



White Paper for KAYTUS KT3020V2 Series Servers

Powered by Intel Processors

For KT3020-X2-A0-R0-00

Document Version: V1.0

Release Date: February 4, 2024

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Applicable Model

Model	Maintenance	Cooling
KT3020-X2-A0-R0-00	Rear access	Air cooling

Technical Support

Global Service Hotline:

(+1) 844-860-0011/(+1) 325-880-0011

Address:

22 Sin Ming Lane, #06-76, Midview City,
Singapore 573969
KAYTUS SYSTEMS PTE. LTD.

Website:

<https://www.kaytus.com>

Email:

servicesupport@kaytus.com

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Abstract






This document describes the KT3020V2 Intel-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	2024/02/04	Initial release

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1 Product Overview

The KT3020V2 Intel-based system is an entry-level single-socket tower server for growing small and medium-sized enterprises (SMEs) and the branches of large enterprises. The server has flexible configurations to meet a wide range of application scenarios, positioning the customer for evolving application demands. It provides reliable hardware solutions for remote office system, email service, print service and so on. With its low noise, it is more suitable for offices and is the preferred choice for informatization for SMEs.

Figure 1-1KT3020V2 Intel-based System



2 Features

2.1 Scalability and Performance

- Supports one processor of Intel Xeon E-2300/Pentium processor family with a maximum TDP of 95 W.
- Supports up to 4 DDR4 ECC DIMMs (UDIMMs).
- Supports up to 4 internal 2.5-inch/3.5-inch SAS/SATA drives (directly connected to the PCH).
- Supports up to 2 standard PCIe expansion cards, namely, 1 PCIe x16 expansion card (x16 bandwidth) and 1 PCIe x8 expansion card (x4 bandwidth).
- Supports up to 1 FHHL x16 GPU.
- The motherboard is integrated with an AST2600 BMC chip with KVM functionality as standard.
- Supports one or two ATX PSUs. If two PSUs are configured, they are 1+1 redundant.

2.2 Availability and Serviceability

- Supports SAS/SATA drives and RAID cards with RAID levels 0/1/1E/10/5/50/6/60. Supported RAID levels vary by RAID cards.
- The LEDs on the front and rear panels and the ISBMC Web GUI indicate the status of key components and quickly lead technicians to failed (or failing) components, simplifying maintenance and speeding up troubleshooting.
- The BMC management network port on the rear panel enables local ISBMC O&M, improving O&M efficiency.
- Provides 2 PSUs with 1+1 redundancy, improving overall system availability.
- The ISBMC manages system parameters in real time and sends alerts in advance, enabling technicians to take appropriate measures in time to minimize system downtime.

2.3 Manageability and Security

- The ISBMC manages the system operating status and enables remote management.

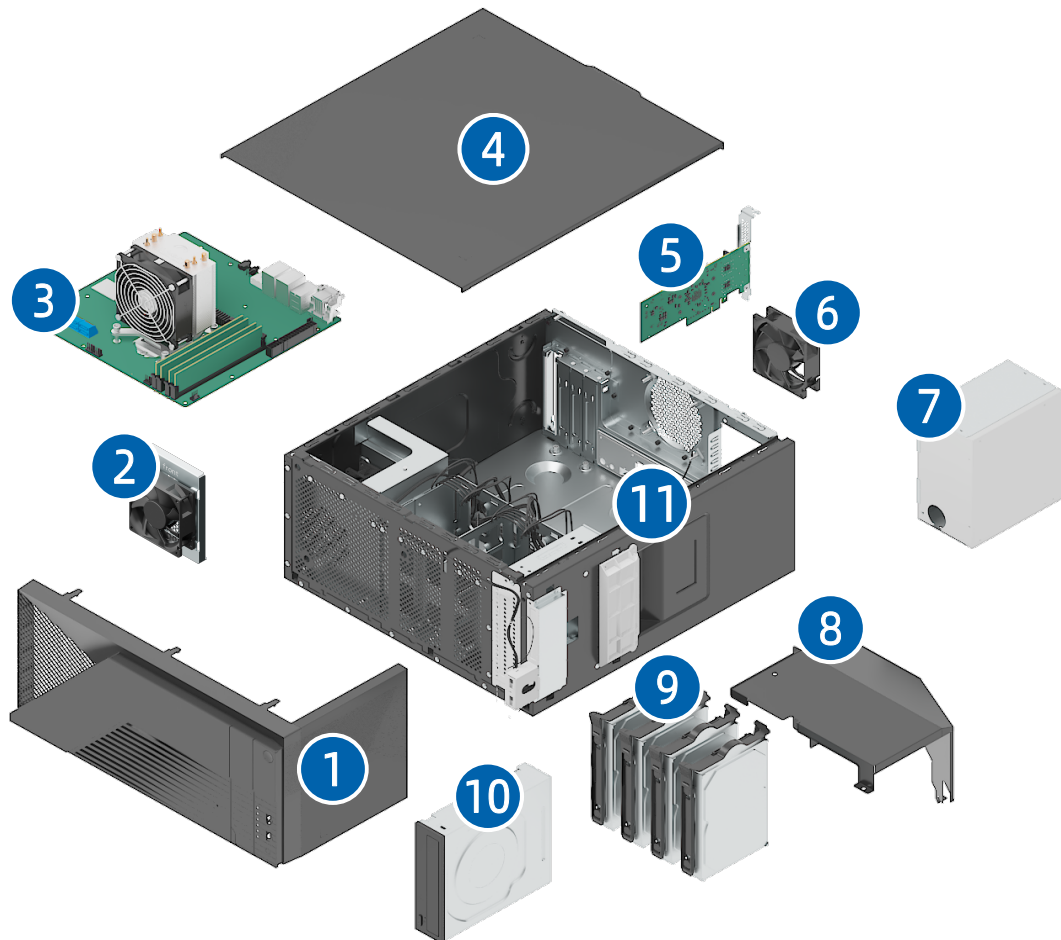
- The industry-standard UEFI improves the efficiency of setup, configuration and update, and simplifies the error handling process.
- The Trusted Platform Module (TPM 2.0) provides advanced encryption.
- Supports BMC secure boot to protect BMC from malicious tampering.
- Flexible BMC access control policies improve BMC management security.

2.4 Energy Efficiency

- Supports 1+1 redundant PSUs (when 2 PSUs are configured) and AC power input, improving power conversion efficiency.
- Offers a fully-optimized system cooling design with energy-efficient cooling fans, lowering energy consumption from system cooling.
- The low-voltage Intel Xeon E-2300 processors consume less energy.

3 System Parts Breakdown

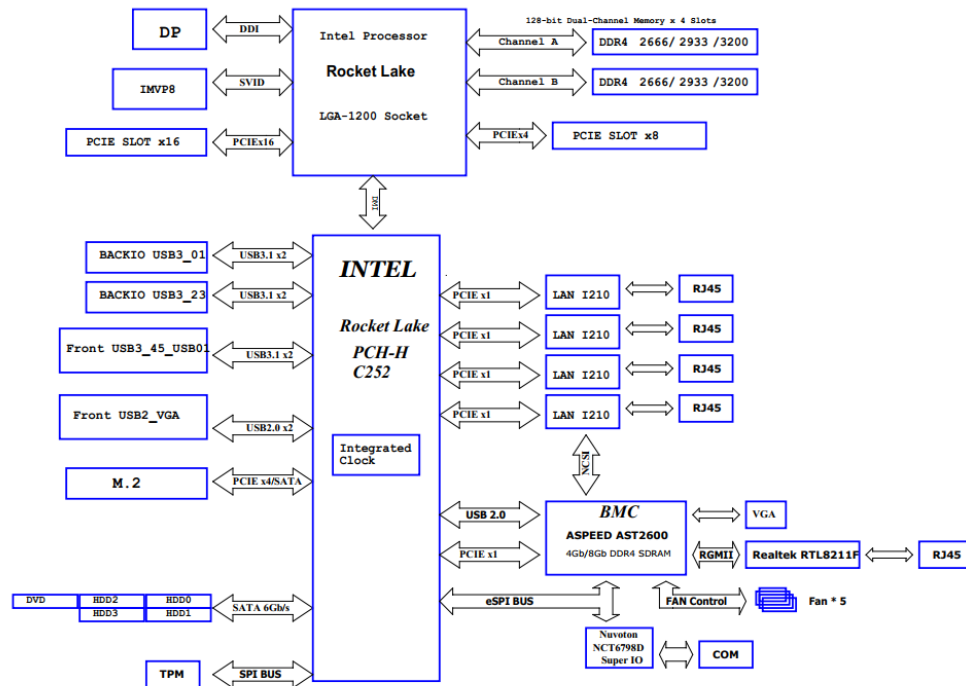
Figure 3-1 Exploded View



Item	Feature	Item	Feature
1	Front Panel	7	PSU
2	Front Fan Module	8	Air Duct
3	Motherboard	9	Drive Module
4	Side Cover	10	DVD-RW Drive
5	PCIe Expansion Card	11	Chassis
6	Rear Fan Module	-	-

