Intel® Server Board S2600TP Product Family and Intel® Compute Module HNS2600TP Product Family

Service Guide

A document providing instruction on installation and removal of subassemblies

Revision 2.2

October 2018

Intel Server Boards and Systems

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Document Revision History

Date	Revision Number	Modifications
January 2015	1.0	First Preliminary version
December 2015	2.0	Applied new format
May 2016	2.1	Added Intel® Xeon v4 product family references
October 2018	2.2	Impotant safety instructions links updated

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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.

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.

Preface

About this Manual

This manual is written for system technicians who are responsible for troubleshooting, upgrading, and repairing the Intel® Compute Module HNS2600TP. This document provides a brief overview of the features of the Intel® Compute Module HNS2600TP, a list of accessories or other components you may need, troubleshooting information, and instructions on how to add and replace the components on the Intel® Compute Module HNS2600TP. For the latest revision of this manual, go to http://www.intel.com/support.

Manual Organization

Chapter 1, Product Features provides a high level overview of the Intel® Compute Module HNS2600TP. In this chapter, you will find a list of the compute module features and illustrations identifying the major compute module components.

Chapter 2, 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.

Chapter 3, System Software Updates and Configuration provides instructions on using the utilities that are shipped with the board or that may be required to update the compute module. This includes information for navigating through the BIOS Setup screens, performing a BIOS update, and resetting the password or BIOS defaults.

Chapter 4, Server Utilities provides instructions for server utilities.

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

Nomenclature

Throughout this manual “compute module” is the abbreviation of the Intel® Compute Module HNS2600TP. It was also called “compute node” or “node” before.

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.

For this information or software	Use this Document or Software
For in-depth technical information about this product	*Intel® Server Board S2600TP Product Family and Intel® Compute Module HNS2600TP Product Family Technical Product Specification*
For product list and supported Intel spares and accessories	*Spares and Accessories List and Configuration Guide*
For server configuration guidance and compatibility	Intel® Server Configurator tool http://serverconfigurator.intel.com
For system power budget guidance	Power Budget Tool http://www.intel.com/support
Product Safety and Regulatory document	*Intel Server Products – Product Safety and Regulatory Compliance Document*

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1 Product Features

This chapter briefly describes the main features of the Intel® Server Board S2600TP and the Intel® Compute Module HNS2600TP Product Family. This includes illustrations of the products, a list of features, and diagrams showing the location of important components and connections.

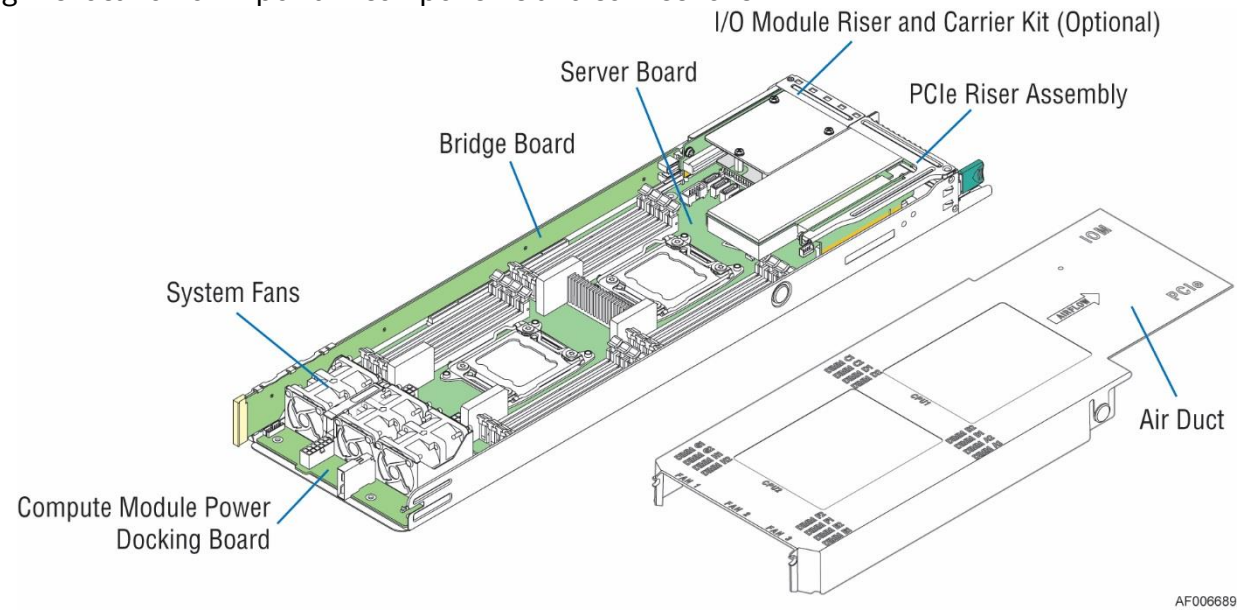


Figure 1. Intel® Compute Module HNS2600TP

1.1 Product Feature Overview

The following tables provide a high-level product feature list.

Table 1. Intel® Server Board S2600TP Product Family Feature Set

Feature	Description
Processor Support	• Two LGA2011-3 (Socket R3) processor sockets • Support for one or two Intel® Xeon® processors E5-2600 v3/v4 product family • Maximum supported Thermal Design Power (TDP) of up to 160 W (Board only)
Memory Support	• Sixteen DIMM slots in total across eight memory channels • Registered DDR4 (RDIMM), Load Reduced DDR4 (LRDIMM) • Memory DDR4 data transfer rates of 1600/1866/2133/2400* MT/s
Chipset	Intel® C612 chipset
External I/O Connections	• DB-15 video connector • Two RJ-45 1GbE Network Interface Controller (NIC) ports • One dedicated RJ-45 port for remote server management • One stacked two port USB 2.0 (port 0/1) connector • One InfiniBand* FDR QSFP+ port (S2600TPF only)

Feature	Description
Internal I/O connectors/headers	• Bridge slot to extend board I/O – Four SATA 6Gb/s signals to backplane – Front control panel signals – One SATA 6Gb/s port for SATA DOM – One USB 2.0 connector (port 10) • One internal USB 2.0 connector (port 6/7) • One 2x7 pin header for system fan module • One 1x12 pin control panel header • One DH-10 serial Port A connector • One SATA 6Gb/s port for SATA DOM • Four SATA 6Gb/s connectors (port 0/1/2/3) • One 2x4 pin header for Intel® RMM4 Lite • One 1x4 pin header for Storage Upgrade Key • One 1x8 pin backup power control connector
PCIe Support	PCIe* 3.0 (2.5, 5, 8 GT/s)
Power Connections	Two sets of 2x3 pin connectors (main power 1/2)
System Fan Support	• One 2x7 pin fan control connector for Intel compute module and chassis • Three 1x8 pin fan connectors for third-party chassis
Video	• Integrated 2D video graphics controller • 16MB DDR3 memory
On-board storage controllers and options	Ten SATA 6Gb/s ports, two of them are SATA DOM compatible
RAID Support	• Intel® Rapid Storage RAID Technology (RSTe) 4.0 • Intel® Embedded Server RAID Technology 2 (ESRT2) with optional Intel® RAID C600 Upgrade Key to enable SATA RAID 5
Riser Support	• Four riser slots – Riser slot 1 provides x16 PCIe* 3.0 lanes – Riser slot 2 provides ▪ x24 PCIe* 3.0 lanes for S2600TP ▪ x16 PCIe* 3.0 lanes for S2600TPF – Riser slot 3 provides x24 PCIe* 3.0 lanes – Riser slot 4 provides x16 PCIe* 3.0 lanes • One bridge board slot for board I/O expansion
Server Management	• Onboard Emulex* LLC Pilot III* Controller • Support for Intel® Remote Management Module 4 Lite solutions • Intel® Light-Guided Diagnostics on field replaceable units • Support for Intel® System Management Software • Support for Intel® Intelligent Power Node Manager (Need PMBus*-compliant power supply)

Warning: The riser slot 1 on the server board is designed for plugging in ONLY the riser card. Plugging in the PCIe* card may cause permanent server board and PCIe* card damage.

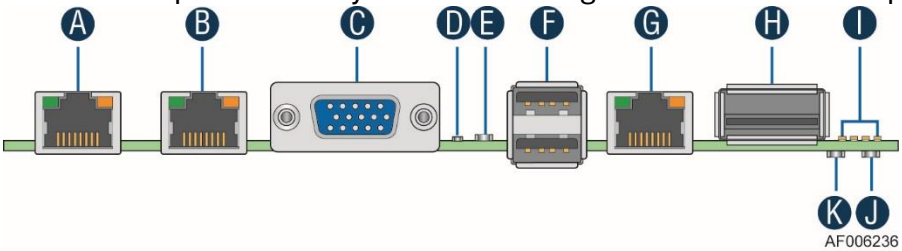
Table 2. Intel® Compute Module HNS2600TP Product Family Feature Set

Feature[1]	Description
Server Board	Intel® Server Board S2600TP product family • Intel® Compute Module HNS2600TPR – include Intel® Server Board S2600TP • Intel® Compute Module HNS2600TPFR – include Intel® Server Board S2600TPF • Intel® Compute Module HNS2600TP24R – include Intel® Server Board S2600TP and Dual Port Intel® X540 10GbE I/O Module (RJ45) • Intel® Compute Module HNS2600TP24SR – include Intel® Server Board S2600TP and Dual Port Intel® 82599 10GbE I/O Module (SFP+)
Processor Support	Maximum supported Thermal Design Power (TDP) of up to 145 W
Heat Sink	• One Cu/Al 84x106mm heat sink for CPU 1 • One Ex-Al 84x106mm heat sink for CPU 2
Fan	Three sets of 40x56mm dual rotor system fans
Riser Support	• One riser card with bracket in riser slot 1 to support one PCIe* 3.0 x16 low profile card (default)[2] • One I/O module riser and carrier kit in riser slot 2 to support an Intel® I/O Expansion Module (optional) ***Note:*** *Riser slot 3 and 4 cannot be used with the bridge board installed.*
Compute Module Board	• Four types of bridge boards: – 6G SATA Bridge Board (Default in HNS2600TPR/HNS2600TPFR) – 12G SAS Bridge Board (Optional for HNS2600TPR/HNS2600TPFR) – 12G SAS Bridge Board with RAID 5 (Optional for HNS2600TPR/HNS2600TPFR) – 12G SAS/NVMe Combo Bridge Board (Default in HNS2600TP24R/HNS2600TP24SR) • One compute module power docking board
Air Duct	One transparent air duct

The table only lists features that are unique to the compute module or different with the server board.
ONLY low profile PCIe* card can be installed on riser slot 1 riser card of the compute module.

1.2 Back Panel Features

The Intel® Server Board S2600TP product family has the following board rear connector placement.



Label	Description	Label	Description
A	NIC port 1 (RJ45)	G	Dedicated Management Port (RJ45)
B	NIC port 2 (RJ45)	H	InfiniBand* Port (QSFP+, S2600TPF only)
C	VGA port	I	POST Code LEDs (8 LEDs)
D	ID LED	J	InfiniBand* Activity LED (S2600TPFR only)
E	Status LED	K	InfiniBand* Link LED (S2600TPFR only)
F	Dual-port USB		

Figure 2. Server Board Rear Connectors

The Intel® Compute Module HNS2600TP product family has the following back panel features.

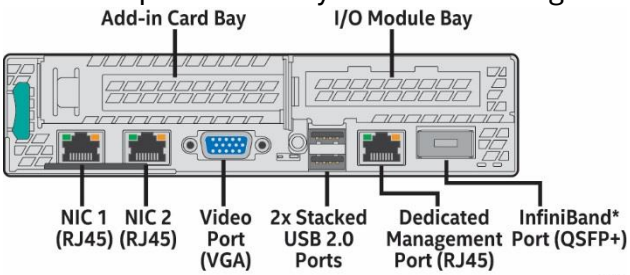


Figure 3. HNS2600TPR/HNS2600TPFR Compute Module Back Panel Features

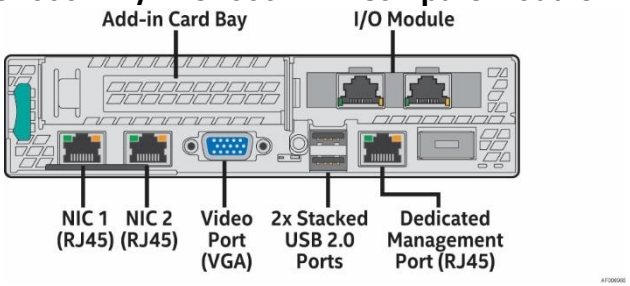
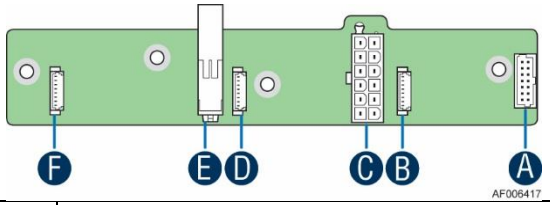


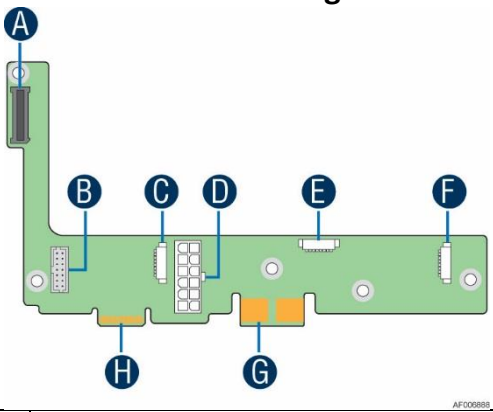
Figure 4. HNS2600TP24R/HNS2600TP24SR Compute Module Back Panel Features

1.3 Power Docking Board Features



Label	Description
A	2x7 pin fan control connector
B	8 pin connector for fan 1
C	2x6 pin Minifit Jr main power output connector
D	8 pin connector for fan 2
E	12 pin connector for main power input
F	8 pin connector for fan 3

