White Paper for KR6288V3 Series Servers

Powered by AMD Processors

For KR6288-E3-A0-R0-00 and KR6288-E3-C0-R0-00

Document Version: V1.0

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Applicable Model

Model	Maintenance	Cooling
KR6288-E3-A0-R0-00	Rear access	Air cooling
KR6288-E3-C0-R0-00	Rear access	Cold-plate liquid cooling

Technical Support

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- For server open source software statements, please contact us.
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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 KR6288V3 AMD-based server's appearance, features, performance parameters, and software and hardware compatibility, providing in-depth information of KR6288V3.

Intended Audience

This white paper 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	2025/04/23	Initial release

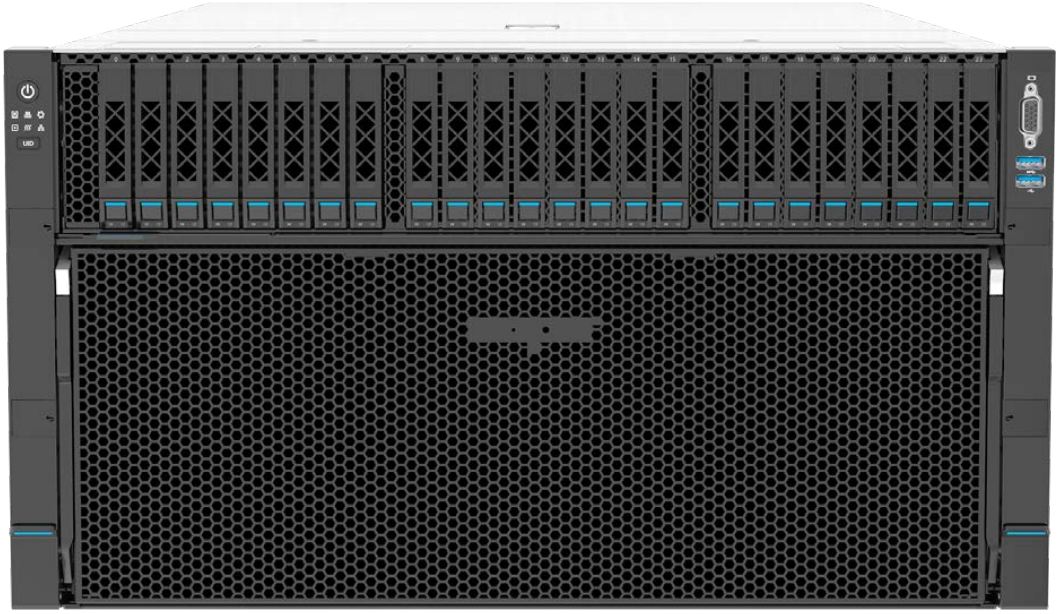
Table of Contents

1 Product Overview

The KR6288V3 AMD-based system is a 6U AI server. It delivers a new generation training platform compatible with multiple architectures. It features superior performance, extreme scalability and flexible deployment. It is ideal for ultra-large data center deployment in application scenarios such as ultra-large model training, meta-universe, natural language understanding (NLU), and recommendation.

Based on an advanced topology, the system can house two 5th Gen AMD EPYC Turin processors and 8 NVIDIA Hopper 700 W GPUs in a 6U space, delivering unparalleled computing power density. With NVIDIA NVSwitch interconnect fabric, any two GPUs can have direct P2P data communication. The server supports a total GPU memory capacity of 640 GB and a total GPU memory bandwidth of 26.8 TB/s. It accommodates 12 PCIe 5.0 x16 expansion slots (KR6288-E3-C0-R0-00 supports 11 PCIe 5.0 x16 expansion slots), achieving an ultimate GPU:IB for computing:IB for storage devices ratio of 8:8:2. The system supports up to 4.0 Tbps network bandwidth and 128 TB NVMe SSDs, which can meet the demand for parallel training of super-large models with trillion-level parameters. The discrete 12 V PSUs for the motherboard and 54 V PSUs for the GPUs offer a higher system energy efficiency ratio over the predecessor; layered and isolated air flow to the GPU and to the motherboard brings optimal cooling efficiency. In addition, the excellent and reliable redundancy design, including 12 V PSUs with 1+1 redundancy, 54 V PSUs with 3+3 redundancy, and motherboard fan modules with N+1 redundancy and rear fan modules with N+1 redundancy for cooling, makes the system perfect for data center deployment, providing customers with unprecedented reliability and stability.

Figure 1-1 KR6288V3 AMD-Based System



2 Features

2.1 Scalability and Performance

Table 2-1 Scalability and Performance

Feature	Description
5th Gen AMD EPYC Turin CPU	• Two 5th Gen AMD EPYC Turin CPUs with up to 192 cores and 384 threads per processor, a base frequency of up to 4.2 GHz (16-core CPUs), and a max. boost frequency of up to 5.0 GHz (64-core CPUs), maximizing concurrent execution of multi-threaded application. • An L3 cache of up to 512 MB and a TDP of up to 500 W. • Three xGMI links at up to 32 GT/s per link. • AMD Turbo Core technology brings you an intelligent self-adaption system. It allows the CPU cores to exceed the max. processor TDP at peak workload and run at the max boost frequency. • AMD Simultaneous Multi-Threading (SMT) 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) significantly accelerates the workloads that are strongly floating point compute intensive.
DDR5 ECC DIMMs	Supports up to 24 DDR5 ECC DIMMs (6,000 MT/s, RDIMMs), delivering superior speed, high availability, and a memory capacity up to 3 TB.
Flexible drive configurations	Provides elastic and scalable storage solutions to meet different capacity and upgrade requirements.
All-SSD configuration	Brings higher I/O performance over all-HDD configuration or HDD-SSD mixing configuration.
24 Gbps serial attached SCSI (SAS 4.0)	Doubles the data transfer rate of internal storage of 12 Gbps SAS (SAS 3.0) solution and maximizes the performance of storage I/O-intensive applications.

Feature	Description
AMD integrated I/O technology	With the AMD integrated I/O technology, the processors integrate the PCIe 5.0 controller to significantly reduce I/O latency and enhance overall system performance. The CXL 1.1 technology built on PCIe 5.0 enables resource sharing among different PCIe devices.
PCIe 5.0 expansion	Up to 12 PCIe 5.0 expansion slots (populated with up to 11 PCIe expansion cards).
OCP IO	One hot-plug OCP slot that can flexibly support one 10/25/100 Gb OCP 3.0 card.

2.2 Availability and Serviceability

Table 2-2 Availability and Serviceability

Feature	Description
Hot-swap SAS/SATA/NVMe drives	• Supports hot-swap SAS/SATA/NVMe drives. • Supports RAID cards with RAID levels 0/1/1E/10/5/50/6/60 created through SAS/SATA drives. Supported RAID levels vary by RAID card. • RAID cache available • RAID cards offer 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 appropriate measures to ensure stable system operation and minimize system downtime.
Availability	• Up to 2 hot-swap 12 V PSUs with 1+1 redundancy and 6 hot-swap 54 V PSUs with 3+3 redundancy • Six hot-swap motherboard fan modules and 6 rear hot-swap fan modules (KR6288-E3-A0-R0-00) or 5 rear hot-swap fan modules (KR6288-E3-C0-R0-00). All fan modules are N+1 redundant, improving system availability.
O&M efficiency	• The BMC management network port on the rear panel enables local BMC O&M, improving O&M efficiency.

Feature	Description
	• Online memory diagnosis helps service technicians quickly locate the failed DIMMs, improving maintenance efficiency.

2.3 Manageability and Security

Table 2-3 Manageability and Security

Feature	Description
Remote management	The BMC monitors system operating status and enables remote management.
Network Controller Sideband Interface (NC-SI) feature	The Network Controller Sideband Interface (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. Notes: The NC-SI port supports the following features: • The NC-SI port can be bonded to any network port of the OCP 3.0 card or of PCIe NIC that supports NC-SI. • Supports the enablement/disablement and configuration of Virtual Local Area Network (VLAN). VLAN is disabled by default. • Supports both IPv6 and IPv4 addresses. The subnet mask of IPv4 or prefix length of IPv6 subnet mask, IP addresses, and default gateways can be configured.
Unified Extensible Firmware Interface (UEFI)	The industry-standard UEFI improves the efficiency of setup, configuration and update, and simplifies the error handling process.
TPM & TCM	Trusted Platform Module (TPM) 2.0 and Trusted Cryptography Module (TCM) provide advanced encryption.
Firmware update mechanism	The firmware update mechanism based on digital signatures prevents unauthorized firmware updates.
UEFI Secure Boot	Protects the system from malicious bootloaders.
Hierarchical BIOS password protection	Ensures system boot and management security.
BIOS Secure Flash and BIOS Lock Enable (BLE)	Reduce attacks from malicious software on the BIOS flash region.

Feature	Description
BMC and BIOS dual-image mechanism	Recovers firmware upon detection of corrupted firmware.
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.

CAUTION

UEFI mode is supported by default. If Legacy mode is needed, contact our Customer Service.

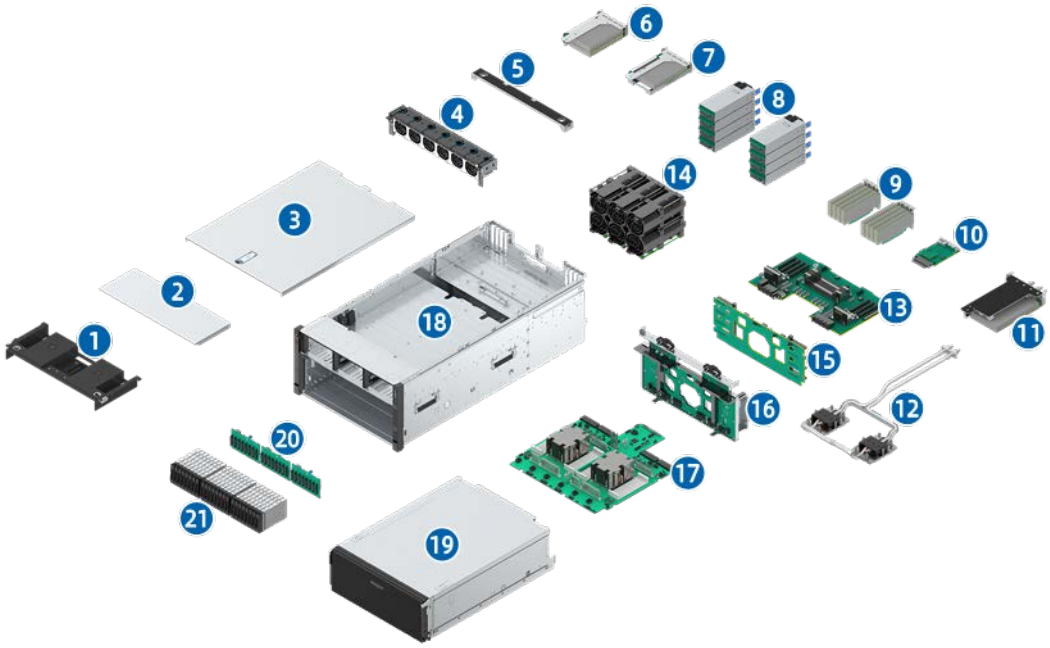
2.4 Energy Efficiency

Table 2-4 Energy Efficiency

Feature	Description
80 Plus Titanium power supply	Equipped with 80 Plus Titanium power supplies of different power efficiency levels, with power efficiency up to 96% at a load of 50%.
N+N redundant PSUs	Supports two 12 V PSUs with 1+1 redundancy and six 54 V PSUs with 3+3 redundancy, supports AC/DC power input, improving power conversion efficiency.
VRD solution	Features the high-efficiency single-board voltage regulator down (VRD) solution, reducing DC-DC conversion loss.
Proportional-Integral-Derivative (PID) intelligent fan speed control and intelligent 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

