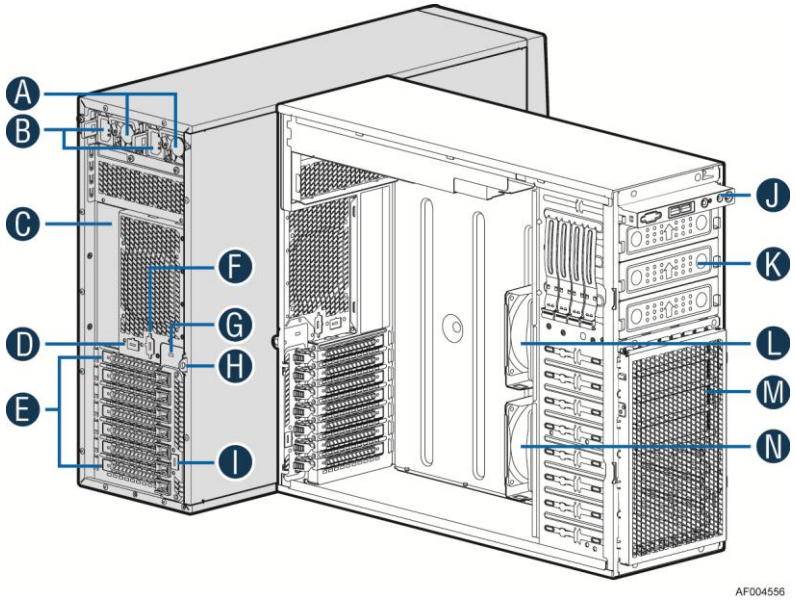
A. 550W Fixed Power supply
B. I/O Ports
C. Alternate RMM4 Knockout
D. PCI Add-in Board Slot Covers
E. AC Input Power Connector
F. Serial Port Knockout
G. A Kensington* Cable Lock Mounting Hole
H. Padlock Loop
I. Alternate RMM4 Knockout
J. Front Control Panel
K. Alternate 5.25” Peripheral Bays
L. CPU Zone System Fan
M. Fixed Hard Drive Bays
N. PCI Zone System Fan

Figure 5. Internal Chassis View of Intel® Server Chassis P4304XXSFEN



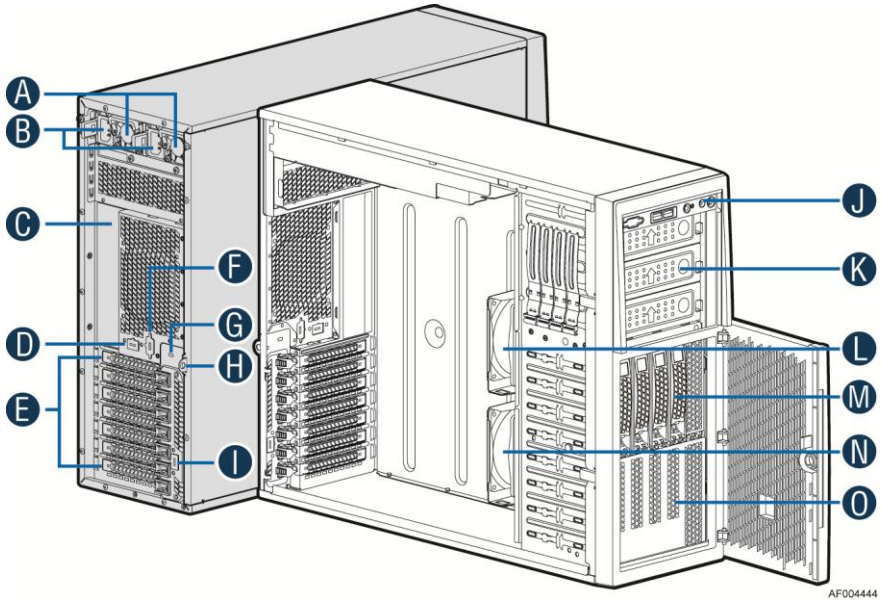
A. 550W Fixed Power supply
B. I/O Ports
C. Alternate RMM4 Knockout
D. PCI Add-in Board Slot Covers
E. AC Input Power Connector
F. Serial Port Knockout
G. A Kensington* Cable Lock Mounting Hole
H. Padlock Loop
I. Alternate RMM4 Knockout
J. Front Control Panel
K. Alternate 5.25” Peripheral Bays
L. CPU Zone System Fan
M. 4x3.5” Hot-swap HDD Cage
N. PCI Zone System Fan
O. Hot-swap HDD EMI Shield

Figure 6. Internal Chassis View of Intel® Server Chassis P4304XXSHEN



A. 460W Redundant Power Supply (Two)
B. AC Input Power Connector (Two)
C. I/O Ports
D. Alternate RMM4 Knockout
E. PCI Add-in Board Slot Covers
F. Serial Port Knockout
G. A Kensington* Cable Lock Mounting Hole
H. Padlock Loop
I. Alternate RMM4 Knockout
J. Front Control Panel
K. Alternate 5.25” Peripheral Bays
L. CPU Zone System Fan
M. Fixed Hard Drive Bays
N. PCI Zone System Fan

Figure 7. Internal Chassis View of Intel® Server Chassis P4304XXSFDR



A. 460W Redundant Power Supply (Two)
B. AC Input Power Connector (Two)
C. I/O Ports
D. Alternate RMM4 Knockout
E. PCI Add-in Board Slot Covers
F. Serial Port Knockout
G. A Kensington* Cable Lock Mounting Hole
H. Padlock Loop
I. Alternate RMM4 Knockout
J. Front Control Panel
K. Alternate 5.25” Peripheral Bays
L. CPU Zone System Fan
M. 4x3.5” Hot-swap HDD Cage
N. PCI Zone System Fan
O. Hot-swap HDD EMI Shield

Figure 8. Internal Chassis View of Intel® Server Chassis P4304XXSHDR

Front Panel

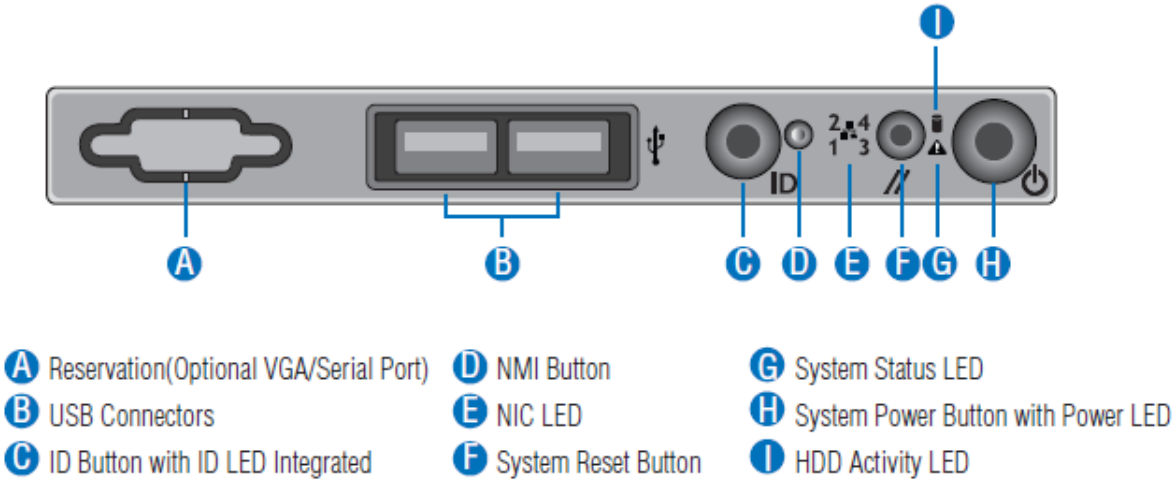


Figure 9. Front Panel Controls and Indicators

Descriptions of the front control panel LEDs are listed in the following table. See your server/workstation documentation for functionality of the buttons.

Table 3. Front Panel LED Functionality

LED	Color	Condition	What It Means
Power/Sleep	Green	On	Power on or S0 sleep.
	Green	Blink	S1 sleep or S3 standby only for workstation baseboards.
		Off	Off (also sleep S4/S5 modes).
Status	Green	On	System ready/No alarm.
	Green	Blink	System ready, but degraded: redundancy lost such as PS or fan failure; non-critical temp/voltage threshold; battery failure; or predictive PS failure.
	Amber	On	Critical alarm: Voltage, thermal, or power fault; CPU missing; insufficient power unit redundancy resource offset asserted.
	Amber	Blink	Non-Critical failure: Critical temp/voltage threshold; VDR hot asserted; min number fans not present or failed.
		Off	AC power off: System unplugged. AC power on: System powered off and in standby, no prior degraded\non-critical\critical state.
Global HDD Activity	Green	Blink	HDD access.
		Off	No access and no fault.
LAN 1-4 Activity/Link (LAN 1-2 for Intel® Server Board S1200BT)	Green	On	LAN link/no access.
	Green	Blink	LAN access.
		Off	Idle
Chassis	Blue	On	Front panel chassis ID button pressed.

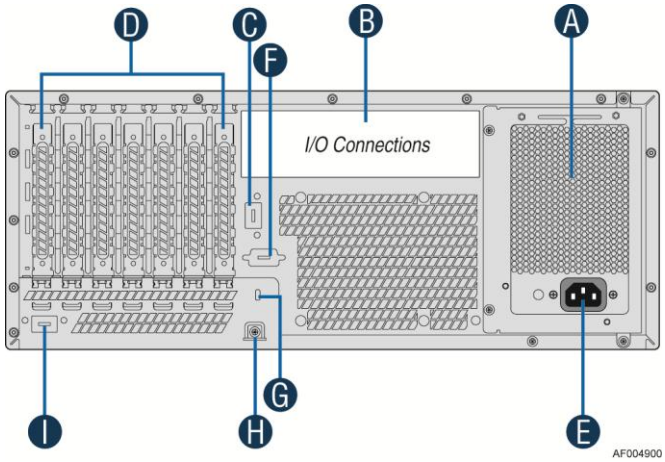
LED	Color	Condition	What It Means
Identification	Blue	Blink	Unit selected for identification via software.
		Off	No identification.

NOTE

This is dependent on server board support. Not all server boards support all features. For additional details about control panel functions supported for a specific board, refer to the individual server board specifications.

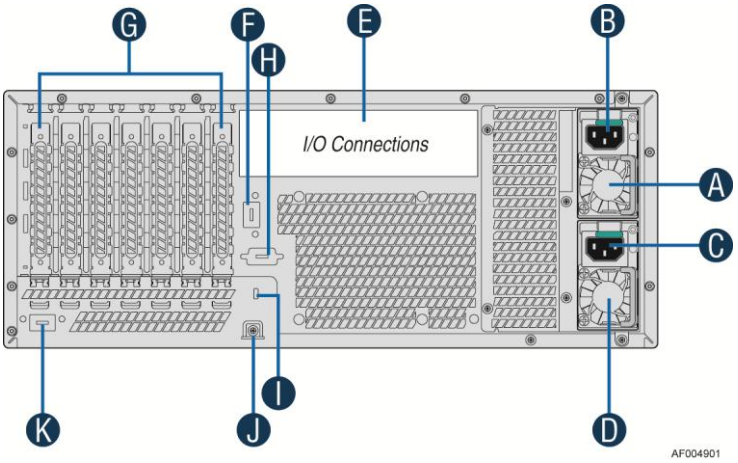
Back Panel

The following figure shows the layout of back panel with fixed power supply and hot-swap redundant power supplies:



A	Fixed Power Supply	F	Serial-B Port (Optional)
B	IO Connectors	G	Kensington* Cable Lock Mounting Hole
C	RMM4 NIC Port (Optional)	H	Padlock Loop
D	Add in PCI-e cards	I	RMM4 NIC Port (Optional)
E	Power Connector		

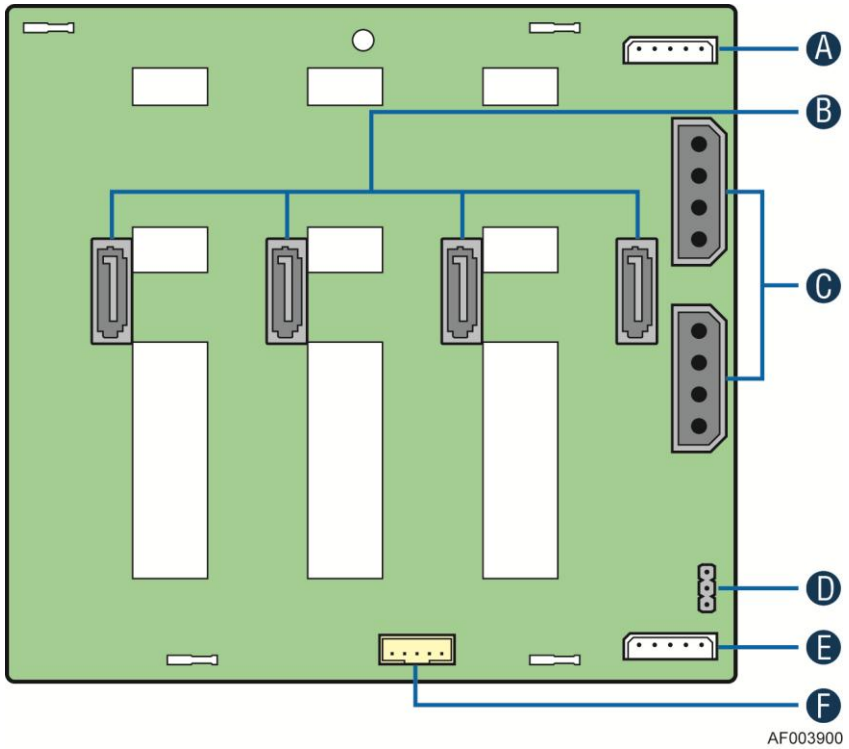
Figure 10. Back Panel Layout (with Fixed Power Supply)



A	Hot-swap Power Supply	G	Add in PCI-e cards
B	Power Connector	H	Serial-B Port (Optional)
C	Power Connector	I	Kensington* Cable Lock Mounting Hole
D	Hot-swap Power Supply	J	Padlock Loop
E	IO Connectors	K	RMM4 NIC Port (Optional)
F	RMM4 NIC Port/(Optional)		

Figure 11. Back Panel Layout (with Hot-swap Power Supply)

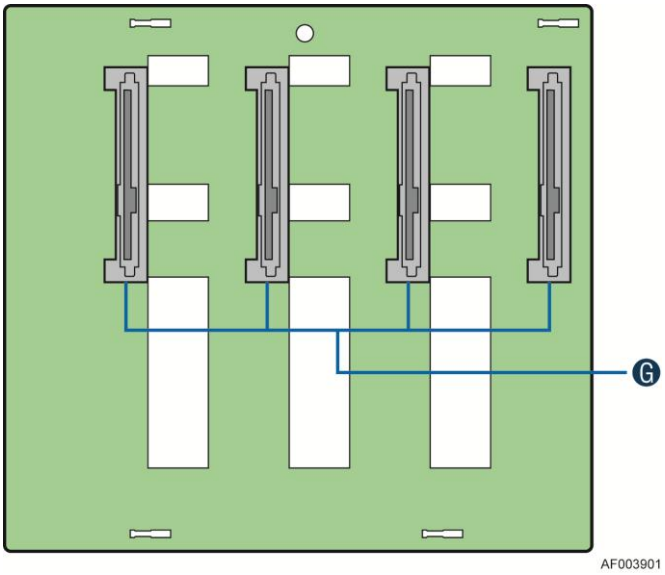
4x3.5" Hard Drive Backplane



A. I2C_In Connectors

B. SATA/SAS Cable Connctors
C. Power Connectors
D. SATA 6X Mode
E. I2C_Out Connectors
F. SGPIO connector

Figure 12. 4x3.5" HSBP Board (Rear View)



G. SATA/SAS Hot-swap Drive Connectors

Figure 13. 4x3.5" HSBP Board Layout (Front View)

2 Hardware Installations and Upgrades

Before You Begin

Before working with your server product, pay close attention to the Appendix B: Safety Information.

This document provides instructions for adding and replacing chassis components. For instructions on replacing components on the server board, such as the processor and memory DIMMs, see the instructions provided with the server/workstation board.

Tools and Supplies Needed

- Phillips* (cross head) screwdriver (#1 bit and #2 bit)
- Needle nosed pliers
- Anti-static wrist strap and conductive foam pad (recommended)

System Reference

All references to left, right, front, top, and bottom assume the reader is facing the front of the chassis as it would be positioned for normal operation.

