CloudEngine 6850 Series Data Center Switches

HUAWEI TECHNOLOGIES CO., LTD.

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Product Overview

Huawei CloudEngine 6850 (CE6850 for short) series switches are next-generation 10G Ethernet switches designed for data centers and high-end campus networks, providing high-performance, high-density 10GE ports, and low latency. The CE6850 series uses an advanced hardware architecture with 40GE uplink ports and high density 10GE access ports.

Using the Huawei VRP8 software platform, CE6850 series 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. CE6850 series can work with CE12800 switches to build an elastic, virtualized, high-quality fabric that meets the requirements of cloud-computing data centers.

CE6850 series 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 be used as aggregation or core switches for enterprise campus networks.

Product Appearance

The CE6850 series come in following models.

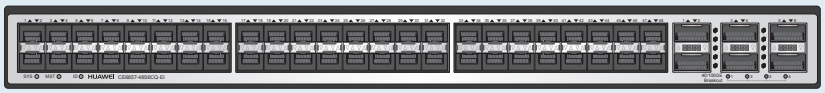
CE6855-48S6Q-HI/ CE6856-48S6Q-HI

48*10GE SFP+ ports, 6*40GE QSFP+ ports

CE6855-48T6Q-HI/ CE6856-48T6Q-HI

48*10GE Base-T ports, 6*40GE QSFP+ ports

CE6857-48S6CQ-EI



48*10GE SFP+ ports, 6*100GE QSFP28 ports or 6*40GE QSFP+ ports

CE6851-48S6Q-HI

48*10GE SFP+ ports, 6*40GE QSFP+ ports

Product Characteristics

High-Density 10GE Access

- CE6850 series are 1 U ToR switches providing 1080 mpps forwarding performance and supporting L2/L3 line-rate forwarding.
- CE6850 series provide 72*10GE ports, high-density 10GE ports among 1 U ToR switches, allowing for high-density 10GE server access.
- CE6850 series have a maximum of six 40GE QSFP+ ports. Each QSFP+ port can be used as four 10GE SFP+ ports, providing flexibility in networking. The uplink 40GE QSFP+ ports can be connected to CE12800 switches to build a non-blocking network platform.

Highly Reliable, High-Performance Stacking

- 16-member stack system
  - » A stack system of 16 member switches has up to 768*10GE access ports that provide high-density server access in a data center.
  - » Multiple stacked switches 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, highly reliable stacking
  - » CE6850 series 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.

Inter-device Link Aggregation, High Efficiency and Reliability

- CE6850 series support 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.
- With 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 zero interruption of services when upgrading switches.

Vertical Virtualization Simplifies Management

- CE6850 series support Super Virtual Fabric (SVF), which can virtualize multiple physical switches of the same or different types into one logical switch to simplify network management and improve reliability.
- SVF enables different types of switches to set up a vertical virtual system. In an SVF system, CE6850 series can act as spine nodes and leaf nodes CE6810 are virtualized into remote line cards of the spine switches. This facilitates cabling and equipment management in equipment rooms.
- Huawei's SVF implements local forwarding on leaf switches. When horizontal traffic dominates in a data center, SVF improves the forwarding efficiency and reduces network delay.

Large-Scale Routing Bridge, On-Demand Scaling

- CE6850 series support the IETF Transparent Interconnection of Lots of Links (TRILL) protocol and can connect to 10G and 1G servers simultaneously. CE6850 series can establish a large Layer 2 TRILL network with 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.
- CE6850 series support TRILL-based Layer 2 equal-cost paths, greatly improving links' load balancing capabilities. The network has a fat-tree architecture that enhances expansion.

Hardware Overlay Gateway Achieves Fast Service Deployment

- CE6850 series can work with a mainstream virtualization platform and acts a hardware gateway on an overlay network (VXLAN) to support up to 16 million tenants.
- CE6850 series can connect to a cloud platform through an open API to provide unified management of software and hardware networks.
- The hardware gateway deployment enables fast service deployment without changing the customer network, providing investment protection.
- CE6850 series support Border Gateway Protocol - Ethernet VPN (BGP-EVPN), which can run as the VXLAN control plane to simplify VXLAN configuration within and between data centers.

Converged Enhanced Ethernet, Allowing for Data, Storage, and Computing Services on One Network

- CE6850 series support 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.
- CE6850 series support centralized FCoE/FC gateway deployment, which makes network O&M simpler.
- Various CE6850 series switches support multiple data center features: 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.

