CloudEngine 8800 Series Data Center Switches

HUAWEI TECHNOLOGIES CO., LTD.

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Product Overview

Huawei CloudEngine 8800 series (CE8800) switches are 100G Ethernet switches designed for data centers and high-end campus networks. The switches provide high-performance, high-density 100GE/40GE/25GE/10GE ports, and low latency. Using the Huawei VRP8 software platform, CE8800 switches provide extensive data center service features and high stacking capability. In addition, the airflow direction (front-to-back or back-to-front) can be changed. CE8800 switches can work with CE12800/CE8800/CE6800/CE5800 switches to build an elastic, virtualized, high-quality fabric that meets the requirements of cloud-computing data centers.

CE8800 switches can function as core or aggregation switches on data center networks to help enterprises and carriers build a scalable data center network platform in the cloud computing era. They can also be used as aggregation or core switches for enterprise campus networks.

Product Appearance

The CE8800 series is available in the following models:

CE8860-4C-EI

2 U high, supporting four flexible cards of half the standard width

CE8850-32CQ-EI

32*100GE QSFP28 ports
2*10GE SFP+ ports

CE8850-64CQ-EI

64*100GE QSFP28 ports

CE8861-4C-EI

2 U high, supporting four flexible cards of half the standard width

CE8800 supports the following models of cards:

CE88-D24S2CQ

24*10GE/25GE(SFP28) and 2*100GE (QSFP28) card

CE88-D24T2CQ

24*10GE (BASE-T) and 2*100GE (QSFP28) card

CE88-D8CQ

8*100GE (QSFP28) card

CE88-D16Q

16*40GE (QSFP+) card

CE88-D24S2CQ-U

24-Port 25GE/16GE FC (SFP28) and 2*100G (QSFP28) card

Product Characteristics

25GE Access Switch with Fexible Cards

- CE8860/CE8861 supports 25GE (SFP28)/10GE (SFP+) auto-sensing interfaces and is applicable to scenarios of high-density 25GE/10GE server access.
- CE8860/CE8861 supports a maximum of 32*100GE, 64*40GE, or 128*25GE/10GE ports, delivering high-density access and aggregation capabilities through flexible card combinations.
- CE8850 supports a maximum of 64*100GE, 64*40GE, 128*25GE, or 128*10GE ports, delivering high-density access and aggregation capabilities.

High-Density 100GE/40GE Aggregation and Outstanding Switching Capacity

- The CE8850-64CQ-EI provides 12.8 Tbit/s switching capacity , forwarding performance of 4,400 Mpps, and supports L2/L3 line-speed forwarding.
- The CE8850-64CQ-EI provides a maximum of 64*100GE QSFP28 or 64*40GE QSFP+ ports, and can function as the core or aggregation switch on a data center or campus network.
- The 100GE QSFP28 port supports 100GE optical modules. One 100GE port can be used as four 25GE SFP28 ports. The 100GE QSFP28 port also supports 40GE QSFP+ optical modules. 40GE ports can be converted to 10GE ports through QSFP+ breakout cable.
- The CE8860/CE8861 supports 100GE/40GE/25GE/10GE flexible cards, delivering flexible networking capability. It can work with CE12800/CE7800/CE6800/CE5800 series data center switches to build a non-blocking network platform.

Highly Reliable, High-Performance Stacking

- Support 16-member stack system
  - » A stack system of 16 member switches (CE8850-64CQ-EI/ CE8850-32CQ-EI) 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, 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 CE8800 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's scale so that network resources can be used more efficiently.

Network-Wide Reliability, Ensuring Zero Service Interruptions

- The CE8800 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 can be upgraded independently. During the upgrade, other switches in the system take over traffic forwarding to ensure uninterrupted services.
- With the industry's most comprehensive inter-device link aggregation technology, the device networking coupling relationship evolves from stacking at the control plane to the use of M-LAG and then finally to coupling-free M-LAG Lite. This achieves active-active server access and high reliability during switch upgrade.

Large-Scale Routing Bridge, On-Demand Scalability

- The CE8800 supports the IETF Transparent Interconnection of Lots of Links (TRILL) protocol. A TRILL network can contain more than 500 nodes, enabling flexible service deployments and large-scale Virtual Machine (VM) migrations.
- The TRILL protocol uses a routing mechanism similar to IS-IS and sets a limited time to live (TTL) value in packets to prevent Layer 2 loops. This significantly improves network stability and speeds up network convergence.
- On a TRILL network, all data flows are forwarded quickly using Shortest Path First (SPF) and Equal-Cost Multi-Path (ECMP) routing. SPF and ECMP avoid the suboptimal path selection problem in STP and increase link bandwidth efficiency to 100 percent.
- The CE8800 supports TRILL-based Layer 2 equal-cost paths, greatly improving links' load balancing capabilities. The network has a fat-tree architecture that enhances expansion.

Converged Enhanced Ethernet, Data, Storage, and Computing Traffic over One Network

- The CE8800 supports Fibre Channel over Ethernet (FCoE), which permits storage, data, and computing services to be transmitted on one network, reducing the costs of network construction and maintenance.
- The CE8800 supports centralized FCoE/FC gateway deployment, which makes network O&M simpler.
- Various CE8800 features ensure lossless transmission: Priority-based Flow Control (PFC), Enhanced Transmission Selection (ETS) and Data Center Bridging eXchange (DCBX). These features ensure low latency and zero packet loss for FC storage and high-speed computing services.

Programmable Network Device, Flexible Customization

- The CE8800 uses the Open Programmability System (OPS) embedded in the VRP8 software platform to provide programmability at the control plane.
- The OPS provides open APIs. APIs can be integrated with mainstream cloud platforms (including commercial and open cloud platforms) and third-party controllers. The OPS enables services to be flexibly customized and provides automatic management.
- Users or third-party developers can use open APIs to develop and deploy specialized network management policies to implement extension of fast service functions, automatic deployment, and intelligent management. The OPS also implements automatic operation and maintenance, and reduces management costs.
- The OPS provides seamless integration of data center service and network in addition to a service-oriented, software-defined networking (SDN).

Virtualized Gateway Achieves Fast Service Deployment

- The CE8800 can work with a mainstream virtualization platform. As the high-performance, hardware gateway of an overlay network (VXLAN), the CE8800 can support more than 16 million tenants.
- The CE8800 can connect to a cloud platform through an open API to provide unified management of software and hardware networks.
- This function implements fast service deployment without changing the customer network. It also protects customer investments.

Zero Touch Provisioning, Automatic O&M

- The CE8800 supports Zero Touch Provisioning (ZTP). ZTP enables the CE8800 to automatically obtain and load version files from a USB flash drive or file server, freeing network engineers from onsite configuration or deployment. ZTP reduces labor costs and improves device deployment efficiency.
- ZTP provides built-in scripts for users through open APIs. Data center personnel can use the programming language they are familiar with, such as Python, to provide unified configuration of network devices.
- ZTP decouples configuration time of new devices from device quantity and area distribution, which improves service provisioning efficiency.

Intelligent O&M with the FabricInsight Solution

- The CE8800 provides proactive path detection on the entire network. It periodically checks sample flows to determine connectivity of all paths on the network and locates failure points, enabling you to know the network health in real time.
- The CE8800 supports visualization of all flows and congestion, improving service experience.
- The CE8800 supports global, precise time synchronization based on IEEE 1588v2, detecting delay with sub-microsecond accuracy.

AI Fabric, Improving Reliability of High-Performance Computing

- In a distributed system, RoCE technology becomes the mainstream. To ensure the throughput and meet strict requirements on packet loss, Huawei ultra-fast Ethernet provides forwarding capabilities with high throughput, high reliability, and low latency for the distributed system, which is 25% lower than the average latency in the industry.
- The CE8881 supports Virtual Input Queue (VIQ) technology. It uses Huawei customized algorithm to customize virtual queues based on services, implementing refined management. It pre-determines uplink and downlink queue congestion to eliminate packet loss.
- The CE8861uses fast CNP and dynamic ECN to pre-determine network congestion and provide fast feedback, reducing retransmission and throughput decrease caused by packet loss on a network. This keeps a low queue delay while ensuring the throughput.

- The CE8861 provides dynamic load balancing (DLB) based on the ECMP group or LAG.

