



# **Intel® Server Board S2600BP Intel® Compute Module HNS2600BP Product Family**

## ***System Integration and Service Guide***

A guide providing instructions for the installation and replacement of system components, and available Intel accessories and spares.

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Intel® Server Products and Solutions

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## ***Document Revision History***

<b>Date</b>	<b>Revision</b>	<b>Changes</b>
July 2017	1.0	<ul style="list-style-type: none"> <li>Initial Release</li> </ul>
October 2017	1.01	<ul style="list-style-type: none"> <li>Updated Post Error Code Tables</li> <li>Updated IFT cable lengths</li> </ul>
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June 2021	2.3	<ul style="list-style-type: none"> <li>Updated Section 1.2, "Processor Assembly and Installation". Added the TIM type on heat sinks shipped by Intel.</li> <li>Added Section 1.4, "Liquid Cooling Solution Kit Assembly and Installation for Compute Module HNS2600BPBRCT"</li> <li>Minor changes throughout for clarity</li> </ul>
January 2022	2.4	<ul style="list-style-type: none"> <li>Removing initial safety information</li> <li>Added Appendix F, Safety instructions.</li> </ul>

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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 Server Chassis AC power. To remove power from the Server Chassis, you must unplug the AC power cord from the wall outlet. Make sure the AC power cord is unplugged before you open the Server Chassis.

Power down the Compute Module and remove it from the Server Chassis before performing any integration or service. Remove power feeds from the Server Board.

**Hazardous conditions, devices and cables:** Hazardous electrical conditions may be present on power, telephone, and communication cables. Turn off the Compute Module remove it from the Server Chassis and disconnect all telecommunications systems, networks, and modems attached to the Server Board before servicing it. Otherwise, personal injury or equipment damage can result.

**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.

### Electrostatic Discharge (ESD)

Electrostatic discharge can cause damage to your computer or the components within it. ESD can occur without the user feeling a shock while working inside the system chassis or while improperly handling electronic devices like processors, memory or other storage devices, and add-in cards.



Intel recommends the following steps be taken when performing any procedures described within this document or while performing service to any computer system.

- Where available, all system integration and/or service should be performed at a properly equipped ESD workstation.
- Wear ESD protective gear like a grounded antistatic wrist strap, sole grounders, and/or conductive shoes.
- Wear an anti-static smock or gown to cover any clothing that may generate an electrostatic charge.
- Remove all jewelry.
- Disconnect all power cables and cords before opening the Server Chassis
- Power down the Compute Module and remove it from the Server Chassis, remove power feed from the Server Board before performing any integration or service
- Touch any unpainted metal surface of the chassis before performing any integration or service.
- Hold all circuit boards and other electronic components by their edges only.
- After removing electronic devices from the system or from their protective packaging, place them component side up on to a grounded anti-static surface or conductive foam pad. **Do not** place electronic devices on to the outside of any protective packaging.

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



Intel warrants 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.

**Liquid cooling safety guidelines:**

Make sure there are no leaks and/or damaged parts before operating the liquid cooling system.

Do not energize system or compute module if liquid cooling system is compromised.

Do not attempt to perform any integration or service before removing power to the liquid compute module, Turn off and disconnect power before disconnecting the liquid cooling quick disconnects tube connectors.

To reduce the risk of damage to the cooling system, use care when installing or removing the liquid compute modules.

Avoid excessive force when connecting and disconnecting quick disconnects tube connectors. Keep cooling tubing clear of pinch points when sliding server nodes.

## Preface

### About This Document

This document is written for system integrators and service technicians who are responsible for system assembly, server upgrades, server repair, and component replacement.

This document is divided into two major sections. The first half of the document provides detailed instructions on how to install critical components into the system like memory, processor and others. It will guide you through the installation of system components and available accessories. The second half of the document is focused on system service. It provides many reference diagrams that identify all key physical features of the system. It also provides detailed instructions for the replacement of field replaceable components (FRU).

Access the following Intel web site for the latest revision of this document, and to download additional product documentation, specs, onboard device drivers, and utility software

<https://www.intel.com/content/www/us/en/support/products/93308/server-products/intel-compute-modules/intel-compute-module-hns2600bp-family.html>

### Additional Information and Software

The following tables list available support collaterals and documentation for this product family.

**Table 1. Server System References**

For this information or software	Use this Document or Software
For in-depth technical information about this product	<ul style="list-style-type: none"> <li>Intel® Server Board S2600BP Product Family and Intel® Compute Module HNS2600BP Product Family Technical Product Specification (TPS)</li> <li>Intel® Remote Management Module 4 (Intel® RMM4) and Integrated BMC User Guide</li> <li>Intel® Remote Management Module 4 Technical Product Specification</li> <li>Intel® Server System BIOS Setup Utility Guide</li> </ul>
For system integration/assembly and disassembly instructions and service guidance	Intel® Server Board S2600BP and Intel® Compute Module HNS2600BP Product Family Integration and Service Guide
For a product list of supported Intel spares and accessories	<i>Intel® Server Board S2600BP and Intel® Compute Module HNS2600BP Configuration Guide</i>
For a complete list of supported processors, memory, add-in cards, and peripherals	<i>Intel® Server Board S2600BP and Intel® Compute Module HNS2600BP Configurator Tool</i> <a href="https://serverconfigurator.intel.com/exodus/page?eventType=1&amp;targetPageId=1201&amp;defaultFlag=1">https://serverconfigurator.intel.com/exodus/page?eventType=1&amp;targetPageId=1201&amp;defaultFlag=1</a>
For system power budget guidance	<i>Intel® Server Board S2600BP and Intel® Compute Module HNS2600BP Power Budget Tool</i>
For product regulatory information. Declaration of Conformity: H2000	<a href="https://www.intel.com/content/www/us/en/declaration-of-conformity/cprs-doc/docs-servers.html">https://www.intel.com/content/www/us/en/declaration-of-conformity/cprs-doc/docs-servers.html</a> Also see product TPS rev 2.4 or later

The server system has support for several software utilities that can be used to configure system parameters and aid in troubleshooting system issues.

**Table 2. System Utility Software**

To do this:	Use this utility:
To obtain full system information	Intel® SYSINFO Utility – Various OS support
To read System Event Log (SEL)	Intel® SELVIEW Utility – Various OS support
Configure, Save and Restore various system options	Intel® SYSCFG Utility – Various OS support
To update system software: BIOS, BMC FW, ME FW, FRU/SDR data	System Update Package (SUP) – uEFI only Intel® One Boot Flash Update (OFU) – Various OS Support <b>Note:</b> Download update package for Intel® Server Board S2600BP product family
To configure and manage Intel® RAID Controllers	Intel® RAID Web Console 2 Utility – Various OS support
Server Management Software	Intel® Active System Console

In compliance with the European Union (EU) regulatory CE marking directive 2019/424 (Lot 9) materials efficiency requirements, Intel makes available all necessary product collaterals as identified below:

- **Product Serviceability Instructions**
  - Intel® Server Board S2600BP and Intel® Compute Module HNS2600BP Product Family Integration and Service Guide (This document)
  - <https://www.intel.com/content/www/us/en/support/products/93308/server-products/intel-compute-modules/intel-compute-module-hns2600bp-family.html>
- **Product Specifications**
  - *Intel® Server Board S2600BP and Intel® Compute Module HNS2600BP Product Family Technical Product Specification*
  - <https://www.intel.com/content/www/us/en/support/articles/000024315/server-products/server-boards.html>
  - [https://www.intel.com/content/www/us/en/support/articles/000026782/server-products.html?productId=93308&localeCode=us\\_en](https://www.intel.com/content/www/us/en/support/articles/000026782/server-products.html?productId=93308&localeCode=us_en)
- **System BIOS/Firmware and Security Updates**
  - System Update Package (SUP) – uEFI only
  - Intel® One Boot Flash Update (OFU) – Various OS Support
  - <https://www.intel.com/content/www/us/en/support/products/93308/server-products/intel-compute-modules/intel-compute-module-hns2600bp-family.html>
- **Intel® Solid State Drive (SSD) Secure Data Deletion and Firmware Updates**
  - Note: for system configurations that may be configured with an Intel SSD
  - Intel® Solid State Drive Toolbox
  - <https://downloadcenter.intel.com/download/29205?v=t>
- **Intel® RAID Controller Firmware Updates and other support collaterals**
  - Note: for system configurations that may be configured with an Intel® RAID Controller
  - <https://www.intel.com/content/www/us/en/support/products/43732/server-products/raid-products.html>



## Document Organization

### System Integration

**Chapter 1 – Essential Component Integration**– provides instructions for adding essential system components required to complete the integration of the server chassis. This includes installation of Processors, Memory, Bridge Boards, Add-in Cards, and Hot-Swap storage devices.

**Chapter 2 – Optional Feature / Accessory Kit Installation and Service** – provides instructions for adding and removing various system options and available accessory kits

**Chapter 3 – System Software Update and Configuration** – provides instructions for completing the integration of the server chassis by updating the system software and navigating through the BIOS Setup screens.

### System Service

**Chapter 5 – Product Family Features Overview** – provides a high level overview of the supported Intel® Server Boards S2600BP and Intel® Compute Module HNS2600BP product family. In this chapter, you will find a list of the server chassis features and illustrations identifying the major system components.

**Chapter 6 – FRU Replacement** – Provides guidance for the replacement of system components considered as field replaceable units (FRUs).

**Appendix A** – Getting Help

**Appendix B** – System Cable Routing Diagrams

**Appendix C** – System Status LED Operating States and Definition

**Appendix D** – POST Code Diagnostic LED Decoder Table for S2600BP server board Family

**Appendix E** – POST Error Codes

**Appendix F** – Safety Instructions

### Throughout this manual:

- The Intel® Compute Module HNS2600BPS, HNS2600BPB, HNS2600BPQ, HNS2600BPBLC, HNS2600BPBRCT will be collectively referred to as the Intel® Compute Module HNS2600BP.
- The Intel® Compute Module HNS2600BPS24, HNS2600BPB24 and HNS2600BPQ will be collectively referred to as the Intel® Compute Module HNS2600BP24.

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# 1. Essential Component Installation

**Important Note:** All product order codes ending with 'R' identify new product versions that are available as of revision 2.0 of this document. While product order codes not ending with 'R' may be referenced within this document, only product order codes ending in '(R)' cover both SKU derivations (i.e. S2600BPB(R) covers S2600BPB and S2600BPBR).

This chapter provides detailed instructions for the installation of required system components whether for OEM server board only installations or those for Intel compute modules that come pre-assembled with a server board, power docking board, system fans, and associated internal cabling.

Component installation instructions included in this chapter will include:

- Processors
- Memory
- Bridge Board (Intel compute module only)

When complete, the server board / Intel compute module should be configured to support basic system functionality.

Installation instructions for all optional features and accessories can be found in Chapter 2.

**Before servicing the system, make sure to review and follow all Safety and ESD precautions found at the beginning of this document.**

**Warning:** This section assumes that the Intel compute module is new and is being configured for the first time. If component changes are being made to an existing Intel compute module that is currently in use: power down the compute module, unplug all external cables from the compute module, and remove it from the server chassis.

Within this document, all references to left, right, front, and back assume that the reader is facing the leading edge of the server board or front of the compute module, where all external I/O connectors on the back edge of the server board are facing away from you.

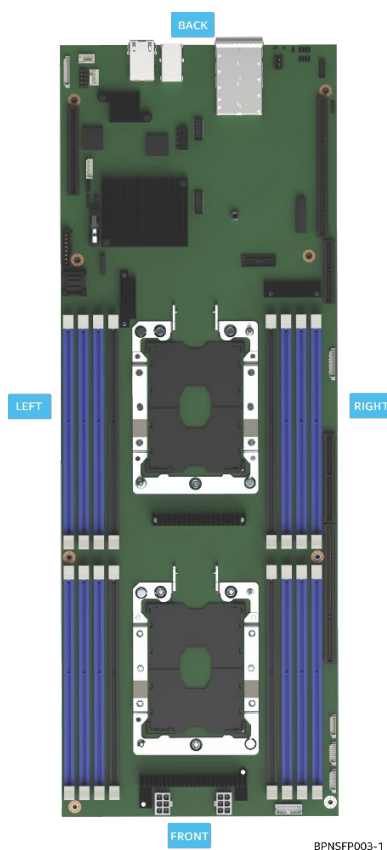
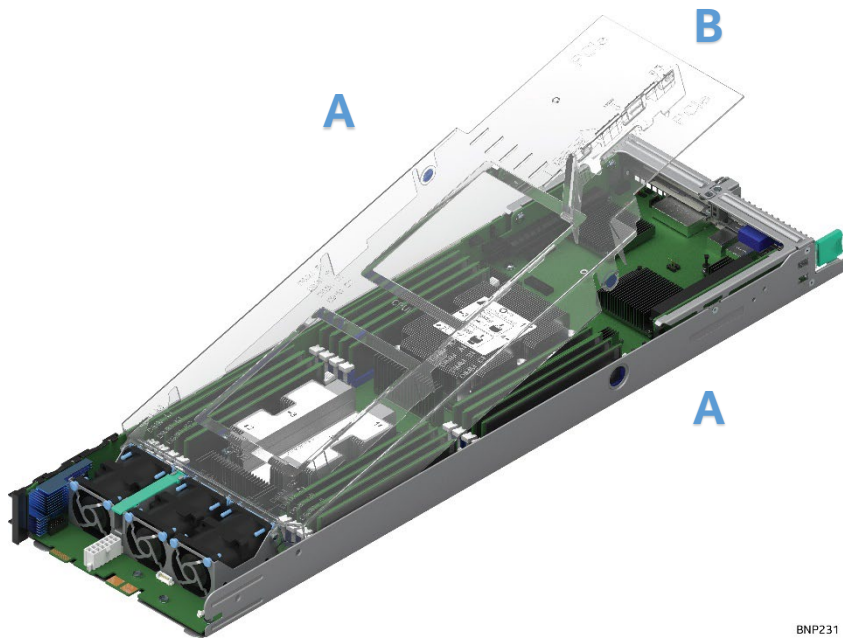


Figure 1. Viewer References

## 1.1 Air Duct Removal / Installation (Intel® Compute Module)

### 1.1.1 Air Duct Removal

1. Press in and hold one of the air duct side latches (see Letter **A**)
2. Carefully lift the back edge of the air duct to disengage the latch from the module base
3. Press in and hold the second air duct latch and pull the air duct away from the module base0 (see Letter **B**)

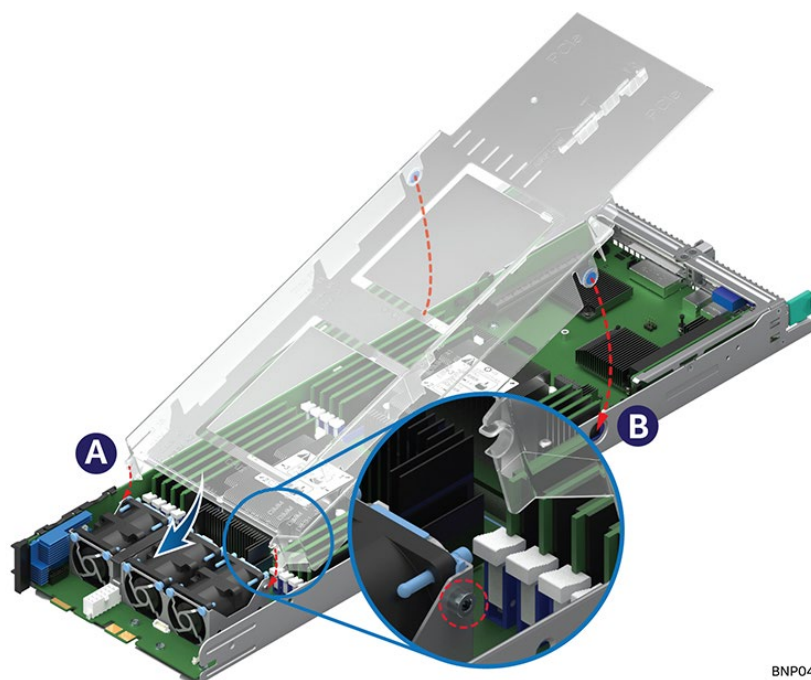


BNP231

Figure 2. Air Duct Removal

### 1.1.2 Air Duct Installation

1. Align and attach the hinge slots on the front end of the air duct with the hinge posts on both sides of the fan bracket (see Letter **A**)
2. Lower the air duct down until the left and right side buttons snap into place (see Letter **B**)



BNP046

Figure 3. Air Duct Installation

## 1.2 Processor Assembly and Installation

### Components Required:

- 1 or 2 1<sup>st</sup> or 2<sup>nd</sup> Gen Intel® Xeon® processor Scalable family
- 1 or 2 processor clips – Standard and/or Fabric
- 2 Processor Heat Sink(s) – CPU #1 (Bi-color Aluminum/Copper), CPU #2 (One Color Aluminum)

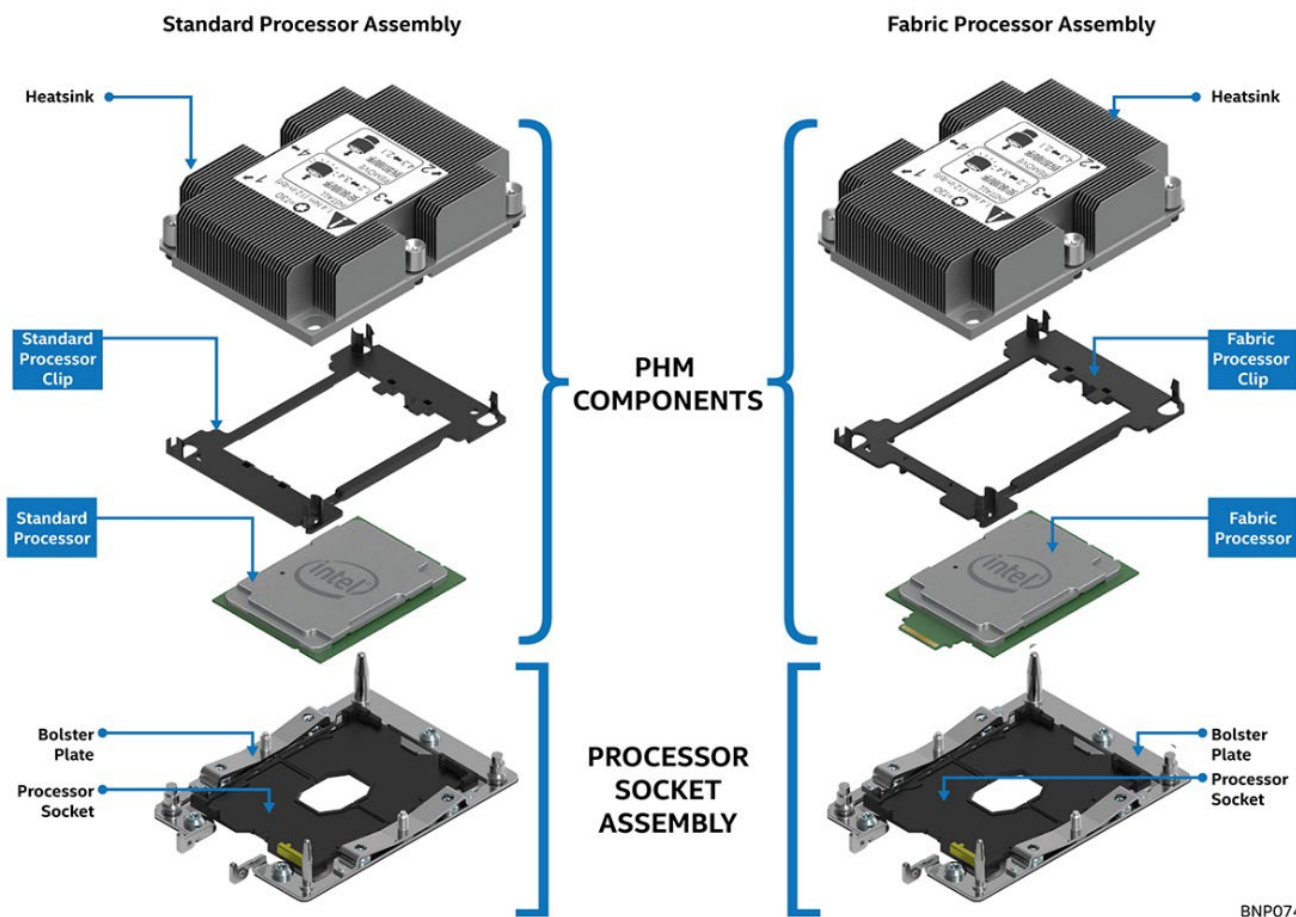
To upgrade to the 2<sup>nd</sup> Generation Intel® Xeon® processor Scalable family, first update the system software stack from the following Intel® website: <https://downloadcenter.intel.com>.

### Tools Required:

- T-30 Torx\* screwdriver
- Flat head screwdriver
- Adequate ESD protective gear (wrist strap, ESD mat)

**This generation of the Intel compute module requires that the processor be attached to the heat sink by using a processor carrier clip prior to installation on to the server board.** The processor, carrier clip and heat sink assembly are referred to as the processor heat sink module, or PHM. The following illustration identifies each component associated with the processor assembly.

**Note:** The illustration does NOT represent the processor installation process.



**Figure 4. PHM and Processor Socket Reference Diagram**

To properly assemble the PHM and install it to the server board, the procedures described in the following sections must be followed in the order specified. These instructions assume that all the PHM components are new and the Thermal Interface Material (TIM) is already applied to the bottom of the heat sink.

**Note:** Heat sinks are shipped pre-installed with TIM type Honeywell\* PCM45F.

**Note:** Intel compute modules include two processor carrier clips to support standard Intel® Xeon® processors. For Intel® Xeon® processors that include an Intel® Omni-Path interface connector, a Fabric Carrier Clip must be used in place of the standard processor clip. Fabric Carrier Clips are included with the following Intel accessory kits: iPC **AHWBPFABKIT** or **AHWBPFABKITCPU1**. Reference the *Intel® Server Board S2600BP Product Family Configuration Guide* for additional information.

See Section 2.7 for complete Fabric Accessory Kit installation instructions.

**Warning:** Attempting to use a Standard processor carrier clip with a Fabric supported processor may result in component damage and/or induce improper assembly of the PHM.

### 1.2.1 PHM Assembly

The PHM assembly and the Processor Socket Assembly have several alignment features to ensure a correct processor installation. These features are identified in the following illustration.

**Note:** The illustration does NOT represent the processor installation process.

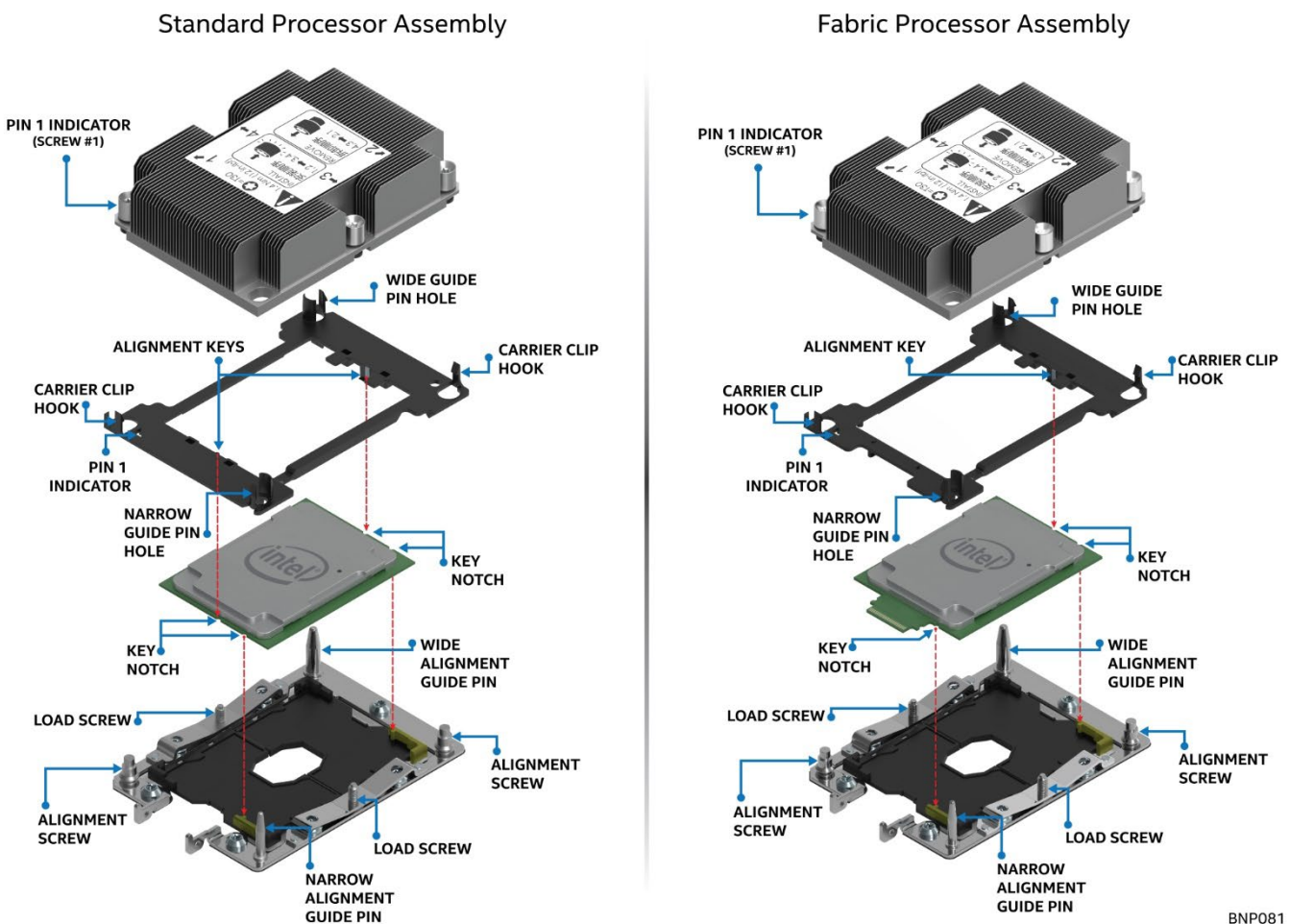


Figure 5. PHM and Processor Socket Alignment Features

BNP081

The following steps detail the PHM assembly process:

1. Remove the heat sink from its packaging. To avoid damage to the heat sink, grasp it by its narrower, top and bottom edges, as shown below.

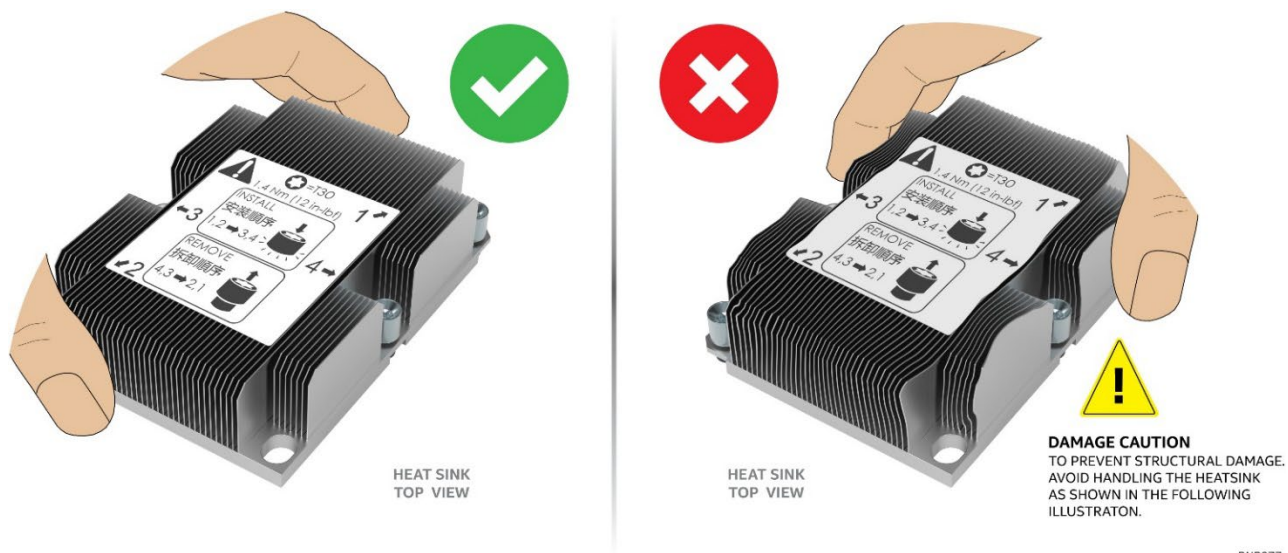


Figure 6. Processor Heat Sink Handling

2. Place the heat sink bottom side up, on to a flat surface as shown.

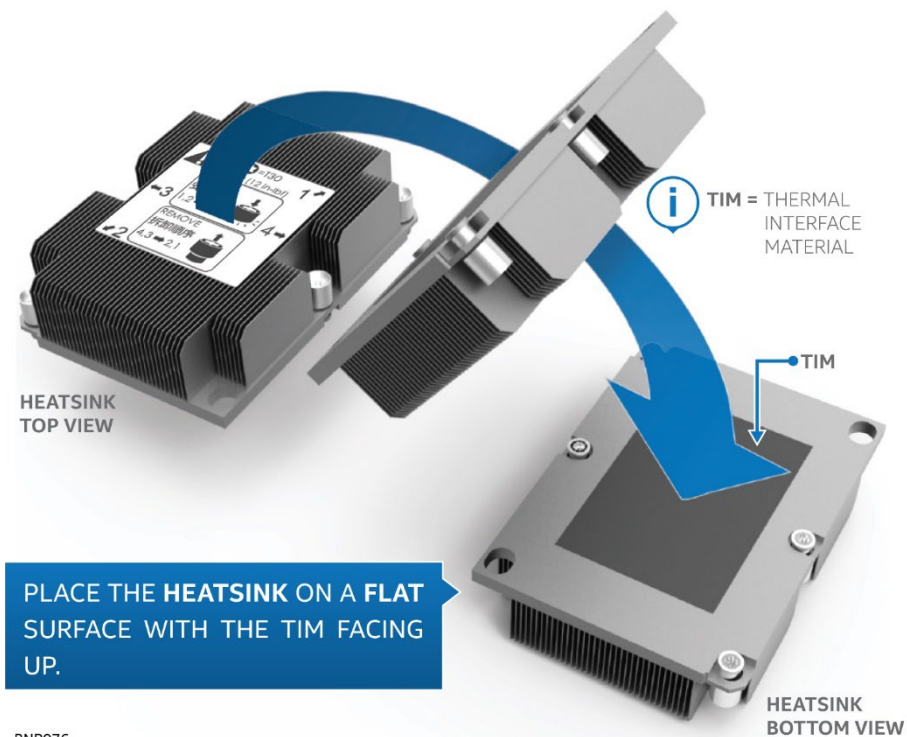


Figure 7. Place the Processor Heat Sink on to a Flat Surface

3. If present, carefully remove the plastic protective cover from the bottom side of the processor to expose the Thermal Interface Material (TIM)
4. Locate the processor carrier clip and place it on to a flat non-skid surface with corner latch pins facing down
5. Carefully remove the processor from its packaging. **A processor should only be grasped by its edges. Do not touch any part of the component side of the processor with your fingers.**
6. Orient the processor, component side up, so that all alignment features match those of the carrier clip as shown in the following figures.

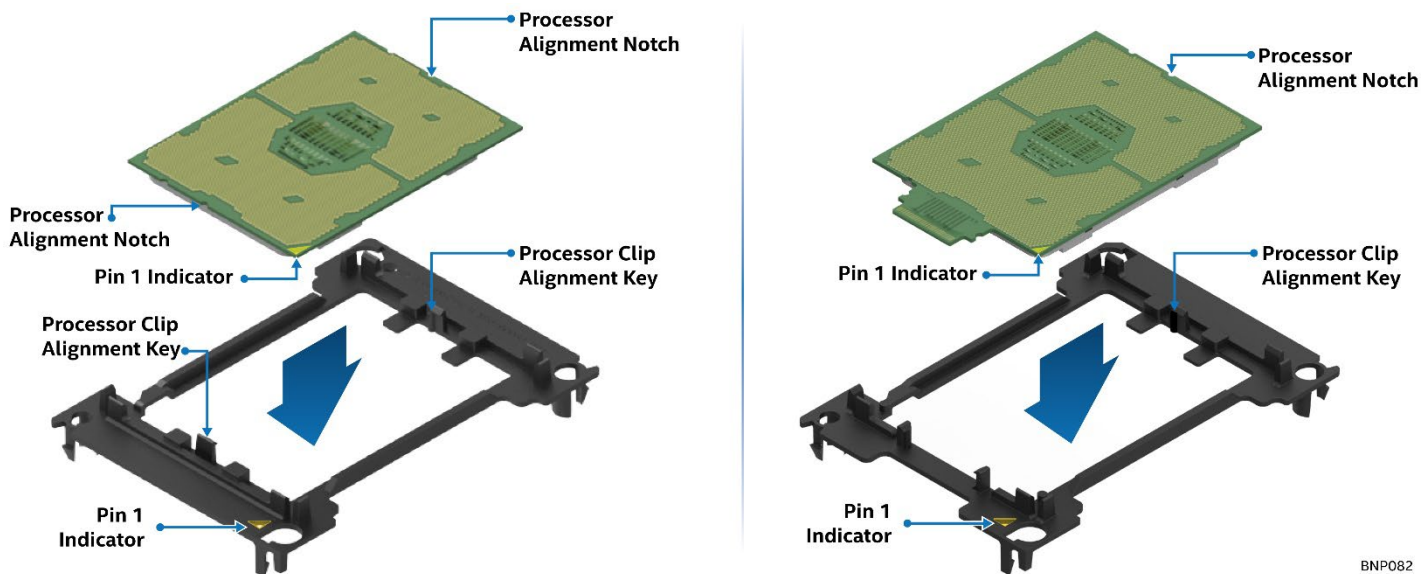


Figure 8. Processor Carrier Clip Assembly

7. Install the processor into the processor carrier clip until it snaps into place.

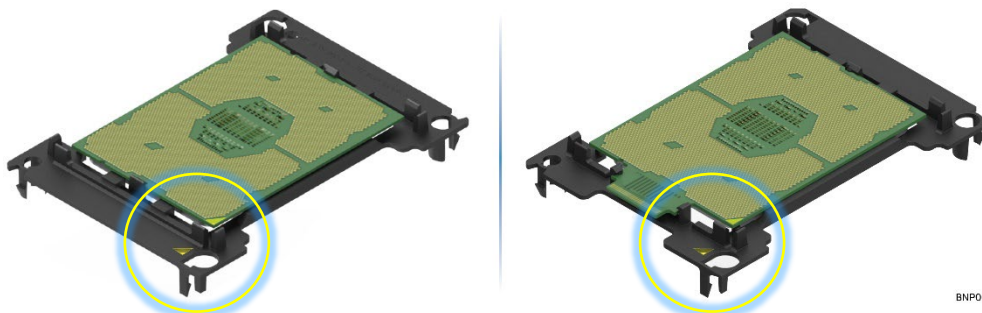
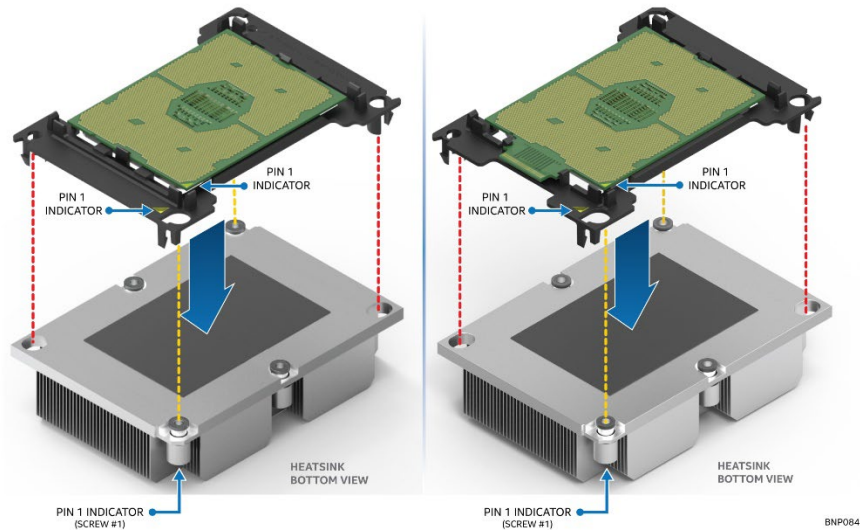


Figure 9. Processor Carrier Clip Sub-Assembly

**Caution:** To prevent the processor from falling out of the carrier clip, the processor / carrier clip assembly should only be grasped by its shorter edges.

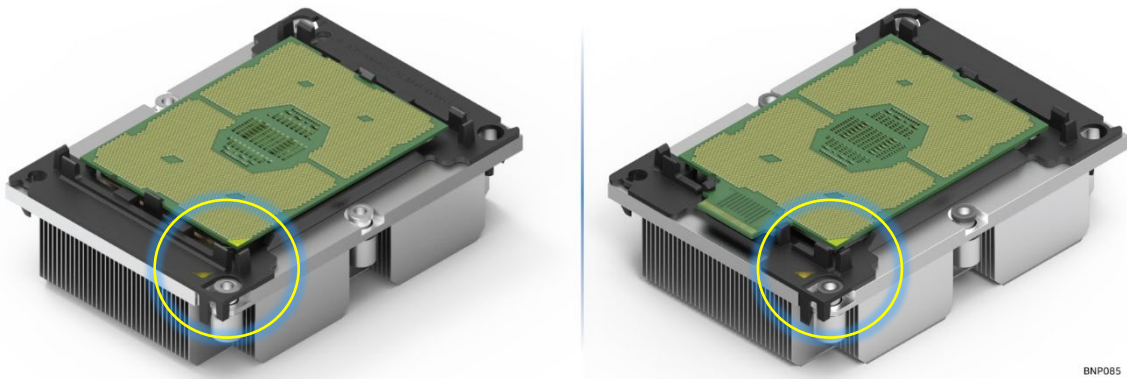
Do not touch the sensitive contacts on the bottom side of the processor at any time during PHM assembly or installation. In addition, the pins inside the processor socket are extremely sensitive. A damaged processor socket may produce unpredictable system errors

8. Orient the processor carrier clip sub-assembly over the processor heat sink so that all corner features are in alignment. **Ensure Pin 1 indicators are aligned** as shown in the following figures.



**Figure 10. Orienting Processor Carrier Clip Sub-assembly to Heat Sink**

9. Push the processor carrier clip sub-assembly down on to the processor heat sink until it snaps into place, ensuring all four corners are secure. Processor and carrier clip sub assembly should sit flat on top of the heat sink.



**Figure 11. Processor Heat Sink Module (PHM)**

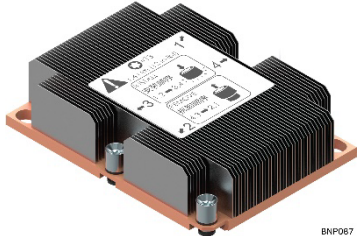
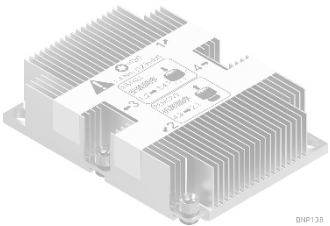



## 1.2.2 Processor Installation

Intel compute modules support the installation of 1 or 2 processors. For the server to be operational, CPU #1 must be installed. The installation of CPU #2 is optional, however, to ensure proper airflow when the compute module is operational, the CPU #2 heat sink must be installed at all times.

To ensure proper cooling when operational, the Intel compute module requires the use of two different types of processor heat sinks. The CPU #1 heat sink has both Copper and Aluminum and is distinguishable by its two tone color and higher fin count. The CPU #2 heat sink is made solely of Aluminum and is distinguishable by its Silver only color and fin count.

**Table 3. Processor Heat sinks**

Intel® Product Code (iPC)	MM#	Description
iPC - FXXHP78X108HS 	MM# - 956548	1U Standard Cu/Al 78mm x 108mm x 25.5mm 53fin Heat Sink (Rear Heat Sink) – for CPU 1 use only
iPC - FXXEA78X108HS 	MM# - 948936 <b>This part is no longer orderable. Refer to replacement part MM# 964013.</b>	1U Standard Ex-Al 78mm x 108mm x 25.5mm Heat Sink (Front Heat Sink) – for CPU 2 use only
iPC - FXX2678X108HS 	MM# - 964013	1 U Standard Cu/AL 78mm x 108mm x 25.5mm Heat Pipe Heat Sink (Front Heat Sink) – for CPU 2 use only

---

**Warning:** DO NOT install a processor / heat sink assembly to the wrong processor socket on the server board, doing so will result in the compute module operating at elevated temperatures that may result in poor performance and possible shutdown.

---

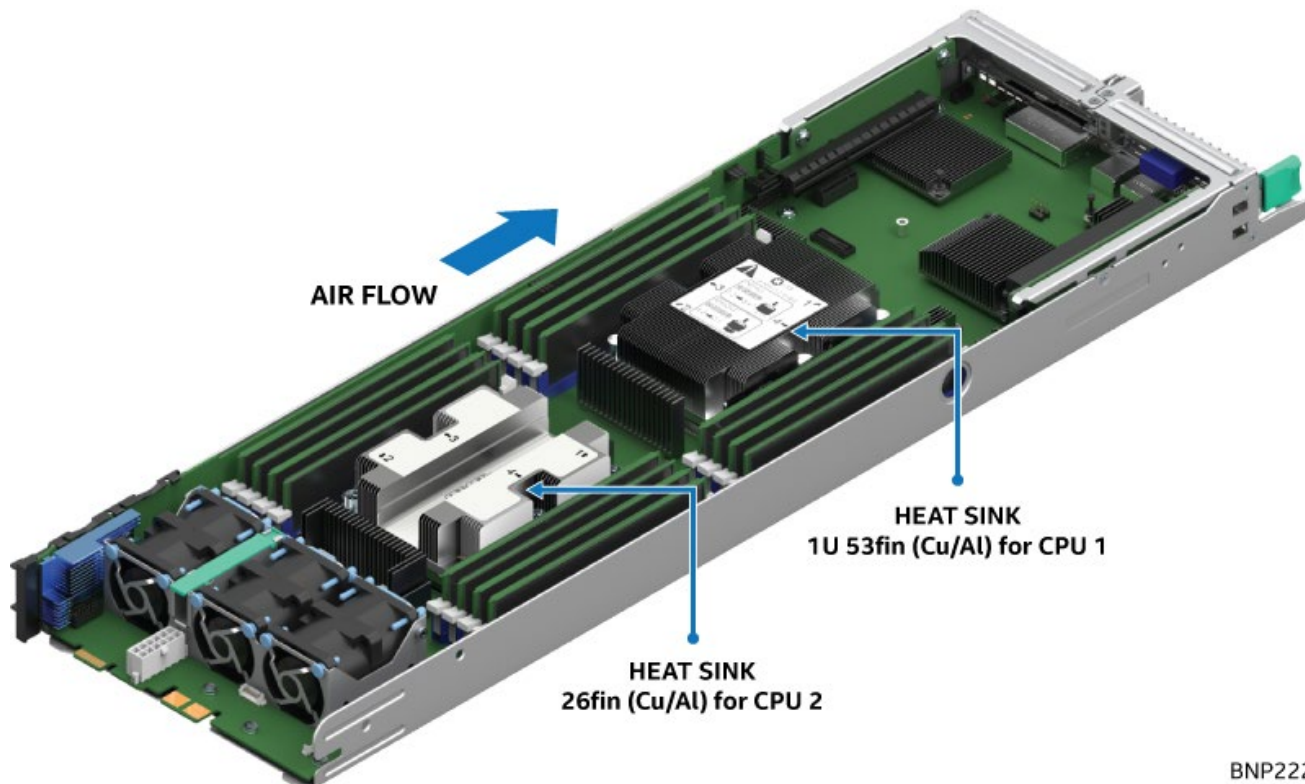
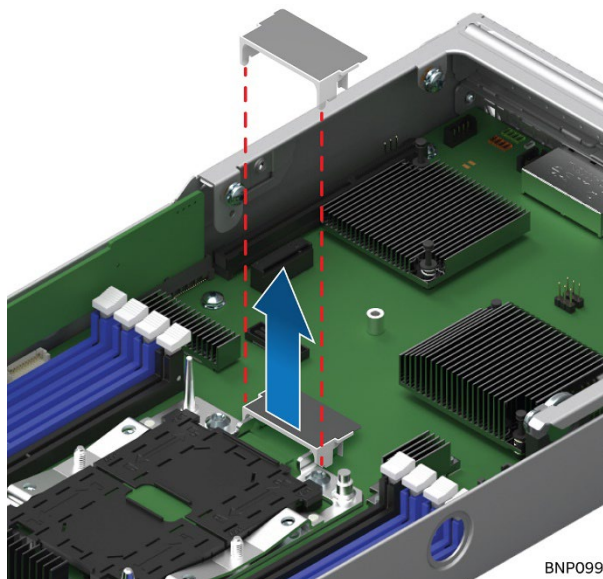


Figure 12. CPU #1 / CPU #2 – Heat Sink Identification

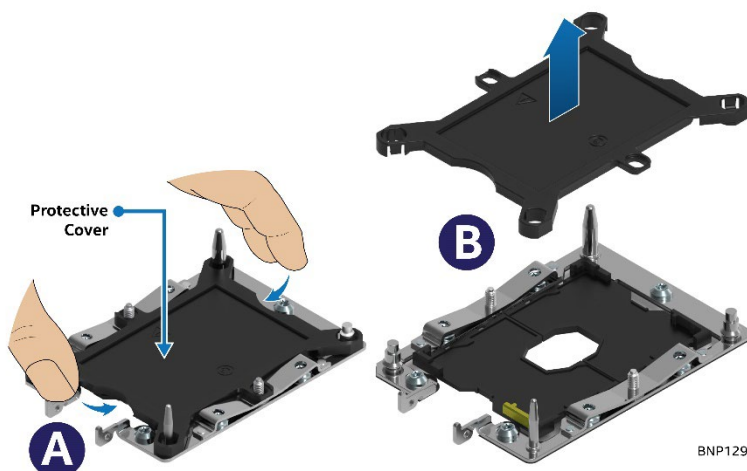
**Note:** Fabric Processor Installation Step

Remove the Bolster Plate Insulator from the CPU #1 processor socket assembly on the server board.



Retain the Bolster Plate Insulator. It will be reinstalled as part of the Fabric Accessory Kit Installation process described in Section 2.7.

1. Remove the plastic cover from the processor socket on the server board
  - Grasp the processor cover as shown in the following figure (see Letter **A**)
  - Carefully pull it up away from the processor socket, ensuring no contact is made with any of the pins within the socket. (see Letter **B**)



**Figure 13. Plastic processor socket cover removal**

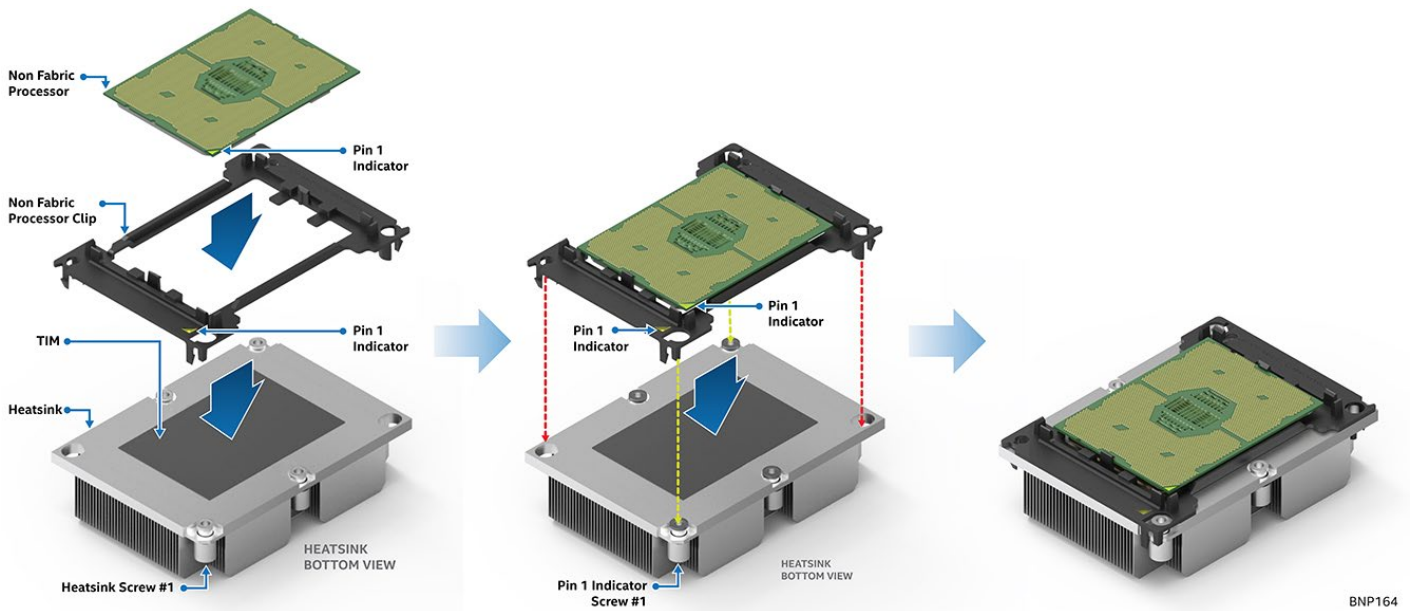
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**Note:** The processor socket cover should be saved for future use.

