Intel® Server Chassis H2000G Product Family

Service Guide

Instruction on installation and removal of subassemblies.

Rev 2.3

October 2018

Intel® Server Products and Solutions

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Document Revision History

Date	Revision	Changes
January 2015	1.0	Initial release.
December 2015	2.0	Applied new format.
May 2016	2.1	Added H2224XXKR2 and H2224XXLR2.
January 2017	2.11	Added “Caution” safety legend.
January 2017	2.2	Applied new format.
October 2018	2.3	Impotant safety instructions links updated

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Safety Information

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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 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 anti-static 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.

Caution: Slide/rail mounted equipment is not to be used as a shelf or a work space.

Intel warranties that this product will perform to its published specifications. However, all computer systems are inherently subject to unpredictable system behavior under various environmental and other conditions.

This product is not intended to be the sole source for any critical data and the user must maintain a verified backup. Failure to do so or to comply with other user notices in the product user guide and specification documents may result in loss of or access to data.

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1. Preface

1.1 About this Document

This document is written for system technicians who are responsible for troubleshooting, upgrading, and repairing the Intel® Server Chassis H2000G product family. This document provides a brief overview of the features of the Intel® Server Chassis H2000G product family, a list of accessories or other components that may be needed, troubleshooting information, and instructions on how to add and replace the components on the Intel® Server Chassis H2000G product family. For the latest revision of this document, visit http://www.intel.com/support.

1.2 Document Organization

Chapter 2 – Product Features provides a high level overview of the Intel® Server Chassis H2000G product family including a list of the server chassis features and illustrations identifying the major chassis components.

Chapter 3 – Hardware Installations and Upgrades provides instructions on adding and replacing the components. Use this chapter for step-by-step instructions and diagrams for installing or replacing the components such as the processors, memory, and add-in cards, among other components.

The appendices provide technical specifications, regulatory information, and information on getting additional help.

1.3 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.

Table 1. Reference documents and software

For this information	Use this document or tool
In-depth technical information	*Intel® Server Chassis H2000G Product Family Technical Product Specification*
Product list and supported spares and accessories	*Configuration Guide and Spares/Accessories List*
Server configuration and compatibility guidance	Intel® Server Configurator Tool at http://serverconfigurator.intel.com
System power budget guidance	Power Budget Tool at http://www.intel.com/support
Product safety and regulatory information	*Intel Server Products – Product Safety and Regulatory Compliance Document*

2. Product Features

This chapter briefly describes the main features of the Intel® Server Chassis H2000G product family. This includes illustrations of the product, a list of the product features, and diagrams showing the location of important components and connections.

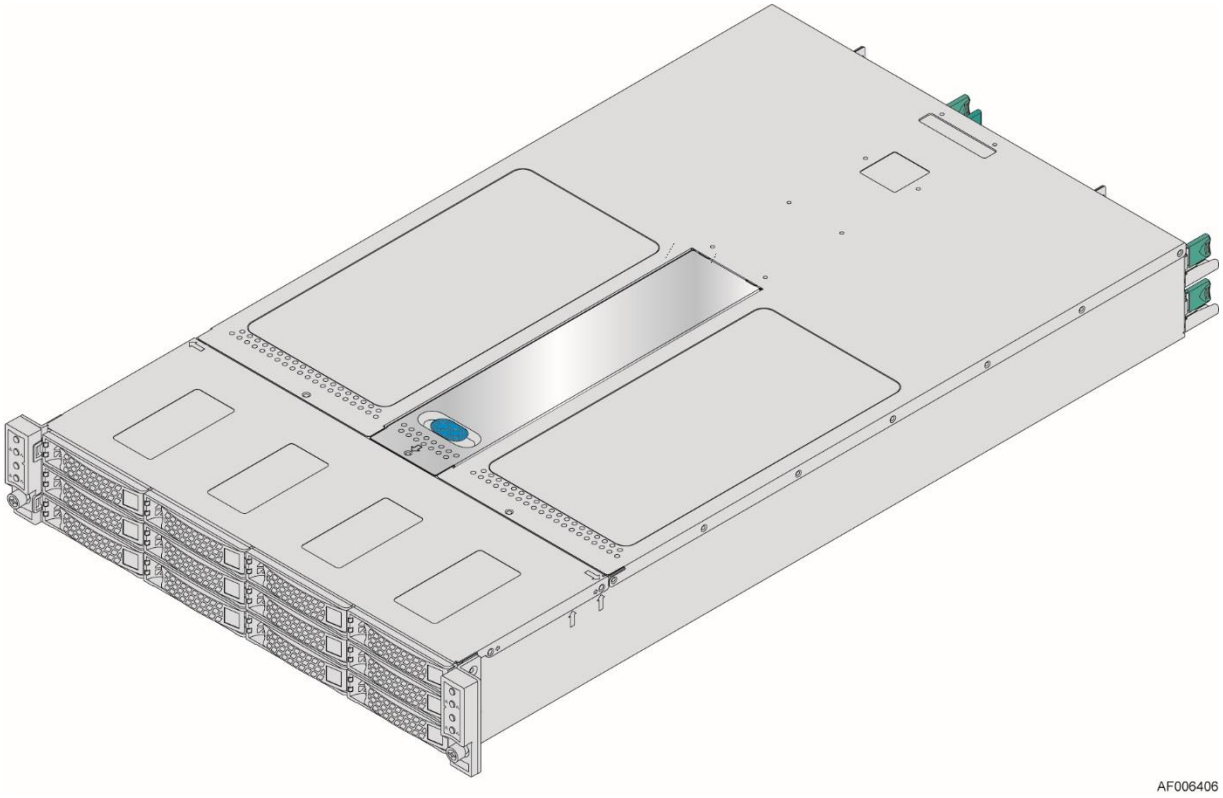


Figure 1. Server chassis overview (H2312XXKR2 SKU)

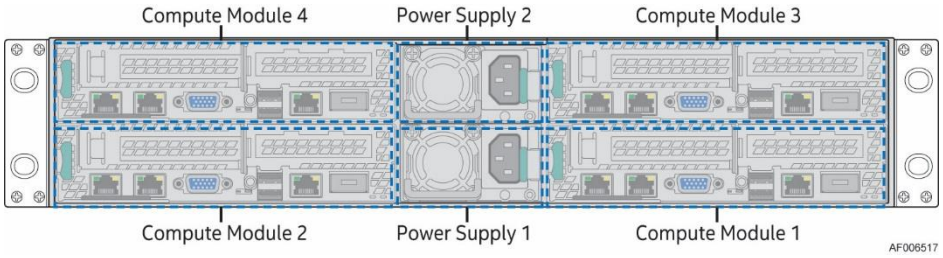


Figure 2. Server chassis rear view

2.1 Product Feature Overview

Table 2 summarizes the features of the product family.

Table 2. Product feature set

Feature		Description
Dimensions (D x W x H)	H2312XXKR2	30.35 x 17.24 x 3.42 inches (771 x 438 x 86.9 mm)
	H2216XXKR2	28.86 x 17.24 x 3.42 inches (733 x 438 x 86.9 mm)
	H2224XXKR2	28.86 x 17.24 x 3.42 inches (733 x 438 x 86.9 mm)
	H2224XXLR2	28.86 x 17.24 x 3.42 inches (733 x 438 x 86.9 mm)
Package dimensions		984 x 578 x 266 mm
Net weight (package weight)	H2312XXKR2	21.5 kg (29.5 kg)
	H2216XXKR2	20.5 kg (28.4 kg)
	H2224XXKR2	20.6 kg (28.8 kg)
	H2224XXLR2	20.6 kg (28.8 kg)
Compute module support		• Intel® Compute Module HNS2600KP Product Family • Intel® Compute Module HNS2600TP Product Family
System fans		• (1) – internal power supply fan for each installed power supply unit • (3) – fans for each compute module
Power supply options		1600 W AC Common Redundant Power Supply (CRPS), 80 PLUS* Platinum with PFC (Power Factor Correction), supporting CRPS configuration
Storage bay options	H2312XXKR2	12x 3.5-inch SATA/SAS drive bays
	H2216XXKR2	16x 2.5-inch SATA/SAS drive bays
	H2224XXKR2	24x 2.5-inch SAS drive bays (8 x PCIe* SFF)
	H2224XXLR2	24x 2.5-inch SAS drive bays (8 x PCIe* SFF)

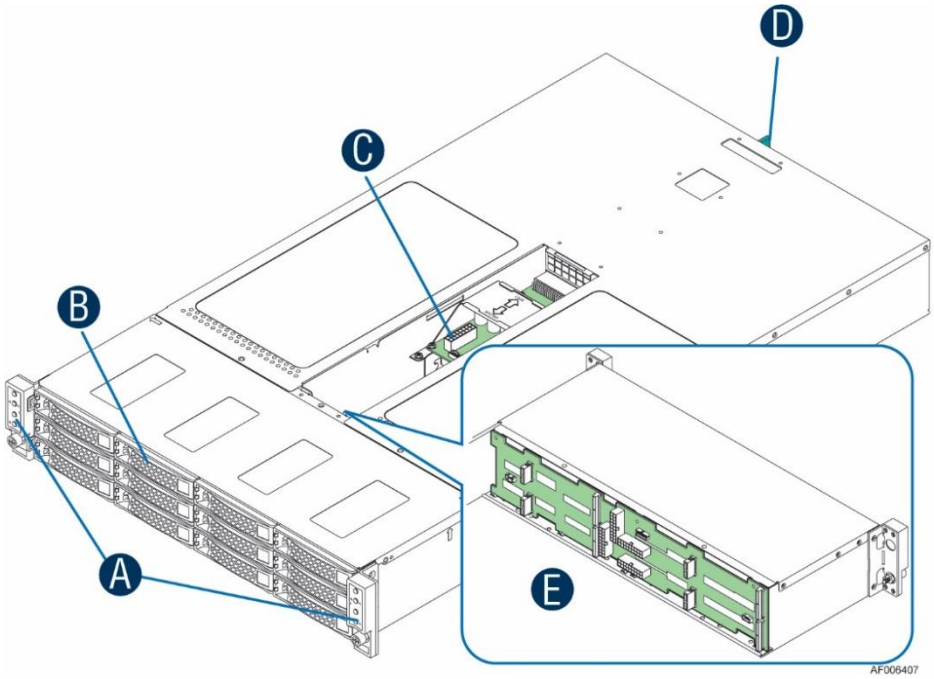
2.2 Server Chassis Components

This section helps identify the components of the product. The Quick Reference Label provided on the chassis cover can also assist in identifying the components.

The Intel® Server Chassis H2000G product family supports four compute modules in the chassis. Figure 3 and Figure 4 show the whole chassis view with the power distribution module cover removed.

