Huawei G5500 Server G560 V5 Compute Node

White Paper

Issue 01

Date 2018-06-30

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About This Document

Purpose

This document describes the general-purpose compute module G560 V5 and heterogeneous compute module GP608 and GS608 of the Huawei FusionServer G5500 server in terms of appearances, features, performance parameters, and configurations.

📖**NOTE**

In this document, a compute node consists of one G560 V5 and one GP608 or GS608.

Intended Audience

This document is intended for:

- Huawei presales engineers
- Channel partner presales engineers
- Enterprise presales engineers

Change History

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

Issue 01 (2018-06-30)

This issue is the first official release.

Contents

1 About the G560 V5, GP608, and GS608

1.1 Overview

This section describes the features, appearances, and installation positions of the G560 V5, GP608, and GS608.

Introduction

The G560 V5 is a full-width general-purpose compute module that uses the new-generation Intel® Xeon® Scalable CPUs with the Purley platform to support a large memory capacity and deliver powerful computing capabilities.

- The G560 V5 supports up to six 2.5-inch SAS/SATA/NVMe drives and two 2.5-inch SAS/SATA/M.2 drives. These drives support hot swap (orderly hot swap for NVMe SSDs).

- The I/O modules support a maximum of four half-height half-length single-slot PCIe 3.0 x16 cards.

- The management module provides two 10GE SFP+ ports.

The GP608 is used together with the G560 V5 to expand the computing capabilities of the G5500.

- The GP608 supports eight PCIe 3.0 x16 slots. Each slot can be configured with one full-height full-length dual-slot GPGPU card.
- The GP608 supports eight hot-swappable 3.5-inch SAS or SATA drives to provide large storage capacity.

The GS608 is used together with the G560 V5 to expand the computing capabilities of the G5500.

- The GS608 supports eight SXM2 GPGPU cards.
- The GS608 supports eight hot-swappable 2.5-inch SAS or SATA drives to provide large storage capacity.

The G560 V5, GP608, and GS608 are installed in a G5500 chassis and centrally managed by the management module.

Appearance

Figure 1-1 shows the appearance of the G560 V5.

Figure 1-1 Appearance of the G560 V5

Figure 1-2 shows the appearance of the GP608.

Figure 1-2 Appearance of the GP608

Figure 1-3 shows the appearance of the GS608.

Figure 1-3 Appearance of the GS608

Installation Position

Figure 1-4 and **Figure 1-5** show the installation positions of the G560 V5, GP608, and GS608 in a chassis.

📖**NOTE**

Install or remove the G560 V5 and GP608/GS608 in the following order:

- Installation order: Install the GP608/GS608 first and then the G560 V5.
- Removal order: Remove the G560 V5 first and then the GP608/GS608.

Figure 1-4 Installation positions of the G560 V5 and GP608

Figure 1-5 Installation positions of the G560 V5 and GS608

1.2 Front Panel

This section describes the front panels of the G560 V5, GP608, and GS608.

Figure1 Front panel of the G560 V5, **Figure 1-7**, and **Figure 1-8** show the front panels of the G560 V5, GP608, and GS608.

Figure 1-6 Front panel of the G560 V5
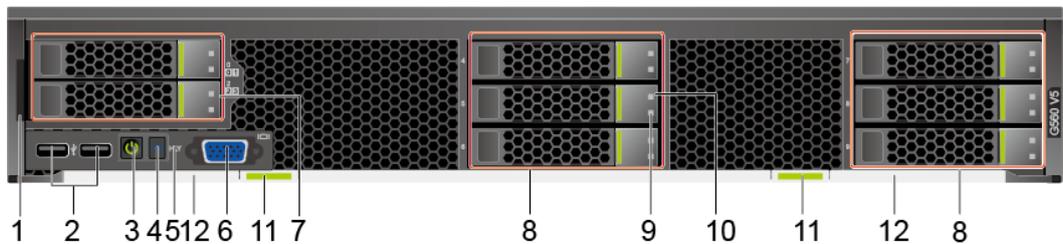
1	Label plate with an SN label	2	USB 3.0 ports

3	Power button/indicator	4	UID button/indicator
5	HLY indicator	6	VGA port
7	2.5-inch SAS/SATA drives[a]	8	2.5-inch SAS/SATA/NVMe drives[b]
9	Drive activity indicator	10	Drive fault indicator
11	Ejector release buttons	12	Ejector lever

NOTE

a: Each M.2 drive module supports two M.2 SSDs.

b: Mixed installation of SAS/SATA/NVMe drives is supported.

Figure 1-7 Front panel of the GP608
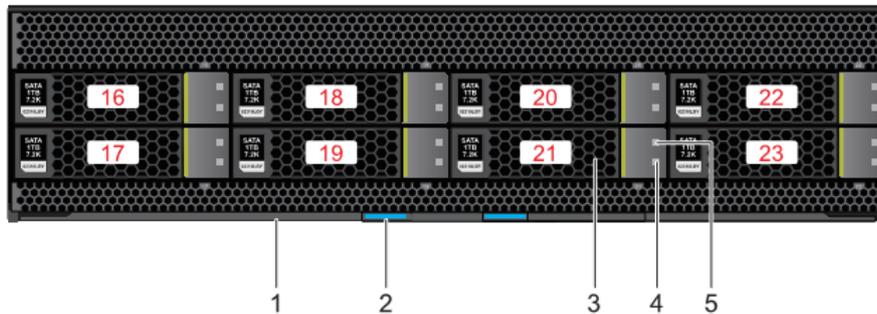
1	Ejector lever	2	Ejector release button
3	3.5-inch SAS or SATA drive	4	Drive activity indicator
5	Drive fault indicator	-	-

NOTE

When a compute node is installed in a chassis, the ejector levers and ejector release buttons on the GP608 panel are invisible because they are blocked by the G560 V5.

Figure 1-8 Front panel of the GS608
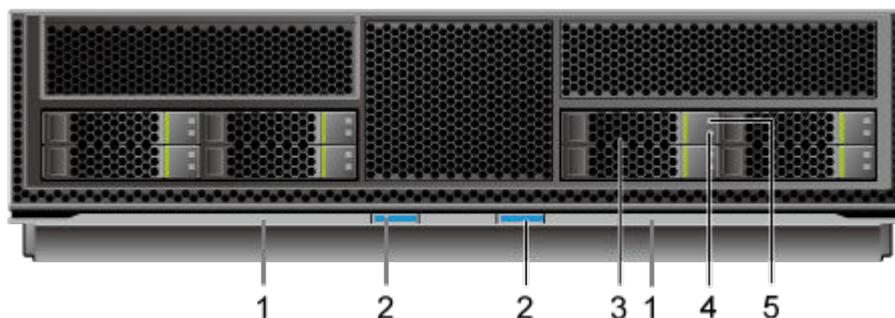
1	Ejector levers	2	Ejector release buttons
3	2.5-inch SAS or SATA drive	4	Drive activity indicator
5	Drive fault indicator	-	-

📖**NOTE**

> When a compute node is installed in a chassis, the ejector levers and ejector release buttons on the GS608 panel are invisible because they are blocked by the G560 V5.

SN

A serial number (SN) is a string that uniquely identifies a server. The SN is required when you apply for Huawei technical support.

Figure 1-9 shows the SN format.

Figure 1-9 SN example

No.	Description
1	SN ID (two characters), which is **21**.
2	Material identification code (eight characters), that is, processing code.
3	Vendor code (two characters). The value **10** indicates Huawei and other values indicate outsourcing vendors.

4	Year and month (two characters).
	● The first character indicates the year. Digits 1 to 9 indicate 2001 to 2009, letters A to H indicate 2010 to 2017, letters J to N indicate 2018 to 2022, and letters P to Y indicate 2023 to 2032.
	  NOTE
	    The years from 2010 are represented by upper-case letters excluding I, O, and Z because the three letters are similar to digits 1, 0, and 2.
	● The second character indicates the month. Digits 1 to 9 indicate January to September, and letters A to C indicate October to December.

5	Serial number (six characters).

No.	Description
6	RoHS compliance (one character). **Y** indicates environment-friendly processing.
7	Internal model, that is, product name.

1.3 Ports

Table 1-1 G560 V5 ports

Port	Type	Quantity	Description
USB port	USB 3.0 Type A	2	The panel provides two USB 3.0 ports, which are compatible with USB 2.0.
VGA port	DB15	1	The panel provides a DB15 VGA port for local maintenance of the compute node.

1.4 Indicators and Buttons

This section describes the indicators and buttons of the G560 V5, GP608, and GS608.

You can learn about the server status by observing the indicators. **Table 1-2**, **Table 1-3**, and **Table 1-4** describe the indicators and buttons of the G560 V5, GP608, and GS608.

Table 1-2 G560 V5 indicators

Silkscreen	Indicator/Button	Color	State Description

PWR ⏻	Power button/ indicator	Yellow and green	● Off: The compute node is not connected to a power source.
			● Blinking yellow: The power button is locked. The power button is locked when the iBMC is being started during the compute node startup.
			● Steady yellow: The compute node is ready to be powered on.
			● Steady green: The compute node is properly powered on.
			NOTE
			  ● When the compute node is powered on, you can press this button for less than 1 second to shut down the OS.
			  ● When the compute node is powered on, holding down this button for 6 seconds will forcibly power it off.
			  ● When the compute node is ready to be powered on, you can press this button for less than 1 second to start it.

UID	UID button/indicator	Blue	The UID indicator is used to locate the compute node in a chassis. You can remotely control the UID indicator status (off, on, or blinking) by using the management module.
			● Off: The compute node is powered off or not being located.
			● On: The compute node is located.
			● Blinking: The compute node is located and differentiated from other located compute nodes.
			NOTE
			  ● You can press this button for less than 1 second to turn on or off the UID indicator.
			  ● You can hold down the UID button for 4 to 6 seconds to reset the iBMC.

Silkscreen	Indicator/Button	Color	State Description
HLY	Health indicator	Red and green	• Off: The compute node is not powered on. • Steady green: The compute node hardware is operating properly. • Blinking red (at 1 Hz): A major alarm has been generated for the compute node. • Blinking red (at 5 Hz): A critical alarm has been generated for the compute node, or the compute node is not securely installed.
▯	NVMe SSD activity indicator	Green	• Off: The SSD is faulty or not detected. • Blinking green: Data is being read from or written to the SSD, or synchronized between SSDs. • Steady green: The SSD is not being accessed.
▨	NVMe SSD fault indicator	Yellow	• Off: The SSD is operating properly. • Blinking yellow (at 0.5 Hz): The SSD completes the hot swap process and is ready to be removed. • Blinking yellow (at 2 Hz): The drive is being located or ejected. • Steady yellow: The SSD is faulty or not detected.
▯	Drive or M.2 module activity indicator	Green	• Off: The drive is faulty or not detected. • Blinking green: Data is being read from or written to the drive, or synchronized between drives. • Steady green: The drive is not being accessed.
▨	Drive or M.2 module fault indicator	Yellow	• Off: The drive is operating properly. • Blinking yellow: The drive is being located, or RAID is being rebuilt. • Steady yellow: The drive is faulty or not detected.

Table 1-3 GP608 indicators

Silkscreen	Indicator	Color	State Description
🗄	Drive activity indicator	Green	● Off: The drive is faulty or not detected. ● Blinking green: Data is being read from or written to the drive, or synchronized between drives. ● Steady green: The drive is not being accessed.
🗄	Drive fault indicator	Yellow	● Off: The drive is operating properly. ● Blinking yellow: The drive is being located, or RAID is being rebuilt. ● Steady yellow: The drive is faulty or not detected.

Table 1-4 GS608 indicators

Silkscreen	Indicator	Color	State Description
🗄	Drive activity indicator	Green	● Off: The drive is faulty or not detected. ● Blinking green: Data is being read from or written to the drive, or synchronized between drives. ● Steady green: The drive is not being accessed.
🗄	Drive fault indicator	Yellow	● Off: The drive is operating properly. ● Blinking yellow: The drive is being located, or RAID is being rebuilt. ● Steady yellow: The drive is faulty or not detected.