Figure 3-1 Exploded View

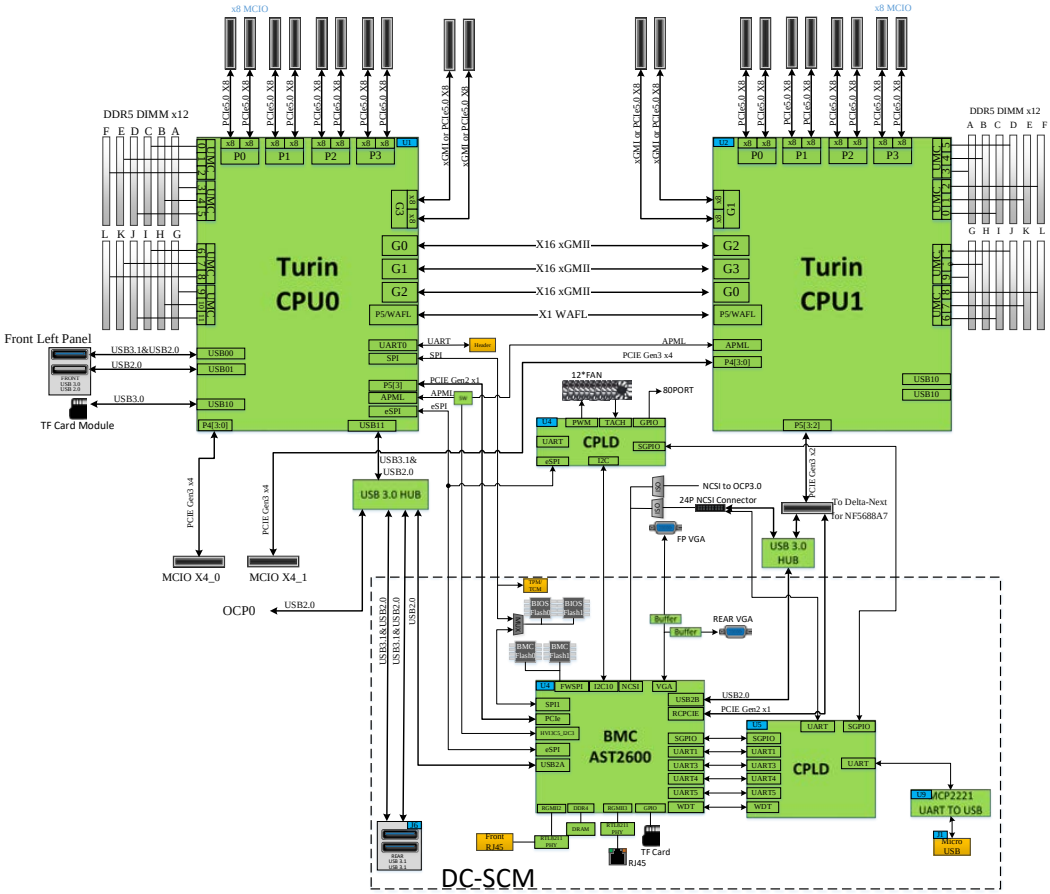


Item	Feature	Item	Feature
1	Air Duct Module	12	CPU Cold Plate Module
2	Middle Top Cover	13	Switch Board
3	Rear Top Cover	14	Rear Fan Module × 6
4	Motherboard Fan Module × 6	15	PDB Board (with rear fan connectors)
5	Reinforcement Crossbar	16	Midplane Board
6	PCIe Riser Module (for up to 2 PCIe expansion cards)	17	Motherboard
7	PCIe Riser Module (for 1 PCIe expansion card and 1 OCP 3.0 card)	18	Chassis
8	PSU × 8 (two 12 V PSUs and six 54 V PSUs)	19	GPU Box
9	LP Card × 8	20	2.5-Inch Drive Backplane × 3
10	DC-SCM Board	21	2.5-Inch Drive × 24
11	PCIe Riser Module (for 1 PCIe expansion card with tubes routed on top)	-	-

4 Logical Diagram

4.1 System Logical Diagram

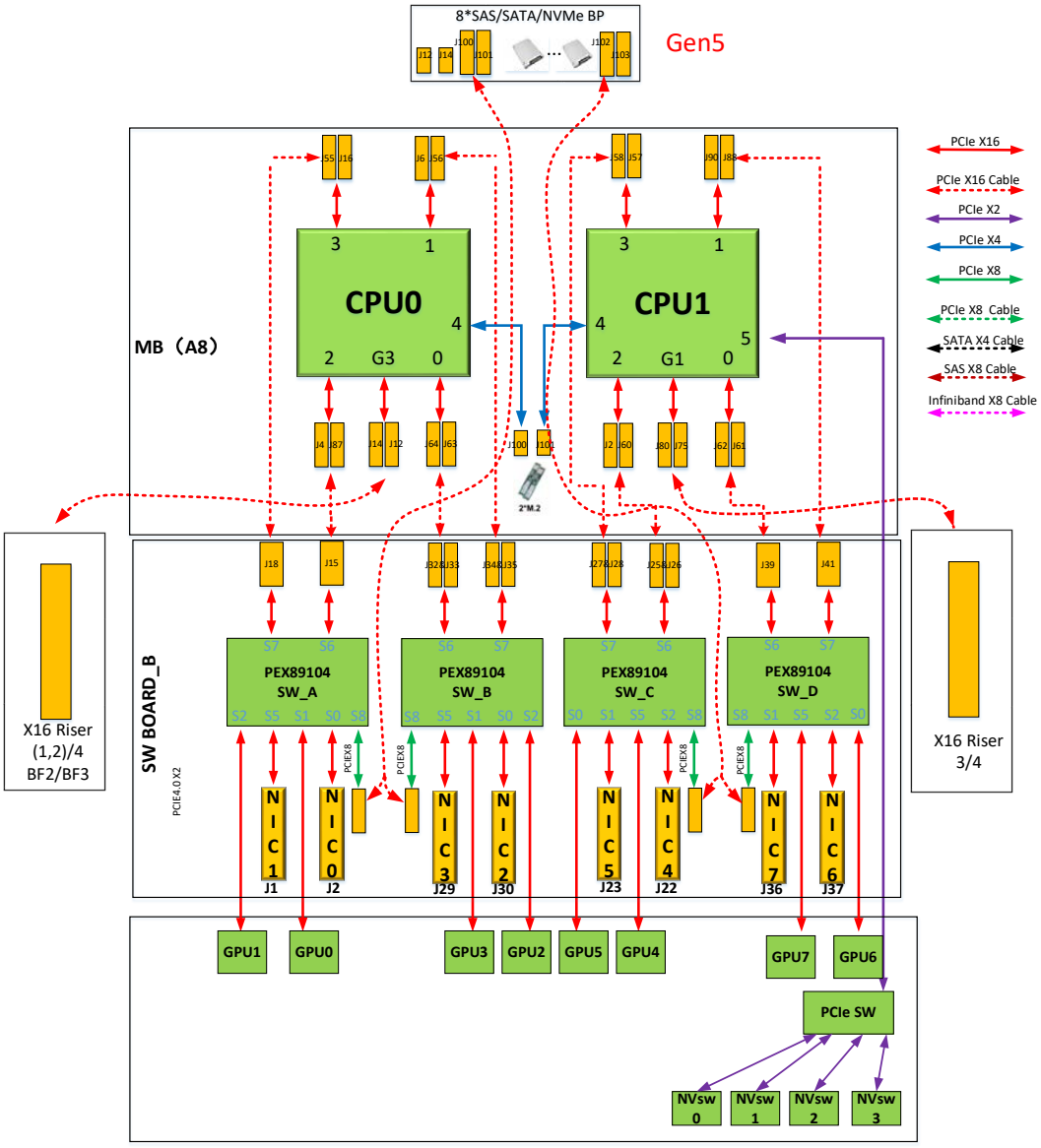
Figure 4-1 Motherboard Logical Diagram



- Two 5th Gen AMD EPYC Turin processors.
- Up to 24 DIMMs.
- Up to 3 xGMI (External Global Memory Interface) links at up to 32 GT/s per link.
- Up to 12 PCIe 5.0 expansion slots. CPU0 supports 1 OCP 3.0 card.
- The DC-SCM board integrates an AST2600 management chip and supports 1 VGA port, 1 BMC management network port, 1 system/BMC serial port, 1 TF card slot, and other connectors.

4.2 PCIe Topologies

Figure 4-2 2 × M.2 SSD + 8 × NVMe Drive + 2 × PCIe x16 Card Configuration

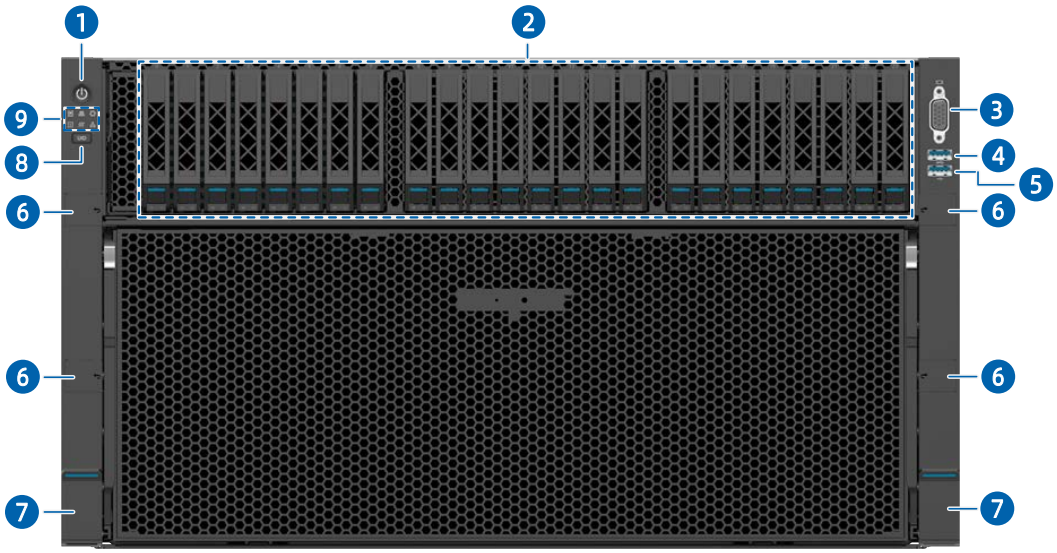


5 Hardware Description

5.1 Front Panel

Supports up to twenty-four 2.5-inch drives.

Figure 5-1 Front View

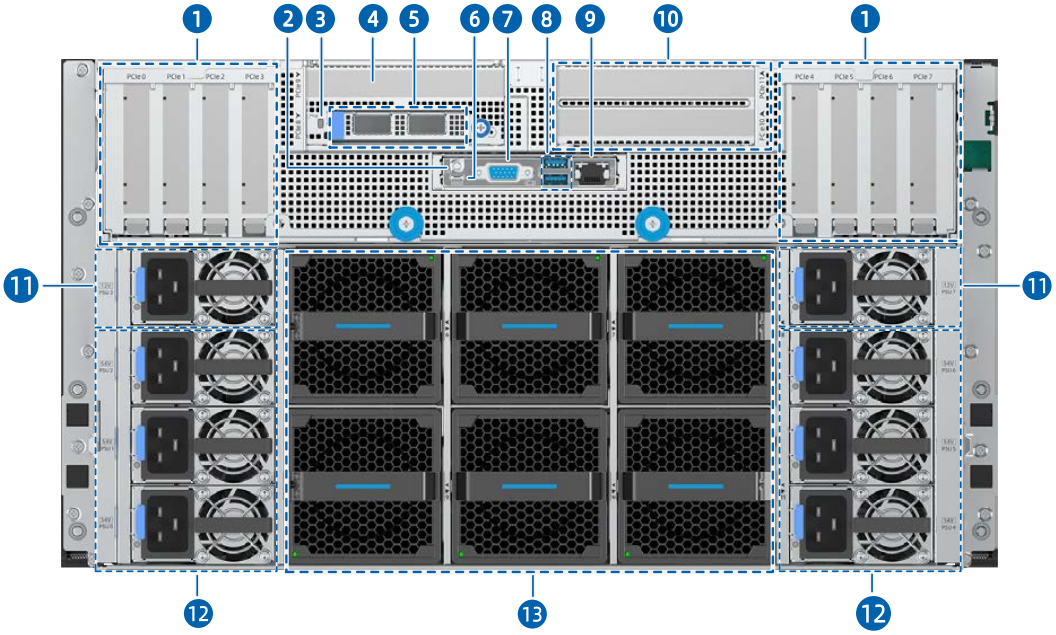


Item	Feature
1	Power Button and LED
2	Drive Bay × 24
3	VGA Port
4	USB 3.0 Port
5	USB 2.0 Port
6	Server Fixing Screw Cover × 4
7	Ear Latch × 2
8	UID/BMC RST Button and LED
9	LEDs

5.2 Rear Panel

5.2.1 KR6288-E3-A0-R0-00

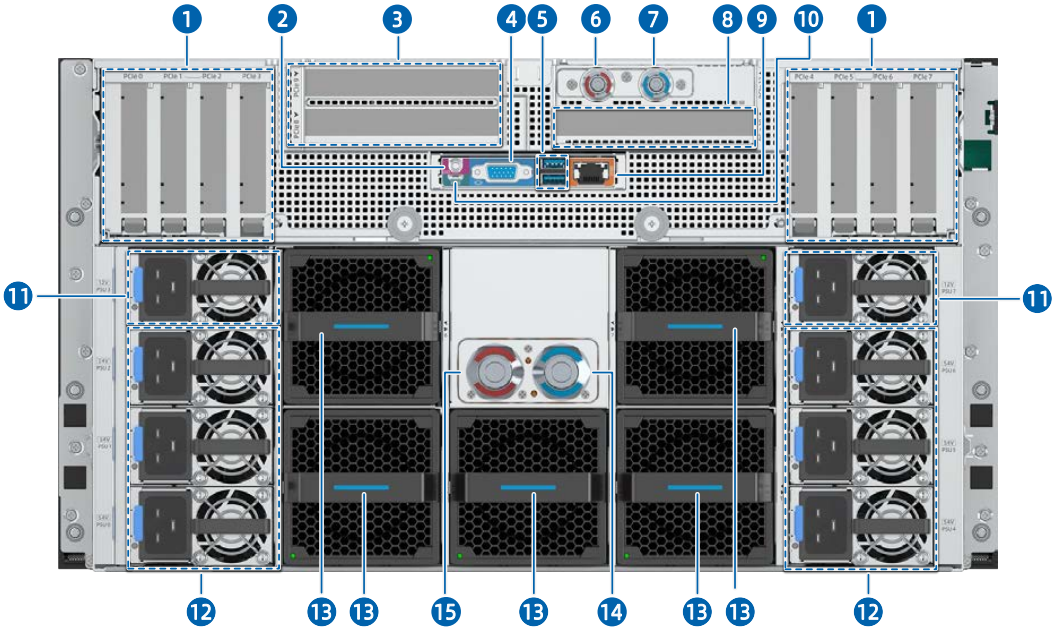
Figure 5-2 Rear View



Item	Feature	Item	Feature
1	LP Card Slot × 8	8	USB 3.0 Port × 2
2	UID/BMC RST Button and LED	9	BMC Management Network Port
3	OCP Hot-Plug Button and LED	10	PCIe Riser Module (PCIe Slots 10 and 11)
4	PCIe Slot 9	11	12 V PSU × 2
5	OCP 3.0 Card (occupies PCIe slot 8)	12	54 V PSU × 6
6	System/BMC Serial Port	13	Rear Fan Module × 6
7	VGA Port	-	-