Figure 5. Power Docking Board Features

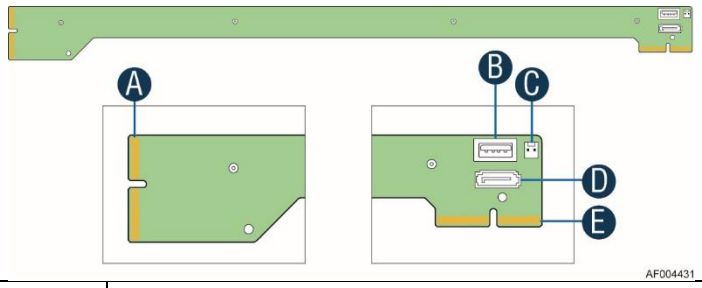


Label	Description
A	40 pin Misc. Signal Connector (to bridge board)
B	2x7 pin Fan Control Connector

C	8 pin Connector for Fan 1
D	2x6 pin Main Power Output Connector
E	8 pin Connector for Fan 2
F	8 pin Connector for Fan 3
G	Power Blade Card Edge Connector (to BIB)
H	40 pin Misc. Signal Card Edge Connector (to BIB)

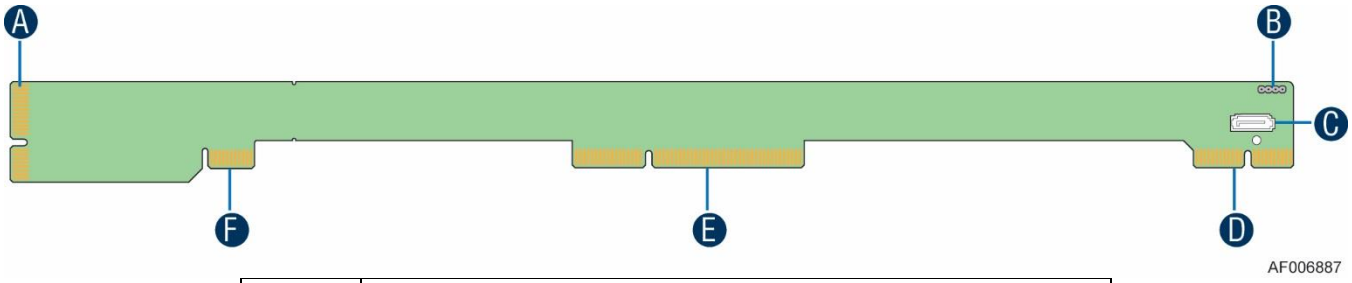
Figure 6. SAS/PCIe* SFF Combo Power Docking Board Feature

1.4 Bridge Board Features



Label	Description
A	2x40 pin card edge connector (to the backplane)
B	USB 2.0 Type-A connector
C	2 pin 5V power
D	AHCI SATA0 DOM port connector
E	2x40 pin card edge connector (to the baseboard slot)

Figure 7. Bridge Board Features



Label	Description
A	100 pin card edge connector (to backplane)
B	UART header
C	SATA DOM connector
D	80 pin card edge connector (to server board)
E	200 pin card edge connector (to server board)
F	40 pin Misc. Signal Card Edge Connector (to power docking board)

Figure 8. SAS/PCIe* SFF Combo Bridge Board Features

1.5 Server Board Features

This section helps you identify the components and connectors on the server board.

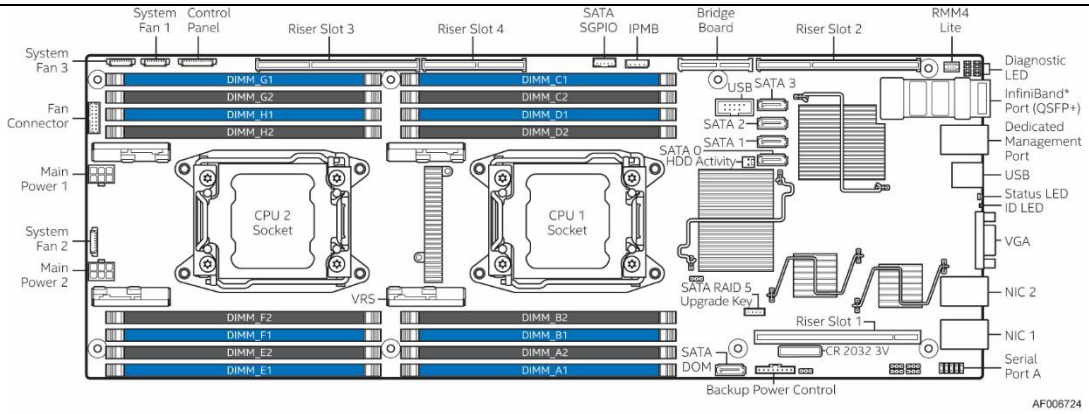


Figure 9. Server Board Features

1.6 Intel® Light-Guided Diagnostics

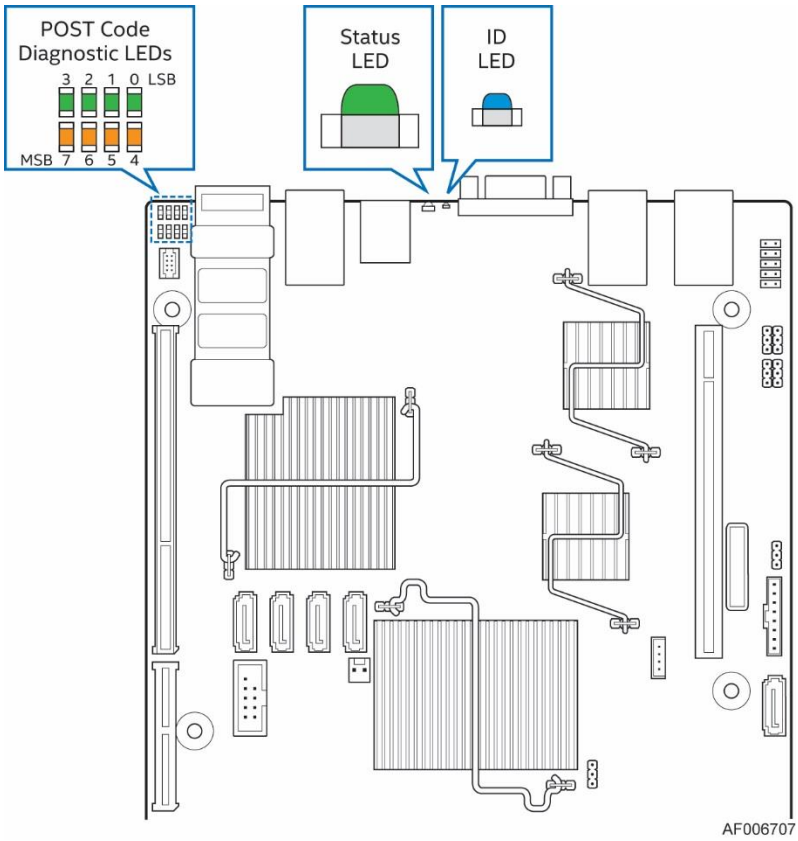


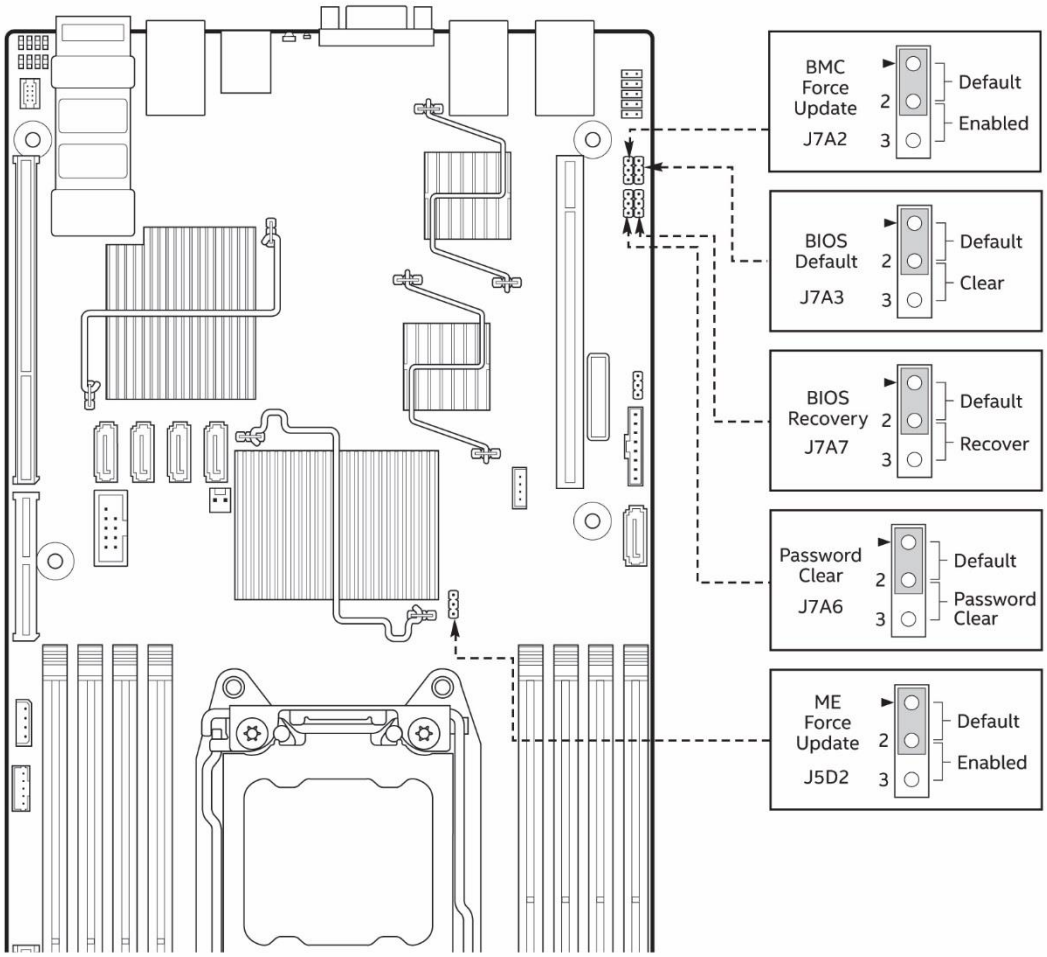
Figure 10. Intel® Light-Guided Diagnostic LEDs – Server Board

The POST Code Diagnostic LEDs on the server board change color or state (off, green, red, and amber) according to the POST sequence.

The Status LED on the back panel shows the overall health of the system (green, blinking green, blinking amber, amber, and off).

The Identification LED on the back panel helps identify the server from among several servers. The ID LED is off by default, and blue when activated by button or software.

1.7 Configuration and Recovery Jumpers



Jumper Name	Description
BMC Force Update (J7A2)	If pins 2-3 are selected, the Integrated BMC Force Update Mode is enabled. These pins should be selected on 1-2 for normal system operation.
BIOS Default (J7A3)	If pins 2-3 are selected, the BIOS settings are restored to the factory defaults on the next reset. These pins should be selected on 1-2 for normal system operation.
BIOS Recovery (J7A7)	If the system BIOS is corrupted, an onboard backup copy of the BIOS can be loaded using the BIOS Recovery Jumper. To load the backup BIOS image, move the jumper from pins 1-2 (default) to pins 2-3, and power on the system. The system will boot to the backup BIOS image. These pins should be selected on 1-2 for normal system operation.
Password Clear (J7A6)	If pins 2-3 are selected, administrator and user passwords are cleared within five to ten seconds after the system is powered on. These pins should be selected on 1-2 for normal system operation.
ME Force Update (J5D2)	If pins 2-3 are selected, the ME Force Update Mode is enabled. These pins should be selected on 1-2 for normal system operation.

Figure 11. Configuration and Recovery Jumpers

1.8 Advanced Management Options

1.8.1 Intel® Remote Management Module 4 Lite

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

The Intel® Remote Management Module 4 Lite, together with the dedicated management port on the IOM carrier sitting in the riser slot 2 provides a dedicated web server for viewing server information and remote control of the compute module. 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.

For instructions on installing the Intel® Remote Management Module 4 Lite, see Installing and Removing the Intel® Remote Management Module 4 Lite (RMM4 Lite).

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 compute module, you must first power down the server and unplug all peripheral devices and the AC power cord.

2.1.1 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)

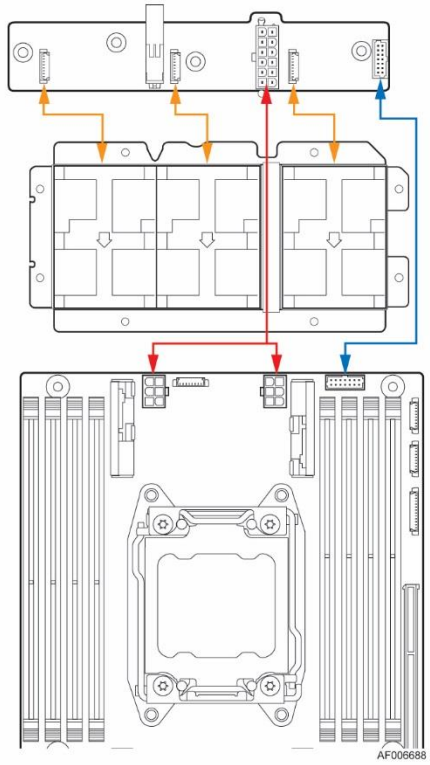
2.1.2 System Reference

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.

2.2 Cable Routing

Each compute module is installed in tray and can be hot swapped without any impact to other compute modules.

When you add or remove components from compute module tray, make sure your cables are routed correctly before plugging in the compute module tray back to the chassis. Use caution to make sure no cables or wires are pinched and that the airflow from the fans is not blocked. Use the figures below to determine the correct cable routing.



Orange line: Fan cable connection
Red line: Mother board power cable connection Blue line: Fan control signal cable connection

Figure 12. Cable Routing

2.3 Removing and Installing the Air Duct

Always operate your compute module with the air duct in place. The air duct is required for proper airflow within the compute module.

2.3.1 Removing the Air Duct

1. Press and hold both the left and right side buttons of the air duct (see letter A).
2. Slowly lift the rear end of the air duct (see letter B).
3. Rotate the air duct more than 45 degrees and pull out.

