

vantageTM

Vantage 12T1

Server System
User Guide

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Technical Support

If a problem arises with your product and no solution can be obtained from the user's manual, please contact your place of purchase or local distributor. Alternatively, please visit <https://vantageo.com/> for further guidance.

Safety Information



Please read and follow these safety instructions carefully before installing, operating or performing maintenance on the server.

General Safety Instructions

- Always read the safety instructions carefully.
- Keep this User's Manual for future reference.
- Keep this equipment away from humidity.
- Lay the equipment on a stable, flat surface before setting it up.
- Do not cover the air openings to prevent overheating.
- Avoid spilling liquids into the equipment to prevent damage or electrical shock.
- Do not leave the equipment in an unconditioned environment. Storage temperatures above 60°C (140°F) may cause damage.

Electrical Safety

Power Setup and Protection

- Ensure the power source matches the equipment voltage before connection.
- Plug the power cord into a grounded (earthed) electrical outlet that is easily accessible at all times. Do not disable the power cord grounding plug, as it is an important safety feature.
- Do not use a power adapter other than the one provided.
- Place the power cord to avoid being stepped on or crushed.
- Protect the server from power fluctuations and outages using a regulated uninterruptible power supply (UPS).

Handling Power Connections

- Unplug the power cord before inserting add-on cards or modules.
- Disconnect all power supplies before maintenance to avoid electrical shock. If the unit has more than one power supply, disconnect all of them.
- Unplug the power cord to fully disconnect the system. The front panel Power On/Standby button does not completely shut off system power. Portions of the power supply and some internal circuitry remain active until AC/DC power is removed.

- **WARNING:** This server is heavy.
- Follow occupational health and safety guidelines for manual material handling.
- A minimum of two people is required to lift or install the server. For installations above chest height, a third person may be needed for alignment.
- Exercise caution when installing or removing the server from the rack, as it may become unstable when not fastened to the rails.

Hot Surfaces

- Allow components like drives and power supplies to cool before touching.

Energy Pack Handling after Removal

To reduce the risk of fire or burns:

- Do not disassemble, crush, or puncture the energy pack.
- Avoid shorting external contacts.
- Do not dispose of the energy pack in fire or water.

Other Components

- Keep away from hazardous moving parts, such as fan blades, to prevent injury.
- Do not drop or jolt the system, as this may damage internal components or compromise safety.

General Precautions During Operation

- Avoid operating the server with the access panel open or removed for extended periods, as this disrupts airflow and may cause overheating.
- Do not insert incorrect connectors into ports to avoid damage to components or the risk of electrical hazards.
- This equipment is not suitable for use in locations where children are likely to be present.

When to Contact Service Personnel

Seek immediate assistance from qualified personnel if any of the following occurs:

- The power cord or plug is damaged.
- Liquid has entered the equipment.
- The equipment has been exposed to moisture.
- The equipment does not function as described in the User Guide.
- The equipment has been dropped or physically damaged.
- The equipment shows visible signs of breakage.

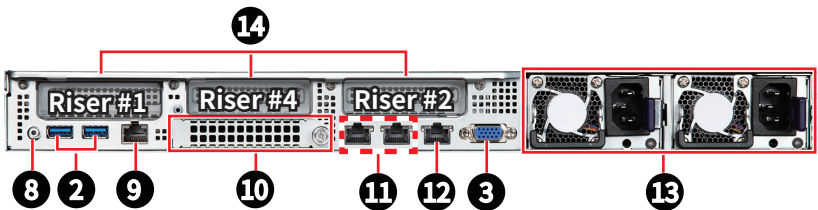
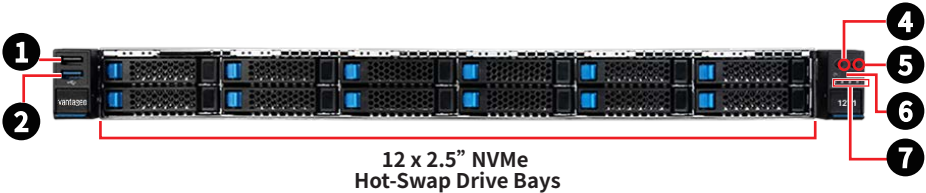
System Specifications

Features	Technical Specification
Form factor	1U
Dimensions	438mm(17.2") W x 43.2mm(1.7")H x 770mm(30.3")D
Processor	Dual AMD EPYC™ 9004 and 9005 series processors, TDP up to 210W* *Optional EVAC CPU coolers available for supporting CPUs up to 360W TDP.
Socket	2 x AMD Socket SP5
Networking	• 2 x 10GSFP+ LAN ports - Intel® LAN controller X710-BM2 - Through OCP NIC 3.0 LAN adapter OCP-321
Memory	• 24 x DDR5 DIMM slots, 24 channels (1DPC), RDIMM/ 3DS-RDIMM - Max Frequency: 6400 MT/s (1DPC) - Max Capacity per DIMM: 256GB
Drive Bays	• 12 x 2.5" Hot-swap drive bays - Supports U.2 PCIe 4.0 NVMe signal
Internal Storage	2 x M.2 M-Key (PCIe 3.0 x2, 2280, from CPU0)
Expansion Slots	• 3 x PCIe slots - RISER1: » 1 x PCIe 5.0 x16 slot (PCIe 5.0 x16 signal, from CPU0, supporting LP PCIe card) - RISER2: » 1 x PCIe 5.0 x16 slot (PCIe 5.0 x16 signal, from CPU1, supporting LP PCIe card) - RISER4: » 1 x PCIe 3.0 x16 slot (PCIe 3.0 x16 signal, from CPU1, supporting LP PCIe card) • 1 x OCP 3.0 Mezzanine card slot (PCIe 5.0 x16 signal, from CPU0) - Supports NCSI
Front Panel	• 2 x USB 3.2 Gen 1 Type-A ports • 1 x VGA port • 1 x System power LED button • 1 x UID LED button • 1 x Reset button • 4 x Status LEDs (M.2/ Alarm/ 2 x LANs)
Rear Panel	• 1 x GbE RJ45 Port (mgmt.) • 2 x USB 3.2 Gen 1 Type-A ports • 1 x COM RJ45 port • 1 x VGA port • 1 x UID LED button*
	*The UID LED button can also function as a BMC reset button by configuring jumper: JUID_SEL1 .
TPM	1 x TPM header (with SPI interface)

Continued on next column

Features	Technical Specification
Security	TPM 2.0
Server Management	• 1 x GbE RJ45 Port (mgmt.) (Realtek® RTL8211FD-CG) • 1 x MicroSD card slot (for BMC log) • ASPEED AST2600 with AMI MegaRAC based firmware - Supports IPMI 2.0 and DMTF Redfish® API • Dual BIOS and BMC supported
Cooling	• 2 x Passive air cooling modules (for max 210W CPU) • 2 x EVAC air cooling modules (for max 360W CPU, optional) • 8 x 4056 easy-swap system fans
Environment	• Operating Temperature: 0°C ~ 35°C • Non-operating Temperature: -20°C ~ 70°C • Non-operating Relative Humidity: 5% ~ 85% (non-condensing)
Power Supply	(1+1) 1300W CRPS, 80 PLUS® Platinum

System Overview



1	USB 2.0 Type-A Port This connector is provided for USB peripheral devices. (Speed up to 480 Mbps)  Important <i>High-speed devices are recommended for USB 3.2 ports whereas low-speed devices, such as mouse or keyboard, are suggested to be plugged into the USB 2.0 ports.</i>
2	USB 3.2 Gen 1 Port This connector is provided for USB peripheral devices. (Speed up to 5 Gbps)
3	VGA Port
4	 System Power Button/ LED
5	UID Button/ LED
6	System Reset Button
7	 System Alarm LED  NIC Link LEDs  M.2 Activity LED
8	UID LED Button (or BMC Reset Button, configured using jumper: JUID_SEL1)
9	COM RJ45 Port
10	OCP Mezzanine card slot

Continued on next column

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GbE RJ45 Port

The standard RJ45 LAN jack is provided for connection to the Local Area Network (LAN). You can connect a network cable to it.

A diagram of an RJ45 port. On the left, a red line points to the port with the label 'LINK/ACT LED'. On the right, a red line points to the port with the label 'SPEED LED'.

LED	Status	Description
Link/ Activity LED	○ Off	No link
	● Green	Linked
	◐ Blinking	Data activity
Speed LED	○ Off	10 Mbps/ No LAN linked
	● Orange	100 Mbps
	● Green	1 Gbps

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GbE RJ45 Port (mgmt.)

The standard RJ45 LAN jack is provided for connection to the Local Area Network (LAN). You can connect a network cable to it.

A diagram of an RJ45 port. On the left, a red line points to the port with the label 'LINK/ACT LED'. On the right, a red line points to the port with the label 'SPEED LED'.

LED	Status	Description
Link/ Activity LED	○ Off	No link
	● Green	Linked
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Speed LED	○ Off	10 Mbps
	● Orange	100 Mbps
	● Green	1 Gbps

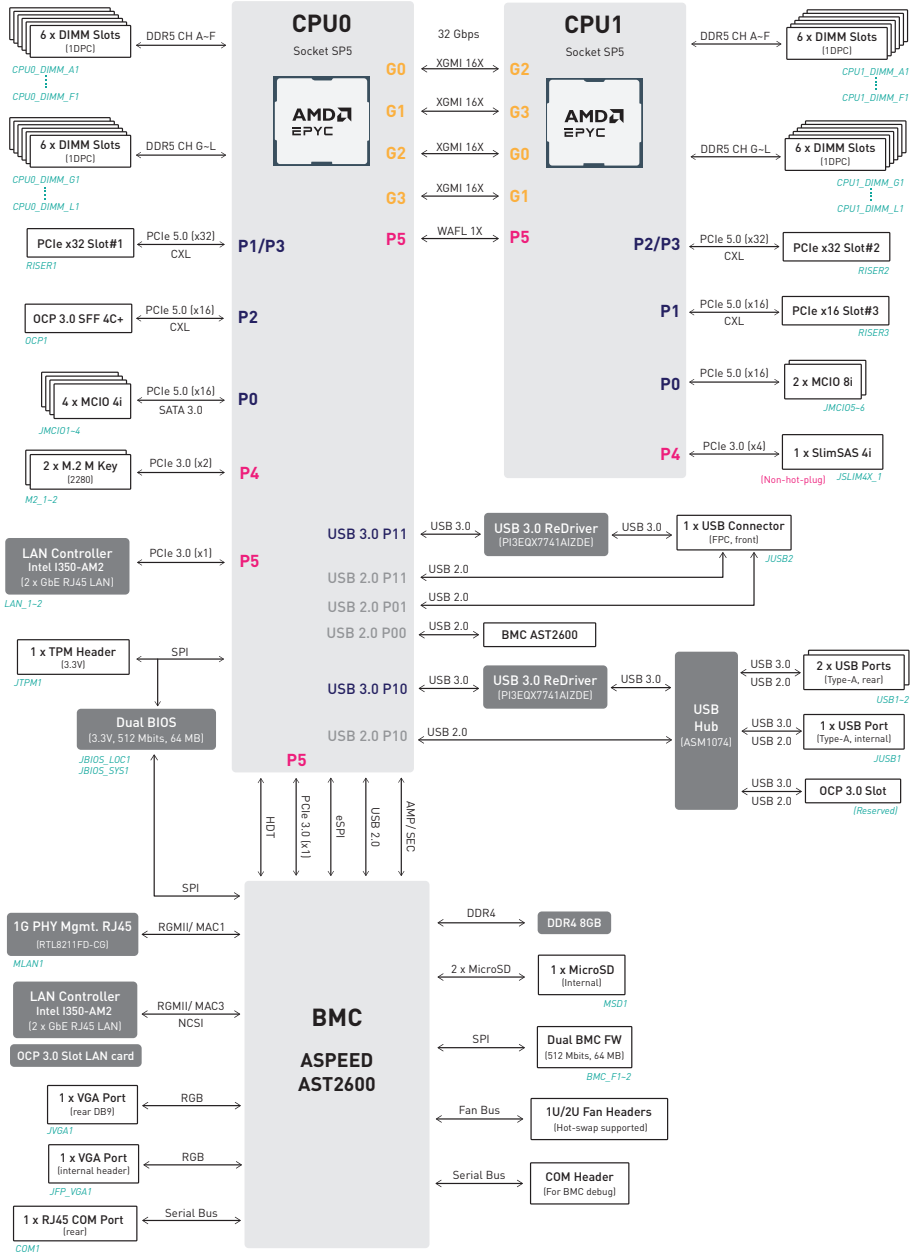
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Power Supply Unit

