Inspur Server NF5266M6 White Paper

Version V0.91

Date 2021/05

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Version Control

Date	Version	Prepared / Revised by	Reviewer	Approver	Revision Description

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1 Product Overview

Inspur Server NF5266M6/SA5266M6 is a dual-way rackmount server for Internet, large data centers, communications, finance, and other fields. The product is developed based on the new generation Intel® Whitley platform. This model adopts 2U height design and can install 26 3.5-inch hot-swappable hard drives, which has surpassed many 4U multi-disk models in terms of storage density. At the same time, it can support 2 Ice Lake CPUs in terms of computing performance, and meet customers' high-density storage needs with high storage performance, high IO throughput performance, and high PCIe expansion performance, making it a differentiated server product with both storage and computing capabilities. In the face of the ever-changing industry trend of IT infrastructure, this server can be adapted to more segments and business segments to meet the demanding requirements of customers.

2 Features

For different application scenarios, the NF5266M6 maintains the Inspur server's consistent high quality and reliability, with excellent configuration flexibility to meet the market's mainstream mid-range configuration requirements, applying the ultimate design concept in performance, scalability, availability, manageability, etc.

Performance

- The NF5266M6 is built on a new generation Intel® Xeon® 3rd generation scalable processor with up to 36 cores and 72 threads on a single CPU, supporting up to 225W TDP CPU. Up to 3.6 GHz, 1.5 MB L3 cache on a single core and 3 sets of 11.2 GT/s UPI interconnect The server has high processing performance due to its single core 1.5 MB L3 cache and 3 sets of 11.2 GT/s UPI interconnect links.
- Supports 16 x 3200 MT/s DDR4 ECC Memory with RDIMM/LRDIMM types for excellent speed, high availability and up to 4T of memory capacity.
- Supports up to 8 Barlow Pass type memories with a maximum capacity of 512G and 3200MHz bandwidth, which can preserve complete memory data during a complete power failure without reducing memory capacity and bandwidth.
- Support up to 8 NVDIMM memory with maximum rate of 3200MT/s.
- Supports up to 26 hot-swappable 3.5" HDD disks.

Expandability

- Storage expansion: Supports up to 24 front + 2 rear 3.5" HDDs (SAS/SATA), 8 rear 2.5" HDDs (NVME, E1.S NVMe, SAS/SATA), and up to 2 PCIe expansions in the rear window
- Compute expansion: supports up to 24 front 3.5" HDDs (SAS/SATA), while supporting up to 4 rear 2.5" HDDs (NVME, SAS/SATA/NVME

mix), and up to 7 PCIe expansions in the rear window

- Support optional OCP3.0 modules, up to 2*OCP3.0 modules, providing 1G, 10G, 25G, 100G, 200G multiple network interface options, providing a more flexible network structure for applications.
- Supports optional on-board/external/AIC Raid M.2 modules to meet diverse storage needs.
- Support TPM/TCM trusted platform module, providing secure and trusted key storage and basic cryptographic operations for the platform.
- Support CPU TDP 225W, with customized expansion heatsink and six 6056 fan modules

Usability

- Based on the concept of humanized design, the whole system can achieve tool-free maintenance. By enhancing and optimizing some structural parts, it realizes quick disassembly and installation, which greatly shortens operation and maintenance time.
- The best working environment is achieved through Longchamp's unique intelligent regulation technology with advanced air cooling system to ensure stable system operation.
- Hot-swappable hard drives, supporting RAID 0/1/10/5/50/6/60, providing RAID Cache and supporting super capacitor power-down data protection.
- Apply the latest BMC technology, so that technicians can guide the equipment through the Web management interface, fault diagnosis LEDs, etc., and can mark the faulty machine by the UID indicator on the front panel to quickly find the components that have failed (or are failing), thus simplifying maintenance, speeding up problem solving, and increasing system availability .
- BMC monitors system parameters and sends early alarms so that technicians can take action to ensure stable machine operation and reduce the chance of downtime.

Manageability

- The professional hardware and software design monitors the temperature and air pressure of the operating environment in real time and intelligently regulates the heat dissipation strategy to improve the service life of the hard disk and ensure that the storage server is in the best operating condition.
- Support LFF HDD grouping power up and down control, can freely define each group of hard disk members, and can set the power up time delay
- Wave server is equipped with ISBMC4 intelligent management system. ISBMC4 is a server remote management system independently developed by Wave.
- ISBMC4 supports the standard IPMI2.0, Redfish1.8 and other mainstream management specifications in the industry.
- ISBMC4 supports standard IPMI2.0, Redfish1.8 and other industry mainstream management specifications.
- ISBMC4 has higher operational reliability.
- ISBMC4 is easy to maintain for customer scenarios.
- ISBMC4 provides more accurate and comprehensive troubleshooting capability.
- ISBMC4 has higher security hardening capability than the industry.
- Equipped with ISPIM intelligent management software for centralized server management, supporting unified component-level asset management, intelligent monitoring and alerting, automatic inspection, fault diagnosis and repair, energy consumption management, firmware upgrade/configuration, and other functions to achieve full lifecycle management of servers.
- Equipped with ISIB automatic shelving system to realize fast server initialization, support batch RAID configuration, OS deployment and other functions.

Energy Efficiency

- Provides 1300/1600W power 80 PLUS Platinum power module and 1300W Titanium power module with 94% power module efficiency at 50% load.
- Support 1+1 redundant power supply and AC/DC integrated power supply to improve power conversion efficiency.
- High efficiency single board VRD power supply to reduce the loss of DC to DC.
- Support system cooling fan intelligent speed regulation, CPU intelligent frequency regulation, energy saving and consumption reduction.
- All-around optimized system cooling design, energy-efficient system cooling fan, reduce system cooling energy consumption.

Security

- Support intel PFR function.
- Support Trusted Platform Module (TPM2.0), Trusted Cryptographic Module (TCM), which can provide advanced encryption functions.
- Support firmware digital signature update mechanism, digital signature verification when updating to prevent non-authorized firmware update.
- Support UEFI secure boot to ensure integrity on UEFI-based firmware systems.
- Support BIOS hierarchical password protection to ensure system boot and management security.
- Support BIOS Lock Enable (BLE) function to eliminate BIOS area attacks by malware on flash devices.
- Supports BMC dual mirroring for recovery after firmware corruption is detected.
- Support BMC secure boot to establish a complete chain of trust and improve system security.

- Management of BMC supports flexible access control policies, password complexity policies, login policies, time, IP, MAC-based access control policies, Web management access support LDAP authentication access methods, etc.
- Support chassis intrusion detection and hard disk bays in place detection, record unauthorized physical access to the server action.

3 New Technical Highlights

3.1 Intel® Scalable Architecture

Intel® 3rd generation Xeon Scalable processors with Ice Lake - SP architecture are designed with a Mesh interconnect architecture instead of the traditional Ring interconnect design to improve CPU access latency and support higher memory bandwidth requirements. Also with low power consumption, the processor automatically adjusts to a lower operating frequency and operates at a relatively low voltage under low system load, allowing for better performance and more efficient energy usage. AI training performance for image classification is up to 1.93x better than the previous generation, and cloud data analytics performance is up to 1.92x better than the Grantley platform's 4-slot system.

3.2 Intel® VROC Technology

Intel® VROC technology (Virtual RAID on CPU), is designed for NVMe SSD-based enterprise RAID solutions. The biggest advantage is that NVEe SSDs connected to Intel® Scalable Processing PCIe lanes can be managed directly without the use of dedicated RAID HBAs.

