Inspur Server NF3180A6
User Manual

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- When servers are to be repurposed or retired, it is allowed to restore their firmware factory settings, delete information and clear logs from BIOS and BMC to protect data privacy. Meanwhile, it is suggested to wipe out the drive data securely with trusted third-party erasing tools.
- The products, services or features you purchased may obtain or use some personal data (such as email address for alerts and IP address) during operation or fault locating. There should be user privacy policies in place with adequate measures implemented in accordance with the applicable laws to ensure that users' personal data are fully protected.
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Technical Support

Global Service Hotline:	1-844-860-0011/1-760-769-1847
Address:	No. 1036, Langchao Road, Jinan, Shandong Province, China Inspur Electronic Information Industry Co., Ltd.
Email:	serversupport@inspur.com
Postal Code:	250101

Foreword

Abstract

This manual describes the server's specifications, features, hardware setup, warranty information and troubleshooting, which will help users to understand how best to utilize the server and all its functionalities.

Target Audience

This manual is intended for:

- Technical support engineers
- Product maintenance engineers

It is recommended that server installation, configuration, or maintenance is performed by only experienced technicians with knowledge in servers.

Safety Precautions

- If your purchases do not include Inspur on-site installation service, make sure that you inspect the shipping cartons before unpacking the equipment. If a shipping carton appears severely damaged, water immersed, or the seal or pressure-sensitive adhesive tape (PSA) is broken, report this based on your purchase channel. If you purchased from a third-party supplier, contact your supplier directly; if you purchased through Inspur direct sales stores, call Inspur service hotline 1-844-860-0011/1-760-769-1847 for technical support.
- For your safety, please do not disassemble the server's components, extend configuration or connect other peripherals arbitrarily. You can contact Inspur for our support and guidance.
- Before disassembling the server's components, please be sure to disconnect all the cables connected to the server.
- Please install the product-compatible operating system and use the driver that comes with the server or provided by Inspur. You can go to our official site, on the Top Navigator, click on **Support** > **Product Support** > **Drivers**, then find the correct driver of your product based on the prompt. An incompatible operating system or a non-Inspur driver may cause compatibility issues and affect the normal use of the product. Inspur will

not assume any responsibility or liability for this.

- BIOS and BMC settings are crucial to 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. Change the BMC user password the first time you log in.

Symbol Conventions

The symbols that may be found in this document are defined as follows.

Symbol	Description
 DANGER	A potential for serious injury, or even death if not properly handled
 WARNING	A potential for minor or moderate injury if not properly handled
 CAUTION	A potential loss of data or damage to equipment if not properly handled
 IMPORTANT	Operations or information that requires special attention to ensure successful installation or configuration
 NOTE	Supplementary description of manual information

Revision History

Version	Date	Description of Changes
V1.0	2021/06/25	Initial release
V1.1	2022/2/23	Updated the power supply specifications and figures for fan blade and multiple-power safety protection

Table of Contents

1 Safety Instructions

1.1 Warnings

The following warnings indicate potential hazards that may cause property damage, personal injury, or death:

- The power supply equipment of this system may generate high voltages and energy hazards that may cause personal injury. For your safety, do not attempt to remove the top cover to disassemble or replace any component on your own. Unless informed by Inspur, only service technicians trained by Inspur are authorized to do so.
- Ensure the system is powered by an external power supply that matches the ratings indicated on the nameplate. Use a voltage regulator or UPS (uninterruptible power supply) to prevent damage to the system that is caused by voltage sags or surges.
- Do not lengthen a power cord by connecting two or more power cords. If you need a longer power cord, please contact Inspur Customer Service.
- For the safety of the system and user, be sure to use the power cables and sockets (if available) shipped with the product, and do not replace them with other power cables or plugs.
- To avoid electric shocks caused by electrical leakage, always connect the power cables of the system and peripherals to properly grounded sockets. Insert the three-prong plug into a properly grounded and easily accessible three-prong AC power socket. Be sure to use the ground pin of the cable, and do not use a prong adapter or unplug the ground pin. Do not operate the system without a grounding conductor installed. If you're not sure whether the grounding protection is in place, contact an electrician.
- Do not insert any object into the openings of the system. Otherwise, it may result in a short circuit of inner components and thus cause a fire or electric shock.
- Keep the system away from heatsinks and heat sources, and be sure not to block the air vents.
- Avoid contaminating the inside of the system or other components with food debris or liquid. Do not use the product in a humid or dusty environment.
- Always use the battery type recommended by the manufacturer or an equivalent type for replacement as using an incorrect battery type may cause

an explosion. Never attempt to disassemble, crush or puncture a battery or short circuit the battery. Do not throw it into fire or water, or expose it to an environment over 60°C (140°F). Never attempt to open or repair a battery. Dispose of used batteries properly. Do not mix used batteries, circuit boards or other components that may contain batteries with other wastes. For battery recycling, contact the local recycling center.

- For stand-alone cabinets, install front and side leveling feet before installing devices into the cabinets. For cabinets connected with other cabinets, install front leveling feet first. Be sure to install the leveling feet before installing devices into cabinets to prevent the cabinets from tipping over, possibly resulting in personal injury. After installing devices and other components in the cabinet, slide only one component out of the cabinet at a time. Pulling out multiple components at a time may cause the cabinet to tip over and result in personal injury.
- Do not move the cabinet alone. At least two people are required to move the cabinet.
- It is prohibited to directly short-circuit the copper busbar. Do not touch the copper busbar when the cabinet is powered on.
- This is a Class A product, and may cause radio interference. In such case, you may need to take necessary measures to mitigate the interference.

1.2 Precautions

Before using the product, read through the following precautions to avoid the issues that may cause component damage or data loss.

- Unplug the product's power plug from the power socket and contact Inspur Customer Service under any of the following circumstances:
  - The power cables or power plugs are damaged.
  - The product gets wet with water.
  - The product falls off or is damaged.
  - Other objects fall into the product.
  - The product does not work properly when the operating instructions are followed.
- If the system is exposed to moisture, follow the steps below.
  a. Power off the system and devices. Disconnect their power cables, wait 10 to 20 seconds, and then remove the top cover.
  b. Move the devices to a ventilated area to dry the system off for at least 24 hours. Make sure that the system is fully dried.

c. Close the top cover, reconnect the system's power cable, and power on the system.

d. If it cannot operate normally, contact Inspur for technical support.

- The cable routing should ensure that the system cables and power cables will not be stepped on or knocked off. Do not place any objects on the cables.
- Before removing the top cover or accessing any inner component, wait until the device is cooled down. After the system is powered off, wait 5 seconds before removing components from the motherboard or disconnecting peripherals to avoid damage to the motherboard.
- If a modem, telecom or LAN option is installed:
  - Do not connect or use the modem in the event of lightning to avoid lightning strikes.
  - Never connect or use the modem in a damp environment.
  - Never insert the modem or telephone cables into the socket of network interface controller (NIC).
  - Before unpacking the product, accessing or installing inner components, or touching an uninsulated modem cable or jack, be sure to disconnect the modem cable.
- To prevent electrostatic discharge from damaging electronic components inside the device:
  - Ground yourself before installing, removing, or accessing any electronic components inside the device. You may remove the static electricity from your body by touching a grounded metal object (such as the unpainted metal surface of the chassis).
  - Do not take out ESD-sensitive components from their anti-static packages if they are not intended for use.
  - Regularly touch grounded conductors or unpainted metal surface of the chassis during operation to discharge static electricity from your body that could damage inner components.
- When installing or removing any components inside the system with the permission of Inspur:

  a. Power off the system and disconnect its power cables and all the cables connected to the system. Disconnect the cable by holding the cable connector (instead of the cable) and pulling it out.

  b. Only after the products completely cool down can you disassemble the top cover or access the internal components.

c. Discharge static electricity from your body by touching a grounded metal object before installing, removing, or touching any electronic components inside the device.

d. Install and remove components gently to avoid damaging the components or scratching your arm.

e. Handle all the components and cards with care and do not touch the components or contacts on the cards. Grab a card or component by holding its edge or metal bracket.

- When installing and using the cabinet:
  - After installing the cabinet, make sure the leveling feet are secured to the rack and extended to the floor so that the full weight of the cabinet rests on them.
  - Be sure to load the cabinet from bottom to top and install the heaviest component first.
  - Always slide a component from the cabinet gently to keep the cabinet balanced and stable.
  - Be careful when pressing the release latches to slide components in or out as the rails may hurt your fingers.
  - Do not overload the AC power branch circuits in the cabinet. The total load of the cabinet should not exceed 80% of the ratings of the branch circuits.
  - Ensure the components in the cabinet are properly ventilated.
  - Never step on other components when repairing components in the cabinet.

2 Product Specifications

2.1 Introduction

The Inspur NF3180A6 is a high-end single socket rack server that features AMD® Milan® scalable processors and is designed for high-end IT applications such as cloud computing, big data, data mining, deep learning, and so on. The server maintains high quality and reliability of Inspur servers and brings innovation and a breakthrough in compute performance, scalability, configurability, intelligent management, and so on. Hence, it is perfect for customers with demanding workloads in telecommunications, finance , Internet industry, and so on.

Key features:

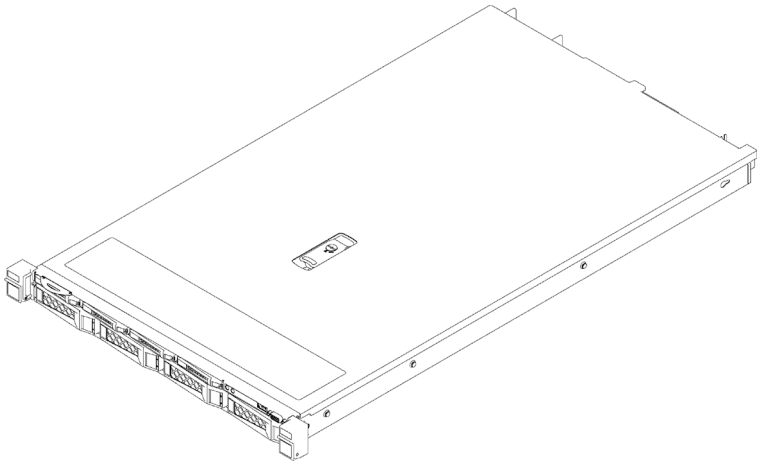
- 1 AMD® Milan® scalable processor with a variety of TDPs up to 280 W
- Up to 16 DIMMs (RDIMMs and LRDIMMs) with memory mirroring and hot spare supported
- Up to 4 × 3.5-inch SAS/SATA/NVMe drives, 4 × 2.5-inch SAS/SATA/NVMe drives, 12 × 2.5-inch SAS/SATA/NVMe drives, or 32 × E1.S NVMe drives at the front
- OCP NIC 3.0 SFF expansion card
- 6 onboard Slimline ×8 connectors with NVMe drives directly connected to the CPU
- Up to 3 standard PCIe expansion cards, including 1 full-height half-length and 2 half-height half-length cards
- Up to 2 single-width full-height half-length GPU cards
- Motherboard integrated with an AST2500 BMC chip with KVM functionality as standard
- Hot-swap LCD module and remote monitoring on mobile devices via BMC
- Modular design of drives, PCIe expansion cards, PSUs and fans, enabling tool-free maintenance
- Hot-swap and redundant CRPS of 80 Plus Platinum or higher rating with PMBus and NM 4.0 functionality
- Hot-swap fan/fan cage design; the fans are N+1 rotor redundant and of low noise

2.1.1 4 × 2.5-inch Drive Configuration (Full Configuration)

NOTE

A 3.5-inch drive tray can accommodate a 3.5- or 2.5-inch drive.

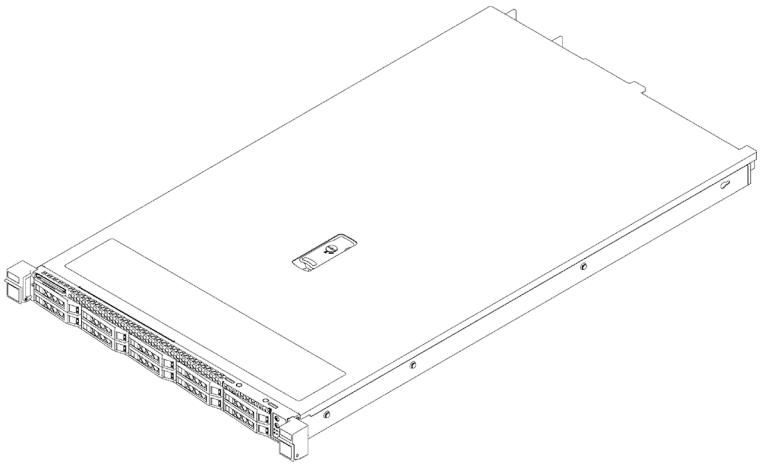
Figure 2-1 4 × 2.5-inch Drive Configuration



2.1.2 10 × 2.5-inch Drive Configuration (Full Configuration)

Up to 10 front 2.5-inch SAS/SATA/NVMe drives, as shown in the figure below.

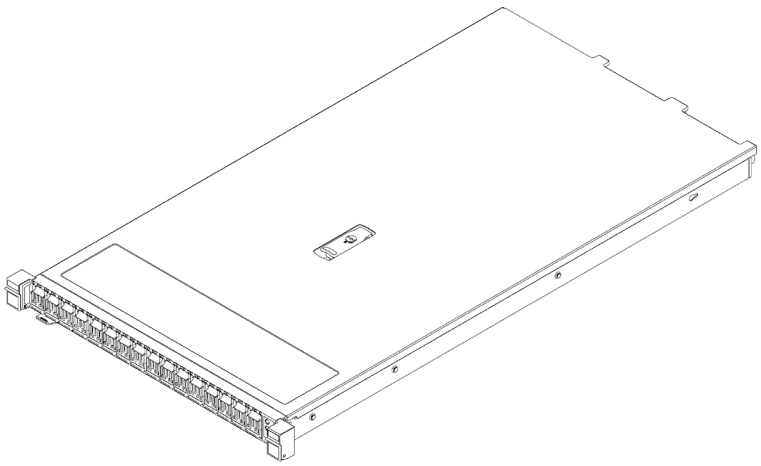
Figure 2-2 10 × 2.5-inch Drive Configuration



2.1.3 16 × E1.S Drive Configuration (Full Configuration)

Up to 16 front E1.S NVMe drives (15 mm), as shown in the figure below.

