Gooxi

Whitley Platform L-shaped Server Barebones

User's Manual

V1.0

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Product name: Gooxi Whitley Platform L-shaped Server Barebones
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Words	Paraphrase
Platinum Efficiency Power Supplies	The platinum certified power supply is the "80 PLUS Platinum" standard, that is, the conversion rate of 20% load is above 90%, the conversion rate of 50% load is above 94%, and the conversion rate of 100% load is above 91%
M.2	The M.2 port is a new-generation port standard tailored for Ultrabook. It is a new port specification introduced by Intel® to replace mSATA.
C620A	Intel® Chipset
RJ45	Common name for standard 8-bay modular interface
AST2500	Aspeed ® BMC Chip
Socket P	Intel ® processor interface types
-F CPU	Refers to the CPU that supports the Intel ® Omni-Path Host Fabric interface, Omni-Path high-speed optical cable interconnection technology, which can support up to 100Gbps end-to-end interconnection
8038 Fan	Fan with dimensions 80x80x38mm
LGA 4189	Full name is Land Grid Array, LGA 4189 represents 4189 contacts
CR2032	3V CR2032 lithium manganese battery, shaped like a button, referred to as a button battery

	or a lithium manganese button battery
RS-232	One of the communication interfaces on the computer is the asynchronous transmission standard interface, called COM port
Jtag	Joint Test Action Group, a joint test working group, mainly used for internal chip testing
NC Pin	Empty pin
XDP	Extend Debug Port, Intel ® CPU debugging interface

Glossary:

Abbreviation	Original	Chinese meaning
PCH	Platform Controller Hub	即之前统称的“南桥”
GbE	Gigabit Ethernet	千兆以太网
BMC	Baseboard Management Controller	基板管理控制器
IPMI	Intelligent Platform Management Interface	智能平台管理接口
CPU	Central Processing Unit	中央处理器
SATA	Serial Advanced Technology Attachment	串行 ATA 接口规范
SAS	Serial Attached SCSI	串行 SCSI
sSATA	secondary SATA	扩展 SATA 接口
LAN	Local Area Network	局域网
VGA	Video Graphics Array	视频传输标准
MB	Mother Board	主板
MIB	Motherboard Interface Board	主板转接板/侧板
BP	Backplane	背板
PCIE	Peripheral Component Interconnect Express	高速串行计算机扩展总线标准
USB	Universal Serial Bus	通用串行总线
FW	Firmware	固件
TPM	Trusted Platform Module	可信赖平台模块
IO	Input/Output	输入输出
BIOS	Basic Input-Output System	基本输入输出系统
CMOS	Complementary Metal Oxide Semiconductor	互补金属氧化物半导体
ME	Management Engine	管理引擎
DDR4	Double Data Rate 4 SDRAM	第四代双倍数据速率同步动态随机存储器
DIMMs	Dual-Inline-Memory-Modules	双列直插式存储模块
RDIMMs	Registered DIMMs	带寄存器的双线内存模块
LRDIMM	Load-Reduced DIMMs	低负载 DIMM
AEP	Apache Pass	Intel® 傲腾 DDR4 内存代号
MEZZ CONN	Mezzanine Connector	夹层/扣卡

KVM	Keyboard Video Mouse	通过直接连接键盘、视频、鼠标端口，能够访问和控制计算机
CPLD	Complex Programmable Logic Device	复杂可编程逻辑器件
ECC	Error Correcting Code	错误检查和纠正
CFM	Cubic Feet Per Minute	立方英尺每分钟
RPM	Revolution Per Minute	转每分

Conventions:

	WARNING: Indicates a potentially hazardous situation which, if unavoidable, could result in death or serious personal injury.
	Red arrow: Represents pointing to a location
	Blue arrow: represents the action of pulling out or inserting downward or inserting at an angle
	Hollow arrows: represent the next action or result
	Dark blue rotation arrow 1: Represents the action of turning the screw clockwise or pulling outward
	Dark blue rotation arrow 2: Represents the action of turning the screw counterclockwise or snapping it inward
	Note: Used to convey equipment or environmental safety warning messages, which, if not avoided, may result in equipment replacement, data loss, reduced equipment performance, or other unpredictable results.

Manual version	Release date	Description
V1.0	2022-July-1	Initial release

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Chapter 1 Safety Statement

1.1 General safety matters

To prevent the risk of personal and property damages, be sure to 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 triangle-marked portion with the lightning bolt that may be subject to high voltage or electric shock.

IMPORTANT: Disconnect all cables before servicing. (There may be more than one cable)

It is strictly forbidden to carry out live operations such as starting the machine before the cover is closed.

When it is necessary to open the cover, please wait for the internal equipment to cool before performing it, otherwise it may cause burns to you.

Do not use this device in wet environments.

If an extension cable needs to be used, use a three-wire cable and make sure it is properly grounded.

Make sure the computer is well grounded. Different grounding methods are possible, but they must be physically connected to ground. If you are not sure whether the grounding protection is safe, please contact the appropriate agency or electrician to confirm. If cable routing is required, please contact Gooxi Hengyun Information Security Co., Ltd. for advice.

Please use a three-core power cord and socket with grounding protection. Improper grounding may cause leakage, burnout, or even personal injury.

Please ensure that the power socket and the power interface can be in close contact, loose contact may cause a fire hazard.

Please use your computer under 220V AC voltage. Working with inappropriate voltage will cause the danger of electric shock, fire and damage to the computer.

It is required that the computer is well ventilated and kept away from heat, fire, and cooling fans, otherwise the computer may be at risk of smoke, fire or other damage due to overheating.

If you smell or see smoke from your computer, shut down the computer immediately and unplug the power cord.

The power cord is required to be easily accessible from the power source and the power outlet. 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 improperly replaced. Only use the replacement parts of the same or equivalent type recommended by the manufacturer. The used battery will pollute the environment. Please set the replaced old battery according to the relevant instructions.

Keep your computer away from electromagnetic fields.

Stay away from electronic noise caused by high-frequency safety equipment such as air conditioners, large fans, and large motors for radio and television stations.

Please do not plug or unplug the backplane cable or move the computer while the computer is running, otherwise the computer may crash or parts may be damaged.

Please try to avoid frequent restart or power on and off to prolong the life of your computer.

Please keep the environment clean and avoid dust. The temperature of the equipment working environment is 10℃~40℃, and the humidity is 35%~80%.

Please back up important data in time, Shenzhen Gooxi Information Security Co., Ltd. is not responsible for data loss caused by any circumstances.

The optical drive used in this product is a **Class 1 laser device**.

Figure 1- 1

1.2 Toxic and hazardous substances or elements in products

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 use of electronic information products by users of electronic information products will not cause serious pollution to the environment or serious damage to persons and property.

Component	Hazardous Substances					
	Pb	Hg	Cd	Cr VI	PBB	PBDE
Chassis / Baffle	X	O	O	O	O	O
Mechanical components (fan, heat sink, motor, etc.)	X	O	O	O	O	O
Printed circuit components - PCA*	X	O	O	O	O	O
Cable / Wire / Connector	X	O	O	O	O	O
HDD	X	O	O	O	O	O

Table 1- 1

Component	Harmful Substances					
	Pb	Hg	Cd	Cr VI	PBB	PBDE
Media read / Store device (CD, etc.)	X	O	O	O	O	O
Power supply / adapter	X	O	O	O	O	O
Power cord	X	O	O	O	O	O
Pointing device (mouse, etc.)	X	O	O	O	O	O
Keyboard	X	O	O	O	O	O
UPS	X	O	O	O	O	O

Complete rack / Rail products	X	X	O	O	O	O

Table 1- 2

○ means that the content of the toxic and harmful substance in all homogeneous materials of the component is below the limit specified in GB/T26572-2011 *Limit Requirements for Restricted Substances in Electronic and Electrical Products*.

× indicates that the content of the toxic and harmful substance in at least one homogeneous material of the component exceeds the limit requirements specified in GB/T26572-2011 *Limit Requirements for Restricted Substances in Electronic and Electrical Products*. However, it complies with the EU RoHS Directive (including its exemption provisions).

Note: the table shows the information of toxic and hazardous substances in all possible components of Gooxi server, storage and workstation products. Customers can refer to the status of toxic and hazardous substances in all components of the purchased products according to this table.

1.3 Warning notices

This product complies with EMC Class A standards.

1.4 Climate and Environmental Requirements

- The best working temperature of the equipment is 10℃-40℃; the maximum indoor ambient temperature of the equipment is 40℃.
- System battery 3 V CR2032 lithium battery

NOTE: Some configurations have been verified for performance at 45°C temperature and 90% (29°C maximum dew point) humidity.

Temperature	
Working temperature	10°C~40°C (50°F~104°F), the maximum temperature gradient is 10°C per hour
Continuous operating temperature range (below 950m or 3117ft above sea level)	In the situation of no direct illumination, 10°C to 40°C (50°F to 104°F)
Storage temperature range	–40°C~65°C (–40°F~149°F)
Humidity	
Storage	The max. dew point is 33°C (91°F). The relative humidity is 5% to 95%. The air must not condense at all times.
Continuous operating humidity percentage range	The max. dew point is 26°C (78.8°F) The relative humidity is 10% to 80%

Table 1- 3

- If the lightning protection facilities of the computer are poor or not available, please shut down the computer in thunderstorm weather and unplug the power line, network cable, telephone line, etc. connected with the computer.
- Please use the authorized operating system and software and configure them correctly. Shenzhen Gooxi Information Security Co., Ltd. is not responsible for server failure caused by operating system and software.
- Please do not disassemble the chassis, increase or decrease the hardware configuration of the server. Shenzhen Gooxi Information Security Co., Ltd. is not responsible for the hardware and data damage caused by this.
- When the server fails, please first check the "troubleshooting" section of this manual to determine and remove common faults. If you are not sure the cause of the failure, please contact the technical support department of Shenzhen Gooxi Information Security Co., Ltd. for help.
- Choosing a suitable environment for the computer is helpful for the stable operation and can prolong the life of the computer.
- Shenzhen Gooxi Information Security Co., Ltd. reserves the right of final interpretation of the above terms.

1.5 Other important descriptions

If the equipment is marked with a label, it means that the equipment with the label is only designed and evaluated as the altitude of 2000m. Therefore, it is only suitable for safe use below 2000m, and there may be potential safety hazards when it is used above 2000m.

If the equipment is marked with this mark, it means that the equipment with this mark is only designed and evaluated based on non tropical climate conditions. Therefore, it is only suitable for safe use in non tropical climate conditions, and there may be potential safety hazards when it is used in tropical climate conditions.

Chapter 2 Product Introduction

2.1 System introduction

Gooxi Whitley dual-socket L-shaped servers are the 1U, 2U and 4U rack L-shaped storage server that Gooxi has launched based on Intel Whitley platform and aimed at the needs of the Internet, IDC (Internet Data Center), cloud computing, enterprise market and telecom applications. It is applicable to the high-density deployment of cloud computing, virtualization, high-performance computing (HPC), big data processing and other loads to improve the space utilization of the data center. The server has the advantages of large storage capacity, strong expansion ability, high reliability, easy management and easy deployment.

2.2 Product Features

- The CPU adopts 1 or 2 third-generation Intel® Xeon® Scalable processors (ICE Lake) 8300/ 6300/ 5300/ 4300 series processors, LGA4189 socket, 270W TDP
- 32 DDR4 memory slots support DDR4 LRDIMM/RDIMM/ECC, the memory frequency supports 2400/ 2666/ 2933/ 3200MHz
- The motherboard has 1 built-in PCIE 4.0x 4 M.2 ports
- Modular design, various combinations of PCIE and hard drives
- Onboard 2 Gigabit data network ports and 1 Gigabit management network port
- Optional 1 OCP3.0 network card module.

2.2.1 System parameters

Processor and memory		
Processor	Support 1 or 2 Gen3 Intel Whitley platform full-series processors, LGA4189 socket	
TDP	Maximum 270W	
Processor core No.	Up to 40 cores	
Processor No.	2	
Memory type	DDR4 ECC RDIMM/LRDIMM, memory frequency supports 2400/ 2667/ 2933/ 3200MHz, single CPU supports 8 DDR4 channels, each channel supports 2 DIMMs; 2 CPUs support a total of 32 DDR4 slots, with a single capacity of 16GB, 32GB, 64GB, 128GB, 256GB, a maximum of 4TB (16* 256GB LRDIMM); Barlow Pass DIMMs (CR 1.5) supported, and a maximum of 6TB (8* 256GB LRDIMM + 8* 512GB Barlow Pass mapped as memory)	
Storage and I/O		
Storage controller	Internal storage: 2 SATA ports (7Pin), 3 Minisas 8643 ports, 2 PCIe 4.0 X4 M.2 ports, 2 slimline x8 ports	
Hard drive	1U 4 bays	1U 10 bays
	Front: 4* 2.5-inch SAS/SATA (HDD/SSD)	Front: 10* 2.5-inch SAS/SATA (HDD/SSD)
External port	Front port: 2 USB3.0, 1 VGA port	
	Rear: 1 VGA, 1 DB-9COM port, 2 USB3.0, 1 RJ45 Gigabit management LAN	

	port, 2* Gigabit/10Gigabit RJ45 network ports
BMC	ASPEED AST2500
PCIe expansion	Support 2 PCIe 4.0 x32 slots (can be converted into various types of PCIE slots through PCEI adapter board), 1 PCIe 4.0 x16, 1 OCP 3.0 (PCIe3.0 x8 signal), 2 Slimline (PCIe4.0 x8 Signal)
TPM	Support
Power supply	
Power supply	Platinum 550W, 800W, 1200W, 1600W, 2200W hot-swap redundant power supply (adapt according to the actual power)
System fan	
Fan	Support 4* 8038 fans (optional 4* 8056 fans)
Remote management	
BMC chip	ASPEED AST2500
IPMI compliant	IPMI2.0
Management port	1 dedicated RJ45 management network port
System depth	748mm.
Operating Support List	
System	CentOS 7.5/7.6/8.0/8.1 RHEL 7.4/7.5/7.6/8.0/8.1 SLES12 SP3/SP4 Ubuntu 18.04/Ubuntu-20.04- Fedora 28 Windows 10 Win server 2012 R2/2016/2019 Xenserver 7.1/7.2/ ESXi 6.7/ 7.0U1c Windows Server 2012 2016 Hyper-v
BIOS	
Name	AMI
Support start mode	HDD (internal)/optical drive/U disk/PXE
TPM	Support
Safety certificate	
Nation	Asia, Europe, Americas, Australia, Africa
Energy saving certification	CECP, CELP
Safety certificate	CCC, CE, FCC
RoHS	Meet the requirements
Environmental parameters	
Operating temperature	5℃~40℃
Operating humidity	35%~80%
Storage temperature	-40℃~70℃
Storage humidity	Short-term storage (≤ 72h): temperature -40℃~70℃ / humidity 20%~90% RH non condensing (including packaging)

	Long-term storage (> 72h): temperature 20℃ ~28℃ / humidity 30%~70% RH non condensing (including packaging)

Table 1- 4

2.2.2 System Architecture

SL series servers include 1U, 2U and 4U models (**SL101-D04R-G3**, **SL101-D10R-G3**, **SL201-D08R-G3**, **SL201-D12RE-G3**, **SL201-D12R-G3**, **SL201-D25RE-G3**, **SL201-D08R-NV-G3**, **SL201-D12R-NV-G3**, **SL401-D24RE-G3**, **SL401-D36RE-G3**). This manual mainly introduces the **1U** model. The name of the motherboard is G4DCL-B, and the models are the same except for the hard disk connection method and the maximum number of compatible hard disks.

The motherboard features are as follows:

- The CPU adopts the third-generation Intel® ICE-Lake® Scalable processor, LGA 4189 socket, TDP 270 W; single processor can reach up to 40 cores, providing excellent system performance, the highest main frequency is 3.2GHz, using Intel® largest single core that can be achieved by the Turbo acceleration technology, the maximum overclocking (Max Turbo Frequency) is 3.4GHz
- Support Intel® Hyper-Threading Technology, allowing multiple threads to run concurrently on each processor core (up to 2 threads per core) to improve multi-threaded application performance
- Per CPU support 8 DDR4 channels, each channel supports 2 memory sticks, RDIMM /LRDIMM
- Support up to 32* 2400/2666/2933/3200 MHz DDR4 LRDIMM/RDIMM/ECC memory, and supports a single capacity of 8GB, 16GB, 32GB, 64GB, 128GB, 256GB. Support Intel second-generation Optane memory BPS (maximum 512GB per DIMM)
- Motherboard integrated AST2500 BMC chip, standard KVM function
- G4DCL-B motherboard provides 2* M.2 Key M SSD slots, supports 2280 size, only supports PCIe 4.0 X 4 signals
- 2 Gigabit Ethernet ports are integrated on the motherboard, using 88E1512 chip from PCH;
- PCH adopts INTEL LEWISBURG C620A series chipset
- Modular design of hard disk module, PCIE expansion module, power supply, fan and other components, tool-free maintenance
- PCH leads out 14 SATA Ports, maximum speed: 6Gb/s, compatible with SATA 1.5Gb/s, 3.0Gb/s; SATA Controller outputs 8 SATA PORTs, while SSATA outputs 6 SATA PORTs, of which SATA PORT has 8 PORTs, based on sequentially introduced into 2 SFF-8643 connectors, while the first 4 PORTs of SSATA are introduced into a SFF-8643 connector, and the latter 2 PORTs are introduced into 7PIN SATA connectors for connecting SATA DOM and DVD
- The BMC chip in this single board adopts the AST2500 control chip of ASPEED Company, which is used for IPMI remote management. VGA output port, dedicated Gigabit RJ45 management network port, and connected to PCH via RMII/NCSI.