3.3 OCP 3.0 Module

The optional OCP 3.0 module provides greater scalability, supporting up to 100Gb OCP3.0 NICs

.Intel® Optane™ Persistent Memory 200 Series

The Optane™ Persistent Memory 200 Series (BPS) is a new type of non-volatile memory from Intel® that preserves intact memory data in the event of a complete power failure. Compared to traditional NVDIMMs, it reduces the need for supercapacitors, making it easier to configure in

systems. With the new generation of Optane™ data center-class non-volatile memory, Intel® has focused on increasing its speed up to 3200MT/s, which will provide up to 25% increase in bandwidth compared to the previous generation (AEP), with up to 4TB of total memory per slot. It also reduces power consumption to 15W compared to 18W of its predecessor, reducing power consumption in the case of heavy use of Optane™ data center grade non-volatile memory.

3.4 Intel® Optane™ Persistent Memory 200 Series

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3.5 Enhanced AI performance with Bfloat16 support

Intel® 3rd Generation Xeon Scalable Processors support Bfloat16 data (Brain Floating Point) format to enhance the efficiency of AI and analytics workload development and execution in data center, networking, intelligent edge computing and other environments. Becoming the industry's first mainstream server processor with built-in support for bfloat16, it enables general-purpose processors to also more fully support AI training and heterogeneous acceleration for applications such as image classification, recommendation engines, speech recognition, and natural language modeling.

The advantage of Bfloat16 is that the Bfloat16 format is as accurate as FP32 for most neural network operations, but can be done with half the bits, which means it can reduce memory usage by half and multiply data throughput. Intel® has also integrated Bfloat16 into the processor's Intel DL Boost function, and supports deep learning architectures such as TensorFlow and Pytorch, as well as optimizing the OpenVINO toolset and ONNX execution environment to achieve the same model accuracy with minor software adjustments and accelerate the processor's AI training and inference performance.

3.6 Innovative storage physical architecture

Adopts the original 2U three-layer hard disk drawer architecture, with three layers of hard disk modules in the front, each module independently pulls and carries 8 3.5 "hard disks, so as to realize the fast maintenance of the 3.5" hard disks in the front

4 Logical Architecture

NF5266M6 whole machine adopts 2U 19-inch chassis. The front adopts three-tier tray drawer structure, each drawer supports 8 LFF hard drives, total 26 LFF hard drives. The middle of the chassis is 6 * 6056 fans for the whole system cooling, the rear of the chassis is the main board and PSU power supply; the rear window of the chassis adopts modular design, by matching different modules, it can support FHHL expansion card, LFF HDD, SFF HDD, E1.S HDD, M.2 HDD, etc. by matching different modules.

The system logic block diagram is shown as follows:

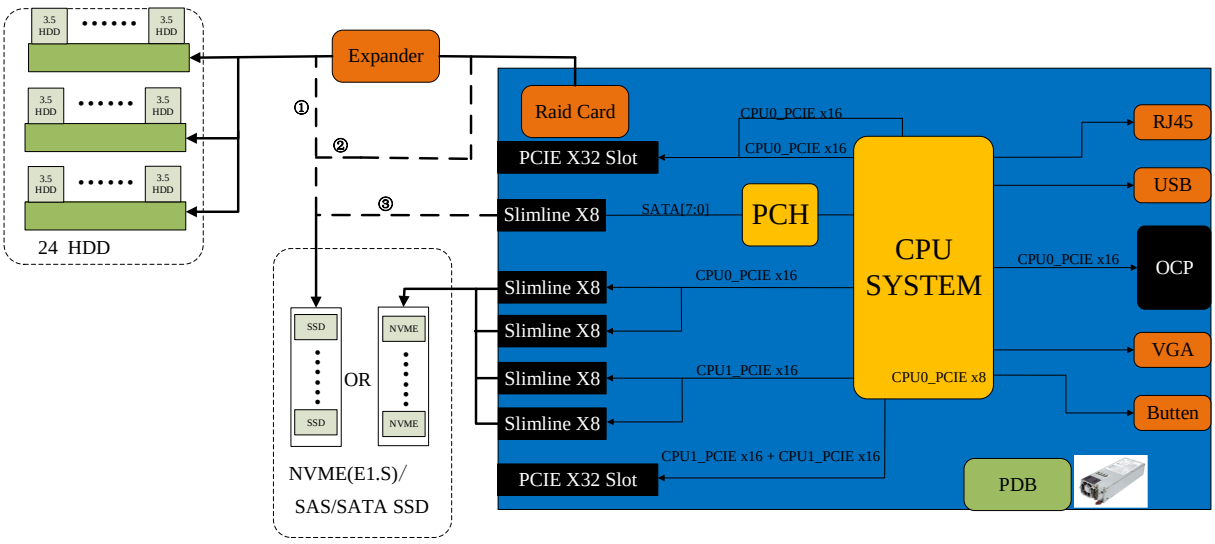


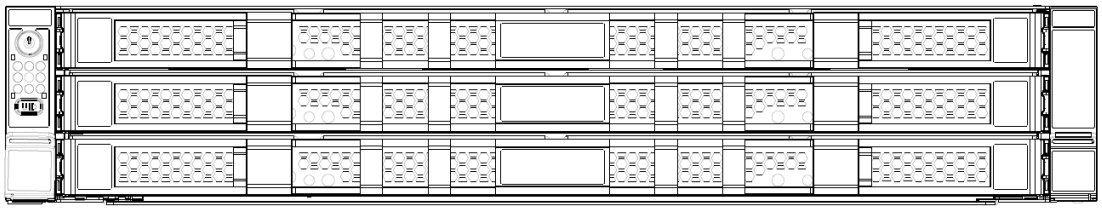
Figure 4-1 Logic Block Diagram of NF5266M6

5 Product Specification

5.1 Front Panel

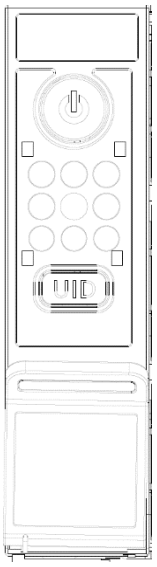
5.1.1 Front View

Figure 5-1 Front Panel



#	Item	#	Item
1	1 level hard drive drawer	2	2 level hard drive drawer
3	3 level hard drive drawer	4	Hard drive drawer unlock button
5	Left front control panel		

Figure 5-2 Front Panel LEDs



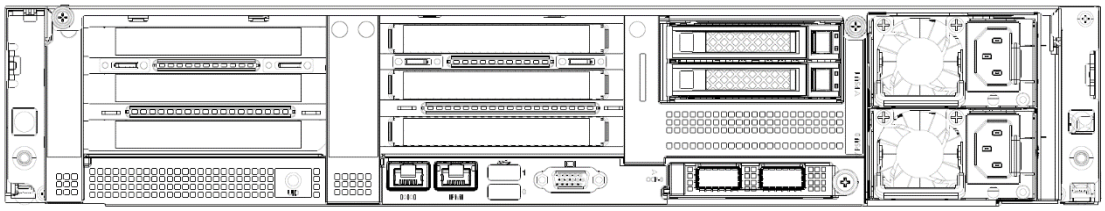
#	Item	Description
1	Power Button	Green light = power on Orange light =standby mode Press and hold 4s to force power off
2	UID	RST Button	Blue light = Turn on/off UID Press and hold 6s force BMC to reboot
3	System Fault Indicator	Does not light up = Normal Solid red = Error or failed Flashing red = Warning

