Huawei XH628 V5 Server Node V100R005

Technical White Paper

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About This Document

Purpose

This document describes the XH628 V5 in terms of its appearance, performance parameters, and component compatibility to help users gain a profound understanding of the XH628 V5.

Intended Audience

This document is intended for:

- Huawei technical support engineers
- Technical support engineers from channel partners
- Enterprise administrators

Symbol Conventions

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

Symbol	Description
⚠ DANGER	Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.
⚠ WARNING	Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.
⚠ CAUTION	Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.
NOTICE	Indicates a potentially hazardous situation which, 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.

Symbol	Description
NOTE	Calls attention to important information, best practices and tips.
	NOTE is used to address information not related to personal injury, equipment damage, and environment deterioration.

Change History

Changes between document issues are cumulative. The latest document issue contains all the changes made in earlier issues.

Issue 01 (2018-08-27)

This issue is the first official release.

Contents

1 Overview

The XH628 V5 is a 2-socket server node designed for Huawei X6800 servers. An X6800 server can hold a maximum of four XH628 V5 server nodes in a 4U chassis. It provides high performance and storage density while breaking through power limits. The XH628 V5 is easy to manage and maintain.

The XH628 V5 supports up to twelve 3.5-inch or 2.5-inch high-speed hard disks, 16 double data rate 4 (DDR4) dual in-line memory modules (DIMMs), and four standard PCIe cards. It provides high computing capability, large local storage, and a variety of ports. It applies to data centers and cloud computing, big data, and Internet applications.

The XH628 V5 provides two types of flexible configurations on the front panel:

- Two 2.5-inch SAS/SATA HDDs or SSDs.
- Two standard half-height half-length (HHHL) PCIe cards.

2 Appearance

Appearance

Figure 2-1 shows the appearance of an XH628 V5.

Figure 2-1 XH628 V5

Front Panel

The XH628 V5 supports the following configurations in its front:

- Two 2.5-inch SAS/SATA HDDs or SSDs

  Figure 2-2 shows the front view of an XH628 V5 configured with two 2.5-inch front hard disks.

Figure 2-2 Front view of an XH628 V5 configured with two 2.5-inch front hard disks
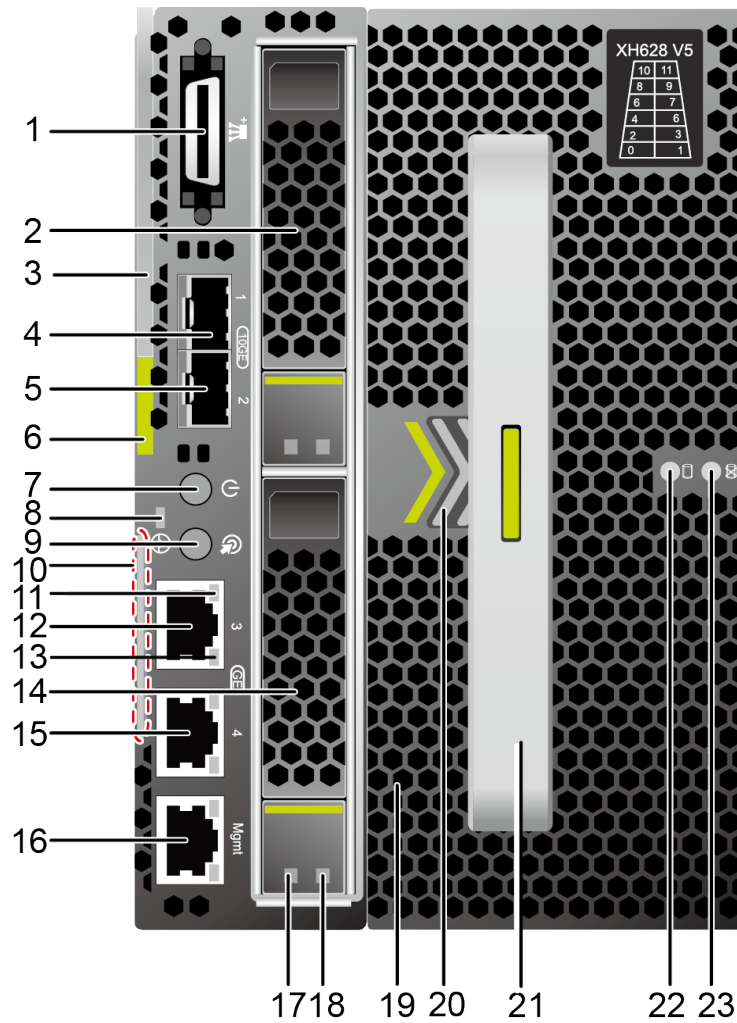
No.	Component	No.	Component
1	Universal connector port (UCP)	2	Front hard disk (HDD20)
3	Ejector lever	4	LOM port 1 (10GE optical port)
5	LOM port 2 (10GE optical port)	6	Ejector release button
7	Power button/indicator	8	Health status indicator
9	UID button/indicator	10	Label plate with an SN label
11	Service network port activity indicator	12	LOM port 3 (GE electrical port)
13	Service network port link indicator	14	Front hard disk (HDD21)

No.	Component	No.	Component
15	LOM port 4 (GE electrical port)	16	iBMC management network port
17	Hard disk activity indicator	18	Hard disk fault indicator
19	Hard disk drawer	20	Hard disk enclosure latch
21	Handle	22	Hard disk enclosure activity indicator
23	Hard disk enclosure fault indicator	-	-

□NOTE

The XH628 V5 supports two GE and two 10GE LOM NICs. The preceding information is for reference only. For details, see the **Huawei ServerCompatibility Checker**.

● Two standard half-height half-length (HHHL) PCIe cards

Figure 2-3 shows the front view of an XH628 V5 configured with two standard HHHL PCIe cards.

