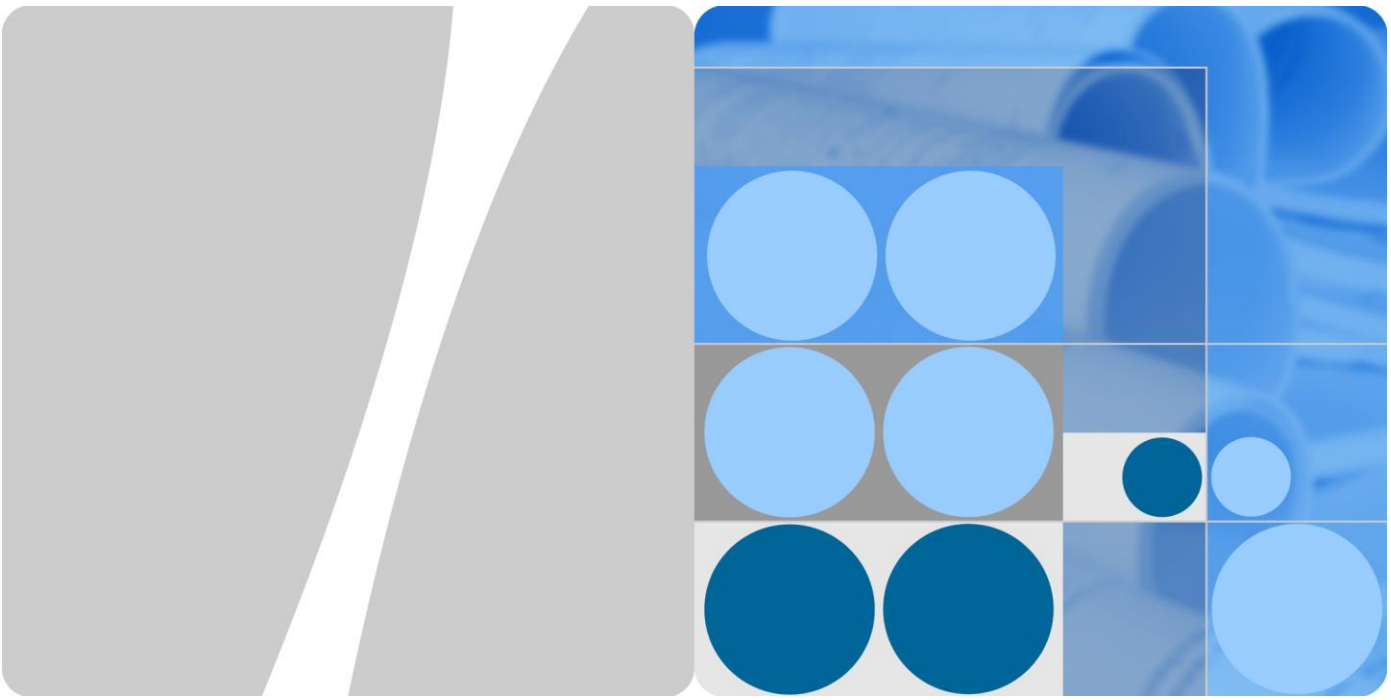

Huawei CH121 V3 Compute Node V100R001

White Paper

Issue 01

Date 2014-09-15

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About This Document

Purpose

This document describes the appearance, features, technical specifications, and configuration of the new-generation CH121 V3 compute node of the HUAWEI E9000 server.

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 (2014-09-15)

This issue is the first official release.

Contents

1 Introduction

About This Chapter

1.1 Functions

This topic describes the basic functions and components of the compute node CH121 V3.

The CH121 V3 compute node (CH121 V3 for short) adopts Intel® new-generation Grantley processor platform. It is half the width of a standard compute node. The CH121 V3 provides large memory capacity, powerful computing capabilities, and flexible scalability. The CH121 V3 is installed in a E9000 chassis and is managed by the management module MM910 in a centralized manner.

The CH121 V3 combines dense computing capabilities with an ultra-large memory capacity. Optimized for computing-intensive enterprise service applications, virtualization, cloud computing, and high-performance computing.

1.2 Appearance

This topic describes the appearance, front panel, installation position, and slot numbering of the CH121 V3.

Appearance

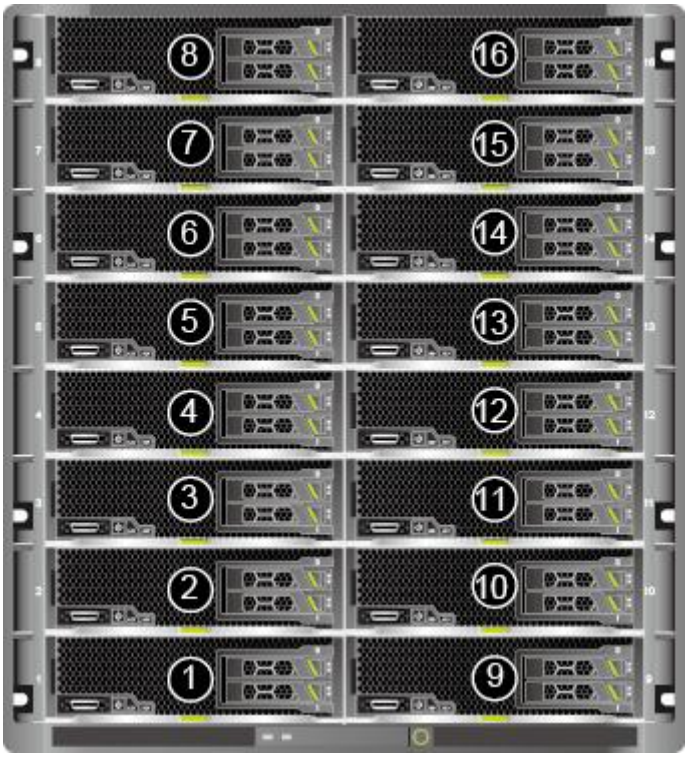
Figure 1-1 shows the CH121 V3 appearance.