The system architecture motherboard block diagram is as follows:

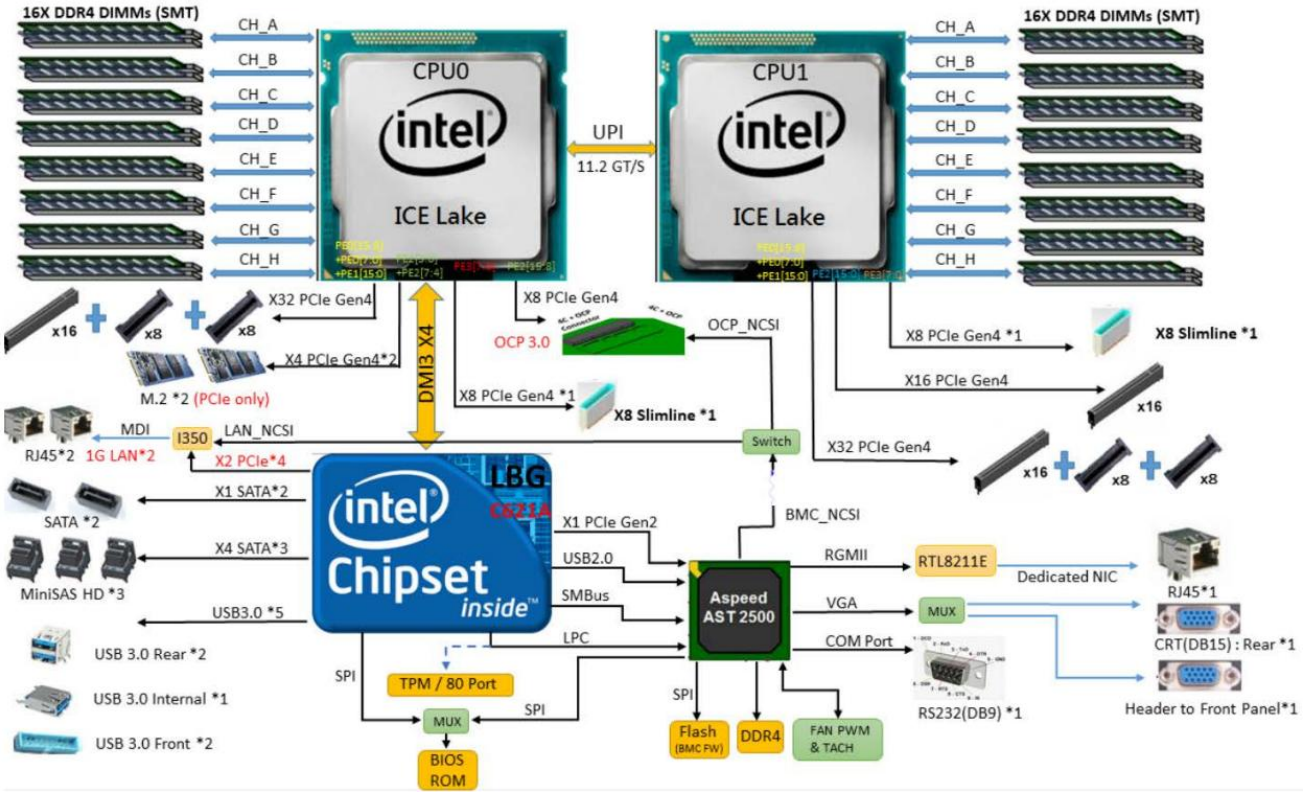
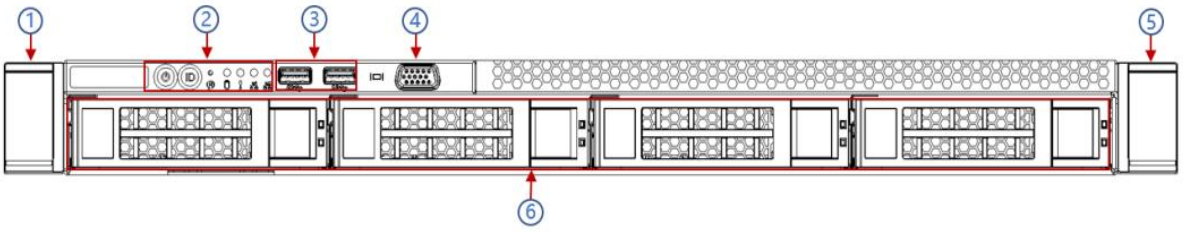


Figure 2- 1

2.3 Introduction of system components

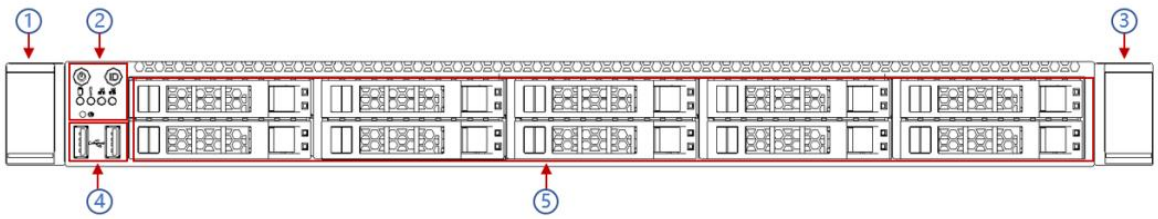
2.3.1 Front panel components

1U4-bay model



Serial No.	Name	Serial No.	Name
1	Left ear	4	VGA port
2	Front Panel Indicators	5	Right ear
3	USB3.0 port	6	3.5 inch hard drive

1U10-bay model



Serial No.	Name	Serial No.	Name

1	Left ear	4	USB3.0 port
2	Front Panel Indicators	5	2.5 inch hard drive
3	Right ear		

Front panel port description

Name	Types of	Description
VGA port	DB15	For connecting to a display terminal such as a monitor or KVM.
USB port	USB 3.0	Provides an external USB port via which USB devices can be connected. Note: When using an external USB device, please make sure that the USB device is in good condition, otherwise the server may work abnormally.

Table 1- 11

Front panel indicators and button description:

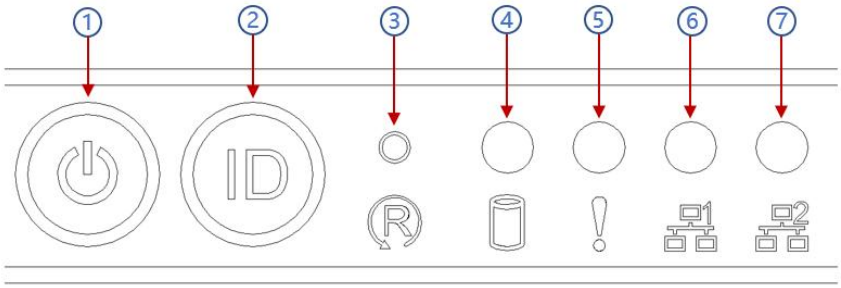


Figure 2- 8

Serial No.	Indicator/Button	Serial No.	Indicator/Button
1	Power switch button/indicator	5	System alarm indicator
2	UID button/indicator	6	Network port 1 connection status indicator
3	Reset restart server button	7	Network port 2 connection status indicator
4	Hard disk indicator		

Table 1- 12

LED Status Description		
Logo	Indicator/ Button	Status Description
Gooxi		GOOXI logo
	Power Indicator	Power indicator description: Green (on): Indicates that the device is powered on normally. Green (flashing): Indicates that the device is in standby. Green off: The device is not powered on. Power button description: Short press this button in the power-on state, and the OS shuts down normally. Press and hold the button for 6 seconds in the power-on state to forcibly power off the server. Short press this button in the power-on state to start the machine.

	UID button/ indicator	The UID button/indicator is used to conveniently locate the server to be operated. The UID button can be manually pressed or the BMC command can be remotely controlled to turn the light off or on. Description of UID indicator: Blue (on/flashing): Indicates that the server is located. Off: Indicates that the server is not located. UID button description: Short press this button to turn on/off the positioning light.
	Reset restart server button	Press to restart the server
	Hard disk indicator	Blinking green light: The hard drive is operating normally
	System alarm indicator	System alarm indicator. Including system alarms, fan alarms, power supply alarms, etc., which can be viewed through the IPMI management software
	Network port connection status indicator	Corresponds to the Ethernet port indicator of the NIC card. Green (on): Indicates that the network port is connected normally. Off: Indicates that the network port is not in use or is faulty. Note: Corresponding to the two 1GE network ports on the motherboard.
	Network port connection status indicator	Corresponds to the Ethernet port indicator of the NIC card. Green (on): Indicates that the network port is connected normally. Off: Indicates that the network port is not in use or is faulty. Note: Corresponding to the two 1GE network ports on the motherboard.

Table 1- 13

2.4.2 Rear panel components

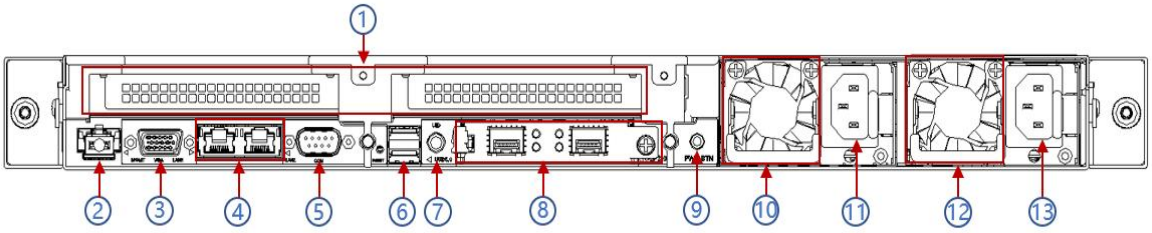


Figure 2- 9

Serial No.	Name	Serial No.	Name
1	Riser modules	8	OCP3.0 interface
2	Management network port	9	Power switch button
3	VGA interface	10	Power module 1
4	PJ45 Gigabit network port	11	Power module AC port 1
5	COM port	12	Power module 2
6	USB3.0 interface	13	Power module AC port 2
7	UID indicator		

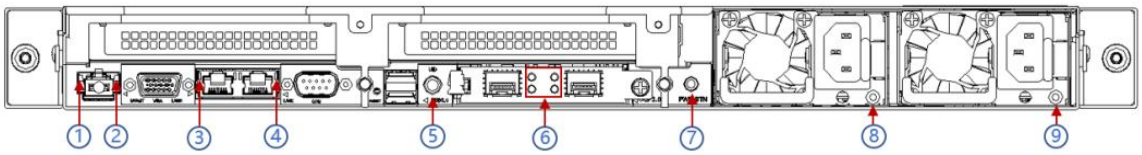
Table 1- 14

Rear panel port description:

Name	Types of	No.	Description
VGA port	DB15	1	For connecting to a display terminal such as a monitor or KVM.
Management network port	GE BASE-T	1	Provide outgoing 1000Mbit/s Ethernet port. The server can be managed through this interface.
USB port	USB 3.0	2	Provides an outgoing USB port via which USB devices can be connected. Notice: When using an external USB device, please make sure that the USB device is in good condition, otherwise the server may work abnormally.
RJ45 Gigabit Ethernet port	GE BASE-T	2	Server service network port.
Power Module AC port	/	1 or 2	You can choose the number of power supplies according to your actual needs, but make sure that the rated power of the power supply is greater than the rated power of the whole machine.
COM port		1	Serial communication port
OCP3.0 port		1	Install the network card of OCP3.0

Table 1- 15

Rear panel indicators and button description:



Serial No.	Name	Serial No.	Name
1	Connection status indicator	8	Power module indicators
2	Data transfer status indicator	9	Power module indicators
3	Connection status indicator		
4	Data transfer status indicator		
5	UID indicator		
6	OCP network port indicator		
7	Power button		

Table 1- 16

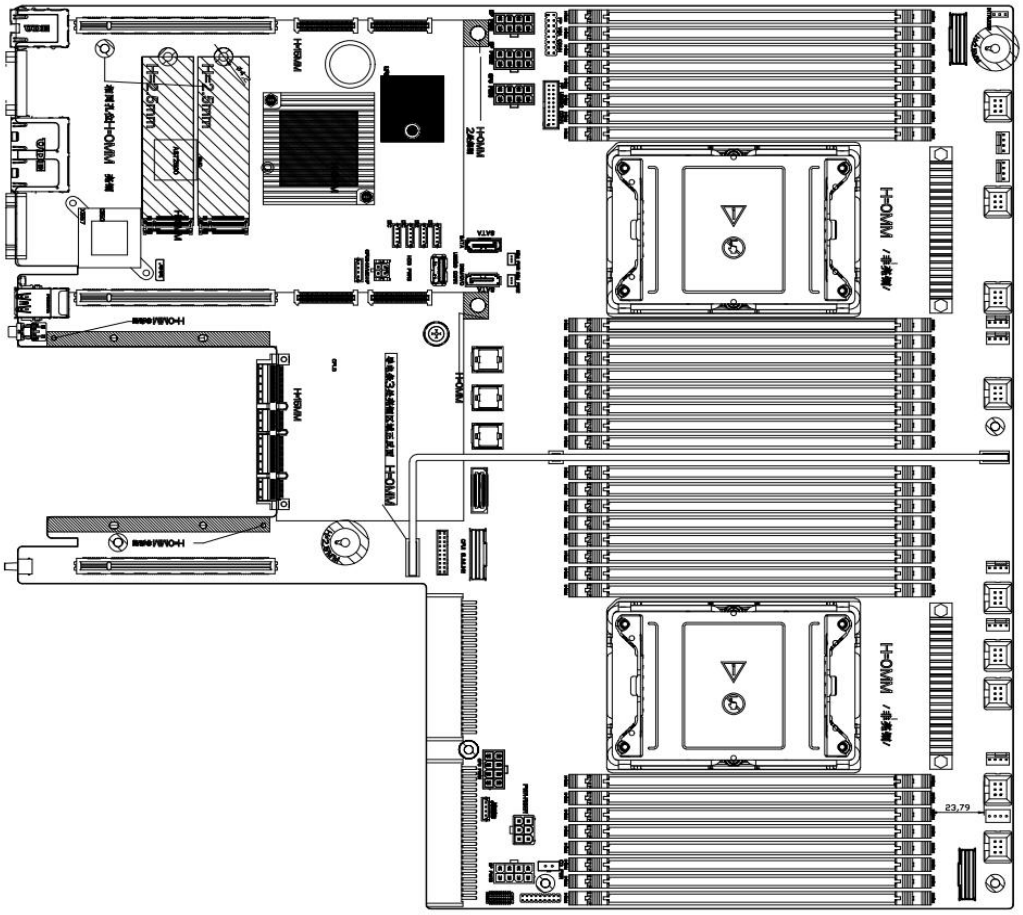
Indicator/ Button	**Status Description**
Power module indicators	Green (on): Indicates that the input and output are normal. Red (on): Indicates that the input is normal, and there is no output due to power supply over-temperature protection, power output over-current/short-circuit, output over-voltage, short-circuit protection, device failure (excluding all device failures) and other reasons.

	Green (1Hz/flashing): Indicates that the input is normal, the power supply is turned off due to power-on or in-position; the input is over- or under-voltage. Green (4Hz/flashing): indicates that the firmware is being upgraded online. Off: Indicates that there is no AC power input.
Connection status indicator	Steady green: Indicates Gigabit Link. Steady orange: Indicates 100M link. Off: Ten Mega Links.
Data transfer status indicator	Yellow (flashing): Indicates that data is being transmitted. Off: Indicates no data transmission.
UID indicator	Blue (on/flashing): Indicates that the server is located. Off: Indicates that the server is not located. UID button description: Short press this button to turn on/off the positioning light.
OCP network port indicator	The upper two are connection status indicators, and the lower two are data transmission status indicators
Power Button	Short press this button in the power-on state, and the OS shuts down normally. Press and hold the button for 6 seconds in the power-on state to forcibly power off the server. Short press this button in the power-on state to start the machine.

