SB405-PV

Storage Barebone
User's Manual

UM_SB405-PV_v1.5_082319

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Document Release History

Release Date	Version	Update Content
August 2018	1	User's Manual release to public.
December 2018	1.1	1. Update cover. 2. Update Motherboard Setting.
Febuary 2019	1.2	1. Update Datasheet.
March 2019	1.3	Update Slide Rail QIG.
June 2019	1.4	DIMM update.
August 2019	1.5	1. BIOS update. 2. Motherboard settings update.

Preface

Copyright

Trademarks

Changes

The material in this document is for information purposes only and is subject to change without notice.

Warning

1. A shielded-type power cord is required in order to meet FCC emission limits and also to prevent interference to the nearby radio and television reception. It is essential that only the supplied power cord be used.
2. Use only shielded cables to connect I/O devices to this equipment.
3. You are cautioned that changes or modifications not expressly approved by the party responsible for compliance could void your authority to operate the equipment.

Disclaimer

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Instruction Symbols

Special attention should be given to the instruction symbols below.

NOTE	This symbol indicates that there is an explanatory or supplementary instruction.
CAUTION	This symbol denotes possible hardware impairment. Upmost precaution must be taken to prevent serious harware damage.
WARNING	This symbol serves as a warning alert for potential body injury. The user may suffer possible injury from disregard or lack of attention.

Safety Instructions

Before getting started, please read the following important cautions:

- All cautions and warnings on the equipment or in the manuals should be noted.
- Most electronic components are sensitive to electrical static discharge. Therefore, be sure to ground yourself at all times when installing the internal components.
- Use a grounding wrist strap and place all electronic components in static-shielded devices. Grounding wrist straps can be purchased in any electronic supply store.
- Be sure to turn off the power and then disconnect the power cords from your system before performing any installation or servicing. A sudden surge of power could damage sensitive electronic components.
- Do not open the system's top cover. If opening the cover for maintenance is a must, only a trained technician should do so. Integrated circuits on computer boards are sensitive to static electricity. Before handling a board or integrated circuit, touch an unpainted portion of the system unit chassis for a few seconds. This will help to discharge any static electricity on your body.
- Place this equipment on a stable surface when install. A drop or fall could cause injury.
- Please keep this equipment away from humidity.
- Carefully mount the equipment into the rack, in such manner, that it won't be hazardous due to uneven mechanical loading.
- This equipment is to be installed for operation in an environment with maximum ambient temperature below 35°C.
- The openings on the system are for air convection to protect the equipment from overheating. DO NOT COVER THE OPENINGS.
- Never pour any liquid into ventilation openings. This could cause fire or electrical shock.
- Make sure the voltage of the power source is within the specification on the label when connecting the equipment to the power outlet. The current load and output power of loads shall be within the specification.
- This equipment must be connected to reliable grounding before using. Pay special attention to power supplied other than direct connections, e.g. using of power strips.
- Place the power cord out of the way of foot traffic. Do not place anything over the power cord. The power cord must be rated for the product, voltage and current marked on the product's electrical ratings label. The voltage and current rating of the cord should be greater than the voltage and current rating marked on the product.
- If the equipment is not used for a long time, disconnect the equipment from mains to avoid being damaged by transient over-voltage.
- Never open the equipment. For safety reasons, only qualified service personnel should open the equipment.

- If one of the following situations arise, the equipment should be checked by service personnel:
  1. The power cord or plug is damaged.
  2. Liquid has penetrated the equipment.
  3. The equipment has been exposed to moisture.
  4. The equipment does not work well or will not work according to its user manual.
  5. The equipment has been dropped and/or damaged.
  6. The equipment has obvious signs of breakage.
  7. Please disconnect this equipment from the AC outlet before cleaning. Do not use liquid or detergent for cleaning. The use of a moisture sheet or cloth is recommended for cleaning.
- Module and drive bays must not be empty! They must have a dummy cover.

CAUTION

The equipment intended for installation should be placed in Restricted Access Location.

CAUTION

There will be a risk of explosion if battery is replaced by an incorrect type. Dispose of used batteries according to the instructions. After performing any installation or servicing, make sure the enclosure is correct in position before turning on the power.

CAUTION

This unit may have more than one power supply. Disconnect all power sources before maintenance to avoid electric shock.

About This Manual

Thank you for selecting and purchasing the SB405-PV.

This user's manual is provided for professional technicians to perform easy hardware setup, basic system configurations, and quick software startup. This document pellucidly presents a brief overview of the product design, device installation, and firmware settings for SB405-PV. For the latest version of this user's manual, please refer to the AIC website: https://www.aicipc.com/en/productdetail/20886.

Chapter 1 Product Features

SB405-PV is a flexible storage server barebone that is specifically designed to accommodate diverse corporations and enterprises for managing heavy workloads and multiple applications.

Chapter 2 Hardware Setup

This chapter displays an easy installation guide for assembling the hardware in this product. Utmost caution for proceeding to set up the hardware is highly advised. Most of the components are highly fragile and vulnerable to exterior influence. Do not endanger the device by placing the device in an unstable environment.

Chapter 3 Hardware Settings

This chapter provides descriptions for the hardware, including multifarious connectors, jumpers, and LED descriptions. These descriptions assist users to configure different settings and functions of the motherboard, as well as to confirm the location of each connector and jumper.

Chapter 4 BIOS Configuration Settings

This chapter introduces the key features of BIOS, including the descriptions and option keys for diverse functions. These details provide users to effortlessly navigate and configure the input/output devices.

Chapter 5 BMC Configuration Settings

This chapter illustrates the diverse functions of IPMI BMC, including the details on logging into the web page and assorted definitions. These descriptions are helpful in configuring various functions through Web GUI without entering the BIOS setup. For more information of BMC configurations, please refer to IPMI BMC (Aspeed AST2500) User's Manual for a more detailed description.

Chapter 6 Technical Support

For more information or suggestion, please contact the nearest AIC corporation representative in your district or visit the AIC website: http://www.aicipc.com/en. It is our greatest honor to provide the best service for our customers.

Chapter 1. Product Features

SB405-PV is a high density storage server that includes motherboard, chassis, power supply, and HDD backplane. For more information about our product, please visit our website at http://www.aicipc.com/en.

Before removing the subsystem from the shipping carton, visually inspect the physical condition of the shipping carton. Exterior damage to the shipping carton may indicate that the contents of the carton are damaged. If any damage is found, do not remove the components; contact the dealer where the subsystem was purchased for further instructions. Before continuing, first unpack the subsystem and verify that the number of components in the shipping carton is accurate and in good condition

1.1 Box Contents

This product contains the components listed below.
Please confirm the number and the condition of the components before installation.

- Chassis

  (includes power supply, fan

  & hard disk drive tray)
- Power cord (vary per region)
- Slide rail x 1 set (optional)
- Rear handle (uninstalled)

Product features are subject to change without notice.

1.2 Specifications

Dimensions (W x D x H)	mm : 434 x 1050 x 176		
	inches : 17.1 x 41.3 x 7		
Motherboard	AIC Server Board Pavo		
Processor	Processor Support	• Intel® Xeon® Scalable Processors • Supports CPU TDP up to 125W	
	UPI Speeds	10.4 GT/s, 9.6 GT/s	
	Socket Type	Socket P0 (LGA-3647 Socket)	
Chipset Support	Intel® Lewisburg C620 series PCH		
System Memory	• 6 x memory channels per CPU, 1 x DIMM per channel • 16 x DIMM slots support: 2666/2400MHz RDIMM/LRDIMM (feature supports up to DDR4 2933MHz by next gen. process upgrade) - up to 192GB RDIMM SRx4 - up to 384GB RDIMM DRx4 - up to 1536GB RDIMM 3DS 8Rx4 - up to 768GB LRDIMM QRx4 - up to 1536GB LRDIMM 3DS 8Rx4 • Intel® NVM DIMM (Apache Pass) support by next gen. Purley Refresh CPU		
Front Panel	System power on/off, System reset, 1 x USB 2.0 Type A		
LEDs	Power status, Drive activity, System ID		
Drive Bays	External	3.5" hot swap	102 (Top-Loading)
		2.5" hot swap	2 (7mm, Top-Loading)
Backplanes	• 3 x 24-port 12 Gb SAS backplane with 36-PHY expander and 2 x 8i SAS Slimline connectors • 1 x 30-port 12 Gb SAS backplane with 40-PHY expander and 2 x 8i SAS Slimline connectors		
Rear I/O	LAN	• 2 x 10GbE SFP+ • 2 x GbE RJ45 • 1 x GbE RJ45 dedicated to BMC management	
	USB	• 2 x USB 3.0 Type A • 1 x USB internal pin-header to support 2 x USB 3.0 • 1 x USB internal pin-header to support 2 x USB 2.0	
	VGA	1 x external DB-15 VGA port	
	Serial Port	1 x audio jack for COM port	
Power Supply	2000W 1+1 redundant power supply 80+ Platinum • AC INPUT : 200~240V,50/60Hz,15A • Socket type: C20 (Power cord type: C19)		
System Cooling	• 3 x 40x56mm easy swap fans (MB canister) • 8 x 60x56mm hot swap fans		

Expansion Slots	PCIe 3.0	1 x16 for OCP Mezzanine V2.0 (Type 2:1 1 x QSFP or 2 x QSFP+)
System BIOS	BIOS Type	Insyde UFEI BIOS
	BIOS Features	• ACP • PXE • WOL • AC loss recovery • SMBIOS • Serial console redirection • BIOS Boot Specification • BIOS Recovery Mode • SRIOV • iSCSI • TPM • PICe Hotplug
On-board Devices	SATA/SAS	Intel® Lewisburg PCH on-chip solution • 4 x SATA 6.0 Gb/s (by 1 x mini-SAS HD) + 2 x SATA 6.0 Gb/s (by 2 x SATA 7 pin) + 5 x SATA 6.0 Gb/s (by Max I/O®)
	BMC	Aspeed AST2500 Advanced PCIe Graphics & Remote Management Processor • Baseboard Management Controller • Intelligent Platform Interface 2.0 (IPMI 2.0) • iKVM, Media Redirection, IPMI over LAN, Serial over LAN • SMASH Support • HTML5 • Redfish
	Network Controllers	• Intel® PCH (Lewisburg) Integrated 10GbE LAN Controller with dual SFP+ rear connectors • Intel® I350 dual ports GbE RJ45 rear connectors • Realtek RTL8211E for BMC dedicated management port
	Graphics	Aspeed AST2500 Advanced PCIe Graphics & Remote Management Processor • PCIe VGA/2D Controller • 1920x1200@60Hz 32bpp
System Management	• IPMI 2.0 • KVM over IP • Media redirection • Temperature, fan, voltage, PSU sensor monitor • System temperature • System ID / System fail indicator • Remote power on/off/reset • SEL message alarm through mail • SNMP support • Intel NM • HTML5 • Redfish	
Environmental Specifications	• Storage temperature : -10ºC(14ºF) ~ 60ºC(140ºF) • Operating temperature : 0ºC(32ºF) ~ 35ºC(95ºF) • Storage operating humidity : 5%~95% non-condensing	
Gross Weight	(w/ PSU, Rail, Pallet)	kgs : 71
		lbs : 143.7
Packaging Dimensions	(W x D x H)	mm : 640 x 1380 x 526
		inches : 25.2 x 54.3 x 20.7
Mounting	Standard	41" tool-less slide rail
	Option	Cable Management Kit

1.3 Feature

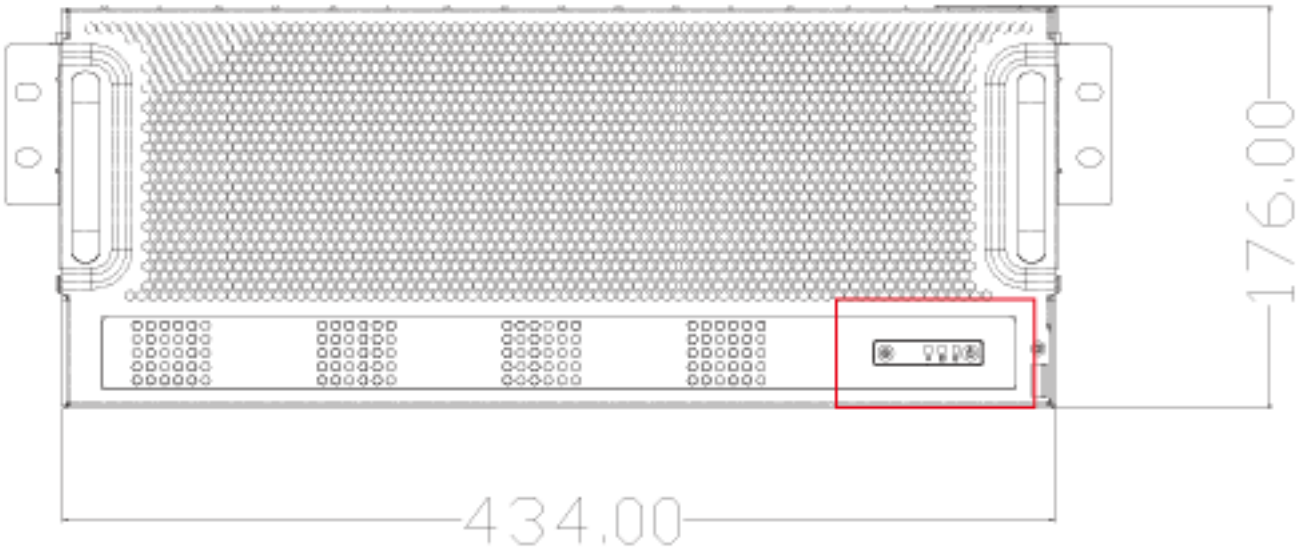
SB405-PV is a reliable 4U storage server barebone with 102 hotswap drives bays. This product is designed to accommodate the AIC-patented serverboard, Pavo, which supports two Intel® Xeon® Scalable Processors and 16 DDR4 DIMM to offer greater perfomance, efficiency, and utility for our customers. Featuring Intel® C620 Series Chipset, which is emphasized for its accelerated speed and expansion, this product enhances these advantages by integrating flexible IO usage and system expansion into to provide greater bandwidth and utilization.

In addition to the noteworthy features of the barebone, SB405-PV provides immediate and efficient management with Onboard Baseboard Management Controller and greater I/O extension. Featuring IPMI 2.0 and Aspeed AST2500 Advanced PCIe Graphics, the server board offers support for iKVM, Media Redirection,Smash Support, IPMI over LAN, and Serial over LAN.

- 4U 102-Bay ultra density storage server
- Supports two Intel® Xeon® Scalable Processors
- With Intel® Lewisburg C620 series Chipset to provide 5+ years product life cycle
- Flexible IO usage with Max IO™ to support up to 1 PCIe 3.0 card
- Onboard Baseboard Management Controller for system management and IPMI control
- One PCIe 3.0 x16 OCP Mezzanine slot
- Two 10GbE SFP+ ports

Front Panel

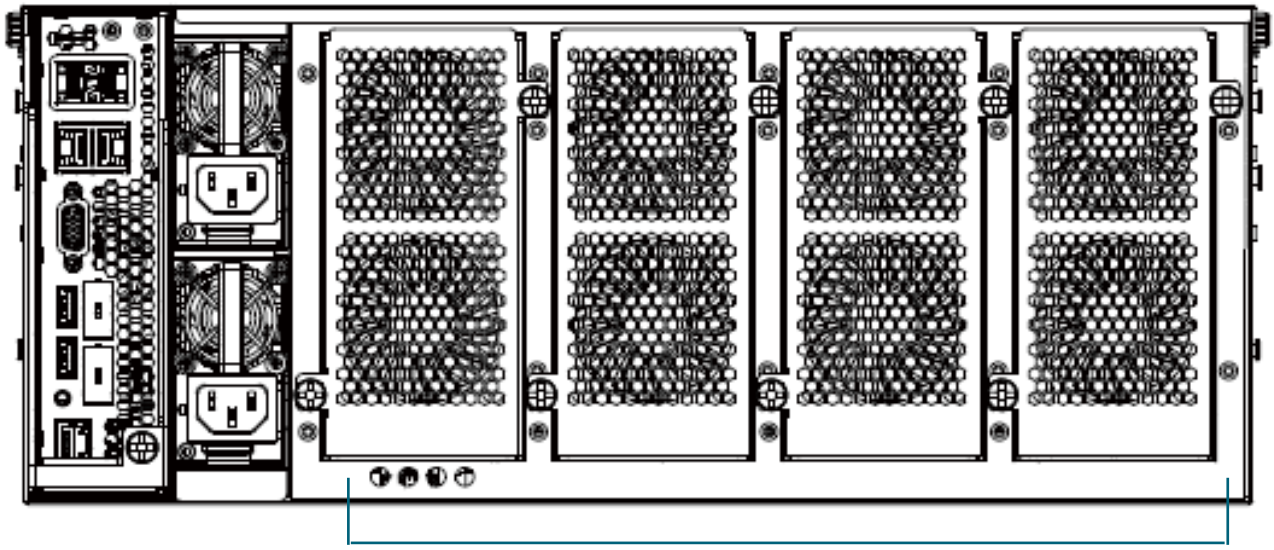
SB405-PV offers 2 system buttons (Power & Reset) and 3 LED indicators (System Power, System Hard Drive Disk Activity, Service ID).



	Power Button
	System Power LED
H	System HDD Activity LED
ID	Service ID LED
	System Reset Button

Rear Panel

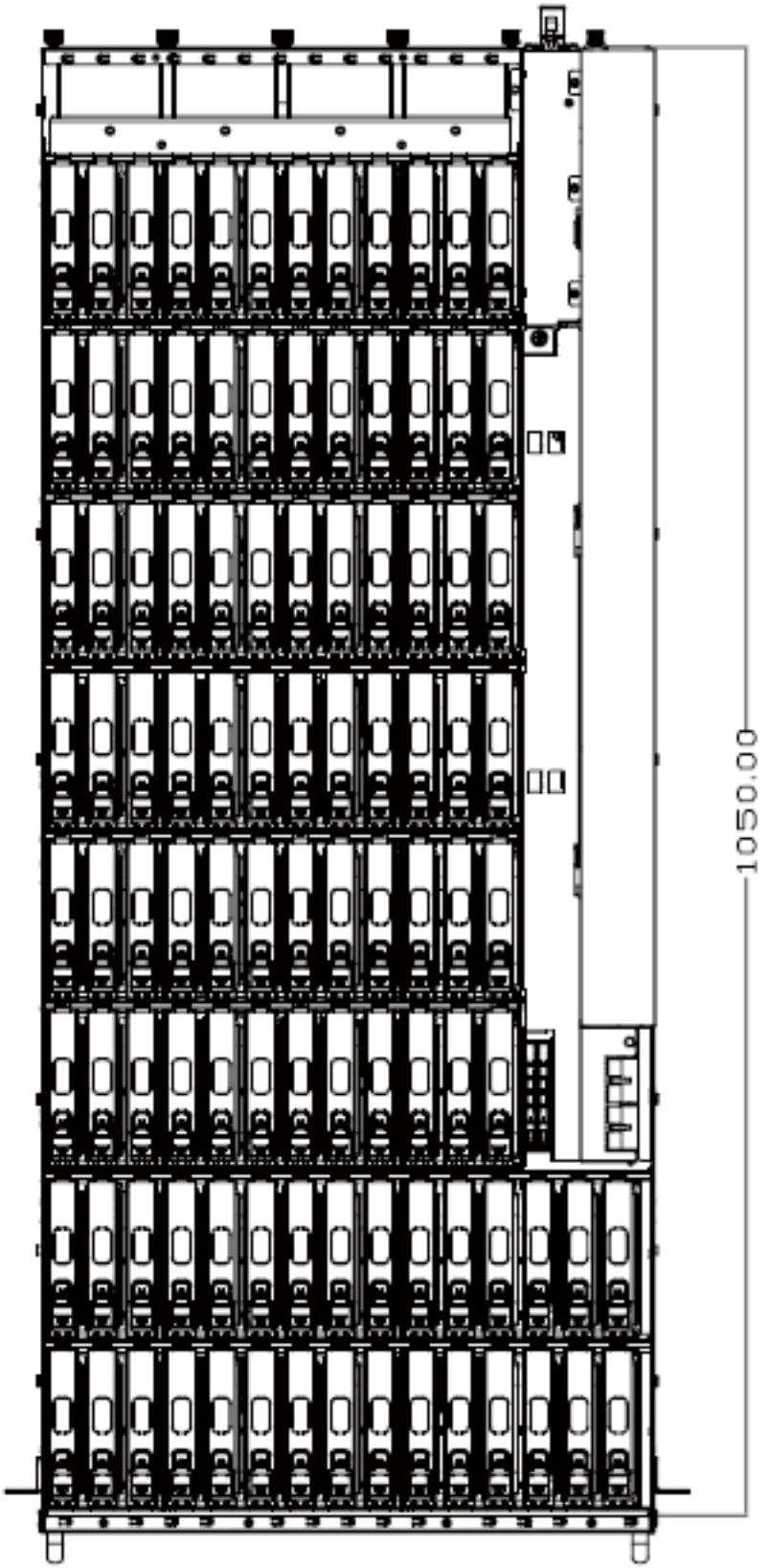
SB405-PV offers 5 LAN ports (10GbE SFP+ x 1, GbE RJ45 x 2, GbE RJ45 dedicated to BMC management x 1), USB connectors and headers (USB 3.0 Type-A connectors x 1, USB internal pin header to support two USB 3.0 x 1, USB internal pin header to support two USB 2.0 x 1), 1 VGA port (external VGA and internal VGA header), audio jack for COM port x 1 and internal COM pin header x 1.



8 x6056mm dual rotor fans

Major Components

SB405-PV offers 3.5" hotswap drive bays x 102 and 2.5" hotswap drive bays x 2.

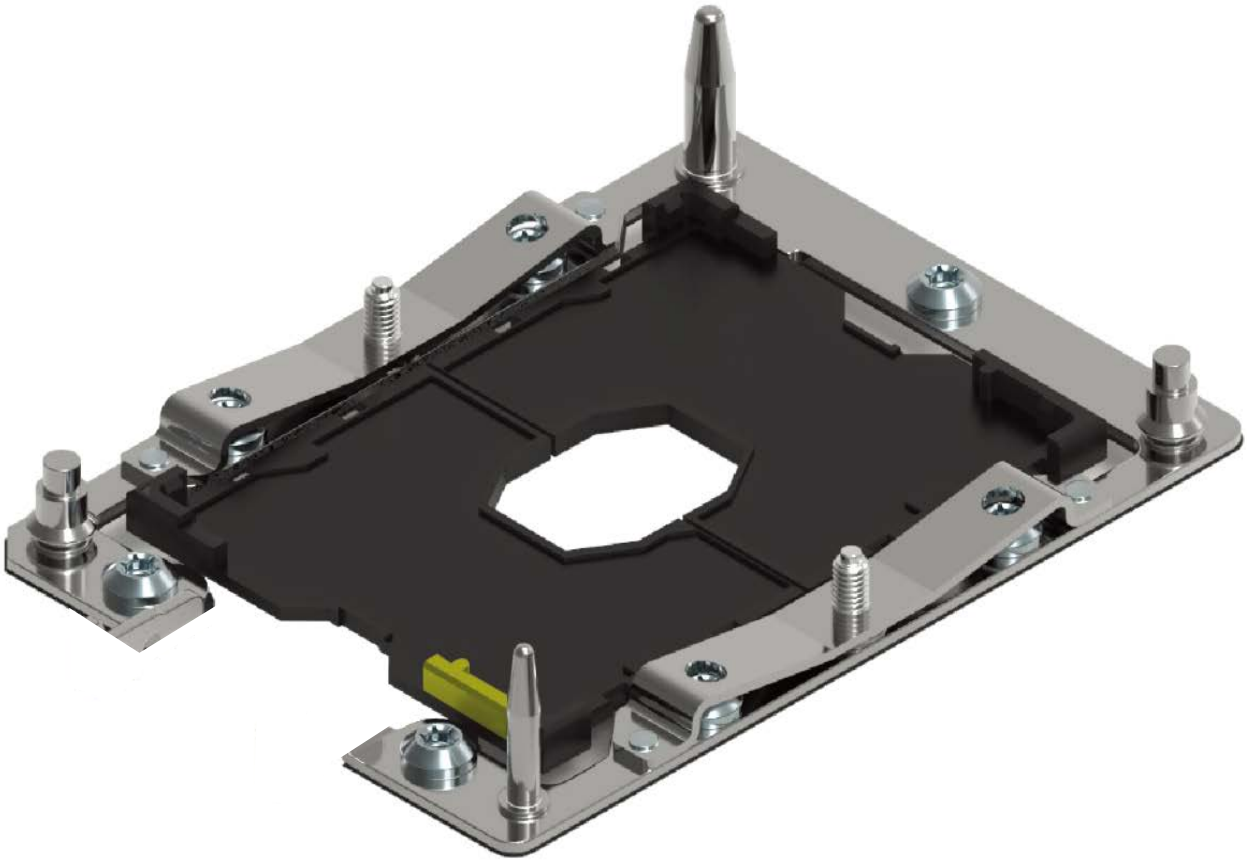


Chapter 2. Hardware Setup

2.1 Central Processiong Unit Setup

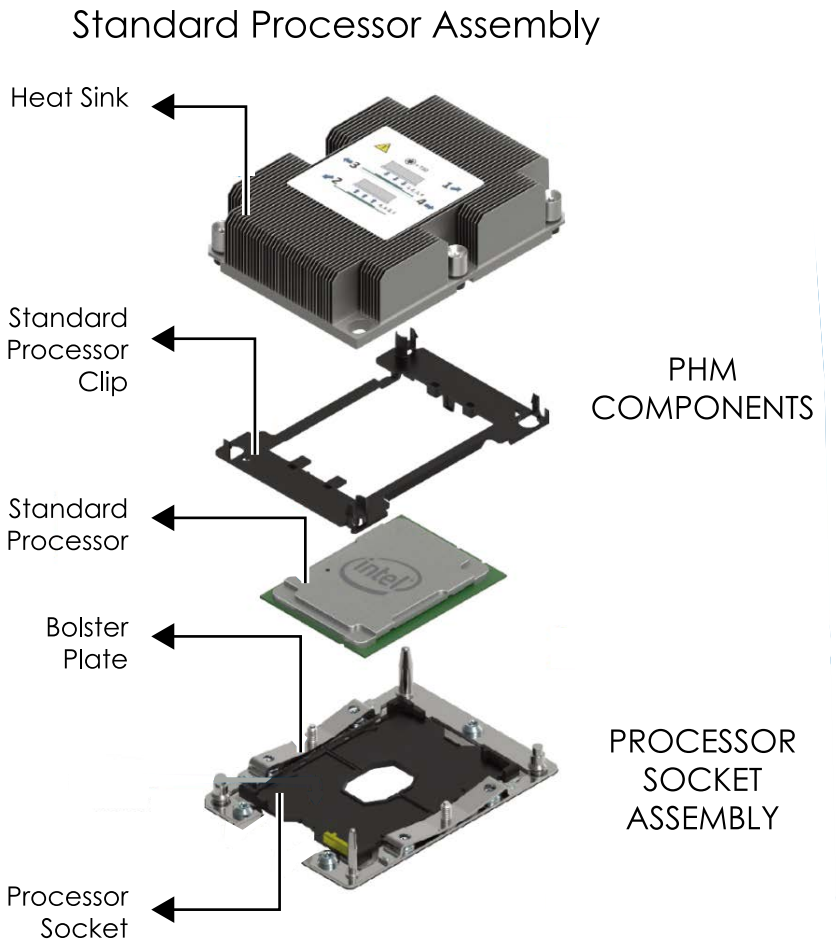
2.1.1 Processor Support

The server board includes two processor sockets (LGA3647) that provides one or two processors of the Intel® Xeon® Processor Scalable Family and supports a Thermal Design Power (TDP) of up to 165W on selected models.



2.1.2 Processor Heat Sink Module and Processor Socket Assembly

Each processor socket on the server board is pre-assembled with a loading mechanism that is designed to secure the Processor Heat Sink Module (PHM) to the server board as shown below.



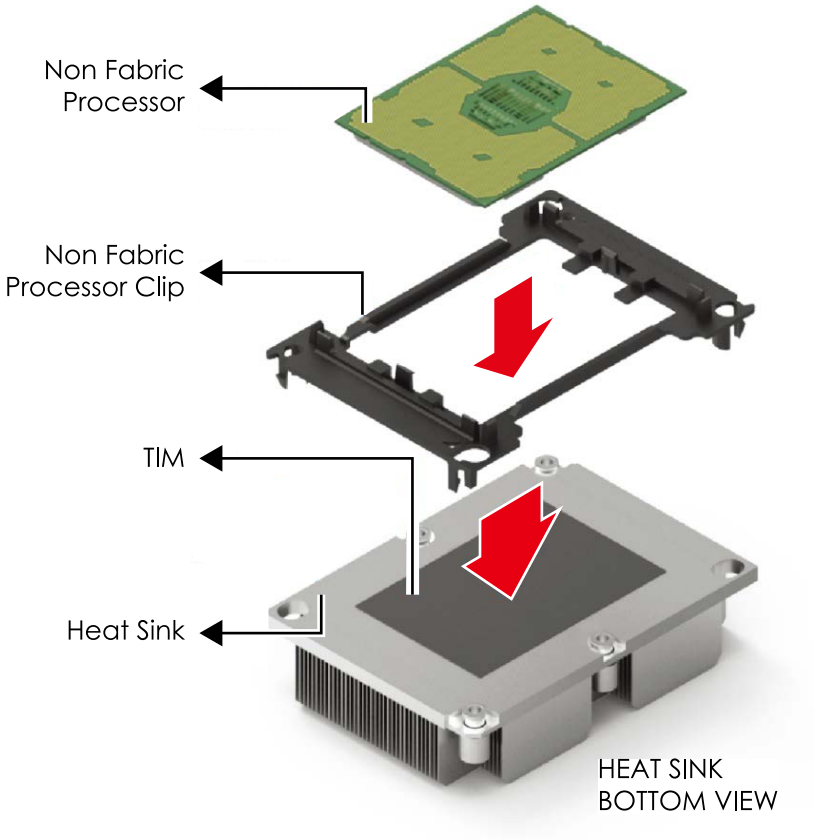
CAUTION

Previous generations of the Intel Xeon Processors and heatsinks are not compatible with the Intel Server Board S2600BP Product Family. Processor installation requires that the processor be attached to the installation onto the server board.

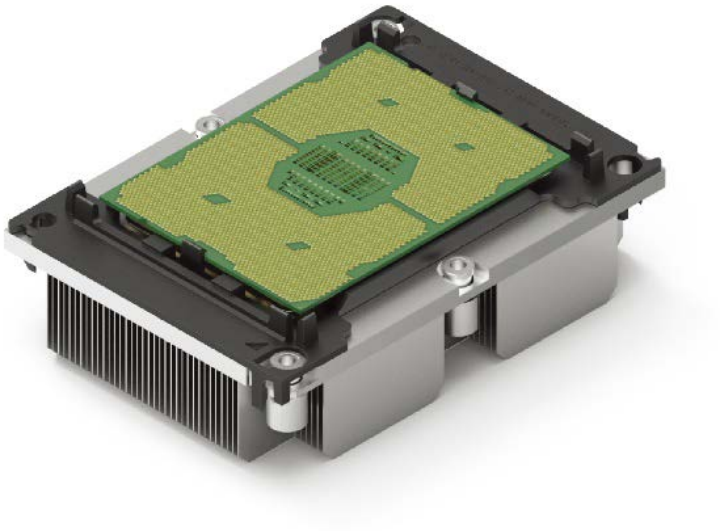
2.1.3 Processor Heat Sink Module

The PHM refers to the sub-assembly where the heat sink and processor are clipped together onto the server board prior to installation. The PHM consists of the components shown below.

Processor Heat Sink Module (PHM) Sub-Assembly

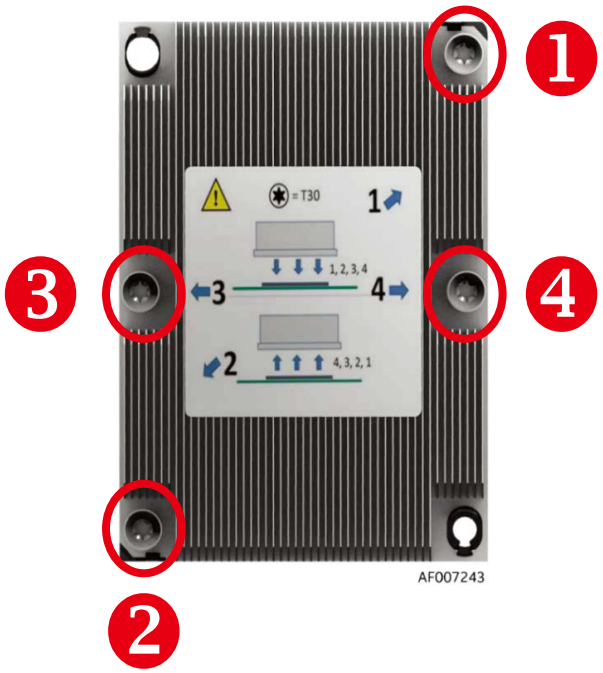


Processor Heatsink Module (PHM)



The PHM sits level with the processor socket assembly. The PHM is NOT installed properly if it does not sit level with the processor socket assembly. Once the PHM is seated over the processor socket assembly, the four heat sink torque screws must be tightened in order as shown below.

