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Inspur Server NF8260M6 White Paper

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1 Product Overview

Inspur Server NF8260M6 is a 2U 4S rack server based on 3rd generation Intel® Xeon® Scalable processor(Cooper lake) designed by Inspur for the needs of domestic, European and American markets such as Internet, communications, etc. The product meets business requirements for high computing performance and large memory capacity, while providing a good solution for customers with certain requirements for density and storage. It is especially suitable for application scenarios such as virtualization, database, SAP HANA, and AI, which have demanding requirements for servers.

Designed for cloud-optimized application scenarios, with strong computing power and scalability while having excellent RAS features. Meeting higher computing performance per unit of space, it is the latest generation of 2U4S server that caters to the low TCO needs of enterprise customers

2 Features

For different application scenarios, the NF8260M6 maintains the usual high quality and reliable performance of Inspur servers, applying the ultimate design concepts to performance, scalability, availability, manageability and more.

Performance

- The NF8260M6 is built on 3rd generation Intel® Xeon® Scalable processor(Cooper lake) with up to 28 cores and 56 threads in a single CPU, supporting up to 250W TDP CPU, Max Turbo Frequency up to 4.3GHz, up to 38.5 MB L3 cache and 10.4 GT/s UPI interconnect link, enables the server to have high processing performance.
- CPU up to 6 UPI with 10.4 GT/S rate and built-in Bfloat16 instruction set to better support AI deep learning training
- Support for 48 DDR4 ECC memories of 3200 MHz/2933MHz, support for RDIMM and LRDIMM types, providing excellent speed, high availability and up to 4.5T of memory capacity. Support up to 24 Barlow Pass memory
- Supports 24 hot-swappable NVMe SSDs in full-flash configurations, which can provide ten times more IOPs than high-end enterprise SATA SSDs, and the ultimate storage IO brings a qualitative leap in storage performance.

Expandability

- Supports up to 25 2.5" SAS/HDD/SSD drives or up to 24 2.5" SAS/HDD/SSD drives or up to 24 2.5" NVMe drives Built-in 2 M.2 hard drives.
- Support OCP3.0 NIC, provide 1G, 10G, 25G, 100G multiple network interface options to provide more flexible network structure for applications.
- Supports up to 12 PCIe 3.0 expansions, which can be used to further enhance I/O performance.
- Supports up to 2 full-length double-wide GPU/FPGA or 4 half-length single-wide expansions, which can be used for AI, HPC, intelligent acceleration and other application scenarios.

Usability

- Tool-free maintenance based on humanized design concept. Quick disassembly and installation is achieved through the optimization of some structural parts enhancement, which greatly shortens the operation and maintenance time.
- Through Inspur's unique intelligent regulation technology with advanced air-cooling system to achieve the best working environment and ensure stable system operation.
- Hot-swappable hard drives, supporting RAID 0/1/1E/10/5/50/6/60, providing RAID Cache and supporting super capacitor power-down data protection.
- Applying the latest technology of BMC enables technicians to guide the equipment through Web management interface, troubleshooting LEDs, etc., and can quickly find the components that have failed (or are failing) by marking faulty machines with

indicators on the front panel, thus simplifying maintenance, speeding up problem solving, and increasing system availability.

- The BMC is used to monitor system parameters and send early warning messages so that technicians can take appropriate action to ensure stable machine operation.
- OCP3.0 NIC (hot-swappable function supports Redhat7.9, Windows and Redhat8.X do not support hot-swappable function at the moment), power supply, and fan hot-swappable, supporting powered maintenance and improving maintenance efficiency.

Manageability

- Wave server is equipped with ISBMC intelligent management system, which is a server remote management system independently developed by Wave.
- ISBMC supports standard IPMI2.0, Redfish1.8 and other mainstream management specifications in the industry.
- ISBMC has higher operational reliability.
- ISBMC is easy to maintain for customer scenarios.
- ISBMC has more accurate and comprehensive troubleshooting capability.
- ISBMC has higher security hardening capability than the industry.
- On-line memory diagnostic function is provided, which enables quick location of memory faults in single computing nodes through LEDs, marking the specific location of each faulty memory on the motherboard; enabling maintenance personnel to quickly identify the memory to be maintained and improve maintenance efficiency.

Energy Efficiency

- Provide 800W ~ 2000W power 80 PLUS Platinum power module, power module efficiency up to 94% under 50% load.
- Supports 1+1 redundant power supplies and AC/DC integrated power supplies 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 Trusted Platform Module (TPM2.0), Trusted Cryptographic Module (TCM) function, which can provide advanced encryption functions.
- Support UEFI secure boot to ensure integrity on UEFI firmware based systems.
- Support BIOS hierarchical password protection to ensure system boot and management security.
- Supports BIOS Lock Enable (BLE) function to eliminate malware attacks on the BIOS area of the flash device.
- Support for BMC secure boot function, support for full chain of trust, and improved system security.
- Support BMC and BIOS to support firmware update tamper-proof.
- Support dual mirroring of BIOS and BMC for automatic recovery of abnormal critical firmware.

- Management of BMC supports flexible access control policy, password complexity policy, login policy, access control policy based on time period, IP, MAC, Web management access support LDAP authentication access method, etc.
- Optional security panel with lock to prevent unauthorized users from plugging and unplugging hard drives to protect local data security.
- Support chassis intrusion detection (when the chassis cover is detected open, BMC will automatically control to increase the fan speed)

3 Logical Architecture

The NF8260M6 supports 2/4 Intel® Xeon® scalable processors with full interconnection between processors and processors via 2/6 sets of UPI buses with transfer rates up to 10.4GT/s. Each CPU supports 6 memory channels with two memory slots per channel, 48 DDR4 DIMMs for the whole machine, and up to 24 OPTANE™ PMEM 200 series memory.

The whole machine can support up to 12 PCIe 3.0 slots, and up to 2 PCIe Riser modules can be expanded. There are two kinds of PCIe adapter boards with PCIe x8*3, PCIe x16*2+PCIe x8*1 for flexible options, and the NF8260M6 can be expanded with up to 2 full-length double-wide GPU devices.

NF8260M6 provides 5 USB interfaces, two VGA interfaces, supports OCP3.0 NICs, and provides 1G, 10G, 25G, and 100G network interface options to provide a more flexible network structure for applications.

The NF8260M6 supports up to 25 2.5" SAS/SATA/SSD hard drives and 24 2.5" SAS/SATA/SSD/NVMe hard drives, while the PCH can be expanded with four 2.5" SATA hard drives and two M.2 SATA/NVMe hard drives.

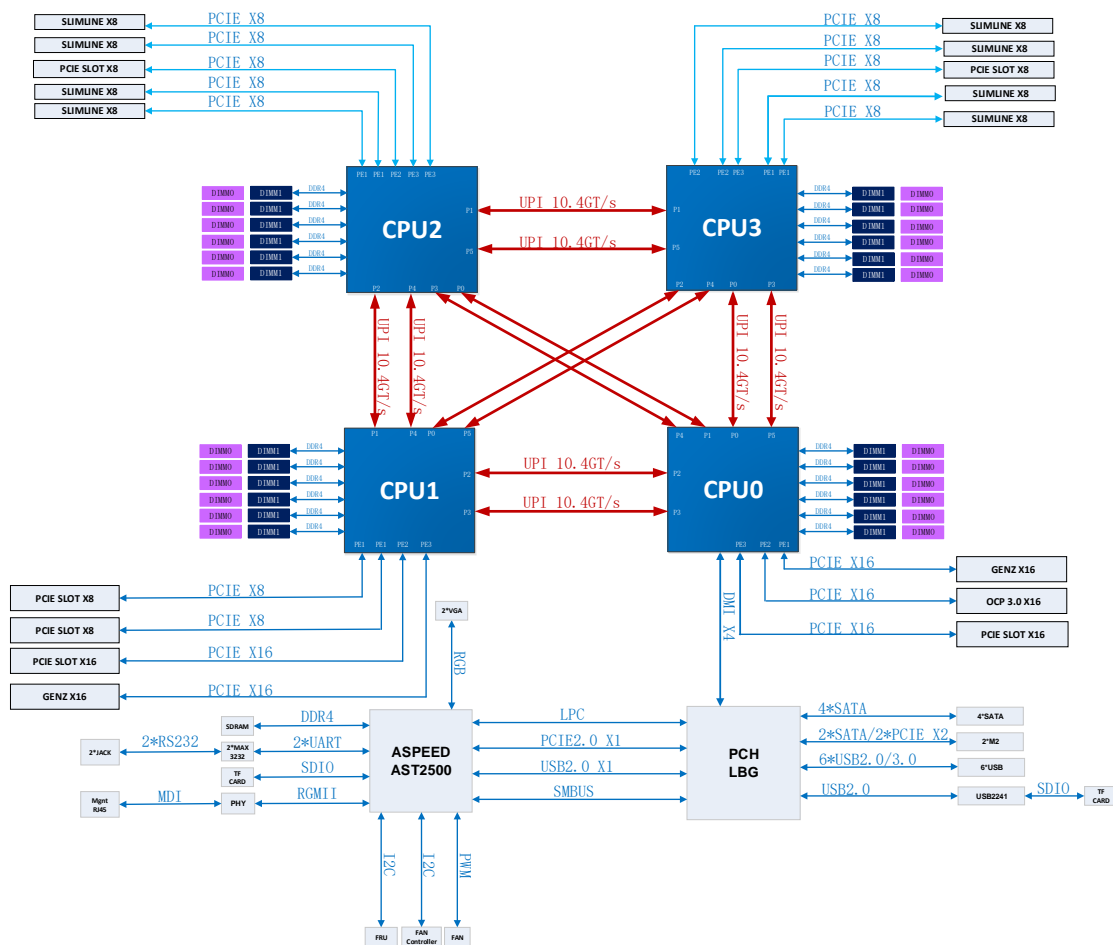
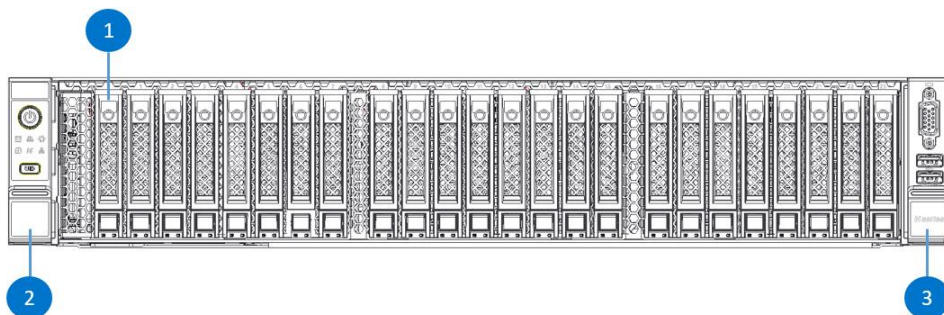


