Huawei TaiShan 2280

Rack Server White Paper

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Contents

1 Overview

The TaiShan 2280 server is a 2-socket rack server developed based on Huawei HiSilicon advanced reduced instruction set computing machines (ARM) 64-bit CPUs. It combines high-performance computing with large storage capacity, low power consumption, easy management, and easy deployment, and is ideal for Internet, distributed storage, and cloud computing applications.

The TaiShan 2280 server supports:

- Two Huawei-developed ARM64 CPUs. Each CPU supports up to 32 cores, 2.4 GHz frequency, and eight DDR4 DIMMs.
- Two types of chassis supporting 12 x 3.5-inch and 25 x 2.5-inch disks at the front. Each disk can be independently maintained.
- A maximum of four 2.5-inch or 3.5-inch disks at the rear of a 12 x 3.5-inch chassis. Each disk can be independently maintained.
- A maximum of two 2.5-inch or 3.5-inch disks at the rear of a 25 x 2.5-inch chassis. Each disk can be independently maintained.
- A maximum of five standard PCIe slots for expansion cards and SSD cards.

NOTE
3.5-inch disk trays are required to support 2.5-inch disks.

Figure 1-1 TaiShan 2280

NOTE

The figure shows a 12 x 3.5-inch chassis. If you have any questions about the hard disk configuration, contact your local Huawei sales representatives.

2 Features

Performance and Scalability

The TaiShan 2280 provides the following features to enhance performance and scalability:

- Uses two HiSilicon server-oriented 64-bit high-performance multicore ARM CPUs, which integrate DDR4, PCIe 3.0, 10GE, and GE ports and provide the system-on-chip (SOC) function.
- Supports two CPUs and 64 cores, which maximizes the concurrent execution of multithreaded applications.
- Supports sixteen DDR4 error checking and correcting (ECC) DIMMs with up to 512 GB memory capacity.
- Provides two 10GE optical ports and two GE electrical ports on the mainboard.
- One half-height half-length PCIe 3.0 x8 slot and four full-height full-length PCIe 3.0 x8 slots.

Availability and Serviceability

The TaiShan 2280 provides the following features to improve availability and serviceability:

- The TaiShan 2280 uses carrier-class components and follows the engineering process to dramatically improve system reliability.
- The TaiShan 2280 is equipped with one RAID controller card that supports RAID 0, 1, 1E, 10, 5, 50, 6, and 60, provides RAID cache, uses a supercapacitor for power-off data protection, and allows non-system disk hot swap.
- The UID and HLY indicators on the panel and iBMC WebUI help technical support personnel promptly obtain the status of key components and locate failed or failing components. This simplifies maintenance, accelerates troubleshooting, and improves system availability.
- The Huawei intelligent baseboard management controller (iBMC) monitors system parameters in real time, triggers alarms, and performs recovery actions in case of failures. This helps minimize system downtime.

Manageability and Security

The TaiShan 2280 provides the following features to ensure manageability and security:

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

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

Energy Efficiency

The TaiShan 2280 provides the following features to improve energy efficiency:

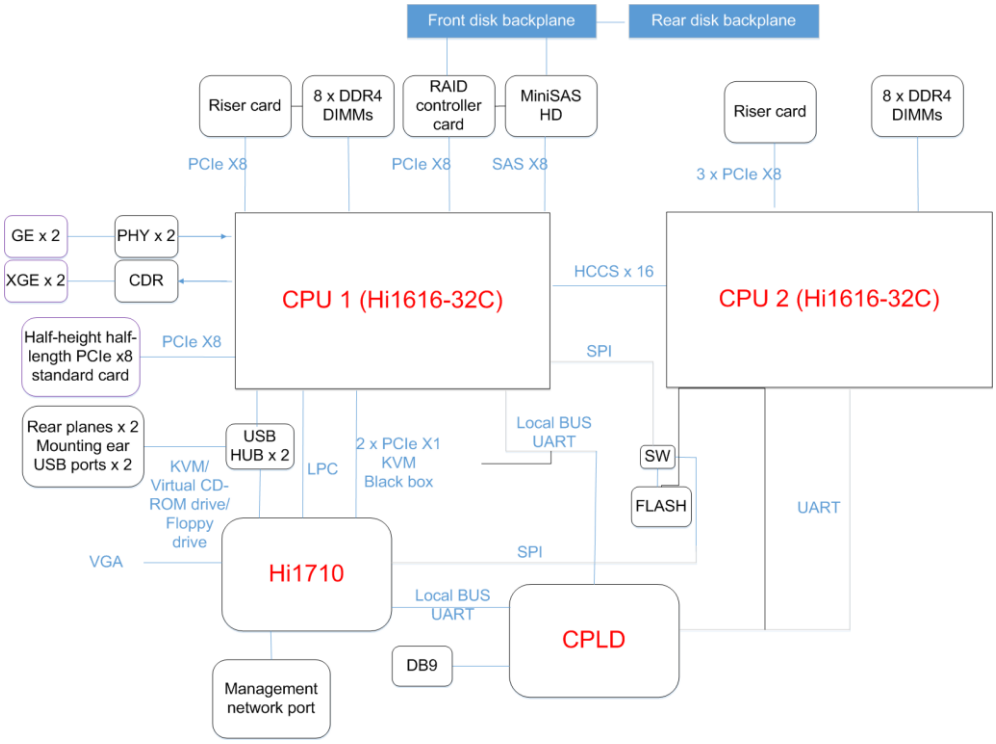
- The TaiShan 2280 supports Platinum power supply units (PSUs), which provide 94% power efficiency at 50% load.
- The voltage regulator-down (VRD) PSUs reduce the energy loss in DC/DC power conversion.
- The TaiShan 2280 supports Proportional-Integral-Derivative (PID) intelligent fan speed adjustment, reducing power consumption.
- The improved thermal design with energy-efficient fan modules ensures optimal heat dissipation and reduces overall system power consumption.
- Hard disks can be powered on at different times to reduce startup power consumption.
- An ARM CPU is more energy-efficient than an x86 CPU.

