NETAŞ NCS6722A N4

Rack Server

Hardware Description

Version: R1.0

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Revision History

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Contents

About This Manual

Purpose

This manual describes the hardware configurations of the NCS6722A N4 rack server so that you can learn about detailed information about the server's components including the CPUs, DIMMs, storage, network, I/O expansion, power modules, fan units, and boards.

Intended Audience

This manual is intended for:

- Network planning engineers
- Hardware installation engineers ● Maintenance engineers

What Is in This Manual

This manual contains the following chapters.

Chapter 1, CPU	Describes the positions of CPUs in the NCS6722A N4 server and the recommended CPU configurations.
Chapter 2, Memory	Describes the memory slots in the NCS6722A N4 server and the supported memory configurations.
Chapter 3, Storage	Describes the hard disk slots in the NCS6722A N4 server and the supported hard disk configurations.
Chapter 4, Network	Describes the OCP NIC and PCIe NIC configurations in the NCS6722A N4 server.
Chapter 5, I/O Expansion	Describes the PCIe slots in the NCS6722A N4 server and the supported PCIe card configurations.
Chapter 6, Power Module	Describes the positions of power modules in the NCS6722A N4 server and the supported power module configurations.
Chapter 7, Fan Unit	Describes the positions of fan units in the NCS6722A N4 server and the supported fan unit configurations.
Chapter 8, Board	Describes the I/O card, mainboard, and disk backplane configurations in the NCS6722A N4 server.
Chapter 9, Anti-Intrusion Sensor	Describes the functions and position of the anti-intrusion sensor in the NCS6722A N4 server.

Conventions

This manual uses the following conventions.

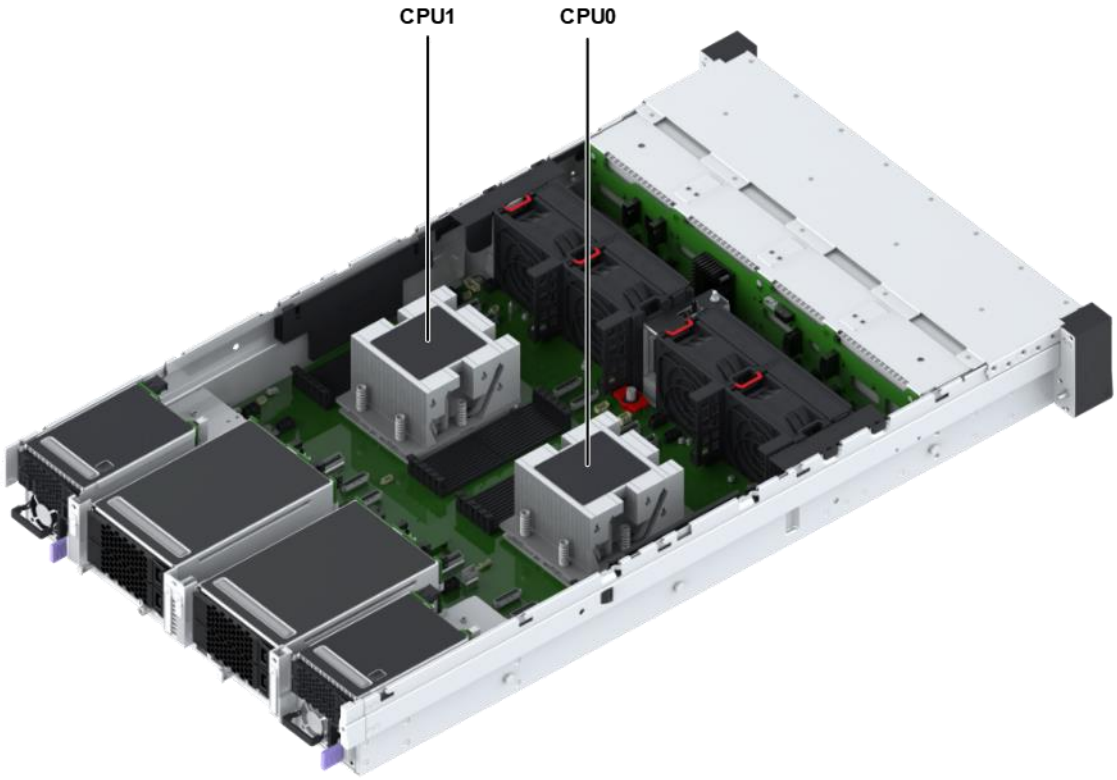
	Notice: indicates equipment or environment safety information. Failure to comply can result in equipment damage, data loss, equipment performance degradation, environmental contamination, or other unpredictable results. Failure to comply will not result in personal injury.
	Note: provides additional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

Chapter 1
CPU

The NCS6722A N4 server uses a dual-CPU design, which supports AMD EPYC Genoa SP5 processors.

Figure 1-1 shows the positions and IDs of the CPUs in the NCS6722A N4 server.

Figure 1-1 CPU Positions and IDs



The following CPU configuration in Table 1-1 is recommended for the NCS6722A N4 server to maximize system performance and functions.

Table 1-1 Recommended CPU Configuration

Number of CPUs	CPU1	CPU0
Two	√	√
One	-	√

1. "√" indicates to install a CPU in the slot.

2. "-" indicates not to install a CPU in the slot.

Notice

The CPUs installed in the NCS6722A N4 server must be of the same model.

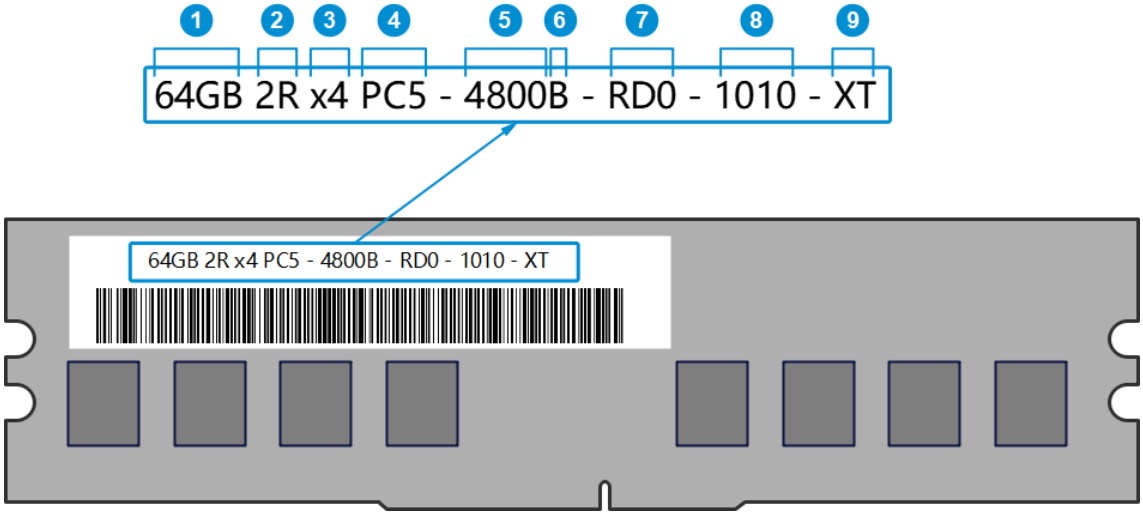
Chapter 2
Memory

Table of Contents

2.1 DIMM Label

A DIMM label specifies the attributes of a DIMM. Figure 2-1 shows a typical DIMM label.

Figure 2-1 DIMM Label



For a description of the DIMM label, refer to Table 2-1.

Table 2-1 DIMM Label Descriptions

No.	Attribute	Description
1	Capacity	• 16 GB • 32 GB • 64 GB • 128 GB
No.	**Attribute**	**Description**

		• 256 GB
2	Rank	• 1R = single-ranked • 2R = dual-ranked • 4R = quad-ranked • 8R = octo-ranked
3	DRAM data-bus width	• x4 = 4 bits • x8 = 8 bits
4	DIMM connector type	PC5 = DDR5
5	Maximum memory speed	4800 MT/s
6	CAS latency (CL-nRCD-nRP)	• AN = 34-34-34 • B = 40-39-39 • BN = 40-40-40 • C = 42-42-42
7	DIMM type	RD0: RDIMM D0
8	SPD version	• 10: SPD revision level (basic section) • 10: SPD revision level (specific section, namely bytes 192–447)
9	Temperature grade	• XT (Extended Temperature grade): 0#–95℃ • NT (Normal Temperature grade): 0#–85℃

2.2 DIMM Compatibility Rules

The following compatibility rules apply when you install DDR5 DIMMs:

- The NCS6722A N4 server must use DDR5 DIMMs of the same model. The memory speed is the lower one of the following: → Maximum memory speed supported by the CPUs.
  → Maximum operating speed of the DIMMs.
- Mix of different types (RDIMM and RDIMM-3DS) and specifications (capacity, data-bus width, rank and height) of DDR5 DIMMs is not allowed.
- The total memory capacity equals the sum of all DDR5 DIMM capacities.
- The maximum number of DIMMs depends on the types of DIMMs and number of ranks.

