Intel® Server Board S2600ST Product Family

Quick Start User Guide

A basic reference guide for server board and essential hardware integration.

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July 2017

Intel® Server Products and Solutions

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Document Revision History

Date	Revision	Changes
July 2017	1.0	Initial release.

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Lesen Sie zunächst sämtliche Warnund Sicherheitshinweise in diesem Dokument, bevor Sie eine der Anweisungen ausführen. Beachten Sie hierzu auch die Sicherheitshinweise zu Intel-Serverplatinen und Servergehäusen auf der
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http://www.intel.com/support/motherboards/server/sb/cs-010770.htm 上的 *Intel® Server Boards and Server Chassis Safety Information* （《Intel 服务器主板与服务器机箱安全信息》）。

Warnings

Heed safety instructions: Before working with your 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.

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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.

Installing or removing jumpers: A jumper is a small plastic-encased conductor that slips over two jumper pins. Some jumpers have a small tab on top that you can grip with your fingertips or with a pair of fine needle nosed pliers. If your jumpers do not have such a tab, take care when using needle-nosed pliers to remove or install a jumper; grip the narrow sides of the jumper with the pliers, never the wide sides. Gripping the wide sides can damage the contacts inside the jumper, causing intermittent problems with the function controlled by that jumper. Take care to grip with, but not squeeze, the pliers or other tool you use to remove a jumper, or you may bend or break the pins on the board.

Electrostatic discharge (ESD) and ESD protection: ESD can damage disk drives, boards, and other parts. We recommend that you perform all procedures in this chapter only at an ESD workstation. If one is not available, provide some ESD protection by wearing an anti-static wrist strap attached to chassis ground, any unpainted metal surface on your server when handling parts.

ESD and handling boards: Always handle boards carefully. They can be extremely sensitive to ESD. Hold boards only by their edges. After removing a board from its protective wrapper or from the server, place the board component side up on a grounded, static-free surface. Use a conductive foam pad if available but not the board wrapper. Do not slide board over any surface.

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1. Overview of the Intel® Server Board S2600ST Product Family Quick Start User Guide

Thank you for buying the Intel® Server Board S2600ST. The information contained in this document will help integrate the Intel® Server Board S2600ST into a server chassis. The Intel® Server Board S2600ST is designed for use with the Intel" Server Chassis P4304XXMFEN2 or P4304XXMUXX.

For details on these chassis or to select a third-party chassis, please visit:

http://www.intel.com/go/serverbuilder and http://www.intel.com/support/motherboards/server.

When installing the server board into a reference chassis, refer to the reference chassis instructions. If not familiar with Electrostatic Discharge (ESD) procedures used during system integration, please see the *Intel® Server Chassis* P4304XXMFEN2/P4304XXMUXX *Service Guide* at:

http://www.intel.com/support/motherboards/server.
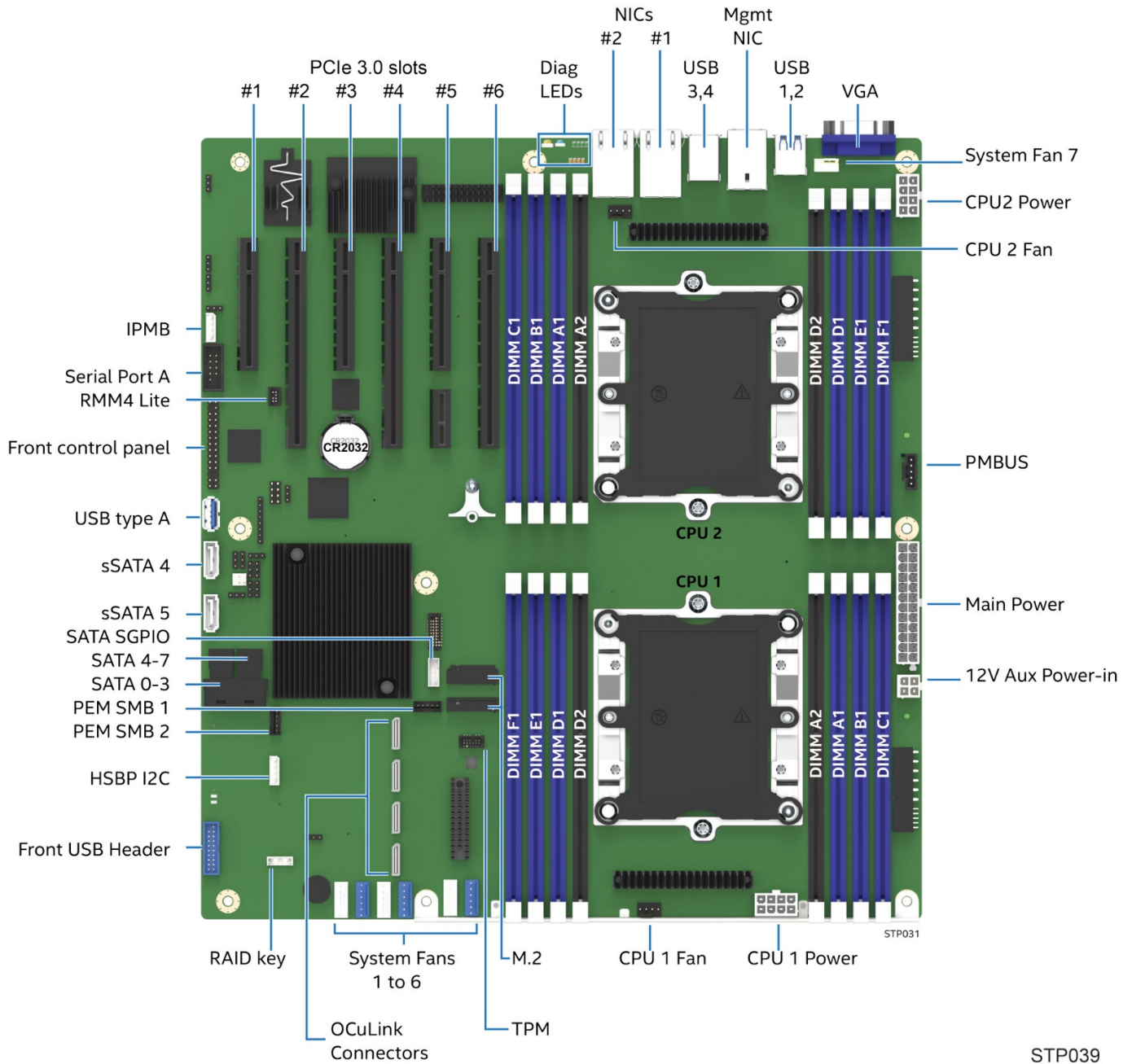
1.1 Intel® Server Board S2600ST Features Overview

Figure 1. Intel® Server Board S2600ST features overview

1.2 Intel® Server Board S2600ST Product Family Overview

The Intel® Server S2600ST product family is built around any one of two Intel® Server Board S2600ST product family options: S2600STB and S2600STQ. Within the following table, each column identifies key features supported in the shipping Intel SKU. Additional order code information and full product descriptions for each option are provided in later sections.

