Inspur Server i48M6
White Paper

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Date 2021-05-21

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Technical Support

Technical Service Hotline: 1-844-860-0011/1-760-769-1847

Address: No. 1036, Langchao Road, Jinan, Shandong Province, China

Inspur Electronic Information Industry Co., Ltd.

Email: serversupport@inspur.com

Postal Code: 250101

Symbol Conventions

The symbols that may be found in this document are defined as follows.

Symbol	Description
 DANGER	A potential for serious injury, or even death if not properly handled
 WARNING	A potential for minor or moderate injury if not properly handled
 CAUTION	A potential loss of data or damage to equipment if not properly handled

Symbol	Description
IMPORTANT	Operations or information that requires special attention to ensure successful installation or configuration
NOTE	Supplementary description of important information

Revision History

Version	Date	Description of Changes
V1.0	2021-05-21	Initial release

Table of Contents

1. Product Overview

Inspur i48M6 is a high-density modular server with the Xeon® Scalable processor design from the Intel® Whitley platform. Optimized for new high-density data centers and applications, it serves as the optimal infrastructure in all-in-one solutions for all scenarios. The chassis of i48M6 can accommodate 8 dual-socket NS5480M6 nodes with optimized computing performance (Figure 1-1), or 4 balanced dual-socket NS5484M6 nodes (Figure 1-2). Two dual-socket NS5486M6 nodes with optimized storage (Figure 1-3) can be used to realize single-node 36-bay deployment. If used with a specially designed 4-slot storage expansion module NS5486JD (Figure 1-4), any dual-socket node based on the i48M6 platform can support another 36 3.5" drives, enabling the server to support a maximum of 72 3.5" drives and 2 2.5" drives. A chassis supports the mixed deployment of nodes of different types.

Each node is an independent system and connected to the chassis through the middle backplane. The power supplies and fans are designed for shared use to save more space and energy consumption, maximizing the density, efficiency, reliability and intelligence in a limited space. An outstanding product design makes i48M6 more suitable for cloud computing, high-performance computing, big data analysis, mass storage, CDN, hyper convergence, traffic analysis, video monitoring, and other infrastructure constructions.

Figure 1-1 i48M6 4U8N Node

Figure1-2 i48M6 4U4N Node

Figure 1-3 i48M6 4U2N Node

Figure 1-4 i48M6 4U1N Node

2. Features

i48M6 maintains high quality and reliability of Inspur servers to meet different needs of various scenarios. It is designed to maximize the density, computing performance, reliability, and maintainability.

Extensible and manageable:

- i48M6 adopts a fully modular design for chassis, node, node front panel expansion, rear I/O cage, management, network, and other modular units. Different modules can be used in combination as needed for easy and rapid customization of IT infrastructure. A unified architecture and an elastic design enable a data center to be expanded smoothly from small to large scale, minimizing the initial infrastructure investment.
- A NS5480M6/NS5484M6/NS5486M6 node supports three types of modular front panel. Different expansion slots can be configured by changing a front panel module.
- Computing and storage resources can be combined flexibly for a variety of workloads. Different node configurations provide 12, 36, 48, 72 or more drives for storage.
- PCIe expansion slots can be used together with front drives through the modular front panel to support multiple networks and high IOPS. A hot-swap expansion module with a single PCIe card is installed in the rear of i48M6 chassis, further improving performance.
- With a flexible management scheme, the server supports a unified CMC management module that connects to the BMC system of each node, which allows remote management from a single location and centralized maintenance of shared units such as chassis fans and power supplies. A dual-CMC redundant architecture and a redundant network switch module are optional. The network switch module of the server is connected to the onboard gigabit chips of nodes, providing 2 10 GbE optical ports and 1 GbE electrical port for a large-scale cluster management network.

High density and high computing performance:

- The server can be configured with 8 compute nodes to enable high-density computing. Each node is built on the latest 3rd generation Intel® Xeon® Scalable processor, supporting two 185 W CPUs in the air cooling mode.
- Featuring high-density storage, the server has a storage node used together with drive cages to support a configuration of up to 72+2+2 drives.
- A single node supports up to 4 standard PCIe slots, 1 OCP slot and 1 RAID card slot, which provides multiple options for network interface configuration and delivers a more flexible network architecture for applications.

- The node hardware system with NUMA-Balanced design allows the PCIe devices to be deployed evenly under two CPUs, optimizing the application performance to the full extent.

Eco-friendly, energy-saving, and quick to deploy:

- i48M6 adopts a shared and redundant design in the power supply system and cooling system. Inspur's unique intelligent control technology together with cutting-edge air cooling system enables optimum working environment to ensure stable running of the server with less power consumption.
- The multi-node modular design enables i48M6 to easily integrate multiple nodes, contributing to rapid delivery in a large-scale data center.

Easy to maintain and highly reliable:

- The front maintenance feature and the hot/cold aisle separation design of a high-density data center eliminate the need of performing OPS operations in the hot aisle, bringing much ease to OPS personnel.
- Drives are maintained in separate cages with the unique drive drawer design and advanced slide rail reinforcement technology. When the server supports 72 high-capacity drives, every 36 drives are deployed in an independent cage, which is connected to the power supply and drive controller via a drag chain. Removing a cage will not interrupt the system operation, which allows hot-swap maintenance of drives without removing the server. The unique technology greatly improves maintainability, reduces the impact of disk resonance, and optimizes the cooling performance.

Security

- Support Trusted Platform Module (TPM 2.0), which can provide advanced encryption functions.
- Support Intel Trusted Execution Technology (Trusted Execution Technology), which can resist malware attacks based on hardware.
- Supports a firmware update mechanism based on digital signatures to prevent unauthorized firmware updates.
- Support UEFI secure boot to protect the system from malicious bootloaders.
- Support BIOS hierarchical password protection to ensure system startup and management safety.
- Supports BIOS Secure Flash and Lock Enable (BLE) functions to reduce malicious software attacks on the BIOS Flash area.
- Support CMC, BMC, BIOS dual-mirror mechanism, recover after detecting the firmware is damaged.
- Support CMC and BMC safe startup to prevent the management firmware from being maliciously tampered with.
- Supports flexible CMC and BMC access control strategies to improve management security.

3. New Technical Highlights

3.1. Dynamic Power Capping Protection

Designed to reduce the risk of power overload, the Power Capping protection mechanism is activated when the total power consumption of the i48M6 system is greater than that of (N-1) PSU. When a PSU fails or is under maintenance, Power Capping can help reduce the total power consumption by control CPU/DIMM working frequency on the node, and ensure the total consumption is less than the power supply of (N-1) PSU. When the power capping function works, the performance of system will be limited. In individual extreme scenarios, the system can not be protected by Power Capping, for example, the output of PSU is short circuited, the PSU with cable is pulled out, etc.

3.2. Intel® VROC

Intel® Virtual RAID on CPU (VROC) is specially designed for enterprise-level RAID solutions based on NVMe SSDs. Its biggest advantage lies in direct management of NVMe SSDs connected to PCIe channels of Intel® Xeon® Scalable processors, without the need for a dedicated RAID controller.

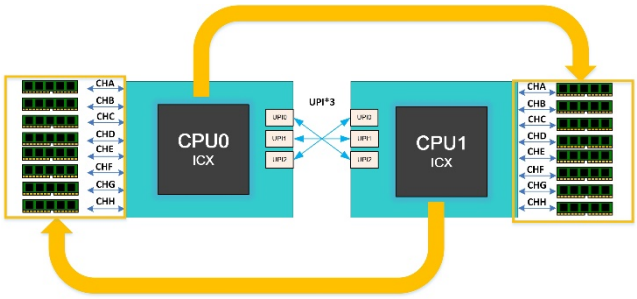
3.3. NUMA Balance System Architecture Configuration

TOR(table of request) can provide service for remote and local request on UPI when there is data remote traffic in server with multi CPU. CPUo access remote memory of CPU1 via UPI. If UPI is the transmission bottleneck, the remote request will remain in TOR for a long time.

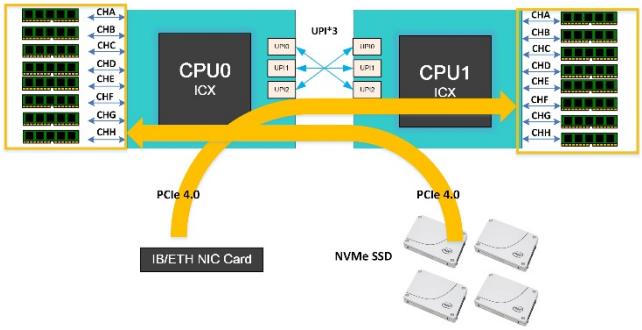
When TOR of one CPU is full of remote request, CPU performance can not fully satisfy its own local request, nor can it fully satisfy the remote request of another CPU. The imbalance will affect overall performance.

With NUMA Balance, i48M6 can balance resources by evenly allocating the front NVMe backplanes and rear PCIe cards to two CPUs. Hence, it is ideal for high I/O environments or latency-sensitive environments.

When one CPU use the memory of remote CPU, UPI is widely used as transmission link. The maximum bandwidth of all memory should not exceed the total bandwidth of UPI.