1.5 Physical Structure

Figure 1-10, **Figure 1-11**, and **Figure3 GS608 components** show the components of the G560 V5, GP608, and GS608.

Figure 1-10 G560 V5 components
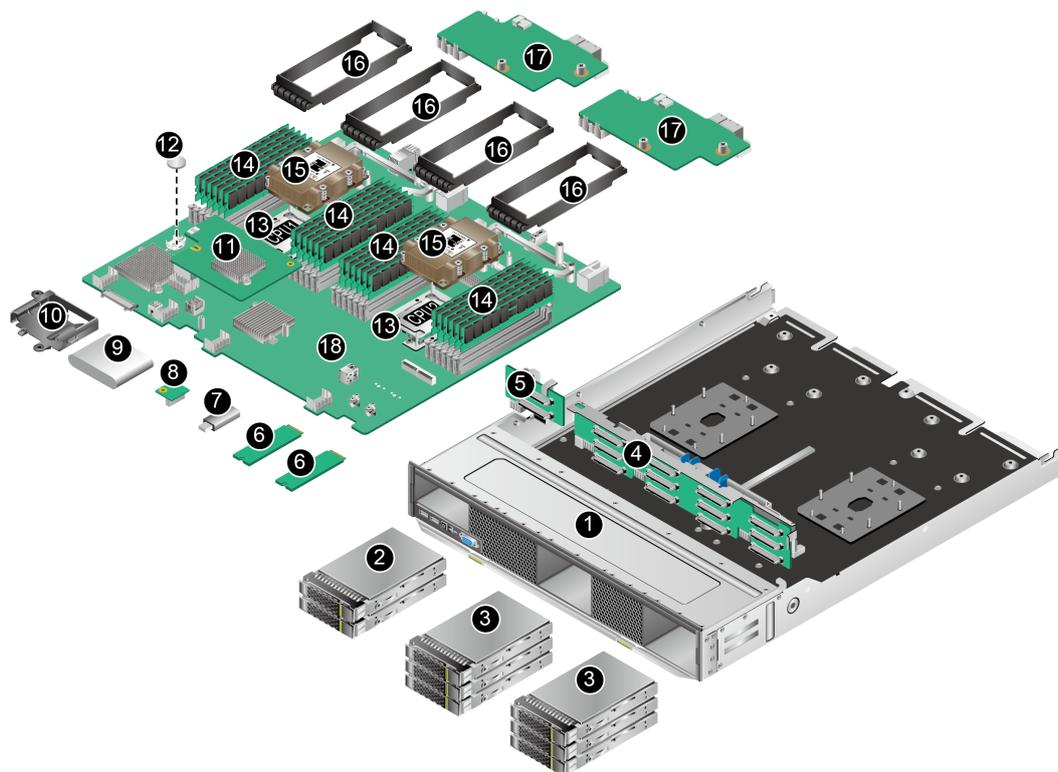
1	G560 V5 case	2	2.5-inch SAS/SATA/M.2 drives[a]
3	2.5-inch SAS/SATA/NVMe drives	4	SAS/SATA/NVMe drive backplane
5	SAS/SATA/M.2 drive backplane	6	M.2 SSDs (optional)
7	USB flash drive (optional)	8	TPM (optional)
9	Supercapacitor (optional)	10	Supercapacitor tray
11	RAID controller card	12	BIOS battery
13	CPUs	14	DIMMs
15	Heat sinks	16	DIMM air ducts
17	Mezzanine cards	18	Mainboard
a: The two slots support 2.5-inch SAS/SATA drives or M.2 drive modules. Each M.2 drive module supports two M.2 FRUs.			

Figure 1-11 GP608 components
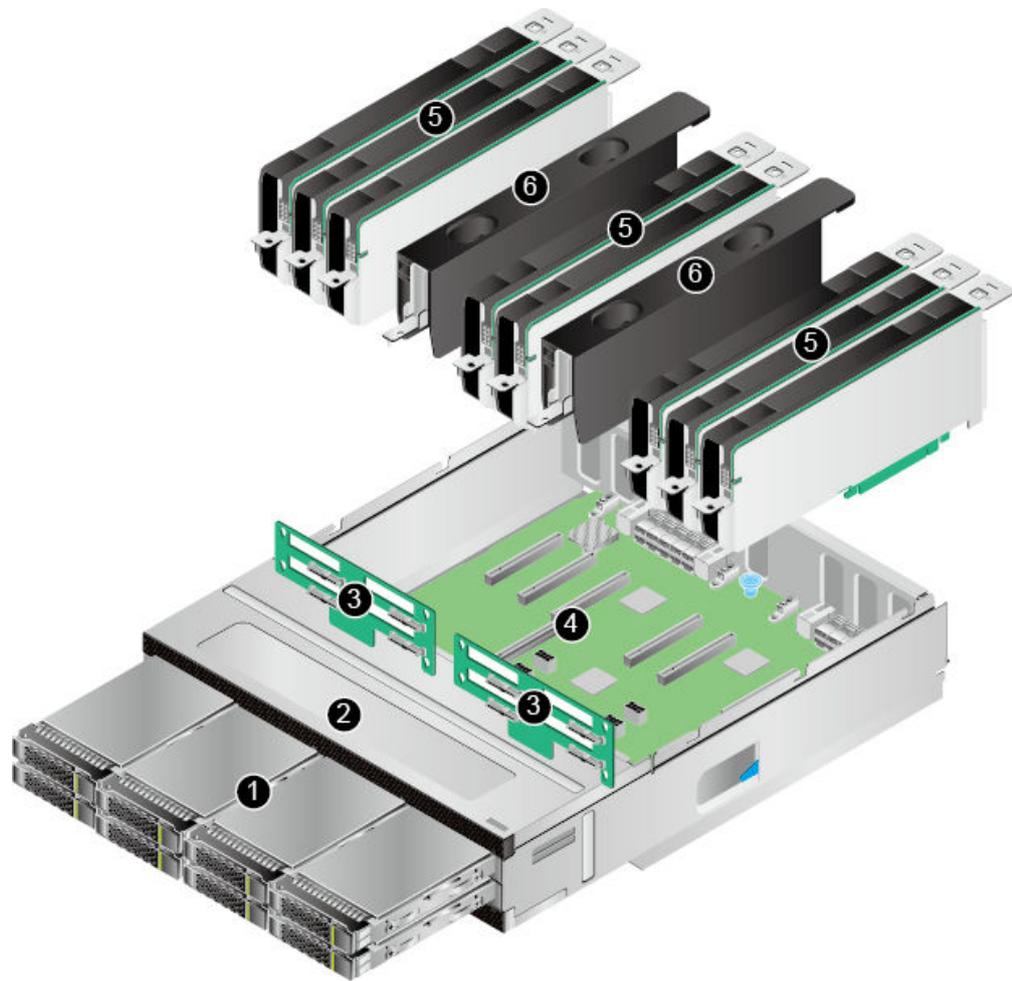
1	SAS/SATA drives	2	GP608 case
3	Drive backplanes	4	PCIe board
5	Full-height full-length dual-slot GPGPU cards	6	Filler modules

Figure 1-12 GS608 components
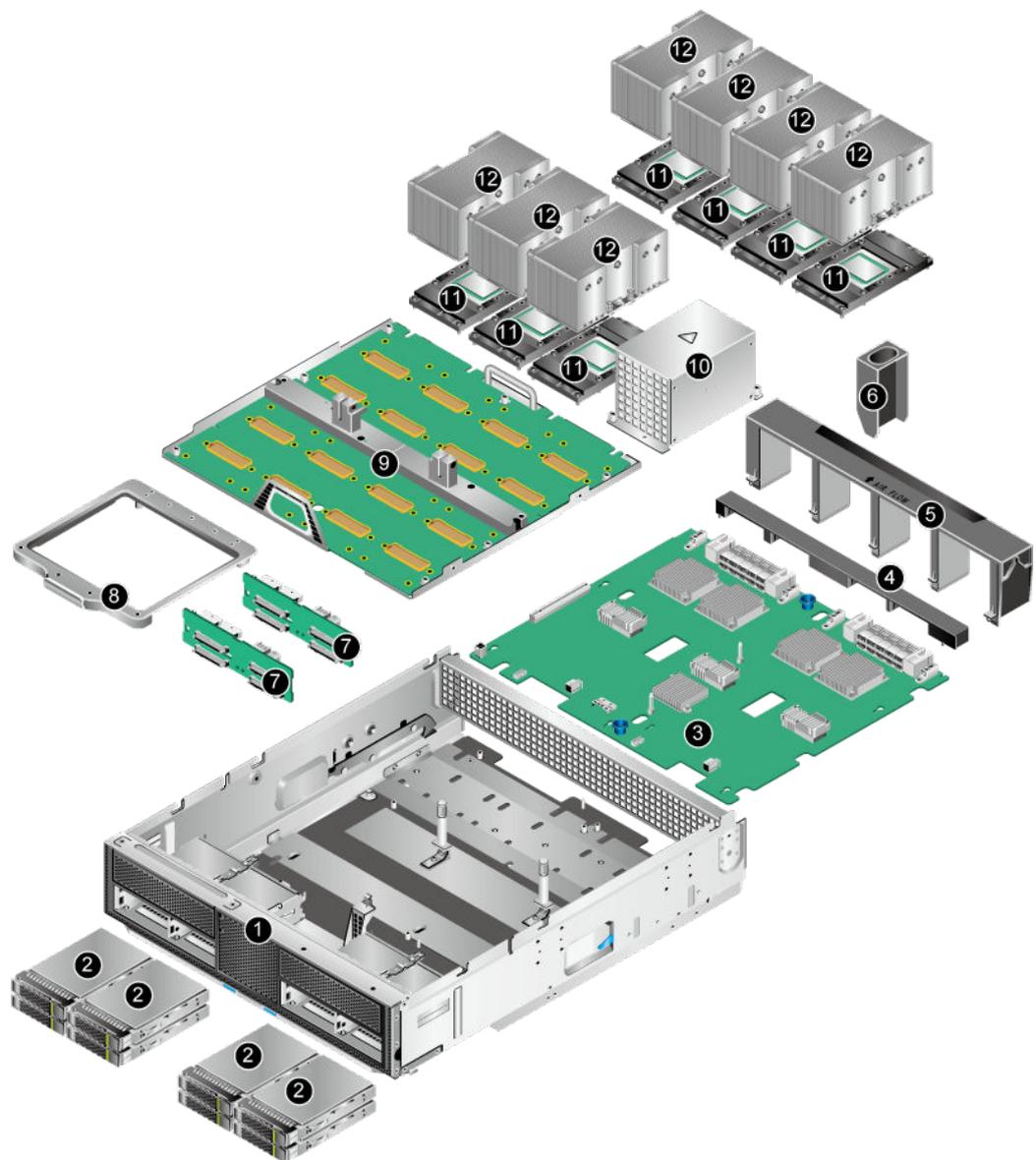
1	GS608 case	2	2.5-inch SAS/SATA drives
3	PCIe board	4	Board air duct
5	GPU air baffle	6	PCIe card air baffle
7	Drive backplanes	8	GPU board handle
9	GPU board	10	GPU filler module
11	GPU cards	12	Heat sinks

1.6 Product Specifications

Table 1-5, Table 1-6, and Table 1-7 describe the G560 V5, GP608, and GS608 specifications.