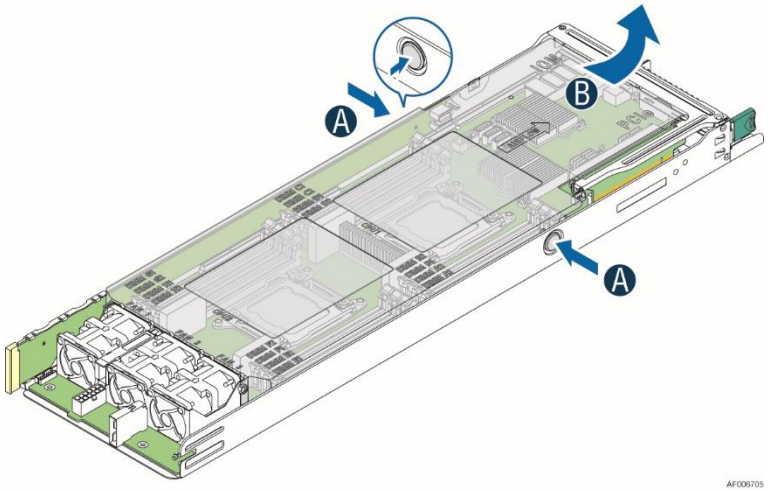


Figure 13. Removing the Air Duct

2.3.2 Installing the Air Duct

1. Align the front end of the air duct with the hinges on both sides of the fan bracket (see letter **A**).
2. Rotate the air duct (see letter **B**) and lower down the rear end of the air duct until the left and right side buttons are firmly in place.

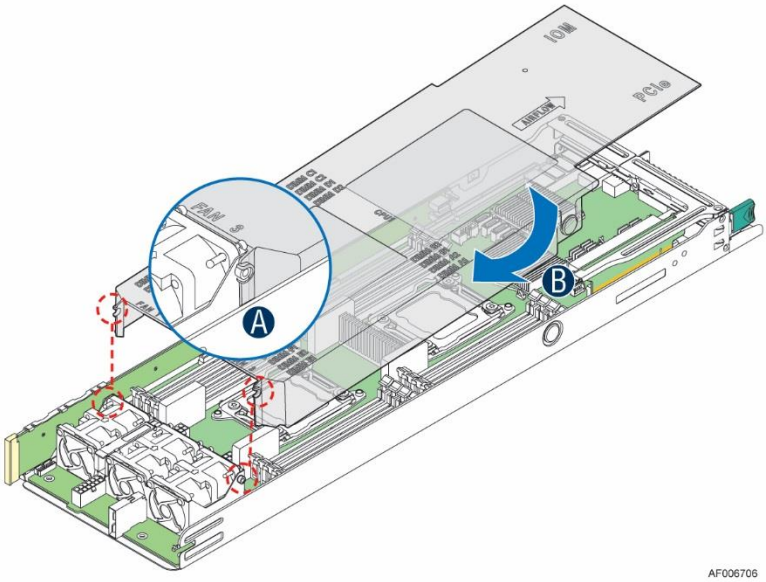


Figure 14. Installing the Air Duct

2.4 Removing and Installing the Processor

The heatsink has thermal interface material (TIM) on the underside of it. Use caution so that you do not damage the thermal interface material. Use gloves to avoid sharp edges.

2.4.1 Removing the Processor Heatsink

The heatsink is attached to the server board or processor socket with captive fasteners. Using a #2 Phillips* screwdriver, loosen the four screws located on the heatsink corners in a diagonal manner using the following procedure:

1. Using a #2 Phillips* screwdriver, start with screw 1 and loosen it by giving it two rotations and stop (see letter **A**). (**IMPORTANT:** Do not fully loosen.)
2. Proceed to screw 2 and loosen it by giving it two rotations and stop (see letter **B**). Similarly, loosen screws 3 and 4. Repeat steps A and B by giving each screw two rotations each time until all screws are loosened.
3. Lift the heatsink straight up (see letter **C**).

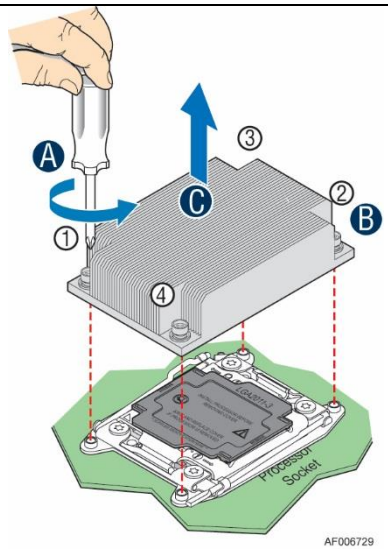


Figure 15. Removing the Processor Heatsink

2.4.2 Installing the Processor

Caution: Processor must be appropriate: You may damage the server board if you install a processor that is inappropriate for your server. For a web link to the list of compatible processors, see Additional Information and Software.

Caution: ESD and handling processors: Reduce the risk of electrostatic discharge (ESD) damage to the processor by doing the following: (1) Touch the metal chassis before touching the processor or server board. Keep part of your body in contact with the metal chassis to dissipate the static charge while handling the processor. (2) Avoid moving around unnecessarily.

1. Unlatch the CPU Load Plate.

a) Push the lever handle labeled “OPEN 1st” (see letter **A**) down and toward the CPU socket. Rotate the lever handle up.

b) Repeat the steps for the second lever handle (see letter **B**).

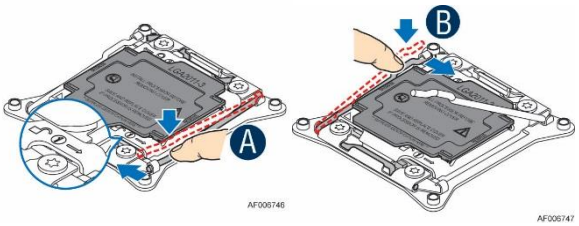


Figure 16. Installing the Processor – Open the Socket Lever

2. Lift open the Load Plate.

a) Rotate the right lever handle down until it releases the Load Plate (see letter **A**).

b) While holding down the lever handle, with your other hand, lift open the Load Plate (see letter **B**).

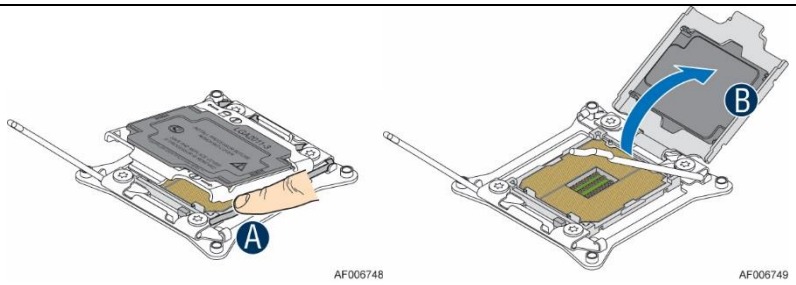


Figure 17. Installing the Processor – Open the Load Plate

3. Install the Processor.

a) Remove the processor from its package.

b) Carefully remove the protective cover from the bottom side of the CPU, taking care not to touch any CPU contacts (see letter **A**).

c) Orient the processor with the socket so that the processor cutouts match the four orientation posts on the socket (see letter **B**). Note the location of a gold key at the corner of the processor (see letter **C**). Carefully place (Do NOT drop) the CPU into the socket.

Caution: The pins inside the CPU socket are extremely sensitive. Other than the CPU, no object should make contact with the pins inside the CPU socket. A damaged CPU socket pin may render the socket inoperable, and will produce erroneous CPU or other system errors if used.

Note: The underside of the processor has components that may damage the socket pins if installed improperly. The processor must align correctly with the socket opening before installation. DO NOT DROP the processor into the socket.

Note: When possible, a CPU insertion tool should be used when installing the CPU.

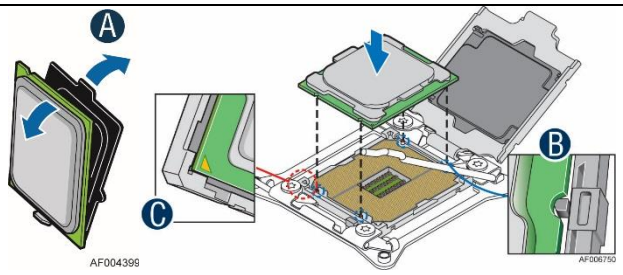


Figure 18. Installing the Processor – Install the Processor

4. Remove the Socket Cover. Remove the socket cover from the load plate by pressing it out.

Note: The socket cover should be saved and re-used should the processor need to be removed at anytime in the future.

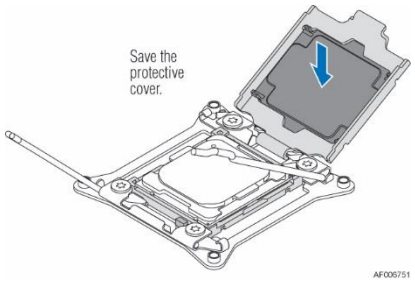


Figure 19. Installing the Processor – Remove the Cover

5. Close the Load Plate. Carefully lower the load plate down over the processor.

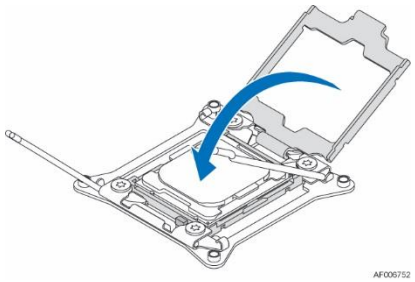


Figure 20. Installing the Processor – Close the Load Plate

6. Lock down the Load Plate.

a) Push down on the locking lever on the CLOSE 1st side (see letter **A**). Slide the tip of the lever under the notch in the load plate (see letter **B**). Make sure the load plate tab engages under the socket lever when fully closed.

b) Repeat the steps to latch the locking lever on the other side (see letter **C**). Latch the levers in the order as shown.

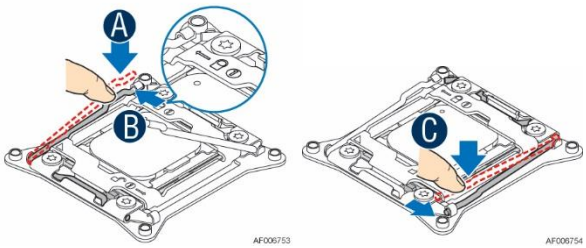


Figure 21. Installing the Processor – Latch the Locking Lever

2.4.3 Installing the Processor Heatsink

Caution: The processor heatsink for CPU1 and CPU2 is different. FXXCA91X91HS is for CPU1, while FXXEA91X91HS2 is for CPU2. Mislocating the heatsink will cause serious thermal damage.

1. If present, remove the protective film covering the Thermal Interface Material on the bottom side of the heatsink (see letter **A**).
2. Align the heatsink fins to the front and back of the chassis for correct airflow. The airflow goes from front-to-back of the chassis (see letter **B**).
3. Each heatsink has four captive fasteners and should be tightened in a diagonal manner using the following procedure:
4. Using a #2 Phillips* screwdriver, start with screw 1 and engage screw threads by giving it two rotations and stop (see letter **C**). (Do not fully tighten.)
5. Proceed to screw 2 and engage screw threads by giving it two rotations and stop (see letter **D**). Similarly, engage screws 3 and 4.
6. Repeat steps C and D by giving each screw two rotations each time until each screw is lightly tightened up to a maximum of 8 inch-lbs torque (see letter **E**).

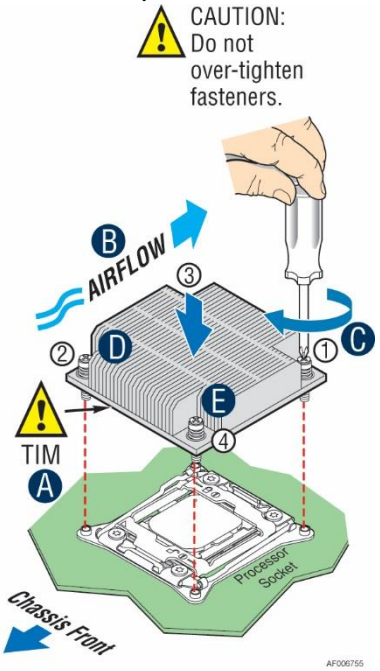


Figure 22. Installing the Processor Heatsink

2.4.4 Removing the Processor

1. Remove the processor heatsink. See Removing the Processor Heatsink.
2. Unlatch the CPU Load Plate. See Installing the Processor.
3. Lift open the Load Plate. See Installing the Processor.
4. Remove the processor by carefully lifting it out of the socket, taking care NOT to drop the processor and not touching any pins inside the socket.
5. Install the socket cover if a replacement processor is not going to be installed.

2.5 Installing and Removing the Memory

2.5.1 Installing the Memory

1. Locate the DIMM socket. Make sure the clips at either end of the DIMM socket are pushed outward to the open position (see letter **A**).
2. Holding the DIMM by the edges, remove it from its anti-static package. Position the DIMM above the socket. Align the notch on the bottom edge of the DIMM with the key in the DIMM socket (see letter **B**).
3. Insert the bottom edge of the DIMM into the socket (see letter **C**). When the DIMM is inserted, push down on the top edge of the DIMM until the retaining clips snap into place (see letter **D**). Make sure the clips are firmly in place (see letter **E**).

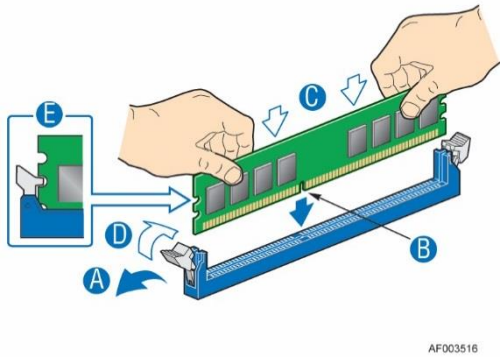


Figure 23. Installing the Memory

2.5.2 Removing the Memory

1. Locate the DIMM socket. Gently spread the retaining clips at either end of the socket. The DIMM lifts from the socket.
2. Holding the DIMM by the edges, lift it from the socket, and store it in an anti-static package.