Figure 3-1 Logic Block Diagram of NF8260M6

4 Product Overview

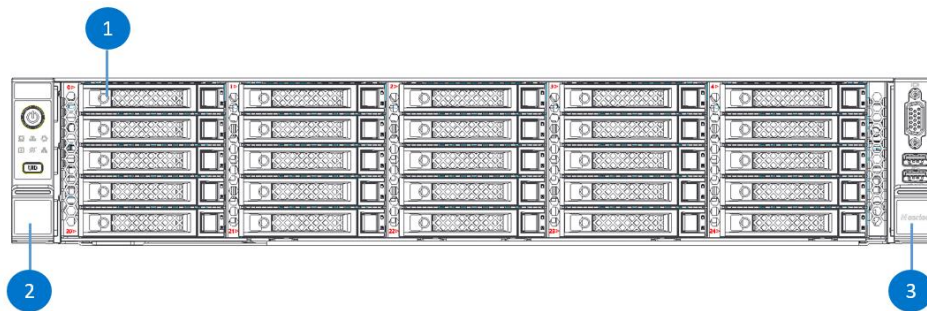
4.1 Front Panel

Figure 4-1 24*2.5" Front View



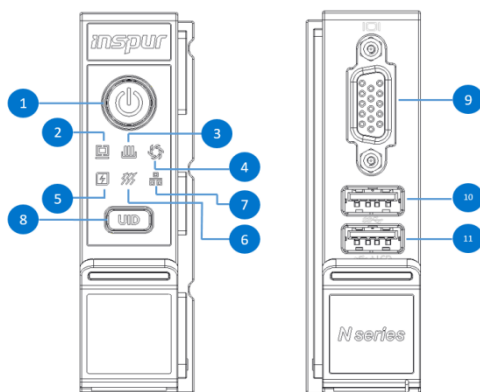
#	Item	#	Item
1	2.5" HDD 0-23	3	Right Mounting Ear Module
2	Left Mounting Ear Module		

Figure 4-2 25*2.5" Front View



#	Item	#	Item
1	2.5"HDD 0-24	3	Right Mounting Ear Module
2	Left Mounting Ear Module		

Figure 4-3 Front Panel LED Indicators and Buttons



#	Item	#	Item	#	Item
1	Power button	6	System Overheat LED	11	USB 2.0 LCD interface
2	System Fault LED	7	Network Status LED		
3	Memory Fault LED	8	UID BMC RST button		
4	Fan Fault LED	9	VGA interface		
5	Power Fault LED	10	USB 3.0 interface		

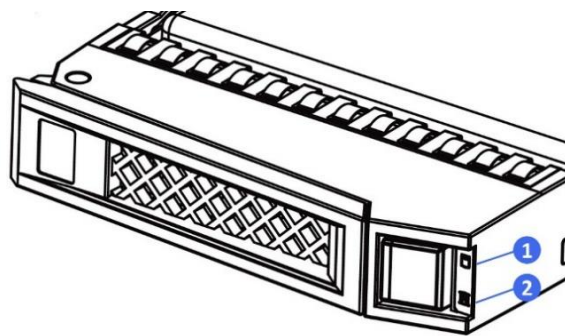
Fault LED Description:

LED Location	#	Item	Description
Front control panel	1	Power Button	Green = ON
			Orange = Standby.
			4-s press = Force shutdown.
	2	UID BMC RST Button	Blue = UID LED ON/OFF
			6-s press = Force restart of BMC
	3	System Fault LED	OFF = Normal
			Solid red = Fault
			Flashing red = Alarm
	4	Memory Fault LED	ON = Normal
			Solid red = Fault
			Flashing red = Alarm
	5	Fan Fault LED	OFF = Normal
Solid red = RPM read failure			
Flashing red = RPM read exception			
6	Power Fault LED	OFF = Normal	

			Solid red = Power supply fault
			Flashing red = Abnormal power supply
	7	System Overheat LED	OFF = Normal
			Solid red = CPU/memory overheat
	8	Network Status LED	Solid/flashing green = Normal network connection
			OFF = No network connection
			*Note: It only indicates the working status of the network self-developed OCP card (4 s).

4.1.2 Hard Disk Tray LEDs

Figure 4-4 Hard Disk Tray LED

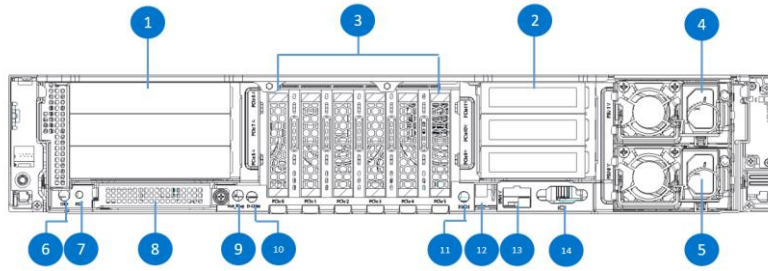


#	Item	Description
1	Activity Status LED	Solid green = Normal Flashing green = Read/write activities
2	Drive Fault LED	Solid red = Drive error or failed Solid blue = Drive is being located Solid pink = RAID rebuilding

4.2 Rear Panel

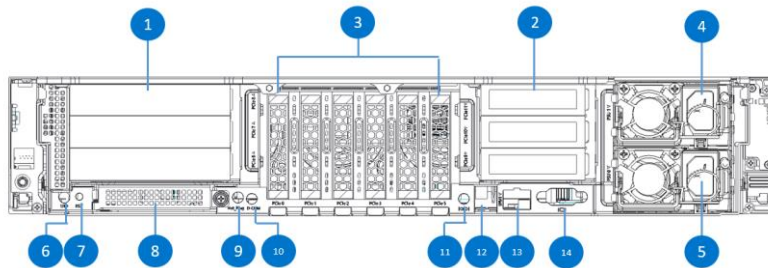
4.2.1 Front View of Rear Panel

Figure 4-5 25 Plate Half Height Rear Window Front View



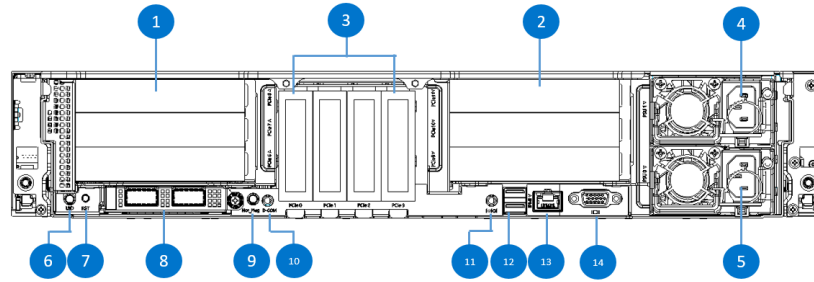
#	Item	#	Item	#	Item
1	FHHL PCIe*3	6	UID light and BMC reboot button	11	System COM port
2	HHHL PCIe*3	7	System reboot button	12	USB3.0 interface*2
3	HHHL PCIe*6(vertical plug-in card)	8	OCP3.0 network card (optional)	13	BMC Network Management Port
4	PSU0	9	Hot Plug button	14	VGA interface
5	PSU1	10	BMC debug serial port		

Figure 4-6 24 Plate Half Height Rear Window Front View



#	Item	#	Item	#	Item
1	FHHL PCIe*3	6	UID light and BMC reboot button	11	System COM port
2	HHHL PCIe*3	7	System reboot button	12	USB3.0 interface*2
3	HHHL PCIe*6(vertical plug-in card)	8	OCP3.0 network card (optional)	13	BMC Network Management Port
4	PSU0	9	Hot Plug button	14	VGA interface
5	PSU1	10	BMC debug serial port		

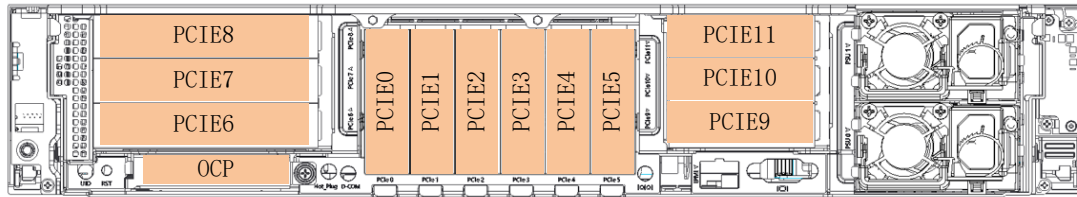
Figure 4-7 24 Plate Full Height Rear Window Front View



#	Item	#	Item	#	Item
1	FHHL PCIe*3	6	UID light and BMC reboot button	11	System COM port
2	FHHL PCIe*3	7	System reboot button	12	USB3.0 interface*2
3	HHHL PCIe*4(bundle plug-in card)	8	OCP3.0 network card (optional)	13	BMC Network Management Port
4	PSU0	9	Hot Plug button	14	VGA interface
5	PSU1	10	BMC debug serial port		

Figure 4-8 PCIE slot distribution

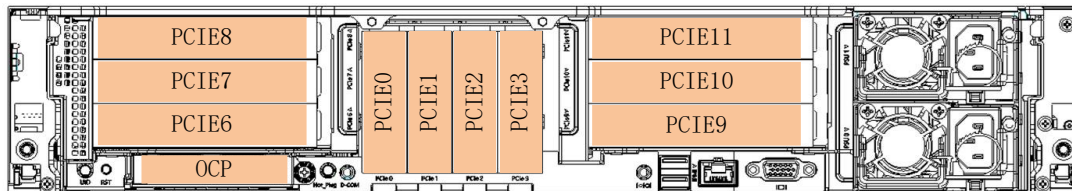
Ordinary Chassis:



PCIE slots with corresponding CPUs				
PCIE	Slot Position	Signal Source	Slot Specification	Note
On-board PCIE Slot	PCIE0	CPU0	2 PCIeX16 half-height half-length cards	Direct mainboard connection
	PCIE1	CPU1		
	PCIE2	CPU3	4 PCIeX8 half-height half-length cards	
	PCIE3	CPU1		
	PCIE4	CPU1		
	PCIE5	CPU2		
PCIE_RISER0 Card Slot	PCIE6	CPU0	3 PCIeX8 full height half-length cards	Direct mainboard connection
	PCIE7	CPU0		Requires one x8 slimline connector on the motherboard to the Riser via the slimline cable
	PCIE8	CPU3		
PCIE_RISER1 card slot	PCIE9	CPU1	3 PCIe x8 half-height half-length cards	Direct mainboard connection
	PCIE10	CPU1		Requires one x8 slimline connector on the motherboard to the Riser via the slimline cable
	PCIE11	CPU2		

OCP	OCP3.0	CPU0	1 PCIeX16	Direct mainboard connection
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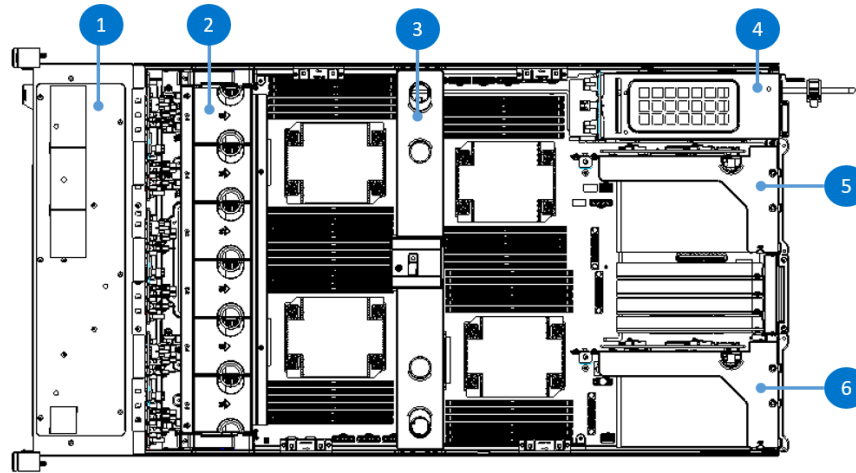
GPU Chassis



PCIe slots with corresponding CPUs				
PCIe	Slot Position	Signal Source	Slot Specification	Note
On-board PCIe Slot	PCIE0	CPU0	2 x PCIeX16 half-height half-length cards	Direct mainboard connection
	PCIE1	CPU1		
	PCIE2	CPU3	2 x PCIeX8 half-height half-length cards	
	PCIE3	CPU1		
PCIe_RISER0 Card Slot	PCIE6	CPU3	1 x PCIeX8 full height half-length card	Requires 1 x8 slimline connector on the motherboard to the Riser via slimline cable
	PCIE7	CPU0	2 x PCIeX16 full height full length cards	Direct mainboard connection
	PCIE8	CPU3		Requires 2 x8 slimline connectors on motherboard to Riser via slimline cable
PCIe_RISER1 card slot	PCIE9	CPU2	1 x PCIeX8 full-height half-length card	Requires 1 x8 slimline connector on the motherboard to the Riser via slimline cable
	PCIE10	CPU1	2 PCIe x16 full height full length cards	Direct mainboard connection
	PCIE11	CPU2		Requires 2 x8 slimline connectors on motherboard to Riser via slimline cable
OCP	OCP3.0	CPU0	1 ↑ PCIeX16	Direct mainboard connection

4.3 Internal Top View

Figure 4-9 Internal Diagram of the Server



#	Item	#	Item
1	2.5*24/25 HDD compartment	2	System Fans
3	Center Bracket Module	4	Power Modules
5	PCIe Riser 1 Module	6	PCIe Riser 0 Module

4.4 PCIe adapter card and OCP card

Figure 4-10 Full Height PCIe Riser Module Schematic

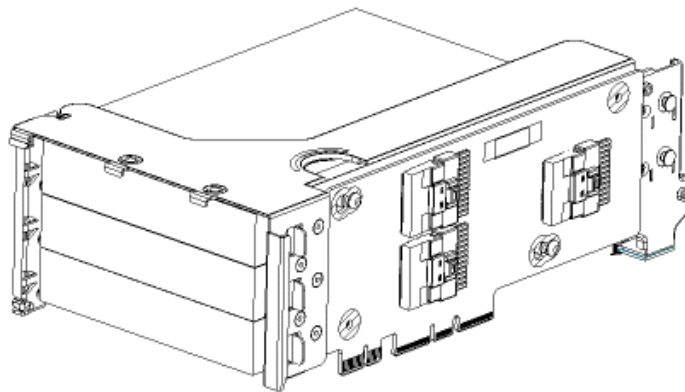


Figure 4-11 Half-height PCIe Riser Module Schematic

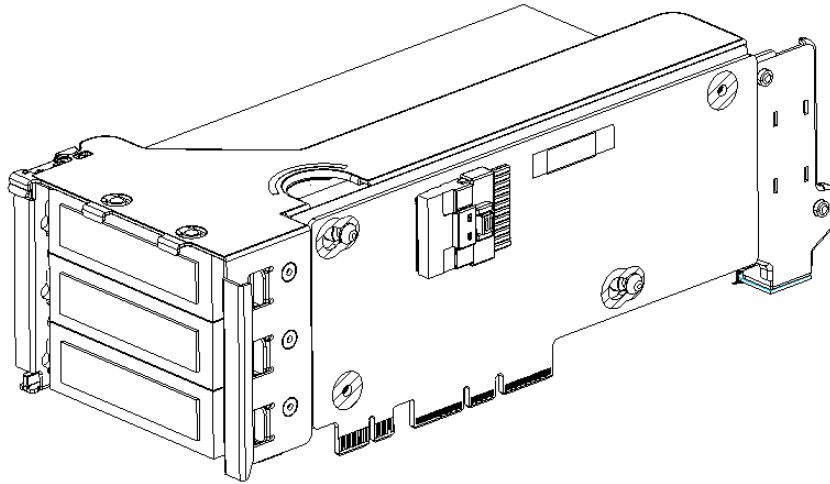
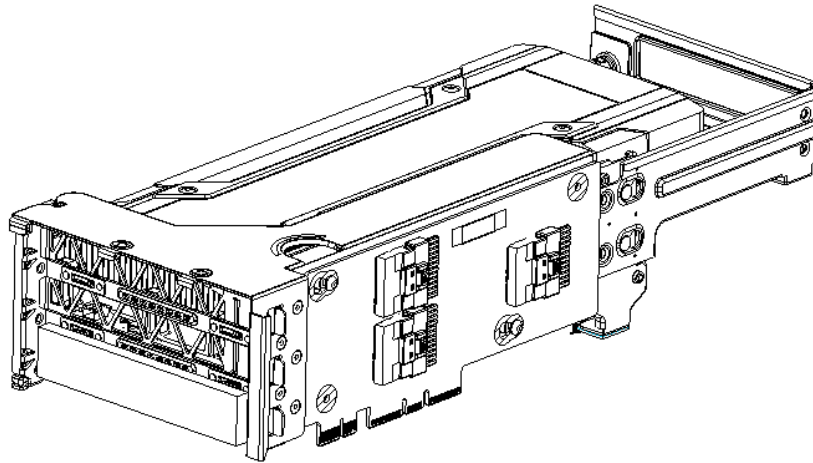
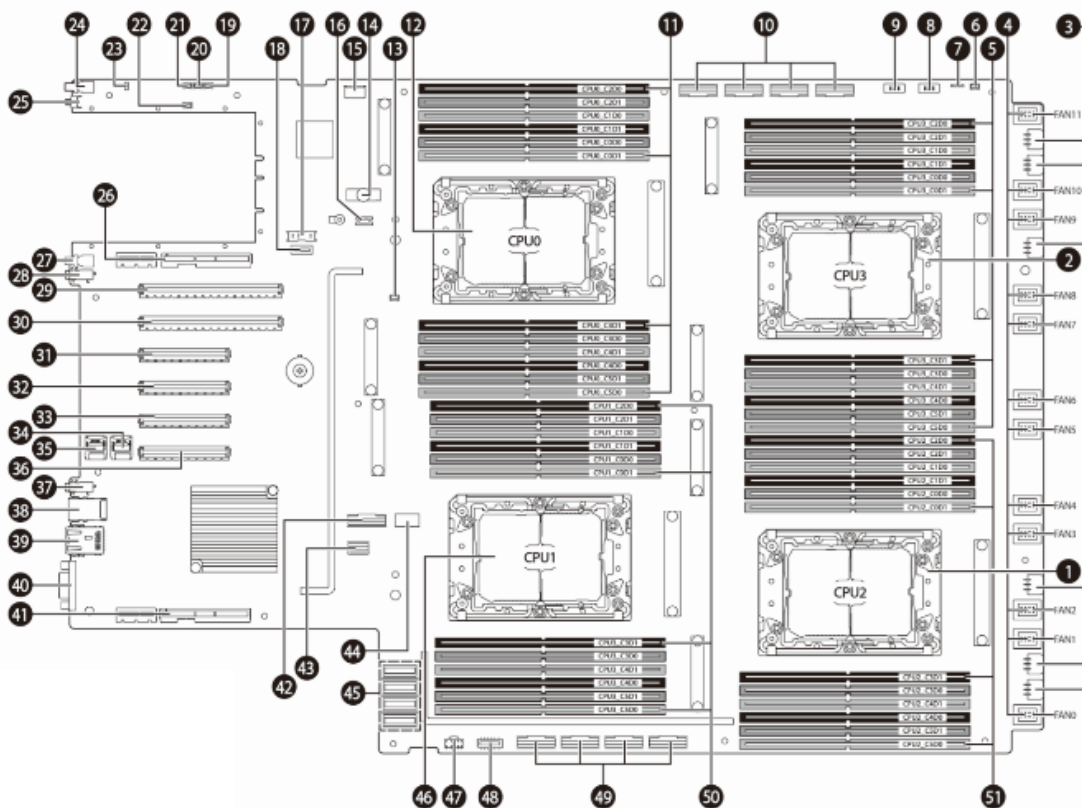