Figure 1-1 Appearance

Installation Position

The CH121 V3 is installed in the half-width slot in the front of the E9000 chassis. A chassis can house a maximum of 16 CH121 V3s. Figure 1-2 shows the installation positions of the CH121 V3s and slot numbering in the chassis.

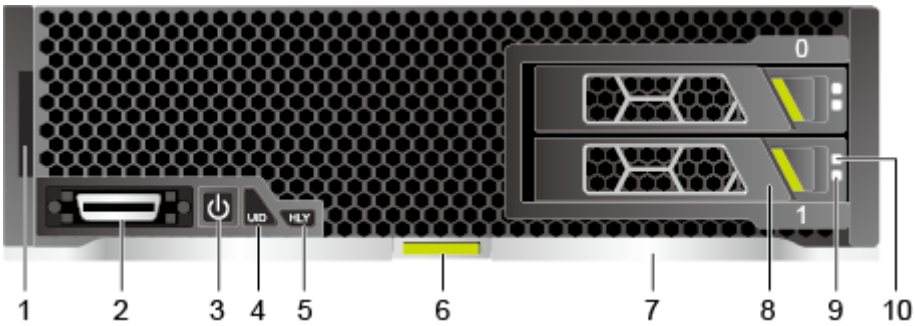
Figure 1-2 Installation positions and slot numbering



Front panel

Figure 1-3 shows the front panel of a CH121 V3.

Figure 1-3 Front panel



1	Customization label	2	High-density port
3	Power button/indicator	4	UID button/indicator
5	HLY indicator	6	Spring
7	Ejector lever	8	Hard disk
9	Hard disk active indicator	10	Hard disk fault indicator

1.3 Ports

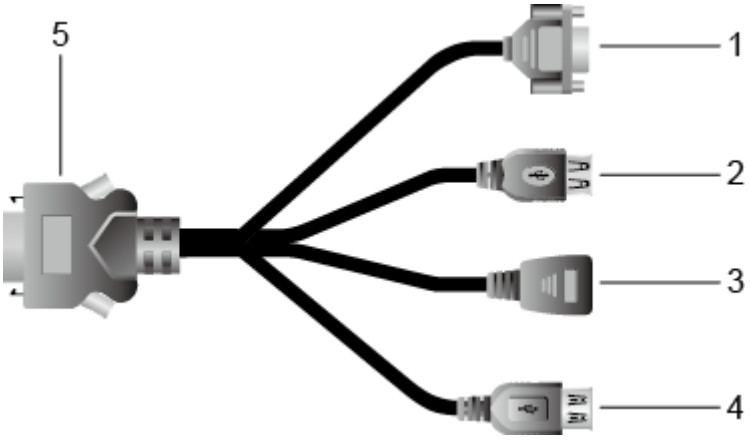
This topic describes the ports on the CH121 V3 and provides detailed information about the high-density cable.

Table 1-1 describes the ports on theCH121 V3.

Table 1-1 Port description

Port	Category	Quantity	Description
High-density port	-	1	The High-density port on the front panel connects to a high-density cable, which provides a DB15 video graphics array (VGA) video port, three USB 2.0 ports, and a RJ45 serial port.

Figure 1-4 High-density cable



1	VGA port	2	Two USB ports
3	Serial port	4	One USB port
5	High-density port	-	-

1.4 Indicators

This topic describes the indicators on the CH121 V3.

You can observe the indicators to determine the current status of the CH121 V3. Table 1-2 describes the indicators on the CH121 V3 panel.

Table 1-2 Indicators on the front panel

Indicator	Meaning	Color	State Description
PWR	Power button/indicator	Yellow and green	• Off: The compute node is not powered on. • Blinking yellow: The power supply is locked, and the compute node cannot be powered on. The power button that locked of reason: – When a compute node is being powered on, iBMC does not start, and the power button on the panel is locked. – Shield the power button in iBMC. • Steady yellow: The compute node is to be powered on. • Steady green: The compute node is properly powered on. **NOTE** If a compute node is powered on, you can hold down the power button for 6 seconds to forcibly power off the compute node.
UID	UID button/indicator	Blue	The Unit Identification (UID) indicator helps locate a compute node in a rack. You can control the UID indicator status (off, on, or blinking) by remotely using the MM910 or by manually pressing the UID indicator. • Off: The compute node is not located or is not powered on. • On: The compute node is located. • Blinking: The compute node is being located. **NOTE** If a compute node is powered on, you can hold down the button for 6 seconds to reset iBMC.
HLY	Health status 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 is generated for the compute node. • Blinking red (at 5 Hz): A critical alarm is generated for the compute node, or the compute node is not securely installed.