2.6 Installing and Removing a PCIe* Add-in Card

2.6.1 Installing a PCIe* Add-in Card

1. Loosen the two screws (see letter **A**).

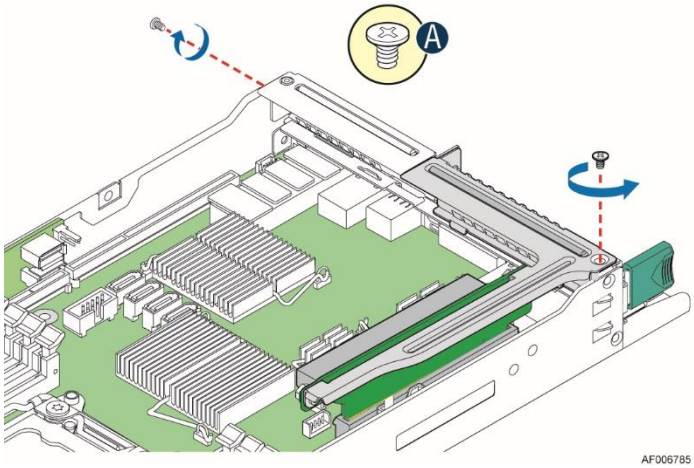


Figure 24. Removing the PCIe* Riser Assembly – Step 1

2. Pull out the PCIe* riser assembly (see letter **B**).

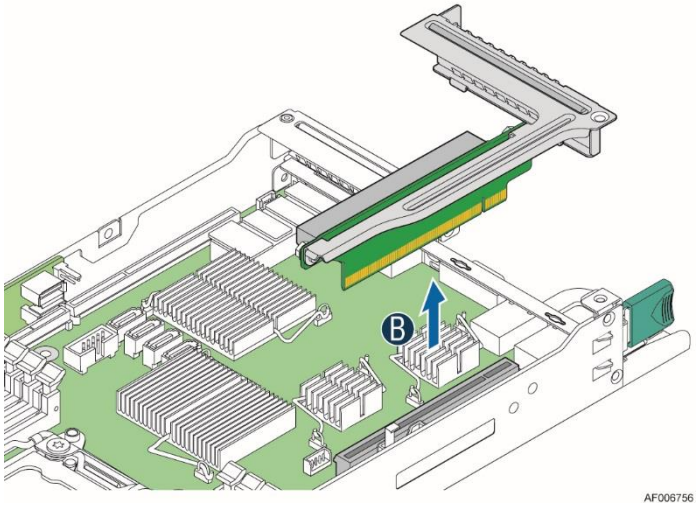


Figure 25. Removing the PCIe* Riser Assembly – Step 2

3. Remove the filler panel from the PCIe riser assembly.

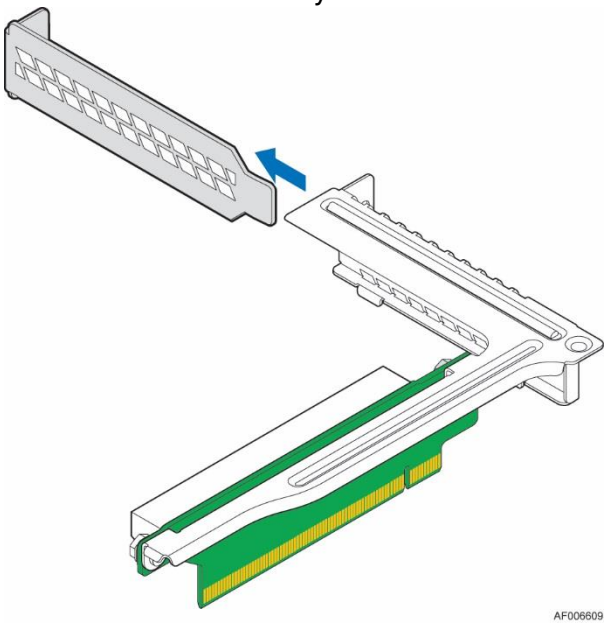


Figure 26. Removing the Filler Panel from the PCIe* Riser Assembly

4. Insert the PCIe* add-in card into the riser slot (see letter **C**).

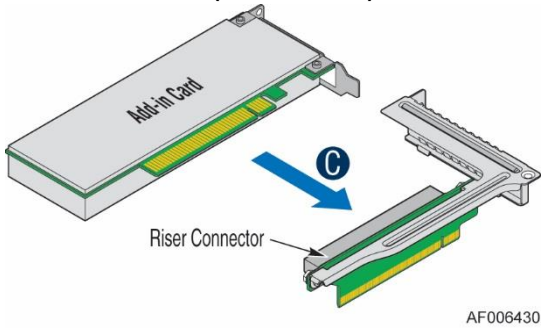


Figure 27. Installing the PCIe* Add-in Card

5. Insert the PCIe* riser assembly into the riser slot 1 on the server board (see letter **D**).

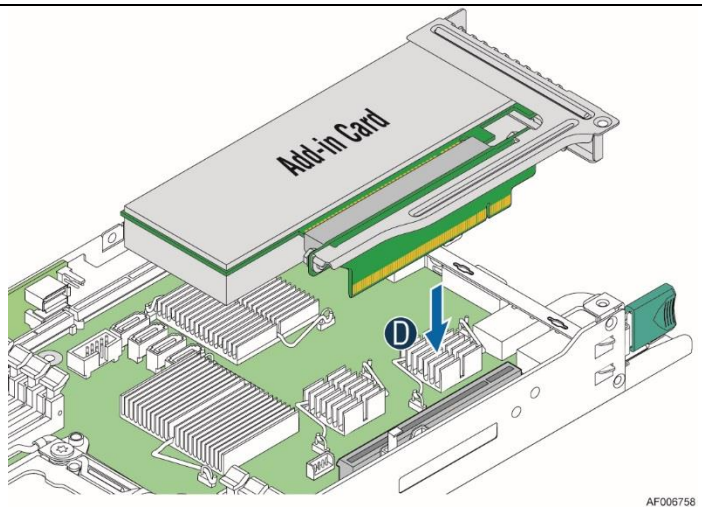


Figure 28. Installing the PCIe* Riser Assembly – Step 1

6. Fasten the two screws (see letter **E**).

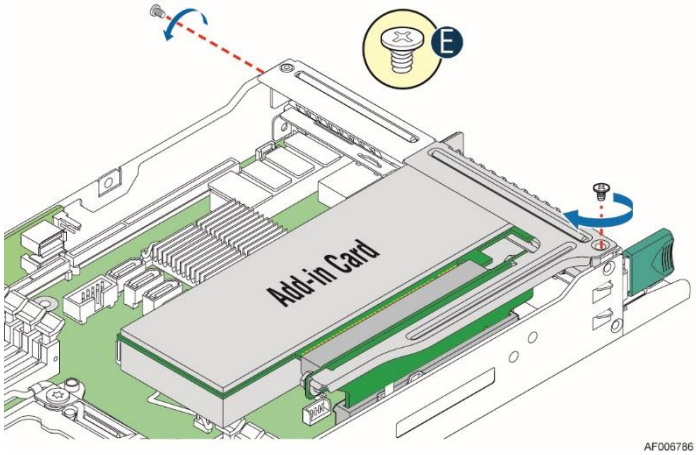


Figure 29. Installing the PCIe* Riser Assembly – Step 2

2.6.2 Removing a PCIe* Add-in Card

1. Loosen the two screws (see letter **A**).

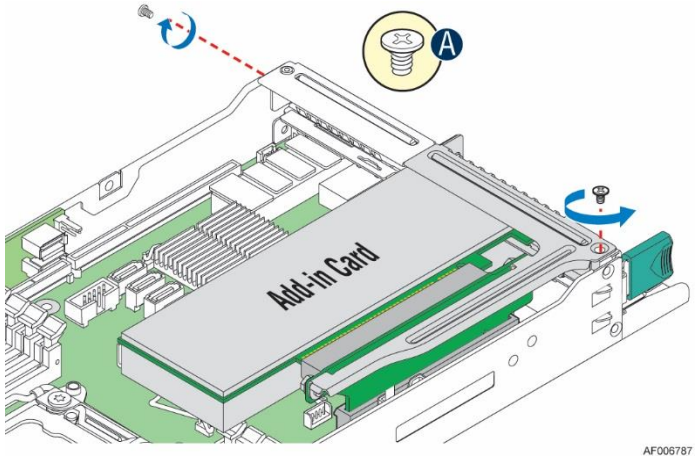


Figure 30. Removing the PCIe* Riser Assembly – Step 1

2. Pull out the PCIe* riser assembly (see letter **B**).

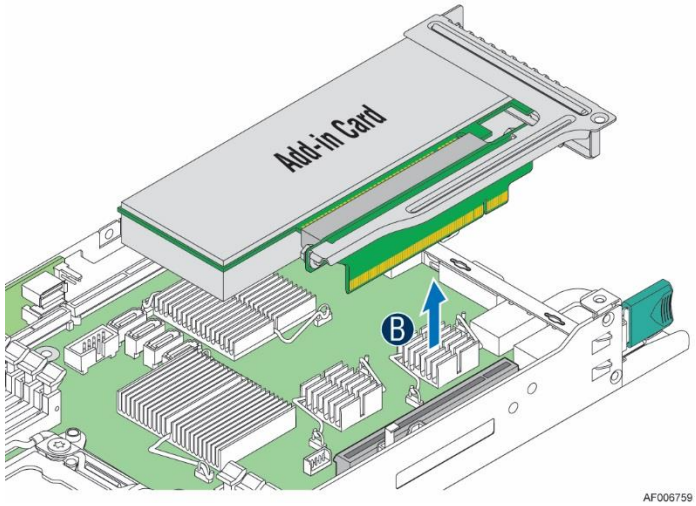


Figure 31. Removing the PCIe* Riser Assembly – Step 2

3. Remove the PCIe* add-in card from the riser slot (see letter **C**).

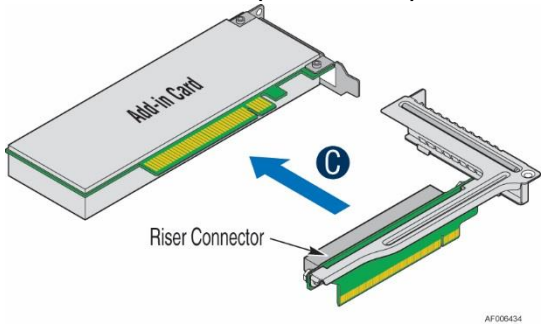


Figure 32. Removing the PCIe* Add-in Card

4. Insert the filler panel to the PCIe* riser assembly.

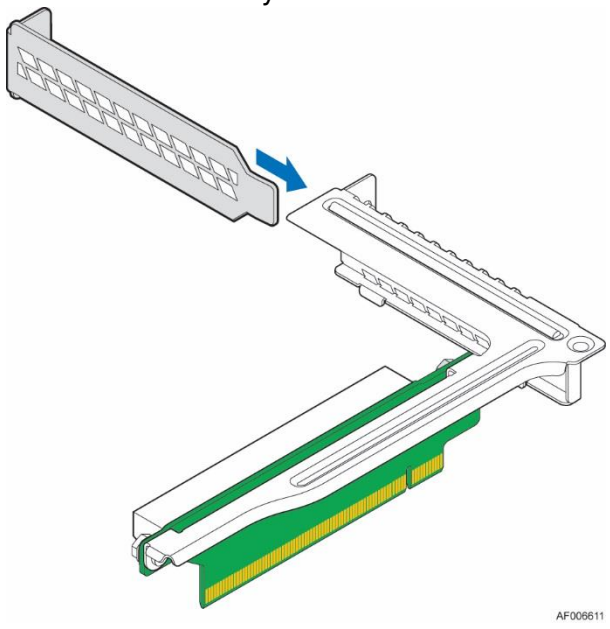


Figure 33. Inserting the Filler Panel to the PCIe* Riser Assembly

5. Insert the PCIe* riser assembly into the riser slot 1 on the server board (see letter **D**).

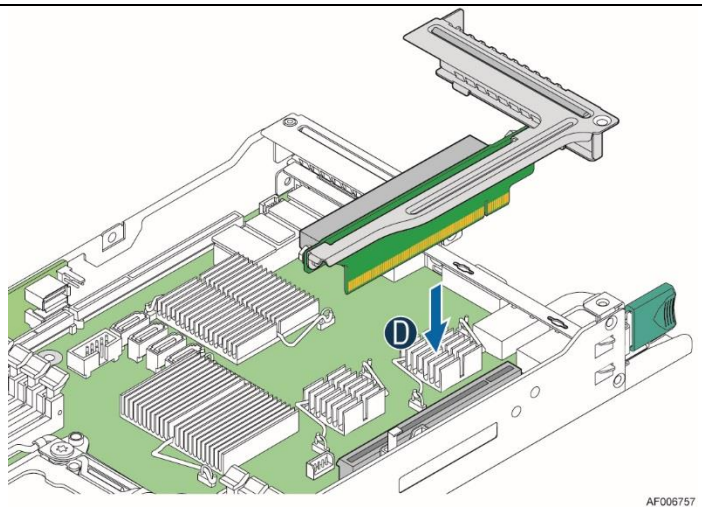


Figure 34. Installing the PCIe* Riser Assembly – Step 1

6. Fasten the two screws (see letter **E**).

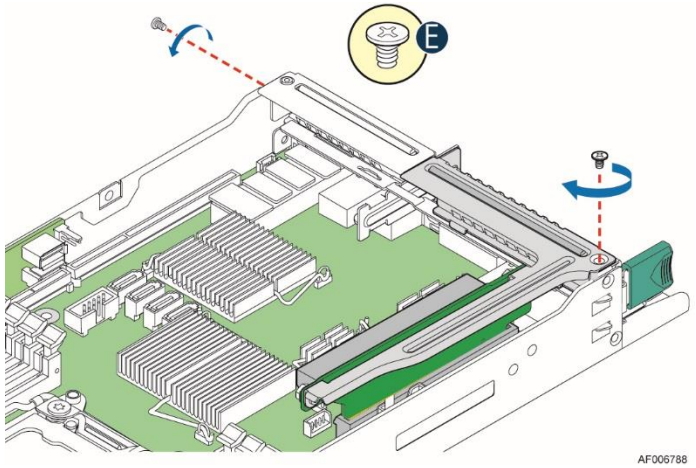


Figure 35. Installing the PCIe* Riser Assembly – Step 2

2.7 Replacing the PCIe* Riser

2.7.1 Removing the PCIe* Riser

1. Loosen the two screws (see letter **A**).

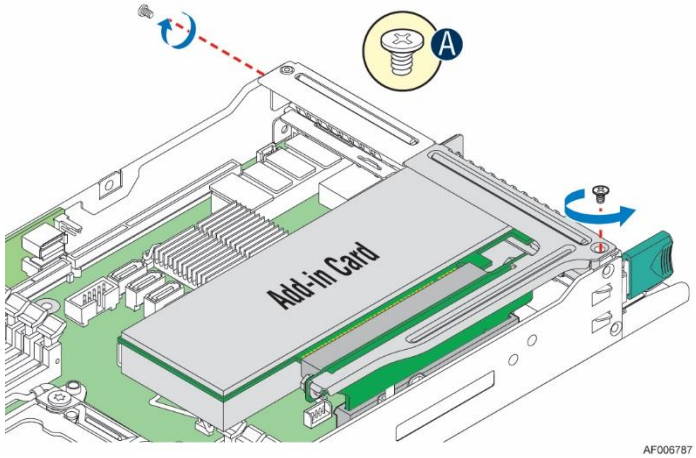


Figure 36. Removing the PCIe* Riser Assembly – Step 1

2. Pull out the PCIe* riser assembly (see letter **B**).

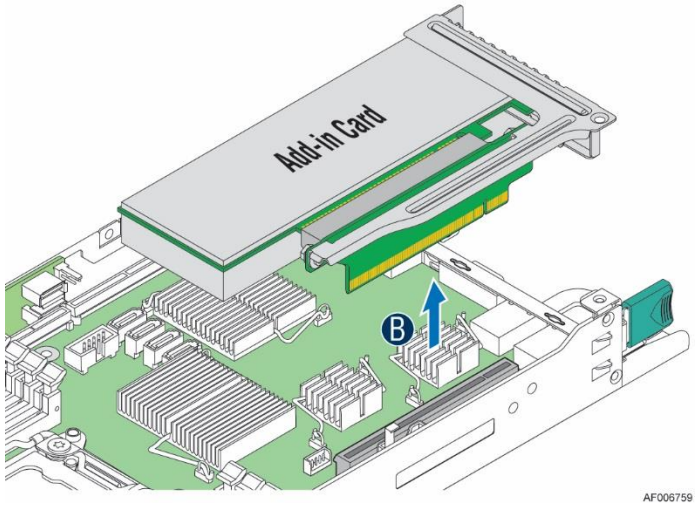


Figure 37. Removing the PCIe* Riser Assembly – Step 2

3. Remove the PCIe* add-in card from the riser slot (see letter **C**).

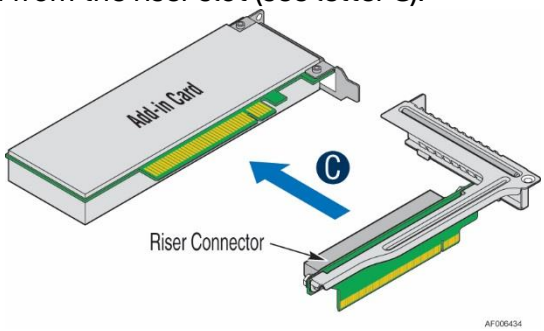


Figure 38. Removing the PCIe* Add-in Card

4. Remove the PCIe* riser from the riser assembly bracket (see letter **E**) by loosening the two screws (see letter **D**).

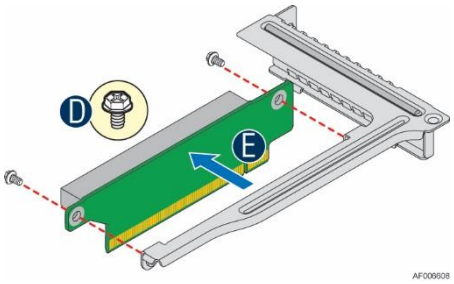


Figure 39. Removing the PCIe* Riser from the Riser Assembly Bracket

2.7.2 Installing the PCIe* Riser