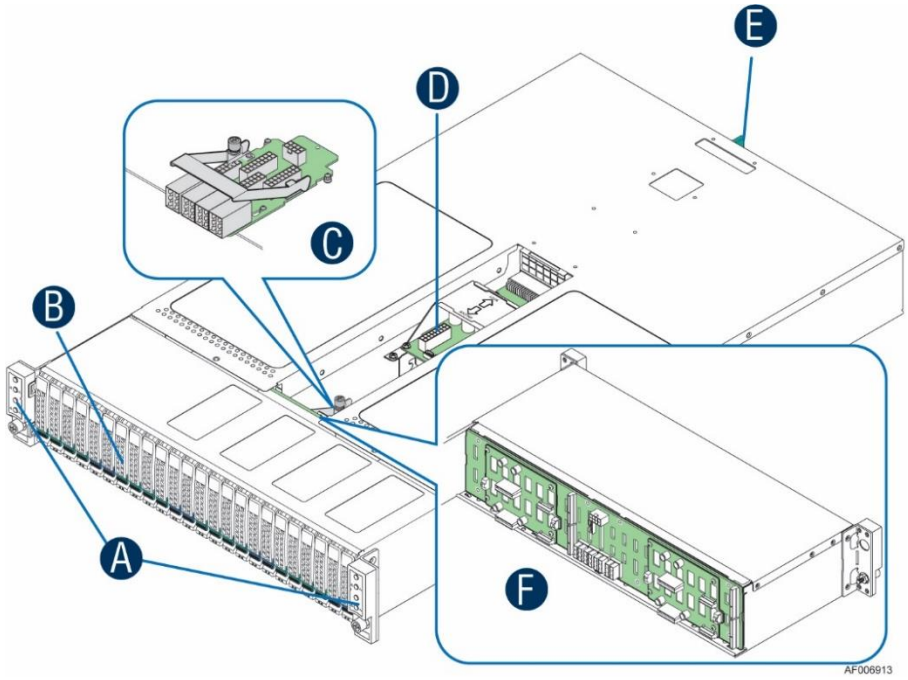
Note: The blank compute module bay must be covered by a dummy tray cover. When removed, keep the dummy tray cover properly for future use. For more information on the dummy cover, see section 2.8.

Note: The compute module bay in the chassis requires either a compute module being installed and powered up or a dummy tray cover installed to maintain proper thermal environment for the other running compute modules in the same chassis. In case of a compute module failure, remove the failed compute module, and replace with a dummy tray cover until the new compute module is installed.



A – Front control panels
B – Drive bays
C – Power distribution modules
D – Power supply modules
E – Hot swap backplane (attached to the drive cage)

Figure 3. Server chassis components (12 x 3.5" drive bay)



A – Front control panels
B – Drive bays
C – Power interposer board (H2224KR2 only)
D – Power distribution module
E – Power supply modules
F – Hot swap backplane (attached to the drive cage)

Figure 4. Server chassis components (24 x 2.5" drive bay)

2.3 Drive Bays

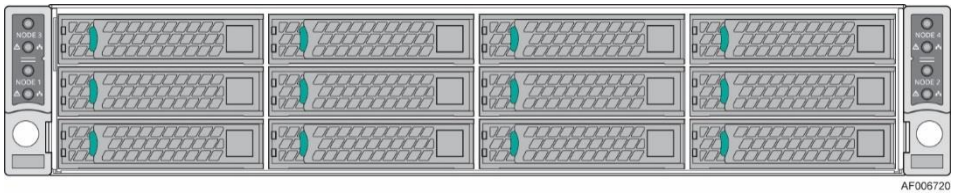


Figure 5. Intel® Server Chassis H2312XXKR2 front view

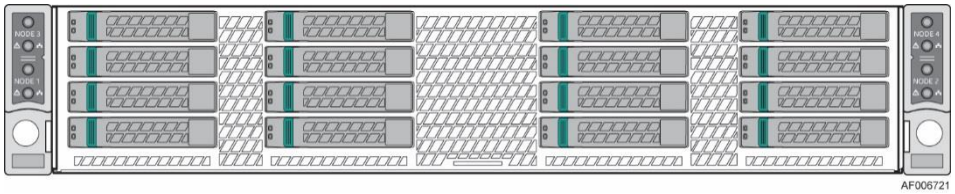


Figure 6. Intel® Server Chassis H2216XXKR2 front view

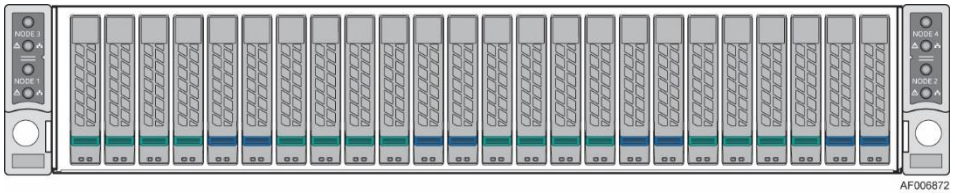


Figure 7. Intel® Server Chassis H2224XXKR2/H2224XXLR2 front view

Each compute module has a dedicated drive array based on the backplane controller design. Figure 8, Figure 9, and Figure 10 show the schemes for the drive arrays corresponding to the compute modules.

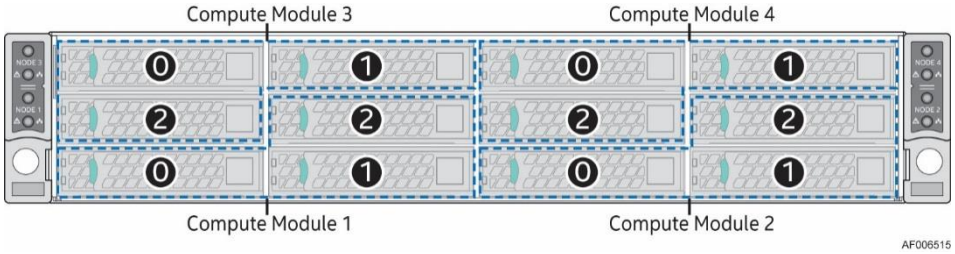


Figure 8. Drive array scheme on the Intel® Server Chassis H2312XXKR2

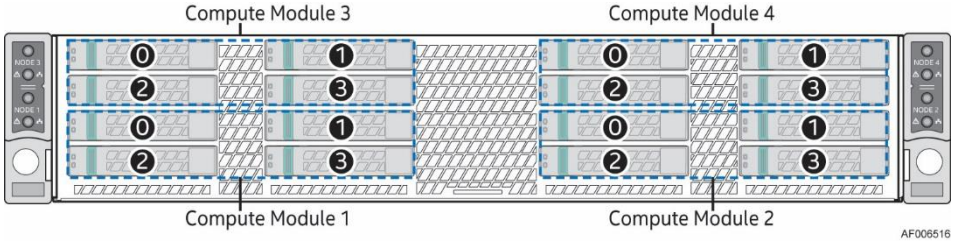


Figure 9. Drive array scheme on the Intel® Server Chassis H2216XXKR2

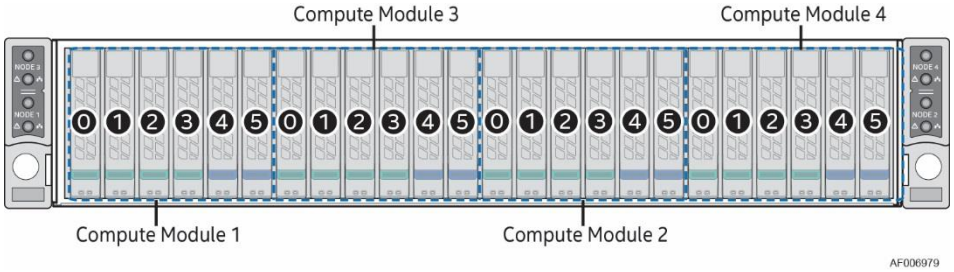


Figure 10. Drive array scheme on the Intel® Server Chassis H2224XXKR2/ H2224XXLR2

2.4 Front Control Panel

The server chassis contains two sets of control panels on the left and right rack handles. Each control panel contains two sets of control buttons and LEDs for each compute module. Figure 11 and Figure 12 show the locations and detailed view of the control panels.

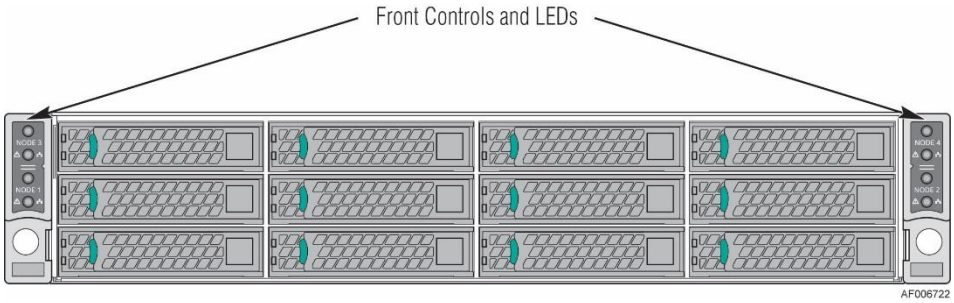


Figure 11. Location of front control panel and LEDs

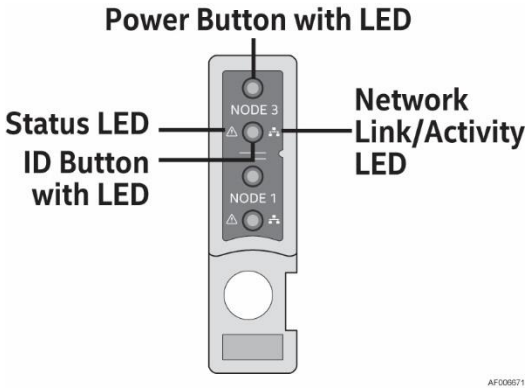


Figure 12. Detailed view of front control panel and LEDs

2.5 Front Bezel

The front bezel is available as an optional accessory for the server chassis. For information on removing and installing the front bezel, see section 3.2.

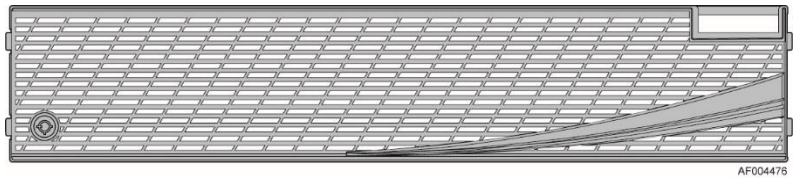
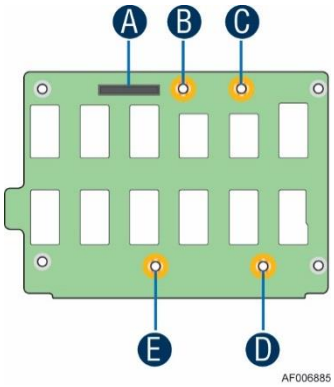


Figure 13. Front bezel

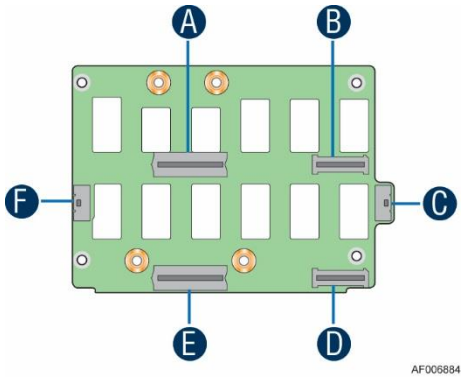
2.6 Backplane Interposer Board

The backplane interposer board (BIB) is only used in 24 x 2.5” drive chassis as the interposer between the backplane and the power docking board to connect the power and miscellaneous signals from the backplane to the compute modules.