3 Logical Structure

Figure 3-1 shows the logical structure of the TaiShan 2280.

- The TaiShan 2280 supports two Huawei-developed ARM64 CPUs, each supporting eight DDR4 DIMMs.
- The mainboard provides two 10GE optical ports and two GE electrical ports.
- The TaiShan 2280 supports two hard disk connection modes:
  - If a RAID controller card is configured, the RAID controller card connects to the CPUs through the hard disk backplane by PCIe bus.
  - If no RAID controller card is configured, the CPUs directly connect to the hard disks.

Figure 3-1 TaiShan 2280 logical structure



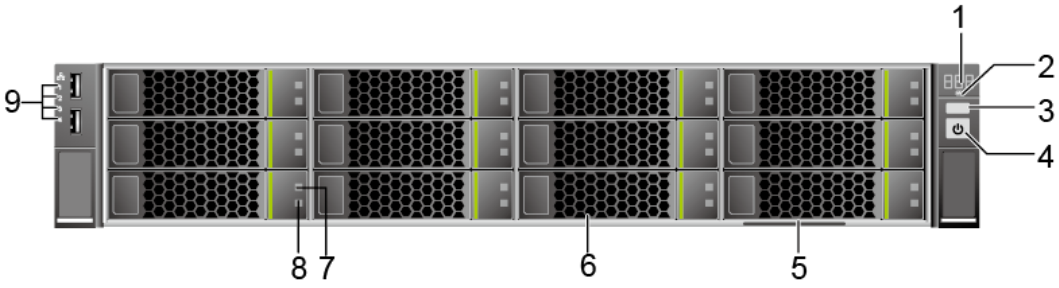
4 Hardware Description

4.1 Appearance

Front Panel

Figure 4-1 shows the front panel (with 12 x 3.5-inch disks) of the TaiShan 2280.

Figure 4-1 Front panel (12 x 3.5-inch disks)

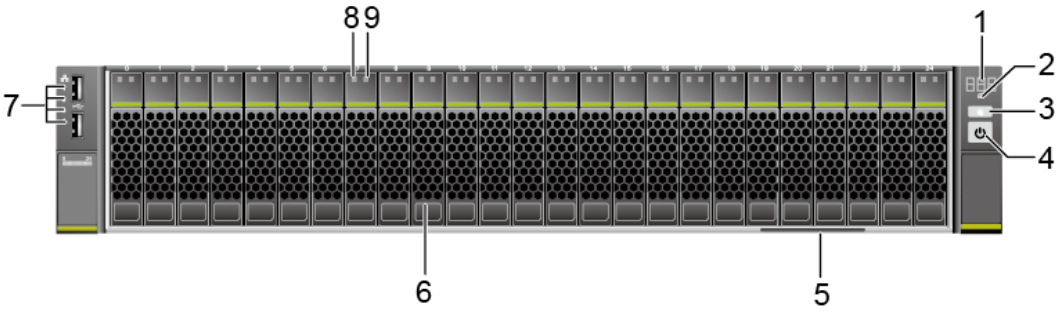


1	Fault diagnosis LED	2	Health indicator
3	UID button/indicator	4	Power button/indicator
5	Label plate	6	Hard disks (slots numbered 0 to 11 from top to bottom and from left to right)
7	Hard disk fault indicator	8	Hard disk activity indicator
9	Network port connection status	-	-

	indicators (1 to 4 from top to down)		

Figure 4-2 shows the front panel (with 25 x 2.5-inch disks) of the TaiShan 2280.

Figure 4-2 Front panel (25 x 2.5-inch disks)

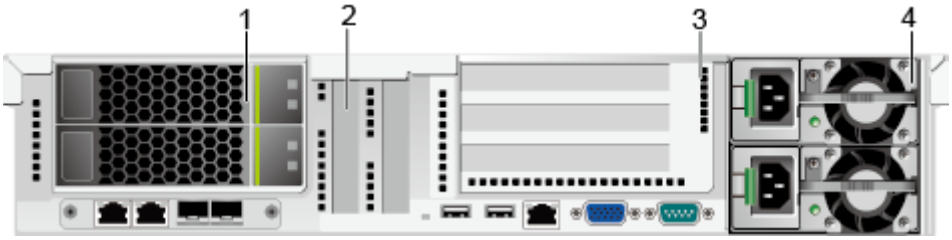


1	Fault diagnosis LED	2	Health indicator
3	UID button/indicator	4	Power button/indicator
5	Label plate	6	Hard disks (numbered 0 to 24 from left to right)
7	Network port connection status indicators (1 to 4 from top to down)	8	Hard disk fault indicator
9	Hard disk activity indicator	-	-

Rear Panel

Figure 4-3 shows the rear panel of the TaiShan 2280.

Figure 4-3 Rear panel

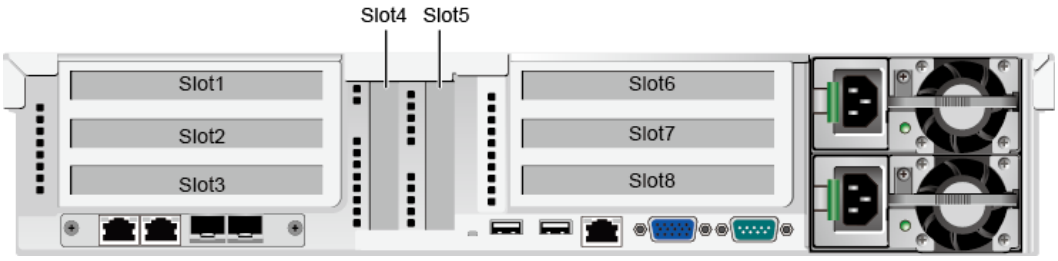


1	I/O module 1	2	LOM PCIe slots
3	I/O module 2	4	PSU

PCIe Slot Layout

Figure 4-4 shows the PCIe slot layout for the TaiShan 2280.