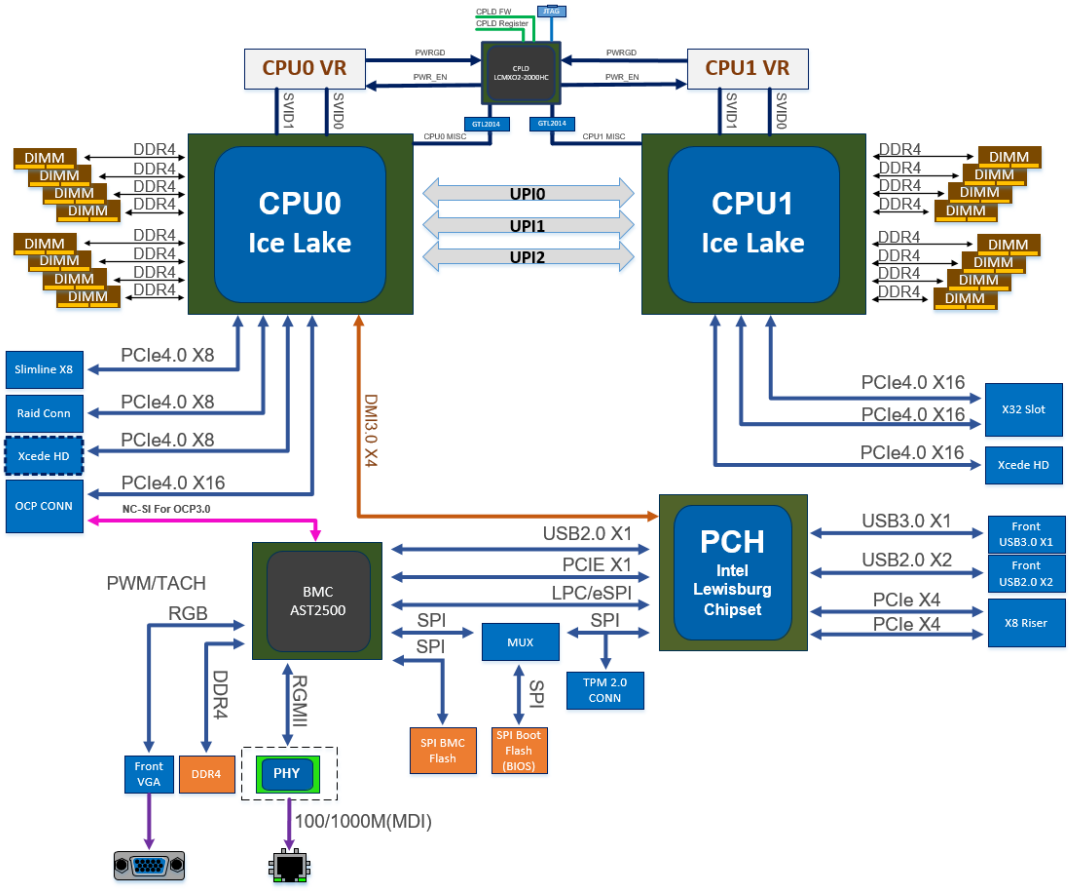
When PCIe device use the resource or memory of remote CPU, massive throughput would be generated on UPI. If the PCIe device can not support RDMA, the total bandwidth of UPI should be greater than the total throughput of all remote PCIe devices.



4. Logical Architecture

- A single NS5480M6/NS5484M6/NS5486M6 node supports 2 Intel® Xeon® Scalable processors and 16 DDR4 DIMM slots. 2933 MHz/3200 MHz DIMMs and 8 BPS are supported.
- Two processors of a single node are interconnected via UPI buses.
- A NS5480M6/NS5484M6/NS5486M6 node uses the IntelC621A chipset.
- A single NS5480M6 node supports up to 6 PCIe signals from 3 front PCIe slots, 1 rear hot-swap PCIe module, 1 front OCP NIC, and 1 built-in RAID card slot.
- The drive cage of NS5484M6/NS5486M6 nodes is connected to the computing unit via the drag chain, which enables the drive cage to be independently maintained without being powered off when it is removed for maintenance. The drive storage cage of NS5486JD is configured with an independent RAID card, which is connected to the node through the backplane.

Figure 4-1 i48NS5480M6/NS5484M6/NS5486M6 Node Block Diagram

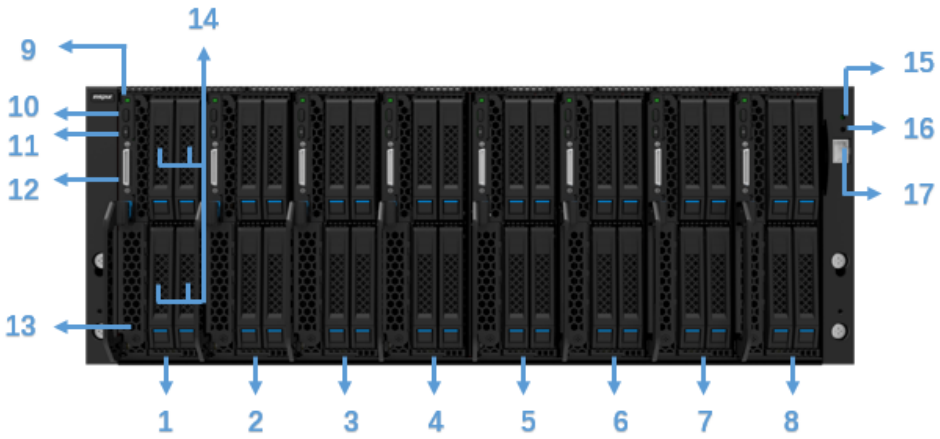


5. Product Overview

5.1. Front View

5.1.1. Front Panel of the 4SFF Server with NS5480M6 Nodes

Figure 5-1 NS5480M6 4SFF Front View



#	Item	Description
1 - 8	Nodes 1 - 8	
9	Node Health LED	Green = Normal Solid red = Error
10	UID Button	Blue = UID on No light = UID off Long press 6 sec to force restart BMC
11	Power Button	Green = Power-on Orange = Standby Long press 4 sec to force a shutdown
12	Ports with High-Density	
13	OCP Slot	Supports OCP NICs
14	SAS/SATA/NVMe Drive	SAS drives are connected to RAID/SAS cards. SATA drives are connected to RAID/SAS cards or onboard RAID controller. NVMe drives support VROC via RAID key.
15	System health LED	No light = Normal Solid red = Error
16	Chassis UID	Blue = UID on No light = UID off

17	Front Mounting Ear RJ45 Connector	Connected to the CMC module for easy front maintenance.

5.1.2. Front Panel of the 2SFF 2LP Server with NS5480M6 Nodes

Figure 5-2 NS5480M6 2SFF 2LP Front View

#	Item	Description
1	OCP Slot	Supports OCP NICs
2	SAS/SATA/NVMe Drive	• SAS drives are connected to RAID/SAS cards. • SATA drives are connected to RAID/SAS cards or onboard RAID controller. • NVMe drives support VROC via RAID key.
3	PCIe Expansion Card	2× PCIe 4.0 x16 cards

5.1.3. Front Panel of the 3LP Server with NS5480M6 Nodes

Figure 5-3 NS5480M6 3LP Front View

#	Item	Description
1	OCP Slot	Supports OCP NICs
2	PCIe Expansion Card	1 × PCIe 3.0 x 8 card
3	PCIe Expansion Card	2 × PCIe 4.0 x16 cards

5.1.4. Front Panel of the 2SFF Server with NS5484M6 Nodes

Figure 5-4 NS5484M6 2SFF Front View

#	Item	Description
1	Node 1	

2	Node 2	
3	Node 3	
4	Node 4	
5	Node Health LED	Green = Normal Solid red = Error
6	UID Button	Blue = UID on No light = UID off Long press 6 sec to force restart BMC
7	Power Button	Green = Power-on Orange = Standby Long press 4 sec to force a shutdown
8	Ports with High-Density	
9	OCP Slot	Supports OCP NICs
10	Storage Pool Drive Power LED	Green = Drives are normal No light = Error
11	Storage Pool Drive Fault LED	No light = Drives are normal Solid red = Error
12	SAS/SATA/NVMe Drive	SAS drives are connected to RAID/SAS cards. SATA drives are connected to RAID/SAS cards or onboard RAID controller. NVMe drives support VROC via RAID key.
13	System Health LED	No light = Normal Solid red = Error
14	Chassis UID	Blue = UID on No light = UID off
15	Front Mounting Ear RJ45 Connector	Connected to the CMC module for easy front maintenance.

5.1.5. Front Panel of the 2SSD 1LP Server with NS5484M6 Nodes

Figure 5-5 NS5484M6 2SSD 1LP Front View

#	Item	Description
1	OCP Slot	Supports OCP NICs
2	PCIe Expansion Card	1 × PCIe 4.0 x16 card
3	SATA Drive (7 mm)	1. SATA drives are connected to RAID/SAS cards or onboard RAID controller, and only support 2.5" SATA SSDs. 2. SATA drives that connect to RAID cards support creating RAID.

