

Huawei TaiShan 5280 Rack Server

White Paper

Issue 01
Date 2018-07-10



Copyright © Huawei Technologies Co., Ltd. 2018. All rights reserved.

No part of this document may be reproduced or transmitted in any form or by any means without prior written consent of Huawei Technologies Co., Ltd.

Trademarks and Permissions



HUAWEI and other Huawei trademarks are trademarks of Huawei Technologies Co., Ltd.

All other trademarks and trade names mentioned in this document are the property of their respective holders.

Notice

The purchased products, services and features are stipulated by the contract made between Huawei and the customer. All or part of the products, services and features described in this document may not be within the purchase scope or the usage scope. Unless otherwise specified in the contract, all statements, information, and recommendations in this document are provided "AS IS" without warranties, guarantees or representations of any kind, either express or implied.

The information in this document is subject to change without notice. Every effort has been made in the preparation of this document to ensure accuracy of the contents, but all statements, information, and recommendations in this document do not constitute a warranty of any kind, express or implied.

Huawei Technologies Co., Ltd.

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

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

Contents

1 Overview	1
2 Features	3
3 Logical Structure	5
4 Hardware Description	6
4.1 Appearance.....	6
4.2 Ports.....	9
4.3 Indicators and Buttons	10
4.4 Physical Structure.....	12
5 Technical Specifications.....	14
6 Component Compatibility	16
6.1 Memory	16
6.2 Storage.....	19
6.3 I/O Expansion	22
6.4 PSU	23
6.5 Supported OSs.....	23
7 System Management.....	24
8 Warranty	26
9 Physical Specifications	27
10 Certifications.....	29

1 Overview

The TaiShan 5280 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 distributed storage applications.

The TaiShan 5280 server supports:

- Two Huawei-developed ARM 64-bit CPUs. Each CPU supports eight DDR4 RDIMMs.
- Twenty-four 2.5-inch or 3.5-inch HDDs at the front of a chassis. Each HDD can be independently maintained.
- A maximum of sixteen 2.5-inch or 3.5-inch HDDs at the rear of a chassis. Each HDD can be independently maintained.
- A maximum of five standard PCIe slots for NICs or SSD cards.



NOTE

3.5-inch hard disk trays are required to support 2.5-inch HDDs.

Figure 1-1 TaiShan 5280



NOTE

If you have any questions about the hard disk configuration, contact your local Huawei sales representatives.

2 Features

Performance and Scalability

The TaiShan 5280 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 and 10GE ports and provide the system-on-chip (SOC) function.
- Supports two CPUs and 64 cores, which maximizes the concurrent execution of multithreaded applications.
- Supports 16 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.
- Provides 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 5280 provides the following features to improve availability and serviceability:

- The TaiShan 5280 uses carrier-class components and follows the engineering process to dramatically improve system reliability.
- The TaiShan 5280 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 the WebUI of the Huawei intelligent baseboard management controller (iBMC) 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 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 5280 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 5280 provides the following features to improve energy efficiency:

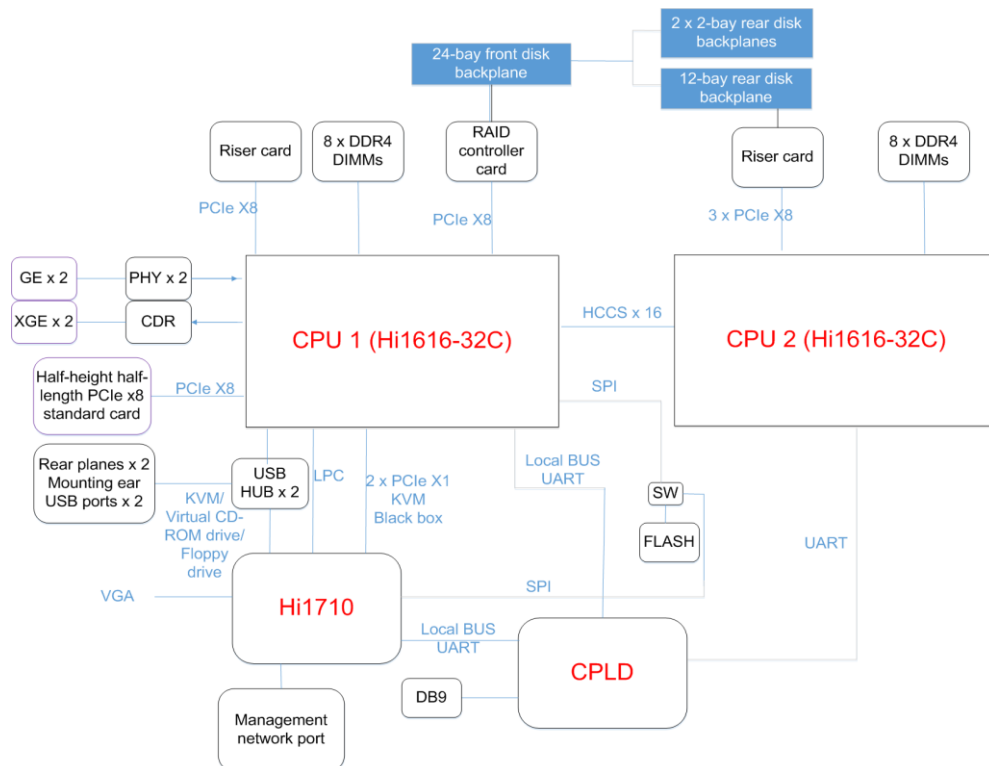
- The TaiShan 5280 supports Platinum power supply units (PSUs), which provide 94% power efficiency at 50% load.
- The voltage regulator-down (VRD) PSUs reduce the energy loss in DC/DC power conversion.
- The TaiShan 5280 supports Proportional-Integral-Derivative (PID) intelligent fan speed adjustment, 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 5280.

- The TaiShan 5280 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 5280 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 5280 logical structure



4 Hardware Description

- 4.1 Appearance
- 4.2 Ports
- 4.3 Indicators and Buttons
- 4.4 Physical Structure

4.1 Appearance

Front Panel

Figure 4-1 shows the front panel of the TaiShan 5280.

Figure 4-1 Front panel



1	Hard disk	2	Label plate (with SN)
---	-----------	---	-----------------------

Table 4-1 provides the TaiShan 5280 front hard disk slot distribution from top to bottom and from left to right.

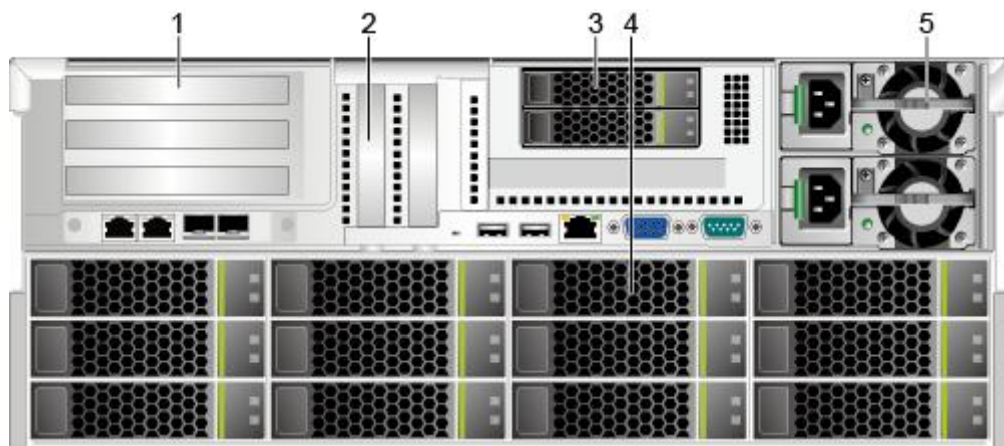
Table 4-1 Front hard disk slot distribution

HDD0	HDD6	HDD12	HDD18
HDD1	HDD7	HDD13	HDD19
HDD2	HDD8	HDD14	HDD20
HDD3	HDD9	HDD15	HDD21
HDD4	HDD10	HDD16	HDD22
HDD5	HDD11	HDD17	HDD23

Rear Panel

Figure 4-2 shows the rear panel of the TaiShan 5280.

