White Paper for KR4268V2 Series Servers

Powered by AMD Processors

For KR4268-E2-A0-R0-00

Document Version: V1.0

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Applicable Model

Model	Maintenance	Cooling
KR4268-E2-A0-R0-00	Rear access	Air cooling

Technical Support

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- Committed to product data security, we have implemented necessary measures on product functions to protect system operation and security data throughout its lifecycle in strict accordance with relevant laws, regulations and supervision

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Preface

Abstract

This document describes the KR4268V2 AMD-based server's appearance, features, performance parameters, and software and hardware compatibility, providing in-depth information of the server.

Intended Audience

This document is intended for pre-sales engineers.

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 document information

Revision History

Version	Date	Description of Changes
V1.0	2025/04/25	Initial release

Table of Contents

1 Product Overview

The KR4268V2 server powered by AMD processors is the latest AI server from our KR4268V2 series. Having outstanding computing performance with multiple computing resources integrated, it is flexibly applicable to all types of scenarios. Powered by two 4th Gen AMD processors built on the 5 nm process technology, the server supports up to 256 CPU cores and up to 8 GPUs. The direct GPU-CPU connection design significantly reduces data latency and improves GPU utilization. The server can work with AIStation, a platform developed by us for model R&D and production services, creating a highly adaptable computing platform with multiple computing resources integrated in this era of intelligent computing.

1.1 24 × 2.5-Inch Drive Configuration

The server supports 24 front 2.5-inch SAS/SATA/NVMe drives, as shown in the following figure.

Figure 1-1 Appearance

1.2 12 × 3.5-Inch Drive Configuration

NOTE

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

The server supports 12 front 3.5-inch SAS/SATA/NVMe drives, as shown in the following figure.

Figure 1-2 Appearance

1.3 16 × 2.5-Inch Drive Configuration

The server supports 16 front 2.5-inch SAS/SATA/NVMe drives, as shown in the following figure.

Figure 1-3 Appearance

2 Features

2.1 Scalability and Performance

Table 2-1 Scalability and Performance

Technical Feature	Description
AMD Genoa CPU	Each CPU supports up to 128 cores, with a max. boost frequency of 4.3 GHz, an L3 cache of up to 384 MB, and 3 xGMI links. • Two processors, 256 cores and 512 threads. • Turbo Core technology brings you a dynamically adjustable system. It allows the CPU cores to exceed the processor TDP at peak workload and run at the max. boost frequency. • Hyper-threading technology allows every processor core to run multiple threads (up to 2 threads per core) concurrently, improving the performance of multi-threaded applications. • AMD Virtualization (AMD-V) technology integrates hardware-level virtualization features, allowing the operating system to better leverage hardware to handle virtualized workloads. • Advanced Vector Extensions 512 (AVX-512), an instruction set, can significantly improve the floating-point performance for compute-intensive workloads.
DIMM Types	Up to 24 DDR5 ECC DIMMs (RDIMMs or 3DS-RDIMMs) for superior speed and high availability.
Flexible Drive Configuration	Provides elastic and expandable storage capacities to meet different capacity and upgrade requirements.
All-SSD Configuration	Brings significantly higher I/O performance over all-HDD configuration or HDD-SSD mixing configuration.
24 Gbps serial attached SCSI (SAS)	Doubles the internal storage data transfer rate of 12 Gbps SAS, maximizing the performance of storage I/O-intensive applications.
Integrated I/O Technology	PCIe 5.0 controllers are integrated into processors, significantly shortening I/O latency and enhancing overall system performance.

Technical Feature	Description
PCIe 5.0 Expansion	• Front: - Up to 3 × PCIe 5.0 slot • Internal: - Up to 2 × PCIe 5.0 slot (for RAID cards only) • Rear: - 1 × OCP 3.0 dedicated slot - T configuration: up to 11 PCIe 5.0 slots (for 10 dual-width FHFL expansion cards and 1 single-width FHFL expansion card) - P configuration: up to 13 PCIe 5.0 slots (for 8 dual-width FHFL expansion cards and 5 single-width FHFL expansion cards) Note: Refer to 5.9 I/O Expansion for details, and consult your local sales representative for specific configurations.
OCP 3.0 Card	One OCP 3.0 slot for one 1/10/25/40/100/200 Gb OCP 3.0 card, hot-pluggable.

2.2 Availability and Serviceability

Table 2-2 Availability and Serviceability

Technical Feature	Description
Hot-swap SAS/SATA/NVMe Drive	Supports hot-swap drives and RAID cards with RAID levels 0, 1, 1E, 10, 5, 50, 6 and 60, RAID cache, and data protection enabled by the super-capacitor in case of power failures.
Reliability	• SSDs are much more reliable than traditional HDDs, increasing system uptime. • The BMC monitors system parameters in real time and sends alerts in advance, enabling technicians to take corresponding measures in time, ensuring stable operation and minimizing system downtime.
Availability	• The LEDs on front and rear panels and the BMC Web GUI indicate the status of key components and quickly lead technicians to failed (or failing) components, simplifying maintenance and speeding up troubleshooting.

Technical Feature	Description
	• Provides 4 hot-swap PSUs with 2+2 redundancy and 12 hot-swap fan modules with N+1 redundancy.
Maintenance Efficiency	The BMC management port on the rear panel supports remote BMC O&M, improving O&M efficiency.

2.3 Manageability and Security

Table 2-3 Manageability and Security

Technical Feature	Description
Remote Management	The BMC can monitor the system operating status and enable remote management.
NC-SI Feature	Allows a network port to serve as a management port and a service port. The NC-SI feature is disabled by default and can be enabled/disabled through the BIOS or BMC. Note: The NC-SI port supports the following features: • The NC-SI port can be bonded to any network port of the OCP card or of the PCIe expansion card that supports NC-SI. • Supports the enablement/disablement and configuration of VLAN. VLAN is disabled by default. • Supports IPv6 and IPv4 addresses. IP address, subnet mask, default gateway, and prefix length of IPv6 address can be configured.
Unified Extensible Firmware Interface (UEFI)	Industry-standard UEFI improves the efficiency of setup, configuration, and update, and simplifies error handling.
TPM & TCM	Trusted Platform Module (TPM) 2.0 and Trusted Cryptography Module (TCM) provide advanced encryption.
Firmware Update Mechanism	Firmware update mechanism based on digital signatures prevents unauthorized firmware updates.
UEFI Secure Boot	Protects the system from malicious bootloaders.
Hierarchical Password Protection in BIOS	Ensures system boot and management security.
BIOS Secure Flash and BIOS Lock Enable (BLE)	Reduces attacks from malicious software on the BIOS flash region.
BMC and BIOS Dual Image Mechanism	Recovers firmware upon detection of corrupted firmware.

Technical Feature	Description
BMC Secure Boot	Protects BMC from malicious tampering.
BMC Access Control Policies	Flexible BMC access control policies improve BMC management security.
Chassis Intrusion Detection	Enhances physical security.
BMC Management Security	Supports flexible BMC access control policies and double-factor authentication.

2.4 Energy Efficiency

Table 2-4 Energy Efficiency

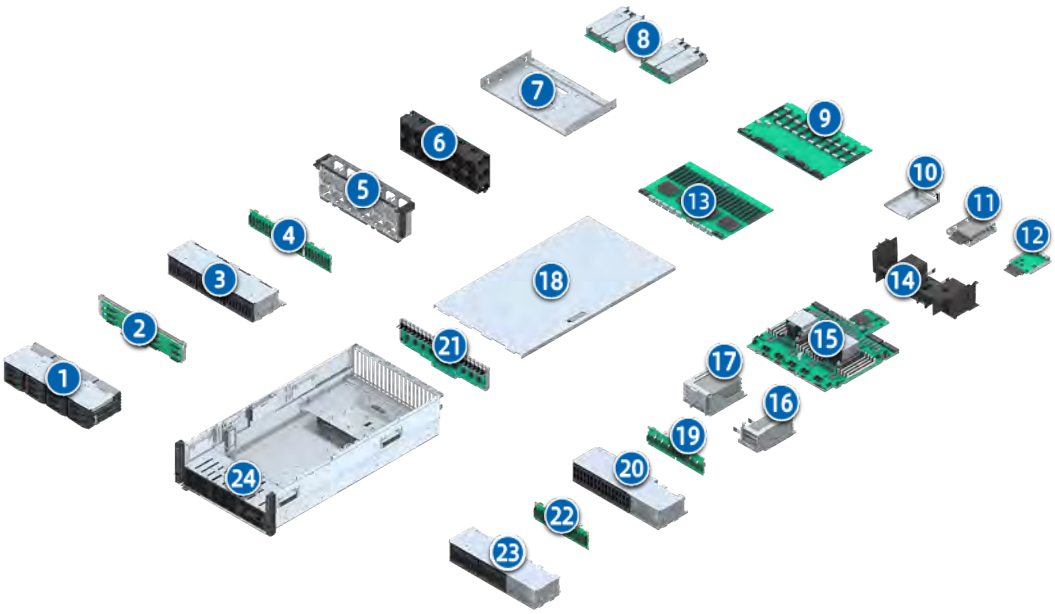
Technical Feature	Description
80 Plus Platinum/Titanium PSUs	Equipped with 80 Plus Platinum/Titanium PSUs of different energy efficiency levels, with the power efficiency up to 96% at a load of 50%.
2+2 Redundant PSUs	Supports AC/DC power input for improved power conversion efficiency.
VRD Solutions	Features high-efficiency single-board voltage regulator down (VRD) solutions, reducing DC-DC conversion loss.
Intelligent Fan Speed PID Control and CPU Frequency Scaling	Supports Proportional-Integral-Derivative (PID) intelligent fan speed control and intelligent CPU frequency scaling, conserving energy.
System Cooling Design	Offers a fully-optimized system cooling design with energy-efficient cooling fans, lowering energy consumption from system cooling.
Staggered Spin-up of Drives	Supports staggered spin-up of drives, reducing power consumption during server startup.

3 System Parts Breakdown

NOTE

The figure shown below is for reference only. The structure and configuration may differ depending on the models you purchased.

Figure 3-1 Exploded View



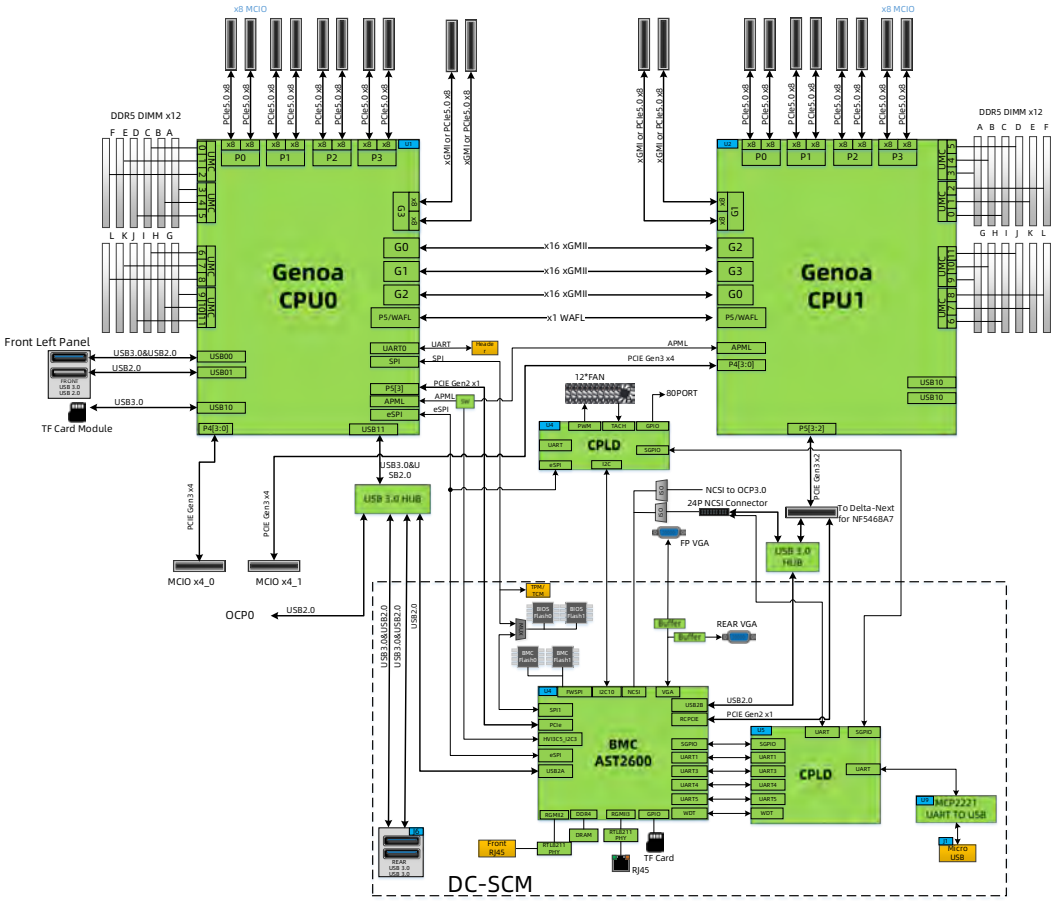
Item	Feature	Item	Feature
1	3.5-Inch Drive Module	13	PCIe Expansion Board (for P configuration)
2	3.5-Inch Drive Backplane	14	Air Duct
3	2.5-Inch Drive Module	15	Motherboard
4	2.5-Inch Drive Backplane	16	RAID Riser and Super-Capacitor Module
5	Fan Cage	17	PCIe Riser Module
6	Fan Module	18	Top Cover
7	PCIe Expansion Board Tray	19	E3.S SSD Backplane (to be validated)
8	PSU	20	E3.S SSD Module (to be validated)
9	PCIe Expansion Board (for T configuration)	21	Power Midplane

Item	Feature	Item	Feature
10	DC-SCM Tray	22	2.5-Inch Drive Backplane
11	OCP 3.0 Card	23	2.5-Inch Drive Module
12	DC-SCM Board	24	Chassis

4 Logical Structure

4.1 System Logical Diagram

Figure 4-1 System Logical Diagram



- Features 2 AMD Genoa CPUs.
- Up to 24 DDR5 DIMMs.
- Processors are interconnected through 3 xGMI links at up to 32 GT/s.
- 1 OCP 3.0 slot and up to 18 PCIe 5.0 expansion slots.
- The DC-SCM board integrates an AST2600 management chip and supports 1 VGA port, 1 BMC management network port, 1 system/BMC serial port, and other connectors.

4.2 PCIe Topologies

NOTE

- Only some of the PCIe topology diagrams are listed below. For other topologies, consult the pre-sales engineer.
- There may be resource conflicts in the configurations as shown in the following PCIe topology diagrams. The topology may differ from the actual configuration.

The server supports two types of PCIe expansion boards: one for T configuration and the other for P configuration. The PCIe expansion board and the motherboard are connected via the MCIO x8 connector.

4.2.1 PCIe Topologies of T Configuration

Figure 4-2 PCIe Topology Diagram for the 12 × SAS/SATA Drive + x8 PCIe NIC + RAID Card Configuration

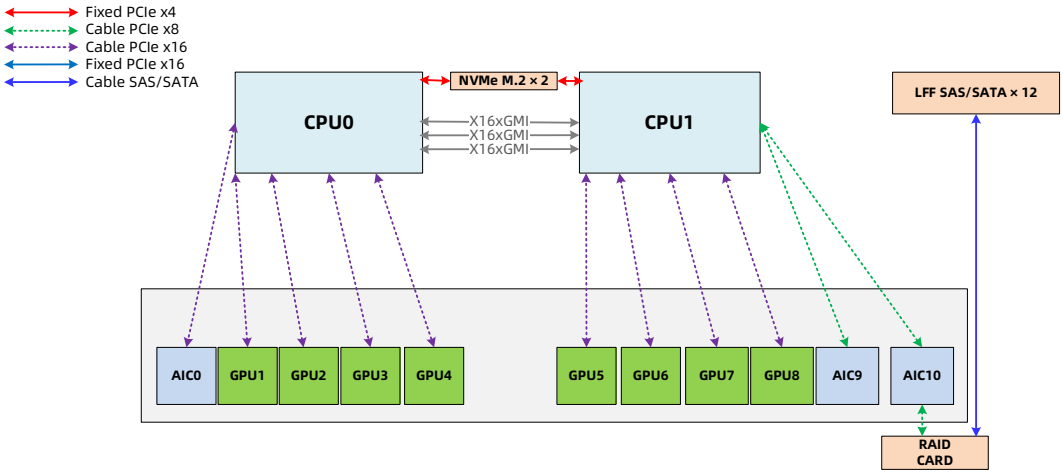


Figure 4-3 PCIe Topology Diagram for the 24 × SAS/SATA Drive + x16 PCIe NIC + RAID Card Configuration

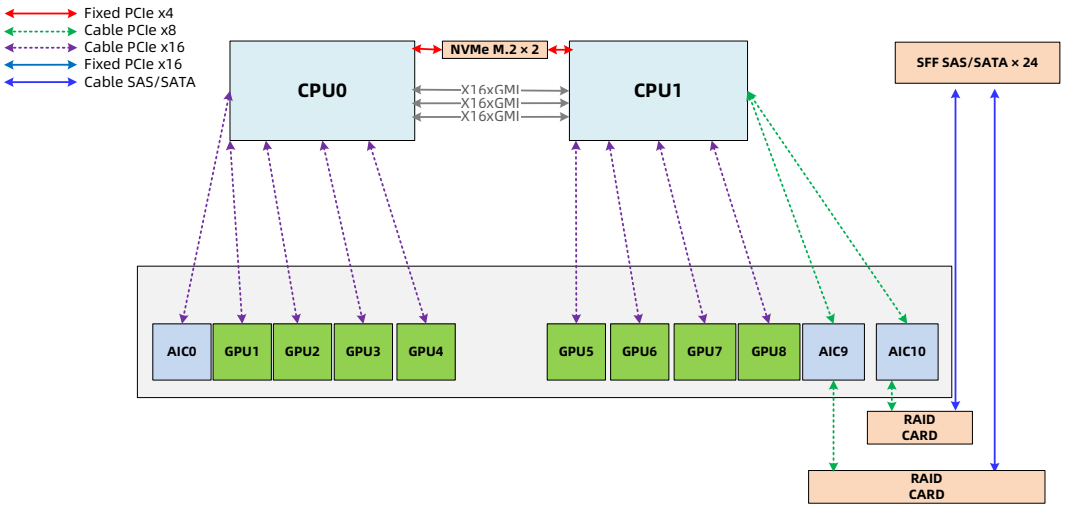


Figure 4-4 PCIe Topology Diagram for the 8 × SAS/SATA Drive + 4 × NVMe Drive + x8 PCIe NIC + RAID Card Configuration