For parameter descriptions of the DDR5 DIMMs supported by the server, refer to Table 2-2.

Table 2-2 DDR5 DIMM Parameter Descriptions

Item	Value				
Capacity (GB) of a single DDR5 DIMM	16	32	64	128	256

Item	Value				
Type	RDIMM	RDIMM	RDIMM	RDIMM-3DS	RDIMM-3DS
Rated memory speed (MT/s)	4800	4800	4800	4800	4800
Operating voltage (V)	1.1	1.1	1.1	1.1	1.1
Maximum number of DDR5 DIMMs[1]	32	32	32	32	32
Maximum total capacity (GB) of DDR5 DIMMs[2]	512	1024	2048	4096	8192
Maximum operating speed (MT/s)	4800	4800	4800	4800	4800

1. By default, the server with two CPUs supports a maximum of 32 DDR5 DIMMs. If the server is configured with only one CPU, the maximum number of DDR5 DIMMs supported is 16.
2. The maximum total capacity of DDR5 DIMMs depends on the types of CPUs and is the value in full memory configuration.

2.3 DIMM Installation Guidelines

The general guidelines on installing DDR5 DIMMs are as follows:

- For an SPR CPU (excluding HBM CPUs), at least one DDR5 DIMM needs to be configured. For an SPR HBM CPU, DDR5 DIMMs are optional.
- All the configured memory modules must be DDR5 RDIMMs.
- All the configured memory modules must have the same number of ranks.

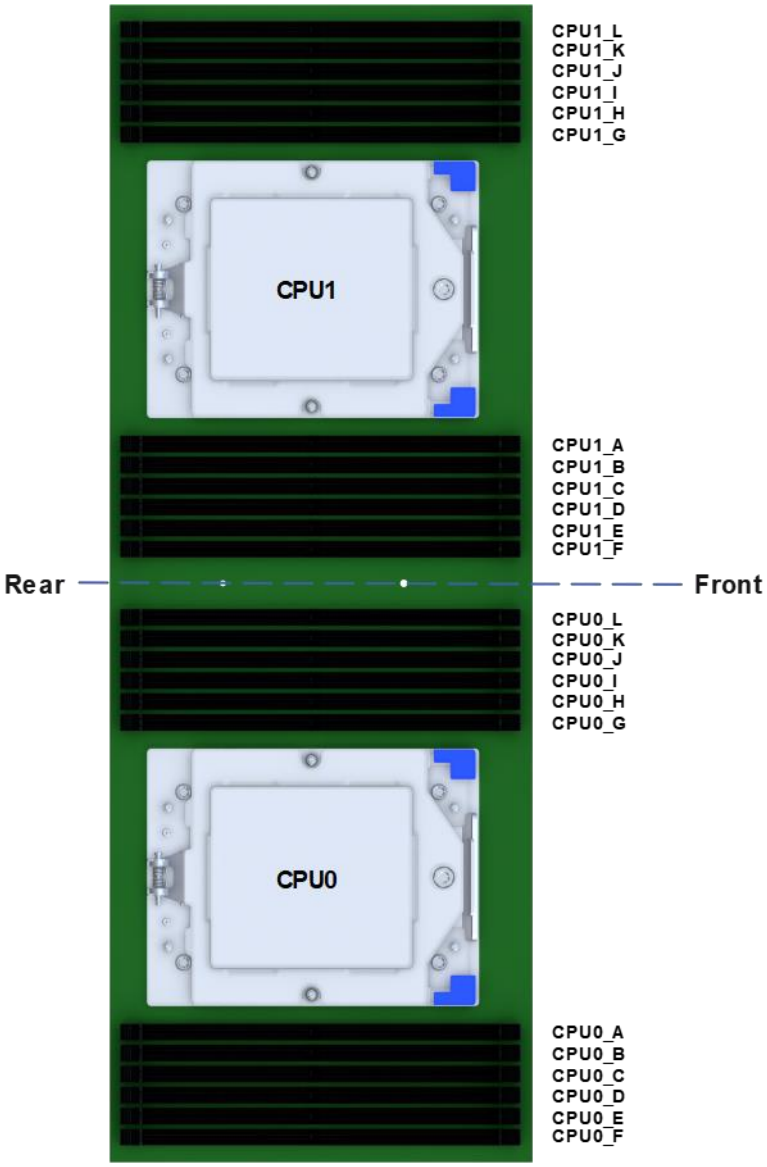
2.4 DIMM Slot Positions

Each CPU in the NCS6722A N4 server provides twelve memory channels, and each memory channel consists of one DIMM slots.

Therefore, the NCS6722A N4 server provides a maximum of 24 DDR5 DIMMs, with the highest speed up to 4800 MT/s.

Figure 2-2 shows the memory channels and DIMM slots in the NCS6722A N4 server.

Figure 2-2 Memory Channels and DIMM Sots



1. Front indicates the server front view.
2. Rear indicates the server rear view.

For the relationships among the CPUs, memory channels, and DIMM slots in the NCS6722A N4 server, refer to Table 2-3.

Table 2-3 Relationships Among CPUs, Memory Channels and DIMM Slots

CPU	Memory Channel	DIMM Slot	CPU	Memory Channel	DIMM Slot
CPU1	A	CPU1_A	CPU0	A	CPU0_A
	B	CPU1_B		B	CPU0_B

	C	CPU1_C		C	CPU0_C
CPU	**Memory Channel**	**DIMM Slot**	**CPU**	**Memory Channel**	**DIMM Slot**
	D	CPU1_D		D	CPU0_D
	E	CPU1_E		E	CPU0_E
	F	CPU1_F		F	CPU0_F
	G	CPU1_G		G	CPU0_G
	H	CPU1_H		H	CPU0_H
	I	CPU1_I		I	CPU0_I
	J	CPU1_J		J	CPU0_J
	K	CPU1_K		K	CPU0_K
	L	CPU1_L		L	CPU0_L

2.5 Recommended DIMM Configuration

Notice

This section recommends the number and layout of DIMMs in different scenarios, which help to maximize memory performance.

Recommended DIMM Configuration (One CPU)

Figure 2-3 shows the configuration of DIMMs when one CPU (CPU0) is configured for the NCS6722A N4 server.

Figure 2-3 Recommended DIMM Configuration (One CPU)

DDR5 Qty	CPU0_L	CPU0_K	CPU0_J	CPU0_I	CPU0_H	CPU0_G		CPU0_A	CPU0_B	CPU0_C	CPU0_D	CPU0_E	CPU0_F
1	-	-	-	-	-	-	CPU0	√	-	-	-	-	-
2	-	-	-	-	-	√		√	-	-	-	-	-
4	-	-	-	√	-	√		√	-	√	-	-	-
6	-	-	-	√	√	√		√	√	√	-	-	-
8	-	√	-	√	√	√		√	√	√	-	√	-
10	-	√	√	√	√	√		√	√	√	√	√	-
12	√	√	√	√	√	√		√	√	√	√	√	√

1. "√" indicates to install a DIMM.
2. "-" indicates not to install a DIMM.

Recommended DIMM Configuration (Two CPUs)

Figure 2-4 shows the configuration of DIMMs when two CPUs (CPU1 and CPU0) are configured for the NCS6722A N4 server.

Figure 2-4 Recommended DIMM Configuration (Two CPUs)

DDR5 Qty	CPU1_L	CPU1_K	CPU1_J	CPU1_I	CPU1_H	CPU1_G		CPU1_A	CPU1_B	CPU1_C	CPU1_D	CPU1_E	CPU1_F	CPU0_L	CPU0_K	CPU0_J	CPU0_I	CPU0_H	CPU0_G		CPU0_A	CPU0_B	CPU0_C	CPU0_D	CPU0_E	CPU0_F
1	-	-	-	-	-	-	CPU1	-	-	-	-	-	-	-	-	-	-	-	-	CPU0	√	-	-	-	-	-
2	-	-	-	-	-	-		√	-	-	-	-	-	-	-	-	-	-	-		√	-	-	-	-	-
4	-	-	-	-	-	√		√	-	-	-	-	-	-	-	-	-	-	√		√	-	-	-	-	-
8	-	-	-	√	-	√		√	-	√	-	-	-	-	-	-	√	-	√		√	-	√	-	-	-
12	-	-	-	√	√	√		√	√	√	-	-	-	-	-	√	√	√	√		√	√	√	-	-	-
16	-	√	-	√	√	√		√	√	√	-	√	-	-	√	-	√	√	√		√	√	√	-	√	-
20	-	√	√	√	√	√		√	√	√	√	√	-	-	√	√	√	√	√		√	√	√	√	√	-
24	√	√	√	√	√	√		√	√	√	√	√	√	√	√	√	√	√	√		√	√	√	√	√	√

1. "√" indicates to install a DIMM.
2. "-" indicates not to install a DIMM.