Table 1. Intel® Server Board S2600ST product family overview

Intel® Product Code	# of CPU sockets	# of DIMM Slots	# of Add-in Card Slots	Onboard 10GbE LAN ports	Onboard SATA ports (6 Gb)	Onboard NVMe Ports	Onboard Video	QAT Support (Quick Assist Technology)	Onboard System Fan Support
S2600STB	2	16	6	2	12	**4**	Yes	**No**	Up to 7
S2600STQ	2	16	6	2	12	**2**	Yes	**Yes**	Up to 7

2. Integrating the Intel® Server Board S2600ST with an Intel Server Chassis

2.1 Minimum Hardware Requirements

The following are minimum requirements to avoid integration difficulties and possible board damage:

- Processor: Intel® Xeon® Processor Scalable Family up to 205-W and compatible heat sink(s).
- Memory Type: Minimum of one DDR4 2666 MT/s RDIMM/LRDIMM.
- Power: SSI EPS 12V-compliant power supply.
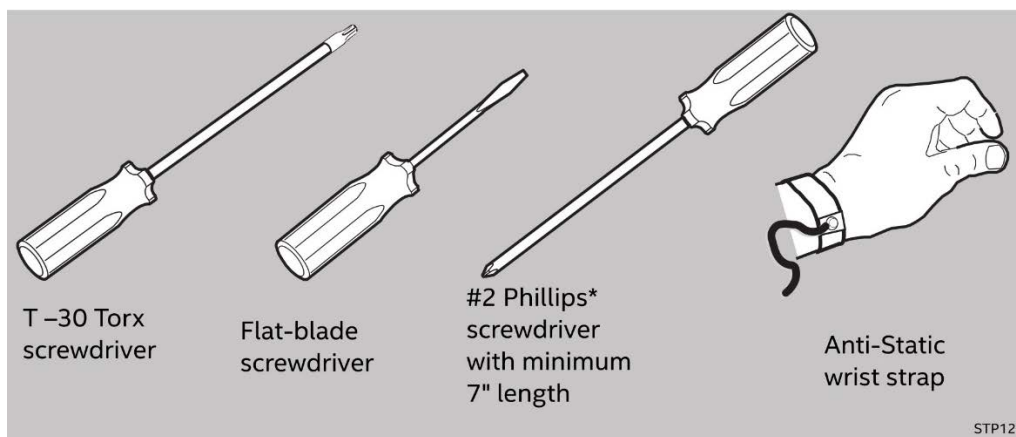
2.1.1 Tools Required for Installation

Figure 2. Tools required to install the Intel® Server Board S2600ST

2.2 Preparing the Chassis

Place the Intel® Server Board S2600ST and the Intel® Server Chassis on a flat, anti-static surface to perform the following integration procedures. Always touch the chassis frame first, before reaching inside to install the server board, make server board connections, and install other components.

Note: If using a non-Intel server chassis, refer to the documentation that comes with it for preparatory steps. Observe normal ESD (Electrostatic Discharge) procedures for a non-Intel server chassis.

2.3   Installing the Chassis Screw Stand-offs

If the Intel® Server Board S2600ST is to be installed on the Intel® Server Chassis P4304XXMFEN2 or P4304XXMUXX, the stand-offs for the server board mounting screws come with chassis and must be installed first.

Following the EEB standard, the server board has mounting screw holes as indicated in the illustration. Please install the chassis stand-offs according to the chassis locations indicated by same marks in Figure 3.
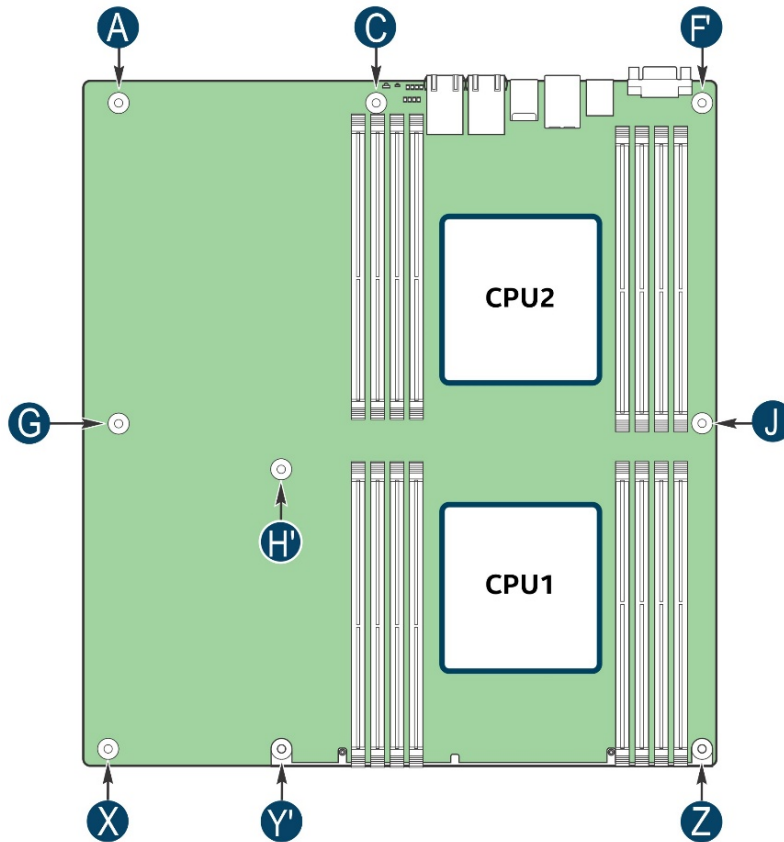

Figure 3. Server chassis stand-off locations
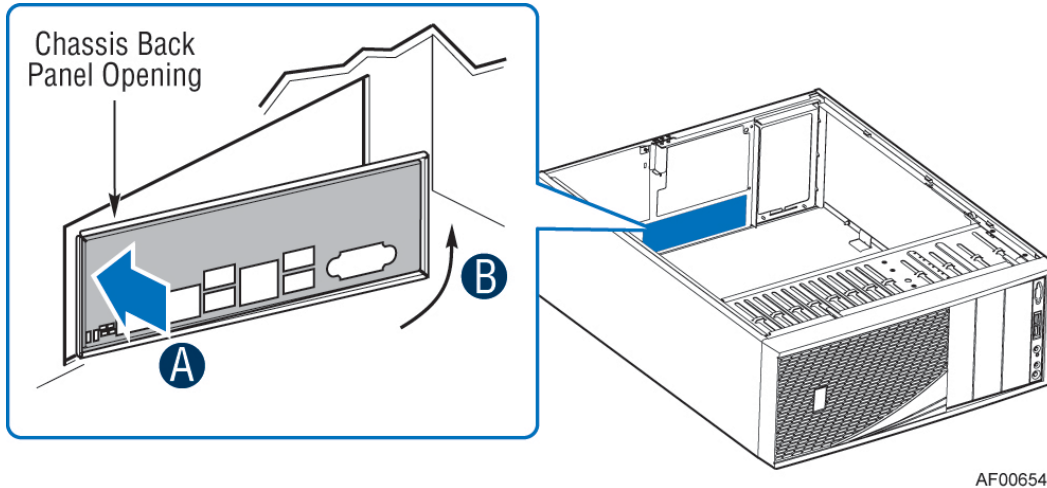
2.4   Installing the I/O Shield

Figure 4. I/O shield installation

1. From the inner side of the chassis, align the I/O shield with the chassis rear I/O opening.
2. Install one end of the I/O shield first (see letter A) and finish by pressing the other end (see letter B).
3. Press the I/O shield firmly to the chassis rear I/O opening until it clicks into place.

2.5   Installing the Server Board Bumpers

Note: If using a non-Intel server chassis, refer to the chassis documentation for bumper installation. If using an Intel server chassis, use the chassis bumpers that come with the chassis.
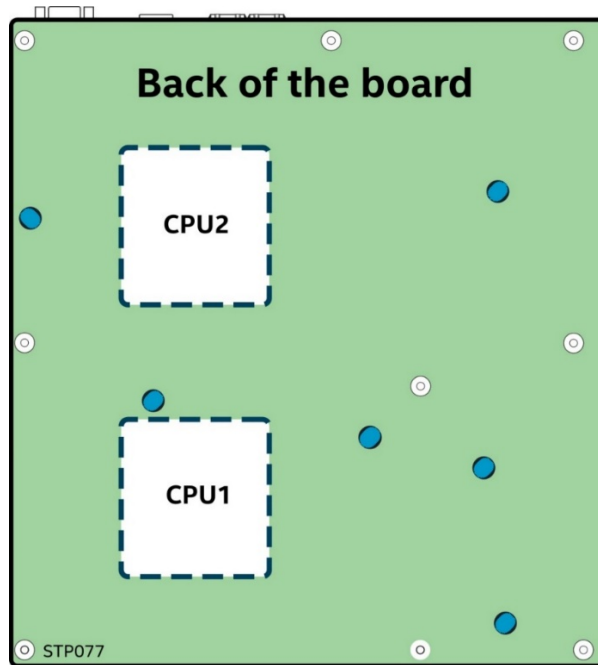

Figure 5. Intel® Server Board S2600ST bumper location

1. Remove the server board from its anti-static bag. Avoid laying the server board component side down to avoid damage.
2. Attach the bumpers to the back of the server board. They are identified with blue circles as shown in the above illustration.

