Intel® Server System M20NTP1UR

System Integration and Service Guide

A guide providing instructions for the insertion and extraction of system components and available Intel accessories and spares

Rev. 1.1

August 2022

M20NTP1UR

Delivering Breakthrough Data Center System Innovation – Experience What's Inside!

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Document Revision History

Date	Revision	Changes
February 2022	1.0	First public release.
August 2022	1.1	Minor edits throughout the document for clarity.

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Safety Warnings

Heed safety instructions:

Before working with your server product, whether you are using this guide or any other resource as a reference, pay close attention to the safety instructions. You must adhere to the assembly instructions in this guide to ensure and maintain compliance with existing product certifications and approvals. Use only the described, regulated components specified in this guide. Use of other products/components will void the UL listing and other regulatory approvals of the product and will most likely result in noncompliance with product regulations in the region(s) in which the product is sold.

System power on/off:

The power button DOES NOT turn off the system AC power. To remove power from the system, you must unplug the AC power cord. Make sure the AC power cord is unplugged before you open the chassis, add, or remove any components.

Hazardous conditions, devices and cables:

Hazardous electrical conditions may be present on power, telephone, and communication cables. Turn off the server and disconnect the power cord, telecommunications systems, networks, and modems attached to the server before opening it. Otherwise, personal injury or equipment damage can result.

Electrostatic Discharge (ESD):

Electrostatic discharge can damage the 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 attached to the server 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 workbench pad. Do not place electronic devices on to the outside of any protective packaging.

Weight of the system:

- Due to the weight of a system, Intel recommends carrying the system with two people supporting the system from the sides or using a mechanical lift or a cart when moving the system from one location to another.
- If your system has rack handles installed, do not lift or carry the system by the rack handles
- When lifting or moving a chassis, always grasp it by all four corners. Do not grasp the chassis by two points at opposing diagonal corners, doing so may damage the internal components.
- If you can only grasp the chassis at two different points, always grasp the chassis by the sides at the midpoint.

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.

Additional Cautions:

- Slide / Rail mounted equipment is not to be used as a shelf or a workspace

- Intel warranties that this product will perform to its published specifications. However, all computer systems are inherently subject to unpredictable system behavior under various environmental and other conditions.
- This product is not intended to be the sole source for any critical data and the user must maintain a verified backup. Failure to do so or to comply with other user notices in the product user guide and specification documents may result in loss of or access to data.

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1. Introduction

The Intel® Server System M20NTP1UR is a purpose-built rack mount server that delivers power and performance within a 1U form factor. The system supports up to two 3rd Gen Intel® Xeon® Scalable processors, providing flexible performance. Previous generation Intel® Xeon® processor and Intel® Xeon® Scalable processor families are not supported.

The Intel® Server System M20NTP1UR supports up to 16 DDR4 DIMMs, providing high memory bandwidth for memory intensive workloads.

For a complete overview of system features and functions, refer to the following Intel documents:

- Intel® Server Board M20NTP2SB Technical Product Specification (TPS)
- Intel® Server System M20NTP1UR Technical Product Specification (TPS)

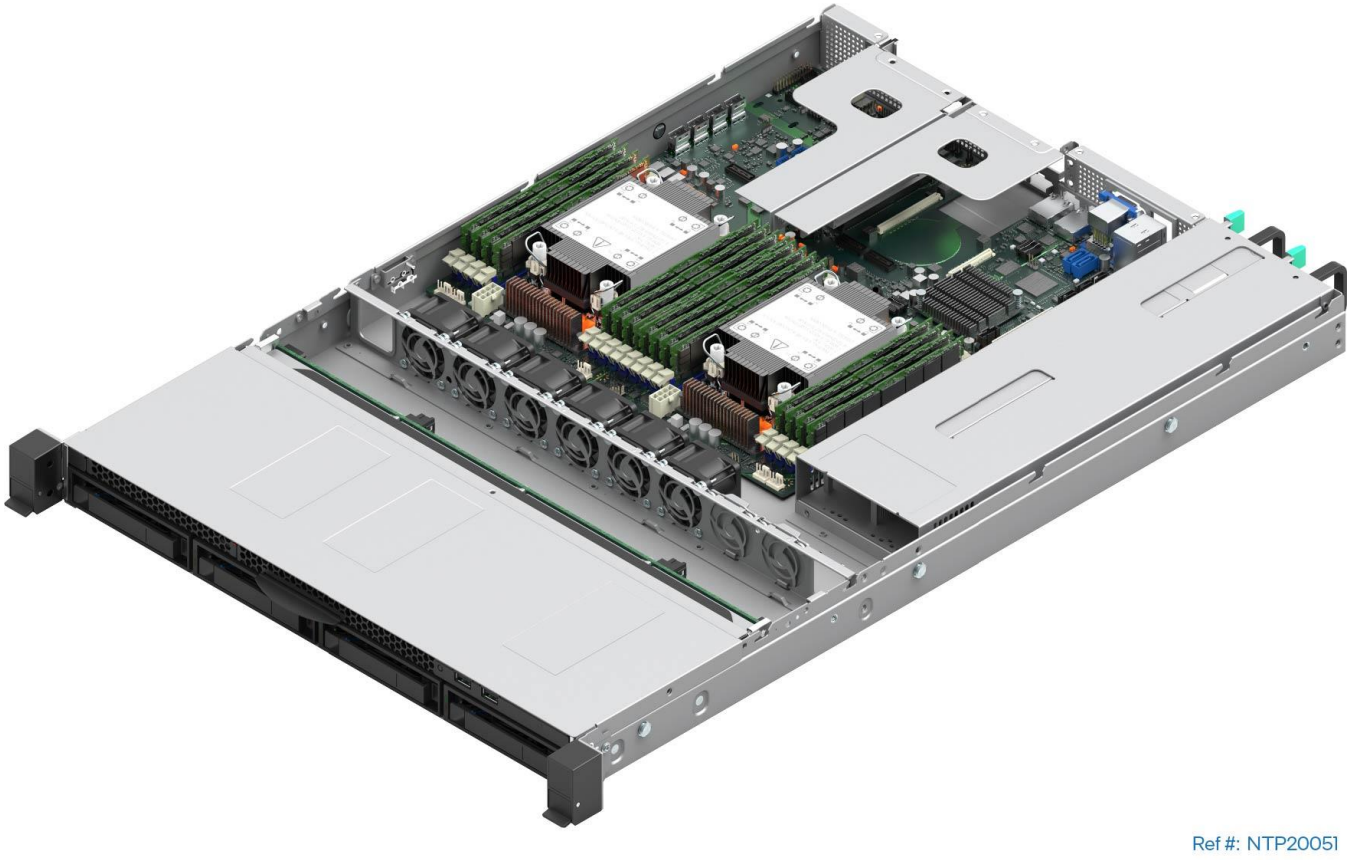

Figure 1. Intel® Server System M20NTP1UR

Refer to Section 1.1 for a complete list of available product documentation. For the latest revision of this document, go to:

https://www.intel.com/content/www/us/en/support/products/77593/server-products/server-systems.html

About This Document

This document provides system integrators and service technicians with instructions for the installation and removal of system components and supported Intel accessories.

The document is organized into two sections. The first section (Chapter 2–Chapter 4) is focused on the installation of system components and accessories into an L6 or L9 integrated server system[1].

The second section (Chapter 5, Chapter 6, and Appendix A–Appendix E) is focused on system service. The section provides the service technician with valuable system information and procedures necessary to successfully identify and replace a faulty system component.

System Integration

Chapter 2 – L6 Only: Essential Component Integration – Installation procedures for components required to make an L6 integrated system power on ready.

Chapter 3 – L6/L9: Optional Component Integration – Installation procedures for optional components and/or available accessory kits used to enhance the base system feature set.

Chapter 4 – System Software Update and Configuration – A short overview describing the system software stack installed on new Intel servers and where to get the latest updates.

System Service

Chapter 5 – **Product Overview** – Provides an overview of the system features.

Chapter 6 – **FRU Replacement** – Replacement procedures for components identified as field replaceable units (FRUs).

Appendix A – **Getting Help**. Provides server system support and contact information.

Appendix B – **Internal Cable Routing Channels**. Provides cable routing guidance.

Appendix C – **General Memory Population Rules**. Provides a summary of general memory population rules.

Appendix D – **POST Code Errors**. List of POST code errors that represent specific failures, warnings, or information.

Appendix E – **System Packaging Assembly Instructions.** Provides detailed instructions to repack the server system into the original Intel packaging.

[1] An L6 integrated system is non-functional as received and requires essential components to be installed to make it power-on ready. An L9 integrated system is power-on ready but may require additional options and or accessories to enhance the base system configuration.

1.1 Reference Documents and Support Collaterals

For additional information and other support collaterals related to this Intel server product, see Table 1. Listed documents and utilities can be downloaded from the following Intel web sites or can be ordered through your local Intel support representative.

https://www.intel.com/content/www/us/en/design/resource-design-center.html

Note: Some of the Intel documents listed in Table 1 are classified as "Intel Confidential". These documents are only made available under a Non-Disclosure Agreement (NDA) with Intel. With an appropriate NDA in place, listed classified documents can be downloaded from the Intel Resource & Design Center web site at the following link: https://www.intel.com/content/www/us/en/design/resource-design-center.html

Table 1. Intel® Server System M20NTP1UR Reference Documents and Support Collaterals

Topic	Document Title or Support Collateral	Document Classification
Server board-level architectural and features overview	*Intel® Server Board M20NTP Technical Product Specification*	Public
System-level architectural and features overview	*Intel® Server System M20NTP1UR Technical Product Specification*	Public
System integration and service instructions	*Intel® Server System M20NTP1UR System Integration and Service Guide*	Public
Available product family options, spares, accessories.	*Intel® Server M20NTP Family Configuration Guide*	Public
Integrated BMC Web Console	*Intel® Integrated Baseboard Management Controller Web Console (Integrated BMC Web Console) User Guide*	Public
Base specifications for the IPMI architecture and interfaces	*Intelligent Platform Management Interface Specification Second Generation v2.0*	Intel Confidential
Specifications for the PCIe* 3.0 architecture and interfaces	*PCIe* Base Specification, Revision 3.0* http://www.pcisig.com/specifications	Public
Specifications for the PCIe* 4.0 architecture and interfaces	*PCIe* Base Specification, Revision 4.0* http://www.pcisig.com/specifications	Public
Specification for OCP*	*Open Compute Project* (OCP*) Specification*	Intel Confidential
TPM for PC Client specifications	*TPM PC Client Specifications, Revision 2.0*	Intel Confidential
Functional specifications of 3rd Gen Intel® Xeon® Scalable processor family	*3rd Generation Intel® Xeon® Scalable Processors, Codename Ice Lake-SP External Design Specification (EDS):* Document IDs: 574451, 574942, 575291	Intel Confidential
Processor thermal design specifications and recommendations	*3rd Generation Intel® Xeon® Scalable Processor, Codename Ice Lake-SP and Cooper Lake-SP - Thermal and Mechanical Specifications and Design Guide (TMSDG)*: Document ID 574080	Intel Confidential
Intel® Virtual RAID on CPU (VROC)	*Intel® Virtual RAID on CPU (VROC) Technical Product Specification (TPS)*	Intel Confidential
	Intel® Virtual RAID on CPU (VROC) User Guide	Public
BIOS and BMC Security Best Practices	*Intel® Server Systems Baseboard Management Controller (BMC) and BIOS Security Best Practices White Paper* https://www.intel.com/content/www/us/en/support/articles/000055785/server-products.html	Public
Managing an Intel Server Overview	*Managing an Intel Server System 2020* https://www.intel.com/content/www/us/en/support/articles/000057741/server-products.html	Public

Topic	Document Title or Support Collateral	Document Classification
Latest system software updates: BIOS and Firmware	*Intel® Server Update Package (SUP) for Intel® Server M20NTP Family*	Public
	Intel® Server Firmware Update Utility (SYSFWUPDT) - Various operating system support	
	Intel® Server Firmware Update Utility User Guide	
To obtain full system information	*Intel® Server Information Utility – SYSINFO*	Public
	Intel® Server Information Utility User Guide	
To configure, save, and restore various system options	*Intel® Server Configuration Utility – SYSCFG – Various operating system support*	Public
	Intel® Server Configuration Utility User Guide	
Product Warranty Information	*Warranty Terms and Conditions* https://www.intel.com/content/www/us/en/support/services/000005886.html	Public
Intel® Data Center Manager (Intel® DCM) information	*Intel® Data Center Manager (Intel® DCM) Product Brief* https://software.intel.com/content/www/us/en/develop/download/dcm-product-brief.html	Public
	Intel® Data Center Manager (Intel® DCM) Console User Guide https://software.intel.com/content/www/us/en/develop/download/dcm-user-guide.html	Public

2. Essential System Component Installation

The Intel® Server System M20NTP1UR is offered as an L6 integrated system. As received, the L6 system is not functional and will not boot. It requires additional components (sold separately) to be added to the system to make the base system configuration power on ready.

The procedures in this chapter should be used to install the following components:

- 1 (Required) or 2 (Optional) processors – 3rd Gen Intel® Xeon® Scalable processor family
- Memory – Up to 16 DDR4 DIMMs

If your Intel server system came preinstalled with all the components included in the previous list, then skip this chapter and go to Chapter 3 for installation procedures associated with all other system options and accessories.

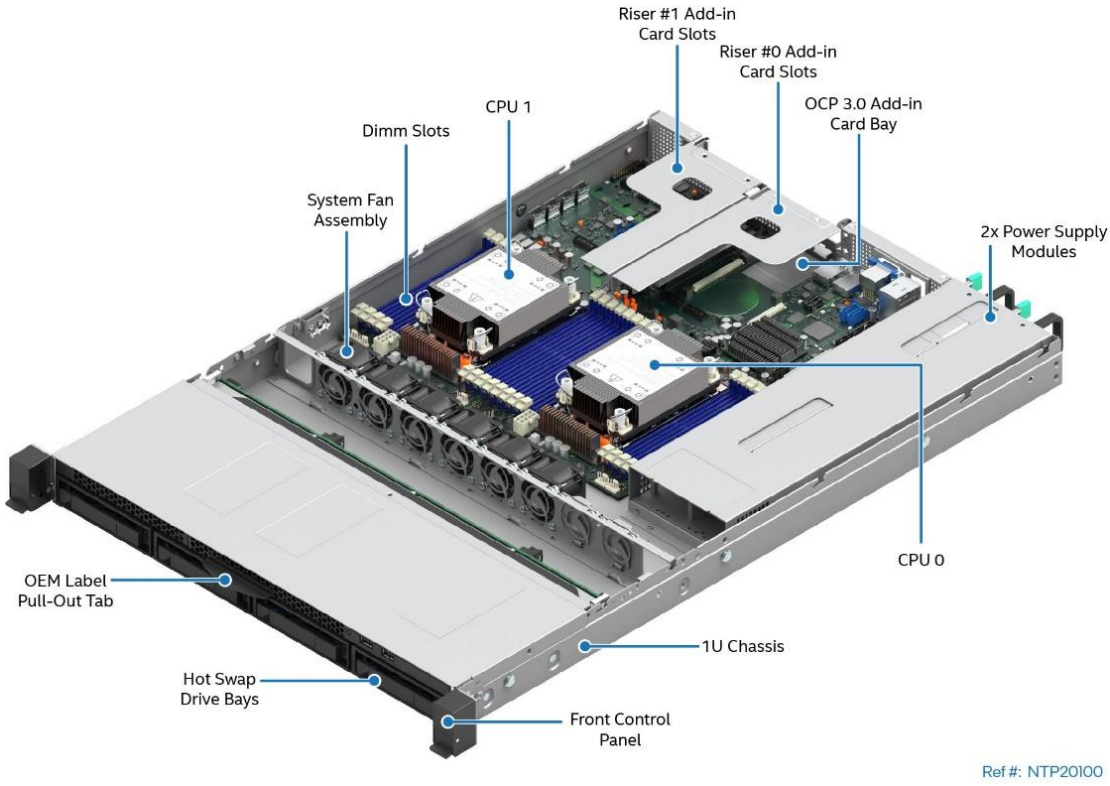

Figure 2. Intel® Server System M20NTP1UR Features

Before You Begin

Before integration of any system components, review all the safety and ESD precautions found in the Safety Warnings section at the beginning of this document.

System Reference

In the following procedures, all references to left, right, front, top, and bottom assume the reader is facing the front of the server chassis.

Instruction Format

Each procedure described in this chapter follows an illustration first format. This format gives the reader the option to follow a quicker path to component integration by first seeing an illustration of the intended procedure. If necessary, the reader can then follow the step-by-step instructions that accompany each procedure.

2.1 System Top Cover Removal / Installation

Required Tools and Supplies

- Anti-static wrist strap and conductive workbench pad (recommended)
- Phillips* head screwdriver #1

2.1.1 System Top Cover Removal

Removal of the top cover is necessary when installing or replacing any system component within the server chassis.

The system ships from the factory with the top cover secured to the chassis using three screws.

1. Remove the three top cover screws (see Figure 3).

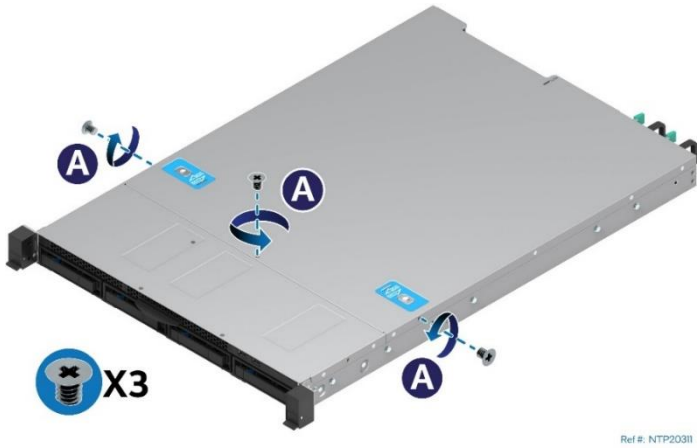

Figure 3. System Top Cover Screws

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

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2. Remove the top cover (see Figure 4)

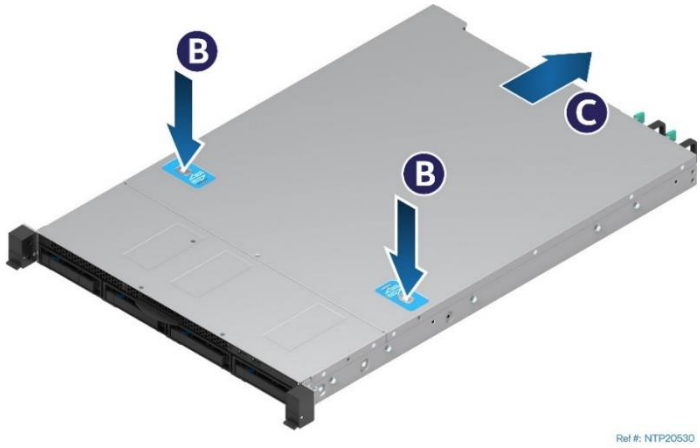

Figure 4. System Cover Removal

- While pushing down on both the left and right buttons (see Letter “B”), slide the top cover ~10mm towards the back of the chassis (see Letter “C”).
- Carefully lift the top cover up and away from the chassis.

2.1.2 System Top Cover Installation

To maintain proper air flow within the system, the top cover must be in place when the system is operating.

1. Install the top cover (see Figure 5)

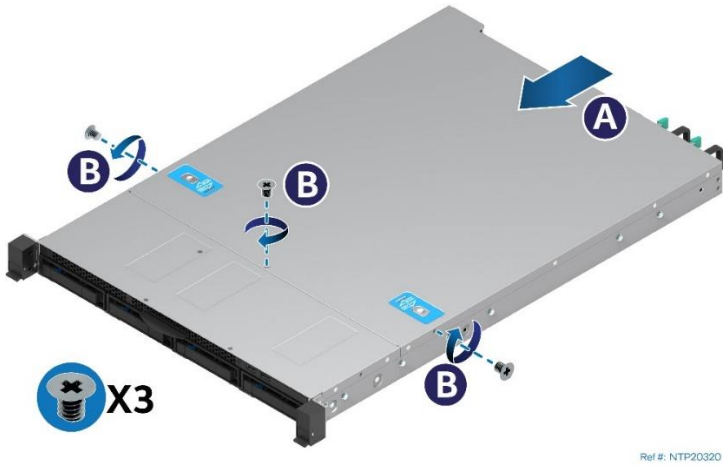

Figure 5. System Cover Installation

- Align and place the top cover on the top edges of the chassis.
- Slide it towards the front of the chassis until it locks into place (see Letter “A”).

Shipping Note: When transporting the server system, Intel recommends installing the three top cover screws before shipping (see Letter “B”).

2.2 Air Duct Removal and Installation

Required Tools and Supplies

- Anti-static wrist strap and conductive workbench pad (recommended)

2.2.1 Air Duct Removal

1. Remove the system top cover (see Section 2.1.1).
2. Remove the air duct (see Figure 6)

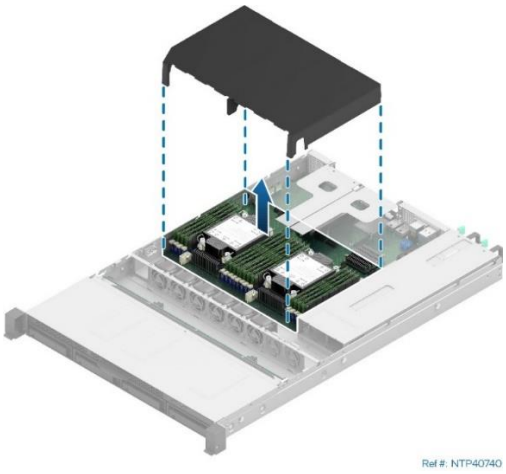

Figure 6. Air Duct Removal

- Lift the air duct straight up and away from the server system.

2.2.2 Air Duct Installation

To maintain proper air flow within the system, the air duct must be in place when the system is operating.

1. Ensure cable channels on each side of the air duct are oriented towards the front of the system
2. Install the air duct (see Figure 7)

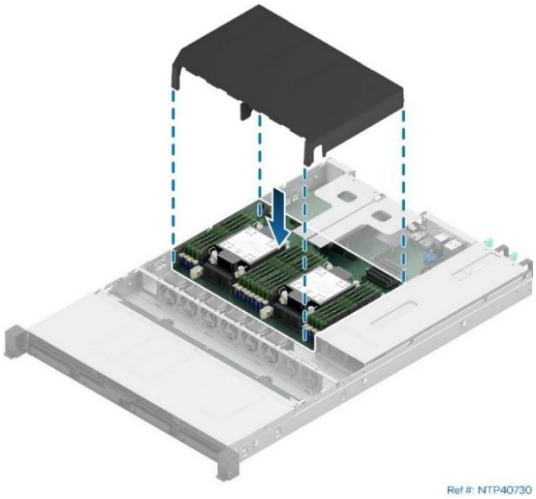

Figure 7. Air Duct Installation

- Lower the air duct into the system, ensuring that all cables are clear from the installation area.
- The air duct is properly installed when it sits flat and is securely in place

2.3 Processor Assembly and Installation

Caution: Fin edges of the processor heat sink are very sharp. Intel recommends wearing thin ESD protective gloves when handling the Processor Heatsink Module (PHM) during the following procedures.

Components Required:

- 1 (required) or two (optional) 3rd Gen Intel® Xeon® Scalable processors
- Processor tray (comes with the processor)
- Processor carrier clip (one per processor) – Included with system
- 1U heat sink – Included with system

Required Tools and Supplies

- Anti-static wrist strap, an ESD safe workbench, and other anti-ESD precautions (recommended)
- ESD Gloves (recommended)
- T-30 Torx* screwdriver

The processor and heat sink are pre-assembled into a single Processor Heat-sink Module (PHM) before being installed onto the processor socket. The PHM concept reduces the risk of damaging pins within the processor socket during the processor installation process.

A PHM assembly consists of a processor, a processor carrier clip, and the processor heat sink, as shown in the following figure.

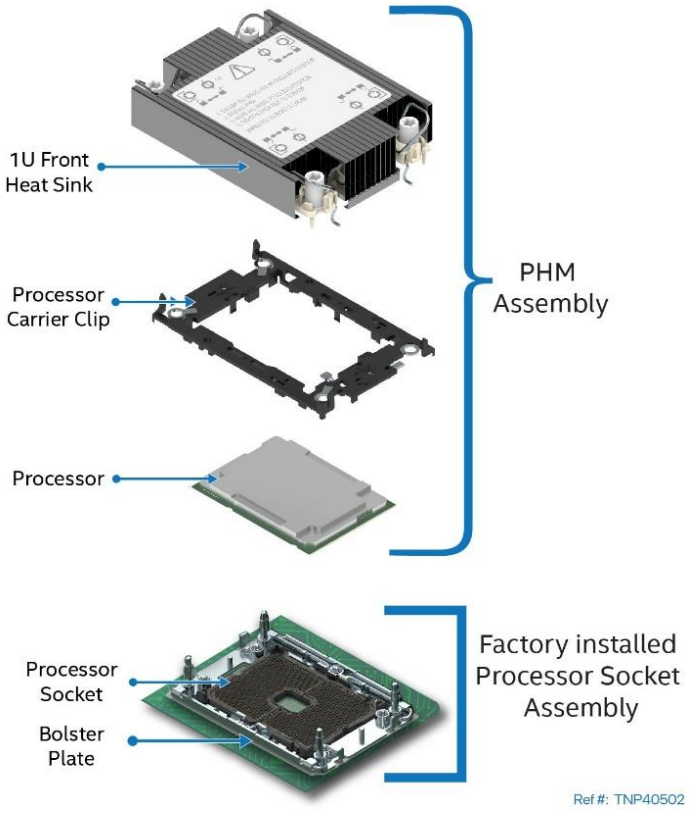

Figure 8. Processor Heat Sink Module (PHM) Reference Diagram

2.3.1 PHM Assembly

To properly assemble the PHM and install it onto the server board, the procedures described in the following sections must be followed in the order specified. These instructions assume that the processor heat sink has the necessary Thermal Interface Material (TIM) (DOWSIL* TC-5888) already applied.

Note: Full ESD precautions should be followed to perform assembly of the PHM and its installation to the server board. At no time should the processor itself be handled.

Each component within the PHM assembly includes a Pin 1 indicator. Pin 1 indicator alignment between all components is required throughout the assembly process.

1. Orient and align the processor carrier clip to the processor (see Figure 9)

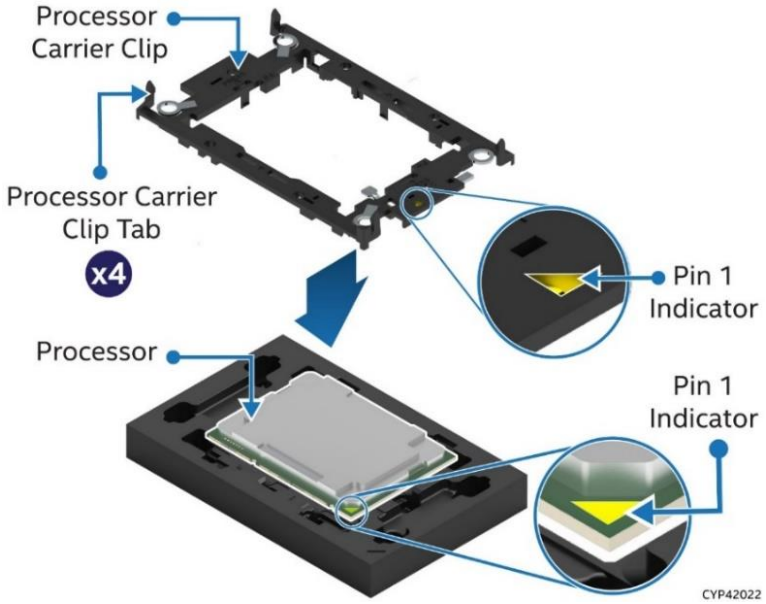

Figure 9. Installing Processor Carrier Clip onto Processor – Part 1

- With the processor still in its tray, place the processor carrier clip over the processor.
- Ensure the Pin 1 indicator on the processor carrier clip is aligned with the Pin 1 indicator of the processor.

2. Attach the Processor Carrier Clip to the Processor (see Figure 10)

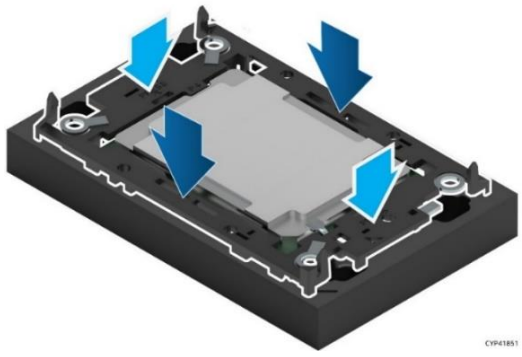

Figure 10. Installing Processor Carrier Clip onto Processor – Part 2

- Gently press down simultaneously on two opposite sides of the processor carrier clip until it clicks in place. Repeat with the other two sides.

1. Locate the processor heat sink. To avoid damage, grasp it by its narrower sides as shown in Figure 11.

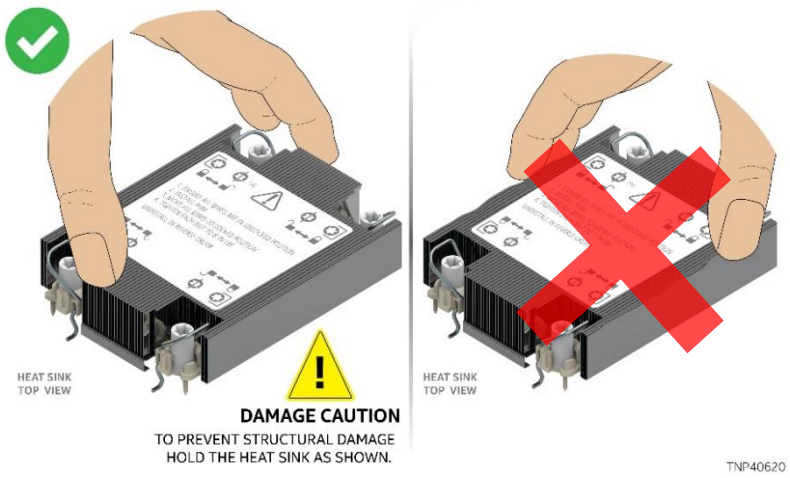

Figure 11. Processor Heat Sink Handling

2. Place the heat sink bottom side up onto a flat surface.
3. Remove the plastic protective film (if present) from the Thermal Interface Material (TIM).
4. Place the heat sink Top side up onto a flat surface.
5. Attach the heat sink to the processor assembly

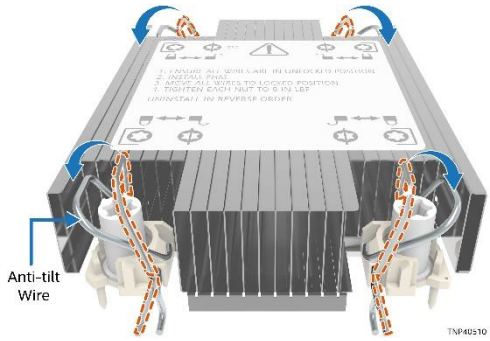

Figure 12. Processor Heat Sink Anti-tilt Wires in the Outward Position

- Set the anti-tilt wire over each of the four heat sink fasteners to their outward position.

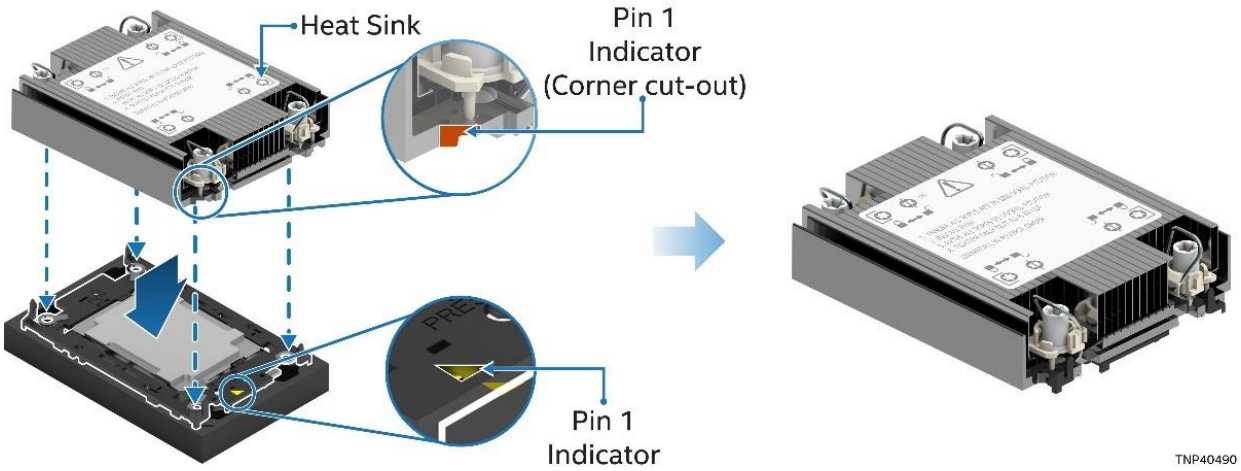

Figure 13. Pin 1 Indicator of Processor Carrier Clip

- Align the Pin 1 indicator of processor carrier clip with one of the diagonally cut corners on the base of the heat sink. Or (If present) look for the Pin 1 indicator on the corner of the heat sink label.
- Gently press down the heat sink onto the processor carrier clip until it clicks into place.
- Ensure all four heat sink corners are securely latched to the carrier clip tabs.

2.3.2 PHM Installation

If installed, remove the plastic cover from the processor socket.