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PCIe Add-in Card Area

Block Diagram

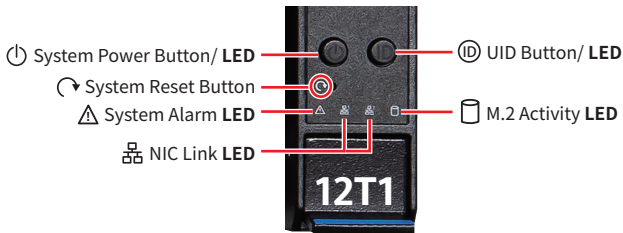


System Storage Topology



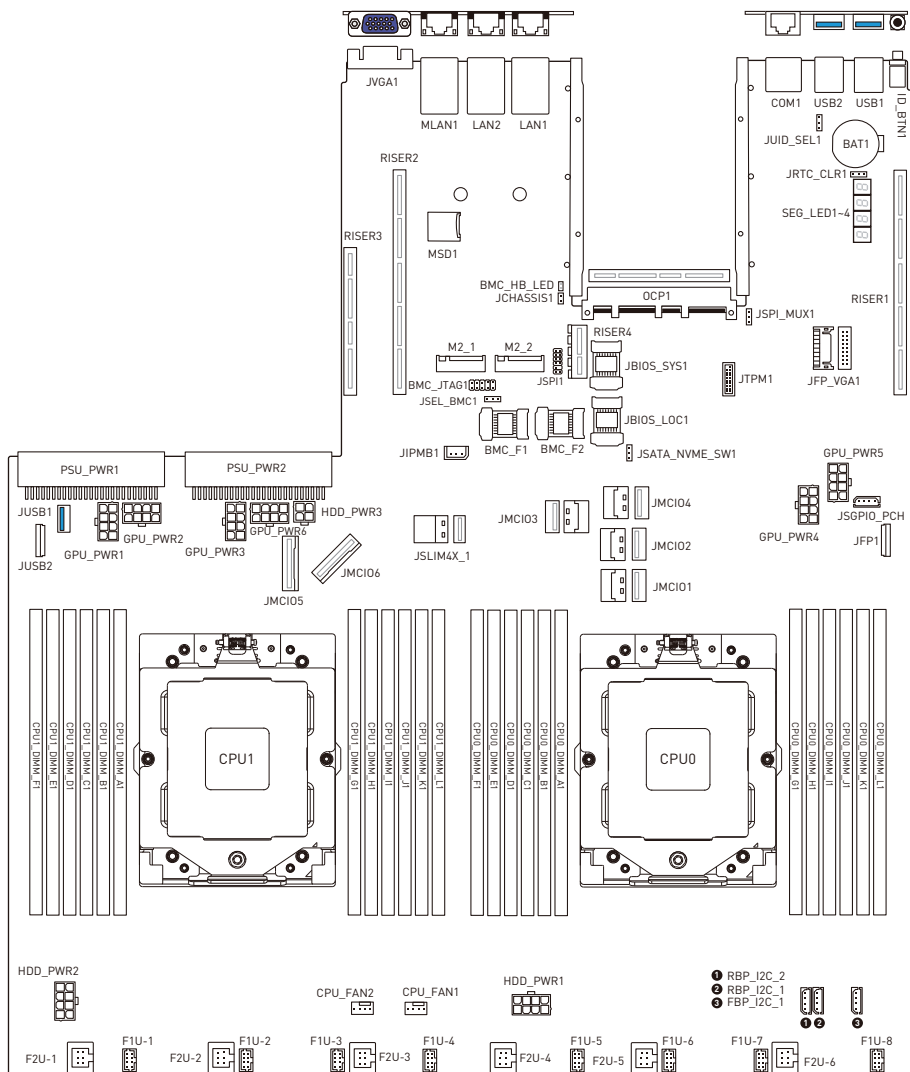
12 x 2.5" NVMe Hot-Swap Drive Bays					
NVMe #11	NVMe #9	NVMe #7	NVMe #5	NVMe #3	NVMe #1
CPU1 P1	CPU1 P1	CPU1 P0	CPU1 P0	CPU0 P0	CPU0 P0
Lanes 8:11	Lanes 0:3	Lanes 8:11	Lanes 0:3	Lanes 8:11	Lanes 0:3
NVMe #12	NVMe #10	NVMe #8	NVMe #6	NVMe #4	NVMe #2
CPU1 P1	CPU1 P1	CPU1 P0	CPU1 P0	CPU0 P0	CPU0 P0
Lanes 12:15	Lanes 4:7	Lanes 12:15	Lanes 4:7	Lanes 12:15	Lanes 4:7

System LED Indicators



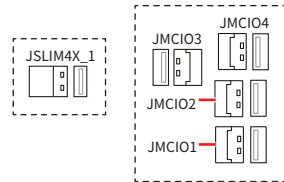
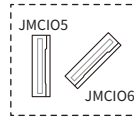
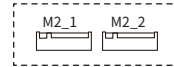
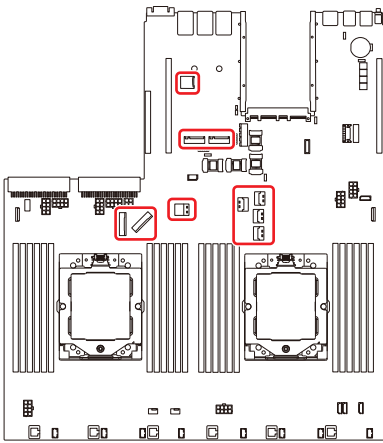
LED	LED State	Description
 System Power LED	 Blue	System power is on
		System power is on ACPI S0 state
	 Blinking	System is sleeping
	 Off	System power is off
 UID LED	 Blue	Identify active via command or button
	 Off	No identification
 System Alarm LED	 Green	BMC initialization
	 Red	System has failed
	 Off	System is running/ normal operation
 NIC Link LED	 Blinking	NIC activity is occurring
	 Off	NIC link is not established
 M.2 Activity LED	 Amber	M.2 present, no activity
	 Blinking	M.2 accessing
	 Off	No M.2 activity

Motherboard Layout



Motherboard Connectors

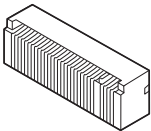
Storage Connectors



Name	Description
JSLIM4X_1	PCIe 3.0 x4, 8GT/s
JMCIO1~4	PCIe 4.0 x4, 16GT/s (default) SATA 3.0, 6Gb/s
JMCIO5~6	PCIe 4.0 x8, 16GT/s
M2_1~2	PCIe 3.0 x2, 8GT/s

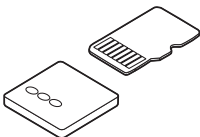
M2_1~2: M.2 Slots (M Key, PCIe 3.0 x2, 2280)

The M.2 slot supports solid-state drive (SSD). For Installation procedure, please refer to "System Setup > M.2 M Key".



MSD1: Micro SD Card Slot

This slot is for inserting the micro SD card.



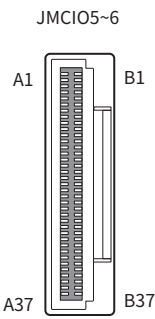
JMCIO1~4: MCIO 4i Connectors

These are right-angle 38-pin Mini Cool Edge IO (MCIO) connectors, which support PCIe 4.0 x4 16GT/s and SATA 3.0 6Gb/s interfaces. A [JSATA_NVME_SW1 jumper](#) can be used to switch signals between **SATA** and **PCIe NVMe (default)**.

JMCIO1~4 B19 B1 A19 A1	A1	GND	B1	GND
	A2	RXP0	B2	TXP0
	A3	RXN0	B3	TXN0
	A4	GND	B4	GND
	A5	RXP1	B5	TXP1
	A6	RXN1	B6	TXN1
	A7	GND	B7	GND
	A8	NC	B8	I2C_CLK
	A9	HP_INT_L	B9	I2C_DATA
	A10	GND	B10	GND
	A11	PCIe CLK_P	B11	PCIe_RST
	A12	PCIe CLK_N	B12	PRSNT_N (NC)
	A13	GND	B13	GND
	A14	RXP2	B14	TXP2
	A15	RXN2	B15	TXN2
	A16	GND	B16	GND
	A17	RXP3	B17	TXP3
	A18	RXN3	B18	TXN3
	A19	GND	B19	GND

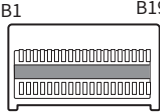
JMCIO5~6: MCIO 8i Connectors

These are vertical 74-pin Mini Cool Edge IO (MCIO) connectors, which support PCIe 4.0 x8 16GT/s interface.

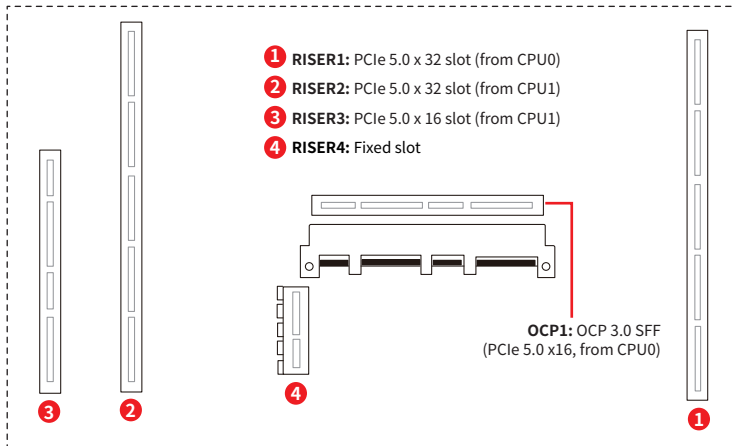
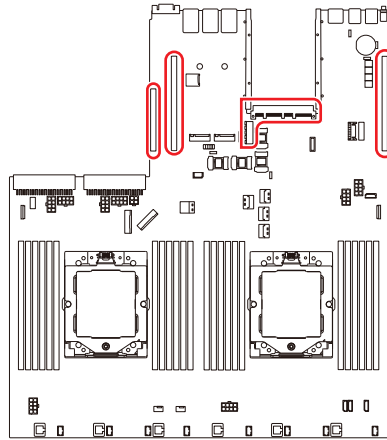
 JMCIO5~6 A1 B1 A37 B37	A1	GND	B1	GND
	A2	RXP0	B2	TXP0
	A3	RXN0	B3	TXN0
	A4	GND	B4	GND
	A5	RXP1	B5	TXP1
	A6	RXN1	B6	TXN1
	A7	GND	B7	GND
	A8	NC	B8	I2C_CLK1
	A9	HP_INT_L1	B9	I2C_DATA1
	A10	GND	B10	GND
	A11	PCIe CLK_P1	B11	PCIe_RST1
	A12	PCIe CLK_N1	B12	PRSNT_N (NC)
	A13	GND	B13	GND
	A14	RXP2	B14	TXP2
	A15	RXN2	B15	TXN2
	A16	GND	B16	GND
	A17	RXP3	B17	TXP3
	A18	RXN3	B18	TXN3
	A19	GND	B19	GND
	A20	RXP4	B20	TXP4
	A21	RXN4	B21	TXN4
	A22	GND	B22	GND
	A23	RXP5	B23	TXP5
	A24	RXN5	B24	TXN5
	A25	GND	B25	GND
	A26	NC	B26	I2C_CLK2
	A27	HP_INT_L2	B27	I2C_DATA2
	A28	GND	B28	GND
	A29	PCIe CLK_P2	B29	PCIe_RST2
	A30	PCIe CLK_N2	B30	PRSNT_N (NC)
	A31	GND	B31	GND
	A32	RXP6	B32	TXP6
	A33	RXN6	B33	TXN6
	A34	GND	B34	GND
	A35	RXP7	B35	TXP7
	A36	RXN7	B36	TXN7
	A37	GND	B37	GND

JSLIM4X_1: Slimline SAS 4i Connector

This is 38-pin Slimline SAS 4i connector, which support PCIe 3.0 x4 8GT/s interface.

