NexaVM nServer-G5-2P-6420

Rack Server

Product Description

Version: R1.6

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LEGAL INFORMATION

Statement on the Use of Third-Party Embedded Software:

If third-party embedded software such as Oracle, Sybase/SAP, Veritas, Microsoft, VMware, and Redhat is delivered together with this product of NexaVM, the embedded software must be used as only a component of this product. If this product is discarded, the licenses for the embedded software must be void either and must not be transferred. NexaVM will provide technical support for the embedded software of this product.

The server is ODMed from ZTE and the logo of the ZTE in the pictures will be replaced by NexaVM logo

Contents

About This Manual

Purpose

This manual describes the nServer-G5-2P-6420 rack server, including its role, characteristics, structure, software functions, product specifications, environmental requirements, and compliant standards, helping you to fully learn about the nServer-G5-2P-6420.

Intended Audience

This manual is intended for:

- Network planning engineers
- Installation engineers
- Maintenance engineers

What Is in This Manual

This manual contains the following chapters.

Chapter 1, Product Overview	Describes the product role, characteristics, and features of the nServer-G5-2P-6420.
Chapter 2, External Views	Describes the front panel and rear panel of the nServer-G5-2P-6420, including the indicators, buttons, and physical interfaces on the front and rear panels.
Chapter 3, Product Structure	Describes the physical structure and logical structure of the nServer-G5-2P-6420.
Chapter 4, Software Functions	Describes the software functions of the nServer-G5-2P-6420.
Chapter 5, Product Specifications	Describes the product specifications of the nServer-G5-2P-6420, including the physical, technical, environmental and reliability specifications.
Chapter 6, Compliant Standards	Describes the standards that the design of the nServer-G5-2P-6420 complies with.
Chapter 7, Product Recycling	Describes how to contact technical support for the recycling of nServer-G5-2P-6420 related products.

Conventions

This manual uses the following conventions.

	Danger: indicates an imminently hazardous situation. Failure to comply will result in death or serious personal injury.

	Warning: indicates a potentially hazardous situation. Failure to comply can result in death or serious personal injury. Caution: indicates a potentially hazardous situation. Failure to comply can result in moderate or minor personal injury.
	Notice: indicates equipment or environment safety information. Failure to comply can result in equipment damage, data loss, equipment performance degradation, environmental contamination, or other unpredictable results. Failure to comply will not result in personal injury.
	Note: provides additional information about a topic.

Chapter 1
Product Overview

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1.1 Product Role

The nServer-G5-2P-6420 is a 2U-high dual-processor rack server designed and developed based on the Intel® Xeon® Scalable processor (Sapphire Rapids / Emerald Rapids). With a high-density, modular, and compact design, the nServer-G5-2P-6420 features high performance, high reliability, high expandability, and convenient management. It is applicable to such fields as cloud computing, big data, NFV, and AI inference.

Figure 1-1 shows an external view of the nServer-G5-2P-6420.

Figure 1-1 External View of the nServer-G5-2P-6420

CAUTION

In a living environment, the operation of this device may cause radio jamming.

1.2 Product Characteristics

High Density and High Performance

- Two Intel® Xeon® Scalable processor are supported, each of which has a maximum of 64 cores.
- Thirty-two DDR5 memory module slots are provided. The maximum rate of a memory module can reach 5600 MT/s.
- High-speed I/O interfaces and high-performance NVMe SSDs are supported.

High Expandability and High Bandwidth

- A maximum of forty-five 2.5-inch disk slots, or twenty 3.5-inch disk slots and four 2.5-inch hard disk slots are provided to meet the requirements for large-capacity storage.
- To enable faster disk access, a maximum of 34 NVMe SSDs, or 40 E1.S hard disks[1], or 40 E3.S hard disks[1] are supported and high-speed I/O interfaces are provided.
- Multiple storage combinations and RAID card configuration options are supported, and local storage can be configured flexibly in accordance with service requirements.
- Multiple mainboard options are available to meet different configuration needs.
- The total number of PCIe slots can be increased to 20 to meet the requirements for flexible expansion of the network and storage.
- Two OCP 3.0 NICs are supported. The interfaces support PCIe 5.0 ×8 lanes or PCIe 5.0 ×16 lanes. Multi-host NICs can be selected as options.
- A maximum of four high-performance GPUs are supported, providing excellent computing power.

High Availability and High Reliability

- Key parts such as hard disks, power modules, and fans support hot swapping, ensuring high availability of the system.
- Multiple data protection mechanisms are available, for example, RAID0, RAID1, RAID5, RAID6, RAID10 and RAID50 are supported, and protection against a power supply failure is provided.
- Intelligent heat dissipation design increases system reliability and effectively extends component life and reducing costs.
- Power modules support 1+1 redundancy, and fan modules support N+1 redundancy, improving system reliability.
- TPM and TCM are supported.
- Intrusion detection is supported.

Convenient Management and Easy Maintenance

- A smart management platform is provided, implementing out-of-band monitoring of CPUs, memory modules, hard disks, fans, power supplies, networks, and other resources.
- Standard interfaces such as IPMI, SNMP, and Redfish are supported, and integration with a third-party management system is supported.
- Automatic deployment, firmware upgrade, and remote operations are supported, improving deployment and O&M efficiency.
- The KVM function is provided.

Energy Saving and Environmentally Friendly

- 80 PLUS platinum and titanium power supplies are used, supporting power capping.
- High-voltage and low-voltage DC technologies are supported, improving energy utilization.
- High-performance mute fans with intelligent speed adjustment are provided.
- A sophisticated liquid cooling solution is provided, meeting the heat dissipation requirements for CPUs on the Intel Eagle Stream platform.
- Lead-free design is used, helping protect the environment.

Note 1: For details, contact technical support to obtain the detailed configuration information.

1.3 Product Features

The nServer-G5-2P-6420 supports active shutdown in response to high temperatures. When enabled, this function automatically shuts down the server if the ambient temperature in the equipment room exceeds a predefined high-temperature threshold. To ensure service continuity, this function is disabled by default in all BMC V4 versions.

Chapter 2
External Views

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2.1 Front Panel

In accordance with the installation mode and number of hard disks, the front panel of the nServer-G5-2P-6420 supports the following configurations:

- Horizontal layout (12 hard disks)

  The front panel provides twelve 3.5-inch SAS/SATA disk slots (compatible with 2.5-inch disks) that support NVMe SSDs, see Figure 2-1.

Figure 2-1 Front Panel with Twelve Horizontal Disk Slots

- Horizontal layout (8 hard disks)

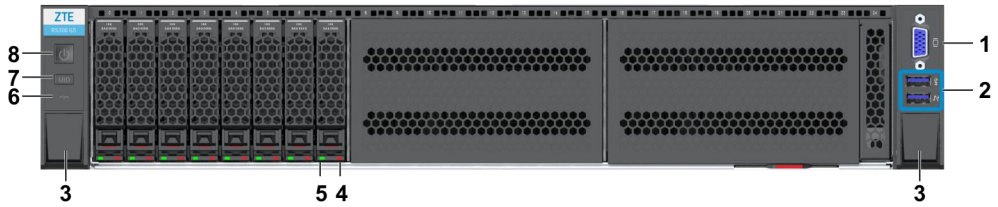
  The front panel provides eight 3.5-inch SAS/SATA disk slots (compatible with 2.5-inch disks) that support NVMe SSDs, see

Figure 2-2 Front Panel with Eight Horizontal Disk Slots

- Vertical layout (8 hard disks)

  The front panel provides eight 2.5-inch SAS/SATA disk slots that support NVMe SSDs, see Figure 2-3.

