

Intel® Server Chassis P4000M Family Service Guide

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

Order Number: G30559-003

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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 P4000M 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 P4000M 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 P4000M 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 the fan, 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.	<i>Intel® Server Chassis P4000M Family Technical Product Specification</i> See the section on the web page titled, “Document and Guides”.
If you just received this product and need to install it.	<i>Intel® Server Chassis P4000M Family Quick Installation User’s Guide</i>
Accessories or other Intel® server products.	<i>Spares and Configuration Guide</i>
To quickly and efficiently select compatible components to design a complete system.	Intel® Server Configurator tool
To make sure your system falls within the allowed power budget.	Power Budget Tool
For software to manage your Intel® server.	Intel® Server Management Software
For firmware and drivers.	Firmware and Drivers

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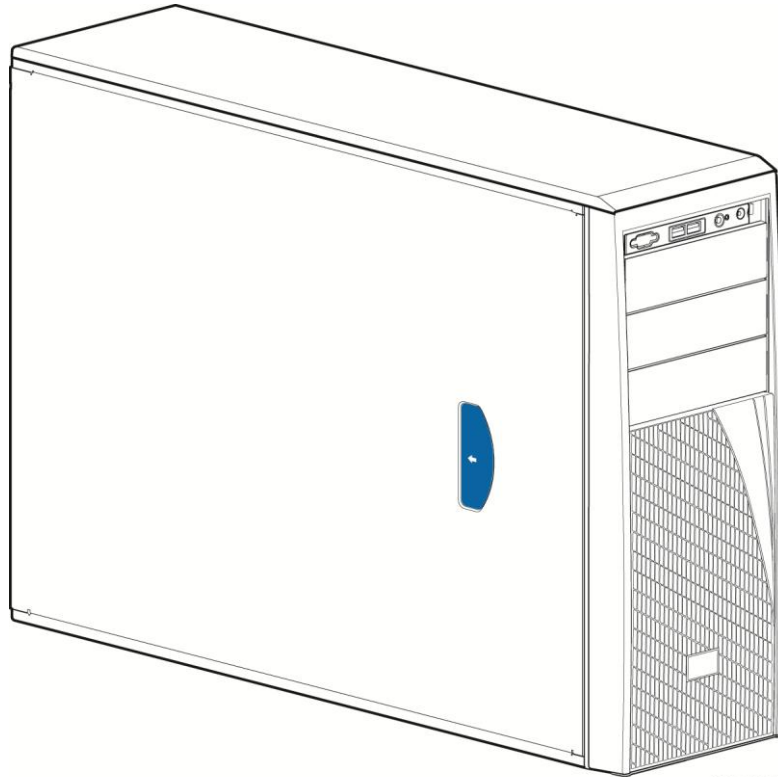
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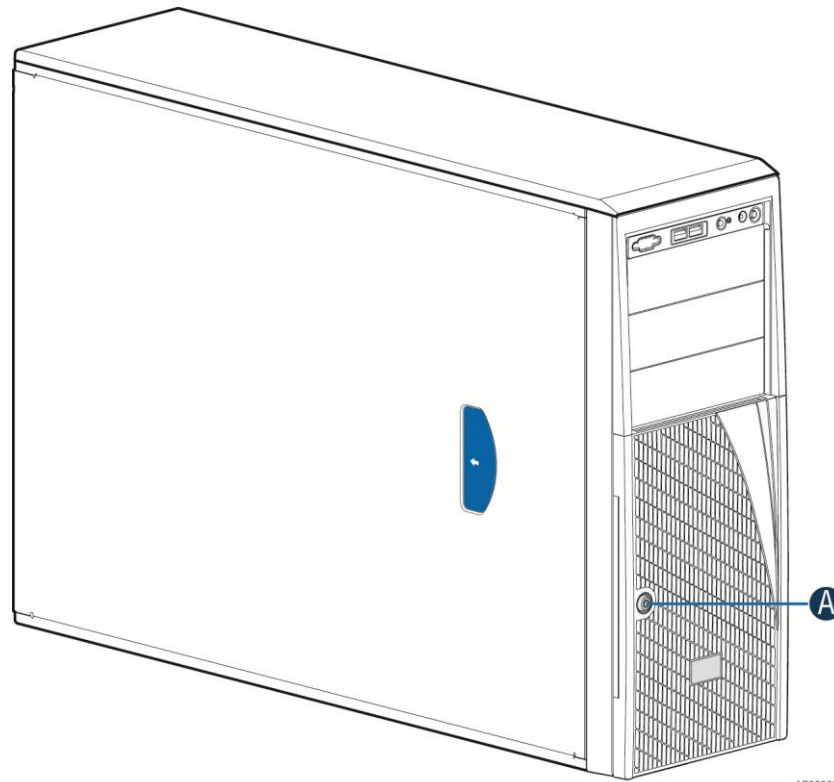
1 Server Chassis Features

This chapter briefly describes the main features of the Intel® Server Chassis P4000M 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.



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Figure 1. Chassis Front View for Fixed Hard Drive



A. Front Door Lock

Figure 2. Chassis Front View for Hotswap Hard Drive

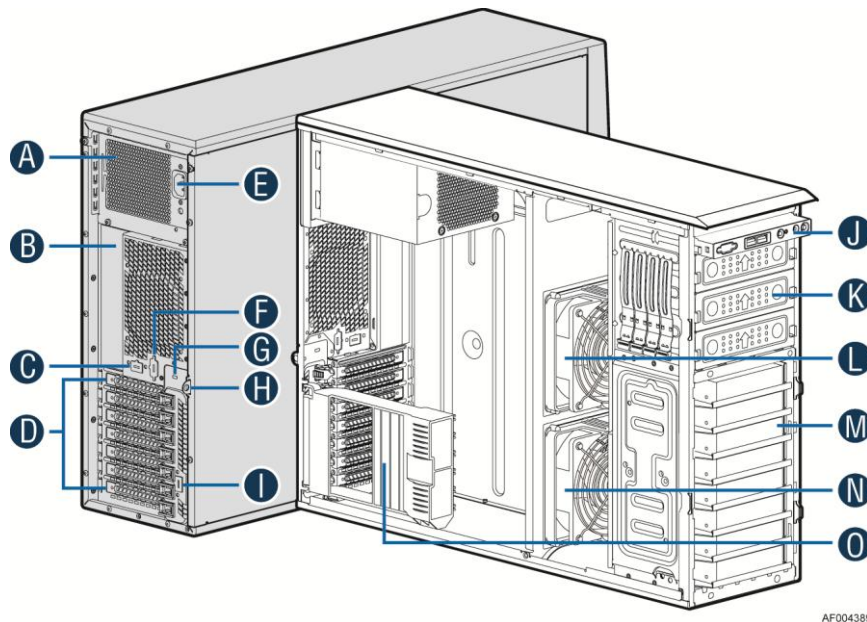
Chassis Features

Table 1. Intel® Server Chassis P4000M family Base Features

Feature	Description
Dimensions	<ul style="list-style-type: none"> ▪ 17.2" high ▪ 6.8" wide ▪ 25" deep (without bezel: 24.5")
Hard Drives Options	<ul style="list-style-type: none"> ▪ Up to eight fixed HDDs ▪ 4x 3.5" SATA/SAS Hot Swap Hard Drive Bays ▪ 8x 3.5" SATA/SAS Hot Swap Hard Drive Bay ▪ 8x2.5" SATA/SAS Hot Swap Hard Drive Bay ▪ Two 8x2.5" SATA/SAS Hot Swap Hard Drive Bays
Peripherals	Three multi-mount 5.25 peripheral bays
Control Panel (dependent on option selected)	<ul style="list-style-type: none"> ▪ Front Panel ▪ Intel® Local Control Panel (Optional)
LEDs and displays (dependent on option)	<ul style="list-style-type: none"> ▪ With Front Panel <ul style="list-style-type: none"> ○ NIC1 Activity ○ NIC2 Activity ○ NIC3 Activity

Feature	Description
selected)	<ul style="list-style-type: none"> ○ NIC4 Activity ○ Power/Sleep ○ System Status ○ System Chassis Identification ○ Hard Drive Activity
Power Supply Options	<ul style="list-style-type: none"> ▪ One fixed 550-W ▪ One hot-swap 750W with high current PDB ▪ Two hot-swap 750-W common redundant power supply with high current PDB ▪ One hot-swap 460-W with low current PDB ▪ Two hot-swap 460-W common redundant power supply with low current PDB ▪ Two hot-swap 1200-W common redundant power supply with high current PDB
Cooling Options	<ul style="list-style-type: none"> ▪ Non redundant cooling solution: One fixed system CPU zone fan + One fixed system PCI zone fan ▪ Redundant cooling solution: Five hot-swap system fans
USB 2.0	<ul style="list-style-type: none"> ▪ Two front panel USB ports with Front Panel ▪ Four Back panel USB ports (depending on server/workstation board)
Video	One rear panel video port

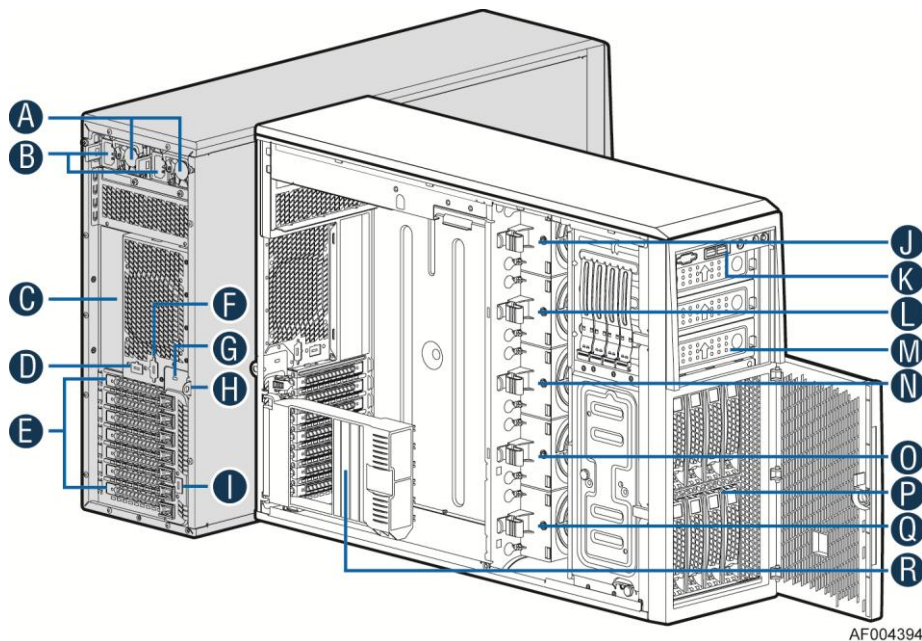
Component Identification



- A. 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 Panel
- K. 5.25" Peripheral Bays
- L. CPU Zone System Fan (Fan 2)
- M. Fixed Hard Drive Carrier Tray
- N. PCI Zone System Fan (Fan 1)
- O. PCI card retainer

Figure 3. Internal Chassis View of Intel® Server Chassis P4000M with Fixed Power Supply, Fixed Hard Drives, Fixed System Fans

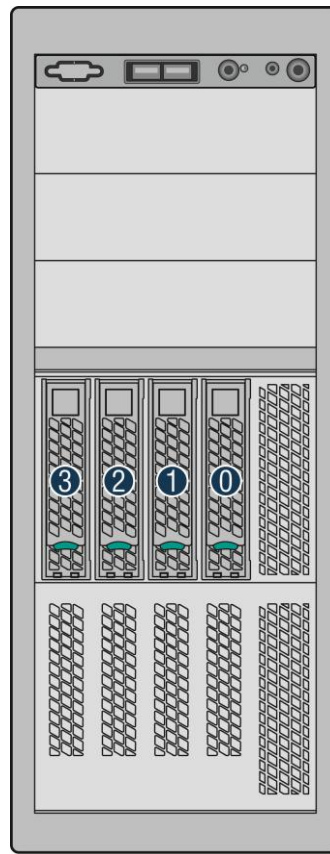


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- A. Two Redundant Hot-swap Power Supply
- B. AC Input Power Connector
- C. I/O Ports
- D. Alternate RMM4 Knockout
- E. PCI Add-in Board Slot Covers
- F. Serial Port Knockout
- G. A Kensington* Cable Lock Mounting Hole
- H. Padlock Loop
- I. Alternate RMM4 Knockout
- J. Hot-swap System Fan 5
- K. Front Panel
- L. Hot-swap System Fan 4
- M. 5.25" Peripheral Bays
- N. Hot-swap System Fan 3
- O. Hot-swap System Fan 2
- P. 8x3.5" Hot-swap HDD Cage
- Q. Hot-swap System Fan 1
- R. PCI card retainer

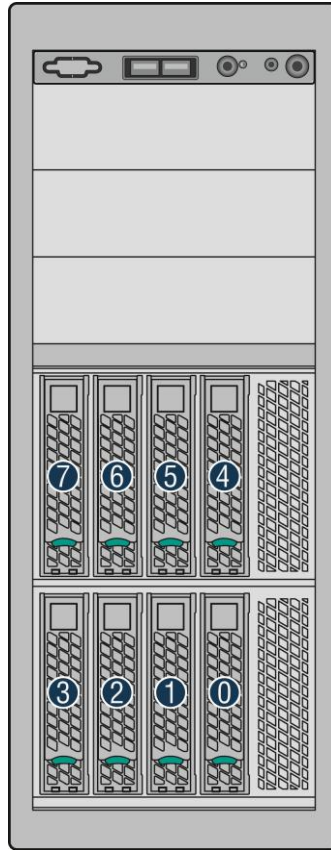
Figure 4. Internal Chassis View of Intel® Server Chassis P000M with Hot-swap Power Supply, Hot-swap Hard Drives and Hot-swap System Fans

Hot Swap Hard Drive Bay Options and HDD Numbering



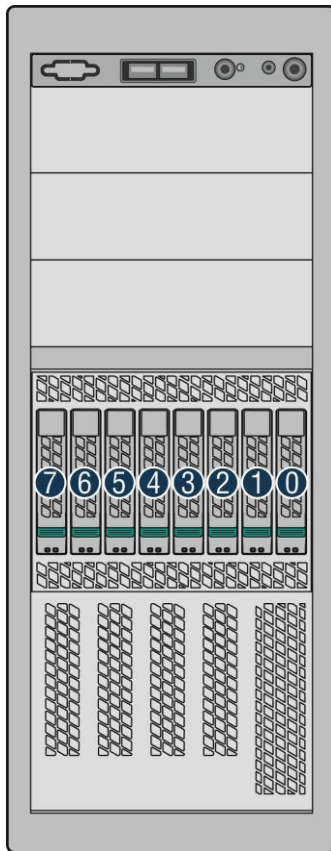
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Figure 5. 4x3.5" Hot-Swap Drive Cage



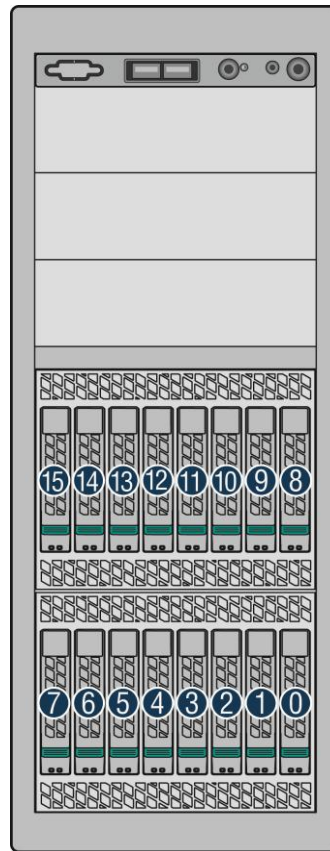
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Figure 6. 8x3.5" Hot-Swap Drive Cage



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Figure 7. 8x2.5" Hot-Swap Drive Cage

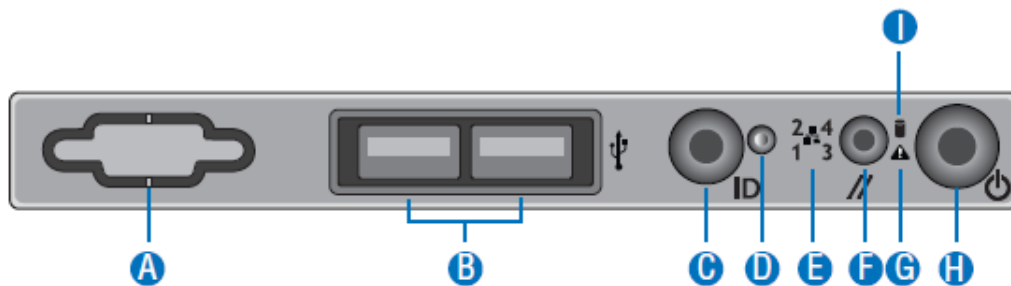


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Figure 8. Two 8x2.5" Hot-Swap Drive Cages

Front Panel

The Intel® Server Chassis P4000M family uses a common front control panel. The layout of the front control panel is as shown in below figure.