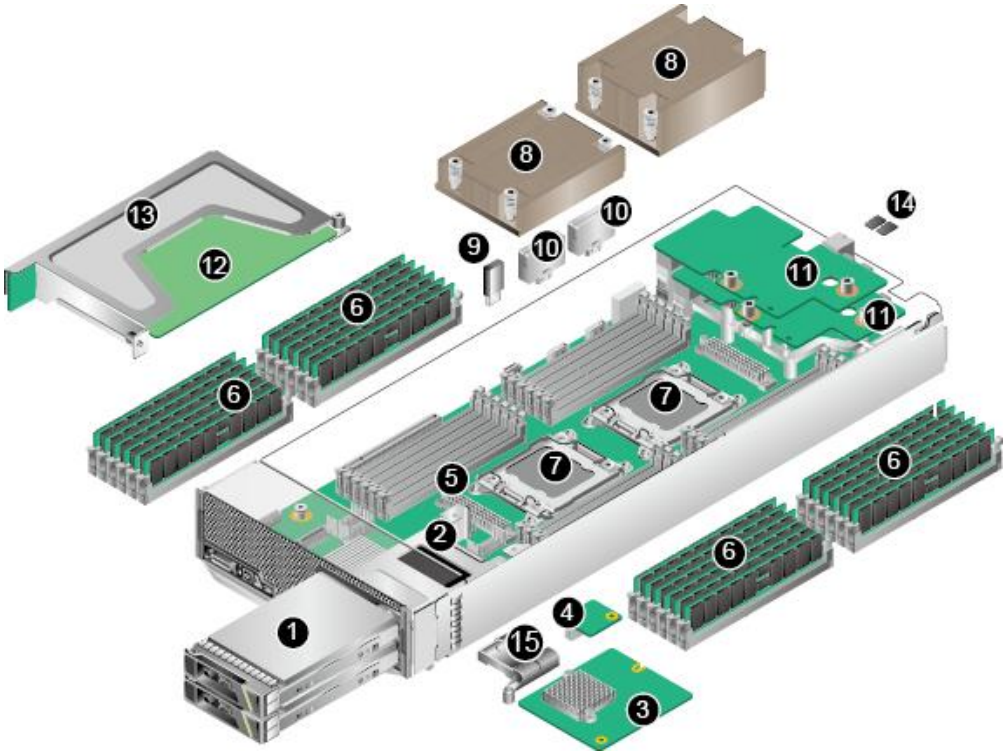
Indicator	Meaning	Color	State Description
	Hard disk active indicator	Green	• Off: The hard disk is not detected or is faulty. • Blinking green: Data is being read from, written to the hard disk, or synchronized between hard disks. • Steady green: The hard disk is inactive.
	Hard disk fault indicator	Yellow	• Off: The hard disk is operating properly or hard disks cannot be detected in the RAID. • Blinking yellow: The hard disk is being located, or the RAID is being reconstructed. • Steady yellow: The hard disk is not detected or is faulty.

1.5 Hardware Structure

This topic describes components, main board layout, and connectors of the CH121 V3.

Figure 1-5 shows the components of the CH121 V3.

Figure 1-5 Components of the CH121 V3



1	Hard disk	2	Hard disk tray
3	Redundant array of independent disks (RAID) controller card	4	(Optional) Trusted Platform Module (TPM)
5	Main board	6	Dual inline-memory module (DIMM)
7	CPU	8	Heat sink
9	(Optional) USB 3.0	10	(Optional) SATADOM
11	Mezzanine card	12	(Optional) PCIe card
13	(Optional) PCIe card tray	14	(Optional) Micro SD card
15	(Optional) superCapacitor	-	-

Table 1-3 describes the components of the CH121 V3.

Table 1-3 Component description

Number	Name	Description
1	Hard disk	The compute node supports a maximum of two 2.5-inch hard disk drives (HDDs) or SSDs. Mixed configuration of hard disk drives (HDDs) and SSDs is supported. The hard disk backplane provides two Serial Attached SCSI (SAS) and Serial Advanced Technology Attachment (SATA) ports

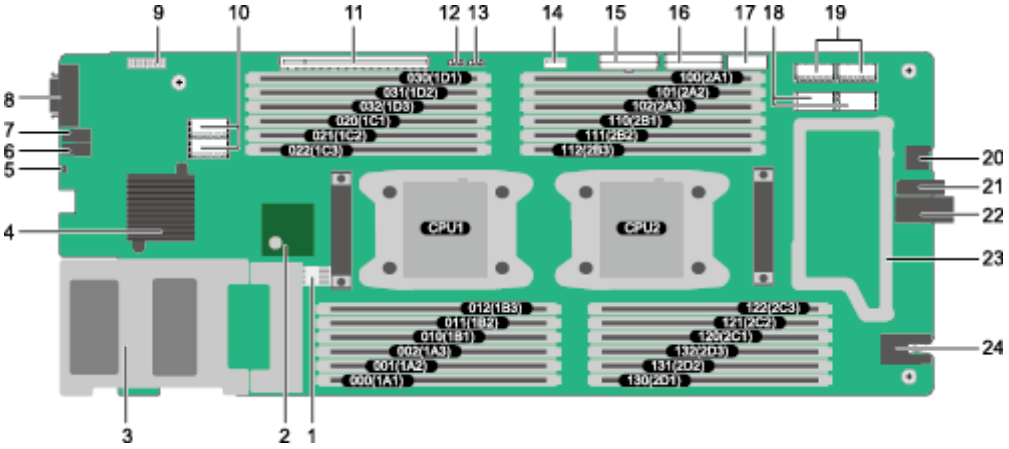
Number	Name	Description
		for connecting SAS and SATA hard disks. Each hard disk is hot-swappable and can be installed and removed separately. • Up to 2.4 TB with fully configured 1.2 TB SAS hard disks • Up to 2 TB with fully configured 1 TB SATA hard disks • Up to 1.6 TB with fully configured 800 GB SSDs
2	Hard disk tray	Supports hard disks
3	RAID controller card	The RAID controller card connects to external hard disks to expand the storage capacity of the compute node. The hard disk backplane provides eight 12 Gbit/s SAS or SATA ports. The CH121 V3 provides only two SAS or SATA ports for connecting SAS disks, SATA disks. The mainboard supports three types of RAID controller cards: LSISAS2308, LSISAS3008, LSISAS3108, and PMC8060. • LSISAS2308: supports RAID 0, 1, 1E, and 10. • LSISAS3008: supports RAID 0, and 1E. • LSISAS3108: supports RAID 0, 1, 5, 6, 10, 50, and 60. • PMC8060: supports RAID 0, 1, 5, 6, 10, 50, and 60.
4	(Optional) TPM	The Trusted Platform Module (TPM) is a security solution that complies with the Trusted Computing Group (TCG) standards. It enhances platform security by preventing viruses or unauthorized operations.
5	Main board	The mainboard holds the CPUs, DIMMs, hard disk interface modules, power control module, iBMC (integrated baseboard management controller), logic module, chipset and display adapter. The server chipset is the Platform Controller Hub (PCH) using the Intel® C610 chip. A video chip with 32 MB display memory integrated into the 1710 chip. The maximum resolution is 1920 x 1200 at 60 Hz with 16 M colors.
6	DIMM	Up to 24 dual in-line memory module (DIMM) slots for installing DIMMs (12 DIMMs for each CPU). • Maximum memory speed: 2133 MHz • Memory protection: error-correcting code (ECC), mirroring, and sparing. • DIMM type: registered DIMM (RDIMM) and load-reduced DIMM (LRDIMM). Mixing different types of DIMMs is not supported. – RDIMM: up to 348 GB for 24 x 16 GB RDIMMs and two CPUs – LRDIMM: up to 768 GB for 24 x 32 GB LRDIMMs