5.2 Rear Panel

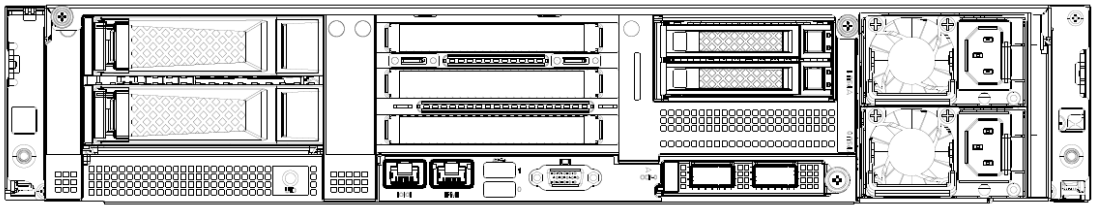
5.2.1 Front View of the Rear Panel of the Hard Disk Model

Figure 5-3 Rear Panel

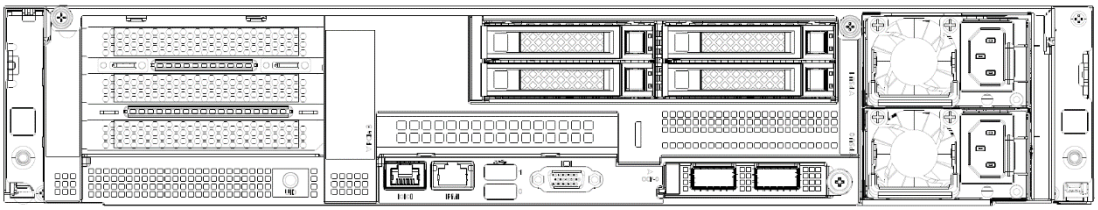
Configuration 1: 6PCIe+2SFF



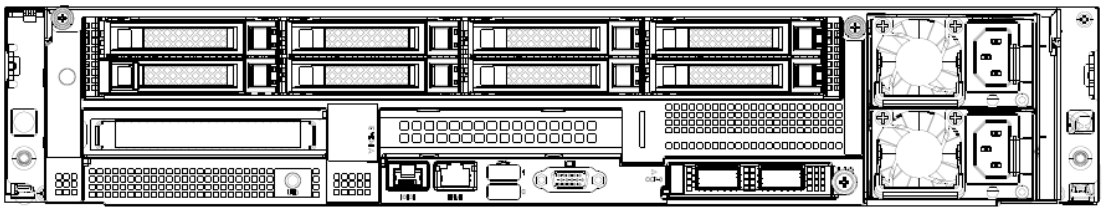
Configuration 2：2LFF+2SFF+3Pcie



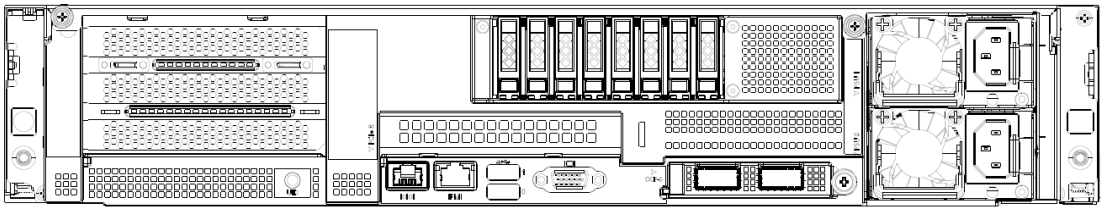
Configuration 3: 4PCIe+4SFF



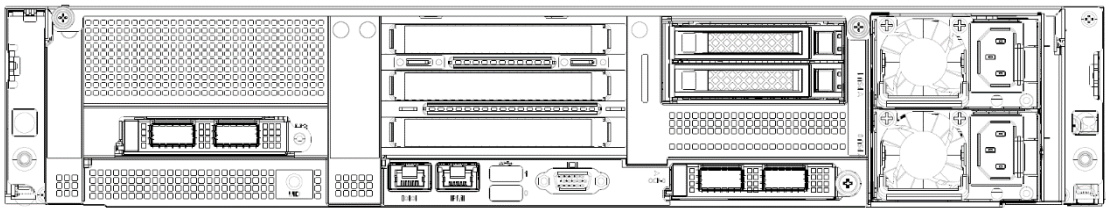
Configuration 4: 8SFF+2PCIe



Configuration 5: 4PCIe+8RSSD



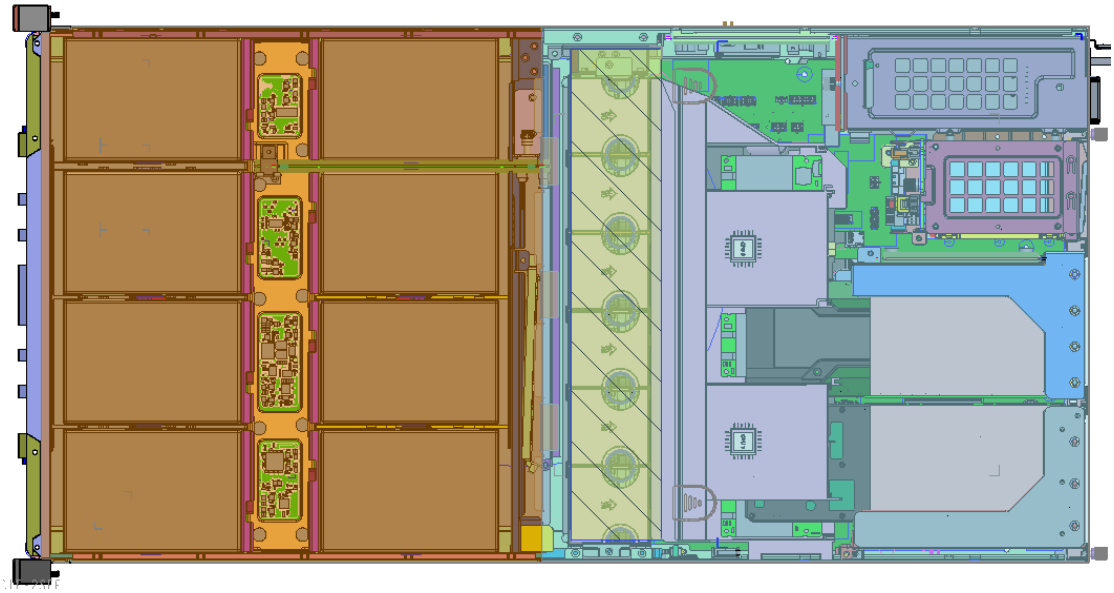
Configuration 6: 3PCIe+2SFF+2OCP3.0



#	Item	#	Item
1	PSU0	2	PSU1
3	PEIe Expansion Slot	4	SFF Module
5	M.2 module	6	OCP3.0 Module
7	VGA interface	8	USB3.0 Interface
9	RJ45 management port	10	Network Port

5.3 Internal Top View

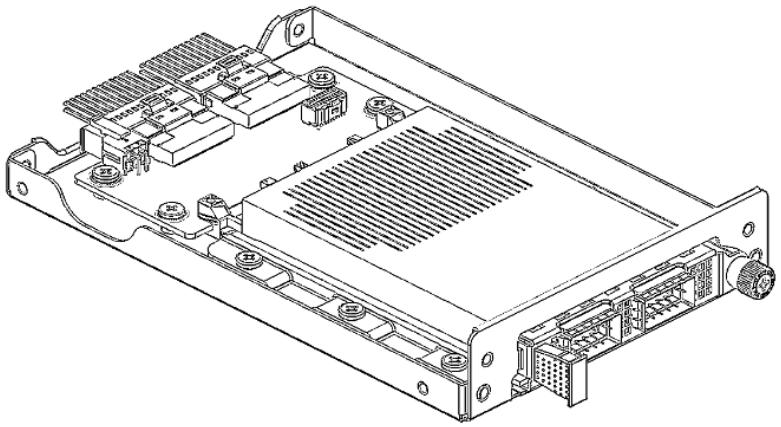
Figure 5-4 Internal Diagram of the Server