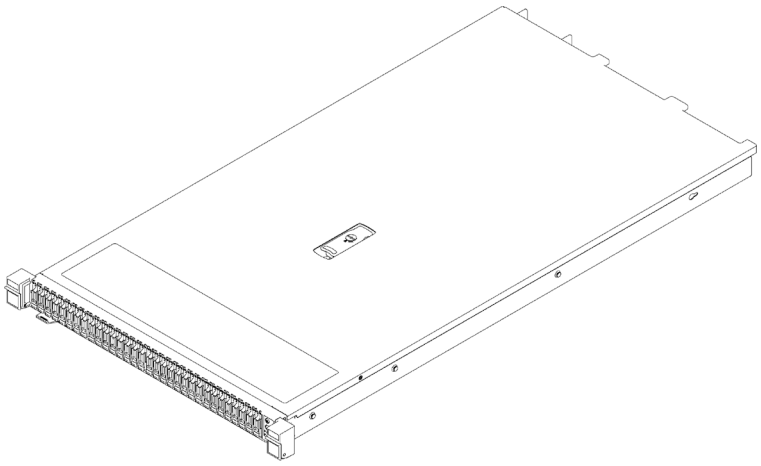
Figure 2-3 16 × E1.S Drive Configuration



2.1.4 32 × E1.S Drive Configuration (Full Configuration)

Up to 32 front E1.S NVMe drives (9.5 mm), as shown in the figure below.

Figure 2-4 32 × E1.S Drive Configuration



2.2 Features and Specifications

Table 2-1 Features and Specifications

Item	Description
Time to Market	2022/03
Processor Type	AMD® Milan® scalable processors (1 CPU, TDP up to 280 W)
Processor Socket	One
Memory	• Memory type: RDIMM, LRDIMM • Memory slots: 16 • Total memory capacity: Up to 2 TB (128 GB per memory module)
Display Controller Type	Integrated in the ASPEED 2500 chip, up to 1280 × 1024 resolution
Backplane	Hot-swap SAS/SATA/NVMe drives
NIC Controller	Standard OCP NIC 3.0 cards or standard PCIe cards supported on the motherboard
Management Chip	Integrated with 1 independent 1000 Mbps network port, dedicated for IPMI remote management
I/O Ports	• 2 rear USB 3.0 ports, 1 front USB 3.0 port • 1 front VGA port, 1 rear VGA port • 1 rear serial port • 2 UID buttons and LEDs (1 front and 1 rear)
PCIe Expansion Slots	1. 3 onboard PCIe Gen 4.0 ×16 slots and 1 PCIe 4.0 ×16 slot (16 lanes) for PCIe riser cards 2. The riser card supports horizontal-inserted full-height or half-height cards. 3. 3 PCIe configuration: Up to 2 riser cards • Butterfly riser is populated with a riser card with 2 PCIe 4.0 ×16 slots. • Right 1 slot riser is populated with a riser card with 1 PCIe 4.0 ×16 slot. 4. 2 PCIe configuration: Up to 3 riser cards • Left 1 slot riser is populated with a riser card with 1 PCIe 4.0 ×16 slot. • Right 1 slot riser is populated with a

Item	Description
	riser card plus extended riser card with 1 PCIe 4.0 ×16 slot. 5. 1 onboard OCP NIC 3.0 SFF slot for OCP NIC 3.0 card
Storage	Front panel: 1. 32 × hot-swap E1.S SSD drives (9.5 mm)(0.37 inch)/16 × E1.S SSD drives (15 mm)(0.59 inch) 2. 4 × 3.5-inch hot-swap SAS/SATA/NVMe drives and 4 × 2.5-inch hot-swap SAS/SATA/NVMe drives 3. 10 × 2.5-inch hot-swap SATA/SAS/NVMe drives Built-in storage: 1. Up to 2 TF cards for BIOS and BMC respectively 2. Up to 2 SATA M.2 drives 3. Up to 2 PCIe ×4 M.2 drives
External Storage Drive	External USB drives
Power Supply Specifications	• Output power of 550 W, 800 W, 1300 W, 1600 W or above in a single- or dual-power supply configuration • 1+1 redundancy • 2 PSUs • PMBus and Node Manager 4.0 supported
Power Input	Please refer to the power input on the nameplate of the chassis.
Fans	8 hot-swap 4056 fans with N+1 redundancy
Outer Packaging Dimensions (L × W × H)	• 780-depth chassis: 1031 × 651 × 247 mm (40.59 × 25.63 × 9.72 in.) • 840-depth chassis: 1080 × 600 × 240 mm (42.52 × 23.62 × 9.45 in.)
Chassis Dimension (W × H × D)	With mounting ears: • 32R SSD configuration: 482 × 43.05 × 871.8 mm (18.98 × 1.69 × 34.32 in.)

Item	Description
	• Other configurations: 482 × 43.05 × 811.8 mm (18.98 × 1.69 × 31.96 in.) Without mounting ears: • 32R SSD configuration: 438 × 43.05 × 840 mm (17.24 × 1.69 × 33.07 in.) • Other configurations: 438 × 43.05 × 780 mm (17.24 × 1.69 × 30.71 in.)
Product Weight (Gross weight: Chassis + Packaging Box + Rails + Accessory Box)	4 × 2.5-inch configuration: • Net weight: approx. 21 kg (46.30 lbs) • Gross weight: 31.5 kg (69.45 lbs) (chassis + packaging box + rails + accessory box) 10 x 2.5-inch configuration: • Net weight: approx. 21 kg (46.30 lbs) • Gross weight: 31 kg (68.34 lbs) (chassis + packaging box + rails + accessory box)

2.3 Power Efficiency

Table 2-2 Platinum Level Power Supply Efficiency

Rated Power	@20% Load	@50% Load	@100% Load	PF@50% Load
800 W	90%	94%	91%	0.98
1300 W	90%	94%	91%	0.98
1600 W	90%	94%	91%	0.98
2000 W	90%	94%	91%	0.98

Table 2-3 Titanium Level Power Supply Efficiency

Rated Power	@10% Load	@20% Load	@50% Load	@100% Load	PF@50% Load
800 W	90%	94%	96%	91%	0.98

Table 2-4 EU Regulation 2019/424 Server Configurations

EU Regulation 2019/424 Server Configurations	**High-end Performance Configuration**	**Low-end Performance Configuration**
(h) idle state power	139.4 W	137.7 W
(i) list of all components for additional idle power allowances, if any (additional PSU, HDDs or SSDs, additional memory, additional buffered DDR channels, additional I/O devices);	See Table 2-5	See Table 2-5
(j) maximum power, expressed in Watts and rounded to the first decimal place;	606.6 W	353.6 W
(k) declared operating condition class;	A2	A2
(l) idle state power (Watts) at the higher boundary temperature of the declared operating condition class;	139.9 W	138.5 W
(m) the active state efficiency and the performance in active state of the server;	45.2	38.5

Table 2-5 List of Components for Additional Power Allowance

(i) List of Components for Additional Power Allowance		**High-end Performance Configuration**	**Low-end Performance Configuration**
CPU Performance	1 socket: 10 × Perf CPU W 2 socket: 7 × Perf CPU W	211.4 W	126.9 W
Additional PSU	10 W per PSU	10 W	10 W
HDD or SSD	5.0 W per HDD or SSD	10 W	10 W
Additional Memory	0.18 W per GB	45.36 W	22.32 W
Additional Buffered DDR Channel	4.0 W per buffered DDR channel	0	0
Additional I/O Devices	< 1 Gbps: No Allowance = 1 Gbps: 2.0 W/Active Port > 1 Gbps and < 10 Gb/s: 4.0 W/Active Port ≥ 10 Gbps and < 25 Gbps: 15.0 W/Active Port	0	0

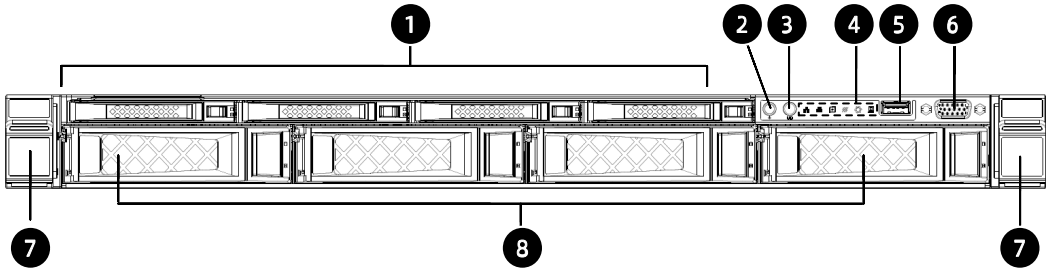
(i) List of Components for Additional Power Allowance		High-end Performance Configuration	Low-end Performance Configuration
	≥ 25 Gbps and < 50 Gbps: 20.0 W/Active Port ≥ 50 Gbps 26.0 W/Active Port		
Total Power		276.76 W	169.22 W

3 Product Overview

3.1 Front Panel

3.1.1 4 × 2.5-inch Drive Configuration

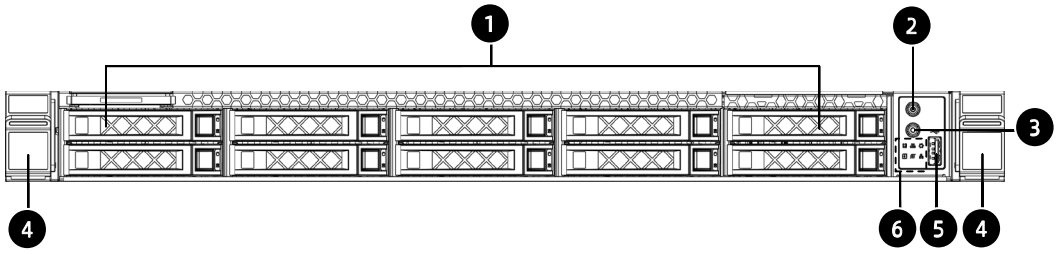
Figure 3-1 Front Panel of 4 × 2.5-inch Drive Configuration



Item	Feature
1	2.5-inch Drive × 4
2	Power Button
3	UID/BMC RST Button
4	LEDs
5	USB 3.0 Port
6	VGA Port
7	Quick Release Lever
8	3.5-inch Drive × 4

3.1.2 10 × 2.5-inch Drive Configuration

Figure 3-2 Front Panel of 10 × 2.5-inch Drive Configuration

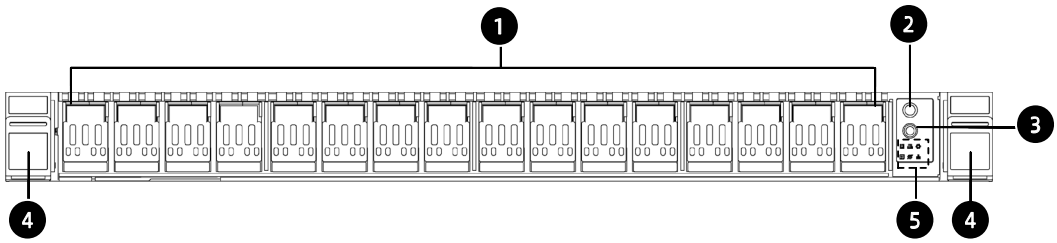


Item	Feature
1	2.5-inch Drive × 10

Item	Feature
2	Power Button
3	UID/BMC RST Button
4	Quick Release Lever
5	USB 2.0 Port
6	LEDs

3.1.3 16 × E1.S Drive Configuration

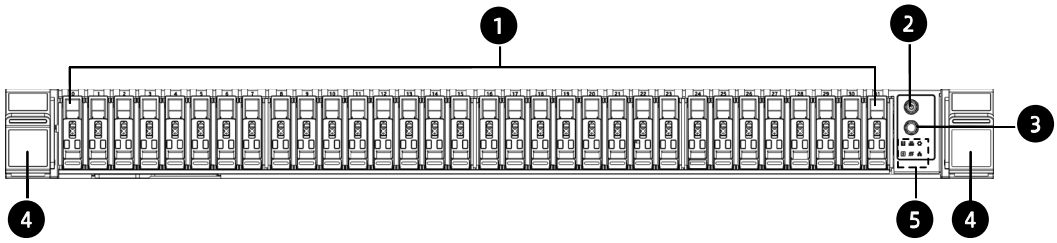
Figure 3-3 Front Panel of 16 × E1.S Drive Configuration



Item	Feature
1	E1.S Drive × 16
2	Power Button
3	UID/BMC RST Button
4	Quick Release Lever
5	LEDs

3.1.4 32 × E1.S Drive Configuration

Figure 3-4 Front Panel of 32 × E1.S Drive Configuration

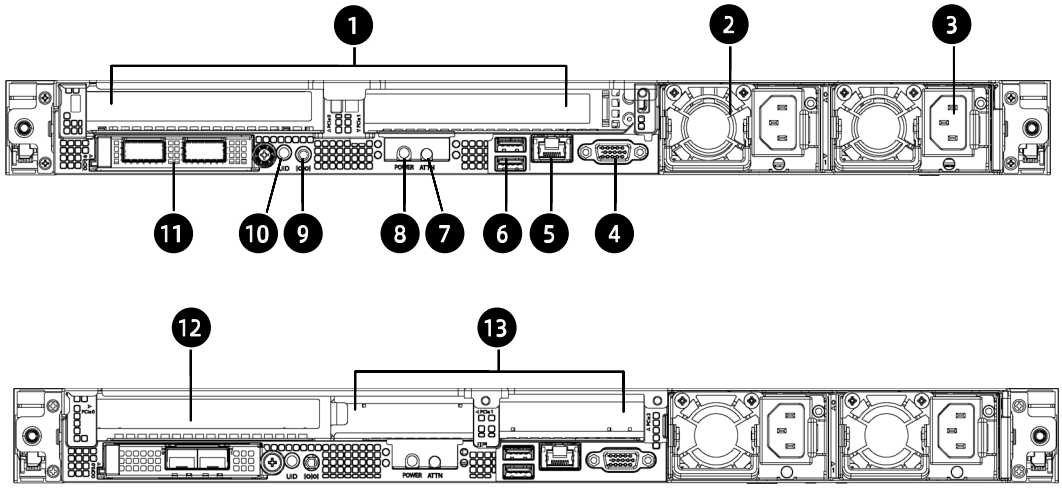


Item	Feature
1	E1.S Drive × 32
2	Power Button
3	UID/BMC RST Button

Item	Feature
4	Quick Release Lever
5	LEDs

3.2 Rear Panel

Figure 3-5 Rear Panel



Item	Feature	Item	Feature
1	PCIe x16 FHHL x 2	8	OCP Hot-plug Button with Power Status LEDs
2	PSU0	9	System/UID Serial Port
3	PSU1	10	UID Button
4	VGA Port	11	OCP 3.0 Module
5	BMC Network Management Port	12	PCIe x16 FHHL x 1
6	USB Port x 2 (compatible with USB 3.0/2.0)	13	PCIe x16 FHHL x 2
7	OCP Hot-plug Button with Attention LEDs		