Number	Name	Description
		and two CPUs
7	CPU	The mainboard supports one or two Intel® Xeon® E5-2600 V3 (Haswell-EP) CPUs of 70 W, 80 W, 85 W, 105 W, 120 W, 130 W, 135 W, and 145 W, with a maximum of 18 cores per CPU. • Each CPU integrates a memory controller for supporting four DDR4 memory channels. Each channel supports three DDR4 DIMMs of 1333 MHz, 1600 MHz, 1866 MHz, and 2133 MHz. • Each CPU integrates a Peripheral Component Interconnect Express (PCIe) controller with 80 lanes and supports PCIe 3.0. • Each CPU has two QuickPath buses. Every two CPUs are interconnected through a QuickPath bus at 9.6 GT/s. • The maximum dominent frequency supported by the CPUs reaches 3.5 GHz.
8	Heat sink	The heat sink cools CPUs. Each CPU is configured with one heat sink. The heat sink for CPU2 is higher than that for CPU1 on the mainboard.
9	(Optional) USB 3.0	The mainboard provides a built-in USB port for connecting to a USB 3.0 device with the dimensions of 31.75 mm x 12.00 mm x 4.50 mm.
10	(Optional) SATADOM	The serial ATA disk on module (SATADOM) is a SATA SSD or SATA DOM electrical hard disk. It is a quick memory storage media unit that features energy efficiency and high stability.
11	Mezzanine card	The mainboard provides two mezzanine card connectors to connecting to the slots of switch modules or pass through modules through the backplane. • The upper mezz module is Mezz 1, and the lower one is Mezz 2. • Mezz 1 connects to slots 2X and 3X. • Mezz 2 connects to slots 1E and 4E.
12	(Optional) PCIe card	Standard PCIe card. The PCIe card can be an 800 GB, 1.2 TB, or 2.4 TB PCIe SSD. If PCIe card is configured, no DIMMs can be inserted into the six DIMM slots below the PCIe card due to space limitations.
13	(Optional) PCIe card tray	The PCIe card tray is placed above the DIMMs. Each PCIe card tray provides one PCIe 3.0 x16 slot by using a riser card.
14	(Optional) Micro SD card	The mainboard provides two Micro SD card interfaces. Each interface supports an Micro SD card with a maximum capacity of 32 GB, and the Micro SD card can be used as

Number	Name	Description
		the boot medium for a compute node.
15	(Optional) superCapacitor	When the LSISAS2208 controller card is installed, you can install a supercapacitor to provide power-off protection at power failures.

Figure 1-6 shows the positions of connectors and other components on the CH121 V3 main board.

Figure 1-6 Positions of the connectors and other components



1	HDD Backplane Connector	2	TPM Card Connector
3	HDD Tray	4	PCH (Platform Control Hub)
5	HLY indicator	6	UID button/indicator
7	Power button/indicator	8	High-density Port
9	Expansion Card Connector	10	RAID Card Connector
11	PCIe Riser Card Connector	12	SATADOM Power Connector 1
13	SATADOM Power Connector 2	14	USB 3.0 Port
15	SATADOM Connector 2	16	SATADOM Connector 1
17	BIOS Battery	18	Mezz Card Connector 2
19	Mezz Card Connector 1	20	Micro SD Card 1 (top) Micro SD Card 2 (bottom)
21	Positioning Pin	22	Midplane Signal Connector
23	Mezz Card Tray	24	Midplane Power Connector

1.6 Architecture

This topic describes the architecture of the CH121 V3.

Figure 1-7 shows the architecture of the CH121 V3.

