

Gooxi

Whitley Platform 4U 5-GPU Standard Server Barebones



User's Manual

V1.0

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Product name: Gooxi Whitley Platform L-shaped Server Barebones

Manual Version: V1.0

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Glossary:

Noun	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 interface is a new-generation interface standard tailored for Ultrabooks. It is a new interface specification introduced by Intel® to replace mSATA.
C620A	Intel® Chipset
RJ45	Common name for standard 8-bit 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	Land Grid Array, grid array package, 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

Abbreviation:

Abbreviation	Original Phrase	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
DIMM	Dual-Inline-Memory-Modules	双列直插式存储模块
RDIMM	Registered DIMM	带寄存器的双列内存模块
LRDIMM	Load-Reduced DIMM	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
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Conventions:

	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.
	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.

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 significant 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 maintaining. (There may be more than one cable)

It is strictly forbidden to carry out operations of electricity 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 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 do not block the 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 or (and) server 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 operating environment is 10°C~40°C, and the humidity is 35%~80%.

Please back up important data in time, 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.

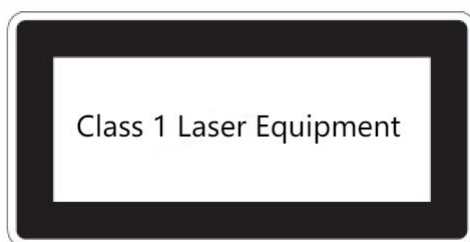


Figure 1- 1

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
Hard disk drive	X	O	O	O	O	O

Table 1- 1

Component	Hazardous 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 operating temperature of the equipment is 10°C-40°C; the maximum indoor ambient temperature of the equipment is 40°C.

◆ 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	
Operating temperature	10°C to 35°C (50°F to 95°F) with a maximum temperature gradient of 10°C per hour
Continuous operating temperature range (at altitudes below 950 meters or 3117 feet)	10°C to 35°C (50°F to 95°F) without direct sunlight from the device.
Storage temperature range	–40°C to 65°C (–40°F to 149°F)
Humidity	

Storage	5% to 95% relative humidity at a maximum dew point of 33°C (91°F). The air must always be non-condensing.
Continuous Operation Humidity Percentage Range	10% to 80% relative humidity at a maximum dew point of 26°C (78.8°F).

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 2000 meters. Therefore, it is only suitable for safe use below 2000 meters, and there may be potential safety hazards when it is used above 2000 meters.

 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 4U dual-socket rackmount server, supports 1 or 2 third-generation Intel® Xeon® Scalable series processors, 16 DIMM DDR4 3200MHz memory slots, integrated 1 M.2 port, 2 Gigabit Ethernet ports, 1 RJ45 management network port, 10 PCIe3.0/4.0 expansion slots, suitable for virtualization, cloud computing, big data processing, high-performance computing, distributed storage, enterprise market and telecom applications.

2.2 Product features

- ◆ 1 or 2 Gen3 Intel® Xeon® Scalable processors, up to 270W TDP
- ◆ 16 DDR4 slots, memory frequency supports 2400/2666/2933/3200MHz
- ◆ Onboard 1 M.2 PCIe 3.0 x4 (supports 2280 length)
- ◆ Up to 10 PCIe3.0/4.0 high-speed expansion slots
- ◆ Supports 5 full-height, full-length, double-width GPU cards

2.2.1 System parameters

Processor and memory		
Processor	Supports 1 or 2 Gen3 Intel Whitley platform full-series processors, LGA4189 socket	
Processor power (TDP)	Up to 270W (TDP)	
Processor cores	Up to 40 cores	
Processors No.	2	
Memory type	Supports 2400/2666/2933/3200 MHz DDR4 LRDIMM/RDIMM/ECC memory, supports 8 DDR4 Channels, total 16 DDR4 slots; maximum support per DIMM: 8GB, 16GB, 32GB, 64GB, 128GB, 256GB. Supports Intel Gen2 Optane memory BPS (maximum 512GB per DIMM)	
Storage and I/O		
Storage controller	Internal storage: 2 SATA DOM ports (7Pin), 3 Minisas 8643 ports, 1 M.2 port (2280), 2 slimline x8 ports	
Hard drive	4U 2-bay	4U 12-bay
	Rear: 2* 2.5-inch SAS/SATA hard drives	Front: 12 hot-swap 3.5/2.5-inch SAS/SATA hard drive disks; Rear optional 1* 2x2.5-inch hard disk module
External port	2* USB2.0	2* USB3.0
	Rear: 1 VGA, 1 COM port, 2 USB3.0, 1 management network port, 2 RJ45 network ports	
PCIe expansion	10 PCIe slots, support 6 PCIe 3.0x8 (in PCIe 3.0 x16 slot), 1 PCIe 3.0x16 and 3 PCIe	

	4.0x16; Optional 4 PCIe 3.0x8 (in PCIe 3.0 x16 slot), 2 PCIe 3.0x16, and 3 PCIe 4.0x16	
TPM	Supports	
Power supply		
Power supply	AC 220V 1600W, 2000W, 2200W hot-swap redundant power supply (adapt based on the actual power)	
System fan		
Fan	3* 12038 fans	8* 8038 hot-swap N+1 redundant fans
Remote management		
BMC chip	ASPEED AST2500	
IPMI	IPMI2.0	
Management port	1 dedicated RJ45 management network port	
System depth	440/695mm	
OS support list		
Operating system	Linux Red Hat Enterprise Linux 7.8 and later • Red Hat Enterprise Linux 8.2 and later • SUSE Enterprise Linux SLE 15 SP2 and later • Ubuntu 18.04 LTS • Ubuntu 20.04 LTS and later VMware • VMWare ESXi** VMM • Linux KVM • Microsoft Azure • Hyper-V: Windows Server 2016 LTSC • Hyper-V: Windows Server 2019 LTSC Windows • Windows Server 2016 LTSC • Windows Server 2019 LTSC • Windows Server 19H1 • Windows Server 19H2	
BIOS		
Name	AMI	
Start mode	HDD (internal)/CD/USB/PXE	
TPM	Supports	
Safety certificate		
Nations	Asia, Europe, America, Australia, Africa	
EMC	Class A	
Safety certificate	CCC, CE, FCC	
RoHS	Meets the requirements	
Environmental parameters		
Operating temperature	10°C ~ 35°C	
Operating humidity	35% ~ 80%	
Storage temperature	-40°C ~ 70°C	
Storage humidity	Short-term storage (≤72H): temperature -40°C ~ 70°C/humidity 20% ~ 90%RH	

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

Table 2-1

2.2.2 System architecture

4U 5-GPU cards standard rack server products, including **ASY4105G-D12R-G3**, **ASY4105G-D02R-G3**, motherboard name: G3DE-B, 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:

- ◆ CPU adopts the third generation Intel® ICE-Lake® Scalable processor, LGA4189 socket, TDP power consumption 270W; a single processor can reach up to 40 cores, providing excellent system performance, the highest frequency is 3.2GHz, the largest single core that can be achieved with Intel® Turbo Boost Technology, the maximum overclocking (Max Turbo Frequency) is 3.4GHz
- ◆ Supports Intel® Hyper-Threading Technology, which allows multiple threads to run concurrently in each processor core (up to 2 threads per core) to improve multi-threaded application performance
- ◆ Each CPU supports 8 DDR4 channels, each channel supports 2 memory sticks, RDIMM/LRDIMM
- ◆ Supports up to 32* 2400/2666/2933/3200 MHz DDR4 LRDIMM/RDIMM/ECC memory, and supports single capacity of 8GB, 16GB, 32GB, 64GB, 128GB, 256GB. Supports Intel® second-generation Optane memory BPS (maximum 512GB per DIMM)
- ◆ Motherboard integrated AST2500 BMC chip, standard KVM function
- ◆ G3DE-B motherboard provides 1 M.2 Key M SSD slot, supports 2280 size, only supports PCIe 4.0 X4 signal
- ◆ Supports 5 full-height, full-length, double-width GPU cards
- ◆ Motherboard integrates 2 Gigabit Ethernet ports, 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, according to 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 the 7PIN SATA connector for connecting SATA DOM and DVD
- ◆ The BMC chip in this board adopts the AST2500 control chip of ASPEED Technology, 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:

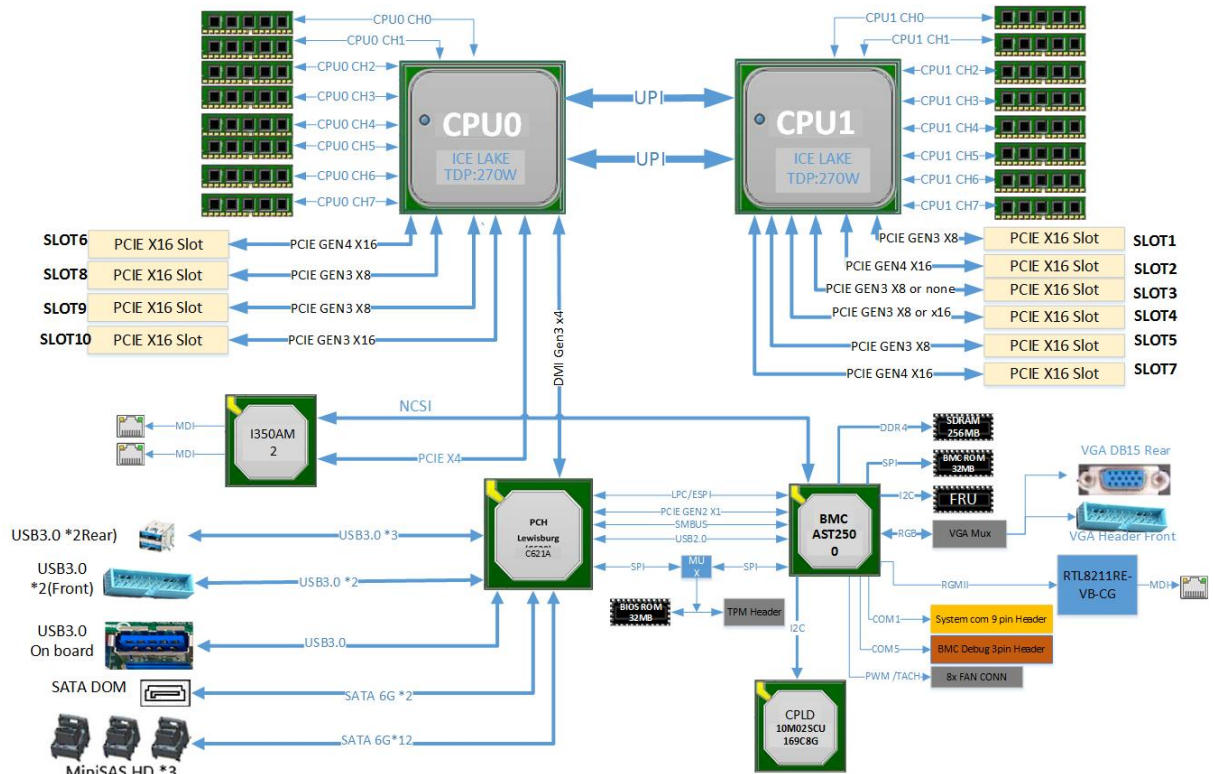


Figure 2-1

2.3 Introduction of system components

2.3.1 Front panel components

4 U 2-bay model

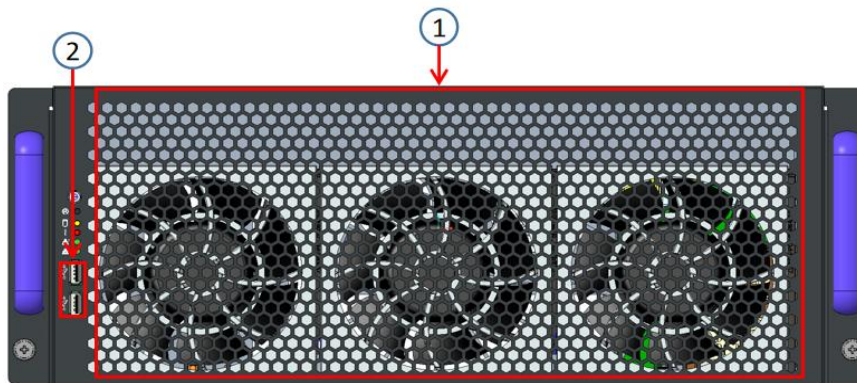


Figure 2-2

4 U 24-bay model

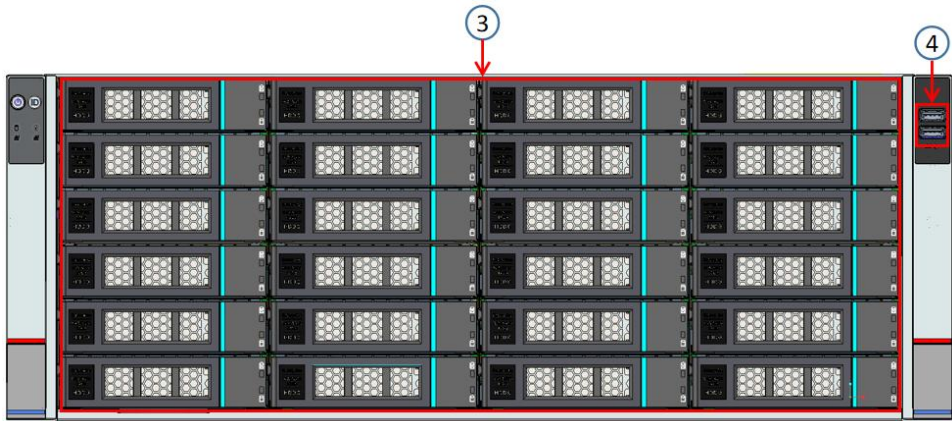


Figure 2-3

S/N	Name	S/N	Name
1	12038 fan	2	USB2.0 interface
3	3.5-inch hard drive	4	USB3.0 interface

Table 2-2

Description of front panel interface:

Name	Type	Description
USB interface	USB3/USB2.0	Provides an external USB interface through 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 2-3

Description of front panel indicators and buttons:

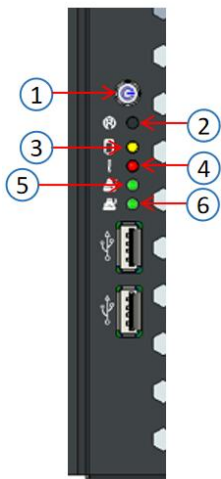


Figure 2-4

S/N	Indicator/Button	S/N	Indicator/Button
1	Power switch button/indicator	4	System alarm indicator
2	Reset server button	5	Network port1 connection status indicator
3	Hard drive indicator	6	Network port2 connection status indicator

Table 2-4

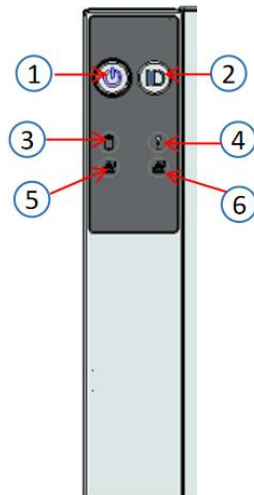


Figure 2-5

S/N	Indicator/Button	S/N	Indicator/Button
1	Power switch button/indicator	4	System alarm indicator
2	UID button/indicator	5	Network port 1 connection status indicator
3	Hard drive indicator	6	Network port 2 connection status indicator

Table 2-5

LED Status Description		
Logo	Indicator/Button	Status Description
	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: Shortly press the button in the power-on state, the OS will shut down normally; Press and hold the 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.
	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: shortly press this button to turn on/off the positioning light.
	Reset server button	Press to restart the server.

	Hard drive indicator	Green light flashing: 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 via the IPMI management software.
	Network port connection status indicator	Corresponding 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	Corresponding 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 2-6

2.4.2 Rear panel components

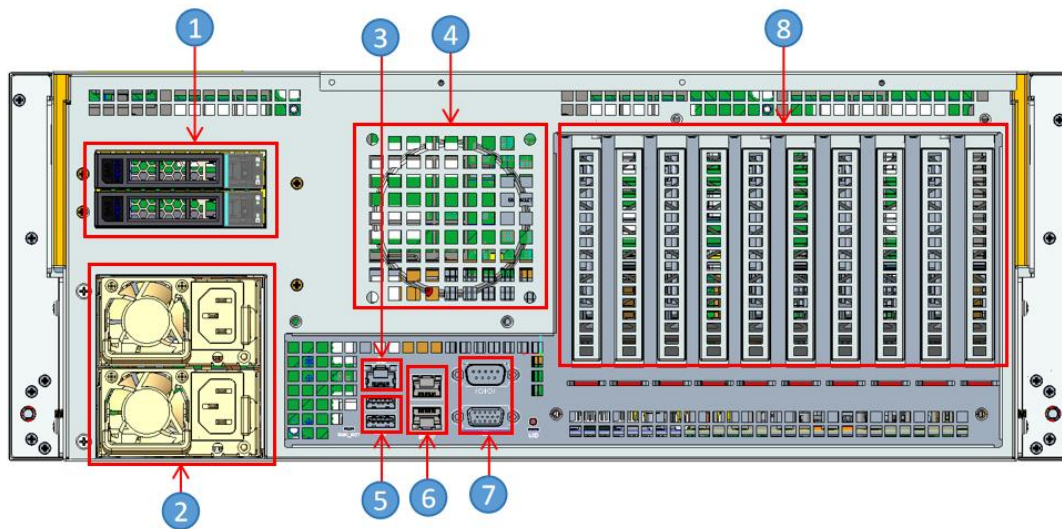


Figure 2-6

S/N	Name	S/N	Name
1	2.5 inch hard disk module	5	USB3.0 interface
2	Power module & AC interface	6	RJ45 Gigabit Ethernet port
3	Management network port	7	COM port, VGA port
4	Hot-swap fans	8	GPU card

Table 2-7

✧ Description:

The rear window of this product can be customized according to requirements. This picture is for reference only, and the actual configuration shall prevail.

