NETAŞ NCS6782G N4

Rack Server

Hardware Description (Including Liquid Cooling)

Version: R1.9

LEGAL INFORMATION

Revision History

Revision No.	Revision Date	Revision Reason
R1.9	2025-12-11	Updated "1.2 Logical Structure".
R1.8	2025-08-11	Updated "5 Network".
R1.7	2025-05-15	Updated "7 PSU".
R1.6	2025-03-11	Updated "10.1 Power Cables".
R1.5	2025-01-10	● Added "1 Product Structure". ● Updated "5.1 OCP NIC".

Revision No.	Revision Date	Revision Reason
		● Updated "5.2 PCIe NIC".
R1.4	2024-12-10	Updated "4.1 OCP NIC".
R1.3	2024-11-26	Updated "4.2 PCIe NIC".
R1.2	2024-09-30	Updated "4.2 PCIe NIC".
R1.1	2024-07-29	● Updated "1 Processor". ● Added "9 Cables".
R1.0	2024-07-12	First edition.

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Contents

About This Manual

Purpose

This manual describes the hardware configurations of the NCS6782G N4 rack server so that you can learn about detailed information about the server's components including the processors, DIMMs, storage, network, I/O expansion, PSUs, 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, Product Structure	Describes the physical structure and logical structure of the NCS6782G N4 server.
Chapter 2, Processor	Describes the positions of processors in the NCS6782G N4 server and the recommended CPU configurations.
Chapter 3, Memory	Describes the memory slots in the NCS6782G N4 server and the supported memory configurations.
Chapter 4, Storage	Describes the hard disk slots in the NCS6782G N4 server and the supported hard disk configurations.
Chapter 5, Network	Describes the OCP NIC and PCIe NIC configurations in the NCS6782G N4 server.
Chapter 6, I/O Expansion	Describes the PCIe slots in the NCS6782G N4 server and the supported PCIe card configurations.
Chapter 7, PSU	Describes the positions of PSUs in the NCS6782G N4 server and the supported PSU configurations.
Chapter 8, Fan Unit	Describes the positions of fan units in the NCS6782G N4 server and the supported fan unit configurations.

Chapter 9, Board	Describes the I/O card, mainboard, and disk backplane configurations in the NCS6782G N4 server.
Chapter 10, Cables	Describes the functions, structures, and usage of cables used by the NCS6782G N4.

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
Product Structure

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1.1 Physical Structure

1.1.1 Air Cooling–Based Physical Structure

Figure 1-1 shows the internal components of the air-cooled NCS6782G N4 server.

Figure 1-1 Internal Structure (in Air Cooling Mode)

No.	Component	No.	Component
1	Front hard disk	2	Front hard disk backplane
3	Disk backplane adapter	4	Middle backplane
5	GPU module	6	Chassis

No.	Component	No.	Component
7	Fan unit	8	Fan backplane
9	CPU module	-	-

1.1.2 Liquid Cooling–Based Physical Structure

Figure 1-2 shows the internal components of the liquid-cooled NCS6782G N4 server.

Figure 1-2 Internal Structure (in Liquid Cooling Mode)

No.	Component	No.	Component
1	Front hard disk	2	Front hard disk backplane
3	Disk backplane adapter	4	Middle backplane
5	GPU module (liquid-cooled)	6	Chassis
7	Fan unit	8	Fan backplane
9	CPU module (liquid-cooled)	-	-

1.2 Logical Structure

1.2.1 Mainboard

Figure 1-3 shows the logical structure of the NCS6782G N4 server mainboard.

Figure 1-3 Logic Structure of the Mainboard
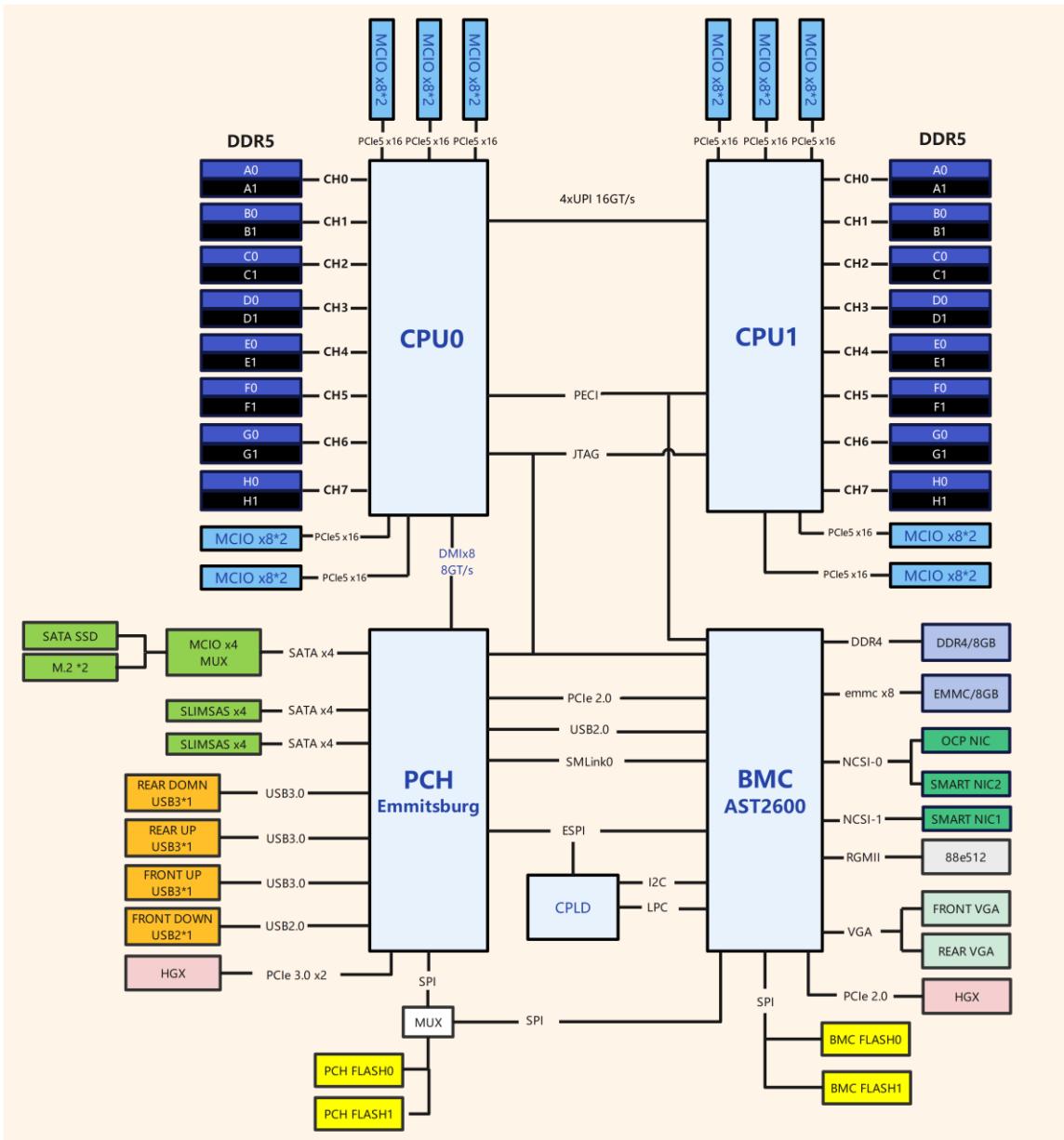
For a description of the modules of the NCS6782G N4 server mainboard, refer to Table 1-1.

Table 1-1 Module Descriptions

Module	Description
CPU	As the computing and control core of the server, the CPU is used for processing information and running programs. The NCS6782G N4 supports a maximum of two CPUs, which are interconnected through four UPI links, with a maximum transmission rate of 16 GT/s.
BMC	Used for upgrading server firmware and viewing device information when the server is not powered on.

Module	Description
PCH	Southbridge chipset on the mainboard of the server, on which SATA, PCIe, and USB interfaces can be integrated. The NCS6782G N4 uses the Emmitsburg chipset.
DDR5	Used for storing computational data in the CPUs and the data exchanged with external storage devices such as hard disks. The NCS6782G N4 provides thirty-two DDR5 memory slots.
USB	Exchanges data between the server and external devices. The NCS6782G N4 server provides one USB 2.0 interface and three USB 3.0 interfaces.
SATA	Hard disk interface. The NCS6782G N4 provides three SATA 3.0 interfaces.
MCIO	High-speed signal connector, which connects to the hard disk backplane and switch board.
CPLD	Used for server power management, system reset and initialization, and hardware logic control.
OCP	Used to install OCP 3.0 NICs and provides GE, 10 GE, 25 GE, and 100 GE interfaces.
VGA	Used to connect a display. The NCS6782G N4 provides two VGA interfaces.

1.2.2 Switch Board

With a PCIe switch board, the NCS6782G N4 server can provide a certain number of standard PCIe card slots to expand system functions.

The switch boards of the NCS6782G N4 server include the following:

- Dual-uplink switch board

  Figure 1-4 shows the logical structure of a dual-uplink switch board.

Figure 1-4 Logical Architecture of the Dual-Uplink Switch Board
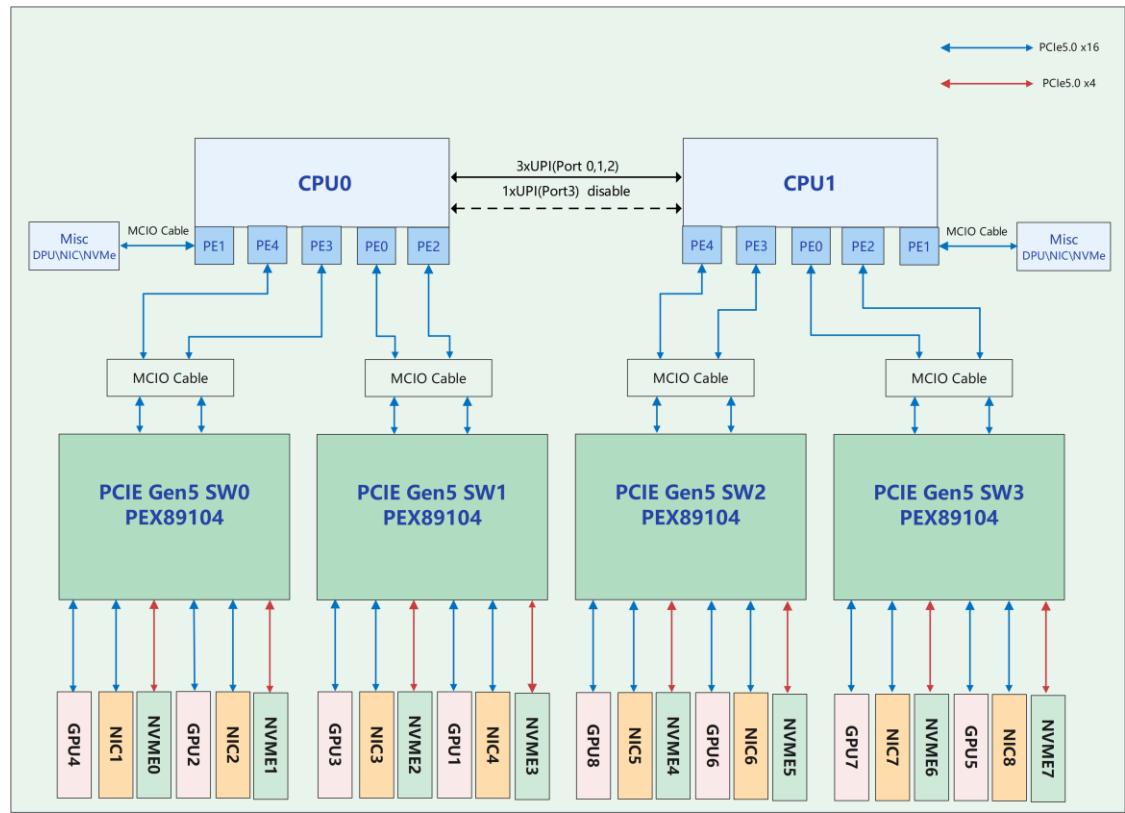
For the relationships between the PCIe devices that can be connected to the dual-uplink switch board and the connectors, refer to Table 1-2.

Table 1-2 Relationships Between PCIe Devices and Connectors—Dual-Uplink Switch Board

PCIe Device	Connector Position ID on the Switch Board	Connector Position ID on the Mainboard
Switch1: ➔ GPU1, GPU3 ➔ NIC3, NIC4 ➔ NVME2, NVME3	X56	X56
	X36	X36
	X41	X41
	X44	X44
Switch0: ➔ GPU2, GPU4 ➔ NIC1, NIC2 ➔ NVME0, NVME1	X14	X14
	X48	X48
	X47	X47
	X8	X8
Switch3: ➔ GPU5, GPU7	X58	X58
	X28	X28

PCIe Device	Connector Position ID on the Switch Board	Connector Position ID on the Mainboard
➔ NIC7, NIC8 ➔ NVME6, NVME7	X53	X53
	X54	X54
Switch2: ➔ GPU6, GPU8 ➔ NIC5, NIC6 ➔ NVME4, NVME5	X50	X50
	X49	X49
	X13	X13
	X18	X18

● Single-uplink switch board

Figure 1-5 shows the logical structure of a single-uplink switch board.

Figure 1-5 Logical Architecture of a Single-Uplink Switch Board
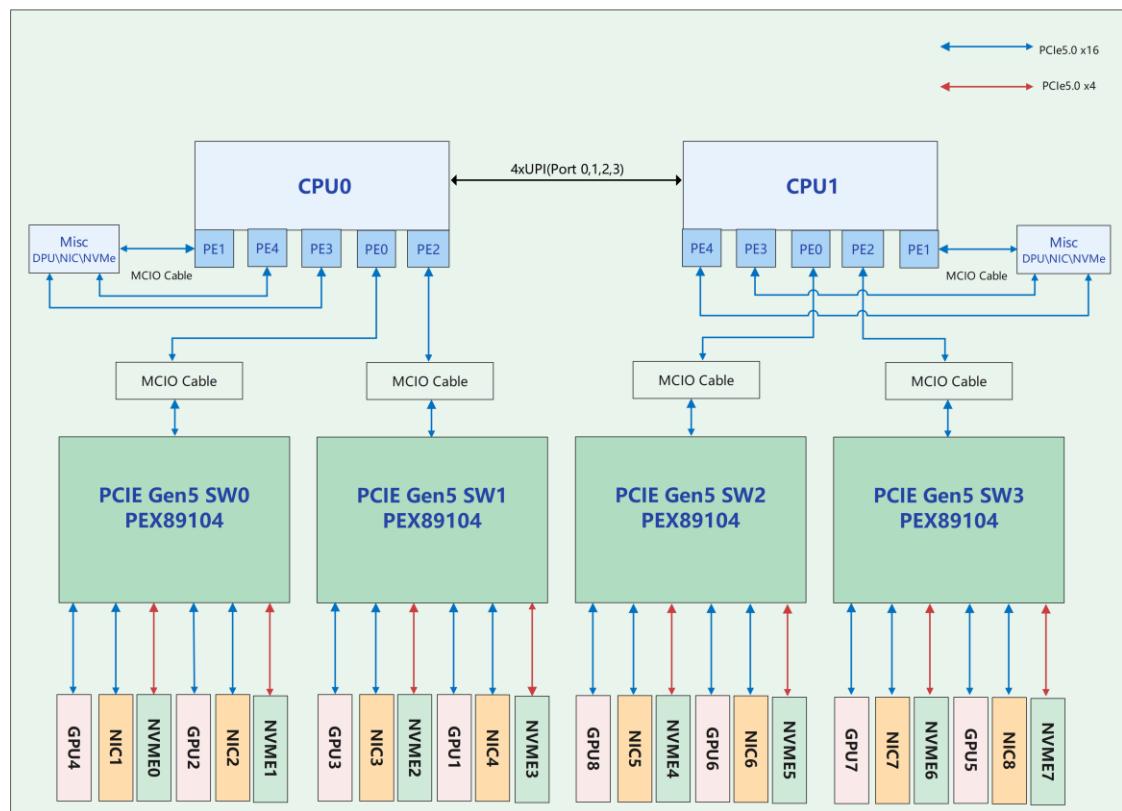
For the relationships between the PCIe devices that can be connected to a single uplink switch board and the connectors, refer to Table 1-3.

Table 1-3 Correspondence Between PCIe Devices and Connectors—Single-Uplink Switch Board

PCIe Device	Connector Position ID on the Switch Board	Connector Position ID on the Mainboard
Switch3: ➔ GPU5, GPU7 ➔ NIC7, NIC8 ➔ NVME6, NVME7	X53	X53
	X54	X54
Switch0: ➔ GPU2, GPU4 ➔ NIC1, NIC2 ➔ NVME0, NVME1	X14	X56
	X48	X36
Switch2: ➔ GPU6, GPU8 ➔ NIC5, NIC6 ➔ NVME4, NVME5	X50	X58
	X49	X28
Switc12: ➔ GPU3, GPU1 ➔ NIC3, NIC4 ➔ NVME2, NVME3	X41	X41
	X44	X44

Chapter 2
Processor

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The NCS6782G N4 server is a GPU server intended for AI service scenarios such as large-scale training, speech recognition, image classification, and machine translation.

