

**FusionStorage**  
**8.0.1**

# **Block Storage Product Description**

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# About This Document

## Purpose

This document describes the positioning, highlights, architecture, application scenarios, recommended hardware, environmental requirements, and standards compliance of FusionStorage block storage.





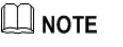
## Intended Audience

This document is intended for:

- Sales engineers
- Network planning engineers
- Maintenance engineers
- Training engineers

## Symbol Conventions

The symbols that may be found in this document are defined as follows.

Symbol	Description
	Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.
	Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.
	Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.
	Indicates a potentially hazardous situation which, if not avoided, could result in equipment damage, data loss, performance deterioration, or unanticipated results. NOTICE is used to address practices not related to personal injury.
	Calls attention to important information, best practices and tips. NOTE is used to address information not related to personal injury, equipment damage, and environment deterioration.

## Change History

Issue	Date	Description
02	2020-03-01	This issue is the second official release. Content has been optimized.
01	2019-10-31	This issue is the first official release.

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# 1 Positioning

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FusionStorage block storage provides distributed storage with extensive scale-out capabilities. By leveraging storage system software, FusionStorage block storage organizes local storage resources of servers into fully distributed storage pools and provides block storage services for upper-layer applications through SCSI and iSCSI interfaces, meeting storage requirements of cloud resource pools and databases.

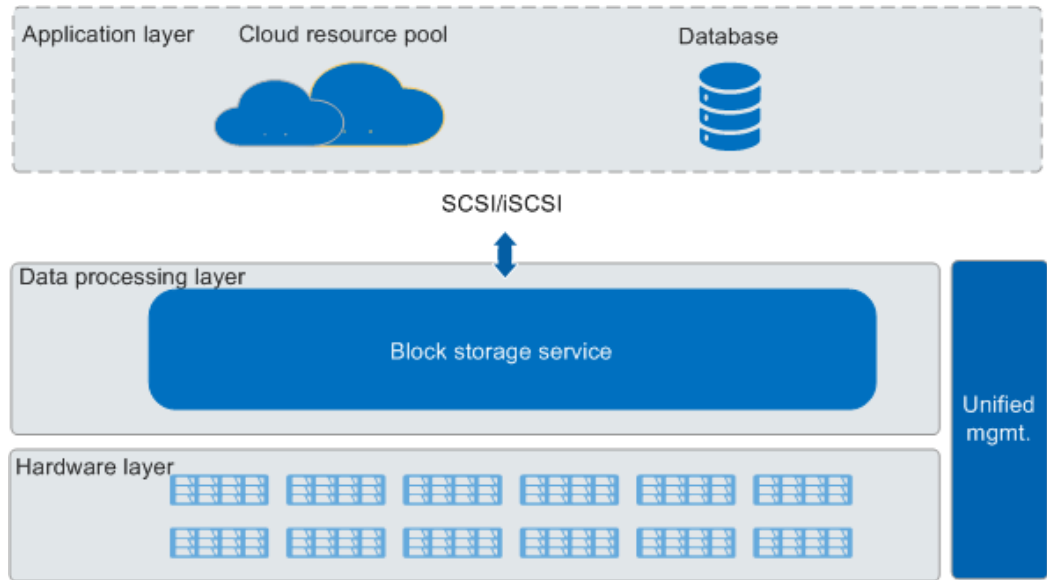
FusionStorage block storage implements flexible and reliable enterprise data access during rapid service changes by providing a variety of enterprise-class data service features, including HyperSnap (snapshot), HyperReplication (remote replication), HyperMetro (active-active storage), SmartDedupe (data deduplication), and SmartCompression (data compression).

FusionStorage block storage mainly applies to:

- **Cloud resource pools**  
FusionStorage block storage forms large block storage resource pools by pooling resources of general-purpose servers. It enables on-demand resource allocation by integrating with virtualization platforms, including Huawei FusionSphere, VMware vSphere, and OpenStack, and supports a wide range of service applications, such as SQL, web, and industry applications.
- **Databases**  
FusionStorage block storage supports SSD caches and main storage, significantly improving system performance and reliability while retaining high scalability. This provides high-performance data access and storage for mission-critical enterprise applications, including databases, Enterprise Resource Planning (ERP), and Customer Relationship Management (CRM).

Figure 1-1 shows the system architecture of FusionStorage block storage.

**Figure 1-1** System architecture of FusionStorage block storage





# 2 Highlights

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FusionStorage block storage features elastic scalability, superb performance, robust reliability, solid security, enhanced data protection, outstanding intelligence, efficiency, and cost-effectiveness, high usability, and wide compatibility. It has multiple data protection features, including HyperMetro, HyperReplication, and HyperSnap, as well as a variety of features to improve space utilization and performance, such as SmartDedupe, SmartCompression, SmartThin (thin provisioning), SmartQoS (Quality of Service), and SmartCache (caching). It is compatible with various virtualization platforms and applications.

## Elastic Scalability

FusionStorage block storage employs a distributed hash table (DHT) architecture to distribute metadata onto storage nodes according to predefined rules, preventing metadata bottlenecks caused by cross-node access. This core architecture ensures large-scale linear expansion.

FusionStorage block storage leverages an innovative data fragmentation technology and a DHT-based data routing algorithm to evenly distribute volume data to large resource pools. The load sharing across hardware resources enables each volume to deliver better IOPS and MBPS performance. In addition, multiple volumes share the disks in a resource pool. Resources can be flexibly allocated to each application as the load changes, preventing load imbalance incurred by traditional Redundant Array of Independent Disks (RAID).

## Superb Performance

FusionStorage block storage leverages dynamic intelligent partitioning, static disk selection algorithms, Huawei-developed EC algorithms, small I/O aggregation, and large I/O passthrough to achieve balanced service distribution, robust reliability, and superb performance. While using HDDs as the main storage, FusionStorage block storage adopts the distributed SSD cache acceleration solution to build SSDs on each storage node into a shared distributed cache resource pool for all services, accelerating the performance of HDDs.

## Robust Reliability

FusionStorage block storage implements distributed cluster management where systems are deployed in full redundancy mode, eliminating single points of failure (SPOFs). In addition, it supports multi-copy and erasure coding (EC) data redundancy protection mechanisms, data integrity check functions, including data integrity field (DIF) and background data consistency check, as well as flexible data reliability policies, such as system subhealth detection and handling.

- Cluster management

Cluster management eliminates system SPOFs. A faulty node or disk is automatically isolated, preventing adverse impact on system services.

- Multiple copies  
The multi-copy mechanism enables a piece of data to have two or three copies. The copies are stored in different servers, cabinets, or even equipment rooms. This ensures data integrity and availability even if a server, cabinet, or equipment room fails.
- EC  
EC implements RAID between nodes. Data integrity is not compromised by node or disk failures as long as the number of failed nodes or disks does not exceed the maximum allowed by specified EC schemes. Compared with the multi-copy mechanism, EC delivers the same or even higher reliability and remarkably improves space utilization.
- DIF  
When receiving user data, the system calculates a cyclic redundancy check (CRC) for the data and inserts the CRC into the DIF. Then, the system sets check points in key data flow channels. If a newly calculated CRC is inconsistent with that in the DIF, an error has occurred during data transmission. In this case, the system will attempt to automatically rectify the error and reports an alarm to ensure data consistency.
- Background data consistency check  
FusionStorage block storage supports background scan of Bad Sector Tags (BSTs) and disks. The system will automatically restore data if bad sectors are detected during data reads/writes or background scanning.
- System subhealth detection and handling  
FusionStorage block storage checks the status of resources using performance indicators, such as latency. If the values of the performance indicators exceed preset ranges, the resources are subhealthy. In this case, the system will isolate the resources and recover system services.

## Solid Security

FusionStorage block storage safeguards security in the following aspects:

- Network
  - Proper port openness  
Only ports required for implementing system functions are opened, preventing security risks caused by opening unnecessary ports.  
For details about monitoring ports of each plane, see *FusionStorage Block Storage Communication Matrix* of the desired version.
  - Network isolation  
FusionStorage block storage consists of a management network, service network, storage network, BMC network, replication network, and quorum network (which is required only when the HyperMetro feature is enabled). These networks are isolated by Virtual Local Area Networks (VLANs) to enhance system security.
- Operating system  
FusionStorage block storage supports security hardening for FusionStorage OS and periodic patch release to fix vulnerabilities.
- Data storage  
Before storage, data can be encrypted by using self-encrypting disks (SEDs) and the internal key management service.
- Management

- Access  
A secure authentication mechanism is adopted for interface invoking. Different accounts are used for different service operations. The passwords of these accounts can be changed or reset.
- Transmission  
Data transmission over HTTPS encrypted channels is supported to prevent data leakage.

## Enhanced Data Protection

FusionStorage block storage protects data using the following features:

- HyperSnap  
Captures the state of volume data at a specific point in time. Snapshots can be exported and used to restore the volume data. For details about the HyperSnap feature, see *FusionStorage Block Storage HyperSnap Feature Guide* of the desired version.
- HyperReplication  
Periodically synchronizes data from a production center to a remote disaster recovery (DR) center to implement system DR. For details about the HyperReplication feature, see *FusionStorage Block Storage HyperReplication Feature Guide* of the desired version.
- HyperMetro  
Delivers active-active read/write capabilities using two FusionStorage block storage clusters. If one data center fails, the system automatically switches to the other cluster to ensure service continuity. For details about the HyperMetro feature, see *FusionStorage Block Storage HyperMetro Feature Guide* of the desired version.

## Outstanding Intelligence, Efficiency, and Cost-Effectiveness

FusionStorage block storage delivers an intelligent, efficient, and cost-effective storage system using the following features:

- SmartThin  
Allocates physical space to volumes only when users write data to the volumes, providing virtual storage resources in excess of physical storage resources.
- SmartDedupe and SmartCompression  
SmartDedupe detects and processes duplicate data on disks, and SmartCompression reduces the space occupied by data, remarkably improving disk utilization. For details about SmartDedupe and SmartCompression features, see *FusionStorage Block Storage SmartDedupe and SmartCompression Feature Guide* of the desired version.
- SmartQoS  
Sets performance priorities for applications to ensure that each application receives proper resources. SmartQoS helps ensure the performance of mission-critical services. For details about the SmartQoS feature, see *FusionStorage Block Storage SmartQoS Feature Guide* of the desired version.
- SmartCache  
Organizes SSDs of storage nodes into a shared and distributed cache resource pool for services to use, improving read and write performance while fully utilizing SSD resources.

## High Usability

FusionStorage block storage supports efficient and easy-to-use unified network topology management and maintenance.

- Administrators can access DeviceManager through its management IP address to configure and monitor the cluster system, collect performance statistics, and view alarms.
- Administrators can use eSight for centralized management and maintenance when there are multiple FusionStorage block storage systems, such as in scenarios where HyperMetro and HyperReplication features are enabled.
- Connection to the eService cloud intelligent management system helps drive IT O&M activities through big data analysis and artificial intelligence (AI) technologies, identify faults in advance, reduce O&M difficulties, and improve O&M efficiency.

## Wide Compatibility

FusionStorage block storage features wide compatibility:

- **Main storage**  
A variety of storage media can function as the main storage, including SATA disks, SAS disks, SSD cards, NVMe SSDs, SAS SSDs, SATA SSDs, self-encrypting SATA disks, and self-encrypting SAS disks.
- **Cache**  
SSD cards, NVMe SSDs, SAS SSDs, and SATA SSDs can function as the cache and have power failure protection capabilities, ensuring zero data loss in the event of a power failure.
- **Networking**  
Multiple protocols, including IB, RoCE, and TCP, are supported to interconnect storage nodes.
- **Virtualization platforms and applications**  
Through standard SCSI and iSCSI interfaces, FusionStorage block storage supports integration with various virtualization platforms, such as Xen, KVM, and VMware vSphere, as well as enhanced virtualization platforms provided by different vendors, such as Huawei FusionSphere. In addition, FusionStorage block storage supports a wide range of database applications, such as SQL Server, Oracle RAC, DB2, and Sybase, as well as various enterprise IT applications, industry applications, and web applications.

To query the compatible server types, operating system types and versions, and virtualization platforms and versions, access [Huawei Storage Interoperability Navigator](#). For the detailed query method, see B.1 Compatibility.

## Ever-New Storage

- **Storage service update**  
The modular design of FusionStorage block storage enables storage services to be upgraded or updated by upgrading or updating microservices.
- **System rolling update**  
FusionStorage block storage supports system rolling update. Nodes and storage pools can be rolling updated in batches. This reduces upgrade risks and impacts, and improves upgrade efficiency.

# 3 Architecture

This chapter describes the deployment schemes and software architecture of FusionStorage block storage.

## 3.1 Deployment Schemes

### 3.2 Software Architecture

## 3.1 Deployment Schemes

FusionStorage block storage supports two deployment schemes, depending on whether compute nodes and storage nodes are deployed on the same servers. Figure 3-1 shows the two deployment schemes.

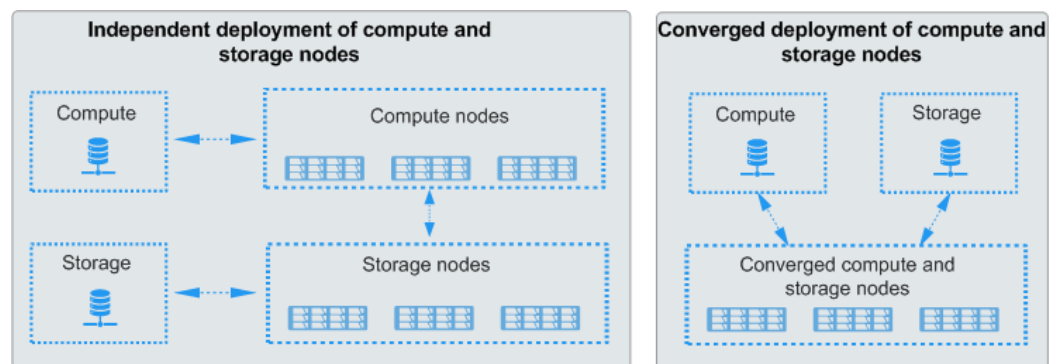
### NOTE

**Compute node**: a server that runs application systems

**Storage node**: a server that provides storage resources

**Converged compute and storage node**: a server on which a compute node and a storage node are deployed. The server functions both as a compute node and a storage node.

Figure 3-1 Deployment schemes



Independent deployment is recommended.

For details about the deployment schemes and networking, see *FusionStorage Block Storage Network Planning Guide* of the desired version.

## 3.2 Software Architecture

### Functional Architecture

Figure 3-2 shows the functional architecture of FusionStorage block storage.

**Figure 3-2** Functional architecture

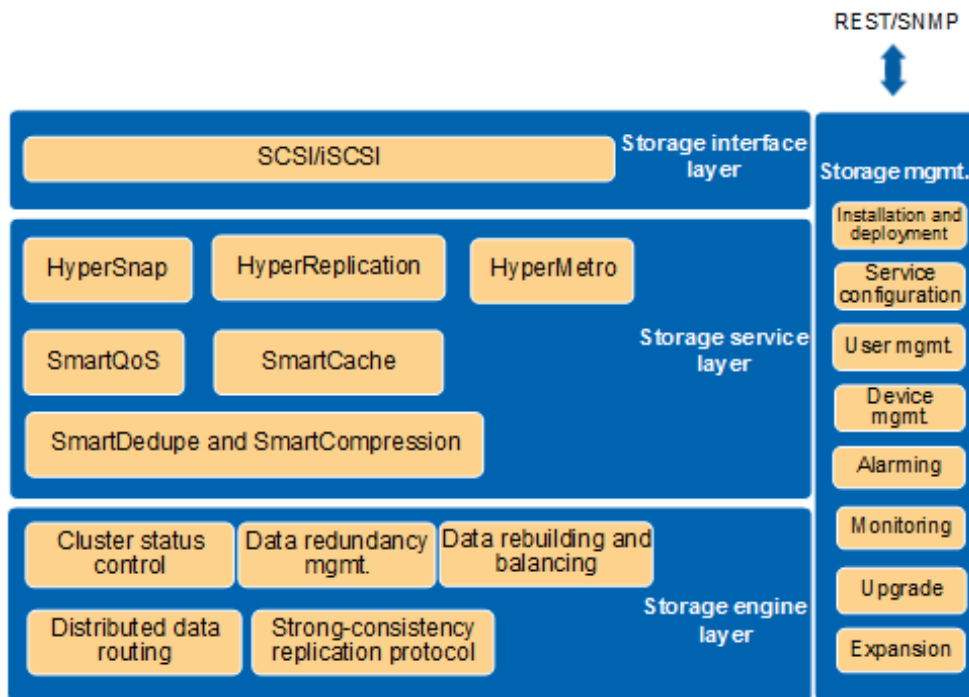


Table 3-1 describes the functions of software modules.

**Table 3-1** Functions of software modules

Type		Description
Storage interface layer	SCSI	Provides volumes for operating systems and databases by locally mapping the volumes using a SCSI standard driver and interacting with the storage system through a private communication protocol.
	iSCSI	Works with multipathing software to support iSCSI interfaces and provides volumes for operating systems and databases.
Storage service layer	HyperSnap	Provides the snapshot function. HyperSnap does not physically copy data. Instead, it quickly provides complete data copies by locating data through mapping tables.
	HyperReplication	Provides the remote replication function. HyperReplication creates usable data copies of a

Type		Description
		local storage system in near real time on a remote storage system. The copies are instantly available without data restoration, maximizing service continuity and data availability. After HyperReplication pairs are added to a consistency group, any operation to the consistency group also takes effect on the HyperReplication pairs in the group. This ensures that data in multiple HyperReplication pairs is consistent in time.
	HyperMetro	Provides the active-active storage function. HyperMetro enables real-time data synchronization and access between two storage systems. If data access fails in any storage system, HyperMetro implements seamless service switchover, ensuring data security and service continuity.
	SmartQoS	Implements intelligent service quality control. SmartQoS controls the performance of volumes to ensure service quality of high-priority applications.
	SmartCache	Uses high-speed and small-capacity disks as the buffer for low-speed and large-capacity disks. SmartCache caches data and improves the read and write performance of the storage system.
	SmartDedupe and SmartCompression	Provides deduplication and compression functions. SmartDedupe analyzes and deletes duplicate data in the storage system, and SmartCompression compresses written data blocks by changing data storage formats, greatly reducing storage space occupation.
Storage engine layer	Cluster status control	Controls the status of distributed clusters, including nodes, disks, and networks.
	Data redundancy management	Calculates EC and copies to ensure high data reliability.
	Distributed data routing	Evenly distributes data and metadata to storage nodes according to preset rules.
	Data rebuilding and balancing	Rebuilds and balances data.
	Strong-consistency replication protocol	Ensures data consistency for HyperReplication pairs and HyperMetro pairs.
Storage management		Operates, manages, and maintains the system, and provides functions such as system installation, deployment, service configuration, device management, monitoring, alarm reporting, upgrade, and capacity expansion.

## Component Architecture

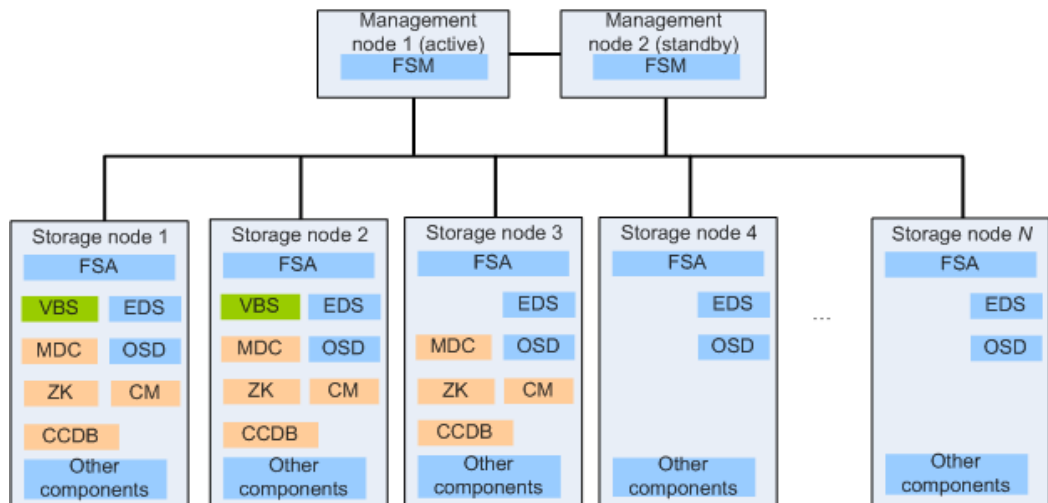
Figure 3-3 and Figure 3-4 show the component architecture, depending on whether Virtual Block Service (VBS) is deployed on storage or compute nodes. Table 3-2 describes key components and processes.

### NOTE

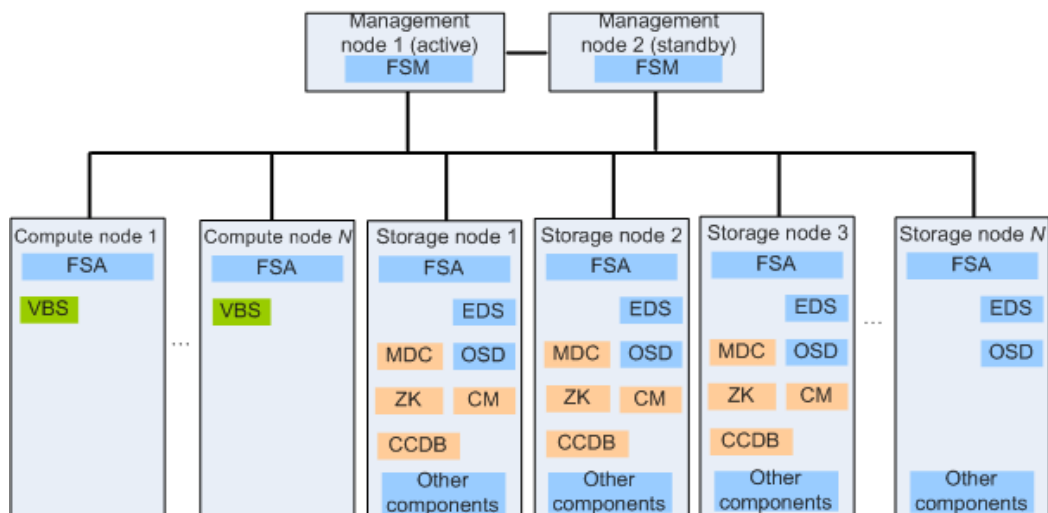
**VBS:** a process that provides the distributed storage access point service through SCSI or iSCSI interfaces and enables application servers to access distributed storage resources

**Management node:** a server that runs the FusionStorage Manager (FSM) process of FusionStorage block storage and provides operation and maintenance (O&M) functions, including alarm reporting, monitoring, logging, and configuration. The FSM process can be deployed in a virtual environment, an external physical server, or a storage node. The FSM process must be deployed in active/standby mode. Figure 3-3 and Figure 3-4 use deploying the FSM process on external physical servers as an example.

**Figure 3-3** Component architecture, with VBS deployed on storage nodes



**Figure 3-4** Component architecture, with VBS deployed on compute nodes





**Table 3-2** Key processes and components of FusionStorage block storage

Process or Component	Description
FSM	<p>Management process of FusionStorage block storage deployed on active and standby management nodes to monitor, configure, manage, upgrade, and expand system resources.</p> <p>FSM automatically starts during management node installation.</p>
FusionStorage Agent (FSA)	<p>Management agent process of FusionStorage block storage deployed on storage nodes and compute nodes to implement communication between the nodes and FSM.</p> <p>FSA automatically starts during storage or compute node installation.</p>
Metadata Controller (MDC)	<p>Metadata control component that controls the status of the distributed cluster as well as data distribution and rebuilding rules.</p> <p>When you create a control cluster using three, five, seven, or nine nodes, MDC automatically starts on these nodes. The ZooKeeper (ZK) cluster will elect a primary MDC to monitor other MDCs. When the primary MDC fails, the ZK cluster elects a new one. Each resource pool has one MDC. When a resource pool is added, its MDC automatically starts. A maximum of 96 MDCs can be started in one system.</p>
ZK	<p>Distributed coordination service process for applications. ZK is deployed on each node in the control cluster to form a ZK cluster. The ZK cluster provides primary arbitration for the MDC cluster. More than half of the ZKs must be active and accessible.</p> <p>ZK automatically starts on the nodes that form the control cluster during control cluster creation.</p>
VBS	<p>Process that provides the distributed storage access point service through SCSI or iSCSI interfaces and enables application servers to access distributed storage resources.</p> <p>VBS needs to be manually started on servers, and the servers running VBS form a VBS cluster.</p>
Enterprise Data Service (EDS)	<p>Process that provides enterprise-class features, including HyperSnap, HyperReplication, and SmartDedupe.</p> <p>EDS automatically starts on the servers that have been added to storage pools.</p>
Object Storage Device (OSD)	<p>Process that handles I/O messages from VBS, implements data redundancy protection, and stores data onto storage media.</p> <p>OSD automatically starts on the servers that have been added to storage pools. Each server runs only one OSD.</p>
Cluster Manager (CM)	<p>Cluster management process that manages and controls cluster information.</p> <p>CM automatically starts during control cluster creation.</p>
Cluster Configuration Database	<p>Cluster configuration database used to store cluster configurations, such as configurations of HyperMetro and HyperReplication pairs and consistency groups.</p>

<b>Process or Component</b>	<b>Description</b>
(CCDB)	CCDB automatically starts during control cluster creation.