Figure 4-2 Rear panel



1	I/O module 1	2	PCIe slots on the mainboard
3	I/O module 2	4	Rear hard disk
5	PSU	-	-

The hard disks (marked 3 in Figure 4-2) are numbered A1 and B1 from top down.

Table 4-2 provides the TaiShan 5280 rear hard disk slot distribution from top to bottom and from left to right.

Table 4-2 Rear hard disk slot distribution

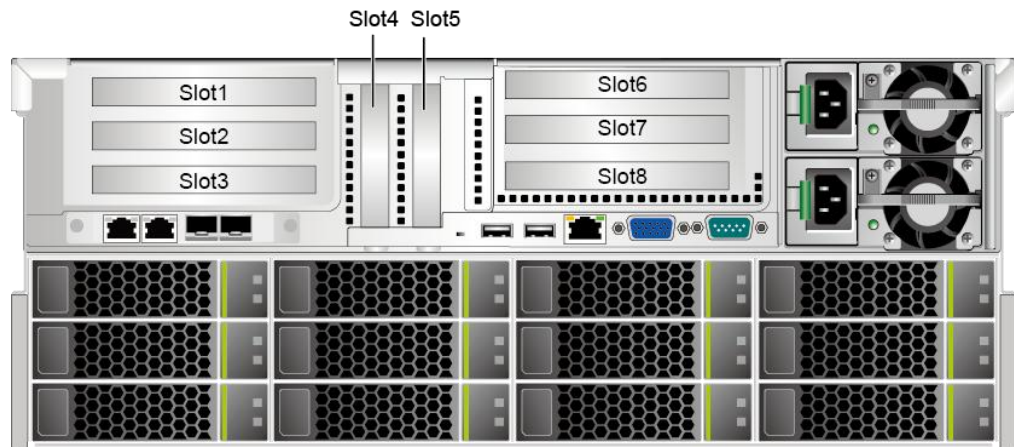
HDD0	HDD3	HDD6	HDD9
------	------	------	------

HDD1	HDD4	HDD7	HDD10
HDD2	HDD5	HDD8	HDD11

PCIe Slot Layout

Figure 4-3 shows the PCIe slot layout for the TaiShan 5280.

Figure 4-3 PCIe slot layout



When each I/O module uses a PCIe riser card that provides three x8 PCIe slots:

I/O module 1 provides slot 1, and slots 2 and 3 are unavailable. I/O module 2 provides slots 6 to 8.

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:

I/O module 1 provides slots 3, and slots 1 and 2 are unavailable. I/O module 2 provides slots 6 to 8.

The mainboard provides slots 4 and 5, where slot 5 is unavailable.

Table 4-3 describes the mapping between the CPUs and PCIe slots, and the compliant PCIe standards of the TaiShan 5280.

Table 4-3 PCIe slot description

PCIe Slot	CPU Socket	Compliant PCIe Standard	Connector Bandwidth	Bus Bandwidth	Slot Size
Slot 1	CPU1	PCIe 3.0	x16	x8	Full-height full-length
Slot 4	CPU1	PCIe 3.0	x8	x8	Half-height half-length
Slot6	CPU2	PCIe 3.0	x16	x8	Full-height

PCIe Slot	CPU Socket	Compliant PCIe Standard	Connector Bandwidth	Bus Bandwidth	Slot Size
					full-length
Slot7	CPU2	PCIe 3.0	x8	x8	Full-height full-length
Slot8	CPU2	PCIe 3.0	x8	x8	Full-height half-length
<p>Note 1: A 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.</p> <p>Note 2: A PCIe slot with the bus width of x16 is backward compatible with PCIe x8, PCIe x4, or PCIe x1 card.</p> <p>Note 3: Slots 1 and 3 are mutually exclusive, depending on the riser card used.</p>					

4.2 Ports

Table 4-4 describes the external ports provided by the TaiShan 5280.