3.3 Buttons and LEDs

3.3.1 Front Panel Buttons and LEDs

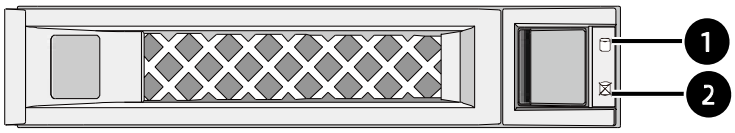
Table 3-1 Front Panel Buttons and LEDs

Item	Icon	Feature	Description
1		Power Button	• Solid green = Power on state • Solid orange = Standby state • Long press 4 s to force a shutdown
2		System Status LED	• Off = Normal • Solid red = A failure occurs • Flashing red = A warning occurs
3		Memory Status LED	• Off = Normal • Solid red = A failure occurs • Flashing red = A warning occurs
4		Fan Status LED	• Off = Normal • Solid red = Failed to read the fan speed • Flashing red = Speed reading is abnormal
5		Power Status LED	• Off = Normal • Solid red = A power failure occurs • Flashing red = Power state is abnormal
6		System Overheat LED	• Off = Normal • Solid red = CPU/Memory is overheating
7		Network Status LED	• Solid/Flashing green = Network connected • Off = No network connection Note: It indicates only the working status of LOM (LAN on Motherboard).
8		UID Button and LEDs	• Solid blue = UID is turned on manually or by the system • Flashing = KVM has been launched or firmware update is in process • Long press 6 s to force a BMC shutdown
9		OCP Hot-plug Button with Attention LEDs	• OFF = OCP NIC card is normal • ON = OCP NIC card is abnormal • Flashing = OCP is being configured as per instructions

Item	Icon	Feature	Description
10	POWER	OCP Hot-plug Button with Power Status LEDs	• OFF = OCP NIC card is powered off and pluggable • ON = OCP NIC card is powered on and not pluggable • Flashing = The hog-plug program is being configured and the OCP NIC card is not pluggable

3.3.2 Drive Tray LEDs

Figure 3-6 Drive Tray LEDs



Item	Feature	Description
1	Activity Status LED	• Solid green = Normal • Flashing green = Read/write activities
2	Drive Fault LED	• Solid red = Drive error or failed • Solid blue = Drive is being located • Solid pink = RAID Rebuilding

3.3.3 PSU LEDs

Figure 3-7 PSU LEDs

Item	PSU LED Status	Description
1	Solid green	Normal
2	Off	No AC power to PSU
3	Solid amber	A shutdown has occurred when the protection mechanism had been triggered
4	Flashing amber at 1 Hz	PSU continues operating after a warning event has occurred
5	Flashing green at 1 Hz	PSU operating in standby mode with AC input

6	Flashing green at 0.33 Hz (on for 2 seconds and off for 1 second)	PSU operating in cold redundant and sleep mode
7	Flashing green at 2 Hz	PSU operating in firmware updating mode

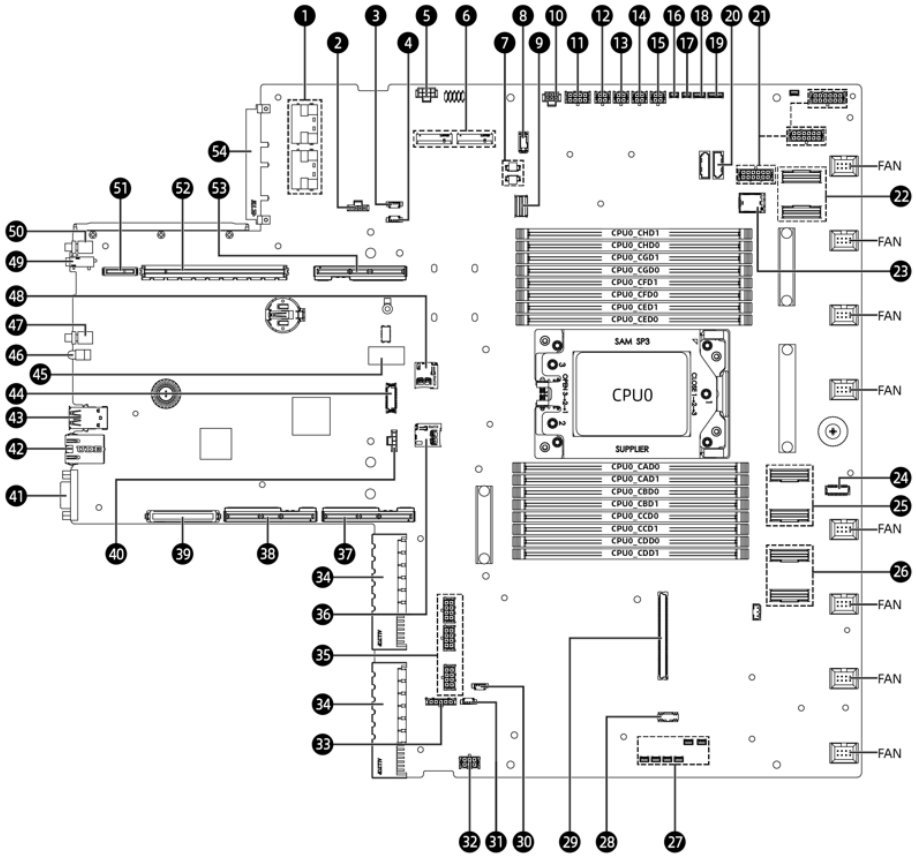
3.4 Port Description

Table 3-2 Port Description

Item	Port	Description
1	VGA Port	Enables you to connect a display terminal to the system
2	USB 3.0 Port	Enables you to connect a USB device to the system
3	USB 2.0 Port	Enables you to connect a USB device to the system
4	BMC Network Management Port	Enables you to manage the server Note: It is a Gigabit Ethernet port of 100/1000M (self-adaption)

3.5 Motherboard View

Figure 3-8 Motherboard Connectors



Item	Feature	Item	Feature
1	OCP 3.0 Slimline Connectors	28	HDT Debug Connector
2	GPU Riser0 Power Connector	29	OCP Mezzanine Connector
3	GPU2 I²C/Middle Riser I²C Connector	30	GPU4 Throttle Connector
4	GPU2 Throttle Connector	31	GPU4 I²C Connector
5	Middle Backplane Power Connector	32	GPU Riser/BP Power Connector
6	M.2 Connector 0&1	33	Capacitor Plate Connector
7	100M CLK Connector × 2	34	AC Power Connector
8	NVMe Hot-swap I²C Connector	35	GPU Power Connector
9	Right Control Panel Connector	36	System TF Card Slot
10	GPU1/Middle Riser Power Connector	37	Gen-Z 4C PCIe P0 Port

Item	Feature	Item	Feature
11	GPU0/Middle Riser Power Connector	38	Gen-Z 4C PCIe P1 Port
12	Backplane1 Power Connector	39	Riser Power Connector
13	Backplane2 Power Connector	40	GPU Riser2 Power Connector
14	Backplane0 Power Connector	41	VGA Connector
15	Backplane3/GPU Riser1 Power Connector	42	MLAN Connector
16	Backplane2 I^2C Connector	43	USB Connector
17	Backplane7 I^2C Connector	44	NCSI Connector
18	PCIe G2 Port SGPIO Connector	45	CLR_CMOS Jumper Cap
19	PCIe P0 Port SGPIO Connector	46	OCP Hot-plug Attention LED
20	7pin SATA Connector	47	OCP Hot-plug Button
21	FP BP Power Connector× 3	48	BMC TF Card Slot
22	PCIe G3 Port Slimline Connectors	49	Serial Port
23	Mini SAS HD Connector	50	UID Button and LED
24	Front Left Ear Plate Connector	51	Riser Power Connector
25	PCIe G1 Port Slimline Connectors	52	x16 Slot PCIe P3 Port
26	PCIe G0 Port Slimline Connectors	53	Gen-Z 4C PCIe P2 Connector
27	Backplane I^2C Connector	54	OCP NIC 3.0 Slot

3.6 How to Clear CMOS

CAUTION

For your personal safety and protection of the equipment, it is necessary to shut down the system and disconnect the power cables before clearing the CMOS.

For the location of the CMOS jumper, see 3.5 Motherboard View.

Table 3-3 CMOS Jumper Cap

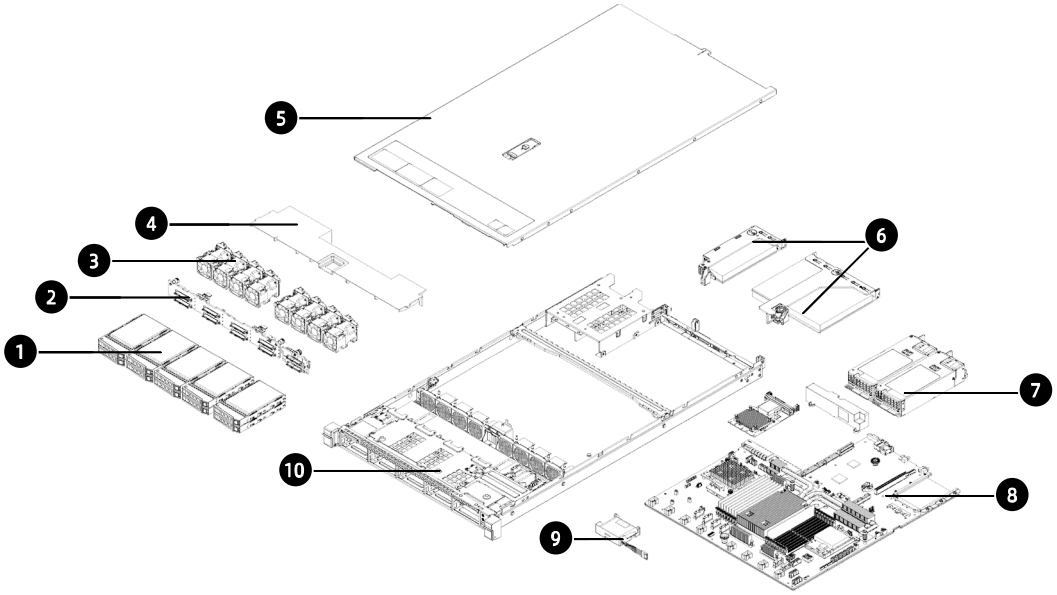
Jumper Location	Description	Function
J54 (CLR_CMOS)	To clear CMOS	• Short-circuit pins 1-2 to restore to normal status. • Short-circuit pins 2-3 to clear CMOS.

To clear the CMOS setting via a jumper:

1. Power down the server and unplug the power cords from the electrical outlet.
2. Wait for 5 s.
3. Locate the CLR_CMOS clear jumper on the motherboard.
4. Move the jumper cap from the default pins 1-2 to pins 2-3.
5. Plug in the power cords and power on the server, and then wait for 10 seconds for the CMOS to clear.
6. Power down the server, unplug the power cords, and then wait for 5 seconds again.
7. Move the jumper cap back to the default pins 1-2.
8. Replug the power cords and power on the server again.

3.7 System Layout

Figure 3-3 Exploded Diagram



Item	Feature	Item	Feature
1	Front Drive Module	6	Riser Card Module
2	Drive Backplane	7	Power Supply Unit
3	Fan Modules	8	Motherboard
4	Air Duct	9	Super Capacitor Module
5	Top Cover	10	Chassis

4 Getting Started

4.1 Installing Server into the Rack

For detailed information on installing the server into the rack with rails supplied by Inspur, see Rack Server Installation Guide.

CAUTION

If you would like to use non-Inspur rails, please contact Inspur Customer Service first to ensure the server can be installed to the rack safely and properly. The load-bearing capacity of non-Inspur rails must be higher than 50 kg (110.23 lb). If not, you MUST use Inspur-supplied rails as using these non-Inspur rails may cause such risks as installation failure. Inspur will not assume any responsibility or liability for any damage or injury caused by this.

WARNING

To reduce the risk of personal injury or damage to the equipment, DO secure the mounting ears to the posts firmly to prevent the server from moving or sliding out from the cabinet.

4.2 Power On/Off

To power on and off the server, press the power button.

To completely shut down the server, press the power button and disconnect the power cables from the server.

DANGER

To reduce the risk of personal injury, electric shock, or damage to the equipment, remove the power plug to disconnect power from the server. Pressing the power button on the front panel does not shut off the system power completely. Some power supplies and internal circuitry remain active until AC power is removed.

4.3 Pre-Disassembly Instructions

Read the installation instructions for all the hardware operations before disassembling or re-assembling the components. All prerequisites must be completed prior to starting installation or maintenance.

 DANGER

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

 CAUTION

To prevent damage to electrical components, properly ground the server before installation. Improper grounding may cause electrostatic discharge.

Do the following prior to installation or maintenance:

1. Shut down the server.
2. Remove all cables from the server.
3. Remove the server out of the rack:

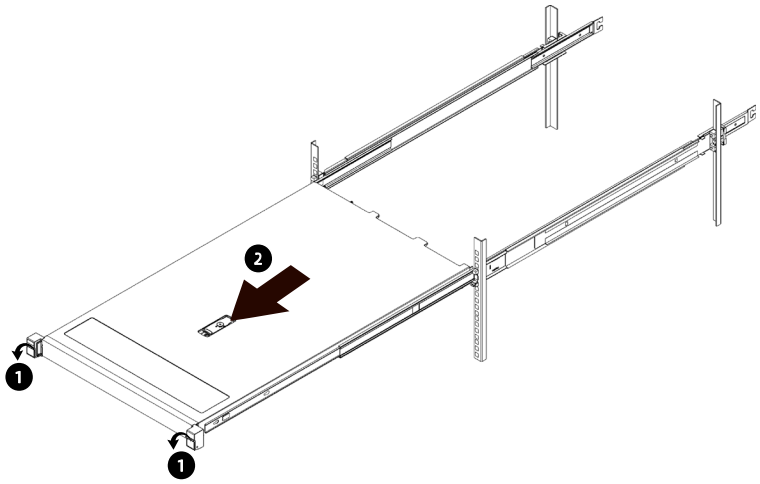
 WARNING

1. To reduce the risk of personal injury or equipment damage, make sure that the rack is adequately stabilized before you pull a component out of the rack.
2. To reduce the risk of personal injury, be careful when sliding the server into the rack. The sliding rails could pinch your fingers.

a. Loosen the screws in the left and right mounting ears on the front panel.

b. Gently slide and remove the server out of the rack.

Figure 4-1 Removing the Server out of the Rack



NOTE

- After installation or maintenance, slide the server all the way back into the rack and secure it in place.
- For more information on how to install the server into the rack, refer to Rack Server Installation Guide.