**Caution:** When reinstalling the socket cover, make sure it properly snaps into place. Improper installation will cause it to become loose and damage the processor socket.

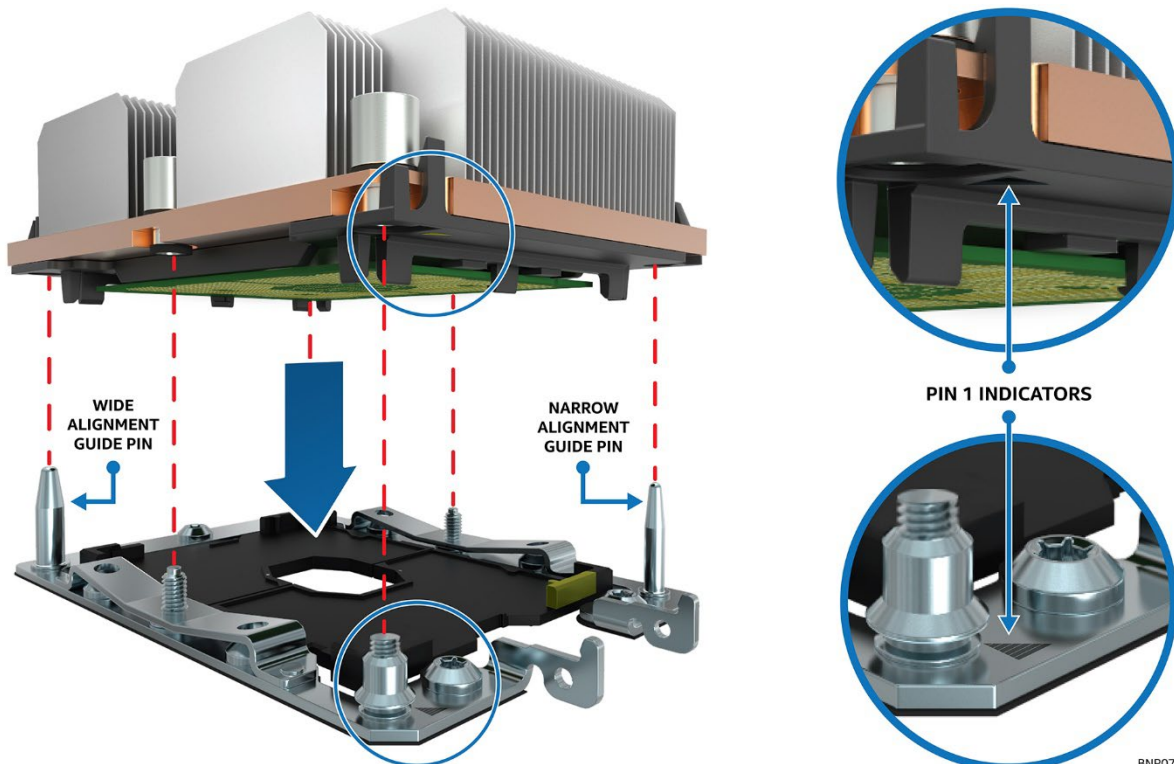
---

The assembled PHM and the processor socket include several alignment features to ensure the PHM can only be installed one way. Care should be taken to ensure components are accurately assembled and the PHM is oriented correctly to the processor socket prior to placement onto the server board. Install PHM assembly to the processor socket on the server board.



**Figure 14. PHM Assembly Using Carrier Clip**

- Align the mounting holes of the PHM (on diagonal corners) to the guide pins of the processor socket as shown in the following figure.

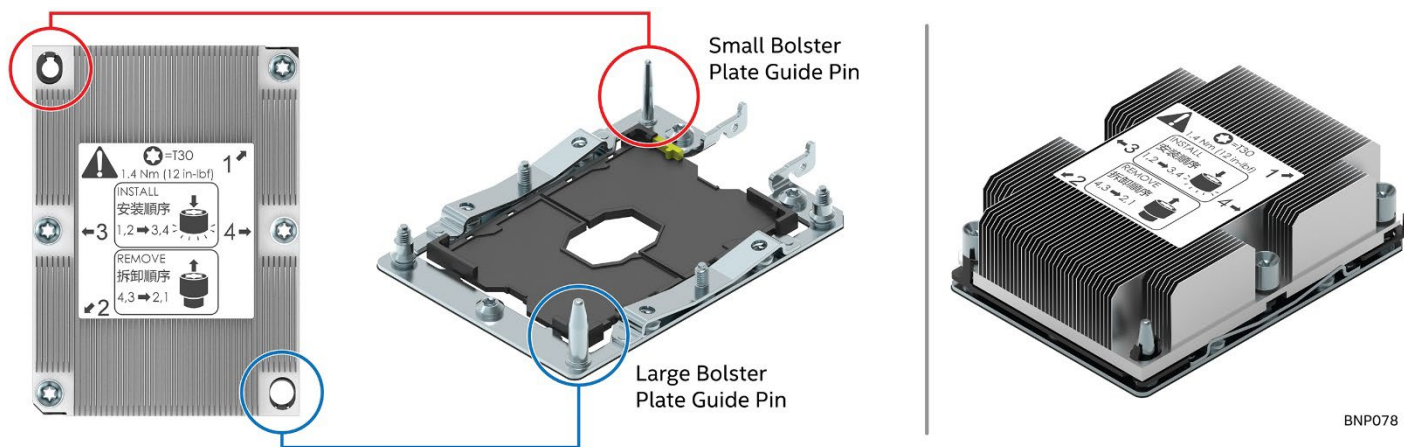


**Figure 15. PHM Alignment to Bolster Plate**

- Lower the PHM onto the processor socket assembly

**Caution:** Processor socket pins are delicate and bend easily. Use extreme care when placing the PHM onto the processor socket, do not drop it.

- The PHM assembly is properly installed when seated flat and evenly upon the processor socket assembly



**Figure 16. Correct PHM Placement**

**Note:** The PHM is NOT installed properly if it does not sit level with the processor socket assembly. Improperly installed PHMs cannot be fastened down. PHMs can only be fastened down if correctly installed.

2. Secure PHM to the processor socket assembly

- Using a T30 Torx\* bit screwdriver, securely tighten (12 in-lb) each fastener in the sequence shown on the label on the top of the heat sink



**Figure 17. Installing the PHM**

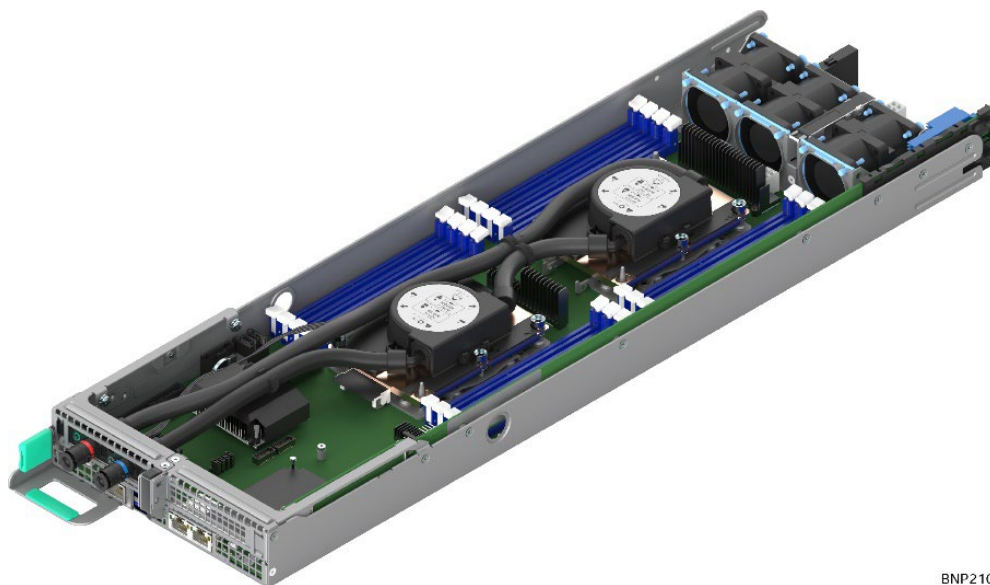
**Caution:** Failure to tighten the heat sink screws in the specified order may damage the processor socket assembly. Each heat sink screw should be fully tightened to 12 in-lb torque before securing the next screw in the sequence.

3. For a second processor, repeat the processor installation instructions above, ensuring the proper processor heatsink and processor carrier clip are used for the installation.

For single processor configurations where a 2<sup>nd</sup> processor is not configured, install the CPU #2 heat sink on to the CPU #2 socket to ensure proper airflow when the compute module is operational.

### 1.3 Liquid Cooling Solution Kit Assembly and Installation for Intel® Compute Modelue HNS2600BPBLC

Intel® Compute Module **HNS2600BPBLC** supports the use of the Intel® Liquid Cooling Kit **AXXBPLCKIT** with Intel® Xeon® processor Scalable family with a maximum TDP of up to 165W within the Intel® Server Chassis H2312XXLR3 and Intel® Server Chassis H2204XXLRE.



BNP210

**Figure 18. Intel® Compute Module HNS2600BPBLC with Liquid Cooling Kit**

*Refer to the Intel® Server Board and Compute Module HNS2600BP product family configuration guide for ordering information and to the Intel® Server Board and Compute Module HNS2600BP product family technical product specification for additional details.*

This section of the Service Guide describes the installation and removal of the 1U liquid cooling solution kit into the Intel® Compute Module HNS2600BPBLC.



BNP220

**Figure 19. Intel® Liquid Cooling Kit AXXBPLCKIT**

---

**Caution:** The liquid cooling kit is factory filled with coolant. Be careful when handling the tubes and connections to avoid leaks and spills.

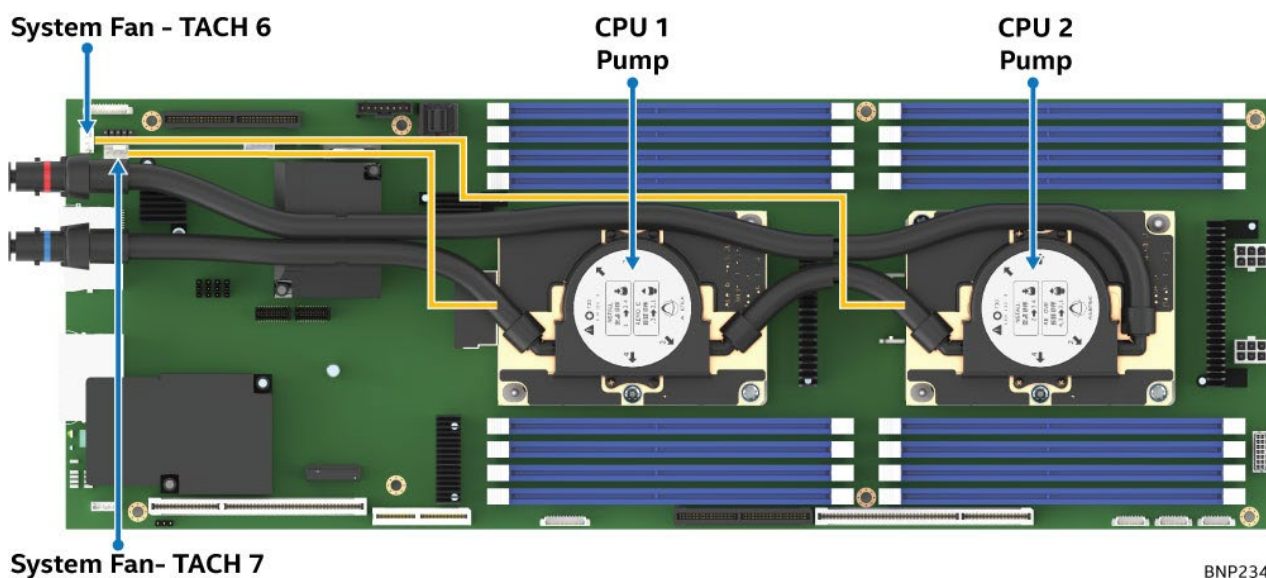
---

### 1.3.1 Removing the Liquid Cooling Kit

**Note:** The following procedure assumes user has already disconnected any external liquid source from the node. The sequence and method of removing the liquid cooling cold plate is the same as the passive air PHM assembly. Carefully follow the screw loosening sequence, use the passive air heat sink installation and removal instructions in Section 5.1 as reference.

**Warning:** Beware, the kit is entirely filled with liquid.

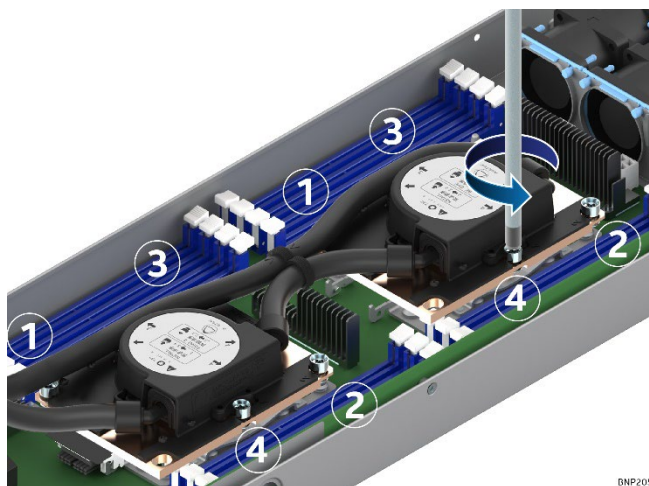
1. Power off the compute module
2. Carefully disconnect the liquid cooling node from any external source
3. Remove the compute module from the system and place it over a suitable surface
4. Remove the air duct (see Section 1.1.1)
5. Disconnect the pump signal cables from the server board fan headers J6A1 (SYS\_FAN\_6) and J6A4 (SYS\_FAN\_7), (see Figure 20)



BNP234

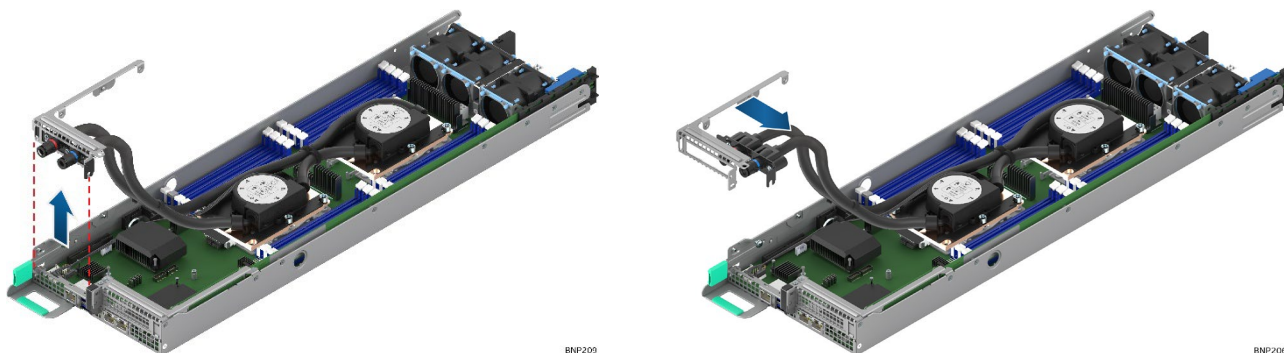
Figure 20. Disconnect the Pump Signal Cables from the Server Board

- Using a T30 Torx\* bit screwdriver, loosen each cold plate fastener in the sequence shown on the label located on the top of the liquid cooling pumps (see Figure 21)



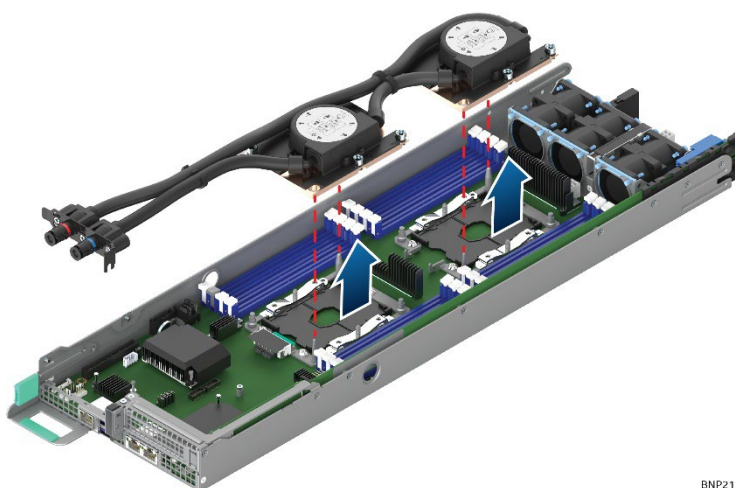
**Figure 21. Releasing the Liquid Cooling Assembly**

- Following instructions in Section 2.5.2, carefully disengage the liquid cooling quick disconnects bracket from the raiser slot 1 (see Figure 22)



**Figure 22. Disengage of the Quick Connectors Bracket**

- Lift the entire liquid cooling assembly straight up from the server board until it is free from the processor socket bolster plate guide pins (see Figure 23)



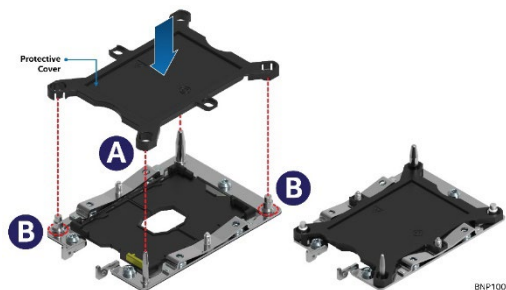
**Figure 23. Removing Liquid Cooling Assembly**

---

**Note:** In order to prevent possible damage to the processor socket, reinstall the original plastic cover to the processor socket.

---

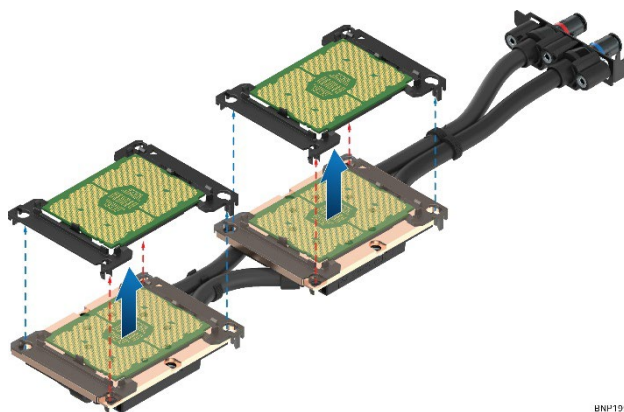




**Figure 24. Plastic Processor Socket Cover Installation**

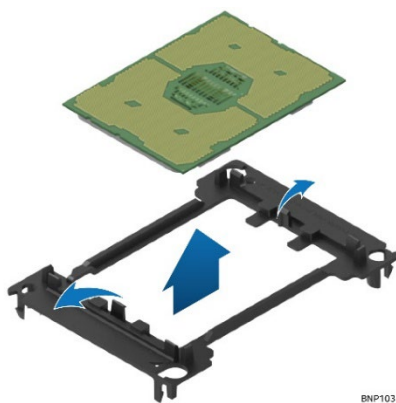
### 1.3.2 Removing Processor and Carrier from Liquid Cooling Assembly

1. With the liquid cooling assembly facing down, place the liquid cooling plates onto a flat non-conductive surface
2. To remove the processor clip sub-assembly from the liquid cooling plate:
  - Insert the head of a flat head screwdriver in-between the cooling plate and the processor clip assembly and gently twist to break the bond between the two components (see Section 5.1.1)
  - Unlatch the hooks on each corner of the processor carrier clip to free the processor carrier from the cold plate



**Figure 25. Processor and Cold Plate Disassembly**

- Carefully lift the processor sub-assembly away from the cold plate
- Remove the processor from the processor carrier clip by carefully pushing back one of the latches on the ends of the processor and rotating the processor up and out of the processor carrier clip



**Figure 26. Releasing Processor from Carrier Clip**

### 1.3.3 Installing the Liquid Cooling Kit

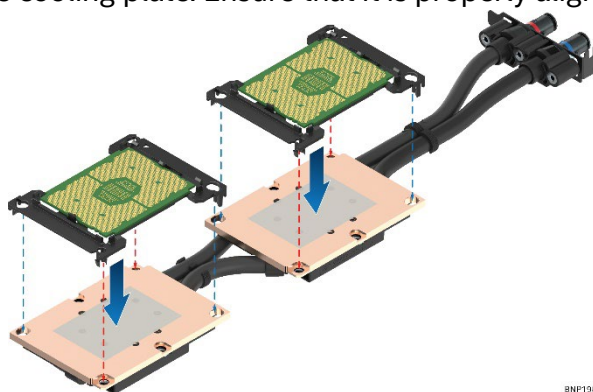
1. Power off the compute module and disconnect the power cable(s).
2. Remove the air duct (see Section 1.1.1)

---

**Note:** The liquid cooling assembly is modeled after the passive air heat sink assembly. The sequence and method of installing the CPU and Carrier is the same as the passive air heat sink. This step is only required if the CPU requires replacement or installation. For simplification, refer to the CPU and Carrier installation instructions in Section 1.2 for details.

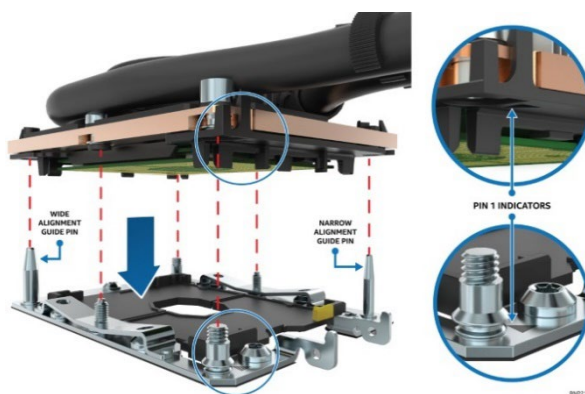
---

3. Verify thermal interface material (TIM) is present and pristine state. Carefully place and position the processor assembly on the cooling plate. Ensure that it is properly aligned.



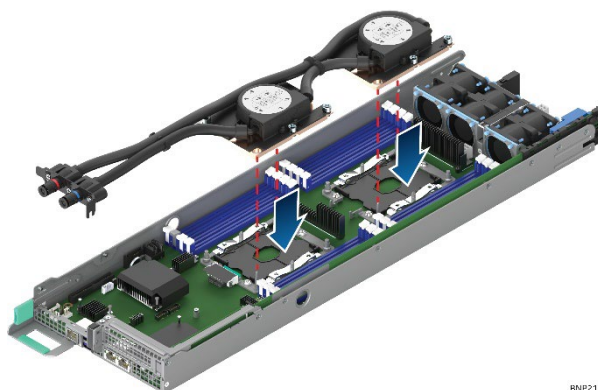
**Figure 27. Processor Liquid Cooling Assembly**

4. Place and position the liquid cooling assembly over the node using two hands, ensure it is properly aligned and that the cold plate aligns correctly with the CPU socket assembly and guide pins



**Figure 28. Liquid Cooling Assembly Alignment**

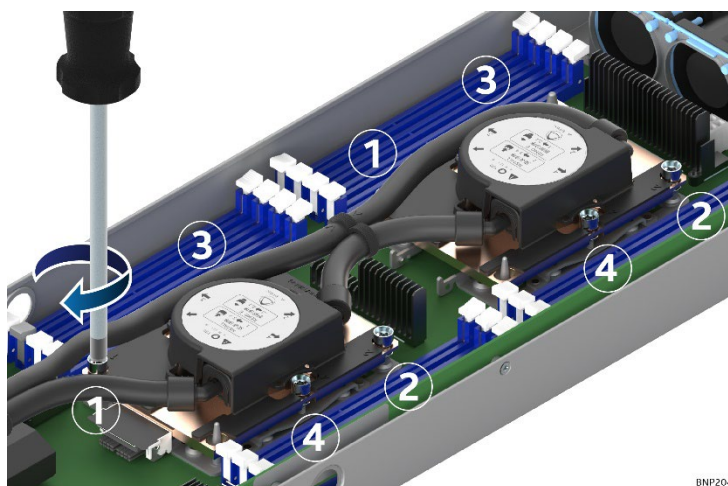
5. Carefully lower the assembly until it seat flat into place



**Figure 29. Liquid Cooling Assembly Placement**

4. Secure the liquid cooling assembly to the processor socket assembly

- Using a T30 Torx\* bit screwdriver, securely tighten (12 in-lb) each fastener in the sequence shown on the label on the top of the liquid cooling pump



BNP204

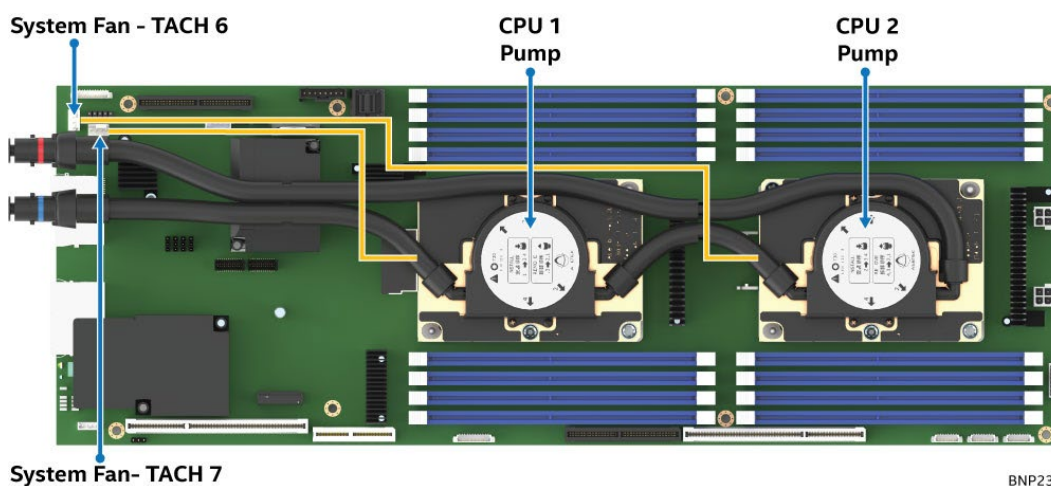
Figure 30. Installing the PHM

---

**Caution:** Failure to tighten the cold plate screws in the specified order may damage the liquid cooling assembly and processor socket. Each cold plate screw should be fully tightened to 12 in-lb torque before securing the next screw in the sequence.

---

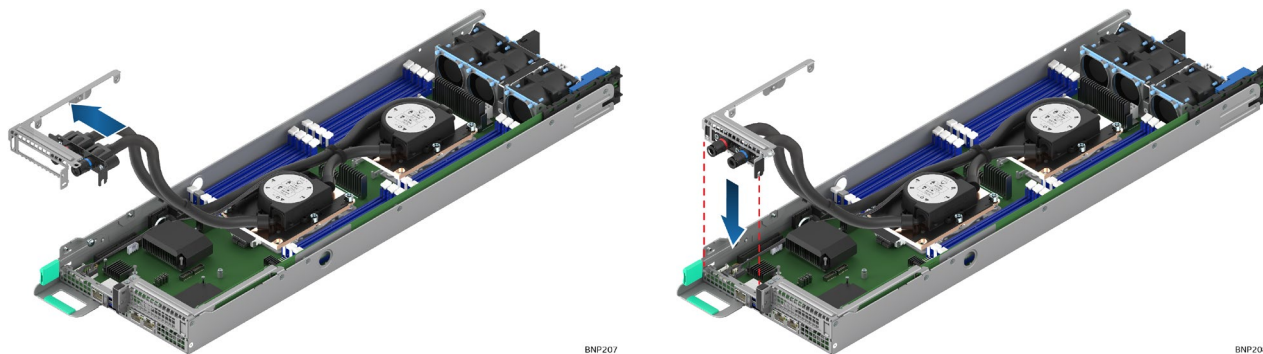
9. Connect the pump signal cables to the server board fan headers J6A1 (CPU 2 Pump to SYS\_FAN\_6) and J6A4 (CPU 1 Pump to SYS\_FAN\_7), see Figure 31.



BNP234

Figure 31. Connect Pump Signal Cables to Server Board Fan Headers

6. Install and secure the quick disconnects bracket into riser slot 2, see Section 2.5 for detailed instructions



**Figure 32. Installing and Securing Quick Connectors Bracket**

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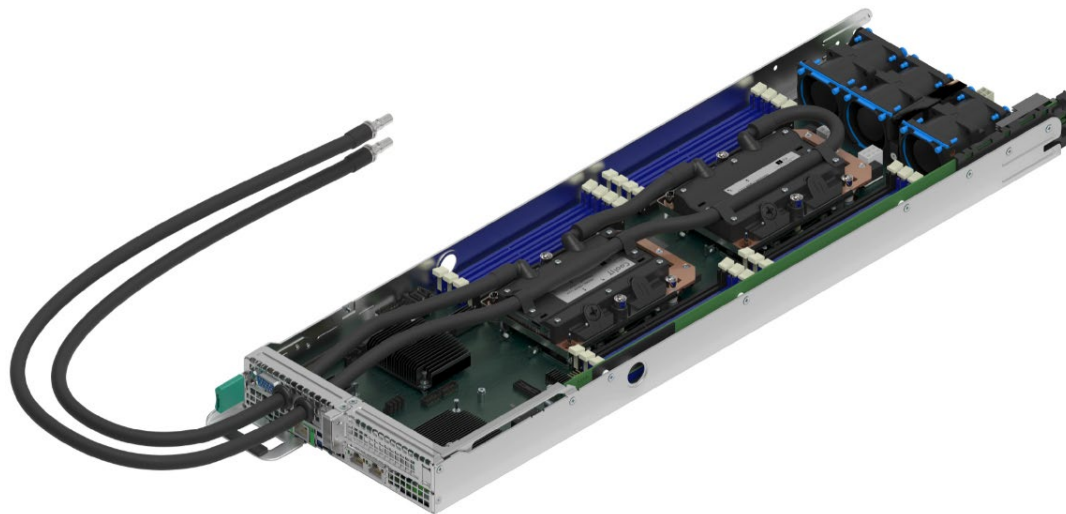
**Caution:** Verify the integrity of the assembly and the connections, inspect there are no leaks or damaged parts before operating the system. Ensure to follow safety guidelines detailed at the beginning of this document.

---

7. Install the air duct, (see Section 1.1.2)

## 1.4 Liquid Cooling Solution Kit Assembly and Installation for Compute Module HNS2600BPBRCT

Intel® Compute Module **HNS2600BPBRCT** supports the use of the Liquid Cooling Kit **AXXBPCTKIT** with Intel® Xeon® processor Scalable family with a maximum TDP of up to 165W within the Intel® Server Chassis H2312XXLR3 and Intel® Server Chassis H2204XXLRE.

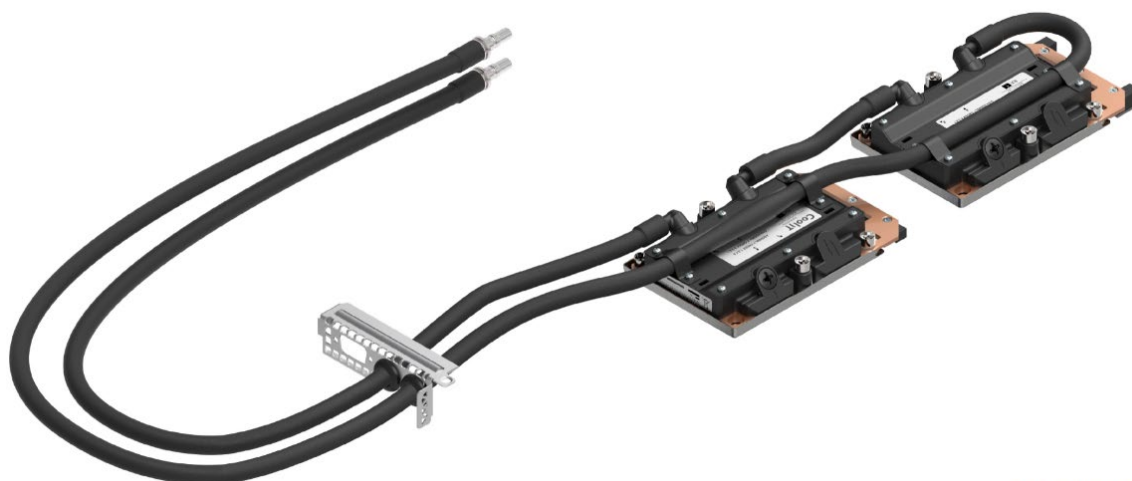


Ref #: BNP40051

**Figure 33. Intel® Compute Module HNS2600BPBRCT with Liquid Cooling Loop Kit**

Refer to the *Intel® Server Board and Compute Module HNS2600BP Product Family Configuration Guide* for ordering information. Refer to the *Intel® Server Board and Compute Module HNS2600BP Product Family Technical Product Specification* for additional details.

This section of the service guide describes the installation and removal of the 1U liquid cooling solution kit into the Intel® Compute Module HNS2600BPBRCT.



Ref #: BNP40061

**Figure 34. Liquid Cooling Loop Kit AXXBPCTKIT**

---

**Caution:** The liquid cooling kit is factory filled with coolant. Be careful when handling the tubes and connections to avoid leaks and spills.

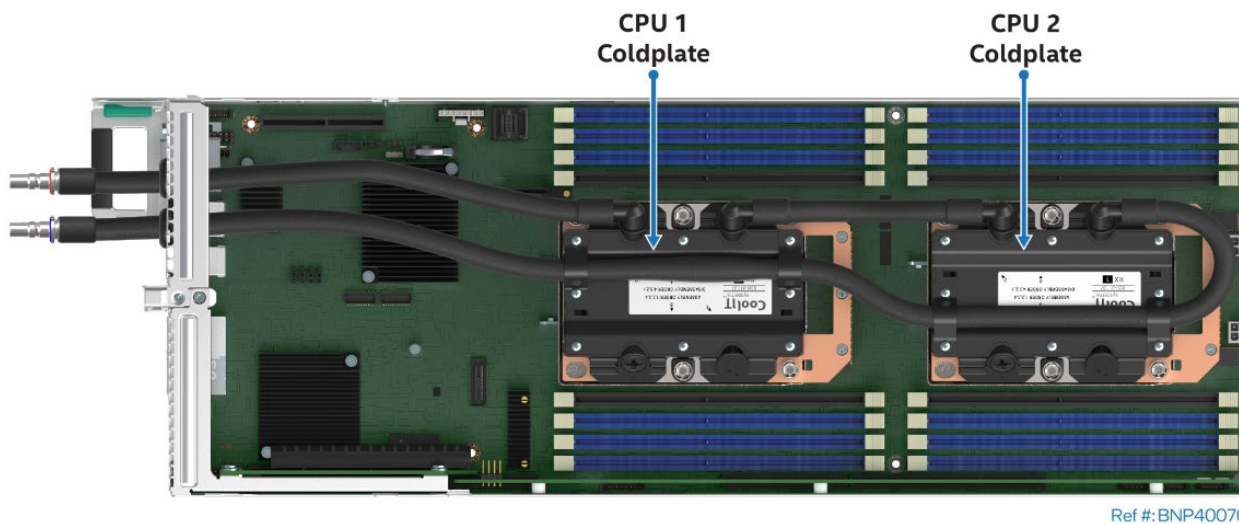
---

### 1.4.1 Removing the Liquid Cooling Loop Kit

**Note:** The following procedure assumes the user has already disconnected any external liquid source from the node. The sequence and method of removing the liquid cooling cold plate is the same as the passive air PHM assembly. Carefully follow the screw loosening sequence. Use the passive air heat sink installation and removal instructions in Section 5.1 as reference.

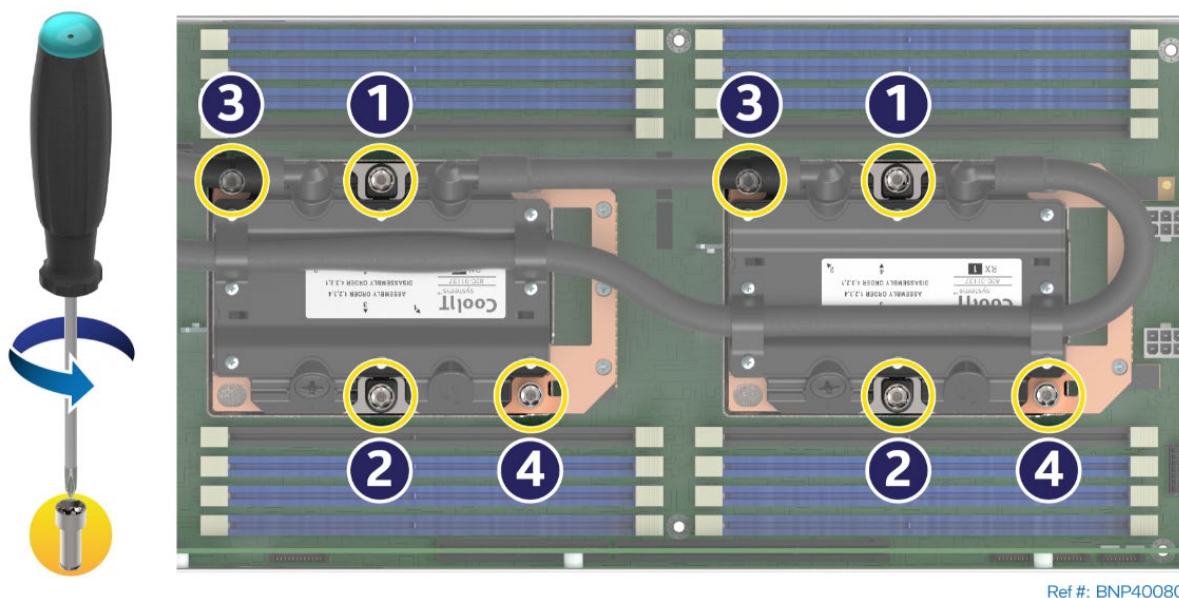
**Warning:** Be careful, the kit is entirely filled with liquid.

1. Power off the compute module
2. Carefully disconnect the liquid cooling node from any external source
3. Remove the compute module from the system and place it over a suitable surface
4. Remove the air duct (see Section 1.1.1)



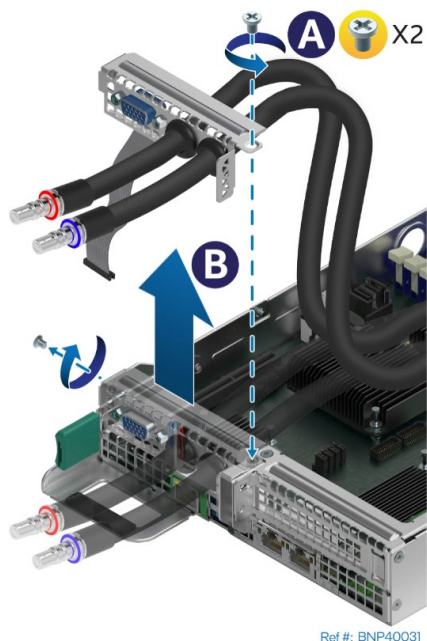
**Figure 35. Cold Plate Identification from the Server Board**

5. Follow the instructions in Section 2.4.1 to disconnect the video cable connection from the server board and unscrew the VGA connector out the bracket.
6. Using a T20 Torx\* bit screwdriver, loosen each cold plate fastener in the sequence shown on the label on the top of the liquid cold plates (see Figure 36).



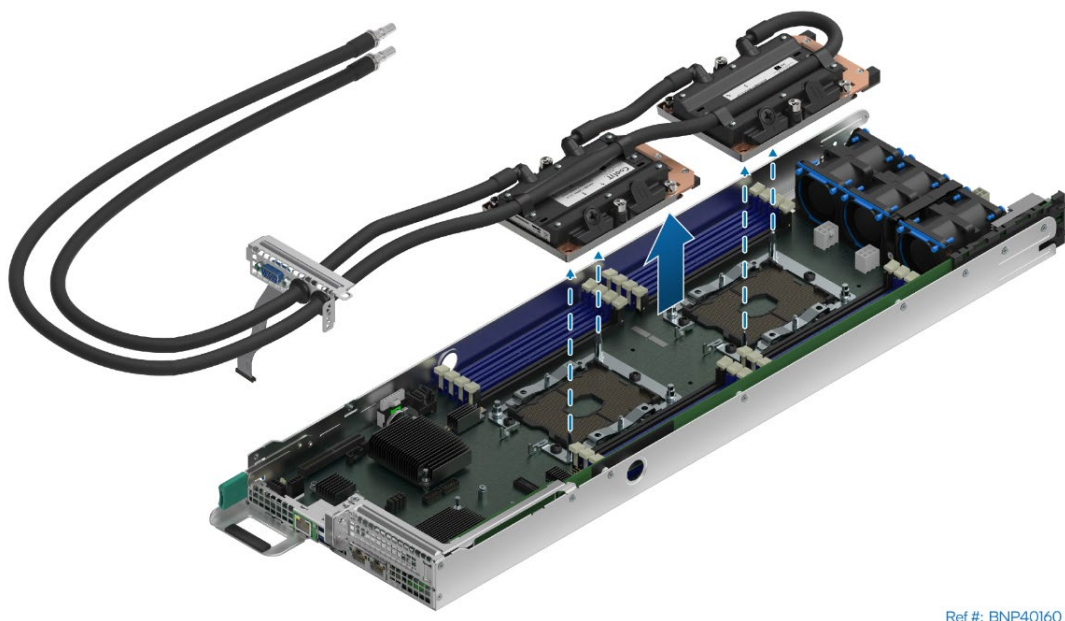
**Figure 36. Releasing the Liquid Cooling Loop Kit**

7. Remove the two screws securing the riser 1 assembly to the compute module base (see Letter **A**) and lift the riser 1 quick connectors bracket (see Letter **B**)



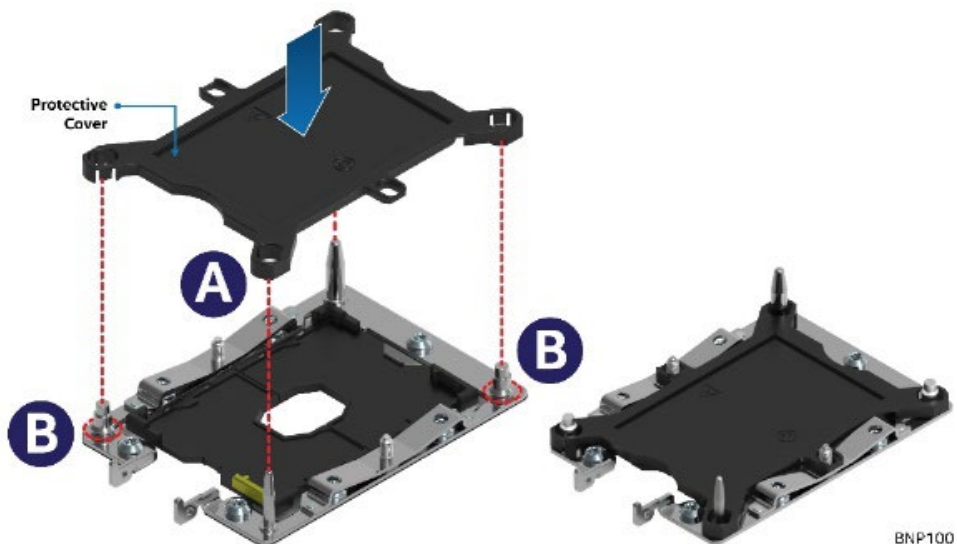
**Figure 37. Lift the Riser 1 Quick Connectors Bracket**

8. Lift the entire liquid cooling assembly straight up from the server board until it is free from the processor socket bolster plate guide pins (see Figure 38)



**Figure 38. Removing Liquid Cooling Assembly**

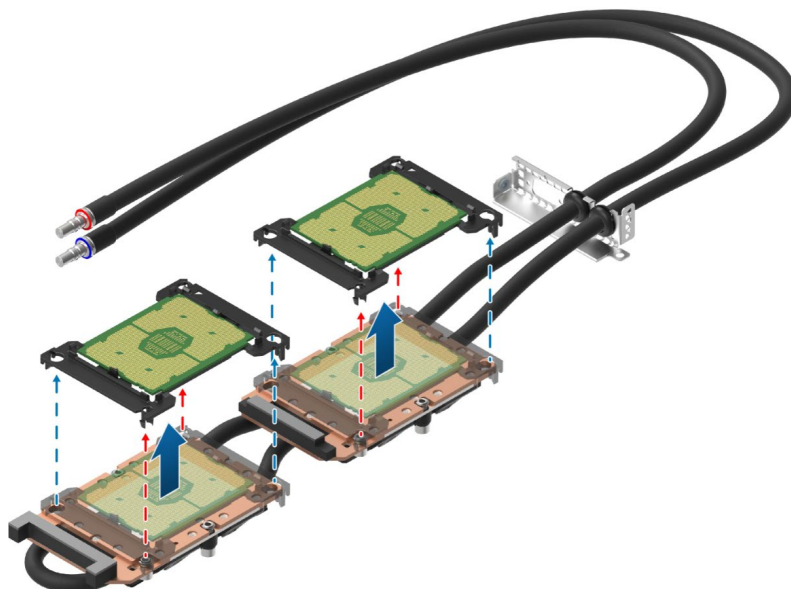
**Note:** To prevent possible damage to the processor socket, reinstall the original plastic cover to the processor socket.



**Figure 39. Plastic Processor Socket Cover Installation**

### 1.4.2 Removing Processor and Carrier from Liquid Cooling Assembly

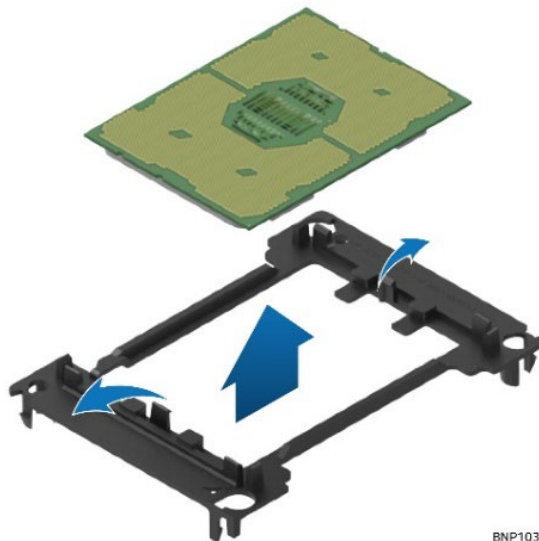
1. With the liquid cooling assembly facing down, place the liquid cooling plates onto a flat non-conductive surface
2. To remove the processor clip sub-assembly from the liquid cooling plates:
  - Insert the head of a flat head screwdriver in-between the cooling plate and the processor clip assembly and gently twist to break the bond between the two components (see Section 5.1.1)
  - Unlatch the hooks on each corner of the processor carrier clip to free the processor carrier from the cold plate



**Figure 40. Processor and Cold Plate Disassembly**

- Carefully lift the processor sub-assembly away from the cold plate
- Remove the processor from the processor carrier clip by carefully pushing back one of the latches on the ends of the processor and rotating the processor up and out of the processor carrier clip





BNP103

**Figure 41. Releasing Processor from Carrier Clip**

### 1.4.3 Installing the Liquid Cooling Loop Kit

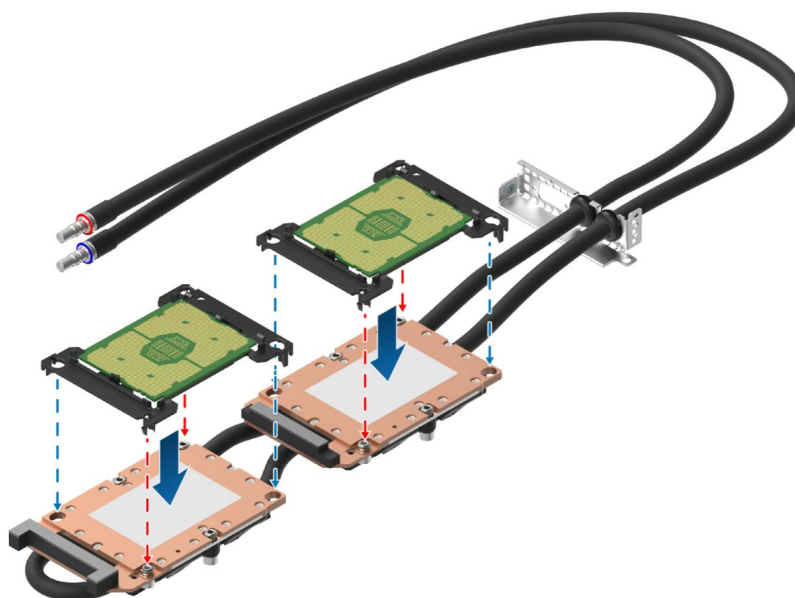
1. Power off the compute module and disconnect the power cable(s).
2. Remove the air duct (see Section 1.1.1)

---

**Note:** The liquid cooling assembly is modeled after the passive air heat sink assembly. The sequence and method of installing the processor and Carrier is the same as the passive air heat sink. This step is only required if the processor requires replacement or installation. For simplification, refer to the processor and Carrier installation instructions in Section 1.2 for details.