JSLIM4V_1 	A1	GND	B1	GND
	A2	RXP0	B2	TXP0
	A3	RXN0	B3	TXN0
	A4	GND	B4	GND
	A5	RXP1	B5	TXP1
	A6	RXN1	B6	TXN1
	A7	GND	B7	GND
	A8	NC	B8	I2C_CLK
	A9	HP_INT_L	B9	I2C_DATA
	A10	GND	B10	GND
	A11	PCIe CLK_P	B11	PCIe_RST
	A12	PCIe CLK_N	B12	PRSNT_N (NC)
	A13	GND	B13	GND
	A14	RXP2	B14	TXP2
	A15	RXN2	B15	TXN2
	A16	GND	B16	GND
	A17	RXP3	B17	TXP3
	A18	RXN3	B18	TXN3
	A19	GND	B19	GND

Expansion Slots



RISER1~4: PCIe Expansion Slots

The PCI Express(Peripheral Component Interconnect Express) slots support PCIe interface expansion cards.

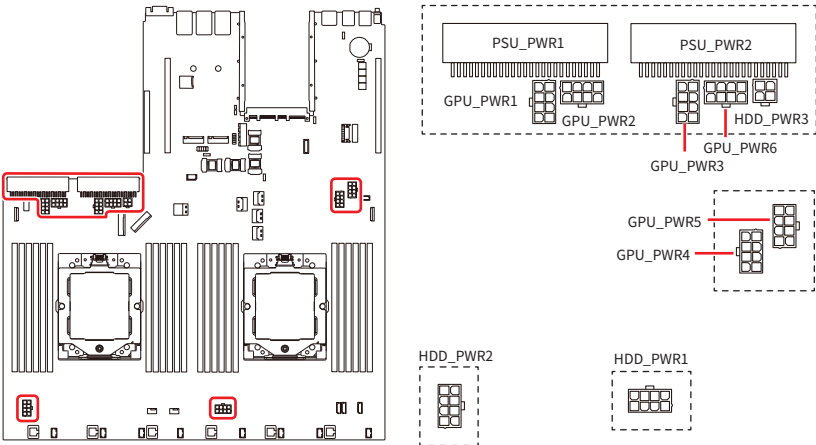
OCP1: OCP (Open Compute Project) LAN Mezzanine Slot

The slots allows the deployment of a wide variety of additional networking options through OCP Mezzanine Ethernet cards.



When adding or removing expansion cards, make sure that you unplug the power supply first. Meanwhile, read the documentation for the expansion card to configure any necessary hardware or software settings for the expansion card, such as jumpers, switches or BIOS configuration.

Power Connectors



PSU_PWR1~2: CRPS Power Connectors

These CRPS (Common Redundant Power Supplies) connectors allow you to connect a power supply. To connect the power supply, ensure that the plug is inserted in the proper orientation and that the pins are aligned. Then firmly push down the power supply into the connector.

GPU_PWR1~6: 8-Pin GPU Power Connectors

These connectors provide power output to GPUs.

HDD_PWR1~2: 8-Pin HDD BP Power Connectors

These connectors provide power output to HDDs.

GPU_PWR1~6 HDD_PWR1~2	8 4		1	GND	2	GND
			3	GND	4	GND
			5	P12V	6	P12V
			7	P12V	8	P12V

HDD_PWR3: 4-Pin Rear HDD BP Power Connector

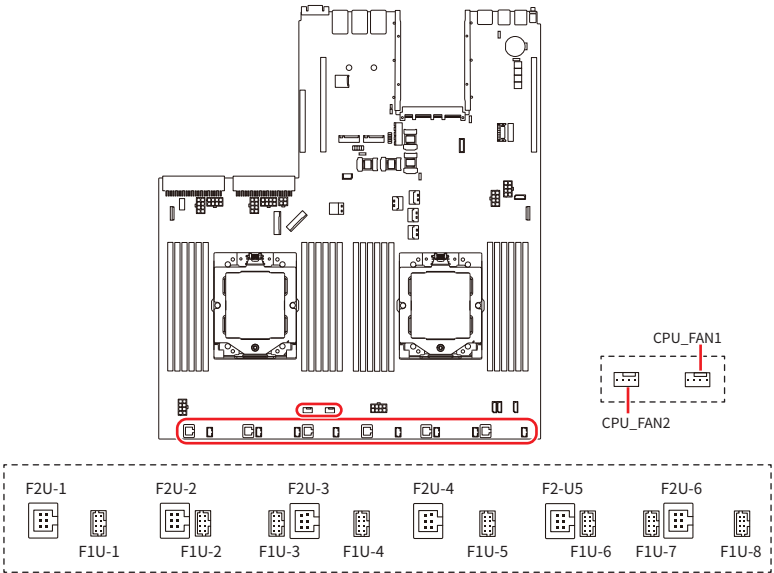
This connector provides power output to HDDs on rear side.

HDD_PWR3		1	GND	2	GND
		3	P12V	4	P5V

 Important

Make sure that all power connectors are securely connected to the power supply to ensure stable operation of the motherboard.

Cooling Connectors



F2U-1~6: 2U System Fan Connectors

The fan power connectors support 2U system cooling fans.

F2U-1~6 	1	GND	2	P12V
	3	FAN_TACH	4	FAN_PWM
	5	NC	6	FAN_FAULT

F1U-1~8: 1U System Fan Connectors

The fan power connectors support 1U system cooling fans.

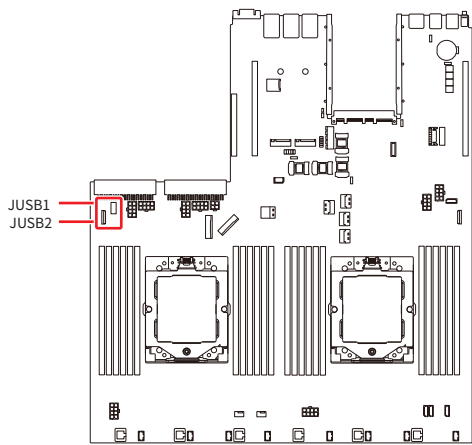
F1U1~8 	1	FAN_TACH	2	FAN_PWM
	3	P12V	4	P12V
	5	FAN_TACH	6	GND
	7	GND	8	NC

CPU_FAN1~2: CPU Fan Connectors

The fan power connectors support CPU cooling fans.

CPU_FAN1~2 	1	GND	3	FAN_TACH
	2	P12V	4	FAN_PWM

USB Connectors



JUSB1: USB 3.2 Gen 1 Type-A Port

The USB (Universal Serial Bus) port is used for connecting USB devices such as keyboards, mice, or other compatible peripherals. It supports data transfer rates up to **5 Gbps** and is backward-compatible with USB 2.0 devices.

JUSB1



JUSB2: USB 3.2 Gen 1 FPC Connector

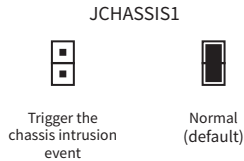
This port is backward-compatible with USB 2.0 devices and supports data transfer rate up to **5 Gbps**.

	1	FUSB_VCC	2	FUSB_VCC
	3	FUSB_VCC	4	FUSB_VCC
	5	FUSB_VCC	6	FUSB_VCC
	7	GND	8	GND
	9	GND	10	GND
	11	GND	12	GND
	13	GND	14	GND
	15	USB3_F_RXN	16	USB3_F_RXP
	17	GND	18	USB3_F_TXN
	19	USB3_F_TXP	20	GND
	21	USB2_F1_DN	22	USB2_F1_DP
	23	GND	24	USB2_F2_DN
	25	USB2_F2_DP	26	GND

Other Connectors and Components

JCHASSIS1: Chassis Intrusion Header

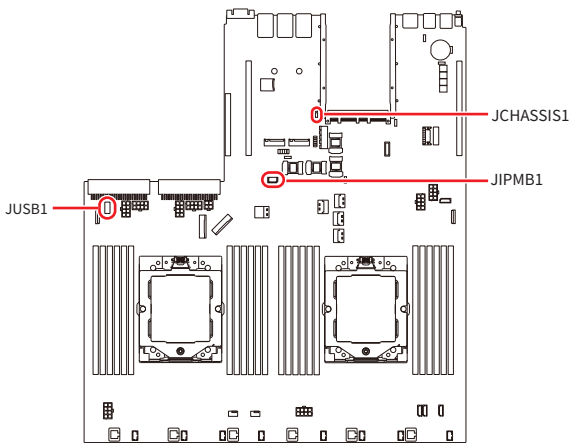
This header connects to the chassis intrusion switch cable. If the chassis is opened, the chassis intrusion mechanism will be activated. The system will record this status and show a warning message on the screen. To clear the warning, you must enter the BIOS utility and clear the record.



JIPMB1: IPMB Header

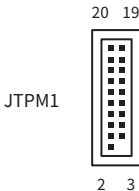
This header is used to connect the IPMB (Intelligent Platform Management Bus).

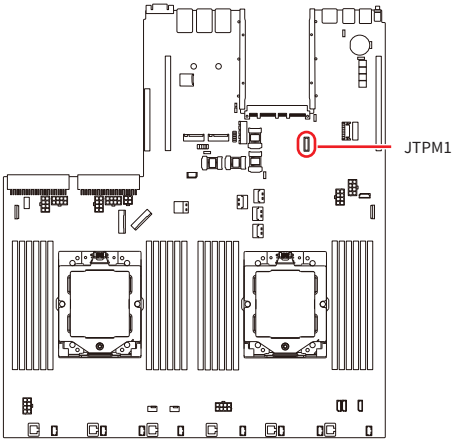
JIPMB1	3		1	SMB_IPMB_DAT	3	SMB_IPMB_CLK
				2	GND	



JTPM1: SPI TPM Header

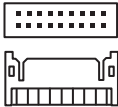
This header connects to a TPM (Trusted Platform Module) module (optional). Please refer to the TPM security platform manual for more details.

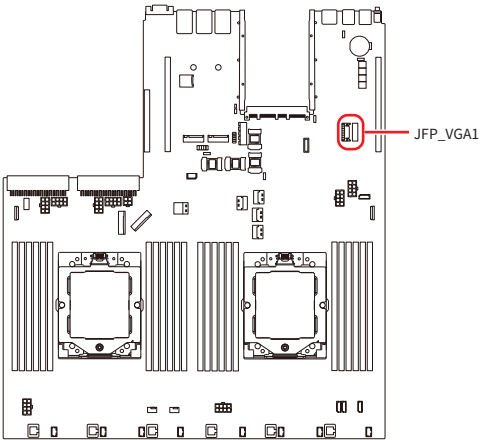
 JTPM1	1	N/A	2	N/A
	3	N/A	4	N/A
	5	GND	6	P3V3_AUX
	7	SPI_CPU0_3V3_CLK	8	N/A
	9	N/A	10	SPI_CPU0_3V3_MISO
	11	N/A	12	SPI_CPU0_3V3_MOSI
	13	SPI_TPM_CS_N	14	GND
	15	N/A	16	N/A
	17	IRQ_TPM_SPI_N	18	P3V3_AUX
	19	TPM_RESET_N	20	P3V3_AUX



JFP_VGA1: Front VGA Header

The VGA header is provided for monitors.