Processor Heat Sink – Top View with Screw Tightening Order

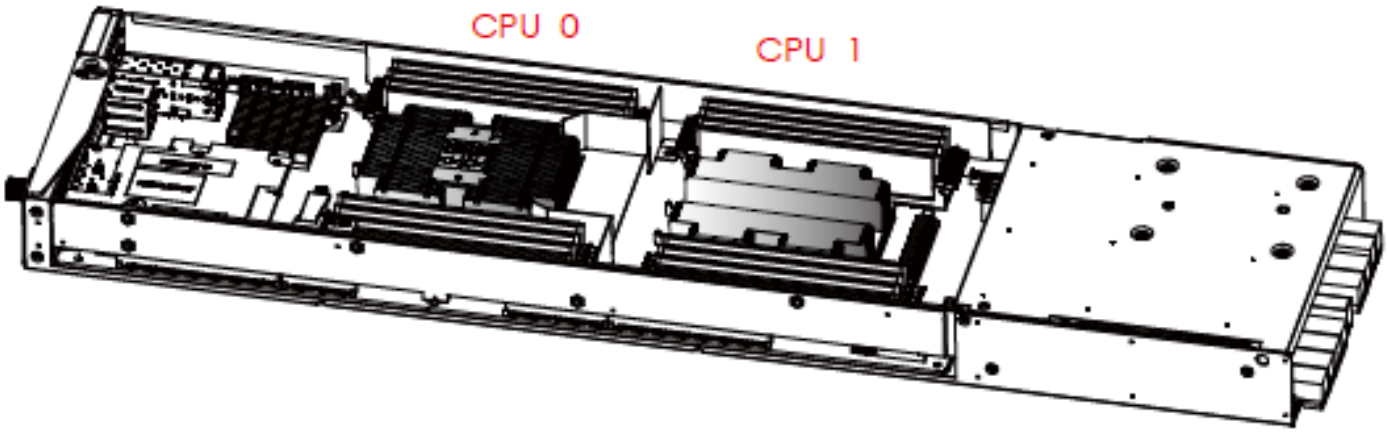


CAUTION

Failure to tighten the heatsink screws in the specified order may cause damage to the processor socket assembly. Heat sink screws should be tighted to 12 in-lbs torque according to the indicated order on the top of the heatsink label.

2.1.4 Heatsink Location

Position the heatsinks over the CPU0 and CPU1 and align the screws on the heatsink with the screw holes on the motherboard.

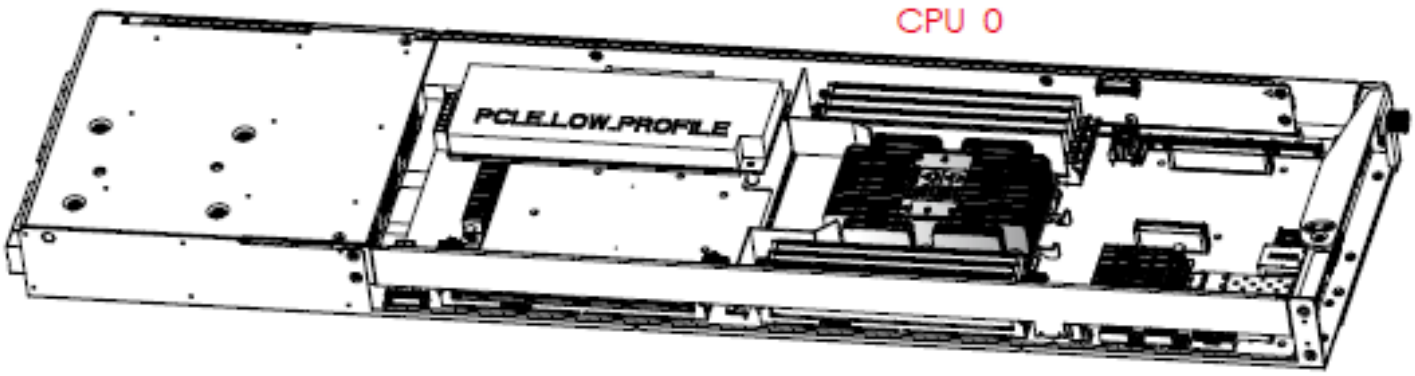


CAUTION

Avoid moving the heatsink after it has contacted the top of the CPU. Too much movement could disturb the layer of thermal compound, causing voids, and leading to ineffective heat disspation and component damage.

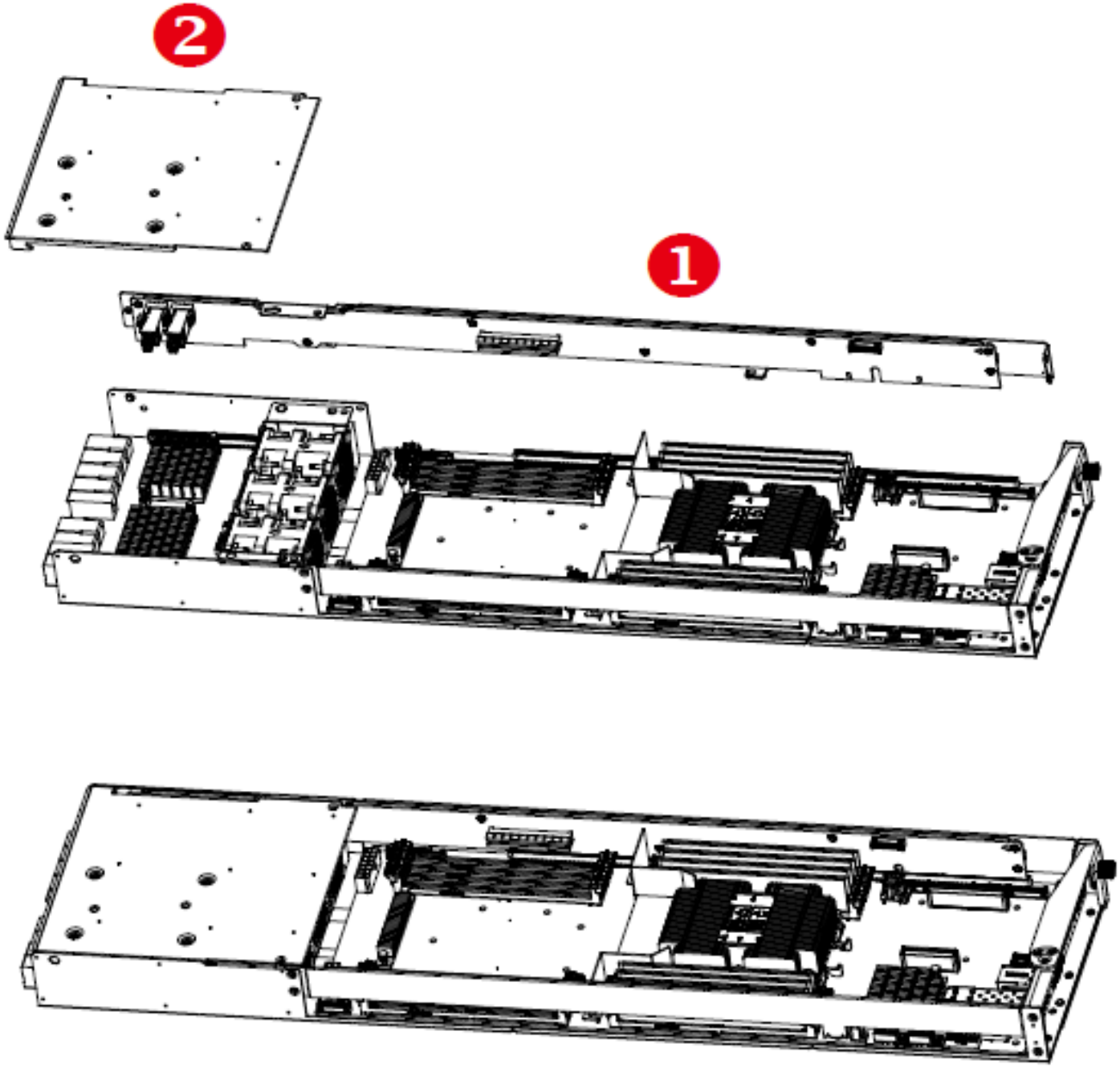
2.1.5 Heatsink for Single Processor only with RAID card Function (BTO)

Position the heatsink on top of CPU 0.



2.1.6 Riser Card Installation (BTO)

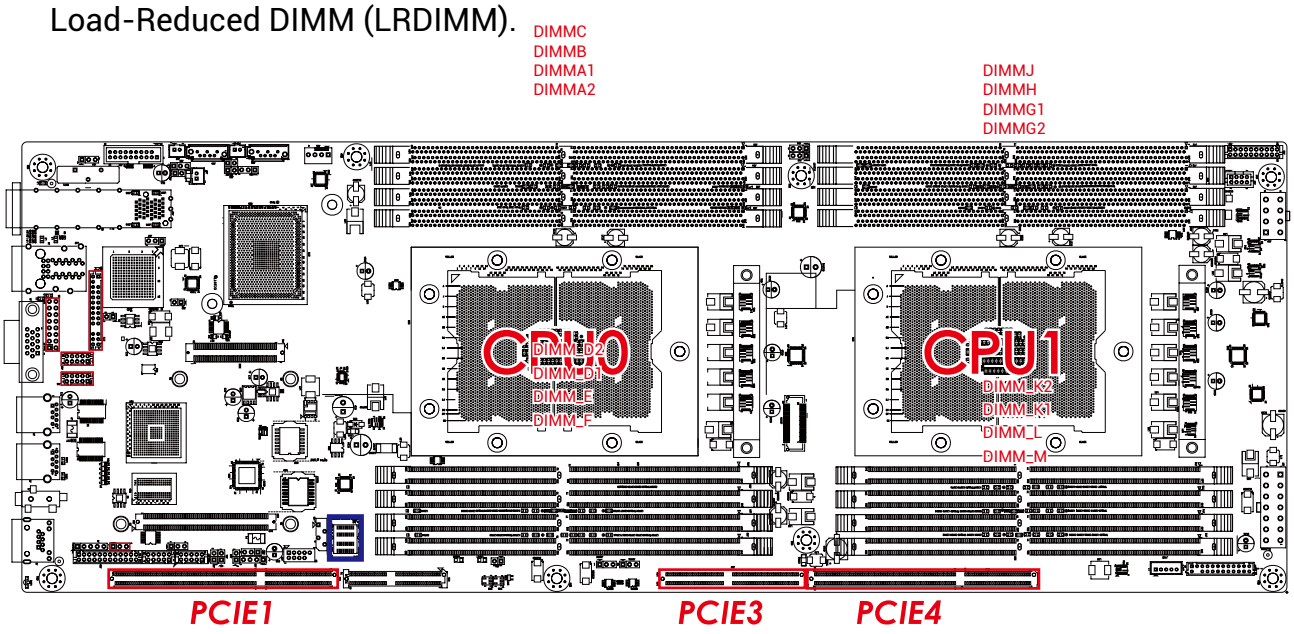
Step 1 Secure the riser card onto the motherboard with screws.
Step 2 Secure the top cover that covers the fan with screws to complete installation.



2.2 System Memory

2.2.1 Dual Processor

This server board supports up to sixteen DDR4 2400 and 2666 Registered ECC DRAM/ Load-Reduced DIMM (LRDIMM).

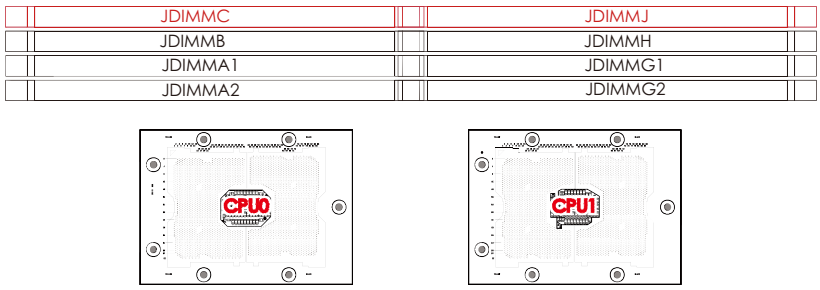


NOTE

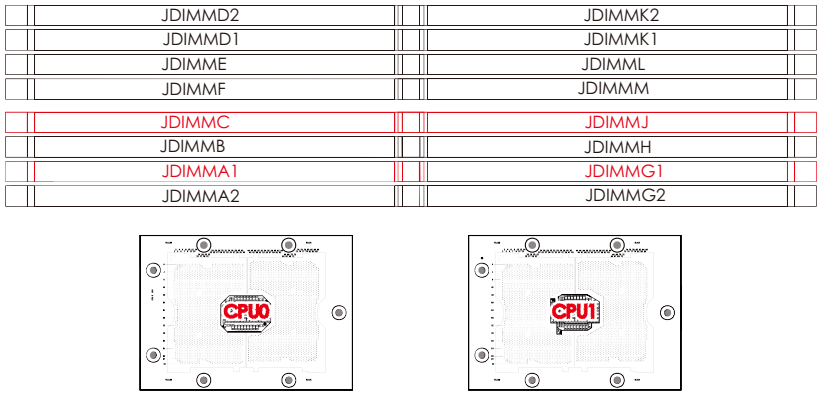
In Pavo Case, the 16 lanes from CPU#0 and the 8 lanes from CPU#1 are routed to PCIe slot1. The lanes from the CPU#1 are routed to the PCIe slot 3 and 4.

2.2.2 Recommended Dimm Installation Order

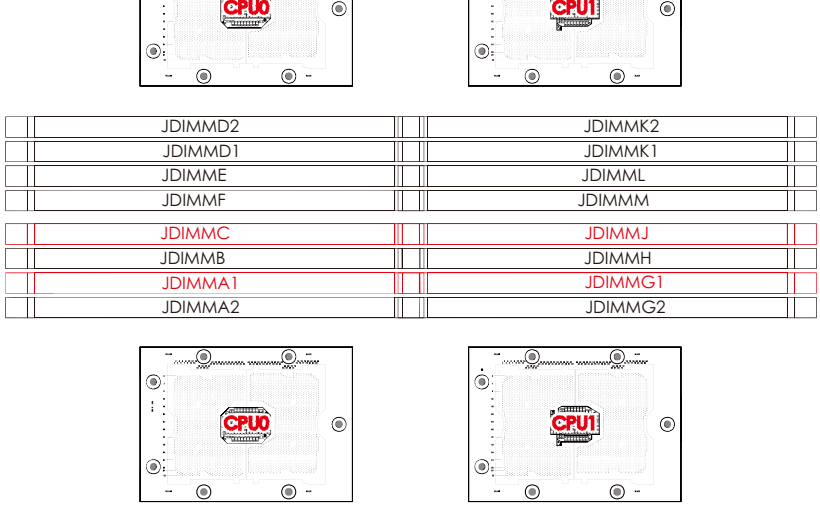
DIMM Numbers	DIMM ARRANGMENT	
2 DIMMs	CPU0	CPU1
	JDIMM_C	JDIMM_J



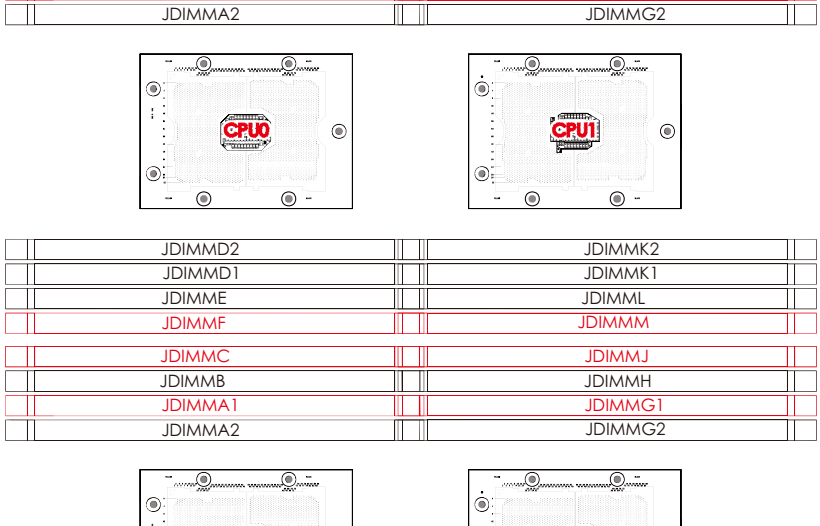
	CPU0	CPU1
4 DIMMs	JDIMM_C	JDIMM_J
	JDIMM_A1	JDIMM_G1



	CPU0	CPU1
6 DIMMs	JDIMM_C	JDIMM_J
	JDIMM_A1	JDIMM_G1
	JDIMM_F	JDIMM_M

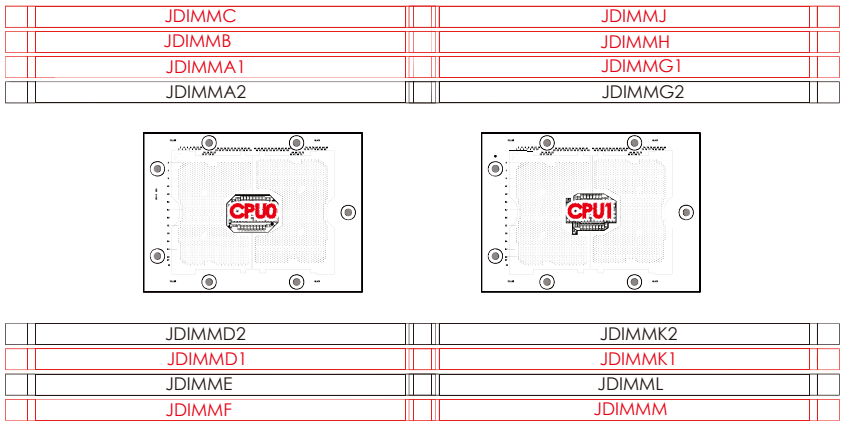


	CPU0	CPU1
8 DIMMs	JDIMM_C	JDIMM_J
	JDIMM_A1	JDIMM_G1
	JDIMM_D1	JDIMM_K1
	JDIMM_F	JDIMM_M



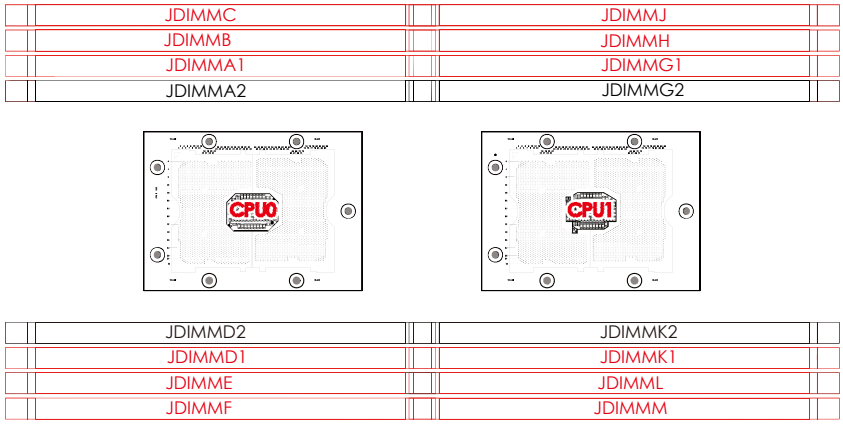
10 DIMMs

CPU0	CPU1
JDIMM_C	JDIMM_J
JDIMM_B	JDIMM_H
JDIMM_A1	JDIMM_G1
JDIMM_D1	JDIMM_K1
JDIMM_F	JDIMM_M



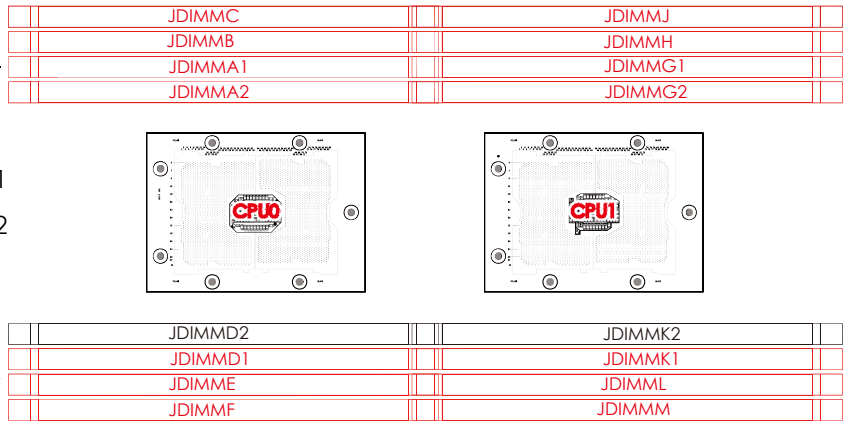
12 DIMMs

CPU0	CPU1
JDIMM_C	JDIMM_J
JDIMM_B	JDIMM_H
JDIMM_A1	JDIMM_G1
JDIMM_D1	JDIMM_K1
JDIMM_E	JDIMM_L
JDIMM_F	JDIMM_M



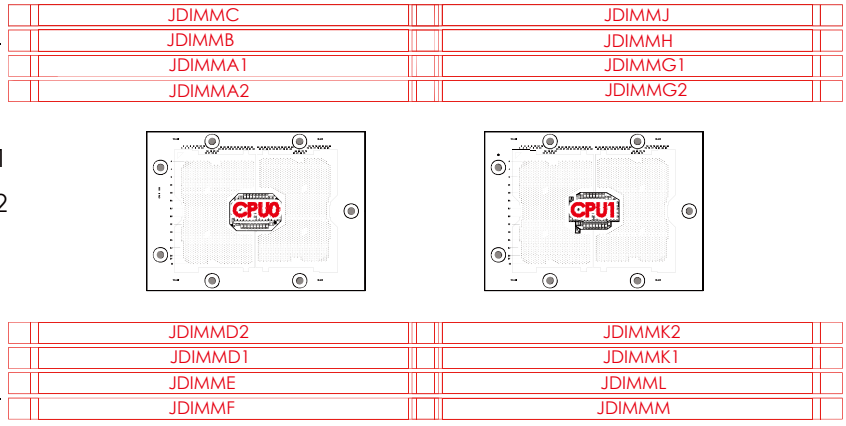
14 DIMMs

CPU0	CPU1
JDIMM_C	JDIMM_J
JDIMM_B	JDIMM_H
JDIMM_A1	JDIMM_G1
JDIMM_A2	JDIMM_G2
JDIMM_D1	JDIMM_K1
JDIMM_E	JDIMM_L
JDIMM_F	JDIMM_M



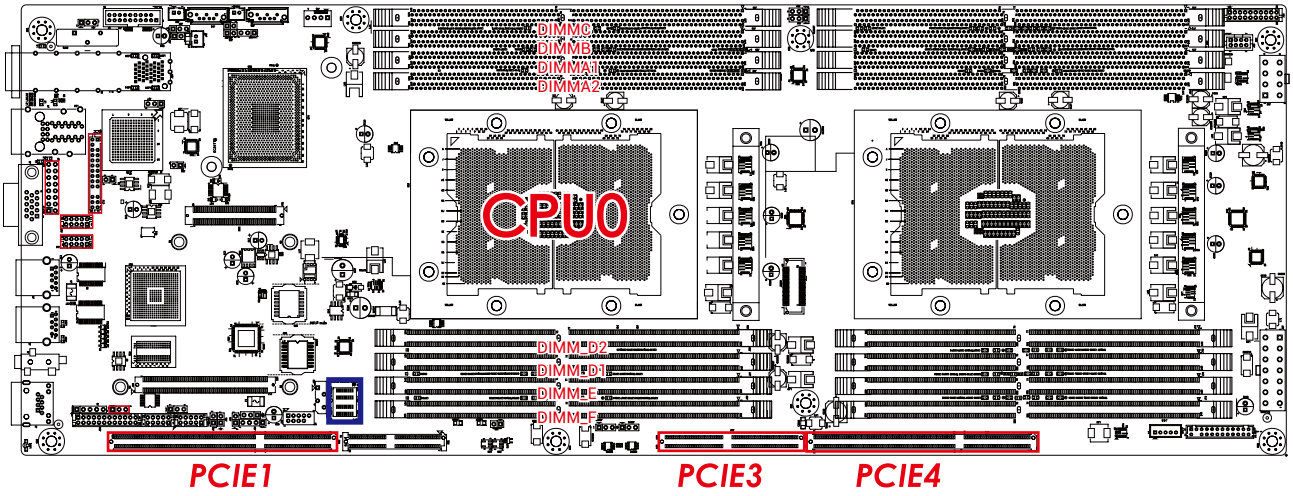
16 DIMMs

CPU0	CPU1
JDIMM_C	JDIMM_J
JDIMM_B	JDIMM_H
JDIMM_A1	JDIMM_G1
JDIMM_A2	JDIMM_G2
JDIMM_D2	JDIMM_K2
JDIMM_D1	JDIMM_K1
JDIMM_E	JDIMM_L
JDIMM_F	JDIMM_M

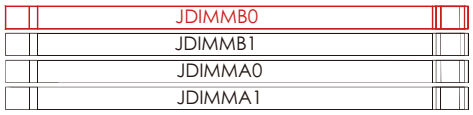


2.2.3 Single Processor with Raid Card Function (BTO)

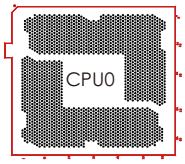
You can only use CPU0 with the single processor.

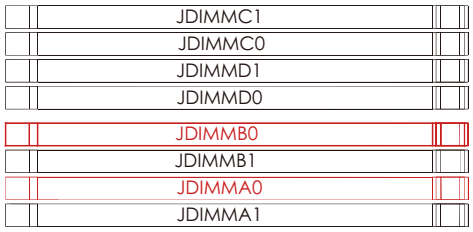


2.2.4 Populate DIMMs with the Single Processor

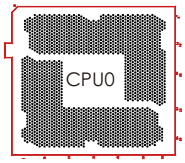


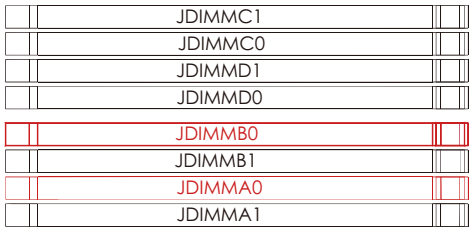
DIMM Numbers	DIMM ARRANGMENT
1 DIMMs	CPU0
	JDIMM_B0



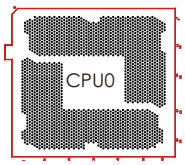


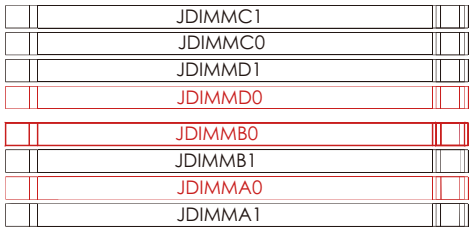
	CPU0
2 DIMMs	JDIMM_B0
	JDIMM_A0



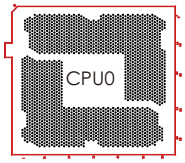


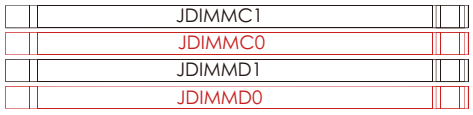
	CPU0
	JDIMM_B0
3 DIMMs	JDIMM_A0
	JDIMM_D0



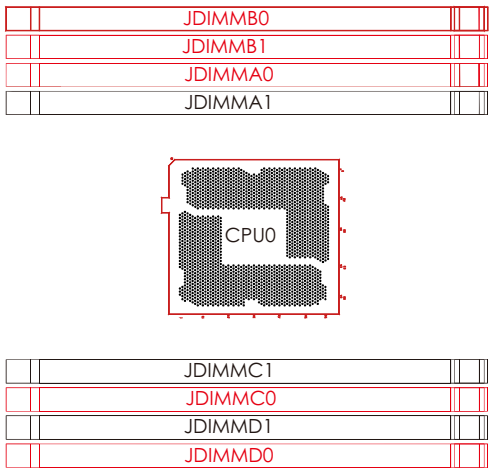


	CPU0
	JDIMM_B0
4 DIMMs	JDIMM_A0
	JDIMM_C0
	JDIMM_D0

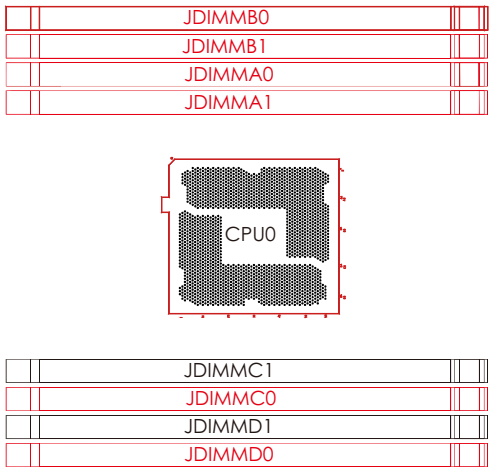




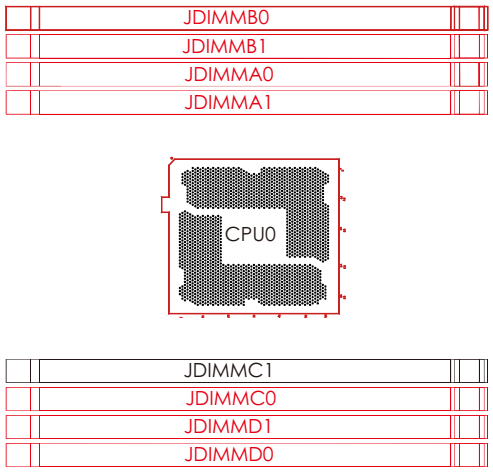
	CPU0
5 DIMMs	JDIMM_B0
	JDIMM_B1
	JDIMM_A0
	JDIMM_C0
	JDIMM_D0



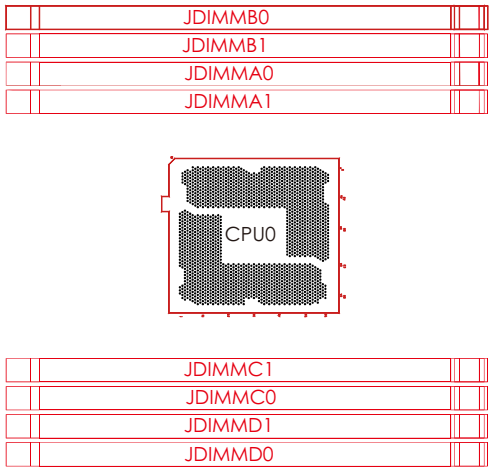
	CPU0
6 DIMMs	JDIMM_B0
	JDIMM_B1
	JDIMM_A0
	JDIMM_A1
	JDIMM_C0
	JDIMM_D0



	CPU0
7 DIMMs	JDIMM_B0
	JDIMM_B1
	JDIMM_A0
	JDIMM_A1
	JDIMM_C0
	JDIMM_C1
	JDIMM_D0



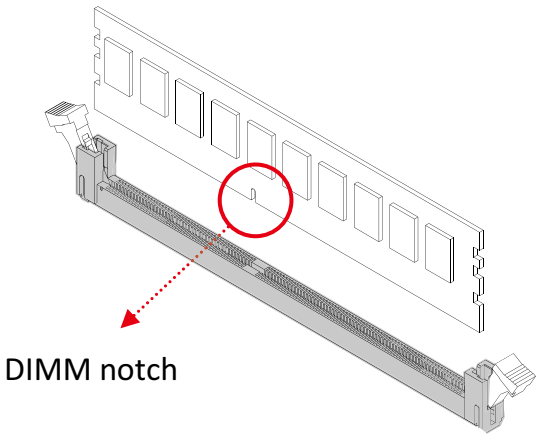
	CPU0
8 DIMMs	JDIMM_B0
	JDIMM_B1
	JDIMM_A0
	JDIMM_A1
	JDIMM_C0
	JDIMM_C1
	JDIMM_D1
	JDIMM_D0



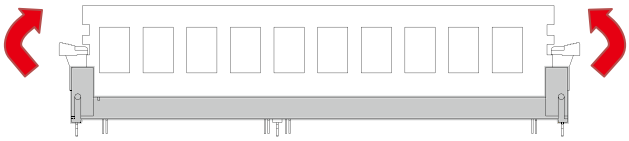
2.2.5 DIMM Installation

Step 1 Unlock the dimm socket by pressing the retaining clips outward.

Step 2 Insert the memory module into the slot. Make sure that the dimm notch is accurately positioned.