Table 4-4 Ports on the rear panel

Port	Type	Quantity	Description
VGA port	DB15	1	This port is used to connect to a monitor or a keyboard, video, and mouse (KVM).
USB port	USB 2.0	2	The USB ports are used to connect USB devices to the server. NOTE Before connecting an external USB device, check that the USB device operates properly. A server may fail if it is connected to an abnormal USB device.
Management network port (Mgmt)	RJ45	1	This 1000 Mbit/s Ethernet port is used to manage the server.
Serial port	DB9	1	This port is used as the system serial port by default. You can set it as the iBMC serial port by using the iBMC CLI. This 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 5280 GE electrical port is less than 6000 bytes but the MTU of the peer port is greater than 6000 bytes, the TaiShan 5280 cannot receive large





Port	Type	Quantity	Description
			packages. In this case, the communication becomes abnormal.
10GE optical port	RJ45	2	<p>The 10GE optical port is provided by the mainboard.</p> <p>NOTE</p> <ul style="list-style-type: none"> The 10GE optical port does not support speed adaptation to GE. When the MTU of the TaiShan 5280 10GE optical port is less than 6000 bytes but the MTU of the peer port is greater than 6000 bytes, the TaiShan 5280 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 5280.

Table 4-5 describes the indicators and buttons on the TaiShan 5280 front panel.

Table 4-5 Indicators and buttons on the front panel

Silk Screen	Meaning	State Description
	Fault diagnosis LED	<ul style="list-style-type: none"> ---: The server is operating properly. Error code: A server component is faulty.
	Power button/indicator	<ul style="list-style-type: none"> Off: The server is not connected to a power source. Blinking yellow: The iBMC is starting. Steady yellow: The server is to be powered on. Steady green: The server is properly powered on. <p>NOTE</p> <p>You can hold down the power button for 6 seconds to power off the server.</p>
	UID button/indicator	<p>The UID button/indicator helps identify and locate a server in a cabinet. You can turn on or off the UID indicator by manually pressing the UID button or remotely running a command on the iBMC CLI.</p> <ul style="list-style-type: none"> Steady blue: The server is located. Off: The server is not located. <p>You can hold down the UID button for 4 to 6 seconds to reset the iBMC.</p>
	Health indicator	<ul style="list-style-type: none"> Steady green: The server is operating properly.


Silk Screen	Meaning	State Description
		<ul style="list-style-type: none"> Blinking red at 1 Hz: A major alarm has been generated on the server. Blinking red at 5 Hz: A critical alarm has been generated on the server.
-	Hard disk activity indicator	<ul style="list-style-type: none"> Off: The hard disk is faulty or cannot be 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 inactive.
-	Hard disk fault indicator	<ul style="list-style-type: none"> Off: The hard disk is operating properly or cannot be detected in a RAID array. Blinking yellow: The hard disk is located or is rebuilding RAID. Steady yellow: The hard disk is faulty or cannot be detected.
	Network port link indicator	<p>Each indicator shows the status of a LOM Ethernet port.</p> <ul style="list-style-type: none"> Steady green: The port is properly connected. Off: The port is faulty or not in use.

Table 4-6 describes the indicators on the TaiShan 5280 rear panel.