- | | | |
|--|------------------------------|---|
| A Reservation(Optional VGA/Serial Port) | D NMI Button | G System Status LED |
| B USB Connectors | E NIC LED | H System Power Button with Power LED |
| C ID Button with ID LED Integrated | F System Reset Button | I HDD Activity LED |

Figure 9. Front Panel Controls and Indicators

The description of the front panel LEDs are listed in the following table:

Table 2. Front Panel LED Functionality

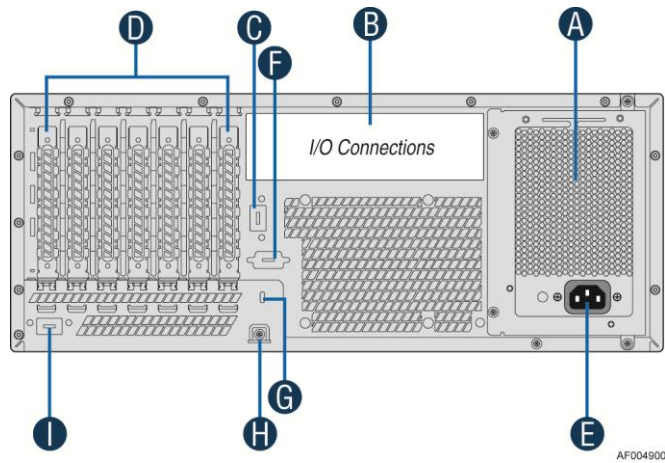
LED	Color	Condition	What It Means
Power/Sleep	Green	On	Power on or S0 sleep.
	Green	Blink	S1 sleep or S3 standby only for workstation baseboards.
		Off	Off (also sleep S4/S5 modes).
Status	Green	On	System ready/No alarm.
	Green	Blink	System ready, but degraded: redundancy lost such as PS or fan failure; 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 Identification	Blue	On	Front panel chassis ID button pressed.
	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 front panel functions supported for a specific board, refer to the individual server board specifications.

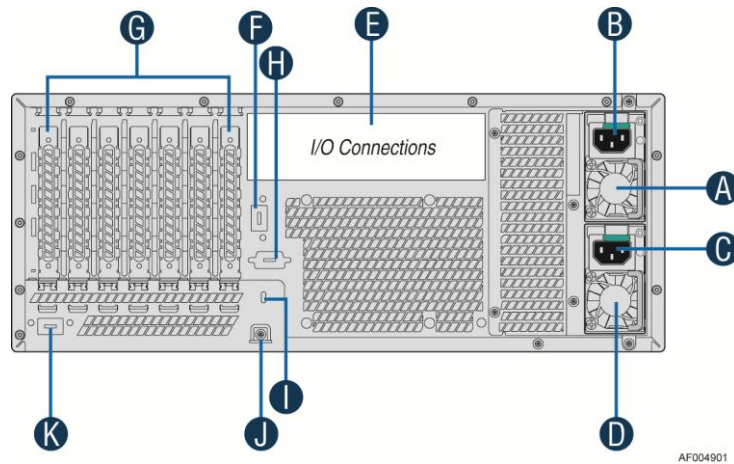
Back Panel

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/1394B 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)



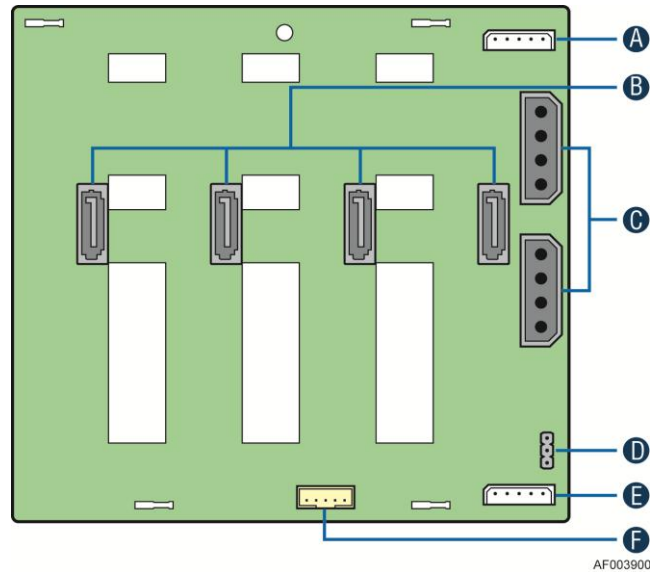
A	Hot-swap Power Supply	G	Add in PCI-e cards
B	Power Connector	H	Serial-B Port (Optional)
C	Power Connector	I	Kensington* Cable Lock Mounting Hole
D	Hot-swap Power Supply	J	Padlock Loop
E	IO Connectors	K	RMM4 NIC Port (Optional)
F	RMM4 NIC/1394B Port/(Optional)		

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

Hot-swap SAS/SATA Backplane

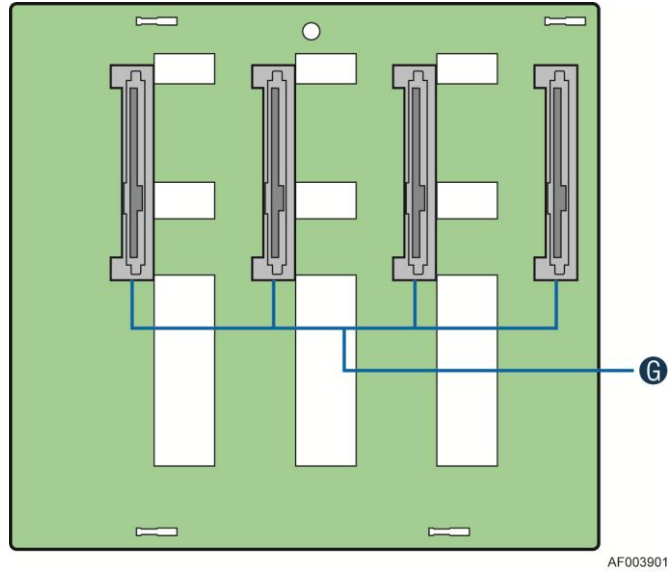
The Hot-swap SAS/SATA backplane serves as an interface between the motherboard and the system drives. The following diagrams show the location for each connector found on the backplane.

4x3.5" Hard Drive Backplane



- A. I2C_In Connectors
- B. SATA/SAS Cable Connectors
- C. Power Connectors
- D. SATA 6X Mode Connector
- E. I2C_Out Connector
- F. SGPIO Connector

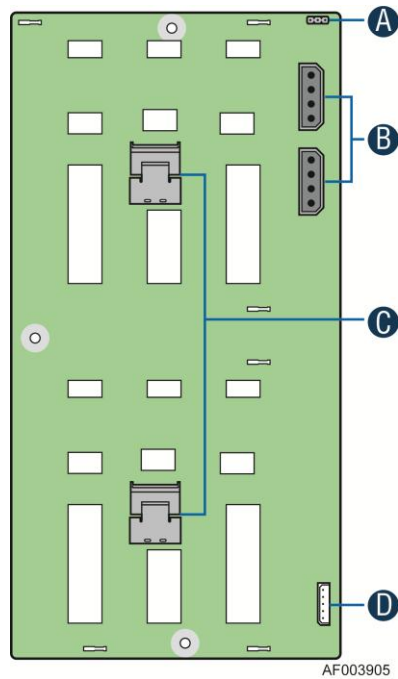
Figure 12. 4x3.5" HSBP Board (Rear View)



G. SATA/SAS Hot-swap Drive Connectors

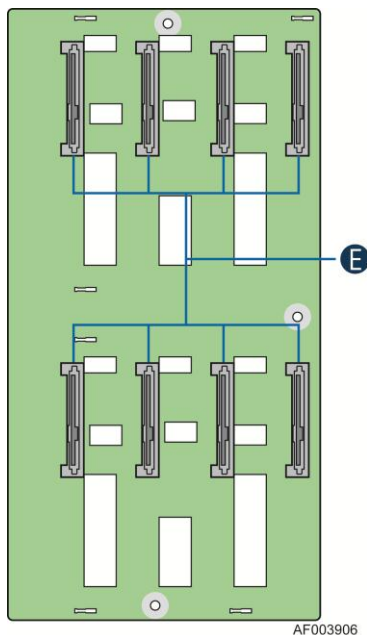
Figure 13. 4x3.5" HSBP Board Layout (Front View)

8x3.5" Hard Drive Backplane



- A. SATA 6X Mode
- B. Power Connectors
- C. MINI_SAS Connectors
- D. I2C Connector

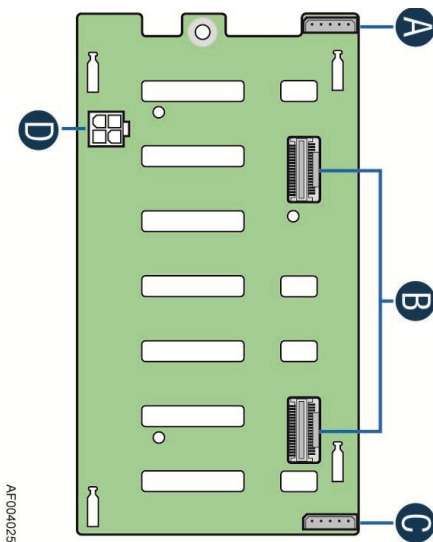
Figure 14. 8x3.5" HSBP Board (Rear View)



E. SATA/SAS Hot-swap Drive Connectors

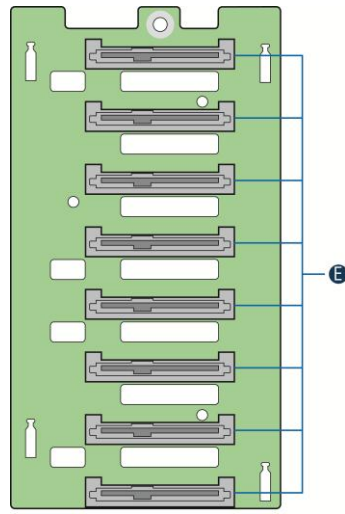
Figure 15. 8x3.5" HSBP Board (Front View)

8x2.5" Hard Drive Backplane



- A. I2C_OUT Connector
- B. MINI_SAS Connectors
- C. I2C_IN Connector
- D. Power Connectors

Figure 16. 8x2.5" HSBP Board (Front View)



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E. SATA/SAS Hot-swap Drive Connectors

Figure 17. 8x3.5" HSBP Board (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

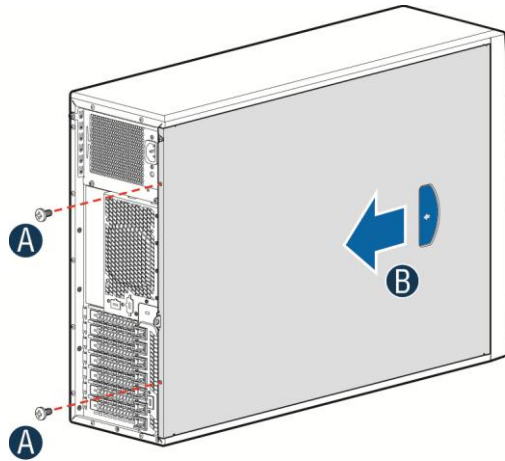
Removing the Chassis Cover

The Intel® Server Chassis P4000M 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 sliding 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.

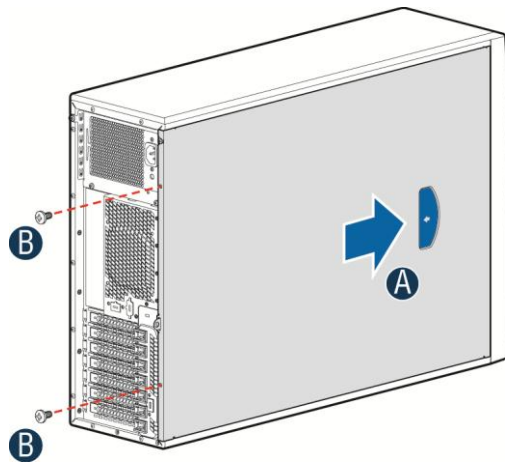


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Figure 18. Removing the Chassis Cover

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**).



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Figure 19. Installing the Chassis Cover

Removing and Installing the Front Bezel (Pedestal Only)

Removing the Front Bezel (Pedestal Only)

NOTE

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

There are two type of bezel assembly. One type is for fixed HDD configuration, 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.

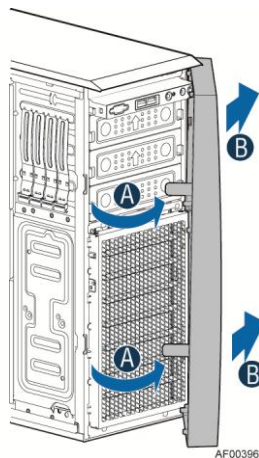


Figure 20. Removing the Front Bezel

Installing the Front Bezel (Pedestal Only)

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.

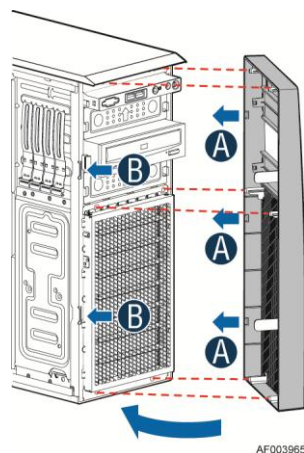


Figure 21. Installing the Front Bezel

Installing and/or Removing 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 matching the alignment tabs on airduct and the alignment holes on chassis bracket.

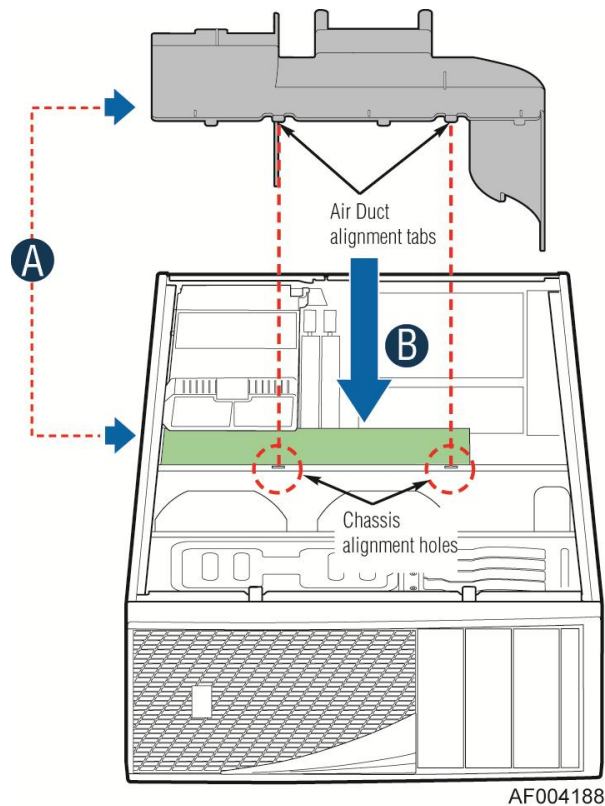


Figure 22. Installing the Airduct

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. Remove the airduct.

Replacing the Fixed Fan

NOTE

Please pay attention to the fan cable connector color. The fan with blue connector should be installed in fan 2 bracket and the fan with white connector should be installed in fan 1 bracket. The fan numbering is inscribed on the chassis.

This procedure applies only to the Intel® Server Chassis P4000M family with fixed fan configuration.

Removing the 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 air duct if the air duct is installed. For instructions, see “Removing the Airduct”.
5. Disconnect the appropriate fan power cable from the server board (see letter **A**).

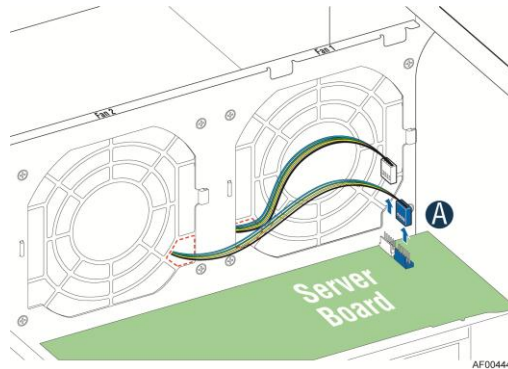


Figure 23. Disconnecting the fan power cable from the server board

6. Remove system fan by pushing the tabs outward and disengaging from its snap-in bracket (see letter **B**).

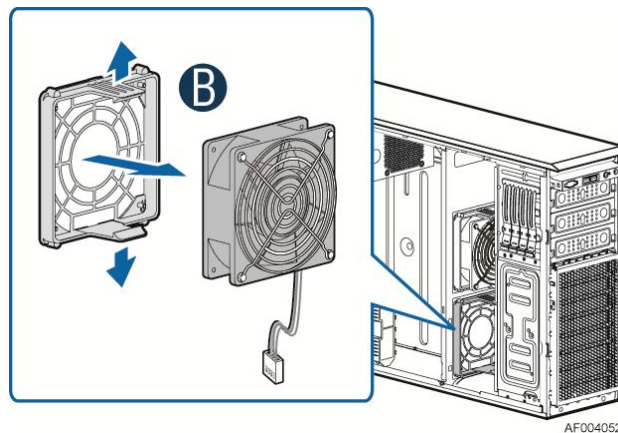


Figure 24. Removing fixed system fan from chassis

Installing the 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 air duct if the air duct is installed. For instructions, see “Removing the Airduct”.
5. Insert the fan cable in the fan bracket as shown below (see letter **A**). Pay attention to the fan cable connector color. The fan with blue fan cable connector should be installed in fan2 bracket; the fan with white fan connector should be installed in fan 1 bracket.