1. Install the PCIe* riser to the riser assembly bracket (see letter **A**) by fastening the two screws (see letter **B**).

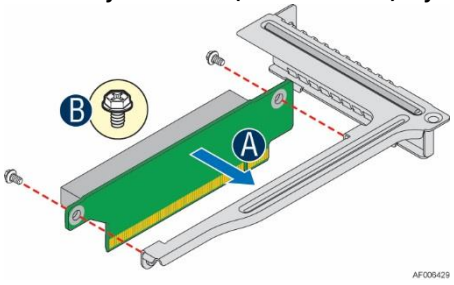


Figure 40. Installing the PCIe* Riser to the Riser Assembly Bracket

2. Insert the PCIe add-in card into the riser slot (see letter **C**).

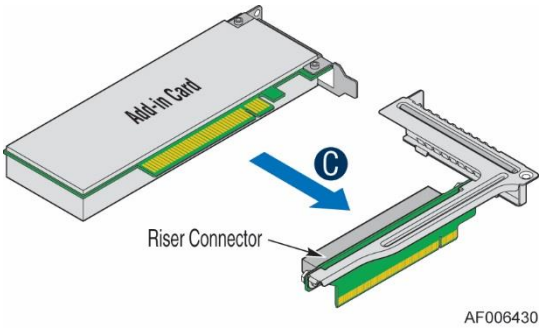


Figure 41. Installing the PCIe* Add-in Card

3. Insert the PCIe riser assembly into the riser slot 1 on the server board (see letter **D**).

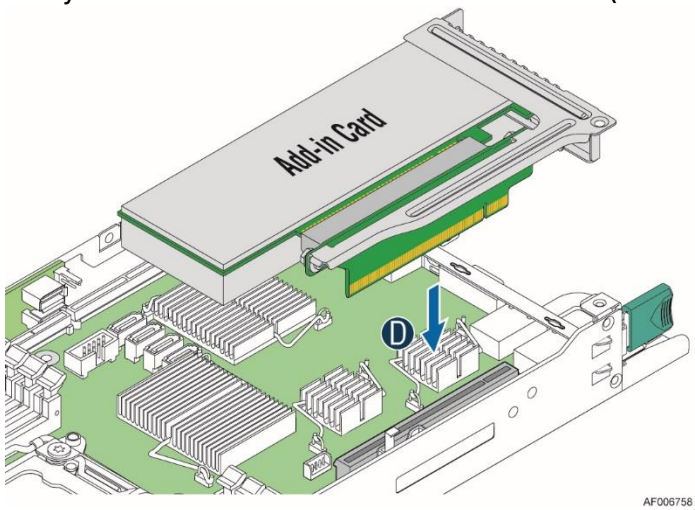


Figure 42. Installing the PCIe* Riser Assembly – Step 1

4. Fasten the two screws (see letter **E**).

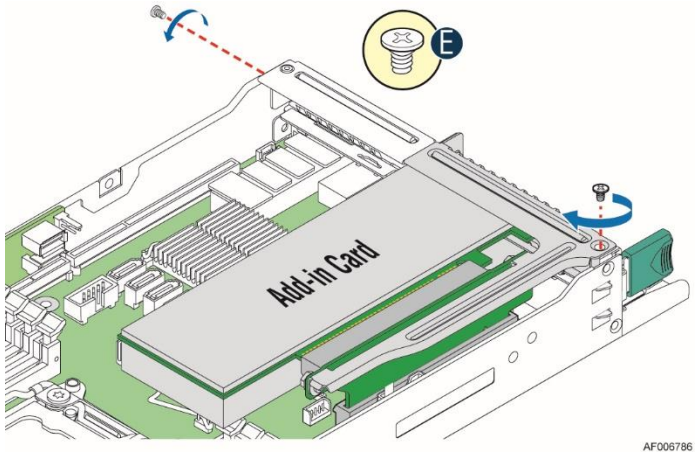


Figure 43. Installing the PCIe* Riser Assembly – Step 2

2.8 Installing and Removing an IO Module

2.8.1 Installing an IO Module

1. Remove the IOM riser and carrier assembly from its package.

Note: The IOM riser and carrier assembly is provided as an optional accessory to HNS2600TPR and

HNS2600TPFR.

2. Remove the bracket from the IOM riser and carrier assembly (see letter **B**) by loosening the two screws (see letter **A**).

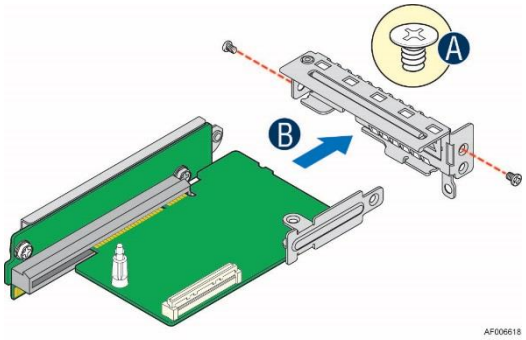


Figure 44. Removing the Bracket from the IOM Riser and Carrier Assembly

3. Install the IO module to the IOM riser and carrier assembly by tightening the screw (see letter **C**).

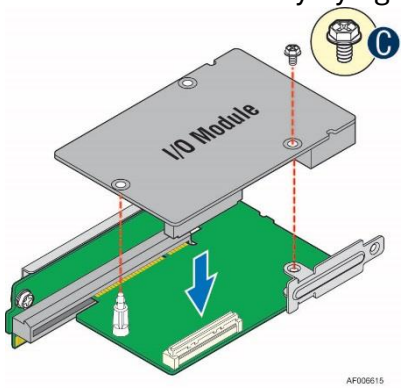


Figure 45. Installing the IO Module to the IOM Riser and Carrier Assembly

4. Install the bracket to the IOM riser and carrier assembly (see letter **D**) by tightening the two screws (see letter **E**).

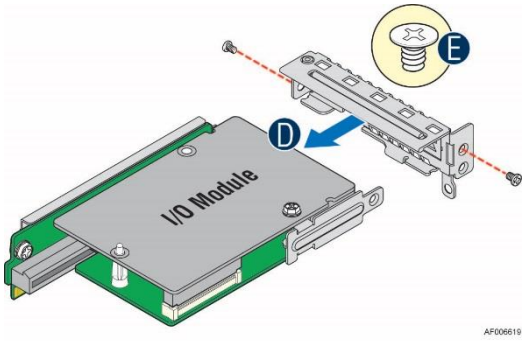


Figure 46. Installing the Bracket to the IOM Riser and Carrier Assembly

5. Remove the filler panel (see letter **G**) by loosening the three screws (see letter **F**).

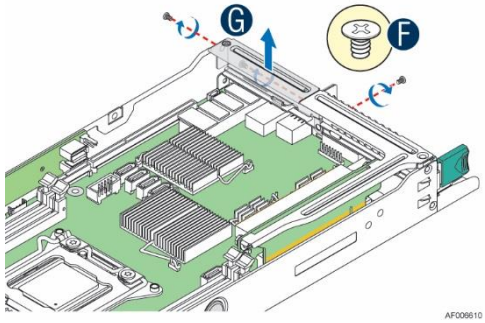


Figure 47. Removing the Filler Panel

6. Insert the IOM riser and carrier assembly into the riser slot 2 on the server board (see letter **H**) and fasten the four screws (see letter **I**).

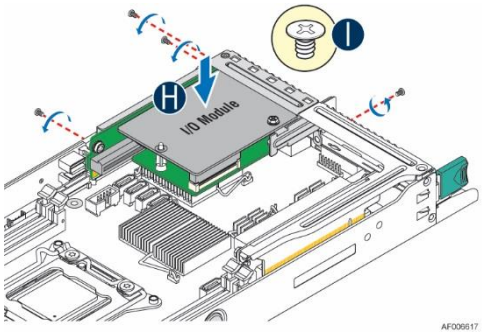


Figure 48. Installing the IOM Riser and Carrier Assembly

2.8.2 Removing an IO Module

1. Loosen the four screws (see letter **A**) and pull out the IOM riser and carrier assembly (see letter **B**).

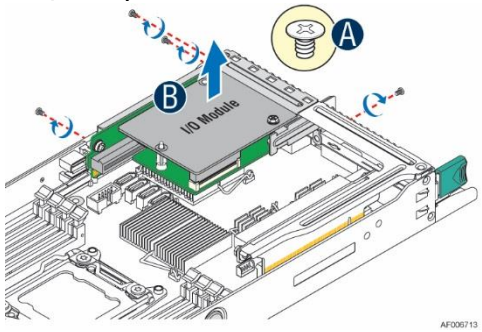


Figure 49. Removing the IOM Riser and Carrier Assembly

2. Remove the bracket from the IOM riser and carrier assembly (see letter **D**) by loosening the two screws (see letter **C**).

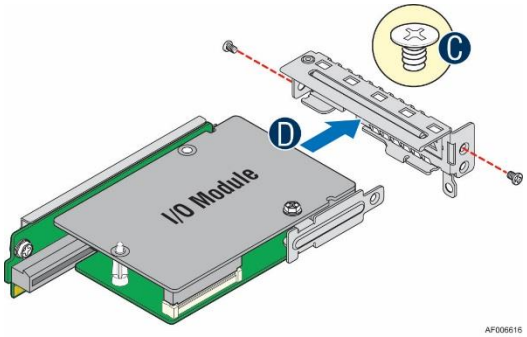


Figure 50. Removing the Bracket from the IOM Riser and Carrier Assembly

3. Remove the IO module by loosening the screw (see letter **E**).

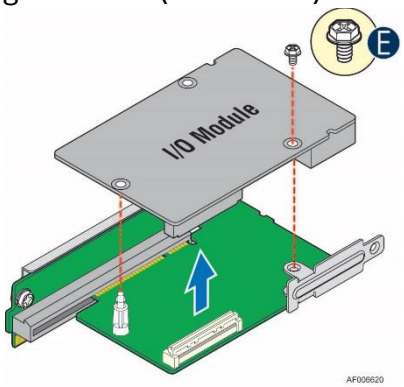


Figure 51. Removing the IO Module from the IOM Riser and Carrier Assembly

4. Install the bracket to the IOM riser and carrier assembly (see letter **F**) by tightening the two screws (see letter **G**).