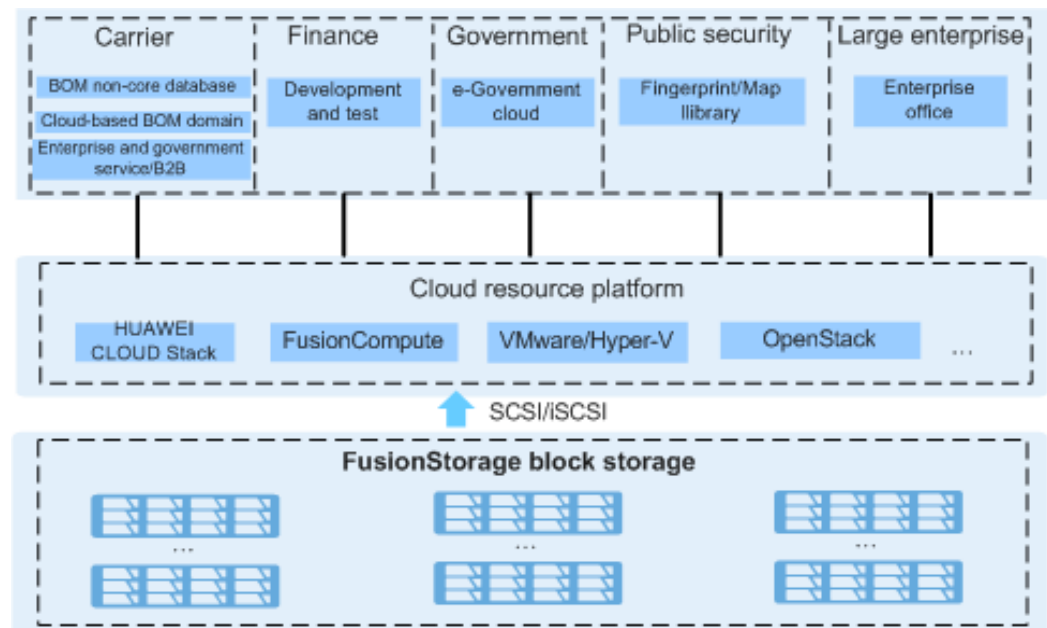
# 4 Application Scenarios

FusionStorage block storage mainly applies to cloud resource pools and databases.

## Cloud Resource Pools

In large-scale cloud computing data centers, FusionStorage block storage organizes resources of general-purpose servers into large block storage resource pools and provides standard block storage data access interfaces (SCSI and iSCSI). FusionStorage block storage can integrate with various cloud platforms, such as Huawei FusionSphere, VMware vSphere, and OpenStack, to allocate storage resources on demand. In addition, FusionStorage block storage supports multiple service applications, including online transaction processing (OLTP), online analytical processing (OLAP), Virtual Server Infrastructure (VSI), virtual desktop infrastructure (VDI), web, and office automation (OA). Figure 4-1 shows the application of FusionStorage block storage in cloud resource pools.

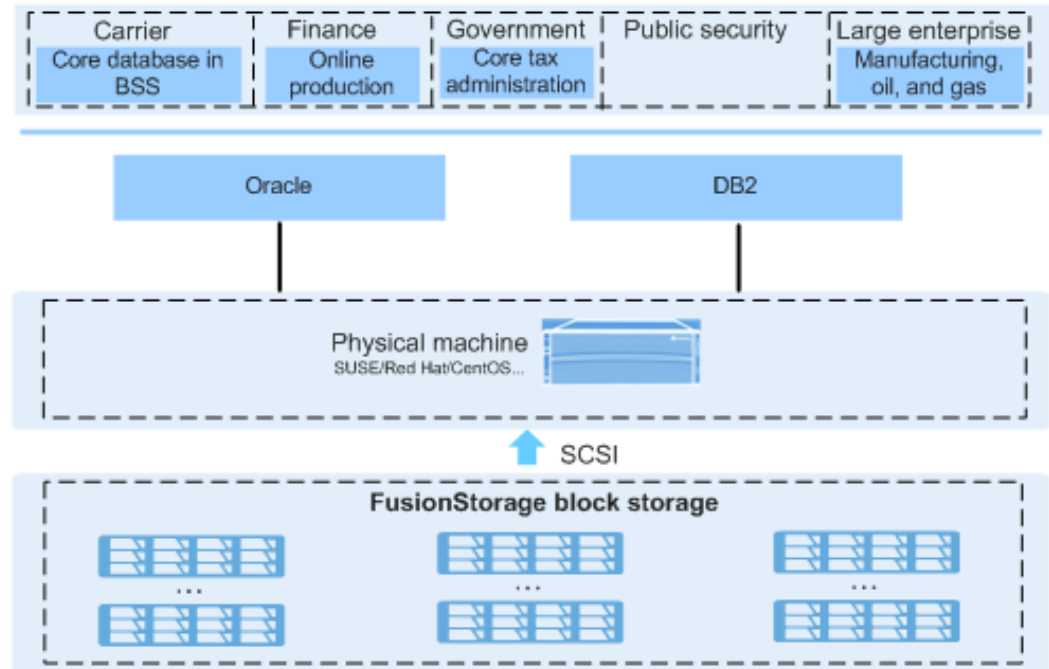
Figure 4-1 Application in cloud resource pools



## Databases

For vital enterprise IT infrastructure, FusionStorage block storage interconnects servers using IB networks and adopts key technologies, such as using SSDs as the main storage or cache, to significantly improve storage system performance and reliability. In addition, FusionStorage block storage leverages the high scalability of distributed storage to meet demands of mission-critical databases and key applications, such as ERP and CRM. Figure 4-2 shows the application of FusionStorage block storage in databases.

**Figure 4-2** Application in databases



# 5 Specifications

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Log in to <https://e.huawei.com>, enter **FusionStorage Data Sheet** in the search box to search for *Huawei FusionStorage Data Sheet*, and view the FusionStorage block storage specifications in the document.

# 6 Recommended Hardware

This chapter describes the recommended hardware.

You can query hardware compatibility using [Huawei Storage Interoperability Navigator](#). For details, see B.1 Compatibility. Table 6-1 lists the recommended hardware.

**Table 6-1** Recommended hardware

Type	Recommended Model	Description
Cabinet	Standard IT cabinet	Provides 42 U space for device installation.
Storage nodes	2288H V5	Provides 12 disk slots, 25 disk slots, 12 NVMe SSD slots, or 24 NVMe SSD slots.
	5288 V5	Provides 36 disk slots.
	TaiShan 200 (Model 2280) <b>NOTE</b> The original name is TaiShan 2280 V2. The node name change does not affect operations, such as O&M and upgrade.	Provides 12 disk slots, 25 disk slots, or 12 NVMe SSD slots. <b>NOTE</b> The TaiShan 200 (Model 2280) 25-slot node is supported only in 8.0.1.SPH8 and later.
	TaiShan 200 (Model 5280) <b>NOTE</b> The original name is TaiShan 5280 V2. The node name change does not affect operations, such as O&M and upgrade.	Provides 36 disk slots.
TaiShan 2280	Provides 12 disk slots. <b>NOTE</b> The TaiShan 2280 12-slot node is supported only in 8.0.1.SPH8 and later.	

Type	Recommended Model	Description
	TaiShan 5280	Provides 36 disk slots.  <b>NOTE</b> The TaiShan 5280 36-slot node is supported only in 8.0.1.SPH8 and later.
Network devices	S5731-H48T4XC	Functions as a GE BMC/management switch and provides four 10GE SFP+ Ethernet optical ports and forty-eight 10/100/1000BASE-T Ethernet electrical ports.
	S5331-H48T4XC	Functions as a GE BMC/management switch and connects nodes in the system to implement data communication and active/standby configuration for components.
	CE6881-48S6CQ	Functions as a 10GE storage switch and provides forty-eight 10GE SFP+ Ethernet optical ports and six 40GE QSFP28 Ethernet optical ports for node interconnection and service data communication.
	CE6855-48S6Q-HI	Functions as a 10GE storage switch and provides forty-eight 10GE SFP+ optical ports and six 40GE QSFP+ optical ports.
	CE6860-48S8CQ-EI	Functions as a 25GE storage switch and provides forty-eight 25GE SFP28 optical ports and eight 100GE QSFP28 optical ports.
	CE6865-48S8CQ-EI	Functions as a 25GE storage switch and provides forty-eight 25GE SFP28 optical ports and eight 100GE QSFP28 optical ports.
	CE6863-48S6CQ	Functions as a 25GE storage switch and provides forty-eight 25GE SFP28 Ethernet optical ports and six 100GE QSFP28 Ethernet optical ports for node interconnection and service data communication.
	SB7800	Functions as a 56 Gbit/s or 100 Gbit/s IB storage switch and provides thirty-six 56 Gbit/s or 100 Gbit/s QSFP28 optical ports.
Keyboard, video, and mouse (KVM)		Provides eight KVM ports.

For more details about the recommended hardware, see A Recommended Hardware for FusionStorage Block Storage.

# 7 Environmental Requirements

This chapter describes environmental requirements of hardware.

- Table 7-1 lists the environmental requirements of Huawei servers.
- If servers of other vendors are used, comply with their requirements.

**Table 7-1** Environmental requirements of Huawei servers

Item	Requirement
Operating temperature <sup>a</sup>	5°C to 35°C
Storage temperature	-40°C to +70°C
Temperature gradient	Less than 10°C per hour
Long-term storage temperature	21°C to 27°C
Operating humidity	20% RH to 80% RH (non-condensing)
Storage humidity	5% RH to 95% RH (non-condensing)
Humidity gradient	Less than 20% RH per hour
Long-term storage humidity	30% RH to 69% RH (non-condensing)
Altitude	≤ 3000 m
Noise <sup>b</sup>	< 72 dBA
<p>a. If the system runs at an altitude no higher than 900 m, the operating temperature ranges from 5°C to 35°C. If the system runs at an altitude higher than 900 m, the maximum operating temperature decreases by 1°C for every 300 m altitude increment above 900 m.</p> <p>b. Maximum noise generated by a storage node when the operating temperature is 23°C.</p>	



# 8 Standards Compliance

This chapter describes the hardware and software standards that FusionStorage block storage complies with.

## Protocol Standards

FusionStorage block storage complies with the protocol standards listed in Table 8-1.

**Table 8-1** Protocol standards

Name	Standard No.
IPMI 2.0	Intelligent Platform Management Interface Specification Second Generation v2.0, Document Revision 1.0, February 12, 2004
SMBIOS	System Management BIOS (SMBIOS) Reference Specification, Version 2.5, Status: Final Standard, September 5, 2006
SAS 2.1	Information technology - Serial Attached SCSI - 2
ACPI	Advanced Configuration and Power Interface Specification, Revision 3.0, September 2, 2004
IP	RFC0791: Internet Protocol

## Safety and EMC Standards

FusionStorage block storage complies with the safety and electromagnetic compatibility (EMC) standards listed in Table 8-2.

**Table 8-2** Safety and EMC standards

Name	Standard No.
IT equipment safety standard	GB4943–2001
International Electrotechnical Commission (IEC) standard	IEC 60950-1
North America safety standard	UL 60950–1

Name	Standard No.
US EMC standard	FCC, 47 CFR Part 15, Subpart B
European safety standard	EN 60950-1
European EMC standard	EN 55024: 1998+A1+A2

## Industry Standards

FusionStorage block storage complies with the industry standards listed in Table 8-3.

**Table 8-3** Industry standards

Name	Standard No.
Ethernet standard	IEEE 802.3
Fast Ethernet standard	IEEE 802.3u
GE standard	IEEE 802.3z
IEEE Standard Test Access Port and Boundary-Scan Architecture	IEEE 1149.1-2001
Failure mode and effects analysis (FMEA) process	IEC 812
Reliability, maintainability, and availability standard	IEC 863
Environmental protection standard	REACH/RoHS/WEEE

## Certification

FusionStorage block storage has attained the certification listed in Table 8-4.

**Table 8-4** Certification

Certification	Description
CB	The CB Scheme is managed by the Worldwide System for Conformity Testing and Certification of Electrotechnical Equipment and Components (IECEE). IECEE member agencies in each country test the safety of electrical equipment based on IEC standards. The test results (CB test reports and certificates) are recognized by IECEE member bodies. The CB Scheme aims to reduce trade barriers caused by different approval or certification standards in different countries.
CCC	China Compulsory Certification (CCC) enforces compulsory certification on products related to human health and safety, animal and plant life and health, environmental protection, and public safety.

Certification	Description
CE	Conformité Européenne (CE) refers to the certification required for products to be sold in Europe. Products marked CE comply with the EMC regulations (2004/108/EC) and low voltage regulations (2006/95/EC) released by the European Commission.
C-Tick	C-Tick signifies compliance with the EMC standards of Australia Community Association (ACA). Currently, C-Tick is only applicable to products with electromagnetic interference and became effective from January 1, 1999.
FCC	Federal Communications Commission (FCC) certification guarantees that equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules.
GOST	Russia national standard certification requiring CE or CB.
IC	Industry Canada (IC) sets up the test standards for analog and digital terminal devices and specifies the EMC certificates that all imported electronic products must obtain.
REACH	Registration, Evaluation, Authorization and Restriction of Chemicals (REACH) is a regulation of the European Union (EU), adopted to protect human health and the environment from the risks posed by chemicals.
RoHS	Restriction of the Use of Certain Hazardous Substances (RoHS) was published in 2003 by EU. It manages environmental impact caused by electrical and electronic products when produced and scrapped. RoHS specifies the maximum number of hazardous substances allowed during device production.
SASO	Saudi Arabian Standards Organization (SASO), authorized by the Saudi Arabian government, organizes and implements International Conformity Certification Program (ICCP) for market access. Products imported into Saudi Arabia must meet SASO's market access requirements and obtain the COC certificates before customs clearance.
SONCAP	As required by Standards Organization of Nigeria (SON), products exported to Nigeria must be certified by SON Conformity Assessment Programme (SONCAP) before customs clearance.
UL	Underwriters Laboratories (UL) is an American non-profit product safety testing and certification organization.
VCCI	Voluntary Control Council for Interference (VCCI) is an EMC certification trademark registered to Japan.
WEEE	Waste Electrical and Electronic Equipment (WEEE) Regulation is an EU directive. Electrical and electronic products sold in the EU must comply with this directive and bear the symbol of a crossed-out wheelie bin.
Multi-Country Certification	The certification is applicable to Saudi Arabia, Nigeria, Tanzania, Uganda, Kuwait, Algeria, Botswana, Qatar, and Egypt.
NOM	Norma Oficial Mexicana (NOM) is the name of each of a series of official compulsory standards and regulations for diverse activities in Mexico. According to the List of Mandatory Mexican Standards Enforced at the

Certification	Description
	Border (NAFTA doc. 9012), general electrical and electronic equipment (EEE) must obtain the NOM certificate except that the equipment is proved to be highly specialized equipment (HSE) or the input power of the equipment does not exceed 24 V (rms). Three organizations can grant such a certificate: UL, NYCE, and ANCE.
China Environmental Labeling	To obtain certificates from China Environmental Labeling, product activities must be controlled from design, production, use, waste disposal, reclamation, and recycling (from cradle to cradle). This ensures that requirements for energy saving, environmental protection, security, and EMC are met.

# A Recommended Hardware for FusionStorage Block Storage

## A.1 Storage Nodes

### A.1.1 2288H V5 12-Slot Node

#### Function

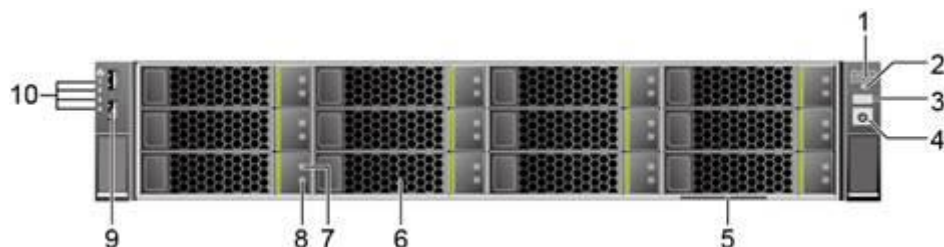
Huawei 2288H V5 12-slot node is a 2 U dual-socket rack server developed for Internet, Internet data center (IDC), cloud computing, enterprise, and telecom service applications. The node is ideal for IT core services, cloud computing virtualization, high-performance computing, distributed storage, big data processing, enterprise and telecom service applications, and other complex workloads. It combines low power consumption with high scalability and reliability, and easy deployment and management.

#### Appearance

##### Front view

Figure A-1 shows the front panel of the node.

**Figure A-1** Front panel



1	Fault diagnosis LED	2	Health status indicator
3	UID button/indicator	4	Power button/indicator
5	Label plate with an ESN label	6	Service disk

7	Disk fault indicator	8	Disk activity indicator
9	USB 2.0 port	10	Connection status indicators for network ports (numbered 1 to 4 from top to bottom)

The front panel of the node provides 12 service disk slots numbered 0 to 11 from top to bottom and from left to right, as shown in Figure A-2.

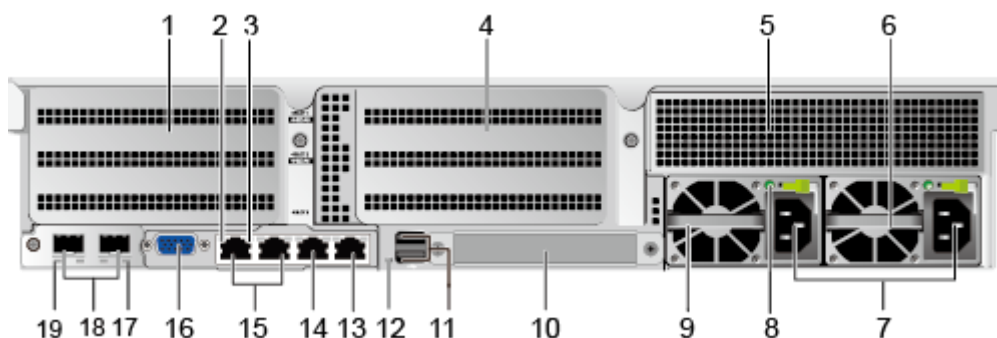
**Figure A-2** Disk slots on the front panel of the node



### Rear view

Figure A-3 shows the rear panel of the node.

**Figure A-3** Rear panel



1	I/O module 1	2	Data transmission status indicator
3	Connection status indicator	4	I/O module 2
5	I/O module 3	6	Power module 2
7	Power module socket	8	Power module indicator
9	Power module 1	10	Flexible NIC (optional)
11	USB 3.0 port	12	UID indicator
13	Serial port	14	Management network port
15	GE electrical port	16	VGA port
17	Data transmission rate indicator	18	10GE optical port

19	Connection status indicator/Data transmission status indicator	-	-
----	--	---	---

## Ports

Table A-1 and Table A-2 show ports provided by the node.

**Table A-1** Ports on the front panel

Port	Type	Quantity	Description
USB port	USB 2.0	2	Connects to a USB device.  <b>NOTICE</b> Before connecting to a USB device, ensure that the USB device operates properly. A node may operate abnormally if it is connected to a faulty USB device.

**Table A-2** Ports on the rear panel

Port	Type	Quantity	Description
Power module socket	-	2	Connects to a power supply.
10GE electrical port	10G BASE-T	2	The mainboard provides 2 x 10GE electrical ports or 2 x 10GE optical ports.  <b>NOTE</b> <ul style="list-style-type: none"> <li>10GE optical ports do not support 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s networks.</li> <li>10GE electrical ports do not support 10 Mbit/s or 100 Mbit/s networks, but support auto-negotiation to 1000 Mbit/s.</li> </ul>
10GE optical port	10G SFP+	2	
GE electrical port	1000BASE-T	2	Functions as a service network port.  <b>NOTE</b> This port does not support forcible rates or 10 Mbit/s and 100 Mbit/s networks.
USB port	USB 3.0	2	Connects to a USB device.

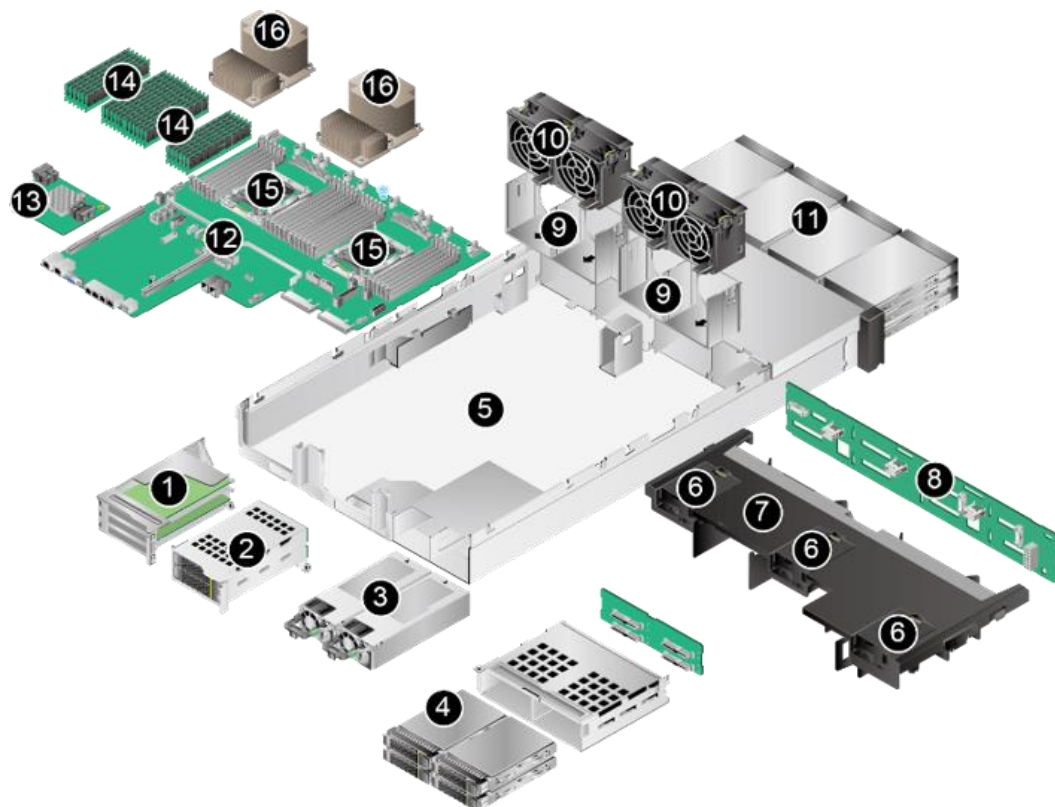
Port	Type	Quantity	Description
			<b>NOTICE</b> Before connecting to a USB device, ensure that the USB device operates properly. A node may operate abnormally if it is connected to a faulty USB device.
Management network port	GE BASE-T	1	Functions as a 1000 Mbit/s Ethernet port, used for node management.
VGA port	DB-15	1	Connects to a terminal, such as a monitor or KVM.
Serial port	RJ-45	1	Functions as the system serial port by default. You can set it as the iBMC serial port by using the iBMC command. This port is used for debugging.