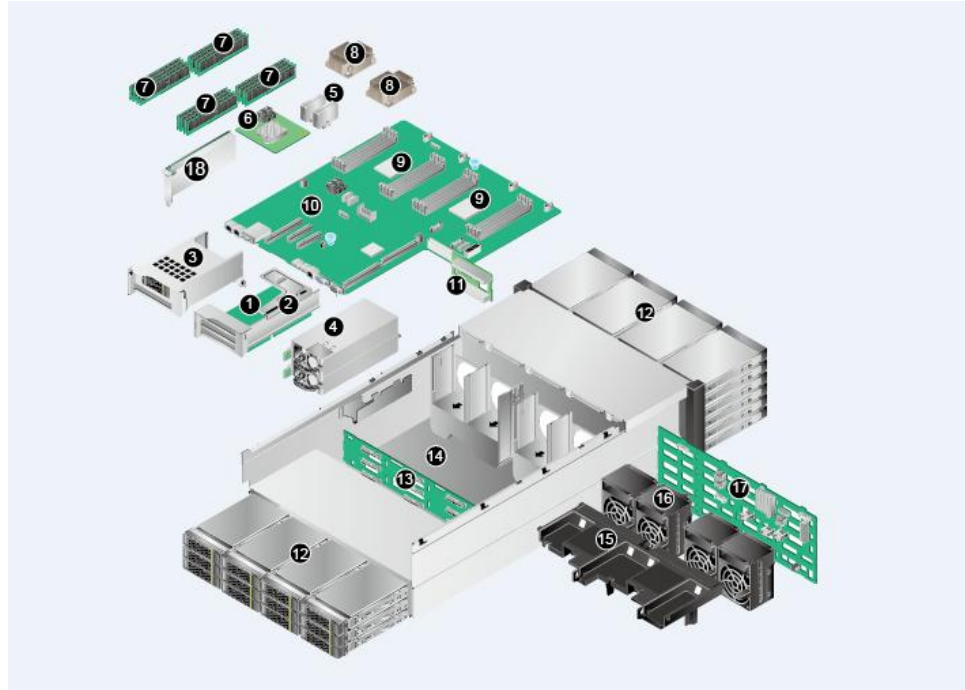
Table 4-6 Indicators on the rear panel

Indicator	State Description
Data transmission status indicator for the management network port	<ul style="list-style-type: none"> Off: No data is being transmitted. Blinking orange: Data is being transmitted.
Connection status indicator for the management network port	<ul style="list-style-type: none"> Steady green: The port is properly connected. Off: The port is not connected.
PSU indicator	<ul style="list-style-type: none"> Steady on: The power input is normal. Off: No AC power is supplied or the system is standby.
UID indicator	<ul style="list-style-type: none"> Steady blue: The server is located. Off: The server is not located.
Data transmission status indicator for the optical port	<ul style="list-style-type: none"> Off: No data is being transmitted. Blinking orange: Data is being transmitted.
Connection status indicator for the optical port	<ul style="list-style-type: none"> Steady green: The port is properly connected. Off: The port is not connected.

4.4 Physical Structure

Figure 4-4 shows the components of a TaiShan 5280 server with 12 disks.

Figure 4-4 TaiShan 5280 components



1	PCIe card on a riser card	2	I/O module
3	Rear hard disk module	4	PSUs
5	SATADOM	6	RAID controller card
7	DIMMs	8	Heat sinks
9	CPUs	10	Mainboard
11	PSU backplane	12	Hard disks
13	12-bay rear hard disk backplane	14	Chassis
15	Air duct	16	Fan modules
17	Front hard disk backplane	-	-

Table 4-7 describes the TaiShan 5280 components.

Table 4-7 TaiShan 5280 components

No.	Component	Description
1	PCIe card on a	A PCIe device.

No.	Component	Description
	riser card	
2	I/O module	I/O module for a CPU.
3	Rear hard disk module	Stores data.
4	PSU	Supplies power to the server.
5	SATADOM	The SATA disk on module (SATADOM) is a SATA SSD or SATA DOM electrical hard disk. It is a quick memory storage media unit that features high energy efficiency and stability.
6	RAID controller card	Connects to hard disks to expand the storage capacity.
7	DIMM	Stores programs and data and supports direct addressing by CPUs.
8	Heat sink	Cools a CPU. Each CPU is configured with one heat sink.
9	CPU	Computing and control unit of a server.
10	Mainboard	Integrates basic components, including the BIOS chip and PCIe slots, and provides CPU sockets, DIMM slots, and other slots. The mainboard integrates the display chip with 32 MB display memory.
11	PSU backplane	Connects PSUs to the mainboard.
12	Hard disk	Stores data.
13	12-bay rear hard disk backplane	Supplies power to rear hard disks and provides data transmission channels.
14	Chassis	An external subrack for housing and protecting devices.
15	Air duct	Provides ventilation channels.
16	Fan modules	Cools devices.
17	24-bay front hard disk backplane	Supplies power to front hard disks and provides data transmission channels.