The processors of the NCS6782G N4 server include GPUs and CPUs.

2.1 GPU

GPUs are located in the GPU module in the upper part of the NCS6782G N4 server, and used for image processing and parallel computing. For tasks that require a large amount of computing, such as deep learning and big data analytics, the GPU module can provide powerful computing capabilities.

The NCS6782G N4 server supports both air cooling and liquid cooling.

- Figure 2-1 shows the internal components of the GPU module when the server uses air cooling.

Figure 2-1 Internal Structure of the GPU Module in Air Cooling Mode
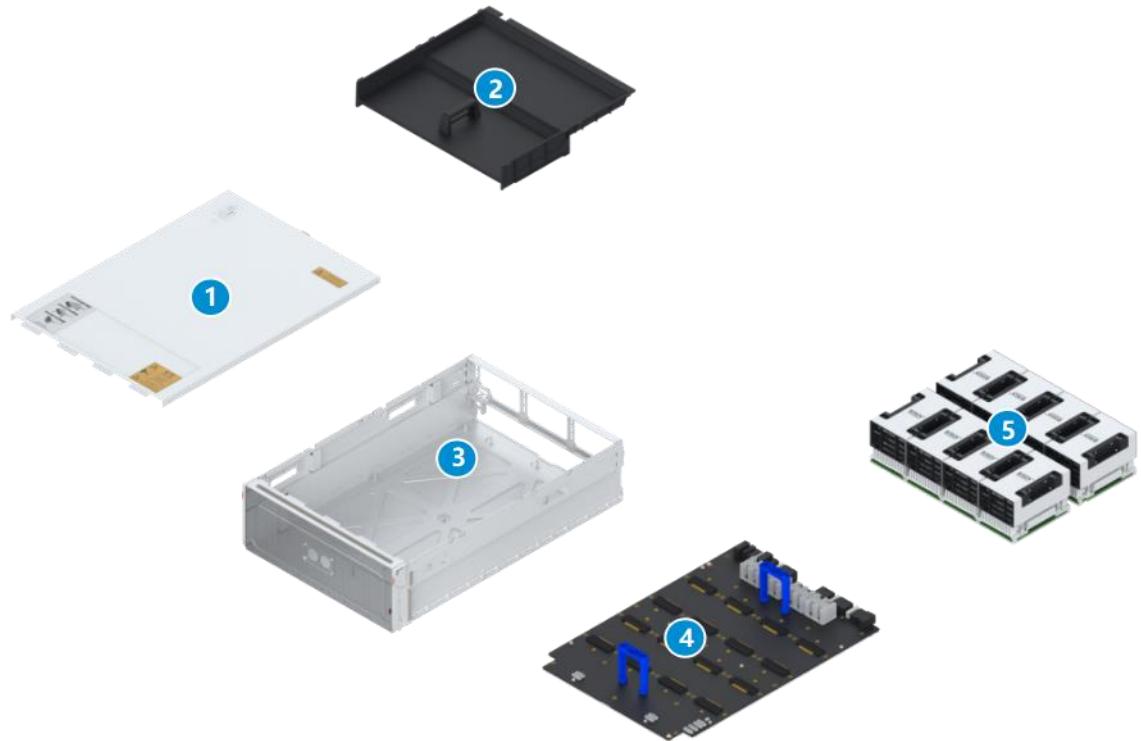
No.	Component	No.	Component
1	Upper cover of the GPU module	2	Air baffle for air cooling
3	GPU chassis	4	Universal Baseboard (UBB)
5	Air-cooled GPU module	-	

● Figure 2-2 shows the internal components of the GPU module when the server uses liquid cooling.

Figure 2-2 Internal Structure of the GPU Module in Liquid Cooling Mode
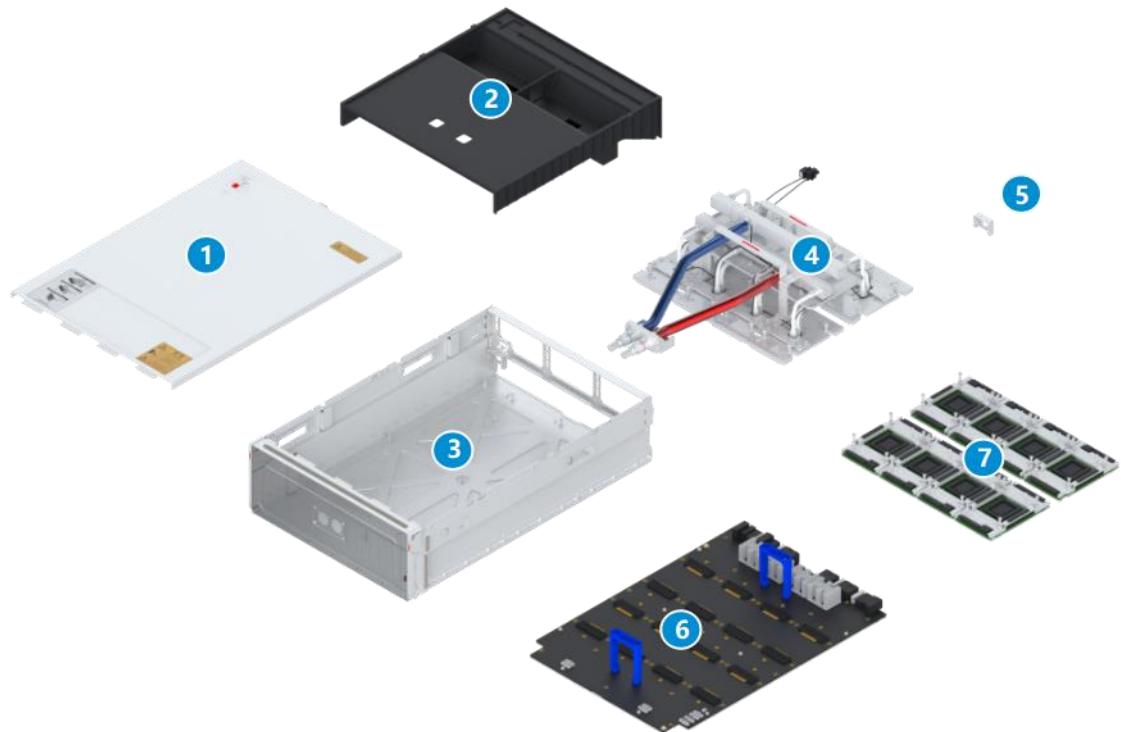
No.	Component	No.	Component
1	Upper cover of the GPU module	2	Air baffle for liquid cooling
3	GPU chassis	4	Liquid cold plate for GPUs
5	Holder for the leak detection cable connector	6	Universal Baseboard (UBB)
7	Liquid-cooled GPU module	-	

2.2 CPU

CPUs are located in the CPU module in the lower part of the NCS6782G N4 server. The CPU module uses a dual-CPU design, supporting Intel$^{®}$ Xeon$^{®}$ Scalable processors.

The NCS6782G N4 server supports both air cooling and liquid cooling.

- Figure 2-3 shows the positions of the CPUs in the CPU module when the server uses air cooling.

Figure 2-3 Positions for CPUs in Air Cooling Mode
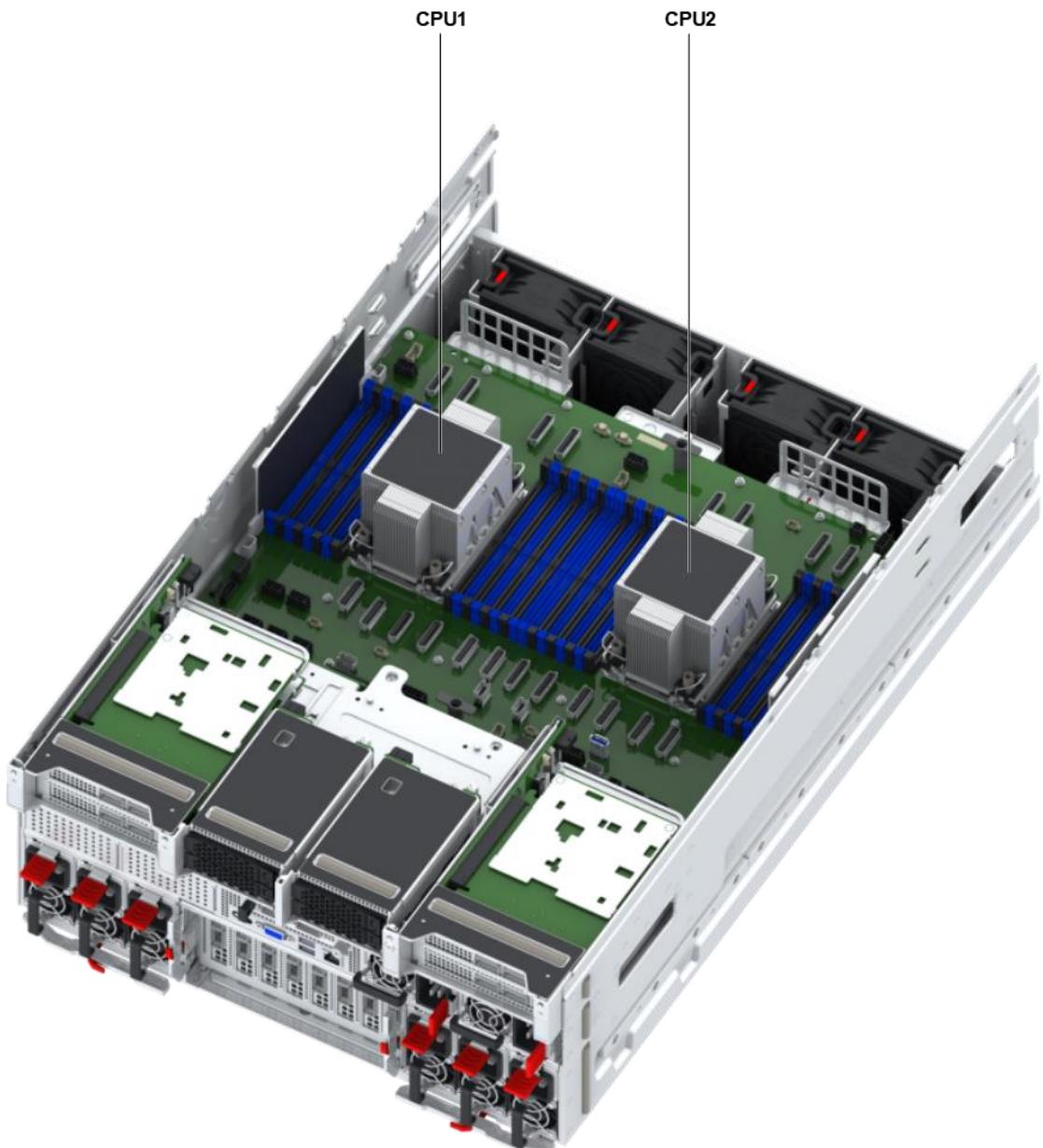
- Figure 2-4 shows the positions of the CPUs in the CPU module when the server uses liquid cooling.

Figure 2-4 Positions for CPUs in Liquid Cooling Mode
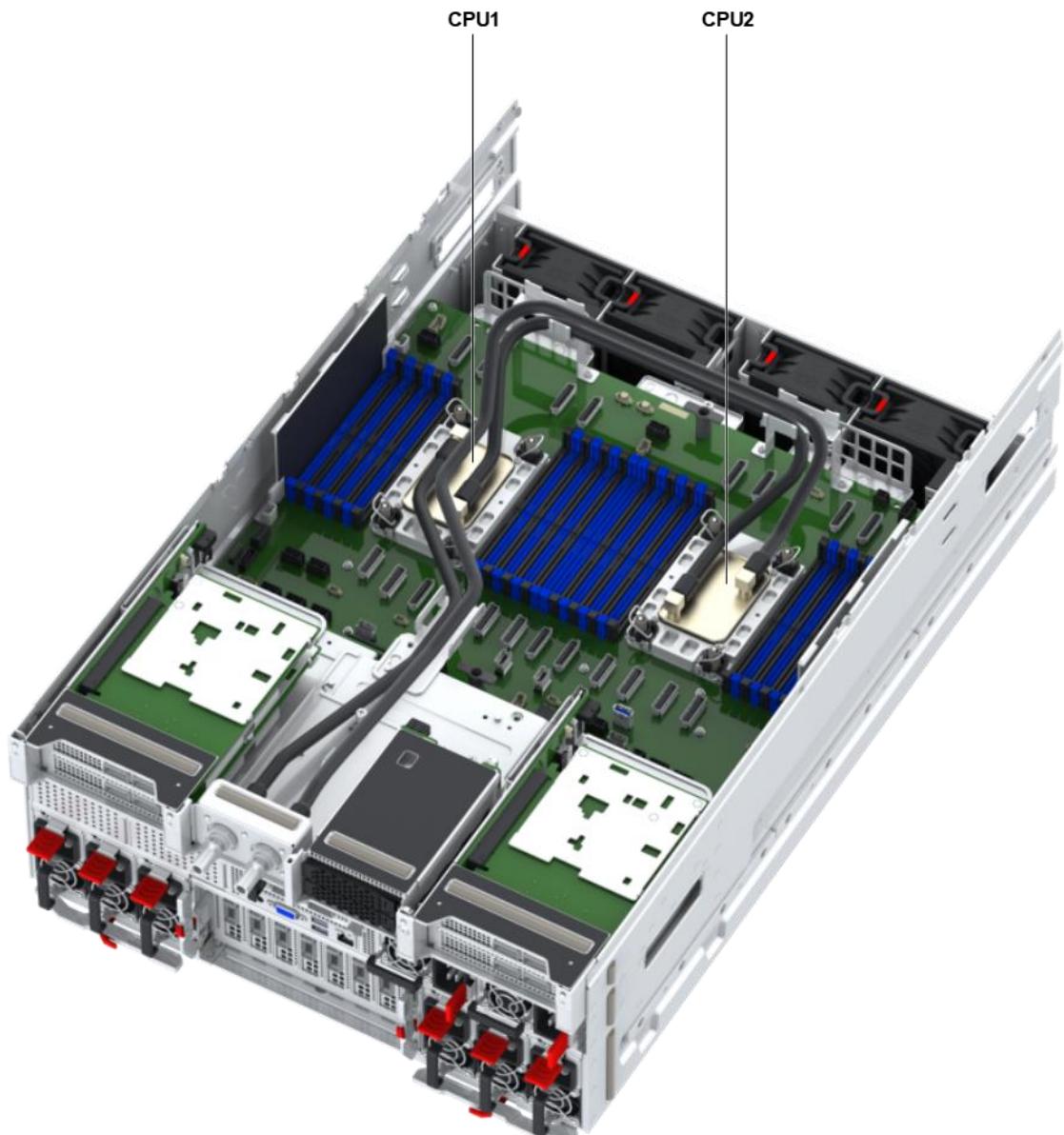
The following CPU configuration in Table 2-1 is recommended for the NCS6782G N4 server to maximize its performance and functions.

Table 2-1 Recommended CPU Configuration

Number of CPUs	CPU1	CPU2
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 a server must be of the same model.

Chapter 3
Memory

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3.1 DIMM Label

A DIMM label specifies the attributes of a DIMM. Figure 3-1 shows a typical DIMM label.

Figure 3-1 DIMM Label
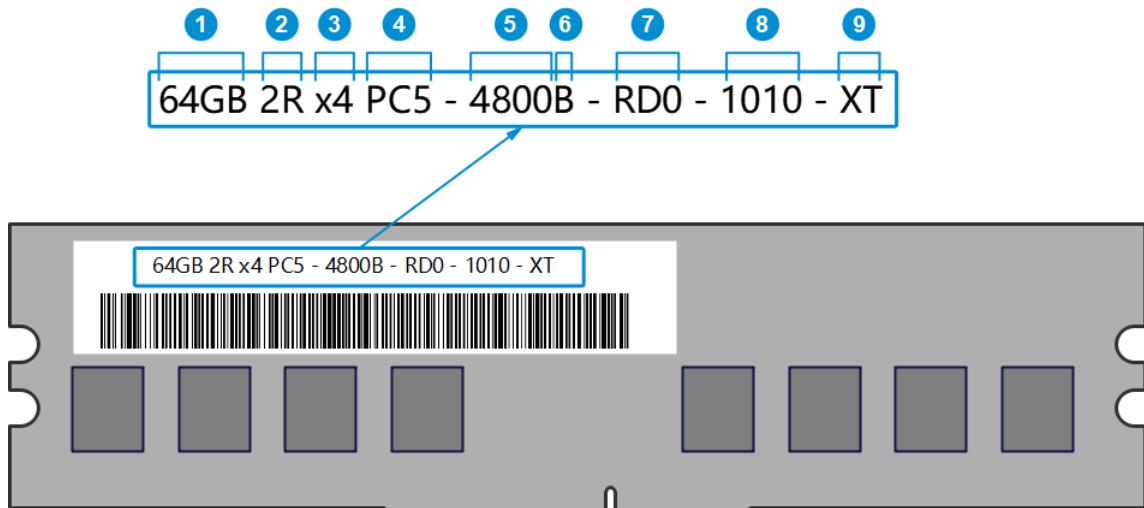
For a description of the DIMM label, refer to Table 3-1.