2.6   Installing the Server Board

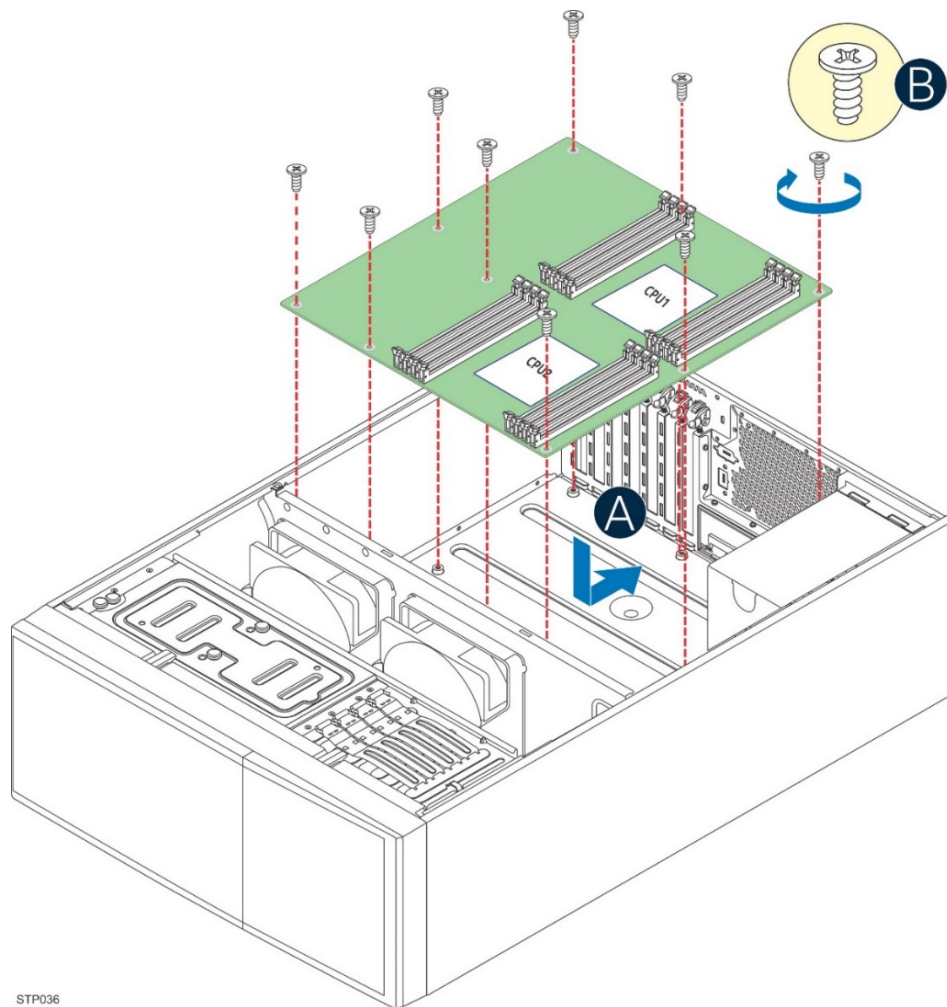**Note:** The instructions below apply to the Intel® Server Chassis P4304XXMFEN2/P4304XXMUXX.

Figure 6. Intel® Server Board S2600ST installation

1. Cautiously move aside any cables around the chassis base to clear the area for server board placement.
2. Carefully lower the server board into the chassis so that the rear I/O connectors of the server board align with it and are fully seated into the matching holes on the chassis back panel (see letter A).
3. Confirm the server board is accurately placed when rear I/O connectors (NIC connectors, USB connectors, and VGA connector) align with the I/O shield openings and properly fit into it.
4. Fasten down the server board with nine screws using 8 in/lbs torque (see letter B).

2.7   Installing the Processor Heat Sink Module (PHM)

2.7.1   Assembling the PHM

The Processor Heat Sink Module (PHM) refers to the sub-assembly where the heat sink and processor are clipped together prior to installation onto the server board. Processor installation requires that the processor be attached to the processor heat sink prior to installation onto the server board.
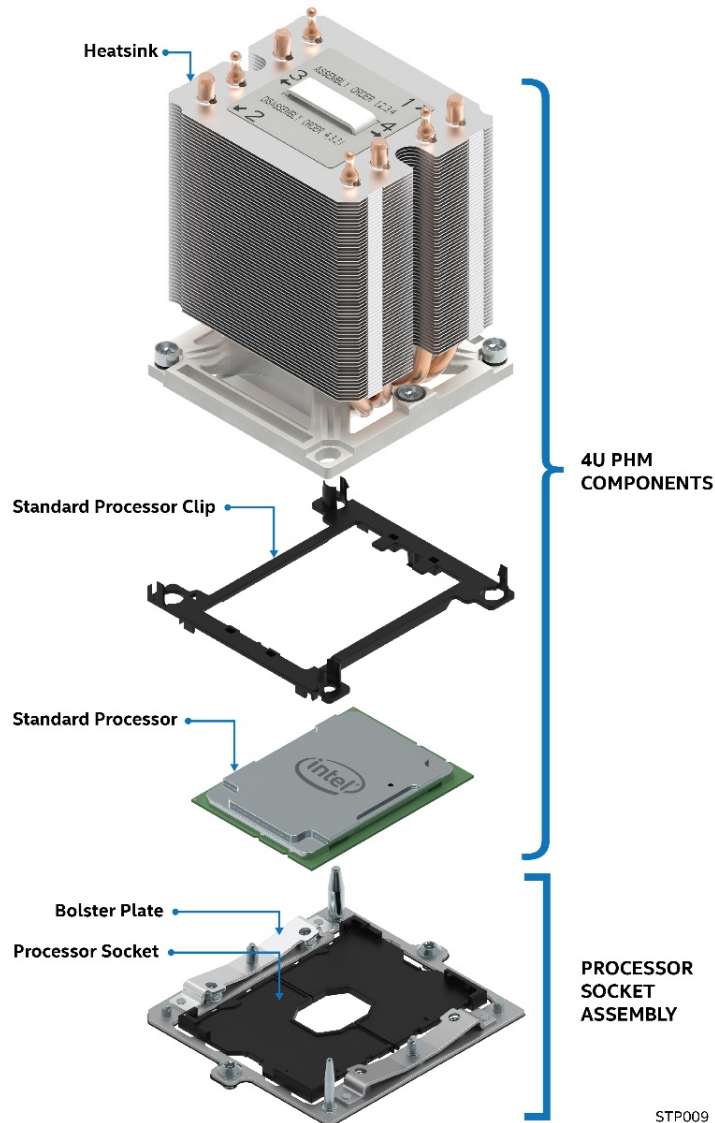

Figure 7. Processor heat sink module components

Important: Follow the procedures described in this section in the order specified to properly assemble the PHM and install or remove it from the server board. These instructions assume that all the PHM components are new and the Thermal Interface Material (TIM) is already applied to the bottom of the heat sink.