A – 80-pin miscellaneous signal connector (to backplane)
B – Power mate pin hole (to backplane)
C – Power mate pin hole (to backplane)
D – Power mate pin hole (to backplane)
E – Power mate pin hole (to backplane)

Figure 14. Backplane interposer board (front view)



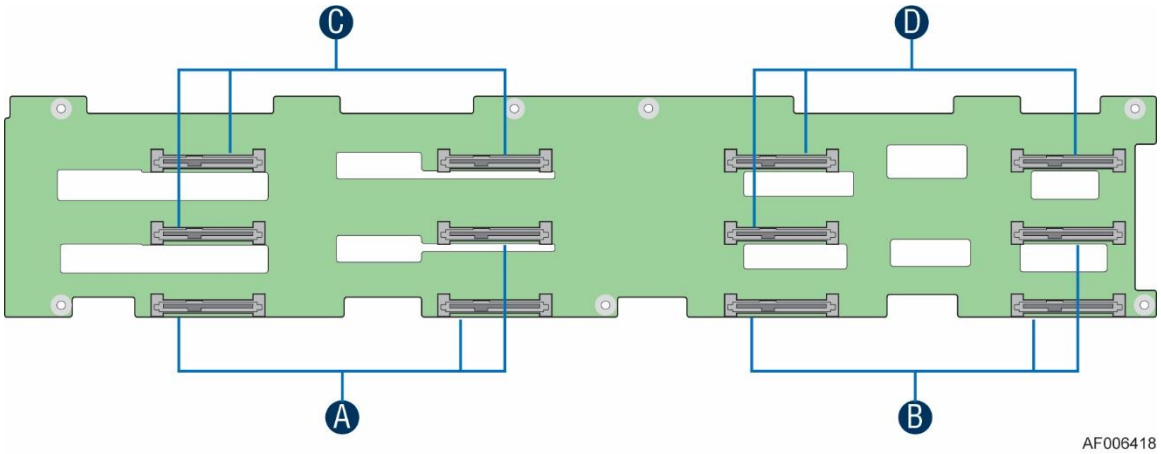
A – Power edge connector (to top compute module power docking board)
B – 40-pin miscellaneous signal connector (to top compute module power docking board)
C – Front panel connector
D – 40-pin miscellaneous signal connector (to bottom) compute module power docking board)
E – Power edge connector (to bottom compute module power docking board)
F – Front panel connector

Figure 15. Backplane interposer board (back view)

2.7 Hot-Swap SAS/SATA Backplane

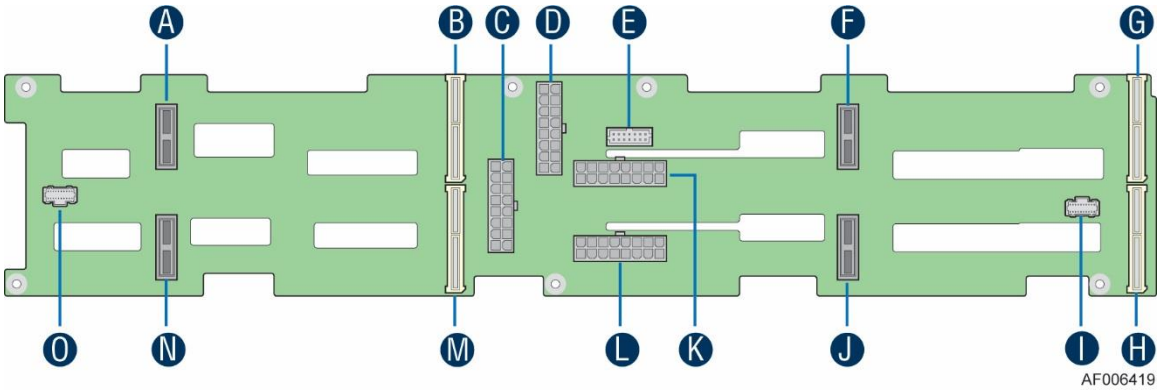
The hot-swap SAS/SATA backplane serves as an interface between the mother board and the drives. The following diagrams show the location for each connector found on the backplane.

2.7.1 3.5" Hot-Swap Backplane



A – SATA/SAS connectors for node 1
B – SATA/SAS connectors for node 2
C – SATA/SAS connectors for node 3
D – SATA/SAS connectors for node 4

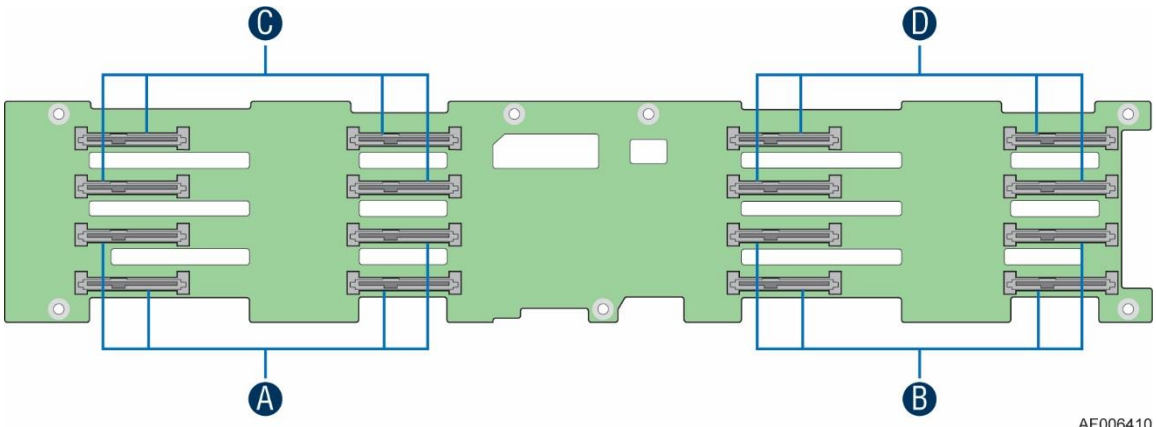
Figure 16. 12 x 3.5" backplane components (front view)



A – 2-blade compute module power connector for node 4
B – 2x40-pin bridge board connector for node 4
C – 2x9-pin power supply input connector
D – 2x9-pin power supply input connector
E – 2x7-pin power control cable connector
F – 2-blade compute module power connector for node 3
G – 2x40-pin bridge board connector for node 3
H – 2x40-pin bridge board connector for node 1
I – 20-pin front panel cable connector for nodes 1 and 3
J – 2-blade compute module power connector for node 1
K – 2x9-pin power supply input connector
L – 2x9-pin power supply input connector
M – 2x40-pin bridge board connector for node 2
N – 2-blade compute module power connector for node 2
O – 20-pin front panel cable connector for nodes 2 and 4

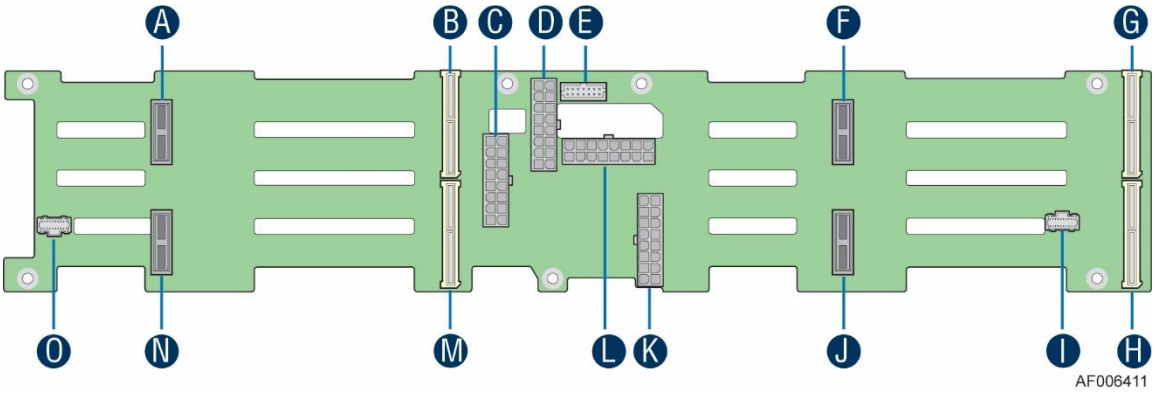
Figure 17. 12 x 3.5" backplane components (back view)

2.7.2 16 x 2.5" Hot-Swap Backplane



A – SATA/SAS connectors for node 1
B – SATA/SAS connectors for node 2
C – SATA/SAS connectors for node 3
D – SATA/SAS connectors for node 4

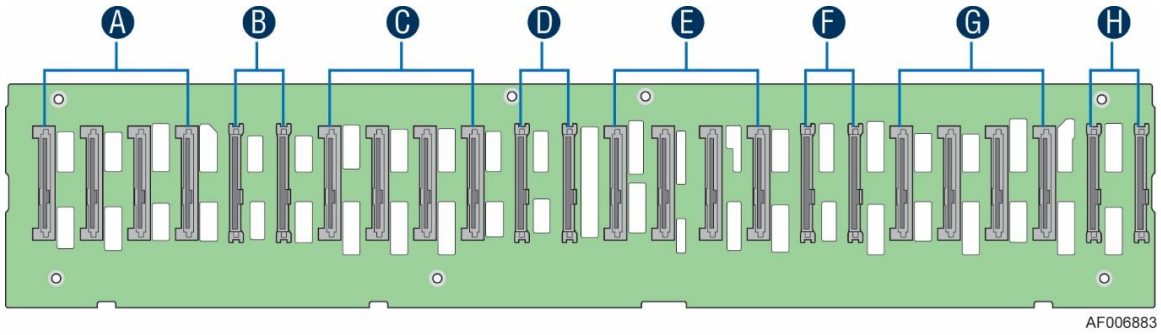
Figure 18. 16 x 2.5" backplane components (front view)



A – 2-blade compute module power connector for node 4
B – 2x40-pin bridge board connector for node 4
C – 2x9-pin power supply input connector
D – 2x7-pin power supply input connector
E – 2x9-pin power control cable connector
F – 2-blade compute module power connector for node 3
G – 2x40-pin bridge board connector for node 3
H – 2x40-pin bridge board connector for node 1
I – 20-pin front panel cable connector for nodes 1 and 3
J – 2-blade compute module power connector for node 1
K – 2x9-pin power supply input connector
L – 2x9-pin power supply input connector
M – 2x40-pin bridge board connector for node 2
N – 2-blade compute module power connector for node 2
O – 20-pin front panel cable connector for nodes 2 and 4

