SNR-LS-G4 2U

User manual

SNR
Smart Networking Reliable

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1 Safety statement

1.1 General Safety Matters

To prevent the risk of serious personal and property damage,always follow the recommendations below.

- Please do not open the system cover by yourself, it should be operated by professionally trained maintenance technicians. Do not touch the triangular marked part with the lightning symbol as there may be high voltage or electric shock.
- Never push objects of any kind into the system openings. Objects, if inserted, may short out internal components resulting in fire or electric shock.
- IMPORTANT: Before servicing, disconnect all cables. (there may be more than one cable)
- It is strictly forbidden to perform live operations such as power-on before the cover is closed.
- When it is necessary to open the cover, please wait for the internal equipment to cool down, otherwise it may cause burns to you.
- Do not use this device in a wet environment.
- If an extension cable is used, use a three-wire cable and make sure it is properly grounded.
- Make sure the server is well grounded. Different grounding methods are available, but must be physically connected to ground. If you are unsure whether you have a safe grounding, please contact the appropriate authority or an electrician to confirm. Please use a three-core power cord and socket with grounding protection. Improper grounding may cause leakage, burning , explosion or even personal injury.
- Please make sure that the power socket and the power interface are in tight contact, loose contact may cause a fire hazard.
- Please use the device under 220V AC voltage. Working under an inappropriate voltage will cause electric shock, fire, or even damage to the device.
- It is required that the equipment is well ventilated and kept away from heat sources, fire sources, and do not block the cooling fan, otherwise the equipment may cause smoke, fire or other damage due to overheating.

- Please keep the power cord and plug clean and undamaged, otherwise there may be a risk of electric shock or fire.
- Note: There is a danger of explosion if the battery is replaced improperly. Only use the same or equivalent replacement parts recommended by the manufacturer. Waste batteries will pollute the environment. Please follow the instructions to set up the replaced old batteries.
- Keep your computer away from electromagnetic fields.
- Keep away from electronic noise and interference caused by high-frequency equipment such as air conditioners, fans, motors, radio stations, TV stations, and transmission towers.
- Please do not plug or unplug the internal connection parts or move the device while the device is running, otherwise it may cause device downtime or damage to the device.
- Please try to avoid restarting or switching the machine frequently to prolong the service life of the device.
- Please keep the environment clean and avoid dust. The working environment temperature of the equipment is 5°C~35°C and the humidity is 35%~80%.
- Users are requested to back up important data in time. SNR is not responsible for any data loss caused by any circumstances.

1.2 Hazardous Substances Statement

During the 10-year environmental protection use period, the toxic and harmful substances or elements contained in the product will not leak or mutate under normal use conditions, and the user will not cause serious pollution to the environment or cause serious harm to the person or property when using the device. damage.

Part Name	Harmful Substance					
	lead	HG	cadmium	Hexavalent chromium	PBBs	polybrominated diphenyl ethers
	(Pb)	(Hg)	(Cd)	(CrVI)	(PBB)	(PBDE)
Chassis/bezel	x	o	o	o	o	o
Mechanical components (fans, radiators, motors, etc.)	x	o	o	o	o	o
Printed Circuit Assembly - PCA*	x	o	o	o	o	o
Cable/Wire/Connector	x	o	o	o	o	o
Hard disk drive	x	o	o	o	o	o
Media reading/storage devices (optical discs, etc.)	x	o	o	o	o	o
Power Supply/Power Adapter	x	o	o	o	o	o
power supply	x	o	o	o	o	o
Pointing device (mouse, etc.)	x	o	o	o	o	o
keyboard	x	o	o	o	o	o
Complete Rack/Rail Products	x	x	o	o	o	o

- Indicates that the content of the toxic and hazardous substance in all homogeneous materials of the component is below the limit requirement specified in GB/T26572-2011 "Limit Requirements for Restricted Substances in Electrical and Electronic Products".
- Indicates that the content of the toxic and hazardous substance in at least one homogeneous material of the component exceeds the limit requirement specified in GB/T26572-2011 "Limit Requirements for Restricted Substances in Electrical and Electronic Products". But comply with EU RoHS Directive (including its exemption clause).

1.3 Warning notice

This product complies with EMC Class A standards.

1.4 Climate and environment requirements

temperature	
Operating temperature	5°C to 35°C with a maximum temperature gradient of 10°C per hour.
Continuous operating temperature range (at altitudes below 950 meters or 3117 feet)	5°C to 35°C without direct sunlight on the device.
storage temperature range	-40°C to 65°C.
humidity	
storage	The air must be non-condensing at all times with a relative humidity of 5% to 95% at a maximum dew point of 33°C .
Continuous Operating Humidity Percentage Range	10% to 80% relative humidity at a maximum dew point of 26°C.

Explain

Certain configurations have been validated for performance at 40°C and 90% (29°C maximum dew point) humidity

Caution

- If the device is used in an environment with poor or no lightning protection facilities, please shut down the device in thunderstorm weather and unplug the power cord, network cable, telephone line, etc. connected to the device.
- Please use genuine operating system and software, and configure them correctly.SNR Y is not responsible for the maintenance of server failures caused by operating systems and software.
- Please do not disassemble the chassis and increase or decrease the server hardware configuration by yourself. SNR is not responsible for the hardware and data damage caused by this.
- When the equipment fails, please check the contents of this manual first to identify and eliminate common faults. If you cannot determine the cause of the fault, please contact the technical support department for help in time. Selecting a suitable environment for the computer will help the computer run stably and prolong the service life of the computer.

2. Product Introduction

2.1 Introduction

SNR-LS-G4 is a flagship general-purpose server with a wide range of uses. It is based on Intel's latest server platform and achieves comprehensive breakthroughs in computing, storage, and networking. Adopting a modular design, it supports a wide range of specifications and strong expansion capabilities, and can be flexibly configured according to business needs.

It is suitable for workloads such as IT core business, virtualization, cloud computing, distributed storage and artificial intelligence.

It has the advantages of high energy efficiency, strong scalability, high reliability, and easy management.

2.2 Features

Modular design and rich configurations

The SNR-LS-G4 server adopts a modular design, and both the front hard disk module and the rear IO module can be configured as needed.

- The front hard drive supports 2U8/12-3.5", 2U8/16/24/25-2.5" and other hard drive configurations
- Optional 2/4 2.5-inch hard drives at the rear, compatible with different types of hard drives such as SATA/SAS/SSD/NVMe
- A variety of PCIe expansion modules are available at the rear, and different riser cards can be selected to meet different expansion card needs.

High performance

- Supports Intel's latest generation Sapphire Rapids architecture CPU
- Supports up to 16 channels of DDR5 memory, each channel can support up to 2 memory slots, and supports memory frequencies up to 4800MHz
- Support higher UPI link rate
- Supports more CPU cores, each CPU can have up to 60 physical cores
- Integrated PCIe 5.0 with up to 80Lanes

High reliability

- Has advanced memory fault tolerance function

- Optional RAID configuration supports online recovery of RAID arrays to ensure data security when the hard disk fails.
- Optional 1+1 redundant power supply provides users with a more stable and reliable system power supply

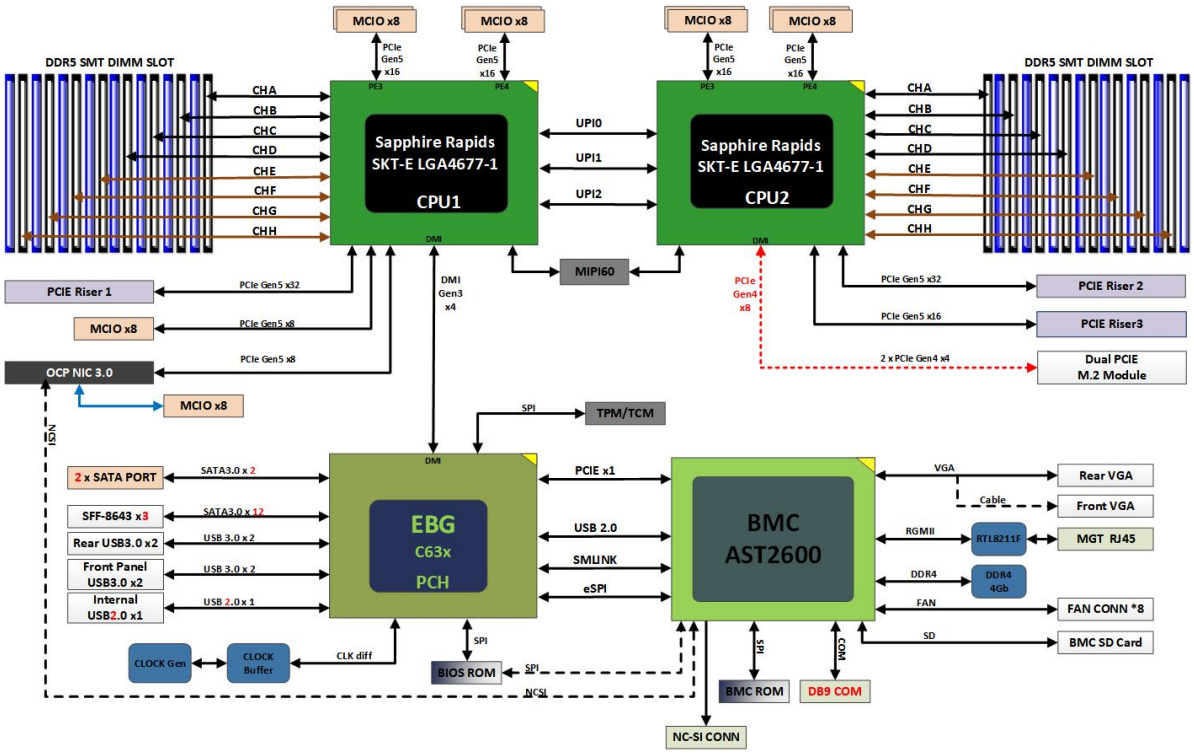
Intelligent management

- Integrated intelligent server remote management system. Provides working status information display such as system internal temperature, fan speed, DC power supply voltage, etc. Automatically record server failure time and log information
- Integrated iKVM function can remotely operate and maintain the server, provide fault indication function, and improve maintenance efficiency

2.3 Product Specifications

For detailed technical specifications of SNR-LS-G4 , please refer to the SNR-LS-G4 product brochure .

2.4 System topology block diagram



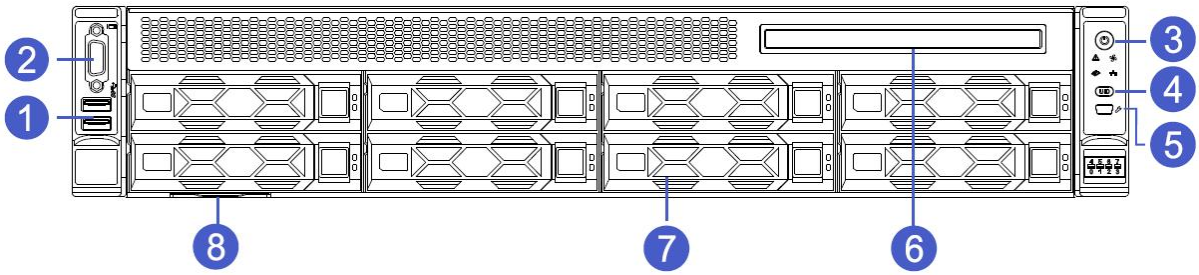
- SNR-LS-G4 supports 2 Intel® Xeon® fourth-generation scalable processors and 32 DDR5 DIMMs. The processors are interconnected through 3 sets of UPI buses, and the transmission rate can reach up to 16GT/s.

- Onboard SATA interface: Onboard 3 SFF-8643 interfaces and 2 standard 7pin SATA interfaces, supporting up to 14 SATA expansions.
- Onboard M.2 interface: Provides 2 standard M.2 interfaces, supporting 2280 and 22110 specifications (CPU2 PCIe 4.0 x4).
- Onboard MCIO interface: CPU1 provides 5 MCIO interfaces, CPU2 provides 4 MCIO interfaces, and can be expanded up to 18 U.2 NVMe.
- PCIe expansion: Provides 3 custom PCIe riser expansion slots, which can provide different PCIe expansion combinations with different PCIe risers.
- Network expansion: Provides a standard OCP NIC 3.0 expansion slot and supports standard OCP NIC 3.0 SFF modules.
- Integrated AST2600 management chip, providing IPMI/KVM management functions, VGA, management network port, debugging serial port and other interfaces.

3. System Components

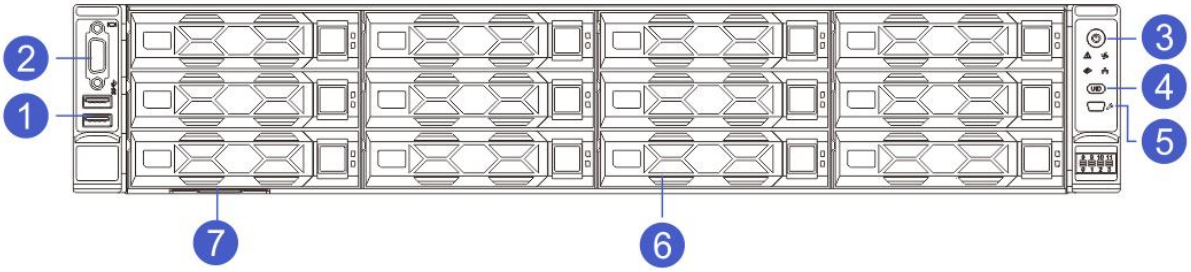
3.1 Front panel components

- 2U8-bay 3.5- inch disk model



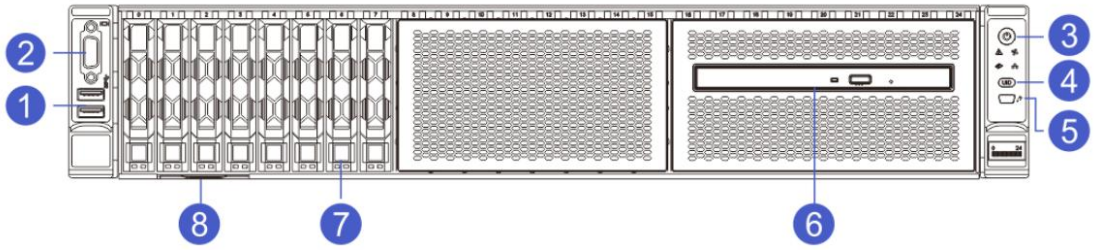
serial number	module name	serial number	module name
1	USB 3.0 interface	2	VGA interface
3	power button	4	UID button
5	MiniUSB LCD interface	6	optiacl drive
7	Hard drive module	8	Asset tag

- 2U12-bay 3.5- inch disk model



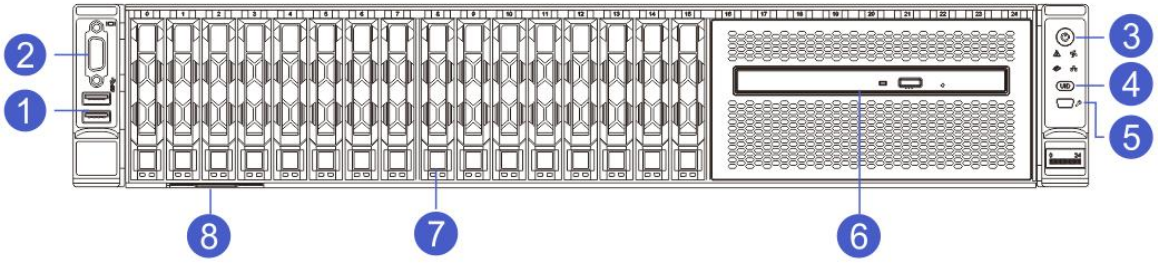
serial number	module name	serial number	module name
1	USB 3.0 interface	2	VGA interface
3	power button	4	UID button
5	MiniUSB LCD interface	6	Hard drive module
7	asset tag		

- 2U8-bay 2.5- inch disk model



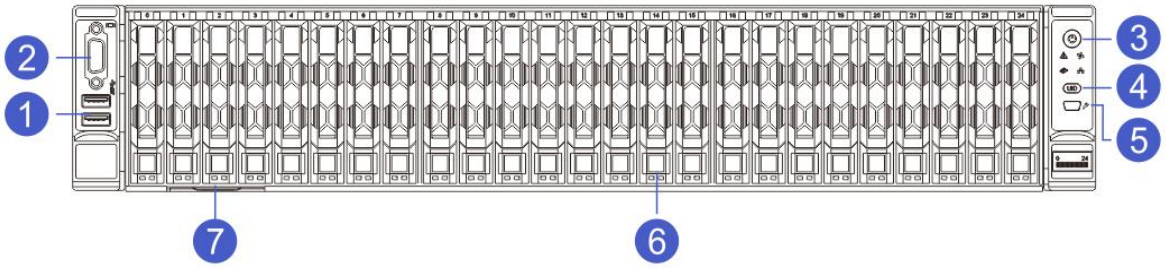
serial number	module name	serial number	module name
1	USB 3.0 interface	2	VGA interface
3	power button	4	UID button
5	MiniUSB LCD interface	6	optiacl drive
7	Hard drive module	8	asset tag

- 2U16-bay 2.5- inch disk model



serial number	module name	serial number	module name
1	USB 3.0 interface	2	VGA interface
3	power button	4	UID button
5	MiniUSB LCD interface	6	optiacl drive
7	Hard drive module	8	asset tag

- 2U24/25-bay 2.5- inch disk model



serial number	module name	serial number	module name
1	USB 3.0 interface	2	VGA interface
3	power button	4	UID button
5	MiniUSB LCD interface	6	Hard drive module
7	asset tag		

Explain

The 3.5-inch hard drive bay can accommodate 3.5/2.5-inch hard

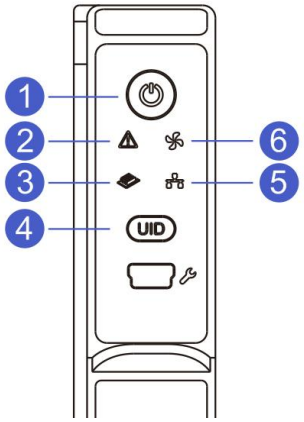
Front panel interface description

name	type	illustrate
VGA interface	DB15	for connecting a monitor
USB interface	USB 3.0	Provides a USB interface through which USB devices can be connected.
LCD dedicated interface	Mini USB	Used to connect to external LCD modules. It is mainly used to reflect the presence and running status of various components of the server. It can also be used to set the IP address of the server's iBMC management network port and query device status information and alarms. The LCD and the iBMC management module on the server together form the LCD subsystem. LCD obtains device information directly from the iBMC management module. The LCD subsystem does not store device data.

