inspur

Inspur Server User Manual

NF5488A5

Abstract

This manual contains technical information such as specifications, hardware operations, software configuration, fault diagnosis, etc., which is relevant to the maintenance and operation of this server.

It is recommended that server installation, configuration and maintenance is performed by experienced technicians only.

Target Audience

This manual is intended for:

- Technical support engineers
- Product maintenance engineers
- Technicians

Warnings

This manual introduces the NF5488A5 server's technical features, system installation and setup, which will help the user to understand how best to utilize the server and all its functions.

1.For your safety, please do not disassemble the server's components arbitrarily. Please do not extend configuration or connect other peripheral devices arbitrarily. If needed, please contact Inspur for our support and guidance.

2.Before disassembling the server's components, please be sure to disconnect all the power cords connected to the server.

3.BIOS and BMC setup is a significant factor in correctly configuring your server. If there are no special requirements, it is suggested to use the Default Values and not alter the parameter settings arbitrarily. After the first login, please change the BMC user password in time.

4.Please install the product-compatible operating system and use the driver provided by Inspur. If you use an incompatible operating system or non-Inspur driver, it may cause compatibility issues and affect the normal use of the product, Inspur will not assume any responsibility or liability.

Inspur is not responsible for any damages, including loss of profits, loss of information, interruption of business, personal injury, and/or any damage or consequential damage without limitation, incurred before, during, or after the use of our products.

Contents

1. Safety Instructions

⚠️ **WARNING:** Please be advised to follow the instructions below for safety. Failure to do so could result in potential dangers that may cause property loss, personal injury or death.

1. The power supplies in the system may produce high voltages and energy hazards that may cause personal injury. For your safety, please do not attempt to remove the cover of the system to remove or replace any component without assistance provided by Inspur. Only service technicians trained by Inspur are authorized to remove the cover of the host, and to remove and replace internal components.

2. Please connect the equipment to the appropriate power supply. Use only power supplies with the correct voltage and electrical specifications according to the label. To protect your equipment from damages caused by a momentary spike or plunge of the voltage, please use relevant voltage stabilizing equipment, or uninterruptible power supplies.

3. If you must use an extension cable, please use a three-core cable with properly grounded plugs. Observe extension cable ratings. Ensure that the total rating of all equipment plugged into the extension cable does not exceed 80 percent of the ratings limit for the extension cable.

4. Please be sure to use the power supply components that come with the server, such as power cable, power socket (if provided with the server) etc. For your safety, please do not replace power cables or plugs randomly.

5. To prevent electric shock dangers caused by leakage in the system, please make sure that the power cables of the system and peripheral equipment are correctly connected to the earthed/grounded power socket. Please connect the three-core power cable plug to the three-core AC power socket that is well earthed and easy to access. Be sure to use earthing /grounding pin of power cables and do not use the patch plug or the earthing/grounding pin unplugged with cables. In the case that the earthing/grounding conductors are not installed and it is uncertain whether there are appropriate earthing/grounding protections, please do not use or attempt to operate the equipment. Contact and consult an electrician.

6. Please do not push any objects into the openings of the system. Doing so may cause

fire or electric shock.

7. Please place the system far away from the cooling plate and heat sources, and be sure not to block the air vents.

8. Please be sure not to scatter food or liquid in the system or on other components, and do not use the product in humid or dusty environments.

9. Using an incompatible battery may cause explosion. When battery replacement is required, please consult the manufacturer first, and choose batteries of the same or equivalent type. Do not disassemble, crush, puncture the batteries or make the external connection point short circuit, and do not expose them in the environment over 60°C. Never throw batteries into fire or water. Please do not attempt to open or repair the batteries. Dispose of used batteries according to instructions. For battery recycling, please contact the local waste recycling center.

10. Before installing equipment into the rack, please install all front and side stabilizers on the independent rack first. Please install the front stabilizers first, if connecting with other racks. Please install stabilizers before installing equipment into the rack. Failure to install the corresponding stabilizers before installing equipment into the rack may cause the cabinet to tip over, possibly resulting in severe injury. After installing the equipment and other components into the rack, only one component can be pulled out from the rack through its sliding part at one time. Pulling out several components at the same time may cause the rack to turn over, resulting in serious personal injury.

11. A minimum of two people are required to safely move a rack. The racks are extremely awkward and heavy, moving them without adequate, trained personnel could result in severe injury or death.

12. It is prohibited to directly short-circuit the copper busbar. Please do not touch the copper busbar when the rack is powered on.

13. This is Class A product, and may cause radio interference. In such case, users may need to take necessary measures to mitigate the interference.

14. The equipment is intended for installation in a Restricted Access Location.

⚠ **Note:** The following considerations may help avoid the occurrence of problems that could damage the components or cause data loss, etc.

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1. In the event of the following, please unplug the power cable plug from the power

socket and contact Inspur's customer service department:

1) The power cables, extension cables or power plugs are damaged.

2) The products get wet.

3) The products have fallen or have been damaged.

4) Other objects have fallen into the products.

5) The products do not or are unable to function normally even when attempting to operate according to the instructions.

2. If the system becomes wet or damp, please follow these steps:

1) Power off the equipment, disconnect them with the power socket, wait for 10 to 20 seconds, and then open the host cover.

2) Move the equipment to a well-ventilated place to dry the system at least for 24 hours and make sure that the system is fully dried.

3) Close the host cover, reconnect the system to the power socket, and then power on.

4) In case of operation failure or other abnormal situations, please contact Inspur and get technical support.

3. Pay attention to the position of system cables and power cables-avoid placing wires in high foot traffic locations. Please do not place objects on the cables.

4. Before removing the host cover, and/or touching the internal components, please allow for the equipment to cool first. To avoid damaging the motherboard, please power off the system and wait for five seconds, and then remove the components from the motherboard and/or disconnect the peripheral device from the system. Please remember that only service technicians trained by Inspur are authorized to remove the cover of the host, and to remove and replace internal components.

5. If there is modem, telecom or LAN options installed in the equipment, please pay attention to the followings:

1) In the case of thunder and lightning, please do not connect or use the modem.

2) Never connect or use the modem in a damp environment.

3) Never insert the modem or telephone cables into the socket of network interface controller (NIC).

4) Before unpacking the product package, installing internal components, touching uninsulated cables or jacks of the modem, please disconnect the modem cables.

6. In order to prevent electrostatic discharge from damaging the electronic

components in the equipment, please pay attention to the followings:

1) Please remove any static electricity on your body before dismounting or touching any electronic component in the equipment, to prevent the static electricity from conducting itself to the sensitive components. You may remove the static electricity on the body by touching the metal earthing objects (such as the unpainted metal surface on the rack).

2) Please do not take electrostatic sensitive components that are not ready to be installed for application out of the antistatic package materials.

3) While working, please touch the earthing conductor or the unpainted metal surface on the cabinet regularly to remove any static electricity from the body that may damage the internal components.

7. Upon receiving the proper authorization from Inspur and dismounting the internal components, please pay attention to the followings:

1) Switch the system power supply off and disconnect the cables, including all connections of the system. When disconnecting the cables, please hold the connector of the cables and slowly pull the plugs out. Never pull on the cables.

2) The products need to completely cool down before dismounting the host cover or touching the internal components.

3) Before disassembling, assembling or touching any electronic components in the equipment, you should first remove static electricity on your body by touching a grounded metal object.

4) During the dismounting process, avoid making large movement ranges to prevent damage to the components or scratching arms.

5) Handle components and plug-in cards with care. Please do not touch the components or connection points on the plug-in cards. When handling the plug-in cards or components, firmly grab the edges of the plug-in cards and components, and/or their metal fixed supports.

8. During the process of rack installation and application, please pay attention to the followings:

1) After the rack installation is finished, please ensure that the stabilizers have been fixed to the rack and supported to ground, and the weight of the rack is firm on ground.

2) Always load from the bottom up, and load the heaviest items first.

3) When pulling out the components from the rack, apply slight force to keep the rack balanced.

4) When pressing down the release latch and the rail of components is sliding, please be careful; as the sliding may hurt your fingers.

5) Do not overload the AC power supply branch circuits in the rack. The total load of the rack should not exceed 80% of the ratings of the branch circuits.

6) Ensure that components in the rack have good ventilation conditions.

7) When repairing components in the rack, never step on any other components.

9. After receiving the server, please refer to the label on the top cover to remove the screws on both sides of the chassis and then install it on the rack, to avoid damage to the handles when you open the GPU BOX later without removing the screws.

2 Product Specifications

2.1 Overview

Inspur AI server NF5488A5 has high scalability, high performance, high energy efficiency, flexible deployment and other features. Its AI computing performance can reach 2 petaflops, suitable for image & video, speech recognition, financial analysis, intelligent customer service and other AI application scenarios. With the massive growth of data and the rapid iteration of models, AI research institutes and commercial companies urgently need to improve AI computing power to shorten the model training and development cycle. At the same time, they hope to deploy AI infrastructure more quickly and economically, and to realize the compatibility between the AI infrastructure and the legacy IT infrastructure to save data center space and reduce costs. NF5488A5 uses the most advanced NVIDIA NVSwitch interconnect architecture in the industry,and can be equipped with eight NVIDIA SXM4 A100 Tensor Core 40GB/80GB GPUs interconnected at high speed in 4U space.The direct P2P data interaction between any two GPUs can achieve 2 petaflops of AI computing performance. . NF5488A5 adopts the most advanced high-speed NVIDIA NVSwitch™, which enables P2P connection between any two of the 8 NVIDIA SXM4 A100 Tensor Core 40/80 G GPUs at a total bandwidth of up to 600 GB/s in a 4U space. With 2 AMD EPYC 7002/7003 series PCIe 4.0 CPUs, together with xGMI-2, this server provides top-level computing performance. A 4U chassis and power supply redundancy design enable NF5488A5 to be widely applied to data center environments, especially mounted to the cabinets with limited power consumption. Besides, NF5488A5 adopts a more flexible cluster deployment scheme for integration from hardware to applications. Moreover, the 54V_VR power supply offers higher power efficiency. A combination of the layered and zoned cooling channels and an intelligent PID control strategy ensures optimal cooling performance. With NF5488A5, AI users can build AI infrastructures and development environments efficiently with high computing performance and low deployment and operational costs.