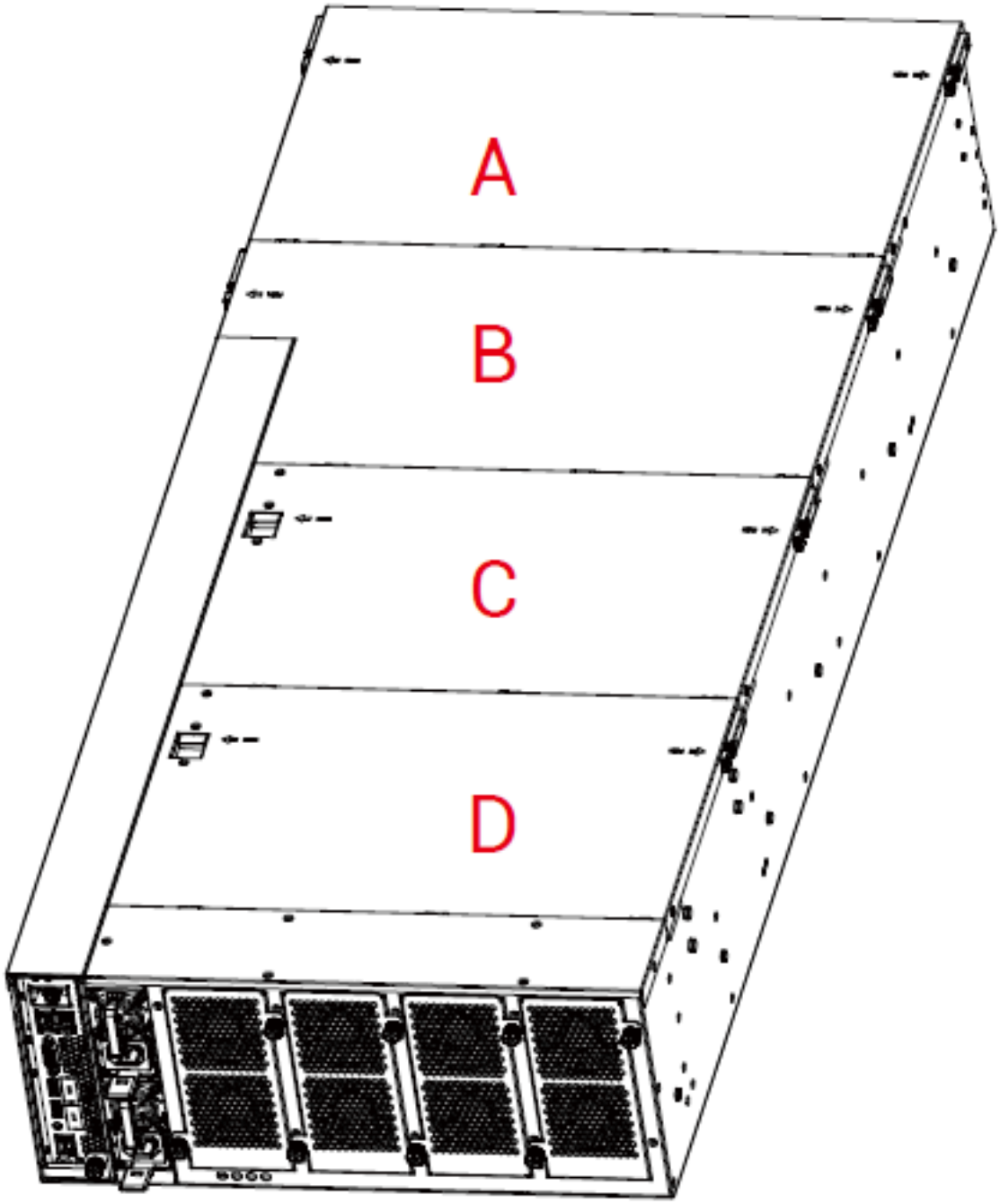
Step 3 Close the retaining clips to complete installation.



This information is provided for professional technicians only.

2.3 Top Cover

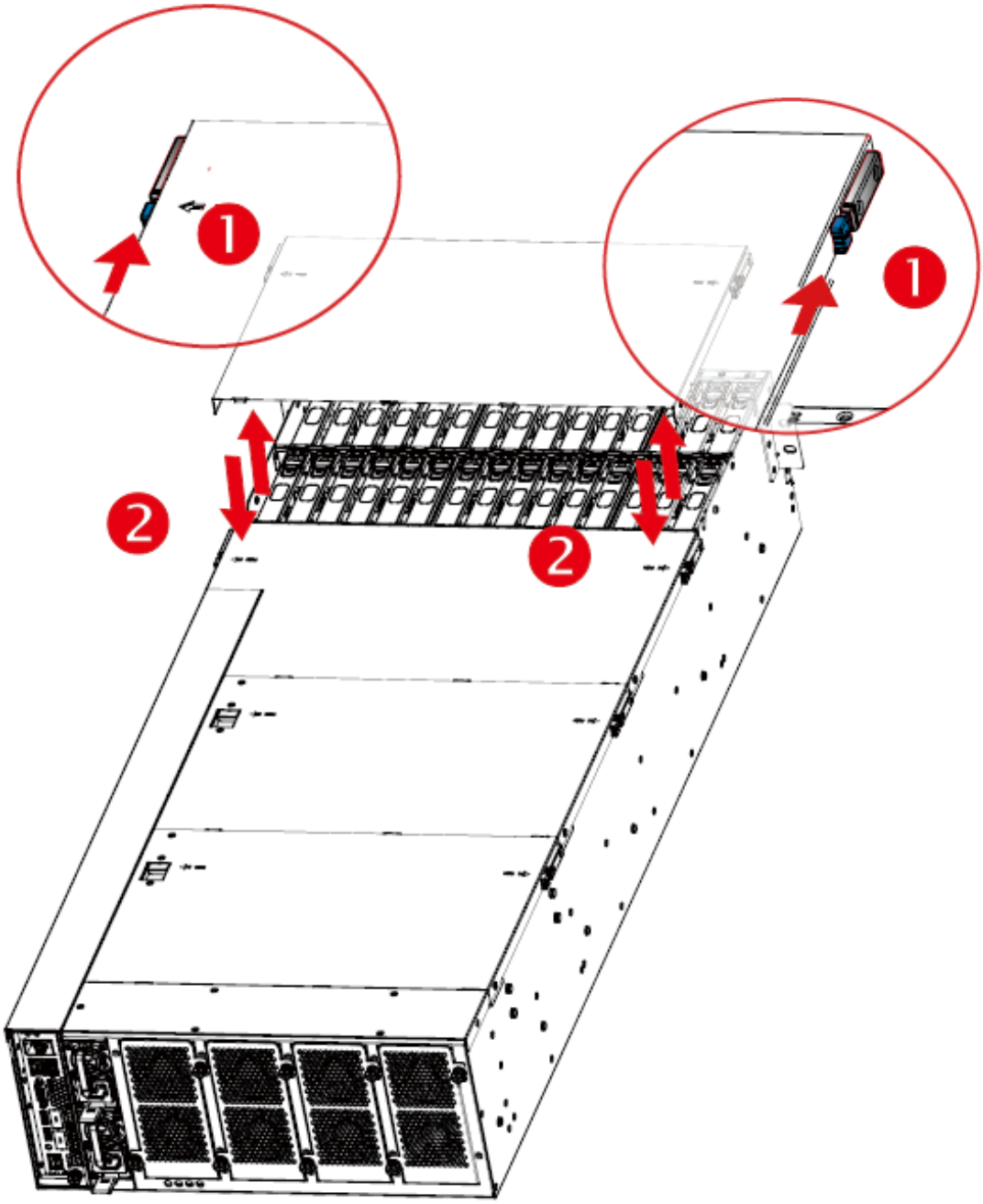
The server consists of four covers: cover A,B, C & D.



This information is provided for professional technicians only.

2.3.1 Removing the Top Cover A & B

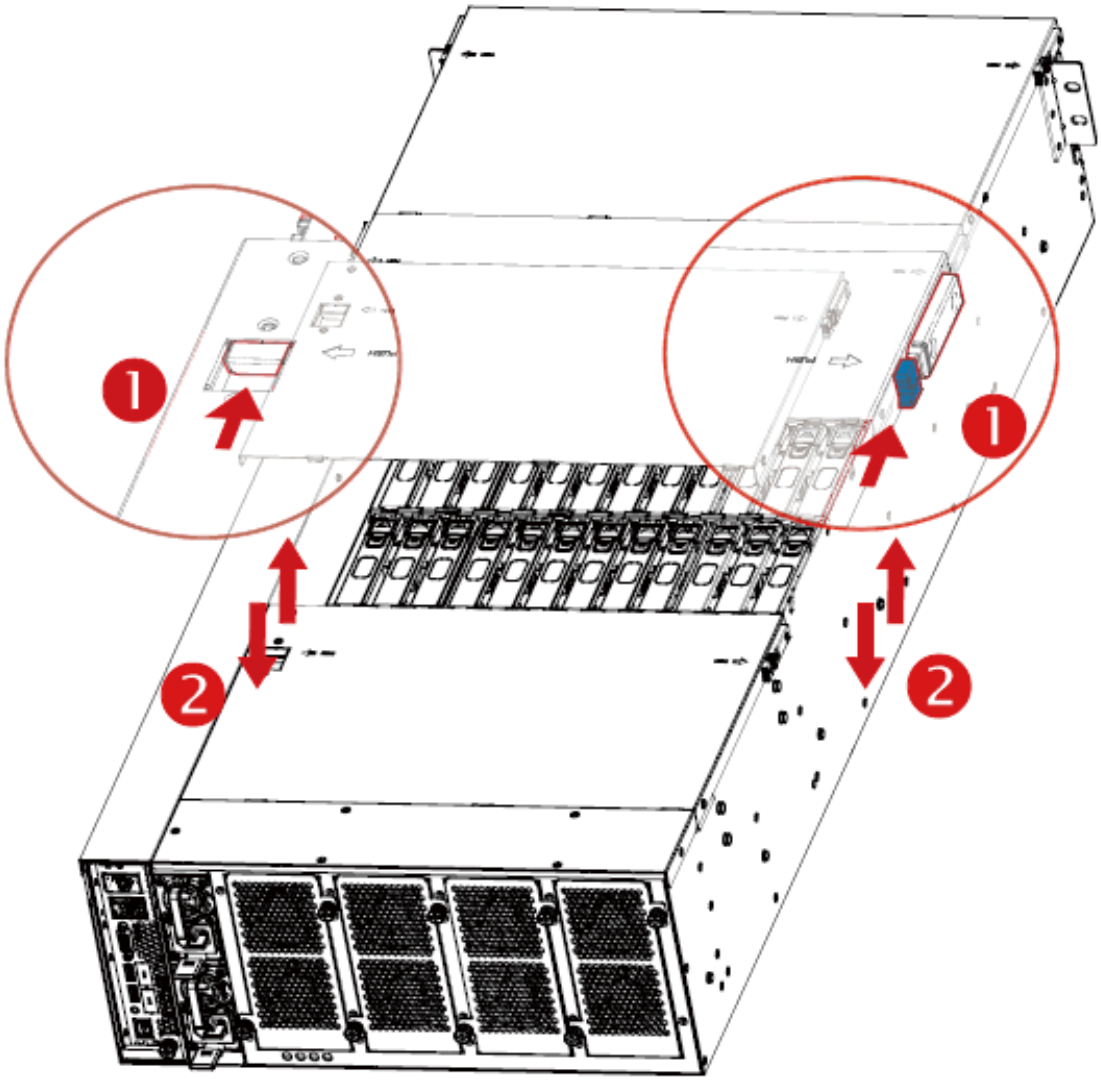
① Push the release button on both sides of the top cover.
② Lift upward to remove the cover.



This information is provided for professional technicians only.

2.3.2 Removing the Top Cover C & D

① Push the release button on both sides of the top cover.
② Lift upward to remove the cover.

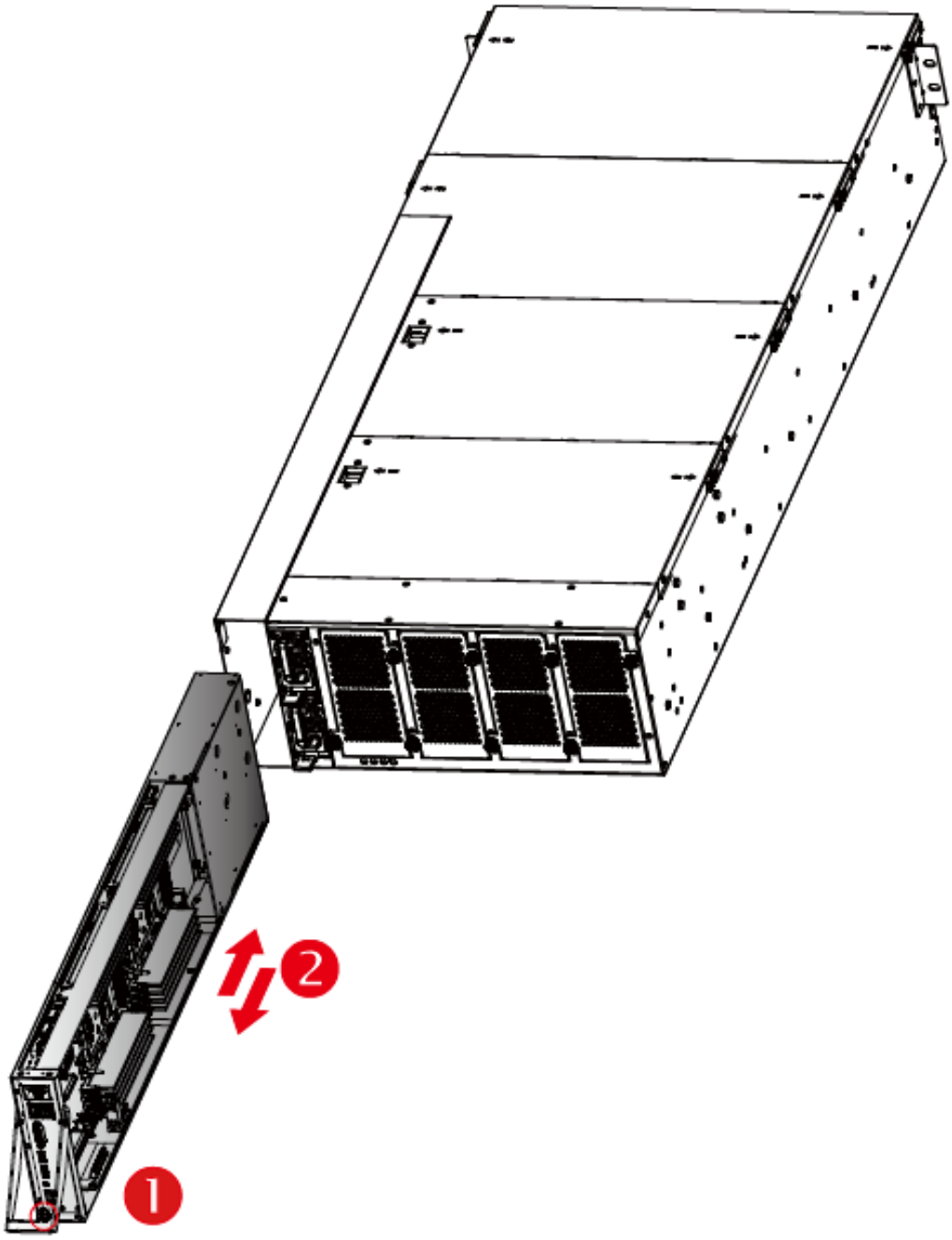


This information is provided for professional technicians only.

2.4 Motherboard

2.4.1 Removing the Motherboard

Loosen the thumb screw to remove the motherboard from the chassis.

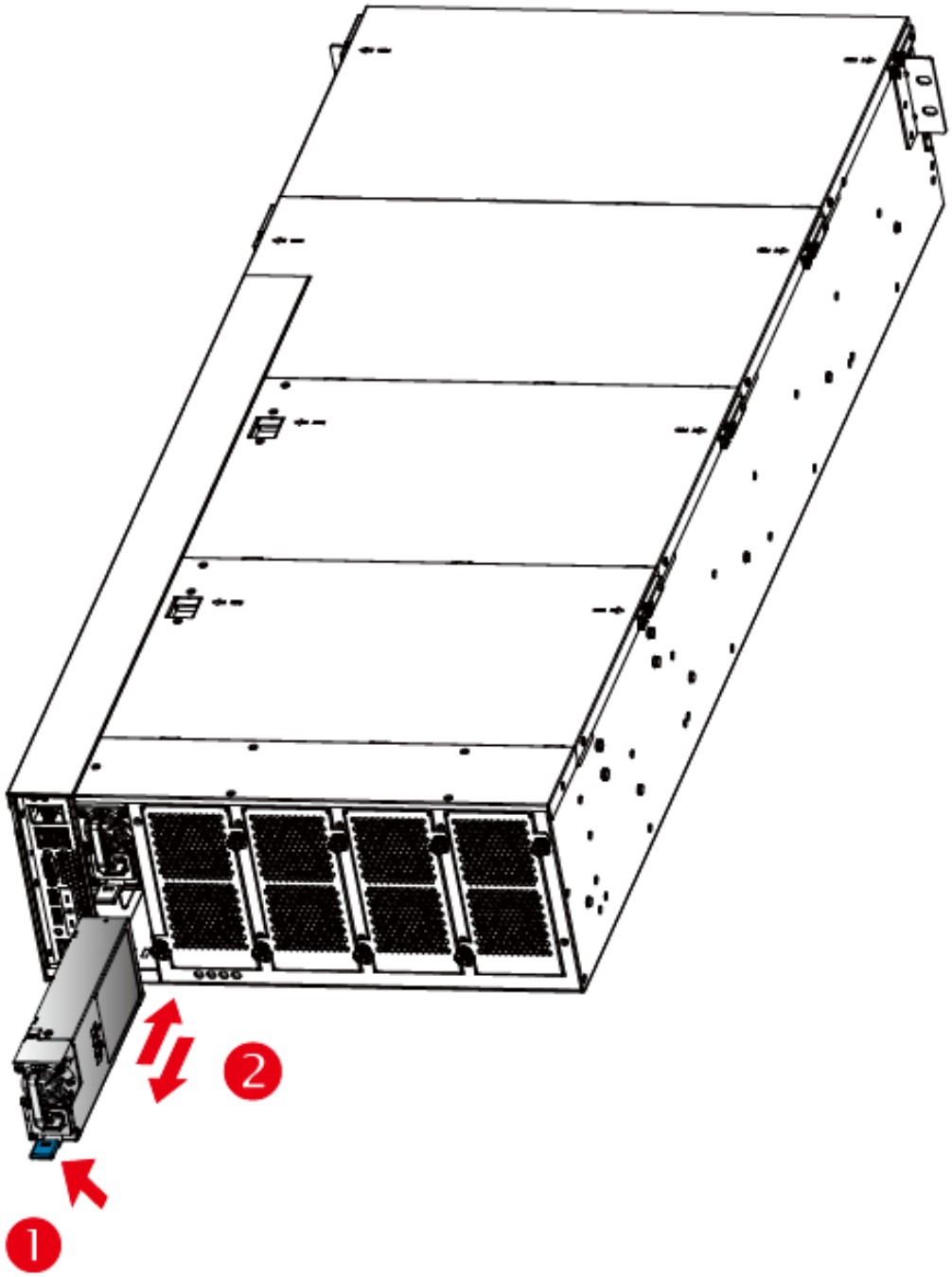


This information is provided for professional technicians only.

2.5 Power Supply Unit Module

2.5.1 Removing the Power Supply Unit

① Push the latch upward and hold the tray handle.
② Pull the tray handle on the power supply module.

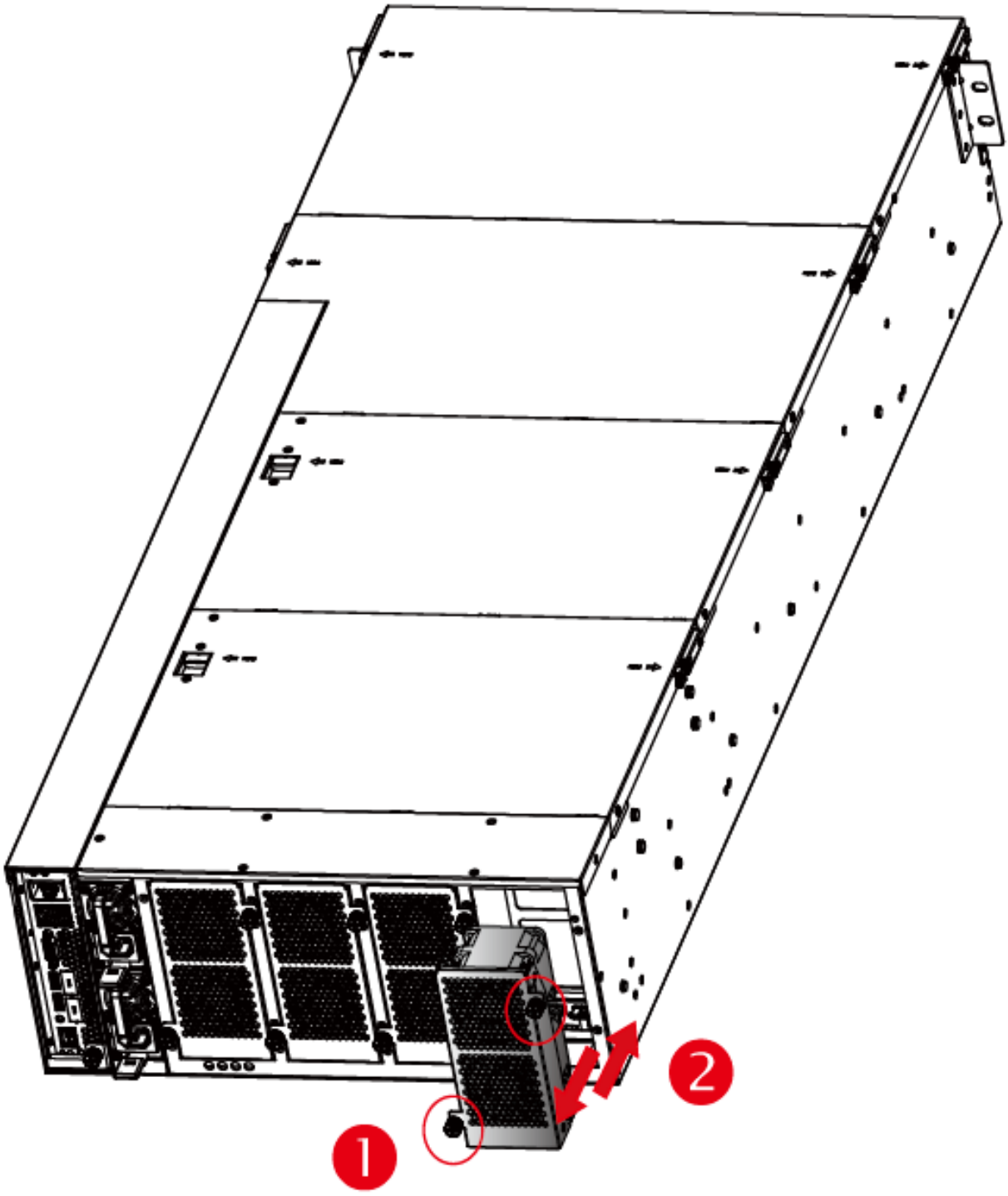


This information is provided for professional technicians only.

2.6 Fan Module

2.6.1 Installing the Fan

① Push the fan module into the chassis.
② Secure the thumb screws x 2 pcs on the fan module.

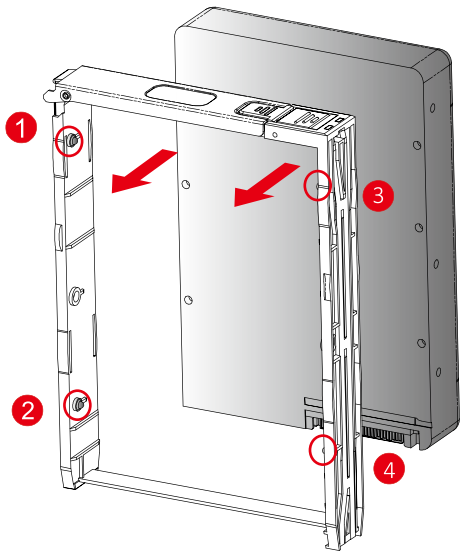


This information is provided for professional technicians only.

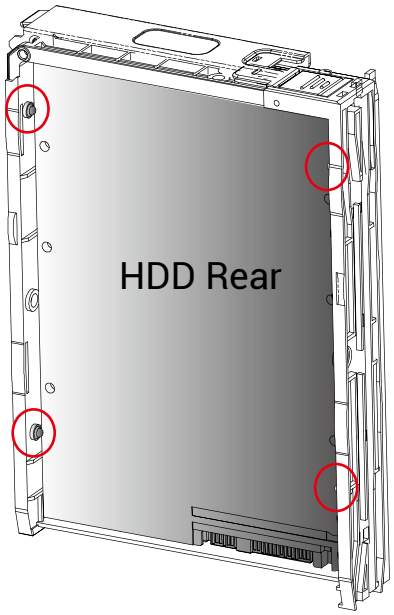
2.7 Hard Disk Drive

2.7.1 Installing the HDD

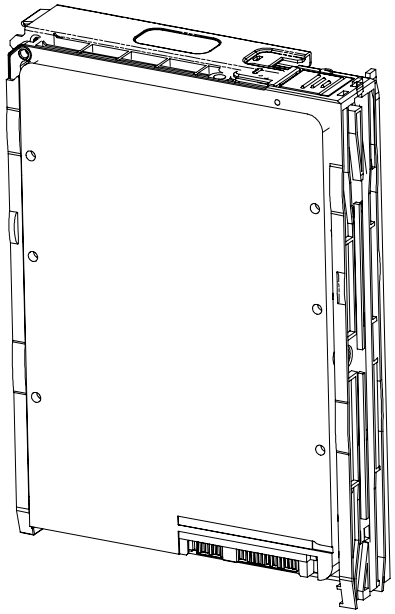
① Match the dimples on the HDD with the tool-less tray.
② Align the HDD with the tray by placing it against each other.



③ Insert the HDD into the tool-less tray in the suggested order above.
Make certain to attach the side of the tray with the larger dimples to the HDD first and the side with the smaller dimples last for easier installation.



④ Complete the installation.



2.7.2 Removing the HDD from the tool tray

Pull the sides of the tray to remove the HDD. Make certain to pull the tray with smaller dimples first away from the HDD and the larger dimples last for easier removal.

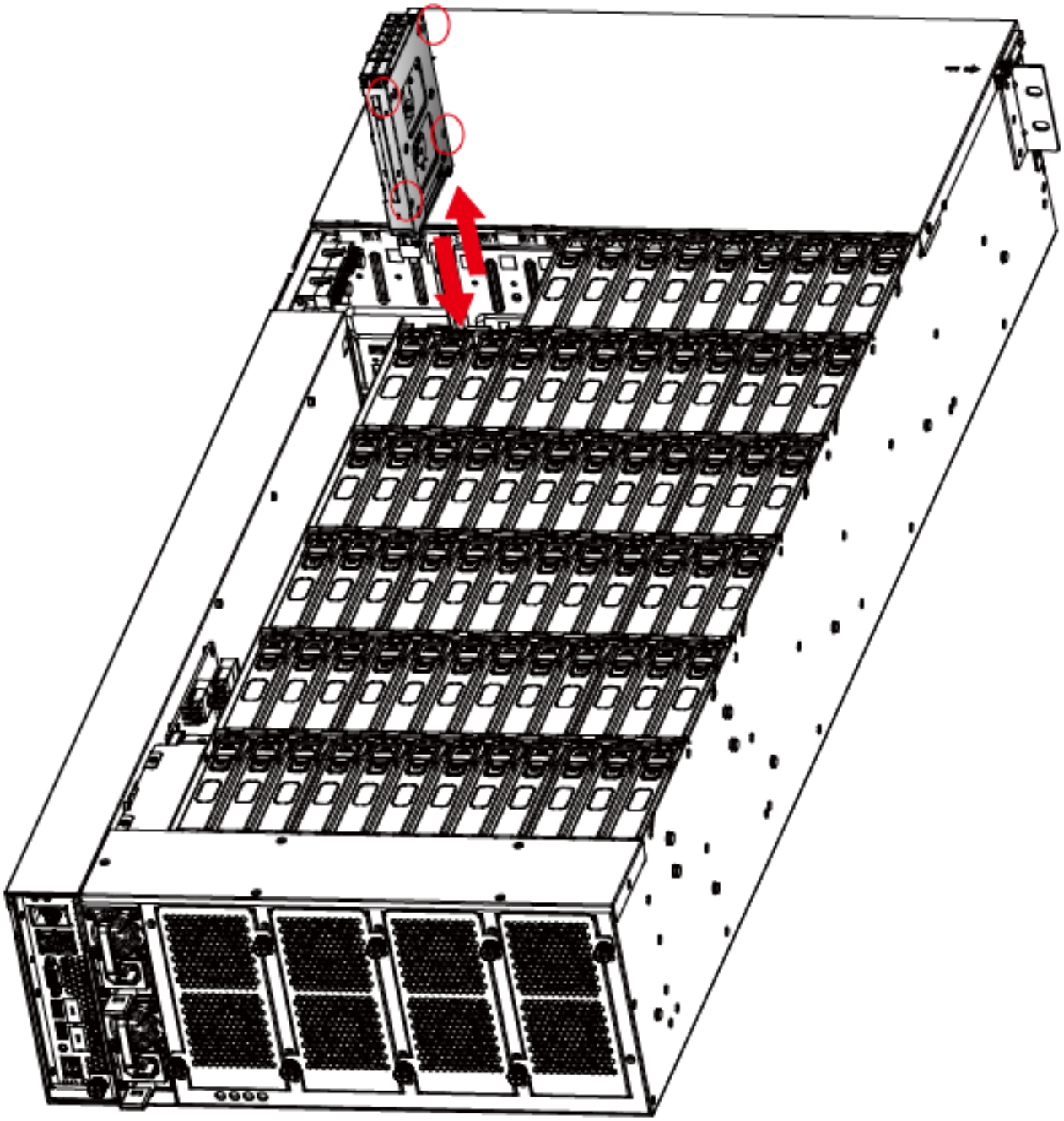
This information is provided for professional technicians only.

2.7.3 Installing/Removing the HDD Tray

Inser the HDD tray into the chassis. Check if the drive tray is correctly secured in place where the front edge aligns with the edge of the bay.

2.7.3.1 The 2.5" Tray Module

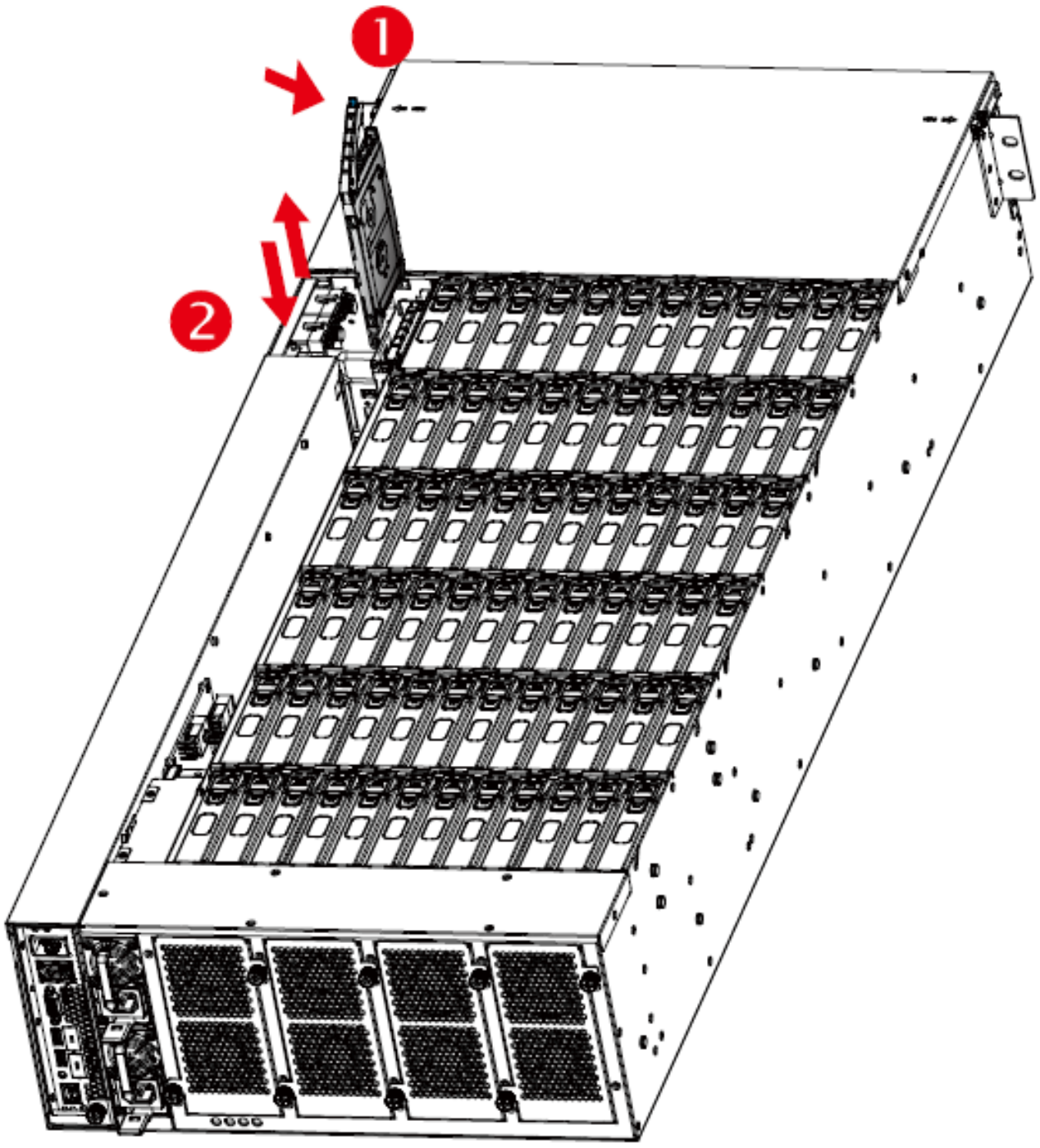
The 2.5" Tray Module is secured with screws x 4 pcs.



2.7.3.2 Installing the 2.5" HDD tray into the chassis

① Press downward on the tray lever.