Figure 2-3 Front view of an XH628 V5 configured with two standard HHHL PCIe cards
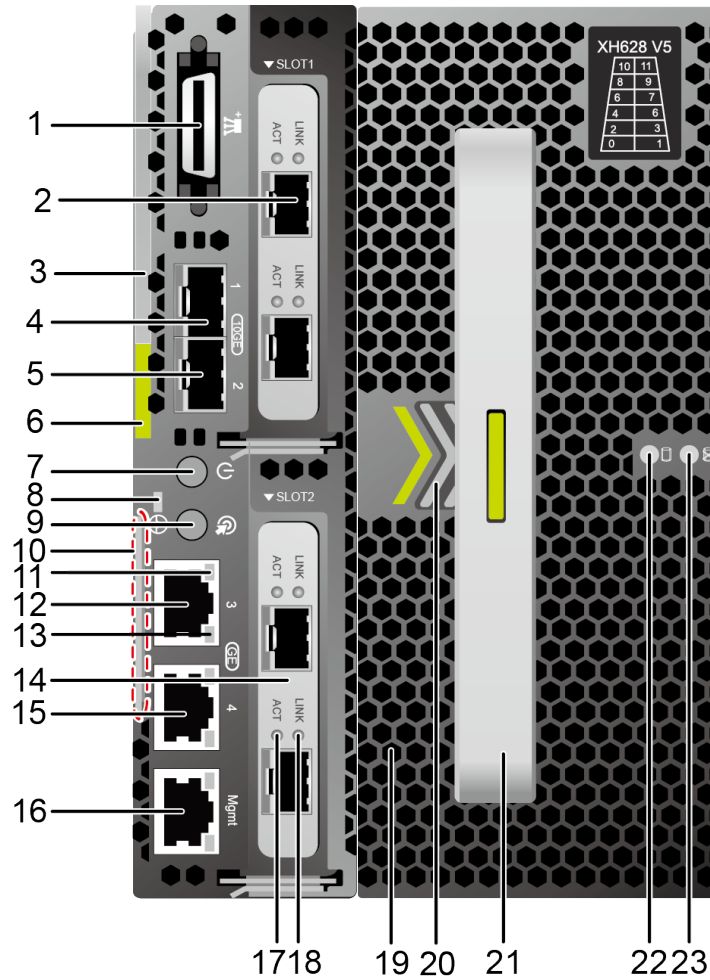
No.	Component	No.	Component
1	Universal connector port (UCP)	2	Front standard PCIe card (PCIe 1)
3	Ejector lever	4	LOM port 1 (10GE optical port)
5	LOM port 2 (10GE optical port)	6	Ejector release button
7	Power button/indicator	8	Health status indicator
9	UID button/indicator	10	Label plate with an SN label
11	Management network port activity indicator	12	LOM port 3 (GE electrical port)
13	Management network port link indicator	14	Front standard PCIe card (PCIe 2)
15	LOM port 4 (GE electrical port)	16	iBMC management network port
17	Network port activity indicator	18	Network port link indicator

No.	Component	No.	Component
19	Hard disk drawer	20	Hard disk enclosure latch
21	Handle	22	Hard disk enclosure activity indicator
23	Hard disk enclosure fault indicator	-	-

Installation Position

The XH628 V5 nodes are installed in the slots at the rear of the X6800 chassis. A 4U chassis can house a maximum of four XH628 V5 nodes.

Figure 2-4 shows the XH628 V5 nodes installed in an X6800 chassis.

Figure 2-4 Installation positions
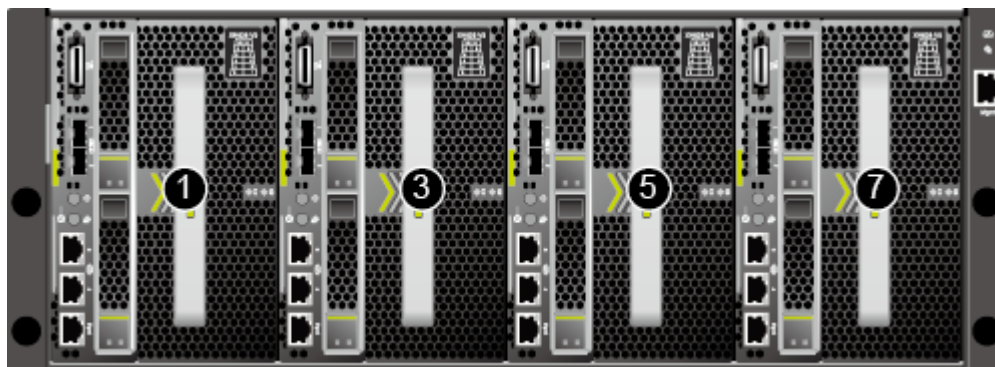
NOTE

● The X6800 provides four slots numbered 1, 3, 5, 7 from left to right.
● The rear slots for PCIe cards and RAID controller cards are connected to CPU 2.

3 Ports

Table 3-1 describes the external ports on the XH628 V5.

Table 3-1 Ports

| Port	Type	Quantity	Description
Universal connector port (UCP)	-	1	The UCP port on the front panel connects to a multi-port cable that provides one video graphics array (VGA) port, three USB 2.0 ports (compatible with USB 1.1), and one RJ45 serial port.
Management network port	RJ45	1	The 1000 Mbit/s Ethernet port on the front panel is used to manage the XH628 V5. **NOTE** The intelligent baseboard management controller (iBMC) has two types of network ports: management network port and shared network port. A network port on a standard PCIe card or a service network port for which the Network Controller Sideband Interface (NC-SI) function is enabled can function as a shared network port.
LOM network port	–	4	The LOM network cad on the fornt panel supports two GE and two 10GE LOM NICs. **NOTE** The preceding information is for reference only. For details, see the **Huawei Server Compatibility Checker**.

Figure 3-1 Multi-port cable
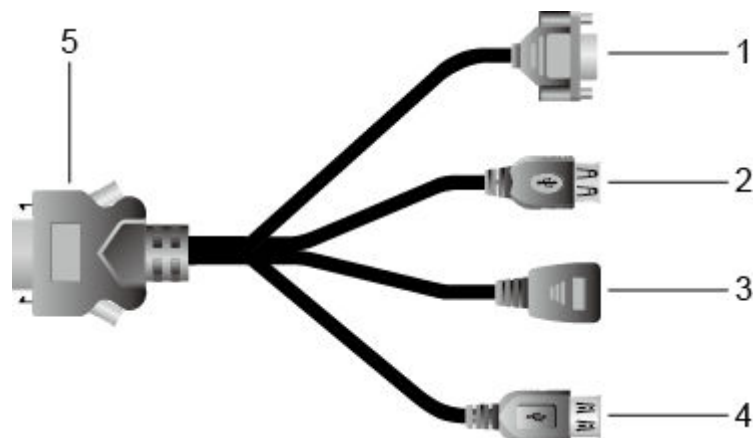
Table 3-2 Ports

No.	Connector	No.	Connector
1	VGA connector	2	Two USB connectors
3	Serial connector	4	One USB connector
5	Multi-port connector	–	–

4 Indicators

You can observe the indicators to determine the status of the XH628 V5.

Table 4-1 describes the indicators on the XH628 V5 panel.

Table 4-1 Indicators

Silk Screen	Meaning	Color	State Description
⏻	Power button/indicator	Yellow and green	- Off: The XH628 V5 is not powered on. - Blinking yellow: The iBMC is being started. - Steady yellow: The XH628 V5 is to be powered on. - Steady green: The XH628 V5 is properly powered on. **NOTE** You can press and hold down this power button for 6 seconds to power off the server.
HLY	Health status indicator	Red and green	- Off: The XH628 V5 is not powered on. - Steady green: The XH628 V5 is operating properly. - Blinking red at 1 Hz: A major alarm is generated. - Blinking red at 5 Hz: A critical alarm is generated.