Table 1- 17

2.43 Motherboard components

All models share motherboard components, the port description is as follows:



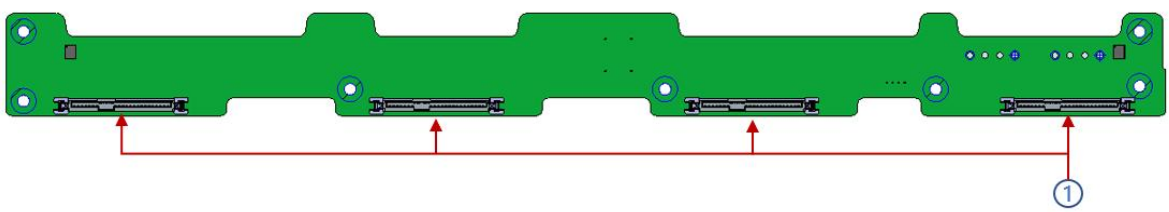
Name	Remarks	Default
J16	BMC_UART5, BMC debug serial port	
PJ1	For CPU0 VR upgrading and programming, the jumper cap is not connected by default	
PJ2	For CPU1 VR upgrading and programming, the jumper cap is not connected by default	
J12	Front VGA mounting ear connector	
J36	Front USB 3.0 connectors (x2)	
J35	Built-in USB3.0 connector	
J34	Rear USB3.0 connector q(x2)	
J1	Trusted Platform Module (TPM)	SPI
SSD1 / SSD2	M.2 PCIE X2 CONN, only supports PCIe Only 2280 size	
J15	CPLD JTAG Header, used to program CPLD program	
J32	Front panel buttons, LED connectors	
J48	2X10 BP HDD LED Connector (for Rear HDD BP backplane)	
J27	sSATA, SATA 3.0 Connection from PCH (8643 miniSAS HD with PCH sSATA SGPIO Pins) * Whitley3 Ver.A motherboard must use J27 and J48 to connect RM2112-SHDB-D1 /D2 to turn on the hard drive LED*	
J29	SATA, SATA 3.0 Connection from PCH (8643 miniSAS HD with PCH SATA SGPIO Pins)	
J31	SATA, SATA 3.0 Connection from PCH (8643 miniSAS HD with PCH SATA SGPIO Pins)	
FAN1~FAN9	6 Pin fan connector (total 9 pcs)	
J40~J47	4 Pin fan connector (total 8 pcs)	
SATA1/SATA2	SATA DOM CONN (SATA 7 Pin) (with PWR design)	
J37/J38	SATA DOM PWR CONN	
J64	Chassis Intrusion Header, chassis intrusion detection	
J24/J25	Slimline PCIe X8 CONN (defined by SFF-9402 standard)	
B1	Buzzer	
DIMMA0-DIMMH0 DIMMA1-DIMMH1	CPU0 DIMM, 16 slots	
DIMMA3-DIMMH3 DIMMA4-DIMMH4	CPU1 DIMM, 16 slots	
SW3	Rear BMC Reset Button	
COM1	Rear COM Port	
J4	Rear BMC IPMI LAN Port	
J2	1X2 Gigabit data network port	
CN1	Rear VGA Connector	
SW2	Rear UID Button (Blue LED)	
SW1	Rear Power Button	
J51/J53/J56/J58	2X4 Front BP HDD Power Connectors (White)	
J59/J61	2X4 Risers and GPU Card Power Connectors (Black)	
J52/J54/J55	2X2 Rear BP HDD Power Connectors (Black)	

J60	2X3 Riser 4 Power Connector (Black)	
J69	PEHP CPU0 (1.8V CPU I2C Reserved for U.2 HDD backplane)	
J70	PEHP CPU1 (1.8V CPU I2C Reserved for U.2 HDD backplane)	
J49/J50	CRPS Slots	
SW4	SKU IDs (Reserved)	
J7/J8/J9/J10	BP1~BP4 BMC I2C Connector (Reserved for HDD BP backplane)	
J57	1X2 CD/DVD Power Connector	
J63	NVME Key (VROC)	
J13	VR Debug Mode Jump (Reserved for RD test Only)	No Jumper
J14	CPLD No CPU Power ON Jump (Reserved for RD test Only)	No Jumper
J30	2X4 SATA sGPIO Header (for 8643 miniSAS HD Conn J29/J31)	
J28	2X4 sSATA sGPIO Header (for 8643 miniSAS HD Conn J28)	
J33	BMC Watch Dog Timer Enable (Reserved for RD test Only)	
J5	IPMB Connector	
J67	SCY Strap, (2/3)High = Disable Flash Descriptor Security	Default (1/2)Low
J11	PCH_HOST I2C Header (Reserved for RD test Only)	
J68	PCH I2C Header Pin.1/2 Clear CMOS Pin.3/4 Password Clear Pin.5/6 ME FW Recovery Status Pin.7/8 BMC Disable Pin.9/10 BIOS Recovery Mode Enable	No Jumpers
J3	SD Card Slot (BMC Log Storage)	
OCP1	OCP3.0 Slot (CPU0 PCIE X8)	
J17+J18+J19	Riser1 Slot (CPU0 PCIE X32)	
J20+J21+J22	Riser2 Slot (CPU0 PCIE X32)	
J23	Riser3 Slot (CPU1 PCIE X16)	

2.4.4 HDD Backplane Components

1U4 active backplane as shown in the figure

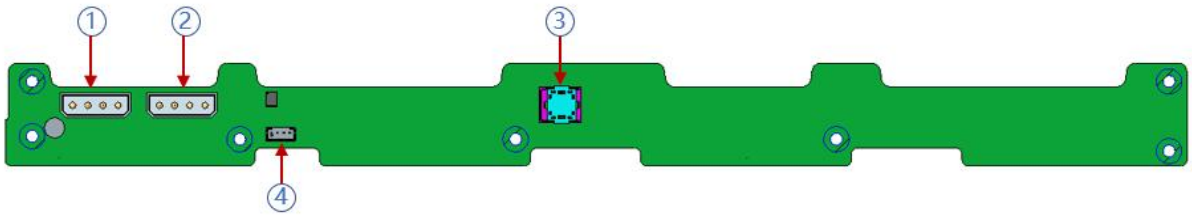
Top surface:



Serial No.	Description	Function

1	SAS/SATA hard drive connector	1. Maximum support 12G/b SAS hard disk; 2. Maximum support 6G/b SATA hard disk; 3. Support SAS/SATA hard disk hot-swap.

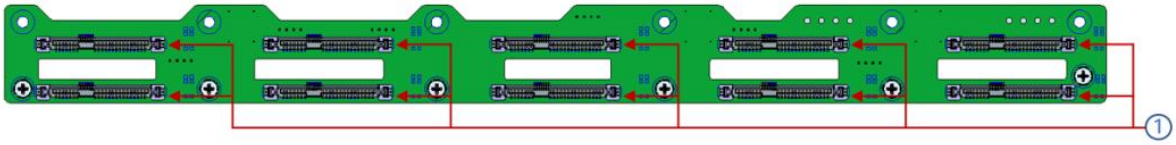
Bottom surface:



Serial No.	Description	Function
1, 2	Power connector	Backplane power transfer connector for 5V/12V power transfer
3	SFF-8643 12Gb SAS interface	Backplane bay signal interface
4	I2C port	For I2C signal interface

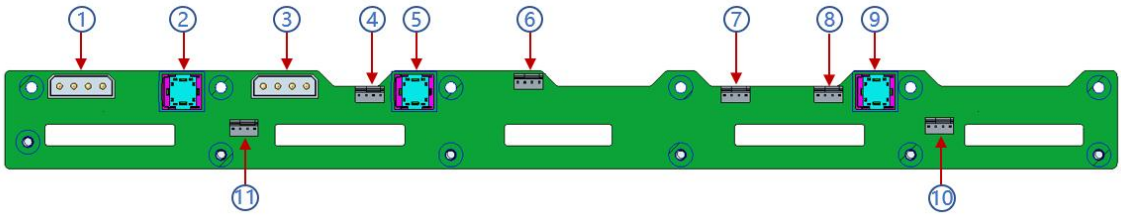
1U10 active backplane as shown

TOP surface:



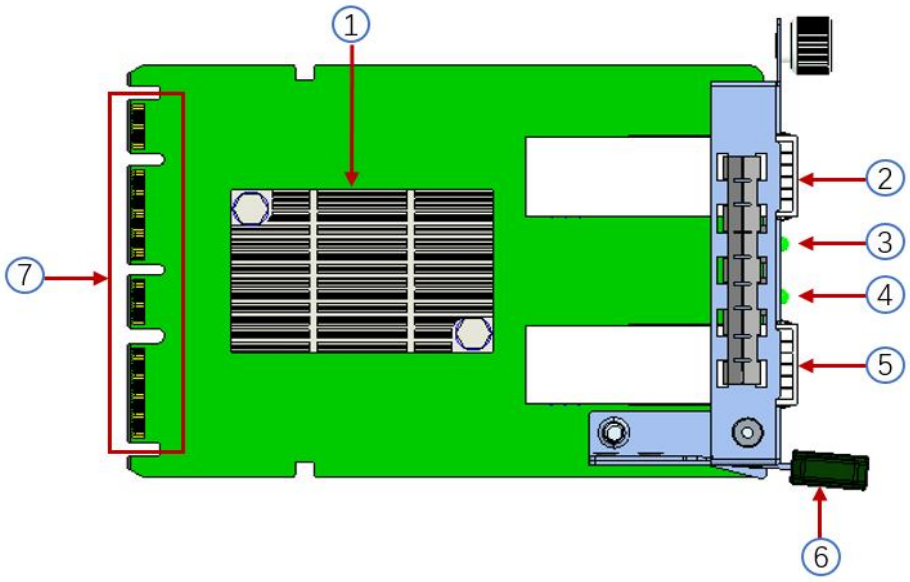
Serial No.	Description	Function
1	SAS/SATA hard drive connector	1. Maximum support 12G/b SAS hard disk; 2. Maximum support 6G/b SATA hard disk; 3. Support SAS/SATA hard disk hot-swap.

Bottom view:



Serial No.	Description	Function
1, 3	Power connector	Backplane power transfer connector for 5V/12V power transfer
2, 5, 9	SFF-8643 12Gb SAS interface	Backplane bay signal interface
4, 6, 7, 8, 10, 11	Temperature controlled fan socket	For 4pin fan interface

The OCP3.0 network card is shown in the figure:



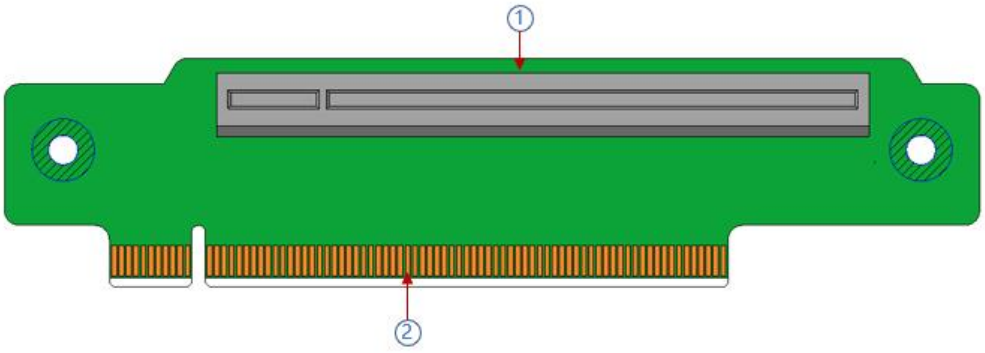
Serial No.	Description	Function
1	Intel 82599ES chip	It is mainly connected to the network interface controller of the motherboard CPU through PCIe Gen.2 X8, which is converted into a two-port SFP+ at the network card end, and the 82599ES chip also provides an interface for communication with the motherboard BMC NCSI for information transfer between the BMC and the network card.
2	SFP+ LAN1	Provides SFP+ 10G optical port signal
3	LED1	LED status indicator
4	LED2	LED status indicator
5	SFP+ LAN2	Provides SFP+ 10G optical port signal
6	Network card buckle	It is used to lock the network card. When removing the network card, you need to press buckle down to pull out the network card.
7	OCP3.0 interface	Used to connect to the motherboard OCP3.0 PCIe X8 signal/12V power supply/Sideband signal

LED description

Serial No.	Description	Function
LED1	SFP+ LAN1 Link LED	Green/ yellow LED for indicating LAN1 speed Green: 10 Gigabit Internet speed; Yellow: Gigabit Internet speed No light: no optical port network cable
	SFP+ LAN1 ACT LED	Green LED for LAN1 data activity Flashing: data activity; off: no data activity
LED2	SFP+ LAN2 Link LED	Green/ yellow LED for LAN2 speed Green: 10 Gigabit Internet speed; Yellow: Gigabit Internet speed No light: no optical port network cable
	SFP+ LAN2 ACT LED	Green LED for LAN2 data activity

		Flashing: data activity; off: no data activity

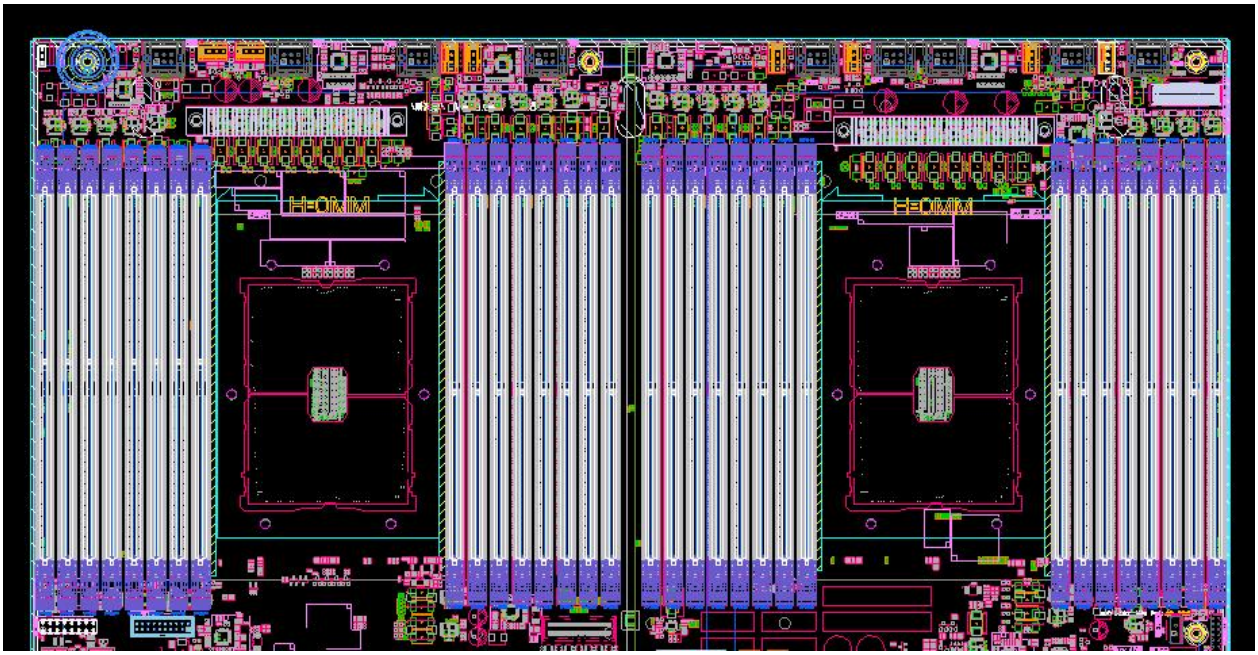
RISER 1 backplane as shown:



Serial No.	Description	Function
2	PCIE 3.0 X16 Slot	For PCIe 3.0 X16 devices.
4	PCIE X16 specification Gold finger	For motherboard PCIe X16 X8 port

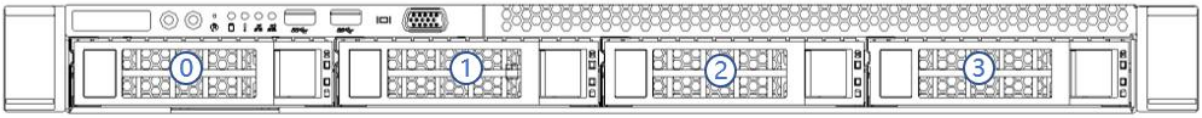
2.4.5 DIMM slot locations

The motherboard adopts Intel Whitley platform and is equipped with Intel Xeon ICE Lake CPU. Each CPU supports 8 channels, and each channel has 2 DIMMs. The entire motherboard can support 32 DIMMs. When only one memory is inserted, the blue box in the figure below is preferred, (inner slot board slot plastic color is blue), supports DDR4 ECC RDIMMs/ LRDIMMs server memory, the memory frequency supports 2400/2666/2933 / MHz; the location is as shown below:

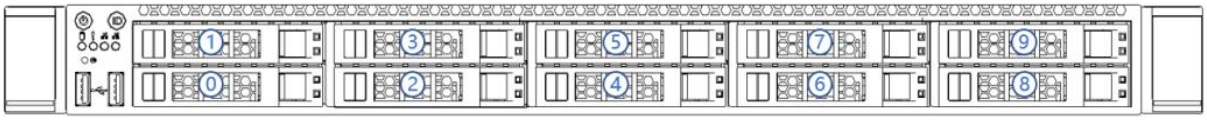


2.4.6 Hard disk label

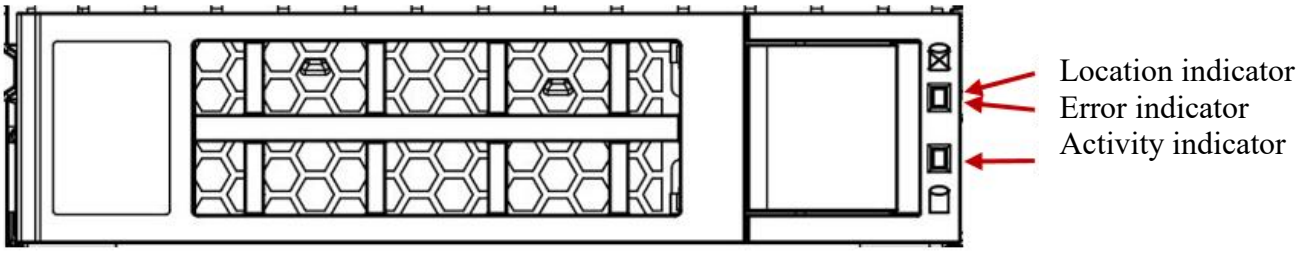
1U4-bay model



1U10-bay model



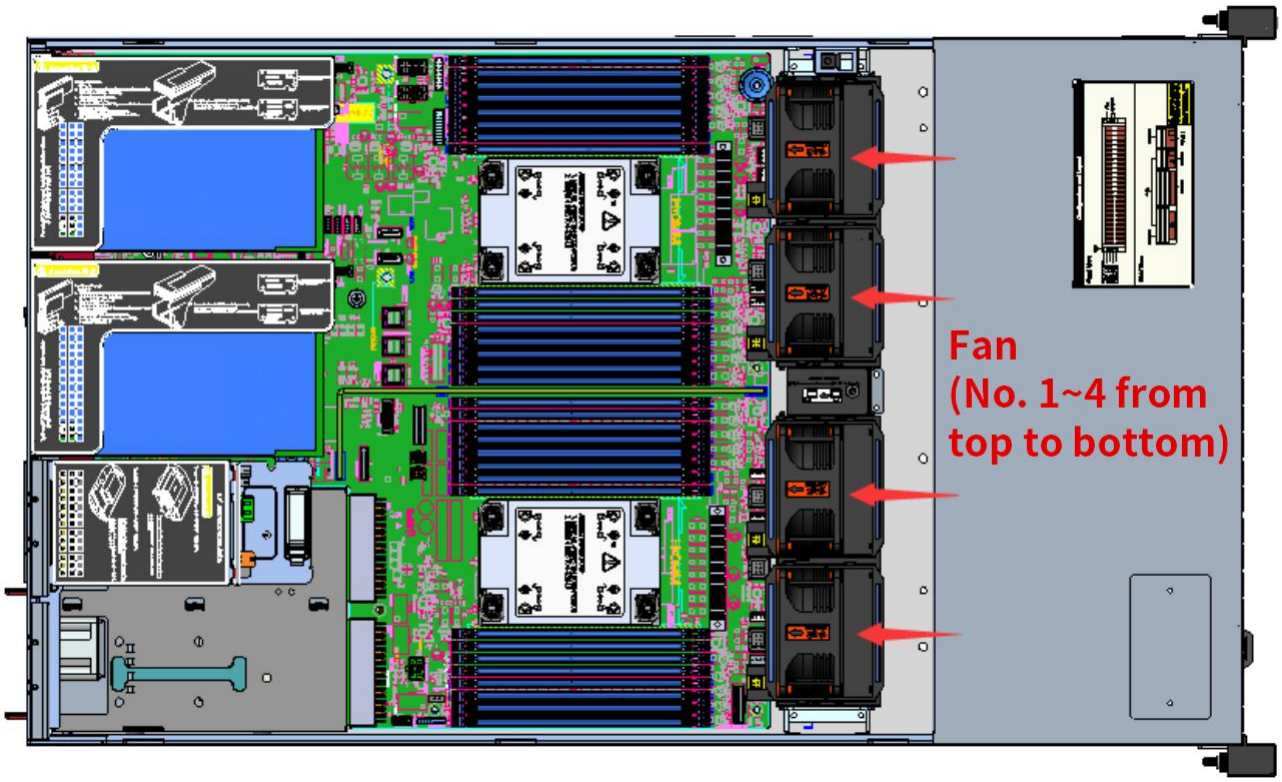
2.4.7 Hard disk indicator



Function	Activity indicator (green)	Location indicator (blue)	Error indicator (yellow)
Hard drive in place	On	Off	Off
Hard drive activity	Flashing 4Hz/sec	Off	Off
Hard disk positioning	On	Flashing 4Hz/sec	Off
Hard disk error	On	Off	On
RAID rebuilding	On	Off	Flashing 1Hz/sec

2.4.8 System fan

The server supports variable fan speeds. Normally the fan runs at the lowest speed, if the server temperature rises, the fan will increase the speed to cool down.