## Physical Structure

Figure A-4 shows components of the node.



**Figure A-4** Components



1	I/O module 1	2	I/O module 2
3	Power module	4	I/O module 3
5	Chassis	6	Supercapacitor holder
7	Air duct	8	Front-disk backplane
9	Fan module bracket	10	Fan module
11	Front disks	12	Mainboard
13	RAID controller card	14	DIMM
15	CPU	16	Heat sink

## Technical Specifications

Table A-3 lists the technical specifications of the node.

**Table A-3** Technical specifications

Item	Specifications
Dimensions (H x W x	86.1 mm (2 U) x 447 mm x 748 mm

Item	Specifications
D)	
Weight in full configuration	<ul style="list-style-type: none"> <li>• Net weight: 34.1 kg</li> <li>• Packaging weight: 5 kg</li> </ul>
Power supply specifications	<ul style="list-style-type: none"> <li>• AC: 100 V AC to 240 V AC (50 Hz or 60 Hz)</li> <li>• 240 V high-voltage DC: 192 V to 288 V</li> </ul>
Maximum power consumption	962 W

## A.1.2 2288H V5 25-Slot Node

### Function

Huawei 2288H V5 25-slot node is a 2 U dual-socket rack server developed for Internet, Internet data center (IDC), cloud computing, enterprise, and telecom service applications. The node is ideal for IT core services, cloud computing virtualization, high-performance computing, distributed storage, big data processing, enterprise and telecom service applications, and other complex workloads. It combines low power consumption with high scalability and reliability, and easy deployment and management.

### Appearance

#### Front view

Figure A-5 shows the front panel of the node.

**Figure A-5** Front panel



1	Connection status indicators for network ports (numbered 1 to 4 from top to bottom)	2	Fault diagnosis LED
3	Health status indicator	4	UID button/indicator
5	Power button/indicator	-	-

The front panel of the node provides 25 service disk slots numbered 0 to 24 from left to right, as shown in Figure A-6.

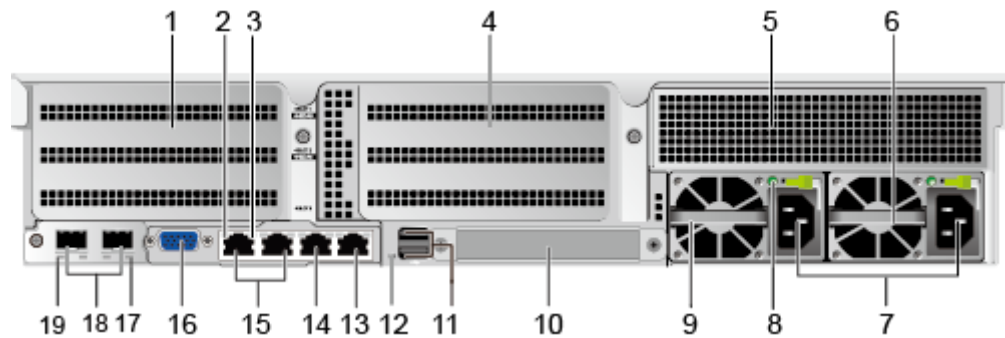
**Figure A-6** Disk slots on the front panel of the node



**Rear view**

Figure A-7 shows the rear panel of the node.

**Figure A-7** Rear panel



1	I/O module 1	2	Data transmission status indicator
3	Connection status indicator	4	I/O module 2
5	I/O module 3	6	Power module 2
7	Power module socket	8	Power module indicator
9	Power module 1	10	Flexible NIC (optional)
11	USB 3.0 port	12	UID indicator
13	Serial port	14	Management network port
15	GE electrical port	16	VGA port
17	Data transmission rate indicator	18	10GE optical port
19	Connection status indicator/Data transmission status indicator	-	-

**Ports**

Table A-4 and Table A-5 show ports provided by the node.

**Table A-4** Ports on the front panel

Port	Type	Quantity	Description
USB port	USB 2.0	2	Connects to a USB device.  <b>NOTICE</b> Before connecting to a USB device, ensure that the USB device operates properly. A node may operate abnormally if it is connected to a faulty USB device.

**Table A-5** Ports on the rear panel

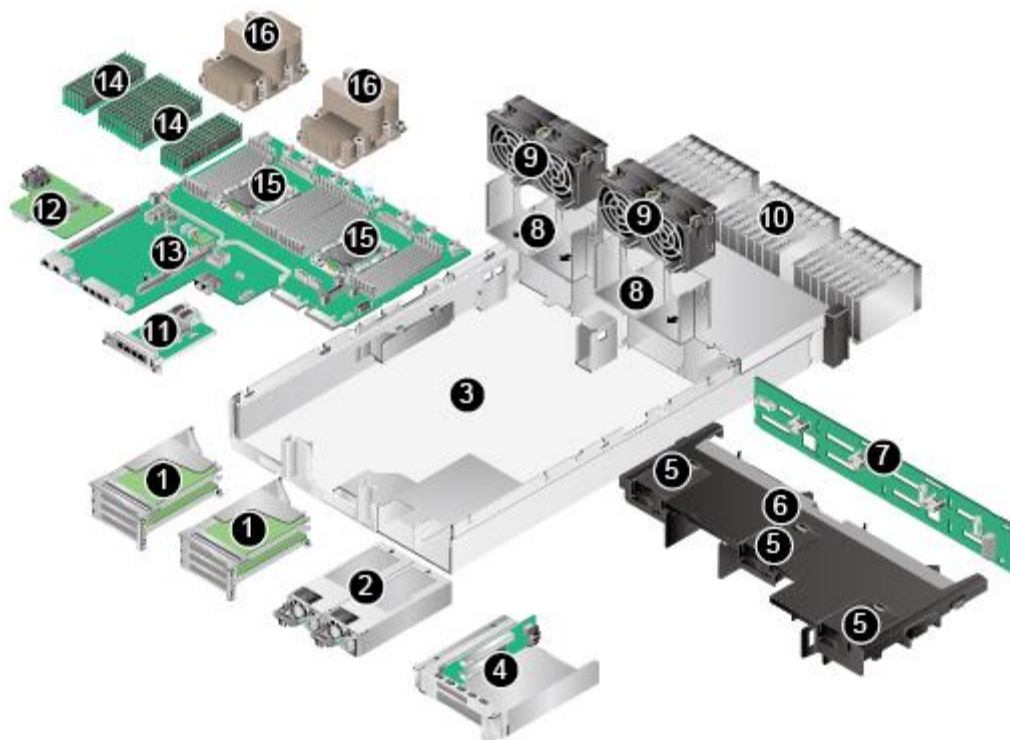
Port	Type	Quantity	Description
Power module socket	-	2	Connects to a power supply.
10GE electrical port	10G BASE-T	2	The mainboard provides 2 x 10GE electrical ports or 2 x 10GE optical ports.  <b>NOTE</b> <ul style="list-style-type: none"> <li>10GE optical ports do not support 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s networks.</li> <li>10GE electrical ports do not support 10 Mbit/s or 100 Mbit/s networks, but support auto-negotiation to 1000 Mbit/s.</li> </ul>
10GE optical port	10G SFP+	2	
GE electrical port	1000BASE-T	2	Functions as a service network port.  <b>NOTE</b> This port does not support forcible rates or 10 Mbit/s and 100 Mbit/s networks.
USB port	USB 3.0	2	Connects to a USB device.  <b>NOTICE</b> Before connecting to a USB device, ensure that the USB device operates properly. A node may operate abnormally if it is connected to a faulty USB device.
Management network port	GE BASE-T	1	Functions as a 1000 Mbit/s Ethernet port, used for node management.

Port	Type	Quantity	Description
VGA port	DB-15	1	Connects to a terminal, such as a monitor or KVM.
Serial port	RJ-45	1	Functions as the system serial port by default. You can set it as the iBMC serial port by using the iBMC command. This port is used for debugging.

## Physical Structure

Figure A-8 shows components of the node.

**Figure A-8** Components



1	I/O module 1 I/O module 2	2	Power module
3	Chassis	4	I/O module 3
5	Supercapacitor holder	6	Air duct
7	Front-disk backplane	8	Fan module bracket
9	Fan module	10	Front disks

11	Flexible NIC	12	RAID controller card
13	Mainboard	14	DIMM
15	CPU	16	Heat sink

## Technical Specifications

Table A-6 lists the technical specifications of the node.

**Table A-6** Technical specifications

Item	Specifications
Dimensions (H x W x D)	86.1 mm (2 U) x 447 mm x 748 mm
Weight in full configuration	<ul style="list-style-type: none"><li>• Net weight: 30.5 kg</li><li>• Packaging weight: 5 kg</li></ul>
Power supply specifications	<ul style="list-style-type: none"><li>• AC: 100 V AC to 240 V AC (50 Hz or 60 Hz)</li><li>• 240 V high-voltage DC: 192 V to 288 V</li></ul>
Maximum power consumption	1014 W

### A.1.3 2288H V5 Node with 12 NVMe SSDs

#### Function

Huawei 2288H V5 node with 12 NVMe SSDs is a 2 U dual-socket rack server developed for Internet, Internet data center (IDC), cloud computing, enterprise, and telecom service applications. The node is ideal for IT core services, cloud computing virtualization, high-performance computing, distributed storage, big data processing, enterprise and telecom service applications, and other complex workloads. It combines low power consumption with high scalability and reliability, and easy deployment and management.

#### Appearance

##### Front view

Figure A-9 shows the front panel of the node.

**Figure A-9** Front panel



1	Connection status indicators for LOM ports (numbered 1 to 4 from top to bottom)	2	Fault diagnosis LED
3	Health status indicator	4	UID button/indicator
5	Power button/indicator	-	-

From left to right, slots 0 to 7 house SAS or SATA disks, and slots 8 to 19 house NVMe SSDs, as shown in Figure A-10.

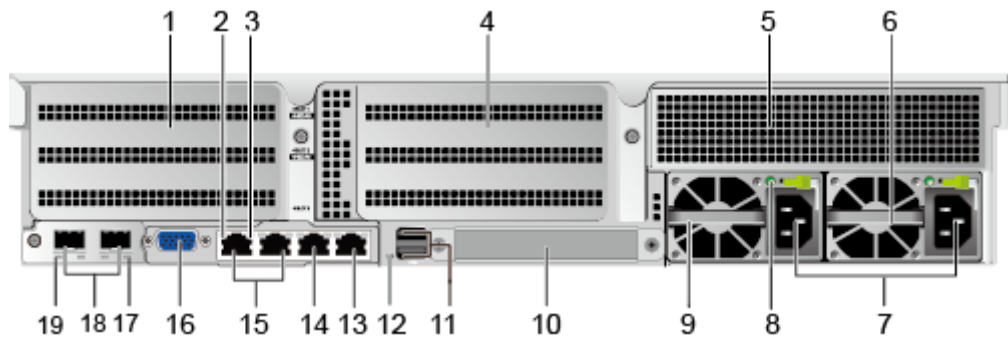
**Figure A-10** Disk slots on the front panel of the node



**Rear view**

Figure A-11 shows the rear panel of the node.

**Figure A-11** Rear panel



1	I/O module 1	2	Data transmission status indicator
3	Connection status indicator	4	I/O module 2

5	I/O module 3	6	Power module 2
7	Power module socket	8	Power module indicator
9	Power module 1	10	Flexible NIC (optional)
11	USB 3.0 port	12	UID indicator
13	Serial port	14	Management network port
15	GE electrical port	16	VGA port
17	Data transmission rate indicator	18	10GE optical port
19	Connection status indicator/Data transmission status indicator	-	-

## Ports

Table A-7 and Table A-8 show ports provided by the node.

**Table A-7** Ports on the front panel

Port	Type	Quantity	Description
USB port	USB 2.0	2	Connects to a USB device.  <b>NOTICE</b> Before connecting to a USB device, ensure that the USB device operates properly. A node may operate abnormally if it is connected to a faulty USB device.

**Table A-8** Ports on the rear panel

Port	Type	Quantity	Description
Power module socket	-	2	Connects to a power supply.
10GE electrical port	10G BASE-T	2	The mainboard provides 2 x 10GE electrical ports or 2 x 10GE optical ports.  <b>NOTE</b> <ul style="list-style-type: none"> <li>10GE optical ports do not support 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s networks.</li> <li>10GE electrical ports do not support 10 Mbit/s or</li> </ul>
10GE optical port	10G SFP+	2	

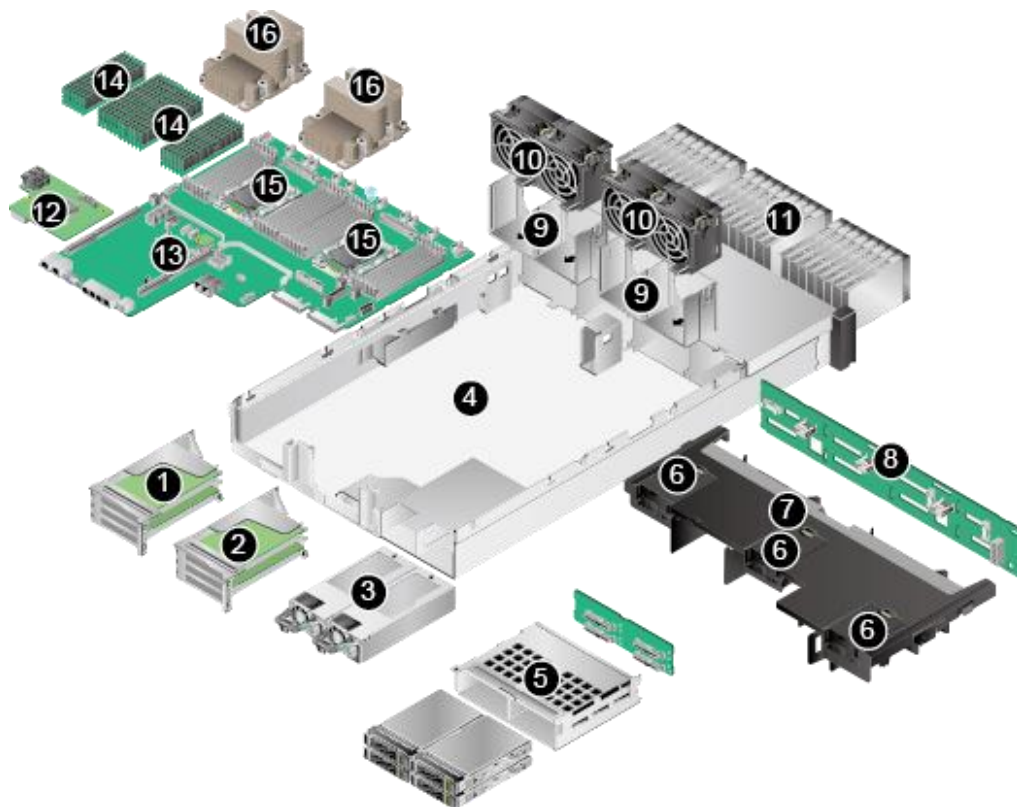


Port	Type	Quantity	Description
			100 Mbit/s networks, but support auto-negotiation to 1000 Mbit/s.
GE electrical port	1000BASE-T	2	Functions as a service network port.  <b>NOTE</b> This port does not support forcible rates or 10 Mbit/s and 100 Mbit/s networks.
USB port	USB 3.0	2	Connects to a USB device.  <b>NOTICE</b> Before connecting to a USB device, ensure that the USB device operates properly. A node may operate abnormally if it is connected to a faulty USB device.
Management network port	GE BASE-T	1	Functions as a 1000 Mbit/s Ethernet port, used for node management.
VGA port	DB-15	1	Connects to a terminal, such as a monitor or KVM.
Serial port	RJ-45	1	Functions as the system serial port by default. You can set it as the iBMC serial port by using the iBMC command. This port is used for debugging.

## Physical Structure

Figure A-12 shows components of the node.

**Figure A-12** Components



1	I/O module 1 I/O module 2	2	Power module
3	Chassis	4	I/O module 3
5	Supercapacitor holder	6	Air duct
7	Front-disk backplane	8	Fan module bracket
9	Fan module	10	Front disks
11	Flexible NIC	12	RAID controller card
13	Mainboard	14	DIMM
15	CPU	16	Heat sink

## Technical Specifications

Table A-9 lists the technical specifications of the node.

**Table A-9** Technical specifications

Item	Specifications
------	----------------

Item	Specifications
Dimensions (H x W x D)	86.1 mm (2 U) x 447 mm x 708 mm
Weight in full configuration	<ul style="list-style-type: none"> <li>• Net weight: 34.1 kg</li> <li>• Packaging weight: 5 kg</li> </ul>
Power supply specifications	<ul style="list-style-type: none"> <li>• AC: 100 V AC to 240 V AC (50 Hz or 60 Hz)</li> <li>• 240 V high-voltage DC: 192 V to 288 V</li> </ul>
Maximum power consumption	776 W

## A.1.4 2288H V5 Node with 24 NVMe SSDs

### Function

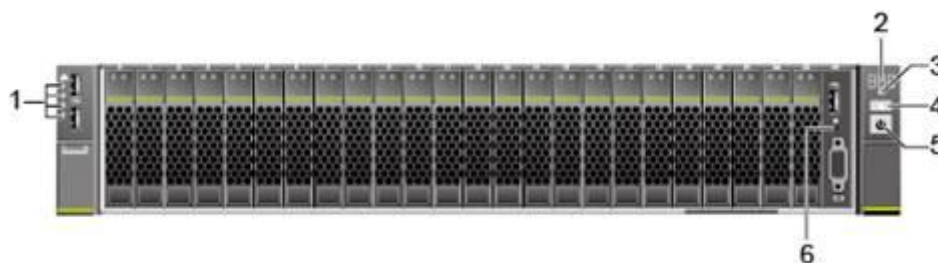
Huawei 2288H V5 node with 24 NVMe SSDs is a 2 U dual-socket rack server developed for Internet, Internet data center (IDC), cloud computing, enterprise, and telecom service applications. The node is ideal for IT core services, cloud computing virtualization, high-performance computing, distributed storage, big data processing, enterprise and telecom service applications, and other complex workloads. It combines low power consumption with high scalability and reliability, and easy deployment and management.

### Appearance

#### Front view

Figure A-13 shows the front panel of the node.

**Figure A-13** Front panel



1	Connection status indicators for network ports (numbered 1 to 4 from top to bottom)	2	Fault diagnosis LED
3	Health status indicator	4	UID button/indicator
5	Power button/indicator	6	NMI button

The front panel of the node provides 24 service disk slots. Slots 0 to 3 house SAS disks, SATA disks, or NVMe SSDs and slots 4 to 23 house only NVMe SSDs, as shown in Figure A-14.

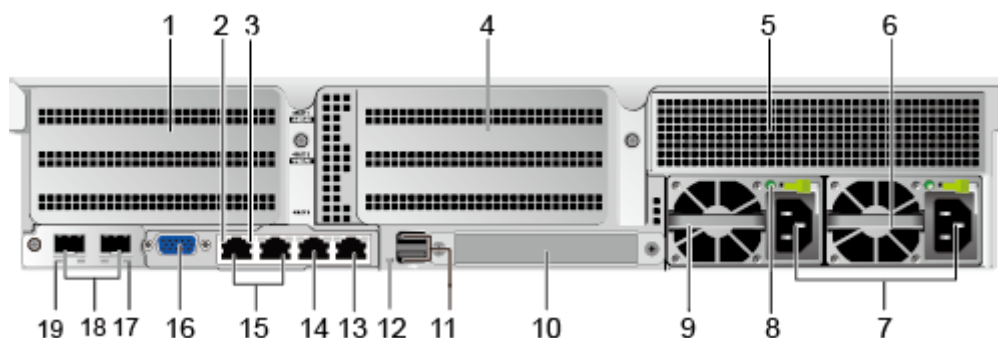
**Figure A-14** Disk slots on the front panel of the node



**Rear view**

Figure A-15 shows the rear panel of the node.

**Figure A-15** Rear panel



1	I/O module 1	2	Data transmission status indicator
3	Connection status indicator	4	I/O module 2
5	I/O module 3	6	Power module 2
7	Power module socket	8	Power module indicator
9	Power module 1	10	Flexible NIC (optional)
11	USB 3.0 port	12	UID indicator
13	Serial port	14	Management network port
15	GE electrical port	16	VGA port
17	Data transmission rate indicator	18	10GE optical port
19	Connection status indicator/Data transmission status indicator	-	-

## Ports

Table A-10 and Table A-11 show ports provided by the node.

**Table A-10** Ports on the front panel

Port	Type	Quantity	Description
USB port	USB 2.0	2	<p>Connects to a USB device.</p> <p><b>NOTICE</b></p> <p>Before connecting to a USB device, ensure that the USB device operates properly. A node may operate abnormally if it is connected to a faulty USB device.</p>

**Table A-11** Ports on the rear panel

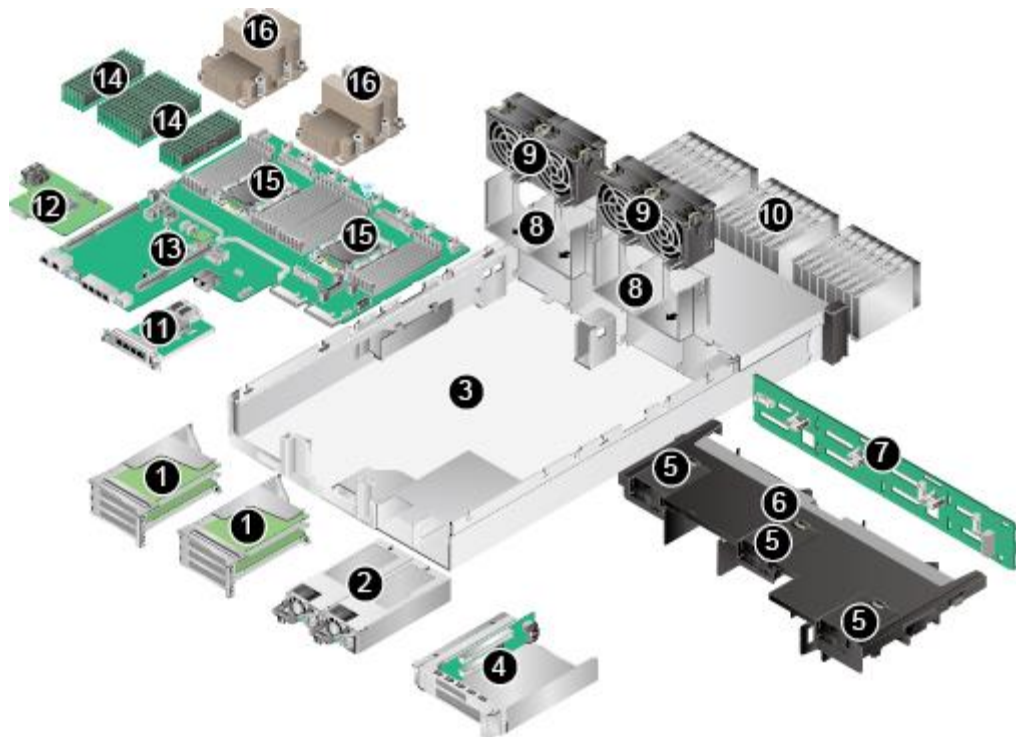
Port	Type	Quantity	Description
Power module socket	-	2	Connects to a power supply.
10GE electrical port	10G BASE-T	2	<p>The mainboard provides 2 x 10GE electrical ports or 2 x 10GE optical ports.</p> <p><b>NOTE</b></p> <ul style="list-style-type: none"> <li>10GE optical ports do not support 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s networks.</li> <li>10GE electrical ports do not support 10 Mbit/s or 100 Mbit/s networks, but support auto-negotiation to 1000 Mbit/s.</li> </ul>
10GE optical port	10G SFP+	2	
GE electrical port	1000BASE-T	2	<p>Functions as a service network port.</p> <p><b>NOTE</b></p> <p>This port does not support forcible rates or 10 Mbit/s and 100 Mbit/s networks.</p>
USB port	USB 3.0	2	<p>Connects to a USB device.</p> <p><b>NOTICE</b></p> <p>Before connecting to a USB device, ensure that the USB device operates properly. A node may operate abnormally if it is connected to a faulty</p>

Port	Type	Quantity	Description
			USB device.
Management network port	GE BASE-T	1	Functions as a 1000 Mbit/s Ethernet port, used for node management.
VGA port	DB-15	1	Connects to a terminal, such as a monitor or KVM.
Serial port	RJ-45	1	Functions as the system serial port by default. You can set it as the iBMC serial port by using the iBMC command. This port is used for debugging.