Silk Screen	Meaning	Color	State Description
(UID icon)	UID button/ indicator	Blue	The UID button/indicator helps identify and locate a server node in a chassis. You can turn on or off the UID indicator by pressing the UID button or by using the iBMC CLI or WebUI. UID indicator ● Steady blue: The UID indicator is turned on. ● Off: The UID indicator is not turned on. ● Blinking: The XH628 V5 is located. UID button ● You can press this button to turn on or off the UID indicator. ● You can press and hold down this button for 4 to 6 seconds to reset the iBMC.
-	Active indicator for a front hard disk	Green	● Off: The hard disk cannot be detected or is faulty. ● Blinking green: Data is being read from or written to the hard disk, or synchronized between hard disks. ● Steady green: The hard disk is inactive.
-	Fault indicator for a front hard disk	Yellow	● Off: The hard disk is operating properly. ● Blinking yellow: The hard disk is being located, or the RAID is being reconstructed. ● Steady yellow: The hard drive is faulty, or a member drive in the RAID array is faulty.
Network port link indicator	Connectivity status indicator	Green	● Off: The network port is not connected. ● Steady green: The network port is properly connected.
Network port activity indicator	Data transmission indicator	Orange	● Off: The network port is idle. ● Blinking orange: Data is being transmitted over the network port.
(drawer icon)	Hard disk drawer health indicator	Green	● Off: A hard disk in the hard disk drawer is faulty. ● Steady green: All hard disks in the hard disk drawer are operating properly.
(drawer fault icon)	Hard disk drawer fault indicator	Yellow	● Off: All the hard disks in the hard disk drawer are operating properly or a hard disk in the RAID group cannot be detected. ● Steady yellow: The hard disks in the drawer cannot be detected or the hard disk in the hard disk drawer is faulty.

5 Physical Structure

Figure 5-1 shows the XH628 V5 components.

Figure 5-1 XH628 V5 components
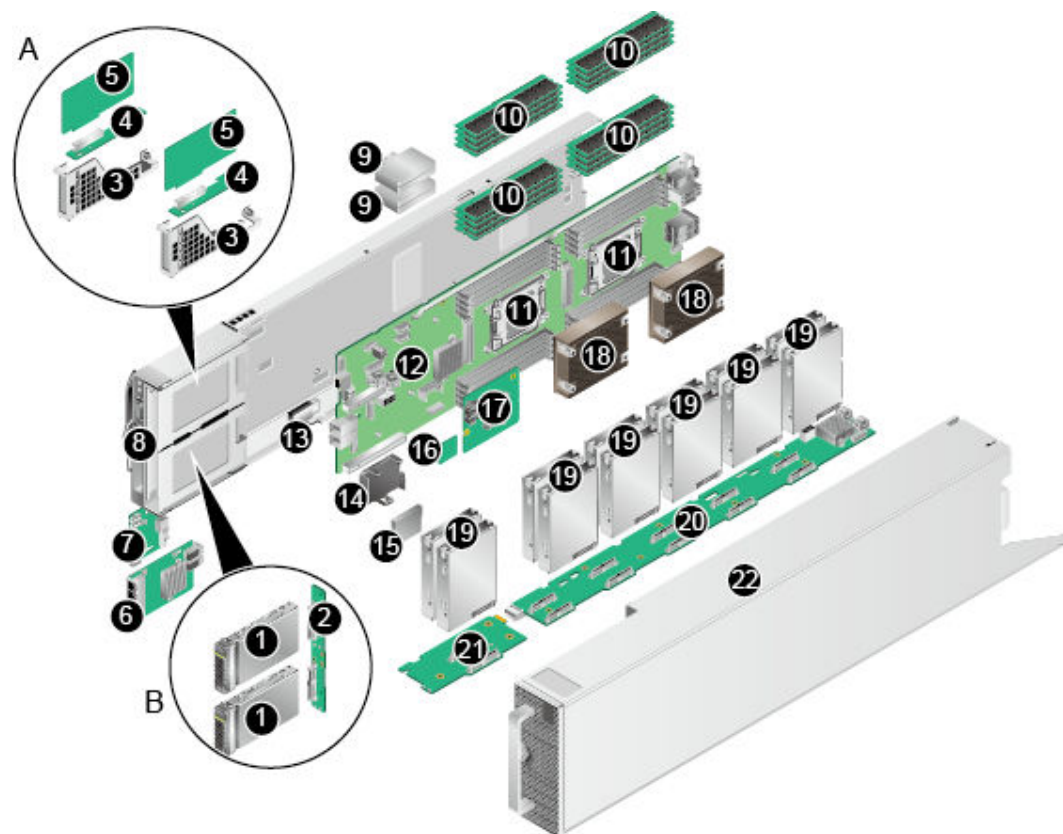
No.	Item	No.	Item
1	Front hard disk	2	Front hard disk backplane
3	PCIe card bracket	4	Riser card
5	Front HHHL PCIe card	6	Mainboard enclosure

No.	Item	No.	Item
7	DIMM	8	RAID controller card
9	Mainboard	10	CPU
11	Heat sink	12	Vertical adapter board
13	Horizontal adapter board	14	TPM
15	Hard disk	16	Ten-bay disk backplane for the hard disk drawer
17	Two-bay disk backplane for the hard disk drawer	18	Hard disk drawer enclosure

Table 5-1 describes the XH628 V5 components.

Table 5-1 XH628 V5 components

No.	Item	Description
Configuration A: two front 2.5-inch hard disks		
1	Front hard disk	Two 2.5-inch SAS/SATA HDDs or SSDs. **NOTE** Front 2.5-inch hard disks can be connected through PCH or support RAID cards.
2	Front hard disk backplane	Supports two 2.5-inch SAS/SATA HDDs or SSDs.
Configuration B: two front HHHL PCIe cards		
3	PCIe card bracket	Used to hold the riser card.
4	Riser card	Holds a PCIe card
5	Front HHHL PCIe card	Two HHHL standard PCIe cards.
Common components in configurations A and B		
6	Mainboard enclosure	Holds and protects the server node mainboard.

