



**Huawei G5500 Server G530 V2 Compute Node
1.0.0**

White Paper

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Contents

1 About This Document.....	1
2 About the G530 V2 and GP316.....	3
2.1 Overview.....	3
2.2 Appearance.....	3
2.3 Ports.....	7
2.4 Indicators and Buttons.....	7
2.5 Physical Structure.....	9
2.6 Logical Structure.....	19
2.7 Technical Specifications.....	21
3 Product Features.....	23
4 Components.....	24
5 Management.....	30
6 Warranty.....	32

1 About This Document

Purpose

This document describes the general-purpose compute module G530 V2 and heterogeneous compute module GP316 of the Huawei FusionServer G5500 server in terms of appearances, features, performance parameters, and configurations, helping users have a deep understanding of a compute node consisting of a G530 V2 and a GP316.

NOTE

In this document, a compute node consists a G530 V2 and a GP316.

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 03 (2018-02-12)

This is the third official release.

Mode	Change Description
Modify	Changed ESN to SN and modified the description of the year and month.

Issue 02 (2018-01-05)

This is the second official release.

Mode	Change Description
Modify	Modified DIMM configuration rules.
New	Added the B/D/F information of PCIe devices.
Delete	Deleted the CPU list. To obtain CPU models, use the Huawei Server Compatibility Checker .

Issue 01 (2017-10-20)

This issue is the first official release.

2 About the G530 V2 and GP316

- [2.1 Overview](#)
- [2.2 Appearance](#)
- [2.3 Ports](#)
- [2.4 Indicators and Buttons](#)
- [2.5 Physical Structure](#)
- [2.6 Logical Structure](#)
- [2.7 Technical Specifications](#)

2.1 Overview

The G530 V2 is a half-width compute module that uses the new-generation Intel® Xeon® Scalable processors with the Purley platform to support a large memory capacity and deliver powerful computing capabilities. The GP316 supports a maximum of 16 half-height half-length single-slot PCIe slots for installing general-purpose GPU (GPGPU) cards and is used together with the G530 V2 to expand the computing capabilities.

The G530 V2 and GP316 are installed in a G5500 chassis (chassis for short) and centrally managed by the management module. Each chassis can be installed with a maximum of two compute nodes, and each compute node contains a G530 V2 and a GP316.

2.2 Appearance

Appearances of the G530 V2 and GP316

[Figure 2-1](#) and [Figure 2-2](#) show the appearances of the G530 V2 and GP316.

Figure 2-1 Appearance of the G530 V2



Figure 2-2 Appearance of the GP316



Installation Position

The G530 V2 compute modules are installed in the lower two slots of the chassis, corresponding to G530 V2-1 and G530 V2-2. The GP316 heterogeneous compute modules used together with the G530 V2 compute modules are installed in the upper two slots of the chassis, corresponding to GP316-1 and GP316-2. See [Figure 2-3](#).

Figure 2-3 Installation positions of the G530 V2 and GP316 modules



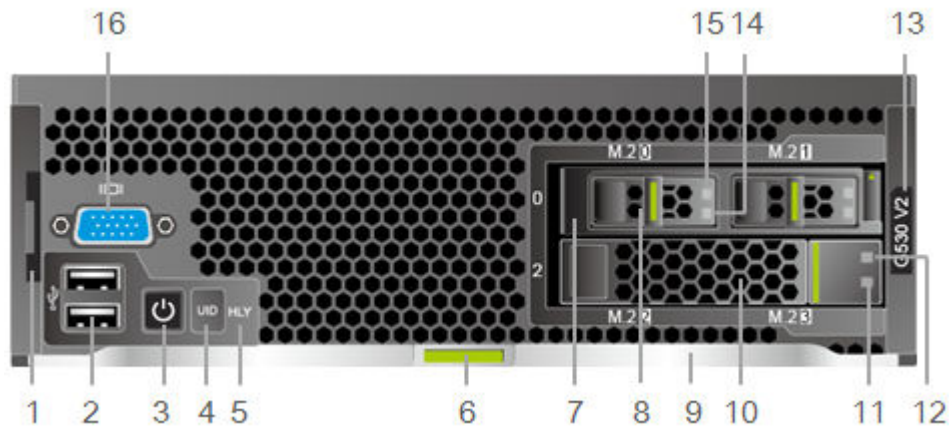
NOTE

- A maximum of two G530 V2 compute modules can be installed in a chassis, and each G530 V2 combines with the GP316 in its upper slot to form a G530 V2 compute node. The two combinations are independent of each other. When configuring only one compute node, select the combination (G530 V2-1 and GP316-1) on the left.
- In each combination, the G530 V2 and GP316 must be installed and removed in the following sequence: Install the GP316 and then the G530 V2. Remove the G530 V2 and then the GP316.
- Maintaining one combination does not affect the proper operation of the other combination.

Front Panel

Figure 2-4 shows the front panel of the G530 V2.

Figure 2-4 Front panel of the G530 V2



1	Label plate	2	USB 3.0 ports
3	Power button/indicator	4	UID button/indicator
5	HLY indicator	6	Release button
7	M.2 module adapter	8	M.2 module
9	Ejector lever	10	2.5-inch hard disk

11	Hard disk activity indicator	12	Hard disk fault indicator
13	Product model	14	M.2 module activity indicator
15	M.2 module fault indicator	16	VGA port

Figure 2-5 shows the front panel of the GP316.