## Physical Structure

Figure A-16 shows components of the node.

**Figure A-16** Components



1	I/O module 1 I/O module 2	2	Power module
3	Chassis	4	I/O module 3

5	Supercapacitor holder	6	Air duct
7	Front-disk backplane	8	Fan module bracket
9	Fan module	10	Front disks
11	Flexible NIC	12	RAID controller card
13	Mainboard	14	DIMM
15	CPU	16	Heat sink

## Technical Specifications

Table A-12 lists the technical specifications of the node.

**Table A-12** Technical specifications

Item	Specifications
Dimensions (H x W x D)	86.1 mm (2 U) x 447 mm x 748 mm
Weight in full configuration	<ul style="list-style-type: none"><li>• Net weight: 29.4 kg</li><li>• Packaging weight: 5 kg</li></ul>
Power supply specifications	<ul style="list-style-type: none"><li>• AC: 100 V AC to 240 V AC (50 Hz or 60 Hz)</li><li>• 240 V high-voltage DC: 192 V to 288 V</li></ul>
Maximum power consumption	1014 W

### A.1.5 5288 V5 36-Slot Node

#### Function

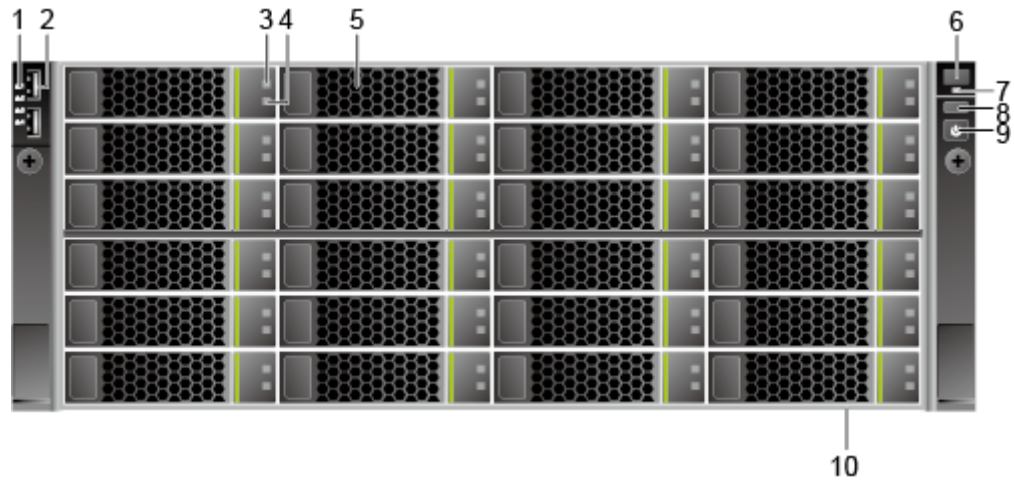
Huawei 5288 V5 36-slot node is a new-generation 4 U dual-socket or single-socket storage rack server that adopts an efficient design to ensure excellent computing performance and large-capacity local storage with elastic scalability. It is applicable to cold data storage, video surveillance, cloud storage, and big data, and can be widely used in a variety of industries, such as media and entertainment, finance, and public security.

#### Appearance

##### Front view

Figure A-17 shows the front panel of the node.

**Figure A-17** Front panel



1	Connection status indicator for a network port	2	USB 2.0 port
3	Disk fault indicator	4	Disk activity indicator
5	Service disk	6	Fault diagnosis LED
7	Health status indicator	8	UID button/indicator
9	Power button/indicator	10	Label plate with an ESN label

The front panel of the node provides 24 service disk slots numbered 0 to 23 from top to bottom and from left to right, as shown in Figure A-18.

**Figure A-18** Disk slots on the front panel of the node



### Rear view

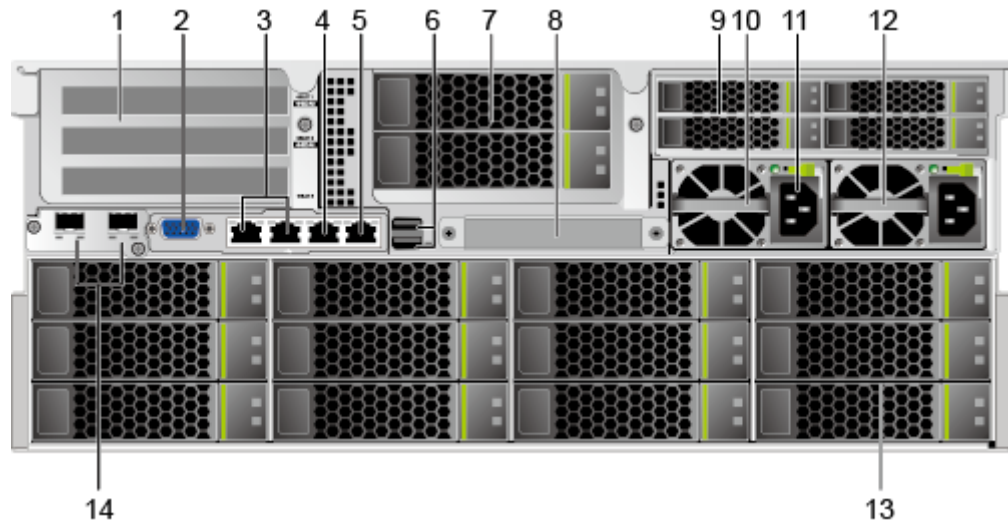
Figure A-19 shows the rear panel of the node.

#### NOTE

This section uses the 10GE NIC as an example.



**Figure A-19** Rear panel



1	I/O module 1	2	VGA port
3	GE electrical port	4	Management network port
5	Serial port	6	USB 3.0 port
7	I/O module 2	8	Flexible NIC (optional)
9	I/O module 3	10	Power module 1
11	Power module socket	12	Power module 2
13	Rear disks	14	10GE optical port

## Ports

Table A-13 and Table A-14 show ports provided by the node.

**Table A-13** Ports on the front panel

Port	Type	Quantity	Description
USB port	USB 2.0	2	Connects to a USB device.  <b>NOTICE</b> Before connecting to a USB device, ensure that the USB device operates properly. A node may operate abnormally if it is connected to a faulty USB device.

**Table A-14** Ports on the rear panel

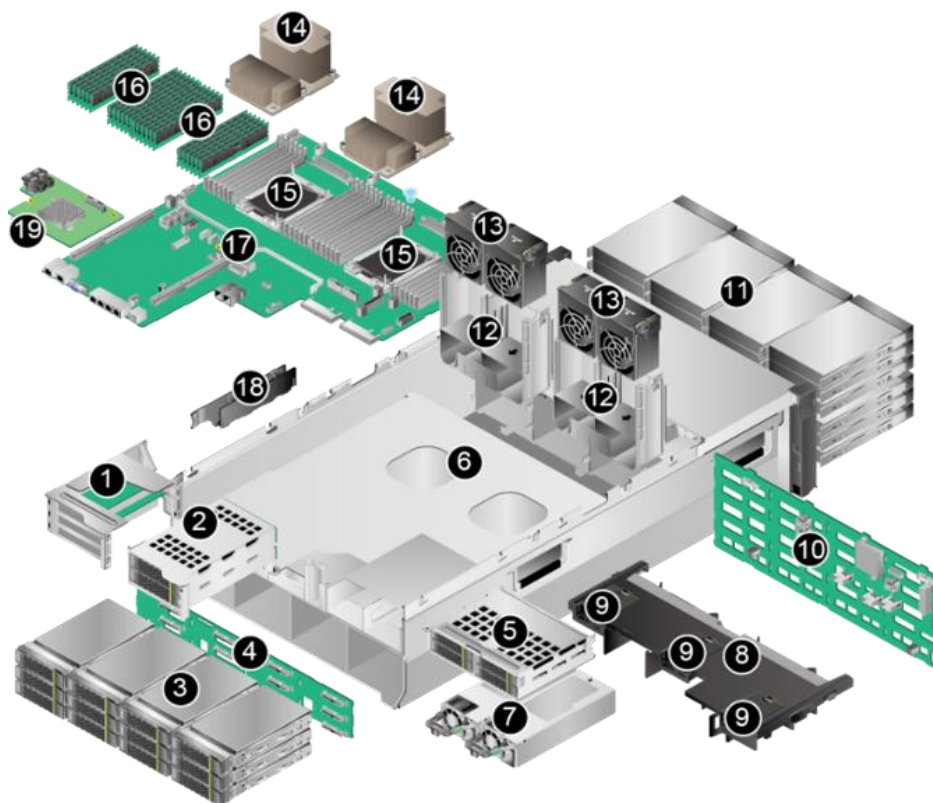
Port	Type	Quantity	Description
10GE electrical port	10G BASE-T	2	The mainboard provides 2 x 10GE electrical ports or 2 x 10GE optical ports.  <b>NOTE</b> <ul style="list-style-type: none"> <li>10GE electrical ports do not support forcible rates or 10 Mbit/s and 100 Mbit/s networks.</li> <li>10GE optical ports do not support 10 Mbit/s or 100 Mbit/s networks and the rate cannot be forcibly set to 1000 Mbit/s.</li> <li>10GE electrical/optical ports do not support GE autonegotiation.</li> </ul>
10GE optical port	10G SFP+	2	
GE electrical port	1000BASE-T	2	Functions as a service network port.  <b>NOTE</b> This port does not support forcible rates or 10 Mbit/s and 100 Mbit/s networks.
VGA port	DB-15	1	Connects to a terminal, such as a monitor.
USB port	USB 3.0	2	Connects to a USB device.  <b>NOTICE</b> Before connecting to a USB device, ensure that the USB device operates properly. A node may operate abnormally if it is connected to a faulty USB device.
Management network port	Ethernet port	1	Functions as a 1000 Mbit/s Ethernet port, used for node management.
Serial port	DB-9	1	Three-pin serial port (that contains only the PIN2 RX, PIN3 TX, and PIN5 GND signals in the DB-9 connector, no signals in other pins). The default baud rate is 115,200 bit/s.  Functions as the system serial port by default. You can set it as the iMana 200 serial port on the iBMC CLI. This port is used for debugging.

Port	Type	Quantity	Description
Network port	-	-	The port types and quantity vary according to the configured NIC.

## Physical Structure

Figure A-20 shows components of the node.

**Figure A-20** Components



1	I/O module 1	2	I/O module 2
3	Rear disks	4	Rear-disk backplane
5	I/O module 3	6	Chassis
7	Power module	8	Air duct
9	Supercapacitor	10	Front-disk backplane
11	Front disks	12	Fan module bracket
13	Fan module	14	Heat sink
15	CPU	16	DIMM

17	Mainboard	18	Cable organizer
19	RAID controller card	-	-

## Technical Specifications

Table A-15 lists the technical specifications of the node.

**Table A-15** Technical specifications

Category	Item	Specifications
Physical specifications	Dimensions (H x W x D)	175 mm (4 U, 1 U = 44.45 mm) x 447 mm x 748 mm
	Weight	<ul style="list-style-type: none"><li>• Net weight: 65 kg</li><li>• Packaging weight: 5 kg</li></ul>
Environmental specifications	Operating temperature	-5°C to +40°C
	Operating humidity	8% RH to 90% RH
Power supply specifications	220 V AC and 240 V high-voltage DC (adaptive)	<ul style="list-style-type: none"><li>• AC: 100 V AC to 240 V AC (50 Hz or 60 Hz)</li><li>• High-voltage DC: 192 V to 288 V</li><li>• 336 V high-voltage DC</li></ul>
Power consumption specifications	Maximum power consumption	1180 W

### A.1.6 TaiShan 200 (Model 2280) 12-Slot Node

#### Function

A TaiShan 200 (Model 2280) 12-slot node is a 2 U dual-socket rack server developed based on Huawei Kunpeng 920 processor. It is applicable to Internet, distributed storage, cloud computing, big data, and enterprise services, and features high-performance computing, large-capacity storage, low power consumption, easy management, and easy deployment.

#### Appearance

##### Front view

Figure A-21 shows the front panel of the node.

**Figure A-21** Front panel



1	UID button/indicator	2	Health status indicator
3	Power button/indicator	4	Fault diagnosis LED
5	Flexible NIC indicators (1 and 2)	6	Service disk
7	Disk fault indicator	8	Disk activity indicator
9	VGA port	10	USB 3.0 port
11	Label plate with an ESN label	-	-

The front panel of the node provides 12 service disk slots numbered 0 to 11 from top to bottom and from left to right, as shown in Figure A-22.

**Figure A-22** Disk slots on the front panel of the node



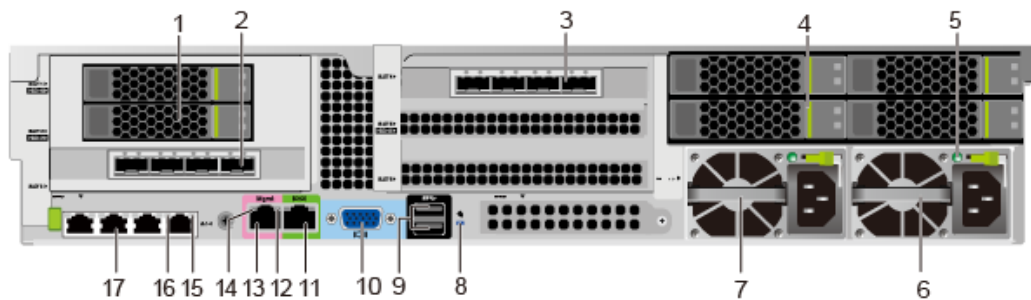
### Rear view

Figure A-23 shows the rear panel of the node.

#### NOTE

This section uses the 10GE NIC as an example.

**Figure A-23** Rear panel



1	2 x 2.5" system disks	2	10GE network port 1
3	10GE network port 2	4	4 x 2.5" system disks
5	Power module indicator	6	Power module 2
7	Power module 1	8	UID indicator
9	USB 3.0 port	10	VGA port
11	Serial port	12	Connection status indicator for the management network port
13	Management network port	14	Data transmission status indicator for the management network port
15	Connection status indicator for a GE electrical port	16	Data transmission status indicator for a GE electrical port
17	Flexible NIC	-	-

## Ports

Table A-16 and Table A-17 show ports provided by the node.

**Table A-16** Ports on the front panel

Port	Type	Quantity	Description
USB port	USB 3.0	2	Connects to a USB device.  <b>NOTICE</b> Before connecting to a USB device, ensure that the USB device operates properly. A node may operate abnormally if it is connected to a faulty USB device.

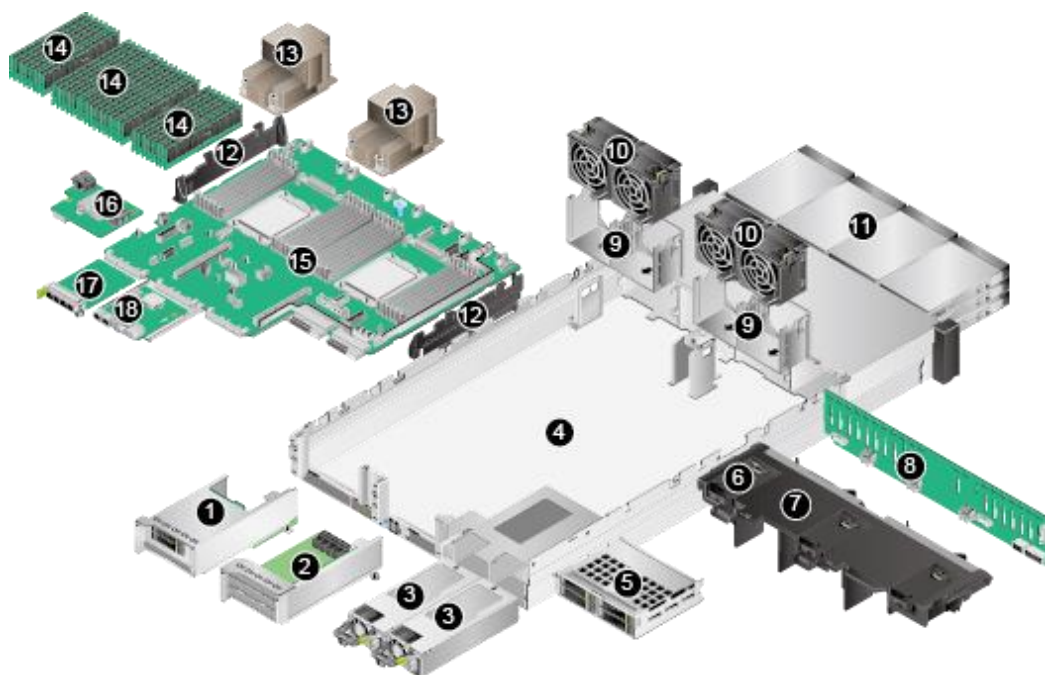
**Table A-17** Ports on the rear panel

Port	Type	Quantity	Description
Power module socket	-	2	Connects to a power supply.
GE electrical port	RJ-45	4/8	The mainboard provides GE electrical ports. A maximum of eight GE electrical ports can be provided through two flexible NICs.
25GE optical port	SFP+	4/8	The mainboard provides 25GE optical ports. A maximum of eight 25GE optical ports can be provided through two flexible NICs.  <b>NOTE</b> 25GE optical ports support 10GE autonegotiation through optical modules with different rates.
USB port	USB 3.0	2	Connects to a USB device.  <b>NOTE</b> Before connecting to a USB device, ensure that the USB device operates properly. A node may operate abnormally if it is connected to a faulty USB device.
Management network port	RJ-45	1	Functions as a 1000 Mbit/s Ethernet port, used for node management.
VGA port	DB-15	1	Connects to a terminal, such as a monitor or KVM.
Serial port	RJ-45	1	Functions as the system serial port by default. You can set it as the iBMC serial port by using the iBMC command. This port is used for debugging.

## Physical Structure

Figure A-24 shows components of the node.

**Figure A-24** Components



1	I/O module 1	2	I/O module 2
3	Power module	4	Chassis
5	I/O module 3	6	Supercapacitor holder
7	Air duct	8	Front-disk backplane
9	Fan module bracket	10	Fan module
11	Front disks	12	Cable organizer
13	Heat sink	14	DIMM
15	Mainboard	16	RAID controller card
17	Flexible NIC	18	iBMC card

**NOTE**

The supercapacitor holder and RAID controller card are involved only in the TaiShan 200 (Model 2280) 12-slot node (EXP).

## Technical Specifications

Table A-18 lists the technical specifications of the node.

**Table A-18** Technical specifications

Category	Item	Specifications
----------	------	----------------



Category	Item	Specifications
Physical specifications	Dimensions (H x W x D)	86.1 mm (2 U, 1 U = 44.45 mm) x 447 mm x 790 mm
	Weight	<ul style="list-style-type: none"> <li>• Net weight: 32 kg</li> <li>• Packaging weight: 5 kg</li> </ul>
Environmental specifications	Operating temperature	5°C to 45°C
	Operating humidity	8% RH to 90% RH
Power supply specifications	220 V AC and 240 V high-voltage DC (adaptive)	<ul style="list-style-type: none"> <li>• AC: 200 V AC to 240 V AC (50 Hz or 60 Hz)</li> <li>• High-voltage DC: 192 V to 288 V</li> </ul>
Power consumption specifications	Maximum power consumption	950 W

## A.1.7 TaiShan 200 (Model 2280) 25-Slot Node

### Function

A TaiShan 200 (Model 2280) 25-slot node is a 2 U dual-socket rack server developed based on Huawei Kunpeng 920 processor. It is applicable to Internet, distributed storage, cloud computing, big data, and enterprise services, and features high-performance computing, large-capacity storage, low power consumption, easy management, and easy deployment.

### Appearance

#### Front view

Figure A-25 shows the front panel of the node.

**Figure A-25** Front panel



1	UID button/indicator	2	Health status indicator
3	Power button/indicator	4	Fault diagnosis LED

5	Flexible NIC indicators (1 and 2)	6	SAS or SATA disk activity indicator
7	SAS or SATA disk fault indicator	-	-

The front panel of the node provides 25 service disk slots numbered 0 to 24 from left to right, as shown in Figure A-26.

**Figure A-26** Disk slots on the front panel of the node



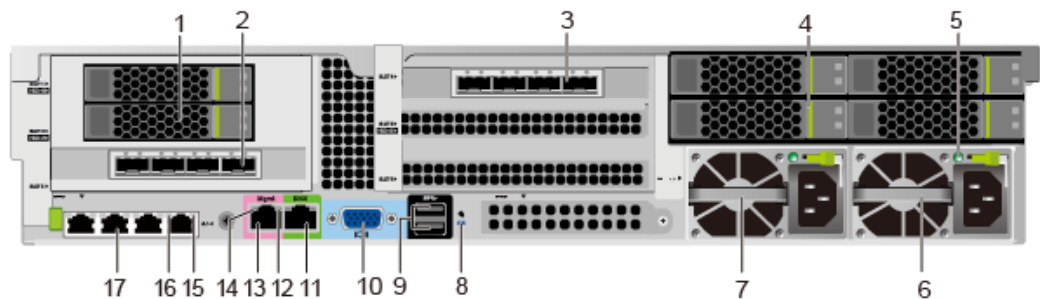
**Rear view**

Figure A-27 shows the rear panel of the node.

**NOTE**

This section uses the 10GE NIC as an example.

**Figure A-27** Rear panel



1	2 x 2.5" system disks	2	10GE network port 1
3	10GE network port 2	4	4 x 2.5" system disks
5	Power module indicator	6	Power module 2
7	Power module 1	8	UID indicator
9	USB 3.0 port	10	VGA port
11	Serial port	12	Connection status indicator for the management network port
13	Management network port	14	Data transmission status indicator for the management network port

15	Connection status indicator for a GE electrical port	16	Data transmission status indicator for a GE electrical port
17	Flexible NIC	-	-

## Ports

Table A-19 and Table A-20 show ports provided by the node.

**Table A-19** Ports on the front panel

Port	Type	Quantity	Description
USB port	USB 3.0	2	Connects to a USB device.  <b>NOTICE</b> Before connecting to a USB device, ensure that the USB device operates properly. A node may operate abnormally if it is connected to a faulty USB device.

**Table A-20** Ports on the rear panel

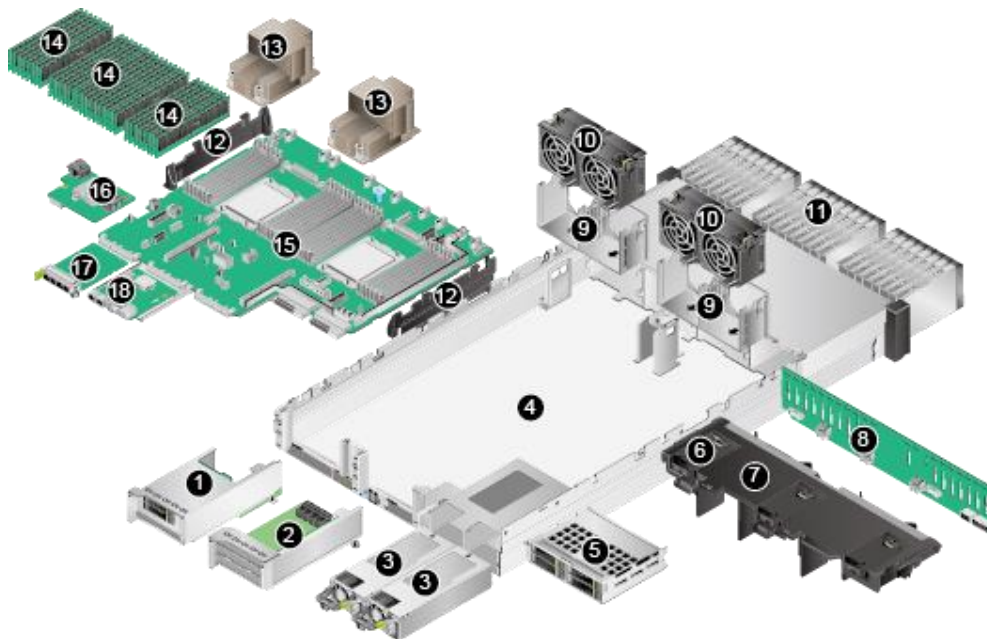
Port	Type	Quantity	Description
Power module socket	-	2	Connects to a power supply.
GE electrical port	RJ-45	4/8	The mainboard provides GE electrical ports. A maximum of eight GE electrical ports can be provided through two flexible NICs.
25GE optical port	SFP+	4/8	The mainboard provides 25GE optical ports. A maximum of eight 25GE optical ports can be provided through two flexible NICs.  <b>NOTE</b> 25GE optical ports support 10GE autonegotiation through optical modules with different rates.
USB port	USB 3.0	2	Connects to a USB device.  <b>NOTE</b>

Port	Type	Quantity	Description
			Before connecting to a USB device, ensure that the USB device operates properly. A node may operate abnormally if it is connected to a faulty USB device.
Management network port	RJ-45	1	Functions as a 1000 Mbit/s Ethernet port, used for node management.
VGA port	DB-15	1	Connects to a terminal, such as a monitor or KVM.
Serial port	RJ-45	1	Functions as the system serial port by default. You can set it as the iBMC serial port by using the iBMC command. This port is used for debugging.