Note

When two CPUs are configured, it is not recommended that you install an odd number of DIMMs.

2.6 Memory Protection Technologies

DDR5 DIMMs support the following memory protection technologies:

- Error Check and Correction (ECC)

- On-die ECC
- Error Check and Scrub (ECS)
- Memory Mirroring
- Memory Single Device Data Correction (SDDC)
- Failed DIMM Isolation
- Memory Thermal Throttling
- Command/Address Parity Check and Retry
- Memory Demand/Patrol Scrubbing
- Memory Data Scrambling
- Post Package Repair (PPR)
- Write Data CRC Protection
- Adaptive Data Correction - Single Region (ADC-SR)
- Adaptive Double Device Data Correction - Multiple Region (ADDDC-MR)
- Partial Cache Line Sparing (PCLS, HBM CPU only)

Chapter 3
Storage

Table of Contents

3.1 Hard Disk Slot

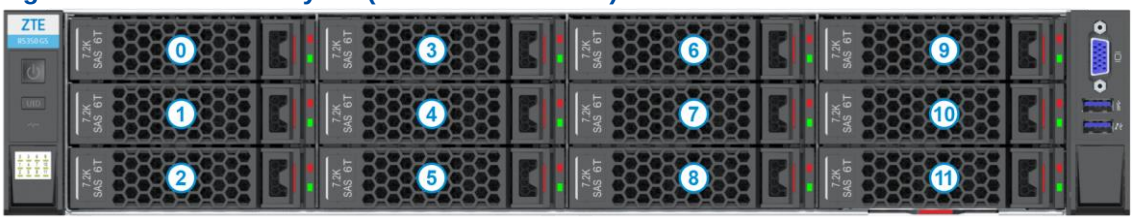
Front Hard Disk

In accordance with the layout (horizontal and vertical) and number of hard disks, the server supports the following hard disk configuration modes:

- Horizontal layout (12 hard disk slots)

  Figure 3-1 shows the hard disk slots arranged when 12 hard disks are installed horizontally.

  Figure 3-1 Horizontal Layout (12 Hard Disk Slots)

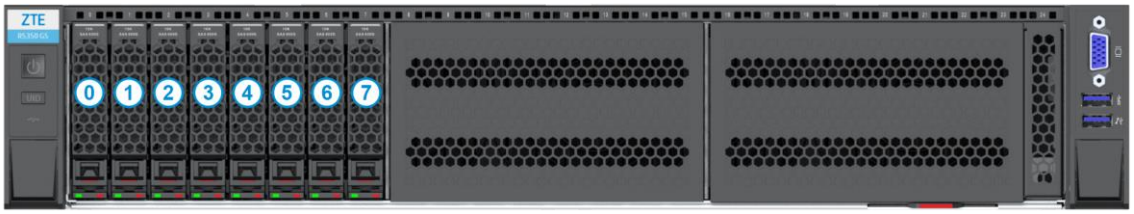
  

  The front panel provides twelve 3.5-inch SAS/SATA disk slots (compatible with 2.5-inch hard disks) that support NVMe SSDs.

- Vertical layout (8 hard disk slots)

  Figure 3-2 shows the hard disk slots arranged when 8 hard disks are installed vertically.

  Figure 3-2 Vertical Layout (8 Hard Disk Slots)

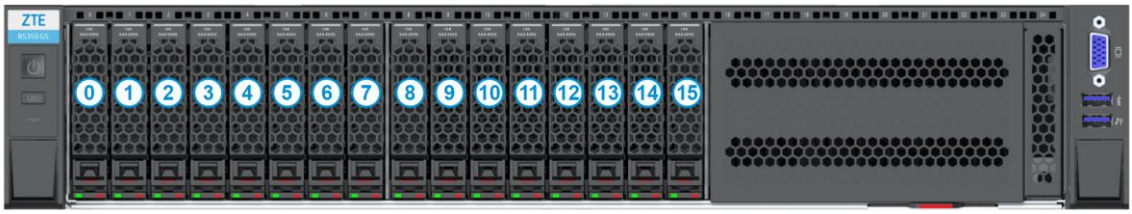
  3 Storage

  The front panel provides eight 2.5-inch SAS/SATA disk slots that support NVMe SSDs.

- Vertical layout (16 hard disk slots)

Figure 3-3 shows the hard disk slots arranged when 16 hard disks are installed vertically.

Figure 3-3 Vertical Layout (16 Hard Disk Slots)

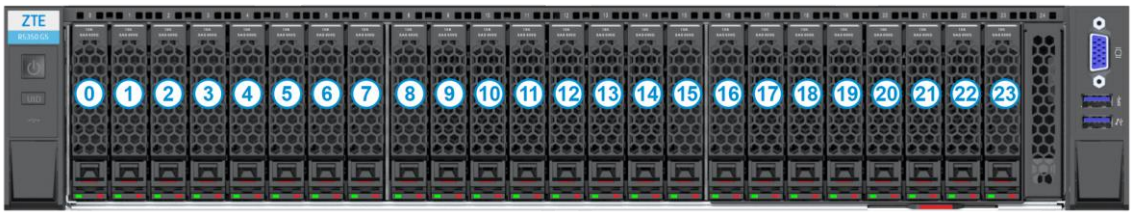


The front panel provides sixteen 2.5-inch SAS/SATA disk slots that support NVMe SSDs.

- Vertical layout (24 hard disk slots)

  Figure 3-4 shows the hard disk slots arranged when 24 hard disks are installed vertically.

Figure 3-4 Vertical Layout (24 Hard Disk Slots)

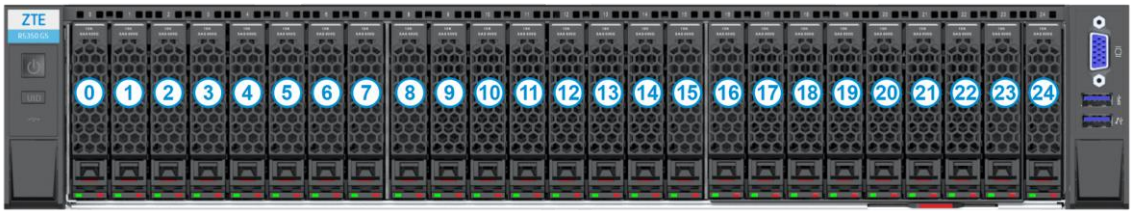


The front panel provides twenty-four 2.5-inch SAS/SATA disk slots that support NVMe SSDs.

- Vertical layout (25 hard disk slots)

  Figure 3-5 shows the hard disk slots arranged when 25 hard disks are installed vertically.

Figure 3-5 Vertical Layout (25 Hard Disk Slots)



The front panel provides twenty-five 2.5-inch SAS/SATA disk slots, where slots 1, 3, 5, 7, 17, 19, 21, and 23 support NVMe SSDs.

Notice

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

Rear Hard Disk

When the I/O modules on the rear panel of the NCS6722A N4 server are all configured with hard disks, the rear hard disk slots are arranged as shown in Figure 3-6.

Figure 3-6 Rear Hard Disk Slots

All slots support SAS/SATA/NVMe disks.

Notice

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

3.2 Hard Disk Indicator

Figure 3-7 shows the hard disk indicators on the NCS6722A N4 server.

Figure 3-7 Hard Disk Indicators

1. Hard disk status indicator
2. Hard disk activity indicator

For a description of the hard disk indicators, refer to Table 3-1.

Table 3-1 Hard Disk Indicator Descriptions

Indicator	Status
Hard disk status indicator	The possible status of the indicator is one of the following: ● 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.
Hard disk activity indicator	The possible status of the indicator is one of the following:

Indicator	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 indicator flashes green at 4 Hz on a SAS/SATA disk and flashes green at an undefined frequency on an NVMe disk.) • Steady green: The hard disk is present but inactive.

3.3 RAID Controller Card

Through a RAID controller card of the corresponding model, the RAID technology combines multiple independent hard disks to form an array with the redundancy capability. Compared with a single hard disk, the RAID array provides higher storage performance, I/O performance, and reliability.

The RAID controller card provides the functions such as RAID support, RAID level migration, and disk roaming.

For detailed information about RAID controller cards, refer to the `NETAŞ Server RAID User Guide (Genoa)`.

Chapter 4
Network

Table of Contents

4.1 OCP NIC

OCP NICs are new-generation multi-function and high-performance NICs for servers. The NCS6722A N4 server supports OCP NICs to provide more network capabilities. The OCP NIC slots support various standard OCP 3.0 NICs, which provide the following port rates: GE, 10 GE, 25 GE, and 100 GE. Figure 4-1 shows the OCP NIC positions.

Figure 4-1 OCP NIC Positions

For the OCP NIC models that the NCS6722A N4 server supports, refer to Table 4-1.

