CloudEngine 6810 Series Data Center Switches

HUAWEI TECHNOLOGIES CO., LTD.

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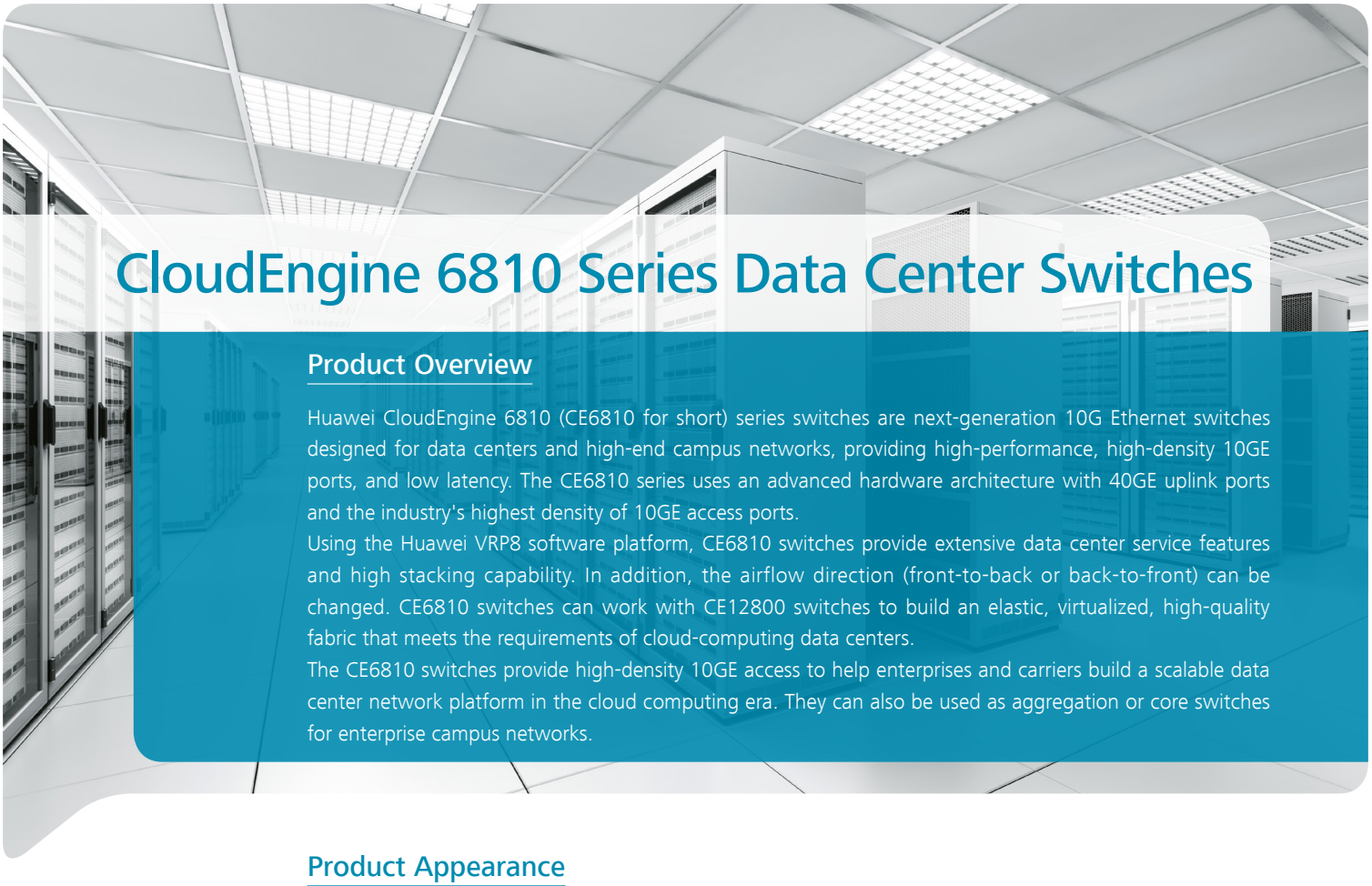


CloudEngine 6810 Series Data Center Switches

Product Overview

Huawei CloudEngine 6810 (CE6810 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 CE6810 series uses an advanced hardware architecture with 40GE uplink ports and the industry's highest density of 10GE access ports.