Full Openness and Programmability, Flexible Customization

- CE6850 series use 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.
- CE6850 series support CE modules for Ansible, which enables unified provisioning of physical and virtual networks.
- CE6850 series can seamlessly integrate with systems of F5, an industry-leading application delivery network provider, to build an active-active data center network.
- The OPS provides seamless integration of data center service and network in addition to a service-oriented, software-defined networking (SDN).

Zero Touch Provisioning, Automatic O&M

- CE6850 series support Zero Touch Provisioning (ZTP). ZTP enables the CE6800 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

- CE6850 series provide 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.
- CE6850 series support visualization of all flows and congestion, improving service experience.

Flexible Airflow Design, High Energy Efficiency

- Flexible front-to-back/back-to-front airflow design
  - » CE6850 series use 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.
- Energy-saving technology
  - » CE6850 series have energy-saving chips and can measure system power consumption in real time. Fan speeds 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 40GE 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.
  - » CE6850 series support 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	CE6850					
	CE6856-48T6Q-HI	CE6856-48S6Q-HI	CE6855-48T6Q-HI	CE6855-48S6Q-HI	CE6851-48S6Q-HI	CE6857-48S6CQ-EI
Device virtualization	iStack[2]					
	Super Virtual Fabric (SVF)[3] (Not supported by the CE6857)					
	M-LAG					
Network virtualization	TRILL (Not supported by the CE6857)					
	VXLAN routing and bridging					
	BGP-EVPN					
	QinQ access VXLAN					
Data center interconnect	VXLAN mapping, implementing interconnection between multiple DCI networks at Layer 2					
SDN Controller	Agile Controller					
	VMware NSX (Supported by the CE6855 and CE6856)					
Network convergence	FCoE					
	DCBX, PFC, ETS					
Programmability	OPS					
	CE modules for Ansible released on open source websites					
Traffic analysis	NetStream					
	sFlow					
VLAN	Adding access, trunk, and hybrid interfaces to VLANs					
	Default VLAN					
	QinQ					
	MUX VLAN					
	GVRP					

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

Item	CE6850					
	CE6856-48T6Q-HI	CE6856-48S6Q-HI	CE6855-48T6Q-HI	CE6855-48S6Q-HI	CE6851-48S6Q-HI	CE6857-48S6CQ-EI
MAC address table	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 Neighbor Discovery (ND)					
	IPv6 VXLAN over IPv4					
	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					
	Fast leaving of multicast member interfaces					
	Multicast traffic suppression					
	Multicast VLAN					
	Multicast VXLAN					
MPLS	MPLS					
Reliability	Fine-grained microsegmentation isolation(Supported only by the CE6857-48S6CQ-EI)					
	LACP					
	STP, RSTP, VBST, MSTP					
	BPDU protection, root protection, and loop protection					
	Smart Link and multi-instance					
	DLDP					
	ERPS (G.8032)					
	Hardware-based Bidirectional Forwarding Detection (BFD)					
	VRRP, VRRP load balancing, and BFD for VRRP					
	BFD for BGP/IS-IS/OSPF/Static route					
	BFD for VXLAN					

Item	CE6850					
	CE6856-48T6Q-HI	CE6856-48S6Q-HI	CE6855-48T6Q-HI	CE6855-48S6Q-HI	CE6851-48S6Q-HI	CE6857-48S6CQ-EI
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					
	Telemetry					
	Statistics on the buffer microburst status					
	VXLAN OAM: VXLAN ping, 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					
	802.3az Energy Efficient Ethernet (EEE)					
	Hot patches					
	User operation logs					
	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 number, and VLAN ID					
	Authentication methods, including AAA, RADIUS, and HWTACACS					
	Remote Network Monitoring (RMON)					

Performance and Scalability

Item	CE6850					
	CE6856-48T6Q-HI	CE6856-48S6Q-HI	CE6855-48T6Q-HI	CE6855-48S6Q-HI	CE6851-48S6Q-HI	CE6857-48S6CQ-EI
Maximum number of MAC address entries	288K					
Maximum number of Forwarding routes (FIB IPv4/IPv6)	256K/128K					380K/256K
ARP table size	128K					168K
Maximum number of VRF	1024					4096
IPv6 ND (Neighbour Discovery) table size	48K					64K
Maximum Number of multicast routes (Multicast FIB IPv4/IPv6)	8K/2K					
Maximum VRRP groups	256					1000
Maximum number of ECMP paths	32					
Maximum ACL number	Ingress14750 Egress 1000	Ingress14750 Egress 1000	Ingress14750 Egress 1000	Ingress14750 Egress 1000	Ingress3750 Egress 1000	Ingress 7662 Egress 2000
Maximum Number of broadcast domains	8K	8K	8K	8K	4K	16k
Maximum number of BDIF	4K					12K
Maximum number of tunnel endpoints (VTEP)	15K					