Table 4-1 Supported OCP NIC Models

OCP NIC Model	Network Port Type	Number of Network Ports	Rate	NC-SI/WOL/PXE Supported Or Not
MCX4621A-XCAB	Optical port	2	10 Gbps	Supported
X710DA20CPV3G1P (979097)	Optical port	2	10 Gbps	Supported
X710T2LOCPV3G1P (9999MK)	Optical port	2	10 Gbps	Supported

Note

The number of OCP NIC models supported by the NCS6722A N4 server is growing. For more information, contact NETAŞ technical support.

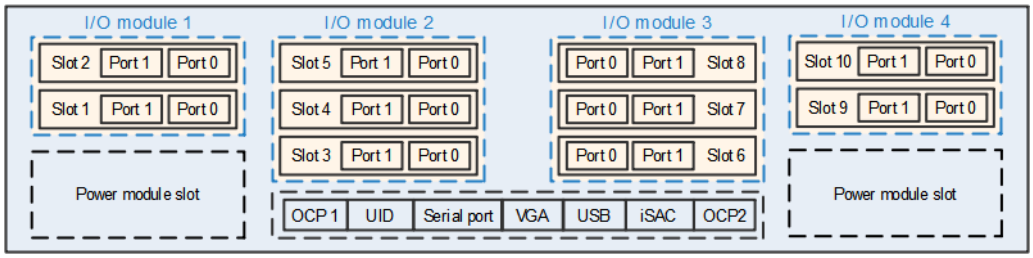
4.2 PCIe NIC

A PCIe NIC is a network adapter that provides PCIe ports. It is connected to the mainboard through a PCIe port.

The NCS6722A N4 server supports PCIe NICs to provide more network capabilities.

Figure 4-2 shows the IDs of ports that each PCIe NIC provides externally when slots 1 to 10 are all configured with PCIe NICs.

Figure 4-2 Typical PCIe NIC Configuration



Note

The above figure displays the ports in the Red Hat system. For example, if a standard PCIe NIC with two optical ports is installed in slot 5 of I/O module 2, port 0 of the PCIe NIC is displayed as ens5f0 and port 1 of the PCIe NIC is displayed as ens5f1 in the Red Hat system.

Chapter 5
I/O Expansion

Table of Contents

5.1 PCIe Card

You can install PCIe cards as required to expand system capabilities.

5.2 PCIe Slot Position

Figure 5-1 shows the PCIe slot positions on the NCS6722A N4 server.

Figure 5-1 PCIe Slots

1. I/O module 1
2. I/O module 2
3. I/O module 3
4. I/O module 4

The I/O modules can provide more PCIe slots through riser cards. For a description of the riser cards supported by each I/O module of the NCS6722A N4 server, refer to Table 5-1.

Table 5-1 Supported Riser Card Configurations

I/O Module	Riser Card	PCIe Interface	Quantity
I/O module 1	SR2PB	x16	1

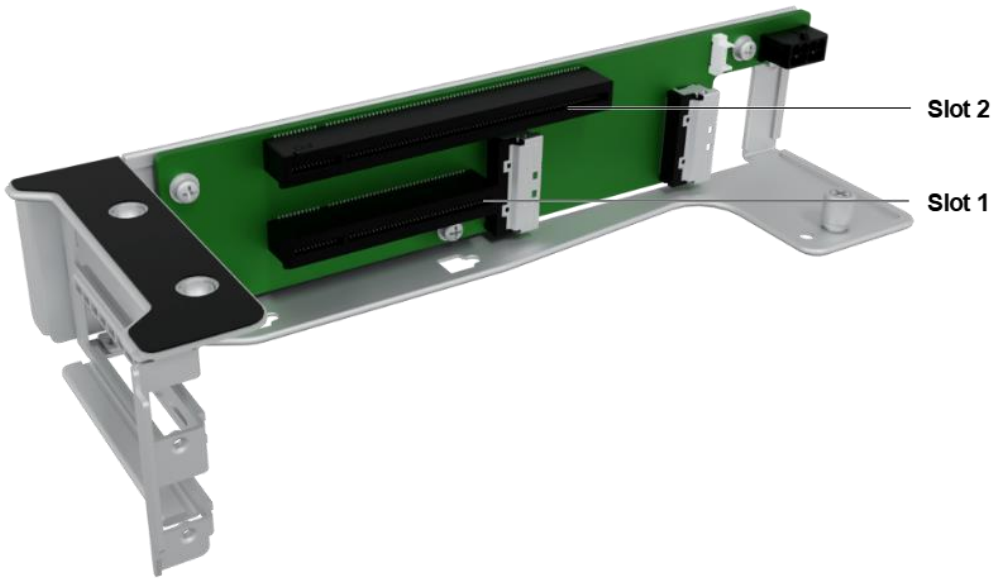
I/O Module	Riser Card	PCIe Interface	Quantity
		x8	1
I/O module 2	RC5305R3A	x16	1
		x8	2
	RC5305R2A	x16	2
	RC5305R2B	x16	2
I/O module 3	RC5305L3A	x16	1
		x8	2
	RC5305L2A	x16	2
	RC5305L2B	x16	2
	RC5305L2C	x16	2
I/O module 4	SR2PB	x16	1
		x8	1

The riser cards supported by each I/O module are as follows:

- I/O module 1

  Figure 5-2 shows an SR2PB riser card installed in I/O module 1.

Figure 5-2 SR2PB Riser Card Installed in I/O Module 1



- I/O module 2 → Figure 5-3 shows an RC5305R3A riser card installed in I/O module 2.

Figure 5-3 RC5305R3A Riser Card Installed in I/O Module 2

→ Figure 5-4 shows an RC5305R2A riser card installed in I/O module 2.

Figure 5-4 RC5305R2A Riser Card Installed in I/O Module 2

→ Figure 5-5 shows an RC5305R2B riser card installed in I/O module 2.

Figure 5-5 RC5305R2B Riser Card Installed in I/O Module 2

- I/O module 3 → Figure 5-6 shows an RC5305L3A riser card installed in I/O module 3.

Figure 5-6 RC5305L3A Riser Card Installed in I/O Module 3

→ Figure 5-7 shows an RC5305L2A riser card installed in I/O module 3.

Figure 5-7 RC5305L2A Riser Card Installed in I/O Module 3

→ Figure 5-8 shows an RC5305L2B riser card installed in I/O module 3.

Figure 5-8 RC5305L2B Riser Card Installed in I/O Module 3

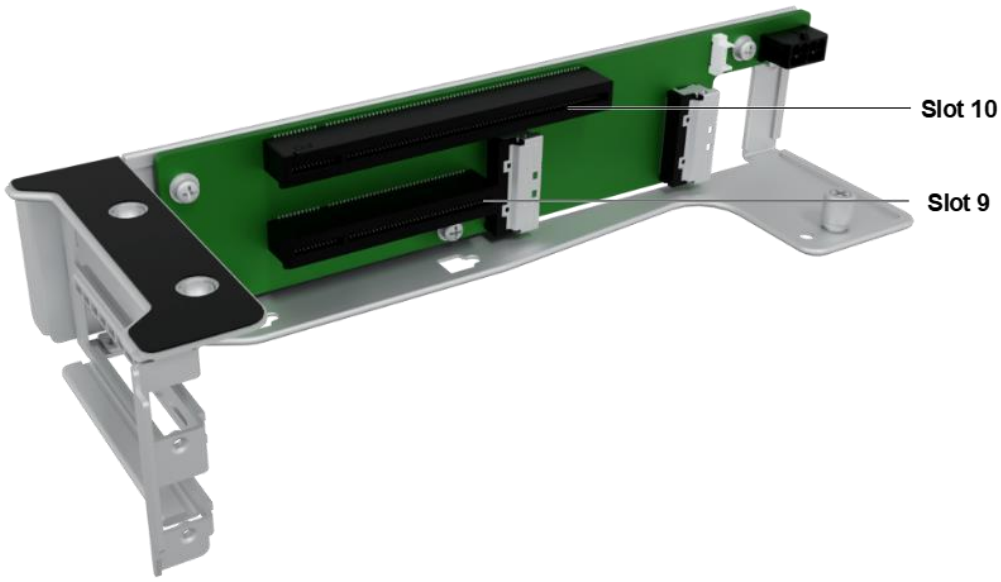
→ Figure 5-9 shows an RC5305L2C riser card installed in I/O module 3.

Figure 5-9 RC5305L2C Riser Card Installed in I/O Module 3

- I/O module 4

  Figure 5-10 shows an SR2PB riser card installed in I/O module 4.

  Figure 5-10 SR2PB Riser Card Installed in I/O Module 4



5.3 PCIe Slot Description

The PCIe slots of the NCS6722A N4 server are connected to the mainboard through cables. The association between the CPUs and PCIe slots depends on cable connections.

Note

It is recommended that Slot 1 to Slot 5 be connected to CPU 1 and Slot 6 to Slot 10 be connected to CPU 0.

The PCIe slots of the NCS6722A N4 server all support PCIe 5.0. For a description of the connector bandwidth and slot size, refer to Table 5-2.