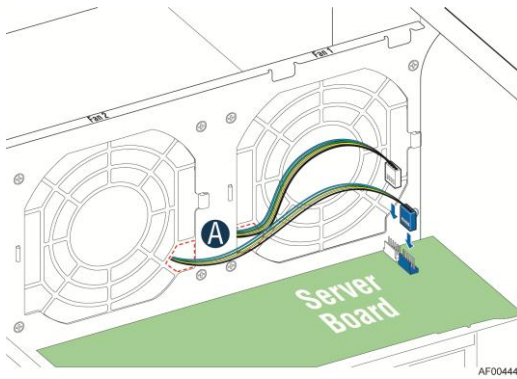


Figure 25. Inserting the fan cable in the corresponding fan bracket

6. Install the fixed fan in the corresponding fan bracket (see letter **B**).

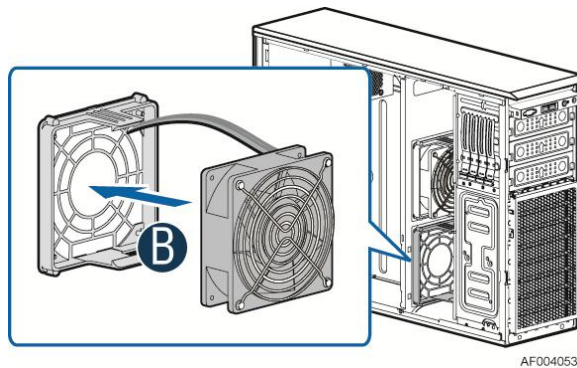


Figure 26. Installing the Fixed Fan

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 Hot-swap Fan

NOTE

This procedure applies only to the Intel® Server Chassis P4000M family with hot-swap fan configuration.

Removing the Hot-swap 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 latch on fan and pull on handle to remove hot-swap fan from chassis.

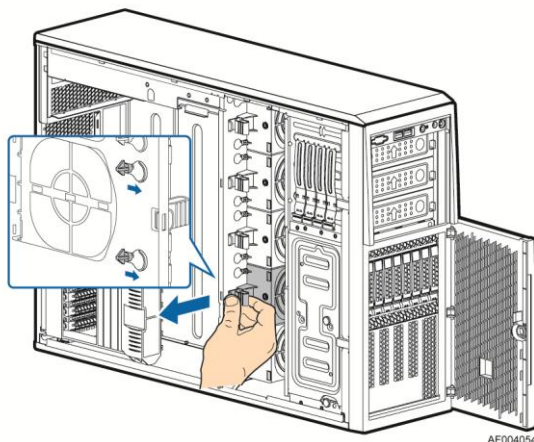


Figure 27. Removing Hot-swap Fan

Installing the Hot-swap 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. Insert hot-swap fan into corresponding chassis slot until it clicks into place.

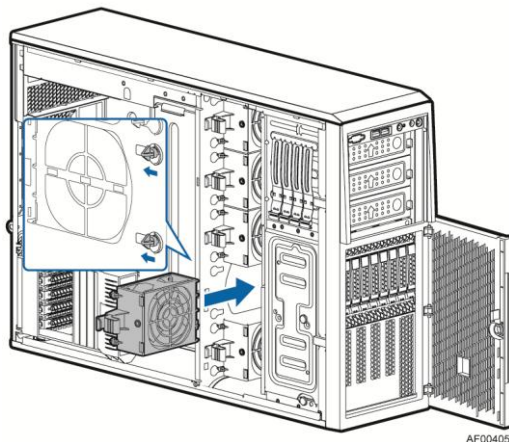


Figure 28. Installing Hot-swap Fan

Removing and Installing the Fixed HDD EMI Shield

NOTE

For a rack configuration or 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 P4000M 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. Press the clip (see letter **A**) and lift the EMI shield (see letter **B**) and move EMI shield outward from the chassis.

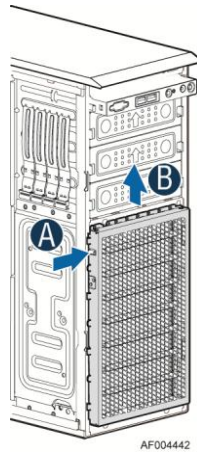


Figure 29. Removing the Fixed HDD EMI Shield

Installing the Fixed HDD 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**).

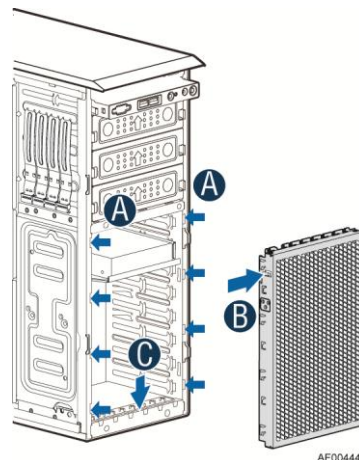


Figure 30. Installing the Fixed HDD EMI Shield

Removing and Installing Fixed Hard Drive(s)

 **NOTE**

This procedure applies only to the Intel® Server Chassis P4000M 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.

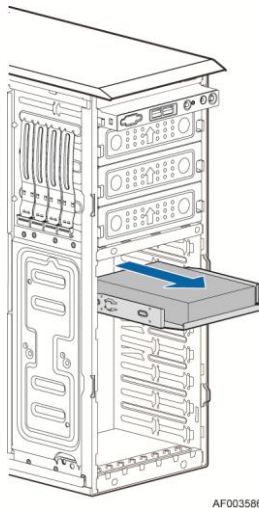


Figure 31. Removing Fixed Hard Drives

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

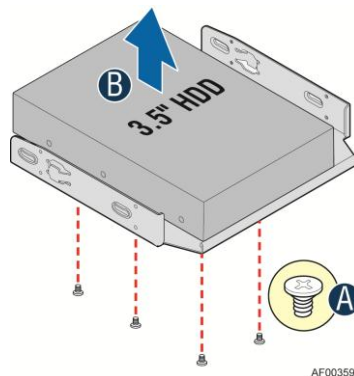


Figure 32. Removing the 3.5" HDD from Fixed HDD tray

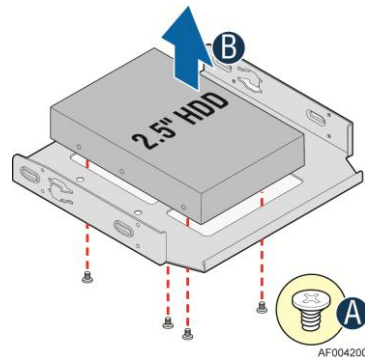


Figure 33. Removing the 2.5" HDD from Fixed HDD tray

9. Reinstall the HDD carrier tray into chassis.

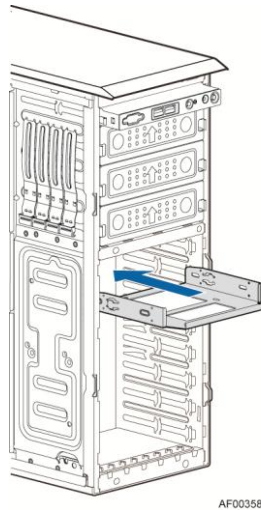
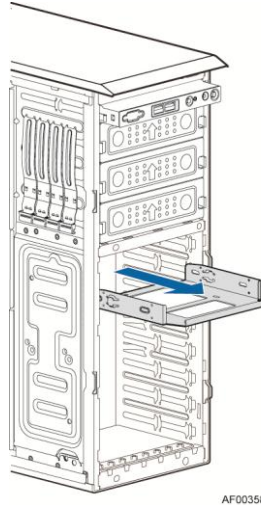


Figure 34. Reinstalling the HDD Carrier Tray

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)

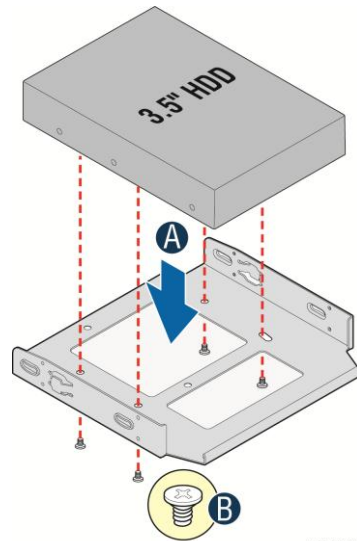
1. Observe the safety and ESD precautions at the beginning of this book.
2. Power down the server and unplug all peripheral devices and the AC power cable.
3. Remove the chassis cover. For instructions, see "Removing the Chassis Cover".
4. Remove the front bezel if it is installed. For instructions, 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.



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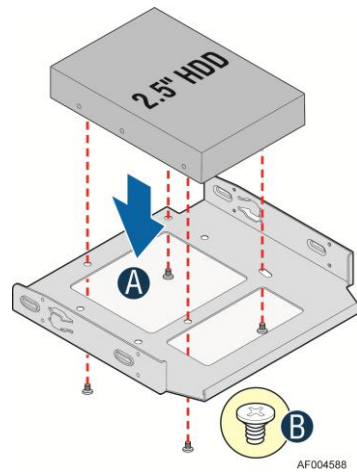
Figure 35. Removing Fixed Hard Drive

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



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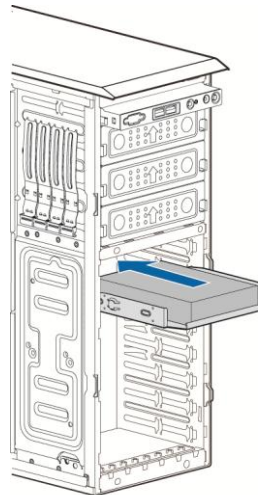
Figure 36. Securing the 3.5" HDD on Fixed HDD Carrier Tray



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Figure 37. Securing the 2.5" HDD on Fixed HDD Carrier Tray

8. Insert the HDD carrier tray into chassis.



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Figure 38. 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 P4000M 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**).

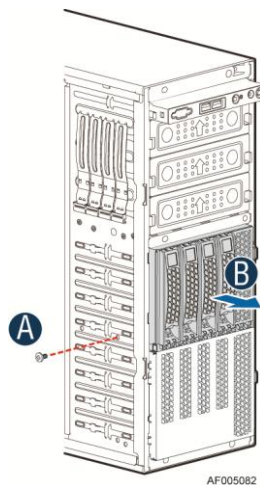


Figure 39. Removing the 4x3.5" HDD Cage

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

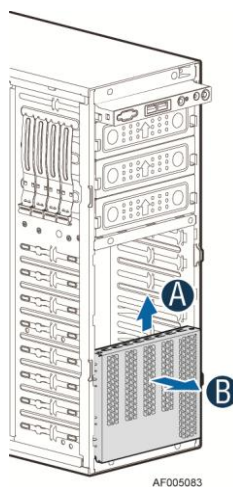


Figure 40. Removing the EMI shield

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 shield against the sides of the chassis (see letter **A**).

- 2) While pressing the EMI shield, slide the EMI Shield downwards until the latches on the EMI shield are engaged with the chassis (see letter **B**).

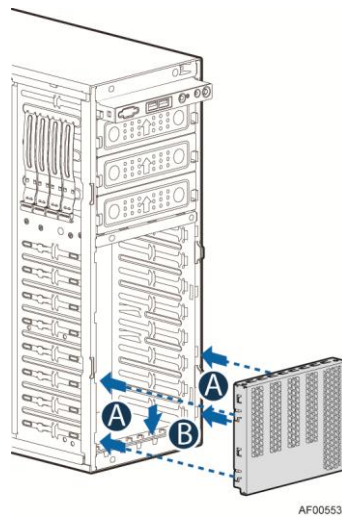


Figure 41. Installing the EMI shield

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**).

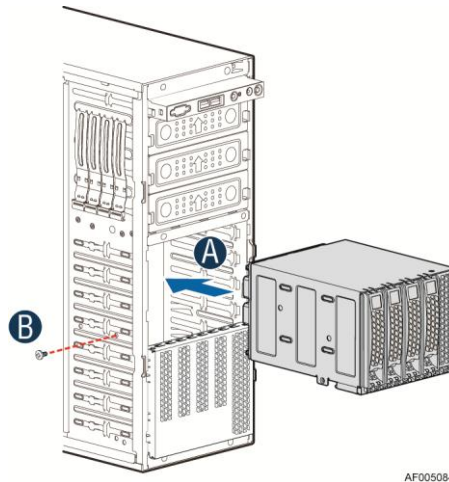
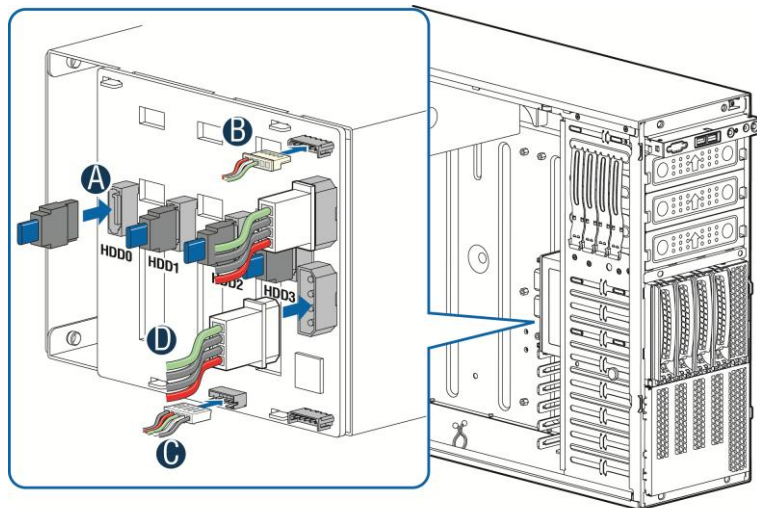


Figure 42. Installing the 4x3.5" Hot-Swap Hard Drive Cage

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**).



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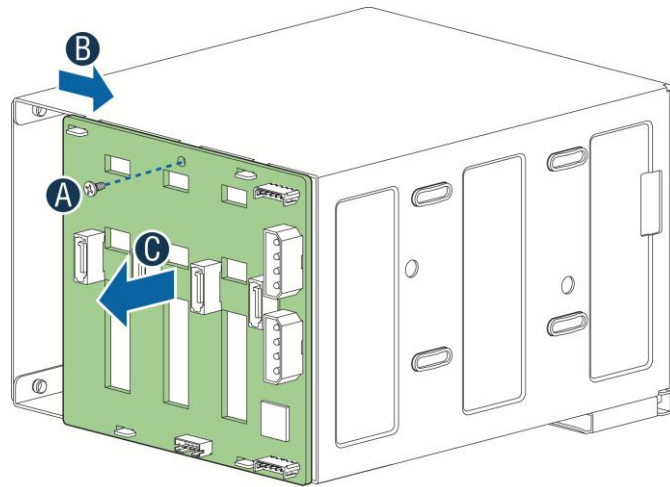
Figure 43. 4x3.5" Hot Swap Backplane Cable Connections

16. Install the front bezel. For instructions, see “Installing the Front Bezel”.
17. Install the chassis cover. For instructions, see “Installing the Chassis Cover”.
18. Plug all peripheral devices and the AC power cable into the server.
19. 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**).

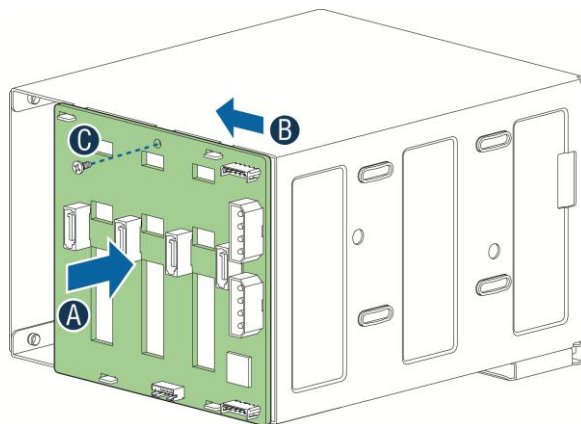


AF003913

Figure 44. 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 inserted in the backplane holes (see letter **A**).
7. Push the backplane (see letter **B**) and secure the backplane with the screw (see letter **C**).



AF003914

Figure 45. 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.

Removing and Installing 8x3.5" Hot-swap Hard Drive Cage Assembly

NOTE

This procedure applies only to the Intel® Server Chassis P4000M family with 8x3.5" hot-swap hard disk drive cage configuration.

Removing 8x3.5" Hot-swap Hard Drive Cage 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. Remove the front bezel if it is installed. For instructions, see “Removing the Front Bezel (Pedestal Only)”.
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**).

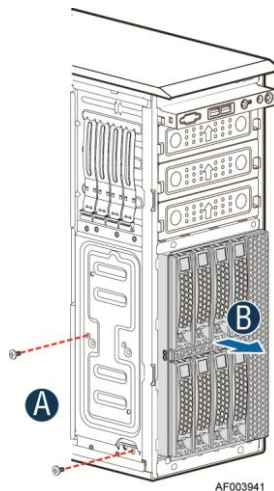


Figure 46. Removing the 8x3.5" Hot-swap HDD Cage Assembly

Installing 8x3.5" Hot-swap Hard Drive Cage Assembly

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 (Pedestal Only)”.
5. Install the 8x3.5" Hot-Swap Hard Drive Cage.
 - 1) Slide the 8x3.5" Hot-Swap Drive Cage into the slot (see letter **A**).
 - 2) Secure the Hard Drive Cage with the Screw (see letter **B**).

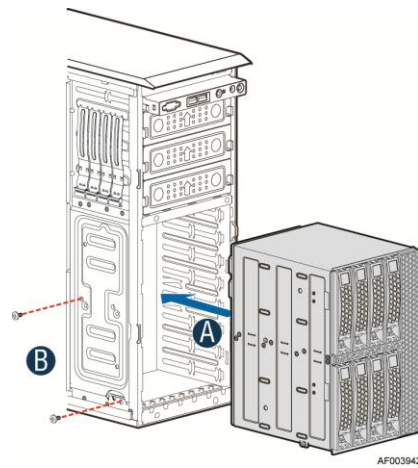


Figure 47. Installing the 8x3.5" Hot-Swap Hard Drive Cage Assembly

6. Make the backplane and server board/RAID controller card cable connections. Refer to the documentation for your server board and/or RAID controller card for instructions on connecting backplane cables to your server board or RAID controller card.
 - 1) Connect an I2C cable (letter **A**).
 - 2) Connect Mini SAS data cables (letter **B**).
 - 3) Connect power cable (letter **C**).