Figure 4-12 Schematic of the Full-length GPU Riser Module



4.5 Mainboard Layout

Figure 4-13 Mainboard Layout

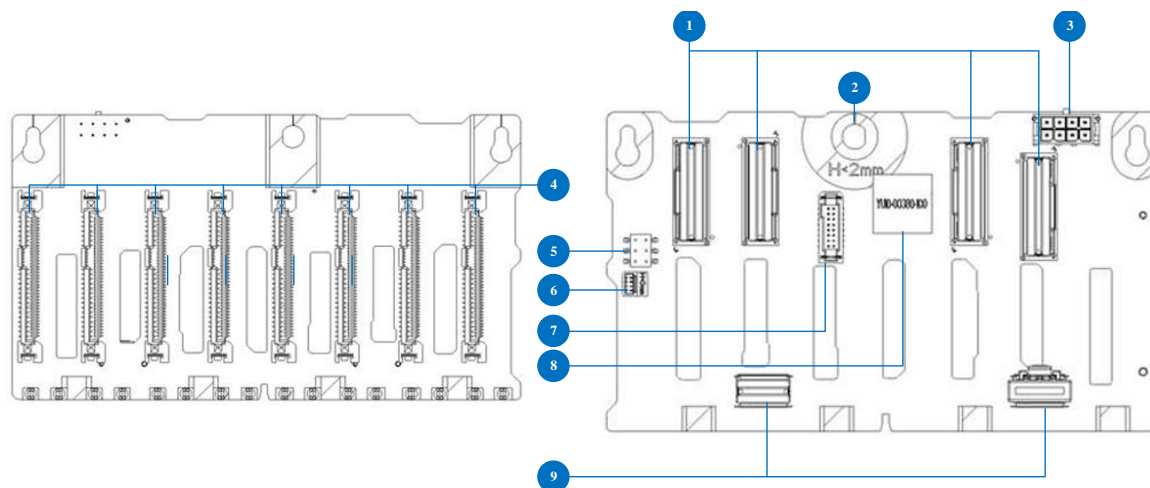


#	Item	#	Item	#	Item
1	CPU2	20	HDD backplane I2C interface 1	39	BMC management network port
2	CPU3	21	HDD backplane I2C interface 0	40	VGA interface
3	Backplane power cable connector x6	22	HDD backplane I2C interface 3	41	PCIE_RISER1 Card Slot
4	Fan connector x12	23	CLR_CMOS	42	M.2_Riser interface
5	Memory slot (corresponding to CPU3)	24	UID light and BMC reboot button	43	SLIM_SATA Interface
6	SENSOR_CABLE interface	25	System reboot button	44	On-board USB interface
7	Raid key	26	PCIE_RISER0 card slot	45	Power Supply Interface
8	CPU01_VPP interface	27	OCP button	46	CPU1
9	CPU23_VPP interface	28	BMC serial port	47	Power backplane signal line interface
10	Slimline interface x4	29	PCIE0_CPU0 card slot	48	Left lug connector
11	Memory slot (corresponding to CPU0)	30	PCIE1_CPU1 card slot	49	Slimline interface x4

12	CPU0	31	PCIE2_CPU3 card slot	50	Memory slot (corresponds to CPU1)
13	Chassis open cover detection interface	32	PCIE3_CPU1 card slot	51	Memory slot (corresponding to CPU2)
14	XDP interface	33	PCIE4_CPU1 card slot		
15	Right lug signal line interface	34	System TF card slot		
16	TCM/TPM interface	35	BMC TF card slot		
17	NIC_NCSI interface	36	PCIE5_CPU2 Card Slot		
18	TPCM interface	37	System Serial Port		
19	Hard disk backplane I2C interface2	38	USB3.0 interface x2		

4.6 Backplane Layout

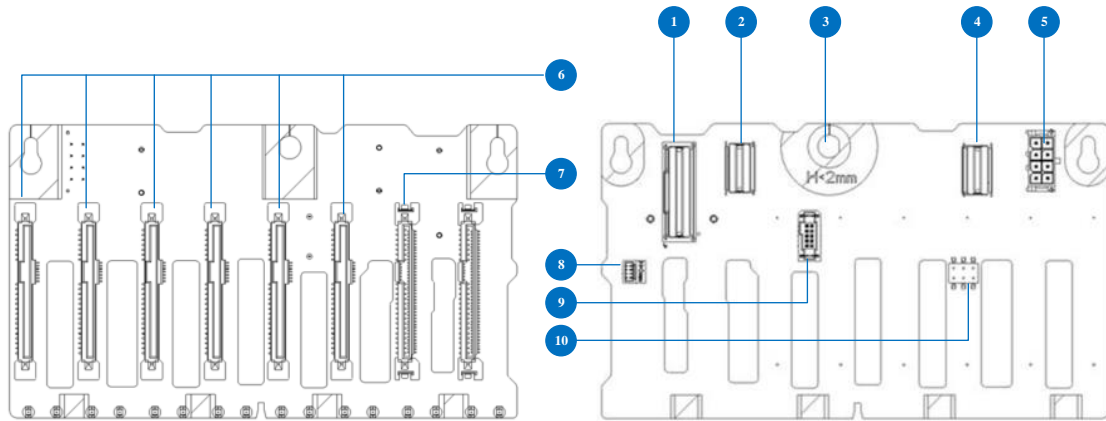
Figure 4-14 8NVMe/SAS/SATA Backplane Layout



#	Item	#	Item	#	Item
1	Slimline x8 Connector (For NVMe)	2	Fixing Studs	3	Power Connector
4	SAS/SATA/NVMe Hard Drive Connectors	5	CPLD JTAG Connector	6	BMC I2C Header
7	VPP Header	8	CPLD	9	Slimline x4

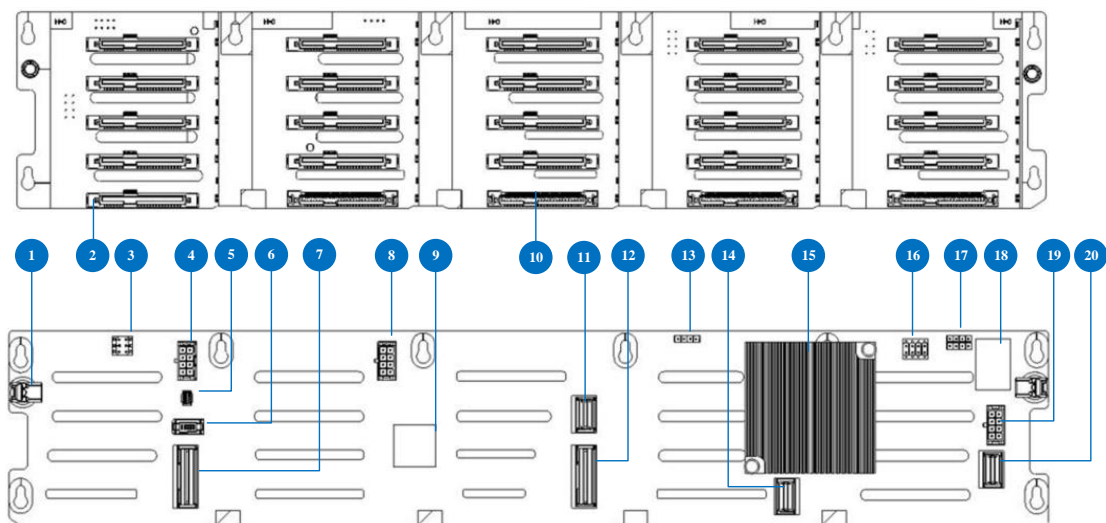
					Connector (For SAS/SATA)
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Figure 4-15 6SAS/SATA+2NVMe/SAS/SATA Backplane Layout



#	Item	#	Item	#	Item
1	Slimline x8 Connector (For NVMe)	2	Slimline x4 Connector (For SAS/SATA)	3	Fixing Studs
4	Slimline x4 Connector (For SAS/SATA)	5	Power Connector	6	SAS/SATA Hard Drive Connectors
7	SAS/SATA/NVMe Hard Drive Connectors	8	BMC I2C Header	9	VPP Header
10	CPLD JTAG				

Figure 4-16 21SAS/SATA+4NVMe/SAS/SATA Backplane Layout



#	Item	#	Item	#	Item
1	Fixing studs	2	SAS/SATA Hard Drive Connectors	3	CPLD JTAG
4	Power Connector	5	BMC I2C Header	6	VPP Header
7	Slimline x8 Connector (For NVMe)	8	Power Connector	9	CPLD
10	SAS/SATA/NVMe Hard Drive Connectors	11	Slimline x4 Connector (For Backup BP)	12	Slimline x8 Connector (For NVMe)
13	Expander Chip Debug Interface	14	Slimline x4 Connector (To RAID Card)	15	Expander Chip
16	Expander Chip Debug Interface	17	Expander Chip Debug Interface	18	Expander Flash
19	Power Connector	20	Slimline x4 Connector (To RAID Card)		

5 System Specifications

Table 5-1 System Specifications

Item	Description
Time to Market	2021
Form Factor	2U Rack
Processor	Supports 4 Intel® 53xx, 63xx, 83xx series scalable processors. Supports up to 28 cores (frequency 3.8GHz) Maximum frequency 4.3GHz (8 cores) 6 UPI interconnect links, single link high speed rate 10.4GT/s Maximum thermal design power 250W
Chipsets	Intel C621A
Memory	Supports up to 48 memory sticks. Each processor supports 6 memory channels, with a maximum of 2 memory slots per channel. Maximum memory speed up to 3200MT/s. Supports RDIMM, LRDIMM and BPS memory. Memory protection with ECC, memory mirroring, memory level protection
Storage	Front panel. 1. Maximum support for 25 2.5" hot-swappable hard drives 2.5"x21 SATA/SAS/SSD+4xSATA/SAS/SSD/NVMe support hot-swap 2. Optional support for 24 NVME hard drives 2.5"x24 SATA/SAS/SSD/NVMe support hot-swappable Built-in storage Supports up to two 110/80mm PCIE x2 M.2 and two SATA M.2 Supports up to two MICRO SD
Storage Controller	RAID Card Controllers Inspur 3008IMR, PM8204, BRCM 9361-8i/16i, 9460-8i/16i SAS Card Controllers Inspur 3008IT/IR, PM8222 Intel onboard SATA controller with RAID 0/1/5/10 support Intel onboard NVME controller with optional Intel NVME Raid Key