Removing and Installing the Chassis Cover

Removing the Chassis Cover

The Intel® Server Chassis P4000S family must be operated with the top cover in place to ensure proper cooling. You will need to remove the top cover to add or replace components inside of the platform. Before removing the top cover, power down the server and unplug all peripheral devices and the AC power cable.

NOTE

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

1. Observe the safety and ESD precautions at the beginning of this book.
2. Turn off all peripheral devices connected to the server. Turn off the server.
3. Disconnect the AC power cord.
4. Remove the screws (see letter **A**).
5. Slide the side cover back (see letter **B**) and lift the cover outward to remove it.

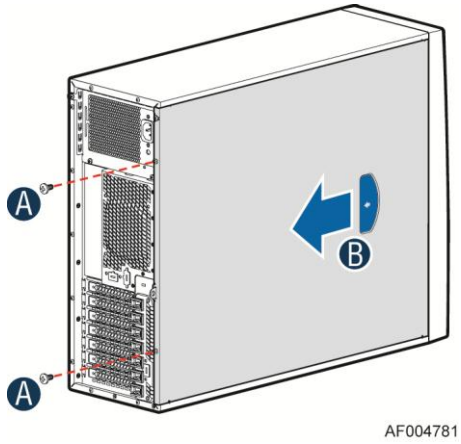


Figure 14. Removing the Chassis Cover

Installing the Chassis Cover

1. Slide the chassis cover on the chassis (see letter **A**).
2. Latch the cover securely to the chassis.
3. Secure the chassis cover with the screws (see letter **B**).

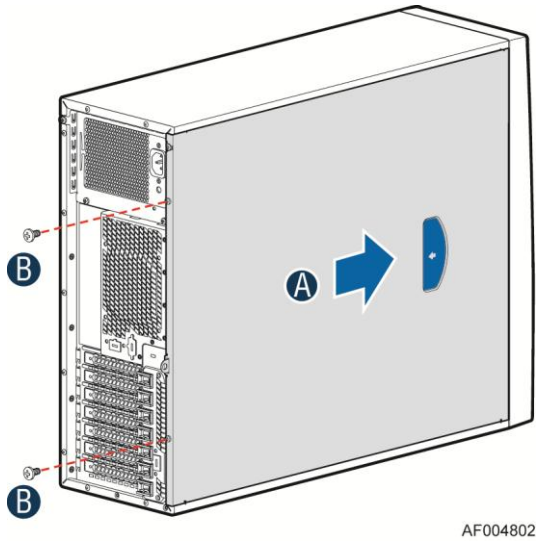


Figure 15. Installing the Chassis Cover

Removing and Installing the Front Bezel

Removing the Front Bezel

NOTE

With the chassis on its side, position the chassis hanging over the edge of a table or workbench before removing the bezel.

There are two types of bezel assembly. One is for fixed HDD configuration, and the other type is for Hot-swap HDD configuration.

CAUTION

Do not rotate the bezel assembly more than 40 degrees or you will damage the bezel assembly.

1. Observe the safety and ESD precautions at the beginning of this book.
2. Power down the server and unplug all peripheral devices and the AC power cable.
3. Remove the chassis cover. For instructions, see “Removing the Chassis Cover”.

4. Release the two plastic tabs on the left side of the bezel assembly to disengage the tabs, and rotate the bezel assembly (see letter **A**) no more than 40 degrees outward.
5. At a 40-degree angle, push the bezel assembly away from the chassis (see letter **B**).
6. If the bezel assembly does not immediately disconnect from the chassis, tap the left-hand side of the bezel assembly to disengage the bezel hooks on the right-hand side of the chassis.

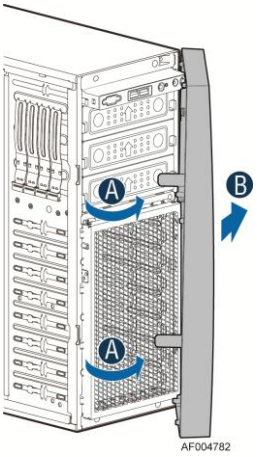


Figure 16. Removing the Front Bezel

Installing the Front Bezel

1. Fit the right edge of the bezel assembly against the right side of the chassis.
2. Engage the plastic bezel hooks (see letter **A**) into the raised metal slots at the chassis edge.
3. Rotate the bezel assembly toward the chassis.
4. Latch the two plastic tabs (see letter **B**) on the left side of the bezel assembly to the chassis.

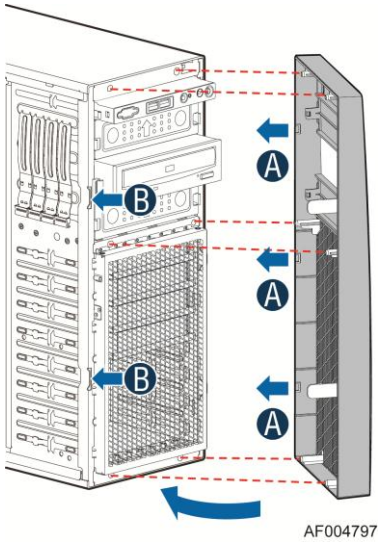


Figure 17. Installing the Front Bezel

Removing and Installing a DVD or CD-ROM Drive

Removing a DVD or CD-ROM Drive

1. Observe the safety and ESD precautions at the beginning of this book.
2. Power down the server and unplug all peripheral devices and the AC power cable.
3. Remove the chassis cover. For instructions, see “Removing the Chassis Cover”.
4. Remove the front bezel if it is installed. For instructions, see “Removing the Front Bezel”.
5. Disconnect the power and data cables to the DVD/CD-ROM drive.
6. Press on the slide release latches (see letter **A** in the following figure) and pull the DVD/CD-ROM drive/slide assembly from the chassis (see letter **B** in the following figure). Remove the slides from the DVD or CD-ROM drive (see letter **C**).

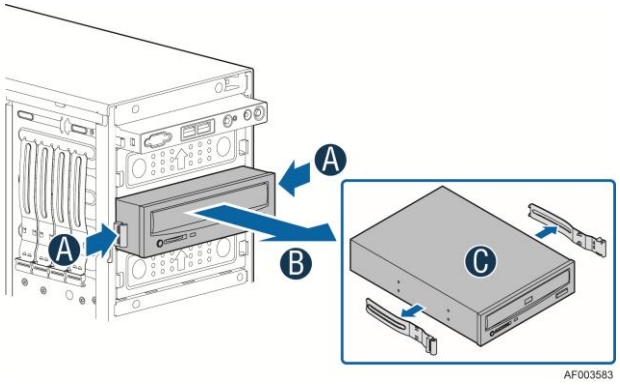


Figure 18. Removing DVD or CD-ROM Drive

7. If not replacing with another drive, reinsert an EMI shield into chassis (see below picture).

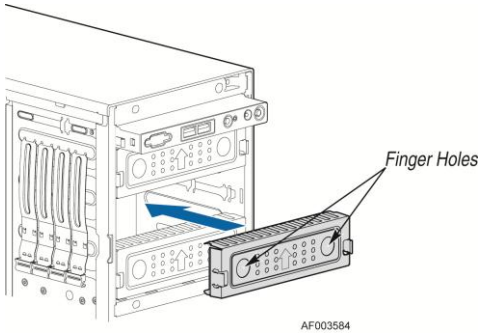


Figure 19. Re-inserting Empty EMI Shield

Installing a DVD or CD-ROM Drive

1. Observe the safety and ESD precautions at the beginning of this book.
2. Power down the server and unplug all peripheral devices and the AC power cable.
3. Remove the chassis cover. For instructions, see “Removing the Chassis Cover”.

4. Remove the front bezel if it is installed. For instructions, see “Removing the Front Bezel”.
5. Remove an EMI shield (see picture below).

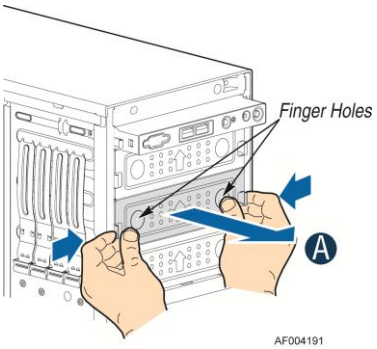


Figure 20. Removing EMI Shield

6. Get the slides from the chassis side (see letter **B**). Attach slides to the DVD or CD-ROM drive by pressing the slides firmly into the side dimples on the DVD or CD-ROM drives (see letter **C**). Insert the drive/slide assembly into the device bay until the slides lock into place (see letter **D**).

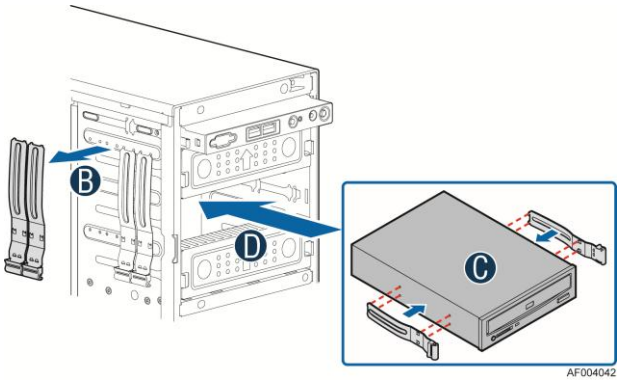


Figure 21. Installing DVD or CD-ROM Drive

7. Connect the DVD or CD-ROM power cable. See your server board documents for data cable connection.

Removing and Installing the Fixed HDD EMI Shield

NOTE

For a chassis on its side, position the chassis hanging over the edge of a table or workbench before removing the bezel.

This procedure applies only to the Intel® Server chassis P4000S family with fixed HDD configuration.

Removing the Fixed HDD EMI Shield

1. Observe the safety and ESD precautions at the beginning of this book.
2. Power down the server and unplug all peripheral devices and the AC power cable.

3. Remove the chassis cover. For instructions, see “Removing the Chassis Cover”.
4. Remove the front bezel. For instructions, see “Removing the front bezel”.
5. Lift the EMI shield (see letter **A**) and lift the EMI shield (see letter **B**) and move EMI shield outward from the chassis.

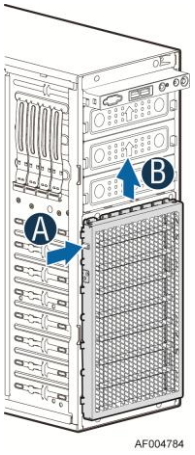


Figure 22. Removing the EMI Shield

Installing the EMI Shield

1. Fit the edges of the EMI Shield against the sides of the chassis (see letter **A**).
2. While pressing the clip (see letter **B**), slide the EMI Shield downwards until the latches on the EMI Shield are engaged with the chassis (see letter **C**).

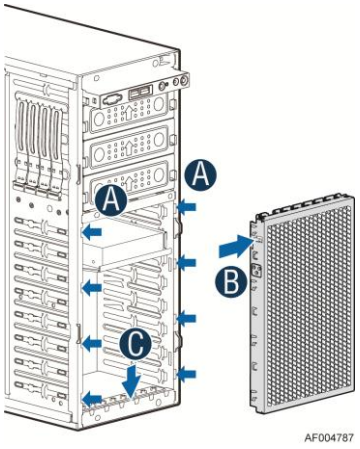


Figure 23. Installing the EMI Shield

Removing and Installing Fixed Hard Drive(s)

NOTE

This procedure applies only to the Intel® Server Chassis P4000S family with fixed HDD configuration.

Removing Fixed Hard Drive(s)

1. Observe the safety and ESD precautions at the beginning of this book.
2. Power down the server and unplug all peripheral devices and the AC power cable.
3. Remove the chassis cover. For instructions, see “Removing the Chassis Cover”.
4. Remove the front bezel if it is installed. For instructions, see “Removing the Front Bezel”.
5. Remove the Fixed HDD EMI shield. For instructions, see “Removing the Fixed HDD EMI Shield”.
6. Remove power and data cables from the hard drive connectors.
7. Pull out the HDD carrier tray.

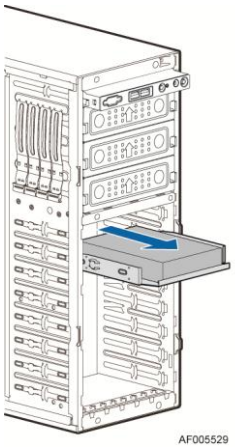


Figure 24. Removing Fixed Hard Drives

8. Use screwdriver to release the 3.5" or 2.5" HDD from the carrier tray.

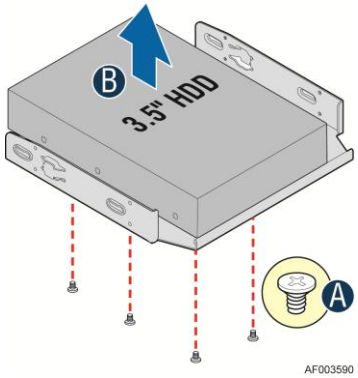


Figure 25. Removing the 3.5" HDD from Fixed HDD tray

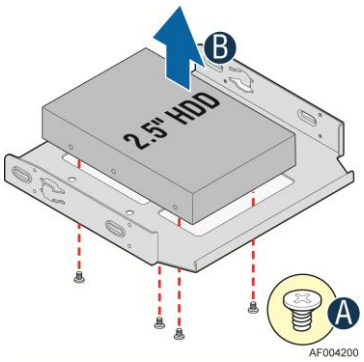


Figure 26. Removing the 2.5'' HDD from Fixed HDD tray

9. Reinstall the HDD carrier tray into chassis.

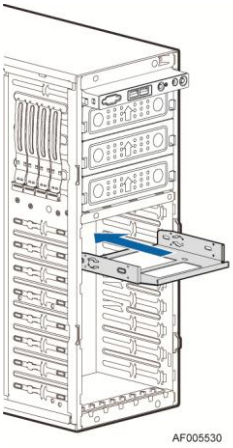


Figure 27. Reinstalling the HDD Carrier Tray

10. Install the Fixed HDD EMI shield. For instructions, see “Installing the Fixed HDD EMI Shield”.
11. Install the front bezel. For instructions, see “Installing the Front Bezel”.
12. Install the air duct if the air duct is removed. For instructions, see “Removing the Airduct”.
13. Install the chassis cover. For instructions, see “Installing the Chassis Cover”.
14. Plug all peripheral devices and the AC power cable into the server.
15. Power up the server.

Installing Fixed Hard Drive(s)

1. Observe the safety and ESD precautions at the beginning of this book.
2. Power down the server and unplug all peripheral devices and the AC power cable.
3. Remove the chassis cover. For instructions, see “Removing the Chassis Cover”.

4. Remove the front bezel if it is installed. For instructions, see “Removing the Front Bezel”.
5. Remove the Fixed HDD EMI shield. For instructions, see “Removing the Fixed HDD EMI Shield”.
6. Pull out the HDD carrier tray.

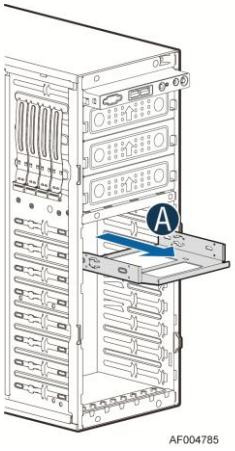


Figure 28. Removing Fixed Hard Drive

7. Secure the 3.5" or 2.5" HDD on the HDD carrier tray with screws.

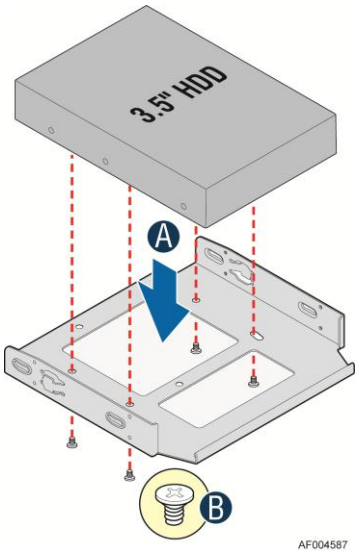


Figure 29. Securing the 3.5" HDD on Fixed HDD Carrier Tray

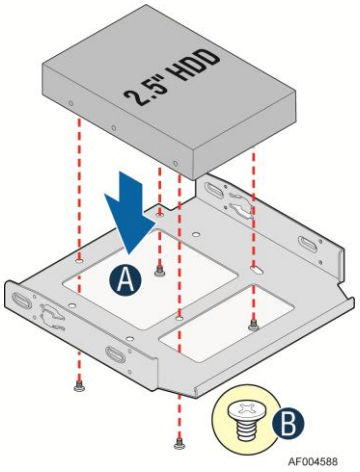


Figure 30. Securing the 2.5" HDD on Fixed HDD Carrier Tray

8. Insert the HDD carrier tray into chassis.

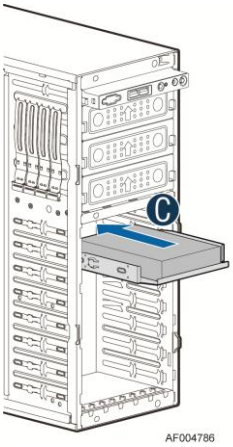


Figure 31. Inserting the HDD Carrier Tray

9. Connect power and data cables on HDD.
10. Install the Fixed HDD EMI shield. For instructions, see “Installing the Fixed HDD EMI Shield”.
11. Install the front bezel. For instructions, see “Installing the Front Bezel”.
12. Install the air duct if the air duct is removed. For instructions, see “Installing the Airduct”
13. Install the chassis cover. For instructions, see “Installing the Chassis Cover”.
14. Plug all peripheral devices and the AC power cable into the server.
15. Power up the server.