5.1.6. Front Panel of the 2LP Server with NS5484M6 Nodes

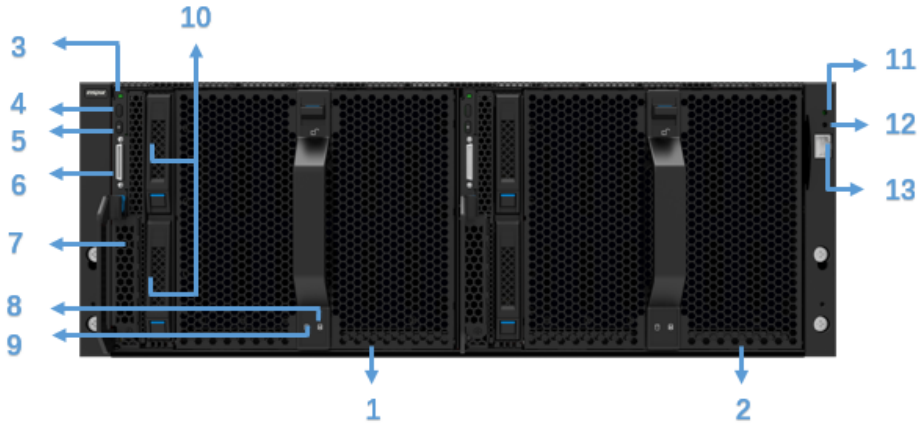
Figure 5-6 NS5484M6 2LP Front View

#	Item	Description
1	OCP Slot	Supports OCP NICs
2	PCIe Expansion Card	1 × PCIe 4.0 x16 card

3	PCIe Expansion Card	1 × PCIe 3.0 x8 card

5.1.7. Front Panel of the 2SFF Server with NS5486M6 Nodes

Figure 5-7 NS5486M6 2SFF Front View



#	Item	Description
1	Node 1	
2	Node 2	
3	Node Health LED	Green = Normal Solid red = Error
4	UID Button	Blue = UID on No light = UID off Long press 6 sec to force restart BMC
5	Power Button	Green = Power-on Orange = Standby Long press 4 sec to force a shutdown
6	Ports with High-Density	
7	OCP Slot	Supports OCP NICs
8	Storage Pool Drive Power LED	Green = Drives are normal No light = Error
9	Storage Pool Drive Fault LED	No light = Drives are normal Solid red = Error
10	SAS/SATA/NVMe Drive	SAS drives are connected to RAID/SAS cards. SATA drives are connected to RAID/SAS cards or onboard RAID controller. NVMe drives support VROC via RAID key.
11	System Health LED	No light = Normal Solid red = Error

12	Chassis UID	Blue = UID on No light = UID off
13	Front Mounting Ear RJ45 Connector	Connected to the CMC module for easy front maintenance.

5.1.8. Front Panel of the 2SSD 1LP Server with NS5486M6 Nodes

Figure 5-8 NS5486M6 2SSD 1LP Front View

#	Item	Description
1	OCP Slot	Supports OCP NICs
2	PCIe Expansion Card	1 × PCIe 4.0 x16 card
3	SATA Drive (7 mm)	1. SATA drives are connected to SAS/RAID cards or onboard RAID controller, and only support 7 mm (2.5") SATA SSDs. 2. SATA drives that connect to RAID cards support creating RAID.

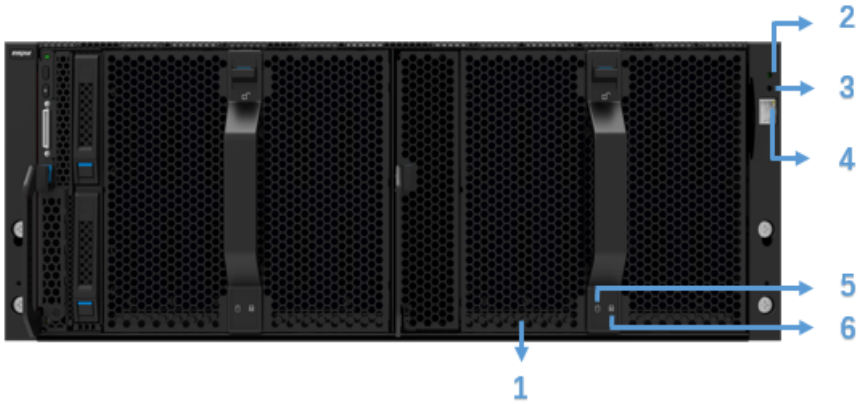
5.1.9. Front Panel of the 2LP Server with NS5486M6 Nodes

Figure 5-9 NS5486M6 2LP Front View

#	Item	Description
1	OCP Slot	Supports OCP NICs
2	PCIe Expansion Card	1 × PCIe 4.0 x16 card
3	PCIe Expansion Card	1 × PCIe 3.0 x8 card

5.1.10. Front Panel of NS5486JD Drive Cage and the Matched Nodes

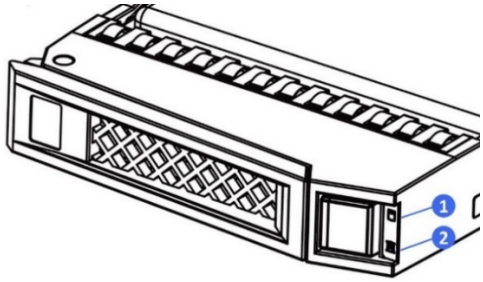
Figure 5-10 NS5486JD Front View



#	Item	Description
1	36-Bay Cold Storage Drive Cage	Supports 3.5" or 2.5" drives
2	System Health LED	No light = Normal Solid red = Error
3	Chassis UID	Blue = UID on No light = UID off
4	Front Mounting Ear RJ45 Connector	Connected to the CMC module for easy front maintenance.
5	Storage Pool Drive Fault LED	No light = Drives are normal Solid red = Error
6	Storage Pool Drive Power LED	Green = Drives are normal No light = Error

5.1.11. Front Drive and LED

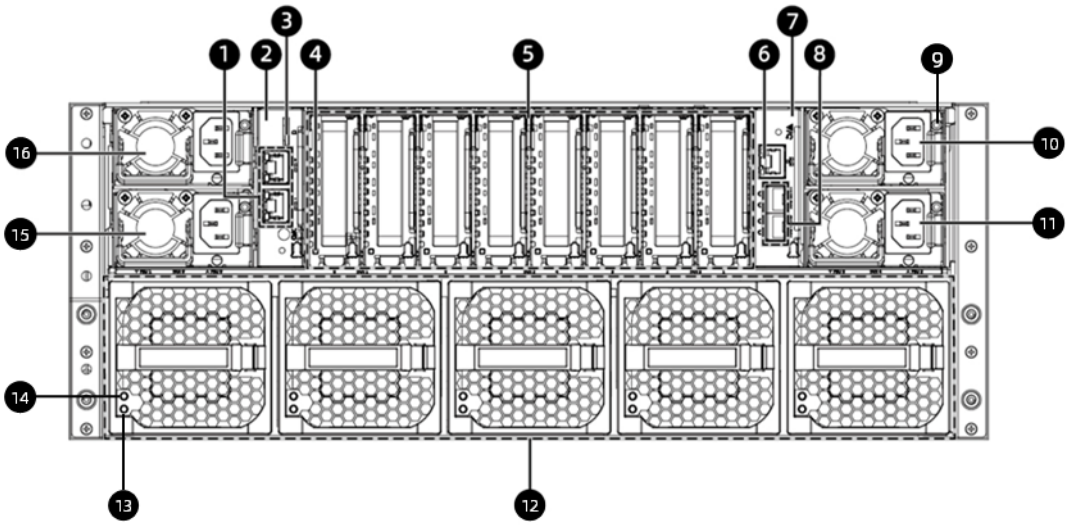
Figure 5-11 Drive View



#	Item	Description
1	Activity Status LED	Solid green = Normal Flashing green = Read/write activities
2	Drive Fault LED	Solid red = Drive error or failure Solid blue = Drive is being located Solid pink = RAID rebuilding

5.2. Rear View

Figure 5-12 Chassis Rear Panel



#	Item
1	CMC Network Interface × 2
2	Management Module (which is used as the active management module when selected)
3	CMC TF Card Slot
4	PCIe Hot-Swap Button

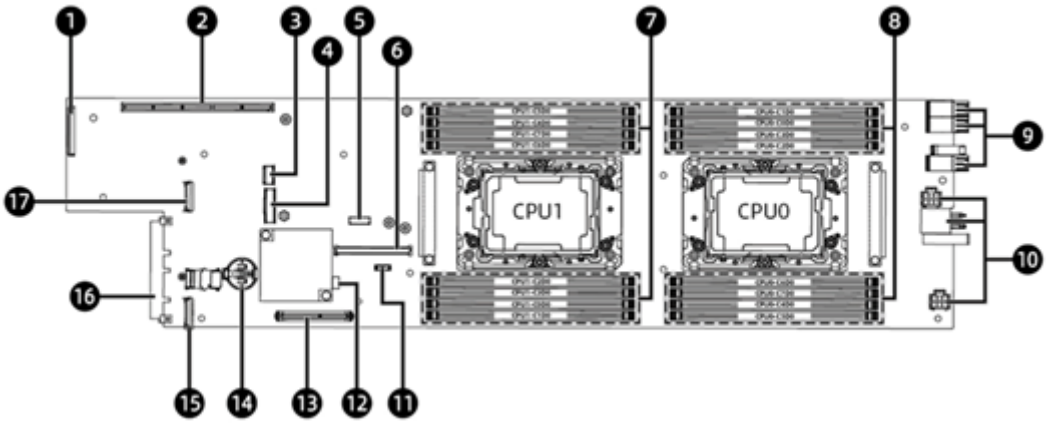
#	Item
5	Node 8_PCIe to Node 1_PCIe Slots
6	Switch Module RJ45 Connector
7	Switch Module (replaceable with the management module)
8	Switch Module Optical Port × 2
9	Power Status LED
10	PSU 2
11	PSU 3
12	Fan Modules 0 - 4
13	Fan Power LED
14	Fan Status LED
15	PSU 1
16	PSU 0

The number of rear PCIe cards is the same as that of nodes. Each node can be configured with up to one rear PCIe card at the corresponding slot. The following table shows the full configuration of the nodes of the same type. For other node configuration schemes, please contact Inspur Customer Service.