5.2.2 KR6288-E3-C0-R0-00

Figure 5-3 Rear View

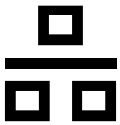


Item	Feature	Item	Feature
1	LP Card Slot × 8	9	BMC Management Network Port
2	UID/BMC RST Button and LED	10	System/BMC Serial Port
3	PCIe Riser Module (PCIe slots 8 and 9)	11	12 V PSU × 2
4	VGA Port	12	54 V PSU × 6
5	USB 3.0 Port × 2	13	Rear Fan Module × 5
6	Quick Disconnect (Outlet) for Motherboard	14	Quick Disconnect (Inlet) for GPU
7	Quick Disconnect (Inlet) for Motherboard	15	Quick Disconnect (Outlet) for GPU
8	PCIe Slot 10	-	-

5.3 LEDs and Buttons

Table 5-1 LED and Button Description

Item	Icon	Feature	Description
1		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.
2		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.
3		Memory Status LED	• Off = Normal • Blinking red (1 Hz) = A warning error occurs • Solid red = A critical error occurs
4		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
5		Power Status LED	• Off = Normal • Blinking red (1 Hz) = A warning error occurs • Solid red = A critical error occurs
6		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,

Item	Icon	Feature	Description
			including CPU Thermal Trip
7		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.
8		UID/BMC RST Button and LED	• UID/BMC RST LED: - Off = The server is not connected to power, or the UID LED is not activated when the server is in standby or power-on state - Blinking blue (1 Hz) = The UID LED is activated by the UID button or via the BMC when the server is in standby state - Solid blue = The UID LED is activated by the UID button or via the BMC when the server is in power-on state • 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

NOTE

- Warning error: Errors that result in redundancy degradation or loss, and other errors that have a minor impact on the system running and that require attention.
- Critical error: Errors that result in system crash/restart or part failure, and other errors that have a major impact on the system running and that require immediate action.

5.4 Port Description

Table 5-2 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 3.0/2.0 device to the system.
3	USB 2.0 Port	Enables you to connect a USB 2.0 device to the system
4	System/BMC Serial Port	• BMC serial port: Enables you to debug and monitor the BMC. • System serial port: Enables you to debug and monitor the system.
5	BMC Management Network Port	Enables you to manage the server. Note: It is a Gigabit Ethernet port that supports 10/100/1,000 Mbps auto-negotiation.
6	OCP Network Port	Enables you to connect the system to the network.

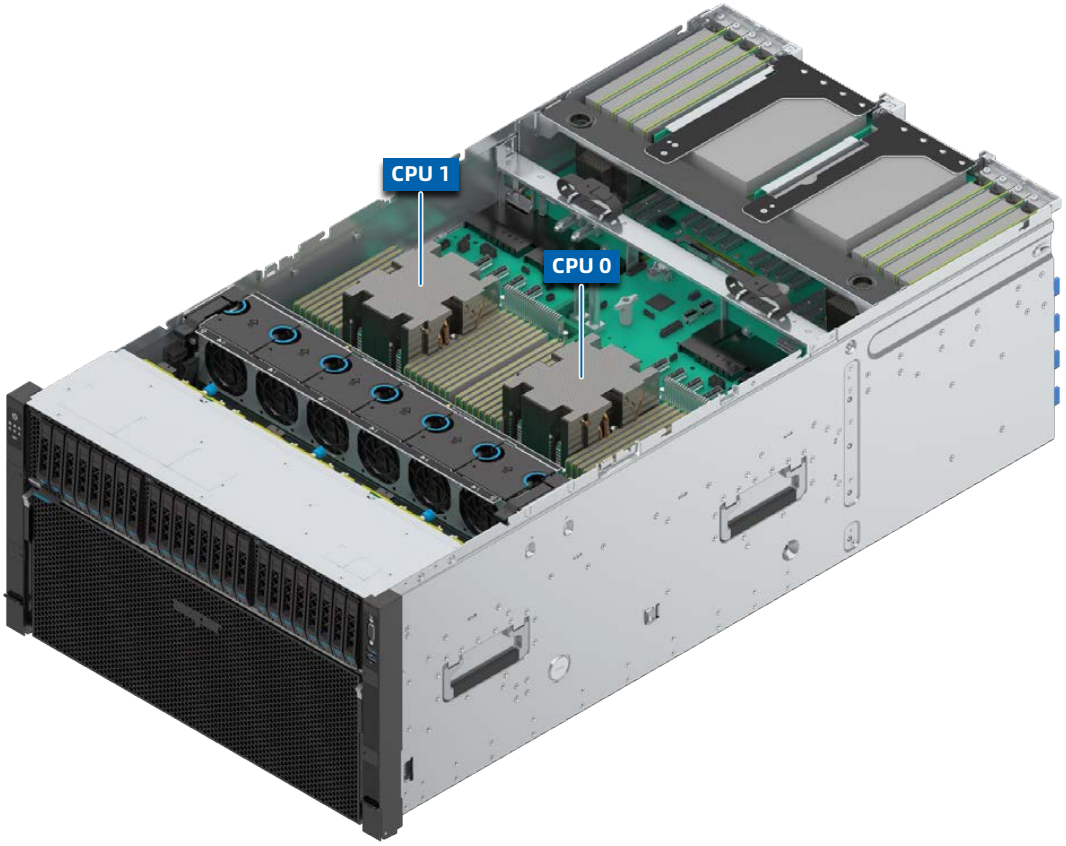
5.5 Processors

- Two 5th Gen AMD EPYC Turin processors.
- The processors used in a server must bear the same part number (P/N code).

For specific system processor options, consult your local sales representative or refer to 7.2 Hardware Compatibility.

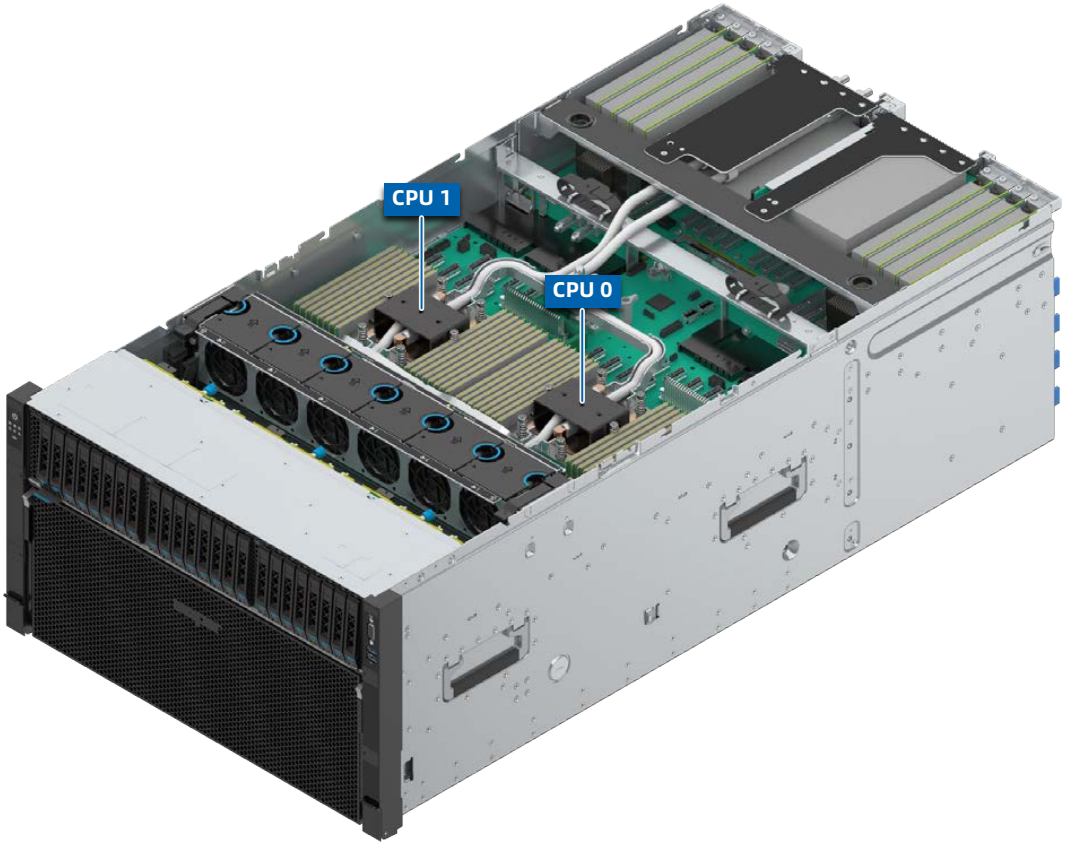
5.5.1 KR6288-E3-A0-R0-00

Figure 5-4 Processor Locations



5.5.2 KR6288-E3-C0-R0-00

Figure 5-5 Processor Locations

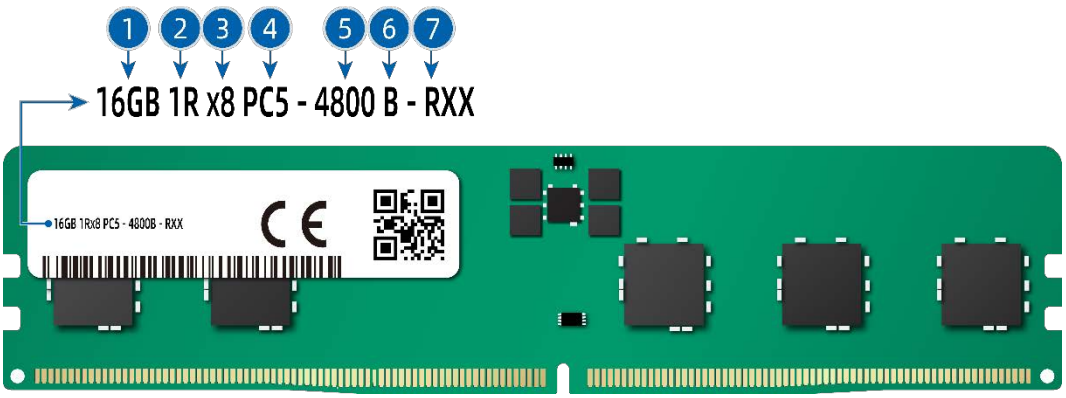


5.6 DDR5 DIMMs

1. Identification

To determine DIMM characteristics, refer to the label attached to the 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 • 3DS 5600B = 52-45-45
7	DIMM type	R = RDIMM

2. Memory Subsystem Architecture

The server supports 24 DIMM slots and 12 memory 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

CPU	Channel ID	Silk Screen
	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
	Channel L	CPU1_CLD0

3. Compatibility

Refer to the following rules to configure 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 specific memory configuration.
- 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.

- The total memory capacity is the sum of the capacities of all DDR5 DIMMs.
- The total memory capacity cannot exceed the maximum capacity supported by the CPU.

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	RDIMM
Rated speed (MT/s)		6,400	6,400	6,400	6,400	6,400
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]	6,000	6,000	6,000	6,000	6,000

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

The information above is for reference only. Consult your local sales representative for details.

4. Population Rules

General population rules for DDR5 DIMMs:

- Install DIMMs only when the corresponding processor is installed.
- Install dummies in the empty DIMM slots.

5. DIMM Slot Layout

Up to 24 DDR5 DIMMs can be installed in a server, and a balanced DIMM configuration is recommended for optimal memory performance. DIMM configuration must be compliant with the DIMM population rules.

Figure 5-7 DIMM Slot Layout

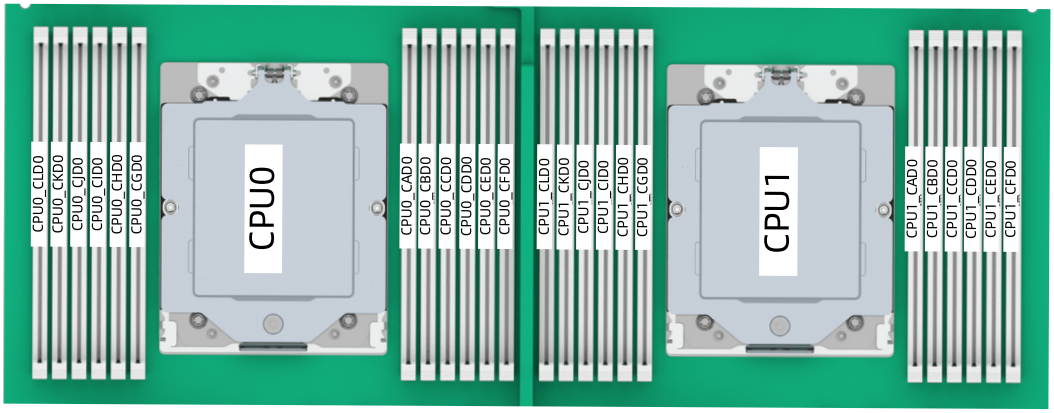


Table 5-5 DDR5 DIMM Population Rules (Dual-CPU Configuration)

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

5.7 Storage

5.7.1 Drive Configurations

NOTE

For the physical drive No. of each configuration, see 5.7.2 Drive Numbering.