Table 3-1 DIMM Label Descriptions

No.	Attribute	Description
1	Capacity	● 16 GB ● 32 GB

No.	Attribute	Description
		• 64 GB • 128 GB • 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	• First 10: SPD revision level (basic section) • Last 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℃

3.2 DIMM Compatibility Rules

DDR5 is a computer memory specification. Compared with DDR4 memory, DDR5 memory has higher speed and bandwidth, lower power consumption, and higher stability and reliability. The following compatibility rules apply when you install DDR5 DIMMs:

- The NCS6782G 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 3-2.

Table 3-2 DDR5 DIMM Parameter Descriptions

Item		Value				
Capacity (GB) of a single DDR5 DIMM		16	32	64	128	256
Type		RDIMM	RDIMM	RDIMM	RDIMM-3DS	RDIMM-3DS
Rated memory speed (MT/s)		5600	5600	5600	5600	5600
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)	1DPC[3]	• Sapphire Rapids processor: 4800 • Emerald Rapids processor: 5600				
	2DPC	4400	4400	4400	4400	4400

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.

3. DIMM Per Channel (DPC) indicates the number of DIMMs installed in each memory channel.

3.3 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.

3.4 DIMM Slot Positions

Each CPU in the NCS6782G N4 server provides eight memory channels, and each memory channel consists of two DIMM slots.

Therefore, the NCS6782G N4 server provides a maximum of 32 DDR5 DIMMs, with the highest speed up to 5600 MT/s.

Figure 3-2 shows the memory channels and DIMM slots in the NCS6782G N4 server.

Figure 3-2 Memory Channels and DIMM Sots
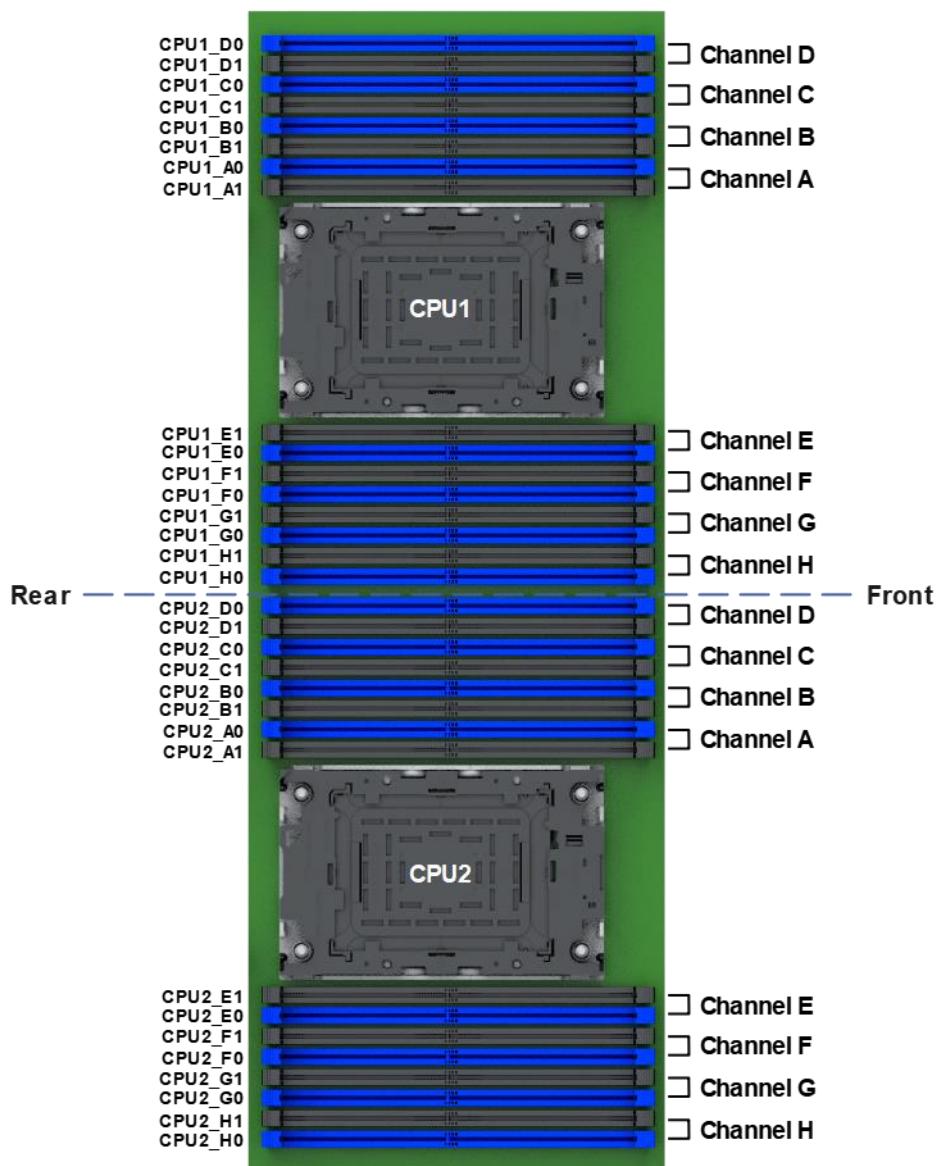
1. Front indicates the server front view.

2. Rear indicates the server rear view.

For the relationships among the CPUs, memory channels, and DIMM slots in the NCS6782G N4 server, refer to Table 3-3.

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

CPU	Memory Channel	DIMM Slot	CPU	Memory Channel	Memory slot
CPU1	A	CPU1_A0	CPU2	A	CPU2_A0
		CPU1_A1			CPU2_A1
	B	CPU1_B0		B	CPU2_B0

CPU	Memory Channel	DIMM Slot	CPU	Memory Channel	Memory slot
		CPU1_B1			CPU2_B1
	C	CPU1_C0		C	CPU2_C0
		CPU1_C1			CPU2_C1
	D	CPU1_D0		D	CPU2_D0
		CPU1_D1			CPU2_D1
	E	CPU1_E0		E	CPU2_E0
		CPU1_E1			CPU2_E1
	F	CPU1_F0		F	CPU2_F0
		CPU1_F1			CPU2_F1
	G	CPU1_G0		G	CPU2_G0
		CPU1_G1			CPU2_G1
	H	CPU1_H0		H	CPU2_H0
		CPU1_H1			CPU2_H1

3.5 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 3-3 shows the configuration of DIMMs when one CPU (CPU0) is configured for the NCS6782G N4 server.

Figure 3-3 Recommended DIMM Configuration (One CPU)

DDR5 Qty	CPU1_D0	CPU1_D1	CPU1_C0	CPU1_C1	CPU1_B0	CPU1_B1	CPU1_A0	CPU1_A1	CPU1_E1	CPU1_E0	CPU1_F1	CPU1_F0	CPU1_G1	CPU1_G0	CPU1_H1	CPU1_H0
1	-	-	-	-	-	-	√	-	-	-	-	-	-	-	-	-
2	-	-	-	-	-	-	√	-	-	-	-	-	√	-	-	-
4	-	-	√	-	-	-	√	-	-	√	-	-	-	√	-	-
6	√	-	√	-	-	-	√	-	-	√	-	√	-	√	-	-
8	√	-	√	-	√	-	√	-	-	√	-	√	-	√	-	√
12	√	-	√	√	√	-	√	√	√	√	-	√	√	√	-	√
16	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√

(Columns D C B A belong to CPU1; E F G H belong to CPU1.)

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

Recommended DIMM Configuration (Two CPUs)

Figure 3-4 shows the configuration of DIMMs when two CPUs (CPU1 and CPU0) are configured for the NCS6782G N4 server.

Figure 3-4 Recommended DIMM Configuration (Two CPUs)

DDR5 Qty	CPU1_D0	CPU1_D1	CPU1_C0	CPU1_C1	CPU1_B0	CPU1_B1	CPU1_A0	CPU1_A1	CPU1_E1	CPU1_E0	CPU1_F1	CPU1_F0	CPU1_G1	CPU1_G0	CPU1_H1	CPU1_H0	CPU2_D0	CPU2_D1	CPU2_C0	CPU2_C1	CPU2_B0	CPU2_B1	CPU2_A0	CPU2_A1	CPU2_E1	CPU2_E0	CPU2_F1	CPU2_F0	CPU2_G1	CPU2_G0	CPU2_H1	CPU2_H0
2	-	-	-	-	-	-	√	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	√	-	-	-	-	-	-	-	-	-
4	-	-	-	-	-	-	√	-	-	-	-	-	√	-	-	-	-	-	-	-	-	-	√	-	-	-	-	-	√	-	-	-
6	-	-	√	-	-	-	-	-	-	√	-	-	-	√	-	-	-	-	√	-	-	-	-	-	-	√	-	-	-	√	-	-
8	-	-	√	-	-	-	√	-	-	√	-	-	-	√	-	-	-	-	√	-	-	-	√	-	-	√	-	-	-	√	-	-
10	-	-	√	-	-	-	√	-	-	√	-	-	-	√	-	√	-	-	√	-	-	-	√	-	-	√	-	-	-	√	-	√
12	√	-	√	-	-	-	√	-	-	√	-	√	-	√	-	-	√	-	√	-	-	-	√	-	-	√	-	√	-	√	-	-
16	√	-	√	-	√	-	√	-	-	√	-	√	-	√	√	-	√	-	√	-	√	-	√	-	-	√	-	√	-	√	-	√
24	√	-	√	√	√	-	√	√	√	√	-	√	√	√	-	√	√	-	√	√	√	-	√	√	√	√	-	√	√	√	-	√
32	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√

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.

3.6 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 4
Storage

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4.1 Hard Disk Slot

Front Hard Disks

Based on the number of hard disks, the front panel supports the following types of hard disk configurations:

● Eight hard disks

Figure 4-1 shows the hard disk slots arranged when 8 hard disks are installed.

Figure 4-1 Front Hard Disk Slots—8 Hard Disks
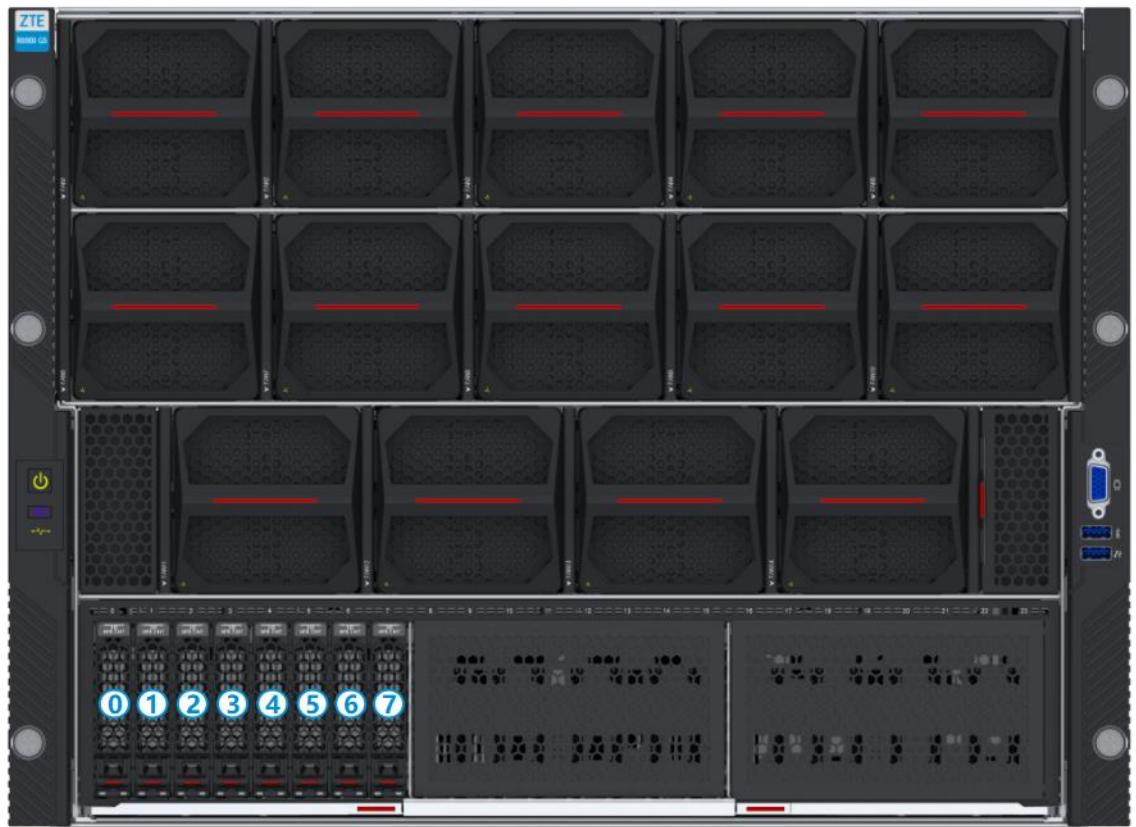
● Sixteen hard disks

Figure 4-2 shows the hard disk slots arranged when 16 hard disks are installed.

Figure 4-2 Front Hard Disk Slots—16 Hard Disks

- Twenty-four hard disks

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

Figure 4-3 Front Hard Disk Slots—24 Hard Disks
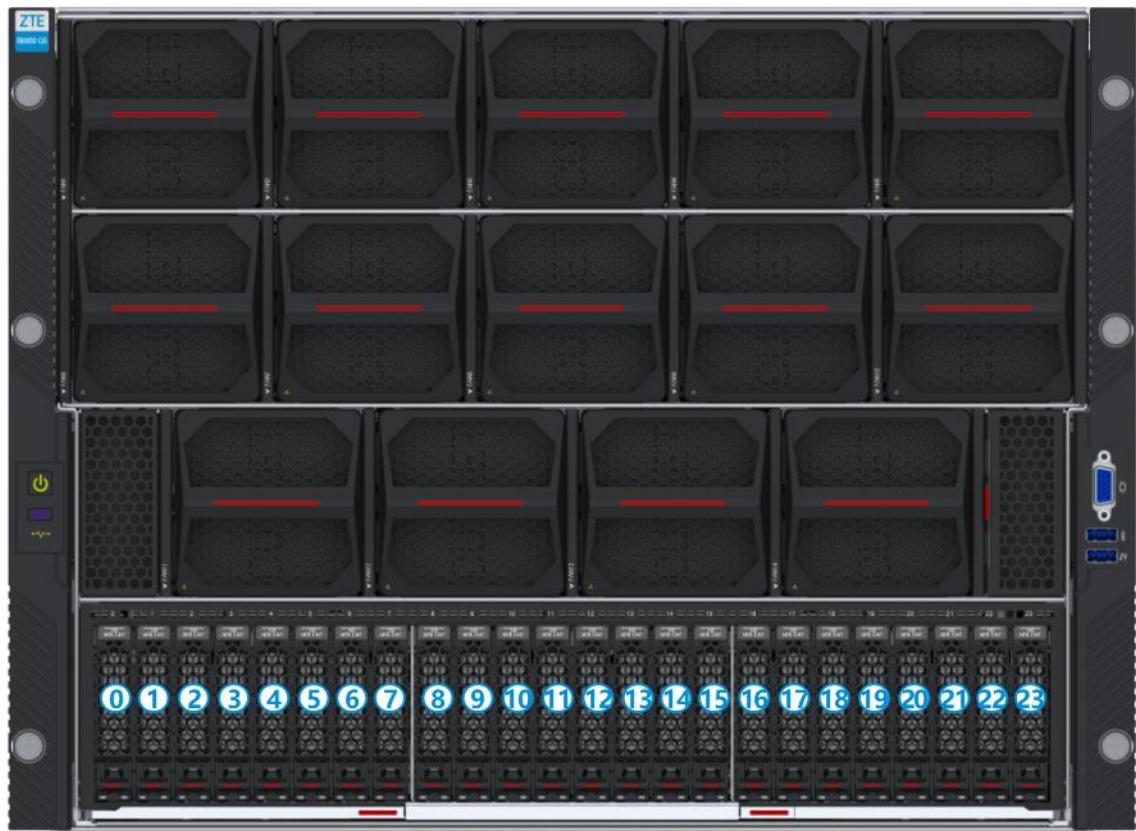
For the hard disk types applicable to different hard disk configurations on the front panel, refer to Table 4-1.

Table 4-1 Types of Front Hard Disks

Quantity	Type
8	All slots support SAS, SATA, and NVMe SSDs.
16	● Slots 0–7: support SAS and SATA SSDs. ● Slots 8–15: support NVMe SSDs.
24	● Slots 0–7: support SAS and SATA SSDs. ● Slots 8–23: support NVMe SSDs.

Note

To ensure drive availability, the storage duration of a hard disk drive cannot exceed six months before use.
During the hot insertion of an NVMe SSD, if a bandwidth error occurs, remove and install it again.