Figure 4-4 PCIe slot layout



- When both I/O module 1 and I/O module 2 use a PCIe riser card that provides three x8 PCIe slots, slots 1, 6, 7, and 8 are available, and slots 2 and 3 is unavailable.
- When I/O module 1 uses a PCIe riser card that provides one x8 PCIe slot and I/O module 2 uses a PCIe riser card that provides three x8 PCIe slots, slots 3, 6, 7, and 8 are available, and slots 1 and 2 is unavailable.
- The mainboard provides slots 4 and 5, where slot 5 is unavailable.

Table 4-1 describes the mapping between the CPUs and PCIe slots, and the compliant PCIe standards of the TaiShan 2280.

Table 4-1 PCIe slot description

PCIe Slot	CPU Socket	Compliant PCIe Standard	Connector Bandwidth	Bus Bandwidth	Slot Size
Slot1/Slot 3	CPU1	PCIe 3.0	X16	X8	Full-height full-length
Slot 4	CPU1	PCIe 3.0	X8	X8	Half-height half-length
Slot 6	CPU2	PCIe 3.0	X16	X8	Full-height full-length
Slot 7	CPU2	PCIe 3.0	X8	X8	Full-height full-length
Slot 8	CPU2	PCIe 3.0	X8	X8	Full-height half-length
Note 1: The PCIe slot that supports a full-height full-length PCIe card is backward compatible with a full-height half-length or half-height half-length PCIe card. Note 2: The PCIe slots that support PCIe x16 cards are backward compatible with PCIe x8, PCIe x4, and PCIe x1 cards. Note 3: Slots 1 and 3 are mutually exclusive, depending on the riser card used. When I/O module 1 uses a PCIe riser card that provides three x8 PCIe slots, slot 1 is available; when					

PCIe Slot	CPU Socket	Compliant PCIe Standard	Connector Bandwidth	Bus Bandwidth	Slot Size
I/O module 1 uses a PCIe riser card that provides one x8 PCIe slot, slot 3 is available.					

4.2 Ports

Table 4-2 describes the external ports provided by the TaiShan 2280.

Table 4-2 Ports on the rear panel

Port	Type	Quantity	Description
Video graphics array (VGA) port	DB15	1	The VGA port is used to connect a terminal, such as a monitor or KVM.
USB port	USB2.0	2	The USB port is connected to a USB device. **NOTE** Before connecting to an external USB device, check that the USB device operates properly. A server may operate abnormally if it is connected to an abnormal USB device.
Management network port (Mgmt)	RJ45	1	The 1000 Mbit/s Ethernet port is used to manage the server.
Serial port	DB9	1	The serial port is used as the system serial port by default. You can set it as the iBMC serial port on the iBMC CLI. The port is used for debugging.
GE electrical port	RJ45	2	The GE electrical port is provided by the mainboard. **NOTE** When the maximum transmission unit (MTU) of the TaiShan 2280 GE electrical port is smaller than 6000 bytes but the MTU of the peer device is larger than 6000 bytes, the TaiShan 2280 cannot receive large packets and the communication becomes abnormal.
10GE optical port	SFP+	2	The 10GE optical port is provided by the mainboard. **NOTE** • The 10GE optical port does not support speed adaptation to GE. • When the MTU of the TaiShan 2280 10GE optical port is less than 6000 bytes but the MTU of the peer port is greater than 6000

Port	Type	Quantity	Description
			bytes, the TaiShan 2280 cannot receive large packages. In this case, the communication is abnormal.

4.3 Indicators and Buttons

You can observe the indicators to determine the status of the TaiShan 2280.

Table 4-3 describes the indicators and buttons on the TaiShan 2280 front panel.

Table 4-3 Indicators and buttons on the front panel

Alarm ID	Meaning	State Description
888	Fault diagnosis LED	• ---: The server is operating properly. • Error code: A fault occurs in server hardware.
	Power button/indicator	• Off: The server is not connected to a power source. • Blinking yellow: The iBMC is starting. • Steady yellow: The server is connected and ready to power on. • Steady green: The system is properly powered on. **NOTE** To power off the server, hold down the power button for 6 seconds.
	UID button/indicator	The UID button/indicator helps identify and locate a server in a chassis. You can turn on or off the UID indicator by pressing the UID button or remotely running a command on the CLI. • Steady blue: The server is located. • Off: The server is not located. To reset the iBMC, hold down the UID button for 4 to 6 seconds.
	Health indicator	• Steady green: The server is operating properly. • Blinking red at 1 Hz: A major alarm is generated. • Blinking red at 5 Hz: A critical alarm is generated.
-	Hard disk activity indicator	• Off: The hard disk is not detected or is faulty. • Blinking green: Data is being read from or written to the hard disk, or synchronized between hard disks.

Alarm ID	Meaning	State Description
		• Steady green: The hard disk is inactive.
-	Hard disk fault indicator	• Off: The hard disk is operating properly or hard disks cannot be detected in the RAID group. • Blinking yellow: The hard disk is located, or rebuilding RAID. • Steady yellow: The hard disk is not detected or the hard disk is faulty.
	Network port link status indicators	Each indicator shows the status of an Ethernet port on the NIC. • Steady green: The port is properly connected. • Off: The port is not in use or has failed.

Table 4-4 shows the indicators on the TaiShan 2280 rear panel.