2.7.2 Tools Required for Installation

- T–30 Torx screwdriver
- Flathead screwdriver
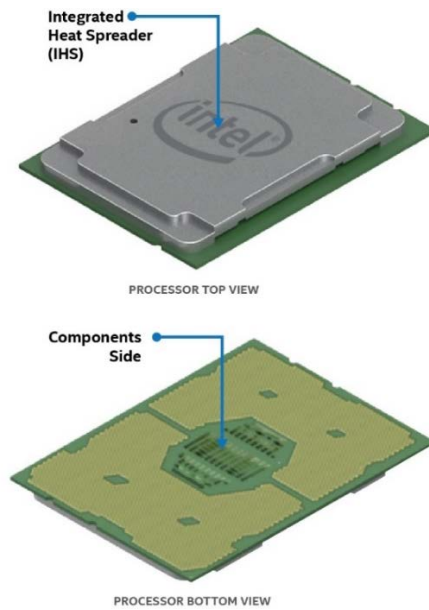- Adequate ESD protective gear (wrist strap, ESD mat)

Figure 8. Processor top and bottom views

WARNING: The processor heat sink may be damaged if grasped by the longer sides with its fins squeezed together. Grasp processor heat sinks only on the shorter edges as shown following.
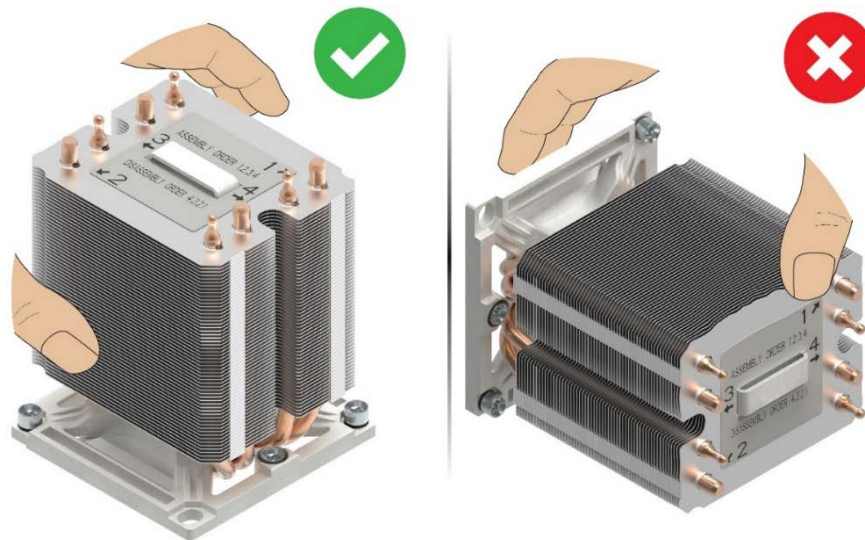
Figure 9. Proper and improper handling of the processor heat sink

1. Remove the heat sink from its packaging if present. With the TIM facing up, place the heat sink on to a flat surface, as shown in the following illustration.
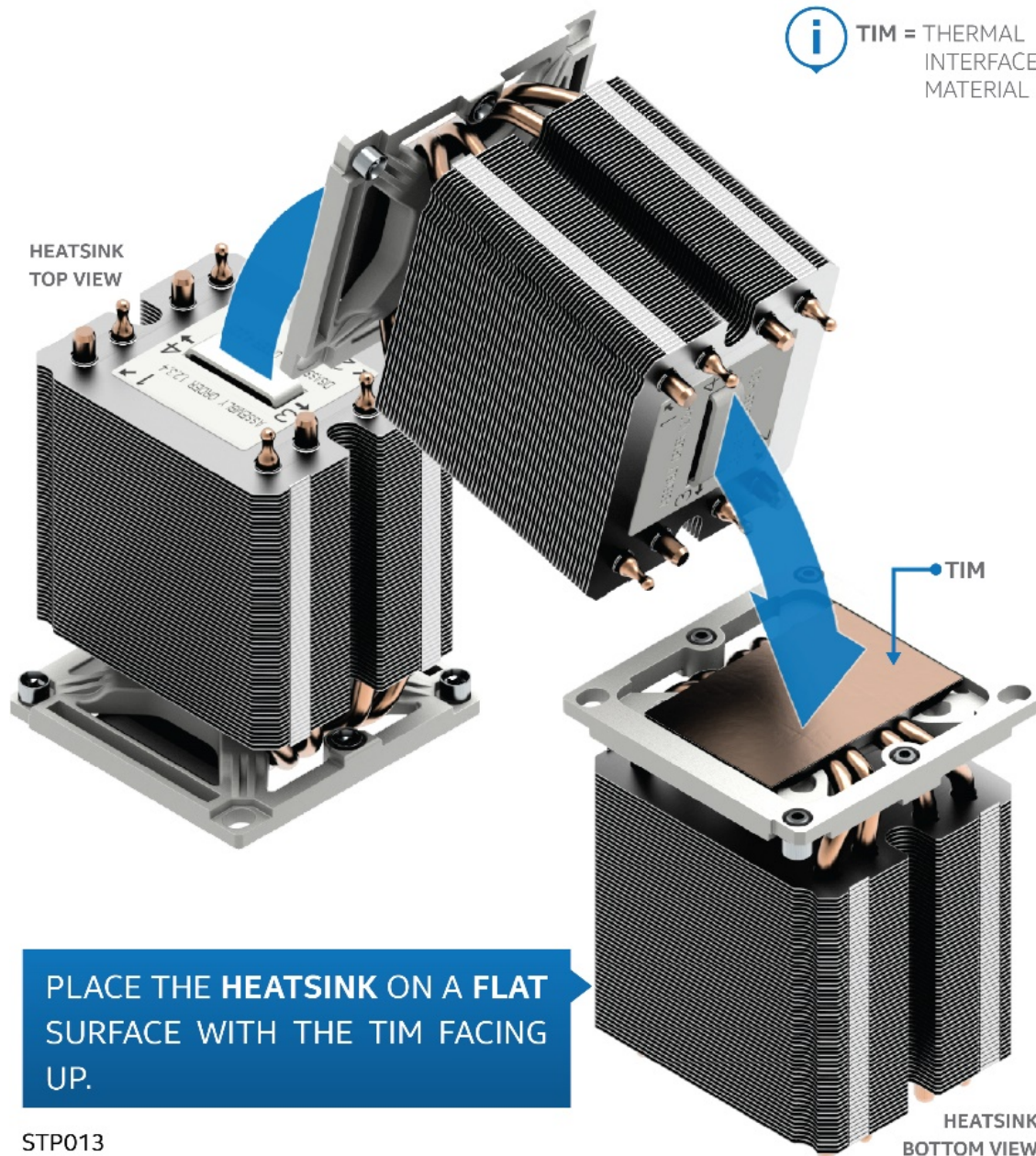
TIM = THERMAL INTERFACE MATERIAL

HEATSINK TOP VIEW

TIM

PLACE THE **HEATSINK** ON A **FLAT** SURFACE WITH THE TIM FACING UP.

STP013

HEATSINK BOTTOM VIEW

Figure 10. Placing the PHM on a flat surface

CAUTION: Do not touch sensitive contacts on the bottom side of the processor at any time during PHM assembly or installation. Also refrain from touching the pins inside the processor socket as they also are extremely sensitive. A damaged processor socket may produce unpredictable system errors.