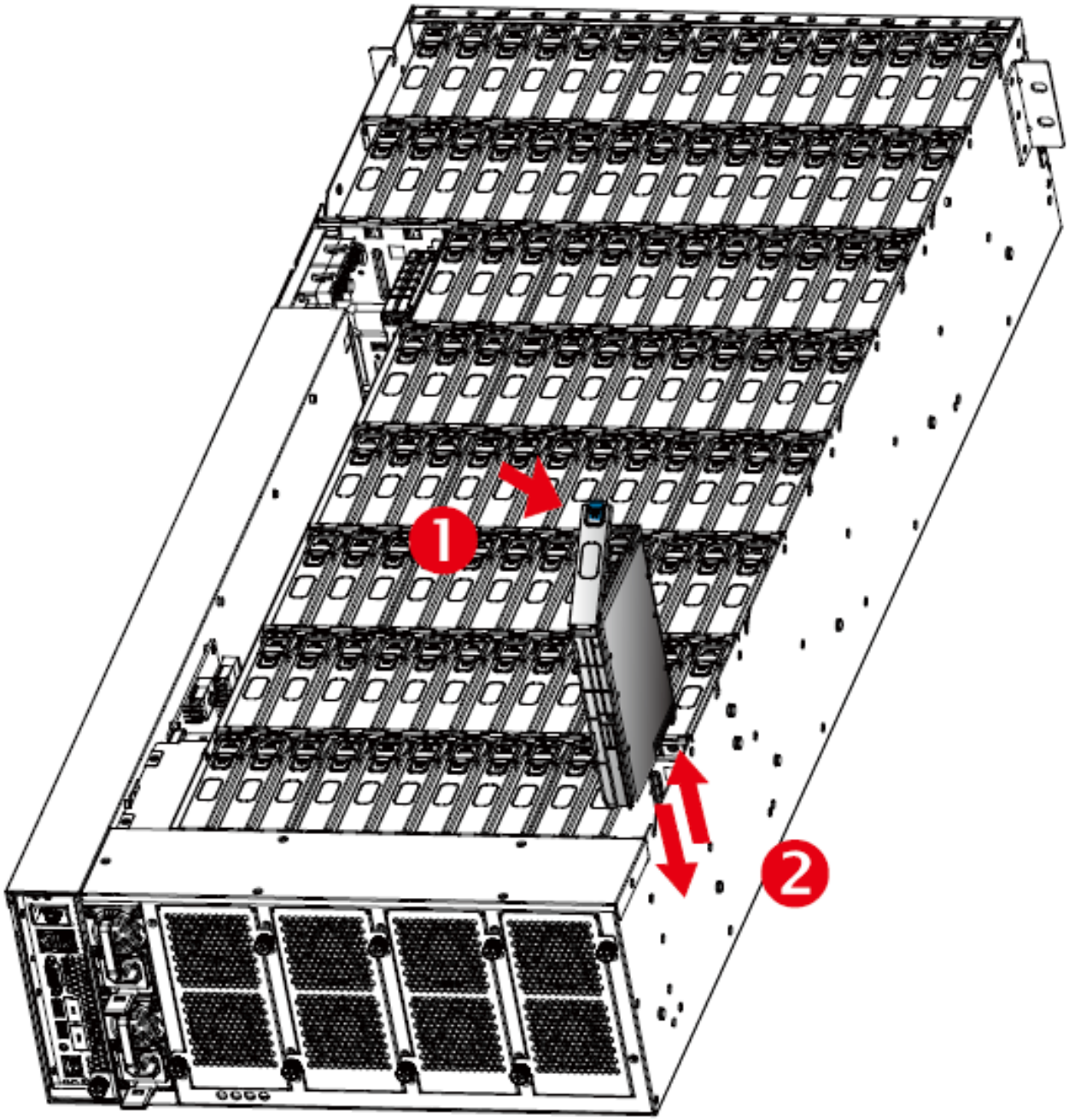
② Insert the 2.5" HDD into the chassis until it clicks.



2.7.3.3 Installing the 3.5" HDD tray into the chassis

① Adjust and press downward on the tray lever.

② Insert the tray into the chassis until it clicks.



This information is provided for professional technicians only.

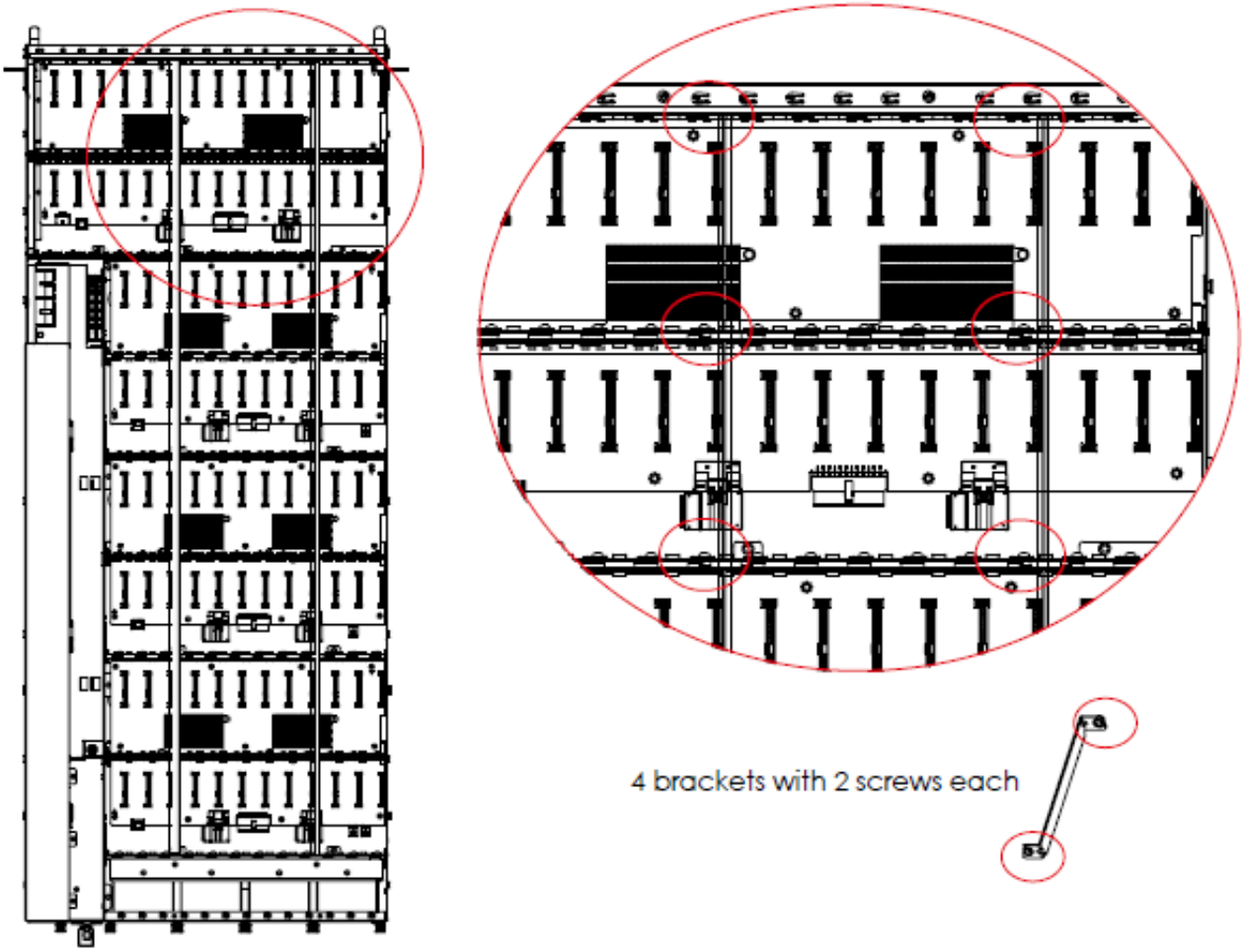
2.8 HDD Backplane Module

2.8.1 Installing the HDD Backplane

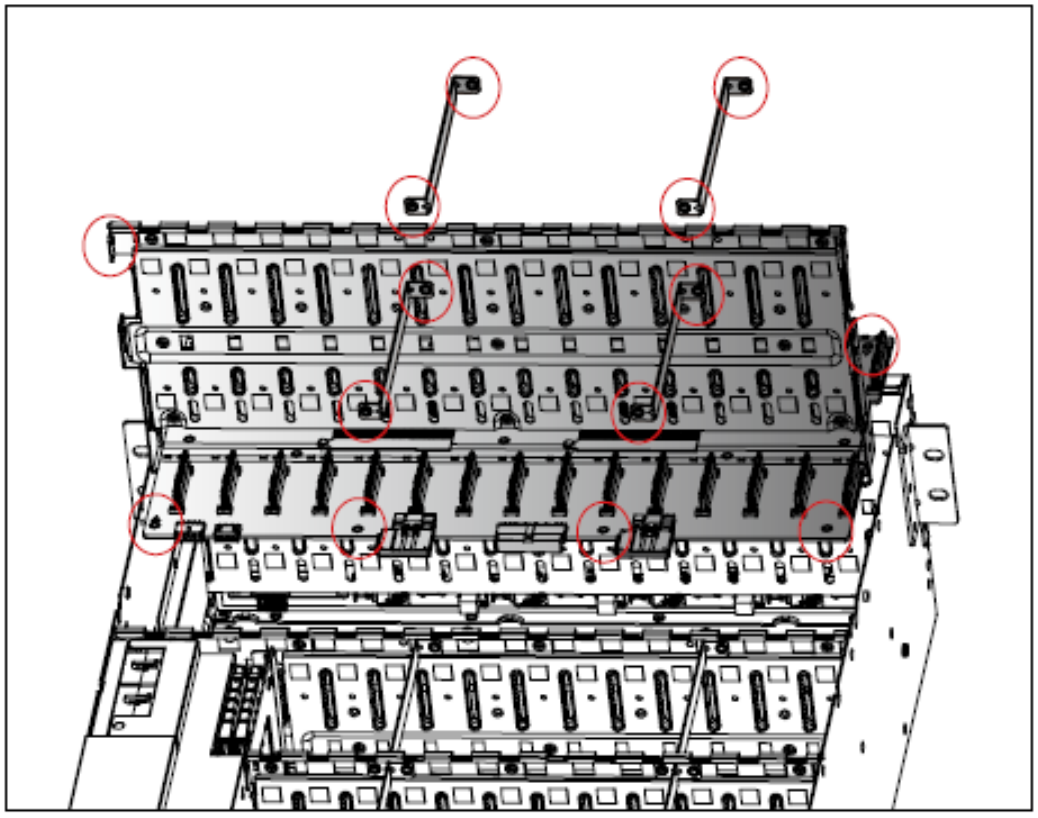
① Position the HDD backplane module into the chassis and secure the screws x 12 pcs onto the chassis (8 screws on the HDD backplane, 4 screws on the HDD backplane tray).
② Position the brackets x 4 on the top of the HDD backplane module and secure the screws x 8 pcs (1 bracket with 2 screws each).
③ Repeat step 1 and step 2 to install the second backplane.

2.8.2 Removing the HDD Backplane

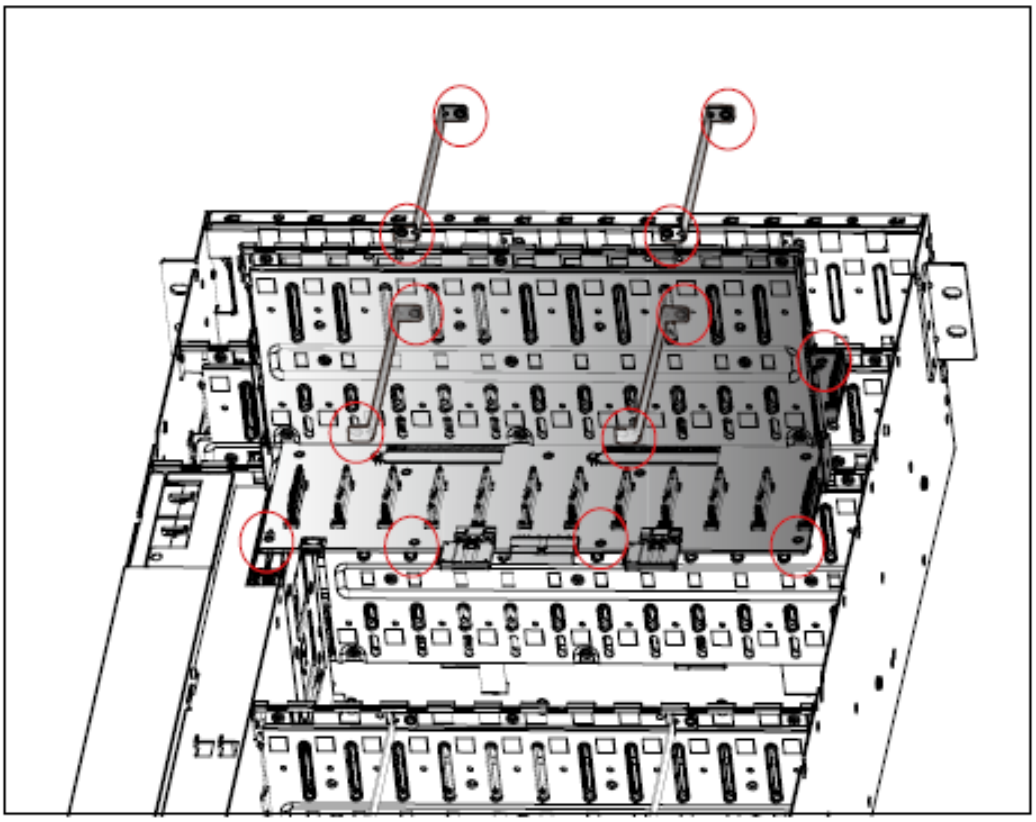
① Remove the HDD disk trays from the chassis.
② Remove the top brackets x 4 from the chassis by removing the screws x 8 pcs (1 bracket with 2 screws each).
③ Remove the screws x 12 pcs on the HDD backplane module (8 screws on the HDD backplane and 4 screws on the HDD backplane tray).
④ Repeat step 1 to 3 to remove the second HDD backplane module.



Bracket and HDD backplane removal



Bracket and second HDD backplane removal

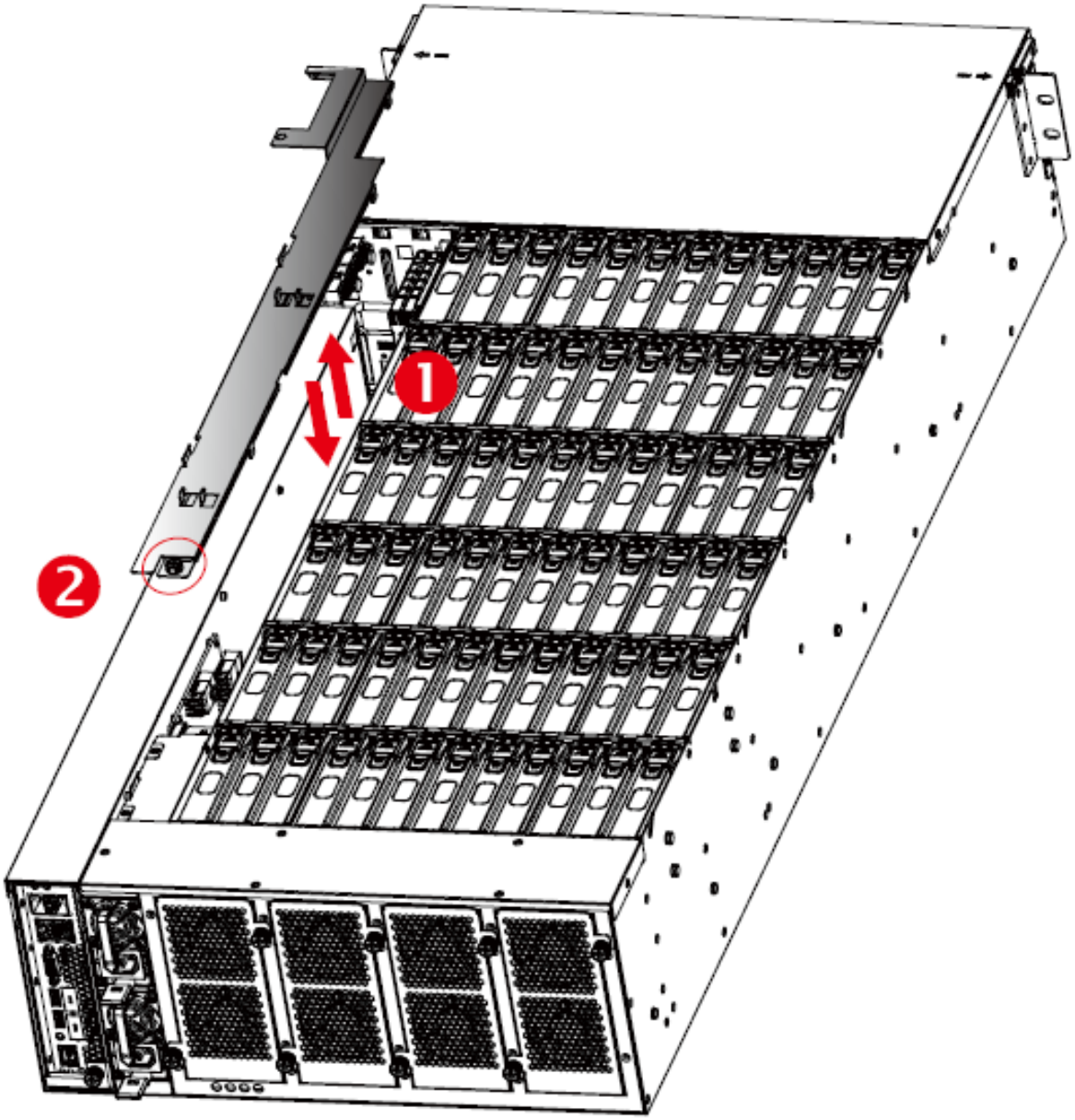


This information is provided for professional technicians only.

2.9 Cable Cover

2.9.1 Installing the Cable Cover

① Position the cable cover onto the chassis.
② Secure the thumb screw x 1 pc on the cable cover.

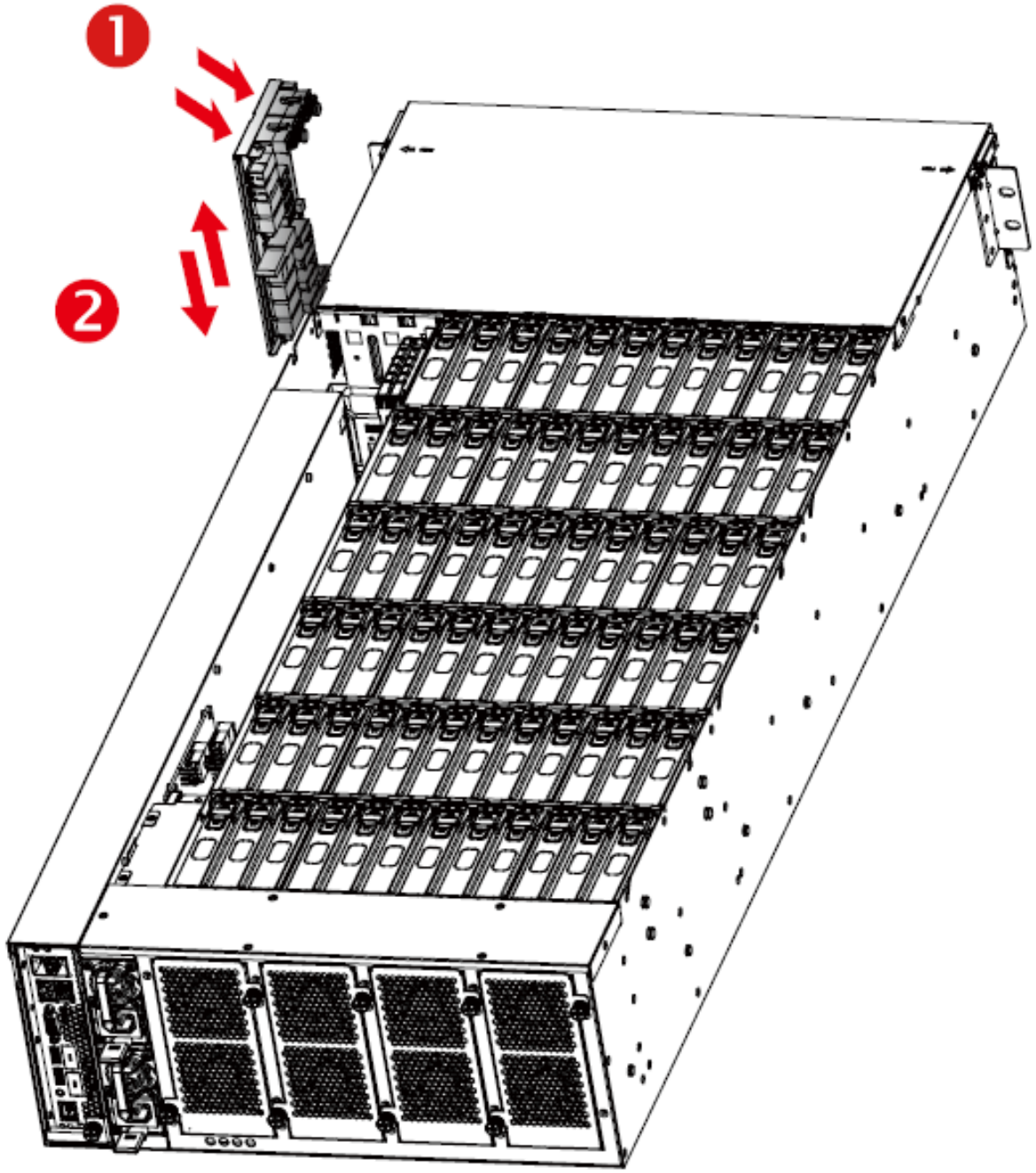


This information is provided for professional technicians only.

2.10 Bridge Board

2.10.1 Installing the Bridge Board

① Insert the bridge into the chassis.
② Secure the screws x 2 pcs on the side of the bridge.



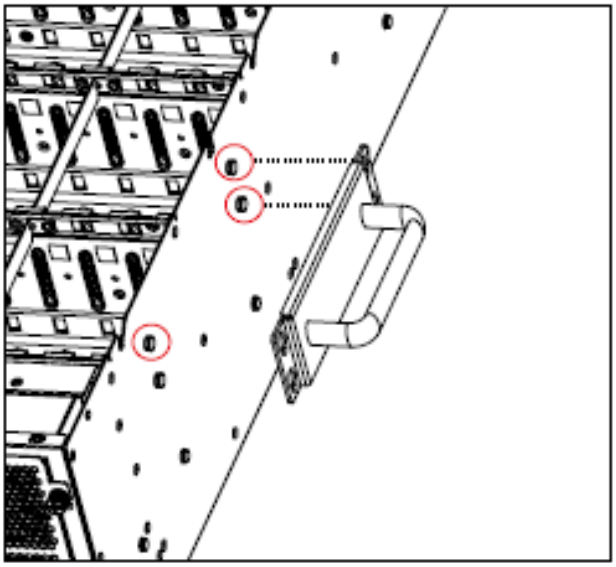
This information is provided for professional technicians only.

2.11 Rear Handle

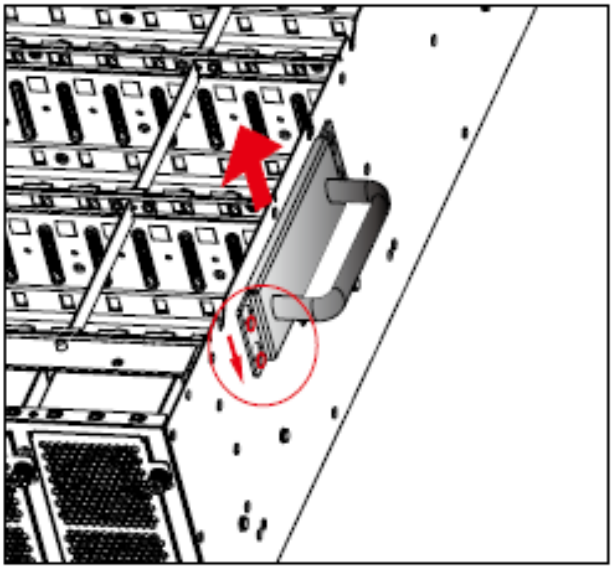
2.11.1 Installing the Rear Handle

① Match the locking plate on the handle with the locks on the chassis.
② Pull the handle upward to lock the handle onto the chassis.

Aligning the handle with the chassis.



Securing the handle.

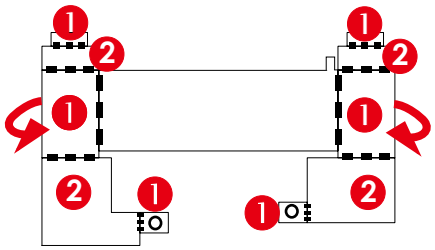


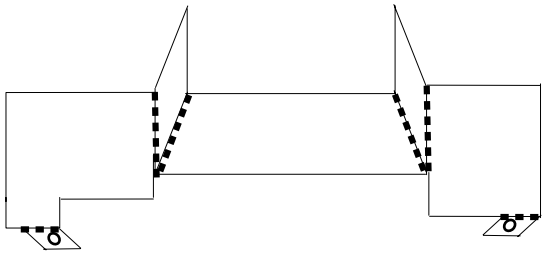
This information is provided for professional technicians only.

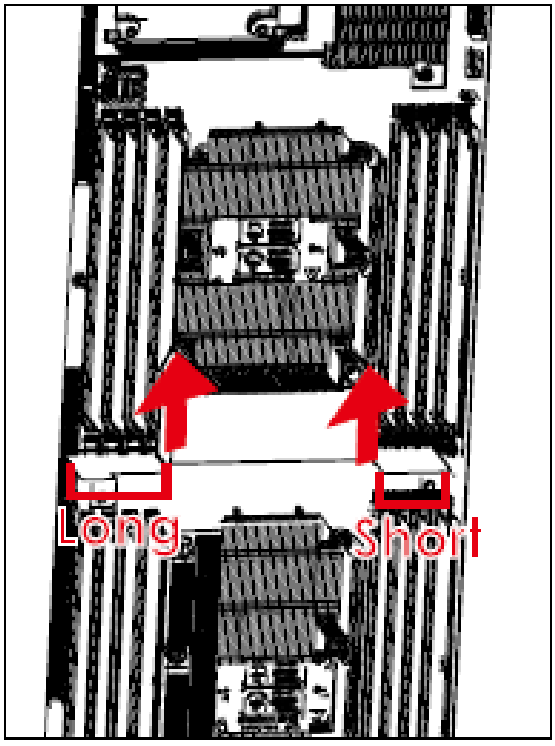
2.12 Airduck

2.12.1 Installing the Airduck

① Fold the airduck according to the dotted line on the airduck.
② Slide the airduck under the heatsink and secure the screw x 2 pcs.
Make certain to match the length of the airduck with the side of the dimm.







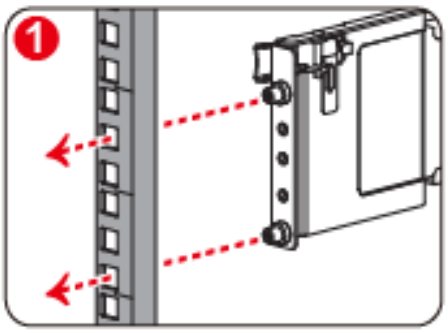
This information is provided for professional technicians only.

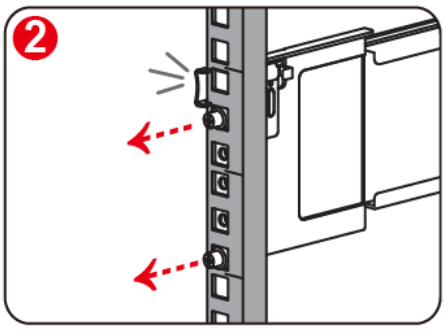
2.13 Slide Rail Installation

1. Attach the slide rail braket assembly to the rack frame.

① Align and attach the front rail bracket to the rack.

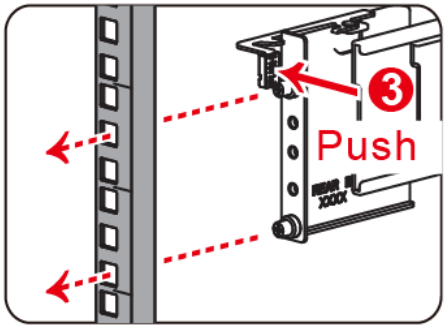
② Ensure that the latch on the rail is hooked onto the rack.

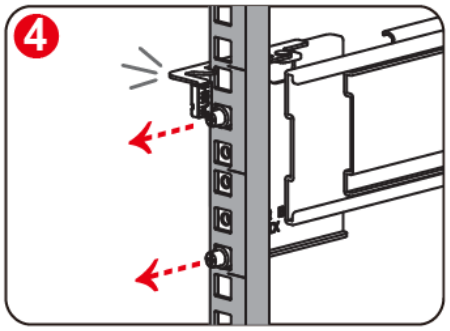




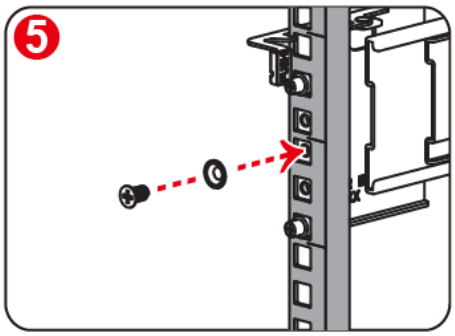
③ Align and attach the rear rail braket to the rack by pushing the latch outward. Ensure the latch is hooked onto the rack.

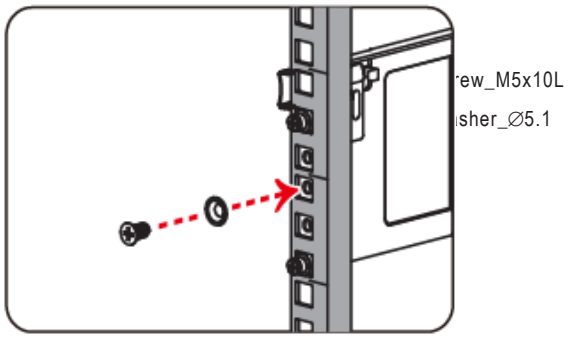
④ Ensure that the latch on the rail is hooked onto the rack.



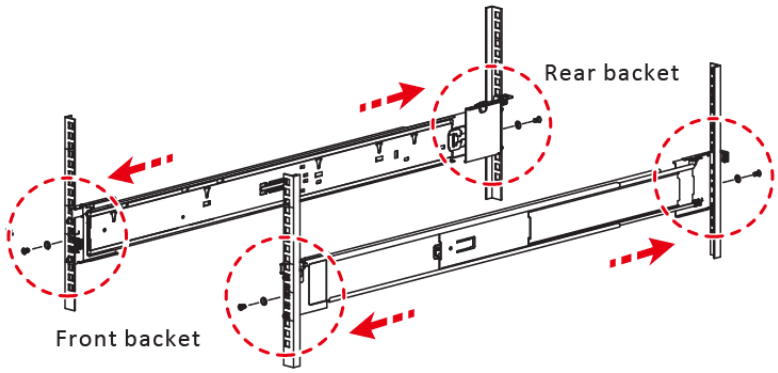


⑤ Secure the rail bracket with a washer and screw on both sides of the rail bracket.



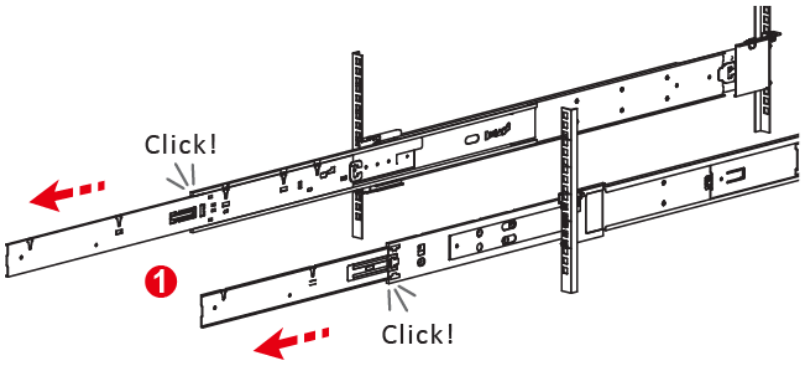


⑥ Repeat ❶ to ❺ to install the other side of the rack.

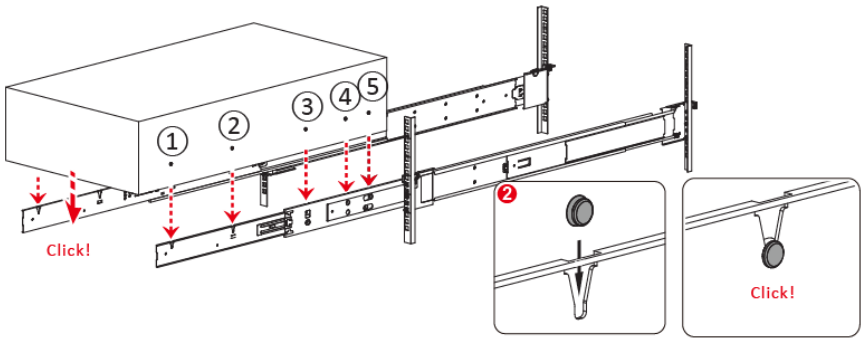


2. Attach the chassis onto the rack fram

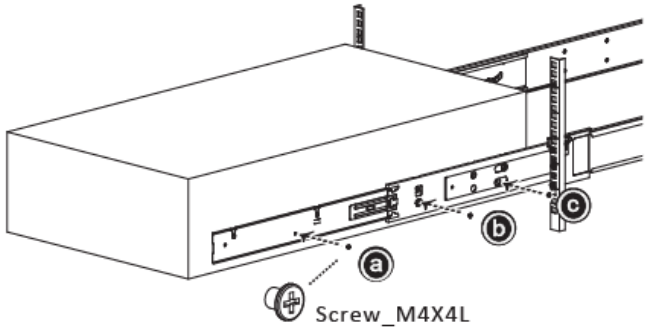
① Pull the inner and middle rail to fully locked position.