	Intel NVME Raid Key: Support RAID 0/1/5/10
Network	1 OCP 3.0 module provides 1Gb/s, 10Gb/s, 25Gb/s, 100Gb/s Supports standard 1Gb, 10Gb, 25Gb, 40G, 100Gb NICs
Integrated Graphics	Integrated graphics controller, 64MB graphics memory, 1920*1200 resolution
Optical drives	Support external USB optical drive, optical drive type: external Slim DVDRW
I/O expansion	Supports up to 12 standard PCIe slots and one OCP 3.0 card slot Supports 6 half-height, half-length vertical PCIe slots, including 2 X16 and 4 X8 Supports 2 Riser modules, each supporting 3 standard PCIe slots, with different numbers of X8 and X16 slots by choosing different Riser modules Supports up to 8 standard PCIe slots + 1 OCP3.0 slot for 2 CPUs PCIe expansion is available in a modular, tool-less design, while the PCIe slots on the Riser remain screwed in place
Interface	2 rear USB 3.0 ports, 1 front USB 3.0 port + 1 front USB 2.0 port, 1 internal USB 3.0 port 1 front VGA port 1 rear VGA port
Fan	6 hot-swappable N+1 redundant 6056/6038 fans
Power supply	Supports up to two 800W/1300W/1600W/2000W CRPS standard power supplies with 1+1 redundancy
System Management	Integrated 1 independent 1000Mbps network interface, specifically for remote management of IPMI
Operating System	Microsoft Windows Sever、Red Hat Enterprise Linux、SUSE Linux Enterprise Server、Vmware ESXi etc.

Table 5 - 2 Physical Specifications

Item	Specifications
Size	With lugs: W (width) 482.4mm; H (height) 87mm; D (depth) 867.5 mm Without lugs: W (width) 435mm; H (height) 87mm; D (depth) 841mm With package: 1161mm long, 671mm wide, 302mm high
Weight	2.5 * 24 configuration (including the front 24 * 2.5-inch hard drive, 10PCIE) Host (without packaging): 31kg

	<p>Gross weight (including packaging): 39.5kg (including packaging + rails + accessories box) 2.5*25 configuration (including the front 25*2.5-inch hard drive, 10PCIE) Mainframe (without packaging): 34 kg Gross weight (including packaging): 40 kg (including packaging + rails + accessories box) GPU configuration (including the front 8 * 2.5-inch hard disk, 2GPU) Mainframe (without packaging): 29.5 kg Gross weight (including packaging): 40.5 kg (including packaging + rails + accessories box)</p>
Temperature	<p>Working temperature: 5~45°C 1,2,3; Storage temperature (with package): -40~+70°C Storage temperature (without package): -40~+55°C</p>
Humidity	<p>Working humidity: 5%~90% R.H. Storage humidity (with package): 5%~93% R.H. Storage humidity (without package): 5%~93% R.H.</p>
Noise (Bels) (Sound power level) ^{4,5,6,7}	<p>Idle LWAd: 5.8 B General purpose common configuration. LpAm: 49.0 dBA General-purpose common configuration. Operating LWAd: 6.4 B general purpose normal configuration. LpAm: 53 dBA general purpose normal configuration.</p>
Altitude	<p>Operating temperature 0 °C to 40 °C at 0 to 1000 m. Operating temperature 5°C to 32°C at 1000 to 3050 meters</p>

Table 5-3 Operating Temperature Specifications

Configuration Name	System Fan	Front Hard Drive	BPS/Dimm	CPU	PCIE	OCP	GPU	Max. Operating Temperature
Typical Configuration	6038 Fan	2.5*8 (NVME/SAS)	Rdimm/LRDimm (≤ 48 pcs)	$\leq 165W$	8PCS	No Restrictions	NONE	$\leq 35^{\circ}C$
High-end CPU configuration	6056 Fan	2.5*8 (NVME/SAS)	Rdimm LRDimm (≤ 48 pcs) (Maximum support 24BPS)	$\leq 250W$	12PCS	No Restrictions	NONE	$\leq 35^{\circ}C$
25 Disk Storage Configuration	6056 Fan	2.5*25 (NVME/SAS)	Rdimm/LRDimm (≤ 48 pcs)	$\leq 205W$ Not support 8356H CPU	6PCS	100G OCP not supported	NONE	$\leq 35^{\circ}C$
24-disk storage configuration	6056 Fan	2.5*24 (NVME/SAS)	Rdimm/LRDimm (≤ 48 pcs)	$\leq 250W$	12PCS Not support 100G NIC Card	100G OCP not supported	NONE	$\leq 35^{\circ}C$
GPU Configuration	6056 Fan	2.5*8 (NVME/SAS)	Rdimm/LRDimm (≤ 48 pcs)	$\leq 165W$	6PCS	100G OCP not supported	Double width*2	$\leq 30^{\circ}C$
GPU Configurations	6056 Fan	2.5*8 (NVME/SAS)	Rdimm/LRDimm (≤ 48 pcs)	$\leq 165W$	6PCS	100G OCP not supported	Single width*4	$\leq 30^{\circ}C$
Extreme Temperature Configuration	6056 Fan	2.5*8 (NVME/SAS)	Rdimm/LRDimm (≤ 48 pcs)	$\leq 150W$	8PCS	Not supported	NONE	$\leq 40^{\circ}C$
Extreme Temperature Configuration	6056 Fan	2.5*8 (NVME/SAS)	Rdimm/LRDimm (≤ 12 pcs)	$\leq 150W$	6PCS	Not supported	NONE	$\leq 45^{\circ}C$

Notes:

1. Not all configurations support 5~45 °C working temperature, where the GPU configuration supports working temperature of 10~30°C

2. Standard operating temperature

10° to 35° C (50° to 95° F) at sea level, with a temperature drop of 1.0° C for every 305 meters of altitude (1.8° F per 1000 feet) Maximum of 3050 meters (10,000 feet), 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 degraded if the fan fails or if it is operated above 30° 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 35° to 45° 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 extends to 35° to 45° C (104° to 113° F) at sea level 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 5-4 Safety & EMC

Safety	IEC 60950-1:2005 (Second Edition); Am1:2009 + Am2:2013 IEC 60950-1:2005 EN 60950-1:2006+A11:2009+A1:2010+A12:2011+A2:2013 GB4943.1-2011 UL 60950-1 and CAN/CSA C22.2 No. 60950-1-07 standard for information Technology Equipment-Safety-Part 1:General Requirements
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	EN 62368-1:2014/A11:2017, IEC 62368-1:2014 (Second Edition) TC 004/2011 UL 62368-1 : Audio/video, information and communication technology equipment Part 1: Safety requirements CAN/CSA C22.2 No. 62368-1-14 : Audio/video, information and communication technology equipment Part 1: Safety requirements IEC 62368-1:2014 (Second Edition) TP TC 004/2011 GB4943.1-2011 IS 13252(PART 1):2010/ IEC 60950-1 : 2005
EMC	GB/T9254-2008 (idt CISPR 22: 2006) GB17625.1-2012 (idt IEC 61000-3-2: 2009) EN 55032:2015 EN 61000-3-2:2014 EN 61000-3-3:2013 EN 55024:2010+A1:2015 EN 55035:2017 AS/NZS CISPR 32:2015 CFR 47 FCC Part 15 subpart B, 2018 ICES-003 ISSUE 6:2016 TC 020/2011 KN32 KN35

Table 5-5 Industry Standard Compliance

ACPI 6.2 Compliant
PCI-E 3.0 Compliant
WOL Support
SMBIOS 3.2
UEFI 2.6
Redfish API
IPMI 2.0
Microsoft® Logo certifications
PXE Support
Advanced Encryption Standard (AES)
SNMP v3
TLS 1.2
Active Directory v1.0

6 Compatibility List

*The compatibility list is updated in March 2021. For the latest compatibility and product part numbers not reflected in this manual, please consult Inspur Solutions technical staff for details.

6.1 Processors

NF8260M6 supports four Intel Xeon Scalable processors, 83XX supports up to 3200MHz, 63XX supports up to 2933MHz, and 53XX supports 2666MHz.

Table 6-1 CPU

Model	Number of cores	Number of threads	Base Frequency	Max Frequency	Raid	Cache	TDP
8380H	28	56	2.9 GHz	3.8 GHz		38.5M	250W
8380H L	28	56	2.9 GHz	3.8 GHz		38.5M	250W
8376H	28	56	2.6 GHz	3.5 GHz		38.5M	205W
8376H L	28	56	2.6 GHz	3.5 GHz		38.5M	205W
8360H	24	48	3.0 GHz	3.8 GHz		33M	225W
8360H L	24	48	3.0 GHz	3.8 GHz		33M	225W
8356H	8	16	3.9 GHz	4.3 GHz		35.75M	190W
8354H	18	36	3.1 GHz	4.0 GHz		24.75M	205W
8353H	18	36	2.5 GHz	3.3 GHz		24.75M	150W
6348H	24	48	2.3 GHz	3.1 GHz		33M	165W
6330H	24	48	2.0 GHz	2.8 GHz		33M	150W
6328H	16	32	2.8 GHz	3.7 GHz		22M	165W
6328H L	16	32	2.8 GHz	3.7 GHz		22M	165W
5320H	20	40	2.4 GHz	3.3 GHz		27.5M	150W
5318H	18	36	2.5 GHz	3.3 GHz		24.75M	150W

6.2 Memory

- The NF8260M6 supports up to 48 sticks of DDR4 memory. Each processor supports 6 memory channels with 2 memory slots per channel. Supports RDIMM / LRDIMM / BPS. supports the following memory protection technologies
- ECC (Error Correction Code): Error checking and correction technology
- Memory Mirroring (Memory Mirroring)
- Memory Hot Standby (Memory Level Evacuation)
- SDDC (Single Device Data Correction)
- ADDDC (Adaptive Dual Device Data Correction)
- PPR (Power-Up-Post-Package Repair).

