



## HUAWEI XH622 V3 Server Node

# White Paper

Issue 05

Date 2017-07-26

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## **Huawei Technologies Co., Ltd.**

Address: Huawei Industrial Base  
Bantian, Longgang  
Shenzhen 518129  
People's Republic of China

Website: <http://e.huawei.com>

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# 1 Overview

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The XH622 V3 server node (XH622 V3 for short) is a two-socket 4U4 general processing unit (GPU) node for the X6800 and provides high performance and storage density while breaking through power limits. The XH622 V3 is easy to manage and maintain.

The XH622 V3 provides outstanding floating-point computing capability and high computing density based on a maximum of two dual-width GPUs and 16 double data rate 4 (DDR4) dual in-line memory modules (DIMMs). The XH622 V3 applies to high-performance computing (HPC), graphics acceleration, and game application scenarios.

# 2 Appearance

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## Appearance

**Figure 2-1** shows an XH622 V3.

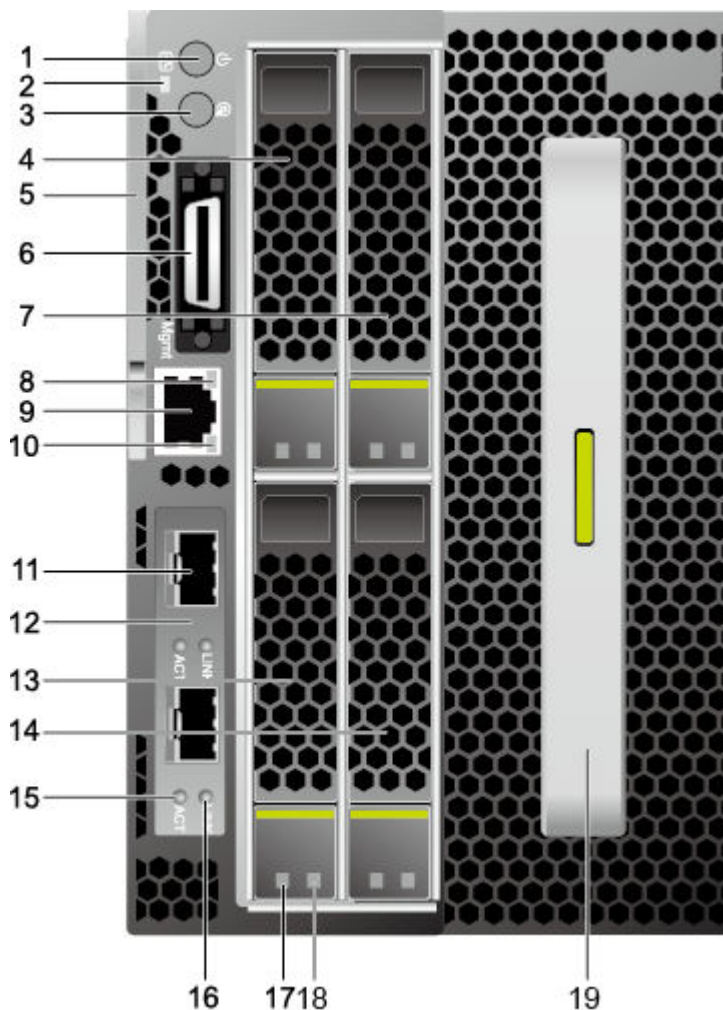
**Figure 2-1** Appearance



## Panel

**Figure 2-2** shows the front panel of an XH622 V3.

Figure 2-2 Front view of an XH622 V3



1	Power button/indicator	2	Health status indicator
3	UID button/indicator	4	Front hard disk (HDD 0)
5	Ejector lever	6	Universal connector port (UCP)
7	Front hard disk (HDD 2)	8	Management network port activity indicator
9	Management network port	10	Management network port link indicator
11	10GE port	12	Flexible NIC
13	Front hard disk (HDD 1)	14	Front hard disk (HDD 3)
15	NIC activity indicator	16	NIC link indicator
17	Hard disk activity indicator	18	Hard disk fault indicator
19	Server node handle		

 **NOTE**

The XH622 V3 supports the following types of NICs:

- NIC with two or four GE ports
- NIC with two 10GE ports
- NIC with two 10G Base-T ports
- NIC with one or two 56G IB ports

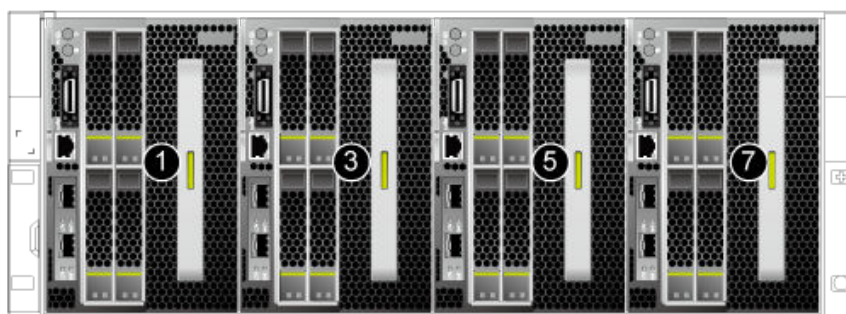
The preceding information is for reference only. For details, see the [Appearance \(with Two Front 2.5-inch Hard Disks\)](#).

## Installation Positions

An X6800 chassis can house a maximum of four XH622 V3 nodes.

**Figure 2-3** shows the installation positions and slot numbers of the XH622 V3 nodes in the chassis.

**Figure 2-3** Installation positions



 **NOTE**

- The X6800 provides eight slots numbered 1-8 from left to right. If dual-slot nodes are installed, the server nodes are numbered 1, 3, 5, and 7 from left to right.
- The front PCIe card, onboard RAID controller card, flexible NIC, and GPU card are connected to CPU 1.
- The rear PCIe cards and GPU card are connected to CPU 2. If CPU 2 is not configured, the rear PCIe and GPU slots cannot be installed with any card.