2. If it is present, carefully remove the plastic protective cover from the bottom side of the processor.

Note: The PHM and processor socket include several alignment features to ensure proper assembly and installation. Take care to ensure components are accurately assembled and the PHM is oriented correctly to the processor socket prior to installation.
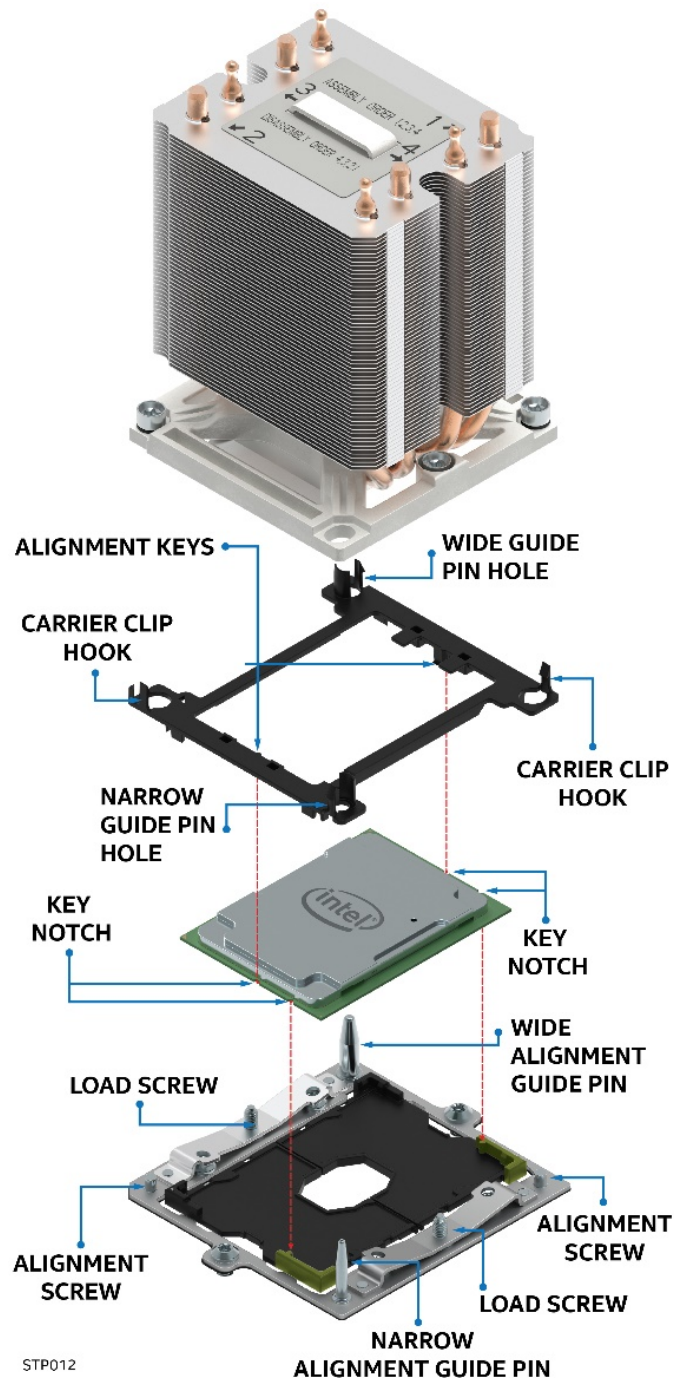

Figure 11. PHM components

CAUTION: Handle the processor carefully. Do not touch the bottom side of the contacts or components; always grip the processor by its edges.

3. Orient the processor with the heat spreader side down so its alignment features match those of the carrier clip, as shown in the following figures.
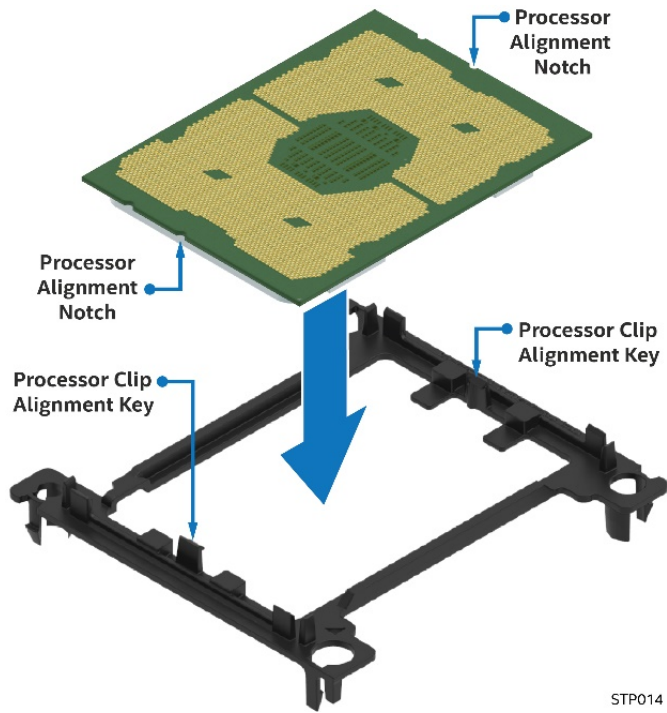

Figure 12. Orienting the processor carrier clip for alignment

4. Install the processor into the processor carrier clip until it snaps into place.
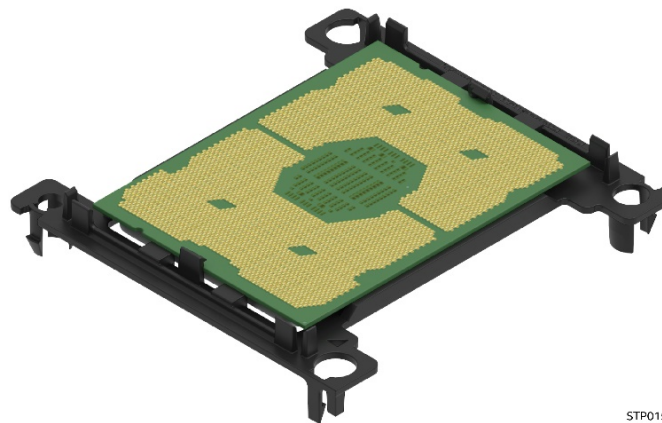
Figure 13. Installing the processor carrier clip

CAUTION: A processor can dislodge from the processor carrier clip if the assembly is grasped by the long narrow edges of the processor clip. Grasp the processor carrier assembly only by using the shorter edges of the assembly.

5. If present, remove the protective film covering the TIM on the bottom side of the heat sink.
6. Orient the processor sub-assembly over the processor heat sink so that all corner features are in alignment.

Figure 14. Orienting the processor sub-assembly for alignment

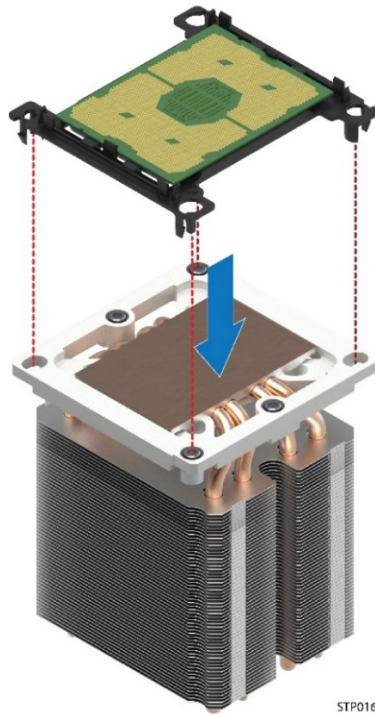7. Push the processor sub-assembly down on to the processor heat sink until it snaps into place, ensuring all four corners are secure.
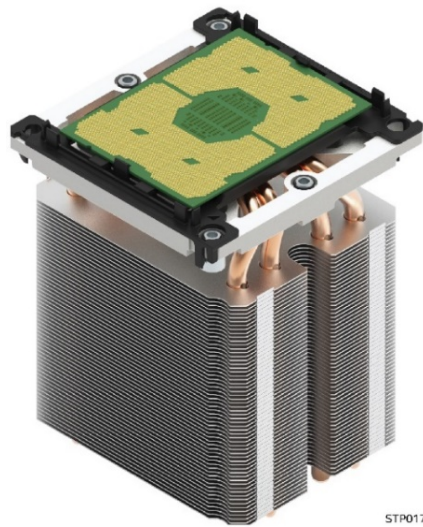