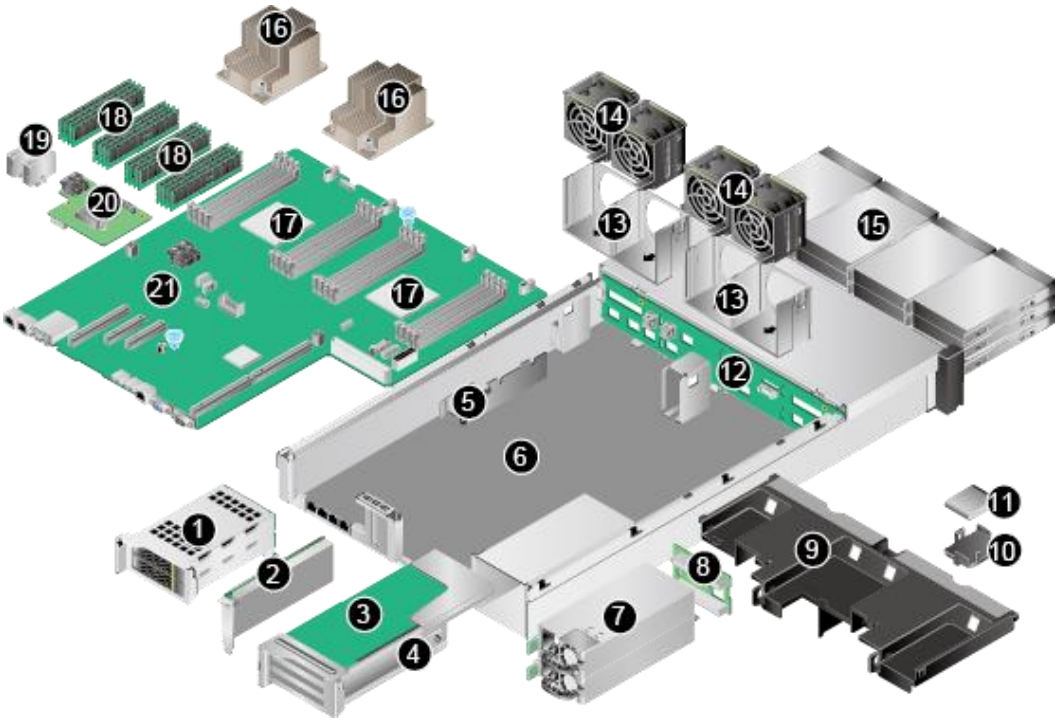
Table 4-4 Indicators on the rear panel

Indicator	State
Data transmission status indicator for the management port	• Off: No data is being transmitted. • Blinking orange: Data is being transmitted.
Connectivity status indicator for the management network port	• Steady green: The network port is properly connected. • Off: The network port is not connected.
PSU indicator	• Steady green: The power supply is normal. • Off: No AC power is supplied or the system is on standby.
UID indicator	• Steady blue: The server is being located. • Off: The server is not located.
Optical port data transmission status indicator	• Off: No data is being transmitted. • Blinking orange: Data is being transmitted.
Optical port connectivity status indicator	• Steady green: The network port is properly connected. • Off: The network port is not connected.
Electrical port data transmission status indicator	• Off: No data is being transmitted. • Blinking orange: Data is being transmitted.
Electrical port connection status indicator	• Steady green: The network port is properly connected. • Off: The network port is not connected.

4.4 Physical Structure

Figure 4-5 shows the components of a TaiShan 2280 server with 12 disks.

Figure 4-5 TaiShan 2280 components



1	I/O module 1	2	PCIe card on the mainboard
3	PCIe card on a riser card	4	I/O module 2
5	Cable management arm (CMA)	6	Chassis
7	PSU	8	PSU backplane
9	Air duct	10	Supercapacitor tray
11	Supercapacitor	12	Front hard disk backplane
13	Fan bracket	14	Fan module
15	Front hard disk	16	Heat sink
17	CPU	18	DIMM
19	SATADOM	20	RAID controller card
21	Mainboard	-	-

Table 4-5 describes the TaiShan 2280 components.

Table 4-5 TaiShan 2280 components

No.	Component	Description
1	I/O module 1	I/O module for a CPU.
2	PCIe card on the mainboard	A PCIe device.
3	PCIe card on a riser card	A PCIe device.
4	I/O module 2	I/O module for a CPU.
5	Cable management arm (CMA)	A CMA enables neat cabling.
6	Chassis	A chassis houses all components.
7	PSU	A PSU supplies power to devices.
8	PSU backplane	A PSU backplane connects PSUs to the mainboard.
9	Air duct	An air duct provides ventilation channels.
10	Supercapacitor tray	A supercapacitor tray secures a supercapacitor for a RAID controller card.
11	Supercapacitor	A supercapacitor provides power-off protection for a RAID controller card.
12	Front hard disk backplane	A hard disk backplane supplies power to front hard disks and provides data transmission channels.
13	Fan bracket	A fan bracket secures a fan module.
14	Fan module	Fan modules dissipate heat for the server and are hot-swappable. If fan modules are in full configuration, a faulty fan module will trigger speed adjustment of other fan modules by area, maintaining optimal heat dissipation.
15	Front hard disk	A hard disk stores data.
16	Heat sink	A heat sink cools a CPU. Each CPU is configured with one heat sink.
17	CPU	A CPU is a computing and control unit of a PC.
18	DIMM	A DIMM stores programs and data and support direct addressing by CPUs.
19	SATADOM	A SATA disk on module (SATADOM) is a SATA SSD or SATADOM electrical hard disk. It is a quick memory storage media unit that features high energy efficiency and stability.
20	RAID controller card	A RAID controller card connects to hard disks to expand the storage capacity.
21	Mainboard	As a key component of a server, the mainboard integrates basic components such as the basic input/output system

No.	Component	Description
		(BIOS) chip and PCIe expansion slots, and provides CPU sockets and DIMM slots.

5 Technical Specifications

Table 5-1 provides the TaiShan 2280 technical specifications.

Table 5-1 Technical specifications

Component	Specifications
Form factor	2U rack server
CPU	The TaiShan 2280 supports two 32-core Hi1616 CPU with a frequency of 2.4 GHz.
Memory	• A maximum of 16 DDR4 DRMM slots are provided and RDIMMs are supported. • The maximum rate of DIMMs is 2400 MT/s. • The error checking and correcting (ECC) technology is supported for protecting memory data. • The capacity of a DIMM is 16 GB or 32 GB. **NOTE** • DIMMs of different specifications (such as the capacity, bit width, rank, and height) cannot be installed on one server. That is, all DIMMs on one server must have the same BOM number. • DIMMs in same memory channel (for example, 000 and 001) must be provided by the same vendor and have the same specifications. DIMMs of different vendors cannot be mixed.
Storage	• TaiShan 2280 (12 x 3.5-inch chassis): supports 12 x 3.5-inch front SAS/SATA disks + 1 SAS cable or SAS RAID controller card + (optional) 4 x 2.5-inch or 3.5-inch rear SAS/SATA disks or SSDs • TaiShan 2280 (25 x 2.5-inch chassis): supports 25 x 2.5-inch front SAS/SATA disks + 1 SAS cable or SAS RAID controller card + (optional) 2 x 3.5-inch or 2.5-inch rear SAS/SATA disks or SSDs • Hot-swappable hard disks • Support for SR130 (LSI SAS3008) and SR430C (LSI SAS3108) RAID controller cards
RAID support	The TaiShan 2280 supports SR130 (LSI SAS3008) and SR430C (LSI SAS3108) RAID controller cards. • SR130 (LSI SAS3008): supports RAID 0, 1, 10, and 1E.

