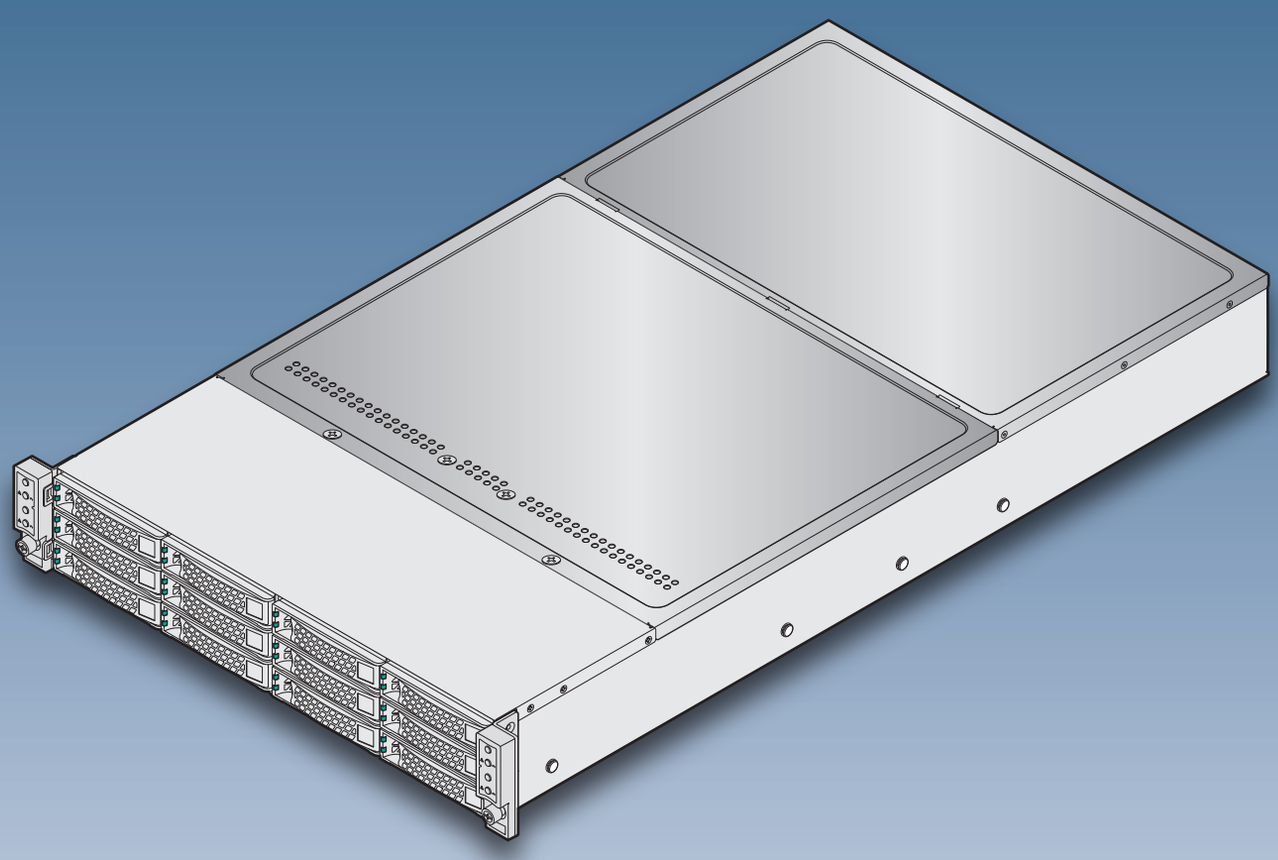
Intel® Server System H2000LP Quick Installation User's Guide

Thank you for buying an Intel® Server System. The following information will help you assemble your Intel® Server System and install components.

If you are not familiar with ESD [Electrostatic Discharge] procedures used during system integration, see the complete ESD procedures described in your *Service Guide*.

This guide and other supporting documents are located on the web at: http://www.intel.com/support.



* 12 x 3.5" hard drive bay system as shown

G55167-003

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Warning

Read all caution and safety statements in this document before performing any of the instructions. Also see the *Intel® Server Board and Server Chassis Safety Information* document at: http://www.intel.com/support/motherboards/server/sb/cs-010770.htm for complete safety information.

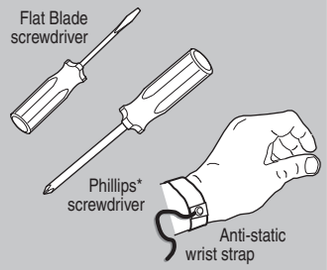
Warning

Installation and service of this product to be performed only by qualified service personnel to avoid risk of injury from electrical shock or energy hazard.

Caution

Observe normal ESD [Electrostatic Discharge] procedures during system integration to avoid possible damage to server board and/or other components.

Tools Required



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Thermal Operation and Configuration Requirements for Server System H2000LP

To keep the system operating within supported maximum thermal limits, the system must meet the following operating and configuration guidelines:

- Ambient in-let temperature cannot exceed 35° C and should not remain at this maximum level for long periods of time. Doing so may affect long term reliability of the system.

- The CPU-1 processor + CPU heatsink must be installed first. The CPU-2 heatsink must be installed at all times, with or without a processor installed.

- **Memory Slot population requirements:**

NOTE: Specified memory slots either can be populated with a DIMM or supplied DIMM Blank. Memory population rules apply when installing DIMMs.

  - DIMM Population Rules on CPU-1

    Install DIMMs in order: channels A1, B1, C1, A2, B2, and C2. Remove only DIMM blanks when populating the slot with a DIMM.

  - DIMM Population on CPU-2

    Install DIMMs in order: Channels D1, E1, F1, D2, E2, and F2. Only remove DIMM blanks when populating the slot with a DIMM.

- All hard drive bays must be populated. Hard drive carriers either can be populated with a hard drive or supplied drive blank.

- The air duct must be installed at all times.

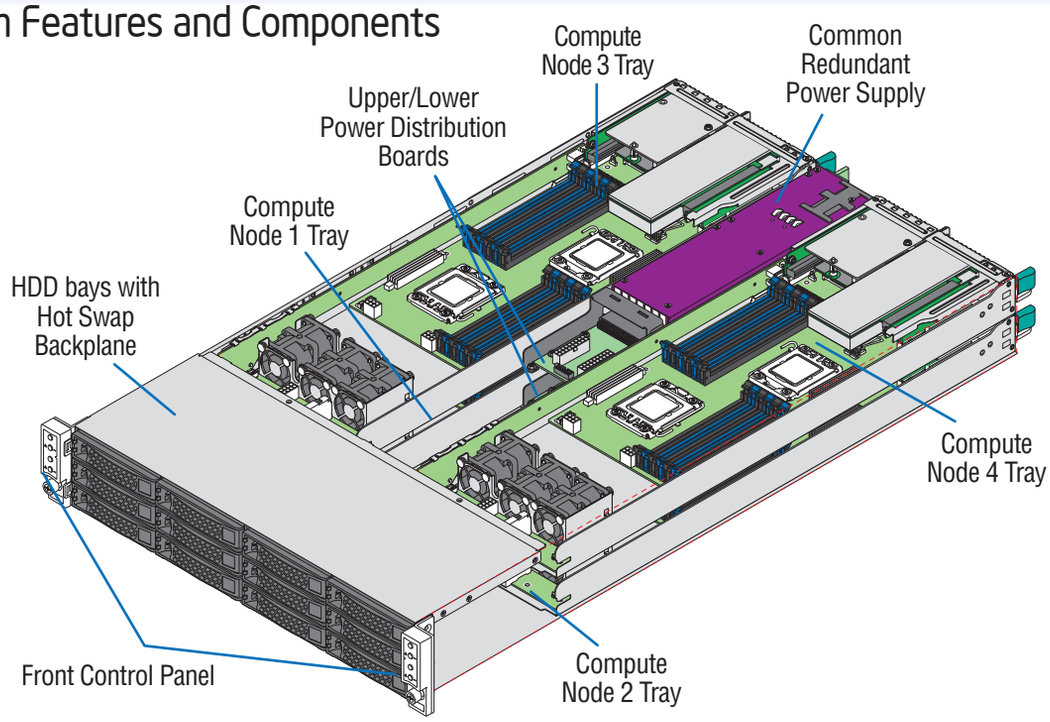
- The empty power supply bay must have the supplied filler blank installed at all times.