Using the Huawei VRP8 software platform, CE6810 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. CE6810 switches can work with CE12800 switches to build an elastic, virtualized, high-quality fabric that meets the requirements of cloud-computing data centers.

The CE6810 switches provide high-density 10GE access to help enterprises and carriers build a scalable data center network platform in the cloud computing era. They can also be used as aggregation or core switches for enterprise campus networks.

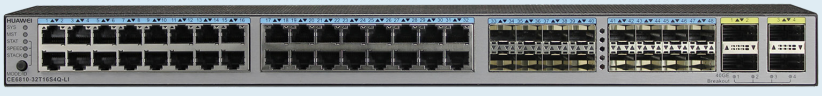
Product Appearance

The CE6810 series comes in three models.

CE6810-48S4Q-LI

48*10GE SFP+ ports, 4*40GE QSFP+ ports

CE6810-32T16S4Q-LI



32*10GE Base-T ports, 16*10GE SFP+ ports, 4*40GE QSFP+ ports

CE6810-24S2Q-LI

24*10GE SFP+ ports, 2*40GE QSFP+ ports

Product Characteristics

High-Density 10GE Access

- The CE6810 is the industry's highest-performing 1 U ToR switch. It provides forwarding performance of 960 mpps and supports L2 line-rate forwarding.
- The CE6810 provides 64*10GE ports, allowing for high-density 10G server access.
- The CE6810 has four 40GE QSFP+ ports, each of which can be used as four 10GE SFP+ ports to provide flexibility in network deployment. Using the 40GE uplink ports, the CE6810 switches can connect to CE12800 switches to build a non-blocking network platform.

Highly Reliable, High-Performance Stacking

- The industry's first 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
  - » The CE6810 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.

Vertical Virtualization Simplifies Management

- The CE6810 supports 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, CE6810 switches can act as leaf nodes and connect to spine switch CE6850 as its remote line cards. This facilitates cabling and equipment management in equipment rooms.
- Huawei's SVF is the first in the industry to implement local forwarding on leaf switches. When horizontal traffic dominates in a data center, SVF improves the forwarding efficiency and reduces network delay.

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

- The CE6810 series switches 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.
- The CE6810 series switches support centralized FCoE gateway deployment, which makes network O&M simpler.
- The CE6810 series switches support multiple data center features: Priority-based Flow Control (PFC), and Data Center Bridging eXchange (DCBX). These features ensure low latency and zero packet loss for FC storage and high-speed computing services.

Zero Touch Provisioning, Automatic O&M

- The CE6810 supports Zero Touch Provisioning (ZTP). ZTP enables the CE6810 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.

Flexible Airflow Design, High Energy Efficiency

- Flexible front-to-back/back-to-front airflow design
  - » The CE6810 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.
- Energy-saving technology
  - » The CE6810 series switches 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.

» CE6810 series switches 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

Item	CE6810-48S4Q-LI	CE6810-32T16S4Q-LI	CE6810-24S2Q-LI
10G Base-T ports	0	32	0
SFP+ ports	48	16	24
QSFP+ ports	4	4	2
Switching capacity	1.28 Tbit/s (Switching capacity after stacking: 20.48 Tbit/s)		
Forwarding rate	960 mpps	960 mpps	480 mpps
Airflow design	Front-to-back or back-to-front		
Device virtualization	iStack[1]		
	Super Virtual Fabric (SVF)[2]		
	M-LAG		
Traffic analysis	NetStream		
	sFlow		
VLAN	Adding access, trunk, and hybrid interfaces to VLANs		
	Default VLAN		
	QinQ		
	MUX VLAN		
	GVRP		

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

Item	CE6810-48S4Q-LI	CE6810-32T16S4Q-LI	CE6810-24S2Q-LI
ACL	Ingress:1250, Engress:500		
MAC address table	Maximum:128 k		
	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		
ARP (Maximum)	1.5 k		
IPv4 FIB (Maximum)	1.5 k		
IP routing	IPv4 routing protocols, such as RIP, OSPF, BGP, and IS-IS (Only for NMS Routing)		
IPv6	Path MTU Discovery (PMTU)		
	TCP6, ping IPv6, tracert IPv6, socket IPv6, UDP6, and Raw IP6		
Multicast	IGMP Proxy(CE6810EI)		
	MLD-Snooping		
Reliability	LACP		
	STP, RSTP, VBST, MSTP		
	BPDU protection, root protection, and loop protection		
	Smart Link and multi-instance		
	DLDP, LLDP		
	ERPS (G.8032)		
	VRRP, VRRP load balancing, and BFD for VRRP		
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		