# 3 Ports

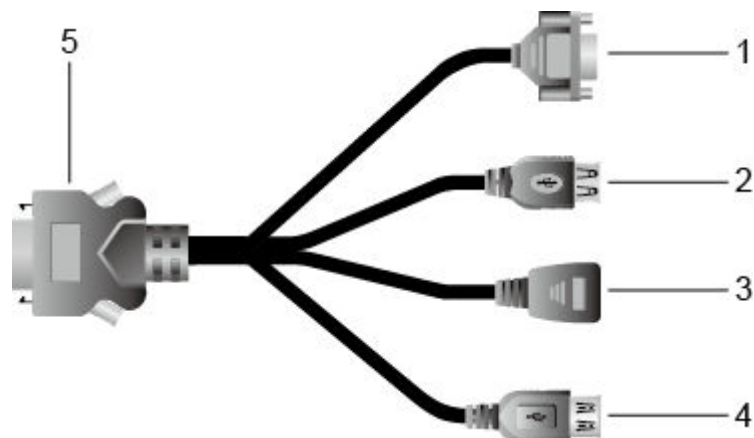
**Table 3-1** describes the external ports provided by the XH622 V3.

**Table 3-1** Ports on the XH622 V3

Port	Type	Quantity	Description
UPC	-	1	The Universal connector port (UCP) on the front panel connects to a multi-port cable for service, maintenance, and OS installation. The multi-port cable allows USB, serial, and video devices to be directly attached to the server node. The multiple-port cable provides one DB-15 VGA port, three USB 2.0 ports, and one RJ45 serial port.
Management network port	RJ45	1	This 1000 Mbit/s Ethernet port is used to manage the XH622 V3. <b>NOTE</b> The intelligent baseboard management controller (iBMC) has two types of network ports: management network port and shared network port. A service network port with the network controller sideband interface (NC-SI) feature enabled can function as a shared network port.
Flexible NIC network port	-	1, 2, or 4	The flexible NIC can provide the following network ports: <ul style="list-style-type: none"> <li>● Two or four GE electrical ports</li> <li>● Two 10GE optical ports</li> <li>● Two 10GE Base-T ports</li> <li>● One or two 56G IB ports</li> </ul>



**Figure 3-1** Multi-port cable



Number	Ports	Number	Ports
1	VGA port	2	Two USB ports
3	Serial port	4	One USB port
5	Multi-port connector	-	-


# 4 Indicators


The front panel indicators on the XH622 V3 display its working status.

## Indicators

**Table 4-1** describes the indicators on the XH622 V3 panel.

**Table 4-1** Indicators on the panel

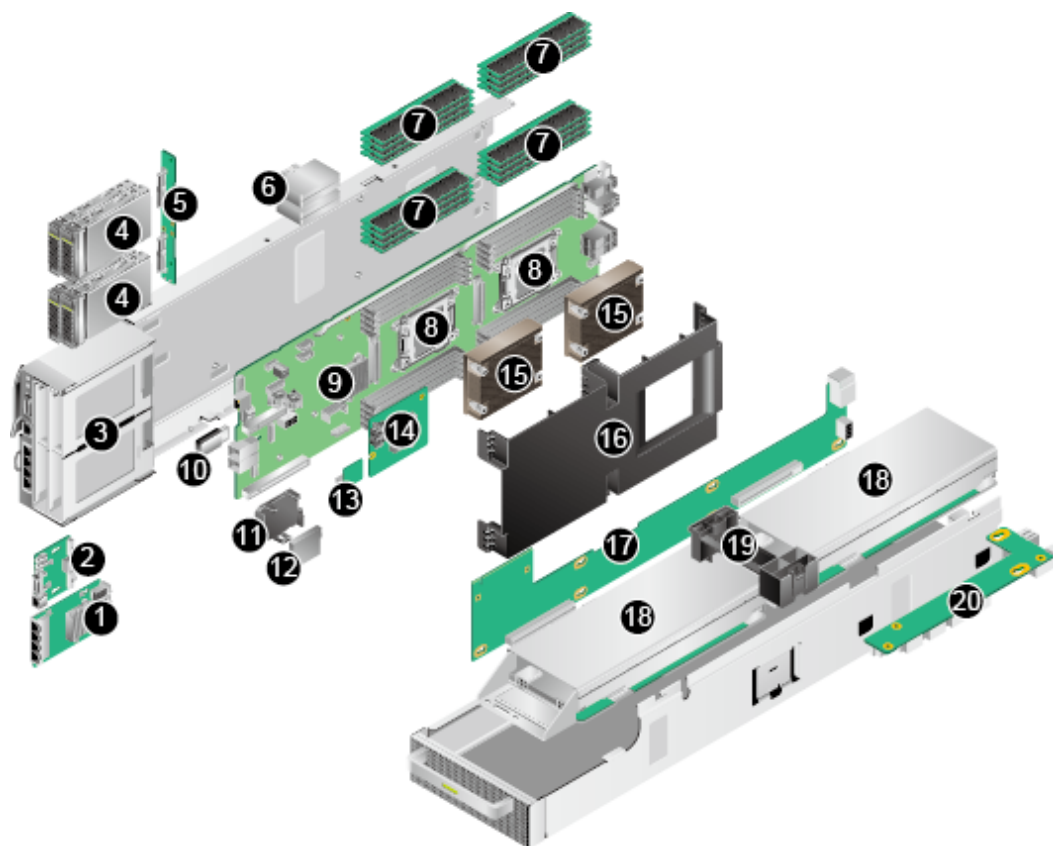
Silk Screen	Description	Color	State Description
	Power button/ indicator	Yellow and green	<ul style="list-style-type: none"> <li>● Off: The XH622 V3 is not powered on.</li> <li>● Blinking yellow: The iBMC is being started.</li> <li>● Steady yellow: The iBMC starts, and XH622 V3 can be powered on.</li> <li>● Steady green: The XH622 V3 is properly powered on.</li> </ul> <p><b>NOTE</b> Holding down the power button for 6 seconds will forcibly power off the server node.</p>
HLY	Health status indicator	Red and green	<ul style="list-style-type: none"> <li>● Off: The XH622 V3 is not powered on.</li> <li>● Steady green: The XH622 V3 is operating properly.</li> <li>● Blinking red at 1 Hz: A major alarm has been generated.</li> <li>● Blinking red at 5 Hz: A critical alarm has been generated.</li> </ul>