No.	Item	Description
7	DIMM	- Up to 16 DDR4 DIMM slots (8 DDR4 DIMM slots per CPU) for installing either RDIMMs or LRDIMMs (mixed use of them is not supported). - Maximum memory speed: 2666 MT/s. - RDIMMs: 16 x 32 GB RDIMMs for two CPUs, with a maximum memory capacity of 512 GB. - LRDIMMs: 16 x 128 GB LRDIMMs for two CPUs, with a maximum memory capacity of 2.0 TB. - Memory protection technologies: error checking and correcting (ECC), memory mirroring, Single Device Data Correction (SDDC), and memory sparing. - DDR4 speed: 2400 MT/s and 2666 MT/s. **NOTE** Only the same type of DIMMs with the same specifications (capacity, bit width, rank, and height) can be installed in a server node. To obtain information about the DIMMs, use the **Huawei Server Compatibility Checker**.
8	RAID controller card	The XH628 V5 supports RAID controller cards of the following models: - SR150: - Uses the LSI SAS3408 chip. - Supports RAID 0, 1, 1E, and 10. - Does not support power-off protection. - Avago SAS3004iMR: - Supports RAID 0 and 1. - Does not support power-off protection. - SR450: - Uses the LSI SAS3508 chip. - Provides a 2 GB or 4 GB cache. - Supports RAID 0, 1, 10, 5, 50, 6, and 60. - Provides a supercapacitor to protect cache data from power failures. - Supports a maximum of 14 hard disks. These RAID controller cards support RAID state migration, RAID configuration memory, self-diagnosis, and web-based remote configuration. **NOTE** The information here is for reference only. To obtain more information, use the **Huawei Server Compatibility Checker**.

No.	Item	Description

9	Mainboard	Uses the Grantley platform and integrates components, including the BIOS chip, Platform Controller Hub (PCH) chip, expansion slots, processor sockets, DIMM slots, and slots for installing other components.
		● Integrates the Intel® C622 PCH chip.
		● Integrates the SM750 graphics card chip, providing a memory capacity of 32 MB and supporting a maximum resolution of 1920 x 1200 at 60 Hz with 16 million colors.
		  NOTE
		  The maximum resolution 1920 x 1200 is supported only when a compatible graphics card driver is installed. Otherwise, only the default resolution supported by the OS is available.
		● Integrates two PCIe3.0 x16 slots.

10	CPU	Supports one or two Intel® Xeon® Scalable 3100, 4100, 5100, 6100, or 8100 (some models) series processors. ● A maximum of 28 cores (2.5 GHz) ● Maximum frequency: 3.6 GHz (four cores) ● Two UPI links, with the maximum transmission speed of each link at 10.4 GT/s ● Maximum L3 cache capacity per core: 1.375 MB ● Maximum thermal design power (TDP): 165 W
11	Heat sink	Dissipates heat from the processors.
12	Vertical adapter board	Used to connect signals between the mainboard and horizontal adapter board.
13	Horizontal adapter board	Connects signals between the mainboard and system backplane.
14	TPM	Complies with the Trusted Computing Group (TCG) standards and is used for device identification, authentication, and encryption.

15	Hard disk	● The hard disk drawer supports a maximum of twelve 2.5- or 3.5-inch SAS/SATA HDDs or SSDs.
		● The XH628 V5 supports RAID 0, 1, 10, 1E, 5, 50, 6, and 60. It provides a supercapacitor to protect cache data from power failures, and supports RAID state migration, RAID configuration memory, self-diagnosis, and web-based configuration.
		  NOTE
		  The maximum storage capacity of the XH628 V5 varies depending on the maximum capacity of a single hard disk.

16	Ten-bay disk backplane for the hard disk drawer	Supports ten 2.5-inch or 3.5-inch SAS/SATA HDDs or SSDs.

No.	Item	Description
17	Two-bay disk backplane for the hard disk drawer	Supports two 2.5-inch or 3.5-inch SAS/SATA HDDs or SSDs.
18	Hard disk drawer enclosure	Protects the hard disks in the XH628 V5 when the XH628 V5 is placed independently.

6 Mainboard Layout

Figure 6-1 shows the layout of the XH628 V5 mainboard.

Figure 6-1 Mainboard layout
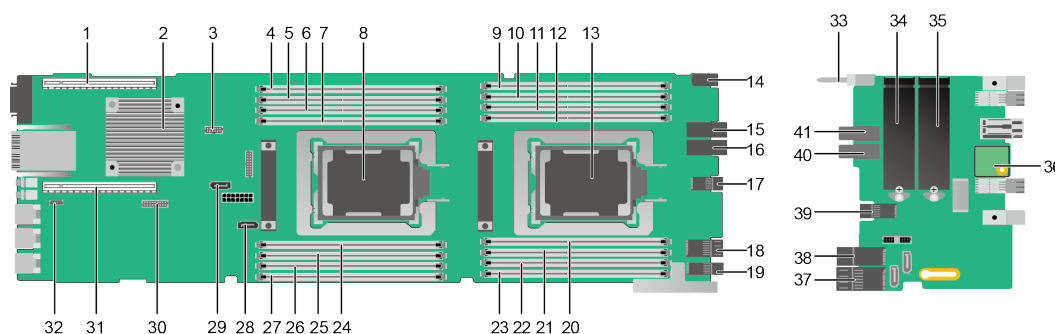
No.	Component	No.	Component
1	PCIe card slot 1	2	PCH
3	2.5-inch disk backplane connector	4	DIMM 050 connector
5	DIMM 040 connector	6	DIMM 030 connector
7	DIMM 031 connector	8	CPU 1
9	DIMM 150 connector	10	DIMM 140 connector
11	DIMM 130 connector	12	DIMM 131 connector
13	CPU 2	14	Guide sleeve
15	Power connector	16	Power connector
17	Signal connector	18	Signal connector
19	Signal connector	20	DIMM 101 connector
21	DIMM 100 connector	22	DIMM 110 connector

No.	Component	No.	Component
23	DIMM 120 connector	24	DIMM 001 connector
25	DIMM 000 connector	26	DIMM 010 connector
27	DIMM 020 connector	28	M.2 SSD connector port 0
29	M.2 SSD connector port 1	30	TPM signal connector
31	PCIe card slot 2	32	SoftRAID key connector
33	Guide pin	34	M.2 SATA SSD card
35	M.2 SATA SSD card	36	TPM card
37	Signal connector	38	Signal connector
39	Signal connector	40	Power connector
41	Power connector	-	-

7 Logical Structure

Figure 7-1 shows the logical view of the XH628 V5.