- The system top-cover must be installed at all times. Remove the top cover only when the system is in power-off state.

System Overview

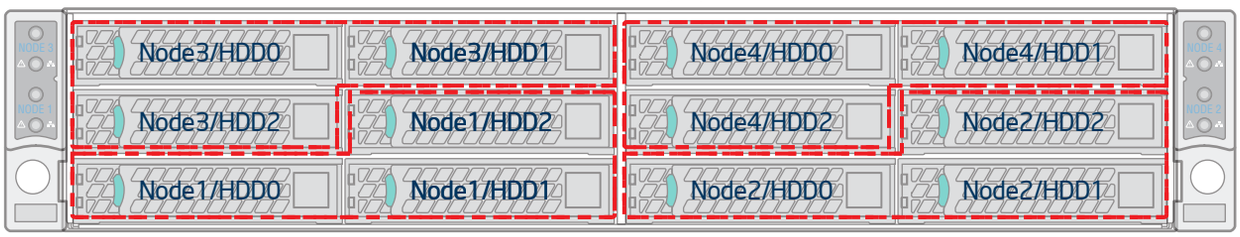
Intel® Server System H2000LP Family

System Features and Components

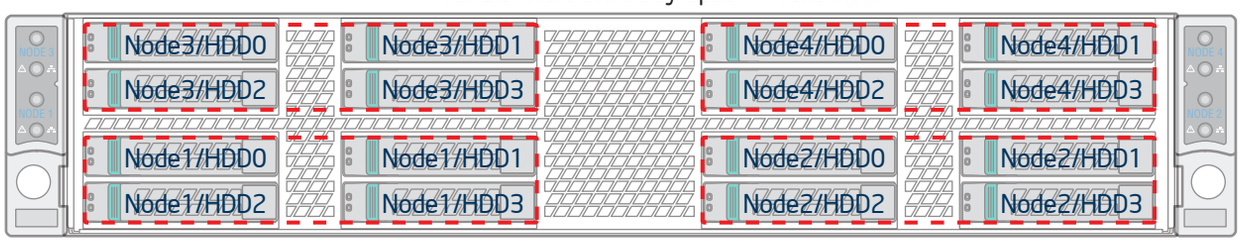


Intel® Server System H2000LP Hard Drive Numbering Diagram

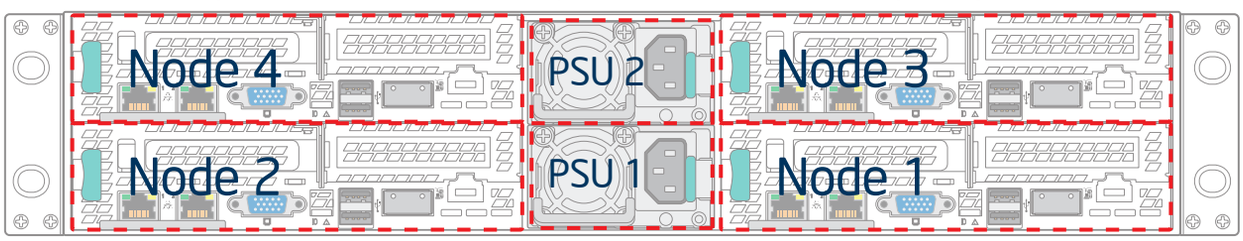
12X3.5" Hard Drive Bay Option - Front View



16X2.5" Hard Drive Bay Option - Front View



Intel® Server System H2000LP Compute Node Numbering Diagram - Rear View



General Installation Process

The installation instructions in this section are for common components of Intel® Server System H2000LP family.

Minimum Hardware Requirements

To avoid integration difficulties and possible board damage, your system must meet the following minimum requirements:

- Processor:
  Intel® Xeon® Processor E5 product family (TDP 95W or below).
- Memory Type:
  Minimum of one 1GB DDR3 1066/1333/1600 MHz RDIMM.
- Hard Disk Drives: SATA/SAS

For a complete list of compatible processors, heatsinks, and memory, see http://www.intel.com/p/en_US/support.

1 Preparing the System

Observe normal ESD (Electrostatic Discharge) procedures.

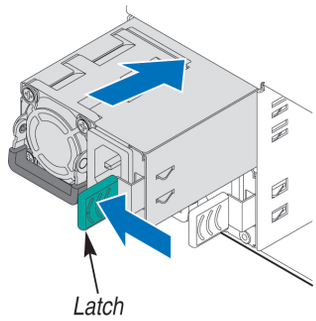
Place your Intel® Server System on a flat anti-static surface to perform the following integration procedures. Observe ESD procedures before reaching inside to make server board connections or install components.

2 Install/Remove the Power Supply Unit

Install the Power Supply Unit:

A. Align and slide in the Power Supply Unit to the power cage rail.

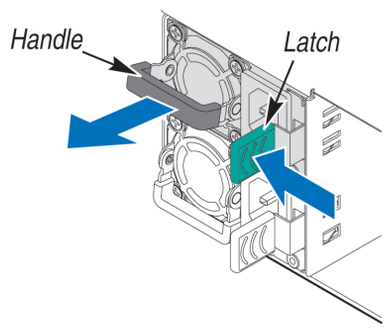
B. Push the Power Supply Unit along the rail until the latch locks in position with a "tick" sound.



Remove the Power Supply Unit:

A. Carefully push in the latch on the right hand of PSU.

B. Pull the handle with the PSU while still press the latch.

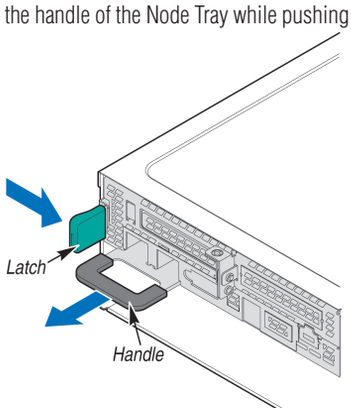


3 Remove/Install Computer Node Tray

To Remove Node Tray:

A. Push-in the latch on the left hand of Node Tray.

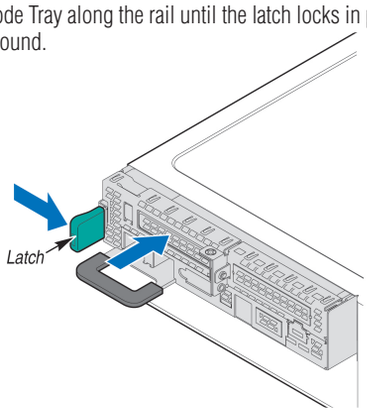
B. Pull the handle of the Node Tray while pushing the latch.



To Install Node Tray:

A. Align and slide in the Node Tray to the chassis rail.

B. Push the Node Tray along the rail until the latch locks in position with a tick sound.



General Installation Process

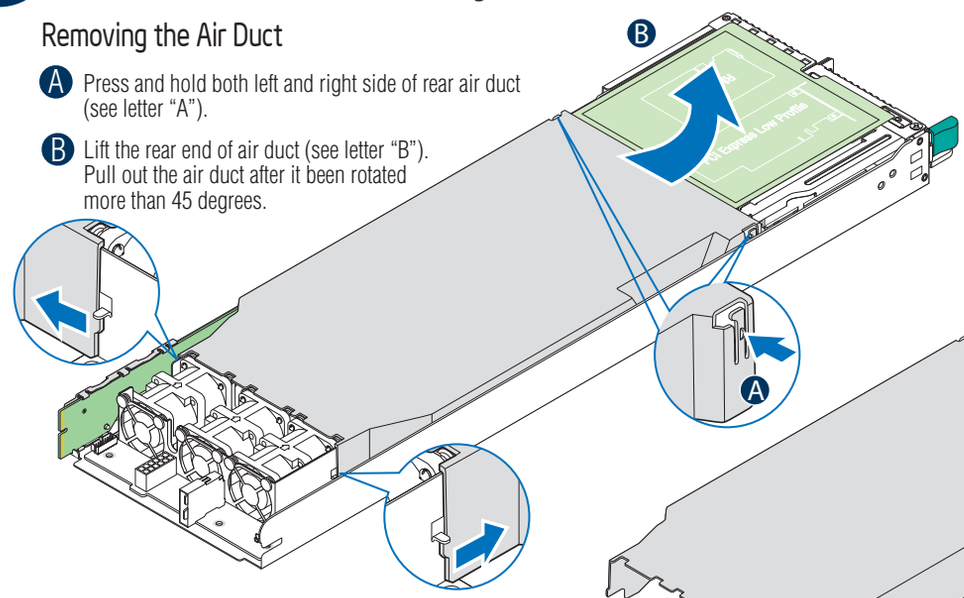
The installation instructions in this section are for common components of Intel® Server System H2000LP family.