Silk Screen	Description	Color	State Description
	UID button/ indicator	Blue	<p>The Unit Identification (UID) indicator helps locate a server node in a chassis. During on-site maintenance, the UID button of a particular compute node can be pressed to pinpoint its location. The UID indicator can also be remotely activated using commands to pinpoint the location of a server node in a chassis.</p> <ul style="list-style-type: none"> <li>● Steady blue: The server node has been located.</li> <li>● Off: The server node has not been powered on or is not being located.</li> <li>● Blinking: distinguishes the server node from multiple server nodes that have also been located.</li> </ul> <p><b>NOTE</b> Holding down this button for 6 seconds will reset the iBMC.</p>
-	Hard disk activity indicator	Green	<ul style="list-style-type: none"> <li>● Off: The hard disk cannot be detected or is faulty.</li> <li>● Blinking green: Data is being read from or written to the hard disk, or synchronized between hard disks.</li> <li>● Steady green: The hard disk is not being accessed.</li> </ul>
-	Hard disk fault indicator	Yellow	<ul style="list-style-type: none"> <li>● Off: The hard disk is operating properly or a hard disk in the RAID group cannot be detected.</li> <li>● Blinking yellow: The hard disk is being located, or RAID is being rebuilt.</li> <li>● Steady yellow: The hard disk cannot be detected or is faulty.</li> </ul>
Network link indicator	Connectivity status indicator	Green	<ul style="list-style-type: none"> <li>● Off: The network port is not connected.</li> <li>● Steady green: The network port is properly connected.</li> </ul>
Network port activity indicator	Data transmission indicator	Orange	<ul style="list-style-type: none"> <li>● Off: The network port is idle.</li> <li>● Blinking orange: Data is being transmitted over the network port.</li> </ul>

# 5 Physical Structure

Figure 5-1 shows the XH622 V3 components.

Figure 5-1 XH622 V3 components



No.	Component	No.	Component
1	Flexible NIC	2	User interface board
3	Front hard disk tray	4	Front hard disk
5	Front hard disk backplane	6	MiniSSD

No.	Component	No.	Component
7	DIMM	8	Processor
9	Mainboard	10	USB flash drive
11	Supercapacitor tray	12	Supercapacitor
13	TPM	14	RAID controller card
15	Heat sink	16	Mainboard air duct
17	GPU riser card	18	GPU
19	GPU air duct	20	Power adapter board

**Table 5-1** describes the XH622 V3 components.

**Table 5-1** XH622 V3 components

No.	Name	Description
1	Flexible NIC	<p>The XH622 V3 supports the following types of NICs:</p> <ul style="list-style-type: none"> <li>● NIC with two or four GE ports</li> <li>● NIC with two 10GE ports</li> <li>● NIC with 10G Base-T ports</li> <li>● NIC with one or two 56G IB ports</li> </ul> <p><b>NOTE</b> The preceding information is for reference only. For more details, see the <a href="#">Huawei Server Compatibility Checker</a>.</p>
2	User interface board	<p>The user interface board provides the following:</p> <ul style="list-style-type: none"> <li>● PWRBTN and UID buttons</li> <li>● HLY status indicator</li> <li>● Management network port and a UCP</li> </ul> <p>The UCP connects to a multi-port cable for service, maintenance, and OS installation. The multi-port cable provides one VGA port, three USB 2.0 ports, and one RS232 serial port.</p>
3	Front hard disk tray	The hard disk tray accommodates front hard disks.
4	Front hard disk	<p>The XH622 V3 with a RAID controller card supports four 2.5" SATA or SAS HDDs, or SSDs.</p> <p><b>NOTE</b> The front 2.5" hard disks support SoftRAID and RAID card controllers. SoftRAID supports Windows Server 2008 R2 SP1, Windows Server 2012, Windows Server 2012 R2, RHEL 6.5, RHEL 7.0, and SLES 11.3.</p>

No.	Name	Description
5	Front hard disk backplane	Supports four 2.5" SAS/SATA HDDs or SSDs
6	MiniSSD	<p>The MiniSSD is a SATA SSD or SATADOM electrical hard disk. It is a quick memory storage media unit that features energy efficiency and high stability.</p> <p><b>NOTE</b></p> <ul style="list-style-type: none"> <li>● MiniSSDs support RAID 0 and 1 and SoftRAID.</li> <li>● Supported OSs include Windows Server 2008 R2 SP1, Windows Server 2012, Windows Server 2012 R2, RHEL 6.5, RHEL 7.0, and SLES 11.3.</li> <li>● For details about STATADOM application scenarios, see the <i>STATADOM Technical White Paper</i>.</li> </ul>
7	DIMM	<ul style="list-style-type: none"> <li>● Up to 16 DDR4 DIMM slots (8 DIMMs per CPU) for installing RDIMMs or load-reduced DIMMs (LRDIMMs). Combining different types of DIMMs is not supported.</li> <li>● Maximum memory speed: 2400 MT/s</li> <li>● RDIMM: Sixteen 32 GB RDIMMs for two processors with a maximum memory capacity of 512 GB</li> <li>● LRDIMM: 16 x 128 GB LRDIMMs for two processors, with a maximum memory capacity of 2048 TB</li> <li>● Data protection measures: ECC, memory mirroring, Single Device Data Correction (SDDC), and memory sparing</li> <li>● Supported memory speed: DDR4 1866, 2133, and 2400 MT/s</li> </ul>