Item	CE6810-48S4Q-LI	CE6810-32T16S4Q-LI	CE6810-24S2Q-LI
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)		
Dimensions (W x D x H, mm)	442 x 600 x 43.6	442 x 420 x 43.6	442 x 600 x 43.6
Weight (fully loaded)	10.4 kg (22.9 lb)	8.5 kg (18.7 lb)	10.1 kg (22.3 lb)
Environmental parameters	Operating temperature: 0°C to 40°C (32°F to 104°F) (0 m to 1,800 m) Storage temperature: -40°C to +70°C (-40°F to 158°F) Relative humidity: 5% RH to 95% RH, non-condensing		
Operating voltage	AC: 90 V to 290 V DC: –38.4 V to –72 V		
Max. power consumption	238 W	288 W	171 W

Ordering Information

Mainframe	
CE6810-LI-B-B0A	CE6810-48S4Q-LI Switch(2*AC Power Module,2*FAN Box,Port-side Intake)
CE6810-LI-B00	CE6810-48S4Q-LI Switch(2*600W AC Power Module,2*FAN Box,Port side exhaust)
CE6810-48S4Q-LI	CE6810-48S4Q-LI Switch (48-Port 10GE SFP+,4-Port 40GE QSFP+,Without Fan and Power Module)
CE6810-32T16S4Q-LI	CE6810-32T16S4Q-LI Switch(32-Port 10G RJ45,16-Port 10G SFP+,4-Port 40G QSFP+,Without Fan and Power Module)
CE6810-LI-B-B00	CE6810-32T16S4Q-LI Switch(32-Port 10G RJ45,16-Port 10G SFP+,4-Port 40G QSFP+,2*AC Power Module,2*FAN Box,Port-side Intake)
CE6810-LI-F-B00	CE6810-32T16S4Q-LI Switch(32-Port 10G RJ45,16-Port 10G SFP+,4-Port 40G QSFP+,2*AC Power Module,2*FAN Box,Port-side Exhaust)
CE6810-24S2Q-LI	CE6810-24S2Q-LI Switch(24-Port 10G SFP+,2-Port 40GE QSFP+,Without Fan and Power Module)
CE6810-LI-B-B0C	CE6810-24S2Q-LI Switch(24-Port 10G SFP+,2-Port 40GE QSFP+,2*AC Power Module,2*FAN Box,Port-side Intake)
CE6810-LI-F-B0C	CE6810-24S2Q-LI Switch(24-Port 10G SFP+,2-Port 40GE QSFP+,2*AC Power Module,2*FAN Box,Port-side Exhaust)

Fan box

Part Number	Product Description	Support Product
FAN-40EA-F	Fan box (EA, Front to Back, FAN panel side intake)	CE6810-48S4Q-LI, CE6810-24S2Q-LI, CE6810-32T16S4Q-LI
FAN-40EA-B	Fan box (EA, Back to Front, FAN panel side exhaust)	CE6810-48S4Q-LI, CE6810-24S2Q-LI, CE6810-32T16S4Q-LI

Power

Part Number	Product Description	Support Product
PAC-600WA-F	600W AC Power Module (Front to Back, Power panel side intake)	CE6810-48S4Q-LI, CE6810-24S2Q-LI, CE6810-32T16S4Q-LI
PAC-600WA-B	600W AC Power Module (Back to Front, Power panel side exhaust)	CE6810-48S4Q-LI, CE6810-24S2Q-LI, CE6810-32T16S4Q-LI
PDC-350WA-F	350W DC Power Module (Front to Back, Power panel side intake)	CE6810-48S4Q-LI, CE6810-24S2Q-LI, CE6810-32T16S4Q-LI
PDC-350WA-B	350W DC Power Module (Back to Front, Power panel side exhaust)	CE6810-48S4Q-LI, CE6810-24S2Q-LI, CE6810-32T16S4Q-LI