4 Remove/Install Node Tray Air Duct

Removing the Air Duct

A Press and hold both left and right side of rear air duct (see letter "A").

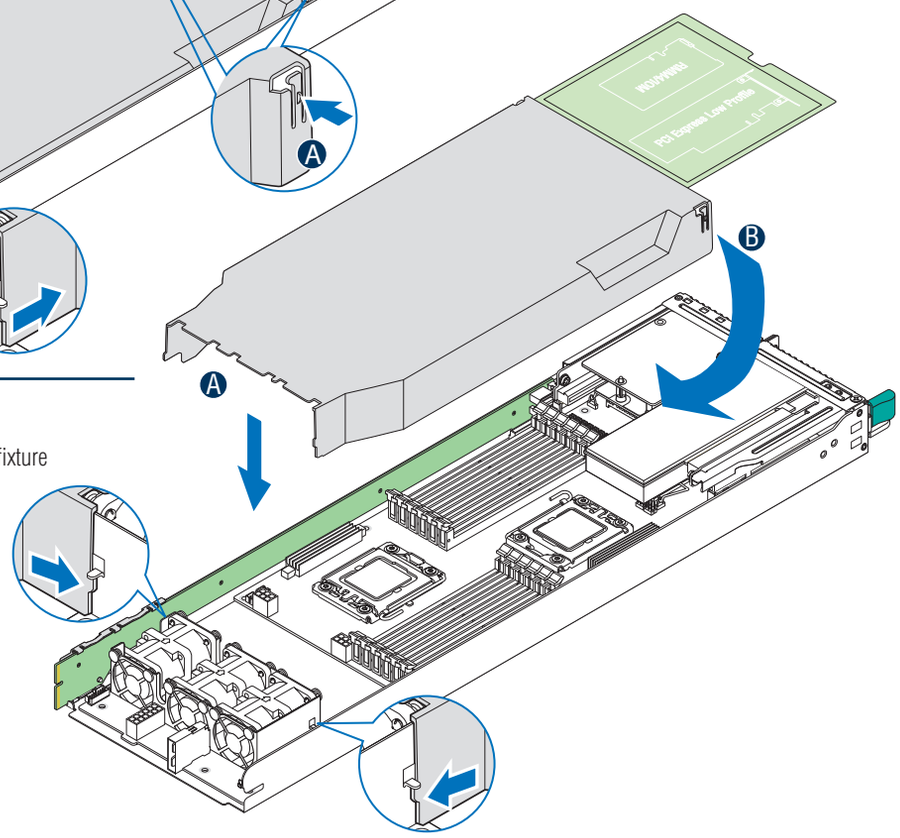
B Lift the rear end of air duct (see letter "B"). Pull out the air duct after it been rotated more than 45 degrees.



Installing the Air Duct

A Align the front end of the air duct to chassis fixture (see letter "A").

B Push down the rear end of the air duct to the fixture until a "tick" sound is heard (see letter "B").



IMPORTANT!

Before proceeding further, check your Intel® Server System for disconnected or loose cables and components that may have occurred during shipping.

5 Remove Processor Heatsink(s)

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

The heatsink is attached to the server board/processor socket with captive fasteners.

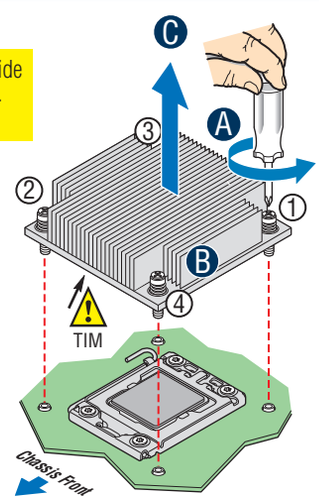
Using a #2 Phillips* screwdriver, loosen the four screws located on the heatsink corners in a diagonal manner using the following procedure:

A Using a #2 Phillips* screwdriver, start with screw 1 and loosen it by giving it two rotations and stop. (IMPORTANT: Do not fully loosen.)

B Proceed to screw 2 and loosen it by giving it two rotations and stop. Similarly, loosen screws 3 and 4.

Repeat steps A and B by giving each screw two rotations each time until all screws are loosened.

C Lift the heatsink straight up.

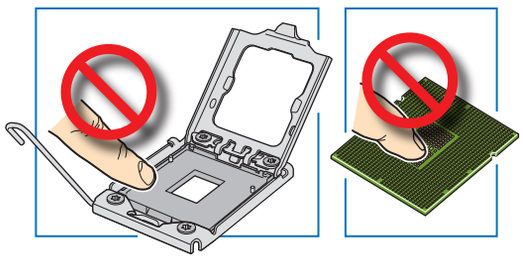


General Installation Process

6 Install the Processor(s)

Cautions:

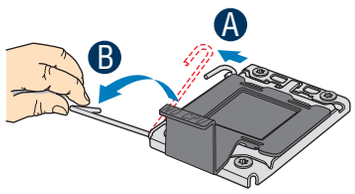
1. When opening a socket, DO NOT TOUCH the gold socket wires.
2. When unpacking a processor, hold by the edges only to avoid touching the gold contact wires.



A. Open the Socket Lever

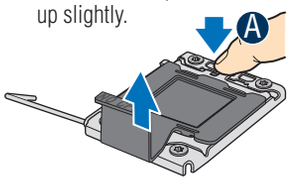
A Push the lever handle down and away from the socket to release it.

B Rotate the lever open all the way.

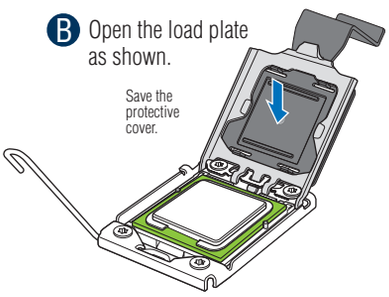


B. Open the Load Plate

A Push the rear tab with your finger tip to bring the front end of the load plate up slightly.



B Open the load plate as shown.

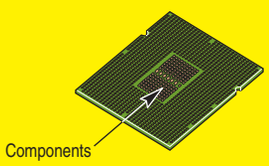


Install the Processor(s) ... *continued*

C. Remove the Processor Protective Cover

A Take the processor out of the box and remove the protective shipping cover.

CAUTION: The underside of the processor has components that may damage the socket wires if installed improperly.

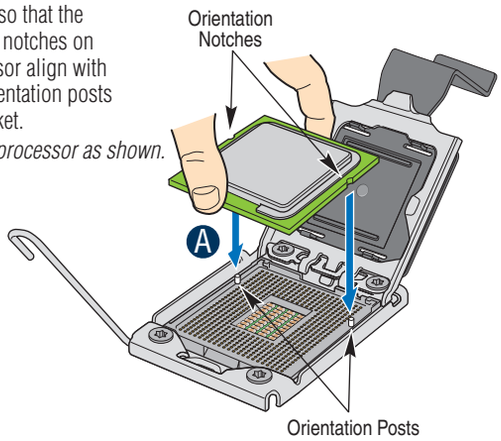


Processor must align correctly with the socket opening before installation.
DO NOT DROP processor into the socket!

Install the Processor(s) ... *continued*

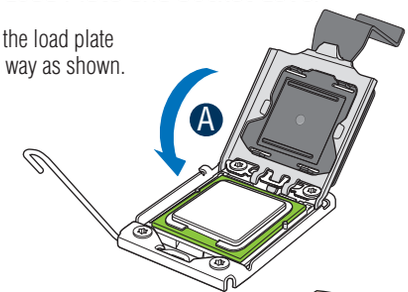
D. Install the Processor

A Orient the processor with the socket so that the orientation notches on the processor align with the two orientation posts on the socket.
Install the processor as shown.



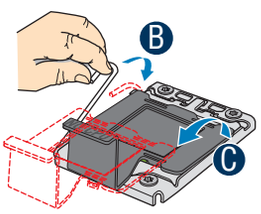
E. Close Load Plate and Socket Lever

A Close the load plate all the way as shown.