Figure 7-1 Logical view of the XH628 V5
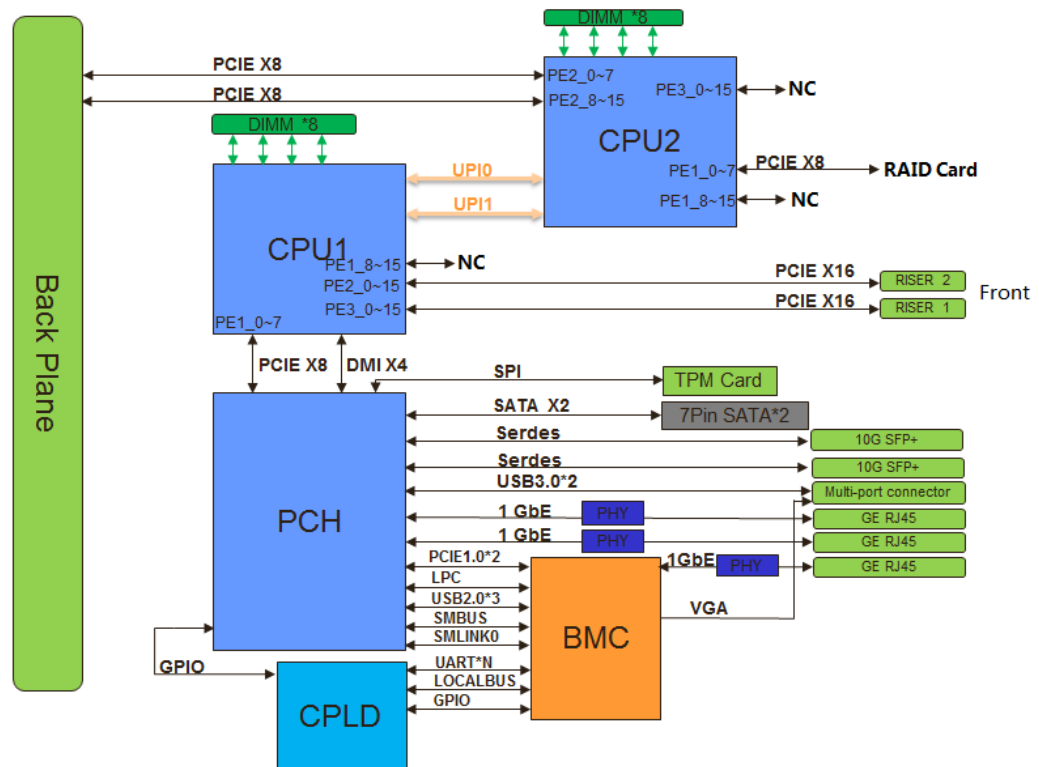
- The XH321 V5 supports Intel® Xeon® Scalable CPUs (3100, 4100, 5100, 6100, and some models of 8100) and 16 DIMMs.

- The CPUs interconnect with each other through two Ultra Path Interconnect (UPI) buses at speeds of up to 10.4 GT/s.

- CPUs interconnect with the platform controller hub (PCH) over the Direct Media Interface Generation 3 (DMI3) bus with a transmission rate of 8.5 GT/s.

- CPUs interconnect with mezzanine cards and standard cards through PCIe slots to provide service ports.

- The BMC chipset interconnects with the PCH through PCIe slots and LPC buses to provide a management port.

- A RAID controller card is combined with a 12-disk backplane to form a storage module, which interconnects with CPUs over PCIe slots.

- The BMC integrates video card, video compression, and virtual media functions and provides device management functions, such as controlling server node power, querying server node slot information, monitoring power supply status, and accessing server nodes through KVM over IP.

8 Technical Specifications

Table 8-1 provides the technical specifications of the XH628 V5.

Table 8-1 Technical specifications

Category	Item	Specifications
Mechanical specifications	Dimensions (H x W x D)	166 mm x 109 mm x 745 mm (6.54 in. x 4.29 in. x 29.33)
	Weight	Net weight: 21.5 kg (47.4 lb)

Environmental specifications	Temperature	● Operating temperature: 5°C to 40°C (41°F to 104°F)
		● Storage temperature: –40°C to +65°C (–40°F to +149°F)
		● Long-term storage temperature: 21°C to 27°C (69.8°F to 80.6°F)
		NOTE
		  ● The maximum temperature of the supercapacitor is 33°C (CPU power = 165 W), 35°C (150W ≤ CPU power < 165 W), and 40°C (CPU power < 150 W).
		  ● The maximum operating temperature of the server is 35°C (95°F) if 6144, 6146, 8176, 8170, or 6150 CPUs are used.
		  ● If one fan fails, the maximum operating temperature of the server is 5°C (9°F) lower than that in normal cases.
		  ● The XH628 V5 supports mixed configuration with only the XH628 V3 nodes in one chassis. In this case, the supported operating environment temperature is the same as that of the XH628 V5.

	Temperature change rate	20°C/h (36°F/h)
	Humidity	● Operating humidity: 10% RH to 85% RH (non-condensing) ● Storage humidity: 5% RH to 95% RH (non-condensing) ● Long-term storage humidity: 30% RH to 69% RH (non-condensing)

Category	Item	Specifications

	Altitude	● Operating altitude: ≤ 3000 m (9842.4 ft)
		● Storage altitude: ≤ 12,000 m (39369.6 ft)
		    NOTE
		    When the altitude is higher than 900 m (2952.72 ft), the operating temperature decreases by 1°C (1.8°F) for every altitude increase of 300 m (984.24 ft).
		● At an altitude of over 3000 m (9842.4 ft), only Titanium PSUs can be used.
		● HDDs are not supported at an altitude of over 3000 m (9842.4 ft).

	Corrosive air pollutant	● Corrosion rate of the copper test piece: < 300 Å/ month (in compliance with the ANSI/ISA-71.04-2013 gaseous corrosion level G1). ● Corrosion rate of the silver test piece: < 200 Å/ month.
	Particulate pollutant	● The ISO14664-1 Class 8 requirements are met.You are advised to ask a professional organization to monitor particulate pollutants in the equipment room. ● There is no explosive, conductive, magnetic, or corrosive dust in the equipment room.
Input power specifications	Rated input voltage	12 V DC
Power consumption	Power consumption parameter	Power consumption of typical configuration ≤ 350 W The power consumption changes depending on the server configuration. For details, see **Huawei Server Power Calculator**.
Reliability	Mean time to repair (MTTR)	149 seconds
	Mean time between failures (MTBF)	210941 hours

9 Features

Balanced Performance

The XH628 V5 provides the following performance features:

- Intel® Xeon® 3100, 4100, 5100, 6100, and 8100 (some models) series CPUs ensure high processing performance by providing:
  - Up to 28 cores
  - 3.6 GHz frequency
  - 38.5 MB L3 cache
  - Two 10.4 GT/s UPI links between CPUs
- Each XH628 V5 supports up to two processors, 44 cores, and 88 threads, which maximizes the concurrent execution of multithreaded applications.
- L2 cache is supported. Each core occupies 1 MB L2 cache space and up to 1.375 MB L3 cache space.
- The XH628 V5 supports 1.2 V DDR4 DIMMs, which consume 20% power less than 1.35 V DDR3L DIMMs.
- The XH628 V5 supports up to sixteen 2666 MT/s DDR4 LRDIMMs to provide a maximum of 2048 GB memory capacity. The maximum theoretical memory bandwidth is 249.9375 GB/s, ensuring high speed. The LRDIMMs adopt error checking and correcting (ECC) technology, ensuring high availability.
- Intel Turbo Boost Technology 2.0 allows processor cores to run faster than thermal design power (TDP) configuration specified frequency if they are operating below power, current, and temperature specification limits.
- Intel hyper-threading technology enables each processor core to run up to two threads, improving parallel computing capacity.
- The hardware-assisted Intel Virtualization Technology (Intel VT) allows OS vendors to better use hardware to address virtualized workloads.
- Intel® Advanced Vector Extensions 2.0 (AVX 2.0 and AVX-512) improves floating-point computing performance for compute-intensive applications.
- The Intel® Xeon® Scalable CPUs incorporate the PCIe 3.0 controller using Intel integrated I/O. This remarkably shortens I/O latency and enhances overall system performance.