4.4 Disassembly/Reassembly Process

NOTE

- Before installation or removal of any hardware, always ensure all data is backed up properly.
- Disconnect the power cord(s) of the server and all attached devices from the power outlet.
- There is no need to remove power from the server when replacing hot-swap components.
- If more than one option is to be installed, read the installation instructions for all the hardware options and identify similar steps to streamline the installation process.

Item appearance may differ depending on actual models.

4.4.1 Top Cover Replacement

WARNING

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

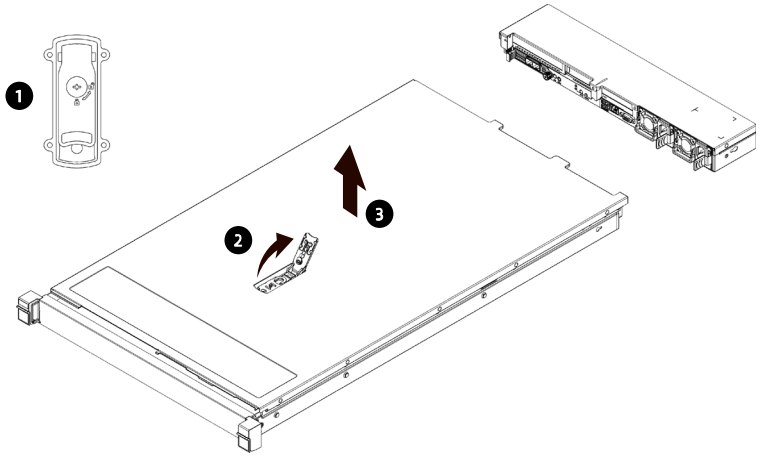
CAUTION

- For proper cooling, do not operate the server without the top cover, air duct, or fans installed.
- If the server supports hot-swap components, minimize the amount of time the top cover is open.

To remove the top cover:

1. Loosen the screw on the hood latch anticlockwise to the unlocked position with a Phillips screwdriver.
2. Lift up the hood latch handle until the top cover slides back and the tabs on the top cover disengage from the guide slots on the chassis. Hold the top cover on both sides and remove the panel away from the server.

Figure 4-2 Removing the Top Cover



To install the top cover:

1. Open the hood latch handle, align the standoffs of the top cover with the J-slots on the chassis. Lower the top cover down onto the chassis.
2. Press down the hood latch and then slide the top cover toward the front of the server until the tabs on the top cover engage with the guide slots on the chassis, and the hood latch locks into place.

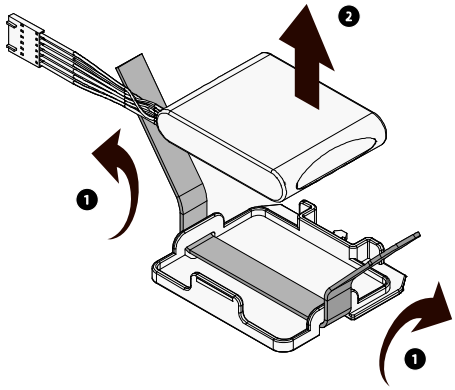
3. Tighten the screw on the hood latch clockwise to the locked position with a Phillips screwdriver.

4.4.2 Super-Capacitor Replacement

To remove the super-capacitor:

1. Remove the top cover.
2. Disconnect the cable of the super-capacitor.
3. Unfasten the velcro tape used to fix the super-capacitor.
4. Remove and put the super-capacitor into an antistatic bag.

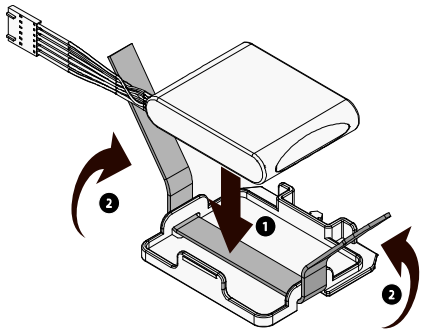
Figure 4-3 Removing the Super-Capacitor



To install the super-capacitor:

1. Take the new super-capacitor out from the anti-static bag and place it in the corresponding position.
2. Fix the super-capacitor securely with the velcro tape.

Figure 4-4 Installing the Super-Capacitor



1. Connect the cable of the super-capacitor.
2. Install the top cover.

4.4.3 Air Duct Replacement

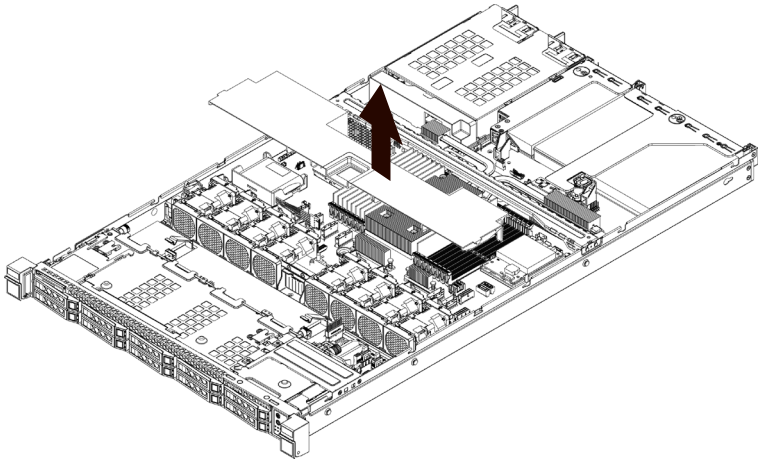
CAUTION

- For proper cooling, do not operate the server without the top cover, air ducts, expansion slot covers, or blanks installed.
- If the server supports hot-swap components, minimize the amount of time the top cover is open.

To remove the air duct:

1. Remove the top cover.
2. Remove the super-capacitor on the air duct.
3. Remove the air duct in the direction of arrow.

Figure 4-5 Removing the Air Duct



To install the air duct:

1. Lower down the air duct vertically into the chassis.
2. Install the super-capacitor.
3. Install the top cover.

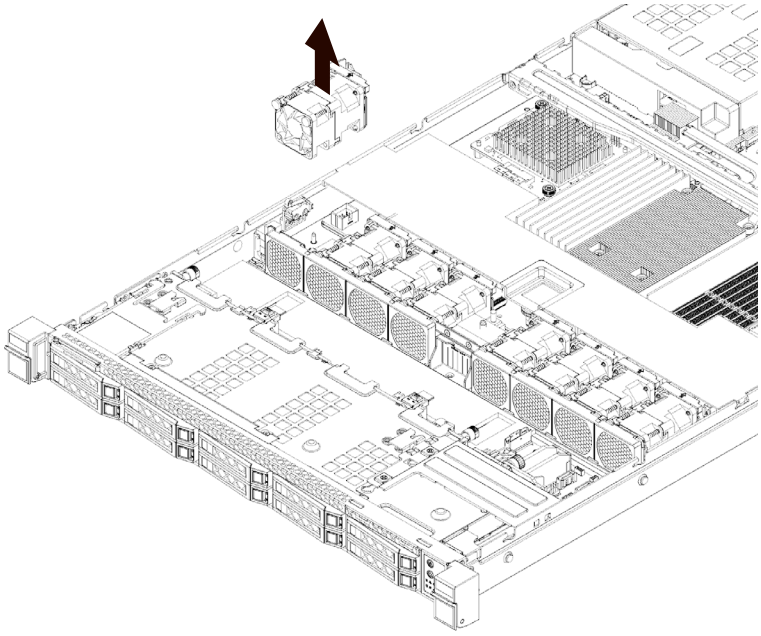
4.4.4 Hot-Swap Fan Module Replacement

To remove the fan module:

1. Remove the top cover.
2. Remove the fan module:
    a. Lift up the fan module out of the fan bay.

b. Put the fan module into an antistatic bag.

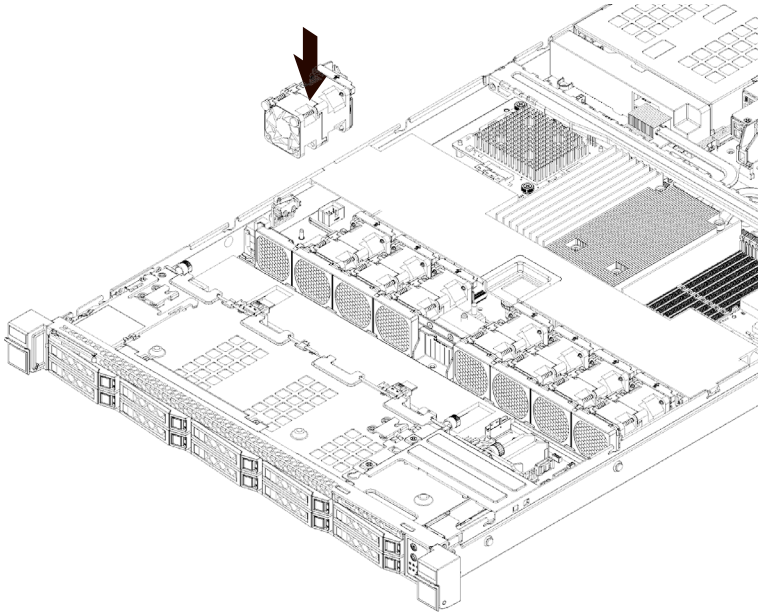
Figure 4-6 Removing the Fan Module



To install the fan module:

1. Take the new fan module out from the antistatic bag.
2. Align the fan power connector with the power connector on the motherboard, and install the fan module vertically into the fan cage.

Figure 4-7 Installing the Fan Module



3. Install the top cover.
4. Verify that the fan status LED is off after powering on the server.

4.4.5 DIMM Replacement

IMPORTANT

Mixed use of RDIMMs and LRDIMMs is not allowed.

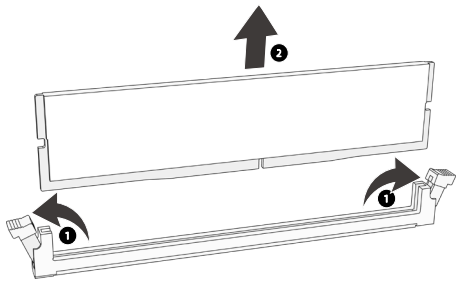
To remove the DIMM:

1. Remove the top cover.
2. Disconnect the cable of the super-capacitor.
3. Remove the air duct.
4. Remove the beam.
5. Locate the DIMM you want to replace.
6. Remove the DIMM:
   a. Push the release tabs on both ends of the DIMM slot outward to unlock it. Gently lift and remove the DIMM from the slot.

NOTE

Make sure the release tabs on both sides of the DIMM slot are fully opened.

Figure 4-8 Removing the DIMM



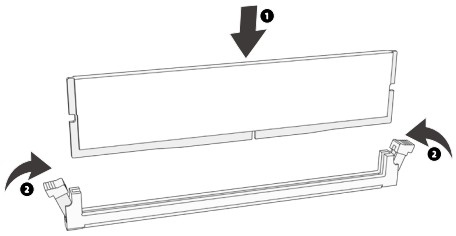
   b. Put it into the memory box.

To install the DIMM:

1. Take the new DIMM out from the memory box.

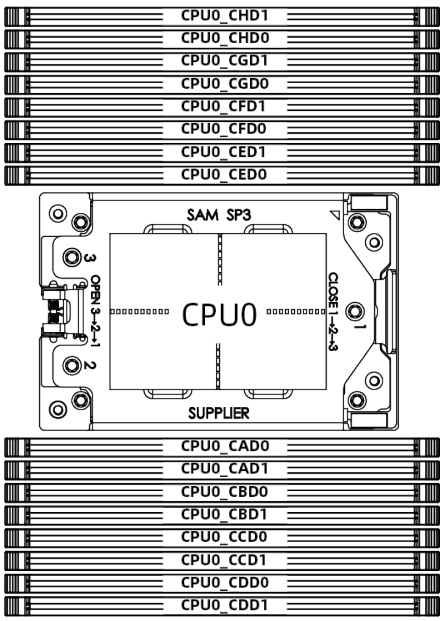
2. Align the bottom notch with the receptive point on the slot. Use two thumbs together to press both ends of the module straight down into the slot until the module snaps into place.

Figure 4-9 Installing the DIMM



3. Install the beam.
4. Install the air duct.
5. Connect the cable of the super-capacitor.
6. Install the top cover.

Figure 4-10 DIMM Slot Layout



Population Sequence for CPU Configuration

Table 4-1 Population Sequence for CPU Configuration

Memory Amount	CPU0															
	CD		CC		CB		CA		CE		CF		CG		CH	
	D1	D0	D1	D0	D1	D0	D1	D0	D0	D1	D0	D1	D0	D1	D0	D1
1			●													
2	●		●													
4	●		●											●		●
6	●		●				●			●				●		●
8	●		●		●		●			●		●		●		●
16	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●

4.4.6 Processor Heatsink Module (PHM) Replacement

CAUTION

- To avoid damage to the processor and motherboard, do not install the processor without using the processor installation tool.
- To prevent possible server malfunction and damage to the equipment, multiprocessor configurations must contain processors with the same part number.

To remove the processor heatsink module:

WARNING

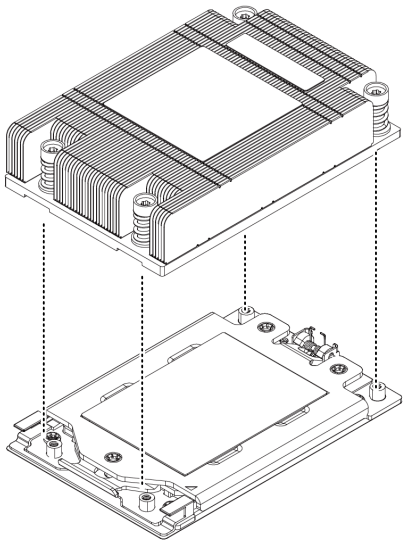
The heatsink may be hot after the system has been powered down. Allow the heatsink to cool down for a few minutes before removing it.

1. Remove the top cover.
2. Remove the beam.
3. Disconnect the cable of the super-capacitor.
4. Remove the air duct.
5. Remove the PHM:

a. Loosen the four screws securing the PHM to the CPU socket anticlockwise in the sequence as shown on the heatsink label with a T30 Torx screwdriver.

b. Gently lift the PHM off the CPU socket.

Figure 4-11 Removing the PHM

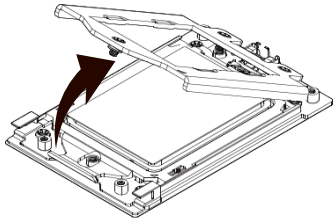


CAUTION

The gold pins on the CPU are fragile and can be easily damaged if touched. During removal and installation, always keep the gold pins up and DO NOT touch the pins when processor dedicated insertion/removal tool (CPU tray) is unavailable.