B Close the socket lever.

C Remove the protective cover after it been automatically disengaged from the load plate.



General Installation Process

7 Install Processor Heatsink(s)

CAUTION: The heatsink has thermal interface material (TIM) on the underside of it. Use caution so that you do not damage the thermal interface material.
Use gloves to avoid sharp edges.
CPU socket 1 heat sink is different from CPU socket 2 heat sink. In the Server System H2000LP family, **FXXCA90X90HS** is for CPU socket 1 and **FXXEA90X90HS** is for CPU socket 2. Mis-locating the heatsink will cause serious thermal damage!

A. Remove the protective film on the TIM if present.

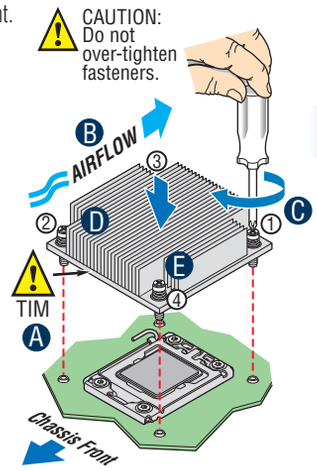
B. Align heatsink fins to the front and back of the chassis for correct airflow.
Airflow goes from front-to-back of chassis.

Each heatsink has four captive fasteners and should be tightened in a diagonal manner using the following procedure:

C. Using a #2 Phillips* screwdriver, start with screw 1 and engage screw threads by giving it two rotations and stop. (Do not fully tighten.)

D. Proceed to screw 2 and engage screw threads by giving it two rotations and stop. Similarly, engage screws 3 and 4.

E. Repeat steps C and D by giving each screw two rotations each time until each screw is lightly tightened up to a maximum of 8 inch-lbs torque.



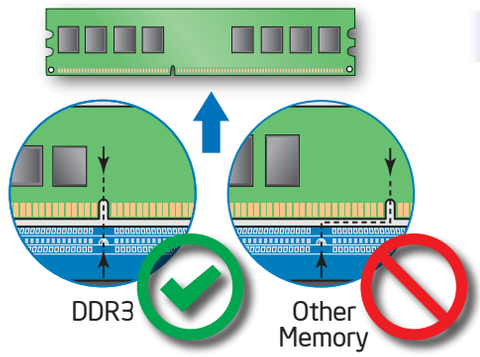
Note: Heatsink styles may vary.

8 Install Memory Modules

DDR3 DIMM Memory Identification:

CAUTION: Observe normal ESD (ElectroStatic Discharge) procedures to avoid possible damage to system components.

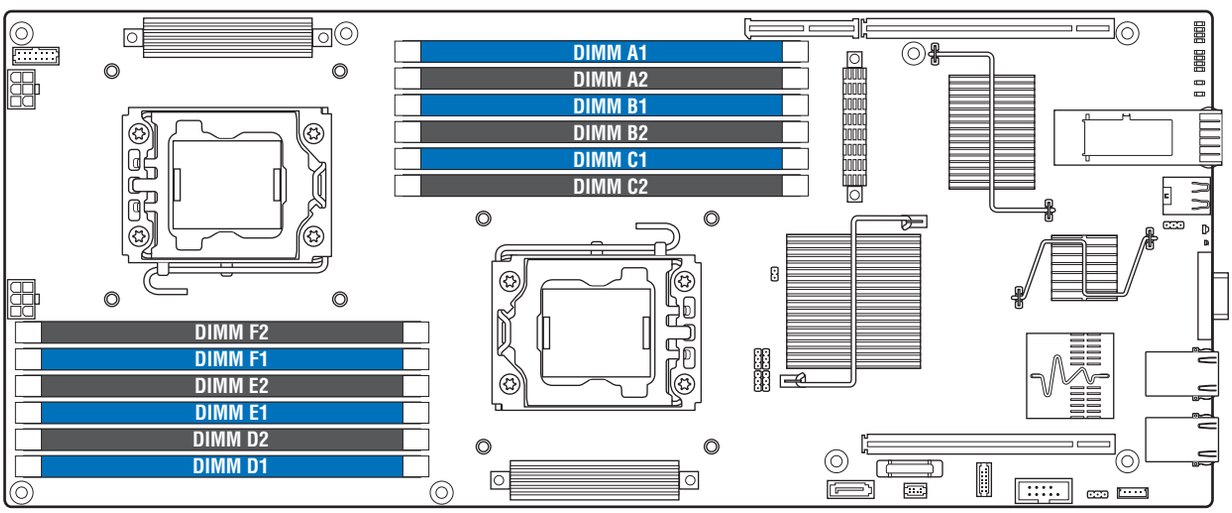
DIMM notch and socket bump must align as shown below.



Install Memory Modules ... *Continued*

Memory Configurations and Population Order:

Intel® Server Board S2400LP



For best performance, a minimum of four DIMMs per CPU is recommended, populated in the blue slot of each memory channel.

In a single-processor configuration, always populate A1 DIMM first.

In a dual-processor configuration, always populate A1 DIMM first for CPU 1 and D1 DIMM first for CPU2.

Note: *For additional memory configurations, go to http://www.intel.com/support/motherboards/server/.*

Memory sizing and configuration is supported only for qualified DIMMs approved by Intel. For a list of supported memory, see the tested memory list at http://www.intel.com/support/motherboards/server/.

General Installation Process

Install Memory Modules ... *Continued*

To Install DIMMs:

A Open both DIMM socket levers.

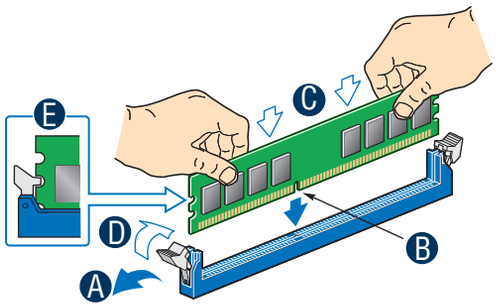
B Note location of alignment notch.

C Insert DIMM making sure the connector edge of the DIMM aligns correctly with the slot.

D Push down firmly on the DIMM until it snaps into place and both levers close.

E IMPORTANT! Visually check that each latch is fully closed and correctly engaged with each DIMM edge slot.

CAUTION: Avoid touching contacts when handling or installing DIMMs.

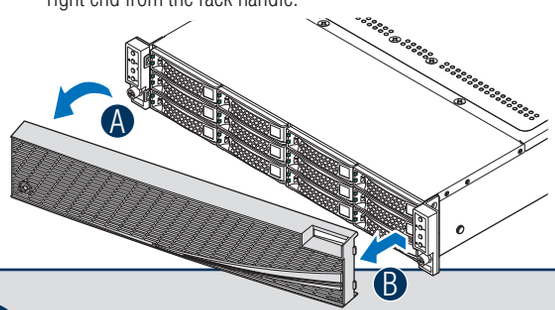


9 Install/Remove the Front Bezel

Remove the Front Bezel:

A Unlock the bezel if it is locked. Remove the left end of front bezel from rack handle

B Rotate the front bezel anticlockwise to release the latches on the right end from the rack handle.



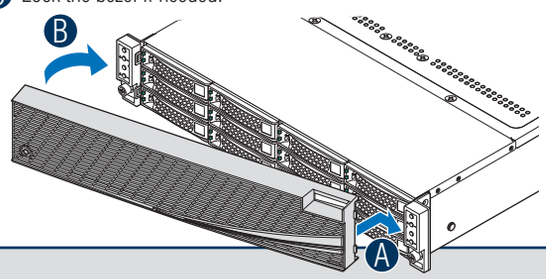
Install the Front Bezel:

Note: *Before installing the bezel, you must install the rack handles.*

A Lock the right end of the front bezel to the rack handle.

B Rotate the front bezel clockwise till the left end clicks into place.

C Lock the bezel if needed.

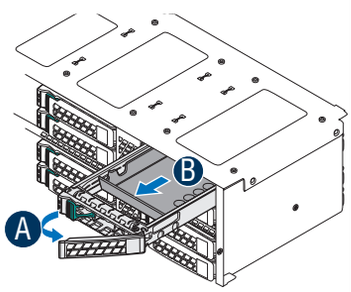


10 Install Hard Drives

2.5" Hard Drive Carrier (For system with 2.5" hard drive bay only)

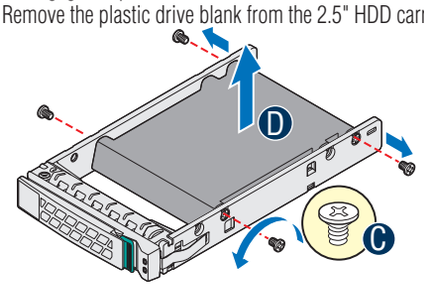
A Remove the drive carrier by pressing the green latch to unlock.