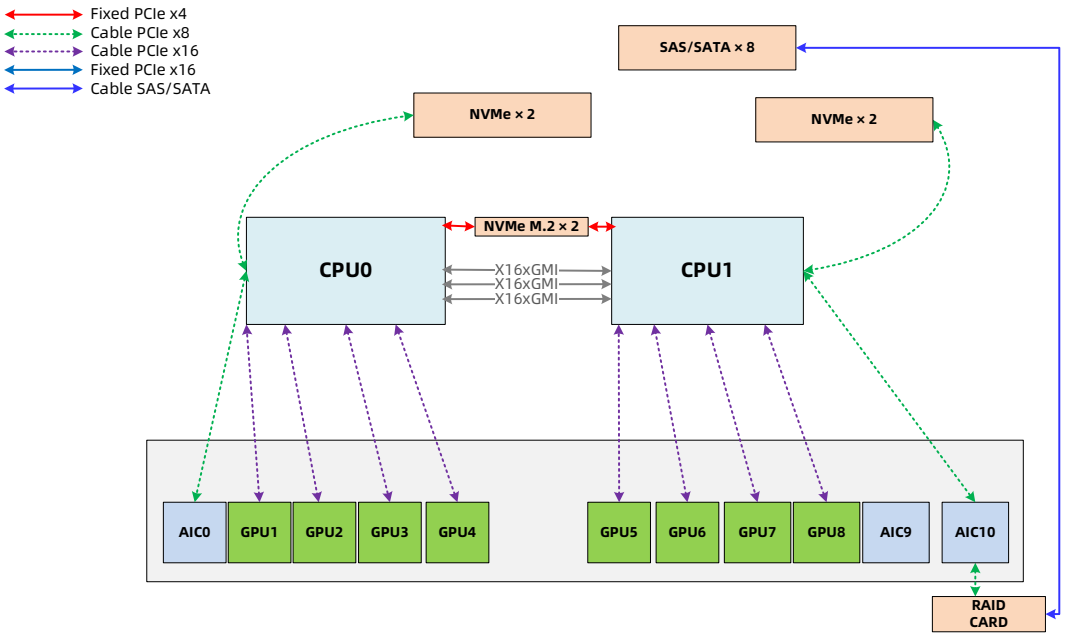


Figure 4-5 PCIe Topology Diagram for the 14 × SAS/SATA Drive + 2 × NVMe Drive + RAID Card + x16 PCIe NIC/OCP NIC + x16 NIC Configuration

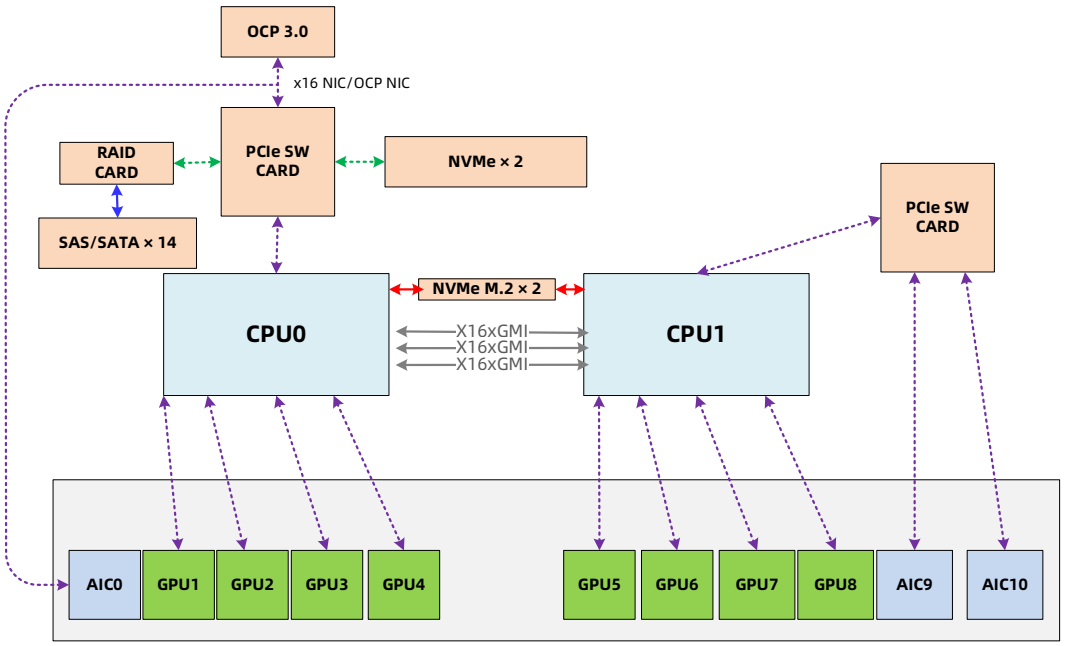


Figure 4-6 PCIe Topology Diagram for the 8 × NVMe Drive + x16 PCIe NIC/OCP NIC + x16 NIC Configuration

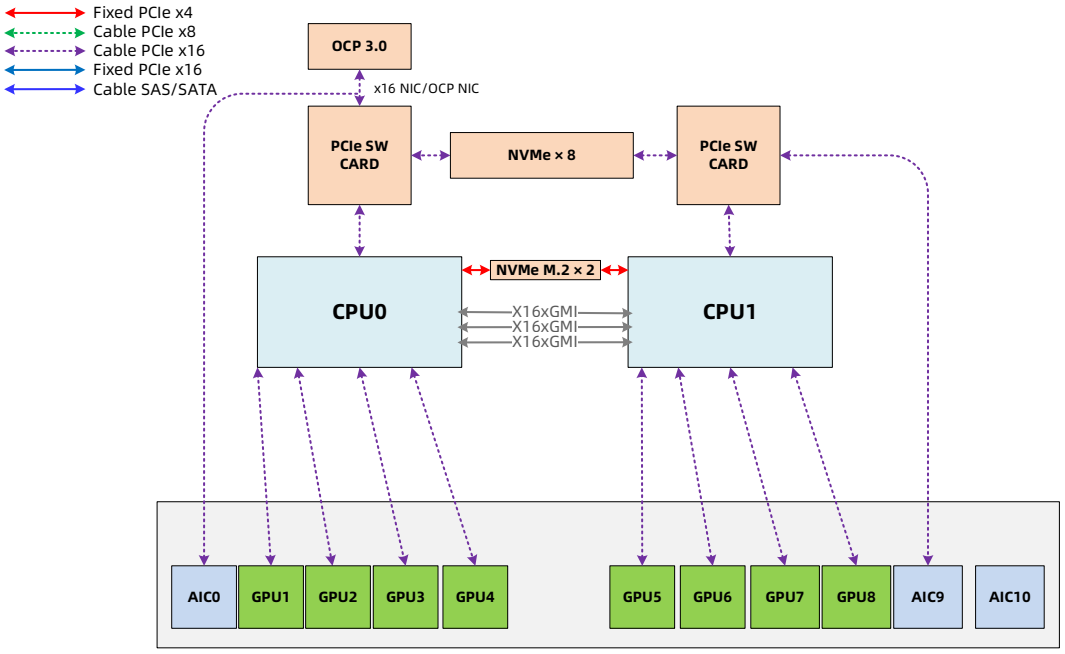


Figure 4-7 PCIe Topology Diagram for the 16 × SAS/SATA Drive + RAID Card + x16 PCIe NIC/OCP NIC Configuration

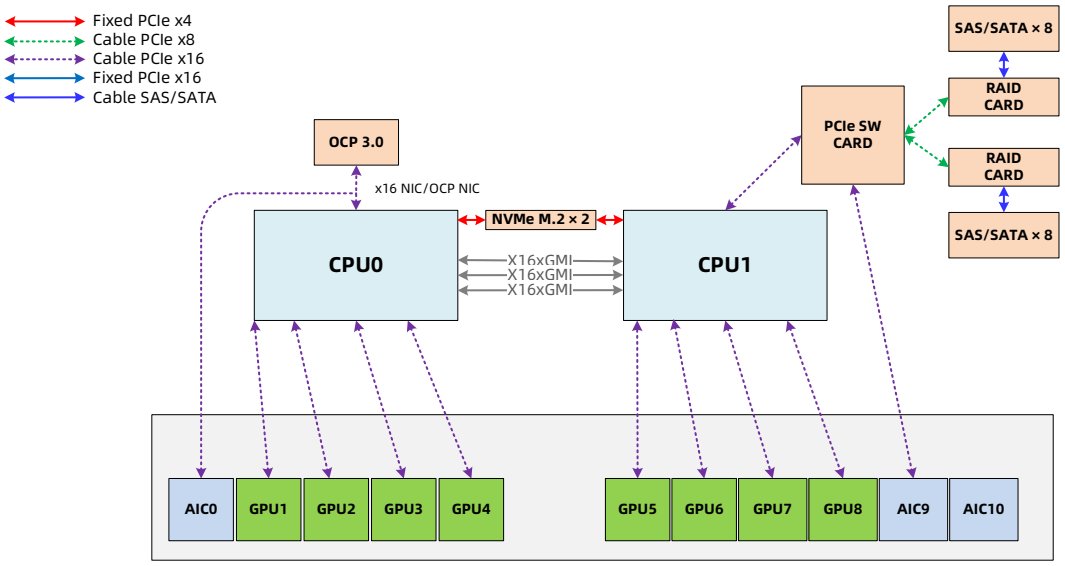


Figure 4-8 PCIe Topology Diagram for the 8 × SAS/SATA Drive + 4 × NVMe Drive + RAID Card + OCP NIC + x8 PCIe NIC Configuration

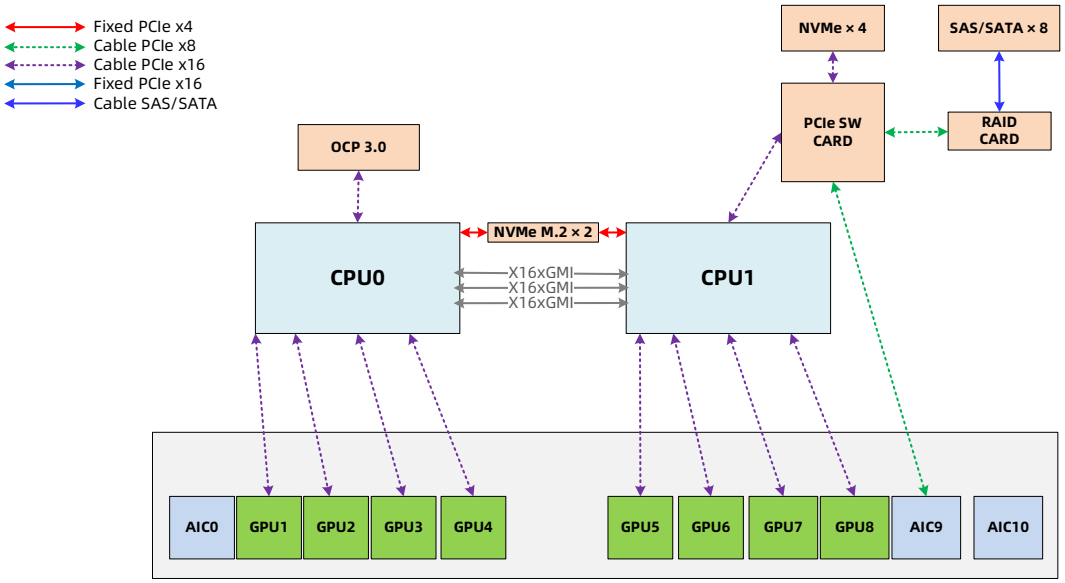
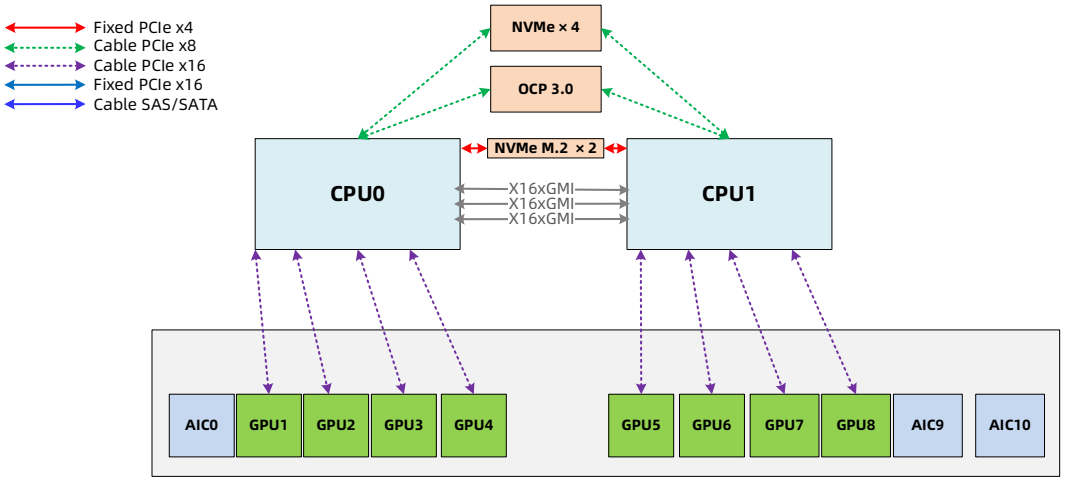


Figure 4-9 PCIe Topology Diagram for the Multi-Host Configuration



4.2.2 PCIe Topologies of P Configuration

Figure 4-10 PCIe Topology Diagram for the 8 × NVMe Drive + OCP NIC Configuration

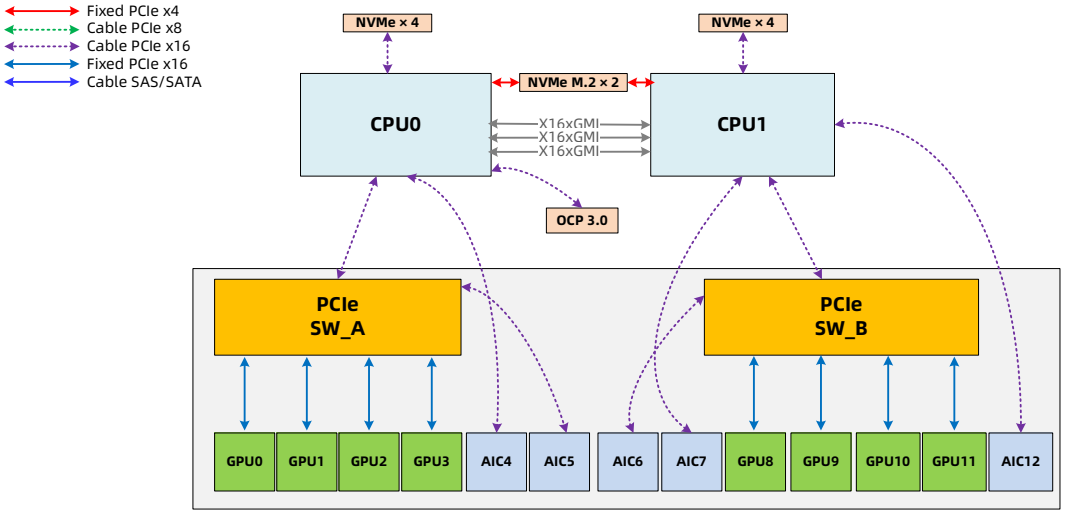
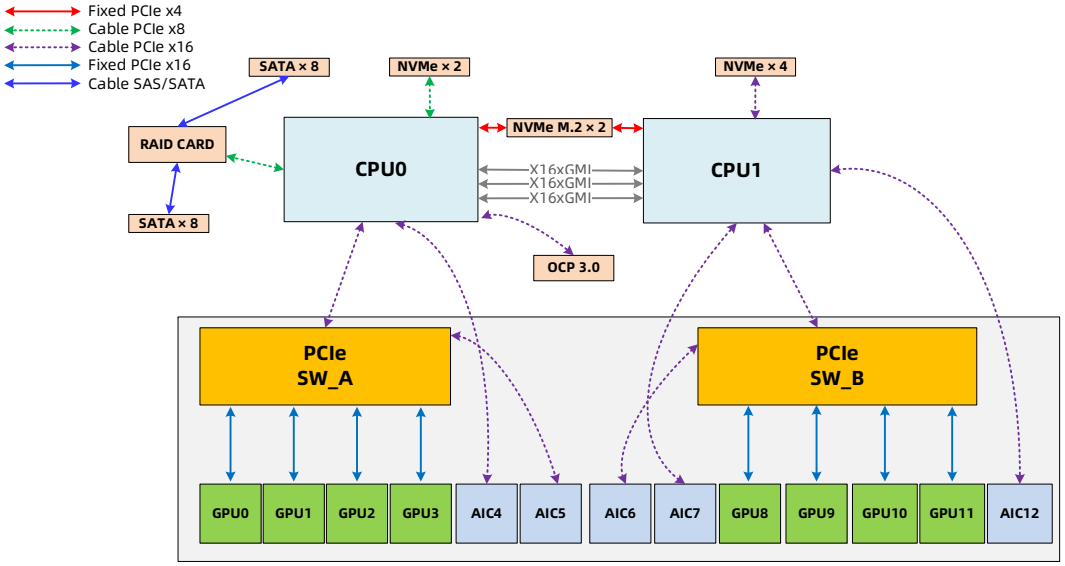


Figure 4-11 PCIe Topology Diagram for the 16 × SATA Drive + 6 × NVMe Drive + RAID Card + OCP NIC Configuration

