



Intel® Storage System JBOD2312S3SP

Service Guide

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

Revision 1.0
Apr 2017

Intel® Server Boards and Systems

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Revision History

Date	Revision Number	Modifications
Apr 2017	0.6	First preliminary version
Apr 2017	1.0	First public version

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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 Warnung und 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 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.

Preface

About this Manual

This manual is written for system technicians who are responsible for troubleshooting, upgrading, and repairing this JBOD system. This document provides a brief overview of the features of the JBOD 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® JBOD 2000S3 System. For the latest revision of this manual, go to <http://www.intel.com/support>.

Manual Organization

Chapter 1 provides a brief overview of the Intel® JBOD 2000S3 System. In this chapter, you will find a list of the server system features, and figures of the system and components to help you identify your system 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, and front panel board, among other components.

The back of this manual provides technical specifications, regulatory information, and help information.

Additional Information and Software

For additional information about this family of products or any of their supported accessories, refer to the following resources available at <http://www.intel.com/support>.

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1 JBOD System Features

This chapter briefly describes the main features of the Intel® Storage Server System JBOD 2000S3 family. This includes illustrations of the products, a list of the features, and diagrams showing the location of important components and connections on the JBOD systems.

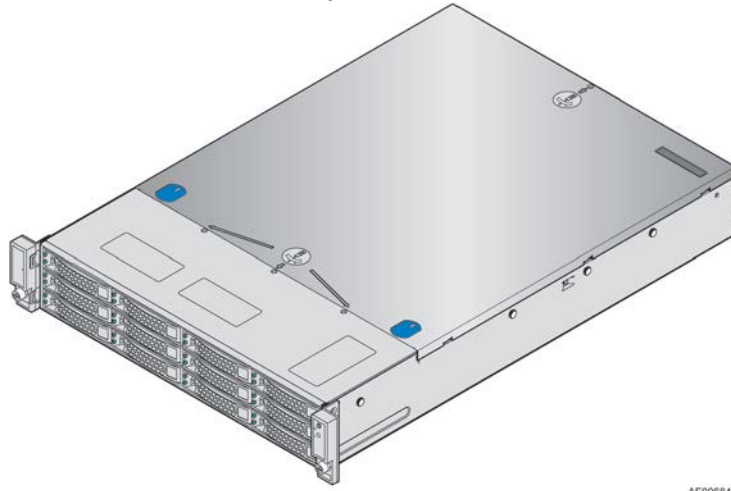


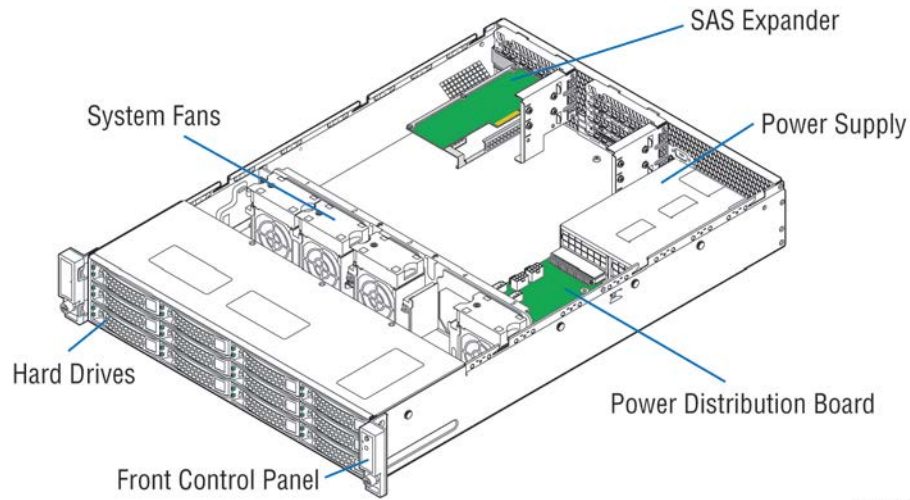
Figure 1. Intel® Storage Server System JBOD2312S3SP

1.1 JBOD System Feature Overview

Feature	Description
External connections	SFF-8644 mini-SAS connectors
System Fans	Four hot-swap managed system fans One power supply fan for each installed power supply module
Power Supply Options	Single AC 460W PSU for JBOD2312S3SP as default configuration, second PSU can be supported as option.
Storage Bay Options	12x – 3.5" SATA/SAS Hot Swap Hard Drive Bays
Available Rack Mount Kit Options	Tool-less rack mount rail kit – Intel Product Code – AXXPRAIL Value rack mount rail kit – Intel Product Code – AXXVRAIL Cable Management Arm – Intel Product Code – AXX1U2UCMA (*supported with AXXPRAIL only) 2-post fixed mount bracket kit – Intel Product Code – AXX2POSTBRCKT Note: Refer to the <i>Intel® Storage Server System Family JBOD2000S3 Spares/Accessories List and Configuration Guide</i> for rack mount kit configuration in JBOD2000S3 products.
Expander Options	Single 36 Port 12G SAS Expander

1.2 JBOD System Components

This section helps you identify the components of your server system. If you are near the system, you can also use the Quick Reference Label provided on the inside of the chassis cover to assist in identifying components.



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Figure 2. Intel® JBOD2000S3 System Family Components

1.3 Hot Swap Hard Drive Bay

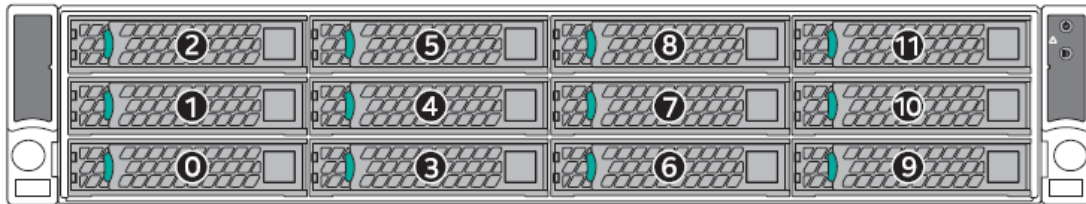
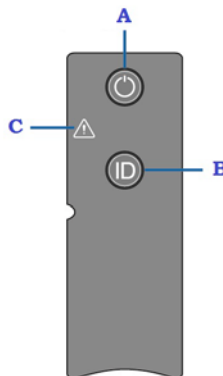


Figure 3. 12 x 3.5" Drive JBOD2312S3SP Front View

1.4 Front Panel



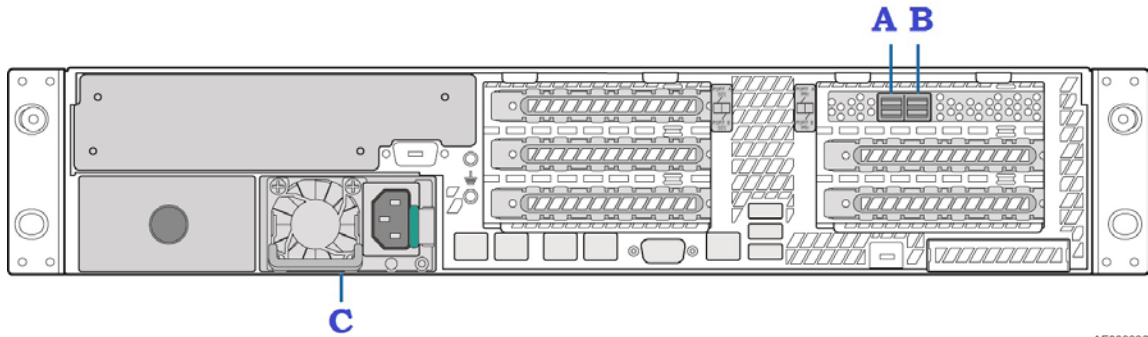
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Label	Description
A	Power Button w/Integrated LED
B	System ID Button w/Integrated

