Huawei CloudEngine 6880 Series Data Center Switches

HUAWEI TECHNOLOGIES CO., LTD.

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Product Overview

Huawei CloudEngine 6880 (CE6880 for short) series switches are next-generation 10GE access switches that provide high performance and high port density on data center networks and high-end campus networks. The CE6880 has an advanced hardware architecture with 40GE/100GE uplink ports and the industry's highest density of 10GE access ports. Using Huawei's VRP8 software platform, CE6880 series switches support extensive data center features and high stacking capabilities. In addition, the CE6880 uses a flexible airflow design (front-to-back or back-to-front). CE6880 switches can work with Huawei CE12800 series data center core switches to build elastic, virtual, and high-quality 40GE/100GE full-mesh networks, meeting requirements of cloud computing data centers.

CE6880 series switches provide high-density 10GE access to help enterprises and carriers build a scalable data center network platform in the cloud computing era. They can also work as core or aggregation switches on campus networks.

Product Appearance

CE6880 series switches are available in one model.

CE6880-24S4Q2CQ-EI

24 x 10GE SFP+ ports, 4 x 40GE QSFP+ ports, and 2 x 100GE QSFP28 ports

Product Characteristics

High-Density 10GE Access

- The CE6880 provides up to 24 x 10GE ports, allowing for high-density 10GE server access and smooth evolution.
- The CE6880 provides up to 4 x 40GE QSFP+ ports and 2 x 100GE QSFP28 ports. Each QSFP28 port can also be used as one 40GE QSFP+ port, providing flexibility in networking. The uplink 40GE/100GE ports can be connected to CE12800 series switches to build a non-blocking network platform.

Highly Reliable, Long-Distance Stacking

- Industry's first 16-member stack system
  - » A stack system of 16 member switches has a maximum of 384 x 10GE access ports that provide high-

density server access in a data center.

  - » Multiple switches in a stack system are virtualized into one logical device, making it possible to build a scalable and easy-to-manage data center network platform.
  - » A stack system separates the control plane from the data plane. This eliminates the risk of single points of failure and greatly improves system reliability.
- Long-distance stacking
  - » The CE6880 can use service ports as stack ports. A stack system can be established with switches in the same rack or different racks, and even over long distances.
  - » Service and stack bandwidths can be allocated based on the network scale to ensure that network resources are used more efficiently.

Inter-device Link Aggregation, High Efficiency and Reliability

- The CE6880 supports multichassis link aggregation group (M-LAG), which enables links of multiple switches to aggregate into one to implement device-level link backup.
- Switches in an M-LAG system all work in active state to share traffic and back up each other, enhancing system reliability.
- Switches in an M-LAG system can be upgraded independently. During the upgrade, other switches in the system take over traffic forwarding to ensure uninterrupted services.
- M-LAG supports dual-homing to Ethernet, TRILL, VXLAN, and IP networks, allowing for flexible networking.

Virtualized Hardware Gateway, Enabling Quick Deployment

- The CE6880 can connect to a cloud platform through open APIs, facilitating the unified management of virtual and physical networks.
- The CE6880 can work with the industry's mainstream virtualization platforms. The virtualization function protects investments by ensuring services can be deployed quickly without requiring network changes.
- The hardware gateway deployment enables fast service deployment without changing the customer network, providing investment protection.
- The CE6880 supports Border Gateway Protocol - Ethernet VPN (BGP-EVPN), which can run as the VXLAN control plane to simplify VXLAN configuration within and between data centers.

Standard Interfaces, Enabling Openness and Interoperability

- The CE6880 supports NETCONF and can work with Huawei Agile Controller.
- The CE6880 supports Ansible-based automatic configuration and open-source module release, expanding network functions and simplifying device management and maintenance.
- The CE6880 series switches can be integrated into mainstream SDN and cloud computing platforms flexibly and quickly.

ZTP, Implementing Automatic O&M

- The CE6880 supports Zero Touch Provisioning (ZTP). ZTP enables the CE6880 to automatically obtain and load version files from a USB flash drive or file server, freeing network engineers from onsite

configuration and deployment. ZTP reduces labor costs and improves device deployment efficiency.

- ZTP provides built-in scripts through open APIs. Data center personnel can use a programming language they are familiar with, such as Python, to centrally configure network devices.
- ZTP decouples the configuration time of new devices from the device quantity and area distribution, which improves service provisioning efficiency.

FabricInsight-based Intelligent O&M

- The CE6880 supports global, precision time synchronization based on IEEE 1588v2, which achieves nanosecond-level delay detection.
- Huawei's Packet Conservation Algorithm for Internet (iPCA) technology implements accurate per-hop packet loss, delay, and jitter detection for real service flows, locating network faults in real time.
- The CE6880 proactively performs path detection over the entire network. It periodically checks sample flows to determine the connectivity of all paths on the network and locates fault points, providing real-time network health information.
- The CE6880 supports visualization of all flows and congestion, improving service experience.