Table 6-2 Memory List

Type	Capacity	Frequency	Data width	Organization
RDIMM	16GB	3200	x72	1R×4/ 2R×8
RDIMM	16GB	2933	x72	1R×4/ 2R×8
RDIMM	32GB	3200	x72	2R×4
RDIMM	32GB	2933	x72	2R×4
RDIMM	64GB	3200	x72	2R×4
RDIMM	64GB	2933	x72	2R×4
RDIMM	128GB	2933	x72	4R×4
BPS	128GB	3200		

Notes:

1. Not the same server does not allow the mixed use of different types (RDIMM, LRDIMM) and different specifications (capacity, bit width, rank, height, etc.) of memory.

*Special case: support for a single CPU memory mixing scheme in the case of full allocation as follows, to be used with the specified memory model.

1. 6*16G+6*32G.

2. 6*32G+6*64G.

2. The maximum memory capacity can be achieved when four processors are installed. Maximum memory capacity of half of the displayed capacity when using two processors.

3. Recommended to mount the same number of specifications of memory under each CPU, recommended to mount 6, 12 memory under each CPU; when BPS is used, technical review is required.

4. When Optane™ PMem memory is used.

Must be used with RDIMM memory, 16G, 32G ,64GRDIMM are available;

Table 6-3 Ordinary Memory Insertion Method (4 CPU)

6.3 Storage

6.3.1 SATA/SAS Hard Drive Models

Table 6-5 Hard Drive Options

Model	Speed/min	Capacity
2.5 SAS	10K	600G/1.2T/1.8T/2.4T
	15K	600G/900G

Note: Mixing and matching of 2.5" hard drives is allowed, but no more than 2 different types of disks are allowed

6.3.2 SSD Hard Drive Models

Table 6-6 SSD Hard Drive Options

Model	Capacity
SATA SSD	240G
SATA SSD	480G
SATA SSD	960G
SATA SSD	1.9T
SATA SSD	3.8T
SAS SSD	960G
SAS SSD	1.9T
SAS SSD	3.8T

6.3.3 U.2 NVMe SSD Hard Drive

Table 6-7 U.2 NVMe SSD Hard Drive

Model	Capacity	Maximum Quantity
U.2 NVMe SSD	960G	24
U.2 NVMe SSD	1T	24
U.2 NVMe SSD	1.6T	24
U.2 NVMe SSD	1.9T	24
U.2 NVMe SSD	2T	24
U.2 NVMe SSD	3.2T	24
U.2 NVMe SSD	3.8T	24
U.2 NVMe SSD	4T	24
U.2 NVMe SSD	6.4T	24
U.2 NVMe SSD	8T	24

Note: For part numbers not shown in this table, please consult an Inspur technician.

6.3.4 M.2 SSD Hard Drive

Table 6-8 M.2 NVMe SSD Hard Drive

Model	Capacity	Maximum Quantity
M.2 SATA SSD	240G	2
M.2 SATA SSD	480G	2
M.2 SATA SSD	960G	2
M.2 PCIE SSD	960G	2
M.2 PCIE SSD	1.9T	2
M.2 PCIE SSD	3.8T	2

Note: For part numbers not shown in this table, please consult an Inspur technician.

6.4 HDD Backplane

Type	Model	Note
HDD Backplane	YZBB-01649-101	Support 8SAS/SATA/SSD, maximum support 3 pieces
	YZBB-01650-101	Support 8SAS/SATA/SSD/NVME, maximum support 3 pieces
	YZBB-01969-101 (Broadcom)	Support 21SAS/SATA/SSD+4 SAS/SATA/SSD/NVME, maximum support 1 pieces
	YZBB-02020-101 (Microchip)	Support 21SAS/SATA/SSD+4 SAS/SATA/SSD/NVME, maximum support 1 pieces
M.2 Riser Board	YZRI-01032-101	Support 2 M.2 SATA/PCIE, maximum support 1 pieces

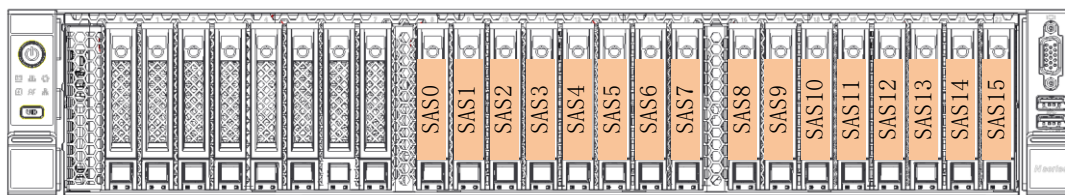
Note:

Broadcom backplanes need to be paired with Broadcom Raid cards, Microchip backplanes need to be paired with Microchip Raid cards

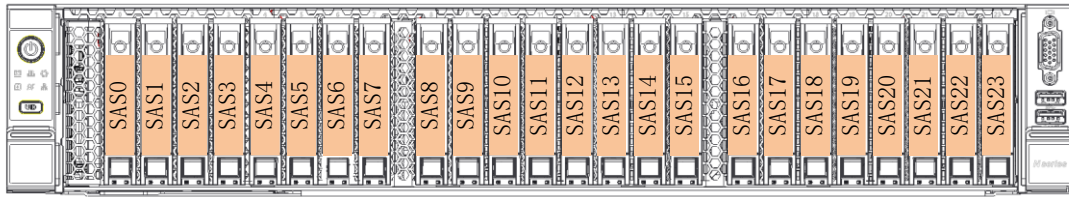
6.5 Hard Drive Installation Location

6.5.1 Normal HDD Installation Sequence

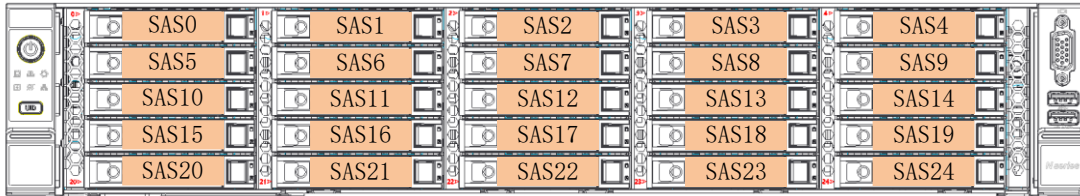
2.5x16:



2.5x24:

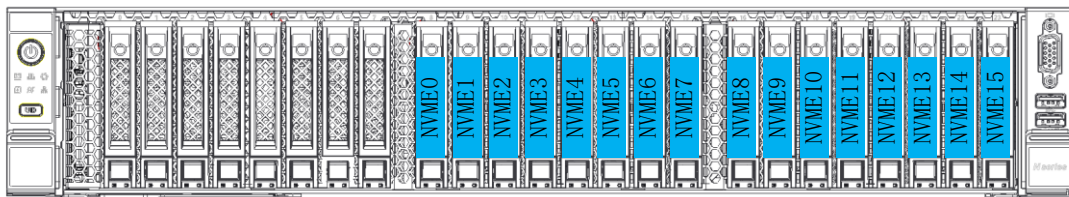


2.5x25:



6.5.2 NVMe Hard Drive Installation Location

2.5x16:

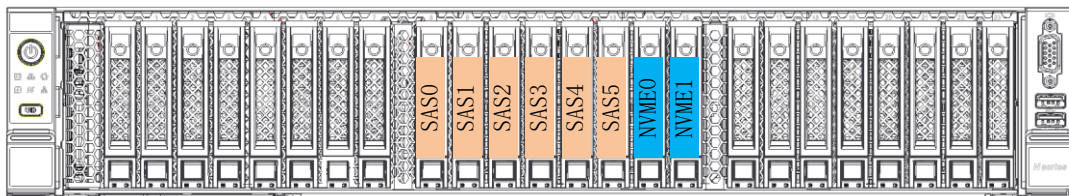


2.5x24:



6.5.3 Mixed Storage Installation Locations for Normal Hard Drives and NVMe Hard Drives

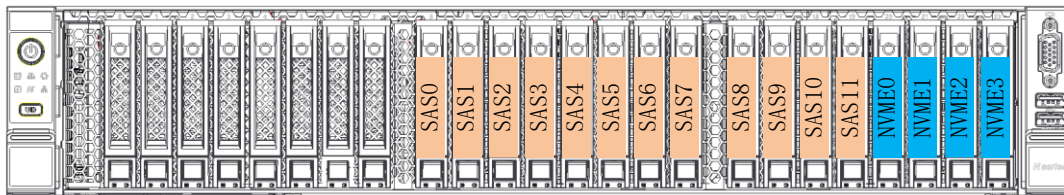
2.5x8: (Example)



Normal hard drives: install in SAS0-SAS6 order

NVMe hard drives: installed in NVMe6-NVMe0 order from right to left

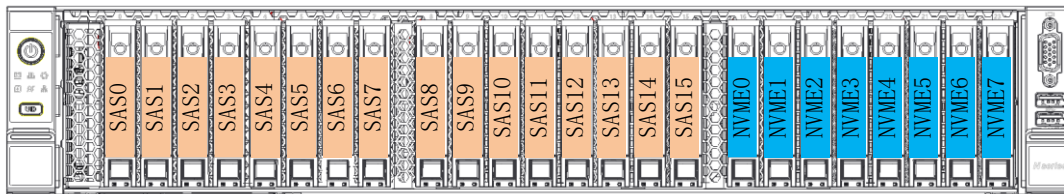
2.5x16: (Example)



Normal hard drives: install in SAS0-SAS15 order

NVMe hard drives: Installed in NVMe15-NVMe0 order from right to left

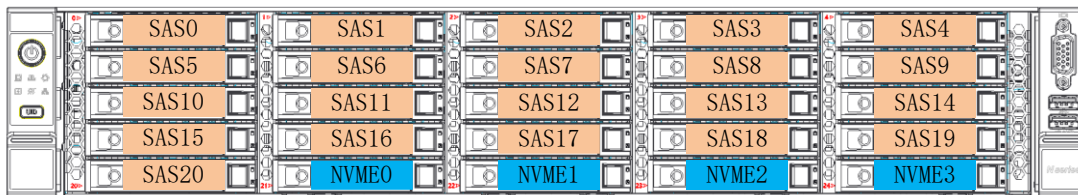
2.5x24: (Example)



Normal hard drives: install in SAS0-SAS23 order

NVMe hard drives: installed in NVMe23-NVMe0 order from right to left

2.5x25: (Example)