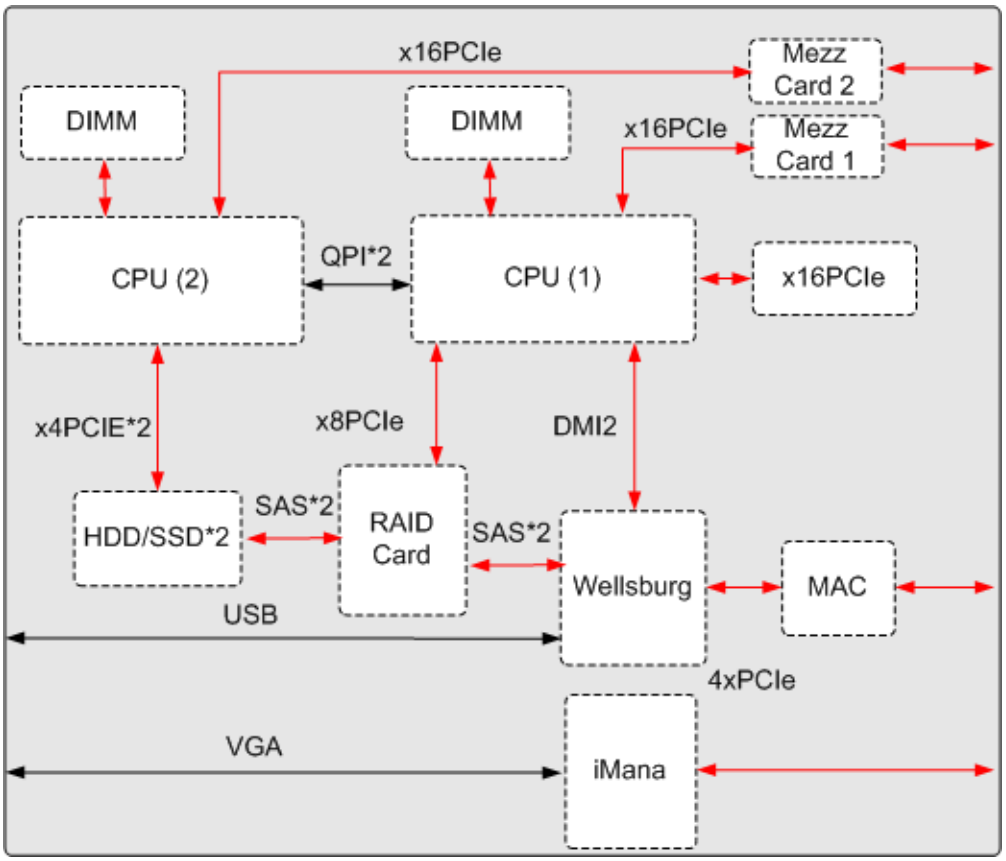
The main board contains two next-generation Intel® Haswell-EP CPUs and 24 dual in-line memory modules (DIMMs). CPUs are connected over the QuickPath Interconnect (QPI) bus. The maximum transmission rate reaches 9.6 GT/s. A CPU connects to a bridge over the DMI2 bus. The maximum transmission rate reaches 5 GT/s. A CPU connects to a mezzanine card over the peripheral Component Interconnect Express (PCIe). The mezzanine card provides a service interface.

As PCH (Platform Controller Hub), the Wellsburg is a next-generation Intel® southbridge chip used on server platforms and supports external input/output (I/O) bus interfaces and bus expansion. A PCH connect to a MAC chip over the PCIe, and the MAC chip provides a management service interface.

The hard disk interface module consists of a redundant array of independent disks (RAID) card and a midplane where two hard disk drives (HDDs) are located. The hard disk interface module connects to a CPU over the PCIe.

The provides device management functions, such as power-on control for compute nodes, obtaining slot ID, monitoring power supply, and KVM over IP.

Figure 1-7 Architecture of CH121 V3



1.7 Compute Node Technical Specifications

This topic describes specifications of the CH121 V3.

Table 1-4 describes the technical specifications of the CH121 V3.

Table 1-4 Technical Specifications

Category	Item	Specifications
Physical specifications	Dimensions (H x W x D)	60.46 mm × 210 mm × 537.2 mm (2.4 in. x 8.26 in. x 21.14 in.)
	Color	• Front panel: black • Cover: silver white
	Weight	Net: 7 kg (15.44 lb)
		Packing materials: 2.3 kg (5.07 lb)
Environmental specifications	Temperature	• Operating temperature: 5 ℃ to 40 ℃ (41 ℉ to 104 ℉) • Storage temperature: -40 ℃ to +65 ℃ (-40 ℉ to +149 ℉)
	Temperature change rate	15 ℃/h (27 ℉/h)
	Humidity	• Operating humidity: 5% RH to 85% RH (non-condensing) • Storage humidity: 5% RH to 95% RH (non-condensing)
	Altitude	900 m (2952.72 ft) at 40 ℃ (104 ℉) When the device is used in an altitude of 900 m to 1800 m, the operating temperature decreases by 1 ℃ (1.8 ℉) as the altitude increases by 300 m (984.24 ft).
Input power supply	Rated input voltage	12 V DC
Power consumption	Maximum power consumption	521 W

2 Features

Performance and Scalability

- The Intel® Xeon® E5-2600 V3 (Haswell-EP) series 18 cores processors provide high system performance, 45 MB L3 cache, and a frequency of 3.5 GHz, as well as two 9.6 GT/s QuickPath Interconnect (QPI) links between processors. This feature enables the compute node to provide the optimal processing performance.
- Each compute node supports two processors, 36 cores, and 72 threads to maximize the concurrent execution of multithreaded applications.
- Intel® Turbo Boost Technology 2.0 provides the intelligent adaptation function to enable the processor cores to run at the maximum speed during peak workloads by temporarily going beyond the processor thermal design power (TDP).
- Intel® hyper-threading technology boosts performance for multithreaded applications by concurrently processing multiple threads (up to two threads per core) within each processor core.
- Intel® virtualization technology integrates hardware-level virtualization functions to allow operating system (OS) vendors to better use hardware for addressing virtualization workloads.
- Intel® advanced vector extensions (AVX) improves floating-point computing performance for computing-intensive applications.
- A total of 24 load-reduced DIMMs (LRDIMMs) provides quick speed, high availability, and a maximum memory capacity of 768 GB.
- Intel® Xeon® E5-2600 V3 (Haswell-EP) series processors provide a maximum memory bandwidth of 68.3GB/s (64 bit/8*2133 MHz*4 channel) in theory.
- The I/O performance of a system configured with only solid-state drives (SSDs) is much higher than that of a system configured with only HDDs or with both SSDs and HDDs. An SSD supports up to 100 times I/O operations per second (IOPS) of a typical HDD.
- A compute node can be configured with one NIC with two integrated GE ports for connecting to a switch module to provide a variety of ports.
- Compute Node support Peripheral Component Interconnect Express 3.0 (PCIe 3.0) with 80 lanes. The PCIe 3.0 I/O bandwidth reaches 8 GT/s per lane, which is improved the by 60% compared with PCIe 2.0.
- Intel® integrated I/O technology enables the PCIe 3.0 controller to be integrated into the Intel® Xeon® E5-2600 V3 (Haswell-EP) series processors. This shortens I/O latency and enhances overall system performance.
- A compute node supports multiple network ports and mezz modules to provide a variety of ports.