Table 1-5 G560 V5 specifications

No.	Item	Specifications
1	G560 V5 case	Other components of the G560 V5 are installed inside the case.
2	SAS/SATA/M.2 drive	A maximum of two 2.5-inch SAS/SATA drives or M.2 drive modules can be configured. Each M.2 drive module supports two M.2 SSDs. Each drive or module is hot-swappable and can be independently installed and removed.
3	SAS/SATA/NVMe drive	A maximum of six 2.5-inch HDDs or SSDs (including SAS, SATA, or NVMe SSDs) can be configured. Six SAS/SATA HDDs or SSDs are supported, or six PCIe 3.0 x4 slots are provided for NVMe SSDs. Each SAS/SATA drive is hot-swappable and can be independently installed and removed. Each NVMe SSD can be installed and removed independently and supports orderly hot-swap. Surprise hot-swap is not supported.
4	SAS/SATA/NVMe drive backplane	The backplane helps expand storage capacity and control SAS/SATA/NVMe drives in real time.
5	SAS/SATA/M.2 drive backplane	The backplane helps expand storage capacity and control SAS/SATA/M.2 drives in real time.
6	M.2 SSD (optional)	Each M.2 drive module supports two M.2 SSDs, including the 2242 and 2280 models.
7	USB flash drive (optional)	The mainboard provides one built-in USB port, which can connect to a USB 3.0 device. The dimensions of the device cannot exceed 31.75 mm (height) x 12.00 mm (length) x 4.50 mm (width).
8	TPM (optional)	The server supports TPM 2.0. 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.
9	Supercapacitor (optional)	If the Avago SAS3508 RAID controller card is used, the supercapacitor provides power-off protection.
10	Supercapacitor tray	The supercapacitor tray protects a supercapacitor.

No.	Item	Specifications
11	RAID controller card	The RAID controller card expands the storage capacity of the compute node through drives and ensures data security. The G560 V5 supports an LSI SAS3008, Avago SAS3408, or Avago SAS3508 RAID controller card. The RAID controller card provides eight SAS or SATA ports for connecting to drives to support multiple RAID modes. ● LSI SAS3008: supports two RAID modes, RAID 0 and 1. ● Avago SAS3408: supports two RAID modes, RAID 0 and 1. ● Avago SAS3508: supports seven RAID modes, RAID 0, 1, 5, 6, 10, 50, and 60. A supercapacitor can be configured to provide power-off protection for the Avago SAS3508 RAID controller card.
12	BIOS battery	When the G560 V5 is not powered on, the BIOS battery supplies power to the real time clock (RTC).
13	CPU	The mainboard supports two CPUs. ● The server supports Intel® Xeon® Scalable (Bronze 3100, Silver 4100, Gold 5100/6100, and Platinum 8100) processors, each with a maximum of 28 cores. ● Each CPU is integrated with a memory controller and supports six DDR4 memory channels. Each channel supports two DDR4 DIMMs of a 2400 or 2666 MHz frequency. ● Each CPU is integrated with a PCIe controller with 48 lanes and supports PCIe 3.0. ● The two processors are interconnected through three UltraPath Interconnect (UPI) buses at 10.4 GT/s. ● The maximum frequency is 3.6 GHz. **NOTE** The G560 V5 does not support single-processor configuration, and the two processors must be of the same model.

No.	Item	Specifications
14	Memory	The mainboard provides 24 slots for installing DDR4 DIMMs (12 DIMMs for each CPU). ● Maximum memory speed: 2666 MT/s ● Memory protection: ECC, memory mirroring, and memory sparing ● DIMM types: RDIMMs and LRDIMMs. DIMMs in the same compute node must be of the same type (RDIMM or LRDIMM) and the same specifications (capacity, bit width, rank, and height), and have the same BOM code. To query DIMM BOM numbers, use the **Huawei Server Compatibility Checker**. – RDIMMs: When twenty-four 32 GB RDIMMs and two CPUs are configured, the maximum memory capacity is 768 GB. – LRDIMMs: When twenty-four 64 GB LRDIMMs and two CPUs are configured, the maximum memory capacity is 1536 GB.
15	Heat sink	Cools CPUs. Each CPU is configured with one heat sink.
16	DIMM air duct	Provides ventilation channels for DIMMs.
17	Mezzanine card	The G560 V5 supports two mezzanine cards. Each mezzanine card provides two PCIe 3.0 x16 channels and is connected to the mainboard through four connectors and to the GP608 through the chassis backplane. For details, see **1.9 Logical Structure**. In addition, mezzanine card 1 also provides the SAS channel between the RAID controller card and the GP608.
18	Mainboard	As the most important component of the G560 V5, the mainboard integrates basic components, such as the BIOS chip and PCH chip, and provides CPU sockets and DIMM slots.

Table 1-6 GP608 specifications

No.	Item	Specifications
1	SATA or SAS drive	Up to eight 3.5-inch SAS or SATA drives. The drives are hot-swappable and can be independently installed and removed.
2	GP608 case	Other components of the GP608 are installed inside the case.
3	Drive backplane	The GP608 is configured with two drive backplanes. Each drive backplane supports four drives.
4	PCIe board	Up to nine PCIe slots. For details, see **1.7 PCIe Slots**.
5	GPGPU card	Up to eight full-height full-length dual-slot GPGPU cards. **NOTE** Install filler modules in vacant GPGPU card slots.

No.	Item	Specifications
6	Filler module	Provides ventilation channels. If all eight GPGPU cards are installed and PCIe slot 9 is not used, two filler modules are required. If all eight GPGPU cards are installed and PCIe slot 9 is used, one filler module is required.

Table 1-7 GS608 specifications

No.	Item	Specifications
1	SATA or SAS drive	Up to eight 2.5-inch SAS or SATA drives. The drives are hot-swappable and can be independently installed and removed.
2	GS608 case	Other components of the GS608 are installed inside the case.
3	Drive backplane	The GS608 is configured with two drive backplanes. Each drive backplane supports four drives.
4	GPU board	The GPU board provides eight SXM2 GPGPU slots.
5	PCIe board	The PCIe board is configured with four PCIe switches. It can house four PCIe 3.0 x16 PCIe cards connecting to the G560 V5, four PCIe 3.0 x16 PCIe cards connecting to the I/O module, and eight PCIe 3.0 x16 PCIe cards connecting to the GPU board.
6	GPU card	A maximum of eight SXM2 GPU cards can be configured. **NOTE** Install filler modules in vacant GPGPU card slots.
7	Filler module	Provides ventilation channels. Install filler modules in vacant slots.

1.7 PCIe Slots

Table 1-8 describes the mapping between G560 V5 PCIe slots and CPUs, supported PCIe standards, and B/D/F information.

Table 1-9 and Table 1-10 describe the mapping between GP608 PCIe slots and CPUs, supported PCIe standards, and B/D/F information.

Table 1-11 and Table 1-12 describe the mapping between GS608 PCIe slots and CPUs, supported PCIe standards, and B/D/F information.

Table 1-8 G560 V5 PCIe slots

PCIe Device	CPU	PCIe Standard	Connector Width	Bus Width	Port Number	Root Port B/D/F	Device B/D/F	Slot Size
RAID controller card	CPU 1	PCIe 3.0	x8	x8	Port 1A	17/0/0	18/0/0	Non-standard device
Mezzanine card 1	CPU 1	PCIe 3.0	2 x16	2 x16	Port 2A, Port 3A	3A/0/0, 5D/0/0	3B/0/0, 5E/0/0	Non-standard device
Mezzanine card 2	CPU 2	PCIe 3.0	2 x16	2 x16	Port 2A, Port 3A	AE/0/0, D7/0/0	AF/0/0, D8/0/0	Non-standard device
NVMe PCIe SSD 4	CPU 1	PCIe 3.0	x4	x4	Port 1C	17/2/0	19/0/0	2.5-inch drive
NVMe PCIe SSD 5	CPU 1	PCIe 3.0	x4	x4	Port 1D	17/3/0	1A/0/0	2.5-inch drive
NVMe PCIe SSD 6	CPU 2	PCIe 3.0	x4	x4	Port 1A	85/0/0	86/0/0	2.5-inch drive
NVMe PCIe SSD 7	CPU 2	PCIe 3.0	x4	x4	Port 1B	85/1/0	87/0/0	2.5-inch drive
NVMe PCIe SSD 8	CPU 2	PCIe 3.0	x4	x4	Port 1C	85/2/0	88/0/0	2.5-inch drive
NVMe PCIe SSD 9	CPU 2	PCIe 3.0	x4	x4	Port 1D	85/3/0	89/0/0	2.5-inch drive

☉**NOTE**

- NVMe SSDs 4 and 5 are connected to CPU 1, and NVMe SSDs 6 to 9 are connected to CPU 2. It is recommended that NVMe SSDs are evenly installed to ensure bandwidth balance.

- The preceding B/D/F information is the default system configuration.

Table 1-9 GP608 PCIe slots in topology 1

PCIe Device	CPU	PCIe Standard	Connector Width	Bus Width	Port Number	Root Port B/D/F	Device B/D/F	Slot Size
PCIe slot 1	CPU 1	PCIe 3.0	x16	x16	Port 3A	00/03/0-22/14/0-28/08/0	45/00/0	Full-height full-length dual-slot
PCIe slot 2	CPU 1	PCIe 3.0	x16	x16	Port 3A	00/03/0-22/14/0-28/14/0	51/00/0	Full-height full-length dual-slot
PCIe slot 3	CPU 1	PCIe 3.0	x16	x16	Port 3A	00/03/0-22/14/0-28/10/0	4d/00/0	Full-height full-length dual-slot
PCIe slot 4	CPU 1	PCIe 3.0	x16	x16	Port 3A	00/03/0-22/14/0-28/0c/0	49/00/0	Full-height full-length dual-slot
PCIe slot 5	CPU 1	PCIe 3.0	x16	x16	Port 3A	00/03/0-22/14/0-28/04/0-2a/08/0	2f/00/0	Full-height full-length dual-slot
PCIe slot 6	CPU 1	PCIe 3.0	x16	x16	Port 3A	00/03/0-22/14/0-28/04/0-2a/14/0	3b/00/0	Full-height full-length dual-slot
PCIe slot 7	CPU 1	PCIe 3.0	x16	x16	Port 3A	00/03/0-22/14/0-28/04/0-2a/10/0	37/00/0	Full-height full-length dual-slot
PCIe slot 8	CPU 1	PCIe 3.0	x16	x16	Port 3A	00/03/0-22/14/0-28/04/0-2a/0c/0	33/00/0	Full-height full-length dual-slot
PCIe slot 9	CPU 1	PCIe 3.0	x16	x8	Port 3A	00/03/0-22/0c/0	23/00/0	Full-height full-length single-slot

PCIe Device	CPU	PCIe Standard	Connector Width	Bus Width	Port Number	Root Port B/D/F	Device B/D/F	Slot Size
I/O slot 1	CPU 1	PCIe 3.0	x16	x16	Port 3A	00/03/0-22/0c/0	23/00/0 23/00/1	Half-height half-length single-slot
I/O slot 2	-	PCIe 3.0	x16	x16	-	-	-	Half-height half-length single-slot
I/O slot 3	CPU 2	PCIe 3.0	x16	x16	Port 3A	80/03/0-9e/08/0	9f/00/0 9f/00/1	Half-height half-length single-slot
I/O slot 4	CPU 1	PCIe 3.0	x16	x16	Port 3A	00/03/0-22/14/0-28/04/0-2a/04/0	2b/00/0 2b/00/1	Half-height half-length single-slot

Table 1-10 GP608 PCIe slots in topology 2

PCIe Device	CPU	PCIe Standard	Connector Width	Bus Width	Port Number	Root Port B/D/F	Device B/D/F	Slot Size
PCIe slot 1	CPU 1	PCIe 3.0	x16	x16	Port 3A	00/03/0-22/14/0-28/08/0	2d/00/0	Full-height full-length dual-slot
PCIe slot 2	CPU 1	PCIe 3.0	x16	x16	Port 3A	00/03/0-22/14/0-28/14/0	39/00/0	Full-height full-length dual-slot
PCIe slot 3	CPU 1	PCIe 3.0	x16	x16	Port 3A	00/03/0-22/14/0-28/10/0	35/00/0	Full-height full-length dual-slot