---

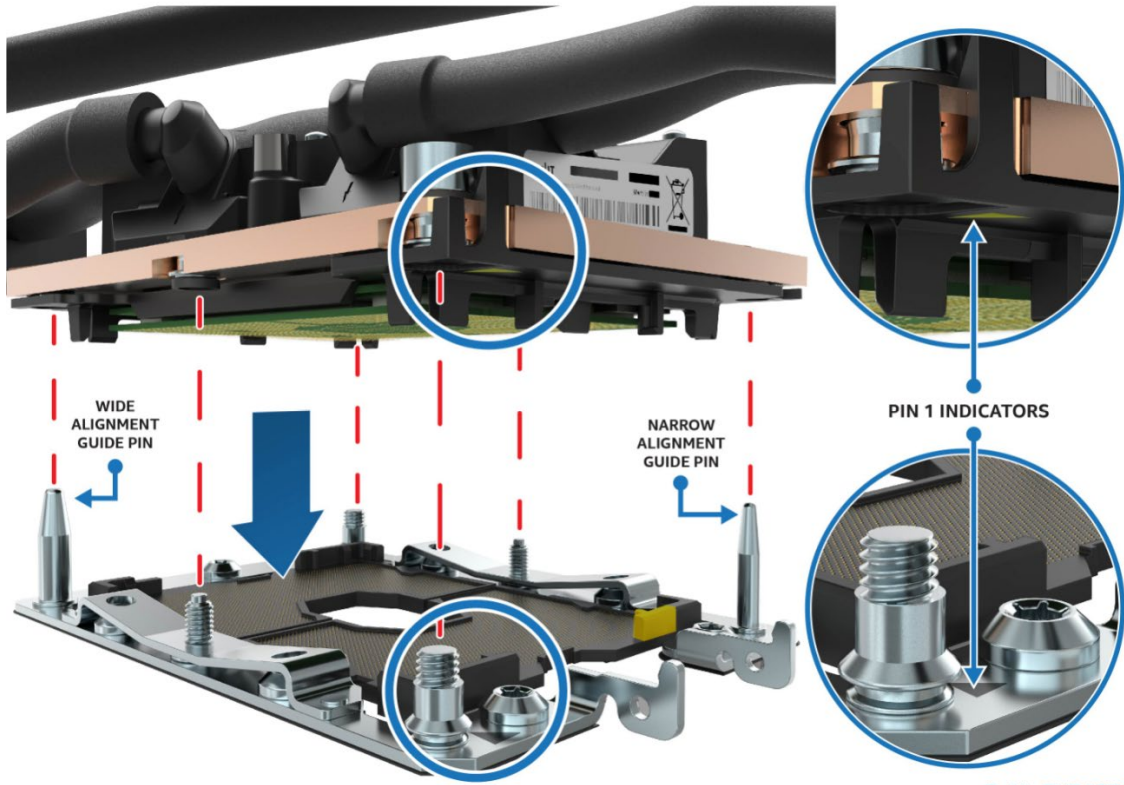
3. Verify thermal interface material (TIM) is present and in a pristine state. Carefully place and position the processor assembly on the cooling plate. Ensure that it is properly aligned.



Ref #: BNP40110

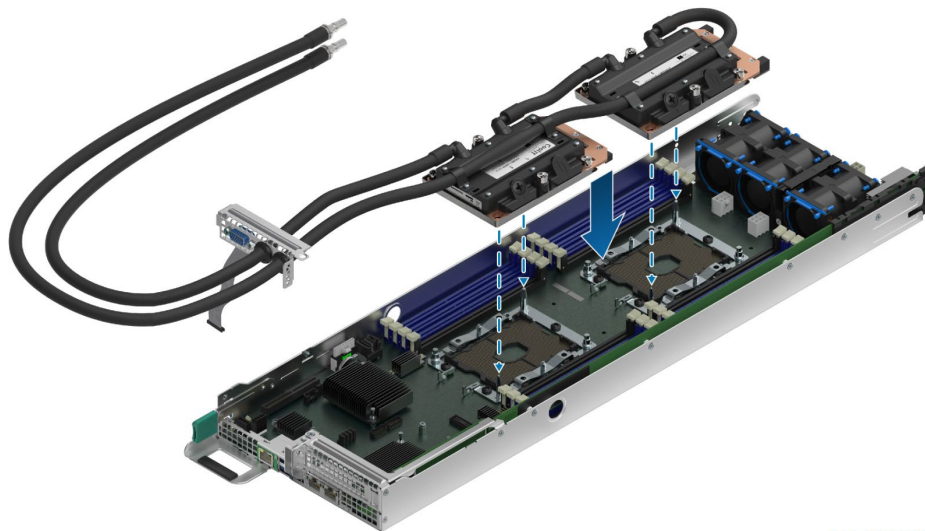
**Figure 42. Processor Liquid Cooling Assembly**

- Place and position the liquid cooling assembly over the node using two hands. Ensure it is properly aligned and the cold plate aligns correctly with the processor socket assembly and guide pins



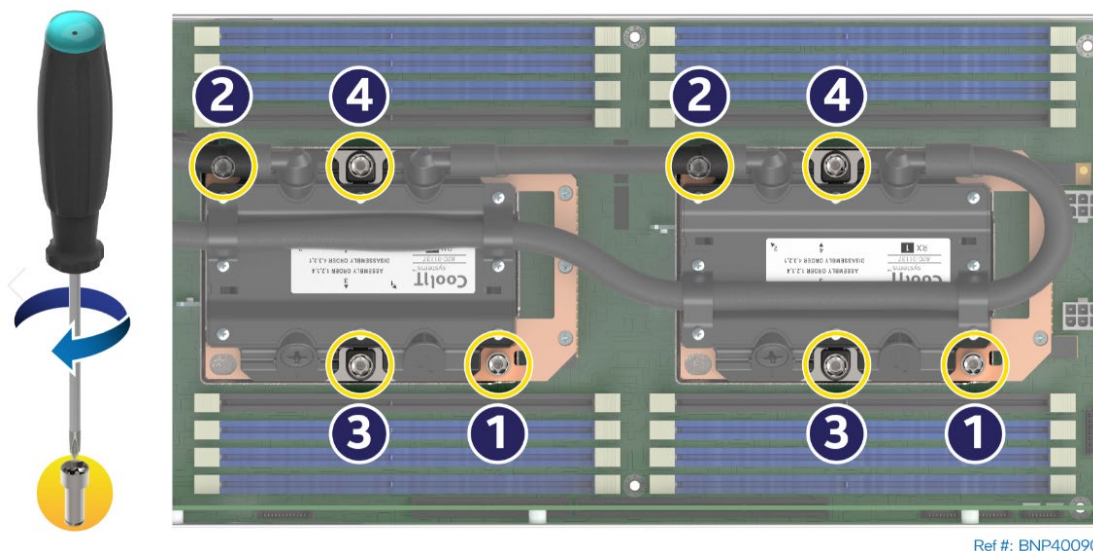
**Figure 43. Liquid Cooling Assembly Alignment**

- Carefully lower the assembly until it seats flat into place



**Figure 44. Liquid Cooling Assembly Placement**

6. Secure the liquid cooling assembly to the processor socket assembly
  - Using a T20 Torx\* bit screwdriver, securely tighten (12 in-lb) each fastener in the sequence shown on the label on the top of the liquid cold plates



Ref #: BNP40090

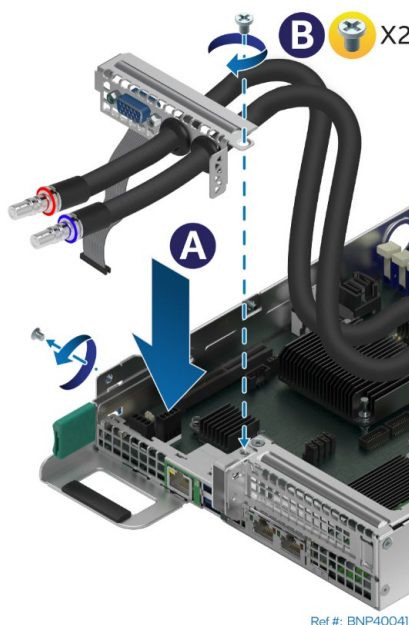
**Figure 45. Installing the Liquid Cooling Loop Kit**

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**Caution:** Failure to tighten the cold plate screws in the specified order may damage the liquid cooling assembly and processor socket. Each cold plate screw should be fully tightened to 12 in-lb torque before securing the next screw in the sequence.

---

7. Install the bracket into the compute module (see Letter **A**) and secure the two screws to the riser 1 assembly to the compute module base (see Letter **B**). Follow Section 5.5.1 for video connector bracket installation.



Ref #: BNP40041

**Figure 46. Installing and Securing Quick Connectors Bracket**

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**Caution:** Verify the integrity of the assembly and the connections. Inspect that there are no leaks or damaged parts before operating the system. Ensure the safety guidelines detailed at the beginning of this document are followed.

---

8. Install the air duct (see Section 1.1.2)

## 1.5 Memory Module (DIMM) Installation

### Components Required:

- Up to 16 DDR4 DIMMs

### General Memory Population Rules:

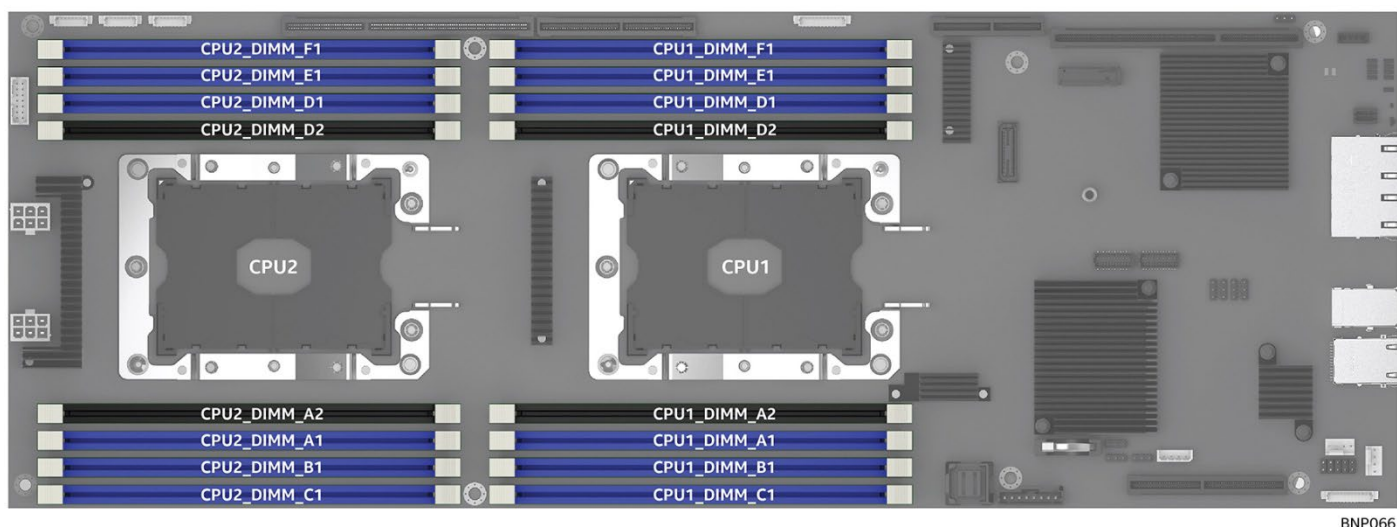
The Intel® Server Board S2600BP can support up to two processors. Each installed processor provides six channels of memory. Memory channels from each processor are identified as Channels A – F. The server board uses a “2-1-1” DIMM slot configuration where memory channels A and D of each processor support two DIMM slots, and all remaining memory channels support a single DIMM slot.

- When installing a single DIMM into memory channels A and/or D, the DIMM must be installed in the BLUE slots in those channels.
- In single processor configurations, only DIMM slots associated with CPU #1 can be used. DIMM slots associated with CPU #2 can only be used in dual processor configurations.
- For best performance in a dual processor configuration, DIMMs should be distributed equally between processors

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**Note:** For full DIMM population rules that apply to traditional DRAM and Intel® persistent memory module, refer to the *Intel® Server Board S2600BP Product Family Technical Product Specification*.

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BNP066

**Figure 47. Intel® Server Board S2600BP DIMM Slot Layout**

## 1.5.1 Memory Module (DIMM) Installation

**Note:** Intel® persistent memory module is only supported on server boards and compute modules containing product codes ending in 'R' that have the 2<sup>nd</sup> Generation Intel® Xeon® processor Scalable family installed.

1. Locate the desired DIMM slot
2. Rotate the white retention clips on each end of the DIMM slot, out to the open position (see Letter **A**)
3. Holding the DIMM by its edges, ensure the DIMM alignment notch and DIMM slot key are properly aligned (see Letter **B**)
4. Carefully insert the DIMM into the DIMM Slot (see Letter **C**).
5. Firmly push down on the top edge of the DIMM until the retaining clips snap into place (see Letter **D**).
6. Visually check that both retention clips are firmly in place (see Letter **E**).

**Note:** Avoid opening adjacent latches at same time

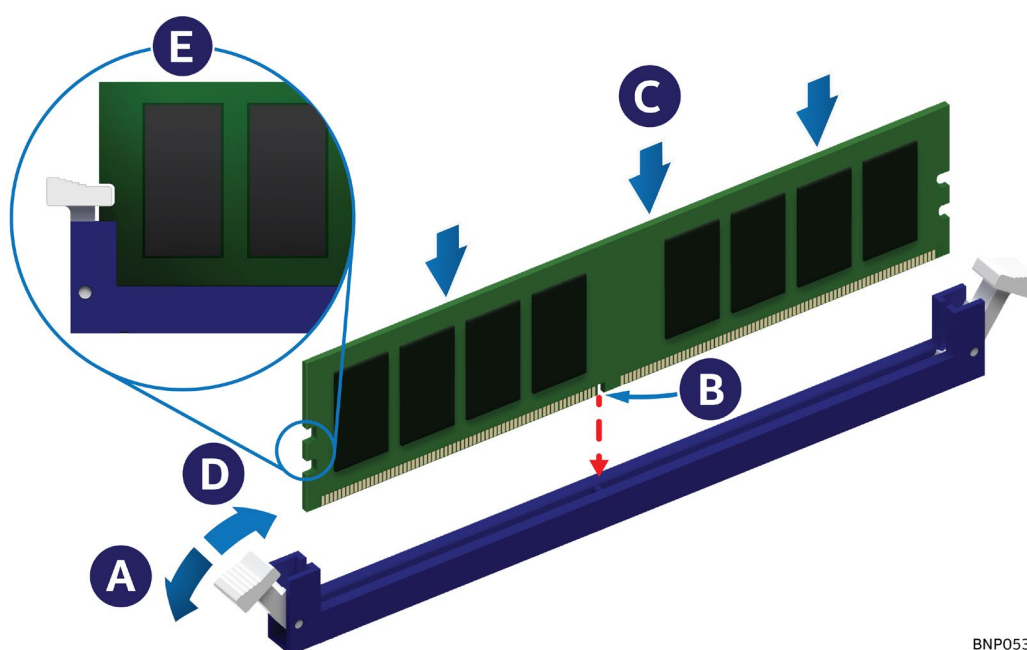


Figure 48. Installing the Memory

Repeat steps for all DIMMs to be installed.

## 1.6 Bridge Board Installation (Intel® Compute Module)

Supported Intel server chassis support a variety of front drive bay configurations. To utilize available drive bays, Intel compute modules must have a compatible Bridge Board installed into it. For a complete list of available Bridge Boards, reference the *Intel® Server Board S2600BP / Intel® Compute Module HNS2600BP Configuration Guide*.

This section describes the installation procedures associated with each type of Bridge Board available for this compute module product family.

See installation instructions specific to selected Bridge Board option.

## 1.6.1 4-port Bridge Board Installation

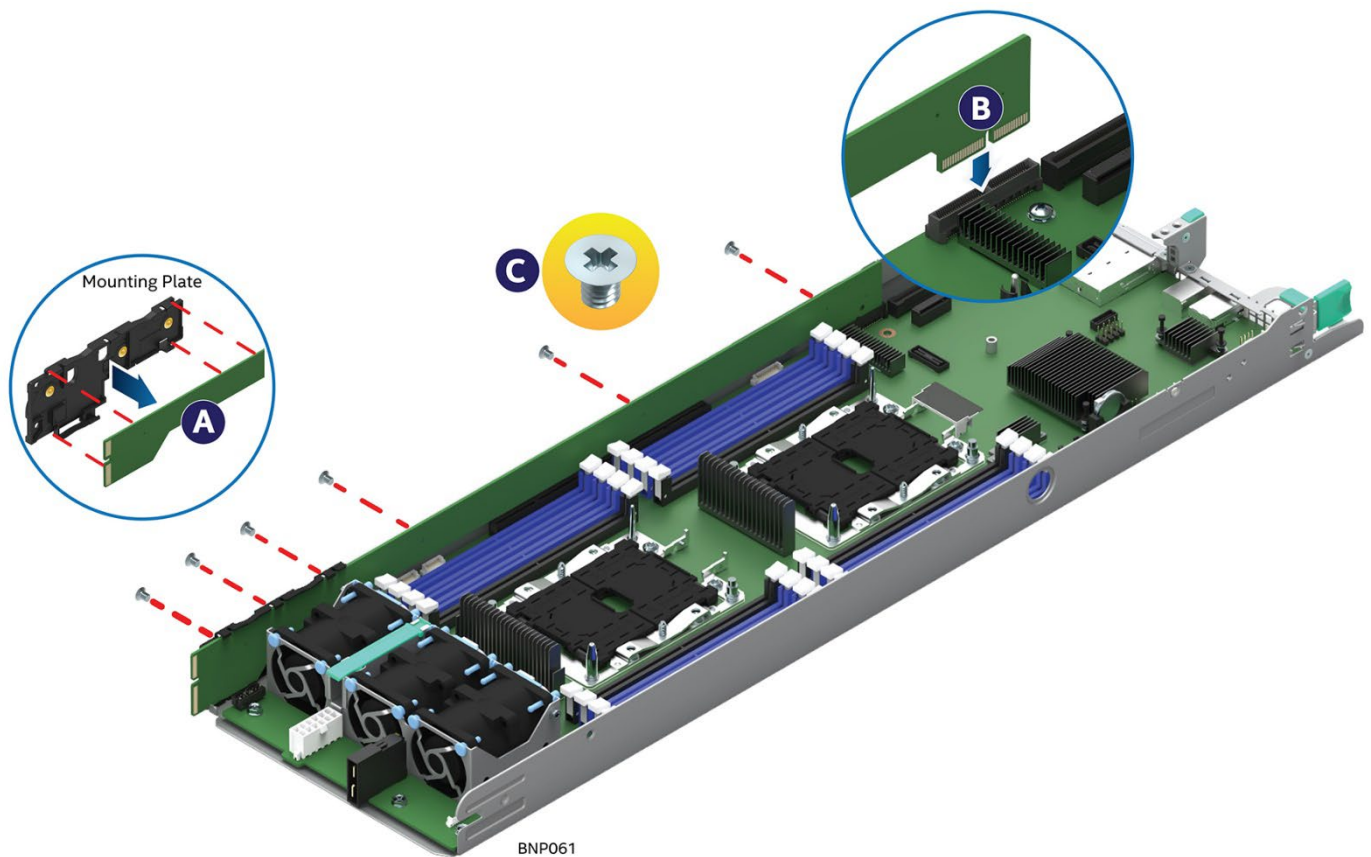
These installation instructions apply to the following Intel Bridge Board Accessory Kits

- AHWBPBGB
- AHWBP12GBGB
- AHWBP12GBGBIT
- AHWBP12GBGBR5

### Tools Required:

- Phillips\* screwdriver

1. Carefully unpack the contents of the accessory kit
2. Position the black plastic Bridge Board Mounting Plate onto the back side of the Bridge Board as shown in the illustration below (see Letter **A**).
3. Insert bridge board edge connector(s) into matching slot connectors on the server board (see Letter **B**)
4. Using six screws, secure the bridge board to the compute module side wall (see Letter **C**)



\*Middle edge connector on AHWBP12GBGB, AHWBP12GBGBIT and AHWBP12GBGBRS only

**Figure 49. 4-port Bridge Board Installation**

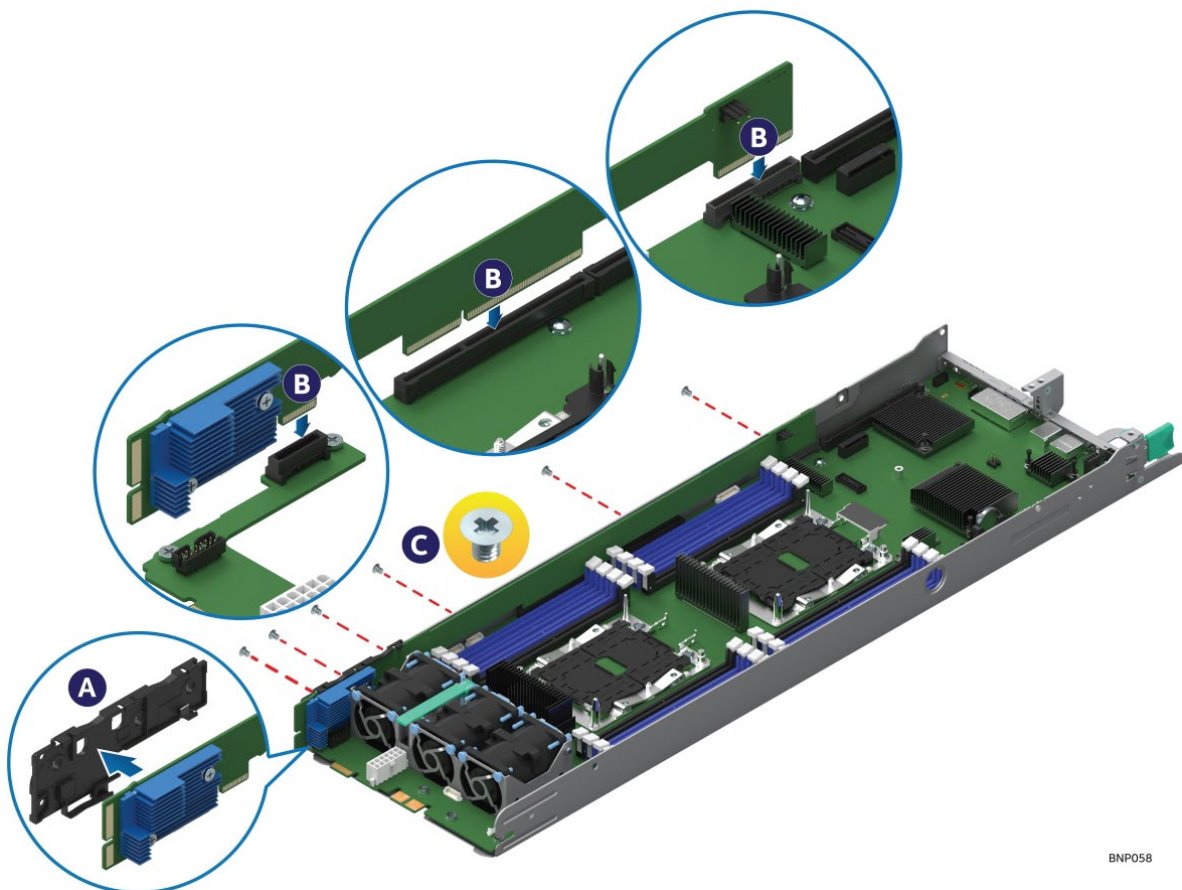
## 1.6.2 6-port SAS/NVMe Combo Bridge Board Installation

These installation instructions apply to the following Intel Bridge Board Accessory Kits

- AHWBPBGB24
- AHWBPBGB24R

### Tools Required:

- Phillips\* screwdriver
1. Carefully unpack the contents of the accessory kit
  2. Position the black plastic Bridge Board Mounting Plate onto the back side of the Bridge Board as shown in the illustration below (see Letter **A**).
  3. Insert the bridge board edge connectors into the matching slot connectors on the server board (see Letter **B**)
  4. Using six screws, secure the bridge board to the compute module side wall (see Letter **C**)



BNP058

Figure 50. Installing the SAS/PCIe\* SFF Combo Bridge Board

### 1.6.3 Pass-Through Bridge Board Installation

These installation instructions only apply to the following Intel Bridge Board Accessory Kit:

- **AHWBPBGB24P**

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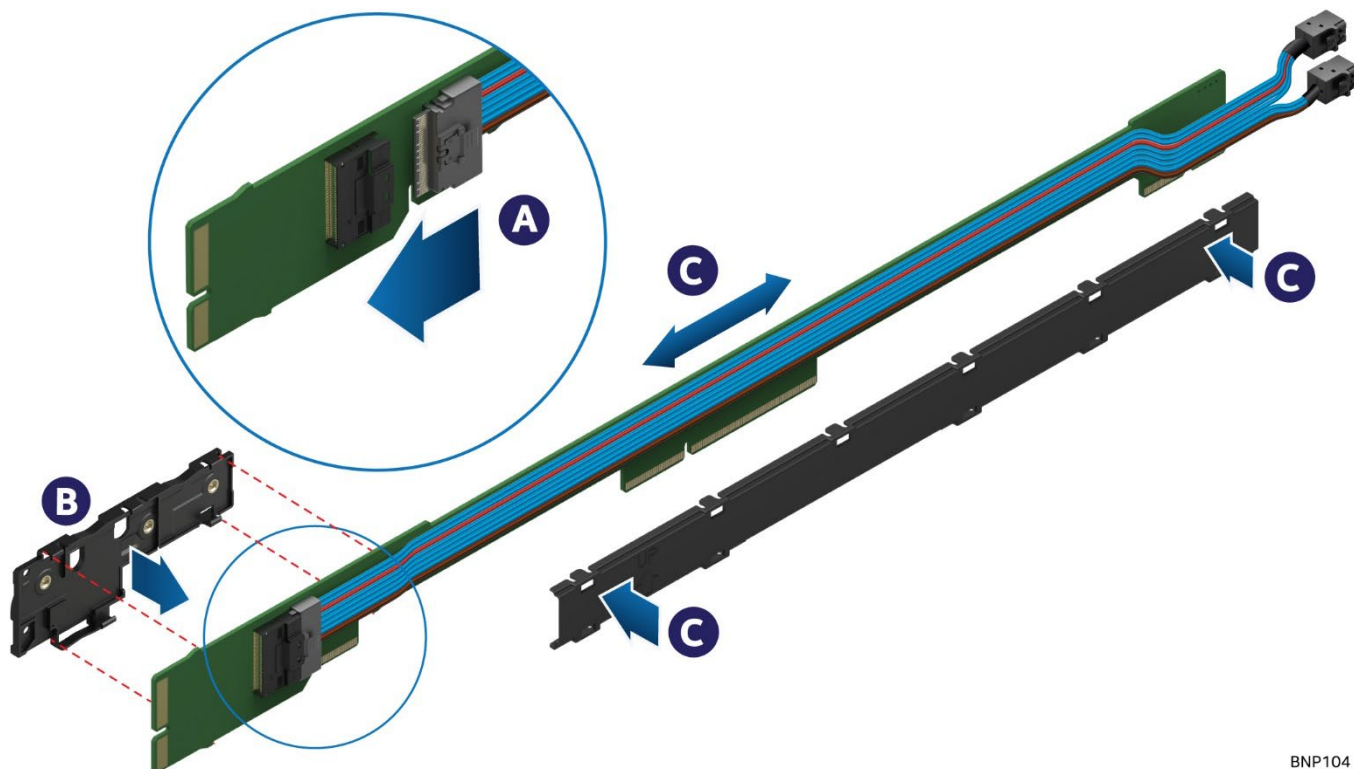
**Note:** This Intel Bridge Board option requires the installation of an add-in PCIe\* RAID card installed into a PCIe\* add-in slot on Riser 2. Refer to Section 2.5.1 for PCIe\* add-in card installation instructions.

---

**Tools Required:**

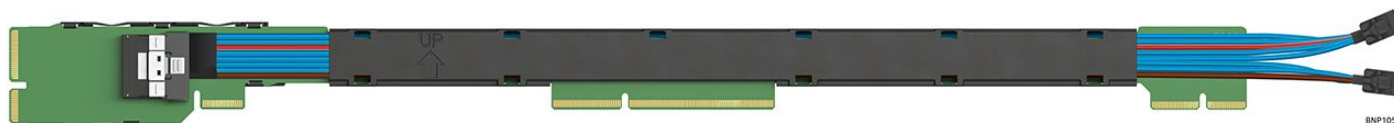
- Phillips\* screwdriver

1. Carefully unpack the contents of the accessory kit
2. Insert the flat cable connector of the Slim-line SAS cable to the matching slot connector on the bridge board (see Letter **A**)
3. Position the black plastic Bridge Board Mounting Plate onto the back side of the Bridge Board as shown in the illustration below (see Letter **B**)
4. Snap the mounting tabs of the mounting plate over the edges of the Bridge board ensuring the mounting plate is securely attached
5. Carefully position the black plastic cable cover over the slim-line SAS cable and snap the cover tabs over the edges of the bridge board, ensuring the cover is securely attached. (see Letter **C**)



**Figure 51. Installing Holding and Cover of the Bridge Board**

The following figure shows the Pass-Through Bridge Board fully assembled



**Figure 52. Assembled Pass Through Bridge Board**

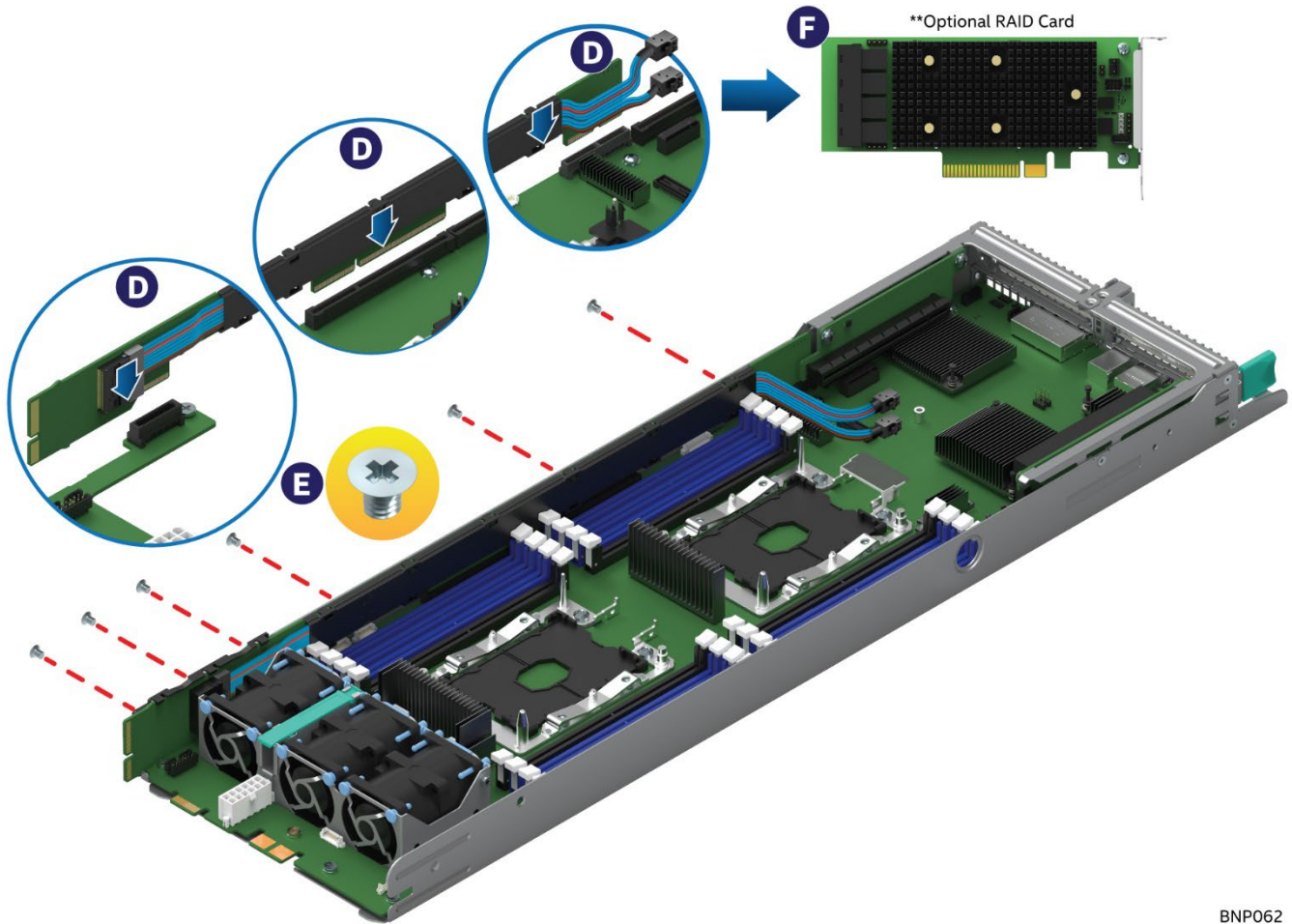


6. Install the add-in card and riser as indicated in Section 2.5.1
7. Connect the two Slim-line SAS cable connectors to the RAID card (see Letter F)
8. Insert the bridge board edge connectors into the matching slot connectors on the server board (see Letter D)
9. Using six screws, secure the bridge board to the compute module side wall (see Letter E)

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**Note:** The screws are included in the bridge board accessory kit.

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**Figure 53. Installing the Pass-Through Bridge Board**

BNP062

## 2. Optional Feature / Accessory Kit Installation and Service

The Intel® Server Board S2600BP and Intel® Compute Module HNS2600BP product families have support for a number of optional features and accessory kits to enhance the base feature set of the server board and/or Intel compute module. For a complete list of supported accessory kits, reference the *Intel® Server Board S2600BP and Intel® Compute Module HNS2600BP product family Configuration Guide*.

This chapter provides instructions for the installation and removal of optional features and accessory kits, starting with the items that are specific to the server board only, then including those that are specific to the Intel compute module.

### 2.1 M.2 SSD – Server Board

The server board includes one (1) onboard M.2 SSD connector capable of supporting a PCIe\* or SATA SSD that conforms to a 2260 (42mm) form factor.

1. Remove the air duct from the compute module. See Section 1.1.1
2. If a PCIe\* Add-in card is installed to Riser 2, it must be removed from the server board to proceed.
3. Remove the screw from the M.2 mounting stand-off on the server board
4. Locate the M.2 SSD
5. Holding the M.2 SSD by its edges, ensure the M.2 SSD alignment notch and M.2 slot key are properly aligned, then gently insert it into the M.2 slot (see Letter **A**)
6. Using a screw, secure the M.2 SSD to the on-board stand-off (see Letter **B**)

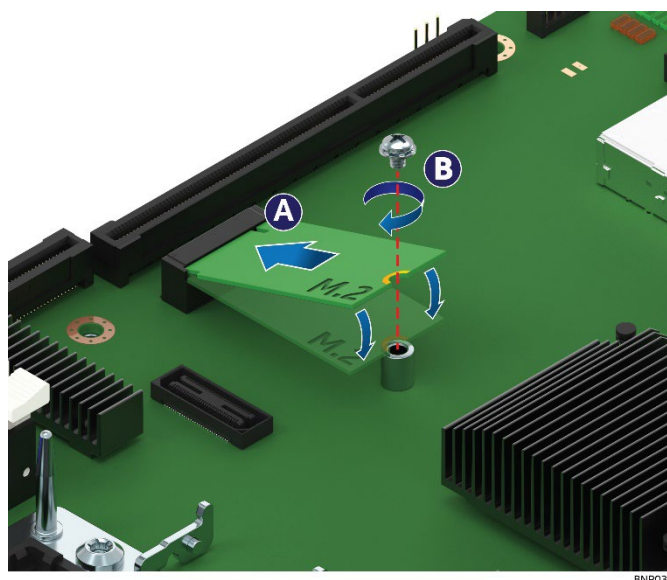


Figure 54. Server Board – M.2 SSD Installation

## 2.2 Intel® Remote Management Module 4 Lite (RMM4 Lite)

The Intel® Remote Management Module 4 Lite (iPC - **AXXRMM4LITE2**) is an activation key used to enable advanced management features.

### 2.2.1 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 Riser Slot 2
3. Match the orientation of the Intel® RMM4 Lite to the onboard connector
4. Press the Intel® RMM4 Lite down into the connector until it fully engages

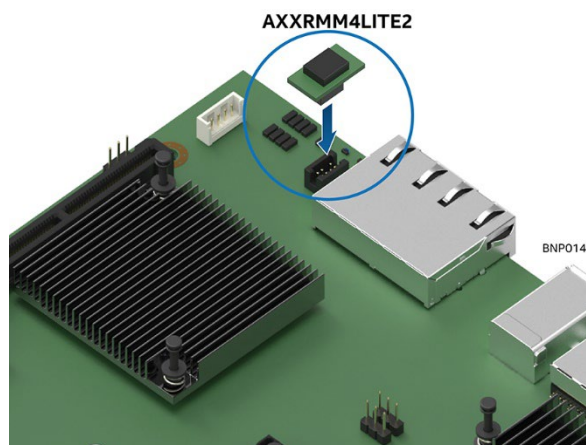


Figure 55. Installing the Intel® RMM4 Lite

### 2.2.2 Removing the Intel® RMM4 Lite

1. Remove the air duct from the compute module. See Section 1.1.1
2. Carefully grasp the Intel® RMM4 Lite and pull it up until it disengages from the connector

## 2.3 Intel® Storage Upgrade Key

### 2.3.1 Installing the Intel® Storage Upgrade Key

1. Remove the Intel® Storage Upgrade Key from its package
2. Locate the RAID key connector on the server board next to Riser Slot 2
3. Install the key matching orientation of the receptacle onboard

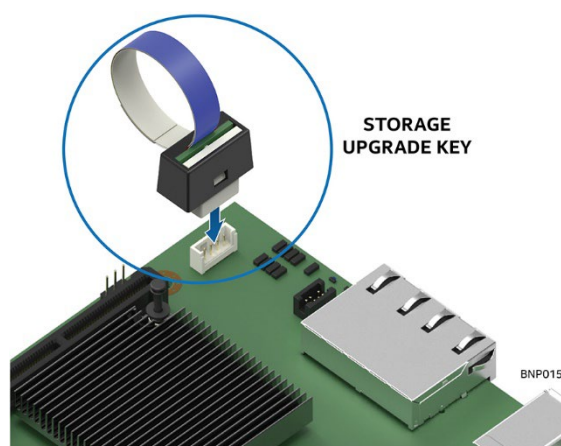


Figure 56. Installing the Intel® Storage Upgrade Key

### 2.3.2 Removing the Intel® Storage Upgrade Key

1. Remove the air duct from the compute module. See Section 1.1.1
2. Using the key pull tab, pull the key up until it disengages from the connector

## 2.4 Add-in Card Installation / Removal – Riser Slot 1

By default, all Intel compute models within the product family will have an add-in VGA video connector bracket installed into the Riser #1 add-in card slot on the back of the compute module. To use the add-in card slot on Riser #1 for any other purpose, the VGA video connector bracket must be removed.

### 2.4.1 Video Connector Assembly Removal

1. Disconnect the video cable connection from the server board (see Letter A)

BNP4010

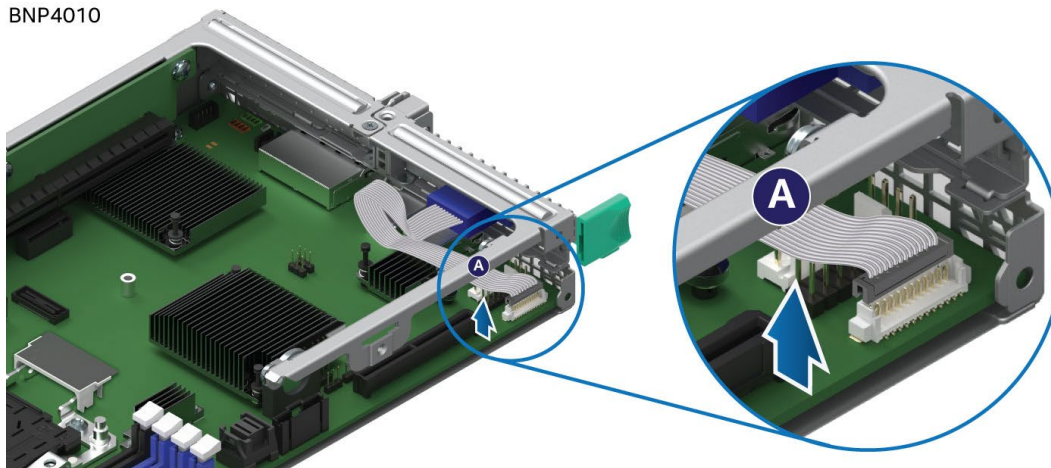


Figure 57. Disconnecting the Video Connector

2. Loosen and remove the three riser bracket screws (see Letter B)
3. Pull the riser assembly straight up and out of the Riser Slot (see Letter C)

BNP4020

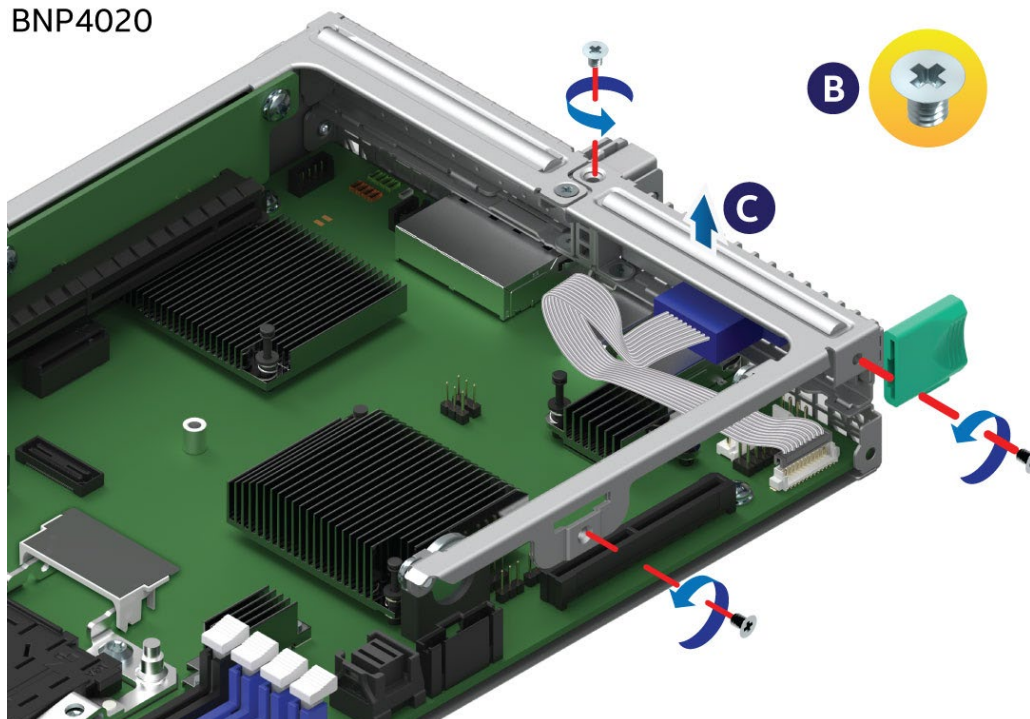
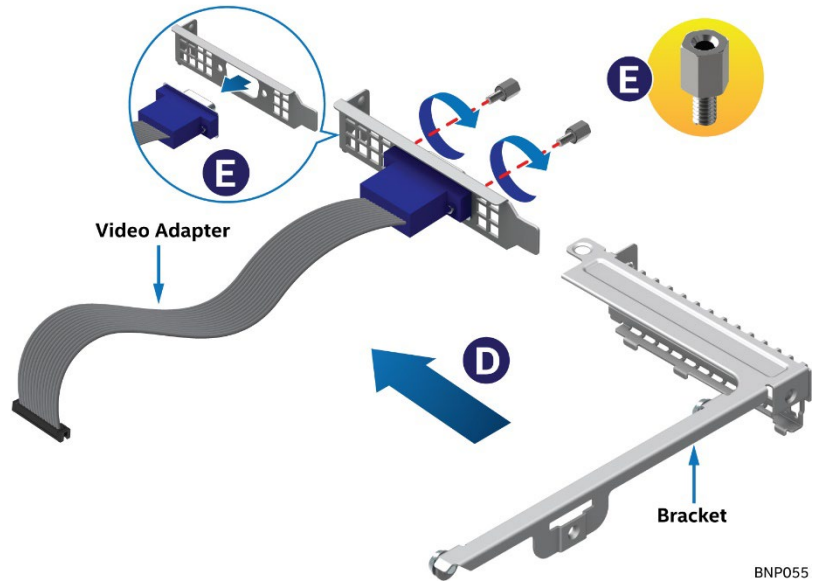


Figure 58. Removing the Video Connector Assembly

4. Remove the video connector assembly from the riser bracket (see Letter D)
5. Unscrew the video connector out of the panel (see Letter E), save the screws for re-use.



**Figure 59. Removing the Video Connector**

## 2.4.2 Add-in Card Installation

Riser Slot 1 functionality is dependent on the specific model of the compute module.

- Intel® Compute Modules **HNS2600BPB(R)** & **HNS2600BPB24(R)**

Riser slot 1 for these Intel compute modules can be used for one of the following add-in options:

- Riser card supporting one PCIe\* 3.0 x16 Elec, x16 Mech add-in card slot. Able to support low profile PCIe\* add-in cards only
- Support for optional Intel® Omni-Path fabric through carrier card
- VGA video connector bracket (Standard Default)

- Intel® Compute Modules **HNS2600BPS(R)**, **HNS2600BPS24(R)**, **HNS2600BPQ(R)**, **HNS2600BPQ24(R)**

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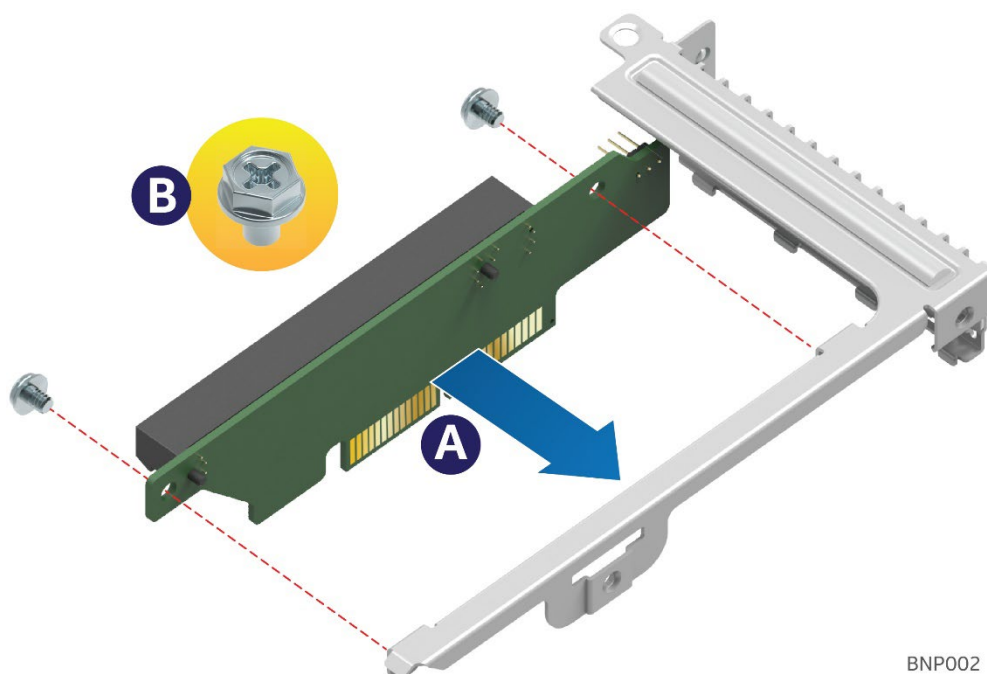
**Note:** Four compute module models mentioned above cannot support PCIe\* Add-in Cards, refer to the *Intel® Server Board S2600B and Compute Module HNS2600BP Product Family Technical Product Specification* for additional information.

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The intended use for Riser Slot #1 in these compute modules is to support the following options only.