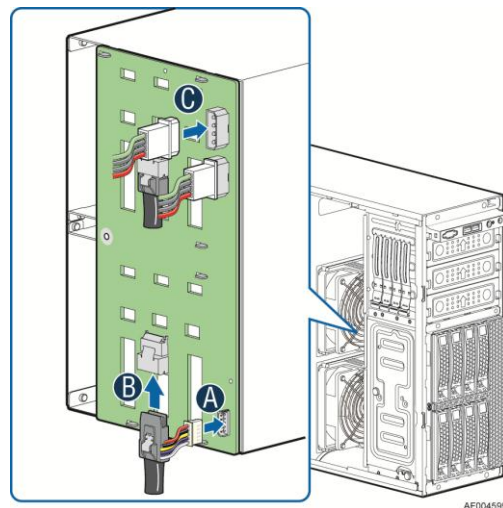


Figure 48. 8x3.5" Hot Swap Backplane Cable Connections

7. Install the front bezel. For instructions, see “Installing the Front Bezel (Pedestal Only)”.
8. Install the air duct if the air duct is removed. For instructions, see “Installing the Airduct”.
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 8x3.5" Hot-swap Backplane

NOTE

This procedure applies only to the Intel® Server Chassis P4000M family with 8x3.5" hot-swap hard disk drive cage configuration.

Removing 8x3.5" 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 (Pedestal Only)”.
5. Remove the 8x3.5" Hot-swap Hard drives cage. For instructions, see “Removing 8x3.5" Hot-swap Hard Drive Cage Assembly”.
6. Remove all hot-swap drive carriers, regardless of whether or not a drive is installed in the carrier.
7. Remove the screws on the backplane (see letter **A**).
8. Push the backplane (see letter **B**) and remove the backplane from the cage (see letter **C**).

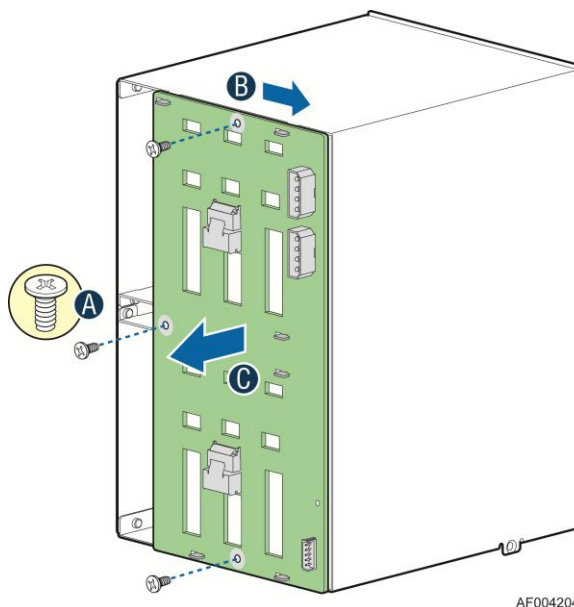


Figure 49. Removing 8x3.5" Hot-swap Backplane

Installing 8x3.5" Hot-swap Backplane

1. Remove all hot-swap drive carriers, regardless of whether or not a drive is installed in the carrier.
2. Attach the backplane to the back side of the hot-swap drive cage, and make sure the hooks on the cage are inserted in the backplane holes (see letter **A**).
3. Push the backplane (see letter **B**) and secure the backplane with the screw (see letter **C**).

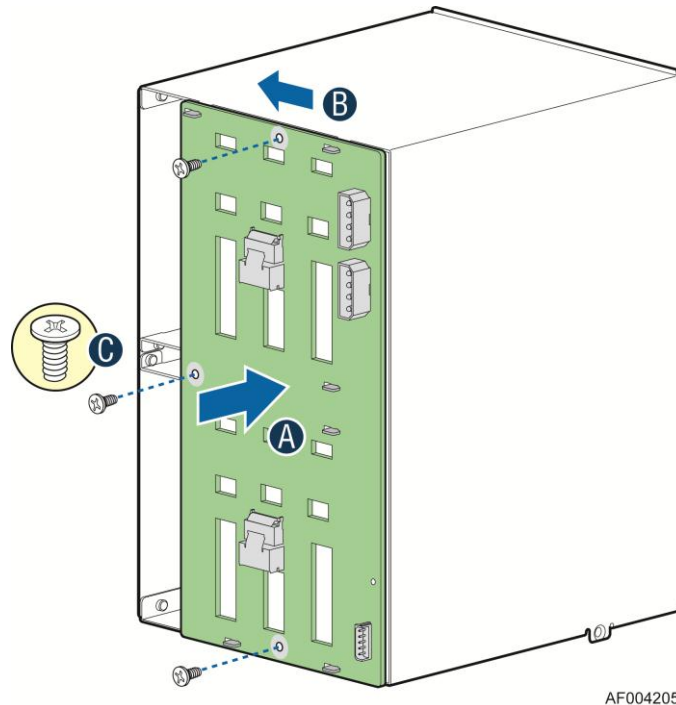


Figure 50. Installing 8x3.5" Hot-swap Backplane

4. Install the 8x3.5" Hot-swap Hard drives cage. For instructions, see "installing 8x3.5" Hot-swap Hard Drive Cage Assembly".
5. Install the front bezel. For instructions, see "Installing the Front Bezel (Pedestal Only)".
6. Install the air duct if the air duct is removed. For instructions, see "Installing the Airduct".
7. Install the chassis cover. For instructions, see "Installing the Chassis Cover".
8. Plug all peripheral devices and the AC power cable into the server.
9. Power up the server.

Removing and Installing 8x2.5" Hot-swap Hard Drive Cage Assembly

NOTE

This procedure applies only to the Intel® Server Chassis P4000M family with 8x2.5" hot-swap hard disk drive cage configuration.

Removing 8x2.5" Hot-swap Hard Drive Cage 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. Remove the front bezel if it is installed. For instructions, see "Removing the Front Bezel (Pedestal Only)".
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**).

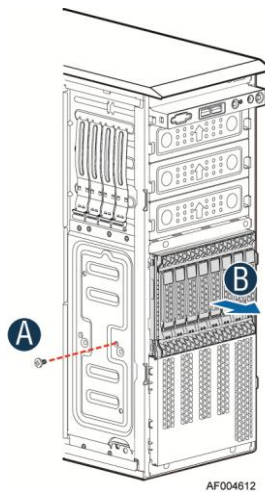


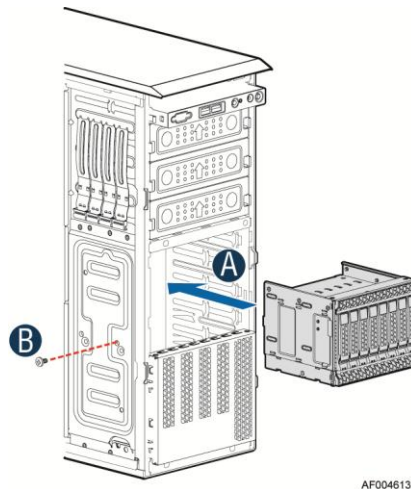
Figure 51. Removing the 8x2.5" HDD Cage Assembly

Installing 8x2.5" Hot-swap Hard Drive Cage Assembly

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.

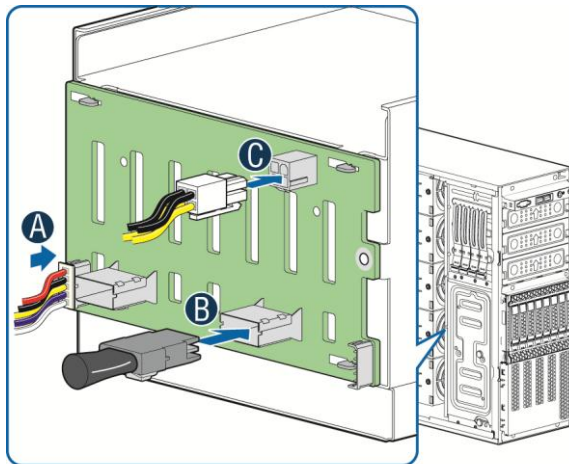
1. Observe the safety and ESD precautions at the beginning of this book.
2. Power down the server and unplug all peripheral devices and the AC power cable.
3. Remove the chassis cover. For instructions, see "Removing the Chassis Cover".
4. Remove the front bezel if it is installed. For instructions, see "Removing the Front Bezel (Pedestal Only)".
5. Install the 8x2.5" Hot-Swap Hard Drive Cage.
 - 1) Slide the 8x2.5" Hot-Swap Drive Cage into the slot (see letter **A**).
 - 2) Secure the Hard Drive Cage with the Screw (see letter **B**).



AF004613

Figure 52. Installing the 8x2.5" Hot-Swap Hard Drive Cage Assembly

6. 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 an I2C_IN cable (letter A)
 - 2) Connect MiniSAS data cables (letter B). There are multiple MiniSAS connectors on the backplane. The figure show connecting to one of them. Connect them as needed.
 - 3) Connect power cable (letter C)



AF004600

Figure 53. 8x2.5" Hot Swap Backplane Cable Connections

7. Install the front bezel. For instructions, see "Installing the Front Bezel (Pedestal Only)".
8. Install the air duct if the air duct is removed. For instructions, see "Installing the Airduct".
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 the Hot-swap HDD EMI Shield

NOTE

This procedure applies only to the Intel® Server Chassis P4000M family with 8x2.5" hot-swap hard disk drive cage configuration.

Removing the Hot-swap 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 (Pedestal Only)”.
5. Remove the 8x2.5" Hot-swap HDD cage. For instructions, see “Removing 8x2.5" Hot-swap Hard Disk Drive Cage with Backplane”
6. Lift the EMI shield (see letter **A**) and move EMI shield outward from the chassis (see letter **B**).

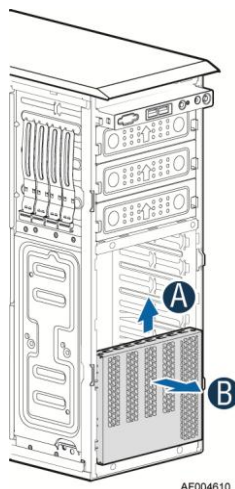


Figure 54. Removing the Hot-swap HDD EMI Shield

Installing the Hot-swap HDD EMI Shield

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

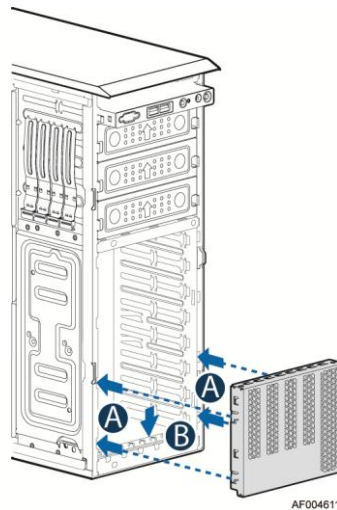


Figure 55. Installing the Hot-swap HDD EMI Shield

Removing and Installing Second 8x2.5" Hot-swap Hard Disk Drive Cage Assembly

NOTE

This procedure applies only to the Intel® Server Chassis P4000M family with two 8x2.5" hot-swap hard disk drive cage configuration.

Removing Second 8x2.5" Hot-swap Hard Disk Drive Cage 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. Remove the front bezel if it is installed. For instructions, see "Removing the Front Bezel (Pedestal Only)".
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**).

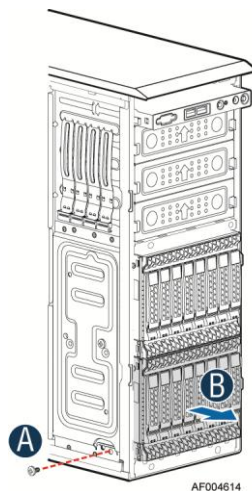


Figure 56. Removing the bottom 8x2.5" Hot-swap HDD Cage Assembly

Installing Second 8x2.5" Hot-swap Hard Disk Drive Cage Assembly

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 (Pedestal Only)".
5. Install bottom 8x2.5" Hot-Swap Hard Drive Cage.
 - 1) Slide the 8x2.5" Hot-Swap Drive Cage into the slot (see letter **A**).
 - 2) Secure the Hard Drive Cage with the Screw (see letter **B**).

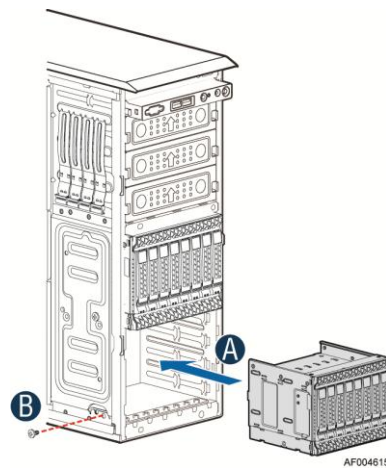


Figure 57. Installing the Second 8x2.5" Hot-swap Hard Drive Cage Assembly

6. 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 an I2C cable to the I2C_IN connector of the bottom backplane (see letter **A**)
 - 2) Connect MiniSAS data cables to the Mini SAS connector of the backplane (see letter **B**). There are multiple MiniSAS connectors on the backplanes. The figure show connecting to one of them. Connect them as needed.
 - 3) Connect power cable to the power connector (see letter **C**).
 - 4) Connect an I2C cable to the I2C_OUT connector of the bottom backplane and the I2C_IN connector of the top backplane (see letter **D**).
 - 5) Install the front bezel. For instructions, see "Installing the Front Bezel (Pedestal Only)".

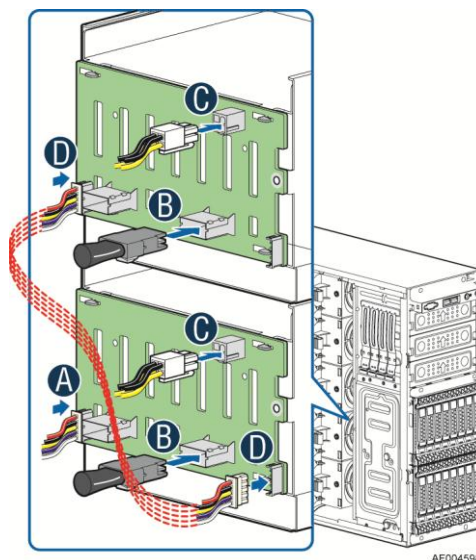


Figure 58. Two 8x2.5" Hot Swap Backplane Cable Connections

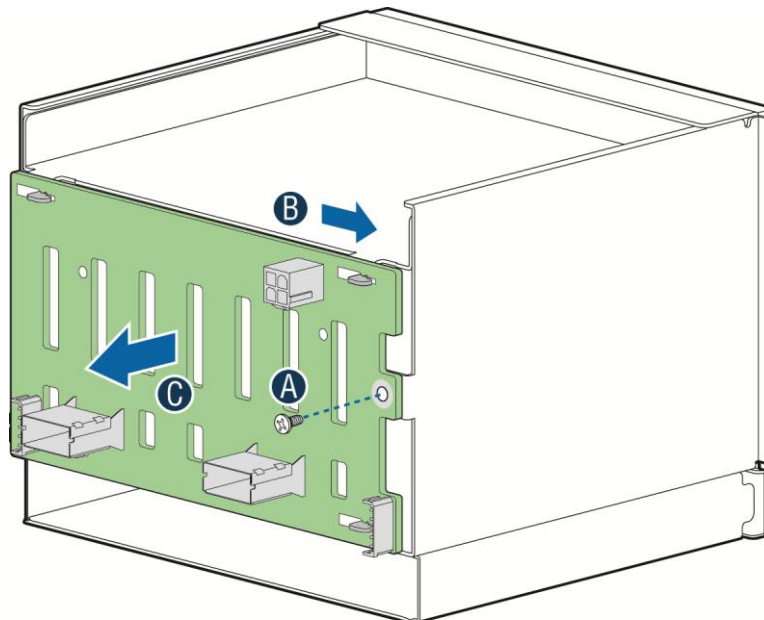
7. Install the air duct if the air duct is removed. For instructions, see "Installing the Airduct".
8. Install the chassis cover. For instructions, see "Installing the Chassis Cover".
9. Plug all peripheral devices and the AC power cable into the server.
10. Power up the server.

Removing and Installing 8x2.5" Hot-swap Backplane

Removing 8x2.5" 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 (Pedestal Only)".

5. Remove the 8x2.5" Hot-swap Hard drives cage. For instructions, see "Removing 8x2.5" Hot-swap Hard Drive Cage Assembly".
6. Remove the screw on the backplane (see letter **A**).
7. Push the backplane (see letter **B**) and remove the backplane from the cage (see letter **C**).