Flexible Airflow Design, Improving Energy Efficiency

- Flexible front-to-back/back-to-front airflow design
  - » The CE6880 uses a strict front-to-back/back-to-front airflow design that isolates cold air channels from hot air channels. This design improves heat dissipation efficiency and meets design requirements of data center equipment rooms.
  - » Air can flow from front to back or back to front depending on the fans and power modules that are used.
  - » Redundant power modules and fans can be configured to ensure service continuity.
- Innovative energy-saving technologies
  - » The CE6880 has innovative energy-saving chips and can measure system power consumption in real time. The fan speed can be adjusted dynamically based on system consumption. These energy-saving technologies reduce O&M costs and contribute to a greener data center.

Clear Indicators, Simplifying Maintenance

- Clear indicators
  - » Port indicators clearly show the port status and port rate. The 100GE port indicators can show the states of all ports derived from the 100GE ports.
  - » State and stack indicators on both the front and rear panels enable users to maintain the switch from either side.
  - » The CE6880 supports remote positioning. Remote positioning indicators enable users to easily identify the switches they want to maintain in an equipment room full of devices.
- Simple maintenance
  - » The management port, fans, and power modules are on the front panel, which facilitates device maintenance.
  - » Data ports are located at the rear, facing servers. This simplifies cabling.

Product Specifications

Item	CE6880-24S4Q2CQ-EI
Number of 10GE Base-T ports	NA
Number of 10GE SFP+ ports	24
Number of 40GE QSFP+ ports	4
Number of 100GE QSFP28 ports	2
Switching capacity	1.2 Tbit/s /(Switching capacity after stacking: 19.2 Tbit/s)
Airflow design	Strict front-to-back or back-to-front
Device virtualization	iStack
	M-LAG
Network virtualization	VXLAN
	BGP-EVPN
	QinQ access VXLAN
SDN	Agile Controller
Programmability	OPS programming
	OpenFlow
	Ansible-based automatic configuration and open-source module release
Traffic analysis	NetStream
VLAN	Adding access, trunk, and hybrid interfaces to VLANs
	Default VLAN
	QinQ
	MUX VLAN
MAC address	Dynamic learning and aging of MAC address entries
	Static, dynamic, and blackhole MAC address entries
	Packet filtering based on source MAC addresses
	MAC address limiting based on ports and VLANs

Item	CE6880-24S4Q2CQ-EI
IP routing	IPv4 routing protocols, such as RIP, OSPF, IS-IS, and BGP
	IPv6 routing protocols, such as RIPng, OSPFv3, IS-ISv6, and BGP4+
	IP packet fragmentation and reassembly
IPv6	IPv6 Neighbor Discovery (ND)
	Path MTU Discovery (PMTU)
	TCP6, ping IPv6, tracert IPv6, socket IPv6, UDP6, and Raw IP6
Multicast	Multicast routing protocols such as IGMP, PIM-SM, and MBGP
	IGMP snooping
	IGMP proxy
	Fast leaving of multicast member interfaces
	Multicast traffic suppression
	Multicast VLAN
Reliability	Fine-grained microsegmentation isolation
	Link Aggregation Control Protocol (LACP)
	STP, RSTP, and MSTP
	BPDU protection, root protection, and loop protection
	Smart Link and multi-instance
	Device Link Detection Protocol (DLDP)
	Hardware-based Bidirectional Forwarding Detection (BFD) at an interval of 3.3 ms
	VRRP, VRRP load balancing, and BFD for VRRP
	BFD for BGP/IS-IS/OSPF/Static route
	BFD for VXLAN
QoS	Traffic classification based on Layer 2, Layer 3, Layer 4, and priority information
	ACL, CAR, re-marking, and scheduling
	Queue scheduling modes such as PQ, WRR, DRR, PQ+WRR, and PQ+DRR
	Congestion avoidance mechanisms, including WRED and tail drop
	Traffic shaping