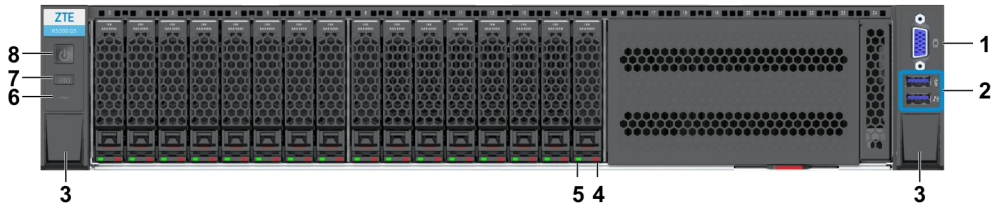
Figure 2-3 Front Panel with Eight Vertical Disk Slots



- Vertical layout (16 hard disks)

  The front panel provides sixteen 2.5-inch SAS/SATA disk slots that support NVMe SSDs, see Figure 2-4.

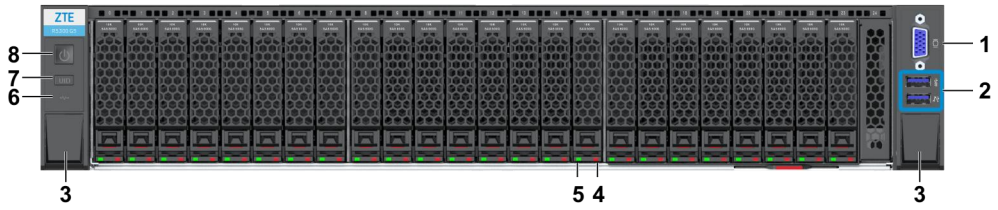
Figure 2-4 Front Panel with Sixteen Vertical Disk Slots



- Vertical layout (24 hard disks)

  The front panel provides twenty-four 2.5-inch SAS/SATA disk slots that support NVMe SSDs, see Figure 2-5.

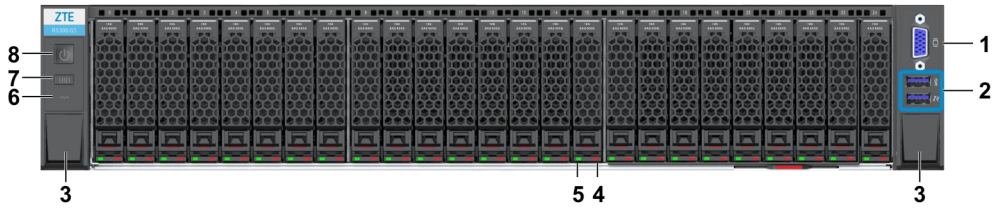
Figure 2-5 Front Panel with Twenty-Four Vertical Disk Slots



- Vertical layout (25 hard disks)

  The front panel provides twenty-five 2.5-inch SAS/SATA disk slots that support NVMe SSDs, see Figure 2-6.

Figure 2-6 Front Panel with Twenty-Five Vertical Disk Slots



For a description of the interfaces and indicators on the front panel of the nServer-G5-2P-6420, refer to Table 2-1.

Table 2-1 Front Panel Descriptions

No.	Name	Description
1	VGA interface	Connected to a display.
2	USB interface	● The upper interface is a USB 3.0 interface, which is connected to a USB 3.0 device, for example, a system boot USB flash drive. ● The lower interface is a USB 2.0 interface, which is connected to a USB mouse or keyboard to facilitate lightweight maintenance of the server and rapid fault location and analysis.
3	Chassis installation screw shield	Shields a screw installed on the chassis.
4	Hard disk status indicator	This indicator can be in the following status: ● Off: The hard disk is operating properly. ● Flashing blue at 1 Hz: The RAID group that the hard disk belongs to is being rebuilt. ● Flashing blue at 4 Hz: The hard disk is being positioned. ● Steady red: The hard disk is faulty.
5	Hard disk activity indicator	This indicator can be in the following status: ● Off: The hard disk is not present or is faulty. ● Flashing green: Data is being read from or written to the hard disk, or synchronized between hard disks. (The green indicator of the SAS/SATA hard disk flashes at 4 Hz, and the green indicator of the NVMe hard disk flashes at an undefined frequency). ● Steady green: The hard disk is present but inactive.
6	Health status indicator	This indicator can be in the following status: ● Steady green: The server is operating properly. ● Flashing red at 1 Hz: The server has a minor alarm. ● Flashing red at 4 Hz: The server has a critical alarm. ● Off: The server is not operating properly.
7	UID button/indicator	The button is also used as an indicator. This indicator can be in the following status: ● Steady blue: The server is being positioned. It can be controlled through the UID button or the BMC Web interface. ● Flashing blue at 1 Hz: The server is being remotely accessed through KVM, Web, or SSH. It can be controlled through the BMC Web interface. ● Flashing blue at 4 Hz: The server is in debugging mode. The serial interface on the rear panel of the server serves as the BMC debugging serial interface. ● Flashing blue at 8 Hz: The server is in BMC reset mode. ● Blue indicator off: No positioning, remote login, or reset operation is triggered for the server.

No.	Name	Description
		The UID button supports the following operations: ● Press and hold the button for less than 4 seconds: Perform server positioning or cancel the current function (cancel positioning or the BMC debugging status of the serial port). ● Press and hold the button for 4 (inclusive) to 10 seconds: Switch the serial port on the panel to BMC debugging status. ● Press and hold the button for at least 10 seconds: Reset the BMC. ● Press and hold the button for 4 (inclusive) to 10 seconds, release it, and then press and hold it for at least 10 seconds: Reset the BMC and keep the serial port on the panel in BMC debugging status.
8	Power button/indicator	The button is also used as an indicator. This indicator can be in the following status: ● Yellow on and green off: The server is powered on in standby mode (the host is not powered on). ● Yellow off and green on: The server is powered on in payload mode (the host is powered on). ● Yellow off and green off: The server is not powered on or the power module is not operating properly. You can press the power button to power on the server. The power button supports the following operations: ● Press and hold the button for less than 4 seconds: Power on the server. ● Press and hold the button for 4 or more seconds: Shut down the server forcibly.

Note

To ensure drive availability, the storage duration of a hard disk drive cannot exceed six months before use.

