KAYTUS

KAYTUS Server NF3180A6 White Paper

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Technical Support

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Overview

This document describes the NF3180A6 server's appearance, features, performance parameters, and software and hardware compatibility of components, providing a profound understanding of NF3180A6.

Intended Audience

The document is intended for pre-sales engineers.

Symbol Conventions

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

Symbol	Description
⚠ DANGER	Indicates a hazard with a high level of risk which, if not avoided, would result in death or serious injury.
⚠ WARNING	Indicates a hazard with a medium level of risk which, if not avoided, could result in death or serious injury.
⚠ CAUTION	Indicates a hazard with a low level of risk which, if not avoided, could result in minor or moderate injury.
NOTICE	Indicates the warnings for equipment or environment safety hazards. Such hazards, if not avoided, could result in equipment damage, data loss, performance deterioration, or unanticipated results. NOTICE is used to address practices not related to personal injury.
🕮 NOTE	Supplements the important information in the main text. NOTE is used to address information not related to personal injury, equipment damage, and environment deterioration.

Change History

Document Version	Release Date	Description
V1.0	2023/08/28	Initial release.

Table of Contents

1 Product Overview

The NF3180A6 is a 1U1S rack server designed based on the 3rd generation AMD® EPYC™ Milan Processors. NF3180A6 features multiple cores, high base frequency and flexible expansion, and delivers the best performance in a 1U space. It is a high-density and cost-effective rack server launched by us to meet the needs of Internet, cloud computing and enterprise market applications, and serves best in distributed, big data, and virtualized scenarios.

2 Features

NF3180A6 delivers high quality and reliability for all kinds of application scenarios, as our servers always do. It features exceptional configuration flexibility to cater to mainstream mid-range demands, adopting the ultimate design philosophy in performance, scalability, availability and manageability.

High Performance

- NF3180A6 is built on the new generation of AMD Milan Processors. Each CPU has up to 64 cores and 128 threads with a maximum Turbo frequency of 3.7 GHz and up to 280 W thermal design power (TDP). It supports PCIe 4.0 interfaces with up to 128 lanes.
- 16 DDR4 ECC memory modules (RDIMM or LRDIMM) are supported with their data transfer rate up to 3,200 MT/s under 1 DPC and 2,933 MT/s under 2 DPC. The memory modules each have a maximum capacity of 128 GB, offering a total maximum capacity of 2 TB with high speeds and superior availability.
- An all-flash configuration of up to 10 hot-swap NVMe SSDs provides a high IOPS ten times higher than that of high-end enterprise-level SATA SSDs.
- An all-flash configuration of up to 32 hot-swap E1.S SSDs that inherit the advantages of traditional NVMe SSDs with a high IOPS and features a small footprint, implementing massive storage in a 1U space and providing 3.2 times better overall IOPS performance.

Scalability

- Up to 10 × 2.5'' front SAS/SATA/NVMe drive, or 32 × front E1.S drive, or 4 × 3.5'' + 4 × 2.5'' front SAS/SATA/NVMe drive.
- Optional OCP NIC 3.0 module with multiple network port options (1/10/25/40/100 Gbps), delivering a more flexible network architecture to applications.
- Up to 3 × standard PCIe 4.0 expansion slot (3 × PCIe x16 slot) and customizable PCIe layouts are supported to meet different customer needs. Two available I/O specifications that support up to 1 × FHHL PCIe x16 slot + 2 × HHHL PCIe x16 slot or 2 × FHHL PCIe x16 slot (4.0).
- 2 × onboard SATA M.2 SSD or 2 × built-in PCIe x4 M.2 SSD supported.

Availability

- With a user-friendly design, the entire system supports tool-free maintenance. The enhanced and optimized structures allow for easy assembly/disassembly and greatly reduce O&M time.

- Our unique intelligent regulating technology combined with a cutting-edge air-cooling system creates an optimum working environment to ensure server health.
- The drives are hot-swappable. The RAID controller card supports RAID 0/1/10/5/6/60/1E, RAID cache and data protection in case of power failure caused by the super capacitor.
- 4 NVDIMMs are supported to ensure memory data integrity in case of power failure without compromising on the memory capacity and bandwidth.
- With the latest BMC, technicians can quickly locate components that have failed (or are failing) through the Web GUI, fault diagnosis LEDs and UID LEDs on the front panel, simplifying maintenance, speeding up troubleshooting, and enhancing system availability.
- Technicians can monitor system parameters and take appropriate actions in a timely manner via the alarms sent in advance via BMC to ensure system health and minimize system downtime.

Manageability (BMC)

The Baseboard Management Controller (BMC), a remote server management system, was developed by us and is equipped on the server. The BMC has the following advantages:

- Supports mainstream management specifications in the industry such as IPMI 2.0 and Redfish 1.0.2.
- Delivers high operational reliability.
- Features excellent serviceability for different customer scenarios.
- Provides comprehensive and accurate fault diagnosis capabilities.
- Offers enhanced security above industry average.

Energy Efficiency (AC)

- Equipped with 80 PLUS Platinum PSUs (550 W–1,600 W) with power efficiency up to 94% at a load of 50%.
- Offers 1+1 redundant and integrated AC/DC power supplies for optimized power conversion efficiency.
- The efficient VRD power for every board reduces loss during DC-DC conversion.
- Intelligent fan speed control and intelligent CPU frequency scaling help conserve energy.
- A fully-optimized cooling design and energy-efficient cooling fans reduce power consumption of the fans.

Security

- Supports firmware encryption and digital signatures to prevent unauthorized writing of unknown firmware.
- The chassis of NF3180A6 features a hood latch on the top cover and quick release levers on the front panel.

3 New Technical Highlights

3.1 AMD® Scalable Architecture

The Milan CPU adopts 7 nm process and technologies that enable better chip efficiency and power consumption performance, and has 64 cores and 128 threads. It has a frequency ranging between 2.0–3.7 GHz and a maximum power consumption of 280 W. It integrates the PCIe 4.0 interface which supports up to 128 lanes.

The Milan CPU adopts a 9-die infrastructure that includes 8 CCD dies, each containing 8 cores and 1 I/O die. Compared to the Rome platform, every 8 cores of Milan share 32 MB of L3 cache. For scenarios that have higher requirements on performance per core, the computing efficiency of Milan processors is superior to that of Rome processors.

3.2 OCP NIC 3.0 Module

The optional OCP NIC 3.0 module (up to 100 Gbps) provides larger scalability.

3.3 E1.S SSD

E1.S SSDs inherit the advantages of traditional NVMe SSDs with high IOPS and feature a small footprint, with each having a maximum capacity of 4 TB. The maximum capacity of a 1U system can be expanded to 128 TB, greatly improving the storage density of the server in a 1U space.

4 Logical Architecture

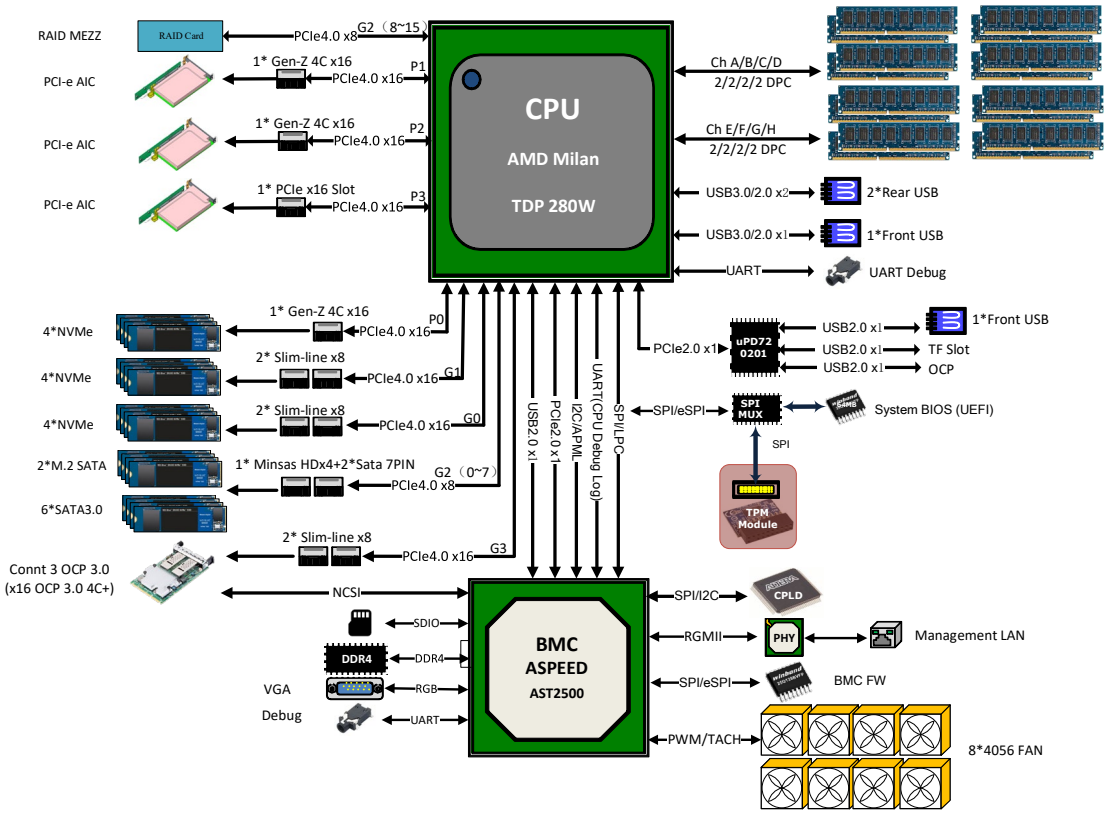
NF3180A6 supports 1 AMD Milan scalable processor and 16 DDR4 DIMMs.