4 System Logical Diagram

Figure 4-1 System Logical Diagram



- One processor of Intel Xeon E-2300/Pentium processor family with a TDP of up to 95 W.
- Up to 4 DIMMs.
- Up to 2 PCIe 4.0 expansion slots, namely, 1 PCIe 4.0 x16 slot (x16 bandwidth) and 1 PCIe 4.0 x8 slot (x4 bandwidth).
- The motherboard integrates the C252 Platform Controller Hub (PCH) to support 6 USB 3.0 ports, 4 SATA 3.0 drive connectors, and 1 SATA/PCIe x4 M.2 connector.
- The motherboard integrates an AST2600 management chip and supports 1 VGA port, 1 BMC management network port, 1 BMC_UART serial port, and other connectors.

5 Hardware Description

5.1 Front Panel

5.1.1 Front View

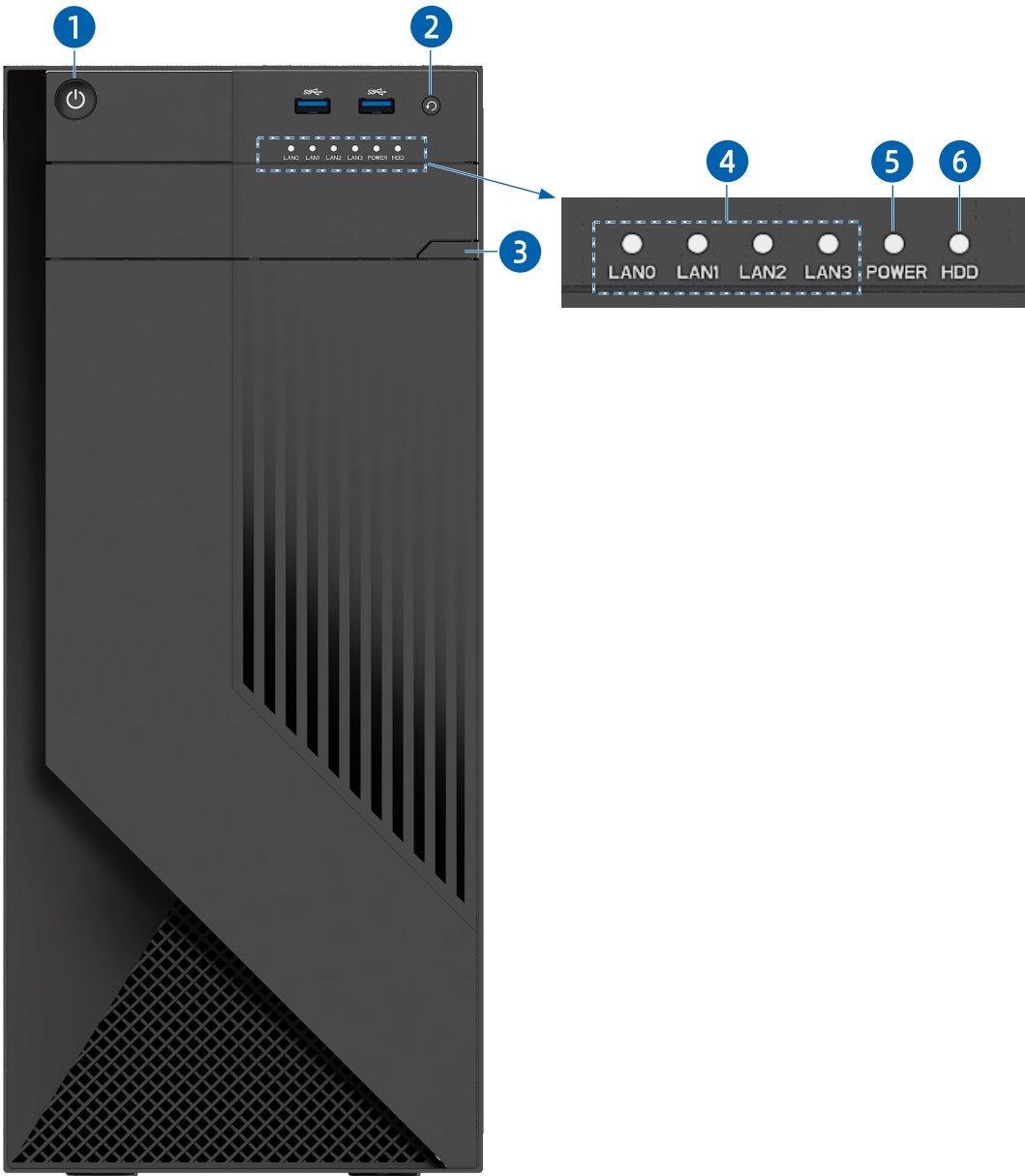
Figure 5-1 Front View



Item	Feature
1	DVD-RW Drive Bay

5.1.2 LEDs and Buttons



Figure 5-2 Front LEDs and Buttons



Item	Feature
1	Power Button
2	System Reset Button
3	DVD-RW Drive Button
4	LAN0 to LAN3 LEDs
5	Power LED
6	Drive LED

1. LED and Button Description

Table 5-1 Front LED and Button Description

Symbol	Feature	Description
	Power Button	Press and hold the button for 4 seconds to force a shutdown
	System Reset Button	Press the button to reset the system
POWER	Power LED	<ul style="list-style-type: none">• Off = No power• Solid blue = Normal
LAN0~LAN3	LAN0 to LAN3 LEDs	<ul style="list-style-type: none">• Off = No network connection• Solid green = Network connected without data being transmitted• Blinking green = Network connected with data being transmitted
HDD	Drive LED	<ul style="list-style-type: none">• Solid blue = Normal• Blinking blue = Drive reading/writing in progress

5.1.3 Ports

Figure 5-3 Front Ports



Item	Feature
1	USB 3.0 Port × 2

1. Port Description

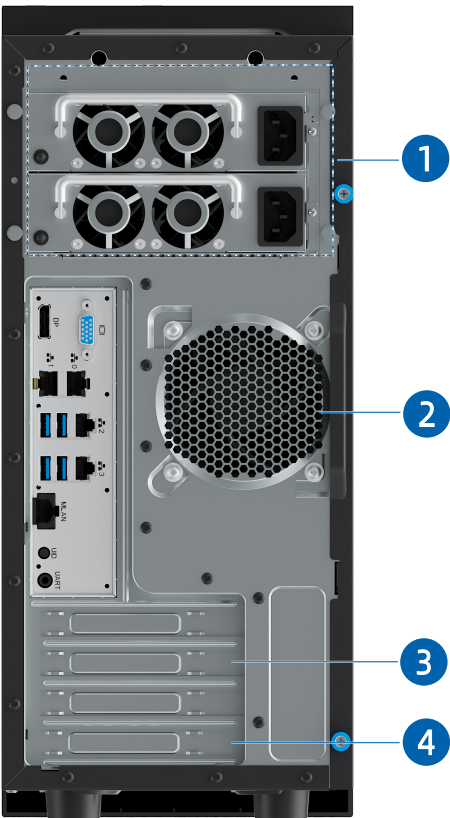
Table 5-2 Front Port Description

Feature	Qty.	Description
USB 3.0 Port	2	Enables you to connect a USB 3.0 device to the system. Note: Make sure that the USB device is in good condition or it may cause the server to work abnormally.