- Support for optional Intel® Omni-Path fabric through carrier card
- VGA video connector bracket (Standard Default)

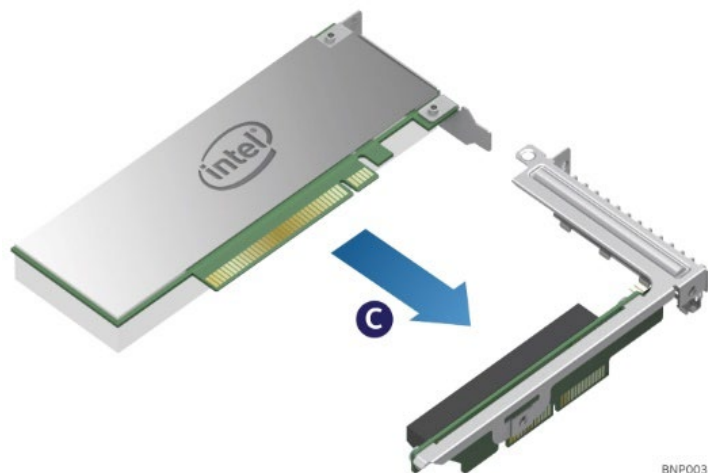
1. Locate and unpack the Intel Riser 1 accessory kit (iPC – **AHW1URISER1**)
2. Attach the riser card to the riser card mounting bracket (A), secure it using two screws (B)



BNP002

**Figure 60. Installing the Riser Card 1 to the Riser Bracket**

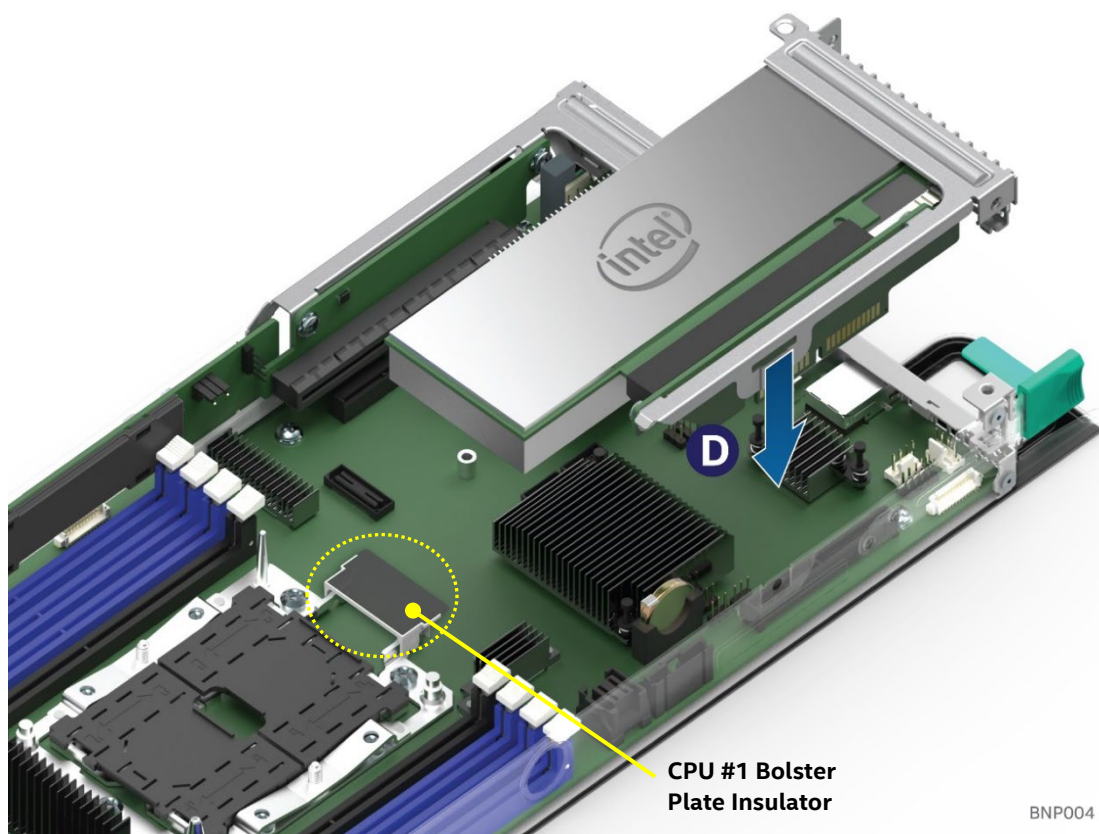
3. Insert the add-in card into the Riser Card Slot (see Letter C)



BNP003

**Figure 61. Installing an Add-in Card to Riser Card Slot 1**

4. Ensure the CPU 1 Bolster Plate Insulator is installed
5. Insert the Riser Assembly into Riser Slot 1 on the server board (see Letter D)



BNP004

**Figure 62. Installing the Riser Assembly – Step 1**

- Using three screws, secure the riser assembly to the compute module base (see Letter E)

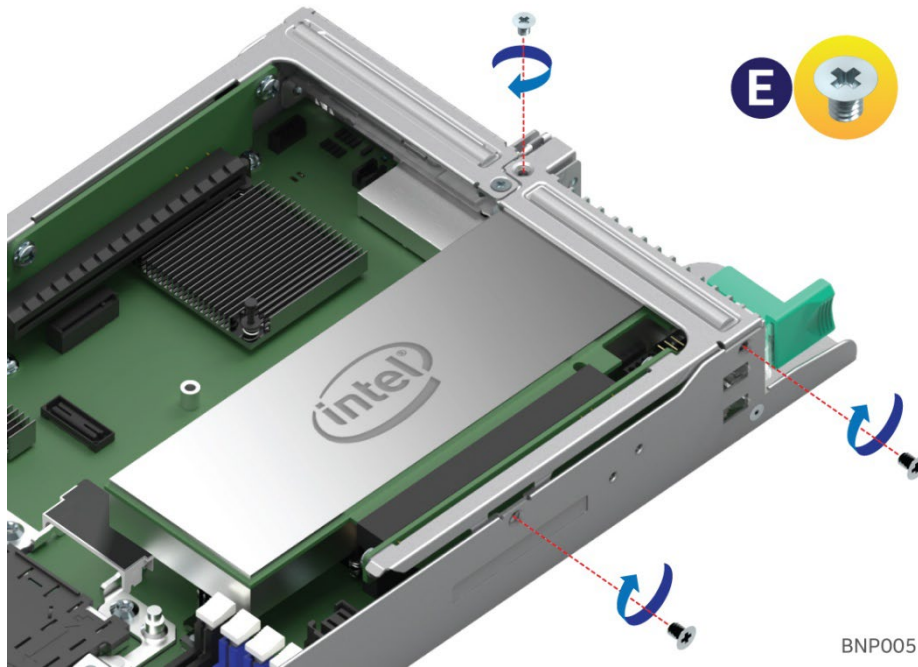


Figure 63. Installing the Riser Assembly – Step 2

### 2.4.3 Add-in Card Removal

- Loosen the three screws securing the riser assembly to the compute module base (see Letter A)

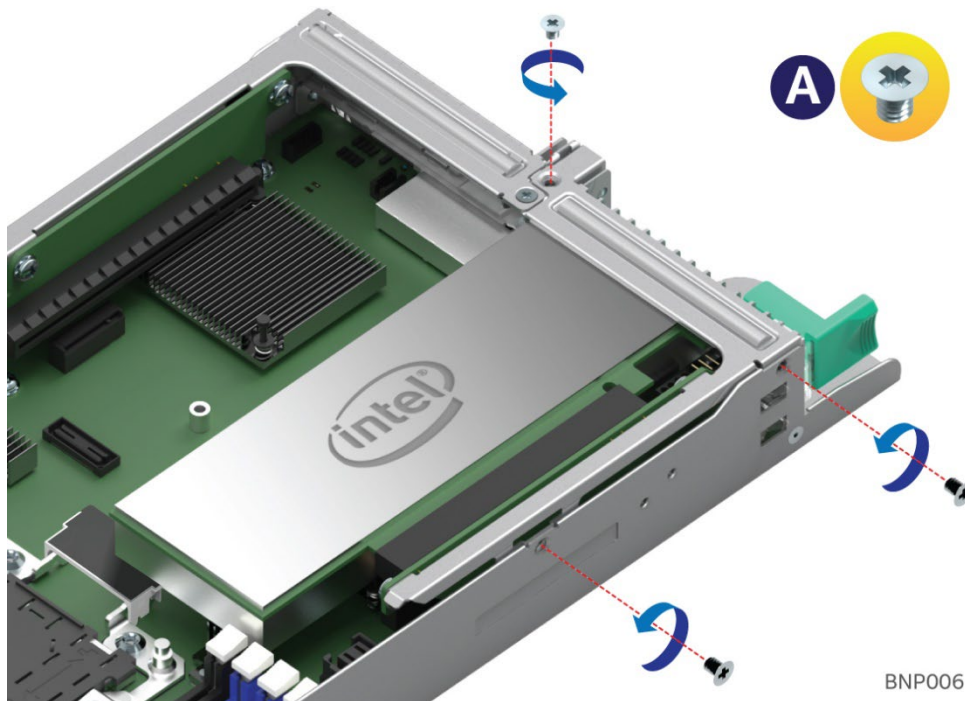
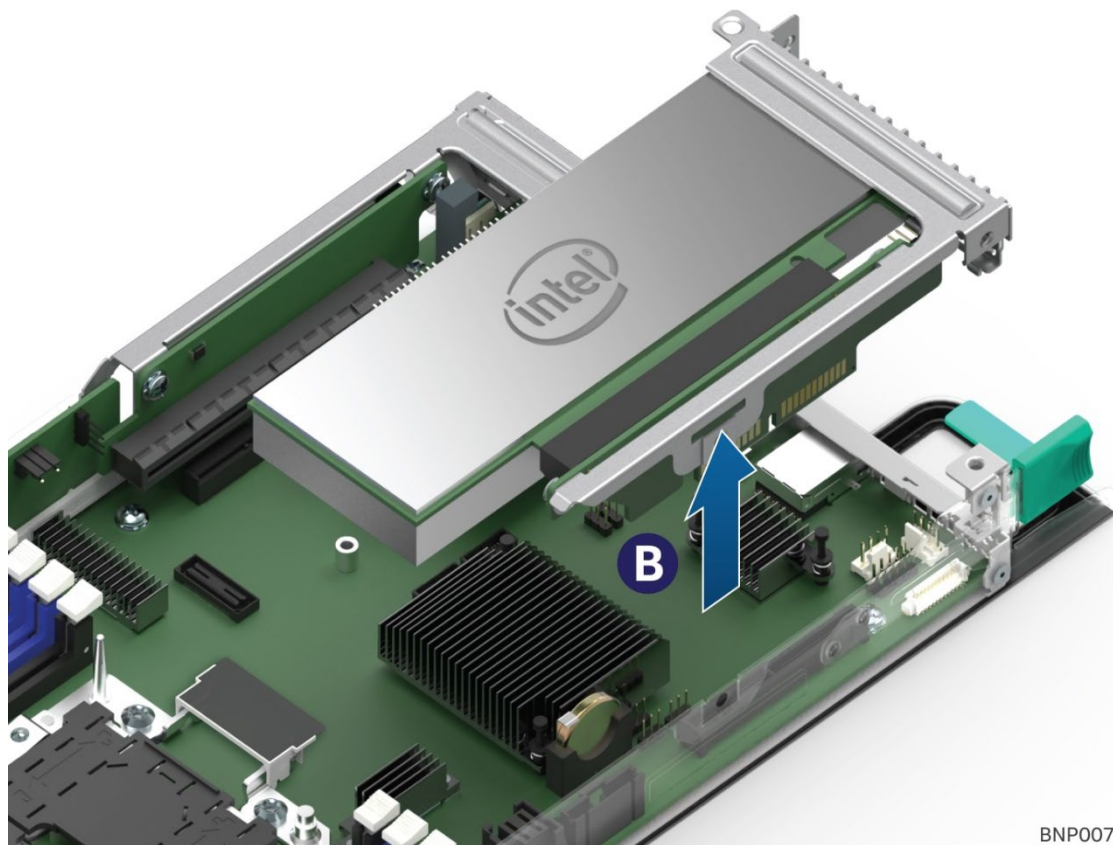


Figure 64. Removing the Riser Assembly

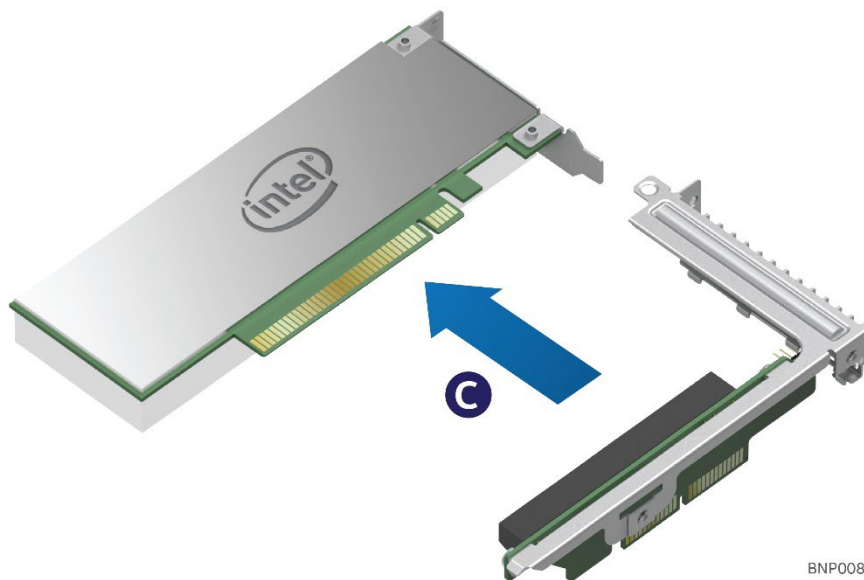


2. Pull the riser card assembly up and out of the compute module (see Letter **B**)



**Figure 65. Removing the Riser Assembly**

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

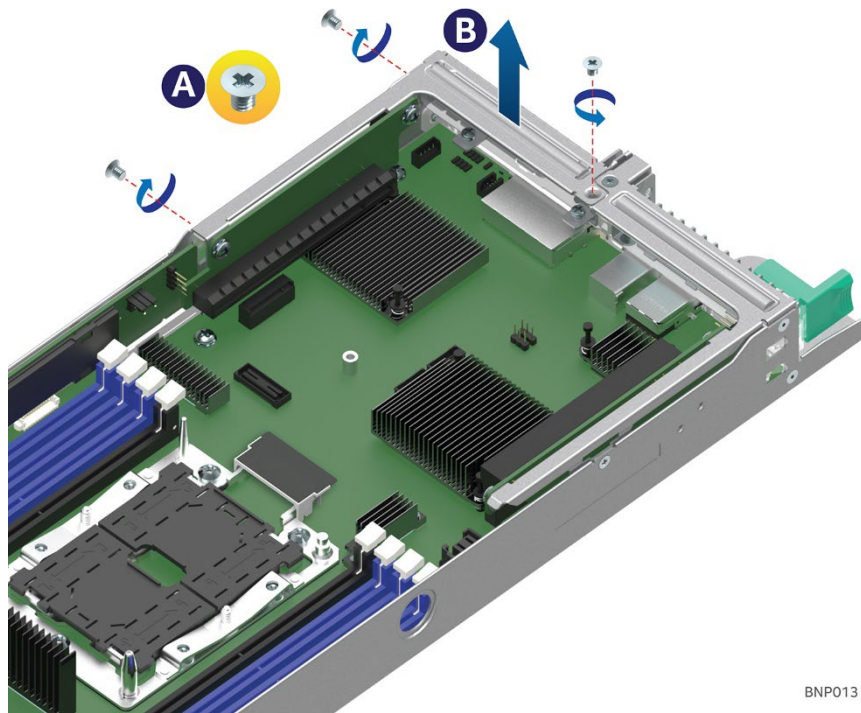


**Figure 66. Removing the Add-in Card from the Riser Card 1**

## 2.5 Add-in Card Installation / Removal – Riser Slot 2

### 2.5.1 Add-in Card Installation

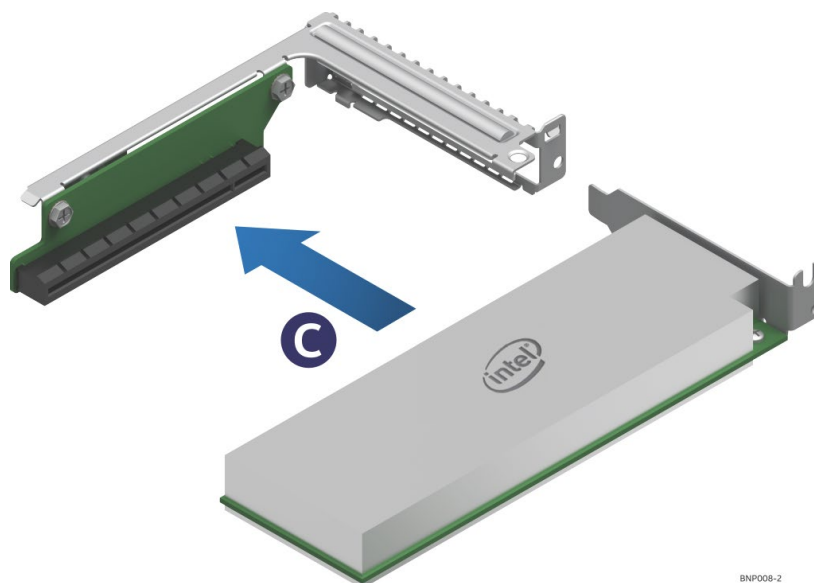
1. Remove the air duct from the compute module. See Section 1.1.1.
2. Remove the three screws securing the Riser 2 assembly to the compute module base (see Letter **A**)
3. Lift the riser 2 assembly from the compute module (see Letter **B**)



BNP013

**Figure 67. Removing the Riser 2 Assembly**

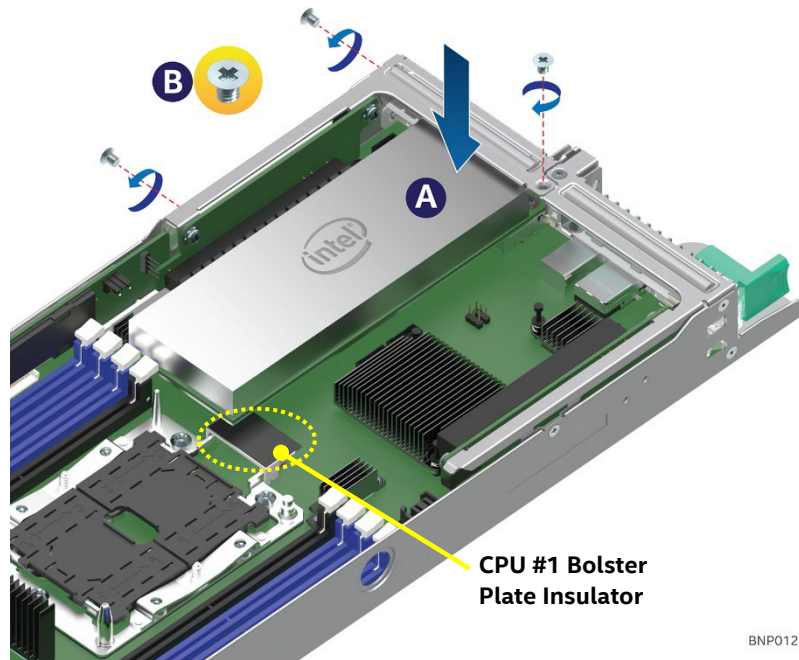
4. Remove the add-in card filler panel from the riser bracket
5. Insert the PCIe\* add-in card into the riser card slot (see Letter **C**)



BNP008-2

**Figure 68. Installing Add-in Card on Riser Card Slot**

6. Ensure the CPU 1 Bolster Plate Insulator is installed
7. Insert the riser card assembly into Riser Slot 2 on the server board (see Letter D)
8. Using three screws, secure the riser assembly to the compute module base (see Letter E)

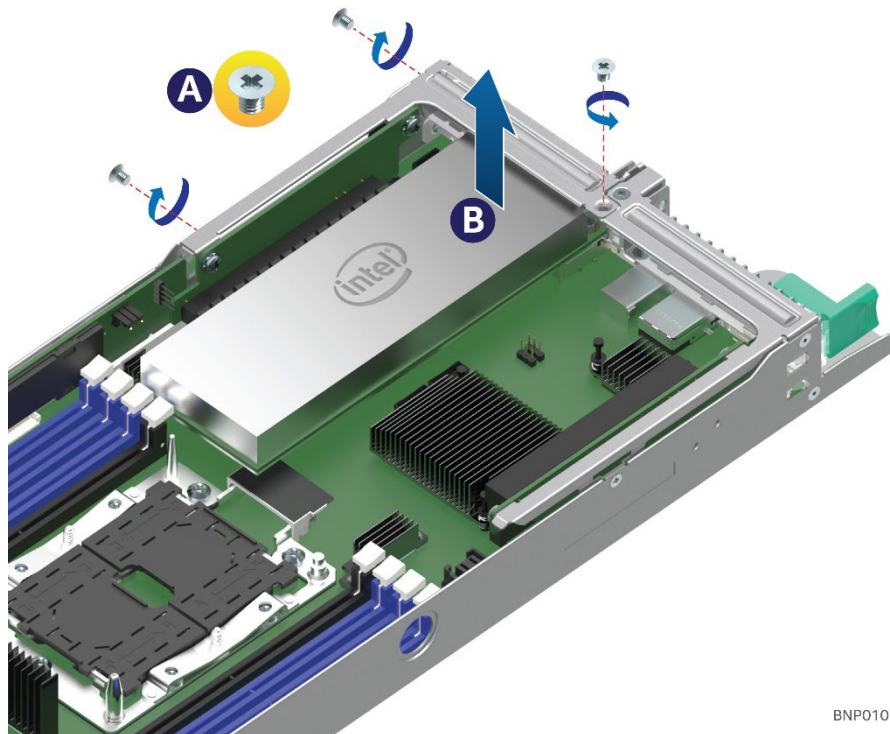


BNP012

**Figure 69. Installing the Riser Assembly**

### 2.5.2 Add-in Card Removal

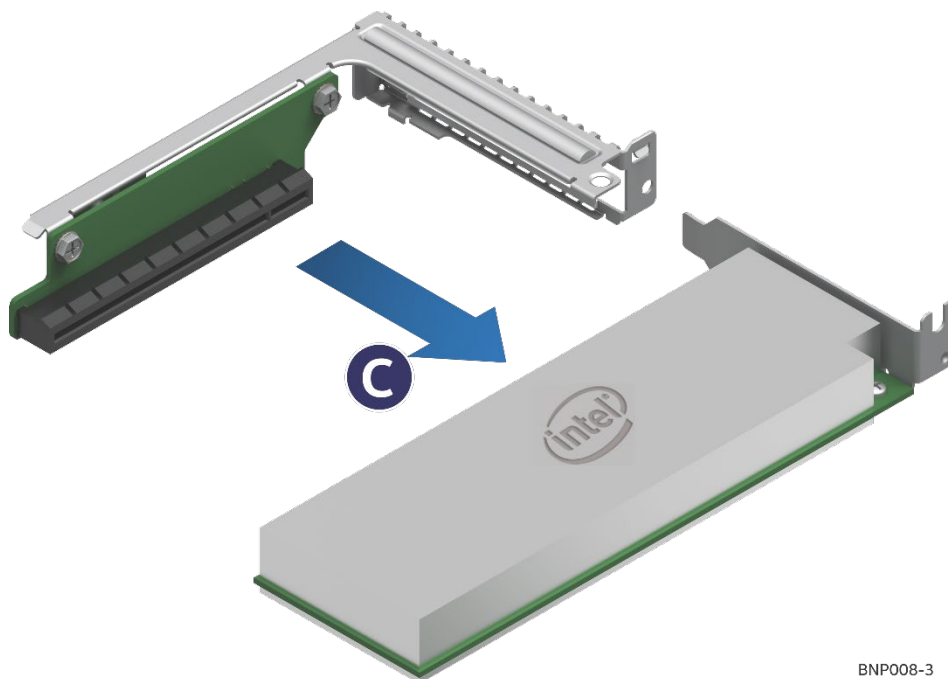
1. Remove the air duct from the compute module. See Section 1.1.1
2. Remove the three screws securing the Riser 2 assembly to the compute module base (see Letter A)
3. Lift the riser card assembly from the compute module (see Letter B)



BNP010

**Figure 70. Removing the Riser Assembly**

4. Remove the add-in card from the riser slot (see Letter C)



BNP008-3

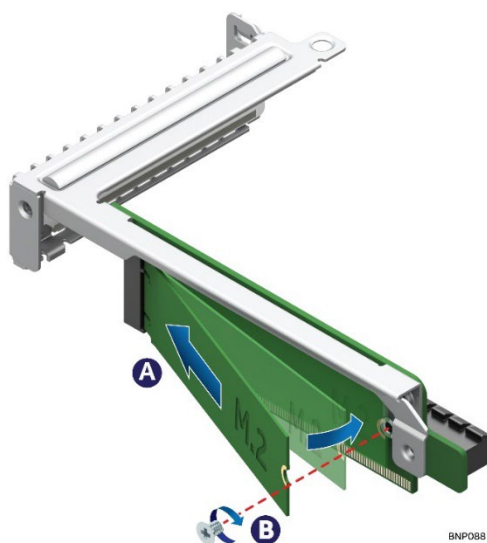
**Figure 71. Removing the Add-in Card from Riser Car 2**

5. If necessary, reinstall the add-in card filler panel into the riser bracket

## 2.6 M.2 SSD – Riser Card 2

On the backside of Riser Card 2 is an M.2 SSD connector capable of supporting PCIe\* M.2 SSDs that conform to the 2280 (80mm) form factor.

1. Remove the air duct from the compute module. See Section 1.1.1
2. Retrieve the M.2 SSD mounting screw (iPN - H22639-001) from the M.2 Riser Spare Kit or the compute module accessory box
3. Holding the M.2 SSD by its edges, gently insert it into the M.2 connector (see Letter A)
4. Using the screw, secure the M.2 SSD to the riser card assembly (see Letter B)



BNP008

**Figure 72. Installing the M.2 Device on the Riser Card**

## 2.7 Intel® Omni-Path Fabric Processor Accessory Kit

The Intel® Xeon® processor Scalable family includes processor SKUs that support an Intel® Omni-Path Integrated Fabric connector. These fabric enabled processors are supported in single processor configurations or in dual processor configurations where either one or both processors are fabric enabled.

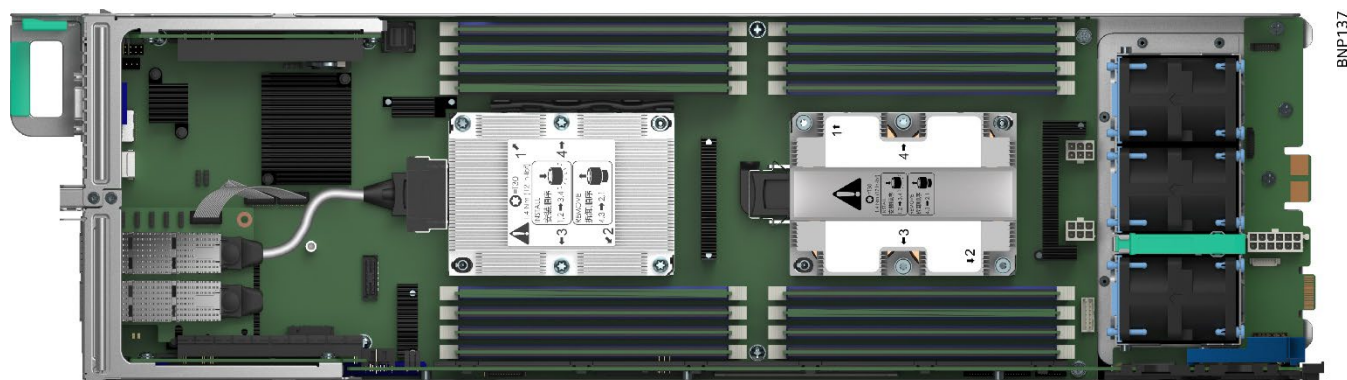
For the Intel® Compute Module HNS2600BP family, one of two available accessory kits must be installed to enable fabric support from the compute module. Accessory kit selection is determined by the desired fabric processor configuration.

For processor configurations where only **one Fabric processor** is installed, the following Intel accessory kit should be installed. Cables within this kit will only allow for the fabric processor to be installed into the CPU #1 processor socket and the IFT Carrier Card to be installed to Riser 2.

Intel Product Code – **AHWBPFABKITCPU1**

Kit Contents:

- (1) IFT Carrier Card – (Riser 2 Only)
- (1) 1-Port Straight Cable Assy, 150.0mm, Non Inverted - (Riser 2 Only)
- (1) Intel® Omni-Path Sideband Y-Cable
- (1) Mylar Air Baffle
- (1) Air Baffle Screw M2x0.4
- (1) Fabric Processor Clip



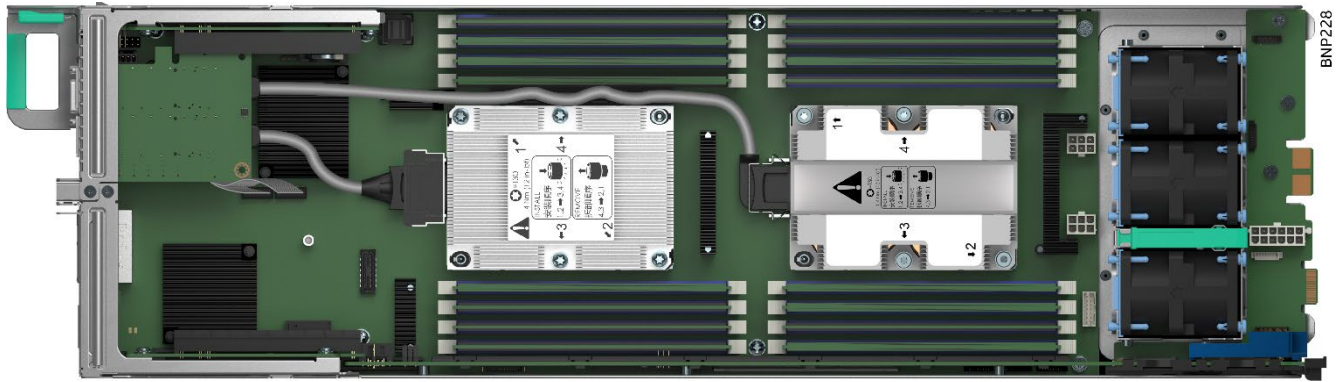
**Figure 73. Single Fabric Processor configuration**

For processor configurations **where two Fabric processors** are installed, the following Intel accessory kit must be installed. Cables within this kit will allow for the installation of the IFT carrier card to be installed into either Riser 1 or Riser 2.

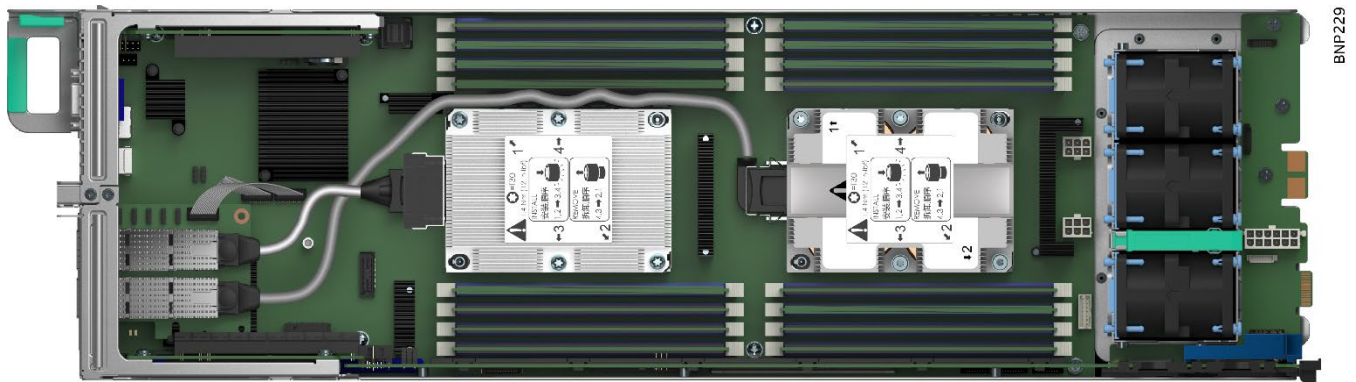
Intel Product Code (iPC) – **AHWBPFABKIT:**

Kit Contents:

- (1) IFT Carrier Card – (Riser 1 or Riser 2)
- (1) 85ohm IFP54B 1-Port Straight Cable Assy, 160.0mm, Inverted – (CPU #1, Riser 1)
- (1) 85ohm IFP54B 1-Port Straight Cable Assy, 150.0mm, Non Inverted – (CPU #1, Riser 2)
- (1) 85ohm IFP54B 1-Port Curved Cable Assy, 318mm, Inverted – (CPU #2, Riser 1)
- (1) 85ohm IFP54B 1-Port Left Curved Cable Assy, 371mm, Non Inverted – (CPU #2, Riser 2)
- (1) Omni-path Sideband Y-Cable
- (1) Mylar Air Baffle
- (1) Air Baffle Screw M2x0.4
- (2) Fabric Processor Clip



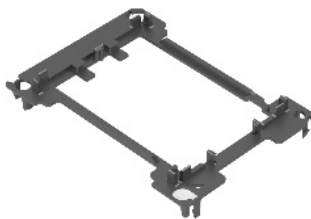
**Figure 74. Dual Fabric Processor Configuration – IFT Carrier Card in Riser 1**



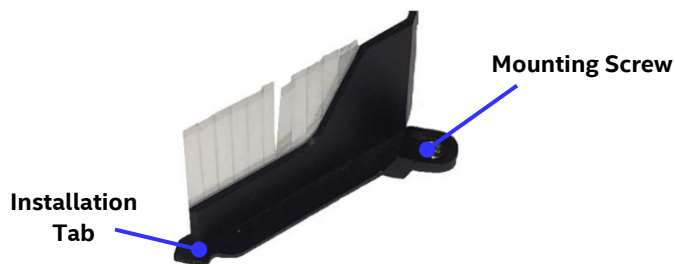
**Figure 75. Dual Fabric Processor Configuration – IFT Carrier Card in Riser 2**

The following sections will provide instructions for the installation for all accessory kit components.

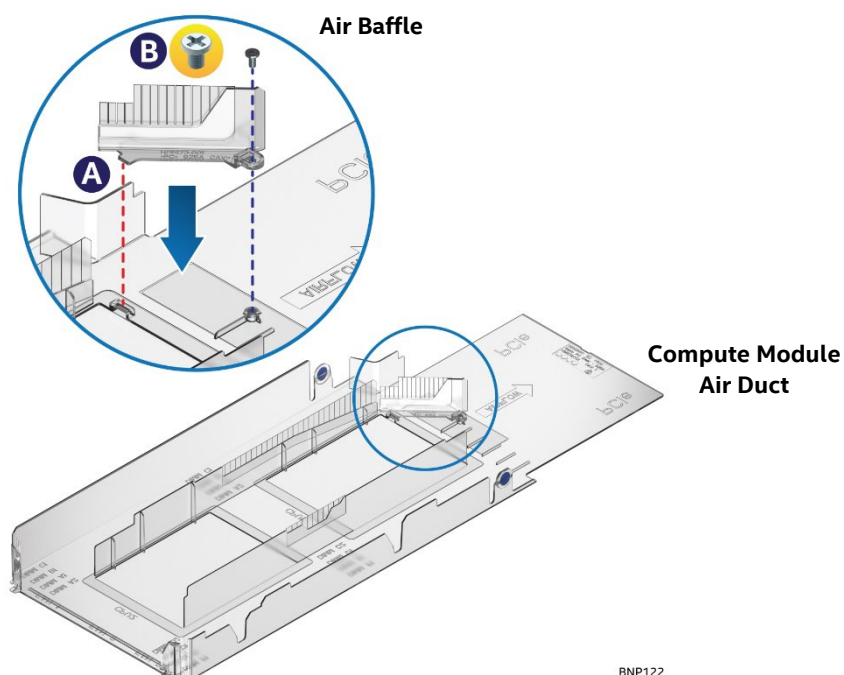
1. From the Accessory Kit, locate the Fabric processor clip (iPN- FXXCPUCLIPF) for each fabric processor to be installed.



2. Use the Fabric processor clip(s) in the processor assembly instructions documented in Section 1.2 *Processor Assembly and Installation*. Return to this section after installing the processor(s) onto the server board.
3. From the Accessory Kit, locate the Mylar Air Baffle



4. Place the compute module air duct top side down on to a flat surface
5. On the bottom side of the air duct, insert the tab on the front edge of the air baffle into the slot on the air duct (A)
6. Using the supplied mounting screw and the threaded standoff on the air duct, secure the air baffle to the air duct (B)



## 2.7.1 IFT Carrier Card Installation

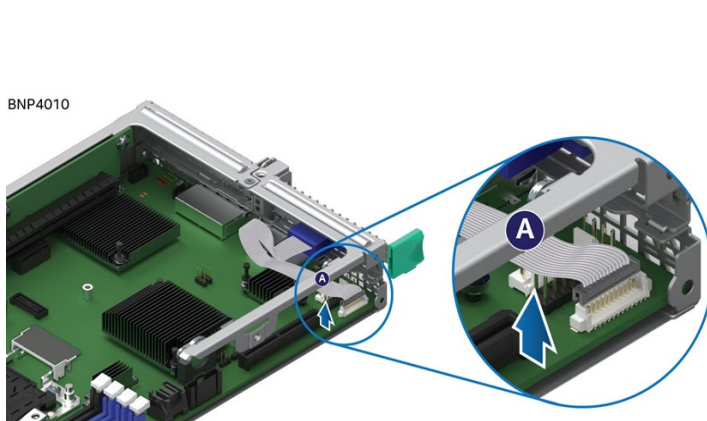
The IFT Carrier Card installation location is dependent on the accessory kit.

- **AHWBPFABKITCPU1** – Riser 2 only
- **AHWBPFABKIT** – Riser 1 or Riser 2

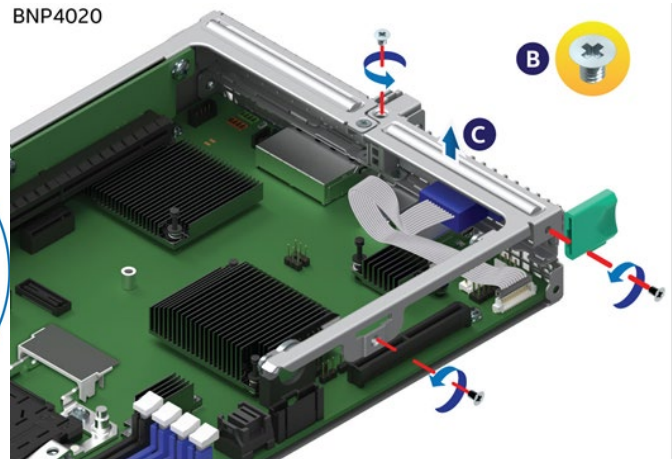
### Installation steps for riser 1:

1. Disconnect and disassemble the Video Cable Bracket from the riser assembly (See Letter **A**)
2. Remove the 3 fastener screws (See Letter **B**)
3. Remove the Riser Assembly from the compute module (See Letter **C**)

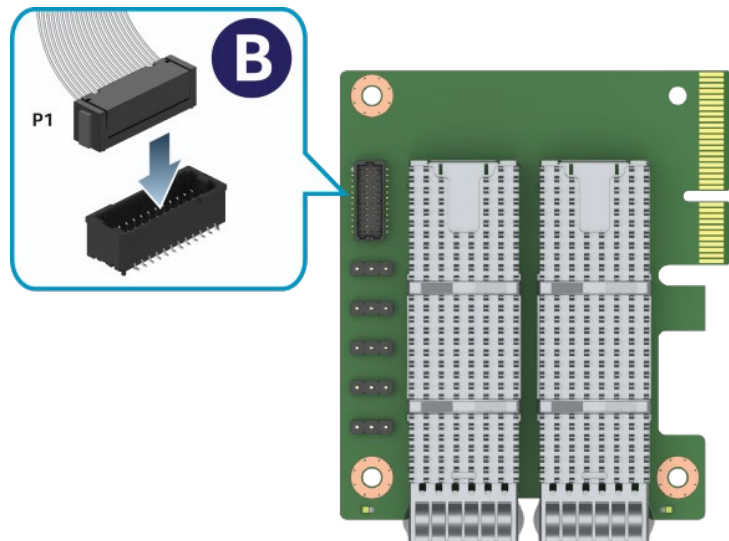
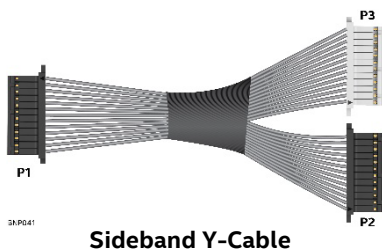
#### Video Connector Disconnection



#### Video Connector Assembly Removal

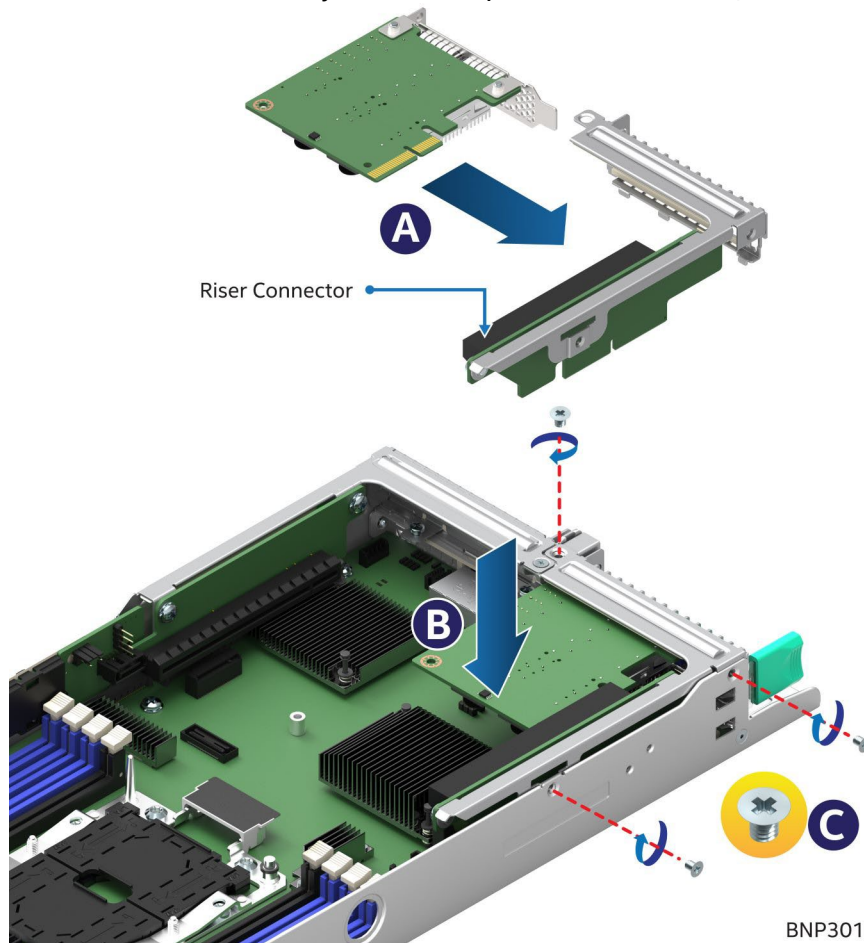


4. Attach the P1 connector of the Sideband Y-Cable to the matching connector on the IFT card (see Letter **B**)

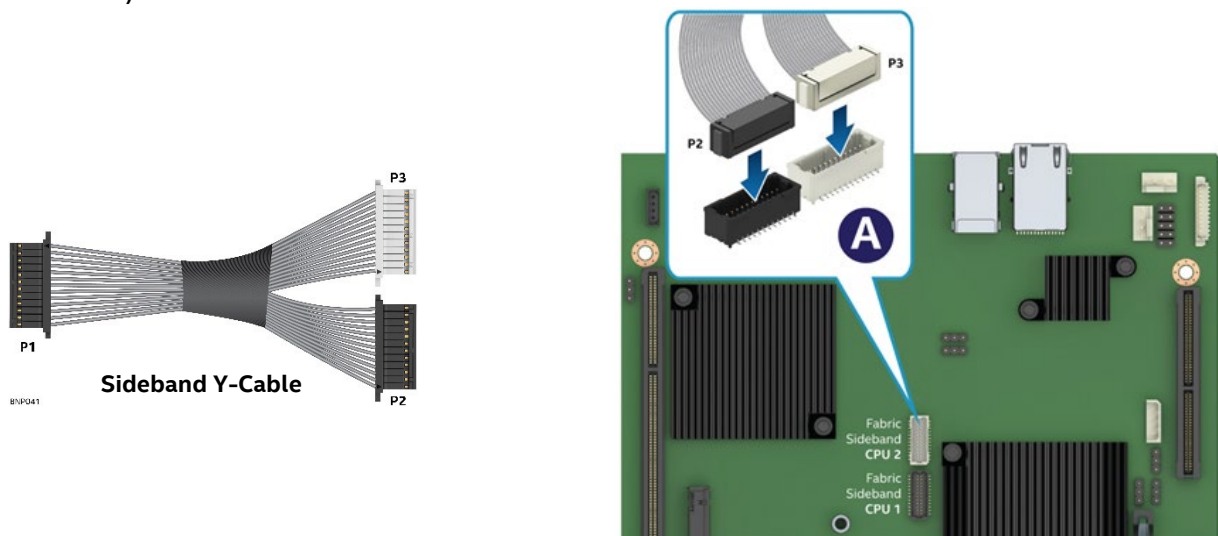




5. Install the IFT card into the riser card assembly (see Letter **A**)
6. Install the riser assembly into the compute module (see Letter **B**)
7. Using 3 screws, secure the riser assembly to the compute module base (see Letter **C**)

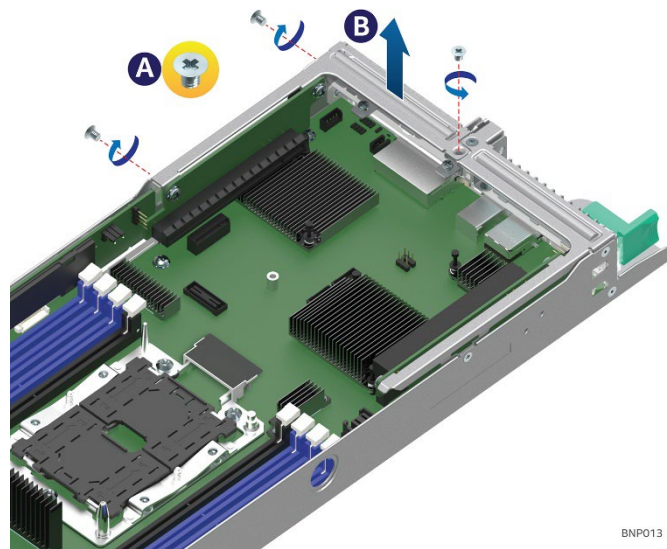


8. Attach the P2 and P3 connectors of the Sideband Y-Cable to matching connectors on the server board (see Letter **A**)



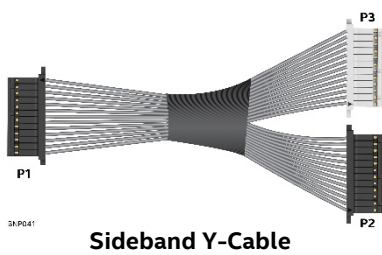
**Installation steps for riser 2:**

1. Remove the 3 fastener screws (see Letter **A**)
2. Remove the Riser Assembly from the compute module (see Letter **B**)

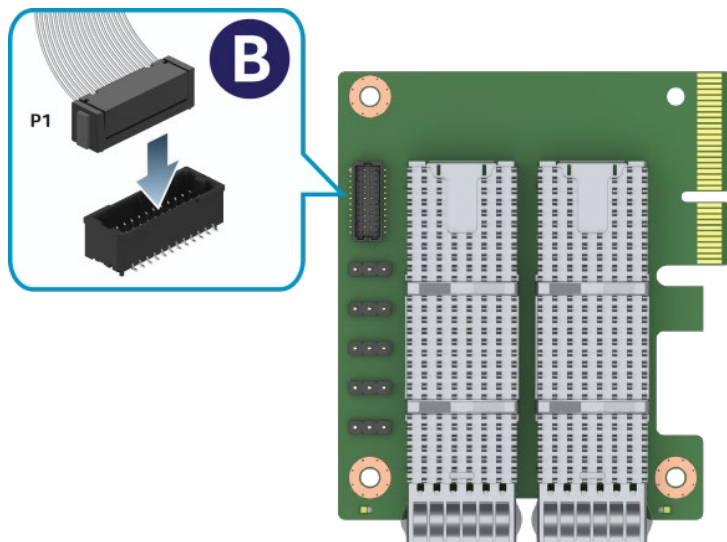


BNP013

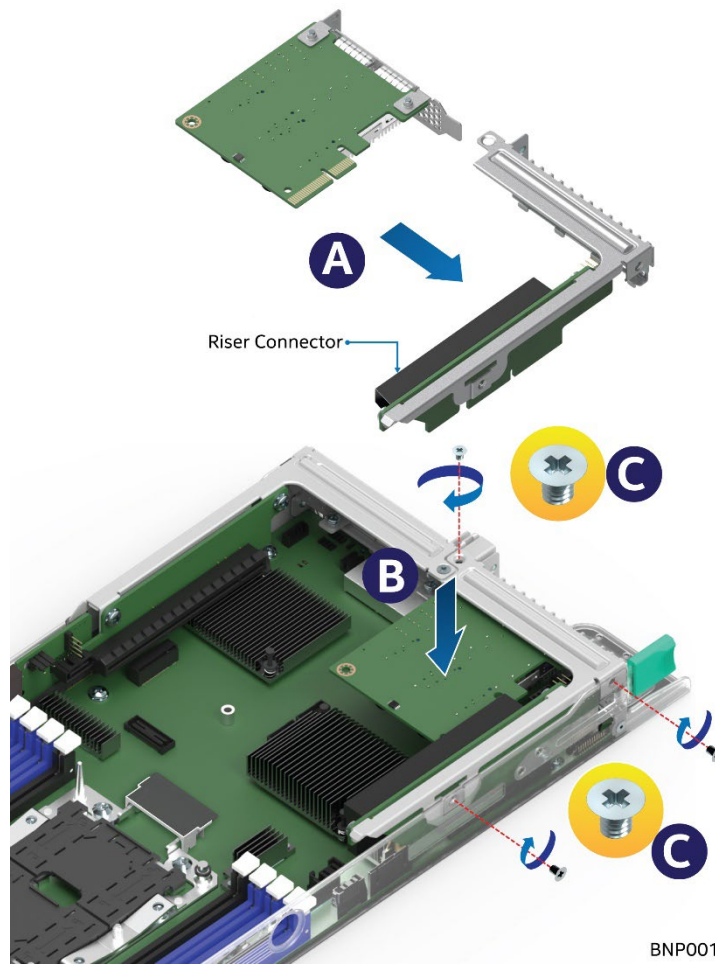
3. Attach the P1 connector of the Sideband Y-Cable to the matching connector on the IFT card (see Letter **B**)



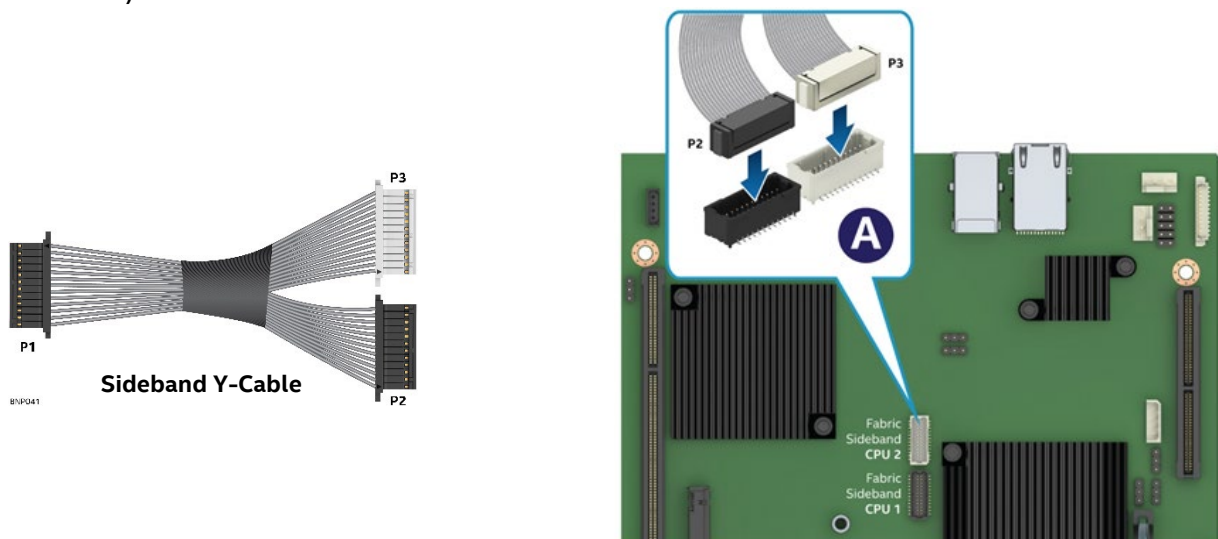
Sideband Y-Cable



4. Install the IFT card into the riser card assembly (see Letter **A**)
5. Install the riser assembly into the compute module (see Letter **B**)
6. Using 3 screws, secure the riser assembly to the compute module base (see Letter **C**)



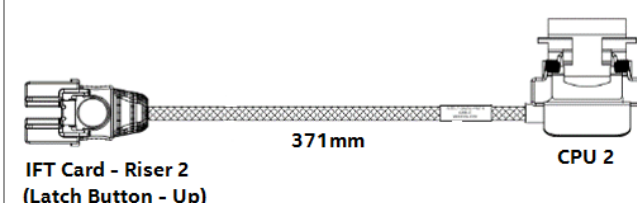
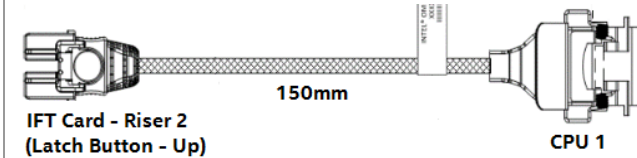
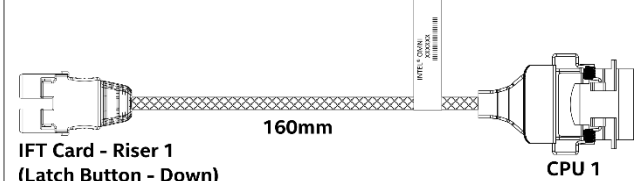
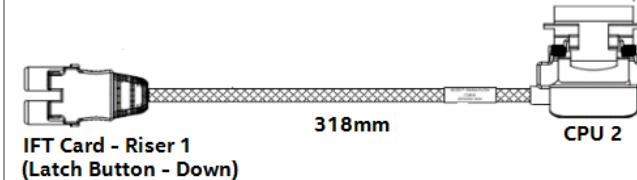
7. Attach the P2 and P3 connectors of the Sideband Y-Cable to matching connectors on the server board (see Letter **A**)



## 2.7.2 Internal Fabric Cable Installation

A fabric cable is routed from each fabric processor to the IFT carrier card. For dual fabric processor configurations, the **AHWBPFABKIT** accessory kit includes two sets of internal fabric cables. One set is used when the IFT Carrier card is installed into Riser 1, and the other set is used when the IFT Carrier card is installed into Riser 2. The following table identifies each cable pair.