Item	CE6850					
	CE6856-48T6Q-HI	CE6856-48S6Q-HI	CE6855-48T6Q-HI	CE6855-48S6Q-HI	CE6851-48S6Q-HI	CE6857-48S6CQ-EI
Maximum number of lag group	1024/512/256/128/64					
Maximum number of links in a lag group	2/4/8/16/32					
Maximum number of MSTP instance	64					
VBST (Maximum number of VLANs where VBST can be configured)	500					

Note

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

Hardware Specifications

Item		CE6850					
		CE6856-48T6Q-HI	CE6856-48S6Q-HI	CE6855-48T6Q-HI	CE6855-48S6Q-HI	CE6851-48S6Q-HI	CE6857-48S6CQ-EI
Physical Features	Dimensions (W × D ×H ,mm)	442*600 *43.6	442*420 *43.6	442*600 *43.6	442*420 *43.6	42*420* 43.6	442*420 *43.6
	Weight (excluding optical modules, power modules, and fan assemblies / including AC power modules and fan assemblies, excluding optical modules ,kg)	8.8/12.6	5.7/8.7	8.8/12.6	5.7/8.7	5.7/8.7	5.3/7.6
	Switching capacity (Tbit/s)	1.44					2.16
	Forwarding performance (Mpps)	1080					1000
10GE SFP+ ports		0	48	0	48	48	48
10GE BASE-T		48	0	48	0	0	0
FC ports		0	0	0	0	0	0
QSFP+ ports		6					0

Item		CE6850					
		CE6856-48T6Q-HI	CE6856-48S6Q-HI	CE6855-48T6Q-HI	CE6855-48S6Q-HI	CE6851-48S6Q-HI	CE6857-48S6CQ-EI
100GE QSFP28 ports		0					6
Card	Number of card slot	1					
	Card type	Fixed Switch					
Management interface	Out-of-band management port	2*GE RJ45 & SFP (combo) management interfaces	1*GE management interface	2*GE RJ45 & SFP (combo) management interfaces	1*GE management interface	1*GE management interface	1*GE management interface
	Console port	1*RJ45 + 1*MiniUSB (multiplexing)	1*RJ45	1*RJ45 + 1*MiniUSB (multiplexing)	1*RJ45	1*RJ45	1*RJ45
	USB port	1					
CPU	Main frequency (HZ)	1.2G	1.2G	1.2G	1.2G	1.2G	1.4G
	Number of cores	4					
Storage	RAM	4GB	4GB	2GB	2GB	2GB	4GB
	NOR Flash	16MB					64MB
	NAND Flash	1GB					2GB
System	System buffer	16MB	16MB	16MB	16MB	12MB	32MB
Power Supply System	nput voltage range (V)	AC rated voltage: 100 V to 240 V; 50/60 Hz Maximum AC voltage : 90 V to 290 V; 47 Hz to 63 Hz 240 V HVDC voltage: 188 V to 290 V DC 380 V HVDC rated voltage: 240 V to 380 V Maximum DC 380 V HVDC voltage: 188V to 400 V ; -48 V DC rated voltage: –48 V to –60 V Maximum -48 V DC voltage: –38.4 V to –72 V	AC rated voltage: 100 V to 240 V; 50/60 Hz Maximum AC voltage : 90 V to 290 V; 47 Hz to 63 Hz -48 V DC rated voltage: –48 V to –60 V Maximum -48 V DC voltage: –38.4 V to –72 V	AC rated voltage: 100 V to 240 V; 50/60 Hz Maximum AC voltage : 90 V to 290 V; 47 Hz to 63 Hz 240 V HVDC voltage: 188 V to 290 V DC 380 V HVDC rated voltage: 240 V to 380 V Maximum DC 380 V HVDC voltage: 188V to 400 V ; -48 V DC rated voltage: –48 V to –60 V Maximum -48 V DC voltage: –38.4 V to –72 V	AC rated voltage: 100 V to 240 V; 50/60 Hz Maximum AC voltage : 90 V to 290 V; 47 Hz to 63 Hz -48 V DC rated voltage: –48 V to –60 V Maximum -48 V DC voltage: –38.4 V to –72 V	AC rated voltage: 100 V to 240 V; 50/60 Hz Maximum AC voltage : 90 V to 290 V; 47 Hz to 63 Hz -48 V DC rated voltage range: –48 V to –60 V Maximum -48 V DC voltage range: –38.4 V to –72 V	AC rated voltage: 100 V to 240 V; 50/60 Hz Maximum AC voltage : 90 V to 290 V; 47 Hz to 63 Hz -48 V DC rated voltage range: –48 V to –60 V Maximum -48 V DC voltage range: –38.4 V to –72 V