Component	Specifications
	• SR430C (LSI SAS3108): supports RAID 0, 1, 10, 5, 50, 6, and 60 and provides a supercapacitor to protect data in the case of power failures.
Network port	Supports a maximum of four network ports: two 10GE SFP+ optical ports and two GE electrical ports, and PXE.
PCIe slot	Supports a maximum of six PCIe 3.0 x8 slots, including one PCIe slot for installing a RAID controller card and five standard PCIe slots. The specifications of the five standard PCIe slots are as follows: • I/O module configuration 1: supports one standard full-height full-length PCIe 3.0 x16 slot (bandwidth: PCIe 3.0 x8). • I/O module configuration 2: supports one standard full-height full-length PCIe 3.0 x16 slot (bandwidth: PCIe 3.0 x8), one standard full-height full-length PCIe 3.0 x8 slot, and one standard full-height half-length PCIe 3.0 x8 slot. • Mainboard: integrates one standard half-height half-length PCIe 3.0 x8 slot.
Port	• The front panel provides two USB 2.0 ports. • The rear panel provides two USB 2.0 ports, one DB-15 VGA port, one DB-9 serial port, one RJ-45 system management port, two 10GE SFP+ optical ports, and two GE electrical ports.
Fan module	Four hot-swappable fans allow one-fan failures.
PSU	Hot-swappable PSUs in 1+1 redundancy mode: • 460 W AC Platinum, support for 240 V HVDC • 750 W AC Platinum, support for 240 V HVDC **NOTE** The PSUs provide short-circuit protection. The PSUs that support dual input live wires provide double-pole fuse.
System management	Huawei iBMC supports Intelligent Platform Management Interface (IPMI), Serial over LAN (SOL), KVM over IP, and virtual media, and provides one 10/100/1000 Mbit/s RJ45 management network port.
Security	Administrator password
GPU	SM750 graphics card chip integrated in the mainboard, providing a memory capacity of 32 MB and supporting a maximum resolution of 1920 x 1200 at 60 Hz with 16 M colors.
OS	OSs built based on Huawei-provided kernel 4.1

6 Physical Specifications

Table 6-1 lists the physical and environmental specifications of the TaiShan 2280.

Table 6-1 Physical specifications

Item	Specifications
Dimensions (H x W x D)	Chassis with 3.5-inch hard disks: 86.1 mm (2U) x 447 mm x 748 mm (3.39 in. x 17.60 in. x 29.45 in.) Chassis with 2.5-inch hard disks: 86.1 mm (2U) x 447 mm x 727.7 mm (3.39 in. x 17.60 in. x 28.65 in.)
Installation space	The server fits into a common cabinet that complies with the IEC 297 standard. • Width: 19 in. • Depth: > 1000 mm (39.37 in.) Guide rail installation requirements are as follows: – L-shaped guide rails: apply only to a Huawei cabinet. – Adjustable guide rails: apply to a cabinet with a distance of 543.5 mm to 848.5 mm (21.40 in. to 33.41 in.) between the front and rear mounting bars. – Holding rails: apply to a cabinet with a distance of 610 mm to 914 mm (24.02 in. to 35.98 in.) between the front and rear mounting bars.
PSU power rating	The PSUs support the following power ratings: • 460 W AC Platinum PSU • 750 W AC Platinum PSU
Weight in full configuration	• Net weight: – With twelve 3.5-inch hard disks: 30 kg (66.15 lb) – With twenty-five 2.5-inch hard disks: 30 kg (66.15 lb) • Packing material weight: 5 kg (11.03 lb)
Input voltage	460 W AC Platinum PSU/750 W AC Platinum PSU: 100 V AC to 240 V AC, or 192 V DC to 288 V DC

Item	Specifications
Operating temperature	• Operating temperature: 5°C to 40°C (41°F to 104°F) • Storage temperature: –40°C to +65°C (–40°F to +149°F) • The temperature change rate is less than 20°C/h (36°F/h)
Relative humidity (RH, non-condensing)	• Operating humidity: 8% to 90% • Storage humidity: 5% to 95% • Humidity change rate: < 20% RH/h
Altitude	≤ 3000 m When the altitude is higher than 900 m (2952.72 ft), the operating temperature decreases by 1°C (1.8°F) as the altitude increases by 300 m (984.24 ft).
Acoustic noise	The data listed in the following is the declared A-weighted sound power levels (LWAd) and declared average bystander position A-weighted sound pressure levels (LpAm) measured when the server is operating in a 23°C (73.4°F) ambient environment. Noise emissions are measured in accordance with ISO 7779 (ECMA 74) and declared in accordance with ISO 9296 (ECMA 109). Operating: • LWAd: 46.625 dB(A) • LpAm: 69.6 dB(A) **NOTE** The actual sound levels generated during server operating vary depending on the server configuration, load, and ambient temperature.

7 Component Compatibility

This chapter describes the software and hardware compatibility of the TaiShan 2280.

The software and hardware models supported by the TaiShan 2280 listed in this chapter are for reference only. For details, see the compatibility list.

7.1 Memory

Memory Capacity Configuration Rules

The TaiShan 2280 supports up to 16 DIMMs. Each CPU supports four memory channels, and each memory channel supports up to two DIMMs.

