



Huawei CloudEngine 5800 Switch Datasheet

CloudEngine 5800 switches provide high-density GE access to help enterprises build a scalable data center network platform for cloud computing. They can also be used as aggregation or access switches for enterprise campus networks.

Product Overview

Huawei CloudEngine 5800 series switches are next-generation, high-density Gigabit Ethernet switches designed for data centers and high-end campus networks. The CloudEngine 5800 hardware has an advanced architectural design, providing high-density GE access ports and 40GE uplink ports. Using the Huawei VRP8 software platform, CloudEngine 5800 switches support Transparent Interconnection of Lots of Links (TRILL) and have a high stacking capability (up to 9-member switches in a stack system). In addition, the airflow direction (front-to-back or back-to-front) can be changed. CloudEngine 5800 switches can work with CloudEngine 16800 or CloudEngine 12800 switches to build an elastic, virtualized, high-quality fabric that meets the requirements of cloud-computing data centers.

CloudEngine 5800 switches provide high-density GE access to help enterprises build a scalable data center network platform for cloud computing. They can also be used as aggregation or access switches for enterprise campus networks.

Product Appearance

CloudEngine 5855-48T4S2Q-EI provides 48*GE BASE-T ports, 4*10GE SFP+ ports,2*40GE QSFP+ ports.



CloudEngine 5855-24T4S2Q-EI provides 24*GE BASE-T ports, 4*10GE SFP+ ports, 2*40GE QSFP+ ports.



Product Characteristics

High-density GE Access

- Each CloudEngine 5800 switch provides 48*GE line-speed ports, which makes future data center expansion easy.
- The CloudEngine 5800 switch provides 40GE uplink ports. The CloudEngine 5800 switches can work with CloudEngine 16800 or CloudEngine 12800 switches to build a high-performance data center network that provides 40GE access. The two 40GE uplink ports on CloudEngine 5800 back up each other to improve system reliability.

Highly Reliable, High-Performance Stacking

- 9-member stack system
 - » A stack system of 9 member switches has up to 432 GE access ports for 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
 - » CloudEngine 5800 switches can use either 10GE or 40GE ports as stack ports. A stack system can be established with switches in the same rack or different racks, and even over long distances.

» The 40GE ports of the CloudEngine 5800 can set up large-capacity stack channels that enable multiple CloudEngine 5800 switches to constitute a non-blocking stack system.

Vertical Virtualization Simplifies Management

- The CloudEngine 5800 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 virtualizes multiple leaf switches into remote cards of the spine switch, making it easier to connect cables and manage devices in equipment rooms. The CloudEngine 5800 switches act as leaf switches in an SVF system.
- Huawei's SVF enables local forwarding on leaf switches. When horizontal traffic dominates in a data center, SVF improves the forwarding efficiency and reduces network delay.

Programmable Network Device, Flexible Customization

- The CloudEngine 5800 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).

Zero Touch Provisioning, Automatic O&M

- The CloudEngine 5800 supports Zero Touch Provisioning (ZTP). ZTP enables the CloudEngine 5800 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 CloudEngine 5800 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 CloudEngine 5800 has 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 the port status.
 - » State and stack indicators on both the front and rear panels enable operators to maintain the switch from either side.
 - » CloudEngine 5800 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

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

Functions and Features

Item	CloudEngine 5855-48T4S2Q-EI	CloudEngine 5855-24T4S2Q-EI
Device virtualization	iStack ¹	
	Super Virtual Fabric (SVF) ²	
	M-LAG	
Network virtualization	TRILL	
Programmability	Open Programmability System (OPS)	
Traffic analysis	NetStream	
	sFlow	
VLAN	Adding access, trunk, and hybrid interfaces to VLANs	
	Default VLAN	
	QinQ	
	MUX VLAN	
	GVRP	
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+ ⁴	
IPv6	IPv6 Neighbor Discovery (ND)	
	Path MTU Discovery (PMTU)	
	TCP6, ping IPv6, traceroute 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	
Reliability	LACP	