PCIe Device	CPU	PCIe Standard	Connector Width	Bus Width	Port Number	Root Port B/D/F	Device B/D/F	Slot Size
PCIe slot 4	CPU 1	PCIe 3.0	x16	x16	Port 3A	00/03/0-22/14/0-28/0c/0	31/00/0	Full-height full-length dual-slot
PCIe slot 5	CPU 2	PCIe 3.0	x16	x16	Port 3A	80/03/0-9e/10/0-a4/08/0	a9/00/0	Full-height full-length dual-slot
PCIe slot 6	CPU 2	PCIe 3.0	x16	x16	Port 3A	80/03/0-9e/10/0-a4/14/0	b5/00/0	Full-height full-length dual-slot
PCIe slot 7	CPU 2	PCIe 3.0	x16	x16	Port 3A	80/03/0-9e/10/0-a4/10/0	b1/00/0	Full-height full-length dual-slot
PCIe slot 8	CPU 2	PCIe 3.0	x16	x16	Port 3A	80/03/0-9e/10/0-a4/0c/0	ad/00/0	Full-height full-length dual-slot
PCIe slot 9	CPU 1	PCIe 3.0	x16	x8	Port 3A	00/03/0-22/0c/0	23/00/0	Full-height full-length single-slot
I/O slot 1	CPU 1	PCIe 3.0	x16	x16	Port 3A	00/03/0-22/0c/0	23/00/0 23/00/1	Half-height half-length single-slot
I/O slot 2	CPU 1	PCIe 3.0	x16	x16	Port 3A	00/03/0-22/14/0-28/04/0	29/00/0 29/00/1	Half-height half-length single-slot
I/O slot 3	CPU 2	PCIe 3.0	x16	x16	Port 3A	80/03/0-9e/08/0	9f/00/0 9f/00/1	Half-height half-length single-slot

PCIe Device	CPU	PCIe Standard	Connector Width	Bus Width	Port Number	Root Port B/D/F	Device B/D/F	Slot Size
I/O slot 4	CPU 2	PCIe 3.0	x16	x16	Port 3A	80/03/0-9e/10/0-a4/04/0	a5/00/0 a5/00/1	Half-height half-length single-slot

📖 **NOTE**

- The CPUs to which PCIe slots 5 to 8 and I/O slot 4 are connected vary depending on the logical topology. For details, see **1.9 Logical Structure**.

- PCIe slot 9 and I/O slot 1 are mutually exclusive and cannot be used at the same time. By default, I/O slot 1 is selected.

- I/O slot 2 is valid only in logical topology 2.

- PCIe cards in PCIe slots 1 to 9 require Huawei-customized brackets.

- The preceding B/D/F information is the system default configuration. If PCIe cards with the PCI bridge function are configured, the B/D/F allocation result will change.

- The B/D/F allocation result of an I/O card with two ports is used as an example. Each port corresponds to one B/D/F allocation result.

Table 1-11 Logical topology 1 of GS608 PCIe slots and GPU slots

PCIe Device	CPU	PCIe Standard	Connector Width	Bus Width	Port Number	Root Port B/D/F	Device B/D/F	Slot Size
GPU 1	CPU 1	PCIe 3.0	x16	x16	Port 2A	28/08/00	2d/00/00	SXM2
GPU 2	CPU 1	PCIe 3.0	x16	x16	Port 3A	55/0C/00	5b/00/00	SXM2
GPU 3	CPU 1	PCIe 3.0	x16	x16	Port 2A	28/10/00	32/00/00	SXM2
GPU 4	CPU 1	PCIe 3.0	x16	x16	Port 3A	55/10/00	5f/00/00	SXM2
GPU 5	CPU 2	PCIe 3.0	x16	x16	Port 2A	B0/08/00	b5/00/00	SXM2
GPU 6	CPU 2	PCIe 3.0	x16	x16	Port 3A	D9/0C/00	df/00/00	SXM2
GPU 7	CPU 2	PCIe 3.0	x16	x16	Port 2A	B0/14/00	be/00/00	SXM2
GPU 8	CPU 2	PCIe 3.0	x16	x16	Port 3A	D9/14/00	e7/00/00	SXM2

PCIe Device	CPU	PCIe Standard	Connector Width	Bus Width	Port Number	Root Port B/D/F	Device B/D/F	Slot Size
GPU 3	CPU 1	PCIe 3.0	x16	x16	Port 2A	28/10/00	44/00/00	SXM2
GPU 4	CPU 1	PCIe 3.0	x16	x16	Port 2A	32/10/00	3c/00/00	SXM2
GPU 5	CPU 2	PCIe 3.0	x16	x16	Port 2A	B0/08/00	b5/00/00	SXM2
GPU 6	CPU 2	PCIe 3.0	x16	x16	Port 2A	ba/0C/00	c0/00/00	SXM2
GPU 7	CPU 2	PCIe 3.0	x16	x16	Port 2A	B0/14/00	d0/00/00	SXM2
GPU 8	CPU 2	PCIe 3.0	x16	x16	Port 2A	ba/14/00	c8/00/00	SXM2
I/O slot 1	CPU 1	PCIe 3.0	x16	x16	Port 2A	28/04/00	29/00/00	Half-height half-length single-slot
I/O slot 2	CPU 1	PCIe 3.0	x16	x16	Port 2A	32/04/00	34/00/00	Half-height half-length single-slot
I/O slot 3	CPU 2	PCIe 3.0	x16	x16	Port 2A	B0/04/00	B1/00/00	Half-height half-length single-slot
I/O slot 4	CPU 2	PCIe 3.0	x16	x16	Port 2A	ba/04/00	bc/00/00	Half-height half-length single-slot

PCIe Device	CPU	PCIe Standard	Connector Width	Bus Width	Port Number	Root Port B/D/F	Device B/D/F	Slot Size
PCIe slot	CPU 1	PCIe 3.0	x8	x8	Port 2A	28/14/0 0	48/00/0 0	Full-height full-length single-slot card

1.8 Mainboard Layout

Figure 1-13 and **Figure 1-14** show the connectors and key components on the mainboard of the G560 V5 and the PCIe board of the GP608. **Figure 1-15**, **Figure 1-16**, and **Figure 1-17** show the connectors and key components on the GPU board and PCIe board of the GS608.

Figure 1-13 G560 V5 connectors and components
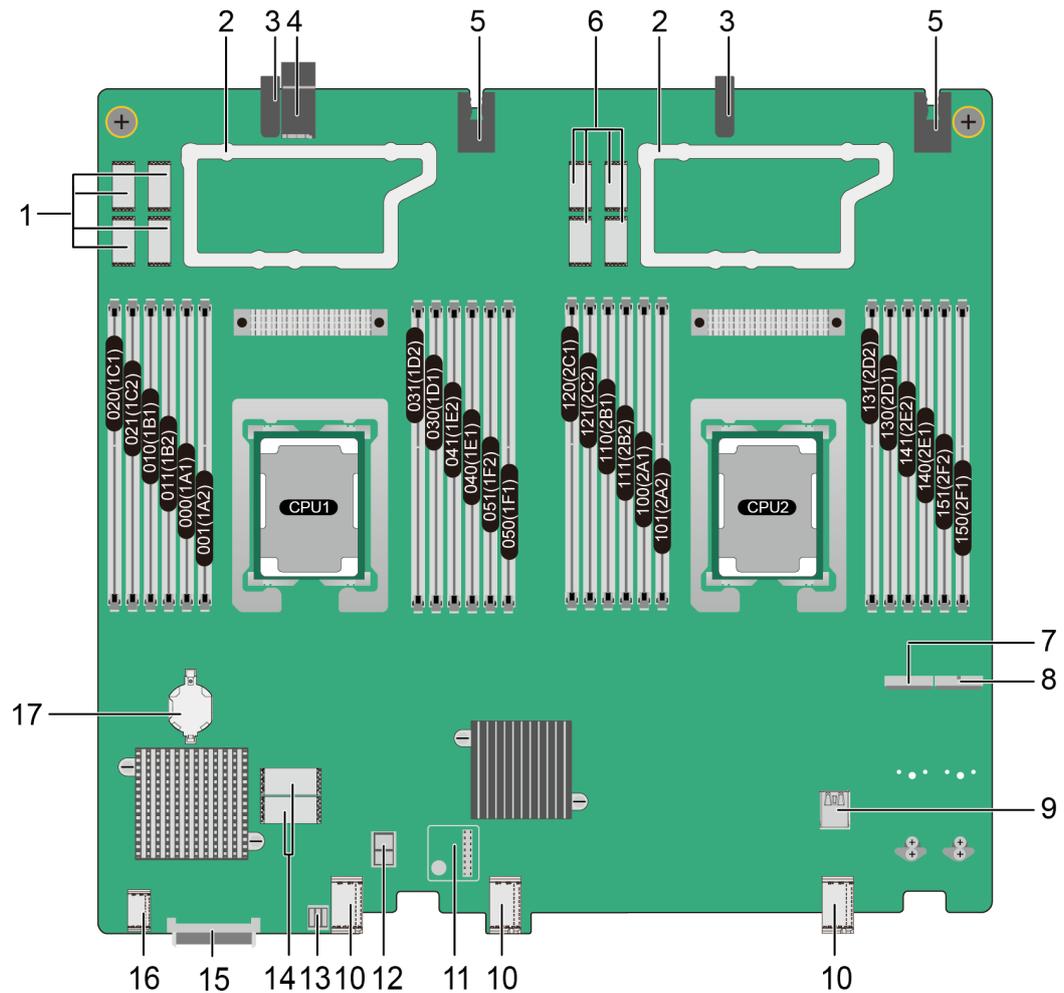
1	Channel 1 connector of mezzanine card 1	2	Mezzanine card trays
3	Backplane guide sleeves	4	Backplane signal connector
5	Backplane power connectors	6	Mezzanine card 2 connectors
7	M.2 connector 1	8	M.2 connector 2
9	USB ports[a]	10	SAS/SATA/NVMe drive backplane connectors
11	TPM connector	12	Mini-SAS connector
13	SAS/SATA/NVMe drive backplane power connector	14	RAID controller card connectors
15	User interface board connector	16	SAS/SATA/M.2 drive backplane connector
17	BIOS battery	-	-

📖**NOTE**

a: There are two built-in USB ports. Only the upper USB port is available, and the lower USB port is not for use.