The processor is connected to the 3 PCIe slots on the board through the PCIe bus. Up to 2 PCIe 4.0 x16 full-height and half-length cards or 2 PCIe 4.0 x16 half-height and half-length cards and 1 PCIe 4.0 x16 full-height and half-length card are supported.

The onboard RAID card/2 × NVMe M.2 SSD connects to the CPU through the PCIe bus and to the drive backplanes through SAS signal cables. The different drive backplanes enable various local storage configurations: 10 × 2.5'' SATA/SAS/NVMe drive; 4 × 3.5'' SATA/SAS/NVMe drive + 4 × 2.5'' SATA/SAS/NVMe drive; 32 × E1.S drive.

Figure 4-1 illustrates the logic block diagram of NF3180A6.

Figure 4-1 Logic Block Diagram of NF3180A6

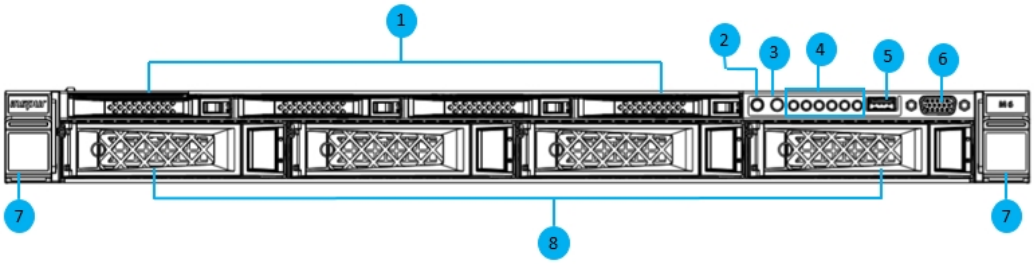


5 Product Overview

5.1 Front Panel

5.1.1 4 × 3.5'' + 4 × 2.5'' Drive Configuration

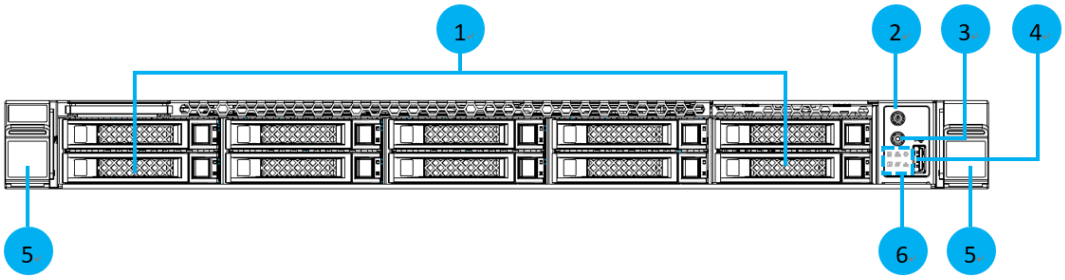
Figure 5-1 Front View



1	2.5" Drive Modules	5	USB 3.0 Port
2	Power Button	6	VGA Port
3	UID/RST Button	7	Quick Release Lever
4	LEDs	8	3.5" Drives

5.1.2 10 × 2.5'' Drive Configuration

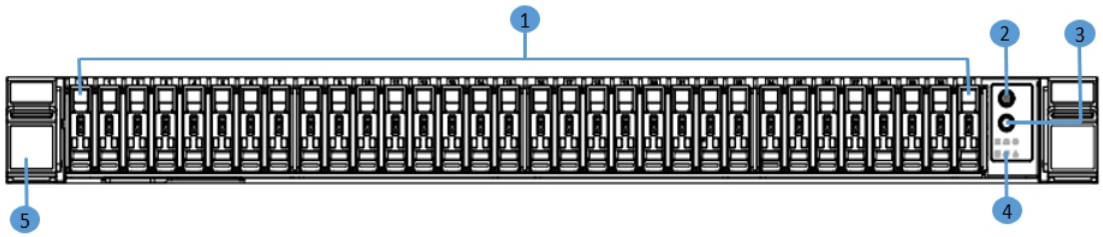
Figure 5-2 Front View



1	2.5'' Drive Modules	4	USB 2.0 Port
2	Power Button	5	Quick Release Lever
3	UID/RST Button	6	LEDs

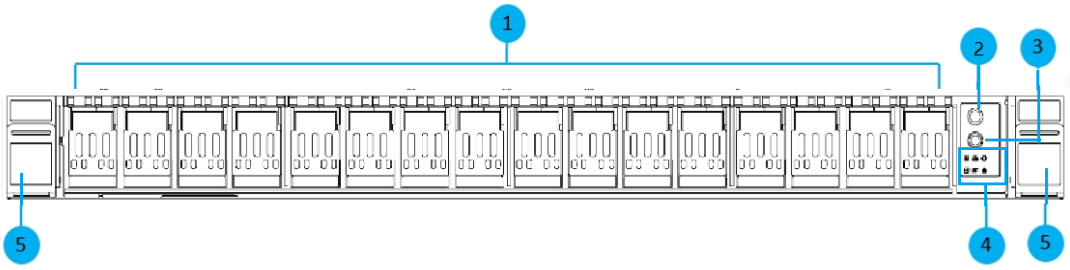
5.1.3 32/16 × E1.S SSD

Figure 5-3 32 × E1.S SSD Front View



1	E1.S SSD Modules	4	LEDs
2	Power Button	5	Quick Release Lever
3	UID/RST Button	-	-

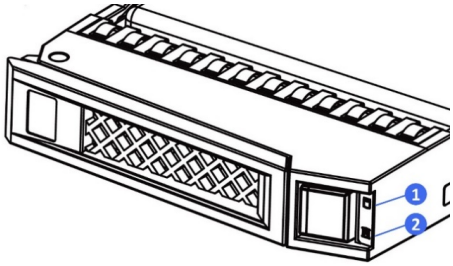
Figure 5-4 16 × E1.S SSD Front View



1	E1.S SSD Modules	4	LEDs
2	Power Button	5	Quick Release Lever
3	UID/RST Button	-	-

5.1.4 2.5''/3.5'' Drive Tray LEDs

Figure 5-5 Drive Tray LEDs

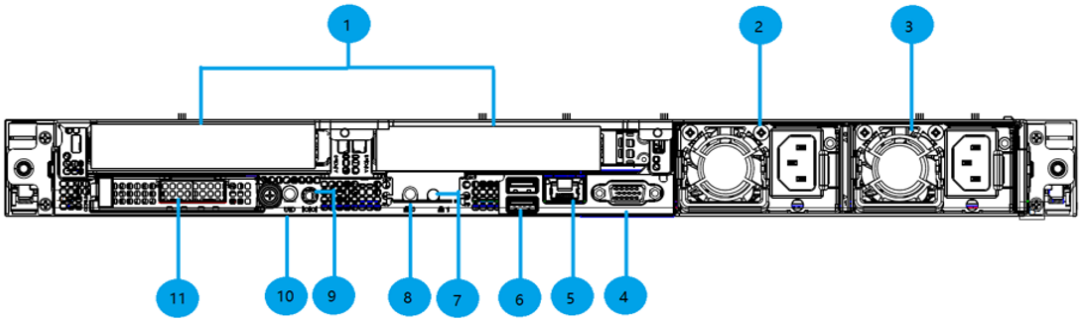


Item	Feature	Description
1	Activity Status LED	Solid green = Normal Flashing green = Read/write activities
2	Drive Status LED	Solid red = Drive error or failure Solid blue = Drive is being located Solid pink = RAID rebuilding

5.2 Rear Panel

5.2.1 2 × PCIe

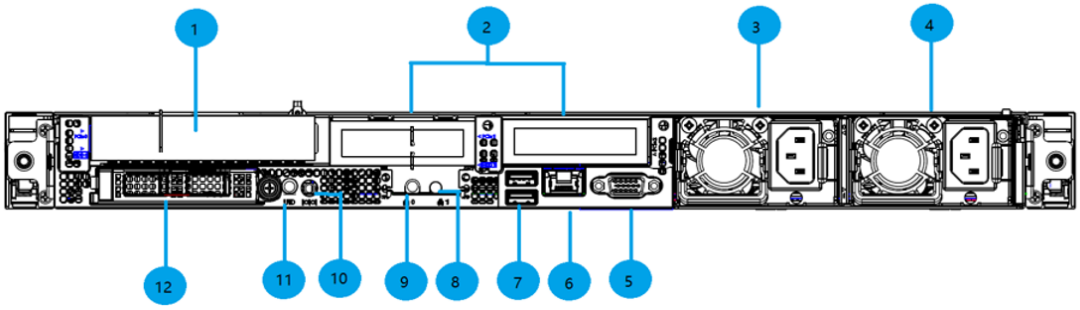
Figure 5-6 Front View



1	2 × PCIe x16 FHHL	7	OCP Hot-plug Button with Attention LEDs
2	PSU0	8	OCP Hot-plug Button with Power Status LEDs
3	PSU1	9	System/UID Serial Port
4	VGA Port	10	UID Button
5	BMC Network Port	11	OCP NIC 3.0 Module
6	2 × USB Port (supports USB 3.0/2.0)	-	-