Figure 2-5 Front panel of the GP316



1	Ejector release button	2	Ejector lever
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NOTE

When a compute node is installed in the chassis, the ejector release button and ejector lever on the GP316 front panel are invisible because they are blocked by the G530 V2. After the G530 V2 is removed, they can be seen.

SN

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

Figure 2-6 shows the SN format.

Figure 2-6 SN example



No.	Description
1	Indicates the SN ID (two digits). The value is fixed to 21 .
2	Indicates the item identification code (eight characters).
3	Indicates the vendor code (two characters). 10 indicates Huawei and other values indicates manufacturing partners.
4	<p>Indicates the year and month (two characters).</p> <ul style="list-style-type: none"> The first character indicates the year. The digits 1 to 9 indicate 2001 to 2009, the letters A to H indicate 2010 to 2017, the letters J to N indicate 2018 to 2022, and the letters P to Y indicate 2023 to 2032. <p>NOTE The years from 2010 are represented by upper-case letters excluding I, O, and Z because the three letters are similar to the digits 1, 0, and 2.</p> <ul style="list-style-type: none"> The second character indicates the month. The digits 1 to 9 indicate January to September, and the letters A to C indicate October to December.
5	Indicates the sequence number (six digits).
6	Indicates RoHS compliance (one character). Y indicates compliance.
7	Indicates the internal model of the board.

2.3 Ports


Table 2-1 Port description





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.

2.4 Indicators and Buttons

This section describes the indicators and buttons of the G530 V2.

Table 2-2 G530 V2 indicators

Silk Screen	Indicator/Button	Color	State Description
PWR 	Power button/ indicator	Yellow and green	<ul style="list-style-type: none"> ● 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. <p>NOTE</p> <ul style="list-style-type: none"> ● 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 off the compute node. ● 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	<p>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.</p> <ul style="list-style-type: none"> ● 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. <p>NOTE</p> <ul style="list-style-type: none"> ● 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.

Silk Screen	Indicator/Button	Color	State Description
HLY	Health indicator	Red and green	<ul style="list-style-type: none"> ● 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.
	Hard disk or M.2 module activity indicator	Green	<ul style="list-style-type: none"> ● Off: The hard disk is faulty or not detected. ● Blinking green: Data is being read from or written to the hard disk, or synchronized between hard disks. ● Steady green: The hard disk is not being accessed.
	Hard disk or M.2 module fault indicator	Yellow	<ul style="list-style-type: none"> ● Off: The hard disk is operating properly. ● Blinking yellow: The hard disk is being located, or RAID is being rebuilt. ● Steady yellow: The hard disk is faulty or not detected.
	NVMe SSD activity indicator	Green	<ul style="list-style-type: none"> ● Off: The hard disk is faulty or not detected. ● Blinking green: Data is being read from or written to the hard disk, or synchronized between hard disks. ● Steady green: The hard disk is not being accessed.
	NVMe SSD fault indicator	Yellow	<ul style="list-style-type: none"> ● Off: The hard disk is operating properly. ● Steady yellow: The hard disk is faulty or not detected.

2.5 Physical Structure

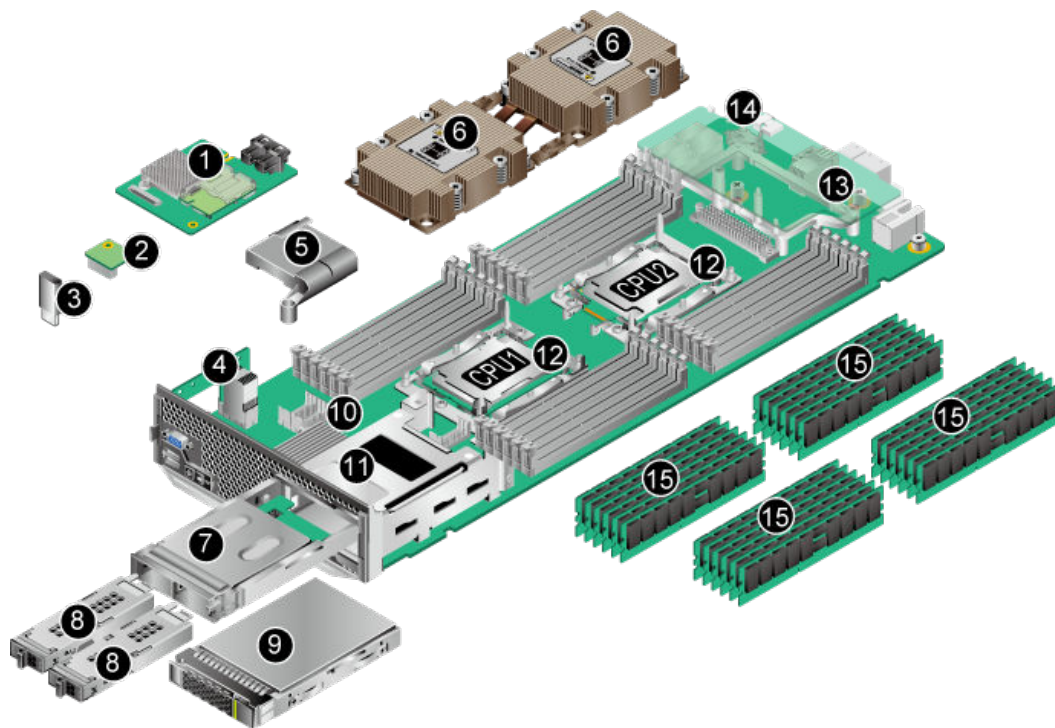
This section describes:

- Components, PCIe devices, mainboard layout, and connectors of the G530 V2

- Components, PCIe devices, PCIe board layout, and connectors of the GP316

Components

Figure 2-7 G530 V2 components



1	RAID controller card	2	TPM (optional)
3	USB flash drive (optional)	4	VGA adapter
5	Supercapacitor (optional)	6	Heat sink
7	M.2 adapter (optional)	8	M.2 FRUs (optional)
9	Hard disk	10	Mainboard
11	Hard disk tray	12	CPUs
13	Mezzanine card	14	BIOS battery
15	DIMMs	-	-

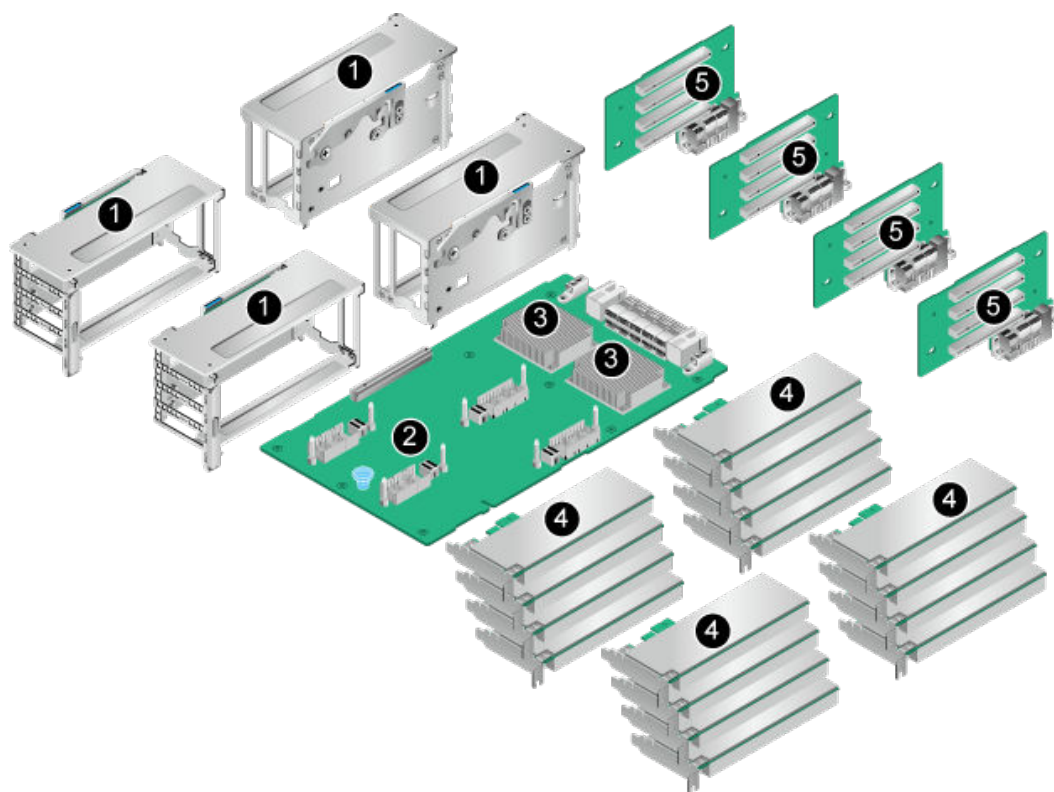
Table 2-3 G530 V2 component description

No.	Item	Description
1	RAID controller card	The RAID controller card expands the storage capacity of the compute node through hard disks and ensures data security. The G530 V2 supports an LSI SAS3008 RAID controller card. The RAID controller card provides two SAS/SATA ports for hard disks or four SATA ports for M.2 FRUs. RAID 0 and RAID 1 are supported.
2	TPM (optional)	The G530 V2 supports Trusted Platform Module (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.
3	USB flash drive (optional)	The USB port on the mainboard connects to a USB 3.0 device. Dimensions: 33.9 mm (height) x 14.5 mm (length) x 7.12 mm (width).
4	VGA adapter	The integrated video adapter on the mainboard uses this VGA adapter to provide a DB15 VGA port for the local maintenance of the compute node.
5	Supercapacitor (optional)	The position of a supercapacitor is reserved to facilitate the capacity expansion of the RAID controller card. The supercapacitor is not used in this version.
6	Heat sink	Cools processors. The two processors of the G530 V2 use a conjoined heat sink, which can meet cooling requirements for CPUs of up to 165 W thermal design power (TDP). The heat sink with low fin density corresponds to CPU 1 and the heat sink with high fin density corresponds to CPU 2.
7	M.2 adapter (optional)	The M.2 adapter can be installed in a 2.5-inch hard disk slot to provide two SATA 3.0 ports for installing two M.2 field replaceable units (FRUs). The M.2 adapter is a reserved function module and is not provided currently.
8	M.2 FRU (optional)	An M.2 SATA 3.0 SSD is a high-performance, compact, and high-stability storage component. The M.2 2280 form factor is supported. Each 2.5-inch hard disk slot can be configured with two M.2 FRUs, which require one M.2 adapter. A hard disk slot does not support mixed configuration of a hard disk and an M.2 module. The M.2 FRU is a reserved function module and is not provided currently.