Removing and Installing 4x3.5" Hot-swap Hard Drive Cage Assembly

NOTE

This procedure applies only to the Intel® Server Chassis P4000S family with 4x3.5" hot-swap hard disk drive cage configuration.

Removing 4x3.5" Hot-swap Hard Drive Cage with Backplane

1. Observe the safety and ESD precautions at the beginning of this book.
2. Power down the server and unplug all peripheral devices and the AC power cable.
3. Remove the chassis cover. For instructions, see “Removing the Chassis Cover”.
4. Remove the front bezel if it is installed. For instructions, see “Removing the Front Bezel”.
5. Disconnect the power and data cables to the backplane.
6. Use screwdriver to release the hot-swap hard drive cage (see letter **A**) from the chassis and remove the hot-swap hard drive cage (see letter **B**).

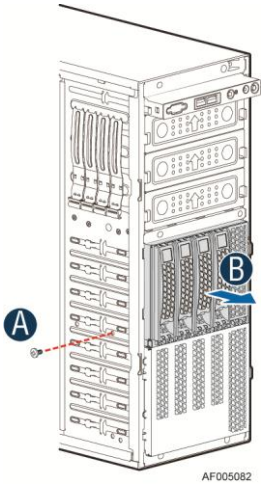


Figure 32. Removing the 4x3.5" HDD Cage

7. Lift the EMI shield (see letter **A**) and move EMI shield outward from the chassis (see letter **B**).

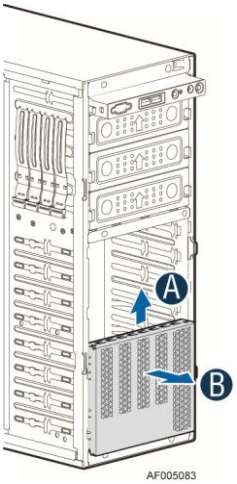


Figure 33. Removing the EMI shield

Installing 4x3.5" Hot-swap Hard Drive Cage with Backplane

CAUTION

It is critical that you connect the SAS/SATA data cables correctly from the SAS/SATA backplane to your server board or RAID controller card. Failure to do so may result in data loss.

1. Observe the safety and ESD precautions at the beginning of this book.
2. Power down the server and unplug all peripheral devices and the AC power cable.
3. Remove the chassis cover. For instructions, see “Removing the Chassis Cover”.
4. Remove the front bezel if it is installed. For instructions, see “Removing the Front Bezel”.
5. Install the hot-swap EMI HDD shield under the hot-swap cage.
    1) Fit the edges of the EMI Shiled against the sides of the chassis (see letter **A**).
    2) While pressing the EMI shiled, slide the EMI Shield downwards until the latches on the EMI shield are engaged with the chassis (see letter **B**).

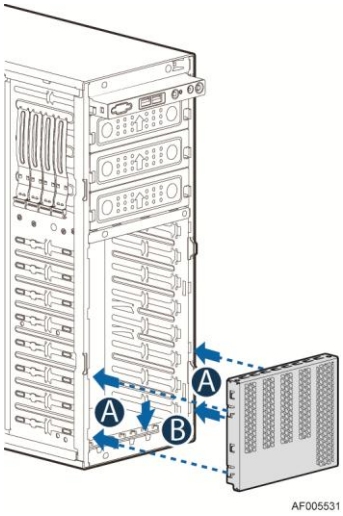


Figure 34. Installing the EMI shield

6. Install the 4x3.5" Hot-Swap Hard Drive Cage.

   1) Slide the 4x3.5" Hot-Swap Drive Cage into the slot (see letter **A**).

   2) Secure the Hard Drive Cage with the Screw (see letter **B**).

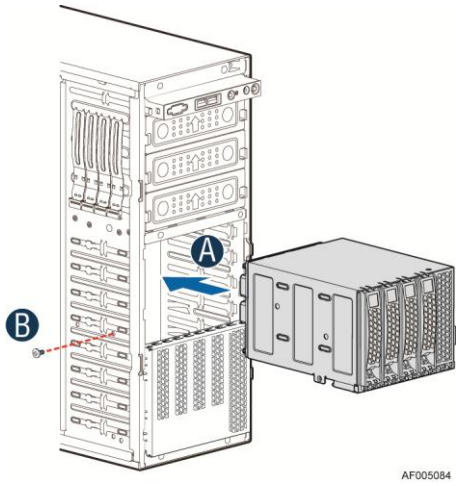


Figure 35. Installing the 4x3.5" Hot-Swap Hard Drive Cage

7. Make the backplane and server board/RAID controller card cable connections. Refer to the documentation that came with your server board and/or RAID controller card for instructions on connecting backplane cables to your server board or RAID controller card.

   1) Connect data cables (letter **A**).

   2) Connect an I2C_IN cable (letter **B**).

   3) Connect an SGPIO cable (letter **C**).

   4) Connect power cable (letter **D**).

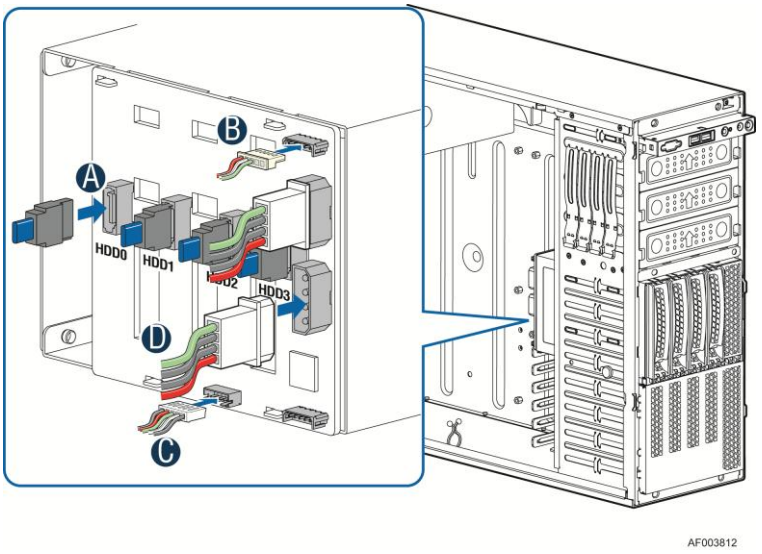


Figure 36. 4x3.5" Hot Swap Backplane Cable Connections

8. Install the front bezel. For instructions, see “Installing the Front Bezel”.
9. Install the chassis cover. For instructions, see “Installing the Chassis Cover”.
10. Plug all peripheral devices and the AC power cable into the server.
11. Power up the server.

Removing and Installing 4x3.5" Hot-swap Backplane

Removing 4x3.5" Hot-swap Backplane

1. Observe the safety and ESD precautions at the beginning of this book.
2. Power down the server and unplug all peripheral devices and the AC power cable.
3. Remove the chassis cover. For instructions, see “Removing the Chassis Cover”.
4. Remove the front bezel if it is installed. For instructions, see “Removing the Front Bezel”.
5. Remove the 4x3.5" Hot-swap Hard drives cage. For instructions, see “Removing 4x3.5" Hot-swap Hard Drive Cage”.
6. Remove the screw on the backplane (see letter **A**).
7. Push the backplane (see letter **B**) and remove the backplane from the chassis (see letter **C**).

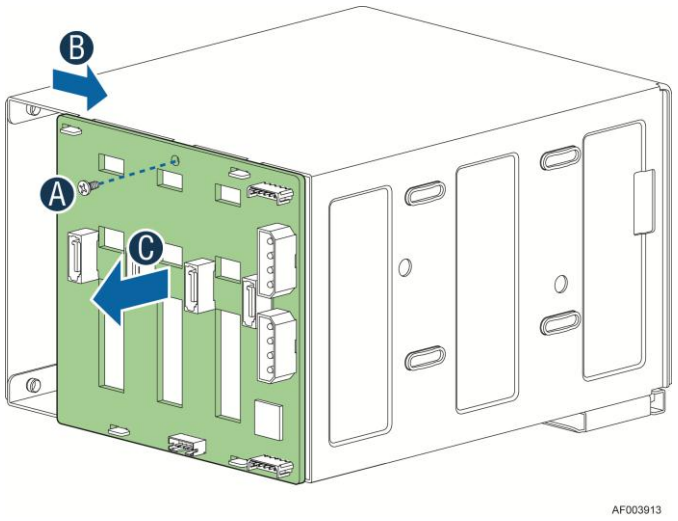


Figure 37. Removing 4x3.5" Hot-swap Backplane

Installing 4x3.5" Hot-swap Backplane

1. Observe the safety and ESD precautions at the beginning of this book.
2. Power down the server and unplug all peripheral devices and the AC power cable.
3. Remove the chassis cover. For instructions, see “Removing the Chassis Cover”.
4. Remove the front bezel if it is installed. For instructions, see “Removing the Front Bezel”.
5. Remove the 4x3.5" Hot-swap Hard drives cage. For instructions, see “Removing 4x3.5" Hot-swap Hard Drive Cage”.
6. Attach the backplane to the back side of the hot-swap drive cage, and make sure the hooks on the cage are insterted in the backplane holes (see letter **A**).
7. Push the backplane (see letter **B**) and secure the backplane with the screw (see letter **C**).

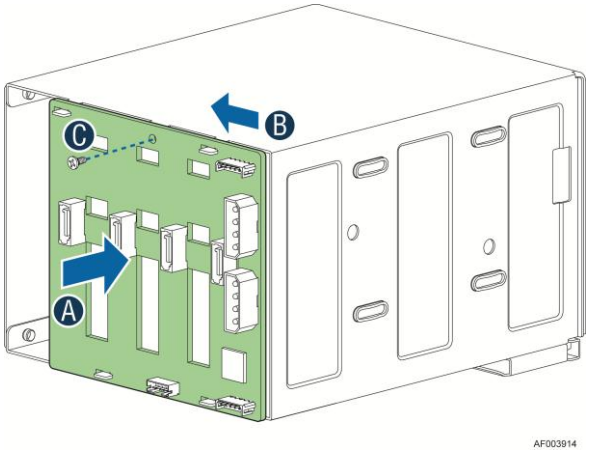


Figure 38. Installing 4x3.5” Hot-swap Backplane

8. Install the 4x3.5" Hot-swap Hard drives cage. For instructions, see “installing 4x3.5" Hot-swap Hard Drive Cage”.
9. Install the front bezel. For instructions, see “Installing the Front Bezel”.
10. Install the chassis cover. For instructions, see “Installing the Chassis Cover”.
11. Plug all peripheral devices and the AC power cable into the server.
12. Power up the server.

Installing Hot-swap Hard Drive

Installing 3.5" Hard Disk Drive

CAUTION

The 3.5" hard disk drive can be a SSD or SAS and SATA. Refer to your server board or system documentation to determine SSD/SAS/SATA support for your server system.

1. Remove the four screws securing the 2.5" HDD interface bracket and remove the 2.5" HDD interface bracket.

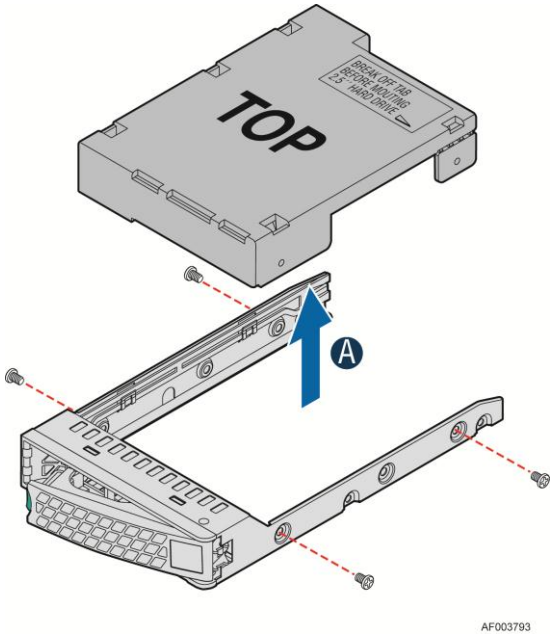


Figure 39. Removing the 2.5" HDD interface bracket from Carrier

2. Install the 3.5" hard disk drive using the same four screws as shown. Make sure the connector end of the drive matches the backplane connector.

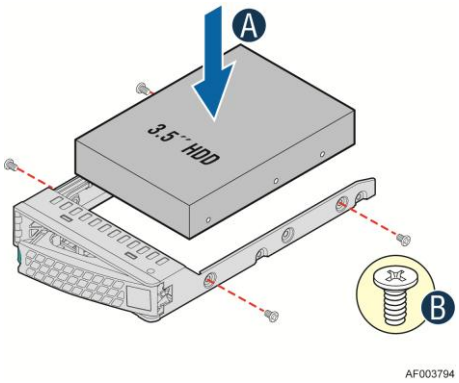


Figure 40. Installing the 3.5" HDD into the Carrier

Installing 2.5" Hard Disk Drive

CAUTION

The 2.5" hard disk drive can be a SSD or SAS and SATA. Refer to your server board or system documentation to determine SSD/SAS/SATA support for your server system.

1. Remove the four screws securing the 2.5" HDD interface bracket and remove the 2.5" HDD interface bracket.

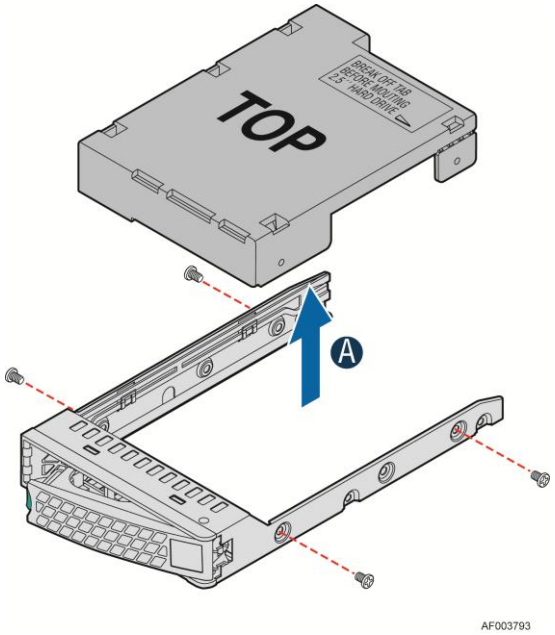


Figure 41. Removing the 2.5" HDD interface bracket from Carrier

2. Break off the tab on the 2.5" HDD interface bracket (see letter **B**).

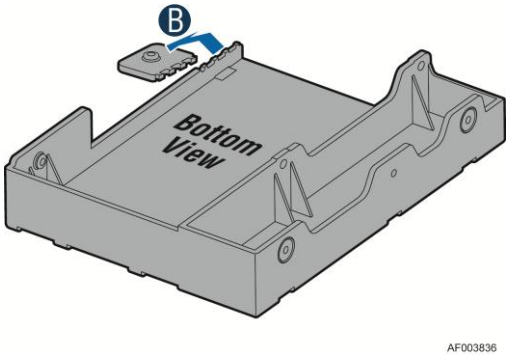


Figure 42. Breaking off the tab on the bracket

3. Install the 2.5" Hard Drive Interface Bracket from top. Secure the bracket using the same screws as shown.

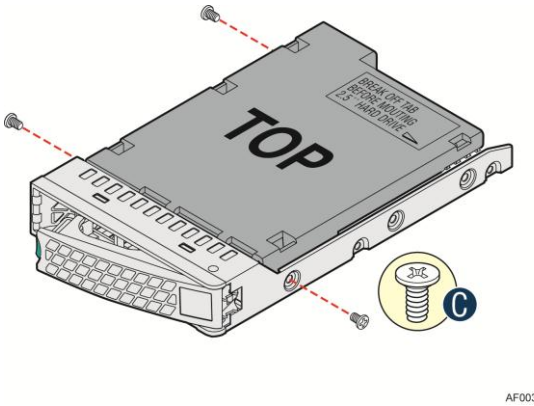
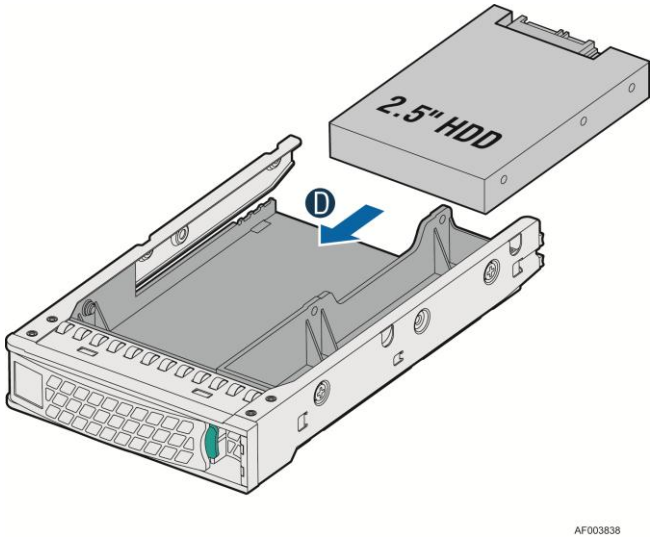


Figure 43. Installing 2.5" HDD interface bracket into Carrier

4. Slide the 2.5" HDD into the bracket to align the screw holes with the right and left rail (See figure **D**). Secure the hard disk drive using the screws for the 2.5'' HDD (See figure **E**).