Caution

When using an external USB device, please make sure that the USB device is in good condition, otherwise the server may work abnormally.

- Front panel indicators and key descriptions



serial number	module name	serial number	module name
1	Power switch button/indicator	4	UID button/indicator
2	System Malfunction Indicator	5	network status light
3	memory fault indicator	6	fan fault light

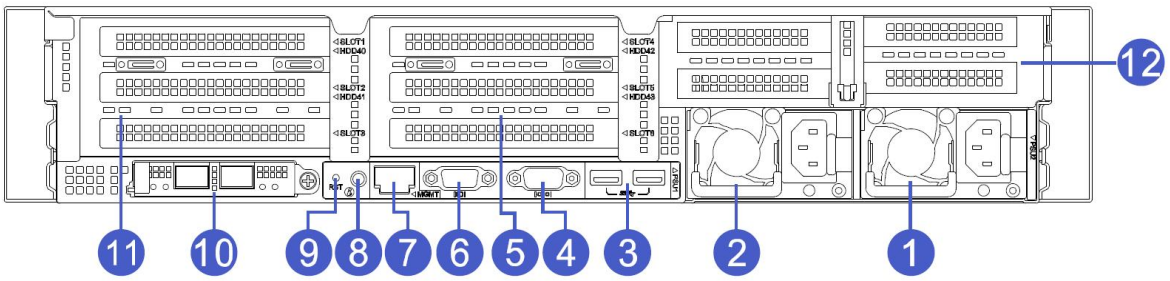
logo	Indicator light/button	status description
	Power switch button/indicator	Description of the power button: ✓ Short press this button in the power-on state, and the OS will shut down normally. ✓ Press and hold this button for 6 seconds in the power-on state to force the server to power off. ✓ Short press this button in the power-on state to start the machine. Description of the power indicator light: ✓ Green (steady on): Indicates that the device has been powered on normally. ✓ Green (blinking): Indicates that the device is in standby. ✓ Green off: Indicates that the device is not powered on.
	UID button/indicator	The UID button/indicator is used to conveniently locate the server to be operated. You can manually press the UID button or remotely control the iBMC to turn off or turn on the indicator. UID button description:

		✓ Short press the UID button to turn on/off the positioning light. ✓ Long press the UID button for 6 seconds to reset the server BMC management system Description of UID indicator light: ✓ Blue (steady on/blinking): Indicates that the server is located. ✓ Off: Indicates that the server is not located.
	System Malfunction Indicator	✓ Off: Indicates that the device is operating normally. ✓ Blinking red: Indicates that the device is faulty. ✓ Steady red: Indicates that the device has an abnormal alarm.
	fan fault light	✓ Off: Indicates that the fan is normal. ✓ Steady red: Indicates that the fan is faulty
	memory fault indicator	✓ Off: Indicates that the system memory is normal. ✓ Steady red: Indicates that the system memory is faulty.
	network status light	✓ Steady green: Indicates that the network card is connected normally and there is no data communication. ✓ Blinking green: Indicates that the network card is connected normally and there is data communication. ✓ Off: Indicates no network connection/no network module

Explain

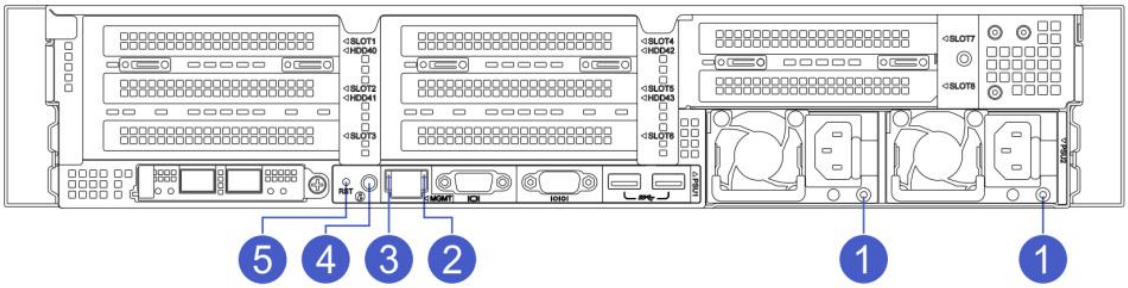
The network status indicator only indicates the network working status of the rear OCP network card module.

3.2 Rear panel components



serial number	module name	serial number	module name
1	PSU2	7	IPMI management network port
2	PSU1	8	UID button and indicator light
3	USB3.0 interface	9	System reset button
4	COM interface	10	OCP 3.0 network card
5	I/O module 2	11	I/O module 1
6	VGA interface	12	I/O module 3

- Rear panel interface description



serial number	module name	serial number	module name
1	Power module indicator light	4	UID button/indicator
2	Network connection status indicator light	5	System reset button
3	Network activity status light		

Power module indicator light	✓ Green (steady on): Indicates that input and output are normal. ✓ Off: Indicates no AC power input. ✓ Green (flashing/1Hz): ● Indicates that the server is in standby state; ● Indicates that the power supply is in cold standby state; ✓ Green (flashing/2Hz): Indicates that the power supply is upgrading firmware. ✓ Red (always on): ● Indicates that the power supply has no output. Possible reasons include power supply over-temperature protection, power supply output over-current/short circuit, output over-voltage, device failure (excluding all device failures), etc.; ● Indicates that the power cord is not connected or the power cord is disconnected; ✓ Red (flashing/1Hz): Indicates an alarm signal in the power supply. The power module may have abnormalities such as high temperature, high load, high current, or low fan speed.
UID button/indicator	✓ The UID indicator light is used to easily locate the server to be operated. The light can be turned off or on remotely by manually pressing the UID button or iBMC command. ✓ Blue (steady on/flashing): Indicates that the server is located. ✓ Off: Indicates that the server has not been located.
Network connection status indicator light	✓ Steady green: Indicates Gigabit Link. ✓ Orange solid light: indicates 100M Link. ✓ Off: 10M Link/no network connection.
Network activity status light	✓ Yellow (flashing): Indicates that data is being transmitted. ✓ Off: Indicates no data transmission.
System reset button	✓ Can be used for system reset or NMI function. ✓ Short press: Reset the system. ✓ Long press (more than 6 seconds): execute the NMI function and trigger the server to generate a non-maskable interrupt.

Caution

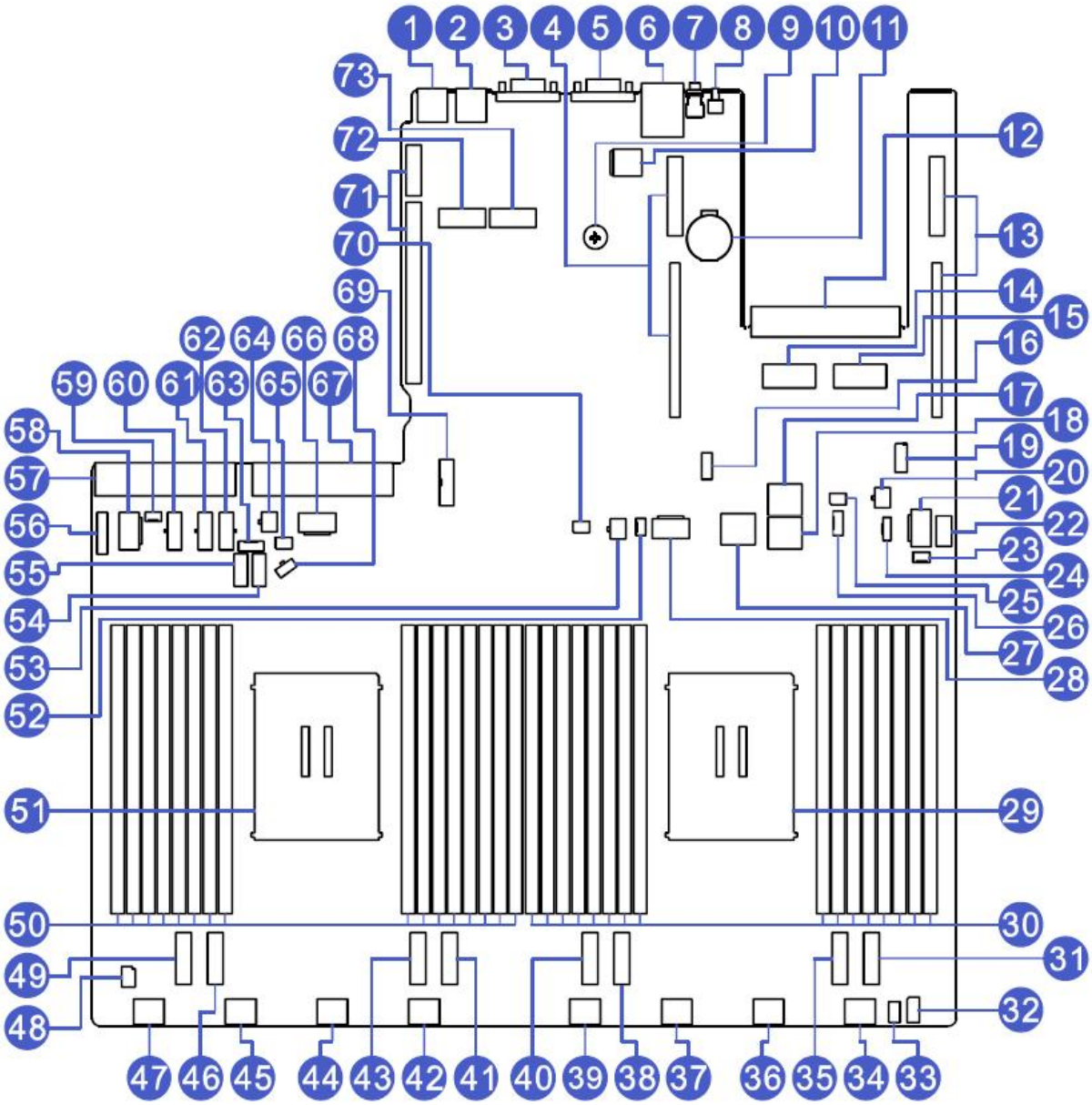
- The NMI button is mainly used when the operating system cannot be used. This feature should not be used during normal server operation.
- The NMI button is only used for internal debugging. When using it, the operating system needs to have a corresponding NMI interrupt handler, otherwise it may cause the system to crash. Please use with caution.

- OCP NIC 3.0 network card

The SNR-LS-G4 server supports standard OCP NIC 3.0 SFF network cards, including OCP NIC 3.0 network cards from any manufacturer.

3.3 Motherboard components

SNR-LS-G4 motherboard components, the interface description is as follows:



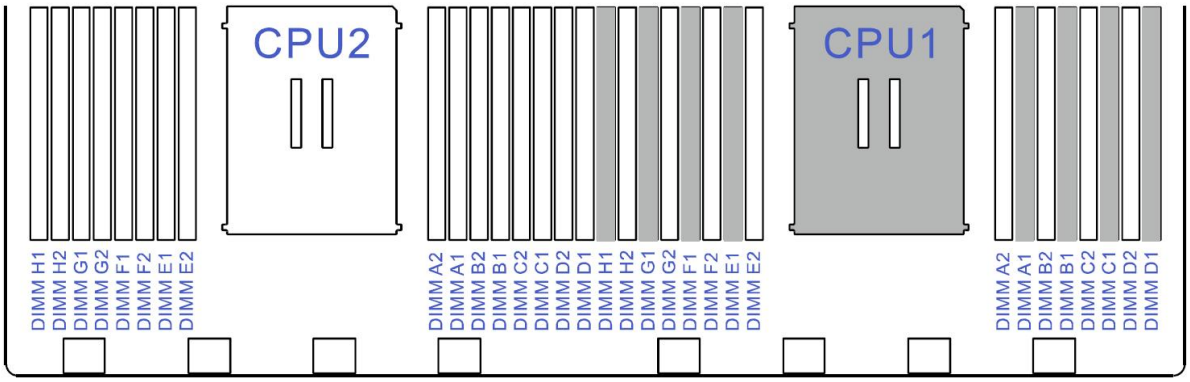
serial number	module name	serial number	module name
1	USB3.0 interface 2	2	USB3.0 interface 1
3	C OM interface	4	Riser card slot 2 (corresponds to C PU2)
5	VGA interface _	6	IP PMI management network port
7	ID button indicator light	8	R ST button
9	Motherboard fixing screws	10	B MC SD slot
11	battery socket	12	O CP NIC3.0 network card connector

13	Rise r card slot 1 (corresponding to C PU1)	14	CPU1 MCIO connector (CPU1 MCIO0)
15	O CP MCIO connector	16	T PM/TCM interface (SPI TPM)
17	Mini SAS HD Connector (SATA Port2)	18	Mini SAS HD Connector (SATA Port1)
19	NCSI connector _	20	Rear hard drive power connector 1 (HDD PWR1)
21	GPU power connector 0 (GPU PWR0)	22	Built-in USB2.0 connector (USB2.0)
23	Rear hard drive backplane I2C connector (BP I2C0)	24	RAID KEY connector (VROC RAID KEY)
25	Rear hard drive backplane signal connector 1 (LED CONN1)	26	Out-of-band management connector 1 (SGPIO1)
27	MINI SAS HD connector (SATA PORT0)	28	GPU power connector (GPU PWR1)
29	CPU1 _	30	Memory slot (corresponding to C PU1)
31	CPU1 MCIO connector (CPU1 MCIO3)	32	Front light panel signal connector (FP CONN)
33	Liquid cooling pump interface (Liquid Cooling CONN)	34	Fan connector (FAN14/15)
35	C PU1 MCIO connector (CPU1 MCIO4)	36	Fan connector (F AN12/13)
37	Fan connector (F AN10/11)	38	C PU1 MCIO connector (CPU1 MCIO2)
39	Fan connector (F AN8 / 9)	40	C PU1 MCIO connector (CPU1 MCIO1)
41	C PU2 MCIO connector (CPU2 MCIO2)	42	Fan connector (F AN6 / 7)
43	C PU2 MCIO connector (CPU2 MCIO3)	44	Fan connector (F AN4 / 5)
45	Fan connector (F AN2/3)	46	C PU2 MCIO connector (CPU2 MCIO1)
47	Fan connector (F AN0/1)	48	Intrusion switch interface (INTRUDER CONN)
4 9	C PU2 MCIO connector (CPU2 MCIO0)	50	Memory slot (corresponding to C PU2)
5 1	CPU2	5 2	Rear hard drive backplane I2C connector (BP I2C1)
5 3	Rear hard drive power connector 1 (HDD PWR2)	5 4	SATA signal connector (HDD2)
5 5	SATA signal connector (HDD1)	5 6	Front VGA interface (FP VGA)
5 7	PSU2 interface	5 8	GPU power connector (GPU PWR3)
5 9	Rear hard drive backplane I2C connector (B P I2C2)	6 0	Front backplane power interface (B P PWR1)
6 1	Front backplane power interface (B P PWR2)	6 2	Front backplane power interface (B P PWR3)

6 3	Out-of-band management connector 2 (SGPIO2)	6 4	Rear hard drive power connector (HDD PWR3)
6 5	Rear hard drive backplane signal connector (LED CONN3)	6 6	GPU power connector (GPU PWR2)
6 7	PSU1 interface	6 8	CD power connector (CDPWR)
6 9	Front USB3.0 interface (FP USB 3.0)	7 0	Rear hard drive backplane signal connector (LED CONN2)
7 1	Riser card slot 3 (corresponds to CPU2)	72	M.2 slot (M.2 SLOT1)
73	M.2 slot (M.2 SLOT0)		

3.4 Memory DIMM slot

The server provides 32 DIMM slots, and each CPU supports 16 DDR 5 memory. The sequence of the corresponding slots is shown in the figure below:



Notice

- Each CPU must have at least one memory installed, and the DIMMs installed in the system are evenly distributed to each CPU one by one according to the number of CPUs.
- The same server is not allowed to mix memory of different types (RDIMM, LRDIMM) and different specifications (capacity, bit width, Rank, etc.).

3.4.1 Memory support type

DDR5 memory types supported by the server are related to the CPU .