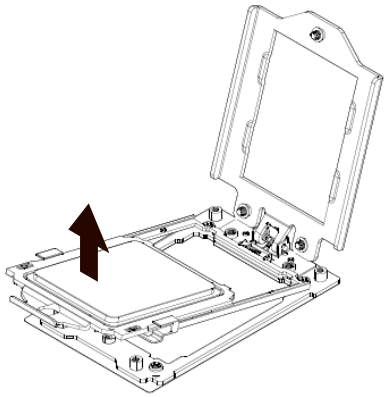
6. Loosen the screw securing the top cover of CPU socket anticlockwise and remove the top cover.

Figure 4-12 Removing the Top Cover of CPU Socket



7. Open the tabs on both sides and lift up the inner bracket. Gently remove the CPU and put it into an antistatic bag.

Figure 4-13 Removing the CPU



CAUTION

- Use a clean and lint-free cloth to wipe off the old thermal grease first if the heatsink is to be reused.
- Coat thermal grease evenly onto the heatsink before reusing the heatsink.

To install the processor heatsink module:

1. Put the CPU back into the inner bracket, and make sure that the gold pins of the CPU do not touch the bracket until it snaps into place.
2. Gently put the CPU socket onto the base and press it down on both sides until it snaps into place.
3. Close the top cover and tighten the screws screwing the top cover to the CPU socket.
4. Evenly apply the thermal grease on the heatsink surface until it covers the CPU fully.
5. To install the heatsink: Tighten the four screws securing the PHM to the CPU socket clockwise in the sequence as shown on the heatsink label with a T30 Torx screwdriver.
6. Install the air duct.

7. Connect the cable of the super-capacitor.
8. Install the beam.
9. Install the top cover.

4.4.7 PCIe Expansion Card Replacement

CAUTION

- To prevent damage to the server or expansion cards, power down the server and remove all power cables before removing or installing the PCIe card.
- To prevent damage to the PCIe slot pins, be sure to apply even force and pull and insert the PCIe card vertically.

NOTE

The assembly/disassembly method of the PCIe riser card module depends on the model.

To remove the PCIe expansion card:

1. Remove the top cover.
2. Disconnect the cables of theriser card.
3. Lift up the blue latch on the PCIe riser card assembly. Rotate the latch 180° anticlockwise to unlock it.
4. Gently lift and remove the PCIe riser card assembly with both hands.
5. Disconnect the cables of the riser card. Take a record of the cables to avoid wrong cabling when installing.
6. Pull outwards to open the cover plate.
7. Remove the PCIe card from the assembly.

To install the PCIe expansion card:

1. Take the new PCIe card from the antistatic bag.
2. Align and insert the PCIe card to the riser card slot.
3. Close the PCIe cover plate.
4. Connect the cables of the riser card.
5. Align and insert the riser card assembly to the slot on the motherboard.

6. Press and rotate the blue latch 180° clockwise to secure the PCIe riser cage in place.
7. Connect the cables of the riser card.
8. Install the top cover.

4.4.8 Hot-Swap Storage Drive Replacement

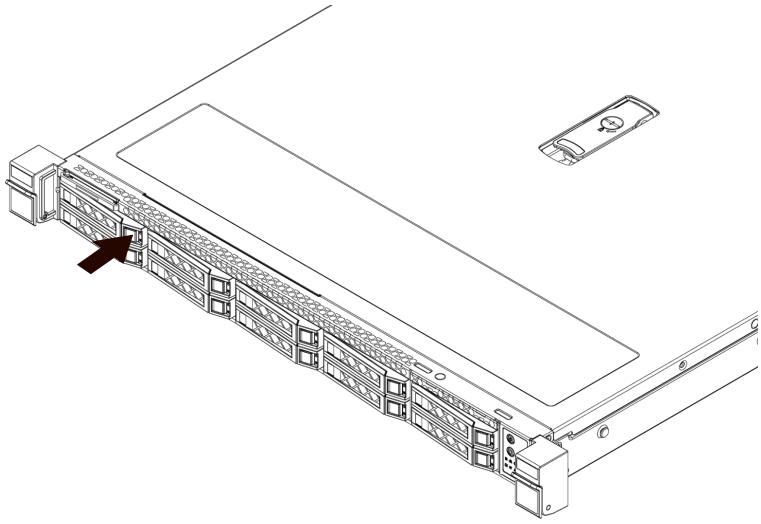
CAUTION

For proper cooling, do not operate the server without the top cover, air ducts, expansion slot covers, or blanks installed. If the server supports hot-swap components, minimize the amount of time the top cover is open.

To remove the drive:

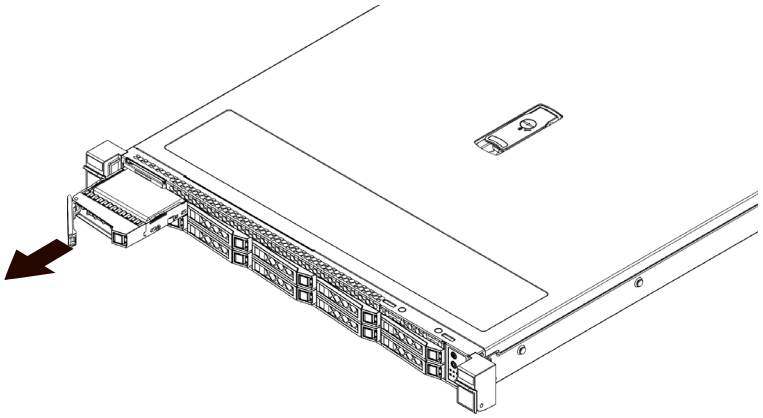
1. Remove the hot-swap drive.
   a. Press the release latch to release the lever. The lever pops up automatically.

   Figure 4-14 Pressing the Release Latch



   b. Hold the lever and pull the drive module out of the drive bay.

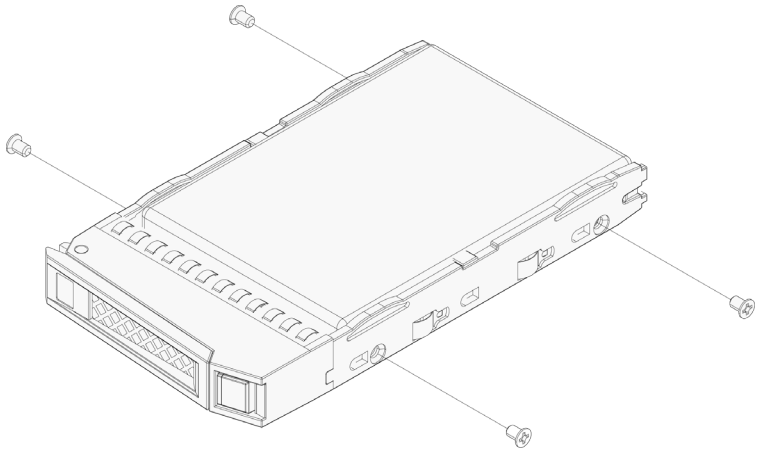
Figure 4-15 Pulling Out the Drive Module



c. Remove the drive from the drive tray:

Remove the four screws securing the drive to the drive tray anticlockwise with a Phillips screwdriver and take out the drive.

Figure 4-16 Removing Screws Securing the Drive



To install the drive:

1. Install the drive into the drive tray.
   a. Orient the drive into the drive tray with the drive connector toward the rear end of the tray.
   b. Tighten the four screws securing the drive to the drive tray clockwise with a Phillips screwdriver.
2. Open the lever. Push the drive module all the way back into the drive bay.
3. Close the lever to lock the drive module in place.

4. Verify that the activity status LED on the drive tray is green after powering on the server.

4.4.9 Hot-Swap PSU Replacement

WARNING

To reduce the risk of personal injury from hot surfaces, allow the power supply or power supply blank to cool down before touching.

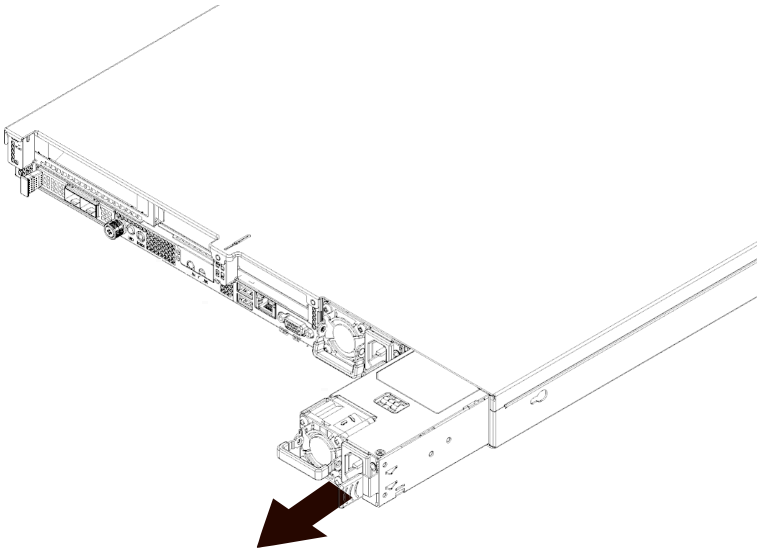
CAUTION

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

To remove the PSU:

1. Grasp the handle and press the blue release tab to release the PSU. Pull the PSU out of the power supply bay.

Figure 4-17 Removing the PSU



2. Put it into an antistatic bag.

To install the PSU:

1. Take the new PSU out from the antistatic bag.
2. Grasp the handle and push the PSU into the power bay until it snaps into place. Make sure the blue release tab is on the right of the PSU.
3. Power on the server and make sure that the PSU LED is solid green.

4.4.10 OCP Card Replacement

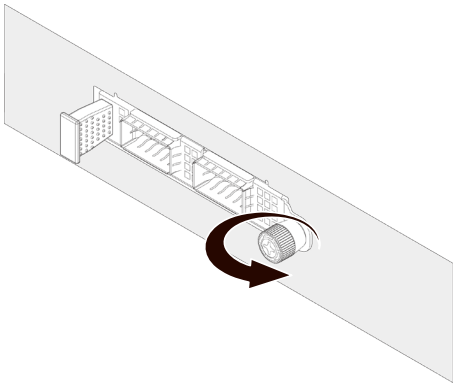
CAUTION

To prevent damage to the server or expansion cards, power down the server and remove all AC power cables before removing or installing the OCP module.

To remove the OCP card:

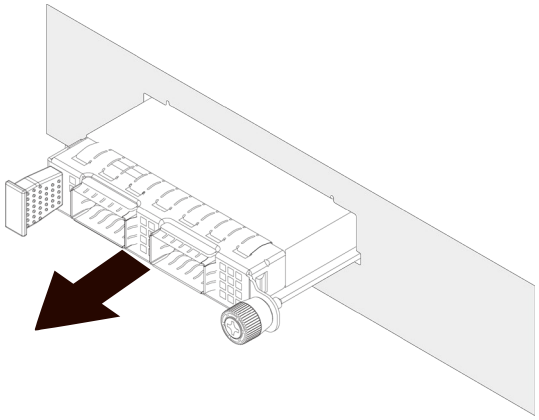
1. Loosen the thumbscrew securing the OCP card to the server anticlockwise.

Figure 4-18 Loosening the Thumbscrew



2. Pull out the OCP card from the server.

Figure 4-19 Pulling Out the OCP Card



3. Put the OCP card into an antistatic bag.

To install the OCP card:

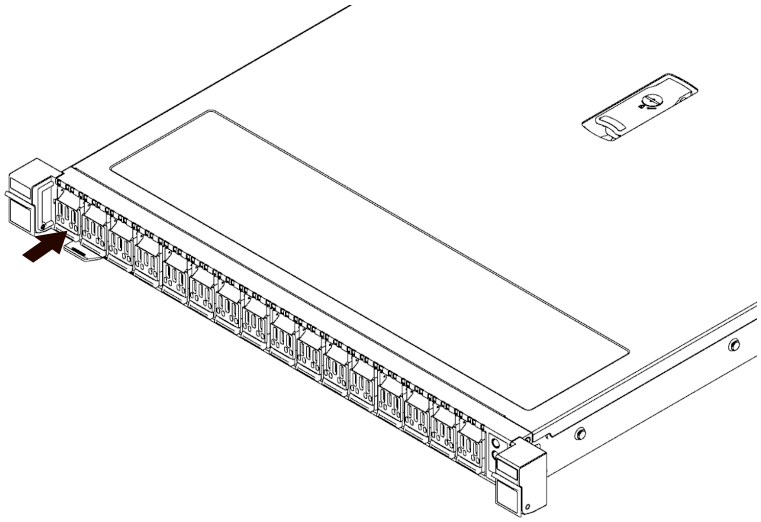
1. Take the new OCP card out from the antistatic bag.
2. Insert the OCP card into the card slot until it snaps into place.
3. Tighten the thumbscrew securing the OCP card to the server clockwise.

4.4.11 E1.S Replacement

To remove the E1.S:

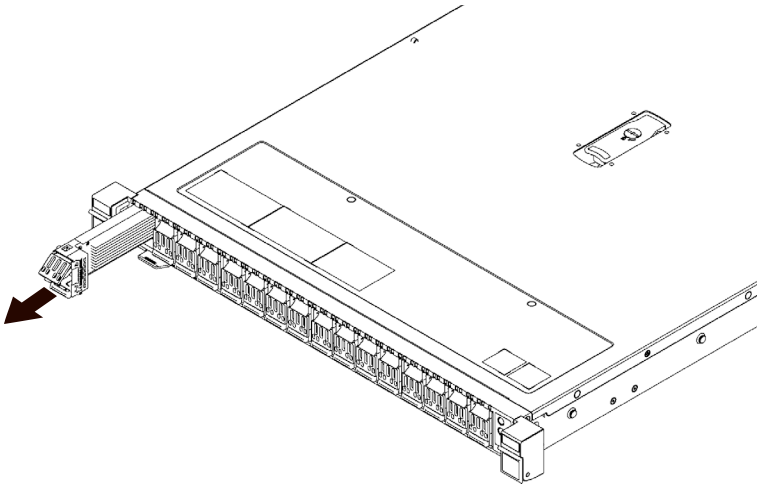
1. Press the release latch to release the lever. The lever pops up automatically.