- A compute node supports standard PCIe SSDs.

Availability and Serviceability

- A compute node provides the memory mirroring and memory backup functions to avoid system shutdown caused by uncorrectable memory errors.
- A compute node supports hot-swappable hard disks for configuring RAID properties to protect data and prolong system running time. A compute node supports RAID 0 and 1.
- The UID and HLY indicators on the panel and the key component status displayed on the integrated baseboard management controller (iBMC) WebUI help technical support personnel quickly locate faulty components. This simplifies maintenance, shortens troubleshooting time, and improve system availability.
- The compute node supports SSDs for providing higher reliability than HDDs and prolonging system operating time.
- The integrated iBMC module continuously monitors system parameters, triggers alarms, and performs recovery actions to minimize system downtime.

Manageability and Security

- The iBMC module on a compute node monitors server operating status and provides remote management.
- An integrated industry-standard unified extensible firmware interface (UEFI) increases setting, configuring, and updating efficiencies, and simplifies error handling.
- The optional trusted platform module (TPM) 2.0 provides advanced encryption functions, such as digital signatures and remote authentication.
- The industry-standard advanced encryption standard–new instruction (AES NI) implements faster and stronger encryption.
- Intel® Execute Disable Bit (EDB) works with a supported operating system (OS) to prevent certain types of malicious buffer overflow attacks.
- Intel® Trusted Execution technology enhances security by using hardware-based resistance against malicious software attacks, allowing applications to run in isolated mode to avoid any interference from the other applications running on the OS.

Energy Efficiency

- The Intel® Xeon® E5-2600 V3 (Haswell-EP) series processors provide higher performance than the previous-generation processors while supporting the same TDP.
- Intel® intelligent power capability powers on and off a single processor based on the site requirements to reduce power consumption.
- Low-voltage Intel® Xeon® processors consume less energy to satisfy demands of power and thermally constrained data centers and telecommunication environments.
- Low-voltage 1.2 V DDR4 registered DIMMs (RDIMMs) consume 20% to 30% less energy than 1.35 V DDR3 RDIMMs.
- SSDs consume 80% less power than HDDs.
- A compute node uses hexagonal ventilation holes to enable higher ventilation density than round holes, remarkably increasing the system cooling efficiency.
- The efficient voltage regulator down (VRD) PSUs reduce the loss in DC/DC power conversion.
- A compute node supports power capping and power control.

3 Component Selection

This topic describes the software and hardware supported by the CH121 V3.

For details about the software and hardware that are compatible with the CH121 V3, see *Compatibility*.

CPU

The mainboard supports one or two Intel® Xeon® E5-2600 V3 (Haswell-EP) CPUs of 70 W, 80 W, 85 W, 105 W, 120 W, 130 W, 135 W, and 145 W, with a maximum of 18 cores per CPU.

- Each CPU integrates a memory controller for supporting four DDR4 memory channels. Each channel supports three DDR4 DIMMs of 1333 MHz, 1600 MHz, 1866 MHz, and 2133 MHz.
- Each CPU integrates a Peripheral Component Interconnect Express (PCIe) controller with 80 lanes and supports PCIe 3.0.
- Each CPU has two QuickPath buses. Every two CPUs are interconnected through a QuickPath bus at 9.6 GT/s.
- The maximum dominent frequency supported by the CPUs reaches 3.5 GHz.

Memory

Up to 24 dual in-line memory module (DIMM) slots for installing DIMMs (12 DIMMs for each CPU).

Memory Configuration Rules

Observe the following rules to configure DIMMs:

1. The CH121 V3 supports the DIMMs with the capacity of 8 GB, 16 GB. A compute node provides a maximum memory capacity of 2768 GB when DIMMs are fully configured.
2. The maximum number of DIMMs supported by one compute node depends on the processor type, DIMM type, rank quantity, and operating voltage. See Maximum number of DIMMs in Table 3-1.

NOTE

Note the following rule:

Number of DIMMs supported by each channel ≤ Number of ranks supported by each channel/Number of ranks supported by each DIMM

3. All DIMMs for the processors operate at the same speed, whichever of the following is the lowest:

- Memory speed that is supported by the specified processor
- For details about the lowest of the maximum operating speeds, see Maximum Operating Speed in Table 3-1.

Table 3-1 DIMM configuration rules

Parameter		RDIMM	
Rank		Single rank	Dual rank
Rated speed (MHz)		2133	2133
Rated voltage (V)		1.2	1.2
Operating voltage (V)		1.2	1.2
Maximum number of DIMMs[a]		16	16
Maximum capacity per DIMM (GB)		8	16
Maximum memory capacity (GB)		128	256
Maximum memory capacity at the maximum operating speed (GB)		128	256
Maximum operating speed (MHz)	One DIMM per channel	2133	2133
	Two DIMMs per channel	2133	1866
a: The maximum number of DIMMs is given for two-processor configuration. If the compute node uses one processor, the maximum number of DIMMs is a half the values given in this figure. The table is for reference only. For details about the components that can be purchased, consult the local Huawei sales representatives.			

Memory slot configuration rules

Table 3-2 describes the DIMM slot installation sequence. For details about the DIMM slot numbers, see Figure 1-6.