Label	Description
	LED
C	System Status LED

Figure 4. Front Panel Options

1.5 Back Panel



Label	Description
A	SFF-8644 receptacle (label: External mini-SAS HD Port 0-3)
B	SFF-8644 receptacle (label: External mini-SAS HD Port 4-7)
C	PSU

AF00683B

Figure 5. JBOD2312S3SP Back View

1.6 Hard Disk Drive Carriers

The Intel® JBOD2312S3SP System ships with 3.5-inch hard disk drive carriers. See the following table for details:

Intel® JBOD System	Supported Hard Drive Type	Maximum Hard Drive Number
JBOD2312S3SP	3.5 inch (2.5 inch can be supported)	12

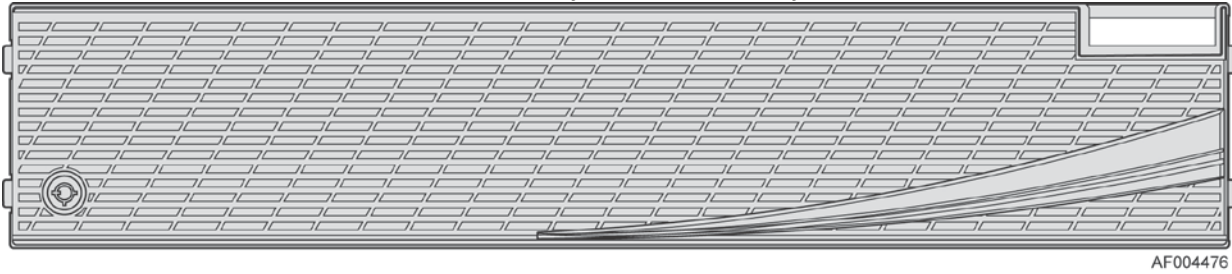
For instructions on installing hard drives, see [“Installing a Hot-swap Hard Disk Drive”](#).

NOTES:

- Drives can consume up to 17 watts of power each. Drives must be specified to run at a maximum ambient temperature of 45°C.
- The Intel® JBOD System Family does not support all SAS or Serial ATA (SATA) hard drives. For a web link to a list of supported hard drives, see [“Additional Information and Software”](#).

1.7 Bezel

The front bezel is available as an optional accessory for the server system:



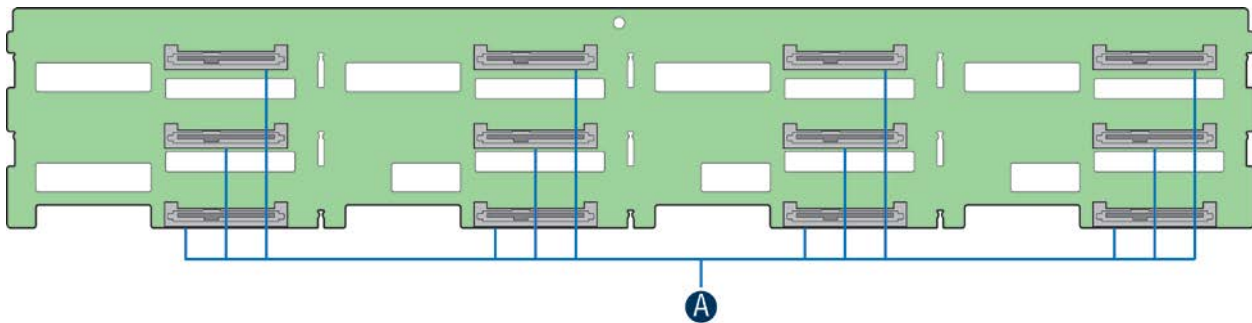
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Figure 6. Front view of Front Bezel

1.8 Hot-Swap SAS/SATA Backplane

The Hot-Swap SAS/SATA backplane serves as an interface between the SAS expander(s) and the system drives. The following diagrams show the location for each connector found on the backplane.

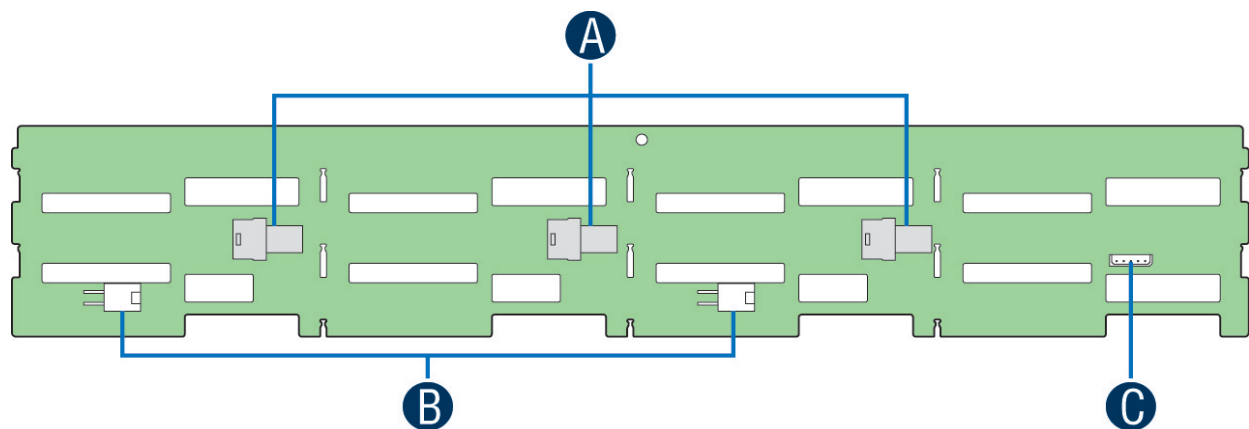
1.8.1 12 x 3.5-inch Hard Drive Backplane



AF004028

A	SAS/SATA Hot-swap Connectors
---	------------------------------

Figure 7. 12 x 3.5-inch Hard Drive Backplane Components (Front View)



AF006861

A	Mini-SAS Connectors
B	Power Connectors
C	I ² C Connector

Figure 8. 12 x 3.5-inch Hard Drive Backplane Components (Rear View)

1.9 JBOD2312S3SP Interconnection

The Intel® Storage Server System JBOD2312S3SP has a 12x3.5" single-port HSBP, a primary SAS expander, a dual-port SAS interface board, a PDB, a PSU, and four fans in its chassis.