Caution: Do not touch the socket pins. The pins inside the processor socket are extremely sensitive. A damaged processor socket may produce unpredictable system errors.

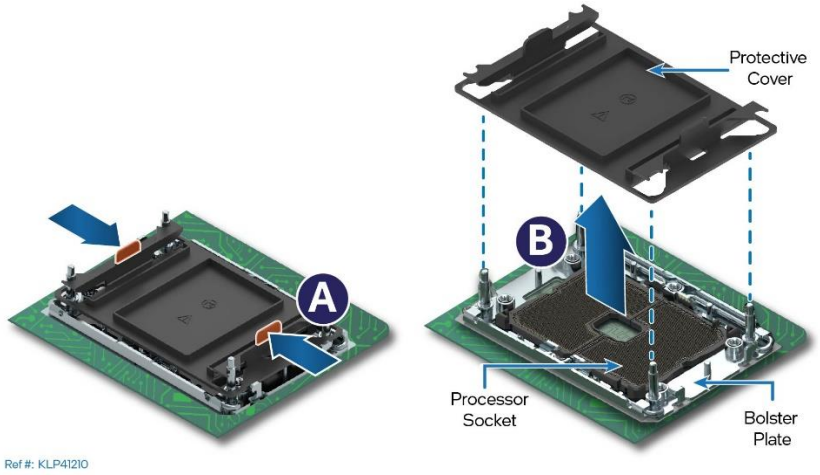

Figure 14. Processor Socket Cover Removal

- Remove the protective socket cover by squeezing the finger grips (see Letter “A”) and pulling the cover up (see Letter “B”).
- Ensure the socket is free of damage or contamination before installing the PHM.

Caution: If debris is observed, blow it away gently. Do not remove it manually, such as with tweezers.

1. Orient and position the PHM over the processor socket (see Figure 15)

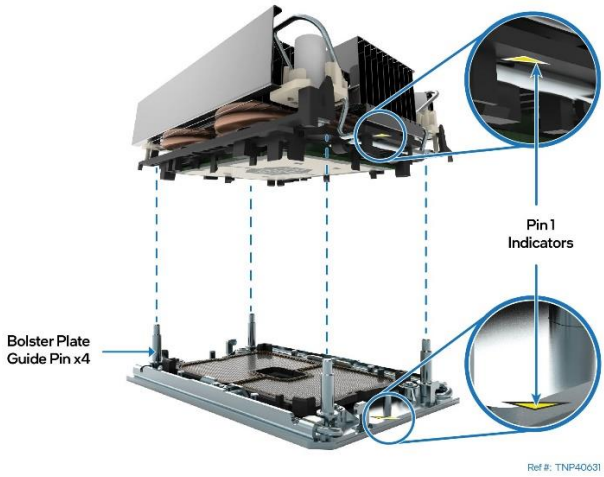

Figure 15. PHM Alignment with Processor Socket Assembly

- Align the Pin 1 indicators of the processor carrier clip and processor with the Pin 1 indicator on the socket assembly bolster plate.

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

2. Install the Processor Heat Sink Module (PHM) on to the processor socket assembly

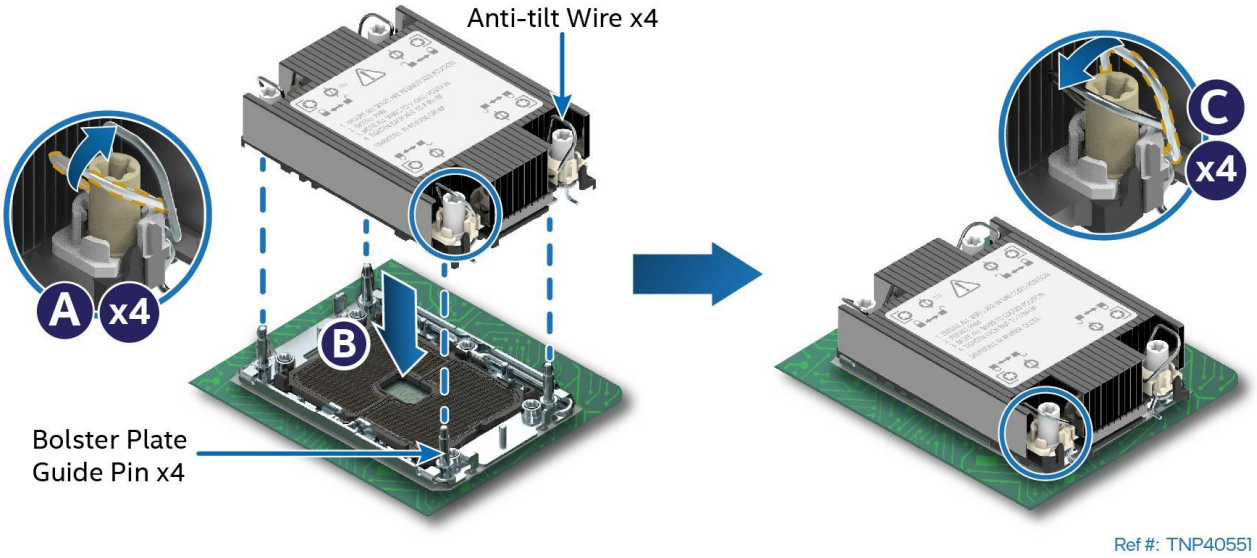

Figure 16. PHM Installation onto Server Board

- Set all four anti-tilt wires on the heat sink to the inward position (see Letter “A”).
- Carefully lower the PHM over the four bolster plate alignment pins (see Letter “B”).
- Ensure the PHM is sitting flat and even on the bolster plate.
- Set all four anti-tilt wires on the heat sink to the outward position (see Letter “C”).

3. Secure the PHM to the bolster plate

Figure 17. Tighten Heat Sink Fasteners

- Using a T30 Torx* screwdriver, tighten the heat sink fasteners to 8 in-lb.
- Repeat the procedure for the second processor

2.4 Memory Module Installation

Required Tools and Supplies

- Anti-static wrist strap and conductive workbench pad (recommended)

Note: See Appendix C for general memory population rules.

2.4.1 DIMM Installation

1. Remove the DIMM blank from the desired memory slot (see Figure 18)

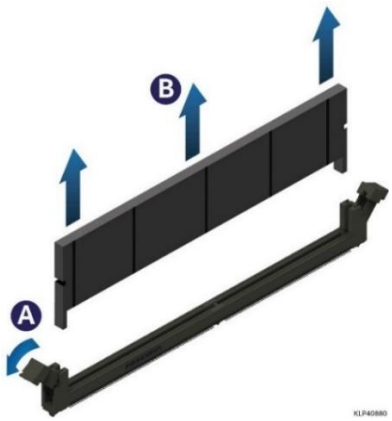

Figure 18. DIMM Blank Removal

- Open the ejection tabs at both ends of the selected memory slot to lift the DIMM blank from the slot (see Letter “A”).
- Carefully remove the DIMM Blank from the system (see Letter “B”).

Note: DIMM Blanks should only be removed when being replaced with a memory module

2. Carefully unpack the memory module, taking care to only handle the device by its outer edges.
3. Install the memory module to the server board (see Figure 19)

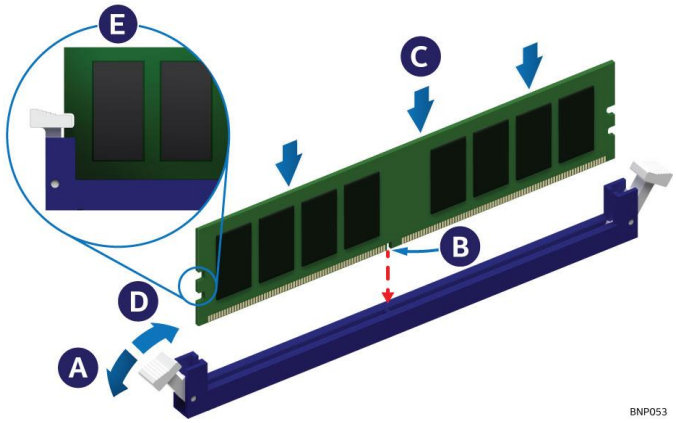

Figure 19. Memory Module Installation

- Ensure that the ejection tabs at both ends of the memory slot are pushed outward to the open position (see Letter “A”).

- Align the notch at the bottom edge of the memory module with the key in the memory slot (see Letter “B”).
- Insert the memory module into the slot (see Letter “C”). Push down on the memory module until the ejection tabs snap into place (see Letter “D”).
- Ensure that the ejection tabs are firmly in place (see Letter “E”).
- Repeat the procedure for each memory module to be installed.

3. System Options / Accessory Kit Installation

This chapter provides instructions for the integration of system options and other Intel accessories. If your integrated Intel server system did not come preinstalled with processors or memory, installation procedures for these components can be found in Chapter 2.

Before You Begin

Before integration of any system components, review all the safety and ESD precautions found in the Safety Warnings section at the beginning of this document.

System Reference

In the following procedures, all references to left, right, front, top, and bottom assume the reader is facing the front of the server chassis.

Instruction Format

Each procedure described in this chapter follows an illustration first format. This format gives the reader the option to follow a quicker path to component integration by first seeing an illustration of the intended procedure. If necessary, the reader can then follow the step-by-step instructions that accompany each procedure.

3.1 System Top Cover Removal / Installation

Required Tools and Supplies

- Anti-static wrist strap and conductive workbench pad (recommended)
- Phillips* head screwdriver #1

3.1.1 System Top Cover Removal

Removal of the top cover is necessary when installing or replacing any system component within the server chassis.

A new system ships from the factory with the top cover secured to the chassis using three screws. These screws may or may not be present if the system was previously received and configured by others.

1. Ensure the system is powered off and that all cables are removed from the system back panel
2. (If present) Remove the three top cover screws (see Figure 20)

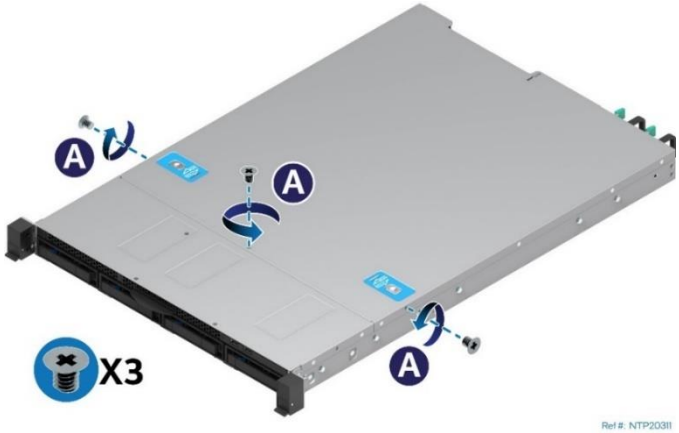

Figure 20. System Top Cover Screws

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

3. Remove the Top Cover (see Figure 21)

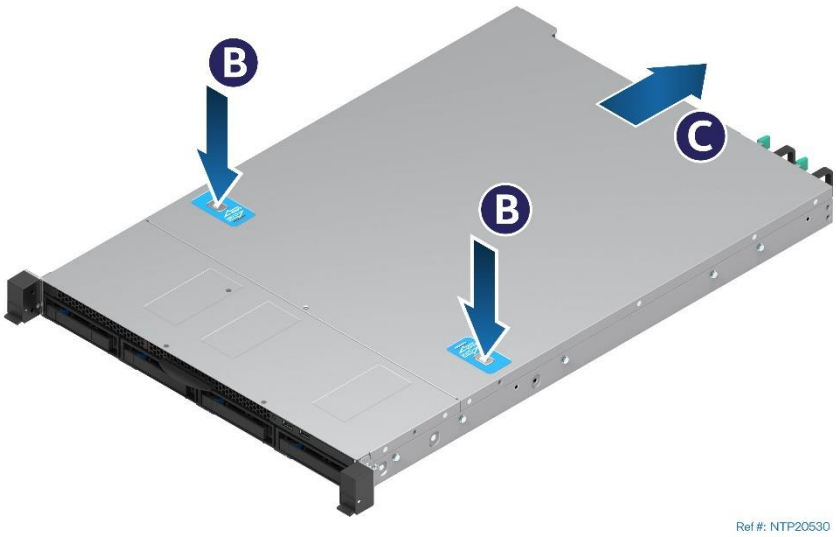

Figure 21. System Cover Removal

- While pushing down on both the left and right buttons (see Letter “B”), slide the top cover ~10mm towards the back of the chassis (see Letter “C”).
- Carefully lift the top cover up and away from the chassis.

3.1.2 System Top Cover Installation

1. Place and secure the top cover to the chassis (see Figure 22)

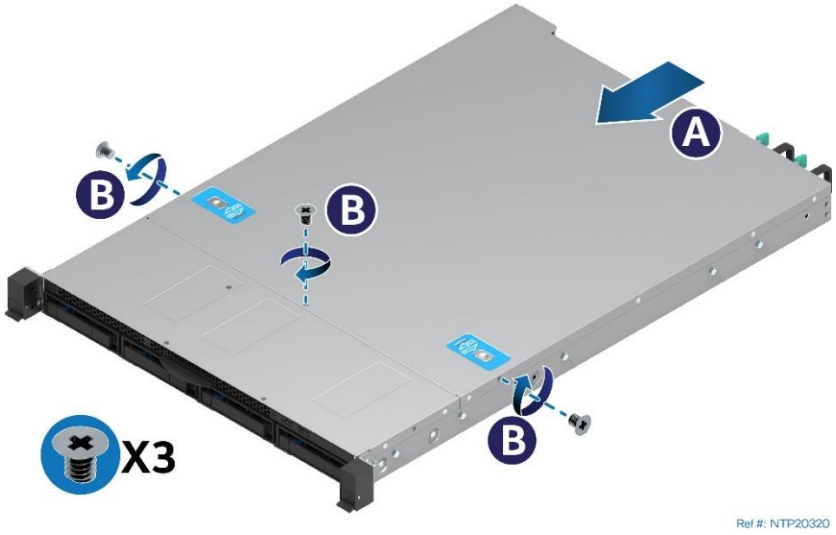

Figure 22. System Cover Installation

- Align and place the top cover on the top edges of the chassis.
- Slide it towards the front of the chassis until it locks into place (see Letter “A”).

Shipping Note: When transporting the server system, Intel recommends installing the three top cover screws before shipping (see Letter “B”).

3.2 Air Duct Removal and Installation

Required Tools and Supplies

- Anti-static wrist strap and conductive workbench pad (recommended)

3.2.1 Air Duct Removal

1. Power off the system and remove the system top cover (see Section 3.1.1).
2. Remove the air duct from the system (see Figure 23)

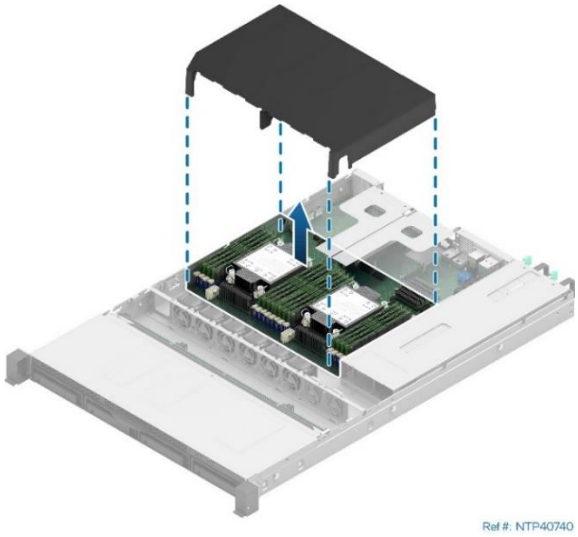

Figure 23. Air Duct Removal

- Lift the air duct straight up and away from the server system.

3.2.2 Air Duct Installation

To maintain proper air flow within the system, the air duct must be in place when the system is operating.

1. Orient the cable channels on each side of the air duct towards the front of the system
2. Install the air duct into system (see Figure 24)

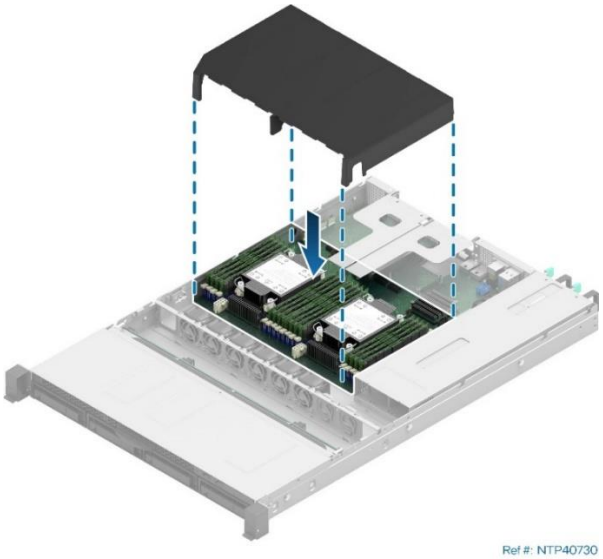

Figure 24. Air Duct Installation

- Lower the air duct into the system, ensuring that all cables are clear from the installation area
- The air duct is properly installed when it sits flat and is securely in place

3.3 Power Supply Module Installation

To provide support for power redundancy, a second power supply can be added to the base system.

Required Tools and Supplies

- Intel accessory kit: iPC **AXXBFP750SLPS** - 750W AC Slim-line power supply module
- Anti-static wrist strap and conductive workbench pad (recommended)

1. (If present) Remove the insert from the power supply bay
2. Locate and unpack the new power supply module
3. Install power supply into the system (see Figure 25)

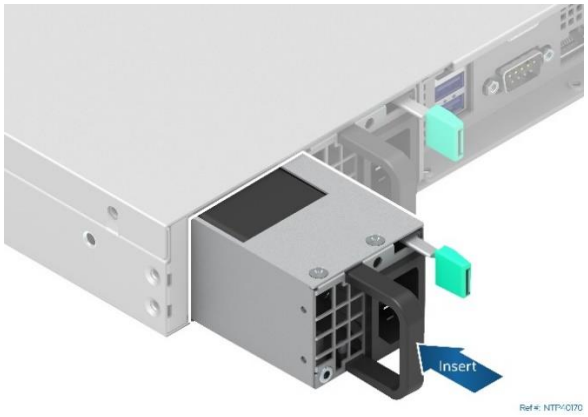

Figure 25. Power Supply Installation

- Slide the power supply into the power supply bay until it clicks and locks in place

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Note: A single power supply configuration requires that the power supply bay insert be installed in the unused bay when the system is operational.

3.4 PCIe* Add-in Card Installation

The Intel® Server System M20NTP1UR has support for up to two PCIe* add-in cards. This section provides instructions for adding a PCIe* add-in card into a riser card.

Required Tools and Supplies

- Anti-static wrist strap and conductive workbench pad (recommended)
- Phillips* head screwdriver

1. Power off the system and disconnect all cables from the back of the system
2. Remove the system top cover (see Section 3.1.1).
3. Remove the Air Duct (see Section 3.2.1).
4. Remove the riser card assembly from the system (see Figure 26)

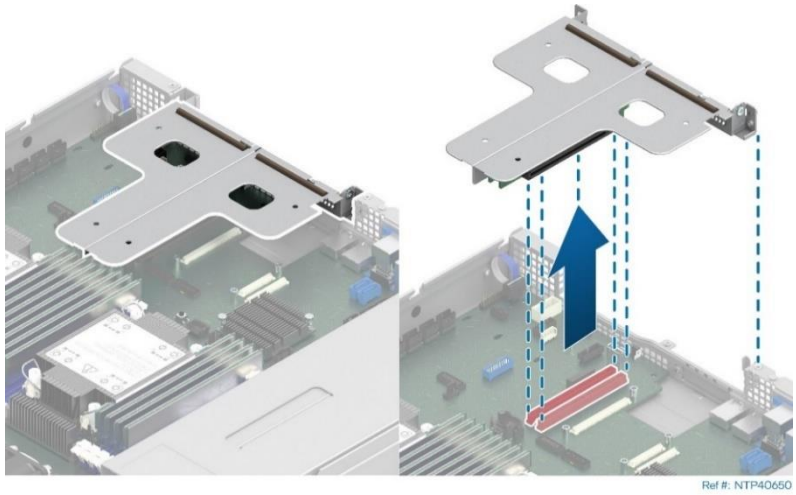

Figure 26. Riser Card Bracket Removal

   - Grasp the riser card assembly with both hands and carefully pull it up and away from the chassis.
5. Locate, Unpack, and Install the PCIe* Add-in card into one of the riser cards (see Figure 27)

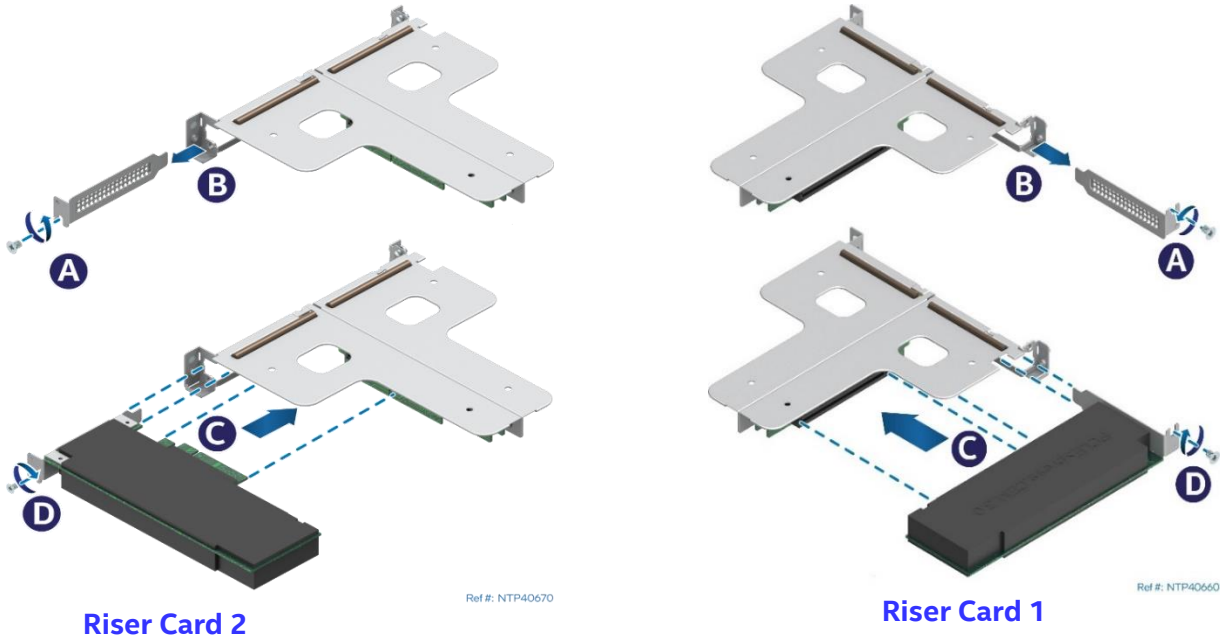

Figure 27. PCIe* Add-in Card Installation

- Loosen and remove the screw securing the filler panel to the riser assembly (see Letter “A”)
- Remove the filler panel from the add-in card slot (see Letter “B”).
- Insert the add-in card until it is fully seated within the PCIe* slot on the riser card (see Letter “C”).
- Using the screw, secure the add-in card to the riser card assembly (see Letter “D”).

Note: For add-in cards with internal cable connectors, it may be necessary to connect cable(s) before installing the riser card assembly back into the system. See Appendix B for cable routing guidance.

If necessary, repeat Step 5 for installation of a 2nd PCIe* Add-in card

6. Carefully reinstall the riser card assembly into the system (see Figure 28)

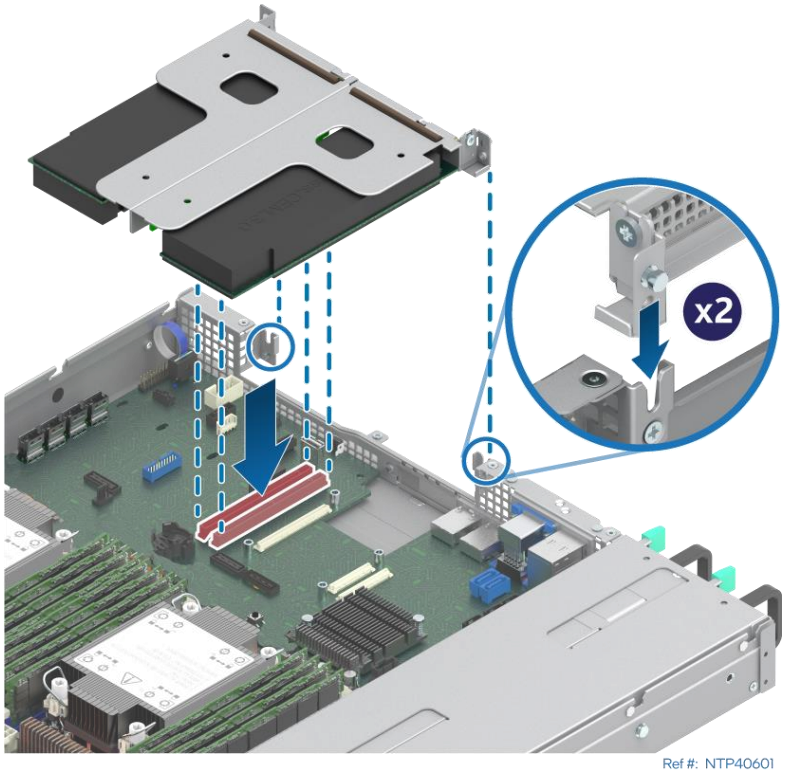

Figure 28. Riser Card Assembly Installation

- Position the two riser card edge connectors over the riser card slots on the server board.
- Align the two mounting keys on the back edge of the riser card assembly with the key slots on the chassis back panel
- Once aligned, press the riser assembly straight down into the riser card slots
- Connect required cables to the add-in card(s). See your add-in card documentation for additional information.

3.5 Front Drive Installation

The Intel® Server System M20NTP1UR has four front drive bays. All drive bays require a drive carrier designed to support a supplied drive blank, 3.5" HDD / SSD, or 2.5" SSD. To ensure proper airflow within the system, all drive carriers must be populated with either a drive or supplied drive blank. All drive bays are hot-swap capable.

This section provides instructions for adding a 3.5" hard disk drive (HDD) or 3.5" Solid State Drive (SSD) or 2.5" Solid State Drive (SSD) to one of the front drive bays.

Required Tools and Supplies

- Up to four 3.5" Hard Disk Drives (HDD), 3.5" Solid State Drives (SSD), or 2.5" Solid State Drives (SSDs)
- Anti-static wrist strap and conductive workbench pad (recommended)
- Phillips* head screwdriver (for mounting 2.5" SSDs to drive blank)

3.5.1 Front Drive Removal

1. Remove the selected drive carrier from the front drive bay (see Figure 29)

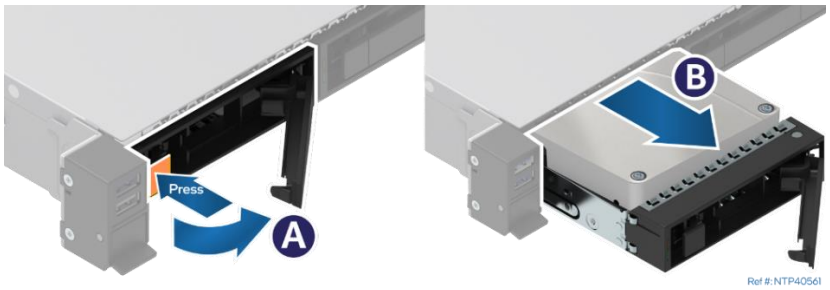

Figure 29. Extracting Drive Carrier from Chassis

   - Press the button on the drive carrier face plate to release the lever (see Letter "A").
   - Using the lever, pull the drive carrier from the drive bay (see Letter "B").
2. Remove the drive blank from the drive carrier (see Figure 30)

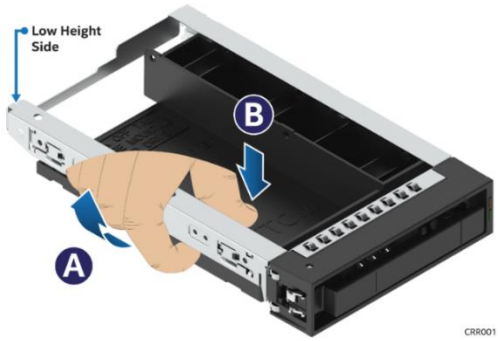

Figure 30. 3.5" Drive Blank Removal

   - Hold the drive carrier top side down in your right hand.
   - Using your left hand, gently rotate the bottom edge of the left rail upwards, and hold (see Letter "A")
   - Push the drive blank down away from the carrier (see Letter "B").

3.5.2 3.5" Drive Assembly

1. Install the 3.5" drive into the drive carrier (see Figure 31)

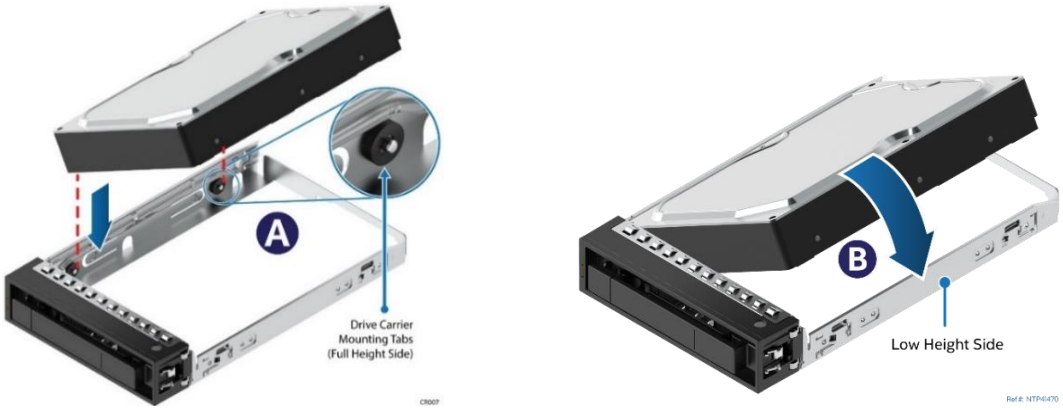

Figure 31. 3.5" Drive Installation to Drive Carrier

- Position the drive interface connector towards the back of the drive carrier
- Align and position the mounting holes on the left side of the drive over the mounting tabs located on the drive carrier side rail (see Letter "A")
- Lower the right side of the drive into the carrier and press down until all mounting tabs lock in place.

3.5.3 2.5" Drive Assembly

Installing a 2.5" SSD into the 3.5" drive carrier requires that the supplied drive blank be used as a mounting bracket for the SSD.

Note: Installing a 2.5" hard disk drive into the 3.5" drive blank is not supported.

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1. Convert the drive blank into a mounting bracket (see Figure 32)

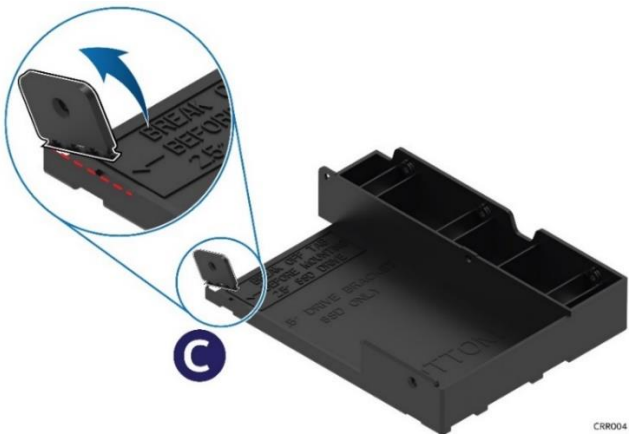

Figure 32. 3.5" Drive Blank to 2.5" SSD Mounting Bracket Conversion

- Break off the small tab from the side of the drive blank, (see Letter "C").

Note: Once the tab is removed, it cannot be re-attached to the drive bracket.

---

2. Position the SSD with its interface connector facing the back of the drive bracket
3. Mount the 2.5" SSD into the mounting bracket (see Figure 33)

Note: A small plastic bag taped within new drive blanks will include the four (4) screws necessary to mount a 2.5" SSD to the mounting bracket.

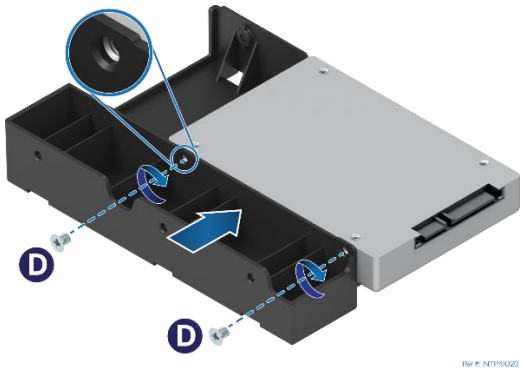

Figure 33. 2.5" SSD Mounting Bracket Assembly

- Install and secure the SSD to the drive bracket using two screws (see Letter "D").