Figure 15. Snapping the processor sub-assembly into place

2.7.3   Inserting the PHM

1. Remove the plastic processor socket cover through the following:

    a. Grasp the socket cover using the finger grips on each end as shown in the following figure (see letter A) then carefully pull up to remove (see letter B).
    b. Save the processor socket cover for future use.
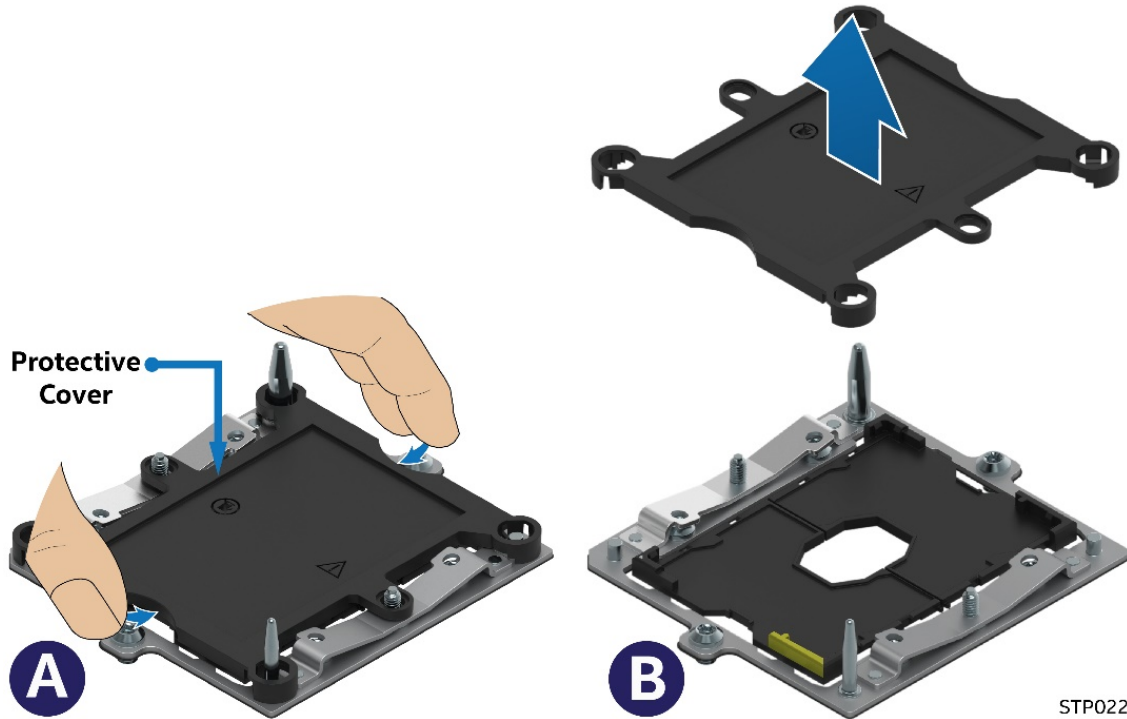
Figure 16. Inserting the PHM

CAUTION: When re-installing the socket cover, make sure it properly snaps into place. Improper installation will cause it to become loose and damage the processor socket.

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2. Install the PHM to the processor socket.
3. Align the mounting holes of the PHM (located on diagonal corners) to the bolster plate guide pins of the processor socket, as shown in the following figure.

Note: Each of the two guide pins of the bolster plate has a different diameter. Each guide pin has a matching PHM mounting hole which allows for only one orientation when installed.

Wide
Alignment
Guide Pin

Narrow
Alignment
Guide Pin

STP018

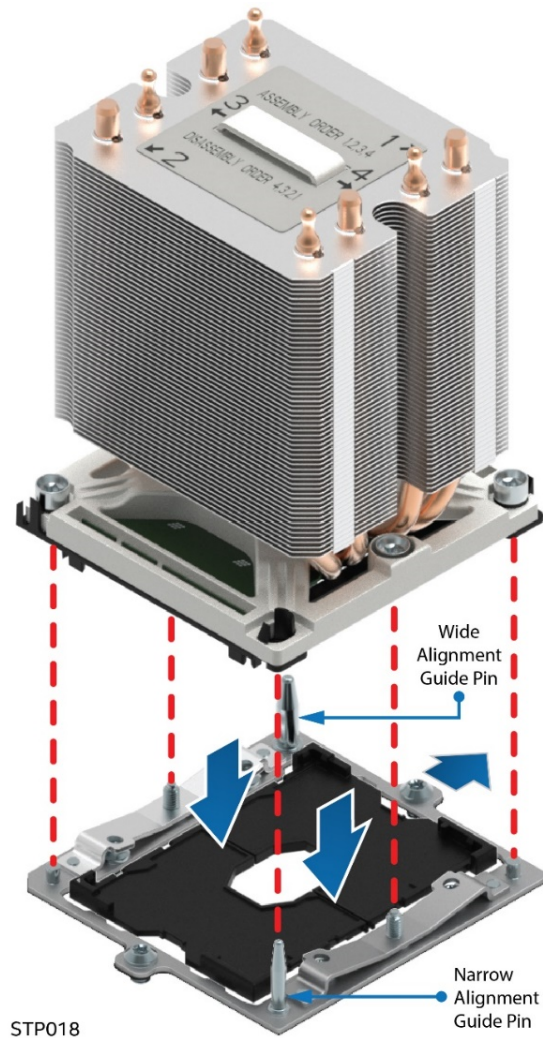**Figure 17. Aligning the PHM to the bolster plate**

4. Lower the PHM onto the processor socket assembly.

CAUTION: Processor socket pins are delicate and bend easily. Use extreme care when placing the PHM onto the processor socket.

Note: Confirm proper PHM installation by visually checking whether or not the PHM sits level with the processor socket assembly. PHMs can only be fastened down if correctly installed. The PHM is NOT installed properly if it does not sit level with the processor socket assembly. Improperly installed PHMs cannot be fastened down.

STP019
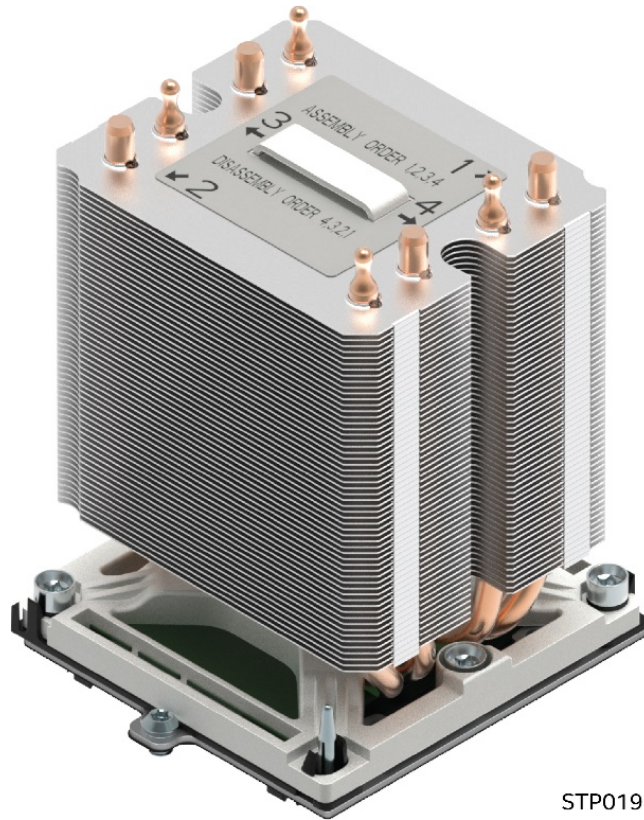
Figure 18. Inserted PHM

5. Secure the PHM to the processor socket assembly by using a T30 Torx* bit screwdriver to tighten each fastener (12 in-lb. torque) in the alphabetical order shown on the label located on the top of the heat sink.

Figure 19. Tightening the heat sink screws

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

2.8   Installing DIMM Memory Modules

Note: For details on DIMM population rules, please refer to the *Intel® Server Board S2600ST Product Family Technical Product Specification*.

Each installed processor provides six memory channels. On the Intel® Server Board S2600ST product family memory channels for each processor are labeled A – F. Channels A and D on each processor support two DIMM slots. All other memory channels have one DIMM slot.