5 Technical Specifications

Table 5-1 provides the TaiShan 5280 technical specifications.

Table 5-1 Technical specifications

Item	Specifications
Form factor	4U rack server
CPU	The TaiShan 5280 supports two 32-core Hi1616 CPUs with a frequency of 2.4 GHz.
Memory	<ul style="list-style-type: none"> A maximum of 16 DDR4 DRMM slots are provided and RDIMMs are supported. The maximum memory speed 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.
Storage	<ul style="list-style-type: none"> Four 3.5-inch or 2.5-inch and thirty-six 3.5-inch SATA or SAS hard disks Hot-swappable hard disks Support for an SR130 (LSI SAS3008) RAID controller card
RAID support	<p>The TaiShan 5280 supports an SR130 (LSI SAS3008) RAID controller card.</p> <p>The SR130 (LSI SAS3008) supports RAID 0, 1, 10, and 1E.</p>
Network port	The TaiShan 5280 supports four LOM ports, including two 10GE small form-factor pluggable plus (SFP+) optical ports and two GE electrical ports, supporting Preboot Execution Environment (PXE).
PCIe slot	<p>The TaiShan 5280 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.</p> <p>The specifications of the five standard PCIe slots are as follows:</p> <ul style="list-style-type: none"> 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

Item	Specifications
	<p>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 full-length PCIe 3.0 x8 slot.</p> <ul style="list-style-type: none"> • Mainboard: integrates one standard half-height half-length PCIe 3.0 x8 slot.
Port	<ul style="list-style-type: none"> • The front panel provides two USB 2.0 ports. • The rear panel provides two USB 2.0 ports, one DB15 VGA port, one DB9 serial port, one RJ45 system management port, two 10GE SFP+ optical ports, and two GE electrical ports.
Fan module	Four hot-swappable fans allow one-fan failures.
PSU	<p>Hot-swappable PSUs in 1+1 redundancy mode: 1200 W AC Platinum, support for 240 V HVDC</p> <p>NOTE</p> <p>The PSUs provide short-circuit protection. The PSUs that support dual input live wires provide double-pole fuse.</p>
System management	The 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
Video card	SM750 graphics card chip, providing a memory capacity of 32 MB and a maximum resolution of 1920 x 1200 at 60 Hz with 16 M colors.
Supported OSs	OSs built based on Huawei-provided kernel 4.1
Dimensions (H x W x D)	Chassis equipped with 3.5-inch hard disks: 175 mm (4U) x 447 mm x 748 mm (6.89 in. x 17.60 in. x 29.45 in.)
Weight	<ul style="list-style-type: none"> • TaiShan 5280 with 36 hard disks: 57 kg (125.69 lb) • Packaging materials: 15 kg (33.08 lb)

6 Component Compatibility

This chapter describes the software and hardware compatibility of the TaiShan 5280.

The software and hardware models supported by the TaiShan 5280 listed in this chapter are for reference only. For details, see the compatibility list.

- 6.1 [Memory](#)
- 6.2 [Storage](#)
- 6.3 [I/O Expansion](#)
- 6.4 [PSU](#)
- 6.5 [Supported OSs](#)

6.1 Memory

Memory Capacity Configuration Rules

The TaiShan 5280 supports up to 16 DIMMs. Each CPU supports four memory channels, and each memory channel supports up to two DIMMs.