5.2.2 3 × PCIe

Figure 5-7 Front View



1	PCIe ×16 FHHL	7	2 × USB 3.0 Port
2	2 × PCIe x16 HHHL	8	OCP Hot-plug Button with Attention LEDs
3	PSU0	9	OCP Hot-plug Button with Power Status LEDs
4	PSU1	10	System/UID Serial Port
5	VGA Port	11	UID Button
6	BMC Network Port	12	OCP NIC 3.0 Module

5.3 Exploded View

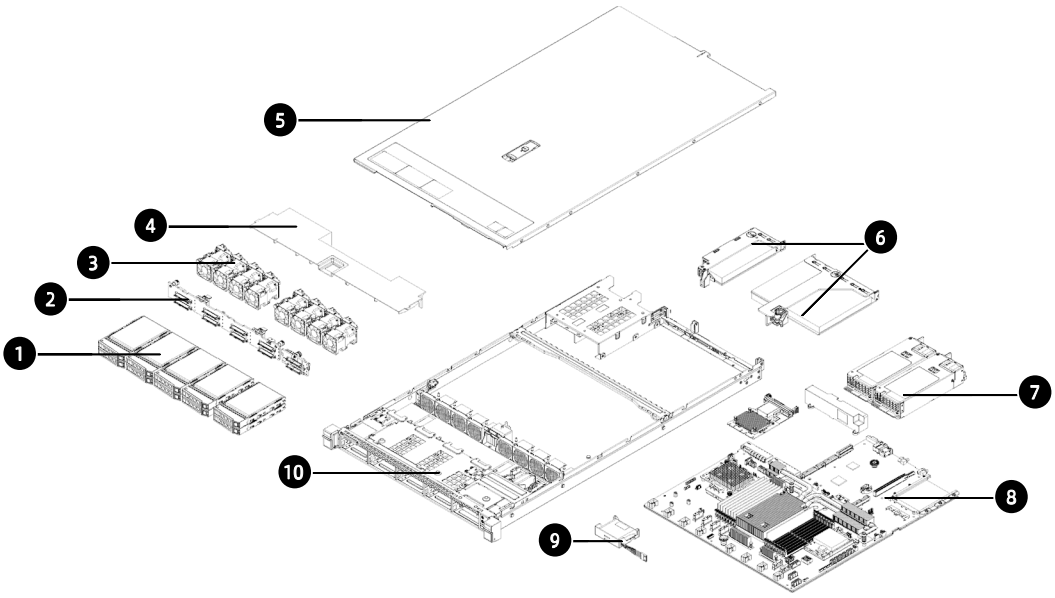
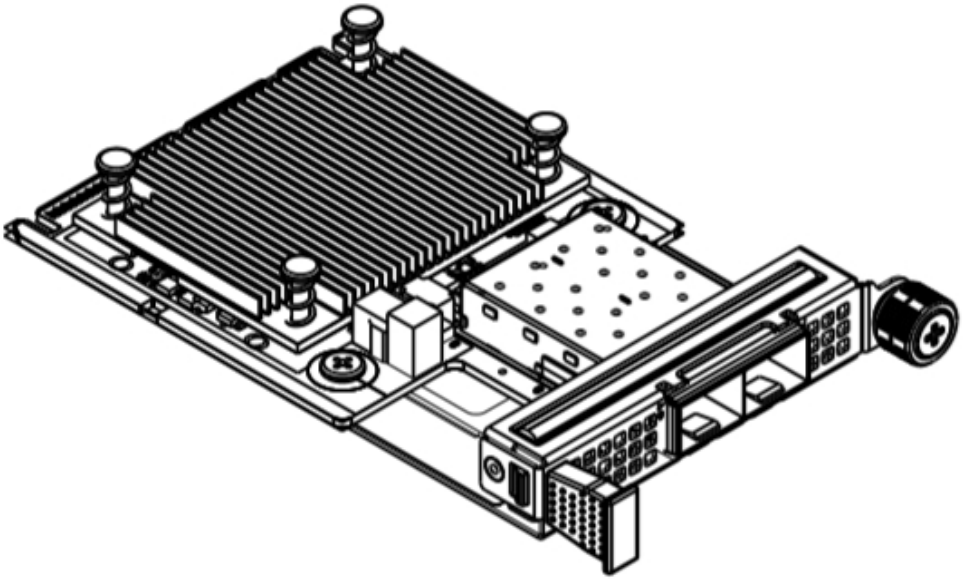


Figure 5-8 Internal Top View

Item	Feature	Item	Feature
1	Front Drive Module	6	Riser Card Module
2	Drive Backplane	7	Power Supply Unit
3	Fan Modules	8	Motherboard
4	Air Duct	9	Super Capacitor Module
5	Top Cover	10	Chassis