Table 5-6 Drive Configurations

Configuration	Front Drives	Internal Drives	Drive Management Mode
4 × 2.5-Inch Drive Configuration (4 × NVMe)	Drive bays with physical drive No. 0, 2, 4 and 6 support NVMe drives only	M.2 SSD on the M.2 adapter	NVMe drives: switch board
8 × 2.5-Inch Drive Configuration (8 × NVMe)	Drive bays with physical drive No. 0 to 7 support NVMe drives only	M.2 SSD on the M.2 adapter	NVMe drives: switch board
24 × 2.5-Inch Drive Configuration (16 × SAS/SATA + 8 × NVMe)	Drive bays with physical drive No. 0 to 7 support NVMe drives only, drive bays with physical drive No. 8 to 23 support SAS/SATA drives only	M.2 SSD on the M.2 adapter	NVMe drives: switch board SAS/SATA drives: 1 RAID card

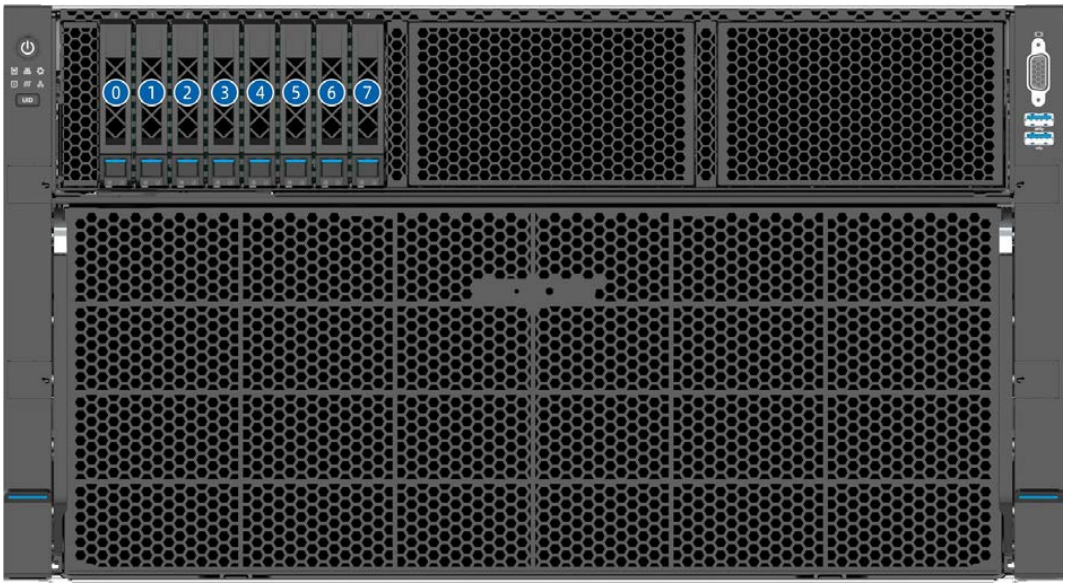
For more information about the drive configurations, contact our Customer Service.

5.7.2 Drive Numbering

1. 4 × 2.5-Inch Drive Configuration

- Supports four NVMe drives that can be populated in drive bays 0, 2, 4 and 6. The drives are connected to the switch board via a backplane.

Figure 5-8 Drive Numbering

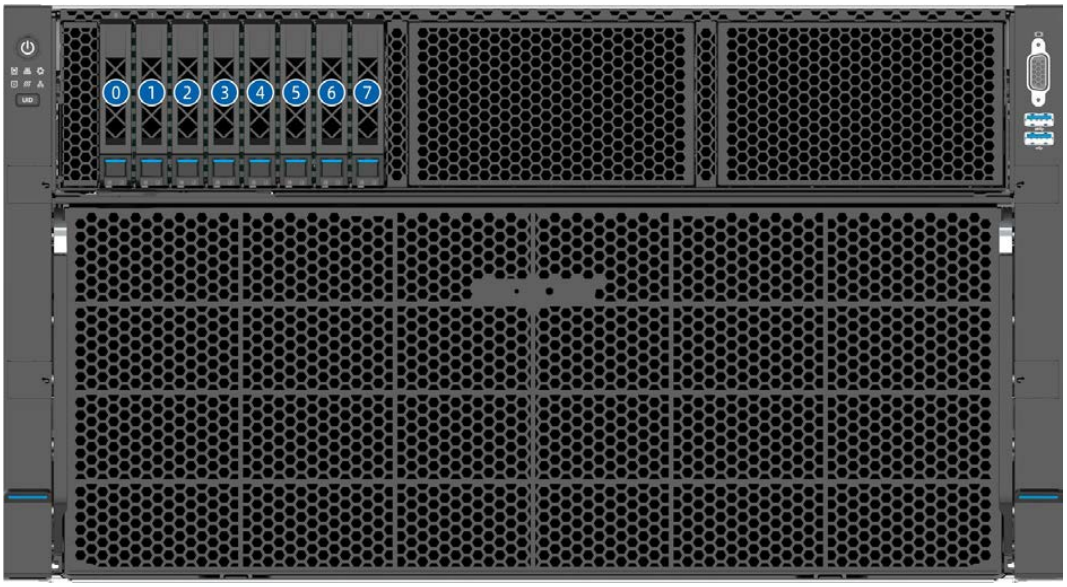


Physical Drive No.	Drive No. Identified by the BMC	Drive No. Identified by a RAID Card
0	0	-
2	2	-
4	4	-
6	6	-

2. 8 × 2.5-Inch Drive Configuration

Supports eight NVMe drives. The drives are connected to the switch board via a backplane.

Figure 5-9 Drive Numbering

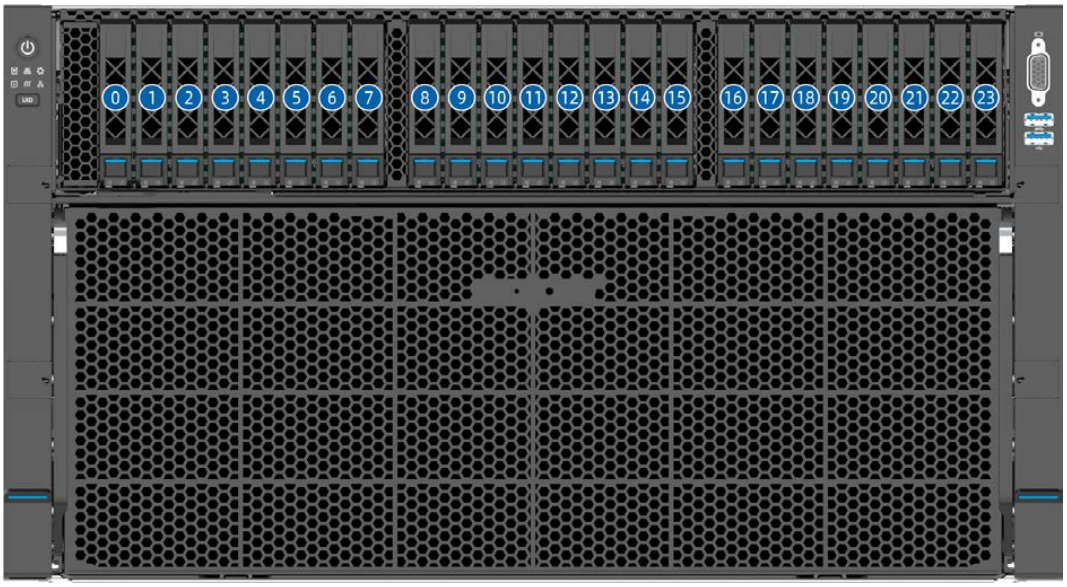


Physical Drive No.	Drive No. Identified by the BMC	Drive No. Identified by a RAID Card
0 to 7	0 to 7	-

3. 24 × 2.5-Inch Drive Configuration

Supports sixteen SAS/SATA drives and eight NVMe drives.

Figure 5-10 Drive Numbering



Physical Drive No.	Drive No. Identified by the BMC	Drive No. Identified by a 16i RAID Card
0	0	-

Physical Drive No.	Drive No. Identified by the BMC	Drive No. Identified by a 16i RAID Card
1	1	-
2	2	-
3	3	-
4	4	-
5	5	-
6	6	-
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
20	20	12
21	21	13
22	22	14
23	23	15

5.7.3 Drive LEDs

1. SAS/SATA Drive LEDs

Figure 5-11 SAS/SATA Drive LEDs

Table 5-7 SAS/SATA Drive LED Description

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/Rebuild 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 fails
Any status	Off	Solid on		Drive fails

2. NVMe Drive LEDs

Figure 5-12 NVMe Drive LEDs

When the NVMe drive is connected to the CPU/switch board via a backplane, RAID is not supported. Only the activity LED functions.

Table 5-8 NVMe Drive LED Description

Activity LED (①)	**Description**
Green	
Off	Drive absent
Solid on	Drive present but not in use
Blinking	Drive present and in use

When the NVMe drive is connected to a trimode RAID card via a backplane, RAID is supported. The drive LED descriptions are indicated in the following table.

Table 5-9 NVMe Drive LED Description

Activity LED (①)	Error LED (②)		Description
Green	Blue	Red	
Off	Off	Off	Drive absent
Solid on	Off	Off	Drive present but not in use
Blinking	Off	Off	Drive present and in use
Blinking	Solid pink		Copyback/Rebuild in progress
Solid on	Solid on	Off	Drive selected but not in use
Blinking	Solid on	Off	Drive selected and in use
Any status	Solid on	Off	Drive is selected but fails
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 system supports the OCP card. Users can select the OCP cards as needed.
- The system support PCIe NICs. Users can select the PCIe NICs as needed.
- For specific NIC 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 cards provide system expansion capabilities.

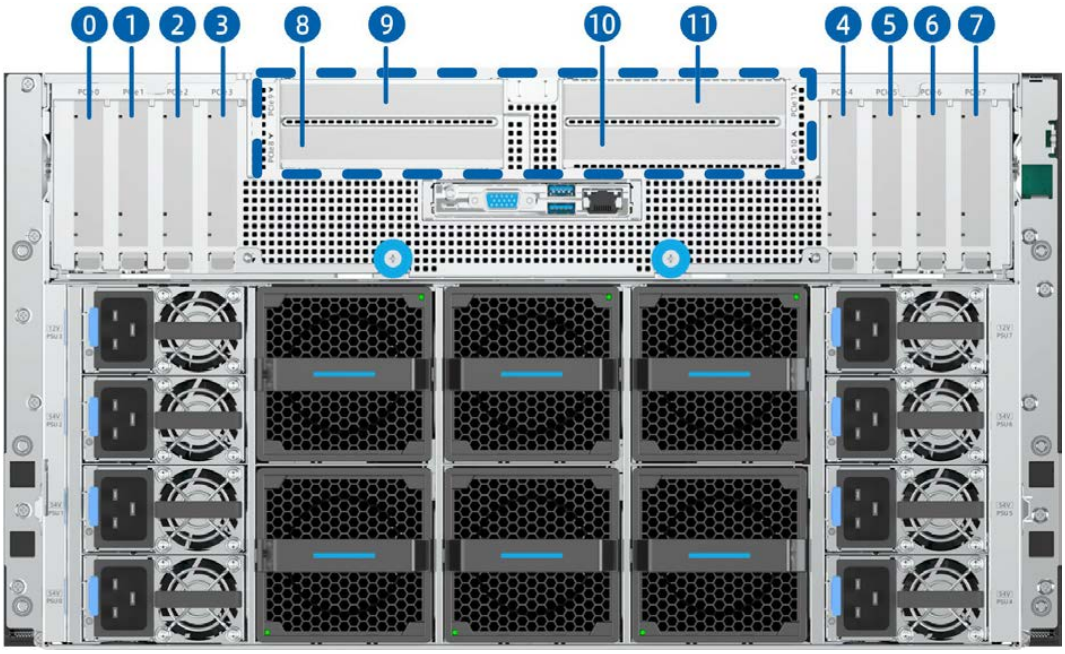
- KR6288-E3-A0-R0-00 supports 12 PCIe 5.0 expansion slots, and KR6288-E3-C0-R0-00 supports 11 PCIe 5.0 expansion slots. The two models both support up to 11 PCIe expansion cards.
- For specific PCIe card options, consult your local sales representative or refer to 7.2 Hardware Compatibility.

5.9.2 PCIe Slot Locations

1. KR6288-E3-A0-R0-00

Supports 12 PCIe expansion slots, which are described below.