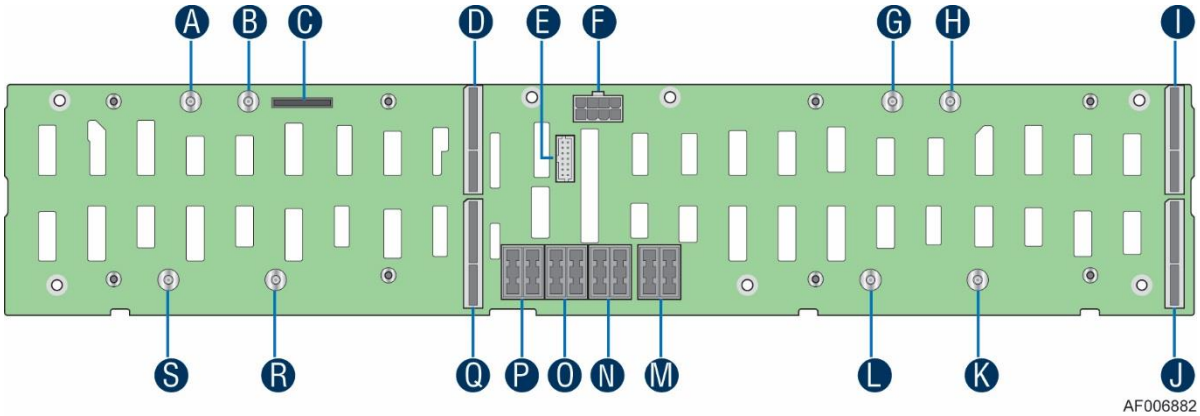
Figure 19. 16 x 2.5" backplane components (back view)

2.7.3 SAS/PCIe* SFF Combo 24 x 2.5" Hot Swap Backplane



A – SAS 0-3 SFF-8680 connectors (compute module 1)
B – SAS 4-5/PCIe* SFF 0-1 SFF 8639 connectors (compute module 1)
C – SAS 6-9 SFF-8680 connectors (compute module 3)
D – SAS 10-11/PCIe* SFF 2-3 SFF-8639 connectors (compute module 3)
E – SAS 12-15 SFF-8680 connectors (compute module 2)
F – SAS 16-17/PCIe* SFF 4-5 SFF-8639 connectors (compute module 2)
G – SAS 18-21 SFF-8680 connectors (compute module 4)
H – SAS 22-23/PCIe* SFF 6-7 SFF-8639 connectors (compute module 4)

Figure 20. 24 x 2.5" backplane components (front view)



A – Power mate pin (to BIB)
B – Power mate pin (to BIB)
C – 80-pin miscellaneous signal connector (to BIB)
D – 100-pin bridge board connector
E – 2x7-pin power control cable connector (to PDB)
F – 2x4 pin P5V power cable connector (to PIB)
G – Power mate pin (to BIB)
H – Power mate pin (to BIB)
I – 100-pin bridge board connector
J – 100-pin bridge board connector
K – Power mate pin (to BIB)
L – Power mate pin (to BIB)
M – 12 V power connector (to PIB)
N – 12 V power connector (to PIB)
O – 12 V power connector (to PIB)
P – 12 V power connector (to PIB)
Q – 100-pin bridge board connector
R – Power mate pin (to BIB)
S – Power mate pin (to BIB)

Figure 21. 24 x 2.5" backplane components (back view)

2.8 Dummy Tray Cover

The dummy tray cover is shipped together with the chassis. It must be removed before installing the compute module, or it must be restored if the compute module is not to be installed.

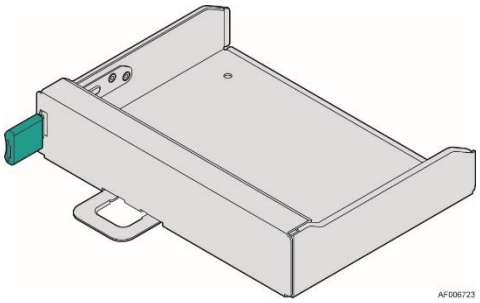


Figure 22. Dummy tray cover

3. Hardware Installations and Upgrades

3.1 Before Beginning

Before working with the server product, pay close attention to the Safety Information at the beginning of this document.

Warning: The transparent plastic protective films (if any) on the chassis top surface must be removed for proper system cooling.

Note: Before servicing the server chassis, power down the server and unplug all peripheral devices and the AC power cord.

3.1.1 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)

3.1.2 System Reference

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

3.2 Removing and Installing the Front Bezel

The server chassis supports the installation of an optional front bezel (iPC – A2UBEZEL). The bezel kit includes a plastic lockable front bezel and multiple bezel snap-on badges allowing for OEM differentiation.

3.2.1 Bezel Snap-On Badges

The bezel kit provides three different bezel snap-on badges to allow for OEM differentiation; two different size branding snap-on badges, and one decorative snap-on wave.

To mount a snap-on badge to the bezel, insert the badge hooks into the bezel and press to snap in place.

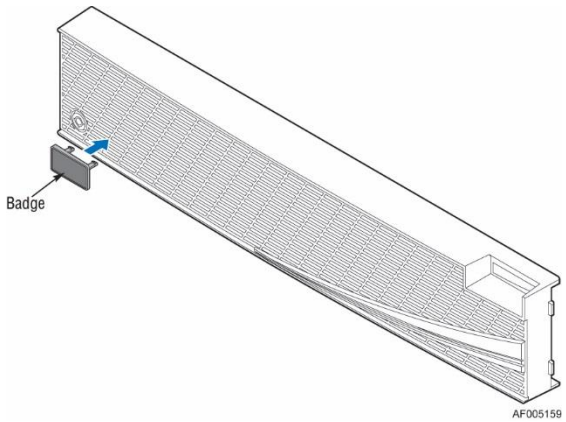


Figure 23. Installing snap-on badges to the front bezel

To remove a snap-on badge from the bezel, squeeze the hooks at the rear of the snap-on badge to release it (A) and remove the snap-on badge from the bezel (B) as pictured in Figure 24.

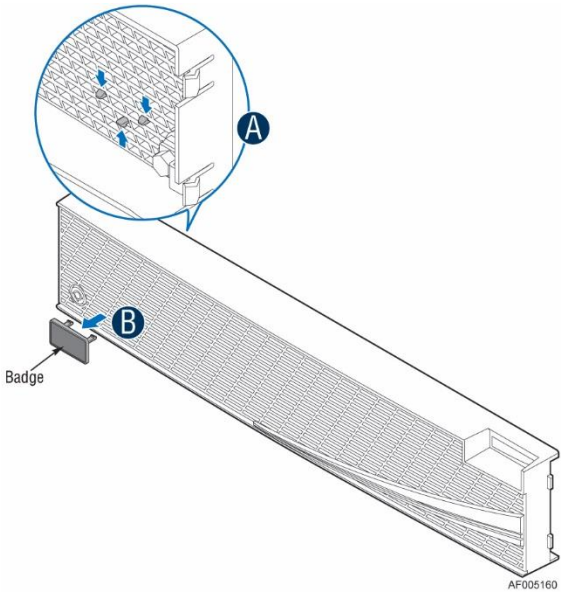


Figure 24. Removing snap-on badges from the front bezel

3.2.2 Removing the Front Bezel

To remove the front bezel, pull out the left side of the bezel from the rack handle (A) and rotate the left side of the bezel away from the chassis to release the latches on the right side from the rack handle (B) as pictured in Figure 25.

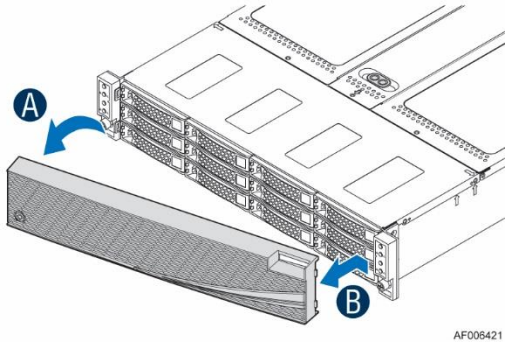


Figure 25. Removing the front bezel

3.2.3 Installing the Front Bezel

Note: Before installing the front bezel, the rack handles must be installed.

To install the front bezel, lock the right side of the bezel to the rack handle (A) and press the left side of the bezel towards the chassis until it clicks into place (B) as pictured in Figure 26.

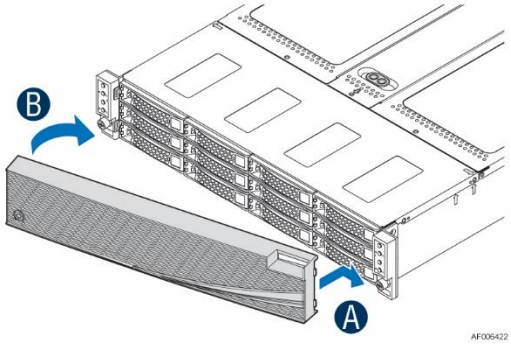


Figure 26. Installing the front bezel

3.3 Removing and Installing the Power Distribution Module Cover

3.3.1 Removing the Power Distribution Module Cover

The server chassis must be operated with the power distribution module cover in place to ensure proper cooling. Remove the cover to add or replace the components inside of the chassis. Before removing the cover, power down the server and unplug all peripheral devices and the power cables.

Note: A non-skid surface or a stop behind the server chassis may be needed to prevent the server chassis from sliding on the work surface.

To remove the power distribution module cover, refer to Figure 27.

1. Remove the screw (A).
2. Lift the cover from the front end to more than 45 degrees (B) and remove the cover.

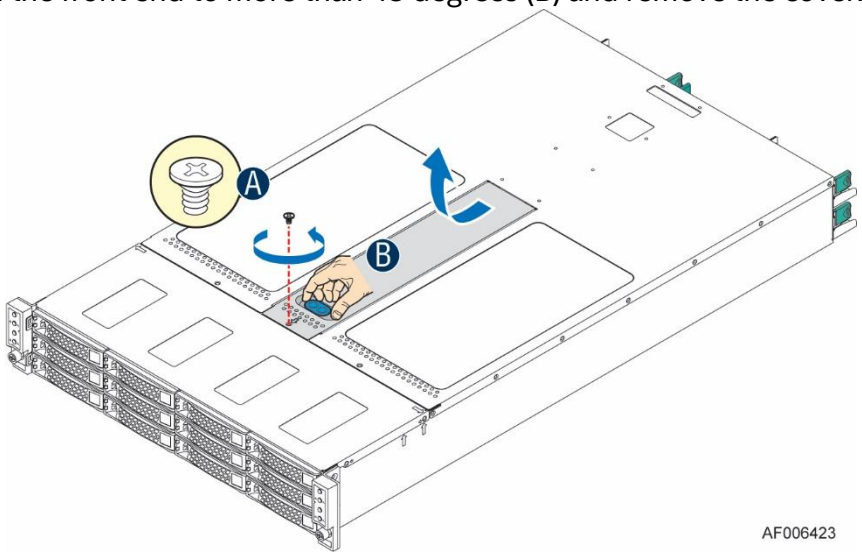


Figure 27. Removing the power distribution module cover

3.3.2 Installing the Power Distribution Module Cover

To install the power distribution module cover, refer to Figure 28.

1. Place the cover onto the chassis and slide forward until the front edge of the cover is pressed against the back edge of the front drive bay (A).
2. Rotate the front end of the cover down to position and fix the cover with the screw (B).