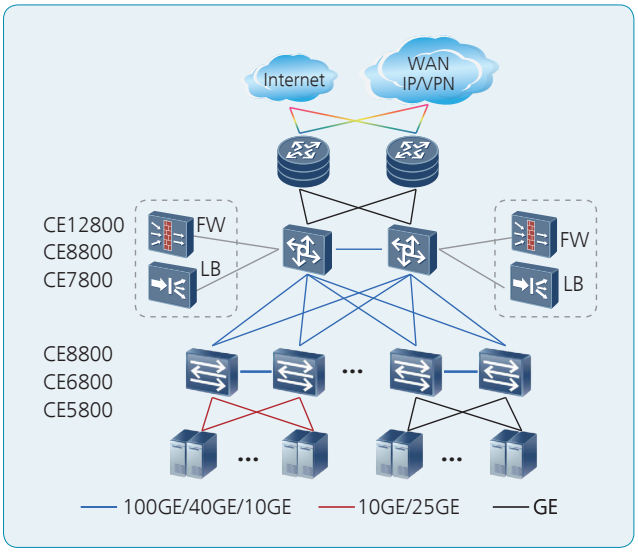
Software	
CE68-LIC-BASE	CE6800 Basic Software Function

Networking and Applications

Data Center Applications

On a typical data center network, CE12800/CE8800/CE7800 switches work as core switches, whereas CE6810 and CE5800 switches work as ToR switches and connect to the core switches using 40GE/10GE ports. These switches use a fabric protocol, such as M-LAG or SVF, to establish a non-blocking large Layer 2 network, which allows large-scale VM migrations and flexible service deployments.

Note: M-LAG and SVF can be also used on campus networks to support flexible service deployments in different service areas.

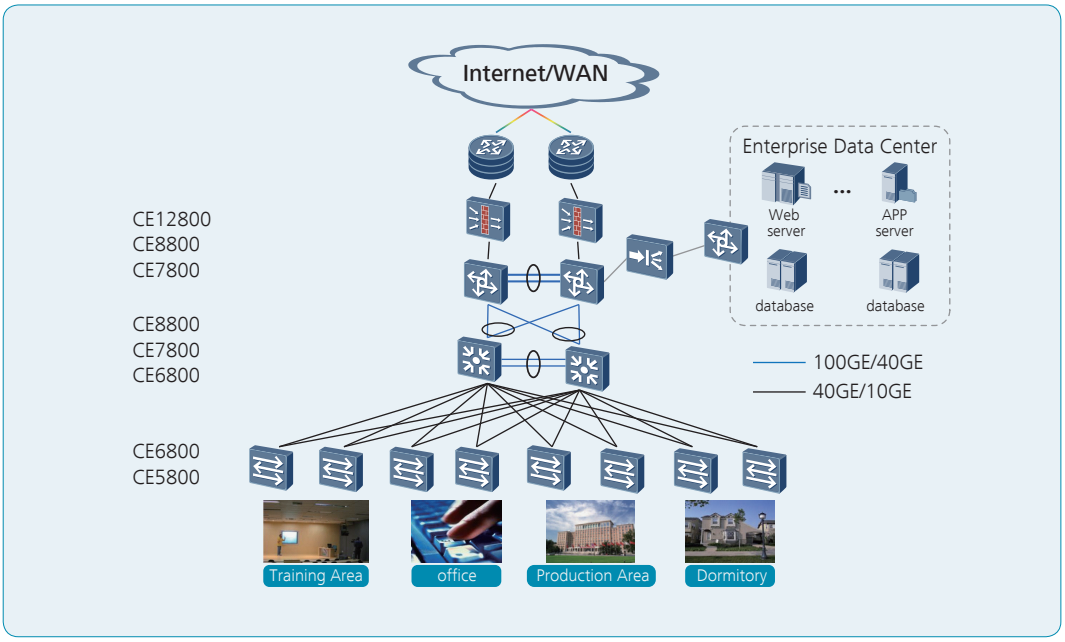


Campus Network Applications

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 CE6810 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, CE5800 switches are virtualized with SVF 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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