Flexible Airflow Design Saves Energy

- Flexible front-to-back/back-to-front airflow design
  - » The CE8800 uses a front-to-back/back-to-front airflow design that isolates cold air channels from hot air channels. This design meets heat dissipation requirements in data center equipment rooms.
  - » Air can flow from front to back, or back to front when different fans and power modules are used.
  - » Redundant power modules and fans can be configured to ensure uninterrupted service transmission.
- Innovative energy-saving technologies
  - » The CE8800 has energy-saving chips and can measure system power consumption in real time. 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, Simple Maintenance

- Clear indicators
  - » Port indicators clearly show port status and port speeds. The port indicators can show the state of all the 10GE ports derived from the 40GE ports.
  - » State and stack indicators on both the front and rear panels enable operators to maintain the switch from either side.
  - » The CE8800 supports remote positioning. Operators can turn on remote positioning indicators on the switches they want to maintain, so that they can find switches easily 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[1]

Functions and Features

Item	CE8860-4C-EI CE8850-32CQ-EI CE8850-64CQ-EI CE8861-4C-EI
Device virtualization	iStack[2]
	M-LAG
Data center interconnect	VXLAN mapping, implementing interconnection between multiple DCI networks at Layer 2
Network virtualization	VXLAN routing and bridging
	BGP-EVPN
	TRILL(CE8860-4C-EI/CE8850-32CQ-EI/CE8850-64CQ-EI)
	QinQ access VXLAN
SDN	Agile Controller
	VMware NSX(Supported only by the CE8861)

1 This content is applicable only to regions outside mainland China. Huawei reserves the right to interpret this content

2 For details about the configuration, please see: http://support.huawei.com/onlinetoolsweb/virtual/en/dc/stack_index.html?dcb

Item	CE8860-4C-EI	CE8850-32CQ-EI	CE8850-64CQ-EI	CE8861-4C-EI
Network convergence	FCoE			
	DCBX, PFC, ETS			
Programmability	OPS			
	Ansible-based automatic configuration and open-source module release			
Traffic analysis	NetStream			
	sFlow			
VLAN	Adding access, trunk, and hybrid interfaces to VLANs			
	Default VLAN			
	QinQ			
	MUX VLAN			
	GVRP			
	Dynamic learning and aging of MAC addresses			
	Static, dynamic, and blackhole MAC address entries			
	Packet filtering based on source MAC addresses			
	MAC address limiting based on ports and VLANs			
IP routing	IPv4 routing protocols, such as RIP, OSPF, BGP, and IS-IS			
	IPv6 routing protocols, such as RIPng, OSPFv3, IS-ISv6, and BGP4+			
IPv6	IPv6 VXLAN over IPv4			
	IPv6 Neighbor Discovery (ND)			
	Path MTU Discovery (PMTU)			
	TCP6, ping IPv6, tracert IPv6, socket IPv6, UDP6, and Raw IP6			
Multicast	IGMP, PIM-SM, PIM-DM, MSDP, and MBGP			
	IGMP snooping			
	IGMP proxy			
	Fast leaving of multicast member interfaces			
	Multicast traffic suppression			
	Multicast VLAN			
	Multicast VXLAN			
MPLS	MPLS			

Item	CE8860-4C-EI	CE8850-32CQ-EI	CE8850-64CQ-EI	CE8861-4C-EI
Reliability	Fine-grained microsegmentation isolation(Supported only by the CE8861-4C-EI)			
	LACP			
	STP, RSTP, VBST, and MSTP			
	BPDU protection, root protection, and loop protection			
	Smart Link and multi-instance			
	DLDP			
	ERPS (G.8032)			
	Hardware-based Bidirectional Forwarding Detection (BFD)(Supported by the CE8850-64CQ-EI and CE8861)			
	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 headers, Layer 3 protocols, Layer 4 protocols, and 802.1p priority			
	Actions of ACL, CAR, re-marking, and scheduling			
	Queue scheduling algorithms, including PQ, WRR, DRR, PQ+WRR, and PQ+DRR			
	Congestion avoidance mechanisms, including WRED and tail drop			
	Traffic shaping			
O&M	Network-wide path detection			
	1588v2(CE8850-64CQ-EI)			
	Telemetry			
	INT(IOAM) and ERSPAN+(Supported only by the CE8861-4C-EI)			
	Statistics on the buffer microburst status			
	VXLAN OAM: VXLAN ping, VXLAN tracert			
AI Fabric	N/A			VIQ
				Dynamic ECN
				Fast CNP
				Dynamic load balancing (DLB)

Item	CE8860-4C-EI	CE8850-32CQ-EI	CE8850-64CQ-EI	CE8861-4C-EI
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			
	802.3az Energy Efficient Ethernet (EEE)			
	Hot patches			
	User operation logs			
	Zero Touch Provisioning (ZTP)			
Security and management	802.1x authentication			
	Command line authority control based on user levels, preventing unauthorized users from using commands			
	DoS, ARP, and ICMP attack defenses			
	Port isolation, port security, and sticky MAC			
	Binding of the IP address, MAC address, interface and VLAN			
	Authentication methods, including AAA, RADIUS, and HWTACACS			
	Remote Network Monitoring (RMON)			

Performance and Scalability

Item	CE8860-4C-EI	CE8850-32CQ-EI	CE8850-64CQ-EI	CE8861-4C-EI
Maximum number of MAC address entries	136k	264k	288k	288k
Maximum number of Forwarding routes (FIB IPv4/ IPv6)	IPV4 192K IPV6 128K	IPV4 192K IPV6 128K	IPV4 360K IPV6 256K	IPV4 380K IPV6 256K
ARP table size	84K	84K	156K	168K
Maximum number of VRF	1024	1024	2048	4096

Item	CE8860-4C-EI	CE8850-32CQ-EI	CE8850-64CQ-EI	CE8861-4C-EI
IPv6 ND(Neighbour Discovery) table size	32K	32K	48K	64K
Maximum Number of multicast routes (Multicast FIB IPv4/ IPv6)	8K	8K	8K	8K
Maximum VRRP groups	64	64	1000	1000
Maximum number of ECMP paths	32	32	32	32
Maximum ACL number	Ingress 2750 egress 1000	Ingress 2750 egress 1000	Ingress 2750 egress 1000	Ingress 7662 egress 2000
Maximum Number of broadcast domains	8K	8K	8K	8K
Maximum number of BDIF	4K	4K	4K	12K
Maximum number of tunnel endpoints (VTEP)	15K	15K	15K	15K
Maximum number of lag group	1024/512/256/128/64	1024/512/256/128/64	1024/512/256/128/64	1024/512/256/128/64
Maximum number of links in a lag group	2/4/8/16/32	2/4/8/16/32	2/4/8/16/32	2/4/8/16/32
Maximum number of MSTP instance	64	64	64	64
VBST (Maximum number of VLANs where VBST can be configured)	500	500	500	500

Note

This specification may vary between different scenarios. Please contact Huawei for details.

Hardware Specifications

Item		CE8860-4C-EI	CE8850-32CQ-EI	CE8850-64CQ-EI	CE8861-4C-EI
Physical Features	Dimensions (W × D ×H ,mm)	442*600*88.1	442*420*43.6	442*600*88.1	442*600*88.1
	Weight (including four cards but excluding power modules and fan tray assemblies / including AC power modules and fan assemblies, excluding optical modules ,kg)	16.8 / 21.2	6.2/9	16.9/22.2	16.8 / 21.2
	Switching capacity (Tbit/s)	6.4	6.44	12.8	6.4
	Forwarding performance (Mpps)	3200	3200	4482	2030
Ports		4 slots; different cards can be flexibly used in combinations to achieve a maximum of: 32*100GE QSFP28 or 64*40GE QSFP+ or 128*25GE SFP28 or 128*10GE SFP+ ports or 96*4/8/16G FC ports	32*100GE QSFP28 and 2*10GE SFP+	64*100GE QSFP28	4 slots; different cards can be flexibly used in combinations to achieve a maximum of: 32*100GE QSFP28 or 64*40GE QSFP+ or 128*25GE SFP28 or 128*10GE SFP+ ports or 96*4/8/16G FC ports
Card	Number of card slot	4	0	0	4
	Card type	Flexible card	Fixed switch	Fixed switch	Flexible card
	Card Specification	CE88-D24S2CQ CE88-D24T2CQ CE 88-D16Q CE88-D8CQ CE88-24S2CQ-U	NA	NA	CE88-D24S2CQ CE88-D24T2CQ CE88-D16Q CE88-D8CQ CE88-24S2CQ-U