Item		CE6850					
		CE6856-48T6Q-HI	CE6856-48S6Q-HI	CE6855-48T6Q-HI	CE6855-48S6Q-HI	CE6851-48S6Q-HI	CE6857-48S6CQ-EI
Power Supply System	Input current range (A)	600 W AC power module: 100 V to 240 V 8 A 600 W 240VDC power module: 240V 4A 600 W 380VDC power module: 240 V to 380 V 4 A 1200 W -48V power module: -48 V to 60 V 38A	600 W AC power module: 100 V to 240 V 9 A 350 W DC power module: –48 V to –60 V DC 11 A	600 W AC power module: 100 V to 240 V 8 A 600 W 240VDC power module: 240V 4A 600 W 380VDC power module: 240 V to 380 V 4 A 1200 W -48V power module: -48 V to 60 V 38A	600 W AC power module: 100 V to 240 V 9 A 350 W DC power module: –48 V to –60 V DC 11 A	600 W AC power module: 100 V to 240 V 9 A 350 W DC power module: –48 V to –60 V DC 11 A	600 W AC power module: 100 V to 240 V 9 A 350 W DC power module: –48 V to –60 V DC 11 A
	Typical power	219W (100% traffic load, 3 m network cable and copper cable, normal temperature, dual power modules) 224W (100% traffic load, 3 m network cable, short-distance optical modules, normal temperature, dual power modules)	116W (100% traffic load, copper cable, normal temperature, dual power modules) 138W (100% traffic load, short-distance optical modules, normal temperature, dual power modules)	219W (100% traffic load, 3 m network cable and copper cable, normal temperature, dual power modules) 224W (100% traffic load, 3 m network cable, short-distance optical modules, normal temperature, dual power modules)	116W (100% traffic load, copper cable, normal temperature, dual power modules) 138W (100% traffic load, short-distance optical modules, normal temperature, dual power modules)	145W (100% traffic load, copper cable, normal temperature, dual power modules) 168W (100% traffic load, short-distance optical modules, normal temperature, dual power modules)	152W (100% traffic load, copper cable, normal temperature, dual power modules) 195W (100% traffic load, short-distance optical modules, normal temperature, dual power modules)
	Maximum power	346W	216W	346W	216W	245W	287W
	Frequency (AC ,HZ)	50/60					
Heat Dissipation	Heat dissipation mode	Air cooling					
	Number of fans	2					4