- When using Intel's fourth generation Xeon Scalable processor (codename: Sapphire Rapids) , the supported DDR5 memory is as follows:

Type	Ranks Per DIMM and Data Width	DIMM Capacity (GB)		Speed (MT/s) ; Voltage (V); DIMM Per Channel (DPC)	
				1DPC	2DPC
		16 Gb	24 Gb	1.1V	
RDIMM	SRx8 (RC D)	16 GB	NA	4800	4400
	SRx4 (RC C)	32 GB	NA		
	SRx4 (RC F) 9x4	32 GB	NA		
	DRx8 (RC E)	32 GB	NA		
	DRx4 (RC A)	64 GB	96GB		
	DRx4(RC B) 9x4	64 GB	NA		
RDIMM-3DS	(4R/8R) x4 (RC A)	2H- 128 GB 4H- 256 GB	NA		

3.4.2 Memory installation requirements

- DDR5 memories of different specifications (capacity, bit width, RANK , etc.) do not support mixed use;
- When installing memory, you need to install the memory of the main memory channel of each channel first;
- When installing memory, you must follow the memory installation principles;

3.4.3 Memory installation principles

Refer to the following installation principles

	SPR iMC#	iMC3				iMC2					iMC0				iMC1										
		CH1(7/H)		CH0(6/G)		CH1(5/F)		CH0(4/E)			CH0(0/A)		CH1(1/B)		CH0(2/C)		CH1(3/D)								
DDR5	Mode	SLOT0	SLOT1	SLOT0	SLOT1	SLOT0	SLOT1	SLOT0	SLOT1		SLOT1	SLOT0	SLOT1	SLOT0	SLOT1	SLOT0	SLOT1	SLOT0	SNC2	AIIA2II	SNC4(XCC only)	Hemi	Quad(XCC only)	Mirror	SGX	Interleaving
1	1LM							DDR5		C		DDR5							Y	Y						
										P				DDR5					Y	Y						
						DDR5				U									Y	Y						
2				DDR5				DDR5				DDR5				DDR5			Y		Y					2
4				DDR5		DDR5		DDR5				DDR5				DDR5		DDR5	Y	Y	Y	Y	Y			4
6		DDR5		DDR5				DDR5				DDR5		DDR5		DDR5			Y	Y						6
		DDR5				DDR5		DDR5						DDR5		DDR5		DDR5	Y	Y						6
		DDR5		DDR5		DDR5						DDR5		DDR5				DDR5	Y	Y						6
8		DDR5		DDR5		DDR5		DDR5				DDR5		DDR5		DDR5		DDR5	Y		Y	Y	Y	Y	Y	8
12		DDR5		DDR5	DDR5	DDR5		DDR5	DDR5		DDR5	DDR5		DDR5	DDR5	DDR5		DDR5	Y		Y	Y	Y			8+4
		DDR5	DDR5	DDR5		DDR5	DDR5	DDR5				DDR5	DDR5	DDR5		DDR5	DDR5	DDR5	Y		Y	Y	Y			8+4
16		DDR5	DDR5	DDR5	DDR5	DDR5	DDR5	DDR5	DDR5		DDR5	DDR5	DDR5	DDR5	DDR5	DDR5	DDR5	DDR5	Y		Y	Y	Y	Y	Y	x8

3.4.4 DDR5 memory RAS features

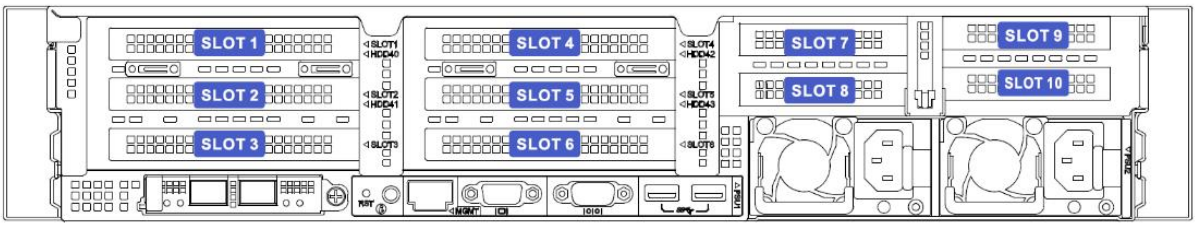
SNR-LS-G4 server DDR5 memory supports the following memory protection

technologies:

- ECC
- Memory Mirroring
- Memory Single Device Data Correction (SDDC，+1)
- Failed DIMM Isolation
- Memory Thermal Throttling
- Command/Address Parity Check and Retry
- Memory Demand/Patrol Scrubbing
- Memory Data Scrambling
- Memory Multi Rank Sparing
- Post Package Repair (PPR)
- Write Data CRC Protection
- Adaptive Data Correction - Single Region (ADC-SR)
- Adaptive Double Device Data Correction - Multiple Region(ADDDC-MR, +1)

3.5 Rear IO Expansion Components

The slot numbers of the PCIe expansion components are shown in the figure below:



- The slots provided by IO module 1 are Slot 1 ~ Slot 3 ;
- The slots provided by IO module 2 are Slot 4 ~ Slot 6 ;
- The slots provided by IO module 3 are Slot 7 ~ Slot 10 ;
- IO module 1 and IO module 2 have the same configurable specifications and can be configured as a hard disk module or PCIe expansion module:
  - When configured as a 3.5 ”hard disk module, Slot 1 ~ Slot 3 (Slot 4 ~ Slot 6) do not support PCIe expansion cards;
  - When configured as a 2.5 hard disk module, Slot 1 ~ Slot 2 (Slot 4 ~ Slot 5) are occupied, and only one PCIe x16 can be expanded in Slot 3 or Slot 6 ;
  - When configured as a PCIe expansion module, 2 PCIe x 16 or 1 PCIe x 16 + 2 PCIe x8 ;

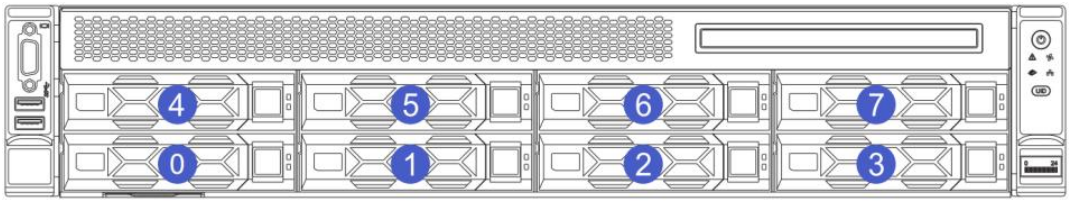
  –
- IO module 3 can be configured as a hard disk module or PCIe expansion module:

- When configured as a 2.5 ” hard disk module, Slot 7 ~ Slot 8 do not support PCIe expansion cards ;
- 2 *PCIe when configured as PCIe expansion module X 16 or 2 *PCIe X 8 or 4 *PCIe x8 ;

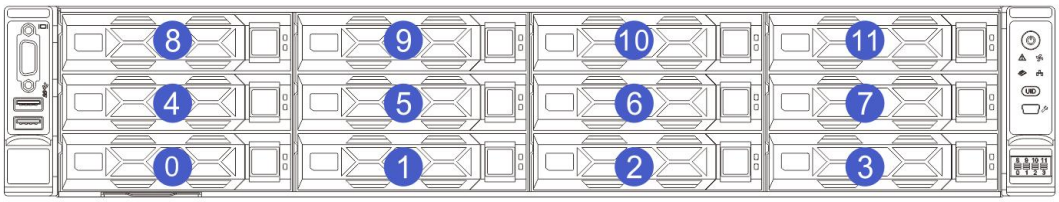
- IO module 1 and IO module 2 can optionally support PCIe 5.0 or PCIe 4.0 , and IO module 3 only supports PCIe 4.0 .

3.6 Hard drive label

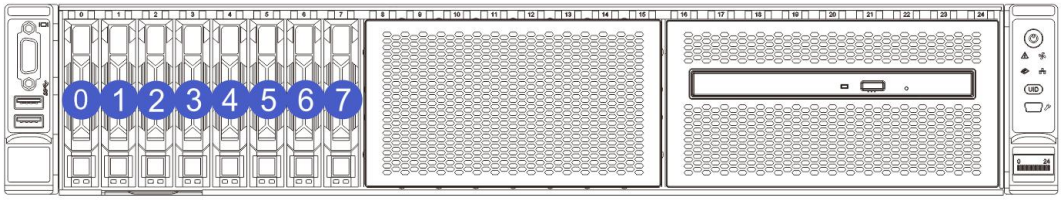
- 2U8 bay 3.5- inch disk model



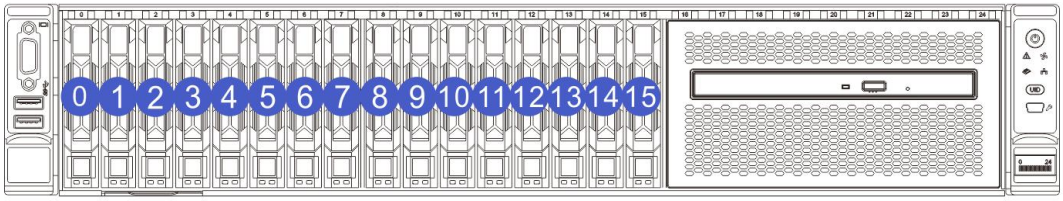
- 2U12 bay 3.5- inch disk model



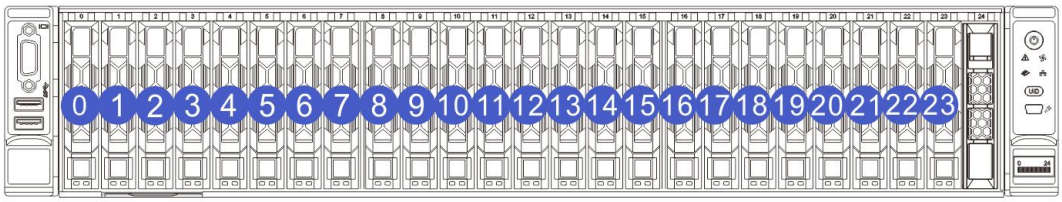
- 2U8- bay 2.5- inch disk model



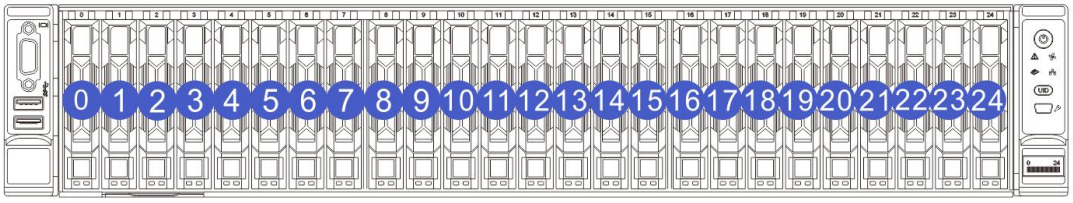
- 2U16- bay 2.5- inch disk model



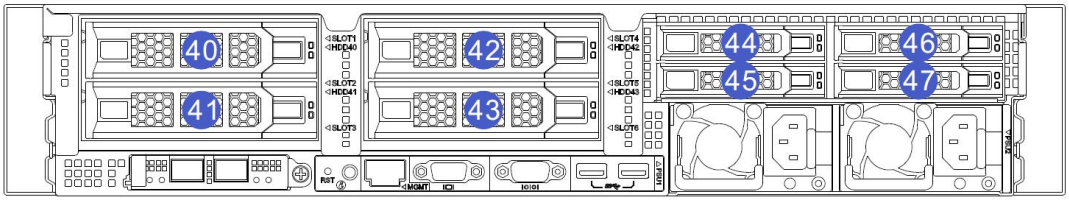
- 2U24 -bay 2.5 -inch disk model



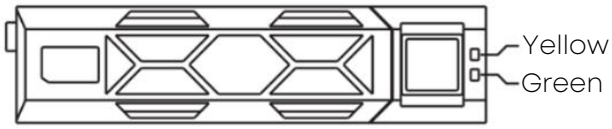
- 2U25 -bay 2.5- inch disk model



- Rear hard drive label



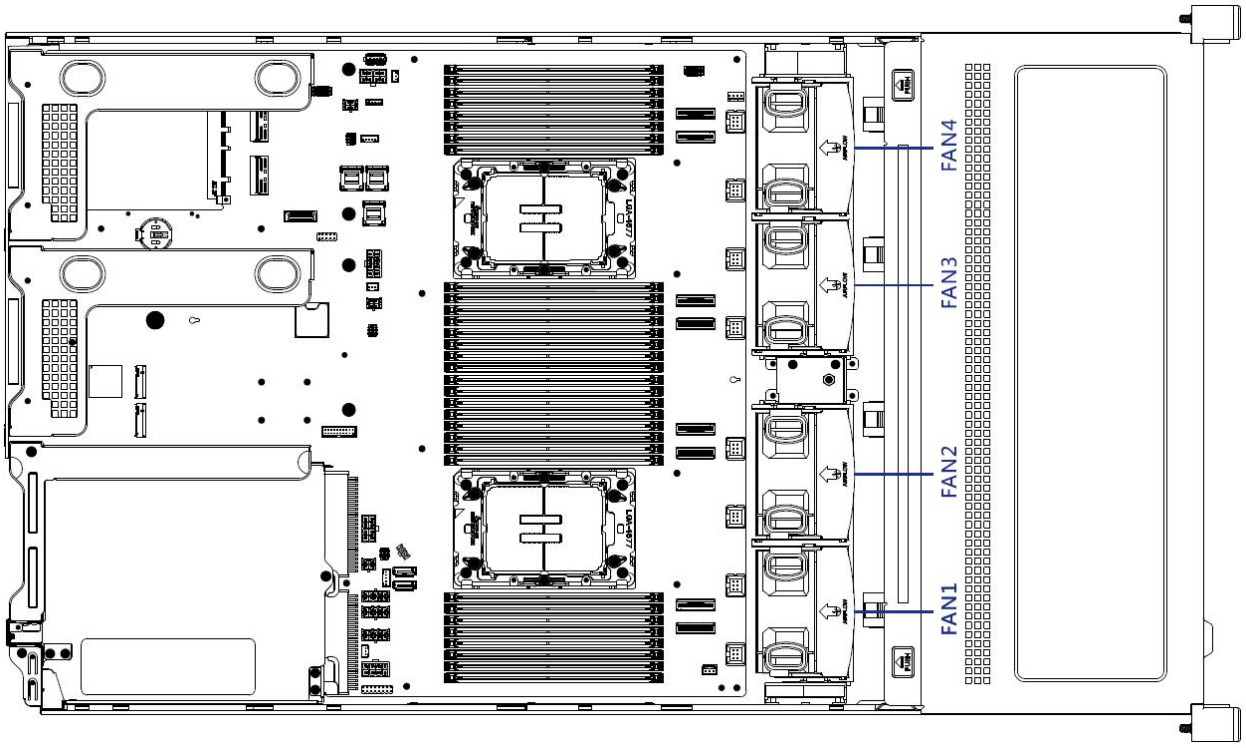
3.7 HDD indicator



HDD status	Hard disk active indicator (green)	Hard disk fault indicator (yellow)
HDD is not in place	turn off	turn off
Hard drive present, but no data activity	always on	turn off
The hard drive is present and active	flashing	turn off
hard disk failure	always on	always on
HDD is located	always on	Blinking (4Hz)
The hard disk is in Rebuild state	always on	Blinking (1Hz)

3.8 System fan

The server supports automatic fan speed adjustment function. The fan speed is dynamically adjusted with the system temperature, effectively reducing system noise and power consumption.

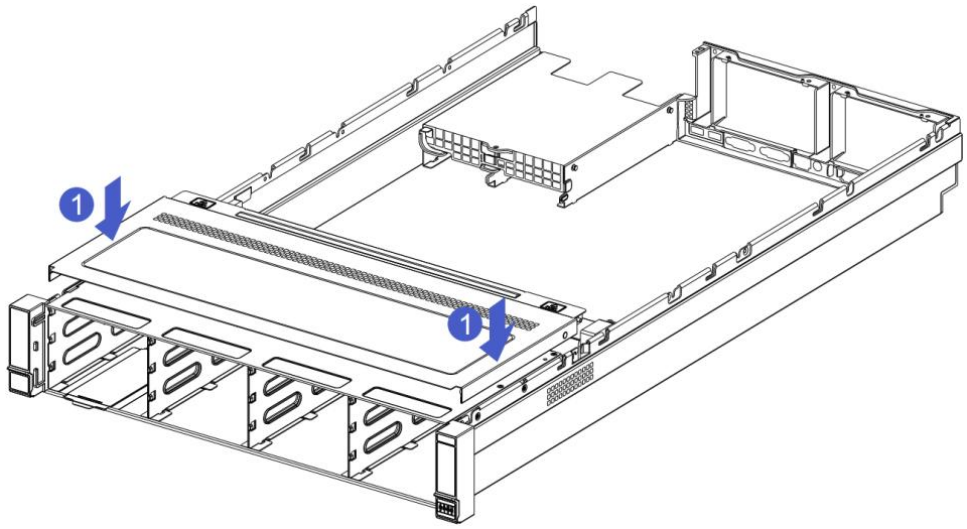


4 Install system components

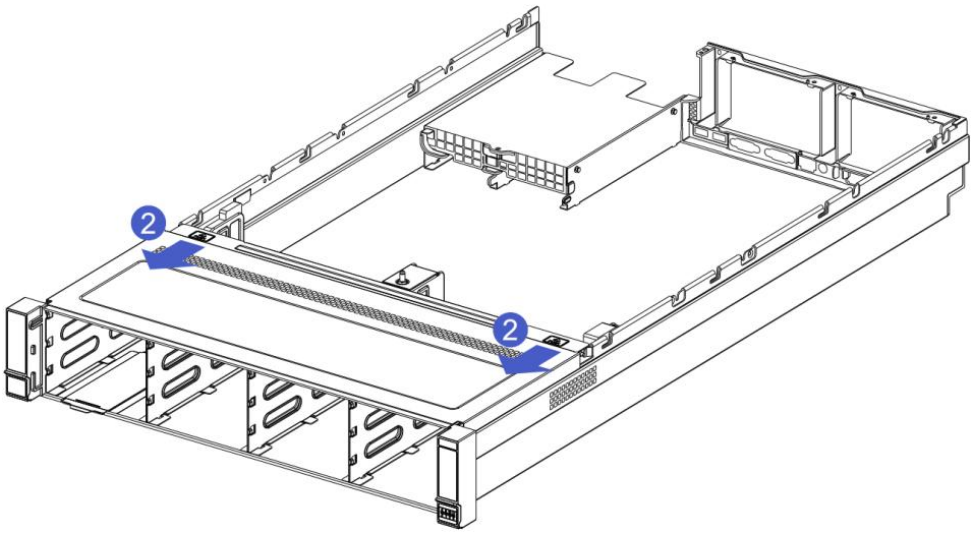
4.1 Chassis cover installation

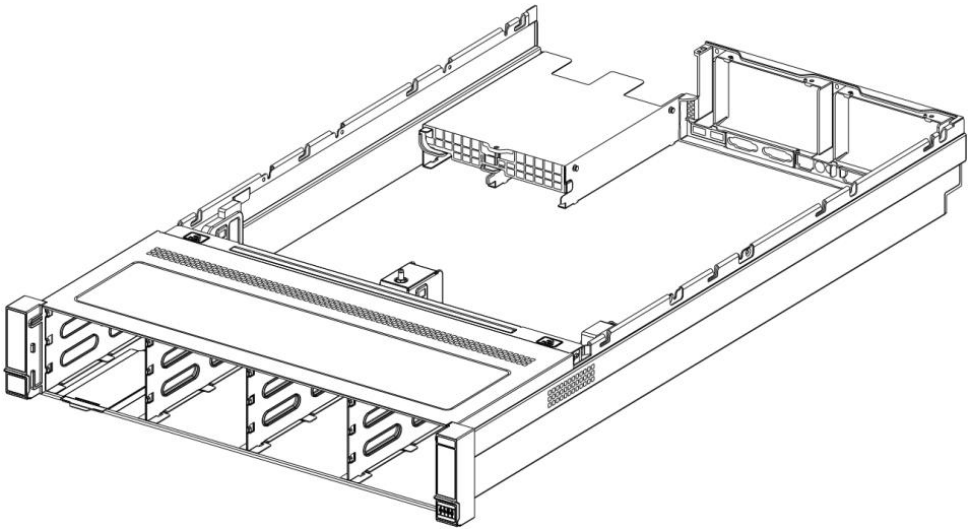
Step 1: Install the front cover of the chassis

1-1. Align the hanging nails of the upper cover with the opening of the box and place it downwards.