5.2 Rear Panel

5.2.1 Rear View

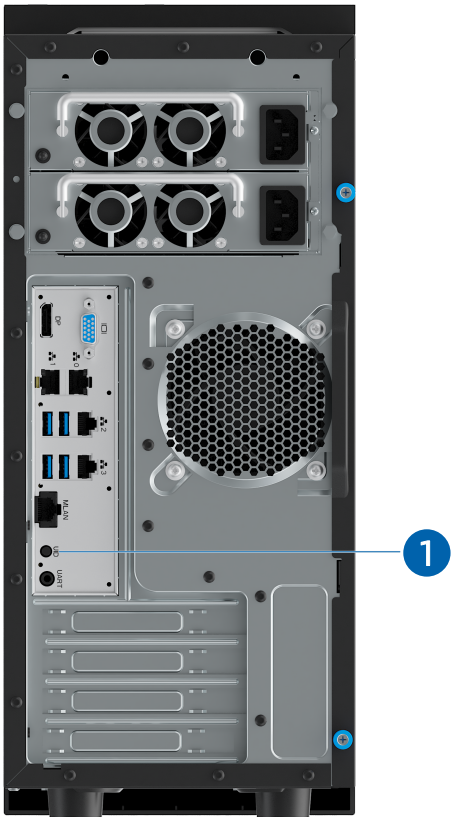
Figure 5-4 Rear View



Item	Feature	Item	Feature
1	PSU	3	PCIe Slot 0
2	Rear Fan Module	4	PCIe Slot 1

5.2.2 LEDs and Buttons

Figure 5-5 Rear LEDs and Buttons



Item	Feature
1	UID/BMC RST Button and LED

1. LED and Button Description

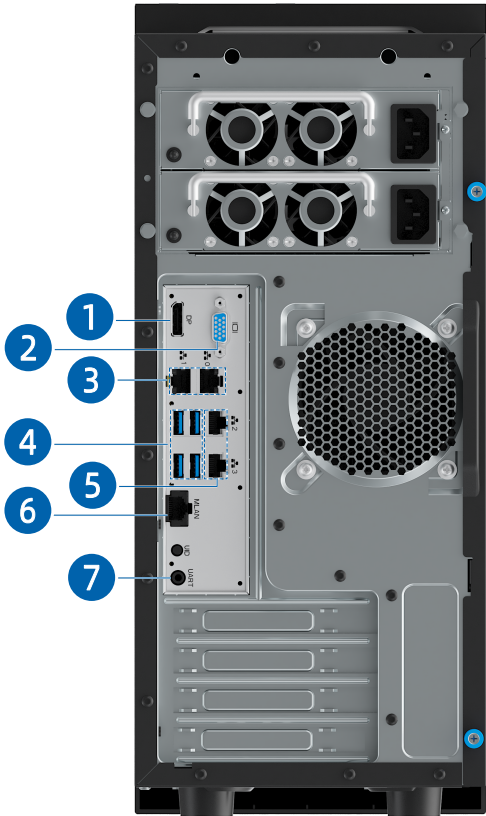
Table 5-3 Rear LED and Button Description

Symbol	Feature	Description
UID	UID/BMC RST Button and LED	<p>Enables you to identify the device to be operated.</p> <ul style="list-style-type: none">Off = Device not identifiedSolid blue = Device identifiedBlinking blue = Device remotely operated <p>Notes:</p> <ul style="list-style-type: none">The UID/BMC RST LED is activated by the UID button or via the ISBMC.Press and hold the button for over 9 seconds to force a BMC reset.

5.2.3 Ports

1. Port Locations

Figure 5-6 Rear Ports



Item	Feature	Item	Feature
1	DP Port	5	RJ45 Network Port × 2
2	VGA Port	6	BMC Management Network Port
3	RJ45 Network Port × 2	7	BMC_UART Serial Port
4	USB 3.0 Port × 4	-	-

2. Port Description

Table 5-4 Rear Port Description

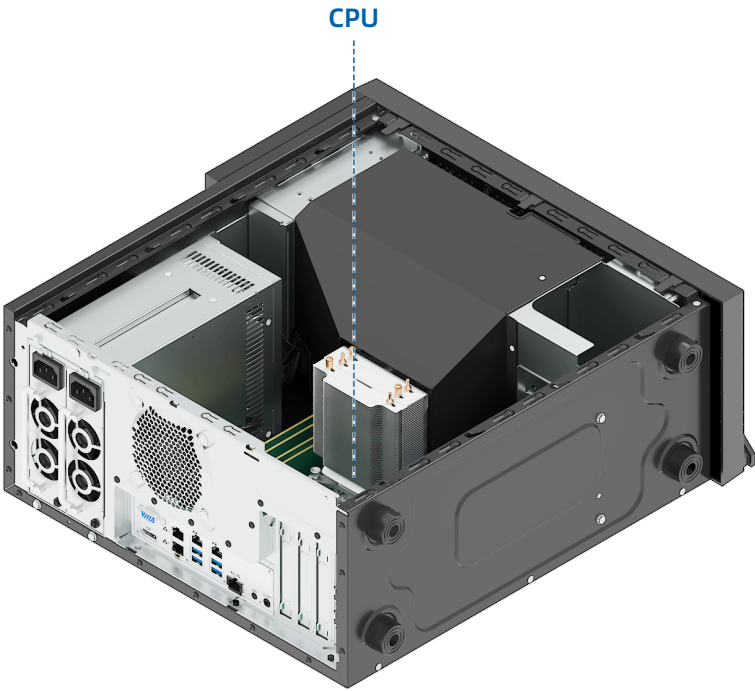
Feature	Type	Qty.	Description
DP Port	DP	1	Enables you to connect a display terminal to the system.
VGA Port	DB15	1	Enables you to connect a display terminal (for example, a monitor) or

Feature	Type	Qty.	Description
			KVM (Keyboard, Video and Mouse) to the system.
RJ45 Network Port	RJ45	4	Enables you to connect the system to the network via the onboard network port.
USB 3.0 Port	USB 3.0	4	<p>Enables you to connect a USB 3.0 device to the system.</p> <p>Notes:</p> <ul style="list-style-type: none"> The maximum current supported by the USB port is 0.9 A. Make sure that the USB device is in good condition or it may cause the server to work abnormally.
BMC Management Network Port	RJ45	1	<p>Enables you to manage the server via the BMC management network port.</p> <p>Note:</p> <p>It is a Gigabit Ethernet port that supports 100 Mbps and 1,000 Mbps auto-negotiation.</p>
BMC_UART Serial Port	Headphone jack	1	<p>Enables you to capture BMC logs and debug the BMC.</p> <p>Note:</p> <p>It is a 3.5 mm headphone jack with a default baud rate of 115,200 bit/s.</p>

5.3 Processor

The server supports 1 processor. For specific processor options, consult your local sales representative or refer to [7.2 Hardware Compatibility](#).