Table 3-2 DIMM installation sequence

CPU	DIMM Slot Installation Sequence
CPU1	1A1, 1B1, 1C1, 1D1, 1A2, 1B2, 1C2, 1D2, 1A3, 1B3, 1C3, 1D3
CPU1 and CPU2	1A1, 2A1, 1B1, 2B1, 1C1, 2C1, 1D1, 2D1, 1A2, 2A2, 1B2, 2B2, 1C2, 2C2, 1D2, 2D2, 1A3, 2A3, 1B3, 2B3, 1C3, 2C3, 1D3, 2D3

The CH121 V3 provides DDR4 DIMM slots. Each processor integrates four memory channels. Four memory channels for processor 1 are 1A, 1B, 1C, and 1D, and those for processor 2 are 2A, 2B, 2C, and 2D. Table 3-3 lists memory channels for each processor.

Slots 1A1, 1B1, 1C1, 1D1, 2A1, 2B1, 2C1, and 2D1 are the primary slots of channels 1A, 1B, 1C, 1D, 2A, 2B, 2C, and 2D respectively. When installing DIMMs, the primary channels are mandatory.

Table 3-3 Memory channels for each processor

Channel Location	Memory Channel	Composition
Processor 1	1A	DIMM000 (1A1)
		DIMM001 (1A2)
		DIMM002 (1A3)
	1B	DIMM010 (1B1)
		DIMM011 (1B2)
		DIMM012 (1B3)
	1C	DIMM020 (1C1)
		DIMM021 (1C2)
		DIMM022 (1C3)
	1D	DIMM030 (1D1)
		DIMM031 (1D2)
		DIMM032 (1D3)
Processor 2	2A	DIMM100 (2A1)
		DIMM101 (2A2)
		DIMM102 (2A3)
	2B	DIMM110 (2B1)
		DIMM111 (2B2)
		DIMM112 (2B3)
	2C	DIMM120 (2C1)
		DIMM121 (2C2)
		DIMM122 (2C3)
	2D	DIMM130 (2D1)
		DIMM131 (2D2)
		DIMM132 (2D3)

Storage

The compute node supports a maximum of two 2.5-inch hard disk drives (HDDs) or SSDs. Mixed configuration of hard disk drives (HDDs) and SSDs is supported. The hard disk backplane provides two Serial Attached SCSI (SAS) and Serial Advanced Technology Attachment (SATA) ports for connecting SAS and SATA hard disks. Each hard disk is hot-swappable and can be installed and removed separately.

- Up to 2.4 TB with fully configured 1.2 TB SAS hard disks
- Up to 2 TB with fully configured 1 TB SATA hard disks
- Up to 1.6 TB with fully configured 800 GB SSDs

The mainboard supports three types of RAID controller cards: LSISAS2308, LSISAS3008, LSISAS3108, and PMC8060.

- LSISAS2308: supports RAID 0, 1, 1E, and 10.
- LSISAS3008: supports RAID 0, and 1E.
- LSISAS3108: supports RAID 0, 1, 5, 6, 10, 50, and 60.
- PMC8060: supports RAID 0, 1, 5, 6, 10, 50, and 60.

Table 3-4 lists the performance of different RAID groups, the minimum number of disks required, and disk utilization.

Table 3-4 RAID level comparison

RAID Level	Reliability	Read Performance	Write Performance	Minimum Number of Hard Disks	Hard Disk Utilization
RAID 0	Low	High	High	2	100%
RAID 1	High	Low	Low	2	50%
RAID 5	Medium	High	Medium	3	(N-1)/N
RAID 6	Medium	High	Medium	4	(N-2)/N
RAID 1E	High	Medium	Medium	3	M/N
RAID 10	High	Medium	Medium	4	M/N
RAID 50	High	High	Medium	6	(N-M)/N
RAID 60	High	High	Medium	8	(N-M*2)/N
Note: *N* indicates the number of member hard disks in a RAID. *M* indicates the number of subgroups of a RAID.					

I/O Expansion

The CH121 V3 supports the following types of Peripheral Component Interconnect Express (PCIe) mezz modules for connecting to switch modules through the midplane. You can choose a mezz module based on the I/O card type and rate requirements.

- GE expansion card

- 10GE expansion card
- FC expansion card
- RoCE expansion card
- HCA expansion card

Power Supply

The CH121 V3 is powered by the power supply units (PSUs) in the E9000 chassis, without any independent power supply.

Peripherals

The CH121 V3 supports the peripherals such as USB DVD-ROM drive and KVM.

OSs and Softwares

For details about the operating systems (OSs) and virtualization softwares supported by the CH121 V3, see the *Compatibility*.

4 Management

Huawei iBMC, a remote management system for servers, is integrated on the E9000 compute nodes. It complies with the IPMI V2.0 standards and provides reliable hardware monitoring and management functions. Huawei iBMC implements seamless communications with management modules. The management modules can also be used to manage compute nodes in a chassis.

The iBMC supports the followings:

- KVM and text console redirection
- Remote virtual media
- IPMI V2.0
- Common information model (CIM)
- Web-based browser login

Table 4-1 describes the iBMC specifications.

Table 4-1 iBMC specifications

Item	Description
Management interface	The iBMC supports various management interfaces to implement system integration. The iBMC can integrate with any standard management systems over the following interfaces: • IPMI V2.0 • CLI • HTTPS
Fault detection	The iBMC helps to detect faults and accurately locate hardware faults.
System watchdog	The iBMC supports BIOS POST, OS watchdog, and fault timeout automatic system reset. You enable or disable these functions in the iBMC.
Boot device configuration	The iBMC supports out-of-band configuration for boot devices.
Alarm management	The iBMC supports alarm management and reports alarms