No.	Name	Description
8	Processor	<p>Intel® Xeon E5-2600 v3 processor</p> <ul style="list-style-type: none"> <li>● Number of cores per processor: 18 cores (up to 2.3 GHz), 16 cores (up to 2.3 GHz), 14 cores (up to 2.6 GHz), 12 cores (up to 2.6 GHz), 10 cores (up to 2.6 GHz), 8 cores (up to 3.2 GHz), 6 cores (up to 3.4 GHz), and 4 cores (up to 3.5 GHz)</li> <li>● Number of QPI links: two</li> <li>● Maximum transmission speed per QPI link: 9.6 GT/s</li> <li>● Maximum memory speed: 2133 MT/s</li> <li>● Maximum L3 cache capacity: 45 MB</li> <li>● Maximum thermal design power (TDP): 145 W</li> </ul> <p>Intel® Xeon E5-2600 v4 processor</p> <ul style="list-style-type: none"> <li>● Number of cores per processor: 22 cores (up to 2.2 GHz), 20 cores (up to 2.2 GHz), 18 cores (up to 2.3 GHz), 16 cores (up to 2.6 GHz), 14 cores (up to 2.6 GHz), 12 cores (up to 2.2GHz), 10 cores (up to 2.4 GHz), 8 cores (up to 3.2 GHz), 6 cores (up to 3.4 GHz), and 4 cores (up to 3.5 GHz)</li> <li>● Number of QPI links: two</li> <li>● Maximum transmission speed per QPI link: 9.6 GT/s</li> <li>● Maximum memory speed: 2400 MT/s</li> <li>● Maximum L3 cache capacity: 55 MB</li> <li>● Maximum TDP: 145 W</li> </ul>
9	Mainboard	<p>As the most important component of the server, the mainboard integrates basic components, including the BIOS chip, Platform Controller Hub (PCH) chip, and expansion slots, and provides processor sockets, DIMM slots, and slots for installing other components.</p> <p>Integrates the SM750 display chip and provides 32 MB display memory. The maximum resolution is 1920 pixels x 1200 pixels at 60 Hz with 16 M colors.</p> <p><b>NOTE</b> If a resolution higher than 1280 x 1024 is required, you need to install dedicated graphics card driver.</p>
10	USB flash drive	USB removable hard disk
11	Supercapacitor tray	A supercapacitor tray holds and fastens a supercapacitor.
12	Supercapacitor	The supercapacitor provides power-off protection for the RAID controller card with the LSI SAS3108 chip.
13	Trusted Platform Module (TPM)	The TPM is a cost-effective security solution that complies with the Trusted Computing Group (TCG) standards. It enhances platform security by preventing viruses or unauthorized operations.

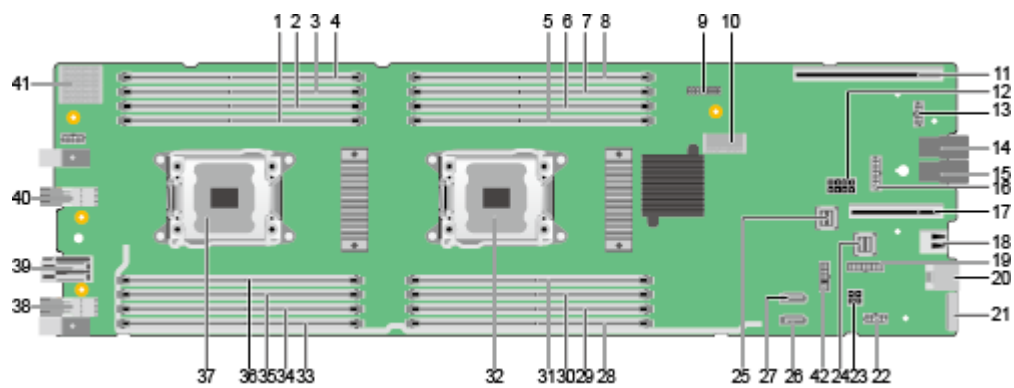
No.	Name	Description
14	RAID controller card	<p>The XH622 V3 supports RAID controller cards of the following models:</p> <ul style="list-style-type: none"> <li>● SR130: <ul style="list-style-type: none"> <li>- Uses the LSISAS3008 chip.</li> <li>- Supports RAID 0, 1, 1E, and 10.</li> <li>- Does not provide cache data protection upon power failures.</li> </ul> </li> <li>● SR430C: <ul style="list-style-type: none"> <li>- Uses the LSISAS3108 chip.</li> <li>- Provides a 1 GB or 2 GB cache.</li> <li>- Supports RAID 0, 1, 10, 5, 50, 6, and 60.</li> <li>- Provides a supercapacitor to protect cache data from power failures.</li> <li>- Supports a maximum of 32 hard disks.</li> </ul> </li> </ul> <p>These RAID controller cards support RAID state migration, RAID configuration memory, self-diagnosis, and web-based remote configuration.</p> <p><b>NOTE</b> The preceding information is for reference only. For details, see the <a href="#">Huawei Server Compatibility Checker</a>.</p>
15	Heat sink	The heat sink cools processors. Each processor is configured with one heat sink.
16	Mainboard air duct	The main air duct is designed to optimize processor and memory heat dissipation, ensuring system reliability.
17	GPU riser card	The riser card supports two dual-slot GPUs.
18	GPU	The GPU can be provided by NVIDIA and Intel. For details, see the <i>Compatibility List</i> .
19	GPU air duct	The GPU air duct is designed to optimize GPU heat dissipation, to ensure that the GPU operates within a proper temperature range.
20	Power adapter board	The power adapter board supplies power to the GPU.