Rear panel interface description:

Name	Type	Qty	Description
VGA interface	DB15	1	For connecting to a display terminal such as a monitor or KVM.
Management network port	GEBASE-T	1	Provide external 1000Mbit/s Ethernet port. The server can be managed through this interface.
USB interface	USB 3.0	2	Provides an external USB interface through 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	GEBASE-T	2	Server network port.
Power module AC interface	/	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
GPU card	/	5	Full-height, full-length, double-width GPU card

Table 2-8

Rear panel indicator and button description:

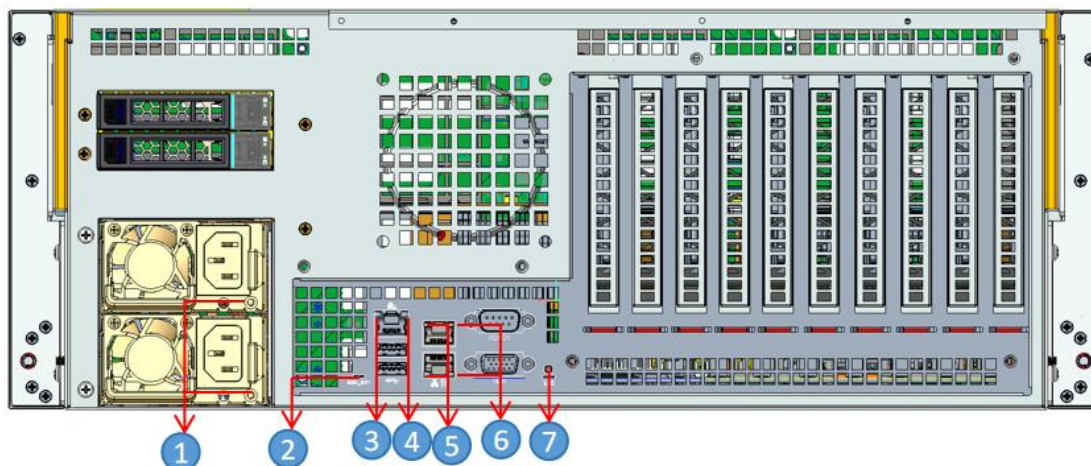


Figure 2-7

S/N	Name	S/N	Name
1	Power module indicators	5	Connection status indicator
2	BMC reset button	6	Data transfer status indicator
3	Connection status indicator	7	UID button
4	Data transfer status indicator		

Table 2-9

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	Green on: indicates 1000M link. Orange on: indicates 100M link. Off: 10M 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: shortly press this button to turn on/off the positioning light.
BMC reset button	BMC button control on server

Table 2-10

2.4.3 Motherboard components

All models share motherboard components, and the interface descriptions are as follows:

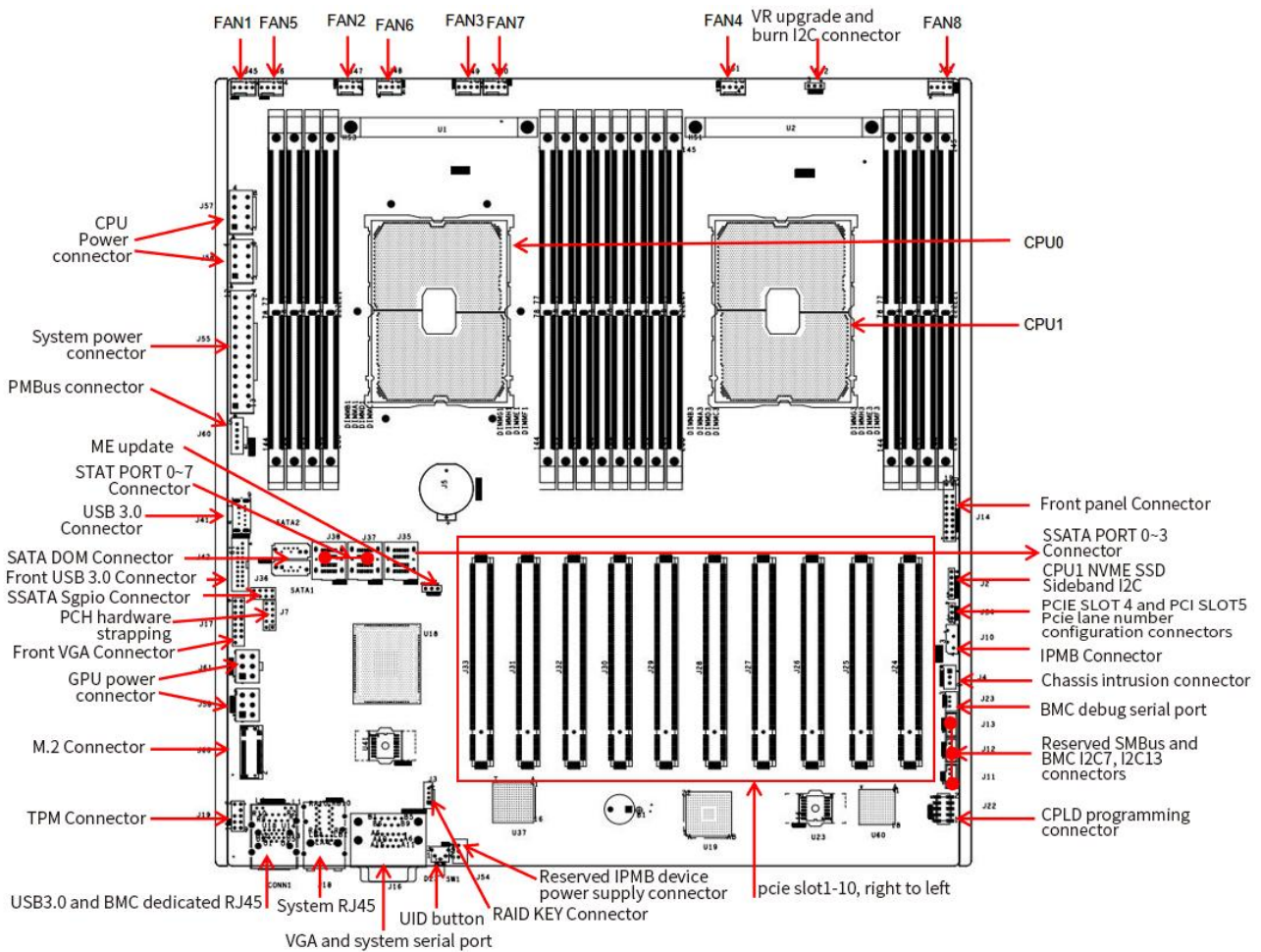


Figure 2-12

Name	Description	Default
J45~J52	1, 5, 2, 6, 3, 7, 4, 8 connectors for system fans in sequence	
PJ2	VR upgrade and burn I2C connector	
J56, J57	2X 8Pin ATX CPU power connector	
J55	2x 12Pin ATX system power connector	
J60	Power PMBus connector	
J41	On board USB3.0 connector	
J42	Front USB3.0 Header x2	
J17	Front VGA Connector	SPI
SATA1, SATA2	STAT DOM connector	
J66	M.2 connector	
J7	PCH hardware strapping	
J61, J58	4U 12V power connector, GPU power connector for ATX power	
J3	RAID KEY connector	
J36	SSATA SGPIO connector	
J62	Rear window 2 hard drive board power supply connectors	NC
J35	S - SATA port 0~3 connector	
J37, J38	ISATA PORT 0~7 connector	
J5	RTC battery connector	
DIMMB1/A1/D1/C1	2,1,4,3changel memory of CPU0 connected to the machine	
DIMMG1/H1/E1/F1	7,8,5,6changel memory of CPU0 connected to machine S	
DIMMB3/A3/D3/C3	2,1,4,3changel memory of CPU1 connected to the machine	
DIMMG3/H3/E3/F3	7,8,5,6changel memory of CPU1 connected to machine S	
J14	Front panel connector	
J2	CPU1 NVME SSD Sideband I2C	
J34	PCIE SLOT4 and PCIE SLOT5 PCIe lane numbers to configure connectors	

J10	IPMB connector	
J8	Connector for storing jumper caps	
J4	Chassis intrusion connector	Jumper cap
J23	BMC debug serial port	
J11, J12, J13	Reserved SMBus and BMC I2C7, I2C13 connectors	
J22	CPLD programming connector	
U1	CPU0	
U2	CPU1	
U18	PCH	
U37	I350 network card chip	
U19	BMC	
U19	BMC	
U60	CPLD	
J20	CPLD Force Power On Connector	
J21	CPLD debug connector	
U23	BMC FLASH	
U41	BIOS FLASH	
J6	ME update	
SW2	BMC reset button	
CONN1	2 USB3.0 and BMC dedicated RJ45	
J18	2 RJ45 for the system	
J16	VGA and system serial port	
SW1	UID button	
J54	Reserved IPMB device power supply connector	
J24	PCIE SLOT1(x8) lane0~7 of CPU1 PORT1	
J25	PCIE SLOT2 (x16) CPU1 PORT3	
J26	PCIE SLOT3 (x8 or N/A) lane0~7 of CPU1 PORT2	
J27	PCIE SLOT4(x8 or x16) lane8~15 of CPU1 PORT2	
J28	PCIE SLOT5(x8) lane8~15 of CPU1 PORT1	
J29	PCIE SLOT6(x16) CPU0 PORT2	
J30	PCIE SLOT7(x16) CPU1 PORT0	
J31	PCIE SLOT8(x8) lane 8~15 of CPU0 PORT1	
J32	PCIE SLOT9(x16) lane0~7 of CPU0 PORT1	
J33	PCIE SLOT10(x16) CPU0 PORT0	

Table 2-11

2.4.4 HDD backplane components

The 2U 12 expansion backplane is shown in the figure:

TOP side:

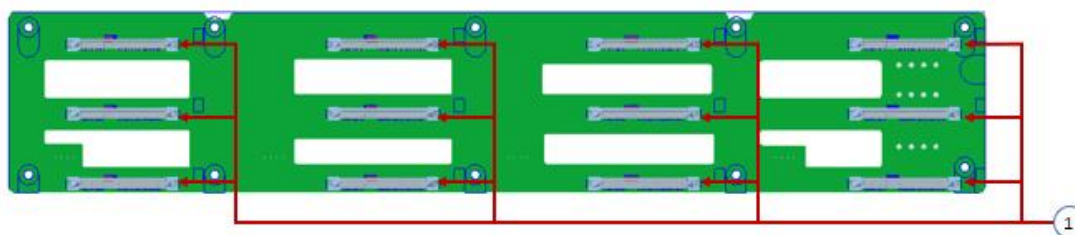


Figure 2-9

S/N	Description	Function
1	SAS/SATA hard drive connector	1. Maximum 12G/b SAS hard disk; 2. Maximum 6G/b SATA hard disk; 3. Supports SAS/SATA hot-swap hard disk.