4. Install the SSD assembly into the drive carrier (see Figure 34)

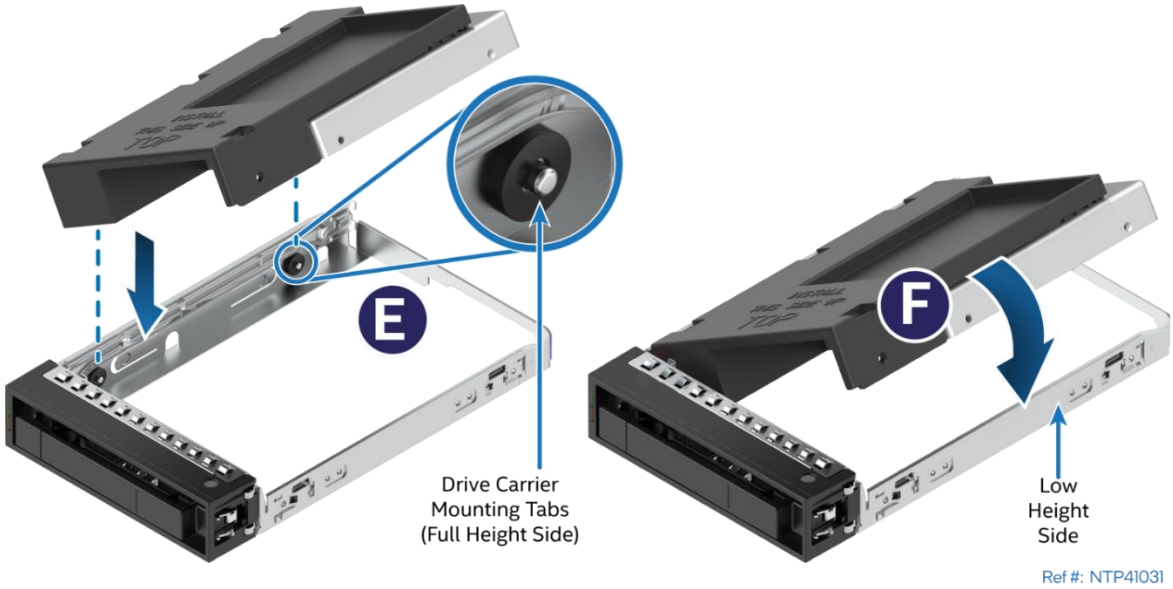

Figure 34. 3.5" Drive Carrier to 2.5" SSD Bracket – Mount Bracket Assembly to Carrier

- Orient the SSD so that its interface connector is positioned towards the back of the drive carrier.
- Align and position the mounting holes on the left side of the SSD assembly over the mounting tabs located on the left side rail of the drive carrier (see Letter "E").
- Lower the right side of the SSD assembly into the drive carrier and press down until all mounting tabs lock in place (see Letter "F").

5. Turn the drive carrier assembly over and secure the SSD assembly to the drive carrier (see Figure 35)

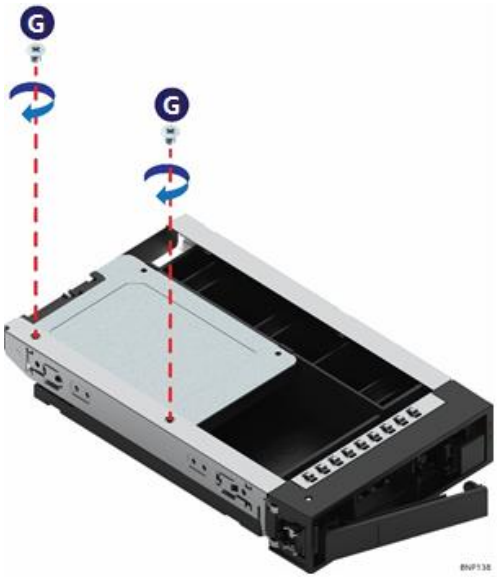

Figure 35. Secure 2.5" SSD Assembly to Drive Carrier

- Using two screws, secure the SSD assembly to the carrier side rail (see Letter "G")

3.5.4 Front Drive Installation

1. Install the drive carrier assembly into a front drive bay (see Figure 36)

Figure 36. Drive Carrier into Chassis Installation

- Align the drive carrier with the open drive bay.
- With the lever in the open position, insert the drive assembly into the drive bay (see Letter "A") and push forward until the drive contacts the backplane.
- Close the drive assembly lever until it locks into place (see Letter "B")

3.6 NVMe* SSD Support

By default, the backplane within the base system configuration is cabled to support a SATA drive interface using the on-board SATA controllers.

PCIe* NVMe* drive support is optional and requires an additional set of SlimSAS cables (sold separately). Intel Cable Accessory Kit: iPC - **NTPCBLSL104K**.

The Kit includes four SlimSAS* cables and one NVMe* LED support cable. The SlimSAS cables are routed from PCIe* SlimSAS connectors on the server board to matching connectors on the backplane. The NVMe* LED support cable is routed from a 7-pin NVMe* LED Support cable connector on the server board to a 3-pin cable header on the backplane (see Figure 37).

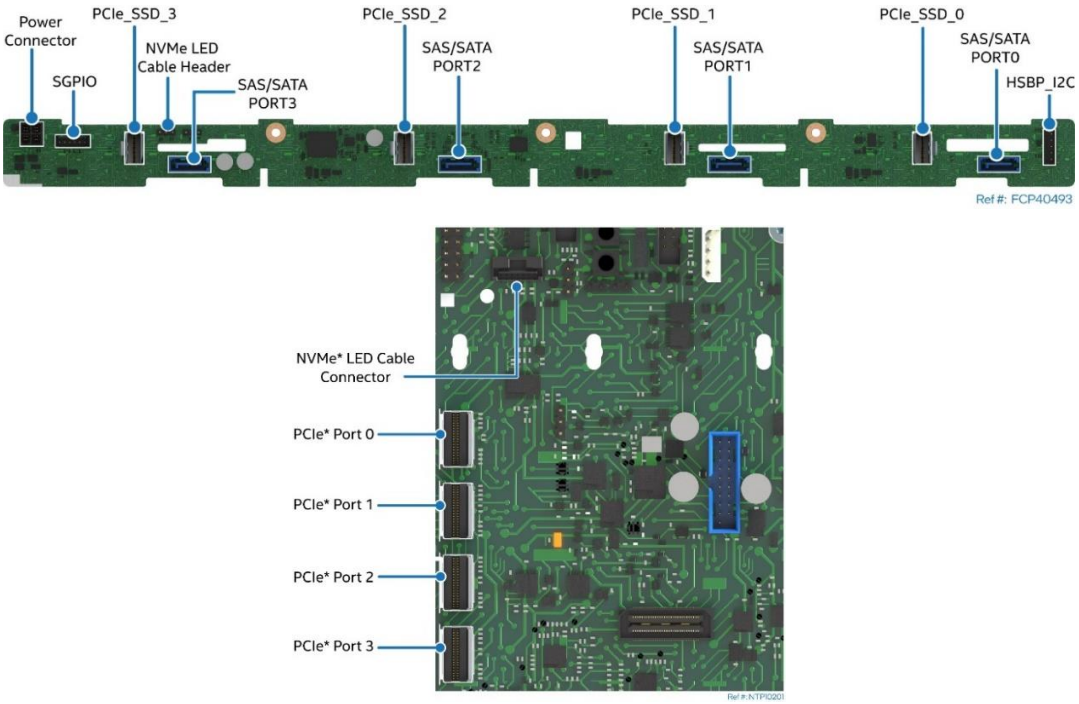

Figure 37. NVMe* Support Cable Connectors

The SlimSAS cables in the kit have specific lengths to support optimal routing between the connectors on the server board and the connectors on backplane. The following table identifies the cable to be used for each server board to backplane connection.

Table 2. PCIe* NVMe* Cable Routing

Cable	Server Board Connector	Backplane connector
450 mm NVMe* cable	SlimSAS – PCIe* Port 0	SlimSAS – PCIe_SSD_0
550 mm NVMe* cable	SlimSAS – PCIe* Port 1	SlimSAS – PCIe_SSD_1
650 mm NVMe* cable	SlimSAS – PCIe* Port 2	SlimSAS – PCIe_SSD_2
750 mm NVMe* cable	SlimSAS – PCIe* Port 3	SlimSAS – PCIe_SSD_3
850 mm NVMe* LED cable	NVMe* LED Support	NVMe* LED cable header

All cables are routed along the left chassis sidewall as shown in the following diagram.

Note: Cable colors in the diagram are for reference purposes only.

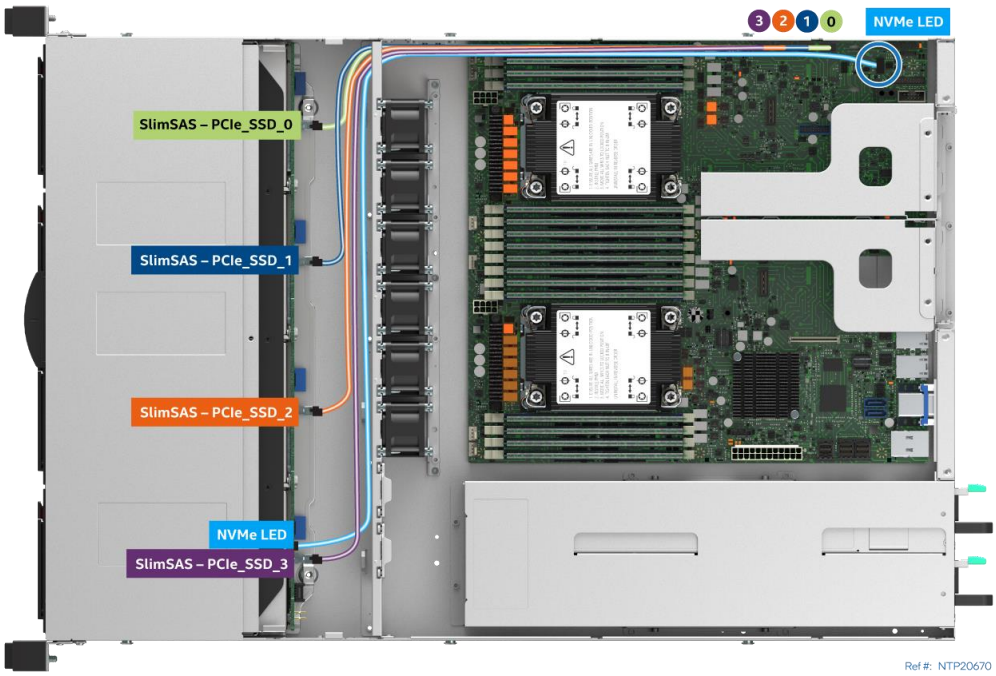

Figure 38. NVMe* Cable Kit Routing

Required Tools and Supplies

- Intel cable accessory kit: : iPC - **NTPCBLSL104K**
- Anti-static wrist strap and conductive workbench pad (recommended)
- Phillips* head screwdriver

1. Power off the system and disconnect all cables from the back of the system.
2. Remove the system top cover (see Section 3.1.1).
3. Remove the Air Duct (see Section 3.2.1).
4. Locate and unpack the cables from the cable kit.
5. Select a cable and attach it to the identified connectors from Table 2. Repeat for each cable.
6. Assemble and Install NVMe* SSDs into the front drive bay (see Section 3.5).

3.7 M.2 SSD Installation

The server board has support for one PCIe* M.2 SSD.

Required Tools and Supplies

- PCIe* M.2 SSD
- M.2 SSD Latch – Included with system
- Anti-static wrist strap and conductive workbench pad (recommended)
- Phillips* head screwdriver

1. Power off the system and disconnect the power cable(s).
2. Remove the system top cover (see Section 3.1.1).
3. Remove the Air Duct (see Section 3.2.1).
4. Remove the riser card assembly (see Figure 26).

The system includes an M.2 latch assembly that secures an M.2 SSD to the server board. To support different M.2 SSD form factors, the latch can be mounted within any of three mounting locations on the server board as shown in Figure 39. The system supports the following M.2 SSD form factors: 2242 (42 mm), 2280 (80 mm) and 22110 (110 mm).

5. Mount the M.2 latch assembly to the server board (see Figure 39).

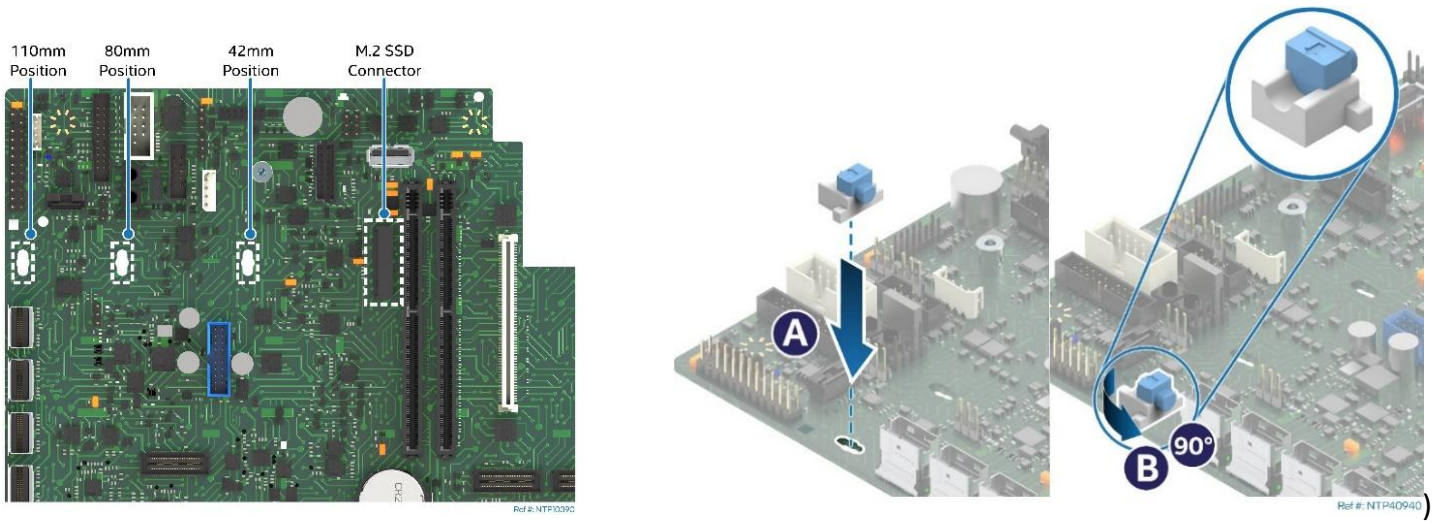

Figure 39. M.2 Mounting Latch Placement

- Locate and install the M.2 SSD latch assembly into one of the three mounting holes on the server board (see Letter “A”)
- Rotate the M.2 SSD latch assembly 90 degrees counter clockwise to secure it to the server board (see Letter “B”).

6. Install the M.2 SSD to the server board

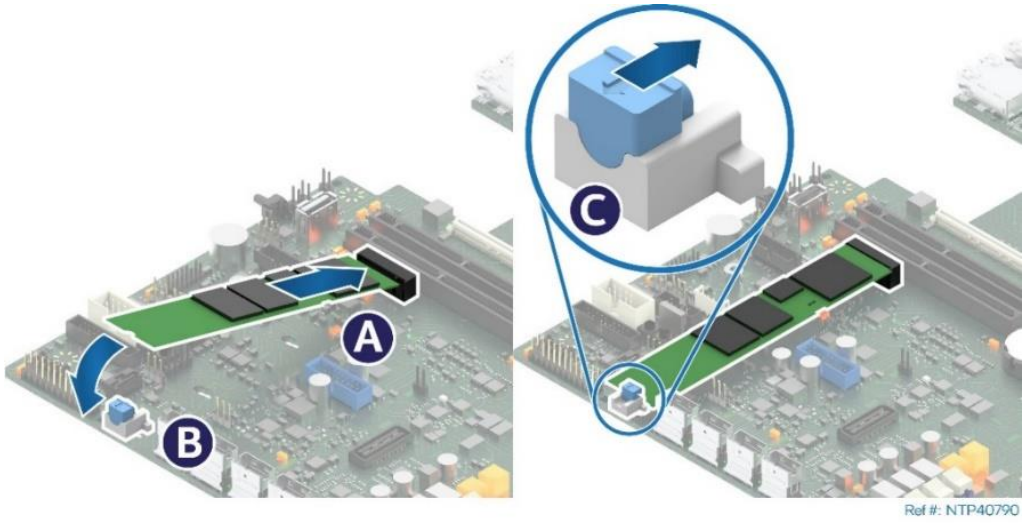

Figure 40. M.2 SSD Installation

- Locate and carefully unpack the M.2 SSD. Hold it by its edges. Do not touch the gold contacts.
- Line up the alignment feature of the M.2 SSD edge connector with the alignment key within M.2 SSD slot connector on the server board.
- Carefully insert the M.2 SSD into the slot connector (see Letter “A”).
- Push down on the free end of the M.2 SSD until it lays flat on the M.2 latch assembly (see Letter “B”).
- Slide the blue latch over the back edge of the M.2 SSD to secure it to the server board (see Letter “C”).

3.8 Ethernet Network Adapter for OCP* – Installation

This section provides instructions for OCP* adapter installation. Refer to the *Intel® Server M20NTP Family Configuration Guide* for available options.

Required Tools and Supplies

- OCP* Mezzanine Ethernet Network Adapter
- OCP* module Mounting Bracket – Included with system
- OCP* module mounting screws – 4x screws included with the system
- Anti-static wrist strap and conductive workbench pad (recommended)
- Phillips* head screwdriver

1. Power off the system and disconnect the power cable(s).
2. Remove the system top cover (see Section 3.1.1).
3. Remove the Air Duct (see Section 3.2.1).
4. Remove the riser card assembly (see Figure 26).
5. Remove the OCP* bay cover plate from the system back panel (see Figure 41)

Caution: If the OCP* module is removed and the bay becomes empty again, the OCP* bay cover plate must be re-installed to ensure EMI/EMC regulatory compliance.

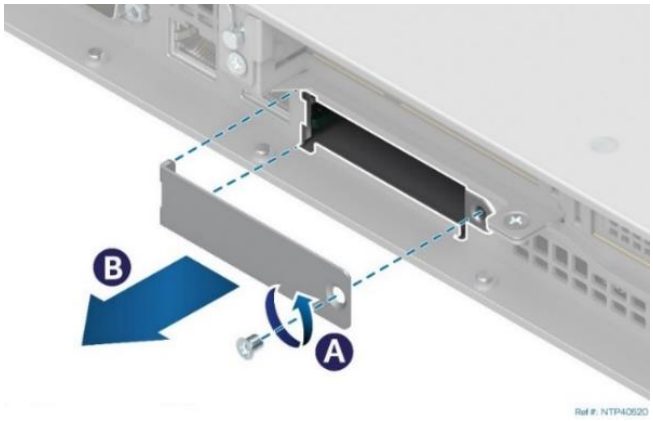

Figure 41. OCP* Adapter Bay Filler Removal

- Remove the fastener screw from the right side of the cover plate (see Letter “A”).
- Pull the cover plate away from the system (see Letter “B”).

6. Locate and mount the OCP* module mounting bracket to the system back panel (see Figure 42)

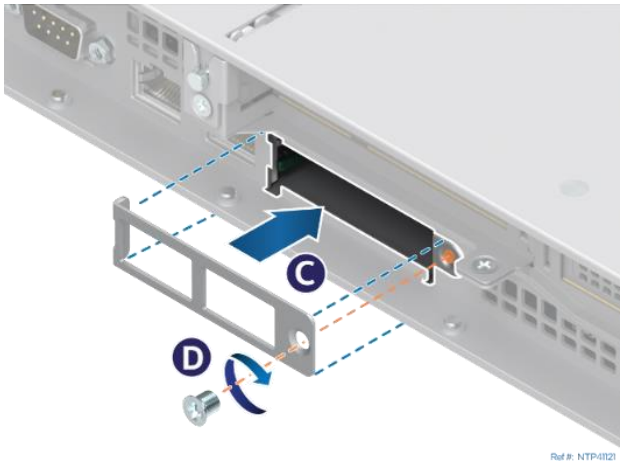

Figure 42. OCP* Mounting Bracket Installation

- Position and align the OCP* mounting bracket to the OCP* bay on the system back panel
- Carefully insert the left tab of the mounting bracket into the mounting notch on the left edge of the opening (see Letter “C”).
- Using a single fastener screw, secure the mounting bracket to the chassis (see Letter “D”).

7. Locate and remove the four screws from the OCP* stand-offs on the server board (see Figure 43).

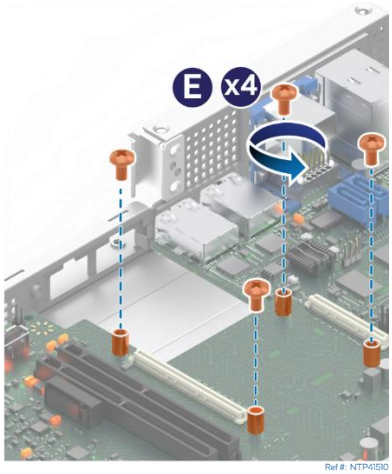

Figure 43. OCP* Module Mounting Screws

- (see Letter “E”)

8. Mount the OCP* module to the server board (see Figure 44)

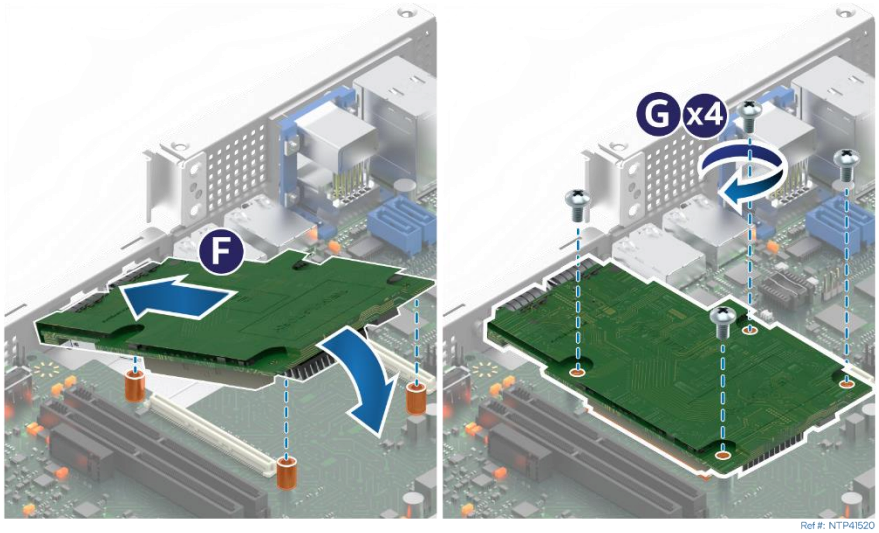

Figure 44. OCP* Module Installation

- Carefully align and insert the cable connectors located on the back edge of the OCP* module through the opening(s) on the system back panel (see Letter “F”).
- Gently lower the OCP* Module until positioned over the four mounting stand-offs.
- Push the OCP* module down onto the server board connector(s) until firmly seated.
- Use 4 screws to secure the OCP* module to the server board (see Letter “G”).

3.9 Trusted Platform Module (TPM) Installation

This section provides instructions to install a Trusted Platform Module (TPM) in the system. Refer to the *Intel® Server M20NTP Family Configuration Guide* for available options.

Required Tools and Supplies

- Intel® TPM Accessory Kit: iPC **JNPTPM** or iPC **JNPTPMCH**
- Mounting hardware – included with TPM kit
- Slot-Head Screw Driver
- Anti-static wrist strap and conductive workbench pad (recommended)

1. Power off the system and disconnect the power cable(s).
2. Remove the system top cover (see Section 3.1.1).
3. Remove the Air Duct (see Section 3.2.1).
4. Remove the riser card assembly (see Figure 26).
5. Locate and unpack the TPM accessory kit: TPM module + mounting hardware.
6. Locate the 16-pin TPM connector found near the back edge of the server board.
7. Install the mounting hardware and TPM onto the server board (see Figure 45).

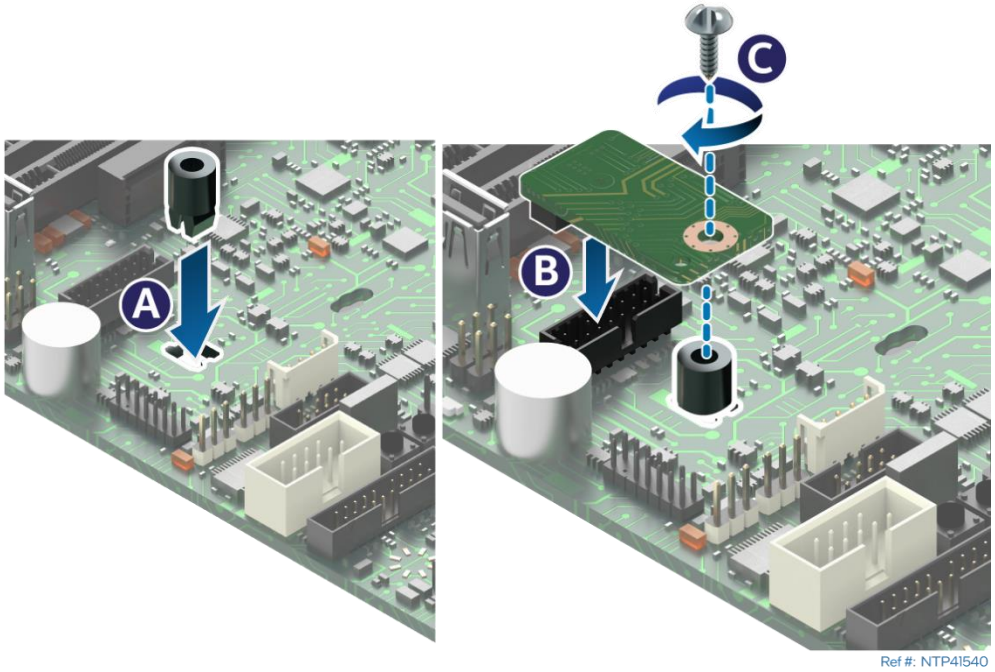

Figure 45. TPM Placement

- Install the TPM mounting stand-off into the stand-off slot on the server board (see Letter “A”)
- Align the TPM interface connector with the connector pins on the server board (see Letter “B”)
- Gently place the TPM onto the server board connector and push down until fully seated
- Install and tighten the security screw to secure the TPM down to the server board (see Letter “C”)

Note: Once the security screw is installed, it cannot be removed

3.10 Intel® VROC Key Installation

This section provides instructions to install an Intel® VROC Key in the system. Refer to the *Intel® Server M20NTP Family Configuration Guide* for available options,

Required Tools and Supplies

- Intel® VROC Key – iPCs: **VROCSTANMOD, VROCPREMMOD, VROCISSDMOD**
- Anti-static wrist strap and conductive workbench pad (recommended)

For more information on the Intel® VROC features, capabilities, and NVMe* drive population rules, refer to the *Intel® Server System M20NTP1UR Technical Product Specification.*

1. Power off the system and disconnect the power cable(s).
2. Remove the system top cover (see Section 3.1.1).
3. Remove the Air Duct (see Section 3.2.1).
4. Remove the riser card assembly (see Figure 26).
5. Locate and unpack the Intel® VROC Key.
6. Locate the white 4-pin Intel® VROC Key connector found near the back edge of the server board.
7. Install the Intel® VROC Key onto the server board (see Figure 46).

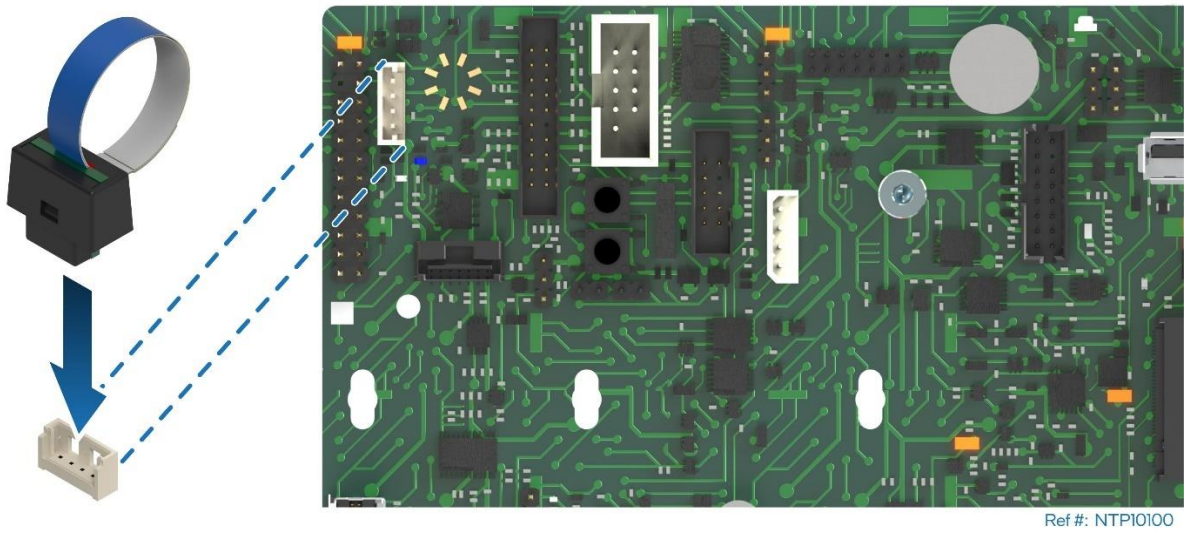

Figure 46. Intel® VROC Key Installation

- Position the Intel® VROC Key over the connector and ensure the alignment features of the key and connector match.
- Place the Intel® VROC Key onto the pins of the connector and press it down until it is securely in place.

4. System Software Updates and Configuration

The Intel® Server System M20NTP1UR includes a system software stack that consists of:

- System BIOS
- Baseboard Management Controller (BMC) firmware

Together, they configure and manage features and functions of the server system. A full software stack is installed during the system manufacturing process but may not be the latest available. Intel highly recommends updating the full system software stack to the latest available version for optimal performance and system reliability. A System Update Package (SUP) containing the latest available system software stack can be downloaded from the following Intel website: http://downloadcenter.intel.com.

For an overview on BIOS Boot Menu, Setup, and hot keys, see the *Intel® Server M20NTP Family BIOS Setup User Guide.*

5. System Service – System Features Overview

This chapter provides a reference for identifying and locating features of the Intel® Server System M20NTP1UR.

Table 3. Intel® Server System M20NTP1UR Features

Feature	Details
Chassis form factor	1U Rack Mount
Chassis Dimensions	26” x 17.2” x 1.7” (661.3 mm x 438.5 mm x 43.4 mm)
Server Board	Intel® Server Board M20NTP2SB
Available Integration levels	• L6 – Additional components required for basic operation: Processor(s), Memory, Storage

Processor Support	• Dual Socket-P4 LGA4189
	• 3rd Gen Intel® Xeon® Scalable processor family:
	  ○ Intel® Xeon® Scalable Gold 5300 series processor
	  ○ Intel® Xeon® Scalable Silver 4300 series processor
	Note: 3rd Gen Intel® Xeon® Scalable processor SKUs ending in (H), (L), (U), or (Q) are not supported.
	• Intel® UPI links: up to three at 11.2 GT/s (Gold 5300 series) or up to two at 10.4 GT/s (Silver 4300 series)
	Note: Previous generation Intel® Xeon® processors are not supported.