2.2 Features and Specifications

Processor	
Processor type	2 × AMD® EPYC® Rome/Milan Processors (up to 225 - 240 W TDP)
Memory	
Memory type	DDR4 RDIMM/LRDIMM 3200MHz
Memory slot quantity	32
Total memory capacity	Up to 2TB
GPU	
HGX2 baseboard	Supports 8* NVIDIA® Ampere SXM4 A100 40GB/80GB GPU, up to 400W; Supports NVSwitch fully-connected topology
I/O	
USB	2* front USB3.0 port
Network port	2*10G optical port
VGA	1* front VGA port
Mgmt	1* front RJ45 IPMI port，and 1* rear RJ45 Switch BMC port
PCIe	Supports 4* PCIe Gen4 x16 25W low-profile PCIe card
Display	
Controller type	Integrated in Aspeed 2500 chip, supporting up to 1900*1200 resolution
Drive	
Drive type	Up to 4 hot-swap NVMe SSDs, 4 built-in enterprise-class M.2 SSDs, 4 SATA/SAS SSDs, and 2 onboard SATA/PCIe bus M.2 SSDs .
Power	

| Specifications	4* 3000W 80Plus Platinum PSU, supporting 3+1 redundancy
Power input	Please refer to the power input on the nameplate label of the host
Physical	
External packing dimensions	722mm (W) x 368 mm (H) x 1168mm (D)
Host machine dimensions	448mm (W) x 175.5mm (H) x 850mm (D)
Weight	Full configuration: NW 62kg, GW 95kg (Gross weight including host + packing box + rails + accessory box)
Environmental	
Operating temperature	5℃ ~35℃
Storage & transportation temperature	-40℃ ~60℃
Operating humidity	20%~90% relative humidity
Storage & transportation humidity	20%~93% (40℃) relative humidity

3 Component Identification

3.1 Front Panel Components
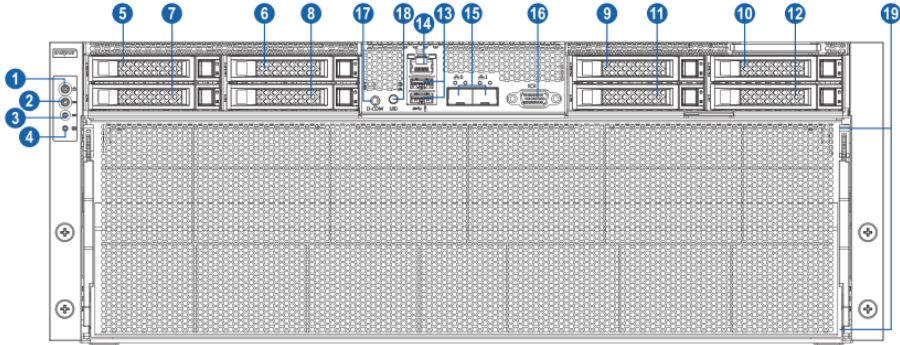
Item	Description
1	Power button & LED
2	UID button & LED
3	System reset button
4	System failure LED
5-12	HDD 0-7
13	USB3.0 port x2
14	BMC management port
15	Ethernet port x2
16	VGA port
17	BMC debug port
18	UID button & LED
19	GPU BOX

3.2 Front Control Panel Buttons and LEDs
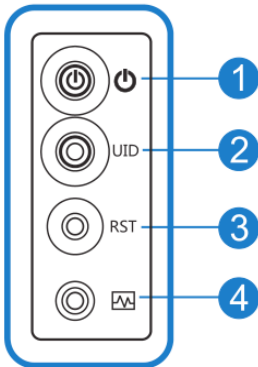
| Item	Description	Status & Interpretation
1	Power button and LED	Steady green in power-on status Steady orange in standby status Long press to force a system shutdown
2	UID LED and button	Turn on/off UID, blue on
3	System reset button	Short press to force a system reset
4	System status LED	Off in normal status Steady red in case of power failure Flashing red in case of abnormal power status

3.3 Drive Tray LEDs
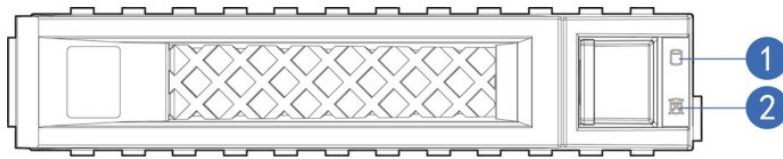
Item	Description	Status & Interpretation
1	Activity status LED	teady green: Normal Flashing green: Read and write activity
2	Fault alarm LED	Steady red: A failure occurs Steady blue: Drive positioning Steady pink: RAID Rebuilding

3.4 Rear Panel Components
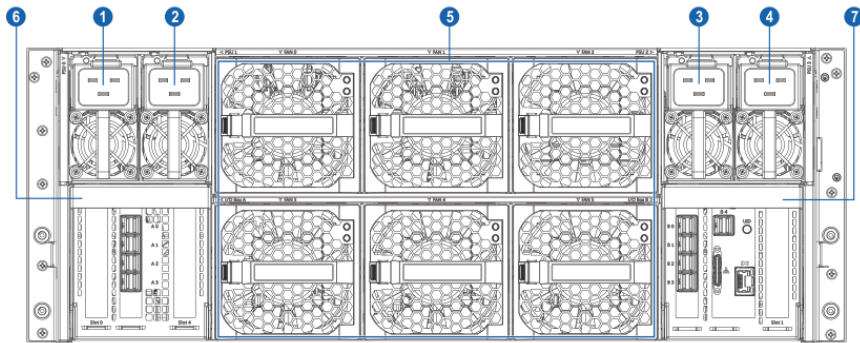
Item	Description
1	PSU0
2	PSU1
3	PSU2
4	PSU3
5	FAN 0-5
6	I/O Box A
7	I/O Box B

3.5 Motherboard Components
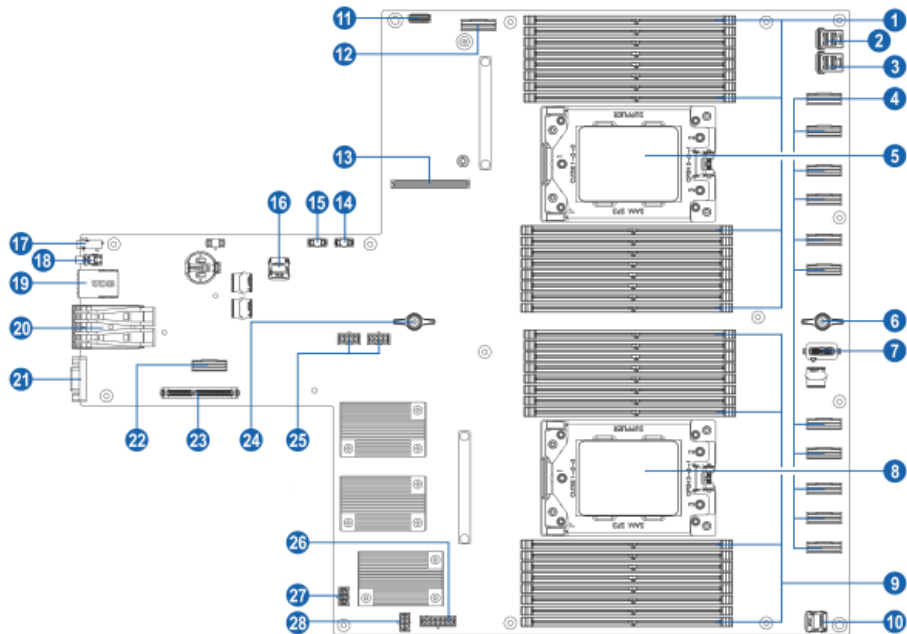
Item	Description
1	DIMM slots (CPU1)
2	SASHD connector 1
3	SASHD connector 0
4	Slimline connector x11
5	CPU1
6	Motherboard handle
7	TPM connector
8	CPU0
9	DIMM slots (CPU0)
10	TF slot
11	Left-ear front panel connector
12	Slimline_PCIe_Raid
13	Raid card connector
14	HDD_BP signal connector 1
15	HDD_BP signal connector 0
16	BMC_TF slot

Item	Description
17	BMC debug port
18	UID button
19	BMC/USB3.0 port x2
20	10G Ethernet port x2
21	VGA port
22	Slimline_PCIe_MB1
23	M.2 Riser slot
24	Motherboard handle
25	HDD_BP signal connectors
26	P12V_INPUT connector
27	PWR_PDB0 connector
28	PWR_PDB1 connector

4 Operations

4.1 Power up the Server

Insert the power cord plug, then press the Power Button.

4.2 Power down the Server

⚠ **WARNING:** To reduce the risk of personal injury, electric shock, or damage to the equipment, remove the power cord to remove power from the server. The front panel Power Button does not completely shut off system power. Portions of the power supply and some internal circuitry remain active until AC power is removed.

⚠ **IMPORTANT:** If installing a hot-plug device, it is not necessary to power down the server.

1. Back up the server data.
2. Shut down the operating system.
3. Disconnect the power cords.

The system is now without power.

4.3 Extend the Server from the Rack

1. Follow the installation guide, and loosen the four captive screws within the ears on both sides by using a screwdriver.
2. Pull out the server slowly out of the rack. Install the lifting handles on both sides. Move the server onto an antistatic bench.