Node	Maximum Number of Configurable Rear PCIe Cards	Note
8 NS5480M6 nodes at full configuration	8	/
4 NS5484M4 nodes at full configuration	8	The I/O module at the rear of the chassis provides 1*PCIe x16 expansion slot or 2*PCIe x8 expansion slot for each node
2 NS5486M6 nodes at full configuration	4	

5.3. Node Mainboard

Figure 5-13 Mainboard

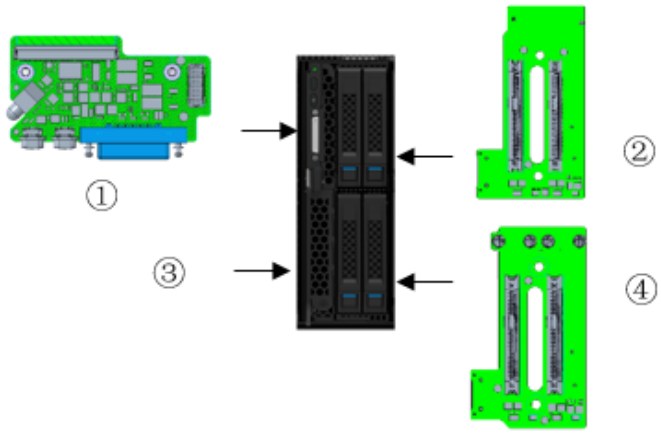


#	Item	#	Item
1	Front Panel I/O Board Connector	10	Power Connector × 3
2	PCIe x32 Riser Card Slot	11	RAID Key Port
3	Slimline x4 Connector	12	Clear CMOS
4	Slimline x8 Connector	13	M.2 Riser Card Slot
5	TPM Slot	14	RTC Battery Holder
6	RAID Card Slot	15	SAMTEC Connector
7	DIMM Slot (CPU1)	16	OCP 3.0 NIC Slot
8	DIMM Slot (CPU0)	17	SAMTEC Connector
9	Xcede Connector × 3		

5.4. Node Board

5.4.1. Front Panel Board of the 4SFF Server with NS5480M6 Nodes

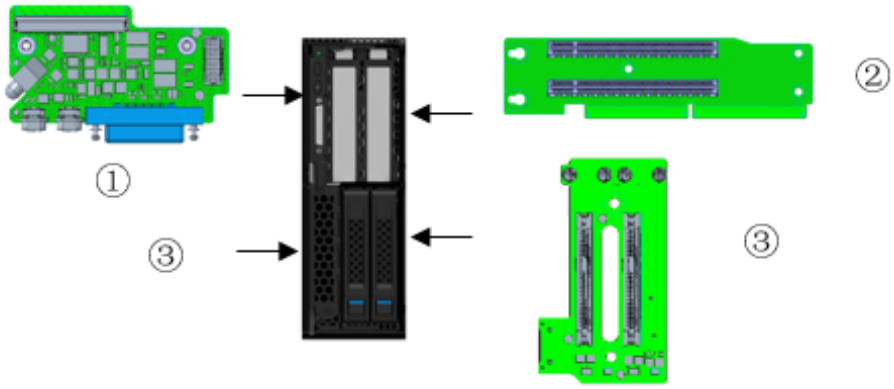
Figure 5-14 NS5480M6 4SFF Front Panel Board Diagram



#	Item	#	Item
1	Front I/O Board	2	2 × SATA/SAS/NVME SFF Drive Backplane
3	Front OCP Slot	4	2 × SATA/SAS/NVME SFF Drive Backplane

5.4.2. Front Panel Board of the 2SFF 2LP Server with NS5480M6 Nodes

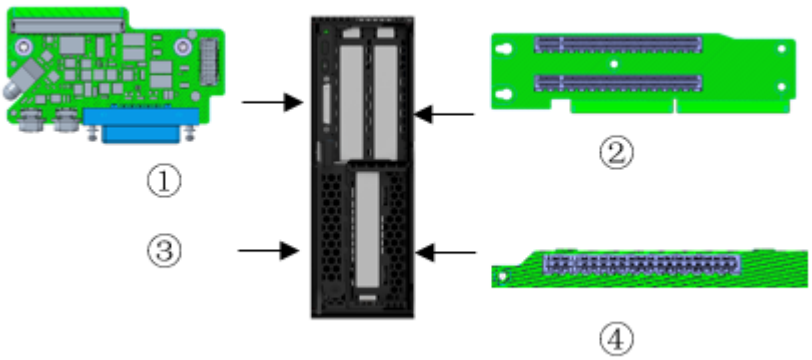
Figure 5-15 NS5480M6 2SFF 2LP Front Panel Board Diagram



#	Item	#	Item
1	Front I/O Board	2	2 × PCIe 4.0 x16 Riser Card
3	Front OCP Slot	4	2 × SATA/SAS/NVME SFF Drive Backplane

5.4.3. Front Panel Board of the 3LP Server with NS5480M6 Nodes

Figure 5-16 NS5480M6 3LP Front Panel Board Diagram

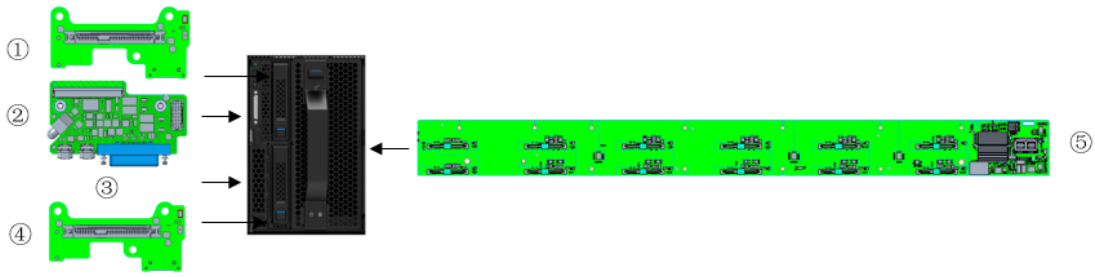


#	Item	#	Item
1	Front I/O Board	2	2 × PCIe 4.0 x16 Riser Card

3	Front OCP Slot	4	1 × PCIe 3.0 x8 Riser Cable

5.4.4. Front Panel Board of the 2SFF Server with NS5484M6 Nodes

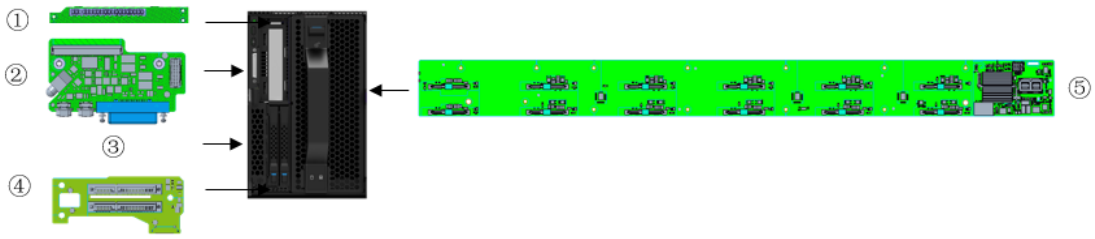
Figure 5-17 NS5484M6 2SFF Front Panel Board Diagram



#	Item	#	Item
1	1 × SATA/SAS/NVME SFF Drive Backplane	4	1 × SATA/SAS/NVME SFF Drive Backplane
2	Front I/O Board	5	12 × SATA/SAS LFF Drive Backplane
3	Front OCP Slot		

5.4.5. Front Panel Board of the 2SFF 1LP Server with NS5484M6 Nodes

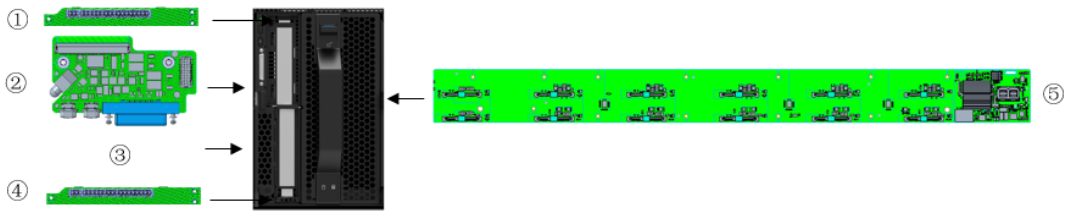
Figure 5-18 NS5484M6 2SFF 1LP Front Panel Diagram(support Hard Raid)



#	Item	#	Item
1	PCIe 4.0 x16 Riser Card	4	2 × SATA Hard RAID SSD Backplane
2	Front I/O Board	5	12 × SATA/SAS LFF Drive Backplane
3	Front OCP Slot		