Supported Processor Thermal Design Power (TDP)	• Maximum 185 W

PCH Chipset	• Intel® C621A Platform Controller Hub (PCH) chipset
	• Embedded features supported on this server system:
	  ○ SATA support
	  ○ USB support
	  ○ PCIe* support

Server Management Processor	• Aspeed* AST2500 Advanced PCIe* Graphics and Remote Management Processor
	• Embedded features supported on this server system:
	  ○ Baseboard Management Controller (BMC)
	  ○ 2D Video Graphics Adapter

Memory Support	• 16 memory slots
	  ○ 8 memory slots per processor (2 CPUs)
	  ○ Eight memory channels per processor
	  ○ One slot per memory channel
	• Registered DDR4 (RDIMM), Load Reduced DDR4 (LRDIMM)
	  ○ All DDR4 DIMMs must support ECC
	  ○ 2933 MT/s – Intel® Xeon® Scalable Gold 5300 series processors
	  ○ 2666 MT/s – Intel® Xeon® Scalable Silver 4300 series processors
	  ○ Memory voltage = 1.2 V

Network Connectivity	• Onboard Intel® Ethernet Controller I210-AT ○ Two (2) RJ45 1000 Base-T ports (Back panel I/O) • One (1) X16 PCIe* OCP* Mezzanine 2.0 add-in card slot
PCIe* Add-in Card Support	• Two (2) PCIe* 4.0 Riser Cards supporting 2 total low profile PCIe* add-in slots ○ One (1) X16 PCIe* 4.0 add-in card slot per riser card

Feature	Details

Storage Options	**Front Drive Bay**
	• Four (4) hot-swap capable drive bays
	  ○ 3.5" HDD – SAS/SATA
	  ○ 2.5" SSD – SAS/SATA and NVMe*
	Front Drive Bay Connectivity options
	NVMe* Support:
	• Four (4) onboard SFF-8654 SlimSAS* cable connectors. Each connector supports backplane connectivity for one PCIe* NVMe* SSD
	• One (1) onboard 7-pin NVMe* LED support cable connector – cable installed together with onboard SlimSAS* cables to backplane
	• Intel® Volume Management Device (Intel® VMD) 2.0 for NVMe*
	• Intel® Virtual RAID on CPU (Intel® VROC for NVMe*) with installation of VROC for NVMe* upgrade key.
	SATA Support:
	• Three (3) onboard quad port SFF-8643 Mini-SAS HD cable connectors. Each connector supports backplane connectivity for 4 SATA devices – only one connector used in 1U system
	• Intel® Virtual RAID on CPU (Intel® VROC for SATA) – RAID 0, 1, 5, and 10
	M.2 SSD
	• Support for one (1) NVMe* M.2 SSD
	• Supported M.2 SSD form factors: 2242 (42 mm), 2280 (80 mm), and 22110 (110 mm)
	USB 3.0
	• Support for one (1) internal mounted USB 3.0 device via onboard Type A USB connector

Video Support	• One (1) VGA DB-15 cable connector (Back panel I/O) • Embedded 2D video controller • 128 MB of DDR4 video memory • Up to 1920 x 1200 resolution
USB	• Two (2) external USB 3.0 connectors (Back panel I/O) • Two (2) external USB 3.0 connectors (Front panel I/O) • One (1) USB 3.0 internal onboard Type-A connector
Serial Ports	• One (1) DB-9 COM1 port cable connector (Back panel I/O) • One (1) internal DH-10 COM2 port header for optional front or rear serial port support. The port follows DTK pinout specifications. (optional COM2 cable kit not available from Intel)
Fan Support	• Six (6) system fans with fan redundancy • Fan speed control is managed by embedded BMC server management

Power Supply	• Support for up to Two (2) Slim-line Power Supplies
	• Available options:
	  ○ 750 W (80 Plus Platinum power efficiency)
	• Supported operating modes:
	  ○ Single Power Supply (1 + 0) – No Redundancy
	  ○ Dual Power Supplies (1 + 1) – Redundant Power – Hot swap support – Supported when system power draw is less than 750 W
	  ○ Dual Power Supplies (2 + 0) – Combined Power (No power redundancy) – Enabled when system power draw is greater than 750 W

Server Management	• Integrated Baseboard Management Controller (Integrated BMC) • Dedicated RJ45 1 GbE remote management port (Back panel I/O) • CPU, Memory, and system thermal monitoring • CPU, Memory, Chipset, and Power supply voltage monitoring • Fan speed control • Onboard Light Guided Diagnostics • Integrated BMC Web Console for Intel® server systems • Intelligent Platform Management Interface (IPMI) 2.0 compliant • Support for Intel® Data Center Manager (DCM) • Support for Intel® Server Debug and Provisioning Tool (Intel® SDP Tool) • Redfish*-compliant

Feature	Details

Security	• Intel® Software Guard Extensions (Intel® SGX)
	• Intel® CBnT – Converged Intel® Boot Guard and Intel® Trusted Execution Technology (Intel® TXT)
	• Intel® Total Memory Encryption (Intel® TME)
	• Trusted platform module (TPM 2.0) support
	  ○ Accessory option: Standard – iPC **JNPTPM** (Not supported in China)
	  ○ Accessory option: China compatible – iPC **JNPTPMCH**
	Note: Available TPM Accessory options are not supported by Microsoft* Windows Server 2022

Onboard Jumper Blocks and Buttons	• System Buzzer Configuration Jumper • Serial Port Configuration Jumpers • Intel® ME Recovery Jumper • Clear CMOS Button • System Reset Button • Power Button

Rack Mount Kit Accessory Option (Sold Separately)	• iPC – **AXXFULLEXTRAILK**
	  ○ Full extension rails
	  ○ Tool-less installation
	  ○ 33 Kgs (72.2 lbs.) max supported weight

Environment Limits	• Operating Temp: 10 °C – 35 °C (50 °F – 95 °F) • Non-Operating Temp: -40 °C – 70 °C (-40 °F – 158 °F)

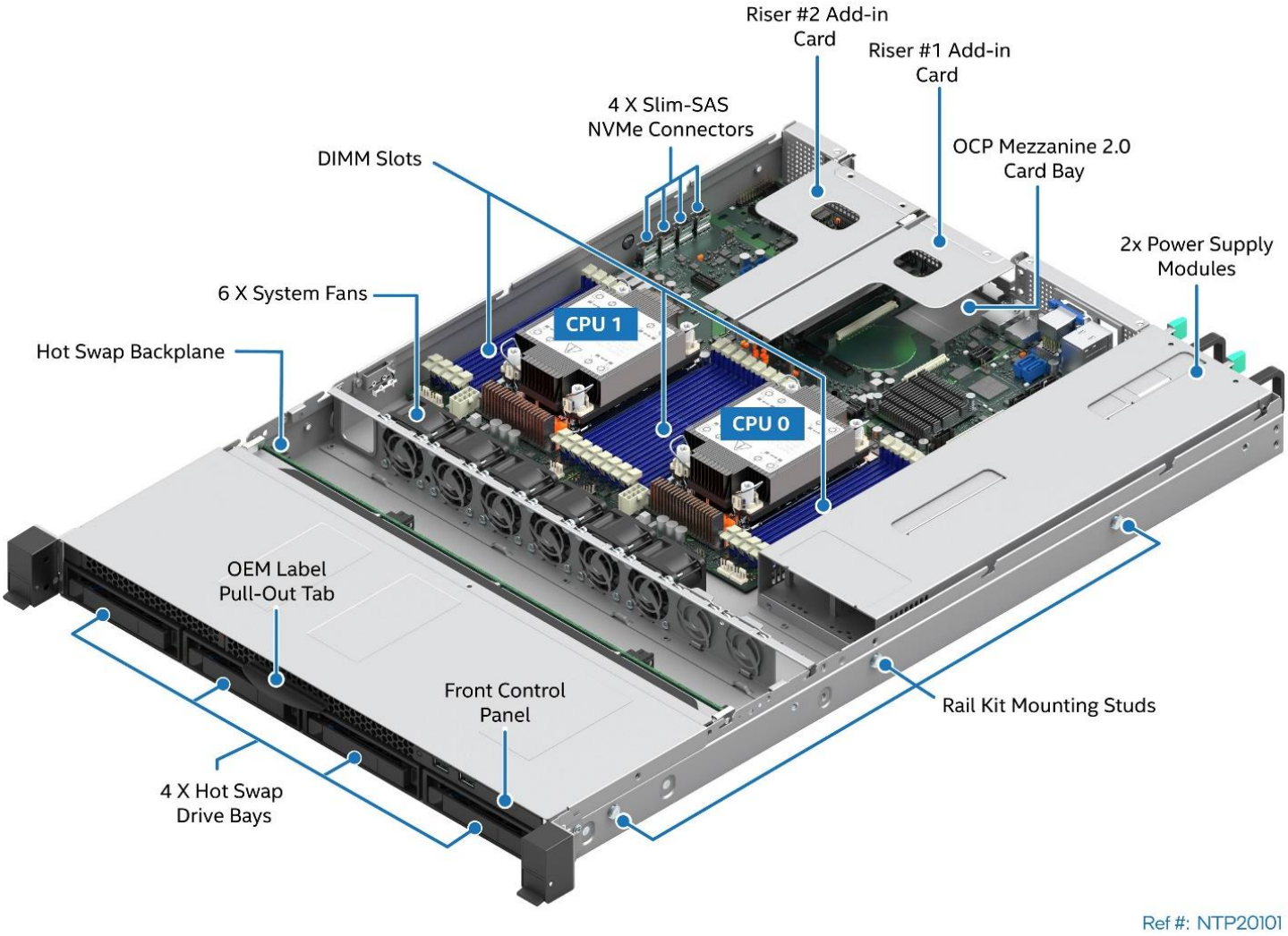

Figure 47. System Features

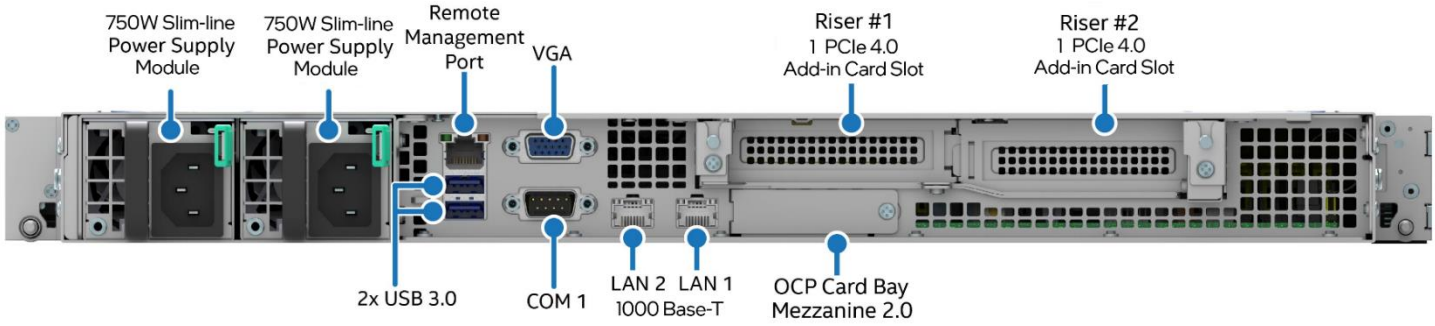

Figure 48. Back Panel Features

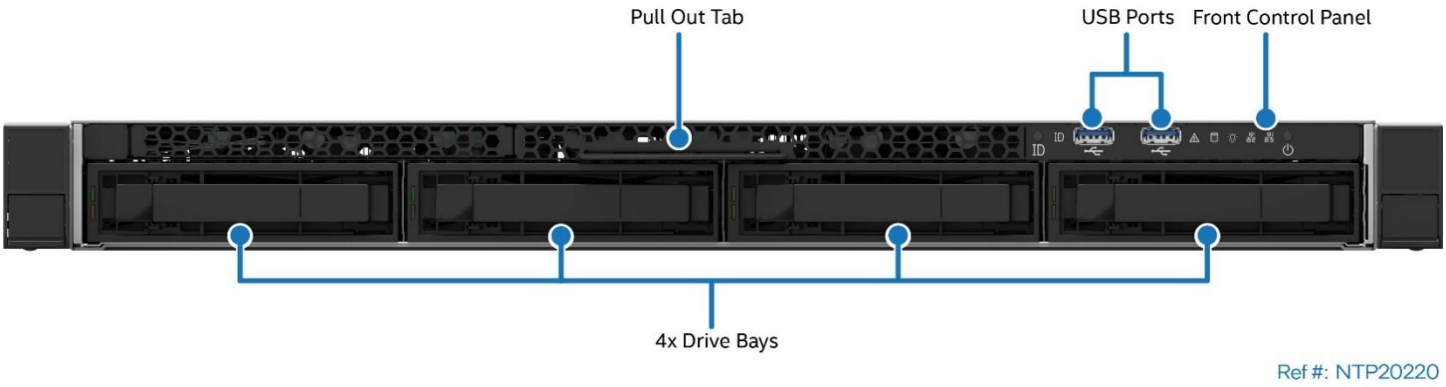

Figure 49. Front Panel Features

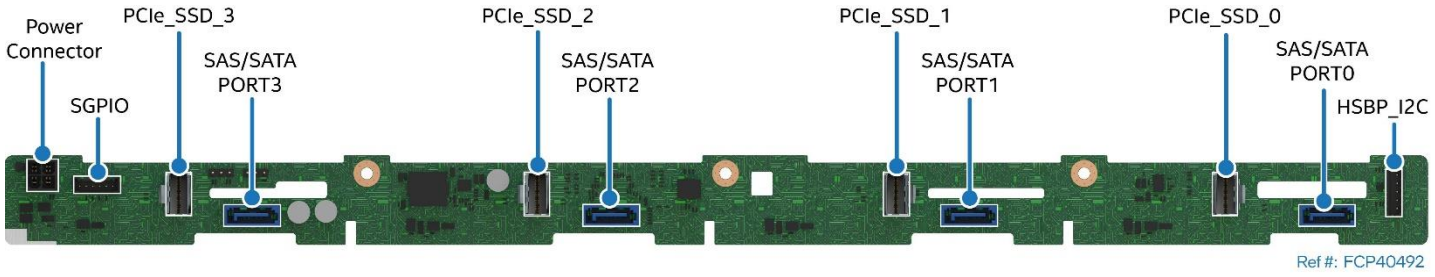

Figure 50. Backplane Cable Connectors

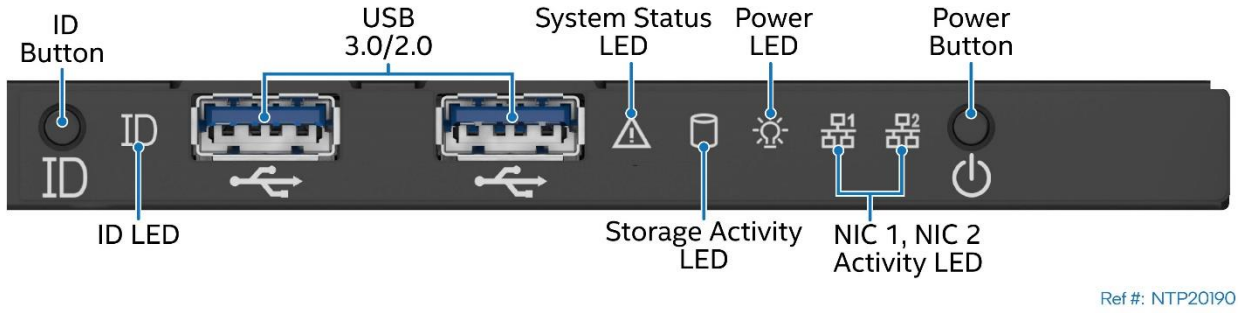

Figure 51. Control Panel Features

5.1 System Status LED State Identification

The system status LED is a bi-color (green/amber) indicator that shows the current health of the server system. The system status LED states are driven by the server board platform management subsystem. When the server is powered down (transitions to the DC-Off state or S5), standby power allows the BMC to retain the sensor and front panel status LED state established before the power-down event. The following table provides a description of each supported LED state.

Table 4. System Status LED State Definitions

Status LED State	System State	Status Description
OFF	Powered off. No Stand-by power	System has no AC power
Solid Green	System is operating normally	System is running (in S0/S5 State) and its status is healthy. The system is not exhibiting any errors. Source power is present, BMC has booted, and manageability functionality is up and running.
Blinking Green	• System is operating in a degraded state, but still functional • System is operating in a redundant state but with an impending failure warning	• 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. • Battery failure • BMC Watchdog has reset the BMC
Blinking Amber	System is operating in a degraded state with an impending failure warning, although still functioning. 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
Solid Amber	Critical/non-recoverable – system is halted. Fatal alarm – system has failed or shut down.	• Processor CATERR signal asserted. • Processor Thermal Trip. • DIMM Thermal Trip or equivalent • SSB Thermal Trip or equivalent.

5.2 Server Board Jumper Blocks and Service Buttons

The server board includes several jumper blocks and service buttons that can be used to configure, protect, reset, or recover specific features of the server board. The following figure identifies the location of each jumper block and service button on the server board. Pin 1 of each jumper can be identified by the arrowhead (▼) silkscreened on the server board next to the pin. The following sections describe how each jumper is used. See the *Intel® Server Board M20NTP2SB Technical Product Specification* for more information.

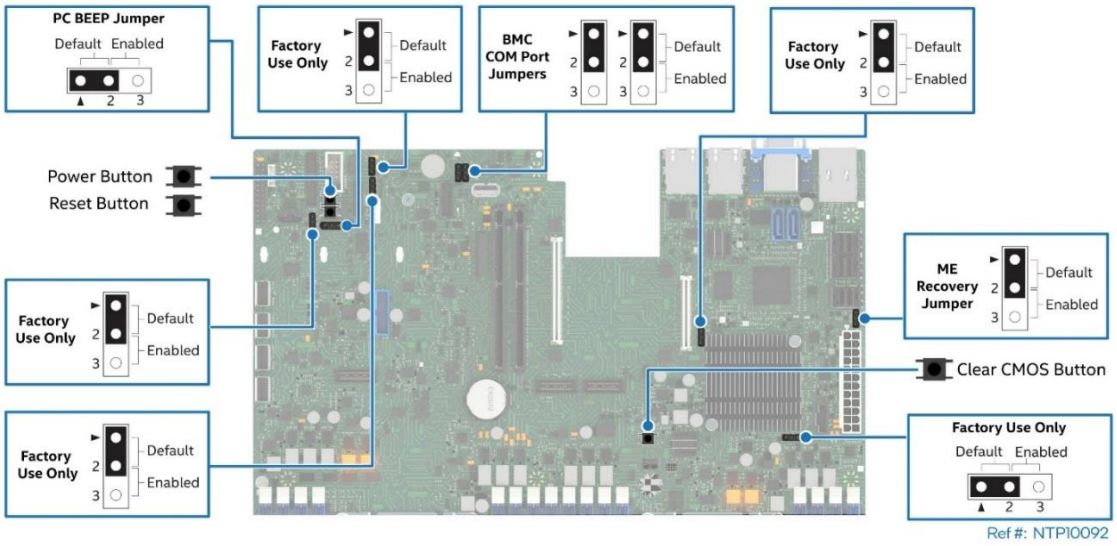

Figure 52. Server Board Jumper Blocks and Service Buttons

The server board includes three surface mount buttons. The Power and Reset buttons can be used to power down or cold reset the system is if no control panel is present.

The Clear CMOS button is used to:

- Reset the BIOS to its original default settings
- Reset the Real time clock
- Clear any BIOS security passwords

The server board includes several 3-pin jumper blocks. Most are used for factory support purposes and should not be changed from their default settings. The following can be used as needed.

5.2.1 PC Beep Jumper

The server board includes a small surface mount speaker near the back edge of the server board. The speaker is used to generate auditory beep codes when the BIOS or BMC detects an error during the power on POST process. The PC Beep Jumper can be set to enable or disable the auditory beep codes.

5.2.2 BMC COM Port Configuration Jumpers

See the *Intel® Server Board M20NTP2SB Technical Product Specification* for more information

5.2.3 ME Recovery Jumper

The ME Recovery jumper is used to place the embedded Intel® Management Engine (Intel® ME) into a force update mode. This jumper can be used should the Intel® ME firmware fail to operate due to some type of firmware corruption. Placing the Intel® ME into a recovery mode disables the Intel® ME operation allowing the firmware to be updated

5.3 Support Requirements for Thermal Management

How the system manages heat is critical to system performance and long-term reliability. The system is designed to operate at external ambient air temperatures ranging between 10°C and 35°C. The system must maintain a steady air flow through the system to expel all hot air generated within it. Using six system fans, an embedded fan within each installed power supply, and other system components, the system pulls cool air in from the front, channels it over and through several high heat generating components and areas within the chassis, and then pushes the hot air out the back

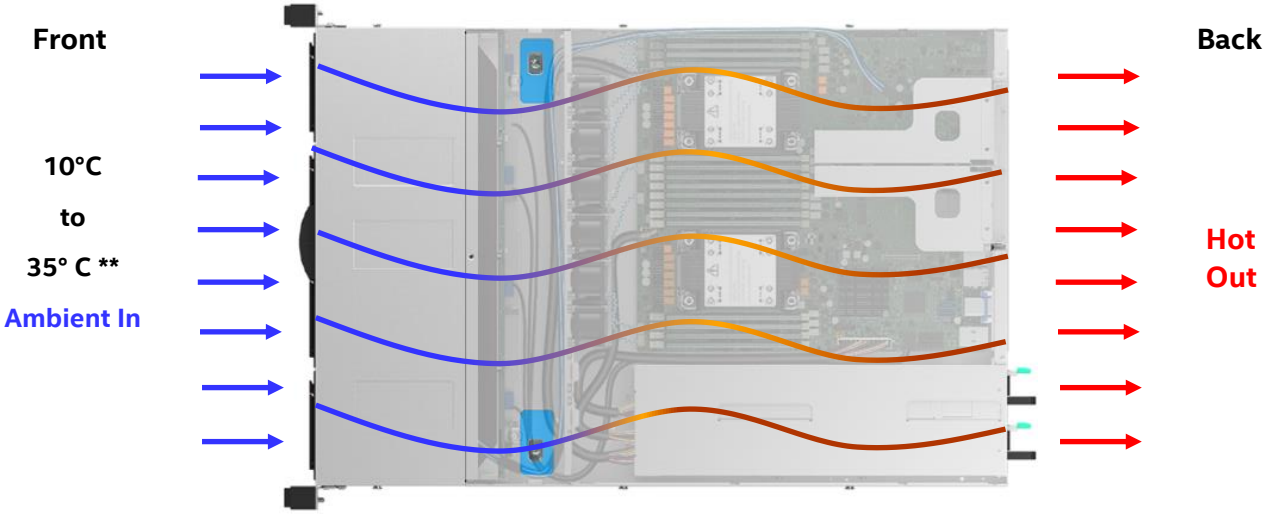

Figure 53. System Airflow

To ensure enough cool air is pulled in and directed to the high heat areas within the system, the following requirements must be followed while the system is operational.

- External ambient air in front of the system is between 10°C and 35°C
- The system top cover must be installed
- The system air duct must be installed
- All front drive bays must be populated with an SSD/HDD or supplied drive blank
- All memory slots must be populated with a DIMM or supplied DIMM blank. A DIMM blank should only be removed when replacing it with a DIMM.

Figure 54. DIMM Blank

- Minimize airflow blockage within the chassis by routing internal cables along the left chassis side wall and the base of the power supply cage. Other than the system fan cables and CPU power cables, no other cables should be routed in front of the system fan assembly.

Reference the *Intel® Server System M20NTP1UR Technical Product Specification* for the latest Thermal Configuration support tables.

6. System Service and FRU Replacement

This chapter provides instruction for replacement of system components considered to be field replaceable (FRU). Only system features that are identified as hot-swappable can be replaced while the system remains operational. These items include:

- Power Supply – In redundant 1+1 dual power supply configurations only
- Drives mounted within the front drive bay – Redundant RAID (1, 5, and 10) configurations only

All other components within the system can only be serviced after the system has been powered off and AC power cord(s) and all other cables have been disconnected from the server system.

Before You Begin

Before integration of any system components, review all the safety and ESD precautions found in the Safety Warnings section at the beginning of this document.

System Reference

In the following procedures, all references to left, right, front, top, and bottom assume the reader is facing the front of the server chassis.

Instruction Format

Each procedure described in this chapter follows an illustration first format. This format gives the reader the option to follow a quicker path to component integration by first seeing an illustration of the intended procedure. If necessary, the reader can then follow the step-by-step instructions that accompany each procedure.

6.1 System Top Cover Removal / Installation

To maintain proper air flow within the system, the top cover must be in place when the system is operating.

Required Tools and Supplies

- Anti-static wrist strap and conductive workbench pad (recommended)
- Phillips* head screwdriver #1

6.1.1 System Top Cover Removal

Removal of the top cover is necessary when installing or replacing any system component within the server chassis. Before removing the top cover, power down the system and unplug all cables from the back of the system.

The top cover may be secured to the chassis using three screws, one on each side and one on the top. If present, the screws must be removed before attempting to remove the top cover.

1. Power off the system and unplug all cables from the back of the system
2. (If present) Remove the three screws that secure the top cover (see Figure 55).

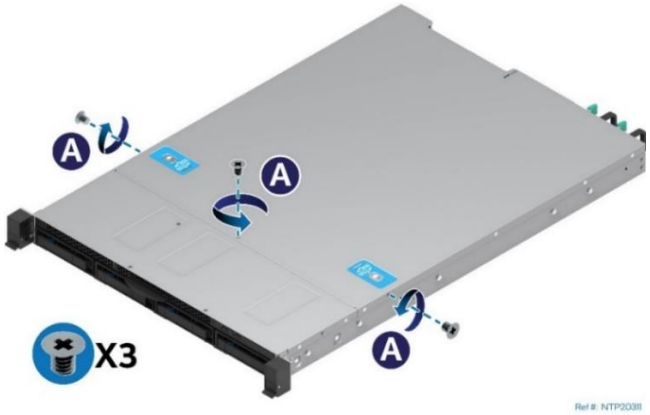

Figure 55. System Top Cover Panel Shipping Screws

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

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3. Remove the top Cover (see Figure 56).

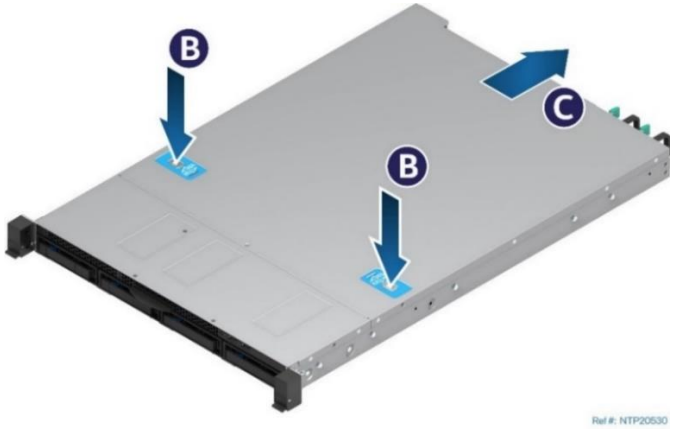

Figure 56. System Cover Removal

- While pushing down on both the left and right buttons (see Letter “B”), slide the top cover ~10mm towards the back of the chassis (see Letter “C”).
- Carefully lift the top cover up and away from the chassis.

6.1.2 System Top Cover Installation

1. Place and secure the top cover to the chassis (see Figure 57).

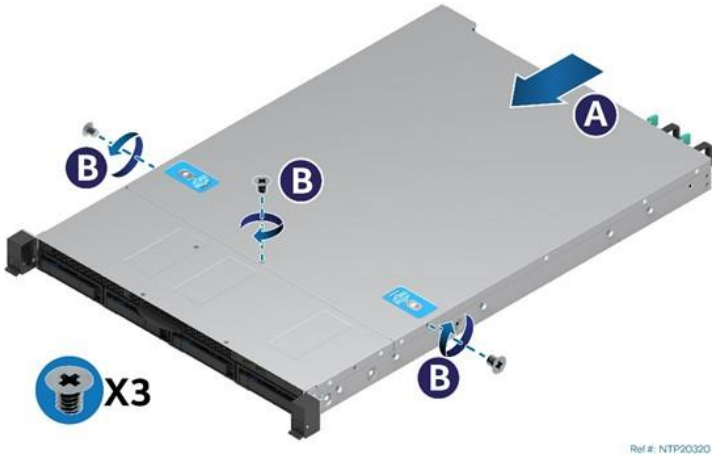

Figure 57. System Cover Installation

- Align and place the top cover on the top edges of the chassis.
- Slide it towards the front of the chassis until it locks into place (see Letter “A”).

Shipping Note: When transporting the server system, Intel recommends installing the three top cover screws before shipping (see Letter “B”).

6.2 Air Duct Removal and Installation

Required Tools and Supplies

- Anti-static wrist strap and conductive workbench pad (recommended)

6.2.1 Air Duct Removal

1. Ensure the system is powered off and all cables are detached from the back of the system.
2. Remove the system top cover (see Section 6.1.1).
3. Remove the Air duct (see Figure 58).

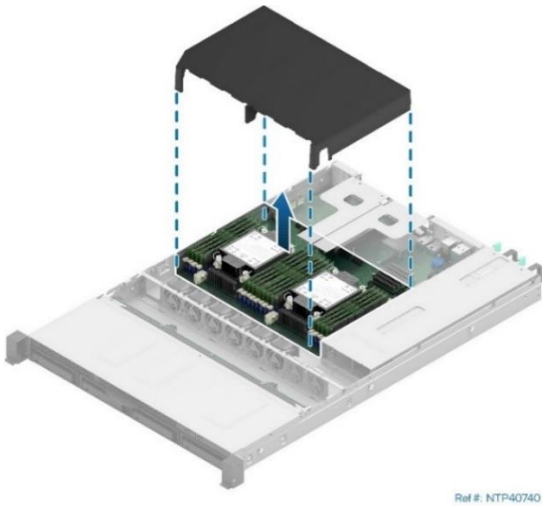

Figure 58. Air Duct Removal

- Lift the air duct straight up and away from the server system.

6.2.2 Air Duct Installation

To maintain proper air flow within the system, the air duct must be in place when the system is operating.

1. Ensure cable channels on each side of the air duct are oriented towards the front of the system.
2. Install the air duct (see Figure 59).

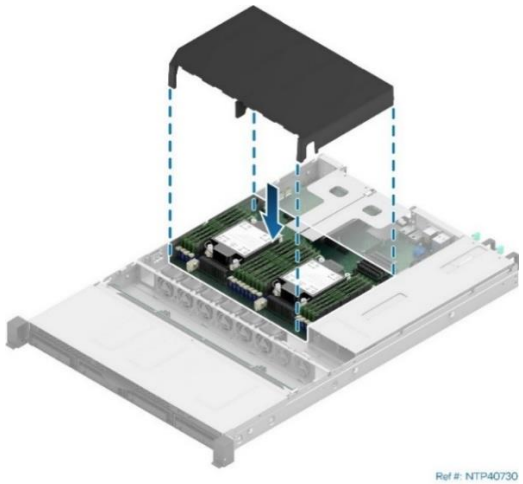

Figure 59. Air Duct Installation

- Lower the air duct into the system, ensuring that all cables are clear from the installation area
- The air duct is properly installed when it sits flat and is securely in place.

6.3 Memory Module Replacement

Required Tools and Supplies

- Anti-static wrist strap and conductive workbench pad (recommended)
- Replacement equivalent memory module

Memory modules are NOT hot-swappable. The system must be powered down and unplugged from the AC power source before replacing a faulty memory module from the system.

1. Power off the system and remove the system top cover (see Section 6.1.1).
2. Remove the air duct (see Figure 58).
3. Identify and locate the faulty memory module.
4. Remove the memory module from the system (see Figure 60).

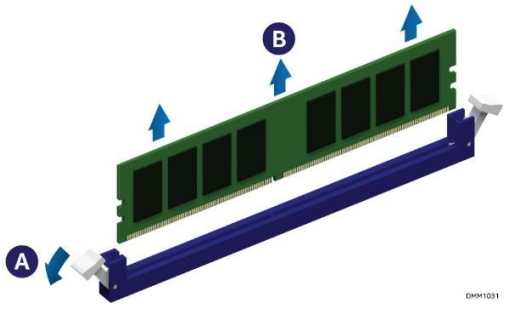

Figure 60. Memory Module Removal

   - Ensure that the ejection tabs of adjacent memory slots are fully closed.
   - Open the ejection tabs at both ends of the selected memory slot (see Letter “A”). The memory module will lift out from the memory slot.
   - Holding the memory module by its edges, lift it away from the slot (see Letter “B”).
5. Locate and carefully unpack the replacement memory module, taking care to only handle the device by its outer edges.
6. Install the memory module onto the server board (see Figure 61).

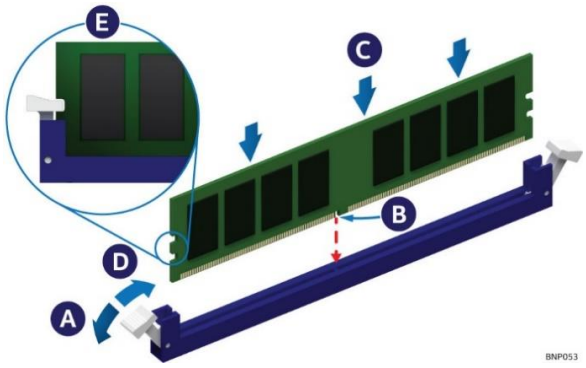

Figure 61. DIMM Installation

   - Ensure that the ejection tabs at both ends of the selected memory slot are pushed outward to the open position (see Letter “A”).
   - Align the notch at the bottom edge of the memory module with the key in the memory slot (see Letter “B”).
   - Insert the memory module into the memory slot.
   - Using even pressure along the top edge, push down on the memory module (see Letter “C”) until the ejection tabs of the memory slot snap into place (see Letter “D”).
   - Ensure that the ejection tabs are firmly in place (see Letter “E”).

6.4 System Fan Replacement

Required Tools and Supplies:

- Intel Spare Fan Kit – iPC **MYP1UFAN**
- Anti-static wrist strap and conductive workbench pad (recommended)

System fans are not hot swappable. The system must be powered off before a faulty system fan can be replaced.

Warning: System fans operate at extremely high speeds. Do not attempt to replace a system fan until it has stopped completely. Attempting to remove a fan that is not completely stopped may result in injury.

1. Power off the system and remove the system top cover (see Section 6.1.1).
2. Remove the air duct (see Figure 58).
3. Identify, locate, and remove the faulty system fan (see Figure 62).

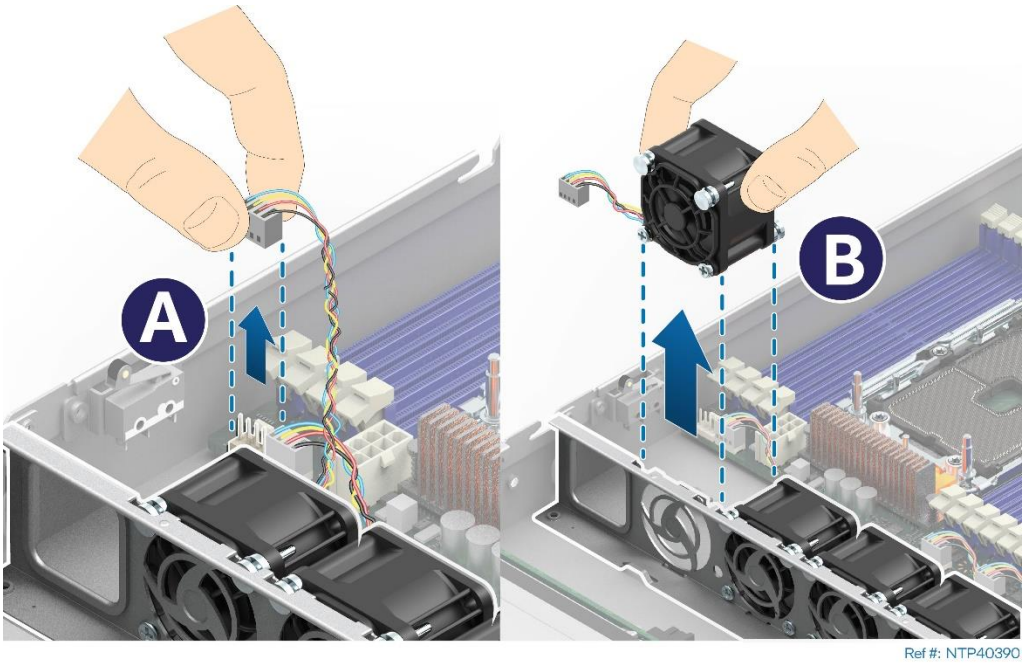

Figure 62. System fan assembly removal

- Disconnect the cable of the selected fan from the server board (see Letter “A”).
- Lift the system fan up and away from the chassis (see Letter “B”).