⚠ **WARNING:** To reduce the risk of personal injury or equipment damage, be sure that the rack is adequately stabilized before extending a component from the rack. A single server weighs above 60kg and should be lifted by at least four people or by using auxiliary equipment.
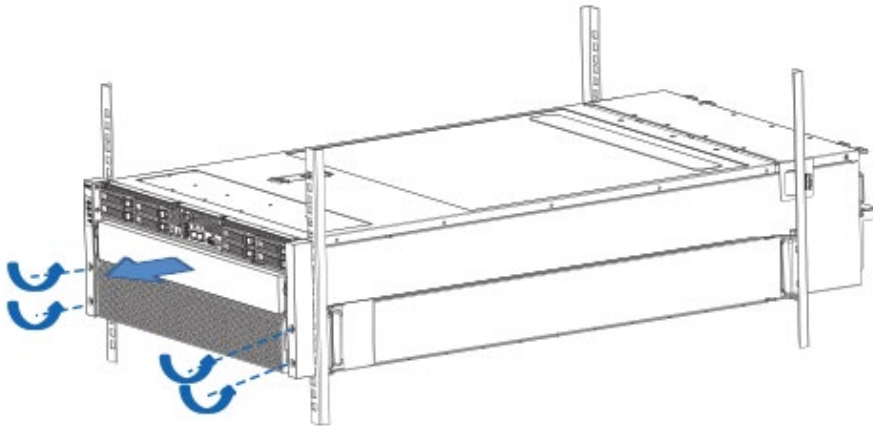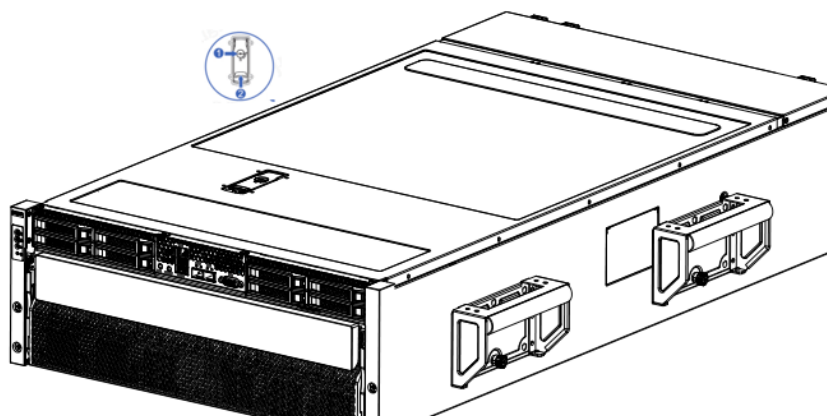
4.4 Remove the Access Panel

⚠ **WARNING:** To reduce the risk of personal injury from hot surfaces, allow the drives and the internal system components to cool before touching them.

⚠ **CAUTION:** For proper cooling, do not operate the server without the access panel, air baffle, or fan installed. If the server supports hot-plug components, minimize the amount of time the access panel is open.

To remove the component:

1. Power down the server if performing a non-hot-plug installation or maintenance procedure.
2. Extend the server from the rack.
3. Use the screwdriver to loosen the security screw on the hood latch.
4. Lift up on the hood latch handle, and then remove the access panel.

4.5 Install the Access Panel

1. Place the access panel on top of the server with the hood latch open. Allow the panel to extend past the rear of the server.

2. Push down on the hood latch. The access panel slides to a closed position.

3. Use the screwdriver to tighten the security screw on the hood latch.

4.6 Install the Server

1. After the installation/maintenance steps are completed, follow the installation guide and lift the server chassis onto the rails. Push it into the rack.

2. Use a screwdriver to fix the captive screws within the ears on both sides to secure the chassis onto the rack.

⚠ **WARNING:** A single server weighs above 60kg and should be lifted by at least four people or by using auxiliary equipment.
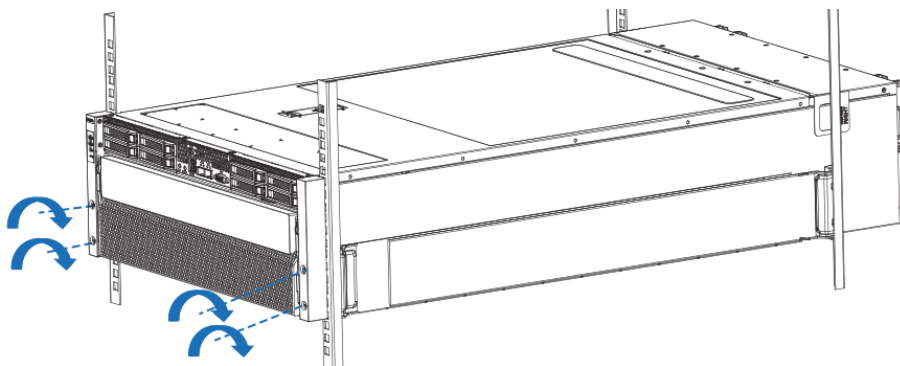

4.7 Remove the GPU BOX

1. Open the handles on both sides of the GPU BOX chassis, as shown by ① in the following figure.

⚠ **Note:** Before opening the handles, check whether the screws on both sides of the chassis are removed, if not removed, please remove them first to avoid damage to the handles.
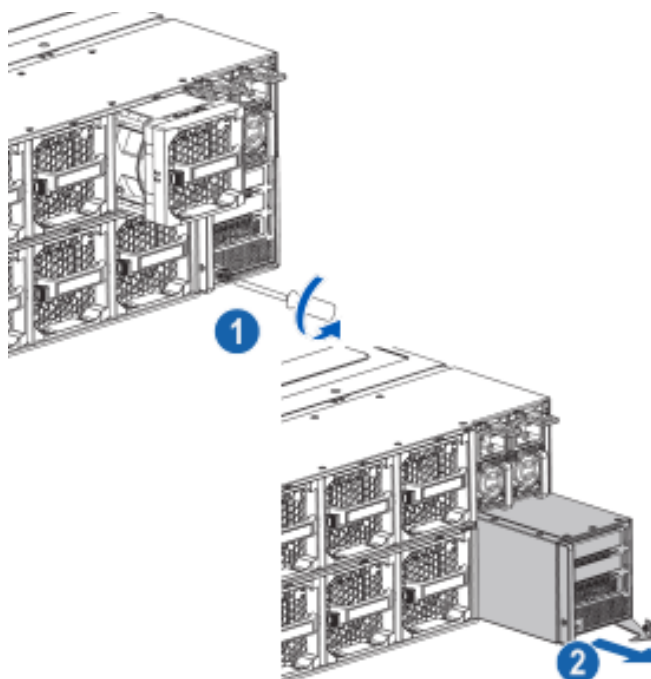
2. Pull the GPU BOX outward. When the buttons on both sides are exposed, press the two buttons at the same time to pull the GPU BOX out of the chassis completely. The GPU BOX is

heavy and requires two people to lift.
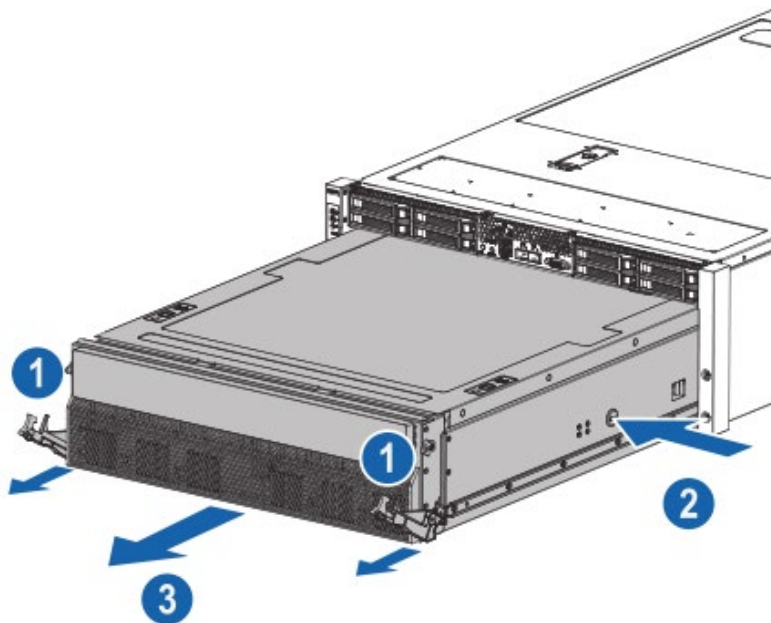
4.8 Remove the IO BOX

1. Use a screwdriver to loosen the screw on the handle of the IO BOX.

2. Open the handle outwards and pull the IO BOX out of the chassis.

5 Setup

5.1 Optimum Environment

When installing the server in a rack, select a location that meets the environmental standards described in this section.

5.1.1 Space and Airflow Requirements

To allow for servicing and adequate airflow, observe the following space and airflow requirements when deciding where to install a rack:

• Leave a minimum clearance of 63.5 cm (25 in) in front of the rack.

• Leave a minimum clearance of 76.2 cm (30 in) behind the rack.

• Leave a minimum clearance of 121.9 cm (48 in) from the back of the rack to the back of another rack or row of racks.

Inspur Servers draw in cool air through the front door and expel warm air through the rear door. Therefore, the front and rear rack doors must be adequately ventilated to allow ambient room air to enter the cabinet, and the rear door must be adequately ventilated to allow the warm air to escape from the cabinet.

⚠ **CAUTION:** To prevent improper cooling and damage to the equipment, do not block the ventilation openings.

When vertical space in the rack is not filled by a server or rack component, the gaps between the components cause changes in airflow through the rack and across the servers. Cover all gaps with blanking panels to maintain proper airflow.

⚠ **CAUTION:** Always use blanking panels to fill empty vertical spaces in the rack. This arrangement ensures proper airflow. Using a rack without blanking panels results in improper cooling that can lead to thermal damage.

⚠ **CAUTION:** If a third-party rack is used, observe the following additional requirements to ensure adequate airflow and to prevent damage to the equipment:

• Front and rear doors—If the 42U rack includes closing front and rear doors, you must allow 5,350 sq cm (830 sq in) of holes evenly distributed from top to bottom to permit

adequate airflow (equivalent to the required 64 percent open area for ventilation).

• Side—The clearance between the installed rack component and the side panels of the rack must be a minimum of 7 cm (2.75 in).

5.1.2 Temperature Requirements

To ensure continued safe and reliable equipment operation, install or position the system in a well-ventilated, climate-controlled environment.

The maximum recommended ambient operating temperature (TMRA) for most server products is 35°C (95°F). The temperature in the room where the rack is located must not exceed 35°C (95°F).

⚠ **CAUTION:** To reduce the risk of damage to the equipment when installing third-party options:

• Do not permit optional equipment to impede airflow around the server or to increase the internal rack temperature beyond the maximum allowable limits.

• Do not exceed the manufacturer's TMRA.

5.1.3 Power Requirements

Installation of this equipment must comply with local and regional electrical regulations governing the installation of information technology equipment by licensed electricians. This equipment is designed to operate in installations covered by NFPA 70, 1999 Edition (National Electric Code) and NFPA-75, 1992 (code for Protection of Electronic Computer/ Data Processing Equipment). For electrical power ratings on options, refer to the product rating label or the user documentation supplied with that option.