Figure 5-13 PCIe Slot Locations

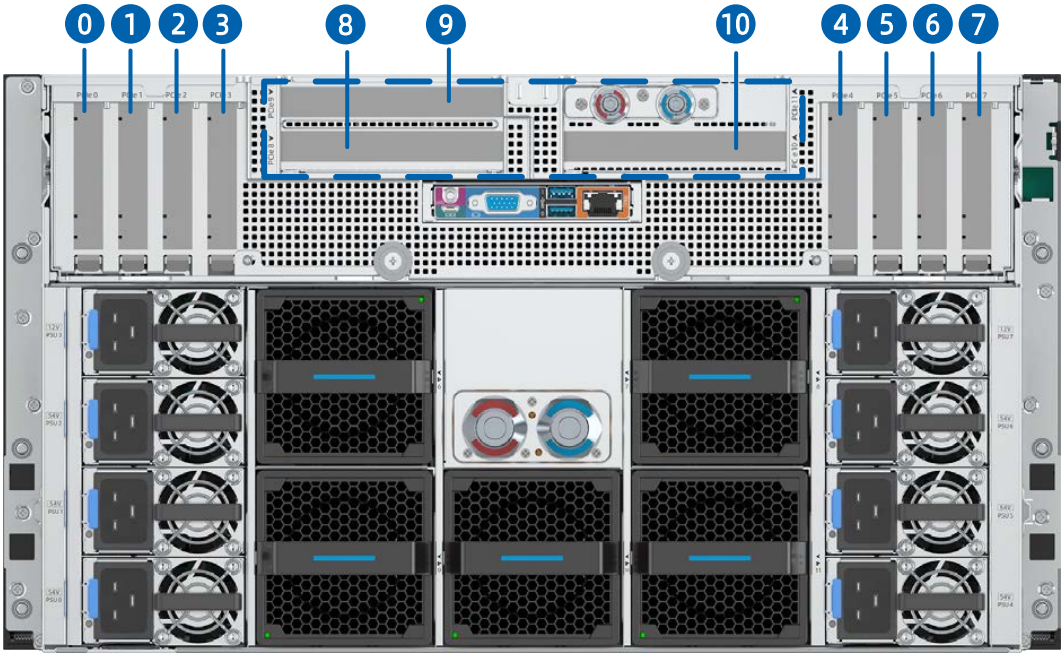


- PCIe slots 8 to 11:
  - Up to 3 single-width FHHL cards (occupies PCIe slots 8, 10 and 11) or
  - 1 × dual-width FHHL card (inserted into PCIe slot 8, and occupies the space of PCIe slots 8 and 9) + 2 × single-width FHHL card (occupies PCIe slots 10 and 11)
- PCIe slot 8:
  - 1 × OCP 3.0 card (optional)
- PCIe slots 0 to 7:
  - Up to 8 HHHL cards

2. KR6288-E3-C0-R0-00

Supports 11 PCIe expansion slots, which are described below.

Figure 5-14 PCIe Slot Locations



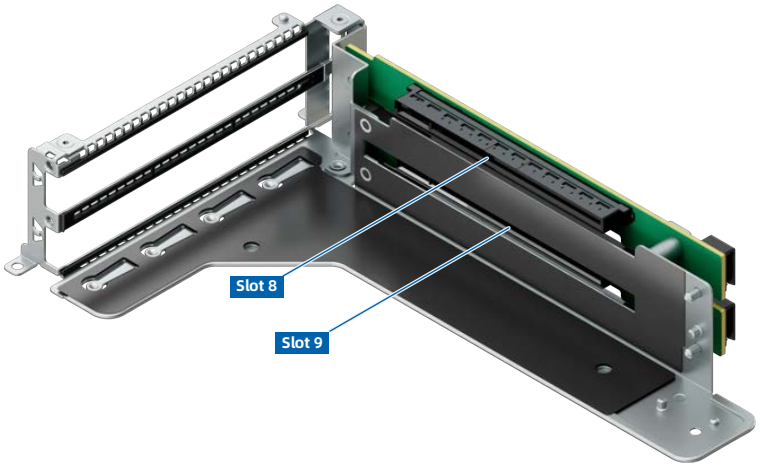
- PCIe slots 8 to 10:
  - Up to 3 single-width FHHL cards (occupies PCIe slots 8, 9 and 10) or
  - 1 × dual-width FHHL card (inserted into PCIe slot 8, and occupies the space of PCIe slots 8 and 9) + 1 × single-width FHHL card (occupies PCIe slot 10)
- PCIe slot 8:
  - 1 × OCP 3.0 card (optional)
- PCIe slots 0 to 7:
  - Up to 8 HHHL cards

5.9.3 PCIe Riser Modules

1. KR6288-E3-A0-R0-00

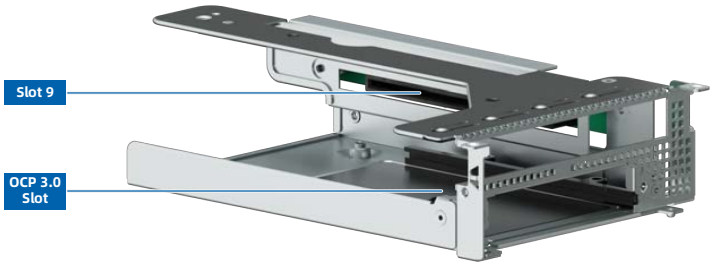
- PCIe riser module (PCIe slots 8 and 9)
  - Up to two x16 single-width FHHL PCIe expansion cards or
  - One x16 dual-width FHHL card (inserted into PCIe slot 8, and occupies the space of PCIe slots 8 and 9).

Figure 5-15 PCIe Riser Module (PCIe Slots 8 and 9)



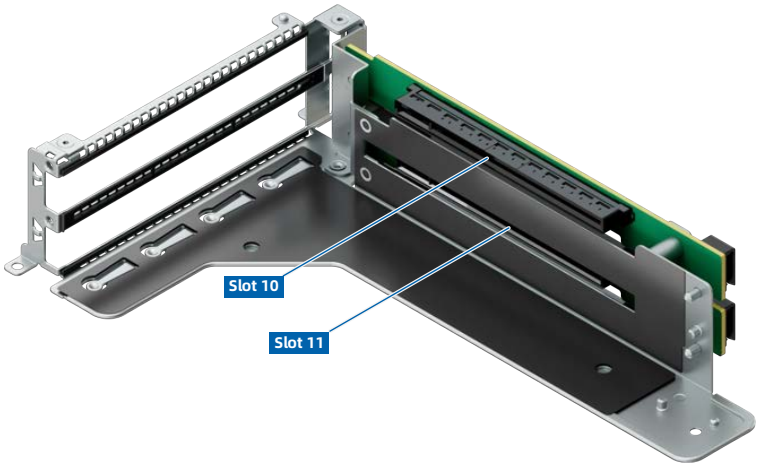
- PCIe riser module (OCP 3.0 slot and PCIe slot 9)
  - One x16 single-width FHHL PCIe expansion card (occupies PCIe slot 9) and one OCP 3.0 card (occupies PCIe slot 8)

Figure 5-16 PCIe Riser Module (PCIe Slot 9 and OCP 3.0 Slot)



- PCIe riser module (PCIe slots 10 and 11)
  - Two x16 single-width FHHL PCIe expansion cards.

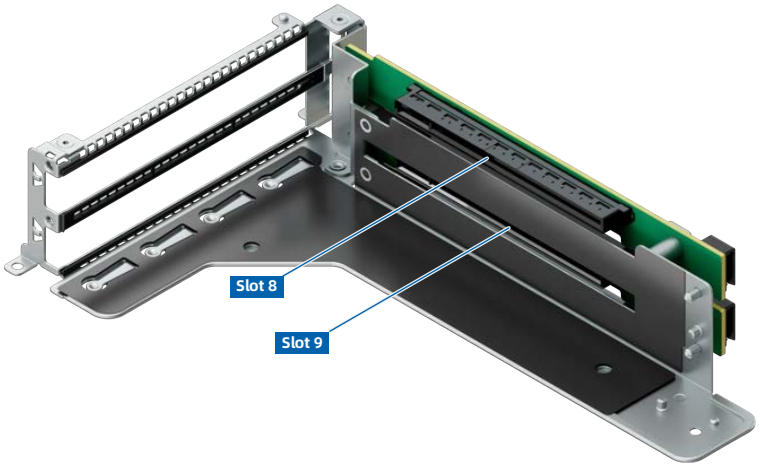
Figure 5-17 PCIe Riser Module (PCIe Slots 10 and 11)



2. KR6288-E3-C0-R0-00

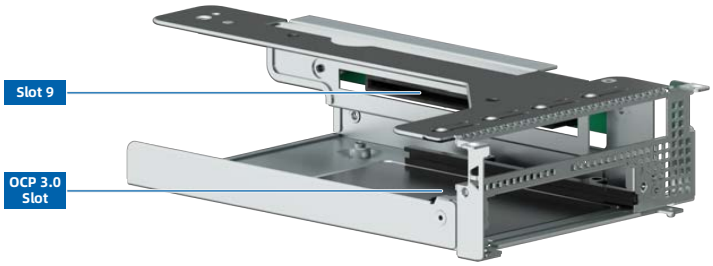
- PCIe riser module (PCIe slots 8 and 9)
  - Up to two x16 single-width FHHL PCIe expansion cards or
  - One x16 dual-width FHHL card (inserted into PCIe slot 8, and occupies the space of PCIe slots 8 and 9).

Figure 5-18 PCIe Riser Module (PCIe Slots 8 and 9)



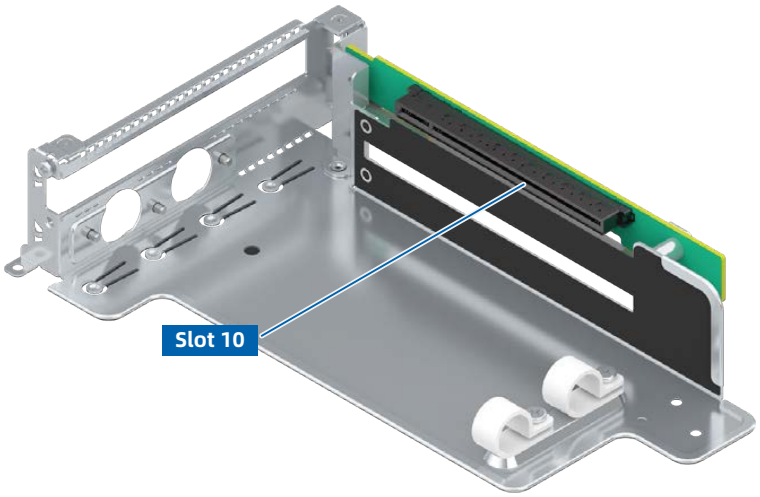
- PCIe riser module (OCP 3.0 slot and PCIe slot 9)
  - One x16 single-width FHHL PCIe expansion card (occupies PCIe slot 9) and one OCP 3.0 card (occupies PCIe slot 8)

Figure 5-19 PCIe Riser Module (PCIe Slot 9 and OCP 3.0 Slot)



- PCIe riser module (PCIe slot 10)
  - One x16 single-width FHHL PCIe expansion card.

Figure 5-20 PCIe Riser Module (PCIe Slot 10)



5.9.4 PCIe Slot Description

1. KR6288-E3-A0-R0-00

Table 5-10 PCIe Slot Description

PCIe Slot	Owner	PCIe Standard	Connector Width	Bus Width	Port No.	Form Factor
Slot 0	SWA	PCIe 5.0	x16	x16	S0	HHHL
Slot 1	SWA	PCIe 5.0	x16	x16	S5	HHHL
Slot 2	SWB	PCIe 5.0	x16	x16	S0	HHHL
Slot 3	SWB	PCIe 5.0	x16	x16	S5	HHHL
Slot 4	SWC	PCIe 5.0	x16	x16	S2	HHHL
Slot 5	SWC	PCIe 5.0	x16	x16	S1	HHHL

PCIe Slot	Owner	PCIe Standard	Connector Width	Bus Width	Port No.	Form Factor
Slot 6	SWD	PCIe 5.0	x16	x16	S2	HHHL
Slot 7	SWD	PCIe 5.0	x16	x16	S1	HHHL
Slot 8	CPU0	PCIe 5.0	x16	x8/x16	G3	FHHL
Slot 9	CPU0	PCIe 4.0	x16	x4	P4	FHHL
		PCIe 5.0	x16	x8	G3	
Slot 10	CPU1	PCIe 5.0	x16	x8/x16	G1	FHHL
Slot 11	CPU1	PCIe 4.0	x16	x4	P4	FHHL
		PCIe 5.0	x16	x8	G1	
OCP 3.0 Slot (occupies slot 8)	CPU0	PCIe 5.0	x16	x16	G3	SFF OCP 3.0

2. KR6288-E3-C0-R0-00

Table 5-11 PCIe Slot Description

PCIe Slot	Owner	PCIe Standard	Connector Width	Bus Width	Port No.	Form Factor
Slot 0	SWA	PCIe 5.0	x16	x16	S0	HHHL
Slot 1	SWA	PCIe 5.0	x16	x16	S5	HHHL
Slot 2	SWB	PCIe 5.0	x16	x16	S0	HHHL
Slot 3	SWB	PCIe 5.0	x16	x16	S5	HHHL
Slot 4	SWC	PCIe 5.0	x16	x16	S2	HHHL
Slot 5	SWC	PCIe 5.0	x16	x16	S1	HHHL
Slot 6	SWD	PCIe 5.0	x16	x16	S2	HHHL
Slot 7	SWD	PCIe 5.0	x16	x16	S1	HHHL
Slot 8	CPU0	PCIe 5.0	x16	x8/x16	G3	FHHL
Slot 9	CPU0	PCIe 4.0	x16	x4	P4	FHHL
		PCIe 5.0	x16	x8	G3	
Slot 10	CPU1	PCIe 5.0	x16	x8/x16	G1	FHHL
Slot 11	NA	NA	NA	NA	NA	NA
OCP 3.0 Slot	CPU0	PCIe 5.0	x16	x16	G3	SFF OCP 3.0

PCIe Slot	Owner	PCIe Standard	Connector Width	Bus Width	Port No.	Form Factor
(occupies slot 8)						

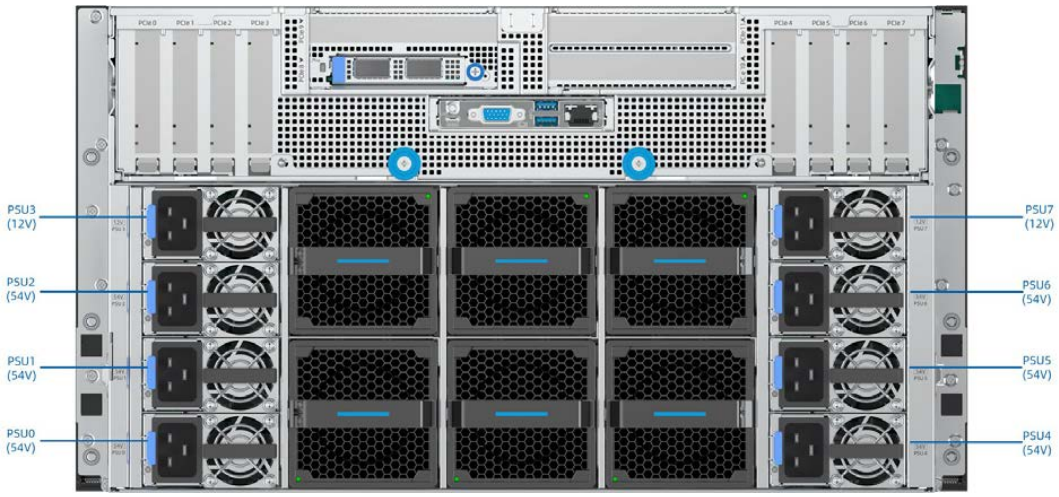
5.10 PSUs

- Up to two 12 V PSUs and six 54 V PSUs.
- When the server is configured with two 12 V PSUs and six 54 V PSUs, the 12 V PSUs support 1+1 redundancy and the 54 V PSUs support 3+3 redundancy.
- Supports AC or DC power input.
- The PSUs are hot-swappable.
- The server must use 12 V PSUs with the same part number (P/N code) and 54 V PSUs with the same part number (P/N code).
- The PSUs feature short-circuit protection.