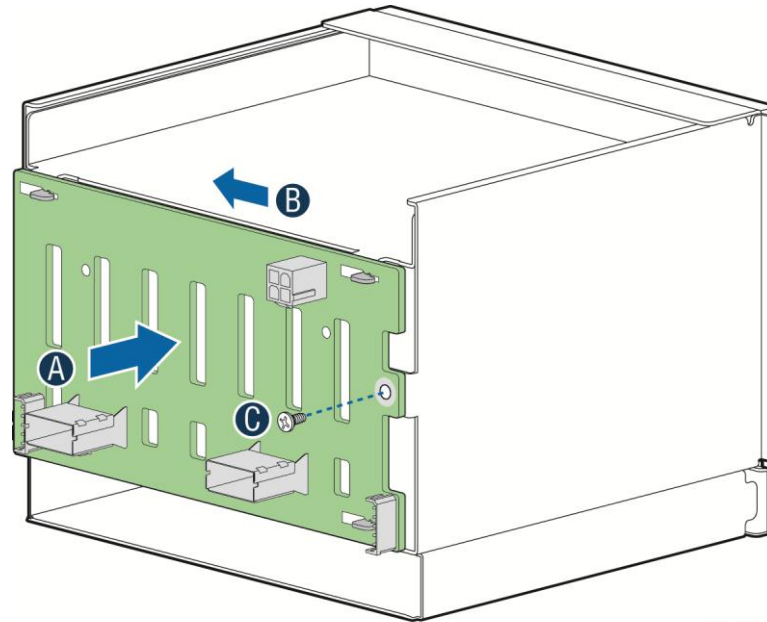


AF004201

Figure 59. Removing 8x2.5" Hot-swap Backplane

Installing 8x2.5" Hot-swap Backplane

1. Attach the backplane to the back side of the hot-swap drive cage, and make sure the hooks on the cage are inserted in the backplane holes (see letter **A**).
2. Push the backplane (see letter **B**) and secure the backplane with the screw (see letter **C**).



AF004202

Figure 60. Installing 8x2.5" Hot-swap Backplane

3. Install the 8x2.5" Hot-swap Hard drives cage. For instructions, see "Installing 8x2.5" Hot-swap Hard Drive Cage Assembly".
4. Install the front bezel. For instructions, see "Installing the Front Bezel (Pedestal Only)".
5. Install the air duct if the air duct is removed. For instructions, see "Installing the Airduct".
6. Install the chassis cover. For instructions, see "Installing the Chassis Cover".
7. Plug all peripheral devices and the AC power cable into the server.
8. Power up the server.

Installing Hot-swap Hard Drive

Installing 3.5" Hot-swap Hard Disk Drive

NOTE

This procedure applies only to the Intel® Server Chassis P4000M family with 3.5" hot-swap hard disk drive cage configuration.

1. Open the Hot-swap HDD door
2. Remove the drive carrier by pressing the green button and opening the lever (see letter **A**). Then slide the carrier out (see letter **B**).

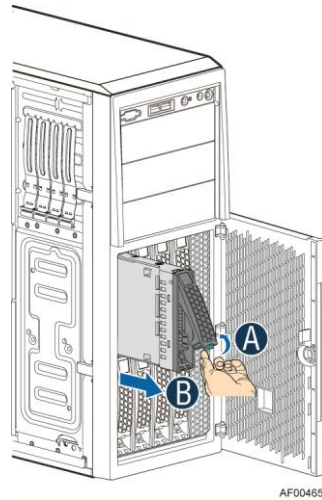


Figure 61. Sliding the 3.5" HDD carrier out

3. Remove the four screws securing the 3.5" HDD interface bracket and remove the 3.5" HDD interface bracket.

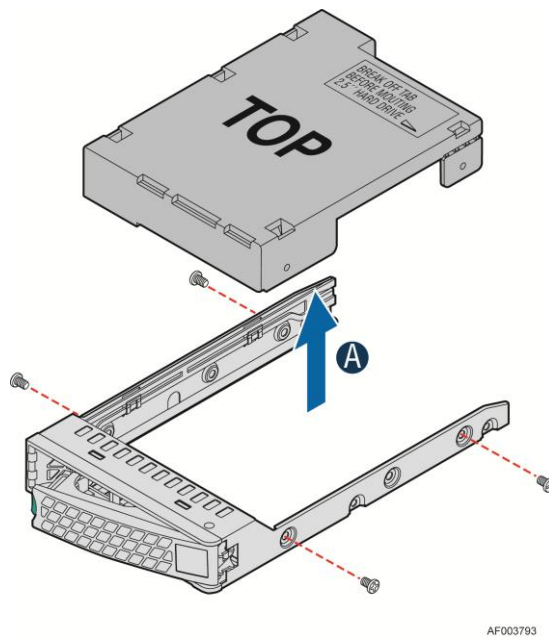
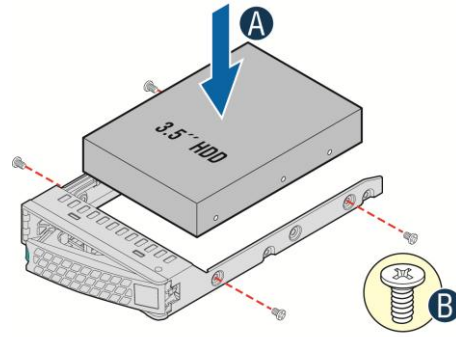


Figure 62. Removing the 3.5" HDD interface bracket from Carrier

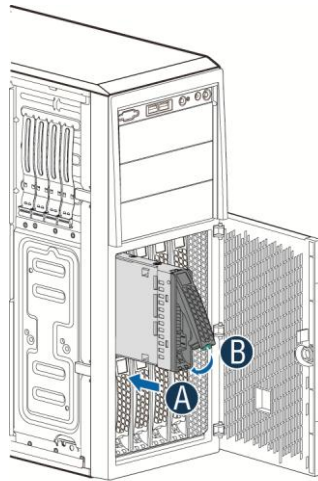
4. Install the 3.5" hard disk drive using the same four screws as shown. Make sure the connector end of the drive matches the backplane connector.



AF003794

Figure 63. Installing the 3.5" HDD into the Carrier

5. With the lever open, insert the hard disk drive assembly into the cage opening and push until the locking lever engages (see letter **A**).
6. Push in the lever to lock it into place (see letter **B**).



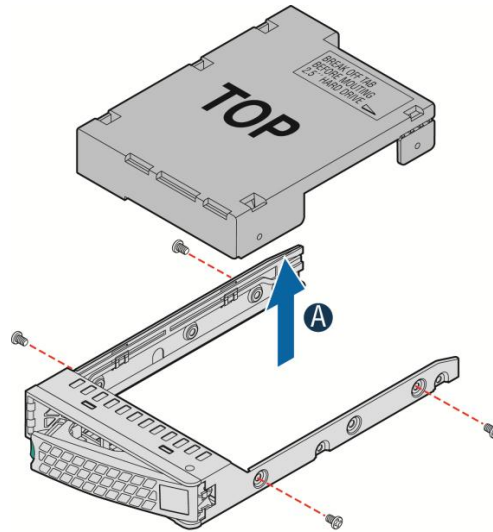
AF004653

Figure 64. Sliding the 3.5" HDD Carrier into the Chassis

7. Close the HS HDD door.

Installing 2.5" Hot-swap Hard Disk Drive in 3.5" HDD Carrier

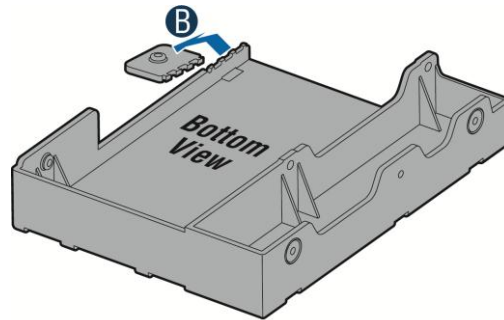
1. Remove the four screws securing the 3.5" HDD interface bracket and remove the 3.5" HDD interface bracket.



AF003793

Figure 65. Removing the 3.5" HDD interface bracket from Carrier

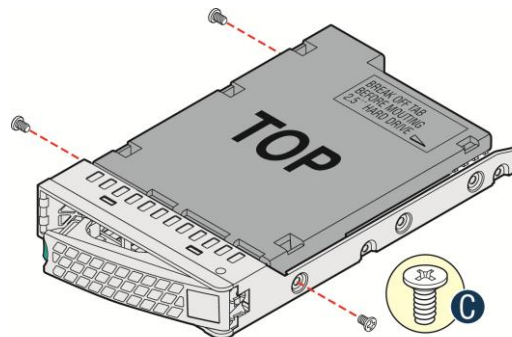
2. Break off the tab on the 3.5" HDD interface bracket (see letter **B**).



AF003836

Figure 66. 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.



AF003837

Figure 67. 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**).

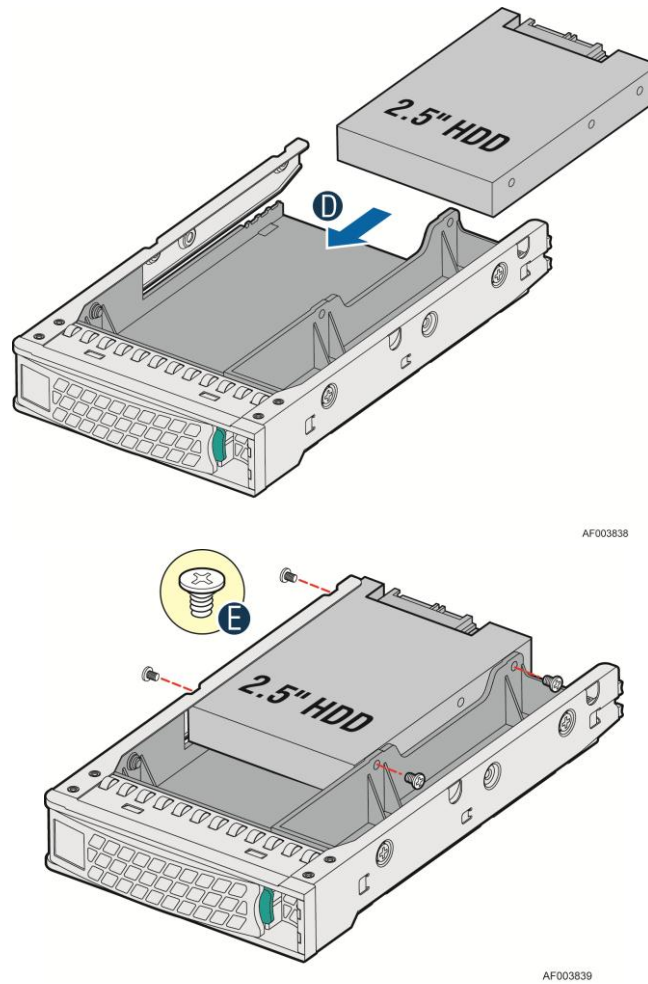


Figure 68. Installing the 2.5" HDD into carrier

Installing 2.5" Hot-swap Hard Disk Drive in 2.5" HDD Carrier

1. Open the Hot-swap HDD door.
2. Remove the drive carrier by pressing the green latch to unlock and pull out the black lever (see letter **A**).
3. Slide the carrier out (see letter **B**).

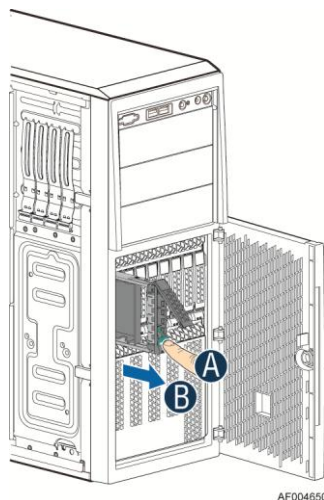


Figure 69. Sliding the 2.5" HDD Carrier from the chassis

4. Remove the four screws securing the plastic retention drive from the 2.5" HDD carrier (see letter C)
5. Disengage the plastic retention device from the HDD carrier (see letter D).
6. Remove the plastic retention device from the 2.5" HDD carrier (see letter E).

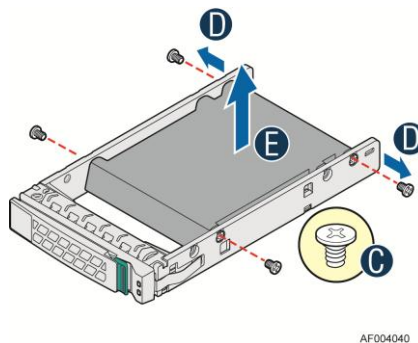


Figure 70. Removing the plastic retention device from Carrier

7. Install the 2.5" hard disk drive using the same four screws as shown. Make sure the connector end of the drive matches the backplane connector (see letter F).

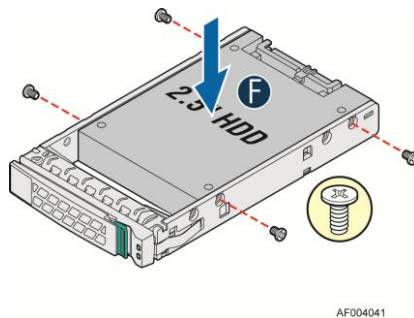


Figure 71. Installing the 2.5" HDD in Carrier

8. With the lever open, insert the hard disk drive assembly into the cage opening and push until the locking lever engaged (see letter G).
9. Push in the lever to lock it into place (see letter "H").

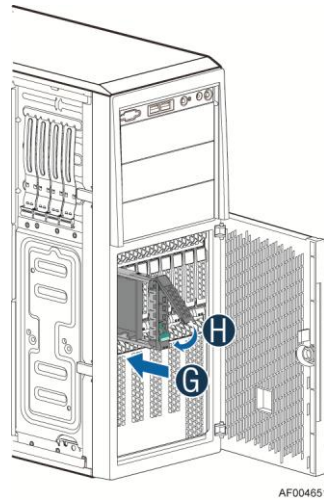


Figure 72. Installing the 2.5" HDD into the Chassis

10. Close the hot-swap HDD door.

Installing and Removing a DVD or CD-ROM Drive

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 letter **A**).

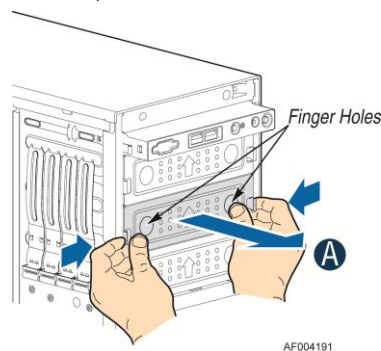


Figure 73. Removing EMI Shield

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**).

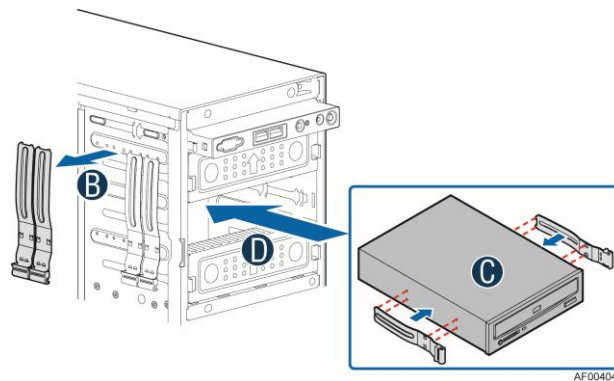


Figure 74. Installing DVD or CD-ROM Drive

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

Removing 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**).

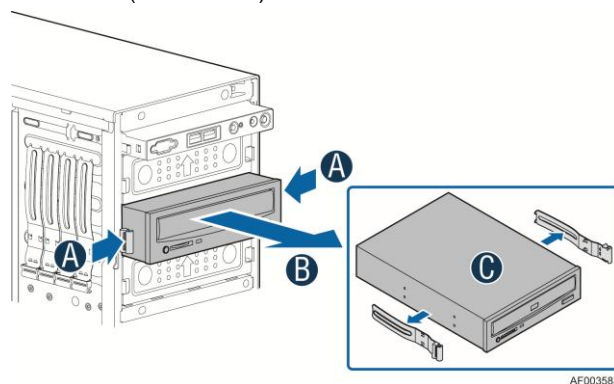


Figure 75. Removing DVD or CD-ROM Drive

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

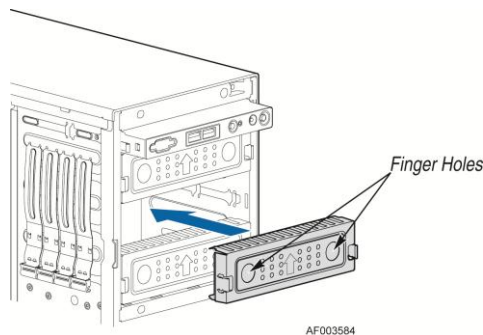


Figure 76. Re-inserting Empty EMI Shield

Installing PCI Add-in Board(s)



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.
5. Remove the PCI slot shield (see letter **A**) by pushing from the shield out from inside the chassis.
6. If the PCI card is a double width card, install the optional double width card fixture (see letter **B**). See “Design A Double Width Card Extender” for additional information on using double width cards.