Item		CE8860-4C-EI	CE8850-32CQ-EI	CE8850-64CQ-EI	CE8861-4C-EI
Management interface	Out-of-band management port	2*GE RJ45 interfaces & SFP (combo) management interfaces	1*GE RJ45 management interfaces	2*GE RJ45 management interfaces	2*GE RJ45 interfaces & SFP (combo) management interfaces
	Console port	1*RJ45 interface + 1*MiniUSB interface (multiplexing)	RJ45 interface	1*RJ45 interface + 1*MiniUSB interface (multiplexing)	1*RJ45 interface + 1*MiniUSB interface (multiplexing)
	USB port	1	1	1	1
CPU	Main frequency (HZ)	1.5G	1.5G	1.5G	1.5G
	Number of cores	4	8	8	8
Storage	RAM	4GB	4GB	4GB	4GB
	NOR Flash	16MB	32MB	32MB	32MB
	NAND Flash	1GB	1GB	2GB	2GB
System	System buffer	16MB	16MB	42MB	32MB
Power Supply System	Power modules	1200W AC&240VDC/ 1200W 380VDC/1200W -48V DC	600 W AC power module	1200W AC&240VDC/ 1200W 380VDC/1200W -48V DC	1200W AC&240VDC/ 1200W 380VDC/1200W -48V DC
	Rated voltage range(V)	AC: 100~240 HDC:240V(188~290) 380V(240~380) DC:-48~-60	100 to 240 AC	AC: 100~240 HDC:240V(188~290) 380V(240~380) DC:-48~-60	AC: 100~240 HDC:240V(188~290) 380V(240~380) DC:-48~-60
	Maximum voltage range(V)	AC: 90~290 HDC:240V(188~290) 380V(188~400) DC:-38.4~-72	90 to 290 AC	AC: 90~290 HDC:240V(188~290) 380V(188~400) DC:-38.4~-72	AC: 90~290 HDC:240V(188~290) 380V(188~400) DC:-38.4~-72
	Maximum input current	1200 W AC power module: 200 V to 240 V 8 A; 100 V to 130 V 10 A 1200 W 240VDC power module: 240V 8A 1200 W 380VDC power module: 240 V to 380 V 8 A 1200 W -48V power module: -48 V to 60 V 38A	100 V to 240 V 9 A	1200 W AC power module: 200 V to 240 V 8 A; 100 V to 130 V 10 A 1200 W 240VDC power module: 240V 8A 1200 W 380VDC power module: 240 V to 380 V 8 A 1200 W -48V power module: -48 V to 60 V 38A	1200 W AC power module: 200 V to 240 V 8 A; 100 V to 130 V 10 A 1200 W 240VDC power module: 240V 8A 1200 W 380VDC power module: 240 V to 380 V 8 A 1200 W -48V power module: -48 V to 60 V 38A

Item		CE8860-4C-EI	CE8850-32CQ-EI	CE8850-64CQ-EI	CE8861-4C-EI
Power Supply System	Typical power	Test condition 1: 100% traffic load, optical interfaces using passive copper cables, normal temperature, dual power modules: Configured with four CE88-D24S2CQ cards: 399W Configured with four CE88-D24T2CQ cards: 522W Configured with four CE88-D16Q cards: 340W Configured with four CE88-D8CQ cards: 355W Configured with four CE88-24S2CQ-U cards: 505W	219W((100% traffic load, copper cable, normal temperature, dual power modules) 314W(100% traffic load, short-distance optical modules, normal temperature, dual power modules)	375W	Test condition 1: 100% traffic load, optical interfaces using passive copper cables, normal temperature, dual power modules: Configured with four CE88-D24S2CQ cards: 437W Configured with four CE88-D24T2CQ cards: 532W Configured with four CE88-D16Q cards: 383W Configured with four CE88-D8CQ cards: 398W Configured with four CE88-24S2CQ-U cards: 525W
	Maximum power	four CE88-D24S2CQ cards: 602W four CE88-D24T2CQ cards: 750W four CE88-D16Q cards: 585W four CE88-D8CQ cards: 625W four CE88-24S2CQ-U cards: 718W	453w	965w	four CE88-D8CQ cards: 658W four CE88-D16Q cards: 620W four CE88-D24T2CQ cards: 747W four CE88-D24S2CQ cards: 674W four CE88-24S2CQ-U cards: 795W
	Frequency (AC ,HZ)	50/60	50/60	50/60	50/60
Heat Dissipation	Heat dissipation mode	Air cooling	Air cooling	Air cooling	Air cooling
	Number of fans	2	2	3	2

Item		CE8860-4C-EI	CE8850-32CQ-EI	CE8850-64CQ-EI	CE8861-4C-EI
Heat Dissipation	Heat dissipation airflow	Front-to-back or back-to-front airflow			
	Maximum heat consumption (BTU/hr)	four CE88-D8CQ cards: 2134 four CE88-D16Q cards: 1998 four CE88-D24T2CQ cards: 2561 four CE88-D24S2CQ cards: 2056 four CE88-24S2CQ-U cards: 2450	1547	3295	four CE88-D8CQ cards: 2245 four CE88-D16Q cards: 2116 four CE88-D24T2CQ cards: 2549 four CE88-D24S2CQ cards: 2300 four CE88-24S2CQ-U cards: 2713
Environment specifications	Long-term operating temperature (°C)	0 to 40°C(0-1800m) The temperature decreases by 1°C each time the altitude increases by 220 m.			
	Storage temperature (°C)	-40 to +70°C			
	Relative humidity	5% to 95%			
	Operating altitude(m)	Up to 5000			
	Sound power at 27°C (dBA)	Front-to-back airflow: < 65 Back-to-front airflow: < 68	Front-to-back airflow: < 65 Back-to-front airflow: < 64	Front-to-back airflow: < 73 Back-to-front airflow: < 74	Front-to-back airflow: <65 Back-to-front airflow: < 68
	Sound power at 40°C (dBA)	Front-to-back airflow: < 88 Back-to-front airflow: < 91	Front-to-back airflow: < 88 Back-to-front airflow: < 86	Front-to-back airflow: < 92 Back-to-front airflow: < 94	Front-to-back airflow: < 88 Back-to-front airflow: < 91
	Sound pressure at 27°C (dBA)	Front-to-back airflow: 52 in average (maximum: 56) Back-to-front airflow: 54 in average (maximum: 58)	Front-to-back airflow: 47 in average (maximum: 52) Back-to-front airflow: 46 in average (maximum: 52)	Front-to-back airflow: 60 in average (maximum: 64) Back-to-front airflow: 60 in average (maximum: 64)	Front-to-back airflow: 56 in average Back-to-front airflow: 58 in average

Item		CE8860-4C-EI	CE8850-32CQ-EI	CE8850-64CQ-EI	CE8861-4C-EI
Environment specifications	Surge protection	AC power supply protection: 4 kV in common mode and 2.5 kV in differential mode DC power supply protection: 4 kV in common mode and 2 kV in differential mode	AC power supply protection: 6 kV in common mode and 6 kV in differential mode	AC power supply protection: 4 kV in common mode and 2.5 kV in differential mode DC power supply protection: 4 kV in common mode and 2 kV in differential mode	AC power supply protection: 4 kV in common mode and 2.5 kV in differential mode DC power supply protection: 4 kV in common mode and 2 kV in differential mode
Reliability	MTBF (year)	40.88	45.34	45.34	36.02
	MTTR (hour)	1.75	1.68	1.68	1.87
	Availability	0.99999611181	0.9999576496	0.999997043	0.9999940608

Note

For detailed information of CloudEngine 8800 Platform hardware information, visit https://support.huawei.com/enterprise/en/doc/EDOC1000019246?idPath=7919710%7C21782165%7C21782239%7C22318540%7C7597815

Safety and Regulatory Compliance

The following table lists the safety and regulatory compliance of CE 8800.

Certification Category	Description
Public MIB	• EN 60950-1:2006+A11:2009+A1:2010+A12:2011 • EN 60825-1:2007 • EN 60825-2:2010 • UL 60950-1:2007 2nd Edition • CSA C22.2 No.650:2007 2nd Edition • IEC 60950-1v2005+A1:2009 • AS/NZS 60950-1:2011 • GB4943:2011

Certification Category	Description
Electromagnetic Compatibility (EMC)	• FCC 47CFR Part15 CLASS A • ETSI EN 300 386 V1.6.1:2012 • ICES-003:2012 CLASS A • CISPR 22:2008 CLASS A • CISPR 24:2010 • EN 55022:2010 CLASS A • EN 55024v2010 • AS/NZS CISPR 22:2009 CLASS A • IEC 61000-3-2:2005+A1:2008+A2:2009/EN 61000-3-2:2006+A1:2009+A2:2009 • IEC 61000-3-3:2008/EN 61000-3-3:2008 • CNS 13438:2006 CLASS A • VCCI V-4:2012 CLASS A • VCCI V-3:2012 CLASS A • EC Council Directive 2004/108/EC • GB9254
Environment	• 2002/95/EC:2011/65/EU • 2002/96/EC:2012/19/EU • EC NO.1907/2006 • ETSI EN 300 019-1-1 V2.1.4 • ETSI EN 300 019-1-2 V2.1.4 • ETSI EN 300 019-1-3 V2.3.2 • ETSI EN 300753 V1.2.1

Note

EMC: electromagnetic compatibility

CISPR: International Special Committee on Radio Interference

EN: European Standard

ETSI: European Telecommunications Standards Institute

CFR: Code of Federal Regulations

FCC: Federal Communication Commission

IEC: International Electrotechnical Commission

AS/NZS: Australian/New Zealand Standard

VCCI: Voluntary Control Council for Interference

UL: Underwriters Laboratories

CSA: Canadian Standards Association

IEEE: Institute of Electrical and Electronics Engineers

RoHS: restriction of the use of certain hazardous substances

REACH: Registration Evaluation Authorization and Restriction of Chemicals

WEEE: Waste Electrical and Electronic Equipment

MIB and Standards Compliance

Supported MIBs

The following table lists the MIBs supported by CE 8800.