Table 2-12

Bottom side:

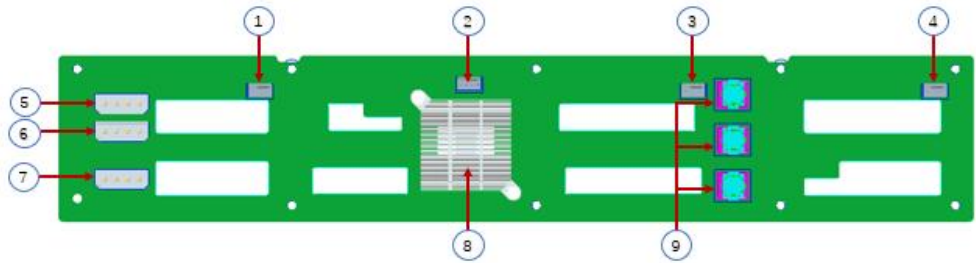


Figure 2-10

Serial No.	Description	Function
1, 2, 3, 4	Temperature controlled fan socket	For 12G/b SAS or 6G/b SATA signal transmission
5, 6, 7	Power connector	Backplane power transfer connector for 12V power transfer
8	EXPANDER chip	PM8043 SXP 24Sx12G 24-port 12G SAS EXPANDER
9	MINI SAS HD high-speed connector	For 12G/b SAS or 6G/b SATA signal transmission

Table 2-13

SAS/SATA backplane as shown:

TOP side:

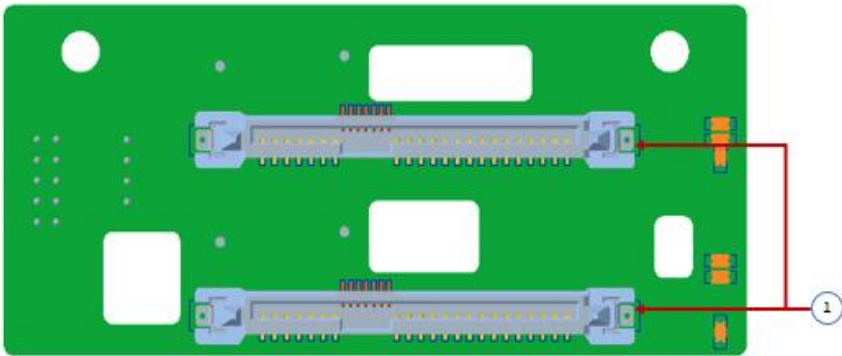


Figure 2-11

S/N	Description	Function
1	SAS/SATA connector	1. Maximum 12G/b SAS hard disk; 2. Maximum 6G/b SATA hard disk; 3. Support SAS/SATA hot-swap hard disk.

Table 2-14

Bottom side:

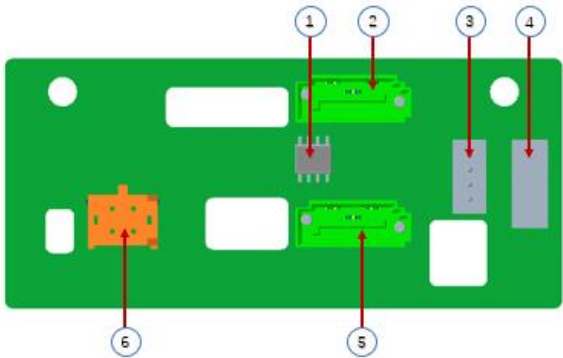


Figure 2-12

S/N	Description	Function
1	Temperature sensor IC	Temperature sensor chip
2, 5	7PIN SATA interface	SATA disk signal cord interface
3	I2C interface	For I2C signal interface
4	SGPIO lighting signal	Used for hard disk LED positioning lighting and fault LED indication function
6	Power interface	Backplane power transfer connector for 12V power transfer

Table 2-15

The U.2 backplane is shown in the figure:

TOP side:



Figure 2-13

S/N	Description	Function
1	SFF-8639 Connector	U.2 interface supporting PCIe×4 for connecting to NVME SSD

Table 2-16

Bottom side:

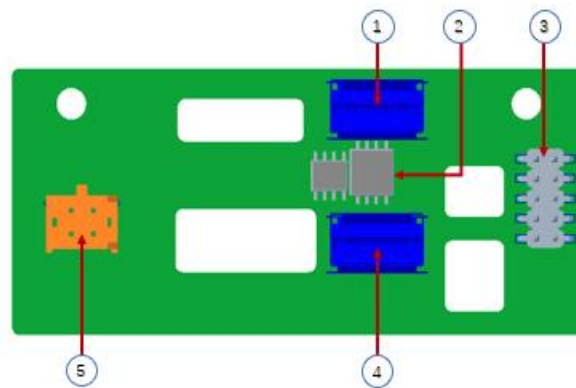


Figure 2-14

S/N	Description	Function
1, 4	Slimline 4i Connector	Provides PCIe×4 interface to connect to CPU and NVME SSD1 (including CPU PEHP I2C and BMC I2C signals)
2	CPLD chip	For data logic processing
3	JTAG debugging interface	JTAG debug interface for programming and version upgrade of CPLD
5	Power outlet	4 Pin power socket for docking with PSU or docking with MB 4 Pin plug to power the board

Table 2-17

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 board can support 32 DIMMs. When only one memory is inserted, the blue box in the figure below is preferred. The plastic color of the slot on the inner slot board is blue. It supports DDR4 ECC RDIMMs server memory, and the memory frequency supports 2400/2666/2933/MHz; the location is shown in the following figure:

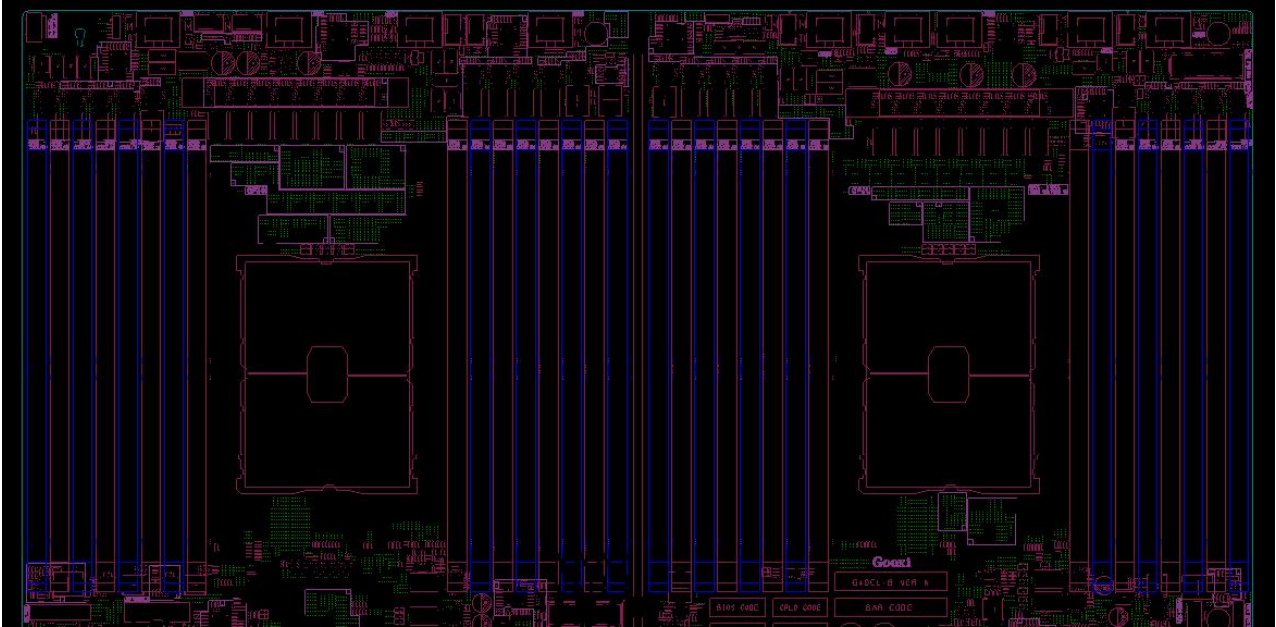


Figure 2-15

2.4.6 Hard drive label

4 U12 disk models:



Figure 2- 16

2.4.7 Hard drive indicator

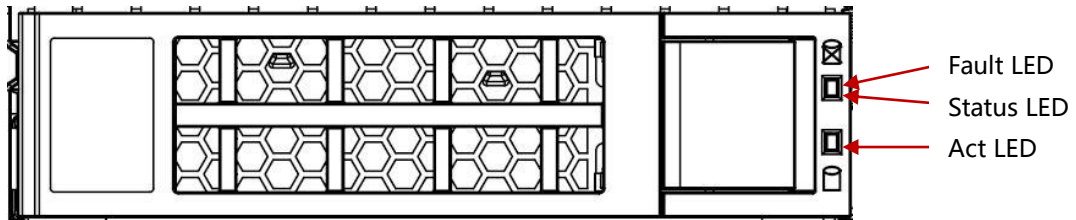


Figure 2- 17

Function	Act LED	Fault LED	Status LED
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 rebuilt	On	Off	Flashing 1Hz/sec

Table 2-18

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.