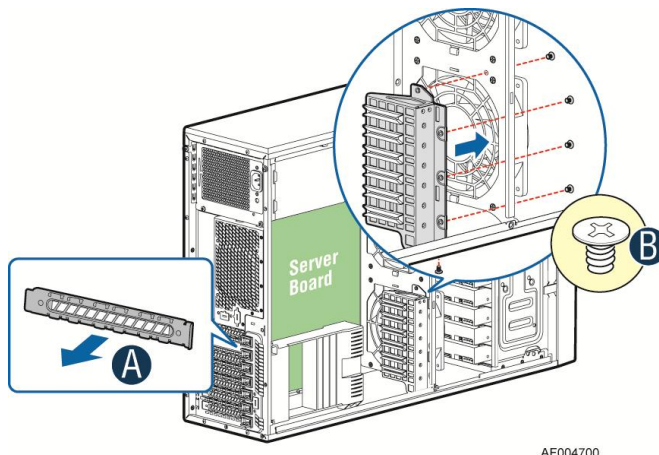
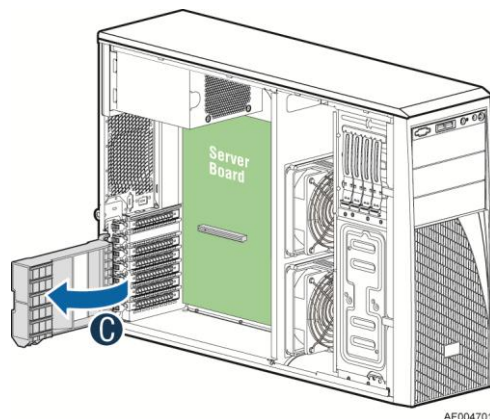


Figure 77. Removing the PCI slot shield

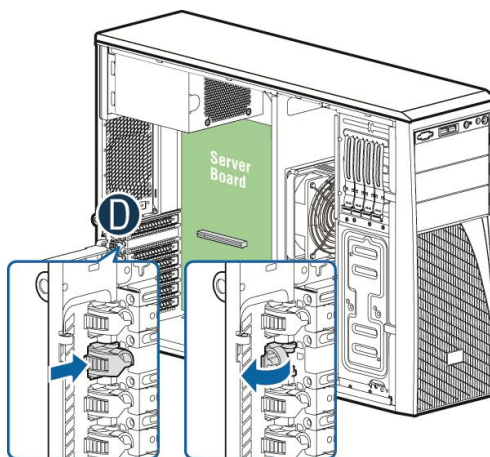
7. Rotate the PCI card retainer all the way up (see letter **C**).



AF004701

Figure 78. Rotate the PCI card retainer

8. From within the chassis, press open the back panel PCI add-in board retention device (see letter D).



AF004702

Figure 79. Open the back panel PCI add-in board retention device

9. 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.
10. While holding 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. If using double width card, align the card edge to the guiding slot on the double width card fixture. See "Design A Double Width Card Extender" for additional information on using double width cards.

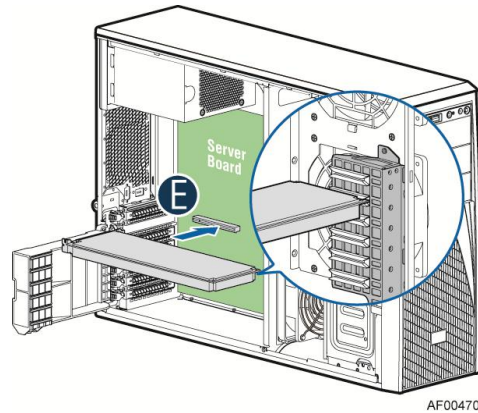


Figure 80. Installing PCI Add-in Board

11. Close the PCI card retention device as shown below.

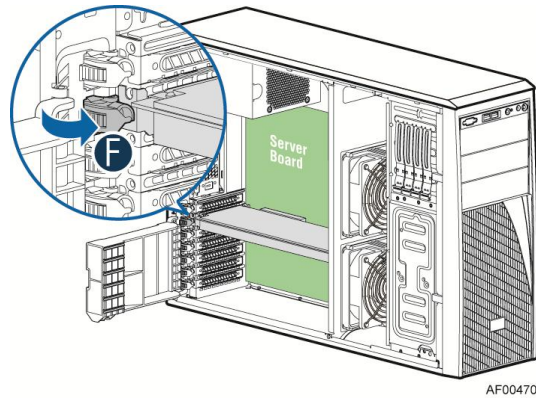


Figure 81. Closing the PCI Card Retention Device

12. Close the PCI card retainer as shown below. Use screws to better secure the PCI-e cards.

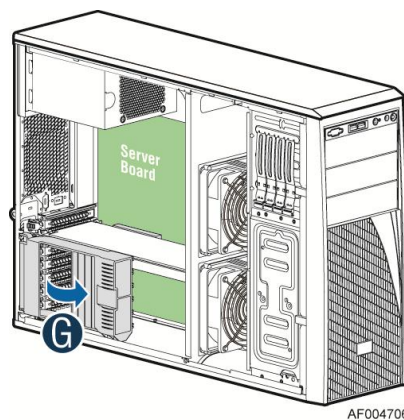


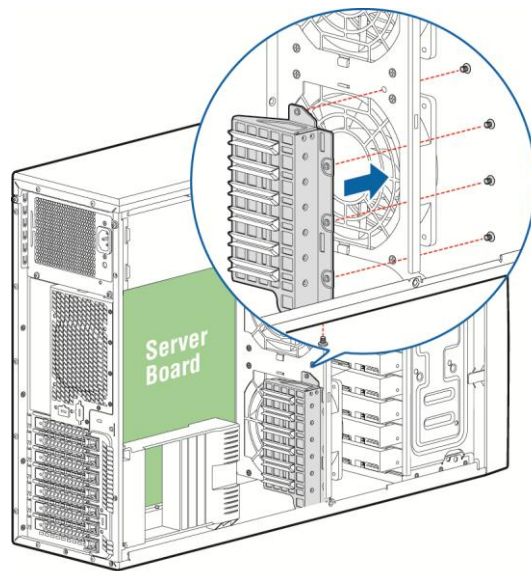
Figure 82. Closing the PCI Card Retainer

13. Attach cables if necessary.
14. Install the air duct if it is removed. For instructions, see “Installing the Airduct”.
15. Install the chassis cover. For instructions, see “Installing the Chassis Cover”.

16. Plug all peripheral devices and the AC power cable into the server.
17. Power up the server.

Design a Double Width Card Extender

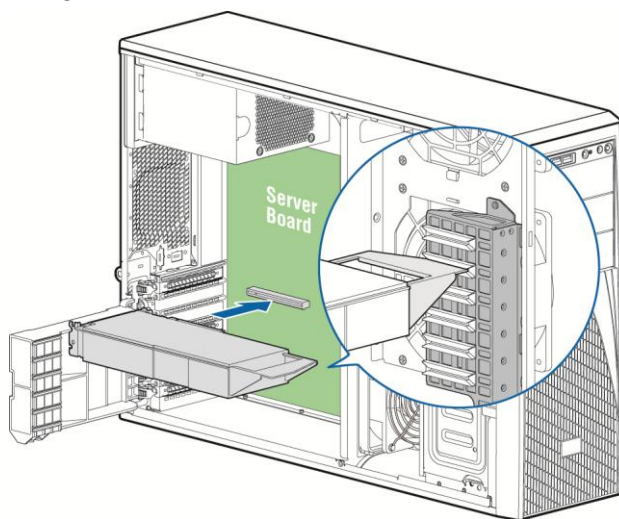
A GPGPU card bracket can help better secure a heavy Double Width card, the bracket can be installed on position as shown in the figure below.



AF005144

Figure 83. Installing the Double Width Card Fixture

Users need to design a double width card extender to make a non-full length double width card to be full length, in order to take advantage of the double width card bracket.



AF005108

Figure 84. Secure the Double Width card with Double Width Card bracket

The following figures show an example of the GPGPU bracket.

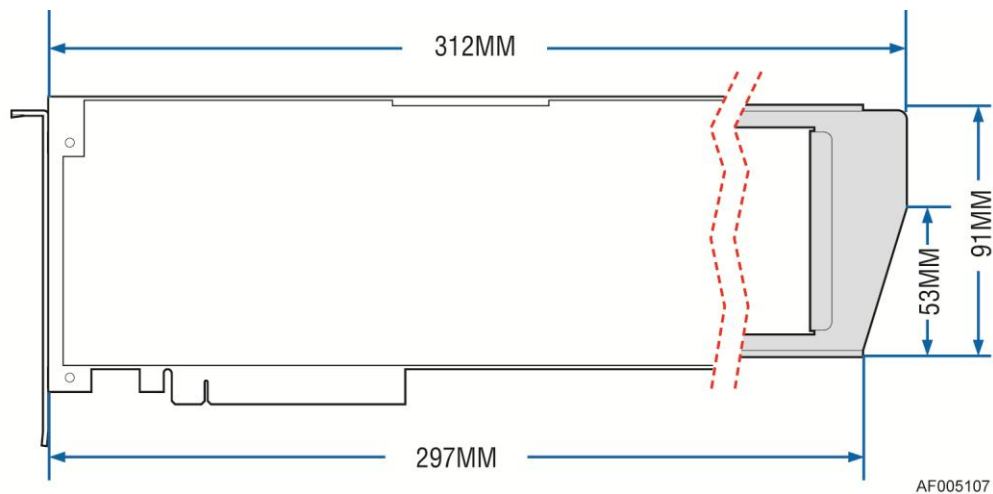


Figure 85. Side View of a Double Width Card Extender Example

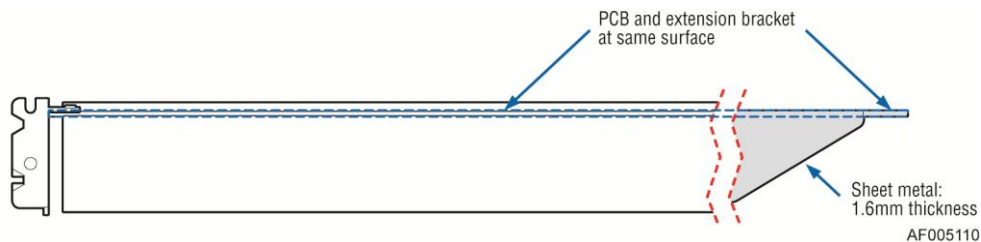


Figure 86. Top View of a Double Width Card Extender Example

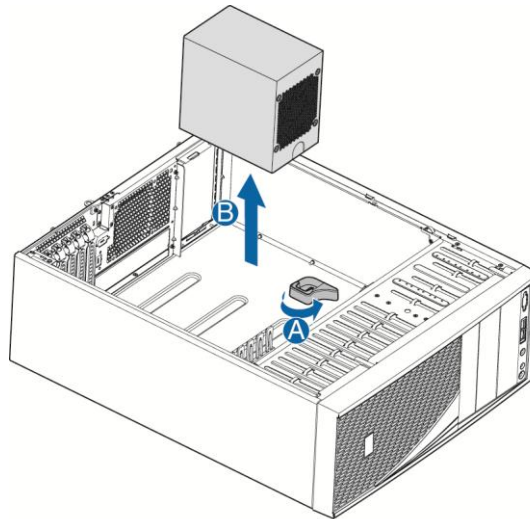
Removing and Installing the Fixed Power Supply

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. Remove the air duct if it is installed. For instructions, see “Installing the Airduct”.
5. Disconnect all internal power cables from chassis components and server board.
6. Rotate the power supply locking device counter-clockwise (see letter **A**) and remove the fixed power supply (see letter **B**).

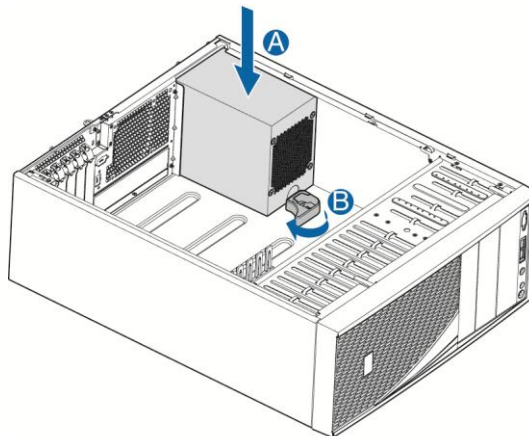


AF003613

Figure 87. 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**).



AF003614

Figure 88. Installing Fixed Power Supply

2. Reconnect power cables to other chassis components as appropriate.
3. Install the air duct. For instructions, see “Installing the Airduct”.
4. Install the chassis cover. For instructions, see “Installing the Chassis Cover”.
5. Plug all peripheral devices and the AC power cable into the server.
6. 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.

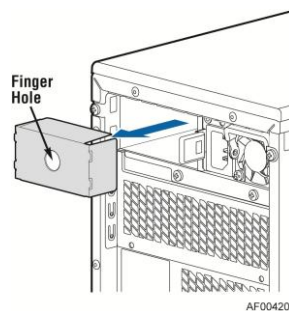


Figure 89. Removing Power Supply Filler Panel

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

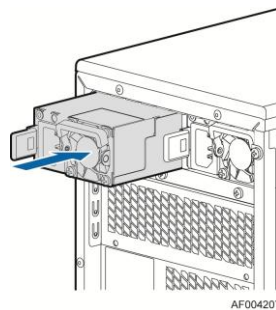


Figure 90. Installing Additional Hot-swap Power Supply Module

Replacing a Hot Swap Power Supply Module

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.

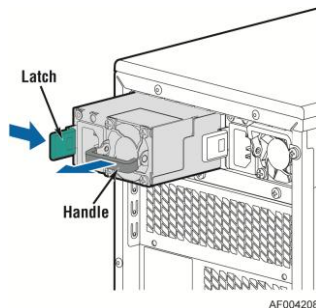


Figure 91. Removing Hot-swap Power Supply Module from Chassis

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

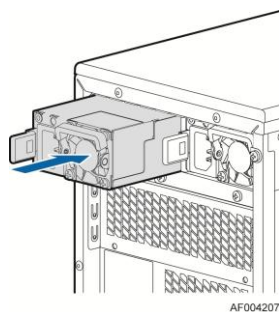


Figure 92. Installing Hot-swap Power Supply Module into Chassis

Replacing the Power Distribution Board for 460W/750W 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.

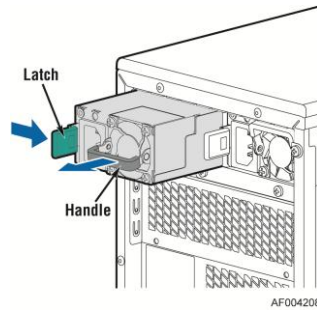


Figure 93. Removing Hot-swap Power Supply Module from Chassis

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

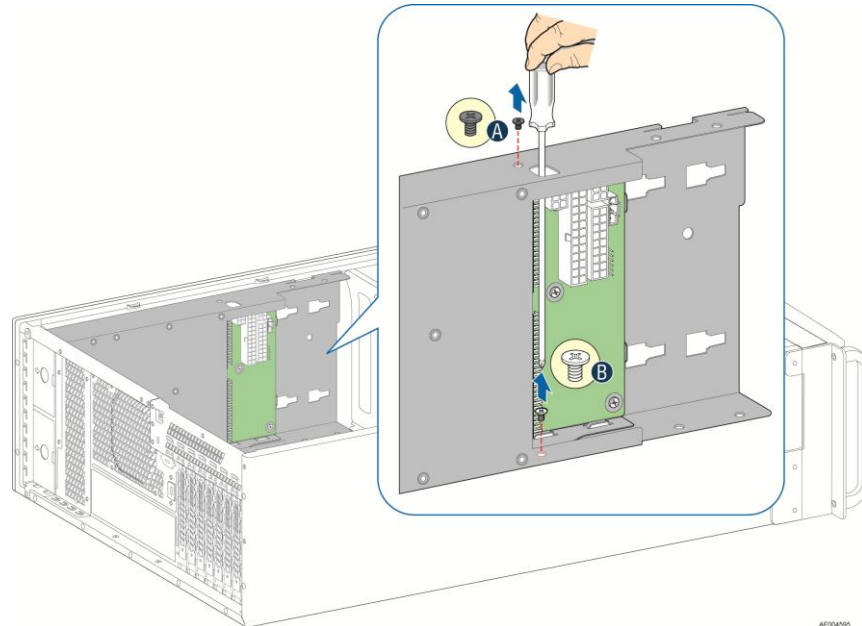


Figure 94. Loosening the Bracket with Power Distribution Board from Chassis

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

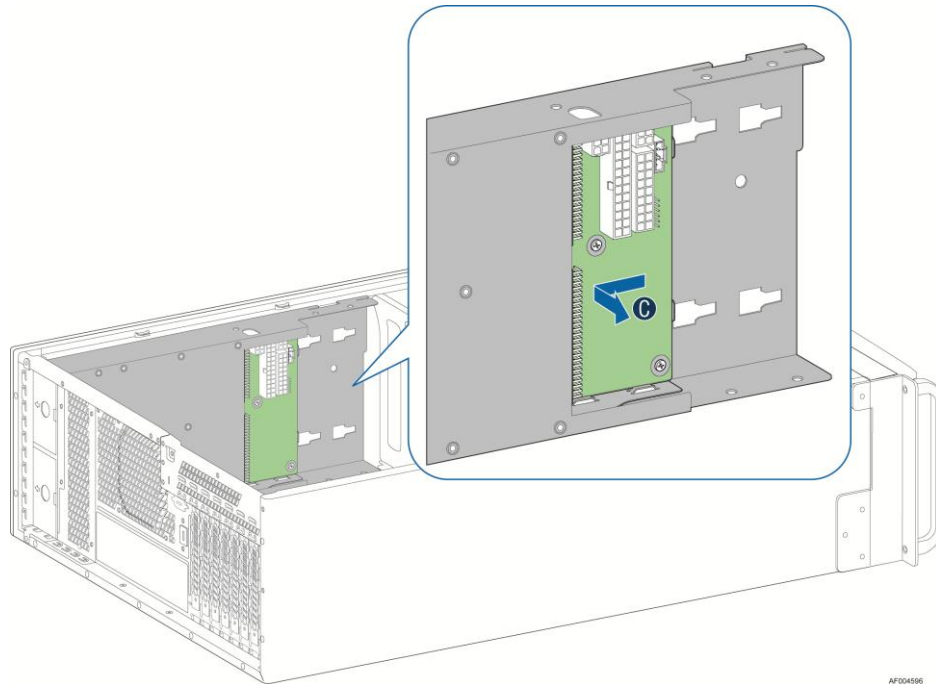


Figure 95. Removing the Bracket with Power Distribution Board from Chassis

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

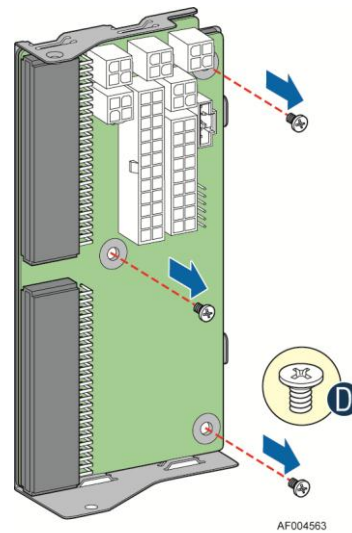


Figure 96. Removing the Power Distribution Board from Bracket

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**).