Category	MIB
Safety	• BRIDGE-MIB • BGP4-MIB • BRIDGE-MIB • DISMAN-PING-MIB • DISMAN-TRACEROUTE-MIB • ENTITY-MIB • IF-MIB • IP-FORWARD-MIB • IP-MIB • IPMCAST-MIB • IPv6-ICMP-MIB • IPv6-MIB • IPv6-TCP-MIB • IPv6-UDP-MIB • ISIS-MIB • LAG-MIB • LLDP-EXT-DOT1-MIB • LLDP-EXT-DOT3-MIB • LLDP-MIB • MAU-MIB • MGMD-STD-MIB • MPLS-FTN-STD-MIB • MPLS-L3VPN-STD-MIB • MPLS-LDP-GENERIC-STD-MIB • MPLS-LDP-STD-MIB • MPLS-LSR-STD-MIB • MSDP-MIB • NOTIFICATION-LOG-MIB • NQA-MIB • OSPF-MIB • OSPF-TRAP-MIB • OSPFV3-MIB • P-BRIDGE-MIB • PIM-BSR-MIB • PIM-STD-MIB • Q-BRIDGE-MIB • RADIUS-AUTH-CLIENT-MIB • RFC1213-MIB • RIPv2-MIB • RMON-MIB • SNMP-FRAMEWORK-MIB • SNMP-MPD-MIB • SNMP-NOTIFICATION-MIB • SNMP-PROXY-MIB • SNMP-TARGET-MIB • SNMP-USER-BASED-SM-MIB

Category	MIB
Huawei-proprietary MIB	• SNMPv2-MIB • SNMP-VIEW-BASED-ACM-MIB • TCP-MIB • UDP-MIB • VRRP-MIB • HUAWEI-AAA-MIB • HUAWEI-ACL-MIB • HUAWEI-ALARM-MIB • HUAWEI-BASE-TRAP-MIB • HUAWEI-BFD-MIB • HUAWEI-BGP-VPN-MIB • HUAWEI-BRAS-RADIUS-MIB • HUAWEI-CBQOS-MIB • HUAWEI-CE-PING-MIB • HUAWEI-CONFIG-MAN-MIB • HUAWEI-CPU-MIB • HUAWEI-DAD-MIB • HUAWEI-DATASYNC-MIB • HUAWEI-DEVICE-MIB • HUAWEI-DEVICE-EXT-MIB • HUAWEI-DHCPR-MIB • HUAWEI-DHCP-SNOOPING-MIB • HUAWEI-DHCPV6-SERVER-MIB • HUAWEI-DLDP-MIB • HUAWEI-ENERGYMNGT-MIB • HUAWEI-ENTITY-TRAP-MIB • HUAWEI-ENTITY-EXTENT-MIB • HUAWEI-ETHOAM-MIB • HUAWEI-ERPS-MIB • HUAWEI-ERRORDOWN-MIB • HUAWEI-ETHARP-MIB • HUAWEI-EVC-MIB • HUAWEI-FCOE-MIB • HUAWEI-FLASH-MAN-MIB • HUAWEI-FTP-MIB • HUAWEI-FWD-RES-TRAP-MIB • HUAWEI-FWD-PAF-TRAP-MIB • HUAWEI-GTL-MIB • HUAWEI-HWTACACS-MIB • HUAWEI-INFOCENTER-MIB • HUAWEI-IF-EXT-MIB • HUAWEI-IPFPM-MIB • HUAWEI-ISIS-CONF-MIB • HUAWEI-L2IF-MIB • HUAWEI-L2MAM-MIB • HUAWEI-L2MULTICAST-MIB • HUAWEI-L2VLAN-MIB • HUAWEI-L3VPN-EXT-MIB

Category	MIB
Huawei-proprietary MIB	• HUAWEI-LDT-MIB • HUAWEI-LINE-MIB • HUAWEI-LLDP-MIB • HUAWEI-M-LAG-MIB • HUAWEI-MEMORY-MIB • HUAWEI-MFLP-MIB • HUAWEI-MIB • HUAWEI-MPLS-EXTEND-MIB • HUAWEI-MPLSLSR-EXT-MIB • HUAWEI-MSTP-MIB • HUAWEI-ND-MIB • HUAWEI-NETCONF-MIB • HUAWEI-NETSTREAM-MIB • HUAWEI-NTP-TRAP-MIB • HUAWEI-NVO3-MIB • HUAWEI-OPENFLOW-MIB • HUAWEI-OSPFV2-MIB • HUAWEI-OSPFV3-MIB • HUAWEI-OVSDB-MIB • HUAWEI-PERFMGMT-MIB • HUAWEI-PIM-STD-MIB • HUAWEI-PORT-MIB • HUAWEI-RIPv2-EXT-MIB • HUAWEI-RM-EXT-MIB • HUAWEI-SECURITY-MIB • HUAWEI-SMARTLINK-MIB • HUAWEI-SNMP-EXT-MIB • HUAWEI-SSH-MIB • HUAWEI-STACK-MIB • HUAWEI-SWITCH-L2MAM-EXT-MIB • HUAWEI-SYS-CLOCK-MIB • HUAWEI-SYS-MAN-MIB • HUAWEI-TASK-MIB • HUAWEI-TCP-MIB • HUAWEI-TRILL-CONF-MIB • HUAWEI-TRNG-MIB • HUAWEI-VBST-MIB • HUAWEI-VP-MIB • HUAWEI-VPLS-EXT-MIB • HUAWEI-VRRP-EXT-MIB • HUAWEI-XQOS-MIB

Note

For detailed information of MIB information, visit http://support.huawei.com/hedex/hdx.do?docid=EDOC1100020548&lang=en&idPath=7919710%7C21782165%7C21782239%7C22318540%7C7597815 or contact your local Huawei sales office.

Standard Compliance

The following table lists the standards the CE 8800 complies with.

Standard Organization	Standard or Protocol
IETF	• RFC6991 Common YANG Data Types • RFC0768 User Datagram Protocol • RFC0791 INTERNET PROTOCOL DARPA INTERNET PROGRAM PROTOCOL SPECIFICATION • RFC0792 INTERNET CONTROL MESSAGE PROTOCOL • RFC0793 TRANSMISSION CONTROL PROTOCOL • RFC0813 Window and Acknowledgement Strategy in TCP/IP • RFC0826 Ethernet Address Resolution Protocol: Or Converting Network Protocol Addresses to 48.bit Ethernet Address for Transmission on Ethernet Hardware • RFC0854 TELNET PROTOCOL SPECIFICATION • RFC0862 Echo Protocol • RFC0879 The TCP Maximum Segment Size and Related Topics • RFC0896 Congestion control in IP/TCP internetworks • RFC0919 Broadcasting Internet Datagrams • RFC0922 Broadcasting Internet datagrams in the presence of subnets • RFC0950 Internet Standard Subnetting Procedure • RFC0959 FILE TRANSFER PROTOCOL (FTP) • RFC1027 Using ARP to implement transparent subnet gateways • RFC1034 Domain names - concepts and facilities • RFC1035 Domain names - implementation and specification • RFC1042 Standard for the transmission of IP datagrams over IEEE 802 networks • RFC1058 Routing Information Protocol • RFC1071 Computing the Internet Checksum • RFC1091 Telnet Terminal-Type Option • RFC1122 Requirements for Internet Hosts -- Communication Layers • RFC1123 Requirements for Internet Hosts - Application and Support • RFC1155 Structure and identification of management information for TCP/IP-based internets • RFC1157 Simple Network Management Protocol (SNMP) • RFC1195 Use of OSI Is-Is for Routing in TCP/IP and Dual Environments • RFC1212 Concise MIB definitions • RFC1214 OSI internet management: Management Information Base • RFC1215 A Convention for Defining Traps for use with the SNMP • RFC1245 OSPF Protocol Analysis • RFC1305 Network Time Protocol (Version 3) • RFC1321 The MD5 Message-Digest Algorithm • RFC1350 THE TFTP PROTOCOL (REVISION 2)