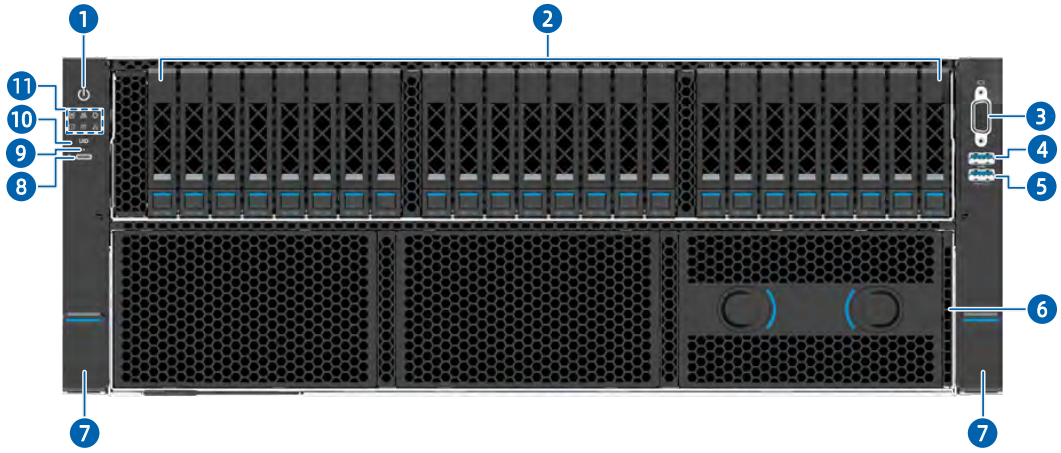


5 Hardware Description

5.1 Front Panel

5.1.1 24 × 2.5-Inch Drive Configuration

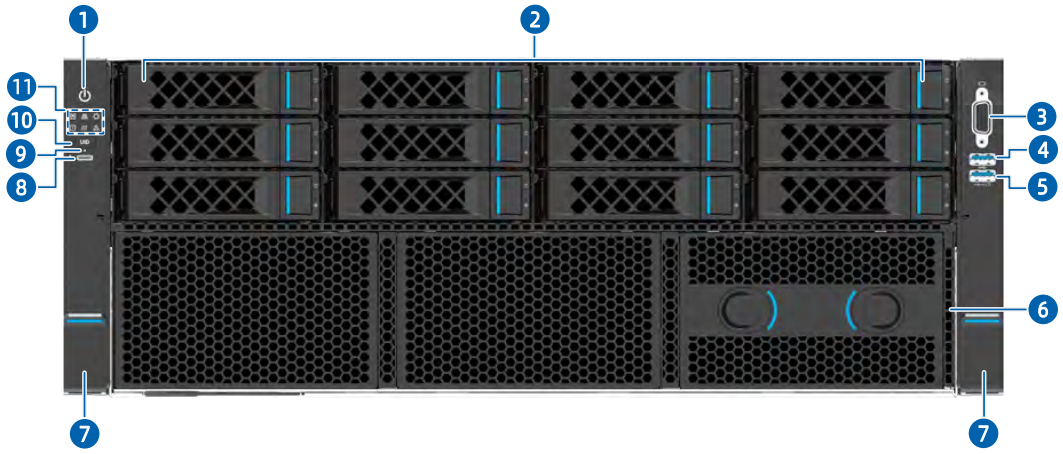
Figure 5-1 Front View



Item	Feature	Item	Feature
1	Power Button and LED	7	Ear Latch
2	2.5-Inch Drive Bay	8	USB Type-C Port
3	VGA Port	9	USB Type-C Status LED
4	USB 3.0 Port	10	UID/BMC RST Button and LED
5	USB 2.0 Port	11	LEDs
6	Quick Release Panel	-	-

5.1.2 12 × 3.5-Inch Drive Configuration

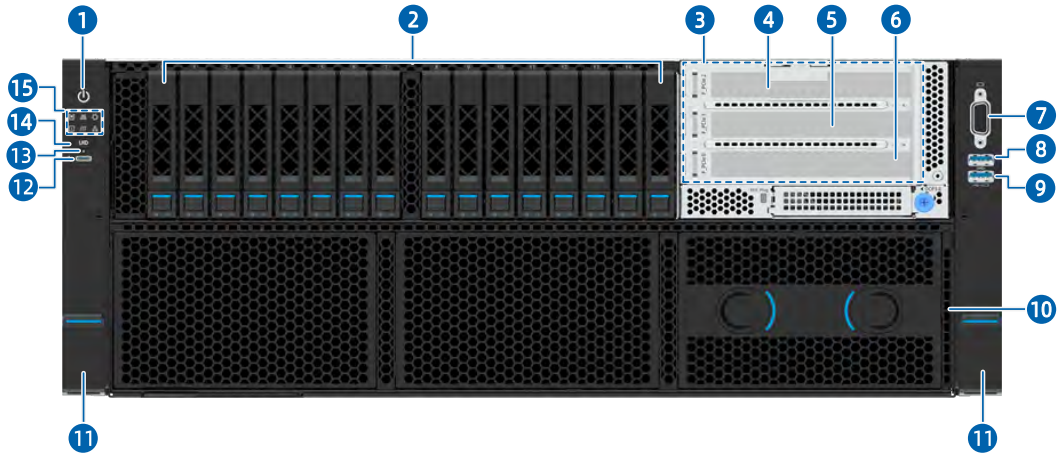
Figure 5-2 Front View



Item	Feature	Item	Feature
1	Power Button and LED	7	Ear Latch
2	3.5-Inch Drive Bay	8	USB Type-C Port
3	VGA Port	9	USB Type-C Status LED
4	USB 3.0 Port	10	UID/BMC RST Button and LED
5	USB 2.0 Port	11	LEDs
6	Quick Release Panel	-	-

5.1.3 16 × 2.5-Inch Drive Configuration

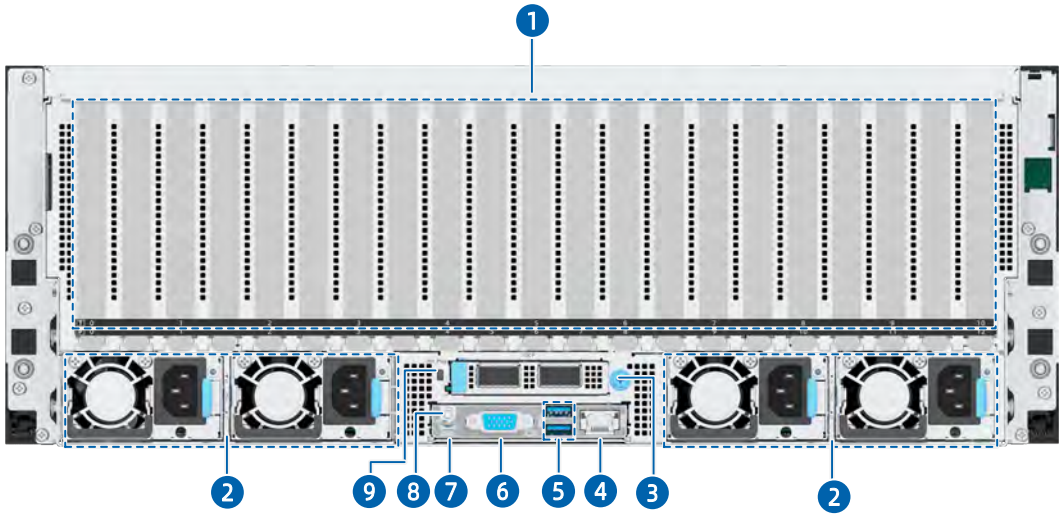
Figure 5-3 Front View



Item	Feature	Item	Feature
1	Power Button and LED	9	USB 2.0 Port
2	2.5-Inch Drive Bay	10	Quick Release Panel
3	PCIe Riser Module 0	11	Ear Latch
4	PCIe Slot 2	12	USB Type-C Port
5	PCIe Slot 1	13	USB Type-C Status LED
6	PCIe Slot 0	14	UID/BMC RST Button and LED
7	VGA Port	15	LEDs
8	USB 3.0 Port	-	-

5.2 Rear Panel

Figure 5-4 Rear View

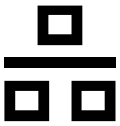


Item	Feature	Item	Feature
1	PCIe/GPU Slot	6	VGA Port
2	PSU	7	System/BMC Serial Port
3	OCP 3.0 Card	8	UID/BMC RST Button and LED
4	BMC Management Network Port	9	OCP 3.0 Card Hot-Plug Button and LED
5	USB 3.0 Port	-	-

5.3 Front Panel LEDs and Buttons

Table 5-1 LED and Button Description

Icon	Feature	Description
	Power Button and LED	• Power LED: - Off = No power - Solid green = Power-on state - Solid orange = Standby state • Power button: - Press and release the button to power on the system from the standby state - Press and hold the button for 6 seconds to force a shutdown from the power-on state.
	System Status LED	• Off = Normal • Blinking red (1 Hz) = A warning error is detected on CPU, memory, power supply, drive, fan, etc. • Solid red = A critical error is detected on CPU, memory, power supply, drive, fan, etc.
	Memory Status LED	• Off = Normal • Blinking red (1 Hz) = A warning error occurs • Solid red = A critical error occurs
	Fan Status LED	• Off = Normal • Blinking red (1 Hz) = A warning error occurs • Solid red = A critical error occurs, including fan failure and fan absence
	Power Status LED	• Off = Normal • Blinking red (1 Hz) = A warning error occurs • Solid red = A critical error occurs

Icon	Feature	Description
	System Overheat LED	• Off = Normal • Blinking red (1 Hz) = A warning error occurs, including Proc Hot, resulting in CPU throttling • Solid red = A critical error occurs, including CPU Thermal Trip/PCH Hot/MEM Hot, etc.
	Network Status LED	• Off = No network connection • Blinking green = Network connected with data being transmitted • Solid green = Network connected without data being transmitted Note: It only indicates the status of the self-developed OCP card.
	UID/BMC RST Button and LED	• UID/BMC RST LED: - Solid blue = The UID is turned on by the UID button or via the BMC Web GUI • UID/BMC RST Button: - Press and release to activate the UID LED. - Press and hold the button for 6 seconds to force the BMC to reset.
-	USB Type-C Status LED	• Connected to a terminal: - Off = Not connected to a terminal - Blinking green (2 Hz) for 3 seconds and then off = Port function is disabled - Solid green = Connected to a terminal • Connected to a USB storage device: - Off = Not connected to a USB storage device - Blinking red (1 Hz) = Job fails or is completed with an error reported

Icon	Feature	Description
		- Blinking green (2 Hz) = Job in progress - Blinking green (2 Hz) 5 times and then off = Port function is disabled - Solid green = Job is completed successfully
-	OCP 3.0 Card Hot-Plug Button and LED	• OCP 3.0 card hot-plug LED: - Solid green = OCP card is powered on - Blinking green = OCP card is getting ready for hot-plugging or OCP card is being identified after being inserted in - Off = OCP card is powered off • OCP 3.0 card hot-plug button: - With the LED solid on, press and release the button to power off the OCP card. - With the LED off and the OCP card installed, press and release the button to power on the OCP card. Note: The blinking frequency of the OCP card LED may vary by brand and model.

5.4 Port Description

Table 5-2 Port Description

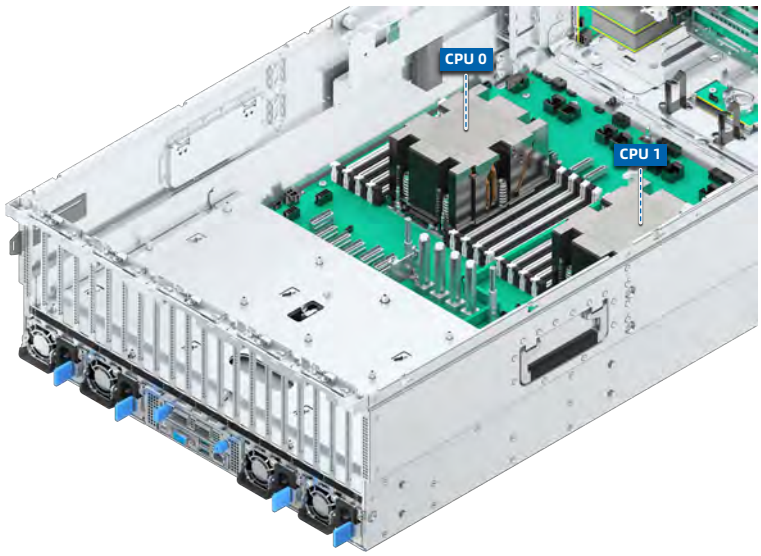
Feature	Description
VGA Port	Enables you to connect a display terminal to the system.
USB 3.0 Port	Enables you to connect a USB 3.0/2.0 device to the system.
USB 2.0 Port	Enables you to connect a USB 2.0 device to the system.
USB Type-C Port	• Enables you to connect a terminal (local PCs with Windows 10 or later OS, or Android/IOS mobile phones) for BMC local maintenance, to monitor and manage the system.

	• Enables you to connect a USB storage device to the system for automatic log copying to the USB device and automatic importing of configuration to the BMC.
System/BMC Serial Port	• System Serial Port: Enables you to debug and monitor the system. • BMC Serial Port: Enables you to debug and monitor the BMC.
BMC Management Network Port	Enables you to manage the server. Note: It is a GbE port of 100/1,000 Mbps auto-negotiation.
OCP NIC Port	Enables you to connect the system to the network.
PCIe NIC Port (for add-in card)	Enables you to connect the system to the network.

5.5 Processors

- Features 2 processors.
- The processors used in a server must bear the same part number (P/N code).
- For specific processor options, consult your local sales representative or refer to 7.2 Hardware Compatibility.

Figure 5-5 Processor Locations

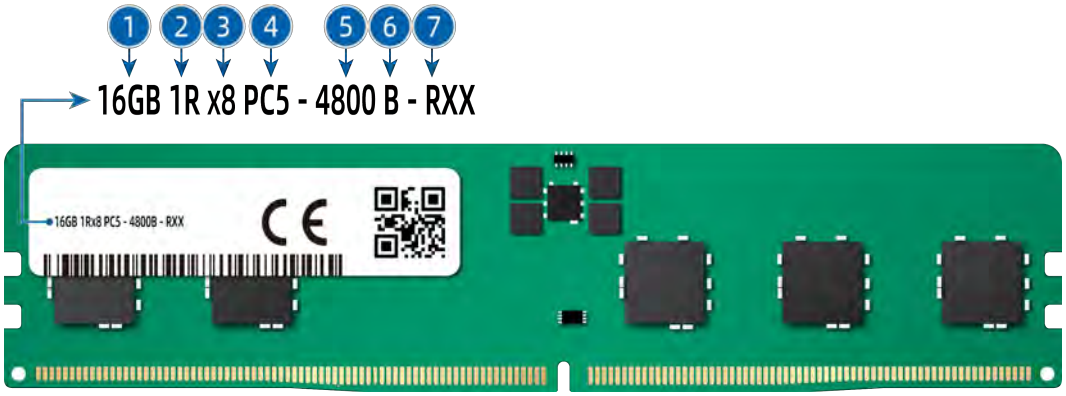


5.6 DDR5 DIMMs

5.6.1 Identification

To determine DIMM characteristics, refer to the label attached to a DIMM and the following figure and table.

Figure 5-6 DIMM Identification



Item	Description	Example
1	Capacity	• 16 GB • 32 GB • 64 GB • 128 GB • 256 GB
2	Rank(s)	• 1R = Single rank • 2R = Dual rank • 2S2R = Two ranks of two high stacked 3DS DRAM • 2S4R = Four ranks of two high stacked 3DS DRAM • 4R = Quad rank
3	Data width of DRAM	• x4 = 4 bits • x8 = 8 bits
4	DIMM slot type	PC5 = DDR5
5	Maximum memory speed	• 4,800 MT/s • 5,600 MT/s
6	CAS latency	• SDP 4800B = 40-39-39 • 3DS 4800B = 46-39-39 • SDP 5600B = 46-45-45

Item	Description	Example
		• 3DS 5600B = 52-45-45
7	DIMM type	R = RDIMM

5.6.2 Memory Subsystem Architecture

The server supports 24 DIMM slots and 12 channels per CPU.

Table 5-3 DIMM Slot List

CPU	Channel ID	Silk Screen
CPU0	Channel A	CPU0_CAD0
	Channel B	CPU0_CBD0
	Channel C	CPU0_CCD0
	Channel D	CPU0_CDD0
	Channel E	CPU0_CED0
	Channel F	CPU0_CFD0
	Channel G	CPU0_CGD0
	Channel H	CPU0_CHD0
	Channel I	CPU0_CID0
	Channel J	CPU0_CJD0
	Channel K	CPU0_CKD0
	Channel L	CPU0_CLD0
CPU1	Channel A	CPU1_CAD0
	Channel B	CPU1_CBD0
	Channel C	CPU1_CCD0
	Channel D	CPU1_CDD0
	Channel E	CPU1_CED0
	Channel F	CPU1_CFD0
	Channel G	CPU1_CGD0
	Channel H	CPU1_CHD0
	Channel I	CPU1_CID0
	Channel J	CPU1_CJD0
	Channel K	CPU1_CKD0

CPU	Channel ID	Silk Screen
	Channel L	CPU1_CLD0

5.6.3 Compatibility

Refer to the following rules to select the DDR5 DIMMs.

IMPORTANT

- A server must use DDR5 DIMMs with the same part number (P/N code). All DDR5 DIMMs operate at the same speed, which is the lowest of:
  - Memory speed supported by a specific CPU.
  - Maximum operating speed of a memory module.
- Mixing DDR5 DIMM specifications (capacity, bit width, rank, height, etc.) is not supported.
- For specific system memory options, consult your local sales representative or refer to 7.2 Hardware Compatibility.

- DDR5 DIMMs can be used with the 4th Gen AMD Genoa processors. The maximum memory capacity supported varies with the CPU model.
- The maximum number of DIMMs supported varies by the CPU type, DIMM type and the rank quantity.

NOTE

Maximum number of DIMMs supported per channel ≤ Maximum number of ranks supported per channel/Number of ranks per DIMM.