# 6 Mainboard Layout

Figure 6-1 shows the positions of connectors and other components on the XH622 V3 mainboard.

Figure 6-1 Positions of the connectors and other components



1	DDR4 connector DIMM111	2	DDR4 connector DIMM110
3	DDR4 connector DIMM101	4	DDR4 connector DIMM100
5	DDR4 connector DIMM011	6	DDR4 connector DIMM010
7	DDR4 connector DIMM001	8	DDR4 connector DIMM000
9	TPM connector	10	RAID controller card connector
11	Front PCIe x16 connector	12	Hard disk drawer power cable connector
13	Hard disk backplane indicator cable connector 2	14	Flexible NIC connector 1
15	Flexible NIC connector 2	16	Hard disk drawer indicator cable connector
17	Front PCIe x8 connector	18	Built-in USB 3.0 connector
19	Front panel connector 1	20	Front panel connector 2

21	Front panel connector 3	22	Hard disk backplane indicator cable connector 1
23	Power cable connector for a front hard disk backplane	24	Mini SAS HD connector A from PCH
25	Mini SAS HD connector B from PCH	26	MiniSSD connector 1
27	MiniSSD connector 2	28	DDR4 connector DIMM020
29	DDR4 connector DIMM021	30	DDR4 connector DIMM030
31	DDR4 connector DIMM031	32	Processor socket 1
33	DDR4 connector DIMM120	34	DDR4 connector DIMM121
35	DDR4 connector DIMM130	36	DDR4 connector DIMM131
37	Processor socket 2	38	Backplane signal connector 1
39	Backplane power connector	40	Backplane signal connector 2
41	Side GPU enclosure connector	42	iBMC password restoration pin(J36) <b>NOTE</b> Connect the jumper to PIN13 and PIN14.

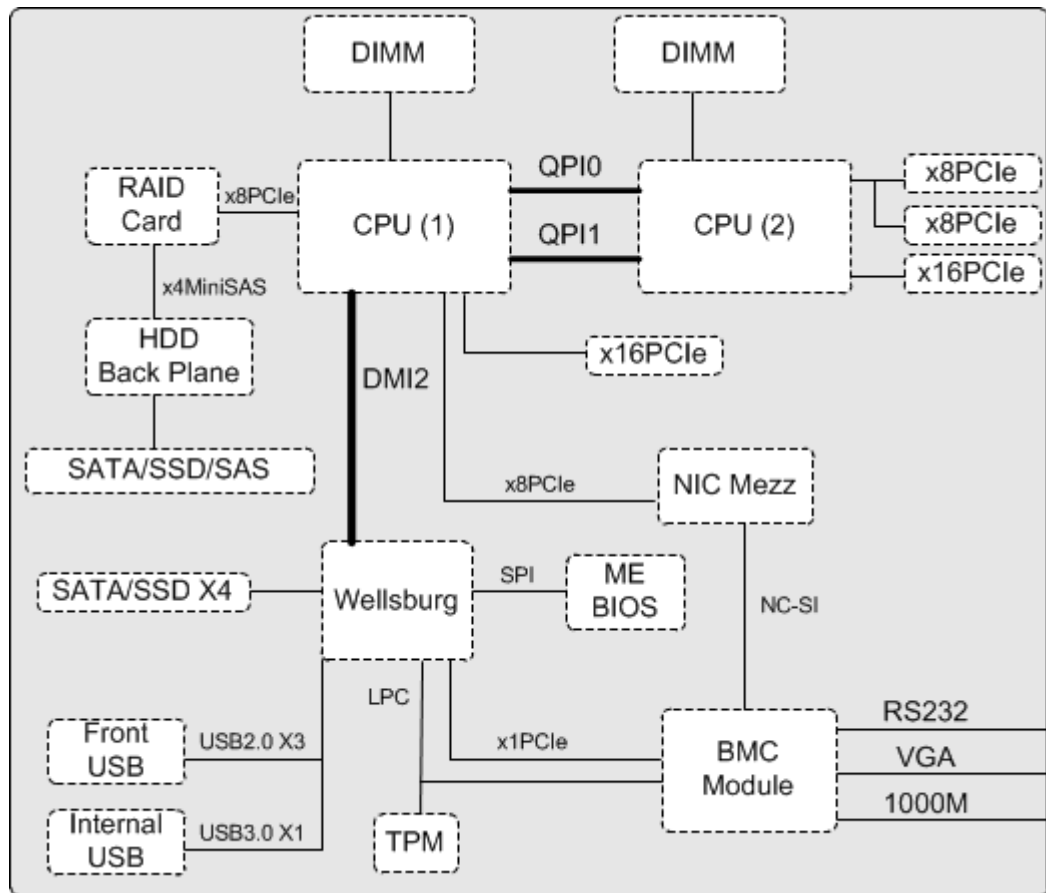
# 7 Logical Structure

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**Figure 7-1** shows the logical structure of the XH622 V3.

- The XH622 V3 supports up to two Intel® Xeon® E5-2600 v3 or Intel® Xeon® E5-2600 v4 processors (CPUs) and 16 DIMMs.
- CPUs interconnect with each other over QuickPath Interconnect (QPI) buses, which provide the maximum speed of 9.6 GT/s.
- CPUs interconnect with the platform controller hub (PCH) over the Direct Media Interface Generation 2 (DMI2) bus with a transmission rate of 5 GT/s.
- CPUs interconnect with mezzanine cards and standard cards through PCIe slots to provide service ports.
- As the PCH, the Wellsburg chipset is an Intel southbridge chipset that provides external I/O ports and bus expansion for the server platform.
- 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 4-disk backplane to form a storage module, which interconnects with CPUs over PCIe slots.
- The BMC provides device management functions, such as controlling compute node power, querying compute node slot information, monitoring power supply status, and accessing compute nodes through KVM over IP.