4. Locate and carefully unpack the replacement fan.

5. Install the fan into the system (see Figure 63)

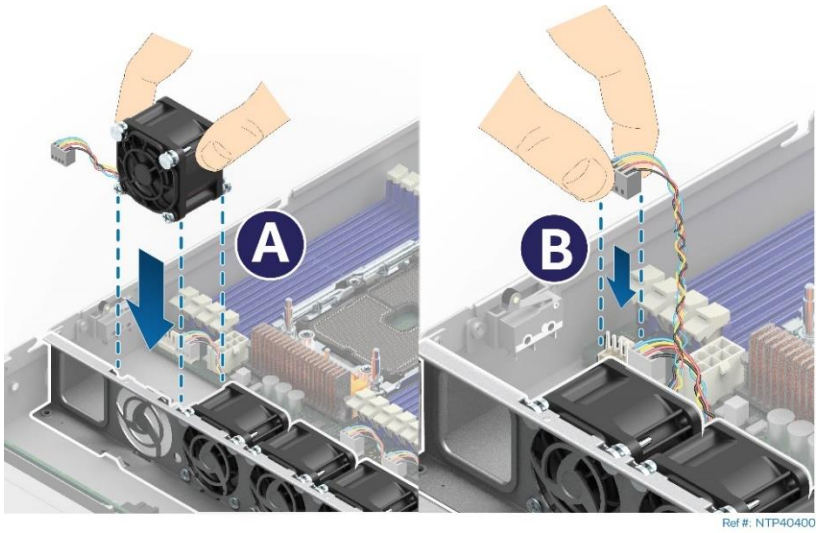

Figure 63. System fan assembly installation

- Carefully position and install the replacement fan into the fan assembly, ensuring all rubber guides are in place and the fan cable is located on the side closest to the server board.
- Attach the fan cable to the fan connector on the server board. Ensure that no cables are trapped beneath the fan module (see Letter “B”).

6.5 Power Supply Replacement

Required Tools and Supplies

- Intel spare power supply kit – iPC **AXXBFP750SLPS**
- Anti-static wrist strap and conductive workbench pad (recommended)

Note: Power supply modules can only be hot-swapped when the system is operating in a 1+1 redundant power configuration.

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1. Detach the AC power cord from the faulty power supply module
2. Remove the power supply from the system (see Figure 64)

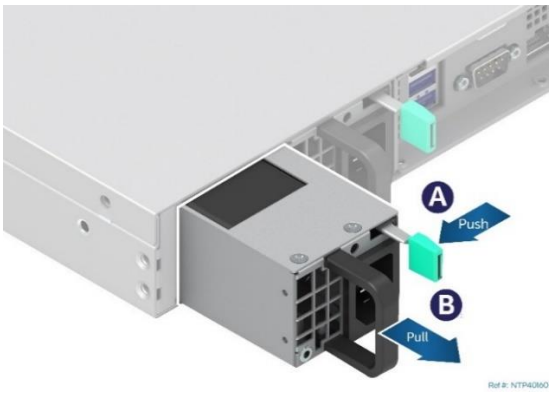


Figure 64. Power Supply Removal

- Push and hold the green latch in the direction shown (see Letter “A”).
- Use the handle to pull the power supply module from the system (see Letter “B”).

3. Locate and unpack the replacement power supply.
4. Install power supply into the system (see Figure 65)

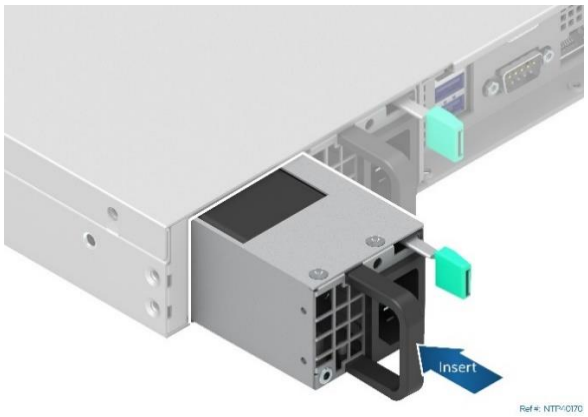


Figure 65. Power Supply Installation

- Slide the power supply into the power supply bay until it clicks and locks in place

5. Re-connect the AC power cord

6.6 Front Drive Replacement

Required Tools and Supplies

- Replacement 3.5” hard disk drive (HDD) or 3.5” solid state drive (SSD), or 2.5” solid state drive (SSD)
- Anti-static wrist strap and conductive workbench pad (recommended)
- Phillips* head screwdriver (for installing 2.5” SSDs)

Note: To ensure proper system airflow requirements, all drive bays must be populated, and all drive carriers must be populated with either a drive or supplied drive blank.

Drives can only be hot-swapped if they are configured within a fault tolerant RAID configuration – 1, 5, 10

6.6.1 Drive Carrier Extraction

1. Remove the selected drive from the front drive bay (see Figure 66)

Figure 66. Extracting Drive Carrier from Chassis

- Press the button on the drive carrier face plate to release the lever (see Letter “A”).
- Using the lever, pull the drive from the drive bay (see Letter “B”).

6.6.2 3.5" Drive Replacement

1. Remove the drive from the drive carrier (see Figure 67).

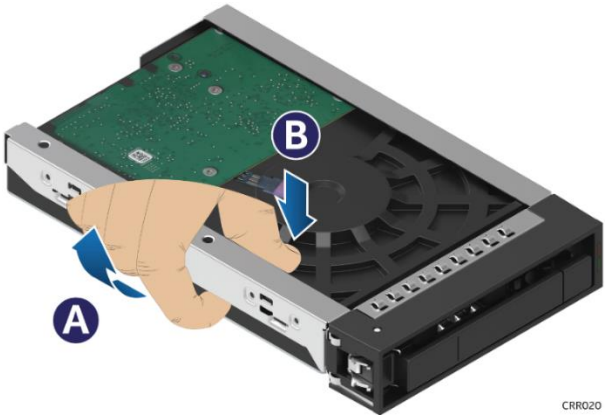


Figure 67. 3.5" Drive Removal from Drive Carrier

- Hold the carrier assembly top side down in your right hand. Using your left hand, gently rotate the bottom edge of the left rail upwards (see Letter "A") while at the same time pushing the drive down away from the carrier (see Letter "B").

2. Locate and unpack the replacement 3.5" drive
3. Install the replacement drive into the drive carrier (see Figure 68)

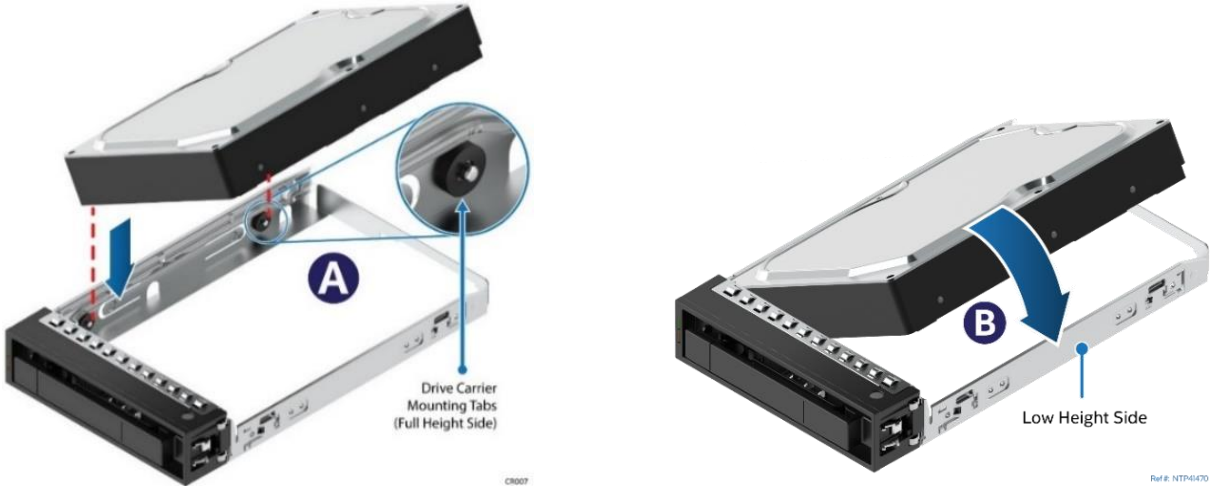


Figure 68. 3.5" Drive Installation to Drive Carrier

- Position the drive interface connector towards the back of the drive carrier
- Align and position the mounting holes on the left side of the drive over the mounting tabs located on the drive carrier side rail (see Letter "A")
- Lower the right side of the drive into the carrier and press down until all mounting tabs lock in place.
- With the rear drive connector positioned towards the back of the drive carrier, align, and position the mounting holes on the left side of the drive over the mounting tabs located on the drive carrier side rail (see Letter "A")
- Lower the other side of the drive into the carrier and press down until all mounting tabs lock in place

6.6.3 2.5" Drive Replacement

1. Remove the screws securing the 2.5" drive assembly to the drive carrier (see Figure 69)

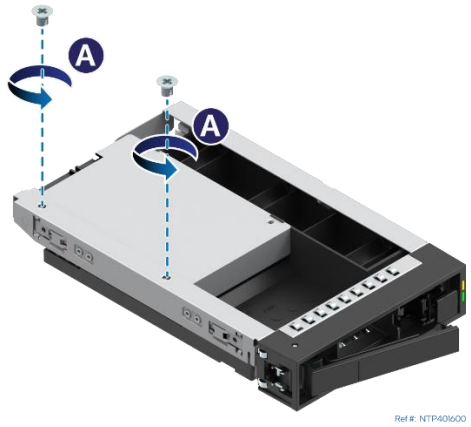


Figure 69. 2.5" Drive Mounting Bracket Removal from Drive Carrier (Step 1)

2. Remove the drive mounting bracket from the drive carrier (see Figure 70)

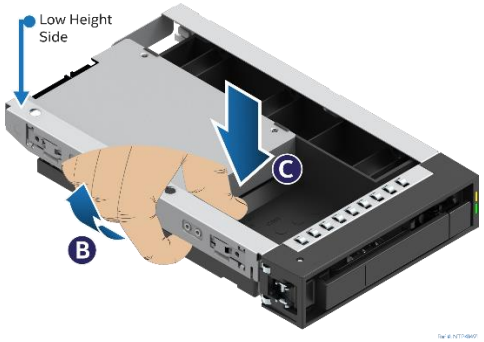


Figure 70. 2.5" Drive Mounting Bracket Removal from Drive Carrier (Step 2)

- Hold the carrier assembly top side down in your right hand. Using your left hand, gently rotate the bottom edge of the left rail upwards (see Letter "A") while at the same time pushing the drive down away from the carrier (see Letter "B").

3. Remove the drive from the mounting bracket (see Figure 71)

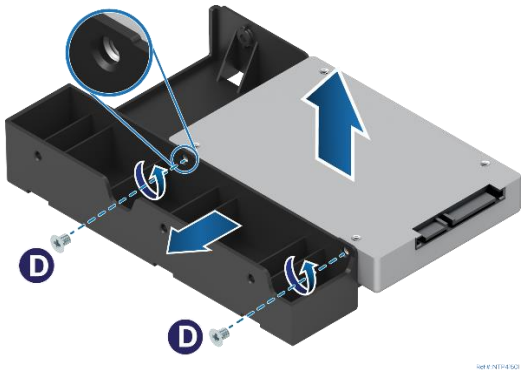


Figure 71. 2.5" Drive Removal from Mounting Bracket

- Remove the two screws securing the drive to the mounting bracket (see Letter "D")
- Lift the drive out of the mounting bracket

4. Locate and unpack the replacement 2.5” drive
5. Position the SSD with its interface connector facing the back of the drive bracket
6. Install the replacement drive into the 2.5” mounting bracket (see Figure 72)

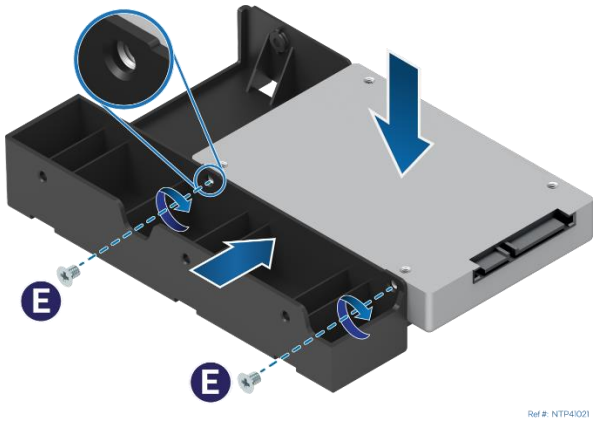


Figure 72. 2.5” Drive Installation to Mounting Bracket

- Install and secure the SSD to the drive bracket using two screws (see Letter “E”).

7. Install the SSD assembly into the drive carrier (see Figure 73)

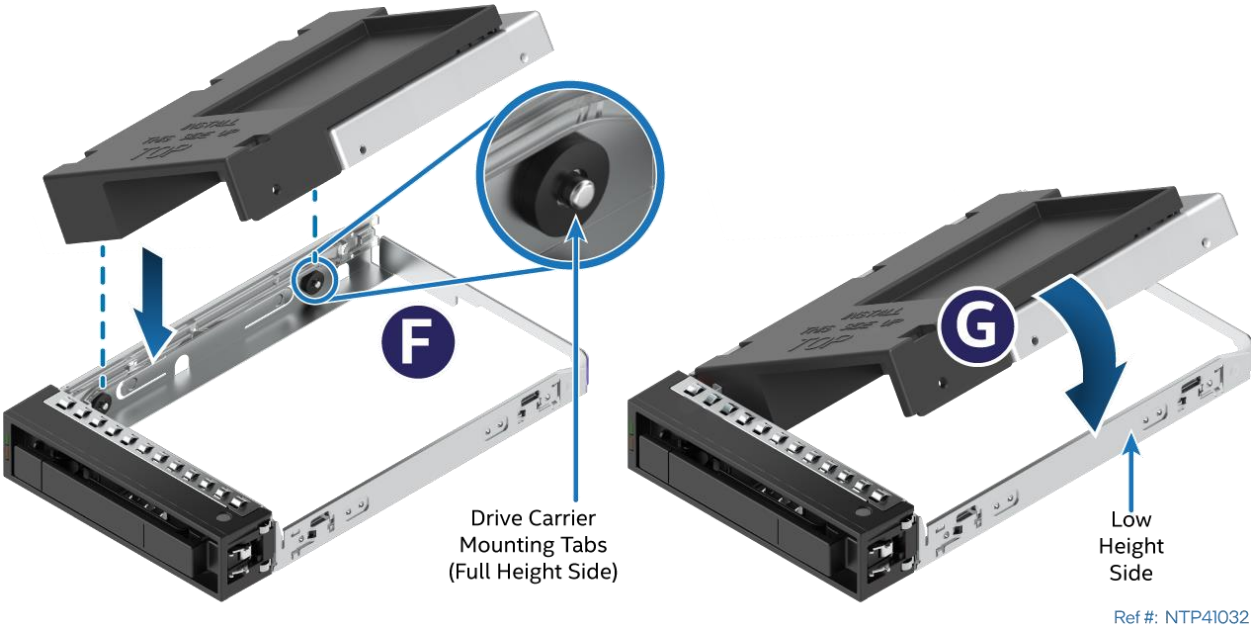


Figure 73. 2.5” Drive Assembly Installation to Drive Carrier (Step 7)

- Orient the SSD so that its interface connector is positioned towards the back of the drive carrier.
- Align and position the mounting holes on the left side of the SSD assembly over the mounting tabs located on the left side rail of the drive carrier (see Letter “F”).
- Lower the right side of the SSD assembly into the drive carrier and press down until all mounting tabs lock in place (see Letter “G”).

8. Turn the drive carrier assembly over and secure the SSD assembly to the drive carrier (see Figure 74).

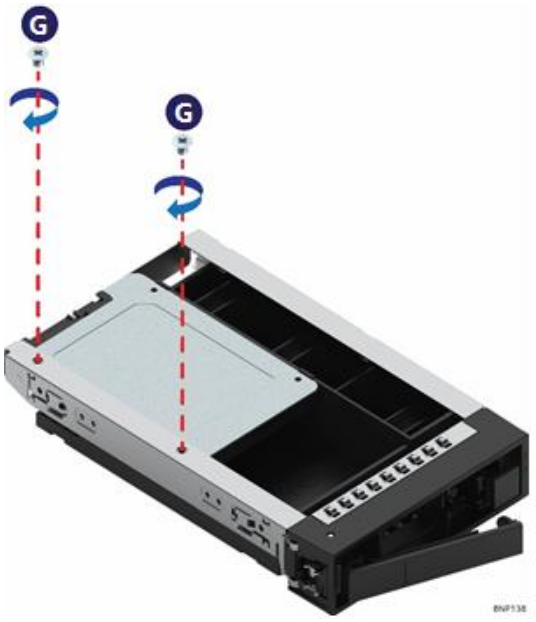


Figure 74. 2.5" SSD Assembly Installation to Drive Carrier (Step 8)

- Using two screws, secure the SSD assembly to the carrier side rail (see letter "G")

6.6.4 Front Drive Installation

1. Install the drive carrier assembly into a front drive bay (see Figure 75)

Figure 75. Drive Carrier into Chassis Installation

- Align the drive carrier with the open drive bay.
- With the lever in the open position, insert the drive assembly into the drive bay (see Letter "A") and push forward until it makes contact with the backplane.
- Close the drive assembly lever until it locks into place (see Letter "B")

6.7 Riser Card Replacement

This section provides instructions for the replacement of a riser card. The instructions provided apply to both riser card 1 and riser card 2.

Required Tools and Supplies

- Intel riser card spare kit – iPC **M20NTP1URISER1** or **M20NTP1URISER2**
- Anti-static wrist strap and conductive workbench pad (recommended)
- Phillips* head screwdriver

1. Power off the system and disconnect all cables from the back of the system.
2. Remove the system top cover (see Section 6.1.1).
3. Remove the Air Duct (see Section 6.2.1).
4. Remove the riser card assembly from the system (see Figure 76).

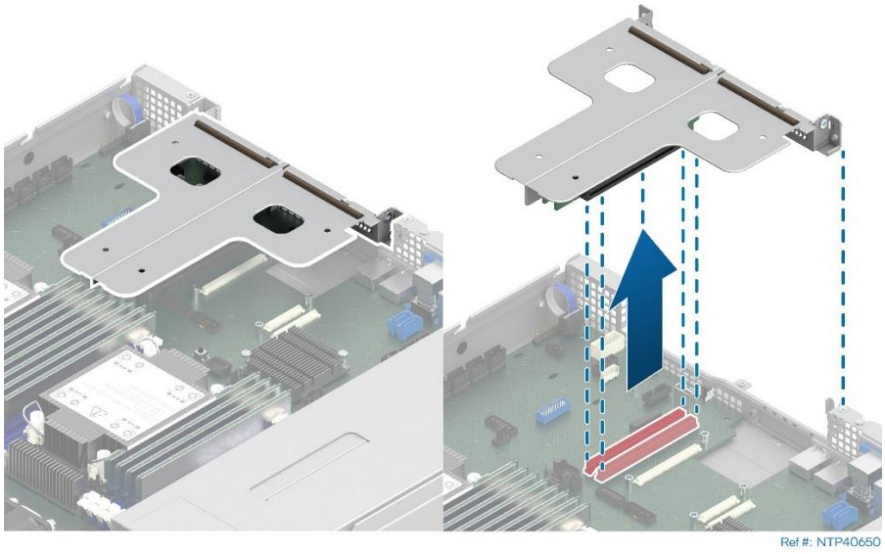


Figure 76. Riser Card Bracket Removal

   - Grasp the riser card assembly with both hands and carefully pull it up and away from the chassis.
5. Remove the add-in card from the riser card (see Figure 77).

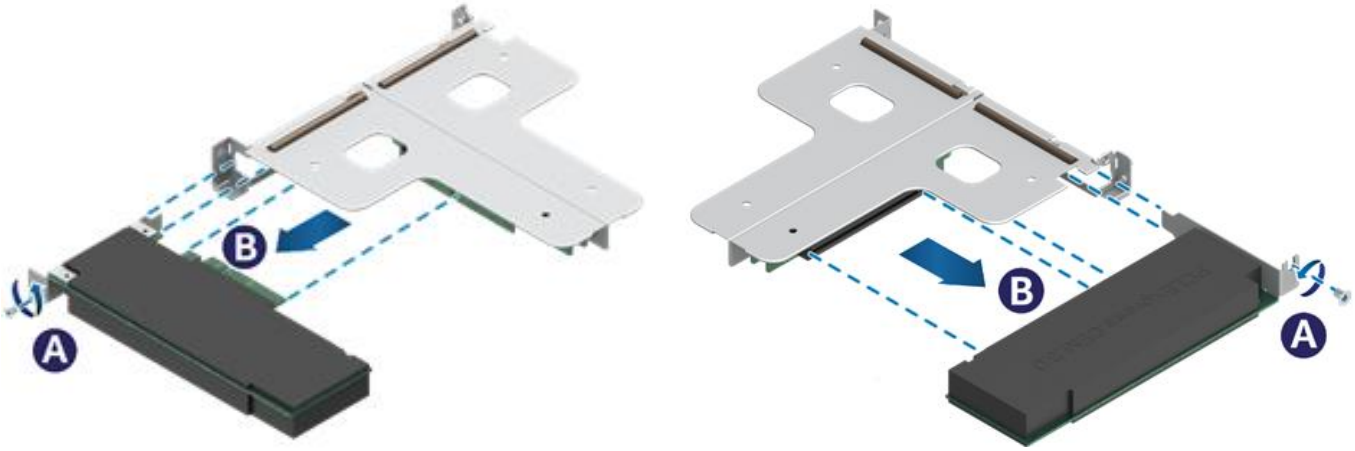


Figure 77. PCIe* Add-in Card Removal

- Remove the screw that secures the add-in card to the riser card bracket (see Letter “A”).
- Carefully remove the add-in card from the riser card (see Letter “B”).

6. Remove the riser card from the riser card bracket (see Figure 78).

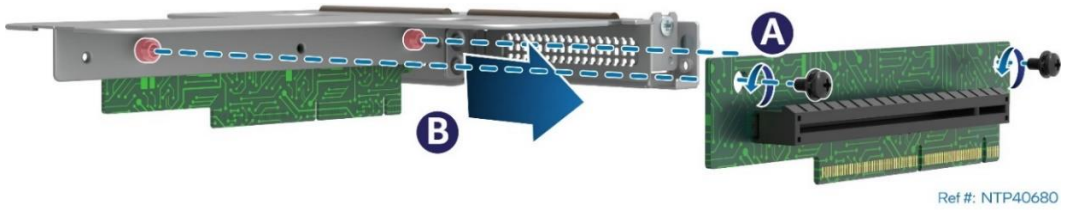


Figure 78. Riser Card Removal from Bracket

- Remove the two screws that secure the riser card to the bracket (see Letter “A”).
- Remove the riser card from the bracket (see Letter “B”).

7. Locate and unpack the replacement riser card.
8. Install the riser card to the riser card bracket (see Figure 79).

Note: The riser cards are not interchangeable between the riser card slots on the server board. Riser card slots on the server board are matched to a specific riser card type. Ensure the replacement riser card matches the one that was removed.

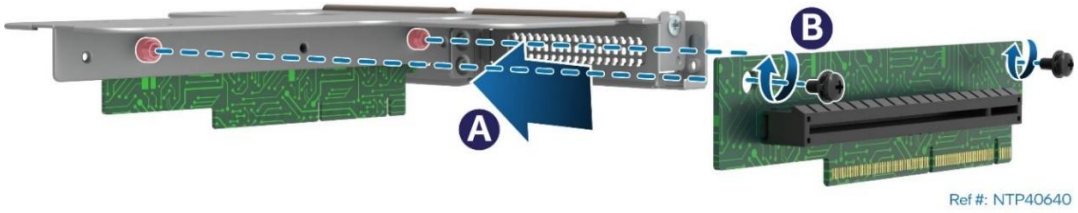


Figure 79. Riser Card Installation

- Align the riser card mounting holes with the standoffs on the bracket (see Letter “A”).
- Using two screws, secure the riser card to the bracket (see Letter “B”).

9. Reinstall the PCIe* add-in card into the riser card (see Figure 80).

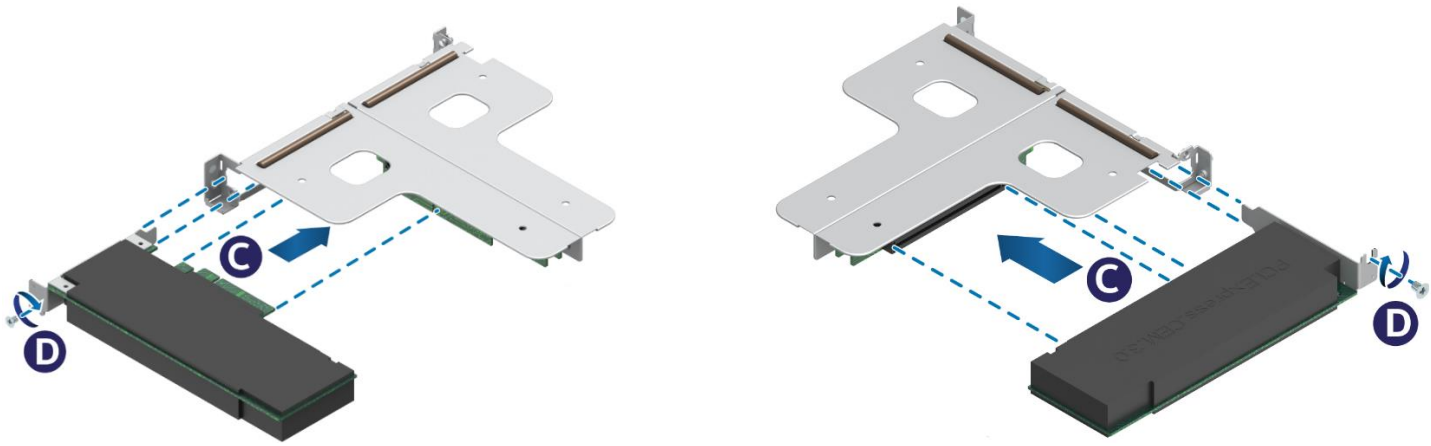


Figure 80. PCIe* Add-in Card Installation

- Insert the add-in card until it is fully seated inside the PCIe* slot on the riser card (see Letter “C”).

- Using the fastener screw, secure the add-in card to the riser card assembly (see Letter “D”).

Note: For add-in cards with internal cables, it may be necessary to connect the cable(s) to the add-in card before installing the riser card assembly into the system.

10. Install the riser card assembly into the system (see Figure 81).

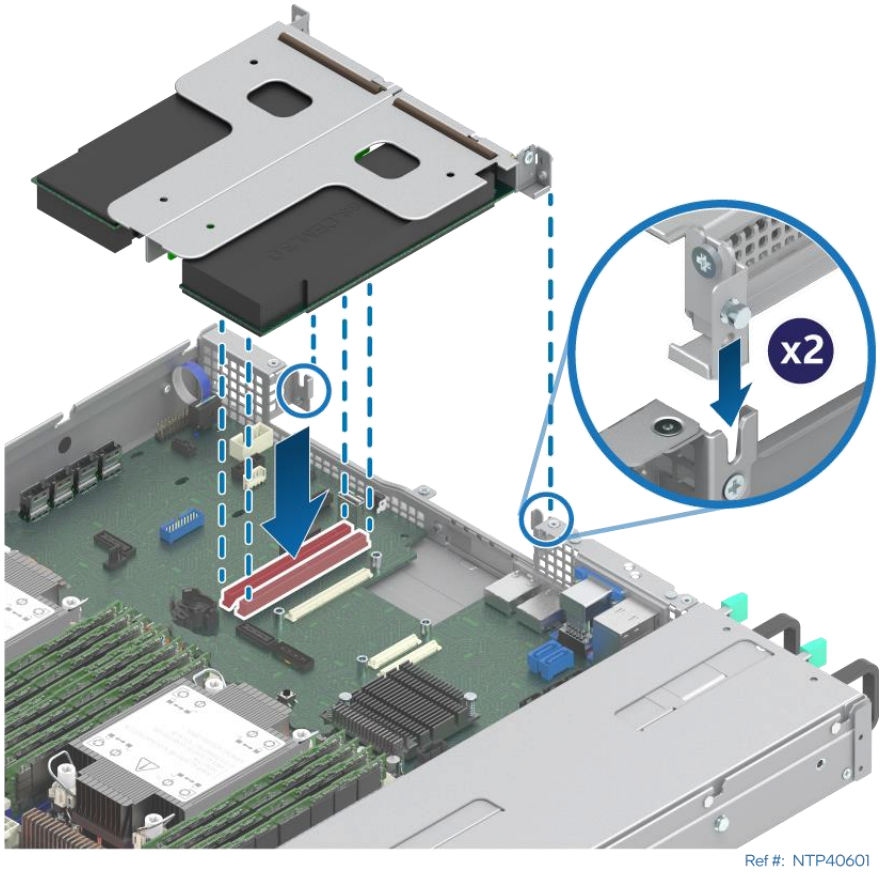


Figure 81. Riser Card Assembly Installation

- Position the two riser card edge connectors over the riser card slots on the server board.
- Align the two mounting keys on the back edge of the riser card assembly with key slots on the back of the chassis.
- Once aligned, press the riser assembly straight down into the riser card slots as shown in Figure 81Figure 28.
- Connect required cables to the add-in card(s). See your add-in card documentation for additional information.

6.8 OCP* Module Replacement

This section provides instructions for OCP* module replacement.

Required Tools and Supplies

- OCP* Mezzanine Ethernet Network Adapter
- OCP* module mounting screws – 4x screws included with the system
- Anti-static wrist strap and conductive workbench pad (recommended)
- Phillips* head screwdriver

1. Power off the system and disconnect all cables from the back of the system.
2. Remove the system top cover (see Section 6.1.1).
3. Remove the Air Duct (see Section 6.2.1).
4. Remove the riser card assembly (see Figure 76).
5. Extract the OCP* Module from the system (see Figure 82).

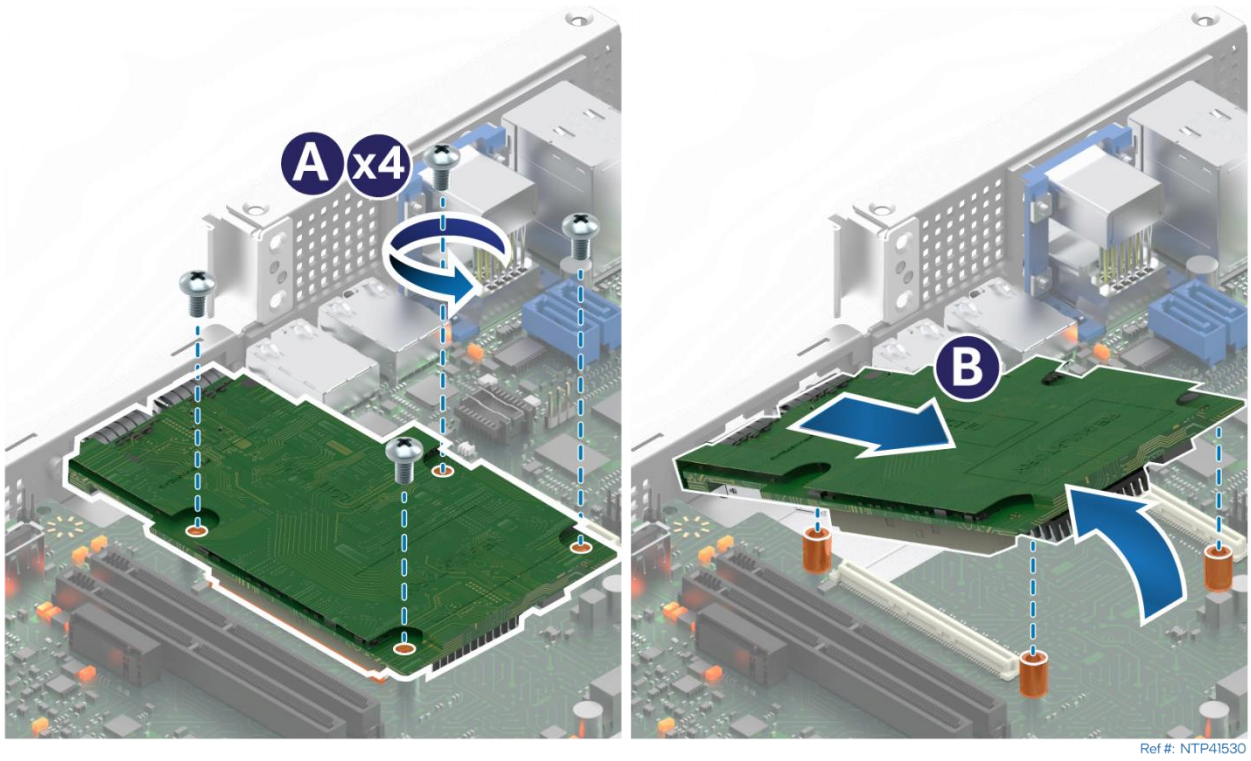


Figure 82. OCP* Module Removal

- Remove the four screws securing the OCP* module to the server board (see Letter “A”).
- Carefully lift the back edge of the OCP* module until the connectors are free (see Letter “B”).
- Gently pull the OCP* module away from the system back panel

Note: If the OCP* module is not being replaced, then the OCP* module mounting bracket, attached to the system back panel must be replaced with the original OCP* bay cover plate to ensure the system remains compliant to EMI/EMC regulatory certifications.

