meta brain® Server NE3120M5

White Paper

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Preface

Abstract

This document describes the NE3120M5 server's appearance, features, performance parameters, and software and hardware compatibility of components, providing a profound understanding of NE3120M5.

Intended Audience

This white paper is intended for pre-sales engineers.

Symbol Conventions

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

Symbol	Description
DANGER	A potential for serious injury, or even death if not properly handled
WARNING	A potential for minor or moderate injury if not properly handled
CAUTION	A potential loss of data or damage to equipment if not properly handled
IMPORTANT	Operations or information that requires special attention to ensure successful installation or configuration
NOTE	Supplementary description of document information

Revision History

Version	Date	Description of Changes
V1.0	2024/04/17	Initial release

Table of Contents

1 Product Overview

The NE3120M5 is a server optimized by us for entry-level edge computing applications. It is designed partly based on Open Telecom IT Infrastructure (OTII) specifications of the Open Data Center Committee (ODCC), an open source hardware organization in China. Besides, this server inherits the design concepts of openness, high performance, intelligence and flexibility of M5 servers. It features high performance and flexible scalability in a healthy and open ecosystem, which makes it an ideal option for various types of enterprises covering Internet, communication, transportation, energy, finance and other industries that have special development needs for edge computing or intelligent edge services. With multiple functions such as computing, storage and image processing in a limited space, it is suitable for smart city, Industrial Internet, intelligent retail, intelligent manufacturing, Internet of Vehicles and other scenarios that have high requirements for deployment environment, bandwidth, and latency, while meeting server architecture design and computing performance requirements.

Figure 1-1 NE3120M5 Appearance

2 Features

2.1 High Performance

- NE3120M5 is powered by 1 Intel® Xeon® E processor with up to 8 cores, 16 threads, a TDP of 95 W, the max Turbo frequency of 4 GHz, and an L3 cache of 16 MB, offering unrivaled processing performance.
- Supports 2 memory channels and 3 DDR4 DIMMs of up to 2,666 MHz.
- Supports up to 2 × 2.5-inch drive, enabling higher storage rates and capacity.

2.2 Stronger Environmental Adaptation

- The server is only 420 mm (16.54 in.) deep, nearly 1/2 shorter than that of general-purpose servers.
- The operating temperature is 5°C - 35°C (41°F - 95°F), and the operating humidity is 10% to 90%.
- Wall mountable.

2.3 Flexible Scalability

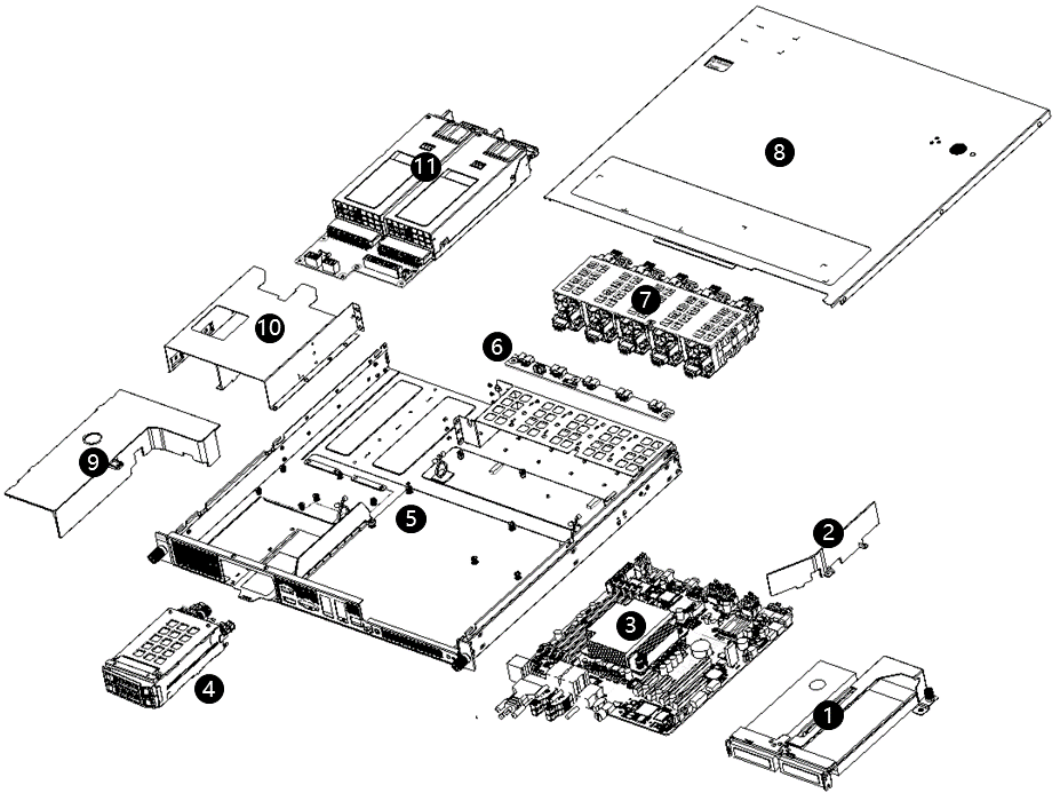
- Up to 2 PCIe 3.0 slots for 2 PCIe x8 cards.
- Up to 2 HHHL PCIe x8 graphics cards.

2.4 Easy Operation and Maintenance

- The modular design and front-side O&M improve the convenience and efficiency of O&M.
- Front I/O design and separated hot and cold air ducts improve the heat dissipation efficiency of the server room.

3 System Parts Breakdown

Figure 3-1 NE3120M5 System Parts Breakdown



Item	Feature	Item	Feature
1	PCIe	2	Air Duct1
3	Motherboard	4	Drives
5	Chassis	6	Fan Board
7	Fans	8	Top Cover
9	Air Duct2	10	PSU Cage
11	PSUs		

4 System Architecture

4.1 Board System Architecture

Figure 4-1 NE3120M5 Motherboard System Architecture

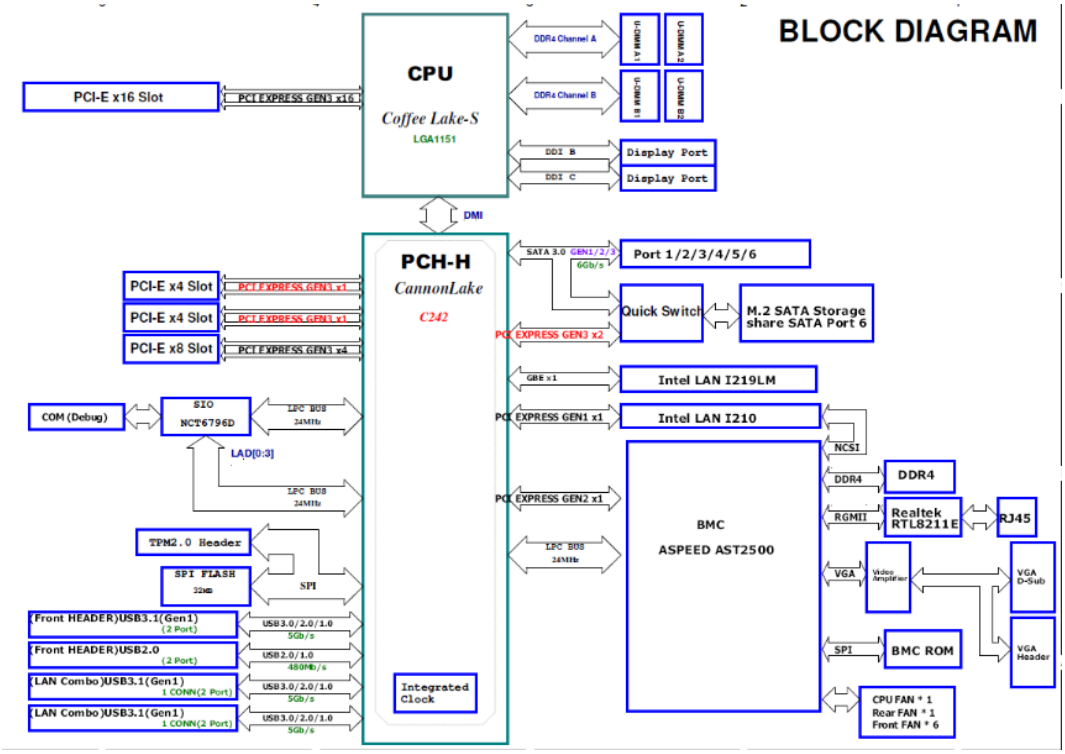
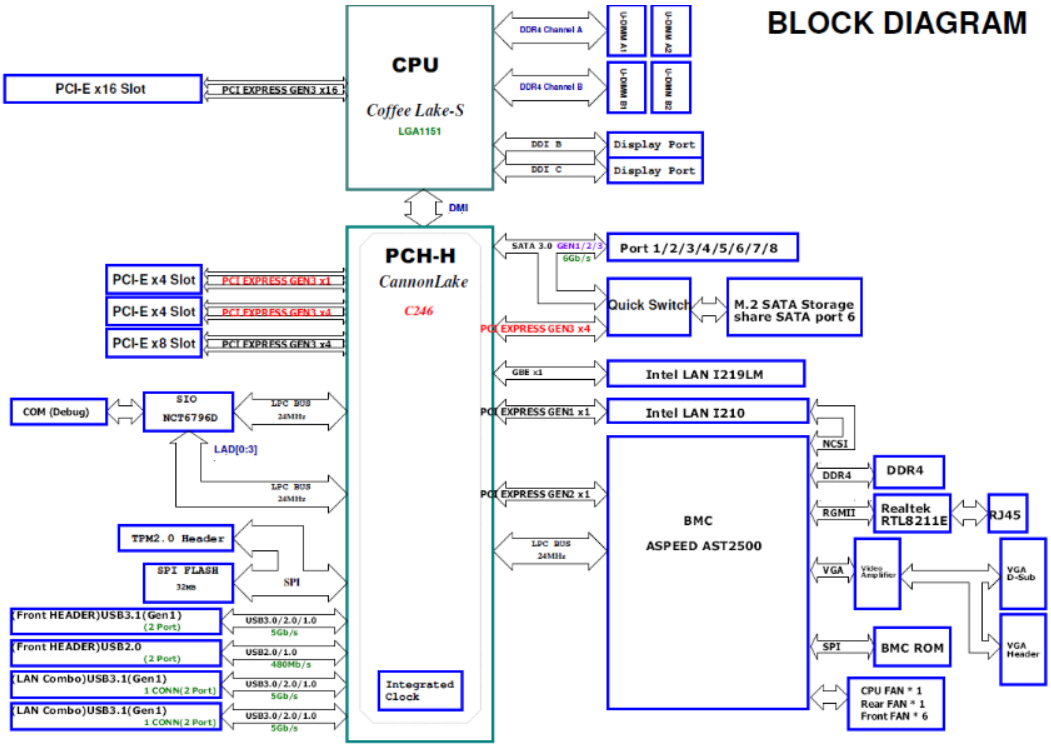