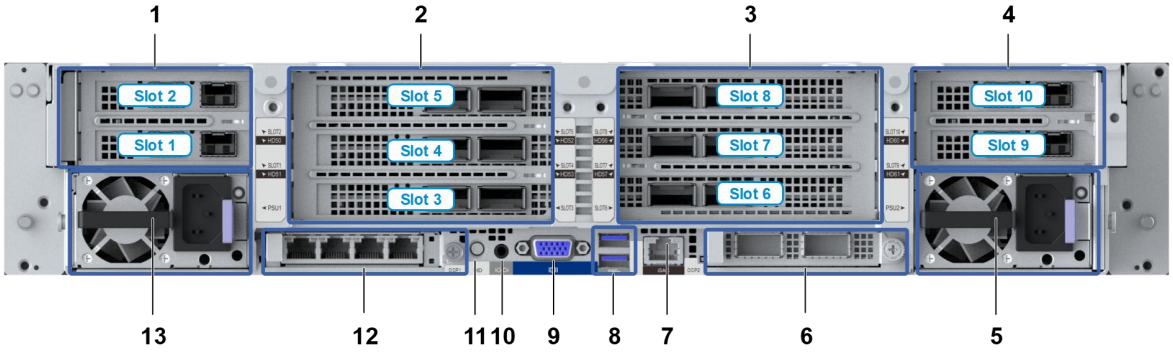
2.2 Rear Panel

2.2.1 Rear Panel of the General Model

The I/O modules on the rear panel of the nServer-G5-2P-6420 server can be configured in the following modes as required:

- All are configured as PCIe 5.0 expansion slots, see Figure 2-7.
- All are configured as hard disk expansion slots, see Figure 2-8.
- Some are configured as PCIe 5.0 expansion slots and the others are configured as hard disk expansion slots.

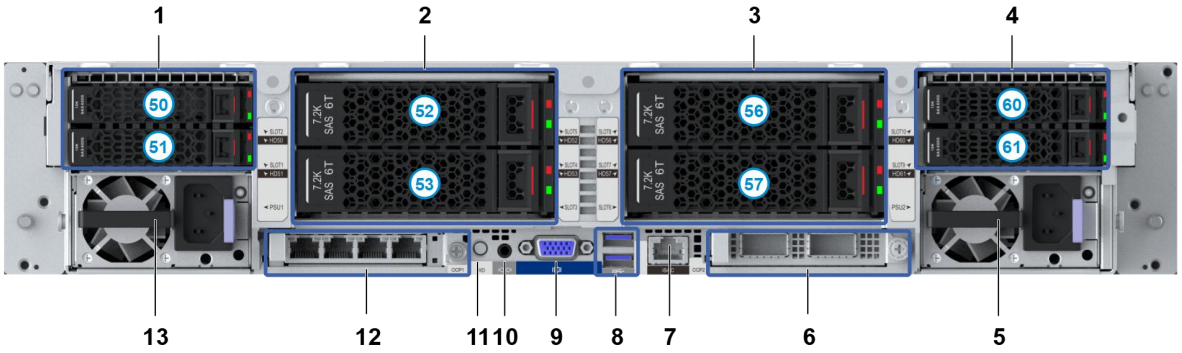
Figure 2-7 Rear Panel with PCIe Slots Only



Note

Slot 1 through Slot 10 in Figure 2-7 indicate the rear PCIe slot numbers.

Figure 2-8 Rear Panel with Hard Disk Slots Only



Note

Numbers 50–53, 56, 57, 60, and 61 in Figure 2-8 indicate the rear hard disk slot numbers.

For a description of the components on the real panel of the nServer-G5-2P-6420, refer to Table 2-2.

Table 2-2 Rear Panel Descriptions

No.	Name	Description
1	I/O module 1	I/O module 1 supports any of the following configurations: ● Two half-height half-length PCIe 5.0 ×8 standard cards. One of the slots can be used as a PCIe 5.0 x16 slot. ● Two 2.5-inch SAS/SATA/NVMe hard disks.
2	I/O module 2	I/O module 2 supports any of the following configurations: ● One full-height half-length single-width PCIe 5.0 ×16 standard card and two full-height half-length single-width PCIe 5.0 x8 standard cards. ● Two full-height half-length single-width PCIe 5.0 ×16 standard cards. ● Two full-height 3/4-length single-width PCIe 5.0 ×16 standard cards.

No.	Name	Description
		● One full-height 3/4-length double-width PCIe 5.0 ×16 standard card and one full-height half-length single-width PCIe 5.0 ×16 standard card. ● Two 3.5/2.5-inch SAS/SATA/NVMe hard disks.
3	I/O module 3	I/O module 3 supports any of the following configurations: ● One full-height half-length single-width PCIe 5.0 ×16 standard card and two full-height half-length single-width PCIe 5.0 x8 standard cards. ● Two full-height half-length single-width PCIe 5.0 ×16 standard cards. ● Two full-height 3/4-length single-width PCIe 5.0 ×16 standard cards. ● One full-height 3/4-length double-width PCIe 5.0 ×16 standard card and one full-height half-length single-width PCIe 5.0 ×16 standard card. ● Two 3.5/2.5-inch SAS/SATA/NVMe hard disks.
4	I/O module 4	I/O module 4 supports any of the following configurations: ● Two half-height half-length PCIe 5.0 ×8 standard cards. One of the slots can be used as a PCIe 5.0 x16 slot. ● Two 2.5-inch SAS/SATA/NVMe hard disks. ● One M.2 adapter that supports two M.2 SAS/SATA hard disks.
5	Power module 2	● 550 W, 800 W, 1200 W, 1600 W, 2000 W, 2700 W, and 3200 W power modules are supported. ● 80 PLUS platinum and titanium power supplies are supported. ● 100 V–127 V and 200 V–240 V (50 Hz to 60 Hz) AC power inputs are supported. ● 240 V and 336 V high-voltage DC power inputs are supported. ● The –48 V low-voltage DC power input is supported. ● The server supports 1+1 redundancy. ● Hot swapping is supported.
6	OCP card 2	Various OCP 3.0 NICs (GE/10GE/25GE/100GE) can be installed in the OCP card slot.
7	iSAC management interface	The network cable is used to interconnect the iSAC management interface with a debugging PC so you can log in to the Web portal of the iSAC management interface through a browser on the debugging PC and configure the server.
8	USB 3.0 interface	Used to connect to a USB mouse, a USB keyboard, or a peripheral storage device (for example, a USB flash drive for booting the system).
9	VGA interface	Used to connect to a display.