Standard Organization	Standard or Protocol
IETF	• RFC1389 RIP Version 2 MIB Extensions • RFC1493 Definitions of Managed Objects for Bridges • RFC1721 RIP Version 2 Protocol Analysis • RFC1722 RIP Version 2 Protocol Applicability Statement • RFC1723 RIP Version 2 - Carrying Additional Information • RFC1724 RIP Version 2 MIB Extension • RFC1757 Remote Network Monitoring Management Information Base • RFC1765 OSPF Database Overflow • RFC1860 Variable Length Subnet Table For IPv4 • RFC1901 Introduction to Community-based SNMPv2 • RFC1918 Address Allocation for Private Internets • RFC1981 Path MTU Discovery for IP version 6 • RFC2080 RIPng for IPv6 • RFC2081 RIPng Protocol Applicability Statement • RFC2082 RIP-2 MD5 Authentication • RFC2104 HMAC: Keyed-Hashing for Message Authentication • RFC2113 IP Router Alert Option • RFC2131 Dynamic Host Configuration Protocol • RFC2132 DHCP Options and BOOTP Vendor Extensions • RFC2233 The Interfaces Group MIB using SMIv2 • RFC2246 The TLS Protocol Version 1.0 • RFC2285 Benchmarking Terminology for LAN Switching Devices • RFC2328 OSPF Version 2 • RFC2329 OSPF Standardization Report • RFC2385 Protection of BGP Sessions via the TCP MD5 Signature Option • RFC2452 IP Version 6 Management Information Base for the Transmission Control Protocol • RFC2453 RIP Version 2 • RFC2454 IP Version 6 Management Information Base for the User Datagram Protocol • RFC2465 Management Information Base for IP Version 6: Textual Conventions and General Group • RFC2466 Management Information Base for IP Version 6: ICMPv6 Group • RFC2472 IP Version 6 over PPP • RFC2576 Coexistence between Version 1, Version 2, and Version 3 of the Internet-standard Network Management Framework • RFC2578 Structure of Management Information Version 2 (SMIv2) • RFC2579 Textual Conventions for SMIv2 • RFC2580 Conformance Statements for SMIv2 • RFC2618 RADIUS Authentication Client MIB • RFC2644 Changing the Default for Directed Broadcasts in Routers • RFC2711 IPv6 Router Alert Option • RFC2763 Dynamic Hostname Exchange Mechanism for IS-IS

Standard Organization	Standard or Protocol
IETF	• RFC2819 Remote Network Monitoring Management Information Base • RFC2865 Remote Authentication Dial In User Service (RADIUS) • RFC2866 Radius Accounting • RFC2873 TCP Processing of the IPv4 Precedence Field • RFC2903 Generic AAA Architecture • RFC2904 AAA Authorization Framework • RFC2906 AAA Authorization Requirements • RFC2966 Domain-wide Prefix Distribution with Two-Level IS-IS • RFC2973 IS-IS Mesh Groups • RFC3014 Notification Log MIB • RFC3069 VLAN Aggregation for Efficient IP Address Allocation • RFC3101 The OSPF Not-So-Stubby Area (NSSA) Option • RFC3152 Delegation of IP6.ARPA • RFC3162 RADIUS and IPv6 • RFC3164 The BSD Syslog Protocol • RFC3170 IP Multicast Applications: Challenges and Solutions • RFC3195 Reliable Delivery for syslog • RFC3277 Intermediate System to Intermediate System (IS-IS) Transient Blackhole Avoidance • RFC3358 Optional Checksums in Intermediate System to Intermediate System (ISIS) • RFC3359 Reserved Type, Length and Value (TLV) Codepoints in Intermediate System to Intermediate System • RFC3363 Representing Internet Protocol version 6 (IPv6) Addresses in the Domain Name System (DNS) • RFC3410 Introduction and Applicability Statements for Internet Standard Management Framework • RFC3411 An Architecture for Describing Simple Network Management Protocol (SNMP) Management Frameworks • RFC3412 Message Processing and Dispatching for the Simple Network Management Protocol (SNMP) • RFC3413 Simple Network Management Protocol (SNMP) Applications • RFC3414 User-based Security Model (USM) for version 3 of the Simple Network Management Protocol (SNMPv3) • RFC3415 View-based Access Control Model (VACM) for the Simple Network Management Protocol (SNMP) • RFC3416 Version 2 of the Protocol Operations for the Simple Network Management Protocol (SNMP). • RFC3417 Transport Mappings for the Simple Network Management Protocol (SNMP) • RFC3418 Management Information Base (MIB) for the Simple Network Management Protocol (SNMP). • RFC3468 The Multiprotocol Label Switching (MPLS) Working Group decision on MPLS signaling protocols • RFC3484 Default Address Selection for Internet Protocol version 6 (IPv6)

Standard Organization	Standard or Protocol
IETF	• RFC3512 Configuring Networks and Devices with Simple Network Management Protocol (SNMP). • RFC3567 Intermediate System to Intermediate System (IS-IS) Cryptographic Authentication • RFC3579 RADIUS (Remote Authentication Dial In User Service) Support For Extensible Authentication Protocol (EAP). • RFC3584 Coexistence between Version 1, Version 2, and Version 3 of the Internet-standard Network Management Framework • RFC3587 IPv6 Global Unicast Address Format • RFC3596 DNS Extensions to Support IP Version 6 • RFC3623 Graceful OSPF Restart • RFC3630 Traffic Engineering (TE) Extensions to OSPF Version 2 • RFC3682 The Generalized TTL Security Mechanism (GTSM) • RFC3719 Recommendations for Interoperable Networks using Intermediate System to Intermediate System (IS-IS) • RFC3756 IPv6 Neighbor Discovery (ND) Trust Models and Threats • RFC3787 Recommendations for Interoperable IP Networks using Intermediate System to Intermediate System (IS-IS) • RFC3826 The Advanced Encryption Standard (AES) Cipher Algorithm in the SNMP User-based Security Model • RFC3847 Restart Signaling for Intermediate System to Intermediate System (IS-IS) • RFC3879 Deprecating Site Local Addresses • RFC3906 Calculating Interior Gateway Protocol (IGP) Routes Over Traffic Engineering Tunnels • RFC3954 Cisco Systems NetFlow Services Export Version 9 • RFC3971 SEcure Neighbor Discovery (SEND) • RFC3972 Cryptographically Generated Addresses (CGA) • RFC4007 IPv6 Scoped Address Architecture • RFC4022 Management Information Base for the Transmission Control Protocol(TCP) • RFC4113 Management Information Base for the User Datagram Protocol (UDP) • RFC4133 Entity MIB (Version 3) • RFC4188 Definitions of Managed Objects for Bridges • RFC4191 Default Router Preferences and More-Specific Routes • RFC4213 Basic Transition Mechanisms for IPv6 Hosts and Routers • RFC4245 High-Level Requirements for Tightly Coupled SIP Conferencing • RFC4250 The Secure Shell (SSH) Protocol Assigned Numbers • RFC4251 The Secure Shell (SSH) Protocol Architecture • RFC4252 The Secure Shell (SSH) Authentication Protocol • RFC4253 The Secure Shell (SSH) Transport Layer Protocol • RFC4254 The Secure Shell (SSH) Connection Protocol • RFC4291 IP Version 6 Addressing Architecture • RFC4293 Management Information Base for the Internet Protocol (IP)