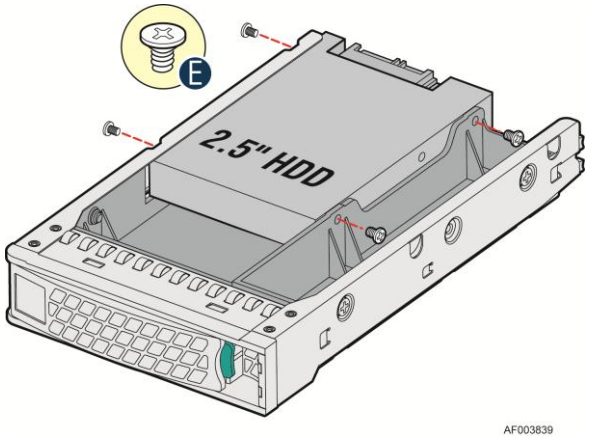


Figure 44. Installing the 2.5" HDD into carrier

Removing and Installing Airduct

NOTE

Airduct may need to be ordered separately. See Configuration Guide of the server board for which airduct work with your server board. The installation and/or removing airduct steps in below is generic. Please see your board or system documents for specific instructions about installing and/or removing airduct.

Installing the Airduct

1. Observe the safety and ESD precautions at the beginning of this book.
2. Power down the server and unplug all peripheral devices and the AC power cable.
3. Remove the chassis cover. For instructions, see “Removing the Chassis Cover”.
4. Install the airduct by aligning the air duct and CPU fans (see letter **A**) and ensure the tab on air duct is engaged in its snap-in bracket.(see letter **B**).

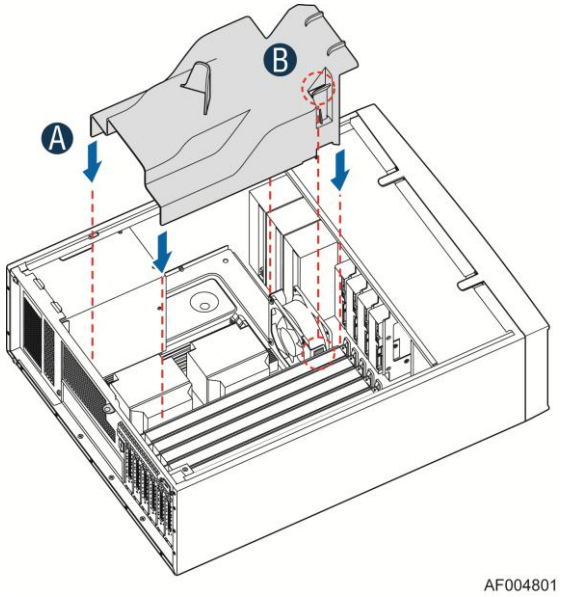


Figure 45. Installing the Airduct

Removing the Airduct

1. Observe the safety and ESD precautions at the beginning of this book.
2. Power down the server and unplug all peripheral devices and the AC power cable.
3. Remove the chassis cover. For instructions, see “Removing the Chassis Cover”.
4. Push the tab outward to disengage the tab from its snap-in blacket (see letter **A**).
5. Grasp the air duct and remove (see letter **B**).

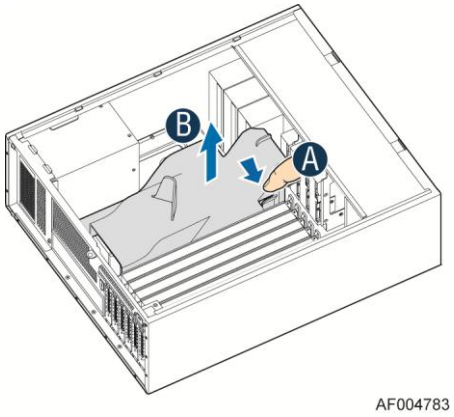


Figure 46. Removing the Airduct

Removing and Installing the Fixed Power Supply

WARNING

Hazardous voltage, current, and energy levels are present inside the power supply. There are no user-serviceable parts inside it; servicing should be done by technically qualified personnel.

Removing the Fixed Power Supply

1. Observe the safety and ESD precautions at the beginning of this book.
2. Power down the server and unplug all peripheral devices and the AC power cable.
3. Remove the chassis cover. For instructions, see “Removing the Chassis Cover”.
4. Disconnect all internal power cables from chassis components and server board.
5. Rotate the power supply locking device counter-clockwise (see letter **A**) and remove the fixed power supply (see letter **B**).

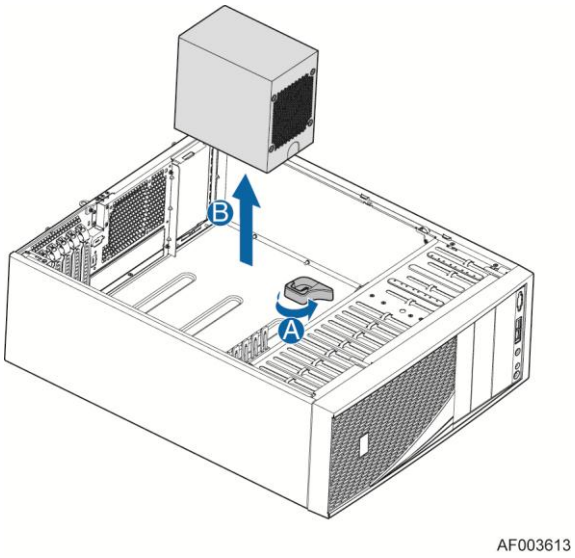


Figure 47. Removing Fixed Power Supply

Installing the Fixed Power Supply

1. Insert new fixed power supply and rotate the power supply locking device clockwise (see letter **A** and **B**).

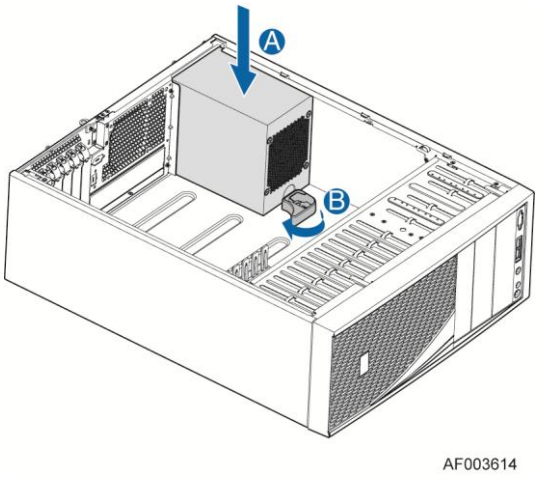


Figure 48. Installing Fixed Power Supply

2. Reconnect power cables to other chassis components as appropriate.
3. Install the chassis cover. For instructions, see “Installing the Chassis Cover”.
4. Plug all peripheral devices and the AC power cable into the server.
5. Power up the server.

Installing an Additional Hot-swap Power Supply Module

NOTE

This install procedure only applies to a chassis with redundant power supply capability.

WARNING

Hazardous voltage, current, and energy levels are present inside the power supply. There are no user-serviceable parts inside it; servicing should be done by technically qualified personnel.

1. Observe the safety and ESD precautions at the beginning of this book.
2. Insert finger into finger hole in middle of filler panel and remove the filler panel from chassis.

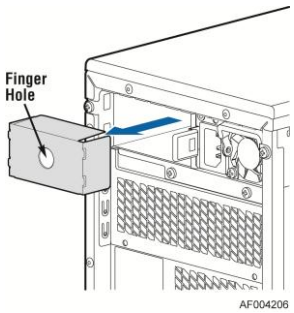


Figure 49. Removing Power Supply Filler Panel

3. Insert the power supply module into the power supply cage and push all the way until it clicks into place.

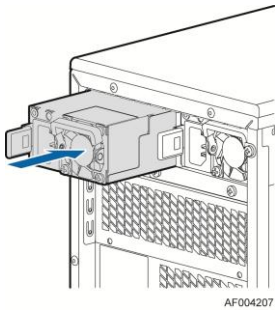


Figure 50. Installing Additional Hot-swap Power Supply Module

Replacing a Hot Swap Power Supply Module

NOTE

This install procedure only applies to a chassis with redundant power supply capability.

WARNING

Hazardous voltage, current, and energy levels are present inside the power supply. There are no user-serviceable parts inside it; servicing should be done by technically qualified personnel.

1. Observe the safety and ESD precautions at the beginning of this book.
2. Remove power cable from defective power supply.
3. Press up on green latch in the direction shown while pulling on handle to remove hot swap power supply from chassis.

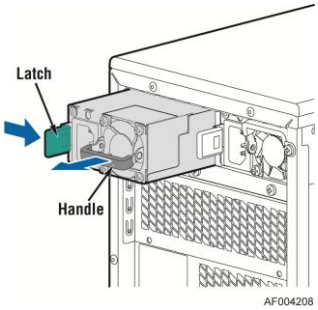


Figure 51. Removing Hot-swap Power Supply Module from Chassis

4. Insert new power supply module into the power supply cage and push all the way until it clicks into place.

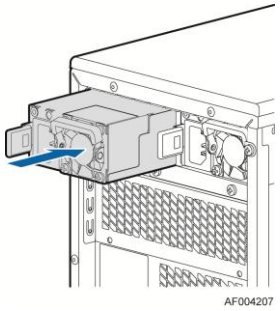


Figure 52. Installing Hot-swap Power Supply Module into Chassis

Replacing the Power Distribution Board for 460W PSUs

WARNING

Hazardous voltage, current, and energy levels are present inside the power supply. There are no user-serviceable parts inside it; servicing should be done by technically qualified personnel.

1. Observe the safety and ESD precautions at the beginning of this book.
2. Power down the server and unplug all peripheral devices and the AC power cable.
3. Remove the chassis cover. For instructions, see “Removing the Chassis Cover”.
4. Remove the air duct. For instructions, see “Installing the Airduct”.
5. Disconnect all internal power cables from chassis components and server board.
6. If present, press on green latch in the direction shown while pulling on handle to remove power supply from chassis. Repeat this step for the second hot-swap power supply if it is installed.

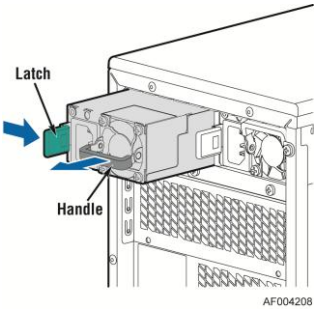


Figure 53. Removing Hot-swap Power Supply Module from Chassis

7. Loosen screws securing the bracket with power distribution board to the chassis (see letter **A** and **B**).

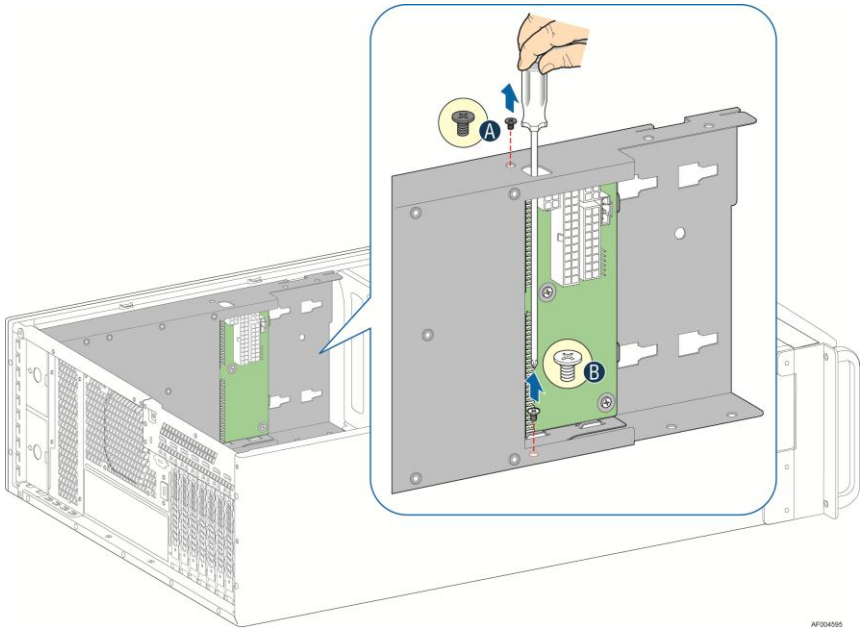


Figure 54. Loosening the Bracket with Power Distribution Board from Chassis

8. Push the bracket forward to release the latch which secure the bracket then pull out the bracket from the chassis (see letter **C**).

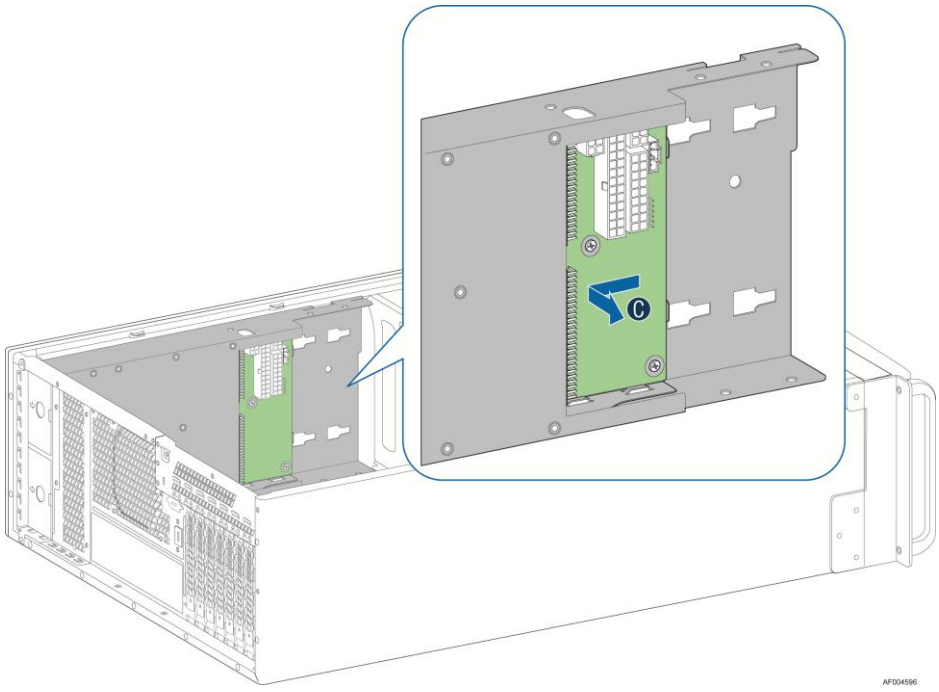


Figure 55. Removing the Bracket with Power Distribution Board from Chassis

9. Loosen screws securing the power distribution board to the bracket, and then remove it from the bracket (see letter **D**).