Item	Description
	in various ways such as the (SMTP), and syslog service to ensure that the server runs properly without interruption.
Integrated KVM	The iBMC Provides remote maintenance measures, such as KVM and KVM over IP, for troubleshooting. The maximum resolution is 1920 x 1200.
Integrated virtual media	The iBMC virtualizes local media devices or images to the media devices for remote compute nodes, which simplifies operating system (OS) installation. The virtual DVD-ROM drive supports a transmission rate of up to 8 MB/s.
WebUI	The iBMC provides visual WebUIs for quick configuration and information queries. The following web browsers are supported: • Internet Explorer 8.0 • Firefox 9.0 • CHROME 13.0 • SAFARI
Fault reproduction	The iBMC reproduces faults to diagnose the faults quickly.
Screenshots and videos	The iBMC allows you to view screenshots and videos without login, which facilitates preventive maintenance inspection (PMI).
DNS/LDAP	The iBMC supports domain management and directory services, which significantly simplifies network and configuration management.
Dual-image backup	The iBMC starts the software from an image backup if the running software fails.
Asset management	The iBMC provides intelligent asset management to ease of assets stocktaking.
Intelligent power management	The iBMC supports power capping to increase deployment density and uses dynamic energy saving technology to lower the operating expense (OPEX).

5 Warranty

According to the *Huawei Enterprise Standard Onsite Warranty*, the hardware have a three-years warranty, and the software media has a three-months warranty. The *Huawei Enterprise Standard Onsite Warranty* is a series of warranty maintenance upgrades and post-warranty maintenance agreements with a well-defined scope of services, including service hours, response time, terms of service, and service agreement terms and conditions.

The *Huawei Enterprise Standard Onsite Warranty* is country-specific. The service types, service levels, response time, and terms and conditions may vary with the countries where the product is used. Not all services described in the *Huawei Enterprise Standard Onsite Warranty* are provided to users in all countries. For more information about warranty services in your country, contact Huawei technical support or local representative office.

Table 5-1 describes warranty services provided by Huawei.

Table 5-1 Huawei warranty services

Service	Description
Help Desk	Huawei provides a 24X7 Help Desk hotline for you to obtain after-sales service support. The customer care representative (CCR) is available 24X7 and 365 days/year.
Remote Trouble Shooting	After receiving a service request for rectifying a network or system fault, Huawei TAC engineers will first analyze and handle the fault remotely and then rectify it in the shortest possible time.
Online Technical Support	Huawei's website provides technical materials about the products, such as product manuals, configuration guides, networking cases, and maintenance experiences. After obtaining website access permissions, you can download documents, get up-to-date information about maintenance experiences and skills, and learn about the latest products.
Licensing of Software Updates	To ensure that the equipment purchased by you can run stably, Huawei provides software correction patches.
Advance Hardware Replacement	Huawei provides advance hardware replacement services to help you cope with your urgent needs of Spare Parts.
Onsite hardware replacement	If the problem cannot be resolved without replacing the hardware, Huawei will assign experienced technical support engineers to your site if necessary. The engineers will replace the hardware and rectify

Service	Description
	the fault to restore your system.

Table 5-2 describes the warranty service response time.

Table 5-2 Response time

Service	Response Time	Description	Remarks
Help Desk	24×7	Available 24 hours a day, 7 days a week (00:00 to 24:00, Monday to Sunday)	None
Remote Trouble Shooting		Available 24 hours a day, 7 days a week (00:00 to 24:00, Monday to Sunday)	Huawei TAC responds to all calls in the shortest possible time.
Online Technical Support		Huawei 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 support website: available 24 hours a day, 7 days a week (00:00 to 24:00, Monday to Sunday)	None
Advance Hardware Replacement	9×5	Available 9 hours a business day 5 days a week, excluding official holidays.	Huawei will use commercially reasonable efforts to deliver a replacement part within NBD after RMA issued. Service request accepted after 15:00 local time will be considered as received on the next Business Day.
Onsite hardware replacement		Available 9 hours a business day 5 days a week, excluding official holidays.	Huawei will use commercially reasonable efforts to deliver a replacement part within NBD after RMA issued. Service request accepted after 15:00 local time will be considered as received on the next Business Day.

6 Certifications

This topic describes the certifications that the E9000 has passed.

Table 6-1 lists the certifications.

Table 6-1 Certifications

Country /Region	Certification	Standard
Europe	WEEE	2002/96/EC, 2012/19/EU
Europe	RoHS	2002/95/EC, 2011/65/EU, EN 50581: 2012
Europe	REACH	EC NO. 1907/2006
Europe	CE	Safety: EN 60950-1:2006+A11:2009+A1:2010+A12:2011 EMC: • EN 55022:2010 • CISPR 22:2008 • EN 55024:2010 • CISPR 24:2010 • ETSI EN 300 386 V1.6.1:2012 • ETSI ES 201 468 V1.3.1:2005
China	RoHS	SJ/T-11363-20006 SJ/T-11364-20006 GB/T 26572-2011
China	China Environmental Labeling	GB/T24024:2001 idt ISO14024:1999 HJ 2507-2011
Australia	C-tick	AS/NZS CISPR22: 2009
America	UL	UL 60950-1
America	FCC	FCC Part 15 (Class A)

Country /Region	Certification	Standard
America	NTRL-UL	UL 60950-1, 2nd Edition, 2011-12-19 (Information Technology Equipment - Safety - Part 1: General Requirements) CSA C22.2 No.60950-1-07,2nd Edition,2011-12 (Information Technology Equipment-Safety-Part 1:General Requirements)
Canada	IC	ICES-003 Class A
Nigeria	SONCAP	IEC 60950-1: 2005 (2nd Edition) + A1:2009 EN 60950-1:2006+A11:2009+A1:2010 + A12:2011
Kingdom of Saudi Arabia (KSA)	SASO	IEC 60950-1: 2005 (2nd Edition) + A1:2009 EN 60950-1:2006+A11:2009+A1:2010 + A12:2011
Global	CB	IEC 60950-1
Taiwan	BSMI	CNS 13438 CNS14336
Japan	VCCI	VCCI V-4:2012