Normal hard drives: install in SAS0-SAS24 order

NVMe hard drives: installed in NVMe3-NVMe0 order from right to left

6.6 RAID/SAS Card

Table 6-9 RAID/SAS Card

SAS Card	Inspur	SAS Card_Inspur_PM8222_PM8222_8_SAS3_PCIE
		SAS Card_Inspur_PM8222_SmarHBA_8_SAS3_PCIE3
		SAS Card_INSPUR_SAS3008+IR+PCIE3.0
		SAS Card_INSPUR_SAS3008+IT+PCIE3.0
		SAS Card_L_8R0_9400-8i_HDM12G_PCIE3
RAID Card	Inspur	RAID Card_Inspur_PM8204_RA_8_2GB_SAS3_PCIE3
		RAID Card_Inspur_PM8204_RA_8_4GB_SAS3_PCIE3
	LSI	RAID

	Card_L_8R0_9460-8i_2GB_HDM12G_PCIE3
	RAID Card_L_8_9361-8i_2G_HDM12G_PCIE3
	RAID
	Card_L_16R0_9361-16i_2GB_HDM12G_PCIE3
	RAID
	Card_L_16R0_9460-16i_4GB_HDM12G_PCIE3
	RAID Card_L_8R0_9361-8i_1G_HDM12G_PCIE3
	RAID Card_L_8_9361-8i_2G_HDM12G_PCIE3
SND	RAID Card_SND_2R0_9230_N_M.2_PCIE2

6.7 NIC

Table 6-10 OCP Card

Type	Model & Description	Speed	Number of Interfaces
OCP	NIC_Inspur_Andes-M6_X710_10G_LC_OCP3x8_2	10G	2
	NIC_M_25G_MCX562A-ACAI_LC_OCP3x16_2_XR_S	25G	2
	NIC_I_25G_E810XXVDA2_LC_OCP3x8_2_XR	25G	2
	NIC_Inspur_Andes-M6_E810_25G_LC_OCP3x8_2	25G	2
	NIC_M_100G_MCX566ACDAB_LC_OCP3x16_2_XR	100G	2

- OCP3.0 NIC hot-swappable function only support Redhat7.9, Windows and Redhat8.X do not support hot-swappable function at the moment

Table 6-11 Standard PCI-E NICs

Type	Model & Description	Speed	Number of Interfaces
PCI-E	NIC_SND_W_I350-AM2_RJ_PCI-E4X_1K_M_Dual	1Gb	2
	NIC_Intel_W_I350-T2V2_RJ_PCI-E4X_1K_M_Dual	1Gb	2
	NIC_Inspur_W_I350AM4_1G_RJ45_PCIE_X8_Four	1Gb	4
	NIC_INSPUR_82599ES_10G_LC_PCIEX8_Dual_XR_Subcard	10Gb	2
	NIC_Intel_W_82599ES_LC_PCI-E8X_10G_Dual	10Gb	2
	NIC_INSPUR_XL710_10G_LC_PCIEX8_Dual_XR_Subcard	10Gb	2
	NIC_I_10G_X710DA2_LC_PCIEx8_2_XR	10Gb	2
	NIC_I_10G_X550T2_RJ_PCIEx4_2_XR	10Gb	2
	NIC_Inspur_Pyxis_X550_10G_RJ_PCIEx8_2_XR	10Gb	2
	NIC_M_25G_MCX4121A-ACAT_LC_PCIE_x8_D_XR	25Gb	2
	NIC_M_25G_MCX512A-ACAT_LC_PCIE_x8_2_XR	25Gb	2

	NIC_BROADCM_25G_57414_LC_PCIEx8_2_XR_42C	25Gb	2
	NIC_Inspur_Andes-M6_E810_25G_LC_PCIEx8_2	25Gb	2
	NIC_I_40G_XL710_LC_PCIEx8_MM	40Gb	1
	NIC_I_40G_XL710_LC_PCIEx8_2_MM	40Gb	2
	NIC_M_100G_MCX516A-CCAT_LC_PCIE_x16_2_XR	100Gb	2
	NIC_M_100G_MCX516A-CDAT_LC_PCIE_x16_2P_XR	100Gb	2

Note: A machine supports up to 6 NICs of the same type, 6 for Gigabit and 10G NICs of different types, and 4 for 25G and above NICs only, supporting a mix of two different types of NICs.

6.8 FC HBA Card

Table 6-12 FC HBA Card

HBA Card	Qlogic	HBA Card_QL_4R1_QLE2690-ISR-BK_FC16G_PCIE
		HBA Card_QL_4R2_QLE2692-ISR-BK_FC16G_PCIE
		HBA Card_QL_8R1_QLE2740_FC32G_PCIE
		HBA Card_QL_8R2_QLE2742-ISR-BK_FC32G_PCIE
	Emulex	HBA Card_E_8R0_LPE31000-M6_FC16G_PCIE
		HBA Card_E_8R2_LPE31002-M6_FC16G_PCIE
		HBA Card_E_8R2_LPE32002-AP_FC32G_PCIE
		HBA Card_E_0R1_LPE32000-AP_FC32G_PCIE

6.9 HCA Card

Table 6-13 HCA Card

Type	Model & Description	Speed
MCX653105A-ECAT PCIe 3.0/4.0 X16	100Gbps	1
MCX653106A-ECAT PCIe 3.0/4.0 X16	100Gbps	2
MCX555A-ECAT PCIe 3.0 X16	100Gbps	1
MCX556A-ECAT PCIe 3.0 X16	100Gbps	2
MCX653105A-HDAT PCIe 3.0/4.0 X16	200Gbps	1
MCX653106A-HDAT PCIe 3.0/4.0 X16	200Gbps	2
HCA 卡 _I_1-EDR4X25_100HFA016LS_PCIE	200Gbps	1

Note: 100G/200G requires PCI-E X16

6.10 Graphics Cards

Table 6-14 Graphics Cards

Type	Model & Description	Maximum Quantity
GPU Card	GPU_NV_32G_Tesla-V100S_4096b_P	2
	GPU_NV_16GB_Tesla-T4_256b_P	4
Graphics Cards	Graphics Cards_NV_2G_P620_128b_P_PG178	2

Note: This graphics card is x16 bus and needs to be plugged into a x16 Riser card slot. GPU with a 165W or less CPU.

6.11 Power Supply

The power supply adopts Intel standard CRPS with universal electrical and structural design, supports hot-swapping, 1+1 redundancy, and maximum loading of 2 power supplies. The CRPS power supply meets 80PLUS Platinum efficiency and partly meets Titanium efficiency, and provides a variety of power output power, users choose different power supply according to the specific configuration.

Supports the following rated 110V~230V AC & 240V DC power supplies with 1+1 redundancy

- 800 W Platinum power supply: 800 W (110VAC), 800 W (230VAC), 800 W (240VDC for China)
- 1300 W Platinum power supply: 1000 W (110VAC), 1300 W (230VAC), 1300 W (240VDC for China)
- 1600 W Platinum Power Supply: 1000 W (110VAC), 1600 W (230VAC), 1600 W (240VDC for China)
- 2000 W Platinum Power Supply: 1000 W (110VAC), 2000 W (230VAC), 2000 W (240VDC for China)
- 800W Titanium Power Supply: 800 W (230VAC), 800 W 240VDC for China)
- 1300W Titanium Power Supply: 1300 W (230VAC), 1300 W (240VDC for China)

Note: 1300W/1600W/2000W will derate to 1000W at 110VAC rating.

- Input voltage range.
- 110VAC ~ 230VAC: 90V ~ 264V
- 240VDC: 180V ~ 320V

Supports the following rated DC 336V power supplies with 1+1 redundancy

- 800W 336VDC power supply: 800W (336VDC)
- 1300W 336VDC power supply: 1300W(336VDC)
- Input voltage range.
- 336VDC: 260V ~ 400V
- 230VAC: 176V ~ 264V

Support the following rated DC-48V power supply, 1+1 redundancy

- 800W -48VDC power supply: 800W(-48VDC)
- 1300W -48VDC power supply: 1300W(-48VDC)
- Input voltage range.
- -48VDC: -40V ~ -72V

Note: Titanium power supply, 336V power supply and -48V power supply have not yet completed the introduction

6.12 Operating Systems

Table 6-25 Operating Systems

OS Manufacturer	OS Version
Windows	Windows server 2016
	Windows server 2019
Red Hat	Red Hat Enterprise 7.9
	Red Hat Enterprise 8.2
SUSE	SLES15.2
	SLES12.5
Oracle	Oracle Linux7.9
	Oracle Linux8.2

7 Configuration Note Options

- When configuring a GPU, you need to select a GPU-specific case, air guide, CPU cooler and Riser module with CPU power consumption less than 165W.
- When NVME hard disk is selected, there may be mutually exclusive relationship with the PCIE slot on the Riser module, depending on the shipping BOM list.
- The system has a cooling limit constraint, which requires 6056 fans in high and GPU configurations, and 6038 fans in normal configurations, subject to operating temperature specifications and BOM list.
- OCP3.0 NIC hot-swappable function only support Redhat7.8, Windows and Redhat8.X do not support hot-swappable function at the moment
- If the number of PCIE expansion cards exceeds 12, there are IO resource problems, please consult the manufacturer's technical staff.

8 System Administration

8.1 Intelligent Management System ISBMC

ISBMC is Inspur's self-developed server remote management system, which supports IPMI2.0, Redfish1.8 and other mainstream management specifications in the industry. ISBMC has high operational reliability, easy maintenance for customer scenarios, accurate and comprehensive troubleshooting capabilities, and higher-than-industry-level security reinforcement capabilities.