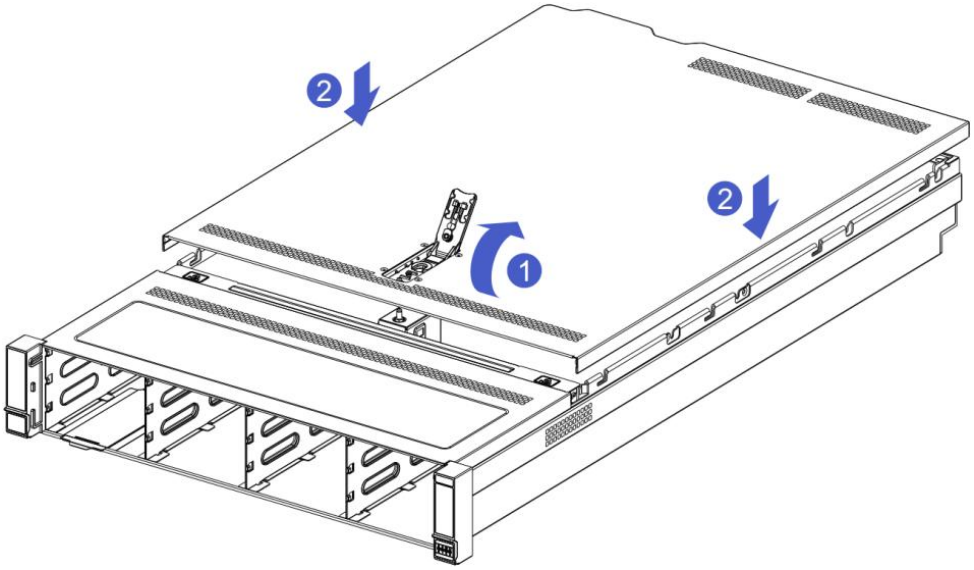
1-2. Push in the direction of the arrow until the front upper cover is flush with the front of the chassis and the locks on both sides click into place.



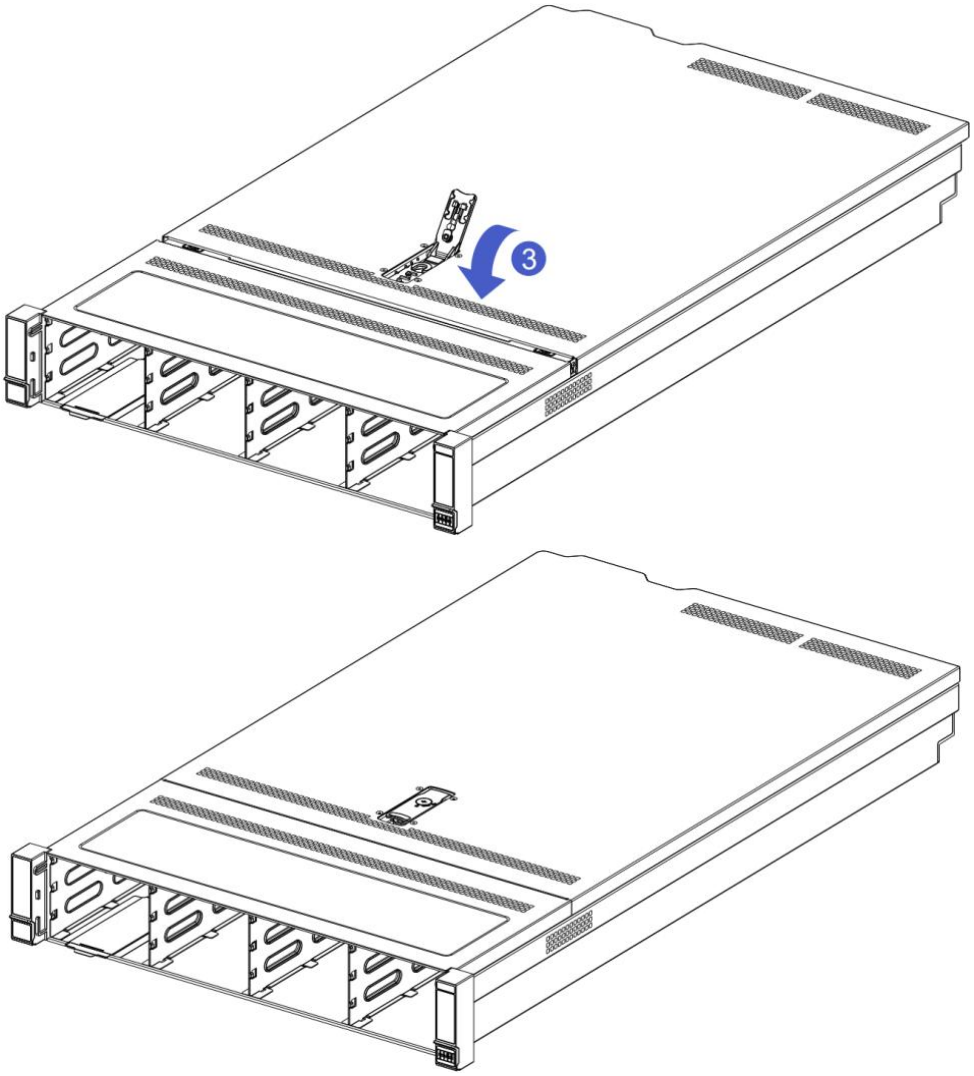


Step 2: Install the rear cover of the chassis

2-1. Open the lock of the chassis in the direction of the arrow, align the pegs on the upper cover with the opening of the box, and place it downward.



2-2. Rotate the lock of the upper cover in the direction of the arrow to lock it in place.



Warning

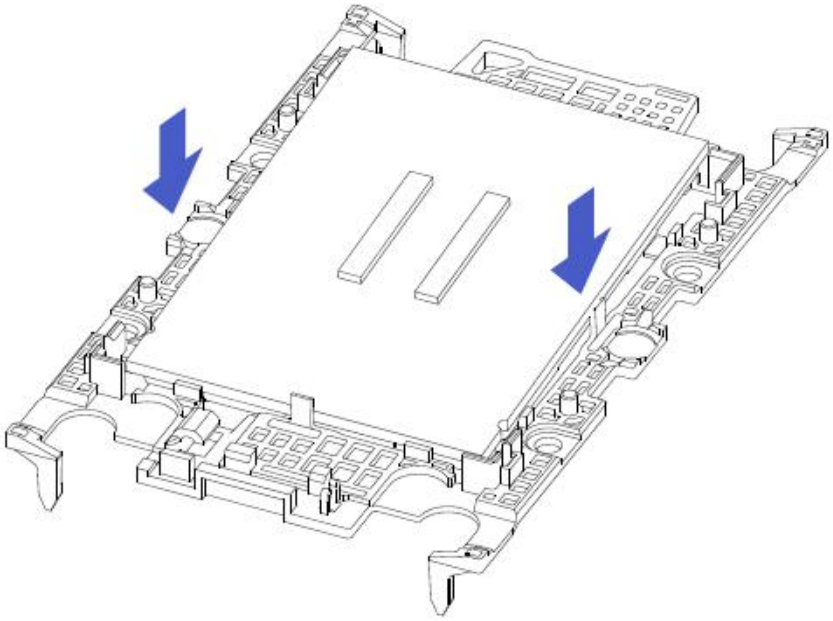
To reduce the risk of personal injury from hot surfaces on the server, allow drives and internal system components to cool before touching

4.2 CPU installation

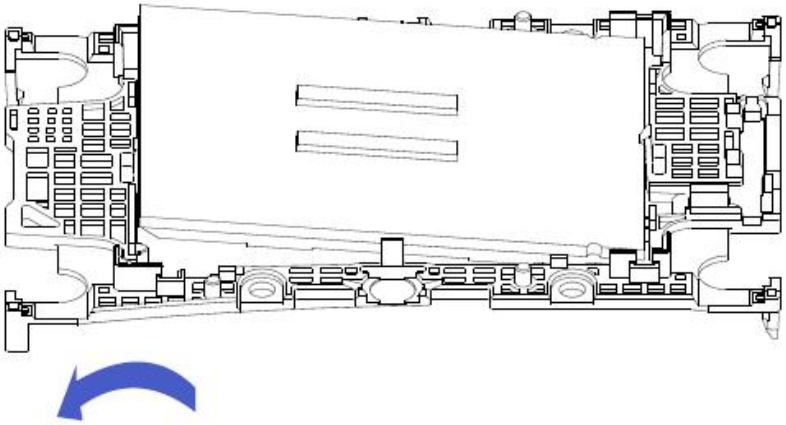
- Install the processor:

Step 1: CPU Installation

1-1. Tilt the CPU as shown in the figure and snap it onto one end of the clamping piece. The A1 corner (triangle mark) of the CPU should be aligned with the corner with the triangular hole on the clamping piece. Make sure that the groove on the processor is aligned with the buckle of the clamping piece. of protrusion.



1-2. In the direction of the arrow, bend and press the other end of the clamping piece to fix the CPU to the clamping piece.

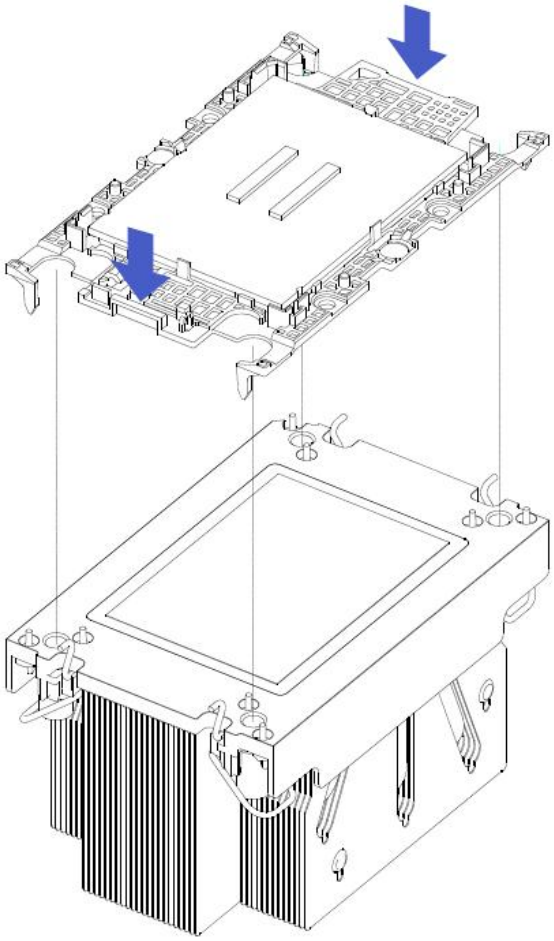


1-3. Loosen the clamping piece and hook the other end of the clamping piece into the CPU groove.

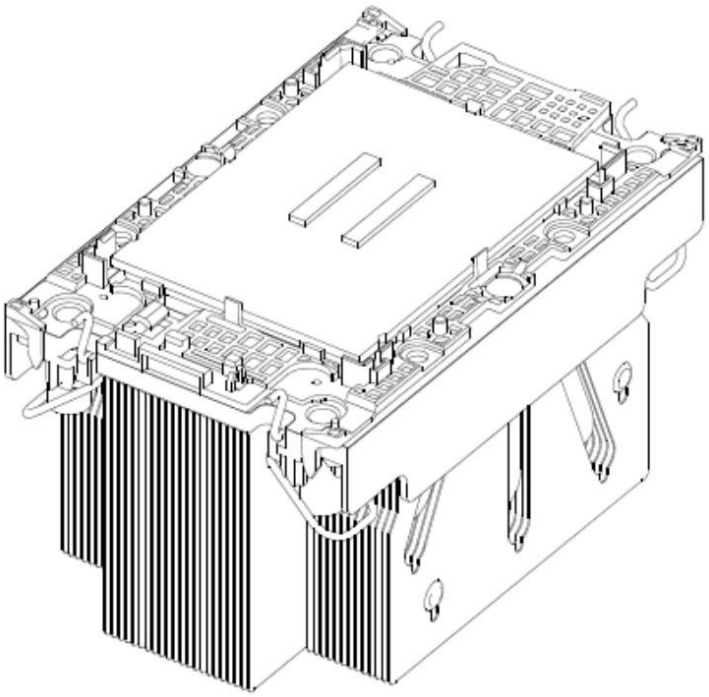
Step 2: Install the CPU onto the radiator, ensuring that the CPU and radiator surfaces are clean, oil-free and free of foreign matter

2-1. Apply about 0.4ml of thermal grease on the CPU and smooth it evenly.

2-2. Align the A1 corner (triangle mark) and buckle the CPU onto the radiator.



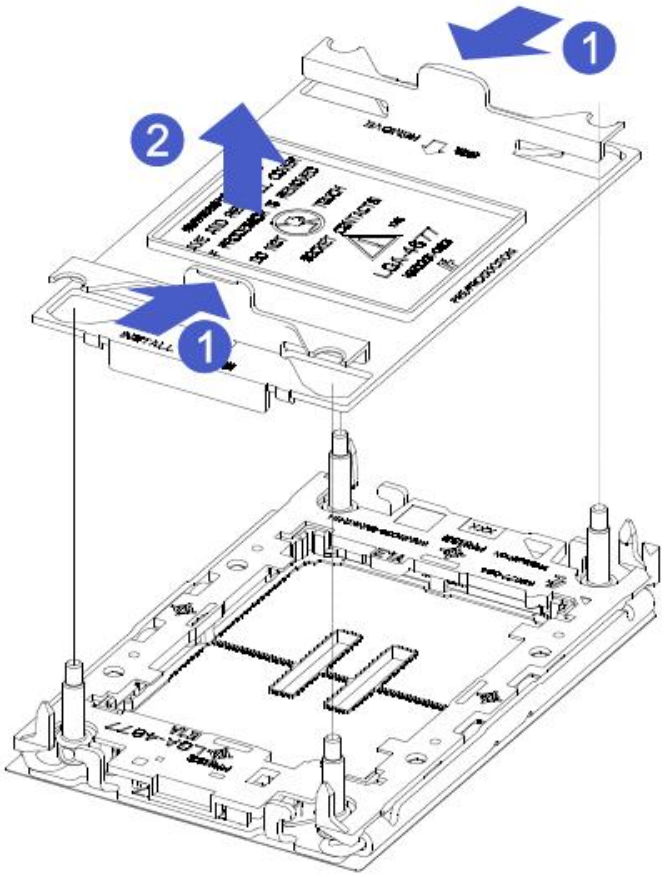
2-3. Carefully check the installation of the clamping piece and the radiator to ensure that the clamping piece is completely tight and flat .



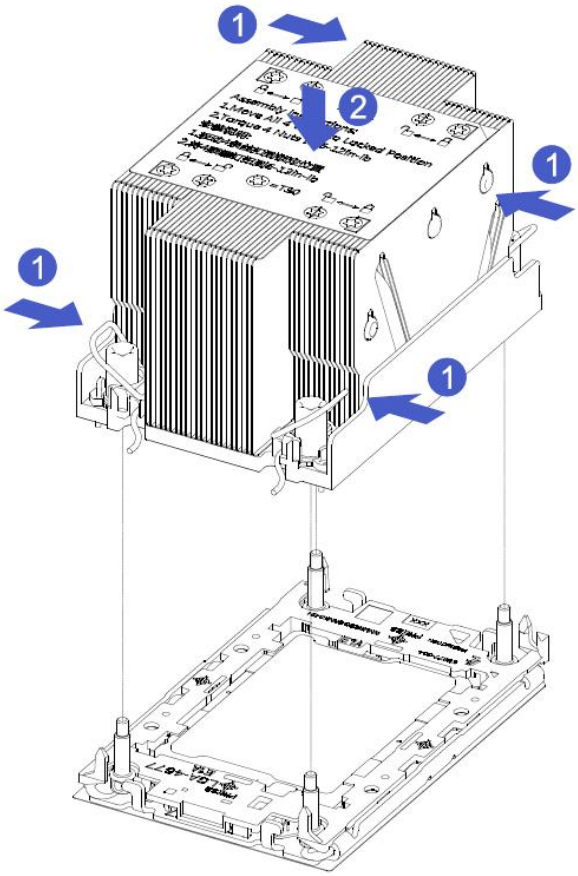
4.3 Radiator installation

- installation steps:

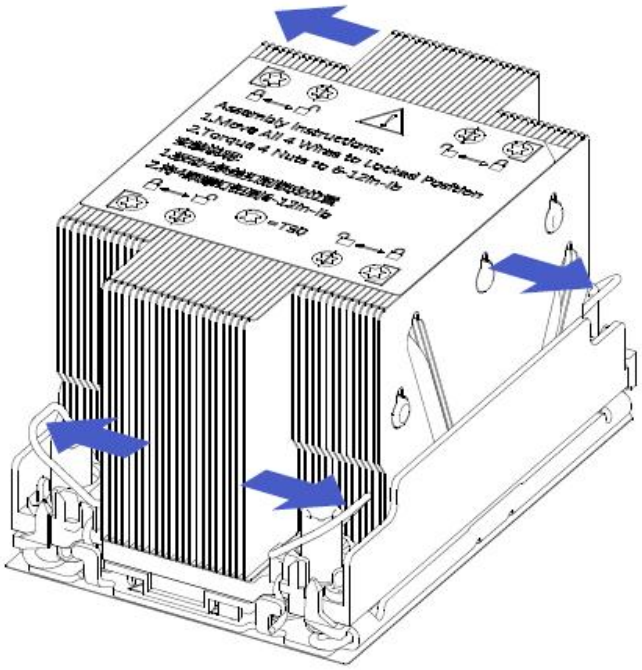
1. Press the protective cover in the direction of the arrow and remove the protective cover upwards .