Table 5-4 DDR5 DIMM Specifications

Item	Value				
Capacity per DDR5 DIMM (GB)	16	32	64	96	128
Type	RDIMM	RDIMM	RDIMM	RDIMM	3DS RDIMM
Rated speed (MT/s)	5,600	5,600	5,600	5,600	5,600
Operating voltage (V)	1.1	1.1	1.1	1.1	1.1

Maximum number of DDR5 DIMMs supported in a server[1]		24	24	24	24	24
Maximum capacity of DDR5 DIMMs supported in a server (GB)[2]		384	768	1,536	2,304	3,072
Actual speed (MT/s)	1DPC[3]	5,600	5,600	5,600	5,600	5,600

Notes:

1. The maximum number of DDR5 DIMMs supported is based on the dual-CPU configuration.

2. It indicates the maximum memory capacity supported when all the DIMM slots are populated with DDR5 DIMMs. The maximum DDR5 capacity varies by the CPU type.

3. DPC (DIMM per channel) is the number of DIMMs per memory channel.

5.6.4 DIMM Population Rules

- General population rules for DDR5 DIMMs:
  - Install DIMMs only when the corresponding processor has been installed.
  - Install dummies in the empty DIMM slots.

5.6.5 DIMM Slot Layout

Up to 24 DDR5 DIMMs can be installed in a server. DIMM configuration must be compliant with the DIMM population rules.

Figure 5-7 DIMM Slot Layout

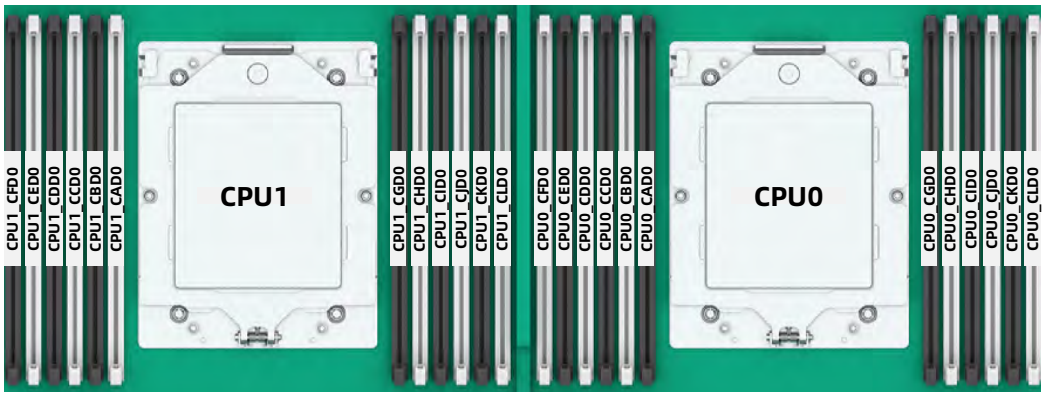


Table 5-5 DDR5 DIMM Population Rules (Dual-CPU Configuration)

DDR QTY	CPU0												CPU1											
	CAD0	CBD0	CCD0	CDD0	CED0	CFD0	CGD0	CHD0	CID0	CJD0	CKD0	CLD0	CAD0	CBD0	CCD0	CDD0	CED0	CFD0	CGD0	CHD0	CID0	CJD0	CKD0	CLD0
2	●												●											
4	●						●						●						●					
8	●		●				●		●				●		●				●		●			
12	●	●	●				●	●	●				●	●	●				●	●	●			
16	●	●	●		●		●	●	●		●		●	●	●		●		●	●	●		●	
20	●	●	●	●	●		●	●	●	●	●		●	●	●	●	●		●	●	●	●	●	
24	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●

5.7 Storage

CAUTION

Mixing of storage controllers may result in drive letter drift under the system.

5.7.1 Drive Configurations

NOTE

- The following table doesn't contain all supported configurations. For other configurations, consult the pre-sales engineer.
- For the physical drive No. of each configuration, refer to 5.7.2 Drive Numbering.

Table 5-6 Drive Configurations

Configuration	Front Drives		Drive Management Mode	Internal Drives
	Bay	Type		
4 × 2.5-Inch NVMe Drive Config.	0 to 3	NVMe drive	Directly connected to CPU	2 × M.2 SSD
8 × 2.5-Inch NVMe Drive Config.	0 to 7	NVMe drive	RAID card	2 × M.2 SSD
8 × 2.5-Inch SAS/SATA Drive + 2 × 2.5-inch NVMe Drive Config.	0 to 7	SAS/SATA drive	RAID card	2 × M.2 SSD
	14 to 15	NVMe drive	SW card	
12 × 3.5-Inch SAS/SATA Drive Config.	0 to 11	SAS/SATA drive	RAID card	2 × M.2 SSD

Configuration	Front Drives		Drive Management Mode	Internal Drives
	Bay	Type		
8/10 × 3.5-Inch SAS/SATA Drive + 2 × 2.5-inch NVMe Drive (3.5-inch Drive Tray) Config.	0 to 7/9	SAS/SATA drive	RAID card	2 × M.2 SSD
	10 to 11	NVMe drive	Directly connected to CPU	
8 × 2.5-Inch SAS/SATA Drive + 4 × 2.5-inch NVMe Drive Config.	0 to 7	SAS/SATA drive	RAID card	2 × M.2 SSD
	12 to 15	NVMe drive	Directly connected to CPU	
8 × 2.5-Inch SAS/SATA Drive + 4 × 2.5-inch NVMe Drive Config.	0 to 7	SAS/SATA drive	RAID card	2 × M.2 SSD
	12 to 15	NVMe drive	SW card	
12 × 2.5-Inch SAS/SATA Drive + 4 × 2.5-inch NVMe Drive Config.	0 to 11	SAS/SATA drive	RAID card	2 × M.2 SSD
	12 to 15	NVMe drive	Directly connected to CPU	
14 × 2.5-Inch SAS/SATA Drive + 2 × 2.5-inch NVMe Drive Config.	0 to 13	SAS/SATA drive	RAID card	2 × M.2 SSD
	14 to 15	NVMe drive	SW card	
16 × 2.5-Inch SAS/SATA Drive Config.	0 to 15	SAS/SATA drive	RAID card	2 × M.2 SSD
12 × 2.5-Inch SAS/SATA Drive + 4 × 2.5-inch NVMe Drive Config.	0 to 11	SAS/SATA drive	RAID card	2 × M.2 SSD
	12 to 15	NVMe drive	SW card	
16 × 2.5-Inch SAS/SATA Drive + 4 × 2.5-inch NVMe Drive Config.	0 to 15	SAS/SATA drive	RAID card	2 × M.2 SSD
	20 to 23	NVMe drive	Directly connected to CPU	
24 × 2.5-Inch SAS/SATA Drive Config.	0 to 23	SAS/SATA drive	RAID card	2 × M.2 SSD

5.7.2 Drive Numbering

- 24 × 2.5-Inch SAS/SATA Drive Configuration

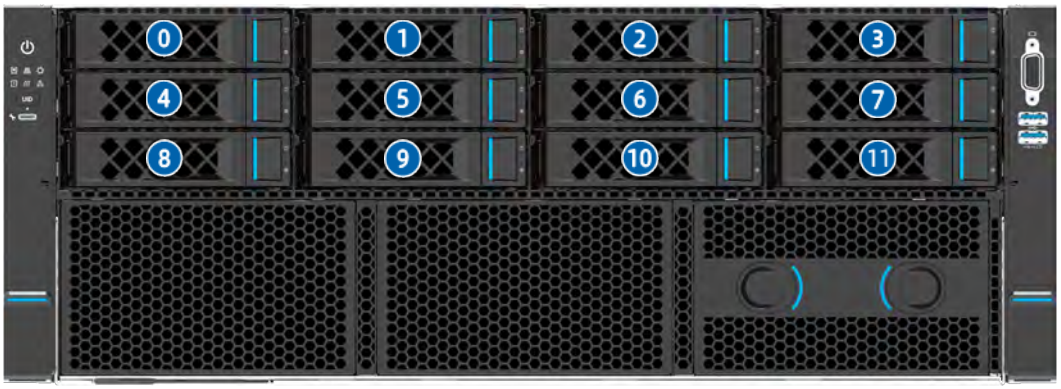
Figure 5-8 Drive Numbering

Physical Drive No.	Drive No. Identified by the BMC	Drive No. Identified by an 8i RAID Card and a 16i RAID Card
0	0	0
1	1	1
2	2	2
3	3	3
4	4	4
5	5	5
6	6	6
7	7	7
8	8	0
9	9	1
10	10	2
11	11	3
12	12	4
13	13	5
14	14	6
15	15	7
16	16	8
17	17	9
18	18	10
19	19	11

Physical Drive No.	Drive No. Identified by the BMC	Drive No. Identified by an 8i RAID Card and a 16i RAID Card
20	20	12
21	21	13
22	22	14
23	23	15

- 12 × 3.5-Inch SAS/SATA Drive Configuration

Figure 5-9 Drive Numbering



Physical Drive No.	Drive No. Identified by the BMC	Drive No. Identified by a 16i RAID Card
0	0	0
1	1	1
2	2	2
3	3	3
4	4	4
5	5	5
6	6	6
7	7	7
8	8	8
9	9	9
10	10	10
11	11	11

- 16 × 2.5-Inch SAS/SATA Drive Configuration

Figure 5-10 Drive Numbering

Physical Drive No.	Drive No. Identified by the BMC	Drive No. Identified by Two 8i RAID Cards
0	0	0
1	1	1
2	2	2
3	3	3
4	4	4
5	5	5
6	6	6
7	7	7
8	8	0
9	9	1
10	10	2
11	11	3
12	12	4
13	13	5
14	14	6
15	15	7

5.7.3 Drive LEDs

1. SAS/SATA Drive LEDs

Figure 5-11 SAS/SATA Drive LEDs

Activity LED (①)	Locator/Error LED (②)			Description
Green	Blue	Red		
Off	Off	RAID created	RAID not created	Drive absent
		Solid on	Off	
Solid on	Off	Off		Drive present but not in use
Blinking (4 Hz)	Off	Off		Drive present and in use
Blinking (4 Hz)	Solid pink			Copyback/Rebuilding in progress
Solid on	Solid on	Off		Drive selected but not in use
Blinking (4 Hz)	Solid on	Off		Drive selected and in use
Off	Solid on	Off		Drive is selected but failed
Any status	Off	Solid on		Drive fails

2. NVMe Drive LEDs

Figure 5-12 NVMe Drive LEDs

Activity LED (①)	Locator/Error LED (②)		Description
Green	Blue	Red	
Off	Off	Off	Drive absent
Solid on	Off	Off	Drive present but not in use

Activity LED (①)	Locator/Error LED (②)		Description
Green	Blue	Red	
Blinking (4 Hz)	Off	Off	Drive present and in use
Blinking (4 Hz)	Solid pink		Copyback/Rebuild/Initializing/ Verifying in progress
Solid on	Solid on	Off	Drive selected but not in use
Blinking (4 Hz)	Solid on	Off	Drive selected and in use
Off	Solid on	Off	Drive is selected but failed
Any status	Off	Solid on	Drive fails

5.7.4 RAID Cards

- The RAID card provides functions such as RAID configuration, RAID level migration, and drive roaming.
- For specific RAID card options, consult your local sales representative or refer to 7.2 Hardware Compatibility.

5.8 Network

NICs provide network expansion capabilities.

- The OCP slot supports the OCP 3.0 card. Users can select the OCP 3.0 card based on their needs.
- The PCIe slots support PCIe NICs. Users can select the PCIe cards based on their needs.
- For specific network options, consult your local sales representative or refer to 7.2 Hardware Compatibility.

5.9 I/O Expansion

5.9.1 PCIe Expansion Cards

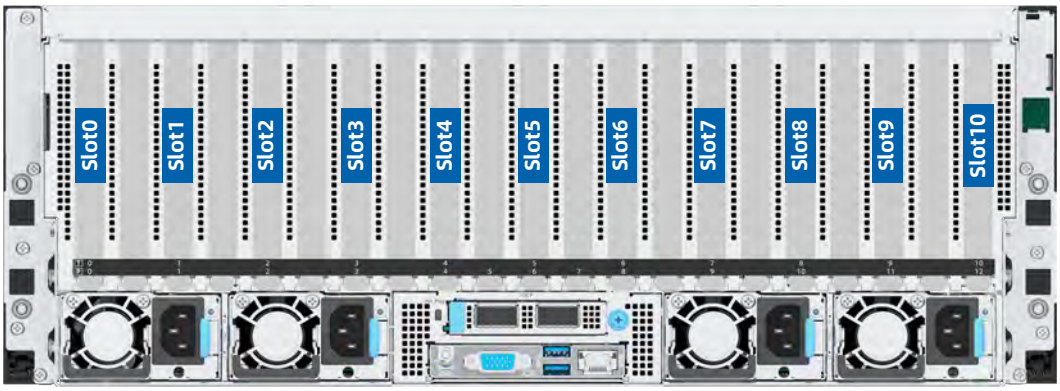
The PCIe expansion cards provide system expansion capabilities.

- Up to 13 rear PCIe 5.0 expansion slots and 1 OCP 3.0 slot.
- Up to 3 front PCIe 5.0 expansion slots.
- Up to 2 internal PCIe 5.0 expansion slots.

- For specific PCIe expansion card options, consult your local sales representative or refer to 7.2 Hardware Compatibility.

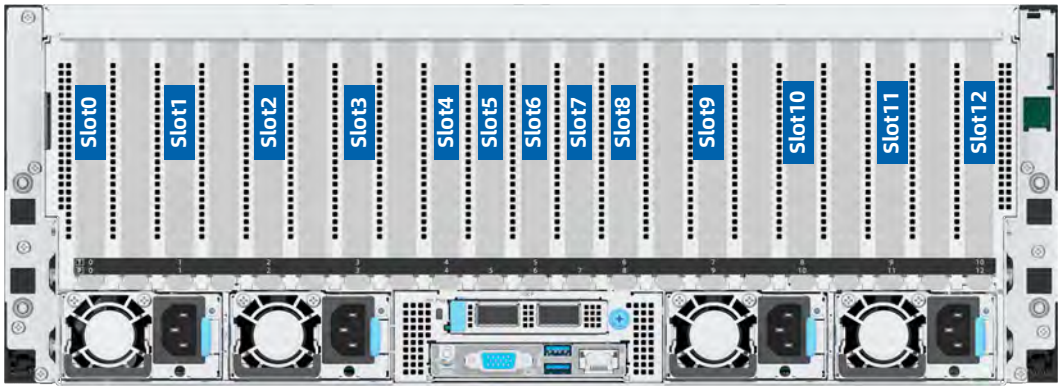
5.9.2 Rear PCIe Slot Locations

Figure 5-13 PCIe Slots - T Configuration



- For 8-GPU configuration, the GPUs are installed in slot 1 to slot 8.
- The smart NIC is installed in slot 0.
- For the PCIe expansion board, refer to 5.12.2 PCIe Expansion Board.

Figure 5-14 PCIe Slots - P Configuration



- For 8-GPU configuration, the GPUs are installed in slots 0 to 3 and slots 8 to 11.
- The smart NIC is installed in slot 4.
- For the PCIe expansion board, refer to 5.12.2 PCIe Expansion Board.

5.9.3 Rear PCIe Slot Description

Table 5-7 PCIe Slot Description - T Configuration

PCIe Slot	Owner	PCIe Standard	Connector Width	Bus Width	Port No.	Form Factor
Slot 0	CPU0	PCIe 5.0	x16	x16/x8	G3	FHFL
Slot 1	CPU0	PCIe 5.0	x16	x16	P2	FHFL
Slot 2	CPU0	PCIe 5.0	x16	x16	P3	FHFL
Slot 3	CPU0	PCIe 5.0	x16	x16	P1	FHFL
Slot 4	CPU0	PCIe 5.0	x16	x16	P0	FHFL
Slot 5	CPU1	PCIe 5.0	x16	x16	P2	FHFL
Slot 6	CPU1	PCIe 5.0	x16	x16	P3	FHFL
Slot 7	CPU1	PCIe 5.0	x16	x16	P1	FHFL
Slot 8	CPU1	PCIe 5.0	x16	x16	P0	FHFL
Slot 9/10	CPU1	PCIe 5.0	x16	x16/x8	G1	FHFL
OCP 3.0 Slot	CPU0/1	PCIe 5.0	x16	x16	G3	SFF OCP 3.0

Table 5-8 PCIe Slot Description - P Configuration

PCIe Slot	Owner	PCIe Standard	Connector Width	Bus Width	Port No.	Form Factor
Slot 0	CPU0	PCIe 5.0	x16	x16	S7	FHFL
Slot 1	CPU0	PCIe 5.0	x16	x16	S2	FHFL
Slot 2	CPU0	PCIe 5.0	x16	x16	S1	FHFL
Slot 3	CPU0	PCIe 5.0	x16	x16	S0	FHFL
Slot 4	CPU0	PCIe 5.0	x16	x16	P1	FHFL
Slot 5	CPU0	PCIe 5.0	x16	x16	S5	FHFL
Slot 6	CPU1	PCIe 5.0	x16	x16	S0	FHFL
Slot 7	CPU1	PCIe 5.0	x16	x16	P1	FHFL
Slot 8	CPU1	PCIe 5.0	x16	x16	S5	FHFL
Slot 9	CPU1	PCIe 5.0	x16	x16	S6	FHFL
Slot10	CPU1	PCIe 5.0	x16	x16	S7	FHFL
Slot11	CPU1	PCIe 5.0	x16	x16	S2	FHFL
Slot12	CPU1	PCIe 5.0	x16	x16	P2	FHFL

PCIe Slot	Owner	PCIe Standard	Connector Width	Bus Width	Port No.	Form Factor
OCP 3.0 Slot	CPU0	PCIe 5.0	x16	x16	G3	SFF OCP 3.0

5.9.4 Front PCIe Slot Locations

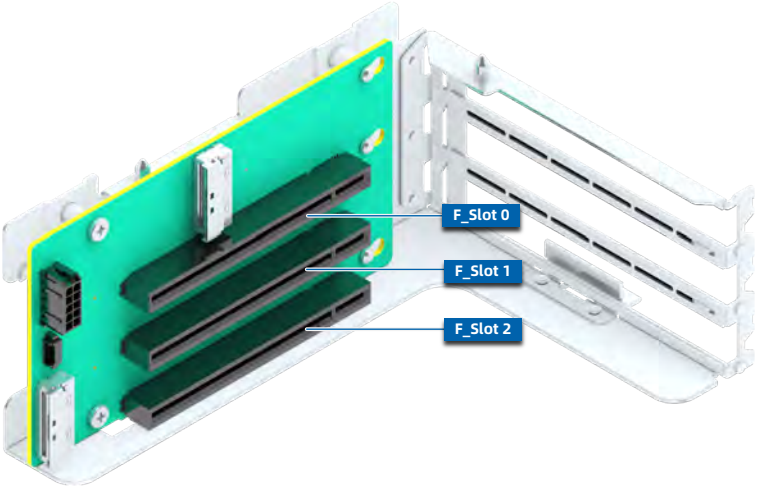
Figure 5-15 PCIe Riser Module 0

- The PCIe riser module 0 provides three PCIe x16 slots, namely, F_Slot 0, F_Slot 1 and F_Slot 2.
- The front RAID Riser module (behind the quick release panel) provides two PCIe x8 slots, namely, M_Slot 0 and M_Slot 1.