Item		CE6850					
		CE6856-48T6Q-HI	CE6856-48S6Q-HI	CE6855-48T6Q-HI	CE6855-48S6Q-HI	CE6851-48S6Q-HI	CE6857-48S6CQ-EI
Heat Dissipation	Heat dissipation airflow	Front-to-back or back-to-front airflow					
	Maximum heat consumption (BTU/hr)	1181	737	1181	737	836	979
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: < 64 dBA Back-to-front airflow: < 64 dBA	Front-to-back airflow: < 69 dBA Back-to-front airflow: < 66 dBA	Front-to-back airflow: < 64 dBA Back-to-front airflow: < 64 dBA	Front-to-back airflow: < 69 dBA Back-to-front airflow: < 66 dBA	Front-to-back airflow: < 69 dBA Back-to-front airflow: < 66 dBA	Front-to-back airflow: < 63 dBA Back-to-front airflow: < 63 dBA
	Sound power at 40°C (dBA)	Front-to-back airflow: < 80 dBA Back-to-front airflow: < 84 dBA	Front-to-back airflow: < 80 dBA Back-to-front airflow: < 79 dBA	Front-to-back airflow: < 80 dBA Back-to-front airflow: < 84 dBA	Front-to-back airflow: < 80 dBA Back-to-front airflow: < 79 dBA	Front-to-back airflow: < 80 dBA Back-to-front airflow: < 79 dBA	Front-to-back airflow: < 84 dBA Back-to-front airflow: < 82 dBA
	Sound pressure at 27°C (dBA)	Front-to-back airflow: 48 dBA in average (maximum: 53 dBA) Back-to-front airflow: 48 dBA in average (maximum: 53 dBA)	Front-to-back airflow: 53 dBA in average (maximum: 58 dBA) Back-to-front airflow: 50 dBA in average (maximum: 56 dBA)	Front-to-back airflow: 48 dBA in average (maximum: 53 dBA) Back-to-front airflow: 48 dBA in average (maximum: 53 dBA)	Front-to-back airflow: 53 dBA in average (maximum: 58 dBA) Back-to-front airflow: 50 dBA in average (maximum: 56 dBA)	Front-to-back airflow: 53 dBA in average (maximum: 58 dBA) Back-to-front airflow: 50 dBA in average (maximum: 56 dBA)	Front-to-back airflow: 48 dBA in average (maximum: 52 dBA) Back-to-front airflow: 49 dBA in average (maximum: 53 dBA)

Item		CE6850					
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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 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	AC power supply protection: 6 kV in common mode and 6 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 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 DC power supply protection: 4 kV in common mode and 2 kV in differential mode
Reliability	MTBF (year)	54.48	48.83	54.48	48.83	49.08	45.3
	MTTR (hour)	1.81	1.73	1.81	1.73	1.77	1.68
	Availability	0.99999620929	0.99999595166	0.99999620929	0.99999595166	0.99999587522	0.99999576002

Note

For detailed information of CloudEngine 6850 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 6850 series switches.

Certification Category	Description
Safety	• 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 60950-1: 2005+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 55024: 2010 • 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

The following table lists the MIBs supported by CE 6850 series switches.

Category	MIB
Public MIB	• 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

Category	MIB
Public MIB	• SNMP-PROXY-MIB • SNMP-TARGET-MIB • SNMP-USER-BASED-SM-MIB • SNMPv2-MIB • SNMP-VIEW-BASED-ACM-MIB • TCP-MIB • UDP-MIB • VRRP-MIB
Huawei-proprietary 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

Category	MIB
Huawei-proprietary MIB	• HUAWEI-L2MAM-MIB • HUAWEI-L2MULTICAST-MIB • HUAWEI-L2VLAN-MIB • HUAWEI-L3VPN-EXT-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 (Not supported by the CE6857) • 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 6850 series switches 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

Standard Organization	Standard or Protocol
IETF	• 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) • 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

Standard Organization	Standard or Protocol
IETF	• 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 • 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).

Standard Organization	Standard or Protocol
IETF	• RFC3468 The Multiprotocol Label Switching (MPLS) Working Group decision on MPLS signaling protocols • RFC3484 Default Address Selection for Internet Protocol version 6 (IPv6) • 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

Standard Organization	Standard or Protocol
IETF	• RFC4254 The Secure Shell (SSH) Connection Protocol • RFC4291 IP Version 6 Addressing Architecture • RFC4293 Management Information Base for the Internet Protocol (IP) • 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-06 Authentication 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-06The 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