Figure 4-20 Pressing the Release Latch



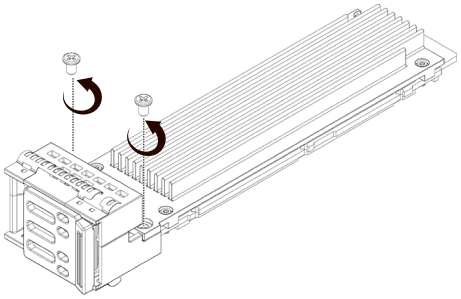
2. Hold the lever and pull the E1.S module out of the drive bay.

Figure 4-21 Pulling Out the E1.S Module



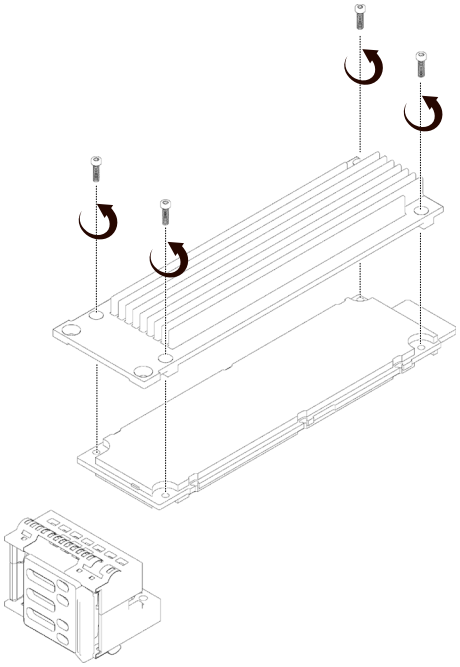
3. Loosen the two screws securing the panel to the drive bay and remove the panel.

Figure 4-22 Separating the Drive Bay Panel



4. Remove the screws of all four corners of the E1.S drive bay.
5. Remove the E1.S upwards.

Figure 4-23 Removing the E1.S



To install the E1.S:

1. Tighten the fours screws securing the E1.S to the drive bay.
2. Install the front panel of the drive bay.
3. Install the E1.S module into the server and close the lever.

4.5 Firmware Update and Configuration

For firmware update and configuration, please refer to:

- *BIOS Update Manual*
- *BIOS User Manual*
- *BMC Update Manual*
- *BMC Configuration Manual*

4.6 Cable Routing

Blue indicates the data cable routing between the backplane and SAS/RAID controller card;

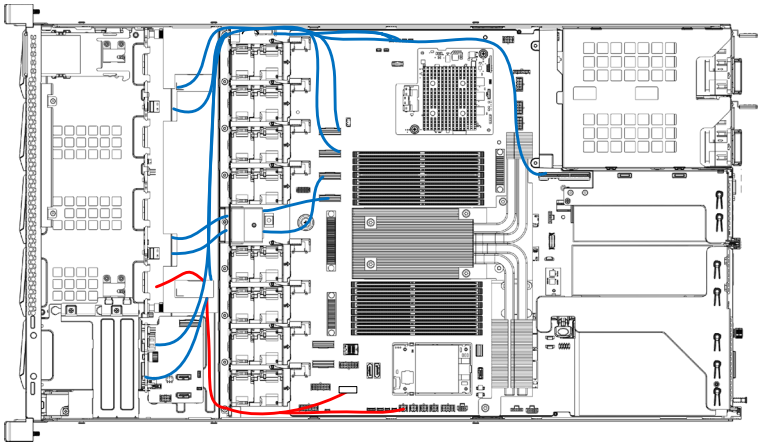
Red indicates the cable routing between the backplane power connector and the

motherboard power connector for powering the backplane.

CAUTION

Please route the cables based on the actual machine configuration.

Figure 4-24 10 × 2.5-inch Drive Configuration



5 Battery Replacement

 DANGER

The server CMOS contains an internal lithium cell. A risk of fire and burns exists if the battery is not properly handled. To reduce the risk of personal injury:

- DO NOT recharge the battery.
- Do not expose the battery to an environment where the temperature is higher than 60°C (140°F).
- DO NOT disassemble, crush, puncture, short-circuit external contacts, or dispose of the battery in fire or water.
- Replace only with the spare designated for this product.
- To avoid damage to the components due to ESD, use conductive foam pads or antistatic wristbands.

To replace the battery:

1. Power off the server and disconnect all the power cables to remove power completely.
2. Gently slide and remove the server out of the rack.
3. Remove the top cover.
4. Remove any full-length expansion card if the card is in the way.
5. Locate the CMOS battery on the motherboard.
6. Gently press the clip on the battery socket until the battery pops up from the socket.
7. Remove the battery from the battery socket.

 NOTE

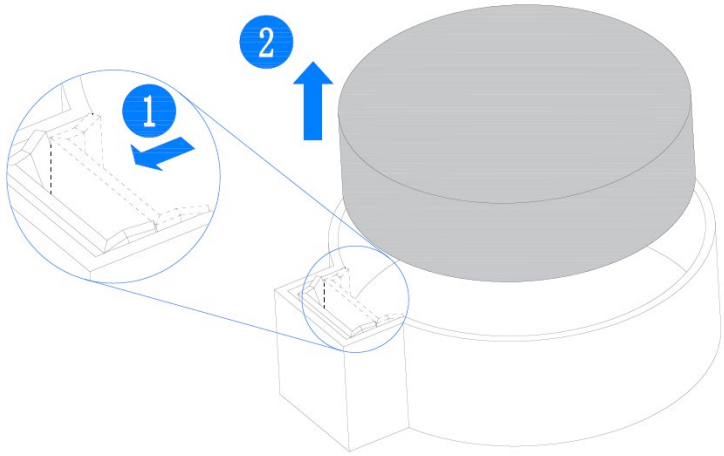
- DO NOT pry or press the battery with excessive force.
- Failing to remove the battery properly might damage the socket on the motherboard. Any damage to the socket might require replacing the entire base with the motherboard.

8. Dispose of the battery as required by local ordinances or regulations.

NOTE

The drawing shown below is for illustration only. The location and orientation of the battery may differ depending on the models you purchased.

Figure 5-1 Battery Replacement



9. Take the new battery out from the antistatic package.
10. Place the new battery into the socket, being careful to observe the correct polarity.
11. Snap the battery into place. Make sure the battery is secured within the socket.

NOTE

After replacing the battery, you must reconfigure the server and reset the system date and time.

6 Electrostatic Discharge

6.1 ESD Prevention

To prevent damage to 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 the motherboard 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 before they arrive at static-free workstations.
- Place parts on a grounded surface before taking them out from their packages.
- Avoid touching pins, leads, or circuitry.
- Always be properly grounded when touching a static-sensitive component or assembly.

6.2 Anti-ESD Grounding Methods

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. The wrist strap must be scalable. The resistance of the ground wire must be at least 1 megohm ±10%. 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 none of the preceding recommended grounding devices are available, contact an authorized dealer to install a grounding device.

For more information on static electricity or assistance with product installation, contact the authorized dealer.

7 Troubleshooting

7.1 Hardware Problems

7.1.1 Power-On Failure

Symptoms:

After the power button has been pressed, the power LED on the power button is orange and the drive activity status LED is off. Meanwhile, there is no output on the monitor, and server fans do not rotate.

Solutions:

Check the status of the PSU LEDs on the rear panel.

1. PSU LED Off or Illuminates Amber

    a. This problem indicates a power failure. Check if the outlet is functioning, if the power cords are plugged in properly and if the power cables of the faulty PSU are working.

    b. If all yes: If the PSU LEDs are still off or amber, maybe the PSUs are faulty. Replace the faulty PSUs with PSUs of the same server model and of the same specifications to test whether the PSUs have failed; If the PSU LEDs turn green, but the power LED on the power button is still orange, call Inspur Customer Service Hotline (1-844-860-0011/1-760-769-1847) or email to serversupport@inspur.com.

2. All the PSU LEDs are green

    a. If all the PSU LEDs are green, disconnect the power cables, remove and re-insert all the PSUs. Connect the power cables and power on again to test if the problem is resolved.

    b. If the problem persists, replace the PSUs with PSUs of the same server model and of the same specifications to test whether the original PSUs are faulty.

    c. If the instructions above do not resolve the problem, call Inspur Customer Service Hotline (1-844-860-0011/1-760-769-1847) or email to serversupport@inspur.com.

7.1.2 No Display

Symptoms:

After the power button has been pressed, the power LED on the power button changes from orange to green, the system fans work normally, but there's no output on the monitor.

Solutions:

1. Check whether the monitor is powered up normally.
2. If yes, but there is still no output on the monitor, check whether the monitor is connected properly to the server's VGA port.
3. If yes, but there is still no output on the monitor, replace with another monitor.
4. If the problem still persists, maybe the VGA port is faulty. Log into the BMC Web interface. Launch the BMC remote KVM (for details, refer to Section 4.5 *Firmware Update and Configuration*) to see if there is normal output: If yes, maybe the VGA port on the motherboard is abnormal, please contact Inspur Customer Service; if no, please record the detailed warning information.
5. If the instructions above do not resolve the problem, call Inspur Customer Service Hotline (1-844-860-0011/1-760-769-1847) or email to serversupport@inspur.com, and inform us of the detailed warning information and failure.

7.1.3 Abnormal LED on the Front Panel

Symptoms:

The status LED on front panel illuminates red.

Solutions:

Identify the abnormal LED based on "Front Panel Buttons and LEDs".

1. If the system status LED illuminates red, check whether the server is under normal operation: If yes, log into the BMC Web interface to view the BMC logs (For detailed reference document, see Section 4.5 *Firmware Update and Configuration*) to check whether there are warnings. If yes, record the detailed warning information.
    a. If the power status LED is abnormal, check if the PSU LEDs on the rear panel are abnormal (amber or off): If the PSU LEDs are normal, log into the BMC Web interface to check the BMC logs (For detailed reference document, see Section 4.5 *Firmware Update and Configuration*) to check whether there is an alarm. If yes, record the detailed warning information. If all the PSU LEDs are abnormal, see “PSU LED Off or Illuminates Amber” in the Section “Power-On Failure”.

b. If other status LEDs are abnormal, log into the BMC Web interface to check the BMS logs to see if there are warnings. If yes, record the detailed warning information.

c. If the instructions above do not locate or resolve the problem, call Inspur Customer Service Hotline (1-844-860-0011/1-760-769-1847) or email to serversupport@inspur.com, and inform us of the detailed warning information and failure.

7.1.4 Stuck in POST Interface or Other Interface

Symptoms:

After the power button has been pressed, the server gets stuck in the POST interface or other interface and cannot enter the OS.

Solutions:

1. If the server gets stuck in the Media Test Failure screen, confirm if OS is installed successfully and OS boot order is set to first.
2. If the stuck interface includes directional error information of hardware, such as self-test errors of memory and RAID, record the detailed errors.
3. If the stuck interface is the POST interface and there are errors reported in the interface, record the detailed errors.
4. If the instructions above do not resolve the problem, call Inspur Customer Service Hotline (1-844-860-0011/1-760-769-1847) or email to serversupport@inspur.com to inform us of the detailed errors.

7.1.5 PSU LED Off or Illuminates Amber

Symptoms:

A certain PSU LED on the rear panel is off or illuminates amber when the server is under normal operation.

Solutions:

1. Check if there is normal external power supply. Inspect the server for any abnormal appearance such as burning or vulcanization.
2. Check whether the power cable is connected properly. Re-connect the power cable again.
3. If the fault persists, remove the power and insert the PSU again.
4. Shut down the server (if shutdown is allowed), switch the positions of the PSUs and cross-check whether the PSU is faulty.

5. If the instructions above do not resolve the problem, call Inspur Customer Service Hotline (1-844-860-0011/1-760-769-1847) or email to serversupport@inspur.com.

7.1.6 Abnormal Drive Status LED

Symptoms:

The drive activity status LED is off or the drive fault LED illuminates red when the server is under normal operation.

Solutions:

1. Check whether the drives are installed in place.
2. Check whether the drives were removed and inserted or subject to other manual operations. If yes, restore the array through RAID configuration to ensure the drives are configured properly.
3. If the drives were not subject to manual operations, run a command under the OS to see if all the drives are identified. If the server is configured with the RAID controller card, you can also log into the RAID management interface to check whether there is a drive failure.
4. If there is a drive failure or the instructions above do not resolve the problem, call Inspur Customer Service Hotline (1-844-860-0011/1-760-769-1847) or email to serversupport@inspur.com.

NOTE

- The hot-swap storage drives allow users to remove or replace drives without shutting down or powering off the system, which improves the system disaster recovery capability, scalability and flexibility. It only means that the hot-swap storage drive can be plugged in and out online without damage.
- Depending on the RAID level, hot-swapping a storage drive in the RAID may cause RAID degradation or failure. When installing a new drive, different RAID controller cards have different policies. You may need to log into the RAID management interface for recovery.
- Remove the drive until the drive motor stops completely in order to prevent damage to the motor.

7.1.7 Loud System Fan Noise

Symptoms:

System fans make excessive noise when the server is under normal operation.

Solutions:

1. Check the fan status LED or other status LEDs on the front panel for any warnings. Meanwhile, ensure that the top cover is closed properly and the air duct has not been moved.
2. Check the server temperature by hand or the sensor temperature in the BMC Web interface for over-temperature.
3. If the temperature of the chassis is too high, check the temperature of the server room. If it is too high, adjust the air conditioner to cool the room.
4. If the temperature of the server room isn't high, check whether the front bezel or chassis interior is jammed with dust. If yes, clean with a soft and dry cloth, or a specialized brush. The environment of the server room needs to be improved to avoid over-temperature running of the server caused by too much dust.
5. Check if the server is operating under heavy load. Log into the BMC Web interface to see if all the fans are identified and if the fan mode is automatic.
6. If the instructions above do not resolve the problem, call Inspur Customer Service Hotline (1-844-860-0011/1-760-769-1847) or email to serversupport@inspur.com.

7.1.8 Alarm from the Server

Symptoms:

An alarm goes off during server startup or operation.

Solutions:

Find where the alarm comes from:

1. If the alarm sound comes from the PSUs, check the status of the PSU LEDs on the rear panel. If the PSU LEDs are abnormal, refer to “PSU LED Off or Illuminates Amber” in the Section “Power-On Failure”.
    - If the alarm sound comes from the chassis interior, remove the top cover to find the specific source.
    - If the alarm comes from the RAID controller card, check the drive fault LED for any warning or log into the RAID management interface for any drive warning and record the detailed warning information if any.

- If the instructions above do not resolve the problem, call Inspur Customer Service Hotline (1-844-860-0011/1-760-769-1847) or email to serversupport@inspur.com, and inform us of the alarm source and detailed warning information.

7.1.9 Keyboard and Mouse Failure

Symptoms:

Neither the keyboard nor mouse is functioning.