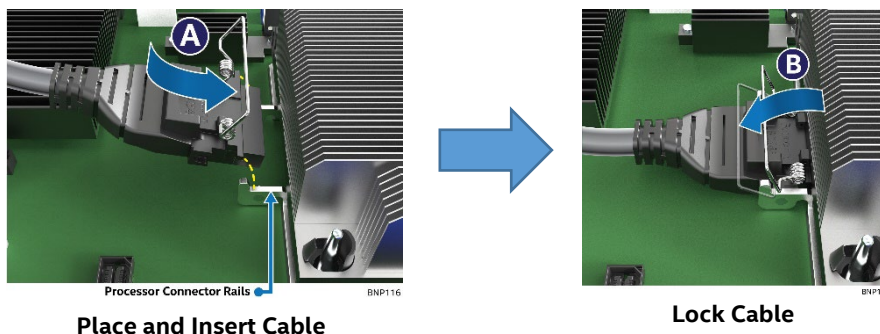
**Table 4. IFP Cable Information**

Cable Part number (on white label)	IFT Card Location	Cable Length	Usage	Drawing
H68075-XXX	Riser 2	371mm	CPU2 to riser 2 (IFT Connector – Latch Up)	
H86172-XXX	Riser 2	150mm	CPU1 to riser 2 (IFT connector – Latch Up)	
H86174-XXX	Riser 1	160mm	CPU1 to riser 1 (Inverted IFT Connector – Latch down)	
H86176-XXX	Riser 1	318mm	CPU2 to riser 1 (Inverted IFT Connector – Latch Down)	



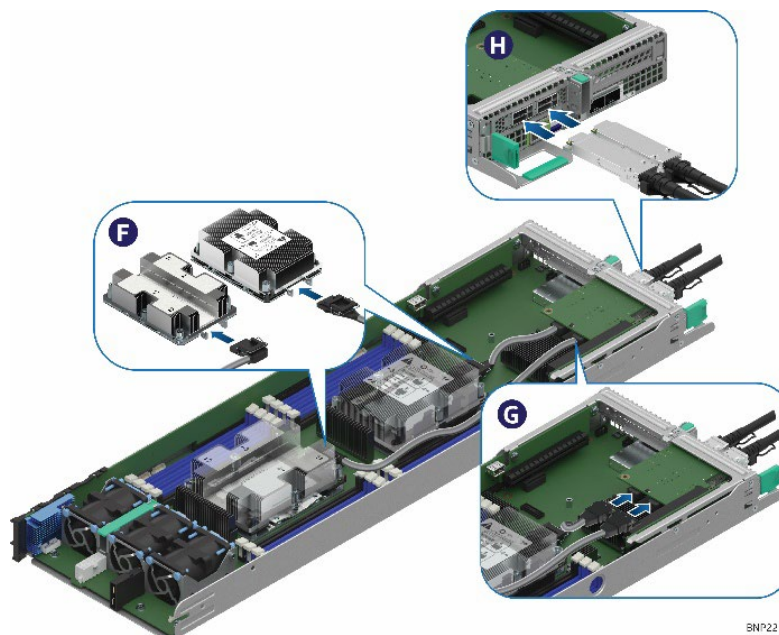
**Figure 76. Internal Fabric Cable Connector Identification**

1. Select the appropriate internal fabric cable from the accessory kit
  2. Place the cable's processor connector within the connector rails on the processor socket and slide processor and cable connectors together (see Letter A)
- Pull the bail wire back until the cable is securely locked in place (see Letter B)



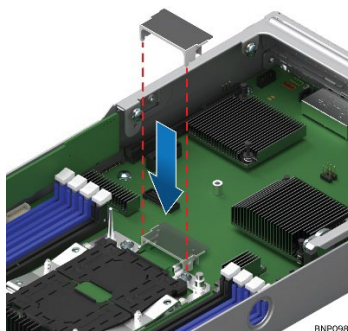
**Figure 77. Fabric Cable Processor Connector Placement**

3. Route the fabric cable to the IFT Carrier Card
  4. Insert the cable connector into an open connector on the IFT Carrier Card.
  5. Ensure the cable is securely locked
- Repeat steps for 2<sup>nd</sup> internal fabric cable as necessary.



**Figure 78. Fabric Cable IFT Carrier Card Connector Placement**

6. Reinstall the CPU1 Bolster Plate Insulator
  - To install, orient the bolster plate insulator over the fabric cable connector on CPU1 and press it down until it snaps into place as shown in the following figure.



**Figure 79. CPU 1 Bolster Plate Insulator Installation**

## 3. System Software Updates and Configuration

---

This chapter provides instructions for completing the integration of the server chassis by updating the system software and navigating through the BIOS Setup screens.

### 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, updating the system software stack to the latest available is highly recommended.

The latest system software stack can be downloaded from Intel at the following Intel web site:



<https://downloadcenter.intel.com/product/1201/Server-Products>

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 that 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

The embedded <F2> BIOS Setup utility is used to view and configure system settings that determine how the server operates.

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.

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 the key strokes from a USB Keyboard will 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.

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.

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.

### 3.3 Navigating the BIOS Setup Utility

The BIOS Setup Utility consists of several menu screens, each holding 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 5. 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.
+	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	<p>Pressing the &lt;F9&gt; key causes the following to display:</p> <div style="border: 1px solid black; padding: 10px; text-align: center; margin: 10px auto; width: fit-content;"> <p>Load default configuration? Press 'Y' to confirm, 'N' / 'ESC' to ignore</p> </div> <p>If "Yes" is highlighted and &lt;Enter&gt; is pressed, all Setup fields are set to their default values. If "No" is highlighted and &lt;Enter&gt; is pressed, or if the &lt;Esc&gt; key is pressed, the user is returned to where they were before &lt;F9&gt; was pressed without affecting any existing field values.</p>

Key	Option	Description
<b>&lt;F10&gt;</b>	Save and Exit	<p>Pressing the &lt;F10&gt; key causes the following message to display:</p> <div data-bbox="379 226 1187 309" style="border: 1px solid black; padding: 5px; text-align: center;"><p>Save configuration changes and exit? Press 'Y' to confirm, 'N' / 'ESC' to ignore</p></div> <p>If "Yes" is highlighted and &lt;Enter&gt; is pressed, all changes are saved and the Setup is exited. If "No" is highlighted and &lt;Enter&gt; is pressed, or the &lt;Esc&gt; key is pressed, the user is returned to where they were before &lt;F10&gt; was pressed without affecting any existing values.</p>



## 4. System Service - System Features Overview

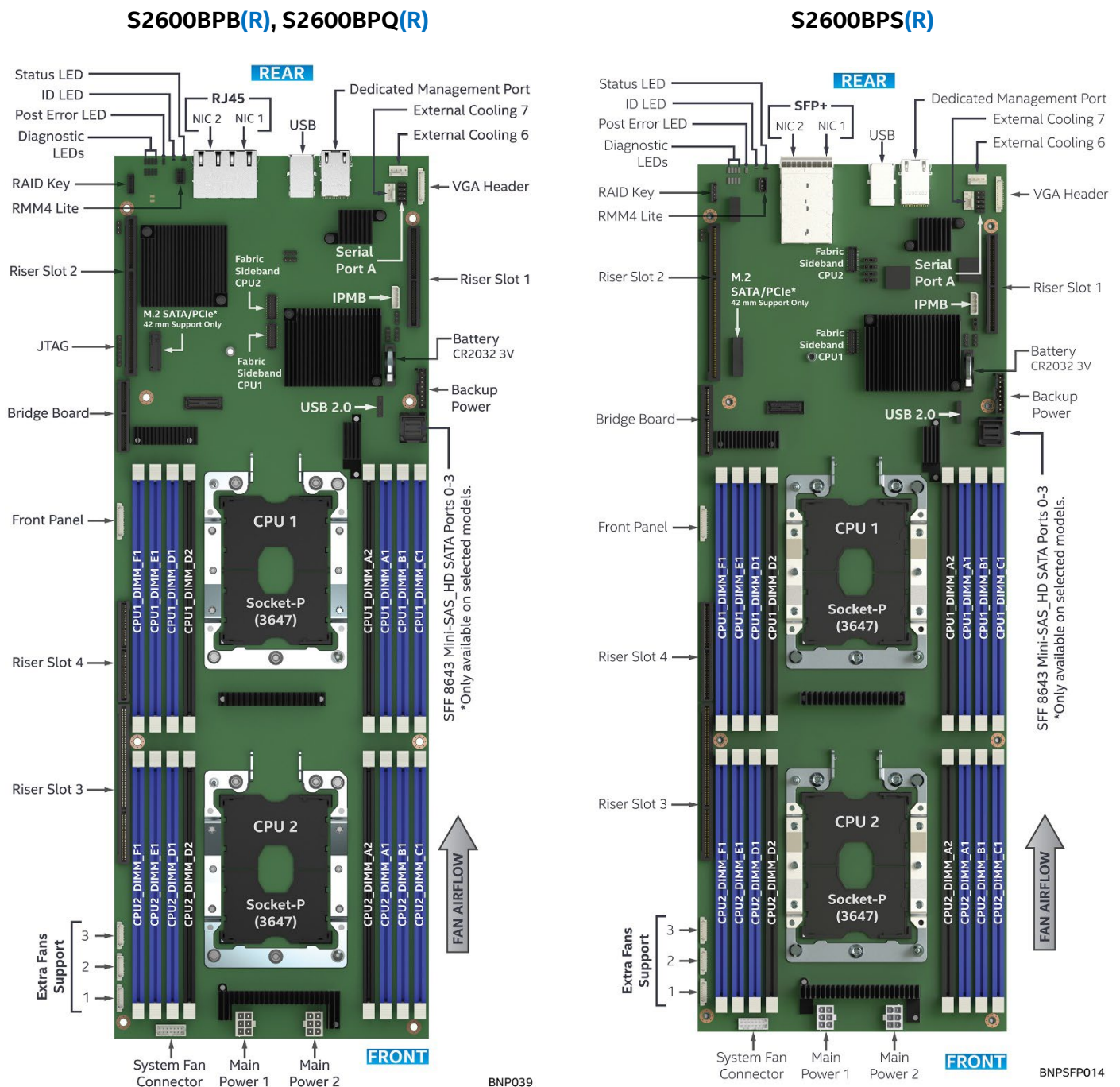
The intent of this chapter is to provide service personnel a reference to identify and locate the features associated with the Intel® Compute Module HNS2600BP and the Intel® Server Board S2600BP product family.

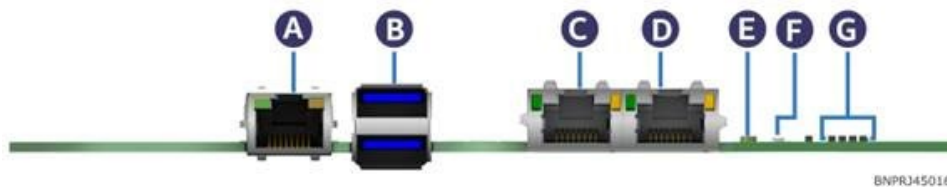
Additional information for this product family can be obtained from the following Intel documents that can be downloaded from the following Intel web site:

<https://www.intel.com/content/www/us/en/support/server-products.html>

### 4.1 Server Board Reference Diagrams

This section provides a high level overview of the Intel® Compute Module HNS2600BP product family. It provides illustrations and diagrams showing the location of important components, features, and connections found throughout the server system.

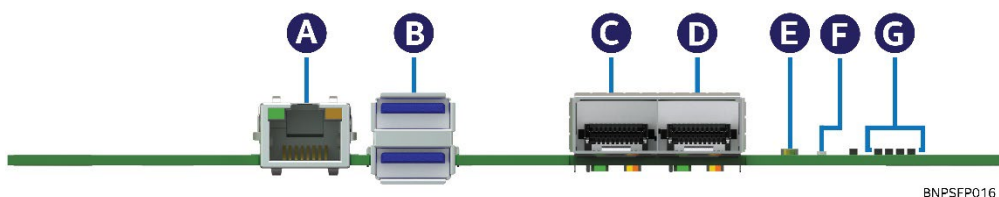




BNPRJ45016

Label	Description	Label	Description
A	Dedicated Management Port (RJ45)	E	Status LED
B	Dual-port USB 3.0	F	ID LED
C	NIC port 1 (RJ45)	G	POST Code LEDs (8 LEDs)
D	NIC port 2 (RJ45)		

Figure 80. Server Board Rear Connectors, (S2600BPB(R), S2600BPQ(R))

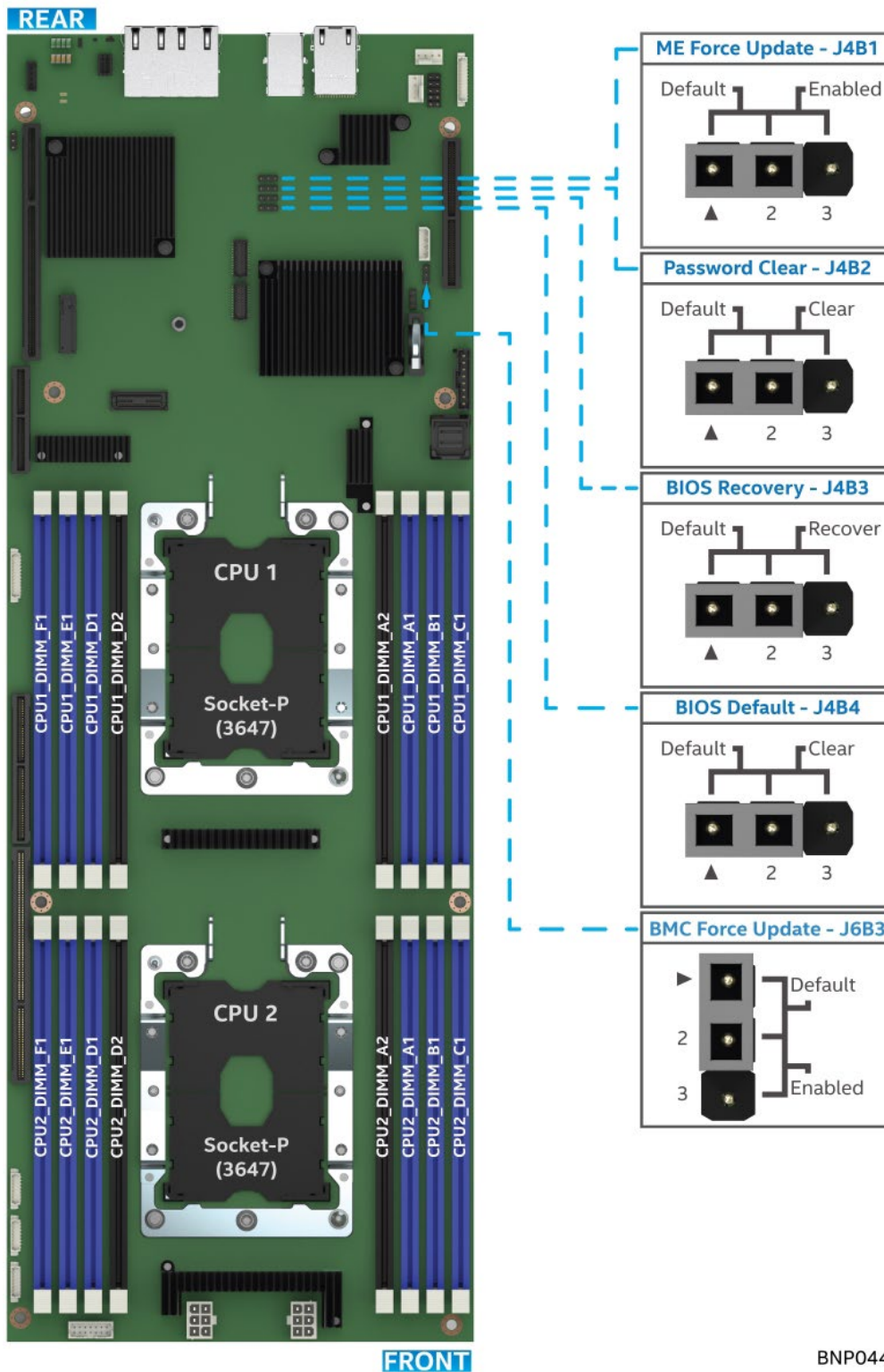


BNPSFP016

Label	Description	Label	Description
A	Dedicated Management Port (RJ45)	E	Status LED
B	Dual-port USB 3.0	F	ID LED
C	NIC port 1 (SFP+)	G	POST Code LEDs (8 LEDs)
D	NIC port 2 (SFP+)		

Figure 81. Server Board Rear Connectors (S2600BPS(R))

The server board includes several jumper blocks that can be used to configure, protect, or recover specific features of the server board. Figure 82 identifies the location of each jumper block on the server board. Pin 1 of each jumper block can be identified by the arrowhead (▼) silkscreened on the server board next to the pin.



BNP044

**Figure 82. Jumper Block Identification**

The server board includes several LEDs to identify system status. Figure 83 shows the supported LEDs and identifies their locations. LED locations and support are common to all boards in the Intel® Server Board S2600BP product family.

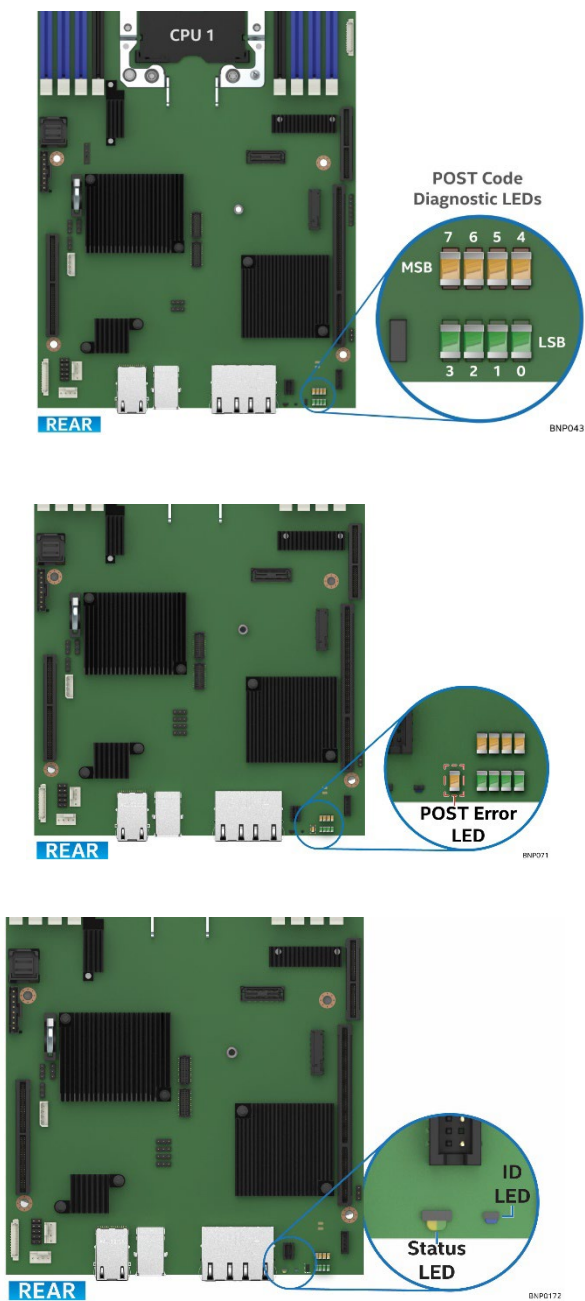
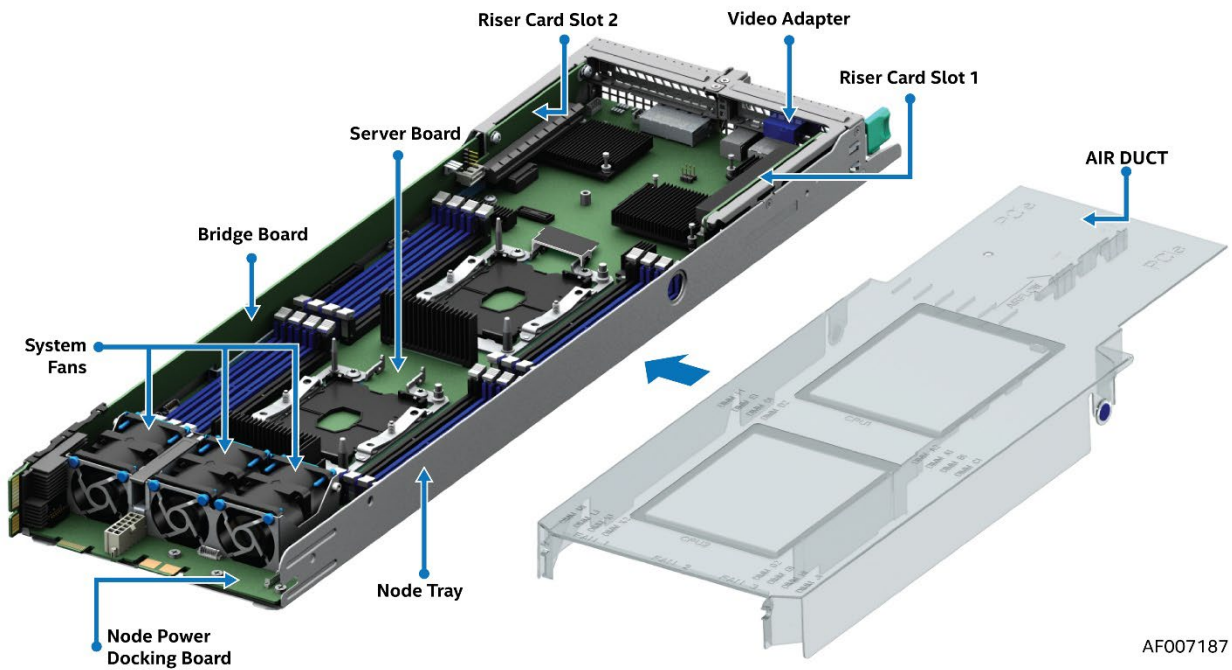


Figure 83. Intel® Light Guided Diagnostics LEDs Identification

### 4.1.1 Intel Compute Module Feature Identification



AF007187

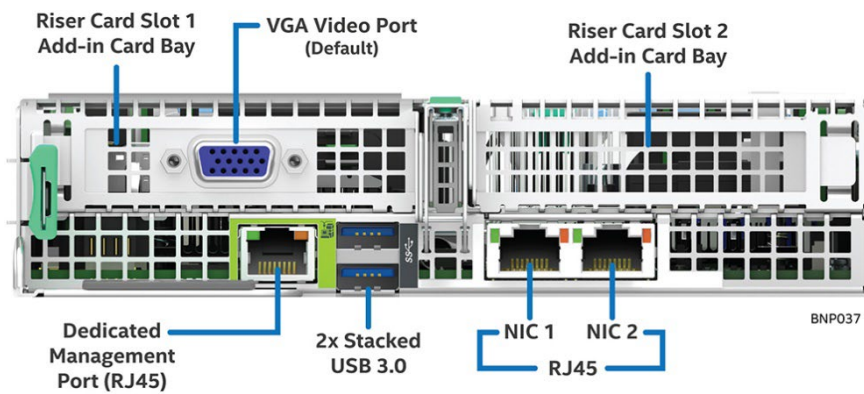


Figure 84. Intel® Compute Module HNS2600BPB(R) and HNS2600BPQ(R) – Rear Connectors

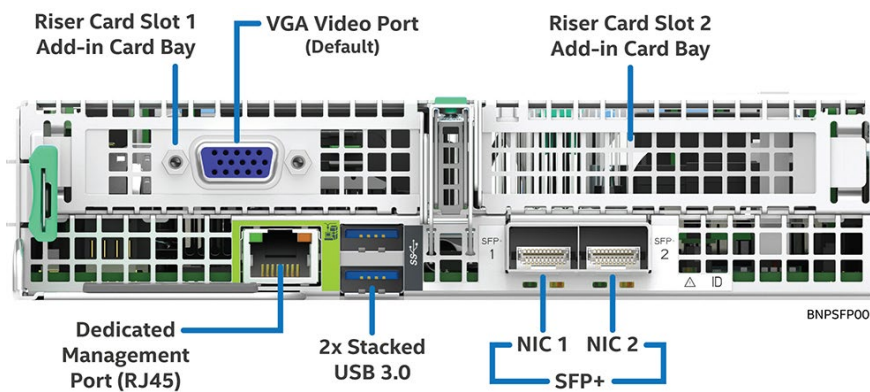


Figure 85. Intel® Compute Module HNS2600BPS(R) – Rear Connectors

The following table identifies the Intel Compute Module compatibility with supported Intel server chassis

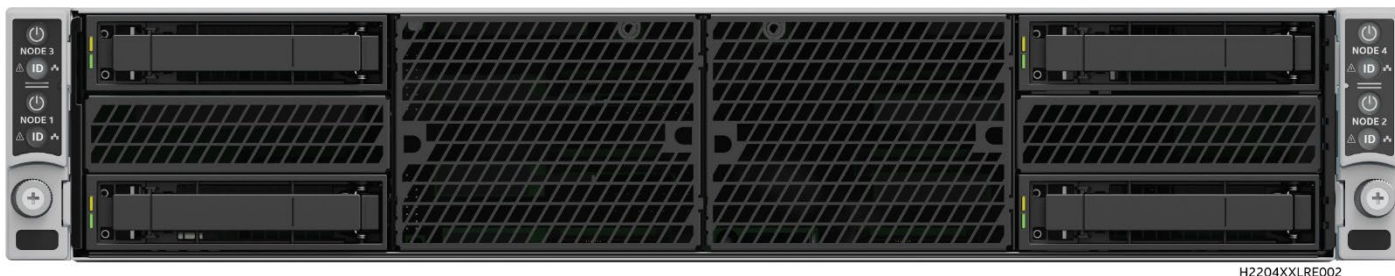
**Table 6. Intel® Compute Module / Intel® Server Chassis Support Table**

Intel® Server Chassis H2000P SKUs	H2312XXLR3	H2204XXLR3	H2224XXLR3
<b>Supported Intel® Compute Module SKUs</b>	HNS2600BPB(R) HNS2600BPQ(R) HNS2600BPS(R)	HNS2600BPB(R) HNS2600BPQ(R) HNS2600BPS(R)	HNS2600BPB24(R) HNS2600BPQ24(R) HNS2600BPS24(R)

Note that the 24 drive SKU of the specified Intel server chassis can ONLY support HNS2600BPx24 compute modules, and that all HNS2600BPx24 compute modules are ONLY compatible for use in the 24 drive chassis SKU.



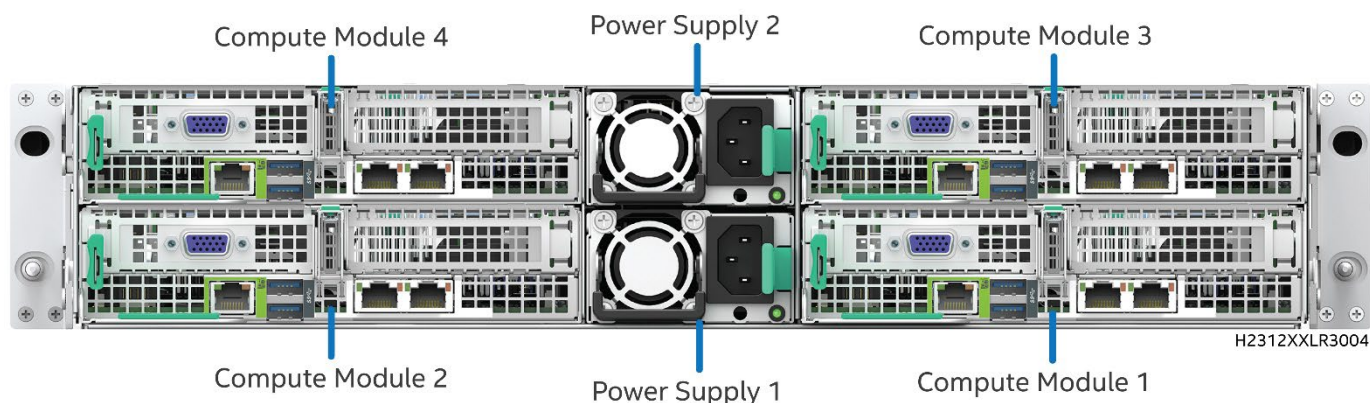
**Figure 86. Intel® Server Chassis H2312XXLR3**



**Figure 87. Intel® Server Chassis H2204XXLR3**



**Figure 88. Intel® Server Chassis H2224XXLR3**



**Figure 89. 4-Node Intel® Server Chassis H2000P**

## 4.2 Power Docking Board Features

### 4.2.1 Power Docking Board (iPC - FHWPBPB)

To be exclusively used with the Intel® Compute Module HNS2600BP product family (12 x3.5" and 4 x 3.5" drive models only)

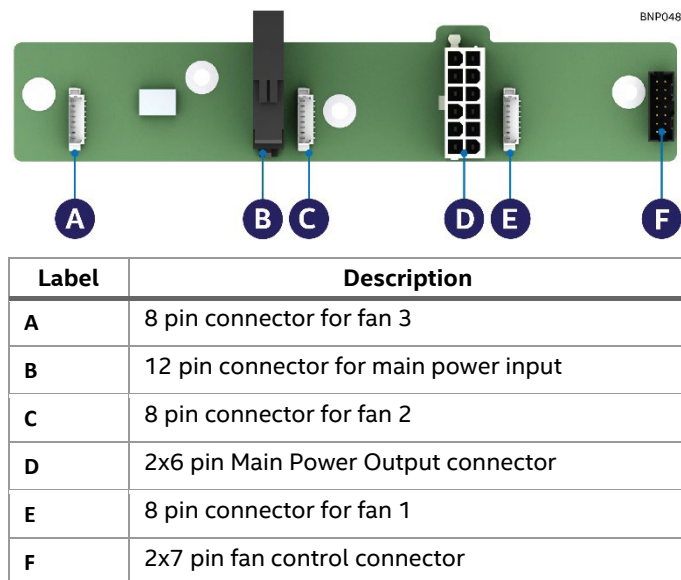
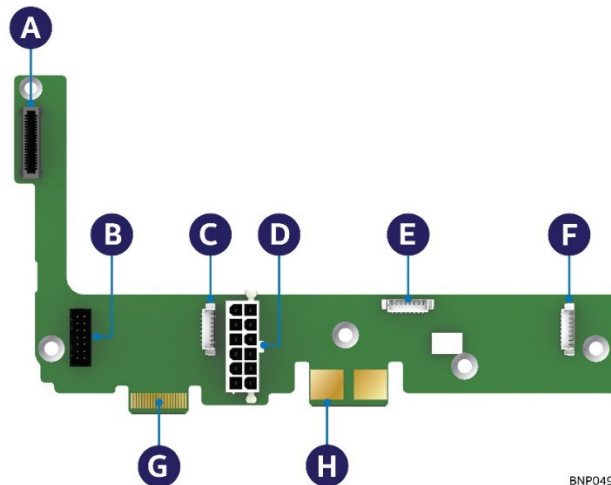


Figure 90. Power Docking Board Features

### 4.2.2 SAS/PCIe\* SFF Combo Power Docking Board (iPC - FHWPBPB24)

To be exclusively used with the Intel® Compute Module HNS2600BP24 product family (24 x2.5" drive models only)



Label	Description
A	40 pin Misc. Signal connector (connects 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	40 pin Misc. Signal Card Edge connector (connects to Chassis Backplane)
H	Power Blade Card Edge connector (connects to Chassis Backplane)

Figure 91. SAS/PCIe\* SFF Combo Power Docking Board Feature

## 5. Compute Module Service – FRU replacement

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This chapter provides instructions for the removal and installation of system components considered as field replaceable. A compute module can only be serviced after being completely removed from the server chassis.

### Before You Begin

Before working with your server product, observe the safety and ESD precautions found in the Warnings section at the beginning of this manual.

### Tools and Supplies Needed

- Anti-static wrist strap and conductive foam pad (recommended)
- Phillips\* (cross head) screwdriver (#2 bit)
- Flat Head screwdriver
- T30 Torx\* bit screwdriver

### System Reference

All references to left, right, front, and back, assume the reader is facing the front of the compute module, or the side opposite that of the external I/O connectors of the server board.



## 5.1 Processor Replacement

### 5.1.1 Processor Removal from Server Board

**Warning:** Processor heat sinks can become extremely hot during normal system operation. Before attempting to remove the processor from the server board, allow the processor heat sinks to fully cool.

**Failing to follow the indicated disassembly sequence, may cause damage**

3. Using a T30 Torx\* bit screwdriver, loosen each heat sink fastener in the sequence shown on the label on the top of the heat sink (see Letter **A**)
4. Lift the PHM straight up from the server board until it is free from the processor socket bolster plate guide pins (see Letter **B**)

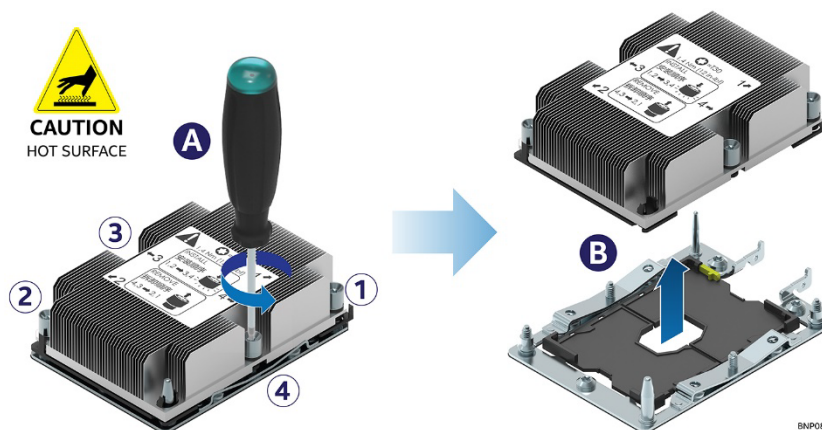


Figure 92. Uninstalling the PHM

**Note:** To prevent possible damage to the processor socket, reinstall the original plastic cover to the processor socket.

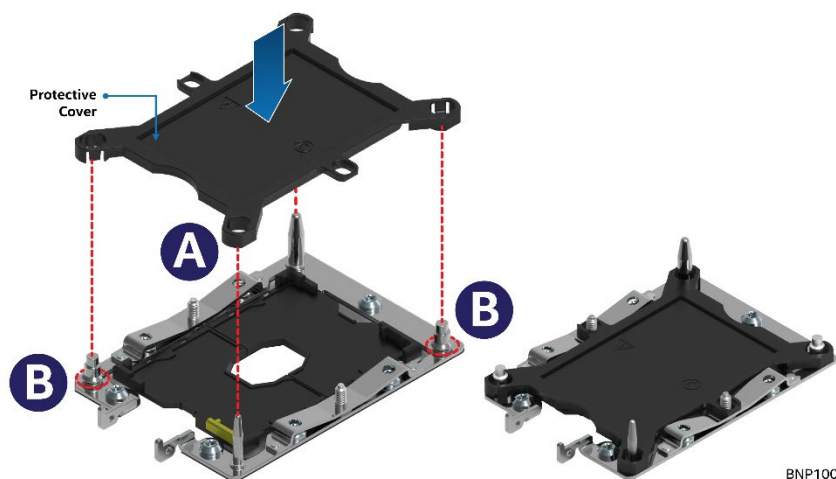
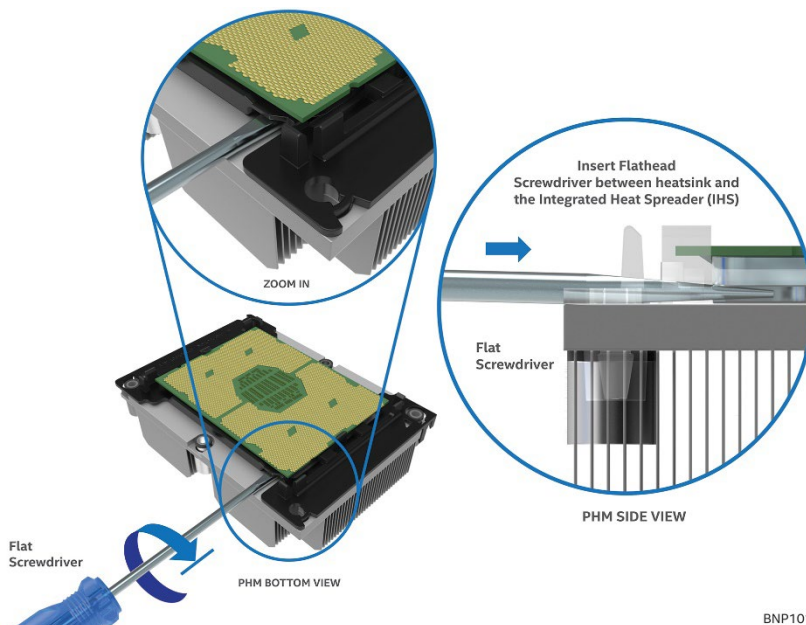


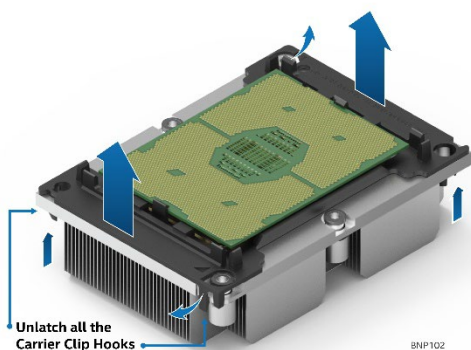
Figure 93. Plastic Processor Socket Cover Installation

5. With the heat sink facing down, place the Processor Heat Sink Module (PHM) onto a flat non-conductive surface
6. To remove the processor clip sub-assembly from the heat sink:
  - Insert the head of a flat head screwdriver in-between the heat sink and the processor clip assembly (as shown below) and gently twist to break the bond between the two components.



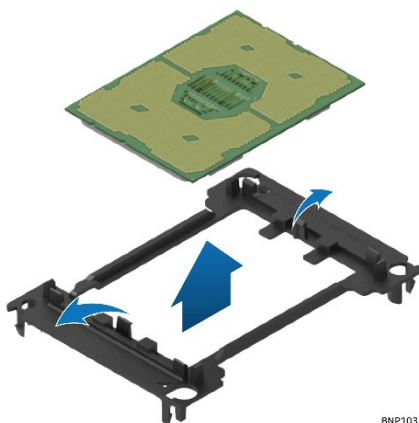
**Figure 94. PHM Disassembly**

- Unlatch the hooks on each corner of the processor carrier clip to free the processor carrier from the heat sink



**Figure 95. Releasing the Processor Carrier Clip from the Heat Sink**

- Carefully lift the processor sub-assembly from the heat sink
- Remove the processor from the processor carrier clip by carefully pushing back one of the latches on the ends of the processor and rotating the processor up and out of the processor carrier clip



**Figure 96. Releasing Processor from Carrier Clip**

For complete processor installation instructions, see Section 1.2 Processor Assembly and Installation

## 5.2 CPU 1 Bolster Plate Insulator

The Intel® HNS2600BP Compute Module includes a factory installed bolster plate insulator to prevent potential contact between a PCIe\* add in card (when installed) and the metal bolster plate of the CPU #1 processor socket.

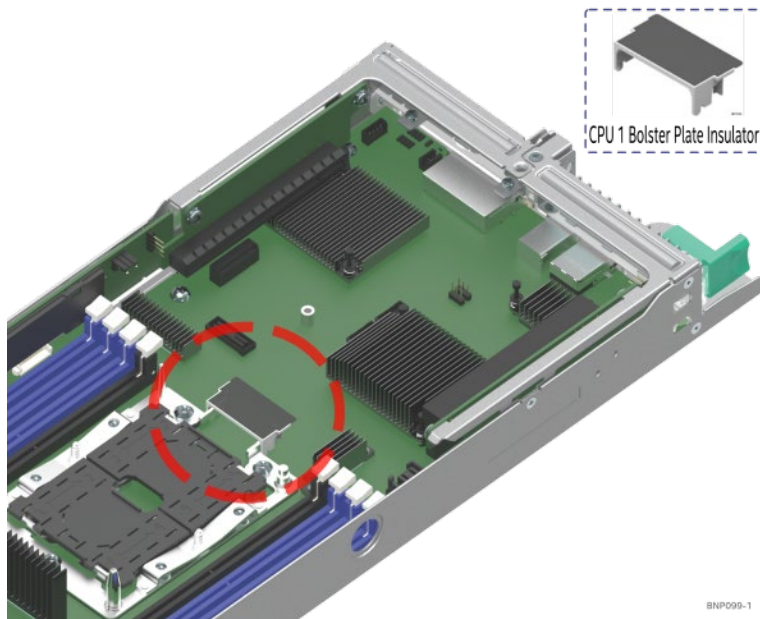


Figure 97. CPU 1 Bolster Plate Insulator

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**Note:** The insulator should only be removed when installing a processor SKU that supports the Intel® Omni-Path Fabric Host Fabric Interconnect (HFI). **The insulator must be reinstalled after the setup is completed.** Do not operate the compute module when configured with a PCIe\* add-in card and with the insulator removed. Doing so may critically damage the PCIe\* add-in card, the server board, or both.

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To remove, grasp the Insulator by its edges and pull straight up. Keep it in a secure location for reuse.

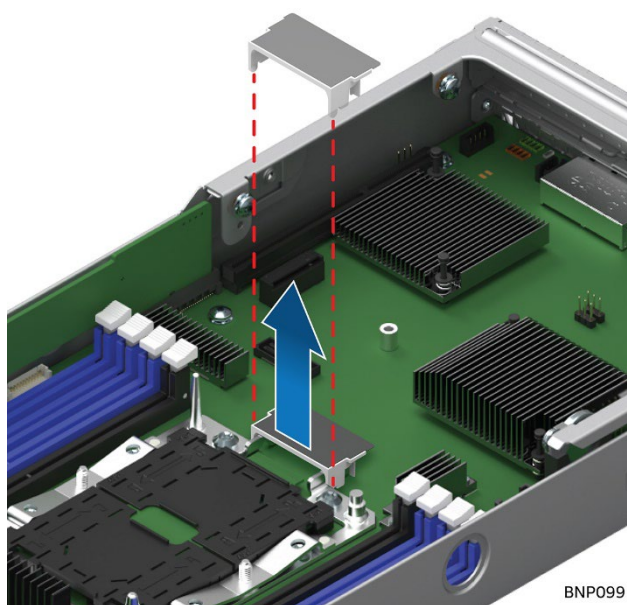
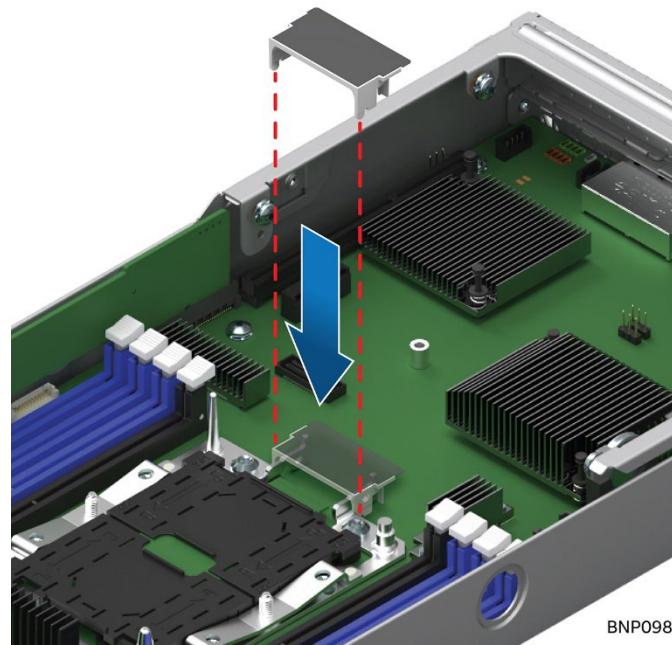


Figure 98. CPU 1 Bolster Plate Insulator

To install, orient the bolster plate insulator over the fabric cable connector on CPU1 and press it down until it snaps into place.