Standard Organization	Standard or Protocol
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 • 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 Number	Product Description
GE-SFP Optical Transceivers	
SFP-1000BaseT	Electrical Transceiver, SFP, GE, Electrical Interface Module (100m, RJ45)
eSFP-GE-SX-MM850	Optical Transceiver, eSFP, GE, Multi-mode Module (850nm, 0.55km, LC)
SFP-GE-LX-SM1310	Optical Transceiver, eSFP, GE, Single-mode Module (1310nm, 10km, LC)
S-SFP-GE-LH40-SM1310	Optical Transceiver, eSFP, GE, Single-mode Module (1310nm, 40km, LC)
S-SFP-GE-LH80-SM1550	Optical Transceiver, eSFP, GE, Single-mode Module (1550nm, 80km, LC)
eSFP-GE-ZX100-SM1550	Optical Transceiver, eSFP, GE, Single-mode Module (1550nm, 100km, LC)
BIDI-SFP Optical Transceivers	
SFP-GE-LX-SM1490-BIDI	Optical Transceiver, eSFP, GE, BIDI Single-mode Module (TX1490/RX1310, 10km,LC)
SFP-GE-LX-SM1310-BIDI	Optical Transceiver, eSFP, GE, BIDI Single-mode Module (TX1310/RX1490, 10km, LC)
LE2MGSC40ED0	Optical Transceiver, eSFP, GE, BIDI Single-mode Module (TX1490/RX1310, 40km, LC)
LE2MGSC40DE0	Optical Transceiver, eSFP, GE, BIDI Single-mode Module (TX1310/RX1490, 40km, LC)
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)
OSXD22N00	Optical Transceiver, SFP+, 10G, Multi-mode Module (1310nm, 0.22km, LC, LRM)
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)
10G-SFP+ DWDM Optical Transceivers	
SFP-10G-ZDWT-L	Optical Transceiver, SFP+, 10G, Single-mode Module (DWDM,1560.61-1529.16nm, 60km, LC)
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)
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-ER4-Lite	100GBase-ER4-Lite Optical Transceiver, QSFP28, 100G, Single-mode module (1310nm, 30km (FEC OFF), 40km (FEC ON), LC)
AOC High-Speed Cables	
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)
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
SFP-10G-AC10M	SFP+, 10G, Active High Speed Cables, 10m, SFP+20M, CC2P0.32B(S), SFP+20M, Used indoor
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
SFP-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

Ordering Information

Mainframe	
CE6856-48S6Q-HI	CE6856-48S6Q-HI Switch (48-Port 10G SFP+, 6-Port 40GE QSFP+, 2*FAN Box, Without Fan and Power Module)
CE6856-HI-B-B0A	CE6856-48S6Q-HI Switch (48-Port 10G SFP+, 6-Port 40GE QSFP+, 2*AC Power Module, 2*FAN Box, Port-side IOake)
CE6856-HI-F-B0A	CE6856-48S6Q-HI Switch (48-Port 10G SFP+, 6-Port 40GE QSFP+, 2*AC Power Module, 2*FAN Box, Port-side Exhaust)
CE6856-48T6Q-HI	CE6856-48T6Q-HI Switch (48-Port 10GE RJ45, 6-Port 40GE QSFP+, 2*FAN Box, Without Fan and Power Module)
CE6856-HI-B-B00	CE6856-48T6Q-HI Switch (48-Port 10GE RJ45, 6-Port 40GE QSFP+, 2*AC Power Module, 2*FAN Box, Port-side Intake)
CE6856-HI-F-B00	CE6856-48T6Q-HI Switch (48-Port 10GE RJ45, 6-Port 40GE QSFP+, 2*AC Power Module, 2*FAN Box, Port-side Exhaust)
CE6855-48S6Q-HI	CE6855-48S6Q-HI Switch (48-Port 10G SFP+, 6-Port 40GE QSFP+, 2*FAN Box, Without Fan and Power Module)
CE6855-HI-B-B0A	CE6855-48S6Q-HI Switch (48-Port 10G SFP+, 6-Port 40GE QSFP+, 2*AC Power Module, 2*FAN Box, Port-side Intake)
CE6855-HI-F-B0A	CE6855-48S6Q-HI Switch (48-Port 10G SFP+, 6-Port 40GE QSFP+, 2*AC Power Module, 2*FAN Box, Port-side Exhaust)
CE6855-48T6Q-HI	CE6855-48T6Q-HI Switch (48-Port 10GE RJ45, 6-Port 40GE QSFP+, 2*FAN Box, Without Fan and Power Module)
CE6855-HI-B-B00	CE6855-48T6Q-HI Switch(48-Port 10GE RJ45, 6-Port 40GE QSFP+, 2*AC Power Module, 2*FAN Box, Port-side Intake)
CE6855-HI-F-B00	CE6855-48T6Q-HI Switch (48-Port 10GE RJ45, 6-Port 40GE QSFP+, 2*AC Power Module, 2*FAN Box, Port-side Exhaust)
CE6851-48S6Q- HI	CE6851-48S6Q-HI Switch (48-Port 10G SFP+, 6-Port 40GE QSFP+, 2*FAN Box,Without Fan and Power Module)
CE6851-HI-B-B0A	CE6851-48S6Q-HI Switch (48-Port 10G SFP+, 6-Port 40GE QSFP+, 2*AC Power Module, 2*FAN Box, Port-side Intake)
CE6851-HI-F-B0A	CE6851-48S6Q-HI Switch (48-Port 10G SFP+, 6-Port 40GE QSFP+, 2*AC Power Module, 2*FAN Box, Port-side Exhaust)