5.4.6. Front Panel Board of the 2LP Server with NS5484M6 Nodes

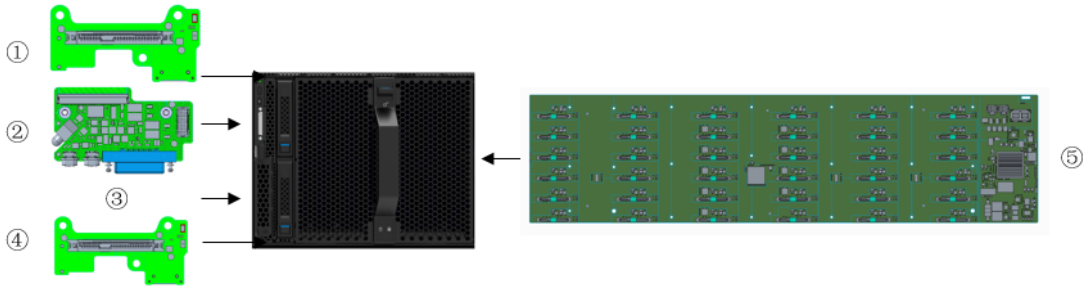
Figure 5-19 NS5484M6 2LP Front Panel Board Diagram



#	Item	#	Item
1	PCIe 4.0 x16 Riser Card	4	PCIe 3.0 x8 Riser Card
2	Front I/O Board	5	12 × SATA/SAS Drive Backplane (compatible with 3.5″/2.5″ drives)
3	Front OCP Slot		

5.4.7. Front Panel Board of the 2SFF Server with NNS5486M6 Nodes

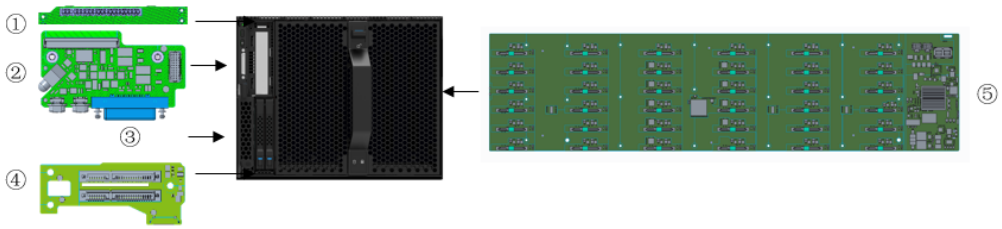
Figure 5-20 NS5486M6 2SFF Front Panel Board Diagram



#	Item	#	Item
1	1 × SATA/SAS/NVME SFF Drive Backplane	4	1 × SATA/SAS/NVME SFF Drive Backplane
2	Front I/O Board	5	36 × SATA/SAS Drive Backplane (compatible with 3.5″/2.5″ Drives)
3	Front OCP Slot		

5.4.8. Front Panel Board of the 2SFF 1LP Server with NS5486M6 Nodes

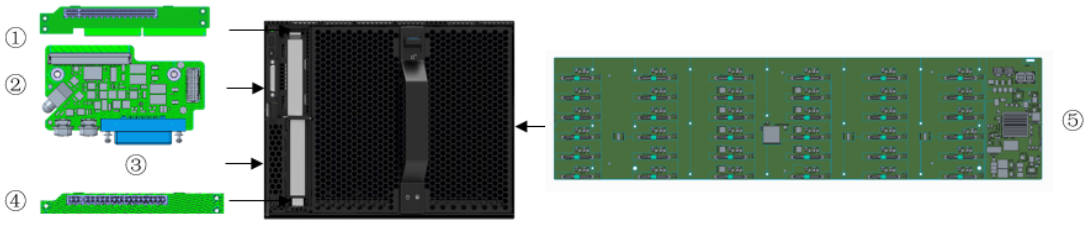
Figure 5-21 NS5486M6 2SFF 1LP Front Panel RAID Board Diagram（support Hard Raid）



#	Item	#	Item
1	1 × PCIe 4.0 x16 Riser Card	4	2 × SATA Hard RAID SSD Backplane
2	Front I/O Board	5	36 × SATA/SAS Drive Backplane (compatible with 3.5"/2.5" Drives)
3	Front OCP Slot		

5.4.9. Front Panel Board of the 2LP Server with NS5486M6 Nodes

Figure 5-22 NS5486M6 2LP Front Panel Board Diagram



#	Item	#	Item
1	1 × PCIe 4.0 x16 Riser Card	4	1 × PCIe 3.0 x8 Riser Card
2	Front I/O Board	5	36 × SATA/SAS Drive Backplane (compatible with 3.5"/2.5" Drives)
3	Front OCP Slot		

6. System Specifications

- Table 6-1 System Specifications

Item	Description
Time to Market	2021/06
Form Factor	4U rack server
Two-Socket NS5480M6 Compute Node Parameters:	
Processor	2 Intel® Xeon® Scalable processors that support CPUs with TDP of up to 185 W
Chipset	Intel C621A
Memory	Up to 16 DDR4 2933/3200 MT/s DIMMs (RDIMM/LRDIMM/BPS) 8 DIMMs per CPU and 16 DIMMs for two CPUs
I/O Port	Expandable to 1 USB 3.0 port, 2 USB 2.0 ports, 1 VGA port, and 1 DB9 serial port through SUV.
Optical Drive	External USB drives
Display Controller	Integrated in Aspeed 2500 chip with 64 M video memory and a maximum resolution of 1920 × 1200 32bpp@60Hz.
SAS/RAID Slave Card	The mainboard is integrated with the SATA controller. The INSPUR SAS3508/PM8254 RAID slave card supports RAID 0/1/5/6/10/50, a cache of 4 G/8 G, and a super capacitor module. The INSPUR SAS3408 IT/IMR & PM8252 SAS pass-through card is supported.
NIC Controller	OCP 3.0 standard cards and PCIe external cards Onboard gigabit chips that need to be used with the TSW module of the chassis
Management Chip	Aspeed 2500 BMC chip
PCIe and Storage Expansion	Up to 6 PCIe expansion slots (for 4 PCIe standard cards, 1 network slave card, and 1 storage slave card) Front: NS5480M6 with the modular front panel design supports three configurations: Front panel 1: 2 × hot-swap SATA/SAS/NVMe SSD, 2 × PCIe x16 card, and 1 × PCIe OCP network slave card Front panel 2: 4 × hot-swap SATA/SAS/NVMe SSD and 1 × PCIe OCP network slave card Front panel 3: 2 × PCIe x16 card, 1 × PCIe x8 card, and 1 × PCIe OCP network slave card

	Built-in: 1 × PCIe SAS/RAID slave card Rear: 1 × PCIe x16 card (The I/O module at the rear of the chassis provides 1 PCIe x16 expansion slot for each node, supporting single-card hot swapping.)
Built-in Storage	2 PCIe/SATA M.2 SSDs and 2 TF cards
Slot Occupied	One slot
Two-Socket NS5484M6 Balanced Node Parameters:	
Processor	2 Intel® Xeon® Scalable processors that support CPUs with TDP of up to 185 W
Chipset	Intel C621A
Memory	Up to 16 DDR4 2933/3200MT/s DIMMs (RDIMM/LRDIMM/BPS) 8 DIMMs per CPU and 16 DIMMs for two CPUs
I/O Port	Expandable to 1 USB 3.0 port, 2 USB 2.0 ports, 1 VGA port, and 1 DB9 serial port through SUV.
Optical Drive	External USB drives
Display Controller	Integrated in Aspeed 2500 chip with 64 M video memory and a maximum resolution of 1920 × 1200 32bpp@60Hz.
SAS/RAID Slave Card	The mainboard is integrated with the SATA controller. The INSPUR SAS3508/PM8254 RAID slave card supports RAID 0/1/5/6/10/50, a cache of 4 G/8 G, and a super capacitor module. The INSPUR SAS3408 IT/IMR & PM8252 SAS pass-through card is supported.
NIC Controller	OCP 3.0 standard cards and PCIe external cards Onboard gigabit chips that need to be used with the TSW module of the chassis
Management Chip	Aspeed 2500 BMC chip
PCIe and Storage Expansion	Up to 5 PCIe expansion slots (for 3 PCIe standard cards, 1 network slave card, and 1 storage slave card) Front: NS5484M6 with the modular front panel design supports three configurations: Front panel 1: 2 × hot-swap SATA SSD (supporting hard RAID), 1 × PCIe x16 card, and 1 × PCIe OCP network slave card Front panel 2: 2 × hot-swap SATA/SAS/NVMe SSD and 1 × PCIe OCP network slave card Front panel 3: 1 × PCIe x16 card, 1 × PCIe x8 card, and 1 × PCIe OCP network slave card Built-in: 1 × PCIe SAS/RAID slave card Rear: 1 × PCIe x16 card or 2 × PCIe x8 (The I/O module at the rear of the chassis provides 1 PCIe x16 expansion slot or 2 × PCIe x8 expansion slot for each node. A single slot supports single-card hot swapping, while dual slots do not support hot swapping.)