Fan
(No. 1~4 from
top to bottom)

Chapter 3 Installing System Components

3.1 Installation of CPU

Install the processor:

Step 1: CPU Installation

1. Tilt the CPU angle as shown in the figure, align the A1 corner (triangle mark), and clamp it on one end of the clamping piece.

2. Direction, press the other end of the clamping piece to fix the CPU to the clamping piece.

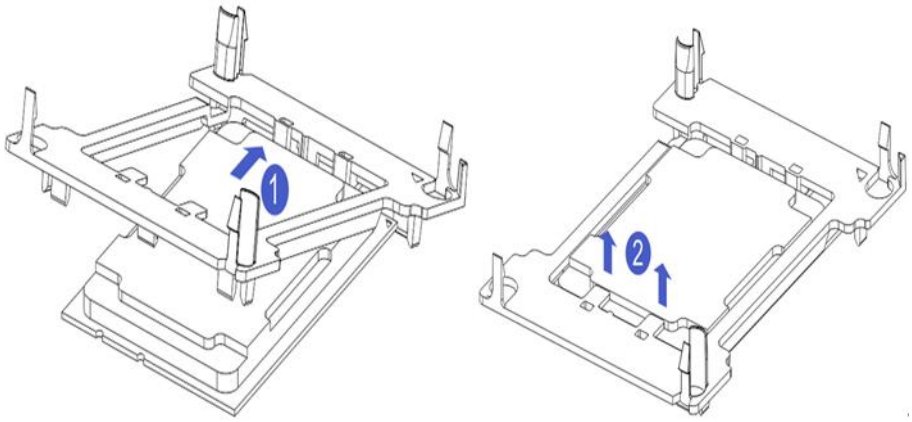


Figure 3-1

Step 2: Install the CPU on the heat sink, and ensure that the surface of the CPU and heat sink is clean and free of oil and foreign body. (As shown below)

1. Smear about 0.4ml of thermal grease on the CPU and smooth it evenly.

2. Align the A1 corner (triangle mark), and buckle the CPU on the heat sink.

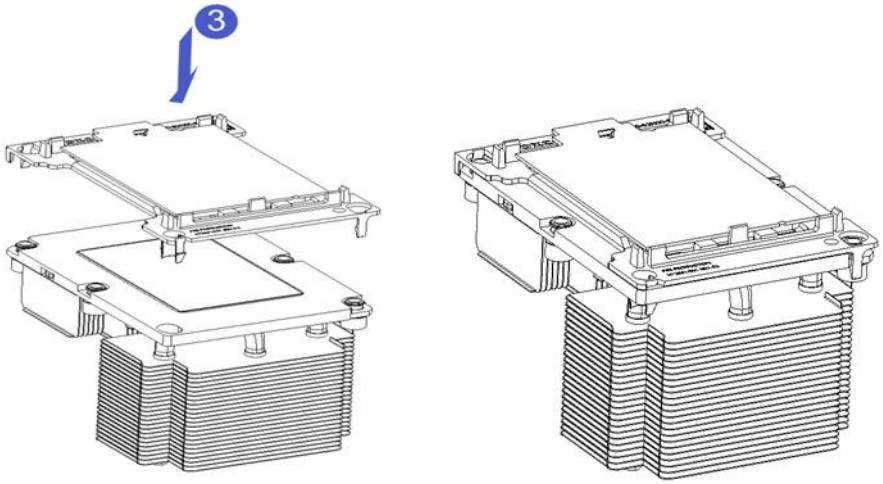


Figure 3-2

3.2 Installation of heat sink

Installing steps:

1. Remove the processor blank (as shown in the figure below)

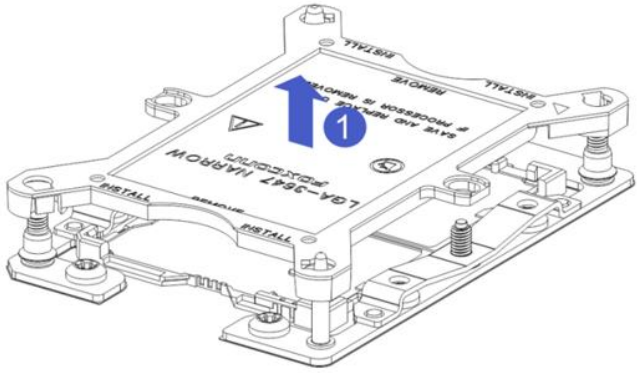


Figure 3- 1

2. Align the heat sink with the heat sink fixing studs on the CPU base, and tighten the heat sink fixing screws in sequence according to the instructions. (As shown below)

NOTE: The pins on the motherboard are extremely fragile. To avoid damaging the motherboard, do not touch the processor or processor socket contacts.

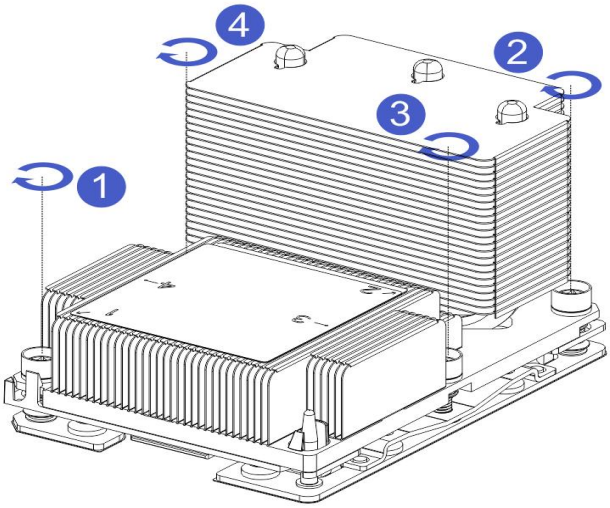


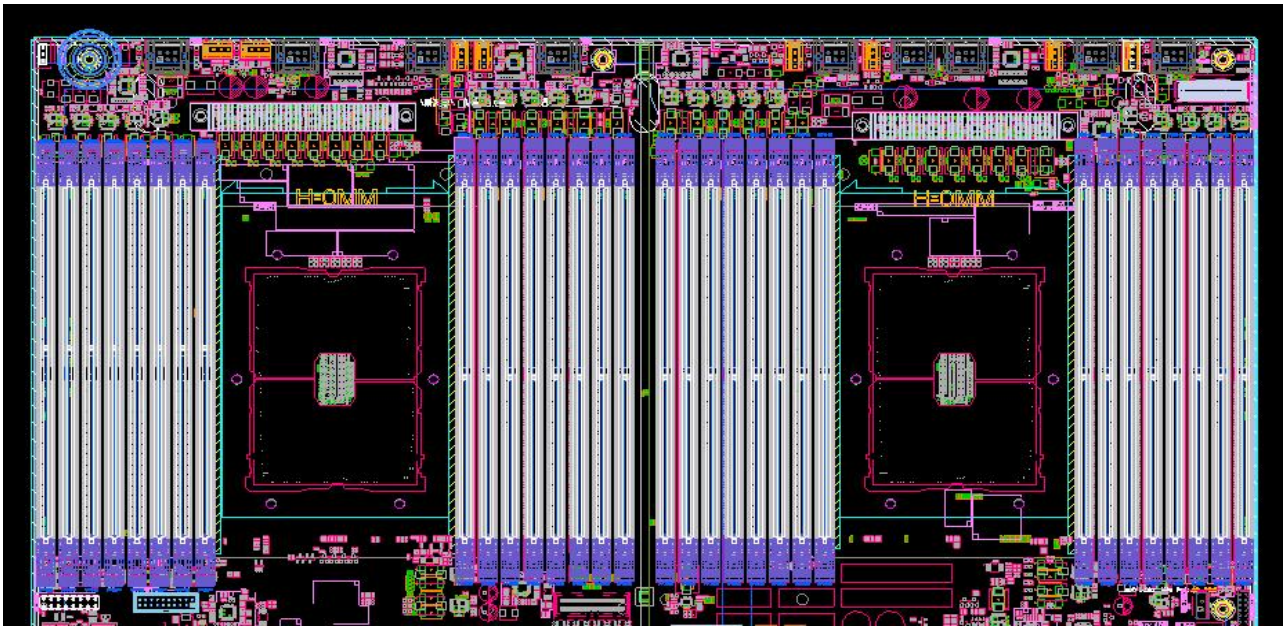
Figure 3- 2

3.3 Memory installation

3.3.1 Memory support specifications

The motherboard supports 64GB R-DIMM, 128GB LR-DIMM, 256GB 3DS LRDIMM DDR4 memory, up to 2933 MHz (2933MT/s is only achieved with a single memory per channel, depending on the CPU SKU).

Note: Please use memory modules with the same CAS delay value on this motherboard. It is recommended that you use the same capacity and the same frequency memory produced by the same manufacturer.



3.3.2 How to install memory

The 8 memory slots controlled by CPU 1 on the motherboard are: DIMMA1, A2, DIMMB1, B2, DIMM C1, C2 and DIMM D1, D2; the 8 memory slots controlled by CPU 2 are: DIMME1, E2, DIMMF1, F2, DIMMG1, G2 and DIMMH1, H2, pay attention to the notch of the memory and the notch of the DIMM slot, and snap each DIMM module into place vertically to prevent incorrect installation.

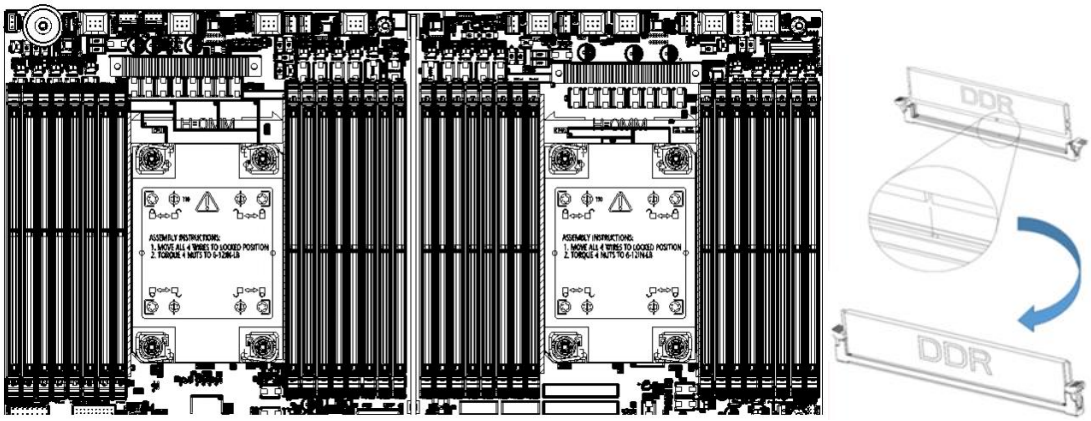


Figure 3- 3

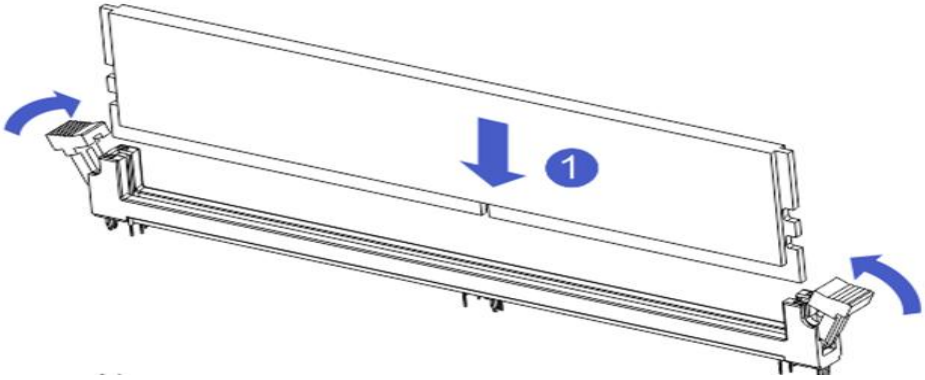


Figure 3- 4

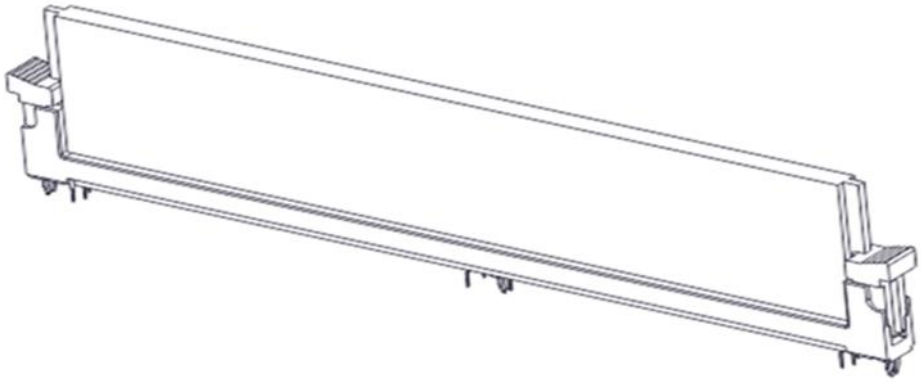


Figure 3-5

3.4 Hard disk installation

Install 3.5" hard drive:

1. Put the hard disk in the tray

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

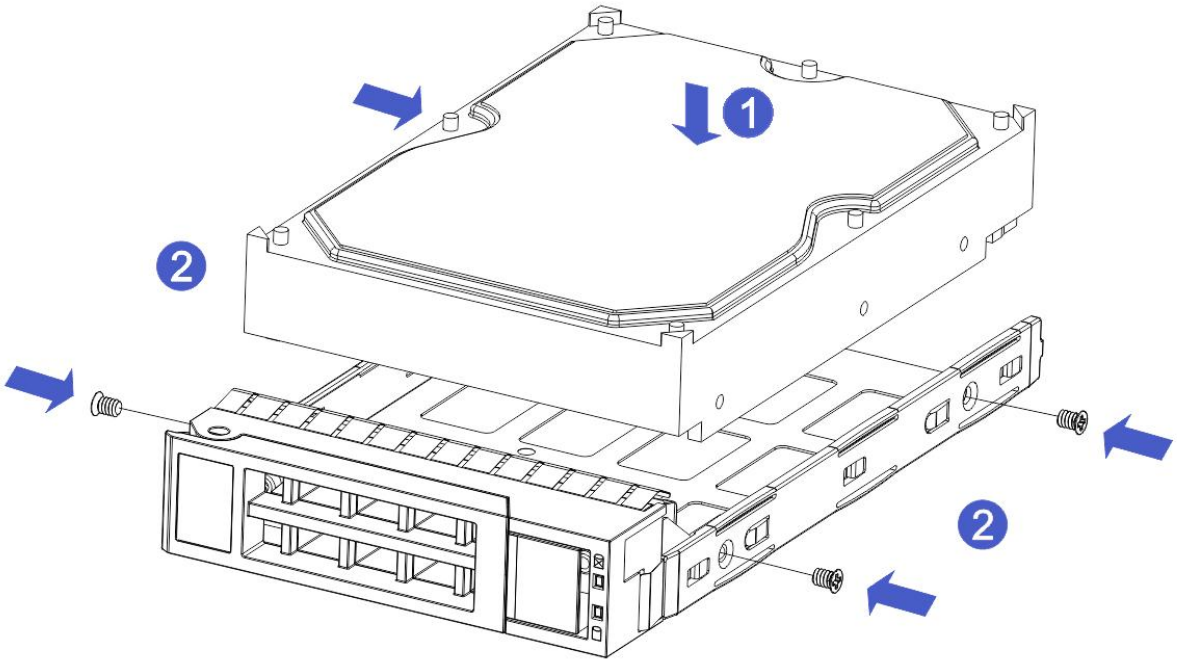


Figure 3- 6

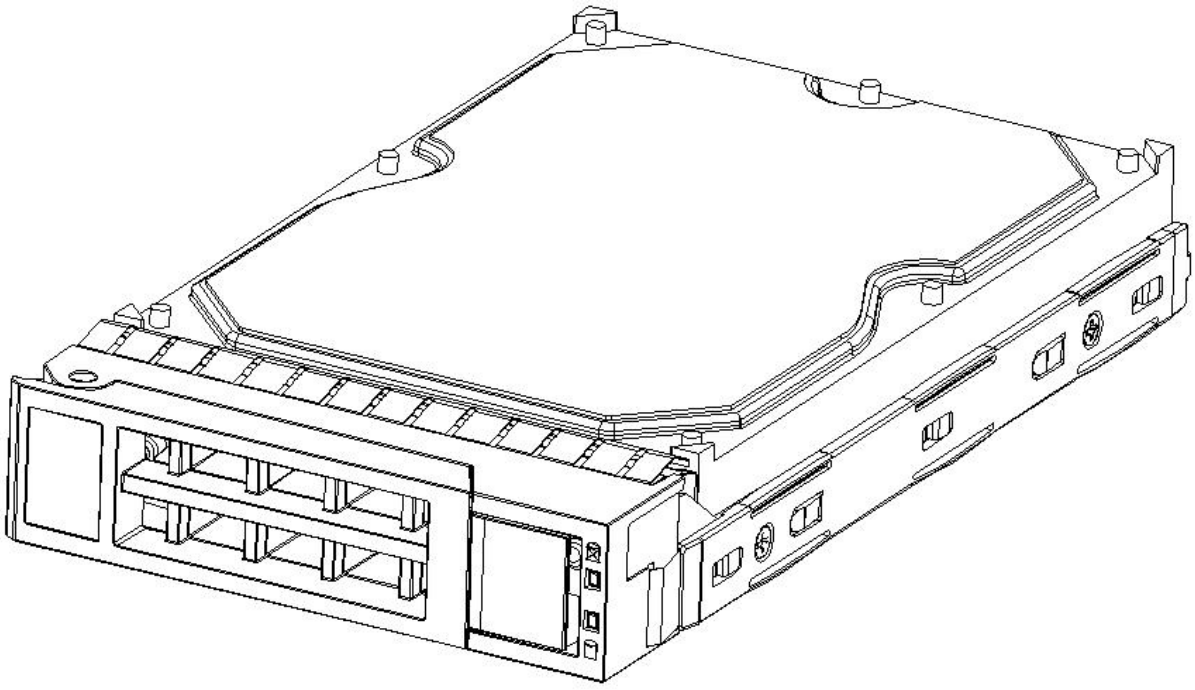


Figure 3- 7

Install 2.5" hard drive

1. Put the hard disk in the tray

2. Four countersunk head screws at the bottom lock the hard disk (the screw heads protrude from the bottom of the tray)

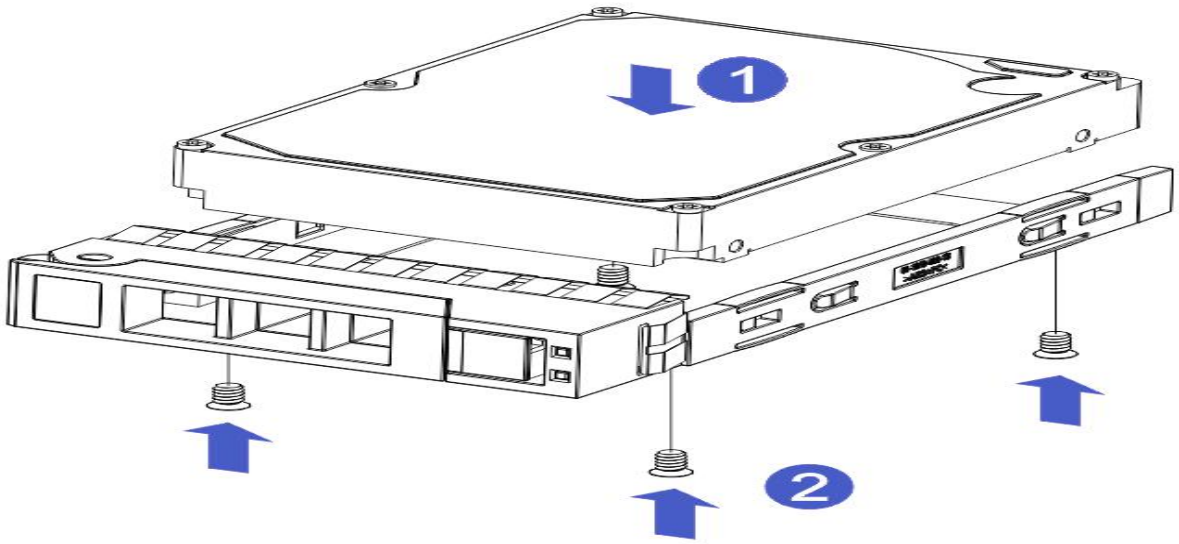


Figure 3- 8

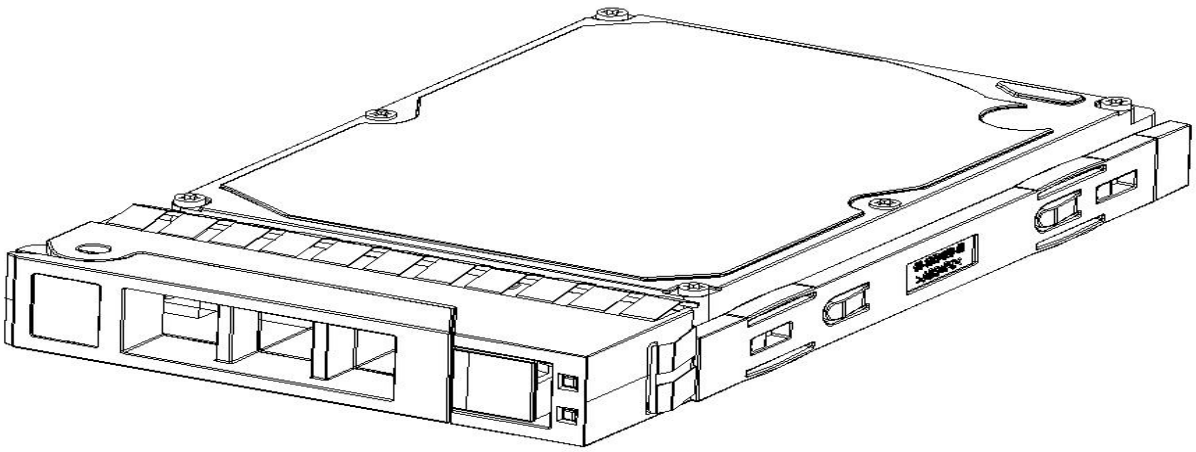


Figure 3- 9

HDD Tray Assembly Installed into Chassis

1. With the hard drive wrench open, push it into the chassis
2. When the hard disk gold finger touches the backplane device, turn the wrench in the direction of the arrow
3. Schematic diagram of hard disk installation in place

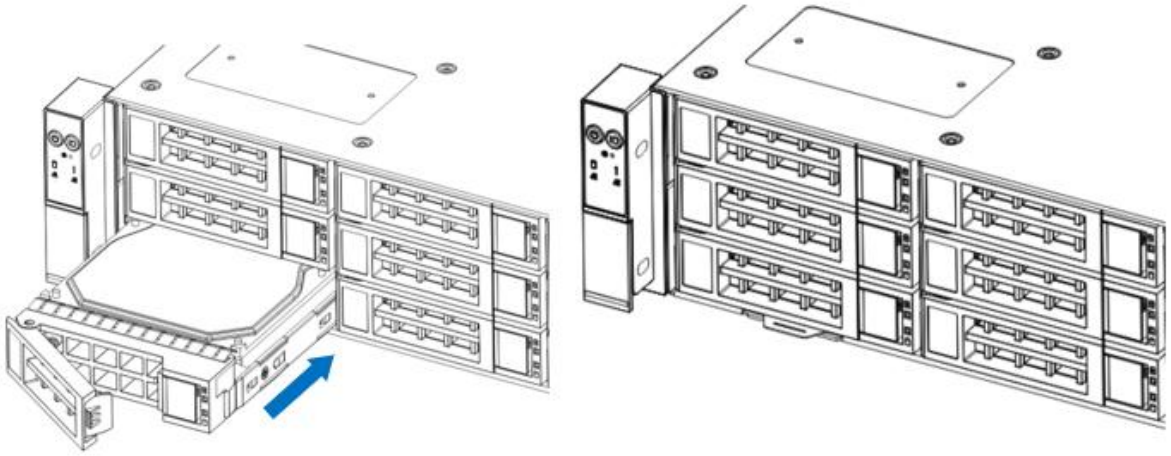


Figure 3- 10

3.5 Front hard disk backplane installation

Front hard disk backplane installation:

1. The gourd holes and hanging holes on the left and right sides of the disk backplane are aligned with the pegs of the hard disk frame, and advance in the direction of the arrow.
2. After the hard disk backplane is pushed into place, press the backplane down until all the hoist nails and hanging holes on both sides are in place.
3. Flip the fixing parts on the left and right sides of the hard disk backplane, and lay the fixing parts flat.

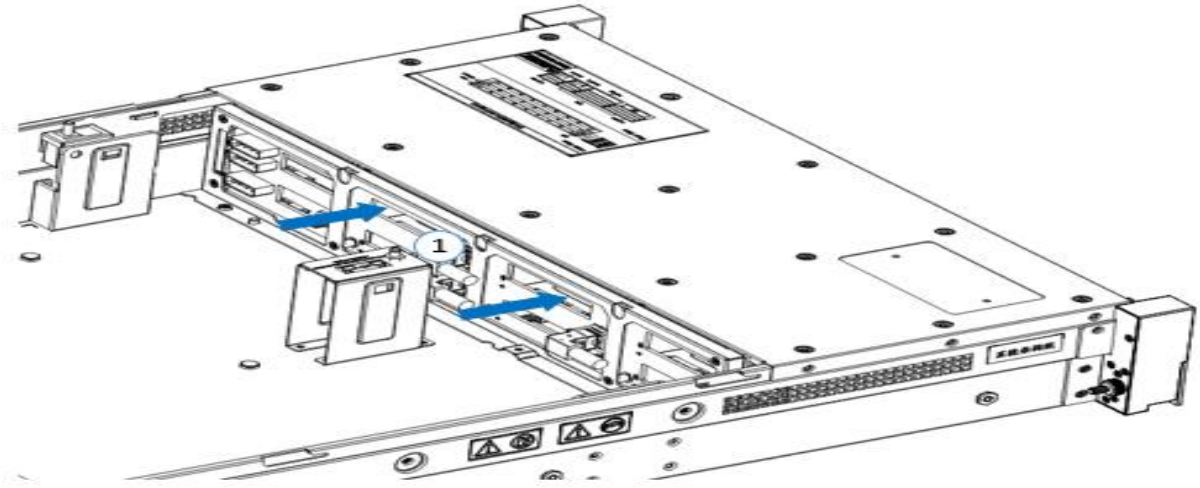


Figure 3- 11

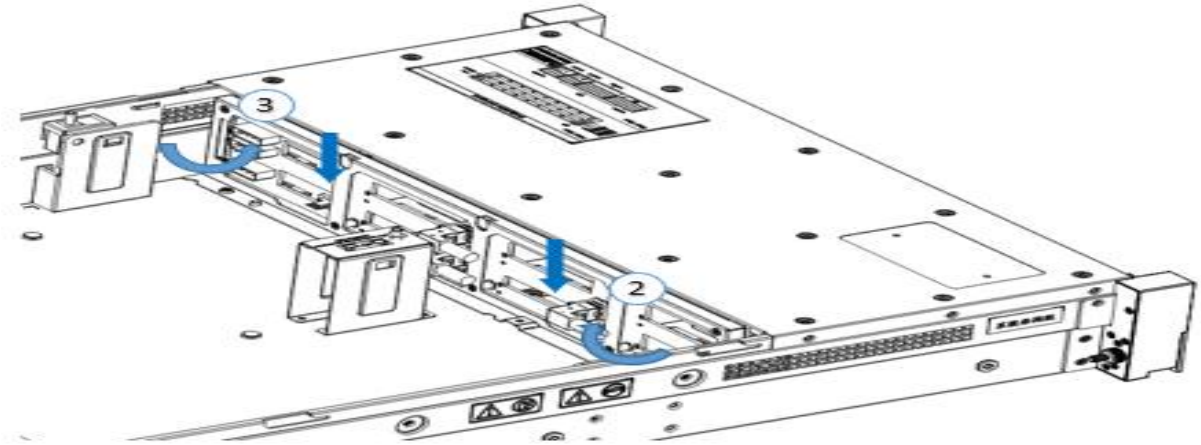


Figure 3- 12

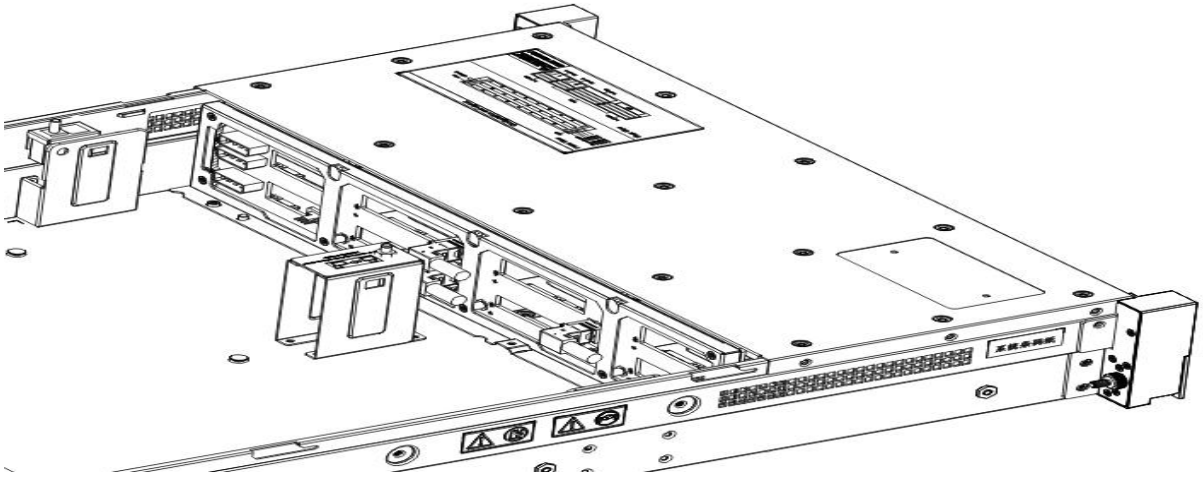


Figure 3- 13

3.6 M.2 SSD installation

Step 1: Install the positioning studs according to the length of the M.2 card to be installed.

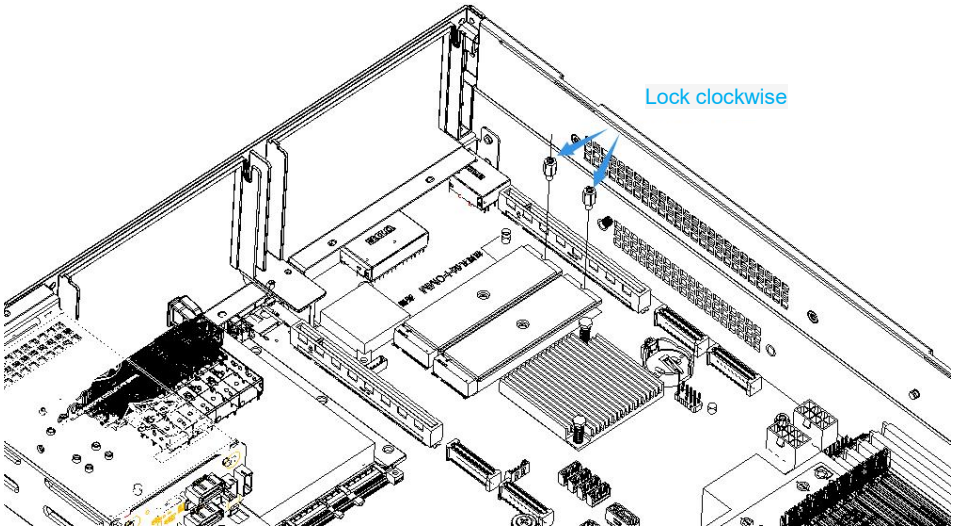


Figure 3- 14

Step 2: Install the M.2 Card

1. Insert the M.2 card connector end into the motherboard connector as shown in the illustration.
2. Press the other end of the M.2 card to the plane of the positioning stud in step 1.

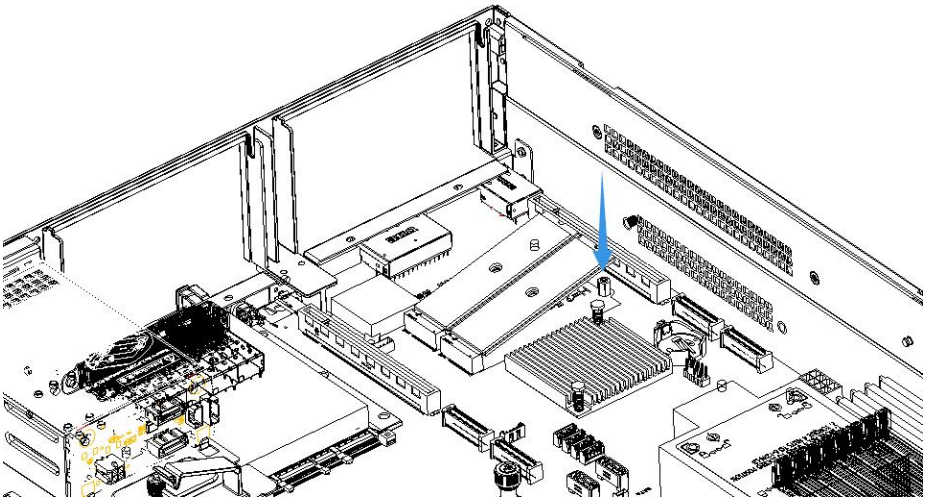


Figure 3- 15

Step 3: Install the fixing screws of the M.2 card.