CE6857-48S6CQ-EI	CE6857-48S6CQ-EISwitch (48-Port 10GE SFP+, 6*100GE QSFP28, Without Fan and Power Module)
CE6857-EI-F-B0B	CE6857-48S6CQ-EISwitch (48*10GE SFP+, 6*100GE QSFP28, 2*AC Power Module, 2*FAN Box, Port-side Exhaust)
CE6857-EI-B-B0B	CE6857-48S6CQ-EI Switch (48*10GE SFP+, 6*100GE QSFP28, 2*AC Power Module, 2*FAN Box, Port-side Intake)

Fan box

Part Number	Product Description	Support Product
FAN-060A-F	Fan box (F, FAN panel side intake)	CE6855-48T6Q-HI, CE6856-48T6Q-HI
FAN-060A-B	Fan box (B, FAN panel side exhaust)	CE6855-48T6Q-HI, CE6856-48T6Q-HI
FAN-40EA-F	Fan box (EA, Front to Back, FAN panel side intake)	CE6851-48S6Q-HI, CE6855-48S6Q-HI, CE6856-48S6Q-HI
FAN-40EA-B	Fan box (EA, Back to Front, FAN panel side exhaust)	CE6851-48S6Q-HI, CE6855-48S6Q-HI, CE6856-48S6Q-HI
FAN-031A-F	FAN-031A-F, Fan box (F, FAN panel side intake)	CE6857-48S6CQ-EI
FAN-031A-B	Fan box (B, FAN panel side exhaust)	CE6857-48S6CQ-EI

Power

Part Number	Product Description	Support Product
PDC-1K2WA-F	1200W DC Power Module (Front to Back, Power panel side intake)	CE6855-48T6Q-HI, CE6856-48T6Q-HI
PDC-1K2WA-B	1200W DC Power Module (Back to Front, Power panel side exhaust)	CE6855-48T6Q-HI, CE6856-48T6Q-HI
PAC-600WB-F	600W AC&240V DC Power Module (Power panel side intake)	CE6855-48T6Q-HI, CE6856-48T6Q-HI, CE6857-48S6CQ-EI
PAC-600WB-B	600W AC&240V DC Power Module (Power panel side exhaust)	CE6855-48T6Q-HI, CE6856-48T6Q-HI, CE6857-48S6CQ-EI
PHD-600WA-F	600W HVDC Power Module (Power panel side intake)	CE6855-48T6Q-HI, CE6856-48T6Q-HI
PHD-600WA-B	600W HVDC Power Module (Power panel side exhaust)	CE6855-48T6Q-HI, CE6856-48T6Q-HI
PAC-600WA-F	600W AC Power Module (Front to Back, Power panel side intake)	CE6851-48S6Q-HI, CE6855-48S6Q-HI, CE6856-48S6Q-HI
PAC-600WA-B	600W AC Power Module (Back to Front, Power panel side exhaust)	CE6851-48S6Q-HI, CE6855-48S6Q-HI, CE6856-48S6Q-HI
PDC-350WA-F	350W DC Power Module (Front to Back, Power panel side intake)	CE6851-48S6Q-HI, CE6855-48S6Q-HI, CE6856-48S6Q-HI, CE6857-48S6CQ-EI
PDC-350WA-B	350W DC Power Module (Back to Front, Power panel side exhaust)	CE6851-48S6Q-HI, CE6855-48S6Q-HI, CE6856-48S6Q-HI, CE6857-48S6CQ-EI