Figure 7-1 XH622 V3 logical structure



# 8 Technical Specifications

**Table 8-1** provides the technical specifications of the XH622 V3.

**Table 8-1** Technical specifications

Category	Item	Specifications
Physical specifications	Dimensions (H x W x D)	166 mm x 109 mm x 670 mm (6.54 in. x 4.29 in. x 26.38 in.)
	Weight	Net weight: 10 kg (22.04 lb)
Environmental specifications	Temperature	<ul style="list-style-type: none"> <li>● Operating temperature: 5°C to 40°C (41°F to 104°F)(ASHRAE Class A3 compliant)</li> </ul> <p><b>NOTE</b></p> <ol style="list-style-type: none"> <li>1. The XH622 V3 supports the highest operating temperature of 35°C (95°F) when one fan fails.</li> <li>2. The supported operating temperature range is 5°C to 35°C (41°F to 95°F) when X6800 nodes are mixed in the server.</li> <li>3. The XH622 V3 supports the highest operating temperature of 30°C (86°F) when P100 GPUs are configured.</li> </ol> <ul style="list-style-type: none"> <li>● Storage temperature: - 40°C to +65°C (- 40°F to +149°F)</li> </ul>
	Temperature change rate	20°C/h (36°F/h)
	Humidity	<ul style="list-style-type: none"> <li>● Operating humidity: 8% RH to 90% RH (non-condensing)</li> <li>● Storage humidity: 5% RH to 95% RH (non-condensing)</li> </ul>

Category	Item	Specifications
	Altitude	<ul style="list-style-type: none"> <li>● Operating altitude: ≤ 3000 m (9842.4 ft)</li> <li>● Storage altitude: ≤ 12,000 m (39369.6 ft)</li> </ul> <p><b>NOTE</b> 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).</p> <ul style="list-style-type: none"> <li>● At an altitude of over 3000 m (9842.4 ft), only Titanium PSUs can be used.</li> <li>● HDDs are not supported at an altitude of over 3000 m (9842.4 ft).</li> </ul>
	Corrosive air pollutant	<ul style="list-style-type: none"> <li>● Corrosion rate of the copper test piece: &lt; 300 Å/month (in compliance with the ANSI/ISA-71.04-2013 gaseous corrosion level G1).</li> <li>● Corrosion rate of the silver test piece: &lt; 200 Å/month.</li> </ul>
	Particulate pollutant	<ul style="list-style-type: none"> <li>● The ISO14664-1 Class 8 requirements are met. You are advised to ask a professional organization to monitor particulate pollutants in the equipment room.</li> <li>● There is no explosive, conductive, magnetic, or corrosive dust in the equipment room.</li> </ul>
Input power specifications	Rated input voltage	12 V DC
Power consumption	Power consumption parameter	<p>Power consumption of typical configuration ≤ 600 W</p> <p>The power consumption changes depending on the server configuration. For details, see <a href="#">Huawei Server Power Calculator</a>.</p>
Reliability	Mean time to repair (MTTR)	138 seconds
	Mean time between failures (MTBF)	228110 hours

**Table 8-2** describes the heat dissipation requirements of XH622 V3 CPUs of different models.

**Table 8-2** Heat dissipation requirements of XH622 V3 CPUs of different models

CPU Model	Maximum Intake Air Temperature	Remarks
E5-2697 v3 (145 W) E5-2699 v3 (145 W) E5-2697 v4 (145 W) E5-2697A v4 (145 W) E5-2699 v4 (145 W) E5-2699A v4 (145 W)	35°C (95°F)	The performance of E5-2667 v4 CPUs will deteriorate if the temperature of intake air is higher than 30°C (86°F) or one fan fails.
E5-2643 v4 (135 W) E5-2637 v4 (135 W)	35°C (95°F)	
E5-2667 v4 (135 W)	30°C (86°F)	

 **NOTE**

The number of the XH622 V3 nodes in each X6800 chassis varies depending on the XH622 V3 configurations and power supply capacity of the equipment room. For details, consult your local Huawei sales representative.

# 9 Features

## Balanced Performance

The XH622 V3 provides the following performance features:

- The XH622 V3 uses Intel® Xeon® E5-2600 v3 or Intel® Xeon® E5-2600 v4 series processors. Each processor provides up to 22 cores, 3.5 GHz frequency, a L3 cache of 55 MB, and two 9.6 GT/s QuickPath Interconnect (QPI) buses, which ensure high processing performance of the XH622 V3.
- Each XH622 V3 supports up to two processors, 44 cores, and 88 threads, which maximizes the concurrent execution of multithreaded applications.
- The XH622 V3 supports 1.2 V DDR4 DIMMs. 1.2 V DDR4 DIMMs consume 20% less power than 1.35 V DDR3L DIMMs.
- The XH622 V3 supports up to sixteen 2400 MT/s DDR4 LRDIMMs to provide a maximum of 2048 GB memory capacity. The maximum theoretical memory bandwidth is 153.6 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 operating system (OS) vendors to better use hardware to address virtualized workloads.
- Integrated with the Intel Advanced Vector Extensions 2.0 (AVX 2.0) instruction set, the XH622 V3 improves floating-point computing performance for compute-intensive applications.
- The XH622 V3 supports two dual-width GPUs with the floating-point computing performance five times than that of the x86 processors.
- The XH622 V3 supports flexible configurations of onboard NIC mezzanine cards, and provides a variety of network ports.
- The Intel polynomial-time approximation scheme (PTAS) technology helps customers manage.