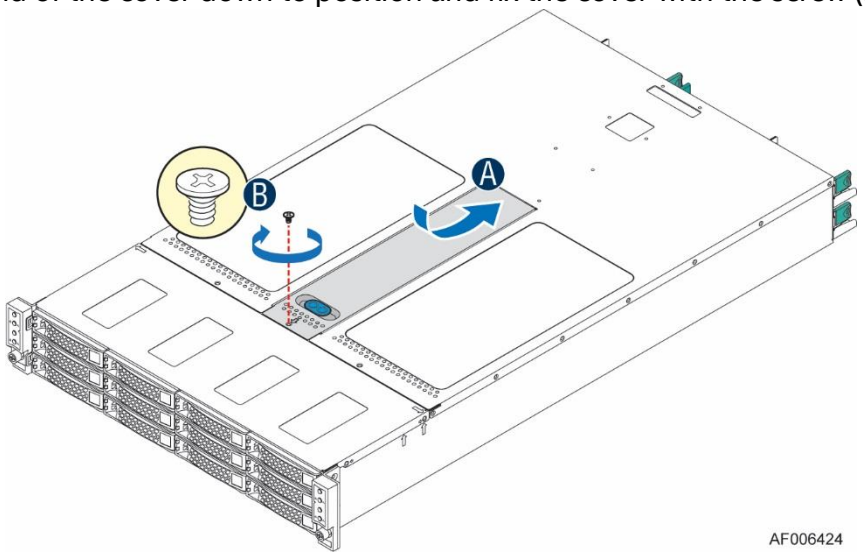


Figure 28. Installing the power distribution module cover

3.4 Removing and Installing the Compute Module

Each compute module is identical in the chassis. They are designed for either “cold” or “hot” swappable. The compute module can only be plugged from the rear chassis.

3.4.1 Installing the Compute Module

To install the compute module:

1. While pressing the latch, pull out the dummy tray cover (Figure 29).

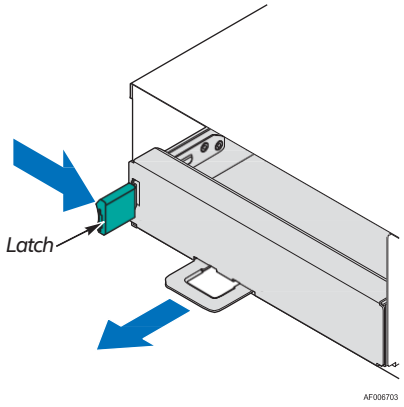


Figure 29. Removing the dummy tray cover

2. Align and slide the compute module into the chassis.

Note: When the upper compute module is being inserted into the chassis, make sure its front edge overrides the air duct edge of the lower compute module.

3. While pressing the latch, push the compute module along the chassis rail until the latch locks in position (Figure 30).

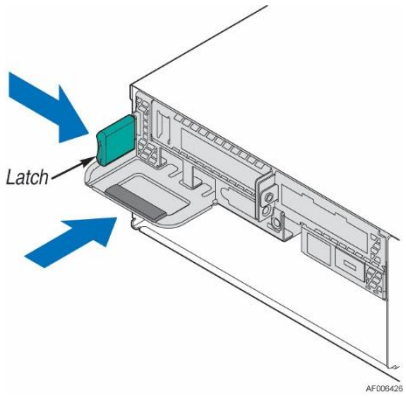


Figure 30. Installing the compute module

3.4.2 Removing the Compute Module

To remove the compute module:

1. While pressing the latch, pull out the handle with the compute module (Figure 31).

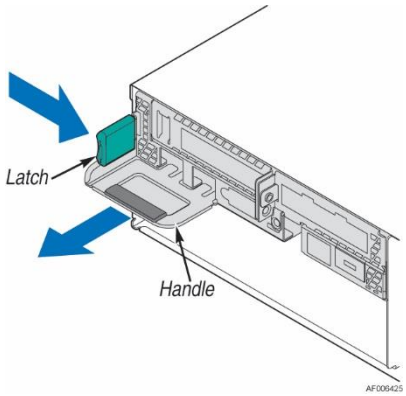


Figure 31. Removing the compute module

2. Restore the dummy tray cover (Figure 32).

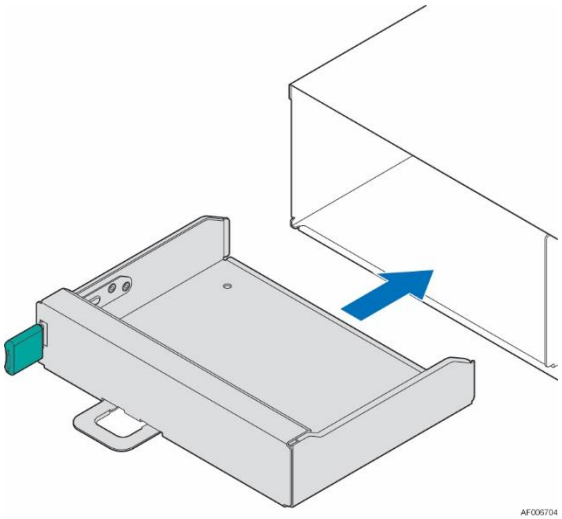


Figure 32. Restoring the dummy tray cover

3.5 Removing and Installing the Redundant Power Supply Unit

The server chassis is equipped with two redundant power supply units. Each of them can be hot-swappable.

Caution: Installing two power supply units with different wattage ratings in a server chassis is not supported. Doing so does not provide power supply redundancy and results in multiple errors being logged.

3.5.1 Removing the Power Supply Unit

While pressing the latch, pull out the handle with the power supply unit (Figure 33).

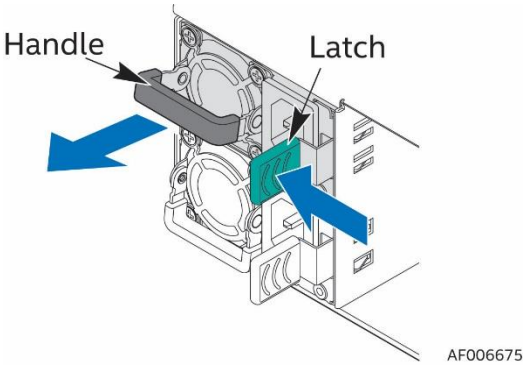


Figure 33. Removing the power supply unit

3.5.2 Installing the Power Supply Unit

To install the power supply unit, refer to Figure 34.

1. Align and slide the power supply unit into the power cage.
2. While pressing the latch, push the power supply unit along the power cage rail until the latch locks in position.

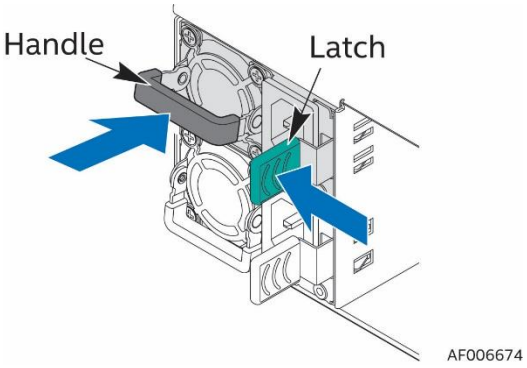


Figure 34. Installing the power supply unit

3.6 Installing a Hot-Swap Storage Device

Note: To maintain proper system cooling, all externally accessible drive bays must be populated with a carrier mounted with a storage device (hard disk drive (HDD) or solid state drive (SSD)) or with a supplied drive blank.

3.6.1 Installing a 3.5” Hard Disk Drive (HDD)

1. Remove the drive carrier from the chassis by pressing the green button and pulling open the lever (A) and pull the carrier out of the drive bay (B) as pictured in Figure 35.

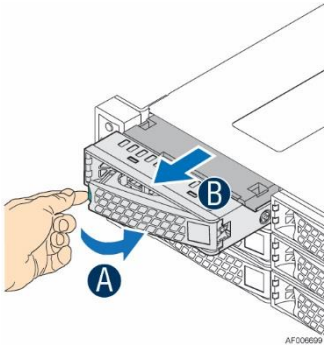


Figure 35. Installing a 3.5” HDD – removing the carrier

2. Remove the four screws securing the plastic drive blank to the carrier and remove the drive blank from the carrier (C) as pictured in Figure 36.

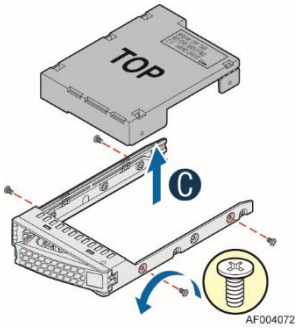


Figure 36. Installing a 3.5” HDD – removing the drive blank

3. Insert the hard disk drive into the carrier (D). Verify the connector end of the drive is located towards the back of the carrier and secure the drive to the carrier using the four screws as pictured in Figure 37.

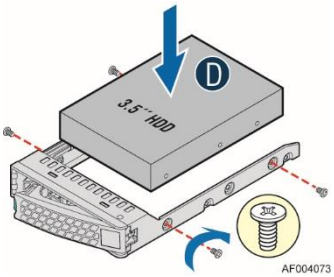


Figure 37. Installing a 3.5" HDD – inserting the HDD

4. With the lever open, insert the carrier assembly into the chassis (E) and push in the lever to lock it into place (F) as pictured in Figure 38.

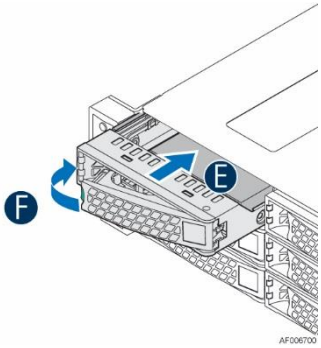


Figure 38. Installing a 3.5" HDD – inserting the carrier assembly

3.6.2 Installing a 2.5” Solid State Drive (SSD) into a 3.5” Carrier

The provided 3.5” drive blank can also be used as a 2.5” device bracket, allowing a 2.5” SSD to be installed into a 3.5” device carrier.

Note: To maintain system thermals, all drive bays must be populated with a drive tray mounted with a HDD, SSD, or supplied drive blank.

To install a 2.5” SSD into a 3.5” carrier, refer to Figure 39.

1. Remove the device carrier from the drive bay and remove the drive blank from the device carrier. For instructions, see section 3.6.1.
2. Break off the small side tab from the drive blank, making the drive blank into a device bracket (d1).
3. Install the device bracket into the device carrier so that the hollow side of the device bracket is facing down and secure the device bracket with the three screws (d2).
4. Turn the carrier assembly over.
5. Slide a 2.5" SSD into the device bracket and align the screw holes with the right and left rail (d3).
6. Secure the device using the four screws (d4).
7. Insert the carrier assembly into the chassis. For instructions, see section 3.6.1.