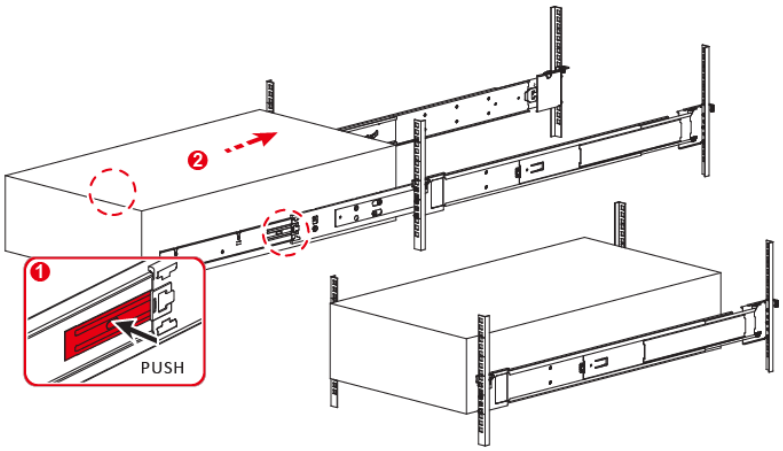
② Position the chassis vertically into the rail. Ensure the standoffs on the chassis slide into the v slots on the rail bracket.



③ Secure the chassis to the rail with screws.



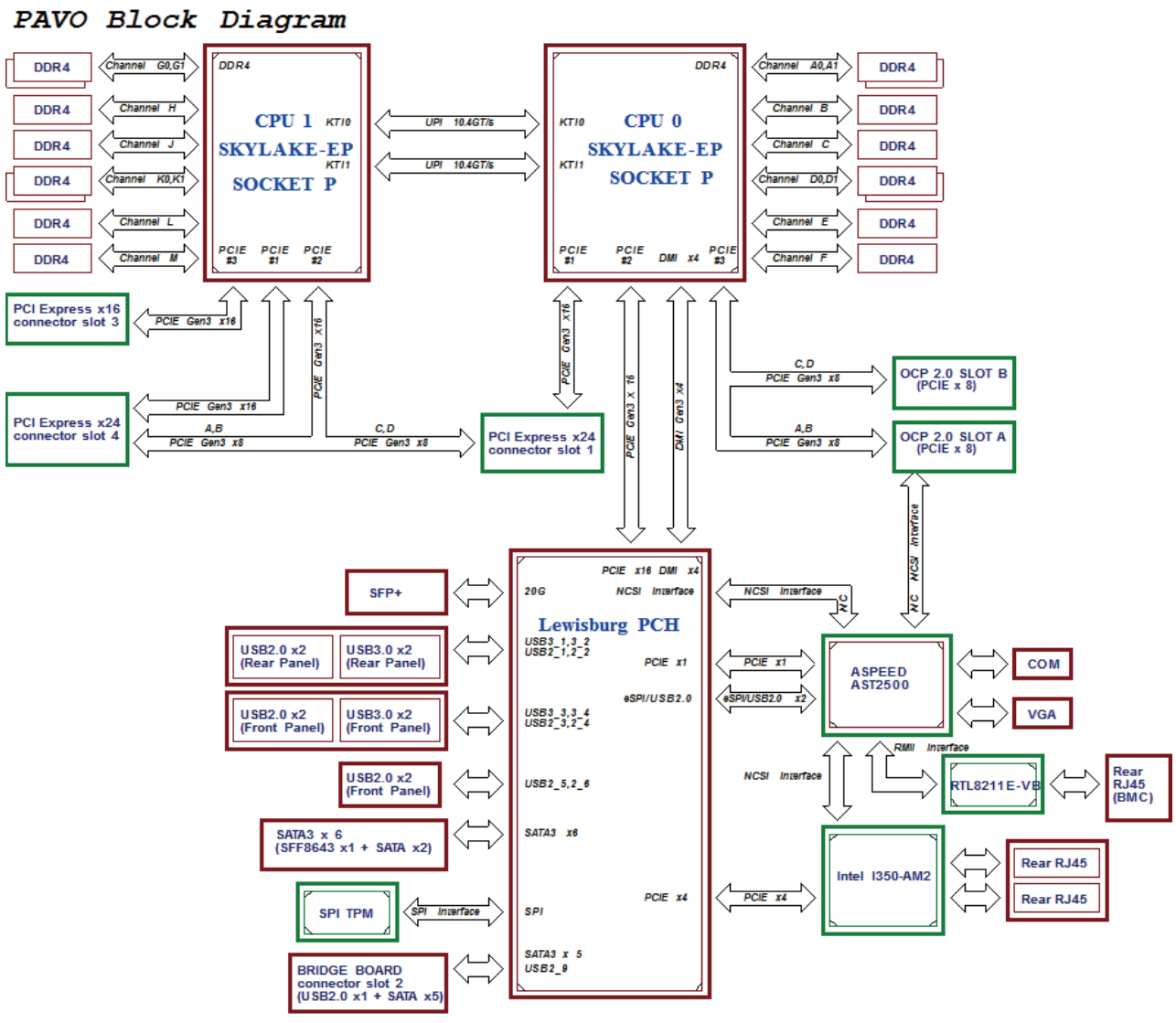
④ Push the release tab on the inner rail and push the chassis into the frame.



Chapter 3. Hardware Settings

This section describes the jumpers, internal connectors, and internal LED settings.

3.1 Motherboard Block Diagram

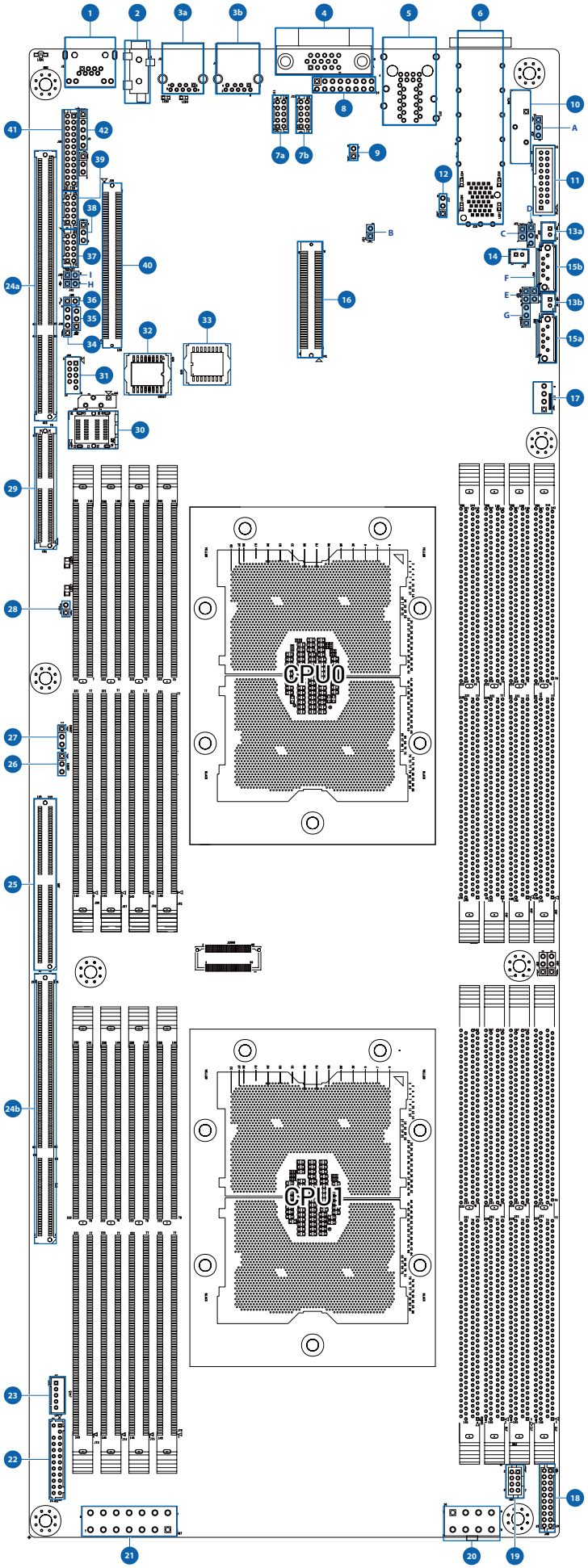


3.2 Content List

Connector and Header		Location	Connector and Header		Location
1	RJ45 Port for BMC management		22	Front Panel Header	J81
2	COM Port by 3.5mm Phone Jack		23	PMBUS Header	J45
3	2 x USB 3.0 Type A Connector		24a 24b	PCIe Slot (x24)	U22 U72
4	VGA Port		25	PCIe Slot (x16)	J80
5	2 x GbE RJ45 Port		26	PCIE Hot-Plug SMB Header (CPU0)	J2001
6	2 x 10GbE SFP+ Port		27	PCIE Hot-Plug SMB Header (CPU1)	J2002
7a 7b	COM Header	J11 J12	28	All Node Off Header	J52
8	Front VGA Header	J7	29	Bridge Board Connector	CN1
9	UID LED Header	J15	30	Serial ATA Connector	J32
10	Battery Socket	BAT1	31	Front I/O USB 2.0 Header	J49
11	Front I/O USB 3.0 Header	J16	32	BMC ROM Socket	U29
12	UART Header	J17	33	SPI ROM Socket	U25
13a 13b	SATA-DOM Power Connector	J22 J42	34	BMC IPMB Header	J36
14	Intruder Header	J47	35	PECI Header	J44
15a 15b	Serial ATA Connector	J33 J34	36	Speaker Header	J48
16	OCP Card Slot A	J41	37	PCH SSGPIO Header	J27
17	BMC Fan Header	J51	38	VRM SMB Header	J24
18	Front BMC GPIO Header	J40	39	PCH SGPIO Header	J18
19	MDIPHY Port Header	J85	40	OCP Card Slot A	J28
20	VDR Supply Connector (2 x 4 pin)	J86	41	Front System Fan Header	J39
21	Power Supply Connector (2 x 7 pin)	J87	42	LCM Header	J9

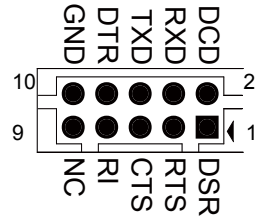
Jumper		Location	Jumper		Location
A	Clear CMOS Jumper	J10	F	BIOS Recovery Mode Jumper	J37
B	BMC Reset Jumper	J23	G	SATA DOM Jumper	J43
C	Flash Security override Jumper	J21	H	Password Clear Jumper	J31
D	SATA DOM Jumper	J20	I	BMC Disable Jumper	J30
E	ME Recovery Mode Jumper	J35			

3.3 Placement

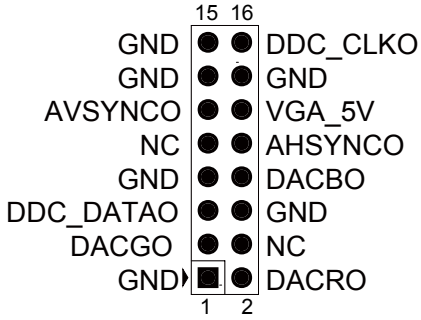


3.4 Connector and Jumper

⑦a~⑦b COM Header (J11, J12)

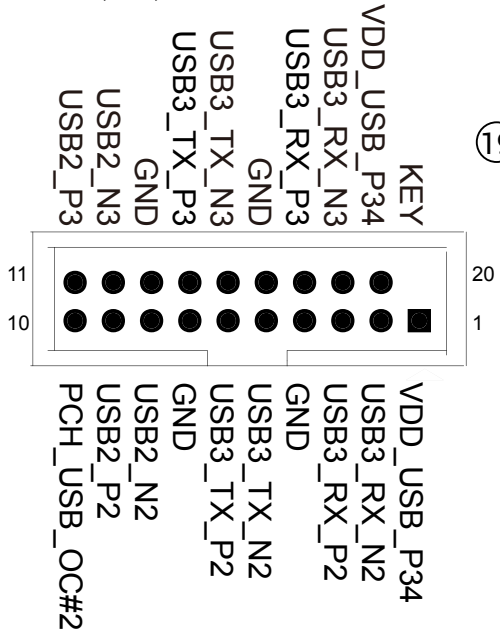


⑧ Front VGA Header (J7)



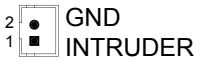
⑨ UID LED Header (J15)

⑪ Front I/O USB 3.0 Header (J16)

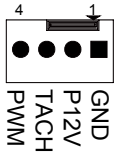


⑫ UART Header (J17)

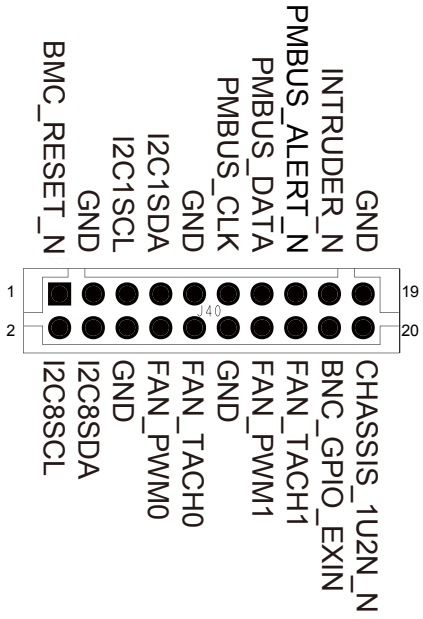
⑭ Intruder Header (J47)



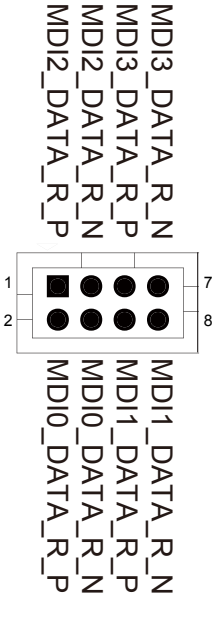
⑰ BMC Fan Header (J51)



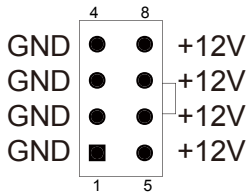
⑱ Front BMC GPIO Header (J40)



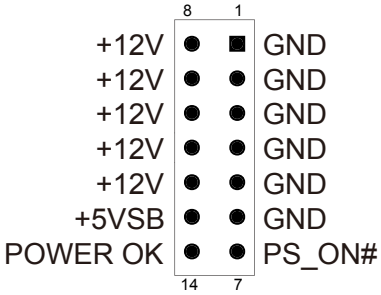
⑲ MDIPHY Port Header (J85)



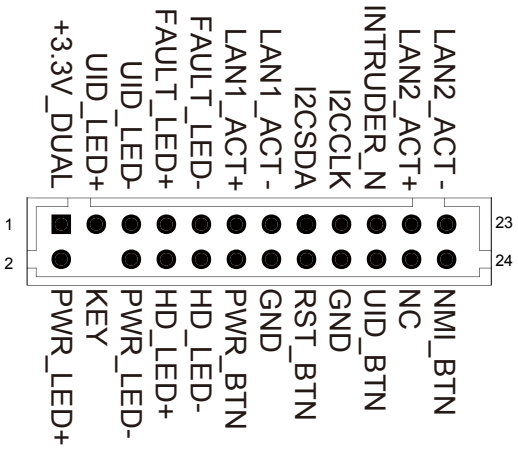
⑳ VRD Supply Connector (J86)



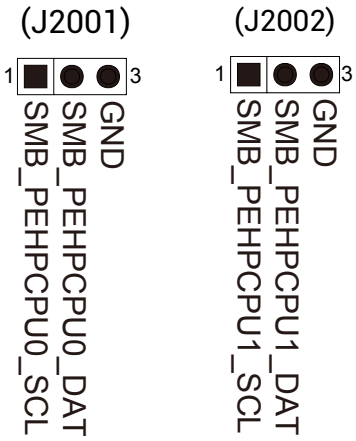
㉑ Power Supply Connector (J87)



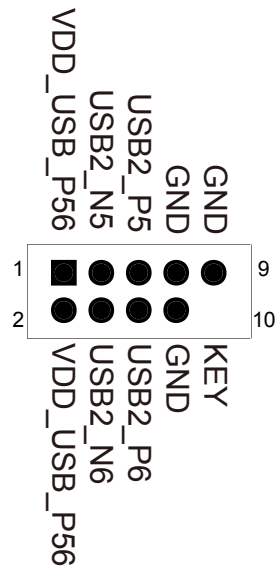
㉒ Front Panel Header (J81)



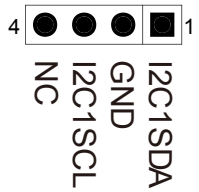
㉖~㉗ PCIe Hot Plug SMB Header



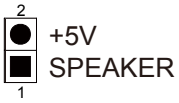
(31) Front I/O USB 2.0 Header (J49)



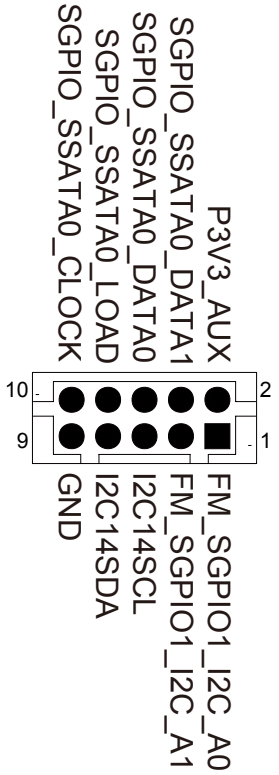
(34) BMC IPMB Header (J36)



(36) Speaker Header (J48)

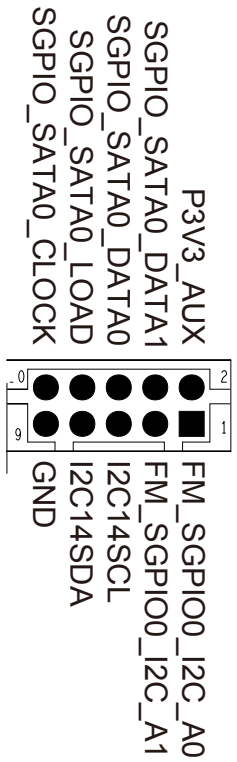


(37) PCH SSGPIO Header (J27)

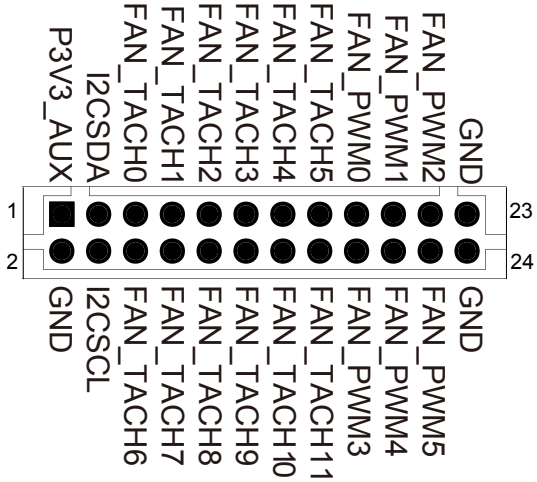


(38) VRM SMB Header (J24)

(39) PCH SGPIO Header (J18)

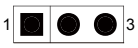


(41) Front System Fan Header (J39)



(42) LCM Header (J9)

Ⓐ Clear CMOS Jumper (J10)



J10	Setting	
Pin1-2	Normal	Default
Pin2-3	Clear CMOS	

Ⓑ BMC Reset Jumper (J23)

J23	Setting	
Short	BMC Reset	
Open	Normal	Default

Ⓒ Flash Security override Jumper (J21)

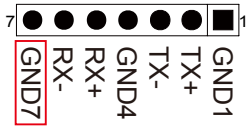
J21	Setting	
Short	Flash Security override	
Open	Normal	Default

Ⓓ SATA DOM Jumper (J20)
ⒼSATA DOM Jumper (J43)

J20, J43	Setting	
Pin1-2	SATA	Default
Pin2-3	SATA DOM	

NOTE

When the jumpers are set, +5V will be delivered to the 7th pin of the SATA connector.



(SATA Connector)

Ⓔ ME Recovery Mode Jumper (J35)

J35	Setting	
Short	ME Recovery Mode	
Open	Normal	Default

Ⓕ BIOS Recovery Mode Jumper (J37)

J37	Setting	
Short	BIOS Recovery Mode	
Open	Normal	Default

Ⓗ Password Clear Jumper (J31)

J31	Setting	
Short	Password Clear	
Open	Normal	Default

ⒾBMC Disable Jumper (J30)

J30	Setting	
Short	BMC Disable	
Open	Normal	Default

3.5 System LED Indicator

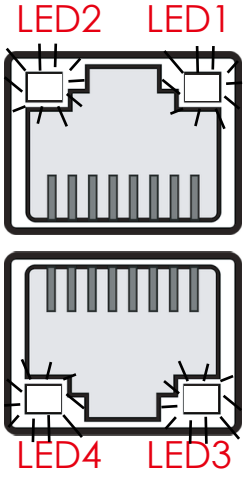
3.5.1 Front Panel

Power	Yellow	System is On.
	Blinking	System is in Standby; System is off, but has AC power.
	Off	System has no AC power.
UID	Blue	UID activity is detected.
	Off	No UID activity is detected.
System Fault	Red	Critical system failure is detected (processors, memory, voltage regulators, thermal events,fan failures, NMI, etc).
	Off	No critical failures are detected.
Hard Disk	Green (Blinking)	Disk activity is detected.
	Off	No disk activity is detected.
LAN1_TRAFFIC	Green (Blinking)	LAN1 activity is detected.
	Off	LAN1 is not active.
LAN2_TRAFFIC	Green (Blinking)	LAN2 activity is detected.
	Off	LAN2 is not active.

3.5.2 Rear I350 LAN

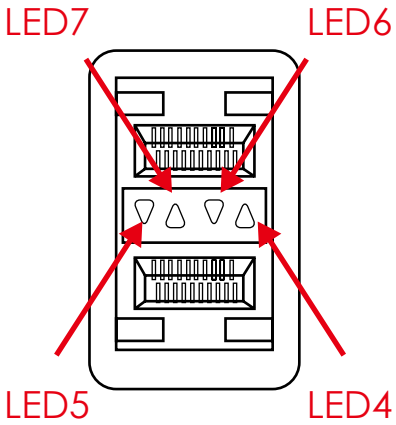
The NIC Port LED should be connected to Vaux (standby) voltage.

Description		Left LED (LED4, LED2,) (Link/Activity)	Right LED (LED3, LED1) (Speed)
No Link		OFF	OFF
Linked at 10 Mbps	Link	Green	OFF
	Active	Blinking Green	OFF
Linked at 100 Mbps	Link	Green	Green
	Active	Blinking Green	Green
Linked at 1000 Mbps	Link	Green	Yellow
	Active	Blinking Green	Yellow



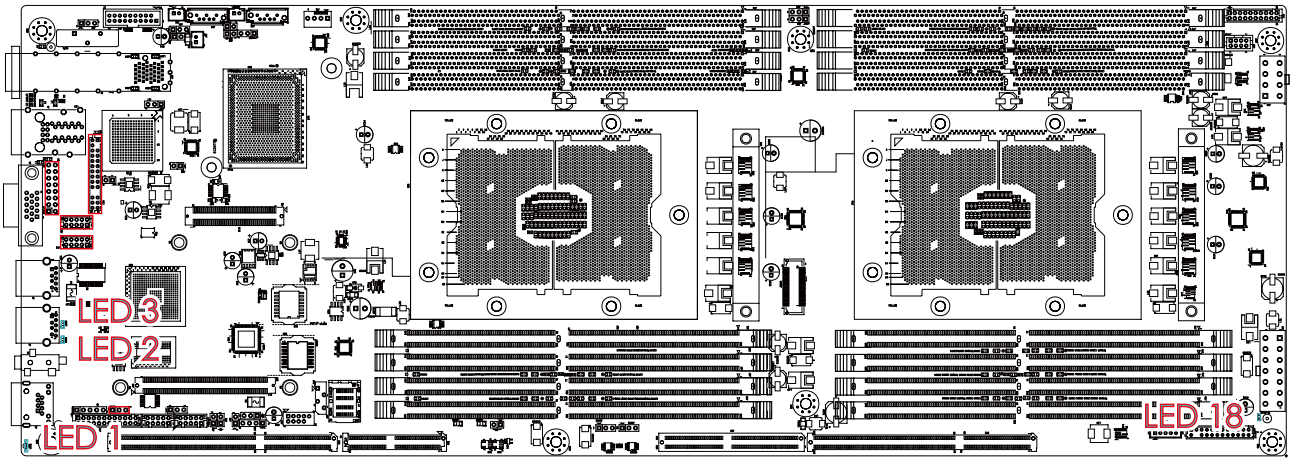
3.5.3 Rear PCH LAN

LED5	Green	LAN1 activity is detected.
	Off	LAN1 is not active.
LED7	Green	LAN1 link is detected
	Off	LAN1 is not linked.
LED6	Green	LAN0 activity is detected
	Off	LAN0 is not linked.
LED4	Green	LAN0 link is detected.
	Off	LAN0 is not active.



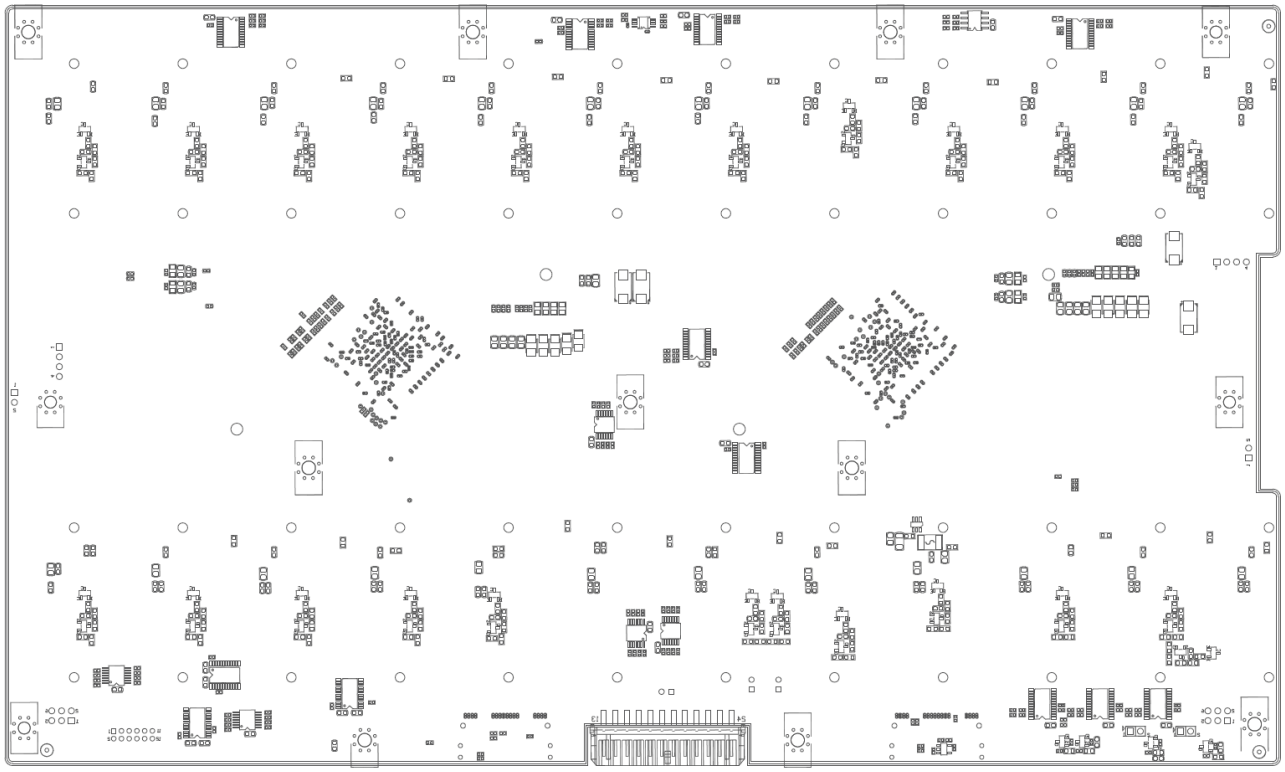
3.5.4 Rear UID & Internal LED

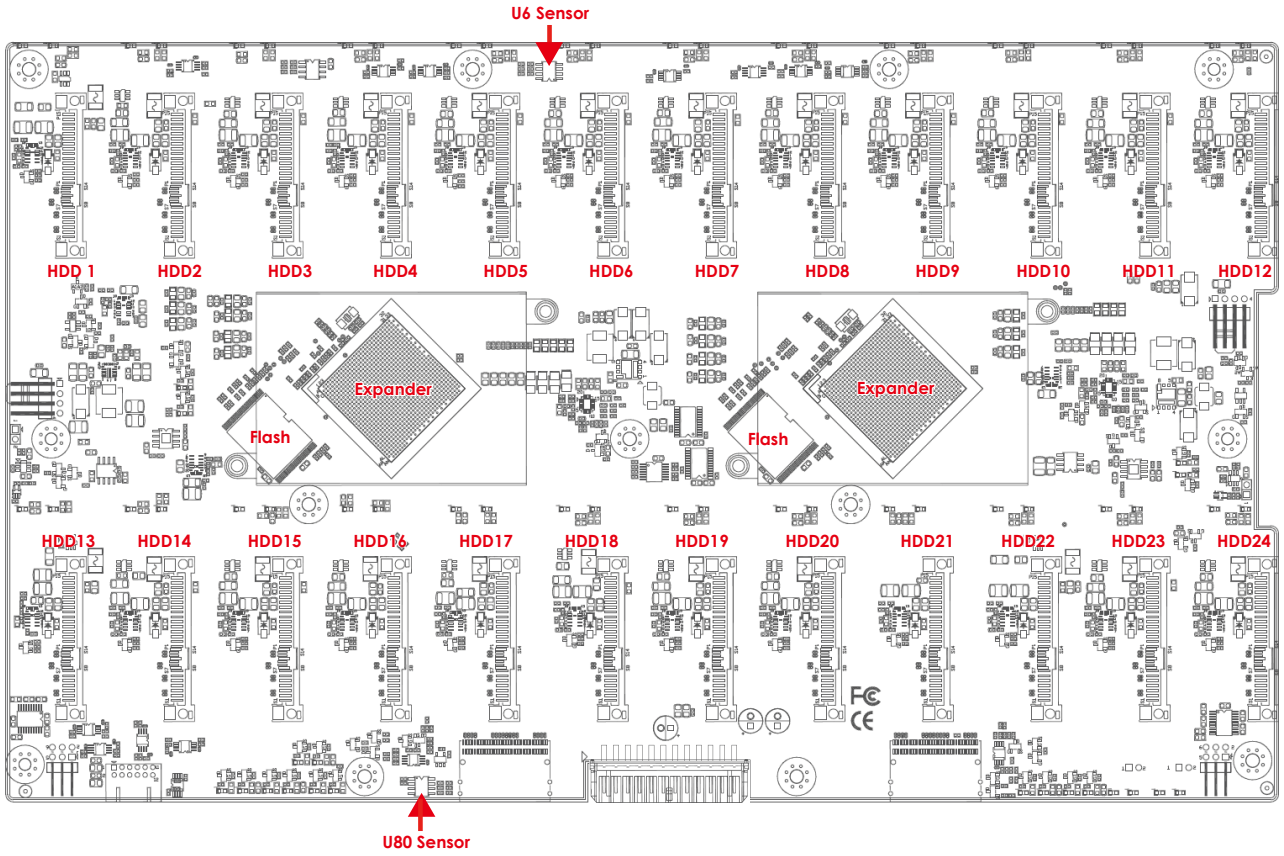
LED1	On	UID activity is detected.
	Off	UID is not active.
LED2	On	BMC Rack LAN activity is detected (Only for Rack).
	Off	BMC Rack LAN is not active (Only for Rack).
LED3	On	BMC Rack LAN activity is detected (Only for Rack).
	Off	BMC Rack LAN is not active (Only for Rack).
LED18	Blinking	BMC is working.
	Off	BMC is not working.