No.	Item	Description
9	Hard disk	<p>A maximum of two 2.5-inch HDDs or SSDs (including SAS SSD/SATA SSD/NVMe SSD) can be configured. The hard disks are hot-swappable and can be independently installed and removed.</p> <p>NOTE In Legacy mode, the BIOS does not support 4Kn hard disks (which have 4K bytes sectors in both the physical layer and logical layer).</p>
10	Mainboard	<p>The mainboard holds the CPUs, DIMMs, hard disk interface modules, power control module, iBMC, logic module, chipset, and video adapter. The Intel® C620 chipset is used. The video adapter is integrated in the iBMC Hi1710 chipset to provide a 32 MB display memory. The maximum resolution is 1920 x 1200 at 60 Hz with 16 M colors.</p>
11	Hard disk tray	<p>The hard disk tray holds hard disks.</p>
12	CPU	<p>The G530 V2 supports two CPUs.</p> <ul style="list-style-type: none"> ● The G530 V2 supports Intel® Xeon® Scalable (Bronze 3100, Silver 4100, Gold 5100/6100, and Platinum 8100) processors, each with up to 165 W TDP and a maximum of 28 cores. ● Each processor integrates memory controllers for supporting six DDR4 memory channels. Each memory channel supports two DDR4 DIMMs of 2400 or 2666 MT/s. ● Each processor integrates PCIe controllers for supporting PCIe 3.0 and providing 48 lanes. ● The two processors are interconnected through two UltraPath Interconnect (UPI) links at 10.4 GT/s. ● The maximum frequency is 3.6 GHz. <p>NOTE The G530 V2 does not support single-processor configuration, and the two processors must be of the same model.</p>
13	Mezzanine card	<p>The G530 V2 supports one mezzanine card. The mezzanine card provides two PCIe 3.0 x16 channels and is connected to the mainboard through four connectors and to the GP316 through the chassis backplane. For details, see 2.6 Logical Structure.</p>
14	BIOS battery	<p>When the G530 V2 is not powered on, the BIOS battery supplies power to the real time clock (RTC).</p>

No.	Item	Description
15	DIMM	<p>The mainboard provides 24 slots for installing DDR4 DIMMs (12 DIMMs for each processor).</p> <ul style="list-style-type: none"> ● Maximum memory speed: 2666 MT/s ● Memory protection technology for reliability, availability, serviceability (RAS): error checking and correcting (ECC), memory mirroring, and memory sparing ● Registered DIMMs (RDIMMs) and load-reduced DIMMs (LRDIMMs) are supported.

Figure 2-8 GP316 components



1	Riser card trays	2	PCIe board
3	PCIe switches	4	Half-height half-length single-slot cards
5	Riser cards	-	-

Table 2-4 GP316 component description

No.	Item	Description
1	Riser card tray	Each riser card tray houses one riser card and a maximum of four half-height half-length single-slot PCIe cards. The GP316 has four riser card trays.
2	PCIe board	The PCIe board is configured with two PCIe switches. It can house four riser cards and one full-height full-length single-slot PCIe card connecting to the G530 V2 and I/O module through the chassis backplane.
3	PCIe switch	Two PCIe switches on the PCIe board provide 16 PCIe 3.0 x8 slots, connecting to four riser cards.
4	Half-height half-length single-slot card	Installed in a riser card tray. Each riser card tray supports up to four half-height half-length single-slot PCIe cards. NOTE Install filler modules in vacant PCIe card slots.
5	Riser card	A riser card houses half-height half-length single-slot PCIe cards by providing four PCIe 3.0 x16 connectors. Each connector provides x8 bandwidth.

PCIe Slots

[Table 2-5](#) and [Table 2-6](#) describe the relationships between the PCIe slots and the CPUs of the G530 V2 and GP316, PCIe standards, and Bus/Device/Function Number (B/D/F) information.

Table 2-5 G530 V2 PCIe device description

PCIe Device	CPU	PCIe Standard	Connector Bandwidth	Bus Bandwidth	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	17/00/0	18/00/0	Non-standard device
Mezzanine card channel 1	CPU 1	PCIe 3.0	x16	x16	Port 2A	-	-	Non-standard device
Mezzanine card channel 2	CPU 2	PCIe 3.0	x16	x16	Port 2A	-	-	Non-standard device
NVMe SSD 0	CPU 2	PCIe 3.0	x4	x4	Port 1C	85/02/0	86/00/0	2.5-inch disk

PCIe Device	CPU	PCIe Standard	Connector Band width	Bus Band width	Port Number	Root Port B/D/F	Device B/D/F	Slot Size
NVMe SSD 1	CPU 2	PCIe 3.0	x4	x4	Port 1D	85/03/0	87/00/0	2.5-inch disk

 **NOTE**

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

Table 2-6 GP316 PCIe device description

PCIe Device	CPU	PCIe Standard	Connector Band width	Bus Band width	Port Number	Root Port B/D/F	Device B/D/F	Slot Size
Riser 1 slot 1	CPU 2	PCIe 3.0	x16	x8	Port 2A	ae/00/0	b2/00/0	Half-height half-length single-slot
Riser 1 slot 2	CPU 2	PCIe 3.0	x16	x8	Port 2A	ae/00/0	b1/00/0	Half-height half-length single-slot
Riser 1 slot 3	CPU 2	PCIe 3.0	x16	x8	Port 2A	ae/00/0	b4/00/0	Half-height half-length single-slot
Riser 1 slot 4	CPU 2	PCIe 3.0	x16	x8	Port 2A	ae/00/0	b3/00/0	Half-height half-length single-slot
Riser 2 slot 1	CPU 2	PCIe 3.0	x16	x8	Port 2A	ae/00/0	c7/00/0	Half-height half-length single-slot