5.9.5 Front PCIe Riser Module

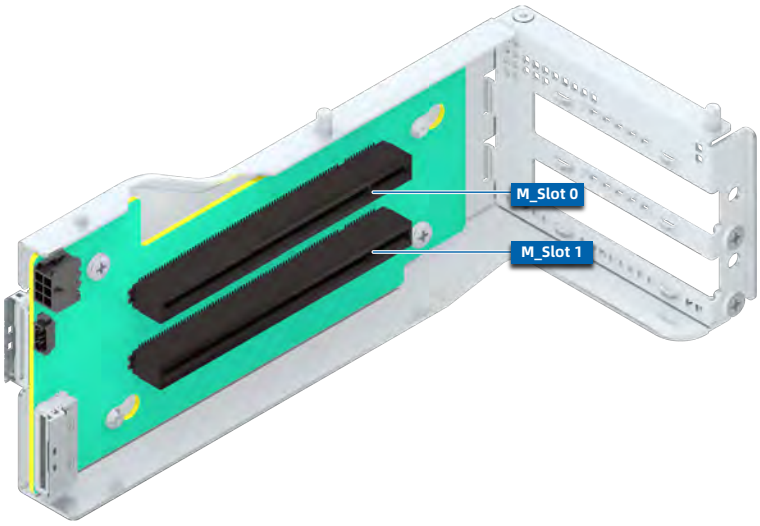
- Front PCIe Riser Module

Figure 5-16 PCIe Riser Module (Three PCIe x16 slots)



- Front RAID Riser Module (for RAID cards only)

Figure 5-17 RAID Riser Module (Two PCIe x8 slots)



5.9.6 Front PCIe Slot Description

Table 5-9 Front PCIe Slot Description

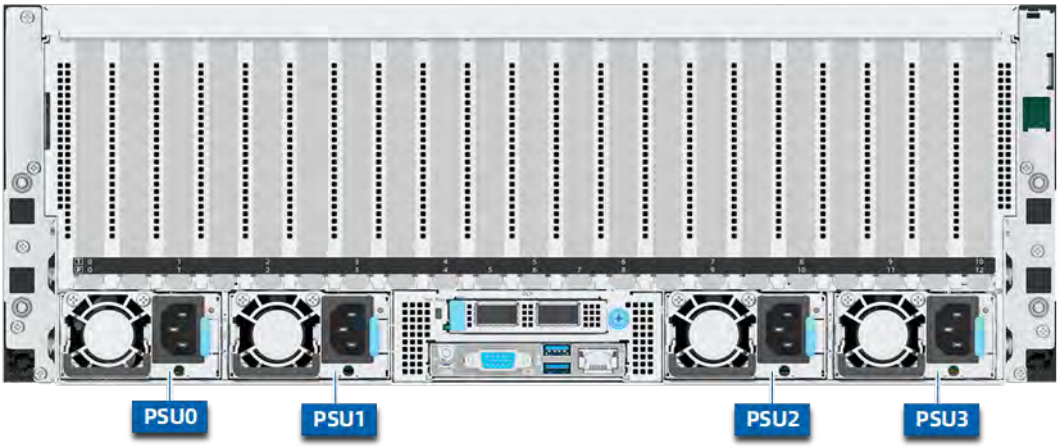
PCIe Slot	Owner	PCIe Standard	Connector Width	Bus Width	Port No.	Form Factor
F_Slot 0	CPU0	PCIe 5.0	x16	x16	P1	FHHL
F_Slot 1	CPU0/1	PCIe 5.0	x16	x16	CPU0_P2 CPU1_P1	FHHL
F_Slot 2	CPU1	PCIe 5.0	x16	x16	P1/P2	FHHL
M_Slot 0	CPU0	PCIe 5.0	x8	x8	G1	FHHL
M_Slot 1	CPU1	PCIe 5.0	x8	x8	G2	FHHL

5.10 PSUs

- The server supports 2 or 4 PSUs.
- The server supports AC or DC power input.
- The PSUs are hot-swappable.
- The server supports 4 PSUs with 2+2 redundancy.
- The server must use PSUs with the same part number (P/N code).

- The PSUs feature short-circuit protection.

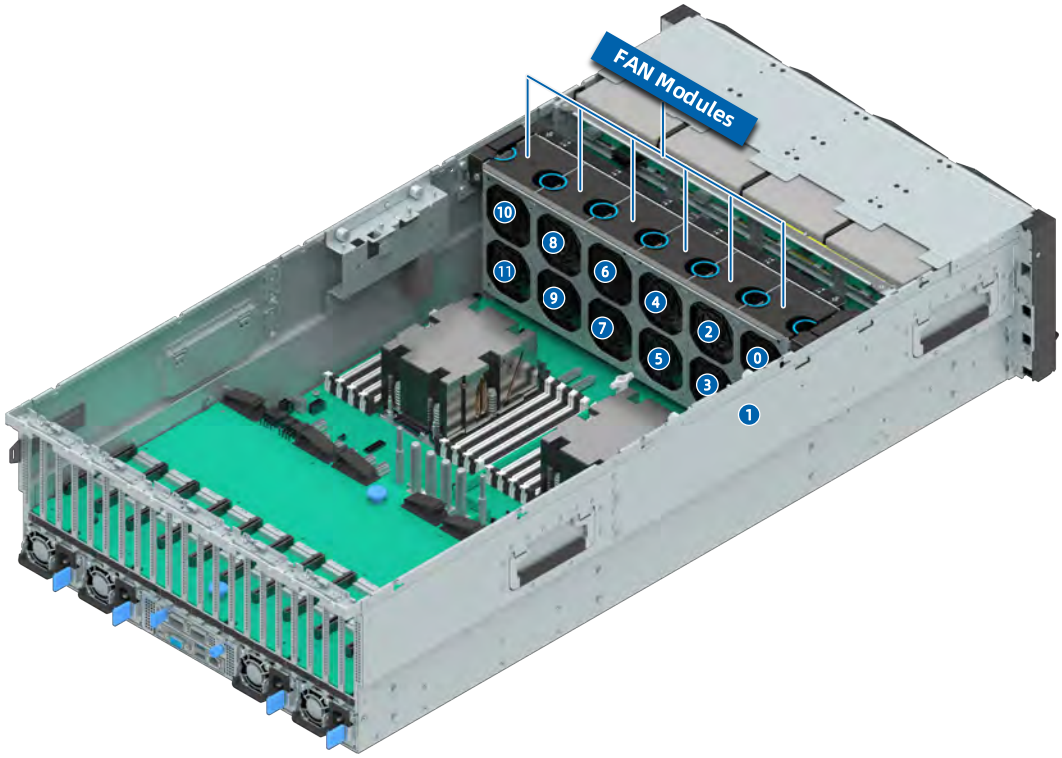
Figure 5-18 PSU Locations



5.11 Fan Modules

- The server supports 12 fan modules.
- The fans are hot-swappable.
- The server supports fans in N+1 redundancy, which means that the server can continue working properly when a single fan fails.
- The server supports intelligent fan speed control.
- The server must use fan modules with the same part number (P/N code).

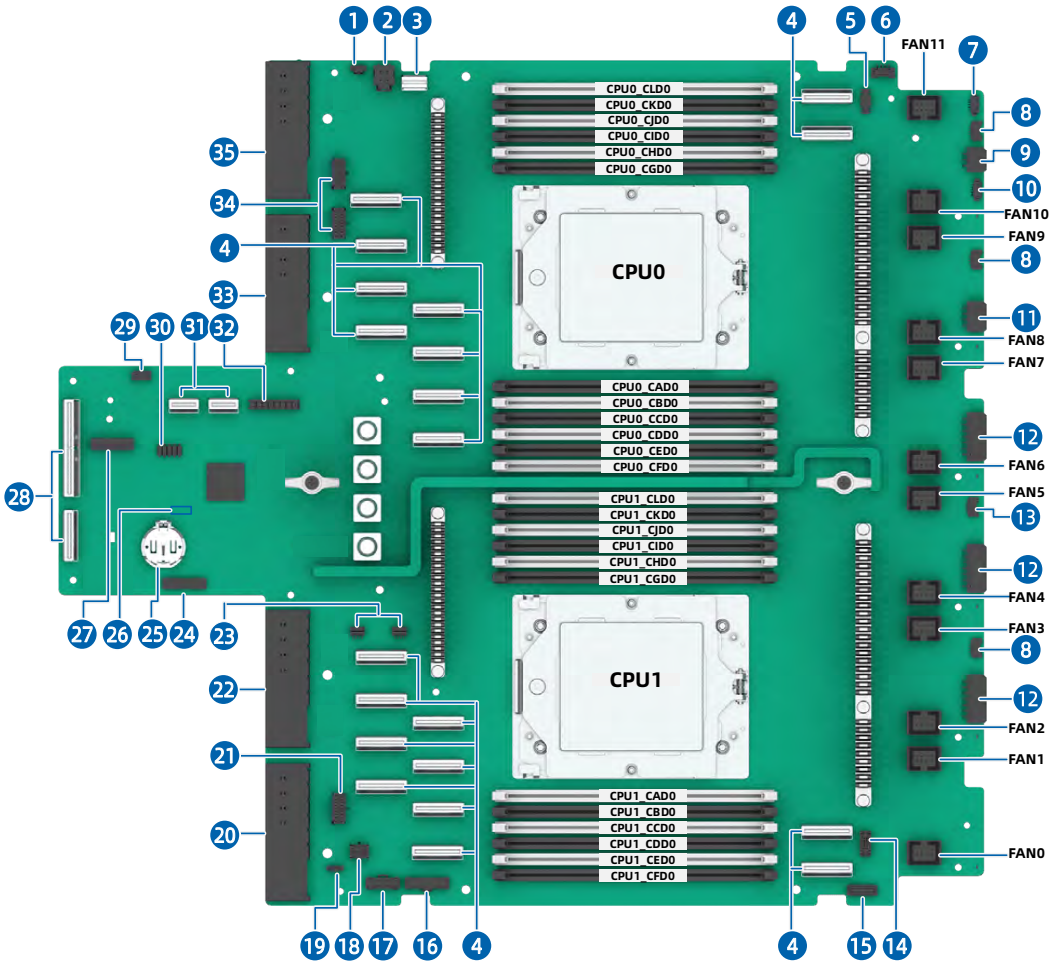
Figure 5-19 Fan Module Locations



5.12 Boards

5.12.1 Motherboard

Figure 5-20 Motherboard



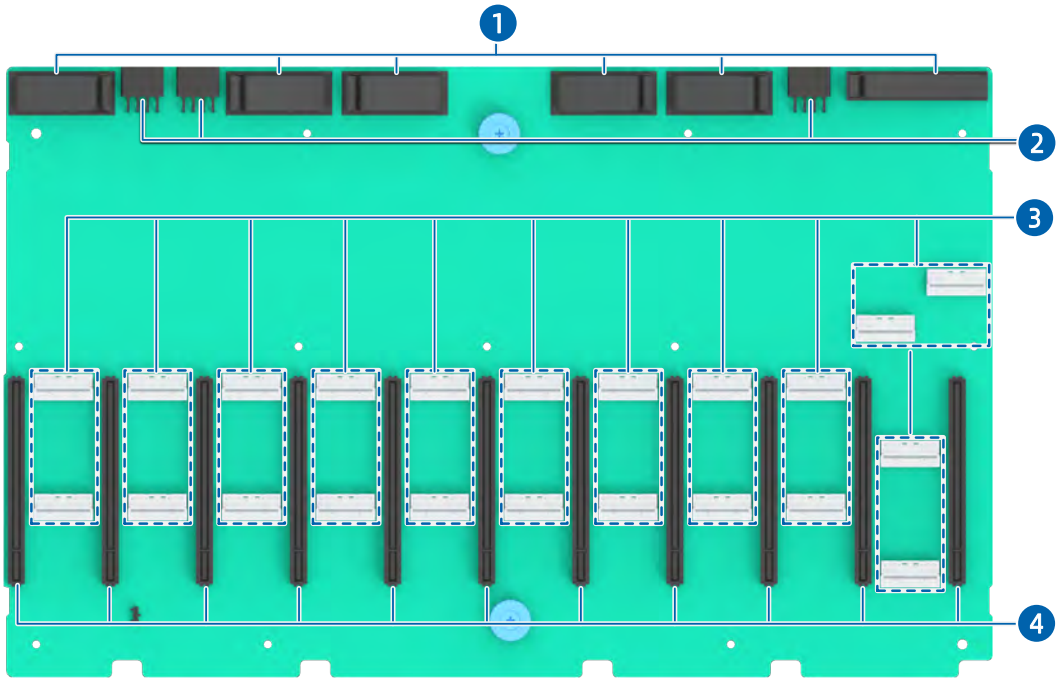
Item	Feature	Item	Feature
1	OCP 3.0 Card Hot-Plug and LED Connector	19	Smart NIC UART Connector
2	OCP 3.0 Card Power Connector	20	PSU3 Connector
3	Right Control Panel Connector	21	PCIe Expansion Board Power Connector
4	MCIO x8 Connector	22	PSU2 Connector
5	HDT Connector	23	Leak Detection Connector
6	Inlet Temperature Sensor Connector	24	OCP Sideband Connector
7	RAID Riser I²C Connector	25	Button Cell Battery Socket
8	Drive Backplane I²C Connector	26	CMOS Jumper

Item	Feature	Item	Feature
9	RAID Riser Power Connector	27	System TF Card Adapter Connector
10	RAID Riser I²C Connector	28	DC-SCM Connector
11	PCIe Riser Module Power Connector	29	Intrusion Switch Connector
12	Drive Backplane Power Connector	30	CPLD JTAG Connector
13	TSOM I²C Connector	31	M.2 Adapter Connector
14	VPP Connector	32	M.2 Adapter Power Connector
15	Left Control Panel Connector	33	PSU1 Connector
16	PDB Sideband Connector	34	PCIe Expansion Board Power Connector
17	NC-SI Sideband Connector	35	PSU0 Connector
18	Smart NIC Power Connector	-	-

5.12.2 PCIe Expansion Board

1. T Configuration

Figure 5-21 PCIe Expansion Board of T Configuration

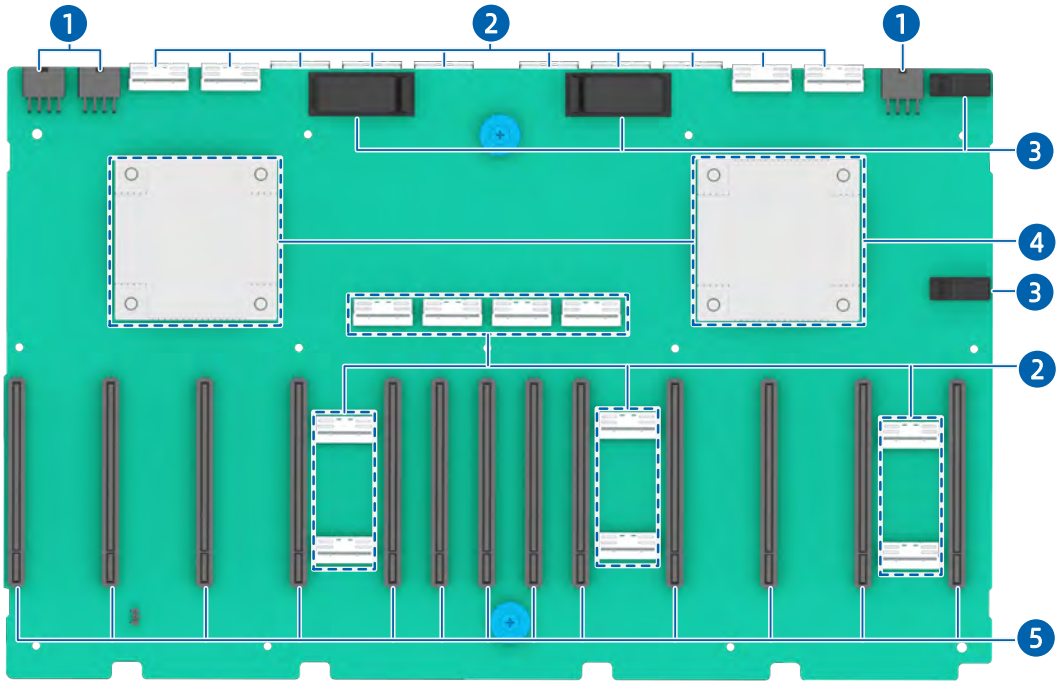


Item	Feature	Item	Feature
1	Cable Clip	3	PCIe MCIO x8 Connector

Item	Feature	Item	Feature
2	PCIe Expansion Board Power Connector	4	PCIe Slot

2. P Configuration

Figure 5-22 PCIe Expansion Board of P Configuration

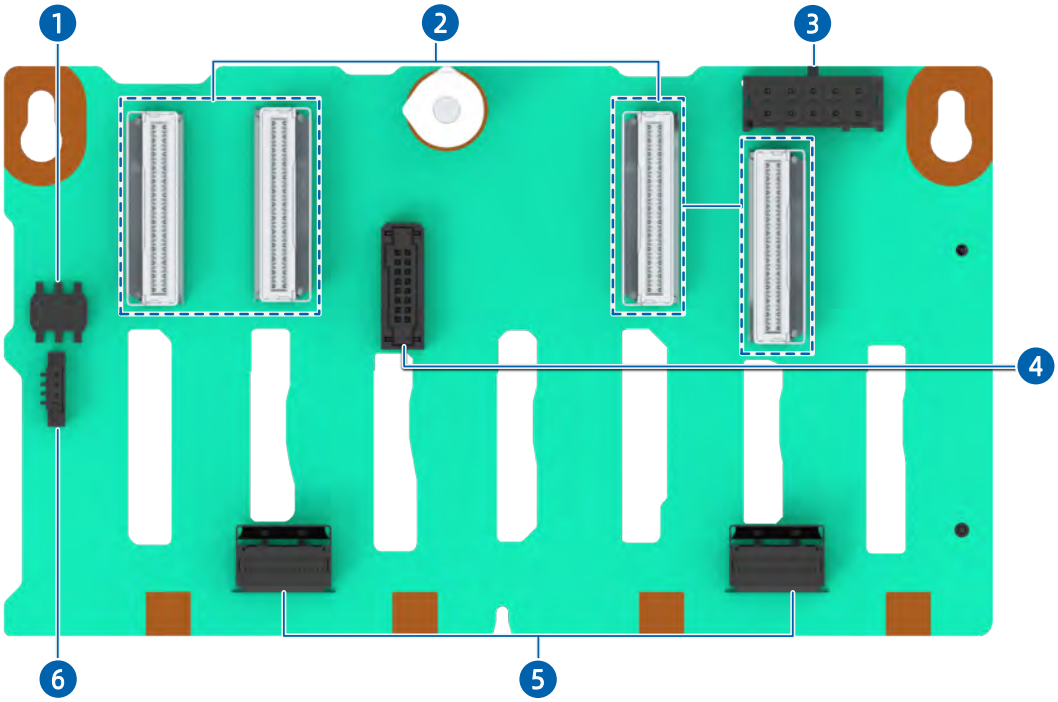


Item	Feature	Item	Feature
1	PCIe Expansion Board Power Connector	4	PCIe Switch Chip
2	PCIe MCIO x8 Connector	5	PCIe Slot
3	Cable Clip	-	-