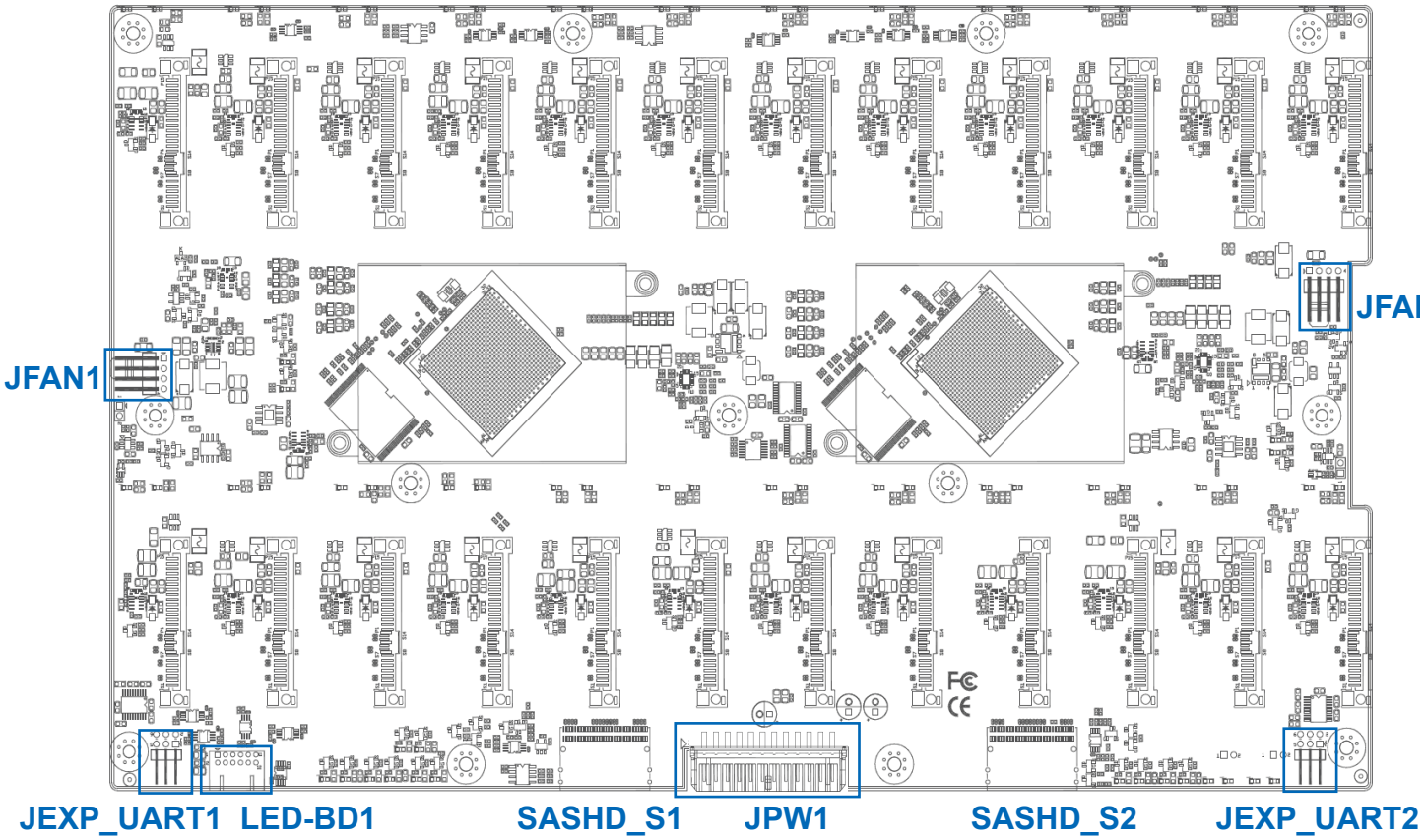
3.6 HDD Backplane: 24 Bay

3.6.1 Placement

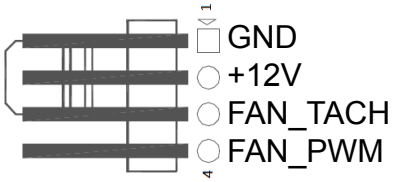




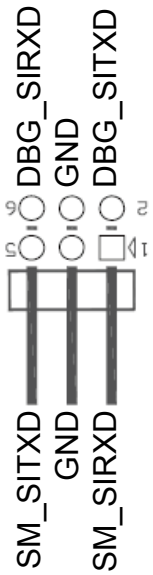
3.6.2 Connector Location



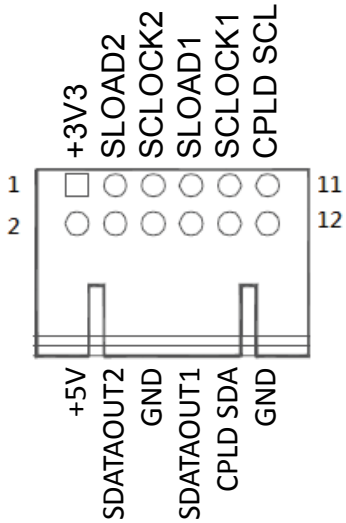
Fan connect for debug use
JFAN1 & JFAN2



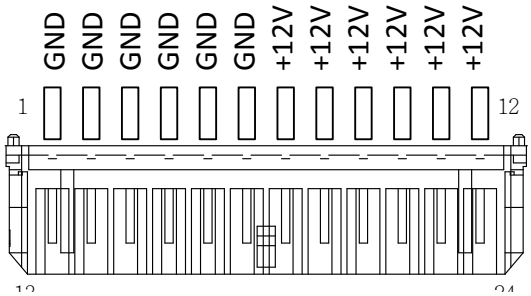
Control for Expander
JEXP_UART1 & JEXP_UART2



Front LED Board Control for
Display HDD LED Status
LED-BD1



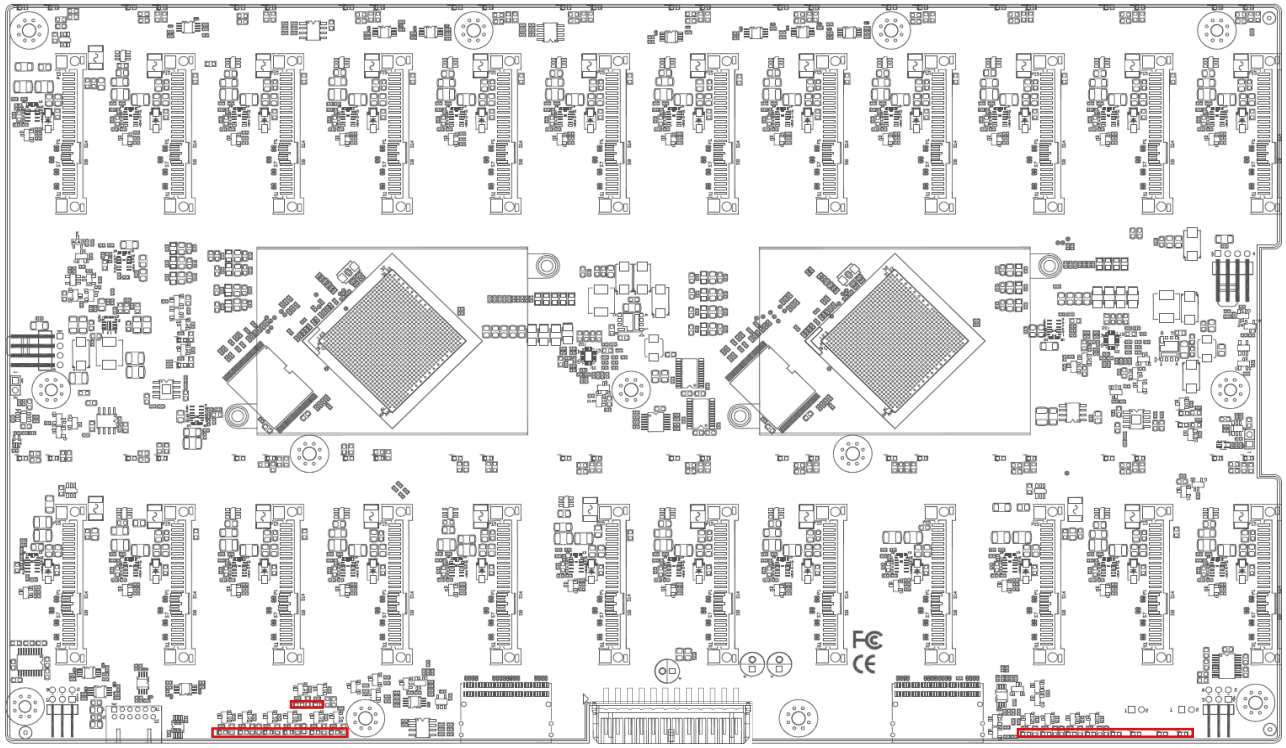
Power Connector
JPW1

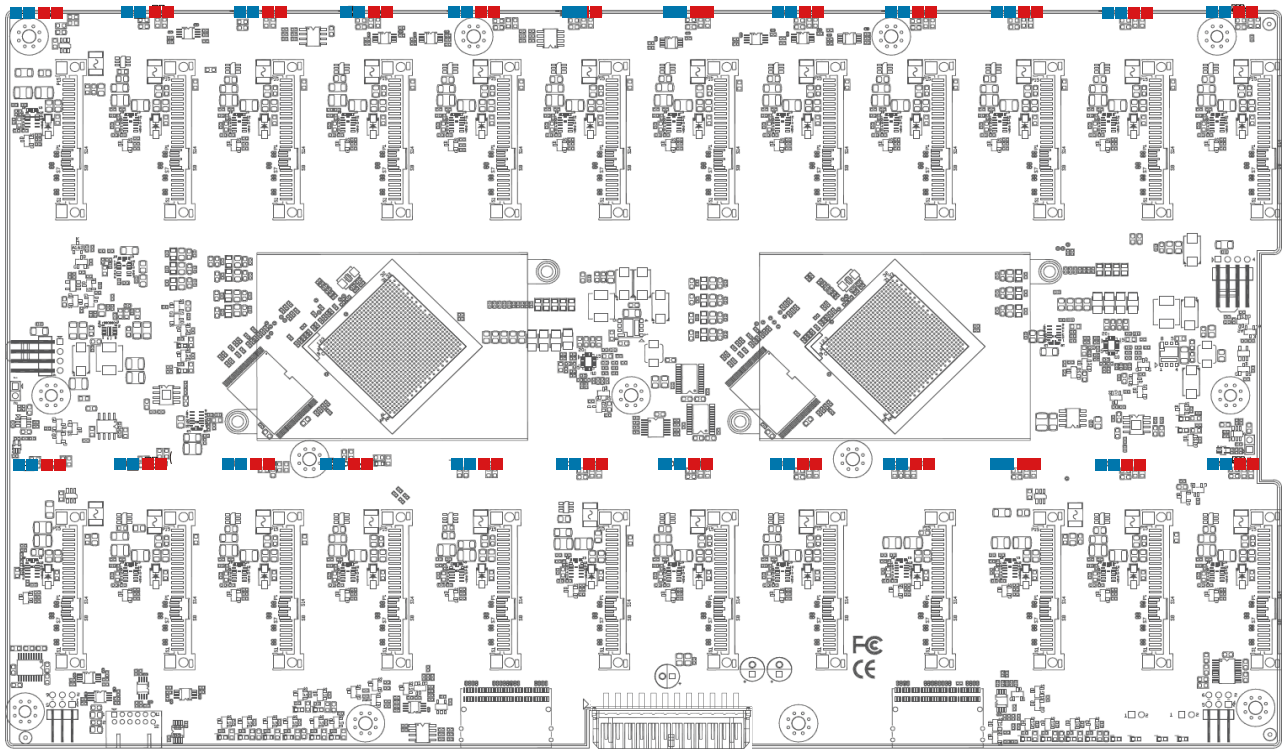


3.6.3 LED Indicator

SAS PHY Link Status (LEDA1 to LEDA16)	Blue (On)	Link up.
	Blue (Blinking)	Activity is detected.
	Off	Link down.
Expander Blink (LED25,LED28)	Blue (Blinking)	Expander is alive, 0.0833Hz (12 seconds per cycle).
Expander Heart Bit (LED26,LED27)	Blue (Blinking)	Expander FW is running.
HDD Activity LEDs	Blue (On)	HDD present
	Blue (Blinking)	HDD Activity is detected : 8Hz
		HDD Locate : 0.5Hz
	Off	HDD is not connected or Power is off.
HDD Fault/ Status LEDs	Red (On)	Set by any of the following bits: 1. RQST MISSING 2. RQST FAULT
	Red (Blinking)	Set by any of the following bits: 1. RQST CONS CHECK 2. RQST IN CRIT ARRAY 3. RQST IN FAILED ARRAY 4. RQST REBUILD/REMAP 5. RQST R/R ABORT 6. RQST INSERT 7. RQST REMOVE 8. PRDFAIL
	Off	No control bit is set or set by any of the following bits: 1. RQST OK 2. RQST RSVD DEVICE 3. RQST HOT SPARE 4. RQST ACTIVE 5. DO NOT REMOVE 6. RQST IDENT 7. DEVICE OFF

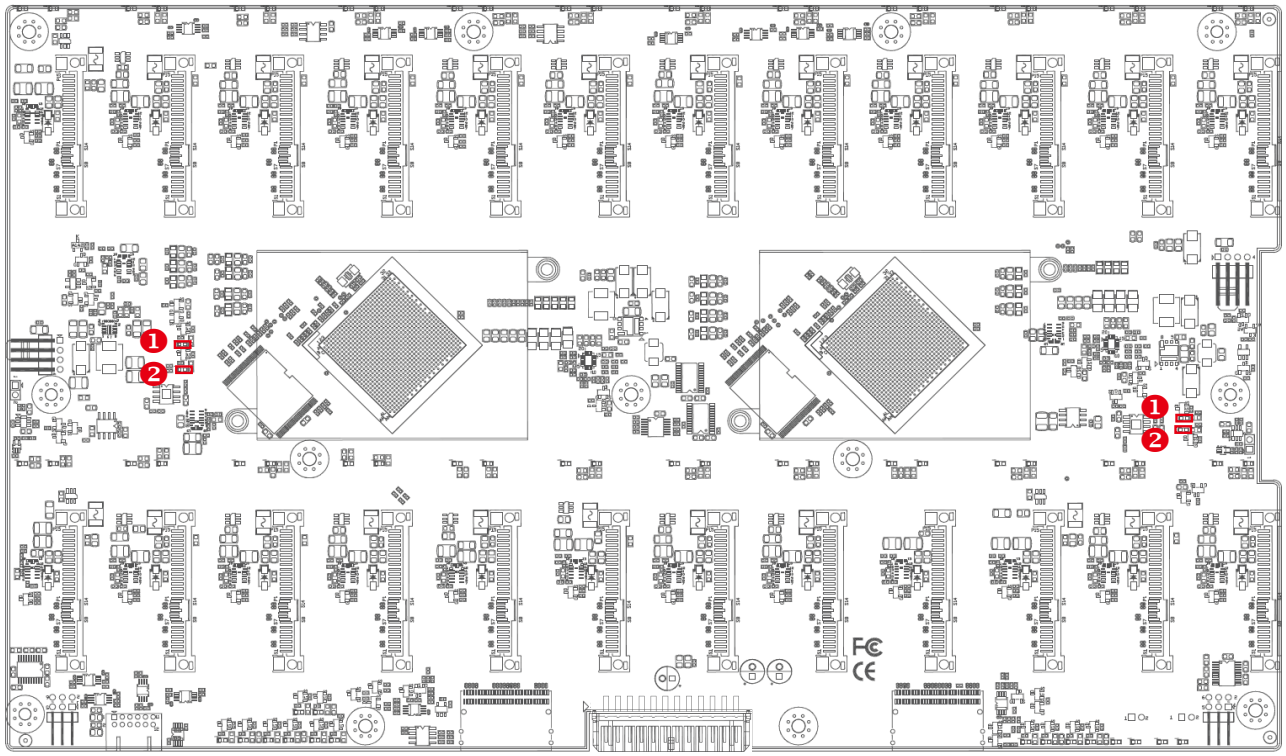
3.6.4 LED Location





HDD Activity LED

HDD Fault/Status LED

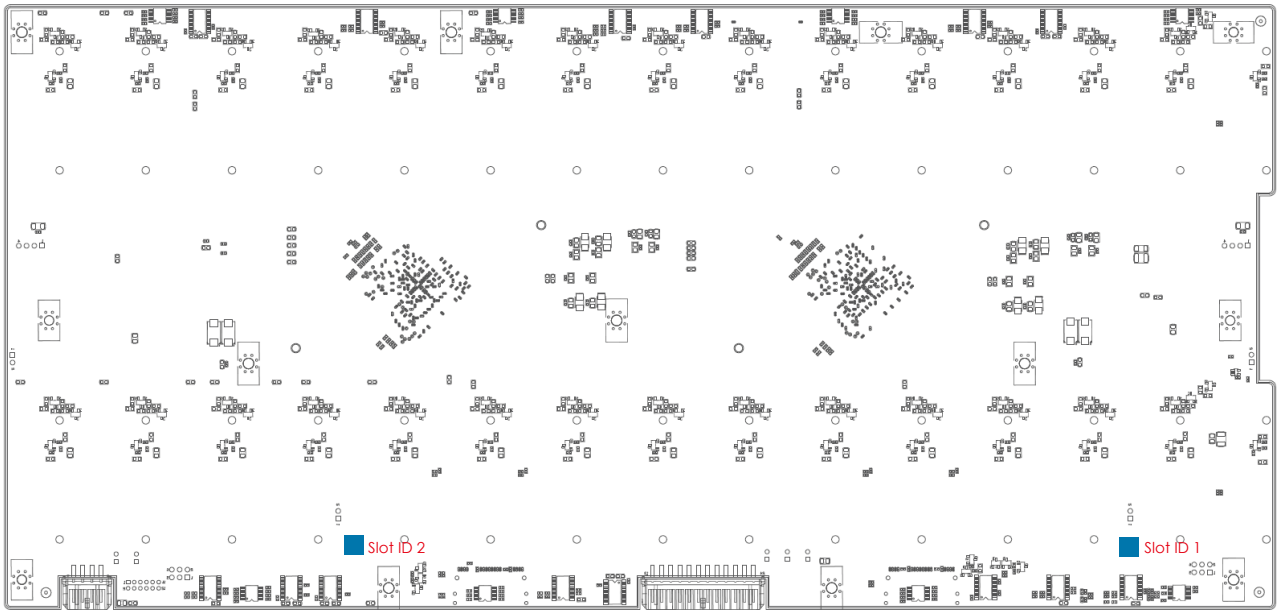


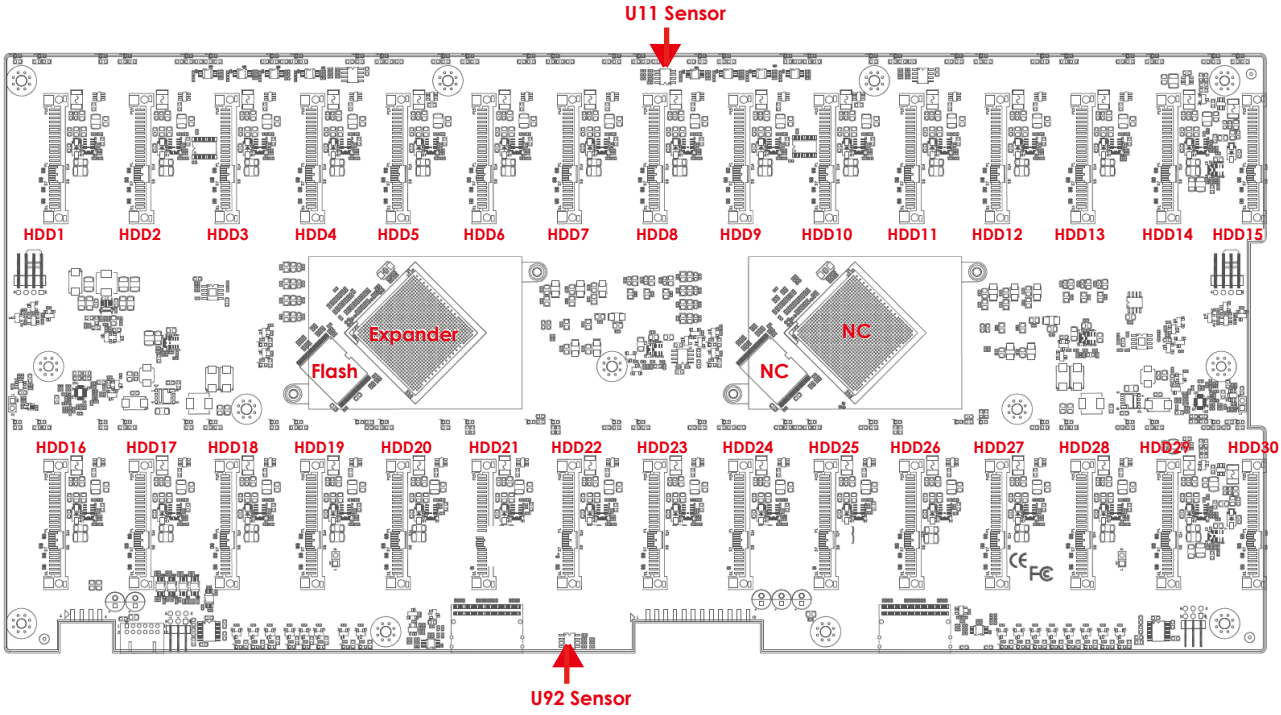
❶ Expander Blinking LED

❷ Expander HeartLED

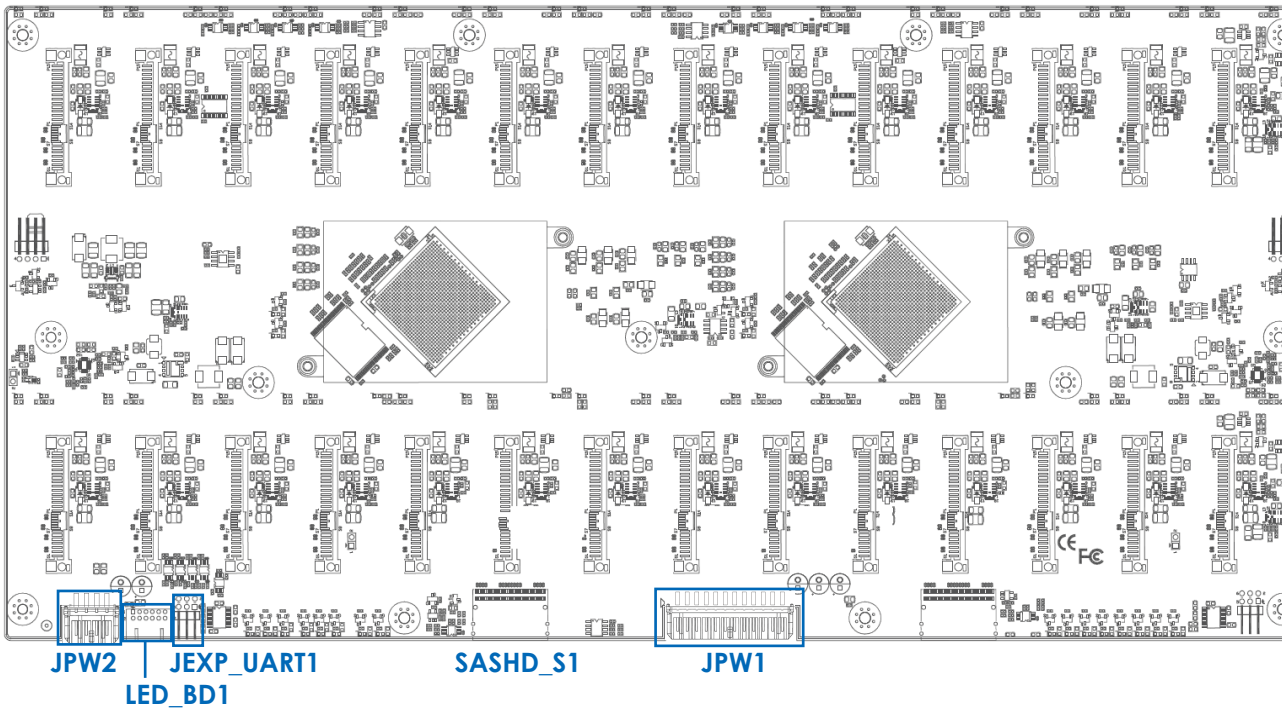
3.7 HDD Backplane: 30 Bay

3.7.1 Placement

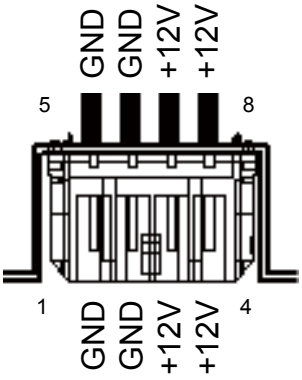




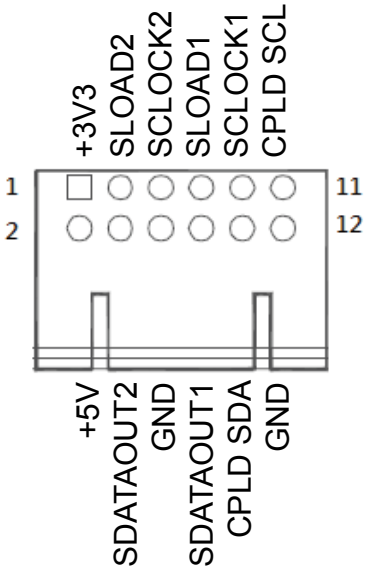
3.7.2 Connector Location



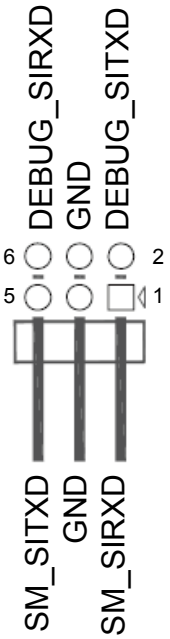
Power Connector
JPW2



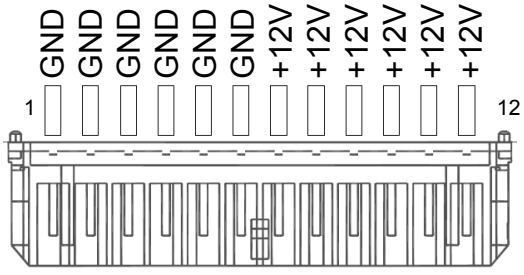
Front LED Board Control for
Display HDD LED Status
LED-BD1



Control for Expander
JEXP_UART1



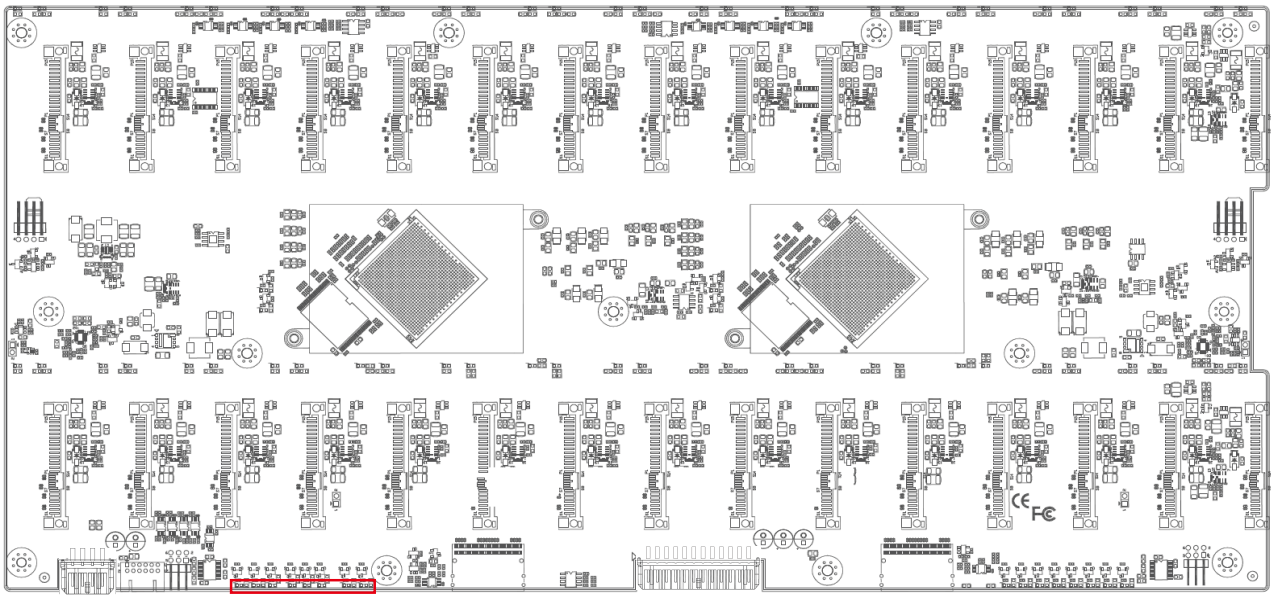
Power Connector
JPW1

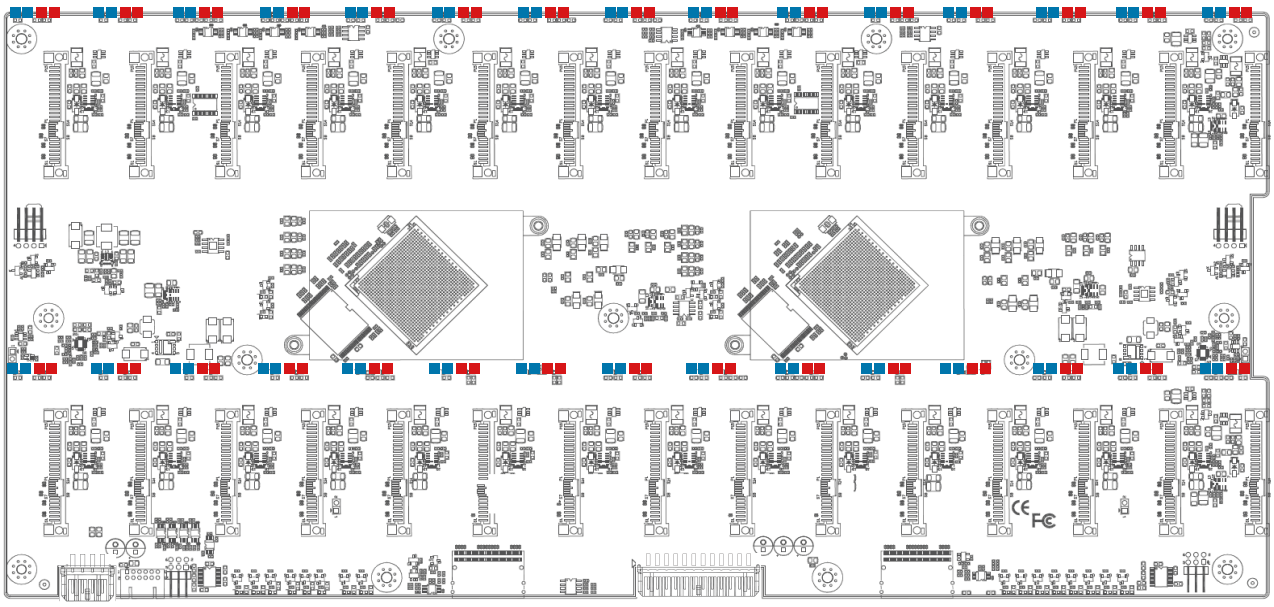


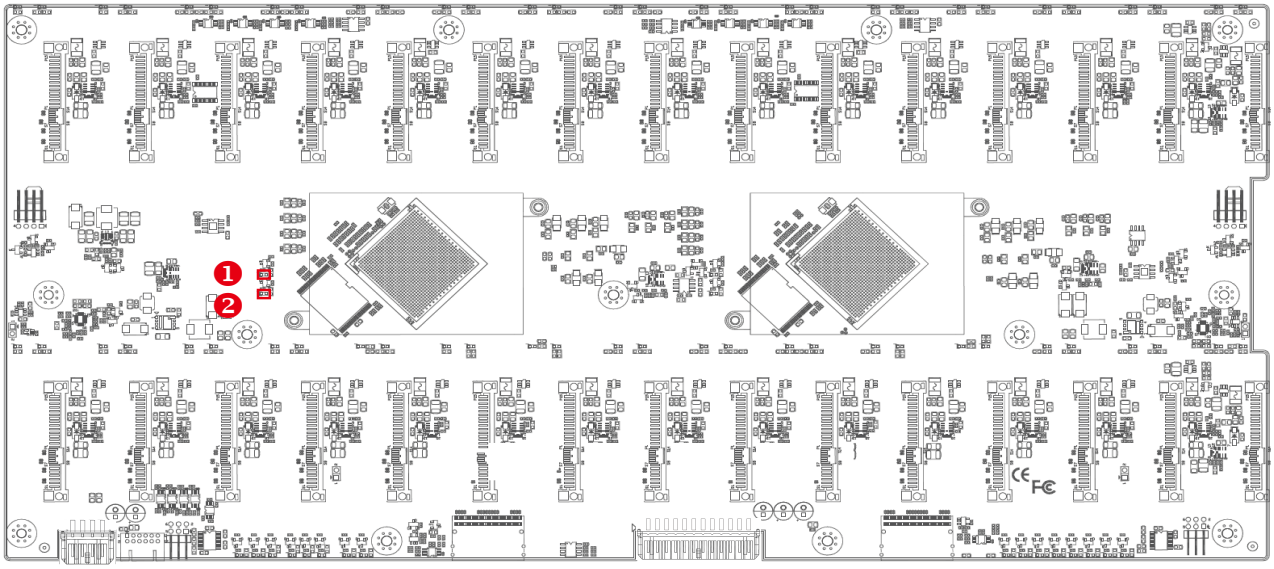
3.7.3 LED Indicator

SAS PHY Link Status (LEDA1 to LEDA8)	Blue (On)	Link up.
	Blue (Blinking)	Activity is detected.
	Off	Link down.
Expander Blink (LED31)	Blue (Blinking)	Expander is alive, 0.0833Hz (12 seconds per cycle)
Expander Heart Bit (LED33)	Blue (Blinking)	Expander FW is running
HDD Activity LEDs	Blue (On)	HDD is present.
	Blue (Blinking)	HDD Activity is detected : 8Hz
		HDD Locate : 0.5Hz
	Off	HDD is not connected or the Power is off.
HDD Fault/ Status LEDs	Red (On)	Set by any of the following bits: 1. RQST MISSING 2. RQST FAULT
	Red (Blinking)	Set by any of the following bits: 1. RQST CONS CHECK 2. RQST IN CRIT ARRAY 3. RQST IN FAILED ARRAY 4. RQST REBUILD/REMAP 5. RQST R/R ABORT 6. RQST INSERT 7. RQST REMOVE 8. PRDFAIL
	Off	No control bit is set or set by any of the following bits: 1. RQST OK 2. RQST RSVD DEVICE 3. RQST HOT SPARE 4. RQST ACTIVE 5. DO NOT REMOVE 6. RQST IDENT 7. DEVICE OFF

3.7.4 LED Location







❶ Expander Blinking LED

❷ Expander Heartbeat LED

Chapter 4. BIOS Configuration Settings

This chapter demonstrates how to configure the UEFI BIOS settings in your system device. You can enter the BIOS screen during system startup.