Figure 4-2 NE3120M5 Motherboard System Architecture (Optimized Configuration)



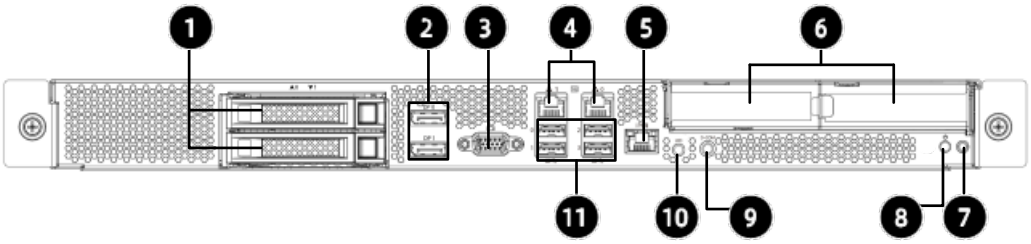
- NE3120M5 supports 1 Intel® Xeon® E processor based on the Melhow platform with the TDP of up to 95 W, and supports 3 DDR4 ECC UDIMMs of 2,666 MHz.
- Chipset: Intel® CNL PCH-H chipset (Intel C246 or C242).
- Supports 2 × HHHL PCIe 3.0 x8 slot or 1 × FHHL PCIe 3.0 x8 slot + 1 × HHHL PCIe 3.0 x8 slot.
- Onboard dual-port 1 GbE LAN.

5 Hardware Description

5.1 Front Panel

5.1.1 Front View

Figure 5-1 Front Panel



Item	Feature	Item	Feature
1	Hot-Plug Drive Bays	7	System Status LED
2	Display Port × 2	8	Power Button
3	VGA Port	9	System Serial Port/BMC Serial Port
4	1 GbE Electrical Port × 2	10	UID LED and Button
5	Management Network Port	11	USB 3.0 Port × 4
6	I/O Module × 2 (supporting half-height PCIe cards)		

5.1.2 Front Panel Buttons and LEDs

Figure 5-2 Front Panel Buttons and LEDs

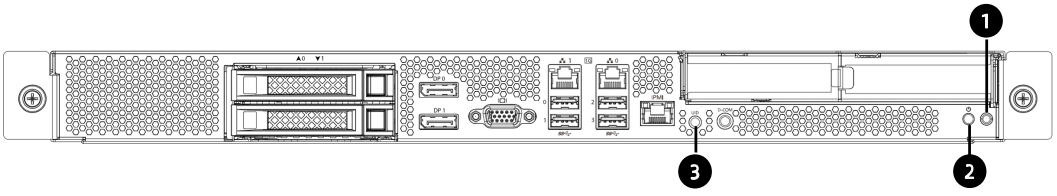


Table 5-1 Front Panel Buttons and LEDs

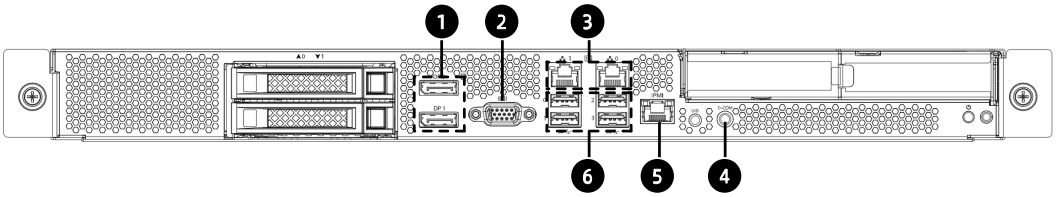
Item	Feature	Description
1	System Status LED	• Off = Normal • Solid red = A system failure occurs

Item	Feature	Description
2	Power Button and LED	• Green = Power on state • Orange = Standby state • Long press to force a shutdown
3	UID Button and LED	• Solid blue: The UID LED turns on when activated by the UID button or via BMC • Long press 6 seconds to reset the BMC system

5.1.3 Ports

1. Port Location

Figure 5-3 Front Panel Ports



Item	Feature	Item	Feature
1	Display Port × 2	2	VGA Port
3	Network Port × 2	4	Motherboard BMC Debug Serial Port
5	BMC Management Port	6	USB Port × 4

2. Port Description

Table 5-2 Front Panel Ports

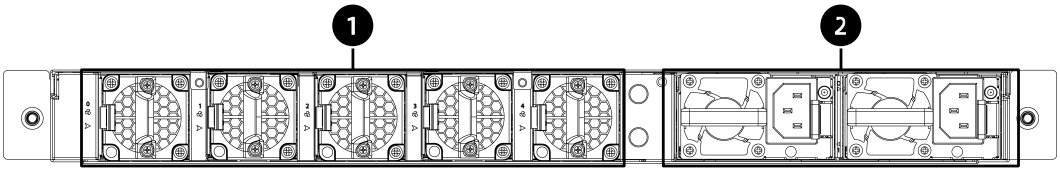
Port	Type	Quantity	Description
Motherboard BMC Debug Serial Port	Headphone jack	1	Enables you to capture BMC logs and use the BMC debugging function NOTE The serial port uses a standard 3.5 mm jack with a default baud rate of 115,200 bit/s.

Port	Type	Quantity	Description
Management Network Port	RJ45	1	An BMC management network port that enables you to manage the server NOTE It is a 1 GbE network port of 100/1,000 Mbps (auto-negotiation).
VGA Port	DB15	1	Enables you to connect a display terminal, for example, a monitor or keyboard, video and mouse (KVM), to the system
USB Port	USB 3.0	4	Enables you to connect a USB 2.0 or 3.0 device to the system IMPORTANT When using an external USB device, the maximum current supported by the USB device connected is 0.9 A. Make sure the USB device is in good condition or it may cause the server to work abnormally.
Network Port	RJ45	2	Enables you to connect an electrical port module to the system NOTE It is a 10 GbE network port of 1,000/10,000 Mbps auto-negotiation.

5.2 Rear Panel

5.2.1 Rear View

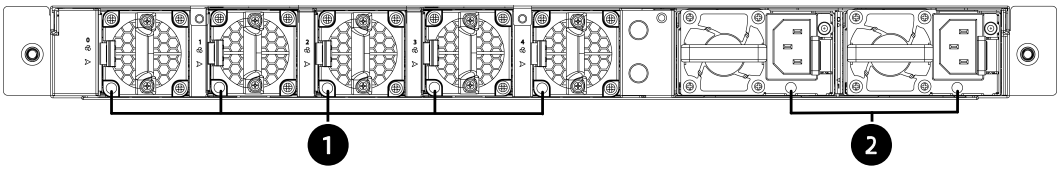
Figure 5-4 Rear Panel



Item	Feature	Item	Feature
1	Fan × 5	2	PSU × 2

5.2.2 LEDs and Buttons

Figure 5-5 Rear Panel LEDs



Item	Feature	Item	Feature
1	Fan Status LEDs	2	PSU LEDs

1. LED and Button Description

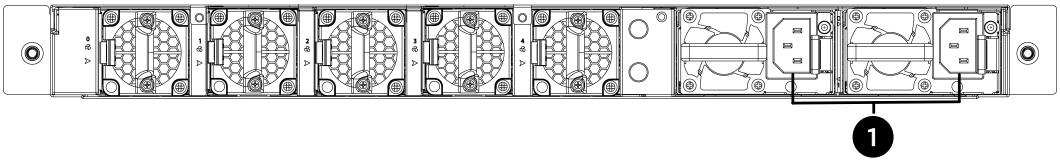
Table 5-3 Description of Rear Panel LEDs

LED	Description
PSU LEDs	• Solid green = Normal • Off = No AC power to PSU • Solid amber = PSU critical event causing a shutdown • Flashing amber at 1 Hz = PSU warning event where the PSU continues to operate • Flashing green at 1 Hz = PSU operating in standby mode with AC input • Flashing green at 0.33 Hz (on for 2 seconds and off for 1 second) = PSU in cold redundant state • Flashing green at 2 Hz = PSU firmware updating
Fan Status LEDs	• Off = Normal • Solid red = A failure occurs