- TwelveSAS or SATA HHDs, or SSDs are provided. Compared with HHDs, SSDs improve I/O performance greatly and An SSD supports approximately 100 times more I/O operations per second (IOPS) than a typical HDD.

- The XH628 V5 supports four HHHL PCIe SSD ES3000s, which are used for low-latency high-bandwidth concurrent data access.

📖**NOTE**

The DIMMs are for reference only. The specific DIMMs used depend on the compatibility list.

Availability and Serviceability

The XH628 V5 provides the following features to improve availability and serviceability:

- The XH628 V5 uses carrier-class components and follows the engineering process to dramatically improve system reliability.

- The XH628 V5 provides twelve 2.5" or 3.5" hot-swappable hard disks. It supports RAID 0, 1, 1E, 5, 6, 10, 50, and 60, depending on the RAID controller card used. It provides a RAID cache. A supercapacitor is used to protect RAID cache data from power failures.

- The UID and HLY indicators on the front panel, and iBMC web user interface (WebUI) help technical support personnel promptly obtain the status of key components and locate failed or failing components. This simplifies maintenance, accelerates troubleshooting, and helps improve system availability.

- SSDs offer better reliability than HDDs, prolonging system uptime.

- The Huawei iBMC monitors system parameters in real time, triggers alarms, and performs recovery actions in case of failures. This minimizes system downtime.

- For XH628 V5 nodes used in China, Huawei provides a three-year warranty for parts replacement and limited onsite repair, as well as a 9-hour-a-day, 5-day-a-week Next Business Day (NBD) support program with optional service upgrades.

- For XH628 V5 nodes used outside China, Huawei provides a three-year warranty for parts replacement and repair, as well as a 9-hour-a-day, 5-day-a-week NBD support program. Huawei delivers the repaired or new parts within 45 calendar days after receiving the defective parts.

Manageability and Security

The XH628 V5 provides the following features to ensure manageability and security:

- The built-in management module iBMC monitors server operating status and provides remote management.

- The integrated industry-standard Unified Extensible Firmware Interface (UEFI) increases setup, configuration, and update efficiency, and simplifies fault handling.

- The optional TPM 2.0 provides advanced encryption functions, including digital signatures and remote authentication.

- The Intel Advanced Encryption Standard–New Instruction (AES NI) supports faster and stronger encryption.

- The Intel Execute Disable Bit (EDB) function prevents certain types of malicious buffer overflow attacks when working with a supported OS.

- The network controller sideband interface (NC-SI) feature supports multiplexing of management and service network ports, maximizing return on investment (ROI).

- NC-SI can be enabled or disabled using iBMC or the basic input/output system (BIOS). NC-SI is disabled by default.

□NOTE

The service network port supporting NC-SI has the following features:

- The service network port can be bound to the LOM.
- The service network port allows you to enable, disable, and configure a virtual local area network (VLAN) ID. A VLAN ID is disabled by default. The default VLAN ID is **0**.
- The service network port supports IPv4 and IPv6 addresses. You can set an IP address, subnet mask, default gateway, and IPv6 address prefix length for the service network port.

Energy Efficiency

The XH628 V5 provides the following features to ensure high energy efficiency.

- The Intel® Xeon® 3100, 4100, 5100, 6100, and 8100 (some models) series CPUs provide higher performance than the previous-generation CPUs while supporting the same TDP.
- The XH628 V5 supports 80 Plus Platinum PSUs with different power levels. The PSUs provide 96% power efficiency at 50% loads.
- The efficient voltage regulator down (VRD) PSUs reduce the loss in DC/DC power conversion.
- Intel Intelligent Power Capability allows a single processor to be powered on or off based on site requirements.
- Low-voltage Intel® Xeon processors consume less energy and apply to the data centers and telecommunication environments that have power and thermal limitations.
- Hard disks can be powered on at different times to reduce startup power consumption.
- 1.2 V DDR4 registered DIMMs (RDIMMs) consume 20% less power than 1.5 V DDR3 RDIMMs.
- SSDs consume 80% less power than HDDs.
- The XH628 V5 supports intelligent processor frequency adjustment, decreasing power consumption.
- Hexagonal ventilation holes on the front panel enable higher ventilation density than round holes, increasing system cooling efficiency.

10 Component Compatibility

CPU

The XH628 V5 supports up to two Intel® Xeon® 3100, 4100, 5100, 6100, and 8100 (some models) series CPUs.

If two CPUs are required, they must be of the same model.

Figure 10-1 CPU installation positions
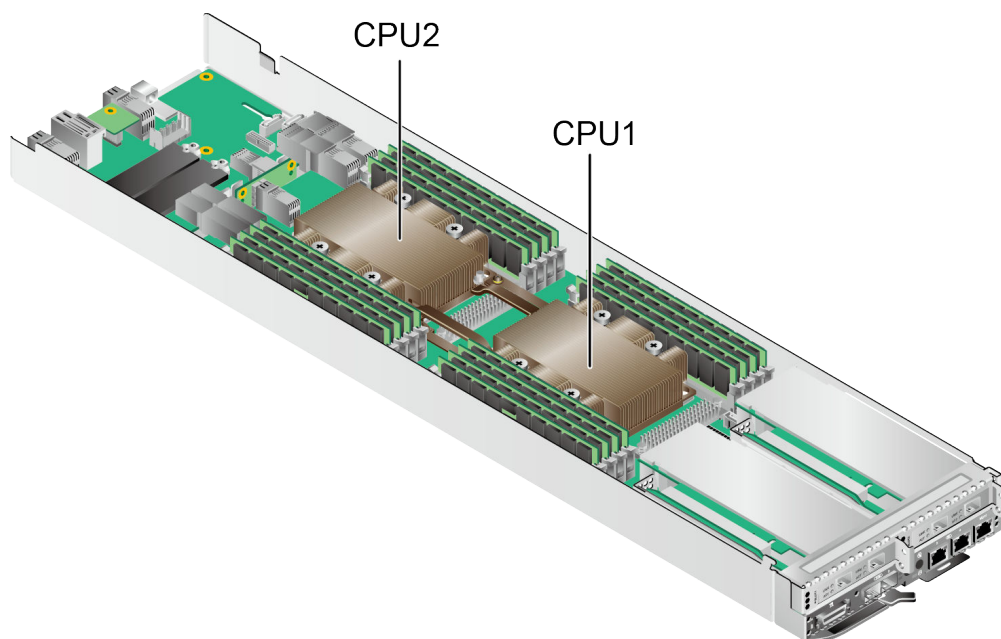
DIMM

DIMM Configuration Rules

The XH628 V5 supports a maximum of 16 DIMMs when two CPUs are installed. Each CPU has six memory channels.