Rear Hard Disks

The NCS6782G N4 server supports both air cooling and liquid cooling.

- Figure 4-4 shows the hard disk slots arranged on the rear panel when the NCS6782G N4 server uses air cooling.

Figure 4-4 Rear Hard Disk Slots (in Air Cooling Mode)

- Figure 4-5 shows the hard disk slots arranged on the rear panel when the NCS6782G N4 server uses liquid cooling.

Figure 4-5 Rear Hard Disk Slots (in Liquid Cooling Mode)

All hard disk slots on the rear panel of the NCS6782G N4 server support SAS, SATA, and NVMe SSDs.

📚 Note

To ensure drive availability, the storage duration of a hard disk drive cannot exceed six months before use.
During the hot insertion of an NVMe SSD, if a bandwidth error occus, remove and install it again.

4.2 Hard Disk Indicator

Figure 4-6 shows the hard disk indicators on the NCS6782G N4 server.

Figure 4-6 Hard Disk Indicators

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

For a description of the hard disk indicators, refer to Table 4-2.

Table 4-2 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: ● 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.

4.3 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 (Intel EagleStream)*.

Chapter 5
Network

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5.1 OCP NIC

The NCS6782G N4 server supports OCP NICs to provide more network capabilities. Figure 5-1 shows the positions of the OCP NICs.

Figure 5-1 OCP NIC Positions

OCP
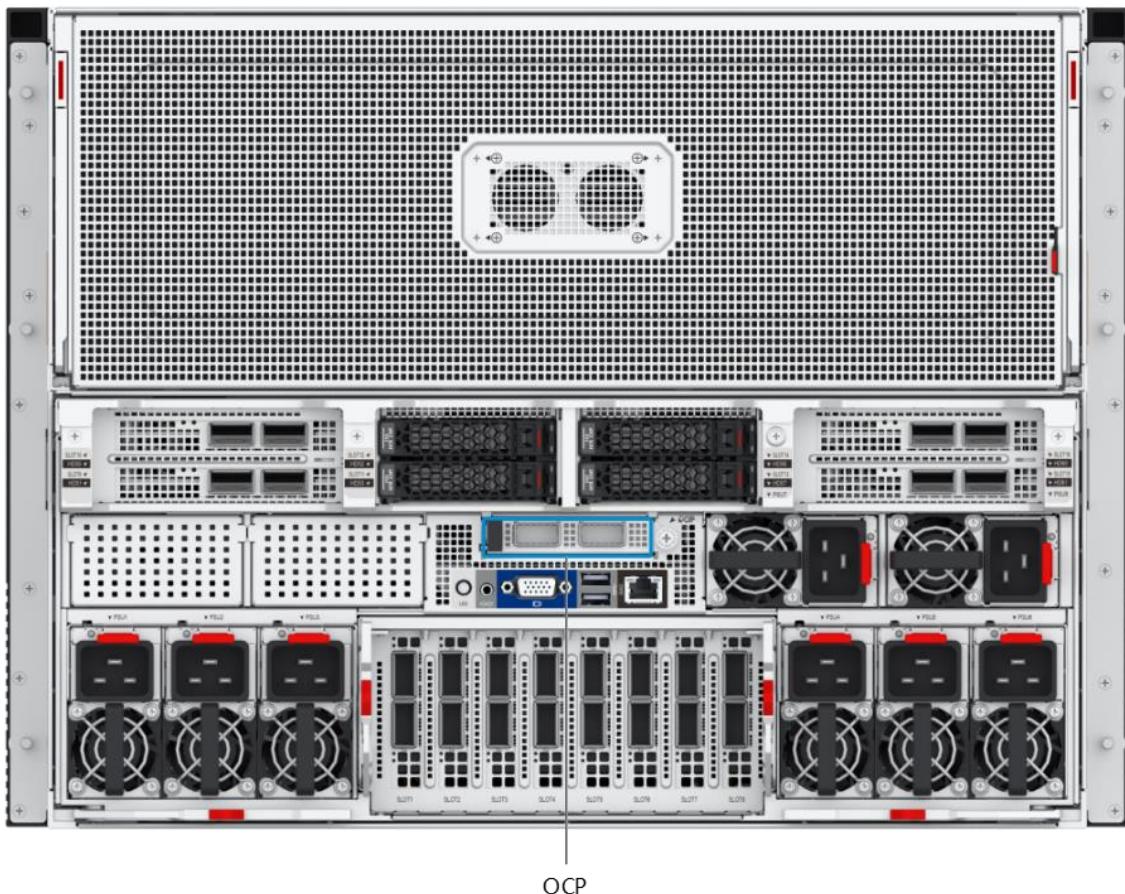
The port names of an OCP NIC configured for the NCS6782G N4 server are usually determined by the BIOS. Some OSs support customization of the port names. By default, a port name of an

OCP NIC configured for the NCS6782G N4 server is ens**xfy**. In the port name, **x** indicates the slot ID of the OCP NIC and **y** indicates the port ID. (The left port of the OCP NIC is numbered 0, which is incremented by one on the right.)

Figure 5-2 shows the IDs of the ports provided by each OCP NIC when the NCS6782G N4 server is configured with OCP NICs that have two optical interfaces each.

Figure 5-2 OCP NIC Configuration

Note

In Figure 5-2, the ports of the OCP NIC located in slot 64 are named ens**64**f**0** and ens**64**f**1**.

For the OCP NIC models that the NCS6782G N4 server supports, refer to Table 5-1.

Table 5-1 Supported OCP NIC Models

OCP NIC Model	Network Port Type	Number of Network Ports	Network Port Rate	Supported PCIe Rate
MCX753436MS-HEAB	Optical interface	2	200 Gbps	PCIe 5.0 x 16
MCX623436AN-CDAB	Optical interface	2	100 Gbps	PCIe 4.0 x 16

Note

The number of OCP NIC models supported by the NCS6782G N4 server is growing. For more information, contact technical support.

5.2 PCIe NIC

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

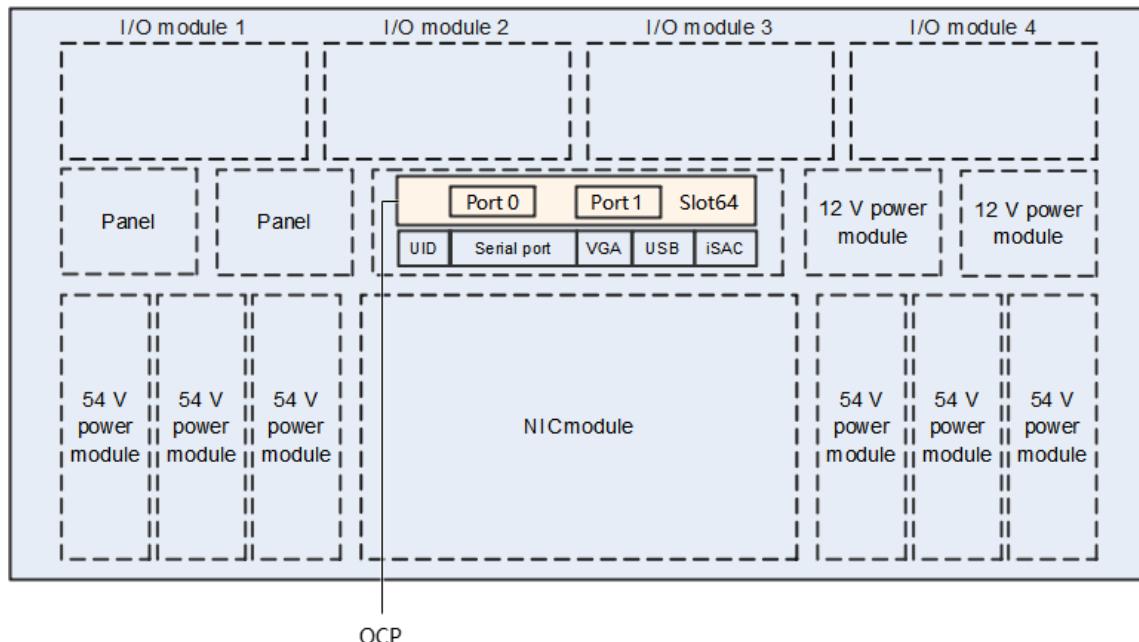The NCS6782G N4 server supports PCIe NICs to provide more network capabilities.

The port names of a PCIe NIC configured for the NCS6782G N4 server are usually determined by the BIOS. Some OSs support customization of the port names. By default, a port name of a PCIe NIC configured for the NCS6782G N4 server is ens**xf**y. In the port name, **x** indicates the slot ID of the PCIe NIC and **y** indicates the port ID. (The port far away from the gold finger of the PCIe NIC is numbered 0, which is incremented by one as the distance shortens.)

Figure 5-3 and Figure 5-4 show the IDs of the ports provided by each PCIe NIC when the NCS6782G N4 server is configured with PCIe NICs that have two optical interfaces each.

Figure 5-3 Typical PCIe NIC Configuration in Air Cooling Mode

Figure 5-4 Typical PCIe NIC Configuration in Liquid Cooling Mode

Note
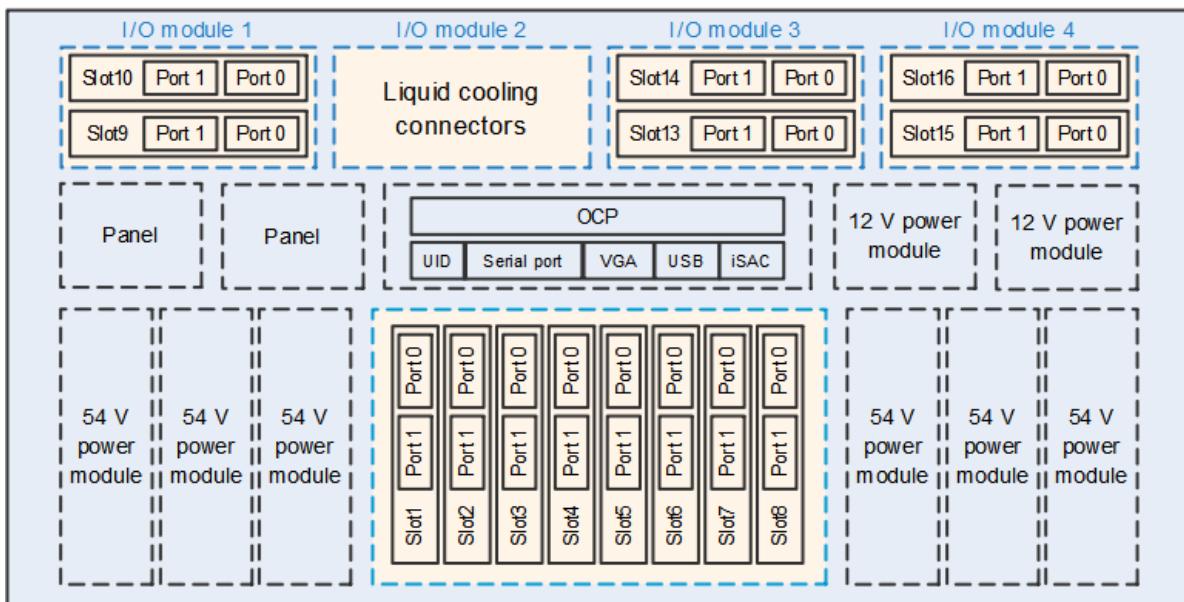
In Figure 5-3 and Figure 5-4, the ports of the PCIe NIC located in slot 9 are named ens**9f0** and ens**9f1**.

PCIe NICs support smart NICs and common NICs.

● For the smart NIC models that the NCS6782G N4 server supports, refer to Table 5-2.

Table 5-2 Supported Smart NIC Models

Smart NIC Model	Network Port Type	Number of Network Ports	Network Port Rate	Supported PCIe Rate
900-9D3B4-00PN-EA0	Optical interface	1	400 Gbps	PCIe 5.0 x 16
900-9D3B6-00SV-AA0	Optical interface	2	200 Gbps	PCIe 5.0 x 16
MBF2H516A-CENOT	Optical interface	2	100 Gbps	PCIe 4.0 x 16
MBF2H516C-CESOT	Optical interface	2	100 Gbps	PCIe 4.0 x 16
MBF2H512C-AEUOT	Optical interface	2	25 Gbps	PCIe 4.0 x 16

Note

The number of smart NIC models supported by the NCS6782G N4 server is growing. For more information, contact technical support.
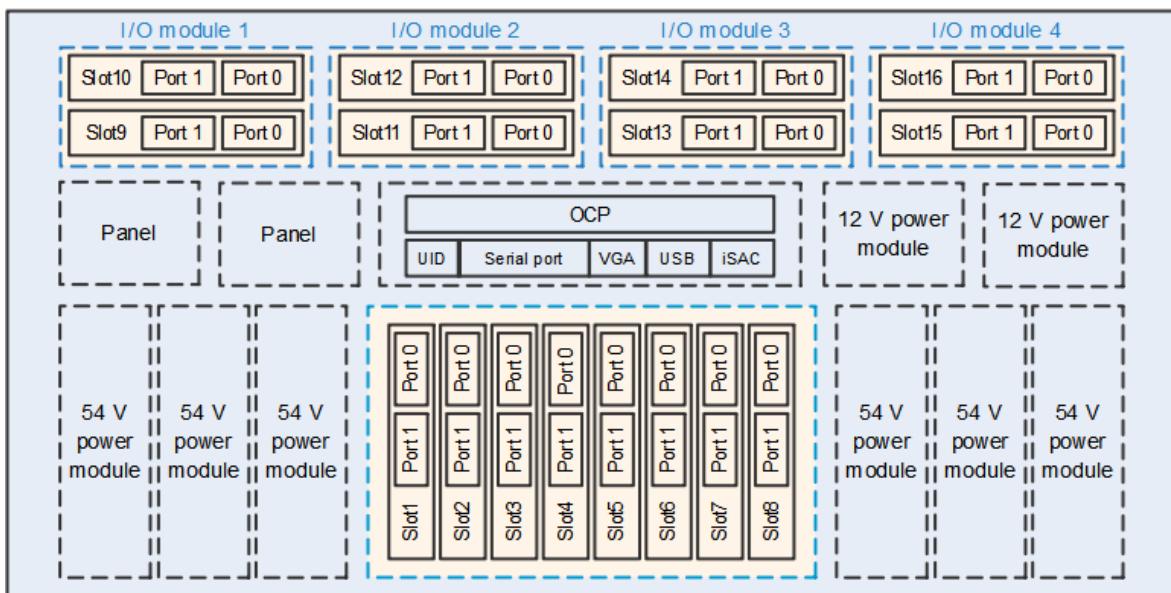
● For the common NIC models that the NCS6782G N4 server supports, refer to Table 5-3.

Table 5-3 Supported Common NIC Models

Common NIC Model	Network Port Type	Number of Network Ports	Network Port Rate	Supported PCIe Rate
EX710DA2G1P5	Optical interface	2	10 Gbps	PCIe 3.0 x 8
MCX623105AN-VDAT	Optical interface	1	100 Gbps	PCIe 4.0 x 16
NX E312	Optical interface	2	100 Gbps	PCIe 4.0 x 16
MCX653106A-ECAT	Optical interface	2	100 Gbps	PCIe 4.0 x 16
F902T-V4.0	Electrical interface	2	1 Gbps	PCIe 2.0 x 4
I350T2G2P20	Electrical interface	2	1 Gbps	PCIe 2.0 x 4
MCX653105A-HDAT	Optical interface	1	200 Gbps	PCIe 4.0 x 16
MCX75310AAS-HEAT	Optical interface	1	200 Gbps	PCIe 5.0 x 16
MCX755106AS-HEAT	Optical interface	2	200 Gbps	PCIe 5.0 x 16
NX E316	Optical interface	2	200Gbps	PCIe 4.0 x 16
MCX512A-ACAT	Optical interface	2	25 Gbps	PCIe 4.0 x 16
MCX512A-ACUT	Optical interface	2	25 Gbps	PCIe 4.0 x 16
MCX623106AN-CDAT	Optical interface	2	25 Gbps	PCIe 4.0 x 16
MCX631102AN-ADAT	Optical interface	2	25 Gbps	PCIe 4.0 x 8
NX E310	Optical interface	2	25 Gbps	PCIe 4.0 x 8
XXV710DA2G1P5	Optical interface	2	25 Gbps	PCIe 3.0 x 8
MCX75310AAS-NEAT	Optical interface	1	400 Gbps	PCIe 5.0 x 16
NS214	Optical interface	2	10 Gbps	PCIe 3.0 x 8
NS312	Optical interface	2	25 Gbps	PCIe 3.0 x 8
NS212	Optical interface	2	25 Gbps	PCIe 3.0 x 8
I350T4G2P20 (934608)	Electrical interface	4	1 Gbps	PCIe 2.0 x 4

 Note

The number of common NIC models supported by the NCS6782G N4 server is growing. For more information, contact technical support.

Chapter 6
I/O Expansion

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6.1 PCIe Card

PCIe cards are connected to the mainboard through the switch board to provide system extension capabilities. PCIe cards can be configured as required.