5.2.3 Ports

1. Port Locations

Figure 5-6 Rear Panel Ports



Item	Feature	Item	Feature
1	PSU Ports		

2. Port Description

Table 5-4 Rear Panel Ports

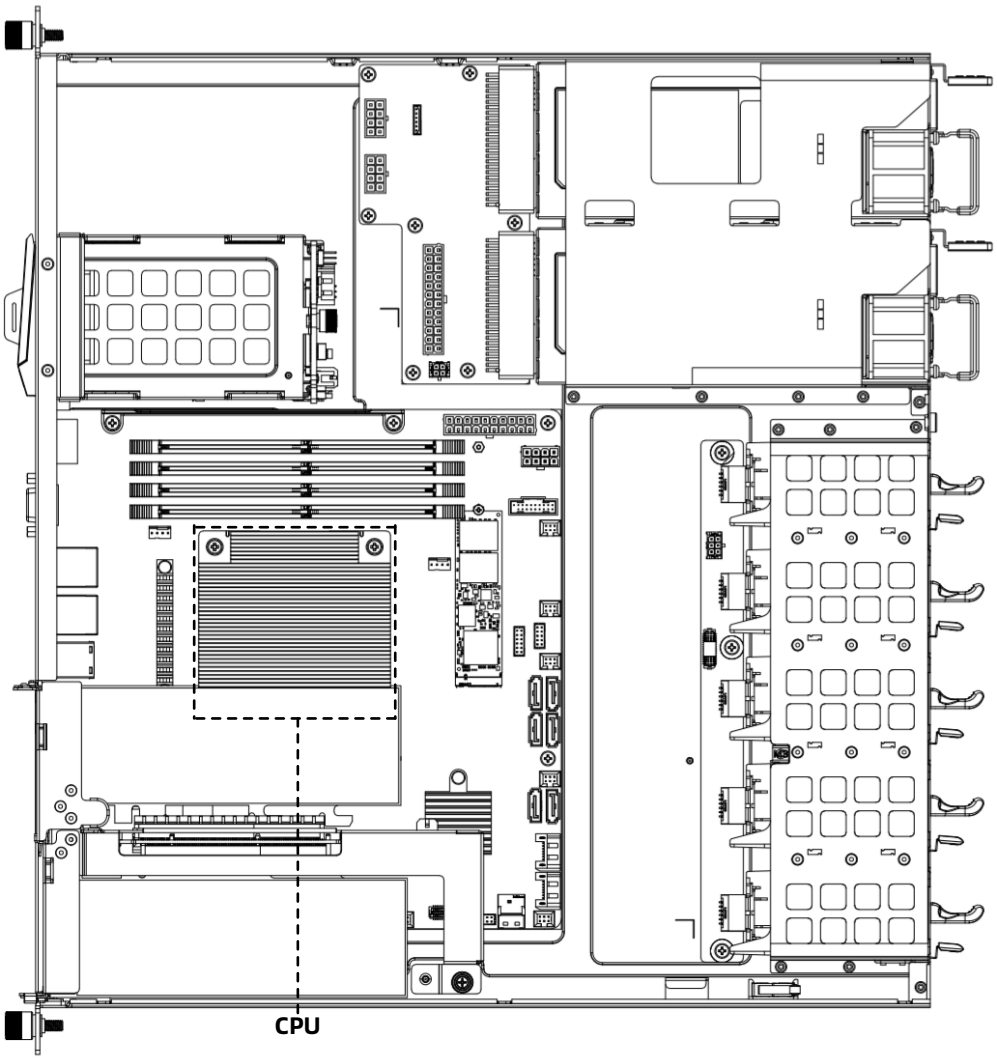
Port	Type	Quantity	Description
PSU Port	-	2	Connected through a power cord. User can optionally configure the PSUs as required NOTE Make sure that the rated power of the PSUs is greater than that of the server when selecting PSUs.

5.3 Processors

- NE3120M5 supports 1 processor as shown in Figure 5-9.

For specific system options, consult your local sales representative or refer to 7.2 Hardware Compatibility.

Figure 5-7 Processor Location

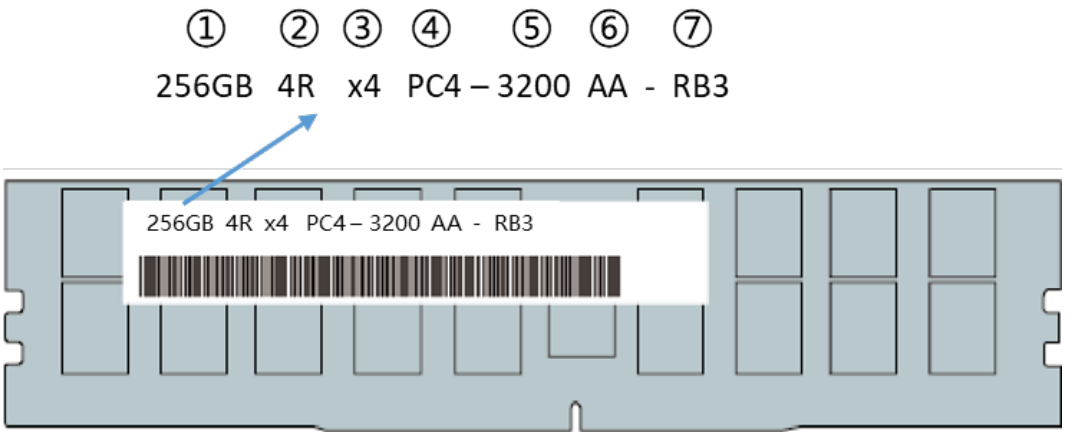


5.4 Memory

5.4.1 DIMM Identification

To determine the characteristics of a DIMM, refer to the label attached on the DIMM and the illustrations and tables below.

Figure 5-8 DIMM Identification



Item	Description	Example
1	Capacity	• 16 GB • 32 GB • 64 GB • 128 GB • 256 GB
2	Rank(s)	• 1R = Single rank • 2R = Dual rank • 2S2R = 3DS 2Hi 2 rank • 4DR = DDP 4 rank • 4R = Quad rank
3	Data width of DRAM	• x4 = 4 bits • x8 = 8 bits
4	DIMM slot type	• PC4 = DDR4
5	Maximum memory speed	• 2,933 MT/s • 3,200 MT/s
6	CAS latency time	• SDP chip based • V = CAS 19-19-19 • Y = CAS 21-21-21

Item	Description	Example
		• AA = CAS 22-22-22 • 3DS chip based • V = CAS 22-19-19 • Y = CAS 24-21-21 • AA = CAS 26-22-22
7	DIMM type	• R = RDIMM • L = LRDIMM

5.4.2 DIMM Subsystem Architecture

The server supports 3 DIMM slots.

Install DIMMs in the slots of active DIMM channels first. DIMMs in the standby channels cannot be used normally if no DIMMs are installed in the active channels.

Table 5-5 Channel Composition

Channel Allocation	Channel ID	Composition
CPU0	Channel A	CPU0_CAD0 (unavailable)
	Channel A	CPU0_CAD1
	Channel B	CPU0_CBD0
	Channel B	CPU0_CBD1

5.4.3 DIMM Compatibility

Configure the DDR4 DIMMs by referring to the rules as follows:

IMPORTANT

- The server must use DDR4 DIMMs of the same Part No. (P/N code) with the operating speed at the lowest value of each item below:
  - The memory speed supported by a specific CPU.
  - The maximum working speed of a specific memory configuration.
- Mixed use of DDR4 DIMMs of different types and specifications (capacity, bit width, rank, height, and so on) is not supported.
- For specific system options, consult your local sales representative or refer to 7.2 Hardware Compatibility.

Table 5-6 DDR4 DIMM Parameters

Parameter		Value	
Capacity per DDR4 DIMM (GB)		16	32
Type		URDIMM	URDIMM
Rated speed (MT/s)		2,666	2,666
Operating voltage (V)		1.2	1.2
Maximum quantity of DDR4 DIMMs supported in the server[a]		3	3
Maximum capacity of DDR4 DIMMs supported in the server (GB)[b]		48	96
Actual speed (MT/s)	1DPC[c]	2,666	2,666
	2DPC	2,666	2,666
a: The maximum quantity of DDR4 DIMMs supported is based on the 2-processor configuration. If the 1-processor configuration is selected, the number should be halved. b: The maximum capacity of DDR4 DIMMs supported depends on the CPU type, and its maximum value at full load is given here. c: DIMM Per Channel (DPC), the number of DIMMs configured per memory channel. The above information is for reference only. Please consult your local sales representative for details.			

5.4.4 DIMM Population Rules

NOTE

This section describes the DIMM population rules when DDR4 DIMMs are fully configured.

General population rules for DDR4 DIMMs:

- Install DIMMs only when the corresponding processor is installed.
- Mixed use of LRDIMMs and RDIMMs is not allowed.
- Install dummies in the DIMM slots where no DIMMs are installed.

Population rules for DDR4 DIMMs in specific modes:

- Memory sparing

- Follow the general population rules.
- The online standby configuration for each channel must be valid.
- Each channel can have a different active online standby configuration.
- Each channel with a DIMM installed must have a spare column.

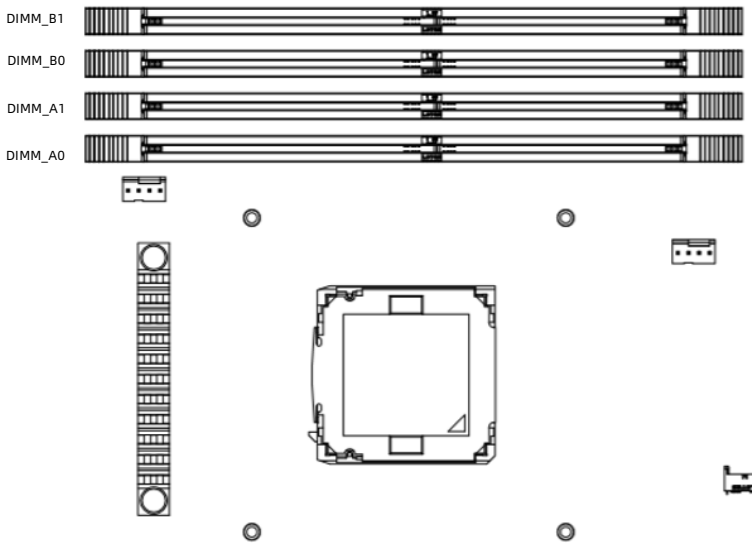
5.4.5 DIMM Slot Layout

Up to 3 DDR4 DIMMs can be installed in a server, and a balanced DIMM configuration is recommended for optimal memory performance. DIMM configuration must adhere to the DIMM population rules.

IMPORTANT

At least 1 DDR4 DIMM is installed in the corresponding active memory channel of CPU0.