To enter BIOS configuration settings,
- Press **Esc** key during the Power-On-Self-Test (POST)

To enter BIOS after POST, you have to restart the system by using one of the three methods:
- Press **Ctrl + Alt + Delete.**
- Press the reset button on the system chassis.
- Turn the system off and on.

NOTE

The following pages provide the details of BIOS menu. Please be noticed that the BIOS menu are continually changing due to the BIOS updating. The BIOS menu provided are the most updated ones when this manual is written.

4.1 Navigation Keys

The navigation keys are listed below.

Function Key	Description
< ↑ > < ← > < → > < ↓ >	Select item.
< Enter >	Select and enter sub-screen.
< + > < - >	Modify selected option.
< F1 >	General help.
< F2 >	Previous Value.
< F3 >	Optimized defaults.
< F4 >	Save & Exit.
< F5> < F6 >	Change values.
< F7 >	Discard Change and Exit.
< F9 >	Load Optimal Default for all values.
< F10 >	Save changes and exit.
< F12 >	Print Screen.
< Esc >	Exit the current menu screen.

4.2 BIOS Setup

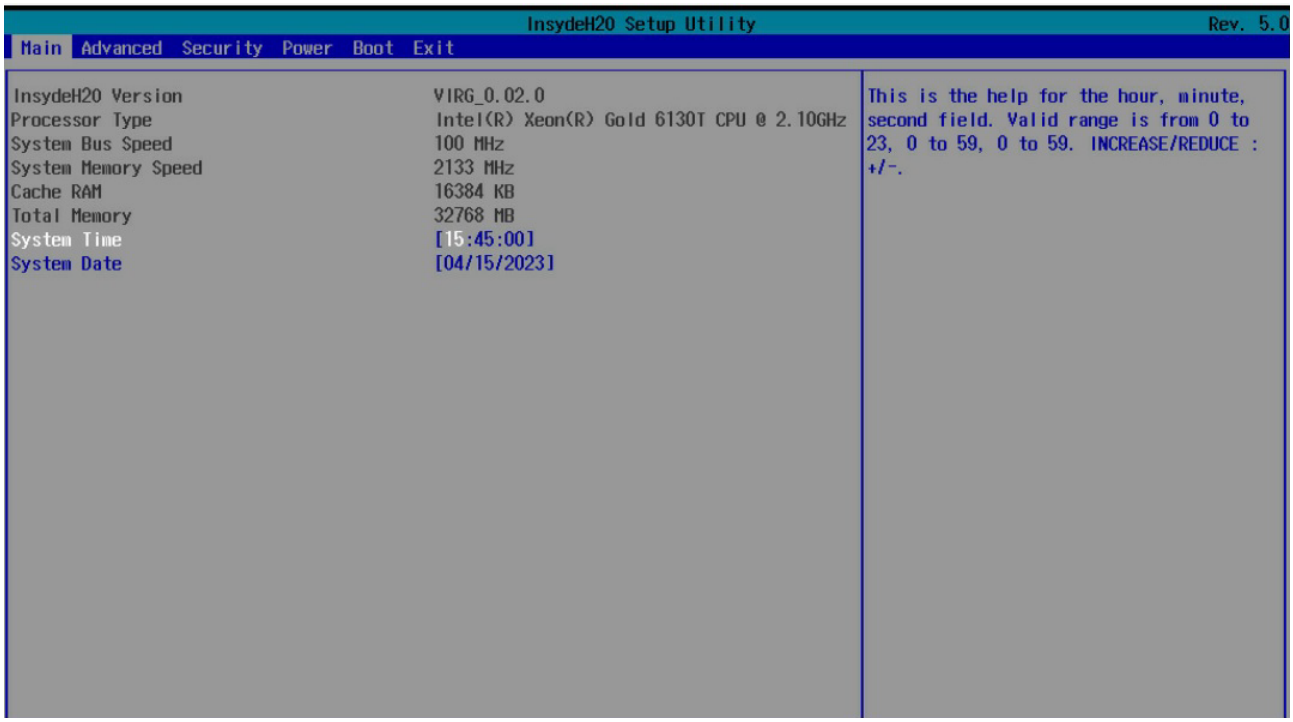
4.2.1 Menu

Press ⬅ and ➡ to select the options of the menu bar.

Press **Enter** to access the option screen.

Menu	Description
Main	Displays basic system information and date & time.
Advanced	Allows configuration of advanced system settings.
Security	Sets passwords and security functions.
Power	Sets the power management parameters.
Boot	Sets boot options, such as Quick Boot or USB Boot.

4.3 Main

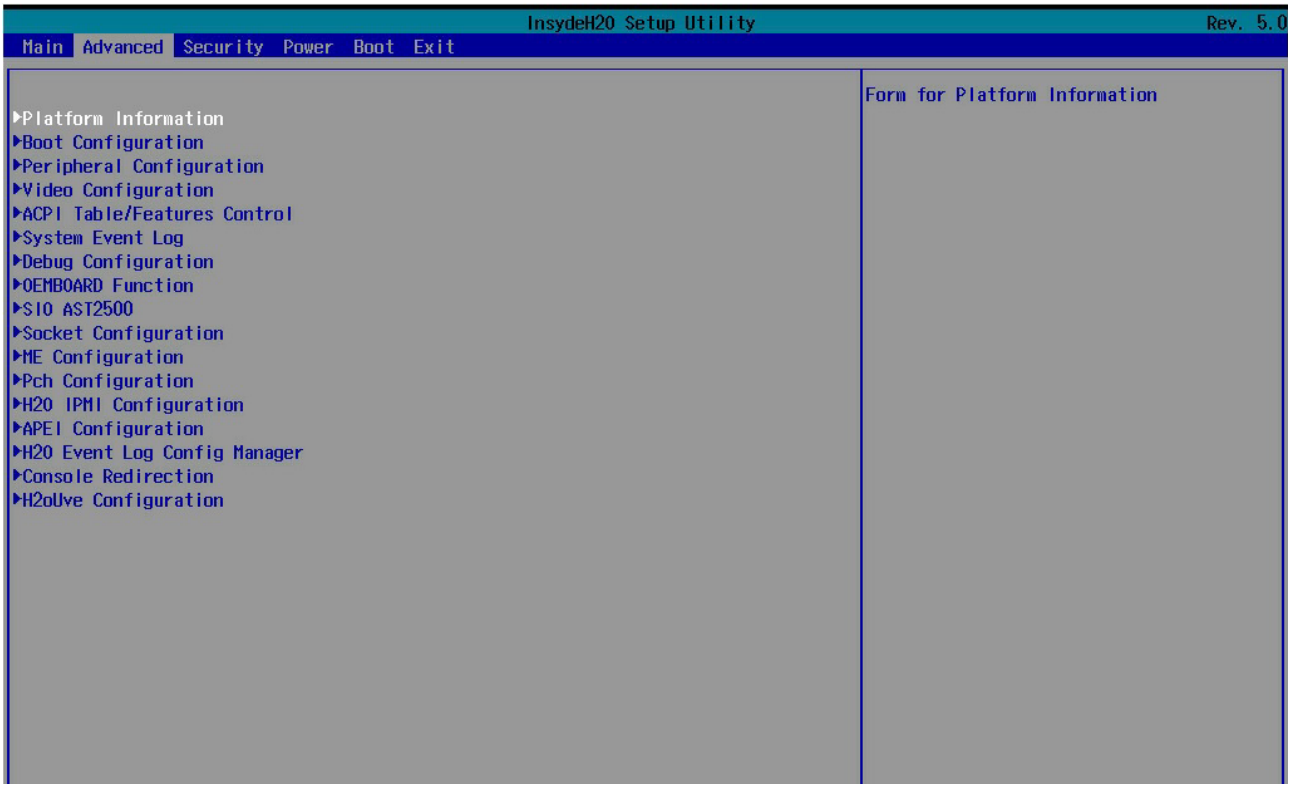


Main Option Key:

4.3.1 Main

Main	
System time	Configures the current time.
System date	Configures the current date.

4.4 Advanced



Advanced Option Key:

4.4.1 Platform Information

Platform Information
Form for platform information.

4.4.2 Boot Configuration

Boot Configuration				
Numlock	On		Off	
SCU Resolution	Auto	640*480	800*600	1024*768
CSM on Demand	Enable		Disable	
USB BIOS Support	Enable		Disable	
USB BIOS Support	Enable	Disable	UEFI Only	
BIOS Guard	Enable ASAP	Enable Proper	Enable ALAP	Enable ASAP avoid wear-out
	Enable Proper avoid wear-out	Enable ALAP avoid wear-out	Unsupport	Disable
iMS Support	Enable		Disable	

4.4.3 Peripheral Configuration

Peripheral Configuration		
Numlock	On	Off
PCIe SR-IOV	Enable	Disable
PCIe ARI	Enable	Disable
ARI Forward	Enable	Disable
Spread Spectrum	Enable	Disable
Redfish On/Off	Enable	Disable

4.4.4 Video Configuration

Video Configuration		
Display Mode	Plug In First	On Board First

4.4.5 ACPI Table/Features Control

ACPI Table/Features Control		
FACP - RTC S4 Wakeup	Enable	Disable
APIC - IO APIC Mode	Enable	Disable
ACPI Memory Debug	Enable	Disable
Low Power S0 Idle Capable	Enable	Disable
SPCR Table Support	Enable	Disable
HPET Table Support	Enable	Disable

4.4.6 System Event Log

System Event Log				
System Errors	Auto	[Enable]	Disable	
System Memory Poison	Enable	Disable		
Viral Status	Enable	Disable		
Clear Viral Status	Enable	Disable		
System Cloaking	Enable	Disable		
Ubox To Pcu Mca Enabling	Enable	Disable		
CATERR → GPIO → SMI	Enable	Disable		
Fatal Err Debug Halt	Enable	Disable		
eMCA Settings	EMCA Logging Support	Enable	Disable	
	LMCE Support	Enable	Disable	
	Ignore OS EMCA Opt-in	Enable	Disable	
	EMCA CMCI-SMI Morphing	EMCA gen 1 Lite	[EMCA gen 2 CSMI]	Disable
	EMCA MCE-SMI Enable	EMCA gen 1 Dual Mode	EMCA gen 2 - MSMI	Disable
	Corrected Error eLog	Enable	Disable	
	Memory Error eLog	Enable	Disable	
	Processor Error eLog	Enable	Disable	
Whea Settings	WHEA Support	Enable	Disable	
	Whea Log Memory Error	Enable	Disable	
	Whea Log Processor Error	Enable	Disable	
	Whea Log PCI Error	Enable	Disable	
Error Injection Settings	Mca Bank Error Injection Support	Enable	Disable	
	WHEA Error Injection Support	Enable	Disable	
	WHEA Error Injection 5.0 Extension	Enable	Disable	
	Whea PCIE Error Injection Support	Enable	Disable	

Error Injection Settings	Whea PCIe Error Injection Action Table	Enable		Disable	
	ME Seg Error Injection Support	Enable		Disable	
	Enable HA Parity Check	Enable		Disable	
	Mca Bank Warm Boot Clear Errors	Enable		Disable	
UPI Error Enabling	SMI UPI Lane Failover	Enable		Disable	
Memory Error Enabling	Memory Error	Enable		Disable	
	Memory Corrected Error	Enable		Disable	
	Memory Leaky Bucket Value	Min=0x0, Max=0xffff, [0x0]			
	Spare Interrupt	Error Pin	CMCI	SMI	Disable
	NVMCTLR Errors	Enable		Disable	
	NVMCTLR Low Priority Error Signaling	ERR0# Pin	SMI	Disable	
	NVMCTLR High Priority Error Signaling	ERR0# Pin	SMI	Disable	
	Set NGN Address Range Scrub	Enable		Disable	
	Set NGN Host Alert Policy for AIT Error	Poison		Viral	
	Set NGN Host Alert Policy for DPA Error	Poison		Viral	
IIO Error Enabling	IIO/PCH Global Error Support	Enable		Disable	
	IIO MCA Support	Enable		Disable	
	IIO Error Pin Programming				
	IIO Error Registers Clear	Enable		Disable	
	IIO LER Support	Enable		Disable	
	LER MA Error Logging	Enable		Disable	
	IIO Coherent Interface Error	Enable		Disable	
	IIO IRP0 protocol parity error	Enable		Disable	
	IIO IRP0 protocol qt overflow underflow error	Enable		Disable	
	IIO IRP0 protocol rcvd unexprsp	Enable		Disable	
	IIO IRP0 csr acc 32b unaligned	Enable		Disable	
	IIO IRP0 wrcache unceccs0 error	Enable		Disable	
	IIO IRP0 wrcache unceccs1 error	Enable		Disable	
	IIO IRP0 protocol rcvd poison error	Enable		Disable	
	IIO IRP0 wrcache correccs0 error	Enable		Disable	
	IIO IRP0 wrcache correccs1 error	Enable		Disable	

IIO Error Enabling	IIO Misc. Error	Enable	Disable
	IIO Vtd Error	Enable	Disable
	IIO Dma Error	Enable	Disable
	IIO Dmi Error	Enable	Disable
	PCIE Error	Enable	Disable
	IIO PCIE Additional Corrected Error	Enable	Disable
	IIO PCIE Additional Uncorrected Error	Enable	Disable
	IIO PCIE AER Spec Compliant	Enable	Disable
PCIe Error Enabling	Corrected Error	Enable	Disable
	Uncorrected Error	Enable	Disable
	Fatal Error Enable	Enable	Disable
	PCIE Corrected Error Threshold Counter	Enable	Disable
	PCIE Corrected Error Threshold Mask	Min=0x0, Max=0x3f	
	PCIE Corrected Error Threshold	Min=0x0, Max=0x7fff	
	PCIE AER Corrected Errors	Enable	Disable
	PCIE AER Advisory Nonfatal Error	Enable	Disable
	PCIE AER Nonfatal Error	Enable	Disable
	PCIE AER Fatal Error	Enable	Disable
	SERR Propagation	Enable	Disable
	PERR Propagation	Enable	Disable
	Signal to OS on SERR	Enable	Disable
	Signal to OS on PERR	Enable	Disable

4.4.7 Debug Configuration

Debug Configuration			
RAM	0	1	None
Trace Hub	0	1	None
Additional Post Codes	Enable	Disable	

4.4.8 OEMBoard Function

OEMBOARD Function				
Messiah Function	SMBIOS Updated	SMBIOS Updated	Auto	By Utility
	SMBIOS TO BMC Redfish	Write SMBIOS to BMC	Enable	Disable
	Halt On Error Function	Halt On Error	Enable	Disable
	Manufacturing Function	Manufacturing Test Mode	Enable	Disable
		Dumped Storage	USB Storage	SATA Storage
		USB Test Function	Enable	Disable
		SATA Test Function	Enable	Disable

4.4.9 SIO AST2500

SIO AST2500				
Serial Port A	Auto	Enable	Disable	
Base I/O Address	2E8	2F8	3E8	3F8
Interrupt	IRQ3		IRQ4	
Serial Port B	Auto	Enable	Disable	
Base I/O Address	2E8	2F8	3E8	3F8
Interrupt	IRQ3		IRQ4	

4.4.10 Socket Configuration

Socket Configuration					
Processor Configuration	Hyper-Threading [ALL]	Enable	Disable		
	VMX	Enable	Disable		
	Enable SMX	Enable	Disable		
	Lock Chipset	Enable	Disable		
	BIOS ACM Error Reset	Enable	Disable		
	MSR Lock Control	Enable	Disable		
	Extended APIC	Enable	Disable		
Common RefCode Configuration	MMCFG Size	64M	128M	256M	
		512M	1G	2G	
	MMIO High Base	56T	40T	24T	
		16T	4T	1T	
	MMIO High Granularity Size	1G	4G	16G	
		64G	256G	1024G	
	Serial Debug Message Level	Disable	Minimum		
		Normal	Maximum		
UPI Configuration	UPI Status	Link Speed Mode	Slow	Fast	
		Link Frequency Select	9.6Gb/s	10.4Gb/s	
			Auto	Use Per Link Setting	
		Link L0p Enable	Auto	Enable	Disable
		Link L1 Enable	Auto	Enable	Disable
		Legacy VGA Socket	Min=0, Max=3		
		Legacy VGA Stack	Min=0, Max=6		
Memory Configuration	Enforce POR	Auto	POR	Disable	
	Memory Frequency	Auto	Selections in MHz		
	IMC BCLK	Auto	100 MHz	133 MHz	
	MRC Promote Warnings	Enable	Disable		
	Promote Warnings	Enable	Disable		
	Halt on mem Training Error	Enable	Disable		
	Attempt Fast Boot	Auto	Enable	Disable	
	Attempt Fast Cold Boot	Auto	Enable	Disable	
	MemTest On Fast Boot	Auto	Enable	Disable	
	Enable ADR	Auto	Disable		
	Legacy ADR Mode	Enable	Disable		
	ADR Data Save Mode	NVDIMMs	Batterybacked DIMMs	Disable	

Memory Configuration	Erase-Arm NVDIMMs	Auto	Enable	Disable	
	Restore NVDIMMs	Enable	Disable		
	Interleave NVDIMMs	Enable	Disable		
	2x Refresh Enable	Auto	Enable	Disable	
	SMB Clock Frequency	Auto	100 Khz	400Khz	1 Mhz
	Memory Map	Volatile Memory Mode	Auto	1LM	2LM
		AppDirect cache	Auto	Enable	Disable
		eADR Support	Auto	Enable	Disable
		1LM Memory Interleave Granularity	Auto	256B Target, 256B Channel	64B Target, 64B Channel
		IMC Interleaving	Auto	1-way Interleave	2-way Interleave
		Channel Interleaving	Auto	1-way Interleave	
			2-way Interleave	3-way Interleave	
		Rank Interleaving	Auto	1-way Interleave	2-way Interleave
			4-way Interleave	8-way Interleave	
		Socket Interleave Below 4GB	Enable	Disable	
	Memory RAS Configuration	Static Virtual Lockstep Mode	Enable	Disable	
		Mirror mode	Enable Mirror Mode (1LM)	Disable	
		Mirror TAD0	Enable	Disable	
		Enable Partial Mirror	Partial Mirror Mode (1LM)	Disable	
		UEFI ARM Mirror	Enable	Disable	
		Memory Rank Sparing	Enable	Disable	
		Correctable Error Threshold	Min= 0x0, Max= 0x7fff		
		SDDC Plus One	Enable	Disable	
		ADDDC Sparing	Enable	Disable	
		Set NGN Die Sparing	Enable	Disable	
		Patrol Scrub	Enable	Disable	
		Patrol Scrub Interval	Min= 0, Max=24		
		Patrol Scrub Address Mode	Reverse Address	System Physical Address	
	NGN Configuration	NGNVM DIMM Secure Erase Unit	Erase All DIMMs	Enable	Disable
			S0 CH0~5 S1 CH0~5 S2 CH0~5 S3 CH0~5	Enable	Disable

Memory Configuration	NGN Configuration	NGN Factory Reset/Clear	Enable	Disable		
		Average Power Budget	Min=10000, Max=18000			
		Publish ARS capability	Auto	Enable	Disable	
		NGN CMD Time	Auto	1N	2N	
		NGN ECC Read Check	Auto	Enable	Disable	
		Thermal Throttling Thresholds Offset	Auto	Enable		
		CR FastGo Configuration	Auto	Default	Option 1	
			Option 2	Option 3	Option 4	Option 5
		CR Latch System Shutdown State	Enable	Disable		
		Snoopy mode for 2LM	Enable	Disable		
		Extended Type 17 Structure	Enable	Disable		
		Enable power cycle policy	Enable	Disable		
		Snoopy mode for AD	Enable	Disable		
		App Direct Memory Hole	Enable	Disable		
		LSx implementation	SWSMI	ASL		
		SMBus Max Access Time	Min= 0, Max= 4294967295			
		SMBus Release Delay	Min= 0, Max= 4294967295			
	Memory Dfx Configuration	Load NGN DIMM Management Drivers	Auto	Enable	Disable	
		Lock NGN CSRs	Auto	Enable	Disable	
		NGN ECC Correctable error	Auto	Enable	Disable	
		NGN ECC Write Check	Auto	Enable	Disable	
		NGN ECC Write Retry Flow Exit	Auto	Enable	Disable	
		C/A Parity Enable	Auto	Enable	Disable	
		High Address Region	Auto	Bit Postion 33~45		
		Low Mem Channel Config	Auto	Channel 0	Channel 1	Channel 2
		Configuration Mask for 2LM	Normal	Aggressive		
		CR Halt/Warn Mixed SKU	Auto	Enable	Disable	
		Crystal Ridge ACPI Debug Interface	ACPI Debug Object	COM1		

Memory Configuration	Memory Dfx Configuration	NFIT debug logs	Enable	Disable	
		NFIT NVDIMM SKU Based	Enable	Disable	
		Skip ARS on Boot	Enable	Disable	
		ECC Checking	Auto	Enable	Disable
		2GB Short Stroke Configuration	Interleaved	Non-Interleaved	Disable
		Force 1-Ch Way in FM 2-2-2 Configuration	Enable	Disable	
IIO Configuration	PCI 64-Bit Resource Allocation	Enable	Disable		
	PCIe Train by BIOS	Yes	No		
	PCIe Hot Plug	Auto	Manual	Enable	Disable
	PCIe ACPI Hot Plug	Enable	Disable	Per-Port	
	MC Base Address Range	Auto	Below 4G		
	MC Index Position	12	20		
	MC Num Group	1	8	32	64
	PCI-E Completion Timeout (Global) Disable	Yes	No	Per-Port	
	PCI-E Global Timeout Value	50us to 10ms	16ms to 55ms	65ms to 210ms	260ms to 900ms
		1s to 3.5s	4s to 13s	17s to 64s	
	PCI-E ASPM Support (Global)	L1 Only	Disable	Per-Port	
Advanced Power Configuration	CPU P State Control	WFR Uncore GV Rate Reduction	Auto	Enable	Disable
		Uncore Freq Scaling (UFS)	Enable	Disable	
		SpeedStep (Pstates)	Enable	Disable	
		Config TDP	Nominal	Level 1	Level 2
		P State Domain	All	One	
		EIST PSD Function	HW_ALL	SW_ALL	SW_ANY
		SINGLE_PCTL	Enable	Disable	
		Single Power Domain (SPD)	Enable	Disable	
		Boot performance mode	Max Performance	Max Efficient	Set by Intel Node Manager
		Energy Efficient Turbo	Enable	Disable	
		Turbo Mode	Enable	Disable	
		CPU Flex Ratio Override	Enable	Disable	
	Hardware PM State Control	Hardware P-States	Disable	Native Mode	
			Out of Band Mode	Native Mode with No Legacy Support	
		HardwarePM Interrupt	Enable	Disable	
		EPP Enable	Enable	Disable	

Advanced Power Configuration	Hardware PM State Control	EPP profile	Performance	Balanced Performance
			Balanced Power	Power
		APS rocketing	Enable	Disable
		Scalability	Enable	Disable
		PPO-Budget	Enable	Disable
	Package C State Control	Package C State	C0/C1 state	C2 state
			C6(non Retention)	C6(Retention) state
			No Limit	Auto
		C2C3TT	Min=0, Max=255	
		PKG C-state Lat. Neg.	Enable	Disable
		LTR IIO Input	Take IIO LTR input	Ignore IIO LTR input

4.4.11 ME Configuration

ME Configuration					
Server ME Configuration	General ME Configuration	Altitude	Min=0x0, Max=0xffff		
		MCTP Bus Owner	Min=0x0, Max=0xffff		
Server ME Debug Configuration	Server ME General Configuration	ME Initialization Complete Timeout	Min=0, Max=12		
		Enable HSIO Messaging	Enable	Disable	
		DRAM Init Done Enable	0	1	None
		DRAM Initialization Status	Auto - true status	0 - Success	
			1 - No Memory in Channels	2 - Memory Init Error	
		Host Reset Warning	0	[1]	None
		Enable Pre-DramInit Done ME Reset	0	1	None
		HMRFPO_LOCK Message	Enable	Disable	
		HMRFPO_ENABLE Message	Enable	Disable	
		END_OF_POST Message	Enable	Disable	
		HECI-1 Enable HECI-2 Enable HECI-3 Enable	Enable	Disable	
	Override ICC Clock Settings	NM Configuration	Boot Mode Override	0	
				1	
				None	
			Boot Mode	Performance Optimized	
				Power Optimized	
			Cores Disable Override	0	
				1	
				None	
			Cores To Disable	Min=0x0, Max=0x7f	
			Power Measurement Override	0	
				1	
				None	
			Power Measurement Override	Enable	
				Disable	

Server ME Debug Configuration	Override ICC Clock Settings	NM Configuration	Hardware Change Override	0
				1
				None
			Hardware Changed	Yes
				No
		Override ICC Clock Settings	Override ICC Clock Settings	0
				1
				None
			ICC Clock Spread Spectrum	0
				1
				None

4.4.12 PCH Configuration

PCH Configuration				
PCH Devices	PCH state after G3	S0	S5	Last State
PCH SATA Configuration	SATA Controller	Enable	Disable	
	Configure SATA as	AHCI	RAID	
	Support Aggressive Link Power Management	Enable	Disable	
	Alternate Device ID on RAID	Enable	Disable	
	Load EFI Driver for RAID	Enable	Disable	
	Port 0	Enable	Disable	
	SATA Port 0 DevSlp	Enable	Disable	
	Hot Plug	Enable	Disable	
	Configure as eSATA	Enable	Disable	
	Mechanical Presence Switch	Enable	Disable	
	Spin Up Device	Enable	Disable	
	SATA Device Type	Hard Disk Drive	Sata State Drive	
	SATA Topology	Unknown	ISATA	Direct Connect
	Port 1~7	Enable	Disable	
	SATA Port 1 DevSlp	Enable	Disable	
	Hot Plug	Enable	Disable	
	Configure as eSATA	Enable	Disable	
	SATA HDD Unlock	Enable	Disable	
	SATA Led locate	Enable	Disable	
	RAID 0	Enable	Disable	
	RAID 1	Enable	Disable	
	RAID 10	Enable	Disable	
	RAID 5	Enable	Disable	
	Intel Rapid Recovery Technology	Enable	Disable	
	RAID Option ROM UI banner	Enable	Disable	
	IRRT Only on ESATA	Enable	Disable	
	Smart Response Technology	Enable	Disable	
	RAID OROM prompt delay	2 Seconds	4 Seconds	
		6 Seconds	8 Seconds	
PCH sSATA Configuration	sSATA Controller	Enable	Disable	
	Configure sSATA as	AHCI	RAID	
	Support Aggressive Link Power Management	Enable	Disable	

PCH sSATA Configuration	Alternate Device ID on RAID	Enable	Disable	
	Load EFI Driver for RAID	Enable	Disable	
	Port 0	Enable	Disable	
	Hot Plug	Enable	Disable	
	Configure as eSATA	Enable	Disable	
	Spin Up Device	Enable	Disable	
	sSATA Device Type	Hard Disk Drive	Sata State Drive	
	SATA Topology	Unknown	ISATA	Direct Connect
		Flex	M.2	
	Port 1~5	Enable	Disable	
	Hot Plug	Enable	Disable	
	Configure as eSATA	Enable	Disable	
	SATA HDD Unlock	Enable	Disable	
	SATA Led locate	Enable	Disable	
	RAID 0	Enable	Disable	
	RAID 1	Enable	Disable	
	RAID 10	Enable	Disable	
	RAID 5	Enable	Disable	
	Intel Rapid Recovery Technology	Enable	Disable	
	RAID Option ROM UI banner	Enable	Disable	
	IRRT Only on ESATA	Enable	Disable	
	Smart Response Technology	Enable	Disable	
	RAID OROM prompt delay	2 Seconds	4 Seconds	
		6 Seconds	8 Seconds	
	PCH Internal LAN	Enable	Disable	
	Wake on LAN	Enable	Disable	
	SLP_LAN# Low on DC Power	Enable	Disable	
	K1 off	Enable	Disable	
	FPK Port 1-4	Enable	Management	Disable
	PCI Delay Optimization	Enable	Disable	
	Compliance Test Mode	Enable	Disable	
	PCI-E ASPM Support (Global)	Per individual port	L1 Only	
	CTO for Uplink x16 CTO for Uplink x8	40-50ms(spec 50us-50ms)	40-50ms(spec 16ms-55ms)	160-170ms (spec 65ms-210ms)
		400-500ms (spec 260ms-900ms)	1.6-1.7s(spec 1s-3.5s)	Disable
	MPL for Uplink x16 MPL for Uplink x8	MPL 128B	MPL 256B	MPL 512B
	PCIE Clock Gating	Enable	Disable	
	PCH DMI ASPM	Platform-POR	ASPM L	Disable
	DMI Link Extended Synch Control	Enable	Disable	
	Stop and Scream	Enable	Disable	
	Expanded SPI TPM Transaction Length Enable	Enable	Disable	
	Subtractive Decode	Enable	Disable	

PCH sSATA Configuration	Subtractive Decode Port#	Min=0, Max=7			
	PCIe Root Port Function Swapping	Enable		Disable	
	Max Read Request Size	MRRS 128B	MRRS 256B	MRRS 512B	
		MRRS1024B	MRRS2048	MRRS4096	
	PCI Express Root Port 1-20	PCIE ASPM	Disable ASPM	ASPM L1	ASPM Auto
		L1 Substates	Disable	L1.1	
			L1.2	L1.1 & L1.2	
		Gen 3 Eq Phase3 Method	[Hardware]	Static Coeff	Software Search
		ACS	Enable	Disable	
		URR	Enable	Disable	
		FER	Enable	Disable	
		NFER	Enable	Disable	
		CER	Enable	Disable	
		SEFE	Enable	Disable	
		SENFE	Enable	Disable	
		SECE	Enable	Disable	
		PME SCI	Enable	Disable	
		Hot Plug	Enable	Disable	
		Advanced Error Reporting	Enable	Disable	
		PCIe Speed	Auto	Gen1	
			Gen2	Gen3	
		MSI	Enable	Disable	
		PCIE Lane Topology	Unknown	x1	
			x4	Sata Express	
			M.2		
		Max Payload Size	MPL	[MPL 128B]	MPL 256B
		Compl. Timeout	40-50ms (spec 50us-50ms)	40-50ms (spec 16ms-55ms)	160-170ms (spec 65ms-210ms)
			400-500ms (spec 260ms-900ms)	1.6-1.7s (spec 1s-3.5s)	Disable
	PCH PCIe LTR Configuration	PCH PCIE1 LTR	Enable	Disable	
		Snoop Latency Override	Auto	Manual	Disable
		Snoop Latency Value	Min=0, Max=1023		
		Snoop Latency Multiplier	1 ns	32 ns	1024 ns
			1048576 ns	32768 ns	33554432 ns
		Non Snoop Latency Override	Auto	Manual	Disable
		Non Snoop Latency Value	Min=0, Max=102		
		Non Snoop Latency Multiplier	1 ns	32 ns	1024 ns
			1048576 ns	32768 ns	33554432 ns
		PCIE1 LTR Lock	Enable	Disable	

4.4.13 H2O IPMI Configuration

H2O IPMI Configuration			
IPMI Support	Enable	Disable	
BMC Warmup Time	Min=0, Max=240		
ACPI SPMI Table	Enable	Disable	
Boot Option Support	Enable	Disable	
Set BIOS version to BMC	Enable	Disable	
BMC Configuration	Watchdog Timer Support	Enable	Disable
	Not disable in OS	Enable	Disable
	Watchdog Timer Timeout	Min=2, Max=8	
	Watchdog Timer Action	No Action	Hard Reset
		Power Down	Power Cycle
	Power Cycle Time Support	Enable	Disable
	Power Cycle Time	Min=0, Max=255	
	Power Button	Enable	Disable
	Reset Button	Enable	Disable
	NMI Button	Enable	Disable
	LAN Channel Number	Min=0, Max=15	
	IPv4 Source	Static	DHCP
	IPv6 Mode	Enable	Disable
	IPv6 Prefix Length	Min=0, Max=15	
SDR List	SDR List Support	Enable	Disable

4.4.14 APEI Configuration

APEI Configuration					
ACPI Platform Error Interface	APEI Support	Enable		Disable	
	APEI Error Injection	MEMORY_CE	MEMORY_UE_ NON_FATAL	MEMORY_UE_ FATAL	PCIE_CE
		PCIE_UE_ NON_FATAL	PCIE_UE_ FATAL	Disable	
	Defrag Level	ROM Space under 1/4	ROM Space under 1/3	ROM Space under 1/2	Every time When Error Occur
	APEI UEFI Revision	UEFI 2.2		UEFI 2.3.1	