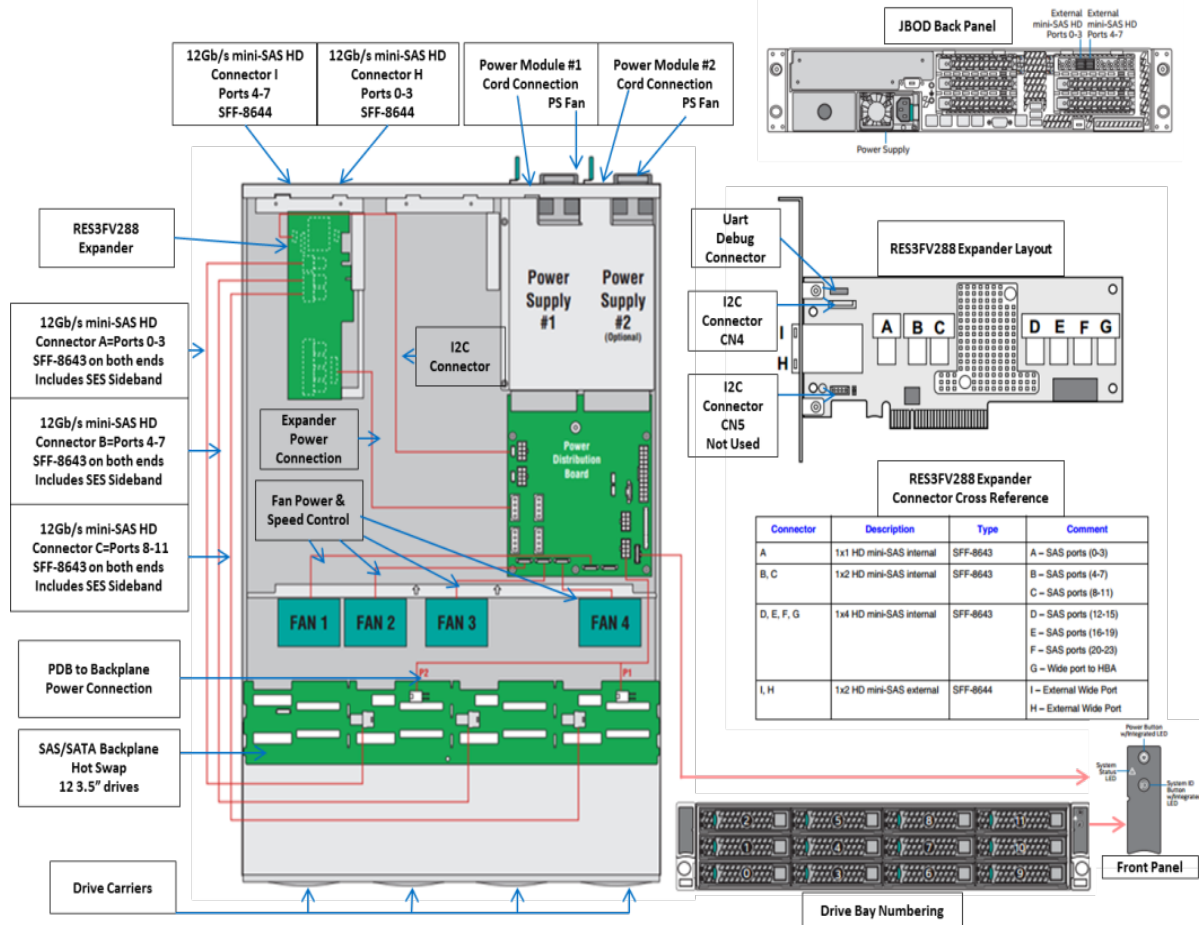


Figure 9. 12x3.5" Single-port JBOD 2000S3 Interconnection Diagram

2 Hardware Installations and Upgrades

2.1 Before You Begin

Before working with your server product, pay close attention to the “[Safety Information](#)” at the beginning of this manual.

NOTE: Whenever you service the system, you must first power down the server and unplug all peripheral devices and the power cord.

2.1.1 Tools and Supplies Needed

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

2.1.2 System Reference

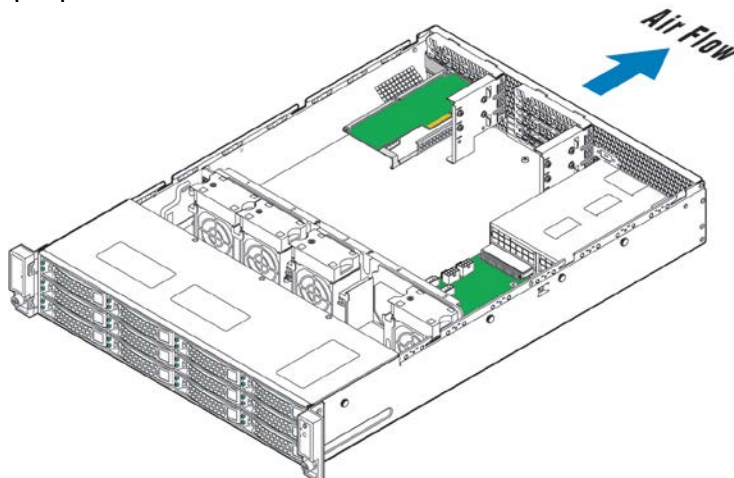
All references to left, right, front, top, and bottom assume the reader is facing the front of the chassis as it would be positioned for normal operation.

2.2 Cable Routing

When you add or remove components from your JBOD, make sure your cables are routed correctly before reinstalling the system cover. Use caution to make sure no cables or wires are pinched and that the airflow from the fans is not blocked.

2.3 Fan Connections

Use Figure 9 to determine the proper fan connections.



AF006853

Figure 10. System Air Flow

2.4 Removing and Installing the Front Bezel

2.4.1 Removing the Front Bezel

If your system includes a front bezel, follow these steps to remove the front bezel:

1. Unlock the bezel if it is locked.
2. Remove the left end of the front bezel from the rack handle (see letter "A").
3. Rotate the front bezel anticlockwise to release the latches on the right end from the rack handle (see letter "B").

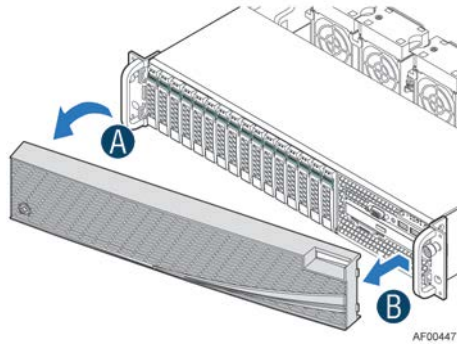


Figure 11. Removing the Front Bezel

2.4.2 Installing the Front Bezel

NOTE: Before installing the bezel, you must install the rack handles.

1. Lock the right end of the front bezel to the rack handle (see letter "A").
2. Rotate the front bezel clockwise till the left end clicks into place (see letter "B").
3. Lock the bezel if needed.