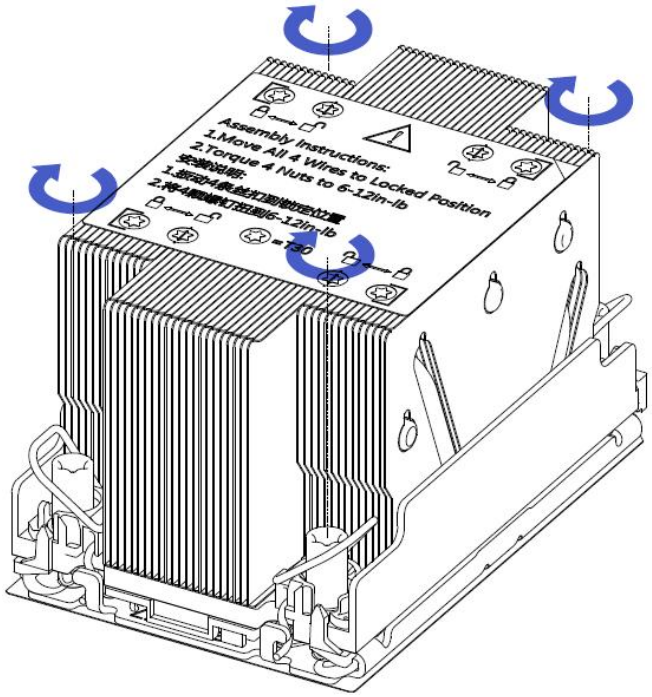
2. Turn the fastening lock on the radiator in the direction of the arrow. The fastening lock is in the vertical position. Align the radiator with the radiator fixing studs on the CPU base and place it vertically downward on the base.



3. Press the fastening latch on the radiator in the direction of the arrow to lock it with the hook on the processor base.



4. Use a T30 Torx screwdriver to tighten the screws securing the heat sink .



Caution

To reduce the risk of personal injury from hot surfaces on the server, allow drives and internal system components to cool before touching them.

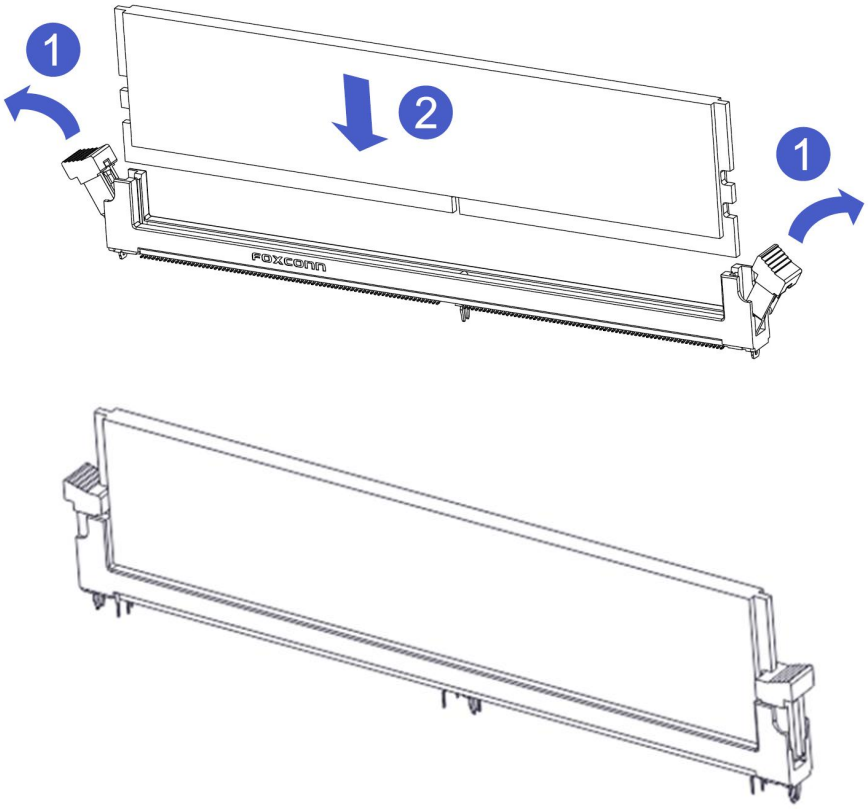
Dangerous

The heat sink may be hot when the server is disconnected from power. Allow the heat sink to cool for a few minutes before installing it.

4.4 Memory installation

Step 1 Open the wrench on both sides of the memory slot, align the memory with the memory slot, pay attention to the correspondence between the gap on the memory stick and the memory slot;

Step 2 Firmly insert the memory into the memory slot vertically until you hear the sound of the memory wrench locking.

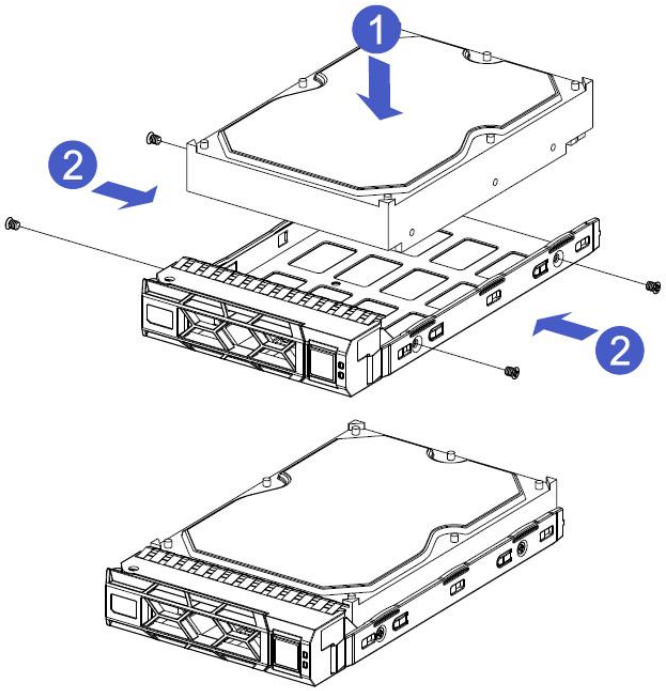

1
2
1
FOXCONN

4.5 Hard disk installation

● Install a 3.5- inch hard drive

1-1. Place the hard disk in the tray ;

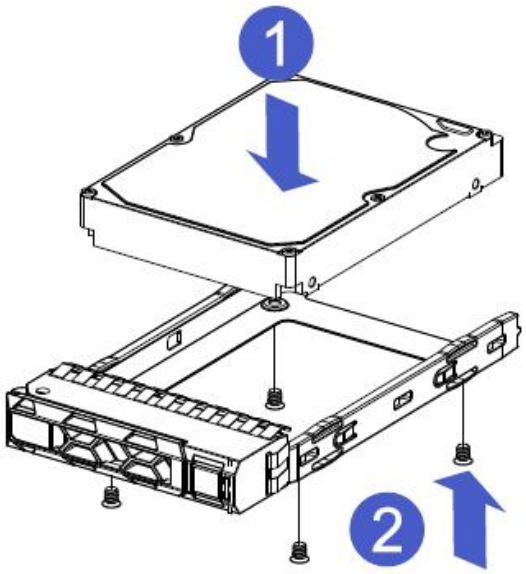
1-2. There are 4 countersunk head screws on the left and right sides to lock the hard disk (screw heads must not protrude from the surface of the slideways on both sides of the tray) .



● Install 2.5- inch HDD

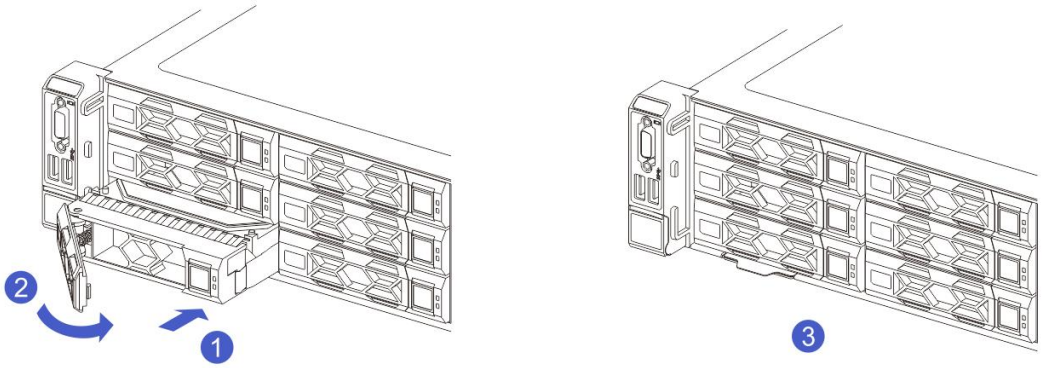
1-1. Place the hard drive in the tray ;

2-2. Lock the hard drive with 4 countersunk head screws at the bottom (the screw heads protrude from the bottom of the tray) .



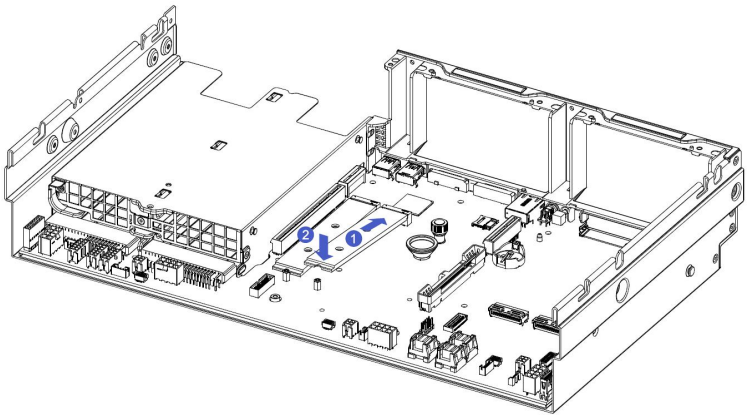
- HDD Tray Assembly Installed into Chassis

1. When the hard drive wrench is opened, push it into the case ;
2. When the gold finger of the hard disk touches the backplane device, turn the wrench in the direction of the arrow ;
3. Schematic diagram of hard disk installation in place :

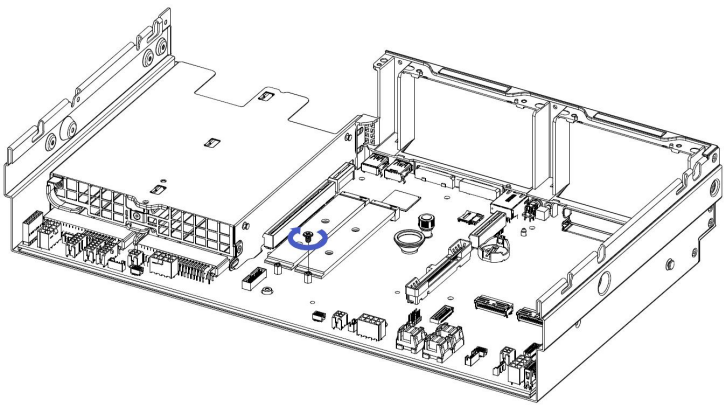


4.6 M.2 installation

1-1. As shown in the figure, insert the M.2 card connector end obliquely into the motherboard connector, and press the other end of the M.2 card to the flat of the positioning stud.



1-2. Install the M.2 card fixing screw.

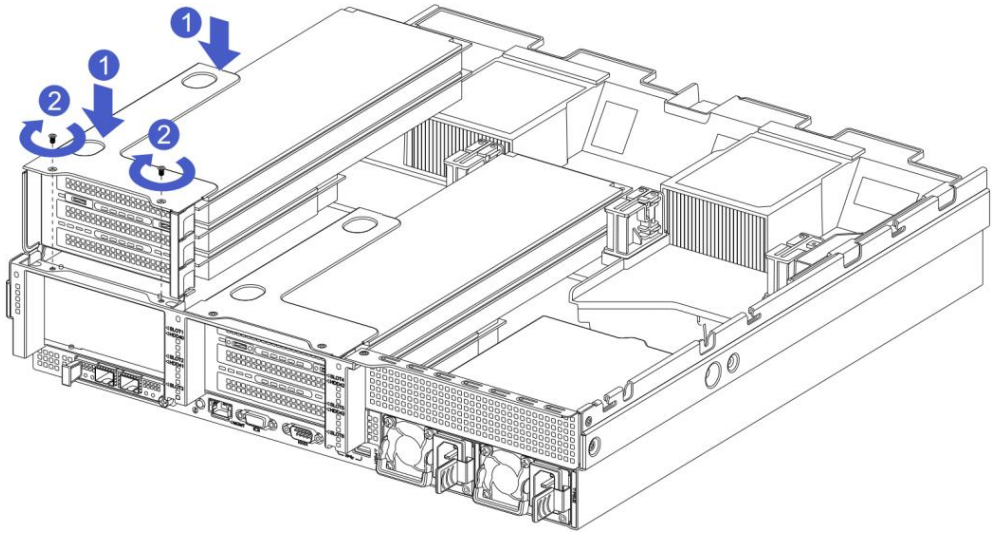


4.7 IO1 and IO2 module installation

- Installation method of IO1 and IO2 module 1 (3xPCIe & 2PCIe module):

Step 1. Place the rear window PCIe component vertically downwards to align with the PCIe slot, align with the positioning holes, and place it flush with the rear window.

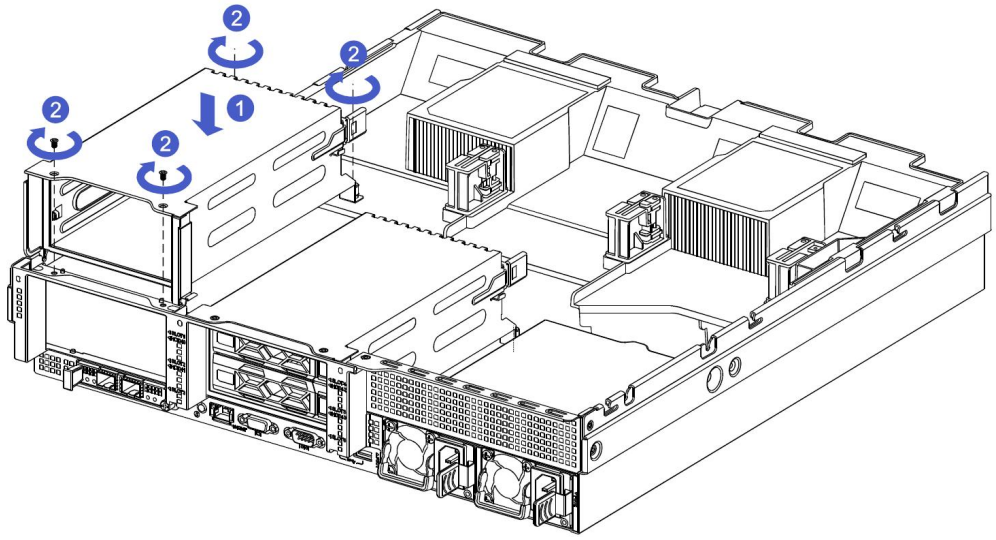
Step 2. Tighten the screws securing the module with a Phillips screwdriver.



- Installation method of IO1 and IO2 module 2 (2x3.5 hard disk module):

Step 1. Place the hard disk box vertically downward and flush with the rear window.

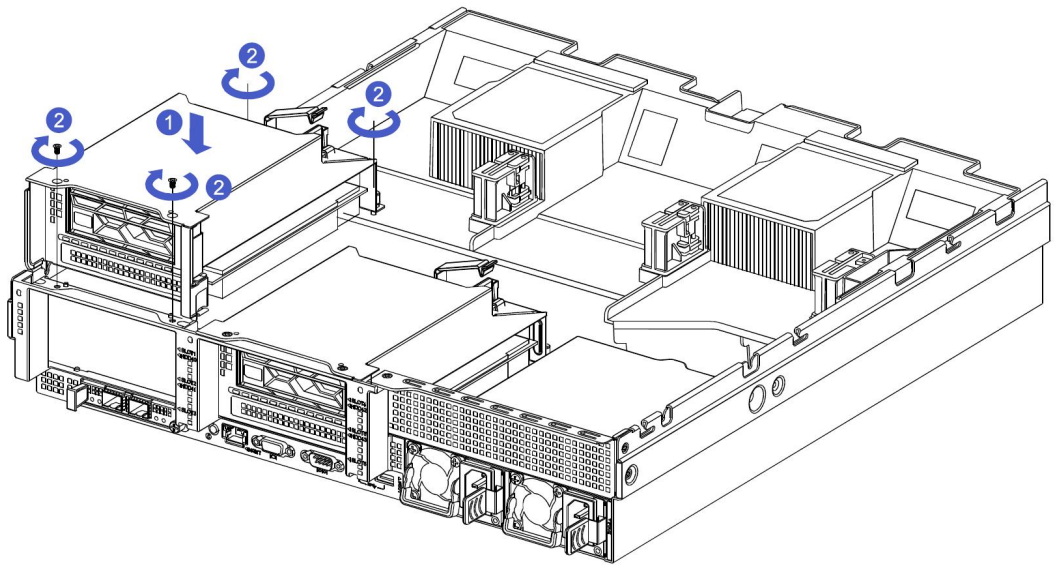
Step 2. Tighten the screws securing the module with a Phillips screwdriver.



- Installation method of IO1 and IO2 module 3 (2x2.5 hard disk + PCIe module):

Step 1. Place the hard disk box vertically downward and flush with the rear window.

Step 2. Tighten the screws securing the module with a Phillips screwdriver.