## Availability and Serviceability

The XH622 V3 provides the following features to improve availability and serviceability:

- The XH622 V3 uses carrier-class components and follows the engineering process to dramatically improve system reliability.
- The XH622 V3 uses four 2.5" hot-swappable hard disks. It supports RAID 0, 1, 1E, 5, 6, 10, 50, and 60, depending on the RAID controller card used. It offers 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 learn about the status of key components and promptly 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 XH622 V3 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 XH622 V3 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 XH622 V3 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 1.2 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 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 network port (NIC mezz) on the onboard NIC of the server or any network port (host network port 1 by default) on the onboard card.
- 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 XH622 V3 provides the following features to ensure high energy efficiency.

- The Intel® Xeon® E5-2600 v3 series processors provide better performance over the previous-generation processors while fitting into the same TDP.
- The XH622 V3 supports 80 Plus Titanium 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.
- 1.2 V DDR4 registered DIMMs (RDIMMs) consume 20% less power than 1.35 V DDR3 RDIMMs.
- SSDs consume 80% less power than HDDs.
- The XH622 V3 supports intelligent processor frequency adjustment, decreasing power consumption.
- Hexagonal ventilation holes on the front panel Hexagonal ventilation holes on the front panel enable higher ventilation density than round holes, increasing system cooling efficiency.

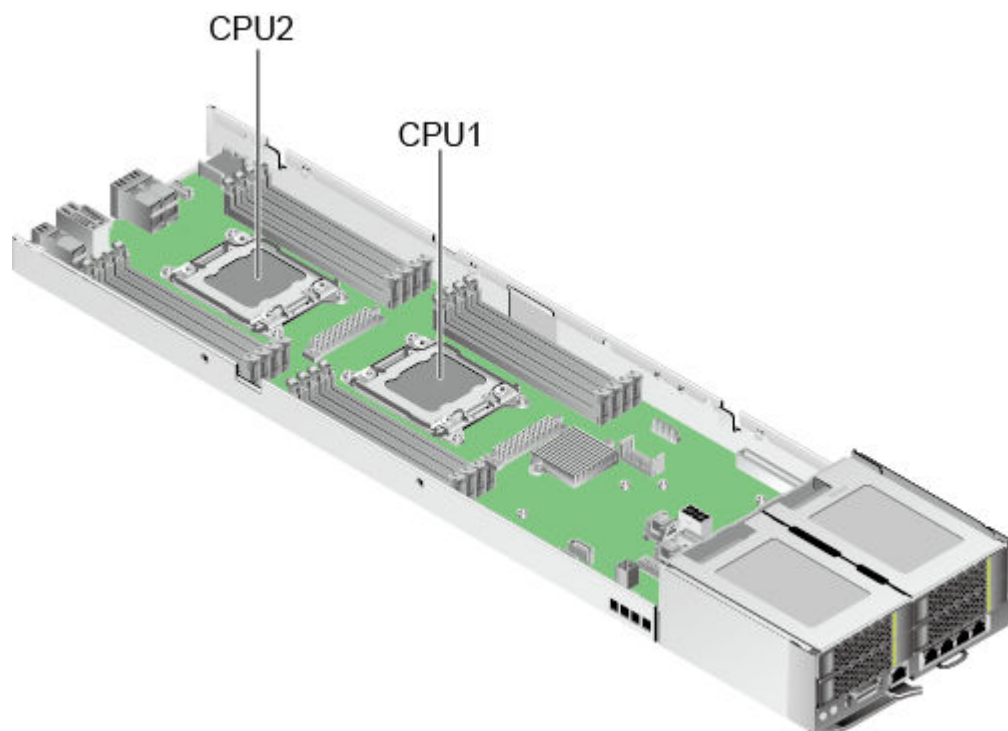
# 10 Component Compatibility

## Processor

The XH622 V3 supports up to two Intel® Xeon® E5-2600 v3 or Intel® Xeon® E5-2600 v4 processors.

- If two processors are required, use the same type of processors.
- If only one processor is required, it must be installed in socket CPU1. See [Figure 10-1](#).

**Figure 10-1** Processor positions



## Memory

### Memory Configuration Rules

The XH622 V3 supports a maximum of eight DIMMs if one processor is installed and supports a maximum of 16 DIMMs if two processors are installed. Each processor comes with four memory channels.

Observe the following rules when configuring DIMMs:

1. The XH622 V3 does not support mixed use of different types of DIMMs. Use either RDIMMs or LRDIMMs.
2. Each memory channel supports a maximum of eight ranks.

 **NOTE**

A memory channel supports more than eight ranks for LRDIMMs and the number of ranks is counted based on the number of ranks of the external ports. The DIMMs in the *Compatibility List* support all memory channels in full configuration.

3. All DIMMs in a server operate at the same speed, which is determined as the lowest value of:
  - Memory speed supported by a specified processor.
  - Memory speed supported by a specified DIMM.
  - For the maximum operating speed for the specific memory configuration, see "Maximum Operating Speed" in [Table 10-1](#).

**Table 10-1** XH622 V3 DIMM configuration and operating speed (Haswell-EP processors)

Item	RDIMM		LRDIMM	
	1DPC	2DPC	1DPC	2DPC
Rank	1DPC	2DPC	1DPC	2DPC
Operating voltage (V)	1.2	1.2	1.2	1.2
Maximum operating speed (MT/s)	2133	2133	2133	2133
<b>NOTE</b> In 2DPC, an RDIMM supports POR+1 and the operating speed of 2133 MT/s.				

**Table 10-2** XH622 V3 DIMM configuration and operating speed (Broadwell-EP processors)

Item	RDIMM		LRDIMM	
	1DPC	2DPC	1DPC	2DPC
Rank	1DPC	2DPC	1DPC	2DPC
Operating voltage (V)	1.2	1.2	1.2	1.2
Maximum operating speed (MT/s)	2400	2400	2400	2400
<b>NOTE</b> In 2DPC, an RDIMM supports POR+1 and the operating speed of 2400 MT/s.				