Figure 1-14 GP608 connectors and components
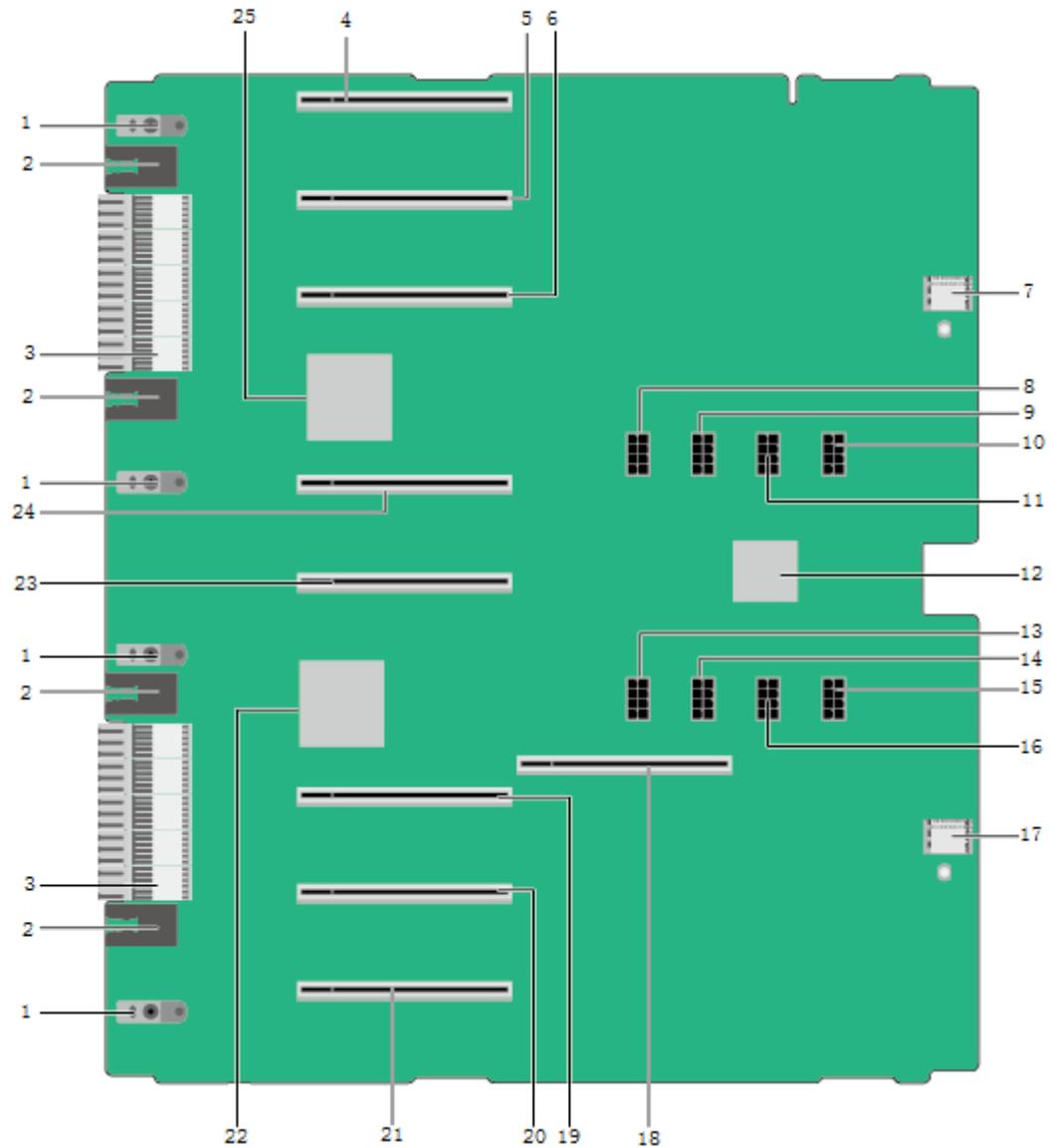
1	Backplane guide sleeves	2	Backplane power connector
3	Backplane signal connector	4	PCIe slot 8
5	PCIe slot 7	6	PCIe slot 6
7	Drive backplane 2 connector	8	PCIe slot 5 auxiliary power connector
9	PCIe slot 6 auxiliary power connector	10	PCIe slot 8 auxiliary power connector
11	PCIe slot 7 auxiliary power connector	12	SAS expander

13	PCIe slot 4 auxiliary power connector	14	PCIe slot 3 auxiliary power connector
15	PCIe slot 1 auxiliary power connector	16	PCIe slot 2 auxiliary power connector
17	Drive backplane 1 connector	18	PCIe slot 9 (reserved)
19	PCIe slot 3	20	PCIe slot 2
21	PCIe slot 1	22	PCIe switch 1
23	PCIe slot 4	24	PCIe slot 5
25	PCIe switch 2	-	-

☐NOTE

The auxiliary power supplies of the PCIe cards installed in PCIe slots 1 to 8 must be connected to PCIe slots 1 to 8 auxiliary power connectors on the GP608 PCIe board.

Figure 1-15 GS608 GPU board connectors and components (front view)
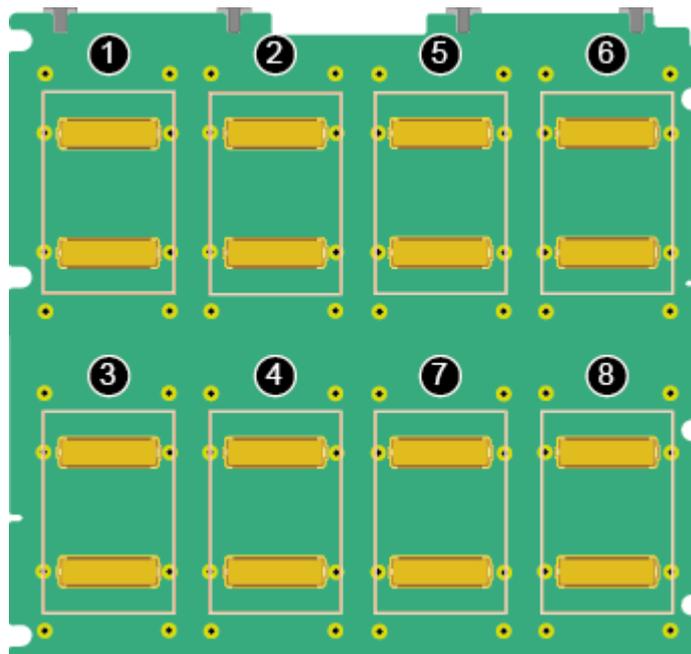
1	GPU slot 1	2	GPU slot 2
3	GPU slot 3	4	GPU slot 4
5	GPU slot 5	6	GPU slot 6
7	GPU slot 7	8	GPU slot 8

Figure 1-16 GS608 GPU board connectors and components (rear view)
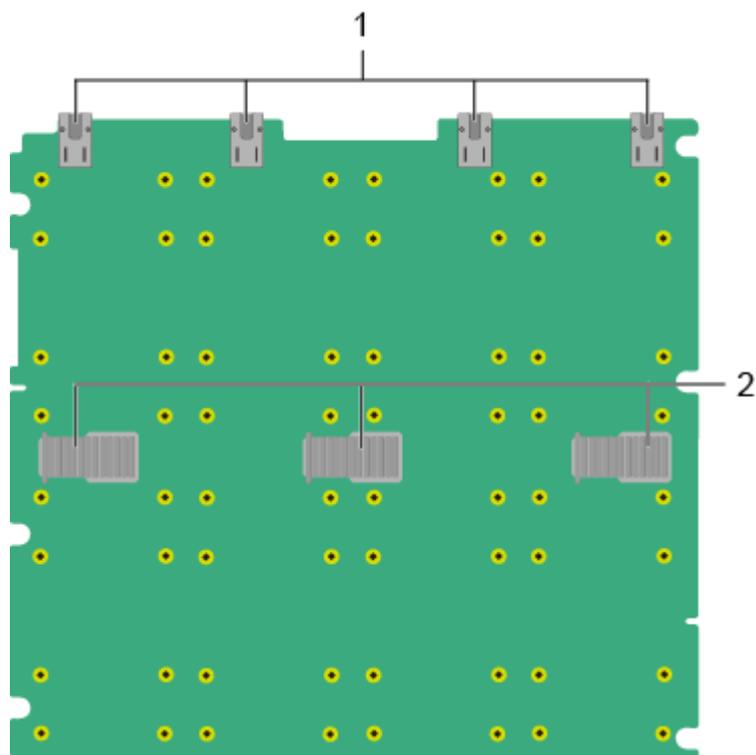
1	GPU board power connectors	2	GPU board and PCIe board connectors

Figure 1-17 GS608 PCIe board components
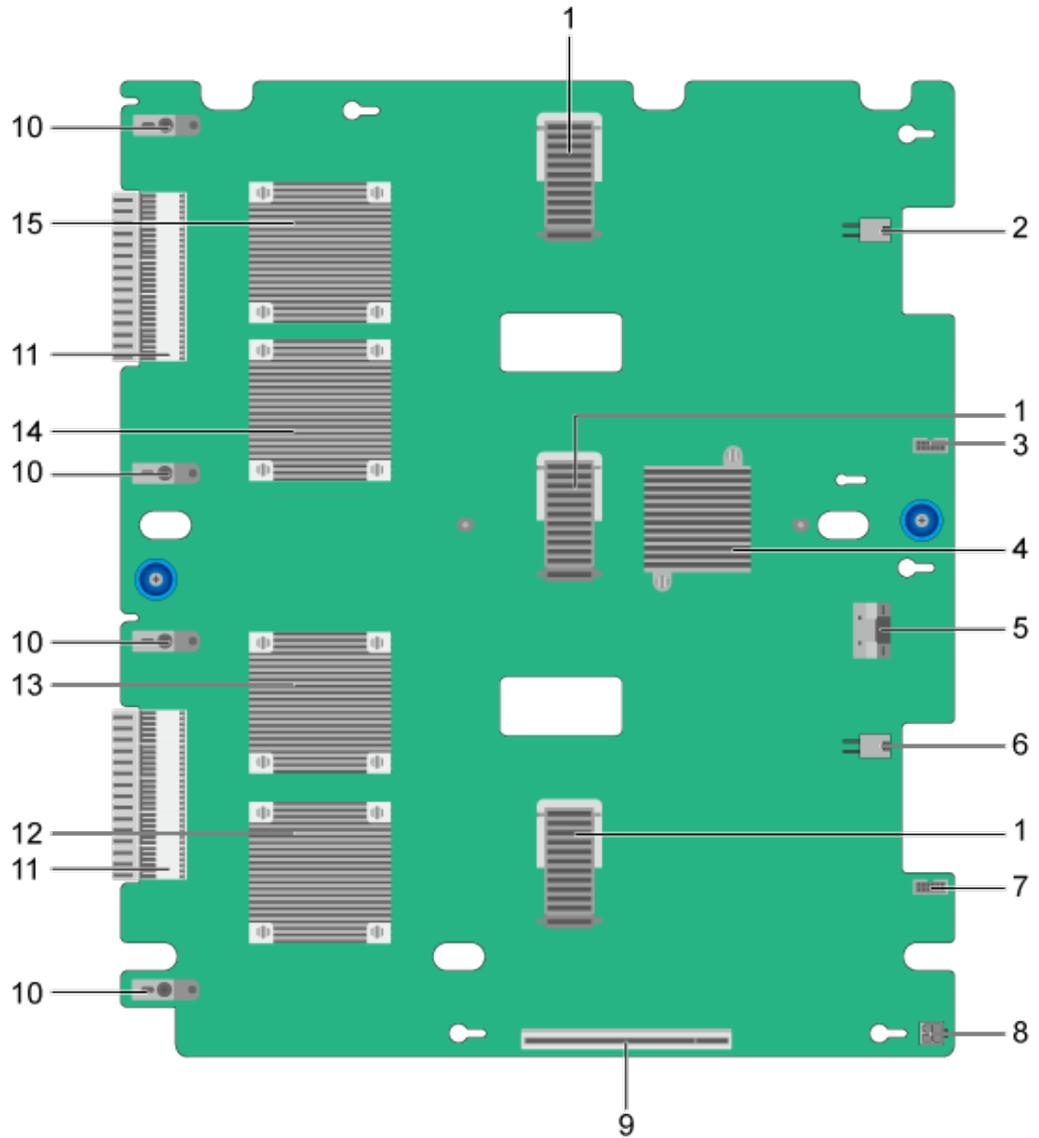
1	GPU board connectors	2	Drive backplane power connector 1
3	Drive backplane low-speed signal connector 1	4	SAS expander
5	Drive backplane high-speed signal connector	6	Drive backplane power connector 2
7	Drive backplane low-speed signal connector 2	8	Expansion slot power connector
9	PCIe slot	10	Backplane guide sleeves
11	Backplane signal connectors	12	PCIe switch 1
13	PCIe switch 2	14	PCIe switch 3

15	PCIe switch 4	-	-

1.9 Logical Structure

Each CPU of the G560 V5 provides two PCIe x16 ports to connect to the two PCIe switches and I/O slots 1 and 3 in the GP608 through the mezzanine cards and chassis backplane.

The RAID controller card in the G560 V5 is connected to a mezzanine card and then to the SAS expander in the GP608 through SAS x4 cables. The RAID controller card is connected to the eight 3.5-inch SAS or SATA drives in the GP608, and the eight 2.5-inch SAS or SATA drives in the G560 V5 when there is no NVMe SSD.

The G560 V5 supports the following storage capability options:

● An LSI SAS3008 or Avago SAS3408 RAID controller card can be configured to support two 2.5-inch local SAS/SATA/M.2 drives and six local SAS/SATA/NVMe drives, supporting RAID 0 and 1.