Table 5-2 PCIe Slot Descriptions

PCIe Slot	Supported Bandwidth	Slot Size
Slot1	x8	Half height and half length
Slot2	x8/x16	Half height and half length
Slot3	• Two-slot RC5305R2A riser card: x8/x16 • Two-slot RC5305R2B riser card: unavailable • Three-slot RC5305R3A riser card: x8	Full height and half length
Slot4	• Two-slot RC5305R2A riser card: unavailable • Two-slot RC5305R2B riser card: x8/x16 • Three-slot RC5305R3A riser card: x8	Full height and full length

Slot5	● Two-slot RC5305R2A riser card: x8/x16	Full height and full length
PCIe Slot	**Supported Bandwidth**	**Slot Size**
	● Two-slot RC5305R2B riser card: x8/x16 ● Three-slot RC5305R3A riser card: x16	
Slot6	● Two-slot RC5305L2A riser card: x8/x16 ● Two-slot RC5305L2B riser card: unavailable ● Two-slot RC5305L2C riser card: x8/x16 ● Three-slot RC5305L3A riser card: x8	Full height and half length
Slot7	● Two-slot RC5305L2A riser card: x8/x16 ● Two-slot RC5305L2B riser card: x8/x16 ● Two-slot RC5305L2C riser card: x8/x16 ● Three-slot RC5305L3A riser card: x16	Full height and full length
Slot8	● Two-slot RC5305L2A riser card: unavailable ● Two-slot RC5305L2B riser card: x8/x16 ● Two-slot RC5305L2C riser card: unavailable ● Three-slot RC5305L3A riser card: x8	Full height and full length
Slot9	x8	Half height and half length
Slot10	x8/x16	Half height and half length

Note

The dimension descriptions of full height, half height, full length, and half length are as follows:

- Full height: not higher than 111.15 mm. ● Half height: not higher than 68.9 mm.
- Full length: between 254.00 mm and 312.00 mm.
- Half length: not longer than 167.65 mm.

Chapter 6
Power Module

Figure 6-1 shows the positions of the power modules in the NCS6722A N4 server.

Figure 6-1 Power Module Positions

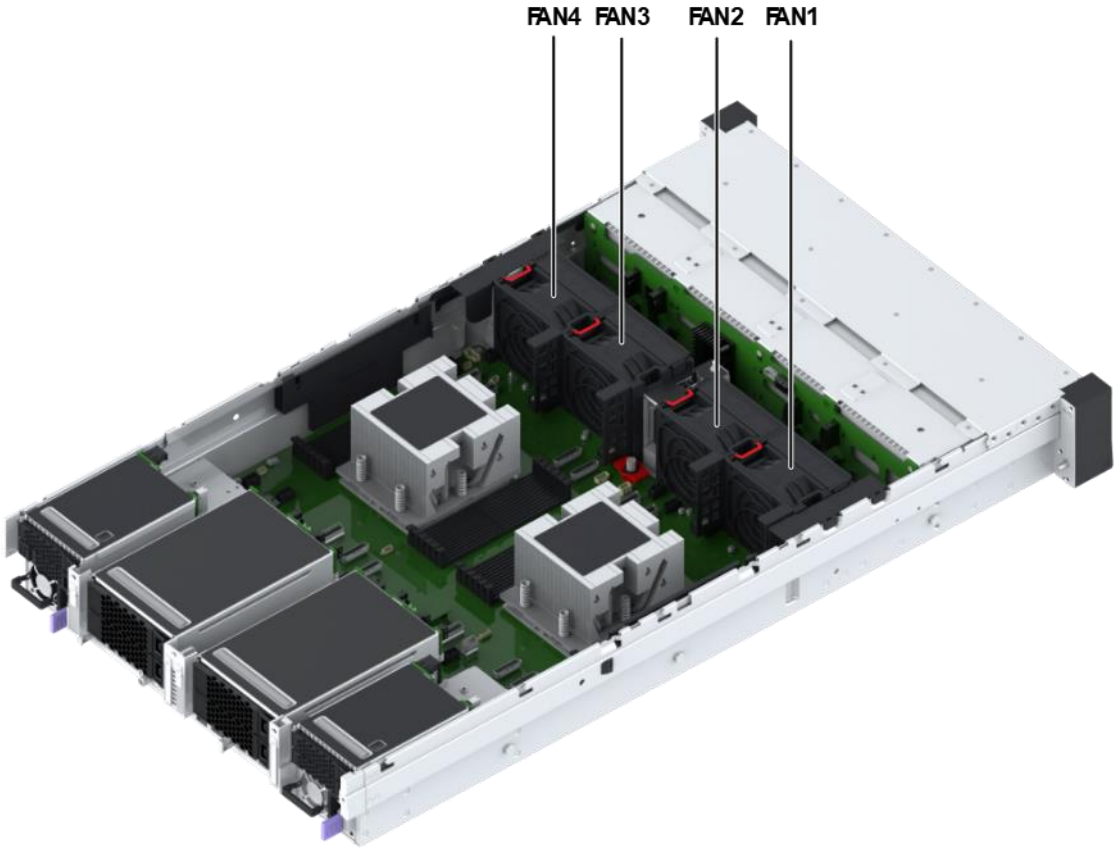
The power module configurations of the NCS6722A N4 server are described as follows:

- The server supports one or two power modules.
- The server supports AC or DC power modules and also supports the mix of them.
- Hot swapping is supported.
- If two power modules are configured, 1+1 redundancy is supported.
- The power modules installed on the same server must be of the same model.
- The power modules are protected against short circuits. The double-pole fuse is provided for a power module with dual input live wires.

Chapter 7
Fan Unit

Figure 7-1 shows the positions of the fan units on the NCS6722A N4 server.

Figure 7-1 Fan Unit Positions



The fan unit configurations of the NCS6722A N4 server are described as follows:

- The server supports four fan units: FAN1–FAN4.
- The server supports two fan specifications: 8038 and 8056.

Note

The fans installed in the same server must be of the same model and specification.

- The fan units support hot swapping.

- If a fan unit or a fan in a fan unit fails, other fan units or the other fan in the fan unit can still operate properly.

  Note

  If a fan fails, an alarm is raised on the Web portal of the BMC. It is recommended that the faulty fan be replaced in a timely manner.

- The fan speed is adjustable.

Chapter 8
Board

Table of Contents

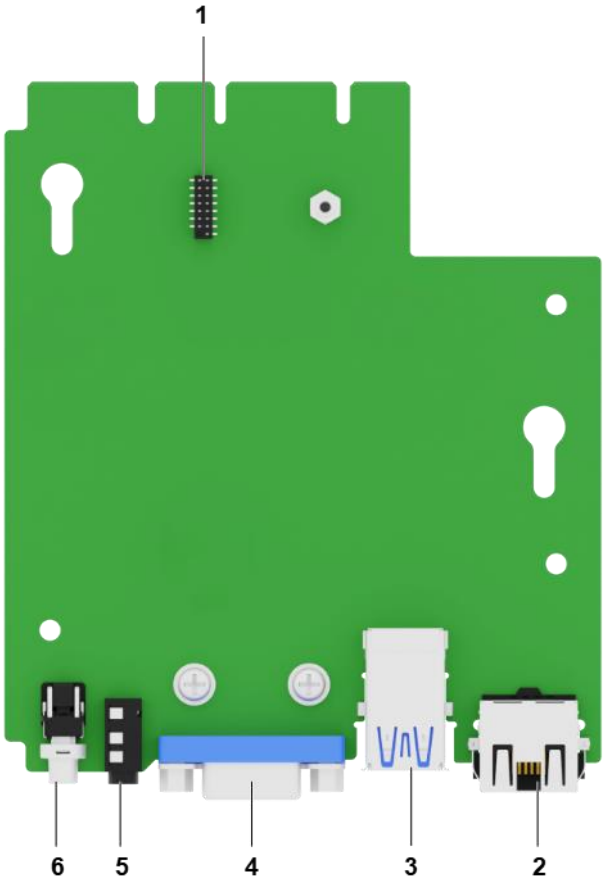
8.1 I/O Card

CPUs communicate with other devices through interfaces. Different devices have different devices, which are called I/O interfaces.

An I/O card is connected to the mainboard, and provides a network interface, VGA interface, and USB interfaces for external devices.

Figure 8-1 shows an I/O card of the NCS6722A N4 server.