Standard Organization	Standard or Protocol
IETF	• RFC4294 IPv6 Node Requirements • RFC4344 The Secure Shell (SSH) Transport Layer Encryption Modes • RFC4345 Improved Arcfour Modes for the Secure Shell (SSH) Transport Layer Protocol • RFC4363 Q-BRIDGE-MIB • RFC4364 BGP/MPLS IP Virtual Private Networks (VPNs) • RFC4419 Diffie-Hellman Group Exchange for the Secure Shell (SSH) Transport Layer Protocol • RFC4443 Internet Control Message Protocol (ICMPv6) for the Internet Protocol Version 6 (IPv6) Specification • RFC4541 Considerations for Internet Group Management Protocol (IGMP)and Multicast Listener Discovery (MLD) Snooping Switches • RFC4560 Definitions of Managed Objects for Remote Ping, Traceroute, and Lookup Operations • RFC4562 MAC-Forced Forwarding: A Method for Subscriber Separation on an Ethernet Access Network • draft-bonica-tcp-auth-06Authentication for TCP-based Routing and Management Protocols • draft-grant-tacacs-02 The TACACS+ Protocol Version 1.78 • draft-ietf-l3vpn-rfc2547bis-03 BGP/MPLS IP VPNs • draft-ietf-ppvpn-rfc2547bis-04 BGP/MPLS VPN Arch • draft-ietf-secsh-filexfer-02 draft-ietf-secsh-filexfer-02 • draft-ietf-secsh-filexfer-13 SFTP File transfer protocol - Partially Not supported. • draft-ietf-secsh-filexfer-14 draft-ietf-secsh-filexfer-14 • draft-ietf-tls-rfc2246-bis-06 The TLS Protocol (Version 1.1) • draft-shen-sm2-ecdsa-00 Support of SM2 key exchange • draft-zhang-mac-forced-forwarding-vepa-01 MAC-Forced Forwarding Inter-operates with VEPA
IEEE	• IEEE 802.1A Overview and Architecture • IEEE 802.1AB Station and Media Access Control Connectivity Discovery • IEEE 802.1AC Media Access Control Service revision • IEEE 802.1AG IEEE Standard for • IEEE Local and metropolitan area networks • IEEE Virtual Bridged Local Area Networks • IEEE Amendment 5 • IEEE Connectivity Fault Management • IEEE 802.1AP Management Information Base (MIB) definitions for VLAN Bridges • IEEE 802.1AX Link Aggregation • IEEE 02.1B LAN/WAN Management • IEEE 802.1D Rapid Reconvergence of Spanning Tree (RSTP) • IEEE 802.1H Media Access Control (MAC) • IEEE Bridging of Ethernet V2.0 in Local

Standard Organization	Standard or Protocol
IEEE	• IEEE Area Networks • IEEE 802.1Q IEEE Standard for Local and Metropolitan Area Networks Virtual Bridged Local Area Networks • IEEE 802.1q 2005 Local and metropolitan area networks-Virtual Bridged Local Area Networks • IEEE 802.1QAZ Enhanced Transmission Selection • IEEE 802.1QBB Priority-based Flow Control • IEEE 802.1S Multiple Spanning Trees • IEEE 802.1X Port Based Network Access Control • IEEE 802.2 IEEE Standards for Local Area Networks: Logical Link Control (LLC) • IEEE 802.3AC VLAN tagging • IEEE 802.3AD Port Trunk, LACP • IEEE 802.3AH Operations, Administration, and Maintenance (OAM) • IEEE 802.3AX (IEEE P802.1AX) Link Aggregation Task Force. • IEEE ISO10598 Information technology—Telecommunications and information exchange between systems — Intermediate System to Intermediate System intra-domain routeing information exchange protocol for use in conjunction with the protocol for providing the connectionless-mode network service (ISO 8473)
ITU	• Y.1344 Ethernet ring protection switching
ISO	• ISO10598 Information technology —Telecommunications and information exchange between systems — Intermediate System to Intermediate System intra-domain routeing information exchange protocol for use in conjunction with the protocol for providing the connectionless-mode network service (ISO 8473)

NOTE

The listed standards and protocols are fully or partially supported by Huawei switches. For details, visit https://e.huawei.com/ca/material/onLineView?MaterialID=821895aad0bd48e6aa079c06e82fb7f8 or contact your local Huawei sales office.

Optical transceivers and Cables

Part	Product
SFP-10G-ER-SM1330- BIDI	Optical Transceiver,SFP+,10G,BIDI Single-mode Module(TX 1330nm/RX 1270nm,40km,LC)
SFP-10G-ER-SM1270- BIDI	Optical Transceiver,SFP+,10G,BIDI Single-mode Module(TX 1270nm/RX 1330nm,40km,LC)
SFP-10G-BXU1	10GBase,BIDI Optical Transceiver,SFP+,10G,Single-mode Module (TX1270nm/ RX1330nm,10km,LC)
SFP-10G-BXD1	10GBase,BIDI Optical Transceiver,SFP+,10G,Single-mode Module (TX1330nm/ RX1270nm, 10km, LC)
10G-SFP+ Optical Transceivers	
SFP-10G-USR	10GBase-USR Optical Transceiver,SFP+,10G,Multi-mode Module (850nm, 0.1km, LC)
OMXD30000	Optical Transceiver,SFP+,10G,Multi-mode Module(850nm,0.3km,LC)
SFP-10G-LR	Optical Transceiver,SFP+,10G,Single-mode Module(1310nm,10km,LC)
OSX040N01	Optical Transceiver,SFP+,10G,Single-mode Module(1550nm,40km,LC)
SFP-10G-ZR	10GBase-ZR Optical Transceiver, SFP+, 10G, Single-mode Module (1550nm, 80km, LC)
SFP-10G-iLR	Optical Transceiver,SFP+,9.8G,Single-mode Module(1310nm,1.4km,LC)
25GE-SFP28 Optical Transceivers	
SFP-25G-	Optical Transceiver,SFP28,25GE, Multi-mode
40GE-QSFP+ Optical Transceivers	
QSFP-40G-SR-BD	40GBase-BD Optical Transceiver,QSFP+,40G,Multi-mode (850nm,0.1km,LC)
QSFP-40G-iSR4	40GBase-iSR4 Optical Transceiver, QSFP+, 40G, Multi-mode (850nm, 0.15km, MPO) (Connect to four SFP+ Optical Transceiver)
QSFP-40G-eSR4	40GBase-eSR4 Optical Transceiver, QSFP+, 40G, Multi-mode (850nm, 0.3km, MPO) (Connect to four SFP+ Optical Transceiver)
QSFP-40G-LX4	40GBase-LX4 Optical Transceiver, QSFP+, 40GE, Single-mode (1310nm, 2km, LC), Multi-mode(1310nm, 0.15km, LC)
QSFP-40G-eSM4	40GBase-eSM4 Optical Transceiver, QSFP+, 40G, Single-mode Module (1310nm, 10km, MPO) (Connect to four SFP+ Optical Transceiver)
QSFP-40G-LR4	40GBase-LR4 Optical Transceiver, QSFP+, 40GE, Single-mode Module (1310nm, 10km, LC)

Part	Product
QSFP-40G-LR4-Lite	QSFP-40G-LR4-Lite,40GBase-LR4 Lite Optical Transceiver,QSFP+,40G,Single-mode Module(1310nm,2km,LC)
QSFP-40G-ER4	40GBase-ER4 Optical Transceiver, QSFP+, 40G, Single-mode Module (1310nm, 40km, LC)
QSFP-40G-SDLC-PAM	40GBase-SDLC Optical Transceiver, QSFP+, 40G, Multi-mode (850nm, PAM4, 0.1km, LC)
QSFP-40G-eSDLC-PAM	40GBase-eSDLC Optical Transceiver, QSFP+, 40G, Multi-mode (850nm, PAM4, 0.3km, LC)
100GE-QSFP28 Optical Transceivers	
QSFP-100G-SWDM4	100GBase-SWDM4 Optical Transceiver,QSFP+,100GE,Multi-mode Module(850,0.0.075km-OM3,0.1km-OM4,LC)
QSFP28-100G-SR4	100GBase-SR4 Optical Transceiver, QSFP28, 100G, Multi-mode (850nm, 0.1km, MPO)
QSFP28-100G-LR4	100GBase-LR4 Optical Transceiver, QSFP28, 100G, Single-mode module (1310nm, 10km, LC)
QSFP28-100G-PSM4	100GBase-PSM4 Optical Transceiver, QSFP28, 100G, Single-mode module (1310nm, 0.5km, MPO)
QSFP-100G-CWDM4	100GBase-CWDM4 Optical Transceiver, QSFP28, 100G, Single-mode module (1310nm, 2km, LC)
QSFP-100G-eCWDM4	100GBase-eCWDM4 Optical Transceiver,QSFP28,100G,Single-mode module (1310nm,10km,LC)
QSFP-100G-ER4-Lite	100GBase-ER4-Lite Optical Transceiver,QSFP28,100G,Single-mode module (1310nm,30km(FEC OFF),40km(FEC ON),LC)
QSFP-100G-SR4-NT	100GBase-SR4 Optical Transceiver,QSFP28,100G,Multi-mode (850nm,0.1km,MPO,NT) ,20-60C
QSFP-100G-CWDM4-NT	100GBase-CWDM4 Optical Transceiver,QSFP28,100G,Single-mode module (1310nm,2km,LC,NT) ,20-65C
FC Optical Transceiver	
SFP-FC8G-SW	Optical Transceiver,SFP+,8G/4G/2G,FC Multi-mode Module(850nm,0.15/0.38/0.5km,LC)
SFP-FC8G-LW	Optical Transceiver,SFP+,8G/4G/2G,FC Single-mode Module(1310nm,10km,LC)
SFP-FC16G-SW	Optical Transceiver,SFP+,16G/8G/4G,FC Multi-mode module (850nm,0.1km,LC)
AOC High-Speed Cables	