Chapter 3 Installing System Components

3.1 Installation of CPU

Installation of the processor:

Step 1: Installing CPU

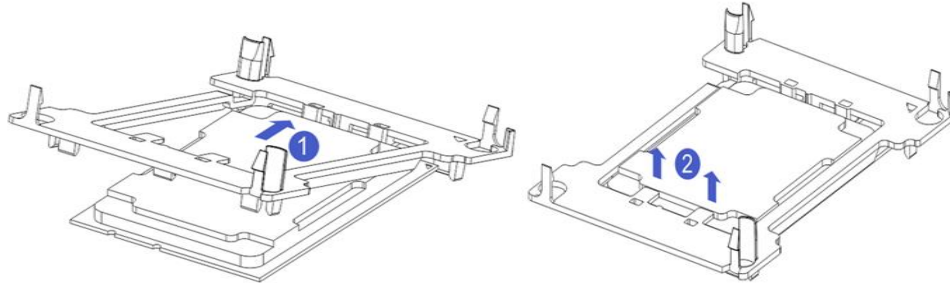


Figure 3-1

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.
(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.

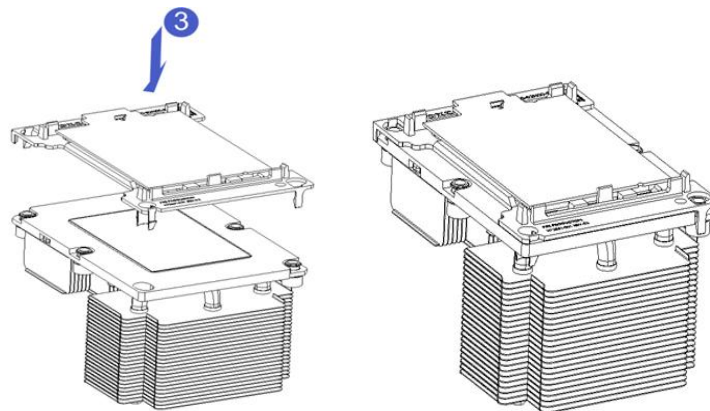


Figure 3-2

3.2 Installation of heat sink

Installing steps:

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

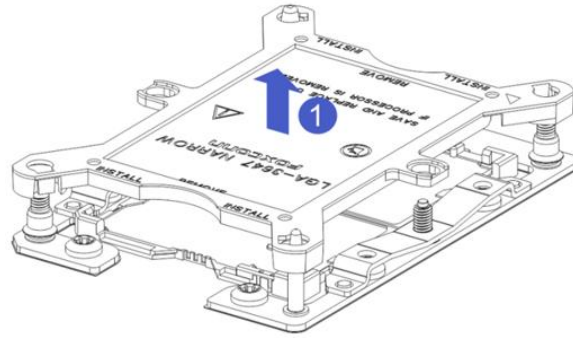


Figure 3- 3

- ◆ 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.

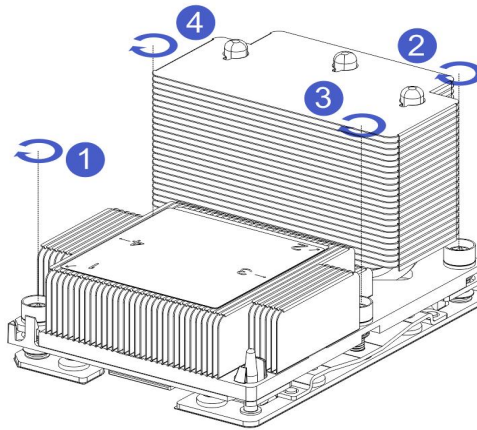


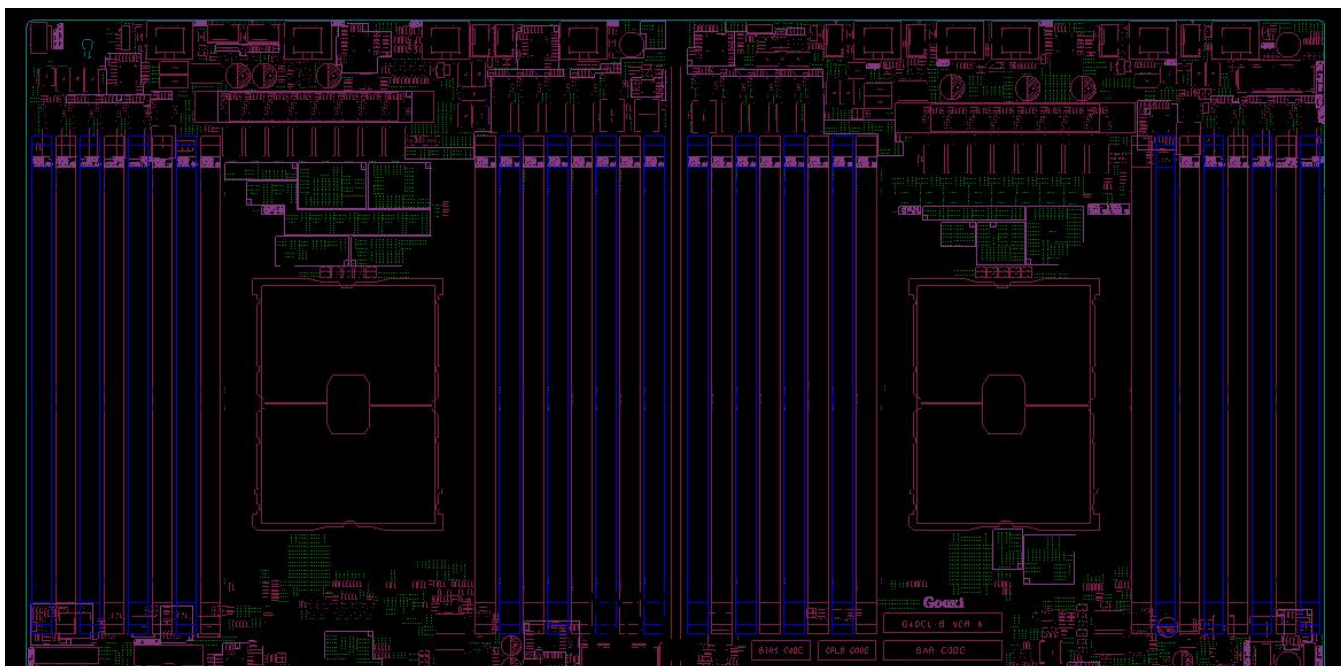
Figure 3-4

3.3 Memory installation

3.3.1 Memory support specifications

The motherboard supports 64GB R-DIMM, 128GB LR-DIMM, 256GB 3DS LRDIMM DDR4 memory, and up to 3200MHz (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 from the same manufacturer.



3.3.2 How to install memory

The 8 memory slots controlled by CPU 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.

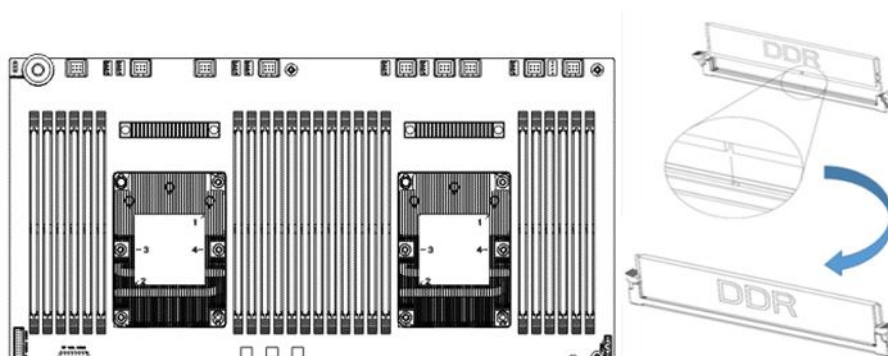


Figure 3-5

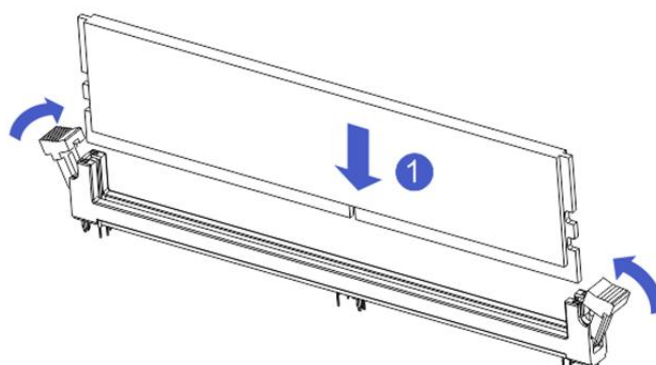


Figure 3-6

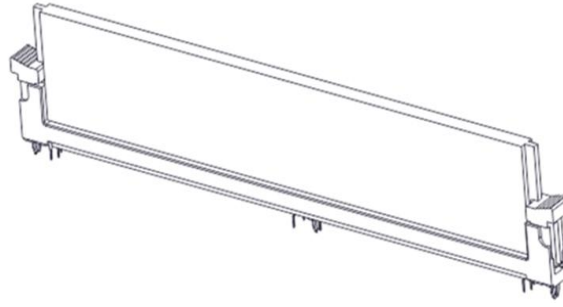


Figure 3-7

3.4 Hard drive installation

Install 3.5" hard drive:

- ◆ 1. Put the hard drive 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 slideway on both sides of the tray)

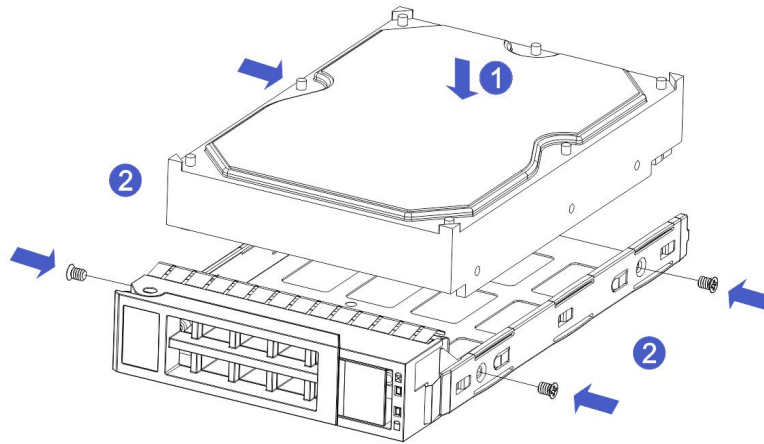


Figure 3- 8

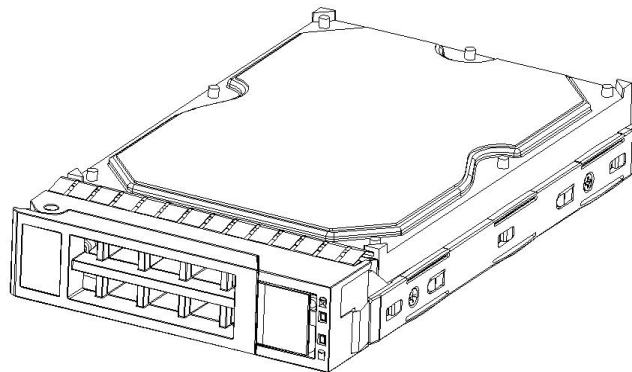


Figure 3- 9

Install 2.5" hard drive:

- ◆ 1. Put the hard drive 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)

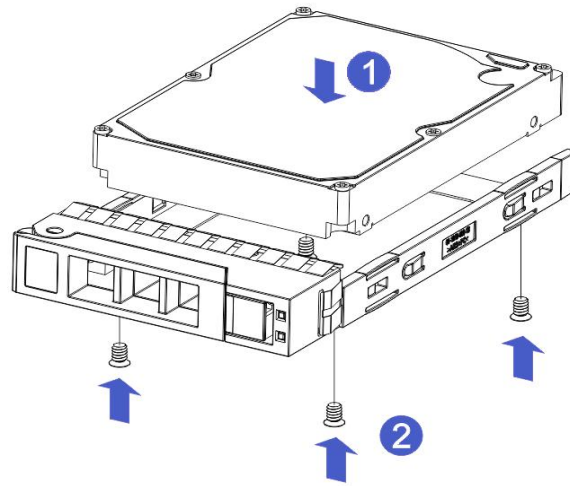


Figure 3- 10

The hard drive tray assembly installs into the 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 as shown

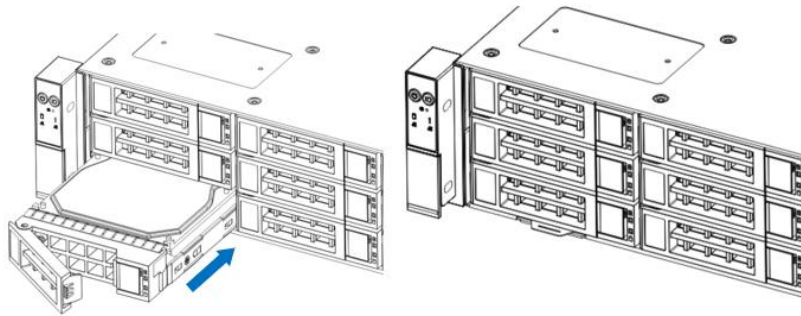


Figure 3 - 1 1

3.5 Front hard drive 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 drive frame, and advance in the direction of the arrow.
- ◆ 2. After the hard drive 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.

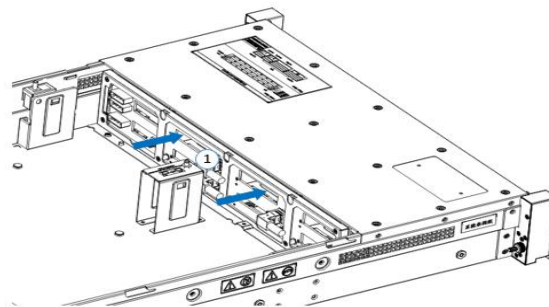


Figure 3-12

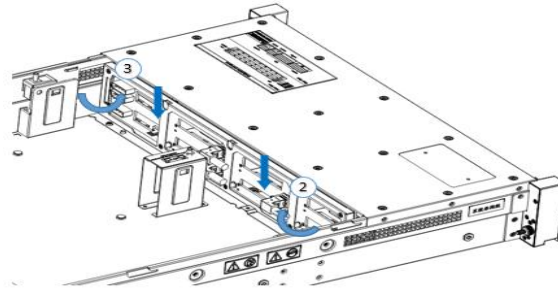


Figure 3-13

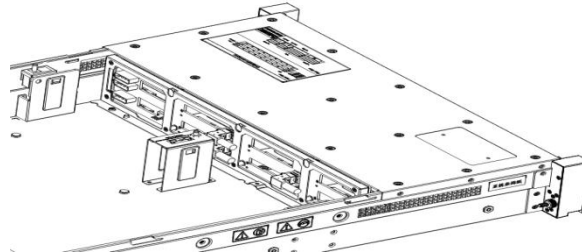


Figure 3-14

3.6 M.2 SSD installation

Step 1: Install the M.2 Card

- ◆ 1. Insert the M.2 card connector end into the motherboard connector.
- ◆ 2. Press the other end of the M.2 card to the flat surface of the positioning stud, and then lock the fixing screws of the M.2 card.

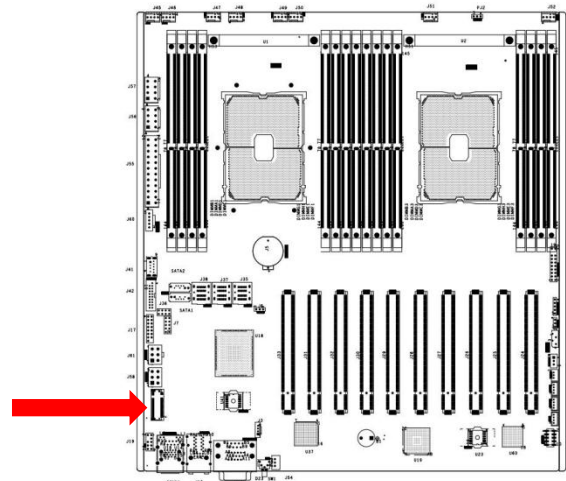


Figure 3-15

3.7 Rear hard drive module backplane installation

Step 1: Installation of the rear hard disk drive module backplane

- ◆ 1. Move the backplane limit spring outwards with your hands, and hold the spring with your hands - keep the spring open
- ◆ 2. Align the peg holes on the backplane of the hard disk with the pegs of the hard drive module holder, push it in, and place it down in place, release the hard drive limit spring, and the spring will automatically bounce back to the original position;