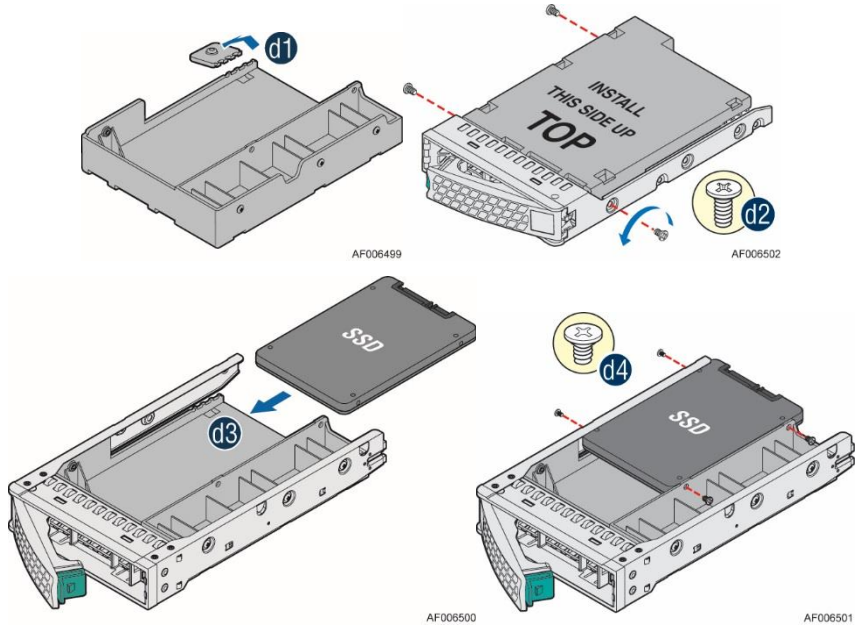


Figure 39. Installing a 2.5” SSD into a 3.5” drive blank

Note: Due to degraded performance and reliability concerns, the use of the 3.5” drive blank as a 2.5” device bracket is intended to support SSD type storage devices only. Installing a 2.5” HDD into the 3.5” drive blank is not supported.

3.6.3 Installing a 2.5” Storage Device (HDD or SSD)

1. Remove the drive carrier from the chassis by pressing the green button, opening the lever (A) and pulling the carrier out of the drive bay (B) as pictured in Figure 40.

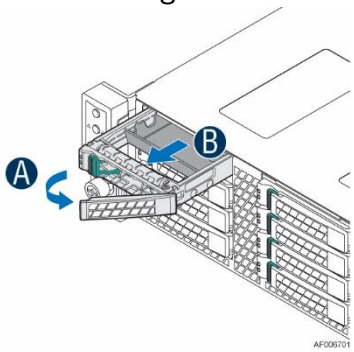


Figure 40. Installing a 2.5” HDD or SSD – removing the carrier

2. Remove the four screws securing the plastic drive blank to the carrier (C), separate the arms of the carrier slightly (D), and remove the drive blank from the carrier (E).

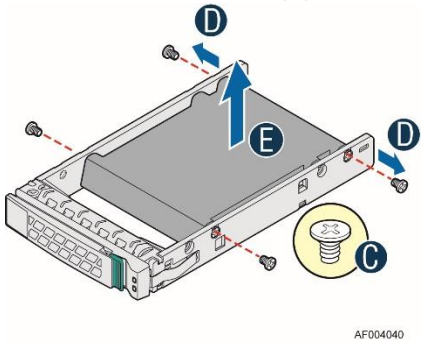


Figure 41. Installing a 2.5” HDD or SSD – removing the drive blank

3. Insert the storage device into the carrier (F). Verify the connector end of the storage device is located towards the back of the carrier and secure the storage device to the carrier using the four screws as pictured in Figure 42.

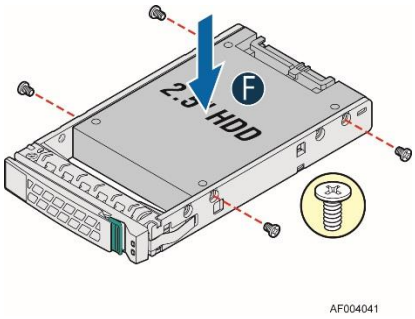


Figure 42. Installing a 2.5” HDD or SSD – inserting the 2.5” HDD or SSD

4. With the lever open, insert the carrier assembly into the chassis (F) and push in the lever to lock it into place (G) as pictured in Figure 43.

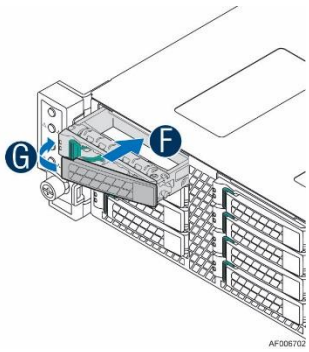


Figure 43. Installing a 2.5" HDD or SSD – inserting the carrier assembly

3.7 Replacing the 12 x 2.5" Backplane Board

3.7.1 Removing the 12 x 2.5" Backplane Board

1. Remove all hot-swap drive carriers, regardless of whether a drive is installed in the carrier.
2. Remove the power distribution module cover. For instructions, see section 3.3.1.
3. Disconnect all cables from the backplane board.
4. Remove the drive cage screws (A, B and C) and pull out the drive cage (D) as pictured in Figure 44.

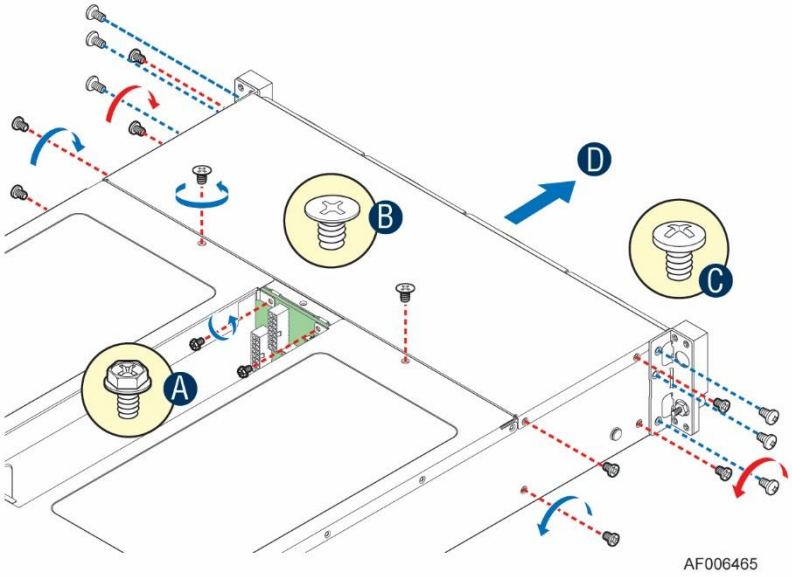


Figure 44. Removing the drive cage

5. Remove the screws from the backplane board (E) and detach the backplane board from the drive cage (F) as pictured in Figure 45.

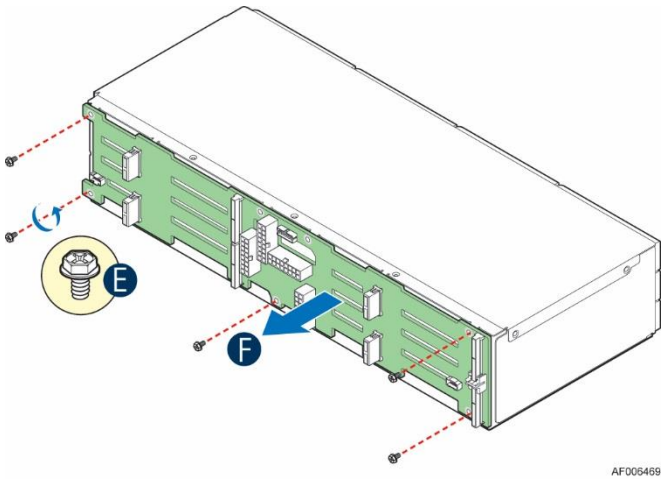


Figure 45. Removing the 12 x 2.5" backplane board from the drive cage

3.7.2 Installing the 2.5" Backplane Board

1. Attach the backplane board to the drive cage (A) and fix the backplane board with the screws (B) as pictured in Figure 46.

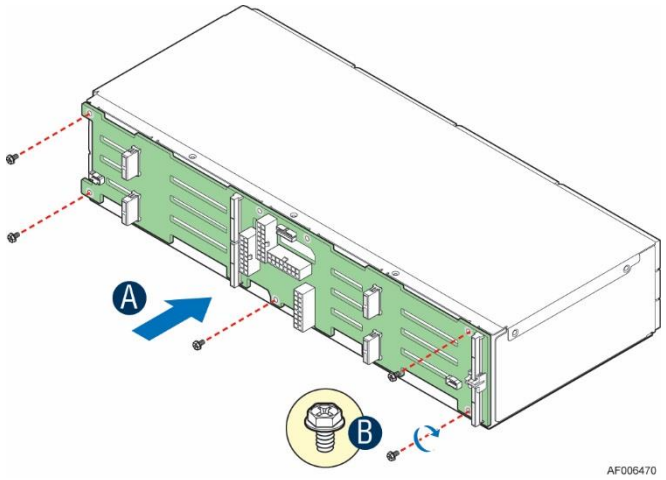


Figure 46. Installing the 12 x 2.5" backplane board to the drive cage

2. Install the drive cage to the chassis (C) and fix the drive cage with the screws (D, E and F) as pictured in Figure 47.

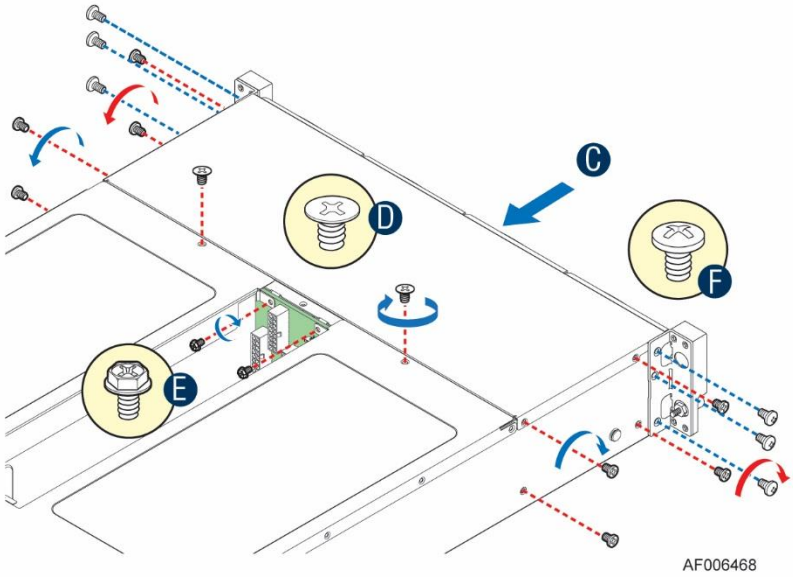


Figure 47. Installing the drive cage to the chassis

3. Reconnect all cables to the backplane board.
4. Install the power distribution module cover. For instructions, see section 3.3.2.
5. Install all hot-swap drive carriers, if removed.

3.8 Replacing the 16 x 2.5" Backplane Board

3.8.1 Removing the 16 x 2.5" Backplane Board

1. Remove all hot-swap drive carriers, regardless of whether a drive is installed in the carrier.
2. Remove the power distribution module cover. For instructions, see section 3.3.1.
3. Disconnect all cables from the backplane board.
4. Remove the drive cage screws (A, B and C) and pull out the drive cage (D) as pictured in Figure 48.