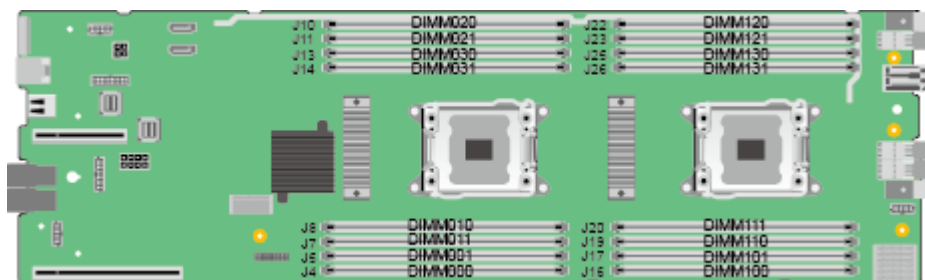
**Memory Slot Configuration Rules**

- The XH622 V3 supports DIMMs of 4 GB, 8 GB, 16 GB, 32 GB, 64 GB, and 128 GB. When the XH622 V3 is fully configured with DIMMs, the maximum memory capacity is 2048 GB.
- The XH622 V3 provides 16 DDR4 DIMM slots for installing DDR4 DIMMs. Each processor integrates four memory channels. Four memory channels for the processor in socket CPU1 are 1A, 1B, 1C, and 1D, and those for the processor in socket CPU2 are 2A, 2B, 2C, and 2D. **Table 10-3** describes the composition of each memory channel. **Figure 10-2** shows the DIMM installation positions.

**Table 10-3** Memory Channels

Processor	Memory Channels	Composition
Processor 1	1A	DIMM000(A)
		DIMM001(E)
	1B	DIMM010(B)
		DIMM011(F)
	1C	DIMM020(C)
		DIMM021(G)
	1D	DIMM030(D)
		DIMM031(H)
CPU2	2A	DIMM100(A)
		DIMM101(E)
	2B	DIMM110(B)
		DIMM111(F)
	2C	DIMM120(C)
		DIMM121(G)
	2D	DIMM130(D)
		DIMM131(H)

**Figure 10-2** DIMM positions



The DIMMs must be installed in the sequence specified in the following table.

CPU	DIMM Installation Sequence
CPU 1	DIMM000(A), DIMM010(B), DIMM020(C), and DIMM030(D), DIMM001(E), DIMM011(F), DIMM021(G), and DIMM031(H)
CPUs 1 and 2	DIMM000(A), DIMM100(A), DIMM010(B), DIMM110(B), DIMM020(C), DIMM120(C), DIMM030(D), and DIMM130(D), DIMM001(E), DIMM101(E), DIMM011(F), and DIMM111(F), DIMM021(G), DIMM121(G), DIMM031(H), and DIMM131(H)

### Memory Protection

The XH622 V3 supports the following memory protection technologies:

- ECC
- SDDC
- Memory mirroring
- Memory sparing
- Lockstep
- Patrol scrambling

### Storage System

The XH622 V3 supports a maximum of four 2.5" hot-swappable SAS HDDs, SATA HDDs, or SSDs.

[Table 10-4](#) describes the RAID level comparison.

**Table 10-4** RAID level comparison

RAID Level	Reliability	Read Performance	Write Performance	Minimum Number of Hard Disks	Hard Disk Utilization
RAID 0	Low	High	High	1	100%
RAID 1	High	Low	Low	2	1/N
RAID 5	Relatively high	High	Medium	3	(N - 1)/N
RAID 6	Relatively high	High	Medium	4	(N - 2)/N
RAID 10	High	Medium	Medium	4	M/N
<p><i>N</i> indicates the number of member disks in a RAID group. <i>M</i> indicates the number of subgroups of a RAID group.</p>					

The table is for reference only. For details about the components that can be purchased, consult the local Huawei sales representatives.

# 11 Management

The XH622 V3 uses Huawei's proprietary iBMC intelligent management system (iBMC for short) 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** provides the specifications of the iBMC.

**Table 11-1** Specifications of iBMC

Item	Description
Management interface	Integrates with any standard management system through the following interfaces: <ul style="list-style-type: none"><li>● IPMI V2.0</li><li>● CLI</li><li>● HTTPS</li><li>● SNMPv3</li><li>● Web Services-Management (WS-MAN)</li></ul>
Fault detection	Detects faults and accurately locates faults in hardware, accurate to field replaceable units (FRUs).



Item	Description
Alarm management	Supports alarm management functions and reports alarms using the SNMP trap, Simple Mail Transfer Protocol (SMTP), and syslog service.
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	<p>Provides a user-friendly graphical user interface (GUI), which simplifies users' configuration and query operations.</p> <p>The iBMC WebUI supports the following web browsers:</p> <ul style="list-style-type: none"> <li>● IE9.0/10.0/11.0</li> <li>● Mozilla Firefox 26.0/39.0</li> <li>● Chrome 21.0/44.0</li> <li>● Safari 8.0</li> <li>● JRE 1.7.0 U40</li> <li>● JRE 1.8.0 U45</li> </ul>
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.

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<b>Item</b>	<b>Description</b>
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 XH622 V3, 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** provides 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

Service	Response Time		Description	Remarks
Remote troubleshooting	-	-	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.
Online technical support	-	-	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	-	-	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.

Service	Response Time		Description	Remarks
	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.
Online technical support	Huawei enterprise support website ( <a href="http://enterprise.huawei.com">http://enterprise.huawei.com</a> ) 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.

Service	Description
Return for repair	<p>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.</p> <p>Huawei provides a three-year warranty for parts replacement and onsite repair for the XH628 V3 used in China. Huawei provides a 9-hour-a-day, 5-day-a-week NBD support program.</p> <p>Huawei provides a three-year warranty for parts replacement and repair for the XH622 V3 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.</p>

# 13 Certifications

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For the certifications passed by the XH622 V3 and the standards to which the XH622 V3 conforms, see the *HUAWEI X6800 High-Density Server White Paper*.