> **Note**
>
> - For the details of the switch board, refer to "9.3 Switch Board".
> - For the details of the mainboard, refer to "9.2 Mainboard".

6.2 PCIe Card Slot Position and Description

The NCS6782G N4 server supports both air cooling and liquid cooling.

- Figure 6-1 shows the PCIe card slots arranged when the NCS6782G N4 server uses air cooling.

Figure 6-1 PCIe Card Slots Arranged in Air Cooling Mode
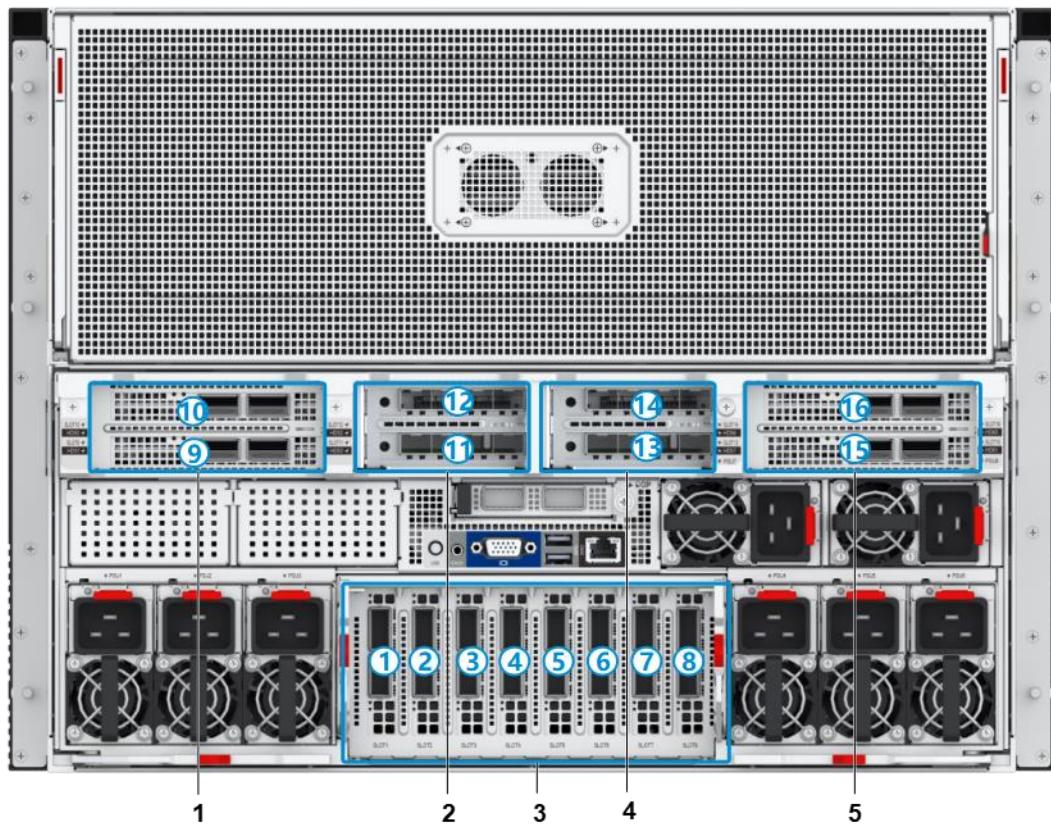
1. I/O module 1
2. I/O module 2
3. NIC module
4. I/O module 3
5. I/O module 4

- Figure 6-2 shows the PCIe card slots arranged when the NCS6782G N4 server uses liquid cooling.

Figure 6-2 PCIe Card Slots Arranged in Liquid Cooling Mode
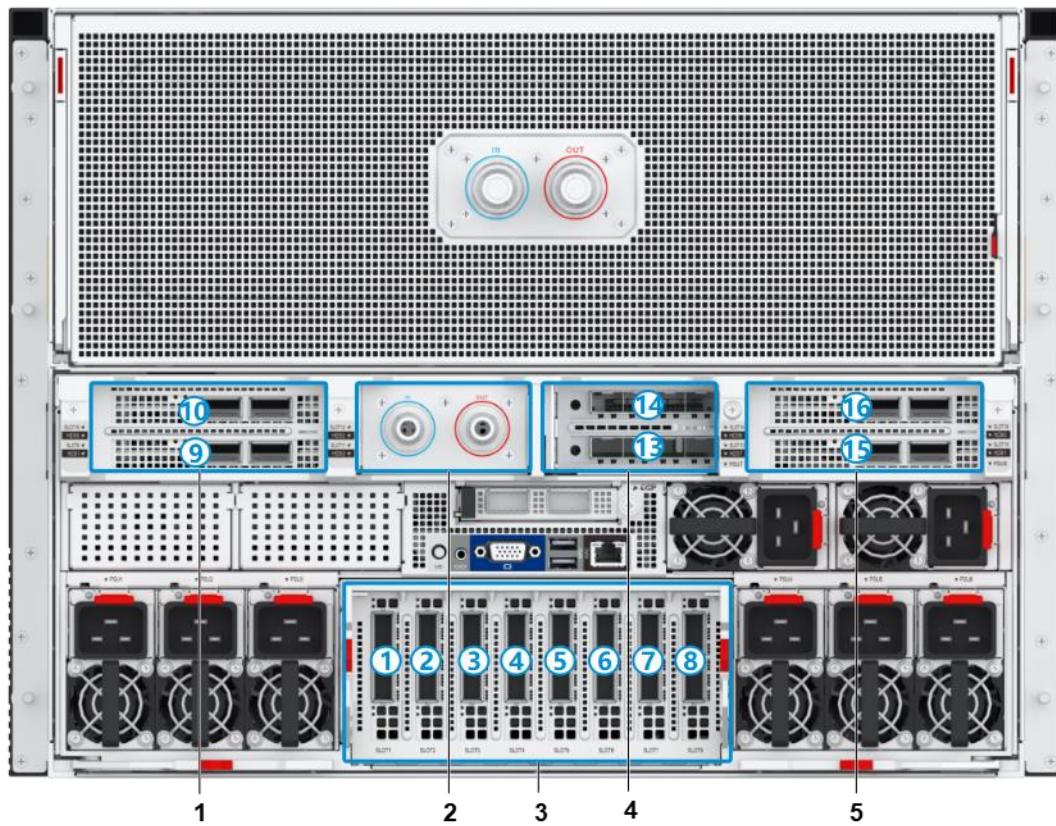
1. I/O module 1
2. Liquid cooling connectors
3. NIC module
4. I/O module 3
5. I/O module 4

The modules on the rear panel of the NCS6782G N4 server can provide more PCIe slots through riser cards. For a description of the riser cards supported by these modules, refer to Table 6-1.

Table 6-1 Supported Riser Cards

Module	Riser Card	PCIe Interface	Quantity
I/O modules 1–4	SR2PB	x16	1
		x8	1
NIC module	RC6905N8A	x6	8

Note

When the NCS6782G N4 server uses liquid cooling, I/O module 2 must be configured with the liquid cooling connectors for the CPU module.

Chapter 7
PSU

Figure 7-1 shows the positions of the PSUs in the NCS6782G N4 server.

Figure 7-1 PSU Positions
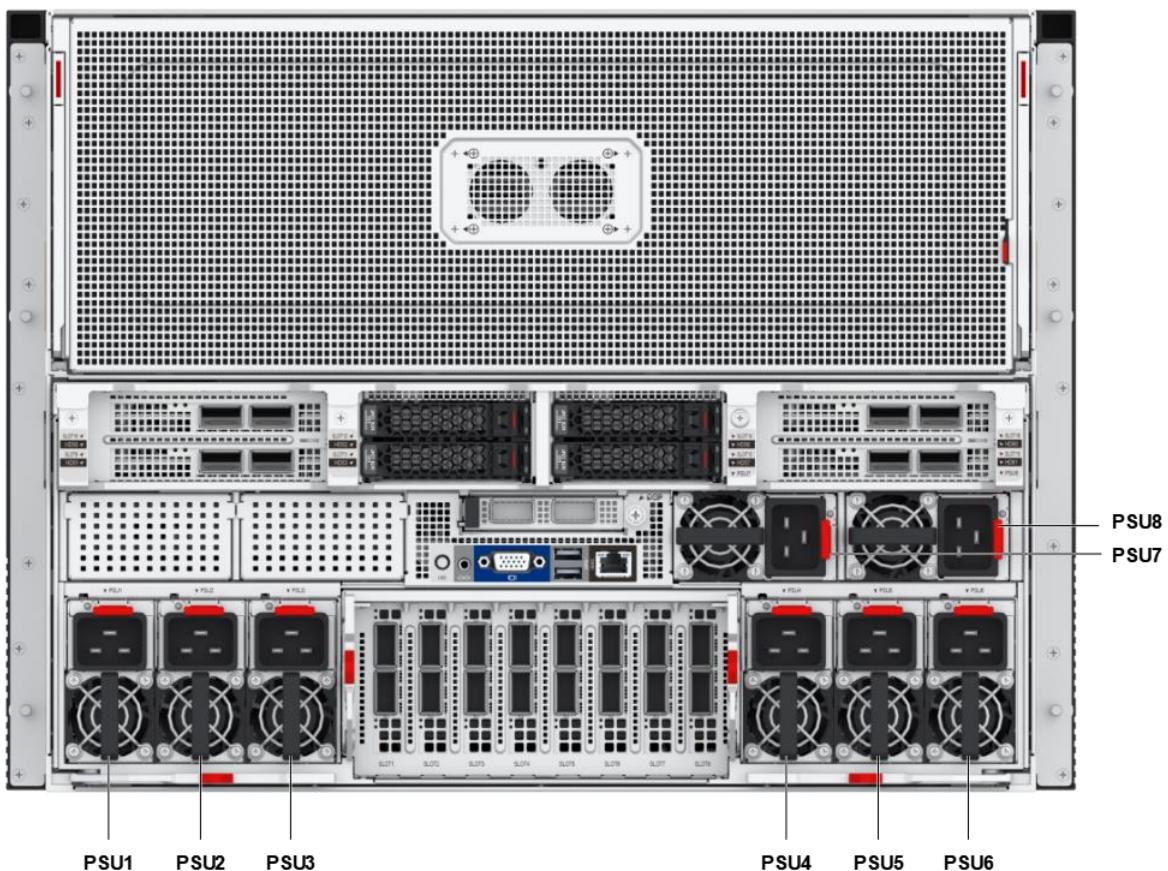
For a description of the PSUs in the NCS6782G N4 server, refer to Table 7-1.

Table 7-1 PSU Descriptions

ID	Name	Description
PSU1–PSU6	54 V PSU	● Supports N+N redundancy. ● Supports hot swapping. ● Supports 220 V AC input or 240 V HVDC input. ● Supports 3200 W.
PSU7–PSU8	12 V PSU	● Supports 1+1 redundancy.

ID	Name	Description
		● Supports hot swapping. ● Supports 220 V AC input or 240 V HVDC input. ● Supports 2700 W.

Note

All the PSUs of the NCS6782G N4 server are protected against short circuits.

Chapter 8
Fan Unit

The NCS6782G N4 server provides a total of 18 fan units. Of them, 14 fan units (80 mm x 80 mm) are located on the front panel, and 4 fan units (80 mm x 38 mm) are located on the switch board inside the CPU module.

- Figure 8-1 shows the positions of the fan units on the front panel.

Figure 8-1 Fan Unit Positions on the Front Panel
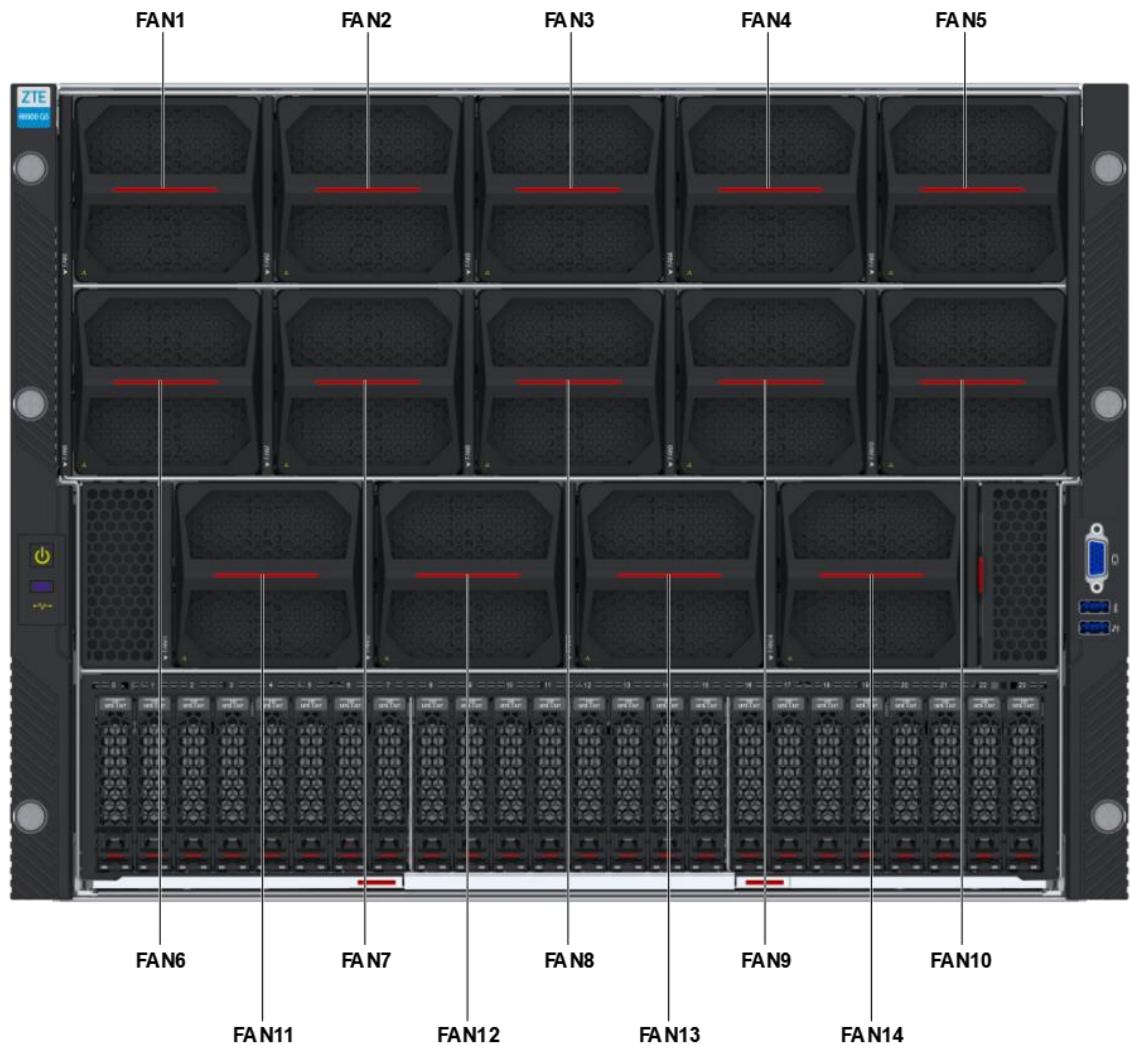
Note

The fan units on the front panel must be of the same model (80 mm x 80 mm).

● Figure 8-2 shows the positions of the fan units on the switch board for the CPUs.