Figure 8-1 I/O Card



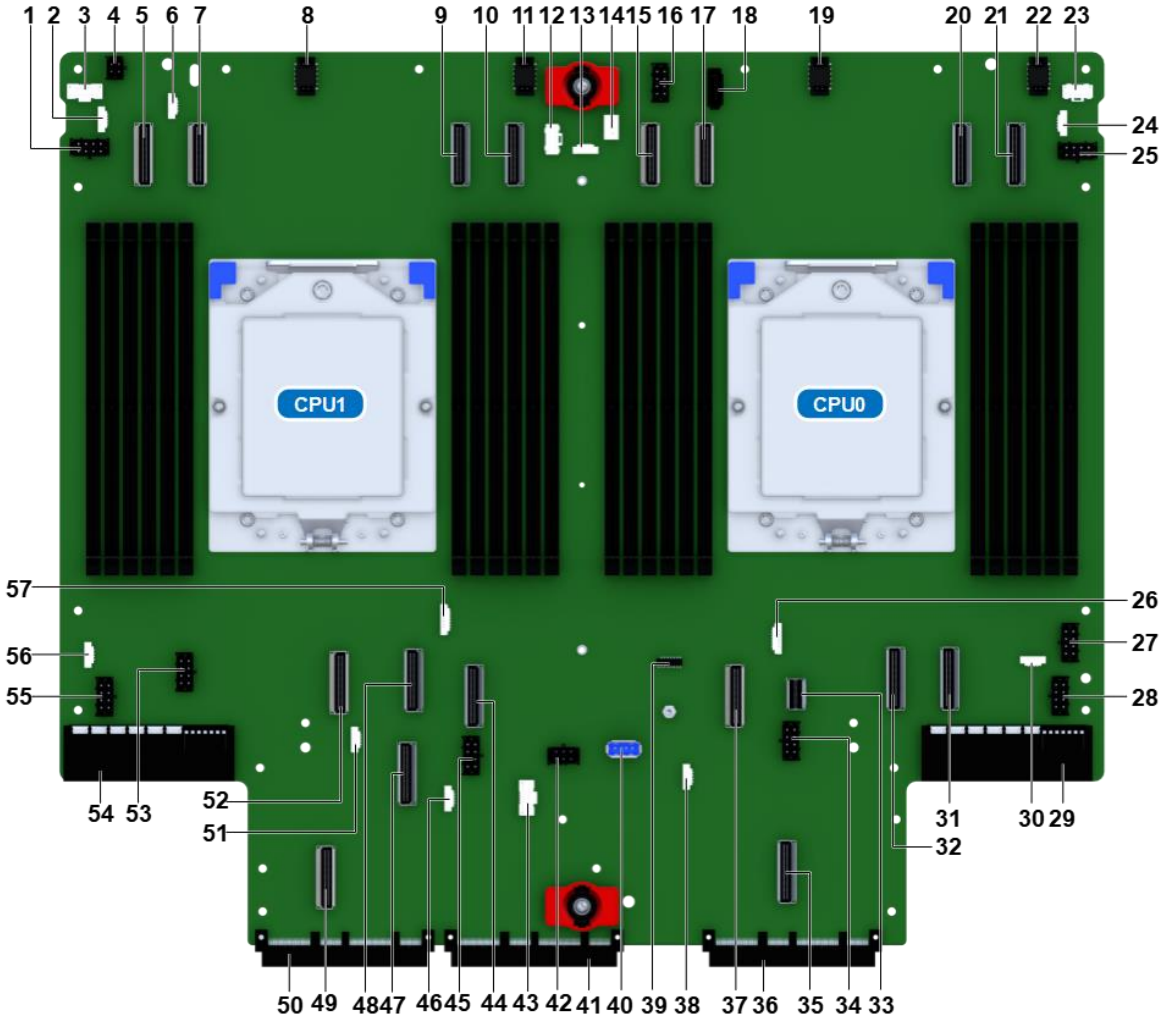
For a description of the interfaces on the I/O card of the NCS6722A N4 server, refer to Table 8-1. **Table 8-1 I/O Card Interface Descriptions**

No.	Interface	Silk Screen	Position Number
1	TPM card interface	TPM CARD	X2
2	BMC management network port	BMC_ETH	X4
3	USB 3.0 interface x 2	USB1/USB2	X6
4	VGA interface	VGA	X7
5	3.5 mm audio jack	COM	X3
6	UID button and indicator	UID	S1

8.2 Mainboard

Figure 8-2 shows the mainboard layout of the NCS6722A N4 server.

Figure 8-2 Mainboard Layout



For a description of the interfaces on the mainboard of the NCS6722A N4 server, refer to Table 8-2.

Table 8-2 Mainboard Interface Descriptions

No.	Item	Silk Screen	Position Number
1	Front-disk backplane power interface	PWR3	X30
2	Front-disk backplane I2C interface	F I2C 4	X40
3	Right-lug interfaces	VGA/USB2.0/OCPDEBUG	X42
4	Front OCP card power interface	FRONT OCP PWR	X24
5	PCIe x8 interface 8	CPU1 HSIO 8	X21

6	Front/middle-disk backplane I2C interface	F/M I2C 3	X36
7	PCIe x8 interface 7	CPU1 HSIO 7	X49
8	Fan unit interface 4	FAN4	X16

No.	Item	Silk Screen	Position Number
9	PCIe x8 interface 6	CPU1 HSIO 6	X48
10	PCIe x8 interface 5	CPU1 HSIO 5	X51
11	Fan unit interface 3	FAN3	X15
12	Front-disk backplane expansion interface	EXPANDER	X31
13	Front-disk backplane I2C interface	F I2C 2	X34
14	Intrusion detection switch interface	INTRUDER	X59
15	PCIe x8 interface 4	CPU0 HSIO 4	X8
16	Front-disk backplane power interface	PWR2	X39
17	PCIe x8 interface 3	CPU0 HSIO 3	X19
18	Right-lug USB 3.0 signal interface	USB1	X37
19	Fan unit interface 2	FAN2	X13
20	PCIe x8 interface 2	CPU0 HSIO 2	X7
21	PCIe x8 interface 1	CPU0 HSIO 1	X12
22	Fan unit interface 1	FAN1	X14
23	Left-lug interfaces	BTN/LED	X61
24	Front-disk backplane I2C interface	F I2C 1	X32
25	Front-disk backplane power interface	PWR1	X35
26	OCP NIC fan unit interface 2	FAN 6	X17

27	Power interface for I/O module 4	PWR 9	X23
28	Power interface for I/O module 4	PWR 8	X20
29	PSU interface 2	PSU 2	X24A2
30	I2C interface for I/O module 4	R I2C 8	X41
31	PCIe x8 interface 14	CPU0 HSIO14	X1
32	PCIe x8 interface 13	CPU0 HSIO13	X3
33	PCIe x4 interface	SLIMSAS	X55
34	Power interface for I/O module 3	PWR7	X4
35	OCP NIC 3.0 PCIe x8 interface 2	OCP0 HSIO	X9
36	OCP NIC 3.0 interface 0	OCP 0	X1A8
No.	**Item**	**Silk Screen**	**Position Number**
37	PCIe x8 interface 12	CPU0 HSIO 12	X2
38	I2C interface for I/O module 3	R I2C 7	X38
39	TPM card interface	TPM CARD	X47
40	Built-in USB 3.0 interface	USB2(3.0)	X64
41	I/O card interface	IO CARD	X27
42	Smart NIC power interface	SMART NIC PWR	X22
43	Smart NIC NCSI interface	SMART NIC NCSI	X29
44	PCIe x8 interface 11	CPU1 HSIO 11	X54
45	Power interface for I/O module 2	PWR6	X52
46	I2C interface for I/O module 2	R I2C 6	X33
47	Front OCP NCSI interface	FRONT OCP NCSI	X6
48	PCIe x8 interface 10	CPU1 HSIO 10	X53

49	OCP NIC 3.0 PCIe x8 interface 1	OCP1 HSIO	X10
50	OCP NIC 3.0 interface 1	OCP1	X1A9
51	Leakage detection cable interface	WEEP DETECT	X60
52	PCIe x8 interface 9	CPU1 HSIO 9	X5
53	Power interface for I/O module 1	PWR5	X25
54	PSU interface 1	PSU 1	X21A2
55	Power interface for I/O module 1	PWR4	X26
56	I2C interface for I/O module 1	R I2C 5	X28
57	OCP NIC fan unit interface 1	FAN 5	X18

8.3 Hard Disk Backplane

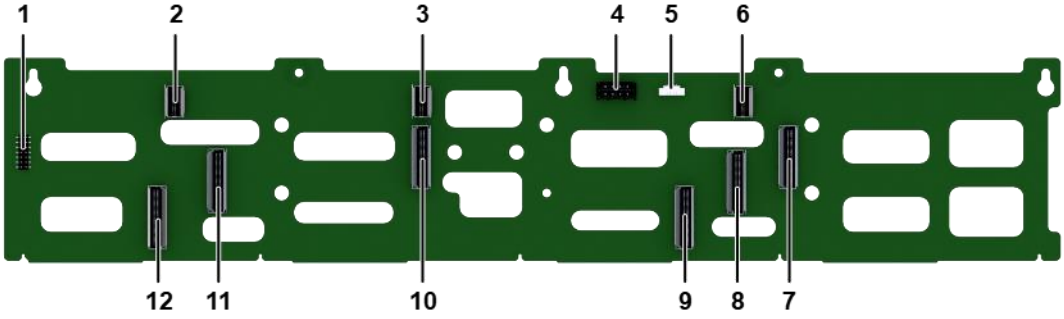
Front-Disk Backplane

The NCS6722A N4 server supports the following types of front-disk backplanes:

- 12 x 3.5" disk backplane

  Figure 8-3 shows a 12 x 3.5" disk backplane.