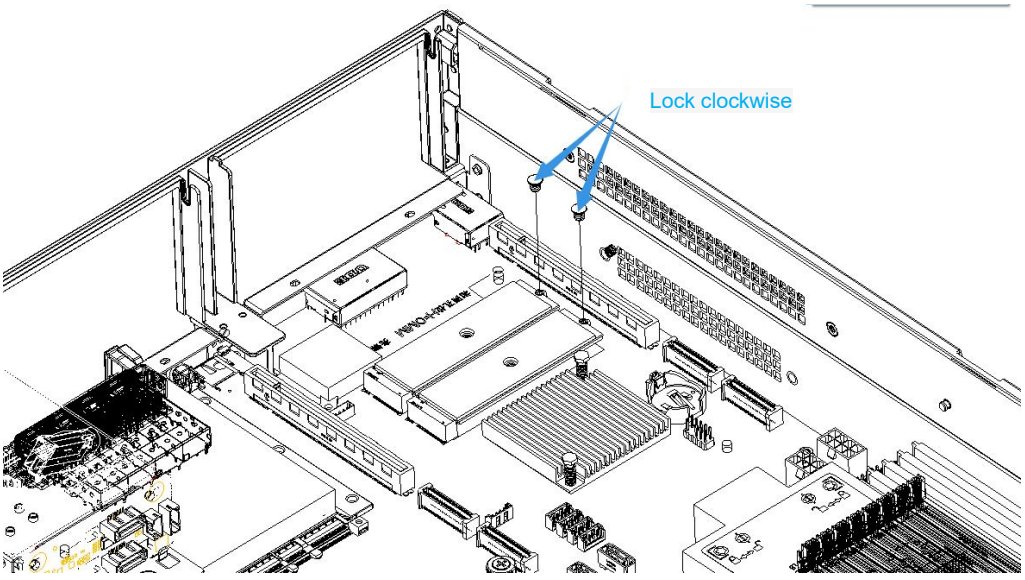


Figure 3- 16

3.7 Installation of PCI-E expansion card

Step: Install the PCIE Card

1. Insert the PCIE card according to the direction shown in the figure
2. Rotate PCIE card lock
3. According to the arrow plan, lock the PCIE card lock

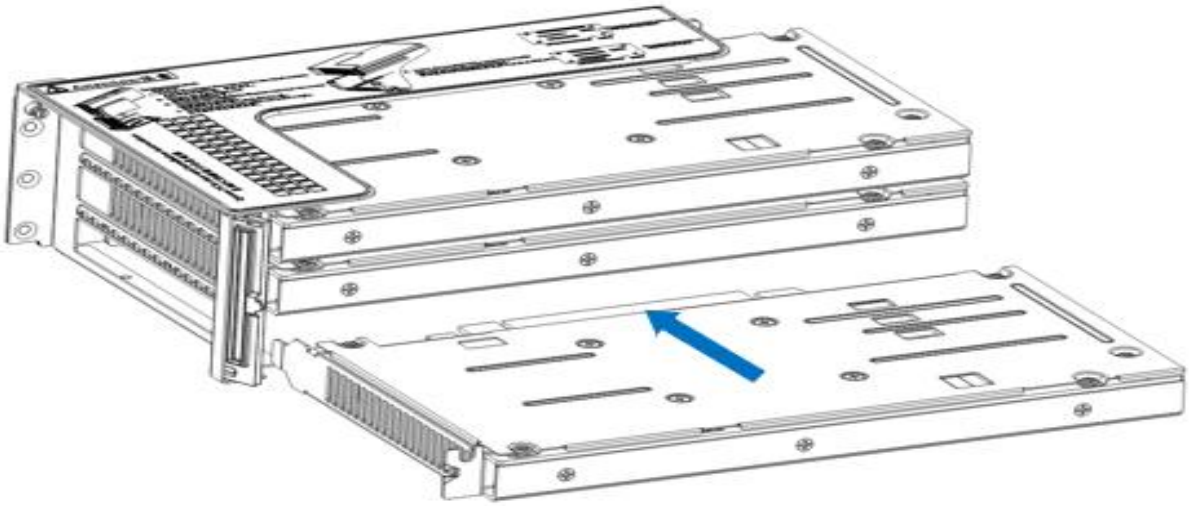


Figure 3- 19

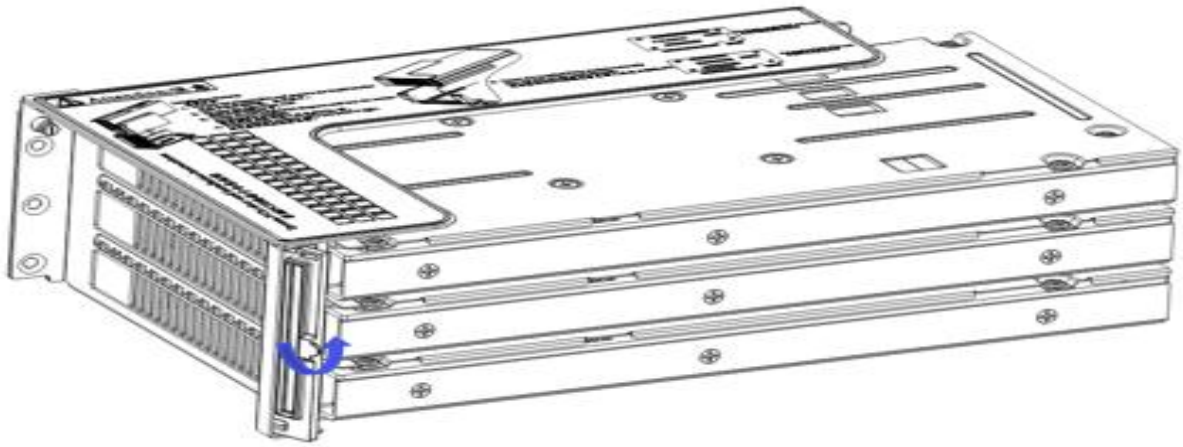


Figure 3- 20

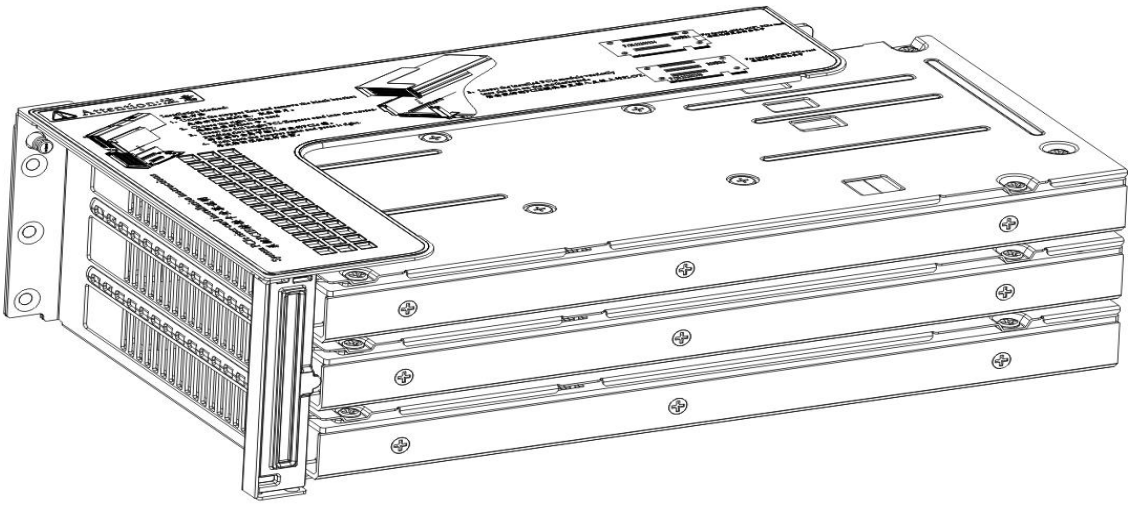


Figure 3- 21

3.8 PCI-E module installation

Riser1-3 module installation steps: PCIE components on the rear window, place them vertically downward - align with the PCIE slot, align with the positioning holes, and place them flush with the rear window.

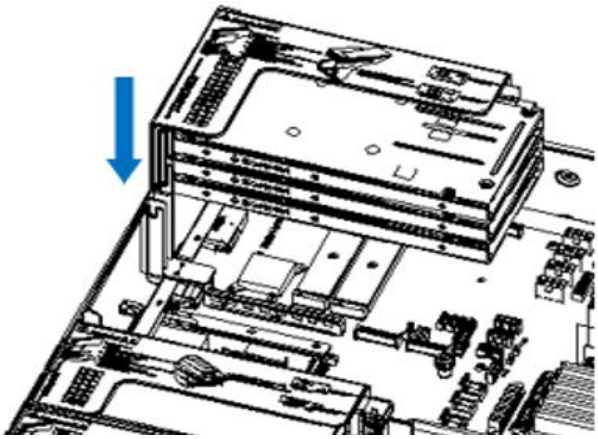


Figure 3.22

Riser4 module installation steps: PCIE components in the rear window, place vertically downwards - align the PCIE slot, align the positioning holes, place it flush with the rear window, and then tighten the side screws.

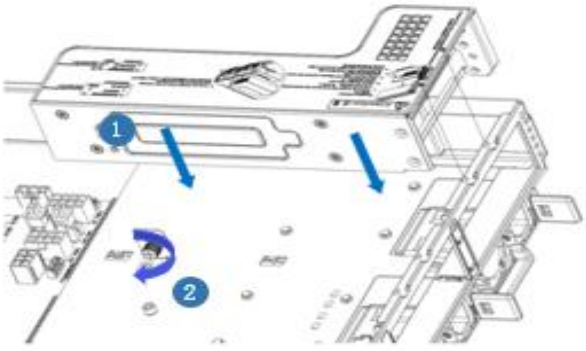


Figure 3. 23

3.9 Rear hard disk module backplane installation

Step 1: Rear hard disk Module Backplane Installation

1. Move the back plate limit shrapnel outwards with your hands, and hold the shrapnel with your hands - keep the shrapnel open

2. Align the peg holes on the backplane of the hard disk with the pegs of the hard disk module bracket, push it in, and place it down in place, release the hard disk limit shrapnel, and the shrapnel will automatically bounce back to the original position;

3. Flip over the fixing parts on the back panel of the hard disk, as shown in the figure - the fixing parts can be placed flat.

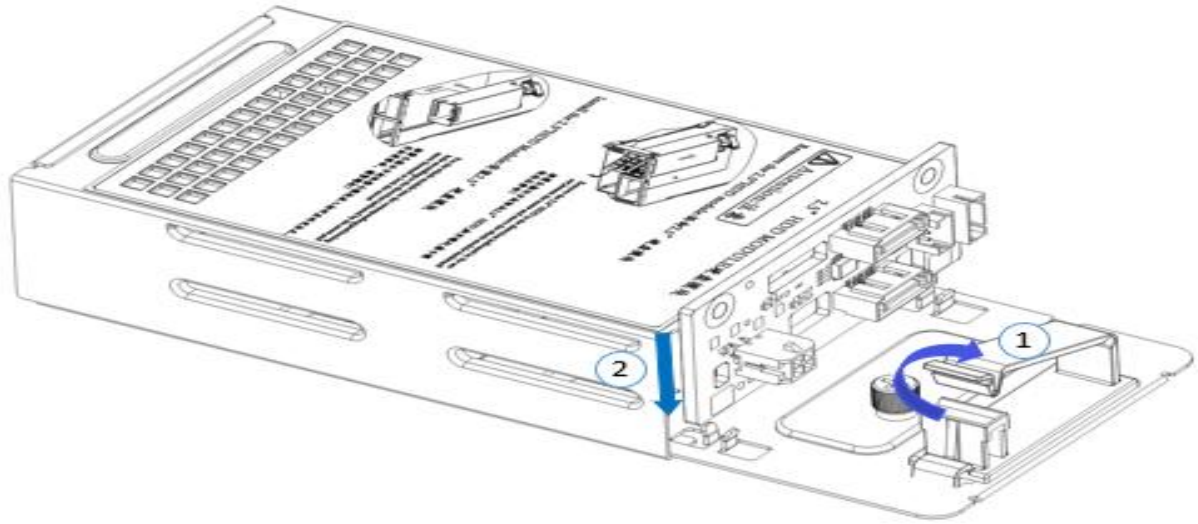


Figure 3- 24

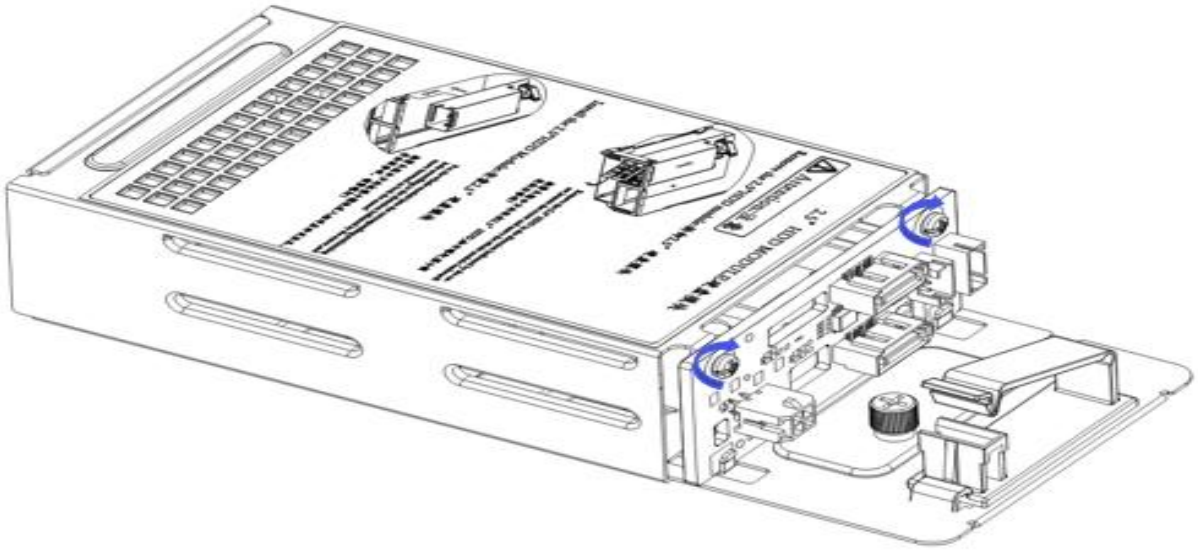


Figure 3- 25

3.10 Rear hard disk module installation

Rear 3.5-inch hard disk enclosure installation

Step 1. The hard disk box is placed vertically down and flush with the rear window

Step 2. Rear hard disk Cage Assembly Fixing

Step 3. Lock a captive screw

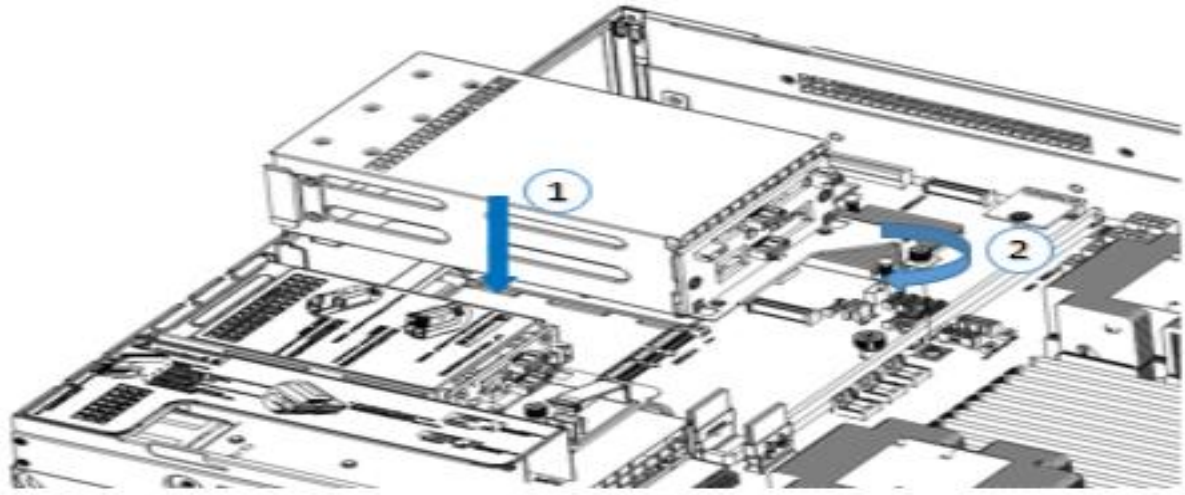


Figure 3- 26

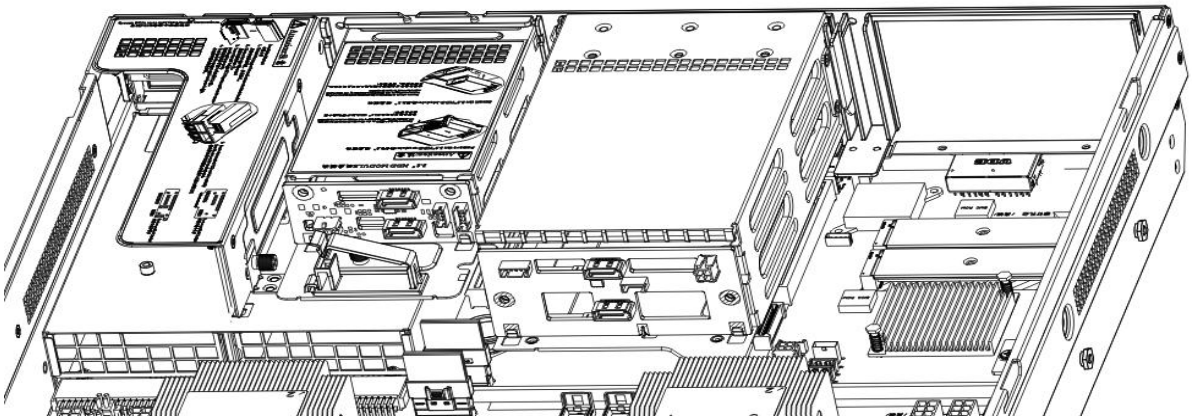


Figure 3- 27

Rear 2.5-inch hard disk enclosure installation

1. Place vertically downward and align with the guide pin at the lower end
2. After placing it flat, push it in the direction of the arrow to the end.
3. Lock the captive screw