Figure 8-2 Fan Unit Positions on the Switch Board
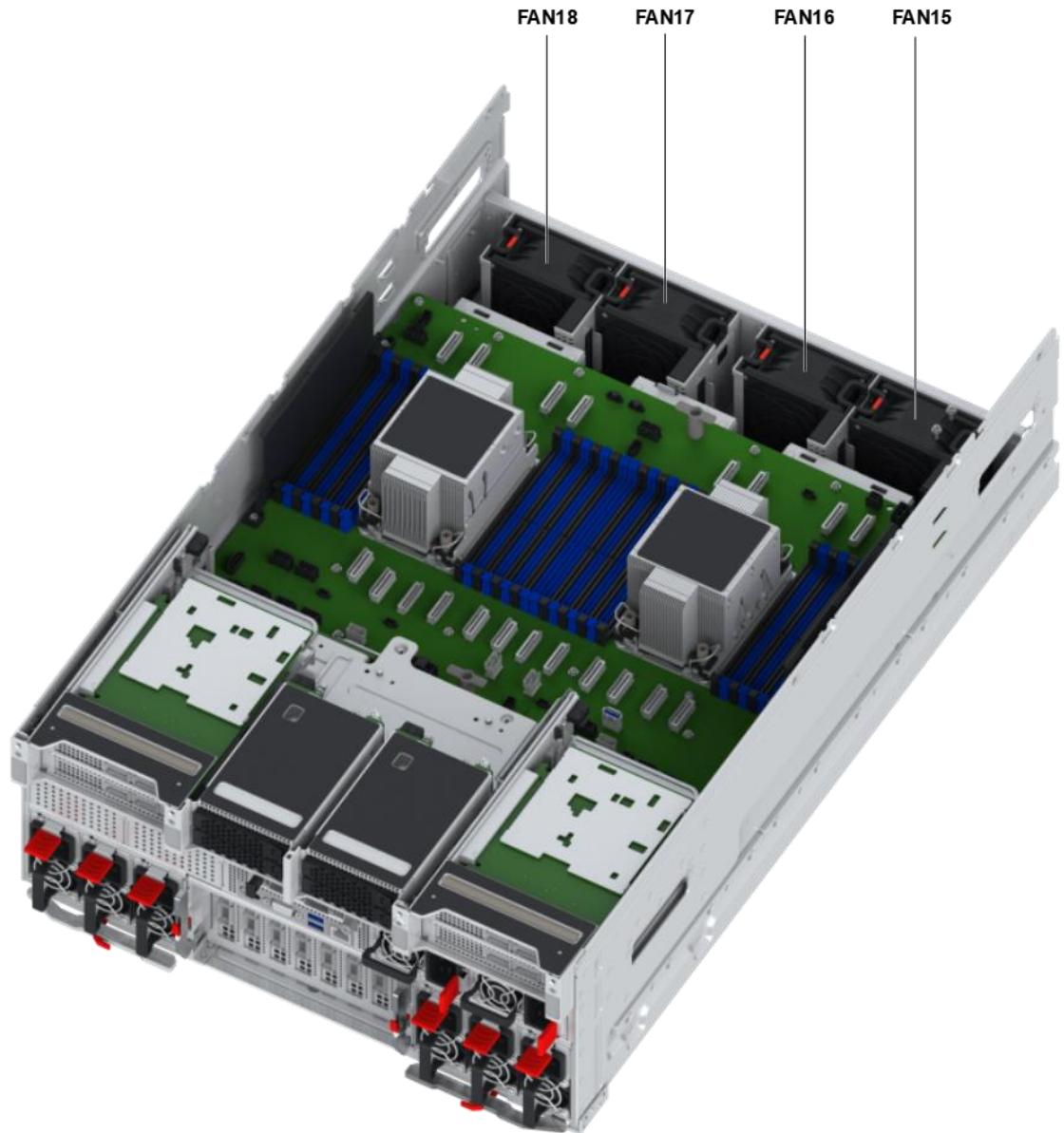
Note

The fan units on the switch board must be of the same model (80 mm x 38 mm).

The fan unit configurations of the NCS6782G N4 server are described as follows:

● Hot swapping is supported.

- 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 9
Board

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9.1 I/O Card

CPUs communicate with other devices through interfaces. Different devices have different I/O interfaces.

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

Figure 9-1 shows the I/O card of the NCS6782G N4 server.

Figure 9-1 I/O Card
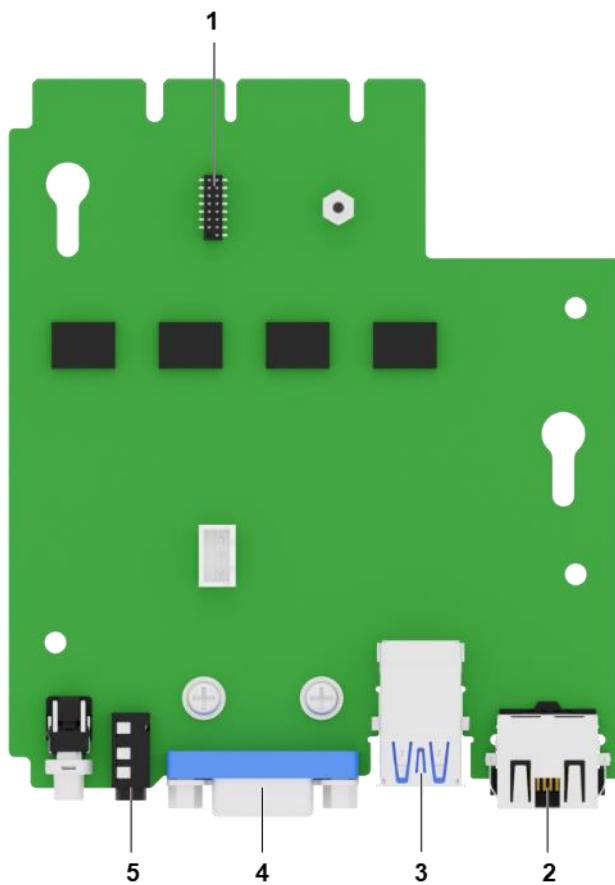
For a description of the interfaces on the I/O card of the NCS6782G N4 server, refer to Table 9-1.

Table 9-1 Interfaces on the I/O Card

No.	Interface Name	Silk Screen	Position Number
1	TPM card interface	TPM CARD	X2
2	BMC management 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

9.2 Mainboard

Figure 9-2 shows the mainboard of the NCS6782G N4 server.

Figure 9-2 Mainboard
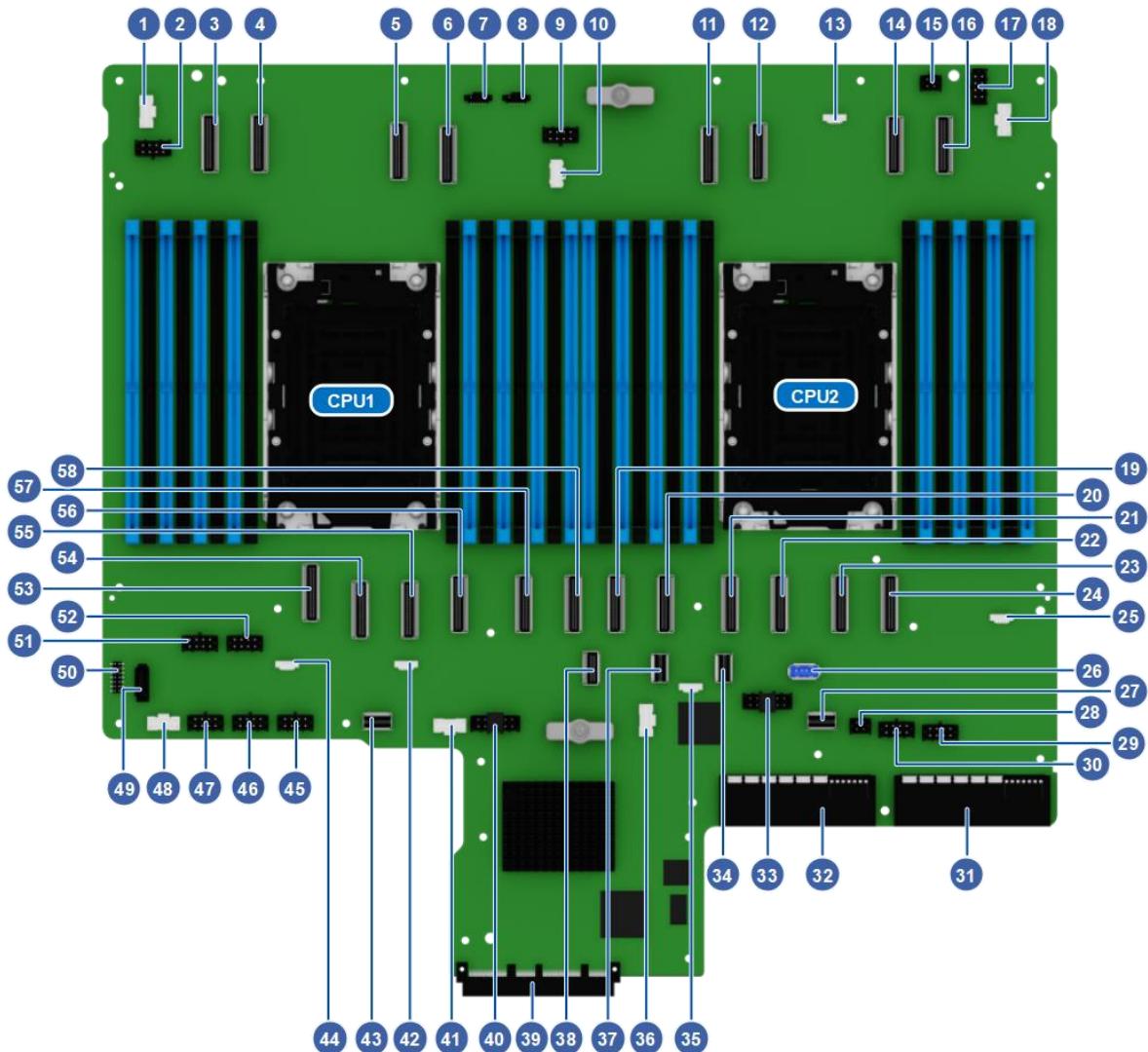
For a description of the interfaces on the mainboard of the NCS6782G N4 server, refer to Table 9-2.

Table 9-2 Interfaces on the Mainboard

No.	Interface Name	Silk Screen	Position Number
1	Right-lug interfaces (VGA and USB)	VGA/USB2.0/OCP DEBUG	X20
2	Power interface for the disk adapter plate	SSD PWR1	X21
3	PCIe x8 interface	CPU1 HISO 1	X14
4	PCIe x8 interface	CPU1 HISO 2	X48
5	PCIe x8 interface	CPU1 HISO 3	X47
6	PCIe x8 interface	CPU1 HISO 4	X8
7	Leak detection cable interface	WEEP DETECT 1	X31

No.	Interface Name	Silk Screen	Position Number
8	Leak detection cable interface	WEEP DETECT 2	X61
9	Power interface for the disk adapter plate	SSD PWR2	X19
10	Out-of-band signal interface for the expander	EXPANDER	X84
11	PCIe x8 interface	CPU2 HSIO 5	X50
12	PCIe x8 interface	CPU2 HSIO 6	X49
13	Out-of-band signal interface for the M.2 adapter plate	F I2C 1	X22
14	PCIe x8 interface	CPU2 HSIO 7	X13
15	Power interface for the M.2 adapter plate	M.2 PWR	X25
16	PCIe x8 interface	CPU2 HSIO 8	X18
17	Power interface for fans on the switch board	FAN PWR	X17
18	Left-lug interfaces	BTN/LED/I2C	X45
19	PCIe x8 interface	CPU2 HSIO 15	X58
20	PCIe x8 interface	CPU2 HSIO 16	X28
21	PCIe x8 interface	CPU2 HSIO 17	X55
22	PCIe x8 interface	CPU2 HSIO 18	X70
23	PCIe x8 interface	CPU2 HSIO 19	X53
24	PCIe x8 interface	CPU2 HSIO 20	X54
25	Out-of-band signal interface for a riser card	R I2C 5	X59
26	USB 3.0 interface	USB 3	X9
27	OCP card NCSI	OCP NCSI	X16
28	OCP card power interface	OCP PWR	X57
29	Riser card power interface	RISER PWR4	X5
30	Riser card power interface	RISER PWR3	X2
31	PSU interface	PSU2	X4a2
32	PSU interface	PSU1	X3a2

No.	Interface Name	Silk Screen	Position Number
33	Smart NIC power interface	SMART NIC PWR2	X72
34	SATA interface	PCH SATA3/M.2	X52
35	Out-of-band signal interface for a riser card	R I2C 4	X26
36	Smart NIC NCSI	SMART NIC NCSI 2	X6
37	SATA interface	PCH SATA2	X23
38	SATA/M.2 interface	PCH SATA1	X12
39	I/O card interface	IO CARD	X24
40	Smart NIC power interface	SMART NIC PWR1	X60
41	Smart NIC NCSI	SMART NIC NCSI 1	X35
42	Out-of-band signal interface for a riser card	R I2C 3	X43
43	HGX control interface	HGX CONTROL 2	X3
44	Out-of-band signal interface for a riser card	R I2C 2	X15
45	Switch board power interface	SW PWR3	X78
46	Switch board power interface	SW PWR2	X77
47	Switch board power interface	SW PWR1	X64
48	HGX control interface	HGX CONTROL 1	X10
49	Right-lug interface (USB)	FP_USB4	X11
50	Intra-board commissioning interface	-	X200
51	Riser card power interface	RISER PWR1	X1
52	Riser card power interface	RISER PWR2	X4
53	PCIe x8 interface	CPU1 HSIO 9	X56
54	PCIe x8 interface	CPU1 HSIO 10	X36
55	PCIe x8 interface	CPU1 HSIO 11	X46
56	PCIe x8 interface	CPU1 HSIO 12	X42
57	PCIe x8 interface	CPU1 HSIO 13	X41
58	PCIe x8 interface	CPU1 HSIO 14	X44

9.3 Switch Board

The switch board is used to provide more PCIe lanes. Figure 9-3 shows the switch board.

Figure 9-3 Switch Board
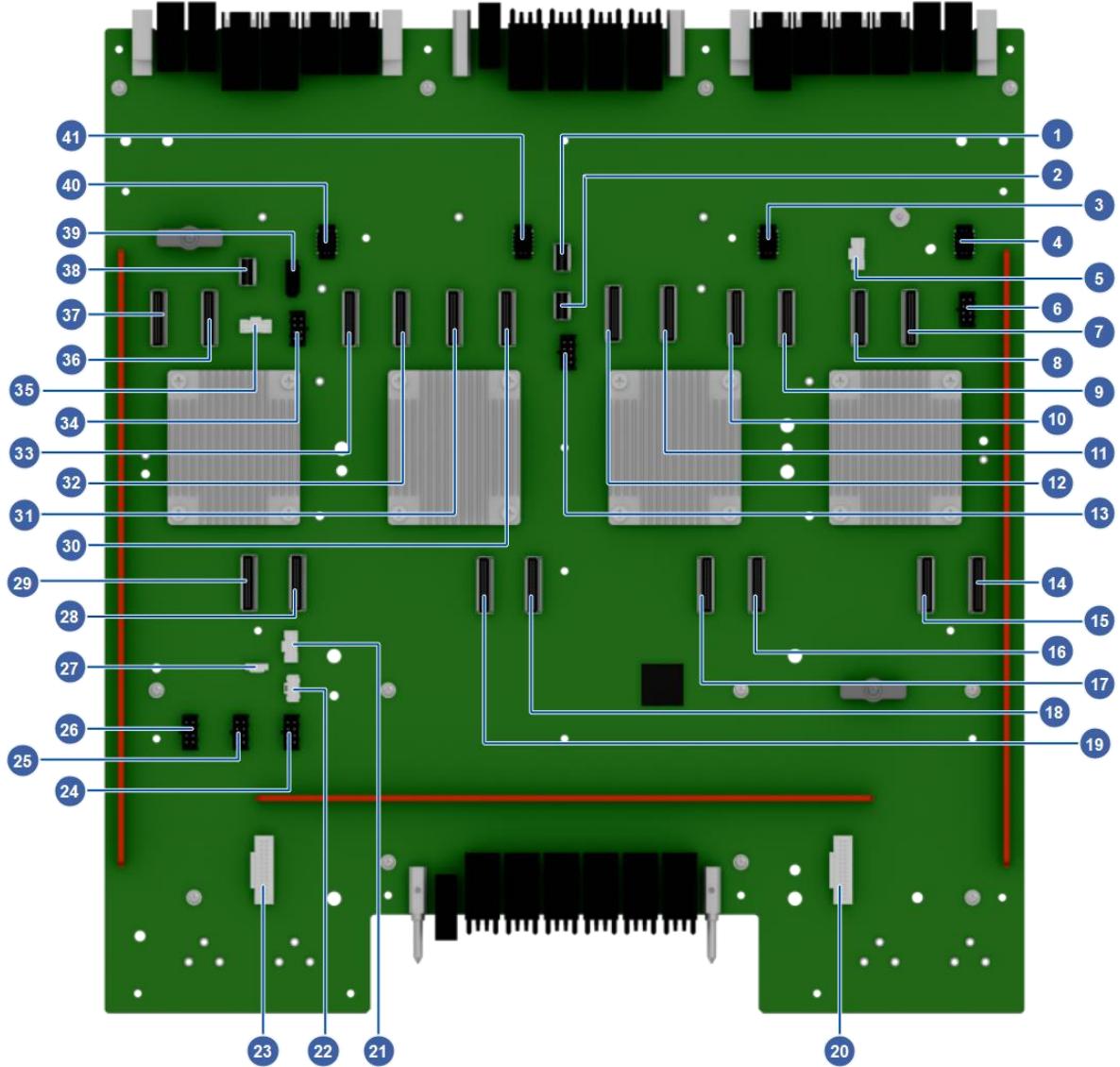
For a description of the interfaces on the switch board, refer to Table 9-3.