Table 7-1 RDIMM configuration rules

Item	RDIMM
Rank	Dual rank
Rated speed (MT/s)	2400
Rated voltage (V)	1.2
Operating voltage (V)	1.2
Maximum number of DIMMs	16
Maximum capacity per DIMM (GB)	32
Maximum memory capacity (GB)	512
Maximum memory capacity at the maximum operating	256

Item		RDIMM
speed (GB)		
Maximum operating speed (MT/s)	One DIMM per channel	2400
	Two DIMMs per channel	2133

Memory Slot Configuration Rules

- The TaiShan 2280 supports DIMMs of 16 GB and 32 GB. When the TaiShan 2280 is fully configured with DIMMs, the maximum memory capacity is 512 GB.
- In the TaiShan 2280, each CPU has eight DDR4 DIMM slots, integrating four memory channels (channels 0, 1, 2, and 3). Table 7-2 describes the composition of each channel. Figure 7-1 shows the DIMM installation positions.
- DIMMs of different specifications (such as capacity, bit width, rank, and height) cannot be mixed on one server. That is, a server must use DIMMs of the same BOM number.
- DIMMs in same memory channel (for example, 000 and 001) must be provided by the same vendor and have the same specifications. DIMMs of different specifications cannot be installed in the same memory channel.

Table 7-2 Memory channels

Memory Channel	Composition
CPU1	020(B),021(F),000(A),001(E),011(G),010(C),031(H),030(D)
CPU2	120(B),121(F),100(A),101(E),111(G),110(C),131(H),130(D)

Figure 7-1 DIMM installation positions

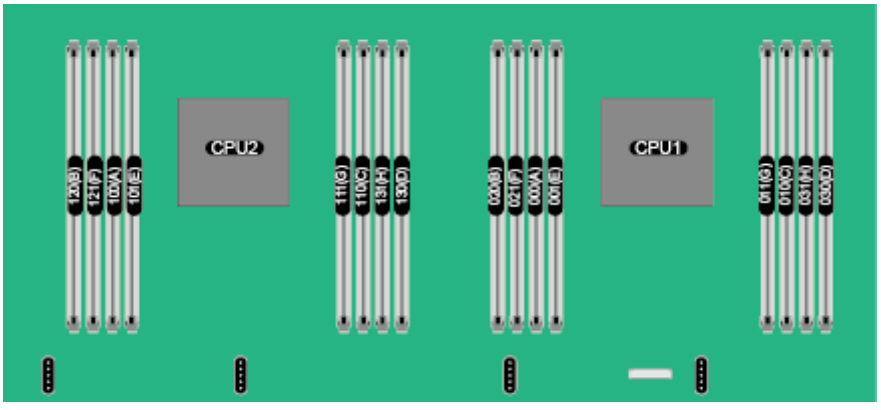


Figure 7-2 describes the DIMM installation rules.

Figure 7-2 DIMM installation rules

CPU	Channel	DIMM Location	DIMM Quantity √: Recommended O: Not recommended															
			O	O	O	√	O	O	O	√	O	O	O	O	O	O	O	√
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
CPU 1	TB_A	DIMM000(A)	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·
	TB_A	DIMM001(E)									·	·	·	·	·	·	·	·
	TB_B	DIMM010(C)					·	·	·	·	·	·	·	·	·	·	·	·
	TB_B	DIMM011(G)													·	·	·	·
	TA_A	DIMM020(B)			·	·	·	·	·	·	·	·	·	·	·	·	·	·
	TA_A	DIMM021(F)											·	·	·	·	·	·
	TA_B	DIMM030(D)							·	·	·	·	·	·	·	·	·	·
	TA_B	DIMM031(H)															·	·
CPU 2	TB_A	DIMM100(A)		·	·	·	·	·	·	·	·	·	·	·	·	·	·	·
	TB_A	DIMM101(E)										·	·	·	·	·	·	·
	TB_B	DIMM110(C)						·	·	·	·	·	·	·	·	·	·	·
	TB_B	DIMM111(G)														·	·	·
	TA_A	DIMM120(B)				·	·	·	·	·	·	·	·	·	·	·	·	·
	TA_A	DIMM121(F)												·	·	·	·	·
	TA_B	DIMM130(D)								·	·	·	·	·	·	·	·	·
	TA_B	DIMM131(H)																·

Supported DIMMs

Table 7-3 lists the DIMMs supported by the TaiShan 2280.

Table 7-3 Supported DIMMs

Part Number	Description	Remarks
06200225	Memory Module,DDR4 RDIMM,16GB,288pin,0.83ns,2400000KHz,1.2V,ECC ,2Rank(1G*8bit)	-
06200224	Memory Module,DDR4 RDIMM,32GB,288pin,0.83ns,2400000KHz,1.2V,ECC ,2Rank(2G*4bit)	-

7.2 Storage

Table 7-4 lists the supported hard disks.