  Figure 8-3 12 x 3.5" Disk Backplane

  For a description of the interfaces on the 12 x 3.5" disk backplane, refer to Table 8-3.

  Table 8-3 Interfaces on the 12 x 3.5" Disk Backplane

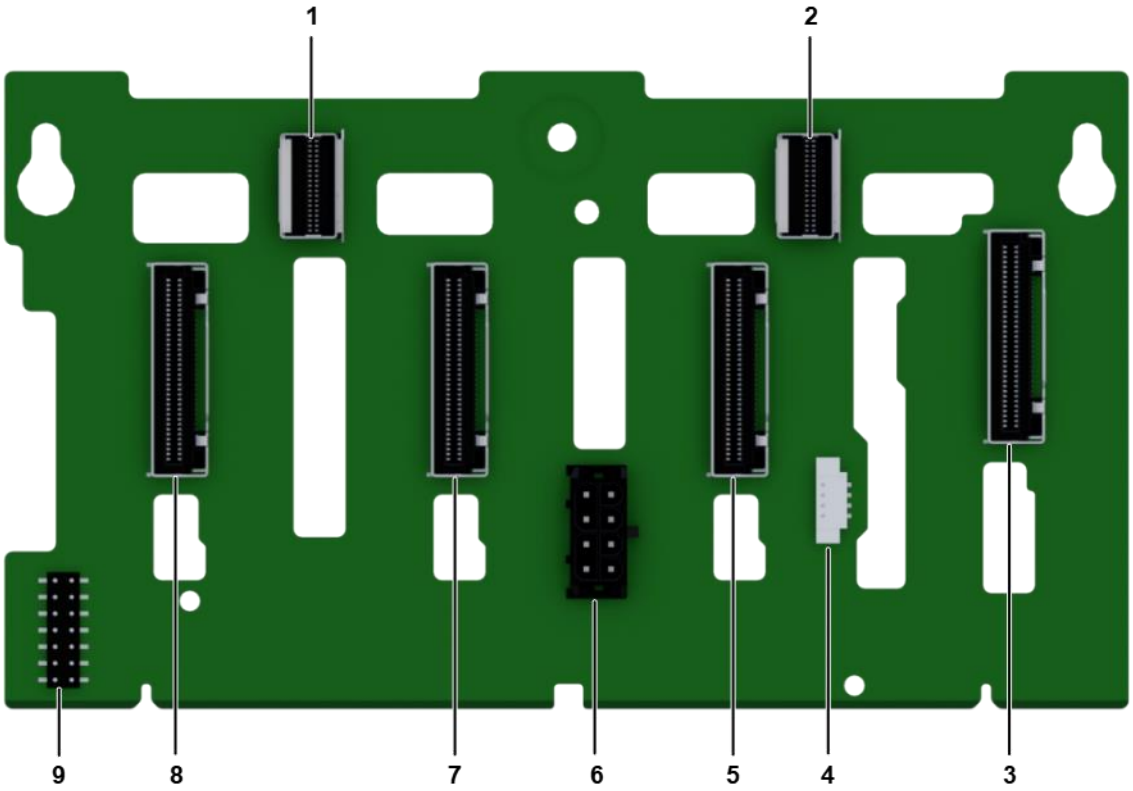
No.	Interface Name	Silk Screen	Position Number
1	JTAG programming interface of the EPLD chip	EPLD JTAG	X200A6
2	PCIe x4 interface 3	SAS3	X2

3	PCIe x4 interface 2	SAS2	X7
4	Power cable interface	PWR1	X4
5	Out-of-band communication interface	I2C 1	X1
6	PCIe x4 interface 1	SAS1	X6
7	PCIe x8 interface 1	HSIO1	X3
8	PCIe x8 interface 2	HSIO2	X9
9	PCIe x8 interface 3	HSIO3	X8
10	PCIe x8 interface 4	HSIO4	X10
11	PCIe x8 interface 5	HSIO5	X11
12	PCIe x8 interface 6	HSIO6	X12

- 8 x 2.5" disk backplane

  Figure 8-4 shows an 8 x 2.5" disk backplane.

  Figure 8-4 8 x 2.5" Disk Backplane



For a description of the interfaces on the 8 x 2.5" disk backplane, refer to Table 8-4.

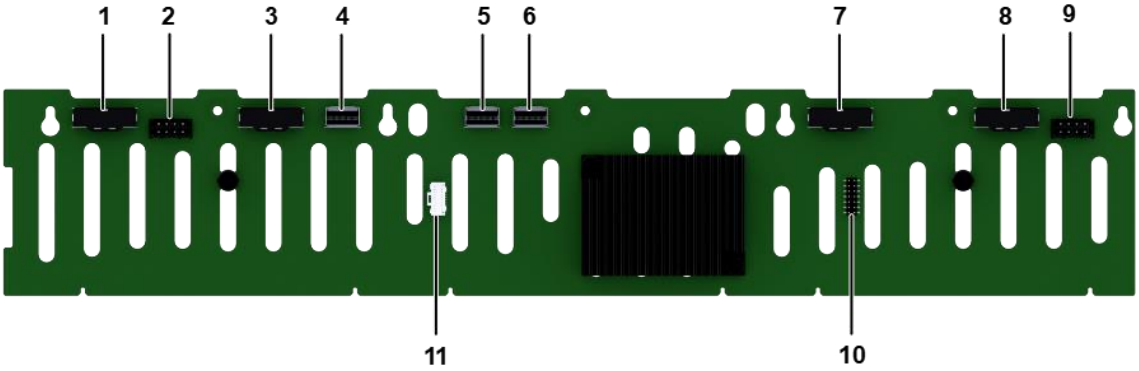
Table 8-4 Interfaces on the 8 x 2.5" Disk Backplane

No.	Interface Name	Silk Screen	Position Number
1	PCIe x4 interface	SAS 2	X15
2	PCIe x4 interface	SAS 1	X14
3	PCIe x8 interface	HSIO 1	X10
4	Out-of-band communication interface	I2C 1	X17
5	PCIe x8 interface	HSIO 2	X11
6	Power cable interface	PWR 1	X16
7	PCIe x8 interface	HSIO 3	X12
8	PCIe x8 interface	HSIO 4	X13
9	JTAG programming interface of the EPLD chip	CPLD JTAG	X305

- 25 x 2.5" disk backplane

  Figure 8-5 shows a 25 x 2.5" disk backplane.

Figure 8-5 25 x 2.5" Disk Backplane



For a description of the interfaces on the 25 x 2.5" disk backplane, refer to Table 8-5.

Table 8-5 Interfaces on the 25 x 2.5" Disk Backplane

No.	Interface Name	Silk Screen	Position Number
1	PCIe x8 interface	SLIMLINE 4	X34
2	Power cable interface	PWR 2	X5
3	PCIe x8 interface	SLIMLINE 3	X33

4	PCIe x4 interface	SLIMSAS 3	X37
5	PCIe x4 interface	SLIMSAS 2	X35
6	PCIe x4 interface	SLIMSAS 1	X36
7	PCIe x8 interface	SLIMLINE 2	X32
8	PCIe x8 interface	SLIMLINE 1	X31
9	Power cable interface	PWR 1	X4
10	JTAG programming interface of the EPLD chip	-	X30A11
11	Out-of-band communication interface	I2C/SPI/UART	X38

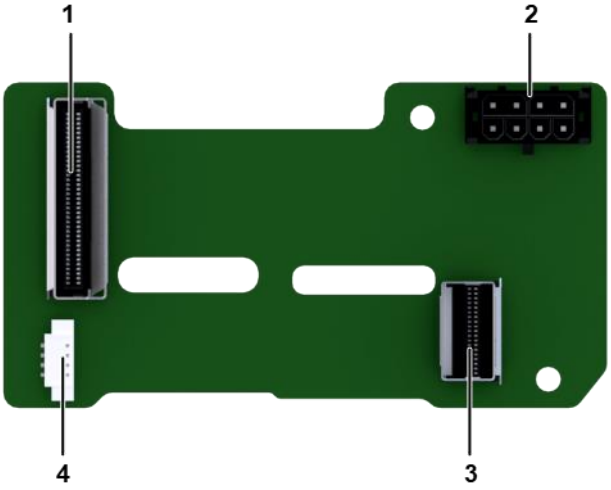
Rear-Disk Backplane

The NCS6722A N4 server supports the following types of rear-disk backplanes:

- 2 x 2.5" disk backplane 1

  This type of rear-disk backplane can be installed in I/O module 1 or 4. Figure 8-6 shows 2 x 2.5" disk backplane 1.