● An Avago SAS3508 controller card can be configured to support two 2.5-inch local SAS/SATA/M.2 drives, six local SAS/SATA/NVMe drives, and eight external 3.5-inch SAS/SATA drives, supporting RAID 0, 1, 5, 6, 10, 50, and 60.

The G560 V5 supports the following external ports:

● Two USB 3.0 ports are provided on the front panel and one USB 3.0 port is provided on the mainboard.

● Two SFP+ Ethernet ports are provided by the 10GE NIC that is integrated into the PCH and connected to the management module through the chassis backplane.

● One DB15 VGA port is provided on the front panel by the iBMC built-in video card. This port is used for the local maintenance of the compute node.

The two PCIe switches on the GP608 PCIe board are connected to eight PCIe x16 PCIe slots and two PCIe x16 I/O slots (I/O slots 2 and 4). The PCIe slots and I/O slots are used for installing GPGPU cards and NICs respectively. By means of programming control of the GP608, two logical topologies are available to meet requirements of different service models.

The GS608 GPU board supports eight SXM2 GPGPU slots for installing GPGPU cards. The PCIe board integrates four PCIe switches for connecting to the eight GPGPU cards on the GPU board, four PCIe cards on the I/O module, and the one I/O card on the PCIe board itself. By means of programming control of the GS608, two logical topologies are available to meet requirements of different service models.

Figure 1-18 and **Figure 1-19** show the logical topologies of the G560 V5 and GP608.

Figure 1-18 G560 V5 and GP608 logical topology 1
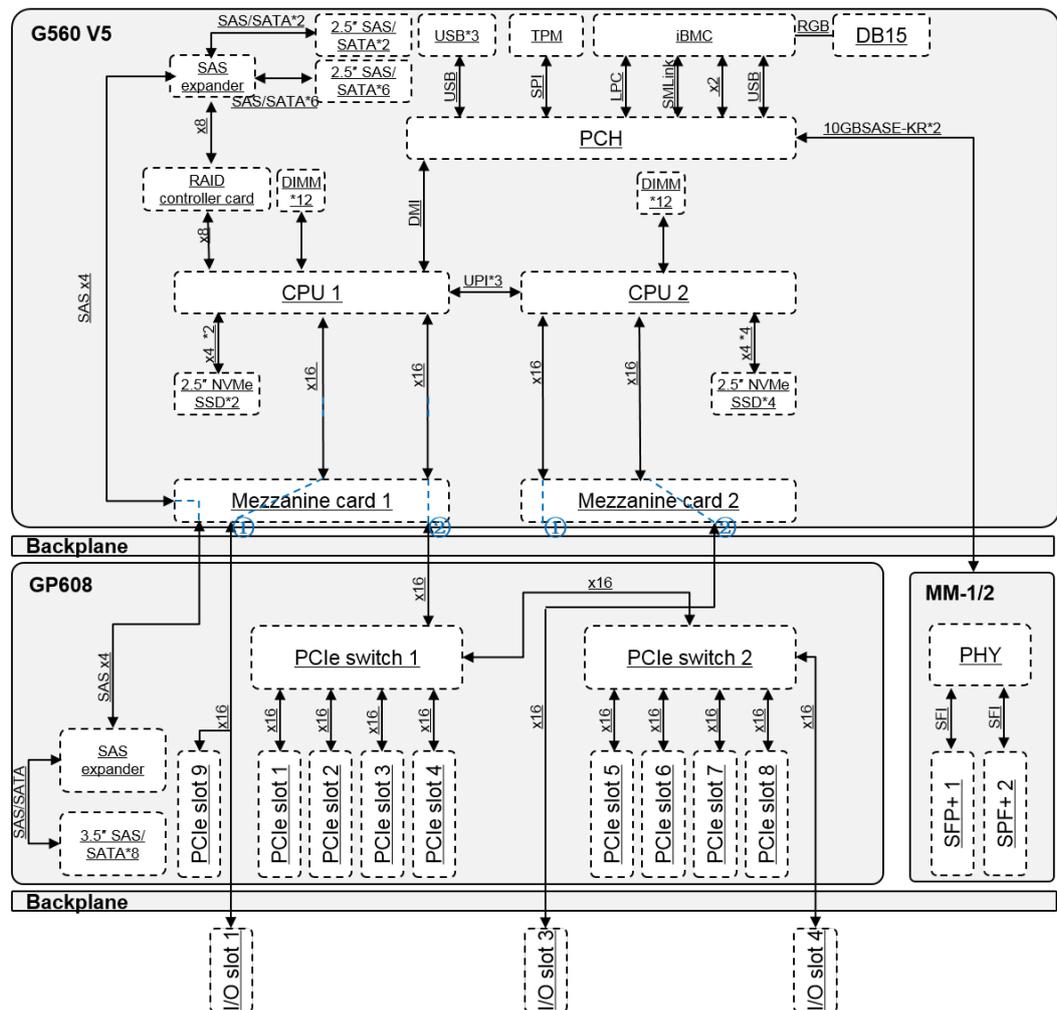
In this logical topology, the two PCIe switches in the GP608 are cascaded, and PCIe slots 1 to 8 belong to the same root port of the CPUs, supporting direct data transmission between a maximum of eight GPGPU cards with an optimal delay. This topology is ideal for machine learning. In this logical topology, I/O slot 2 is unavailable.

☉**NOTE**

If an InfiniBand NIC is used to support a GPGPU cluster, I/O slot 4 is recommended.

Figure 1-19 G560 V5 and GP608 logical topology 2
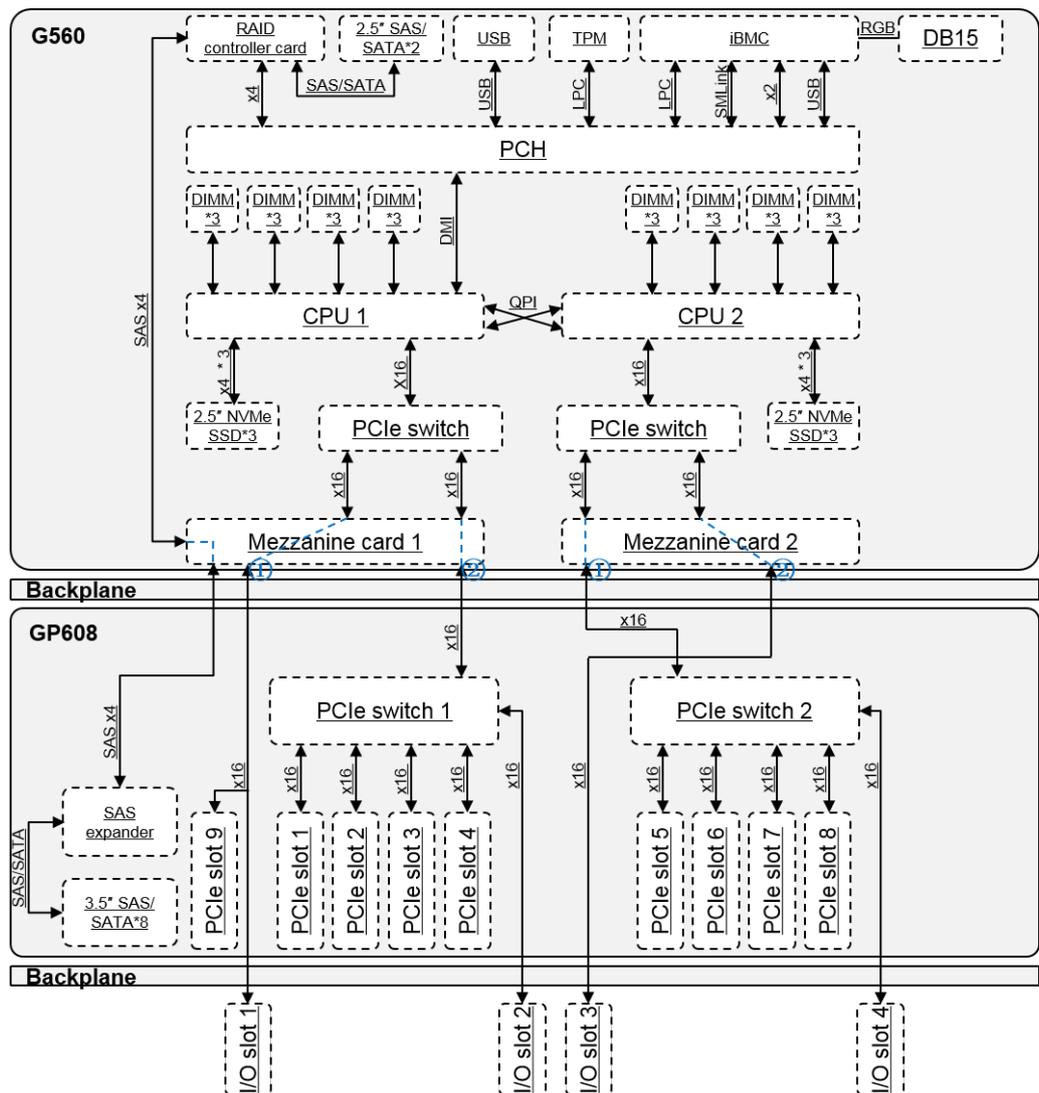
In this logical topology, the two PCIe switches of the GP608 are connected to the two CPUs respectively and provide higher uplink bandwidth for PCIe slots 1 to 8. This topology is ideal for HPC and public cloud scenarios. This topology supports direct data transmission between a maximum of four GPGPU cards.

◡**NOTE**

If InfiniBand NICs are used to support GPGPU clusters, I/O slots 2 and 4 are recommended.

Figure 1-20 G560 V5 and GS608 logical topology 1

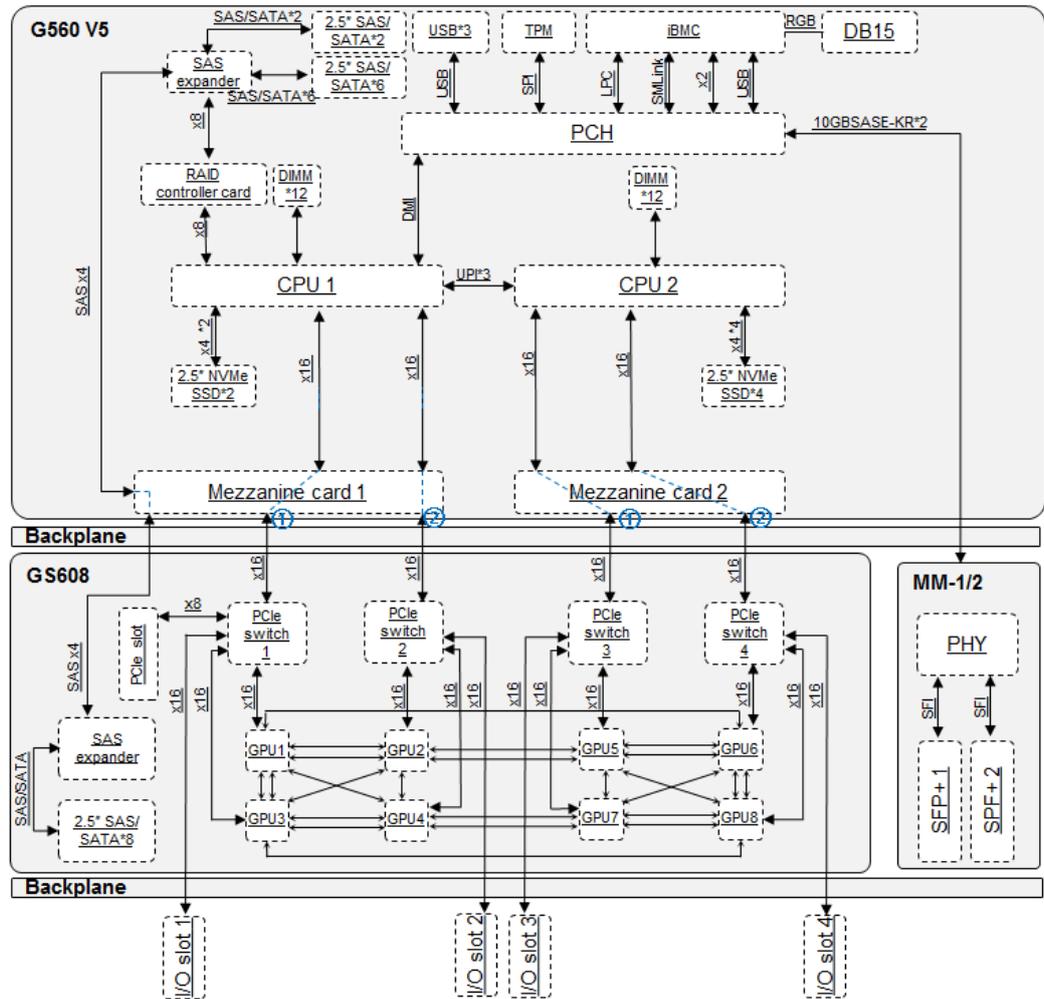In the logical topology, each of four switches in the GS608 has one PCIe x16 uplink port for connecting to the processors, providing a larger uplink bandwidth for the eight GPUs.