#	Item	#	Item
1	3.5" hard drive drawer	3	2.5" HDD Module
2	System Fan	4	PCIE Module
5	Power supply module		

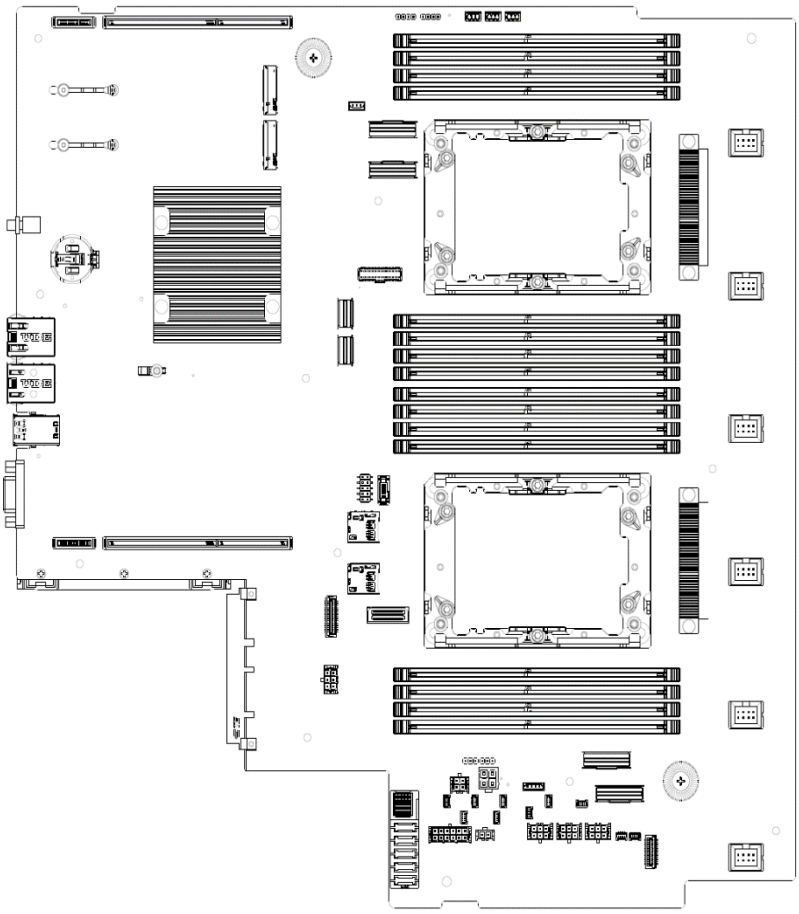
5.4 OCP3.0 Module

Figure 5-5 Schematic Diagram of the OCP3.0 Module



5.5 Mainboard Diagram Layout

Figure 5-6 Mainboard Diagram Layout



#	Item	#	Item
1	RTC Battery	2	NVME RAID KEY
3	OCP 3.0 Interface	4	PCI-E_CPU1 Interface
5	PCH	6	M.2 Interface
7	Memory Slot (corresponds to CPU0)	8	Memory slot (corresponds to CPU1)
9	Memory slot (corresponds to CPU0)	10	Memory slot (corresponds to CPU1)
11	SATA interface	12	NVMe interface
13	PCI-E_CPU0 interface	14	TPM/TCM interface
15	Fan power connector	16	Portable Screws
17	CPU VR cooler	18	Intrusion switch connector
19	Hard Drive Drawer Pull	20	System serial port

#	Item	#	Item
	Sense Connector		connector
21	CPU1 OCP riser card edge with connector	22	On-board SATA/PCIe M.2 Connector

6 System Specifications

Table 6-1 System Specifications

Item	Description
Time to Market	2021
Form Factor	2U rack server
Processor	Supports 1 or 2 Intel® Xeon® 4300, 5300, 6300, 8300 series scalable processors. Supports up to 36 cores Up to 3.6GHz 3 UPI interconnect links with a single link cache rate of 11.2GT/s Maximum L3 level cache of 1.5MB for a single core Maximum thermal design power 225W
Chipset	Intel C621A
Integrated Display Controller	Integrated in the BMC (Aspeed2600), supporting a maximum resolution of 1280*1024
Memory	Supports up to 16 memory sticks. Each processor supports 8 memory channels, with each channel supporting up to 1 memory slot. Memory speed up to 3200MT/s. Support RDIMM and BPS/NVDIMM memory. Memory protection support ECC, memory mirroring, memory level protection
Storage	Front Panel 24*3.5" SATA/SAS with hot-swap support Rear Storage

Item	Description
	For hard drives, 2-drive chassis support 2NVMe or 2SAS/SATA 4-drive chassis support 4NVMe or 4SAS/SATA or 2NVMe+2SAS/SATA or 8E1. 8-drive chassis supports 8NVME or 4NVMe+4SAS/SATA Optional 2*SATA M.2, supports hard and soft RAID Support up to 2 TF cards, one each for BIOS/BMC
Storage Controller	Support Raid card to control all SAS/SATA disks Support NVME direct CPU connection
Network	One onboard OCP3.0 module, one expandable OCP3.0 module, supports 1Gb/s,10Gb/s,25Gb/s,100Gb/s,200 Gb/s NICs Supports standard 1Gb/10Gb/25Gb/40Gb/100Gb NICs
I/O Expansion Slot	• 2-drive chassis: supports up to 7 standard PCIe and up to 1 OCP3.0 card;2 PCIe4.0 x16 half height half length; 4 PCIe3.0 x8 half height half length • 4-drive chassis: supports up to 4 standard PCIe and up to 2 OCP3.0 cards;1 PCIe4.0 x16 half-height half-length; 3 PCIe4.0 x8 half height half length • 8-drive chassis: supports up to 2 standard PCIe and up to 1 OCP3.0 card;2 PCIe3.0 x8 half height half length
Port	2 rear USB3.0 1 rear VGA 1 COM port

Item	Description
Fan	6 hot-swappable N+1 redundant 6056/6038* (low speed) fans, default 6056 specification, 4PCIe+4SFF configurations use 6038 specification
Power Supply	Support 1+1 redundant 1600W, 1300W output power supply110VAC~230VAC：90V ~ 264V 240VDC： 180V ~ 320V 336VDC：190V ~ 400V -48VDC：-40V~ -72V
System Management	Integrated 1 independent 1000Mbps network interface dedicated for remote management of IPMI
Operating System	Microsoft Windows Server 2016/2019; Red Hat Enterprise Linux 7/8; SUSE Linux Enterprise Server 12/15; CentOS Enterprise Linux 7/8; See section 7.12 for details

Table 6-2 Physical Specifications (to be refined)

Item	Description
Chassis Dimensions	With hanging ears: W (width) 482mm; H (height) 87.5mm; D (depth) 891.2 mm Without hanging ears: W (W) 447mm; H (H) 87.5mm; D (D) 866 mm With packaging: length 1168mm, width 721mm, height 279mm
Weight	24*3.5" configuration Main machine (without packaging): 45kg

Item	Description
	Gross weight (including packaging): 58kg (including packaging + guide + accessories box)
Temperature	Working temperature: 5~401,2,3; Storage temperature (with package): -40~+70℃ Storage temperature (without package): -40~+70℃
Humidity	Working humidity: 5%~90% R.H. Storage humidity (with package): 5%~95% R.H. Storage humidity (without package): 5%~95% R.H.
Noise (Bels) (Sound power level) [4,5,6,7]	Idle LpAm：79 dBA Operating LpAm：89 dBA
Altitude	Operating temperatures of 5 to 40 degrees Celsius at 0 to 914 meters (3,000 feet). Operating temperature 10 to 32 degrees Celsius at 914 to 2133 meters (7000 feet)

Notes:

1. Not all configurations support 5~40℃ working temperature, please refer to Table 6-3 Operating Temperature Specifications
2. Standard operating temperature:
   10° to 35°C (50° to 95°F) at sea level with a temperature drop of 1.0°C per 305 m of elevation

gain (1.8°F per 1000 ft) Maximum of 3050 m (10,000 ft), not to be exposed to direct sunlight. The maximum rate of change is 20°C/HR (36°F/HR). Altitude as well as maximum rate of temperature change will vary depending on system configuration.