Figure 5-9 DIMM Slot Location



Supports 3 DIMM slots with a total capacity of up to 96 GB (32 GB per DIMM).

Only DIMMs of the same type could be used in the same machine. Detailed DIMM population rules are as follows.

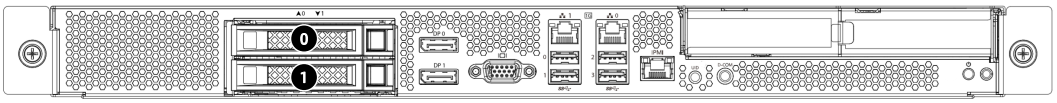
DIMM Qty	DIMM_A1	DIMM_B0	DIMM_B1
1	V		
2	V	V	
3	V	V	V

5.5 Storage Drive

5.5.1 Drives

NE3120M5 supports up to 2 hot-swap 2.5-inch SAS 3.0/SATA drives.

Figure 5-10 Drive Sequence



5.5.2 Drive LEDs

Figure 5-11 Drive Tray LEDs

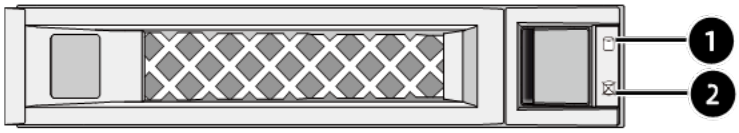


Table 5-7 Drive LEDs

Item	Feature	Description
1	Activity LED	• Solid green = Drive is present but not in use • Flashing green = Drive is present and in use
2	Error LED	• Solid red = Drive error or failure • Solid blue = Drive is being located • Solid pink = RAID rebuilding

5.5.3 RAID Controller Card

A RAID controller card provides functions such as RAID configuration, RAID level migration, and disk roaming.

Table 5-8 Details of SAS Card/RAID Controller Card

Type	Model
SAS Card/RAID Controller Card	SAS3008+IR+PCIe3.0
	SAS3008+IT+PCIe3.0
	SAS_3008_8_128Mb_12G_3
	SND_2R0_9230_N_M.2_PCIe2

5.6 Network

Type	Model and Description	Speed (Gbps)	Quantity
NIC	82599ES_10G_LC_PCIex8_DUAL_XR_Slave Card	10	Dual-port SFP+
	X710_10G_LC_PCIex8_2	10	Dual-port SFP+
	X550_10G_RJ_PCIex8_2_XR	10	Dual electrical port
	10G_X550T2_RJ_PCIex4_2_XR	10	Dual electrical port
	25G_MCX4121A-ACAT_LC_PCIex8_D_XR	25	Dual-port QSFP+
	25G_MCX512A-ACAT_LC_PCIex8_2_XR	25	Dual-port QSFP+

5.7 I/O Expansion

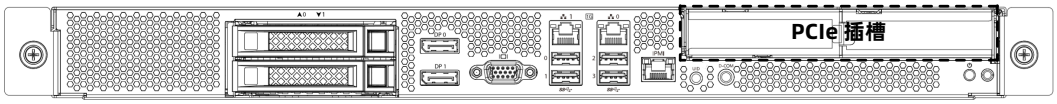
5.7.1 PCIe Card

The PCIe card offers system scalability.

- Supports up to 2 PCIe 3.0 x8 expansion slots.
- For specific system options, consult your local sales representative or refer to 7.2 Hardware Compatibility.

5.7.2 PCIe Slot Locations

Figure 5-12 PCIe Slots - Rear View of the Chassis



5.7.3 PCIe Slot Description

Table 5-9 PCIe Slot Description

PCIe Slot	Owner	PCIe Standard	Connector Bandwidth	Bus Bandwidth	Form Factor
Slot0	CPU	PCIe 3.0	x8	x8	HHHL
Slot1	CPU	PCIe 3.0	x8	x8	HHHL

- A PCIe x8 slot is compatible with a PCIe card with the bus bandwidth of x8, x4, or x1. It is not upward compatible, that is, the bandwidth of the PCIe slot should be larger than that of the inserted PCIe card.
- The power supply capacity of each PCIe slot is up to 75 W.

5.8 Power Supply Unit

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-less maintenance. A CRPS PSU is 80 PLUS Platinum rated, and offers various output powers, allowing customers to choose based on the actual configuration.

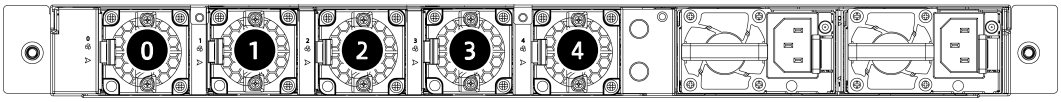
- The following rated 110 Vac - 230 Vac power supplies of 1+1 redundancy are supported:
  - 550 W Platinum level PSU: 550 W (110 Vac), 550 W (230 Vac)
  - Input voltage range:

  - 110 Vac - 230 Vac: 90 V - 264 V

5.9 Fans

Supports 5 fan modules (4028).

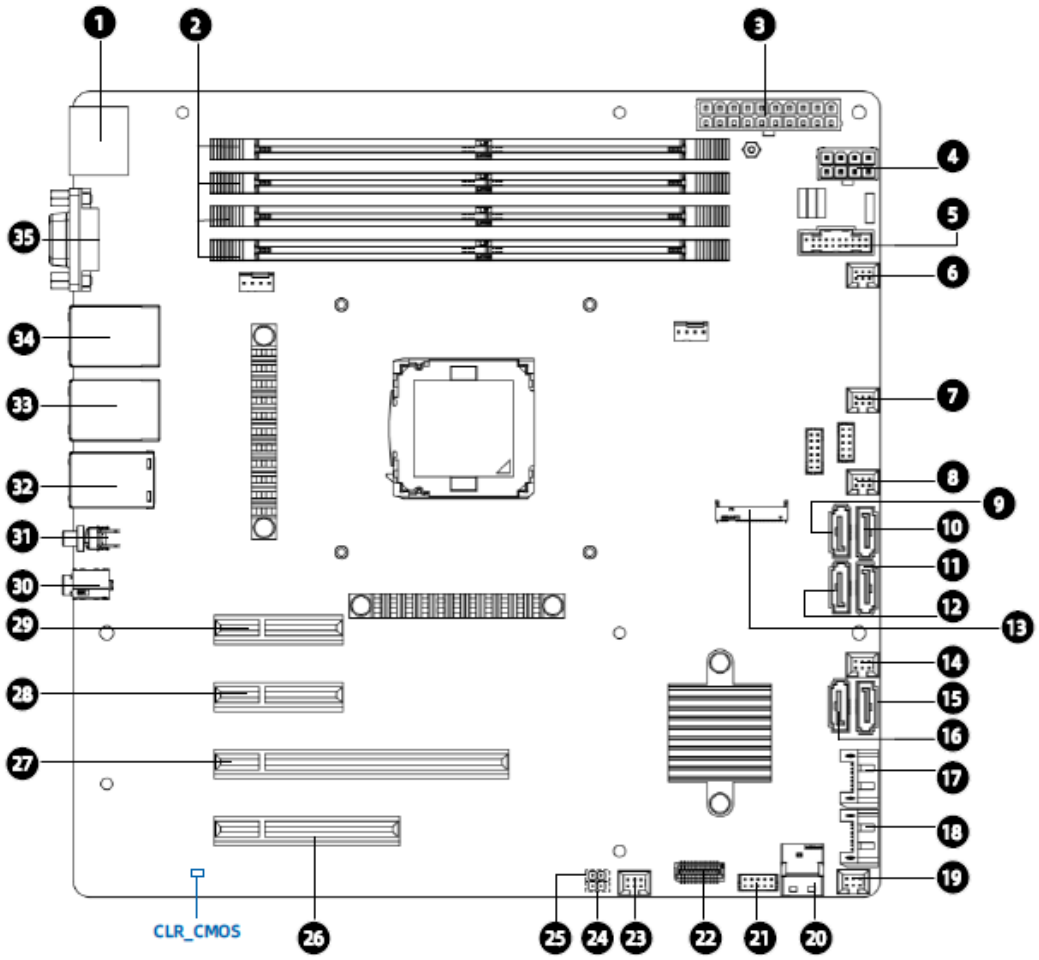
Figure 5-13 Fan Location



5.10 Single Board

5.10.1 Motherboard

Figure 5-14 NE3120M5 Motherboard



Item	Feature	Item	Feature
1	Display Port × 2	19	Fan Connector0
2	DIMM Slot	20	USB 3.0 (4) & USB 2.0 (5) & VGA1 Port
3	Power Connector (20-pin)	21	BP_SGPIO_SMBUS1 Connector
4	Power Connector (8-pin)	22	Front Panel LED & Power Button Connector
5	USB Conversion Connector	23	Fan Connector A
6	Fan Connector3	24	PCH_PW_CLEAR Connector
7	Fan Connector2	25	Intrusion Switch Alarm Connector

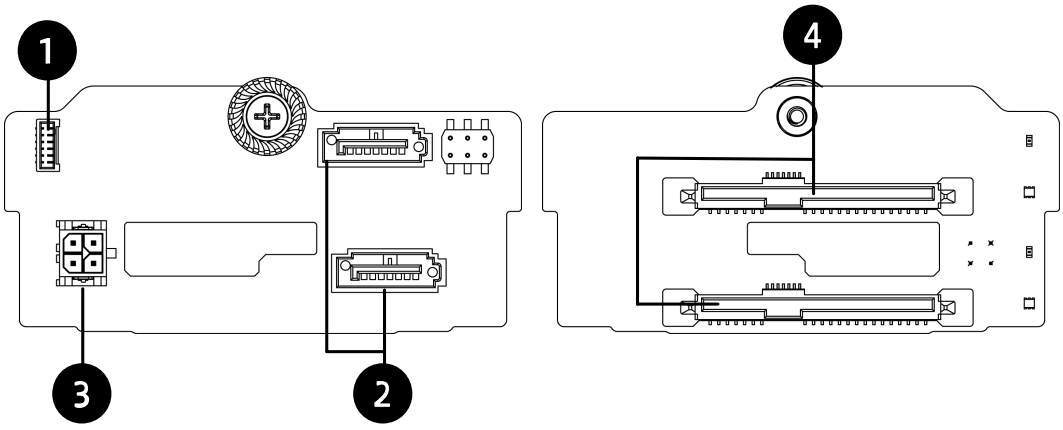
Item	Feature	Item	Feature
8	Fan Connector B	26	PCIe Slot2
9	SATA0 Connector	27	PCIe Slot3
10	SATA1 Connector	28	PCIe Slot1
11	SATA3 Connector	29	PCIe Slot0
12	SATA2 Connector	30	BMC Serial Port
13	M.2 SSD Connector	31	UID LED and Button
14	Fan Connector1	32	Management Network Port
15	SATA5 Connector	33	LAN1 & USB 3.0 (2 and 3) Port Module
16	SATA4 Port	34	LAN0 & USB 3.0 (0 and 1) Port Module
17	SATA6 Connector	35	VGA Port
18	SATA7 Connector		

5.10.2 Drive Backplane

1. Front Drive Backplane

HDD0, HDD1, HDD2 and HDD3 support the pass-through configuration of 2.5-inch NVMe/SAS/SATA drives.