JFP_VGA1 218 117 	1	N/A	2	N/A
	3	F_RED	4	GND
	5	F_GRN	6	GND
	7	F_BLU	8	GND
	9	F_VS	10	GND
	11	F_HS	12	GND
	13	F_DDCDAT	14	SEL_FP_N
	15	F_DDCCLK	16	F_VGA_5V
	17	N/A	18	N/A



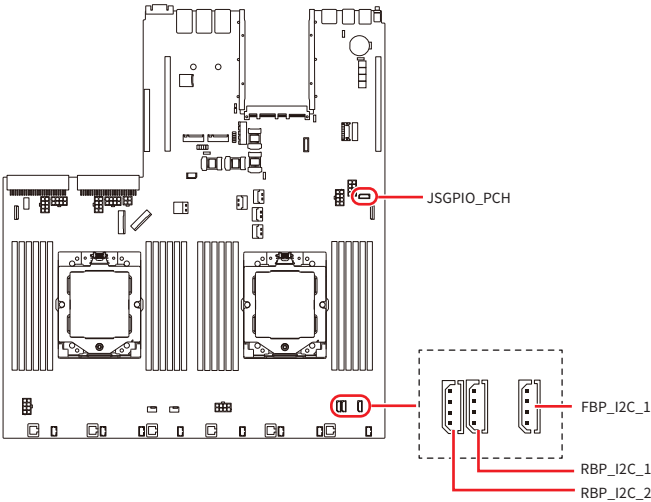
FBP_I2C_1, RBP_I2C_1~2: I2C Headers

I2C headers are used to connect to the System Management Bus (SMBus).
FBP_I2C_1 is for front HDD backplane, and RBP_I2C_1~2 are for rear HDD
backplanes.

FBP_I2C_1 RBP_I2C_1 RBP_I2C_2		1	NC	3	I2C_DAT
		2	I2C_CLK	4	GND

JSGPIO_PCH: Rear Side BP SGPIO Box Header

JSGPIO_PCH 	1	SGPIO_SATA_CLOCK_RBP	3	GND
	2	SGPIO_SATA_LOAD_RBP	4	SGPIO_SATA_DATAOUT_RBP

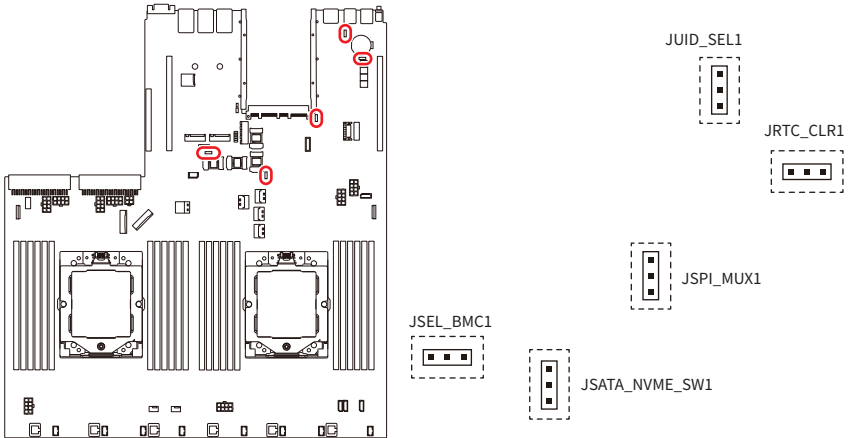


Motherboard Jumpers



Important

Avoid adjusting jumpers when the system is on; it will damage the motherboard.

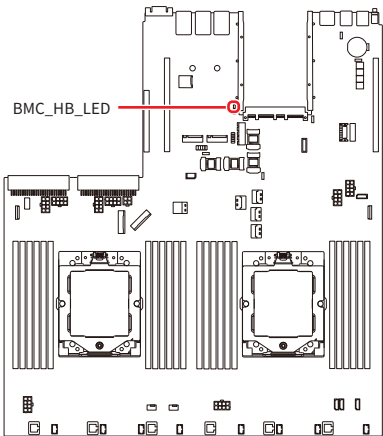


Jumper Name	Default Setting	Description
JSPI_MUX1	 1	1-2: BIOS1 & allows BMC to switch (default) 2-3: BIOS2 (backup only, use when BIOS1 flash crashes)
JSEL_BMC1	 1	1-2: BMC1 (default) 2-3: BMC2
JRTC_CLR1	 1	1-2: Normal (default) 2-3: CMOS Clear
JUID_SEL1	 1	1-2: UID Button (default) 2-3: BMC RST Button
JSATA_NVME_SW1	 1	1-2: JMCIO1~4 set to SATA 2-3: JMCIO1~4 set to NVMe (default)

System Board LEDs

BMC_HB_LED: BMC Heartbeat LED

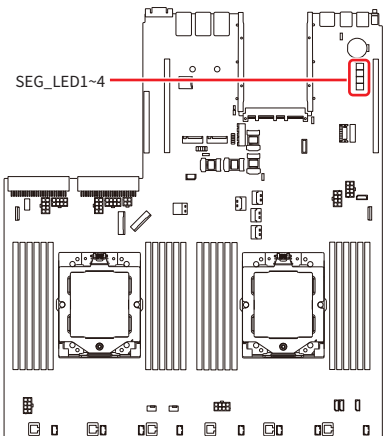
This LED indicates the BMC (Baseboard Management Controller) status.



Status	Description
 Off	BMC is not activated
 Blinking	BMC is functioning normally

SEG_LED1~4: Port 80 Edge LEDs

The Port 80 Edge LEDs display progress and error codes during and after POST (Power-On Self Test).



Hexadecimal Character Table

Hexadecimal	0	1	2	3	4	5	6	7
LED display	0	1	2	3	4	5	6	7
Hexadecimal	8	9	A	B	C	D	E	F
LED display	8	9	A	b	c	d	E	F

Getting Started



Important

- All information is subject to change without prior notice.
- The system photos are provided for demonstration purposes only. The appearance and internal view of your system may vary depending on the model you purchased.

Necessary Tools



Screwdriver



Pliers



Tweezers



Anti-Static Gloves

Safety Precautions

The following precautions should be observed while handling the system:

- Place the system on a flat and stable surface.
- Do not place the system in environments subject to mist, smoke, vibration, excessive dust, salty or greasy air, or other corrosive gases and fumes.
- Do not drop or jolt the system.
- Do not use a power adapter other than the one enclosed with the system.
- Disconnect the power cord before performing any installation procedures on the system.
- Do not perform any maintenance with wet hands.
- Prevent foreign substances, such as water, other liquids or chemicals, from entering the system while performing installation procedures.
- Use a grounded wrist strap before handling system components such as CPU, Memory, HDD, expansion cards, etc.
- Place system components on a grounded antistatic pad or on the bed that came with the components whenever the components are separated from the system.

System Setup



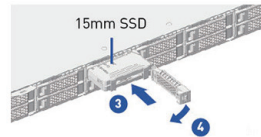
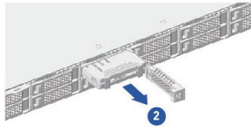
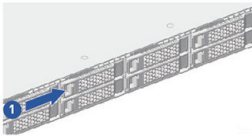
Important

Before removing or installing any components, make sure the system is not turned on or connected to the power.

Drive Bay

Installing 2.5" HDD/ SSD

1. Press the tray button to release the lever.
2. Pull the HDD/ SSD assembly out of the drive bay.
3. Insert the HDD/ SSD horizontally.

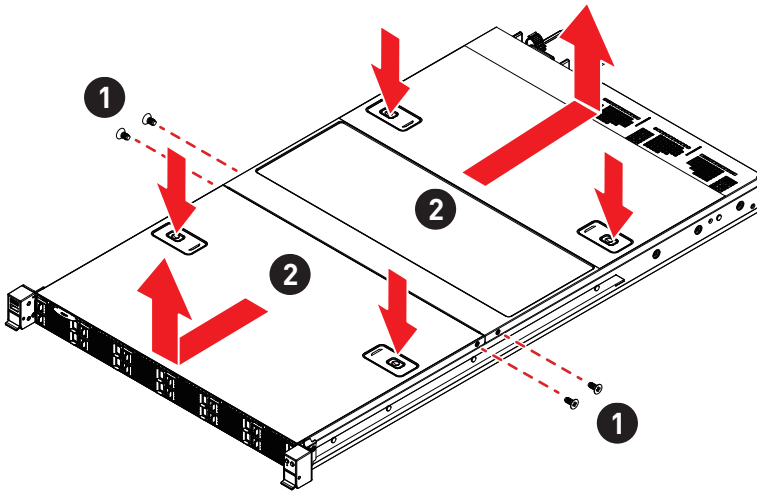


- The interposer BKT act as dummy HDD/ SSD when no drive inside.
- The interposer BKT act as spacer to support 7mm HDD/ SSD.

System Cover

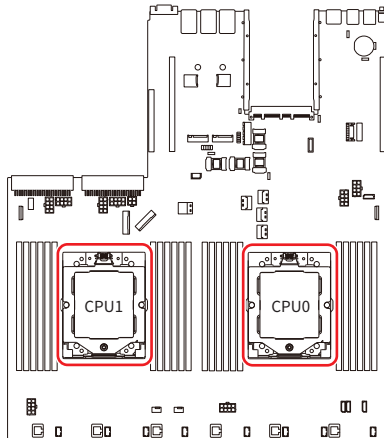
Removing System Cover

1. Remove the **screws** securing the system on both sides.
2. To remove the top cover panels, press down on the **release latches** on both sides and then slide them to the front or back side of the system.



CPU & Heatsink

Use appropriate ground straps, gloves and ESD mats to protect yourself from electrostatic discharge (ESD) while installing the processor.



Important

- **Overheating** will seriously damage the CPU and system. Always make sure the cooling fan can work properly to protect the CPU from overheating. Make sure that you apply an even layer of thermal paste (or thermal tape) between the CPU and the heatsink to enhance heat dissipation.
- While **replacing the CPU**, always turn off the power supply or unplug the power supply's power cord from the grounded outlet first to ensure the safety of CPU.
- Do not touch the CPU socket content to avoid damage.
- Whenever CPU is not installed, always protect your CPU socket pins with the plastic cap covered.
- Please refer to the documentation in the CPU cooler package for more details about the CPU cooler installation.
- Read the CPU status in BIOS.

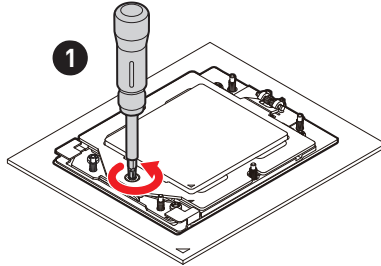
Installing CPU & Heatsink



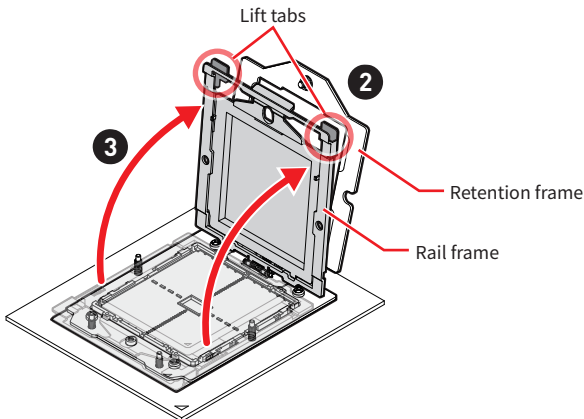
Important

Images are for illustration purposes only; actual parts may vary.