Figure 5-7 Processor Location



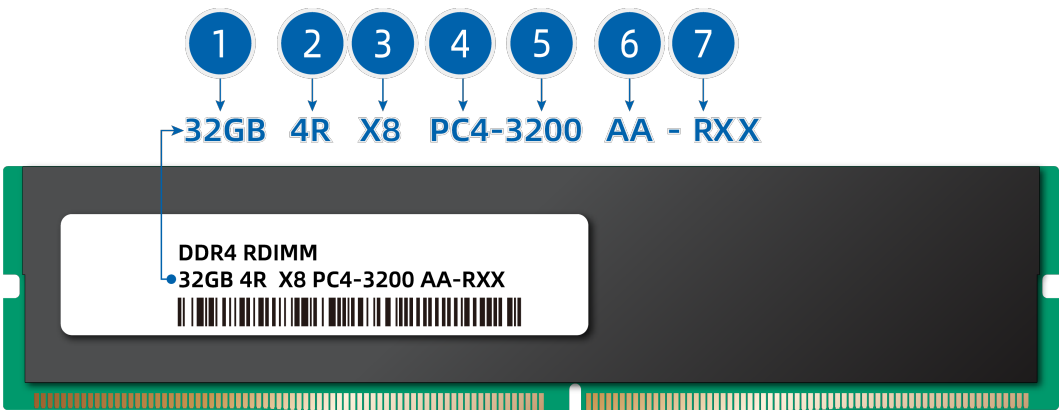
5.4 Memory

5.4.1 DDR4 DIMMs

1. Identification

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

Figure 5-8 DIMM Identification



Item	Description	Example
1	Capacity	<ul style="list-style-type: none"> • 16 GB • 32 GB • 64 GB • 128 GB • 256 GB
2	Rank(s)	<ul style="list-style-type: none"> • 1R = Single rank • 2R = Dual rank • 2S2R = 3DS 2Hi 2rank • 4DR = DDP 4 rank • 4R = Quad rank • 8R = Octal rank
3	Data width of DRAM	<ul style="list-style-type: none"> • x4 = 4 bits • x8 = 8 bits
4	DIMM slot type	PC4 = DDR4
5	Maximum memory speed	<ul style="list-style-type: none"> • 2,933 MT/s • 3,200 MT/s
6	CAS latency	SDP chip based <ul style="list-style-type: none"> • V = CAS 19-19-19 • Y = CAS 21-21-21 • AA = CAS 22-22-22 3DS chip based <ul style="list-style-type: none"> • V = CAS 22-19-19 • Y = CAS 24-21-21 • AA = CAS 26-22-22
7	DIMM type	<ul style="list-style-type: none"> • R = RDIMM

2. Memory Subsystem Architecture

The server supports 4 DIMM slots and 2 memory channels per CPU.

For DIMM population, install DIMMs in the slots with a silk screen ending with 2 (such as DIMM_A2) before installing DIMMs in the slots with a silk screen ending with 1 (such as DIMM_A1).

Table 5-5 DIMM Slot List

CPU	Channel ID	Silk Screen
CPU0	Channel A	DIMM_A2
	Channel A	DIMM_A1
	Channel B	DIMM_B2
	Channel B	DIMM_B1

3. Compatibility

Refer to the following rules to configure the DDR4 DIMMs.



IMPORTANT

- A server must use DDR4 DIMMs with the same part number (P/N code). All DDR4 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 DDR4 DIMMs of different specifications (capacity, bit width, rank, height, etc.) is not supported.
- For specific memory options, consult your local sales representative or refer to [7.2 Hardware Compatibility](#).

- DDR4 DIMMs can be used with the Intel Xeon E-2300/Pentium processors. The maximum memory capacity supported varies by CPU models.
- The total memory capacity supported is the sum of the capacities of all DDR4 DIMMs.
- The total memory capacity should not exceed the maximum value supported by the CPU.
- The maximum number of DIMMs supported varies with the CPU type, DIMM type and rank quantity.

Table 5-6 DDR4 DIMM Specifications

Item	Value			
Capacity per DDR4 DIMM (GB)	16	32	64	128
Type	UDIMM	UDIMM	UDIMM	UDIMM
Rated speed (MT/s)	3,200	3,200	3,200	3,200
Operating voltage (V)	1.2	1.2	1.2	1.2

Item	Value			
Maximum number of DDR4 DIMMs supported in a server ^a	4	4	4	4
Maximum capacity of DDR4 DIMMs supported in a server (GB) ^b	64	128	256	512
Actual speed (MT/s)	3,200	3,200	3,200	3,200
<p>a. The maximum number of DDR4 DIMMs supported is based on the single-CPU configuration.</p> <p>b. It indicates the maximum memory capacity supported when all the DIMM slots are populated with DDR4 DIMMs. The maximum DDR4 memory capacity varies with the CPU type.</p> <p>The information above is for reference only. Consult your local sales representative for details.</p>				

4. DIMM Population Rules



NOTE

This section describes the DIMM population rules when all the DIMM slots are populated with DDR4 DIMMs.

General population rules for DDR4 DIMMs:

- Install DIMMs only when the processor is installed.
- Only UDIMMs are supported.
- Install dummies in the empty DIMM slots.

Population rules for DDR4 DIMMs in specific modes:

- Memory sparing
 - Follow the general population rules.
 - Each channel must have a valid online spare configuration.
 - Each channel can have a different online spare configuration.
 - Each channel with a DIMM installed must have a spare rank.
- Memory mirroring
 - Follow the general population rules.

5. DIMM Slot Layout

Up to 4 DDR4 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 5-9 DIMM Slot Layout

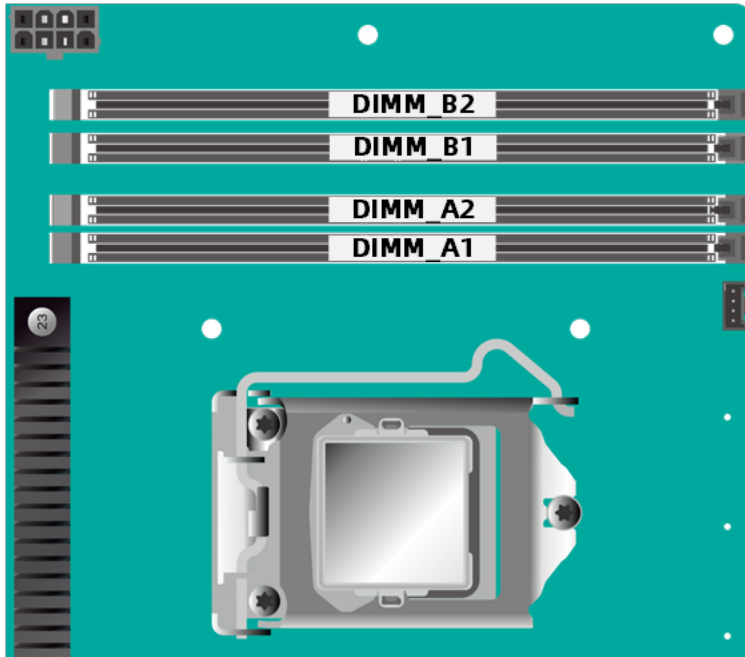


Table 5-7 DIMM Population Rules

Qty.	Recommended DIMM Population Method			
	DIMM_A1	DIMM_A2	DIMM_B1	DIMM_B2
1		●		
2		●		●
3	●	●		●
4	●	●	●	●

6. Memory Protection Technology

DDR4 DIMM protection technology:

- Error Correcting Code (ECC).

5.5 Storage

5.5.1 Drive Configurations

Table 5-8 Drive Configurations

Config.	Internal Drives 1	Internal Drives 2	Drive Management Mode
4 × 3.5-Inch Drive Config.	4 × 3.5-inch internal drive (Drive bays with physical drive No. 0 to 3 support SAS/SATA drives only)	M.2 SSDs	PCH
4 × 3.5-Inch Drive + 1 × RAID Card Config.	4 × 3.5-inch internal drive (Drive bays with physical drive No. 0 to 3 support SAS/SATA drives only)	M.2 SSDs	PCIe RAID card
4 × 2.5-Inch Drive Config.	4 × 2.5-inch internal drive (Drive bays with physical drive No. 0 to 3 support SAS/SATA drives only)	M.2 SSDs	PCH
4 × 2.5-Inch Drive + 1 × RAID Card Config.	4 × 2.5-inch internal drive (Drive bays with physical drive No. 0 to 3 support SAS/SATA drives only)	M.2 SSDs	PCIe RAID card



CAUTION

Mixing drives can lead to server performance deterioration, so it is not recommended.



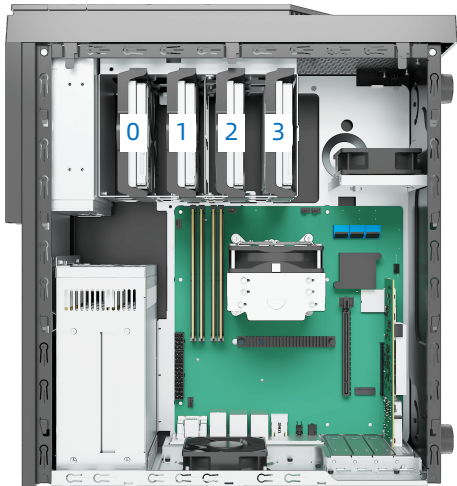
NOTE

- 2.5-inch drives do not support tool-less installation. Screws should be used to secure a 2.5-inch drive to a 3.5-inch drive tray.
- A Phillips screwdriver should be used to remove and install an internal M.2 SSD.