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

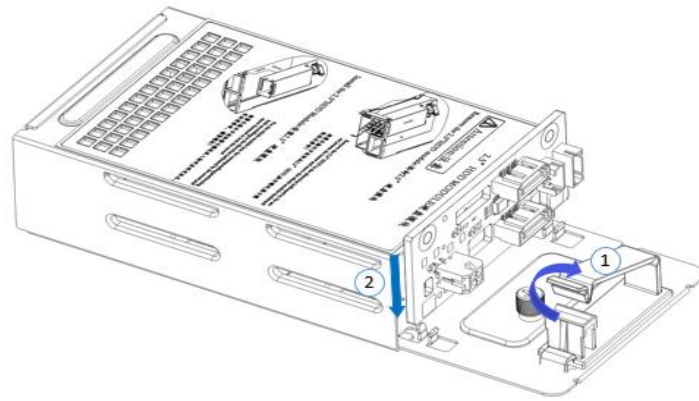


Figure 3- 16

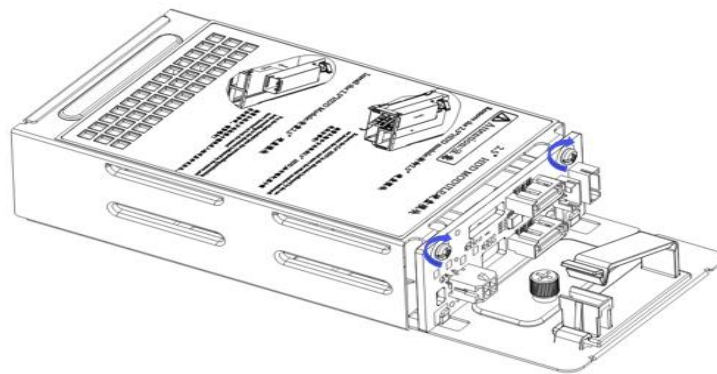


Figure 3- 17

3.9 Rear hard drive installation

Install 3.5" hard drive:

- ◆ 1. Put the hard drive in the tray
- ◆ 2. A total of 4 countersunk head screws on the left and right sides lock the hard disk (the screw heads must not protrude from the surface of the slideways on both sides of the tray)

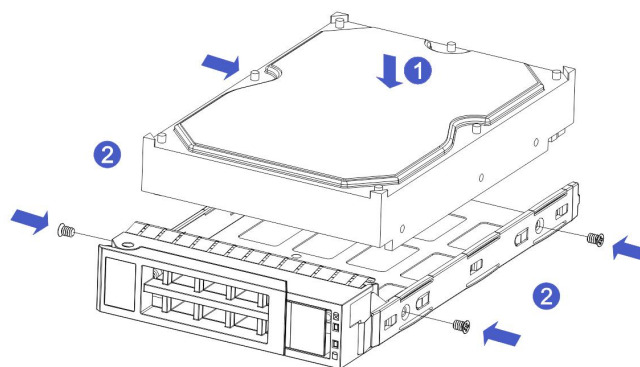


Figure 3- 18

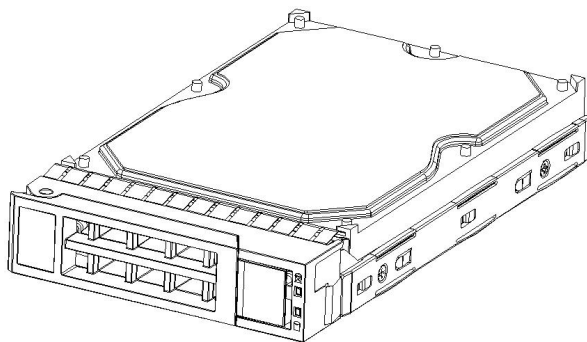


Figure 3-19

Install 2.5" hard drive:

- ◆ 1. Put the hard drive in the tray
- ◆ 2. 4 countersunk head screws at the bottom lock the hard disk (the screw heads protrude from the bottom of the tray)

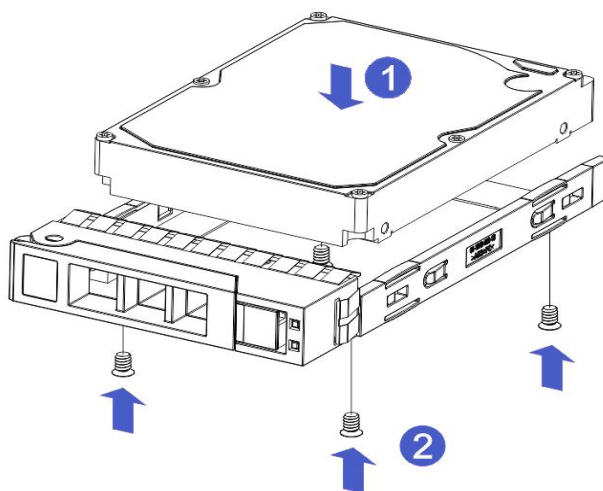


Figure 3-20

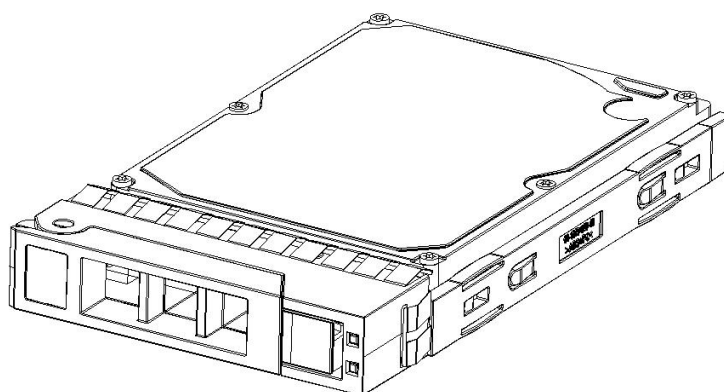


Figure 3-21

The hard drive tray assembly installs into the 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:

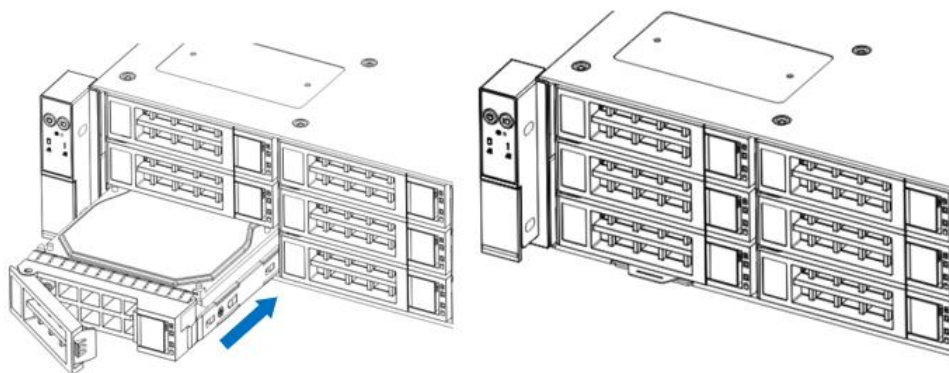


Figure 3-22

3.11 Installation of power module

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

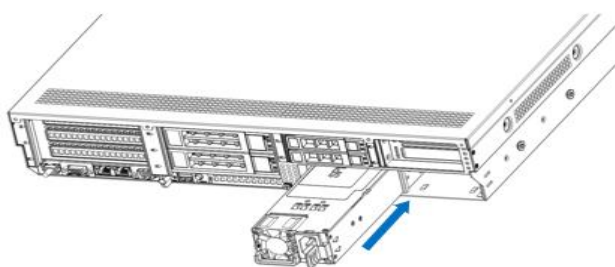


Figure 3- 23

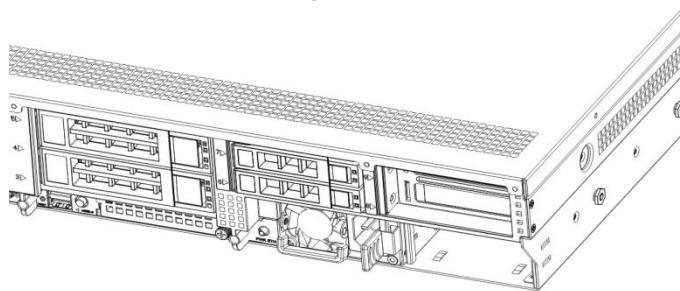


Figure 3- 24

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)

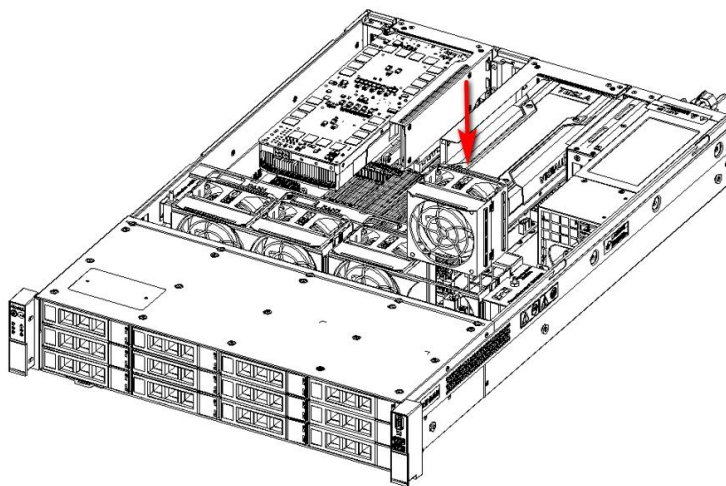


Figure 3- 25

3.13 Installation of the air duct

Steps: Align the air duct 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 case

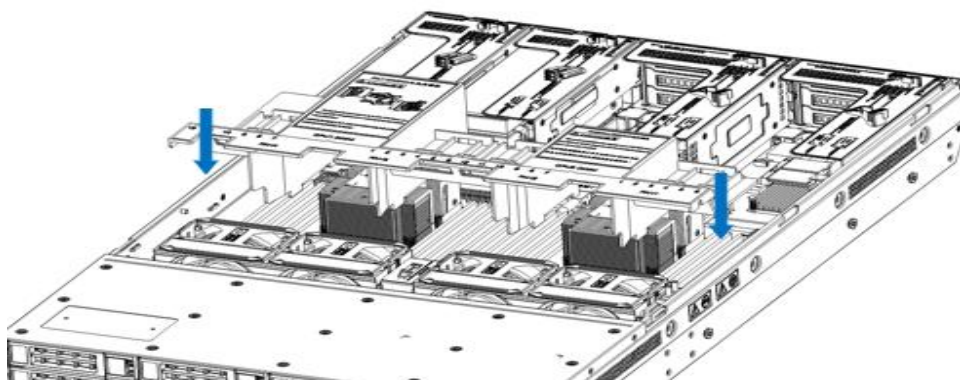


Figure 3- 26

3.14 Installation of optical drive

Steps: Install the optical drive

- ◆ 1. 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.