Observe the following rules when configuring DIMMs:

1. The XH628 V5 does not support mixed use of different types of DIMMs. Use either RDIMMs or LRDIMMs.

2. Each channel supports a maximum of eight ranks.

NOTE

A channel supports more than eight ranks for LRDIMMs. The number of ranks for LDIMMs must be calculated based on the number of ranks presented to external interfaces. All the DIMMs in the compatibility list support full memory channel configuration.

3. All DIMMs on a server operate at the same speed, whichever of the following is the lowest:

   – Memory speed supported by a specified CPU

   – Memory speed supported by a specified DIMM

   – Maximum operating speed of specific DIMMs. See the Maximum Operating Speed in **Table 10-1**.

Table 10-1 DIMM configurations and operating frequency mappings

Parameter	RDIMM		LRDIMM	
Rank	1DPC	2DPC	1DPC	2DPC
Operating voltage (V)	1.2	1.2	1.2	1.2
Maximum operating speed (MT/s)	2666	2666	2666	2666

DIMM Installation Rules

● The XH628 V5 supports DIMMs of 8 GB, 16 GB, 32 GB, 64 GB and 128 GB. When the XH628 V5 is fully configured with DIMMs, the maximum memory capacity is 2 TB.

● Each XH628 V5 provides 16 DDR4 DIMM slots and twelve memory channels. Each CPU integrates six memory channels. The six memory channels for CPU 1 are 1A, 1B, 1C, 1D, 1E, and 1F, and those for CPU 2 are 2A, 2B, 2C, 2D, 2E, and 2F. **Table 10-2** lists memory channels for each CPU. **Figure 10-2** shows the positions for installing DIMMs.

NOTE

The DIMMs are for reference only. The specific DIMMs used depend on the compatibility list.

Table 10-2 Memory channels for CPUs

CPU Socket	Channel	Channel Structure
CPU 1	1A	DIMM000(A)
		DIMM001(G)
	1B	DIMM010(B)
	1C	DIMM020(C)

CPU Socket	Channel	Channel Structure
	1D	DIMM030(D)
		DIMM031(H)
	1E	DIMM040(E)
	1F	DIMM050(F)
CPU 2	2A	DIMM100(A)
		DIMM101(G)
	2B	DIMM110(B)
	2C	DIMM120(C)
	2D	DIMM130(D)
		DIMM131(H)
	2E	DIMM140(E)
	2F	DIMM150(F)

Figure 10-2 DIMM installation positions
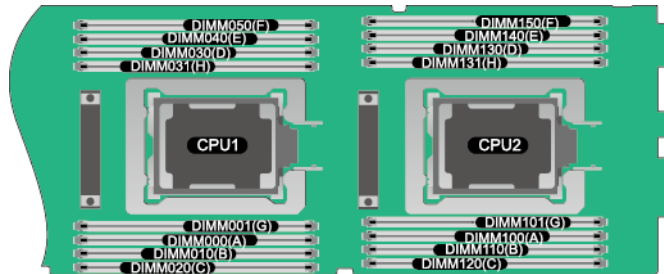
DIMMs must be installed in the slots in sequence, as shown in the following table.

Figure 10-3 DIMM installation sequence (one CPU)

CPU	Channel	DIMM Slot	Number of DIMMs (✓: recommended ○: not recommended)							
			✓	✓	○	✓	○	✓	○	✓
			1	2	3	4	5	6	7	8
CPU1	A	DIMM000(A)	●	●	●	●	●	●	●	●
		DIMM001(G)							●	●
	B	DIMM010(B)		●	●	●	●	●	●	●
	C	DIMM020(C)			●		●	●	●	●
	D	DIMM030(D)				●	●	●	●	●
		DIMM031(H)								●
	E	DIMM040(E)				●	●	●	●	●
	F	DIMM050(F)						●	●	●

Figure 10-4 DIMM installation sequence (two CPUs)

CPU	Channel	DIMM Slot	Number of DIMMs (✓: recommended ○: not recommended)															
			✓	✓	○	✓	○	✓	○	✓	○	✓	○	✓	○	✓	○	✓
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
CPU1	A	DIMM000(A)	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
		DIMM001(G)													●	●	●	●
	B	DIMM010(B)			●	●	●	●	●	●	●	●	●	●	●	●	●	●
	C	DIMM020(C)				●	●			●	●	●	●	●	●	●	●	●
	D	DIMM030(D)						●	●	●	●	●	●	●	●	●	●	●
		DIMM031(H)															●	●
	E	DIMM040(E)						●	●	●	●	●	●	●	●	●	●	●
	F	DIMM050(F)										●	●	●	●	●	●	●
CPU2	A	DIMM100(A)		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
		DIMM101(G)													●	●	●	●
	B	DIMM110(B)				●	●	●	●	●	●	●	●	●	●	●	●	●
	C	DIMM120(C)						●	●			●	●	●	●	●	●	●
	D	DIMM130(D)							●	●	●	●	●	●	●	●	●	●
		DIMM131(H)																●
	E	DIMM140(E)							●	●	●	●	●	●	●	●	●	●
	F	DIMM150(F)											●	●	●	●	●	●

Memory Protection Technology

The XH628 V5 employs the following memory protection technologies:

- ECC
- SDDC
- Mirror
- Sparing
- Lockstep
- Patrol Scrambling

Storage

The XH628 V5 supports a maximum of 14 SAS/SATA HDDs or SSDs, and each disk is hot-swappable.

- Two 2.5-inch disks at the front.
- Twelve 2.5-inch or 3.5-inch disks in the disk drawer.

NOTE

The maximum I/O bandwidth of hard disks managed through the PCH is 1.9 GB/s due to the bandwidth limit of the SATA controller integrated in the southbridge.

Table 10-3 lists the performance of different RAID levels, the minimum number of disks required, and disk utilization.