Figure 5-15 Backplane for 2.5-inch Drive Pass-through Configuration



Item	Feature	Item	Feature
1	VPP Connector	2	Slimline Connector
3	Power Connector	4	SAS Connector

6 Product Specifications

6.1 Technical Specifications

Table 6-1 Technical Specifications

Item	Description
Form Factor	1U rack server
Processor	Supports one processor • One Intel® Xeon® E processor • Integrated memory controller and 4 memory channels • Integrated PCIe controller and PCIe 3.0 • Up to 8 cores • Max Turbo frequency of 4 GHz • 16 MB cache per core • TDP up to 95 W NOTE The above information is for reference only. See 7.2 Hardware Compatibility for details.
Memory	Supports 3 DIMM slots and up to 3 DDR4 DIMMs • Supports ECC UDIMMs • Maximum transmit rate is 2,666 MT/s NOTE The above information is for reference only. See 7.2 Hardware Compatibility for details.
Storage Drive	• Supports 1 M.2 SSD NOTE • The M.2 SSD is only used as a boot device for installing the operating system. • The M.2 SSD has low endurance and cannot be used as a data storage device, especially in scenarios with frequent data erase and write, because it may have write risk within a short period of time, resulting in damage and unavailability. • If it is used as a data storage device, please replace it with an enterprise-grade SSD or HDD with higher DWPD. • Write-intensive service software will cause the M.2 SSD to run out of write

Item	Description
	endurance and then become permanently damaged; therefore, the M.2 SSD is not recommended for such service scenarios. • Do not use the M.2 SSD for caching. • Supports hot-swap SAS/SATA drives NOTE Supports RAID controller cards, see 7.2 Hardware Compatibility for details. • Supports functions such as RAID configuration, RAID level migration, and disk roaming. • Supports power failure protection in super-capacitor mode to protect user data.
Network	Supports multiple types of network expansion NOTE Supports multiple models of NICs, see 7.2 Hardware Compatibility for details.
I/O Expansion	Supports PCIe expansion slots • Supports 2 front PCIe 3.0 x8 25 W low-profile PCIe cards NOTE The above information is for reference only. See 7.2 Hardware Compatibility for details.
Port	Front panel: • 2 × display port • 1 × DB15 VGA port • 1 × 3.5 mm jack • 2 × onboard 1,000 Mbps network port • 4 × USB 3.0 port • 1 × RJ45 IPMI management port NOTE Installation of operating system on USB mobile storage media is not recommended.
Display Controller	• Built-in ASPEED AST2500 • Up to a resolution of 1,900 × 1,200 NOTE The integrated display controller can support a maximum resolution of 1,900 × 1,200 only when the graphics card driver matching the OS version is installed; otherwise only the default resolution of the OS is supported.
System Management	BMC

6.2 Environmental Specifications

Table 6-2 Environmental Specifications

Parameter	Requirement
Temperature(1,2,3)	• Operating temperature: 5°C - 35°C (41°F - 95°F) • Storage and transportation temperature: -40°C to +70°C (-40°F to +158°F)
Relative humidity (RH, non-condensing)	• Operating humidity: 10% to 93% RH • Storage and transportation humidity: 10% to 93% RH
Operating altitude	3,048 m (10,000 ft) • Operating temperature: 5°C - 35°C (41°F - 95°F) at 0 - 950 m (0 - 3,117 ft). • Operating temperature above 950 m (3,117 ft): Every 300 m increase in the altitude above sea level reduces the operating temperature range by 1.0°C (a 1.8°F drop per 984 ft).
Noise(4,5,6)	Idle LWAd: 5.7 B LpAm: 41.7 dBA Operating LWAd: 6.2 B LpAm: 49.7 dBA

NOTE

1. Standard operating temperature: 5°C - 35°C (41°F - 95°F) at sea level. Every 300 m increase in the altitude above sea level reduces the operating temperature range by 1.0°C (a 1.8°F drop per 984 ft). The maximum operating altitude is 3,048 m (10,000 ft). The altitude and maximum temperature change rate vary with different system configurations. Any fan failure or operations above 30°C (86°F) may lead to system performance degradation.
2. Expanded operating temperature: As for certain approved configurations, the supported entry range of the system can be expanded to 5°C - 10°C (41°F - 50°F) and 35°C (95°F) at sea level. At an altitude of 950 - 3,048 m (3,117 - 10,000 ft) above sea level, every 300 m increase in the altitude reduces the

operating temperature range by 1.0°C (a 1.8°F drop per 984 ft). Any fan failure or operations under expanded environments may lead to system performance degradation.

3. This document lists the weighted sound power level (LWAd) 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 test 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.

6.3 Physical Specifications

Table 6-3 Physical Specifications

Indicator	Description
Dimensions (W × H × D)	With mounting ears: 481.6 × 43.4 × 420 mm (18.96 × 1.71 × 16.54in.) Including package: 729 × 248 × 654 mm (28.70 × 9.76 × 25.75 in.)
Installation dimension requirements	19-inch standard cabinet (EIA-310-D), or mounted on the wall with a bracket
Weight	Gross weight (packed): 14.9 kg (32.85 lbs) (including server + packaging + rails)
Power consumption	Up to 330 W

7 Software and Hardware Compatibility

This section describes the compatibility information of OSs and hardware. For the latest compatibility configuration and the parts and models not listed in this document, please contact your local sales representative.

IMPORTANT

- Use of non-compatible components may cause equipment abnormality, and such kind of failures is not covered by technical support or warranty.
- The performance of a server is strongly related to application software, middleware basic software, and hardware. Some subtle differences in application software, middleware foundation software and hardware may cause inconsistent performance at the application level and test software level.
- If you have performance-related requirements on specific application software, contact your local sales representative to request for the proof of concept (POC) to confirm the detailed hardware and software configurations before procurement.
- If you have requirements on consistency of hardware performance, specific configuration requirements (such as specific drive models, specific RAID controller cards, and specific firmware versions) need to be identified before procurement.

7.1 Operating System

Table 7-1 Operating System

Manufacturer	Version
Red Hat	Red Hat Enterprise Linux 8.0
CentOS	CentOS Linux 7.6
Windows Server	WS2016
Windows Server	WS2019
Ubuntu	Ubuntu18.04
SLES	SLES12SP5
SLES	SLES15

7.2 Hardware Compatibility

7.2.1 CPU Specifications

NE3120M5 supports 1 Intel® Xeon® processor.

Table 7-2 CPU Specifications

Model	Cores	Thread Count	Base Frequency	Max Turbo Frequency	Cache	Max Memory Capacity	TDP
E-2186G	6	12	3.8 GHz	4.7 GHz	12 MB	128 GB	95 W
E-2176G	6	12	3.7 GHz	4.7 GHz	12 MB	128 GB	80 W
E-2174G	4	8	3.80 GHz	4.70 GHz	8 MB	128 GB	71 W
E-2146G	6	12	3.5 GHz	4.5 GHz	8 MB	128 GB	80 W
E-2144G	4	8	3.6 GHz	4.5 GHz	8 MB	128 GB	71 W
E-2136	6	12	3.3 GHz	4.5 GHz	12 MB	128 GB	80 W
E-2134	4	8	3.5 GHz	4.5 GHz	8 MB	128 GB	71 W
E-2126G	6	6	3.3 GHz	4.5 GHz	12 MB	128 GB	80 W
E-2124G	4	4	3.4 GHz	4.5 GHz	8 MB	128 GB	71 W
E-2124	4	4	3.4 GHz	4.5 GHz	8 MB	128 GB	71 W
E-2288G	8	16	3.7 GHz	5 GHz	16 MB	128 GB	95 W
E-2286G	6	12	4 GHz	4.9 GHz	12 MB	128 GB	95 W
E-2278G	8	16	3.4 GHz	5 GHz	16 MB	128 GB	80 W
E-2276G	6	12	3.8 GHz	4.9 GHz	12 MB	128 GB	80 W
E-2274G	4	8	4 GHz	4.9 GHz	8 MB	128 GB	83 W
E-2246G	6	12	3.6 GHz	4.8 GHz	12 MB	128 GB	80 W
E-2244G	4	8	3.8 GHz	4.8 GHz	8 MB	128 GB	71 W
E-2236	6	12	3.4 GHz	4.8 GHz	12 MB	128 GB	80 W
E-2234	4	8	3.6 GHz	4.8 GHz	8 MB	128 GB	71 W
E-2226G	6	6	3.4 GHz	4.7 GHz	12 MB	128 GB	80 W
E-2224G	4	4	3.5 GHz	4.7 GHz	8 MB	128 GB	71 W
E-2224	4	4	3.4 GHz	4.6 GHz	8 MB	128 GB	71 W

7.2.2 Memory Specifications

NE3120M5 supports 3 DIMM slots with a total capacity of up to 96 GB (32 GB per DIMM).