Figure 1-21 G560 V5 and GS608 logical topology 2
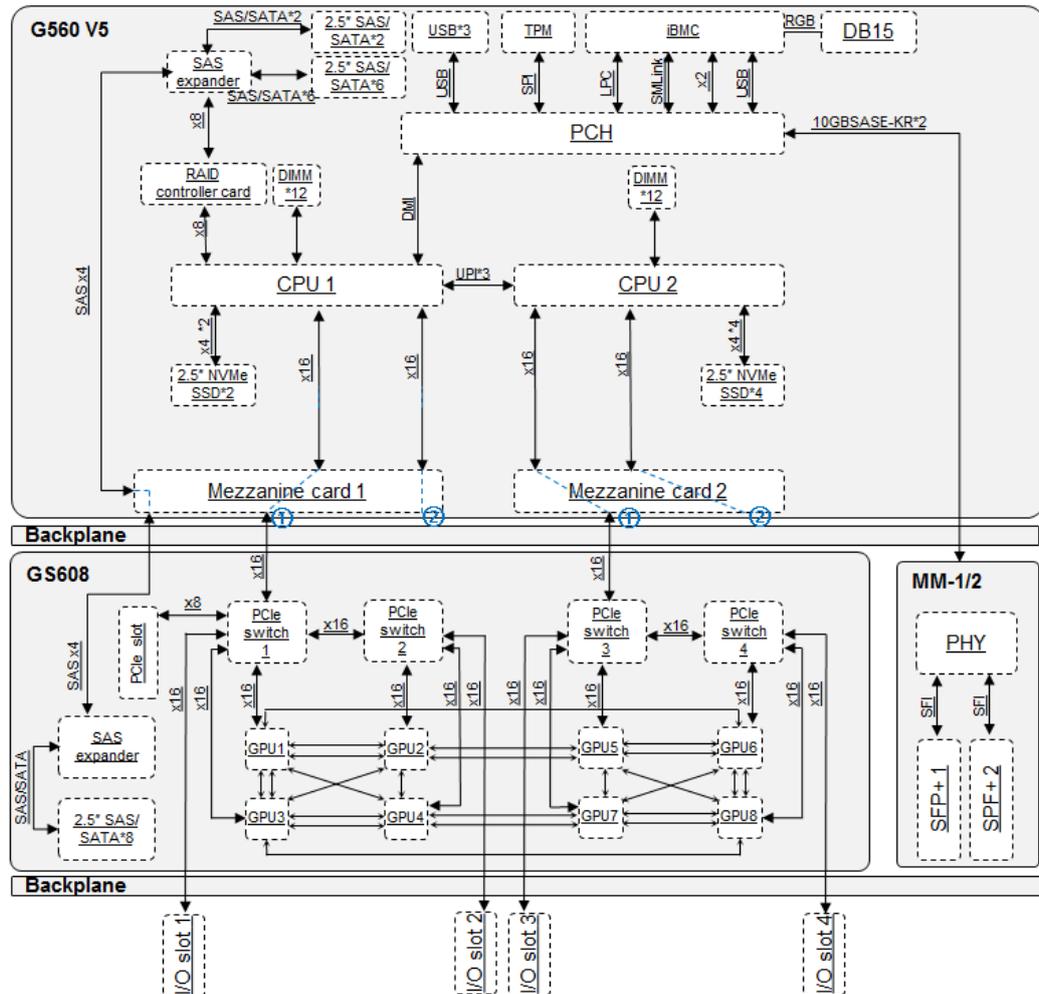
In this logical topology, four PCIe switches in the GS608 are cascaded. That is, PCIe switch 1 and PCIe switch 2 are cascaded, and PCIe switch 3 and PCIe switch 4 are cascaded.

📖**NOTE**

If the InfiniBand NIC to be configured in the I/O slot supports a GPU cluster, you are advised to install the NIC in I/O slot 1, 2, 3, or 4.

1.10 Technical Specifications

Table 1-13 provides the technical specifications of the G560 V5, GP608, and GS608.

Table 1-13 Technical specifications

Category	Item	Specifications
Physical specifications	Dimensions (H x W x D)	● G560 V5: 60.46 mm x 423 mm x 537.2 mm (2.38 in. x 16.65 in. x 21.15 in.) ● GP608: 122.85 mm × 437.4 mm × 540 mm (4.84 in. x 17.22 in. x 21.26 in.) ● GS608: 122.85 mm × 437.4 mm × 540 mm (4.84 in. x 17.22 in. x 21.26 in.)
	Color	● Front panel: black ● Casing: silver

	Weight	● G560 V5
		  – Net weight (with eight drives): 12 kg (26.46 lb)
		  – Packing materials: 3.42 kg (7.54 lb)
		● GP608
		  – Net weight (with eight drives and eight GPGPU cards): 22 kg (48.51 lb)
		  – Packaging materials: 4.5 kg (9.92 lb)
		● GS608
		  – Net weight (with eight drives and eight GPGPU cards): 23 kg (50.72 lb)
		  – Packaging materials: 4.5 kg (9.92 lb)

Environmental specifications	Temperature	● Operating temperature: 5°C to 35°C (41°F to 95°F) ● Storage temperature: -40°C to +65°C (-104°F to +149°F) ● Maximum change rate: 20°C/h (36°F/h)
	Humidity	● Operating humidity: 8% to 90% RH (non-condensing) ● Storage humidity: 5% to 95% RH (non-condensing) ● Maximum change rate: 20% RH/h
	Altitude	● Maximum altitude: 3048 m (9999.88 ft). For altitudes above 900 m (2952.72 ft), the operating temperature decreases by 1°C (1.8°F) for every increase of 300 m (984.24 ft) in altitude. ● HDDs are not supported when the altitude is higher than 3000 m (9842.4 ft).
	Corrosive gaseous contaminant	● Copper corrosion rate test requirements: The corrosion product thickness growth rate is lower than 300 Å/month (meeting level G1 requirements of the ANSI/ISA-71.04-2013 standard on gaseous corrosion). ● Corrosion rate of the silver test piece: < 200 Å/month

Category	Item	Specifications
	Particle contaminant	- The equipment room environment meets the requirements of ISO 14664-1 Class 8. You are advised to hire a professional organization to monitor particle contaminants in the equipment room. - The equipment room is free from explosive, conductive, magnetic conductive, and corrosive dust.
Input power specifications	Rated input voltage	12 V DC
Power consumption	Maximum power consumption	- G560 V5: 750W - GP608: 2400 W - GS608: 2750 W

2 Product Features

- The G560 V5 supports lntel® Xeon® Scalable processors (Bronze 3100, Silver 4100, Gold 5100/6100, or Platinum 8100), each with a maximum of 28 cores. The maximum frequency is 3.6 GHz. The two processors provide a large capacity of L3 cache and are interconnected through three UPI links at 10.4 GT/s. With the two processors, the G560 V5 delivers higher processing performance.

- The G560 V5 supports multiple drive configurations, enabling elastic and scalable storage capacity expansion.
  - Supports a maximum of six 2.5-inch SAS/SATA/NVMe drives to provide high-performance storage and meet various requirements for storage capacities and capacity expansion. It also provides two 2.5-inch SAS/SATA/M.2 drives for local OS installation.
  - Supports eight 3.5-inch SAS/SATA drives to expand the storage capability of the compute node.
  - Supports three types of RAID controller cards: LSI SAS3008, Avago SAS3408, and Avago SAS3508.

- The GP608 supports eight full-height full-length dual-slot PCIe 3.0 x16 slots for installing GPGPU cards or other accelerators. Each card supports 300 W heat dissipation and power distribution capability.

- The GS608 supports eight SXM2 GPGPU card slots for installing SXM2 GPGPU cards. Each card supports 300 W heat dissipation and power distribution capability.

- The server supports flexible PCIe topology programming, meeting requirements of different service models.

- The PCIe slots, SAS expander, SAS/SATA drives, PCIe switches, and system I/O modules in the GP608/GS608 can be powered on only when the G560 V5 is powered on, minimizing power consumption when the G560 V5 is not powered on or installed.

3 Components

Use the **Huawei Server Compatibility Checker** to check the software and hardware supported by the G560 V5, GP608, and GS608.

CPU

The G560 V5 supports two CPUs.

- The G560 V5 supports Intel® Xeon® Scalable CPUs (Bronze 3100, Silver 4100, Gold 5100/6100, or Platinum 8100), each with a maximum of 28 cores. Use the **Huawei Server Compatibility Checker** to obtain the specific CPU models.
- Each CPU integrates memory controllers for supporting six DDR4 memory channels. Each memory channel supports two DDR4 DIMMs of 2400 or 2666 MT/s.
- Each CPU integrates PCIe controllers for supporting PCIe 3.0 and providing 48 lanes.
- The two CPUs are interconnected through three UPI links at 10.4 GT/s.
- The maximum frequency is 3.6 GHz.

Memory

The G560 V5 provides 24 slots for installing DIMMs (12 DIMMs for each CPU). At least one DIMM must be configured.

Memory Configuration Rules

Observe the following rules when configuring DIMMs:

1. The G560 V5 supports DIMMs of 8 GB, 16 GB, 32 GB, and 64 GB. A server fully configured with DIMMs has up to 1536 GB of memory.
2. The maximum number of DIMMs supported by a compute node varies depending on the CPU type, DIMM type, and number of ranks. For details, see Maximum number of DIMMs in **Table 1 DIMM configuration rules for Intel® Xeon® Scalable CPUs**.

   📖**NOTE**
   - The DIMM slots of CPU 1 must be configured with DIMMs. If DIMMs are configured only in the DIMM slots of CPU 2, the compute node cannot be powered on.
   - Number of DIMMs per channel ≤ Number of ranks per channel/Number of ranks per DIMM.

3. DIMMs in the same compute node must be of the same type (RDIMM or LRDIMM) and the same specifications (capacity, bit width, rank, and height), and have the same BOM code. To query DIMM BOM numbers, use the **Huawei Server Compatibility Checker**.

4. All DIMMs operate at the same speed, which is the smaller value of:
   - Memory speed supported by a CPU
   - The smallest values among the maximum operating speed of specific DIMMs. See the **Maximum Operating Speed** in **Table 3-1**.

Table 3-1 DIMM configuration rules for Intel® Xeon® Scalable CPUs

Item		Specifications	
Rank		Dual-rank	Quad-rank
Rated speed (MT/s)		2666	2666
Rated voltage (V)		1.2	1.2
Operating voltage (V)		1.2	1.2
Maximum number of DIMMs		24	24
Maximum capacity per DIMM (GB)		32	64
Maximum memory capacity (GB)		768	1536
Maximum memory capacity at maximum operating speed (GB)		768	1536
Maximum operating speed (MT/s)	One DIMM per channel	2666	2666
	Two DIMMs per channel	2666	2666
This table is for reference only. For details about the components that can be purchased, consult the local Huawei sales representatives.			