## Physical Structure

Figure A-28 shows components of the node.

**Figure A-28** Components



1	I/O module 1	2	I/O module 2
3	Power module	4	Chassis

5	I/O module 3	6	Supercapacitor holder
7	Air duct	8	Front-disk backplane
9	Fan module bracket	10	Fan module
11	Front disks	12	Cable organizer
13	Heat sink	14	DIMM
15	Mainboard	16	RAID controller card
17	Flexible NIC	18	iBMC card

## Technical Specifications

Table A-21 lists the technical specifications of the node.

**Table A-21** Technical specifications

Category	Item	Specifications
Physical specifications	Dimensions (H x W x D)	86.1 mm (2 U, 1 U = 44.45 mm) x 447 mm x 790 mm
	Weight	<ul style="list-style-type: none"><li>• Net weight: 25 kg</li><li>• Packaging weight: 5 kg</li></ul>
Environmental specifications	Operating temperature	5°C to 45°C
	Operating humidity	8% RH to 90% RH
Power supply specifications	220 V AC and 240 V high-voltage DC (adaptive)	<ul style="list-style-type: none"><li>• AC: 200 V AC to 240 V AC (50 Hz or 60 Hz)</li><li>• High-voltage DC: 192 V to 288 V</li></ul>
Power consumption specifications	Maximum power consumption	515W

### A.1.8 TaiShan 200 (Model 5280) 36-Slot Node

#### Function

A TaiShan 200 (Model 5280) 36-slot node is a 4 U dual-socket rack server developed based on Huawei Kunpeng 920 processor. It is applicable to Internet, distributed storage, and cloud computing, and features high-performance computing, large-capacity storage, low power consumption, easy management, and easy deployment.

## Appearance

### Front view

Figure A-29 shows the front panel of the node.

**Figure A-29** Front panel



1	UID button/indicator	2	Health status indicator
3	Power button/indicator	4	Fault diagnosis LED
5	Flexible NIC indicators (1 and 2)	6	Disk
7	VGA port	8	USB 3.0 port
9	Label plate with an ESN label	-	-

The front panel of the node provides 24 service disk slots numbered 0 to 23 from top to bottom and from left to right, as shown in Figure A-30.

**Figure A-30** Disk slots on the front panel of the node



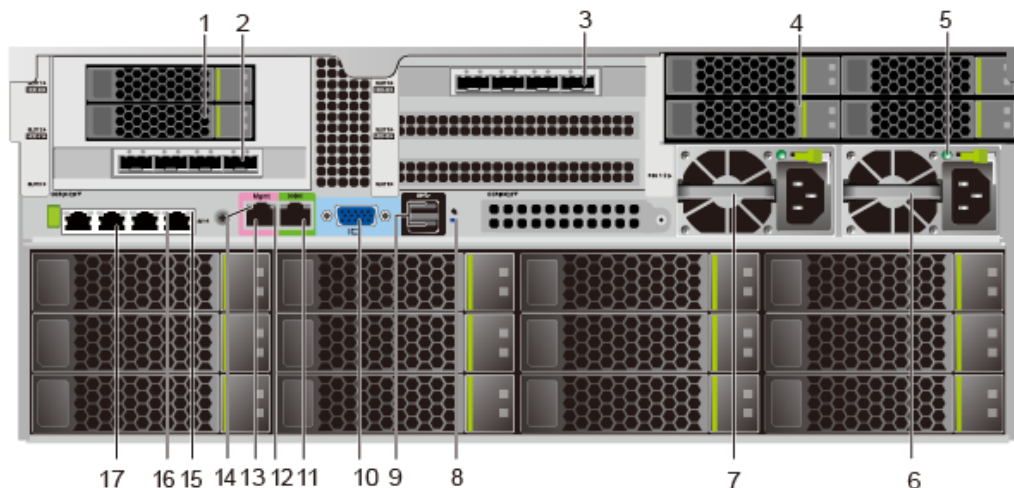
### Rear view

Figure A-31 shows the rear panel of the node.

#### NOTE

This section uses the 10GE NIC as an example.

**Figure A-31** Rear panel



1	2 x 2.5" system disks	2	10GE network port 1
3	10GE network port 2	4	4 x 2.5" system disks
5	Power module indicator	6	Power module 2
7	Power module 1	8	UID indicator
9	USB 3.0 port	10	VGA port
11	Serial port	12	Connection status indicator for the management network port
13	Management network port	14	Data transmission status indicator for the management network port
15	Connection status indicator for a GE electrical port	16	Data transmission status indicator for a GE electrical port
17	Flexible NIC	-	-

## Ports

Table A-22 and Table A-23 show ports provided by the node.

**Table A-22** Ports on the front panel

Port	Type	Quantity	Description
USB port	USB 3.0	2	Connects to a USB device.  <b>NOTE</b> Before connecting to a USB device, ensure that the USB device operates properly. A node may operate abnormally if it is connected to a faulty USB device.

**Table A-23** Ports on the rear panel

Port	Type	Quantity	Description
Power module socket	-	2	Connects to a power supply.
GE electrical port	RJ-45	4/8	The mainboard provides GE electrical ports. A maximum of eight GE electrical ports can be provided through two flexible NICs.
25GE optical port	SFP+	4/8	The mainboard provides 25GE optical ports. A maximum of eight 25GE optical ports can be provided through two flexible NICs.  <b>NOTE</b> 25GE optical ports support 10GE autonegotiation through optical modules with different rates.
USB port	USB 3.0	2	Connects to a USB device.  <b>NOTE</b> Before connecting to a USB device, ensure that the USB device operates properly. A node may operate abnormally if it is connected to a faulty USB device.
Management network port	RJ-45	1	Functions as a 1000 Mbit/s Ethernet port, used for node management.
VGA port	DB-15	1	Connects to a terminal, such as a monitor or KVM.

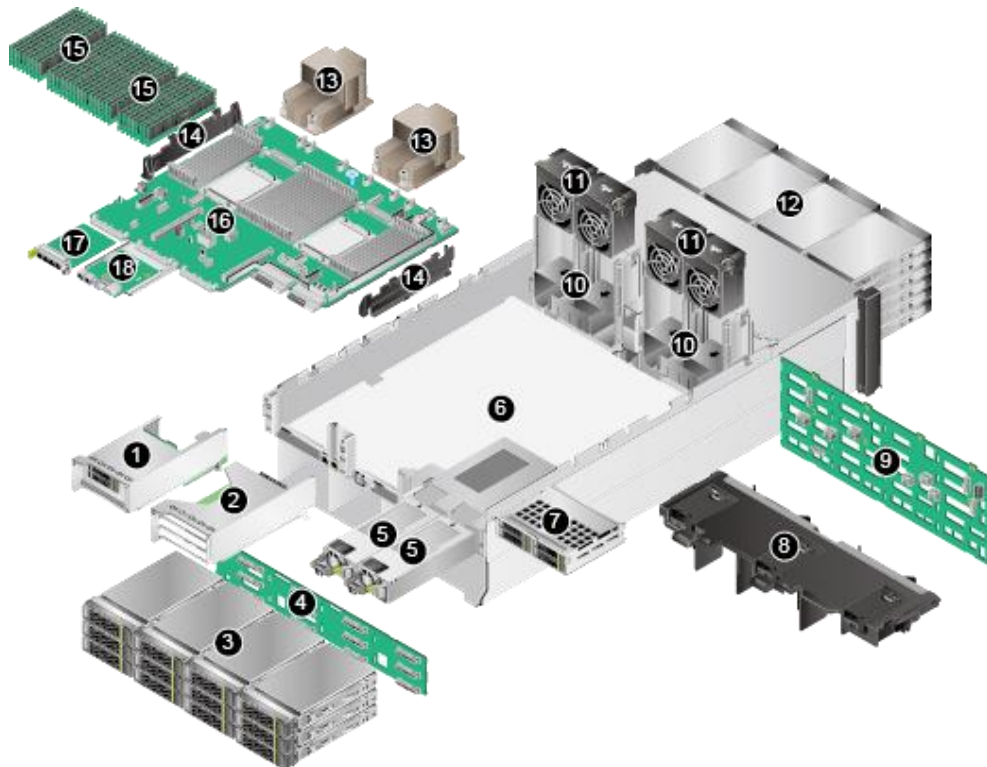


Port	Type	Quantity	Description
Serial port	RJ-45	1	Functions as the system serial port by default. You can set it as the iBMC serial port by using the iBMC command. This port is used for debugging.

## Physical Structure

Figure A-32 shows components of the node.

**Figure A-32** Components



1	I/O module 1	2	I/O module 2
3	Rear disks	4	Rear-disk backplane
5	Power module	6	Chassis
7	I/O module 3	8	Air duct
9	Front-disk backplane	10	Fan module bracket
11	Fan module	12	Front disks
13	Heat sink	14	Cable organizer

15	DIMM	16	Mainboard
17	Flexible NIC	18	iBMC card

## Technical Specifications

Table A-24 lists the technical specifications of the node.

**Table A-24** Technical specifications

Category	Item	Specifications
Physical specifications	Dimensions (H x W x D)	175 mm (4 U, 1 U = 44.45 mm) x 447 mm x 790 mm
	Weight	<ul style="list-style-type: none"><li>• Net weight: 65 kg</li><li>• Packaging weight: 5 kg</li></ul>
Environmental specifications	Operating temperature	-5°C to +40°C
	Operating humidity	8% RH to 90% RH
Power supply specifications	220 V AC and 240 V high-voltage DC (adaptive)	<ul style="list-style-type: none"><li>• AC: 200 V AC to 240 V AC (50 Hz or 60 Hz)</li><li>• High-voltage DC: 192 V to 288 V</li></ul>
Power consumption specifications	Maximum power consumption	1250 W

### A.1.9 TaiShan 200 (Model 2280) Node with 12 NVMe SSDs

#### Function

A TaiShan 200 (Model 2280) node with 12 NVMe SSDs is a 2 U dual-socket rack server developed based on Huawei Kunpeng 920 processor. It is applicable to Internet, distributed storage, cloud computing, big data, and enterprise services, and features high-performance computing, large-capacity storage, low power consumption, easy management, and easy deployment.

#### Appearance

##### Front view

Figure A-33 shows the front panel of the node.

**Figure A-33** Front panel



1	UID button/indicator	2	Health status indicator
3	Power button/indicator	4	Fault diagnosis LED
5	Flexible NIC indicators (1 and 2)	6	Service disk
7	Filler panel	8	VGA port
9	USB 3.0 port	10	Label plate with an SN label

From left to right, slots 0 to 7 house SAS or SATA disks, and slots 8 to 19 house NVMe SSDs, as shown in Figure A-34.

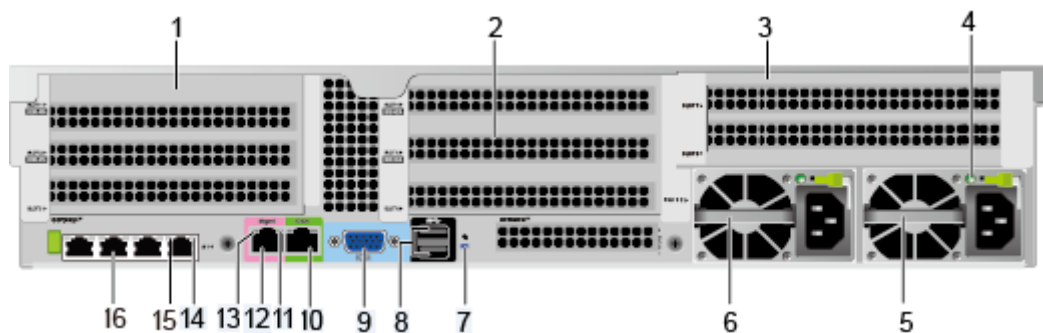
**Figure A-34** Disk slots on the front panel of the node



### Rear view

Figure A-35 shows the rear panel of the node.

**Figure A-35** Rear panel



1	I/O module 1	2	I/O module 2
3	I/O module 3	4	Power module indicator
5	Power module 2	6	Power module 1
7	UID indicator	8	USB 3.0 port
9	VGA port	10	Serial port
11	Connection status indicator for the management network port	12	Management network port
13	Data transmission status indicator for the management network port	14	Connection status indicator for a GE electrical port
15	Data transmission status indicator for a GE electrical port	16	Flexible NIC

## Ports

Table A-25 and Table A-26 show ports provided by the node.

**Table A-25** Ports on the front panel

Port	Type	Quantity	Description
USB port	USB 3.0	2	Connects to a USB device. <b>NOTICE</b> Before connecting to a USB device, ensure that the USB device operates properly. A node may operate abnormally if it is connected to a faulty USB device.

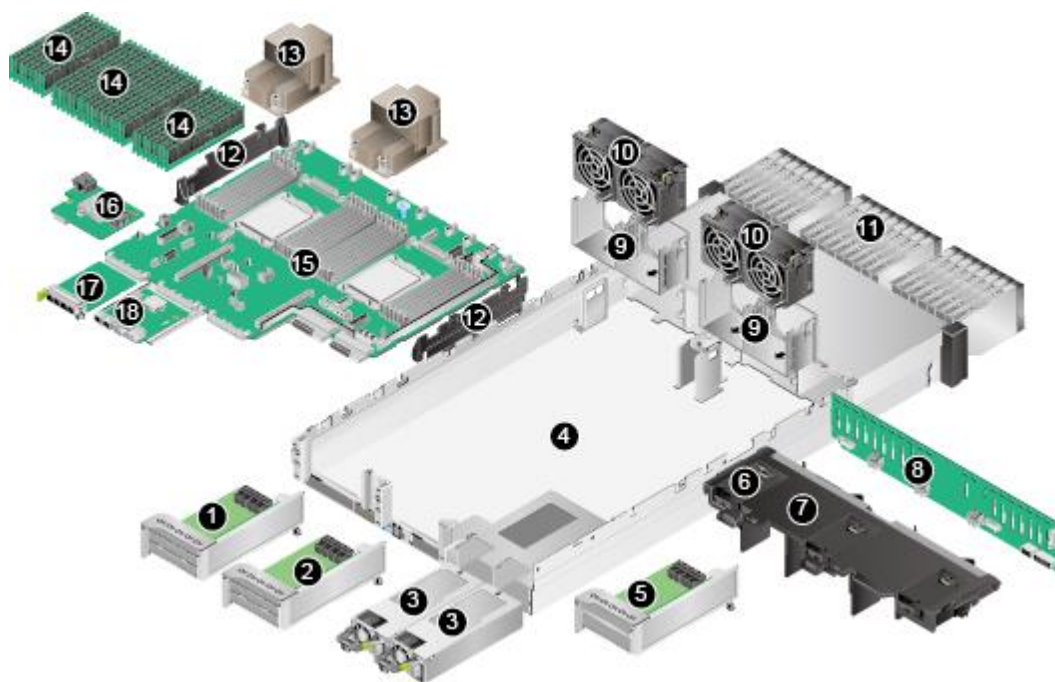
**Table A-26** Ports on the rear panel

Port	Type	Quantity	Description
Power module socket	-	2	Connects to a power supply.
GE electrical port	RJ-45	4/8	The mainboard provides GE electrical ports. A maximum of eight GE electrical ports can be provided through two flexible NICs.
25GE optical port	SFP+	4/8	The mainboard provides 25GE optical ports. A maximum of eight 25GE optical ports can be provided through two flexible NICs.  <b>NOTE</b> 25GE optical ports support 10GE autonegotiation through optical modules with different rates.
USB port	USB 3.0	2	Connects to a USB device.  <b>NOTE</b> Before connecting to a USB device, ensure that the USB device operates properly. A node may operate abnormally if it is connected to a faulty USB device.
Management network port	RJ-45	1	Functions as a 1000 Mbit/s Ethernet port, used for node management.
VGA port	DB-15	1	Connects to a terminal, such as a monitor or KVM.
Serial port	RJ-45	1	Functions as the system serial port by default. You can set it as the iBMC serial port by using the iBMC command. This port is used for debugging.

## Physical Structure

Figure A-36 shows components of the node.

**Figure A-36** Components



1	I/O module 1	2	I/O module 2
3	Power module	4	Chassis
5	I/O module 3	6	Supercapacitor holder
7	Air duct	8	Front-disk backplane
9	Fan module bracket	10	Fan module
11	Front disks	12	Cable organizer
13	Heat sink	14	DIMM
15	Mainboard	16	RAID controller card
17	Flexible NIC	18	iBMC card

## Technical Specifications

Table A-27 lists the technical specifications of the node.

**Table A-27** Technical specifications

Category	Item	Specifications
Physical specifications	Dimensions (H x W x D)	86.1 mm (2 U, 1 U = 44.45 mm) x 447 mm x 790 mm
	Weight	<ul style="list-style-type: none"> <li>Net weight: 24 kg</li> </ul>

Category	Item	Specifications
		<ul style="list-style-type: none"> <li>• Packaging weight: 5 kg</li> </ul>
Environmental specifications	Operating temperature	5°C to 45°C
	Operating humidity	8% RH to 90% RH
Power supply specifications	220 V AC and 240 V high-voltage DC (adaptive)	<ul style="list-style-type: none"> <li>• AC: 200 V AC to 240 V AC (50 Hz or 60 Hz)</li> <li>• High-voltage DC: 192 V to 288 V</li> </ul>
Power consumption specifications	Maximum power consumption	692 W

## A.1.10 TaiShan 2280 12-Slot Node

### Function

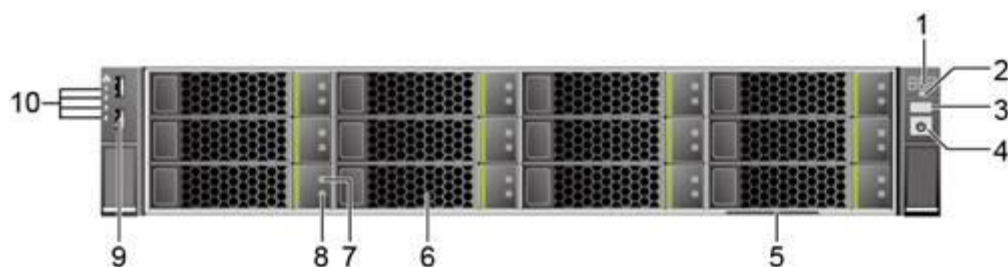
A TaiShan 2280 12-slot node is a dual-socket rack server. It is applicable to Internet, distributed storage, and cloud computing, and features high-performance computing, large-capacity storage, low power consumption, easy management, and easy deployment.

### Appearance

#### Front view

Figure A-37 shows the front panel of the node.

**Figure A-37** Front panel



1	Fault diagnosis LED	2	Health status indicator
3	UID button/indicator	4	Power button/indicator
5	Label plate with an ESN label	6	Service disk
7	Disk fault indicator	8	Disk activity indicator
9	USB 2.0 port	10	Connection status indicators for network

			ports (numbered 1 to 4 from top to bottom)
--	--	--	--

The front panel of the node provides 12 service disk slots numbered 0 to 11 from top to bottom and from left to right, as shown in Figure A-38.

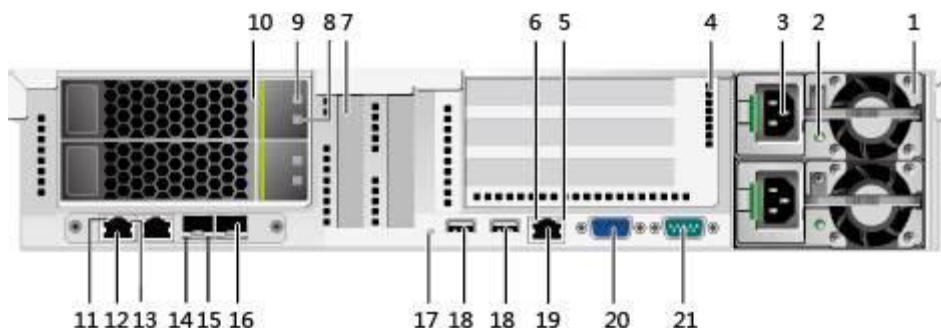
**Figure A-38** Disk slots on the front panel of the node



### Rear view

Figure A-39 shows the rear panel of the node.

**Figure A-39** Rear panel



1	Power module	2	Power module indicator
3	Power module socket	4	I/O module 2
5	Data transmission status indicator for the management network port	6	Connection status indicator for the management network port
7	Onboard PCIe slot	8	Disk activity indicator
9	Disk fault indicator	10	I/O module 1
11	Connection status indicator for an electrical port	12	GE electrical port
13	Data transmission status indicator for an electrical port	14	Connection status indicator for an optical port
15	Data transmission status indicator for an optical port	16	10GE optical port



17	UID indicator	18	USB 2.0 port
19	Management network port	20	VGA port
21	Serial port	-	-

## Ports

Table A-28 and Table A-29 show ports provided by the node.

**Table A-28** Ports on the front panel

Port	Type	Quantity	Description
USB port	USB 2.0	2	Connects to a USB device.  <b>NOTICE</b> Before connecting to a USB device, ensure that the USB device operates properly. A node may operate abnormally if it is connected to a faulty USB device.

**Table A-29** Ports on the rear panel

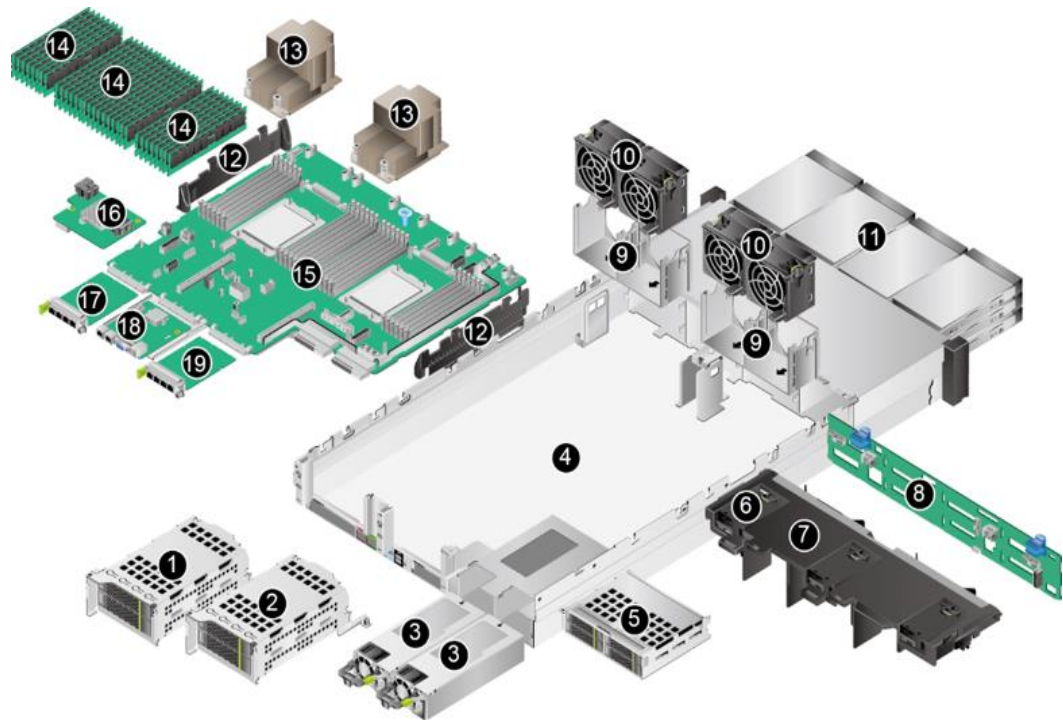
Port	Type	Quantity	Description
Power module socket	-	2	Connects to a power supply.
GE electrical port	-	2	The mainboard provides GE electrical ports.  <b>NOTE</b> If the maximum transmission unit (MTU) of a GE electrical port is less than 6000 bytes but that of the peer port is greater than 6000 bytes, the GE electrical port cannot receive large packets. In this case, the communication is abnormal.
10GE optical port	-	2	The mainboard provides 10GE optical ports.  <b>NOTE</b> <ul style="list-style-type: none"> <li>10GE optical ports do not support GE autonegotiation.</li> <li>If the MTU of a 10GE optical port is less than</li> </ul>

Port	Type	Quantity	Description
			6000 bytes but that of the peer port is greater than 6000 bytes, the 10GE optical port cannot receive large packets. In this case, the communication is abnormal.
USB port	USB2.0	2	Connects to a USB device. <b>NOTICE</b> Before connecting to a USB device, ensure that the USB device operates properly. A node may operate abnormally if it is connected to a faulty USB device.
Management network port	Ethernet port	1	Functions as a 1000 Mbit/s Ethernet port, used for node management.
VGA port	DB-15	1	Connects to a terminal, such as a monitor.
Serial port	DB-9	1	Functions as the system serial port by default. You can set it as the iBMC serial port by using the iBMC command. This port is used for debugging.