⚠ **WARNING:** To reduce the risk of personal injury, fire, or damage to the equipment, do not overload the AC supply branch circuit that provides power to the rack. Consult the electrical authority having jurisdiction over wiring and installation requirements of your facility.

⚠ **CAUTION:** Protect the server from power fluctuations and temporary interruptions with a regulating uninterruptible power supply (UPS). This device protects the hardware from damage caused by power surges and voltage spikes and keeps the system in operation during a power failure.

When installing more than one server, you may need to use additional power distribution devices to safely provide power to all devices. Observe the following guidelines:

• Balance the server power load between available AC supply branch circuits.

• Do not allow the overall system AC current load to exceed 80 percent of the branch circuit AC current rating.

• Do not use common power outlet strips for this equipment.

• Provide a separate electrical circuit for the server.

5.1.4 Electrical Grounding Requirements

The server must be grounded properly for optimal operation and safety. In the United States, you must install the equipment in accordance with NFPA 70, 1999 Edition (National Electric Code), Article 250, as well as any local and regional building codes.

In Canada, you must install the equipment in accordance with Canadian Standards Association, CSA C22.1, and Canadian Electrical Code. In all other countries, you must install the equipment in accordance with any regional or national electrical wiring codes, such as the International Electrotechnical Commission (IEC) Code 364, parts 1 through 7. Furthermore, you must be sure that all power distribution devices used in the installation, such as branch wiring and receptacles, are listed or certified grounding-type devices.

Because of the high ground-leakage currents associated with multiple servers connected to the same power source, Inspur recommends the use of a PDU that is either permanently wired to the building's branch circuit or includes a nondetachable cord that is wired to an industrial-style plug. NEMA locking-style plugs or those complying with IEC 60309 are considered suitable for this purpose. Using common power outlet strips for the server is not recommended.

5.2 Rack Warnings

⚠ **WARNING:** To reduce the risk of personal injury or damage to the equipment, please be sure of the following:

• The leveling jacks are extended to the floor.

• The full weight of the rack rests on the leveling jacks.

• The stabilizing feet are attached to the rack if it is a single-rack installation.

• The racks are coupled together in multiple-rack installations.

• Only one component is extended at a time. A rack may become unstable if more than one component is extended for any reason.

⚠ **WARNING:** To reduce the risk of personal injury or equipment damage when unloading a rack:

• At least two people are needed to safely unload the rack from the pallet. An empty 42U rack can weigh as much as 115 kg (253 lb), can stand more than 2.1 m (7 ft) tall, and may become unstable when being moved on its casters.

• Never stand in front of the rack when it is rolling down the ramp from the pallet. Always handle the rack from both sides.

5.3 Identifying the Contents of the Server Shipping Carton

Unpack the server shipping carton and locate the materials and documentation necessary for installing the server. All the rack mounting hardware necessary for installing the server into the rack is included with the rack or the server.

The contents of the server shipping carton include:

• Server

• Power cord

• Rack-mounting hardware

In addition to the supplied items, you may need:

• Operating system or application software

• Hardware options

5.4 Installing Hardware Options

Install any hardware options before initializing the server. For options installation information, refer to the option documentation. For server-specific information, refer to "Hardware options installation".

5.5 Installing the Server into the Rack

⚠ **CAUTION:** Always plan the rack installation so that the heaviest item is on the bottom of the rack. Install the heaviest item first, and continue to populate the rack from the bottom to the top.

1. Install the server and cable management arm into the rack.

2. Connect peripheral devices to the server. For connector identification information, see "Rear panel components" in this guide.

⚠ **WARNING:** To reduce the risk of electric shock, fire, or damage to the equipment, do not plug telephone or telecommunications connectors into RJ-45 connectors.

3. Connect the power cord to the rear of the server.

4. Connect the power cord to the AC power source.

⚠ **WARNING:** To reduce the risk of electric shock or damage to the equipment:

• Do not disable the power cord grounding plug. The grounding plug is an important safety feature.

• Plug the power cord into a grounded (earthed) electrical outlet that is easily accessible at all times.

• Unplug the power cord from the power supply to disconnect power to the equipment.

• Do not route the power cord where it can be walked on or pinched by items placed against it. Pay particular attention to the plug, electrical outlet, and the point where the cord extends from the server.

5.6 Installing the Operating System

To operate properly, the server must have a supported operating system installed. For the latest information on supported operating systems, refer to the Inspur website (http://www.inspur.com/eportal/ui?pageId=2317460).

To install the operating system on the server, you can download from the official website directly.

6 Hardware Options Installation

6.1 Overview

If more than one option is being installed, read the installation instructions for all the hardware options and identify similar steps to streamline the installation process.

⚠️ **WARNING:** To reduce the risk of personal injury from hot surfaces, allow the drives and the internal system components to cool before touching them.

⚠️ **CAUTION:** To prevent damage to electrical components, properly ground the server before beginning any installation procedure. Improper grounding can cause electrostatic discharge.

6.2 Processor Option

The server supports single- and dual-processor operation.

⚠️ **CAUTION:** To avoid damage to the processor and motherboard, only authorized personnel should attempt to replace or install the processor in this server.
To help avoid damage to the processor and motherboard, do not install the processor without using the processor installation tool.

⚠️ **CAUTION:** To prevent possible server malfunction and damage to the equipment, multiprocessor configurations must contain processors with the same part number.
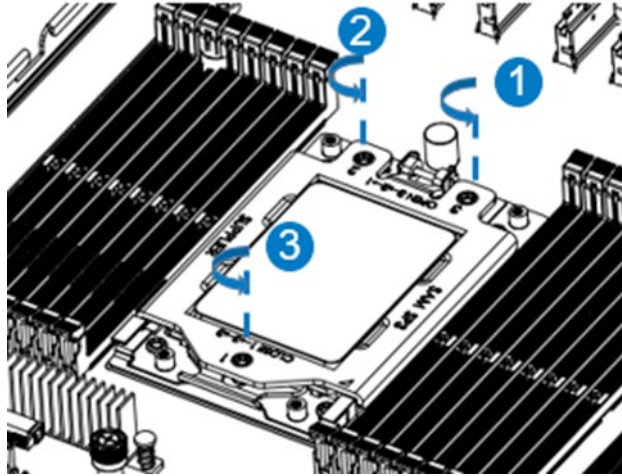
⚠️ **CAUTION:** To install a faster processor, update the system ROM before installing the processor.

To install the component:

1. Power down the server.
2. Extend the server from the rack.
3. Remove the access panel.
4. Remove the air baffle.
5. Remove the heatsink.

6. Install the processor:

Step 1: Follow the sequence ① - ② - ③ in the figure to loosen the screws of the CPU fixing cover.

Step 2: Open the fixing cover.
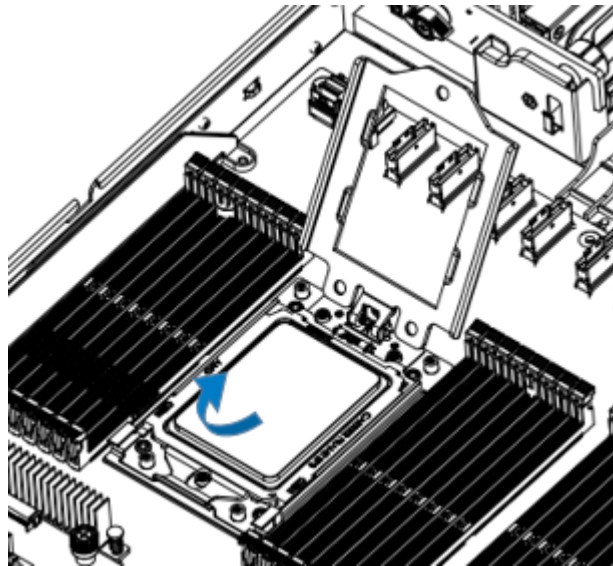
Step 3: Open the tabs on both sides at the same time to open the CPU holder.
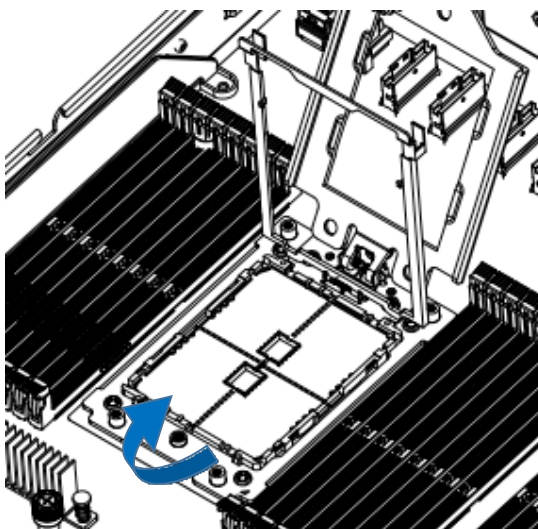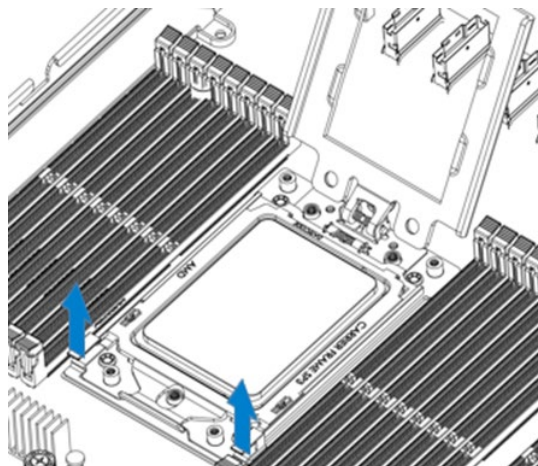
Step 4: Insert the CPU into the CPU holder. Avoid the CPU golden finger side touching the