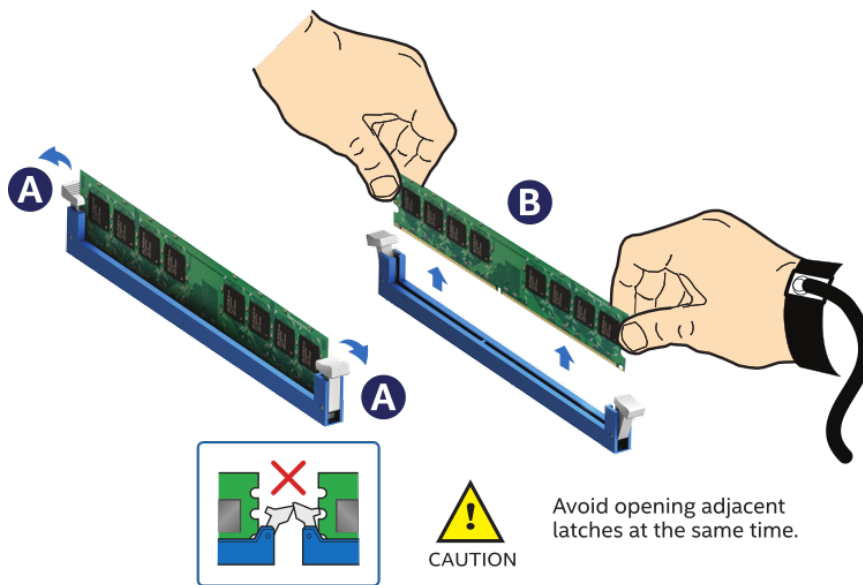


**Figure 99. CPU 1 Bolster Insulator Plate**

## 5.3 Memory Module (DIMM) Replacement

### 5.3.1 DIMM Removal

1. Locate the DIMM socket for service. Ensure that the retaining clips of adjacent slots are closed.
2. Open the DIMM slot latches at either end of the selected DIMM socket (see Letter **A** in Figure 100). The DIMM will lift from the socket connectors.
3. Holding the DIMM by its edges, lift it away from the socket (see Letter **B**)

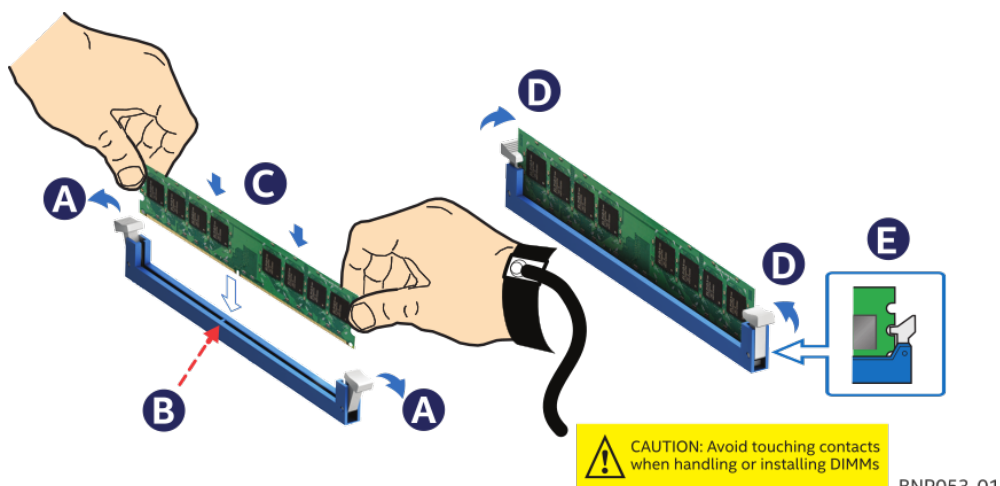


BNP053-02

Figure 100. Memory Removal

### 5.3.2 DIMM Installation

1. Locate the desired DIMM socket
2. Rotate the white retention clips, on each end of the DIMM slot, out to the open position (see Letter **A**)
3. Holding the DIMM by its edges, ensure the DIMM alignment notch and DIMM slot key are properly aligned (see Letter **B**)
4. Carefully insert the DIMM into the DIMM Slot (see Letter **C**).
5. Firmly push down on the top edge of the DIMM until the retaining clips snap into place (see Letter **D**).
6. Visually check that both retention clips are firmly in place (see Letter **E**).



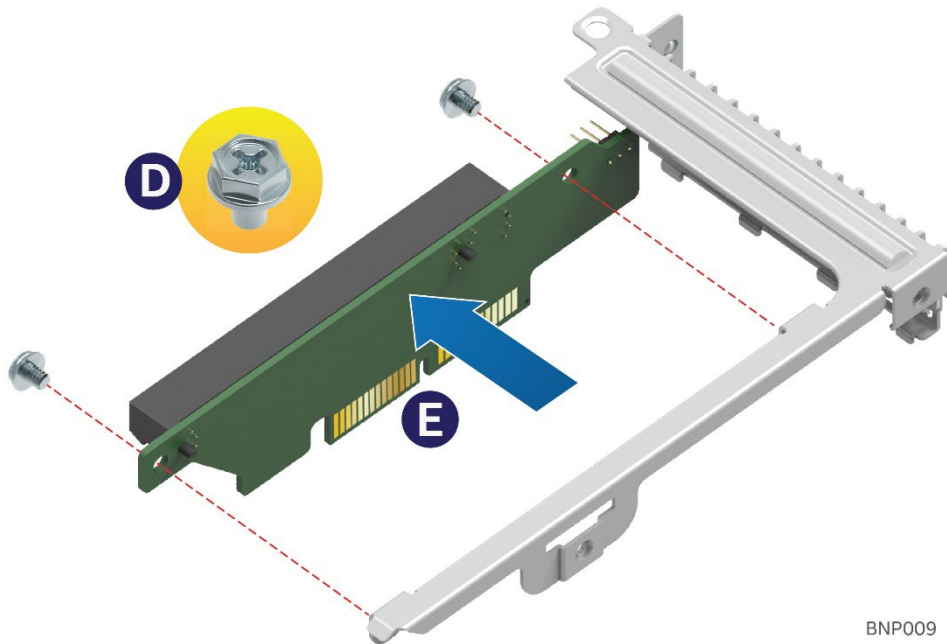
BNP053-01

Figure 101. Installing the Memory

Repeat steps for all DIMMs to be installed

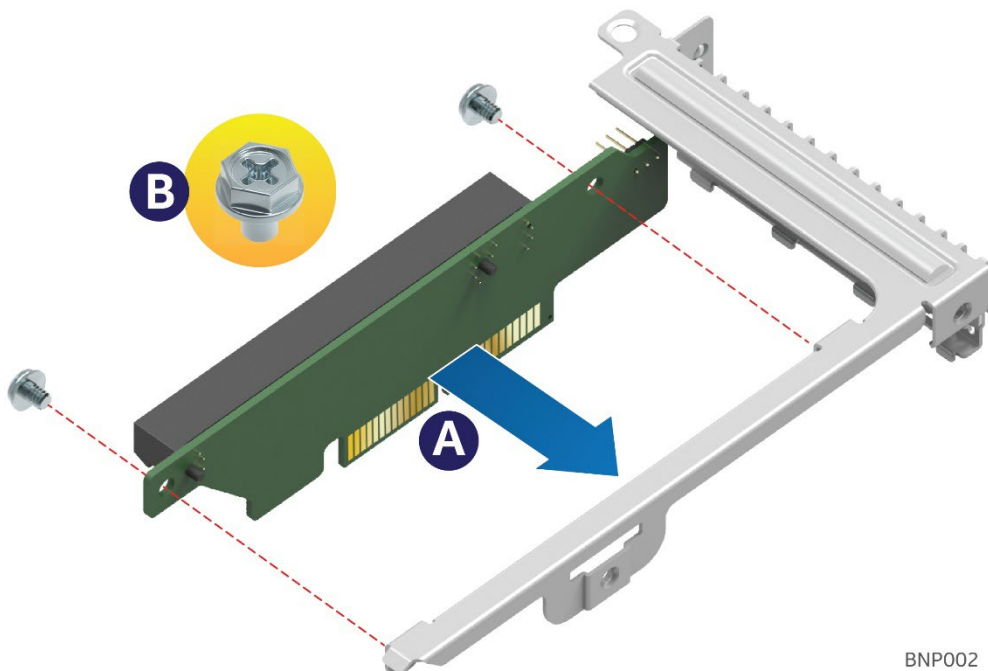
## 5.4 Riser Card #1 Replacement

1. Remove the Riser 1 assembly from the compute module
2. Release the riser card from the riser bracket (see Letter **E**) by loosening and removing the two screws (see Letter **D**)



**Figure 102. Removing Riser Card from the Riser Assembly Bracket**

3. Locate the replacement riser card
4. Locate and unpack the Intel Riser 1 accessory kit (iPC – AHW1URISER1)
5. Using two screws (**B**), mount the riser card to the riser card mounting bracket (**A**)



**Figure 103. Installing the Riser Card 1 to the Riser Bracket**

## 5.5 Riser Slot 1 – Video Connector Bracket

This section assumes the factory installed Video Connector Bracket was previously removed from the Riser 1 bracket, and that the reader is now attempting to reinstall it.

### 5.5.1 Video Connector Bracket Installation

1. Using two mounting screws, attach the Video Cable to the add-in slot bracket (see Letter A)
2. Install the VGA bracket assembly to the PCIe\* Riser bracket (see Letter B)

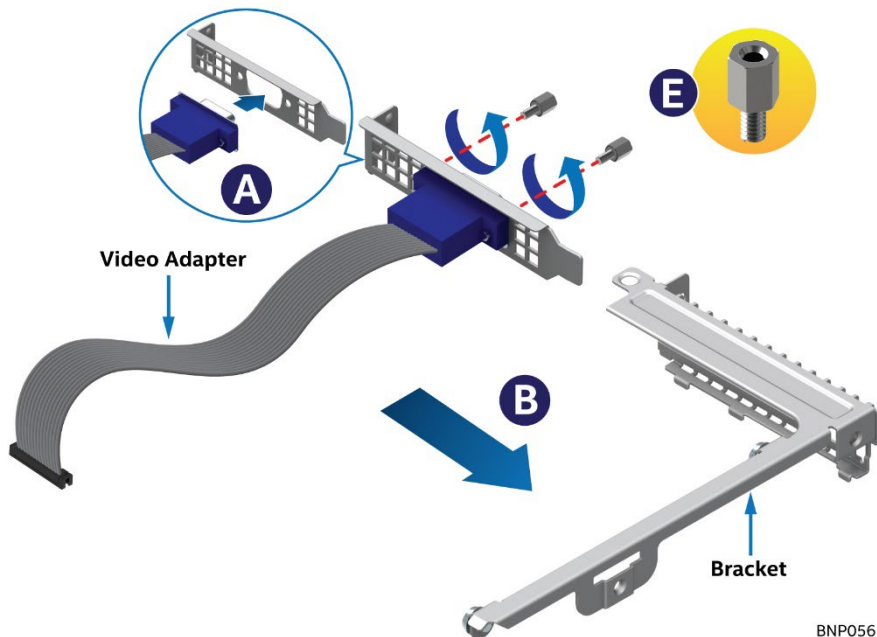


Figure 104. Video Connector Bracket Assembly

3. Connect the Video Cable to the matching connector on the server board (see Letter C)
4. Install the riser bracket assembly into the compute module (see Letter D)
5. Using three screws, secure the riser bracket assembly to the compute base (see Letter E)

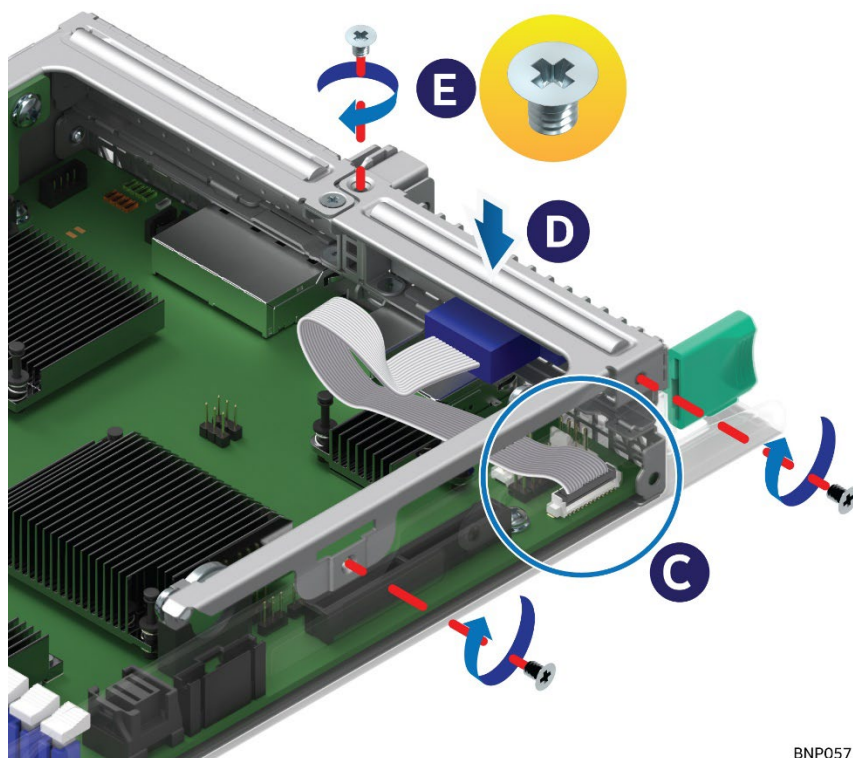


Figure 105. Installing Video Connector Assembly

## 5.6 System Fan Replacement

### 5.6.1 System Fan Removal

1. Remove the air duct from the compute module. See Section 1.1.1
2. Disconnect the fan cable of the faulty fan from the power docking board
  - a) **For System Fan #3**, if the fan cable is routed beneath the Main Power harness, it will be necessary to disconnect the Black 12-pin Main Power connector from the Power Docking Board first.

System fans are not held in place using any type of fastener. They are tightly held in place by friction, using a set of four Blue sleeved rubber grommets that sit within cutouts in the chassis fan bracket. Do not attempt to pull out the blue grommets while the fans are still installed within the fan bracket. A fan is best removed by using the thumb and forefinger of both hands to grasp the top of the fan, then gently rocking the fan loose from the fan housing. When loose, pull the fan straight up.

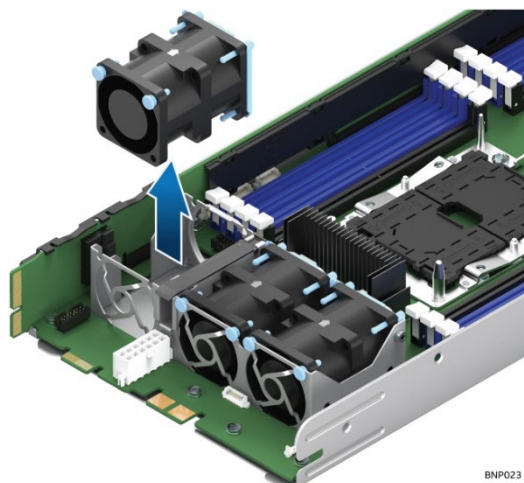


Figure 106. System Fan Removal

### 5.6.2 System Fan Installation

1. Locate the replacement system fan
2. Orient the system fan so that the sticker with the white arrow is on the top side of the fan, and the arrow is pointing towards the back of the compute module.
3. Place the fan into the fan bracket and press down until secure
4. Ensure that all four blue grommets are properly seated within the fan bracket cutouts
5. Connect the fan cable to the matching connector on the power docking board

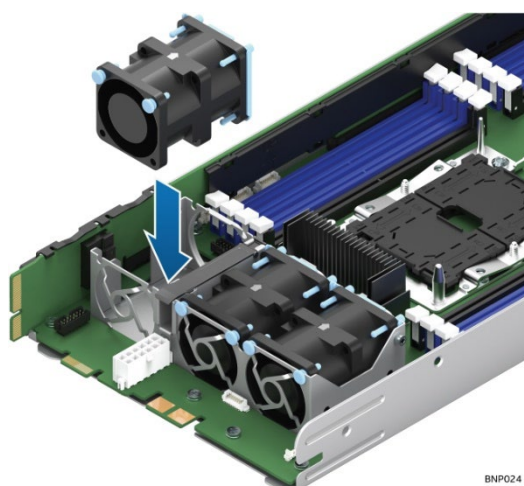


Figure 107. Installing the Fan



## 5.7 Bridge Board Replacement

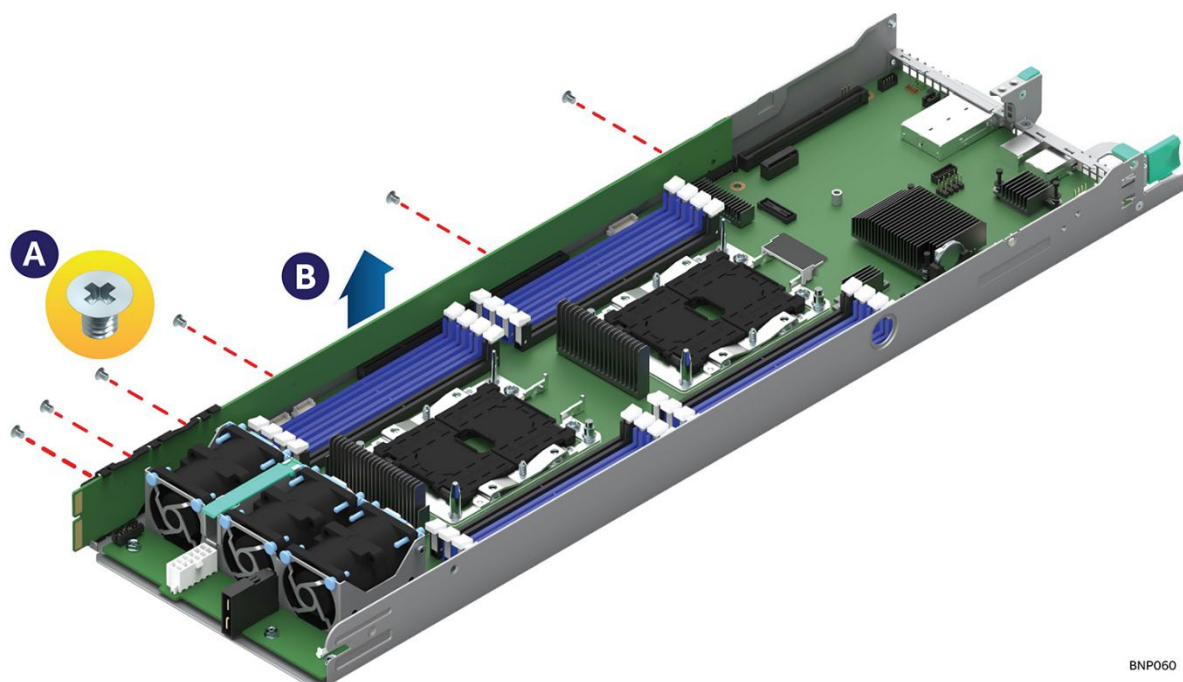
### 5.7.1 4-port Bridge Board Removal

These removal instructions apply to the following Intel Bridge Board Accessory Kits

- AHWBPBGB
- AHWBP12GBGB
- AHWBP12GBGBIT
- AHWBP12GBGBR5

#### Tools Required:

- Phillips\* screwdriver
1. Remove the compute module air duct. See Section 1.1.1
  2. Remove the six screws securing the bridge board to the compute module base (see Letter **A**)
  3. Carefully lift each end of the bridge board up from riser slots on the server board
  4. With the bridge board free from the server board, lift it away from the compute module (see Letter **B**)



**Figure 108. Removing the Bridge Board**

For installation instructions, see Section 1.6.1

## 5.7.2 6-port SAS/NVMe Combo Bridge Board Removal

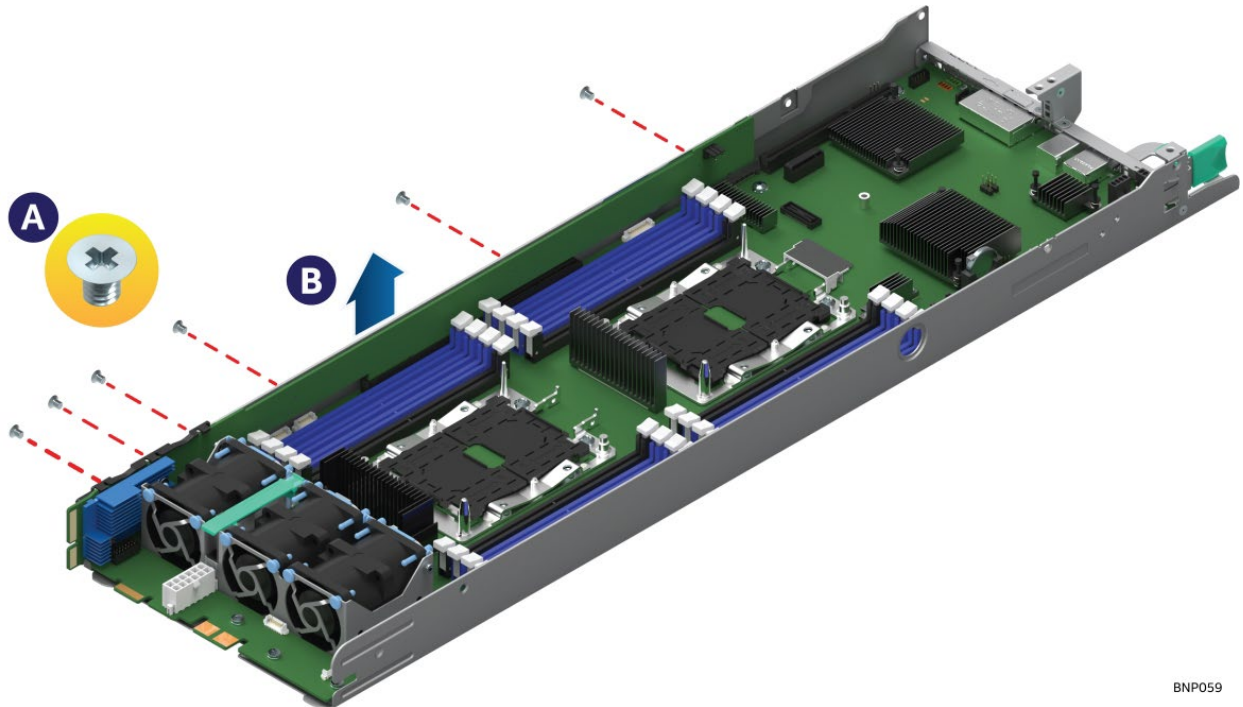
These removal instructions apply to the following Intel Bridge Board Accessory Kits

- AHWBPBGB24
- AHWBPBGB24R

### Tools Required:

— Phillips\* screwdriver

1. Remove the compute module air duct. See Section 1.1.1
2. Remove the six screws securing the bridge board to the compute module base (see Letter **A**)
3. Carefully lift each end of the bridge board up from riser slots on the server board
4. With the bridge board free from the server board, lift it away from the compute module (see Letter **B**)



BNP059

**Figure 109. Removing the SAS/PCIe\* SFF Combo Bridge Board**

For installation instructions, see Section 1.6.2

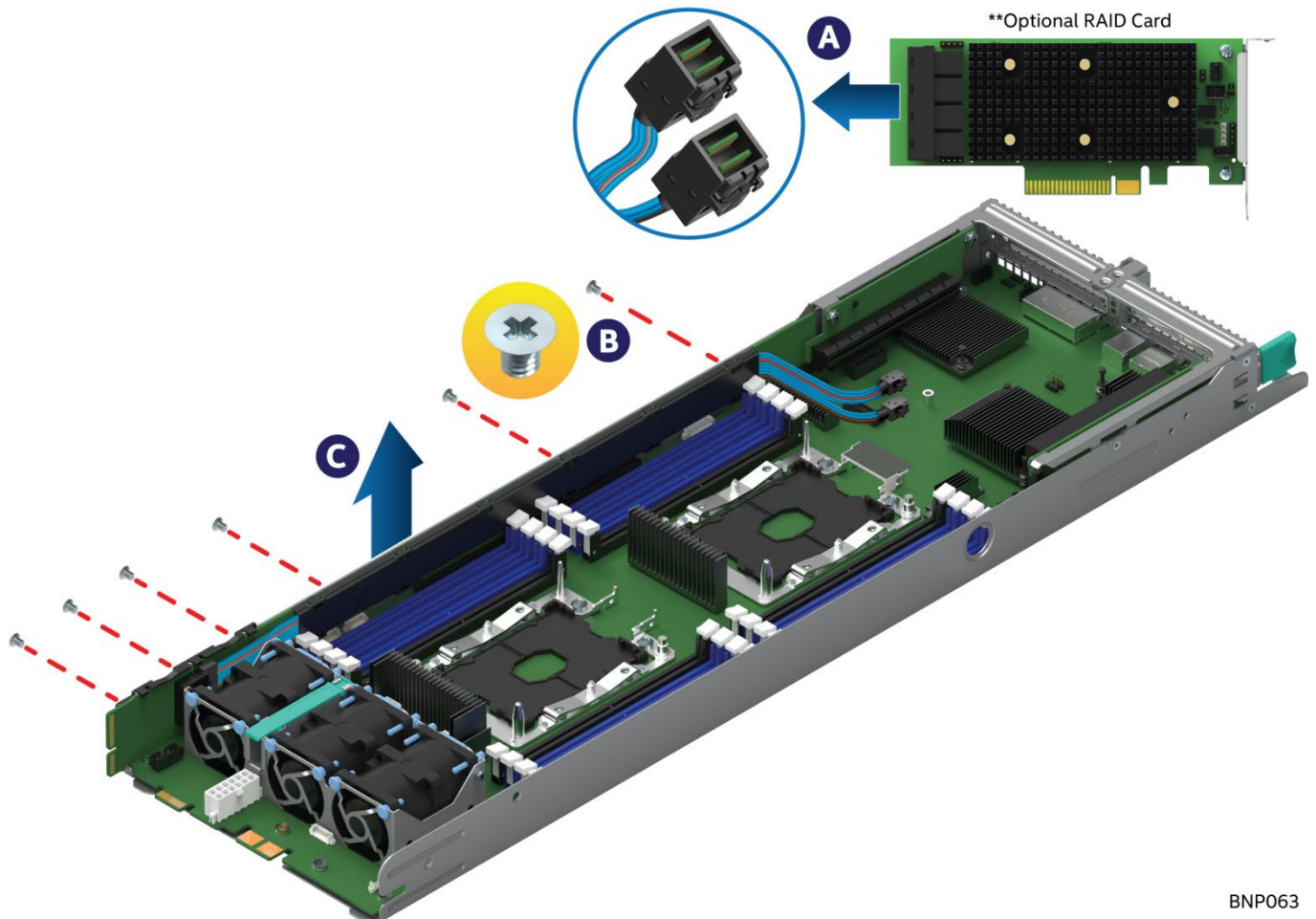
### 5.7.3 Pass-Through Bridge Board Removal

These removal instructions apply to the following Intel Bridge Board Accessory Kits

- **AHWBPBGB24P**

#### **Tools Required:**

- Phillips\* screwdriver
1. Remove the compute module air duct. See Section 1.1.1
  2. Disconnect the Bridge Board cables from the RAID card (see Letter **A**)
  3. Remove the six screws securing the Bridge Board to the compute module base (see Letter **B**)
  4. Carefully lift each end of the bridge board up from riser slots on the server board
  5. With the bridge board free from the server board, lift it away from the compute module (see Letter **B**)



BNP063

**Figure 110. Removing the Pass-Through Bridge Board**

For installation instructions, see Section 1.6.3

## 5.8 Server Board Battery Replacement

The lithium battery on the server board powers the Real Time Clock (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 lost.

Battery Specification:

- Lithium
- 3V
- Coin **CR-2032**

Contact your customer service representative or dealer for a list of approved devices.

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**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.

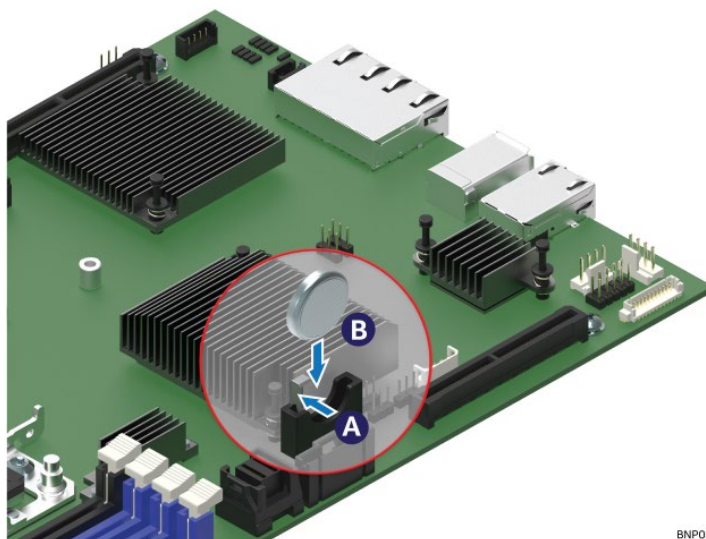
**Advarsel:** Lithiumbatteri - Eksplosjonsfare. Ved utskifting benyttes kun batteri som anbefalt av apparatfabrikanten. Brukt batteri returneres apparatleverandøren.

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

**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. See Figure 111.
2. Gently press the metal clip as shown to release the battery (see Letter **A**)
3. Remove old the battery from the plastic socket
4. Dispose of the battery according to local laws
5. Remove the new lithium battery from its package
6. Orient the battery so the rounded edge is facing out
7. Insert the battery into the battery socket (see Letter **B**)
8. Use the <F2> BIOS Setup Utility to restore BIOS Settings and reset the system time and date



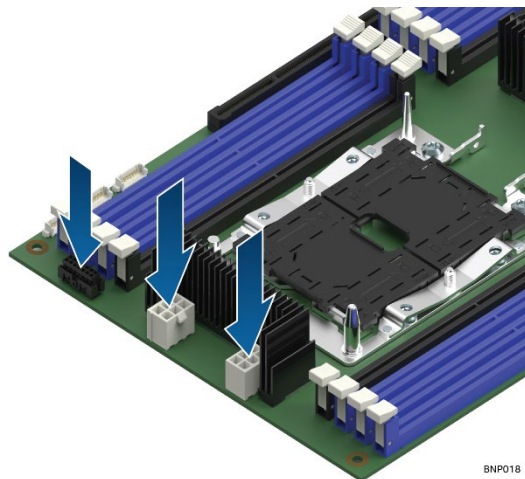
BNP025

**Figure 111. Replacing the Backup Battery**

## 5.9 Server Board Replacement

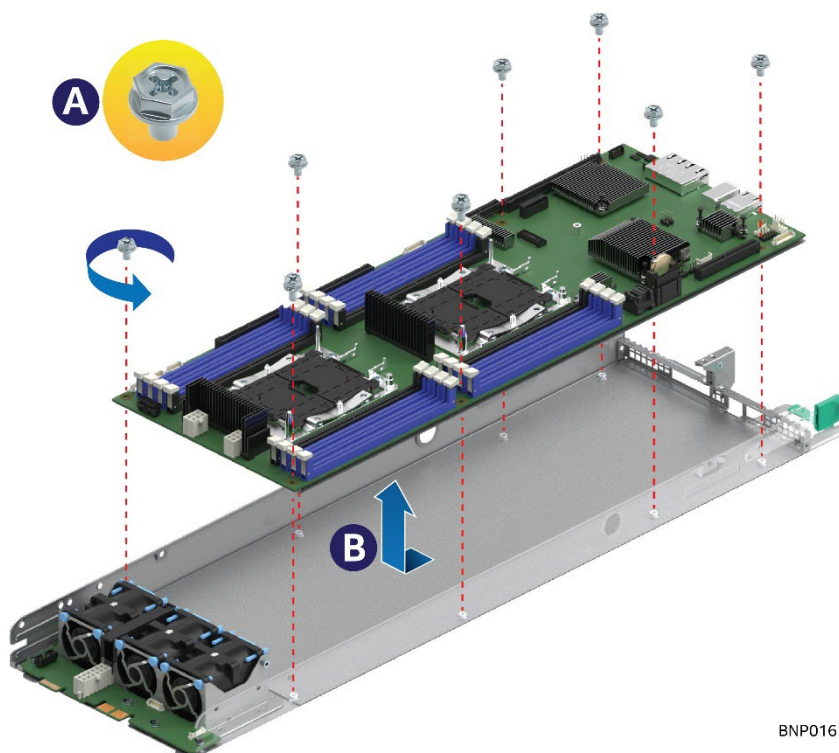
### 5.9.1 Server Board Removal

1. Remove the compute module air duct. See Section 1.1.1
2. Remove the Riser Card Assemblies from the compute module. See Sections 2.4 and 2.5
3. Remove all memory modules from DIMM Slots. Note their location for proper reinstallation.
4. Remove the processor heat sink assemblies from the server board. Note the location of each for proper reinstallation. See Section 5.1.1
5. Remove the bridge board. See Section 5.7
6. Disconnect Fan Signal and Power cables from the server board as shown in the following figure



**Figure 112. Removing the Cable Connections from the Server Board**

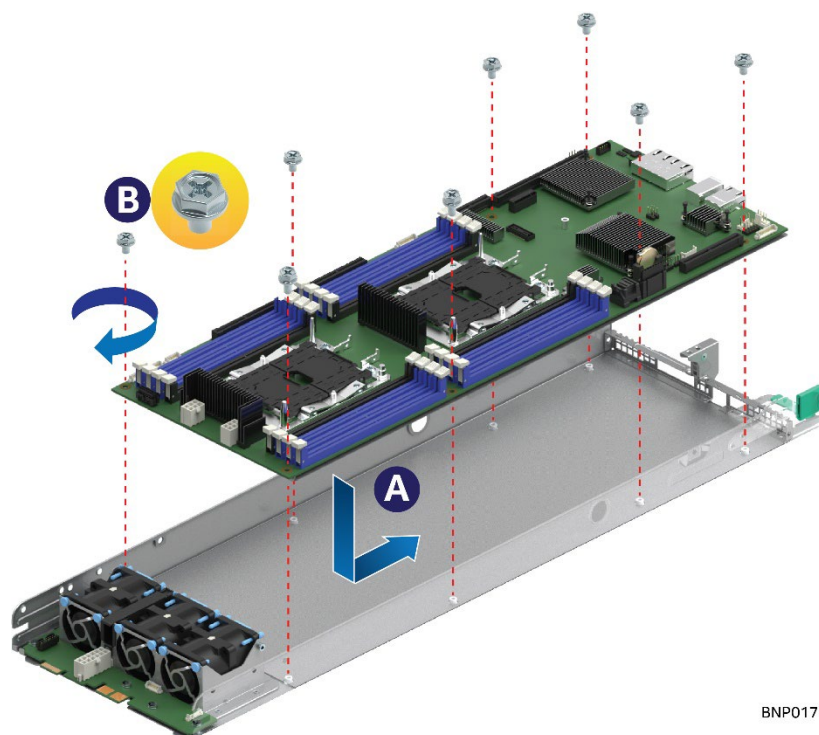
7. Remove the eight screws from the server board (see Letter **A**)
8. Lift the server board straight up and away from the compute module base (see Letter **B**)



**Figure 113. Removing the Server Board**

## 5.9.2 Server Board Installation

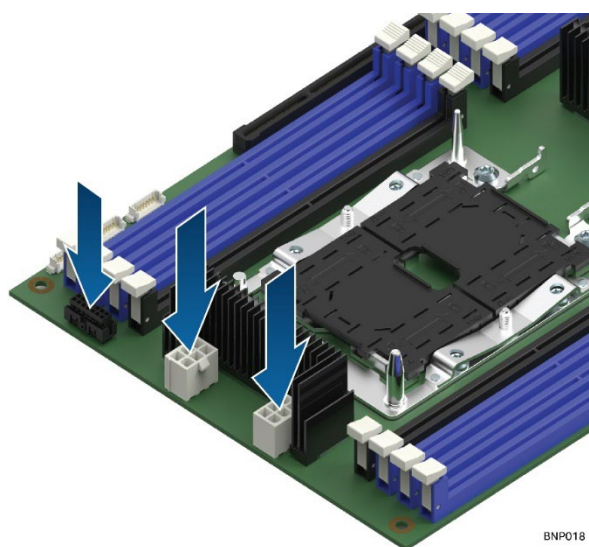
1. Holding the server board by its edges, carefully lower it down into the compute module base so that the rear I/O connectors of the server board align with and are fully seated into the matching holes on the compute module back panel.
2. The server board is correctly placed when the two end screws nearest the front edge of the server board sit securely onto the shouldered compute module standoffs.
3. Fasten the eight screws to 8 in/lb torque (see Letter **B**)



BNP017

**Figure 114. Installing the Server Board**

4. Connect Fan Signal and Power cables to the server board



BNP018

**Figure 115. Connecting all Cables**

5. Install the bridge board. See Section 1.6
6. Install the correct processor heat sink assemblies to the appropriate processor sockets
7. Install memory modules to the appropriate DIMM slots
8. Install riser assemblies into Riser Slot 1 and Riser Slot 2. See Sections 2.4 and 2.5
9. Install the air duct. See Section 1.1.2

## 5.10 Power Docking Board Replacement – HNS2600BP

### 5.10.1 Power Docking Board Removal

1. Remove the air duct from the compute module. See Section 1.1.1
2. Remove the bridge board. See Section 5.7
3. Lift on the front edge of the plastic cable channel cover and remove it from the fan bracket (see Letter **A**)
4. Disconnect all cables from the Power Docking Board (PDB).
5. Remove the four screws securing the Power Docking Board to the compute module base (see Letter **B**). If present, keep the rubber washers for later use.
6. Lift the power docking board away from the compute module base (see Letter **C**)

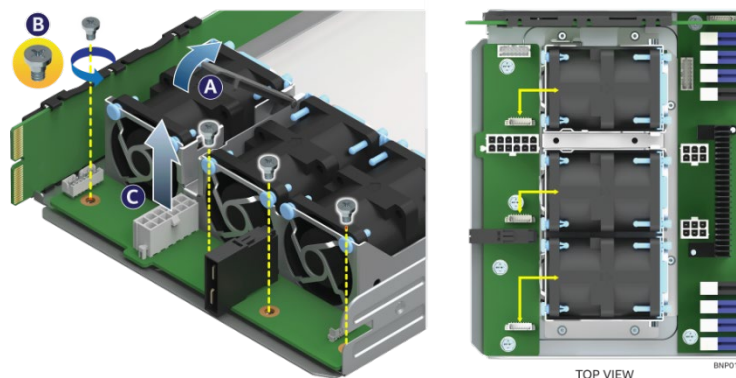


Figure 116. Removing the Power Docking Board

### 5.10.2 Power Docking Board Installation

1. Place the power docking board onto the compute module base, ensuring that all mounting holes are in alignment with the threaded standoffs on the compute module base.
2. Place a rubber washer onto each of the screws. (see Letter **A**)
3. Using the four screws, secure the power docking board to the compute module base (see Letter **B**)
4. Connect all cables to the power docking board (see Section 5.12)
5. Ensure all cables routed through the cable channel in the fan bracket are pushed down as far into the channel as possible. (see Letter **C**)
6. Angle the back edge of the cable channel cover into the fan bracket slot and lower the cover over the cable channel until it snaps into place. (see Letter **D**)

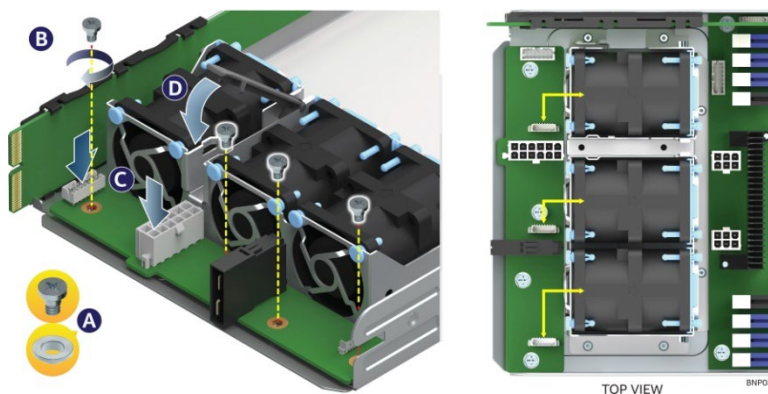


Figure 117. Installing the Power Docking Board

7. Reinstall the Bridge Board. See Section 1.6

## 5.11 Power Docking Board Replacement – HNS2600BP24

### 5.11.1 Removing the SAS/PCIe\* SFF Combo Power Docking Board

1. Remove the air duct from the compute module. See Section 1.1.1
2. Remove the bridge board. See Section 5.7
3. Lift up on the front edge of the plastic cable channel cover and remove it from the fan bracket (see Letter A)
4. Disconnect all cables from the power docking board
5. Remove the five screws securing the Power Docking Board to the compute module base (see Letter B). Save the rubber washers for later use.
6. Lift the power docking board away from the compute module base (see Letter C)

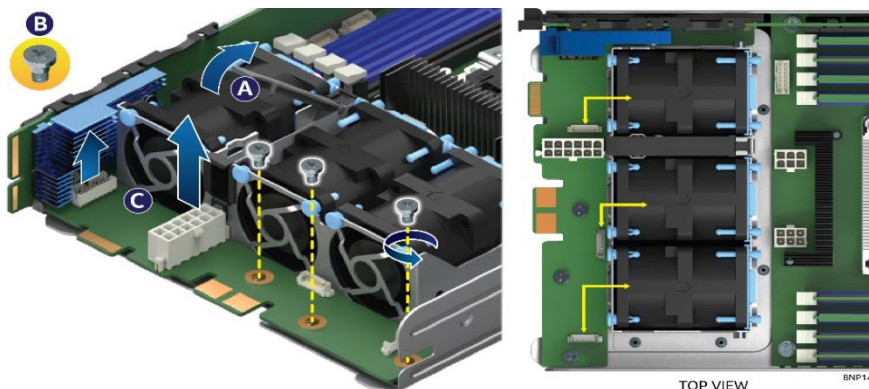


Figure 118. Removing the SAS/PCIe\* SFF Combo Power Docking Board

### 5.11.2 Installing the SAS/PCIe\* SFF Combo Power Docking Board

1. Place the power docking board onto the compute module base, ensuring that all mounting holes are in alignment with the threaded standoffs on the compute module base (see Letter A)
2. Place a rubber washer onto each of the screws. (see Letter B)
3. Using the five screws, secure the power docking board to the compute module base (see Letter C)
4. Connect all cables to the power docking board (see Section 5.12)
5. Ensure all cables routed through the cable channel in the fan bracket are pushed down as far into the channel as possible.
6. Angle the back edge of the cable channel cover into the fan bracket slot and lower the cover over the cable channel until it snaps into place.

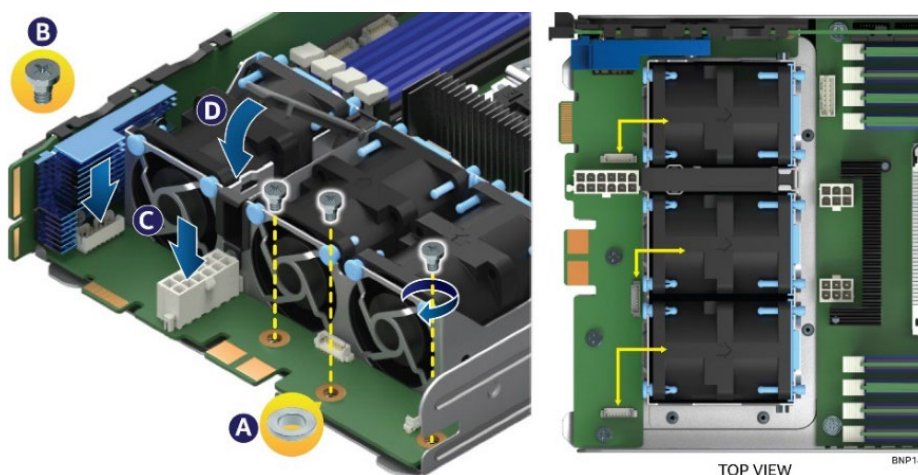


Figure 119. Installing the SAS/PCIe\* SFF Combo Power Docking Board

7. Reinstall the Bridge Board (see Section 1.6)



## 5.12 Power Docking Board Cable Connections

Each Intel® Compute Module HNS2600BP is installed in a tray and can be hot-swapped without any impact to other compute modules. When you add or remove components from a compute module tray, make sure your cables are routed correctly before plugging the compute module tray back into 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 correct cable routing.

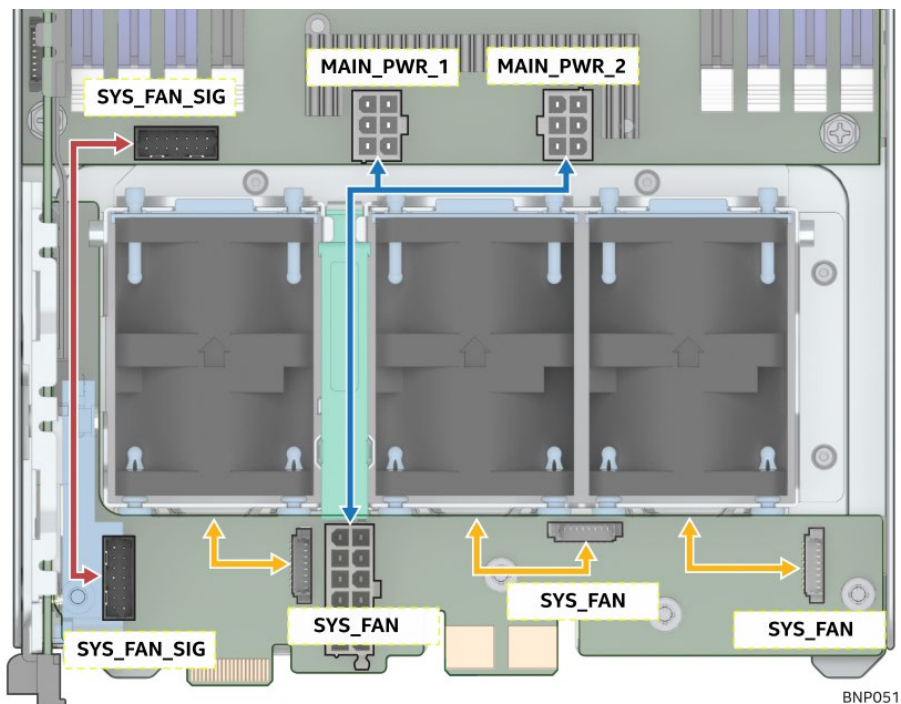


Figure 120. Cable Routing

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**Note:** See Appendix B for complete cabling routing diagrams for the Intel® Server Chassis H2000P Product Family.

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## 6. Product Packaging Assembly

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The original Intel packaging, in which the server system is delivered, is designed to provide protection to a fully configured system and was tested to meet ISTA (International Safe Transit Association) Test Procedure 3A (2008). The packaging was also designed to be re-used for shipment after system integration has been completed.

The original packaging includes two layers of boxes – an inner box and the outer shipping box, and various protective inner packaging components. The boxes and packaging components are designed to function together as a protective packaging system. When reused, all of the original packaging material must be used, including both boxes and each inner packaging component. In addition, all inner packaging components MUST be reinstalled in the proper location to ensure adequate protection of the system for subsequent shipment.

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**Note:** The design of the inner packaging components does not prevent improper placement within the packaging assembly. There is only one correct packaging assembly that will allow the package to meet the ISTA (International Safe Transit Association) Test Procedure 3A (2008) limits.

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Failure to follow the specified packaging assembly instructions may result in damage to the system during shipment.

### 6.1 Accessory Kit

All loose components planned to ship with the system should be placed inside the Accessory Kit box (iPN J11081-001). Piece parts shown in the following photographs are for reference purposes only. Actual Accessory Kit contents may vary. It could contain screws, airflow baffle, carriers, etc.





Figure 121. Accessories pack

## 6.2 Compute Module Packaging Assembly Instructions

1. Pack compute module in an ESD (Electrostatic discharge) bag (iPN H34897-001)



Figure 122. Compute Module Packaging Assembly Instructions - 1

2. Place the compute module into the first box part (iPN H46183-001)



Figure 123. Compute Module Packaging Assembly Instructions - 2

3. Place the compute module and the first box part into a bigger box (iPN J27349-001) as shown on the image



**Figure 124. Compute Module Packaging Assembly Instructions - 3**

4. Fold the ends of the box inside down as shown in the following picture



**Figure 125. Compute Module Packaging Assembly Instructions - 4**

7. Close the box with the larger ends by folding each one inside.  
**First step:** Fold the flap (label A) and insert it into the slot on each end.