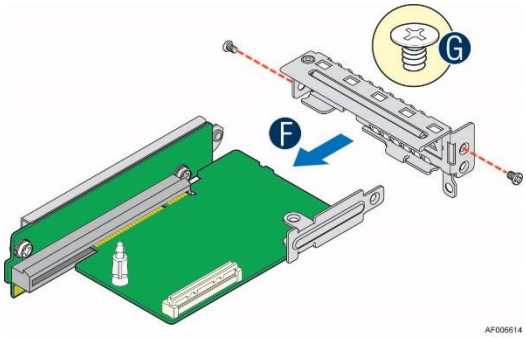


Figure 52. Installing the Bracket to the IOM Riser and Carrier Assembly

5. Insert the IOM riser and carrier assembly into the riser slot 2 on the server board (see letter **H**) and fasten with the four screws (see letter **I**).

Note: If you do not install the IOM riser and carrier assembly, a filler panel must be installed at this location.

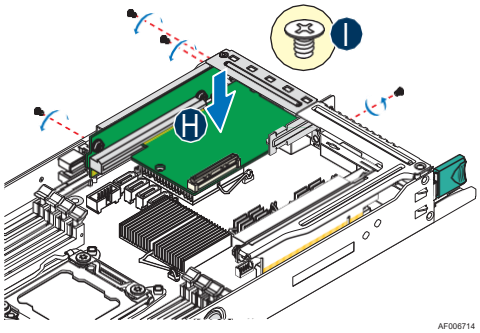


Figure 53. Installing the IOM Riser and Carrier Assembly

2.9 Installing the M.2 Device

Note: Only the AXXKPTP2IOM I/O carrier supports M.2 device.

---

1. Remove the IOM riser and carrier assembly from its package.
2. Turn over the IOM riser and carrier assembly.
3. Install the M.2 device (see letter **A**) and fix it with the screw (see letter **B**).

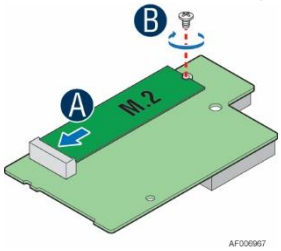


Figure 54. Installing the M.2 Device

4. Install the IOM riser and carrier assembly to the server board. For instructions, see Installing an IO Module.
5. Remove the M.2 SATA cable from its package.
6. Insert one end of the cable into the connector on the IOM riser and carrier assembly (see letter **C**) and the other end into the connector on the server board (see letter **D**).

7. Push down the cable as required (see letter **E**) and make sure that the connectors are not stressed.

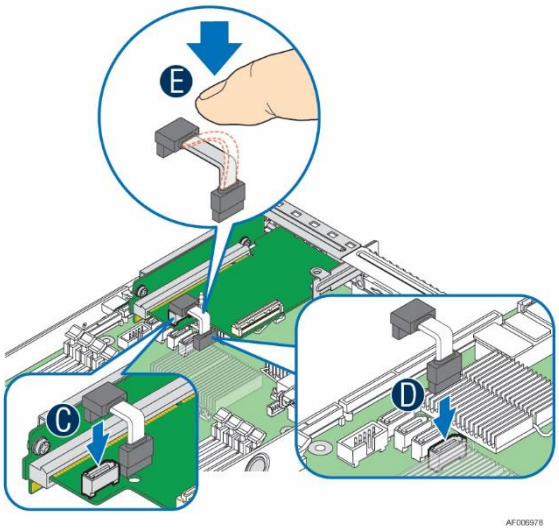


Figure 55. Connecting the M.2 SATA Cable

2.10 Installing and Removing the Intel® Remote Management Module 4 Lite (RMM4 Lite)

2.10.1 Installing the Intel® RMM4 Lite

1. Remove the Intel® RMM4 Lite from its package.
2. Locate the RMM4 Lite connector on the server board next to the riser slot 2.
3. Place the Intel® RMM4 Lite over the connector and match the orientation of the Intel® RMM4 Lite to that of the connector.
4. Press the Intel® RMM4 Lite down onto the connector.

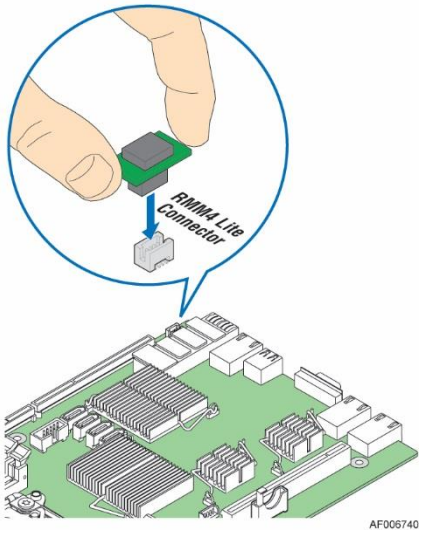


Figure 56. Installing the Intel® RMM4 Lite

2.10.2 Removing the Intel® RMM4 Lite

1. Power off the compute module and disconnect the power cable(s).
2. Remove the air duct. See Removing the Air Duct.

3. Carefully grasp the Intel® RMM4 Lite and pull it up until it disengages from the connector.

2.11 Installing and Removing the Intel® Storage Upgrade Key

2.11.1 Installing the Intel® Storage Upgrade Key

1. Remove the Intel® Storage Upgrade Key from its package.
2. Locate the storage upgrade key connector on the server board next to the riser slot 1.
3. Place the Intel® Storage Upgrade Key over the connector and match the orientation of the key to that of the connector.
4. Press the Intel® Storage Upgrade Key down onto the connector.

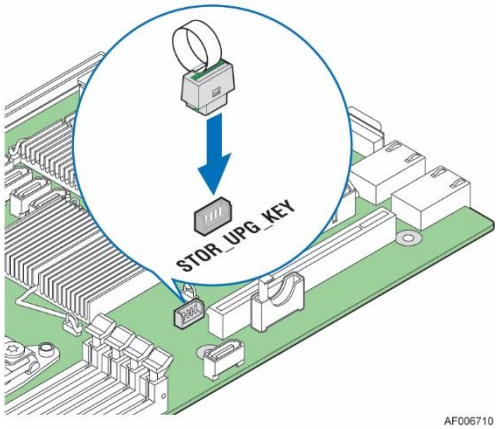


Figure 57. Installing the Intel® Storage Upgrade Key

2.11.2 Removing the Intel® Storage Upgrade Key

1. Power off the compute module and disconnect the power cable(s).
2. Remove the air duct. See Removing the Air Duct.
3. Using the key pull tab, pull the key up until it disengages from the connector.

2.12 Replacing the Bridge Board

2.12.1 Removing the Bridge Board

1. Remove the six screws (see letter **A**) on the bridge board.
2. Straightly lift up the bridge board to remove it from the server board (see letter **B**).

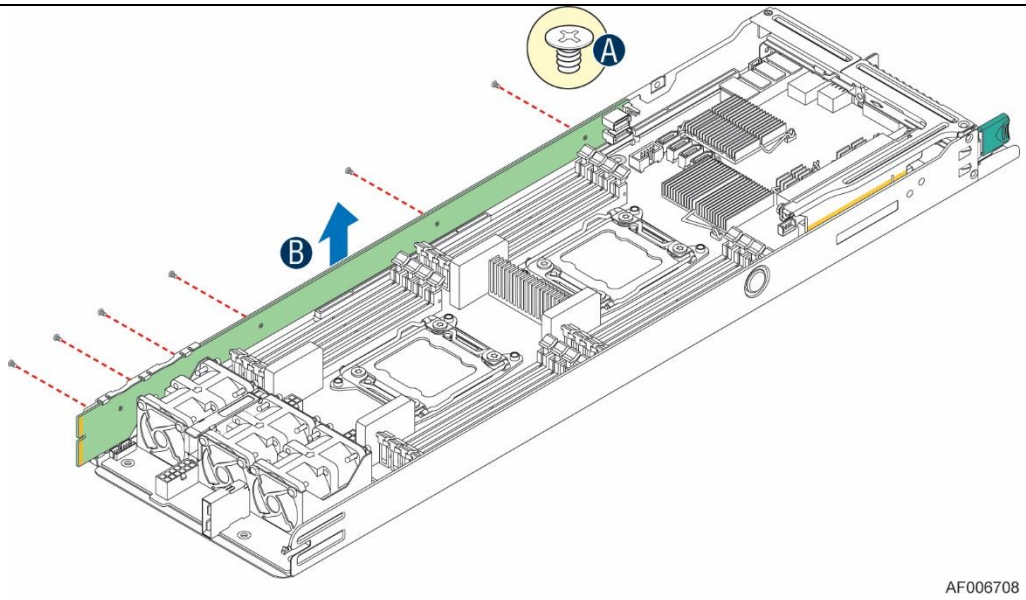


Figure 58. Removing the Bridge Board

2.12.2 Installing the Bridge Board

1. Attach the plastic holder to the front end of the bridge board (see letter **A**).
2. Insert the rear end of the bridge board into the slot on the server board (see letter **B**).
3. Secure the bridge board to the side wall with the six screws (see letter **C**).

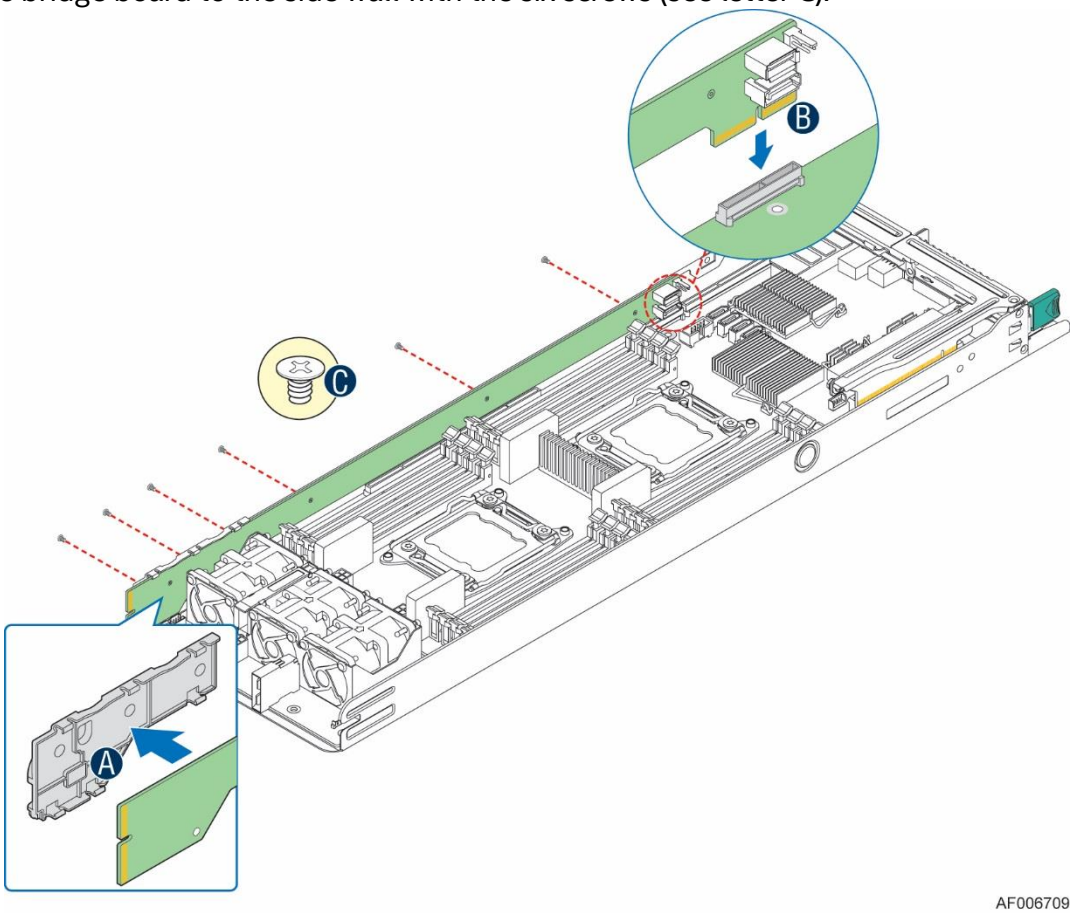


Figure 59. Installing the Bridge Board

2.13 Replacing the SAS/PCIe* SFF Combo Bridge Board

2.13.1 Removing the SAS/PCIe* SFF Combo Bridge Board

1. Remove the six screws (see letter **A**) on the bridge board.
2. Straightly lift up the bridge board to remove it from the server board (see letter **B**).

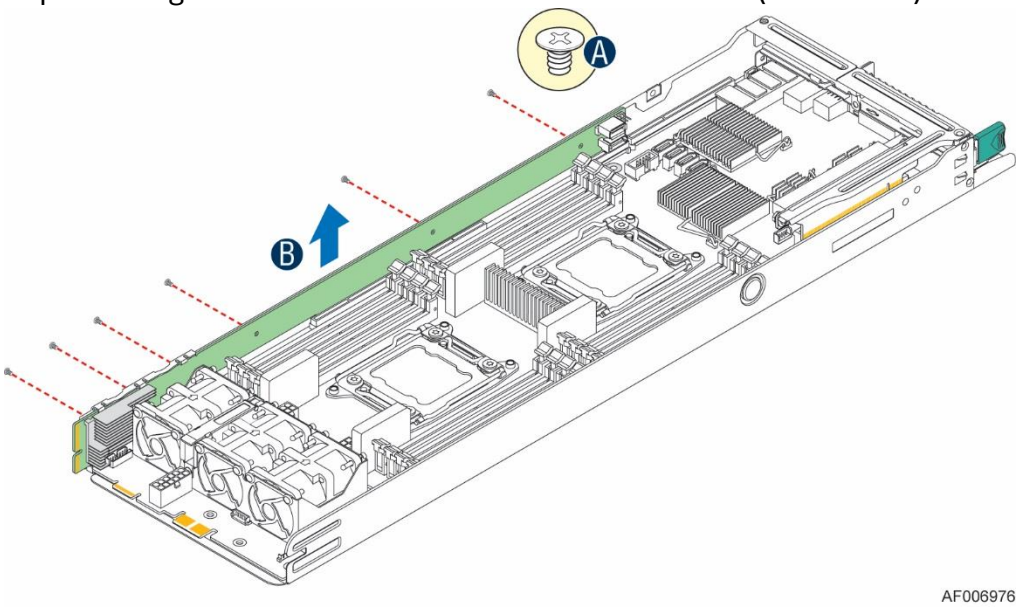


Figure 60. Removing the SAS/PCIe* SFF Combo Bridge Board

2.13.2 Installing the SAS/PCIe* SFF Combo Bridge Board

1. Attach the plastic holder to the front end of the bridge board (see letter **A**).
2. Insert the bridge board into the slots on the server board (see letter **B**).
3. Secure the bridge board to the side wall with the six screws (see letter **C**).