Part	Product
SFP-10G-AOC-5M	Active Optical Cable , SFP+, 10G, (850nm, 5m, AOC)
SFP-10G-AOC-7M	Active Optical Cable , SFP+, 10G, (850nm, 7m, AOC)
SFP-10G-AOC10M	AOC Optical Transceiver, SFP+, 850nm, 1G~10G, 10m
SFP-10G-AOC-3M	Optical transceiver, SFP+, 1G~10.5G, (850nm, 3m, AOC)
SFP-25G-AOC-3M	Active Optical Cable , SFP28, 25G, (850nm, 3m, AOC)
SFP-25G-AOC-5M	Active Optical Cable , SFP28, 25G, (850nm, 5m, AOC)
SFP-25G-AOC-7M	Active Optical Cable , SFP28, 25G, (850nm, 7m, AOC)
SFP-25G-AOC-10M	Active Optical Cable , SFP28, 25G, (850nm, 10m, AOC)
SFP-25G-AOC-5M-O	Active Optical Cable ,SFP28,25G,(850nm,5m,AOC,Orange)
SFP-25G-AOC-7M-O	Active Optical Cable ,SFP28,25G,(850nm,7m,AOC,Orange)
SFP-25G-AOC-10M-O	Active Optical Cable ,SFP28,25G,(850nm,10m,AOC,Orange)
SFP-25G-AOC-20M-O	Active Optical Cable ,SFP28,25G,(850nm,20m,AOC,Orange)
SFP-25G-AOC-5M-A	Active Optical Cable ,SFP28,25G,(850nm,5m,AOC,Aqua)
SFP-25G-AOC-7M-A	Active Optical Cable ,SFP28,25G,(850nm,7m,AOC,Aqua)
SFP-25G-AOC-10M-A	Active Optical Cable ,SFP28,25G,(850nm,10m,AOC,Aqua)
SFP-25G-AOC-20M-A	Active Optical Cable ,SFP28,25G,(850nm,20m,AOC,Aqua)
QSFP-H40G-AOC10M	Optical transceiver, QSFP+, 40G, (850nm, 10m, AOC)
QSFP-4SFP10-AOC10M	Optical transceiver, QSFP+, 40G, (850nm, 10m, AOC)(Connect to four SFP+ Optical Transceiver)
QSFP-100G-AOC-10M	Active Optical Cable ,QSFP28,100G,(850nm,10m,AOC)
QSFP-100G-AOC-30M	Active Optical Cable ,QSFP28,100G,(850nm,30m,AOC)
Copper Cable	
SFP-10G-CU1M	SFP+, 10G, High Speed Direct-attach Cables, 1m, SFP+20M, CC2P0.254B(S), SFP+20M, Used indoor
SFP-10G-CU3M	SFP+, 10G, High Speed Direct-attach Cables, 3m, SFP+20M, CC2P0.254B(S), SFP+20M, Used indoor
SFP-10G-CU5M	SFP, 10G, High Speed Cable, 5m, SFP+20M, CC2P0.254B(S), SFP+20M, LSFRZH For Indoor
SFP-10G-AC7M	SFP, 10G, Active High Speed Cable, 7m, SFP+20M, CC2P0.254B(S), SFP+20M, LSFRZH For Indoor

Part	Product
SFP-10G-AC10M	SFP+, 10G, Active High Speed Cables, 10m, SFP+20M, CC2P0.32B(S), SFP+20M,Used indoor
SFP-25G-CU1M	SFP28, 25G, High Speed Direct-attach Cables, 1m, (SFP28), CC8P0.254B(S), SFP28
SFP-25G-CU3M	SFP28, 25G, High Speed Direct-attach Cables, 3m, (SFP28), CC8P0.254B(S), SFP28
SFP-25G-CU3M-N	SFP28, 25G, High Speed Direct-attach Cables, 3m, (SFP28), CC2P0.4B(S), SFP28
SFP28-25G-CU5M	SFP28, 25G, High Speed Direct-attach Cables, 5m, (SFP28), CC2P0.4B(S), SFP28
QSFP-40G-CU1M	QSFP+, 40G, High Speed Direct-attach Cables, 1m, QSFP+38M, CC8P0.254B(S), QSFP+38M, Used indoor
QSFP-40G-CU3M	QSFP+, 40G, High Speed Direct-attach Cables, 3m, QSFP+38M, CC8P0.32B(S), QSFP+38M, Used indoor
QSFP-40G-CU5M	QSFP+, 40G, High Speed Direct-attach Cables, 5m, QSFP+38M, CC8P0.40B(S), QSFP+38M, Used indoor
QSFP-4SFP10G-CU1M	QSFP+, 4SFP+10G, High Speed Direct-attach Cables, 1m, QSFP+38M, CC8P0.254B(S), 4*SFP+20M, Used indoor
QSFP-4SFP10G-CU3M	QSFP+, 4SFP+10G, High Speed Direct-attach Cables, 3m, QSFP+38M, CC8P0.32B(S), 4*SFP+20M, Used indoor
QSFP-4SFP10G-CU5M	QSFP+, 4SFP+10G, High Speed Direct-attach Cables, 5m, QSFP+38M, CC8P0.4B(S), 4*SFP+20M, Used indoor
QSFP28-100G-CU1M	QSFP28, 100G, High Speed Direct-attach Cables, 1m, (QSFP28), CC8P0.254B(S), QSFP28, Used indoor
QSFP28-100G-CU3M	QSFP28, 100G, High Speed Direct-attach Cables, 3m, (QSFP28), CC8P0.254B(S), QSFP28, Used indoor
QSFP28-100G-CU5M	QSFP28, 100G, High Speed Direct-attach Cables, 5m, (QSFP28), CC8P0.4B(S), QSFP28, Used indoor
QSFP-4SFP25G-CU1M	100GE QSFP28-4SFP25G, High Speed Direct-attach Cables, 1m, (QSFP28), (4*(CC2P0.254B(S))), (4SFP28)
QSFP-4SFP25G-CU3M	100GE QSFP28-4SFP25G, High Speed Direct-attach Cables, 3m, (QSFP28), (4*(CC2P0.254B(S))), (4SFP28)
QSFP-4SFP25G-CU3M-N	100GE QSFP28-4SFP25G, High Speed Direct-attach Cables, 3m, (QSFP28), (4*(CC2P0.4B(S))), 4SFP28
QSFP-4SFP25G-CU5M	100GE QSFP28-4SFP25G, High Speed Direct-attach Cables, 5m, (QSFP28), (4*(CC2P0.4B(S))), 4SFP28

Ordering Information

Mainframe	
CE8860-4C-EI-F	CE8860-4C-EI Mainframe(With 4 Subcard Slots,2*FAN Box, Port-side Exhaust, Without Power Module)
CE8860-4C-EI-B	CE8860-4C-EI Mainframe(With 4 Subcard Slots,2*FAN Box, Port-side Intake, Without Power Module)
CE8860-4C-EI	CE8860-4C-EI Mainframe(With 4 Subcard Slots, Without FAN Box, Without Power Module)
CE8850-EI-F-B0A	CE8850-32CQ-EI Switch(32-Port 100GE QSFP28,2-Port 10GE SFP+,2*AC Power Module,2*FAN Box, Port-side Exhaust)
CE8850-EI-B-B0A	CE8850-32CQ-EI Switch(32-Port 100GE QSFP28, 2-Port 10GE SFP+,2*AC Power Module,2*FAN Box, Port-side Intake)
CE8850-32CQ-EI	CE8850-32CQ-EI Switch(32-Port 100GE QSFP28 Optical,2*FAN Box, Port-side Exhaust, Without Power Module)
CE8850-EI-F-B0B	CE8850-64CQ-EI Switch(64-Port 100GE QSFP28,2*AC Power Module,3*FAN Box,Port-side Exhaust)
CE8850-EI-B-B0B	CE8850-64CQ-EI Switch(64-Port 100GE QSFP28,2*AC Power Module,3*FAN Box,Port-side Intake)
CE8850-64CQ-EI	CE8850-64CQ-EI Switch(64-Port 100GE QSFP28,Without Fan and Power Module)
CE8861-4C-EI-F	CE8861-4C-EI Mainframe(With 4 Subcard Slots,2*FAN Box, Port-side Exhaust, Without Power Module)
CE8861-4C-EI-B	CE8861-4C-EI Mainframe(With 4 Subcard Slots,2*FAN Box, Port-side Intake, Without Power Module)
CE8861-4C-EI	CE8861-4C-EI Mainframe(With 4 Subcard Slots, Without FAN Box, Without Power Module)
Subcard	
CE88-D8CQ	8 Port 100GE QSFP28 Interface Card
CE88-D16Q	16 Port 40GE QSFP+ Interface Card
CE88-D24T2CQ	24 Port 10GE Base-T and 2 Port 100GE QSFP28 Interface Card
CE88-D24S2CQ	24 Port 25GE SFP28 and 2 Port 100GE QSFP28 Interface Card
CE88-D24S2CQ-U	24 Port 25GE/16GE FC (SFP28) and 2 Port 40GE/100GE (QSFP28) Interface Card