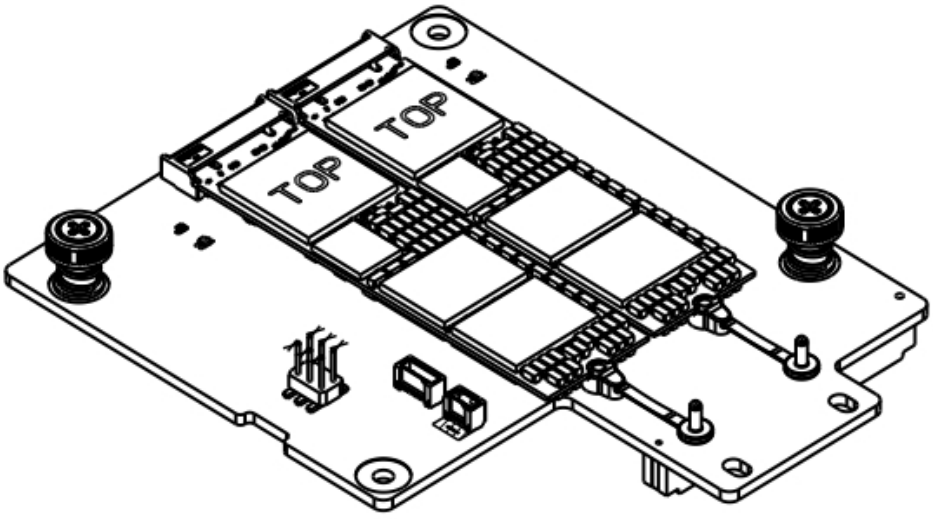
5.4 OCP NIC 3.0 Module

Figure 5-9 OCP NIC 3.0 Module



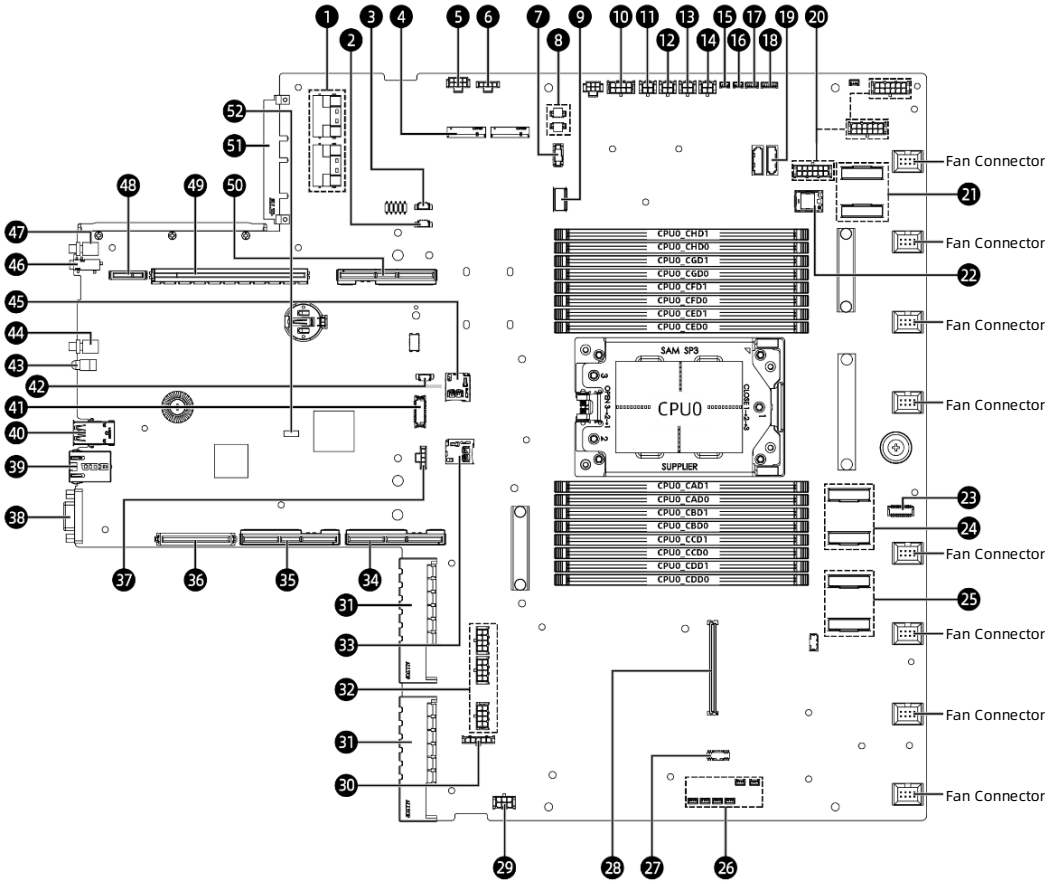
5.5 x4 M.2 Riser Module

Figure 5-10 x4 M.2 Module



5.6 Motherboard Layout

Figure 5-11 Motherboard Connectors



Item	Feature	Item	Feature
1	OCP 3.0 Slimline Connector	27	HDT Debug Connector
2	GPU2 I²C Connector	28	OCP Card Connector
3	GPU4 I²C Connector	29	GPU Riser/BP Power Connector
4	M.2. 0&1 Connector	30	Plate Capacitor Connector
5	Riser Power Connector in the middle	31	AC Power Connector
6	GPU Riser0 Power Connector	32	GPU Power Connector
7	Hot-swap NVMe I²C Connector	33	TF Card Slot
8	100 Mbps CLK Connector × 2	34	Gen-Z 4C PCIe P0 Connector
9	Front Right Ear Plate Connector	35	Gen-Z 4C PCIe P1 Connector
10	BP Power Connector	36	Riser Power Connector

Item	Feature	Item	Feature
11	Backplane1 Power Connector	37	GPU Riser2 Power Connector
12	Backplane2 Power Connector	38	VGA Port
13	Backplane0 Power Connector	39	mLAN Connector
14	Backplane3 Power Connector connecting GPU Riser1	40	USB Port
15	Backplane2 I^2C Connector	41	NCSI Connector
16	Backplane7 I^2C Connector	42	GPU Throttle Connector
17	PCIe G2 Port SGPIO Connector	43	OCP Hot-plug Button with Attention LEDs
18	PCIe P0 Port SGPIO Connector	44	OCP Hot-plug Button
19	7-pin SATA Connector	45	BMC TF Card Slot
20	FP BP Power Connector × 3	46	Serial Port
21	PCIe G3 Port Slimline Connector	47	UID Button with LED
22	Mini SAS HD Connector	48	Riser Power Connector
23	Front Left Ear Plate Connector	49	x16 Slot PCIe P3 Port
24	PCIe G1 Port Slimline Connector	50	Gen-Z 4C PCIe P2 Connector
25	PCIe G0 Port Slimline Connector	51	OCP NIC 3.0 Slot
26	Backplane I^2C Connector	52	CLR_CMOS Jumper Cap

5.7 Relationship between Front and Rear Panels

Front Panel	Rear Panel
4 × 3.5'' + 4 × 2.5''	2 × half-height and half-length card + 1 × full-height and half-length card
10 × 2.5"	2 × full-height and half-length card
	2 × half-height and half-length card + 1 × full-height and half-length card
32 × E1.S	2 × full-height and half-length card
16 × E1.S	2 × full-height and half-length card

6 System Specifications

Table 6-1 System Specifications

Item	Description
Form Factor	1U rack server
Processor	Supports 1 AMD® Milan® scalable processor: Up to 64 cores and 128 threads Max. Turbo frequency at 3.7 GHz L3 cache up to 32 MB (shared by 8 cores) TDP up to 280 W
Memory	1. Up to 16 DIMMs 2. 8 memory channels per processor, and up to 2 memory slots per channel 3. Up to 3,200 MT/s 4. RDIMMs, LRDIMMs and NVDIMMs supported 5. ECC, memory mirroring and memory rank sparing
Storage	Front: 32/16 × hot-swap E1.S SSD 4 × 3.5" hot-swap SAS/SATA/NVMe drive + 4 × 2.5" hot-swap SAS/SATA/NVMe drive 10 × 2.5" hot-swap SATA/SAS/NVMe drive Internal: Up to 1 × TF card Up to 2 × SATA M.2 drive Up to 2 × PCIe x4 M.2 drive
Storage Controller	RAID card controller SAS card controller 10 × SATA connector (2 × 7-pin SATA + 1 × Mini SAS HD + 1 × Gen-Z)
Network	1 × optional OCP NIC 3.0 module (1/10/25/40/100 Gbps) Supports standard 1/10/25/40/100 Gbps NIC cards
I/O Expansion Slots	Up to 3 × standard x16 PCIe 4.0 card (1 × FHHL PCIe x16 slot + 2 × HHHL PCIe x8 slot or 2 × FHHL PCIe x16 slot), 1 × OCP NIC 3.0 and 1 × optional x8 mezzanine slot
Ports	2 × rear USB 3.0 port + 1 × front USB 3.0 port 1 × front VGA port 1 × rear VGA port 1 × rear BMC serial port (USB 3.0 port for 4 × LFF and 4 × SFF front drive configuration; USB 2.0 port for 10 × drive configuration; no front USB port for 32 × E1.S configuration; front VGA port is only available in 4 × LFF and 4 × SFF

	drive configuration)
Fans	8 × hot-swap 4056 fan with N+1 redundancy
Power Supply	Output power of 550 W, 800 W, 1,300 W, 1,600 W or above in 1+1 redundancy
System Management	Integrated with 1 × independent 1,000 Mbps network port, dedicated for IPMI remote management
Operating System	Windows Server 2019 SLES 12.5, SLES 15.2 RHEL 8.3 Ubuntu 18.04, Ubuntu 20.04 CentOS 8.3 Oracle Linux 7.9 VMware ESXi 6.7 U3, VMware ESXi 7.0 U1

Table 6-2 Physical Specifications

Item	Description
Dimensions	With mounting ears: • 32R SSD: 482 × 43.05 × 871.8 mm (18.98 × 1.69 × 34.32 in) (W × H × D) • Other configuration: 482 × 43.05 × 811.8 mm (18.98 × 1.69 × 31.96 in) (W × H × D) Without mounting ears: • 32R SSD: 438 × 43.05 × 840 mm (17.24 × 1.69 × 33.07 in) (W × H × D) • Other configuration: 438 × 43.05 × 780 mm (17.24 × 1.69 × 30.71 in) (W × H × D)
Weight	4 × 2.5-inch configuration • Net weight (excluding packaging): approx. 21 kg (46.30 lbs) • Gross weight (including packaging): 31.5 kg (69.45 lbs) (chassis + packaging box + rails + accessory box) 10 × 2.5-inch configuration • Net weight (excluding packaging): approx. 21 kg (46.30 lbs) Gross weight (including packaging): 31 kg (68.34 lbs) (chassis + packaging box + rails + accessory box)
Temperature	Operating: 5°C to 40°C (41°F to 104°F)[1, 2, 3] Storage (including packaging): -40°C to +70°C (-40°F to +158°F) Storage (excluding packaging): -40°C to +55°C (-40°F to +131°F)
Humidity	Operating: 10–90% RH Storage (including packaging): 10–93% RH Storage (excluding packaging): 10–93% RH

Noise (Bels) (Sound power level)[4, 5, 6, 7]	Idle - LWAd: 6.4 Bel for normal configuration - LPAM: 52.1 dBA for normal configuration Operating - LWAd: 6.5 Bel for normal configuration LpAm: 52.3 dBA for normal configuration
Height	5–35°C (41–95°F) at 0–914 m (0–3,000 ft) Every 305 m increase in the altitude above sea level reduces the operating temperature range by 1.0°C (a 1.8°F drop per 1,000 ft)

Table 6-3 Operating Temperature Specifications

1. Dummies are used to fill the vacant memory slots.
2. The 280 W CPU must be used with a DIMM air duct which is not a must for other situations.
3. The maximum operating temperature supported by normal configurations is 35°C (95°F). If the server is used under a higher ambient temperature, certain configurations should be reviewed and assessed.

	Front Panel Configuration	GPU Support	CPU Power Limit	CPU Heatsink
Maximum operating temperature: 35°C (95°F)	10 × 2.5'' NVMe drive + 32 × E1.S drive	Supports 1 T4 in side wall slot of the chassis at the non-power side	Supports up to 280 W	CPU ≥ 225 W With 1U T-shape heatsink
				CPU < 225 W With standard 1U heatsink
	4 × 3.5'' HDD + 4 × 2.5'' SSD	Not supported	Supports up to 240 W	CPU ≥ 225 W With 1U T-shape heatsink
				CPU < 225 W
				With standard 1U heatsink

Note:

1. Not all configurations support an operating temperature range of 5–40°C (41–104°F). The GPU configuration supports an operating temperature range of 10–30°C (50–86°F).
2. Standard operating temperature:

   10–35°C at sea level (50–95°F). Every 305 m increase in the altitude above sea level reduces the operating temperature range by 1.0°C (a 1.8°F drop per 1,000 ft). The

maximum operating altitude is 3,050 m (10,000 ft). Please keep the product away from direct sunlight. The maximum rate of change is 20°C/h (36°F/h). The operating altitude and maximum rate of temperature change vary with different system configurations.