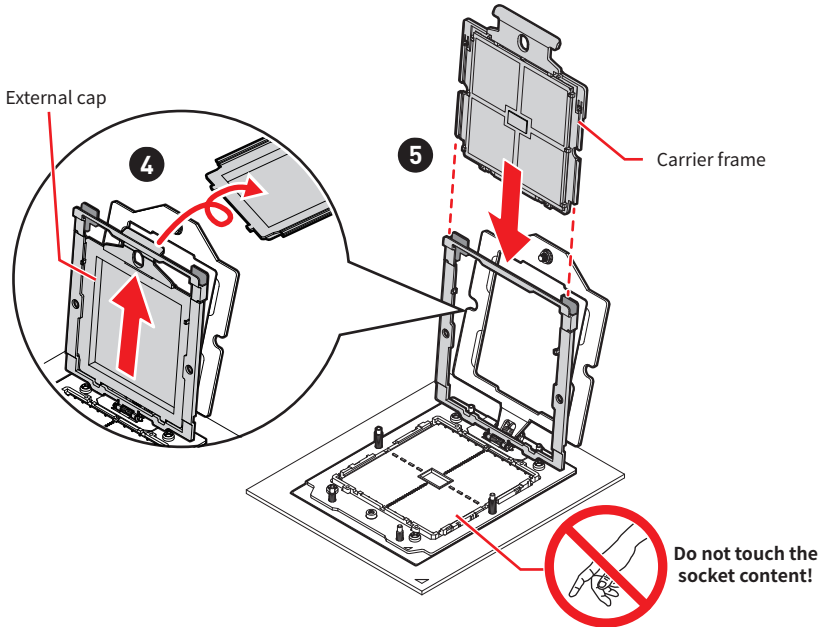
1. Remove the screw on the top of the retention frame.



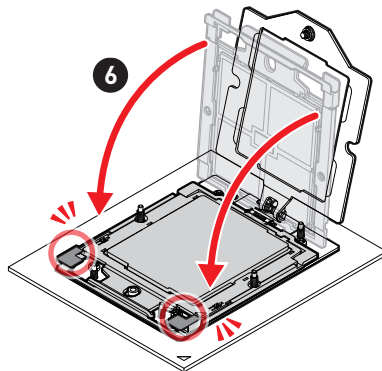
2. After removing the top screw, the **spring-loaded retention frame** will rise up. Hold it gently until it is fully open.
 3. Lift the **rail frame** by gripping the lift tabs near the front edge of the rail frame.
- As both frames are spring-loaded, keep a tight grip on them while lifting to avoid an abrupt swinging motion.



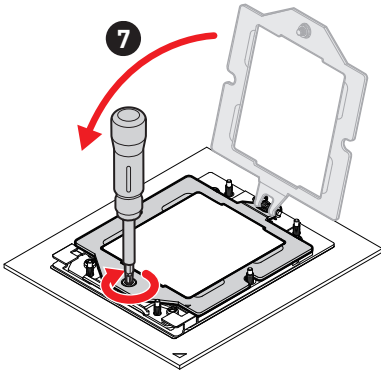
4. Pull the **external cap** upward through the rail guides on the rail frame to remove it.
 5. Grip the handle of the **carrier frame** and slide it downward with the flanges and the rail guides aligned.
- CPUs are shipped from the factory with pre-assembled carrier frames.
 - Make sure the flanges of the carrier frame are firmly loaded on the rails before closing the rail frame.



6. Grip the **lift tabs at the front edge of the rail frame** with the carrier frame loaded, then gently lower it to engage the carrier's latching mechanism to the socket housing.



7. Push the **retention frame** downward and use a torque screwdriver to tighten the screw in the middle.



Torque Screwdriver Settings

Screw Head: Torx T20

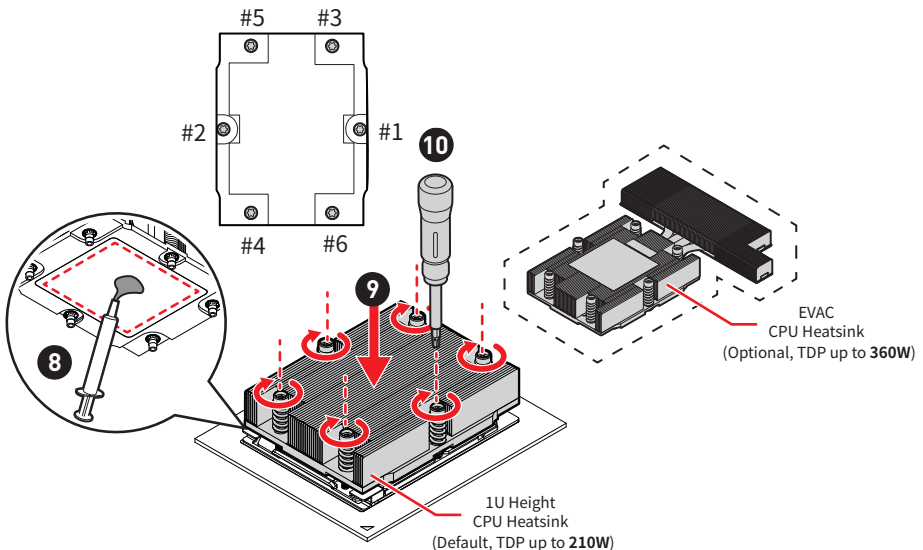
Torque: 12.5-15 kgf·cm*

*12.5-15 kgf·cm

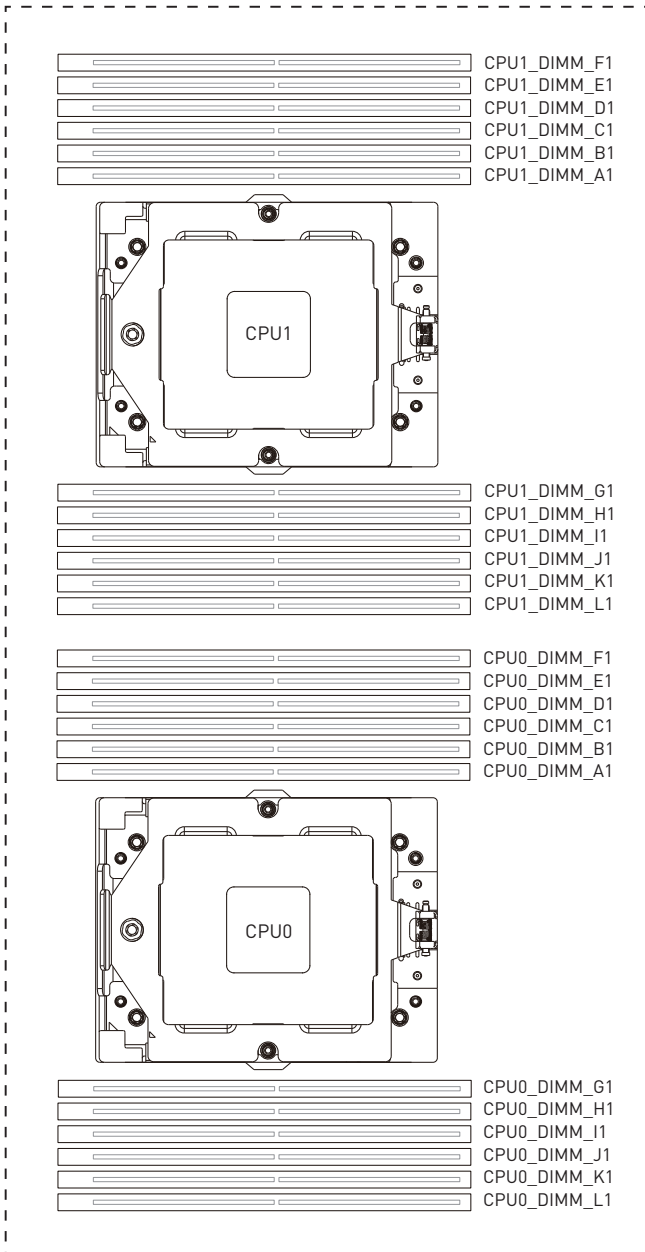
= 1.23-1.47 N·m

= 10.9-13 lbf·in

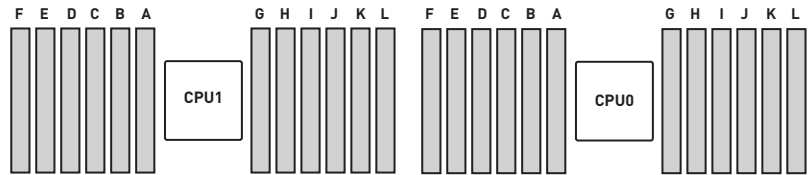
8. For peak thermal performance, apply proper amount of **thermal paste** to the bottom center of the heatsink. (Skip this step if there is pre-applied thermal paste.)
9. Lower the heatsink until it rests firmly in place after aligning the six screw holes on its bottom with the motherboard's studs.
10. Tighten all screws in **diagonal sequence** with a torque screwdriver.
 - To avoid damaging the fins of the heatsink, always grip the heatsink **along the axis of the fins**. Holding a heatsink along the side might damage its fins or solder.
 - To avoid distributing uneven pressure on the CPU, it is recommended to **secure the heatsink in two steps**: first, loosely attach the screws at six points and then gradually tighten them.
 - Confirm if your heatsink is firmly installed before turning on your system.



Memory



Recommended Memory Population



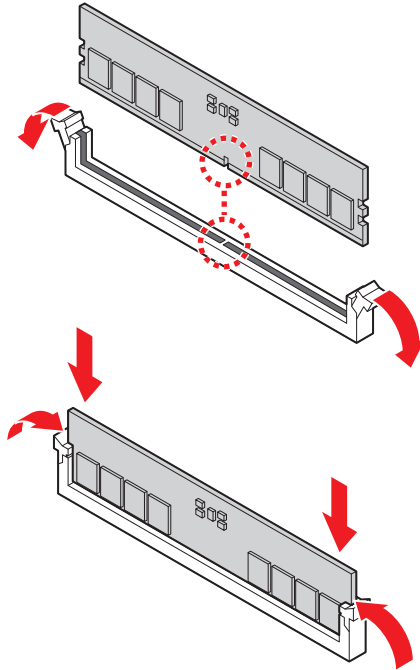
1 CPU															
Channel		F	E	D	C	B	A	C P U	G	H	I	J	K	L	
Qty. of DDR5		V	V	V	V	V	V		V	V	V	V	V	V	V
12			V	V	V	V	V		V	V	V	V	V	V	V
10			V	V	V	V	V		V	V	V	V	V	V	V
8			V		V	V	V		V	V	V	V		V	
6					V	V	V		V	V	V	V			
4					V		V		V	V		V			
2							V		V						
1							V	V							
2 CPUs															
Channel		F	E	D	C	B	A	C P U	G	H	I	J	K	L	
Qty. of DDR5		V	V	V	V	V	V		V	V	V	V	V	V	V
24	CPU1	V	V	V	V	V	V		V	V	V	V	V	V	V
	CPU0	V	V	V	V	V	V		V	V	V	V	V	V	V
20	CPU1		V	V	V	V	V		V	V	V	V	V	V	
	CPU0		V	V	V	V	V		V	V	V	V	V	V	
16	CPU1		V		V	V	V		V	V	V	V		V	
	CPU0		V		V	V	V		V	V	V	V		V	
12	CPU1				V	V	V		V	V	V	V			
	CPU0				V	V	V		V	V	V	V			
8	CPU1				V		V		V	V		V			
	CPU0				V		V		V	V		V			
4	CPU1						V		V	V					
	CPU0						V		V	V					
2	CPU1						V								
	CPU0						V								
1	CPU1														
	CPU0						V								
“V” indicates DIMMs are populated with DDR5 .															

 **Important**

There should be at least one DDR5 DIMM populated.

Installing Memory Modules

1. Open the side clips to unlock the DIMM slot.
2. Insert the DIMM vertically into the slot, ensuring that the off-center notch at the bottom aligns with the slot.
3. Push the DIMM firmly into the slot until it clicks and the side clips automatically close.
4. Verify that the side clips have securely locked the DIMM in place.



Important

You can barely see the golden finger if the memory module is properly inserted in the DIMM slot.