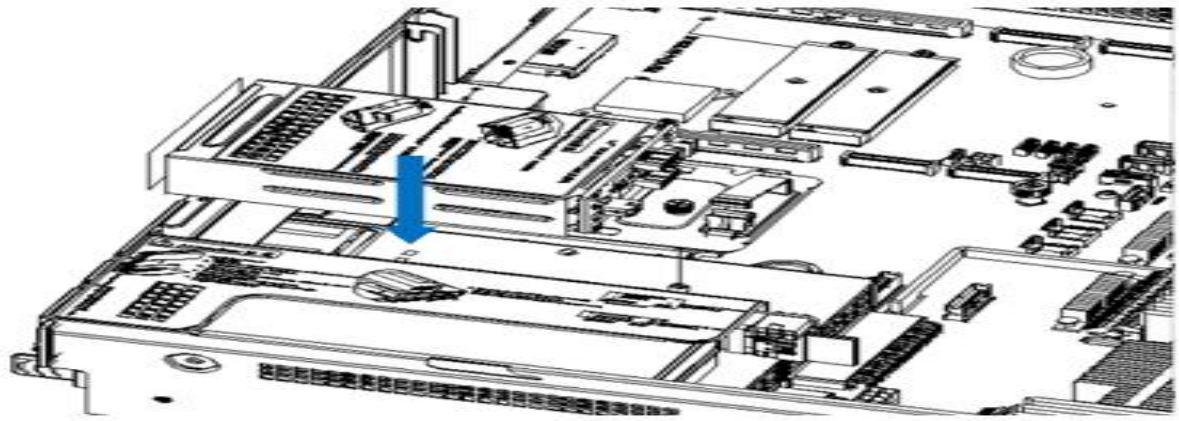


Figure 3- 28

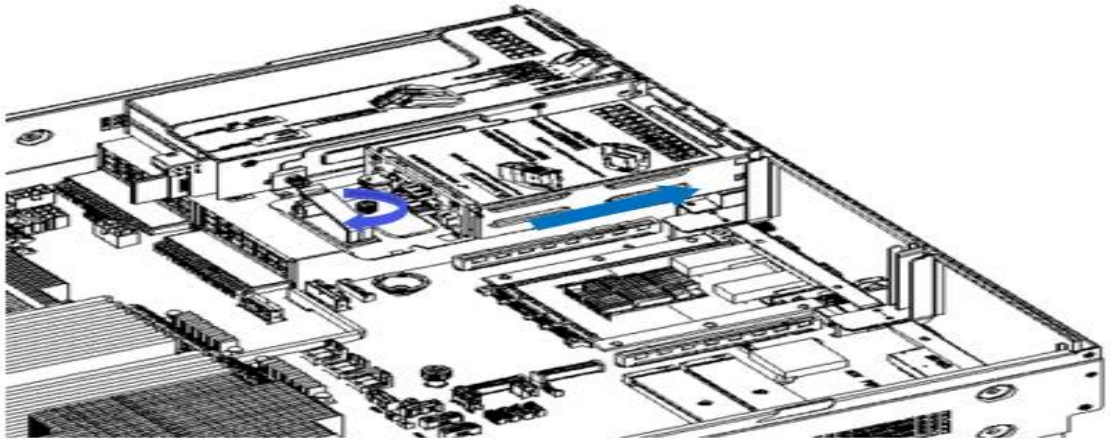


Figure 3- 29

3.11 Installation of power module

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

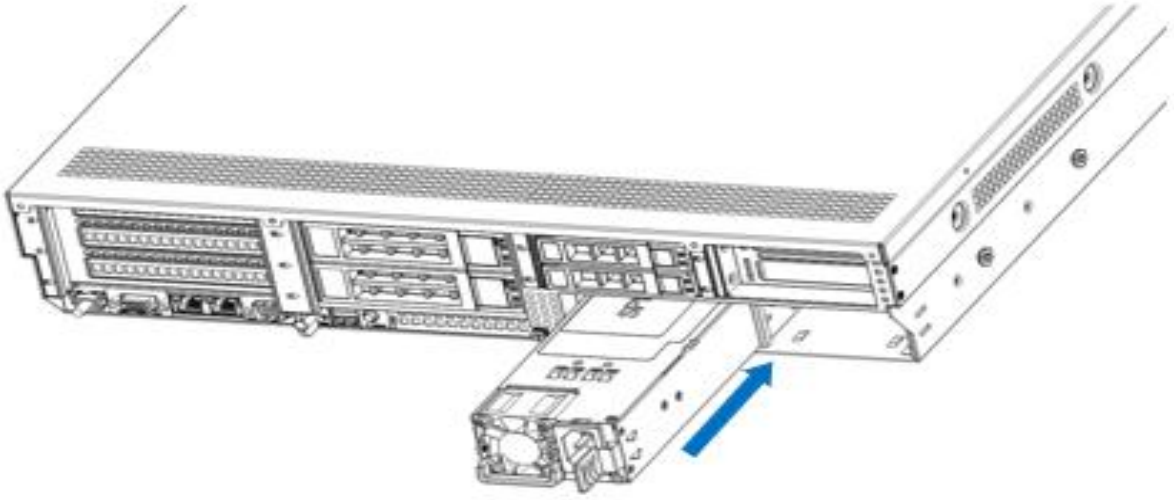


Figure 3- 30

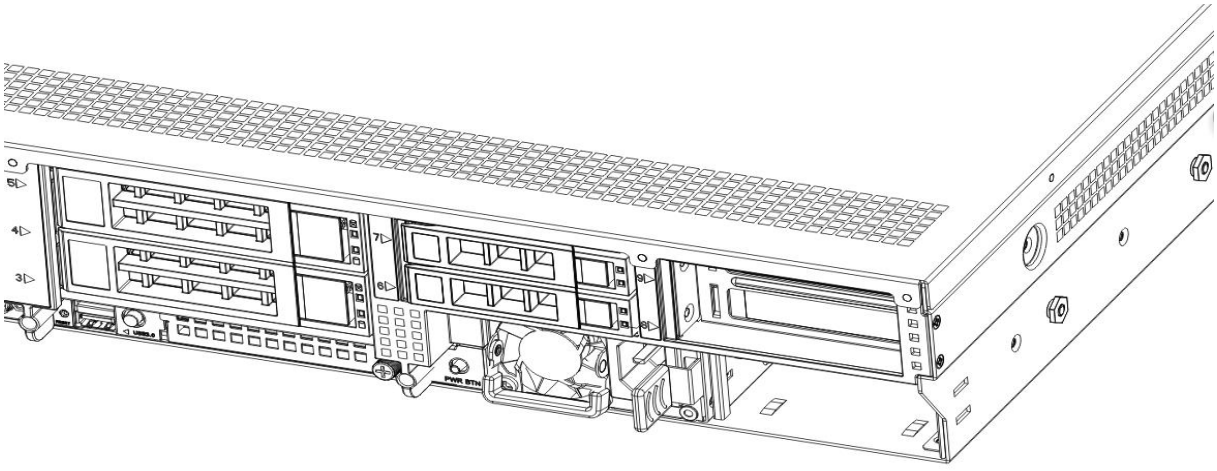


Figure 3- 31

3.12 Installation of the fan module

Steps: Place the fan module vertically downward in the direction of the arrow (pay attention to the direction of the fan module)

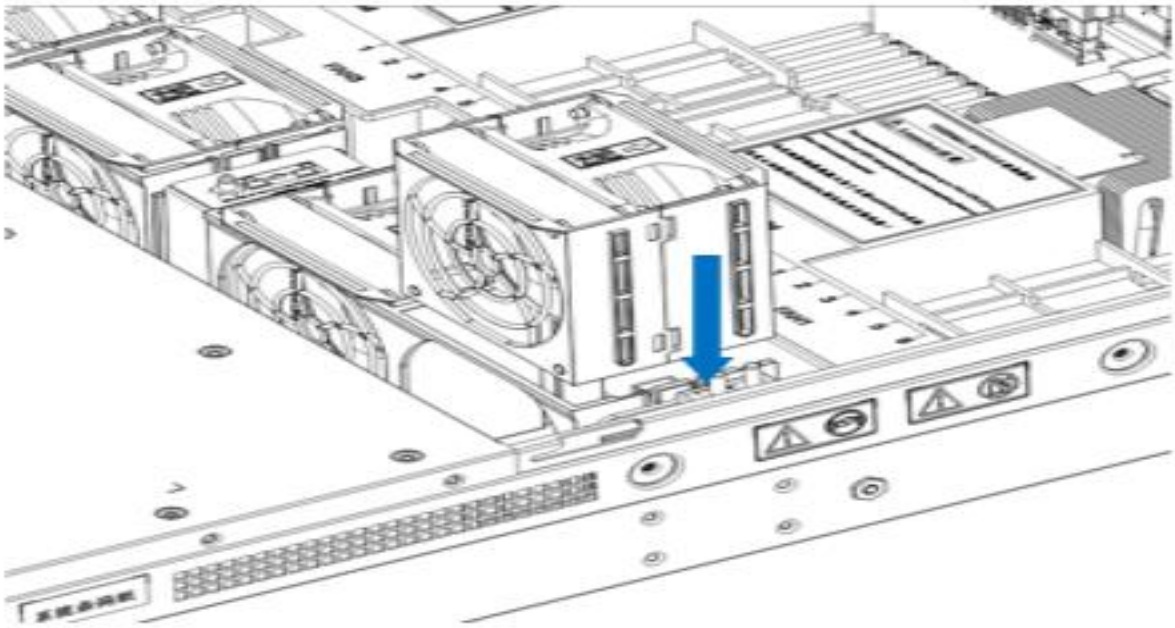


Figure 3- 32

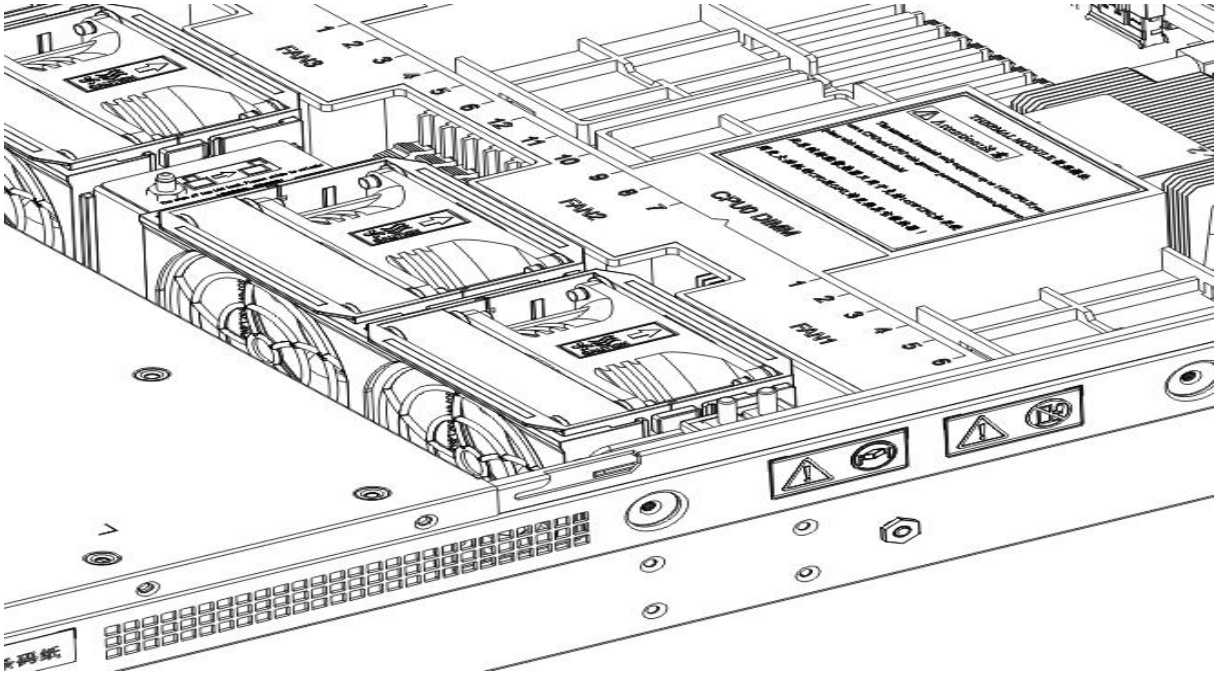


Figure 3- 33

3.13 Installation of the wind shield

Steps: Align the air deflector 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

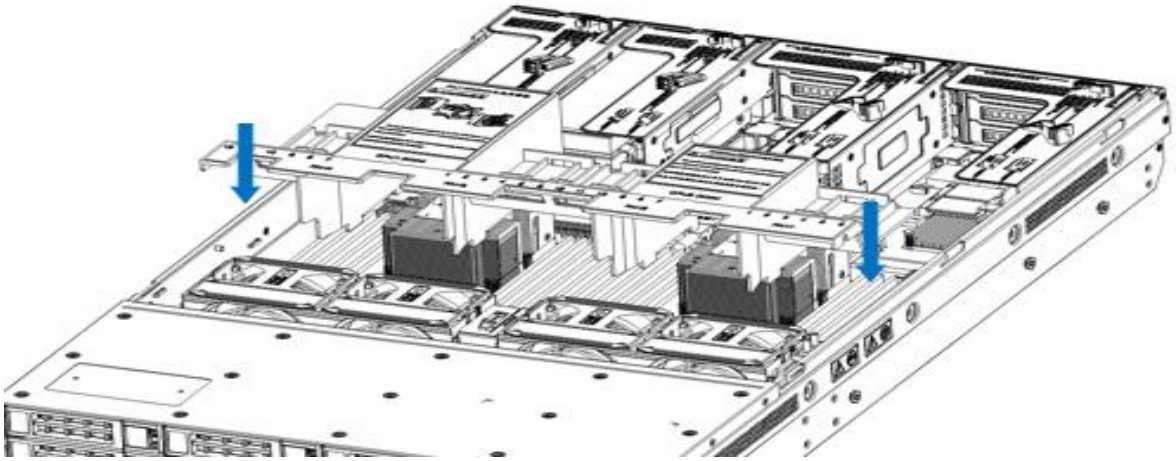


Figure 3- 34

3.14 Installation of CD/DVD-ROM

Steps: Install the CD/DVD-ROM

1. The optical drive is as shown in Figure 3-35:

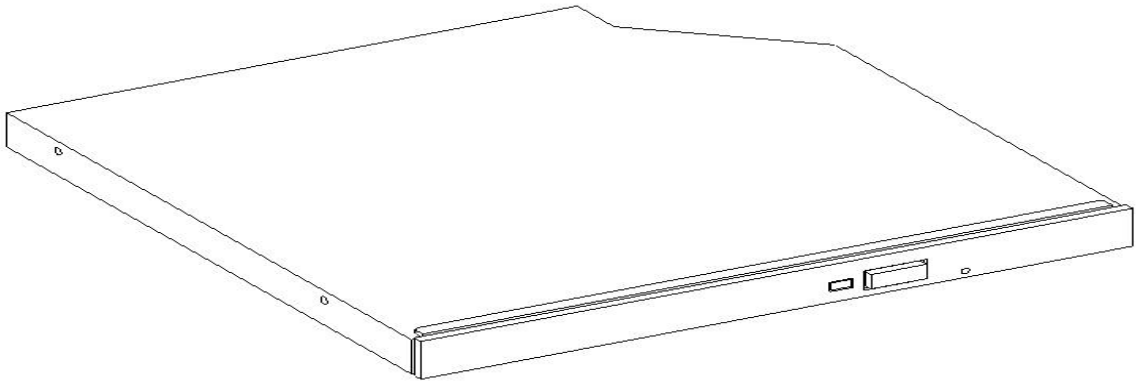


Figure 3- 35

2. Align the opening of the optical drive on the chassis, and push the optical drive in the direction of the arrow until the fixing part locks automatically.

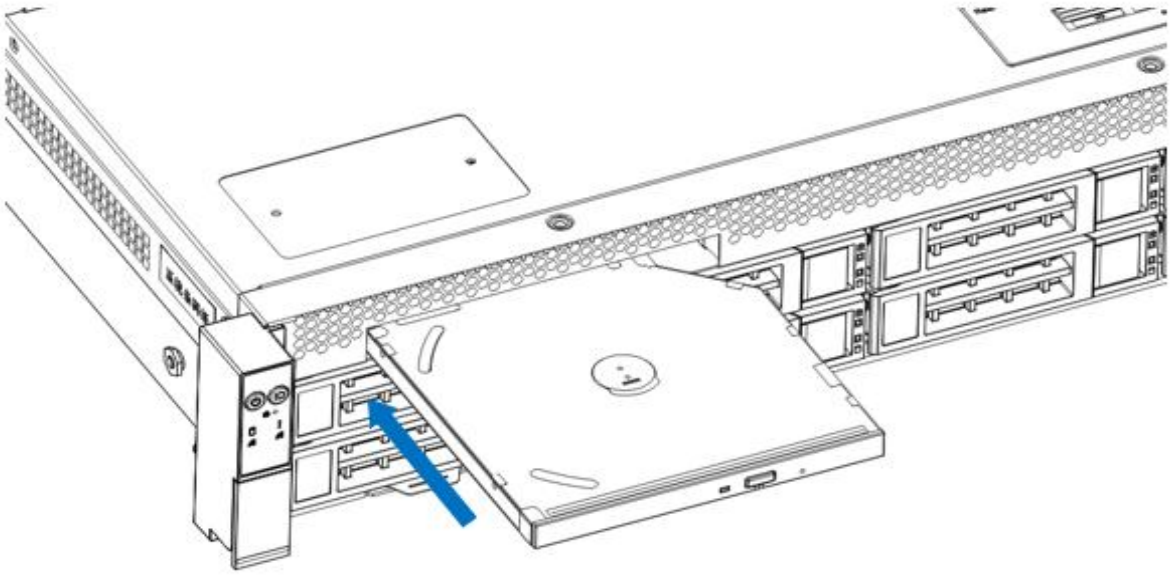


Figure 3- 36

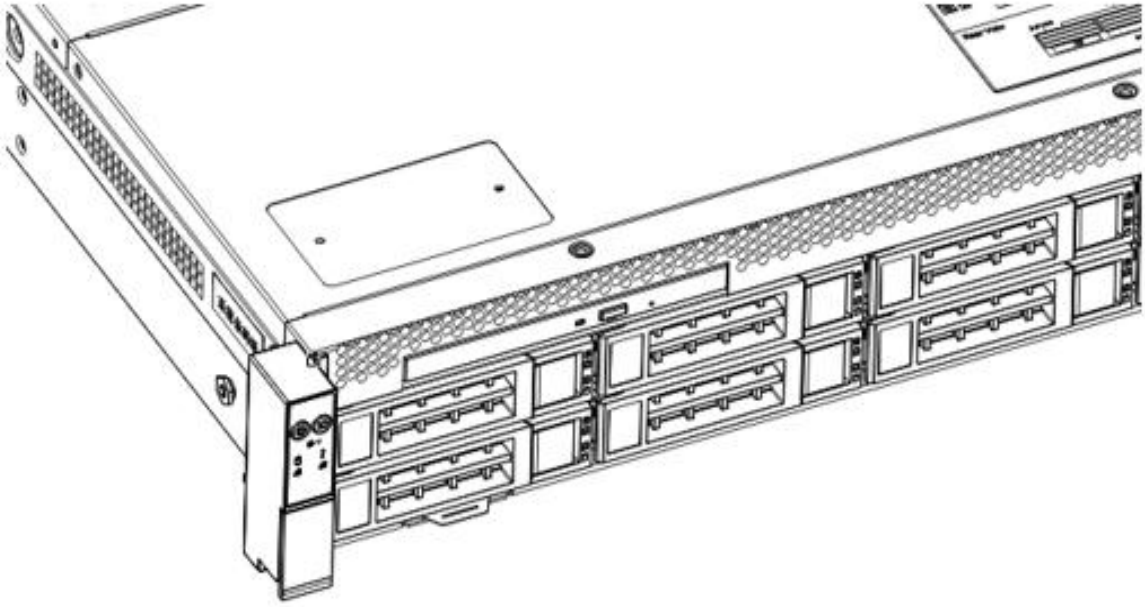


Figure 3- 37

3.15 Installation of the upper cover of the chassis

Step 1: Install the case back cover

1. Align the top cover with the opening of the box and place it downwards
2. Rotate the upper cover lock in the direction of the arrow to lock it in place