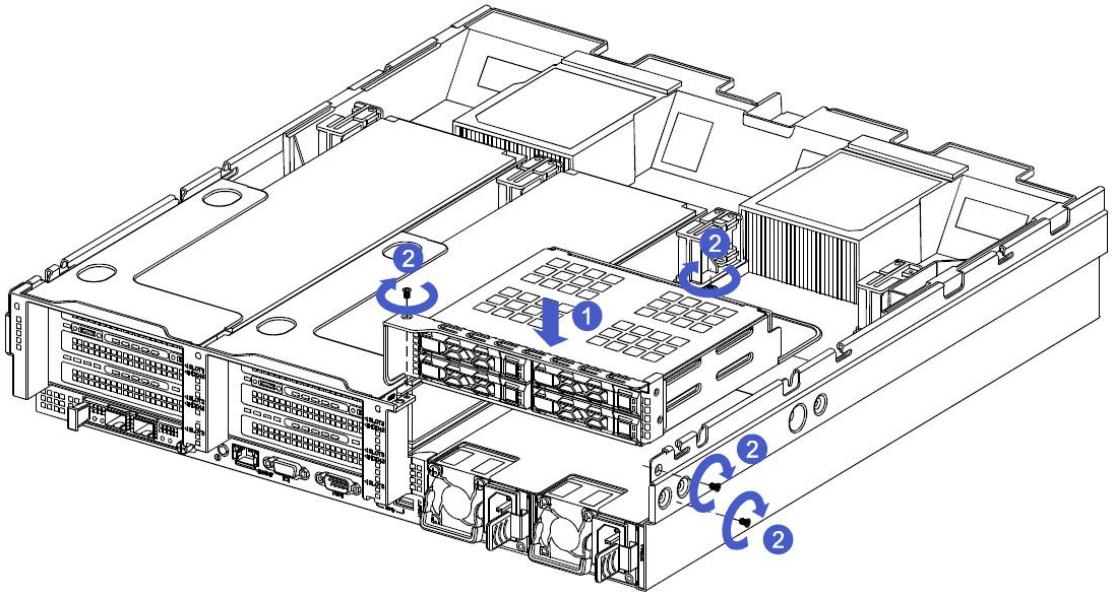


4.8 IO3 module installation

- IO3 module 1 (4x2.5 inch hard disk box):

Step 1. Place it vertically downwards and align it with the guide pins at the lower end.

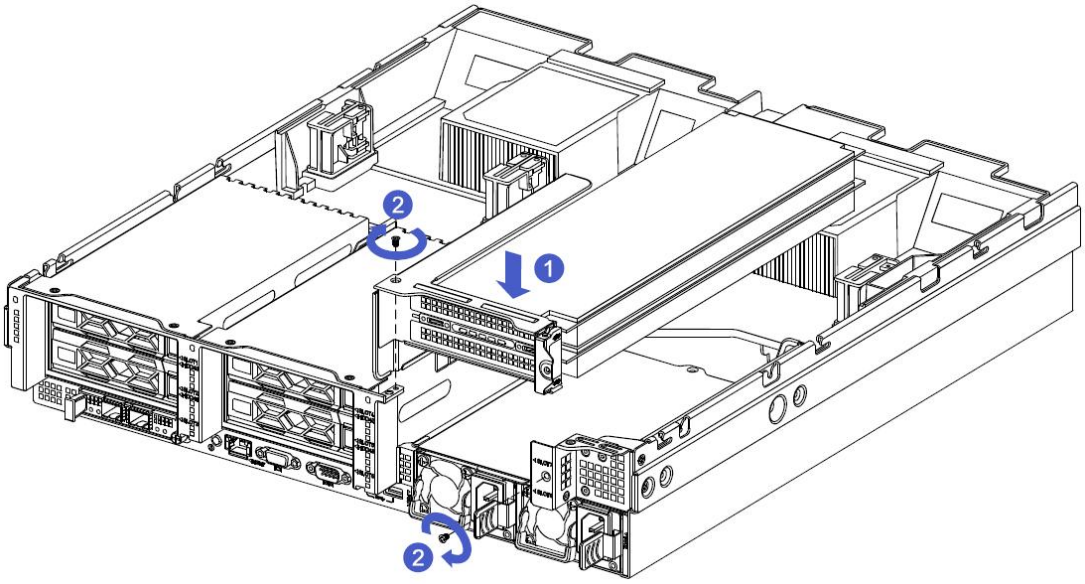
Step 2. After placing it flat, use a Phillips screwdriver to tighten the screws that fix the module.



- Installation method of IO3 module 2 (2xPCIe full height module):

Step 1. Place it vertically downwards and align it with the guide pins at the lower end.

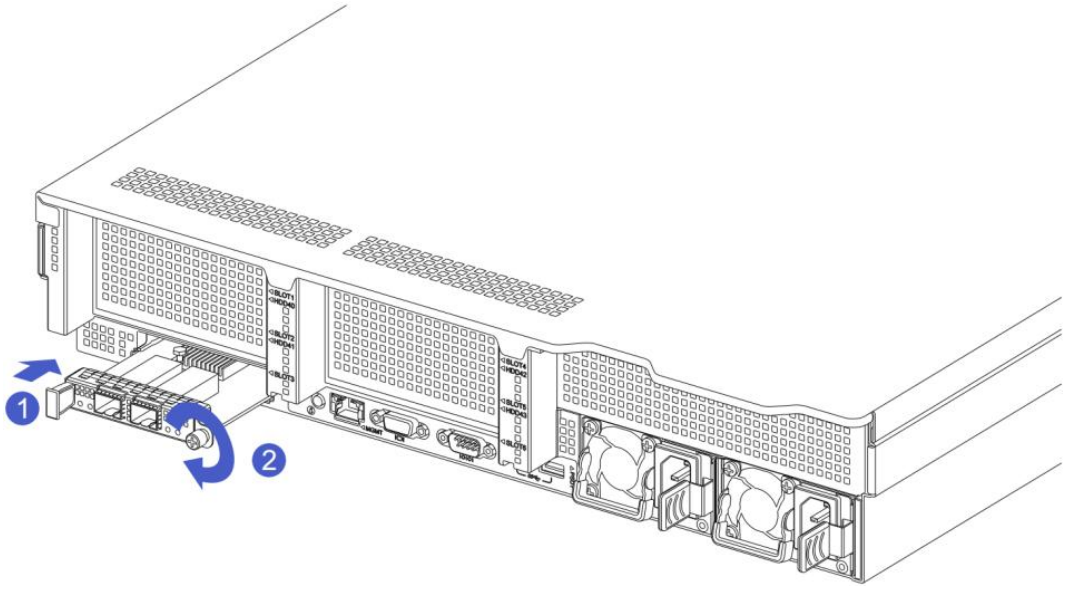
Step 2. After placing it flat, use a Phillips screwdriver to tighten the screws that fix the module.



4.9 Installation of OCP network card

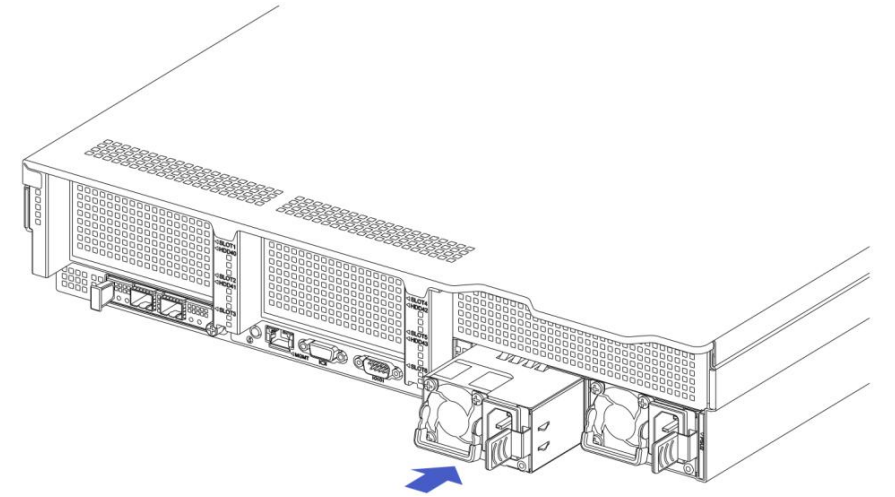
Step 1. Align the OCP expansion network card with the sliding track of the rear window of the chassis and push it in until it cannot be pushed in. Check whether the mounting surface of the captive screw is tightly attached to the rear window ;

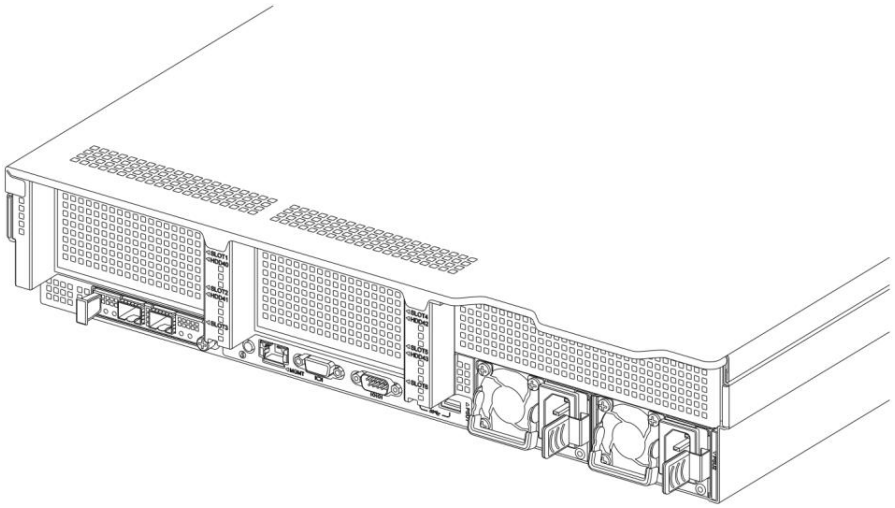
Step 2. Tighten the fixing screws of the flexible IO card with a Phillips screwdriver.



4.10 Installation of the power module

Steps: Push the power supply to the end in the direction of the arrow, and the shrapnel wrench on the right makes a clicking sound, indicating that it is installed in place;



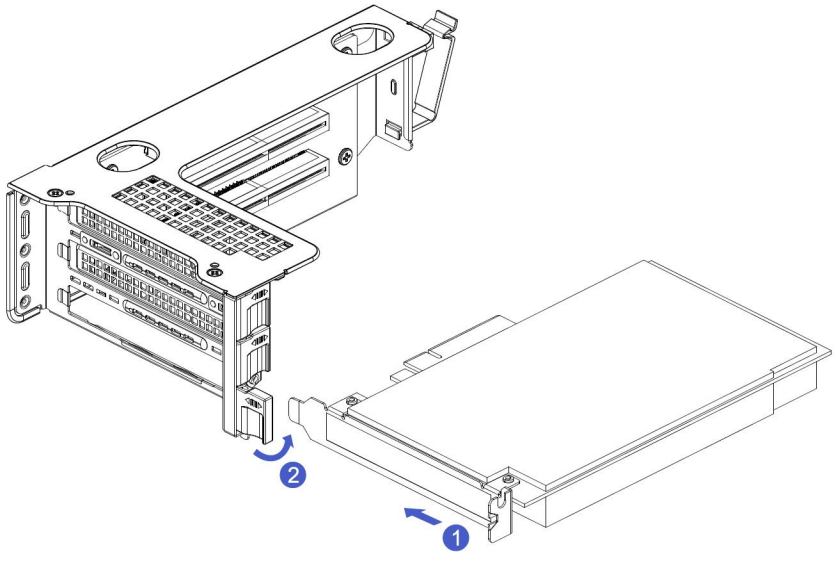


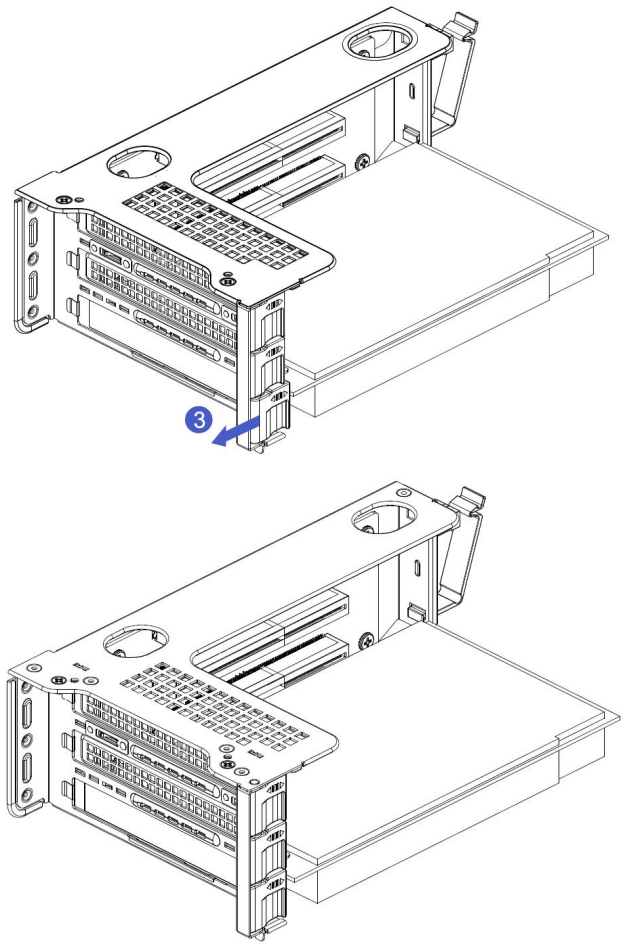
4.11 PCIe expansion card installation

1-1. Insert the PCIe card in the direction shown in the figure ;

1-2. Rotate the PCIe card lock ;

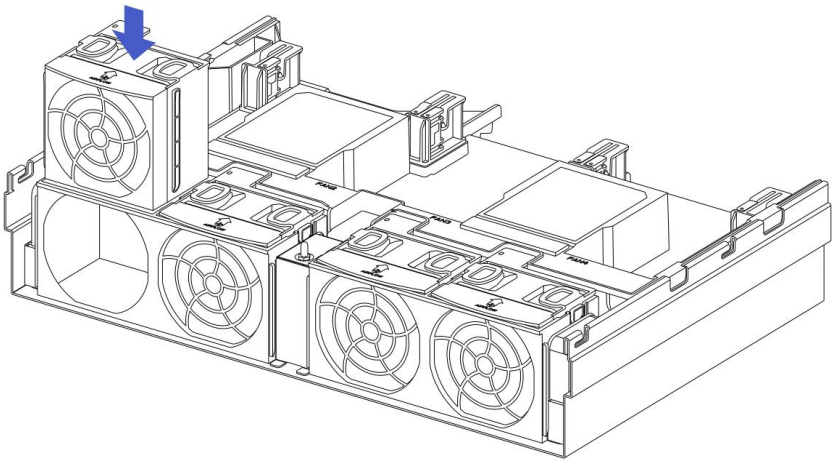
1-3. According to the arrow scheme, lock the PCIe card lock .





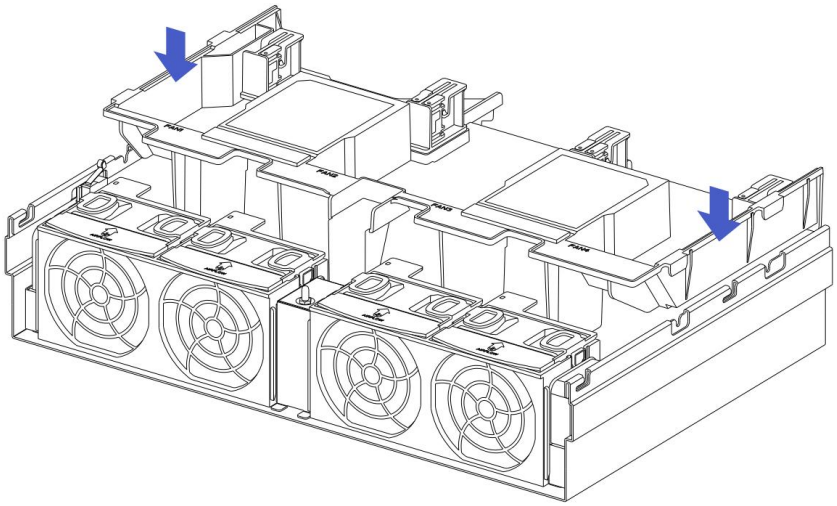
4.12 Fan module installation

Steps: Place the fan module vertically downward in the direction of the arrow (note the orientation of the fan module) .



4.13 Air guide hood installation

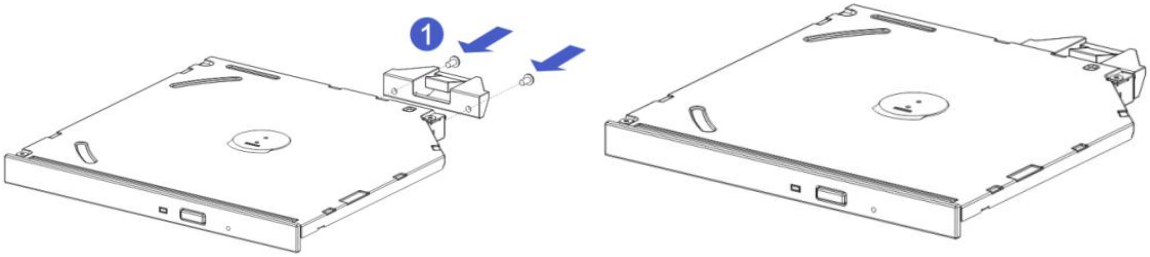
Steps: Align the air guide module with the hanging points on the left and right sides, and place it vertically downward - the height is lower than the height of the cabinet .