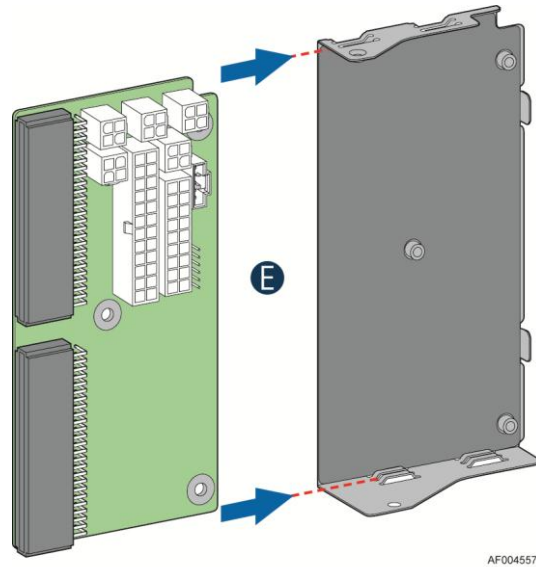


Figure 97. Sliding the New Power Distribution Board in Bracket

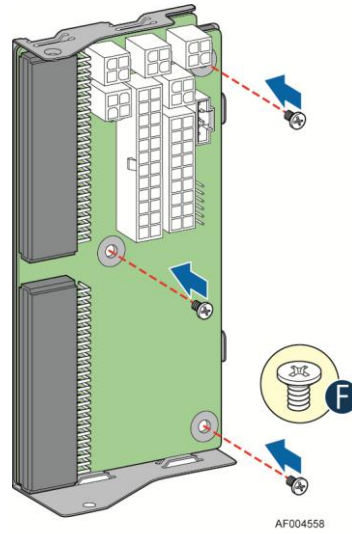


Figure 98. Securing the New Power Distribution Board in Bracket

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

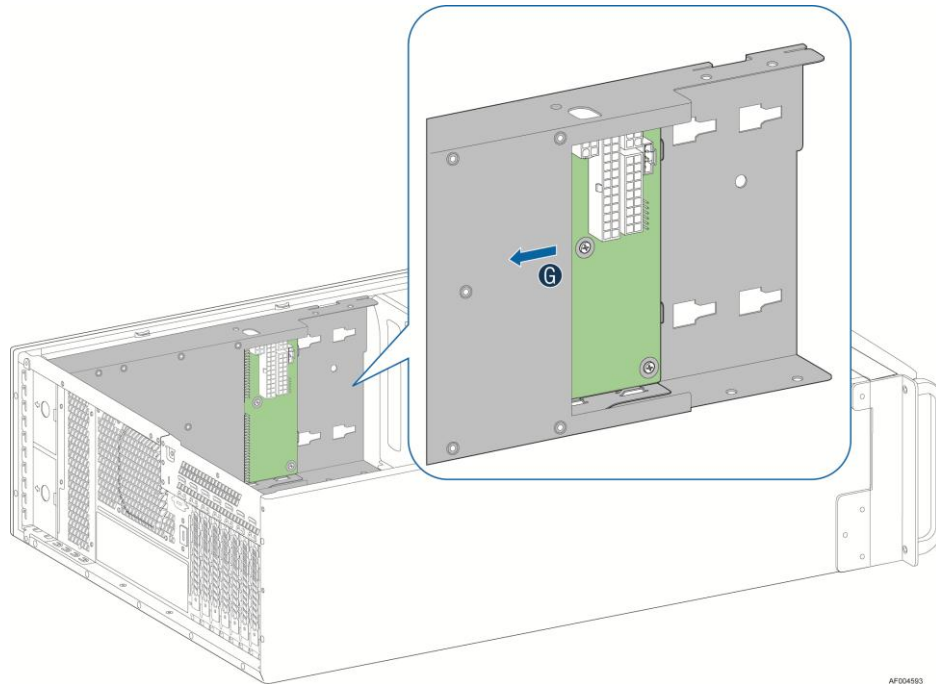


Figure 99. Sliding the Bracket into Power Supply Cage

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").

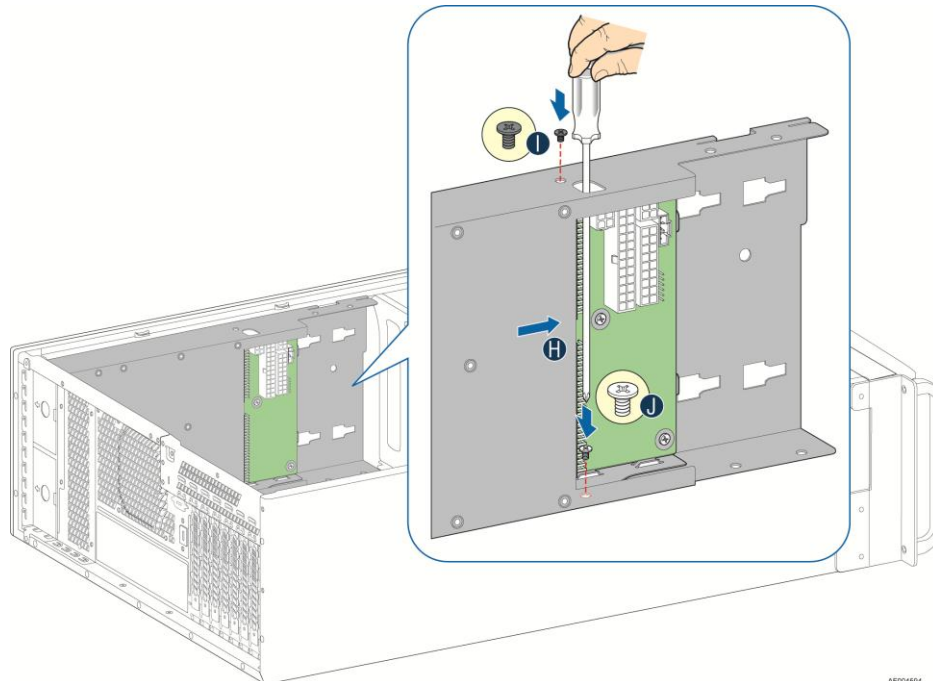


Figure 100. Securing the Bracket into Power Supply Cage

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.

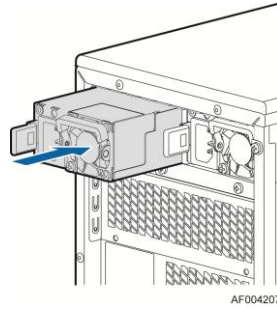


Figure 101. Installing Hot-swap Power Supply Module into Chassis

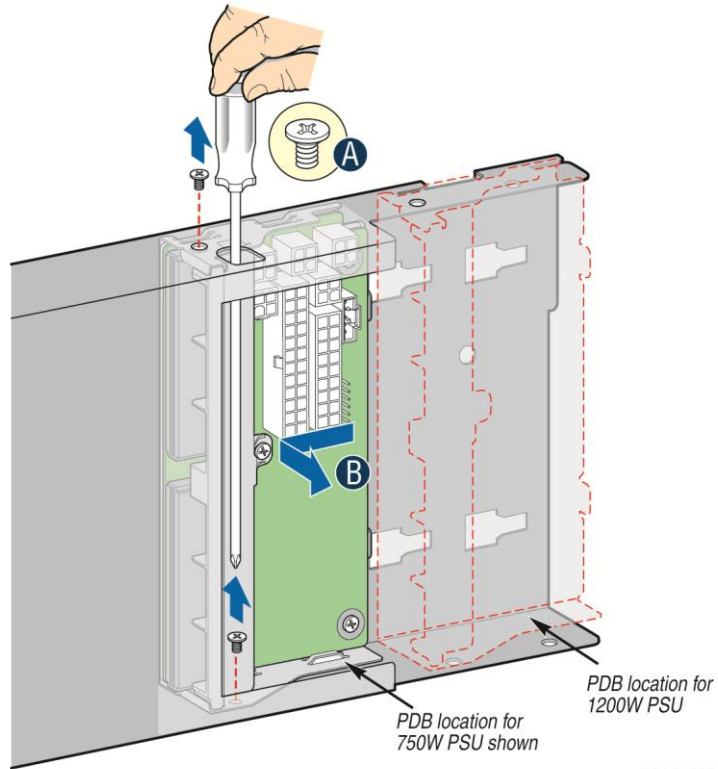
15. Reinstall the air duct. For instructions, see “Installing the Airduct”.
16. Re-install the chassis cover. For instructions, see “Installing the Chassis Cover”.
17. Plug all peripheral devices and the AC power cable into the server.
18. Power up the server.

Replacing the Power Distribution Board for 1200-W 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.

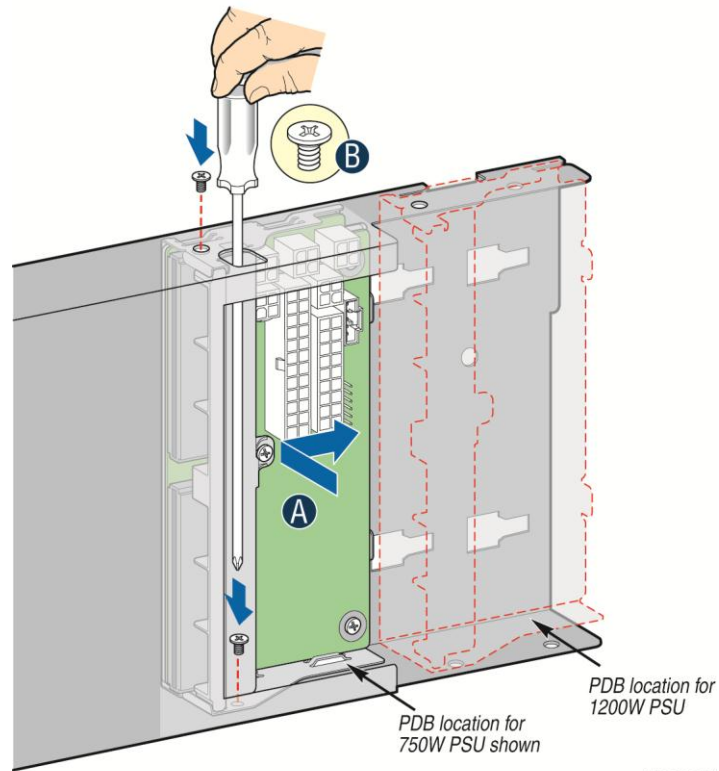
1. Follow instructions in “Replacing the Power Distribution Board for 460-W/750-W PSUs” except the Power Distribution Board is located at different place in the PDB bracket.
2. To remove the Power Distribution Board, loosen screws securing the PDB bracket to the chassis. See letter **A**. Push the bracket forward to release the latch which secure the bracket then pull out the bracket from the chassis. See letter **B**. The figure shows the different PDB locations for 460-W/750-W PSU and 1200-W PSU.



AF005200

Figure 102. Removing the PDB for 1200-W PSU

3. To install the Power Distribution Board, slide the bracket with the new PDB all the way into the power supply cage 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 **A**. Then secure the bracket with the screws. See letter **B**. The figure shows the different PDB locations for 460-W/750-W PSU and 1200-W PSU.



AF005201

Figure 103. Installing the PDB for 1200-W PSU

Removing and Installing the Top Cosmetic Cover

Removing the Top Cosmetic Cover

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 latches under the top cosmetic cover to release the cosmetic cover (see letter **A**) and remove the top cosmetic cover (see letter **B**).

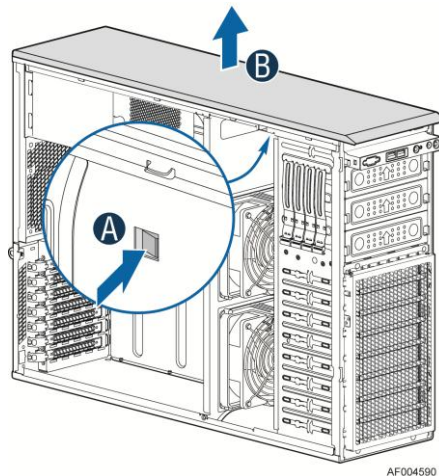


Figure 104. Removing the Top Cosmetic Cover

Installing the Top Cosmetic Cover

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. Attach the top cosmetic cover to the chassis and make sure the edges of the top cosmetic cover fit the sides of the chassis top. Then slide the top cosmetic cover forward until the latches on the top cosmetic cover are engaged with the chassis.

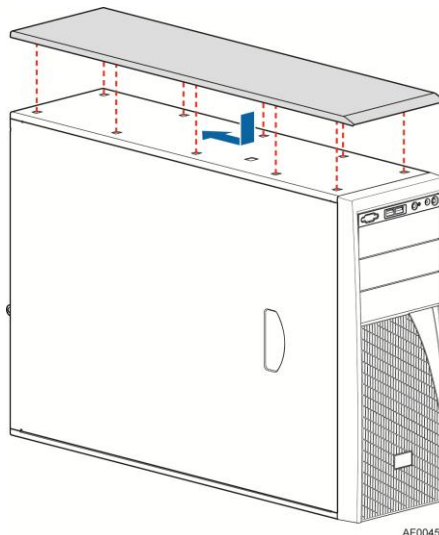


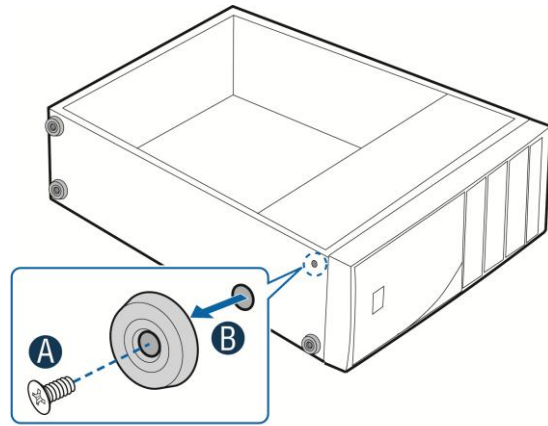
Figure 105. Installing the Top Cosmetic Cover

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.

- Loose the screws securing the rubber foot to the chassis and then remove the rubber foot from chassis.



AF004597

Figure 106. Removing the Chassis Feet

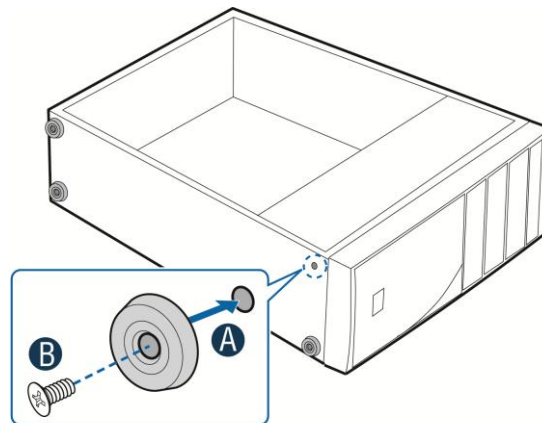
- Repeat above steps until all four feet are removed.

Installing the Chassis Feet (Pedestal Configuration Only)

NOTE

Do not install feet on your Intel® Server Chassis P4000M family if it is to be installed in a rack. Only install feet on a pedestal-configured chassis.

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



AF003966

Figure 107. Installing the Chassis Feet

- Put chassis in the upright position.

8. Reconnect all peripheral devices and the AC power cable to the server. Power up the server.

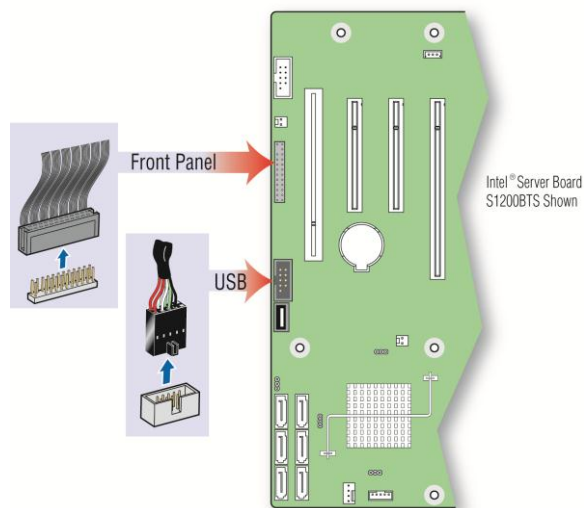
Removing and Installing the Front Panel Tray

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. Remove the air duct if it is installed.
6. Disconnect the front panel cable, USB cable from the server board.