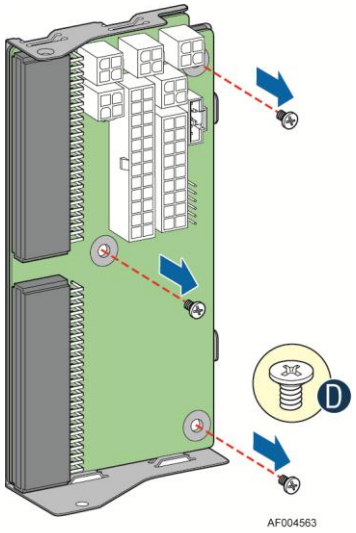


Figure 56. Removing the Power Distribution Board from Bracket

10. Slide the new power distribution board to the bracket (see letter **E**) and secure the new power distribution board to the bracket using the same screws (see letter **F**).

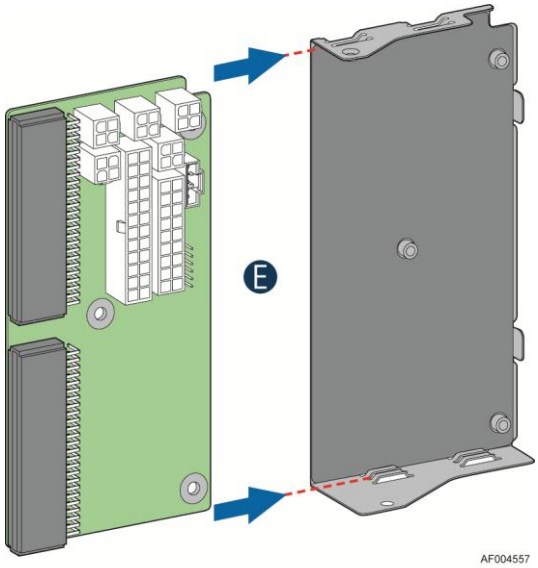


Figure 57. Sliding the New Power Distribution Board in Bracket

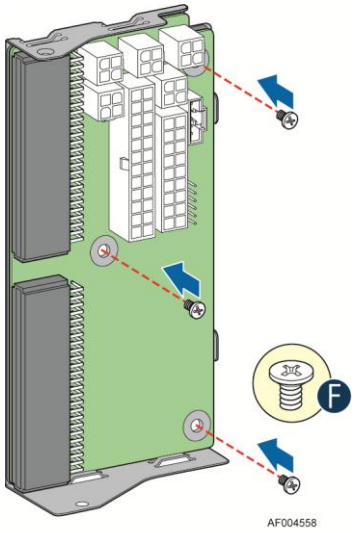


Figure 58. Securing the New Power Distribution Board in Bracket

11. Slide the bracket with the new power distribution board all the way into the power supply cage (see letter **G**).

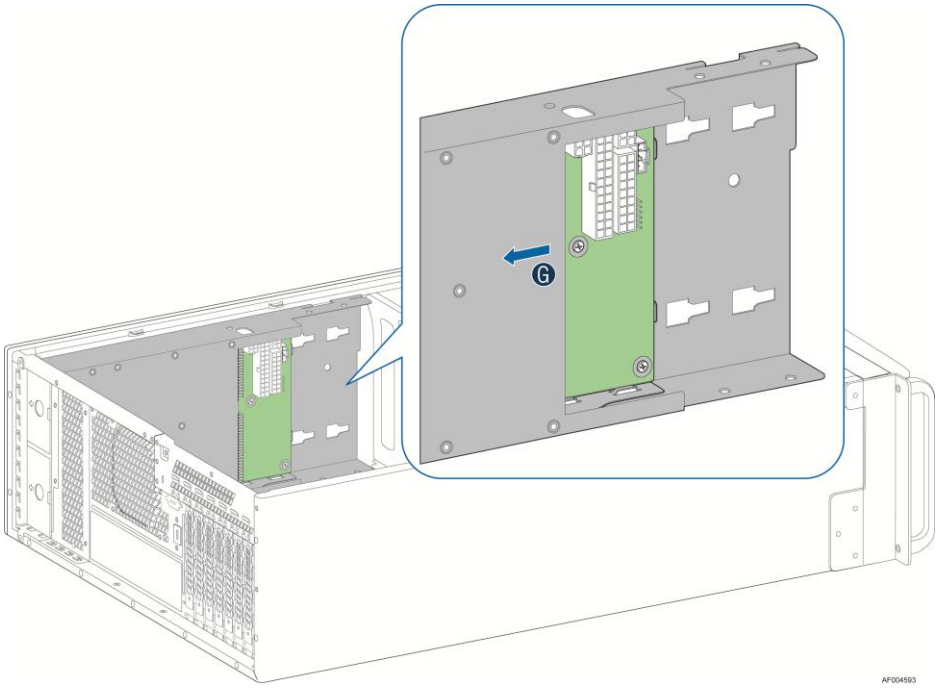


Figure 59. Sliding the Bracket into Power Supply Cage

12. Then pull back until the latch on the bracket is engaged with the power supply cage and make sure the screw holes on the bracket is aligned with the screw holes on power supply cage (see letter **H**). And then secure the bracket with the screws (see letter **I** and **J**).

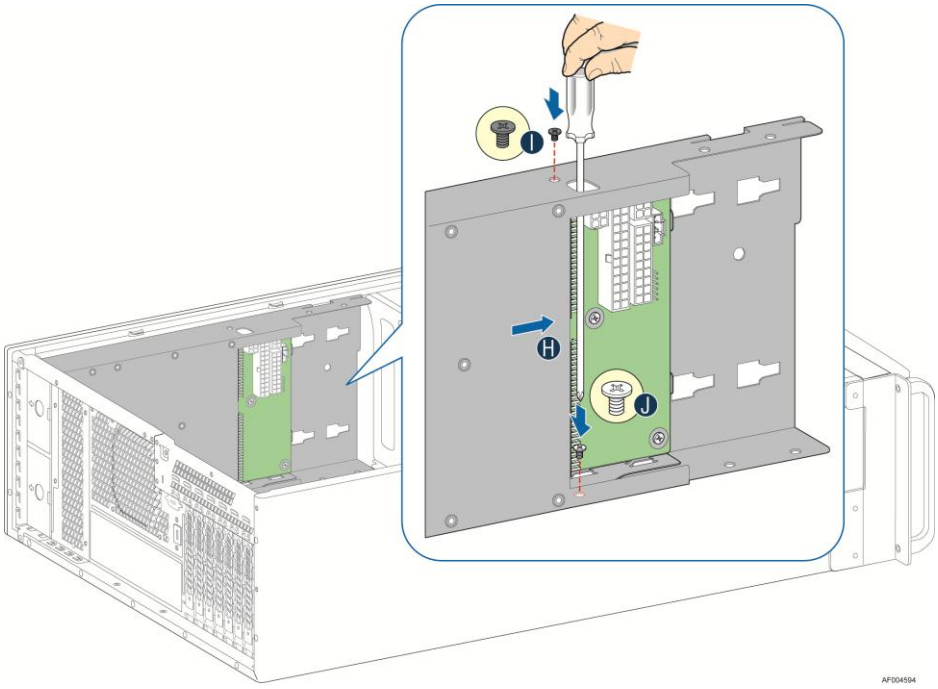


Figure 60. Securing the Bracket into Power Supply Cage

13. Reconnect the power cables as appropriate.
14. Insert the power supply(s) into the power supply cage and push all the way until it clicks into place.

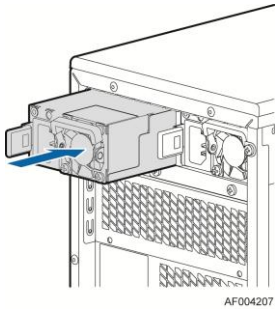


Figure 61. Installing Hot-swap Power Supply Module into Chassis

15. Reinstall the air duct. For instructions, see “Installing the Airduct”.
16. Re-install the chassis cover. For instructions, see “Installing the Chassis Cover’.
17. Plug all peripheral devices and the AC power cable into the server.
18. Power up the server.

Removing and Installing the Rear Fixed Fan

NOTE

This procedure applies only to the Intel® Server chassis P4304XXSFCN and P4304XXSHCN.

Removing the Rear Fixed Fan

1. Observe the safety and ESD precautions at the beginning of this book.
2. Power down the server and unplug all peripheral devices and the AC power cable.
3. Remove the chassis cover. For instructions, see “Removing the Chassis Cover”.
4. Disconnect the appropriate fan power cable from the server board.
5. Locate the four nylon rivets on the four corners of the Fan assembly. From the inside of chassis, push the push-pins (inner part of the rivit) outward, then remove the sleeves (outer part of the rivit). See letter **A** and **B**.
6. Remove the Fan and the rear vent cover under the Fan (see letter **C** and **D**).

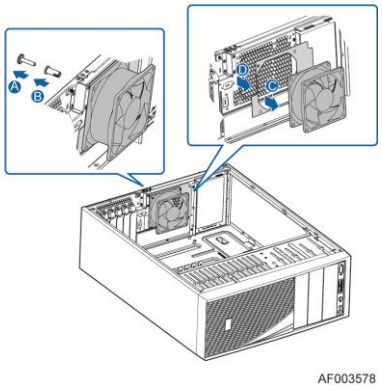


Figure 62. Removing the Rear Fixed Fan

Installing the Rear Fixed Fan

1. Observe the safety and ESD precautions at the beginning of this book.
2. Power down the server and unplug all peripheral devices and the AC power cable.
3. Remove the chassis cover. For instructions, see “Removing the Chassis Cover”.
4. Press the rear vent cover and the fan against the inner side of the chassis rear, adjust until the rivet holes on the chassis, rear vent cover and the fan are aligned with each other (see letter **A** and **B**).
5. While holding the rear vent cover and fan, insert the sleeves of the nylon rivet into the rivet holes from outside of the chassis. Push the push-pins of the nylon rivet into the sleeves (see letter **C** and **D**).

6. Connect fan power cable to the server/workstation board. See the *Quick Start User's Guide* or *Service Guide* provided with your Intel server/workstation board for appropriate connection location.

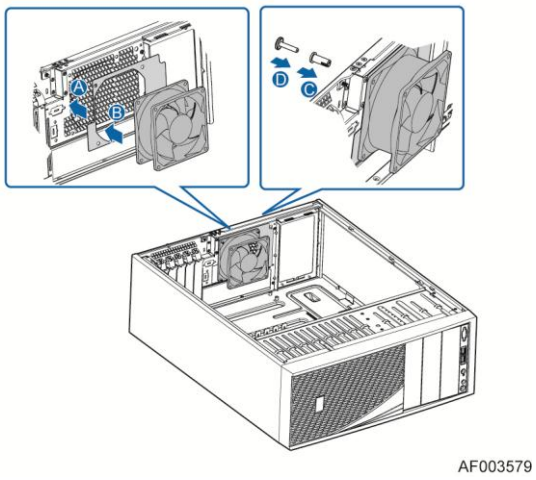


Figure 63. Installing the Rear Fixed Fan

Removing and Installing the Front Fixed Fan

NOTE

This procedure applies only to the Intel® Server chassis P4304XXSFEN, P4304XXSHEN, P4304XXSFDR, P4304XXSHDR, P4304XXSFDN, and P4304XXSHDN.

Removing the Front Fixed Fan

1. Observe the safety and ESD precautions at the beginning of this book.
2. Power down the server and unplug all peripheral devices and the AC power cable.
3. Remove the chassis cover. For instructions, see "Removing the Chassis Cover".
4. Remove the airduct if it is installed. For instructions, see "Removing the Airduct".
5. Disconnect the appropriate fan power cable from the server board.
6. Remove the two screws which secured the fan assembly, and take the fan assembly out (see letter **A**).
7. Locate the four nylon rivets on the four corners of the fan assembly. Remove all the four nylon rivets from the rear vent cover to take the fan out (see letter **B** and **C**).

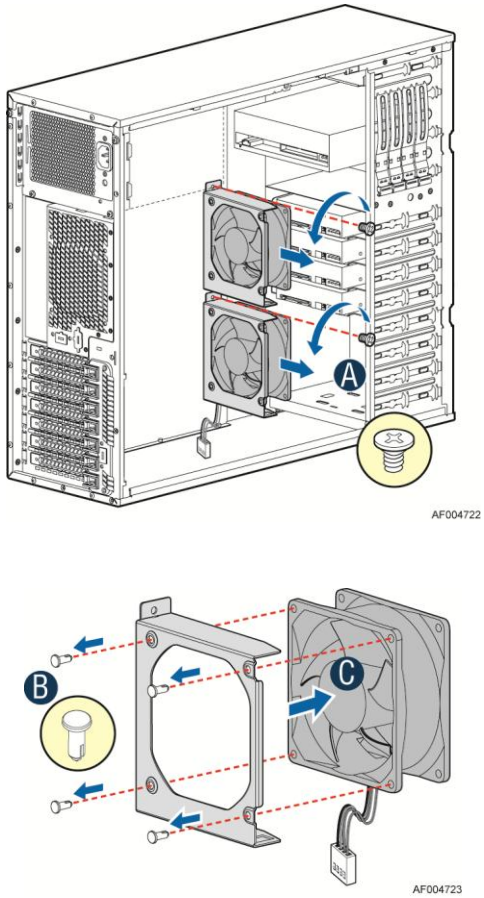


Figure 64. Removing the Front Fixed Fan

Installing the Front Fixed Fan

1. Observe the safety and ESD precautions at the beginning of this book.
2. Power down the server and unplug all peripheral devices and the AC power cable.
3. Remove the chassis cover. For instructions, see “Removing the Chassis Cover”.
4. Remove the airduct if it is installed. For instructions, see “Removing the Airduct”.
5. While holding the rear vent cover and fan, insert the sleeves of the nylon rivet into the rivet. Push the nylon push-pins of the nylon rivet into the sleeves (see letter **A** and **B**).
6. Align the fan assembly with the two screw-holes insdie the chassis and secure the fan assembly with the screws (see letter **C**).

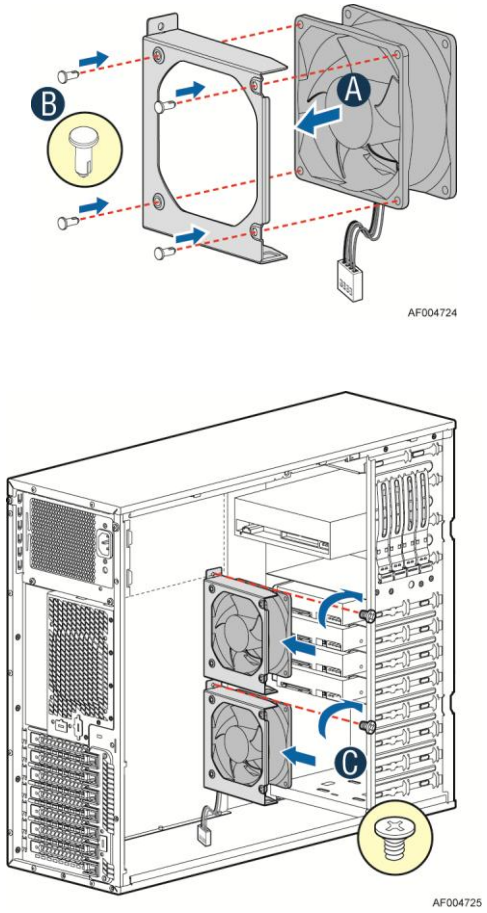


Figure 65. Installing the Front Fixed Fan

7. Connect fan power cable to the server/workstation board. See the *Quick Start User's Guide* or *Service Guide* provided with your Intel server/workstation board for appropriate connection location.

Removing and Installing the PCI Card Guide

Removing PCI Card Guide

NOTE

When full length PCI card is plugged, PCI Card Guide is needed to secure the PCI Card.

1. Observe the safety and ESD precautions at the beginning of this book.
2. Power down the server and unplug all peripheral devices and the AC power cable.
3. Remove the chassis cover. For instructions, see “Removing the Chassis Cover”.
4. Unplug all the PCI cards if there are PCI cards plugged in. When removing a full-length add-in card, you must pull back the latch on the plastic card guide at the front of the chassis to release the card from the card guide. For instructions, see “Removing the PCI Add-in Board(s).
5. Remove the two screws securing the PCI card guide (See letter **A**).
6. Remove the PCI card guide (See letter **B** and letter **C**).