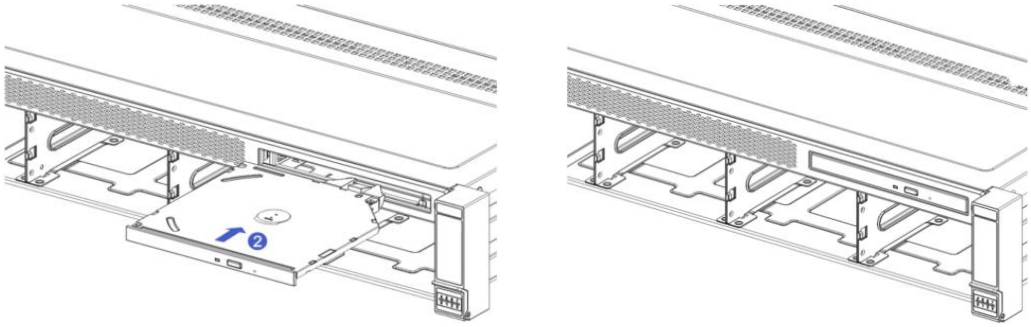
4.14 Internal optical drive installation

Steps: Install the optical drive

1 -1. Install the fixing parts of the optical drive in the direction of the arrow and tighten the pan-head screws ;



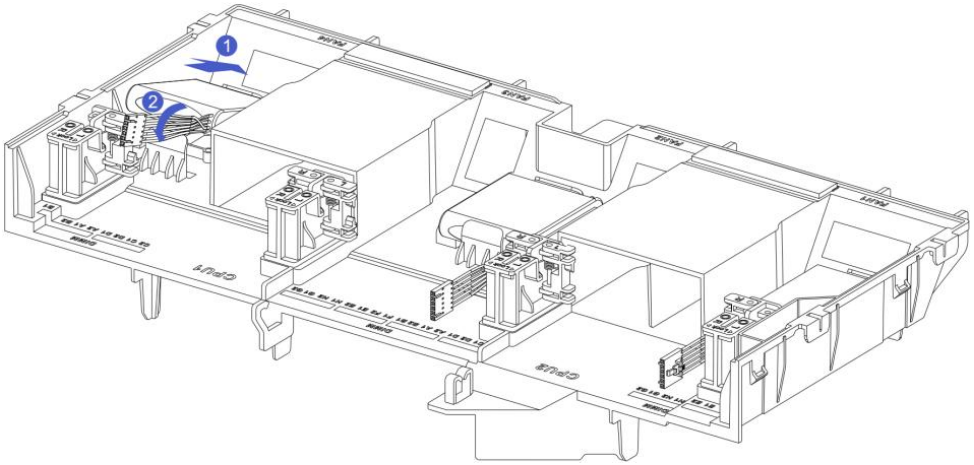
1-2. Align the opening of the optical drive position on the chassis, and push the optical drive in the direction of the arrow until the fixing part is automatically locked.



4.15 RAID card battery pack installation

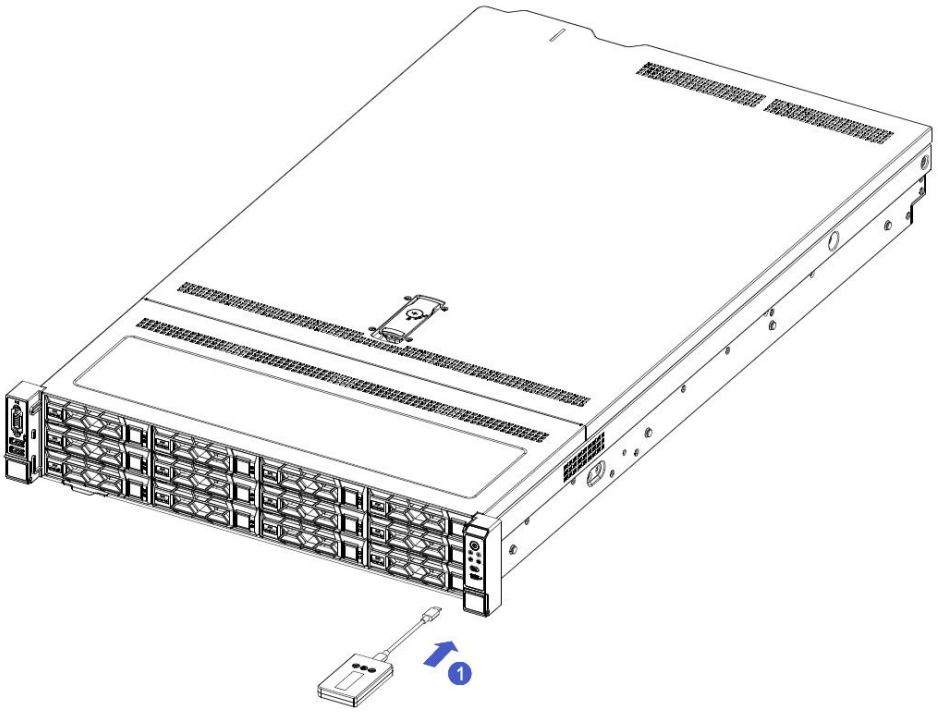
There are 3 places for battery packs on the windshield, which can support up to 3 Raid card battery packs.

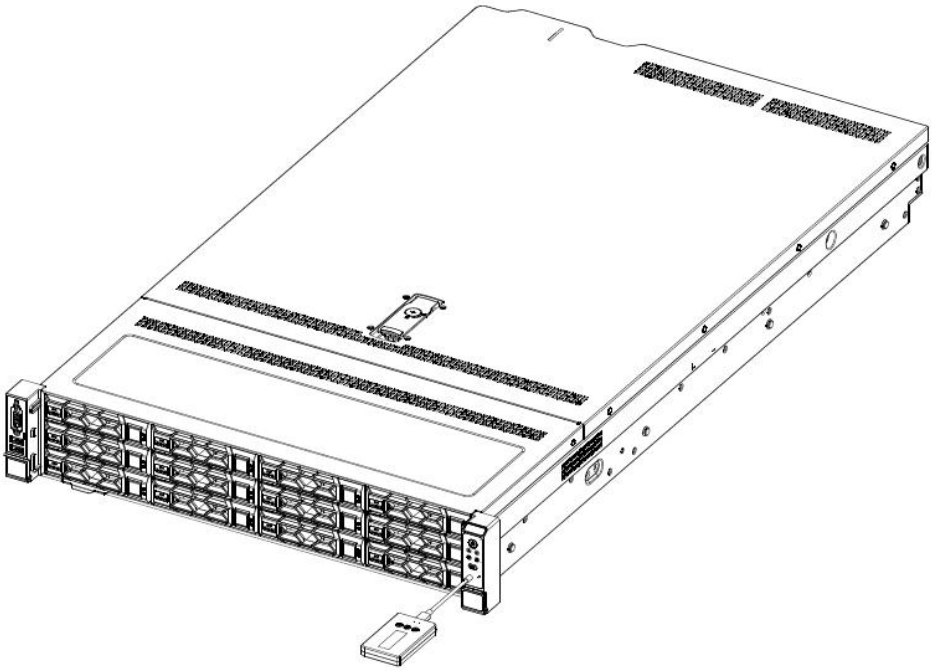
Installation steps: Align the battery pack installation slot on the windshield in the direction of the arrow to place the battery pack.



4.16 LCD module installation

1-1. Connect the cabled LCD module to the LCD interface of the chassis mounting ear .





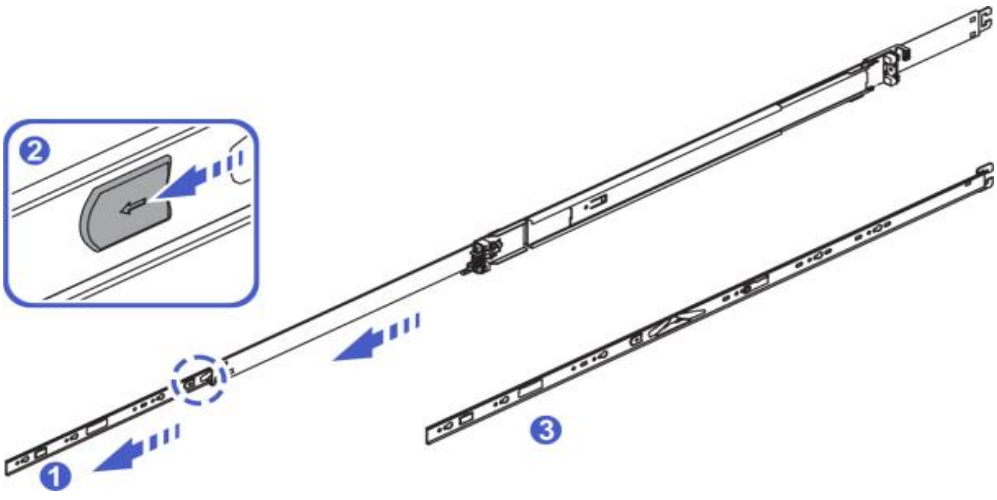
4.17 Rail assembly installation

Step 1. After removing the inner rail from the rail, push the middle rail into the rail

1-1. Pull the inner rail out from the guide rail, and stop after hearing a click ;

1-2. Push the white button in the direction of the arrow and pull out the inner rail completely ;

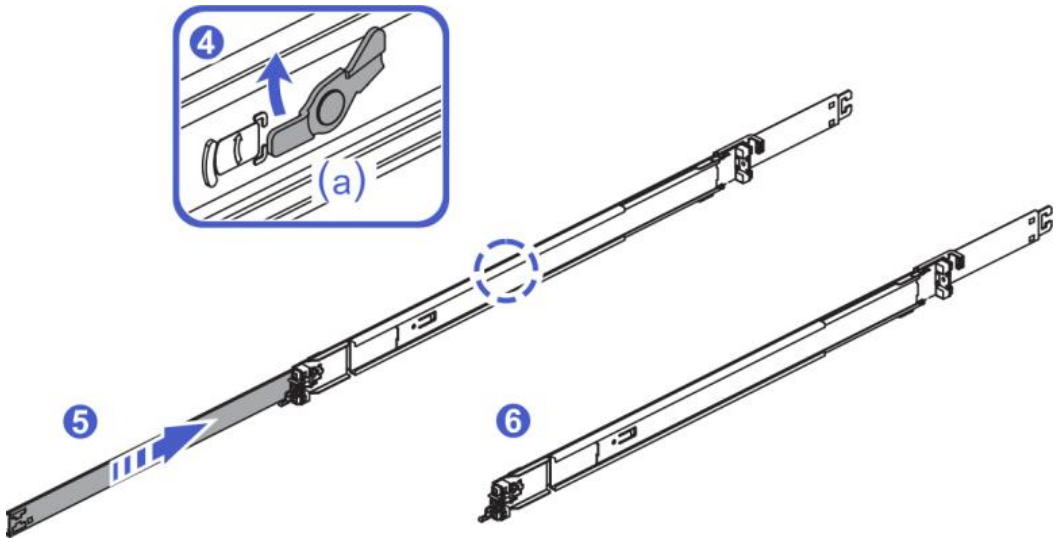
1-3. Complete removal of inner rail ;



1-4. Push the buckle a in the guide rail in the direction of the arrow ;

1-5. Push the middle rail into the slide rail at the same time ;

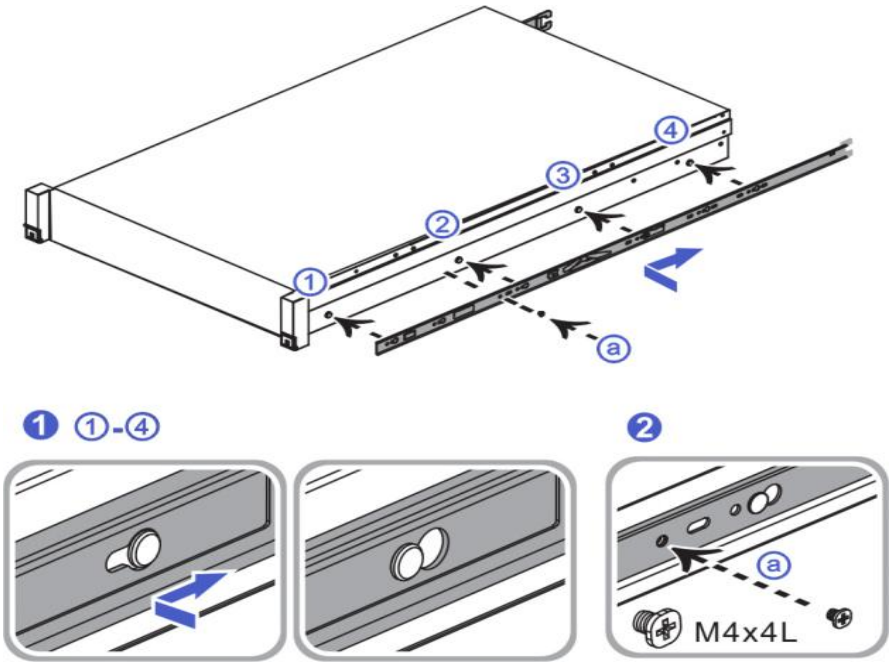
1-6. Complete step 1 .



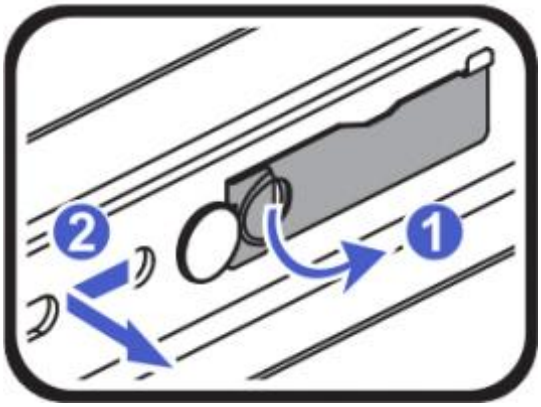
Step 2. Install the inner rail to the chassis (the left and right inner rails are installed in the same way)

2-1. Align the ①-④ɔning holes of the inner rail with the 4 pegs on one side of the chassis, and install the inner rail to the chassis as shown in the figure. After the installation, you can hear a click sound, and you need to ensure that the installation is in place ;

2-2. At the chassis a, lock the M4x4 screws in the accessory into the chassis a. Complete step 2 .



When taking the inner rail out of the chassis, you need to unlock the buckle in the inner rail as shown in the figure :



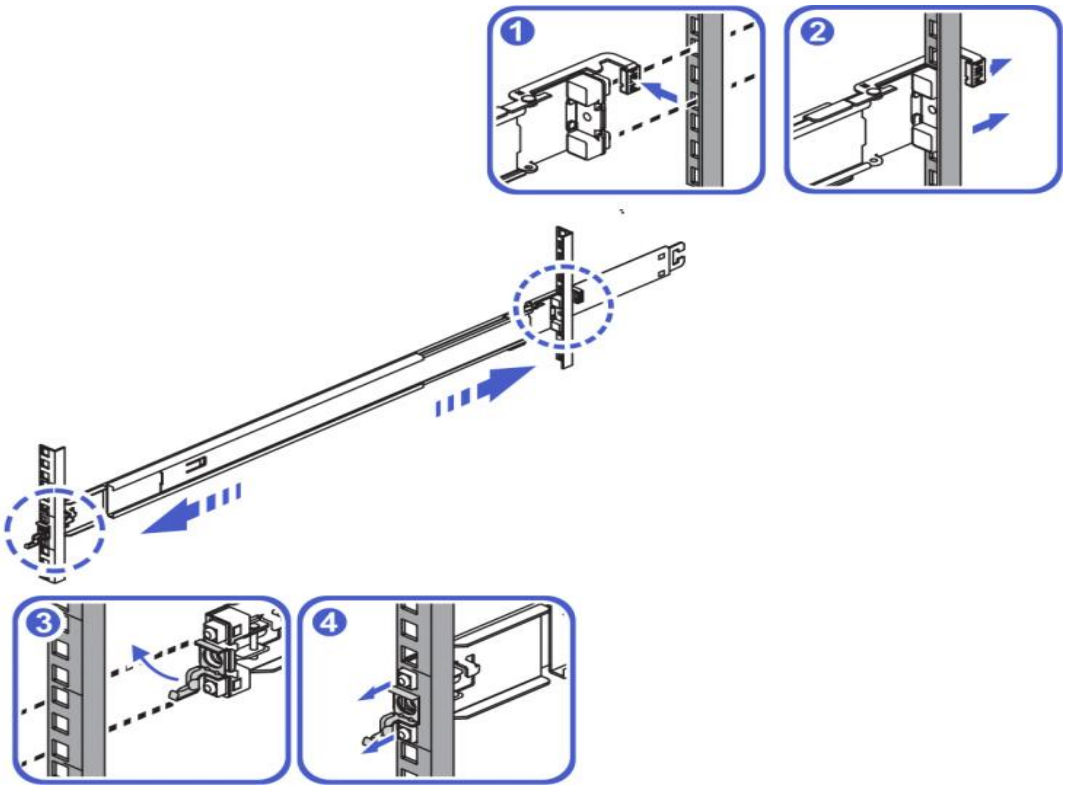
Step 3. Install the guide rails into the rack (the left and right guide rails are symmetrical, please repeat the installation)

3-1. Push the hook at the rear end of the guide rail as indicated by the arrow, align the guide rail with the rack holes, and install the guide rail into the rack ;

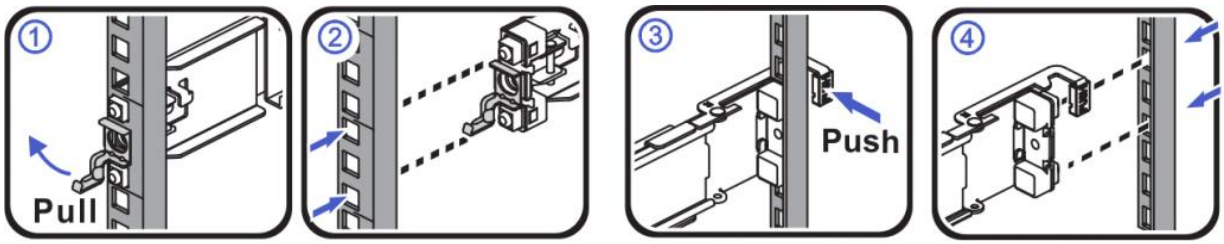
3-2. Install the guide rail into the rear end of the rack and complete the installation of the rear end of the guide rail after hearing a click sound ;

3-3. Push the hook at the front of the guide rail as indicated by the arrow, align it with the rack holes, and install the guide rail into the rack ;

3-4. After installing the guide rail into the front of the rack and hearing a click sound, complete step 3.