System performance may be reduced if the fan fails or if it is operated above 35°C (86°F).

3. Extended Ambient Operating Temperature

   For approved partial configurations, the supported system inlet range extends from 5° to 10°C (41° to 50°F) and 18° to 30°C (95° to 104°F) at sea level, with a temperature reduction of 1.0°C per 175 m (1.8°F per 574 ft) of altitude rise between 900 m (2953 ft) and 3050 m (10,000 ft). 1.0°C lower.

   For approved partial configurations, the supported system entry range at sea level is extended to 10° to 28°C (104° to 113°F) with a 1°C temperature reduction for every 125 m (1.8°F per 410 ft) of elevation gain between 900 m (2953 ft) and a maximum of 3050 m (10,000).

   System performance may be reduced if operating within the extended ambient operating range or if the fan fails. 4.

4. This document lists the weighted sound power (LWAd) and weighted sound pressure (LpAm) values for the product when operating at 23°C ambient. The noise measurements are based on ISO 7779 (ECMA 74) and declared in accordance with ISO 9296 (ECMA 109). The sound levels listed apply to universal shipping configurations; other options may result in increased volume. Please contact your sales representative for more details.
5. The sound levels shown here are measured by the specific test configuration only. Sound levels will vary depending on the system configuration. Values are subject to change without notice and are for reference only.
6. Sample-based (type) test evaluations conform to the referenced product specification. This product or product family is eligible to carry the appropriate compliance marks and claims.
7. The sound levels listed apply to standard shipping configurations; other system configurations may result in increased noise.

Table 6-3 Operating Temperature Specifications

Model	Max. Operating Temperature at 30°C	Max. Operating Temperature at 35°C	Max. Operating Temperature at 40°C
2SFF+6PCIE	● Supports all configurations	● Does not support rear LFF ● Cannot support more than 4T NVMe disk and	

Model	Max. Operating Temperature at 30°C	Max. Operating Temperature at 35°C	Max. Operating Temperature at 40°C
		more than 185W CPU at the same time	
4SFF+4PCIE	● Supports all configurations	● Does not support rear 8*E1.	
8SFF+2PCIE	● Supports all configurations	● Cannot support more than 4T NVMe disk and more than 185W CPU at the same time	

Table 6-4 Safety & EMC

Safety	EN 62368-1:2014+A11, IEC 62368-1:2014
EMC	EN 55032:2015 EN 61000-3-2:2014 EN 61000-3-3:2013 EN 55024:2010+A1:2015 EN 55035:2017 CFR 47 FCC Part 15 subpart B, 2018

Table 6-5 Industry Standard Compliance

ACPI 6.1 Compliant
PCI-E 4.0 Compliant
WOL Support
SMBIOS 3.1
UEFI 2.6
Redfish API

IPMI 2.0
PXE Support
SNMP v3
TPM 2.0
USB 2.0/3.0 Compliant

7 Compatibility List

The compatibility list was updated in February 2021. Please consult Inspur Solutions &Testing technical staff for the latest compatibility status and for part numbers not reflected in this manual.

7.1 Processors

The NF5266M6 supports two Intel® Xeon® Scalable processors.

Table 7-1 CPU

Model	Number of cores	Number of threads	Base Freq.	Max Raid Freq.	Cache	TDP
4310	12	24	2.1	3.3	18	120
4314	16	32	2.4	3.4	24	135
4316	20	40	2.3	3.4	30	150
5317	12	24	3	3.6	18	150
5320	26	52	2.2	3.4	39	185
6326	16	32	2.9	3.5	24	185
6330	28	56	2	3.1	42	205
6334	8	16	3.6	3.7	18	165
6338	32	64	2	3.2	48	205
6346	16	32	3.1	3.6	36	205
6354	18	36	3	3.6	39	205
4309Y	8	16	2.8	3.6	12	105
4310T	10	20	2.3	3.4	15	105
5315Y	8	16	3.2	3.6	12	140
5318N	24	48	2.1	3.4	36	150
5318S	24	48	2.1	3.4	36	165
5318Y	24	48	2.1	3.4	36	165
5320T	20	40	2.3	3.5	30	150
6330N	28	56	2.2	3.4	48	165

Model	Number of cores	Number of threads	Base Freq.	Max Raid Freq.	Cache	TDP
6336Y	24	48	2.4	3.6	36	185
6338N	32	64	2.2	3.5	48	185
6338T	24	48	2.1	3.4	36	165
8351N	36	52	2.4	3.5	54	225
8352S	32	64	2.2	3.4	48	205
8352V	36	52	2.1	3.5	54	195
8352Y	32	64	2.2	3.4	48	205

7.2 Memory

- The NF5266M6 supports up to 16 sticks of DDR4 memory. Each processor supports 8 memory channels with 1 memory slot per channel.
- Partial cache line saving (PCLS)
- DDR4 command/address parity and retry
- Memory demand and patrol refresh
- Memory data scrambling with commands and addresses
- Memory mirroring - internal to iMC
- PMem Single Device Data Correction (SDDC)
- PMem Dual Device Data Correction (DDDC)
- DDRT data ECC (read and write)
- PMem address verification and retry
- PMem Memory Address Range Refresh (ARS)
- DDR4 write data CRC check and retry
- Memory disable/mapping output for FRB
- Post-Package Repair (PPR) for DDR4 on power-up
- Failed DIMM isolation
- Address range/partial memory mirroring

Table 7-2 Memory List

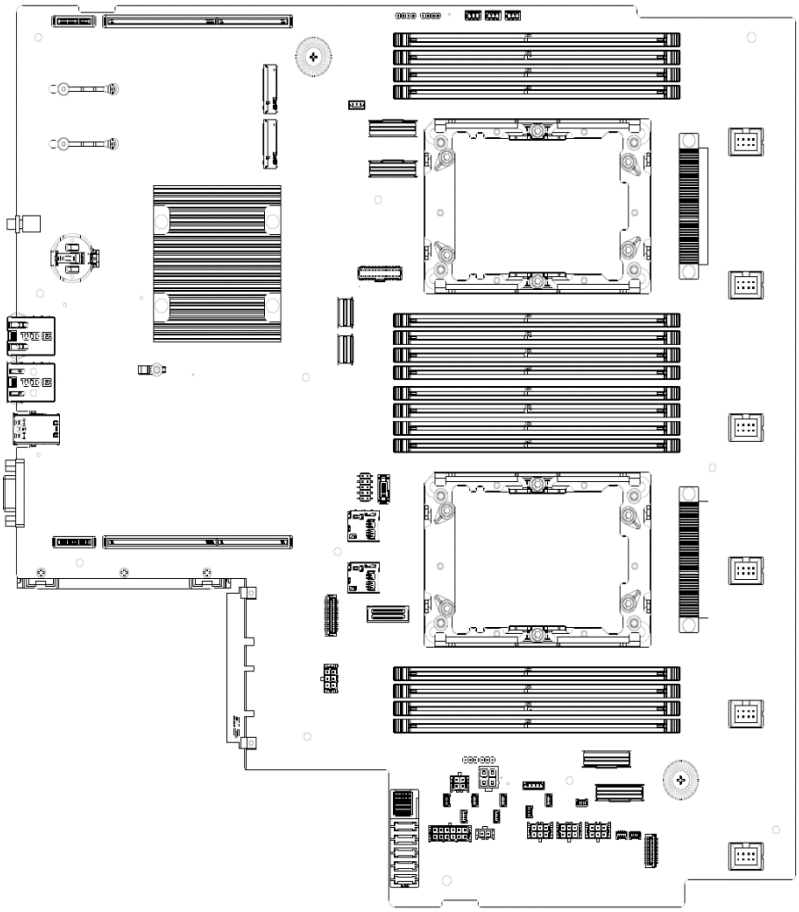
Memory Type	Maximum Capacity	Description
RDIMM	256GB	16×16GB RDIMM@3200
	512GB	16×32GB RDIMM@3200