**Figure 126. Compute Module Packaging Assembly Instructions – 5, 1**

**Second step:** Fold the flap (label B) and insert it into the slot on each end.

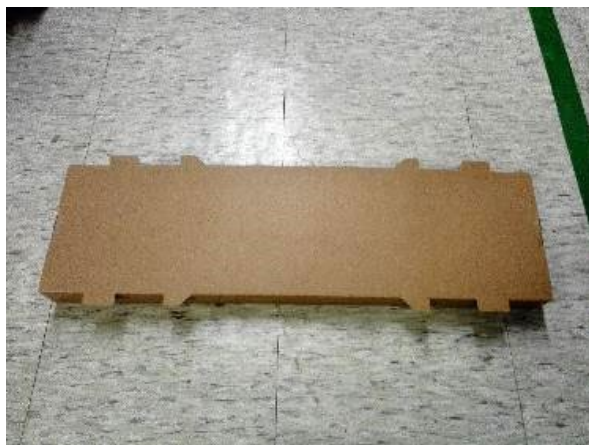


**Figure 127. Compute Module Packaging Assembly Instructions – 5, 2**

**Third step:** Insert the center flap into the center slot.



**Figure 128. Compute Module Packaging Assembly Instructions – 5, 3**



**Figure 129. Compute Module Packaging Assembly Instructions – 5, 4**

- Place the box (iPN J27244-001) and collocate two labeled (iPN J27243-001) foams pieces on the sides inside the box



**Figure 130. Compute Module Packaging Assembly Instructions - 6**

- Collocate the two heat sink boxes and the carriers box into the box (iPN J27244-001)



**Figure 131. Compute Module Packaging Assembly Instructions - 7**

**Note:** Heat sink boxes are directly provided by vendor and carrier box contains two CPU carriers inside on an ESD (Electrostatic discharge) bag



**Figure 132. Compute Module Packaging Assembly Instructions – 7, 1**



**Figure 133. System Packaging Assembly Instructions – 7, 2**

10. Place the compute module box with two labeled (iPN J27242-001) foam pieces on the sides of the box into the bigger box (iPN J27244-001) as shown



**Figure 134. Compute Module Packaging Assembly Instructions – 8**



**Figure 135. Compute Module Packaging Assembly Instructions – 8, 1**

11. Close and seal the box (iPN J27244-001) on the top and bottom as below



**Figure 136. Compute Module Packaging Assembly Instructions – 9**

## Appendix A. Getting Help

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

1. Visit the following Intel support web page:

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

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

- Latest BIOS, firmware, drivers and utilities
  - Product documentation, installation and quick start guides
  - Full product specifications, technical advisories and errata
  - Compatibility documentation for memory, hardware add-in cards, chassis support matrix and operating systems
  - Server and chassis accessory parts list for ordering upgrades or spare parts
  - A searchable knowledge base to search for product information throughout the support site
2. If you are still unable to obtain a solution to your issue, send an email to Intel's technical support center using the online form available at: [http://www.intel.com/p/en\\_US/support/contactsupport](http://www.intel.com/p/en_US/support/contactsupport)
  3. Lastly, you can contact an Intel support representative using one of the support phone numbers available at <http://www.intel.com/support/feedback.htm?group=server> (charges may apply)

Intel also offers Channel Program members around-the-clock 24x7 technical phone support on Intel® server boards, server chassis, server RAID controller cards, and Intel® Server Management at <http://www.intel.com/reseller/>.

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

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### Warranty Information

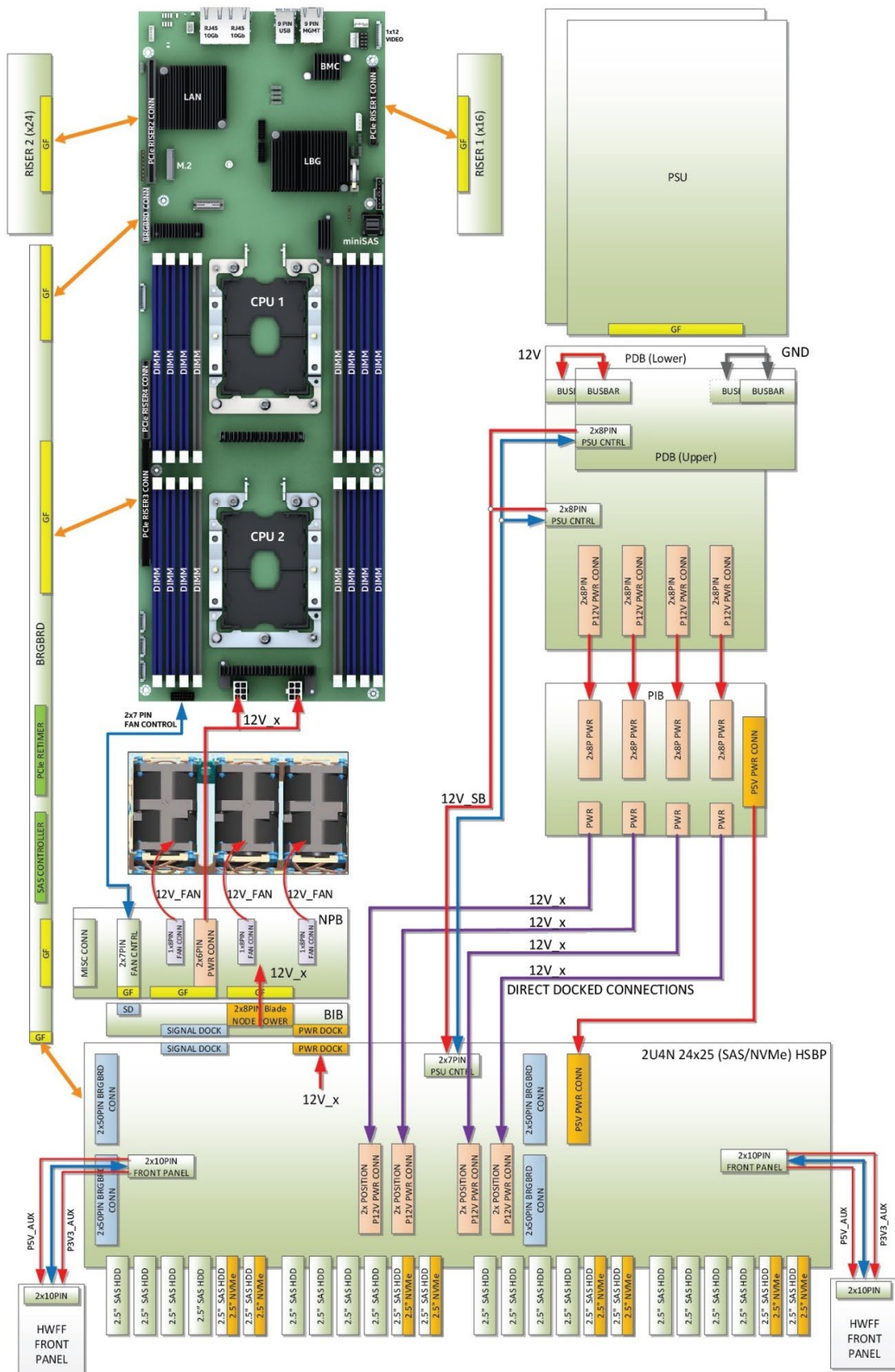
To obtain warranty information, visit the following Intel web site:

[http://www.intel.com/p/en\\_US/support/warranty](http://www.intel.com/p/en_US/support/warranty)

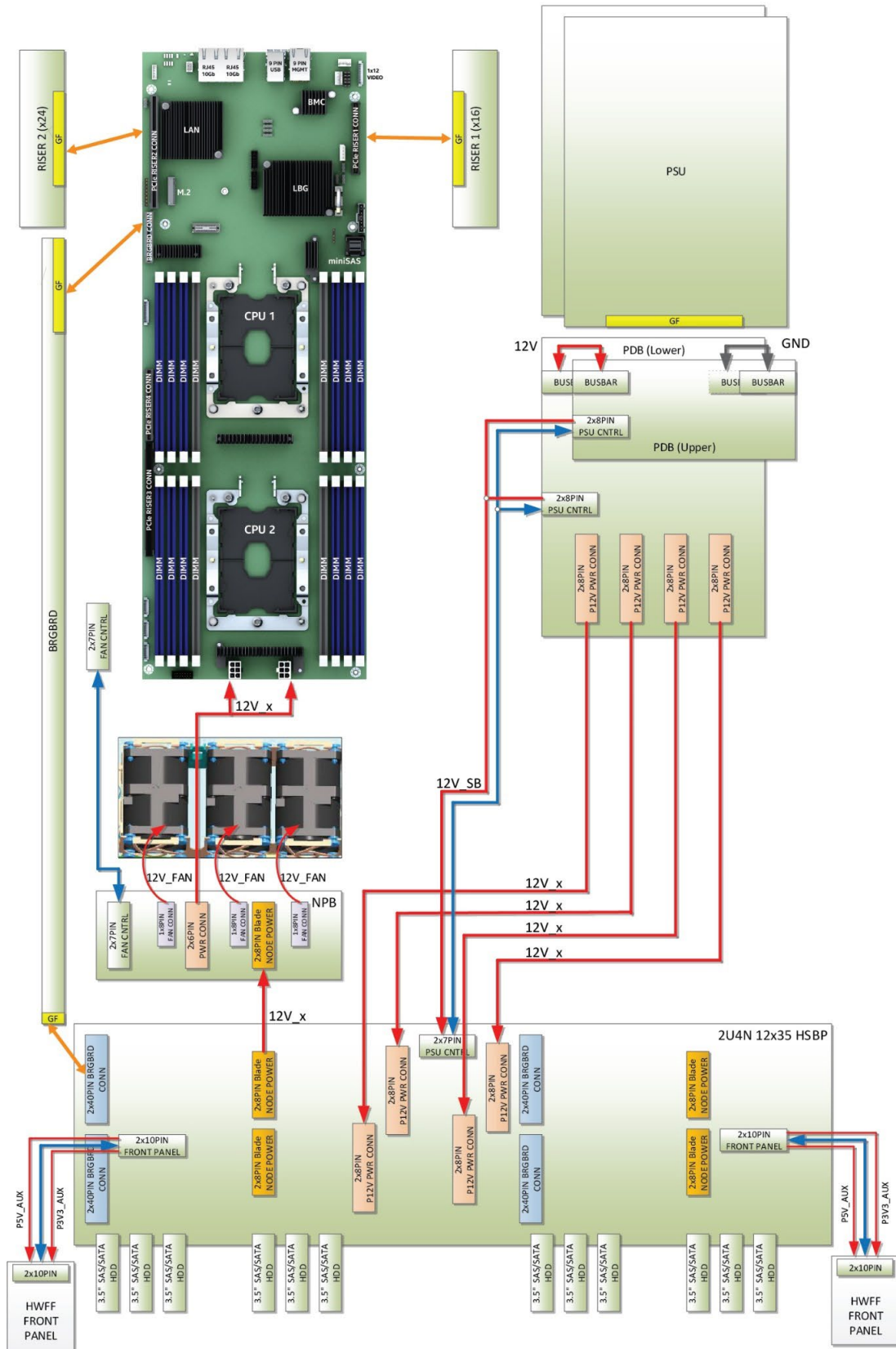


## Appendix B. System Cable Routing Diagrams

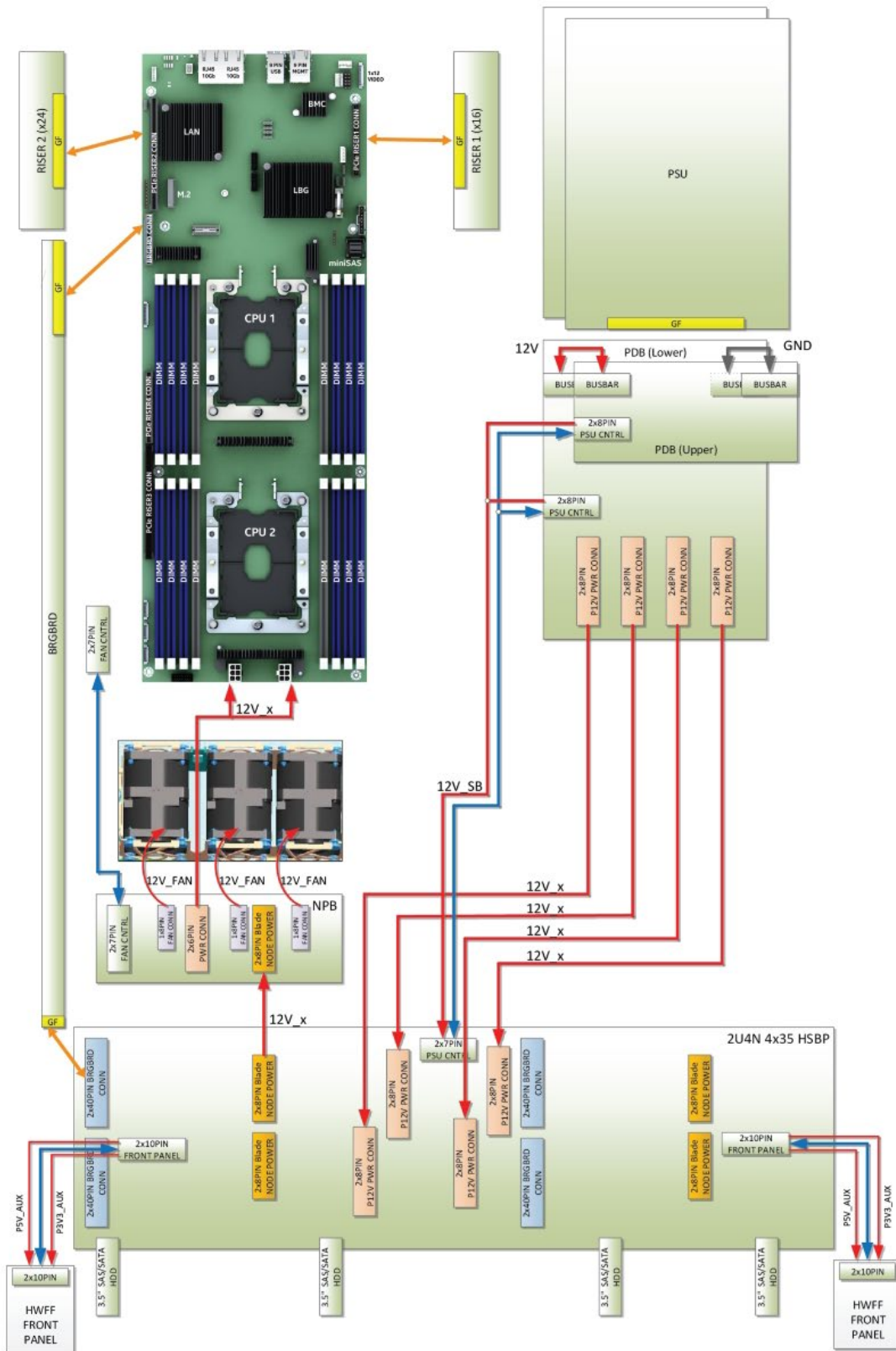
### Intel® Server Board S2600BP into an Intel® Server Chassis H2000P (24 x 2.5" Drive Configuration)



## Intel® Server Board 2600BP into an Intel® Server Chassis H2000P (12 x 3.5" Drive Configuration)



## Intel® Server Board S2600BP into an Intel® Server Chassis H2000P (4 x 2.5" Drive Configuration)



## Appendix C. System Status LED Operating States and Definition

The server board includes a bi-color System Status LED. The System Status LED on the server board is tied directly to the System Status LED on the front panel. This LED indicates the current health of the server. Possible LED states include solid green, blinking green, blinking amber, and solid amber.

When the server is powered down (transitions to the DC-off state or S5), the BMC is still on standby power and retains the sensor and front panel status LED state established before the power-down event.

When AC power is first applied to the system, the status LED turns solid amber and then immediately changes to blinking green to indicate that the BMC is booting. If the BMC boot process completes with no errors, the status LED will change to solid green.

**Table 7. System Status LED State Definitions**

Color	State	Criticality	Description
<b>Off</b>	System is not operating	Not ready	System is powered off (AC and/or DC). System is in EuP Lot6 Off Mode. System is in S5 Soft-Off State.
<b>Green</b>	Solid on	Ok	Indicates that the System is running (in S0 State) and its status is 'Healthy'. The system is not exhibiting any errors. AC power is present and BMC has booted and manageability functionality is up and running. After a BMC reset, and in conjunction with the Chassis ID solid ON, the BMC is booting Linux*. Control has been passed from BMC uBoot to BMC Linux* itself. It will be in this state for ~10~20 seconds
<b>Green</b>	~1 Hz blink	Degraded - system is operating in a degraded state although still functional, or system is operating in a redundant state but with an impending failure warning	System degraded: Redundancy loss such as power-supply or fan. Applies only if the associated platform subsystem has redundancy capabilities. Fan warning or failure when the number of fully operational fans is less than minimum number needed to cool the system. Non-critical threshold crossed – Temperature (including HSBP temp), voltage, input power to power supply, output current for main power rail from power supply and Processor Thermal Control (Therm Ctrl) sensors. Power supply predictive failure occurred while redundant power supply configuration was present. Unable to use all of the installed memory (more than 1 DIMM installed). Correctable Errors over a threshold and migrating to a spare DIMM (memory sparing). This indicates that the system no longer has spared DIMMs (a redundancy lost condition). Corresponding DIMM LED lit. In mirrored configuration, when memory mirroring takes place and system loses memory redundancy. Battery failure. BMC executing in uBoot. (Indicated by Chassis ID blinking at 3Hz). System in degraded state (no manageability). BMC uBoot is running but has not transferred control to BMC Linux*. Server will be in this state 6–8 seconds after BMC reset while it pulls the Linux* image into flash. BMC Watchdog has reset the BMC. Power Unit sensor offset for configuration error is asserted. HDD HSC is off-line or degraded.

Color	State	Criticality	Description
<b>Amber</b>	~1 Hz blink	Non-critical - System is operating in a degraded state with an impending failure warning, although still functioning	<p>Non-fatal alarm – system is likely to fail:            Critical threshold crossed – Voltage, temperature (including HSBP temp), input power to power supply, output current for main power rail from power supply and PROCHOT (Therm Ctrl) sensors.            VRD Hot asserted.            Minimum number of fans to cool the system not present or failed            Hard drive fault            Power Unit Redundancy sensor – Insufficient resources offset (indicates not enough power supplies present)            In non-sparing and non-mirroring mode if the threshold of correctable errors is crossed within the window</p>
<b>Amber</b>	Solid on	Critical, non-recoverable – System is halted	<p>Fatal alarm – system has failed or shutdown:            CPU CATERR signal asserted            MSID mismatch detected (CATERR also asserts for this case).            CPU 1 is missing            CPU Thermal Trip            No power good – power fault            DIMM failure when there is only 1 DIMM present and hence no good memory present.            Runtime memory uncorrectable error in non-redundant mode.            DIMM Thermal Trip or equivalent            SSB Thermal Trip or equivalent            CPU ERR2 signal asserted            BMC/Video memory test failed. (Chassis ID shows blue/solid-on for this condition)            Both uBoot BMC FW images are bad. (Chassis ID shows blue/solid-on for this condition)            240VA fault            Fatal Error in processor initialization:            Processor family not identical            Processor model not identical            Processor core/thread counts not identical            Processor cache size not identical            Unable to synchronize processor frequency            Unable to synchronize QPI link frequency            Uncorrectable memory error in a non-redundant mode</p>

## BMC Boot/Reset Status LED Indicators

During the BMC boot or BMC reset process, the System Status LED and System ID LED are used to indicate BMC boot process transitions and states. A BMC boot will occur when AC power is first applied to the system. A BMC reset will occur after a BMC firmware update, upon receiving a BMC cold reset command, and upon a BMC watchdog initiated reset. The following table defines the LED states during the BMC Boot/Reset process.

**Table 8. BMC Boot/Reset Status LED Indicators**

BMC Boot/Reset State	Chassis ID LED	Status LED	Comment
BMC/Video memory test failed	Solid Blue	Solid Amber	Non-recoverable condition. Contact your Intel representative for information on replacing this motherboard.
Both Universal Bootloader (u-Boot) images bad	Blink Blue 6 Hz	Solid Amber	Non-recoverable condition. Contact your Intel representative for information on replacing this motherboard.
BMC in u-Boot	Blink Blue 3 Hz	Blink Green 1Hz	Blinking green indicates degraded state (no manageability), blinking blue indicates u-Boot is running but has not transferred control to BMC Linux. Server will be in this state 6–8 seconds after BMC reset while it pulls the Linux image into flash.
BMC Booting Linux	Solid Blue	Solid Green	Solid green with solid blue after an AC cycle/BMC reset, indicates that the control has been passed from u-Boot to BMC Linux itself. It will be in this state for ~10~20 seconds.
End of BMC boot/reset process. Normal system operation	Off	Solid Green	Indicates BMC Linux has booted and manageability functionality is up and running. Fault/Status LEDs operate as per usual.

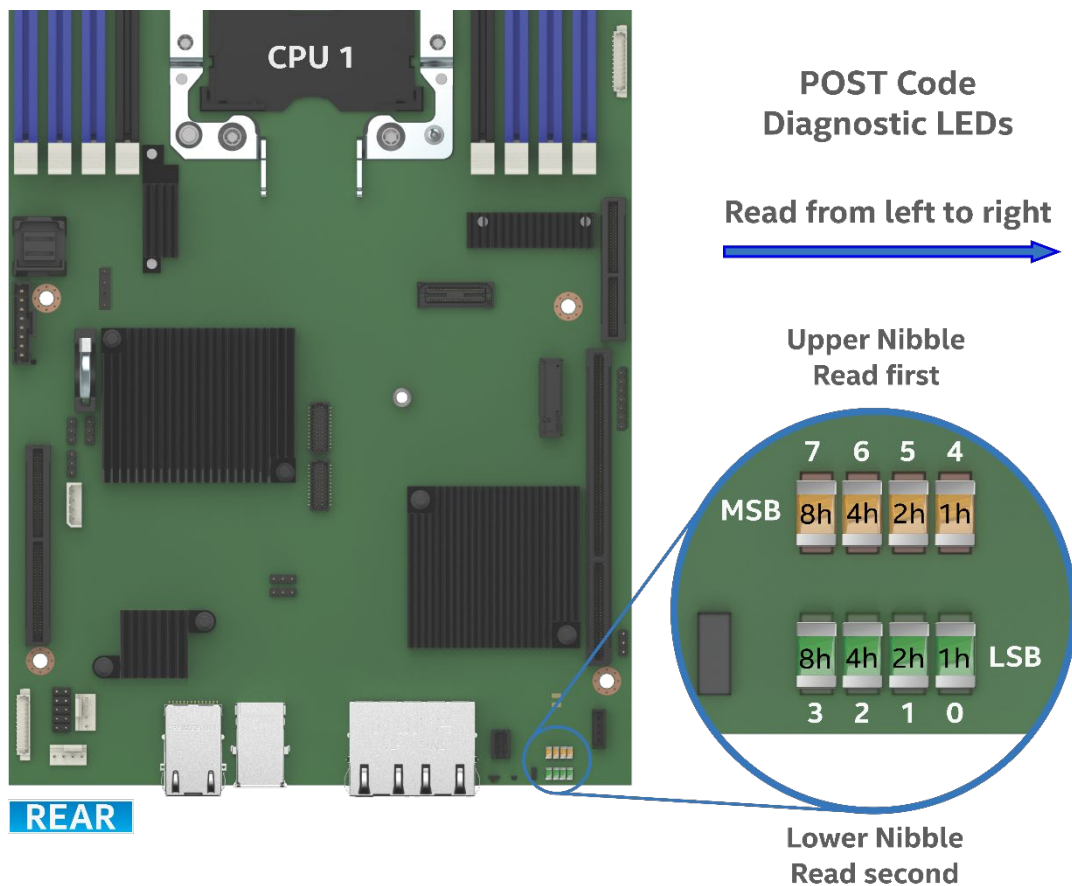
## Appendix D. POST Code Diagnostic LED Decoder Table

As an aid to assist in troubleshooting a system hang that occurs during a system's Power-On Self-Test (POST) process, the server board includes a bank of eight POST Code Diagnostic LEDs on the back edge of the server board.

During the system boot process, Memory Reference Code (MRC) and System BIOS execute a number of memory initialization and platform configuration processes, each of which is assigned a hex POST code number. As each routine is started, the given POST code number is displayed to the POST Code Diagnostic LEDs on the back edge of the server board.

During a POST system hang, the displayed post code can be used to identify the last POST routine that was run prior to the error occurring, helping to isolate the possible cause of the hang condition.

Each POST code is represented by eight LEDs; four Green and four Amber. The POST codes are divided into two nibbles, an upper nibble and a lower nibble. The upper nibble bits are represented by Amber Diagnostic LEDs #7, #6, #5, #4. The lower nibble bits are represented by Green Diagnostics LEDs #3, #2, #1 and #0. If the bit is set in the upper and lower nibbles, the corresponding LED is lit. If the bit is clear, the corresponding LED is off (Lit LED = 1, Off LED = 0).



BNP043

Figure 137. POST Diagnostic LED Location

**Note:** All POST Diagnostic codes must be read from left to right starting from MSB to LSB in given numerical order (7-6-5-4-3-2-1-0) when user is facing the back of the system as show on Figure 138. Failing to follow this instruction will result on a wrong interpretation.

In the following example, the BIOS sends a value of “ACh” to the diagnostic LED decoder.

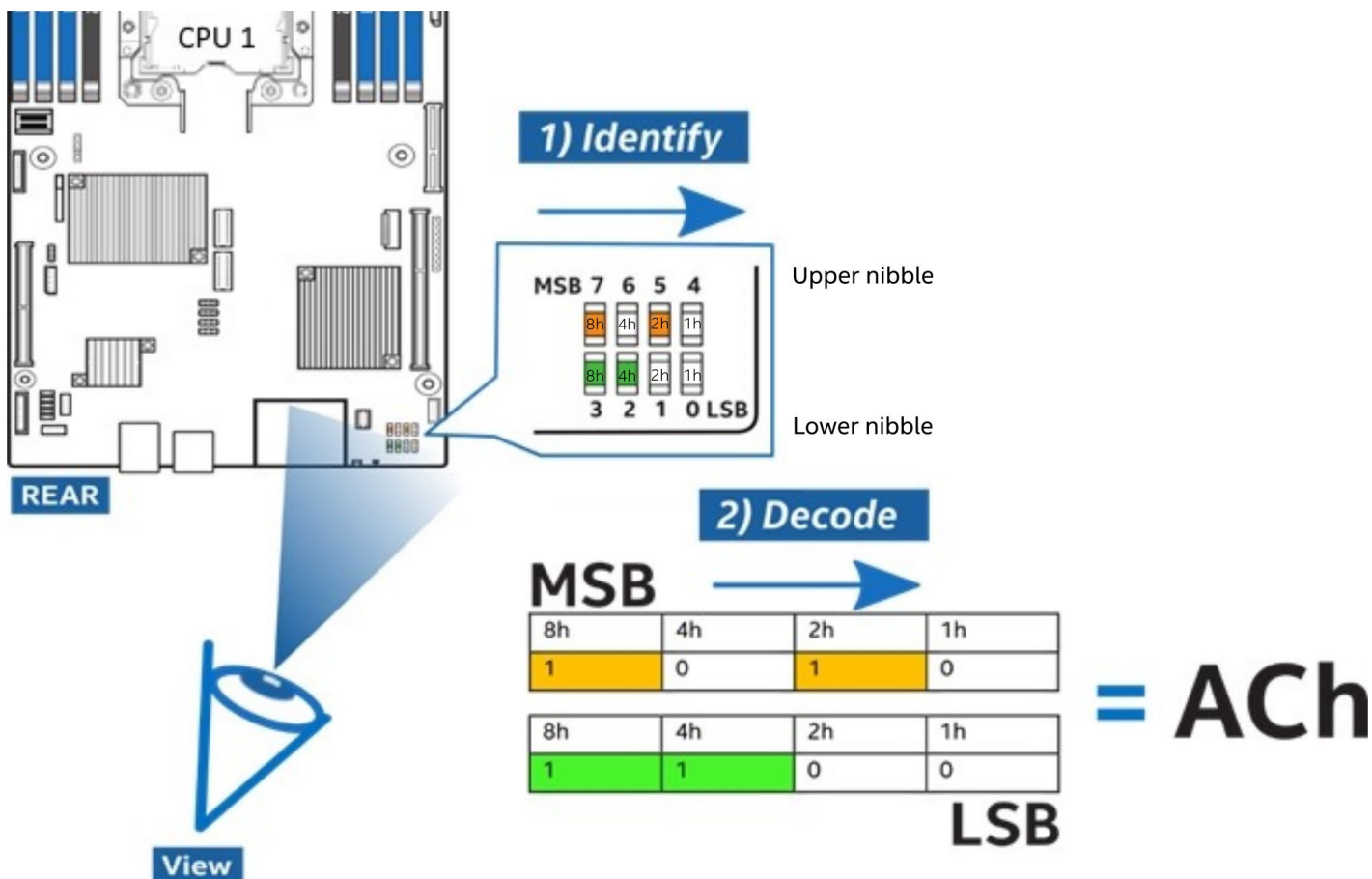


Figure 138. Correct Order Reading POST Diagnostic Codes

The LEDs are decoded as shown in Table 11.

**Note:** Diagnostic LEDs are best read and decoded when viewing the LEDs from the back of the system.

Table 9. POST Progress Code Decoding LED Example

LEDs		Upper Nibble AMBER LEDs				Lower Nibble GREEN LEDs			
		MSB							LSB
		LED #7	LED #6	LED #5	LED #4	LED #3	LED #2	LED #1	LED #0
		8h	4h	2h	1h	8h	4h	2h	1h
Status		ON	OFF	ON	OFF	ON	ON	OFF	OFF
Read Value	Binary	1	0	1	0	1	1	0	0
	Hexadecimal	Ah				Ch			
Result		ACh							

Upper nibble bits = 1010b = Ah; Lower nibble bits = 1100b = Ch; the two Hex Nibble values are combined to create a single ACh POST Progress Code.



**Early POST Memory Initialization MRC Diagnostic Codes**

Memory Initialization at the beginning of POST includes multiple functions, including: discovery, channel training, validation that the DIMM population is acceptable and functional, initialization of the IMC and other hardware settings, and initialization of applicable RAS configurations.

The MRC Progress Codes are displayed to the Diagnostic LEDs that show the execution point in the MRC operational path at each step.

**Table 10. MRC Progress Codes**

Checkpoint	Diagnostic LED Decoder								Description	Subsequences / Subfunctions
	1 = LED On, 0 = LED Off									
	Upper Nibble				Lower Nibble					
	MSB							LSB		
LED #	8h	4h	2h	1h	8h	4h	2h	1h		
	#7	#6	#5	#4	#3	#2	#1	#0	MRC Progress codes	
B0h	1	0	1	1	0	0	0	0	Detect DIMM population	N/A
B1h	1	0	1	1	0	0	0	1	Set DDR4 frequency	N/A
B2h	1	0	1	1	0	0	1	0	Gather remaining SPD data	N/A
B3h	1	0	1	1	0	0	1	1	Program registers on the memory controller level	N/A
B4h	1	0	1	1	0	1	0	0	Evaluate RAS modes and save rank information	N/A
B5h	1	0	1	1	0	1	0	1	Program registers on the channel level	N/A
B6h	1	0	1	1	0	1	1	0	Perform the JEDEC defined initialization sequence	N/A
B7h	1	0	1	1	0	1	1	1	Train DDR4 ranks	N/A
1h	0	0	0	0	0	0	0	1	Train DDR4 ranks	Read DQ/DQS training
2h	0	0	0	0	0	0	1	0	Train DDR4 ranks	Receive Enable training
3h	0	0	0	0	0	0	1	1	Train DDR4 ranks	Write Leveling training
4h	0	0	0	0	0	1	0	0	Train DDR4 ranks	Write DQ/DQS training
5h	0	0	0	0	0	1	0	1	Train DDR4 ranks	DDR channel training done
B8h	1	0	1	1	1	0	0	0	Initialize CLTT/OLTT	N/A
B9h	1	0	1	1	1	0	0	1	Hardware memory test and init	N/A
BAh	1	0	1	1	1	0	1	0	Execute software memory init	N/A
BBh	1	0	1	1	1	0	1	1	Program memory map and interleaving	N/A
BCh	1	0	1	1	1	1	0	0	Program RAS configuration	N/A
BFh	1	0	1	1	1	1	1	1	MRC is done	N/A

Should a major memory initialization error occur, preventing the system from booting with data integrity, a beep code is generated, the MRC will display a fatal error code on the diagnostic LEDs, and a system halt command is executed. Fatal MRC error halts do NOT change the state of the System Status LED, and they do NOT get logged as SEL events. The following table lists all MRC fatal errors that are displayed to the Diagnostic LEDs.

**Note:** Fatal MRC errors will display POST error codes that may be the same as BIOS POST progress codes displayed later in the POST process. The fatal MRC codes can be distinguished from the BIOS POST progress codes by the accompanying memory failure POST Error code of 3 long blinks.

**Table 11. MRC Fatal Error Codes**

Checkpoint	Diagnostic LED Decoder								Description
	1 = LED On, 0 = LED Off								
	Upper Nibble				Lower Nibble				
	MSB							LSB	
	8h	4h	2h	1h	8h	4h	2h	1h	
LED #	#7	#6	#5	#4	#3	#2	#1	#0	
MRC Fatal Error Codes									
E8h	1	1	1	0	1	0	0	0	No Usable Memory Error: 01h = No memory was detected via SPD read, or invalid config that causes no operable memory. 02h = Memory DIMMs on all channels of all sockets are disabled due to hardware memtest error. 03h = No memory installed. All channels are disabled.
E9h	1	1	1	0	1	0	0	1	Memory is locked by Intel® Trusted Execution Technology and is inaccessible.
EAh	1	1	1	0	1	0	1	0	DDR4 Channel Training Error: 01h = Error on read DQ/DQS (Data/Data Strobe) init 02h = Error on Receive Enable 03h = Error on Write Leveling 04h = Error on write DQ/DQS (Data/Data Strobe)
EBh	1	1	1	0	1	0	1	1	Memory Test Failure: 01h = Software memtest failure. 02h = Hardware memtest failed.
EDh	1	1	1	0	1	1	0	1	DIMM Configuration/Population Error: 01h = Different DIMM types (RDIMM, LRDIMM) are detected installed in the system. 02h = Violation of DIMM population rules. 03h = The third DIMM slot cannot be populated when QR DIMMs are installed. 04h = UDIMMs are not supported. 05h = Unsupported DIMM Voltage.
EFh	1	1	1	0	1	1	1	1	Indicates a CLTT table structure error.

**BIOS POST Progress Codes**

The following table provides a list of all POST progress codes.

**Table 12. POST Progress Codes**

Checkpoint	Diagnostic LED Decoder								Description
	1 = LED On, 0 = LED Off								
	Upper Nibble				Lower Nibble				
	MSB							LSB	
LED #	8h	4h	2h	1h	8h	4h	2h	1h	
SEC Phase									
1h	0	0	0	0	0	0	0	1	First POST code after CPU reset
2h	0	0	0	0	0	0	1	0	Microcode load begin
3h	0	0	0	0	0	0	1	1	CRAM initialization begin
4h	0	0	0	0	0	1	0	0	PEI Cache When Disabled
5h	0	0	0	0	0	1	0	1	SEC Core At Power On Begin.
6h	0	0	0	0	0	1	1	0	Early CPU initialization during SEC Phase.
KTI RC (fully leverage without platform change)									
A1h	1	0	1	0	0	0	0	1	Collect infor such as SBSP, boot mode, reset type, etc.
A3h	1	0	1	0	0	0	1	1	Setup minimum path between SBSP and other sockets
A6h	1	0	1	0	0	1	1	0	Sync up with PBSPs
A7h	1	0	1	0	0	1	1	1	Topology discovery and route calculation
A8h	1	0	1	0	1	0	0	0	Program final route
A9h	1	0	1	0	1	0	0	1	Program final IO SAD setting
AAh	1	0	1	0	1	0	1	0	Protocol layer and other uncore settings
ABh	1	0	1	0	1	0	1	1	Transition links to full speed operation
A Eh	1	0	1	0	1	1	1	0	Coherency settings
AFh	1	0	1	0	1	1	1	1	KTI initialization done
PEI Phase									
10h	0	0	0	1	0	0	0	0	PEI Core
11h	0	0	0	1	0	0	0	1	CPU PEIM
15h	0	0	0	1	0	1	0	1	Platform Type Init
19h	0	0	0	1	1	0	0	1	Platform PEIM Init
31h	0	0	1	1	0	0	0	1	Memory Installed
32h	0	0	1	1	0	0	1	0	CPU PEIM (CPU Init)
33h	0	0	1	1	0	0	1	1	CPU PEIM (Cache Init)
34h	0	0	1	1	0	1	0	0	CPU BSP Select
35h	0	0	1	1	0	1	0	1	CPU AP Init
36h	0	0	1	1	0	1	1	0	CPU SMM Init
4Fh	0	1	0	0	1	1	1	1	DXE IPL started
DXE Phase									
60h	0	1	1	0	0	0	0	0	DXE Core started
62h	0	1	1	0	0	0	1	0	DXE Setup Init
68h	0	1	1	0	1	0	0	0	DXE PCI Host Bridge Init
69h	0	1	1	0	1	0	0	1	DXE NB Init
6Ah	0	1	1	0	1	0	1	0	DXE NB SMM Init
70h	0	1	1	1	0	0	0	0	DXE SB Init
71h	0	1	1	1	0	0	0	1	DXE SB SMM Init
72h	0	1	1	1	0	0	1	0	DXE SB devices Init
78h	0	1	1	1	1	0	0	0	DXE ACPI Init
79h	0	1	1	1	1	0	0	1	DXE CSM Init

Checkpoint	Diagnostic LED Decoder								Description
	1 = LED On, 0 = LED Off								
	Upper Nibble				Lower Nibble				
	MSB							LSB	
	8h	4h	2h	1h	8h	4h	2h	1h	
LED #	#7	#6	#5	#4	#3	#2	#1	#0	
7Dh	0	1	1	1	1	1	0	1	DXE Removable Media Detect
7Eh	0	1	1	1	1	1	1	0	DXE Removable Media Detected
90h	1	0	0	1	0	0	0	0	DXE BDS started
91h	1	0	0	1	0	0	0	1	DXE BDS connect drivers
92h	1	0	0	1	0	0	1	0	DXE PCI bus begin
93h	1	0	0	1	0	0	1	1	DXE PCI Bus HPC Init
94h	1	0	0	1	0	1	0	0	DXE PCI Bus enumeration
95h	1	0	0	1	0	1	0	1	DXE PCI Bus resource requested
96h	1	0	0	1	0	1	1	0	DXE PCI Bus assign resource
97h	1	0	0	1	0	1	1	1	DXE CON_OUT connect
98h	1	0	0	1	1	0	0	0	DXE CON_IN connect
99h	1	0	0	1	1	0	0	1	DXE SIO Init
9Ah	1	0	0	1	1	0	1	0	DXE USB start
9Bh	1	0	0	1	1	0	1	1	DXE USB reset
9Ch	1	0	0	1	1	1	0	0	DXE USB detect
9Dh	1	0	0	1	1	1	0	1	DXE USB enable
A1h	1	0	1	0	0	0	0	1	DXE IDE begin
A2h	1	0	1	0	0	0	1	0	DXE IDE reset
A3h	1	0	1	0	0	0	1	1	DXE IDE detect
A4h	1	0	1	0	0	1	0	0	DXE IDE enable
A5h	1	0	1	0	0	1	0	1	DXE SCSI begin
A6h	1	0	1	0	0	1	1	0	DXE SCSI reset
A7h	1	0	1	0	0	1	1	1	DXE SCSI detect
A8h	1	0	1	0	1	0	0	0	DXE SCSI enable
ABh	1	0	1	0	1	0	1	1	DXE SETUP start
ACH	1	0	1	0	1	1	0	0	DXE SETUP input wait
ADh	1	0	1	0	1	1	0	1	DXE Ready to Boot
A Eh	1	0	1	0	1	1	1	0	DXE Legacy Boot
AFh	1	0	1	0	1	1	1	1	DXE Exit Boot Services
B0h	1	0	1	1	0	0	0	0	RT Set Virtual Address Map Begin
B1h	1	0	1	1	0	0	0	1	RT Set Virtual Address Map End
B2h	1	0	1	1	0	0	1	0	DXE Legacy Option ROM init
B3h	1	0	1	1	0	0	1	1	DXE Reset system
B4h	1	0	1	1	0	1	0	0	DXE USB Hot plug
B5h	1	0	1	1	0	1	0	1	DXE PCI BUS Hot plug
B8h	1	0	1	1	1	0	0	0	PWRBTN Shutdown
B9h	1	0	1	1	1	0	0	1	SLEEP Shutdown
C0h	1	1	0	0	0	0	0	0	End of DXE
C7h	1	1	0	0	0	1	1	1	DXE ACPI Enable
0h	0	0	0	0	0	0	0	0	Clear POST Code
S3 Resume									
E0h	1	1	1	0	0	0	0	0	S3 Resume PEIM (S3 started)
E1h	1	1	1	0	0	0	0	1	S3 Resume PEIM (S3 boot script)
E2h	1	1	1	0	0	0	1	0	S3 Resume PEIM (S3 Video Repost)
E3h	1	1	1	0	0	0	1	1	S3 Resume PEIM (S3 OS wake)

Checkpoint	Diagnostic LED Decoder								Description
	1 = LED On, 0 = LED Off								
	Upper Nibble				Lower Nibble				
	MSB							LSB	
	8h	4h	2h	1h	8h	4h	2h	1h	
LED #	#7	#6	#5	#4	#3	#2	#1	#0	
BIOS Recovery									
F0h	1	1	1	1	0	0	0	0	PEIM, which detected forced Recovery condition
F1h	1	1	1	1	0	0	0	1	PEIM, which detected User Recovery condition
F2h	1	1	1	1	0	0	1	0	Recovery PEIM (Recovery started)
F3h	1	1	1	1	0	0	1	1	Recovery PEIM (Capsule found)
F4h	1	1	1	1	0	1	0	0	Recovery PEIM (Capsule loaded)

## Appendix E. POST Error Codes

Most error conditions encountered during POST are reported using **POST Error Codes**. These codes represent specific failures, warnings, or are informational. POST Error Codes may be displayed in the Error Manager Display screen, and are always logged to the System Event Log (SEL). Logged events are available to System Management applications, including Remote and Out of Band (OOB) management.

There are exception cases in early initialization where system resources are not adequately initialized for handling POST Error Code reporting. These cases are primarily Fatal Error conditions resulting from initialization of processors and memory, and they are handed by a Diagnostic LED display with a system halt.

Table 13 lists the supported POST Error Codes. Each error code is assigned an error type that determines the action the BIOS will take when the error is encountered. Error types include Minor, Major, and Fatal. The BIOS action for each is defined as follows:

- **Minor:** The error message is displayed on the screen or on the Error Manager screen, and an error is logged to the SEL. The system continues booting in a degraded state. The user may want to replace the erroneous unit. The POST Error Pause option setting in the BIOS setup does not affect this error.
- **Major:** The error message is displayed on the Error Manager screen, and an error is logged to the SEL. The POST Error **Pause** option setting in the BIOS setup determines whether the system pauses to the Error Manager for this type of error so the user can take immediate corrective action or the system continues booting.

Note that for 0048, "Password check failed", the system halts, and then after the next reset/reboot will display the error code on the Error Manager screen.

- **Fatal:** The system halts during POST at a blank screen with the text "**Unrecoverable fatal error found. System will not boot until the error is resolved**" and "**Press <F2> to enter Setup**". The POST Error Pause option setting in the BIOS setup does not affect this class of error.

When the operator presses the **F2** key on the keyboard, the error message is displayed on the Error Manager screen, and an error is logged to the SEL with the error code. The system cannot boot unless the error is resolved. The user needs to replace the faulty part and restart the system.

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**Note:** The POST Code errors in the following table are common to all current generation Intel server platforms. Features present on a given server board/system will determine which of the listed error codes are supported.

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**Table 13. POST Error Codes and Messages**

Error Code	Error Message	Action message	Response
0012	System RTC date/time not set		Major
0048	Password check failed	Put right password.	Major
0140	PCI component encountered a PERR error		Major
0141	PCI resource conflict		Major
0146	PCI out of resources error	Enable Memory Mapped I/O above 4 GB item at SETUP to use 64bit MMIO.	Major
0191	Processor core/thread count mismatch detected	Use identical CPU type.	Fatal
0192	Processor cache size mismatch detected	Use identical CPU type.	Fatal
0194	Processor family mismatch detected	Use identical CPU type.	Fatal

Error Code	Error Message	Action message	Response
0195	Processor Intel(R) UPI link frequencies unable to synchronize		Fatal
0196	Processor model mismatch detected	Use identical CPU type.	Fatal
0197	Processor frequencies unable to synchronize	Use identical CPU type.	Fatal
5220	BIOS Settings reset to default settings		Major
5221	Passwords cleared by jumper		Major
5224	Password clear jumper is Set	Recommend reminding user to install BIOS password as BIOS admin password is the master keys for several BIOS security features.	Major
8130	Processor 01 disabled		Major
8131	Processor 02 disabled		Major
8160	Processor 01 unable to apply microcode update		Major
8161	Processor 02 unable to apply microcode update		Major
8170	Processor 01 failed Self Test (BIST)		Major
8171	Processor 02 failed Self Test (BIST)		Major
8180	Processor 01 microcode update not found		Minor
8181	Processor 02 microcode update not found		Minor
8190	Watchdog timer failed on last boot.		Major
8198	OS boot watchdog timer failure.		Major
8300	Baseboard Management Controller failed self test.		Major
8305	Hot Swap Controller failure		Major
83A0	Management Engine (ME) failed self test.		Major
83A1	Management Engine (ME) Failed to respond.		Major
84F2	Baseboard management controller failed to respond		Major
84F3	Baseboard Management Controller in Update Mode.		Major
84F4	Baseboard Management Controller Sensor Data Record empty.	Update right SDR.	Major
84FF	System Event Log full	Clear SEL through EWS or SELVIEW utility.	Minor
85FC	Memory component could not be configured in the selected RAS mode		Major
8501	Memory Population Error	Plug DIMM at right population.	Major
8520	Memory failed test/initialization CPU1_DIMM_A1	Remove the disabled DIMM.	Major
8521	Memory failed test/initialization CPU1_DIMM_A2	Remove the disabled DIMM.	Major
8523	Memory failed test/initialization CPU1_DIMM_B1	Remove the disabled DIMM.	Major
8526	Memory failed test/initialization CPU1_DIMM_C1	Remove the disabled DIMM.	Major
8529	Memory failed test/initialization CPU1_DIMM_D1	Remove the disabled DIMM.	Major
852A	Memory failed test/initialization CPU1_DIMM_D2	Remove the disabled DIMM.	Major
852C	Memory failed test/initialization CPU1_DIMM_E1	Remove the disabled DIMM.	Major
852F	Memory failed test/initialization CPU1_DIMM_F1	Remove the disabled DIMM.	Major
8538	Memory failed test/initialization CPU2_DIMM_A1	Remove the disabled DIMM.	Major
8539	Memory failed test/initialization CPU2_DIMM_A2	Remove the disabled DIMM.	Major

Error Code	Error Message	Action message	Response
853B	Memory failed test/initialization CPU2_DIMM_B1	Remove the disabled DIMM.	Major
853E	Memory failed test/initialization CPU2_DIMM_C1	Remove the disabled DIMM.	Major
8540	Memory disabled.CPU1_DIMM_A1	Remove the disabled DIMM.	Major
8541	Memory disabled.CPU1_DIMM_A2	Remove the disabled DIMM.	Major
8543	Memory disabled.CPU1_DIMM_B1	Remove the disabled DIMM.	Major
8546	Memory disabled.CPU1_DIMM_C1	Remove the disabled DIMM.	Major
8549	Memory disabled.CPU1_DIMM_D1	Remove the disabled DIMM.	Major
854A	Memory disabled.CPU1_DIMM_D2	Remove the disabled DIMM.	Major
854C	Memory disabled.CPU1_DIMM_E1	Remove the disabled DIMM.	Major
854F	Memory disabled.CPU1_DIMM_F1	Remove the disabled DIMM.	Major
8558	Memory disabled.CPU2_DIMM_A1	Remove the disabled DIMM.	Major
8559	Memory disabled.CPU2_DIMM_A2	Remove the disabled DIMM.	Major
855B	Memory disabled.CPU2_DIMM_B1	Remove the disabled DIMM.	Major
855E	Memory disabled.CPU2_DIMM_C1	Remove the disabled DIMM.	Major
8560	Memory encountered a Serial Presence Detection(SPD) failure.CPU1_DIMM_A1		Major
8561	Memory encountered a Serial Presence Detection(SPD) failure.CPU1_DIMM_A2		Major
8563	Memory encountered a Serial Presence Detection(SPD) failure.CPU1_DIMM_B1		Major
8566	Memory encountered a Serial Presence Detection(SPD) failure.CPU1_DIMM_C1		Major
8569	Memory encountered a Serial Presence Detection(SPD) failure.CPU1_DIMM_D1		Major
856A	Memory encountered a Serial Presence Detection(SPD) failure.CPU1_DIMM_D2		Major
856C	Memory encountered a Serial Presence Detection(SPD) failure.CPU1_DIMM_E1		Major
856F	Memory encountered a Serial Presence Detection(SPD) failure.CPU1_DIMM_F1		Major
8578	Memory encountered a Serial Presence Detection(SPD) failure.CPU2_DIMM_A1		Major
8579	Memory encountered a Serial Presence Detection(SPD) failure.CPU2_DIMM_A2		Major
857A	Memory encountered a Serial Presence Detection(SPD) failure.CPU2_DIMM_A3		Major
857B	Memory encountered a Serial Presence Detection(SPD) failure.CPU2_DIMM_B1		Major
857E	Memory encountered a Serial Presence Detection(SPD) failure.CPU2_DIMM_C1		Major
85C1	Memory failed test/initialization CPU2_DIMM_D1	Remove the disabled DIMM.	Major
85C2	Memory failed test/initialization CPU2_DIMM_D2	Remove the disabled DIMM.	Major
85C4	Memory failed test/initialization CPU2_DIMM_E1	Remove the disabled DIMM.	Major
85C7	Memory failed test/initialization CPU2_DIMM_F1	Remove the disabled DIMM.	Major



Error Code	Error Message	Action message	Response
85D1	Memory disabled.CPU2_DIMM_D1	Remove the disabled DIMM.	Major
85D2	Memory disabled.CPU2_DIMM_D2	Remove the disabled DIMM.	Major
85D4	Memory disabled.CPU2_DIMM_E1	Remove the disabled DIMM.	Major
85D7	Memory disabled.CPU2_DIMM_F1	Remove the disabled DIMM.	Major
85E1	Memory encountered a Serial Presence Detection (SPD) failure. CPU2_DIMM_D1		Major
85E2	Memory encountered a Serial Presence Detection (SPD) failure.CPU2_DIMM_D2		Major
85E4	Memory encountered a Serial Presence Detection (SPD) failure.CPU2_DIMM_E1		Major
85E7	Memory encountered a Serial Presence Detection (SPD) failure.CPU2_DIMM_F1		Major
8604	POST Reclaim of non-critical NVRAM variables		Minor
8605	BIOS Settings are corrupted		Major
8606	NVRAM variable space was corrupted and has been reinitialized		Major
8607	Recovery boot has been initiated. Note: The Primary BIOS image may be corrupted or the system may hang during POST. A BIOS update is required.		Fatal
A100	BIOS ACM Error		Major
A421	PCI component encountered a SERR error		Fatal
A5A0	PCI Express component encountered a PERR error		Minor
A5A1	PCI Express component encountered an SERR error		Fatal
A6A0	DXE Boot Services driver: Not enough memory available to shadow a Legacy Option ROM.	Disable oprom at SETUP to save runtime memory.	Minor

## POST Error LED Sequence

The POST Error Code “BEEP\_LED” informs the users on error conditions prior to system video initialization. A user-visible error code sequence is followed by the POST Progress LEDs.