## Physical Structure

Figure A-40 shows components of the node.

**Figure A-40** Components



1	I/O module 1	2	I/O module 2
3	Power module	4	Chassis
5	I/O module 3	6	Supercapacitor holder
7	Air duct	8	Front-disk backplane
9	Fan module bracket	10	Fan module
11	Front disks	12	Cable organizer
13	Heat sink	14	DIMM
15	Mainboard	16	RAID controller card
17	FlexIO	18	iBMC card
19	FlexIO	-	-

## Technical Specifications

Table A-30 lists the technical specifications of the node.

**Table A-30** Technical specifications

Item	Specifications
Dimensions (H x W x	86.1 mm (2 U) x 447 mm x 748 mm

Item	Specifications
D)	
Weight in full configuration	<ul style="list-style-type: none"> <li>• Net weight: 30 kg</li> <li>• Packaging weight: 5 kg</li> </ul>
Power supply specifications	<ul style="list-style-type: none"> <li>• AC: 100 V AC to 240 V AC (50 Hz or 60 Hz)</li> <li>• 240 V high-voltage DC: 192 V to 288 V</li> </ul>

## A.1.11 TaiShan 5280 36-Slot Node

### Function

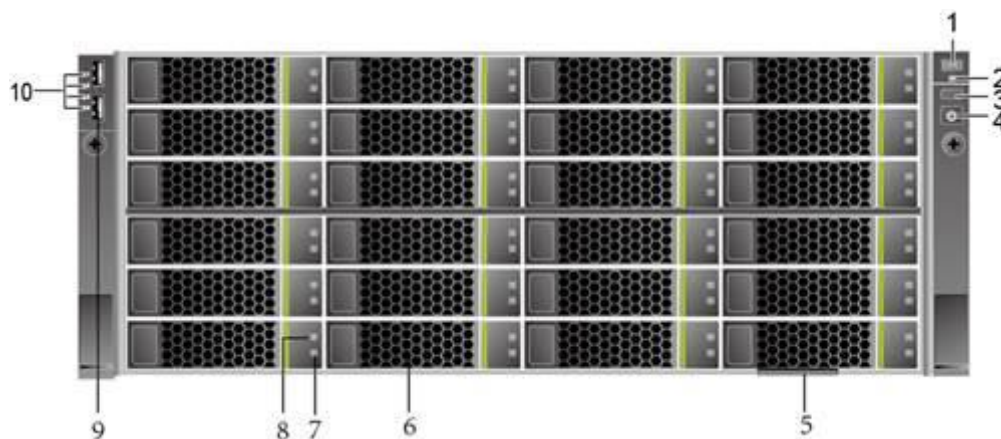
A TaiShan 5280 36-slot node is a dual-socket rack server. It is applicable to Internet, distributed storage, and cloud computing, and features high-performance computing, large-capacity storage, low power consumption, easy management, and easy deployment.

### Appearance

#### Front view

Figure A-41 shows the front panel of the node.

**Figure A-41** Front panel



1	Fault diagnosis LED	2	Health status indicator
3	UID button/indicator	4	Power button/indicator
5	Label plate with an ESN label	6	Service disk
7	Disk activity indicator	8	Disk fault indicator
9	USB 2.0 port	10	Connection status indicators for network ports (numbered 1 to 4 from top to bottom)

The front panel of the node provides 24 service disk slots numbered 0 to 23 from top to bottom and from left to right, as shown in Figure A-42.

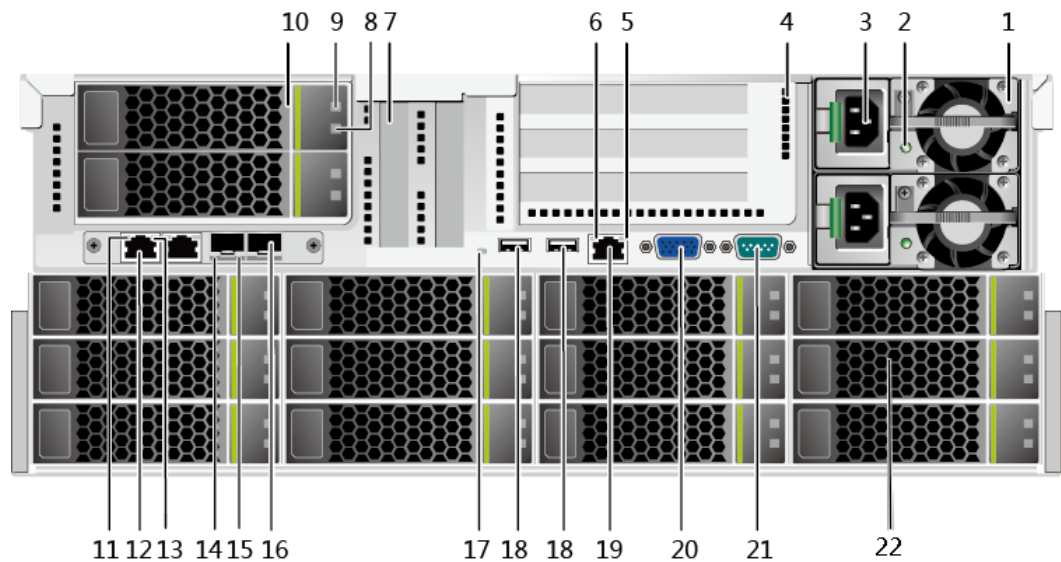
**Figure A-42** Disk slots on the front panel of the node



**Rear view**

Figure A-43 shows the rear panel of the node.

**Figure A-43** Rear panel



1	Power module	2	Power module indicator
3	Power module socket	4	I/O module 2
5	Data transmission status indicator for the management network port	6	Connection status indicator for the management network port
7	Onboard PCIe slot	8	Disk activity indicator
9	Disk fault indicator	10	I/O module 1

11	Connection status indicator for an electrical port	12	GE electrical port
13	Data transmission status indicator for an electrical port	14	Connection status indicator for an optical port
15	Data transmission status indicator for an optical port	16	10GE optical port
17	UID indicator	18	USB 2.0 port
19	Management network port	20	VGA port
21	Serial port	22	Rear disks

## Ports

Table A-31 and Table A-32 show ports provided by the node.

**Table A-31** Ports on the front panel

Port	Type	Quantity	Description
USB port	USB 2.0	2	Connects to a USB device. <b>NOTICE</b> Before connecting to a USB device, ensure that the USB device operates properly. A node may operate abnormally if it is connected to a faulty USB device.

**Table A-32** Ports on the rear panel

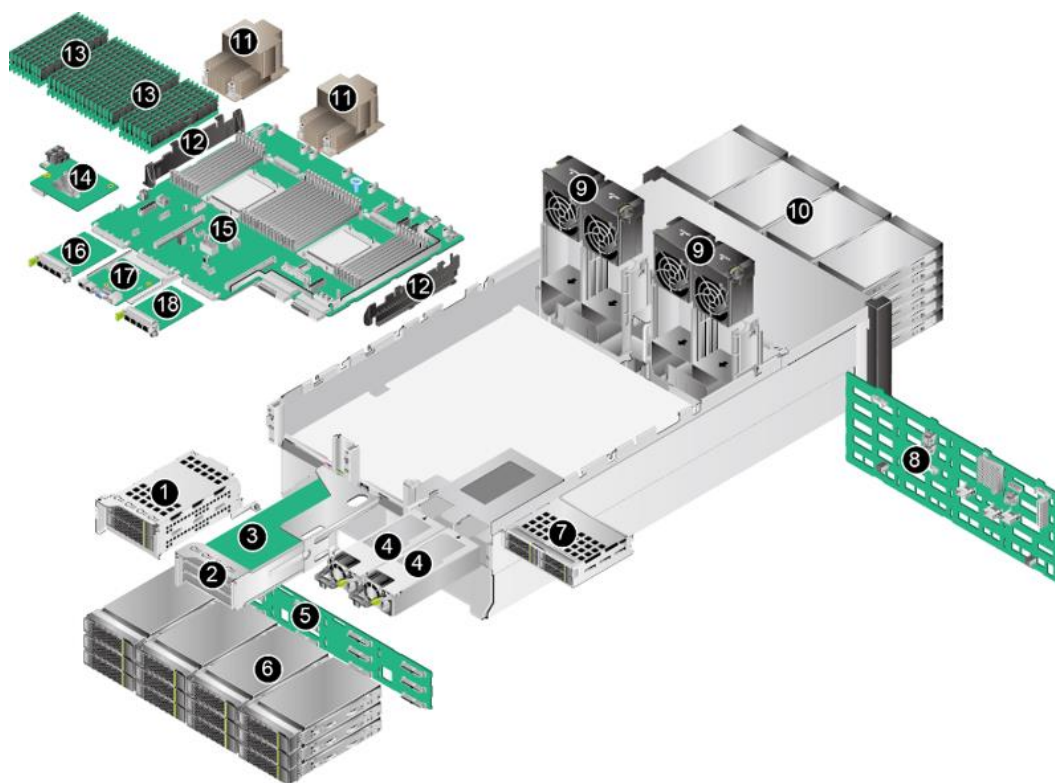
Port	Type	Quantity	Description
Power module socket	-	2	Connects to a power supply.
GE electrical port	-	2	The mainboard provides GE electrical ports. <b>NOTE</b> If the MTU of a GE electrical port is less than 6000 bytes but that of the peer port is greater than 6000 bytes, the GE electrical port cannot receive large packets. In this case, the communication is abnormal.

Port	Type	Quantity	Description
10GE optical port	-	2	<p>The mainboard provides 10GE optical ports.</p> <p><b>NOTE</b></p> <ul style="list-style-type: none"> <li>• 10GE optical ports do not support GE autonegotiation.</li> <li>• If the MTU of a 10GE optical port is less than 6000 bytes but that of the peer port is greater than 6000 bytes, the 10GE optical port cannot receive large packets. In this case, the communication is abnormal.</li> </ul>
USB port	USB2.0	2	<p>Connects to a USB device.</p> <p><b>NOTICE</b></p> <p>Before connecting to a USB device, ensure that the USB device operates properly. A node may operate abnormally if it is connected to a faulty USB device.</p>
Management network port	Ethernet port	1	<p>Functions as a 1000 Mbit/s Ethernet port, used for node management.</p>
VGA port	DB-15	1	<p>Connects to a terminal, such as a monitor.</p>
Serial port	DB-9	1	<p>Functions as the system serial port by default. You can set it as the iBMC serial port by using the iBMC command. This port is used for debugging.</p>

## Physical Structure

Figure A-44 shows components of the node.

**Figure A-44** Components



1	I/O module 1	2	I/O module 2
3	PCIe card	4	Power module
5	Rear-disk backplane	6	Rear disks
7	I/O module 3	8	Front-disk backplane
9	Fan module	10	Disk
11	Heat sink	12	Cable organizer
13	DIMM	14	RAID controller card
15	Mainboard	16	Flexible NIC
17	iBMC card	18	Flexible NIC

## Technical Specifications

Table A-33 lists the technical specifications of the node.

**Table A-33** Technical specifications

Item	Specifications
Dimensions (H x W x	175 mm (4 U) x 447 mm x 748 mm



Item	Specifications
D)	
Weight in full configuration	<ul style="list-style-type: none"> <li>• Net weight: 57 kg</li> <li>• Packaging weight: 5 kg</li> </ul>
Power supply specifications	<ul style="list-style-type: none"> <li>• AC: 100 V AC to 240 V AC (50 Hz or 60 Hz)</li> <li>• 240 V high-voltage DC: 192 V to 288 V</li> </ul>

## A.2 Switches

### A.2.1 S5731-H48T4XC

This section describes the function, appearance, ports, and indicators of GE switch S5731-H48T4XC.

#### Function

An S5731-H48T4XC switch is a device that connects nodes and enables data communication and active/standby configuration for connected components.

#### Appearance

##### NOTE

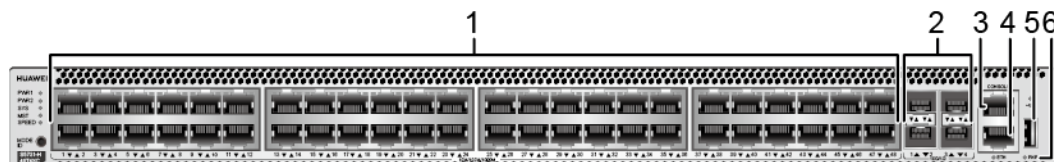
- The figures provided in this section are for reference only, and the switch and module appearances are subject to change.
- For details about the switch, see the product documentation of the desired switch model. You can obtain the documentation as follows:

For enterprise users, log in to <https://support.huawei.com/enterprise/en/index.html>. For carrier users, log in to <https://support.huawei.com/carrierindex/en/hwe/index.html>. Enter the switch model in the search box and click the associated path that is displayed. The corresponding product page is displayed. For enterprise users, click **Documentation**. For carrier users, click **Product Documentation**. Search for and download the product documentation of the desired switch model.

#### Front view

Figure A-45 shows the front panel of the switch.

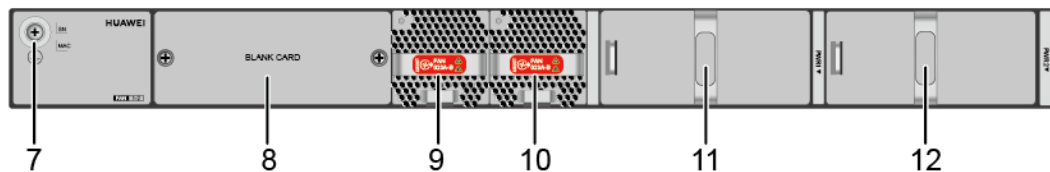
**Figure A-45** Front panel (housing AC power modules)



#### Rear view

Figure A-46 shows the rear panel of the switch.

**Figure A-46** Rear panel (housing AC power modules)



1	10/100/1000BASE-T Ethernet port	2	10GE SFP+ Ethernet optical port
3	Console port	4	ETH management port
5	USB port	6	PNP button
7	Ground screw	8	Rear card slot
9	Fan module slot 1	10	Fan module slot 2
11	Power module slot 1	12	Power module slot 2

## Ports

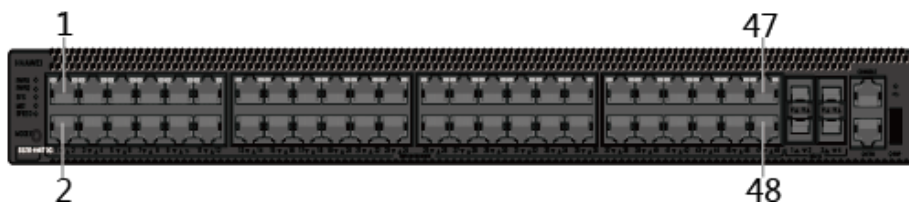
Table A-34 describes the ports on the switch.

**Table A-34** Port description

Port	Description
10/100/1000BASE-T Ethernet port	Sends and receives Ethernet electrical port services.
Console port	Connects to the console for onsite device configuration.
ETH management port	Accesses and manages Ethernet switches.
10GE SFP+ Ethernet optical port	Sends and receives GE or 10GE Ethernet optical port services.

Figure A-47 shows the numbering of the 10/100/1000BASE-T Ethernet ports on the switch.

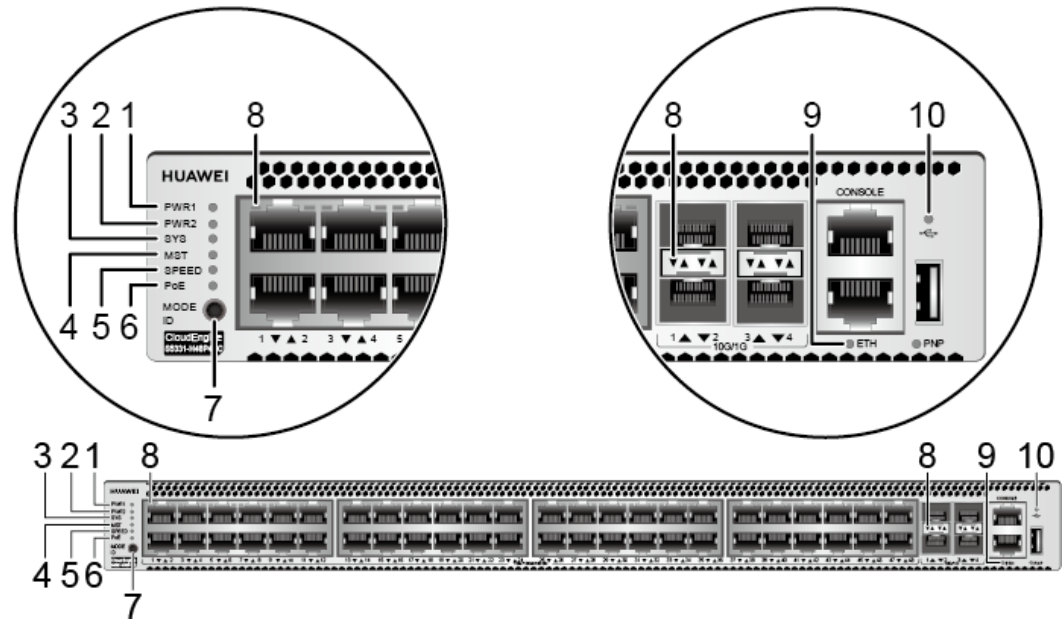
**Figure A-47** 10/100/1000BASE-T Ethernet ports



## Indicators

Figure A-48 shows the indicators on the front panel.

**Figure A-48** Indicators on the front panel



1	Power module indicator	2	Power module indicator
3	System status indicator	4	Stack indicator
5	Speed indicator	6	PoE indicator
7	Mode switch button/ID indicator	8	Service port indicator
9	ETH port indicator	10	USB-based deployment indicator

### A.2.2 S5331-H48T4XC

This section describes the function, appearance, ports, and indicators of GE switch S5331-H48T4XC.

#### Function

A S5331-H48T4XC switch is a device that connects nodes and enables data communication and active/standby configuration for connected components.

#### Appearance

##### NOTE

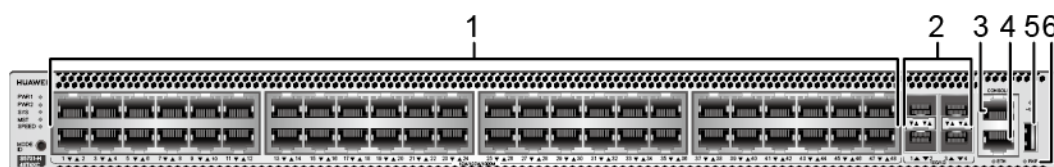
- The figures provided in this section are for reference only, and the switch and module appearances are subject to change.

- For details about the switch, see the product documentation of the desired switch model. You can obtain the documentation as follows:  
For enterprise users, log in to <https://support.huawei.com/enterprise/en/index.html>. For carrier users, log in to <https://support.huawei.com/carrierindex/en/hwe/index.html>. Enter the switch model in the search box and click the associated path that is displayed. The corresponding product page is displayed. For enterprise users, click **Documentation**. For carrier users, click **Product Documentation**. Search for and download the product documentation of the desired switch model.

### Front view

Figure A-49 shows the front panel of the switch.

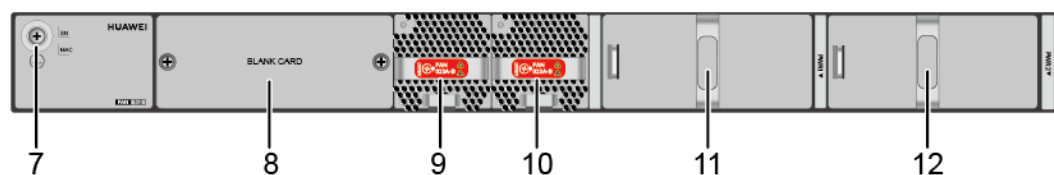
**Figure A-49** Front panel (housing AC power modules)



### Rear view

Figure A-50 shows the rear panel of the switch.

**Figure A-50** Rear panel (housing AC power modules)



1	10/100/1000BASE-T Ethernet port	2	10GE SFP+ Ethernet optical port
3	Console port	4	ETH management port
5	USB port	6	PNP button
7	Ground screw	8	Rear card slot
9	Fan module slot 1	10	Fan module slot 2
11	Power module slot 1	12	Power module slot 2

## Ports

Table A-35 describes the ports on the switch.

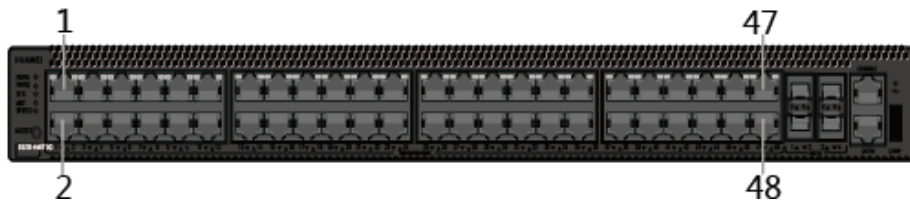
**Table A-35** Port description

Port	Description
------	-------------

Port	Description
10/100/1000BASE-T Ethernet port	Sends and receives Ethernet electrical port services.
Console port	Connects to the console for onsite device configuration.
ETH management port	Accesses and manages Ethernet switches.
10GE SFP+ Ethernet optical port	Sends and receives GE or 10GE Ethernet optical port services.

Figure A-51 shows the numbering of the 10/100/1000BASE-T Ethernet ports on the switch.

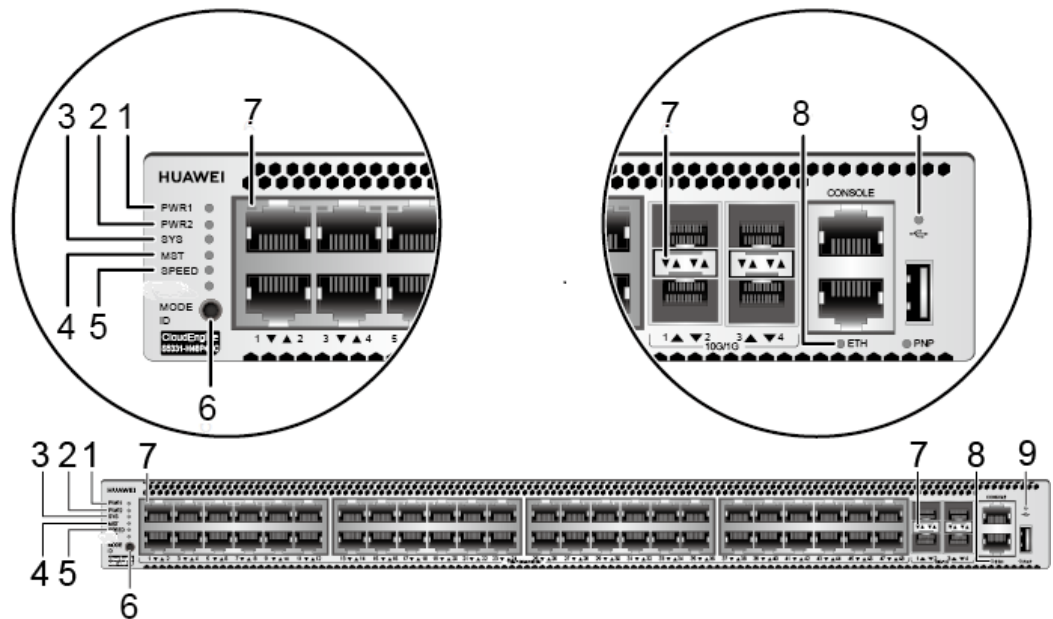
**Figure A-51** 10/100/1000BASE-T Ethernet ports



## Indicators

Figure A-52 shows the indicators on the front panel.