B Pull out the black lever and slide the carrier out.

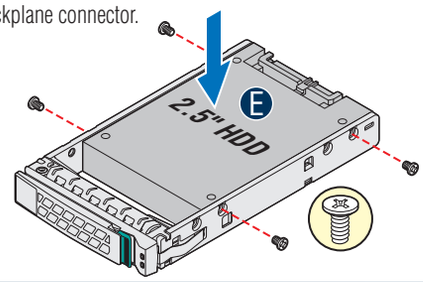


C Remove the four screws securing the plastic drive blank from the 2.5" HDD carrier.

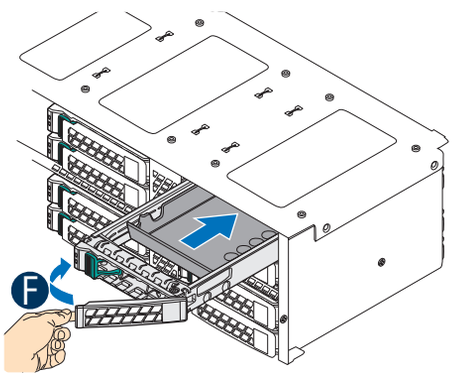
D Disengage the plastic drive blank from the HDD carrier. Remove the plastic drive blank from the 2.5" HDD carrier.



E Install the hard disk drive using the four screws as shown. Make Sure the connector end of the drive matches the backplane connector.



F With the lever open, insert the hard disk drive assembly into the chassis, then push in the lever to lock it into place.



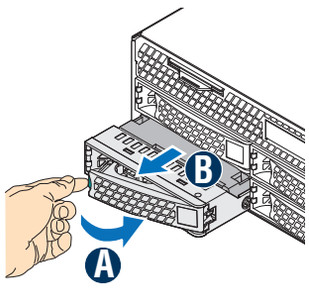
CAUTION: If you don't install all drives, empty drive bays must be occupied by carriers with plastic drive blank provided to maintain proper system cooling.

Install Hard Drives ... *Continued*

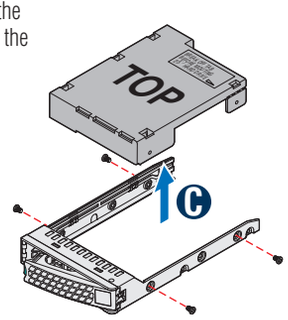
3.5" Hard Drive Carrier (For system with 3.5" hard drive bay only)

A Remove the drive carrier by pressing the **green** button and opening the lever.

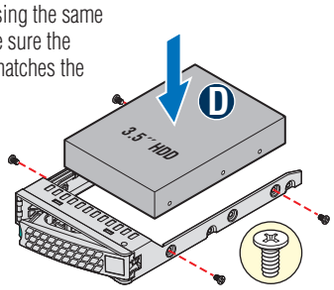
B Slide the carrier out.



C Remove the four screws securing the HDD interface bracket and remove the HDD interface bracket.



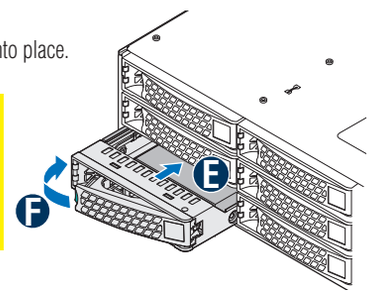
D Install the hard disk drive using the same four screws as shown. Make sure the connector end of the drive matches the backplane connector.



E With the lever open, insert the hard disk drive assembly into the chassis.

F Push in the lever to lock it into place.

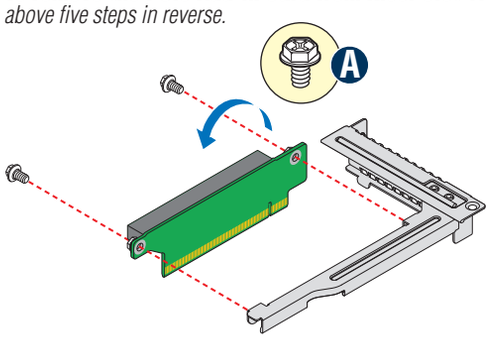
CAUTION: If you don't install all drives, empty drive bays must be occupied by carriers with plastic drive blank provided to maintain proper system cooling.

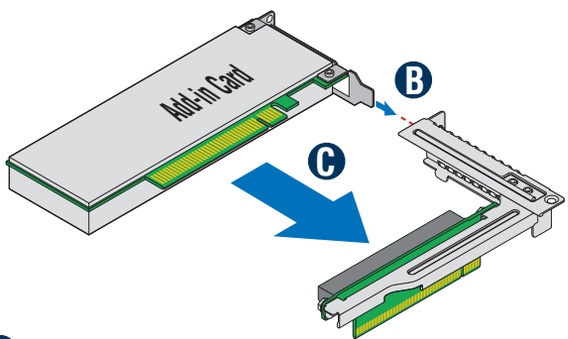


11 Installing PCIe Riser Assembly and Add-in Card on Riser Slot 1

A Install the riser to bracket by fastening screws in below drawings.

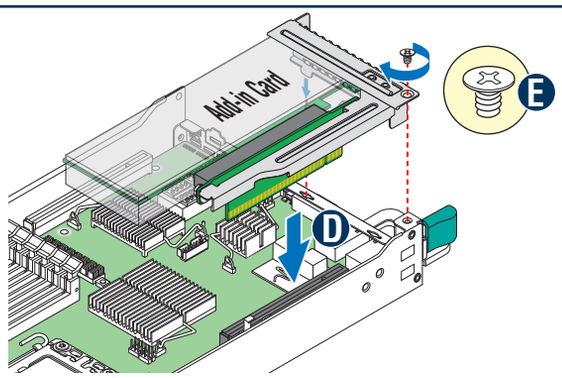
To remove the PCIe Add-in Card from Riser Slot 1: *Perform the above five steps in reverse.*





B Insert add-in card until it seats in the riser connector.

C Install the bracket assembly into the chassis with a screw.



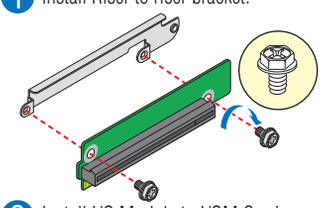
D Slide the card guide horizontally to lock in the back edge of the add-in card.

E Install the bracket assembly into the chassis with a screw.

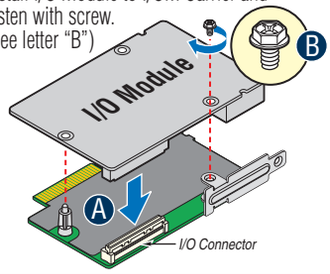
General Installation Process

12 Install I/O Module Riser and Carrier Assembly on Riser Slot 2

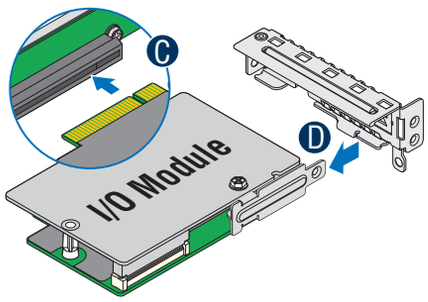
1. Install Riser to riser bracket.