Any fan failure or operations above 30°C (86°F) may lead to system performance degradation.

3. This document lists the weighted sound power level (LWAd) and the weighted sound pressure level (LpAm) of the product at an operating temperature of 23°C (73.4°F). The values were reported according to the ISO 7779 (ECMA 74) noise measurement standards and ISO 9296 (ECMA 109). The listed sound levels are applicable to general shipping configurations and other options may increase the volume. Please contact your sales representative for more information.
4. The sound levels shown here were measured based on specific testing configurations. The sound level will vary with different system configurations. Values are subject to change without notice and are for reference only.
5. The sample (model) test assessments meet the referenced product specifications. This product or product series is eligible to have appropriate compliance labels and declarations.
6. All sound levels listed are for standard shipping configurations and other system configurations may increase the volume.

Table 6-4 Industry Standard Compliance

ACPI 6.1 Compliant
PCIe 4.0 Compliant
WOL Support
SMBIOS 3.1
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
TPM 1.2/2.0
USB 2.0/3.0 Compliant

7 Compatibility List

※ The compatibility list was updated in November 2021. For the latest compatibility configuration and the parts and models not listed in this manual, please contact us.

7.1 Processor

NF3180A6 supports one AMD Milan processor.

Table 7-1 CPU

Model	Core	Base Frequency	Max Turbo Frequency	Cache	TDP
7763	64	2,450 MHz	3,500 MHz	256 MB	280 W
7713	64	2,000 MHz	3,675 MHz	256 MB	225 W
7713P	64	2,000 MHz	3,675 MHz	256 MB	225 W
7663	56	2,000 MHz	3,500 MHz	256 MB	240 W
7643	48	2,300 MHz	3,600 MHz	256 MB	225 W
7543	32	2,800 MHz	3,700 MHz	256 MB	225 W
7543P	32	2,800 MHz	3,700 MHz	256 MB	225 W
7513	32	2,600 MHz	3,650 MHz	128 MB	200 W
7443	24	2,850 MHz	4,000 MHz	128 MB	200 W
7443P	24	2,850 MHz	4,000 MHz	128 MB	200 W
7413	24	2,650 MHz	3,600 MHz	256 MB	180 W
7343	16	3,200 MHz	3,900 MHz	256 MB	190 W
7313	16	3,000 MHz	3,700 MHz	256 MB	155 W
7313P	16	3,000 MHz	3,700 MHz	256 MB	155 W
75F3	32	2,950 MHz	4,000 MHz	256 MB	280 W
74F3	24	3,200 MHz	4,000 MHz	256 MB	240 W
73F3	16	3,500 MHz	4,000 MHz	256 MB	240 W
72F3	8	3,700 MHz	4,100 MHz	256 MB	180 W

7.2 Memory

NF3180A6 supports up to 16 DDR4 DIMMs. Each processor supports 8 memory channels and each channel supports 2 memory slots. Supports RDIMM\LRDIMM\NVDIMM.

Table 7-2 Memory List

Memory Type	Max Memory Capacity	Description
RDIMM	16 × 16 GB	Memory_SA_16G_DDR4-3200ER_1R4_D18F Memory_MT_16G_DDR4-3200ER_1R4_E18F Memory_SK_16G_DDR4-3200ER_1R4_C18J Memory_SK_16G_DDR4-3200ER_1R4_D18J Memory_SA_16G_DDR4-3200ER_2R8_D18F Memory_MT_16G_DDR4-3200ER_2R8_E18F Memory_SK_16G_DDR4-3200ER_2R8_C18J Memory_SK_16G_DDR4-3200ER_2R8_D18J
RDIMM	16 × 32 GB	Memory_SA_32G_DDR4-3200ER_2R4_D36F Memory_MT_32G_DDR4-3200ER_2R4_E36F Memory_SK_32G_DDR4-3200ER_2R4_C36J Memory_SK_32G_DDR4-3200ER_2R4_D36J Memory_SA_32G_DDR4-3200ER_1R4_A18F Memory_SA_32G_DDR4-3200ER_2R8_A18F Memory_MT_32G_DDR4-3200ER_1R4_E18F Memory_SK_32G_DDR4-3200ER_2R8_A18J Memory_SK_32G_DDR4-3200ER_2R8_C18J Memory_MT_32G_DDR4-3200ER_2R8_E18F
RDIMM	16 × 64 GB	Memory_SA_64G_DDR4-3200ER_2R4_A36F Memory_SA_64G_DDR4-3200ER_2R4_B36F Memory_MT_64G_DDR4-3200ER_2R4_E36F Memory_SK_64G_DDR4-3200ER_2R4_C36J Memory_SK_64G_DDR4-3200ER_2R4_A36J

Note:

1. The server does not support mixed use of DIMMs of different types, specifications and manufacturers.

Table 7-3 Common DIMM Insertion Methods

Memory Quantity	CPU0															
	CD		CC		CB		CA		CE		CF		CG		CH	
	D1	D0	D1	D0	D1	D0	D1	D0	D0	D1	D0	D1	D0	D1	D0	D1
1			●													
2	●		●													
4	●		●											●		●
6	●		●				●			●				●		●

8	●		●		●		●			●		●		●		●
16	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●

7.3 Storage

7.3.1 SATA/SAS Drives

Table 7-4 Drive Options

Model	Speed in rpm	Capacity
2.5" SAS Drive	10K	Drive_S_1.2KS_ST1200MM0009_10k2_12_N005_LC Drive_S_600S_ST600MM0009_10k2_12_N005_LC Drive_T_2.4KS_AL15SEB24EQ_10k2_12_1403 Drive_T_1.8KS_AL15SEB18EQ_10k2_12_1403 Drive_T_1.2KS_AL15SEB120N_10k2_12_1403 Drive_T_600S_AL15SEB060N_10k2_12_1403
3.5" SATA Drive	7.2K	Drive_S_16KT_ST16000NM001G_7.2K3_6_SCB3 Drive_S_14KT_ST14000NM001G_7.2K3_6_SCB3 Drive_S_16KT_ST16000NM001G_7.2K3_6_SCB3 Drive_S_14KT_ST14000NM001G_7.2K3_6_SCB3 Drive_S_12KT_ST12000NM001G_7.2K3_6_SCB3 Drive_S_10KT_ST10000NM001G_7.2K3_6_SCB3 Drive_S_8KT_ST8000NM000A_7.2K3_6_SC03 Drive_S_6KT_ST6000NM021A_7.2K3_6_SC03 Drive_S_4KT_ST4000NM000A_7.2K3_6_TC03 Drive_S_2KT_ST2000NM000A_7.2K3_6_TC03 Drive_W_16KT_WUH721816ALE6L4_7.2K3_6_232 Drive_W_14KT_WUH721414ALE6L4_7.2K3_6 Drive_W_12KT_HUH721212ALE600_7.2K3_6_6B0 Drive_W_10KT_WUS721010ALE6L4_7.2K3_6_9C0 Drive_W_8KT_HUS728T8TALE6L4_7.2K3_6_4J0 Drive_W_6KT_HUS726T6TALE6L4_7.2K3_6_4J0 Drive_W_4KT_HUS726T4TALA6L4_7.2K3_6_4J0 Drive_T_16KT_MG08ACA16TE_7.2K3_6_4303

		Drive_T_14KT_MG07ACA14TE_7.2K3_6_4305 Drive_T_12KT_MG07ACA12TE_7.2K3_6_4305 Drive_T_10KT_MG06ACA10TE_7.2K3_6_4304 Drive_T_8KT_MG08ADA800E_7.2K3_6_4302 Drive_T_6KT_MG08ADA600E_7.2K3_6_4302 Drive_T_4KT_MG08ADA400N_7.2K3_6_4302 Drive_W_18KT_WUH721818ALE6L4_7.2K3_6_232 Drive_S_18KT_ST18000NM000J_7.2K3_6_SC02

Note: Mixed use of 2.5'' and 3.5'' drives of no more than three types is allowed.