No.	Name	Description

10	Serial port	The 3.5 mm audio serial cable is used to connect the serial port to the debugging PC. The server can be configured on the HyperTerminal of the debugging PC.
11	UID button/indicator	The button is also used as an indicator. This indicator can be in the following status: ● Steady blue: The server is being positioned. It can be controlled through the UID button or the BMC Web interface. ● Flashing blue at 1 Hz: The server is being remotely accessed through KVM, Web, or SSH. It can be controlled through the BMC Web interface. ● Flashing blue at 4 Hz: The server is in debugging mode. The serial interface on the rear panel of the server serves as the BMC debugging serial interface. ● Flashing blue at 8 Hz: The server is in BMC reset mode. ● Blue indicator off: No positioning, remote login, or reset operation is triggered for the server. The UID button supports the following operations: ● Press and hold the button for less than 4 seconds: Perform server positioning or cancel the current function (cancel positioning or the BMC debugging status of the serial port). ● Press and hold the button for 4 (inclusive) to 10 seconds: Switch the serial port on the panel to BMC debugging status. ● Press and hold the button for at least 10 seconds: Reset the BMC. ● Press and hold the button for 4 (inclusive) to 10 seconds, release it, and then press and hold it for at least 10 seconds: Reset the BMC and keep the serial port on the panel in BMC debugging status.
12	OCP card 1	Various OCP 3.0 NICs (GE/10GE/25GE/100GE) can be installed in the OCP card slot.
13	Power module 1	● 550 W, 800 W, 1200 W, 1600 W, 2000 W, 2700 W, and 3200 W power modules are supported. ● 80 PLUS platinum and titanium power supplies are supported. ● 100 V–127 V and 200 V–240 V (50 Hz to 60 Hz) AC power inputs are supported. ● 240 V and 336 V high-voltage DC power inputs are supported. ● The –48 V low-voltage DC power input is supported. ● The server supports 1+1 redundancy. ● Hot swapping is supported.

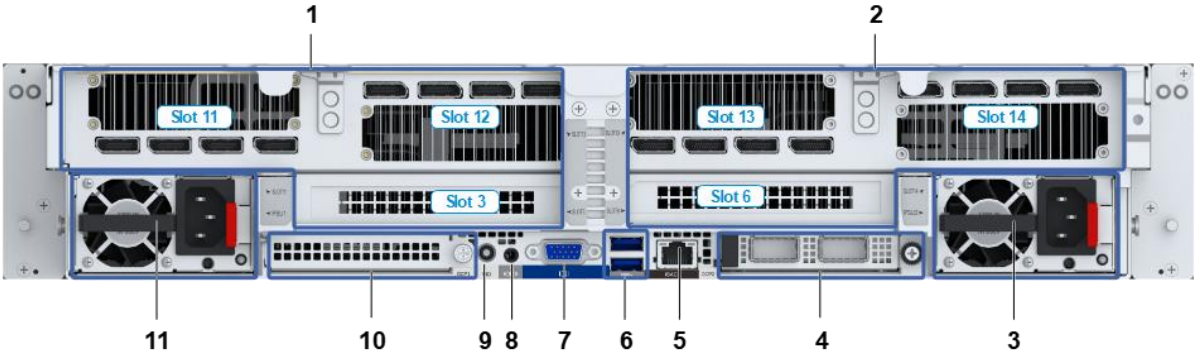
Note

To ensure drive availability, the storage duration of a hard disk drive cannot exceed six months before use.

2.2.2 Rear Panel of the 4-GPU Model

Figure 2-9 shows the rear panel of the nServer-G5-2P-6420 4-GPU server.

Figure 2-9 Rear Panel of the 4-GPU Model



For a description of the components on the real panel of the 4-GPU server, refer to Table 2-3.

Table 2-3 Rear Panel Descriptions

No.	Name	Description
1	I/O module 1	I/O module 1 supports any of the following configurations: ● Slot11/Slot12: One full-height full-length double-width PCIe 5.0 ×16 GPU. ● Slot3: One full-height half-length single-width PCIe 5.0 ×16 standard card or one full-height 3/4-length single-width PCIe 5.0 ×16 standard card.
2	I/O module 2	I/O module 2 supports any of the following configurations: ● Slot13/Slot14: One full-height full-length double-width PCIe 5.0 ×16 GPU. ● Slot6: One full-height half-length single-width PCIe 5.0 ×16 standard card or one full-height 3/4-length single-width PCIe 5.0 ×16 standard card.
3	Power module 2	● 550 W, 800 W, 1200 W, 1600 W, 2000 W, 2700 W, and 3200 W power modules are supported. ● 80 PLUS platinum and titanium power supplies are supported. ● 100 V–127 V and 200 V–240 V (50 Hz to 60 Hz) AC power inputs are supported. ● 240 V and 336 V high-voltage DC power inputs are supported. ● The –48 V low-voltage DC power input is supported. ● The server supports 1+1 redundancy.

No.	Name	Description
		● Hot swapping is supported.
4	OCP card 2	Various OCP 3.0 NICs (GE/10GE/25GE/100GE) can be installed in the OCP card slot.
5	iSAC management interface	The network cable is used to interconnect the iSAC management interface with a debugging PC so you can log in to the Web portal of the iSAC management interface through a browser on the debugging PC and configure the server.
6	USB 3.0 interface	Used to connect to a USB mouse, a USB keyboard, or a peripheral storage device (for example, a USB flash drive for booting the system).
7	VGA interface	Used to connect to a display.
8	Serial port	The 3.5 mm audio serial cable is used to connect the serial port to the debugging PC. The server can be configured on the HyperTerminal of the debugging PC.
9	UID button/indicator	The button is also used as an indicator. This indicator can be in the following status: ● Steady blue: The server is being positioned. It can be controlled through the UID button or the BMC Web interface. ● Flashing blue at 1 Hz: The server is being remotely accessed through KVM, Web, or SSH. It can be controlled through the BMC Web interface. ● Flashing blue at 4 Hz: The server is in debugging mode. The serial interface on the rear panel of the server serves as the BMC debugging serial interface. ● Flashing blue at 8 Hz: The server is in BMC reset mode. ● Blue indicator off: No positioning, remote login, or reset operation is triggered for the server. The UID button supports the following operations: ● Press and hold the button for less than 4 seconds: Perform server positioning or cancel the current function (cancel positioning or the BMC debugging status of the serial port). ● Press and hold the button for 4 (inclusive) to 10 seconds: Switch the serial port on the panel to BMC debugging status. ● Press and hold the button for at least 10 seconds: Reset the BMC. ● Press and hold the button for 4 (inclusive) to 10 seconds, release it, and then press and hold it for at least 10 seconds: Reset the BMC and keep the serial port on the panel in BMC debugging status.
10	OCP card 1	Various OCP 3.0 NICs (GE/10GE/25GE/100GE) can be installed in the OCP card slot.

No.	Name	Description
11	Power module 1	• 550 W, 800 W, 1200 W, 1600 W, 2000 W, 2700 W, and 3200 W power modules are supported. • 80 PLUS platinum and titanium power supplies are supported. • 100 V–127 V and 200 V–240 V (50 Hz to 60 Hz) AC power inputs are supported. • 240 V and 336 V high-voltage DC power inputs are supported. • The –48 V low-voltage DC power input is supported. • The server supports 1+1 redundancy. • Hot swapping is supported.

Note

To ensure drive availability, the storage duration of a hard disk drive cannot exceed six months before use.