Table 6-1 RDIMM configuration rules

Item	RDIMM
Rank	Dual-rank

Item		RECOMMENDATION
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 speed (GB)		256
Maximum operating speed (MT/s)	One DIMM per channel	2400
	Two DIMMs per channel	2133

Memory Slot Configuration Rules

- The TaiShan 5280 supports DIMMs of 16 GB and 32 GB. When the TaiShan 5280 is fully configured with DIMMs, the maximum memory capacity is 512 GB.
- In the TaiShan 5280, each CPU provides eight DDR4 DIMM slots and integrates four memory channels (channels 0, 1, 2, and 3). Table 6-2 describes the composition of each memory channel. Figure 6-1 shows the DIMM installation positions.

Table 6-2 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 6-1 DIMM installation positions

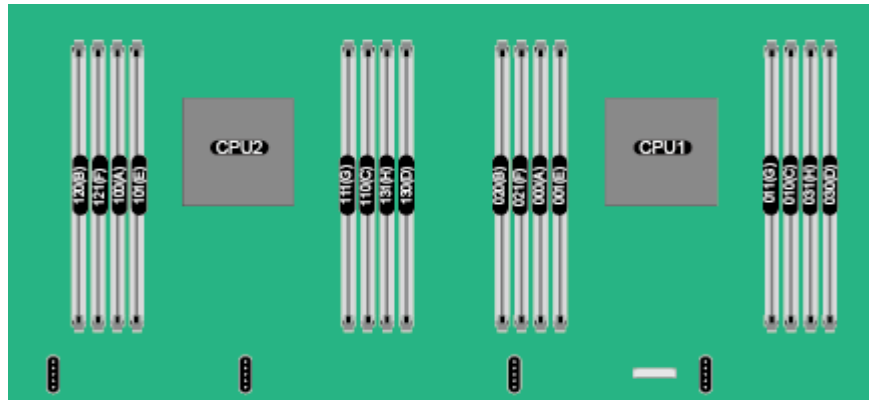


Figure 6-2 describes the DIMM installation rules.

Figure 6-2 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 6-3 lists the DIMMs supported by the TaiShan 5280.

Table 6-3 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)	-

6.2 Storage

The TaiShan 5280 supports thirty-six to forty 2.5-inch or 3.5-inch SATA or SAS HDDs or SSDs.

Table 6-4 lists the supported hard disks.

Table 6-4 Hard disks supported by the TaiShan 5280

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,	-

Part Number	Description	Remarks
	read-intensive, CloudSpeed2	
02311TKB	SSD: 1600 GB, SATA disk, 2.5-inch, 6 Gbit/s, 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	-

Table 6-5 describes the compatible RAID controller card supported by the TaiShan 5280.



NOTE

The following table is for reference only. For details about the RAID controller cards available, contact your local Huawei sales representatives.

Table 6-5 Supported RAID controller card

Part Number	Description	Remarks
02311UBX	Function Module,SR130,BC1M01ESMR,SR130 (LSI3008)-SAS/SATA RAID Card-RAID0,1,10,1E,+630mm MiniSAS HD Cable Module	-
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 6-6 provides the comparison between RAID levels in performance, minimum number of hard disks, and disk usage.

Table 6-6 RAID level comparison

RAID Level	Reliability	Read Performance	Write Performance	Minimum Number of Hard Disks	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 Level	Reliability	Read Performance	Write Performance	Minimum Number of Hard Disks	Disk Usage
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.					

6.3 I/O Expansion

The TaiShan 5280 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	-
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 CX4-1x EN),2-Port,SFP28(without Optical Transceiver),PCIe 3.0 x8	

6.4 PSU

Table 6-7 lists the PSUs supported by the TaiShan 5280.

**NOTE**

- Table 6-7 is for reference only. For details about the PSUs available, contact local Huawei sales representatives.
- A server must use PSUs of the same model.

Table 6-7 Supported PSUs

Part Number	Description	Remarks
02130985	AC-DC Power,-5degC,55degC,90V,264V,12.3V/96A	-

6.5 Supported OSs

The TaiShan 5280 supports the OSs built based on Huawei-provided kernel 4.1. Table 6-8 lists the supported OSs.

Table 6-8 OSs supported by the TaiShan 5280

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

7 System Management

The TaiShan 5280 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 7-1 describes the iBMC specifications.