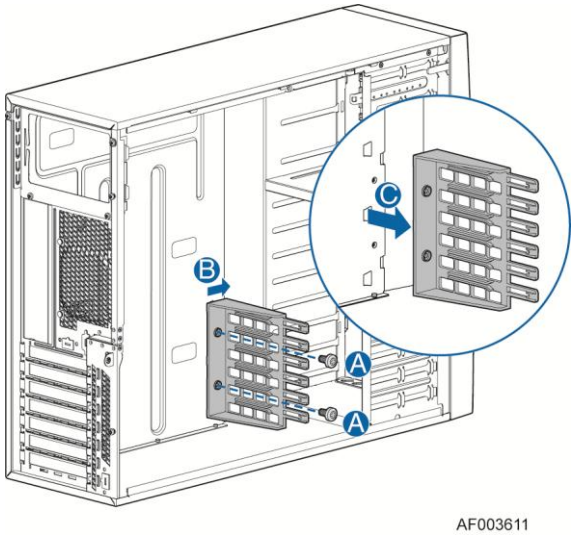


Figure 66. Removing the PCI Guard

Installing PCI Card Guide

NOTE

Required only when full length PCI card is plugged.

1. Observe the safety and ESD precautions at the beginning of this book.
2. Power down the server and unplug all peripheral devices and the AC power cable.

3. Remove the chassis cover. For instructions, see “Removing the Chassis Cover”.
4. Unplug all the PCI cards if there are PCI cards plugged in. For instructions, see “Removing the PCI Add-in Board(s).
5. Insert tabs on left slide of PCI Card Guide into slots in chassis (See letter **A**).
6. Secure the PCI Card Guide with the screws (See letter **B**).

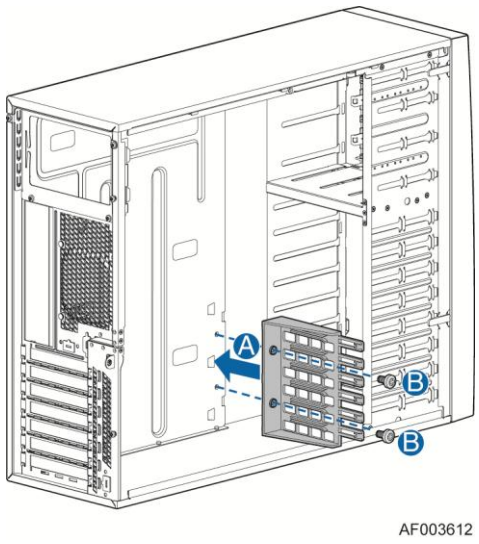


Figure 67. Installing the PCI Guard

Removing and Installing PCI Add-in Board(s)

Removing PCI Add-in Board(s)

CAUTION

When removing a full-length add-in card, you must pull back the latch on the plastic card guide at the front of the chassis to release the card from the card guide.

1. Observe the safety and ESD precautions at the beginning of this book.
2. Power down the server and unplug all peripheral devices and the AC power cable.
3. Remove the chassis cover. For instructions, see “Removing the Chassis Cover”.
4. Remove any cables attached to the add-in card, if necessary.
5. From inside of chassis, press open the back panel PCI add-in board retentaion device (see letter **A**).

6. Firmly grab the PCI add-in board by its top edge or outer corners and remove from the expansion slot on the server board (see letter **B**).

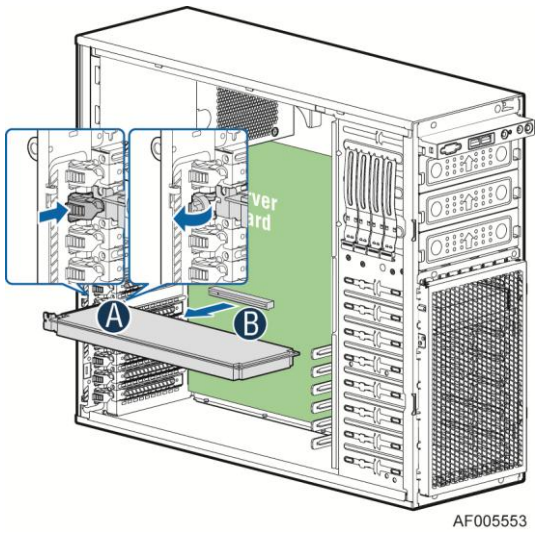


Figure 68. Removing the PCI add-in card

7. Install the PCI blank filler and close the PCI add-in card retention device.
8. Install the chassis cover. For instructions, see “Installing the Chassis Cover”.
9. Plug all peripheral devices and the AC power cable into the server.
10. Power up the server.

Installing PCI Add-in Board(s) for P4304XXSFCN and P4304XXSHCN

CAUTION

You may want to install an operating system before installing any add-in boards.

Do not overload the server board by installing add-in boards that draw excessive current.

Add-in boards can be extremely sensitive to ESD and always require careful handling. After removing the board from its protective wrapper, place it component side up on a grounded, static-free surface. Do not slide the board over any surface.

1. Observe the safety and ESD precautions at the beginning of this book.
2. Power down the server and unplug all peripheral devices and the AC power cable.
3. Remove the chassis cover. For instructions, see “Removing the Chassis Cover”.
4. Install the PCI card guide if full length PCI card is to be installed. For instructions, see “Install PCI Card Guide” (*Only needed when full length PCI card is plugged*).
5. Remove the PCI slot shield (see letter **A**) by pushing from the shield out from inside the chassis.

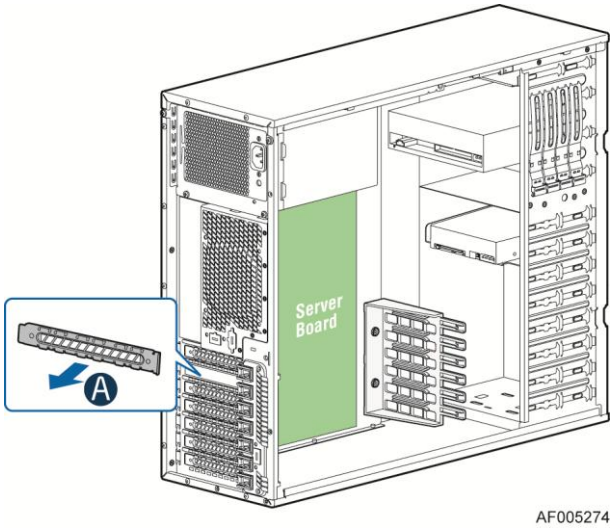


Figure 69. Preparing Chassis for Addition of PCI add-in board

6. From inside of chassis, press open the back panel PCI add-in board retentaion device (see letter **B**).

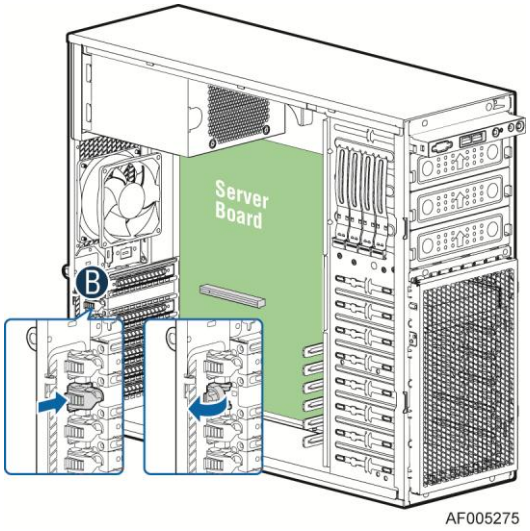


Figure 70. Open the back panel PCI add-in board retentaion device

7. Remove the PCI add-in board from its protective wrapper. Be careful not to touch the components or gold edge connectors. Place the add-in board on an anti-static surface. Record the type and serial number of the add-in board in your equipment log. Set the jumpers or switches on the board according to the manufacturer's instructions.

8. Hold the PCI add-in board by its top edge or upper corners. Firmly press the add-in board into an expansion slot on the server board (see letter **C** in the following figure). Close the back panel PCI add-in card retention device (see letter **D**).

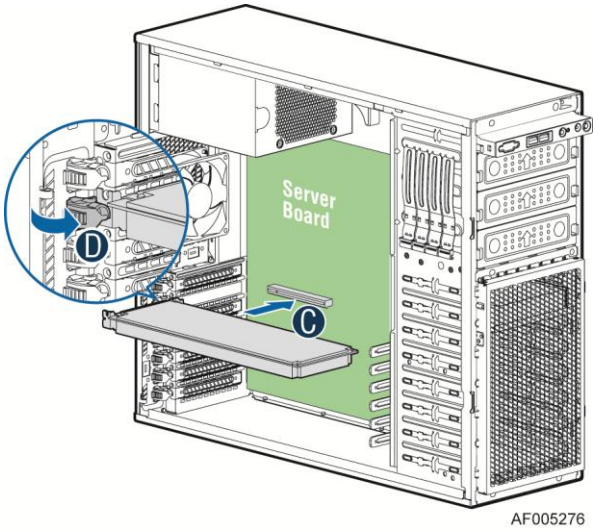


Figure 71. Installing PCI Add-in Board

9. Attach cables if necessary.
10. Install the chassis cover. For instructions, see “Installing the Chassis Cover”.
11. Plug all peripheral devices and the AC power cable into the server.
12. Power up the server.

Installing non-Full Length PCI Add-in Board(s) for P4304XXSFEN/P4304XXSHEN/P4304XXSFDR/P4304XXSHDR/P4304XXSFDN/P4304XXHDN

CAUTION

You may want to install an operating system before installing any add-in boards.

Do not overload the server board by installing add-in boards that draw excessive current.

Add-in boards can be extremely sensitive to ESD and always require careful handling. After removing the board from its protective wrapper, place it component side up on a grounded, static-free surface. Do not slide the board over any surface.

1. Observe the safety and ESD precautions at the beginning of this book.
2. Power down the server and unplug all peripheral devices and the AC power cable.
3. Remove the chassis cover. For instructions, see “Removing the Chassis Cover”.
4. Remove the PCI slot shield (see letter **A**) by pushing from the shield out from inside the chassis.

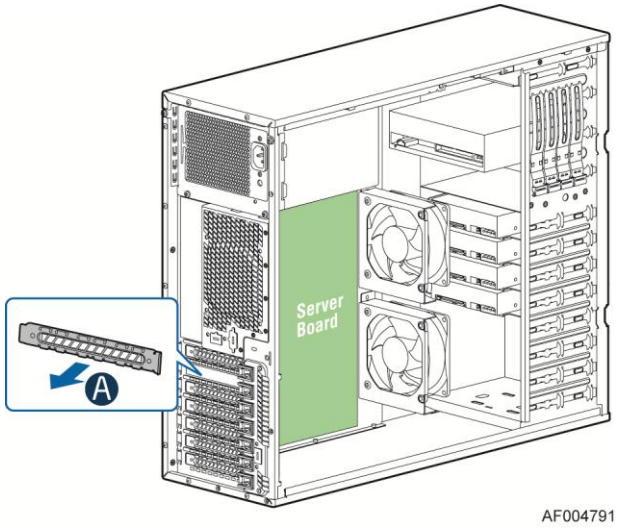


Figure 72. Preparing Chassis for Addition of PCI add-in board

5. From inside of chassis, press open the back panel PCI add-in board retentaion device (see letter **B**).

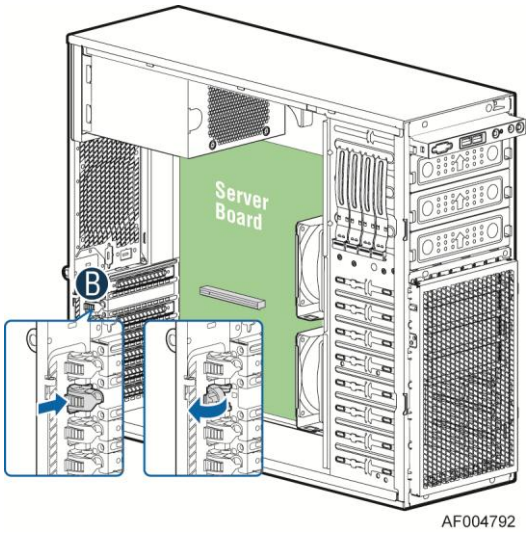


Figure 73. Open the back panel PCI add-in board retentaion device

6. Remove the PCI add-in board from its protective wrapper. Be careful not to touch the components or gold edge connectors. Place the add-in board on an anti-static surface. Record the type and serial number of the add-in board in your equipment log. Set the jumpers or switches on the board according to the manufacturer's instructions.

7. Hold the PCI add-in board by its top edge or upper corners. Firmly press the add-in board into an expansion slot on the server board (see letter **C** in the following figure). Close the back panel PCI add-in card retention device (see letter **D**).

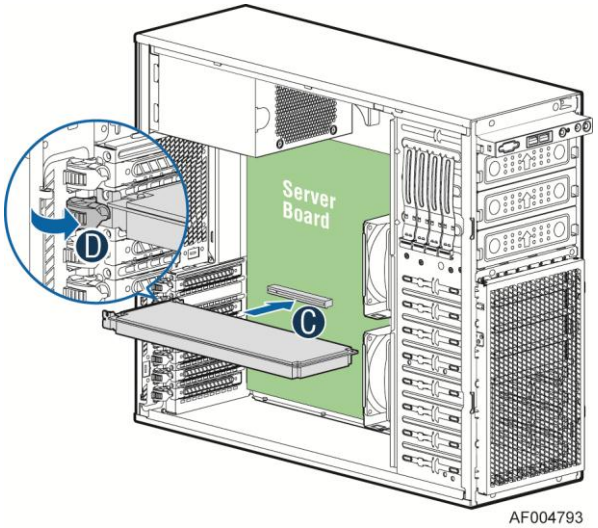


Figure 74. Installing PCI Add-in Board

8. Attach cables if necessary.
9. Install the chassis cover. For instructions, see “Installing the Chassis Cover”.
10. Plug all peripheral devices and the AC power cable into the server.
11. Power up the server.

Installing Full Length PCI Add-in Board(s) for P4304XXSFEN/P4304XXSHEN/P4304XXSFDR/P4304XXSHDR/P4304XXSFDN/P4304XXHDN

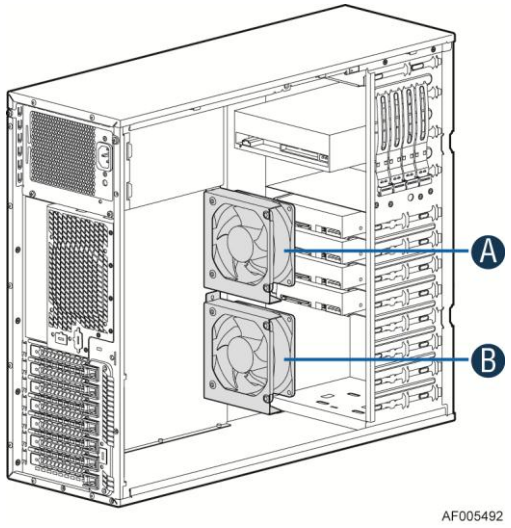
CAUTION

You may want to install an operating system before installing any add-in boards.

Do not overload the server board by installing add-in boards that draw excessive current.

Add-in boards can be extremely sensitive to ESD and always require careful handling. After removing the board from its protective wrapper, place it component side up on a grounded, static-free surface. Do not slide the board over any surface.

1. Observe the safety and ESD precautions at the beginning of this book.
2. Power down the server and unplug all peripheral devices and the AC power cable.
3. Remove the chassis cover. For instructions, see “Removing the Chassis Cover”.
4. Remove the airduct if it is installed. For instruction, see “Removing the Aircut”.
5. Remove the PCI zone system fan (see **B** in below figure for the PCI zone system fan). For instruction, see “Removing the Front Fixed Fan”



A. CPU Zone System Fan
B. PCI Zone System Fan

Figure 75. Front fixed system fans

6. Assembly the fan using the fan kit. (*The fan kit needs to be ordered separately*).

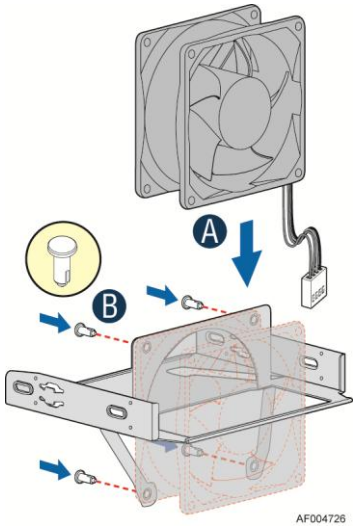


Figure 76. Assemblying the fan in fan kit

7. For chassis that supports fixed drive, remove the fixed HDD EMI shield, and then insert the fan assembly from front side of the chassis.

   For chassis with hot-swap drive cage, remove the drive cage and the EMI cover, insert the fan assembly, and then install the EMI cover and the drive cage back.