Memory Type	Maximum Capacity	Description
LRDIMM	1024GB	16×64GB RDIMM@3200
	2048	16×128GB LRDIMM@3200
	2048	16×128GB LRDIMM@3200
	4096	16×256GB LRDIMM@3200
BPS	1024GB	8×128GB BPS@2666
	2048GB	8×256GB BPS@2666

Notes:

1. A mixture of different types and sizes of memory is not allowed on the same server.
2. The maximum memory capacity can be achieved when two processors are installed. Maximum memory capacity of half of the displayed capacity when using one processor.

Figure 7-1 Motherboard



Note: The following represent separate CPUs and apply to CPU0 and CPU1.

Table 7-3 Ordinary Memory Insertion Method

	ICX iMC#	iMC0		iMC1		CPU and DIMM corresponding real location	iMC3		iMC2	
DDR4+BPS	Channel	Chan B	Chan A	Chan D	Chan C		Chan G	Chan H	Chan E	Chan F
DIMM number	Mode									
1+0	1-Level Memory	DDR4				CPU0/1				
			DDR4							
				DDR4						
					DDR4					
							DDR4			
								DDR4		
									DDR4	
										DDR4
2+0	1-Level		DDR4			CPU0/1			DDR4	

	ICX iMC#	iMC0		iMC1		CPU and DIMM corresponding real location	iMC3		iMC2	
DDR4+BPS	Channel	Chan B	Chan A	Chan D	Chan C		Chan G	Chan H	Chan E	Chan F
DIMM number	Mode									
	Memory				DDR4		DDR4			
			DDR4		DDR4					
							DDR4		DDR4	
			DDR4	DDR4						
		DDR4								DDR4
		DDR4		DDR4						
								DDR4		DDR4
4+0	1-Level Memory		DDR4		DDR4	CPU0/1	DDR4		DDR4	
			DDR4	DDR4				DDR4	DDR4	
		DDR4		DDR4				DDR4		DDR4
		DDR4			DDR4		DDR4			DDR4
6+0	1-Level Memory	DDR4	DDR4		DDR4	CPU0/1	DDR4		DDR4	DDR4
			DDR4	DDR4	DDR4		DDR4	DDR4	DDR4	
		DDR4	DDR4	DDR4				DDR4	DDR4	DDR4
		DDR4		DDR4	DDR4		DDR4	DDR4		DDR4
8+0	1-Level Memory	DDR4	DDR4	DDR4	DDR4	CPU0/1	DDR4	DDR4	DDR4	DDR4

Table 7-4 BPS Memory Insertion Method

	ICX iMC#	iMC0		iMC1		CPU and DIMM corresponding real location	iMC3		iMC2	
DDR4+BPS	Channel	Chan B	Chan A	Chan D	Chan C		Chan G	Chan H	Chan E	Chan F
DIMM number	Mode									
4+4	(1-Level Memory + App Direct) or Memory Mode	BPS	DDR4	BPS	DDR4	CPU0/1	DDR4	BPS	DDR4	BPS
		DDR4	BPS	DDR4	BPS		BPS	DDR4	BPS	DDR4
6+1	1-Level Memory + App Direct	DDR4	DDR4		DDR4	CPU0/1	DDR4	BPS	DDR4	DDR4
			DDR4	DDR4	DDR4		DDR4	DDR4	DDR4	BPS
		DDR4	DDR4	BPS	DDR4		DDR4		DDR4	DDR4
		BPS	DDR	DDR	DDR		DDR	DDR	DDR	

	ICX iMC#	iMC0		iMC1		CPU and DIMM corresponding real location	iMC3		iMC2	
DDR4+BPS	Channel	Chan B	Chan A	Chan D	Chan C		Chan G	Chan H	Chan E	Chan F
DIMM number	Mode									
			4	4	4		4	4	4	
		DDR4	DDR4	DDR4			BPS	DDR4	DDR4	DDR4
		DDR4		DDR4	DDR4		DDR4	DDR4	BPS	DDR4
		DDR4	DDR4	DDR4	BPS			DDR4	DDR4	DDR4
		DDR4	BPS	DDR4	DDR4		DDR4	DDR4		DDR4

7.3 Storage

7.3.1 SATA/SAS Hard Drive Models

Supports up to 26 3.5" SAS/SATA hard drives
Supports up to 4 2.5" SAS/SATA hard drives

Table 7-5 Hard Drive Options

Model	Speed/min	Capacity
2.5” SAS	10K	600G/1.2T/1.8T/2.4T
2.5” SAS	15K	300G/600G/900G
3.5” SATA	7.2K	2T~18T
3.5” SAS	7.2K	2T~18T

7.3.2 SSD Hard Drive Model

Supports up to 8 x 2.5" SSDs

Table 7- 6 SSD Drive Options

Parts	Specifications	Capacity
SAS SSD	Read Dense SSD	240/480/960/1.92/3.84/7.68

Parts	Specifications	Capacity
	Write Dense SSD	240/480/960/1.92/3.84
SATA SSD	M.2 SSD	240/480/960/1.92

7.3.3 U.2 NVMe SSD Hard Drive

Supports up to 8 U.2 NVMe SSD Drives

Table 7-7 U.2 NVMe SSD Hard Drives

Parts	Specifications	Capacity
NVME SSD	U.2 Read Dense SSD	960/1.92/3.84/7.68
	U.2 Write Dense SSD	1.6/3.2/6.4T

Note: For parts not reflected in this table, please consult with Inspur technicians. 2. 1U CPU cooler and 1U wind shield are required to support 4T or more NVMe SSDs.

7.4 Hard Drive Backplane

Table 7-8 Hard Drive Backplane

Backplane Type	Backplane Description	Support
Front 8-port HDD Backplane	Backplane _Inspur_NF5266M6_HDDBP_SAS_3.5X8	Support 8*3.5HDD
Rear 2-port 3.5 SAS/SATA	Backplane _Inspur_NF5266M6_HDDBP_SAS_3.5X2	Support 2*3.5HDD
Rear 2-port NVME	Backplane _Inspur_NF5180M6_NVME_2x2.5_Slimx8	Support 2*NVME
Rear 2-port 2.5 SAS/SATA	Backplane _Inspur_NF5180M6_ _2.5X2_SAS_SATA	Support 2*2.5 SAS/SATA
Rear 8-port	Backplane	Support

Backplane Type	Backplane Description	Support
NVME/SAS/SATA	_Inspur_NF5180M6_SAS_SATA_NVME_2.5_x8	8*NVME/SAS/SATA

7.5 Hard Disk Installation Order

1. For pure NVME, install in order from silkscreen 0. For mixed plug, install from 0 for SAS/SATA disks and from serial number 4 for NVME disks.
2. Installation priority for different models of hard disks: SAS SSD>SATA SSD>SAS mechanical disk>SATA mechanical disk.
3. Installation priority for hard drives of the same model and different capacities: smaller capacity in the front, larger capacity in the back.