	Drive drawer: 12 × 3.5" hot-swap SATA/SAS/SSD drive (supporting 2.5" drives)
Built-in Storage	2 PCIe/SATA M.2 SSDs and 2 TF cards
Slot Occupied	Two slots
Two-Socket NS5486M6 Storage Node Parameters:	
Processor	2 Intel® Xeon® Scalable processors that support CPUs with TDP of up to 165 W
Chipset	Intel C621A
Memory	Up to 16 DDR4 2933/3200 MT/s DIMMs (RDIMM/LRDIMM/Barlow Pass) 8 DIMMs per CPU and 16 DIMMs for two CPUs
I/O Port	Expandable to 1 USB 3.0 port, 2 USB 2.0 ports, 1 VGA port, and 1 DB9 serial port through SUV.
Optical Drive	External USB drives
Display Controller	Integrated in Aspeed 2500 chip with 64 M video memory of and a maximum resolution of 1920 × 1200 32bpp@60Hz.
SAS/RAID Slave Card	The mainboard is integrated with the SATA controller. The INSPUR SAS3508/PM8254 RAID slave card supports RAID 0/1/5/6/10/50, a cache of 4 G/8 G, and a super capacitor module. The INSPUR SAS3408 IT/IMR & PM8252 SAS pass-through card is supported.
NIC Controller	OCP 3.0 standard cards and PCIe external cards Onboard gigabit chips that need to be used with the TSW module of the chassis
Management Chip	Aspeed 2500 BMC chip
PCIe and Storage Expansion	Up to 5 PCIe expansion slots (for 3 PCIe standard cards, 1 network slave card, and 1 storage slave card) Front: NS5486M6 with the modular front panel design supports three configurations: Front panel 1: 2 × hot-swap SATA SSD (supporting hard RAID), 1 × PCIe x16 card, and 1 × PCIe OCP network slave card Front panel 2: 2 × hot-swap SATA/SAS/NVMe SSD and 1 × PCIe OCP network slave card. Front panel 3: 1 × PCIe x16 card, 1 × PCIe x8 card, and 1 × PCIe OCP network slave card Built-in: 1 × PCIe SAS/RAID slave card Rear: 1 × PCIe x16 card or 2 × PCIe x8 card (The I/O module at the rear of the chassis provides 1 PCIe x16 expansion slot or 2 × PCIe x8 expansion slot for each node. A single slot supports single-card hot swapping, while dual slots do not support hot swapping.)

	Drive drawer: 36 × 3.5" hot-swap SATA/SAS/SSD drive (supporting 2.5" drives)
Built-in Storage	2 PCIe/SATA M.2 SSDs and 2 TF cards
Slot Occupied	Four slots
NS5486JD Storage Expansion Module Parameters:	
RAID Controller	The mainboard is integrated with the SATA controller. The INSPUR SAS3508/PM8254 RAID slave card supports RAID 0/1/5/6/10/50, a cache of 4 G/8 G, and a super capacitor module.
PCIe and Storage Expansion	Built-in: 1 × PCIe SAS/RAID slave card (connected to the PCIe x8 link under the CPUo of the expanded node via the middle backplane) Drive drawer: 36 × 3.5" hot-swap SATA/SAS/SSD drive (supporting 2.5" drives)
Collocation	Used together with NS5480M6 to support a two-socket compute node with 36 × 3.5" drive + 4 × 2.5" drive Used together with NS5484M6 to support a two-socket compute node with 48 × 3.5" drive + 2 × 2.5" drive Used together with NS5486M6 to support a two-socket compute node with 72 × 3.5" drive + 2 × 2.5" drive Note: By configuring a single CPU, the NS5486JD expansion module can be mounted.
Slot Occupied	Four slots
Server Parameters:	
Form Factor	4U with 8 node slots
System Management	The server's CMC management module provides 2 external RJ45 ports and supports CMC modules with 1+1 redundancy. Each node integrates an onboard BMC management chip. Management features such as IPMI, SOL, KVM Over IP, and virtual media as well as functions such as SSD life detection are supported.
Gigabit Switch Module	TSW network switch module is used and connected to the gigabit network chip on the mainboard of each node through the backplane, providing 1 × 1 G electrical port + 2 × 10 G optical port externally.
Power Supply	1300W/1600W/2000W, 100V - 240V AC, and 240V HVDC Platinum power supplies that support 2+2/3+1 redundancy
Fan	5 fan modules designed with N+1 redundancy and a backflow preventer
Chassis Dimensions	448 mm (w) × 175.5 mm (h) × 895.5 mm (d)
Product Weight	Chassis weight: 30 kg Server weight: 78 kg: 8 NS5480M6 nodes at full configuration 98 kg: 4 NS5484M6 nodes at full configuration

	120 kg: 2 NS5486M6 nodes at full configuration 120 kg: 1 NS5486M6 node + 1 NS5486JD storage cage at full configuration
Temperature	Storage (packed): -40°C to +70°C Storage (unpacked): -40°C to +55°C Operating: Fans are working normally at 5°C to 35°C; a single fan rotor fails at 5°C to 30°C The operating temperature varies in extreme configurations or environments. For details, please contact Inspur Customer Service.
Humidity	Operating: 10% - 90% R.H. Storage (packed): 10% - 93% R.H. Storage (unpacked): 10% - 93% R.H.
Noise	Idle LWAd: 5.71 B in N1 configuration; 5.63 B in N2 configuration compatible with N3 configuration; LpAm: 58.4 dBA in N1 configuration; 50.2 dBA in N2 configuration compatible with N3 configuration; Operating LWAd: 6.48 B in N1 configuration; 6.62 B in N2 configuration compatible with N3 configuration; LpAm: 65.6 dBA in N1 configuration; 64.4 dBA in N2 configuration compatible with N3 configuration;

7. Compatibility List

※ The compatibility list was updated on 2021/06. For the latest compatibility configuration and the parts and models not listed in this manual, please contact Inspur Customer Service.

7.1. Processor

i48 supports two Intel® Xeon® Scalable processors per node.

- **Table 7-1 CPU Compatibility List**

Model	Cores	Threads	Base Frequency	Max. Turbo Frequency	Cache	TDP
6330N	28	56	2.2 GHz	3.4 GHz	42 M	165 W
6338T	24	48	2.1 GHz	3.4 GHz	36 M	165 W
6336Y	24	48	2.4 GHz	3.6 GHz	36 M	185 W
6326	16	32	2.9 GHz	3.5 GHz	24 M	185 W
6312U	24	48	2.4 GHz	3.6 GHz	36 M	185 W
5320	26	52	2.2 GHz	3.4 GHz	39 M	185 W
5318Y	24	48	2.1 GHz	3.4 GHz	36 M	165 W
5318S	24	48	2.1 GHz	3.4 GHz	36 M	165 W
5318N	24	48	2.1 GHz	3.4 GHz	36 M	150 W
4316	20	40	2.3 GHz	3.4 GHz	30 M	150 W
4314	16	32	2.4 GHz	3.4 GHz	24 M	135 W
4310T	10	20	2.3 GHz	3.4 GHz	15 M	105 W
4310	12	24	2.1 GHz	3.3 GHz	18 M	120 W
4309Y	8	16	2.8 GHz	3.6 GHz	12 M	105 W

7.2. Memory

Each CPU of a single NS5480M6/NS5484M6/NS5486M68 node supports 8 DIMMs, and 2 CPUs support up to 16 DIMMs. The server supports RDIMM/LRDIMM/BPS, and the following memory protection technologies:

- ECC (Error Correcting Code)
- Memory Mirroring
- Memory Rank Sparing

Table 7-2 Memory Compatibility List

Memory Type	Max. Capacity	Description
RDIMM	256 G	16 × 16 G RDIMM@3200
	512 G	16 × 32 G RDIMM@3200
	1024 G	16 × 64 G RDIMM@3200
BPS	1024 G	8 × 128 G BPS@3200

Notes:

1. The server does not support mixed use of DIMMs of different types and specifications.
2. Two processors can maximize the memory capacity. When only one processor is installed,

the maximum memory capacity is half of the display capacity.

Table 7-3 BPS DIMM Population

CPU								
	C0	C1	C2	C3	C4	C5	C6	C7
4+4	DDR	BPS	DDR	BPS	DDR	BPS	DDR	BPS

7.3. Storage

7.3.1. SATA/SAS HDD

Table 7-4 SATA/SAS HDD Compatibility List

Type	RPM	Capacity
2.5 SAS	15K	300G/600G/900G
2.5 SAS	10K	1.8T/2.4T
3.5 SATA	7.2K	2T/4T/6T/8T/10T/12T/14T/16T
3.5 SAS	7.2K	2T/4T

7.3.2. 2.5” SATA SSD

Table 7-5 2.5” SATA SSD Compatibility List

Type	Capacity
SATA SSD	240 G
SATA SSD	480 G
SATA SSD	960 G
SATA SSD	1.92 T
SATA SSD	3.84 T
SATA SSD	7.68 T

7.3.3. 2.5” NVME SSD

Table 7-6 2.5” NVME SSD Compatibility List

类别	容量
NVMe SSD	1TB
NVMe SSD	2TB
NVMe SSD	4TB
NVMe SSD	8TB
PCIe M.2	1TB
PCIe M.2	2TB

7.3.4. M.2 SATA SSD

Table 7-7 M.2 SATA SSD Compatibility List

Type	Capacity
M.2 SSD	240 G
M.2 SSD	480 G
M.2 SSD	960 G

7.4. RAID/SAS Card

Table 7-8 RAID/SAS Card Compatibility List

Type	Model	SAS Rate	Cache	Super Capacitor Module
SAS Card	3408-IT	12 Gbps	4 G	
	3408-IMR	12 Gbps	4 G	
RAID Card	SAS3508-4GB	12 Gbps	4 G	Optional

7.5. I/O Expansion Slot

7.5.1. NIC

A single NS5480M6/NS5484M6/NS5486M6 node has a built-in standard OCP NIC slot, which supports OCP NICs. The compatibility list is as follows:

Table 7-9 OCP NIC Compatibility List

Type	Model	Speed	Ports
OCP	Self-developed I350 Dual Port OCP 3.0 NIC	1 G	2
	Self-developed E810 Dual Port OCP 3.0 NIC	25 G	2

Table 7-10 External PCIe NIC Compatibility List

Speed	Model	Port Type	Ports
1 G	NIC_SND_W_I350-AM2_RJ_PCI-E4X_1KM_DUAL	RJ45	2
10 G	NIC_Intel_W_X540-T2_RJ45_PCI-E8X_10G_DUAL	RJ45	2
	NIC_I_10G_X550T2_RJ_PCIEx4_2_XR	RJ45	2
	NIC_Intel_W_82599ES_LC_PCI-E8X_10G_DUAL	SFP+	2
	NIC_I_10G_X710DA2_LC_PCIEx8_2_XR	SFP+	2
25 G	NIC_M_25G_MCX4121A-ACAT_LC_PCIEx8_D_XR	SFP+	2
	NIC_M_25G_MCX512A-ACAT_LC_PCIEx8_2_XR	SFP+	2

	NIC_BROADCM_25G_57414_LC_PCIEx8_2_XR_42C	SFP+	2
40 G	NIC_I_40G_XL710_LC_PCIEx8_MM	SFP+	1
	NIC_I_40G_XL710_LC_PCIEx8_2_MM	SFP+	2
100 G	BRCM 57508 Dual Port Standard NIC	SFP+	2

7.5.2. FC HBA Card

Table 7-11 HBA Card Compatibility List

Type	Model	Speed	Ports
HBA Card	HBA Card_QL_4R1_QLE2690-ISR-BK_FC16G_PCIE	16 G/s	1
	HBA Card_QL_4R2_QLE2692-ISR-BK_FC16G_PCIE	16 G/s	2
	HBA Card_QL_8R1_QLE2740_FC32G_PCIE	32 G/s	1
	HBA Card_QL_8R2_QLE2742-ISR-BK_FC32G_PCIE	32 /s	2

7.5.3. HCA Card

Table 7-12 HCA Card Compatibility List

Type	Model	Speed	Ports
HCA Card	MCX653105A-ECAT PCIe 3.0/4.0 X16	100 Gbps	1
	MCX653106A-ECAT PCIe 3.0/4.0 X16	100 Gbps	2
	MCX555A-ECAT PCIe 3.0 X16	100 Gbps	1
	MCX556A-ECAT PCIe 3.0 X16	100 Gbps	2
	MCX653105A-HDAT PCIe 3.0/4.0 X16	200 Gbps	1
	MCX653106A-HDAT PCIe 3.0/4.0 X16	200 Gbps	2

7.6. Power Supply

The hot-swap PSUs meet Intel's CRPS standard, adopt general electrical and structural design, and support N+1 redundancy (with a scheme to be specified) and tool-less installation and removal. The CRPS PSUs are 80 PLUS Platinum rated, and offer various output powers, allowing customers to choose based on the actual configuration.

Table 7-13 Power Supply Compatibility List

Model	Max. No.
DPS-1300AB-27A	4
DPS-1600AB-45 A	4
DPST-2030AB F	4

GW-CRPS1600D2W	4
GW-CRPS1300D2W	4
GW-CRPS2000DW	4
PS-2132-11L1-1300W	4
PS-2162-15L1-1600W	4

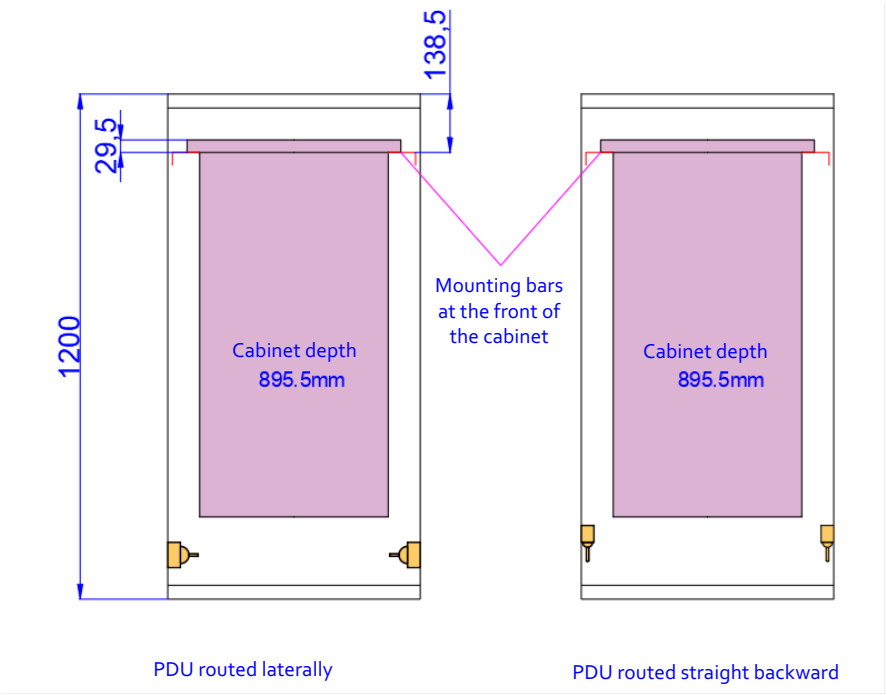
7.7. Operating System

Table 7-14 OS Compatibility List

OS	Version
Windows	Windows Server 2019
SUSE	SUSE 12.5
RHEL	RHEL8.2
VMWare ESXI	Vmware Esxi_6.7U3

8. Configuration Notes

- Three front panel options are available to each node depending on different configuration demands.
- Dual CMC management modules, if configured, cannot be connected to the same switch. Both ports of a CMC should not be connected to the same switch as well.
- YZBB-01751-101 costdown mid-backboard does not support rear IO.
- N3/N3DE does not support 185W CPU.
- The 82599 standard card can only be placed in the rear window.
- In order to ensure that the heat dissipation chassis must be separated by 1U.
- The following lists the requirements and installation recommendations of the i48 server's cabinet:



1) The depth of a cabinet in a server room should be at least 1200 mm.
2) In the case of front-access cabling, the mounting bar at the front of the cabinet should be 138.5 mm away from the front door of the cabinet. In the case of rear-access cabling, the distance can be shortened.
3) It is recommended to route the PDU straight backward to avoid interference with the chassis. If the PDU must be routed laterally, the distance between the PDU and the back of the cabinet should be less than 135 mm.
4) The above data can be adjusted according to the bending radius of the cable if the safety and non-interference principles of front-access cabling are met.

9. System Management

9.1. Intelligent Management System ISBMC

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

It supports the following key features:

- IPMI 2.0
- Redfish 1.8
- Simple network management protocols (SNMP v1/v2c/v3)
- HTML5/Java remote consoles (keyboards, mouses, and videos)
- Remote virtual media
- Login on web browsers
- Intelligent fault diagnosis

Table 9-1 BMC Specifications

Specification	Description
Management Interface	Supports extensive remote management interfaces and is applicable to various server O&M scenarios. The supported interfaces include: ● IPMI ● SSH CLI ● SNMP ● HTTPS ● Web GUI ● Redfish ● RESTful ● DCMI ● Syslog
Intelligent Fault Location	With IDL, a fault diagnosis system independently developed by Inspur, it provides comprehensive and accurate hardware fault location capabilities, and outputs detailed fault causes and correction suggestions.
Alarm Management	Supports rich automatic remote alarm capabilities, including SNMP Trap (v1/v2c/v3), email alarms, syslog remote alarms, and other proactive alarming mechanisms to ensure 24 × 7 reliability.
Remote Console KVM	Supports HTML5- and Java-based remote consoles, supports remotely taking over the display/mouse/keyboard of the server, and provides highly available remote management capabilities without on-site operations.
Virtual Network Console (VNC)	Supports mainstream third-party VNC clients without relying on Java and improves management flexibility.

Specification	Description
Remote Virtual Media	Supports virtualizing local media devices or images, USB devices, and folders as media devices of remote servers, simplifying system installation, file sharing, and other O&M tasks.
Web GUI	Supports the visual management interface developed by Inspur, provides comprehensive display of server information and status, and offers an easy-to-use O&M panel.
Downtime Screenshotting and Common Screenshotting	Supports automatic screenshotting during downtime to capture the last screen before the downtime, and provides the screenshotting function, which can quickly capture the screen to facilitate regular inspections.
Dual Flash and Dual Image	Supports dual flash and dual image with automatic flash failover upon software faults or flash damage, improving operational reliability.
Power Capping	Supports power capping, increasing deployment density and reducing energy consumption.
IPv4/IPv6	Supports both IPv4 and IPv6, enhancing network deployment flexibility.
Adaptation of Management Network Interfaces	Supports adaptation of dedicated NICs and network controller sideband interfaces (NC-SI), and provides customers with flexible network deployment solutions for different management network deployment scenarios.
ISBMC Self-diagnosis and Self-recovery System	Supports the reliable dual watchdog mechanism for hardware and software, enabling automatic restoration of abnormal programs to normal under extreme BMC situations. Provides a thermal protection mechanism, which is automatically triggered when a BMC program is abnormal to ensure that the fan operates at a safe speed to avoid overheating of the entire system. Supports self-diagnosis of processors, memory modules, and storage devices of ISBMC, and automatically cleans up the workload and restores to normal when the device consumption rate is too high.
Power Supply Control	Supports virtual power buttons for startup, shutdown, restart, and shutdown and then restart.
UID LED and Remote Control LED	Supports remote lighting of the unit identification (UID) LED for locating the server in the server room, and supports remote control LED. The UID LED flashes when a user remotely logs in through the web, KVM, or SSH to inform the on-site personnel that an administrator is accessing the server.
Secure Firmware Upgrade	Supports firmware upgrades based on secure digital signatures, unexpected upgrade prevention mechanism for different manufacturers and models, and firmware upgrades of BMC/BIOS/CPLD/PSU and other devices.
Serial Port Redirection	Supports remote redirection of system serial ports, BMC serial ports, and other serial ports, and directs the server-side serial port output to the local administrator through the network for server debugging.
Storage Information Viewing	Supports display of Raid logical array information and drive information, and remote RAID formation for improved deployment efficiency.
User Role Management	Supports refined user management based on user roles and flexible creation of user roles with different permissions, and provides refined