Table 7-3 Memory Specifications

Category	Capacity	Frequency	Data Width	Organization
ECC UDIMM	16 GB	2,666 MHz	x72	2R × 8
ECC UDIMM	16 GB	2,666 MHz	x72	2R × 8
ECC UDIMM	32 GB	2,666 MHz	x72	2R × 8

7.2.3 Storage Specifications

Table 7-4 HDD Specifications

Model	Speed in rpm	Capacity	Max. Qty.
2.5-inch SAS HDD	10,000	2.4 TB/1.8 TB/1.2 TB/600 GB	2
2.5-inch SATA HDD	7,200	2 TB/1 TB	2

Table 7-5 SSD Specifications

Model	Capacity	Max. Qty.
M.2 SSD	240 GB	1
M.2 SSD	480 GB	1
M.2 SSD	960 GB	1
SATA SSD	240 GB	2
SATA SSD	480 GB	2
SATA SSD	960 GB	2
SATA SSD	1.92 TB	2
SATA SSD	3.84 TB	2

7.2.4 SAS Card/RAID Controller Card Specifications

Table 7-6 SAS Card/RAID Controller Card Specifications

Type	Model and Description
SAS Card	SAS3008+IR+PCIe3.0
SAS Card	SAS3008+IT+PCIe3.0
RAID Controller Card	SAS_3008_8_128Mb_12G_3
RAID Controller Card	2R0_9230_N_M.2_PCIe2

7.2.5 NIC Specifications

Table 7-7 NIC Specifications

Type	Model and Description	Speed (Gbps)	Quantity

Type	Model and Description	Speed (Gbps)	Quantity
PCIe	82599ES_10G_LC_PCIex8_DUAL_XR_Slave Card	10	Dual-port SFP+
PCIe	Fortville_X710_10G_LC_PCIex8_2	10	Dual-port SFP+
PCIe	Pyxis_X550_10G_RJ_PCIex8_2_XR	10	Dual electrical port
PCIe	10G_X550T2_RJ_PCIex4_2_XR	10	Dual electrical port
PCIe	25G_MCX4121A-ACAT_LC_PCIex8_D_XR	25	Dual-port QSFP+
PCIe	25G_MCX512A-ACAT_LC_PCIex8_2_XR	25	Dual-port QSFP+

7.2.6 Graphics Card Specifications

Table 7-8 Graphics Card Specifications

Type	Model and Description	Max. Qty.
NVLink	Graphics Card_NV_2G_T400_64b_P	1
NVLink	Graphics Card_NV_4G_T600_128b_P	1

7.2.7 Power Supply Specifications

NE3120M5 supports up to 2 hot-swap 1+1 redundant CRPS PSUs.

Table 7-9 PSU Specifications

Type	Model and Description	Max. Qty.
PSU	PSU_G_M_GW-CRPS550N_550W_1U_P	2

8 Regulatory Information

8.1 Security

8.1.1 General Statement

- When using the equipment, you must strictly comply with local laws and regulations. The safety precautions in this document are only a supplement to local safety regulations.
- The "Danger," "Warning," and "Important" icons in this document are only a supplement to all safety precautions.
- To protect personal safety and the equipment, please strictly comply with the icons on the equipment and all safety precautions in this document.
- Operators of special equipment, such as electricians and electric forklift operators, must possess qualifications recognized by the local government or authority.

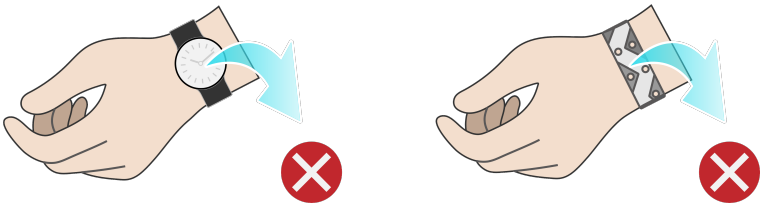
8.1.2 Personal Security

- The entire installation of the equipment must be carried out by a person certified by us or a person authorized by such certified person.
- During the installation, in case of possible personal injury or damage to the equipment, the installation personnel shall stop the operation immediately, report to the project leader and take effective protective measures.
- Do not operate in thunderstorms, including but not limited to handling equipment, installing cabinets and installing power cables.
- Do not exceed the maximum limit for handling by a single person allowed by local laws or regulations. Fully consider the current physical conditions of installation personnel, and do not exceed the weight that installation personnel can bear.
- Installation personnel must wear clean work gloves, work clothes, safety helmet and work shoes, as shown in Figure 8-1.

Figure 8-1 Safety Protection Measures

- Before touching the equipment, put on ESD clothing and ESD gloves or wrist strap, and remove conductive objects (such as metal jewelry and wristwatch) carried on the body to avoid electric shock or burns, as shown in Figure 8-2.

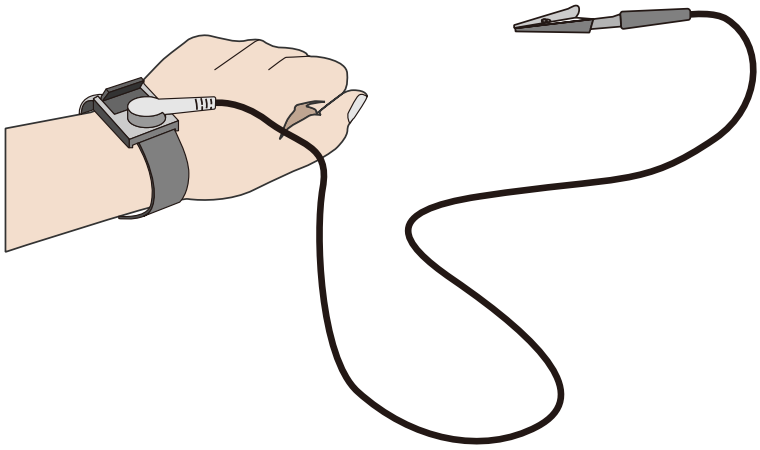
Figure 8-2 Removing Conductive Objects



The method of wearing an ESD wrist strap is shown in Figure 8-3.

1. Put your hand into the ESD wrist strap.
2. Tighten the latch and make sure the ESD wrist strap is in good contact with the skin.
3. Plug the grounding strap of the ESD wrist strap into the jack for the ESD wrist strap in the cabinet (grounded) or chassis (grounded).

Figure 8-3 Wearing an ESD Wrist Strap



- Installation personnel must follow the correct procedures to avoid personal injuries.
- When the installation position of the equipment is above the shoulder of the installation personnel, please use a lifting vehicle and other tools to assist the installation, thus avoiding personnel injury or equipment damage caused by equipment slipping.
- Equipment is powered by high-voltage PSU which may cause fatal danger in case of direct contact or indirect contact through moist objects.
- To ensure personal safety, you must ground the power cord before you connect the power supply to the equipment.
- When installation personnel use ladders, they must be attended by specially-assigned personnel. It is forbidden to work alone in case of a fall.
- When connecting, testing or replacing an optical fiber cable, do not directly look at the optical fiber outlet to prevent the laser beam from burning your eyes.

8.1.3 Equipment Safety

- To protect the equipment and personal safety, use the power cable included.
- The power cable can only be used with the server it was packaged with. Do not use the power cable with other equipment.
- Before touching the equipment, put on ESD clothing and ESD gloves to prevent static electricity from damaging the equipment.
- When moving the equipment, support the bottom edge of the equipment. Do not hold the equipment by the handles of a module mounted to the equipment,

such as the PSU, fan module, drive module, or motherboard. Pay attention to handle the equipment gently. Do not throw it heavily.

- Installation personnel must follow the correct procedures to avoid damage to the equipment.
- To ensure equipment availability, you must connect the power cable to different power distribution units (PDUs) in the active-passive mode.
- To ensure equipment safety, you must ground the power cord before you connect the power supply to the equipment.

8.1.4 Precautions for Moving the Equipment

To prevent accidental damage to the equipment while moving it, contact the original manufacturer for specific precautions before moving the equipment. Note the following precautions before moving the equipment:

- Engage a bona fide logistics company to move the equipment. The transportation process must comply with international transportation standards for electronic equipment, to prevent the equipment from being placed in an inverted position, and subject to impact, moisture, and corrosion, as well as to avoid damage to its packaging or contamination.
- The equipment should be moved in its original manufacturer's packaging.
- If there is no original manufacturer's packaging, heavy and bulky components, such as the chassis and blade-shaped devices, should be packed separately from fragile components, such as the optical modules and PCIe cards.
- During moving, the equipment must be powered off.

8.1.5 Weight Limit for Handling by a Single Person

 CAUTION

The weight limit for handling by a single person is subject to local laws and regulations. The icons on the equipment and descriptions in this document are recommendations.

Table 8-1 lists the weight limits for handling by an adult provided by some organizations, as a reference.

Table 8-1 Weight Limits for Handling by an Adult Provided by Some Organizations

Organization	Weight Limit (kg/lbs)
European Committee for Standardization (CEN)	25/55.13

Organization	Weight Limit (kg/lbs)
International Organization for Standardization (ISO)	25/55.13
National Institute for Occupational Safety and Health (NIOSH)	23/50.72
Health and Safety Executive (HSE)	25/55.13
General Administration of Quality Supervision, Inspection and Quarantine of the People's Republic of China (GAQSIQ)	Male: 15/33.08 Female: 10/22.05

9 Limited Warranty

This limited warranty applies only to the original purchasers of our products who are direct customers or distributors of us (“Customer”).