holder. Make sure the CPU is inserted into the bottom of the holder.
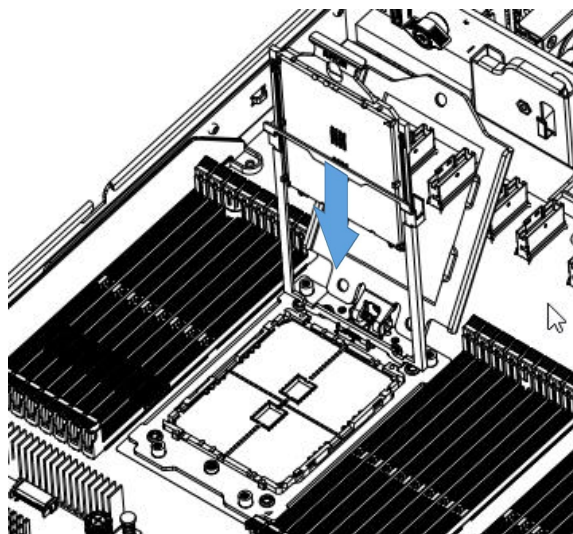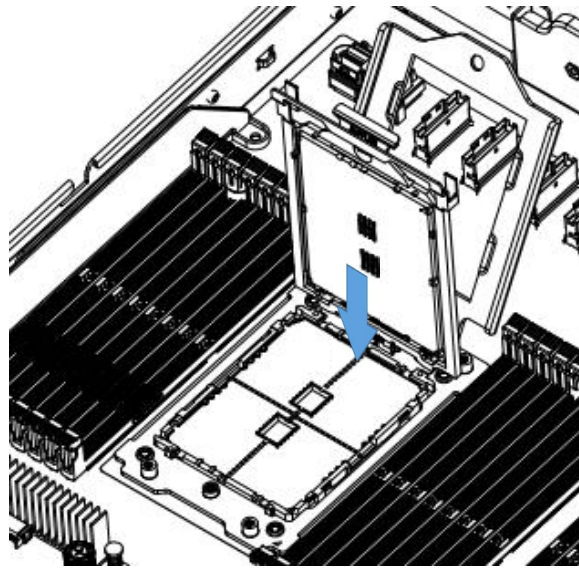
Step 5: Lower the CPU holder onto the socket slowly, and press the two tabs to secure it.
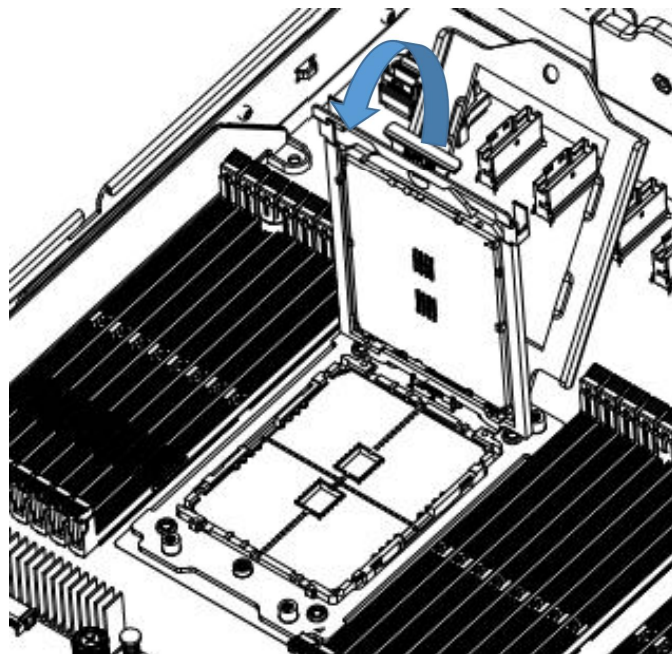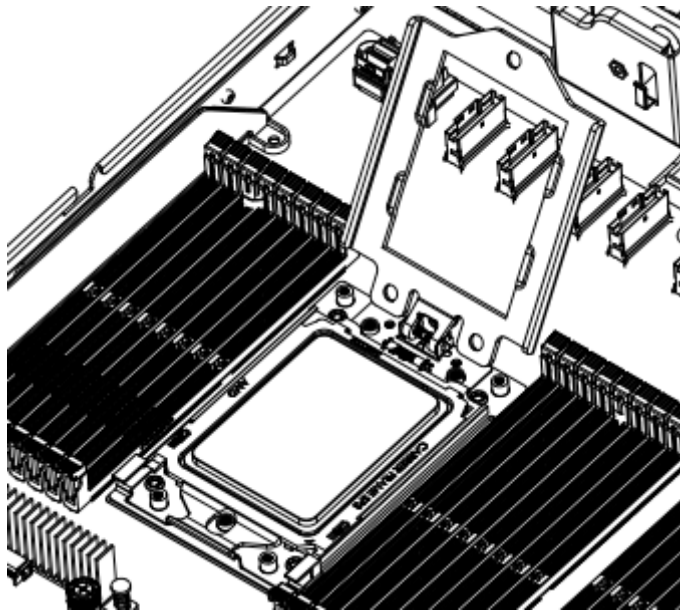
Step 6: Close the fixing cover, and follow the sequence ① - ② - ③ to tighten the screws.
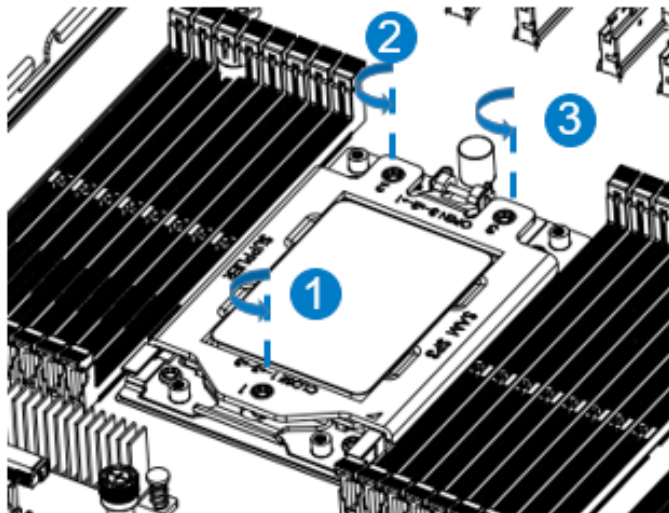
Step 7: Install the heatsink, and tighten the screws.
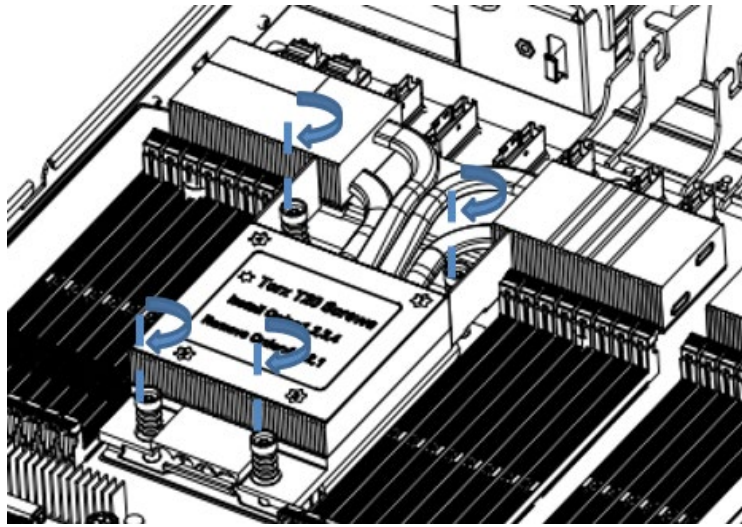
⚠ **Notes:**

● It is required to coat thermal grease evenly onto the contact position between CPU

heatsink and CPU.

● During fixing CPU heatsink, it is required to tighten screws according to the sequence.

⚠ **Note:**

The pins of the processor socket are easily damaged. If any pins are damaged, you may need

to replace the motherboard.

6.3 Memory Option

⚠ **Note:**

This server does not support mixing DIMMs.

All DIMMs installed in the server must be the same type.

● DIMM slot layout is as shown in the following figure:

• DIMM population guidelines:

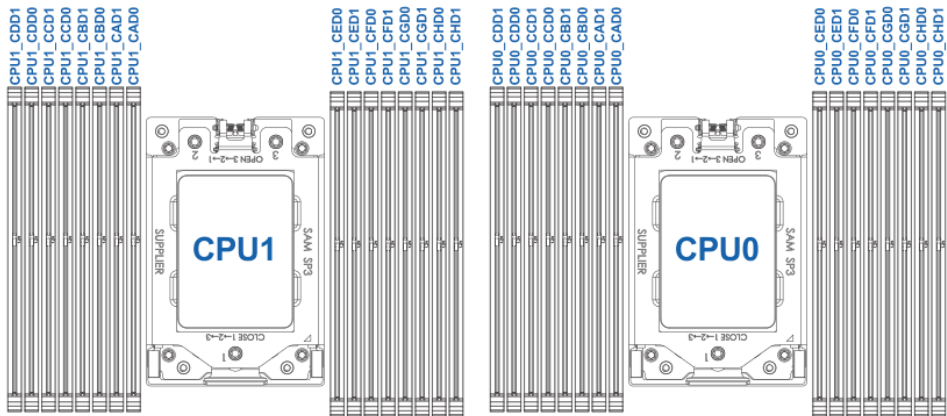| DIMM Qty	CPU1																CPU0															
	CD		CC		CB		CA		CE		CF		CG		CH		CD		CC		CB		CA		CE		CF		CG		CH	
	D1	D0	D1	D0	D1	D0	D1	D0	D0	D1	D0	D1	D0	D1	D0	D1	D1	D0	D1	D0	D1	D0	D1	D0	D0	D1	D0	D1	D0	D1	D0	D1
2				V																V												
4		V		V														V		V												
6		V		V										V				V		V										V		
8		V		V										V		V		V		V										V		V
10		V		V		V								V		V		V		V		V								V		V
12		V		V		V		V						V		V		V		V		V		V						V		V
14		V		V		V		V			V			V		V		V		V		V		V			V			V		V
16		V		V		V		V	V		V		V		V			V		V		V		V	V		V		V		V	
24	V	V	V	V	V	V	V	V	V		V		V		V		V	V	V	V	V	V	V	V	V		V		V		V	
32	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V

Step 1: Open the lock tabs on both ends of the DIMM slot.