Figure 8-6 2 x 2.5" Disk Backplane 1



For a description of the interfaces on 2 x 2.5" disk backplane 1, refer to Table 8-6.

Table 8-6 Interfaces on 2 x 2.5" Disk Backplane 1

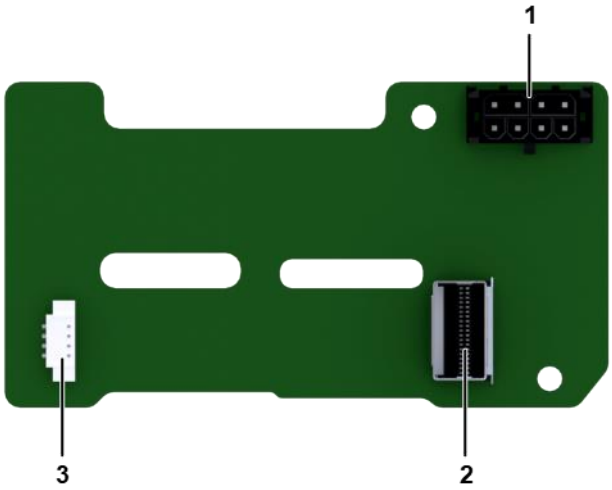
No.	Interface Name	Silk Screen	Position Number
1	PCIe x8 interface	HSIO	X3

2	Power cable interface	PWR	X4
3	PCIe x4 interface	SAS	X2
4	Out-of-band communication interface	I2C	X1

- 2 x 2.5" disk backplane 2

  This type of rear-disk backplane can be installed in I/O module 1 or 4. Figure 8-7 shows 2 x 2.5" disk backplane 2.

Figure 8-7 2 x 2.5" Disk Backplane 2



For a description of the interfaces on 2 x 2.5" disk backplane 2, refer to Table 8-7.

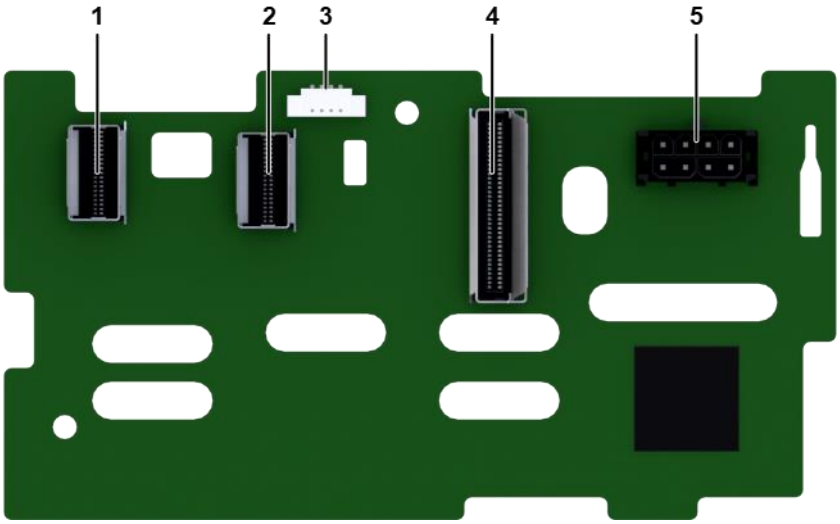
Table 8-7 Interfaces on 2 x 2.5" Disk Backplane 2

No.	Interface Name	Silk Screen	Position Number
1	Power cable interface	PWR	X4
2	PCIe x4 interface	PCIE	X2
3	Out-of-band management cable interface	I2C	X1

- 2 x 3.5" disk backplane

  This type of rear-disk backplane can be installed in I/O module 2 or 3. Figure 8-8 shows a 2 x 3.5" disk backplane.

Figure 8-8 2 x 3.5" Disk Backplane



For a description of the interfaces on the 2 x 3.5" disk backplane, refer to Table 8-8.

Table 8-8 Interfaces on the 2 x 3.5" Disk Backplane

No.	Interface Name	Silk Screen	Position Number
1	PCIe x4 interface 1	SAS1	X2
2	PCIe x4 interface 2	SAS2	X7
3	Out-of-band communication interface	I2C	X1
4	PCIe x8 interface	HSIO	X3
5	Power cable interface	PWR	X4

Chapter 9
Anti-Intrusion Sensor

The functions of the anti-intrusion sensor are as follows:

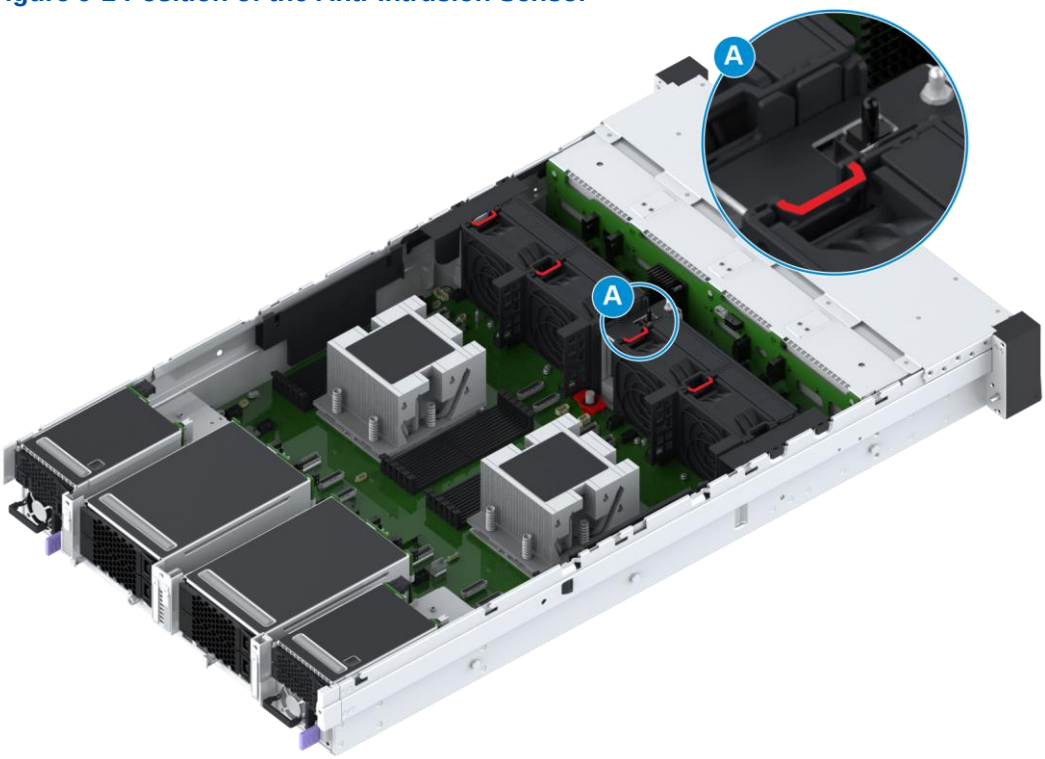
- Triggers an alarm to indicate that the cover of the server is not installed or is not installed properly.
- Ensures good heat dissipation of related components and proper operation of the server if the cover of the server is not installed or is not installed properly.

When the server is in power-on status, once the anti-intrusion sensor detects that the cover is open, it triggers the following actions:

- The BMC reports a system intrusion alarm, indicating that the cover of the server is not installed or is not installed properly.
- The fans of the server operate at the maximum speed to ensure good heat dissipation.

Figure 9-1 shows the position of the anti-intrusion sensor in the NCS6722A N4 server.

Figure 9-1 Position of the Anti-Intrusion Sensor



Glossary

AC

- Alternating Current

ADDDC

- Adaptive Double Device Data Correction

BMC

- Baseboard Management Controller

CAS

- Column Address Strobe

CPU

- Central Processing Unit

CRC

- Cyclic Redundancy Check

DC

- Direct Current

DDR

- Double Data Rate

DIMM

- Dual Inline Memory Module

DRAM

- Dynamic Random Access Memory

ECC

- Error Check and Correction

ECS

- Error Check and Scrub

EPLD

- Erasable Programmable Logic Device

HBM

- High Bandwidth Memory

I/O

- Input/Output

JTAG

- Joint Test Action Group

NIC

- Network Interface Card

NVMe

- Non-Volatile Memory Express

OCP

- Open Computer Project

PCIe

- Peripheral Component Interconnect Express

PCLS

- Partial Cache Line Sparing

PPR

- Post-Package Repair

RAID

- Redundant Array of Independent Disks

RDIMM

- Registered Dual Inline Memory Module

SAS

- Serial Attached SCSI

SATA

- Serial ATA

SDDC

- Single Device Data Correction

SPD

- Serial Presence Detect

SSD

- Solid State Drive

TPM

- Trusted Platform Module

UID

- Unit Identification Light

USB

- Universal Serial Bus

VGA

- Video Graphic Adapter