Chapter 3
Product Structure

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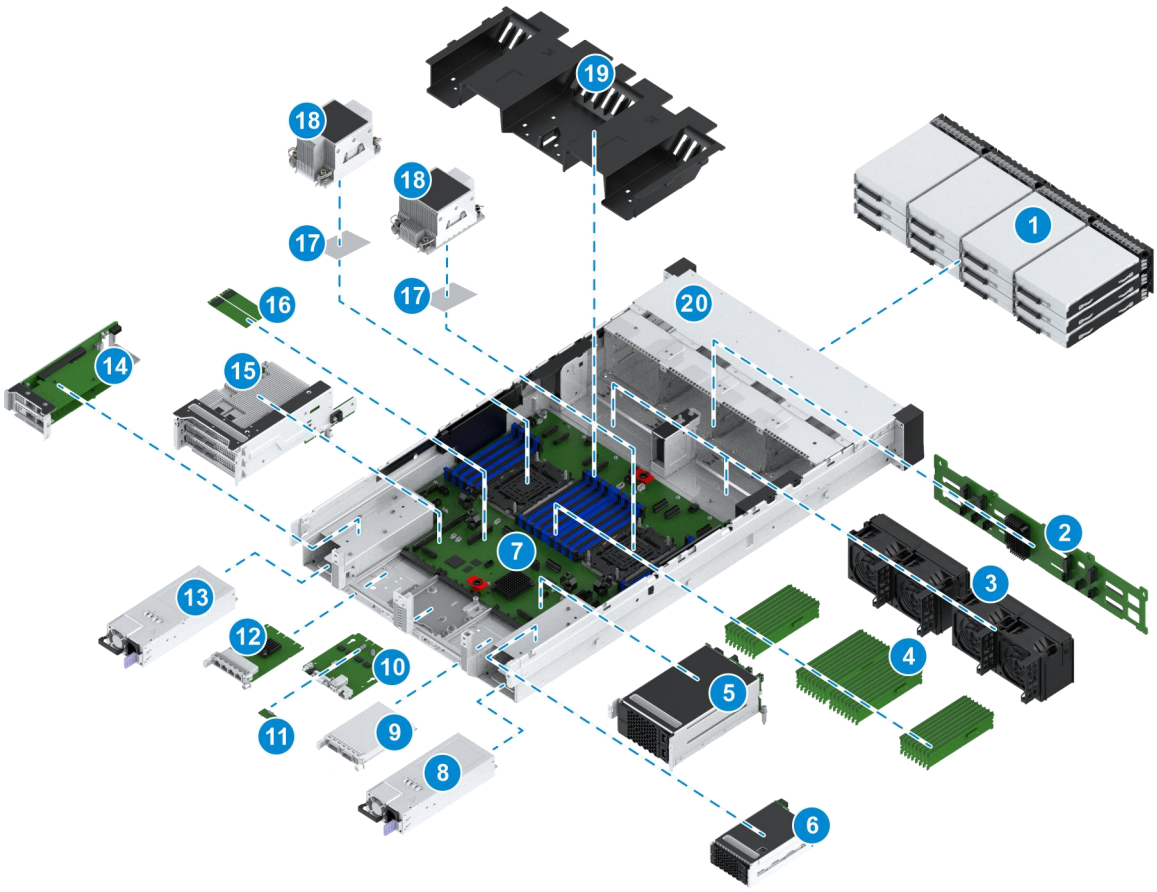
3.1 Physical Structure

3.1.1 Physical Structure of the General Model

Figure 3-1 shows the internal components of the nServer-G5-2P-6420 server (with twelve horizontal disk slots).

Figure 3-1 Internal Layout

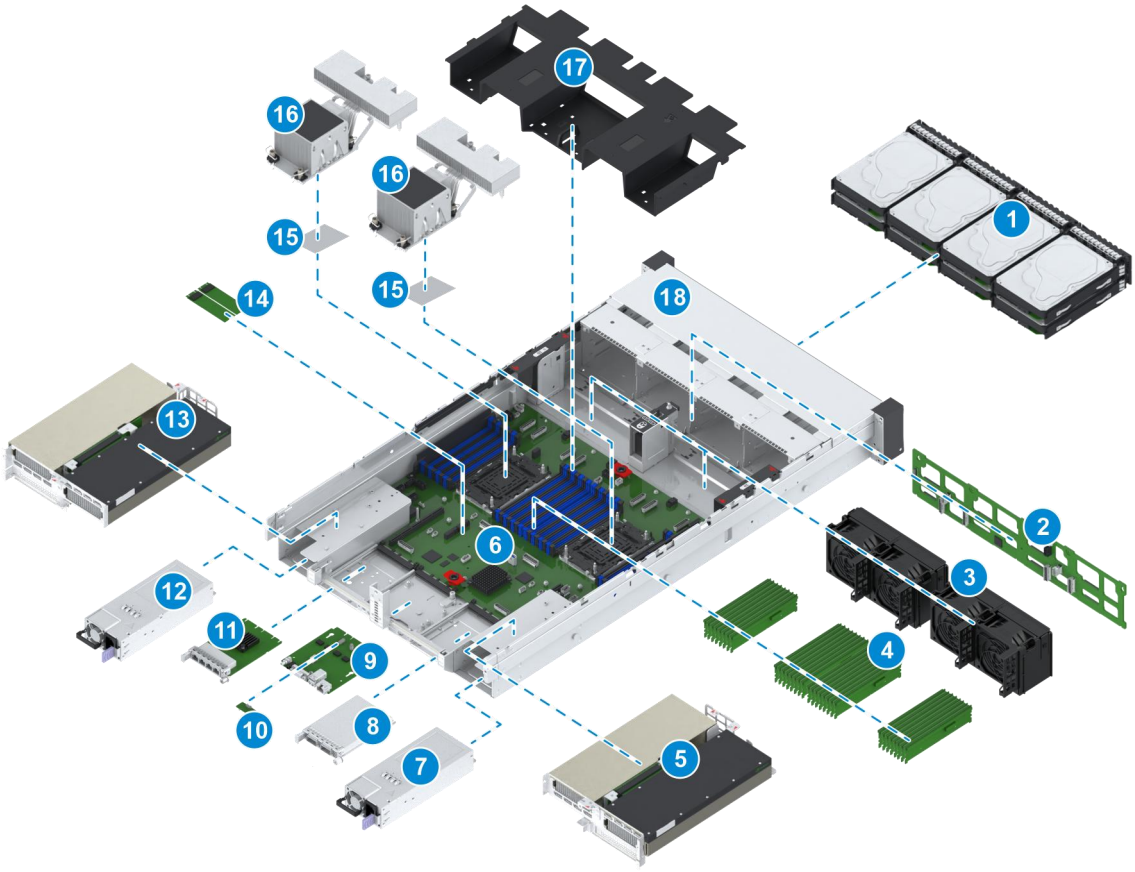


No.	Component	No.	Component
1	Front hard disk	2	Front hard disk backplane
3	Fan module	4	Memory module
5	I/O module 3	6	I/O module 4
7	Mainboard	8	Power module 2
9	OCP card 2	10	I/O card
11	TPM card	12	OCP card 1
13	Power module 1	14	I/O module 1
15	I/O module 2	16	M.2 SSD
17	CPU	18	Heat sink
19	Air duct	20	Chassis

3.1.2 Physical Structure of the 4-GPU Model

Figure 3-2 shows the internal components of the nServer-G5-2P-6420 4-GPU server.