Step 2: Align the bottom key with the receptive point on the slot, press both ends of the DIMM with your thumbs. Insert the DIMM into the slot completely, and the lock tabs will automatically secure the DIMM, locking it into place.
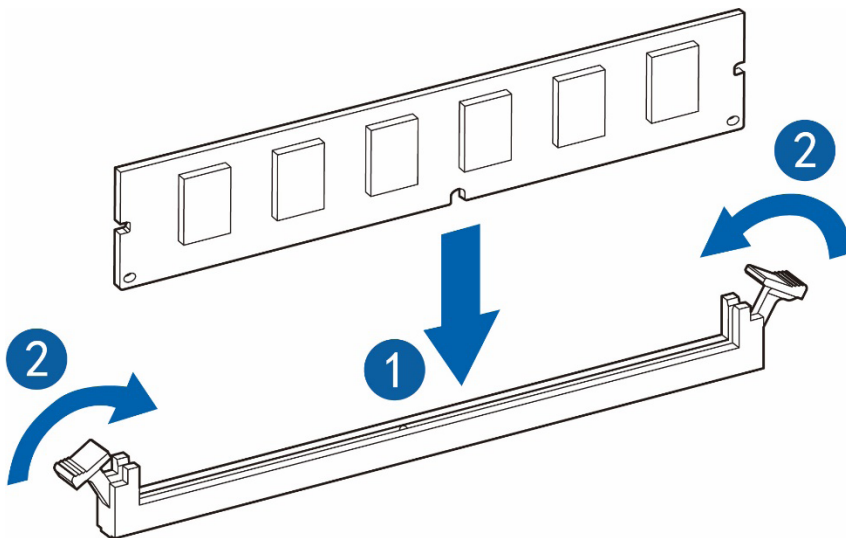
6.4 Hard Drive Option

⚠️ **CAUTION:** For proper cooling, do not operate the server without the access panel, baffles, expansion slot covers, or blanks installed. If the server supports hot-plug components, minimize the amount of time the access panel is open.

1. Check the status of the hard drive from the hot-plug hard drive LED.
2. Back up all server data on the hard drive.
3. Remove the hard drive.

Step 1: Press the drive panel button.
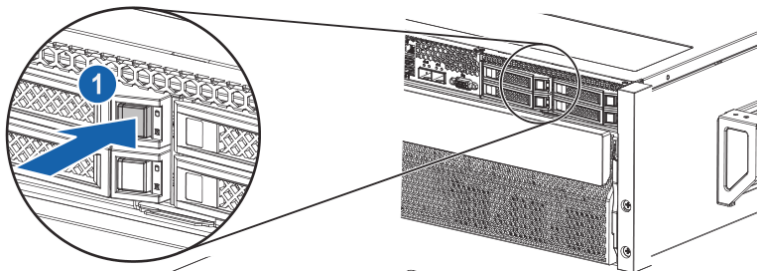
Step 2: The lever on the drive tray pops out automatically. Remove the drive tray outward in horizontal direction.
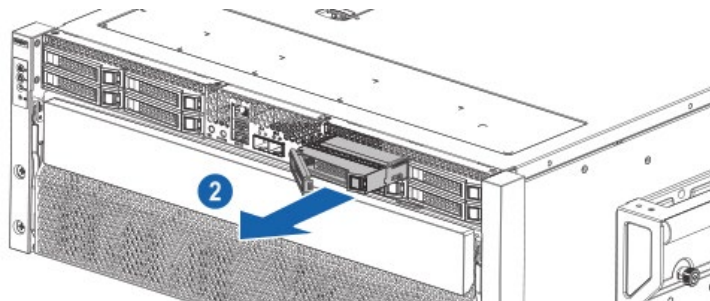
Step 3: Use four screws to fix the drive into the tray.
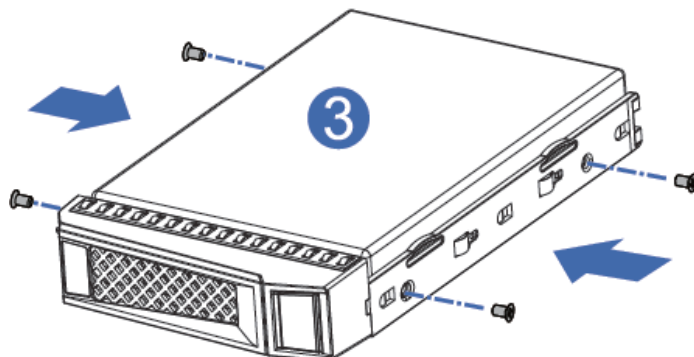
Step 4: Install the drive tray into the chassis, and lock the lever firmly.

6.5 Power Supply Option

⚠️ **CAUTION:** To prevent improper cooling and thermal damage, do not operate the server unless all bays are populated with either a component or a blank.

1. Access the product rear panel.
2. Install the power supply into the power supply bay.

⚠️ **WARNING:** To reduce the risk of personal injury from hot surfaces, allow the power supply or power supply blank to cool before touching it.

3. Connect the power cord to the power supply.
4. Route the power cord through the power cord anchor or cable management arm.
5. Reposition the cable management arm into the operating position.
6. Connect the power cord to the power source.
7. Verify that the corresponding power supply LED is green.

## 6.6 Air Baffle Option

⚠️ **CAUTION:** For proper cooling, do not operate the server without the access panel, baffles, expansion slot covers, or blanks installed. If the server supports hot-plug components, minimize the amount of time the access panel is open.

1. Power down the server.
2. Extend the server from the rack and place it on an antistatic bench.

⚠️ **WARNING:** To reduce the risk of personal injury from hot surfaces, allow the machine to cool before touching it.

3. Remove the access panel.

4. Hold the two sides of the air baffle by using both hands, and lift the air baffle upward to remove it.
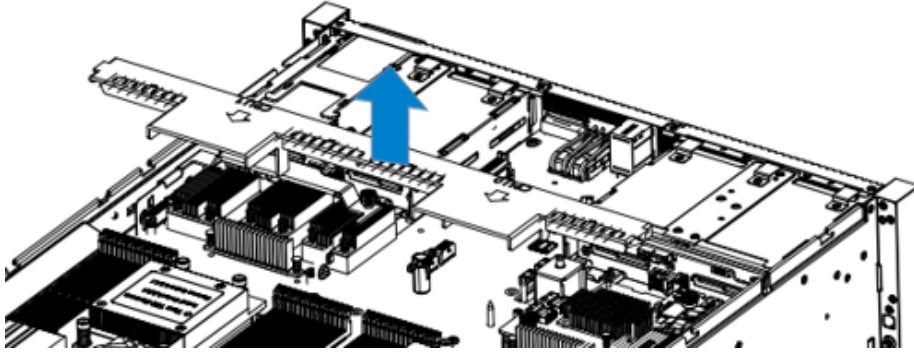
7 Cabling

1. For the configuration with RAID card, route the SAS cables according to the blue lines to connect the drive backplane and the SAS/RAID card. Route the power cables according to the red lines to connect the drive backplane and the motherboard. Route the SlimSAS cables according to the yellow lines.
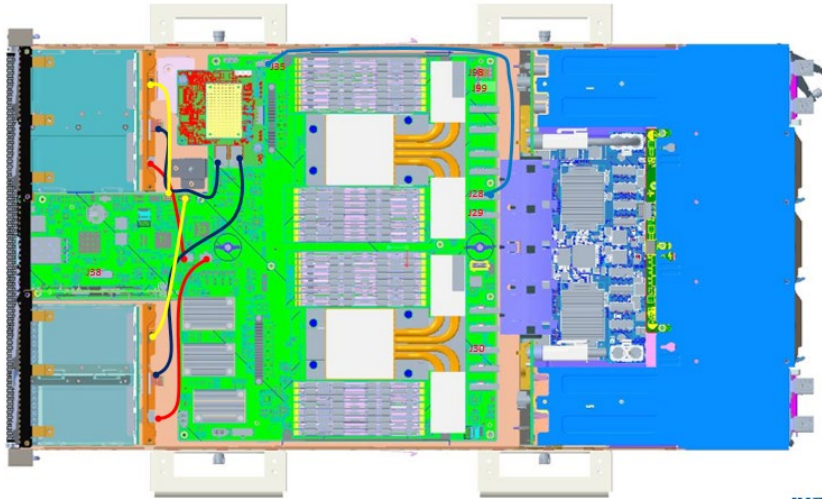
2. When the drive backplane is directly connected with the motherboard, route the SAS cables according to the blue lines to connect the drive backplane and the SAS/RAID card. Route the power cables according to the red lines to connect the drive backplane and the motherboard. Route the SlimSAS cables according to the yellow lines.
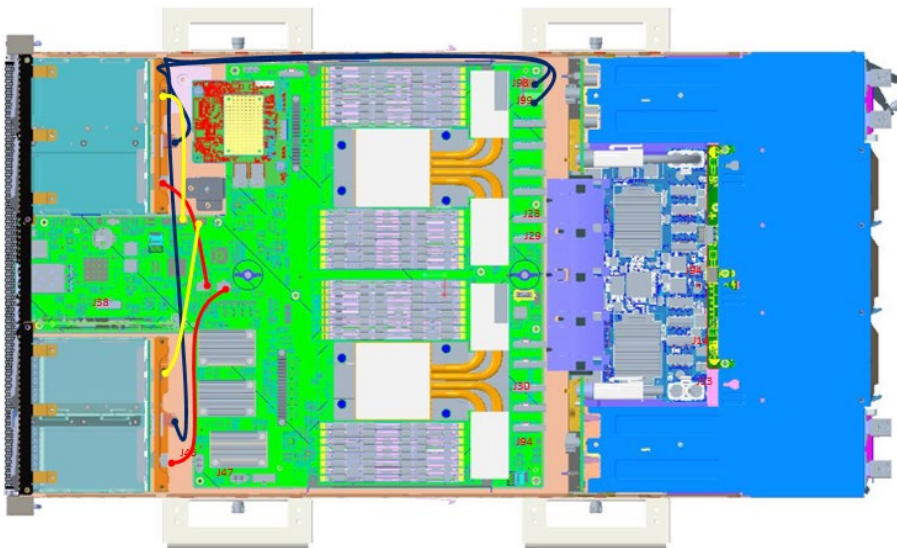
3. Signal line connection between the motherboard and the switch board:
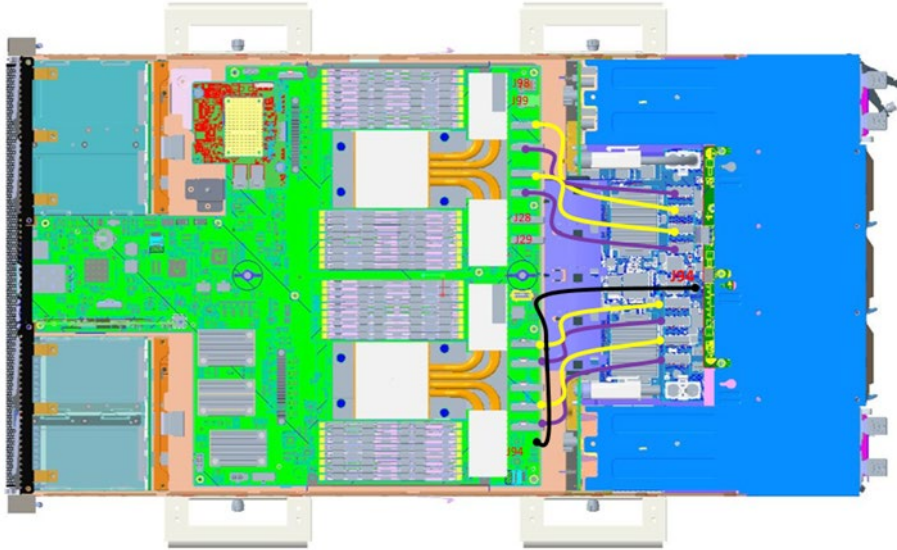
4. Power cable connection between the motherboard and the switch board:
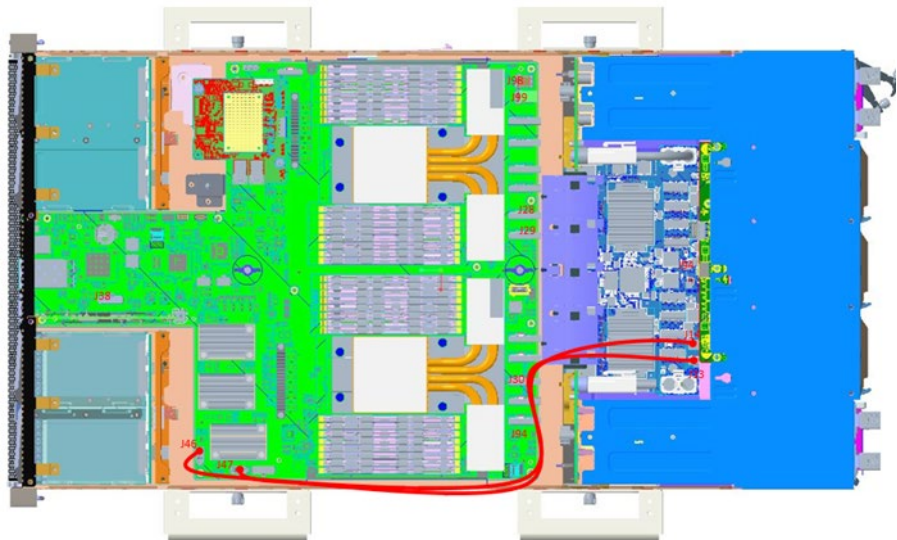
⚠ **Note:** Please route the cables according to your purchased machine configuration.