NOTE

- When the GPU module is installed, at least one 54 V PSU must be used to boot the server.
- When the GPU module is installed, at least three 54 V PSUs must be used to ensure proper system running and help avoid system crash.
- The locations of the PSUs of KR6288-E3-A0-R0-00 and KR6288-E3-C0-R0-00 are the same.

Figure 5-21 PSU Locations



5.11 Fan Modules

- The server supports six 6056 motherboard fan modules and 6 rear 8086 fan modules (KR6288-E3-A0-R0-00) or five rear 8086 fan modules (KR6288-E3-C0-R0-00).
- The 6 motherboard fan modules and 6 rear fan modules support N+1 redundancy, which means that the server can continue working when a single fan fails.
- The fan modules are hot-swappable.
- Supports intelligent fan speed control.
- The server must use motherboard fan modules with the same part number (P/N code) and rear fan modules with the same part number (P/N code).

NOTE

The sequence No. of the motherboard fan modules of KR6288-E3-A0-R0-00 and KR6288-E3-C0-R0-00 are the same.

Figure 5-22 Motherboard Fan Modules

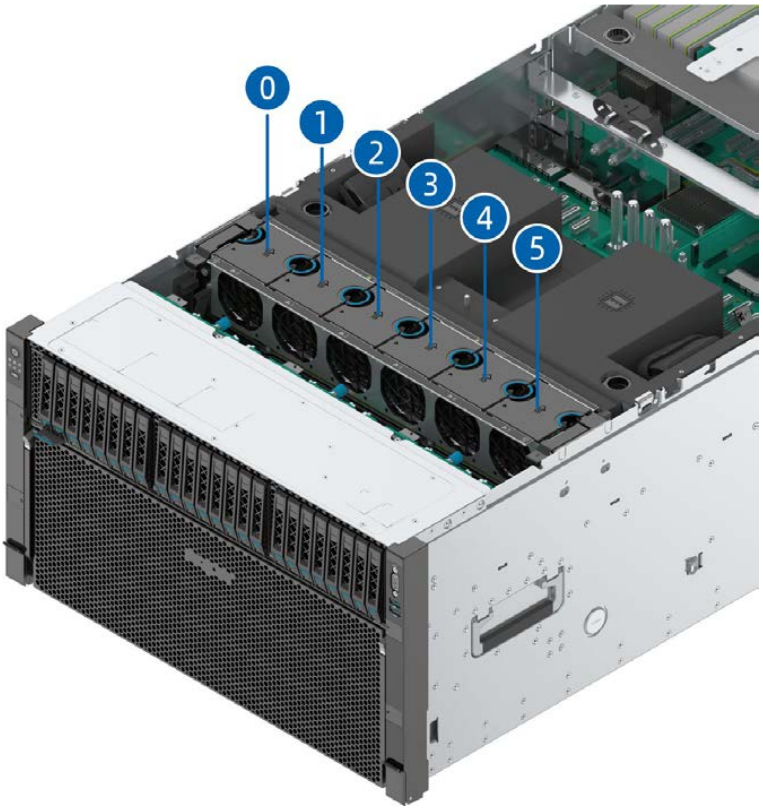


Figure 5-23 Rear Fan Modules of KR6288-E3-A0-R0-00

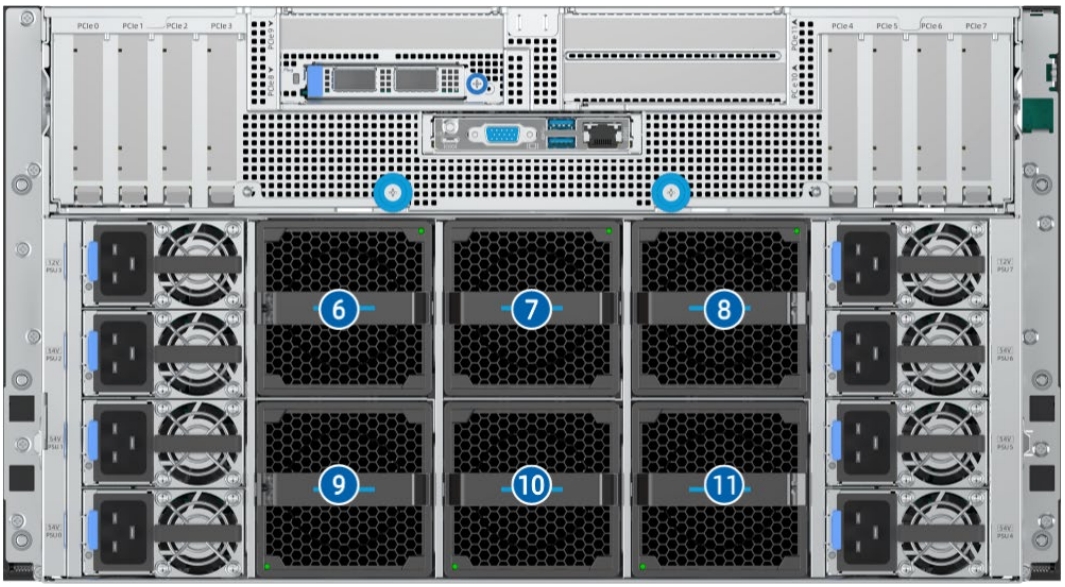
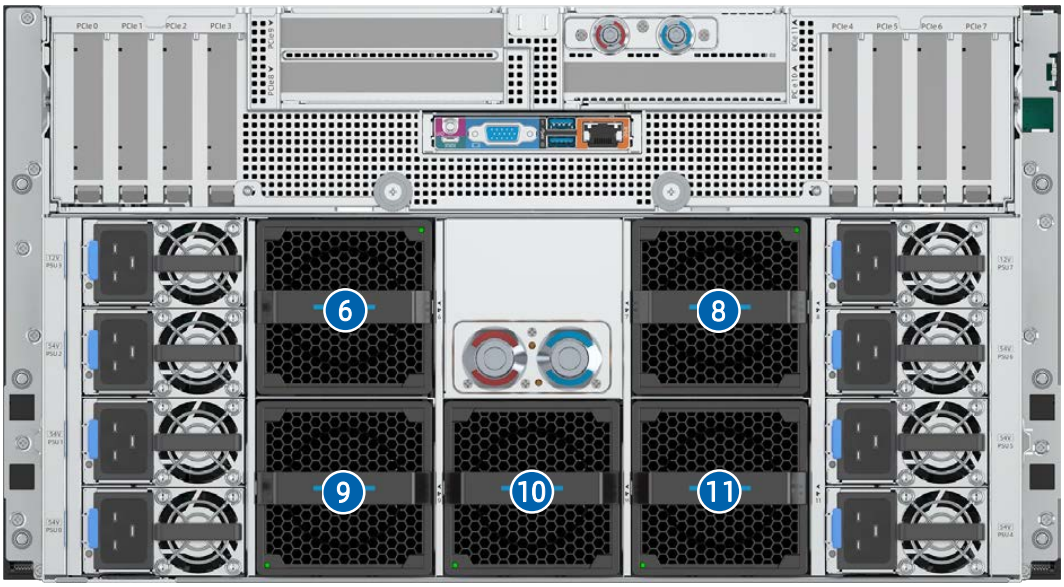


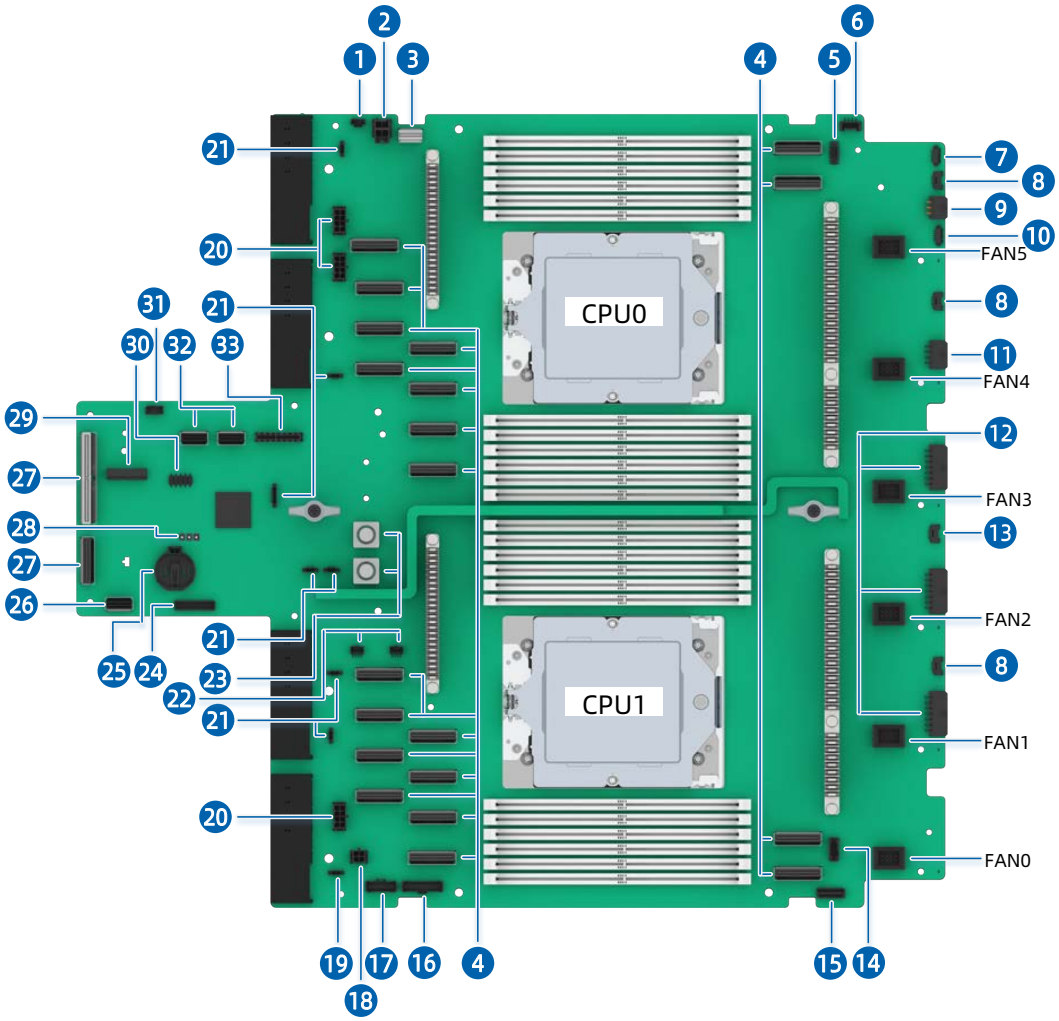
Figure 5-24 Rear Fan Modules of KR6288-E3-C0-R0-00



5.12 Boards

5.12.1 Motherboard

Figure 5-25 Motherboard Layout

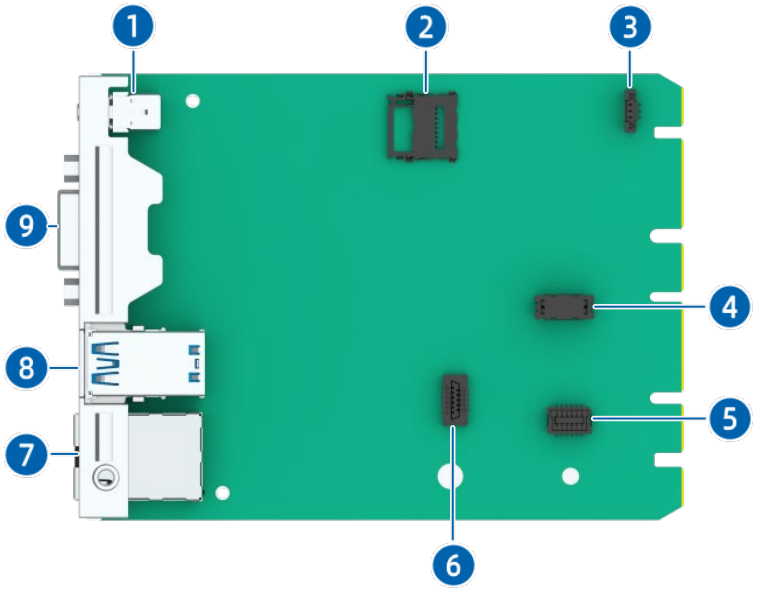


Item	Feature	Item	Feature
1	OCP Hot-Plug Button Connector	18	Smart NIC Power Connector
2	OCP Power Connector	19	Smart NIC UART Connector
3	Right Control Panel Connector	20	GPU Module Power Connector × 3
4	MCIO x8 Connector × 20	21	UART Connector × 7
5	HDT Connector	22	Leak Detection Connector × 2
6	Chassis Temperature Sensor Connector	23	Motherboard Power Connector × 2
7	Riser Card I^2C Connector	24	OCP Sideband Connector