6. Locate and unpack the replacement OCP* module.
7. Mount the OCP* module to the server board (see Figure 83).

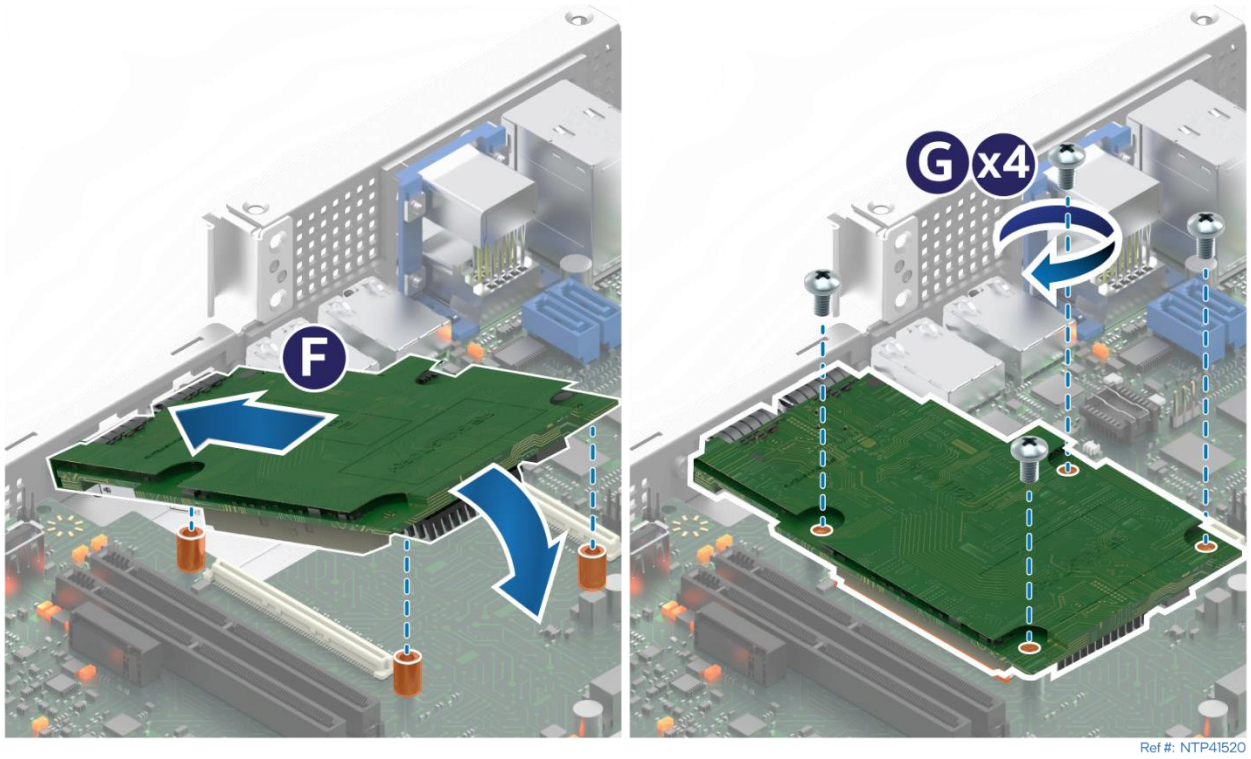


Figure 83. OCP* Module Installation

- Carefully align and insert the cable connectors on the back edge of the OCP* module through the opening(s) on the system back panel.
- Gently push the OCP* module down onto the server board connector(s) (see Letter “F”).
- Use 4 screws to secure the OCP* module to the server board (see Letter “G”).

6.9 Backplane Replacement

Required Tools and Supplies:

- Intel backplane spare kit: iPC **AXXHSBP1304**
- #2 Phillips* head screwdriver
- Anti-static wrist strap and conductive workbench pad (recommended)

1. Power off the system and disconnect all cables from the back of the system.
2. Remove all drive carriers from the front drive bay.
3. Remove the system top cover (see Section 6.1.1).
4. Remove all cables attached to the backplane.
5. Carefully remove the backplane from the system (see the following figures).

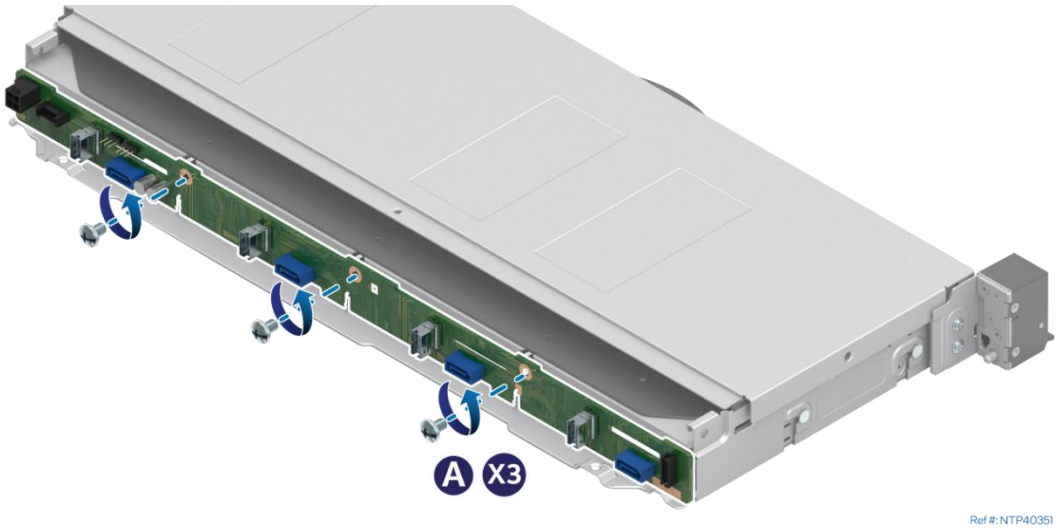


Figure 84. Backplane Removal (Step 1)

- Remove the three screws securing the backplane to the drive bay (see Letter “A”).

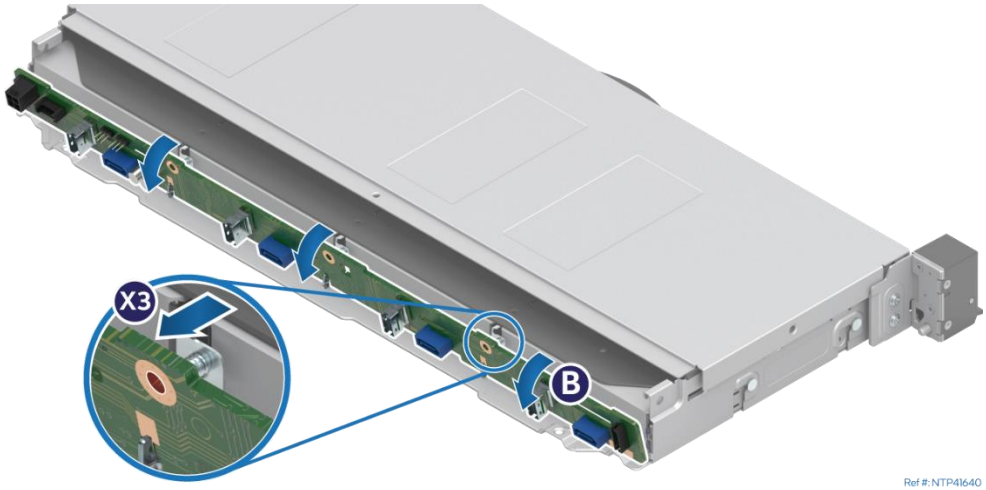


Figure 85. Backplane Removal (Step 2)

- Carefully rotate the top edge of the backplane away from the drive bay to release it from the screw mounts (see Letter “B”).

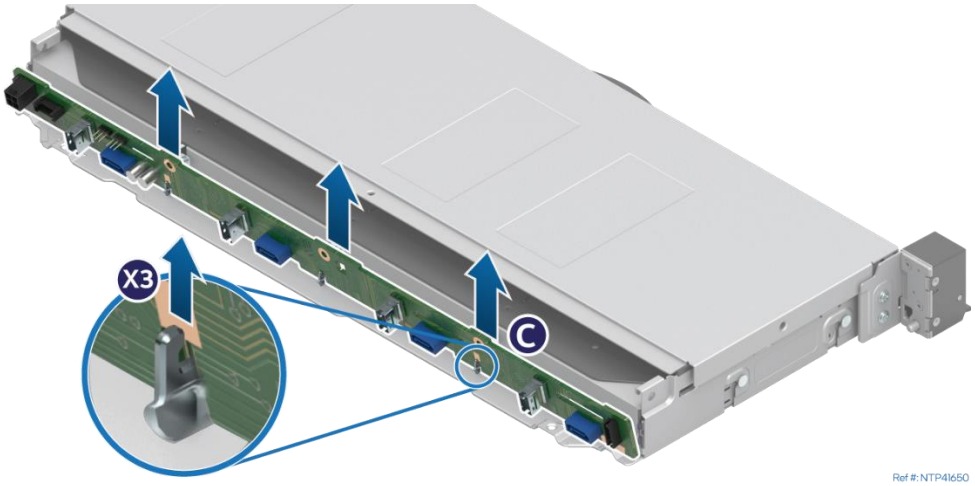


Figure 86. Backplane Removal (Step 3)

- Lift the backplane up from the three mounting brackets (see Letter “C”).

6. Locate and unpack the replacement backplane. Handle the card by its edges
7. Orient the backplane with all cable connectors facing the back of the chassis
8. Place and attach the backplane to the backside of the drive bay

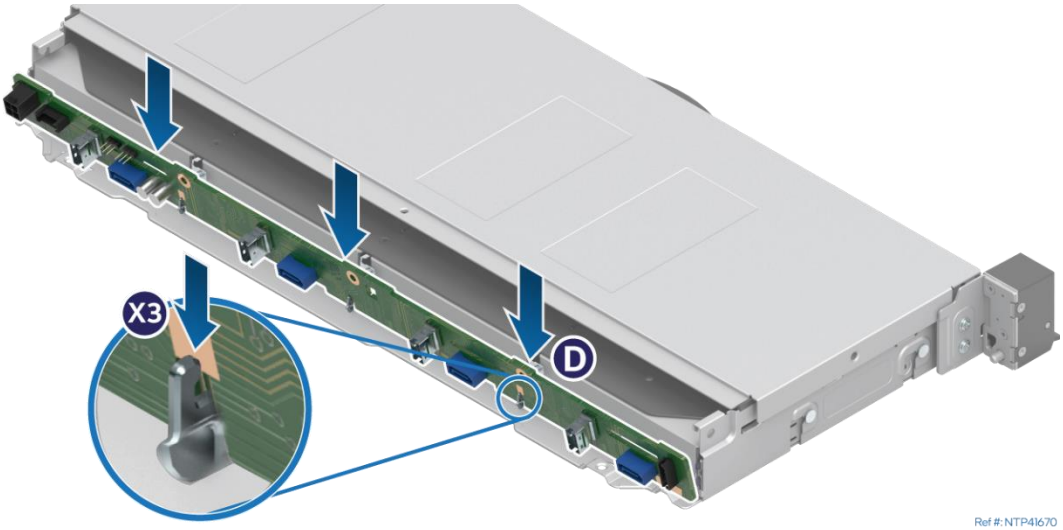


Figure 87. Backplane Installation (Step 1)

- Align the three slots on the bottom edge of the backplane with the three mounting brackets located on the back of the drive bay.
- Lower the bottom edge of the backplane onto the mounting brackets (see Letter “D”).

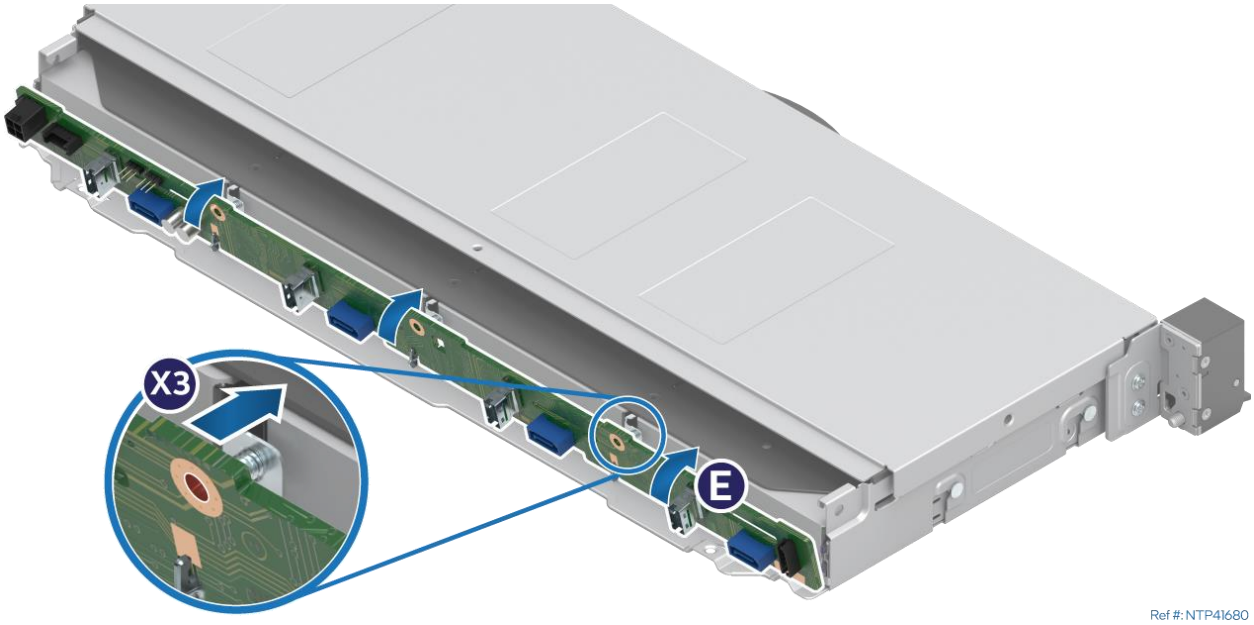


Figure 88. Backplane Installation (Step 2)

- Rotate the top edge of the backplane so the three mounting holes fit over the screw mounts on the drive bay (see Letter “E”).

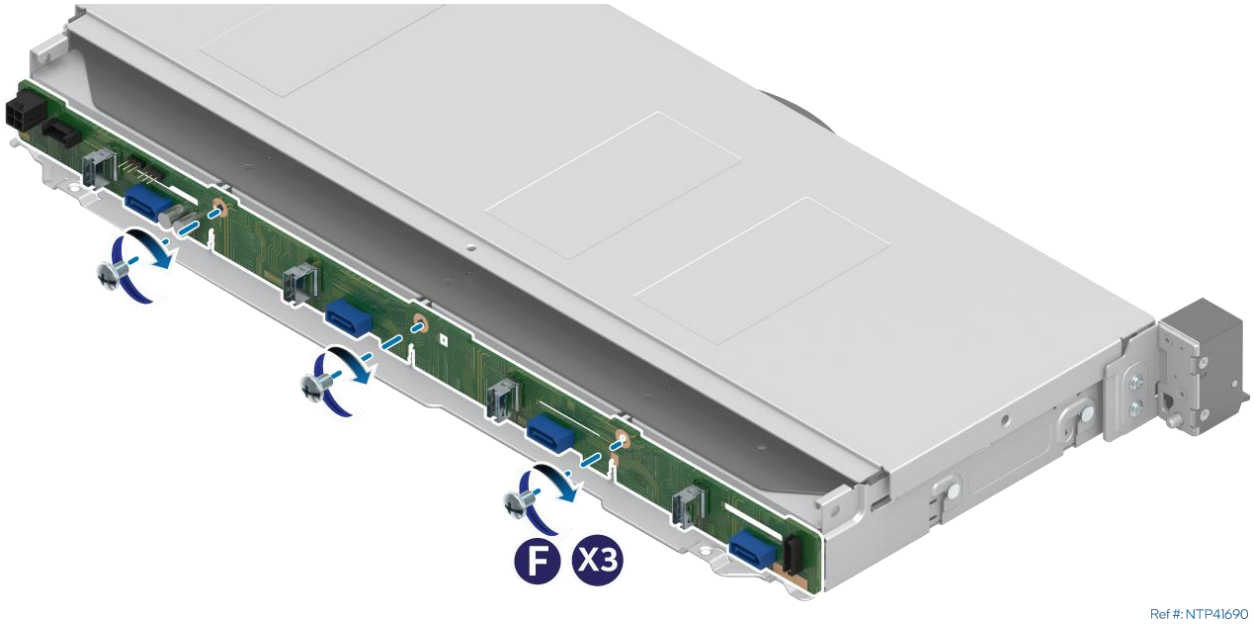


Figure 89. Backplane Installation (Step 3)

- Using 3 screws, secure the backplane to the drive bay

9. Re-attach all cables to the backplane
10. Reinstall all drive carriers into the front drive bay

6.10 M.2 SSD Replacement

Required Tools and Supplies

- Replacement PCIe* M.2 SSD
- Anti-static wrist strap and conductive workbench pad (recommended)
- Phillips* head screwdriver

1. Power off the system and disconnect all cable from the back of the system.
2. Remove the system top cover (see Section 6.1.1).
3. Remove the Air Duct (see Section 6.2.1).
4. Remove the riser card assembly (see Figure 76).
5. Remove the M.2 SSD from the server board (see Figure 90).

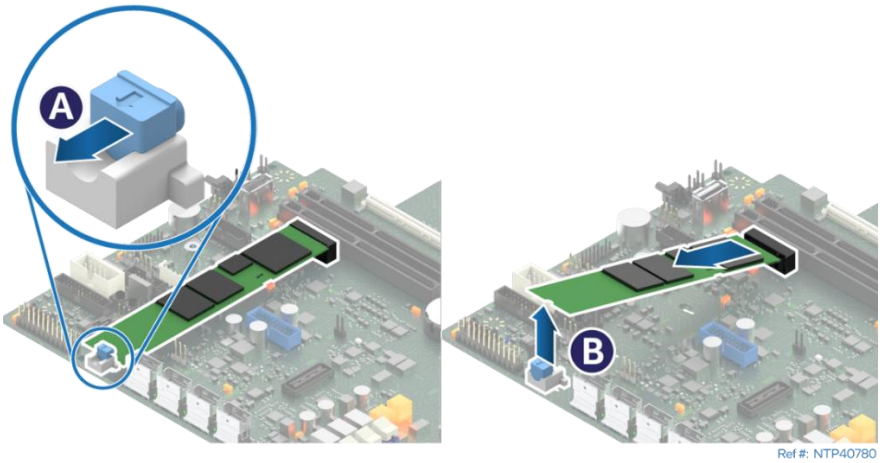


Figure 90. M.2 SSD Removal

   - Slide the blue latch away from the M.2 SSD (see Letter "A").
   - Carefully lift the free end of the M.2 SSD (see Letter "B") and gently pull it out of the connector.
6. Locate and carefully unpack the replacement M.2 SSD. Hold it by its edges. Do not touch the gold contacts.
7. Install the M.2 SSD to the server board (see Figure 91).

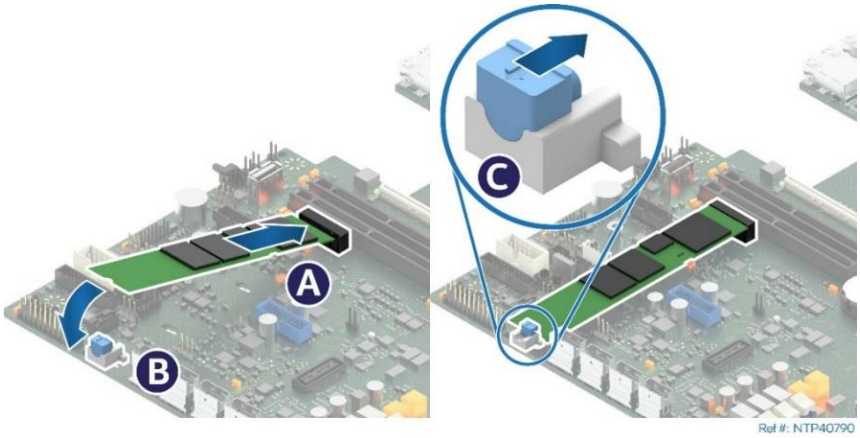


Figure 91. M.2 SSD Installation

   - Line up the alignment feature within the M.2 SSD edge connector with the alignment key within the server board M.2 SSD slot connector.
   - Carefully insert the M.2 SSD into the slot connector (see Letter "A").
   - Push down on the free end of the M.2 SSD until it lays flat onto the latch assembly (see Letter "B").
   - To secure the M.2 SSD to the server board, slide the blue latch over its back edge (see Letter "C").

6.11 Intel® VROC (VMD NVMe* RAID) Key Replacement

This section provides instructions for the replacement of an Intel® VROC Key in the system.

Required Tools and Supplies

- Intel® VROC Key – iPCs: **VROCSTANMOD** or **VROCPREMMOD** or **VROCISSDMOD**
- Anti-static wrist strap and conductive workbench pad (recommended)

1. Power off the system and disconnect all cable from the back of the system.
2. Remove the system top cover (see Section 6.1.1).
3. Remove the system air duct (see Section 6.2.1).
4. Remove the riser card assembly (see Figure 76).
5. Carefully remove the Intel® VROC Key from the server board (see Figure 92).

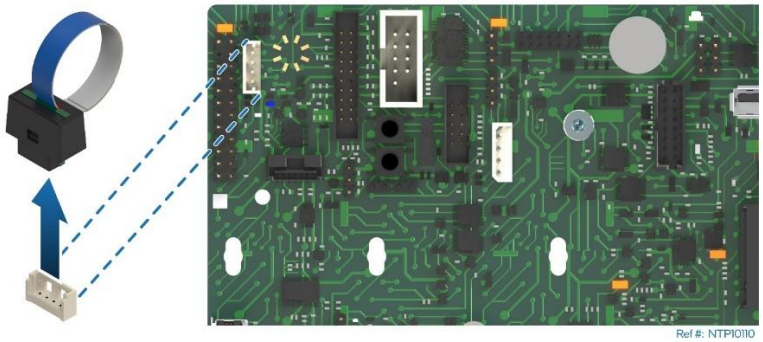


Figure 92. Intel® VROC Key Removal

   - Using the key pull tab, pull the key up until it disengages from the connector.
6. Locate and unpack the new Intel® VROC Key.
7. Install the Intel® VROC Key to the connector on the server board (see Figure 93).

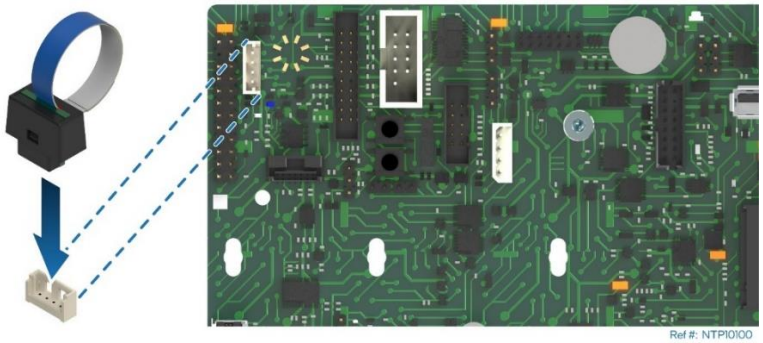


Figure 93. Intel® VROC Key Installation

   - Position the Intel® VROC Key over the connector and ensure the alignment features of the key and connector match.
   - Place the Intel® VROC Key onto the pins of the connector and press it down until it is securely in place

6.12 System Battery Replacement

Required Tools and Supplies

- Compatible CR2032 lithium battery
- Anti-static wrist strap and conductive workbench pad (recommended)

1. Power off the system and disconnect all cable from the back of the system.
2. Remove the system top cover (see Section 6.1.1).
3. Remove the Air Duct (see Section 6.2.1).
4. Remove riser card assembly (see Figure 76).
5. Remove the battery from the server board (see Figure 94).

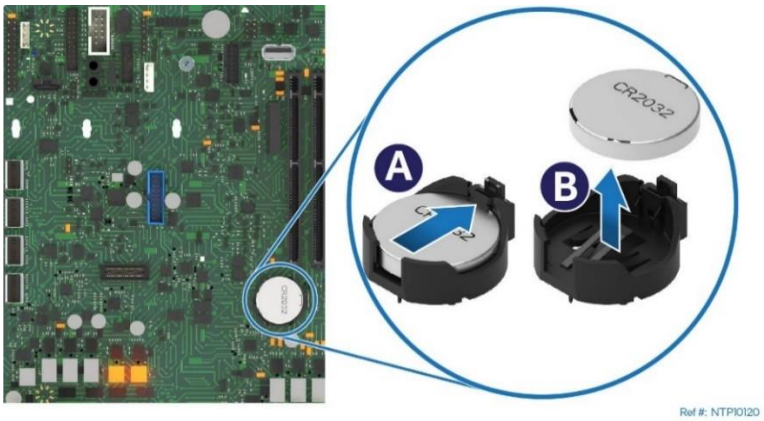


Figure 94. System Battery Removal

- Gently press the metal latch to release the battery (see Letter “A”).
- Remove the battery from the socket (see Letter “B”).
- Dispose of the battery according to local laws.

6. Locate and unpack the replacement battery.
7. Orient the battery with the flat positive ‘+’ side facing up.
8. Install the battery into the battery connector socket on the server board (see Figure 95).

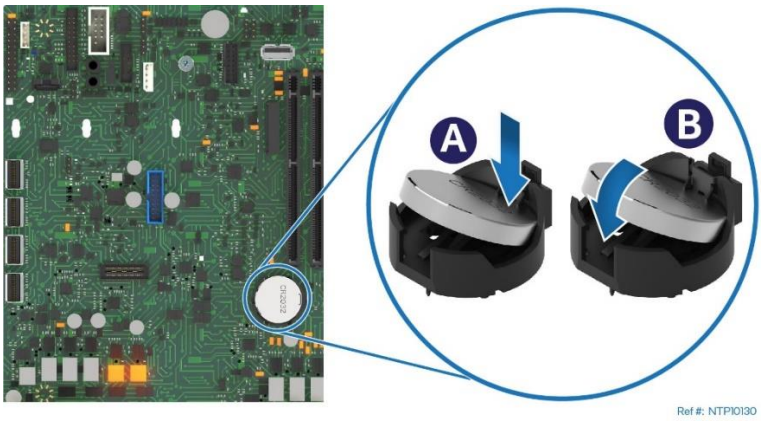


Figure 95. System Battery Installation

- Place the leading edge of the battery beneath the metal latch within the battery socket
- Lower the back edge of the battery into the socket until it is securely seated

9. Re-assemble the system
10. Power on the system and access the <F2> BIOS Setup Utility to restore BIOS Settings and reset the system time and date

6.13 Processor Replacement

Components Required:

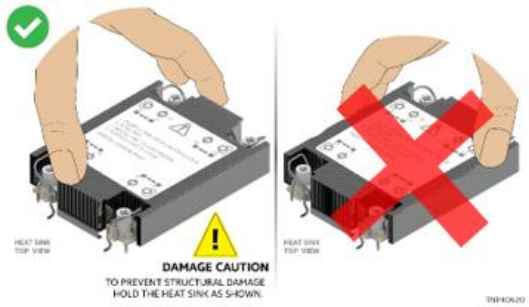
- New matching 3rd Gen Intel® Xeon® processor Scalable processor + included shipping tray
- Existing processor carrier clip
- New processor heat sink or existing processor heat sink + new thermal interface material (TIM)

Required Tools and Supplies

- Anti-static wrist strap, an ESD safe workbench, and other anti-ESD precautions (recommended)
- ESD Gloves (recommended)
- T-30 Torx* screwdriver

1. Power off the system and disconnect all cable from the back of the system.
2. Remove the system top cover (see Section 6.1.1).
3. Remove the Air Duct (see Section 6.2.1).
4. Remove riser card assembly (see Figure 76).
5. Identify and locate the faulty processor.
6. Remove the PHM from the server board (see Figure 96).

Caution: Fin edges of the processor heat sink are very sharp. Intel recommends wearing thin ESD protective gloves when handling the PHM during the following procedures. Processor heat sinks are easily damaged if handled improperly. See the following image for proper handling:



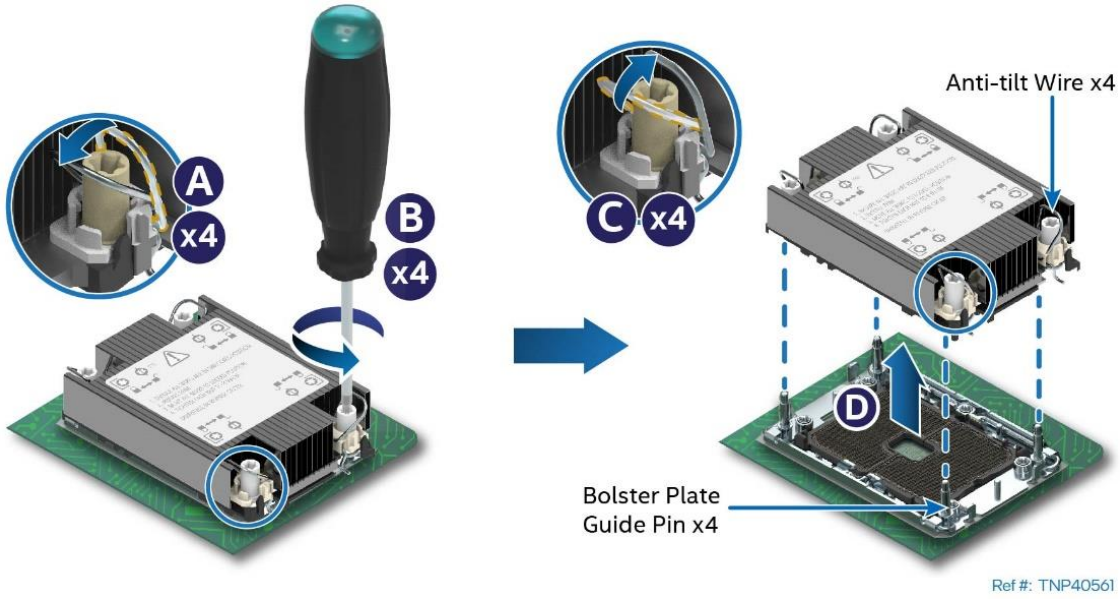


Figure 96. PHM Assembly Removal from Processor Socket

- Ensure the heat sink anti-tilt wire, located over each of the four heat sinks fasteners, is in the outward position (see Letter “A”).
- Loosen each fastener (see Letter “B”)
- Set all four anti-tilt wires on the heat sink to the inward position (see Letter “C”).
- Carefully grasp the PHM and lift it straight up and off the server board (see Letter “D”).

7. With the processor facing up, set the PHM down onto a flat surface.
8. Visually inspect that the processor socket is free of damage or contamination.

Note: If debris is observed within the processor socket, blow it away gently. Do not use tweezers or any other hard tools to remove the debris.

If not replacing the processor, install the original plastic socket cover over the processor socket.

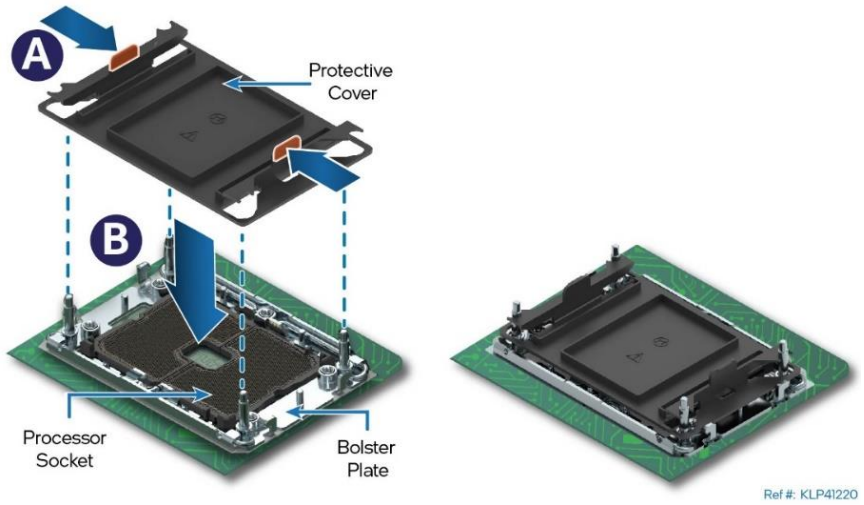


Figure 97. Processor Socket Cover Installation

- Squeeze the finger grips at each end of the cover (see Letter “A”).
- Carefully lower the cover over the four alignment pins of the bolster plate and onto the processor socket (see Letter “B”).
- Release the finger grips to lock the cover in place.
- Ensure socket cover is locked in place.

Caution: Do not press down on the center of the socket cover.