8 Common Faults and Troubleshooting

This chapter introduces the common server faults, as well as corresponding diagnosis and troubleshooting suggestions.

8.1 Hardware Problems

1) Power-on failure at startup

Description: After pressing the power button, the LED (power status LED, HDD status LED) on server's front control panel is off. Meanwhile, no KVM (display) output is displayed, and server chassis fans do not rotate.

Suggestions:

a. Check the power supply situation: If the power module LED is on, it indicates normal power supply. If the power module LED is off or red, please check whether the power supply is normal, and whether the power cord is connected well.

b. If the power supply is normal, insert the power module again, and then power on for verification.

c. If there is a machine and a power module of the same type, you could change the power module to test whether there is a power module fault.

d. If the instructions above do not resolve the problem, please contact Inspur customer service.

2) No display after power on

Description: After pressing the power button, the power LED on server's front control panel is on, the chassis fans rotate normally, but there's no output on the display.

Suggestions:

a. Firstly check whether the monitor is powered up normally.

b. If the monitor is powered up normally, check whether it is connected normally with the server's VGA port.

c. Test on another monitor.

d. If there is no output on the new monitor, login to the BMC Web interface. Open BMC remote KVM to check whether there is output on the monitor. If there is normal output, it indicates the VGA port may be abnormal, please contact Inspur customer service.

e. If above operations could not resolve the problem, please contact Inspur customer

service.

3) Status LED on front panel is abnormal

Description: The server is under normal operation, but the status LED on front panel turns red.

Suggestions:

a. Firstly confirm which LED is abnormal according to the previous chapter about the LEDs on the front panel.

b. If the system failure LED is abnormal, check whether the system runs normally; if the system runs normally, you can login to the BMC Web interface to view the BMC logs, to check whether there are errors reported.

c. If the power failure LED is abnormal, check whether the power module LED is normal; if the power module LED is normal, you can login to the BMC Web interface to view the BMC logs, to check whether there are errors reported.

d. If other LEDs are abnormal, you can login to the BMC Web interface to view the BMC logs, to check whether there are errors reported.

e. If above operations could not resolve the problem, please contact Inspur customer service.

4) Power module LED is off or red

Description: The server is under normal operation, but a certain power module LED is off or red.

Suggestions:

a. Firstly check whether all power cables are normal, and plug in the power cables again.

b. If the fault still exists, insert the power module again.

c. If shutdown is allowed, you could exchange the two power modules to judge whether it is a power module fault.

d. If above operations could not resolve the problem, please contact Inspur customer service.

5) HDD status LED is abnormal

Description: The server is under normal operation, but the HDD status LED is off or red.

Suggestions:

a. If it is caused by manual operations, restore the array through RAID configuration.

b. If there is no manual operations, check whether the HDDs are identified normally. If the server is configured with an RAID card, login to the RAID management interface to check

whether there is an HDD failure.

c. If there is an HDD failure, or the above operations could not resolve the problem, please contact Inspur customer service.

⚠️ **Note:** Hot-plugging HDD allows users to take out or replace the HDD without system shutdown and power off, which improves the system disaster recovery capability, scalability and flexibility. It only means the hot-plug HDD can be plugged in and out online without damage, and the following two items need to be noticed: ① Depending on the RAID level, hot plugging the HDD in the RAID will cause RAID degradation or failure. When installing a new HDD, different RAID cards have different policies, you may need to login to the RAID card management interface for recovery. ② Remove the HDD until the HDD motor stops completely, to prevent damage to the motor.

---

6) Chassis fans make excessive noise

Suggestions:

a. Firstly check whether the chassis fans operate at a high speed caused by the over-temperature chassis.

b. If the chassis has a high temperature, check the temperature of server room, if it is excessively high, open the air conditioner to cool the room.

c. If the server room's temperature is normal, check whether the front panel or chassis interior is jammed with dust, or the air inlet is blocked. It needs to improve the server room's environment, to avoid server over-temperature running because of too much dust.

d. Check whether the server runs under high load.

e. If above operations could not resolve the problem, please contact Inspur customer service.

7) There is alarm sound during startup

Suggestions:

Firstly identify the source of alarm sound:

a. If the alarm sound comes from the power supply, check the power LED's status. If the power LED is abnormal, refer to item 3) to handle it.

b. If the alarm sound comes from the chassis interior, open the chassis to identify the specific source.

c. If the alarm sound comes from the RAID card, check the HDD LED status or login to the

RAID management interface to check the HDD status.

d. If above operations could not resolve the problem, please contact Inspur customer service.

8) Keyboard and mouse are not available

Description: Neither keyboard nor mouse could be operated normally.

Suggestions:

a. Make sure the keyboard or mouse has been connected correctly and firmly.

b. Replace other parts to test whether it is a mouse or keyboard fault.

c. Power cycle the server and retest.

d. Reboot and enter BIOS or RAID configuration interface to test keyboard or mouse performance. When tested in a non-system situation, if the keyboard or mouse performance turns out to be normal, a system fault could be considered. If the keyboard or mouse fault still exists, a motherboard interface fault could be considered, and Inspur technical hotline can be called for support.

9) USB interface problem

Description: Unable to use devices with a USB interface.

Suggestions:

a. Make sure the operating system on server supports USB devices.

b. Make sure the system has been installed with correct USB device driver.

c. Power off the server, and then power on again to test.

d. Check whether the USB device is normal when connected to other hosts.

e. If the USB device is normal when connected to other hosts, the server may be abnormal: please contact Inspur customer service.

f. If the USB device turns out to be abnormal when connecting to other hosts, please replace the USB device.

8.2 Software Problems

1) System installation problems

Description: It fails to load the RAID driver or to create partitions larger than 2T during system installation, C disk utilization is too large, and other problems.

Suggestions:

a. If it fails to load the driver during system installation, check the RAID driver's version, please visit Inspur website (http://en.inspur.com/) to download the correct RAID driver. For

some RAID drivers, it needs to load several times.

b. If it fails to create 2T partitions, check BIOS Advance -> CSM Configuration-> Boot option filter, enable the UEFI option, and select UEFI mode to boot the system. It needs to enter the CMD command line to change the HDD format to GPT, and then partitions larger than 2T can be created.

c. If the C disk utilization is too large after system installation, open Computer Property-> Advanced System Property-> Advanced-> Performance-> Settings-> Change Virtual Memory, turn down the virtual memory or allocate the virtual memory to other partitions.

d. If above operations could not resolve the problem, please contact Inspur customer service.

2) Abnormal memory capacity

Description: The memory capacity displayed in the OS and the physical memory capacity are inconsistent.

Suggestions:

a. Check the OS version, the supported memory capacity varies with the version of Windows OS. Enter BIOS Setup to view the memory capacity, if the memory is identified completely, the operating system may have limits to the memory capacity, e.g. Windows server 2008 x86 supports 4G memory at most.

b. If the memory is not identified completely in BIOS Setup, confirm that the corresponding slots have been installed with memories of correct type.

c. If above operations could not resolve the problem, please contact Inspur customer service.