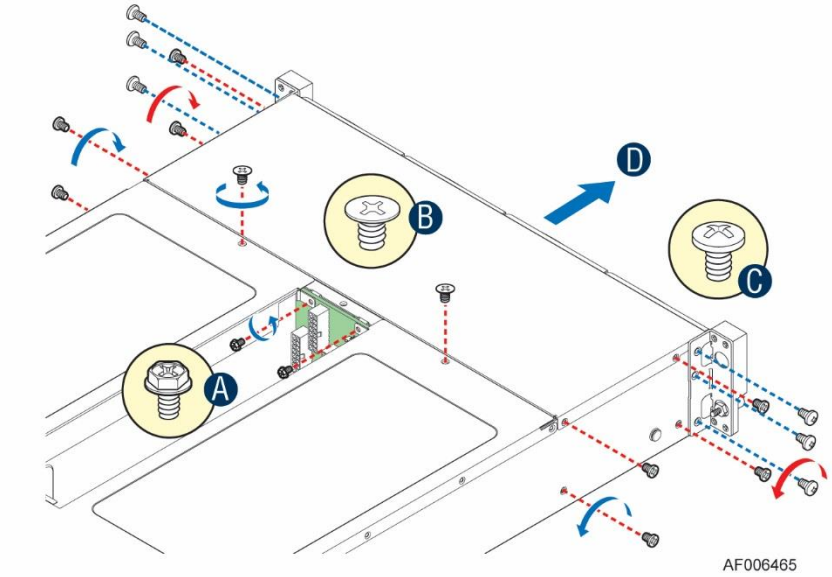


Figure 48. Removing the drive cage

5. Remove the screws from the backplane board (E) and detach the backplane board from the drive cage (F) as pictured in Figure 49.

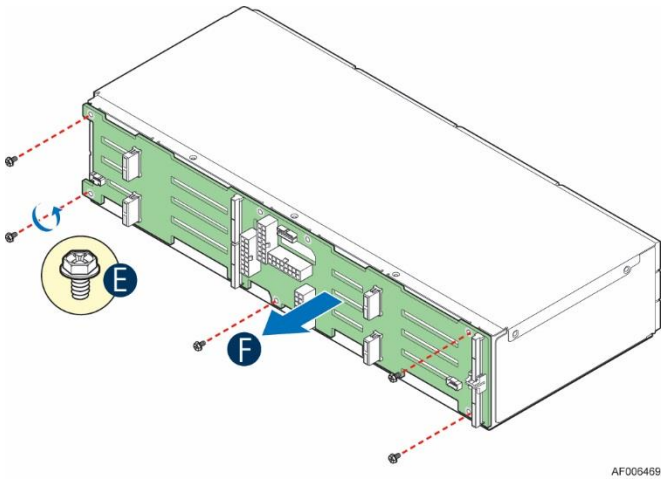


Figure 49. Removing the 16 x 2.5" backplane board from the drive cage

3.8.2 Installing the 16 x 2.5" Backplane Board

1. Attach the backplane board to the drive cage (A) and fix the backplane board with the screws (B) as pictured in Figure 50.

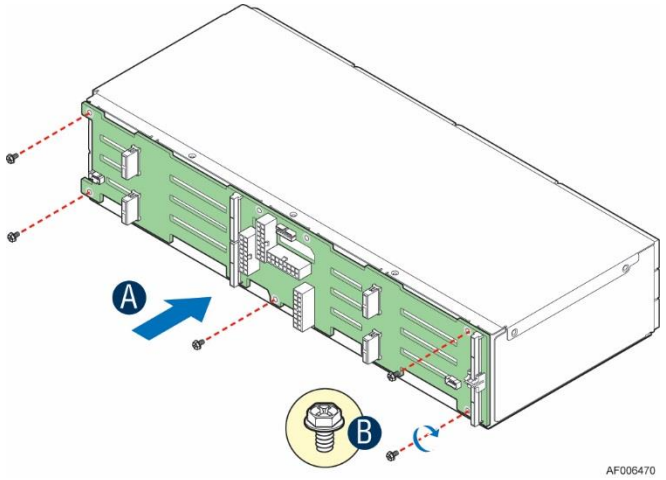


Figure 50. Installing the 16 x 2.5" backplane board to the drive cage

2. Install the drive cage to the chassis (C) and fix the drive cage with the screws (D, E and F) as pictured in Figure 51.

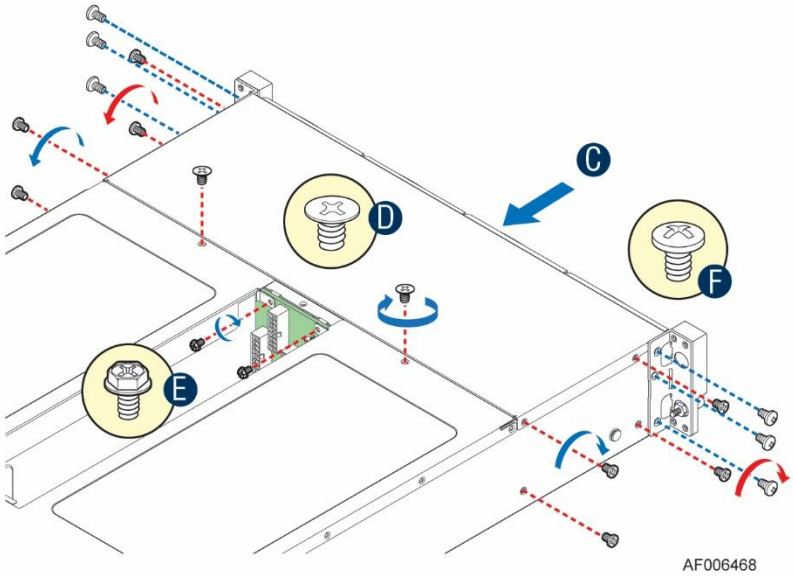


Figure 51. Installing the drive cage to the chassis

3. Reconnect all cables to the backplane board.
4. Install the power distribution module cover. For instructions, see section 3.3.2.
5. Install all hot-swap drive carriers if removed.

3.9 Replacing the SAS/PCIe* SFF Combo 24 x 2.5" Hot Swap Backplane

3.9.1 Removing the SAS/PCIe* SFF Combo 24 x 2.5" Hot Swap Backplane

1. Remove all hot-swap drive carriers, regardless of whether a drive is installed in the carrier.
2. Remove the power distribution module cover. For instructions, see section 3.3.1.
3. Remove the power interposer board. For instructions, see section 3.11.1.
4. Disconnect all cables from the backplane board.
5. Remove the drive cage screws (A, B, and C) and pull out the drive cage (D) as pictured in Figure 52.

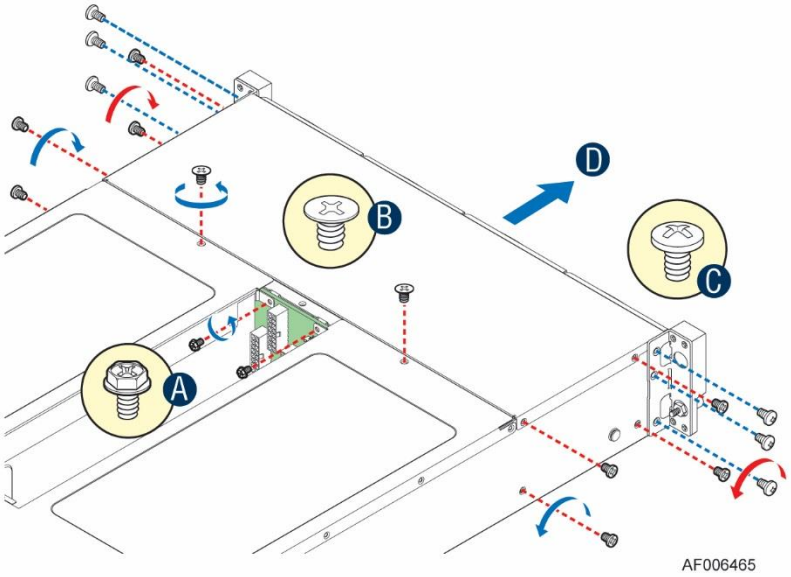


Figure 52. Removing the drive cage

6. Disconnect the front panel cable from the backplane interposer board.
7. Remove the five screws from the backplane board (E), remove the screw and the bracket from the bottom of the drive cage (F), and detach the backplane board from the drive cage (G) as pictured in Figure 53.

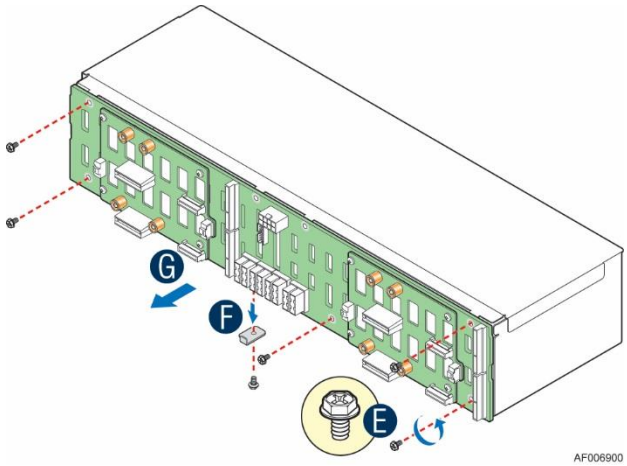


Figure 53. Removing the SAS/PCIe* SFF combo 24 x 2.5" hot swap backplane

3.9.2 Installing the SAS/PCIe* SFF Combo 24 x 2.5" Hot Swap Backplane

1. Attach the backplane board to the drive cage (A), fix the backplane board with the five screws (B), and install the bracket with the screw (C) as pictured in Figure 54.

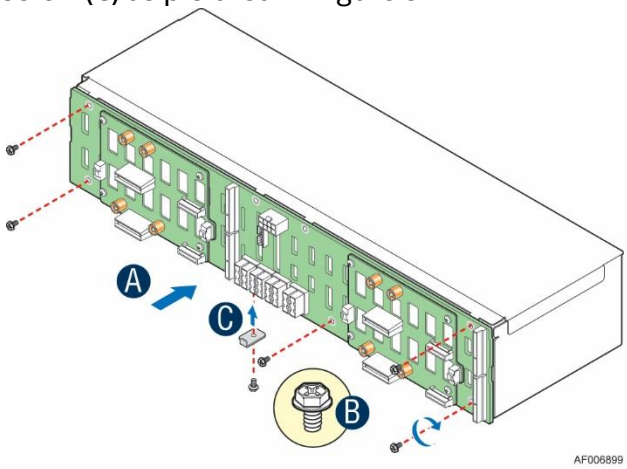


Figure 54. Installing the SAS/PCIe* SFF Combo 24 x 2.5" hot swap backplane

2. Install the drive cage to the chassis (D) and fix the drive cage with the screws (E, F, and G) as pictured in Figure 55.