---

9. Carefully dis-assemble the PHM (see Figure 98).

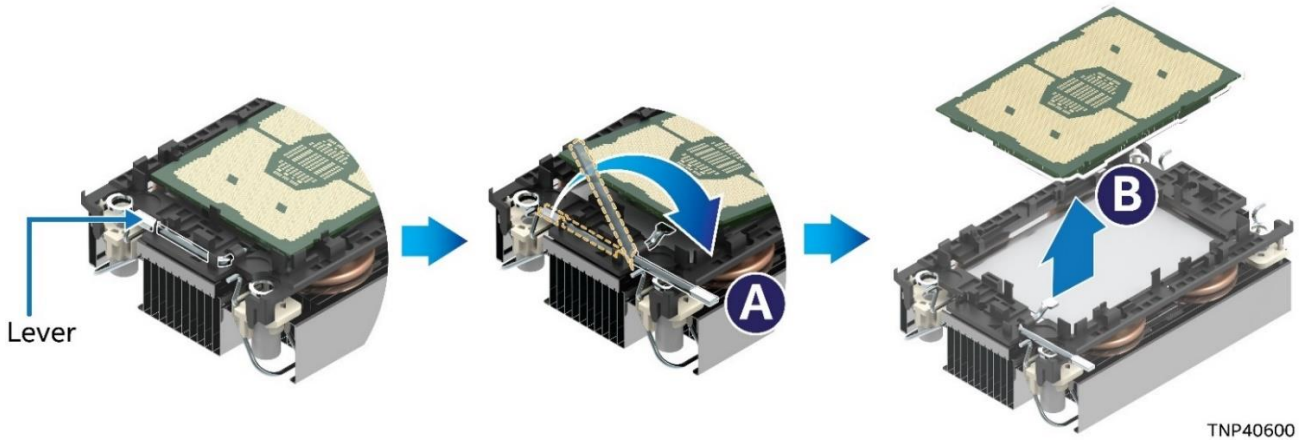


Figure 98. PHM Disassembly

- While holding down the PHM, rotate the lever (see Letter "A") clockwise until the processor lifts free from the processor carrier clip.
- While holding down the edges of the processor carrier clip, carefully lift out the processor (see Letter "B").

10. Return the lever to its original position and detach the processor carrier clip from the heat sink (see Figure 99).

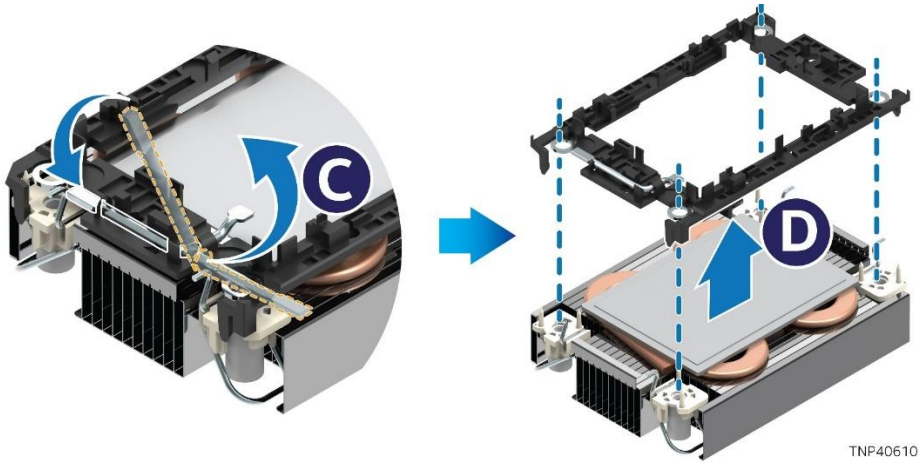


Figure 99. Processor Carrier Clip Removal from PHM Assembly

- Unlatch the hook on each corner of the processor carrier clip and lift it from the heat sink (see Letter "D").

To properly reassemble the PHM and install it onto the server board, the procedures described in the following steps must be followed in the order specified. These instructions assume that the processor heat sink (New or reuse of existing) has the necessary Thermal Interface Material (TIM) (DOWSIL* TC-5888) already applied.

Note: Full ESD precautions should be followed to perform reassembly of the PHM and reinstallation of the PHM to the server board. At no time should the processor itself be handled.

Each component within the PHM assembly includes a Pin 1 indicator. Pin 1 indicator alignment between all components is required throughout the assembly process.

11. Orient and align the processor carrier clip over the processor (see Figure 100).

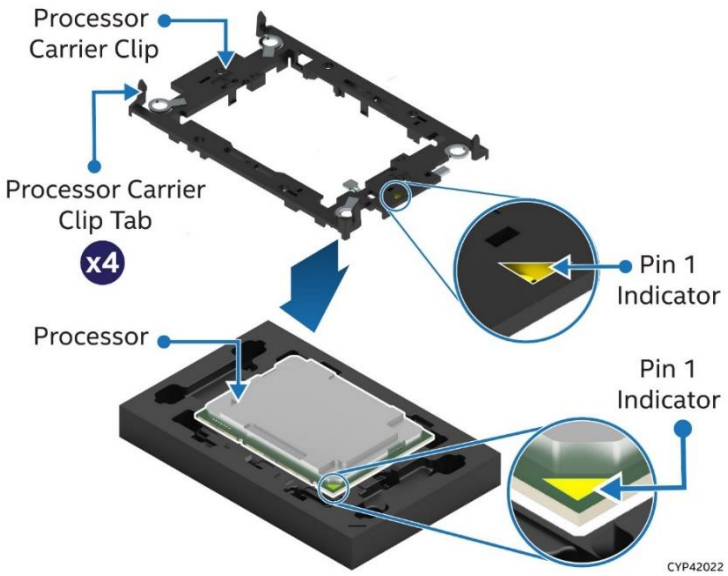


Figure 100. Installing Processor Carrier Clip onto Processor – Part 1

- With the processor still in its tray, place the processor carrier clip over the processor.
- Ensure the Pin 1 indicator on the processor carrier clip is aligned with the Pin 1 indicator of the processor.

12. Place the carrier clip onto the processor.

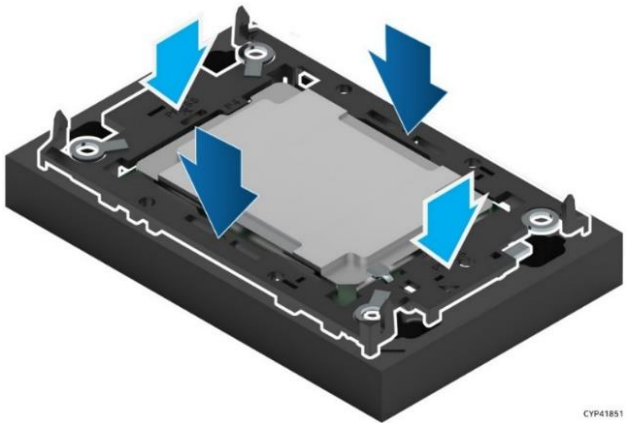


Figure 101. Installing Processor Carrier Clip onto Processor – Part 2

- Gently press down simultaneously on two opposite sides of the processor carrier clip until it clicks in place. Repeat for the other two sides.

13. Locate the processor heat sink. To avoid damage, grasp it by its narrower sides as shown in Figure 102.

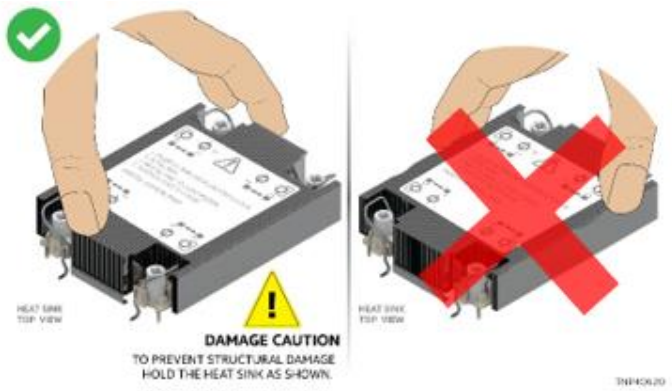


Figure 102. Processor Heat Sink Handling

14. Place the heat sink bottom side up onto a flat surface.
    If reusing an existing heat sink:
    - Properly clean off existing thermal interface material (TIM) from the bottom of the heat sink
    - Apply new TIM (DOWSIL* TC-5888)

    If using a new heat sink
    - Remove the plastic protective film (if present) from the Thermal Interface Material (TIM).

15. Attach the heat sink to the processor assembly

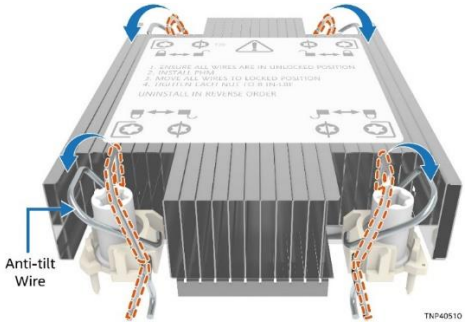


Figure 103. Processor Heat Sink Anti-tilt Wires in the Outward Position

- Place the heat sink top side up onto a flat surface.
- Set the anti-tilt wire over each of the four heat sink fasteners to their outward position (see Figure 103).

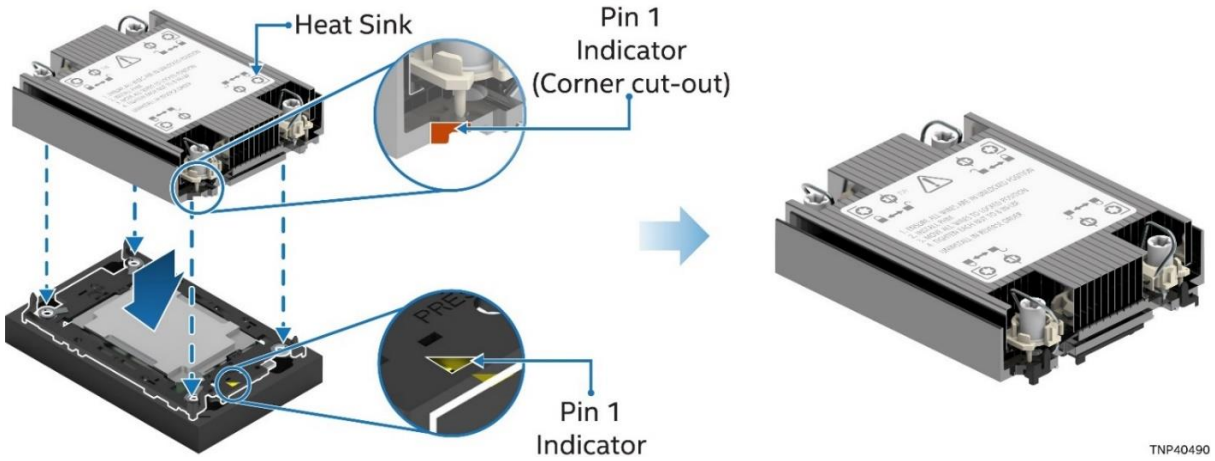


Figure 104. Processor Heat Sink Placement

- Align the Pin 1 indicator of processor carrier clip with one of the diagonally cut corners on the base of the heat sink. Or (If present) look for the Pin 1 indicator on the corner of the heat sink label.
- Gently press down the heat sink onto the processor carrier clip until it clicks into place.
- Ensure all four heat sink corners are securely latched to the carrier clip tabs.

16. If installed, remove the plastic cover from the processor socket

Caution: Do not touch the socket pins. The pins inside the processor socket are extremely sensitive. A damaged processor socket may produce unpredictable system errors.

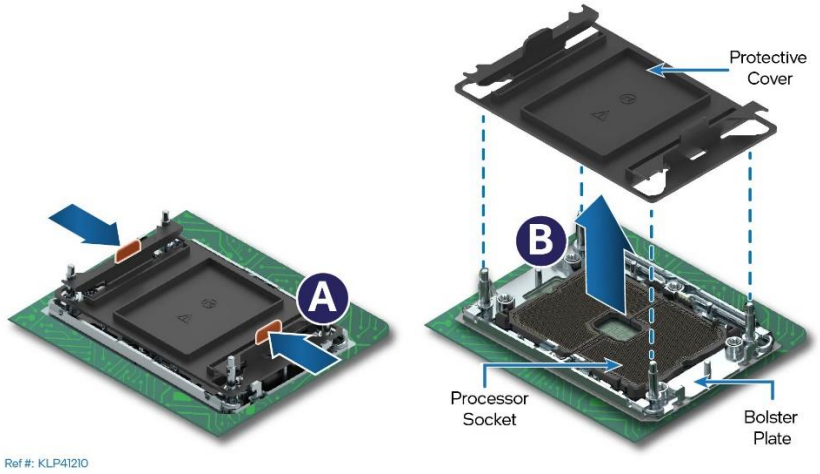


Figure 105. Processor Socket Cover Removal

- Remove the protective cover by squeezing the finger grips (see Letter “A”) and pulling the cover up (see Letter “B”).
- Ensure the socket is free of damage or contamination before installing the PHM.

Note: If debris is observed within the processor socket, blow it away gently. Do not use tweezers or any other hard tools to remove the debris.

17. Orient and align the PHM to the processor socket (see Figure 106).

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

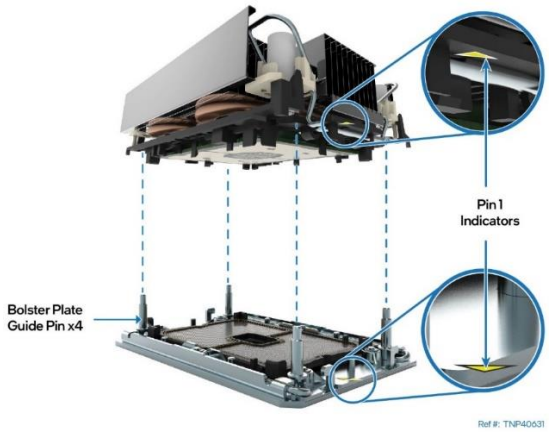


Figure 106. PHM Alignment with Processor Socket Assembly

- Align the Pin 1 indicators of the processor carrier clip and processor with the Pin 1 indicator on the socket assembly bolster plate.

18. Install the fully assembled PHM onto the processor socket (see Figure 107).

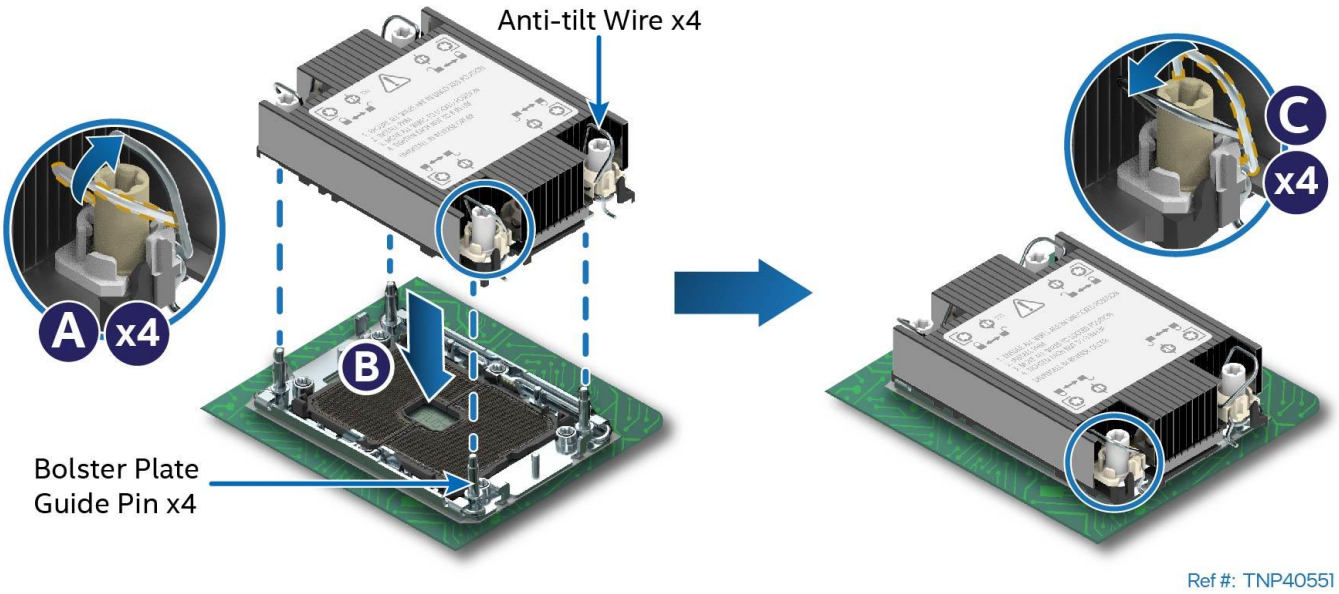


Figure 107. PHM Installation onto Server Board

- Set all four anti-tilt wires on the heat sink to the inward position (see Letter “A”).
- Carefully lower the PHM over the four bolster plate alignment pins (see Letter “B”).
- Ensure the PHM is sitting flat and even on the bolster plate.
- Set all four anti-tilt wires on the heat sink to the outward position (see Letter “C”).

19. Secure the PHM to the bolster plate

Figure 108. Tighten Heat Sink Fasteners

- Using a T30 Torx* screwdriver, tighten the heat sink fasteners to 8 in-lb.

6.14 Server Board Replacement

Required Tools and Supplies

- Intel® Server Board M29NTP2SB spare – iPC M20NTP2SB
- Anti-static wrist strap and conductive workbench pad (recommended)
- Phillips* head screwdriver #2

1. Power off the system and disconnect all cables from the back of the system.
2. Remove the system top cover (see Section 6.1.1).
3. Remove the Air Duct (see Section 6.2.1)
4. Remove the riser card assembly (see Figure 76).
5. (If Present) Remove the OCP* Module from the server board (see Section 6.8)
6. (If Present) Remove the Intel® VROC Key from the server board (see Section 6.11)
7. (If Present) Remove the M.2 SSD from the server board (see Section 6.10)
8. Remove all memory modules from the server board (see Section 6.3)
9. Remove processors from the server board (see Section 6.13).
10. Disconnect all cables attached to connectors on the server board.
11. Remove 9 screws used to secure the server board to the chassis (see Letter A Figure 109).

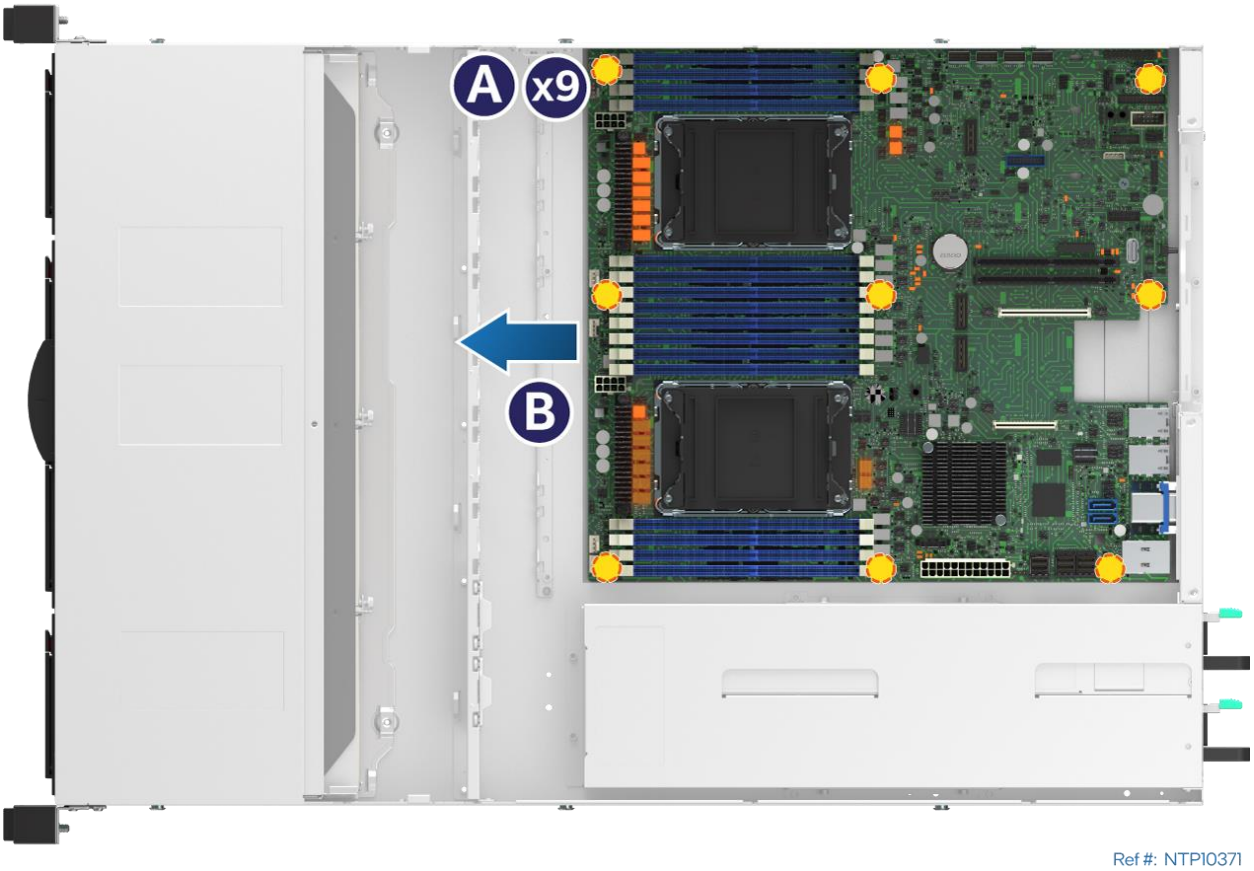


Figure 109. Server Board Removal

12. Slide the server board towards the front of the chassis to disengage I/O connectors from the back panel Letter “B”).
13. Carefully lift the server board from the chassis and place it into an anti-static bag.

14. Locate and unpack the replacement server board. Use two hands to hold the server board by its edges.
15. Clear the installation area of the chassis base from all cables
16. Orient the server board with rear I/O connectors facing the chassis back panel
17. Carefully place the server board into the chassis and slide it towards the back panel.

The server board is correctly positioned when all rear I/O connectors are up against and/or through the chassis back panel and all mounting screw locations on the server board are aligned with the chassis base stand-offs.

18. Secure the server board to the chassis using nine screws at the locations shown in Figure 110.

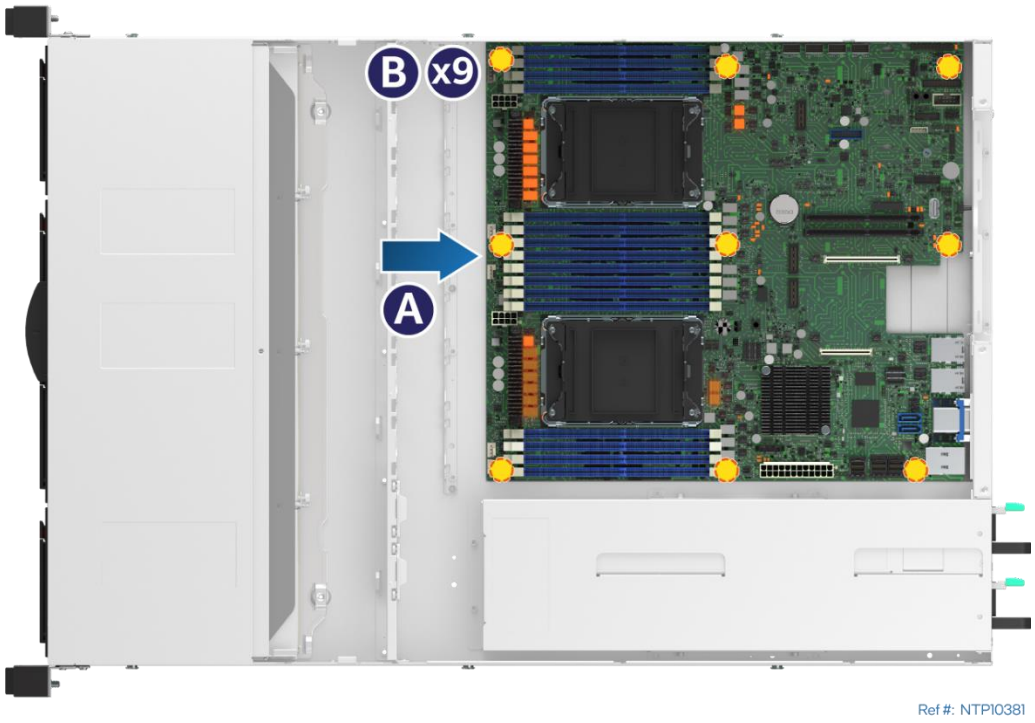


Figure 110. Server Board Installation

19. Re-attach all cables previously removed from the server board.
    - 3 power cables – 1 Main Power + 2 CPU Power
    - 6 fan cables
    - 1 SATA MiniSAS HD cable (If configured)
    - 4 NVMe* SlimSAS cables (If configured)
    - 1 NVMe* LED support cable (If configured)
20. Reinstall processors (see Section 2.3)
21. Reinstall Memory Modules (see Section 2.4).
22. Reinstall all options previously removed from the server board.
23. Reinstall riser card assemblies (see Figure 81).
24. Re-attach all internal cables previously detached from add-in cards and I/O modules.
25. Reinstall the air duct (see Section 2.2.2).
26. Reinstall the system top cover (see Section 2.1.2).
27. Power on the system and access the <F2> BIOS Setup Utility to restore BIOS Settings

To ensure the most reliable system operation, Intel highly recommends downloading and installing the latest BIOS and Firmware from its website.

http://www.intel.com/support/downloadserversw

Appendix A. Getting Help

Available Intel support options with your Intel Server System:

1. 24x7 support through Intel's support webpage at https://www.intel.com/content/www/us/en/support/products/1201/server-products.html

   Information available at the support site includes:

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

   Quick Links:

Use the following links for support on Intel Server Boards and Server Systems	**Download Center** http://www.intel.com/support/downloadserversw	**BIOS Support Page** http://www.intel.com/support/serverbios	**Troubleshooting Boot Issue** http://www.intel.com/support/tsboot
Use the following links for support on Intel® Data Center Block (DCB) Integrated Systems* * Intel DCB comes pre-populated with processors, memory, storage, and peripherals based on how it was ordered through the Intel Configure to Order tool.	**Download Center** http://www.intel.com/support/downloaddcbsw	**Technical Support Documents** http://www.intel.com/support/dcb	**Warranty and Support Info** http://www.intel.com/support/dcbwarranty

2. If a solution cannot be found at Intel's support site, submit a service request via Intel's online service center at https://supporttickets.intel.com/servicecenter?lang=en-US. In addition, you can also view previous support requests. (Login required to access previous support requests)
3. Contact an Intel support representative using one of the support phone numbers available at https://www.intel.com/content/www/us/en/support/contact-support.html (charges may apply).

Intel also offers Partner Alliance Program members ~~a~~round-the-clock 24x7 technical phone support on Intel® server boards, server chassis, server RAID controller cards, and Intel® Server Management at: https://www.intel.com/content/www/us/en/partner-alliance/overview.html

Note: The 24x7 support number is available after logging in to the Intel Partner Alliance website.

Warranty Information

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

Appendix B. Internal Cable Routing Channels

The system provides cable routing channels along each chassis sidewall. Cables should not be routed directly in front of the system fans or through the center of the server board between the memory slots and processor sockets.

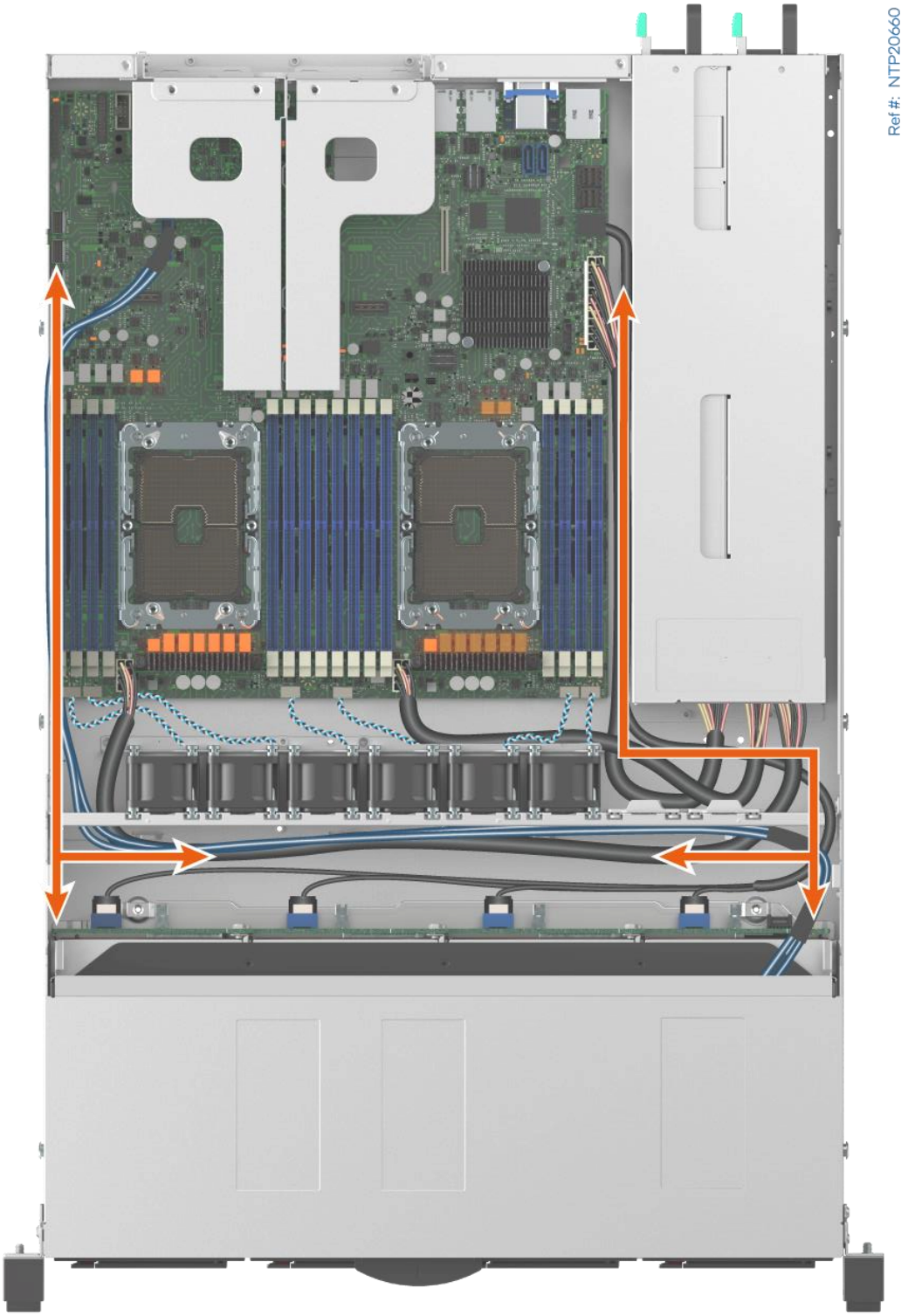


Figure 111. Cable Routing Channels

Appendix C. Memory Population Rules

The Intel® Server System M20NTP1UR includes a total of 16 memory slots, 8 memory slots supported by each processor.

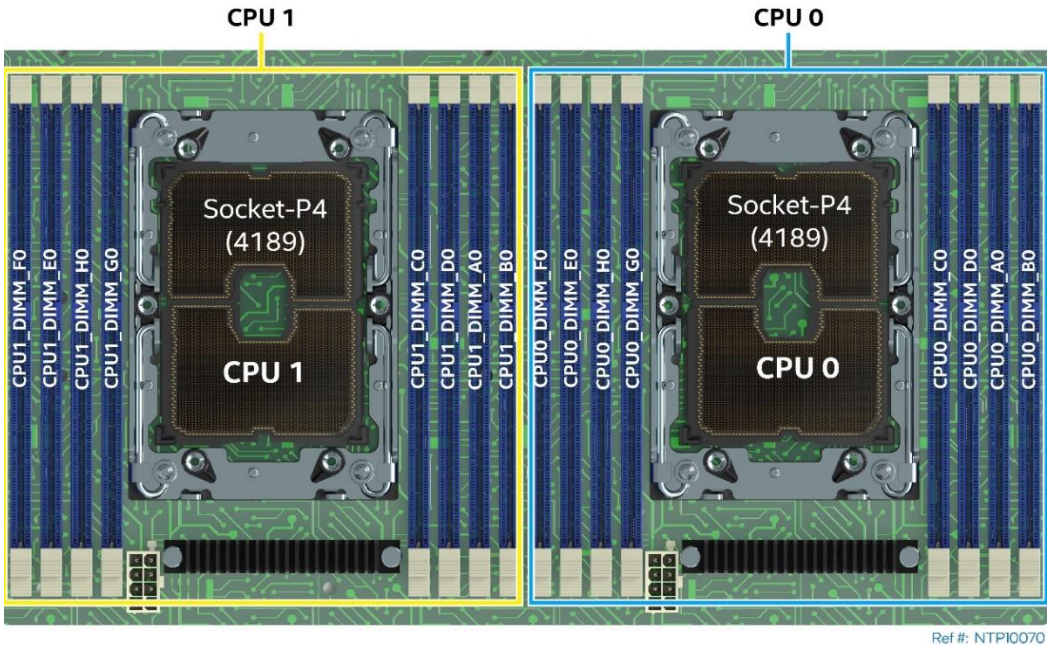


Figure 112. Server Board Memory Slot Association by CPU

As shown in the following illustration, each processor has four integrated memory controllers (IMCs), each supporting two memory channels. Memory channels are identified A through H. Each memory channel supports one memory slot.