7.3.2 SSDs

Table 7-5 SSD Options

Model	Capacity
S4510 SATA SSD	Drive_I_240TD_SSDSC2KB240G8_T2_6_132_S451 Drive_I_480TD_SSDSC2KB480G8_T2_6_132_S451 Drive_I_960TD_SSDSC2KB960G8_T2_6_132_S451 Drive_I_1.92KTD_SSDSC2KB019T8_T2_6_132_451 Drive_I_3.84KTD_SSDSC2KB038T8_T2_6_132_451
S4520 SATA SSD	Drive_I_7.68KTD_SSDSC2KB076TZ_T2_6_100_452 Drive_I_3.84KTD_SSDSC2KB038TZ_T2_6_100_452 Drive_I_1.92KTD_SSDSC2KB019TZ_T2_6_100_452
PM893	Drive_SA_240TD_MZ7L3240HCHQ_T2_6_104_893 Drive_SA_480TD_MZ7L3480HCHQ_T2_6_104_893 Drive_SA_1.92KTD_MZ7L31T9HBLT_T2_6_104_893 Drive_SA_3.84KTD_MZ7L33T8HBLT_T2_6_104_893 Drive_SA_960TD_MZ7L3960HCJR_T2_6_104_893 Drive_SA_7.68KTD_MZ7L37T6HBLA_T2_6_104_893
5300 PRO SATA SSD	Drive_MT_240TD_MTFDDAK240TDS_T2_6_001_PRO Drive_MT_480TD_MTFDDAK480TDS_T2_6_001_PRO Drive_MT_960TD_MTFDDAK960TDS_T2_6_001_PRO Drive_MT_1.92KTD_MTFDDAK1T9TDS_T2_6_001_PR Drive_MT_7.68KTD_MTFDDAK7T6TDS_T2_6_801_PR

	Drive_MT_3.84KTD_MTFDDAK3T8TDS_T2_6_401_PR
S4610 SATA SSD	Drive_I_240TD_SSDSC2KG240G8_T2_6_132_S461 Drive_I_480TD_SSDSC2KG480G8_T2_6_132_S461 Drive_I_960TD_SSDSC2KG960G8_T2_6_132_S461 Drive_I_1.92KTD_SSDSC2KG019T8_T2_6_132_461 Drive_I_3.84KTD_SSDSC2KG038T8_T2_6_132_461 Drive_I_7.68KTD_SSDSC2KG076T8_T2_6_132_461
PM883 SATA SSD	Drive_SA_240TD_MZ7LH240HAHQ_T2_6_7904Q_PM Drive_SA_480TD_MZ7LH480HAHQ_T2_6_7904Q_PM Drive_SA_960TD_MZ7LH960HAJR_T2_6_7904Q_PM Drive_SA_1.92KTD_MZ7LH1T9HMLT_T2_6_7904Q Drive_SA_3.84KTD_MZ7LH3T8HMLT_T2_6_7904Q

7.3.3 U.2 NVMe SSDs

Table 7-6 U.2 NVMe SSDs

Model	Capacity
P5510 NVMe U.2	Drive_I_3.84KU2D_SSDPF2KX038TZ_T2_16_100_5 Drive_I_7.68KU2D_SSDPF2KX076TZ_T2_16_100_5
P4510 NVMe U.2	Drive_I_1KU2D_SSDPE2KX010T8_T2_8_173_P4510 Drive_I_2KU2D_SSDPE2KX020T8_T2_8_173_P4510 Drive_I_4KU2D_SSDPE2KX040T8_T2_8_173_P4510 Drive_I_8KU2D_SSDPE2KX080T8_T2_8_173_P4510 Drive_I_4KU2D_SSDPE2KX040T8_T2_8_182_P4510 Drive_I_1KU2D_SSDPE2KX010T8_T2_8_182_P4510 Drive_I_8KU2D_SSDPE2KX080T8_T2_8_182_P4510 Drive_I_4KU2D_SSDPE2KX040T8_T2_8_182_P4510 Drive_I_2KU2D_SSDPE2KX020T8_T2_8_182_P4510
P4610 NVMe U.2	Drive_I_1.6KU2D_SSDPE2KE016T8_T2_8_173_461 Drive_I_3.2KU2D_SSDPE2KE032T8_T2_8_173_461 Drive_I_6.4KU2D_SSDPE2KE064T8_T2_8_173_461

	Drive_I_7.68KU2D_SSDPE2KE076T8_T2_8_173_461
PM897	Drive_SA_480TD_MZ7L3480HBLT_T2_6_E004Q_897 Drive_SA_3.84KTD_MZ7L33T8HBNA_T2_6_E00_897 Drive_SA_960TD_MZ7L3960HBLT_T2_6_E004Q_897 Drive_SA_1.92KTD_MZ7L31T9HBNA_T2_6_E00_897
PM9A3	Drive_SA_960U2D_MZQL2960HCJR_T2_16_53C2Q Drive_SA_1.92KU2D_MZQL21T9HCJR_T2_16_53C2Q Drive_SA_3.84KU2D_MZQL23T8HCLS_T2_16_53C2Q Drive_SA_960U2D_MZQL2960HCJR_T2_16_51C2Q Drive_SA_1.92KU2D_MZQL21T9HCJR_T2_16_51C2Q Drive_SA_3.84KU2D_MZQL23T8HCLS_T2_16_51C2Q

Note: For the models not listed in the above table, please contact us.

7.3.4 M.2 SSDs

Table 7-7 NVMe M.2 SSDs

Model	Capacity	Max. Qty.
S4510	Drive_I_240M2TD_SSDSCKKB240G8_T2_6_132_45 Drive_I_480M2TD_SSDSCKKB480G8_T2_6_132_45 Drive_I_960M2TD_SSDSCKKB960G8_T2_6_132_45	2
S4520	Drive_I_480M2TD_SSDSCKKB480GZ_T2_6_100_452 Drive_I_240M2TD_SSDSCKKB240GZ_T2_6_100_452	2

Note: For the models not listed in the above table, please contact us.

7.3.5 PCIe M.2 Drives

Table 7-8 PCIe M.2 Drives

Model	Capacity	Max. Qty.
PM983	Drive_SA_960M2PD_MZ1LB960HAJQ_T3_8_7602Q Drive_SA_1.92KM2PD_MZ1LB1T9HALS_T3_8_7602Q	2

	Drive_SA_3.84KM2PD_MZ1LB3T8HMLA_T3_8_7602Q	
P4511	Drive_I_1KM2PD_SSDPELKX010T8_T3_8_352_4511	2
Micron,7300	Drive_MT_960M2PD_MTFDHBA960TDF_T2_8_P0_ROL	2
PM9A3	Drive_SA_960M2PD_MZ1L2960HCJR_T3_16_7202Q Drive_SA_1.92KM2PD_MZ1L21T9HCLS_T3_16_7202 Drive_SA_3.84KM2PD_MZ1L23T8HBLA_T3_16_7202	2

Note: For the models not listed in the above table, please contact us.

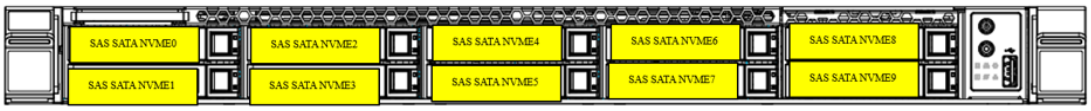
7.3.6 Mixed Drive Configurations

1. Supports the mixed configuration of 4 front 3.5- or 2.5-inch SAS/SATA drives and 4 front 2.5-inch NVMe drives
2. Supports the mixed configuration of 8 front 2.5-inch SAS/SATA drives and 2 front 2.5-inch NVMe drives

7.4 Drive Installation Layout

7.4.1 HDD Installation Sequence

10 × 2.5":



4 × 2.5" + 4 ×3.5":

7.4.2 NVMe Drive Installation Sequence

Backplane: 4 × 3.5" drive, 4 × NVMe drive + 4 × 2.5", 4 × NVMe drive (The connectors for NVMe drives on the backplane are compatible with SAS/SATA drives)

- Only NVMe drives

  Installed in sequence from NVMe0 to NVMe7

- Both HDDs and NVMe drives

HDD: Install in the sequence from NVMe0 to NVMe7

NVMe drives: Install in the sequence from NVMe7 to NVMe0

Backplane: (8 × 2.5" drive_8 × NVMe drive + 2 × 2.5"_2 × NVMe drive) (The connectors for NVMe drives on the backplane are compatible with SAS/SATA drives)

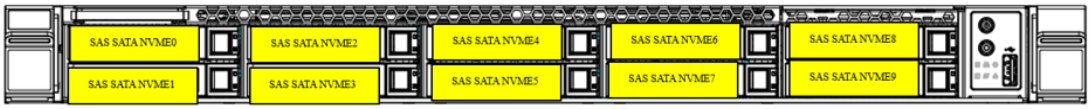
- Only NVMe drives

  Installed in sequence from NVMe0 to NVMe9

- Both HDDs and NVMe drives

  HDD: Install in the sequence from NVMe0 to NVMe9

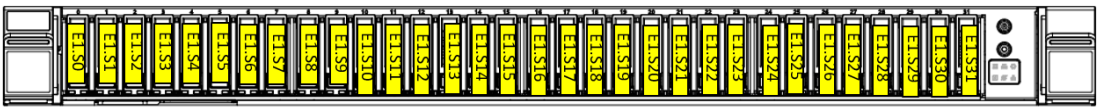
  NVMe drives: Install in the sequence from NVMe9 to NVMe0



Backplane: 32 × E1.S drive (The backplane only supports E1.S drives)