Figure 3-2 Internal Layout

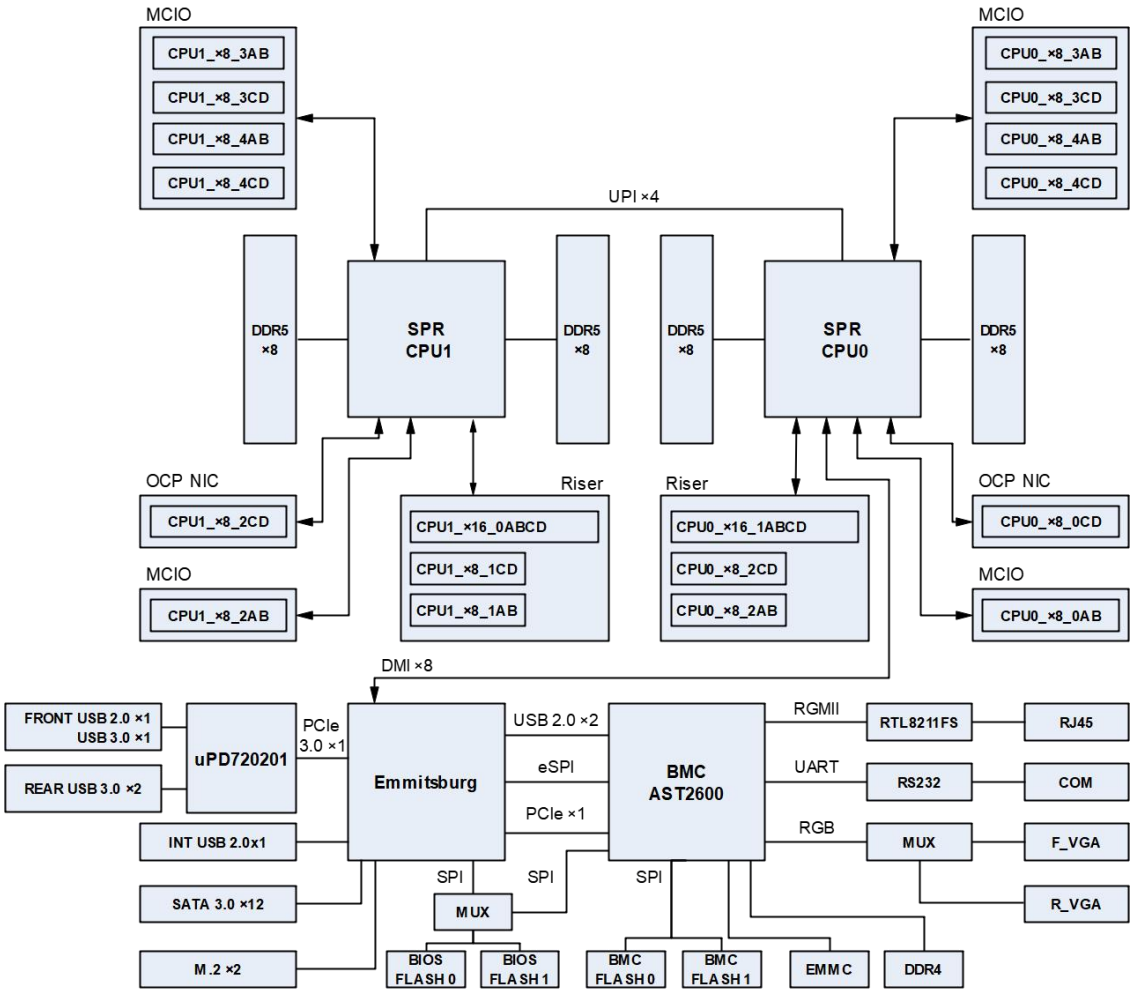


No.	Component	No.	Component
1	Front hard disk	2	Front hard disk backplane
3	Fan module	4	Memory module
5	I/O module 1	6	Mainboard
7	Power module 2	8	OCP card 2
9	I/O card	10	TPM card
11	OCP card 1	12	Power module 1
13	I/O module 1	14	M.2 SSD
15	CPU	16	Heat sink
17	Air duct	18	Chassis

3.2 Logical Structure

Figure 3-3 shows the modules of the nServer-G5-2P-6420 server and the logical relationships among these modules.

Figure 3-3 Logical Structure



For a description of the modules of the nServer-G5-2P-6420, refer to Table 3-1.

Table 3-1 Module Descriptions

Module	Description
CPU	Used for processing information and running programs as the calculation and control core of the server. The nServer-G5-2P-6420 supports a maximum of two CPUs, which are interconnected through four UPI links, with a maximum transmission rate of 20 GT/s.
DDR5	Used for storing computational data in the CPU and the data exchanged with external storage such as hard drives. The nServer-G5-2P-6420 provides 32 DDR5 memory slots.
Riser	Used for installing PCIe standard cards as an extended PCIe module.
OCP NIC	NIC that meets the OCP design specification and can be used for expanding the network capacity of the server. The nServer-G5-2P-6420 supports various OCP NIC 3.0 cards.

PCH	Southbridge chipset on the mainboard of the server. SATA, PCIe, and USB interfaces can be integrated. The nServer-G5-2P-6420 uses the Emmitsburg chipset.

Module	Description
USB	Exchanges data between the server and external devices. The nServer-G5-2P-6420 provides two SB 2.0 interfaces and three USB 3.0 interfaces.
SATA	Hard disk interface. The nServer-G5-2P-6420 provides 20 SATA 3.0 interfaces.
BIOS	Most basic input/output system of the server, providing the most basic and direct hardware configuration and control for the server.
BMC	Can be used for upgrading server firmware and viewing device information when the server is not powered on.
88E1512	Onboard NIC, which provides a GE electrical interface.
RS232	Serial interface controller, which provides an RS232 serial interface.
VGA	VGA interface, which is used for connecting to an external display.
COM	Serial interface module of the server, providing a serial interface for debugging the server.
M.2	Interface specification that is compatible with multiple communication protocols, such as SATA and PCIe.

Chapter 4
Software Functions

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4.1 BMC Software

The CPUs, bridge chips, EPLD, sensors and other components on the mainboard of the nServer-G5-2P-6420 are connected to the BMC through different channels to implement out-of- band management of the mainboard. Based on the hardware platform using the ARM

AST2600 processor and the embedded Linux system, the BMC implements IPMI 2.0 server management, KVM, and virtual media functions with the support of the Tulip platform, and provides external user interfaces.

The BMC chassis management software provides the following functions:

- Internally, the chassis management software manages, tracks, and controls the FRU modules in the chassis, and the public structures of the chassis, especially power supplies and heat dissipation devices.
- Externally, the chassis management software provides external IPMI, Redfish and SNMP interfaces and the web portal to manage and monitor the boards and modules.