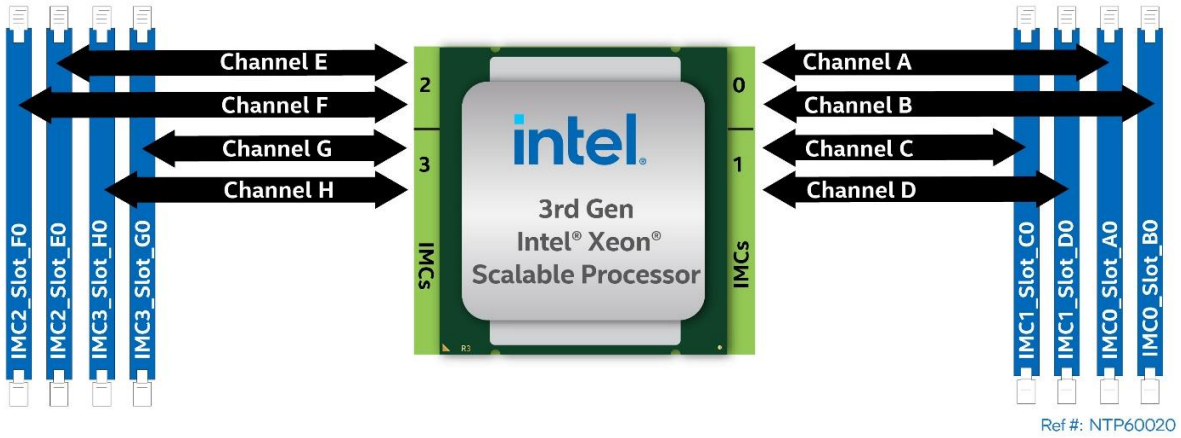


Figure 113. Processor Memory Slot Support Overview

The following applies to the memory architecture of the server board:

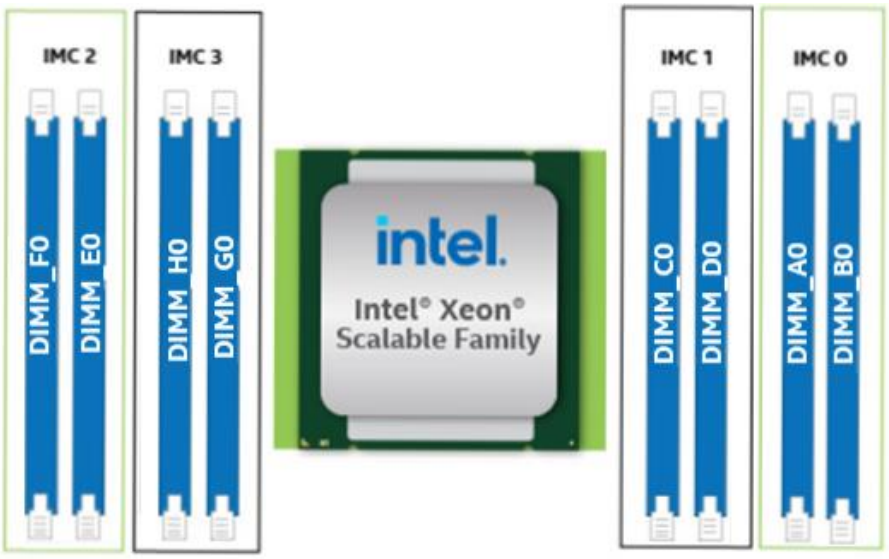
- Memory slots associated with a given processor are unavailable if the corresponding processor socket is not populated.
- Processor sockets are self-contained and autonomous. However, all memory subsystem support (such as memory RAS and error management) in the BIOS Setup are applied commonly for each installed processor.

- For best system performance in dual processor configurations, installed DDR4 DIMM type and population configured to CPU 1 must match DDR4 DIMM type and population configured to CPU 0.
- For best system performance, memory should be installed in all eight channels for each installed processor.
- Mixed DDR4 DIMM population rules:
  - Mixing DDR4 DIMMs of different frequencies and latencies is not supported within or across processors. If a mixed configuration is encountered, the BIOS attempts to operate at the highest common frequency and the lowest latency possible.
  - Mixing of DDR4 DIMM types (RDIMM, LRDIMM, 3DS-RDIMM, 3DS-LRDIMM) within or across processors is not supported. This condition is a Fatal Error Halt in Memory Initialization.

Recommended Memory Configurations

The following table identifies the recommended DIMM population configurations by memory slot based on the desired number of DIMMs to be supported by each installed processor. For best system performance in a dual processor configuration, installed memory type and population configured to CPU 1 must match memory type and population configured to CPU 0.

Table 5. Recommended DDR4 DIMM per Socket Population Configurations



# of DIMMs	IMC-2		IMC-3		IMC -1		IMC-0	
	CH F	CH E	CH H	CH G	CH C	CH D	CH A	CH B
	Slot 0	Slot 0	Slot 0	Slot 0	Slot 0	Slot 0	Slot 0	Slot 0
1	–	–	–	–	–	–	DIMM	–
2	–	DIMM	–	–	–	–	DIMM	–
4	–	DIMM	–	DIMM	DIMM	–	DIMM	–
6	DIMM	DIMM	–	DIMM	DIMM	–	DIMM	DIMM
8	DIMM	DIMM	DIMM	DIMM	DIMM	DIMM	DIMM	DIMM

Note: Intel does not support nor will it provide support for systems populated with “Un-like” (non-matching) DIMMs. However, the system may still operate if all the mixed DDR4 DIMM population rules are followed. Validation and support of these configurations is the sole responsibility of the original system integrator.

For best compatibility and system operation, Intel highly recommends that all installed DIMMs have “identical” or “like” attributes as defined in the following Intel DDR4 support disclaimer.

Intel DDR4 DIMM Support Disclaimer:

Intel validates and will only provide support for system configurations where all installed DDR4 DIMMs have matching "Identical" or "Like" attributes. See Table 6. A system configured concurrently with DDR4 DIMMs from different vendors will be supported by Intel if all other DDR4 "Like" DIMM attributes match.

Intel does not perform system validation testing nor will it provide support for system configurations where all populated DDR4 DIMMs do not have matching "Like" DIMM attributes as listed in Table 6.

Intel will only provide support for Intel server systems configured with DDR4 DIMMs that have been validated by Intel and are listed on Intel's Tested Memory list for the given Intel server product family.

Intel configures and ships pre-integrated L9 server systems. All DDR4 DIMMs within a given L9 server system as shipped by Intel will be identical. All installed DIMMs will have matching attributes as those listed in the *"Identical" DDR4 DIMM4 Attributes* column in Table 6.

When purchasing more than one integrated L9 server system with the same configuration from Intel, Intel reserves the right to use "Like" DIMMs between server systems. At a minimum "Like" DIMMS will have matching DIMM attributes as listed in the following table. However, the DIMM model #, revision #, or vendor may be different.

For warranty replacement, Intel will make every effort to ship back an exact match to the one returned. However, Intel may ship back a validated "Like" DIMM. A "Like" DIMM may be from the same vendor but may not be the same revision # or model #, or it may be an Intel validated DIMM from a different vendor. At a minimum, all "Like" DIMMs shipped from Intel will match attributes of the original part according to the definition of "Like" DIMMs in the following table.

Table 6. DDR4 DIMM Attributes Table for "Identical" and "Like" DIMMs

- DDR4 DIMMs are considered "Identical" when ALL listed attributes between the DIMMs match
- Two or more DDR4 DIMMs are considered "Like" DIMMs when all attributes minus the Vendor, and/or DIMM Part # and/or DIMM Revision#, are the same.

Attribute	"Identical" DDR4 DIMM Attributes	"Like" DDR4 DIMM Attributes	Possible DDR4 Attribute Values
Vendor	**Match**	**Maybe Different**	Memory Vendor Name
DIMM Part #	**Match**	**Maybe Different**	Memory Vendor Part #
DIMM Revision #	**Match**	**Maybe Different**	Memory Vendor Part Revision #
SDRAM Type	**Match**	**Match**	DDR4
DIMM Type	**Match**	**Match**	RDIMM, LRDIMM
Speed (MHz)	**Match**	**Match**	2666, 2933, 3200
Voltage	**Match**	**Match**	1.2V
DIMM Size (GB)	**Match**	**Match**	8GB, 16GB, 32GB, 64GB, 128GB, 256GB
Organization	**Match**	**Match**	1Gx72; 2Gx72; 4Gx72; 8Gx72; 16Gx72; 32Gx72
DIMM Rank	**Match**	**Match**	1R, 2R, 4R, 8R
DRAM Width	**Match**	**Match**	x4, x8
DRAM Density	**Match**	**Match**	8Gb, 16Gb

Appendix D. POST Code Errors

Most error conditions encountered during POST are reported using POST error codes. These codes represent specific failures, warnings, or information. 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.

Checkpoint Ranges

Status Code Range	Description
0x01 – 0x0B	SEC execution
0x0C – 0x0F	SEC errors
0x10 – 0x2F	PEI execution up to and including memory detection
0x30 – 0x4F	PEI execution after memory detection
0x50 – 0x5F	PEI errors
0x60 – 0x8F	DXE execution up to BDS
0x90 – 0xCF	BDS execution
0xD0 – 0xDF	DXE errors
0xE0 – 0xE8	S3 Resume (PEI)
0xE9 – 0xEF	S3 Resume errors (PEI)
0xF0 – 0xF8	Recovery (PEI)
0xF9 – 0xFF	Recovery errors (PEI)

Standard Checkpoints

Security (SEC) Phase

Status Code	Description
0x00	Not used
Progress Codes	
0x01	Power on. Reset type detection (soft/hard).
0x02	AP initialization before microcode loading
0x03	North Bridge initialization before microcode loading
0x04	South Bridge initialization before microcode loading
0x05	OEM initialization before microcode loading
0x06	Microcode loading
0x07	AP initialization after microcode loading
0x08	North Bridge initialization after microcode loading
0x09	South Bridge initialization after microcode loading
0x0A	OEM initialization after microcode loading
0x0B	Cache initialization

Status Code	Description
SEC Error Codes	
0x0C – 0x0D	Reserved for future AMI SEC error codes
0x0E	Microcode not found
0x0F	Microcode not found

SEC Beep Codes

- None

Pre-EFI Initialization (PEI) Phase

Status Code	Description
Progress Codes	
0x10	PEI Core is started
0x11	Pre-memory CPU initialization is started
0x12	Pre-memory CPU initialization (CPU module specific)
0x13	Pre-memory CPU initialization (CPU module specific)
0x14	Pre-memory CPU initialization (CPU module specific)
0x15	Pre-memory North Bridge initialization is started
0x16	Pre-Memory North Bridge initialization (North Bridge module specific)
0x17	Pre-memory North Bridge initialization (North Bridge module specific)
0x18	Pre-Memory North Bridge initialization (North Bridge module specific)
0x19	Pre-memory South Bridge initialization is started
0x1A	Pre-Memory South Bridge initialization (South Bridge module specific)
0x1B	Pre-memory South Bridge initialization (South Bridge module specific)
0x1C	Pre-Memory South Bridge initialization (South Bridge module specific)
0x1D – 0x2A	OEM pre-memory initialization codes
0x2B	Memory initialization. Serial Presence Detect (SPD) data reading
0x2C	Memory initialization. Memory presence detection
0x2D	Memory initialization. Programming memory timing information
0x2E	Memory initialization. Configuring memory
0x2F	Memory initialization (other)
0x30	Reserved for ASL (see ACPI/ASL Checkpoints)
0x31	Memory Installed
0x32	CPU post-memory initialization is started
0x33	CPU post-memory initialization. Cache initialization
0x34	CPU post-memory initialization. Application Processor(s) (AP) initialization
0x35	CPU post-memory initialization. Boot Strap Processor (BSP) selection
0x36	CPU post-memory initialization. System Management Mode(SMM) initialization
0x37	Post-Memory North Bridge initialization is started
0x38	Post-Memory North Bridge initialization (North Bridge module specific)
0x39	Post-Memory North Bridge initialization (North Bridge module specific)
0x3A	Post-Memory North Bridge initialization (North Bridge module specific)
0x3B	Post-Memory South Bridge initialization is started
0x3C	Post-Memory South Bridge initialization (South Bridge module specific)
0x3D	Post-Memory South Bridge initialization (South Bridge module specific)

Status Code	Description
0x3E	Post-Memory South Bridge initialization (South Bridge module specific)
0x3F – 0x4E	OEM post memory initialization codes
0x4F	DXE IPL is started
PEI Error Codes	
0x50	Memory initialization error. Invalid memory type or incompatible memory speed
0x51	Memory initialization error. SPD reading has failed
0x52	Memory initialization error. Invalid memory size or memory modules do not match
0x53	Memory initialization error. No usable memory detected
0x54	Unspecified memory initialization error
0x55	Memory not installed
0x56	Invalid CPU type or speed
0x57	CPU mismatch
0x58	CPU self test failed or possible CPU cache error
0x59	CPU microcode is not found or microcode update is failed
0x5A	Internal CPU error
0x5B	Reset PPI is not available
0x5C – 0x5F	Reserved for future AMI error codes
S3 Resume Progress Codes	
0xE0	S3 Resume is started (S3 Resume PPI is called by the DXE IPL)
0xE1	S3 Boot Script execution
0xE2	Video repost
0xE3	OS S3 wake vector call
0xE4 – 0xE7	Reserved for future AMI progress codes
S3 Resume Error Codes	
0xE8	S3 Resume Failed
0xE9	S3 Resume PPI not Found
0xEA	S3 Resume Boot Script Error
0xEB	S3 OS Wake Error
0xEC – 0xEF	Reserved for future AMI error codes
Recovery Progress Codes	
0xF0	Recovery condition triggered by firmware (Auto recovery)
0xF1	Recovery condition triggered by user (Forced recovery)
0xF2	Recovery process started
0xF3	Recovery firmware image is found
0xF4	Recovery firmware image is loaded
0xF5 – 0xF7	Reserved for future AMI progress codes
Recovery Error Codes	
0xF8	Recovery PPI is not available
0xF9	Recovery capsule is not found
0xFA	Invalid recovery capsule
0xFB – 0xFF	Reserved for future AMI error codes

Driver Execution Environment (DXE) Phase

Status Code	Description
0x60	DXE Core is started
0x61	NVRAM initialization
0x62	Installation of the South Bridge Runtime Services
0x63	CPU DXE initialization is started
0x64	CPU DXE initialization (CPU module specific)
0x65	CPU DXE initialization (CPU module specific)
0x66	CPU DXE initialization (CPU module specific)
0x67	CPU DXE initialization (CPU module specific)
0x68	PCI host bridge initialization
0x69	North Bridge DXE initialization is started
0x6A	North Bridge DXE SMM initialization is started
0x6B	North Bridge DXE initialization (North Bridge module specific)
0x6C	North Bridge DXE initialization (North Bridge module specific)
0x6D	North Bridge DXE initialization (North Bridge module specific)
0x6E	North Bridge DXE initialization (North Bridge module specific)
0x6F	North Bridge DXE initialization (North Bridge module specific)
0x70	South Bridge DXE initialization is started
0x71	South Bridge DXE SMM initialization is started
0x72	South Bridge devices initialization
0x73	South Bridge DXE initialization (South Bridge module specific)
0x74	South Bridge DXE initialization (South Bridge module specific)
0x75	South Bridge DXE initialization (South Bridge module specific)
0x76	South Bridge DXE initialization (South Bridge module specific)
0x77	South Bridge DXE initialization (South Bridge module specific)
0x78	ACPI module initialization
0x79	CSM initialization
0x7A – 0x7F	Reserved for future AMI DXE codes
0x80 – 0x8F	OEM DXE initialization codes
0x90	Boot Device Selection (BDS) phase is started
0x91	Driver connecting is started
0x92	PCI Bus initialization is started
0x93	PCI Bus Hot Plug Controller initialization
0x94	PCI Bus Enumeration
0x95	PCI BUS Request Resources
0x96	PCI Bus Assign Resources
0x97	Console Output devices connect
0x98	Console Input devices connect
0x99	Super IO initialization
0x9A	USB initialization is started
0x9B	USB Reset
0x9C	USB Detect
0x9D	USB Enable
0x9E -0x9F	Reserved for future AMI codes
0xA0	IDE initialization is started

Status Code	Description
0xA1	IDE Reset
0xA2	IDE Detect
0xA3	IDE Enable
0xA4	SCSI initialization is started
0xA5	SCSI Reset
0xA6	SCSI Detect
0xA7	SCSI Enable
0xA8	Setup Verifying Password
0xA9	Start of Setup
0xAA	Reserved for ASL (see ACPI/ASL Checkpoints)
0xAB	Setup Input Wait
0xAC	Reserved for ASL (see ACPI/ASL Checkpoints)
0xAD	Ready To Boot event
0xAE	Legacy Boot event
0xAF	Exit Boot Services event
0xB0	Runtime Set Virtual Address MAP Begin
0xB1	Runtime Set Virtual Address MAP End
0xB2	Legacy Option ROM initialization
0xB3	System Reset
0xB4	USB hot plug
0xB5	PCI bus hot plug
0xB6	Clean-up of NVRAM
0xB7	Configuration Reset (reset of NVRAM settings)
0xB8 – 0xBF	Reserved for future AMI codes
0xC0 – 0xCF	OEM BDS initialization codes
DXE Error Codes	
0xD0	CPU initialization error
0xD1	North Bridge initialization error
0xD2	South Bridge initialization error
0xD3	Some of the Architectural Protocols are not available
0xD4	PCI resource allocation error. Out of Resources
0xD5	No Space for Legacy Option ROM
0xD6	No Console Output Devices are found
0xD7	No Console Input Devices are found
0xD8	Invalid password
0xD9	Error loading Boot Option (LoadImage returned error)
0xDA	Boot Option is failed (StartImage returned error)
0xDB	Flash update is failed
0xDC	Reset protocol is not available

ACPI/ASL Checkpoints

Status Code	Description
0x01	System is entering S1 sleep state
0x02	System is entering S2 sleep state
0x03	System is entering S3 sleep state
0x04	System is entering S4 sleep state
0x05	System is entering S5 sleep state
0x10	System is waking up from the S1 sleep state
0x20	System is waking up from the S2 sleep state
0x30	System is waking up from the S3 sleep state
0x40	System is waking up from the S4 sleep state
0xAC	System has transitioned into ACPI mode. Interrupt controller is in PIC mode.
0xAA	System has transitioned into ACPI mode. Interrupt controller is in APIC mode.

Appendix E. System Packaging Assembly Instructions

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 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.

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.

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

---

1. Open the outer box. Fold the flaps open enough to install the inner box
2. Place the inner box into the outer box

3. Place the two bottom foam packing sections into the inner box. See the following figure.

4. Wrap the system with the original red foam EPE sheet and place within the original plastic shipping bag. Securely close the shipping bag with tape or sticky label

5. Orient the front of the system to match the Bottom Front foam packing section
6. Carefully lower the wrapped system into the shipping box and place it within the bottom foam sections

7. Place the top Front and Back foam sections over the system

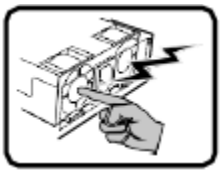
8. If present, place other packaged ship along items within the cutouts of the top foam packaging sections.

9. Close the flaps of the inner box. Short flaps 1st, followed by long flaps.

10. Close the flaps of the outer box. Short flaps 1st, followed by long flaps.
11. Seal the entire package with tape as shown in the following figure.

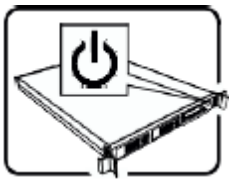
Appendix F. Safety Instructions

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.

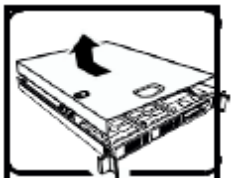


The power button on the system does not turn off system AC power. To remove AC power from the system, you must unplug each AC power cord from the wall outlet or power supply.

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.

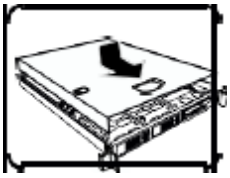
SAFETY STEPS: Whenever you remove the chassis covers to access the inside of the system, follow these steps:

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.



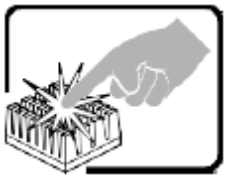
After you have completed the previous six SAFETY steps, you can remove the system top covers. To do this:

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.



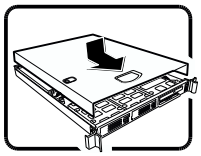
A microprocessor and heat sink may be hot if the system has been running. Also, there may be sharp pins and edges on some board and chassis parts. Contact should be made with care. Consider wearing protective gloves.

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:

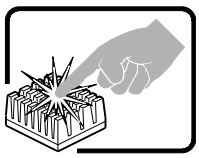
Clean and free of airborne particles (other than normal room dust).
Well ventilated and away from sources of heat including direct sunlight.
Away from sources of vibration or physical shock.
Isolated from strong electromagnetic fields produced by electrical devices.
In regions that are susceptible to 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 (продолжение)

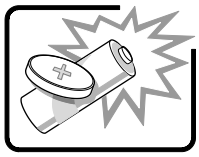


Для обеспечения надлежащего охлаждения и воздушного потока всегда устанавливайте на место крышки корпуса перед включением системы. Работа системы без установленных крышек может привести к повреждению компонентов системы. Чтобы установить крышки, выполните следующие действия:

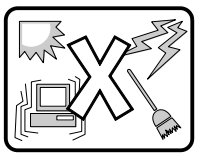
1. Сначала проверьте, не осталось ли в системе незакрепленных инструментов или деталей.
2. Убедитесь, что кабели, платы расширения и другие компоненты установлены правильно.
3. Закрепите крышки на корпусе, завернув и надежно затянув винты, снятые ранее.
4. Установите и закройте навесной замок для предотвращения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



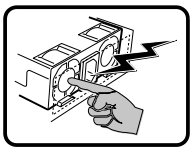
В случае неправильной замены аккумулятора существует опасность взрыва. При замене используйте только те же или эквивалентные модели аккумуляторов, рекомендованные производителем оборудования. Утилизируйте использованные аккумуляторы в соответствии с инструкциями производителя.



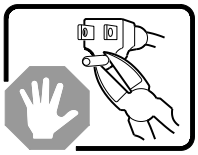
Система предназначена для работы в обычной офисной среде. Место установки системы должно соответствовать следующим требованиям:

- 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.

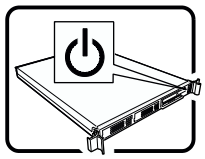
УВАГА! Українська



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.

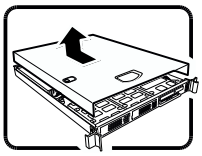


Кнопка живлення на системі не вимикає живлення змінного струму системи. Щоб позбавити систему змінного струму, слід вийняти всі шнури живлення змінного струму зі стінних розеток або джерел живлення.

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.

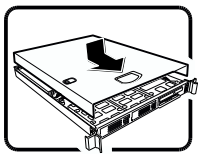


Після виконання шести наведених вище кроків БЕЗПЕКИ можна знімати корпус (кришки) з системи. Для цього виконайте такі дії:

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

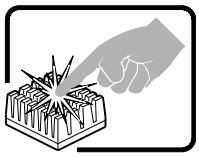
продовження

УВАГА! Українська (продовження)

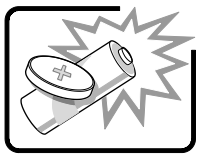


Для правильного охолодження та вентиляції завжди повертайте на місце кришки корпусу перед увімкненням системи. Робота системи без кришок може пошкодити деталі системи. Щоб установити кришки, виконайте такі дії:

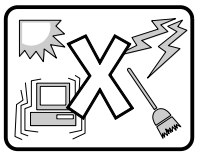
1. Спочатку переконайтеся, що всередині системи не залишилося деталей або незакріплених інструментів.
2. Перевірте, чи правильно встановлено кабелі, розширювальні плати та інші компоненти.
3. Прикріпіть кришки до корпусу знятими раніше гвинтами та надійно їх затягніть.
4. Вставте в систему і зафіксуйте 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.



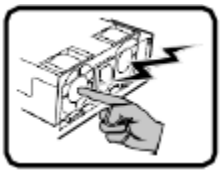
Загроза вибуху, якщо батарею замінено на неправильну. Замінюйте лише таким самим або еквівалентним типом, рекомендованим виробником. Утилізуйте використані батареї згідно з інструкціями виробника.



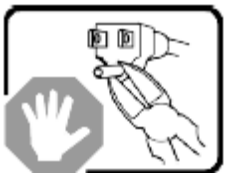
Систему створено для роботи в типовому офісному приміщенні. Виберіть місце, яке:

- 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.

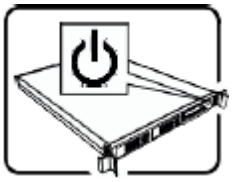
AVERTISSEMENT: Français



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.



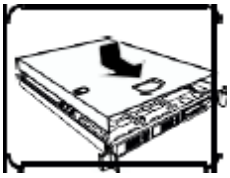
Notez que le commutateur CC de mise sous tension /hors tension du panneau avant n'éteint pas l'alimentation CA du système. Pour mettre le système hors tension, vous devez débrancher chaque câble d'alimentation de sa prise.

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.

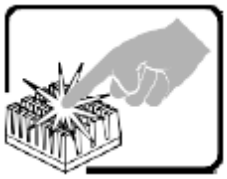
Une fois TOUTES les étapes précédentes accomplies, vous pouvez retirer les panneaux du système. Procédez comme suit:

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.



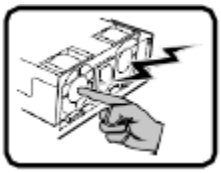
Le microprocesseur et le dissipateur de chaleur peuvent être chauds si le système a été sous tension. Faites également attention aux broches aiguës des cartes et aux bords tranchants du capot. Nous vous recommandons l'usage de gants de protection.

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.

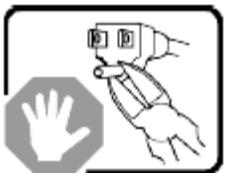
Le système a été conçu pour fonctionner dans un cadre de travail normal. L'emplacement choisi doit être:

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).

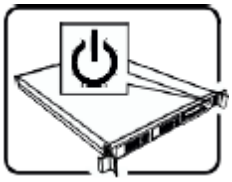
WARNUNG: Deutsch



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



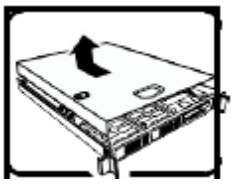
Versuchen Sie nicht, das mitgelieferte Netzkabel zu ändern oder zu verwenden, wenn es sich nicht genau um den erforderlichen Typ handelt. Ein Produkt mit mehreren Netzgeräten hat für jedes Netzgerät ein eigenes Netzkabel.



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.

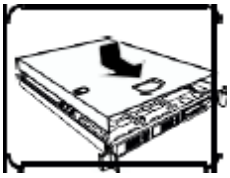
SICHERHEISMASSNAHMEN: Immer wenn Sie die Gehäuseabdeckung abnehmen um an das Systeminnere zu gelangen, sollten Sie folgende Schritte beachten:

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.



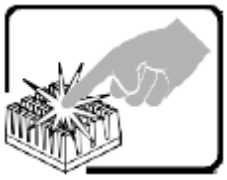
Nachdem Sie die oben erwähnten ersten sechs SICHERHEITSSCHRITTE durchgeführt haben, können Sie die Abdeckung abnehmen, indem Sie:

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.



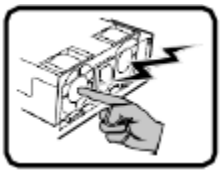
Der Mikroprozessor und der Kühler sind möglicherweise erhitzt, wenn das System in Betrieb ist. Außerdem können einige Platinen und Gehäuseteile scharfe Spitzen und Kanten aufweisen. Arbeiten an Platinen und Gehäuse sollten vorsichtig ausgeführt werden. Sie sollten Schutzhandschuhe tragen.

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.

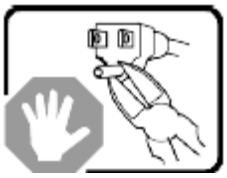
Das System wurde für den Betrieb in einer normalen Büroumgebung entwickelt. Der Standort sollte:

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.

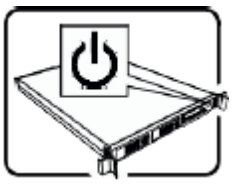
AVVERTENZA: Italiano



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.



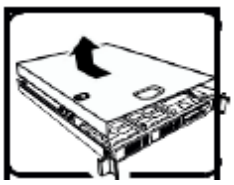
Non modificare o utilizzare il cavo di alimentazione in c.a. fornito dal produttore, se non corrisponde esattamente al tipo richiesto. Ad ogni fonte di alimentazione corrisponde un cavo di alimentazione in c.a. separato.



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.

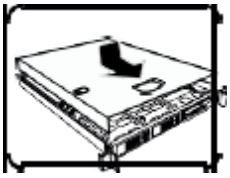
PASSI DI SICUREZZA: Qualora si rimuovano le coperture del telaio per accedere all'interno del sistema, seguire i seguenti passi:

1. Spegnere tutti i dispositivi periferici collegati al sistema.
2. Spegnere 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.



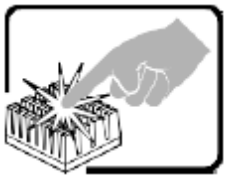
Dopo aver seguito i sei passi di SICUREZZA sopracitati, togliere le coperture del telaio del sistema come seque:

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.



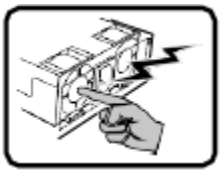
Se il sistema è stato a lungo in funzione, il microprocessore e il dissipatore di calore potrebbero essere surriscaldati. Fare attenzione alla presenza di piedini appuntiti e parti taglienti sulle schede e sul telaio. È consigliabile l'uso di guanti di protezione.

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.

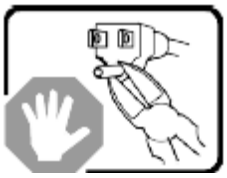
Il sistema è progettato per funzionare in un ambiente di lavoro tipo. Scegliere una postazione che sia:

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

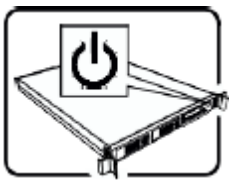


El usuario debe abstenerse de manipular los componentes de la fuente de alimentación de este producto, cuya reparación debe dejarse exclusivamente en manos de personal técnico especializado. Puede que este producto disponga de más de una fuente de alimentación.



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.



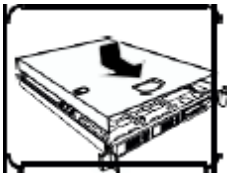
Nótese que el interruptor activado/desactivado en el panel frontal no desconecta la corriente alterna del sistema. Para desconectarla, deberá desenchufar todos los cables de corriente alterna de la pared o desconectar la fuente de alimentación.

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 sujetada 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.

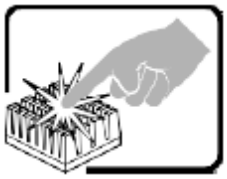
Después de completar las seis instrucciones de SEGURIDAD mencionadas, ya puede extraer las tapas del sistema. Para ello:

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.



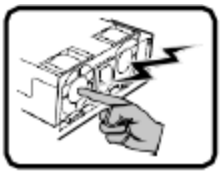
Si el sistema ha estado en funcionamiento, el microprocesador y el disipador de calor pueden estar aún calientes. También conviene tener en cuenta que en el chasis o en el tablero puede haber piezas cortantes o punzantes. Por ello, se recomienda precaución y el uso de guantes protectores.

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.

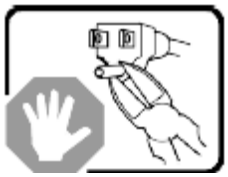
El sistema está diseñado para funcionar en un entorno de trabajo normal. Escoja un lugar:

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.

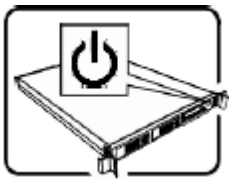
אזהרה: עברית



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.

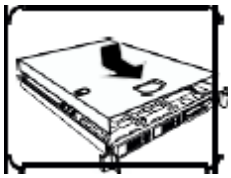
כבל(י) החשמל נחשב(ים) להתקן(ני) ניתוק מקור אספקת חשמל ז"ח. שקע הקיר שאליו מחוברת המערכת יותקן בסמוך לציוד ויהיה נגיש בקלות.

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

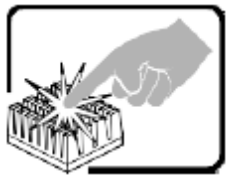
לאחר השלמת ששת שלבי הבטיחות לעיל, באפשרותכם להסיר את מכסי המערכת. כדי לעשות זאת:

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 לפנים המערכת.
5. יש לחבר את כל הכבלים החיצוניים ואת כבל(י) חשמל ז"ח למערכת.



מעבד המיקרו ומפזר החום עלולים להיות לוהטים כשהמערכת פועלת. כמו כן, ייתכנו סיכות וקצוות חדים בחלקי לוח ומעטפת שונים. יש לגעת בזהירות. 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 משמש(ים) לניתוק רשת החשמל למוצר.

Appendix G. Glossary

Term	Definition
1U	One rack unit (1.75 in.)
BIOS	Basic input output system; non-volatile firmware
BMC	Baseboard management controller
Chassis	Casing containing the server board
DIMM	Dual inline memory module
EFI	Extensible Firmware Interface
ESD	Electrostatic discharge
FRU	Field replacement unit
PHM	Processor heat sink module
MRC	Memory Reference Code
NVMe*	Non-Volatile Memory Express
OOB	Out of Band
PCIe*	Peripheral component interconnect express
PDB	Power distribution board
POST	Power-On Self-Test
PTH	Plated Through Hole
Rack	Casing containing one or multiple chassis
SDR	Sensor data record
SEL	System event log
SSD	Solid state drive
SUP	System update package
SMT	Surface-Mount Technology
TIM	Thermal Interface Material
VR	Voltage Regulator
Intel® VROC	Intel® Virtual Raid on Chip