Fan box

Part Number	Product Description	Support Product
FAN-180A-F	Fan box(F, FAN panel side intake)	CE8860-4C-EI /CE8850-64CQ-EI/ CE8861-4C-EI
FAN-180A-B	Fan box(B, FAN panel side exhaust)	CE8860-4C-EI/ CE8850-64CQ-EI/ CE8861-4C-EI
FAN-40HA-F	Fan box(HA, Front to Back, FAN panel side intake)	CE8850-32CQ-EI
FAN-40HA-B	Fan box(HA, Back to Front, FAN panel side exhaust)	CE8850-32CQ-EI

Power module

Part Number	Product Description	Support Product
PAC-1K2WA-F	1200W AC&240V DC Power Module(Power panel side intake)	CE8860-4C-EI /CE8850-64CQ-EI/ CE8861-4C-EI
PAC-1K2WA-B	1200W AC&240V DC Power Module(Power panel side exhaust)	CE8860-4C-EI /CE8850-64CQ-EI/ CE8861-4C-EI
PHD-1K2WA-F	1200W HVDC Power Module(Power panel side intake)	CE8860-4C-EI /CE8850-64CQ-EI/ CE8861-4C-EI
PHD-1K2WA-B	1200W HVDC Power Module(Power panel side exhaust)	CE8860-4C-EI /CE8850-64CQ-EI/ CE8861-4C-EI
PDC-1K2WA-F	1200W DC Power Module (Front to Back, Power panel side intake)	CE8860-4C-EI /CE8850-64CQ-EI/ CE8861-4C-EI
PDC-1K2WA-B	1200W DC Power Module (Back to Front, Power panel side exhaust)	CE8860-4C-EI /CE8850-64CQ-EI/ CE8861-4C-EI
PAC-600WA-F	600W AC Power Module(Front to Back, Power panel side intake)	CE8850-32CQ-EI
PAC-600WA-B	600W AC Power Module(Back to Front, Power panel side exhaust)	CE8850-32CQ-EI

Software

CE88-LIC-NPV	CloudEngine 8800 FCOE NPV Function
CE88-LIC-FCF16	CloudEngine 8800 FCF 16 Ports
CE88-LIC-FCFAL	CloudEngine 8800 FCF All Ports
CE88-LIC-VXLAN	CloudEngine 8800 VXLAN Function
CE88-LIC-TLM	CE8800 Telemetry Function

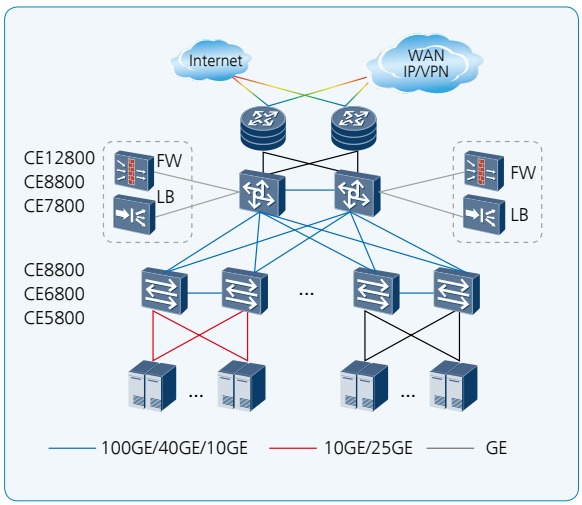
CE88-LIC-PTP	CE8800 Precision Time Protocol Function (Supported only by CE8850-64CQ-EI)
N1-CE88LIC-CFFD	N1-CloudFabric Foundation SW License for CloudEngine 8800
N1-CE88CFFD-SYS1Y	N1-CloudFabric Foundation SW License for CloudEngine 8800-SnS-1 Year
N1-CE88LIC-CFAD	N1-CloudFabric Advanced SW License for CloudEngine 8800
N1-CE88CFAD-SYS1Y	N1-CloudFabric Advanced SW License for CloudEngine 8800-SnS-1 Year
N1-CE88LIC-AIF	N1-CloudEngine 8800 AI Fabric Function
N1-CE88AIF-SnS1Y	N1-CloudEngine 8800 AI Fabric Function-SnS-1 Year

Networking and Applications

Data Center Applications

On a typical data center network, CE12800/CE8800/CE7800 switches work as core switches, whereas CE6800 and CE5800 switches work as ToR switches and connect to the core switches using 100GE/40GE/10GE ports. These switches use fabric technology such as TRILL or VXLAN to establish a non-blocking large Layer 2 network, which allows large-scale VM migrations and flexible service deployments.

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

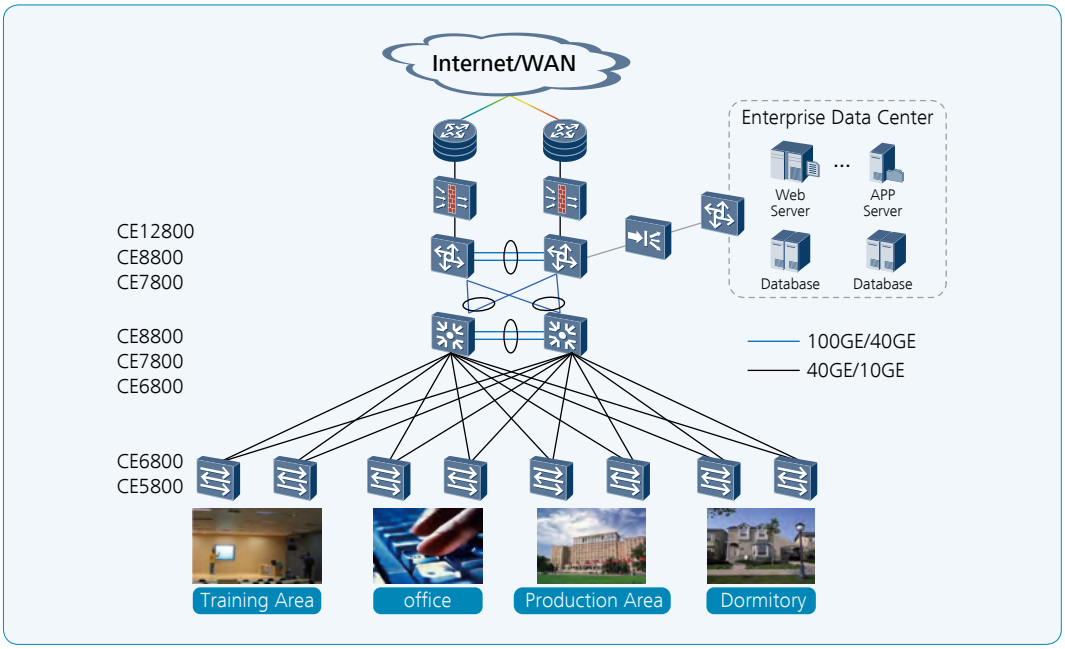


Campus Network Applications

The CE8800 can be used on a campus network. Its high-density, line-speed 100GE/40GE ports and high stacking capability can meet the ever-increasing demand for network bandwidth. CE8800 switches are cost-effective campus network switches, thanks to their extensive service features and innovative energy-saving technologies.

On a typical campus network, two CE12800/CE8800/CE7800 switches are virtualized into a logical core switch using CSS or iStack technology. Multiple CE6800 switches at the aggregation layer form a logical switch using iStack technology. CSS and iStack improve network reliability and simplify network management.

Note: iStack technology is also widely used in data centers to facilitate network management.



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