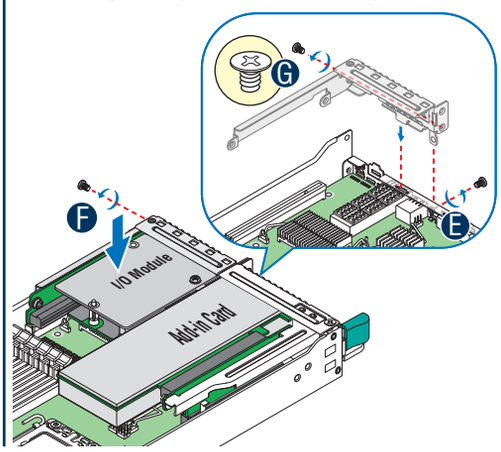
2. Install I/O Module to I/OM Carrier and fasten with screw. (See letter "B")



3. Attach IOM bracket to IOM carrier (see letter "D"), and then plug-in the IOM assembly into the riser slot. (See letter "C")

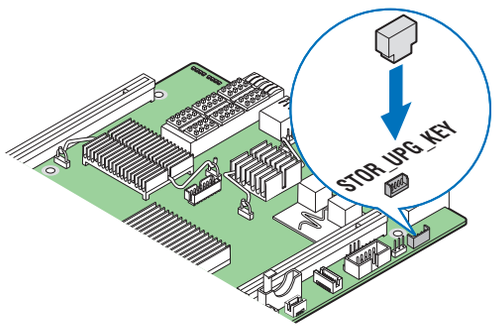


4. Install I/OM assembly and add-in card assembly (if any) using screws. (See letters "F", "E", and "G")



13 Install Intel® RAID C600 Upgrade Key (optional)

Locate the white 4-pin key header next to RISER SLOT_1. Carefully pickup the Intel® RAID C600 Upgrade Key. Match the Key and connector orientation and press down to install.



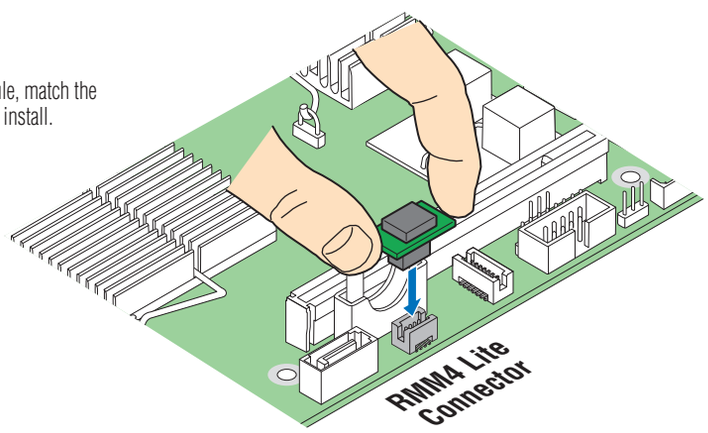
Intel® RAID C600 Storage Upgrade Key Options for S2400LP

Intel® RAID C600 Upgrade Key Options (Intel Product Codes)	Key Color	Intel® RAID C600 Upgrade Key Description	S2400LP SCU RAID availability Description
Default – No option key installed	N/A	4 Port SATA with Intel® ESRT RAID 0,1,10 and Intel® RSTe RAID 0,1,5,10	4 Port SATA with Intel® ESRT RAID 0,1,10 and Intel® RSTe RAID 0,1,5,10
RKSATA4R5	Black	4 Port SATA with Intel® ESRT2 RAID 0,1, **5**, 10 and Intel® RSTe RAID 0,1,5,10	4 Port SATA with Intel® ESRT2 RAID 0,1, **5**, 10 and Intel® RSTe RAID 0,1,5,10
RKSAS4	Green	4 Port SAS with Intel® ESRT2 RAID 0,1, 10 and Intel® RSTe RAID 0,1,10	4 Port SAS with Intel® ESRT2 RAID 0,1, 10 and Intel® RSTe RAID 0,1,10
RKSAS4R5	Yellow	4 Port SAS with Intel® ESRT2 RAID 0,1, **5**, 10 and Intel® RSTe RAID 0,1,10	4 Port SAS with Intel® ESRT2 RAID 0,1, **5**, 10 and Intel® RSTe RAID 0,1,10

Note: *The 8-port Storage Upgrade Key can also implement the RAID function for S2400LP, but only 4 ports (SCU0) can be configured as proper RAID level.*

14 Install Intel® Remote Management Module 4 (optional)

Locate the RMM4 Lite connector, carefully pickup the Intel® RMM4 Lite module, match the alignment pin of the module and the connector on server board, then press to install.

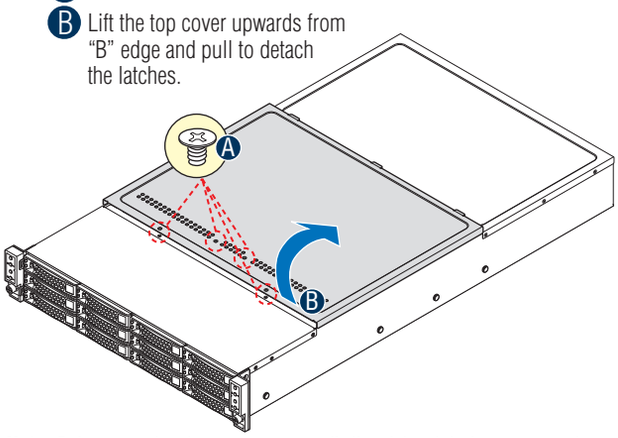


General Installation Process

15 Remove Top Cover

A Remove four screws.

B Lift the top cover upwards from "B" edge and pull to detach the latches.

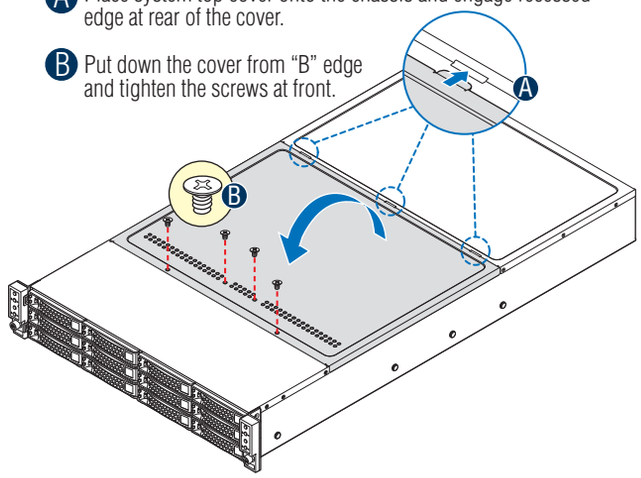


Note: *Before removing the top cover, turn off all peripheral devices connected to the server, turn off the server, and disconnect the power cord.*

16 Install Top Cover

A Place system top cover onto the chassis and engage recessed edge at rear of the cover.

B Put down the cover from "B" edge and tighten the screws at front.



17 Software ▪ BIOS, Drivers, and Operating System Installation

A. Update the System Software:

1. Boot from the Intel® Server Deployment Toolkit CD.
2. Use the Wizard to access the latest versions on the Internet and update the BIOS, firmware, FRUSDRs, and Intel® RMM4. *Note: You may also download files on a USB key.*

Note: The FRUSDR utility must be run for full server configuration.

B. Configure your RAID Controller:

If using a RAID card, use the instructions provided with the RAID controller. If using on-board RAID, you must activate RAID in the BIOS setup. See the *Intel® Server Board S2400LP Technical Product Specification* for more information.

C. Install your Operating System:

Use the instructions provided with the RAID controller and with the operating system.

D. Install Operating System Drivers:

With the operating system running, insert the Intel® Server Deployment Toolkit CD. If using a Microsoft Windows* operating system, the Express Installer will autorun and allow you to select the appropriate drivers to install. On other operating systems, browse the CD folders to locate and install the driver files.

E. Install Intel® System Management Software (optional):

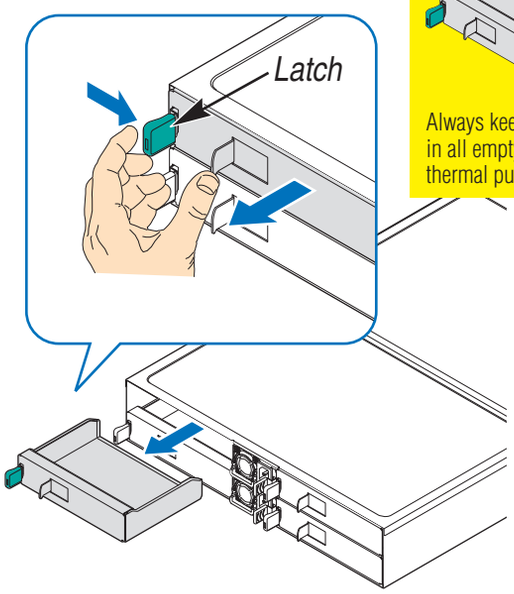
Download the latest version of the Intel® System Management Software from http://www.intel.com/go/servermanagement and use the instructions provided at that link to install the software.