- Only E1.S drives

  E1.S drives: Install in the sequence from E1.S0 to E1.S31



7.5 RAID Controller/SAS Card

Table 7-9 RAID/SAS Cards

Type	Description	Super Capacitor Module
SAS Card	SAS Card_SAS3008+IR+PCIE3.0	No
	SAS Card_PM8222_SmartHBA_8_SAS3_PCIE3	No
	SAS Card_PM8252_SHBA_8_SAS4_PCIE4	No

	SAS Card_PM8252_HBA_8_SAS4_PCIE4	No
	SAS Card_PM8222_PM8222_8_SAS3_PCIE	No
	(LSI) SAS Card_PM8222_PM8222_8_SAS3_PCIe	No
	(LSI) SAS Card_L_8R0_3408IT_HDM12G_PCIe3_Mezz_S	No
RAID Controller Card	RAID Controller Card_PM8204_RA_8_2GB_SAS3_PCIE3	No
	RAID Controller Card_L_16R0_9460-16i_4GB_HDM12G_PCIE3	No
	RAID Controller Card_L_8R0_3508_4GB_HDM12G_PCIE3_Mezz_S	No
	(LSI) RAID Card_L_8_9361-8i_2G_HDM12G_PCIE3	Yes
	(LSI) RAID Card_L_16R0_9460-16i_4GB_HDM12G_PCIE3	Yes
	(LSI) RAID Card_L_8R0_3508_4GB_HDM12G_PCIE3_Mezz_S	Yes
	(LSI) RAID Card_L_8R0_9361-8i_1G_HDM12G_PCIE3	Yes

7.6 NIC Card

Table 7-10 OCP NIC 3.0 Cards

Type	Model and Description	Speed (Gbps)	Qty.
OCP 3.0	NIC Card_SND_1G_I350_RJ_OCP3x4_2_XR	1	2
	NIC Card_Andes-M6_X710_10G_LC_OCP3x8_2	10	2
	NIC Card_SND_10G_X550_RJ_OCP3x4_2_XR	10	2
	NIC Card_M_25G_MCX562A-ACAB_LC_OCP3x16_2_XR	25	2
	NIC Card_I_25G_E810XXVDA2_LC_OCP3x8_2_XR	25	2
	NIC Card_M_25G_MCX4621A-ACAB_LC_OCP3x8_2_XR	25	2
	NIC Card_M_25G_MCX623432A_LC_OCP3x16_2_XR	25	2
	NIC Card_Andes-M6_E810_25G_LC_OCP3x8_2	25	2

	NIC Card_I_100G_E810CQDA2_LC_OCP3x16_2_XR	100	2
	NIC Card_I_100G_E810CQDA2_LC_PCIEx16_2_XR	100	2
	NIC Card_M_100G_MCX566ACDAB_LC_OCP3x16_2_XR	100	2

Table 7-11 Standard PCIe NIC Cards

Type	Model and Description	Speed (Gbps)	Qty.
PCI-E	NIC Card_SND_W_I350-AM2_RJ_PCI-E4X_1KM_2	1	2
	NIC Card_W_I350AM4_1G_RJ45_PCIEX8_4	1	2
	NIC Card_I_10G_X710DA2_LC_PCIEx8_2_XR	10	2
	NIC Card_Fortville_X710_10G_LC_PCIEx8_2	10	2
	NIC Card_I_10G_X550T2_RJ_PCIEx4_2_XR	10	2
	NIC Card_M_10G_MCX4121A-XCAT_LC_PCIEx8_2_XR	10	2
	NIC Card_Pyxis_X550_10G_RJ_PCIEx8_2_XR	10	2
	NIC Card_M_25G_MCX512A-ACAT_LC_PCIEx8_2_XR	25	2
	NIC Card_Andes-M6_E810_25G_LC_PCIEx8_2	25	2
	NIC Card_M_25G_MCX621102AN_LC_PCIEx8_2_XR	25	2
	NIC Card_BROADCM_25G_57414_LC_PCIEx8_2_XR_42C	25	2
	NIC Card_I_25G_XXV710DA2_LC_PCIEx8_2_XR_limit	25	2
	NIC Card_I_25G_E810XXVDA2_LC_PCIEx8_2_XR	25	2
	NIC Card_I_40G_XL710_LC_PCIEx8_2_MM	40	2
	NIC Card_I_40G_XL710_LC_PCIEx8_MM	40	2
	NIC Card_M_100G_MCX516A-CDAT_LC_PCIEx16_2P_XR	100	2
	NIC Card_I_100G_E810CQDA2_LC_PCIEx16_2_XR	100	2

7.7 FC HBA Card

Table 7-12 FC HBA Cards

HBA Card	Emulex	HBA Card_E_8R2_LPE31002-M6_FC16G_PCIe

7.8 Graphics Card and GPU

Table 7-13 Graphics Card

Type	Model and Description	Max. Qty.
GPU Card	GPU_NV_16GB_Tesla-T4_256b_P	1
	GPU_NV_16G_Tesla-T4_256b_P_Special	1

Note: This graphics card uses 16 lanes of the PCIe bus, and needs to be inserted into the x16 riser card slot.

7.9 Power Supply

Supports 1+1 redundant hot-swap Intel CRPS PSUs, up to 2 PSUs, meeting general electrical and structural design requirements. The PSUs can be inserted into the power bay and locked automatically, enabling tool-free maintenance. A CRPS PSU is 80 PLUS Platinum rated, and offers various output powers, allowing customers to choose based on the actual configuration.

- The following rated 110–230 VAC and 240 VDC power supplies of 1+1 redundancy are supported:

  550 W Platinum PSU: 550 W (110 VAC), 550 W (230 VAC), 550 W (240 VDC for China)

  800 W Platinum PSU: 800 W (110 VAC), 800 W (230 VAC), 800 W (240 VDC for China)

  1,300 W Platinum PSU: 1,000 W (110 VAC), 1,300 W (230 VAC), 1,300 W (240 VDC for China)

  1,600 W Platinum PSU: 1,000 W (110 VAC), 1,600 W (230 VAC), 1,600 W (240 VDC for China)

Type	Model and Description	Power	Max. Qty.
AC Power	Power Supply Module_G_M_GW-CRPS550N2W_550W_1U_P	550 W	2

Supply	Power Supply Module_AS_M_U1A-D0550-W-11_550W_1U_P		
	Power Supply Module_LO_M_PS-2801-22L1_800W_1U_P_S Power Supply Module_G_M_GW-CRPS800N2W_800W_1U_P Power Supply Module_DELTA_M_DPS-800AB-58A_800W_1U_P Power Supply Module_AS_M_U1A-D0800-K-10_800W_1U_P	800 W	2
	Power Supply Module_G_M_GW-CRPS1300D2W_1300W_1U_P Power Supply Module_DELTA_M_DPS-1300AB-27A_1300W_1U Power Supply Module_LO_M_PS-2132-11L1_1300W_1U_P_S Power Supply Module_AS_M_U1A-D1300-L-10_1300W_1U_P	1,300 W	2
	Power Supply Module_DELTA_M_DPS-1600AB-45A_1600W_1U_P Power Supply Module_G_M_GW-CRPS1600D2W_1600W_1U_P Power Supply Module_DELTA_M_DPS-1600AB-45A_1600W_1U_P	1,600 W	2

Note: At a rated voltage of 110 VAC, a 1,300/1,600 W power supply will be derated to 1,000 W.

Input voltage range:

110–230 VAC: 90–264 V

240 VDC: 180–320 V

- The following PSUs (rated 240–336 VDC) with 1+1 redundancy are supported:

  800 W 336 VDC PSU: 800 W (240 VDC), 800 W (336 VDC)

  1,300 W 336 VDC PSU: 1,300 W (240 VDC), 1,300 W (336 VDC)

  Input voltage range:

  240–336 VDC: 190–400 V

- The following rated -48 VDC PSUs with 1+1 redundancy are supported:

800 W -48 VDC PSU: 800 W (-48 VDC)

1,300 W -48 VDC PSU: 1,300 W (-48 VDC)

Input voltage range:

-48 VDC: -40 V to -72 V

7.10 Operating System

Table 7-13 Operating System

OS Manufacturer	OS Version
Windows	Windows Server 2019
Red Hat	Red Hat Enterprise Linux 8.3
SUSE	SUSE Linux Enterprise Server 12 SP5
	SUSE Linux Enterprise Server 15 SP2
CentOS	CentOS_8.3
Oracle Linux	Oracle Linux 7.9
ESXi 6.X	VMware ESXi 6.7 U3
	VMware ESXi 7.0 U1
Ubuntu 20	Ubuntu 20.04
	Ubuntu 18.04

8 Configuration Tips

- Onboard SATA and RAID/SAS cards cannot be selected at the same time.
- RAID/SAS cards with different chip models cannot be selected at the same time.
- When SATA drives are configured on the backplanes equipped with expander chips, RAID/SAS cards are required while the connection to onboard SATA connectors is unsupported.
- For the configuration of four 3.5”drives and four 2.5”drive, the thickness of the 2.5”drives is less than 9.5 mm (0.37 in.)
- The appropriate ambient temperatures for different configurations are as follows:

  See **Table 6-3** Operating Temperature Specifications and the Note above.