DIMM Slot Configuration Rules

The G560 V5 provides 24 DDR4 DIMM slots. Each CPU integrates six memory channels.

- The memory channels for CPU 1 are 1A, 1B, 1C, 1D, 1E, and 1F.
- The memory channels for CPU 2 are 2A, 2B, 2C, 2D, 2E, and 2F.

  Table 3-2 lists channels for each CPU.

  Slots 1A1, 1B1, 1C1, 1D1, 1E1, 1F1, 2A1, 2B1, 2C1, 2C1, 2D1, 2E1, and 2F1 are the primary slots of channels 1A, 1B, 1C, 1D, 1E, 1F, 2A, 2B, 2C, 2D, 2E, and 2F, respectively. When installing DIMMs, install the primary DIMMs first.

Table 3-2 Channels

CPU	Channel	DIMM
CPU 1	1A	DIMM000(1A1)
		DIMM001(1A2)
	1B	DIMM010(1B1)

CPU	Channel	DIMM
		DIMM011(1B2)
	1C	DIMM020(1C1)
		DIMM021(1C2)
	1D	DIMM030(1D1)
		DIMM031(1D2)
	1E	DIMM040(1E1)
		DIMM041(1E2)
	1F	DIMM050(1F1)
		DIMM051(1F2)
CPU 2	2A	DIMM100(2A1)
		DIMM101(2A2)
	2B	DIMM110(2B1)
		DIMM111(2B2)
	2C	DIMM120(2C1)
		DIMM121(2C2)
	2D	DIMM130(2D1)
		DIMM131(2D2)
	2E	DIMM140(2E1)
		DIMM141(2E2)
	2F	DIMM150(2F1)
		DIMM151(2F2)

Table 3-3 describes the DIMM installation rules. See **Figure 1-13** for DIMM slot numbers.

Table 3-3 DIMM installation rules

Quantity	Memory Configuration	DIMM Slots of CPU 1	DIMM Slots of CPU 2
1	Unbalanced	1A1	-
2	Balanced	1A1	2A1

Qua ntity	Memory Configu ration	DIMM Slots of CPU 1	DIMM Slots of CPU 2
3	Unbalanc ed	1A1, 1B1	2A1
4	Balanced	1A1, 1B1	2A1, 2B1
5	Unbalanc ed	1A1, 1B1, 1C1	2A1, 2B1
6	Balanced	1A1, 1B1, 1C1	2A1, 2B1, 2C1
7	Unbalanc ed	1A1, 1B1, 1D1, 1E1	2A1, 2B1, 2C1
8	Balanced	1A1, 1B1, 1D1, 1E1	2A1, 2B1, 2D1, 2E1
9	Unbalanc ed	1A1, 1B1, 1C1, 1D1, 1E1	2A1, 2B1, 2D1, 2E1
10	Unbalanc ed	1A1, 1B1, 1C1, 1D1, 1E1	2A1, 2B1, 2C1, 2D1, 2E1
11	Unbalanc ed	1A1, 1B1, 1C1, 1D1, 1E1, 1F1	2A1, 2B1, 2C1, 2D1, 2E1
12	Balanced	1A1, 1B1, 1C1, 1D1, 1E1, 1F1	2A1, 2B1, 2C1, 2D1, 2E1, 2F1
13	Unbalanc ed	1A1, 1A2, 1B1, 1C1, 1D1, 1E1, 1F1	2A1, 2B1, 2C1, 2D1, 2E1, 2F1
14	Unbalanc ed	1A1, 1A2, 1B1, 1C1, 1D1, 1E1, 1F1	2A1, 2A2, 2B1, 2C1, 2D1, 2E1, 2F1
15	Unbalanc ed	1A1, 1A2, 1B1, 1B2, 1D1, 1D2, 1E1, 1E2	2A1, 2A2, 2B1, 2C1, 2D1, 2E1, 2F1
16	Balanced	1A1, 1A2, 1B1, 1B2, 1D1, 1D2, 1E1, 1E2	2A1, 2A2, 2B1, 2B2, 2D1, 2D2, 2E1, 2E2
17	Unbalanc ed	1A1, 1A2, 1B1, 1B2, 1C1, 1C2, 1D1, 1E1, 1F1	2A1, 2A2, 2B1, 2B2, 2D1, 2D2, 2E1, 2E2
18	Unbalanc ed	1A1, 1A2, 1B1, 1B2, 1C1, 1C2, 1D1, 1E1, 1F1	2A1, 2A2, 2B1, 2B2, 2C1, 2C2, 2D1, 2E1, 2F1
19	Unbalanc ed	1A1, 1A2, 1B1, 1B2, 1C1, 1D1, 1D2, 1E1, 1E2, 1F1	2A1, 2A2, 2B1, 2B2, 2C1, 2C2, 2D1, 2E1, 2F1
20	Unbalanc ed	1A1, 1A2, 1B1, 1B2, 1C1, 1D1, 1D2, 1E1, 1E2, 1F1	2A1, 2A2, 2B1, 2B2, 2C1, 2D1, 2D2, 2E1, 2E2, 2F1
21	Unbalanc ed	1A1, 1A2, 1B1, 1B2, 1C1, 1C2, 1D1, 1D2, 1E1, 1E2, 1F1	2A1, 2A2, 2B1, 2B2, 2C1, 2D1, 2D2, 2E1, 2E2, 2F1

Qua ntity	Memory Configu ration	DIMM Slots of CPU 1	DIMM Slots of CPU 2
22	Unbalanc ed	1A1, 1A2, 1B1, 1B2, 1C1, 1C2, 1D1, 1D2, 1E1, 1E2, 1F1	2A1, 2A2, 2B1, 2B2, 2C1, 2C2, 2D1, 2D2, 2E1, 2E2, 2F1
23	Unbalanc ed	1A1, 1A2, 1B1, 1B2, 1C1, 1C2, 1D1, 1D2, 1E1, 1E2, 1F1, 1F2	2A1, 2A2, 2B1, 2B2, 2C1, 2C2, 2D1, 2D2, 2E1, 2E2, 2F1
24	Balanced	1A1, 1A2, 1B1, 1B2, 1C1, 1C2, 1D1, 1D2, 1E1, 1E2, 1F1, 1F2	2A1, 2A2, 2B1, 2B2, 2C1, 2C2, 2D1, 2D2, 2E1, 2E2, 2F1, 2F2

☐NOTE

Unbalanced memory configurations are not recommended.

GPGPU Card

Table 3-4 lists the GPGPU cards supported by the GP608. The GP608 does not support mixed use of GPGPU cards of different models.

Table 3-4 Card models

Model	Vendor	Specifications	Auxiliary Power Connecto r Type	Installation Position
P40	NVIDIA	PCIe 3.0 x16/24GB/250W	CPU 8-pin	PCIe Slots 1 to 8
P100-12G	NVIDIA	PCIe 3.0 x16/12GB/250W	CPU 8-pin	PCIe Slots 1 to 8
P100-16G	NVIDIA	PCIe 3.0 x16/16GB/250W	CPU 8-pin	PCIe Slots 1 to 8
V100-16G	NVIDIA	PCIe 3.0 x16/16GB/250W	CPU 8-pin	PCIe slots 1 to 8

Table 3-5 lists the GPGPU cards supported by the GS608.

The GS608 does not support mixed use of GPGPU cards of different models.

Table 3-5 Card models

Model	Vendor	Specifications	Installation Position
P100-16G	NVIDIA	PCIe 3.0 x16/16GB/250W	Slots 1 to 8
V100-16G	NVIDIA	PCIe 3.0 x16/16GB/250W	Slots 1 to 8

Drive

The G560 V5 can be configured with up to six 2.5-inch SAS/SATA/NVMe drives and two 2.5-inch SAS/SATA/M.2 drives. These drives can be independently installed and removed, and support hot swap (orderly hot swap for NVMe SSDs).

The G560 V5 supports three types of SAS/SATA RAID controller cards: LSI SAS3008, Avago SAS3408, and Avago SAS3508. The LSI SAS3008 and Avago SAS3408 support RAID 0 and 1, and the Avago SAS3508 supports RAID 0, 1, 5, 6, 10, 50, and 60.

The G560 V5 of the G5500 uses a RAID controller card to support eight 2.5-inch SAS/SATA drives, and the G5500 can be configured with the GP608 or GS608 to expand the storage capacity. The GP 608 supports a maximum of eight 3.5-inch SAS/SATA drives, and the GS608 supports a maximum of eight 2.5-inch SAS/SATA drives.

Table 3-6 lists the performance of different RAID levels, the minimum number of drives required, and drive usage.

Table 3-6 RAID level comparison

RAID Level	Reliability	Read Performance	Write Performance	Minimum Number of Drives	Drive Usage
RAID 0	Low	High	High	2	100%
RAID 1	High	Low	Low	2	50%
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	50%
RAID 50	High	High	Relatively high	6	$(N - M)/N$
RAID 60	High	High	Relatively high	8	$(N - M \times 2)/N$
Note: N indicates the number of member drives in a RAID group, and M indicates the number of spans in a RAID group.					

I/O Expansion

The G560 V5 supports two mezzanine cards and connects to the GP608/GS608 through the chassis backplane.

- The I/O modules support a maximum of four half-height half-length single-slot PCIe 3.0 x16 cards.
- The LAN On Motherboard (LOM) of the G560 V5 provides two SFP+ Ethernet ports through the management module.

Power Supply

The G560 V5, GP608, and GS608 are powered by PSUs in the chassis and do not require independent power supply.

OS and Software

Use the **Huawei Server Compatibility Checker** to check OSs and virtualization software supported by the G560 V5.

4 Management

The compute node uses Huawei's proprietary iBMC for remote server management. The iBMC complies with Intelligent Platform Management Interface (IPMI) 2.0 and provides highly reliable hardware monitoring and management. It seamlessly communicates with the management module in a chassis and manages the compute nodes in the chassis through the management module.

The iBMC supports the following features and protocols:

- KVM and text console redirection
- Remote virtual media
- IPMI V2.0
- Common information model (CIM)
- Login using a web browser

Table 4-1 describes the features of the iBMC.

Table 4-1 iBMC features

Feature	Description
Management interface	Integrates with any standard management system through the following interfaces: ● IPMI V2.0 ● CLI ● HTTPS
Fault detection	Detects faults and accurately locates hardware faults.
System watchdog	Supports BIOS power on self-test (POST), OS watchdog, and automatic system reset for timeout. You can enable or disable these functions on the iBMC.
Boot device configuration	Supports out-of-band configuration for boot devices.
Alarm management	Supports alarm management and reports alarms in various ways, such as SMTP and syslog services, to ensure uninterrupted system operating.

Feature	Description
Integrated KVM	Provides remote maintenance measures, such as KVM and KVM over IP, for troubleshooting, and supports a maximum resolution of 1920 x 1200.
Integrated virtual media	Virtualizes local media devices or images to the media devices for remote compute nodes, simplifying OS installation. The virtual DVD-ROM 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 browsers: ● Internet Explorer 9/10/11 ● Mozilla Firefox 26/34 ● Google Chrome 21/43 ● Safari 5.1
Fault reproduction	Reproduces faults to facilitate fault diagnosis.
Screen snapshots and screen videos	Allows you to view screenshots and videos without login, which facilitates routine preventive maintenance inspection (PMI)
DNS/LDAP	Supports the DNS and AD, significantly simplifying network and configuration management.
Dual-image backup	Starts software from a backup image if the software fails.
Asset management	Supports intelligent asset management.
Intelligent power management	Uses the power capping technology to increase deployment density, and uses dynamic energy saving to lower operating expenses.

5 Warranty

According to the *Huawei Warranty Policy for Servers & Storage Products* (*Warranty Policy* for short), Huawei provides a three-year warranty for the server, 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 services and/or parts may not be available in all countries, and some services 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 representative office.