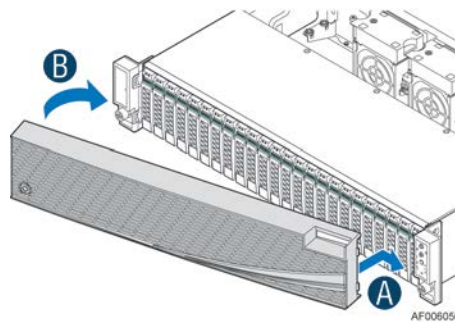


Figure 12. Installing the Front Bezel

Intel also provides an optional plastic badge for customer to use. To install the badge to the bezel, attach the badge onto the bezel until the hooks at the rear of the badge click into the bezel.

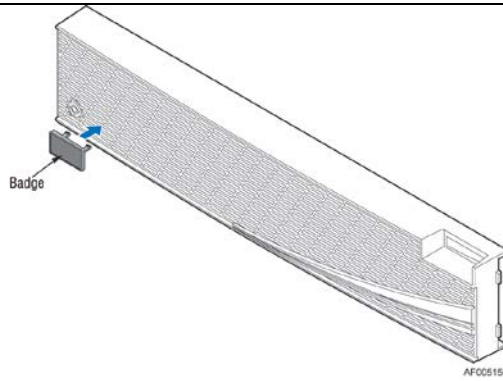


Figure 13. Installing the Badge to the Front Bezel

To remove the badge from the bezel, squeeze the hooks at the rear of the badge to release the badge (see letter "A") and then remove the badge from the bezel (see letter "B").

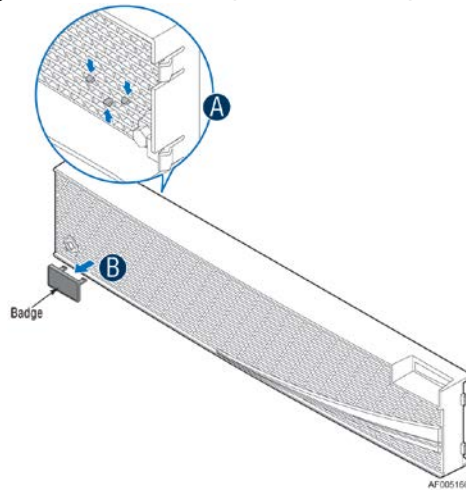


Figure 14. Removing the Badge from the Front Bezel

2.5 Removing and Installing the System Cover

2.5.1 Removing the System Cover

The JBOD system must be operated with the system cover in place to ensure proper cooling. You will need to remove the top cover to add or replace components inside the system. Before removing the top cover, power down the server and unplug all peripheral devices and the power cable(s).

NOTE: A non-skid surface or a stop behind the server system may be needed to prevent the server system 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 power cord.
4. Remove the four screws (see letter "A").
5. Slide the cover back and lift upward (see letter "B").

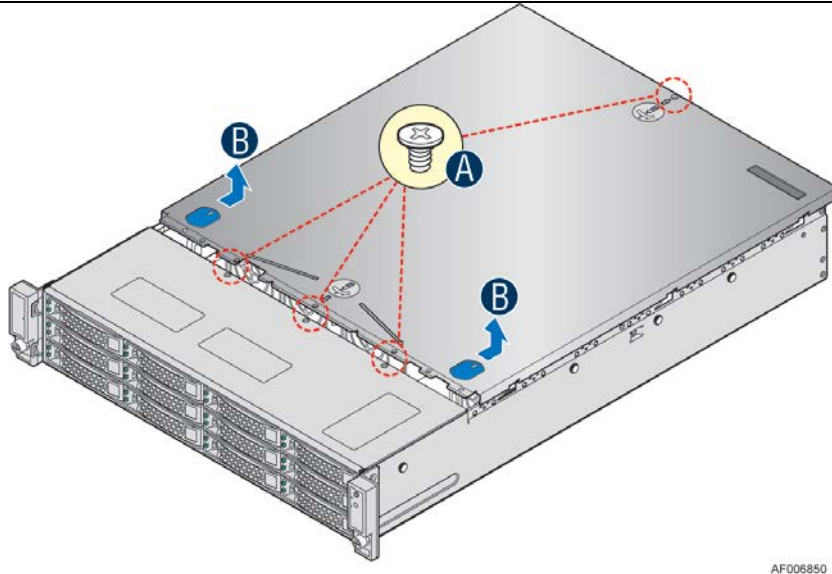


Figure 15. Removing the System Cover

2.5.2 Installing the System Cover

1. Place the system cover onto the chassis and slide forward to engage recessed edge at the front of the cover (see letter "A").
2. Tighten the four screws (see letter "B").

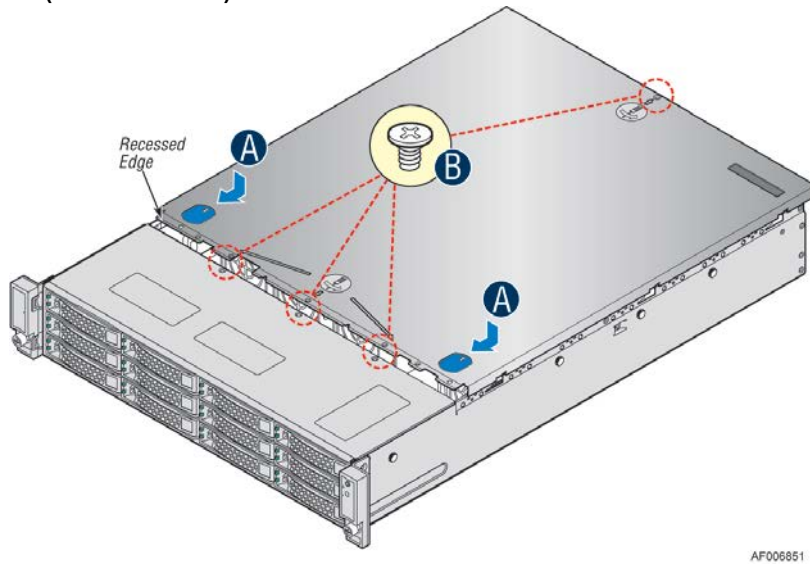


Figure 16. Installing the System Cover

2.6 Installing a Hot-swap Hard Disk Drive

CAUTION: If you don't install all drives, empty drive bays must be occupied by carriers with plastic drive blank provided to maintain proper system cooling.

2.6.1 Installing a Hard Disk Drive into 3.5" Hard Drive Carrier

1. Remove the drive carrier by pressing the green button and opening the lever (see letter "A"). Slide the carrier out (see letter "B").