4.4.15 H2O Event Log Config Manager

H2O Event Log Config Manager	
Configuration Pages	Read only.
Event And Message Pages	

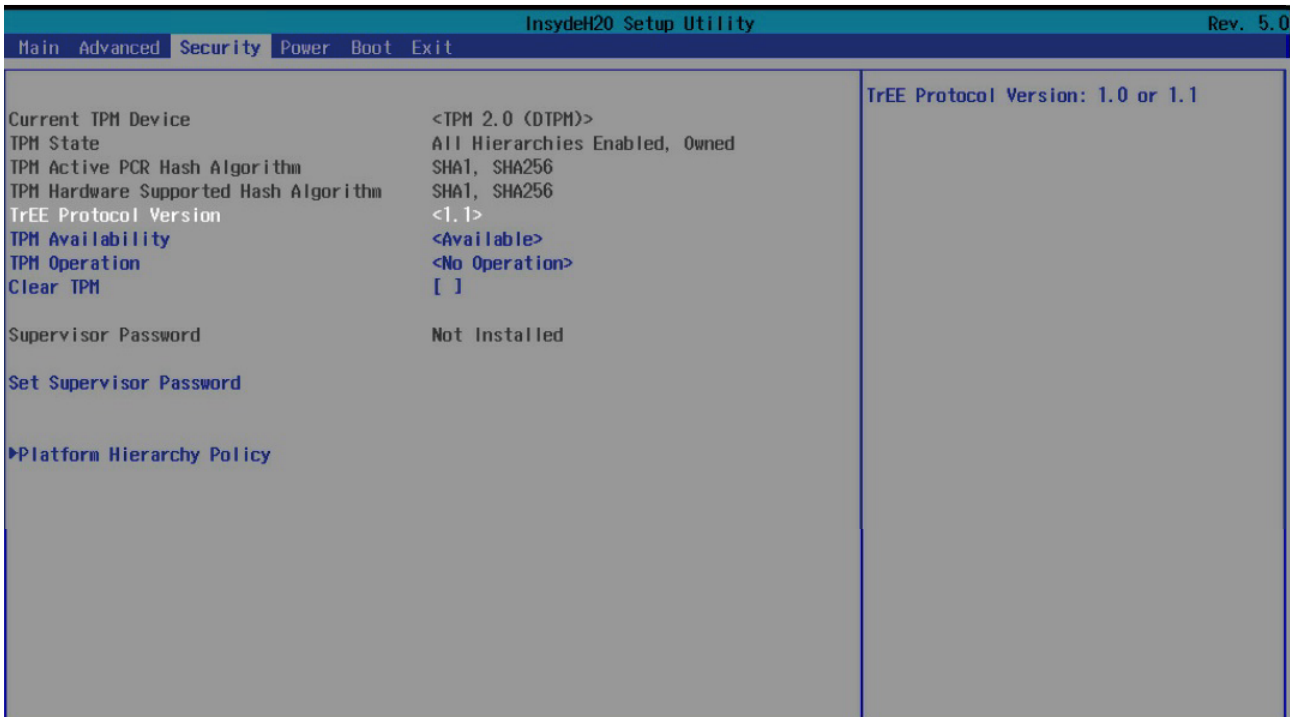
4.4.16 H2oUve Configuration

H2oUve Redirection		
H2OUVE Support	[Enable]	Disable

4.4.17 Console Redirection

Console Redirection									
Console Serial Redirect	Enable					Disable			
Terminal Type	VT_100		VT_100+			VT_UTF8		PC_ANSI	
Baud Rate	1200	2400	4800	9600		19200	38400	57600	115200
Data Bits	7 Bits					8 Bits			
Parity	Even		Odd			None			
Stop Bits	1 Bits					2 Bits			
Flow Control	RTS/CTS		XON/XOFF			None			
Information Wait Time	0 second	2 seconds	5 seconds	10 seconds	30 seconds				
C.R. After Legacy Boot	Yes					No			
Text Mode Resolution	Auto	Force 80x25	Force 80x24 (DEL FIRST ROW)	Force 80x24 (DEL LAST ROW)	Limit 128x40				
Auto Refresh	Enable					Disable			
Auto adjust Terminal resolution	Enable					Disable			

4.5 Security

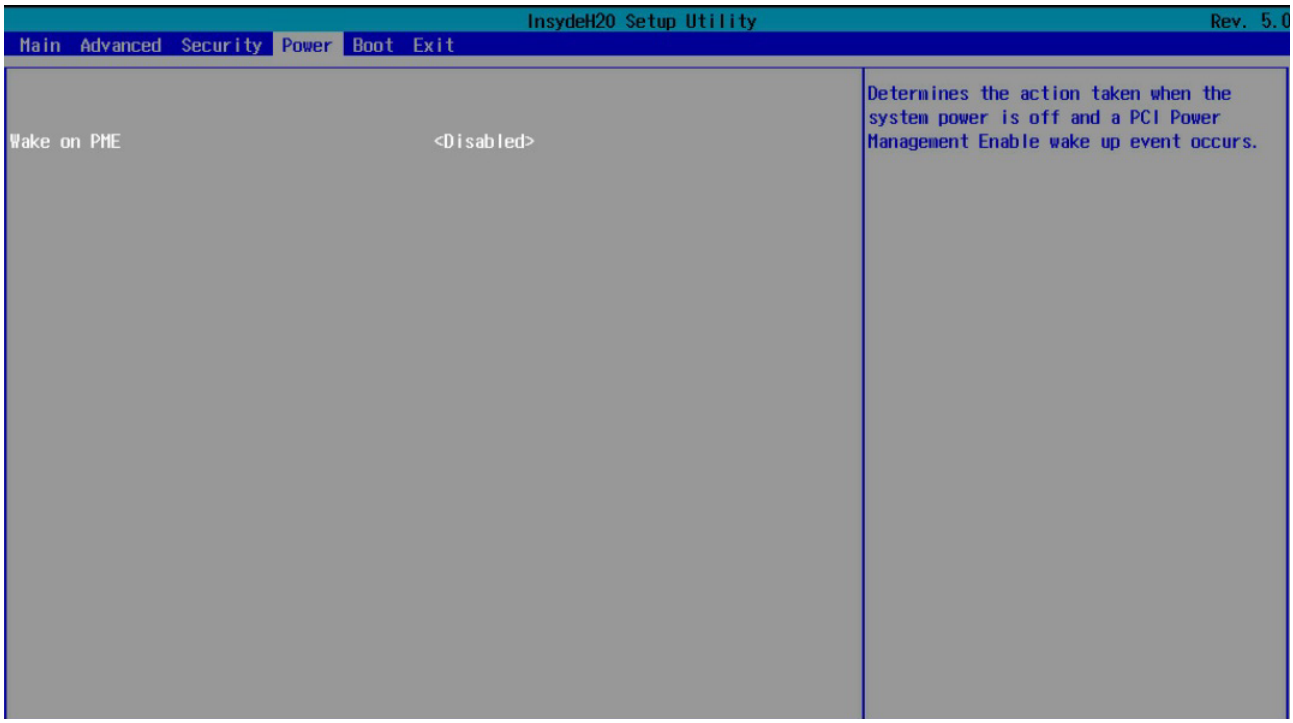


Security Option Key:

4.5.1 Security

Security			
Current TPM Device	Not Detected	TPM 1.2	TPM 2.0
TrEE Protocol Version	1.0	1.1	
TPM Availability	Available	Hidden	
TPM Operation	No operation	Disable and Deactivate	Enable and Activate
Clear TPM	0	1	None
Set Supervisor Password	Press **Enter** to select and option. Press **Esc** to exit.		
Platform Hierarchy Policy	Read only.		

4.6 Power

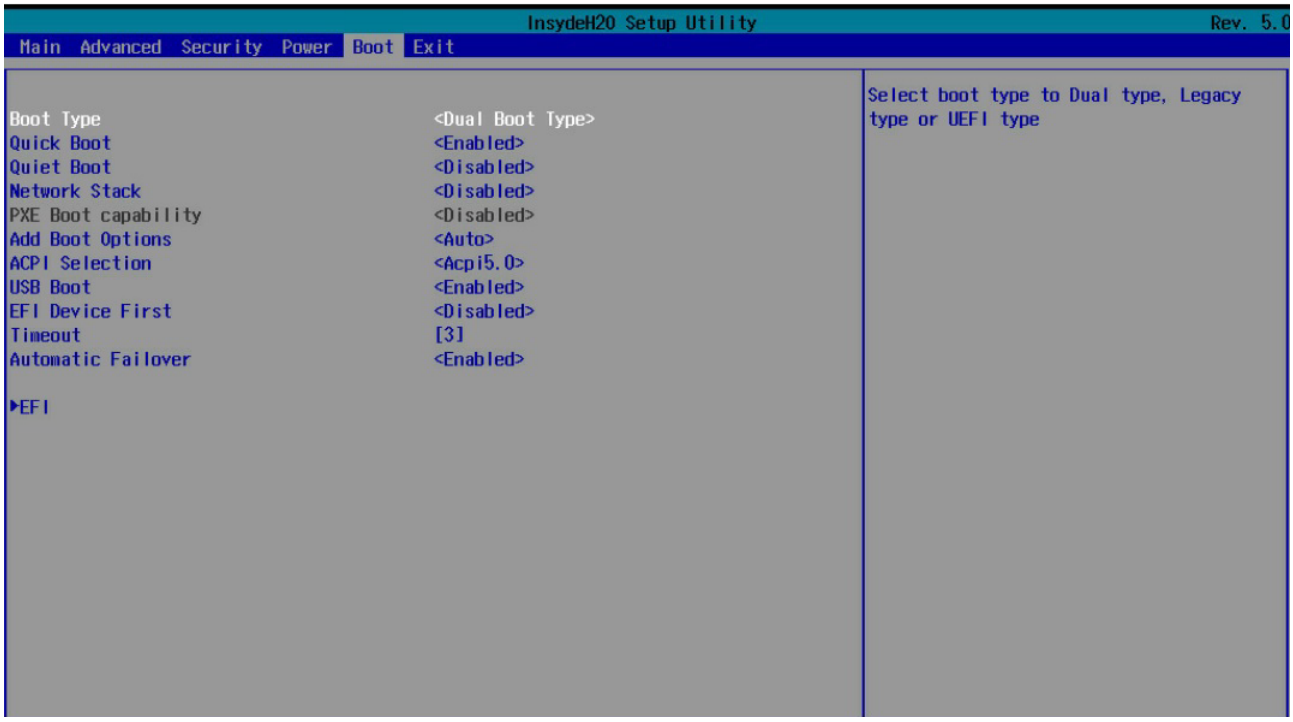


Power Option Key:

4.6.1 Power

Power		
Wake on PME	Enable	Disable
Wake on S5 Time	HH(0):MM(0):SS(0)	
Day of Month	Min=1, Max=31	

4.7 Boot

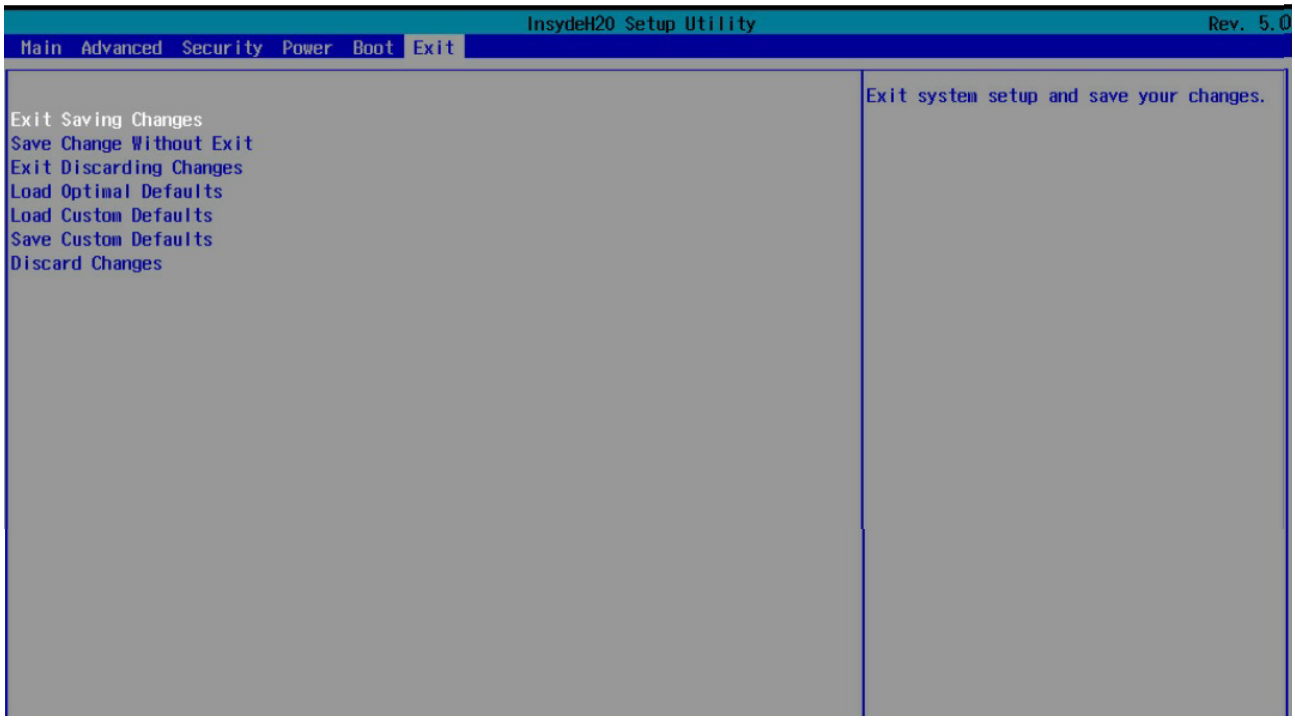


Boot Option Key:

4.7.1 Boot

Boot			
Boot Type	Dual Boot Type	Legacy Boot Type	UEFI Boot Type
Quick Boot	Enable	Disable	
Quiet Boot	Enable	Disable	
Network Stack	Enable	Disable	
PXE Boot to LAN	Enable	Disable	
PXE Boot capability	Disable	UEFI:IPv4	UEFI:IPv6
	UEFI:IPv4/UEFI:IPv6	Legacy	
Add Boot Options	First	Last	Auto
ACPI Selection	Acpi1.0B	Acpi3.0	Acpi4.0
	Acpi5.0	Acpi6.0	Acpi6.1
USB Boot	Enable	Disable	
EFI Device First	Enable	Disable	
UEFI OS Fast Boot	Enable	Disable	
USB Hot Key Support	Enable	Disable	
Timeout	Min=0, Max=10		
Automatic Failover	Enable	Disable	

4.8 Exit



Exit Option Key:

4.8.1 Exit

Save and Exit	
Exit Saving Changes	Exit system setup and save your changes.
Save Change Without Exit	Save your changes without exiting the system.
Exit Discarding Changes	Discard your changes when existing the system.
Load Optimal Defaults	Load optimal default items.
Load Custom Defaults	Resets the BIOS settings to the default values and overwrites any previously customized settings.
Save Custom Defaults	Saves the cumostomized defaults in BIOS settings.
Discard Changes	Discard your changes.

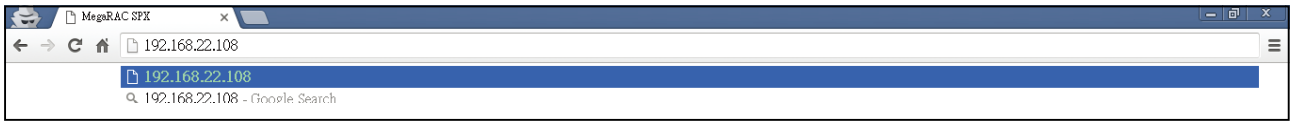
Chapter 5. BMC Configuration Settings

5.1 Login

> **NOTE**
> This feature works with JAVA 6 Runtime installed Console Environment

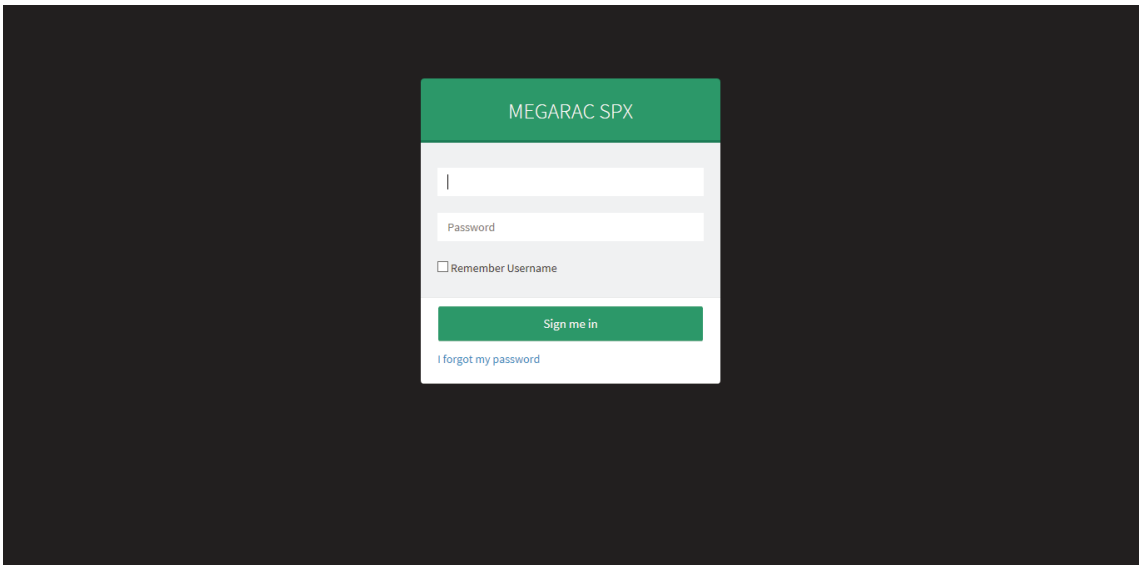
The IP source default is DHCP. You can change the IP source to DHCP or Static by the BIOS utility or the system check.

Step 1 Open the browser then type the BMC IP address.



Step 2 Use the default user name and password for first-time BMC WEB GUI login.

Field:	Default
UserName:	admin
Password:	admin



> **NOTE**
> The default user name and password are in lower-case characters.

> **NOTE**
> Users who login the root user name and password will have full administrative power. The root password can be changed after login.

5.2 Web GUI

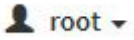
5.2.1 Menu Bar

Click to select the options of the menu bar.

Menu	Description
Dashboard	The Dashboard page gives the overall information about the status of a device.
Sensor	The Sensor Readings page displays all the sensor related information.
FRU Information	The FRU Information page displays the details for FRU devices in the system.
Logs and Reports	The Logs and Reports page monitors and reports on the status of IPMI event and video.
Settings	The Settings page allows you to configure various basic settings, such as date & time, KMV Mouse, Services, and ect.
Remote Control	The Remote Control page allows you to remotely manage server hardware components.
Image Redirection	The Image Redirection page is used to configure the image into BMC for redirection.
Power Control	The Power Control page allows you to view and control the power of your server.
Maintenance	This group of pages allows you to do maintenance tasks on the device.
Sign out	The Sign out page allows you to log out of the web GUI.

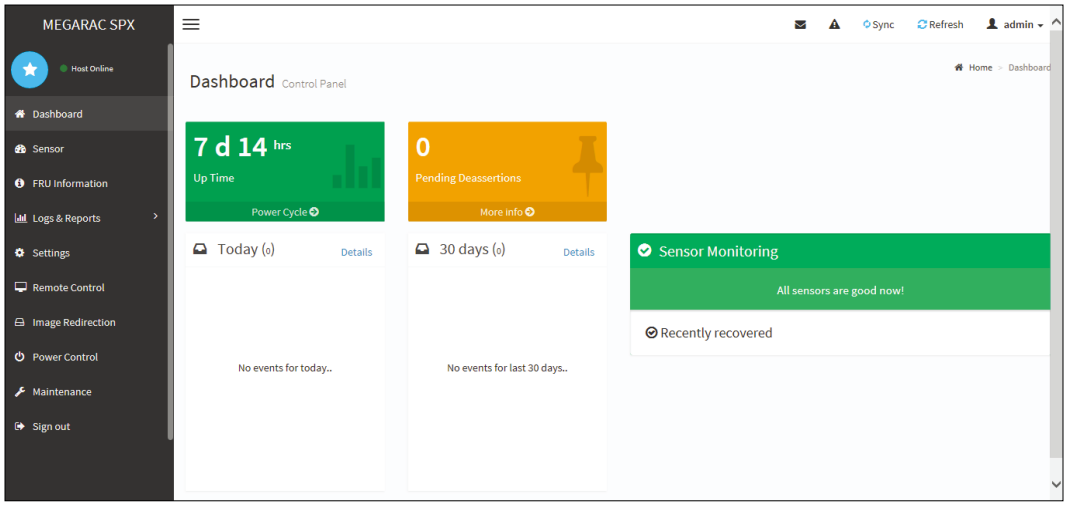
5.2.2 User Information and Quick Button

The user information and quick access buttons are located at the top right corner. It displays the logged-in user, his/her privilege and the four quick buttons allowing you to perform different functions.

Button		Description
User		Only valid commands are allowed.
Operator		All BMC commands are allowed except for the configuration commands that can change the behavior of the out-of-hand interfaces.
Administrator		All BMC commands are allowed.
No access		Login access denied.
	Notification	Click to view notification messages.
	Warning	Click to view warning messages.
	Sync	Click to synchronize with the latest sensor and event log updates.
	Refresh	Click to reload the current page.
	Root-administrator	**Sign out**: Click to log out of the GUI **Profile:** Click to enter the User Management Configuration dialog box in figure xx.
	Help	Click to view more details on field descriptions.

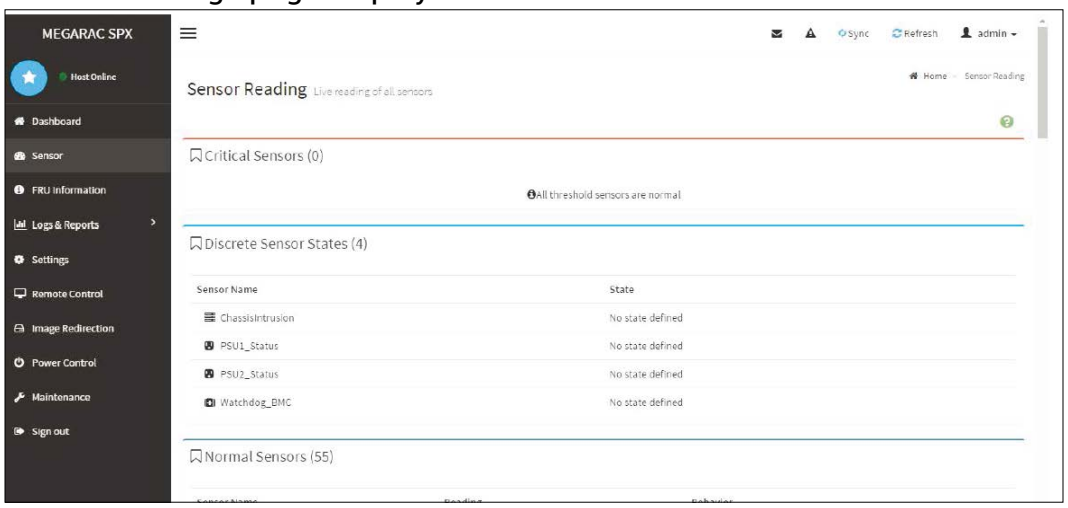
5.2.3 Dashboard

The Dashboard page gives the overall information about the status of adevice.



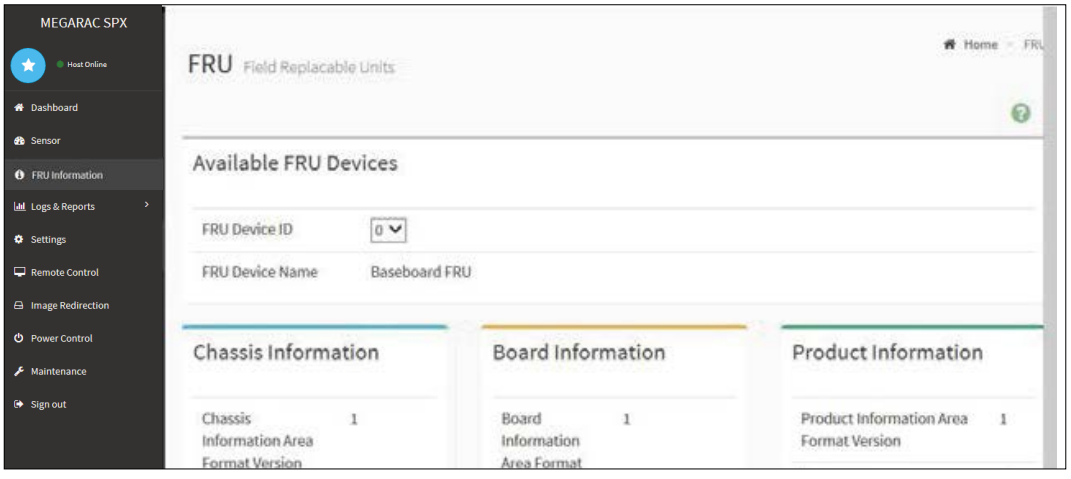
5.2.4 Sensor

The Sensor Readings page displays all the sensor related information.



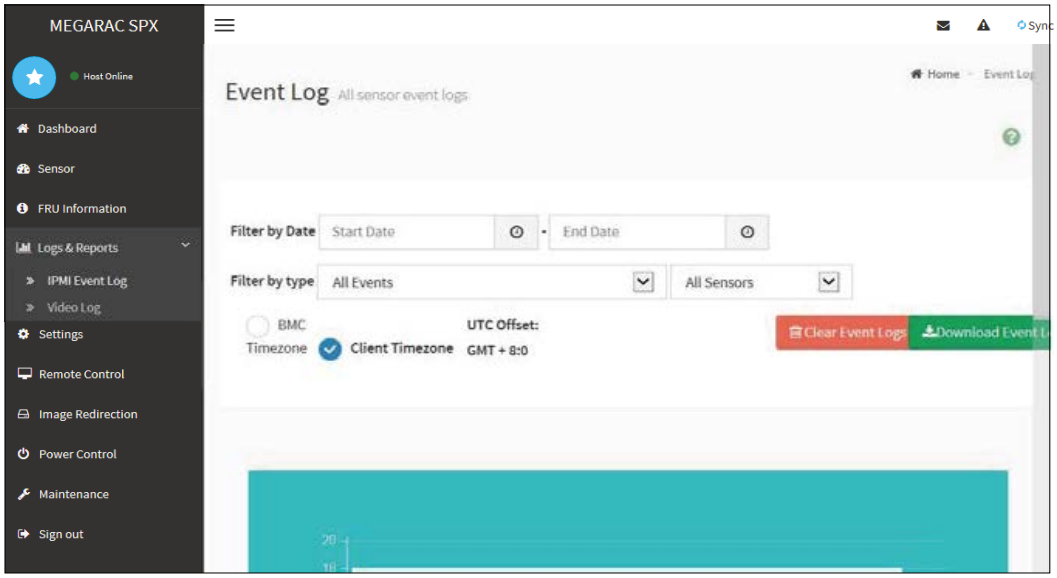
5.2.5 FRU Information

The FRU Information page displays Basic Information, Chassis Information, Board Information and Product Information of the FRU device. Click FRU Information on the menu bar to view the details of the selected device.



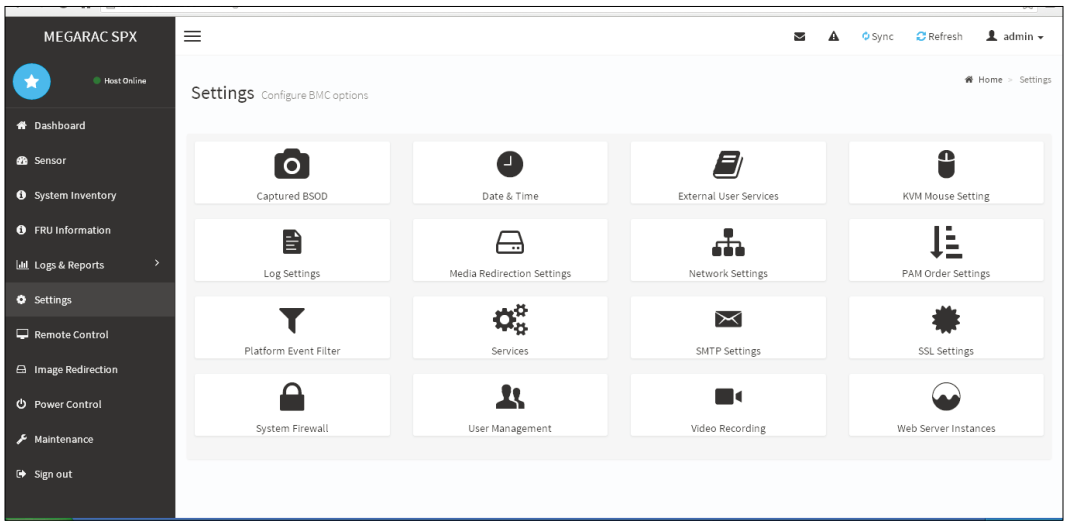
5.2.6 Logs and Report

The System Inventory page displays IPMI Event Log and Video Log. Click **Logs and Reports** from the menu bar.



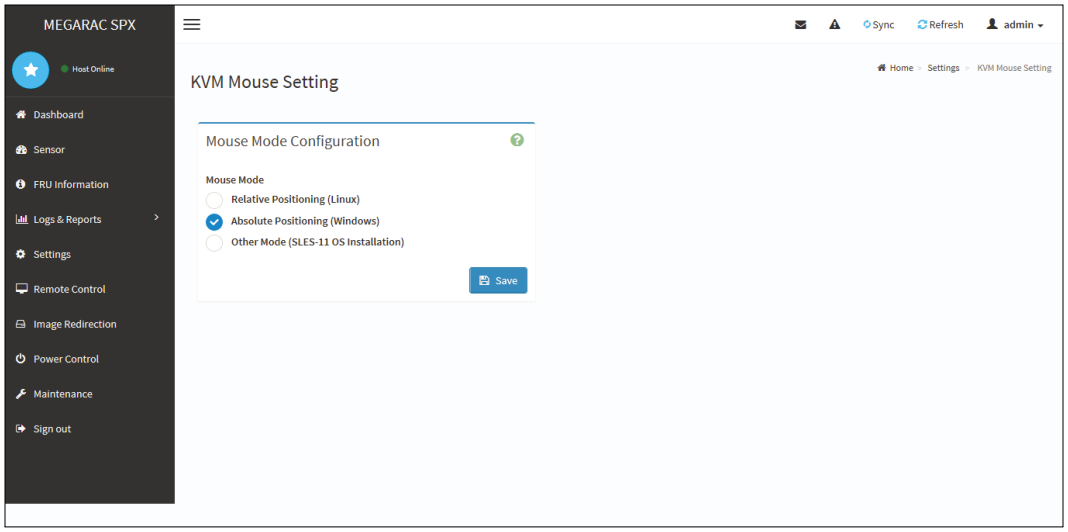
5.2.7 Settings

The Settings page allows you to access various configuration settings.



KVM Mouse Setting

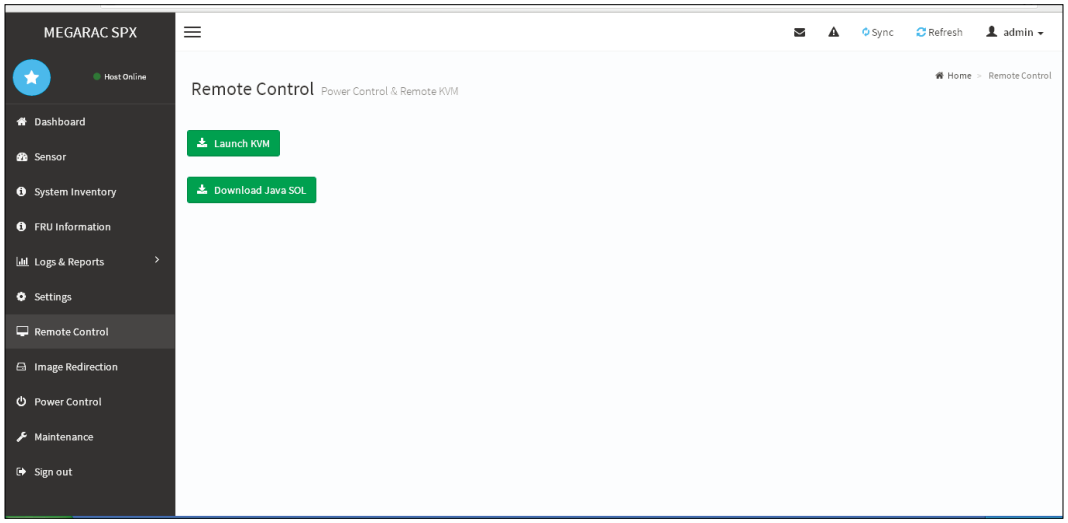
The KVM Mouse Setting page allows you to configure the mouse mode to relative, absolute, and other.



- For Windows OS environment, set mode to absolute.
- For Linux OS environment, set mode to relative.
- For SLES-11 OS environment, set mode to other mode.

5.2.8 Remote Control

The Remote Control page allow you to access any of the managed devices within your system.



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