5.5.2 Drive Numbering

- When the drives are directly connected to the PCH:

Figure 5-10 Drive Numbering



Physical Drive No.	Drive No. Identified by the ISBMC	Drive Number Identified by a RAID Card
0	0	0
1	1	1
2	2	2
3	3	3

5.5.3 Drive LED

1. SAS/SATA Drive LED

Figure 5-11 SAS/SATA Drive LED



Table 5-9 SAS/SATA Drive LED Description

SAS/SATA Drive LED		
HDD LED	Blinking blue	HDD reading/writing in progress
	Solid blue	Normal

5.5.4 RAID Cards

The RAID cards provide 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](#).

5.6 Network

NICs provide network expansion capabilities.

- 4 onboard RJ45 network ports.
- The PCIe expansion slots support PCIe NICs. Users can select the PCIe cards as needed.
- For specific NIC options, consult your local sales representative or refer to [7.2 Hardware Compatibility](#).

5.7 I/O Expansion

5.7.1 PCIe Expansion Card

PCIe expansion cards provide system expansion capabilities.

- Up to 2 PCIe 4.0 expansion slots:
 - 1 PCIe 4.0 x16 expansion slot (x16 lanes, from the CPU) that supports 1 FHHL PCIe expansion card/GPU.
 - 1 PCIe 4.0 x8 expansion slot (x4 lanes, from the CPU) that supports 1 FHHL PCIe expansion card.
- For specific PCIe expansion card options, consult your local sales representative or refer to [7.2 Hardware Compatibility](#).

5.7.2 PCIe Slot Locations

1. PCIe Slot Locations

Figure 5-12 PCIe Slot Locations



- Slot 0 and slot 1 reside on the motherboard.

5.7.3 PCIe Slot Description

Table 5-10 PCIe Slot Description

PCIe	CPU	PCIe Standard	Connector Width	Bus Width	Port No.	Form Factor
Slot 0	CPU0	PCIe 4.0	x16	x16	0	FHHL
Slot 1	CPU0	PCIe 4.0	x8	x4	1	FHHL

5.8 PSUs

- The server supports 1 or 2 PSUs.
- The server supports AC power input.

- If two PSUs are configured, they are 1+1 redundant.
- The PSUs provide short circuit protection.

Figure 5-13 PSU Location (Single-PSU Configuration)

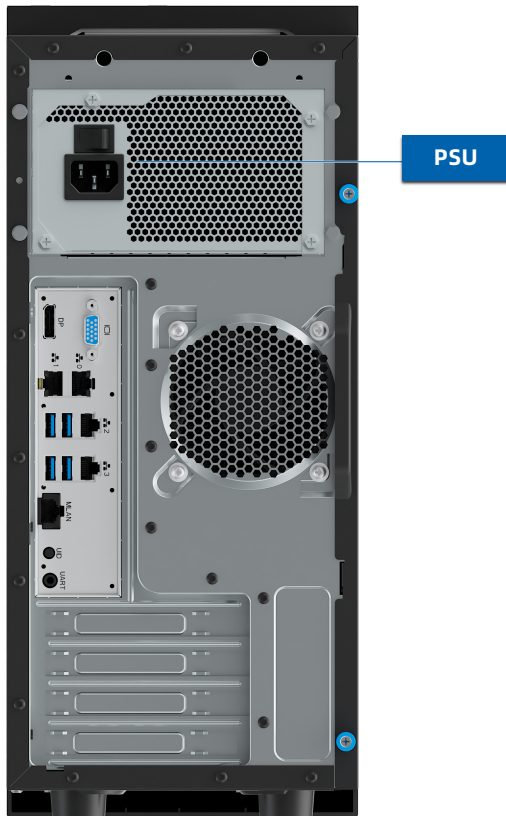
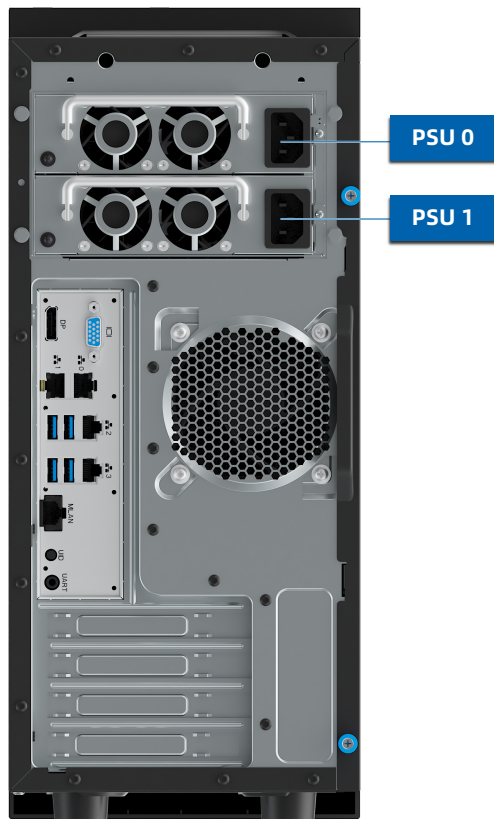


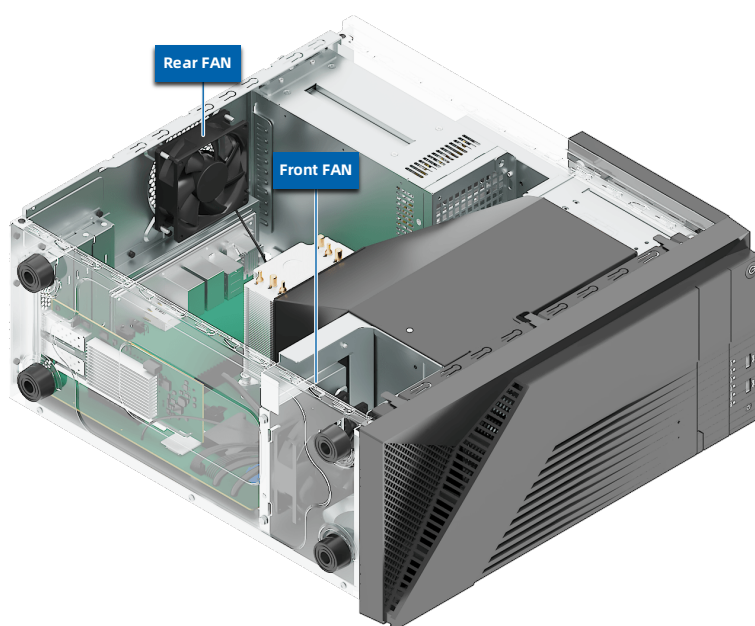
Figure 5-14 PSU Locations (Dual-PSU Configuration)



5.9 Fan Modules

- The server supports 2 fan modules. Users can select 8025 LR and 8025 UR fans based on the configuration.
- The server supports intelligent fan speed control.
- The server must use fan modules with the same part number (P/N code).