5.12.3 Drive Backplanes

- 8 × 2.5-Inch SAS/SATA/NVMe Drive Backplane

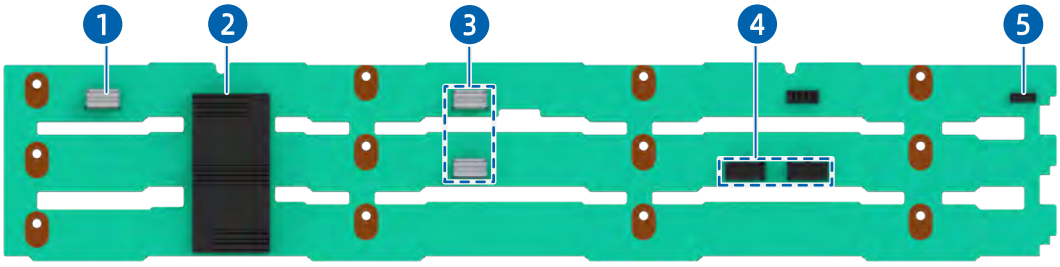
Figure 5-23 8 × 2.5-Inch SAS/SATA/NVMe Drive Backplane



Item	Feature	Item	Feature
1	CPLD JTAG Connector	4	VPP Connector
2	MCIO x8 Connector	5	Slimline x4 Connector
3	Power Connector	6	BMC I²C Connector

- 12 × 3.5-Inch SAS/SATA Drive Backplane

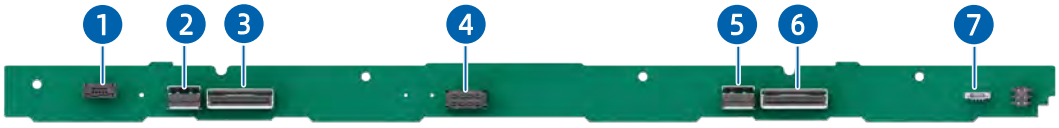
Figure 5-24 12 × 3.5-Inch SAS/SATA Drive Expander Backplane



Item	Feature	Item	Feature
1	Slimline x4 Connector	4	Power Connector
2	Expander Chip	5	BMC I²C Connector
3	Slimline x4 Connector	-	-

- 4 × 3.5-Inch SAS/SATA/NVMe Drive Backplane

Figure 5-25 4 × 3.5-Inch SAS/SATA/NVMe Drive Backplane



Item	Feature	Item	Feature
1	VPP Connector	5	Slimline x4 Connector
2	Slimline x4 Connector	6	MCIO x8 Connector
3	MCIO x8 Connector	7	BMC I^2C Connector
4	Power Connector	-	-

6 System Specifications

6.1 Technical Specifications

Table 6-1 Technical Specifications

Item	Description
Form Factor	4U rack server
Processor	Supports 2 AMD Genoa processors. • Up to 128 cores per CPU (with a base frequency of 2.25 GHz) • Max boost frequency of 4.3 GHz (32 cores) • 3 xGMI links at up to 32 GT/s per link • TDP up to 400 W Note: The information above is for reference only. See 7.2 Hardware Compatibility for details.
Memory	Provides 24 DIMM slots. • Up to 24 DDR5 DIMMs • 12 memory channels per CPU • 1 memory slot per channel • Up to 5,600 MT/s • RDIMMs and 3DS RDIMMs • A server must use DDR5 DIMMs with the same part number (P/N code). Note: The information above is for reference only. See 7.2 Hardware Compatibility for details.
Storage	• Front: - 24 × 2.5-inch SAS/SATA/NVMe drive (hot-swap) or - 12 × 3.5-inch SAS/SATA/NVMe drive (hot-swap) (A 3.5-inch drive tray can accommodate a 2.5-inch drive.) or - 16 × 2.5-inch SAS/SATA/NVMe drive (hot-swap) • Internal storage: 2 × M.2 SSD (optional)
Network	Supports multiple types of network expansion: • One optional hot-plug OCP 3.0 card (1/10/25/40/100/200 Gb) • Standard PCIe 5.0 NICs (1/10/25/40/100/200 Gb)

Item	Description
	• One BMC management network port that supports 100/1000 Mbps auto-negotiation
I/O Expansion	• Front: - Up to 3 × PCIe 5.0 slot • Internal: - Up to 2 × PCIe 5.0 slot (for RAID cards only) • Rear: - 1 × OCP 3.0 dedicated slot - T configuration: up to 11 PCIe 5.0 slots (for 10 dual-width FHFL expansion cards and 1 single-width FHFL expansion card) - P configuration: up to 13 PCIe 5.0 slots (for 8 dual-width FHFL expansion cards and 5 single-width FHFL expansion cards) Note: Refer to 5.9 I/O Expansion for details.
Port	• Front: - 1 × USB 2.0 port - 1 × USB 3.0 port - 1 × VGA port - 1 × USB type-C port • Rear: - 2 × USB 3.0 port - 1 × VGA port - 1 × system/BMC serial port - 1 × BMC management network port
Display	Integrated VGA on the DC-SCM board with a video memory of 64 MB and a maximum 16M color resolution of 1,920 × 1,200 at 60 Hz Notes: • The integrated VGA can support a maximum resolution of 1,920 × 1,200 only when the video driver matching the OS version is installed; otherwise, only the default resolution of the OS is supported. • When the front and rear VGA ports are both connected to monitors, only the monitor connected to the front VGA port works.
System Management	• UEFI • BMC • NC-SI

Item	Description
	• KSManage • KSManage Tools
Security Feature	• Trusted Platform Module (TPM) 2.0 and Trusted Cryptography Module (TCM) • Firmware update mechanism based on digital signatures • UEFI Secure Boot • Hierarchical BIOS password protection • BIOS Secure Flash and BIOS Lock Enable (BLE) • BMC and BIOS dual-image mechanism • Chassis intrusion detection

6.2 Environmental Specifications

Table 6-2 Environmental Specifications

Parameter	Description
Temperature[1, 2]	• Operating: 10°C to 35°C (50°F to 95°F) • Storage (packed): -40°C to +70°C (-40°F to +158°F) • Storage (unpacked): -40°C to +55°C (-40°F to +131°F)
Relative Humidity (RH, non-condensing)	• Operating: 5% to 90% RH • Storage (packed): 5% to 93% RH • Storage (unpacked): 5% to 93% RH
Operating Altitude	≤3,050 m (10,007 ft)
Corrosive Gaseous Contaminants	Maximum growth rate of corrosion film thickness: • Copper coupon: 300 Å/month (compliant with the gaseous corrosivity level of G1 defined in ANSI/ISA-71.04-2013) • Silver coupon: 200 Å/month (compliant with the gaseous corrosivity level of G1 defined in ANSI/ISA-71.04-2013)
Noise Levels[3, 4, 5]	Noise emissions are measured in accordance with ISO 7779 (ECMA 74) and declared in accordance with ISO 9296 (ECMA 109). Listed are the declared A-weighted sound power levels (LWAd) and the declared average bystander position A-weighted sound pressure levels (LpAm) at a server operating temperature of 23°C (73.4°F):

Parameter	Description
	Idle: • LWAd: 5.8 Bels • LpAm: 49.0 dBA Operating: • LWAd: 6.4 Bels • LpAm: 53.0 dBA for standard configuration

Notes:

1. Not all configurations support an operating temperature range of 10°C to 35°C (50°F to 95°F). The 12 × 3.5-inch drive configuration supports an operating temperature range of 10°C to 30°C (50°F to 86°F).

2. Standard operating temperature:

- 10°C to 35°C (50°F to 95°F) is the standard operating temperature range at sea level. The maximum temperature gradient is 20°C/h (36°F/h). The altitude and the maximum temperature gradient vary with server configuration. The server should be protected from direct sunlight.
- Any fan failure or operations above 30°C (86°F) may lead to system performance degradation.

3. This document lists the LWAd and LpAm of the product at a 23°C (73.4°F) ambient environment. All measurements are conducted in conformance with ISO 7779 (ECMA 74) and declared in conformance with ISO 9296 (ECMA 109). The listed sound levels apply to the standard configuration. Additional options may result in increased sound levels. Contact your sales representative for more information.

4. The sound levels shown here were measured based on specific configurations of a server. Sound levels vary with server configuration. These values are for reference only and subject to change without notice.

5. Product conformance to cited normative standards is based on sample testing, evaluation, or assessment. This product or family of products is eligible to bear the appropriate compliance logos and statements.

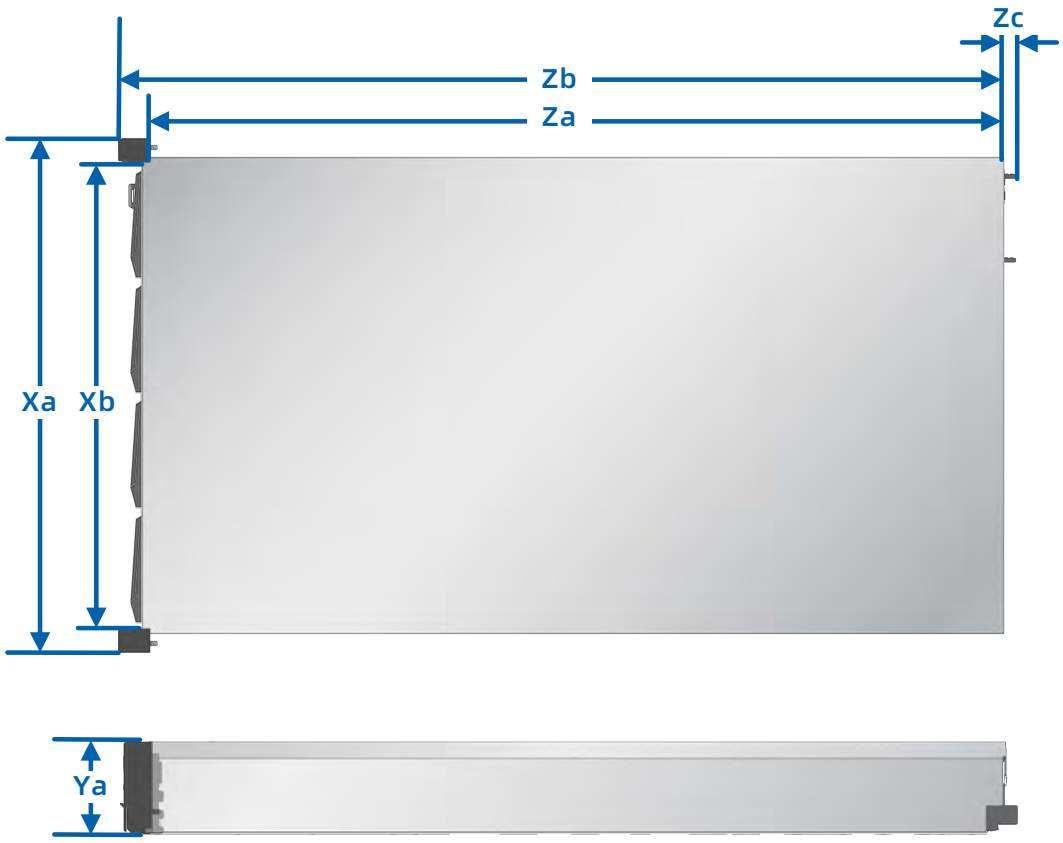
6.3 Physical Specifications

Table 6-3 Physical Specifications

Item	Description
Outer Packaging Dimensions (L × W × H)	1,200 × 800 × 471 mm (47.24 × 31.50 × 18.54 in.)
Installation Dimension Requirements	• Installation requirements for the cabinet are as follows: - General cabinet compliant with the International Electrotechnical Commission 297 (IEC 297) standard - Width: 482.6 mm (19 in.) - Depth: Over 1,000 mm (39.37 in.)

Item	Description
	• Installation requirements for the server rails are as follows: - Static rail kit: The distance between the front and rear mounting flanges ranges from 609 to 914 mm (23.98 to 35.98 in.) - Ball-bearing rail kit: The distance between the front and rear mounting flanges ranges from 609 to 914 mm (23.98 to 35.98 in.)
Weight	• 24 × 2.5-inch drive configuration: - Net weight: 51 kg (112.44 lbs) - Gross weight: 83 kg (182.98 lbs) (including server, packaging, rails and accessory box) • 16 × 2.5-inch drive configuration: - Net weight: 50 kg (110.23 lbs) - Gross weight: 82 kg (180.78 lbs) (including server, packaging, rails and accessory box) • 12 × 3.5-inch drive configuration: - Net weight: 55 kg (121.25 lbs) - Gross weight: 87 kg (191.80 lbs) (including server, packaging, rails and accessory box)

Figure 6-1 Chassis Dimensions



Model	Za	Zb	Zc	Xa	Xb	Ya
KR4268-E2-A0-R0-00	850 mm (33.46 in.)	880 mm (34.65 in.)	28 mm (1.10 in.)	482 mm (18.98 in.)	438 mm (17.24 in.)	174.5 mm (6.87 in.)

7 Operating System and Hardware Compatibility

This chapter describes the OS and hardware compatibility of the server. For the latest compatibility configuration and the component models not listed in this document, contact your local sales representative.

IMPORTANT

- Using incompatible components may cause the server to work abnormally, and such failures are not covered by technical support or warranty.
- The hardware compatibility of different models may vary slightly. Contact your sales representatives to confirm the detailed hardware configurations during the pre-sales phase.
- The server performance is strongly influenced by application software, middleware and hardware. The subtle differences in them may lead to performance variation in the application and test software.
  - For requirements on the performance of specific application software, contact your sales representatives to confirm the detailed hardware and software configurations during the pre-sales phase.
  - For requirements on hardware performance consistency, define specific configuration requirements (for example, specific drive models, RAID cards, or firmware versions) during the pre-sales phase.

7.1 Supported Operating Systems

Table 7-1 Supported Operating Systems

OS Version
Red Hat Enterprise Linux 8.7
Red Hat Enterprise Linux 8.8
Red Hat Enterprise Linux 9.0
Ubuntu 22.04
Windows Server 2022

NOTE

After installing Linux OS, add **iommu=pt** in the OS. See the OS installation guide on our website for details.