Solutions:

1. Make sure the keyboard and/or mouse have/has been connected properly and firmly.
2. Connect the keyboard and mouse to a laptop or a server to test if they can function or not.
3. Power cycle the server and retest.
4. Restart the server and enter BIOS or RAID management interface to test if the keyboard and mouse can function: If the keyboard and mouse can function in non-OS environment, maybe there is something wrong with the USB driver of the OS; if the keyboard and mouse cannot function in non-OS environment, then maybe the connector on the motherboard is faulty. Call Inspur Customer Service Hotline (1-844-860-0011/1-760-769-1847) or email to serversupport@inspur.com.

7.1.10 USB Port Problem

Symptoms:

Unable to use devices with USB ports.

Solutions:

1. Make sure that the OS of the server supports USB devices.
    a. Make sure the server has been installed with the correct USB driver, and try installing the USB driver again.
    b. Connect the USB device to another server to test if the device can function.
    c. If the USB device cannot function, replace with a known working USB device.
    d. Power cycle the server and retest.
    e. If the instructions above do not resolve the problem, call Inspur Customer Service Hotline (1-844-860-0011/1-760-769-1847) or email to serversupport@inspur.com.

7.2 Software Problems

7.2.1 OS Installation Problems

Symptoms:

Unable to load the RAID driver or create partitions larger than 2 TB during OS installation, C disk usage is too high after OS installation, and so on.

Solutions:

1. If it fails to load the driver during OS installation, check the RAID driver version. Go to Inspur website https://en.inspur.com to download the correct RAID driver. Some RAID drivers need to be loaded several times.

   - If it fails to create partitions larger than 2 T during OS installation, select **Advanced** > **CSM Configuration** > **Boot option filter** > **UEFI only** (For detailed reference document, see Section 4.5 *Firmware Update and Configuration*) in BIOS, save and exit BIOS interface. Choose UEFI to boot the OS. The server will restart automatically. Use the CMD command line to change the drive format to GPT, and then partitions larger than 2 TB can be created.
   - If the C disk usage is too high after installing the Windows OS, turn down the virtual memory or allocate the virtual memory to other partitions.
   - If the instructions above do not resolve the problem, call Inspur Customer Service Hotline (1-844-860-0011/1-760-769-1847) or email to serversupport@inspur.com.

7.2.2 PXE Boot Failure

Symptoms:

Unable to install OS via PXE.

Solutions:

1. Check if the PXE server can be used to install OS for another server.
2. Check whether there is a network link via the network port LED to confirm if there is a fault in the external network.
3. Check whether the NIC can be identified under the BMC Web interface, BIOS or Shell.
4. Check if PXE Function is enabled and if the boot sequence is set to first in BIOS.
5. Check if the target drive for the OS or RAID array can be identified and if there is enough space.

6. If the instructions above do not resolve the problem, call Inspur Customer Service Hotline (1-844-860-0011/1-760-769-1847) or email to serversupport@inspur.com.

7.2.3 Abnormal Memory Capacity

Symptoms:

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

Solutions:

1. Check the OS version. The supported memory capacity varies with the Windows OS version. Enter BIOS Setup to view the memory capacity. If the memory is identified completely, the OS may be unable to access all the installed memories. For example, Windows server 2008 ×86 supports up to 4 GB memory.
2. If the memory is not identified completely in BIOS Setup, confirm that the corresponding slots have been populated with memories of the correct type.
3. If the instructions above do not resolve the problem, call Inspur Customer Service Hotline (1-844-860-0011/1-760-769-1847) or email to serversupport@inspur.com.

7.2.4 Abnormal Network

Symptoms:

The network is disconnected, or the rate is lower than the actual rate of the network port under the server OS.

Solutions:

1. Check whether the network cable is connected properly and whether the network port LED flashes normally to ensure that the network is configured correctly.
2. Unplug and plug the network cable back to test if the problem has been resolved. If not, connect the server with a laptop via a known working network cable: If the network is normal, check the network cable or the switch port; if the network is faulty, go to Inspur website https://en.inspur.com to download the latest NIC driver.
3. Check whether the NIC can be identified under the BMC Web interface, BIOS or Shell and whether the MAC address is correct.

If the instructions above do not resolve the problem, call Inspur Customer Service Hotline (1-844-860-0011/1-760-769-1847) or email to serversupport@inspur.com, and inform us of the detailed warning information and failure.

8 Environment Requirements

8.1 Ambient Temperature

Table 8-1 Ambient Temperature

Parameter	Condition	Requirement
Temperature	Continuous operation	10°C - 35°C (50°F - 95°F)
	Transportation (Storage)	-40°C to 70°C (-40°F to 158°F)
	Maximum temperature gradient (Operation and storage)	20°C/h (36°F/h)
Humidity	Operations	Relative humidity: 10% to 80% Maximum dew point: 32°C (89.6°F)
	Transportation (Storage)	When the maximum dew point is 39°C (102.2°F), relative humidity is 10% to 93%. Atmosphere must be non-condensing all the time.

8.2 Vibration and Shock Resistance

Table 8-2 Vibration and Shock Resistance

Parameter	Condition	Requirement
Vibration	Operation	5-500 Hz: 0.21 Grms (X, Y and Z axis and every direction for 15 minutes)
	Transportation (Storage)	5-500 Hz: 2.2 Grms (X, Y and Z axis and every direction for 10 minutes)
Shock	Operation	On negative and positive X, Y and Z axis direction, each axis can withstand 100 continuous 2 G shock pulses for up to 11 ms
	Transportation (Storage)	On X, Y and Z axis direction, each axis can withstand 1,000 continuous 40 G shock pulses for up to 6 ms

8.3 Altitude and Air Pressure

Table 8-3 Altitude and Air Pressure

Parameter	Condition	Requirement
Altitude	Operation	0 to 3,048 m (0 to 10,000 ft)
	Transportation (Storage)	0 to 12,192 m (0 to 40,000 ft)

8.4 Alternating Temperature and Humidity

Table 8-4 Alternating Temperature and Humidity

Parameter	Condition	Requirement
Humidity	Operation	Relative humidity: 5% to 90% Maximum dew point: 38°C (100.4°F)
	Transportation (Storage)	When the maximum dew point is 39°C (102.2°F), relative humidity is 5% to 95%. Atmosphere must be non-condensing all the time.

8.5 Expanded Operation Temperature

Table 8-5 Expanded Operation Temperature

Temperature Specification (Numbers are for instance only)	Description
5°C - 40°C (41°F - 104°F) (5% - 85%RH)[1]	Continuous running is possible
-5°C to 45°C (23°F - 113°F) (5% - 90%RH)[2]	Running time ≤ 1% per year

Note 1: When the server operates beyond the temperature specifications, system performance will be affected.

Note 2: Ignore alarm sound of ambient temperature when the temperature is not within the specification range.

8.6 Expanded Operation Temperature Limits

- Powering on under 5°C (41°F) is not allowed.
- The altitude cannot be higher than 3,000 m (9,843 ft).

8.7 Thermal Restrictions

Table 8-6 Thermal Restrictions

Configuration	Front Drive	Internal Drive	Rear Drive	CPU	GPU	Max. Ambient Temperature
Storage configuration 1	12 × 2.5-inch	None	None	≤ 280 W	Not supported	< 35°C (95°F)
Storage configuration 2	10 × 2.5-inch	None	None	≤ 280 W	Not supported	< 35°C (95°F)
With GPU	10 × 2.5-inch	None	None	≤ 240 W	Supported	< 35°C (95°F)

8.8 Operational Requirements

This section specifies the requirements for temperature, humidity, organisms, chemical materials and mechanically active materials in the server room when the server is operating.

1. Temperature and Humidity

The temperature, dew point and relative humidity in the server room should meet the requirements for operating the server. For the specific requirements on different servers, see the detailed description in the product documentations.

2. Organisms

Plants and animals are strictly prohibited in the server room. Take strict precautions against damage by rats and ants.

To meet these requirements, take the following measures in the server room:

- Ensure safety if there are humidification devices in the server room.

- All the structures and construction cracks of doors, windows, walls, and ground (floors) must be sealed.
- If there are water supply and drainage pipes in the server room, anti-leakage and anti-condensation measures should be taken.
- If there is water equipment in the main server room, measures must be taken to prevent water overflow and leakage.
- Block cable holes and antenna holes.
- Clean and sterilize the server room periodically.

3. Corrosive Airborne Contaminants

Generally, a small quantity of common corrosive gas pollutants exist in indoor and outdoor atmospheric environments. Chemical reactions may occur due to long-term contact between these mixed corrosive gas pollutants or pollutants of one single corrosive gas and other environmental factors (such as temperature or relative humidity), which may pose a risk of IT equipment failure from corrosion and damage circuit boards of IT equipment and system component units with weak oxidation resistance. This article specifies the limitation on corrosive airborne contaminants with an aim to avoid such risks.

The concentration level of corrosive airborne contaminants in a data center shall meet the requirements listed in the white paper entitled Gaseous and Particulate Contamination Guidelines for Data Centers published in 2011 by American Society of Heating Refrigerating and Air-conditioning Engineers (ASHRAE) Technical Committee (TC) 9.9. According to the Guidelines, corrosive airborne contaminants in a data center shall meet the following requirements:

- Copper coupon corrosion rate less than 300 Å/month per ANSI/ISA-71.04-2013 severity level G1.
- Silver corrosion rate less than 200 Å/month per ANSI/ISA-71.04-2013 severity level G1.
- According to ANSI/ISA-71.04-2013 Environmental Conditions for Process Measurement and Control Systems: Airborne Contaminants, the gaseous corrosively levels are G1 (mild), G2 (moderate), G3 (harsh), and GX (severe), as described in Table 8-7.

Table 8-7 Gaseous Corrosively Levels per ANSI/ISA-71.04-2013

Gaseous Corrosivity Level	**Copper Reactivity Level**	**Silver Reactivity Level**	**Description**
G1 (mild)	< 300 Å/month	< 200 Å/month	An environment sufficiently well-

Gaseous Corrosivity Level	Copper Reactivity Level	Silver Reactivity Level	Description
			controlled such that corrosion is not a factor in determining equipment reliability.
G2 (moderate)	< 1000 Å/month	< 1000 Å/month	An environment in which the effects of corrosion are measurable and may be a factor in determining equipment reliability.
G3 (harsh)	< 2000 Å/month	< 2000 Å/month	An environment in which there is high probability that a corrosive attack will occur.
GX (severe)	≥ 2000 Å/month	≥ 2000 Å/month	An environment in which only specially designed and packaged equipment would be expected to survive.

See the table below for the requirements on the copper and silver corrosion rates.

Table 8-8 Concentration Limitation on Corrosive Airborne Contaminants in a Data Center

Group	Corrosive Gas	Unit	Concentration
Group A	H_2S	ppb[a]	< 3
	SO_2	ppb	< 10
	Cl_2	ppb	< 1
	NO_2	ppb	< 50
Group B	HF	ppb	< 1

Group	Corrosive Gas	Unit	Concentration
	NH_3	ppb	< 500
	O_3	ppb	< 2
a: Parts per billion (ppb) is a unit of concentration, and 1 ppb represents 1 part per billion.			

Group A and group B are common gas groups in a data center. Group A's or group B's concentration limitation values correspond to copper and silver reactivity level G1.

Corrosion is not determined by a single factor, but by comprehensive environmental factors such as temperature, relative humidity and corrosive airborne contaminants. Any change of the environmental factors may affect the gaseous corrosively level. Therefore, the concentration limitation values specified in the previous table are for reference only. If the actual mixed gas concentration is not listed in the table, refer to chemically active substance level in IEC-60721-3-3 or GB/T 4798.3-2007 to choose the concentration range.

4. Mechanically Active Substances

The server room must be free of explosive, conductive, magnetic, and corrosive dust. The table below lists the requirements for mechanically active substances.

Table 8-9 Requirements for Concentration of Mechanically Active Substances

Mechanically Active Substances	Unit	Concentration
Sand	mg/m^3	≤ 30
Floating dust	mg/m^3	≤ 0.2
Dust deposits	$mg/(m^2h)$	≤ 1.5

To meet these requirements, take the following measures in the server room:

- Use dustproof materials on the ground, wall, and ceiling of the server room.
- Adopt few or no windows design in the server room and use dustproof materials for outer windows.
- Clean the server room, especially the air filters periodically.
- Wear shoe covers and ESD clothing before entering the server room.

8.9 Electromagnetic Compatibility and Safety Requirements

As per GB/T 17626.3 (IEC 61000-4-3), GB/T 17626.6 (IEC 61000-4-6) and GB/T 17626.8 (IEC 61000-4-8), the recommended electromagnetic environment is as follows:

Table 8-10 Electromagnetic Environment

Electromagnetic Phenomenon		**Specifications**
Power frequency magnetic field	Frequency (Hz)	50
	A/m (rms)	≤ 1
RF electromagnetic field amplitude modulation	Frequency (MHz)	80 - 1000
	V/m (rms, unmodulated)	≤ 3
	%AM (1 kHz)	80
RF continuous wave conduction	Frequency (MHz)	0.15 - 80
	V (rms, unmodulated)	≤ 3
	%AM (1 kHz)	80

Take the following measures to suppress interference signals:

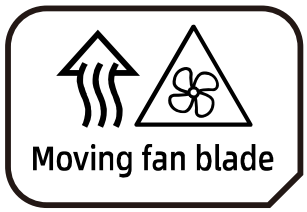
- Take effective measures against power grid interference to the power supply system.
- Keep away from electrical equipment such as medical magnetic resonance equipment, helium arc welding machines, and RF electric heaters.
- Try to avoid the impact of nearby areas with high power emissions (broadcast, radar, and mobile communication transmitters), electrified railways, industrial radiation, substations, and high-voltage transmission lines.
- The interference effect of other equipment in the server room must comply with relevant standards and regulations.
- Take measures to shield and isolate natural noise such as atmospheric noise and solar radio noise when necessary.

To avoid damage to the system, take ESD protection measures (See Section 6 Electrostatic Discharge.)

As per the requirements of Appendix F.5 of IEC6268, the server is affixed with safety protection logos. The logos and interpretations are as follows:

- Fan blade safety protection:

Figure 8-1 Fan Blade Safety Protection



Caution: Keep body parts away from fan blades.

- Multiple-power safety protection:

Figure 8-2 Multiple-power Safety Protection

Caution: Shock Hazard! Disconnect all power cords before servicing.

8.10 Power Supply Requirements

8.10.1 Requirements for AC Power Supply

An AC power supply that consists of mains supply, uninterruptible power supply (UPS), and self-supplied electric generator set can be used as an integrated power supply. The AC power supply must feature simple connection line, safe operation, flexible scheduling, and easy maintenance in addition to meeting the requirements of site load. The low voltage power supply should adopt three-phase five-wire mode or monophase three-wire mode.