Item	CE6880-24S4Q2CQ-EI
O&M	IEEE 1588v2
	iPCA
	Network-wide path detection
	Telemetry
	Statistics on the buffer microburst status
	VXLAN OAM: VXLAN ping and VXLAN tracert
Configuration and maintenance	Console, Telnet, and SSH terminals
	Network management protocols, such as SNMPv1/v2c/v3
	File upload and download through FTP and TFTP
	BootROM upgrade and remote upgrade
	Hot patches
	User operation logs
	Zero Touch Provisioning (ZTP)
Security and management	Command line authority control based on user levels, preventing unauthorized users from using commands
	Defense against DoS address attacks, ARP storms, and ICMP attacks
	Port isolation, port security, and sticky MAC
	Binding of the IP address, MAC address, port number, and VLAN ID
	Authentication methods, including AAA, RADIUS, and HWTACACS
	Remote Network Monitoring (RMON)
Dimensions (W x D x H)	442 mm x 420 mm x 43.6 mm
Weight (fully loaded)	8.5 kg (18.7 lb)
Environment requirements	Operating temperature: 0° C to 40° C (32° F to 104° F) (0 m to 1,800 m) Storage temperature: -40° C to +70° C (-40° F to 158° F) Relative humidity: 5% RH to 95% RH, noncondensing
Operating voltage	AC: 90 V to 290 V DC: –38.4 V to –72 V
Maximum power consumption	224 W

Ordering Information

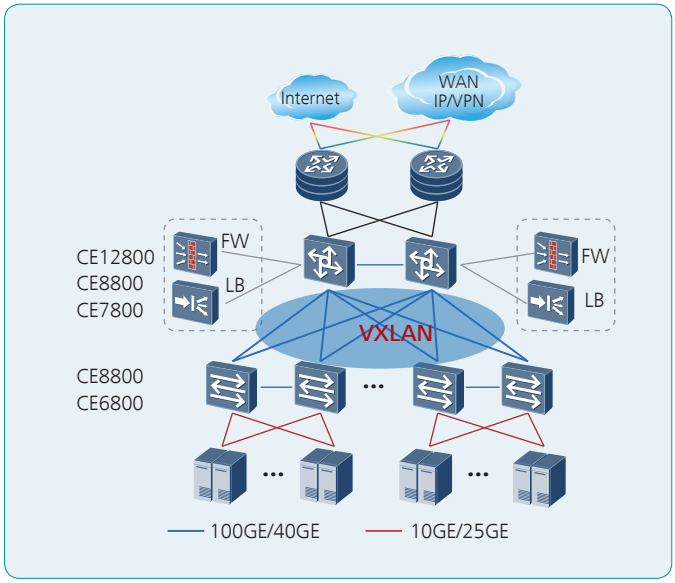
Mainframe		
CE6880-EI-B-B0B	CE6880-EI-B-B0B,CE6880-24S4Q2CQ-EI Switch(24*10G SFP+,4*40G QSFP+,2*100G QSFP28,2*AC Power Module,2*FAN Box,Port-side Intake)	
CE6880-EI-F-B0B	CE6880-24S4Q2CQ-EI Switch(24*10G SFP+,4*40G QSFP+,2*100G QSFP28,2*AC Power Module,2*FAN Box,Port-side Exhaust)	
CE6880-24S4Q2CQ-EI	CE6880-24S4Q2CQ-EI Switch(24*10G SFP+,4*40G QSFP+,2*100G QSFP28, Without Fan and Power Module)	
Fan Tray		
Model	Description	Applicable Product
FAN-40HA-F	Fan box (HA, Front to Back, FAN panel side intake)	CE6880-24S4Q2CQ-EI
FAN-40HA-B	Fan box (HA, Back to Front, FAN panel side exhaust)	CE6880-24S4Q2CQ-EI
Power		
Model	Description	Applicable Product
PAC-600WA-F	600W AC Power Module (Front to Back, Power panel side intake)	CE6880-24S4Q2CQ-EI
PAC-600WA-B	600W AC Power Module (Back to Front, Power panel side exhaust)	CE6880-24S4Q2CQ-EI
PDC-350WA-F	350W DC Power Module (Front to Back, Power panel side intake)	CE6880-24S4Q2CQ-EI
PDC-350WA-B	350W DC Power Module (Back to Front, Power panel side exhaust)	CE6880-24S4Q2CQ-EI
Software		
CE68-LIC-BUN01	CE6800 Function License Bundle 1	
CE68-LIC-VXLAN	CloudEngine 6800 VXLAN Function	
CE68-LIC-NSH	NSH Function	
CE68-LIC-TLM	CloudEngine 6800 Telemetry Function	
CE68-LIC-BASE	CE6800 Basic Software Function	

Networking and Application

Data Center Applications

On a typical data center network, CE6880 switches work as TOR switches and connect to CE12800, CE8800, or CE7800 core switches using 40GE/100GE ports, building an end-to-end 100GE full-mesh network. The core and TOR switches use fabric technologies such as VXLAN to build a non-blocking large Layer 2 network, which allows for large-scale VM migration and flexible service deployment.

Note: VXLAN can also be used on campus networks to support flexible service deployment in different service areas.



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