Item	Feature	Item	Feature
8	BP I²C Connector × 3	25	Button Cell Battery Socket
9	Riser Card Power Connector (reserved)	26	NVLink Connector
10	Riser Card I²C Connector (reserved)	27	DC-SCM Connector
11	Riser Card Power Connector (reserved)	28	CMOS Jumper
12	BP Power Connector × 3	29	SYS_TF Connector
13	TSOM I²C Connector	30	CPLD JTAG Connector
14	VPP Connector	31	Intrusion Switch Connector
15	Left Control Panel Connector	32	M.2 Adapter Connector × 2
16	PDB Sideband Connector	33	M.2 Adapter Power Connector
17	NC-SI Sideband Connector	-	-

5.12.2 DC-SCM Board

Figure 5-26 DC-SCM Board



Item	Feature	Item	Feature
1	UID/BMC RST Button and LED	6	TCM/TPM Connector
2	TF Card Slot	7	BMC Management Network Port

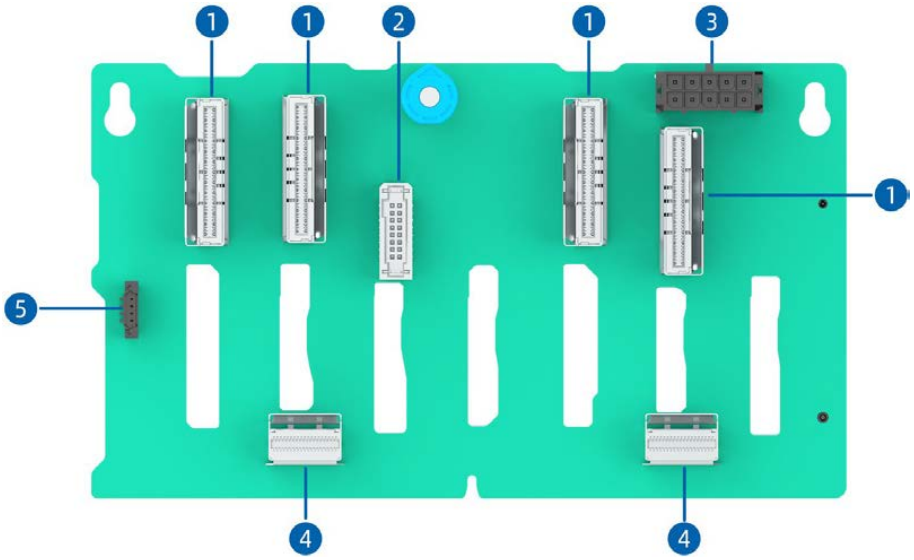
Item	Feature	Item	Feature
3	BMC_RTC_BAT Connector (reserved)	8	USB 3.0 Port × 2
4	Board to Board PHY Connector (reserved)	9	VGA Port
5	Front Panel USB Type-C Port Connector (reserved)	-	-

5.12.3 Drive Backplanes

Front Drive Backplanes

- SAS/SATA/NVMe Drive Backplane

Figure 5-27 SAS/SATA/NVMe Drive Backplane



Item	Feature	Item	Feature
1	MCIO x8 Connector × 4	4	Slimline x4 Connector × 2
2	VPP Connector	5	BMC_I²C Connector
3	Backplane Power Connector	-	-

6 Product Specifications

6.1 Technical Specifications

Table 6-1 Technical Specifications

Item	Description
Form Factor	6U rack server
Processor	Two 5th Gen AMD EPYC Turin processors: • Up to 192 cores per CPU • Base frequency up to 4.2 GHz (16-core CPUs) • Max. boost frequency of 5.0 GHz (64-core CPUs) • Three xGMI links at up to 32 GT/s per link • TDP up to 500 W Note: The information above is for reference only. For details, see 7.2 Hardware Compatibility.
Memory	• 24 DIMM slots: • Up to 24 DDR5 DIMMs • 12 memory channels per processor • 1 DIMM per channel • Up to 6,000 MT/s (actual speed) • Supports RDIMMs • Supports ECC Note: The information above is for reference only. For details, see 7.2 Hardware Compatibility.
Storage	Front: • Up to 24 × 2.5-inch drive (16 × 2.5-inch SAS/SATA drive + 8 × 2.5-inch NVMe drive) or • Up to 16 × 2.5-inch NVMe drive or • Up to 16 × E3.S SSD Internal: • Up to 2 M.2 SSDs • Up to 2 TF cards

Item	Description
Network	• 1 optional 10/25/100 Gb OCP 3.0 card • 1/10/25/40/100/200 Gb PCIe NICs • 100/200/400 Gb HCA cards
I/O Expansion	KR6288-E3-A0-R0-00 • Supports 12 PCIe slots. Up to 11 PCIe expansion cards, including 1 optional OCP 3.0 card that occupies PCIe slot 8. • PCIe slots 0 to 7: up to 8 HHHL cards • PCIe slots 8 to 11: - Up to 3 single-width FHHL cards (occupies PCIe slots 8, 10 and 11) or - One dual-width FHHL card (inserted into PCIe slot 8, and occupies the space of PCIe slots 8 and 9) and two single-width FHHL cards (occupies PCIe slots 10 and 11) KR6288-E3-C0-R0-00 • Supports 11 PCIe slots. Up to 11 PCIe expansion cards, including 1 optional OCP 3.0 card that occupies PCIe slot 8. • PCIe slots 0 to 7: up to 8 HHHL cards • PCIe slots 8 to 10: - Up to 3 single-width FHHL cards or - One dual-width FHHL card (inserted into PCIe slot 8, and occupies the space of PCIe slots 8 and 9) and one single-width FHHL card (occupies PCIe slot 10) For details, see 5.9.2 PCIe Slot Locations and 5.9.4 PCIe Slot Description.
Port	• Front: - 1 × VGA port - 1 × USB 3.0 port - 1 × USB 2.0 port • Rear: - 2 × USB 3.0 port - 1 × BMC management network port - 1 × system/BMC serial port

Item	Description
	- 1 × VGA port Note: OS installation on the USB storage media is not recommended.
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 • KSManage
Security	• 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

Item	Description
Temperature	• Operating: - 8-drive configuration with no fan failure: 10℃ to 35℃ (50°F to 95°F) - 16/24-drive configuration with no fan failure: 10℃ to 30℃ (50°F to 86°F) - 8/16-drive configuration with a failed fan: 10℃ to 25℃ (50°F to 77°F)

Item	Description
	- 24-drive configuration with a failed fan: 10°C to 20°C (50°F to 68°F) • Inlet water temperature: ≤45°C (113°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: 10% to 90% RH • Storage (packed): 10% to 93% RH • Storage (unpacked): 10% to 93% RH
Operating Altitude	≤3050 m (10,007 ft). Derate the maximum allowable temperature by 1°C per 300 m (1°F per 546.81 ft) at an altitude of 900 to 3,050 m (2,953 to 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)
Acoustic Noise	Noise levels are within the limits defined by OSHA and occupational health and safety regulations in China. Listed is noise measured at a server operating temperature of 25°C (77°F): • Idle: - 8.7 Bels • Operating: - 9.6 Bels

 NOTE

- Standard operating temperature range
  - Derate the maximum allowable temperature by 1°C per 300 m (1°F per 546.81 ft) at an altitude of 900 to 3,050 m (2,953 to 10,007 ft). No direct sustained sunlight is permitted. The maximum operating altitude is 3,050 m (10,007 ft) and the maximum temperature gradient is 20°C/h (36°F/h), both varying by system configuration.

  - Any fan failure or operations above the standard operating temperature may lead to system performance degradation.
- This document lists the LWAd of the product at a 25°C (77°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.
- The sound levels shown here were measured based on the specific configurations of a server. Sound levels vary by server configuration. These values are for reference only and subject to change without notice.
- 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
Dimensions (W × H × D)	• With mounting ears: 482 × 263 × 890 mm (18.98 × 10.35 × 35.04 in.) • Without mounting ears: 447 × 263 × 860 mm (17.60 × 10.35 × 33.86 in.) • Outer packaging: 721 × 450 × 1,167 mm (28.39 × 17.72 × 45.94 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: Above 1,000 mm (39.37 in.) • Installation requirements for the server rails are as follows: 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 - Net weight: 88 kg (194.01 lbs)

Item	Description
	- Gross weight: 110 kg (242.51 lbs) (including server, packaging box, rails and accessory box) Note: The system weight varies by configuration.

7 Operating System and Hardware Compatibility

This section 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.
- Hardware compatibility may vary by model. Contact your sales representative for 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 8.8
Ubuntu 22.04

7.2 Hardware Compatibility

7.2.1 CPU Specifications

The server supports 2 AMD EPYC 9005 series processors.

Table 7-2 CPU Specifications

Model	Cores	Threads	Base Frequency (GHz)	Max. Boost Frequency (GHz)	Cache (MB)	TDP (W)
9755	128	256	2.7	4.1	512	500

7.2.2 DIMM Specifications

The server supports up to 24 DDR5 DIMMs. Each processor supports 12 memory channels with 1 DIMM per channel. RDIMMs are supported.

Table 7-3 DIMM Specifications

Type	Capacity (GB)	Speed (MT/s)	Data Width	Organization
RDIMM	64	5,600	64bits	2R x4
RDIMM	96	5,600	64bits	2R x4

7.2.3 Drive Specifications

Table 7-4 SATA SSD Specifications

Type	Capacity	Max. Qty.
SATA SSD	3.84 TB	8

Table 7-5 U.2 NVMe SSD Specifications

Type	Capacity	Max. Qty.
U.2 NVMe SSD	7.68 TB	8

Table 7-6 M.2 SSD Specifications

Type	Capacity	Max. Qty.
M.2 PCIe SSD	1.92 TB	2

7.2.4 RAID Card Specifications

Table 7-7 RAID Card Specifications

Type	Description
RAID Card	RAID_L_8R0_9560-8i_4G_HDM12G_PCIE4

7.2.5 NIC Specifications

Table 7-8 PCIe NIC Specifications

Type	Description	Speed (Gbps)	Port Qty.
PCIe NIC	NIC_IAG_Vostok_X710_10G_LC_P8-G3_2	10	2
	NIC_M_25G_MCX631102AN_LC_PCIEx8_2_XR	25	2
	NIC_I_100G_E810-CQDA2_LC_PCIEx16_2_XR	100	2

7.2.6 HCA Card Specifications

Table 7-9 HCA Card Specifications

Type	Description	Speed (Gbps)	Port Qty.
HCA Card	HCA_NV_1-NDR200_MCX75310AAS-HEAT_PCIE	200	1
	HCA_NV_1-NDR_MCX75310AAS-NEAT_PCIE	400	1

7.2.7 GPU Specifications

Table 7-10 GPU Specifications

Type	Description	Max. Qty.
GPU	GPUM_NV_640G_HGX-H100-8GPU-AC_5120b_MP	1
	GPUM_NV_640G_HGX-H800-8GPU-AC_5120b_MP	1

7.2.8 PSU Specifications

The server supports up to two 12 V PSUs with 1+1 redundancy and six 54 V PSUs with 3+3 redundancy that follow the Intel Common Redundant Power Supply (CRPS) specification. The PSUs share a common electrical and structural design that allows for hot-swap and tool-less installation into the server with the PSUs locking automatically after being inserted into the power bay. The CRPS PSUs are 80 Plus Titanium rated with various output powers, allowing customers to choose as needed.

The following rated 110 Vac and 230 Vac power supplies are supported:

- 12 V PSU:
  - 3,200 W Titanium PSU: 1,400 W (110 Vac), 3,200 W (230 Vac)
- 54 V PSU:
  - 2,700 W Titanium PSU: 1,200 W (110 Vac), 2,700 W (230 Vac)
  - 3,200 W Titanium PSU: 1,400 W (110 Vac), 3,200 W (230 Vac)
- Operating voltage range:
  - 110 Vac: 90 Vac to 132 Vac
  - 230 Vac: 180 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.

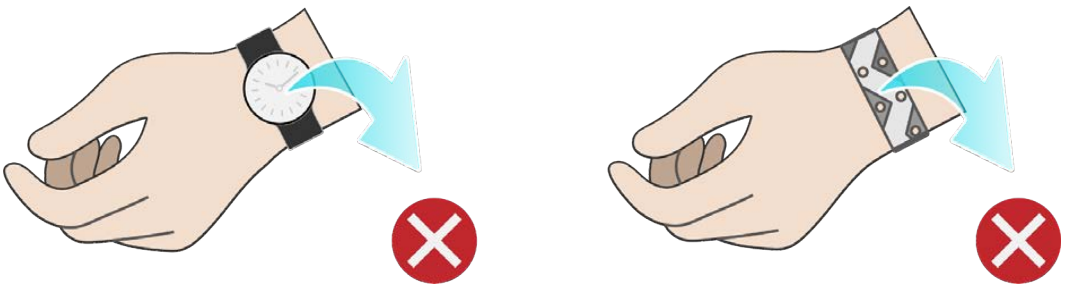
8.1.2 Personal Safety

- 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.