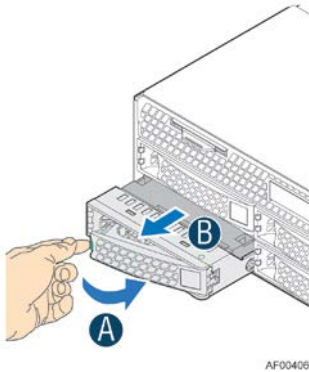


Figure 17. Installing Hard Disk Drive – Removing 3.5" HDD Carrier

2. Remove the four screws securing the HDD interface bracket and remove the HDD interface bracket (see letter "C").

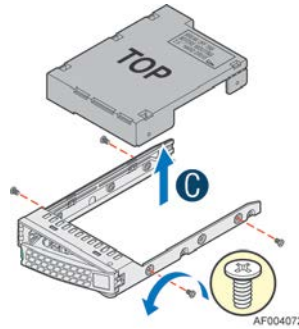


Figure 18. Installing Hard Disk Drive – Removing 3.5" HDD Interface Bracket

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

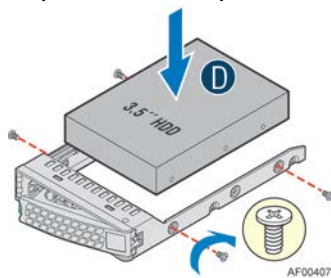


Figure 19. Installing Hard Disk Drive – Installing 3.5" HDD

For installing 2.5" Hard Disk Drive as an option:

- 1) Break off the tab on the HDD interface bracket (see letter "d1").
- 2) Install the HDD interface bracket from top. Secure the bracket with three screws as shown (see letter "d2").
- 3) Slide the 2.5" HDD into the bracket to align the screw holes with the right and left rail (see letter "d3").
- 4) Secure the hard disk drive using the four screws for 2.5" HDD (see letter "d4").

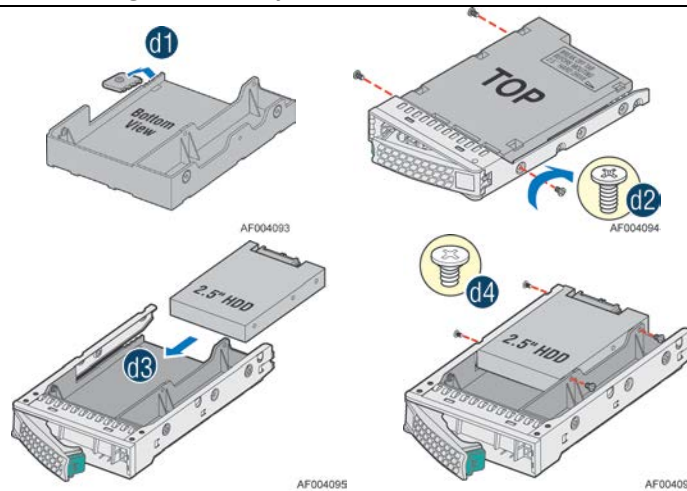


Figure 20. Installing Hard Disk Drive – Installing 2.5" HDD

4. With the lever open, insert the hard disk drive assembly into the chassis (see letter "E"). Push in the lever to lock it into place (see letter "F").

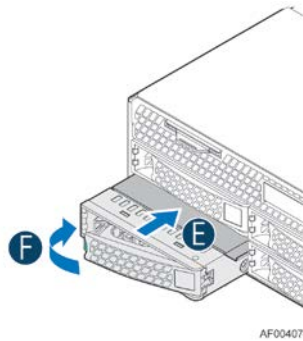


Figure 21. Installing Hard Disk Drive – Inserting 3.5" HDD Assembly

2.7 Replacing the Power Supply

CAUTION: The power supply is only hot-swappable if you have a redundant system with two power supplies installed. If you only have one power supply installed, before removing or replacing the power supply, you must first take the system out of service, turn off all peripheral devices connected to the system, turn off the system by pressing the power button, and unplug the power cord from the system or wall outlet.

The power supply can be replaced if it fails. To replace the power supply, follow these steps:

1. Do one of the following:
 - If a power supply is installed, push the green latch in the direction shown while pulling the power supply out of the system by the handle.

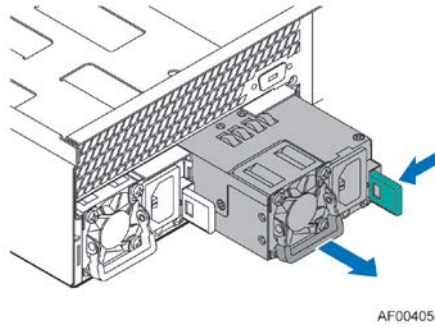


Figure 22. Removing the Power Supply Module

- If a filler panel is installed, use the 'finger hole' to remove the filler panel (see letter "B").

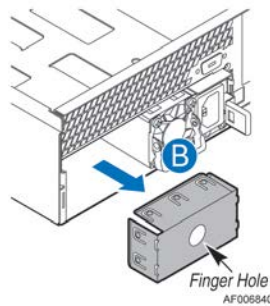


Figure 23. Removing the Filler Panel

2. Do one of the following:
 - Insert the power supply module into the power supply cage and push all the way until it clicks into place (see letter "C").

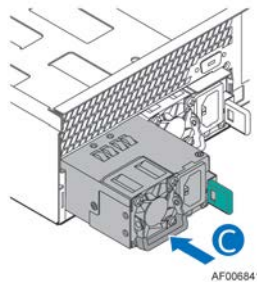


Figure 24. Installing the Power Supply Module

- If no power supply is to be installed, install the filler panel into the power supply cage.

2.8 Installing and Removing the SAS Expander

2.8.1 Removing the SAS Expander

1. Disconnect all cables from the SAS Expander and remember the connection locations. Grasp the riser assembly with both hands and pull up to remove from the system.

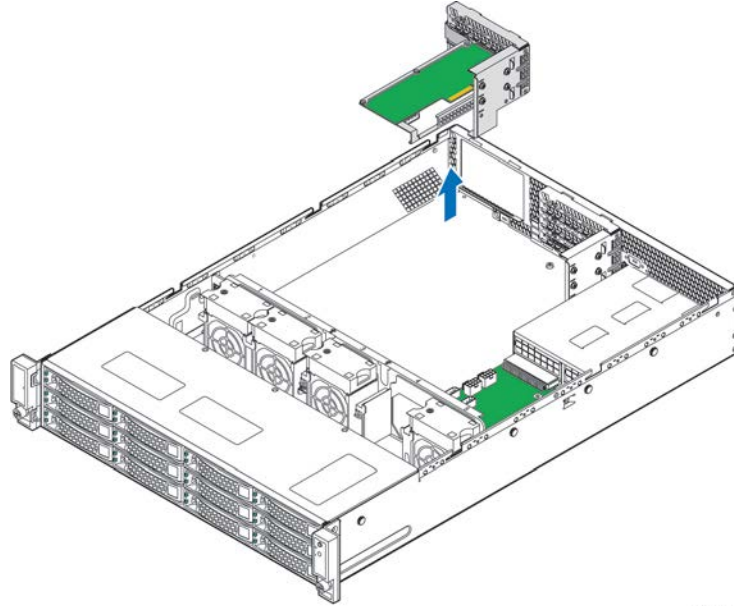


Figure 25. Removing the Riser Assembly

2. Remove the screw from the SAS expander bracket as shown (see letter "A"). Pull up the SAS Expander from the riser assembly as shown (see letter "B").