9 System Management

9.1 Intelligent Baseboard Management System (BMC)

The BMC, a remote server management system, was developed by us and supports mainstream management specifications in the industry such as IPMI 2.0 and Redfish 1.0.8. It features higher operational reliability and excellent serviceability for different customer scenarios. It provides comprehensive and accurate fault diagnosis capabilities and enhanced security above industry average.

It supports the following features:

- IPMI 2.0
- Redfish 1.0.8
- Simple network management protocols (SNMP v1/v2c/v3)
- HTML5/Java remote consoles (keyboards, mouses, and videos)
- Remote virtual media
- BMC login on web browsers
- Intelligent fault diagnosis system

Table 9-1 BMC Specifications

Item	Description
Management Interfaces	Supports extensive remote management interfaces and is applicable to various server O&M scenarios. The supported interfaces include: IPMI SSH CLI SNMP HTTPS Web GUI Redfish RESTful DCMI Syslog

Intelligent Fault Location	With IDL, a fault diagnosis system developed in-house by us, it provides comprehensive and accurate hardware fault location capabilities, and outputs detailed fault causes and handling suggestions.
Alert Management	Supports rich automatic remote alarm capabilities, including SNMP Trap (v1/v2c/v3), email alarms, syslog remote alarms, and other proactive alarming mechanisms to ensure 24 × 7 device reliability.
Remote Console KVM	Supports HTML5- and Java-based remote consoles, supports remotely taking over the display/mouse/keyboard of the server, and provides highly available remote management capabilities without on-site operations.
Virtual Network Console (VNC)	Supports mainstream third-party VNC clients without relying on Java and improves management flexibility.
Remote Virtual Media	Links local devices, images, USB devices, and folders to BMC through the network so that BMC can intelligently mount the devices to the server, achieving remote media virtualization and simplifying system installation, file sharing, and other O&M tasks.
Web GUI	Features a visual management interface developed by us, provides comprehensive display of server information and status, and offers easy-to-use O&M buttons.
Downtime Screenshotting and Common Screenshotting	Supports automatic screenshotting during downtime to capture the last screen before downtime, and provides a screenshotting function, which can quickly capture the display to facilitate regular inspections.
Dual Flash and Dual Image	Supports dual flash and dual image with automatic flash failover upon software faults or flash damage, improving operational reliability.
Power Capping	Supports power capping, increasing deployment density and reducing energy consumption.
IPv4/IPv6	Supports both IPv4 and IPv6, enhancing network deployment flexibility.
Adaptation of Management Network Ports	Supports adaptation of dedicated management network ports and network controller sideband interfaces (NC-SI), and provides customers with flexible network deployment

	solutions for different management network deployment scenarios.
BMC Self-Diagnosis and Self-Recovery System	Supports the reliable dual watchdog mechanism for hardware and software, enabling automatic restoration of abnormal programs to normal under extreme BMC situations. Provides a thermal protection mechanism, which is automatically triggered when a BMC program is abnormal to ensure that the fan operates at a safe speed to avoid overheating of the entire system. Supports self-diagnosis of processors, memory modules, and storage devices of ISBMC, and automatically cleans up the workload and restores to normal when the device consumption rate is too high.
Power Supply Control	Supports virtual power buttons for startup, shutdown, restart, and restart after shutdown.
UID LED	Supports remote lighting of the unit identification (UID) LED for locating the server in the server room.
Secure Firmware Upgrade	Supports firmware upgrades based on secure digital signatures, unexpected upgrade prevention mechanism for different manufacturers and models, and firmware upgrades of BMC/BIOS/CPLD/PSU and other devices.
Serial Port Redirection	Supports remote redirection of system serial ports, BMC serial ports, and other serial ports, and directs the server-side serial port output to the local administrator through the network for server debugging.
Storage Information Display	Supports display of RAID logical array information and drive information, and remote RAID formation for improved deployment efficiency.
User Role Management	Allows granular user management based on user roles and flexible creation of user roles with different permissions, and provides detailed user roles to allow administrators to grant different permissions to O&M personnel.
Security Features	Adopts the industry-leading server security baseline standard V2.0, and provides secure and reliable algorithms for SSH, HTTPS, SNMP, and IPMI, and has capabilities including secure upgrade and boot as well as security reinforcement mechanisms such as anti-replay, anti-injection, and anti-

	brute force.

9.2 InManage

The server is compatible with the latest version of InManage, a new-generation infrastructure O&M management platform for data centers.

Built on cutting-edge O&M concepts, InManage provides users with leading and efficient overall management solutions for data centers to ensure advanced infrastructure management. This platform provides a rich set of functions such as centralized asset management, in-depth fault diagnosis, component fault early warning, intelligent energy consumption management, 3D automatic topologies, and stateless automatic deployment. With these functions, users can implement centralized O&M of servers, storage devices, network devices, security devices, and edge devices, effectively improving O&M efficiency, reducing O&M costs, and ensuring the secure, reliable, and stable operation of data centers. InManage offers:

- lightweight deployment in multiple scenarios and full lifecycle management of devices
- high reliability and on-demand scalability enabled by 1 to N data collectors
- intelligent asset management and real-time tracking of asset changes
- comprehensive monitoring for overall business control
- intelligent fault diagnosis for reduced maintenance time
- second-level performance monitoring for real-time status of devices
- batch configuration, deployment and update, shortening the time needed to bring the production environment online
- improved firmware version management efficiency
- standardized northbound interfaces for easy integration and interfacing

Table 9-1 InManage Features

Feature	Description
Home	• Display of basic information (data centers, server rooms, cabinets, assets and alerts), quick addition of devices and custom home page

Feature	Description
Assets	• Batch asset import, automatic asset discovery, and full lifecycle management of assets • Management of the full range of our server family, including general-purpose rack servers, AI servers, multi-node servers, edge servers and all-in-one servers • Management of our general-purpose disk arrays and distributed storage devices • Management of network devices (switches, routers, etc.), security devices (firewalls, load balancers, etc.), cabinets and clouds • Management of data centers • Asset warranty information management, asset inventory reports for server acceptance, asset attribute expansion, etc.
Monitor	• Display of real-time alerts, history alerts, blocked alerts and events • Fault prediction of drives and memories • Custom inspection plan and inspection result management • Notification record viewing • Intelligent fault diagnosis and analysis, automatic fault reporting and repair ticket viewing • Trap management and Redfish management • Management of monitoring rules, such as alert rules, notification rules, blocking rules, alert noise reduction rules, compression rules and fault reporting rules, and redefinition of the above rules
Control	• Quick start of firmware update, OS installation, power management, drive data erasing and stress test • Batch firmware update (BMC/BIOS/RAID Card/NIC/Drive/HBA Card/MB CPLD/BP CPLD/PSU) • Batch firmware configuration (BMC/BIOS)

Feature	Description
	• Batch RAID configuration and OS deployment for servers • Secure and quick drive data erasing • CPU and memory stress test • Automatic firmware baseline management • BMC and BIOS snapshot management • Repositories for update files
Energy Efficiency	• Overview of data center power consumption trend chart and carbon emission trend chart • Setting of server dynamic power consumption policies and minimum power consumption policies • Carbon asset and carbon emission management
Log	• Fault log record management • Diagnosis record and diagnosis rule management
Topologies	• Centralized management of multiple data centers and panoramic 3D views, including dynamic display of power consumption, temperature, alerts and cabinet capacity of the data center • Network topologies
Reports	• Management of warranty information reports, alert reports, asset reports, hardware reports and performance reports • Export of reports in .xlsx format
System	• Password management, alert forwarding and data dump • Customized InManage parameters
Security	Security control of InManage via a set of security policies such as user management, role management, authentication management (local authentication and LDAP authentication) and certificate management.

9.3 InManage Tools

Table 9-2 Features of InManage Tools

Feature	Description
InManage Kits	A lightweight automatic batch O&M tool for servers, mainly used for server deployment, routine maintenance, firmware update, fault handling, etc.
InManage Boot	A unified batch management platform for bare metals, with features including firmware management, hardware configuration, system deployment and migration, stress test and in-band management
InManage Server CLI	Fast integration with third-party management platforms, delivering a new O&M mode of Infrastructure as Code (IaC)
InManage Driver	Operates under the OS and gets system asset and performance information via the in-band mode, providing users with more comprehensive server management capabilities
InManage Server Provisioning	Offers users with RAID configuration, intelligent OS installation, firmware update, hardware diagnosis, secure erasing and software upgrade, using the TF card as the carrier

10 Certification

Parts of the task book to be certified:

Region	Item	Certification Logo	Compulsory/ Voluntary	Description
China	CCC		Compulsory	-
	China Environmental Label		Voluntary	-
International Mutual Recognition	CB	N/A	Voluntary	-
EU	CE		Compulsory	-
US	FCC		Compulsory	-
	UL		Voluntary	-
	Energy Star		Voluntary	-

11 Support and Services

Please visit the official website to check the warranty status and configuration of related products.

Required customer information:

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