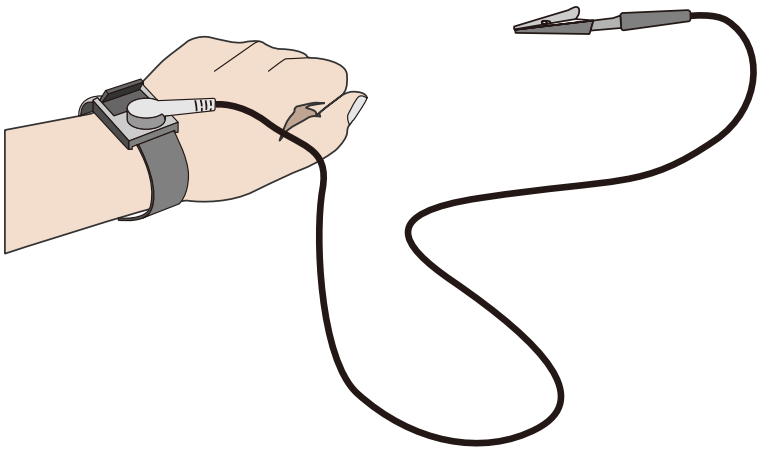
Figure 8-2 Removing Conductive Objects



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

1. Put your hand through an 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 clothing 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 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 the 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 Limits 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
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
- Redfish 1.13
- SNMP v1/v2c/v3
- HTML5/Java remote consoles (Keyboard, Video, Mouse)
- remote virtual media
- login via web browsers
- intelligent fault 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 • SMASH CLP • SNMP • 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.

Feature	Description
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.
Power Capping	Supports power capping, increasing deployment density and reducing energy consumption.
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.
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

Feature	Description
	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 models; supports firmware update of BMC/BIOS/CPLD/PSU.
Serial Port Redirection	Supports remote redirection of the system serial port, BMC serial port 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, provides more user roles to allow administrators to grant different privileges to O&M personnel.
Security Features	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.
Configuration Exporting and Importing	To import and export the existing system configurations.
System Information Display	Displays the server basic information such as the information and health status of key 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.

Feature	Description
One-Click Erasing	To perform non-recoverable erasing on all storage devices of the server, preventing data leakage when the server is to be retired.
System Lockdown	After this feature is enabled, some parameters of the server cannot be set and some operations cannot be performed on 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 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 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	• Online asset management combined with offline asset management enabled by IoT solutions brings integrated digital asset management • 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 the above rules.
Control	• Quick start of firmware update, OS installation, power management, drive data erasing and stress test • 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

Feature	Description
	• 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.

Feature	Description
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
EN	CE	Mandatory
U.S.	FCC	Mandatory
	UL	Voluntary
Canada	IC	Mandatory
	CUL	Voluntary
Korea	KC	Mandatory
EAEU	EAC	Mandatory
	EAC-RoHS	Mandatory
	FSS	Mandatory
Taiwan, China	BSMI	Mandatory

12 Appendix A

12.1 Operating Temperature Specification Limits

Table 12-1 Operating Temperature Specification Limits

Configuration	Front Drive	CPU	GPU	Max. Operating Temperature
24 × 2.5-Inch Drive Configuration	8 × NVMe Drive + 16 × SATA Drive	≤500 W	NVIDIA Hopper HGX 8-GPU Baseboard	30°C (86°F)
16 × 2.5-Inch Drive Configuration	8 × NVMe Drive + 8 × SATA Drive	≤500 W	NVIDIA Hopper HGX 8-GPU Baseboard	30°C (86°F)
8 × 2.5-Inch Drive Configuration	8 × NVMe Drive	≤500 W	NVIDIA Hopper HGX 8-GPU Baseboard	35°C (95°F)

NOTE

- When a single fan fails, the maximum operating temperature will be lower than that when no fan fails, which may affect system performance.
- For the air-cooled servers, when the server is configured with a 400 Gb NIC or HCA card, the maximum operating temperature supported is 25°C (77°F) if no fan fails and is 20°C (68°F) if a single fan fails.

12.2 Model

Table 12-2 Model

Certified Model	Description
KR6288-E3-A0-R0-00	Global
KR6288-E3-C0-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	Note
Inlet_Temp	Air inlet temperature	Air inlet on the mounting ear, front drive backplane and motherboard.	The lowest temperature of the three locations will be taken.
Outlet_Temp	Air outlet temperature	Switch board	-
CPUx_Temp	CPUx core temperature	CPUx	x indicates the CPU number with a value of 0 to 1
CPUx_VR_Temp	CPUx VR chip temperature sensor reading	CPUx VR chip	x indicates the CPU number with a value of 0 to 1
CPUx_DIMM_T	The maximum temperature among DDR5 DIMMs of CPUx	CPUx	x indicates the CPU number with a value of 0 to 1
PSU_Inlet_Temp	PSU inlet temperature	PSU	-
NVME_Temp	NVMe drive temperature	NVMe drive	-
HDD_MAX_Temp	Maximum temperature among all drives	Drive backplane	-
OCP_NIC_Temp	OCP 3.0 card temperature	OCP 3.0 card	-

Sensor	Description	Sensor Location	Note
OCP_NIC_SFP_Temp	OCP 3.0 card SFP module temperature	OCP 3.0 card SFP module	-
PCIe_NIC_Temp	Maximum temperature among all PCIe NICs	PCIe NIC	-
PCIe_NIC_SFP_Temp	PCIe NIC SFP module temperature	PCIe NIC SFP module	-
RAID_Temp	Maximum temperature among all RAID cards	RAID card	-
HGX_GPUx_Temp	GPUx temperature	GPUx	x indicates the GPU number with a value of 0 to 7
SWB_Inlet_Temp	Maximum inlet temperature of switch board	Switch board	-
SWB_Outlet_Temp	Maximum outlet temperature of switch board	Switch board	-
SWB_PCIEIN_Temp	Inlet temperature of PCIe slots on switch board	Switch board	--
PDB_FANIN_Temp	Average inlet temperature of rear 8086 fans on PDB board	PDB	-
PDB_PSUIN_Temp	Inlet temperature of PSUs on PDB board	PDB	-
MBP_PSUIN_Temp	Average inlet temperature	System mid-plane board	-

Sensor	Description	Sensor Location	Note
	of PSUs on mid-plane board		
MBP_GPUOUT_Temp	Average outlet temperature of GPU on mid-plane board	System mid-plane board	-
HGX_FPGA_Temp	Temperature sensor reading of FPGA on Delta-Next board	Delta-Next board	-
HGX_NVSWx_Temp	Temperature sensor reading of NVSwitch on Delta-Next board	Delta-Next board	-
HGX_MEMx_Temp	Temperature sensor reading of memory on Delta-Next board	Delta-Next board	-
DELTA_PCSW_Temp	Temperature sensor reading of PCIe switch chip on Delta-Next board	Delta-Next board	-
HGX_RTx_Temp	Temperature sensor reading of retimer chip on Delta-Next board	Delta-Next board	-
P12V_CPU1_DIMM1	CPU1 DIMM voltage	Motherboard	-
P12V_CPU0_DIMM1	CPU0 DIMM voltage	Motherboard	-

Sensor	Description	Sensor Location	Note
P1V8_STBY	Motherboard 1.8 V standby voltage	Motherboard	-
P1V05_USB	USB hub voltage	Motherboard	-
P3V3_STBY	Motherboard 3.3 V standby voltage	Motherboard	-
P5V_STBY	Motherboard 5 V standby voltage	Motherboard	-
P12V_STBY	Motherboard 12 V standby voltage	Motherboard	-
PVDDCR_CPU0_P1	CPU VR voltage	VR chip	-
PVDDCR_CPU1_P1	CPU VR voltage	VR chip	-
PVDDIO_P1	CPU VR voltage	VR chip	-
SYS_12V	System 12 V voltage	Motherboard	-
SYS_5V	System 5 V voltage	Motherboard	-
SYS_3V3	System 3.3 V voltage	Motherboard	-
PSUx_VIN	PSU input voltage	Motherboard	x indicates the PSU number with a value of 0 to 7
PSUx_VOUT	PSU output voltage	Motherboard	x indicates the PSU number with a value of 0 to 7
RTC_Battery	RTC battery voltage	Motherboard RTC battery	-
FANx_Speed	Fan speed	Fanx	x indicates the fan number with a value of 0 to 11
FANx_F_Speed			
FANx_R_Speed			
Total_Power	Total power	PSU	-

Sensor	Description	Sensor Location	Note
PSUx_PIN	PSU input power	PSUx	x indicates the PSU number with a value of 0 to 7
PSUx_POUT	PSU output power	PSUx	x indicates the PSU number with a value of 0 to 7
FAN_Power	Total fan power	Fan	-
CPU_Power	Total CPU power	Motherboard	-
Memory_Power	Total memory power	Motherboard	-
Disk_Power	Total drive power	Motherboard	-
CPUx_Status	CPU status detection	CPUx	x indicates the CPU number with a value of 0 to 1
CPU_Config	Mixed use of CPUs	CPU	-
CPUx_CXDY	CPUx DIMM	CPUx DIMM	x indicates the CPU number with a value of 0 - 1. X indicates the channel number of a CPU with a value of A to L Y indicates the memory number with a value of 0.
FANx_Status	Fan status	Fanx	x indicates the fan number with a value of 0 to11
FAN_Redundant	Fan redundancy lost	Fan	-
PCIe_Status	PCIe expansion card status	PCIe expansion card	-

Sensor	Description	Sensor Location	Note
Power_Button	Power button pressed	Motherboard and power button	-
Watchdog2	Watchdog	Motherboard	-
Sys_Health	System health status	DC-SCM board	-
UID_Button	UID button status	Motherboard	-
PWR_CAP_Fail	Power capping status	Motherboard	-
PSU_Redundant	PSU redundancy lost after being plugged out	-	-
PSU_Mismatch	PSU model mismatch	-	-
PSUx_Status	PSU status	-	-
Intrusion	Chassis-opening activity	-	-
SysShutdown	Reason for system shutdown	-	-
ACPI_PWR	ACPI status	-	-
SysRestart	Reason for system restart	-	-
BIOS_Boot_Up	BIOS boot complete	-	-
System_Error	System emergent error	-	-
POST_Status	POST status	-	-
BMC_Boot_Up	Records BMC boot event		
SEL_Status	Records SEL is almost full or has been cleared.		
BMC_Status	BMC status		

Sensor	Description	Sensor Location	Note
Leakage_Status	Leakage warning status	-	-

13 Appendix B Acronyms and Abbreviations

13.1 A - E

A

AC	Alternating Current
ACPI	Advanced Configuration and Power Interface
AI	Artificial Intelligence
AMD	Advanced Micro Devices
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

B

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

C

CAS	Column Address Strobe
CB	Certification Body
CE	Conformitè Europëenne
CEN	European Committee for Standardization

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

D

DC	Direct Current
DC-SCM	Datacenter-ready Secure Control Module
DDR5	Double Data Rate 5
DIMM	Dual In-line Memory Module
DOA	Dead on Arrival
DPC	DIMM Per Channel
DRAM	Dynamic Random Access Memory

E

ECC	Error-Correcting Code
ECMA	European Computer Manufacturers Association
ESD	Electrostatic Discharge

13.2 F - J

F

FCC	Federal Communications Commission
FHHL	Full-Height Half-Length

FPGA	Field Programmable Gate Array

G

GB	Gigabyte
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
HHHL	Half-Height Half-Length
HSE	Health and Safety Executive
HTTPS	Hypertext Transfer Protocol Secure

I

IB	InfiniBand
IC	Industry Canada
ID	Identification
IEC	International Electrotechnical Commission
IO	Input/Output
IP	Internet Protocol
IPMI	Intelligent Platform Management Interface
ISA	International Society of Automation
ISO	International Organization for Standardization

J

JTAG	Joint Test Action Group

13.3 K - O

K

KC	Korea Certification
KVM	Keyboard Video Monitor

L

LDAP	Lightweight Directory Access Protocol
LED	Light Emitting Diode
LP	Low Profile

M

MB	Motherboard
MCIO	Mini Cool Edge IO

N

NBD	Next Business Day
NC-SI	Network Controller Sideband Interface
NIC	Network Interface Card
NIOSH	National Institute for Occupational Safety and Health
NLU	Natural Language Understanding
NVMe	Non-Volatile Memory Express

O

OCP	Open Compute Project
OS	Operating System
OSHA	Occupational Safety and Health Administration

13.4 P - T

P

PCIe	Peripheral Component Interconnect Express
PDB	Power Distribution Board
PHY	Physical
PID	Proportional-Integral-Derivative
POST	Power-On Self-Test
PSU	Power Supply Unit
PXE	Preboot 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
RST	Reset
RTC	Real Time Clock

S

SAS	Serial Attached SCSI
SATA	Serial Advanced Technology Attachment
SCSI	Small Computer System Interface
SDP	Single Die Package
SEL	System Event Log
SFF	Small Form Factor
SFP	Small Form-Factor Pluggable
SLA	Service Level Agreement
SMT	Simultaneous Multithreading
SNMP	Simple Network Management Protocol
SSD	Solid State Drive
SSH	Secure Shell

T

TCM	Trusted Cryptography Module
TDP	Thermal Design Power
TF	TransFlash
TPM	Trusted Platform Module
TSOM	Terasic SoC System on Module

13.5 U - Z

U

UART	Universal Asynchronous Receiver-Transmitter
UEFI	Unified Extensible Firmware Interface
UID	Unit Identification

UL	Underwriters Laboratories
USB	Universal Serial Bus

V

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