7.6 SAS/RAID Card

SAS Card	Inspur	Inspur PM8222-HBA/SHBA
		Inspur 3008IR/IT/IMR
	Broadcom	Broadcom SAS9500-8i
		Broadcom SAS9400-8i
RAID Card	Inspur	Inspur PM8204-2GB/4GB
	Broadcom	Broadcom SAS9560-8i 4G
		Broadcom SAS9460-8i 2G
		Broadcom SAS9361-8i 1G/2G
		Broadcom SAS9460-16i 4G
	Marvell	Marvell 9230 M.2 RAID Card

7.7 NIC

Table 7-10 OCP3.0 Card

Type	Model & Description	Speed	Number of Interfaces
OCP	Self-developed X710 OCP3.0	Gen3	2

Type	Model & Description	Speed	Number of Interfaces
	SND X550 OCP 3.0	Gen3	2
	I350 Dual Port OCP3.0	Gen3	2
	Mellanox CX6 LX Dual Port OCP3.0 Card	Gen4	2
	BRCM 57414 OCP 3.0	Gen3	2
	Mellanox CX5 Dual Port OCP3.0 Card	Gen3	2
	Self-developed E810 Dual Port OCP 3.0 Card	Gen4	2
	intel E810 Dual Port OCP 3.0 Card	Gen4	2
	mellanox OCP 200G NIC	Gen4	2

Table 7-11 Standard PCI-E NIC

Type	Model & Description	Speed	Number of Interfaces
PCI-E	Self-developed 82599 dual-port standard card	GEN3	2
	Intel original 82599 dual-port standard card	GEN3	2
	Intel Original X710 Dual Port Standard Card	GEN3	2
	Self-developed X710 dual-port standard card	GEN3	2
	MCX4121A Dual Port Label Card	GEN3	2
	X2522 Low Latency NIC	GEN3	2
	Self-developed X550 dual-port standard card	GEN3	2
	Intel Original X550 Dual Port Label Card	GEN3	2
	SND Dual-port I350 Standard Card	GEN3	2

Type	Model & Description	Speed	Number of Interfaces
	Self-developed I350 quad-port standard card	GEN3	4
	Mellanox CX4 LX dual-port standard card	GEN3	2
	Mellanox CX5 dual-port standard card	GEN3	2
	Intel E810 Dual Port Label Card	GEN4	2
	BRCM 57414 Label Card	GEN3	2
	Intel XL710 Standard Card	GEN3	2
	BRCM Dual Port 25G Stingray2	GEN5	2
	Mellanox Bluefield2 25G	GEN4	2
	Mellanox CX5 Dual Port Standard Card	GEN4	2
	BRCM 57508 Dual Port Standard Card	GEN4	2
	Intel E810 Dual Port Standard Card	GEN4	2

7.8 FC HBA Card

Table 7-12 FC HBA Card

HBA Card	8G Single and double port	Gen3
	16G Single and double port	Gen3
	32G Single and double port	Gen4

7.9 HCA Card

Table 7-13 HCA Card

HCA Card	100G MCX6 Single and double port	Gen4
	200G MCX6 Single and double port	Gen4

7.10 Power Supply

The power supply uses Intel standard CRPS, universal electrical and structural design, supports hot-swapping, and loads up to 2 power supplies. The power supply supports tool-free disassembly and insertion into the server with automatic locking. The power supply meets 80PLUS Platinum efficiency and provides a variety of power output power, users choose different power supply according to the specific configuration

Support the following rated AC 110V~230V & DC 240V power supplies.

- 1300W Platinum power supply: 1000W (110VAC), 1300W (230VAC), 1300W (240VDC for China)
- 1600W Platinum power supply: 1000W (110VAC), 1600W (230VAC), 1600W (240VDC for China)
- 1300W Titanium power supply: 1000W (110VAC), 1300W (230VAC), 1300W (240VDC for China)

Note: 1300W and above power supplies will derate to 1000W at 110VAC rating.

Input voltage range:

110VAC~230VAC: 90V ~ 264V

240VDC: 180V ~ 320V

7.11 Operating System

Table 7-15 Operating System

OS Category	OS
Linux	RHEL7.9
	RHEL8.2
Microsoft	Window Server 2016
	Window Server 2019
Linux	Suse 12.5

OS Category	OS
	Suse 15.2
	CentOS 7.x
	CentOS 8.x
Virtualization	Vmware Esxi 7.x
Linux	Oracle Linux7.x
	Oracle Linux8.x
	Ubuntu 18.x
	Ubuntu 20.x
	NeoKylin 7.x
	Critrix Latest Version

8 Configuration Note Options

- When configuring NVDIMMs, the default is to use one supercapacitor for one tow four, with one supercapacitor shared by every four NVDIMMs. When the configuration requires 1 supercapacitor, the supercapacitor of NVDIMM is placed in M.2 position. When the configuration requires 2 supercapacitors, a 1U air shield is required, where all supercapacitors (NVDIMM supercapacitors, raid supercapacitors) are placed on the 1U air shield.

Note: For more information, please contact Inspur technicians

9 System Management

9.1 Intelligent Management System BMC

ISBMC4 is a server remote management system developed by Longchamp, which supports standard IPMI2.0, Redfish1.8 and other mainstream management specifications in the industry. ISBMC4 has higher operational reliability, easier maintenance for customer scenarios, more accurate and comprehensive fault diagnosis capability, and higher security reinforcement capability than the industry level.

The main features of ISBMC4 intelligent management system are:

- Support IPMI2.0
- Support for Redfish 1.8 protocol
- Support simple network management protocols (SNMP v1/v2c/v3)
- Support HTML5/Java remote console (keyboard, mouse, video)
- Support remote virtual media
- Support logging into BMC via Web browser
- Support intelligent fault diagnosis system

Table 9-1 ISBMC4 Intelligent Management System Specifications

Specification	Description
Management Interfaces	Supports rich remote management interfaces for different server O&M scenarios, supported interfaces include IPMI SSH CLI SNMP HTTPS WEBGui Redfish Restful DCMI

Specification	Description
	Syslog
Intelligent Fault Location	With Inspur's self-developed fault diagnosis system IDL, specific comprehensive and accurate hardware fault location capability, and output detailed fault causes and treatment recommendations
Alarm management	Support rich automatic remote alarm capability, including SNMP Trap (v1/v2c/v3), email alarm, syslog remote alarm and other active alarm reporting mechanisms to ensure the highly reliable operation of the device 7*24 hours.
Remote Console KVM	Support HTML5 and Java-based remote console to remotely take over the server display/mouse/keyboard, providing highly available remote management capability without on-site operation.
VNC (Virtual Network Console)	Support mainstream third-party VNC clients, not dependent on Java, to enhance management flexibility
Remote Virtual Media	Supports linking the administrator's local devices, images, USB devices, and folders to the BMC through the network, and the BMC will intelligently hook up the devices to the server to achieve remote virtual media, simplifying system installation, file sharing, and other operations and maintenance operations
WebGUI	Support Inspur's self-developed visual management interface, providing rich server equipment information, status display, and easy-to-use operation and maintenance buttons
Downtime screenshots and screen snapshots	Supports automatic screenshot of downtime, preserving the last downtime screen; provides screenshot function, which can quickly capture