7.2 Hardware Compatibility

7.2.1 CPU Specifications

Table 7-2 CPU Specifications

Model	Cores	Threads	Base Frequency (GHz)	Max. Boost Frequency (GHz)	Cache (MB)	TDP (W)
9654	96	192	2.4	3.7	384	360
9554	64	128	3.1	3.75	256	360
9354	32	64	3.25	3.8	256	280
9634	84	168	2.25	3.7	384	290
9754	128	256	2.25	3.1	256	360
9534	64	128	2.45	3.7	256	280
9454	48	96	2.75	3.8	256	290
9374F	32	64	3.85	4.3	256	320
9474F	48	96	3.6	4.1	256	360

7.2.2 DIMM Specifications

Table 7-3 DIMM Specifications

Type	Capacity (GB)	Rate (MT/s)	Data Width	Organization
RDIMM	96	4,800	x72	2R x4
RDIMM	64	4,800	x72	2R x4
RDIMM	32	4,800	x72	2R x8
RDIMM	32	4,800	x72	1R x4
RDIMM	32	4,800	x72	2R x8
RDIMM	32	5,600	x72	2R x8
RDIMM	64	5,600	x72	2R x4

RDIMM	128	4,800	x72	2R x4

7.2.3 Drive Specifications

Table 7-4 SAS HDD Specifications

Type	RPM	Capacity	Max. Qty.
3.5-Inch SAS HDD	7.2K	2 TB/4 TB/6 TB/8 TB/10 TB /16 TB/18 TB/20 TB	12

Table 7-5 SSD Specifications

Type	Capacity	Max. Qty.
SATA SSD	240 GB/480 GB/960 GB/1.92 TB/3.84 TB/7.68 TB	24
SAS SSD	240 GB/480 GB/960 GB/1.92 TB/3.84 TB/7.68 TB/15.36 TB	24
U.2 NVMe SSD	960 GB/1.92 TB/3.84 TB/7.68 TB/12.8 TB/15.36 TB	8
M.2 NVMe SSD	960 GB/1.92 TB/3.84 TB	2

7.2.4 SAS/RAID Card Specifications

Table 7-6 SAS/RAID Card Specifications

Type	Description
SAS Card	SAS_PM8222_SmartHBA_8_SAS3_PCIE3
	SAS_8222_HBA_8R0_SAS3_PCIE3
	SAS_8222_S-HBA_8R0_SAS3
RAID card	RAID_PM8204_RA_8_2GB_SAS3
	RAID_PM8204_RA_8_4GB_SAS3
	RAID_L_16R0_9560-16i_8GB_SMSAS3_PCIE4
	RAID_L_8R0_9560-8i_4G_HDM12G_PCIE4
	RAID_8204_Y_8R0_4G_SAS3
	RAID_8204_Y_8R0_2GB_SAS3
	RAID_BRCM_16R_9560-16i_8_SMSAS3
	RAID_BRCM_8R0_9560-8i_4G_SMSAS3

7.2.5 NIC Specifications

Table 7-7 OCP Card Specifications

Type	Description	Speed (Gbps)	Port Qty.
OCP 3.0 Card	NIC_M_200G_MCX623435AN	200	1
	NIC_M_100G_MCX566ACDAB	100	2
	NIC_M_25G_MCX562A-ACAB_LC_OCP3x16_2_XR	25	2
	NIC_Andes-M6_X710_10G_LC_OCP3x8_2	10	2
	NIC_A-M6_E810_25G_LC_O3x8_2	25	2

Table 7-8 PCIe NIC Specifications

Type	Description	Speed (Gbps)	Port Qty.
PCIe NIC	NIC_Vostok_I350_1G_RJ_PCIEx4_4	1	4
	NIC_Intel_W_I350-T4V2_RJ_PCI-E4X_1KM	1	4
	NIC_Vostok_X710_10G	10	2
	NIC_Pyxis_X550_10G_RJ_PCIEX8_2_XR	10	2
	NIC_SZ_SP1000A_10G_LC_PCIx8-G3_2	10	2
	NIC_M_25G_MCX512A-ACAT_LC_PCIEx8_2_XR	25	2
	NIC_Andes-M6_E810_25G_LC_PCIE2x8_2	25	2
	NIC_BROADCM_25G_57414_LC_PCIEx8_2_XR_42C	25	2
	NIC_I_25G_E810XXVDA2_LC_PCIEx8_2_XR_M7	25	2
	NIC_M_25G_MCX631102AN_LC_PCIEx8_2_XR	25	2
	NIC_M_100G_MCX516A-CDAT_LC_PCIEx16_2P_XR	100	2
	NIC_M_100G_ MCX623106AN_LC_PCIEx16_2_XR	100	2
	NIC_BROADCM_100G_508_LC_PCIEx16_2_XR	100	2
	NIC_I_100G_E810CQDA2_LC_PCIEx16_2_XR_M7	100	2
	NIC_M_200G_MCX623105AN_LC_PCIEx16_XR	200	1

7.2.6 HCA Card Specifications

Table 7-9 HCA Card Specifications

Type	Description	Speed (Gbps)	Port Qty.
HCA Card	HCA_NV_1-NDR_MCX75310AAS-NEAT_PCIE	400	1
	HCA_MCX683105AN-HDAT PCIE4.0 x16	200	1
	HCA_MCX653105A-HDAT PCIE4.0 x16	200	1
	HCA_NV_2-NDR200_MCX755106AS-HEAT_PCIE	200	2
	HCA_MCX653105A-ECAT PCIe4.0 x16	100	1
	HCA_MCX653106A-ECAT_PCIE 4.0 x16	100	2

7.2.7 GPU Specifications

Table 7-10 GPU Specifications

Type	Description	Max. Qty.
GPU	GPU_NV_48G_NVIDIA-L40-PCIe4_384b_MP	8
	GPU_NV_48G_L20_384b	8
	GPU_NV_48G_NVIDIA-L40S-PCIe4_384b_MP	8
	GPU_NV_24G_NVIDIA-A10_384b_NOCEC	8
	GPU_NV_24G_NVIDIA-L4-PCIe4-LP_192b_MP	8
	GPU_NV_80G_NVIDIA-A800-PCIe4_5120b_S	8
	GPU_NV_80G_NVIDIA-H800-PCIe5-ACM_5120b	8
	GPU_NV_80G_H100-PCIe5_5120b_MP_S	8

7.2.8 PSU Specifications

The server supports up to four 80 Plus Platinum or Titanium hot-swap PSUs in 2+2 redundancy that follow the Intel Common Redundant Power Supply (CRPS) specification with a standard electrical and structural design. The PSUs will lock automatically after being inserted into the power bays, enabling tool-less maintenance. The CRPS PSUs offers various output powers for customers to choose as needed.

- The following PSUs in 2+2 redundancy with the rated input voltage of 110 Vac and 230 Vac are supported:

- 1,600 W Platinum PSUs: 1,000 W (110 Vac), 1,600 W (230 Vac)
- 2,000 W Platinum PSUs: 1,000 W (110 Vac), 2,000 W (230 Vac)
- 2,200 W Platinum PSUs: 1,100 W (110 Vac), 2,200 W (230 Vac)
- 3,000 W Platinum PSUs: 1,200 W (110 Vac), 3,000 W (230 Vac)
- 1,600 W Titanium PSUs: 1,000 W (110 Vac), 1,600 W (230 Vac)
- 2,000 W Titanium PSUs: 1,000 W (110 Vac), 2,000 W (230 Vac)
- 3,000 W Titanium PSUs: 1,200 W (110 Vac), 3,000 W (230 Vac)

- Input voltage range:
  - 110 Vac/230 Vac: 90 Vac to 264 Vac

8 Regulatory Information

8.1 Safety

8.1.1 General

- Strictly comply with local laws and regulations while installing the equipment. The safety instructions in this section are only a supplement to local safety regulations.
- To ensure personal safety and to prevent damage to the equipment, all personnel must strictly observe the safety instructions in this section and on the device labels.
- People performing specialized activities, such as electricians and electric forklift operators, must possess qualifications recognized by the local government or authorities.

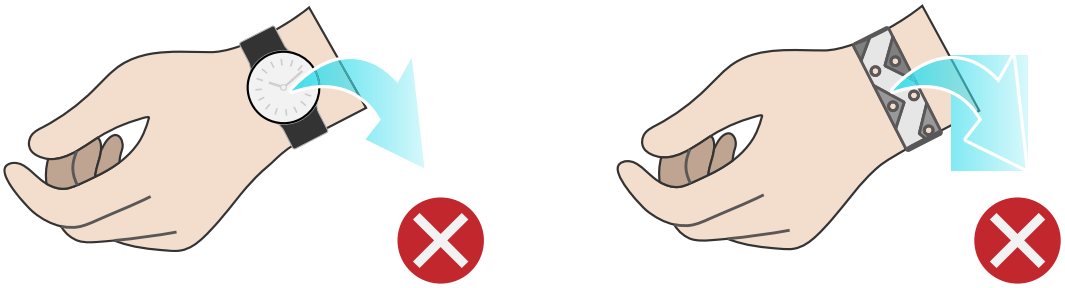
8.1.2 Personal Safety

- Only personnel certified or authorized by us are allowed to perform the installation procedures.
- Stop any operation that could cause personal injury or equipment damage. Report to the project manager and take effective protective measures.
- Working during thunderstorms, including but not limited to handling equipment, installing cabinets and installing power cords, is forbidden.
- Do not carry the weight over the maximum load per person allowed by local laws or regulations. Arrange appropriate installation personnel and do not overburden them.
- Installation personnel must wear clean work clothes, work gloves, safety helmets and safety shoes, as shown in Figure 8-1.

Figure 8-1 Protective Clothing

- Before touching the equipment, put on ESD clothes and ESD gloves or an ESD wrist strap, and remove any conductive objects such as wrist watches or metal jewelry, as shown in Figure 8-2, in order to avoid electric shock or burns.

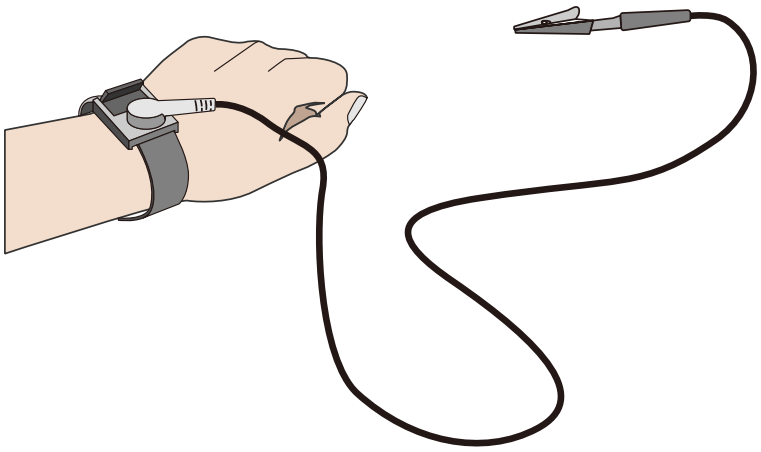
Figure 8-2 Removing Conductive Objects



How to put on an ESD strap (Figure 8-3).

1. Put your hand through the ESD wrist strap.
2. Tighten the strap buckle to ensure a snug fit.
3. Plug the alligator clip of the ESD wrist strap into the corresponding jack on the grounded cabinet or grounded chassis.

Figure 8-3 Wearing an ESD Wrist Strap



- Use tools correctly to avoid personal injury.
- When moving or lifting equipment above shoulder height, use lifting devices and other tools as necessary to avoid personal injury or equipment damage due to equipment slippage.
- The power sources of the server carry a high voltage. Direct contact or indirect contact through damp objects with the high-voltage power source is fatal.
- To ensure personal safety, ground the server before connecting power.
- When using ladders, always have someone hold and guard the bottom of the ladders. In order to prevent injury, never use a ladder alone.
- When connecting, testing or replacing optical fiber cable, avoid looking into the optical port without eye protection in order to prevent eye damage from laser light.

8.1.3 Equipment Safety

- To ensure personal safety and prevent equipment damage, use only the power cords and cables that come with the server.
- Do not use them with any other equipment.
- Before touching the equipment, put on ESD clothes and ESD gloves to prevent static electricity from damaging the equipment.
- When moving the server, hold the bottom of the server. Do not hold the handles of any module installed in the server, such as PSUs, fan modules, drive modules, or motherboard. Handle the equipment with care at all times.
- Use tools correctly to avoid damage to the equipment.

- Connect the power cords of active and standby PSUs to different PDUs to ensure high system reliability.
- To ensure equipment safety, always ground the equipment before powering it on.

8.1.4 Transportation Precautions

Contact the manufacturer for precautions before transportation as improper transportation may damage the equipment. The precautions include but not limited to:

- Hire a trusted logistics company to move all equipment. The transportation process must comply with international transportation standards for electronic equipment. Always keep the equipment being transported right-side up. Avoid collision, moisture, corrosion, packaging damage or contamination.
- Transport the equipment in its original packaging.
- If the original packaging is unavailable, separately package heavy and bulky components (such as chassis, blade servers and blade switches), and fragile components (such as optical modules and PCIe expansion cards).
- Power off all equipment before shipping.

8.1.5 Manual Handling Weight Limits

CAUTION

Observe local laws or regulations regarding the manual handling weight limits per person. The limits shown on the equipment and in this document are recommendations only.

Table 8-1 lists the manual handling weight limits per person specified by some organizations.

Table 8-1 Manual Handling Weight Limit per Person

Organization	Weight Limit (kg/lbs)
European Committee for Standardization (CEN)	25/55.13
International Organization for Standardization (ISO)	25/55.13
National Institute for Occupational Safety and Health (NIOSH)	23/50.72
Health and Safety Executive (HSE)	25/55.13

Organization	Weight Limit (kg/lbs)
General Administration of Quality Supervision, Inspection and Quarantine of the People's Republic of China (AQSIQ)	• Male: 15/33.08 • Female: 10/22.05

9 Limited Warranty

This limited warranty applies only to the original purchasers of our products who are direct customers or distributors of us (“Customer”).

We warrant all our hardware products, if properly used and installed, to be free from defects in material and workmanship within the warranty period. The term “Hardware Product” is limited to the hardware components and required firmware. The term “Hardware Product” DOES NOT include software applications or programs, and DOES NOT include products or peripherals that are not supplied by us. We may, at our discretion, repair or replace the defective parts. Repair or replacement parts may be new, used, or equivalent to new in performance and reliability. Repair or replacement 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.

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

9.1 Warranty Service

Our warranty service includes 24 × 7 remote technical support, RMA (Return Material Authorization) Service, ARMA (Advanced Return Material Authorization) Service, 9 × 5 × NBD (Next Business Day) Onsite Service and 24 × 7 × 4 Onsite Service.

9.1.1 Remote Technical Support

The 24 × 7 remote technical support can be obtained through hotline, e-mail, and Service Portal*[1]. Through hotline and e-mail support, our engineers help customers diagnose the causes of malfunctions and provide solutions. Service Portal*[1] provides access to firmware, customized update files, and related manuals for Hardware Products. Customer may also access the Service Portal*[1] to submit an RMA request or an ARMA request for parts replacement or repair.

Information needed when requesting 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 (SELs and blackbox logs, and any other related logs from OS), screenshot of issue, pictures of damaged/faulty parts, etc.

9.1.2 RMA Service

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

NOTE

- Customer should return the defective parts in original packaging to our designated service center at their own expense.
- After our further diagnosing and testing, if the defective parts conform to our repair policy, we will ship out the repair or replacement parts at our own expense; otherwise, we will return the defective parts at Customer's expense.
- If Customer needs to designate a logistics company, allocation of the shipping cost to us/Customer will be redefined.

9.1.3 ARMA Service

Advanced Replacement: If a problem with our hardware products cannot be resolved via hotline or e-mail support and replacement part(s) are required, we 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). The shipping cost coverage varies by region. Contact your sales representative for details.

NOTE

- Customer should return the defective parts in original packaging to our designated service center.
- We will ship out the replacement parts at our own expense after completing remote diagnosis.
- If Customer needs to designate a logistics company, allocation of the shipping cost to us/Customer will be redefined.

9.1.4 9 × 5 × NBD Onsite Service

When we ultimately determine that an onsite service call is required to repair or replace a defect, the call will be scheduled in accordance with the Response Time

Commitment. The response time is measured from the time when the remote troubleshooting is completed and logged to the arrival of a service engineer and parts to Customer location for repair.

NOTE

9 × 5 × NBD: Our service engineer typically arrives at the customer's data center on the next business day. Service engineers are available on local business day from 9:00 am to 6:00 pm local time. Calls received/dispatches after 5:00 pm local time will require an additional day for the service engineer to arrive.

9.1.5 24 × 7 × 4 Onsite Service

When we ultimately determine that an onsite service call is required to repair or replace a defect, the call will be scheduled in accordance with the Response Time Commitment. The response time is measured from the time when the remote troubleshooting is completed and logged to the arrival of a service engineer and parts to Customer location for repair.

NOTE

24 × 7 × 4: Our service engineer typically arrives at the customer site within 4 hours. Service engineers are available at any time, including weekends and local national holidays.

9.2 Our Service SLA

We offer a variety of Service Level Agreements (SLA)*[2] to meet customer requirements.

- RMA Service
- ARMA Service
- 9 × 5 × NBD Onsite Service
- 24 × 7 × 4 Onsite Service

9.3 Warranty Exclusions

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

Products.

The Limited Warranty does not apply to

- expendable or consumable parts, such as, but not limited to, batteries or protective coatings that are designed to diminish over time, unless failure has occurred during DOA period due to a defect in material or workmanship;
- any cosmetic damage, such as, but not limited to, scratches, dents, broken plastics, metal corrosion, or mechanical damage, unless failure has occurred during DOA period due to a defect in material or workmanship;
- damage or defects caused by accident, misuse, abuse, contamination, improper or inadequate maintenance or calibration or other external causes;
- damage or defects caused by operation beyond the parameters as stipulated in the user documentation;
- damage or defects by software, interfacing, parts or supplies not provided by us;
- damage or defects by improper storage, usage, or maintenance;
- damage or defects by virus infection;
- loss or damage in transit which is not arranged by us;
- Hardware Products that have 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 us when the product is manufactured;
- any engineering sample, evaluation unit, or non-mass production product that is not covered under warranty service;
- any solid-state drive (SSD) which has reached its write endurance limit.

In no event will we 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 we have 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 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 representative to learn more.

10 System Management

10.1 Intelligent Management System BMC

BMC, a remote server management system, supports mainstream management specifications in the industry such as IPMI 2.0 and Redfish 1.13. BMC features high operational reliability, easy serviceability for different business scenarios, accurate and comprehensive fault diagnosis capabilities, and industry-leading security reinforcement capabilities.

BMC supports:

- IPMI 2.0, mainly including KCS, LANPlus and IPMB
- Management protocols: IPMI 2.0, HTTPS, SNMP, and SMASH CLP
- Web GUI
- Redfish
- Management network port: Dedicated/NC-SI
- KVM and virtual media
- SOL
- Diagnostic logs: SEL, audit log, IDL, and one-key collection log
- BMC hardware watchdog. If the BMC does not respond within 4 minutes, it will raise the fan speed to a safe level to ensure proper cooling of the server.
- Event alerts: SNMP Trap (v1/v2c/v3), email alert, and system log (Syslog)
- BIOS and BMC dual-flash mechanism
- Monitoring and configuration of RAID controllers/physical drives/virtual drives
- Firmware update: BMC/BIOS/CPLD/FPGA/PSU
- Device status monitoring and diagnosis

Table 10-1 BMC Features

Feature	Description
Management Interface	Supports extensive remote management interfaces for various server O&M scenarios. The supported interfaces include: • IPMI • SNMP

Feature	Description
	• HTTPS • Web GUI • Redfish • RESTful • Syslog
Accurate and Intelligent Fault Location	IDL, a fault diagnosis system, offers accurate and comprehensive hardware fault location capabilities, and outputs detailed fault causes and handling suggestions.
Alert Management	Supports rich automatic remote alert capabilities, including proactive alerting mechanisms such as SNMP Trap (v1/v2c/v3), email alerts and syslog remote alerts to ensure 24 × 7 reliability.
Remote Console KVM	Supports HTML5- and Java-based remote console to remotely control and operate the monitor/mouse/keyboard of the server, providing highly available remote management capabilities without on-site operation.
Virtual Network Console (VNC)	Supports mainstream third-party VNC clients without relying on Java, improving management flexibility.
Remote Virtual Media	Supports virtualizing local images, USB devices, and folders as media devices of remote servers, simplifying OS installation, file sharing, and other O&M tasks.
Web GUI	Supports the visual management interface developed by us, displaying abundant information of the server and components, and offers easy-to-use Web GUIs.
Crash Screenshot and Crash Video Recording	• Supports automatic crash screenshot and crash video recording (video needs to be enabled manually) to capture the last screen and video before crash; • Provides manual screenshot, which can quickly capture the screen for easy inspection at scheduled time.
Dual Flash and Dual Image	Supports dual flash and dual image, enabling automatic flash failover in case of software or flash corruption, improving operational reliability.
IPv4/IPv6	Supports both IPv4 and IPv6, enhancing network deployment flexibility.
Auto-Switching of Management Network Port	Supports auto-switching between the dedicated management network port and shared management network port, providing customers with flexible network deployment solutions for different management network deployment scenarios.