We warrant all our hardware products, if properly used and installed, to be free from defects in material and workmanship within the warranty period. The term “Hardware Product” is limited to the hardware components and required firmware. The term “Hardware Product” DOES NOT include software applications or programs, and DOES NOT include products or peripherals that are not supplied by us. We may, at our discretion, repair or replace the defective parts. Repair or replacement parts may be new, used, or equivalent to new in performance and reliability. Repair or replacement parts are warranted to be free of defects in material or workmanship for ninety (90) calendar days or for the remainder of the warranty period of the product, whichever is longer.

Service offerings may vary by geographic region. Please contact your representative to identify service levels and needs for your region.

9.1 Warranty Service

Our warranty service includes 24 × 7 remote technical support, RMA (Return Material Authorization) Service, ARMA (Advanced Return Material Authorization) Service, 9 × 5 × NBD (Next Business Day) Onsite Service and 24 × 7 × 4 Onsite Service.

9.1.1 Remote Technical Support

The 24 × 7 remote technical support can be obtained through hotline, e-mail, and Service Portal*[1]. Through hotline and e-mail support, our engineers help customers diagnose the causes of malfunctions and provide solutions. Service Portal*[1] provides access to firmware, customized update files, and related manuals for Hardware Products. Customer may also access the Service Portal*[1] to submit an RMA request or an ARMA request for parts replacement or repair.

Information needed when requesting support:

- Contact name, phone number, e-mail address
- System serial number, part number, model and location (address) of the product needing service
- Detailed description of problem, logs (SELs and blackbox logs, and any other related logs from OS), screenshot of issue, pictures of damaged/faulty parts, etc.

9.1.2 RMA Service

Standard Replacement: When a hardware failure occurs, Customer may submit an RMA request to us via e-mail or Service Portal*[1]. We will review and approve the RMA submission at its own discretion, and provide an RMA number and return information that Customer may use to return the defective part(s) for the RMA service. We will ship out replacement part(s) within one (1) business day after receiving the defective part(s) and cover one-way shipment.

NOTE

- Customer should return the defective parts in proper packaging to our designated service center at their own expense.
- After our further diagnosing and testing, if the defective parts conform to our repair policy, we will ship out the repair or replacement parts at our own expense; otherwise, we will return the defective parts at Customer's expense.
- If Customer needs to designate a logistics company, allocation of the shipping cost to us/Customer will be redefined.

9.1.3 ARMA Service

Advanced Replacement: If a problem with our hardware products cannot be resolved via hotline or e-mail support and replacement part(s) are required, we will ship out replacement part(s) in advance within one (1) business day. Customer should return defective part(s) within five (5) business days after receiving the replacement(s). The shipping cost coverage varies by region. Contact your sales representative for details.

NOTE

- Customer should return the defective parts in proper packaging to our designated service center.
- We will ship out the replacement parts at our own expense after completing remote diagnosis.
- If Customer needs to designate a logistics company, allocation of the shipping cost to us/Customer will be redefined.

9.1.4 9 × 5 × NBD Onsite Service

When we ultimately determine that an onsite service call is required to repair or replace a defect, the call will be scheduled in accordance with the Response Time

Commitment. The response time is measured from the time when the remote troubleshooting is completed and logged to the arrival of a service engineer and parts to Customer location for repair.

NOTE

9 × 5 × NBD: Our service engineer typically arrives at the customer's data center on the next business day. Service engineers are available on local business day from 9:00 am to 6:00 pm local time. Calls received/dispatches after 5:00 pm local time will require an additional day for the service engineer to arrive.

9.1.5 24 × 7 × 4 Onsite Service

When we ultimately determine that an onsite service call is required to repair or replace a defect, the call will be scheduled in accordance with the Response Time Commitment. The response time is measured from the time when the remote troubleshooting is completed and logged to the arrival of a service engineer and parts to Customer location for repair.

NOTE

24 × 7 × 4: Our service engineer typically arrives at the customer site within 4 hours. Service engineers are available at any time, including weekends and local national holidays.

9.2 Our Service SLA

We offer a variety of Service Level Agreements (SLA)*[2] to meet customer requirements.

- RMA Service
- ARMA Service
- 9 × 5 × NBD Onsite Service
- 24 × 7 × 4 Onsite Service

9.3 Warranty Exclusions

We do not guarantee that there will be no interruptions or mistakes during the use of the products. We will not undertake any responsibility for the losses arising from any operation not conducted according to instructions intended for Hardware Products.

The Limited Warranty does not apply to

- expendable or consumable parts, such as, but not limited to, batteries or protective coatings that are designed to diminish over time, unless failure has occurred during DOA period due to a defect in material or workmanship;
- any cosmetic damage, such as, but not limited to, scratches, dents, broken plastics, metal corrosion, or mechanical damage, unless failure has occurred during DOA period due to a defect in material or workmanship;
- damage or defects caused by accident, misuse, abuse, contamination, improper or inadequate maintenance or calibration or other external causes;
- damage or defects caused by operation beyond the parameters as stipulated in the user documentation;
- damage or defects by software, interfacing, parts or supplies not provided by us;
- damage or defects by improper storage, usage, or maintenance;
- damage or defects by virus infection;
- loss or damage in transit which is not arranged by us;
- Hardware Products that have been modified or serviced by non-authorized personnel;
- any damage to or loss of any personal data, programs, or removable storage media;
- the restoration or reinstallation of any data or programs except the software installed by us when the product is manufactured;
- any engineering sample, evaluation unit, or non-mass production product that is not covered under warranty service;
- any solid-state drive (SSD) which has reached its write endurance limit.

In no event will we be liable for any direct loss of use, interruption of business, lost profits, lost data, or indirect, special, incidental or consequential damages of any kind regardless of the form of action, whether in contract, tort (including negligence), strict liability or otherwise, even if we have been advised of the possibility of such damage, and whether or not any remedy provided should fail of its essential purpose.

*1 Service Portal availability is subject to customer type and customer location. Please contact your representative to learn more.

*2 Not all SLA offerings are available at all customer locations. Some SLA offerings may be limited to geolocation and/or customer type. Please contact your representative to learn more.

10 System Management

10.1 Intelligent Management System BMC

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

BMC supports the following key features:

- Intelligent platform management interface (IPMI).
- Redirection of KVM and text console.
- Remote virtual media.
- Redfish protocol.
- Simple network management protocol (SNMP).
- BMC login through web browsers.
- Server log query and fault screen record.
- Power monitoring and dynamic power consumption control.

Table 10-1 BMC Specifications

Item	Description
Management Interfaces	A variety of management interfaces are supported for integration with any standard management system, including: • IPMI • CLI • SNMP • HTTPS • Redfish
Fault Detection	Provides rich fault detection functions.
Alarm Management	• Supports alarm management and various alarm mechanisms such as SNMP Traps (v1/v2c/v3), email

Item	Description
	alerts, and syslog alarms to ensure 24 × 7 device reliability • Provides functions such as server health management and screenshotting
Virtual KVM	Remote maintenance is made possible to eliminate the need for on-site operation in case of system faults
Virtual Media	Local media devices or images, USB devices, and folders are virtualized as media devices of remote servers to simplify operating system installation
Web GUI	A graphical user interface to enable quick setup and queries by simply clicking on the interface
Dual Mirroring Backup for Software	Rebooting from a backup image is allowed in case of a software crash
IPv6	A full IPv6 environment can be built with abundant IP resources
NC-SI	Supports network controller sideband interface (NC-SI), enabling easy access to BMC through service network port
Hardware Monitoring Timer	Full-speed protection is activated for fans when BMC is unresponsive beyond the preset timeout period
Power Control	Supports on/off/cycle/status and provides power supply monitoring
UID Remote Control	Turn on the UID LED of a server manually to easily identify it in the server room
Firmware Upgrade	BMC/BIOS upgrade is available
Storage Information Display	The information of the RAID logical array and drives is displayed

11 Certification

Country/Region	Item	Certification Logo	Compulsory/ Voluntary
China	CCC		Mandatory
	China Environmental Label		Voluntary
	CECP		Voluntary

12 Appendix A

12.1 Operating Temperature and Specification Limits

Table 12-1 Operating Temperature and Specification Limits

Configuration	Typical Configuration	High-end configuration
Maximum operating temperature: 35°C (95°F)	• 5 × 4028 fan • 3 × 16 GB RDIMM/LRDIMM • 1 × CPU with the TDP of up to 95 W • 1 × HHHL PCIe x8 card • 1 × 2.5-inch SAS/SATA drive	• 5 × 4028 fan • 3 × 32 GB RDIMM/LRDIMM • 1 × CPU with the TDP of up to 95 W • 2 × HHHL PCIe x8 card • 2 × 2.5-inch SAS/SATA drive

NOTE

- The maximum operating temperature supported when a single fan fails is 5°C (9°F) below the normal operating temperature.
- Single fan failure may affect system performance.
- It is recommended to deploy your servers at an interval of a 1U space to reduce server noise and improve server energy efficiency.

12.2 Model

Table12-2 Model

Certified Model	Description
NE3120M5	Global

12.3 RAS Features

NE3120M5 supports a variety of RAS (Reliability, Availability, and Serviceability)

features. By configuring these features, NE3120M5 can provide greater reliability, availability, and serviceability.