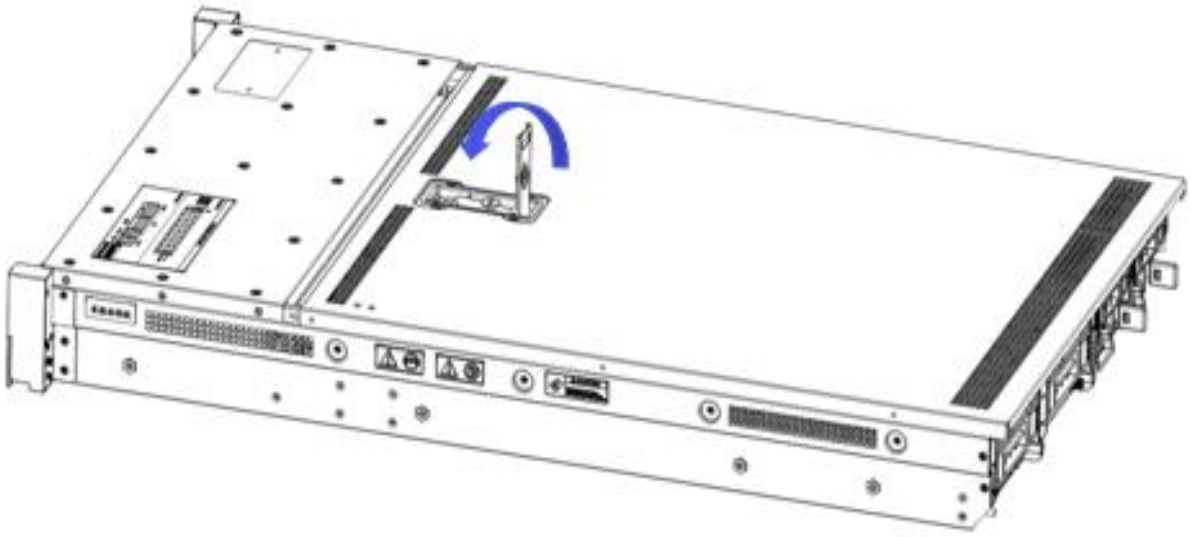


Figure 3- 38

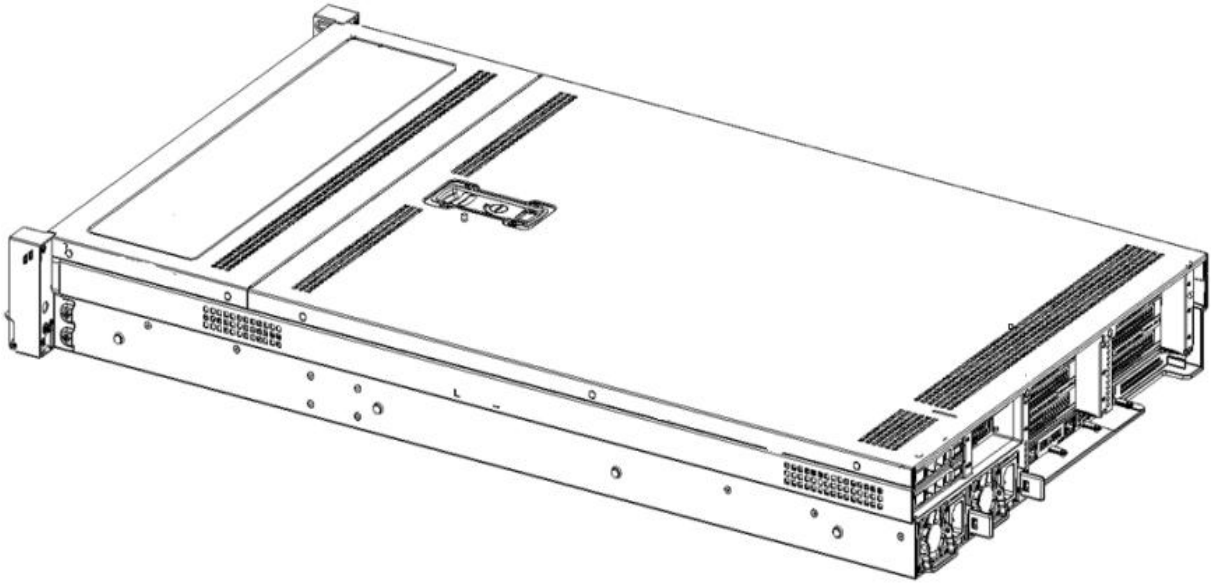


Figure 3- 39

Chapter 4 System Rack Installation

4.1 Mounting on the inner rail of the guide rail

Step 1. Prepare two slide rails and pull out the inner rail.

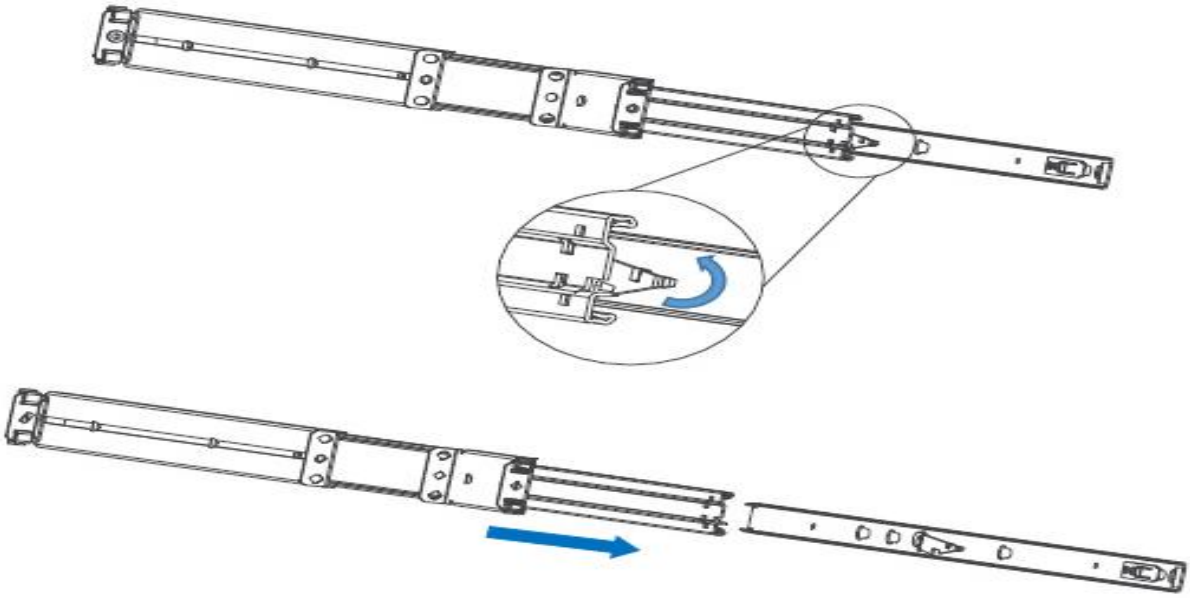


Figure 4- 1

Step 2. Fasten the inner rails on both sides of the chassis.

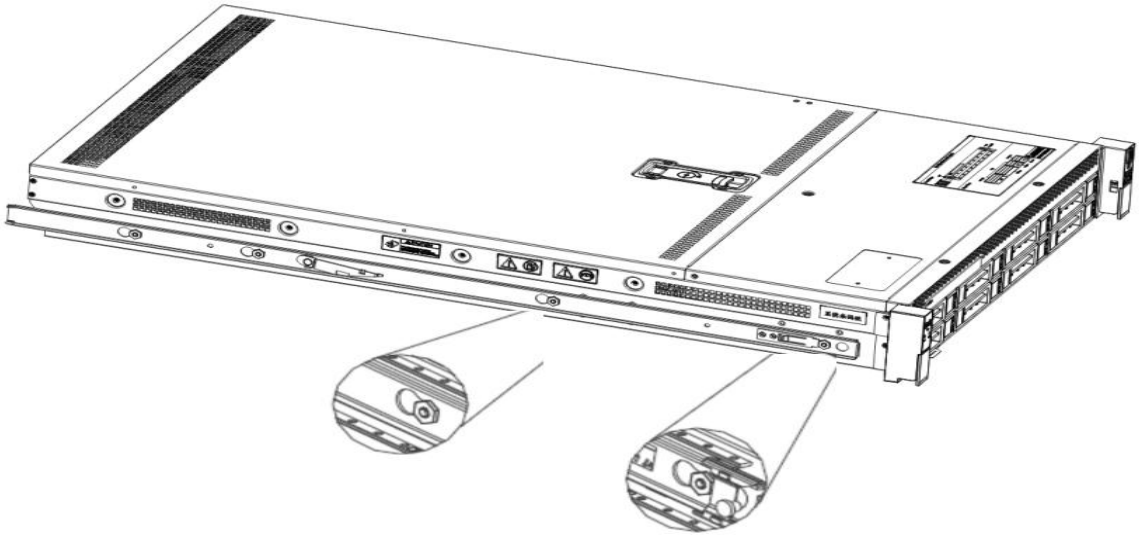


Figure 4- 2

4.2 Installing the outer rails to the rack

Step 3. Install the outer rail on the cabinet bracket and tighten the screws.

Note: When installing the rail, you need to align the U mark, and install it in place when you hear a snap, and

use M5 screws to tighten it.

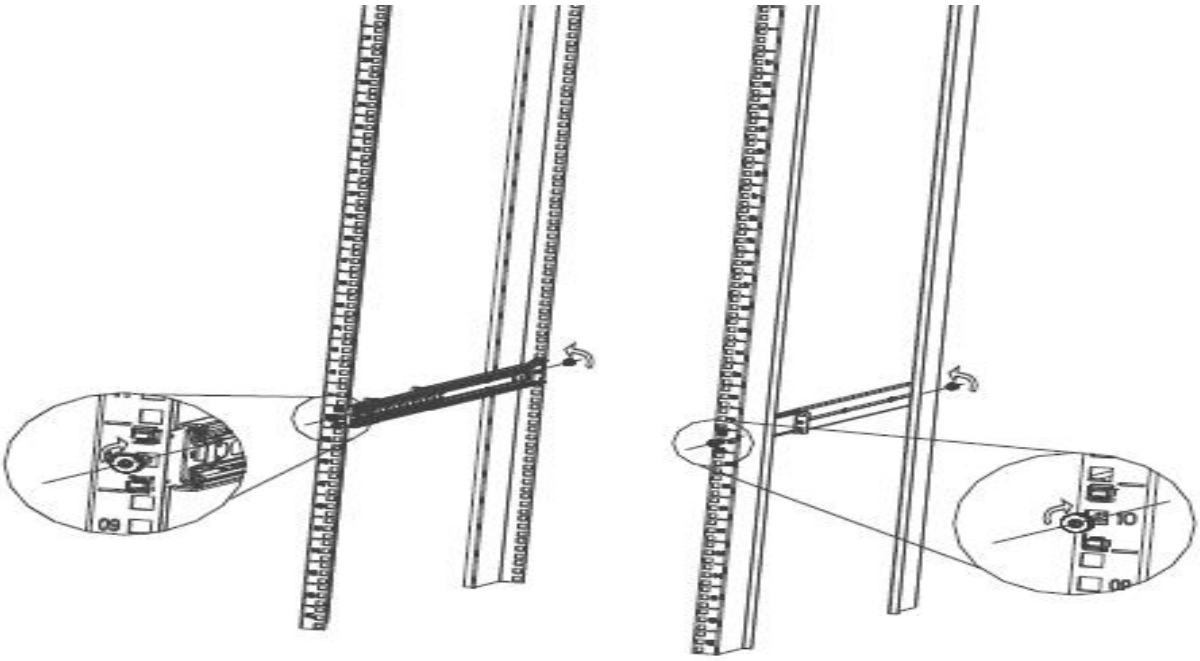


Figure 4- 3

4.3 Install the server to the rack

Step 4. Align the chassis with the inner rails installed on the outer rails for installation.

Note: When you can push the chassis forward, you will hear a popping sound. If you can't push it, you need to pull the inner rail buckle down to continue to push the chassis gently.

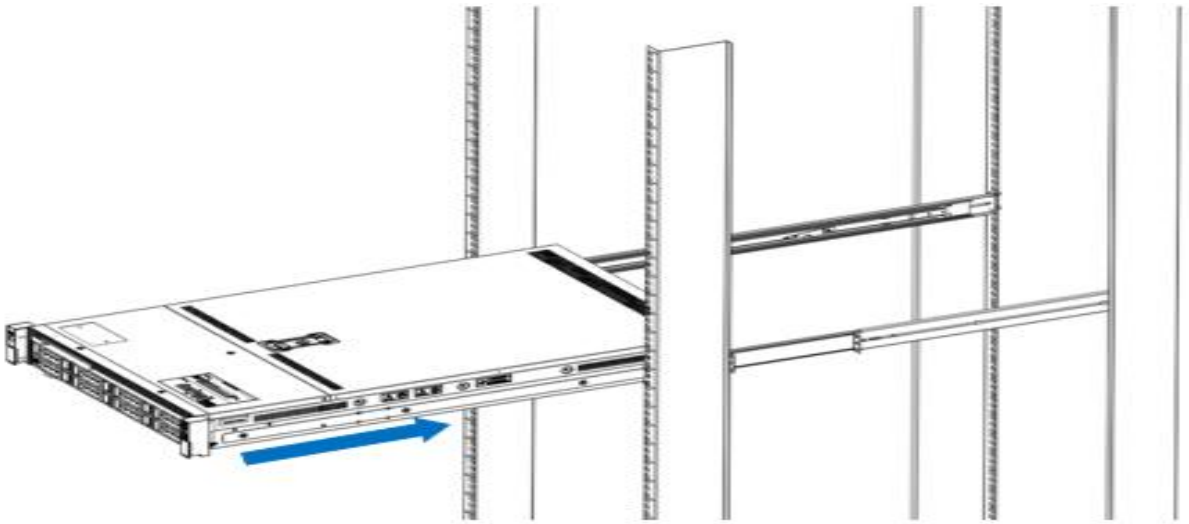


Figure 4- 4

Step 5. When the chassis is pushed forward and cannot slide, the screw installation is completed.

Note: During equipment maintenance, you need to loosen the panel screws, pull the chassis lightly, and do not push or pull the chassis at random to avoid damage to the equipment.

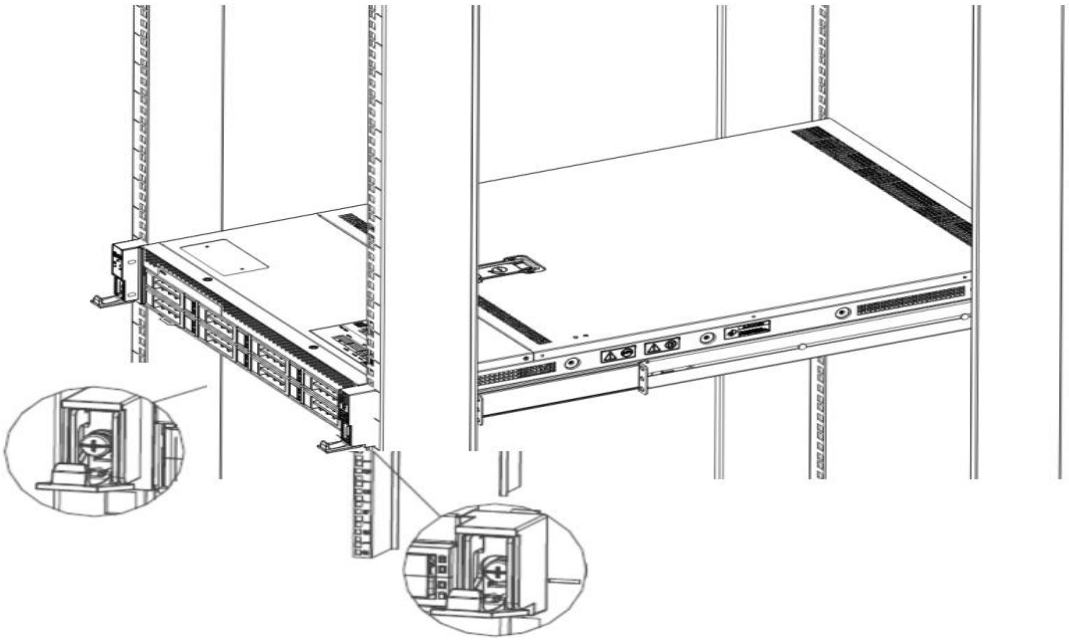


Figure 4- 5