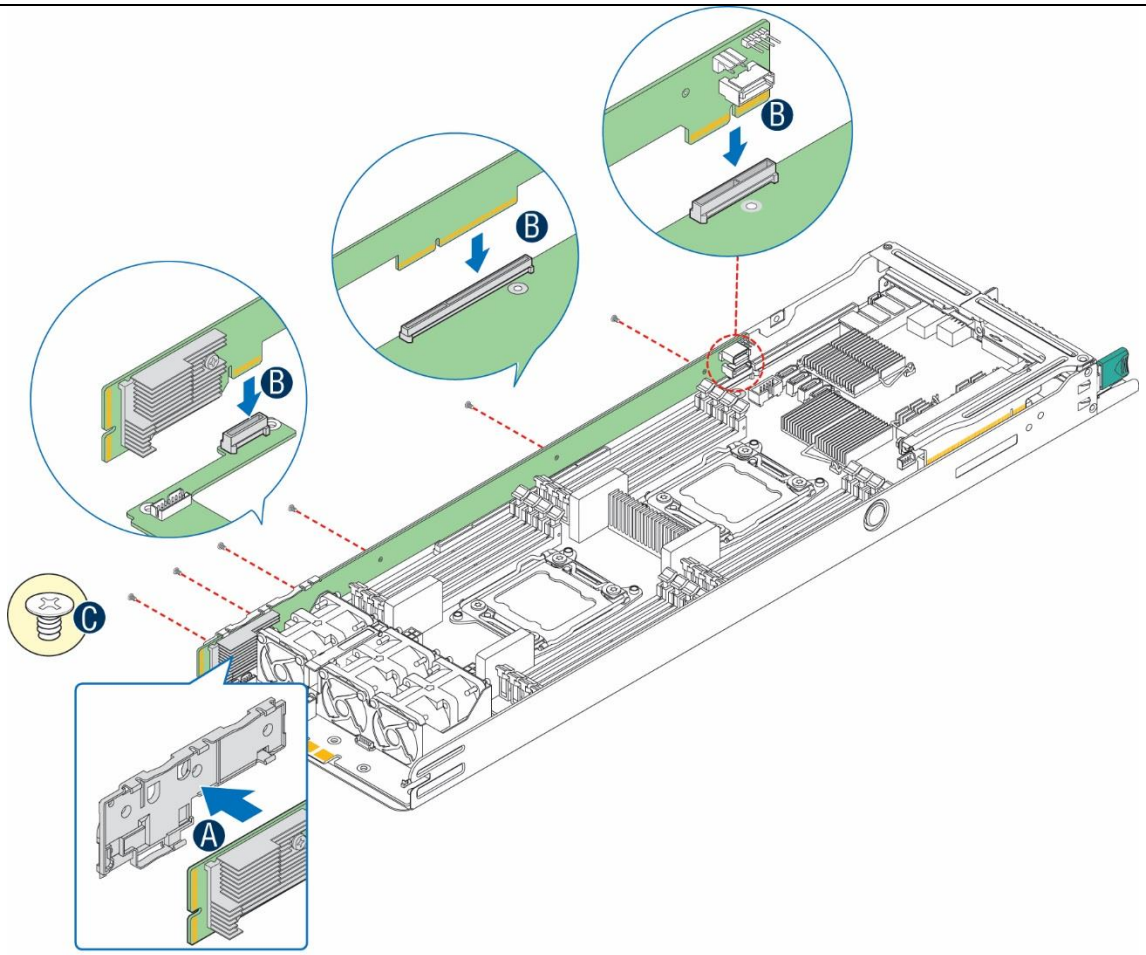


Figure 61. Installing the SAS/PCIe* SFF Combo Bridge Board

2.14 Replacing the Server Board

2.14.1 Removing the Server Board

1. Remove the air duct. See Removing the Air Duct.
2. Remove the processors and the memory DIMMs if there are any. See Removing the Processor and Removing the Memory.
3. Remove the bridge board. See Removing the Bridge Board.
4. Remove the PCIe* riser assembly from the riser slot 1. See Removing the PCIe* Riser Assembly – Step 1 and Removing the PCIe* Riser Assembly – Step 2.
5. Remove the IOM riser and carrier assembly from the riser slot 2 if there is any. See Removing the IOM Riser and Carrier Assembly.
6. Disconnect the cables from the server board.

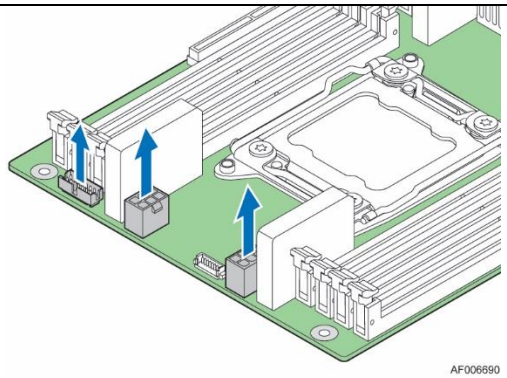


Figure 62. Removing the Cable Connections from the Server Board

1. Remove the eight screws from the server board (see letter **A**).
2. Lift up the server board (see letter **B**).

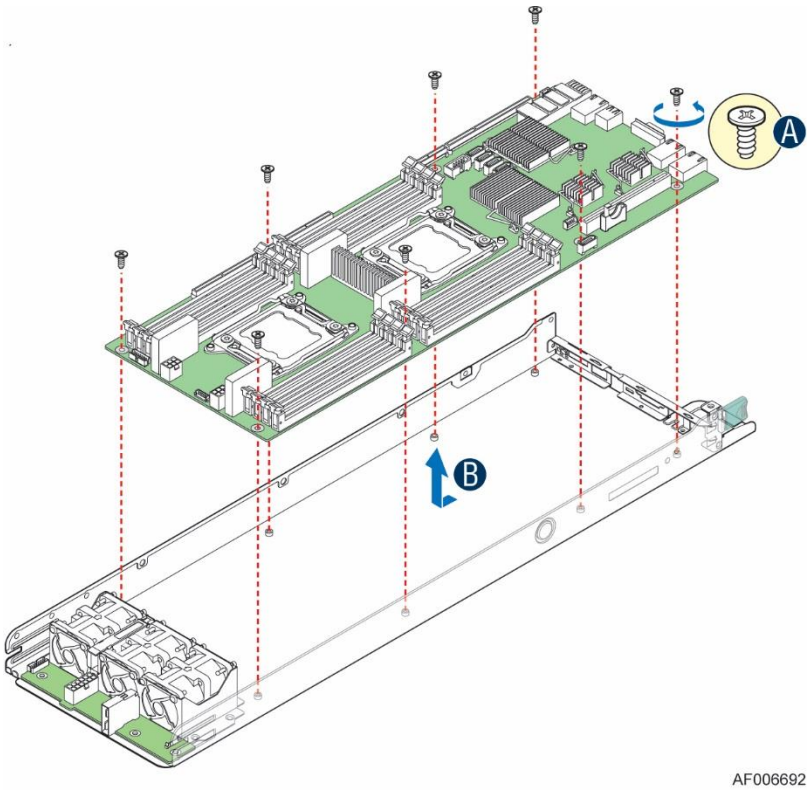


Figure 63. Removing the Server Board

2.14.2 Installing the Server Board

1. Carefully lower the server board into the compute module so that the rear I/O connectors of the server board align with and are fully seated into the matching holes on the compute module back panel.
2. The server board is accurately placed when the two end screws nearest the front edge of the server board (see letter **A**) sit securely onto the shouldered compute module standoffs.
3. Fasten the eight screws (see letter **B**).

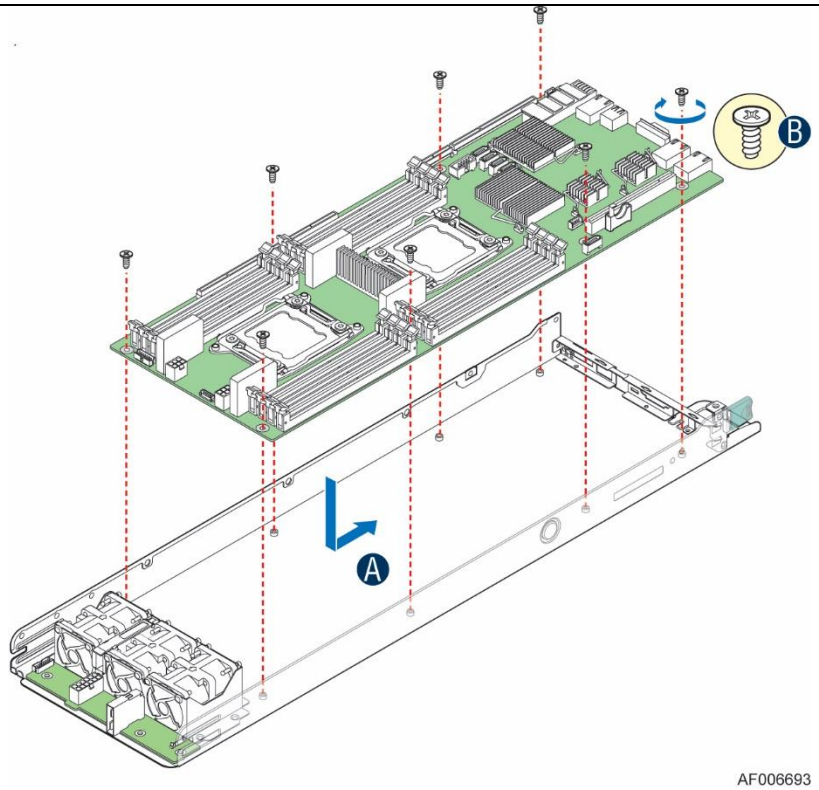


Figure 64. Installing the Server Board

4. Connect all cable connections to the server board.

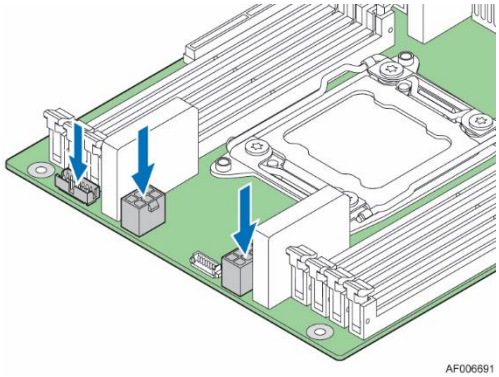


Figure 65. Connecting all Cables

5. Install the bridge board. See Installing the Bridge Board.
6. Install the PCIe riser assembly to the riser slot 1. See Installing the PCIe* Riser Assembly – Step 1 and Installing the PCIe* Riser Assembly – Step 2.
7. Install the IOM riser and carrier assembly to the riser slot 2 if there is any. See Installing the IOM Riser and Carrier Assembly.
8. Install the processors and the memory DIMMs if there are any. See Installing the Processor and Installing the Memory.
9. Install the air duct. See Installing the Air Duct.

2.15 Installing and Removing the Power Docking Board

2.15.1 Removing the Power Docking Board

1. Disconnect all cables from the power docking board.
2. Remove the four screws (see letter **A**).

3. Straightly lift up the power docking board (see letter **B**).

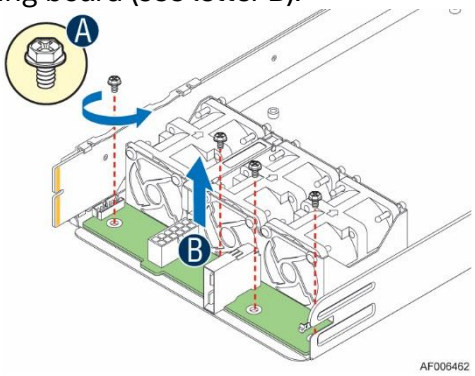


Figure 66. Removing the Power Docking Board

2.15.2 Installing the Power Docking Board

1. Place the power docking board into the compute module base (see letter **A**).
2. Secure the power docking board with the four screws (see letter **B**).
3. Connect all cables to the power docking board.

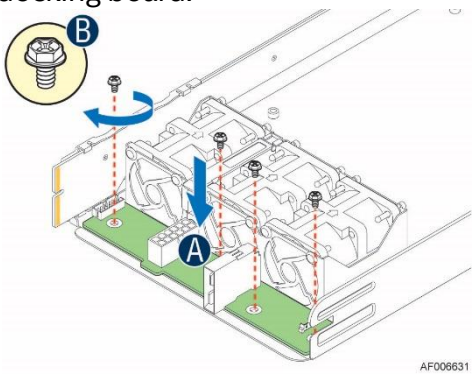


Figure 67. Installing the Power Docking Board

2.16 Replacing the SAS/PCIe* SFF Combo Power Docking Board

2.16.1 Removing the SAS/PCIe* SFF Combo Power Docking Board

1. Remove the bridge board. For instructions, see Removing the SAS/PCIe* SFF Combo Bridge Board.
2. Disconnect all cables from the power docking board.
3. Remove the five screws (see letter **A**).
4. Straightly lift up the power docking board (see letter **B**).