The main features of ISBMC intelligent management system are:

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

Table 8-1 ISBMC Intelligent Management System Specifications

Specification	Description
Management Interfaces	Supports rich remote management interfaces for different server O&M scenarios, supported interfaces include: <ul style="list-style-type: none"> ● IPMI ● SSH CLI ● SNMP ● HTTPS ● WebGui ● Redfish ● Restful ● DCMI ● Syslog
Intelligent Fault Location	Inspur's self-developed fault diagnosis system, IDL, provides comprehensive and accurate hardware fault location functions, outputting detailed fault causes and treatment recommendations.
Alarm management	Support rich automatic remote alerting capability, including SNMP Trap(v1/v2c/v3), email alert, syslog remote alert and other active alerting reporting mechanisms to ensure 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, which do not depend on Java and enhance management flexibility.
Remote Virtual Media	Supports virtualizing local media devices or images, USB devices, and folders as media devices on remote servers, simplifying system installation, file sharing, and other operations and maintenance operations.
WebGUI	Supports Wave's self-developed visual management interface, which provides rich server device information and status display, as well as an easy-to-use operation and maintenance panel.
Downtime screenshots and screen snapshots	Supports automatic screenshot of downtime, preserving the last downtime screen; provides screenshot function, which can quickly capture the screen and facilitate regular inspection.
Dual Flash dual mirroring	Support dual Flash and dual mirroring, which can automatically switch to another Flash when the software is damaged or the Flash is damaged to improve operational reliability.
Power Capping	Support power capping to improve deployment density and save energy.
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 to automatically restore to available state when the program is abnormal under extreme conditions of BMC; support thermal protection mechanism to automatically trigger thermal protection when the BMC program is abnormal to ensure the fan is at 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 available state when the device occupancy is too high.
Power Control	Support virtual power button to enable power on, power off, reboot, shutdown and power on again
Server positioning light, remote control indicator	Supports remote lighting of the server locator light (UID) to make it easy to find the device in the server room; supports remote control indicator, the UID light will flash when the user logs in to WEB, KVM and SSH remotely to inform the 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 functions based on user roles, divide multiple permissions, and can flexibly establish user roles with different permissions to provide a more refined user role division, which is convenient for administrators to assign different permissions to operations and maintenance personnel.
Security Features	Adopt Inspur server security baseline V2.0 standard which is higher than the industry standard, SSH, HTTPS, SNMP, IPMI, etc. with safe and secure algorithms, with secure upgrade, secure start-up capability, and with security reinforcement mechanisms such as anti-replay, anti-injection, anti-violence cracking, etc.

8.2 Inspur Physical Infrastructure Management Platform (ISPIM)

The NF8260M6 server is compatible with the latest version of Inspur Physical Infrastructure Manager (ISPIM).

ISPIM is Inspur's self-developed physical infrastructure management platform for data centers. The platform provides asset management, monitoring management, inspection management, energy management, stateless management, and Restful and SNMP interfaces for easy integration and interfacing.

- Lightweight deployment of multiple scenarios and full lifecycle management of devices
- High reliability and on-demand data collector 1-N expansion
- Intelligent asset management, real-time tracking of asset changes
- Comprehensive monitoring and automatic fault diagnosis
- Batch configuration, deployment and upgrade of equipment to shorten the online cycle
- Intelligent power consumption analysis and control to improve data center energy efficiency and operational stability
- Version management to improve version management efficiency
- Standardized northbound interface for user-friendly integration and docking
- Unified management of edge devices

Table 8-1 ISPIM System Specifications

Specification	Description
Centralized Device Management	Support the unified network equipment management, including servers (Inspur's full range of products, including general rack servers, AI intelligent servers, blade servers, all-in-ones computers and other high-end server products, third-party servers); storage (Inspur's universal magnetic array, distributed storage, and other vendors' storage

	equipment); network equipment (Inspur switches and third-party switches, third-party firewall equipment).
Monitoring Management	Support centralized display, search, blocking, and email notification of device alarms; support creation of alarm rules, notification rules, and blocking 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 configuration template; support hardware baseline automation management; support upgrade file repository.
Operating System Deployment	Supports batch OS deployment via BMC interface; supports one-click deployment with automatic status write-back without manual intervention; supports up to 40 devices for simultaneous deployment.
Asset Management	Support component-level asset management and 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.
Power Management	Support intelligent power consumption capping strategy; provide a variety of energy consumption optimization analysis, including: cooling analysis, server utilization analysis, server power consumption analysis, load distribution analysis; support intelligent power consumption prediction.
Security Management	Realize the security control of ISIPM itself through a series of security policies such as user management, role management, authentication management (local authentication, LDAP authentication) and certificate management.

8.3 Inspur Server Intelligent Boot (ISIB)

- NF8260M6 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. 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 racking to automated operation and maintenance
- Bare-metal one-stop deployment with one-click racking
- Flexible task scheduling with 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 instruction-level traceability of execution results
- Built-in rich operation and maintenance scripts and management solutions.

Table 8-2 ISIB System 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, OS information collection, out-of-band/in-band power management.
Repository	Provide management of image, software, firmware, configuration files, scripts, and sources to facilitate 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 for system inspection.
Task	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.
DFX	Support HA high availability, Https secure access. Support system snapshot, self-service management. Support 10,000 scale batch operation and maintenance. Provide RESTfull northbound interface.

9 Certification

By 2021/01, the NF8260M6 has completed the certification:

Region	Certification Program	Certification Logo	Mandatory/Voluntary
China	CCC		Mandatory
	China Environmental Labelling		Voluntary
	CECP		Voluntary
International	CB	N/A	Voluntary
EU	CE		Mandatory
US	FCC		Mandatory
	UL		Voluntary
	Energy star		Voluntary
Russia	EAC		Mandatory
	FSS	N/A	Mandatory
South Korea	E-Standby		Mandatory
	KC		Mandatory
Japan	VCCI	N/A	Voluntary

10 Support & Service

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

11 New Technical Highlights

11.1 Intel PFR Technology

PFR (Platform Firmware Resilience) is Intel's platform firmware recovery technology that provides an outer layer of protection to increase the server's resilience to firmware layer attacks. It enables the system to detect firmware attacks through a special pre-boot (pre-boot) and automatically recover to a known normal state within minutes. Monitoring during operation and storing monitoring information in non-volatile memory to prevent attacks; protection during shipment by locking the system and signing the firmware.

PFR provides two main system platform trust roots, namely.

(1) Intel XEON processors (enabling PFR) running VCM (Vendor/OEM Code Module) in the TCB (Trusted Computing Base).

(2) The OEM-controlled platform component, i.e., PFR CPLD

PFR introduces a small Trusted Computing Border TCB environment, thus enabling OEMs to authenticate and recover critical firmware using OEM keys.

PFR equips servers with the ability to respond to firmware attacks mainly through.

(1) Explicit checks

VCM signature verification of platform firmware, which includes: BIOS, SPI descriptors, BMC, Intel ME, NIC, power supply and other firmware.

(2) Implicit checks

PFR CPLD monitors boot processes that deviate from normal behavior during the boot process.

(3) Effective filtering

PFR CPLD maintains a whitelist of SPI and SMBus commands for different platform components and is able to filter malicious transactions.

In-transit process protection is achieved through PIT techniques, specifically.

(1) Platform lockout - protects the platform by password at power-up

Random passwords (PIT pwd) are provided for the PFR CPLD and RF components. If the password in the RF component is lost, the PFR CPLD compares the PIT password at each AC power-up and blocks the power-up timing. Removing the password from the RF before shipping prevents the platform from powering up and booting.

(2) Platform firmware signature

Prior to shipping the PFR CPLD calculates the hash of the platform firmware (PCH, BMC, and additional SPI chips) and stores it in a secure NVRAM space. Upon delivery PFR CPLD recalculates the platform firmware hash and alerts for any mismatches.

11.2 Intel BPS Memory

Barlow Pass is Intel's second generation Optane technology solution. Intel® Optane™ data center-class persistent memory introduces a new product category between memory and storage, providing the best of both worlds by combining the features of memory and storage. Intel Aeon data center-class persistent memory is now available in 128GiB, 256GiB and 512GiB.

256GiB and 512GiB capacities. This new product is flexible, with both volatile and

non-volatile attributes, and can also be used as a high-performance storage tier, allowing designers and developers to access high-capacity, cost-effective memory. Moreover, they can also choose to apply managed memory, which is critical for optimizing system performance. This Intel[®] technology delivers consistent low latency, high bandwidth, quality of service (QoS) and endurance, providing cloud and virtualization users with more capacity and more virtual machines (VMs), as well as higher capacity, ultra-fast storage and larger memory pools for in-memory databases at an economical price. In short, Intel can deliver greater memory capacity while improving system performance (up to three times the performance of non-volatile memory host controller interface specification (NV Me) solid-state disks). In addition, this technology provides better endurance in write intensive workloads than NAND SSDs.

11.3 BMC BIOS Dual Flash Redundancy

Technology

Provides a recoverable mechanism for firmware code and core data, supporting dual BIOS and dual BMC flash chip redundancy, with the goal of preventing physical damage to the BIOS or BMC chips or malicious external modification of ROM data.

The BMC and BIOS images have dual copies each and are stored on different NOR FLASH. The dual images are required to keep the same version (which can be inconsistent for a short period of time during the upgrade process) and both images can boot the BMC normally (even if one of them is corrupted).

The primary and secondary SPI Flash share a common SPI channel, and SPI switching is done through CS0/CS1.

When the BMC boots, if SPI0 Verify or Boot fails, it is considered a boot failure, and the BMC uses GPIO to switch CS0 to CS1 and SPI1 to boot.

If the main BIOS chip fails to boot during BIOS boot, the BIOS notifies the BMC via GPIO and the BMC records the log. Users can switch between master and slave BIOS in the BMC interface.

11.4 OCP3.0 Card and Hot Swap Technology

OCP NIC 3.0 is the latest NIC specification exported by the Open Compute Project organization. Compared with OCP 2.0, optimized hardware design and thermal processing, OCP NIC 3.0 is different from Mezz 2.0 card, connector interface form is different, using SFF-TA-1002 interface form, interface gold finger in line with pcie 4.0 standard, compatible with 5.0 standard. Using the front plug-in card installation method, support hot-swappable, with the advantages of supporting hot-swappable under the conditions of the former maintenance-free open box, to avoid the need to switch on and off or open the chassis to replace the plug-in card.

11.5 NVME Hard Raid and M.2 Hard Raid

Technology

Support Broadcom and microchip tri-mode Raid card, support docking up to 4 x 4 NVME hard drives to achieve NVME hard Raid function.

Support M.2 RAID Adapter, based on Marvell's 88SE9230 SATA Raid controller, to realize 2 SATA interface M.2 HDDs to form a hard Raid and support Raid1.

12 Related Documentation

For more information, please refer to the following links.

<https://www.inspur.com>

Web Services provides resources to help customers solve problems and learn about our products, such as product manuals, drivers, and firmware.

13 Trademark

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