M.2 M Key

Installing M.2 SSD

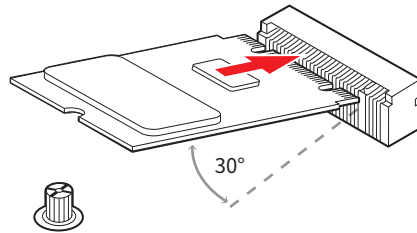


Video Demonstration

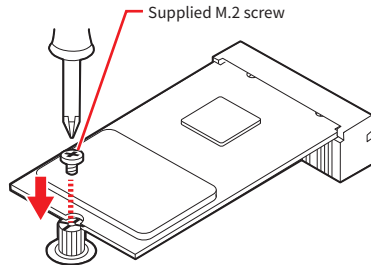
Watch the video to learn how to
Install M.2 SSD.



1. Insert your M.2 SSD into the M.2 slot at a 30-degree angle.



2. Secure the M.2 SSD in place with the supplied M.2 screw.



PCIe Add-in Card

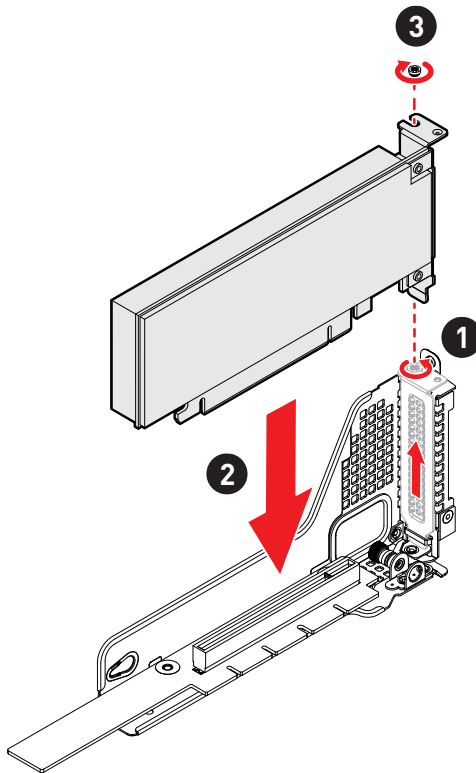
Installing PCIe Add-in Card

1. Loosen the screws on the riser bracket to remove the filler panels.
2. Align the PCIe add-in card with the connector on the riser card, and insert it until it is fully seated.
3. Tighten the screws to securely fix the PCIe add-in card in place.



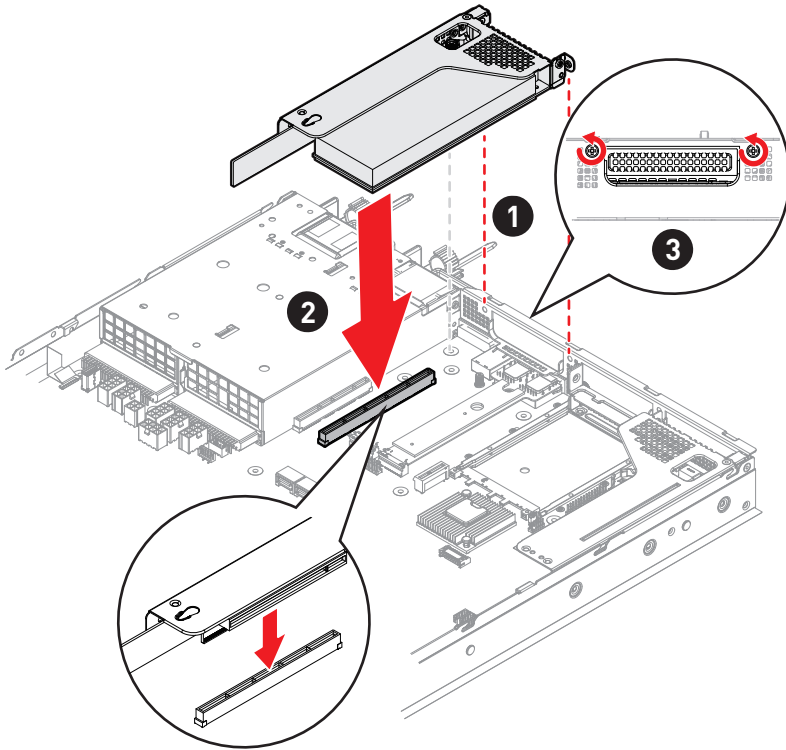
Important

The procedure for installing PCIe add-in cards are the same for all riser slots.



Installing Riser Card Assembly

1. Lower the riser card assembly down as shown in the image below.
2. Insert the riser card assembly into the PCIe slot on the system board.
3. Tighten the screws on the rear side of the system to secure the riser card assembly.



System Fan

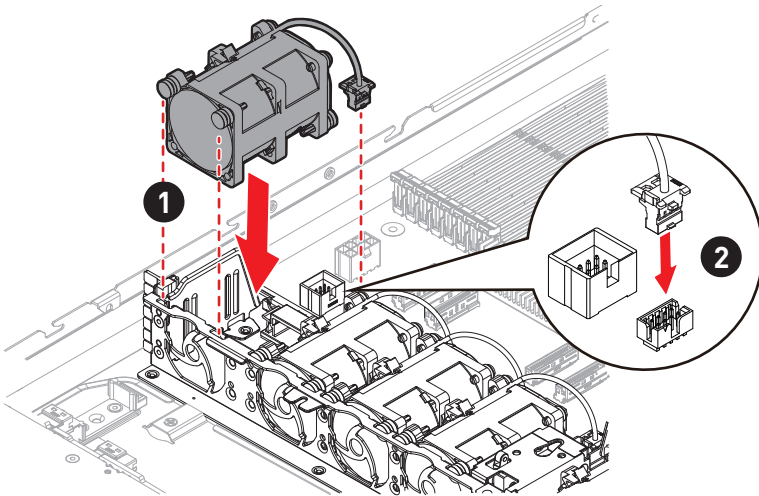
The server system is equipped with **8 non-hot swappable system fans** that measure **40 x 40 x 56mm**, which provide primary airflow to maintain optimal cooling and prevent overheating.

The fan features include:

- Tachometer on each fan allows BMC to monitor the system's status in real-time.
- An integrated BMC firmware automatically adjusts fan speed based on the system's thermal status to maintain optimal performance.

Installing 1U Fan

1. Lower the system fan until it seated firmly.
 2. Connect the fan cable to the system board.
- *Note the fool-proof design on the connector before docking it.*



Power Supply Unit (PSU)

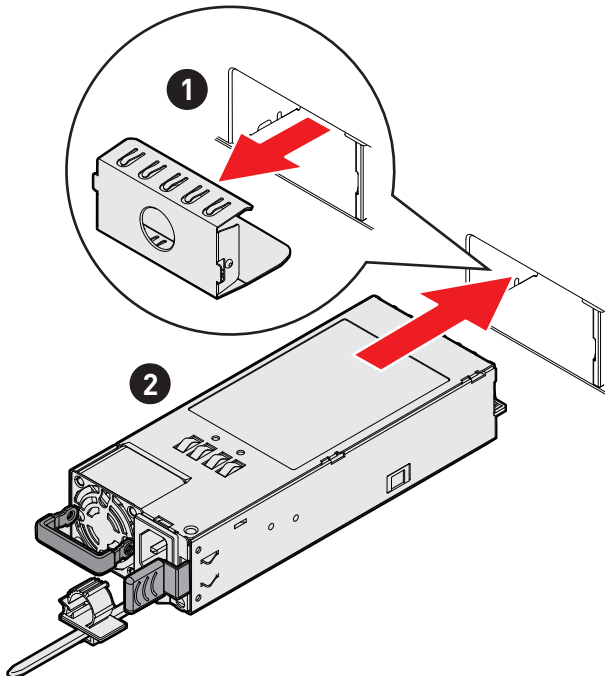
The server system supports two power supplies that can be easily inserted and removed from the rear side of the system without the need for tools.

Important

- Both power supplies must be identical and both power cords should be connected.
- Failing to connect both power supplies could result in CPU throttling.

Installing PSU

1. Remove the PSU blank.
2. Slide the PSU into the chassis bay until the release latch snaps into place.
3. Connect the power cable to the PSU power outlet.



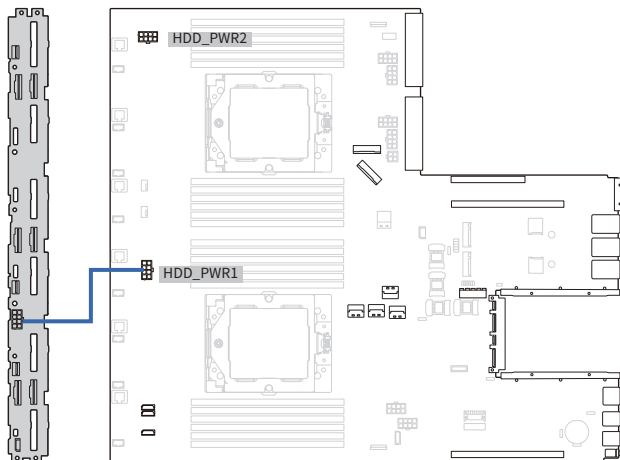
Cable Routing



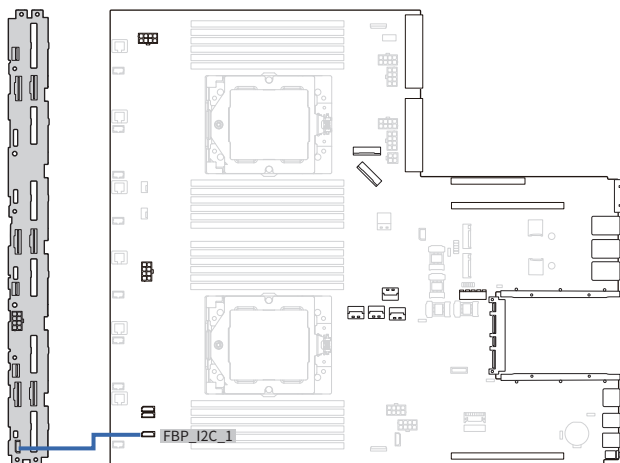
Important

Please remove the **fan cage** before routing cables.