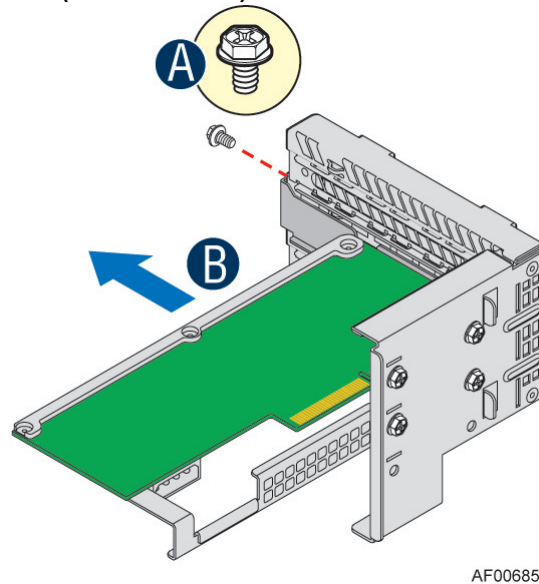


Figure 26. Removing the SAS Expander

2.8.2 Installing the SAS Expander

1. Remove the PCI riser assembly from the system.
2. Remove the filler panel from the add-in card slot and remove the fastener screw.
3. Insert the SAS Expander till it is fully seated on the riser assembly as shown (see letter "A").

Note: The SAS Expander should not be installed in the lowest slot of the riser due to the thermal reason.

4. Secure the SAS Expander with three screws (see letter "B").

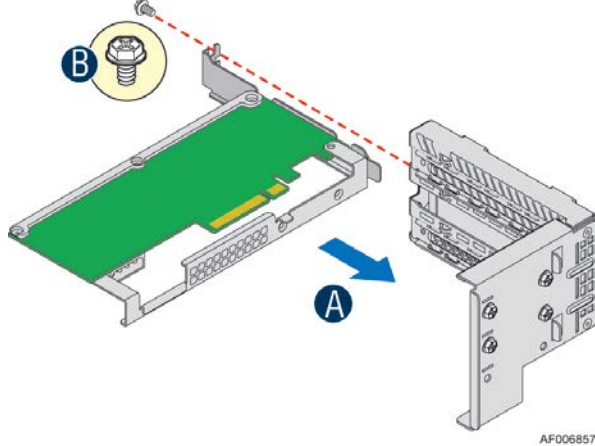


Figure 27. Installing the SAS Expander

5. Align the two hooks on the back edge of the riser assembly with the slots on the back of the chassis, and press the riser assembly straight down as shown.

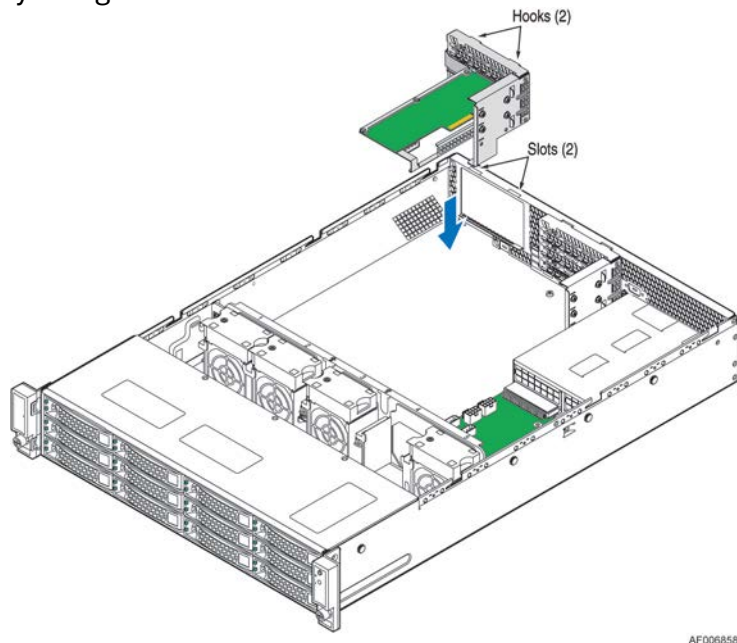


Figure 28. Installing the Riser Assembly

6. Connect all cables back into the SAS Expander connectors.

2.9 Installing and Removing the Power Distribution Board

2.9.1 Removing the Power Distribution Board

1. Disconnect the power cord, and unplug the PSU from the chassis.
2. Disconnect all cables from the power distribution board and remember the connection locations.
3. Remove the six screws from the power distribution system (see letter "A").
4. Lift the power distribution board from the JBOD system (see letter "B").

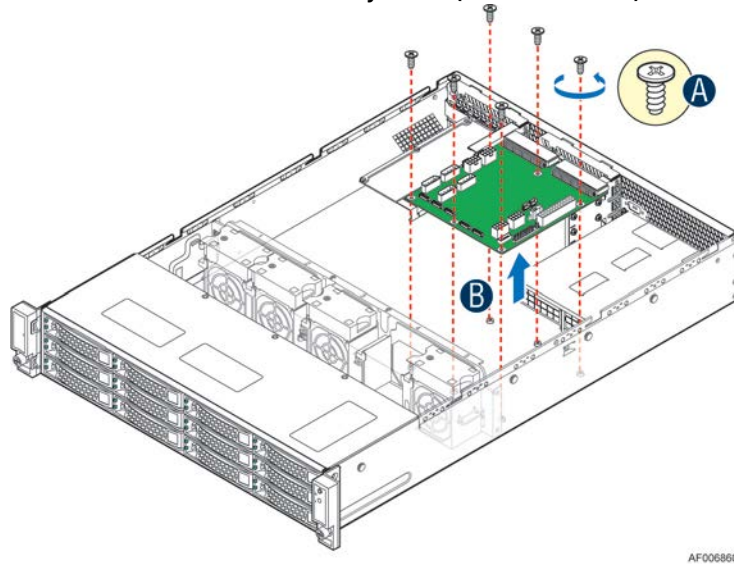


Figure 29. Removing the Power Distribution Board

2.9.2 Installing the Power Distribution Board

1. Place the power distribution board into the JBOD system (see letter "A").
2. Secure the power distribution board with six screws (see letter "B").