Table 9-3 Interfaces on the Switch Board

No.	Interface Name	Silk Screen	Position Number
1	SATA interface	PCH SATA2	X52
2	SATA interface	PCH SATA1	X6
3	Built-in fan power interface	-	X64
4	Built-in fan power interface	-	X62
5	BTN/LED/I2C interface	BTN/LED/I2C	X45

No.	Interface Name	Silk Screen	Position Number
6	Fan power interface	FAN PWR	X19
7	PCIe x8 interface	SW3 HSIO 15	X58
8	PCIe x8 interface	SW3 HSIO 16	X28
9	PCIe x8 interface	SW2 HSIO 8	X18
10	PCIe x8 interface	SW2 HSIO 7	X13
11	PCIe x8 interface	CPU2 HSIO 17	X55
12	PCIe x8 interface	CPU2 HSIO 18	X70
13	SSD power interface	SSD PWR2	X17
14	PCIe x8 interface	SW3 HSIO 19	X53
15	PCIe x8 interface	SW3 HSIO 20	X54
16	PCIe x8 interface	SW2 HSIO 5	X50
17	PCIe x8 interface	SW2 HSIO 6	X49
18	PCIe x8 interface	SW1 HSIO 13	X41
19	PCIe x8 interface	SW1 HSIO 14	X44
20	PSU interface	PSU_BPA	X1A2
21	HGX control interface	HGX CONTROL 1	X10
22	PSU backplane interface	-	X4A3
23	PSU interface	PSU_BPB	X1A3
24	Switch board power interface	SW PWR 3	X9
25	Switch board power interface	SW PWR 2	X7
26	Switch board power interface	SW PWR 1	X5
27	Riser card interface	RISER_RSV	X15
28	PCIe x8 interface	SW0 HSIO 1	X14
29	PCIe x8 interface	SW0 HSIO 2	X48
30	PCIe x8 interface	CPU1 HSIO 11	X46
31	PCIe x8 interface	CPU1 HSIO 12	X42
32	PCIe x8 interface	SW1 HSIO 9	X56
33	PCIe x8 interface	SW1 HSIO 10	X36
34	SSD interface	SSD PWR1	X16

No.	Interface Name	Silk Screen	Position Number
35	Mounting lug interfaces	VGA/USB2.0/OCP DEBUG	X20
36	PCIe x8 interface	SWO HSIO 4	X8
37	PCIe x8 interface	SWO HSIO 3	X47
38	HGX control interface	HGX CONTROL 2	X3
39	USB 3.0 interface	USB 3	X11
40	Built-in fan power interface	-	X63
41	Built-in fan power interface	-	X65

9.4 Hard Disk Backplane

Backplane for Front Hard Disks

The NCS6782G N4 server supports a maximum of three 8 x 2.5" hard disk backplanes. Figure 9-4 shows an 8 x 2.5" hard disk backplane.

Figure 9-4 8 x 2.5" Hard Disk Backplane
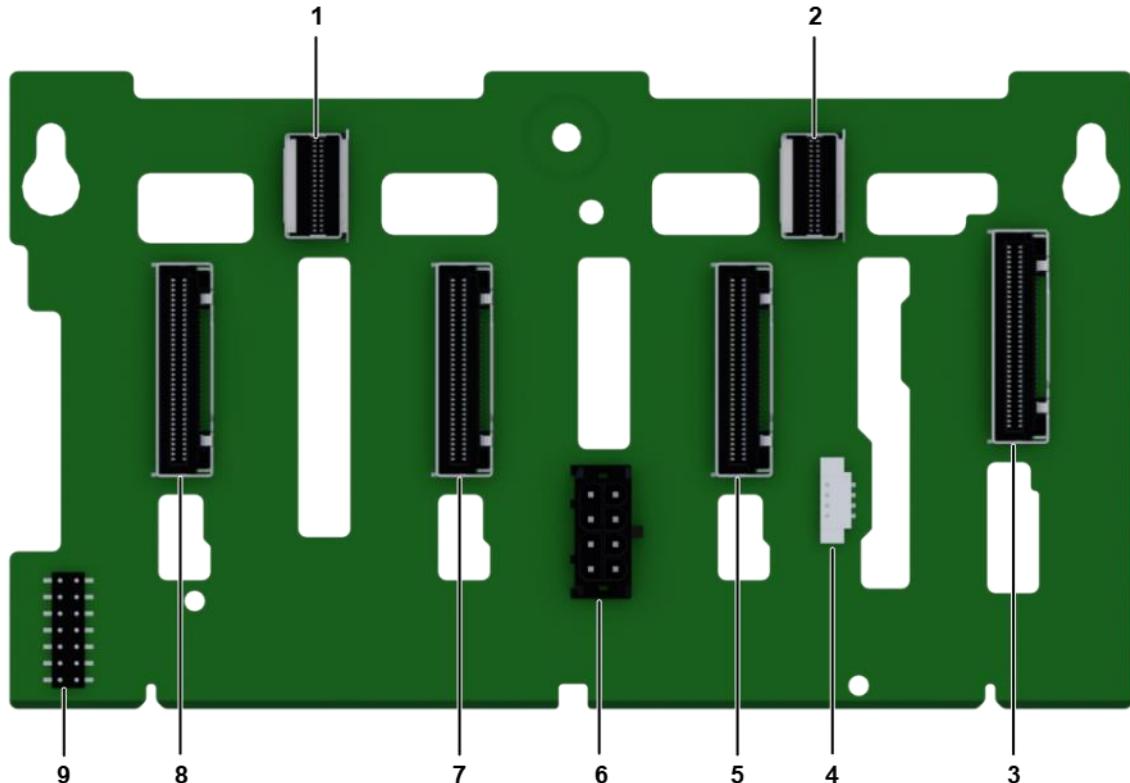
For a description of the interfaces on an 8 x 2.5" hard disk backplane, refer to Table 9-4.

Table 9-4 Interfaces on an 8 x 2.5" Hard 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

Backplane for Rear Hard Disks

The NCS6782G N4 server supports both air cooling and liquid cooling.

● When the NCS6782G N4 server uses air cooling, it supports a maximum of two 2 x 2.5" hard disk backplanes.

● When the NCS6782G N4 server uses liquid cooling, it supports a maximum of one 2 x 2.5" hard disk backplane.

Figure 9-5 shows a 2 x 2.5" hard disk backplane.

Figure 9-5 2 x 2.5" Hard Disk Backplane

For a description of the interfaces on a 2 x 2.5" hard disk backplane, refer to Table 9-5.
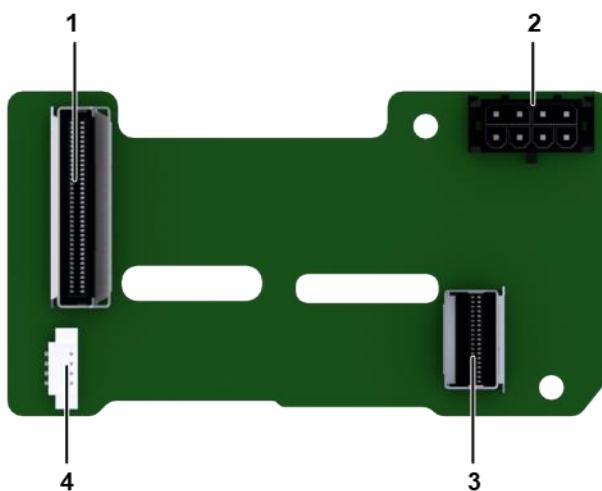
Table 9-5 Interfaces on a 2 x 2.5" Hard Disk Backplane

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

9.5 Disk Backplane Adapter Plate

The disk backplane adapter plate of the NCS6782G N4 server is used to connect the hard disk backplane and middle backplane. Figure 9-6 shows the disk backplane adapter plate.

Figure 9-6 Disk Backplane Adapter Plate
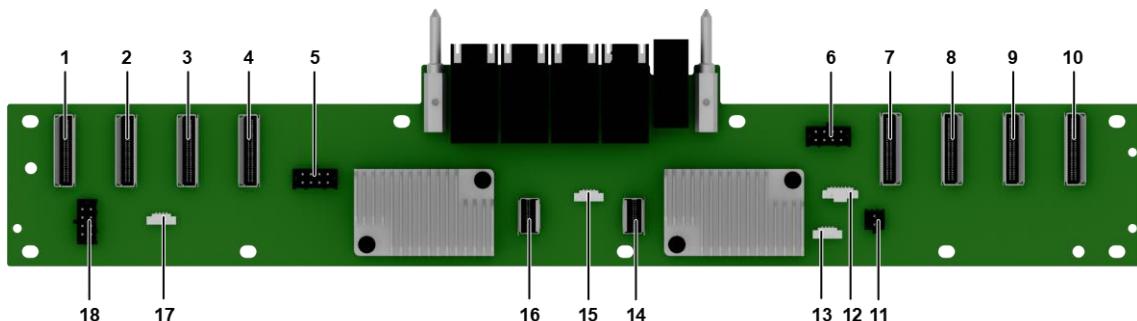
For a description of the interfaces on the disk backplane adapter plate, refer to Table 9-6.

Table 9-6 Interfaces on the Disk Backplane Adapter Plate

No.	Interface Name	Position Number
1	PCIe x8 interface	X24
2	PCIe x8 interface	X23
3	PCIe x8 interface	X21
4	PCIe x8 interface	X20
5	Power interface	X11
6	Power interface	X13
7	PCIe x8 interface	X19
8	PCIe x8 interface	X18
9	PCIe x8 interface	X16
10	PCIe x8 interface	X15
11	Power interface	X6

No.	Interface Name	Position Number
12	Riser card interface	X17
13	Out-of-band communication interface of the hard disk backplane	X9
14	PCIe x4 interface	X25
15	Out-of-band communication interface of the hard disk backplane	X10
16	PCIe x4 interface	X52
17	Out-of-band communication interface of the hard disk backplane	X22
18	Power interface	X12

9.6 Middle Backplane

The middle backplane is used to connect the disk backplane adapter plate, fan backplane, CPU module, and GPU module. The middle backplane of the NCS6782G N4 server provides interfaces on its front and back sides. Figure 9-7 shows the middle backplane.

Figure 9-7 Middle Backplane
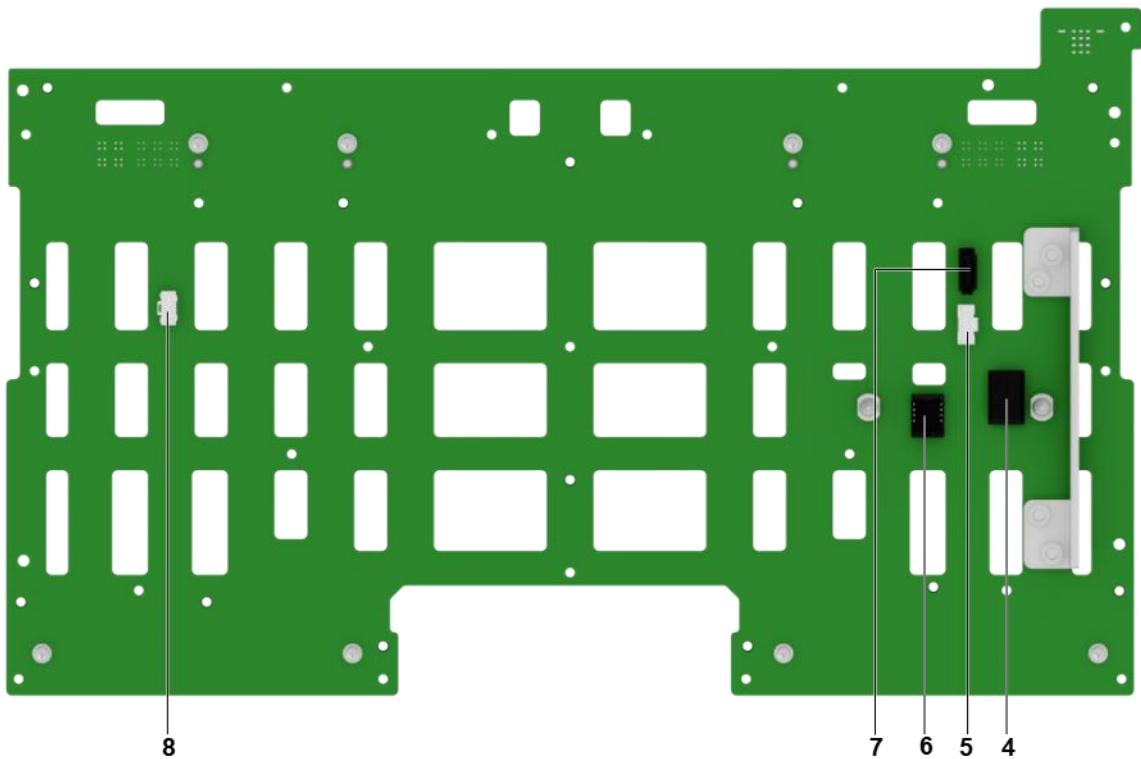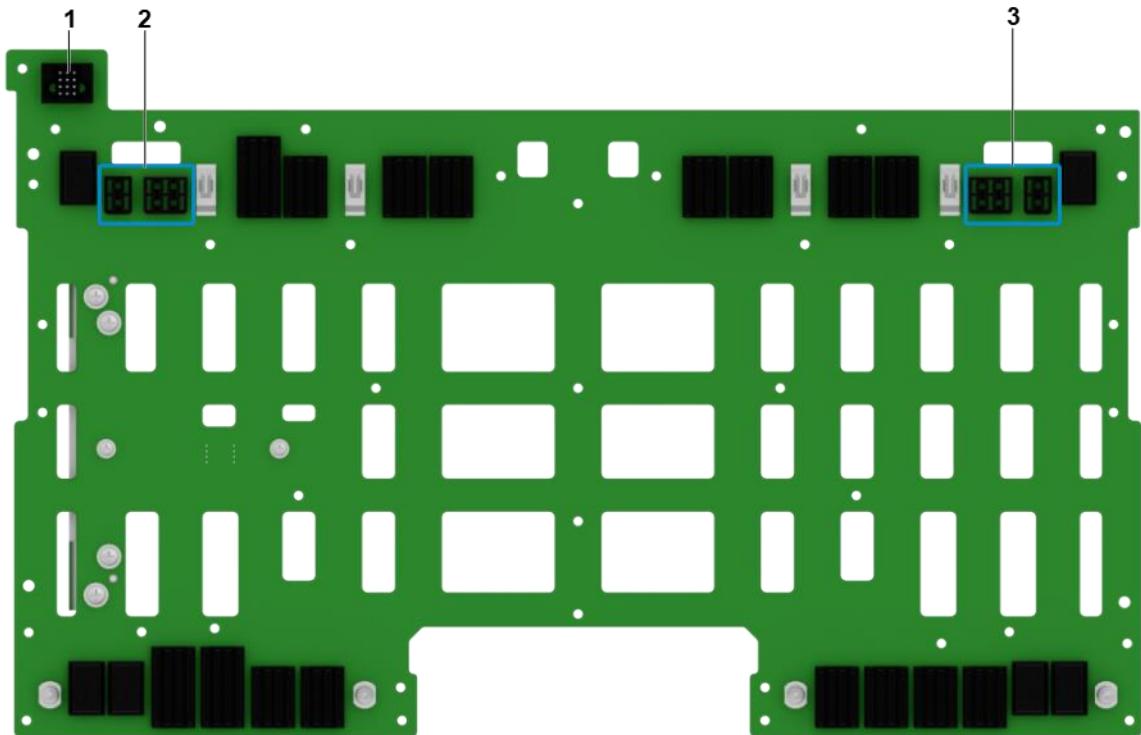
For a description of the interfaces on the middle backplane, refer to Table 9-7.

Table 9-7 Interfaces on the Middle Backplane

No.	Interface Name	Position Number
1	Leak detection signal interface	X4
2	54 V_1C power interface	X5A1 X7A1
3	54 V_2C power interface	X8A1 X9A1
4	54 V_1C fan power interface	X2A3
5	Right-lug interfaces (VGA/USB 2.0)	X2
6	Fan control interface	X1A3
7	Right-lug interface (USB 3.0)	X1
8	Left-lug status signal interface	X3

9.7 PSU Backplane

There are 8 PSUs on the rear panel of the NCS6782G N4 server. These PSUs need to be connected to one A-type PSU backplane (with 3 power interfaces) and one B-type PSU backplane (with 5 power interfaces). Both the A-type PSU backplane and B-type PSU backplane are connected to the switch board.

● The A-type PSU backplane provides interfaces on its front and back sides, as shown in Figure 9-8.