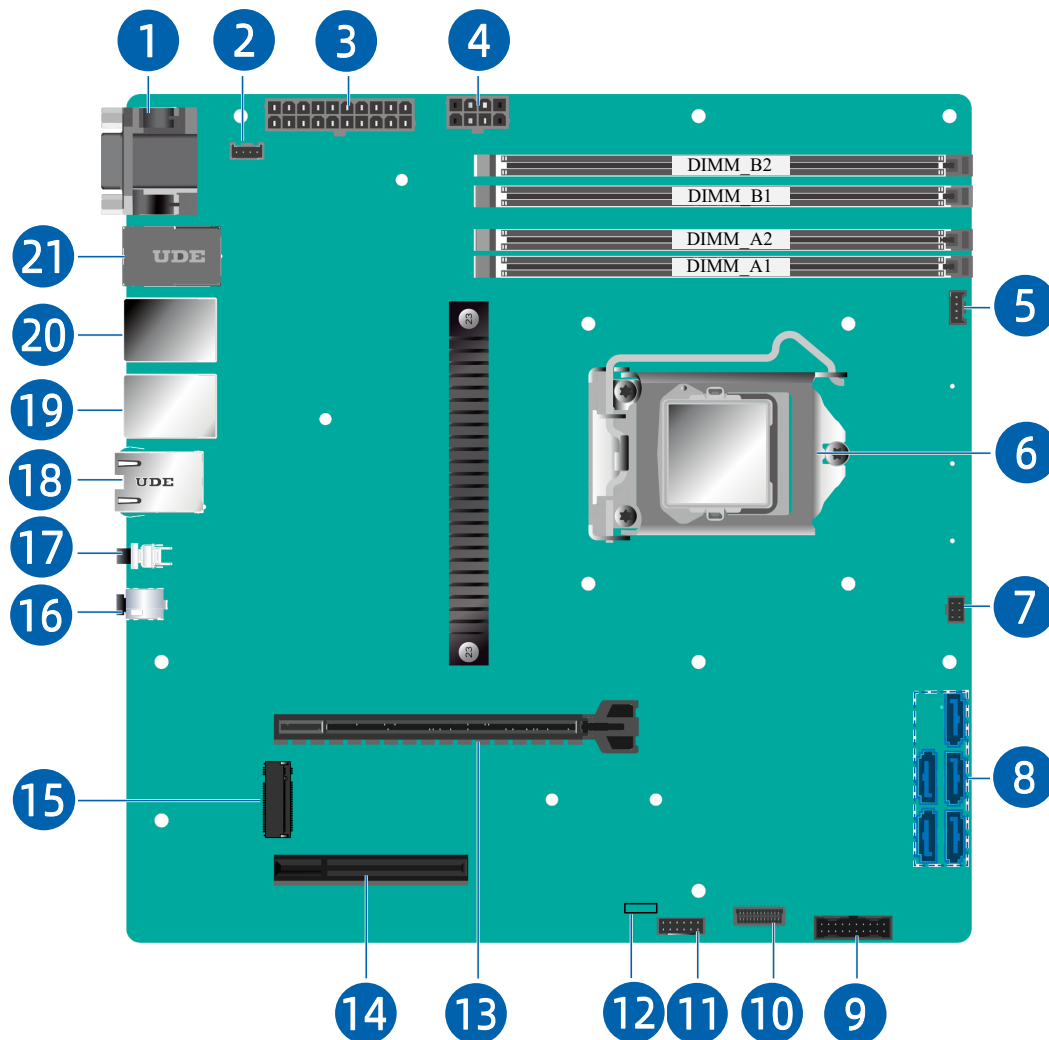
Figure 5-15 Fan Module Locations



5.10 Boards

5.10.1 Motherboard

Figure 5-16 Motherboard



Item	Feature	Item	Feature
1	VGA Port/DP Port	12	CMOS Jumper
2	Rear Fan Connector	13	PCIe 4.0 x16 Slot (x16 Bandwidth)
3	EATXPWR1_Motherboard Power Connector	14	PCIe 4.0 x8 Slot (x4 Bandwidth)
4	EATX12V1_Motherboard Power Connector	15	M.2 Connector
5	CPU Fan Connector	16	BMC_UART Serial Port

Item	Feature	Item	Feature
6	CPU	17	UID/BMC RST Button and LED
7	Front Fan Connector	18	BMC Management Network Port
8	Onboard SATA & DVD Connector	19	RJ45 Network Port 0/USB 3.0 Ports 2 & 3
9	Front USB 3.0 Connector	20	RJ45 Network Port 1/USB 3.0 Ports 0 & 1
10	PANEL1_Temperature Measuring Cable Connector	21	RJ45 Network Ports 2 & 3
11	PANEL2_Front LED Panel Connector	-	-

6 Product Specifications

6.1 Technical Specifications

Table 6-1 Technical Specifications

Item	Description
Form Factor	Tower server
Chipset	Intel C252
Processor	<p>Supports 1 processor of Intel Xeon E-2300/Pentium processor family:</p> <ul style="list-style-type: none">• Up to 8 cores (with a base frequency of 3.2 GHz)• Cache up to 16 MB• TDP up to 95 W• Integrated memory controllers and 2 memory channels• Integrated PCIe 4.0 controllers and 20 PCIe lanes <p>Note: The information above is for reference only. See 7.2 Hardware Compatibility for details.</p>
Memory	<ul style="list-style-type: none">• Supports up to 4 DDR4 DIMMs• The CPU supports 2 memory channels• Each channel supports up to 2 DIMMs• Up to 3,200 MT/s• UDIMMs supported• ECC supported
Storage	<ul style="list-style-type: none">• Internal:<ul style="list-style-type: none">- 4 × 3.5-inch/2.5-inch SAS/SATA drive- 1 × DVD-RW drive- 1 × SATA M.2 SSD
I/O Expansion	<p>Supports up to 2 PCIe expansion cards</p> <ul style="list-style-type: none">• 1 FHHL PCIe 4.0 x16 expansion card (x16 bandwidth)• 1 FHHL PCIe 4.0 x8 expansion card (x4 bandwidth) <p>Note: For details, see 5.7.2 PCIe Slot Locations and 5.7.3 PCIe Slot Description.</p>

Item	Description
Port	<p>Supports multiple kinds of ports</p> <ul style="list-style-type: none"> • Front: <ul style="list-style-type: none"> - 2 × USB 3.0 port • Rear: <ul style="list-style-type: none"> - 1 × DP port - 4 × RJ45 network port - 4 × USB 3.0 port - 1 × VGA port - 1 × BMC management network port <p>Note: OS installation on the USB storage media is not recommended.</p>
Display	<p>Integrated VGA on the motherboard with a video memory of 64 MB and a maximum 16M color resolution of 1,920 × 1,200 at 60 Hz</p> <p>Note: 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.</p>
System Management	<p>Integrated with 1 independent 1,000 Mbps BMC management network port, dedicated to IPMI remote management</p>
Security	<ul style="list-style-type: none"> • Trusted Platform Module (TPM 2.0) and Trusted Cryptography Module (TCM) • Intel Trusted Execution Technology • Firmware update mechanism based on digital signatures • UEFI Secure Boot • Hierarchical BIOS password protection • BIOS Secure Flash and BIOS Lock Enable (BLE)

6.2 Environmental Specifications

Table 6-2 Environmental Specifications

Item	Description
Temperature ¹	<ul style="list-style-type: none"> 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)	<ul style="list-style-type: none"> 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	<p>Maximum growth rate of corrosion film thickness:</p> <ul style="list-style-type: none"> 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 ^{2,3,4}	<p>Noise emissions are measured in accordance with ISO7779 (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):</p> <ul style="list-style-type: none"> Idle: <ul style="list-style-type: none"> LWAd: 5.8 B LpAm: 30.0 dBA Operating: <ul style="list-style-type: none"> LWAd: 6.4 B LpAm: 40 dBA

Notes:

1. Standard operating temperature:

- 10°C to 35°C (50°F to 95°F) is the standard operating temperature range at sea level. At the altitude of 0 to 3,050 m (0 to 10,007 ft), derate the maximum allowable temperature by 1°C per 305 m (1°F per 556 ft). No direct sustained sunlight is permitted. The maximum temperature gradient

is 20°C/h (36°F/h). Both the altitude and the maximum temperature gradient vary with server configuration.

- Any fan failure or operations above 30°C (86°F) may lead to system performance degradation.
- 2. 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). Contact your sales representative for more information.
- 3. The sound levels shown here were measured based on the specific configurations of a server. Sound levels vary with server configuration. These values are for reference only and subject to change without further notice.
- 4. 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)	<ul style="list-style-type: none">Unpacked: 454.8 × 180 × 416 mm (17.91 × 7.09 × 16.38 in.)Packed: 600 × 365 × 590 mm (23.62 × 14.37 × 23.23 in.)
Weight	<ul style="list-style-type: none">Net weight: 13.4 kg (29.54 lbs)Gross weight: 14 kg (30.86 lbs) (including server, packaging box, and accessory box)

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 slightly from model to model. 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
CentOS 8.5
SUSE Linux Enterprise Server 15.3

7.2 Hardware Compatibility

7.2.1 CPU Specifications

The server supports 1 processor of Intel Xeon E-2300/Pentium processor family. The E-2300 processors support the maximum memory frequency of 3,200 MHz, and the Pentium processors support the maximum memory frequency of 2,666 MHz.