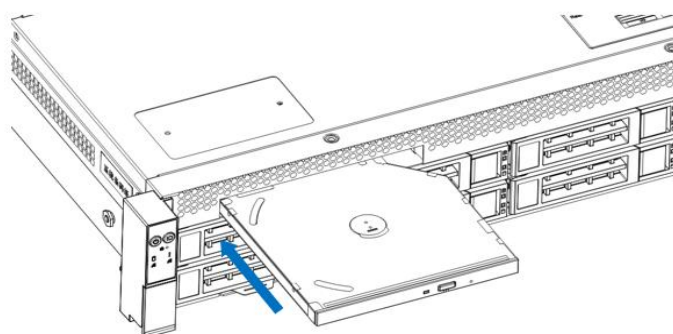


Figure 3- 29

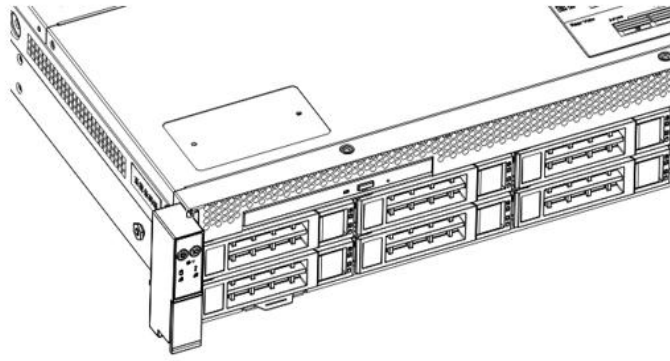


Figure 3- 30

3.15 Installation of the upper cover of the chassis

Step 1: Install the chassis back cover

- ◆ 1. Align the upper 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

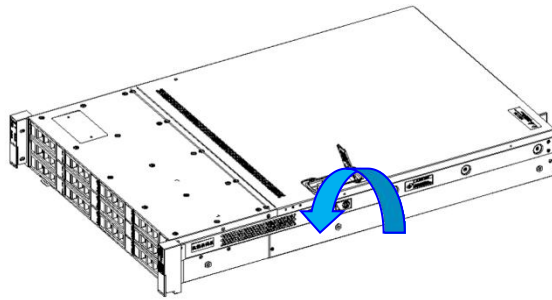


Figure 3- 31

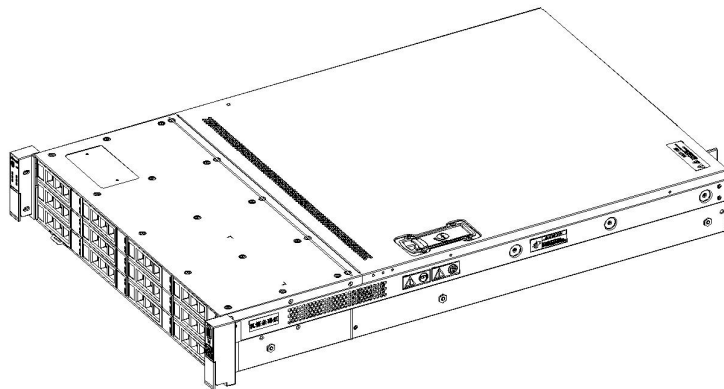


Figure 3-32

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.

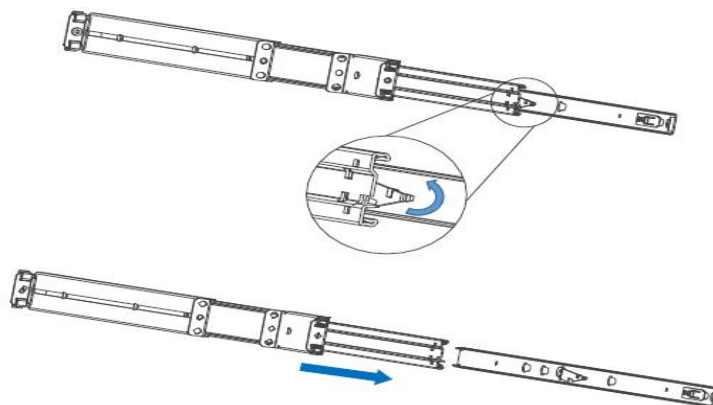


Figure 4- 1

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

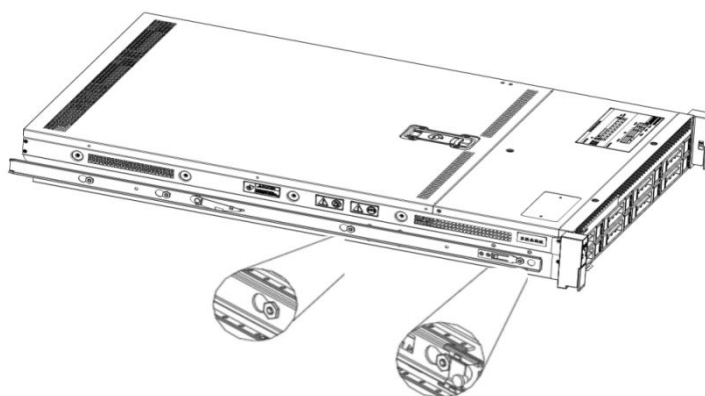


Figure 4- 2

4.2 Installing the outer rails to the rack

Step 3. Install the outer rail on the chassis 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.

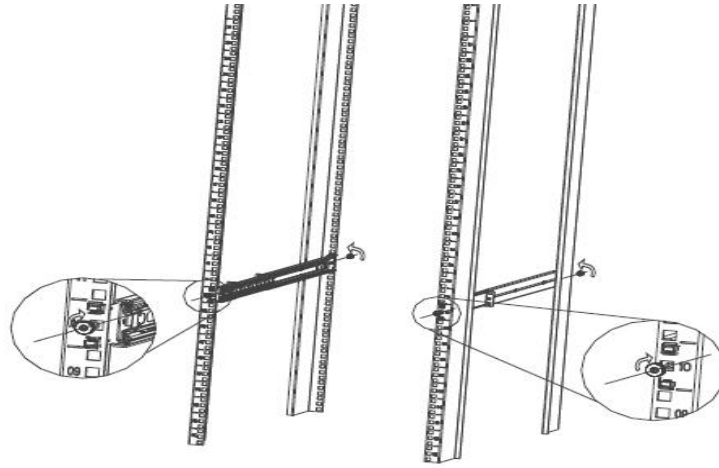


Figure 4-3

4.3 Mount 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 sound. If you can't push it, you need to pull the inner rail buckle down to continue to push the chassis gently.

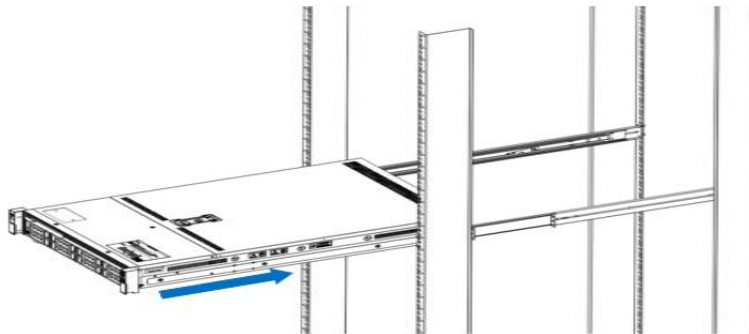


Figure 4-4

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.

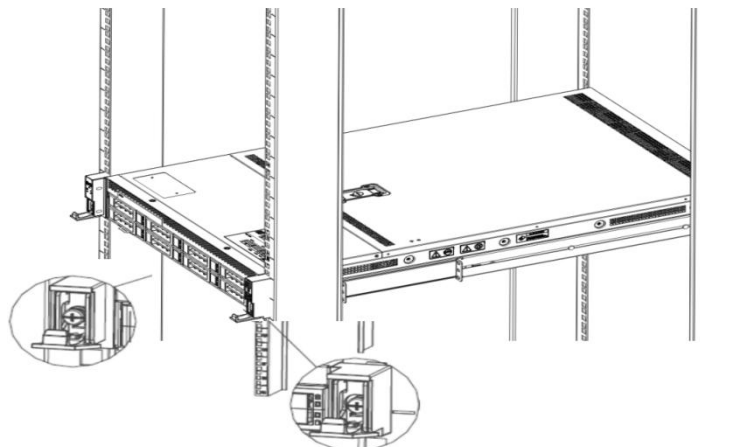


Figure 4-5