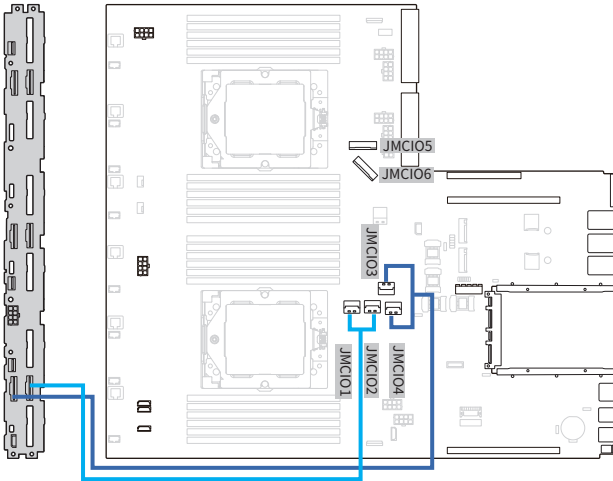
8-pin to 8-pin Power Cable



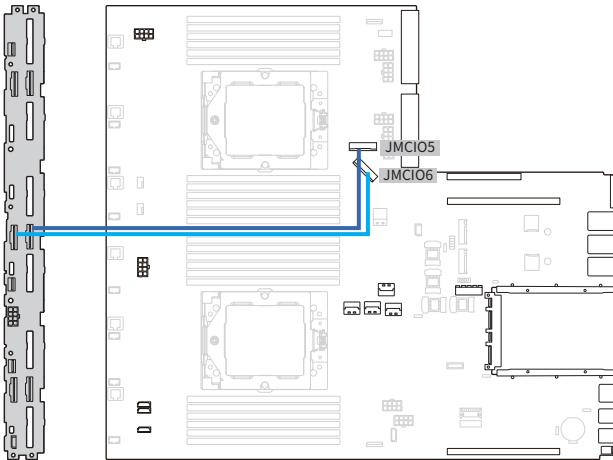
I2C Cable



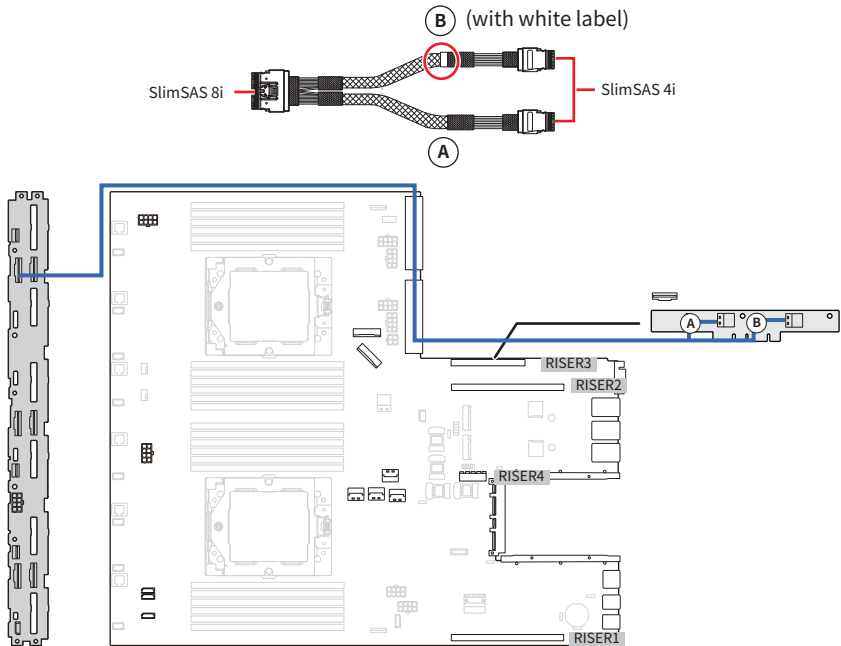
MCIO 4i to SlimlineSAS 8i Cable



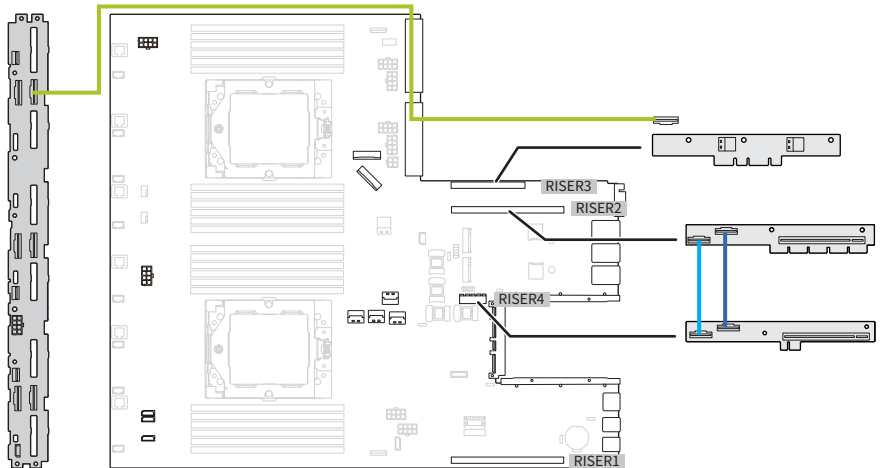
MCIO 8i to SlimlineSAS 8i Cable



SlimlineSAS 4i to SlimlineSAS 8i Cable



SlimlineSAS 8i to SlimlineSAS 8i Cable



Slide Rail

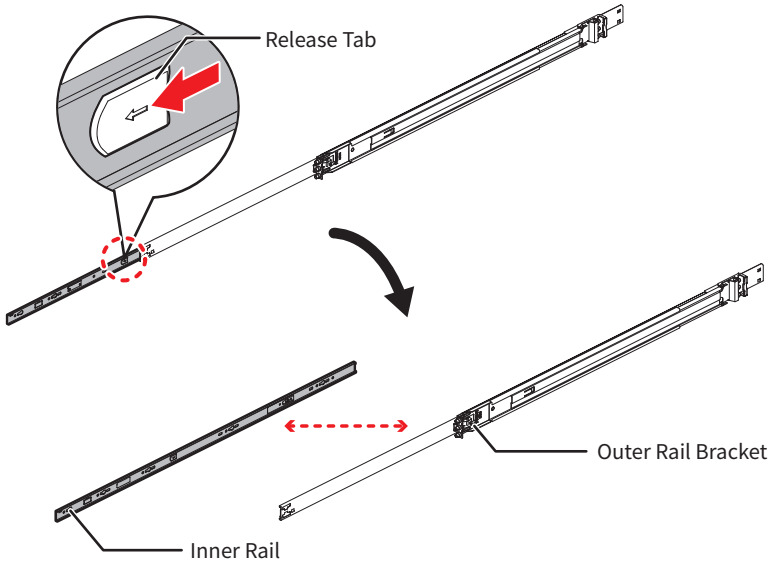


Important

The illustrations are provided for demonstrative purposes only. The appearance of your system may differ based on the model you have purchased.

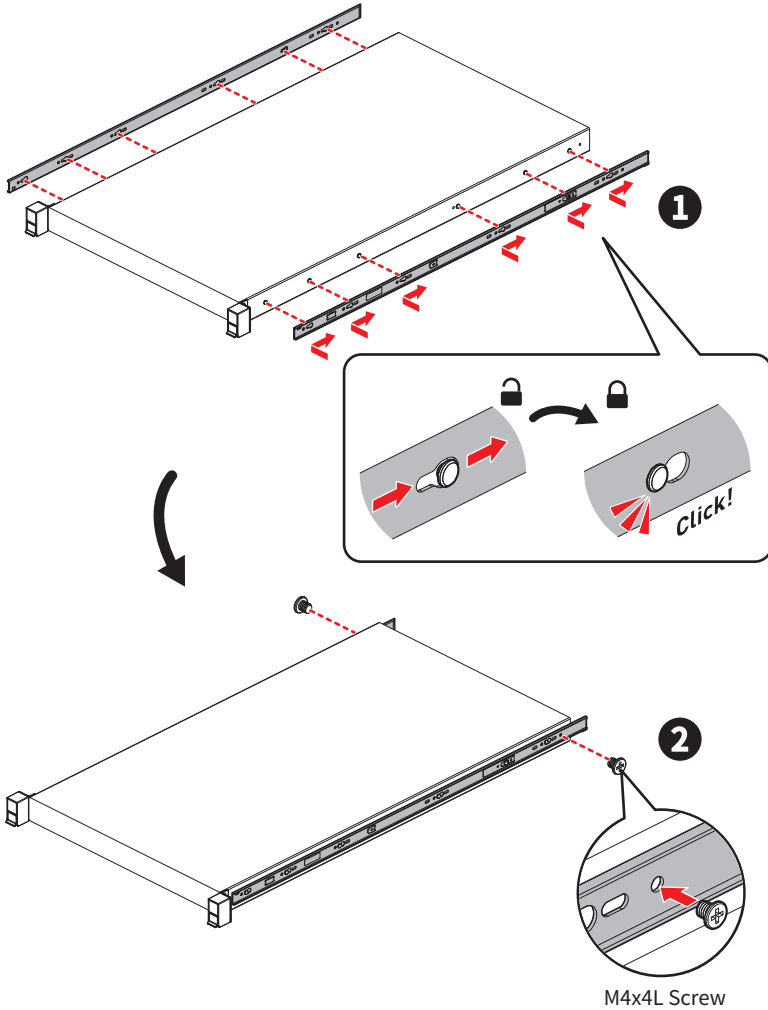
Disassembling Slide Rail

Slide the **release tab** forward to separate the inner rail from the bracket.



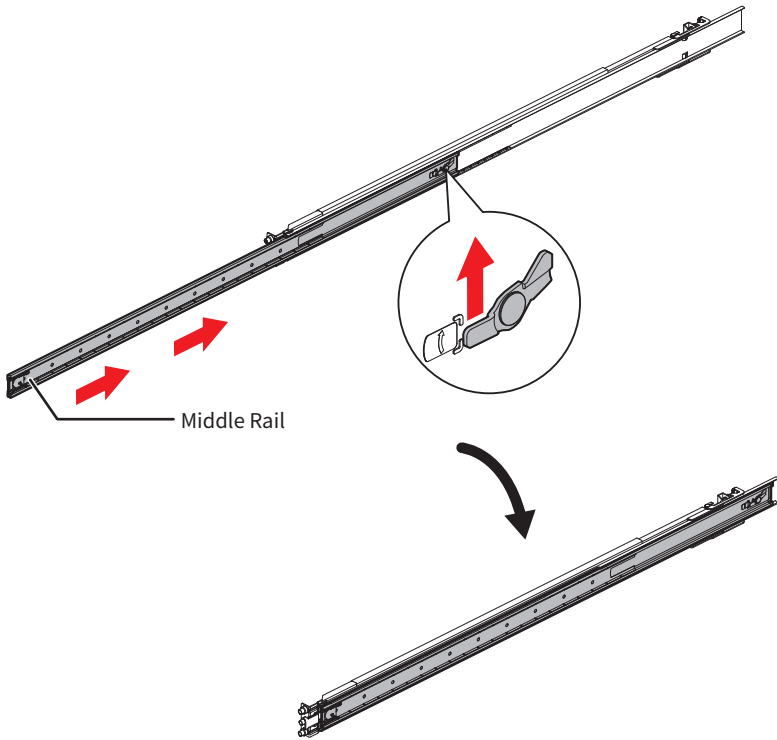
Installing Inner Rail onto the Chassis

1. Align the standoffs on the side of the chassis with the hole on the inner rail, then **pull the inner rail backwards** till it locks into place.
 2. Tighten the screw to secure the inner rail.
- Repeat the same procedure to install the inner rail on the other side of the chassis.

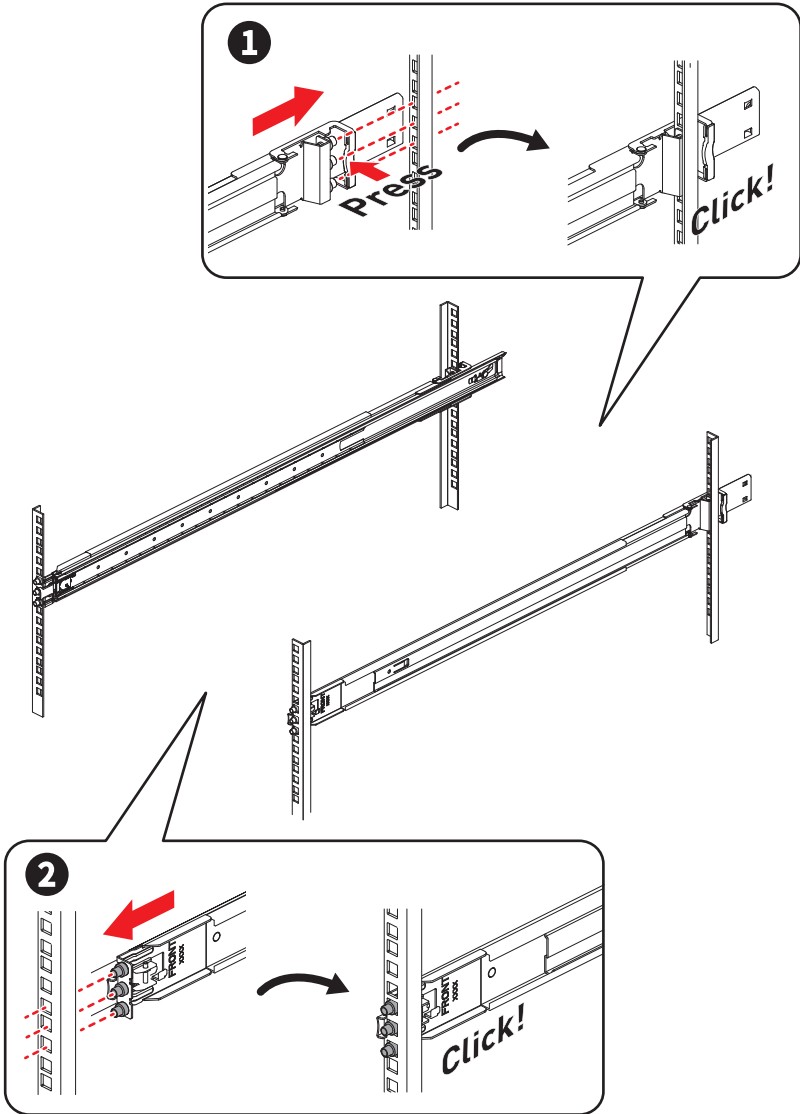


Retracting Outer Rail Bracket

Pull the latch upward to slide the middle rail back to the outer rail bracket.