**Figure A-52** Indicators on the front panel



1	Power module indicator	2	Power module indicator
---	------------------------	---	------------------------

3	System status indicator	4	Stack indicator
5	Speed indicator	6	Mode switch button/ID indicator
7	Service port indicator	8	ETH port indicator
9	USB-based deployment indicator	-	-

#### NOTE

- The figures provided in this section are for reference only, and the switch and module appearances are subject to change.
- For details about the switch, see the product documentation of the desired switch model. You can obtain the documentation as follows:

For enterprise users, log in to <https://support.huawei.com/enterprise/en/index.html>. For carrier users, log in to <https://support.huawei.com/carrierindex/en/hwe/index.html>. Enter the switch model in the search box and click the associated path that is displayed. The corresponding product page is displayed. For enterprise users, click **Documentation**. For carrier users, click **Product Documentation**. Search for and download the product documentation of the desired switch model.

## A.2.3 CE6881-48S6CQ

This section describes the function, appearance, ports, and indicators of 10GE switch CE6881-48S6CQ.

### Function

A CE6881-48S6CQ switch can provide 48 x 10GE SFP+ Ethernet optical ports and 6 x 40GE QSFP28 Ethernet optical ports for node interconnection and communication.

### Appearance

#### NOTE

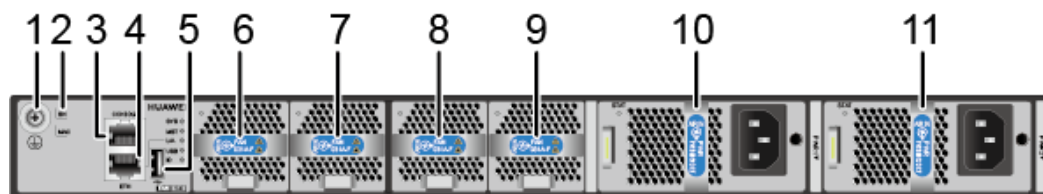
- The figures provided in this section are for reference only, and the switch and module appearances are subject to change.
- For details about the switch, see the product documentation of the desired switch model. You can obtain the documentation as follows:

For enterprise users, log in to <https://support.huawei.com/enterprise/en/index.html>. For carrier users, log in to <https://support.huawei.com/carrierindex/en/hwe/index.html>. Enter the switch model in the search box and click the associated path that is displayed. The corresponding product page is displayed. For enterprise users, click **Documentation**. For carrier users, click **Product Documentation**. Search for and download the product documentation of the desired switch model.

#### Front view

Figure A-53 shows the front panel of the switch.

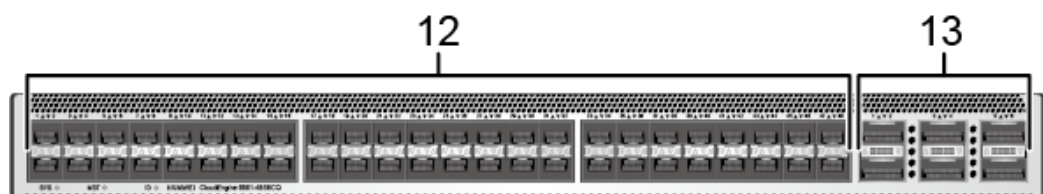
**Figure A-53** Front panel (housing AC power modules)



**Rear view**

Figure A-54 shows the rear panel of the switch.

**Figure A-54** Rear panel



1	Ground screw	2	Equipment serial number (ESN)
3	Console port	4	ETH management port (RJ-45)
5	USB port	6	Fan module 1
7	Fan module 2	8	Fan module 3
9	Fan module 4	10	Power supply slot 1
11	Power supply slot 2	12	48 x 10GE SFP+ Ethernet optical ports
13	6 x 40GE QSFP28 Ethernet optical ports	-	-

**Ports**

Table A-36 describes the ports on the switch.

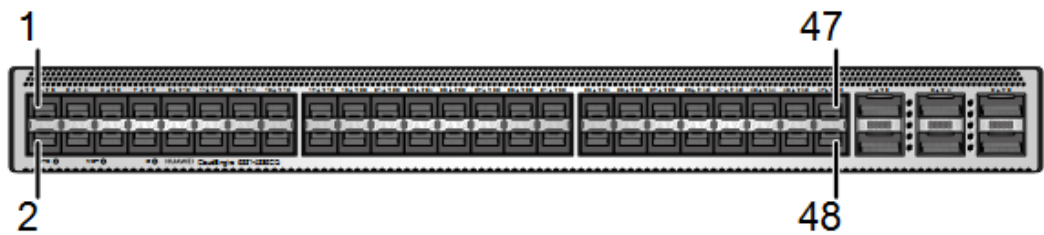
**Table A-36** Port description

Port	Description
10GE SFP+ Ethernet optical port	Sends and receives GE or 10GE Ethernet optical port services.
40GE QSFP28 Ethernet optical port	Interconnects switches or functions as an uplink port.

Port	Description
Console port	Connects to the console for onsite device configuration.
ETH management port	Connects to the network port of a configuration terminal or network management workstation to set up an onsite or remote configuration environment.

Figure A-55 shows the numbering of 10GE SFP+ Ethernet optical ports on the switch.

**Figure A-55** 10GE SFP+ Ethernet optical ports



## Indicators

Figure A-56 shows the indicators on the rear panel.



**Figure A-56** Indicators on the rear panel

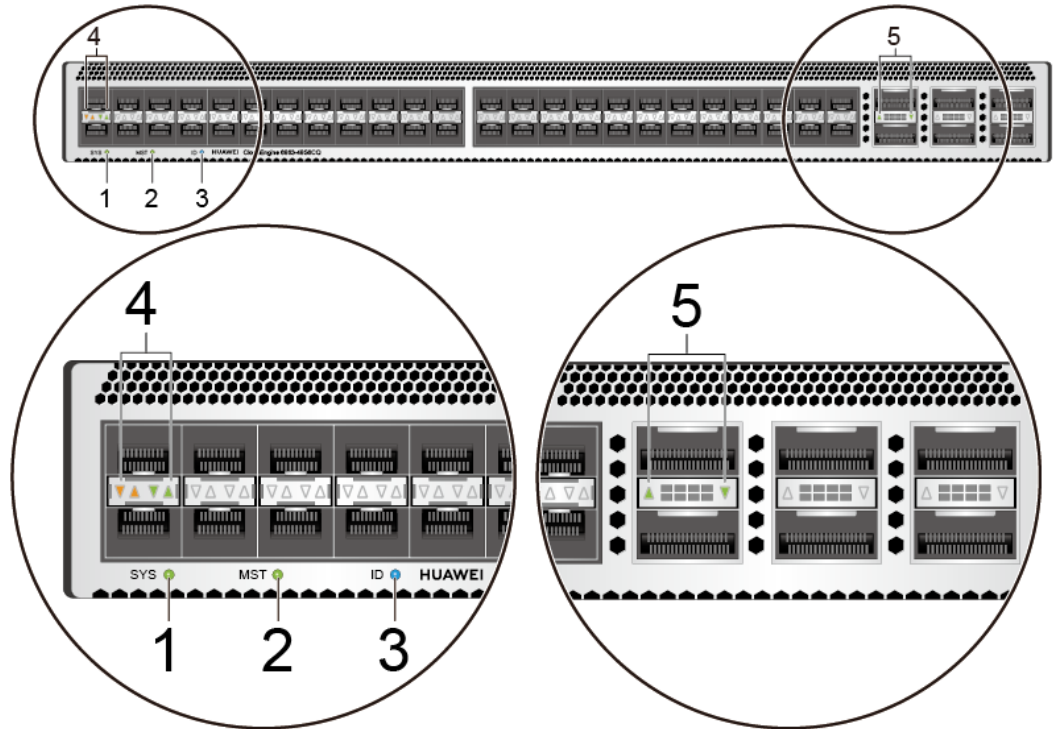
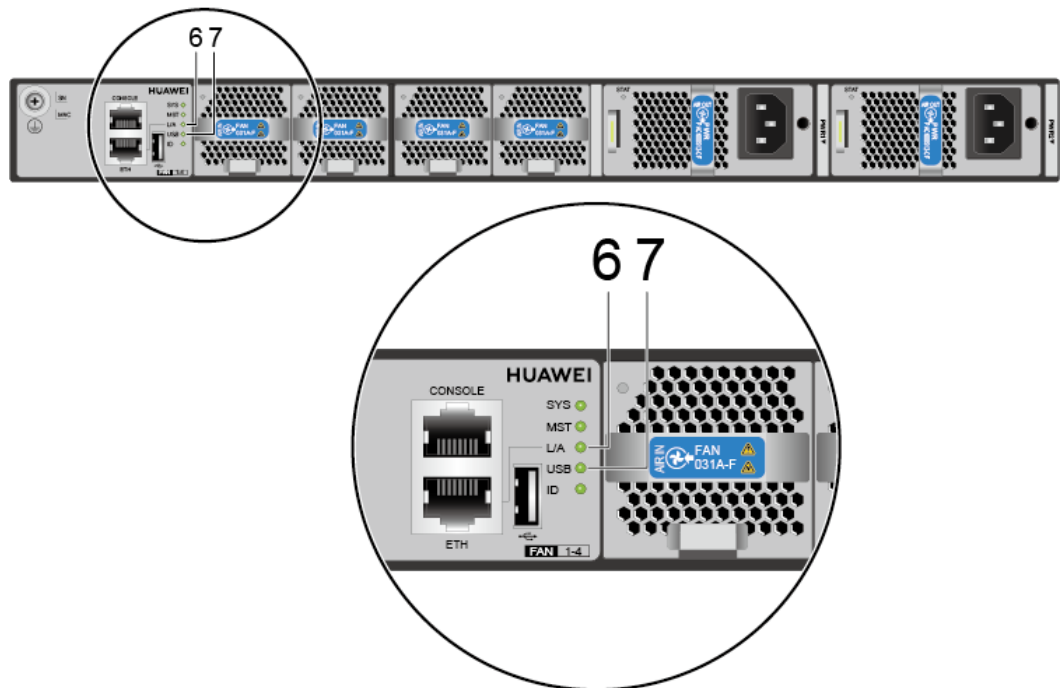


Figure A-57 shows the indicators on the front panel.

**Figure A-57** Indicators on the front panel



1	System status indicator	2	Stack master/slave indicator
3	ID indicator	4	Service port indicator (10GE optical port)
5	Service port indicator (40GE optical port)	6	ETH management port indicator
7	USB-based deployment indicator	-	-

## A.2.4 CE6855-48S6Q-HI

This section describes the function, appearance, ports, and indicators of 10GE switch CE6855-48S6Q-HI.

### Function

A CE6855-48S6Q-HI switch can provide 48 x 10GE SFP+ Ethernet optical ports and 6 x 40GE QSFP+ Ethernet optical ports for node interconnection and communication. Each 40GE QSFP+ Ethernet optical port can be divided into four 10GE ports.

### Appearance

#### NOTE

- The figures provided in this section are for reference only, and the switch and module appearances are subject to change.
- For details about the switch, see the product documentation of the desired switch model. You can obtain the documentation as follows:

For enterprise users, log in to <https://support.huawei.com/enterprise/en/index.html>. For carrier users, log in to <https://support.huawei.com/carrierindex/en/hwe/index.html>. Enter the switch model in the search box and click the associated path that is displayed. The corresponding product page is displayed. For enterprise users, click **Documentation**. For carrier users, click **Product Documentation**. Search for and download the product documentation of the desired switch model.

#### Front view

Figure A-58 shows the front panel of the switch.

Figure A-58 Front panel (housing AC power modules)



1	Power module 1	2	Power module 2
3	Fan slot 1	4	Fan slot 2
5	Console port	6	ETH management port

7	ESN label	8	USB port
---	-----------	---	----------

**Rear view**

Figure A-59 shows the rear panel of the switch.

**Figure A-59** Rear panel



1	48 x 10GE SFP+ Ethernet optical ports	2	6 x 40GE QSFP+ Ethernet optical ports
---	---------------------------------------	---	---------------------------------------

**Ports**

Table A-37 describes the ports on the switch.

**Table A-37** Port description

Port	Description
10GE SFP+ Ethernet optical port	Sends and receives GE or 10GE Ethernet optical port services.
40GE QSFP+ Ethernet optical port	Stacks switches or functions as an uplink port.
Console port	Connects to the console for onsite device configuration.
ETH management port	Connects to the network port of a configuration terminal or network management workstation to set up an onsite or remote configuration environment.

Figure A-60 shows the numbering of 10GE SFP+ Ethernet optical ports on the switch.

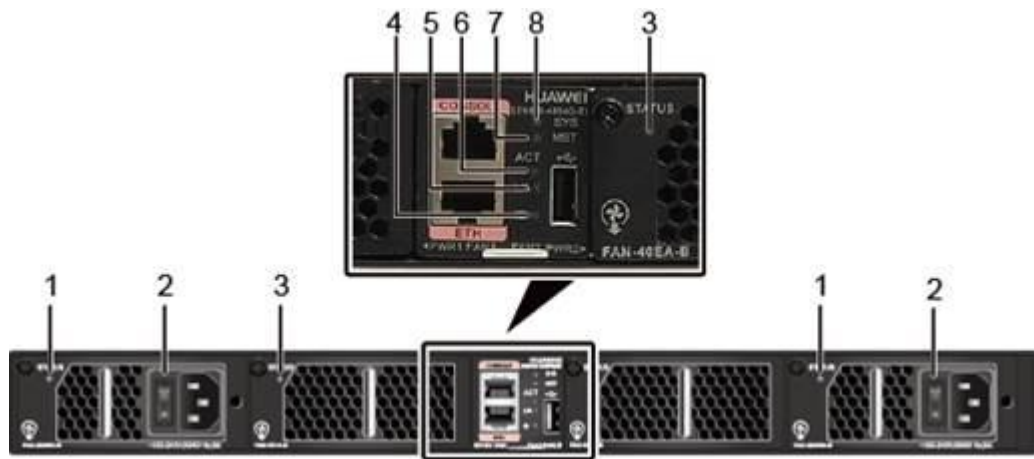
**Figure A-60** 10GE SFP+ Ethernet optical ports



## Indicators

Figure A-61 shows the indicators and buttons on the front panel.

**Figure A-61** Indicators and buttons on the front panel



1	Power running indicator	2	Power button
3	Fan indicator	4	ID indicator
5	ETH management port indicator	6	USB-based deployment indicator
7	Stack master/slave indicator	8	System status indicator

Figure A-62 shows the indicators and buttons on the rear panel.

**Figure A-62** Indicators and buttons on the rear panel



1	Service port indicator (10GE optical port)	2	Service port indicator (40GE optical port)
3	Sequence number indicators 1/2/3/4 of 10GE ports converted from a 40GE port	4	ID indicator
5	Stack master/slave indicator	6	System status indicator

## A.2.5 CE6860-48S8CQ-EI

This section describes the function, appearance, ports, and indicators of 25GE switch CE6860-48S8CQ-EI.

### Function

A CE6860-48S8CQ-EI switch can provide 48 x 25GE SFP28 Ethernet optical ports and 8 x 100GE QSFP28 Ethernet optical ports for node interconnection and communication. Each QSFP28 Ethernet optical port can be divided into four 25GE ports.

### Appearance

#### NOTE

- The figures provided in this section are for reference only, and the switch and module appearances are subject to change.
- For details about the switch, see the product documentation of the desired switch model. You can obtain the documentation as follows:

For enterprise users, log in to <https://support.huawei.com/enterprise/en/index.html>. For carrier users, log in to <https://support.huawei.com/carrierindex/en/hwe/index.html>. Enter the switch model in the search box and click the associated path that is displayed. The corresponding product page is displayed. For enterprise users, click **Documentation**. For carrier users, click **Product Documentation**. Search for and download the product documentation of the desired switch model.

#### Front view

Figure A-63 shows the front panel of the switch.

**Figure A-63** Front panel (housing AC power modules)



1	Power module 1	2	Power module 2
3	Fan slot 1	4	Fan slot 2
5	Console port	6	ETH management port

7	ESN label	8	USB port
---	-----------	---	----------

**Rear view**

Figure A-64 shows the rear panel of the switch.

**Figure A-64** Rear panel



1	48 x 25GE SFP28 Ethernet optical ports	2	8 x 100GE QSFP28 Ethernet optical ports
---	--	---	---

**Ports**

Table A-38 describes the ports on the switch.

**Table A-38** Port description

Port	Description
25GE SFP28 Ethernet optical port	Sends and receives Ethernet optical port services.
100GE QSFP28 Ethernet optical port	Stacks switches or functions as an uplink port.
Console port	Connects to the console for onsite device configuration.
ETH management port	Connects to the network port of a configuration terminal or network management workstation to set up an onsite or remote configuration environment.

Figure A-65 shows the numbering of 25GE SFP28 Ethernet optical ports on the switch.

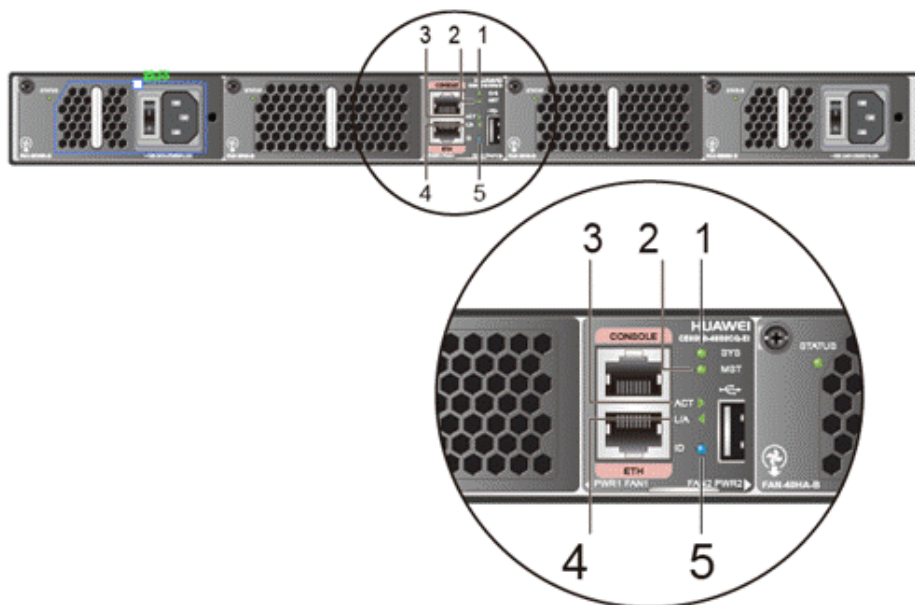
**Figure A-65** 25GE SFP28 Ethernet optical ports



## Indicators

Figure A-66 shows the indicators and buttons on the front panel.

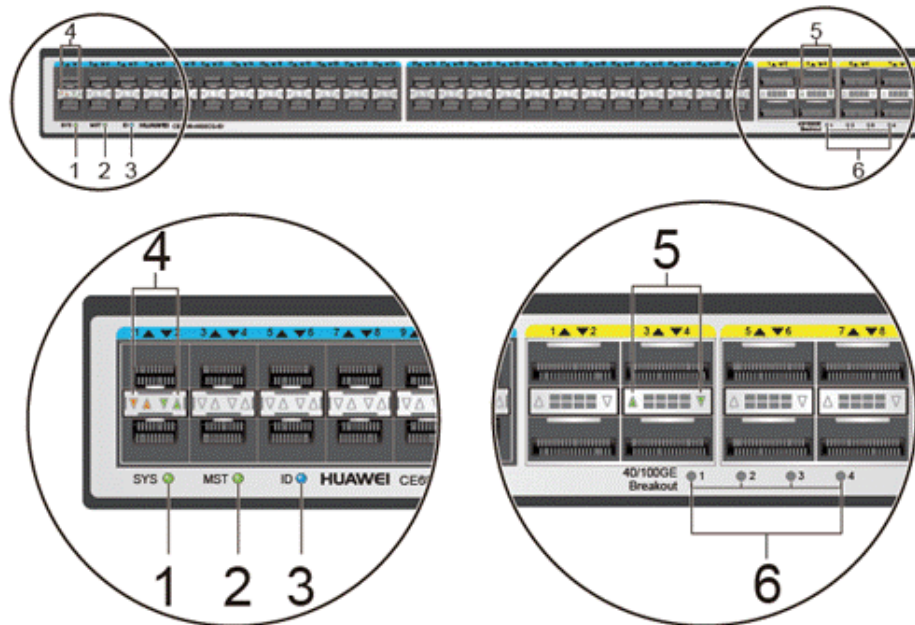
**Figure A-66** Indicators and buttons on the front panel



1	System status indicator	2	Stack master/slave indicator
3	USB-based deployment indicator	4	ETH management port indicator
5	ID indicator	-	-

Figure A-67 shows the indicators and buttons on the rear panel.

**Figure A-67** Indicators and buttons on the rear panel



1	System status indicator	2	Stack master/slave indicator
3	ID indicator	4	Service port indicator (25GE optical port)
5	Service port indicator (100GE optical port)	6	Sequence number indicators of 25GE ports converted from a 100GE port

## A.2.6 CE6865-48S8CQ-EI

This section describes the function, appearance, ports, and indicators of 25GE switch CE6865-48S8CQ-EI.

### Function

A CE6865-48S8CQ-EI switch can provide 48 x 25GE SFP28 Ethernet optical ports and 8 x 100GE QSFP28 Ethernet optical ports for node interconnection and communication. Each QSFP28 Ethernet optical port can be divided into four 25GE ports.

### Appearance

#### NOTE

- The figures provided in this section are for reference only, and the switch and module appearances are subject to change.
- For details about the switch, see the product documentation of the desired switch model. You can obtain the documentation as follows:

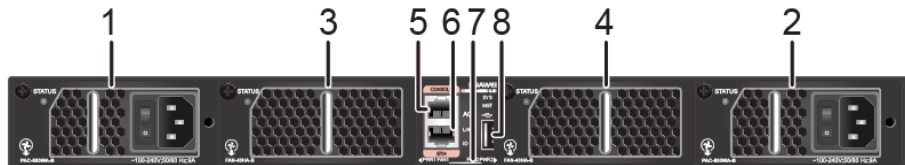


For enterprise users, log in to <https://support.huawei.com/enterprise/en/index.html>. For carrier users, log in to <https://support.huawei.com/carrierrindex/en/hwe/index.html>. Enter the switch model in the search box and click the associated path that is displayed. The corresponding product page is displayed. For enterprise users, click **Documentation**. For carrier users, click **Product Documentation**. Search for and download the product documentation of the desired switch model.

### Front view

Figure A-68 shows the front panel of the switch.

**Figure A-68** Front panel (housing AC power modules)

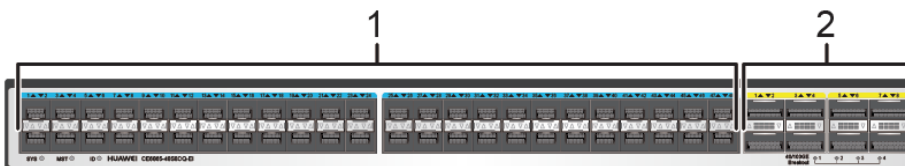


1	Power supply slot 1	2	Power supply slot 2
3	Fan slot 1	4	Fan slot 2
5	Console port	6	ETH management port (RJ-45)
7	ESN label	8	USB port

### Rear view

Figure A-69 shows the rear panel of the switch.