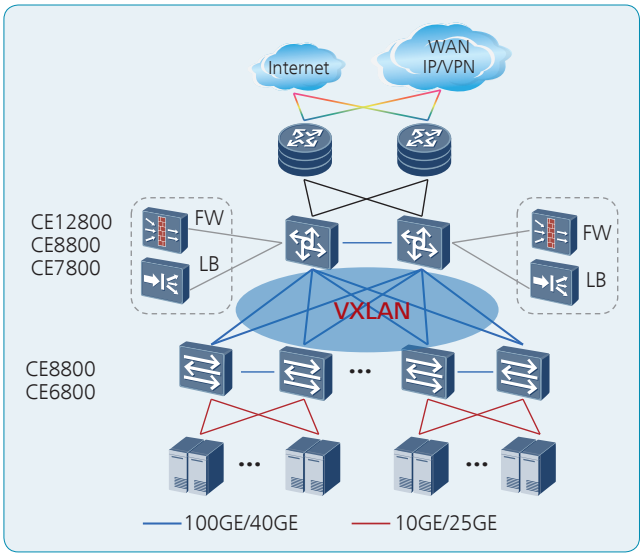
Software	
CE68-LIC-VXLAN	CloudEngine 6800 VXLAN Function
CE68-LIC-FCF16	CloudEngine 6800 FCF 16 Ports
CE68-LIC-FCFAL	CloudEngine 6800 FCF All Ports
CE6800-LIC-NPV	CloudEngine 6800 FCOE NPV Function
CE68-LIC-TLM	CE6800 Telemetry Function
N1-CE68LIC-CFFD	N1-CloudFabric Foundation SW License for CloudEngine 6800
N1-CE68CFFD-SnS1Y	N1-CloudFabric Foundation SW License for CloudEngine 6800-SnS-1 Year
N1-CE68LIC-CFAD	N1-CloudFabric Advanced SW License for CloudEngine 6800
N1-CE68CFAD-SnS1Y	N1-CloudFabric Advanced SW License for CloudEngine 6800-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.

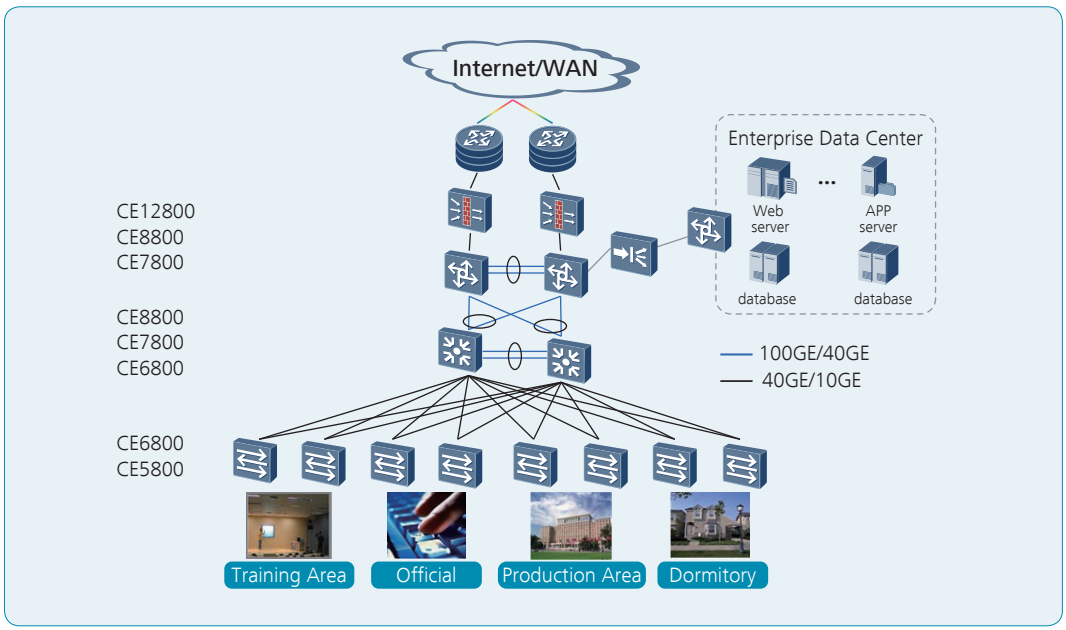


Campus Network Applications

CE6800 switches can be used as aggregation or core switches on a campus network. Their high-density, line-rate 10GE ports and high stacking capability can meet the ever-increasing demand for network bandwidth. CE6800 switches are cost-effective campus network switches, thanks to their extensive service features and innovative energy-saving technologies.

On a typical campus network, multiple CE12800/CE8800/CE7800 switches are virtualized into a logical core switch using CSS or iStack technology. Multiple CE8800/CE7800/CE6800 switches at the aggregation layer form a logical switch using iStack technology. CSS and iStack improve network reliability and simplify network management. At the access layer, CE6800/CE5800 switches are virtualized with CloudFabric technology, such as SVF or M-LAG (vertical virtualization), to provide high-density line-rate ports.

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



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