Feature	Description
BMC Self-Diagnosis and Self-Recovery System	• Supports the reliable dual watchdog mechanism for hardware and software, enabling automatic restoration of BMC in case of BMC abnormality. • Provides a thermal protection mechanism, which is automatically triggered when the BMC is abnormal to ensure that the fan operates at safe speeds to avoid system overheating. • Supports self-diagnosis of processors, memory modules, and storage devices of BMC, and automatically cleans the workload to restore to normal when the device usage rate is too high.
Power Control	Supports virtual power buttons for power on/off, power cycle and reset.
UID LED	Supports remote lighting of the UID LED for locating the server in the server room.
Secure Firmware Update	• Supports firmware update based on secure digital signatures, and mismatch prevention mechanism for firmware from different manufacturers and firmware for different server models; • Supports firmware update of BMC/BIOS/CPLD/PSU.
Serial Port Redirection	Supports remote redirection of system serial ports, BMC serial ports and other serial ports, and directs the server-side serial port output to the local administrator via the network for server debugging.
Storage Information Display	Displays RAID logical array information and drive information, and supports remote RAID creation for improved deployment efficiency.
User Role Management	Supports user detail management based on user roles and flexible creation of user roles with different privileges, and provides more user roles to allow administrators to grant different privileges to O&M personnel.
Security Feature	Adopts the industry-leading server security baseline standard V3.0. SSH, HTTPS, SNMP and IPMI use secure and reliable algorithms. BMC offers capabilities including secure update and boot and security reinforcement mechanisms such as anti-replay, anti-injection, and anti-brute force.
Double Factor Authentication	Supports double factor authentication for local BMC users. Users need to log in to the BMC with both password and certificate, thus to prevent attacks caused by password leakage.

Feature	Description
Configuration Exporting and Importing	To import and export the existing system configurations.
System Information	Displays the server basic information such as the information and health status of major server components, including CPU, memory, power supply, device inventory, hard drive, network adapter, and security chip.
Fan Management	Displays the status, current speed, duty ratio, and other information of a fan module. You can select the fan control mode and preset the speed for each fan module in the Manual Fan Control mode.
Power Policy	To set how the server operating system reacts under the BMC's control when AC power is reconnected to the server.

10.2 KSManage

The server is compatible with the latest version of KSManage, a new-generation infrastructure O&M management platform for data centers.

Built on cutting-edge O&M concepts, KSManage provides users with leading and efficient overall management solutions for data centers to ensure advanced infrastructure management. This platform provides a rich set of functions such as centralized asset management, in-depth fault diagnosis, component fault early warning, intelligent energy consumption management, 3D automatic topologies, and stateless automatic deployment. With these functions, users can implement centralized O&M of servers, storage devices, network devices, security devices, and edge devices, effectively improving O&M efficiency, reducing O&M costs, and ensuring the secure, reliable, and stable operation of data centers. KSManage offers:

- Lightweight deployment in multiple scenarios and full lifecycle management of devices
- High reliability and on-demand node scalability enabled by 1 to N data collectors
- Intelligent asset management and real-time tracking of asset changes
- Comprehensive monitoring for overall business control
- Intelligent fault diagnosis for reduced maintenance time
- Second-level performance monitoring for real-time status control of devices

- Batch configuration, deployment and update, shortening the time needed to bring the production environment online
- Improved firmware version management efficiency
- Standardized northbound interfaces for easy integration and interfacing

Table 10-2 KSManage Features

Feature	Description
Home	• Display of basic information (data centers, server rooms, cabinets, assets and alerts), quick addition of devices and custom home page
Assets	• Batch asset import, automatic asset discovery, and full lifecycle management of assets • Management of the full range of our server family, including general-purpose rack servers, AI servers, multi-node servers, edge servers and all-in-one servers • Management of our general-purpose disk arrays and distributed storage devices • Management of network devices (switches, routers, etc.), security devices (firewalls, load balancers, etc.), cabinets and clouds • Management of data centers • Asset warranty information management, asset inventory reports for server acceptance, asset attribute expansion, etc.
Monitor	• Display of real-time alerts, history alerts, blocked alerts and events • Fault prediction of drives and memories • Custom inspection plan and inspection result management • Notification record viewing • Intelligent fault diagnosis and analysis, automatic fault reporting and repair ticket viewing • Trap management and Redfish management • Management of monitoring rules, such as alert rules, notification rules, blocking rules, alert noise reduction rules, compression rules and fault reporting rules, and redefinition of above rules
Control	• Quick start of firmware update, OS installation, power management, drive data erasing and stress test

Feature	Description
	• Batch firmware update (BMC/BIOS/RAID Card/NIC/Drive/HBA Card/MB CPLD/BP CPLD/PSU) • Batch firmware configuration (BMC/BIOS) • Batch RAID configuration and OS deployment for servers • Secure and quick drive data erasing • CPU and memory stress test • Automatic firmware baseline management • BMC and BIOS snapshot management • Repositories for update files
Energy Efficiency	• Overview of data center power consumption trend chart and carbon emission trend chart • Setting of server dynamic power consumption policies and minimum power consumption policies • Carbon asset and carbon emission management
Log	• Fault log record management • Diagnosis record and diagnosis rule management
Topologies	• Centralized management of multiple data centers and panoramic 3D views, including dynamic display of power consumption, temperature, alerts and cabinet capacity of the data center • Network topologies
Reports	• Management of warranty information reports, alert reports, asset reports, hardware reports and performance reports • Export of reports in .xlsx format
System	• Password management, alert forwarding and data dump • Customized KSManage parameters
Security	Security control of KSManage via a set of security policies such as user management, role management, authentication management (local authentication and LDAP authentication) and certificate management

10.3 KSManage Tools

Table 10-3 Features of KSManage Tools

Feature	Description
KSManage Kits	A lightweight automatic batch O&M tool for servers, mainly used for server deployment, routine maintenance, firmware update, fault handling, etc.
KSManage Boot	A unified batch management platform for bare metals, with features including firmware management, hardware configuration, system deployment and migration, stress test and in-band management
KSManage Server CLI	Fast integration with third-party management platforms, delivering a new O&M mode of Infrastructure as Code (IaC)
KSManage Driver	Operates under the OS and gets system asset and performance information via the in-band mode, providing users with more comprehensive server management capabilities.
KSManage Server Provisioning	Offers users with RAID configuration, intelligent OS installation, firmware update, hardware diagnosis, secure erasing and software upgrade, using the TF card as the carrier.

11 Certifications

Table 11-1 Certifications

Country/Region	Certification	Mandatory/Voluntary
International	CB	Voluntary
EU	CE	Mandatory
US	FCC	Mandatory
	UL	Voluntary
EAEU	EAC	Mandatory
Korea	KC	Mandatory

12 Appendix A

12.1 Operating Temperature Specification Limits

Table 12-1 Operating Temperature Specification Limits

Configuration	Max. Operating Temp.: 30°C (86°F)	Max. Operating Temp.: 35°C (95°F)
8 × 3.5-Inch Front SAS/SATA Drive Config.	• CPU TDP ≤400 W • GPU TDP ≤350 W (with all GPUs configured)	• CPU TDP ≤400 W • GPU TDP ≤350 W (with all GPUs configured)
12 × 3.5-Inch Front SAS/SATA Drive Config.	• CPU TDP ≤400 W • GPU TDP ≤350 W (with all GPUs configured)	Not supported
24 × 2.5-Inch Front SAS/SATA Drive Config.	• CPU TDP ≤400 W • GPU TDP ≤350 W (with all GPUs configured)	• CPU TDP ≤400 W • GPU TDP ≤350 W (with all GPUs configured)

NOTE

- The maximum operating temperature will drop by 5°C (9°F) if a single fan fails.
- Single fan failure may affect system performance.

12.2 Model

Table 12-2 Model

Certified Model	Description
KR4268-E2-A0-R0-00	Global

12.3 RAS Features

The server supports a variety of RAS (Reliability, Availability, and Serviceability) features. By configuring these features, the server can provide greater reliability, availability, and serviceability.

12.4 Sensor List

Table 12-3 Sensor List

Sensor	Description	Sensor Location
Inlet_Temp	Air inlet temperature (the lower one among the temperatures measured by two sensors)	Right mounting ear and front panel
Outlet_Temp	Air outlet temperature	PCIe backplane
CPUx_Temp	CPUx core temperature	CPUx x indicates the CPU number with a value of 0 to 1
CPUx_DIMM_T	The maximum temperature among DDR5 DIMMs of CPUx	Motherboard x indicates the CPU number with a value of 0 to 1
CPUx_VR_Temp	CPUx VR chip temperature	VR chip x indicates the CPU number with a value of 0 to 1
PSUx_Temp	PSUx temperature	PSUx x indicates the PSU number with a value of 0 to 3
HDD_MAX_Temp	The maximum temperature among all drives	Drives
OCP_NIC_Temp	OCP card temperature	OCP card
OCP_SFP_Temp	The maximum temperature among all OCP SFP modules	SFP modules
PCIe_NIC_Temp	The maximum temperature among all PCIe NICs	PCIe NICs
PCIe_NIC_SFP_Temp	The maximum temperature among all PCIe SFP modules	SFP modules
RAID_Temp	The maximum temperature among all RAID cards	RAID cards
GPUx_Temp	GPUx core temperature	GPUx

Sensor	Description	Sensor Location
		x indicates the GPU number with a value of 0 to 7
Switch_chip_Temp	Switch chip temperature	Switch board
NVMe_M.2_Temp	The maximum temperature among all M.2 SSDs	M.2 adapter
BFx_SOC_Temp	BF2/BF3 smart NIC temperature	BF2/BF3 smart NIC
BFx_SFP_Temp	The temperature of BF2/BF3 smart NIC optical module	The BF2/BF3 smart NIC optical module
PSU_inlet_Temp	The maximum air inlet temperature among all PSUs	PSUs
SYS_12V	12 V voltage supplied by motherboard to CPU	Motherboard
SYS_5V	5 V voltage supplied by motherboard to BMC	Motherboard
SYS_3V3	3.3 V voltage supplied by motherboard to BMC	Motherboard
P12V_CPU1_DIMM1	CPU1 DIMM voltage	Motherboard
P12V_CPU0_DIMM1	CPU0 DIMM voltage	Motherboard
P1V8_STBY	Motherboard standby voltage	Motherboard
P1V05_USB	Motherboard USB voltage	Motherboard
P3V3_STBY	Motherboard standby voltage	Motherboard
P5V_STBY	Motherboard standby voltage	Motherboard
P12V_STBY	Motherboard standby voltage	Motherboard
PSUN_VIN	PSUN input voltage	Motherboard N indicates the PSU number with a value of 0 to 3
PSUx_VOUT	PSUx output voltage	Motherboard x indicates the PSU number with a value of 0 to 3
RTC_Battery	RTC battery voltage	Motherboard
FANx_F_Speed	FANx speed in rpm	FANx x indicates the fan module number with a value of 0 to 11
FANx_R_Speed		

Sensor	Description	Sensor Location
Total_Power	Total power	PSUs
PSUx_PIN	PSUx input power	PSUx x indicates the PSU number with a value of 0 to 3
PSUx_POUT	PSUx output power	PSUx x indicates the PSU number with a value of 0 to 3
FAN_Power	Total power of fans	Fan modules
CPU_Power	Total CPU power	Motherboard
Memory_Power	Total memory power	Motherboard
Disk_Power	Total drive power	Motherboard
GPU_Total_power	Total GPU power	-
CPUx_Status	CPUx status	CPUx x indicates the CPU number with a value of 0 to 1
FANx_Status	FANx status	FANx x indicates the fan number with a value of 0 to 11
FAN_Redundant	Fan redundancy lost alert status	Fan modules
PCIe_Status	PCIe expansion card status error	PCIe expansion cards
Watchdog2	Watchdog	Motherboard
Sys_Health	BMC health status	-
PSU_Redundant	PSU redundancy lost alert status	-
PSU_Mismatch	Power supply model mismatch	-
PSUx_Status	PSUx failure status	PSUx x indicates the PSU number with a value of 0 to 3
Intrusion	Chassis-opening activity	Top cover
SysShutdown	Reason for system shutdown	-
ACPI_PWR	ACPI power status	-
ME_FW_Status	System software process error and system boot error	-
SysRestart	Reason for system restart	-
BIOS_Boot_Up	BIOS boot up complete	-

Sensor	Description	Sensor Location
System_Error	Emergency system failure	-
POST_Status	POST status	-
BMC_Boot_Up	BMC boot up complete	-
SEL_Status	Record the event that system event logs are almost full or cleared	-
BMC_Status	BMC status	-

13 Appendix B Acronyms and Abbreviations

A

AC	Alternating Current
ACPI	Advanced Configuration and Power Interface
AI	Artificial Intelligence
ANSI	American National Standards Institute
AQSIQ	General Administration of Quality Supervision, Inspection and Quarantine of the People's Republic of China
ARMA	Advanced Return Material Authorization
AVX	Advanced Vector Extensions

B

BIOS	Basic Input Output System
BLE	BIOS Lock Enable
BMC	Baseboard Management Controller

C

CAS	Column Address Strobe
CB	Certification Body
CCC	China Compulsory Certificate
CE	Conformite Europeenne
CECP	China Energy Conservation Program
CEN	European Committee for Standardization

CLI	Command-Line Interface
CMOS	Complementary Metal-Oxide-Semiconductor Transistor
CPLD	Complex Programmable Logic Device
CPU	Central Processing Unit
CRPS	Common Redundant Power Supply

D

DC	Direct Current
DC-SCM	Datacenter-ready Secure Control Module
DIMM	Dual In-Line Memory Module
DMPU	Data Mining Processing Unit
DOA	Dead on Arrival
DPC	DIMMs per Channel
DRAM	Dynamic Random Access Memory
DWPD	Drive Writes Per Day

E

EAC	Eurasian Conformity
ECC	Error-Correcting Code
ECMA	European Computer Manufacturers Association
ESD	Electrostatic Discharge
EU	European Union

F

FCC	Federal Communications Commission
FHFL	Full Height Full Length

FHHL	Full Height Half Length
FPGA	Field Programmable Gate Array
FSS	Federal Security Service
FW	Firmware

G

GPU	Graphics Processing Unit
GUI	Graphical User Interface

H

HBA	Host Bus Adapter
HCA	Host Channel Adapter
HDD	Hard Disk Drive
HDT	Hardware Debug Tool
HSE	Health and Safety Executive
HTTPS	Hypertext Transfer Protocol Secure

I

ID	Identification
IEC	International Electrotechnical Commission
IP	Internet Protocol
IPMB	Intelligent Platform Management Bus
IPMI	Intelligent Platform Management Interface
ISA	International Society of Automation
ISO	International Organization for Standardization

J

JTAG	Joint Test Action Group

K

KC	Korea Certification
KCS	Keyboard Controller Style
KVM	Keyboard Video Mouse

L

LAN	Local Area Network
LDAP	Lightweight Directory Access Protocol
LED	Light Emitting Diode
LP	Low Profile

M

MCIO	Mini Cool Edge IO

N

NBD	Next Business Day
NCSI	Network Controller Sideband Interface
NIC	Network Interface Controller
NIOSH	National Institute for Occupational Safety and Health
NVMe	Non-Volatile Memory Express

O

OCP	Open Compute Project
O&M	Operations and Maintenance
OS	Operating System

P

PC	Personal Computer
PCIe	Peripheral Component Interconnect express
PCH	Platform Controller Hub
PDB	Power Distribution Board
PID	Proportional Integral Derivative
POST	Power On Self Test
PSU	Power Supply Unit
PXE	Pre-boot Execution Environment

R

RAID	Redundant Arrays of Independent Disks
RAS	Reliability, Availability, Serviceability
RDIMM	Registered Dual In-Line Memory Module
RH	Relative Humidity
RMA	Return Material Authorization
RPM	Revolutions Per Minute
RST	Reset
RTC	Real Time Clock

S

SAS	Serial Attached SCSI
SATA	Serial Advanced Technology Attachment
SCSI	Small Computer System Interface
SDP	System Demonstration Platform
SEL	System Event Log
SFF	Small Form Factor
SFP	Small Form-factor Pluggable
SLA	Service Level Agreement
SMASH CLP	Systems Management Architecture for Server Hardware Command Line Protocol
SNMP	Simple Network Management Protocol
SOL	Serial Over LAN
SSD	Solid State Drive
SSH	Secure Shell
SW	Switch

T

TCM	Trusted Cryptography Module
TDP	Thermal Design Power
TF	T-flash
TPM	Trusted Platform Module
TSOM	Transport, Storage, Operation Monitor

U

UART	Universal Asynchronous Receiver-Transmitter
UEFI	Unified Extensible Firmware Interface

UID	Unit Identification
UL	Underwriters Laboratories
USB	Universal Serial Bus

V

VAC	Voltage Alternating Current
VDC	Voltage Direct Current
VGA	Video Graphics Array
VLAN	Virtual Local Area Network
VNC	Virtual Network Console
VPP	Virtual Pin Port
VRD	Voltage Regulator Down

X

xGMI	External Global Memory Interface