PCIe Device	CPU	PCIe Standard	Connector Band width	Bus Band width	Port Number	Root Port B/D/F	Device B/D/F	Slot Size
Riser 2 slot 2	CPU 2	PCIe 3.0	x16	x8	Port 2A	ae/00/0	c8/00/0	Half-height half-length single-slot
Riser 2 slot 3	CPU 2	PCIe 3.0	x16	x8	Port 2A	ae/00/0	c5/00/0	Half-height half-length single-slot
Riser 2 slot 4	CPU 2	PCIe 3.0	x16	x8	Port 2A	ae/00/0	c6/00/0	Half-height half-length single-slot
Riser 3 slot 1	CPU 1	PCIe 3.0	x16	x8	Port 2A	3a/00/0	3e/00/0	Half-height half-length single-slot
Riser 3 slot 2	CPU 1	PCIe 3.0	x16	x8	Port 2A	3a/00/0	3d/00/0	Half-height half-length single-slot
Riser 3 slot 3	CPU 1	PCIe 3.0	x16	x8	Port 2A	3a/00/0	40/00/0	Half-height half-length single-slot
Riser 3 slot 4	CPU 1	PCIe 3.0	x16	x8	Port 2A	3a/00/0	3f/00/0	Half-height half-length single-slot
Riser 4 slot 1	CPU 1	PCIe 3.0	x16	x8	Port 2A	3a/00/0	53/00/0	Half-height half-length single-slot

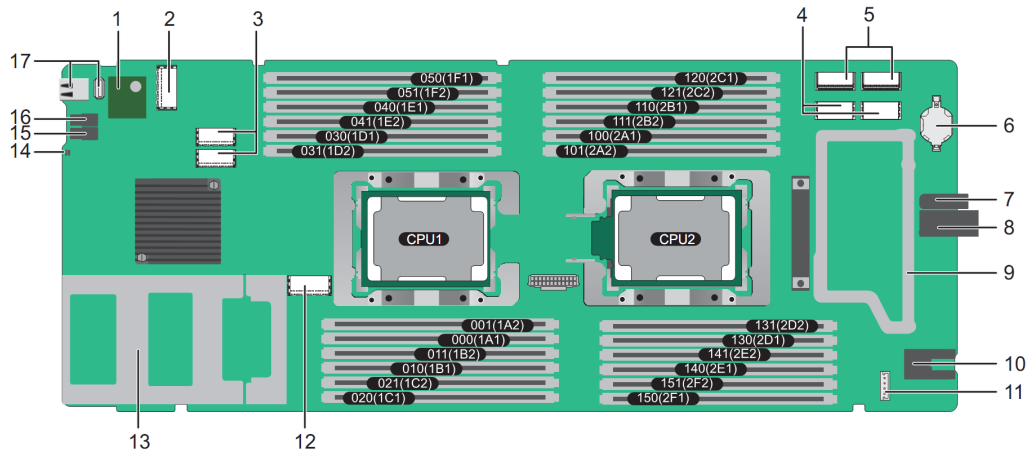
PCIe Device	CPU	PCIe Standard	Connector Band width	Bus Band width	Port Number	Root Port B/D/F	Device B/D/F	Slot Size
Riser 4 slot 2	CPU 1	PCIe 3.0	x16	x8	Port 2A	3a/00/0	54/00/0	Half-height half-length single-slot
Riser 4 slot 3	CPU 1	PCIe 3.0	x16	x8	Port 2A	3a/00/0	51/00/0	Half-height half-length single-slot
Riser 4 slot 4	CPU 1	PCIe 3.0	x16	x8	Port 2A	3a/00/0	52/00/0	Half-height half-length single-slot
Expansion slot	CPU 1	PCIe 3.0	x16	x8	Port 2A	3a/00/0	3e/00/0	Full-height full-length single-slot
I/O slots 1 and 3	CPU 1	PCIe 3.0	x16	x16	Port 2A	3a/00/0	41/00/0 41/00/1	Half-height half-length single-slot
I/O slots 2 and 4	CPU 2	PCIe 3.0	x16	x16	Port 2A	ae/00/0	b5/00/0 b5/00/1	Half-height half-length single-slot

 **NOTE**

- The expansion slot and riser 3 slot 1 cannot be enabled at the same time. Only one of the two slots can be enabled by software programming. By default, the expansion slot is disabled.
- 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.