** Other brands and names may be claimed as the property of others..*

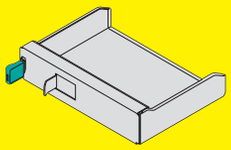
Intel® Server Chassis H2000 Assembly and Disassembly

18 Assembling the Server System with Server Chassis H2000

A. Removing the Node Dummy Tray

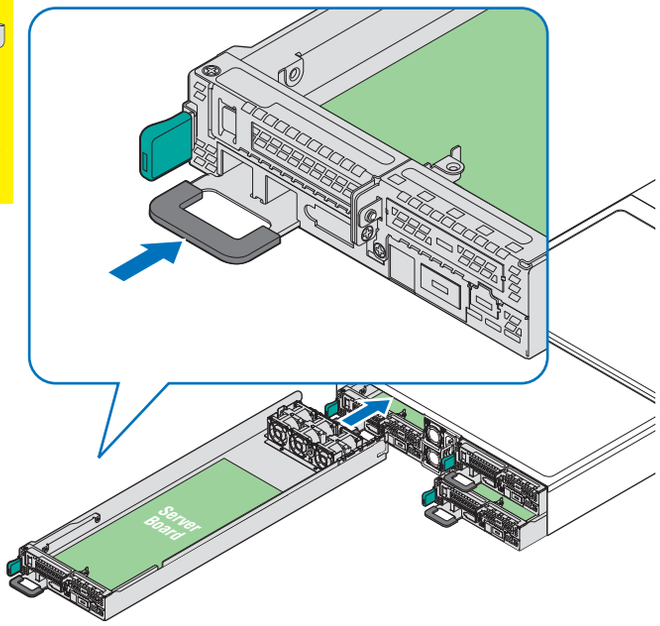


Node Dummy Tray



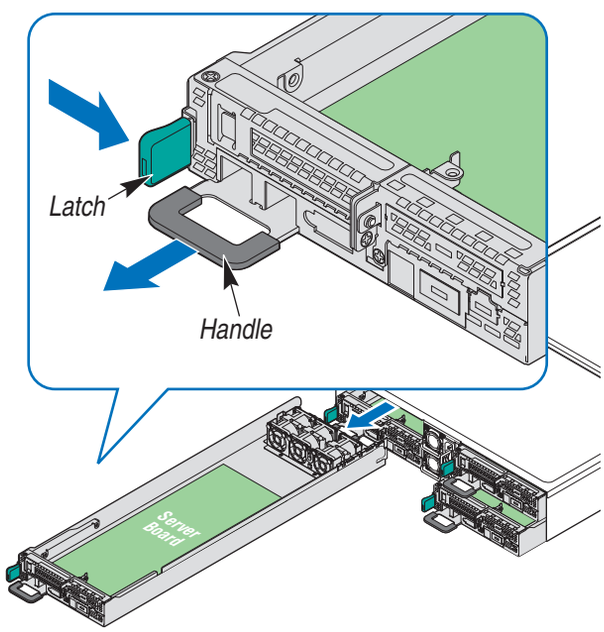
Always keep dummy trays in all empty node slots for thermal purpose.

B. Inserting the Node Tray

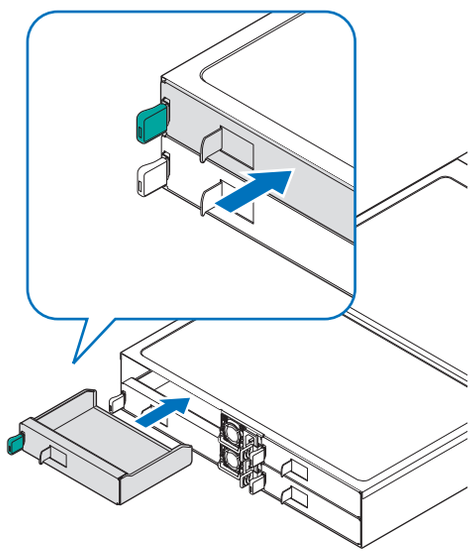


19 Removing a Node Tray from a Chassis

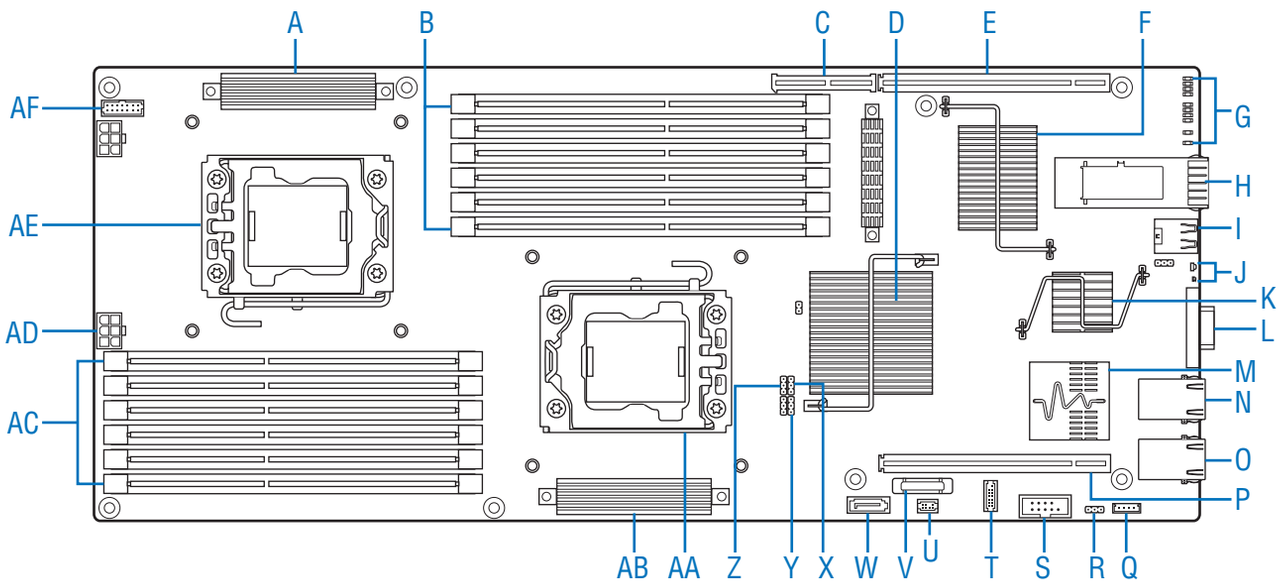
A. Removing the Node Tray



B. Inserting the Dummy Tray back



Intel® Server Board S2400LP Component Layout



A	CPU2 VR	I	USB x2	Q	Storage Upgrade Key	Y	ME Firmware Update
B	CPU1 DIMM (6 Total)	J	Status and ID LED	R	BIOS Recovery	Z	Reset BIOS Configuration
C	Bridge Board Connector	K	BMC	S	Serial Port A	AA	CPU1
D	PCH C600-A	L	VGA Out	T	TPM	AB	CPU1 VR
E	Riser Slot 2 (PCIe Gen3x16 with x8 Electrical)	M	Dual port 1GbE NIC	U	RMM4_Lite	AC	CPU2 DIMM (6 Total)
F	Infiniband QDR	N	NIC Port 2	V	CMOS Battery	AD	2x3 PWR Connector
G	POST and QSFP LED	O	NIC Port 1	W	SATA DOM	AE	CPU2
H	QSFP Port	P	Riser Slot 1 (PCIe Gen3x16 with x8 Electrical)	X	Clear Password	AF	2x7 Fan Control Connector

See your *Intel® Server System H2000LP Service Guide* for expanded component and connection information.