Channels that support more than one DIMM must be populated starting with the blue DIMM slot. In addition, when populating a Quad-rank DIMM with a Single- or Dual-rank DIMM in the same channel, the Quad-rank DIMM farthest from the processor must be populated .
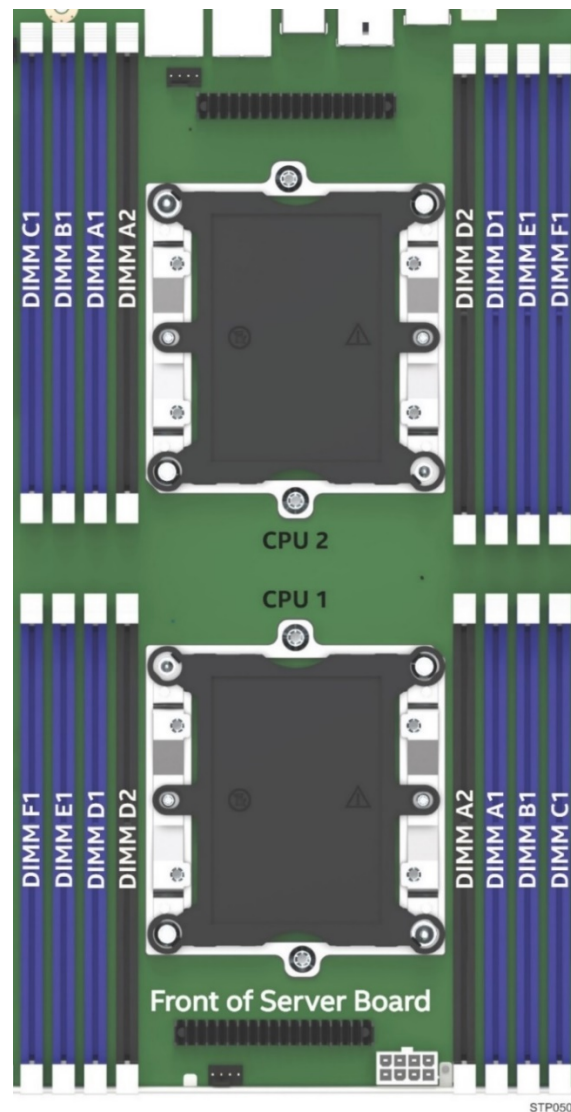

Figure 20. Intel® Server Board S2600ST DIMM slots

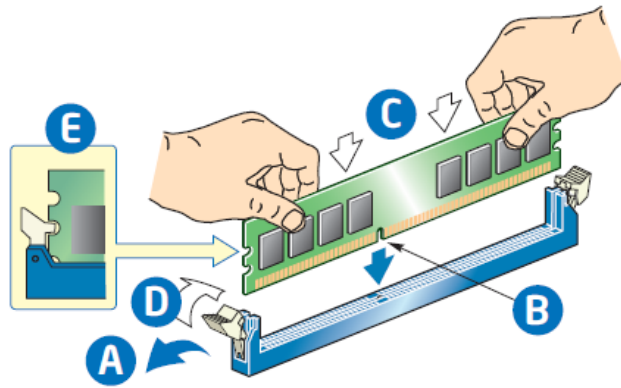## 2.8.1   Installing DIMMs into Memory Slots

Figure 21. Installing DIMM Memory

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

2.9   Connecting Power Cables to the Server Board

Note: Both CPU1 and CPU2 power cables need to be connected even if CPU2 is not installed.
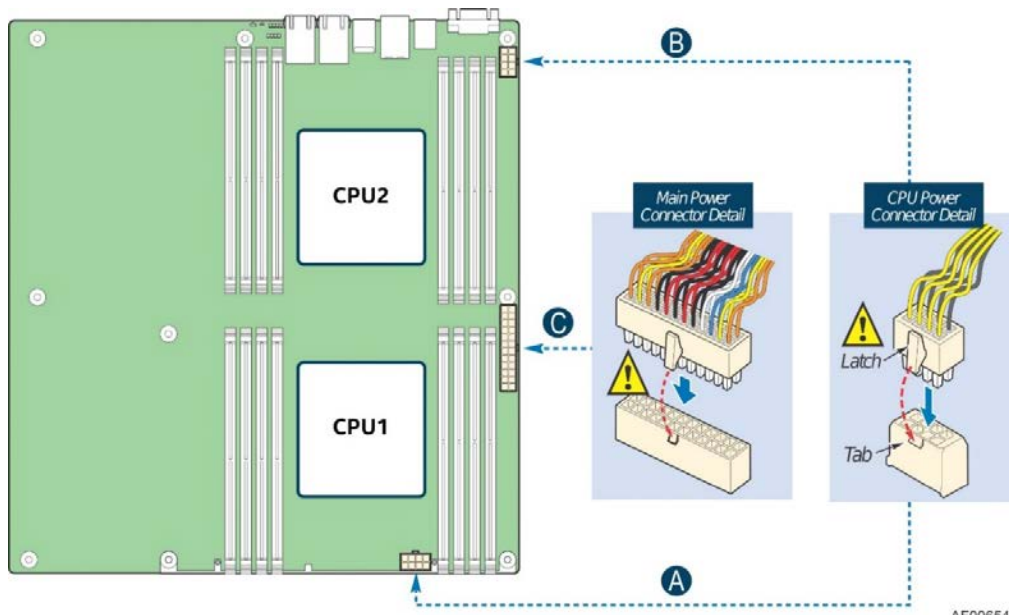
Figure 22. Connecting cables to the server board

1. Connect the 2x4 pin cable connector to the server board close to CPU1 (see letter A). The silkscreen on the server board is "CPU_1_PWR".
2. Connect the 2x4 pin cable connector to the server board close to CPU2 (see letter B). The silkscreen on the server board is "CPU_2_PWR".
3. Connect the 2x12 pin cable connector to the server board close to the server edge (see letter C). The silkscreen on the server board is "MAIN_PWR".

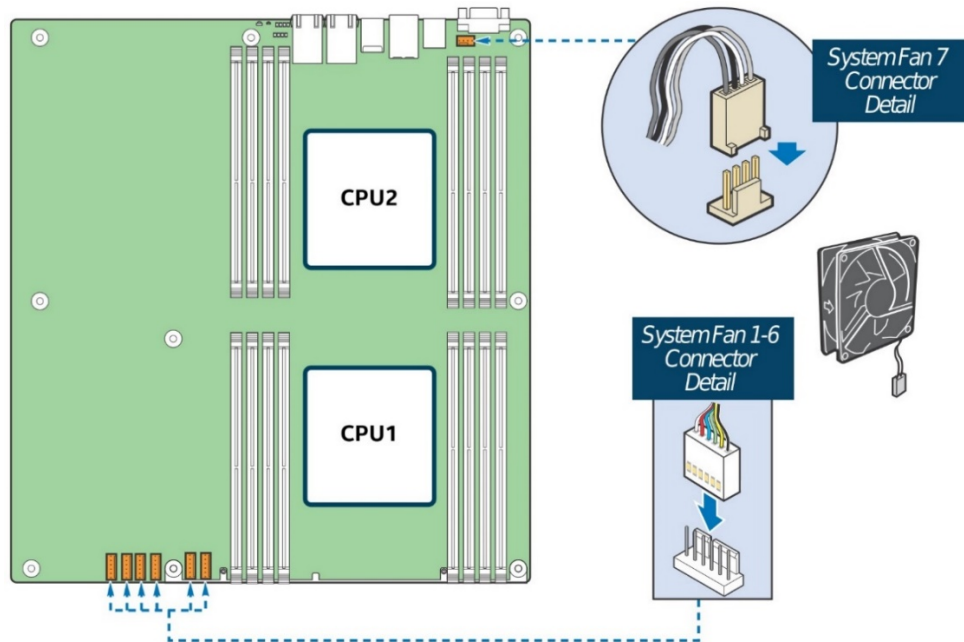## 2.10 Connecting System Fan Cables to the Server Board

Figure 23. Connecting system fan cables

1. For server chassis P4304XXMFEN2, connect the cables of the two fixed system fans to the fan headers on the server board (silkscreen labeled "SYS_FAN_1" and "SYS_FAN_2").
2. For server chassis P4304XXMUXX, connect the cables of the five Hot-Swap system fans to the fan headers on the server board (silkscreen labeled "SYS_FAN_1", "SYS_FAN_2", "SYS_FAN_3", "SYS_FAN_4" and "SYS_FAN_5").