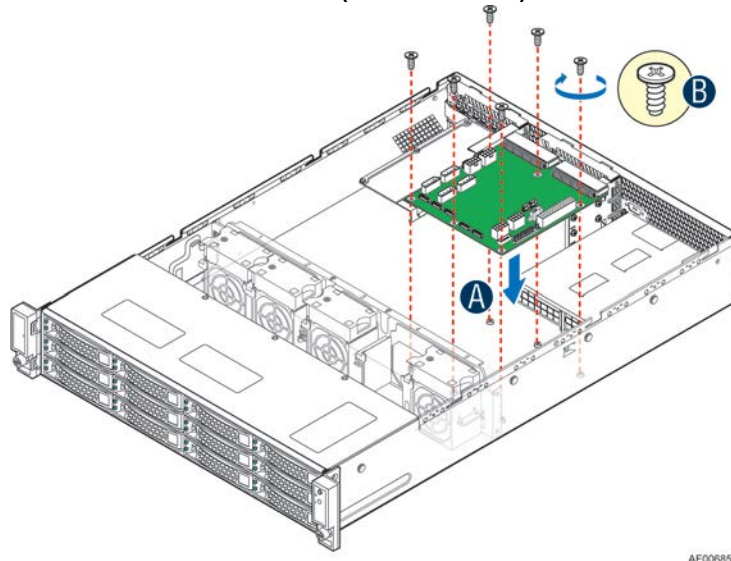


Figure 30. Installing the Power Distribution Board

3. Connect all cables back into the power distribution board connectors.

2.10 Replacing a System Fan

1. Pull the system fan straight up to remove it from the fan holder.
2. Replace the system fan.

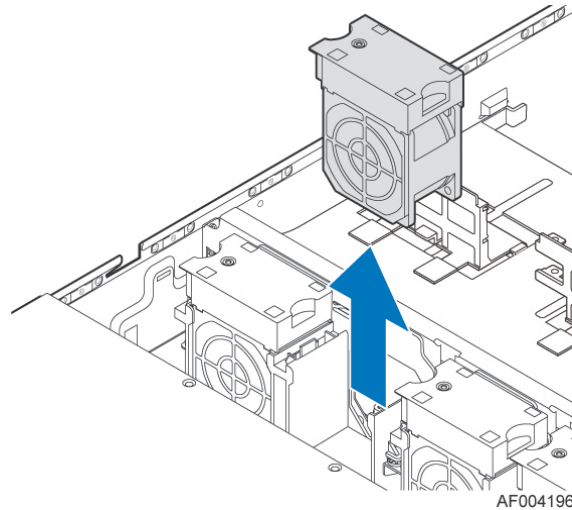


Figure 31. Replacing a System Fan

2.11 Replacing the Backplane

2.11.1 Replacing the 3.5" Hard Drive Backplane

2.11.1.1 Removing the 3.5" Hard Drive Backplane:

1. Remove all hot-swap drive carriers, regardless of whether or not a drive is installed in the carrier. Disconnect all cables from the backplane.
2. Remove the six screws to release the hard drive cage (see letter "A").
3. Slide the hard drive cage out of the server chassis. The clip will fall out automatically (see letter "B").

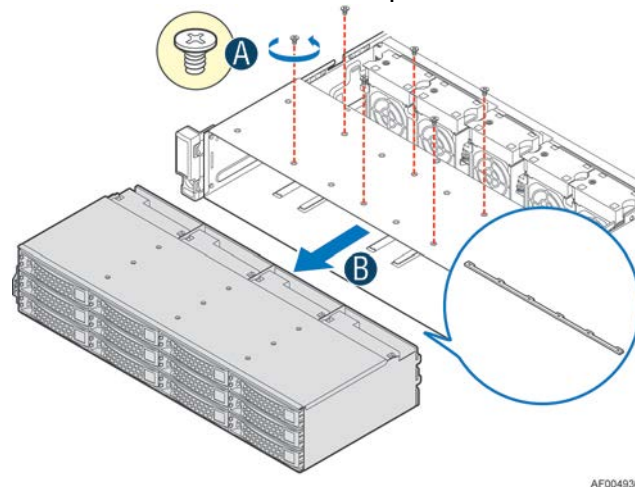


Figure 32. Removing 3.5" Hard Drive Backplane – Remove the Hard Drive Cage

4. Remove the screw at the rear of the backplane (see letter "C").
5. Pull up the backplane (see letter "D"). Remove the backplane from the server chassis (see letter "E").

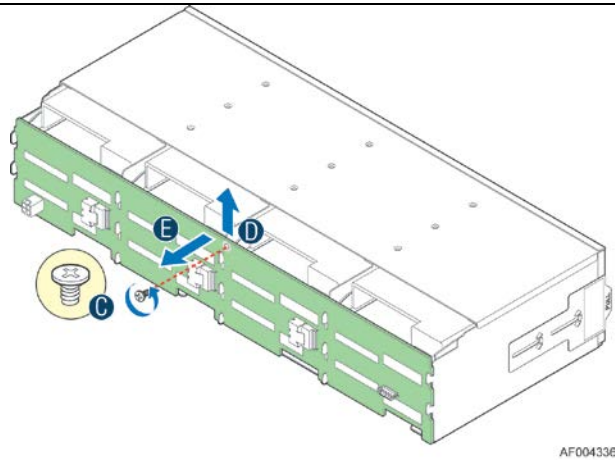


Figure 33. Removing 3.5" Hard Drive Backplane – Remove the Backplane

2.11.1.2 Installing the 3.5" Hard Drive Backplane

1. Hold the backplane only by the edges. Do not push or pull on any components on the backplane. Position the backplane in place at the front of the server system (see letter "A").
2. Slide the backplane into the server system guides (see letter "B").
3. Secure the backplane with the screw (see letter "C").

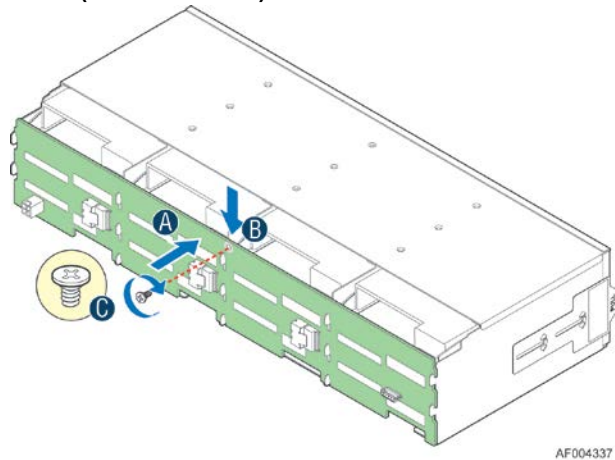


Figure 34. Installing 3.5" Hard Drive Backplane – Install the Backplane

4. Insert the hard drive cage into the server chassis (see letter "D").
5. Secure the hard drive cage with the six screws (see letter "E").

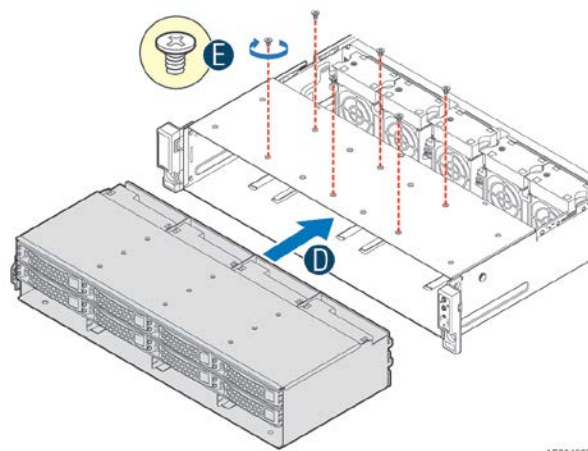


Figure 35. Installing 3.5" Hard Drive Backplane – Install the Hard Drive Cage

6. Install the clip to the server chassis (see letter "F").
7. With the lever open, insert the hard disk drive assembly into the chassis (see letter "G"). Push in the lever to lock it into place (see letter "H"). Repeat step G and H to make sure all hard drive assemblies are in place.

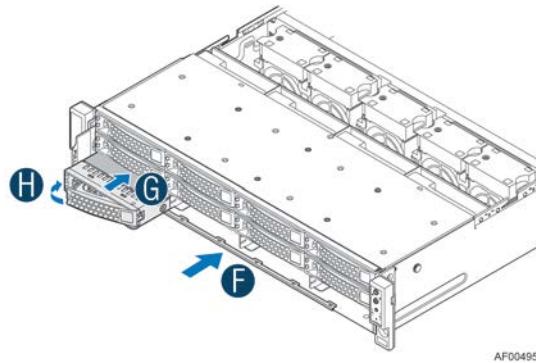


Figure 36. Installing 3.5" Hard Drive Backplane – Install the Stiffener and Hard Drives

8. Connect cables to the backplane. See "Cable Routing".

2.12 Installing and Removing the Rack Handles

2.12.1 Removing the Rack Handles

Remove the two screws holding the rack handle in place, and remove the rack handle from the server system as shown.