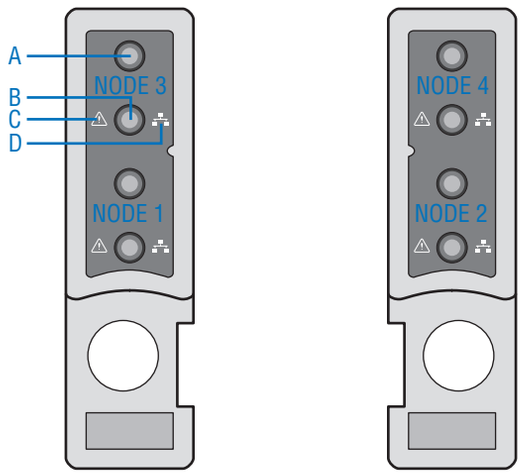
Reference

Front Panel Controls and Indicators

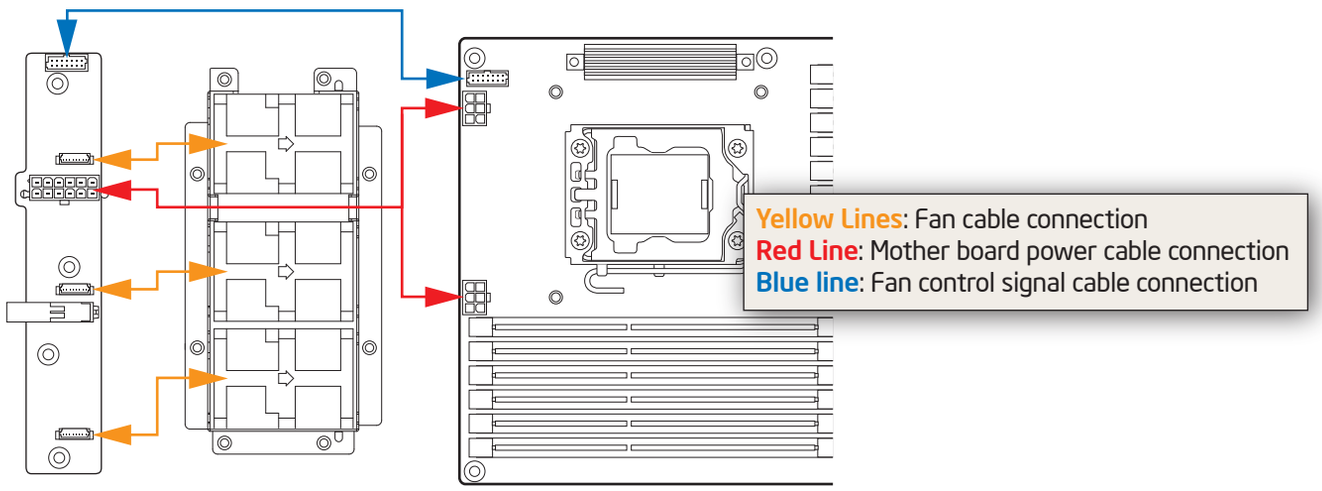
Your system may include one of two front control panel types.The features of each are as follows:

A. System Power Button with LED
B. System ID Button
C. System Status LED
D. Network Link/Activity LED

Standard Control Panel



Cable Routing inside Server System H2000LP Node Tray



Optional Accessories

Product Code	MM#	Description
AXXRMM4IOM	918249	PCI Express x16 164P rIOM riser; RMM4/rIOM carrier board
FXX1200PCRPS	915605	1200W AC CRPS
FXX1600PCRPS	915606	1600W AC CRPS
FXXCA90X90HS	918255	1U Cu/Al 90mmx90mm Heat Sink (for CPU socket 1)
FXXEA90X90HS	918256	1U Ex-Al 90mmx90mm Heat Sink (for CPU socket 2)
HNS2400LPQ	918379	Intel® Server Board S2400LPQ; Intel® Node Power Board; Intel® Bridge Board; 1U PCI Express Low Profile Riser; 1U Cu/Al 90mmx90mm Heat Sink; 1U Ex-Al 90mmx90mm Heat Sink; Three 4056 Dual Rotor Fan; Power Cable, Airduct; 1U Node Tray; Fan Control Signal Cable
HNS2400LP	918380	Intel® Server Board S2400LP; Intel® Node Power Board; Intel® Bridge Board; 1U PCI Express Low Profile Riser; 1U Cu/Al 90mmx90mm Heat Sink; 1U Ex-Al 90mmx90mm Heat Sink; Three 4056 Dual Rotor Fan; Power Cable, Airduct; 1U Node Tray; Fan Control Signal Cable

A complete list of accessories and spares can be found at http://www.intel.com/p/en_US/support.

Intel® Sever System RAID Options

Intel® RSTe

Intel® RSTe (also known as Intel® Rapid Storage Technology Enterprise) is an embedded software RAID solution based on the Intel Chipset RAID Stack for on-server board SAS and SATA ports. It provides pass-through drive support as well as host based RAID 0/1/10 support and RAID 5 support for the SATA ports.

Intel® ESRT2

Intel® ESRT2 (also known as Intel® Embedded Server RAID Technology II) is an embedded software RAID solution based on the LSI MegaRAID* Stack for on-server board SAS and SATA ports. It supports RAID 0/1/10 and optional RAID 5 with the proper Intel® RAID C600 upgrade keys.

Intel® Integrated RAID Modules

Intel® Integrated RAID Modules connects to the on-board SAS Module Connector or a module enabled PCI-E slot. This is a cost-effective RAID solution providing more system design flexibility.

Must be purchased separately

Add-in RAID Adapters

Standard SAS or RAID HBA available from Intel® or 3rd Party suppliers. See Intel® Sever Configurator Tool (*http://serverconfigurator.intel.com*) for the most up-to-date adapter support list for your system.

Must be purchased separately

Intel® Sever System RAID Options

	Step 1 Choose a RAID Option	Step 2 Choose proper hardware	Step 3 Enable RAID Option	Step 4 Configure RAID
Motherboard RAID Options	**On-Server board AHCI Capable SATA Controller (SATA Ports)** Supported RAID option: 1. Intel® RSTe 2. Intel® ESRT2	**Intel® RAID C600 Upgrade Keys** Refer to the key description table on previous page to populate a proper key on your system.	1. During system post, press ***F2*** to enter System BIOS Setup 2. Under Advance tab, select Mass Storage Controller Configuration and press ***enter*** 3. Select Intel(R) RSTe or Intel(R) ESRT2 for AHCI Capable SATA Controller	**Intel®** RSTe: During system post, press ***Ctrl+I*** to enter RAID BIOS console. **Intel® ESRT2**: During system post, press ***Ctrl+E*** to enter RAID BIOS console. See *Intel® Rapid Storage Technology Enterprise Software User's Guide*
	On-Server board SATA/SAS Capable Controller(SAS Ports) Supported RAID option: 1. Intel® RSTe 2. Intel® ESRT2	**Intel® RAID C600 Upgrade Keys** Refer to the key description table on previous page to populate a proper key on your system.	1. During system post, press ***F2*** to enter System BIOS Setup 2. Under Advance tab, select Mass Storage Controller Configuration and press ***enter*** 3. Select Intel(R) RSTe or Intel(R) ESRT2 for SATA/SAS Capable Controller	**Intel®** RSTe: During system post, press ***Ctrl+I*** to enter RAID BIOS console. **Intel® ESRT2**: During system post, press ***Ctrl+E*** to enter RAID BIOS console. See *Intel® Rapid Storage Technology Enterprise Software User's Guide*
Add-in RAID Controller Options	**Intel® Integrated RAID Module** See Intel® Sever Configurator Tool for supported modules for your system.	**Intel® Integrated RAID Module** **Entry Modules** = R0,1,1E **Mainstream Modules** = R0,1,10,5,50,6,60 **Optional Premium Feature Keys** AXXRPFKSSD = SSD Cache AXXRPFKDE = Disk Encryption AXXRPFKSNSH = Snapshot For Details See Intel® Sever Configurator Tool	Follow by the Installation Guide that shipped with the module to install the Intel® Integrated RAID Module in the server system	**Entry Modules** During system post, press ***Ctrl+E*** **Mainstream Modules** During system post, press ***Ctrl+G*** See *Intel® RAID software user's guide*
	RAID Adapters See Intel® Sever Configurator Tool for supported RAID Adapters for your system.	**Intel® RAID Controllers** **Entry Adapters** = R0,1,1E **Mainstream Adapters** = R0,1,10,5,50,6,60 **Optional Premium Feature Keys** AXXRPFKSSD = SSD Cache AXXRPFKDE = Disk Encryption AXXRPFKSNSH = Snapshot For Details See Intel® Sever Configurator Tool	Follow by the Installation Guide (shipped with the adapter) to install the Intel® RAID controller in the server system	**Entry Adapters** During system post, press ***Ctrl+E*** **Mainstream Adapters** During system post, press ***Ctrl+G*** See *Intel® RAID software user's guide*

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