Table 7-4 Hard disks supported by the TaiShan 2280

Part Number	Description	Remarks
02311AYT	7200 RPM - 3.5' SATA 6Gbps - 2000GB HDD	-
02311AYV	7200 RPM - 3.5' SATA 6Gbps - 4000GB HDD	-
02311DYQ	7200 RPM - 3.5' SATA 6Gbps - 6000GB HDD	-
02311JRE	7200 RPM - 3.5' SATA 6Gbps - 8000GB HDD	-
02311SXE	7200 RPM - 3.5' SATA 6Gbps – 10TB HDD	-
02311HAS	10000 RPM - 2.5' SAS 12Gbps - 300GB HDD-3.5' front panel	-
02311HAT	10000 RPM - 2.5' SAS 12Gbps - 600GB HDD-3.5' front panel	-
02311NAJ	10000 RPM - 2.5' SAS 12Gbps - 900GB HDD-3.5' front panel	-
02311NHV	10000 RPM - 2.5' SAS 12Gbps - 1200GB HDD-3.5' front panel	-
02311KSV	10000 RPM - 2.5' SAS 12Gbps - 1800GB HDD-3.5' front panel	-
02311TKK	LE 2.5' SATA 6Gbps - 480GB SSD-3.5' front panel	-
02311TKL	LE 2.5' SATA 6Gbps - 800GB SSD-3.5' front panel	-
02311TKM	LE 2.5' SATA 6Gbps - 960GB SSD-3.5' front panel	-
02311TKN	LE 2.5' SATA 6Gbps -1600GB SSD-3.5' front panel	-
02311TKP	LE 2.5' SATA 6Gbps - 1920GB SSD-3.5' front panel	-
02311UFY	LE 2.5' SATA 6Gbps - 3840GB SSD-3.5' front panel	-
02311HAK	10000 RPM - 2.5' SAS 12Gbps - 300GB HDD	-
02311HAP	10000 RPM - 2.5' SAS 12Gbps - 600GB HDD	-
02311HAL	10000 RPM - 2.5' SAS 12Gbps - 900GB HDD	-
02311HAN	10000 RPM - 2.5' SAS 12Gbps - 1200GB HDD	-
02311FMR	10000 RPM - 2.5' SAS 12Gbps - 1800GB HDD	-
02311TJX	SSD: 480 GB, SATA disk, 2.5-inch, 6 Gbit/s, read-intensive, CloudSpeed2	-
02311TJY	SSD: 800 GB, SATA disk, 2.5-inch, 6 Gbit/s, read-intensive, CloudSpeed2	-
02311TKA	SSD: 960 GB, SATA disk, 2.5-inch, 6 Gbit/s, read-intensive, CloudSpeed2	-
02311TKB	SSD: 1600 GB, SATA disk, 2.5-inch, 6 Gbit/s,	-

Part Number	Description	Remarks
	read-intensive, CloudSpeed2	
02311TKC	SSD: 1920 GB, SATA disk, 2.5-inch, 6 Gbit/s, read-intensive, CloudSpeed2	-
02311UYE	SSD: 3840 GB, SATA disk, 2.5-inch, 6 Gbit/s, read-intensive, PM863A	-
02311PQC	SSD-960GB-SATA 6Gbps-Mixed Use-SM863-2.5inch(2.5inch Drive Bay)-VE Series	-
02311PPX	SSD-1600GB-SATA 6Gbps-Mixed Use-S3610-2.5inch(2.5inch Drive Bay)-VE Series	-
02311PXY	SSD-1920GB-SATA 6Gbps-Mixed Use-SM863-2.5inch(2.5inch Drive Bay)-VE Series	-
02310YCY	SSD-200GB-SATA 6Gbps-Write Intensive-S3710-2.5inch(2.5inch Drive Bay)-ME Series	-
02310YCX	SSD-400GB-SATA 6Gbps-Write Intensive-S3710-2.5inch(2.5inch Drive Bay)-ME Series	-
02311BAE	SSD-800GB-SATA 6Gbps-Write Intensive-S3710-2.5inch(2.5inch Drive Bay)-ME Series	-
02311HAH	SSD-400GB-SAS 12Gbps-Write Intensive-HGST SSC Plus-2.5inch(2.5inch Drive Bay)-ME Series	-
02311HAG	SSD-800GB-SAS 12Gbps-Write Intensive-HGST SSC Plus-2.5inch(2.5inch Drive Bay)-ME Series	-
02311HAJ	SSD-1600GB-SAS 12Gbps-Write Intensive-HGST SSC Plus-2.5inch(2.5inch Drive Bay)-ME Series	-

Table 7-5 lists the compatible RAID controller cards for the TaiShan 2280.

NOTE

The information in Table 7-5 is for reference only. For details about the components available, consult the local Huawei sales representatives.

Table 7-5 RAID controller cards supported by the TaiShan 2280

Part Number	Description	Remarks
02311UBX	Function Module,SR130,BC1M01ESMR,SR130 (LSI3008)-SAS/SATA RAID Card-RAID0,1,10,1E,+630mm MiniSAS HD Cable Module	-
02311UBY	Function Module,SR430C 1GB,BC1M05ESMS,LSI3108 RAID card-Board ID 0X2A-RAID0,1,5,6,10,50,60-Support SuperCap+630mm MiniSAS HD Cable Module	-

Part Number	Description	Remarks
02311UCA	Function Module,SR430C 2GB,BC1M01ESMT,LSI 3108 RAID CARD-Board ID 0X23-RAID0,1,5,6,10,50,60-Support SuperCap+630mm MiniSAS HD Cable Module	-

Table 7-6 provides the comparison between RAID levels in performance, minimum number of hard disks, and disk usage.

Table 7-6 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%
RAID 5	Better than medium	High	Medium	3	(N - 1)/N
RAID 6	Better than medium	High	Medium	4	(N - 2)/N
RAID 10	High	Medium	Medium	4	M/N
RAID 50	High	High	Better than medium	6	(N - M)/N
RAID 60	High	High	Better than medium	8	(N - M x 2)/N
Note: N indicates the number of member disks in a RAID array, and M indicates the number of spans in a RAID array.					

7.3 I/O Expansion

The TaiShan 2280 supports one half-height half-length and four full-height full-length PCIe cards.

Part Number	Description	Remarks
02311PBK	Function Module,ES3000 V3,CN2M10FACM,ES3600C-1600GB-3 DWPD-PCIE 3.0 X4-Vendor ID 19e5-Device ID 0123-1,Model number HWE36P43016M000N,HH/HL Card,NVMe SSD	-

Part Number	Description	Remarks
02311PBJ	Function Module,ES3000 V3,CN2M10FACP,ES3600C-3200GB-3 DWPD-PCIE 3.0 X4-Vendor ID 19e5-Device ID 0123-1,Model number HWE36P43032M000N,HH/HL Card,NVMe SSD	-
03030WSQ	Finished Board,X6000,CN21ITGAA13,Intel 82599 2*10GE SFP+ Half-height Half-length X8 PCIE Ethernet Card NCSI Supported,PCIE 2.0 X8-Vendor ID 8086-Device ID 10FB-2	-
02311UPG	Function Module,TaiShan 2280,CN2M01ITGJ,Ethernet Adapter,10Gb Optical Interface(Mellanox MT27712A0),2-Port,SFP+(without Optical Transceiver),PCIe 3.0 x8	-
02311UPK	Function Module,TaiShan 2280,CN2M02ITGJ,Ethernet Adapter,25Gb Optical Interface(Mellanox CX4-lx EN),2-Port,SFP28(without Optical Transceiver),PCIe 3.0 x8	-
02311MSP	Function Module,Rack Server,CN2M01ITGD,Ethernet Adapter,10Gb Electrical Interface(Intel X540),2-Port,RJ45,PCIe 2.0 x8	-
02312BWG	Function Module,SP570,BC5M01ETHB,Ethernet Adapter,25GE/10GE(Hi822),4-Port,SFP+(without Optical Module)	-

7.4 PSU

Table 7-7 lists the PSUs supported by the TaiShan 2280.