Table 10-3 RAID level comparison

RAID Level	Reliability	Read Performance	Write Performance	Minimum Hard Disks	Hard Disk Usage
RAID 0	Low	High	High	1	100%
RAID 1	High	Low	Low	2	1/N

RAID Level	Reliability	Read Performance	Write Performance	Minimum Hard Disks	Hard Disk Usage
RAID 5	Better than medium	High	Medium	3	(N - 1)/N
RAID 6	Better than medium	High	Medium	4	(N - 2)/N
RAID 10	High	Medium	Medium	4	M/N
RAID 50	High	High	Better than medium	6	(N - M)/N
RAID 60	High	High	Better than medium	8	(N - M x 2)/N
N indicates the number of member hard disks in a RAID array. M indicates the number of subgroups of a RAID array.					

Table 10-4 Technical specifications of PCIe slots

Item	Specifications	Remarks
Dimensions (H x L)	68.90 mm x 167.65 mm (2.71 in. x 6.60 in.)	Install a half-height half-length PCIe card.
Maximum power consumption	25 W	Single slot

11 Management

iBMC is a Huawei proprietary intelligent management system designed to implement remote server management. iBMC complies with IPMI V2.0 specifications and provides reliable hardware monitoring and management.

iBMC supports the following features and protocols:

- KVM and text console redirection
- Remote virtual media
- Remote virtual media IPMI V2.0
- Simple Network Management Protocol version 3 (SNMPv3)
- Common Information Model (CIM)
- Login by using a web browser
- Black box function

Table 11-1 describes the specifications of iBMC.

Table 11-1 Specifications of iBMC

Item	Description
Management interface	Integrates with any standard management system through the following interfaces: - IPMIV2.0 - CLI - HTTPS - SNMPv3 - Web Services-Management (WS-MAN)
Fault detection	Detects faults and accurately locates faults in hardware, accurate to field replaceable units (FRUs).
Alarm management	Supports alarm management functions and reports alarms using the SNMP trap, Simple Mail Transfer Protocol (SMTP), and syslog service.

Item	Description
Integrated virtual KVM	Provides remote maintenance measures for troubleshooting the system. Supports a maximum resolution of 1920 x 1200.
Integrated virtual media	Virtualizes local media devices, images, USB keys, and folders to media devices on a remote server, simplifying OS installation. (The virtual DVD drive supports a maximum transmission rate of 8 MB/s.)
WebUI	Provides a user-friendly graphical user interface (GUI), which simplifies users' configuration and query operations. The iBMC WebUI supports the following web browsers: ● IE9.0/10.0/11.0 ● Mozilla Firefox 26.0/39.0 ● Chrome 21.0/44.0 ● Safari 8.0 ● JRE 1.7.0 U40 ● JRE 1.8.0 U45
Fault reproduction	Reproduces faults to facilitate system crash diagnosis.
Screen snapshots and videos	Allows you to view screen snapshots and videos without login, which facilitates routine preventive maintenance inspection (PMI).
Domain name service (DNS) and directory service	Supports the DNS and directory service, which significantly simplifies network and configuration management.
Dual-image backup	Starts software from a backup image if the software fails.
Assets management	Provides intelligent assets management.
Intelligent power management	Uses the power capping technology to increase deployment density, and uses dynamic energy saving to lower operating expenses.
IPv6	Supports IPv6 to ensure sufficient IP addresses.
NC-SI	Supports NC-SI, which allows you to access iBMC over the service network port.

12 Warranty

According to the *Huawei Warranty Policy for Servers & Storage Products* (*Warranty Policy* for short), Huawei provides a three-year warranty for the XH628 V5, a one-year warranty for DVD-ROM drives and iBBUs, and a three-month warranty for software media.

The *Warranty Policy* stipulates warranty terms and conditions, including the available services, response time, terms of service, and disclaimer.

The warranty terms and conditions may vary by country,

and some service and/or parts may not be available in all countries. For more information about warranty services in your country, contact Huawei technical support or the local Huawei office.

Table 12-1 describes the warranty service response time.

Table 12-1 Response time

Service	Response Time	Description	Remarks
Help Desk	24×7	Available 24 hours a day, 7 days a week (00:00 to 24:00, Monday to Sunday)	None
Remote troubleshooting	24×7	Available 24 hours a day, 7 days a week (00:00 to 24:00, Monday to Sunday)	The response time starts from the time when Huawei technical support accepts a customer's service request to the time when the technical support contacts the customer the first time to provide remote troubleshooting services.

Service	Response Time		Description	Remarks
Online technical support	24×7		Huawei enterprise support website: available 24 hours a day, 7 days a week (00:00 to 24:00, Monday to Sunday)	None
Licensing of software updates	24×7		Huawei enterprise support website: available 24 hours a day, 7 days a week (00:00 to 24:00, Monday to Sunday)	None
Return for repair	Outside China	9/5 hours, shipment within 45 calendar days	Available 9 hours a day, 5 days a week (09:00 to 18:00, Monday to Friday), excluding official holidays	The repaired or replacement parts will be shipped within 45 calendar days after Huawei receives the defective parts.
	In China	9×5×NBD	Available 9 hours a day, 5 days a week (09:00 to 18:00, Monday to Friday), excluding official holidays	Service requests submitted after 15:30 will be handled the next workday.

Table 12-2 describes warranty services provided by Huawei.

Table 12-2 Warranty services

Service	Description
Help Desk	Huawei provides 24-hour after-sales technical support (such as handling requests for troubleshooting and hardware repair), receives and handles customer inquiries, complaints, and suggestions through a dedicated hotline.
Remote troubleshooting	After receiving a service request for rectifying a network or system fault, Huawei engineers will first analyze and handle the fault remotely and proceed to rectify it in the shortest possible time. There are two methods for remote troubleshooting: telephone support and remote access.

Service	Description
Online technical support	Huawei enterprise support website (**http:// enterprise.huawei.com**) provides product and technical materials, such as product manuals, configuration guides, networking case study, and maintenance experience collections. Registered users can access the website and download required documents.
Licensing of software updates	To ensure that the devices operate stably, Huawei provides software patches whenever necessary.
Return for repair	Huawei provides repair or replacement services for customers within the promised time to meet customer needs for spare parts. You can return defective parts to the designated Huawei site after submitting a service request. Huawei provides a three-year warranty for parts replacement and onsite repair for the XH628 V5 used in China. Huawei provides a 9-hour-a-day, 5-day-a-week NBD support program. Huawei provides a three-year warranty for parts replacement and repair for the XH628 V5 used outside China. Huawei provides a 9-hour-a-day, 5-day-a-week NBD support program. Huawei delivers the repaired or new parts within 45 calendar days after receiving the defective parts.

13 Certifications

For the certifications passed by the XH628 V5 and the standards to which the XH628 V5 conforms, see the *HUAWEI X6800 Server Technical White Paper*.