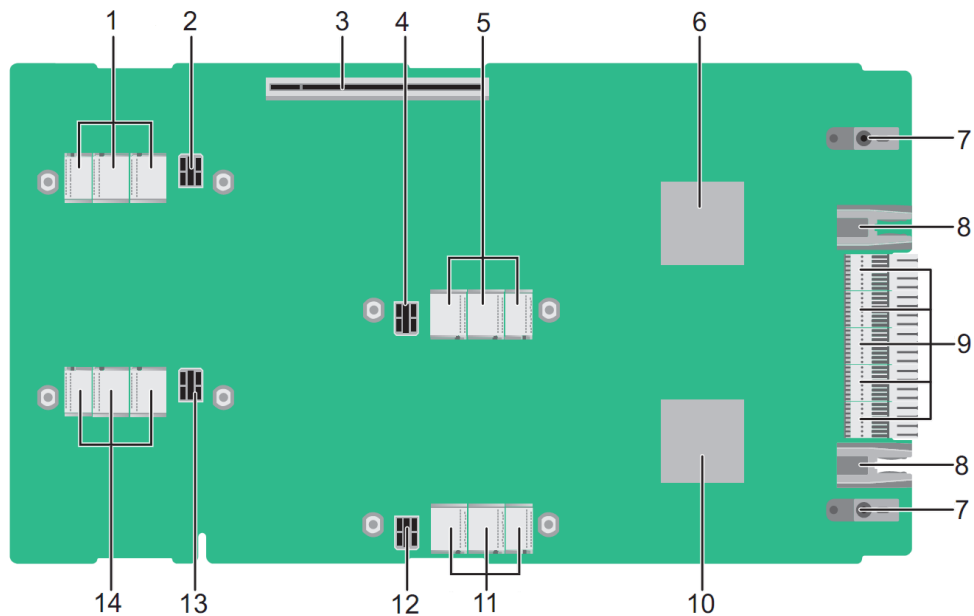
Mainboard Layout

Figure 2-9 G530 V2 connectors and components



1	TPM connector	2	VGA adapter connector
3	RAID controller card connectors	4	Channel 2 mezzanine card connectors
5	Channel 1 mezzanine card connectors	6	BIOS battery
7	Backplane guide sleeve	8	Backplane signal connector
9	Mezzanine card tray	10	Backplane power connector
11	Virtual RAID on CPU (VROC) key connector	12	Hard disk backplane connector
13	Hard disk tray	14	HLY indicator
15	UID button/indicator	16	Power button/indicator
17	USB 3.0 ports	-	-

Figure 2-10 GP316 connectors and components



1	Signal connectors of riser 4	2	Power connector of riser 4
3	Expansion slot	4	Power connector of riser 3
5	Signal connectors of riser 3	6	PCIe switch 2
7	Backplane guide sleeves	8	Backplane power connectors
9	Backplane signal connectors	10	PCIe switch 1
11	Signal connectors of riser 1	12	Power connector of riser 1
13	Power connector of riser 2	14	Signal connectors of riser 2

2.6 Logical Structure

Figure 2-11 shows the logical structure of the G530 V2 and GP316.

The PCIe x16 ports of the two CPUs in a G530 V2 are connected to two PCIe switches in the corresponding GP316 through the mezzanine card, each PCIe switch supports two riser cards and one x16 I/O slot, and each riser card supports four x8 (x16 slot and x8 bandwidth) half-height half-length single-slot PCIe cards. The G530 V2 supports the following storage capabilities:

- Supports two 2.5-inch NVMe SSDs without configuring a RAID controller card. The bandwidth of each SSD is PCIe 3.0 x4. Intel VROC is supported.
- Configures an LSI SAS3008 RAID controller card to support two 2.5-inch SAS/SATA hard disks and support RAID 0 and 1.

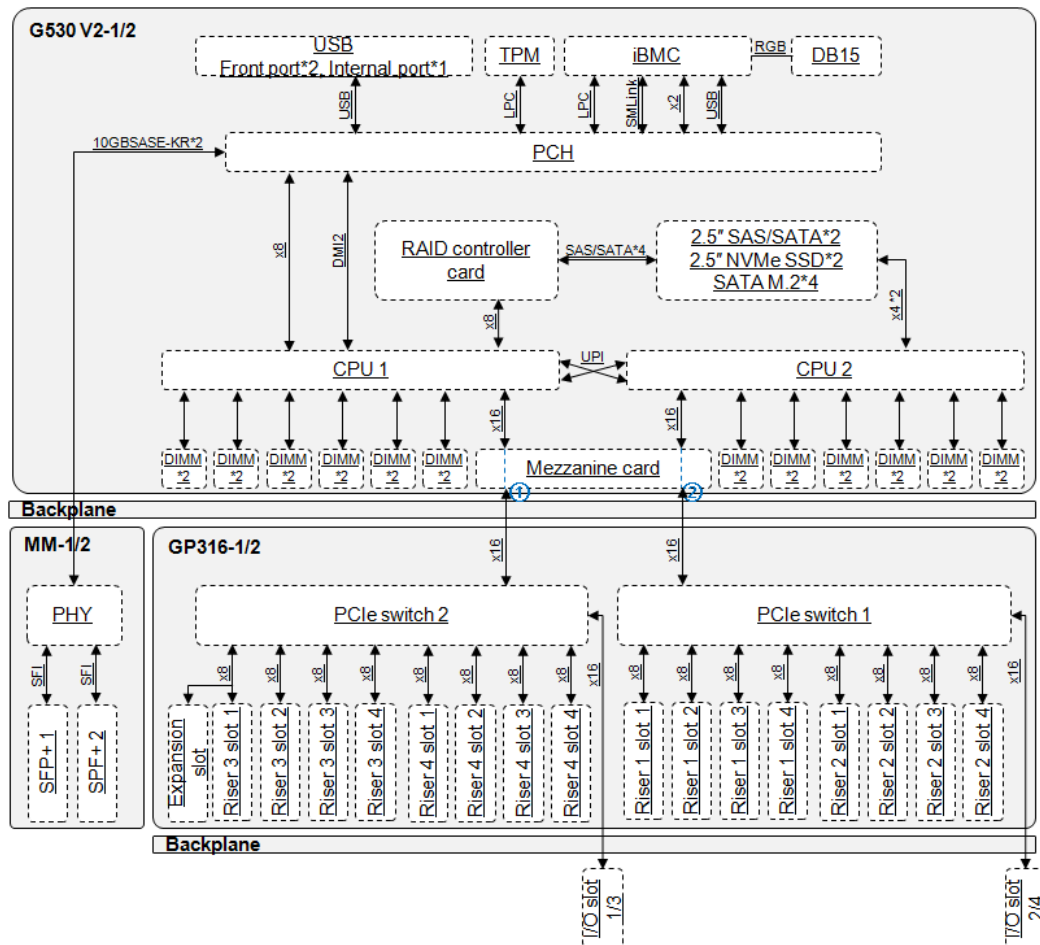
The G530 V2 supports the following external ports:

- Two USB 3.0 ports are provided on the 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 panel by the built-in iBMC video card. This port is used for the local maintenance of the compute node.

One x8 port of PCIe switch 2 is shared by the expansion slot and riser 3 slot 1 in the GP316. Only one of the two slots can be enabled by software programming. By default, the expansion slot is disabled.

Figure 2-11 Logical structure of the G530 V2 and GP316



NOTE

G530 V2-1, GP316-1, MM-1, I/O slot 1, and I/O slot 2 are the configuration combination on the left of the chassis. G530 V2-2, GP316-2, MM-2, I/O slot 3, and I/O slot 4 are the configuration combination on the right of the chassis. The logical structures of the two configuration combinations are the same.

2.7 Technical Specifications

Table 2-7 Technical specifications

Category	Item	Specifications
Physical specifications	Dimensions (H x W x D)	<ul style="list-style-type: none"> ● G530 V2: 60.46 mm × 210 mm × 537.2 mm (2.38 in. x 8.27 in. x 21.15 in.) ● GP316: 122.85 mm × 217.2 mm × 540 mm (4.84 in. x 8.55 in. x 21.26 in.)
	Color	<ul style="list-style-type: none"> ● Front panel: black ● Casing: silver
	Weight	<ul style="list-style-type: none"> ● G530 V2 <ul style="list-style-type: none"> - Net weight (with two hard disks): 6 kg (13.23 lb) - Packaging materials: 1.7 kg (3.75 lb) ● GP316 <ul style="list-style-type: none"> - Net weight (fully configured with 16 NVIDIA P4 cards): 12 kg (26.46 lb) - Packaging materials: 2.7 kg (5.95 lb)
Environmental specifications	Temperature	<ul style="list-style-type: none"> ● Operating temperature: 5°C to 35°C (41°F to 95°F) ● Storage temperature: -40°C to +65°C (-40°F to +149°F) ● Temperature change rate: < 20°C/h (36°F/h)
	Humidity	<ul style="list-style-type: none"> ● Operating humidity: 8% to 90% RH (non-condensing) ● Storage humidity: 5% to 95% RH (non-condensing) ● Humidity change rate: < 20% RH/h
	Altitude	<ul style="list-style-type: none"> ● ≤ 3048 m (9999.88 ft). For altitudes above 900 m (2952.72 ft), the operating temperature decreases by 1°C (1.8°F) every 300 m (984.24 ft). ● HDDs are not supported when the altitude is higher than 3000 m (9842.4 ft).
	Corrosive gaseous contaminant	<ul style="list-style-type: none"> ● 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). ● Silver corrosion rate test requirements: The corrosion product thickness growth rate is lower than 200 Å/month.

Category	Item	Specifications
	Particle contaminant	<ul style="list-style-type: none"> ● 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	<ul style="list-style-type: none"> ● G530 V2: 600 W ● GP316: 1400 W

3 Product Features

- The G5500 chassis supports two compute nodes, providing higher integration.
- The G530 V2 supports two Intel® Xeon® Scalable processors (Bronze 3100, Silver 4100, Gold 5100/6100, or Platinum 8100), each with up to 165 W TDP and 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 two UltraPath Interconnect (UPI) links at 10.4 GT/s. With the two processors, the G530 V2 delivers higher processing performance.
- The GP316 supports 16 NVIDIA P4 cards, increasing the computing capabilities for the G530 V2.
- The G530 V2 provides multiple flexible hard disk configuration solutions.
 - Two 2.5-inch NVMe SSDs
 - Two 2.5-inch SAS/SATA hard disks, supporting RAID 0 or 1
- The GP316 PCIe slots, PCIe switches and system I/O modules can be powered on synchronously with the G530 V2, minimizing power consumption when the G530 V2 is not powered on or installed.

4 Components

This section describes the software and hardware that are supported by the G530 V2 and GP316.

Use the [Huawei Server Compatibility Checker](#) to check the software and hardware supported by the G530 V2 and GP316.

CPU

The G530 V2 supports two processors.

- The G530 V2 supports Intel® Xeon® Scalable processors (Bronze 3100, Silver 4100, Gold 5100/6100, or Platinum 8100), each with the power up to 165 W and a maximum of 28 cores. Use the [Huawei Server Compatibility Checker](#) to obtain the specific processor modules.
- Each processor integrates memory controllers for supporting six DDR4 memory channels. Each memory channel supports two DDR4 DIMMs of 2400 or 2666 MT/s.
- Each processor integrates PCIe controllers for supporting PCIe 3.0 and providing 48 lanes.
- The two processors are interconnected through two UltraPath Interconnect (UPI) links at 10.4 GT/s.
- The maximum frequency is 3.6 GHz.