The AC power supply should work under nominal voltage and rated frequency.

Table 8-11 Nominal Voltage and Rated Frequency

Nominal Voltage	Rated Frequency
110 V, 208 V	60 Hz

Nominal Voltage	Rated Frequency
220 V, 380 V	50 Hz

A UPS is typically used as an AC potential power of network products. A UPS should be in the same phase as the mains supply. The time used for switching between the UPS and the mains supply should be less than 8 ms. Otherwise, the server will reboot or reset.

8.10.2 Requirements for DC Power Supply

The DC power supply system should work under nominal voltage of -48 V, 270 V and 380 V.

8.10.3 Recommendations on the AC Power Supply

Recommendations on the AC power supply are as follows:

- Use a voltage stabilizer or voltage regulator to respond to voltage fluctuations. Use a voltage-regulator in the following situations:
  - The server is directly powered by the mains supply, and the power supply voltage exceeds the rated voltage by -10% to +5% or the voltage range allowed for the server.
  - The server is not directly powered by the mains supply, and the mains voltage exceeds the rated voltage by -15% to +10% or the AC input voltage range allowed for the DC power equipment.
- To prevent interruption or surge of AC power supply, use the UPS or inverter.
- The data center should be equipped with self-supplied generator set in case of mains failure to ensure proper function of important load and important power load. All electrical equipment such as IT equipment and refrigeration equipment shall be considered. Check the start-up shock to ensure that the generator can start reliably. The generator performance should meet the requirements of Code for Design of Data Centers (GB50174).
- Connect two storage battery strings in parallel. A second UPS is needed as redundant backup.

8.10.4 HVDC Power Supply

The high-voltage direct current (HVDC) system can eliminate the problems existing in conventional AC and low-voltage DC power supplies. At present, 240 V HVDC standards and 336 V HVDC standards are the mainstream HVDC standards used in China.

8.10.5 Requirements for HVDC Power Supply

- The requirements for HVDC power supply are as follows:
  - Operating range: -5°C to 45°C (23°F - 113°F)
  - Storage and transportation range: -40°C to 85°C (-40°F to 185°F)
- Relative humidity:
  - Operating range: ≤ 90% RH (40 ± 2°C) (104 ± 3.6°F)
  - Storage and transportation range: ≤ 95% RH (40 ± 2°C) (104 ± 3.6°F)
- Vibration performance: Ability to withstand sinusoidal frequencies between 10 Hz to 55 Hz and amplitude of 0.35 mm.
- Battery capacity configuration: Ensure continuous operation of servers at full loads when the power supplies are unavailable. The battery backup time should be 15 minutes when a diesel generator is available as backup power source.
- Determination of cell voltage and pack number: Depending on the system capacity and backup time, the cell voltage can be selected from 2 V, 6 V or 12 V.
- The insulation monitoring device acts properly if a ground fault occurs or the insulation resistance is 28 kΩ lower than the set value. The HVDC system is protected against overcurrent and short circuits and can be manually or automatically restored after overcurrent or short circuits are rectified.
- Over- and under-voltage protection for AC power supplies: The power supply system can monitor the input voltage changes. When detecting that the AC input voltage is higher or lower than the specified threshold, which may pose safety risk on the operation of the power supply system, the system automatically shuts down. The system automatically restores when the input voltage is normal.
- The site must be free from explosives, conductive media and hazardous gases that erode metals and affect insulation, and mold.
- Protection against high temperature: When the temperature in the power supply system reaches the specified threshold, the power supply system automatically reduces the power or shuts down the power amplifier. When the temperature falls below the threshold, the power supply system restores the normal power output.
- The system provides alarm records and query, and the alarm display can be updated on a real-time basis. The alarm information is protected against loss when the system is out of power.

8.10.6 Recommendations for HVDC Power Supply

- Terminal devices can be connected to power sockets or wiring terminals. Wiring terminals are recommended.
- Do not use a shunt circuit breaker to connect to or control multiple power modules through a multi-purpose power socket.
- Choose DC circuit breakers based on the rated current of the equipment. The 10 A or 16 A DC breakers are recommended.
- Recommended standards for equipment power wiring: Connect the DC output positive pole to terminal L of the equipment power cable. Connect the DC output negative pole to terminal N of the equipment power cable. DC system is strictly forbidden to be grounded.
- The upstream input terminal of the power supply system is equipped with a surge protection device to protect the system against a minimal voltage surge of 10/700 us, 5 kV and a minimal current surge of 8/20 us, 20 kA.
- All cables in the power distribution frame (PDF) comply with YD/T 1173 specifications, and the diameters of all power cables meet the requirements for wire ampacity.

8.10.7 DC Power Supply

The DC power supply should be stable and reliable. The power equipment should be deployed near the server. The standard DC voltage is -48 VDC with a fluctuation range of server power between -38.4 V to -57.6 V.

9 Warranty

Inspur warrants that all Inspur-branded hardware products shall be free from material malfunctioning and material defects under conditions of normal use for a period of three (3) years from the Date of Invoice.

Service offerings may vary by geographic region. Please contact your Inspur representative to identify service levels and needs for your regions.

9.1 Warranty Service

Remote Technical Support

Inspur warranty service includes 24/7 remote technical support and 3 years parts replacement throughout the warranty period. Warranty service is Advance Replacement Service in the first year and Standard Replacement Service in the second and third years.

Table 9-1 Warranty Service Type and Duration

Type	Duration
Remote Technical Support	3 years
RMA Services	3 years

The 24/7 remote technical support can be obtained through hotline, e-mail, and Service Portal*1. Through hotline and e-mail support, Inspur engineers help customers diagnose the cause of malfunction and provide solution. Service Portal*1 provides access to firmware, customized update files, and related manuals for Inspur products. Customer may also access the Service Portal*1 to submit Return Material Authorization (RMA) for parts replacement or repair.

Information needed when requesting for support:

- Contact name, phone number, e-mail address
- System Serial Number, Part Number, Model and location (address) of the product needing service
- Detailed description of problem, logs (sel and blackbox, and any other related logs from OS), screenshot of issue, pictures of damaged/questions parts, etc.

Table 9-2 Support Contact Information

Type	Description	Support Window
Global Hotline	Global: 1-844-860-0011 / 1-760-769-1847 (English) China: 400-860-0011 (Chinese)	24 × 7 × 365
Email	Global: serversupport@inspur.com China: lckf@inspur.com	24 × 7 × 365
	US**: serversupportusa@inspur.com Korea: serversupport_kr@inspur.com Japan: serversupport_jp@inspur.com	Local business hours 9AM to 6PM Monday to Friday **US: PST (GMT -8)
Service Portal*1	US**: http://service.inspursystems.com/login.htm EU: http://eurportal.inspur.com/	Local business hours 9AM to 6PM Monday to Friday **US: PST (GMT -8)

RMA Services

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. Repaired or replaced 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.

Advance Replacement: Under the terms of Advance Replacement Service, if a problem with customer product cannot be resolved via hotline and e-mail support and a replacement part is required, Inspur will ship out replacement part(s) in advance within one (1) business day. Customer should return defective part(s) within five (5) business days after receiving the replacement(s). Inspur will cover one-way shipment via ground.

Standard Replacement: When a hardware failure happens, customer may submit RMA request to Inspur via e-mail or Service Portal*1. Inspur will review and approve RMA submission, and provide an RMA number and return information that customer may use to return for RMA service. Inspur will ship out replacement part(s) within one (1) business day after receiving the defective part(s) and cover one-way shipment via ground.

9.2 Inspur Service SLA

Inspur offers a variety of Service Level Agreements (SLA)[*2] to meet customer requirements with different service components and service level targets.

- Base Warranty Services
- Advance Replacement
- 9x5 NBD Onsite Service
- 24x7x4 Onsite Service
- Onsite Deployment Service
- Data Media Retention
- Global Service
- Customized Service

9.3 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 Terms & Conditions do not apply to consumable parts, as well as any products that the serial number missed, damaged or obscured 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 staging, usage, or maintenance
- Virus infection
- Loss or damage in transit which is not arranged by Inspur
- The product has been modified or serviced by non-authorized personnel
- Any damage to or loss of any personal data, programs, or removable storage media
- The restoration or reinstallation of any data or programs except the software installed by Inspur when the product is manufactured
- Any consumable parts, such as, but not limited to, battery or protective

coating that is diminished over time, unless the failure has occurred during DOA period, such failure caused by Inspur's material or workmanship

- Any cosmetic damage, such as, but not limited to, scratches, dents, broken plastics, metal corrosion, or mechanical damage, unless the failure has occurred during DOA period due to defect in Inspur's material or workmanship
- Any engineering sample, evaluation unit, or non-mass production product is not covered under warranty service
- Any solid-state drive (SSD) with the usages of which has reached its write endurance limit

In no event will Inspur be liable for any direct loss of use, interruption of business, lost profits, lost data, or indirect, special, incidental or consequential damages of any kind regardless of the form of action, whether in contract, tort (including negligence), strict liability or otherwise, even if Inspur has been advised of the possibility of such damage, and whether or not any remedy provided should fail of its essential purpose.

*1 Service Portal availability is subject to customer type and customer location. Please contact your Inspur representative to learn more.

*2 Not all SLA offerings are available at all customer locations. Some SLA offerings may be limited to geolocation and/or customer type. Please contact your Inspur representative to learn more.

10 Appendix

10.1 Drive Neodymium Content Reference Table

Table 10-1 Seagate Drive Neodymium Content Reference

Product Series Name	Neodymium Content Range		
	<5 g	5 g - 25 g	>25 g
Cimarron (2 TB/4 TB)	√		
Cimarron (6 TB/8 TB)		√	
Evans		√	
Evans BP		√	
Kestrel	√		
MakaraBP		√	
MakaraPLUS		√	
Mobula		√	
MobulaBP		√	
Skybolt	√		
Tatsu		√	

Table 10-2 WD Drive Neodymium Content Reference Range

Product Series Name	Neodymium Content Range		
	<5 g	5 g - 25 g	>25 g
Rainier	√		
Libra He10		√	
Leo A		√	
Vela-A		√	
Vela-AP		√	
Hs14		√	
Leo-B		√	
Paris C		√	

Product Series Name	Neodymium Content Range		
	<5 g	5 g - 25 g	>25 g
Vela-AX		√	

Table 10-3 Toshiba Drive Neodymium Content Reference Range

Product Series Name	Neodymium Content Range		
	<5 g	5 g - 25 g	>25 g
AL14SE-Lite	√		
AL15SE	√		
AL14SX	√		
MG04 Tomcat-R SAS		√	
MG04 Tomcat-R SATA		√	
MG04 Tomcat SATA		√	
MG06 SAS		√	
MG06 SATA		√	
MG07 SAS		√	
MG07 SATA		√	
MG08 16T		√	

10.2 Acronyms and Abbreviations

A

AC	Alternating Current
ACPI	Advanced Configuration and Power Management Interface
AES	Advanced Encryption Standard New Instruction Set
AI	Artificial Intelligence
AOC	Active Optical Cables
API	Application Program Interface
ARP	Address Resolution Protocol

B

BIOS	Basic Input Output System
BMC	Baseboard Management Controller

C

CE	Conformite Europeenne
CLI	Command-Line Interface
CMOS	Complementary Metal-Oxide-Semiconductor Transistor
CPLD	Complex Programming Logic Device
CPU	Central Processing Unit
CRPS	Common Redundant Power Supplies
CRU	Customer-Replaceable Unit
CSA	Canadian Standards Association
CSM	Compatibility Support Module

D

DC	Direct Current
DDR4	Double Date Rate 4
DHCP	Dynamic Host Configuration Protocol
DIMM	Dual-Inline-Memory-Modules
DNS	Domain Name System
DVD	Digital Video Disc

F

FMA	Failure Mode Analysis
FRU	Field-Replaceable Unit

FTP	File Transfer Protocol
FW	Firmware

G

GPU	Graphics Processing Unit
GUI	Graphical User Interface

H

HBA	Host Bus Adapter
HCA	Host Channel Adapter
HDD	Hard Disk Drive
HTML	Hyper Text Markup Language
HWRAID	Hardware Redundant Arrays of Independent Drives

I

I/O	Input/Output
IEC	International Electrotechnical Commission
IOPS	Input/Output Operations Per Second
IP	Internet Protocol
IPMB	Intelligent Platform Management Bus
IPMI	Intelligent Platform Management Interface
iSCSI	Internet Small Computer System Interface

J

JTAG	Joint Test Action Group

K

KVM	Keyboard Video Mouse

L

LAN	Local Area Network
LCD	Liquid Crystal Display
LED	Light Emitting Diode
LRDIMM	Load Reduced Dual In-Lane Memory Module

M

MLAN	Management Local Area Network

N

NCSI	National Communication System Instructions
NEMA	National Electrical Manufacturers Association
NFPA	National Fire Protection Association
NIC	Network Interface Controller
NM	Node Manager
NPU	Network Processing Unit
NTP	Network Time Protocol
NVDIMM	Non-Volatile Dual In-Line Memory Module
NVMe	Non-Volatile Memory Express

O

OCP	Open Compute Project
OS	Operating System

P

PCH	Platform Controller Hub
PCI	Peripheral Component Interconnect
PCIe	Peripheral Component Interconnect express
PDU	Power Distribution Unit
PFR	Platform Firmware Resilience
PHM	Processor Heatsink Module
PHY	Physical
PMBus	Power Management Bus
POST	Power On Self Test
PSU	Power Supply Unit
PXE	Pre-boot Execution Environment

R

RAM	Random-Access Memory
RAID	Redundant Arrays of Independent Drives
RDIMM	Registered Dual In-line Memory Module
RH	Relative Humidity
ROM	Read-Only Memory
RTA	Real Time Clock

S

SAS	Serial Attached Small Computer System Interface
SATA	Serial Advanced Technology Attachment
SFP	Small Form-factor Pluggable

SIC	Smart Interface Card
SKU	Stock Keeping Unit
SMTP	Simple Mail Transfer Protocol
SNMP	Simple Network Management Protocol
SOL	Serial Over LAN
SSD	Solid State Disk
SSH	Secure Shell
SWRAID	Software Redundant Arrays of Independent Drives

T

TCG	Trusted Computing Group
TCM	Trusted Cryptography Module
TCO	Total Cost of Ownership
TDP	Thermal Design Power
TPCM	Trusted Platform Control Module
TPM	Trusted Platform Module

U

UEFI	Unified Extensible Firmware Interface
UID	User Identification
UPI	Ultra Path Interconnect
UPS	Uninterruptible Power Supply
USB	Universal Serial Bus

V

VGA	Video Graphics Array
VLAN	Virtual Local Area Network

X

XDP	eXtend Debug Port