Table 7-2 CPU Specifications

Model	Cores	Threads	Base Frequency (GHz)	Max. Turbo Frequency (GHz)	Cache (MB)	TDP (W)
G6505	2	4	4.20	Not supported	4	58
G6605	2	4	4.30	Not supported	4	58
E-2334	4	8	3.40	4.80	8	65
E-2388G	8	16	3.20	5.10	16	95
E-2378	8	16	2.60	4.80	16	65
E-2386G	6	12	3.50	5.10	12	95
E-2356G	6	12	3.20	5.00	12	80
E-2374G	4	8	3.70	5.00	8	80
E-2324G	4	4	3.10	4.60	8	65
E-2314	4	4	2.80	4.50	8	65
G6505T	2	4	3.60	Not supported	4	35
G6405	2	4	4.10	Not supported	4	58
G6405T	2	4	3.50	Not supported	4	35

7.2.2 DIMM Specifications

Supports up to 4 DDR4 DIMMs. Each processor supports 2 memory channels with up to 2 DIMMs per channel. UDIMMs are supported.

Table 7-3 DIMM Specifications

Type	Capacity (GB)	Frequency (MT/s)	Data Width	Organization
UDIMM	16	2,933	x72	2R x8
UDIMM	32	2,933	x72	2R x8
UDIMM	16	3,200	x72	2R x8

Type	Capacity (GB)	Frequency (MT/s)	Data Width	Organization
UDIMM	32	3,200	x72	2R x8
UDIMM	32	3,200	x72	1R x8

7.2.3 Drive Specifications

Table 7-4 SAS/SATA Drive Specifications

Type	Speed in rpm	Capacity	Max. Qty.
3.5-Inch SAS Drive	7.2k	8 TB	4
	10k	600 GB/1.2 TB/1.8 TB/2.4 TB	4
3.5-Inch SATA Drive	7.2k	1 to 16 TB	4

Table 7-5 SATA SSD Specifications

Type	Capacity	Max. Qty.
SATA SSD	240 GB	4
SATA SSD	480 GB	4
SATA SSD	960 GB	4
SATA SSD	1.92 TB	4
SATA SSD	3.84 TB	4
SATA SSD	7.68 TB	4

Table 7-6 M.2 SSD Specifications

Type	Capacity	Max. Qty.
M.2 SATA SSD	240 GB	1
M.2 SATA SSD	480 GB	1
M.2 PCIe SSD	960 GB	1
M.2 PCIe SSD	1.92 TB	1
M.2 PCIe SSD	3.84 TB	1

7.2.4 SAS/RAID Card Specifications

Table 7-7 SAS/RAID Card Specifications

Type	Description
SAS Card	SAS_PM8222_PM8222_8_SAS3_PCl_e
	SAS_PM8222_SmarHBA_8_SAS3_PCl_e3
RAID Card	RAID_PM8204_RA_8_2GB_SAS3_PCl_e3
	RAID_PM8204_RA_8_4GB_SAS3_PCl_e3

7.2.5 NIC Specifications

Table 7-8 PCIe NIC Specifications

Type	Description	Speed (Gbps)	Port Qty.
PCIe NIC	NIC_I_10G_X710DA2_LC_PCl_e x8_2_XR	10	2
	NIC_Vostok_X710_10G_LC_PCl_e x8_2	10	2
	NIC_Pyxis_X550_10G_RJ_PCl_e x8_2_XR	10	2
	NIC_I_10G_X550T2_RJ_PCl_e x4_2_XR	10	2
	NIC_SND_W_I350-AM2_RJ_PCl_e -E4X_1KM_Dual	1	2
	NIC_Vostok_I350_1G_RJ_PCl_e x4_4	1	4

7.2.6 Graphics Card Specifications

Table 7-9 Graphics Card Specifications

Type	Description	Max. Qty.
Graphics Card	Graphics_NV_4G_T400_64b_P	1

7.2.7 PSU Specifications

The server supports up to 2 ATX PSUs in 1+1 redundancy that share a common electrical and structural design.

- Supports one or two PSUs with a rated AC voltage of 230 V/110 V. If two PSUs are configured, they are 1+1 redundant.
- Operating voltage range:

- 230 Vac: 180 Vac to 264 Vac
- 110 Vac: 90 Vac to 132 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.
- The DANGER, WARNING and CAUTION notices in this document are only supplements to the safety instructions.
- 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

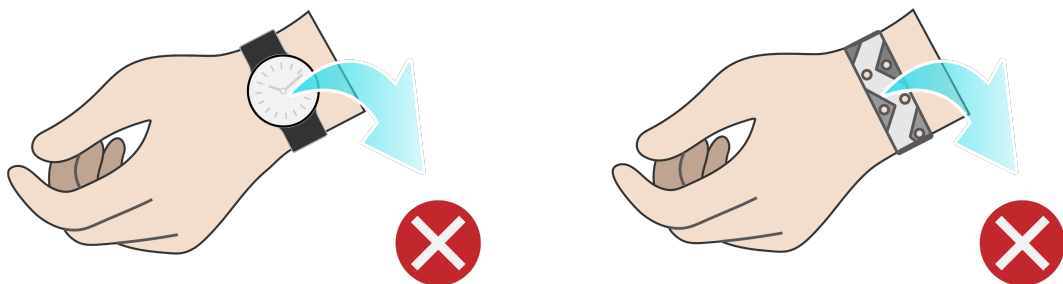
- Only personnel certified or authorized by us are allowed to perform the installation procedures.
- Stop any operation that could cause personal injury or equipment damage. Report to the project manager and take effective protective measures.
- Working during thunderstorms, including but not limited 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.

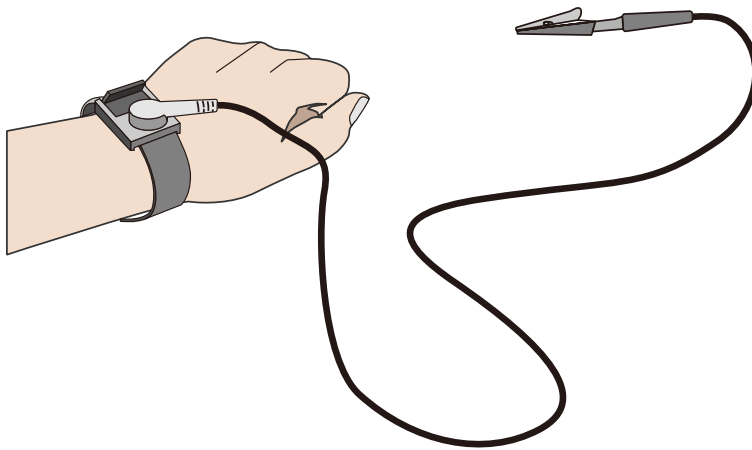
Figure 8-2 Removing Conductive Objects



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 are 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



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)	<ul style="list-style-type: none"> • 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 ISBMC

ISBMC, a remote server management system, supports mainstream management specifications in the industry such as IPMI 2.0 and Redfish 1.8. ISBMC features high operational reliability, easy serviceability for different business scenarios, accurate and comprehensive fault diagnosis capabilities, and industry-leading security reinforcement capabilities.