NOTE

- Table 7-7 is for reference only. For details about the PSUs available, contact local Huawei sales representatives.
- A server must use PSUs of the same model.
- 460 W and 750 W PSUs can be selected based on different server configurations.

Table 7-7 Supported PSUs

Part Number	Description	Remarks
02130957	AC-DC Power,5degC,50degC,90V,264V,12V/38A,460W Platinum Power Module	-
02310QWX	Function Module,EPW750-12A,EN3MCACC,750W	-

Part Number	Description	Remarks
	platinum AC power supply unit	

7.5 Supported OSs

The TaiShan 2280 supports the OSs built based on Huawei-provided kernel 4.1. Table 7-8 lists the supported OSs.

Table 7-8 OSs supported by the TaiShan 2280

Vendor	Version
Canonical	Ubuntu 16.04.3
SUSE	SLES 12 SP3
Red Hat	RHEL 7.4 for ARM (CentOS 7.4)
NeoKylin	NeoKylin-Server V7.0 update 2
Huawei	EulerOS V200R002C20 EulerOS V200R005C00

8 System Management

The TaiShan 2280 uses Huawei's proprietary intelligent baseboard management controller (iBMC) for remote server management. The iBMC complies with IPMI V2.0 standards and provides reliable hardware monitoring and management.

The iBMC supports the following features and protocols:

- KVM and text console redirection
- Remote virtual media
- IPMI
- Simple Network Management Protocol (SNMP)
- Login using a web browser

Table 8-1 describes the iBMC specifications.

Table 8-1 iBMC specifications

Item	Specifications
Management interface	Integrates with any standard management system through the following interfaces: • IPMIV2.0 • CLI • HTTPS • SNMP V3
Fault detection	Detects faults and accurately locates faults in hardware, for example, a field replaceable unit (FRU).
Alarm management	Supports alarm management and reports alarms using the SNMP trap, Simple Mail Transfer Protocol (SMTP), and syslog service to ensure 24/7 continuous operation.
Integrated virtual KVM	Provides remote maintenance measures for troubleshooting the system, and supports a maximum resolution of 1920 x 1200.
Integrated virtual media	Virtualizes local media devices, images, and folders into media devices on a remote server, simplifying OS installation. (The virtual DVD drive supports a maximum transmission rate of 8 MB/s.)

Item	Specifications
WebUI	Provides a user-friendly graphical user interface (GUI), which simplifies users' configuration and query operations. The iBMC WebUI supports OSs, web browsers, and Java Runtime Environment (JRE) of the following versions: • Windows XP (32-bit); Internet Explorer 8.0/9.0/10.0, Firefox 9.0, or Google Chrome 13.0; JRE 1.6.0 U25 or later • Windows 7 (32-bit); Internet Explorer 8.0/9.0/10.0, Firefox 9.0, or Google Chrome 13.0; JRE 1.6.0 U25 or later • Red Hat Enterprise Linux 4.3 (64-bit); Firefox 9.0; JRE 1.6.0 U25 or later • Red Hat Enterprise Linux 6.0 (64-bit); Firefox 9.0; JRE 1.6.0 U25 or later • macOS; Safari or Firefox 9.0; JRE 1.6.0 U25 or later
Screen snapshots and videos	Allows you to view screen snapshots and videos without login, which facilitates preventive maintenance inspection.
Domain name service (DNS) and directory service	Supports the DNS and directory service, significantly simplifying network and configuration management.
Dual-image backup	Starts software from a backup image if the software fails.
Asset management	Provides intelligent asset management.
IPv6	Supports IPv6 to ensure sufficient IP addresses.
NC-SI	Supports NC-SI, which allows you to access the iBMC over the service network port. (Only PCIe cards support NC-SI.)

9 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 the DVD drive and supercapacitor, 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 Policy stipulates warranty terms and conditions, including the available services, response time, terms of service, and disclaimer. The warranty terms and conditions may vary by country, and some service and/or parts may not be available in all countries. For more information about warranty services in your country, contact Huawei technical support or your local Huawei office.

For details about warranty, log in to http://e.huawei.com and choose **Support** > **Warranty** to obtain warranty documents.

10 Certifications

No.	Country/Region	Certification	Standard
1	Europe	ROHS	2011/65/EU
2	Europe	WEEE	2012/19/EU
3	Europe	REACH	EC 1907/2006
4	China	CCC	GB4943.1-2011 GB9254-2008 (Class A) GB17625.1-2012
5	Europe	ERP	2009/125/EC
6	Europe	CE	Safety: IEC 60950-1: 2005 (2nd Edition) + A1: 2009 and/or EN 60950-1: 2006+A11: 2009+A1: 2010+A12: 2011+A2: 2013 EMC: EN 55032: 2012/AC: 2013* CISPR 32: 2012* EN 55024: 2010 CISPR 24: 2010 EN 55024: 2010+A1: 2015 CISPR 24: 2010+A1: 2015 ETSI EN 300 386 V1.6.1: 2012 ETSI EN 201 468 V1.4.1: 2014 RoHS EN 50581: 2012 ERP (EU) No 617/2013, Generalized Test Protocol for Calculating the Energy Efficiency of Internal Ac-Dc and Dc-Dc Power Supplies Revision 6.6 (April,

No.	Country/Region	Certification	Standard
			2012)
7	Japan	VCCI	VCCI V-3: 2012