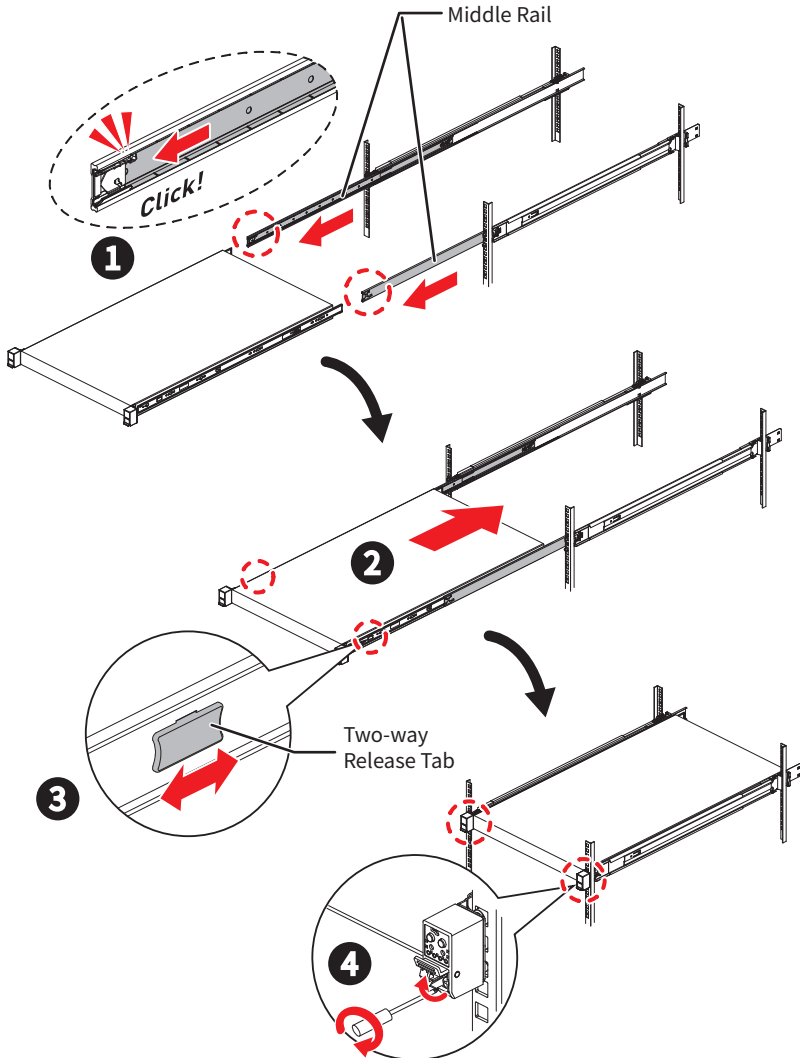


Attaching Outer Rail Bracket to Rack Frame



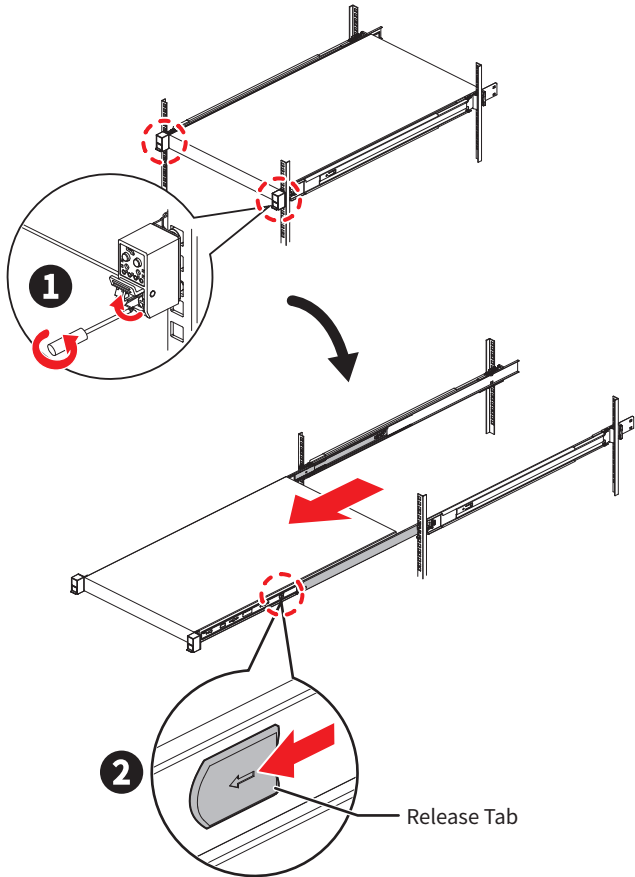
Installing Chassis into Rack

1. Pull out the middle rails till it fully extended.
- Ensure the **ball bearing retainers** are locked forward on each middle rail.
2. Engage the inner rails of the chassis to the middle rails, then push the chassis forward until it stops.
3. Push the chassis into the rack by sliding the **two-way release tabs** forward or backward.
4. Tighten the screws to secure the chassis.

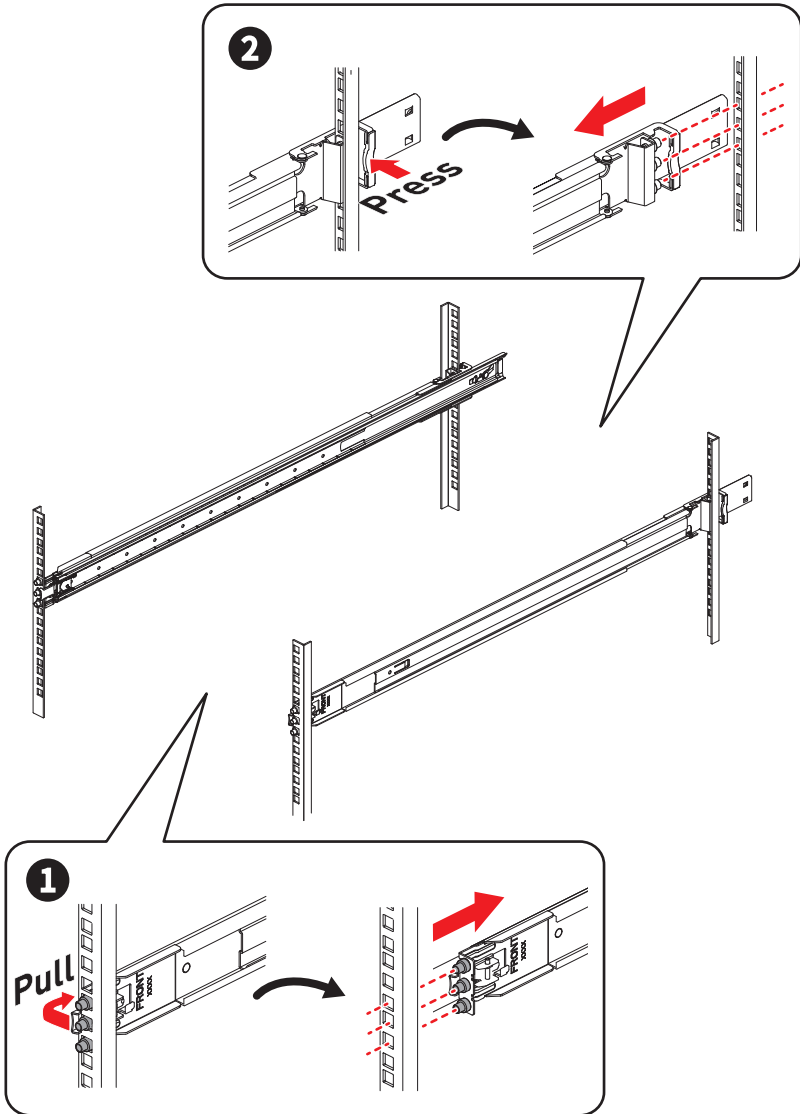


Removing Chassis from Rack

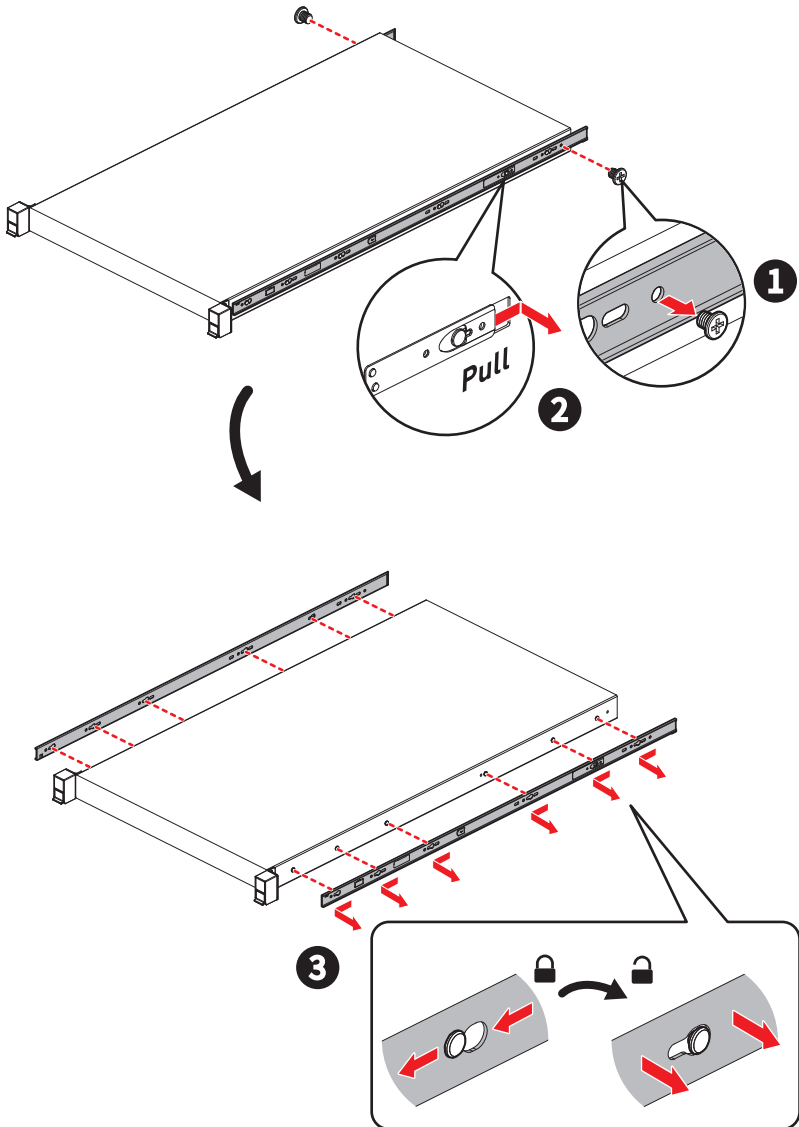
1. Remove the screws.
2. Slide the **release tab** forward to separate the inner rail (chassis) from the bracket.



Detaching Outer Rail Bracket from Rack Frame



Detaching Inner Rail from Chassis



vantageTM