Figure 9-8 A-type PSU Backplane
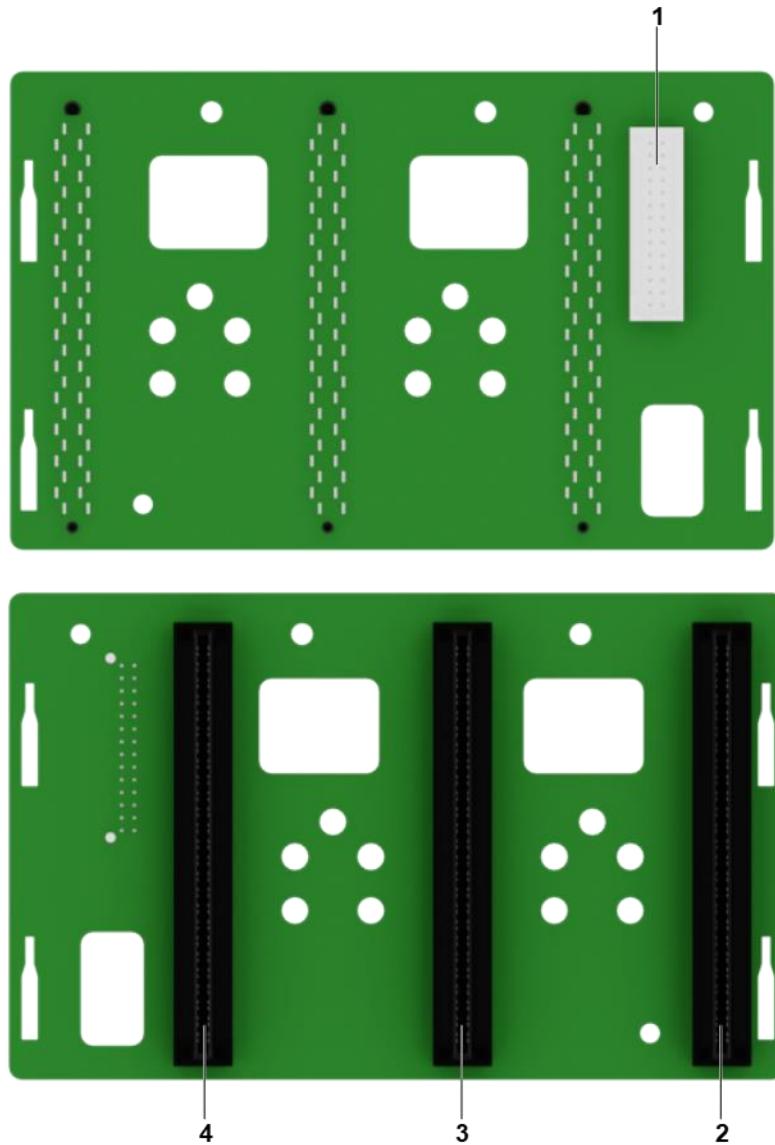
For a description of the interfaces on the A-type PSU backplane, refer to Table 9-8.

Table 9-8 Interfaces on the A-type PSU Backplane

No.	Interface Name	Position Number
1	PSU1 interface	X1
2	54 V PSU interface	X2
3	54 V PSU interface	X4
4	54 V PSU interface	X3

● The B-type PSU backplane provides interfaces on its front and back sides, as shown in Figure 9-9.

Figure 9-9 B-type PSU Backplane

For a description of the interfaces on the B-type PSU backplane, refer to Table 9-9.

Table 9-9 Interfaces on the B-type PSU Backplane

No.	Interface Name	Position Number
1	Switch board connection interface	X4
2	PSU2 interface	X1

No.	Interface Name	Position Number
3	12 V PSU interface	X3
4	54 V PSU interface	X7
5	54 V PSU interface	X5
6	54 V PSU interface	X2
7	12 V PSU interface	X6

9.8 Fan Backplane

There are 14 fan units (80 mm x 80 mm) on the front panel of the NCS6782G N4 server. These fan units need to be connected to one A-type fan backplane (with 4 slots) and two B-type fan backplanes (with 5 slots each).

● Figure 9-10 shows an A-type fan backplane.

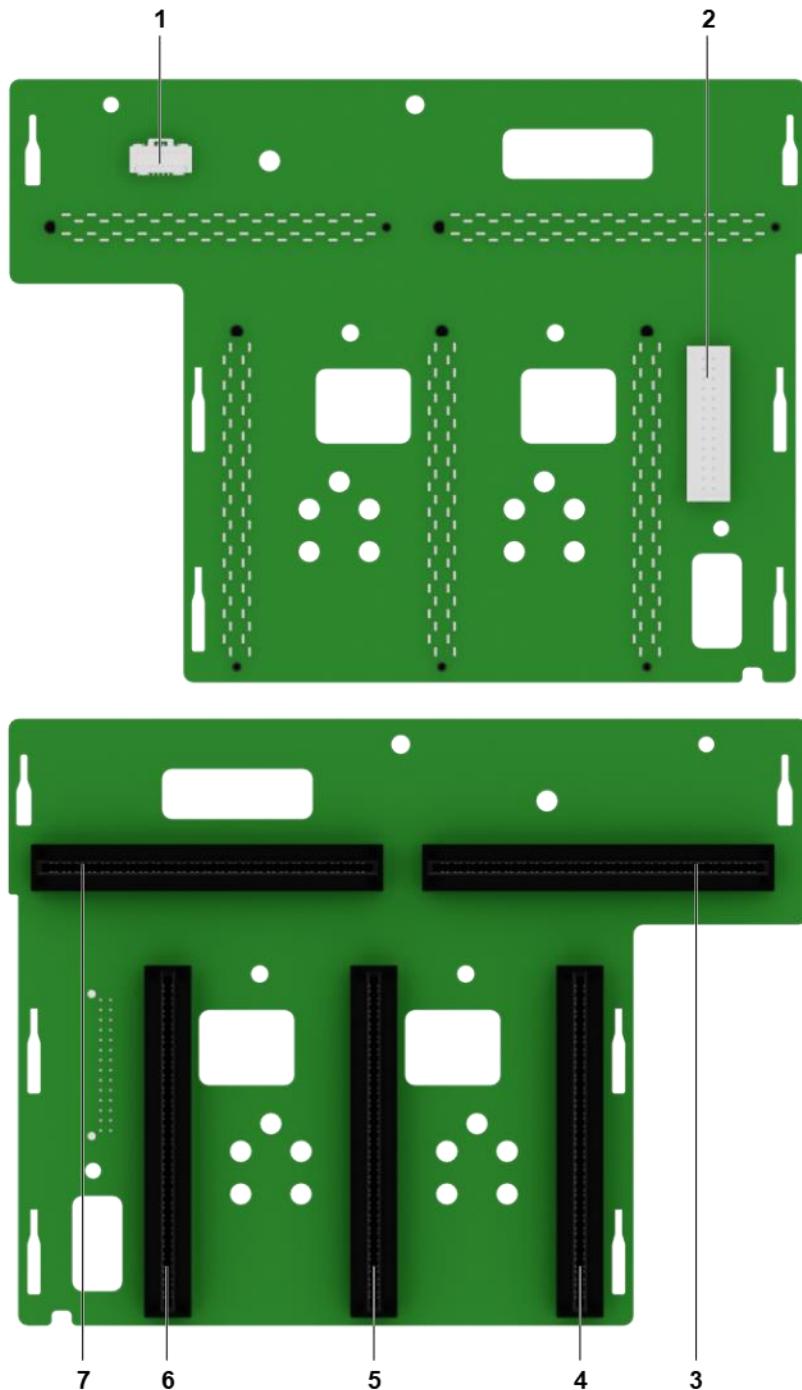**Figure 9-10 A-type Fan Backplane**
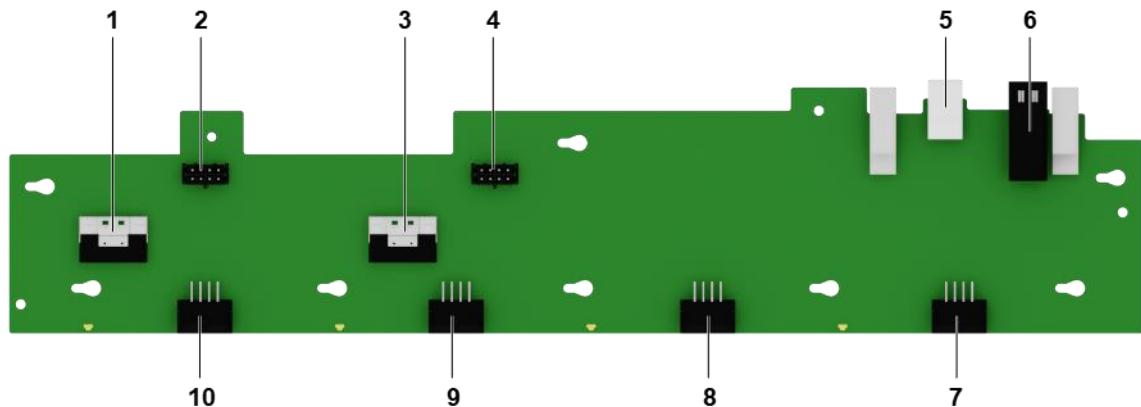
For a description of the interfaces on the A-type fan backplane, refer to Table 9-10.

Table 9-10 Interfaces on the A-type Fan Backplane

No.	Interface Name	Position Number
1	Slim SAS x8 interface	X2
2	Power interface	X5
3	Slim SAS x8 interface	X3
4	Power interface	X6
5	Fan control interface	X14
6	54 V_1C fan power interface	X1
7	Fan interface	X12

No.	Interface Name	Position Number
8	Fan interface	X11
9	Fan interface	X10
10	Fan interface	X9

● Figure 9-11 shows a B-type fan backplane.

Figure 9-11 B-type Fan Backplane

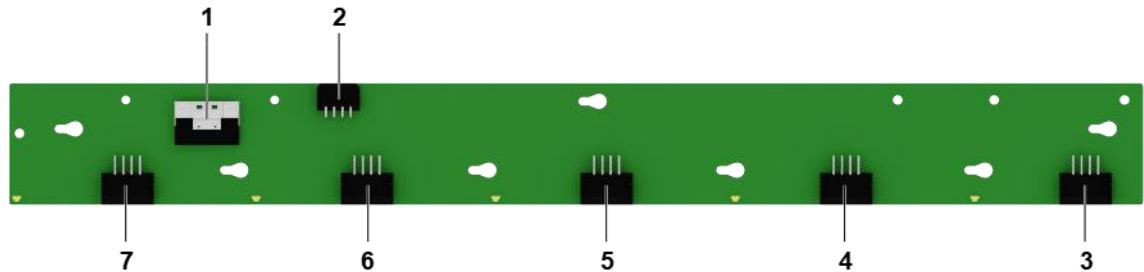For a description of the interfaces on the B-type fan backplane, refer to Table 9-11.

Table 9-11 Interfaces on the B-type Fan Backplane

No.	Interface Name	Position Number
1	Slim SAS x8 interface	X1
2	Power interface	X2
3	Fan interface	X12
4	Fan interface	X11
5	Fan interface	X10
6	Fan interface	X9
7	Fan interface	X13

Chapter 10
Cables

Table of Contents

10.1 Power Cables

10.1.1 C19-16A National Plug Power Cable

Function

A C19-16A national plug power cable is connected to a power strip in the cabinet to supply power for the NCS6782G N4 server chassis.

External View

Figure 10-1 shows an external view of a C19-16A national plug power cable.

Figure 10-1 C19-16A National Plug Power Cable

End A of the power cable is a C19 female connector, and end B is a 16 A three-flat-pin male plug. The power cable is a black power cable.

Connections

For the connections of a C19-16A national plug power cable, refer to Table 10-1.

End A	End B
Connected to the power input port of a PSU on the chassis.	Connected to a power strip in the cabinet.

Technical Specifications

- Rated current: 16 A.
- Internal wires: three wires, each with a cross-sectional area of 2.5 mm^2.

10.1.2 C19-C20 Power Cable

Function

A C19-C20 power cable is connected to a power strip in the cabinet to supply power for the NCS6782G N4 server chassis.

External View

Figure 10-2 shows an external view of a C19-C20 power cable.

Figure 10-2 C19-C20 Power Cable

End A of the power cable is a C19 female connector, and end B is a C20 male plug. The power cable is a black power cable.

Connections

For the connections of a C19-C20 power cable, refer to Table 10-2.

Table 10-2 Connections of a C19-C20 Power Cable

End A	End B
Connected to the power input port of a PSU on the chassis.	Connected to a power strip in the cabinet.

Technical Specifications

- Rated current: 16 A.
- Internal wires: three wires, each with a cross-sectional area of 2.5 mm^2.

10.2 Straight-Through Cable

Function

A straight-through cable is used to connect two devices or terminals for data transmission.

External View

Figure 10-3 shows an external view of a straight-through cable.

Figure 10-3 Straight-Through Cable

End A and end B of a shielded straight-through cable are shielded 8P8C crimped plugs. End A and end B of a non-shielded straight-through cable are non-shielded 8P8C crimped plugs. The main differences between shielded and unshielded straight-through cables lie in the structures, resistance to interference, and application scenarios.

- Shielded straight-through cable: This type of cable contains a metal shielding layer to reduce electromagnetic interference and RF interference, thus increasing signal quality and transmission distance. Shielded straight-through cables are typically used in environments with high data transmission requirements, such as data centers or industrial automation settings.
- Unshielded straight-through cable: This type of cable lacks an additional metal shielding layer, resulting in lower resistance to interference. Due to its lower cost and ease of installation, unshielded straight-through cables are widely used in home and office environments.

Connections

The two ends of a straight-through cable are connected to the network interfaces (RJ45 interfaces) of the devices or terminals that require data transmission.

Technical Specifications

A shielded straight-through cable is an eight-core 100-ohm Cat5e shielded cable. An unshielded straight-through cable is an eight-core 100-ohm Cat5e unshielded cable. Table 10-3 describes the correspondence between cores.

Table 10-3 Correspondence Between Wires and Pins of a Straight-Through Cable

End A	Color	End B
1	White-orange	1

End A	Color	End B
2	Orange	2
3	White-green	3
4	Blue	4
5	White-blue	5
6	Green	6
7	White-brown	7
8	Brown	8

Note

The metal shielding layer of a shielded cable must be securely connected to the metal shielding enclosures of connectors at both ends.

10.3 Serial Cable

Function

A serial cable connects the serial port on the NCS6782G N4 chassis to the serial port of a debugging PC.

External Overview

Figure 10-4 shows an external view of a serial cable.

Figure 10-4 Serial Cable

End A of a serial cable is a 3.5 mm audio plug, and end B is a 9-pin D-shape molded plug. Both end A and end B are numbered as pin numbers.

Connections

For a description of the connections of a serial cable, refer to Table 10-4.

Table 10-4 Serial Cable Connections

End A	End B
Connected to the 3.5 mm audio port of the server.	Connected to the RS-232 debugging serial port (DB9) of a debugging PC.

Technical Specifications

For the correspondence between the pins of the connectors at both ends of the serial cable, refer to Table 10-5.

Table 10-5 Correspondence Between Pins on Both Ends of the Serial Cable

Pin at End A	Pin at End B
1	2
2	3
3	5
4	

10.4 VGA Cable

Function

A VGA cable is used to connect the NCS6782G N4 and a media display.

External Overview

Figure 10-5 shows the external overview of a VGA cable.

Figure 10-5 VGA Cable

A VGA cable is a beige UL2919 cable with magnetic rings, and uses HD-SUB plugs at both ends.

Connections

For the connections of a VGA cable, refer to Table 10-6.

Table 10-6 VGA Cable Connections

End A	End B
Connected to the VGA interface on the chassis.	Connected to the VGA interface of a media display.

Technical Specifications

A VGA cable is a horizontal pair-twisted cable. For the correspondence between the wires and pins of a VGA cable, refer to Table 10-7.

Table 10-7 Correspondence Between the Wires and Cores of a VGA Cable

End A	Color	End B
1	Core of the red cord	1
2	Core of the gray cord	2
3	Core of the blue cord	3
4	(Blank)	4
5	External shielded wire	5
6	Core of the red cord	6
7	Core of the gray cord	7
8	Core of the blue cord	8
9	(Blank)	9
10	Shielded wire for the white cord	10
11	Shielded wire for the black cord	11
12	Black wire	12
13	Shielded wire for the white cord	13
14	Shielded wire for the black cord	14
15	Brown wire	15

Note

The external shielded wire for the entire VGA cable, shielded wire for the white cord, and shielded wire for the black cord are connected and grounded together through the VGA plug shell.

Glossary

AC

- Alternating Current

ADDDC

- Adaptive Double Device Data Correction

BIOS

- Basic Input/Output System

BMC

- Baseboard Management Controller

CAS

- Column Address Strobe

CPLD

- Complex Programmable Logic Device

CPU

- Central Processing Unit

CRC

- Cyclic Redundancy Check

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

GPU

- Graphics Processing Unit

HBM

- High Bandwidth Memory

HVDC

- High-Voltage Direct Current

I/O

- Input/Output

I2C

- Inter-Integrated Circuit

JTAG

- Joint Test Action Group

LED

- Light Emitting Diode

NCSI

- Network Controller Sideband Interface

NIC

- Network Interface Card

NVMe

- Non-Volatile Memory Express

OCP

- Open Computer Project

OS

- Operating System

PC

- Personal Computer

PCH

- Platform Controller Hub

PCIe

- Peripheral Component Interconnect Express

PCLS

- Partial Cache Line Sparing

PPR

- Post-Package Repair

PSU

- Power Supply Unit

RAID

- Redundant Array of Independent Disks

RDIMM

- Registered Dual Inline Memory Module

RS-232

- Recommended Standard 232

SAS

- Serial Attached SCSI

SATA

- Serial ATA

SDDC

- Single Device Data Correction

SPD

- Serial Presence Detect

SSD

- Solid State Drive

TPM

- Trusted Platform Module

USB

- Universal Serial Bus

VGA

- Video Graphic Adapter