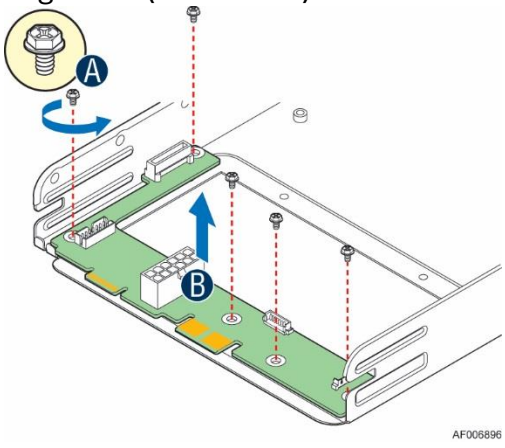


Figure 68. Removing the SAS/PCIe* SFF Combo Power Docking Board

2.16.2 Installing the SAS/PCIe* SFF Combo Power Docking Board

1. Place the power docking board into the compute module base (see letter **A**).
2. Check the rubber bumper is in the mounting hole (see letter **B**).
3. Secure the power docking board with the five screws (see letter **C**).
4. Connect all cables to the power docking board.
5. Install the bridge board. For instructions, see Installing the SAS/PCIe* SFF Combo Bridge Board.

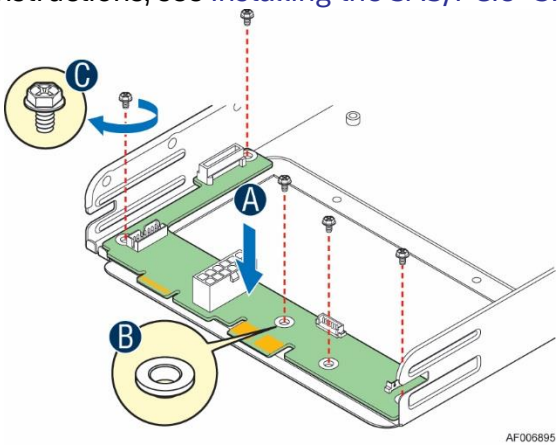


Figure 69. Installing the SAS/PCIe* SFF Combo Power Docking Board

2.17 Replacing the Fan

2.17.1 Removing the Fan

1. Disconnect the fan cable from the power docking board.
2. Grasp the fan from the top and pull it out of the fan bracket.

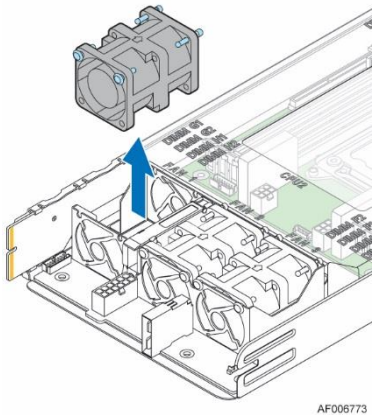


Figure 70. Removing the Fan

2.17.2 Installing the Fan

1. Place the fan into the fan bracket.
2. Connect the fan cable to the connector on the power docking board.

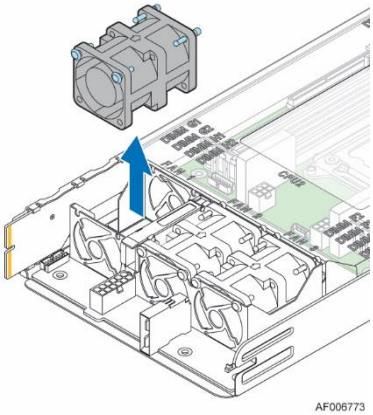


Figure 71. Installing the Fan

2.18 Replacing the Backup Battery

The lithium battery on the server board powers the RTC for up to 10 years in the absence of power. When the battery starts to weaken, it loses voltage, and the server settings stored in CMOS RAM in the RTC (for example, the date and time) may be wrong. Contact your customer service representative or dealer for a list of approved devices.

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

Advarsel: Lithiumbatteri – Eksplosionsfare ved fejlagtig håndtering. Udskiftning må kun ske med batteri af samme fabrikat og type. Levér det brugte batteri tilbage til leverandøren.

Advarsel: Lithiumbatteri – Eksplosjonsfare. Ved utskifting benyttes kun batteri som anbefalt av apparatfabrikanten. Brukt batteri returneres apparatleverandøren.

Varning: Explosionsfara vid felaktigt batteribyte. Använd samma batterityp eller en ekvivalent typ som rekommenderas av apparattillverkaren. Kassera använt batteri enligt fabrikantens instruktion.

Varoitus: Paristo voi räjähtää, jos se on virheellisesti asennettu. Vaihda paristo ainoastaan laitevalmistajan suosittelemaan tyyppiin. Hävitä käytetty paristo valmistajan ohjeiden mukaisesti.

1. Locate the battery on the server board.
2. Gently press the metal clip as shown to release the battery (see letter **A**).
3. Remove the battery from the plastic socket (see letter **B**).

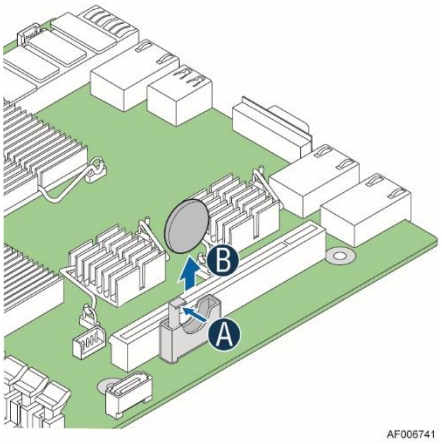


Figure 72. Replacing the Backup Battery

4. Dispose of the battery according to local ordinance.
5. Remove the new lithium battery from its package, and, being careful to observe the correct polarity, insert it into the battery socket.

Note: You will need to run the BIOS Setup to restore the configuration settings to the RTC.

---

3 System Software Updates and Configuration

3.1 Updating the System Software Stack

The system includes a software stack to operate. This includes a BIOS, BMC firmware, ME firmware, and FRU & SDR data. A default software stack is loaded during the system manufacturing process. However, it may not be the latest available. For best operation and system reliability, it is highly recommended to update the system software stack to the latest available.

The latest system software stack can be downloaded from Intel at the Intel web site http://downloadcenter.intel.com.

At a minimum, after the initial configuration, the system's FRU and SDR data must be updated to ensure that the embedded platform management subsystem is configured properly. The system's FRU and SDR data is updated by running the FRUSDR utility. Properly loaded FRU and SDR data allows platform management to monitor the appropriate system sensors which are used to determine proper system cooling, best performance, and accurate error reporting. The FRUSDR utility is included in the platform's System Update Package (SUP) which can be downloaded from the Intel web site referenced above. The System Update Package will include full system update instructions.

3.2 Using the BIOS Setup Utility

This section describes how to access and navigate the embedded <F2> BIOS Setup utility. This utility can be used to view and configure system settings that determine how the server operates.

2.1.1 Entering the BIOS Setup

To enter the BIOS Setup using a keyboard (or emulated keyboard), press the <F2> function key during boot time when the OEM or Intel Logo Screen or the POST Diagnostic Screen is displayed.

Note: At initial system power on, a USB keyboard will not be functional until the USB controller has been initialized during the power on self test (POST) process. When the USB controller is initialized, the system will beep once. Only after that time will the key strokes from a USB Keyboard be recognized allowing for access into the <F2> BIOS Setup utility.

The following message will be displayed on the Diagnostic Screen or under the Quiet Boot Logo Screen:

```
Press <F2> to enter setup, <F6> Boot Menu, <F12> Network Boot
```

After pressing the <F2> key, the system will eventually load the BIOS Setup utility and display the BIOS Setup Main Menu screen.

Note: Should serious system errors occur during the POST process, the regular system boot will stop and the system will load the BIOS Setup utility and display the Error Manager screen. The Error Manager screen will list and provide information about the specific boot errors detected.

3.2.1 No Access to the BIOS Setup Utility

If the BIOS Setup utility is not accessible by hitting the <F2> key or other described access methods, it may be necessary to restore the BIOS default settings.

3.2.2 Navigating the BIOS Setup Utility

The BIOS Setup utility consists of several menu screens, each holding either informational fields and/or configurable system setup options.

The bottom right portion of each menu screen provides a list of commands that are used to navigate through the Setup utility. These commands are displayed at all times.

If no Administrator or User password is used, all available settings are configurable and can be set by anyone with access to the BIOS Setup.

System settings that are not configurable, because of security settings or configuration limits, will be grayed out and are not accessible.

Table 3. BIOS Setup: Keyboard Command Bar

Key	Option	Description
<Enter>	Execute Command	The <Enter> key is used to activate submenus when the selected feature is a submenu, or to display a pick list if a selected option has a value field, or to select a subfield for multi-valued features like time and date. If a pick list is displayed, the <Enter> key selects the currently highlighted item, undoes the pick list, and returns the focus to the parent menu.
<Esc>	Exit	The <Esc> key provides a mechanism for backing out of any field. When the <Esc> key is pressed while editing any field or selecting features of a menu, the parent menu is re-entered. When the <Esc> key is pressed in any submenu, the parent menu is re-entered. When the <Esc> key is pressed in any major menu, the exit confirmation window is displayed and the user is asked whether changes can be discarded. If “No” is selected and the <Enter> key is pressed, or if the <Esc> key is pressed, the user is returned to where they were before <Esc> was pressed, without affecting any existing settings. If “Yes” is selected and the <Enter> key is pressed, the setup is exited and the BIOS returns to the main System Options Menu screen.
↑	Select Item	The up arrow is used to select the previous value in a pick list, or the previous option in a menu item's option list. The selected item must then be activated by pressing the <Enter> key.
↓	Select Item	The down arrow is used to select the next value in a menu item’s option list, or a value field’s pick list. The selected item must then be activated by pressing the <Enter> key.
←→	Select Menu	The left and right arrow keys are used to move between the major menu pages. The keys have no effect if a submenu or pick list is displayed.
<Tab>	Select Field	The <Tab> key is used to move between fields. For example, <Tab> can be used to move from hours to minutes in the time item in the main menu.
-	Change Value	The minus key on the keypad is used to change the value of the current item to the previous value. This key scrolls through the values in the associated pick list without displaying the full list.

Key	Option	Description
+	Change Value	The plus key on the keypad is used to change the value of the current menu item to the next value. This key scrolls through the values in the associated pick list without displaying the full list. On 106-key Japanese keyboards, the plus key has a different scan code than the plus key on the other keyboards, but has the same effect.
<F9>	Setup Defaults	Pressing the <F9> key causes the following to display: Load Optimized Defaults? Yes No If "Yes" is highlighted and <Enter> is pressed, all Setup fields are set to their default values. If "No" is highlighted and <Enter> is pressed, or if the <Esc> key is pressed, the user is returned to where they were before <F9> was pressed without affecting any existing field values.
<F10>	Save and Exit	Pressing the <F10> key causes the following message to display: Save configuration and reset? Yes No If "Yes" is highlighted and <Enter> is pressed, all changes are saved and the Setup is exited. If "No" is highlighted and <Enter> is pressed, or the <Esc> key is pressed, the user is returned to where they were before <F10> was pressed without affecting any existing values.

4 Server Utilities

Intel provides the following utilities for Intel® Server Products. The utilities and user's guides can be downloaded from www.intel.com/support.

4.1 Intel® System Information Retrieve Utility (Sysinfo)

The Intel® System Information Retrieval Utility (Sysinfo) is used for collecting system information. The utility dumps system information, for example, Sensor Data Records, Baseboard FRU, BMC System Event Log, BMC Settings, BIOS Settings, Operating System Event Log, PCI Bus Device Information, RAID settings and RAID log. Log information results may vary between different versions; refer to the detailed information from specific sections.

4.2 Intel® One Boot Flash Update Utility (OFU)

The Intel® One-Boot Flash Update Utility (Intel® OFU) is used to update the BIOS and firmware on the Intel® Server Boards while the operating system is running. The utility may be launched from a command prompt in either the Windows* or Linux* operating systems. This utility can also be executed remotely through a secure network connection using a Telnet Client and Terminal Services in Windows* or using a Telnet Client and Remote Shell under Linux*.

4.3 Intel® System Event Log (SEL) Viewer Utility

The Intel® System Event Log (SEL) Viewer Utility provides the ability to view system event records stored on the server management storage device of a server. The utility displays the SEL records in either a text or a hexadecimal format. The utility also allows you to save SEL entries to a file and load SEL entries from a file for viewing. You can also reload SEL entries from a server and see properties of SEL entries. The SEL entries can be viewed in two modes: interpreted text mode and hex mode.

4.4 Intel® System Configuration Utility (SYSCFG)

The Intel® System Configuration Utility (Syscfg) is a command-line utility that can be used to save and restore BIOS and firmware settings to a file or to set and display individual settings. Refer to the User Guide for a command reference. The User Guide also provides an overview of the features of the module and instructions for configuring the BIOS and management firmware on the Intel® Server Products.

Appendix A. Technical Reference

System Environmental Specifications

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

Table 4. 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: 7.0BA with hard disk drive stress only at room ambient temperature (23 +/- 2°C)
Shock, operating	Half sine, 2g peak, 11 mSec
Shock, unpackaged	Trapezoidal, 25g, velocity change 205 inches/second (80 lbs to < 100 lbs)
Vibration, unpackaged	5 Hz to 500 Hz, 2.20 g RMS random
Shock and vibration, packaged	ISTA (International Safe Transit Association) Test Procedure 3A
ESD	+/-12 KV except I/O port +/- 8 KV per Intel® Environmental Test Specification
System Cooling Requirement in BTU/Hr	1600 Watt Max – 5459 BTU/hour 2130 Watt Max – 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/support/server.

Appendix C. Appendix C: Getting Help

If you encounter an issue with your compute module, follow these steps to obtain support:

1. Visit the following Intel support web page: http://www.intel.com/p/en_US/support/contactsupport

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

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.

2. 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.

Warranty Information

To obtain warranty information, visit the following Intel web site: http://www.intel.com/p/en_US/support/warranty