Specification	Description
	the screen and facilitate regular inspection.
Dual Flash dual mirroring	Support dual Flash and dual mirroring, which can automatically switch to another Flash to run when the software is damaged or the Flash is corrupted to enhance operational reliability.
Power Capping	Support power capping to improve deployment density and save energy consumption.
IPv4/IPv6	Simultaneous IPv4/IPv6 support with network deployment flexibility
Management Network Port Adaptive	Support dedicated management network port and NC-SI (Network Controller Sideband Interface) adaptive, for different management network deployment scenarios to provide customers with flexible network deployment solutions.
ISBMC self-diagnostic, self-recovery system	Support reliable hardware and software dual Watchdog mechanism, which automatically restores to the available state when the program is abnormal under extreme BMC conditions. Support heat dissipation protection mechanism, which automatically triggers heat dissipation protection when the BMC program is abnormal to ensure that the fan is at a safe speed to avoid system overheating. Support self-diagnostic capability of ISBMC's own processor, memory, and storage devices to automatically clean up and restore to a usable state when the device occupancy is too high.
Power Control	Support virtual power button for power on, power off, restart, power off and power on

Specification	Description
	again
Server positioning light, remote control indicator	Supports remote lighting of the server locator light (UID) to make it easy to find equipment in the server room; supports remote control lights, and the UID light flashes when users log in remotely to WEB, KVM and SSH to inform site personnel that an administrator is accessing the server.
Security firmware upgrade	Support firmware upgrade based on security digital signature, support anti-mistake upgrade interception mechanism for different manufacturers and models; support firmware update for BMC/BIOS/CPLD/PSU and other devices.
Serial port redirection	Support remote redirection function for system serial port, BMC serial port and other serial ports, directing the server-side serial output to the administrator's local through the network, which is convenient for server debugging
Storage information view	Support Raid logical array information, hard disk information display, and support remote group RAID function to improve deployment efficiency
User role management	Support refined user management function based on user roles, divide multiple permissions, and flexibly establish user roles with unused permissions, providing a more refined user role division and facilitating administrators to assign limited permissions to different operation and maintenance personnel.
Security Features	Adopt the Wave Server Security Baseline V2.0 standard which is higher than the industry standard, SSH, HTTPS, SNMP, IPMI, etc. to provide safe and secure algorithms with

Specification	Description
	secure upgrade, secure boot capability, and security reinforcement mechanisms such as anti-replay, anti-injection, and anti-violence crack.

9.2 Inspur Physical Infrastructure Management Platform (ISPIM)

The NF5266M6 server is compatible with the latest version of the Inspur Physical Infrastructure Manager (ISPIM).

ISPIM is a new generation of infrastructure operation and maintenance management platform for industrial data centers. Based on cutting-edge operation and maintenance concepts, ISPIM provides users with a leading and efficient total solution for data center management, ensuring advanced infrastructure management for users. The platform has many functions such as unified resource management, deep fault diagnosis, second-level performance monitoring, intelligent energy management, 3D automatic topology, stateless automatic deployment, etc. It realizes unified operation and maintenance of servers, storage, network devices, security devices and edge devices, which can effectively help enterprises improve operation and maintenance efficiency, reduce operation and maintenance costs, and ensure safe, reliable and stable operation of data centers. ISPIM's main functional features include:

- Lightweight deployment of multiple scenarios and full lifecycle management of equipment
- High reliability capability, 1-N data collection to achieve on-demand node expansion
- Intelligent asset management, real-time tracking of asset changes
- Comprehensive monitoring and control of the overall business

situation

- Intelligent fault diagnosis to shorten maintenance cycle
- Second-level performance monitoring to grasp the real-time status of equipment
- Batch upgrade, configuration and deployment to shorten the online cycle
- Version management to improve version management efficiency
- Standardized northbound interface for easy user integration and docking

Table 9-2 ISPIM System Specifications

Specification	Description
Centralized Device Management	Support the unified network equipment management, including servers (Inspur's full range of products, including universal rack servers, AI intelligent servers, blade servers, all-in-one and other high-end server products, third-party servers); storage (Inspur's universal magnetic array, distributed storage, and other vendors' storage devices); network equipment (Inspur switches and third-party switches, third-party firewall equipment).
Monitoring Management	Support centralized display, search, shielding and email notification of device alarms; support creation of alarm rules, notification rules and shielding rules; support alarm redefinition; support alarm forwarding and southward setting; support device performance monitoring; support distributed monitoring.
Stateless Computing	Support Inspur server BMC/BIOS upgrade and configuration; support Inspur server RIAD configuration; support hardware baseline automation management; support upgrade file repository.

Specification	Description
Operating System Deployment	Supports batch deployment of operating systems via BMC interface; supports one-click deployment with automatic status write-back and no manual intervention; supports up to 40 devices for simultaneous deployment.
Asset Management	Support component-level asset management, support multi-dimensional asset statistics; support 3D data center; support asset maintenance management.
Inspection Management	Support active inspection tasks; support passive alarm-triggered inspection; support intelligent fault diagnosis and analysis, and support automatic fault reporting and repair.
Security Management	Through a series of security policies such as user management, role management, authentication management (local authentication, LDAP authentication) and certificate management, the security control of ISPIM itself is realized.

9.3 Inspur Server Intelligent Boot (ISIB)

NF5266M6 is compatible with the latest version of ISIB (Inspur Server Intelligent Boot) system, which is a server full lifecycle automated operation and maintenance management system developed by Inspur itself. It is compatible with Inspur's full range of servers, based on SSH and PXE technology, with more efficient and reliable automated deployment and hardware and software configuration management functions.

- Support full lifecycle device management from shelf to automated operation and maintenance
- True bare-metal one-stop deployment, supporting one-click shelving
- Free task scheduling, providing multi-scenario operation and

maintenance capabilities

- Large-scale deployment technology architecture to shorten the go-live cycle
- Zero network deployment, plug-and-play
- Precise logging and command-level traceability of execution results
- Built-in rich operation and maintenance scripts and management solutions

Table 9-3 ISIB System Specifications

Specification	Description
Home	Provide multi-dimensional statistical results of assets, warehouse, operation and operation; 24-hour operation dynamic display; 30-day operation histogram display.
Assets	Supports automatic device discovery, OS information collection, out-of-band/in-band power management.
Warehouse	Provide management of image, software, firmware, configuration files, scripts, and sources to facilitate your OS deployment, firmware upgrade, and other operations.
Operation	Support for firmware upgrades. Support for hardware configuration. Support for PXE automated installation. Support for installation template management. Support for image cloning & restoration. Support for software distribution. Support for configuration changes. Support system patrol.
Tasks	Support for job scheduling, timed and periodic execution of tasks. Provide visual multi-dimensional task display and fine-grained log view.
GShell	Support single/batch SSH terminal remote management.

10 Certification

Certification Program	Certification Logo	Compulsory/ Voluntary
CCC		Compulsory
CECP		Compulsory
CEL		Voluntary
CB		Voluntary
CE		Compulsory
FCC		Compulsory
UL		Voluntary
CU		Compulsory
CU-RoHS	N/A	Compulsory
FSS	N/A	Compulsory

11 Support and Services

Please visit Inspur's official website https://www.inspur.com/, click **Support Downloads / Self Service / Service Policy**, to learn about the warranty service policy of the relevant products, including service content, service period, service mode, service response time and service disclaimer and other related contents.

Global service hotline:

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

Information required from the customer:

- Name
- Unit Information
- Contact Number
- Email Address
- Product Model Number
- Product serial number SN
- Problem Description

12 Relevant Documents

For more information, please refer to the following links.

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