**Table 14. POST Error (LED Codes)**

POST Error LED Sequence	Error Message	POST Progress Code	Description
<b>1 blink</b>	USB device action	N/A	Short LED blink whenever USB device is discovered in POST, or inserted or removed during runtime.
<b>1 long blink</b>	Intel® TXT security violation	0xAE, 0xAF	System halted because Intel® Trusted Execution Technology detected a potential violation of system security.
<b>3 blinks</b>	Memory error	Multiple	System halted because a fatal error related to the memory was detected.
<b>3 long blinks followed by 1</b>	CPU mismatch error	0xE5, 0xE6	System halted because a fatal error related to the CPU family/core/cache mismatch was detected.
<b>The following POST Error LED Codes are lighted during BIOS Recovery</b>			
<b>2 blinks</b>	Recovery started	N/A	Recovery boot has been initiated.
<b>4 blinks</b>	Recovery failed	N/A	Recovery has failed. This typically happens so quickly after recovery is initiated that it lights like a 2–4 LED code.

The Integrated BMC may generate beep codes upon detection of failure conditions. Beep codes are translated into visual LED sequences each time the problem is discovered, such as on each power-up attempt, but are not lit continuously. Codes that are common across all Intel server boards and systems that use the same generation of chipset are listed in Table 15. Each digit in the code is represented by an LED lit/off sequence of whose count is equal to the digit.

**Table 15. Integrated BMC Error (LED) Codes**

Code	Associated Sensors	Reason for Error (LED lit)
<b>1-5-2-1</b>	No CPUs installed or first CPU socket is empty.	CPU1 socket is empty, or sockets are populated incorrectly CPU1 must be populated before CPU2.
<b>1-5-2-4</b>	MSID Mismatch	MSID mismatch occurs if a processor is installed into a system board that has incompatible power capabilities.
<b>1-5-4-2</b>	Power fault	DC power unexpectedly lost (power good dropout) – Power unit sensors report power unit failure offset
<b>1-5-4-4</b>	Power control fault (power good assertion timeout).	Power good assertion timeout – Power unit sensors report soft power control failure offset
<b>1-5-1-2</b>	VR Watchdog Timer sensor assertion	VR controller DC power on sequence was not completed in time.
<b>1-5-1-4</b>	Power Supply Status	The system does not power on or unexpectedly powers off and a Power Supply Unit (PSU) is present that is an incompatible model with one or more other PSUs in the system.

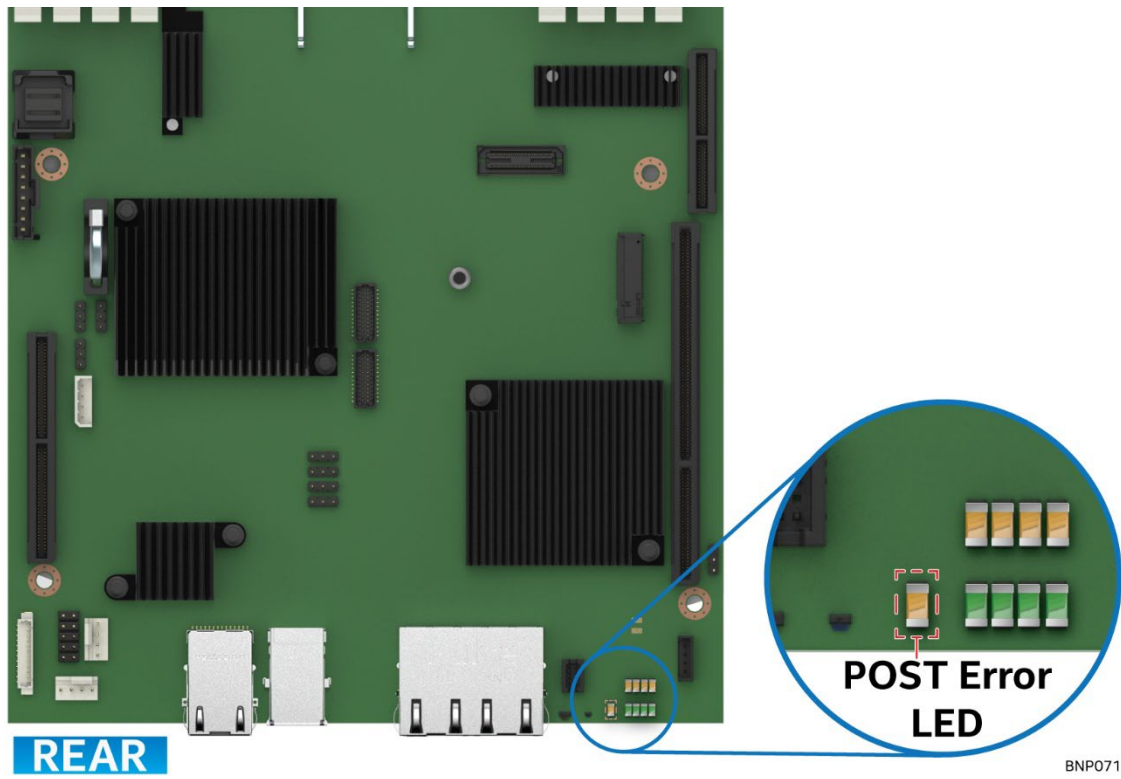
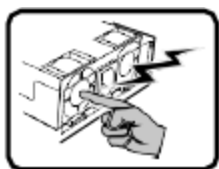


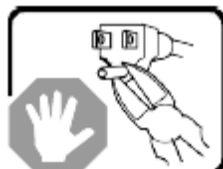
Figure 139. POST Diagnostic Error (BEEP LED)

## Appendix F. Safety Instructions

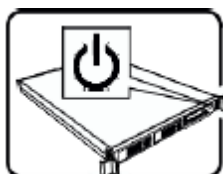
### WARNING: English (US)



The power supply in this product contains no user-serviceable parts. There may be more than one supply in this product. Refer servicing only to qualified personnel.



Do not attempt to modify or use the supplied AC power cord if it is not the exact type required. A product with more than one power supply will have a separate AC power cord for each supply.



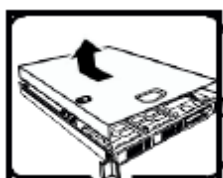
The power button on the system does not turn off system AC power. To remove AC power from the system, you must unplug each AC power cord from the wall outlet or power supply.

The power cord(s) is considered the disconnect device to the main (AC) power. The socket outlet that the system plugs into shall be installed near the equipment and shall be easily accessible.



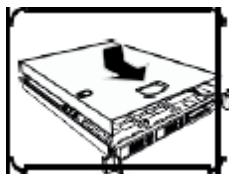
**SAFETY STEPS:** Whenever you remove the chassis covers to access the inside of the system, follow these steps:

1. Turn off all peripheral devices connected to the system.
2. Turn off the system by pressing the power button.
3. Unplug all AC power cords from the system or from wall outlets.
4. Label and disconnect all cables connected to I/O connectors or ports on the back of the system.
5. Provide some electrostatic discharge (ESD) protection by wearing an antistatic wrist strap attached to chassis ground of the system—any unpainted metal surface—when handling components.
6. Do not operate the system with the chassis covers removed.



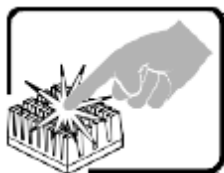
After you have completed the six SAFETY steps above, you can remove the system top covers. To do this:

1. Unlock and remove the padlock from the back of the system if a padlock has been installed.
2. Remove and save all screws from the covers.
3. Remove the covers.



For proper cooling and airflow, always reinstall the chassis covers before turning on the system. Operating the system without the covers in place can damage system parts. To install the covers:

1. Check first to make sure you have not left loose tools or parts inside the system.
2. Check that cables, add-in boards, and other components are properly installed.
3. Attach the covers to the chassis with the screws removed earlier, and tighten them firmly.
4. Insert and lock the padlock to the system to prevent unauthorized access inside the system.
5. Connect all external cables and the AC power cord(s) to the system.



A microprocessor and heat sink may be hot if the system has been running. Also, there may be sharp pins and edges on some board and chassis parts. Contact should be made with care. Consider wearing protective gloves.



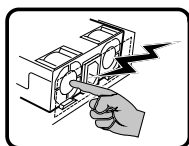
Danger of explosion if the battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the equipment manufacturer. Dispose of used batteries according to manufacturer's instructions.



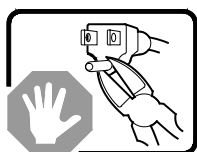
The system is designed to operate in a typical office environment. Choose a site that is:

- Clean and free of airborne particles (other than normal room dust).
- Well ventilated and away from sources of heat including direct sunlight.
- Away from sources of vibration or physical shock.
- Isolated from strong electromagnetic fields produced by electrical devices.
- In regions that are susceptible to electrical storms, we recommend you plug your system into a surge suppresser and disconnect telecommunication lines to your modem during an electrical storm.
- Provided with a properly grounded wall outlet.
- Provided with sufficient space to access the power supply cord(s), because they serve as the product's main power disconnect.

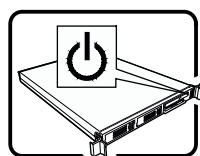
## ОСТОРОЖНО: русский



Блок питания данного изделия не содержит деталей, подлежащих обслуживанию пользователем. В этом изделии может быть несколько блоков питания. Обслуживание должно выполняться только квалифицированным персоналом.



Не модифицируйте и не используйте прилагаемый кабель питания, если он не соответствует требуемому типу. Если в устройстве несколько блоков питания, то к каждому блоку питания прилагается отдельный кабель питания.



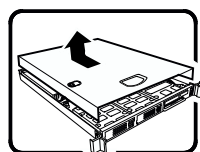
При нажатии кнопки питания не отключается питание системы от электросети. Чтобы отключить подачу питания переменного тока в систему, необходимо отсоединить все кабели питания от электрической розетки или блока питания.

Кабель питания считается размыкателем питания переменного тока. Электрическая розетка, к которой подключается система, должна находиться рядом с оборудованием и быть легко доступной.



**ИНСТРУКЦИИ ПО ТЕХНИКЕ БЕЗОПАСНОСТИ.** Каждый раз перед снятием крышек корпуса для доступа к внутренней части системы выполняйте следующие действия:

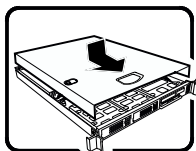
1. Выключите все периферийные устройства, подключенные к системе.
2. Выключите систему, нажав кнопку питания.
3. Отсоедините все кабели питания от системы или электрических розеток.
4. Промаркируйте и отсоедините все кабели, подключенные к разъемам или портам ввода/вывода на задней панели системы.
5. Для обеспечения защиты от электростатического разряда при работе с компонентами надевайте антистатический браслет, прикрепленный к заземленной части корпуса системы (любой неокрашенной металлической поверхности).
6. Запрещается работать с системой, когда крышки корпуса сняты.



Крышки корпуса системы можно снимать, когда выполнены все шесть описанных выше мер безопасности. Для этого:

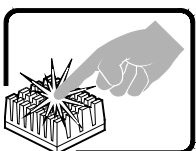
1. Откройте и снимите навесной замок (если имеется) с задней части системы.
2. Выверните все винты с крышек и сохраните их.
3. Снимите крышки.

(продолжение)

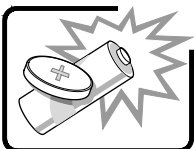
**ОСТОРОЖНО: русский** (продолжение)

Для обеспечения надлежащего охлаждения и воздушного потока всегда устанавливайте на место крышки корпуса перед включением системы. Работа системы без установленных крышек может привести к повреждению компонентов системы. Чтобы установить крышки, выполните следующие действия:

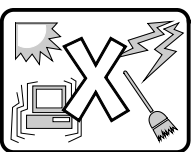
1. Сначала проверьте, не осталось ли в системе незакрепленных инструментов или деталей.
2. Убедитесь, что кабели, платы расширения и другие компоненты установлены правильно.
3. Закрепите крышки на корпусе, завернув и надежно затянув винты, снятые ранее.
4. Установите и закройте навесной замок для предотвращения несанкционированного доступа внутрь системы.
5. Подключите к системе все внешние кабели и кабели питания.



Микропроцессор и теплоотвод могут нагреваться во время работы системы. На некоторых деталях платы и корпуса могут быть острые выступы и кромки. Соблюдайте осторожность. Рекомендуется использовать защитные перчатки.



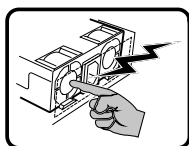
В случае неправильной замены аккумулятора существует опасность взрыва. При замене используйте только те же или эквивалентные модели аккумуляторов, рекомендованные производителем оборудования. Утилизируйте использованные аккумуляторы в соответствии с инструкциями производителя.



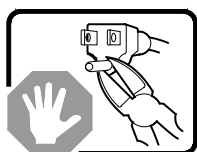
Система предназначена для работы в обычной офисной среде. Место установки системы должно соответствовать следующим требованиям:

- Помещение должно быть чистым, в воздухе не должно быть взвешенных частиц (кроме обычной пыли).
- Место установки должно хорошо вентилироваться и находиться вдали от источников тепла (включая прямой солнечный свет).
- Место установки должно находиться вдали от источников вибрации или механических ударов.
- Место установки должно быть изолировано от сильных электромагнитных полей, создаваемых электрическими устройствами.
- В регионах, где часто бывает гроза, рекомендуется подключать систему к сетевому фильтру и отключать телекоммуникационные линии от модема во время грозы.
- В помещении должна быть правильно заземленная электрическая розетка.
- Должен быть оставлен достаточный зазор для доступа к кабелям питания, которые служат размыкателем электропитания системы.

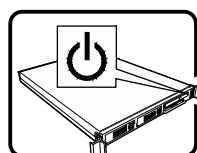
## УВАГА! Українська



Джерело живлення в цьому виробі не містить жодних частин, які користувачі могли б обслуговувати самостійно. Цей виріб може містити більше одного джерела живлення. Обслуговувати його може виключно кваліфікований персонал.



Не намагайтеся модифікувати шнур живлення змінного струму з комплекту або користуватися ним, якщо він не відповідає потрібному типу. Виріб із джерелами живлення більше одного має окремі шнури живлення змінного струму для кожного джерела.



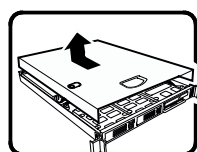
Кнопка живлення на системі не вимикає живлення змінного струму системи. Щоб позбавити систему змінного струму, слід вийняти всі шнури живлення змінного струму зі стінних розеток або джерел живлення.



Вважається, що шнур(и) живлення є пристроями вимкнення основного живлення (змінного струму). Розетка електромережі, до якої підключається система, мусить бути розташована поруч із обладнанням і легкодоступна.

**КРОКИ БЕЗПЕКИ:** Щоразу, знімаючи корпус для доступу до внутрішніх частин системи, виконуйте ці кроки:

1. Вимкніть усі периферійні пристрої, підключені до системи.
2. Вимкніть систему, натиснувши кнопку живлення.
3. Вийміть шнури живлення змінного струму із системи чи стінних розеток.
4. Позначте і від'єднайте всі кабелі, підключені до з'єднувачів входу/виходу або портів ззаду на системі.
5. Працюючи з компонентами, захищайтеся від електростатичних розрядів (ЕР), вдягаючи антистатичний ремінець-браслет, прикріплений до елемента заземлення корпусу - будь-якої непофарбованої металевої поверхні.
6. Не використовуйте систему з відкритим корпусом.



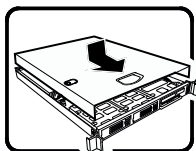
Після виконання шести наведених вище кроків БЕЗПЕКИ можна знімати корпус (кришки) з системи. Для цього виконайте такі дії:

1. Розблокуйте і зніміть замок ззаду на системі, якщо його встановлено.
2. Зніміть і збережіть всі гвинти з кришок.
3. Зніміть усі кришки.

продовження

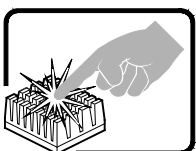


## УВАГА! Українська (продовження)

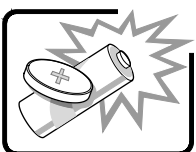


Для правильного охолодження та вентиляції завжди повертайте на місце кришки корпусу перед увімкненням системи. Робота системи без кришок може пошкодити деталі системи. Щоб установити кришки, виконайте такі дії:

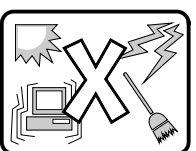
1. Спочатку переконайтеся, що всередині системи не залишилося деталей або незакріплених інструментів.
2. Перевірте, чи правильно встановлено кабелі, розширювальні плати та інші компоненти.
3. Прикріпіть кришки до корпусу знятими раніше гвинтами та надійно їх затягніть.
4. Вставте в систему і зафіксуйте замок, щоб запобігти неавторизованому доступу до нього.
5. Підключіть усі зовнішні кабелі та шнур(и) живлення змінного струму до системи.



Під час роботи системи мікропроцесор і радіатор можуть розігрітися до гарячого. Деякі частини корпусу і плат можуть мати гострі шипи або краї. Із ними слід поводитися обережно. Можна вдягти захисні рукавички.



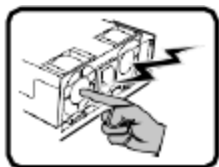
Загроза вибуху, якщо батарею замінено на неправильну. Замінюйте лише таким самим або еквівалентним типом, рекомендованим виробником. Утилізуйте використані батареї згідно з інструкціями виробника.



Систему створено для роботи в типовому офісному приміщенні. Виберіть місце, яке:

- Чисте і де немає в повітрі інших дрібних часточок, окрім звичайного побутового пилу.
- Добре провітрюється, розташоване далеко від джерел тепла, включно з прямим сонячним промінням.
- Розташоване далеко від джерел вібрації і струсів.
- Ізольоване від сильних електромагнітних полів, спричинених електроприладами.
- У регіонах, де часто проходять грози, радимо підключати пристрій через пристрій захисту від викидів напруги та відключити телекомунікаційні лінії від модему під час грози.
- Оснащене правильно заземленими стінними розетками електромережі.
- Має достатньо простору для доступу до шнура(ів) живлення, оскільки вони слугують основними вимикачами виробу.

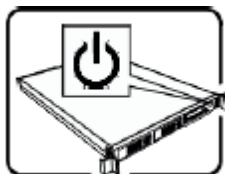
## AVERTISSEMENT: Français



Le bloc d'alimentation de ce produit ne contient aucune pièce pouvant être réparée par l'utilisateur. Ce produit peut contenir plus d'un bloc d'alimentation. Veuillez contacter un technicien qualifié en cas de problème.



Ne pas essayer d'utiliser ni modifier le câble d'alimentation CA fourni, s'il ne correspond pas exactement au type requis. Le nombre de câbles d'alimentation CA fournis correspond au nombre de blocs d'alimentation du produit.

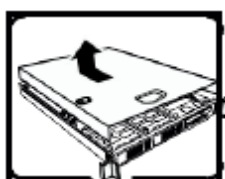


Notez que le commutateur CC de mise sous tension /hors tension du panneau avant n'éteint pas l'alimentation CA du système. Pour mettre le système hors tension, vous devez débrancher chaque câble d'alimentation de sa prise.



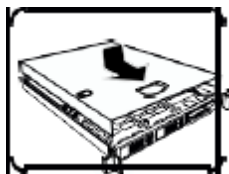
**CONSIGNES DE SÉCURITÉ:** Lorsque vous ouvrez le boîtier pour accéder à l'intérieur du système, suivez les consignes suivantes:

1. Mettez hors tension tous les périphériques connectés au système.
2. Mettez le système hors tension en mettant l'interrupteur général en position OFF (bouton-poussoir).
3. Débranchez tous les cordons d'alimentation c.a. du système et des prises murales.
4. Identifiez et débranchez tous les câbles reliés aux connecteurs d'E-S ou aux accès derrière le système.
5. Pour prévenir les décharges électrostatiques lorsque vous touchez aux composants, portez une bande antistatique pour poignet et reliez-la à la masse du système (toute surface métallique non peinte du boîtier).
6. Ne faites pas fonctionner le système tandis que le boîtier est ouvert.



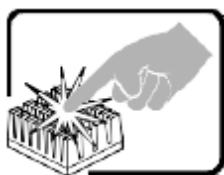
Une fois TOUTES les étapes précédentes accomplies, vous pouvez retirer les panneaux du système. Procédez comme suit:

1. Si un cadenas a été installé sur à l'arrière du système, déverrouillez-le et retirez-le.
2. Retirez toutes les vis des panneaux et mettez-les dans un endroit sûr.
3. Retirez les panneaux.



Afin de permettre le refroidissement et l'aération du système, réinstallez toujours les panneaux du boîtier avant de mettre le système sous tension. Le fonctionnement du système en l'absence des panneaux risque d'endommager ses pièces. Pour installer les panneaux, procédez comme suit:

1. Assurez-vous de ne pas avoir oublié d'outils ou de pièces démontées dans le système.
2. Assurez-vous que les câbles, les cartes d'extension et les autres composants sont bien installés.
3. Revissez solidement les panneaux du boîtier avec les vis retirées plus tôt.
4. Remettez le cadenas en place et verrouillez-le afin de prévenir tout accès non autorisé à l'intérieur du système.
5. Rebranchez tous les cordons d'alimentation c. a. et câbles externes au système.



Le microprocesseur et le dissipateur de chaleur peuvent être chauds si le système a été sous tension. Faites également attention aux broches aiguës des cartes et aux bords tranchants du capot. Nous vous recommandons l'usage de gants de protection.



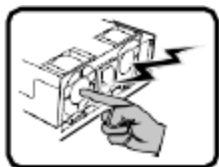
Danger d'explosion si la batterie n'est pas remontée correctement. Remplacer uniquement avec une batterie du même type ou d'un type équivalent recommandé par le fabricant. Disposez des piles usées selon les instructions du fabricant.



Le système a été conçu pour fonctionner dans un cadre de travail normal. L'emplacement choisi doit être:

- Propre et dépourvu de poussière en suspension (sauf la poussière normale).
- Bien aéré et loin des sources de chaleur, y compris du soleil direct.
- A l'abri des chocs et des sources de vibrations.
- Isolé de forts champs électromagnétiques générés par des appareils électriques.
- Dans les régions sujettes aux orages magnétiques il est recommandé de brancher votre système à un suppresseur de surtension, et de débrancher toutes les lignes de télécommunications de votre modem durant un orage.
- Muni d'une prise murale correctement mise à la terre.
- Suffisamment spacieux pour vous permettre d'accéder aux câbles d'alimentation (ceux-ci étant le seul moyen de mettre le système hors tension).

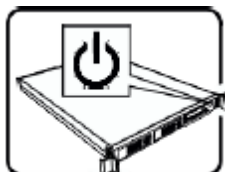
## WARNUNG: Deutsch



Benutzer können am Netzgerät dieses Produkts keine Reparaturen vornehmen. Das Produkt enthält möglicherweise mehrere Netzgeräte. Wartungsarbeiten müssen von qualifizierten Technikern ausgeführt werden.



Versuchen Sie nicht, das mitgelieferte Netzkabel zu ändern oder zu verwenden, wenn es sich nicht genau um den erforderlichen Typ handelt. Ein Produkt mit mehreren Netzgeräten hat für jedes Netzgerät ein eigenes Netzkabel.

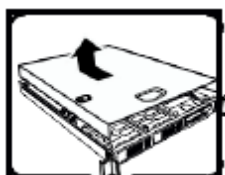


Der Wechselstrom des Systems wird durch den Ein-/Aus-Schalter für Gleichstrom nicht ausgeschaltet. Ziehen Sie jedes Wechselstrom-Netzkabel aus der Steckdose bzw. dem Netzgerät, um den Stromanschluß des Systems zu unterbrechen.



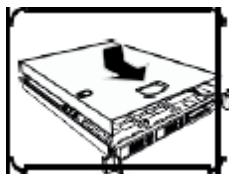
**SICHERHEISSCHRIFFEN:** Immer wenn Sie die Gehäuseabdeckung abnehmen um an das Systeminnere zu gelangen, sollten Sie folgende Schritte beachten:

1. Schalten Sie alle an Ihr System angeschlossenen Peripheriegeräte aus.
2. Schalten Sie das System mit dem Hauptschalter aus.
3. Ziehen Sie den Stromanschlußstecker Ihres Systems aus der Steckdose.
4. Auf der Rückseite des Systems beschriften und ziehen Sie alle Anschlußkabel von den I/O Anschlüssen oder Ports ab.
5. Tragen Sie ein geerdetes Antistatik Gelenkband, um elektrostatische Ladungen (ESD) über blanke Metallstellen bei der Handhabung der Komponenten zu vermeiden.
6. Schalten Sie das System niemals ohne ordnungsgemäß montiertes Gehäuse ein.



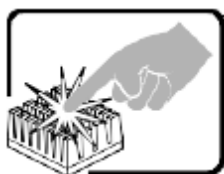
Nachdem Sie die oben erwähnten ersten sechs SICHERHEITSSCHRITTE durchgeführt haben, können Sie die Abdeckung abnehmen, indem Sie:

1. Öffnen und entfernen Sie die Verschlusseinrichtung (Padlock) auf der Rückseite des Systems, falls eine Verschlusseinrichtung installiert ist.
2. Entfernen Sie alle Schrauben der Gehäuseabdeckung.
3. Nehmen Sie die Abdeckung ab.



Zur ordnungsgemäßen Kühlung und Lüftung muß die Gehäuseabdeckung immer wieder vor dem Einschalten installiert werden. Ein Betrieb des Systems ohne angebrachte Abdeckung kann Ihrem System oder Teile darin beschädigen. Um die Abdeckung wieder anzubringen:

1. Vergewissern Sie sich, daß Sie keine Werkzeuge oder Teile im Innern des Systems zurückgelassen haben.
2. Überprüfen Sie alle Kabel, Zusatzkarten und andere Komponenten auf ordnungsgemäßen Sitz und Installation.
3. Bringen Sie die Abdeckungen wieder am Gehäuse an, indem Sie die zuvor gelösten Schrauben wieder anbringen. Ziehen Sie diese gut an.
4. Bringen Sie die Verschlusseinrichtung (Padlock) wieder an und schließen Sie diese, um ein unerlaubtes Öffnen des Systems zu verhindern.
5. Schließen Sie alle externen Kabel und den AC Stromanschlußstecker Ihres Systems wieder an.



Der Mikroprozessor und der Kühler sind möglicherweise erhitzt, wenn das System in Betrieb ist. Außerdem können einige Platinen und Gehäuseteile scharfe Spitzen und Kanten aufweisen. Arbeiten an Platinen und Gehäuse sollten vorsichtig ausgeführt werden. Sie sollten Schutzhandschuhe tragen.



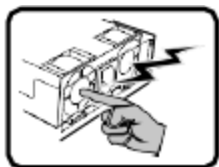
Bei falschem Einsetzen einer neuen Batterie besteht Explosionsgefahr. Die Batterie darf nur durch denselben oder einen entsprechenden, vom Hersteller empfohlenen Batterietyp ersetzt werden. Entsorgen Sie verbrauchte Batterien den Anweisungen des Herstellers entsprechend.



Das System wurde für den Betrieb in einer normalen Büroumgebung entwickelt. Der Standort sollte:

- sauber und staubfrei sein (Hausstaub ausgenommen);
- gut gelüftet und keinen Heizquellen ausgesetzt sein (einschließlich direkter Sonneneinstrahlung);
- keinen Erschütterungen ausgesetzt sein;
- keine starken, von elektrischen Geräten erzeugten elektromagnetischen Felder aufweisen;
- in Regionen, in denen elektrische Stürme auftreten, mit einem Überspannungsschutzgerät verbunden sein; während eines elektrischen Sturms sollte keine Verbindung der Telekommunikationsleitungen mit dem Modem bestehen;
- mit einer geerdeten Wechselstromsteckdose ausgerüstet sein;
- über ausreichend Platz verfügen, um Zugang zu den Netzkabeln zu gewährleisten, da der Stromanschluß des Produkts hauptsächlich über die Kabel unterbrochen wird.

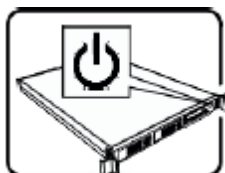
## AVVERTENZA: Italiano



Rivolgersi ad un tecnico specializzato per la riparazione dei componenti dell'alimentazione di questo prodotto. È possibile che il prodotto disponga di più fonti di alimentazione.



Non modificare o utilizzare il cavo di alimentazione in c.a. fornito dal produttore, se non corrisponde esattamente al tipo richiesto. Ad ogni fonte di alimentazione corrisponde un cavo di alimentazione in c.a. separato.

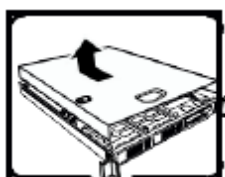


L'interruttore attivato/disattivato nel pannello anteriore non interrompe l'alimentazione in c.a. del sistema. Per interromperla, è necessario scollegare tutti i cavi di alimentazione in c.a. dalle prese a muro o dall'alimentazione di corrente.



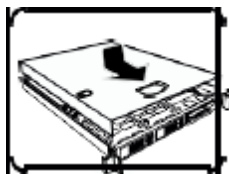
**PASSI DI SICUREZZA:** Qualora si rimuovano le coperture del telaio per accedere all'interno del sistema, seguire i seguenti passi:

1. Spegner tutti i dispositivi periferici collegati al sistema.
2. Spegner il sistema, usando il pulsante spento/acceso dell'interruttore del sistema.
3. Togliere tutte le spine dei cavi del sistema dalle prese elettriche.
4. Identificare e sconnettere tutti i cavi attaccati ai collegamenti I/O od alle prese installate sul retro del sistema.
5. Qualora si tocchino i componenti, proteggersi dallo scarico elettrostatico (SES), portando un cinghia anti-statica da polso che è attaccata alla presa a terra del telaio del sistema – qualsiasi superficie non dipinta – .
6. Non far operare il sistema quando il telaio è senza le coperture.



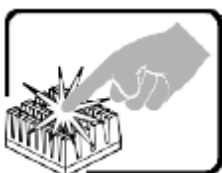
Dopo aver seguito i sei passi di SICUREZZA sopracitati, togliere le coperture del telaio del sistema come segue:

1. Aprire e rimuovere il lucchetto dal retro del sistema qualora ve ne fosse uno installato.
2. Togliere e mettere in un posto sicuro tutte le viti delle coperture.
3. Togliere le coperture.



Per il giusto flusso dell'aria e raffreddamento del sistema, rimettere sempre le coperture del telaio prima di riaccendere il sistema. Operare il sistema senza le coperture al loro proprio posto potrebbe danneggiare i componenti del sistema. Per rimettere le coperture del telaio:

1. Controllare prima che non si siano lasciati degli attrezzi o dei componenti dentro il sistema.
2. Controllare che i cavi, dei supporti aggiuntivi ed altri componenti siano stati installati appropriatamente.
3. Attaccare le coperture al telaio con le viti tolte in precedenza e avvitarle strettamente.
4. Inserire e chiudere a chiave il lucchetto sul retro del sistema per impedire l'accesso non autorizzato al sistema.
5. Ricollegare tutti i cavi esterni e le prolunghe AC del sistema.



Se il sistema è stato a lungo in funzione, il microprocessore e il dissipatore di calore potrebbero essere surriscaldati. Fare attenzione alla presenza di piedini appuntiti e parti taglienti sulle schede e sul telaio. È consigliabile l'uso di guanti di protezione.



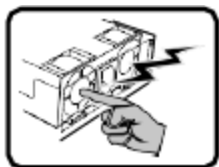
Esiste il pericolo di un esplosione se la pila non viene sostituita in modo corretto. Utilizzare solo pile uguali o di tipo equivalente a quelle consigliate dal produttore. Per disfarsi delle pile usate, seguire le istruzioni del produttore.



Il sistema è progettato per funzionare in un ambiente di lavoro tipo. Scegliere una postazione che sia:

- Pulita e libera da particelle in sospensione (a parte la normale polvere presente nell'ambiente).
- Ben ventilata e lontana da fonti di calore, compresa la luce solare diretta.
- Al riparo da urti e lontana da fonti di vibrazione.
- Isolata dai forti campi magnetici prodotti da dispositivi elettrici.
- In aree soggette a temporali, è consigliabile collegare il sistema ad un limitatore di corrente. In caso di temporali, scollegare le linee di comunicazione dal modem.
- Dotata di una presa a muro correttamente installata.
- Dotata di spazio sufficiente ad accedere ai cavi di alimentazione, i quali rappresentano il mezzo principale di scollegamento del sistema.

## ADVERTENCIAS: Español

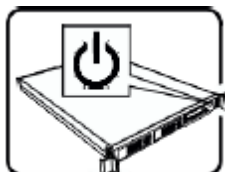


El usuario debe abstenerse de manipular los componentes de la fuente de alimentación de este producto, cuya reparación debe dejarse exclusivamente en manos de personal técnico especializado. Puede que este producto disponga de más de una fuente de alimentación.



No intente modificar ni usar el cable de alimentación de corriente alterna, si no corresponde exactamente con el tipo requerido.

El número de cables suministrados se corresponden con el número de fuentes de alimentación de corriente alterna que tenga el producto.

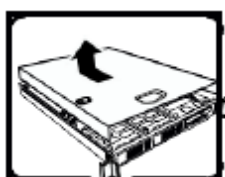


Nótese que el interruptor activado/desactivado en el panel frontal no desconecta la corriente alterna del sistema. Para desconectarla, deberá desenchufar todos los cables de corriente alterna de la pared o desconectar la fuente de alimentación.



**INSTRUCCIONES DE SEGURIDAD:** Cuando extraiga la tapa del chasis para acceder al interior del sistema, siga las siguientes instrucciones:

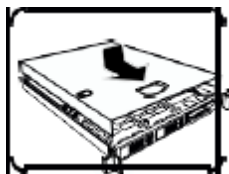
1. Apague todos los dispositivos periféricos conectados al sistema.
2. Apague el sistema presionando el interruptor encendido/apagado.
3. Desconecte todos los cables de alimentación CA del sistema o de las tomas de corriente alterna.
4. Identifique y desconecte todos los cables enchufados a los conectores E/S o a los puertos situados en la parte posterior del sistema.
5. Cuando manipule los componentes, es importante protegerse contra la descarga electrostática (ESD). Puede hacerlo si utiliza una muñequera antiestática sujeta a la toma de tierra del chasis — o a cualquier tipo de superficie de metal sin pintar.
6. No ponga en marcha el sistema si se han extraído las tapas del chasis.



Después de completar las seis instrucciones de SEGURIDAD mencionadas, ya puede extraer las tapas del sistema. Para ello:

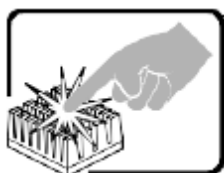
1. Desbloquee y extraiga el bloqueo de seguridad de la parte posterior del sistema, si se ha instalado uno.
2. Extraiga y guarde todos los tornillos de las tapas.
3. Extraiga las tapas.





Para obtener un enfriamiento y un flujo de aire adecuados, reinstale siempre las tapas del chasis antes de poner en marcha el sistema. Si pone en funcionamiento el sistema sin las tapas bien colocadas puede dañar los componentes del sistema. Para instalar las tapas:

1. Asegúrese primero de no haber dejado herramientas o componentes sueltos dentro del sistema.
2. Compruebe que los cables, las placas adicionales y otros componentes se hayan instalado correctamente.
3. Incorpore las tapas al chasis mediante los tornillos extraídos anteriormente, tensándolos firmemente.
4. Inserte el bloqueo de seguridad en el sistema y bloquéelo para impedir que pueda accederse al mismo sin autorización.
5. Conecte todos los cables externos y los cables de alimentación CA al sistema.



Si el sistema ha estado en funcionamiento, el microprocesador y el disipador de calor pueden estar aún calientes. También conviene tener en cuenta que en el chasis o en el tablero puede haber piezas cortantes o punzantes. Por ello, se recomienda precaución y el uso de guantes protectores.



Existe peligro de explosión si la pila no se cambia de forma adecuada. Utilice solamente pilas iguales o del mismo tipo que las recomendadas por el fabricante del equipo. Para deshacerse de las pilas usadas, siga igualmente las instrucciones del fabricante.

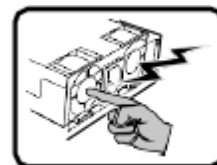


El sistema está diseñado para funcionar en un entorno de trabajo normal. Escoja un lugar:

- Limpio y libre de partículas en suspensión (salvo el polvo normal).
- Bien ventilado y alejado de fuentes de calor, incluida la luz solar directa.
- Alejado de fuentes de vibración.
- Aislado de campos electromagnéticos fuertes producidos por dispositivos eléctricos.
- En regiones con frecuentes tormentas eléctricas, se recomienda conectar su sistema a un eliminador de sobrevoltaje y desconectar el módem de las líneas de telecomunicación durante las tormentas.
- Provisto de una toma de tierra correctamente instalada.
- Provisto de espacio suficiente como para acceder a los cables de alimentación, ya que éstos hacen de medio principal de desconexión del sistema.

## אזהרה: עברית

אספקת החשמל במוצר זה לא מכילה חלקים שניתנים לשירות על ידי משתמש. ייתכן שיש יותר ממקור אספקת חשמל אחד במוצר זה. לקבלת שירות יש לפנות רק אל אנשים המוסמכים לכך.

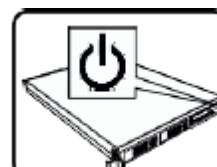


אין לנסות לשנות את כבל החשמל ז"ח המסופק, או לשנותו, אם הוא לא מהסוג המדויק הנדרש. למוצר עם יותר ממקור אספקת חשמל אחד יצורף כבל חשמל נפרד לכל מקור אספקת חשמל.



מתג ההפעלה במערכת לא מכבה את מערכת חשמל ז"ח. להסרת חשמל ז"ח מהמערכת, יש לנתק כל כבל חשמל ז"ח משקע הקיר או מאספקת החשמל.

כבלי (י) החשמל נחשבים (ם) להתקן (ני) ניתוק מקור אספקת חשמל ז"ח. שקע הקיר שאליו מחוברת המערכת יותקן בסמוך לצידוד ויהיה נגיש בקלות.



שלבי בטיחות: בכל פעם שמסירים את מכסי המעטפת כדי לגשת לחלק הפנימי של המערכת, יש לבצע את הצעדים הבאים:



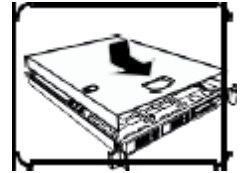
1. לכבות את כל ההתקנים ההיקפיים שמחוברים למערכת.
2. לכבות את המערכת על ידי לחיצה על מתג ההפעלה.
3. לנתק את כל כבלי חשמל ז"ח מהמערכת או משקעי הקיר.
4. לתייג את כל הכבלים המחוברים למחברי קלט/פלט או ליציאות בגב המערכת ולנתק אותם.
5. לספק הגנה מסוימת מפריקות אלקטרוסטטיות (ESD) על ידי חבישת רצועת שורש כף יד אנטיסטטית שמחוברת להארקת המעטפת של המערכת - כל משטח מתכת לא צבוע - בעת הטיפול ברכיבים.
6. אין להפעיל את המערכת כשמכסי המעטפת מוסרים.

לאחר השלמת ששת שלבי הבטיחות לעיל, באפשרותכם להסיר את מכסי המערכת. כדי לעשות זאת:

1. יש לפתוח את המנעול התלוי ולהסירו מגב המערכת אם אכן הותקן בה מנעול תלוי.
2. יש להסיר את כל הברגים של המכסים ולשמור אותם.
3. יש להסיר את המכסים.

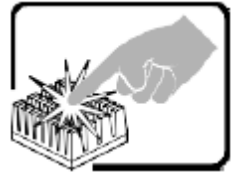


לקירור ולזרימת אוויר תקינים, יש תמיד להתקין מחדש את מכסי המעטפת לפני הפעלת המערכת. הפעלת המערכת ללא המכסים במקומם, עלולה לגרום נזק לחלקי המערכת. להתקנת המכסים:



1. יש לבדוק תחילה כדי לוודא שלא נשארו כלים או חלקים רופפים בתוך המערכת.
2. יש לבדוק שהכבלים, הלוחות הנוספים ורכיבים אחרים מותקנים כראוי.
3. יש לחבר את המכסים למעטפת עם הברגים שהוסרו קודם לכן ולהדק אותם בחוזקה למקומם.
4. יש להכניס את מנעול התליה למערכת ולנעול אותו כדי למנוע גישה בלתי מורשית לפני המערכת.
5. יש לחבר את כל הכבלים החיצוניים ואת כבל(י) חשמל ז"ח למערכת.

מעבד המיקרו ומפזר החום עלולים להיות לוחים כשהמערכת פועלת. כמו כן, ייתכנו סיכות וקצוות חדים בחלקי לוח ומעטפת שונים. יש לגעת בזיהרות. יש לשקול עטיית כפפות מגן.



סכנת פיצוץ אם הסוללה מוחלפת באופן שגוי. יש להחליף רק באותו סוג או שווה ערך שמומלץ על ידי יצרן הציוד. יש להשליך סוללות משומשות על פי הוראות היצרן.



המערכת נועדה לפעול בסביבה משרדית טיפוסית. יש לבחור אתר שהוא:

- נקי וחופשי מחלקיקים נישאים באוויר (למעט אבק שקיים באופן רגיל בחדר).
- מאוורר היטב ורחוק ממקורות חום כולל אור שמש ישיר.
- יש להרחיק ממקורות רטט או זעזועים פיזיים.
- מבודד משדות אלקטרומגנטיים חזקים שנגרמים על ידי מכשירים חשמליים.
- באזורים שרגישים לסערות חשמל, אנו ממליצים לחבר את המערכת למדכא נחשול, ובמהלך סערה חשמלית לנתק קווי תקשורת שמחוברים למודם שלכם.
- בעל שקע קיר מוארק כהלכה.
- בעל מספיק מקום לגישה חופשית לכבל(י) החשמל, מכיוון שהוא/הם משמשים(ים) לביתוק רשת החשמל למוצר.



## Glossary

Acronym	Description
<b>AC</b>	Alternating Current, a type of electrical current in which the current repeatedly changes direction
<b>ACM</b>	Authenticated Code Mode
<b>ACPI</b>	Advanced Configuration Power Interface
<b>AP</b>	Application Processor
<b>BDS</b>	Boot Device Selection
<b>BIB</b>	Burn in Board
<b>BIOS</b>	Basic Input/Output System – Firmware interface to the system hardware
<b>BIST</b>	Built-in Self Test
<b>BMC</b>	Server board Management Controller
<b>BSP</b>	Boot strap processor. The processor selected at boot time to be the primary processor in a multi-processor system.
<b>BTU/hour</b>	A unit of power. 1 watt is approximately 3.41214 BTU/h[, and 1000 BTU/h is approximately 293.071 W
<b>CLTT</b>	Closed Loop Thermal Throttling
<b>CMOS</b>	Complementary Metal-oxide-semiconductor
<b>CPU</b>	Central Processing Unit
<b>CRAM</b>	Configuration RAM - a programmable bit inside an FPGA that controls its behavior
<b>CSM</b>	Compatibility Support Module
<b>DC</b>	Direct current, the flow of electric charge is only in one direction.
<b>DIMM</b>	Dual In-line Memory Module, a plug-in memory module with signal and power pins on both sides of the internal printed circuit board (front and back).
<b>DQ</b>	Data Quality
<b>DQS</b>	Bi-directional Data Strobe
<b>DXE</b>	Driver Execution Environment. Component of Intel® Platform Innovation Framework for EFI architecture
<b>EI</b>	Enhanced Intel
<b>ESD</b>	<b>Electrostatic Discharge</b>
<b>FRU</b>	Field Replaceable Unit
<b>GT/s</b>	GigaTransfers per second
<b>HBA</b>	Hot Bus Adapter
<b>HPC</b>	High Performance Computing
<b>IDE</b>	Integrated Drive Electronics, a disk interface standard
<b>IFT</b>	Intel Fabric Through
<b>IMC</b>	Integrated Memory Controller – memory controller integrated into the processor chip
<b>IPL</b>	Initial Program Load
<b>IPMB</b>	Intelligent Platform Management Bus

Acronym	Description
<b>ISTA</b>	International Safe Transit Association
<b>JEDEC</b>	Joint Electron Device Engineering Council, industry organization for memory standards
<b>KVM</b>	Keyboard, Video, and Mouse – an attachment that mimics those devices, and connects them to a remote I/O user
<b>LAN</b>	Local Area Network
<b>LED</b>	Light Emitting Diode
<b>LOM</b>	LAN on Board
<b>LRDIMM</b>	Load Reduced DIMM memory modules have buffer registers for both address and data between the SDRAM modules and the system's memory controller.
<b>ME</b>	Management Engine
<b>MM#</b>	Material Management number
<b>MRC</b>	Memory Reference Code
<b>MSB</b>	Most Significant Bit
<b>MSID</b>	CPU Icc Mismatch
<b>MT/s</b>	MegaTransfers per second
<b>NB</b>	Northbound
<b>NIC</b>	Network Interface Card
<b>NVRAM</b>	Non-volatile RAM
<b>OEM</b>	Original Equipment Manufacturer
<b>OFU</b>	One-Boot Flash Update
<b>OLTT</b>	Open Loop Thermal Throttling
<b>OOB</b>	Out of Band
<b>OS</b>	Operating System
<b>PCH</b>	Platform Controller Hub
<b>PCI</b>	Peripheral Component Interconnect, or PCI Local Bus Standard – also called “Conventional PCI”
<b>PCIe</b>	PCI Express* -- an updated form of PCI offering better throughput and better error management
<b>PEI</b>	Pre EFI Initialization. Component of Intel® Platform Innovation Framework for EFI architecture.
<b>PEIM</b>	PEI Module
<b>PERR</b>	Parity Error
<b>PHM</b>	Processor Heatsink Module
<b>POST</b>	Power On Self Test – BIOS activity from the time on Power On until Operating System boot begins.
<b>PSU</b>	Power Supply Unit
<b>QPI</b>	Intel® QuickPath Interconnect
<b>QR</b>	Quad Rank – DIMM organization, DRAMs organized in four ranks
<b>RAID</b>	Redundant Array of Inexpensive Disks – provides data security by spreading data over multiple disk drives. RAID 0, RAID 1, RAID 10, and RAID 5 are different patterns of data on varying numbers of disks to provide varying degrees of security and performance.

Acronym	Description
<b>RAM</b>	Random Access Memory
<b>RAS</b>	Reliability, Availability, and Serviceability
<b>RC</b>	Raw Class
<b>RDIMM</b>	Registered DIMM (also called buffered) memory modules have an address buffer register between the SDRAM modules and the system's memory controller.
<b>ROM</b>	Read-Only Memory
<b>RT</b>	Runtime. Component of Intel® Platform Innovation Framework for EFI architecture
<b>RTC</b>	Real Time Clock
<b>SAD</b>	Source Address Decoder
<b>SAS</b>	Serial Attached SCSI, a high speed serial data version of SCSI
<b>SATA</b>	Serial ATA, a high speed serial data version of the disk ATA interface
<b>SB</b>	Southbound
<b>SBSP</b>	System Boot-Strap Processor
<b>SCSI</b>	Small Computer System Interface, a connection usually used for disks of various types
<b>SDR</b>	Sensor Data Record
<b>SEC</b>	Security. Component of Intel® Platform Innovation Framework for EFI architecture
<b>SEL</b>	System Event Log
<b>SERR</b>	System Error
<b>SFF</b>	Small Form Factor
<b>SFP+</b>	The enhanced small form-factor pluggable (SFP+) is an enhanced version of the SFP that supports data rates up to 16 Gbit/s.
<b>SIO</b>	Super I/O
<b>SMM</b>	System Management Mode
<b>SPD</b>	Serial Presence Detect
<b>SUP</b>	System Updated Package
<b>TDP</b>	Thermal Design Power
<b>TIM</b>	Thermal Interface Material
<b>TPM</b>	Trusted Platform Module
<b>TXT</b>	Intel® Trusted Execution Technology
<b>UPI</b>	Intel® UltraPath® Interconnect
<b>USB</b>	Universal Serial Bus, a standard serial expansion bus meant for connecting peripherals.
<b>VGA</b>	Video Graphics Array
<b>VR</b>	Voltage Regulator