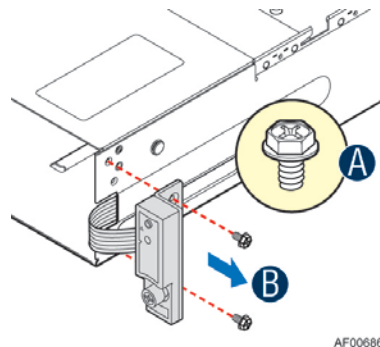


Figure 37. Installing the Rack Handle

2.12.2 Installing the Rack Handles

Align the rack handle with the two holes on the side of the server system and attach the rack handle to the server system with two screws as shown.

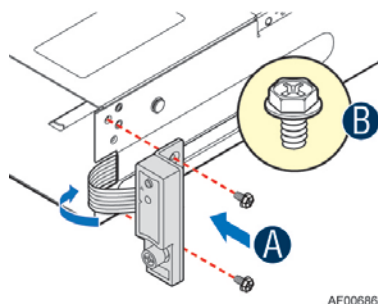


Figure 38. Removing the Rack Handle

2.13 Installing and Removing the Storage Front Panel

2.13.1 Installing the Storage Front Panel

1. Align the interposer card with the two holes on the side wall of the server chassis (see letter "A").
2. Fasten the two screws to secure the interposer card (see letter "B").
3. Connect cables to the interposer card (see letter "C"). See ["Cable Routing"](#) for more details.

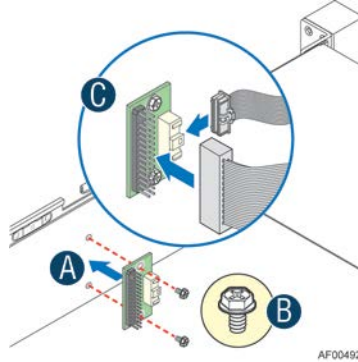


Figure 39. Installing the Interposer Card

4. Attach the storage front panel to the rack handle on the right side of the server chassis (see letter "D").
5. Fasten the four screws to secure the storage front panel (see letter "E").

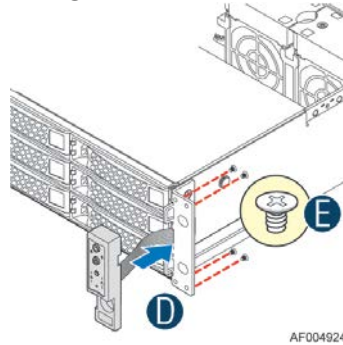


Figure 40. Installing the Storage Front Panel

2.13.2 Removing the Storage Front Panel

1. Remove the four screws to release the storage front panel (see letter "A").
2. Remove the storage front panel from the rack handle (see letter "B").

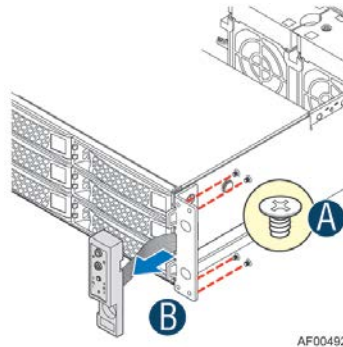


Figure 41. Removing the Storage Front Panel

3. Disconnect all the cables from the interposer card (see letter "C").

4. Remove the two screws to release the storage front panel (see letter “D”).
5. Remove the storage front panel from the side wall of the server chassis (see letter “E”).

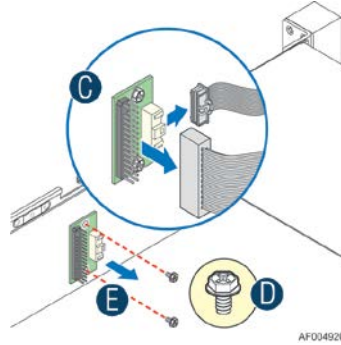


Figure 42. Removing the Interposer Card

6. Connect the front panel control cable from the motherboard to the standard front control panel if needed. See [“Cable Routing”](#) for more details.

Appendix A. Technical Reference

Power Supply Input Voltages

460W power supply module

- 100 - 127 V at 50/60 Hz 5.8 A
- 200 - 240 V at 50/60 Hz 2.9 A

Power Supply Output Voltages

The following table lists the total wattage available from the power subsystem for each voltage. For information about calculating the power usage for your configuration, use the Power Budget Tool.

Table 1. Power Supply Output Capability

Voltage	Maximum Current
12V	38.0A
12VSB	2.1A

System Environmental Specifications

The following table defines the system level operating and non-operating environmental limits.

Table 2. System Environmental Limits Summary

Parameter	Limits
Operating Temperature	+10°C to +35°C with the maximum rate of change not to exceed 10°C per hour
Non-Operating Temperature	-40°C to +70°C
Non-Operating Humidity	90%, non-condensing at 35°C
Acoustic noise	Sound power: 7.0 BA in operating condition at typical office ambient temperature. (23 +/- 2°C)
Shock, operating	Half sine, 2 g peak, 11 milliseconds
Shock, unpackaged	Trapezoidal, 25 g, velocity change 136 inches/second (≥ 40 lbs to < 80 lbs)
Shock, packaged	Non-palletized free fall in height 24 inches (≥ 40 lbs to < 80 lbs)
Vibration, unpackaged	5 Hz to 500 Hz, 2.20 g RMS random
ESD	+/-12 KV except I/O port +/- 8 KV per Intel® Environmental test specification
System Cooling Requirement in BTU/Hr	460 Watt Max – 1570 BTU/hour

Appendix B. 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/server>.

Appendix C. Getting Help

If you encounter an issue with your server system, follow these steps to obtain support:

1. Visit the following Intel support web page:

<http://www.intel.com/support/>

This web page provides 24x7 support when you need it to get the latest and most complete technical support information on all Intel Enterprise Server and Storage Platforms. Information available at the support site includes:

- Latest BIOS, firmware, drivers and utilities
- Product documentation, installation and quick start guides
- Full product specifications, technical advisories and errata
- Compatibility documentation for memory, hardware add-in cards, chassis support matrix and operating systems
- Server and chassis accessory parts list for ordering upgrades or spare parts
- A searchable knowledgebase to search for product information throughout the support site

2. If you are still unable to obtain a solution to your issue, send an email to Intel's technical support center using the online form available at

<http://www.intel.com/support/feedback.htm?group=server>.

3. Lastly, you can contact an Intel support representative using one of the support phone numbers available at <http://www.intel.com/support/feedback.htm?group=server> (charges may apply).

Intel also 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 at <http://www.intel.com/reseller/>.

NOTE: You will need to log in to the Reseller site to obtain the 24x7 number.

Appendix D. Warranty Information

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

<http://www.intel.com/support/warranty>