Memory

The G530 V2 provides 24 slots for installing DIMMs (12 DIMMs for each processor). At least one DIMM must be configured.

Memory Configuration Rules

Observe the following rules when configuring DIMMs:

1. The G530 V2 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 4-1](#).

 **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. [Figure 2-9](#) shows the positions of CPUs 1 and 2.
 - Restriction of the number of ranks supported by each channel on the maximum number of DIMMs supported by each channel:

$$\text{Number of DIMMs supported by each channel} \leq \text{Number of ranks supported by each memory channel} / \text{Number of ranks supported by each DIMM}$$
3. A compute node cannot be configured with DIMMs (RDIMMs or LRDIMMs) of different types.
 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 4-1](#).

Table 4-1 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 G530 V2 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, and those for CPU 2 are 2A, 2B, 2C, 2D, 2E, and 2F. [Table 4-2](#) lists channels for each CPU.

Slots 1A1, 1B1, 1C1, 1D1, 1E1, 1F1, 2A1, 2B1, 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 4-2 Channels

CPU	Channel	DIMM	
CPU 1	1A	DIMM000(1A1)	
		DIMM001(1A2)	
	1B	DIMM010(1B1)	
		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 4-3 shows the DIMM installation rules. See **Figure 2-9** for DIMM slot numbers.

Table 4-3 DIMM configuration rules

DIM M Quan tity	Memory Configur ation	DIMM Slots of CPU 1	DIMM Slots of CPU 2
1	Unbalanc ed	1A1	-
2	Balanced	1A1	2A1
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

DIM M Quantity	Memory Configuration	DIMM Slots of CPU 1	DIMM Slots of CPU 2
20	Unbalanced	1A1, 1A2, 1B1, 1B2, 1C1, 1D1, 1D2, 1E1, 1E2, 1F1	2A1, 2A2, 2B1, 2B2, 2C1, 2D1, 2D2, 2E1, 2E2, 2F1
21	Unbalanced	1A1, 1A2, 1B1, 1B2, 1C1, 1C2, 1D1, 1D2, 1E1, 1E2, 1F1	2A1, 2A2, 2B1, 2B2, 2C1, 2D1, 2D2, 2E1, 2E2, 2F1
22	Unbalanced	1A1, 1A2, 1B1, 1B2, 1C1, 1C2, 1D1, 1D2, 1E1, 1E2, 1F1	2A1, 2A2, 2B1, 2B2, 2C1, 2C2, 2D1, 2D2, 2E1, 2E2, 2F1
23	Unbalanced	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**

The unbalanced memory configurations are not recommended.

GPGPU Card

Table 4-4 shows the GPGPU cards supported by the GP316.

Table 4-4 GPGPU cards supported by the GP316

Model	Vendor	Specifications	Auxiliary Power Connector Type	Installation Position
P4	NVIDIA	PCIe 3.0 x16/8 GB/75 W	None	Riser 1 slots 1 to 4 Riser 2 slots 1 to 4 Riser 3 slots 1 to 4 Riser 4 slots 1 to 4

Hard Disk

The G530 V2 can be configured with up to two 2.5-inch HDDs or SSDs. Each hard disk can be independently installed and removed and is hot-swappable. The G530 V2 supports an LSI SAS3008 RAID controller card. The RAID controller card provides two SAS or SATA ports that connect to two 2.5-inch SAS or SATA hard disks. RAID 0 and RAID 1 are supported.

 **NOTE**

After the OS is installed on a hard disk, do not move the hard disk to another compute node; otherwise, a virtual flash drive or CD/DVD-ROM may fail to be mounted on the KVM screen.

Table 4-5 lists the performance of different RAID levels, the minimum number of disks required, and disk usage.

Table 4-5 RAID level comparison

RAID Level	Reliability	Read Performance	Write Performance	Minimum Number of Hard Disks	Hard Disk Usage
RAID 0	Low	High	High	2	100%
RAID 1	High	Low	Low	2	50%

I/O Expansion

The G530 V2 supports the following I/O extension options:

- One mezzanine card that connects to the PCIe switch of the GP316 through the chassis backplane and one I/O module that supports a maximum of two half-height half-length single-slot PCIe 3.0 x16 cards
- One LAN On Motherboard (LOM) NIC that provides two SFP+ Ethernet ports through the management module

PSU

The G530 V2 and GP316 are powered by PSUs in the G5500 chassis and do not require independent power supply.

Peripheral

The G530 V2 supports peripherals, such as a USB DVD-ROM drive.

OS and Software

Use the [Huawei Server Compatibility Checker](#) to check OSs and virtualization software supported by the G530 V2.

5 Management

The compute node uses Huawei's proprietary intelligent baseboard management controller (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 chassis 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 5-1 describes the features of the iBMC.

Table 5-1 iBMC features

Feature	Description
Management interface	Integrates with any standard management system through the following interfaces: <ul style="list-style-type: none"> ● 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 operation.

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: <ul style="list-style-type: none"> ● 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.

6 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. For more information about warranty services in your country, contact Huawei technical support or the local Huawei representative office.