12.4 Sensor List

Table 12-3 Sensor List

Sensor	Description	Component Location
FAN*N*	Fan speed	Fan*N* *N* indicates the fan module number with a value of 0 - 4
FAN Power	Total power of fans	Fans
PSU*N* Pwr Input	PSU input power	Motherboard *N* indicates the PSU number with a value of 0 - 1
PSU*N* Pwr Output	PSU output power	Motherboard *N* indicates the PSU number with a value of 0 - 1
PSU*N* Curr Input	PSU input current	Motherboard *N* indicates the PSU number with a value of 0 - 1
PSU*N* Curr Output	PSU output current	Motherboard *N* indicates the PSU number with a value of 0 - 1
PSU*N* Volt Input	PSU input voltage	PSU*N* *N* indicates the PSU number with a value of 0 - 1
PSU*N* Volt Output	PSU output voltage	PSU*N* *N* indicates the PSU number with a value of 0 - 1
OEM PSU*N* Temp	PSU temperature	The corresponding power supply for PSU*N* *N* indicates the PSU number with a value of 0 - 1
PSU1 PWR Detect	PSU1 power detection	Motherboard
PSU1 AC Lost	PSU1 input detection	Motherboard
PSU0 PWR Detect	PSU0 power detection	Motherboard
PSU0 AC Lost	PSU0 input detection	Motherboard
DIMMB*N* Temp	Temperature of the corresponding	DIMM*N* *N* indicates the DIMM number with
DIMMA*N* Temp		

Sensor	Description	Component Location
	DIMM for the CPU	a value of 0 - 1
PCIE2 Temp	The maximum temperature of PCIe NIC	Motherboard PCIe NIC
PCIE1 Temp		
PCIE0 Temp		
PCIE3 Temp		
PCIE2_2 Temp		
PCIE2_1 Temp		
Front Panel Temp	Air inlet temperature	Right mounting ear
RAID ROC Temp	RAID controller card temperature	Motherboard PCIe
SASIT ROC Temp	SAS controller card temperature	Motherboard PCIe
PCH Temp	PCH bridge chip temperature	Motherboard
Outlet Temp	Air outlet temperature	Motherboard
Inlet Temp1	Air inlet temperature	Motherboard
Riser Temp	Riser card temperature	Riser
CPU Margin Temp	CPU margin temperature	Motherboard
M.2 Temp	M.2 temperature	M.2 SSD
CPU VR Temp	CPU VR temperature	Motherboard
CPU Temp	CPU kernel temperature	Motherboard
BP Temp	Backplane temperature	Backplane
CPU_CATERR	CPU fatal alarm	Motherboard
CPU1_ThermalTrip	CPU temperature alarm	Motherboard
CPU Missing	CPU missing	Motherboard
CPU1 ProcHot	CPU max. operating temperature	Motherboard
CPU1_ECC1	CPU ECC alarm	Motherboard
CPU VR Volt	CPU VR power	Motherboard
SMI	eSPI enabling monitoring	Motherboard
Memory_Train_ERR	Memory loading alarm	Motherboard
CPU Power	CPU power supply	Motherboard

Sensor	Description	Component Location
System Power	Total input power	Power Supply Unit
Memory Power	Total memory power	Motherboard
Backplane1 HD01	Backplane in use	Backplane
Backplane1 HD02	Backplane in use	Backplane
POST PROGRESS	POST status	Motherboard
BMC_BOOT_UP	Record the BMC startup events	Motherboard
SEL Record	Record the events when SEL is almost full/cleared	Motherboard
ChassisIntrusion	Listen to intrusion actions	Motherboard
Watchdog2	Watchdog	Motherboard
BMC Watchdog	BMC Watchdog	Motherboard
Reset_Button	Reset Button	Motherboard
Power_Button	Power button pressed	Motherboard and power button
Locate_Button	UID button status	Motherboard
+VDDQ_AB	DIMM voltage	Motherboard
+VCORE1	CPU voltage	Motherboard
+VCCST		
+VCCSA		
+VCCIO		
+VCCGT1		
+VBAT	RTC battery voltage	RTC battery in motherboard
+5VSB	USB port voltage	Motherboard
+5V	5 V supplied by motherboard	Motherboard
+3V	3.3 V supplied by motherboard	Motherboard
+12V	12 V supplied by motherboard	Motherboard

13 Appendix B Terms

13.1 A - E

B

Baseboard management controller (BMC)	As the core of IPMI, BMC collects, processes, and stores sensor signals, and monitors the running status of components. BMC enables the chassis management module (MM) to manage various objects by providing such information as hardware status and alarms of the managed objects for the MM.

C

Ejector lever	A component on the panel used to plug in or out a device from a slot.
Ethernet	Ethernet is a baseband LAN specification created by Xerox and jointly developed by Xerox, Intel and DEC. It uses CSMA/CD to transmit data on various cables at 10 Mbps. It is similar to IEEE 802.3 series standards.

13.2 F - J

G

Gigabit Ethernet Ethernet (GE)	It is an extension and enhancement of traditional shared media Ethernet standards. It is compatible with 10 Mbps and 100 Mbps Ethernet and complies with IEEE 802.3z standards.

H

Hot swap	A technology that can improve the reliability and maintainability of the system, which can ensure that the plugging or unplugging of functional modules in or from a running system as specified will not affect the normal operation of the system.

13.3 K - O

K

KVM	Keyboard, video and mouse.

13.4 P - T

P

Panel	An external component (including but not limited to ejector levers, indicators and ports) that can be seen on the front view and rear view of the server. It seals the front and rear of the chassis to ensure optimal ventilation and electromagnetic compatibility (EMC).
Peripheral Component Interconnect express (PCIe, peripheral Component Interconnect express)	A type of PCI computer bus that uses existing PCI programming concepts and communication standards, but is based on a faster serial communication system. PCIe is primarily developed by Intel. It is used only for internal interconnection. A PCI system can be transformed to a PCIe system only by modifying the physical layer instead of software since it is built based on the existing PCI system. The high-speed PCIe can replace almost all existing internal buses, including AGP and PCI.

R

Redundancy	The mechanism of a system to keep functioning normally in the event of a device failure, by automatically having a backup device replace the faulty one.
Redundant array of independent disks (RAID)	A technology that combines multiple independent physical drives into one logical drive group in different ways to provide data redundancy and higher storage performance than a single drive.

S

Server	A special computer that provides various services for clients in the network environment.

System event log (SEL)	Event information stored in the system for fault diagnosis and system recovery.

13.5 U - Z

U

U	A unit of measure to describe the height of cabinet, chassis and sub-rack in IEC 60297-1. 1U = 44.45 mm (1.75 in.).
Ultra Path Interconnect (UPI)	Intel's next generation point-to-point interconnect architecture.

14 Appendix C Abbreviations

14.1 A - E

A

AC	Alternating Current
AES	Advanced Encryption Standard New Instruction Set
ARP	Address Resolution Protocol
AVX	Advanced Vector Extensions

B

BBU	Backup Battery Unit
BIOS	Basic Input Output System
BMC	Baseboard Management Controller

C

CD	Calendar Day
CE	Conformite Europeenne
CIM	Common Information Model
CLI	Command-line Interface

D

DC	Direct Current
DDR4	Double Data Rate 4
DDDC	Double Device Data Correction

DEMT	Dynamic Energy Management Technology
DIMM	Dual In-line Memory Module
DRAM	Dynamic Random-Access Memory
DVD	Digital Video Disc

E

ECC	Error Checking and Correcting
ECMA	European Computer Manufacturer Association
EDB	Execute Disable Bit
ETS	European Telecommunication Standards

14.2 F - J

F

FB-DIMM	Fully Buffered DIMM
FC	Fiber Channel
FCC	Federal Communications Commission
FCoE	Fibre Channel over Ethernet
FTP	File Transfer Protocol

G

GE	Gigabit Ethernet
GPIO	General Purpose Input/Output
GPU	Graphics Processing Unit

H

HA	High Availability

HDD	Hard Disk Drive
HTTP	Hypertext Transfer Protocol
HTTPS	Hypertext Transfer Protocol Secure

I

IC	Industry Canada
ICMP	Internet Control Message Protocol
IDC	Internet Data Center
IEC	International Electrotechnical Commission
IEEE	Institute of Electrical and Electronics Engineers
IGMP	Internet Group Management Protocol
IOPS	Input/Output Operations per Second
IP	Internet Protocol
IPC	Intelligent Power Capability
IPMB	Intelligent Platform Management Bus
IPMI	Intelligent Platform Management Interface

14.3 K - O

K

KVM	Keyboard, Video and Mouse

L

LC	Lucent Connector
LRDIMM	Load-Reduced Dual In-line Memory Module
LED	Light Emitting Diode
LOM	LAN on Motherboard

M

MAC	Media Access Control
MMC	Module Management Controller

N

NBD	Next Business Day
NC-SI	Network Controller Sideband Interface

O

OCP	Open Compute Project

14.4 P - T

P

PCIe	Peripheral Component Interconnect express
PDU	Power Distribution Unit
PHY	Physical Layer
PMBUS	Power Management Bus
POK	Power OK
PWM	Pulse-width Modulation
PXE	Preboot Execution Environment

R

RAID	Redundant Array of Independent Disks

RAS	Reliability, Availability and Serviceability
RDIMM	Registered Dual In-line Memory Module
REACH	Registration Evaluation and Authorization of Chemicals
RJ45	Registered Jack 45 (RJ45)
RoHS	Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment

S

SAS	Serial Attached Small Computer System Interface
SATA	Serial Advanced Technology Attachment
SCM	Supply Chain Management
SDDC	Single Device Data Correction
SERDES	Serializer/Deserializer
SGMII	Serial Gigabit Media Independent Interface
SMI	Serial Management Interface
SMTP	Simple Mail Transfer Protocol
SNMP	Simple Network Management Protocol
SOL	Serial Over LAN
SSD	Solid-State Drive
SSE	Streaming SIMD Extension

T

TACH	Tachometer Signal
TBT	Turbo Boost Technology
TCG	Trusted Computing Group
TCM	Trusted Cryptography Module
TCO	Total Cost of Ownership

TDP	Thermal Design Power
TELNET	Telecommunication Network Protocol
TET	Trusted Execution Technology
TFM	Trans Flash Module
TFTP	Trivial File Transfer Protocol
TOE	TCP Offload Engine
TPM	Trusted Platform Module

14.5 U - Z

U

UDIMM	Unbuffered Dual In-line Memory Module
UEFI	Unified Extensible Firmware Interface
UID	Unit Identification Light
UL	Underwriter Laboratories Inc.
UPI	UltraPath Interconnect
USB	Universal Serial Bus

V

VCCI	Voluntary Control Council for Interference by Information Technology Equipment
VGA	Video Graphics Array
VLAN	Virtual Local Area Network
VRD	Voltage Regulator-Down

W

WEEE	Waste Electrical and Electronic Equipment

WSMAN	Web Service Management