Specification	Description
	user roles to allow administrators to grant different permissions to O&M personnel.
Security Features	Adopts the industry-leading Inspur server security baseline standard V2.0, and uses secure and reliable algorithms for SSH, HTTPS, SNMP, and IPMI, and has the capabilities including secure upgrade and boot as well as security reinforcement mechanisms such as anti-replay, anti-injection, and anti-brute force.

i48 allows overall CMC management I48 is configured with one CMC management module by default to read the BMC information of each node via the backplane. The rear CMC management module integrates a dual-port IPMI management interface. The front panel of the server is configured with a single-port IPMI management interface by default. You can select front or rear maintenance as needed. Dual CMC modules are supported when the server is not configured with the TSW network switch module.

Table 9-2 CMC Specifications

Specification	Description
Management Interface	Supports extensive remote management interfaces and is applicable to various server O&M scenarios. The supported interfaces include: ● IPMI ● SSH CLI ● SNMP ● HTTPS ● Web GUI ● Redfish ● RESTful ● Syslog
Centralized Node Management	Supports display and batch update of BMC/BIOS/CPLD version information for nodes in the chassis, viewing of node FRU information, viewing and setting node IP addresses, the multi-frame function for managing nodes in other chassis, PSU information display, and fan control.
Intelligent Fault Location	With IDL, a fault diagnosis system developed in-house by Inspur, it provides comprehensive and accurate hardware fault location capabilities, and outputs detailed fault causes and handling suggestions.
Alarm Management	Supports rich automatic remote alarm capabilities, including SNMP Trap (v1/v2c/v3), email alarms, syslog remote alarms, and other proactive alarming mechanisms to ensure 24 × 7 reliability.
Web GUI	Features visual management interface developed by Inspur, provides comprehensive display of server information and status, and offers an easy-to-use O&M panel.
Dual Flash and Dual Image	Supports dual flash and dual image with automatic flash failover upon software faults or flash damage, improving operational reliability.
Power Capping	Supports power capping, increasing deployment density and reducing energy consumption.
IPv4/IPv6	Supports both IPv4 and IPv6, enhancing network deployment flexibility.
ISCMC Self-diagnosis and Self-recovery System	Comes with a reliable dual watchdog mechanism for hardware and software, enabling automatic restoration of abnormal programs to normal under extreme CMC situations. Provides a thermal protection mechanism, which is automatically triggered

Specification	Description
	when a CMC program is abnormal to ensure that the fan operates at a safe speed to avoid overheating of the entire system.
Secure Firmware Upgrade	Supports firmware upgrades based on secure digital signatures, unexpected upgrade prevention mechanism for different manufacturers and models, and firmware upgrades of BMC/BIOS/CPLD/PSU and other devices.
User Role Management	Allows granular user management based on user roles and flexible creation of user roles with different permissions, and provides detailed user roles to allow administrators to grant different permissions to O&M personnel.
Security Features	Adopts the industry-leading Inspur server security baseline standard V2.0, and provides secure and reliable algorithms for SSH, HTTPS, SNMP, and IPMI, and has the capabilities including secure upgrade and boot as well as security reinforcement mechanisms such as anti-replay, anti-injection, and anti-brute force.

9.2. Inspur Physical Infrastructure Manager (ISPIM)

The i48M6 server is compatible with the latest version of Inspur Physical Infrastructure Manager (ISPIM).

ISPIM is a next-generation infrastructure O&M management platform for industry data centers. Based on cutting-edge O&M concepts, ISPIM provides users with leading and efficient overall management solutions for data centers to ensure the advancement of their infrastructure management. This platform provides a rich set of functions such as centralized resource management, in-depth fault diagnosis, second-level performance monitoring, intelligent energy consumption management, 3D automatic topology, and stateless automatic deployment. With these functions, users can implement central O&M of servers, storage devices, network devices, security devices, and edge devices, effectively improving O&M efficiency, reducing O&M costs, and ensuring the secure, reliable, and stable operation of data centers. ISPIM has the following key features:

- Lightweight deployment for multiple scenarios and full lifecycle management of devices
- High reliability and on-demand node expansion for 1-N data collection
- Intelligent asset management and real-time tracking of asset changes
- Comprehensive monitoring for overall business control
- Intelligent fault diagnosis for reduced correction time
- Second-level performance monitoring for real-time status control of devices
- Batch upgrade, configuration, and deployment for reduced launch time
- Version management for improved version management efficiency
- Standardized northbound interfaces for easy integration and interfacing

Table 9-3 ISPIM Specifications

Specification	**Description**
Centralized Device Management	Supports centralized management of network-wide devices, including servers (covering the complete Inspur server family, including general rack-mounted servers, AI servers, blade servers, all-in-one servers, and other high-end server products, and third-party servers), storage devices (Inspur general disk arrays, distributed storage devices, and storage devices of other manufacturers), and network devices (Inspur switches, third-party switches, and third-party firewall devices).
Monitoring Management	Supports centralized display, search, and blocking of device alarms, and email notifications, and supports the creation of alarm rules, notification rules, and blocking rules, alarm redefinition, alarm forwarding and southbound settings, device performance monitoring, and distributed monitoring.
Stateless Computing	Supports BMC/BIOS upgrade and configuration of Inspur servers, RAID configuration of Inspur servers, automatic hardware baseline management, and file repository upgrade.

Specification	Description
Operating System Deployment	Supports batch deployment of operating systems through the BMC interface, one-click deployment with automatic status writeback without manual intervention, and concurrent deployment of up to 40 devices.
Asset Management	Supports part-level asset management, multi-dimensional asset statistics, 3D data centers, and asset maintenance management.
Inspection Management	Supports active inspection tasks, alarm-triggered passive inspection, intelligent fault diagnosis and analysis, and automatic fault reporting and correction.
Security Management	Implements security control of ISPIM by using a set of security policies such as user management, role management, authentication management (local authentication and LDAP authentication), and certificate management policies.

9.3. Inspur Server Intelligent Boot (ISIB)

i48M6 is compatible with the latest Inspur Server Intelligent Boot (ISIB) system, an automatic O&M management system throughout the server lifecycle developed in-house by Inspur. Based on SSH and PXE technologies, it is compatible with the entire family of Inspur servers, and has more efficient and reliable automatic deployment and software and hardware configuration management functions. Its key features include:

- Full lifecycle device management from rack mounting to automatic O&M
- Barebone one-stop deployment with one-click racking
- Flexible task scheduling with O&M capabilities for different scenarios
- •Large-scale deployment of technical architecture for reduced launch time
- Zero network deployment with plug-and-play support
- Accurate logging and instruction-level tracing of execution results
- Rich built-in O&M scripts and management schemes

Table 9-4 ISIB Specifications

Specification	Description
Home	Provides multi-dimensional statistical results of assets, repositories, operations, and jobs, dynamic display of jobs in the last 24 hours, and histogram display of jobs in the last 30 days.
Asset	Supports automatic device discovery, operating system information collection, and out-of-band/in-band power supply management.
Repository	Provides the management of images, software, firmware, configuration files, scripts, and sources to facilitate operations such as operating system deployment and firmware upgrades.
Operation	Supports firmware upgrades; Supports hardware configuration; Supports PXE automatic installation; Supports installation template management; Supports image cloning and restoration; Supports software distribution; Supports configuration changes; Supports system inspection.
Task	Supports job scheduling, and scheduled and periodic task execution. Provides visual multi-dimensional task display and refined log viewing.

10. Certification

Region	Certification Program	Certification Logo	Compulsory/Voluntary	Description
China	SEPA		Voluntary	
International Mutual Recognition	CB		Voluntary	
EU	CE		Compulsory	
U.S.	FCC		Compulsory	
	UL		Voluntary	

11. Support and Services

Please visit the official website of Inspur at https://en.inspur.com/, click **Support > Support Center > Warranty & Configuration,** and enter the product model, part model, serial number or keywords to learn relevant information and check the warranty status and configuration of related product.

Global service hotline:

- 1-844-860-0011 (toll free)
- 1-760-769-1847 (direct line)
- Service email: serversupport@inspur.com

Information required from customers:

- Name
- Company information
- Contact number
- Email address
- Product model
- Product serial number
- Problem description

12. Relevant Documents

For more information, go and visit https://en.inspur.com, where you can find resources to help customers solve problems and learn about our products, such as product manuals, drivers, and firmware.

13. Trademark

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