Table 7-1 iBMC specifications

Item	Specifications
Management interface	Integrates with any standard management system through the following interfaces: <ul style="list-style-type: none"> • IPMI V2.0 • CLI • Hypertext Transfer Protocol Secure (HTTPS) • SNMPv3
Fault detection	Detects faults and accurately locates faults in hardware, for example, a field replaceable unit (FRU).
Alarm management	Reports alarms using the SNMP trap, Simple Mail Transfer Protocol (SMTP), and syslog service.
Integrated virtual KVM	Provides remote maintenance measures for troubleshooting the system, 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.)
WebUI	Provides a user-friendly graphical user interface (GUI), which simplifies

Item	Specifications
	<p>users' configuration and query operations.</p> <p>The iBMC WebUI supports OSs, web browsers, and Java Runtime Environment (JRE) of the following versions:</p> <ul style="list-style-type: none"> • 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 • Mac; 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 iBMC over the service network port. (Only PCIe cards support NC-SI.)

8 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 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.

9 Physical Specifications

Table 9-1 describes the physical specifications of the TaiShan 5280.

Table 9-1 Physical specifications

Item	Specifications
Dimensions (H x W x D)	175 mm (4U) x 447 mm x 748 mm (6.89 in. x 17.60 in. x 29.45 in.)
Installation space	<p>The TaiShan 5280 fits into a common rack that complies with the IEC 297 standard.</p> <ul style="list-style-type: none"> • Rack width: 19 in. • Rack depth: > 1000 mm (39.37 in.) <p>Requirements for guide rail installation:</p> <ul style="list-style-type: none"> - L-shaped guide rails: apply only to a Huawei cabinet. - Adjustable guide rails: apply to a rack with a distance of 543.5–848.5 mm (21.40–33.41 in.) between the front and rear mounting bars. - Holding rails: apply to a rack with a distance of 610–914 mm (24.02–35.98 in.) between the front and rear mounting bars.
PSU power rating	The rated power for compatible Platinum AC PSUs: 1200 W.
Weight in full configuration	<ul style="list-style-type: none"> • TaiShan 5280 with 36 hard disks: 57 kg (125.69 lb) • Packaging materials: 15 kg (33.08 lb)
Input voltage	1200 W AC Platinum PSU: 100–240 V AC or 192–288 V DC
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/hour (36 °F/hour) <p>NOTE</p> <p>The TaiShan 5280 supports the maximum operating temperature of 35 °C (95 °F) if:</p> <ul style="list-style-type: none"> • It is equipped with rear hard disks.

Item	Specifications
	<ul style="list-style-type: none"> • A fan module fails. • It is equipped with Huawei PCIe SSDs.
Relative humidity (RH, non-condensing)	<ul style="list-style-type: none"> • Operating humidity: 8% to 90% • Storage humidity: 5% to 95% • Humidity change rate: < 20% RH/hour
Altitude	<p>≤ 3000 m (9842.40 ft)</p> <p>For altitudes above 900 m (2952.72 ft), the maximum operating temperature decreases by 1 °C (1.8 °F) for every increase of 300 m (984.24 ft).</p>
Acoustic noise	<p>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).</p> <p>Operating:</p> <ul style="list-style-type: none"> • LWAd: 6.9 bels • LpAm: 53.6 dBA <p>NOTE</p> <p>The actual sound levels generated during server operating vary depending on the server configuration, load, and ambient temperature.</p>

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	<p>Safety: IEC 60950-1:2005 (2nd Edition) + A1:2009 and/or EN 60950-1:2006+A11:2009+A1:2010+A12:2011+A2:2013</p> <p>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</p> <p>RoHS EN 50581: 2012</p> <p>ERP (EU) No 617/2013, Generalized Test Protocol for Calculating the Energy Efficiency of Internal Ac-Dc</p>

No.	Country/Region	Certification	Standard
			and Dc-Dc Power Supplies Revision 6.6 (April, 2012)
7	Japan	VCCI	VCCI V-3: 2012