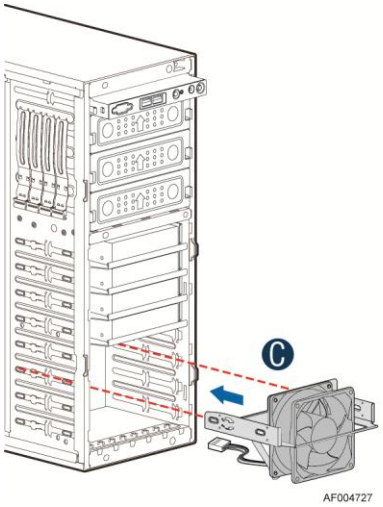


Figure 77. Insert the fan assembly from front of the chassis

8. Install the PCI card guide. For instructions, see “Installing PCI Card Guide” (*Only needed when full length PCI card is plugged*).

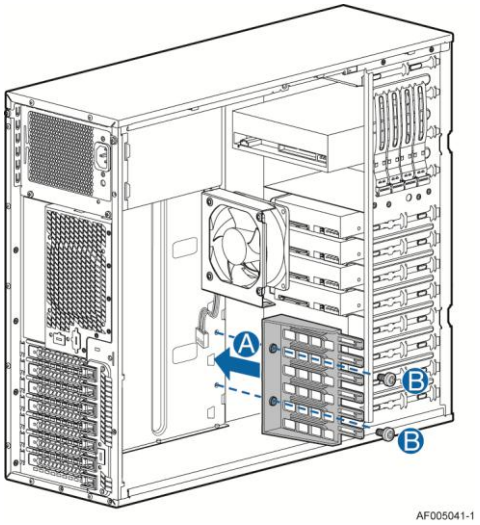


Figure 78. Installing the PCI Guard

9. Install the PCI card. For instructions, see “Installing non-Full Lenth PCI Add-in Board(s) for P4304XXSFEN/P4304XXSHEN/P4304XXSFDR/P4304XXSHDR/P4304XXSFDN/P4304XXSHDN”.

Removing and Installing the Chassis Feet

Removing the Chassis Feet

1. Observe the safety and ESD precautions at the beginning of this book.
2. Power down the server and unplug all peripheral devices and the AC power cable.

3. Lay the chassis down on its right side.
4. Loose the screws securing the rubber foot to the chassis and then remove the rubber foot from chassis.

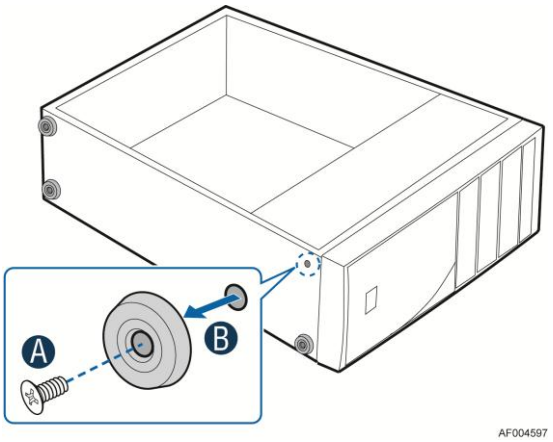


Figure 79. Removing the Chassis Feet

5. Repeat above steps until all four feet are removed.

Installing the Chassis Feet

1. Observe the safety and ESD precautions at the beginning of this book.
2. Power down the server and unplug all peripheral devices and the AC power cable.
3. Lay the chassis down on its right side.
4. Insert rubber foot into chassis hole (see letter **A**).
5. Secure foot by inserting screw through the rubber foot (see letter **B**).
6. Repeat above steps until all four feet are installed.

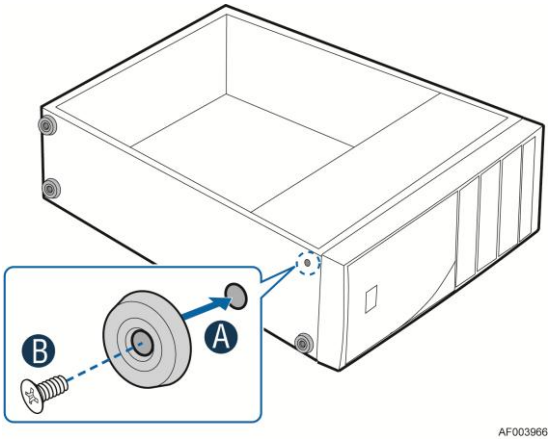


Figure 80. Installing the Chassis Feet

7. Put chassis in the upright position.
8. Reconnect all peripheral devices and the AC power cable to the server. Power up the server.

Removing and Installing the Front Panel Tray

CAUTION

The front panel is NOT hot swappable. Before removing or replacing the control panel, 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.

Removing the Front Control Panel Tray

1. Observe the safety and ESD precautions at the beginning of this book.
2. Power down the server and unplug all peripheral devices and the AC power cable.
3. Remove the chassis cover. For instructions, see “Removing the Chassis Cover”.
4. Remove the front bezel if it is installed. For instructions, see “Removing the Front Bezel”.
5. Disconnect the front panel cable, USB cable from the server board

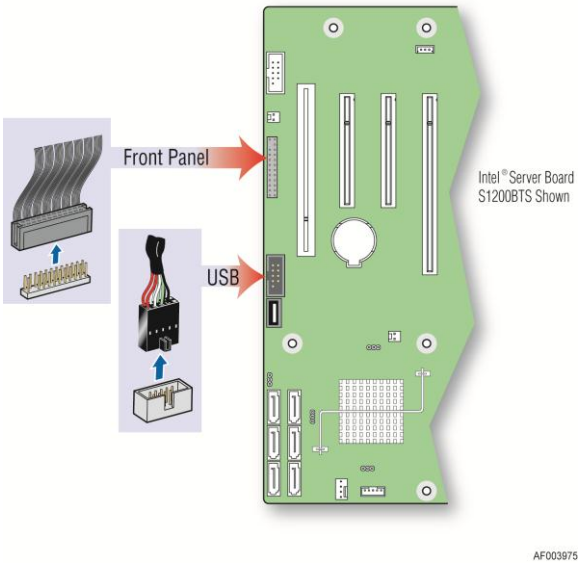


Figure 81. Disconnecting the Cables from the Server Board

6. Loose the front panel cable and USB cable from the wire clip on chassis
7. Press the latch at the sides of the front panel (see letter **A**) and carefully slide the front panel out (see letter **B**).

CAUTION

Do not slide the front panel out far from the front of the chassis before you disconnect the instruction cable from the front panel board.

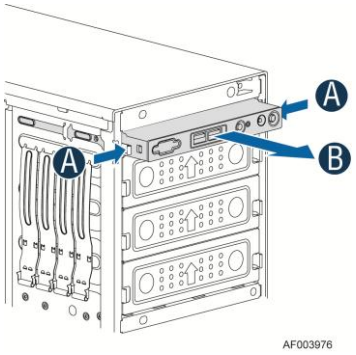


Figure 82. Sliding the Front Panel Tray out from the Chassis

8. Slide the front panel out from the front of the chassis to the place (see Letter **C**) so that you can reach the front panel and USB cable connectors at the rear of the front panel. Then disconnect the front panel cable and intrusion switch cable from the front panel board (see Letter **D**).

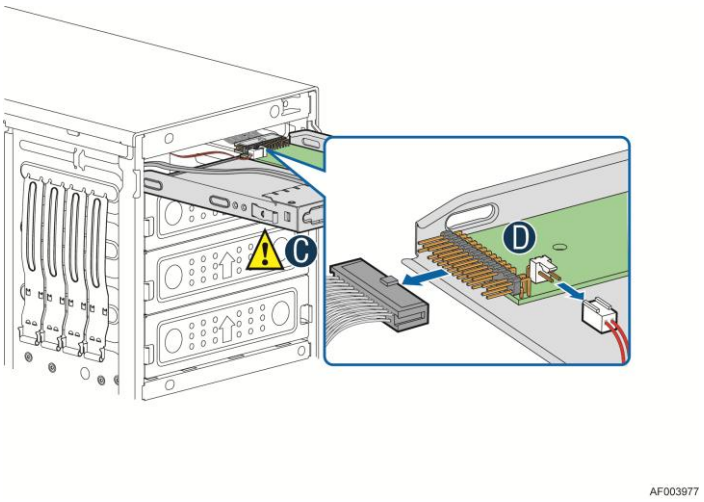


Figure 83. Disconnecting the Cables from Front Panel Board

9. Slide the front panel tray out.

Installing the Fron Panel Tray

1. Observe the safety and ESD precautions at the beginning of this book.
2. Power down the server and unplug all peripheral devices and the AC power cable.
3. Remove the chassis cover. For instructions, see “Removing the Chassis Cover”.
4. Remove the front bezel if it is installed. For instructions, see “Removing the Front Bezel”.
5. Attach the front panel cable and the chassis intrusion cable (see letter **A**) to the front panel board.

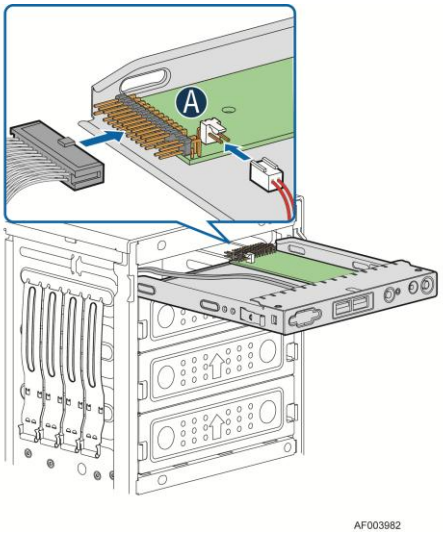


Figure 84. Connecting the Cables to the Front Panel Board

6. Slide the front panel tray in chassis

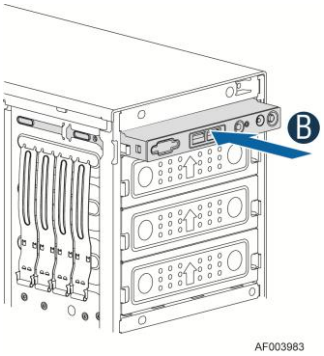


Figure 85. Installing the Front Panel Tray in Chassis

7. Connect the front panel and USB cables to server board.

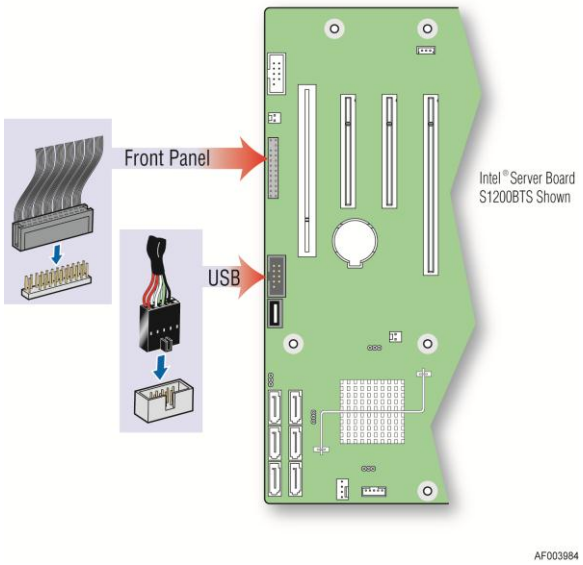


Figure 86. Connecting the Cables to Server Board the Front Panel Tray in Chassis

8. Install the front bezel. For instructions, see “Removing and Installing the Front Bezel”.
9. Install the chassis cover. For instructions, see “Installing the Chassis Cover”.
10. Plug all peripheral devices and the AC power cable into the server.
11. Power up the server.

Replacing the Front Panel Board

1. Observe the safety and ESD precautions at the beginning of this book.
2. Power down the server and unplug all peripheral devices and the AC power cable.
3. Remove the chassis cover. For instructions, see “Removing the Chassis Cover”.
4. Remove the front bezel if it is installed. For instructions, see “Removing the Front Bezel”.
5. Remove the front panel tray if it is installed. For instructions, see “Removing the Front Panel Tray”.
6. Loose the screw (see letter **A**) securing the front panel board and remove the front panel board (see letter **B**)

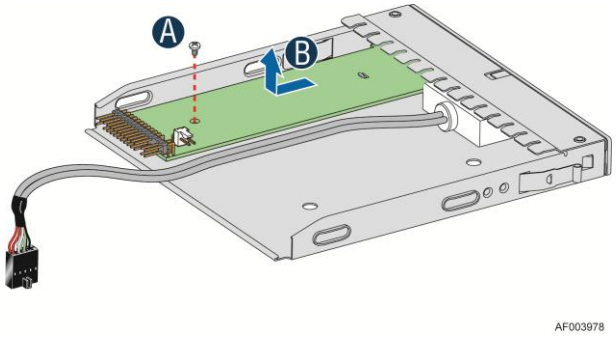


Figure 87. Removing the Front Panel Board

7. Remove the cap on the front panel board power LED and install the cap on the new front panel board.

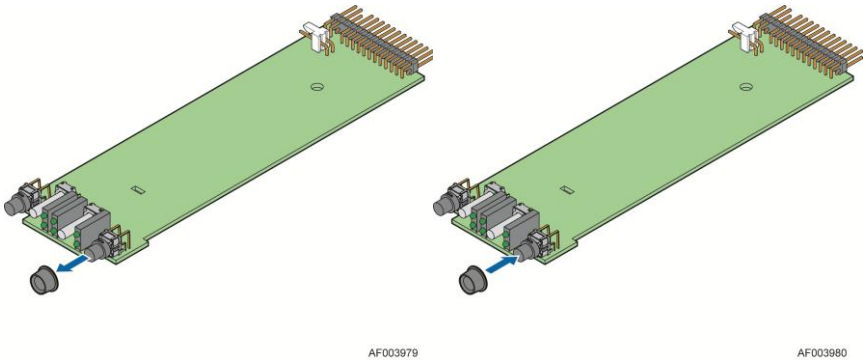


Figure 88. Removing and Installing the Cap on Front Panel Board

8. Attach the new front panel board in the front panel tray (see letter **A**) and secure the new front panel board with the screw (see letter **B**).

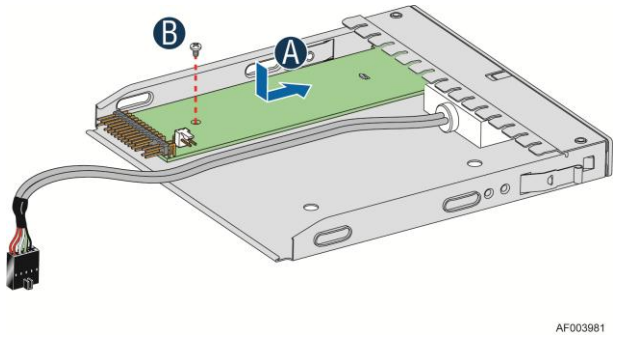


Figure 89. Installing the New Front Panel Board

9. Installing the front panel tray with the front panel board. For instructions, see “Installing the Front Panel Tray”.
10. Install the front bezel. For instructions, see “Removing and Installing the Front Bezel”.
12. Install the chassis cover. For instructions, see “Installing the Chassis Cover”.
13. Plug all peripheral devices and the AC power cable into the server.
14. Power up the server.

Installing and/or Removing a Server/Workstation Board

NOTE

The server/workstation board you can install in your chassis depends upon the chassis model.

To install or remove a server board, do the following:

1. Observe the safety and ESD precautions at the beginning of this book.
2. Power down the server and unplug all peripheral devices and the AC power cable.
3. Remove the chassis cover. For instructions, see “Removing the Chassis Cover”.
4. Remove the front bezel assembly if it is installed. For instructions, see “Removing the Bezel Assembly (Pedestal Only)”
5. Remove any PCI add-in boards that are present. For instructions, see “Removing PCI Add-in Board(s)”.
6. If installing a server board, refer to the *Service Guide* and/or *Quick Start User’s Guide* that shipped with your Intel® server/workstation board for installation instructions. Use the mounting screws, bumpers and standoffs (if necessary) that came with your chassis to secure the server/workstation board to the chassis. Make sure the server/workstation board is properly seated and then tighten the screws firmly, starting with the screws at the center of the server/workstation board. Make cable connections per instructions in the Intel® server/workstation board *Service Guide* and/or *Quick Start User’s Guide*.
7. If removing a server board, disconnect all cables connected to the server board.
8. Remove the mounting screws, starting with the screws at the center of the server/workstation board. Remove the server board.
9. If desired, install any PCI Add-in boards. For instructions, see “Installing PCI Addin Board(s)”
10. Re-install the front bezel assembly. For instructions, see “Installing the Front Bezel (Pedestal Only)”.
11. Re-install the chassis cover. For instructions, see “Installing the Chassis Cover”.
12. Plug all peripheral devices and the AC power cable into the server.
13. Power up the server.