Note: For a non-Intel server chassis, see the documentation accompanying the chassis for specific chassis fan requirements.

2.11 Installing a TPM Module Connector (Optional)

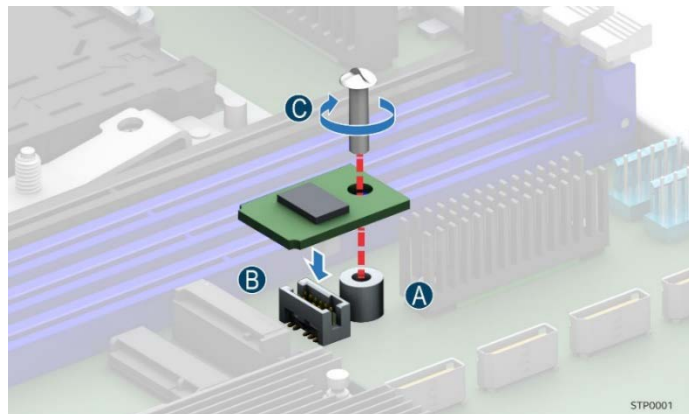**Figure 24. Installing a TPM module connector**

1. Locate the TPM module connector on the server board next to the DIMM slots.
2. Install the standoff to the server board mounting hole (see letter A).
3. Place the TPM module over the connector, match the orientation and press the key down onto the connector (see letter B).
4. Secure the TPM module to the stand-off with the screw (see letter C).

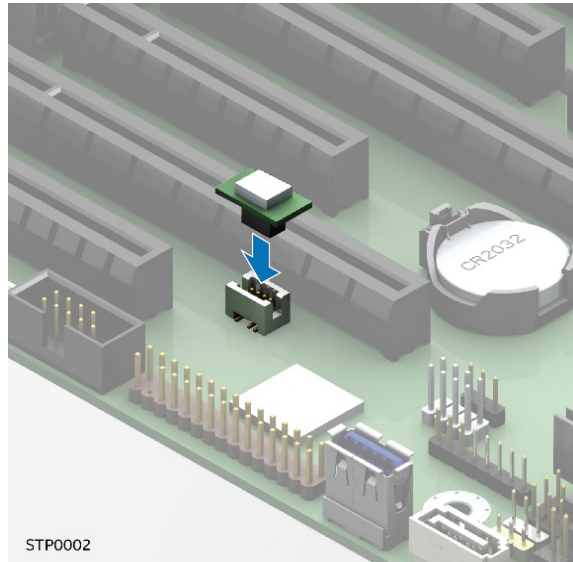## 2.12 Installing the Intel® RMM4 Lite (Optional)

Figure 25. Installing the Intel® RMM4 Lite Key

1. Remove the Intel® Remote Management Module 4 Lite (Intel® RMM4 Lite) key from its packaging.
2. Locate the Intel® RMM4 Lite connector on the server board between the first two PCIe* slots.
3. Place the Intel® RMM4 Lite key over the connector and match the key's orientation to that of the connector.
4. Press the key down onto the connector.

2.13 Installing M.2 Storage Devices (Optional)

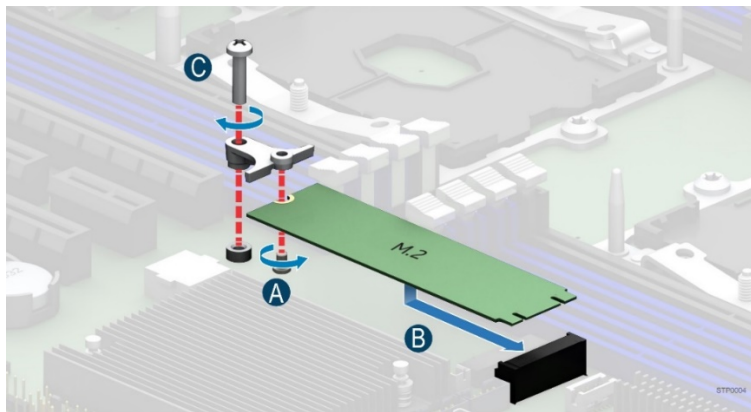### 2.13.1   Installing One M.2 Device (Single Configuration)

Figure 26. Installing Single Configuration M.2 device

1. Locate the top M.2 connector on the server board near the DIMM slots.
2. Remove the bracket.
3. Attach the bracket to the M.2 device using the screw (see letter A).
4. Slide the M.2 device into the connector (see letter B).
5. Secure the M.2 device to the server board with the screw (see letter C).

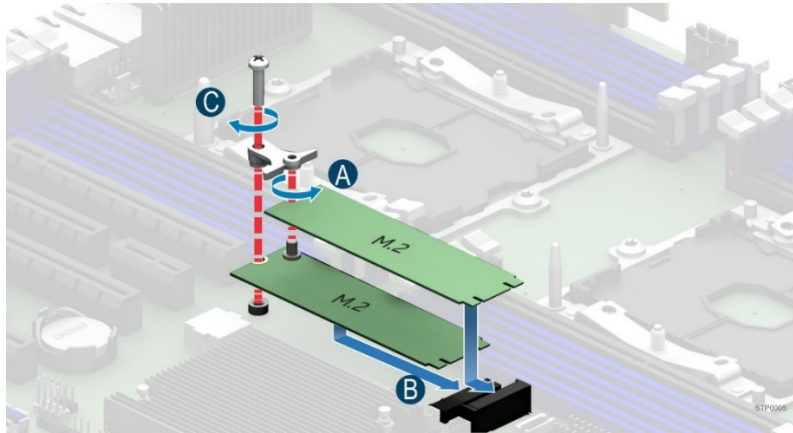### 2.13.2   Installing Two M.2 Devices (Dual Configuration)

Figure 27. Installing Dual Configuration M.2 device

1. Locate the M.2 connectors on the server board near the DIMM slots.
2. Remove the bracket.
3. Attach the bracket to the M.2 device that will be installed on the top connector using the screw (see letter A).
4. Slide the M.2 device that is to be installed on the bottom connector first and then the device to be installed on the top connector (see letter B).
5. Secure the M.2 devices to the server board with the screw (see letter C).

2.14 Installing Software: BIOS, Drivers, and Operating Systems

- Confirm BIOS Version: Look on the Server/System Management screen in the BIOS Setup Utility to determine the installed BIOS version. Compare this to the versions at: http://www.intel.com/support/motherboards/server. If new versions are available, update the BIOS on the server.
- Configure the RAID controller. Use the instructions provided with the RAID controller.
- Install the operating system. Use the instructions provided with the RAID controller and the operating system.
- Install operating system drivers. The drivers can be downloaded on http://www.intel.com/support.

2.15 Useful Product Information, Tips, and Tricks

- Always update the system with the latest Software Update Package (SUP) available.
- The Intel® Server Board S2600ST product family supports only the Intel® Xeon® Processor Scalable Family. Previous generation Intel® Xeon® processors or heat-sinks are not supported.
- When installing a processor, install CPU_1 first.
- PCIe* slots 1 to 4 are non-functional without having a second processor installed. See the *Intel® Server Board S2600ST Product Family Technical Product Specification* for information regarding server board architecture.
- When making processor population changes after the server board is powered on (populating CPU2 when only CPU1 was populated, depopulating CPU2 so that only CPU1 is populated, swapping processors among sockets, or replacing a processor), perform a BIOS default before powering on the again. Failure to follow this steps will result in the server board not powering on.

Appendix A. Glossary

Term	Definition
BIOS	Basic Input Output System
DIMM	Dual In-line Memory Module
ESD	Electro-Static Discharge
iPC	Intel Product Code
iPN	Intel Product Number
LAN	Local Area Network
NVDIMM	Non-Volatile Dual Inline Memory Module
OS	Operating System
PHM	Processor Heat Sink Module
RDIMM	Registered DIMM
SUP	System Update Package
TCG	Trusted Computing Group
TIM	Thermal Interface Material
TPM	Trusted Platform Module
TPS	Technical Product Specification
USB	Universal Serial Bus