When taking the guide rail out of the rack, you need to unlock the buckle in the guide rail as shown in the figure :



Step 4. Install the server into the rack

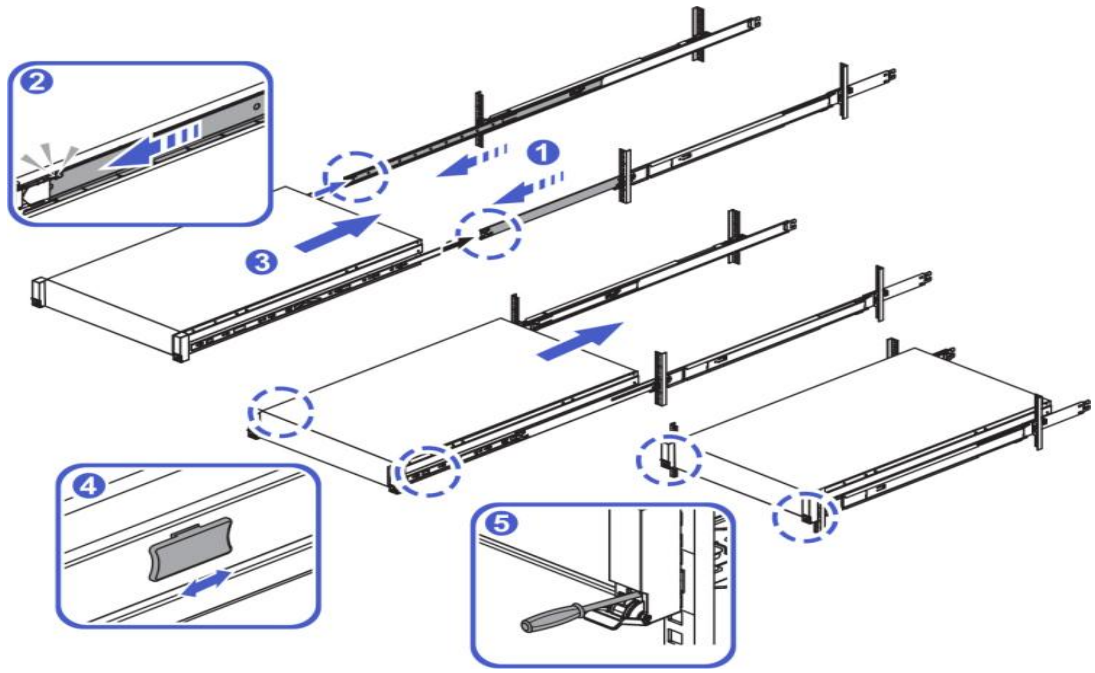
4-1. Pull out the middle rails on both sides installed in the rack until you hear a click sound ;

4-2. Lift the server, align the inner rail of the guide rail with the middle rail, push the server into the rack in the direction of the arrow, and ensure that the inner rail is smoothly installed into the middle rail ;

4-3. After pushing the server into the middle rail, you can hear a click sound before it stops ;

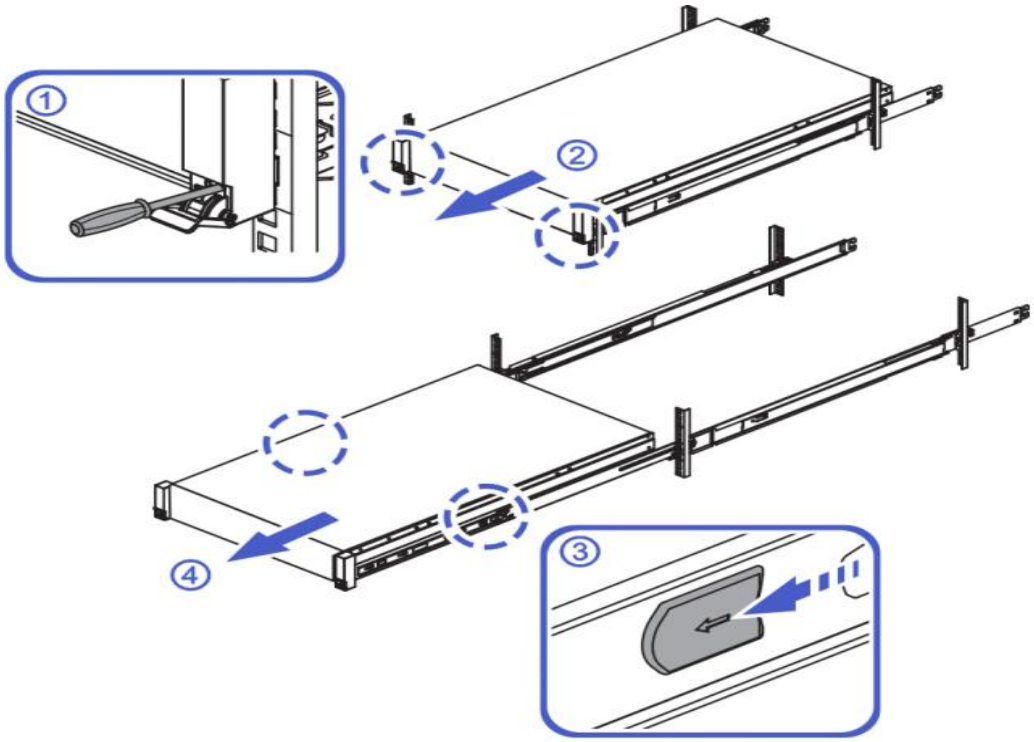
4-4. Turn the blue button in the direction of the arrow, hold down the button and push the server into the rack ;

4-5. Open the front mounting ears on both sides, use a screwdriver to tighten the screws, and complete step 4 .



To take the server out of the rack, you need to unlock the screws and white buttons on

both sides, as shown in the figure:



5 Restrictions and Common Troubleshooting

5.1 Software and hardware limitations

- The duty cycle of the fan is uniformly controlled and speed-adjusted;
- the server is in the BIOS Setup state and the hard disk is hot-swapped, the BMC will not record the hard disk removal log;

  (When the model is configured to be directly connected to NVM e or directly connected to SATA , hot-swappable hard disks are not supported in the BIOS Set up state)
- When controlling the hard disk lighting through the RAID card, there will be a delay in information synchronization on the BMC Web interface ;
- Due to the limitations of the BMC's hard drive insertion and removal log mechanism, it is not advisable to quickly insert and remove multiple hard drives at the same time, which will result in the inability to correspond to the log.
- When the server supports GPU or graphics card, it needs to be equipped with an air guide;
- Memory must be installed according to POR rules, and the memory frequency is related to the CPU model;
- upgrading B IOS through U EFI Shell , only the currently active BIOS can be upgraded (the server supports B IOS dual flash);
- LSI 9560 RAID card does not support legacy mode management of RAID cards;
- PCH SATA does not support legacy mode creation of RAID;
- To enable mdns of a certain network port, it will take effect only when the " Register BMC" function item of the corresponding network port is enabled ;
- BMC configuring DNS information will cause network reconnection, and you need to wait for a certain period of time (1 to 2 minutes is recommended) before performing the next operation;
- BMC WEB The NTP function requires the dedicated network port to be in DHCP mode to function properly;
- BMC After NTP-related configuration is performed on the WEB, the corresponding service will be restarted, and you need to wait for a certain period of time (1 minute is recommended) before performing the next operation, otherwise an error may occur;

- For snmp permissions under the admin user, you need to change its password first, because the password length of snmp requires more than 8 characters, and the default password length of the admin user does not meet the requirement;
- After installing the in-band software (tool for querying hard disk usage), BMC There is a certain error in the device usage rate read by the WEB;
- Although the SSL certificate uploaded on the SSL page and the SSL file on the LDAP setting page are both in pem format, they cannot be shared;
- When operating the hard disk connected to the SAS card, there will be a certain delay in the generation of SAS IT logs;
- Try to avoid installing multiple operating systems on one machine. If you must install them, you need to ensure that the boot partition and data partition of each system belong to the same hard disk.

5.2 Thermal Limitations

Front hard drive configuration	Fan configuration	Maximum working temperature 30℃	Maximum working temperature 35℃	Maximum working temperature 40℃
12x3.5- inch hard drive	8056	All configurations supported (CPU power consumption ≤330W when paired with GPU)	All configurations supported (CPU power consumption ≤ 270W when paired with GPU)	Supports all configurations (GPU not supported)
	8038	- Supports up to 300W CPU - CPU power consumption ≤250W when paired with GPU	- Supports up to 270W CPU - Does not support passive GPU	- Supports up to 205W CPU - Does not support GPU
8x3.5- inch hard drive	8056	All configurations supported	All configurations supported	All configurations supported (Only supports 70W GPU)

	8038	- Supports up to 330W CPU - CPU power consumption ≤270W when paired with GPU	- Supports up to 300W CPU - CPU power consumption ≤250W when paired with GPU	- Supports a maximum of 270W CPU - Only supports 70W GPU, and the CPU power consumption is ≤185W
25x2.5 inch hard drive	8056	All configurations supported (CPU power consumption ≤330W when paired with GPU)	All configurations supported (CPU power consumption ≤ 270W when paired with GPU)	Supports all configurations (GPU not supported)
	8038	- Supports up to 300W CPU - CPU power consumption ≤250W when paired with GPU	- Supports up to 270W CPU - Does not support passive GPU	- Supports up to 205W CPU - Does not support GPU

5.3 Common troubleshooting

5.3.1 Common Hardware Faults

- The VGA on the rear of the server cannot be displayed

Fault description: After the server is powered on, the status indicator light displays normally, but the rear VGA has no display output;

When the front VGA and rear VGA are connected at the same time, only one of the two VGAs can be output, and the front VGA has priority ;

Solution: Unplug the front VGA, and the rear VGA will display normally;

- The operating system cannot start

Fault description: After configuring RAID on the RAID card and installing the operating system, the operating system cannot start;

Cause of failure: The RAID card is not configured with the installation disk as the preferred boot hard drive;

Solution: Enter LSI In the RAID card management interface, set the RAID disk where the system is installed as the preferred boot disk to enter the system normally;

- BMC Web cannot log in

Fault description: BMC WEB cannot log in;

Cause of the problem: There may be two reasons;

- The username and password are incorrect;
- BMC IP DHCP has changed;

Solution: First confirm whether the user name and password of the BMC are accurate. After the boot display is displayed, go to the server P OST interface or BIOS. Check the current IP of BMC under Setup and use this IP to log in to BMC Web again .

- G PU card PCI e slowdown

2 under the OS ;

Cause of the fault: The system will activate the energy-saving mode of the GPU card or graphics card. After the GPU card or graphics card is loaded, it will automatically increase to the Spec rate;

Solution: Normal phenomenon, no need to solve;

- configuring RAID , you can still see all physical disks when installing the operating system

Fault description: After configuring RAID through the PCH RAID controller, when installing VMware When operating the ESXI or Ubuntu Server operating system, you can still see all physical disks, but not the virtual disks after forming RAID ;

Cause of failure: VMware ESXI and Ubuntu Server do not support PCH RAID;

Solution: Platform limitation, cannot be solved;

- The memory status light on the motherboard turns red

Fault description: The motherboard memory status light turns red, and there is a red memory alarm on the BIOS POST interface;

Cause of failure: There are three possible causes of failure:

- Memory failure or abnormality
- Motherboard slot failure or abnormality
- Memory is not installed according to POR rules

Solution: First confirm whether the memory installation complies with the P OR rules. If not, reinstall the memory according to the P OR rules;

If the memory installation complies with the P OR rules, the memory status light is still on red. In the BIOS POST List interface or BMC Confirm the memory slot where the error is reported in the WEB log, then shut down the server, swap the memory in the slot with the problem with memory in other slots, and verify whether the error is reported with the memory slot or the memory itself;

- The server mounting ear indicator light is red.

Fault description: The status indicator light on the right mounting ear of the server lights up red;

Cause of failure: There are four possible causes of failure:

- Fan abnormal alarm
- PSU abnormal alarm
- Memory exception alarm
- Chassis cover abnormal alarm

Solution: Follow the following inspection steps to determine the fault

- If the memory status light and system status light on the mounting ear alarm at the same time, you need to enter the memory fault handling

process.

- If the system status light is solid red, you need to confirm whether the PSU is in place and whether the chassis intrusion is abnormal.

- If the system status light flashes red, you need to confirm whether the PSU power cord is connected abnormally.

- After manually offline the hard disk through the RAID card , the hard disk alarm light does not light up.

Fault description: The server uses a direct-connected hard disk backplane configuration and is connected with an LSI 9560 RAID card. After manually Offlining the hard disk in the BIOS RAID card setup, the hard disk alarm light does not light up;

Cause of failure: LSI 9560 RAID card is designed in this way;

Solution: RAID itself has limitations and cannot be solved;

- After the hard disk positioning light is turned on, other status lights of the hard disk will be replaced.

Fault description: After the Locate light of the hard disk is lit, other status lights such as rebuild and failure of the hard disk will be replaced;

Reason for the failure: The server is designed in such a way that it adopts a high-priority mechanism for the hard drive Locate light. When the hard drive location light is on, other status lights will be replaced to facilitate users to locate abnormal hard drives.

Solution: Normal phenomenon, no need to solve;

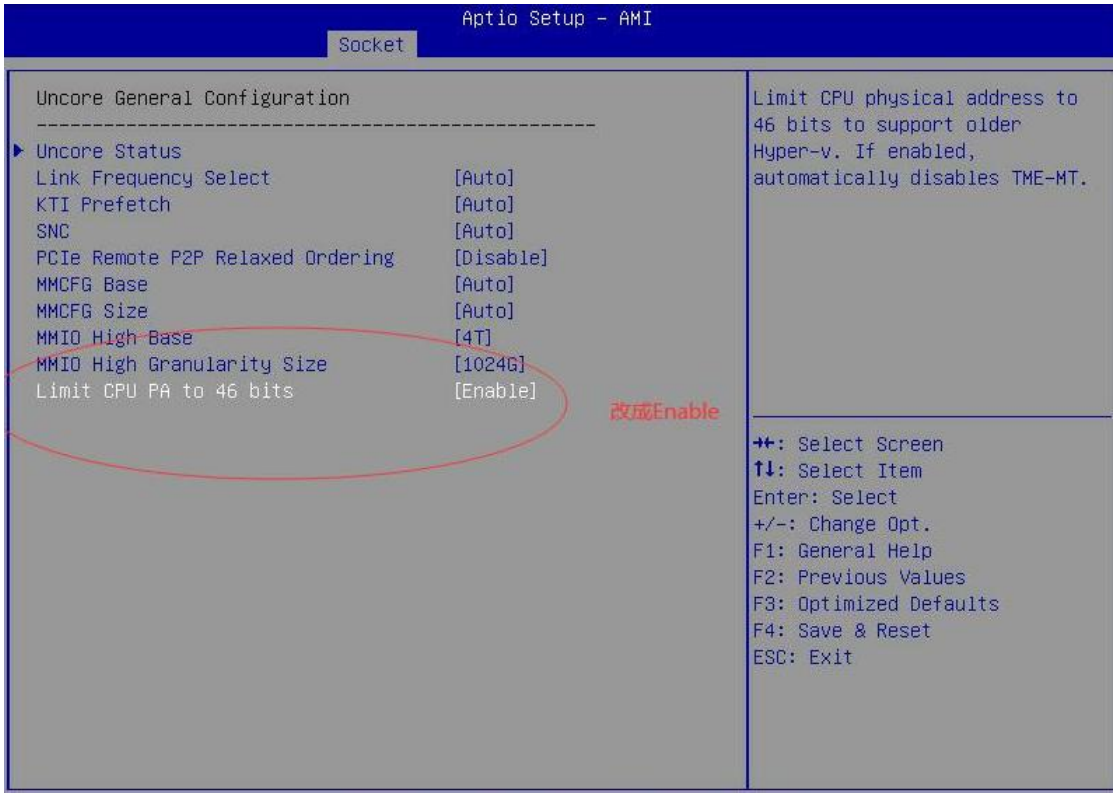
5.3.2 Common Software Faults

- System installation error

Fault description: Windows Server 201 9 An error was reported during the installation process and the installation failed;

Cause of failure: BIOS does not configure CPU PA address;

Solution: Enter BIOS Setup --> Socket- -> Uncore General Configuration, set Limit CPU PA to 46 bits changed to Enable;



- BMC log time is inconsistent with the actual time

Fault description: The BMC log generation time is abnormal and inconsistent with the current Beijing time;

Cause of failure: Time configuration is not synchronized;

Solution: There are two solutions:

- Set the time under the OS to Beijing time and enable NTP synchronization;
- Execute the command timedatectl set-local-rtc 1 under the Linux operating system to synchronize time;

- PXE function cannot be used

Fault description: The server is equipped with Intel X710 network card, in Legacy mode, the PXE function cannot be used normally;

Cause of failure: BIOS is not configured for above 4G decode;

Solution: Enter BIO S Setup configuration, Disable Above 4G decode option, save B IOS settings and restart, PXE can be used normally in Leagcy mode;

Tip : Turning off Above 4G decode may cause some models of PCI e devices to fail to work properly.

- BMC Web cannot manage RAID card or SAS HBA card

Fault description: The server is in BIOS Setup status, BMC WEB cannot obtain RAID management and SAS management functions;

Cause of failure: In BIOS In the Setup stage, BMC has not yet completed initialization of RAID management and SAS management functions. Only after entering the operating system can BMC manage RAID and SAS functions normally;

Solution: Normal phenomenon, no need to deal with;

- BMC Web RAID card management function abnormality

Fault description: The server is configured with two RAID cards, and the two RAID cards are inserted into the same PCIe riser card. The BMC Web management RAID card function is abnormal;

Cause of failure: same PCIe R iser card cannot support 2 RAID or SAS HBA cards of the same brand and type;

Solution: Insert the 2 cards into different PCIe Riser card;

- BMC Web RAID card management function abnormality

Fault description: When LSI and PMC RAID cards or S AS HBA cards are used on the same server, the BMC Web management function abnormality;

Cause of failure: AMI code function limitation. On the same machine, the BMC management function cannot adapt to cards from different manufacturers;

RAID card or S AS HBA card in the same server ;

- BMC cannot obtain rear 2 disk information

Fault description: Front 2 5 + rear 2 disk configuration, rear 2 disks are cascaded to the front 2 5 disk backplane wiring method, BMC cannot obtain the information of the rear 2 disks;

Cause of failure: In this configuration, the rear 2-disk backplane has no presence signal;

Solution: Design limitation, cannot be solved;