Installing Alternate Serial Port

1. Observe the safety and ESD precautions at the beginning of this book.
2. Power down the server and unplug all peripheral devices and the AC power cable.
3. Remove the chassis cover. For instructions, see “Removing the Chassis Cover”.
4. Remove the alternate serial port knockout by pressing the knockout from inside the chassis (see letter **A**).
5. Mount the serial port on the rear panel of the chassis and secure the port with two screws (see letter **B** and **C**). Connect the cable to the Serial B Connector on your motherboard (see letter **D**).

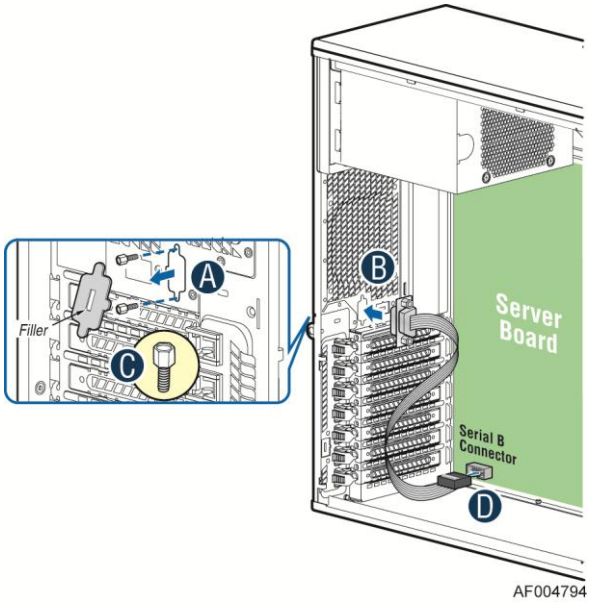


Figure 90. Installing the Alternate Serial Port Knockout

Connecting and Disconnecting Cables to or from Server Workstation Board

CAUTION

Use caution when routing cables to ensure that cables do not obstruct fan airflow.

1. See your *Intel® Server/Workstation Board Service Guide* or *Quick Start User's Guide* for cable connection locations.
2. If your server has a hot swap power supply, secure the cables (that route toward the server/workstation board) to the chassis.

Connecting Cables to Server/Workstation Board

1. If your server has a hot swap power supply, connect the cables (that route toward the server/workstation board) to the chassis.
2. See your *Intel® Server/Workstation Board Service Guide* or *Quick Start User's Guide* for cable connection locations.

Removing Cables from Server/Workstation Board

1. If your server has a hot swap power supply, remove the cables (that route toward the server/workstation board) to the chassis.
2. See your *Intel® Server/Workstation Board Service Guide* or *Quick Start User's Guide* for cable connection locations.

Intel® Remote Management Module 4

The Intel® Remote Management Module 4 plugs into a dedicated connector on the server board and provides additional server management functionality to the server board.

This module provides a dedicated web server for viewing server information and remote control of the system. It also provides Remote KVM Redirection and USB Media Redirection allowing USB devices attached to the remote system to be used on the managed server.

Intel® Server Chassis P4000S family provide two Intel® Remote Management Module 4 knockout. For instructions on installing the Intel® Remote Management Module 4, see *Intel® Remote Management Module 4 User Guide*.

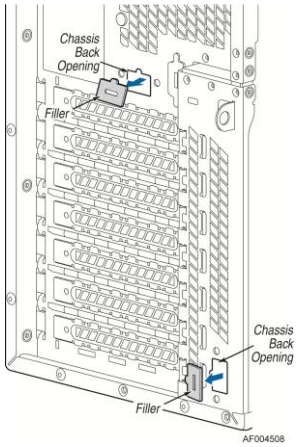


Figure 91. RMM4 knockout

Mechanical Locks

All configurations of the server chassis can support the installation of a padlock loop (see letter **A** in the following figure) at the rear of the chassis.

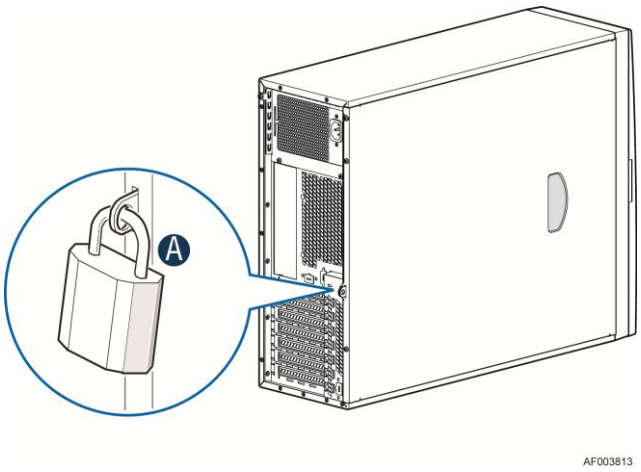


Figure 92. Mechanical Locks

3 Technical Reference

Power Supply Specification

The power supply specifications for your Intel® Server Chassis P4000S family depend upon the configuration of chassis you purchased. Below power supply configurations are available:

- 365W fixed power supply
- 460W hot-swap power supply
- 550W fixed power supply

365-W Single Power Supply Input Voltage

- 100-127V at 50/60 Hz; 10A max.
- 200-240V at 50/60 Hz; 10A max.

365-W Single Power Supply Output Voltages

The following table defines the minimum power and current ratings. The power supply must meet both static and dynamic voltage regulation requirements for all conditions.

Table 4. Power Supply Output Voltages

Parameter	Min.	Max.	Peak	Unit
5V	0.3	10.0		A
12V1	0.7	16.0	18.0	A
12V2	1.5	16.0	18.0	A
3.3V	0.5	18.0		A
-12V	0.0	0.5		A
5V	0.0	2.5	3.0	A

Notes:

1. Max combined power for all output shall not exceed 365W.
2. Peak combined power for all outputs shall not exceed 385W.
3. Max combined power of 12V1 and 12V2 shall not exceed 318W.
4. Max combined power on 3.3V and 5V shall not exceed 80W.
5. Peak power and current loading shall be supported for a minimum of 12 second.

460-W Hot-swap Power Supply Input Voltage

- 100-127V at 50/60 Hz; 10A max.
- 200-240V at 50/60 Hz; 10A max.

460-W Hot-swap Power Supply Output Voltages

The following table defines the minimum power and current ratings. The power supply must meet both static and dynamic voltage regulation requirements for all conditions.

Table 5. Power Supply Output Voltages

Parameter	Tolerance	Min.	Nom.	Max.	Unit
+12V	- 5%/+5%	+11.40	+12.00	+12.60	V_{rms}
+12V stby	- 5%/+5%	+11.40	+12.00	+12.60	V_{rms}

550-W Single Power Supply Input Voltage

- 100-127V at 50/60 Hz; 10A max.
- 200-240V at 50/60 Hz; 10A max.

550-W Single Power Supply Output Voltages

The following table defines the minimum power and current ratings. The power supply must meet both static and dynamic voltage regulation requirements for all conditions.

Table 6. Power Supply Output Voltages

Parameter	Min.	Max.	Peak	Unit
3.3V	0.5	18.0		A
5V	0.3	15.0		A
12V1	0.7	24.0	28.0	A
12V2	0.7	24.0	28.0	A
12V3	1.5	18.0		A
– 12V	0.0	0.5		A
5Vstby	0.0	3.0	3.5	A

Notes:

1. Max combined power for all output shall not exceed 550W.
2. Peak combined power for all outputs shall not exceed 630W for 20 seconds.
3. Max combined power of 12V1, 12V2 and 12V3 shall not exceed 530W.
4. Max combined power on 3.3V and 5V shall not exceed 120W.

System Environmental Requirements

Table 7. Environmental Requirements

Parameter	Limits
Operating temperature	+10°C to +35°C with the maximum rate of change not to exceed 10°C per hour.

Parameter	Limits
Non-operating temperature	-40°C to +70°C
Non-operating humidity	50% to 90%, non-condensing with a maximum wet bulb of 28° C (at temperatures from 25° C to 35° C)
Acoustic noise	7.0 BA LWA in a typical office ambient temperature (18-25°C)
Shock Operating	Half sine, 2 g, 11 milliseconds
Shock Unpackaged	Trapezoidal, 25 g, velocity change 136 inches/second (40 lbs to < 80 lbs)
Shock Packaged	Operational after a free fall of 9 – 36 inches depending on the weight
Vibration unpackaged	5 Hz to 500 Hz 2.20 g RMS random
Vibration packaged	5 Hz to 500 Hz 1.09 g RMS random
Packaged shock	Operational after a free fall of 9 – 36-inches depending on the weight
ESD	Air discharge: 0 to 15.0kV; Contact Discharge: 0 to 8.0kV

Current Usage

Calculation Power Usage

The total combined wattage for your configuration **must be less than the wattage rating for your power supply**. 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

Table 8. Power Usage Worksheet

	Current (maximum) at voltage level					
Device	+3.3V	+ 5V	-5 V	+12 V	-12 V	5V Standby
Baseboard, Front Panel						
Board and Fans						
Processor(s)						
Memory						
3.5-inch Diskette Drive						
CD-ROM Drive						
Second 5.25-inch Device						
Third 5.25-inch Device						
1st Hard Drive						
2nd Hard Drive						
3rd Hard Drive						

	Current (maximum) at voltage level					
4th Hard Drive						
Expansion Board 1						
Expansion Board 2						
Expansion Board 3						
Expansion Board 4						
Expansion Board 5						
Expansion Board 6						
Intel® Remote Management						
Module						
Control Panel						
Total Current						

Worksheet, Total Combined Power Used by the Server

- From the previous worksheet, enter the total current for each column.
- Multiply the voltage by the total current to get the total wattage for each voltage level.

Add the total wattage for each voltage level to arrive at the total combined power usage for the power subsystem.

Table 9. Power Usage Worksheet 2

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

Appendix A: Regulatory and Compliance Information

Please refer to the Server Products Regulatory and Safety document for the product regulatory compliance reference. The document can be downloaded from http://www.intel.com/support/motherboards/server/.

Appendix B: Safety Information

Please refer to the Server Products Regulatory and Safety document for the Safety Information. The document can be downloaded from http://www.intel.com/support/motherboards/server/.

Appendix C: Installation/Assembly Safety Instructions

Please refer to the Server Products Regulatory and Safety document for the Installation/Assembly Safety Instructions. The document can be downloaded from http://www.intel.com/support/motherboards/server/.

Appendix D: Getting Help

If you encounter an issue with your server platform, please follow these steps to obtain support on your product.

1. Get connected to our support web page for 24x7 support when you need it to get the latest and most complete technical support information on all Intel Enterprise Server and Storage Platforms. Information available at the support site includes:
   - Latest BIOS, firmware, drivers and utilities
   - Product documentation, installation and Quick Start Guides
   - Full product specifications, technical advisories and errata
   - Compatibility documentation for memory, hardware add-in cards, chassis support matrix, and operating systems
   - Server and chassis accessory parts list for ordering upgrades or spare parts
   - A searchable knowledgebase to search for product information throughout the support site
2. Send an email to Intel's technical support center using the following online form if you still cannot obtain a solution to your issue.
3. Lastly, you can contact an Intel support representative using one of the following support phone numbers. Charges may apply. Intel customer support suggests filling out the issue report form to better service the issue.

   Intel now offers Channel Program members around-the-clock 24x7 technical phone support+ on Intel® server boards, server chassis, server RAID controller cards, and Intel® Server Management.

NOTE

You must login in to the reseller site to obtain the 24x7 number.

Warranty Information

To obtain warranty information, visit the following Intel web site:

http://www.intel.com/support/motherboards/server/sb/cs-010807.htm.

Appendix E: Intel® Server Issue Report Form

Issue Report Form (Rev 3.5)

NOTE

FILLING OUT THIS FORM COMPLETELY IS REQUIRED FOR ANY ESCALATION

Customer Contact Information:

Customer Support Case#:

Intel® Server Board or System:

(Example: S1200BT, P4304XXSFCN)

Server Chassis:

(Example PXXXX. If third-party chassis used, indicate make and model.)

Base Board Information: (some information maybe found by accessing BIOS and going through the Server Management menu -> System Information)

Baseboard PBA/TA/AA # (Example: 123456-789):

- You can find this on the white sticker label on the baseboard.

System BIOS Version:

Intel® Remote Management Module Firmware Version (if applicable):

Intel® Management Module BMC Revision (if applicable):

BMC/mBMC Version:

FRU/SDR Version:

HSC Version:

Has the latest BIOS been tried? (Yes/No):

Has the latest BMC/mBMC been tried? (Yes/No):

Has the latest IMM BMC been tried? (Yes/No):

Has the latest RMM Firmware been tried? (Yes/No):

Has the latest FRU/SDR been tried? (Yes/No):

Has the latest HSC been tried? (Yes/No):

Processor information:

	Type	Speed	sSpec	Thermal Solution
Processor 1				
Processor 2				
Processor 3				
Processor 4				

Thermal solution (Heat sink) examples:

(1U, Passive w/air ducting, Active w/fan, and so on)

Memory:

Manufacturer	Part Number	DRAM Part Number	On Intel tested list?

Add-in adapters (Example: NICs, Management Adapters, Serial Expansion Cards, PCI-Express* Adapters, RAID Controllers, SCSI Controllers, and so on):

Type	Slot	Manufacturer	Model	Firmware

Other third part hardware (Example: Example: KVM, Chassis, and so on):

Description/Use	Manufacturer	Model	Firmware

Storage Devices (Example: SCSI, SATA, SAS, USB, Tape, and so on):

Manufacturer	Model	Type	Size	Firmware	In Hot Swap Bay?

Operating System Information (Example: RedHat* Enterprise Linux, Microsoft Windows Server 2003*, Service pack 1, OEM CD):

Manufacturer:

Version:

Language version (English, Arabic, Chinese (Simplified)):

Service Pack Level or Kernel Revision:

Distribution (OEM/Retail):

Intel® RAID Controller: (Example SRCU42E)

RAID controller part number (PBA number):

RAID controller firmware version:

Has the latest RAID firmware been tried? (Yes/No):

RAID driver version:

Has the latest RAID driver been tried? (Yes/No):

RAID volumes configuration (disks and RAID level):

RAID volume use (Boot device/Data Volume):

Is BBU (Battery Backup Unit) installed? (Yes/No):

BBU part number:

Detailed description of issue:

Troubleshooting tried:

Steps to replicate the issue:

Issue impact statements:

Do you have any potential Intel system, or component purchases that this issue is holding up? If yes, please provide a brief description below.

Do you have systems already purchased that are not being delivered to your customers because of this issue? If yes, please provide a brief description below.

Have you returned systems or components to your place of purchase because of this issue? If yes, please provide a brief description below.

*All other brands and names are property of their respective owners.

Appendix F: 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 which 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, transportation charges for the return of Product to buyer within the USA will be paid by Intel. For all other locations, the warranty excludes all costs of shipping, customs clearance, and other related charges. Intel will have 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 standalone 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.

This Limited Warranty does not cover damages due to external causes, including accident, problems with electrical power, usage not in accordance with product instructions, misuse, neglect, alteration, repair, improper installation, or improper testing.

Warranty Limitations and Exclusions

These warranties replace all other warranties, expressed or implied including, but not limited to, the implied warranties of merchantability and fitness for a particular purpose. Intel makes no expressed warranties beyond those stated here. Intel disclaims all other warranties, expressed or implied including, without limitation, implied warranties of merchantability and fitness for a particular purpose. Some jurisdictions do not allow the exclusion of implied warranties, so this limitation may not apply.

All expressed and implied warranties are limited in duration to the limited warranty period. No warranties apply after that period. Some jurisdictions do not allow limitations on how long an implied warranty lasts, so this limitation may not apply to you.

Limitations of Liability

Intel's responsibility under this, or any other warranty, implied or expressed, is limited to repair, replacement, or refund, as set forth above. These remedies are the sole and exclusive remedies for any breach of warranty. Intel is not responsible for direct, special, incidental, or consequential damages resulting from any breach of warranty under another legal theory including, but not limited to, lost profits, downtime, goodwill, damage to or replacement of equipment and property, and any costs of recovering, reprogramming, or reproducing any program or data stored in or used with a system containing this product. Some jurisdictions do not allow the exclusion or limitation of incidental or consequential damages, so the above limitations or exclusions may not apply to you.

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 and Latin America: To obtain warranty repair for the product, please go to the following Web site 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 cannot 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.

See Appendix D: Getting Help for telephone numbers.

Returning a Defective Product

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