ISBMC supports:

- IPMI 2.0
- Redfish 1.8
- SNMP v2c/v3
- HTML5/Java remote consoles (Keyboard, Video, Mouse)
- login via web browsers
- remote virtual media
- Serial over LAN (SOL) technology
- intelligent fault diagnosis

Table 10-1 ISBMC Features

Feature	Description
Management Interface	Supports extensive remote management interfaces for various server O&M scenarios. The supported interfaces include: <ul style="list-style-type: none">• IPMI• SSH CLI (Smash Lite)• SNMP• Web GUI (HTTPS)• Redfish (HTTPS)• RESTful (HTTPS)• Syslog
Intelligent and Automatic Management	Offers accurate and comprehensive sensing of temperature, voltage, fan and other parameters and provides event

Feature	Description
	recording; outputs the event logs with abnormal sensor data; detects the faults of CPU, memory and other hardware.
Alert Management	Supports rich automatic remote alert capabilities, including proactive alerting mechanisms such as SNMP Trap (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.
Remote Virtual Media	Supports virtualizing images, USB devices, folders and local media devices 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
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.
Web Services Supported by Management Network Port	Supports network time protocol (NTP) and domain name system (DNS) and the firewall.
Power Control	Supports virtual power buttons for power on/off, power cycle and reset.
UID LED and Remote Control of UID LED	<ul style="list-style-type: none"> Supports remote lighting of the UID LED for locating the server in the server room Supports remote control of UID LED. The UID LED blinks when a user remotely logs in via web, KVM, or SSH to

Feature	Description
	inform the on-site personnel that an administrator is accessing the server.
Secure Firmware Update	<ul style="list-style-type: none"> • 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.
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, and provides more user roles to allow administrators to grant different privileges to O&M personnel.
Remote Authentication	Supports lightweight directory access protocol (LDAP) authentication, Active Directory (AD) authentication and Remote Authentication Dial-In User Service (RADIUS). User roles can be authenticated by a specified server online.
Security Features	Adopts the industry-leading server security baseline standard V3.0. SSH, HTTPS, SNMP and IPMI use secure and reliable algorithms. ISBMC offers capabilities including secure update and boot and security reinforcement mechanisms such as anti-replay, anti-injection, and anti-brute force.

11 Appendix A

11.1 Operating Temperature Specification Limits

Table 11-1 Operating Temperature Specification Limits

Config.	Max. Operating Temp.: 35°C (95°F)	Max. Operating Temp.: 40°C (104°F)	Max. Operating Temp.: 45°C (113°F)
<ul style="list-style-type: none">1 × Front 8025 Fan Module + 1 × Rear 8025 Fan Module1 × 16 GB DIMM1 × CPU (TDP ≤65 W)1 × GPU (T400)1 × 3.5-Inch SATA HDD1 × 300 W PSU	Supported	Not supported	Not supported
<ul style="list-style-type: none">1 × Front 8025 Fan Module + 1 × Rear 8025 Fan Module2 × 32 GB DIMM1 × CPU (TDP ≤80 W)1 × GPU (T400)4 × 3.5-Inch SATA HDD1 × 500 W PSU	Supported	Not supported	Not supported
<ul style="list-style-type: none">1 × Front 8025 Fan Module + 1 × Rear 8025 Fan Module4 × 32 GB DIMM1 × CPU (TDP ≤95 W)1 × GPU (T400)	Supported	Not supported	Not supported

Config.	Max. Operating Temp.: 35°C (95°F)	Max. Operating Temp.: 40°C (104°F)	Max. Operating Temp.: 45°C (113°F)
<ul style="list-style-type: none"> 4 × 3.5-Inch SATA HDD 2 × 500 W PSU 			
<ul style="list-style-type: none"> 1 × Front 8025 Fan Module + 1 × Rear 8025 Fan Module 4 × 32 GB DIMM 1 × CPU (TDP ≤95 W) 1 × RAID Card 4 × 3.5-Inch SATA HDD 2 × 500 W PSU 	Supported	Not supported	Not supported

11.2 Model

Certified Model	Description
KT3020-X2-A0-R0-00	Global

11.3 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.

11.4 Sensor List

Sensor	Description	Sensor Location
CPU Temperature	CPU core temperature	Motherboard
System Temp	PCB temperature	Motherboard
Inlet_temp	Panel 2 cable configuration	Motherboard
CPU_DIMMA1	CPU DIMMA1 temperature	DIMMA1
CPU_DIMMA2	CPU DIMMA2 temperature	DIMMA2

Sensor	Description	Sensor Location
CPU_DIMMB1	CPU DIMMB1 temperature	DIMMB1
CPU_DIMMB2	CPU DIMMB2 temperature	DIMMB2
PCle_1	The maximum temperature of PCIe expansion card 1	Add-in card in PCIe_2 Slot 1
PCle_2	The maximum temperature of PCIe expansion card 2	Add-in card in PCIe_2 Slot 2
+VCORE	CPU voltage	Motherboard
+VDDQ	DIMM voltage	Motherboard
+VCCIO	CPU voltage	Motherboard
+VCCSA	CPU voltage	Motherboard
+VCCST	CPU voltage	Motherboard
+VCCGT	CPU graphics card voltage	Motherboard
+12V	Voltage supplied by the motherboard to the CPU	Motherboard
+5V	Voltage supplied by the motherboard to the BMC	Motherboard
+3V	Voltage supplied by the motherboard to the BMC	Motherboard
+5VSB	Supplied by PSUs	Motherboard
+3VSB	Supplied by the motherboard	Motherboard
+VBAT	3.3 V button cell battery	Motherboard
CPU_FAN1	FAN1 speed	Motherboard Fan module
FRNT_FANB		
REAR_FAN1		
CPU1_ECC1	ECC error	Motherboard
CPU_CATERR	Internal CPU error	Motherboard
Memory_Train_ERR	Memory training error	Motherboard
ChassisIntrusion	Chassis-opening activity	Motherboard
Watchdog2	Watchdog 2	Motherboard

12 Appendix B Acronyms and Abbreviations

12.1 A - E

A

AC	Alternating Current
AD	Active Directory
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
ATX	Advanced Technology Extended

B

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

C

CAS	Column Address Strobe
CCC	China Compulsory Certificate
CECP	China Energy Conservation Program
CEN	European Committee for Standardization
CLI	Command-Line Interface
CMOS	Complementary Metal-Oxide-Semiconductor

CPLD	Complex Programmable Logic Device
CPU	Central Processing Unit

D

DDP	Dual Die Package
DDR4	Double Data Rate 4
DIMM	Dual In-line Memory Module
DNS	Domain Name System
DOA	Dead on Arrival
DRAM	Dynamic Random-Access Memory
DVD-RW	Digital Video Disc-ReWritable

E

ECC	Error-Correcting Code
ECMA	European Computer Manufacturer Association
ERP	Enterprise Resource Planning
ESD	Electro-static Discharge

12.2 F - J

F

FHHL	Full-Height Half-Length
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G

GB	GigaByte
GPU	Graphics Processing Unit

GUI	Graphical User Interface
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H

HDD	Hard Disk Drive
HSE	Health and Safety Executive
HTTPS	HyperText Transfer Protocol Secure

I

ID	Identifier
IP	Internet Protocol
IPMI	Intelligent Platform Management Interface
ISA	International Society of Automation
ISO	International Organization for Standardization

12.3 K - O

K

KVM	Keyboard, Video, Mouse
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L

LAN	Local Area Network
LC	Lucent Connector
LDAP	Lightweight Directory Access Protocol
LED	Light Emitting Diode

N

NBD	Next Business Day
NIC	Network Interface Card
NIOSH	National Institute for Occupational Safety and Health
NTP	Network Time Protocol

O

OS	Operating System
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12.4 P - T

P

PCB	Printed Circuit Board
PCH	Platform Controller Hub
PCI	Peripheral Component Interconnect
PCIe	Peripheral Component Interconnect Express
PSU	Power Supply Unit

R

RADIUS	Remote Authentication Dial-In User Service
RAID	Redundant Arrays of Independent Disks
RAS	Reliability, Availability, Serviceability
RDIMM	Registered Dual In-line Memory Module
RH	Relative Humidity
RJ45	Registered Jack 45

RMA	Return Material Authorization
RST	Reset

S

SAS	Serial Attached SCSI
SATA	Serial Advanced Technology Attachment
SCSI	Small Computer System Interface
SDP	System Demonstration Platform
SLA	Service Level Agreements
SNMP	Simple Network Management Protocol
SMEs	Small and Medium-Sized Enterprises
SOL	Serial over LAN
SSD	Solid State Drive
SSH	Secure Shell

T

TCM	Trusted Cryptography Module
TDP	Thermal Design Power
TPM	Trusted Platform Module

12.5 U - Z

U

UART	Universal Asynchronous Receiver Transmitter
UDIMM	Unbuffered Dual In-line Memory Module
UEFI	Unified Extensible Firmware Interface

UID	Unit Identification
USB	Universal Serial Bus

V

VGA	Video Graphics Array
VNC	Virtual Network Console