3) Abnormal network

Description: The network is disconnected, or the rate is lower than the actual rate of the network port.

Suggestions:

a. Check whether the network cable is connected well and whether the network LED flashes normally, re-insert the network cable to test again.

b. If the problem still exists, use a computer to connect with the server directly. If the direct connection is normal, check whether the network cable or the switch port is normal.

c. If the direct connection is abnormal, please visit Inspur website (http://en.inspur.com/) to download the latest NIC driver.

d. If above operations could not resolve the problem, please contact Inspur customer service.

9 Battery Replacement

If the server no longer automatically displays the correct date and time, you may need to replace the battery that provides power to the real-time clock.

⚠️ **Warning!** The computer contains an internal lithium manganese dioxide, a vanadium pentoxide, or an alkaline battery pack. A risk of fire and burns exists if the battery pack is not properly handled. To reduce the risk of personal injury:

• Do not attempt to recharge the battery.

• Do not expose the battery to temperatures higher than 60°C (140°F).

• Do not disassemble, crush, puncture, short external contacts, or dispose of in fire or water.

• Replace only with the spare designated for this product.

To remove the component:

1. Power down the server.

2. Extend the server from the rack.

3. Remove the access panel.

4. Remove the battery.

5. Install the new battery.
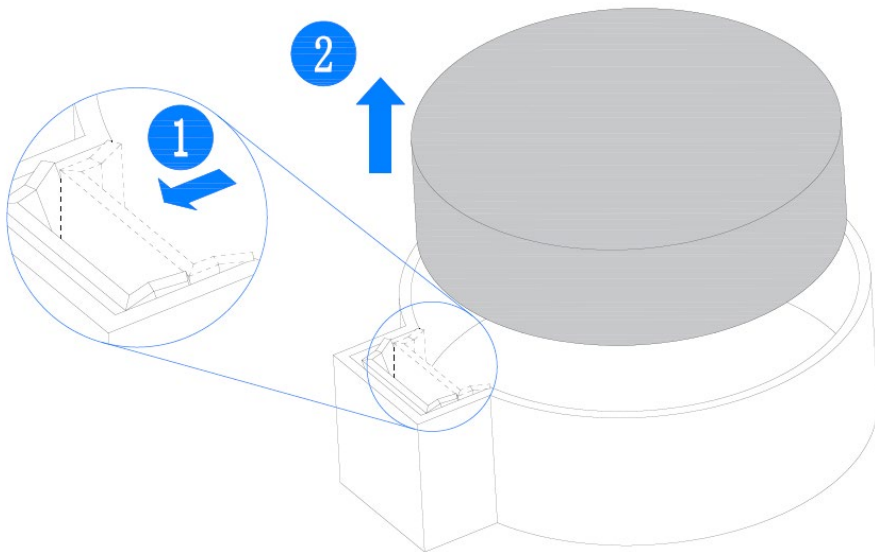
10 Regulatory Compliance Notices

10.1 Regulatory Compliance Identification Numbers

For the purpose of regulatory compliance certifications and identification, this product has been assigned a unique regulatory model number. The regulatory model number can be found on the product nameplate label, along with all required approval markings and information. When requesting compliance information for this product, always refer to this regulatory model number. The regulatory model number is not the marketing name or model number of the product.

10.2 Federal Communications Commission Notice

Part 15 of the Federal Communications Commission (FCC) Rules and Regulations has established Radio Frequency (RF) emission limits to provide an interference-free radio frequency spectrum. Many electronic devices, including computers, generate RF energy incidental to their intended function and are, therefore, covered by these rules. These rules place computers and related peripheral devices into two classes, A and B, depending upon their intended installation. Class A devices are those that may reasonably be expected to be installed in a business or commercial environment. Class B devices are those that may reasonably be expected to be installed in a residential environment (for example, personal computers). The FCC requires devices in both classes to bear a label indicating the interference potential of the device as well as additional operating instructions for the user.

10.2.1 FCC Rating Label

The FCC rating label on the device shows the classification (A or B) of the equipment. Class B devices have an FCC logo or ID on the label. Class A devices do not have an FCC logo or ID on the label. After you determine the class of the device, refer to the corresponding statement.

Class A equipment

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference

to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at personal expense.

10.3 European Union Regulatory Notice

Products bearing the CE marking comply with the following EU Directives:

• Low Voltage Directive 2014/35/EU

• EMC Directive 2014/30/EU

CE compliance of this product is valid if powered with the correct CE-marked AC adapter provided by INSPUR.

Compliance with these directives implies conformity to applicable harmonized European standards (European Norms) that are listed in the EU Declaration of Conformity issued by INSPUR for this product or product family and available (in English only) within the product documentation.

The compliance is indicated by one of the following conformity markings placed on the product:

CE

Please refer to the regulatory label provided on the product.

10.4 Disposal of Waste Equipment by Users in the European Union

This symbol on the product or on its packaging indicates that this product must not be disposed of with other household waste. Instead, it is your responsibility to dispose of your waste equipment by handing it over to a designated collection point for the recycling of waste electrical and electronic equipment. The separate collection and recycling of your waste equipment at the time of disposal will help to conserve natural resources and ensure that it is recycled in a manner that protects human health and the environment. For more information about where you can drop off your waste equipment for recycling, please contact your local city office, your household waste disposal service or the shop where you purchased the product.

10.5 Korean Notice

Class A Equipment

A급 기기 (업무용 방송통신기기)	이 기기는 업무용(A급)으로 전자파적합등록을 한 기기이오니 판매자 또는 사용자는 이 점을 주의하시기 바라며, 가정 외의 지역에서 사용하는 것을 목적으로 합니다.

Class B Equipment

B급 기기 (가정용 방송통신기기)	이 기기는 가정용(B급)으로 전자파적합등록을 한 기기로서 주로 가정에서 사용하는 것을 목적으로 하며, 모든 지역에서 사용할 수 있습니다.

10.6 Chinese Notice

声明

此为 A 级产品，在生活环境中，该产品可能会造成无线电干扰。在这种情况下，可能需要用户对其干扰采取可行的措施。

10.7 Battery Replacement Notice

⚠ **WARNING:** The computer contains an internal lithium manganese dioxide, a vanadium pentoxide, or an alkaline battery pack. A risk of fire and burns exists if the battery pack is not properly handled. To reduce the risk of personal injury:

• Do not attempt to recharge the battery.

• Do not expose the battery to temperatures higher than 60°C (140°F).

• Do not disassemble, crush, puncture, short external contacts, or dispose of in fire or water.

Batteries, battery packs, and accumulators should not be disposed of together with the general household waste. To forward them to recycling or proper disposal, use the public collection system or return them to Inspur, an authorized Inspur Partner, or their agents.

11 Electrostatic Discharge

11.1 Preventing Electrostatic Discharge

To prevent damaging the system, be aware of the precautions you need to follow when setting up the system or handling parts. A discharge of static electricity from a finger or other conductor may damage motherboards or other static-sensitive devices. This type of damage may reduce the life expectancy of the device.

To prevent electrostatic damage:

• Avoid hand contact by transporting and storing products in static-safe containers.

• Keep electrostatic-sensitive parts in their containers until they arrive at static-free workstations.

• Place parts on a grounded surface before removing them from their containers.

• Avoid touching pins, leads, or circuitry.

• Always be properly grounded when touching a static-sensitive component or assembly.

11.2 Grounding Methods to Prevent Electrostatic Discharge

Several methods are used for grounding. Use one or more of the following methods when handling or installing electrostatic-sensitive parts:

• Use a wrist strap connected by a ground cord to a grounded workstation or computer chassis. Wrist straps are flexible straps with a minimum of 1 megohm ±10 percent resistance in the ground cords. To provide proper ground, wear the strap snug against the skin.

• Use heel straps, toe straps, or boot straps at standing workstations. Wear the straps on both feet when standing on conductive floors or dissipating floor mats.

• Use conductive field service tools.

• Use a portable field service kit with a folding static-dissipating work mat.

If you do not have any of the suggested equipment for proper grounding, have an authorized reseller install the part.

For more information on static electricity or assistance with product installation, contact Inspur Customer Service.

12 Warranty

12.1 Introduction

Inspur warrants that all Inspur-branded hardware products shall provide a period of three (3) year warranty. This document describes Warranty Service, including a detailed description of service-level.

The warranty terms and conditions may vary by country, and some services and/or parts may not be available in all countries. For more information about warranty services in your country, contact Inspur technical support or Inspur local office.

12.2 Warranty Service

12.2.1 Service Overview

Type	Duration
Remote Services	3 years
RMA Services	3 years

12.2.2 Warranty Service Terms & Conditions

i. Remote Services

Inspur provides 24x7 remote service through Hotline, E-mail and Website. Through Hotline and E-mail Services, Inspur engineer helps customers determine the cause of the malfunction and provide solution. Website service provides a number of resources to help customers resolve problems, and learn about our products, such as product manuals, drivers and Firmware.

Below is how to obtain our remote service:

Type	Description	Response time
Hotline	1-844-860-0011 (English) 1-760-769-1847 (English) 86-800-860-0011 (Chinese)	Within 2hrs
E-mail	serversupport@inspur.com	Within 2hrs
Website	http://en.inspur.com/	---

ii. RMA Services

Customers could return defective parts to the designated Inspur site after submitting a service request. Inspur may, at its discretion, repair or replace the defective parts. Repair or

replacement parts may be new, used, or equivalent to new in performance and reliability. Replaced or repaired parts are warranted to be free of defects in material or workmanship for ninety (90) calendar days or, for the remainder of the warranty period of the product, whichever is longer.

12.3 Warranty Exclusions

Inspur does not guarantee that there will be no interruptions or mistakes during the use of the products. Inspur will not undertake any responsibility for the losses arising from any operation not conducted according to Inspur Hardware Products.

The Warranty Service Terms & Conditions do not apply to consumable parts, as well as any products the serial number of which falls off, is damaged or obscure for the following reasons:

● Accident, misuse, abuse, defiling, improper maintenance or calibration or other external causes

● Operating beyond the parameters as stipulated in the user documentation

● Use of the software, interface, parts or supplies not provided by Inspur

● Improper preparation place or maintenance

● Virus infection

● Loss or damage in transit

● Alterations or repairs have been made by unauthorized persons, or service organizations

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