For a description of the BMC chassis management software functions, refer to Table 4-1.

Table 4-1 Descriptions of the Chassis Management Software Functions

Function	Description
Basic information viewing function	This function allows you to view the following information: ● Board name, product name, manufacturer, and asset label ● Production date, board serial number, and product serial number ● GUID ● Power-on/off status, and real-time power ● Boot mode ● Alarm status of the system

Real time monitoring function	This function monitors the following information in real time: ● Sensor information ● CPU usage

Function	Description
	● Memory usage ● Disk usage
Component information viewing function	This function allows you to view the following information: ● Hard disk information ● Memory information ● CPU Information ● Network interface information ● Fan information
System configuration function	This function allows you to perform the following operations: ● BMC network configuration ● DNS configuration ● Time configuration ● Power and power supply control ● Power-on strategy and power-on delay parameters ● UID indicator ● Boot mode ● Resetting defaults
System management function	This function allows you to manage the following information: ● Account, version and logs ● IPMI, SNMP, Redfish, ACL rules, and ports ● Https certificate
Button functions	The following buttons are available: ● Board power-on ● Board power-off ● Restart
Reliability function	This function enables the BMC firmware redundancy and backup.
KVM function	This function enables the support for KVM. This function provides HTML5 clients and Java clients.
Alarm management function	This function manages alarms.
Performance management function	This function provides statistics on historical power consumption.
Diagnosis and maintenance functions	The following functions are supported: the last screen function, the one-click data export function, the configuration backup function, and the factory default configuration restoration function.

4.2 BIOS Software

Complying with the modern UEFI BIOS standard, the BIOS of the nServer-G5-2P-6420 is responsible for initializing hardware, loading device drivers and leading the booting of bootable devices or systems.

The functions of the BIOS software include:

- Security
- BIOS Management
- ECC Memory
- Power ACPI management
- Console redirection
- Boot mode selection
- Asset collection
- SEL record
- SMBIOS information
- Black box
- Support for PCIe hot swapping

Chapter 5
Product Specifications

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5.1 Physical Specifications

For the physical specifications of the nServer-G5-2P-6420, refer to Table 5-1.

Table 5-1 Physical Specifications

Item	Description
Dimensions (Width x Height x Depth)	● 432 mm x 87.6 mm x 780 mm (lugs excluded) ● 482.6 mm x 87.6 mm x 780 mm (lugs included)
Weight	● General model: ≤ 40 kg (full configuration without rails) ● 4-GPU model: ≤ 48 kg (full configuration without rails)
Color	● Silver chassis ● Black panels
Installation requirements	● The server can be installed in a general-purpose cabinet meeting the IEC 297 standard and with a depth equal to or greater than 1000 mm. ● A clearance of 800 mm is required for both the front and rear doors of the cabinet for heat dissipation and equipment maintenance.

5.2 Technical Specifications

For the technical specifications of the nServer-G5-2P-6420, refer to Table 5-2.

Table 5-2 Technical Specifications

Item	Description
Height and type	2U rack server
Chipset	Intel C741

Item	Description
CPU	The server supports a maximum of two Intel® Xeon® Scalable processor (Sapphire Rapids / Emerald Rapids), each of which has a maximum of 64 cores.
Memory	The server supports a maximum of 32 DDR5 memory modules, with the rate of up to 5600 MT/s per module.
Interconnection bus	● The server provides four UPI links. The maximum rate of each link can reach 20 GT/s. ● The server provides eight DMI lanes.
Storage controller	The server supports RAID 0, 1, 5, 6, 10, 50, and 60, and supports protection against a power supply failure.
Storage	● The server supports a maximum of forty-five 2.5-inch hard disks, or twenty 3.5-inch hard disks and four 2.5-inch hard disks. ● The server supports a maximum of 34 NVMe SSD disks. ● The server supports a maximum of 40 E1.S hard disks[1]. ● The server supports a maximum of 40 E3.S hard disks[1].
Network	● The server provides one IPMI gigabit Ethernet interface. ● The server supports two optional OCP 3.0 NICs, which can be Multi-host NICs.
I/O expansion	The server supports a maximum of 20 PCIe expansion slots, including 18 PCIe standard slots and 2 dedicated OCP slots.
Interface	The server provides multiple interfaces: ● Interfaces on the front panel: → One USB 2.0 interface → One USB 3.0 interface → One VGA interface ● Interfaces on the rear panel: → Two USB 3.0 interfaces → One iSAC management interface → One VGA interface → Two OCP card interfaces → One 3.5 mm audio serial interface ● Internal interfaces: One USB 2.0 interface
Power supply	● 550 W, 800 W, 1200 W, 1600 W, 2000 W, 2700 W, and 3200 W power modules are supported. ● 80 PLUS platinum and titanium power supplies are supported. ● 100–127 V or 200–240 V (50 Hz to 60 Hz) AC power inputs are supported. ● 240 V and 336 V high-voltage DC power inputs are supported.

Item	Description
	● The –48 V low-voltage DC power input is supported. ● The server supports 1+1 redundancy. ● The server supports hot swapping of power supplies.
Fan	Four efficient fans in N+1 redundancy mode, equipped with an intelligently adjustable heat dissipation system.
Video card	The server has an integrated graphics card and supports PCIe standard graphics cards.
Supported operating systems	The server is compatible with mainstream server operating systems, including but not limited to Microsoft Windows Sever, Red Hat Enterprise Linux, SUSE Linux Enterprise Server, CentOS, VMware ESXi and CGSL.

Note 1: For details, contact technical support to obtain the detailed configuration information.

5.3 Environmental Specifications

For the environmental specifications of the nServer-G5-2P-6420, refer to Table 5-3.

Table 5-3 Environmental Specifications

Item	Description
Temperature	● Operating temperature: → General model: 5°C through 45°C (Meets the ASHRAE Class A2/A3/A4 requirements) → 4-GPU model: 5°C through 30°C ● Storage temperature: –40°C through +65°C ● Maximum temperature change rate: 20°C/h The limit on the operating temperature of servers with different configurations varies. For details, refer to Table 5-4.
Relative humidity	● Operating environment: 8% through 90%, non-condensing (Meets the ASHRAE Class A2/A3/A4 requirements) ● Non-operating environment: 5% through 95%, non-condensing
Altitude	≤ 3000 m. The operating temperature decreases by 1 °C per 300 m when the altitude is above 900 m, and hard disk drive configuration is not supported when the altitude is above 3000 m.
Corrosive gas contaminants	Meets the requirements of the airborne corrosion level G1 defined in ANSI/ISA-71.04-2013. The maximum thickness growth rate of corrosive airborne contaminants should be as follows: ● Copper coupon: 300 Å/month ● Silver coupon: 200 Å/month

Item	Description
Particulate pollutants	● Meets the requirements of the data center cleaning standard ISO 14644-1 Class 8. ● There must be no explosive, electrically or magnetically conducive, or corrosive dust in the equipment room.