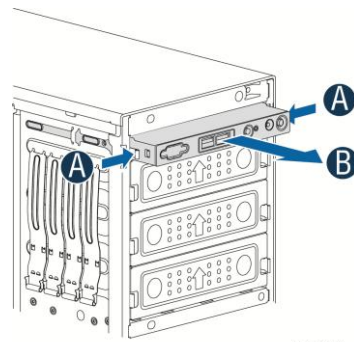
AF003975

Figure 108. Disconnecting the Cables from the Server Board

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

CAUTION

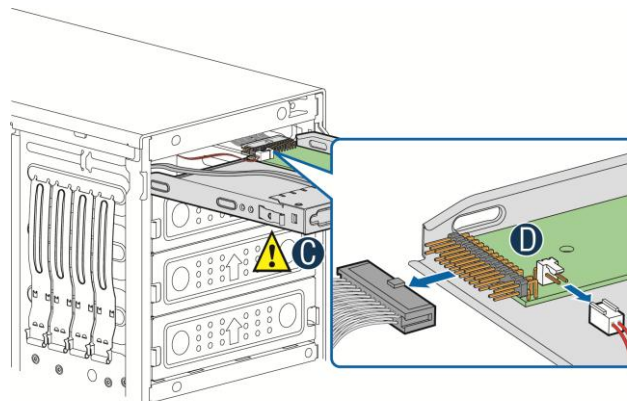
Do not slide the front panel out far from the front of the chassis before you disconnect the instruction cable from the front panel board.



AF003976

Figure 109. Sliding the Front Panel Tray out from the Chassis

- 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 cable and intrusion 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**).



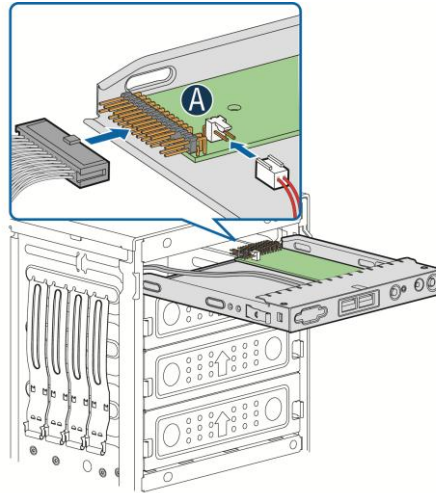
AF003977

Figure 110. Disconnecting the Cables from Front Panel Board

- Slide the front panel tray out.

Installing the Front Panel Tray

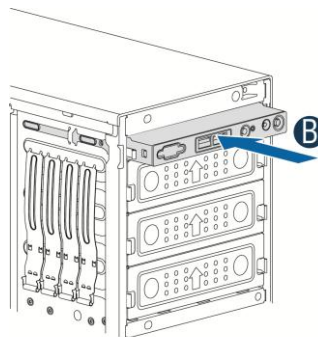
- Observe the safety and ESD precautions at the beginning of this book.
- Power down the server and unplug all peripheral devices and the AC power cable.
- Remove the chassis cover. For instructions, see “Removing the Chassis Cover”.
- Remove the front bezel if it is installed. For instructions, see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



AF003982

Figure 111. Connecting the Cables to the Front Panel Board

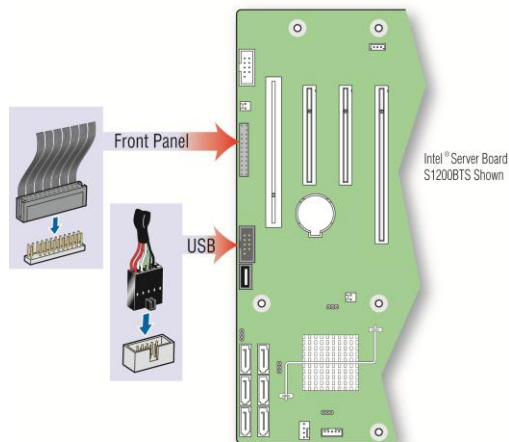
7. Slide the front panel tray in chassis



AF003983

Figure 112. Installing the Front Panel Tray in Chassis

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



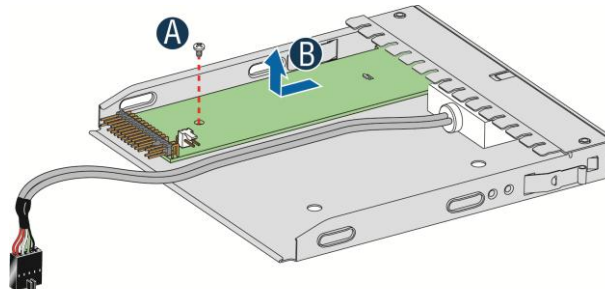
AF003984

Figure 113. Connecting the Cables to Server Board the Front Panel Tray in Chassis

9. Install the front bezel. For instructions, see “Removing and Installing the Front Bezel”.
10. Install the air duct based on board requirement.
11. 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.

Replacing the Front Panel Board

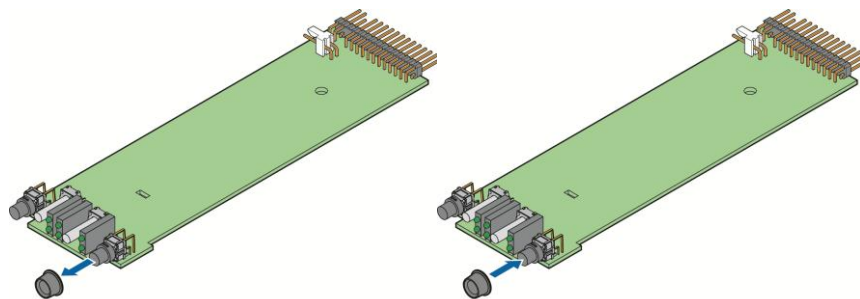
1. Observe the safety and ESD precautions at the beginning of this book.
2. Power down the server and unplug all peripheral devices and the AC power cable.
3. Remove the chassis cover. For instructions, see “Removing the Chassis Cover”.
4. Remove the front bezel if it is installed. For instructions,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



AF003978

Figure 114. Removing the Front Panel Board

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

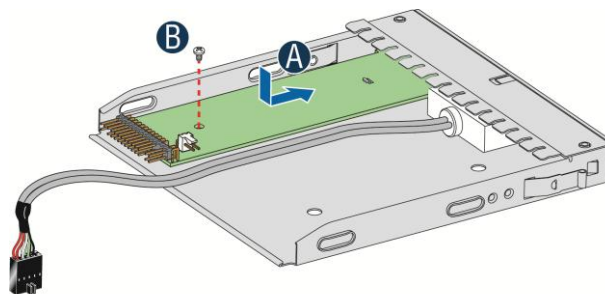


AF003979

AF003980

Figure 115. 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**).



AF003981

Figure 116. 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”.
11. Install the air duct based on board requirement.
14. Install the chassis cover. For instructions, see “Installing the Chassis Cover”.
15. Plug all peripheral devices and the AC power cable into the server.
16. 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.

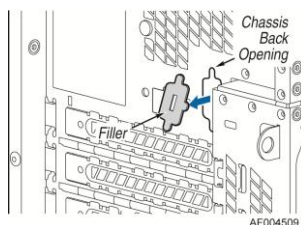
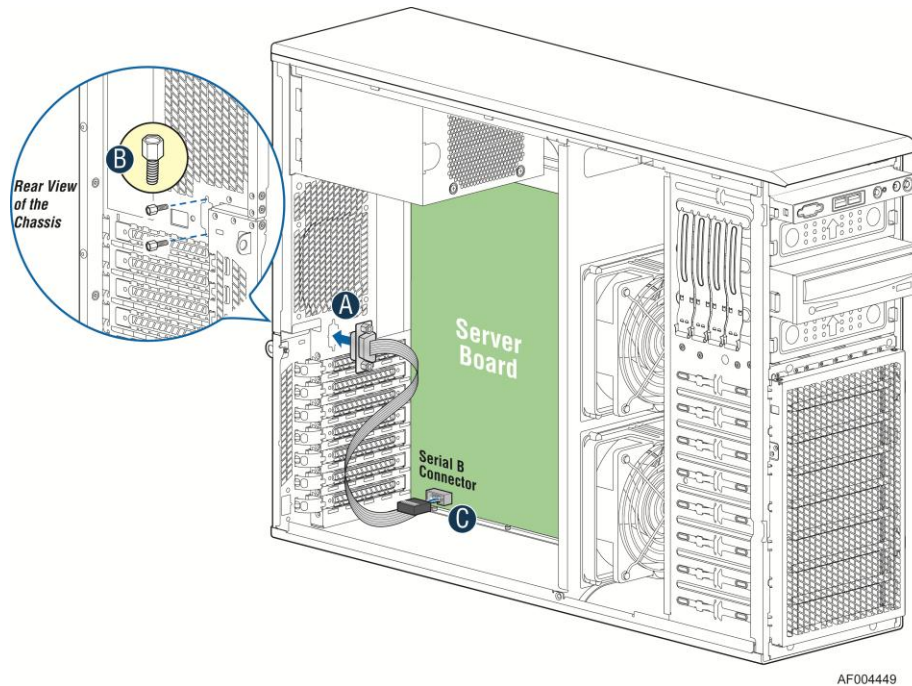


Figure 117. Removing the Alternate Serial Port Knockout

5. Install the serial port on the rear panel of the chassis. Connect the cable to the Serial B Connector on your motherboard.



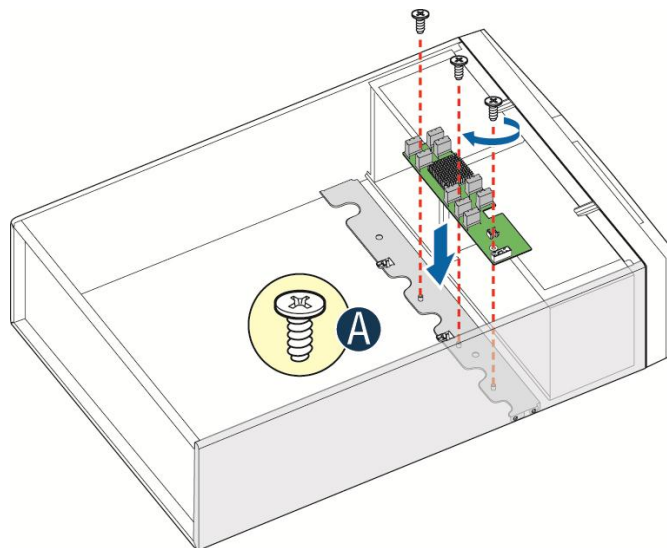
AF004449

Figure 118. Installing the Alternate Serial Port Knockout

Installing and/or Removing a Expander card

Installing the Expander 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, "Removing the Chassis Cover".
4. Remove the fans. For instructions, see "Removing the Fixed Fan" or "Removing the Hot-swap Fans".
5. Remove the Fixed HDDs or Hotswap drive cages. For instructions, see "Remove Fixed Hard Drives", or "Remove 8x3.5 Hotswap Drive Cage Assemble", or "Remove 8x2.5 Hotswap Drive Cage Assemble".
6. Locate the expander card bracket in the chassis. Mount the expander card to the bracket with screws.



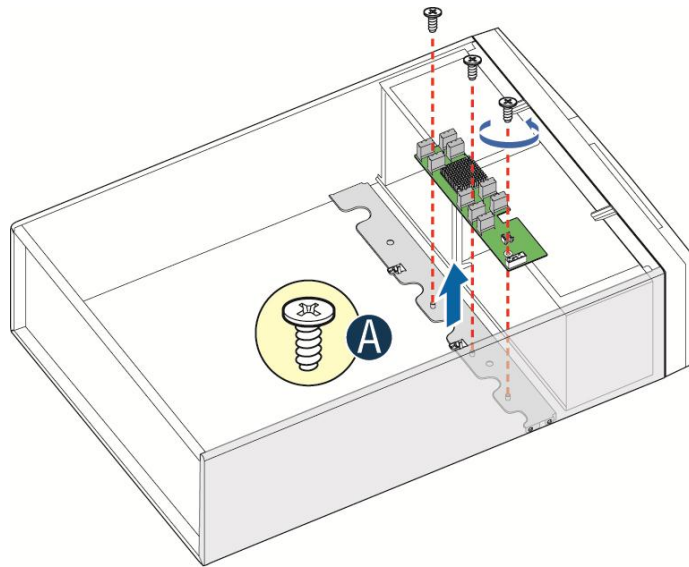
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Figure 119. Installing the Expander Card

7. Connect the data cable between server board and expander card, and between expander and backplane(s). See documents for your server boards for instructions.
8. Install the Fixed HDDs or Hotswap drive cages. For instructions, see “Install Fixed Hard Drives”, or “Install 8x3.5 Hotswap Drive Cage Assemble”, or “Install 8x2.5 Hotswap Drive Cage Assemble”.
9. Install the fans. For instructions, see “Install the Fixed Fan” or “Install the Hot-swap Fans”.
10. Install the chassis cover. For instructions, “Install the Chassis Cover”.

Removing the Expander 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, “Removing the Chassis Cover”.
4. Remove the fans. For instructions, see “Removing the Fixed Fan” or “Removing the Hot-swap Fans”.
5. Remove the Fixed HDDs or Hotswap drive cages. For instructions, see “Remove Fixed Hard Drives”, or “Remove 8x3.5 Hotswap Drive Cage Assemble”, or “Remove 8x2.5 Hotswap Drive Cage Assemble”.
6. Unplug all the cables connected to the expander card.
7. Remove the expander card from expander card bracket by releasing the securing screws.



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Figure 120. Removing the Expander card

8. Install the Fixed HDDs or Hotswap drive cages. For instructions, see “Install Fixed Hard Drives”, or “Install 8x3.5 Hotswap Drive Cage Assemble”, or “Install 8x2.5 Hotswap Drive Cage Assemble”.
9. Install the fans. For instructions, see “Install the Fixed Fan” or “Install the Hot-swap Fans”.
10. Install the chassis cover. For instructions, see “Install the Chassis Cover”.

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 Add-in 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.

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.

Rack-mounted Systems

Your Intel® Server Chassis P4000M family can be mounted into a rack. Intel® provides a tool-less rail kit and a cable management arm to mount this server chassis into a rack. When installing the chassis into a rack, Intel recommends you install systems from the bottom of the rack to the top. In other words, install the first system in the rack into the bottom position of the rack, the second system in the second position from the bottom, and so on.

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 P4000M 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*.

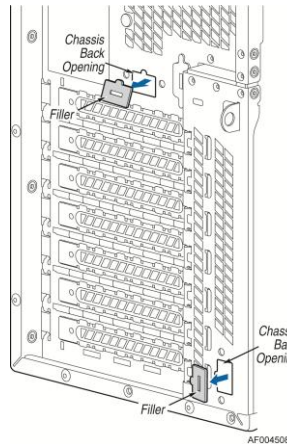


Figure 121. RMM4 knockout

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.

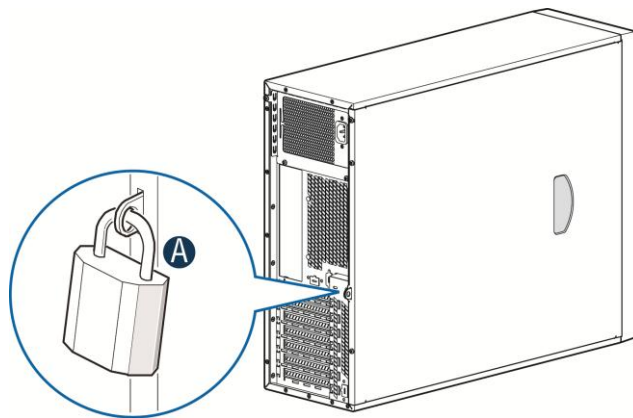


Figure 122. Mechanical Locks

3 Technical Reference

Power Supply Specification

The power supply specifications for your Intel® Server Chassis P4000M family depend upon the configuration of chassis you purchased. Below power supply configurations are available:

- 460-W hot-swap power supply
- 550-W fixed power supply
- 750-W hot-swap power supply
- 1200-W hot-swap power supply

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 3. Power Supply Output Voltages

Parameter	Tolerance	MIN	NOM	MAX	UNITS
+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 4. 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.

750-W Hot-swap Power Supply Input Voltage

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

750-W Hot-swap Power Supply Output Voltages

Table 5. Power Supply Output Voltages

Parameter	Tolerance	Min	Nom	Max	Units
+12V	- 5%/+5%	+11.40	+12.00	+12.60	V _{rms}
+12V stby	- 5%/+5%	+11.40	+12.00	+12.60	V _{rms}

1200-W Hot-swap Power Supply Input Voltage

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

1200-W Hot-swap Power Supply Output Voltages

Table 6. Power Supply Output Voltages

Parameter	Tolerance	MIN	NOM	MAX	UNITS
+12V	- 5%/+5%	+11.40	+12.00	+12.60	V _{rms}
+12V stby	- 5%/+5%	+11.40	+12.00	+12.60	V _{rms}

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.

Technical Reference

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

Device	Current (maximum) at voltage level					
	+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						
4th Hard Drive						

	Current (maximum) at voltage level					
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:
 - i. Latest BIOS, firmware, drivers and utilities
 - ii. Product documentation, installation and *Quick Start Guides*
 - iii. Full product specifications, technical advisories and errata
 - iv. Compatibility documentation for memory, hardware add-in cards, chassis support matrix, and operating systems
 - v. Server and chassis accessory parts list for ordering upgrades or spare parts
 - vi. 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: S2600CP, P4308XXMFEN)

Server Chassis:

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

Base Board Information: (Some information may be found by accessing BIOS & 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 & 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:

Appendix E: Intel® Server Issue Report Form

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.

Appendix F: Warranty

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://www.intel.com/support/motherboards/warranty-support.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.