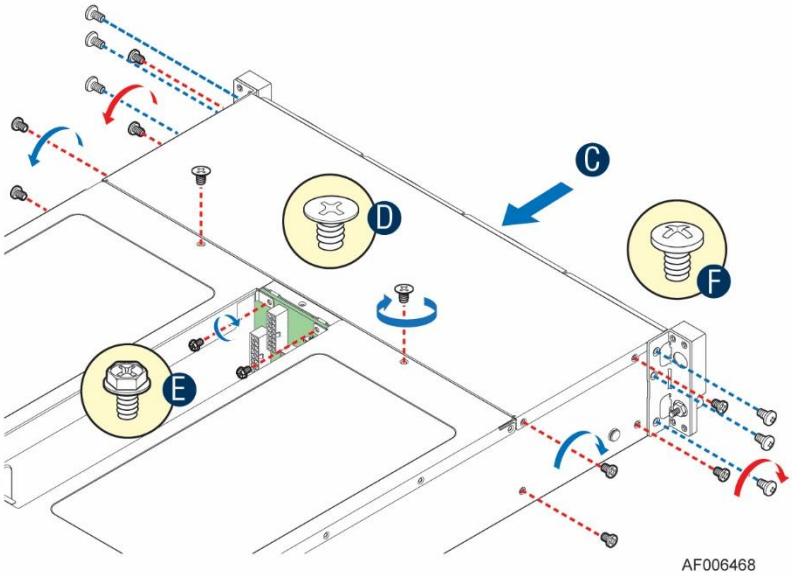


Figure 55. Installing the drive cage to the chassis

3. Reconnect all cables to the backplane board.
4. Reconnect the front panel cable to the backplane interposer board.
5. Install the power interposer board. For instructions, see section 3.11.2
6. Install the power distribution module cover. For instructions, see section 3.3.2
7. Install all hot-swap drive carriers, if removed.

3.10 Removing and Installing the Power Distribution Module

3.10.1 Removing the Power Distribution Module

1. Remove the cover and the power supply units from the chassis.
2. Remove the power cables and PMBus* cable between the power distribution module and the backplane.
3. Remove the two screws (A) and slide the power distribution module and lift it (B) as pictured in Figure 56.

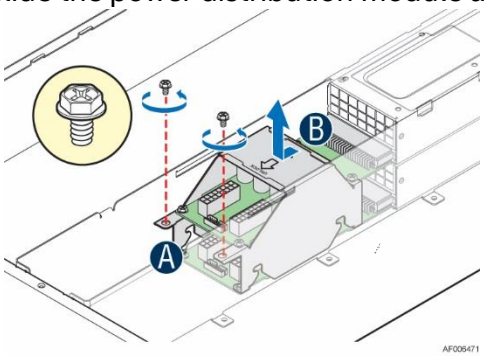


Figure 56. Removing the power distribution module

3.10.2 Installing the Power Distribution Module

1. Slide in the power distribution module (A) and fix the module with the two screws (B) as pictured in Figure 57.

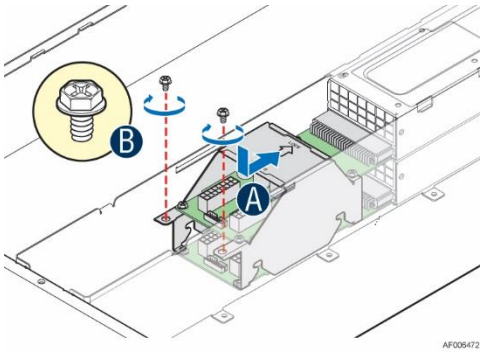


Figure 57. Installing the power distribution module

2. Connect the power cables and the PMBus* cable to the power distribution module.
3. Close the cover and install the power supply units.

3.11 Replacing the Power Interposer Board

3.11.1 Removing the Power Interposer Board

Loosen the screw (A), rotate the bracket clockwise (B), and lift up the power interposer board (C) as pictured in Figure 58.

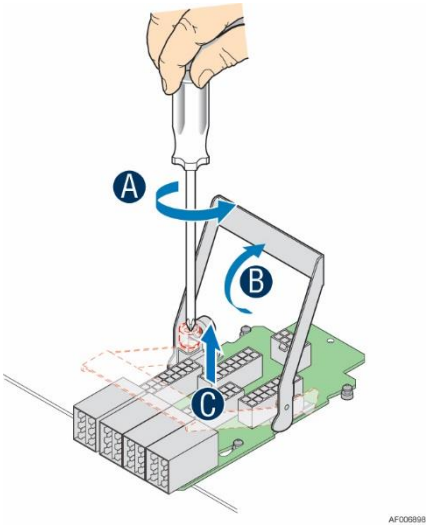


Figure 58. Removing the power interposer board

3.11.2 Installing the Power Interposer Board

Place the power interposer board into the compute module (A), rotate the bracket counterclockwise all the way (B), and tighten the screw (C) as pictured in Figure 59.

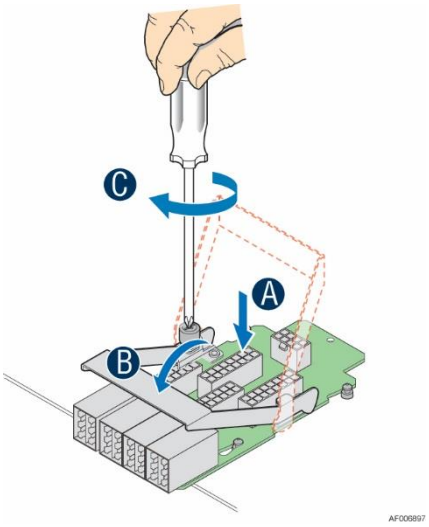


Figure 59. Installing the power interposer board

3.12 Replacing the Front Control Panel Board

3.12.1 Removing the Front Control Panel Board

1. Remove the four screws on the back of the rack handle (A) as pictured in Figure 60. Be careful of the front panel cable on the back.

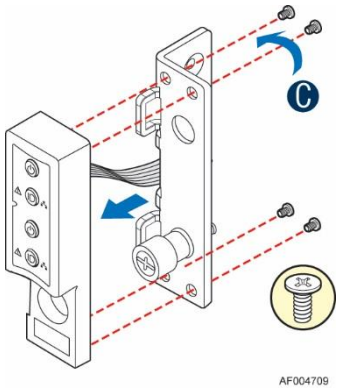


Figure 60. Removing the front control panel assembly from the rack handle

2. Disconnect the cable from the front control panel board (B) as pictured in Figure 61.

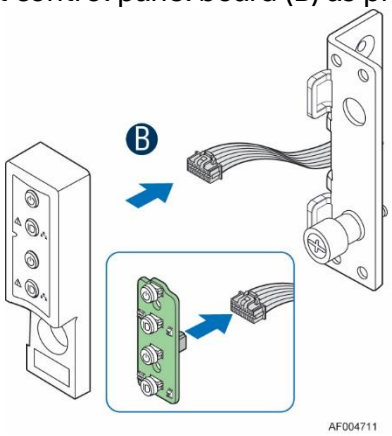


Figure 61. Disconnecting the front panel cable

3. Remove the two screws from the back of the front control panel board (C) and remove the board as pictured in Figure 62.

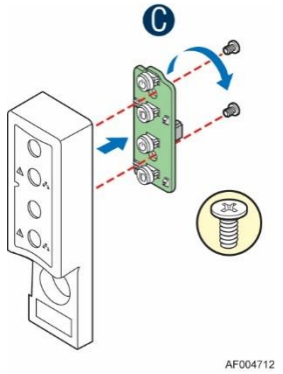


Figure 62. Removing the front control panel board

3.12.2 Installing the Front Control Panel Board

1. Install the front control panel board to the panel shell with the two screws (A) as pictured in Figure 63.

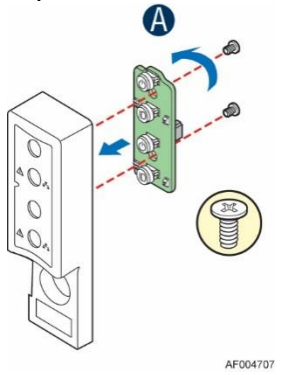


Figure 63. Installing the front control panel board

2. Connect the cable to the front control panel board (B) as pictured in Figure 64.

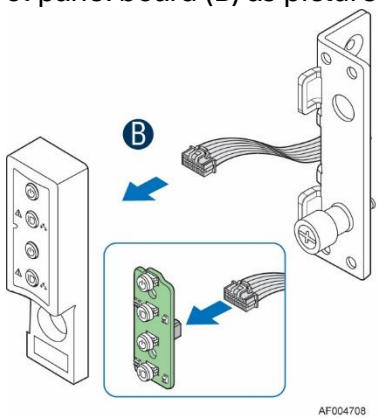


Figure 64. Connecting the front panel cable

3. Install the front control panel assembly to the rack handle with the four screws (C) as pictured in Figure 65.

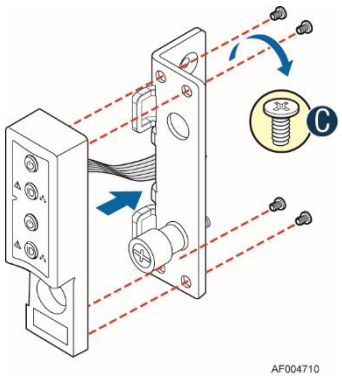


Figure 65. Installing the front control panel assembly to the rack handle

Appendix A. Technical Reference

A.1. System Environmental Specifications

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

Table 3. 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 with hard disk drive stress only at room ambient temperature (23 ± 2 °C)
Shock, operating	Half sine, 2 g peak, 11 msec
Shock, unpackaged	Trapezoidal, 25 g velocity change 175 inches/second (80 lbs to < 100 lbs)
Vibration, unpackaged	5 Hz to 500 Hz, 2.20 g RMS random
Shock and vibration, packaged	International Safe Transit Association (ISTA) Test Procedure 3A
ESD	±12 KV except I/O port ±8 KV per Intel® Environmental Test Specification
System Cooling Requirement	1600 W maximum – 5459 BTU/hour 2130 W maximum – 7268 BTU/hour

Disclaimer Note: Intel ensures the unpackaged server board and system meet the shock requirement mentioned above through its own chassis development and system configuration. It is the responsibility of the system integrator to determine the proper shock level of the board and system if the system integrator chooses different system configuration or different chassis. Intel Corporation cannot be held responsible, if components fail or the server board does not operate correctly when used outside any of its published operating or non-operating limits.

Appendix B. Regulatory and Compliance Information

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/content/www/us/en/support/boards-and-kits/000007675.html.

Appendix C. Getting Help

If there is an issue with the server chassis, follow these steps to obtain support:

1. Visit http://www.intel.com/p/en_US/support/contactsupport.

   This web page provides 24x7 support 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 and installation and quick start guides.
   - Full product specifications, technical advisories, and errata.
   - Compatibility documentation for memory, hardware add-in cards, and operating systems.
   - Server and chassis accessory parts list for ordering upgrades or spare parts.
   - A searchable knowledgebase to find for product information throughout the support site.

2. If a solution cannot be found at Intel's support site, 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, 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, Intel® Server Chassis, Intel® RAID Controller cards, and Intel® Server Management at http://www.intel.com/content/www/us/en/secure/technology-provider/overview.html.

Note: Access to the 24x7 number requires a login to the reseller site.

C.1. Warranty Information

To obtain warranty information, visit http://www.intel.com/p/en_US/support/warranty.