Table 5-4 Operating Temperatures for Different Server Configurations

Model		Maximum Operating Temperature 30°C	Maximum Operating Temperature 35°C	Maximum Operating Temperature 40°C	Maximum Operating Temperature 45°C
General model	Vertical layout (8 hard disks)	All configurations are supported.	All configurations are supported.	The following configurations are not supported: ● Rear hard disks such as HDD, SSD, NVMe SSD and M.2. ● Rear OCP card with the capacity of 100GB or above ● Memory module: 128 GB or above	The following configurations are not supported: ● CPU with a TDP of over 250 W ● Rear FPGA card and OCP card ● Front HDD and NVMe SSD ● Rear hard disks such as HDD, SSD, NVMe SSD and M.2. ● Memory module: 128 GB or above
	Vertical layout (16 hard disks)	All configurations are supported.	All configurations are supported.	The following configurations are not supported: ● Rear hard disks such as HDD, SSD, NVMe SSD and M.2. ● Rear FPGA card, and OCP card with the capacity of 100 GB or above ● Memory module: 128 GB or above ● Device stacking	The following configurations are not supported: ● Device stacking ● CPU with a TDP of over 225 W ● Rear FPGA card and OCP card ● Front HDD and NVMe SSD ● Rear hard disks such as HDD, SSD, NVMe SSD and M.2. ● Memory module: 128 GB or above

Model		Maximum Operating Temperature 30°C	Maximum Operating Temperature 35°C	Maximum Operating Temperature 40°C	Maximum Operating Temperature 45°C
	Vertical layout (24/25 hard disks)	All configurations are supported.	All configurations are supported.	The following configurations are not supported: ● CPU with a TDP of over 350 W ● Rear hard disks such as HDD, SSD, NVMe SSD and M.2. ● Rear FPGA card, and OCP card with the capacity of 100 GB or above ● Memory module: 128 GB or above ● Device stacking	Not supported.
	Horizontal layout (12 hard disks)	All configurations are supported.	All configurations are supported.	The following configurations are not supported: ● CPU with a TDP of over 350 W ● Front NVMe SSD ● Rear hard disks such as HDD, SSD, NVMe SSD and M.2. ● Rear FPGA card, and OCP card with the capacity of 100 GB or above ● Memory module: 128 GB or above ● Device stacking	Not supported.
GPU model	Horizontal layout	All configurations are supported.	Not supported.	Not supported.	Not supported.

Model		Maximum Operating Temperature 30°C	Maximum Operating Temperature 35°C	Maximum Operating Temperature 40°C	Maximum Operating Temperature 45°C
	(8 hard disks)				

1. When a fan fails, the operating temperature supported is reduced by 5°C. In this case, the GPU performance may be degraded.
2. If a GPU needs to be installed, you must select a server of the GPU model. A server of the general model does not support GPUs. For the supported models of GPUs, contact technical support.
3. When a server with rear mechanical hard disks is installed in stacking mode, you must enable performance mode for the fans of the server.
4. To ensure drive availability, the storage duration of a hard disk drive cannot exceed six months before use.
5. If servers are stacked, heat dissipation conditions are subject to the power density inside the cabinet and the heat dissipation capacity of the cabinet. The maximum operating temperature supported by the servers may be reduced. Therefore, it is recommended that servers be installed at 1U intervals in a cabinet.
6. The above data applies to only general CPU models. To customize a CPU for the server, you can contact technical support.
7. If you need any other models of servers, you can contact technical support.

5.4 Reliability Specifications

For the reliability specification descriptions of the nServer-G5-2P-6420, refer to Table 5-5.

Table 5-5 Reliability Specifications

Item	Specification
System availability	> 99.999%
MTTR	≤ 60 min
MTBF	> 110000 h

Chapter 6
Compliant Standards

For the standards that the nServer-G5-2P-6420 rack server complies with, refer to Table 6-1.

Table 6-1 Compliant Standards

Standard Name	Standard Number
CE Certification	EN 62368-1:2014+A11:2017
	EN 300 386 V1.6.1
	EN 300 386 V2.2.1
	EN IEC 63000:2018
	(EU) 2019/424
	EN 303 470 V1.1.1
CB Certification	IEC 62368-1
ETL Certification	UL 62368-1

Chapter 7
Product Recycling

To better care for and protect the earth, if this product is no longer needed or has reached the end of its service life, please dispose it in compliance with national or local laws and regulations related to the recycling and disposal of electronic waste, and deliver it to a manufacturer with recycling and disposal qualification to ensure proper treatment.

In accordance with relevant laws and regulations, NexaVM can recycle the electronic information products that it has produced and sold. If necessary, contact the local technical support office for product recycling.

Contact information:

- Headquarters tel: +86 755-26771900
- For local office phone numbers, please visit www.NexaVM.com.cn. Address:
- Headquarters address: NexaVM Plaza, Keji Road South, Hi-Tech Industrial Park, Nanshan District, Shenzhen, P.R.China
- For local office addresses, please visit www.NexaVM.com.cn.

Glossary

AC

- Alternating Current

ACL

- Access Control List

ACPI

- Advanced Configuration and Power Interface

AI

- Artificial Intelligence

ARM

- Advanced RISC Machines

BIOS

- Basic Input/Output System

BMC

- Baseboard Management Controller

CB

- Certification Bodies' Scheme

CE

- CONFORMITE EUROPENDE

CGSL

- Carrier Grade Server Linux

COM

- Component Object Model

CPU

- Central Processing Unit

DC

- Direct Current

DDR

- Double Data Rate

DMI

- Direct Media Interface

DNS

- Domain Name System

ECC

- Error Check and Correction

EPLD

- Erasable Programmable Logic Device

ETL

- Electrical Testing Laboratories

FPGA

- Field Programmable Gate Array

FRU

- Field Replaceable Unit

GPU

- Graphics Processing Unit

GUID

- Globally Unique Identifier

HDD

- Hard Disk Drive

HTML

- HyperText Markup Language

I/O

- Input/Output

IEC

- International Electrotechnical Commission

IPMI

- Intelligent Platform Management Interface

iSAC

- Integrated Server Administrator Controller

KVM

- Keyboard, Video and Mouse

MTBF

- Mean Time Between Failures

MTTR

- Mean Time To Recovery

NFV

- Network Functions Virtualization

NIC

- Network Interface Card

NVMe

- Non-Volatile Memory Express

O&M

- Operation & Maintenance

OCP

- Open Computer Project

PC

- Personal Computer

PCH

- Platform Controller Hub

PCIe

- Peripheral Component Interconnect Express

RAID

- Redundant Array of Independent Disks

SAS

- Serial Attached SCSI

SATA

- Serial ATA

SEL

- System Event Log

SMBIOS

- System Management BIOS

SNMP

- Simple Network Management Protocol

SSD

- Solid State Drive

SSH

- Secure Shell

TCM

- Trusted Cryptography Module

TPM

- Trusted Platform Module

UEFI

- Unified Extensible Firmware Interface

UID

- Unit Identification Light

UPI

- Ultra Path Interconnect

USB

- Universal Serial Bus

VGA

- Video Graphic Adapter