**Figure A-69** Rear panel



1	48 x 25GE SFP28 Ethernet optical ports	2	8 x 100GE QSFP28 Ethernet optical ports
---	--	---	---

## Ports

Table A-39 describes the ports on the switch.

**Table A-39** Port description

Port	Description
------	-------------

Port	Description
25GE SFP28 Ethernet optical port	Sends and receives GE or 10GE Ethernet optical port services.
100GE QSFP28 Ethernet optical port	Stacks switches or functions as an uplink port.
Console port	Connects to the console for onsite device configuration.
ETH management port	Connects to the network port of a configuration terminal or network management workstation to set up an onsite or remote configuration environment.

Figure A-70 shows the numbering of 25GE SFP28 Ethernet optical ports on the switch.

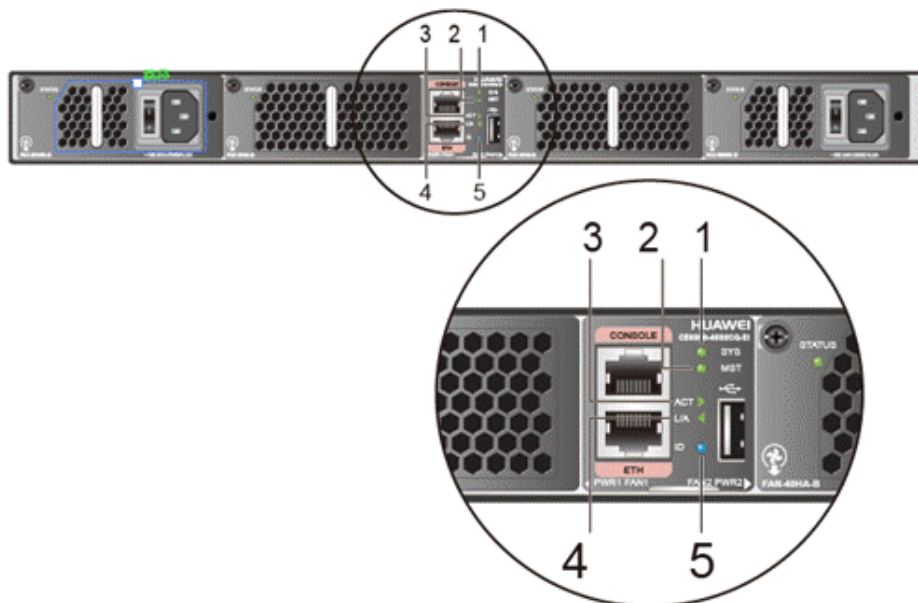
**Figure A-70** 25GE SFP28 Ethernet optical ports



## Indicators

Figure A-71 shows the indicators and buttons on the front panel.

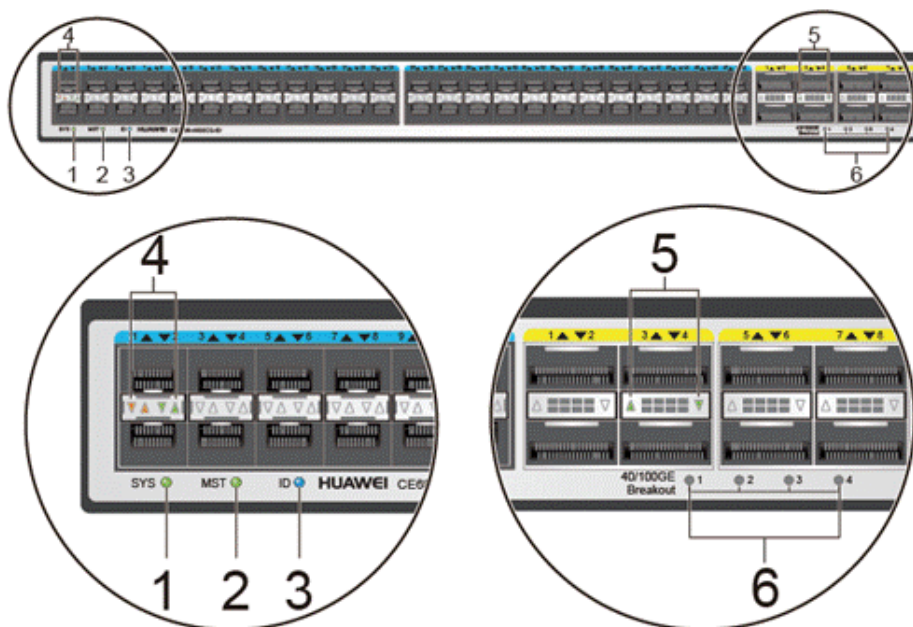
**Figure A-71** Indicators and buttons on the front panel



1	System status indicator	2	Stack master/slave indicator
3	USB-based deployment indicator	4	ETH management port indicator
5	ID indicator	-	-

Figure A-72 shows the indicators and buttons on the rear panel.

**Figure A-72** Indicators and buttons on the rear panel



1	System status indicator	2	Stack master/slave indicator
3	ID indicator	4	Service port indicator (25GE optical port)
5	Service port indicator (100GE optical port)	6	Sequence number indicators of 25GE ports converted from a 100GE port

## A.2.7 CE6863-48S6CQ

This section describes the function, appearance, ports, and indicators of 25GE switch CE6863-48S6CQ.

### Function

A CE6863-48S6CQ switch can provide 48 x 25GE SFP28 Ethernet optical ports and 6 x 100GE QSFP28 Ethernet optical ports for node interconnection and communication.

## Appearance

### NOTE

- The figures provided in this section are for reference only, and the switch and module appearances are subject to change.
- For details about the switch, see the product documentation of the desired switch model. You can obtain the documentation as follows:

For enterprise users, log in to <https://support.huawei.com/enterprise/en/index.html>. For carrier users, log in to <https://support.huawei.com/carrierindex/en/hwe/index.html>. Enter the switch model in the search box and click the associated path that is displayed. The corresponding product page is displayed. For enterprise users, click **Documentation**. For carrier users, click **Product Documentation**. Search for and download the product documentation of the desired switch model.

### Front view

Figure A-73 shows the front panel of the switch.

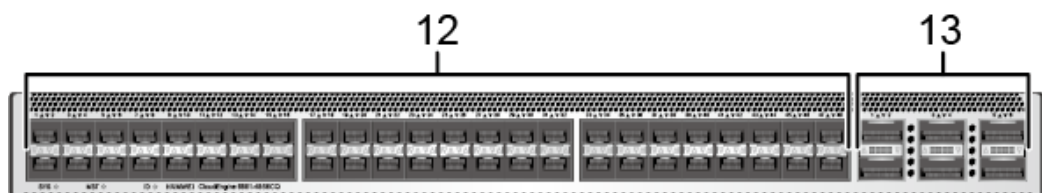
**Figure A-73** Front panel (housing AC power modules)



### Rear view

Figure A-74 shows the rear panel of the switch.

**Figure A-74** Rear panel



1	Ground screw	2	Equipment serial number (ESN)
3	Console port	4	ETH management port (RJ-45)
5	USB port	6	Fan module 1
7	Fan module 2	8	Fan module 3
9	Fan module 4	10	Power supply slot 1
11	Power supply slot 2	12	48 x 25GE SFP28 Ethernet optical ports
13	6 x 100GE QSFP28 Ethernet optical ports	-	-

## Ports

Table A-40 describes the ports on the switch.

**Table A-40** Port description

Port	Description
25GE SFP28 Ethernet optical port	Sends and receives GE or 10GE Ethernet optical port services.
100GE QSFP28 Ethernet optical port	Interconnects switches or functions as an uplink port.
Console port	Connects to the console for onsite device configuration.
ETH management port	Connects to the network port of a configuration terminal or network management workstation to set up an onsite or remote configuration environment.

Figure A-75 shows the numbering of 25GE SFP+ Ethernet optical ports on the switch.

**Figure A-75** 25GE SFP+ Ethernet optical ports



## Indicators

Figure A-76 shows the indicators on the rear panel.

**Figure A-76** Indicators on the rear panel

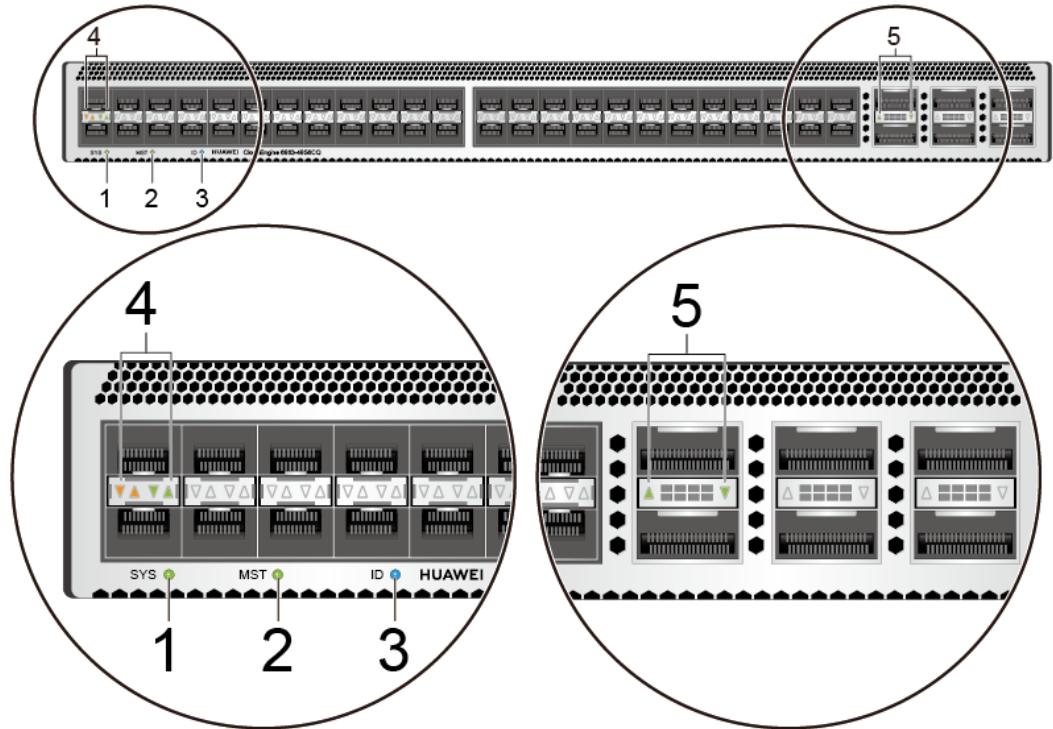
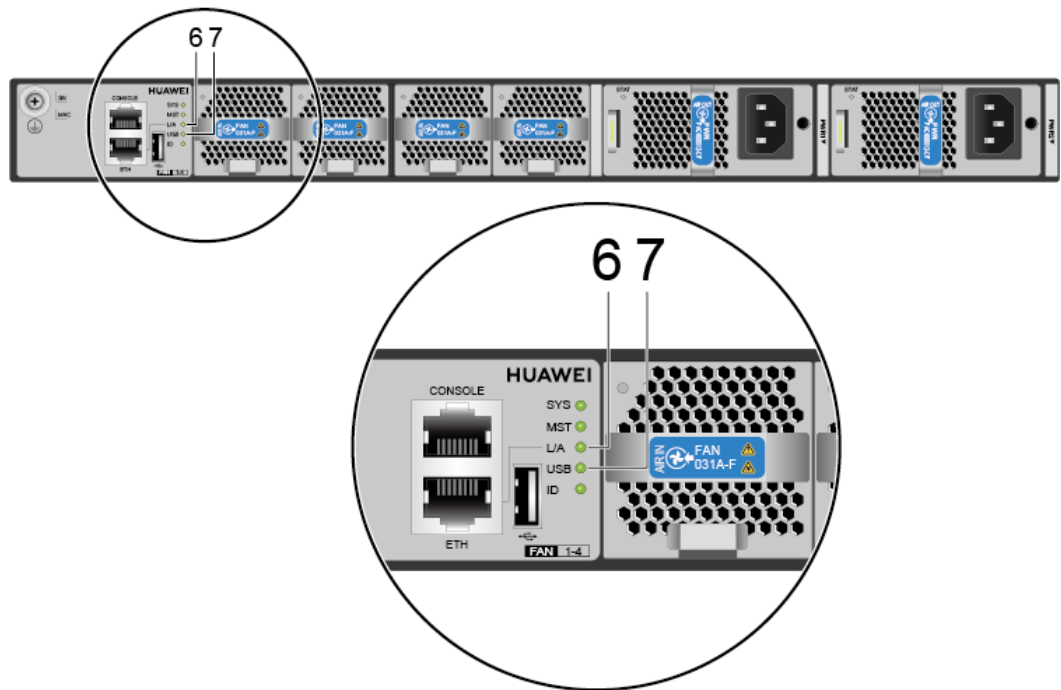


Figure A-77 shows the indicators on the front panel.

**Figure A-77** Indicators on the front panel



1	System status indicator	2	Stack master/slave indicator
3	ID indicator	4	Service port indicator (25GE optical port)
5	Service port indicator (100GE optical port)	6	ETH management port indicator
7	USB-based deployment indicator	-	-

## A.2.8 SB7800

An MSB7800-ES2F (SB7800 for short) switch provides 56 Gbit/s or 100 Gbit/s IB access.

For details about SB7800 switches, see the official website of Mellanox.

## A.3 Standard IT Cabinet

Huawei 42 U standard IT cabinets are recommended.

### Function

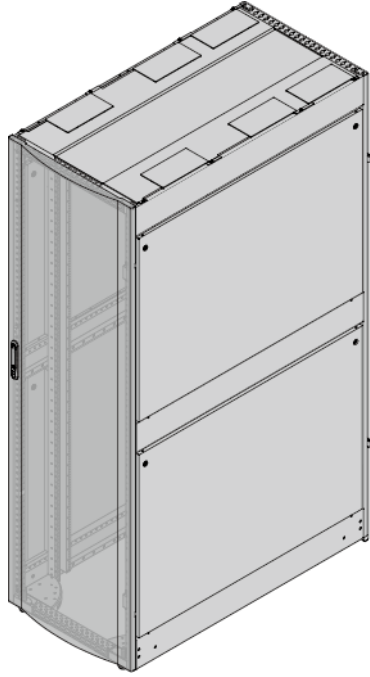
A Huawei cabinet complies with the IEC 60297-1 standard and is an assembled cabinet for ease of expansion. The distance between its front and rear mounting bars can be precisely adjusted in increments of 25 mm. The Huawei cabinet has the following functions:

- Provides space to accommodate components that can be interconnected.
- Is equipped with castors to facilitate movement on a flat floor or a slope of no more than 10 degrees.
- Protects components from dust.
- Prevents components from damage.

### Appearance

The appearance of a Huawei cabinet is in sand texture black. Figure A-78 shows a Huawei cabinet.

**Figure A-78** Appearance of a Huawei cabinet

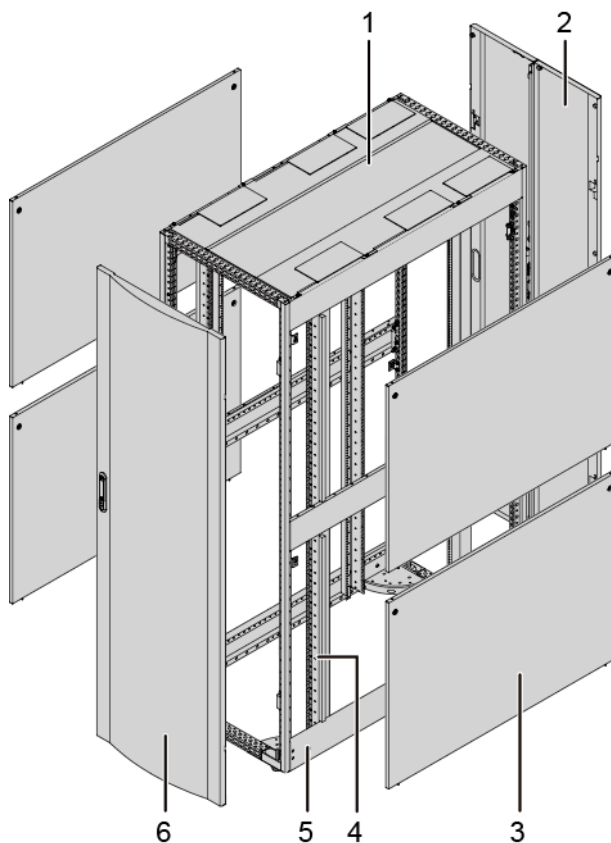


## Physical Structure

A Huawei cabinet consists of racks, a front door, a rear door, side panels, a cover, and mounting bars, as shown in Figure A-79.



**Figure A-79** Cabinet structure



1	Cover	2	Rear door
3	Side panel	4	Mounting bar
5	Rack	6	Front door

## Technical Specifications

Table A-41 lists the technical specifications of a Huawei cabinet.

**Table A-41** Technical specifications of a Huawei cabinet

Item	Specifications
Dimensions (H x W x D)	2000 mm x 600 mm x 1200 mm
Capacity	42 U of internal space (1 U = 44.45 mm)
Weight	<ul style="list-style-type: none"> <li>120 kg (with only the front and rear doors)</li> <li>170 kg (with the front door, rear door, guide rails, and cables)</li> </ul>
Cabling mode	Overhead or underfloor cabling

Item	Specifications
Installation mode	Fastening installation or non-fastening installation Both modes are applicable to either concrete or ESD floors.
Material	High-intensity G-A quality carbon cold-rolled steel plates and galvanized sheets that comply with RoHS and UL
Heat dissipation	Perforated doors, front-to-rear cooling, and underfloor air intake
Operating temperature	<ul style="list-style-type: none"> <li>• Long term: 0°C to 50°C</li> <li>• Short term: -5°C to +50°C</li> </ul>
Operating humidity	<ul style="list-style-type: none"> <li>• Long term: 5% RH to 85% RH</li> <li>• Short term: 5% RH to 95% RH</li> </ul>

 **NOTE**

- The operating temperature and humidity are measured 1.5 m above the ground and 0.4 m in front of the cabinet.
- The short term is defined as no more than 48 consecutive hours and 15 accumulative days per year.

## A.4 KVM

A KVM connects to keyboard, mouse, and video ports of a storage node for user access and storage device control.

### Function

A KVM provides a multiple-port switch function and implements operations on multiple nodes through one set of devices (including an LCD monitor, a keyboard, and a mouse).

### Appearance

A KVM is 1 U high. Figure A-80 shows its appearance.

**Figure A-80** Appearance of a KVM



## Ports

Figure A-81 shows the ports on the rear panel of a KVM.

**Figure A-81** Ports on the rear panel of a KVM



1	Power input socket	2	Power button
3	PGND cable terminal	4	Console port
5	PC connection port (integrating the VGA/keyboard/mouse signal input end)	6	Update port

## Physical Structure

A KVM consists of a keyboard, an LCD monitor, and a mouse, as shown in Figure A-82.

**Figure A-82** Appearance of a KVM



1	Touch mouse	2	Keyboard
3	Control keys	4	LCD monitor

## Technical Specifications

Table A-42 lists the technical specifications of a KVM.

**Table A-42** Technical specifications of a KVM

Item	Specifications
Dimensions (H x W x D)	42.5 mm x 448 mm x 601 mm
Weight	15 kg
Input voltage range	90 V AC to 264 V AC
Maximum power consumption	46 W
Temperature	<ul style="list-style-type: none"> <li>Operating temperature: 0°C to 50°C</li> <li>Storage temperature: -20°C to +60°C</li> </ul>
Humidity	0% RH to 80% RH (non-condensing)

## A.5 Typical Cabinet Configurations

This section describes typical cabinet configurations in 10GE, 25GE RoCE, and IB networks.

The number of nodes in a fully configured cabinet depends on the power supply capability of the cabinet. Different power supplies support different typical cabinet configurations, as listed in Table A-43, Table A-44, and Table A-45.

### NOTE

- Inter-cabinet switching indicates that switches are deployed in base and expansion cabinets, and intra-cabinet switching indicates that switches are deployed only in the base cabinet.
- Hyphens (-) in the following tables indicate that the corresponding node types do not support the corresponding networking.

**Table A-43** Typical cabinet configurations in a 10GE network

Node Type	220 V/63 A				220 V/32 A			
	Inter-Cabinet Switching		Intra-Cabinet Switching		Inter-Cabinet Switching		Intra-Cabinet Switching	
	Base Cabinet	Expansion Cabinet	Base Cabinet	Expansion Cabinet	Base Cabinet	Expansion Cabinet	Base Cabinet	Expansion Cabinet
2288H V5 12-slot node	12	12	12	12	12	12	12	12
2288H V5 25-slot node	12	12	12	12	8	9	8	9
5288 V5 36-slot node	8	8	8	8	7	7	6	7
TaiShan 200 (Model 2280) 12-slot node	12	12	12	12	12	12	12	12
TaiShan 200 (Model 2280) 25-slot node <b>NOTE</b> This node type is supported only in 8.0.0.1 and later.	12	12	12	12	12	12	12	12
TaiShan 200 (Model 5280) 36-slot node	8	8	8	8	7	8	7	8
TaiShan 2280 12-slot node	12	12	12	12	12	12	12	12
TaiShan 5280 36-slot node	8	8	8	8	7	8	7	8

**Table A-44** Typical cabinet configurations in a 25GE RoCE network

Node Type	220 V/63 A				220 V/32 A			
	Inter-Cabinet Switching		Intra-Cabinet Switching		Inter-Cabinet Switching		Intra-Cabinet Switching	
	Base Cabinet	Expansion Cabinet	Base Cabinet	Expansion Cabinet	Base Cabinet	Expansion Cabinet	Base Cabinet	Expansion Cabinet
2288H V5 12-slot node	12	12	12	12	12	12	12	12
2288H V5 25-slot node	12	12	12	12	8	9	7	9
2288H V5 node with 12 NVMe SSDs	12	12	12	12	7	8	7	8
2288H V5 node with 24 NVMe SSDs	11	11	11	11	5	6	5	6
5288 V5 36-slot node	8	8	8	8	7	7	6	7
TaiShan 200 (Model 2280) 12-slot node	11	11	11	11	5	6	5	6
TaiShan 200 (Model 2280) 25-slot node <b>NOTE</b> This node type is supported only in 8.0.0.1 and later.	11	11	11	11	5	6	5	6
TaiShan 200 (Model 5280) 36-slot node	8	8	8	8	5	5	4	5
TaiShan 200 (Model 2280) node with 12 NVMe SSDs	11	11	11	11	5	6	5	6

**Table A-45** Typical cabinet configurations in an IB network

Node Type	220 V/63 A		220 V/32 A	
	Inter-Cabinet	Intra-Cabinet	Inter-Cabinet	Intra-Cabinet

	Switching		Switching		Switching		Switching	
	Base Cabinet	Expansion Cabinet	Base Cabinet	Expansion Cabinet	Base Cabinet	Expansion Cabinet	Base Cabinet	Expansion Cabinet
2288H V5 12-slot node	12	12	12	12	12	12	12	12
2288H V5 25-slot node	12	12	12	12	8	9	8	9
2288H V5 node with 12 NVMe SSDs	12	12	12	12	7	8	7	8
2288H V5 node with 24 NVMe SSDs	11	11	11	11	5	6	5	6
5288 V5 36-slot node	8	8	8	8	6	7	6	7
TaiShan 200 (Model 2280) node with 12 NVMe SSDs	12	12	12	12	5	6	5	6

 **NOTE**

TaiShan servers do not support IB networking.

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# B Common Information

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## B.1 Compatibility

To query compatibility:

1. Log in to [Huawei Storage Interoperability Navigator](#).

 **NOTE**

If the **IT OPEN LAB** home page is displayed upon login, choose **Interoperability Center > Storage Interoperability**.

2. Click  in **Storage System**, and select the desired product.
3. Click  in **Storage Type**, select **Block**, and click **OK**. Then, click **Submit**.  
The compatibility information page is displayed.
4. In the upper area, select items that you want to query.

 **NOTE**

The numbers in the **Remarks** column correspond to notes provided in the lower area of the page.

After obtaining the compatibility information, visit the official websites of the servers you plan to use and ensure that they are compatible with the components of the storage system, including operating systems, SSD cards, and network adapters. All components must meet the compatibility requirements of both the storage system and the servers.