Item	CloudEngine 5855-48T4S2Q-EI	CloudEngine 5855-24T4S2Q-EI
	STP, RSTP, VBST, MSTP	
	BPDU protection, root protection, and loop protection	
	Smart Link and multi-instance	
	DLDP	
	ERPS (G.8032)	
	VRRP, VRRP load balancing, and BFD for VRRP	
	BFD for BGP/IS-IS/OSPF/Static route	
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	
Configuration and maintenance	Console, Telnet, and SSH terminals	
	Network management protocols, such as SNMPv1/v2/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 number, and VLAN ID	
	Authentication methods, including AAA, RADIUS, and HWTACACS	
	Remote Network Monitoring (RMON)	

1 For details about the configuration, please see:

http://support.huawei.com/online/toolsweb/virtual/en/dc/stack_index.html?dcb

2 For details about the configuration, please see:

http://support.huawei.com/online/toolsweb/virtual/en/dc/svf_index.html?dcb

Performance and Scalability

Item	CloudEngine 5855-48T4S2Q-EI	CloudEngine 5855-24T4S2Q-EI
Maximum number of MAC address entries	64K	
Maximum number of Forwarding routes (FIB IPv4/ IPv6)	32K/28K	
ARP table size	54K	
Maximum number of VRF	1024	
IPv6 ND (Neighbor Discovery) table size	16K	
Maximum Number of multicast routes (Multicast FIB IPv4/IPv6)	8K/NA	
Maximum VRRP groups	128	
Maximum number of ECMP paths	32	
Maximum ACL number	Ingress: 9000 Egress: 2000	Ingress: 4500 Egress: 1000
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	CloudEngine 5855-48T4S2Q-EI	CloudEngine 5855-24T4S2Q-EI	
Physical Features	Dimensions (W × D ×H, mm)	442 mm x 420 mm x 43.6 mm	
	Weight (excluding optical transceivers, power modules, and fan assemblies, including AC power modules and fan assemblies, excluding optical transceivers; kg)	5.6/5.3	
	Switching capacity (Gbps)	336	288
	Forwarding performance (Mpps)	252	215
Number of GE Base-T ports	48	24	
Number of 10GE SFP+ ports	4	4	
40GE QSFP+ ports	2	2	
Card	Number of card slot	0	
	Card type	Fixed Switch	
Management	Out-of-band management	1*GE management interface	

Item		CloudEngine 5855-48T4S2Q-EI	CloudEngine 5855-24T4S2Q-EI
interface	port		
	Console port	1*RJ45 interface	
	USB port	1	
CPU ^e	Main frequency (GHZ)	1G	
	Number of cores	2	
Storage	RAM	2GB	
	NOR Flash	16MB	
	NAND Flash	512MB	
System	System buffer	8MB	4MB
Power Supply System	Power modules	150 W AC/350 W –48V DC	
	Rated voltage range (V)	100 V to 240 V AC –48 V to –60 V DC	
	Maximum voltage range (V)	90 – 264 AC –38.4 V to –72 V DC	90 – 264 AC –38.4 V to –72 V DC
	Maximum input current	100 to 240V 3A -48 to -60V DC 11A	100 to 240V 3A -48 to -60V DC 11A
	Typical power	76W (100% traffic load, copper cable, normal temperature, dual power modules) 81W (100% traffic load, short-distance optical transceivers, normal temperature, dual power modules)	48W (100% traffic load, copper cable, normal temperature, dual power modules) 53W (100% traffic load, short-distance optical transceivers, normal temperature, dual power modules)
	Maximum power	103W	75W
	Frequency (AC, HZ)	50/60	
Heat Dissipation	Heat dissipation mode	Air cooling	
	Number of fan trays	2	
	Heat dissipation airflow	Front-to-back or back-to-front airflow	
	Maximum heat consumption (BTU/hr)	351	256
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: < 58	Front-to-back airflow: < 62 Back-to-front airflow: < 58

Item		CloudEngine 5855-48T4S2Q-EI	CloudEngine 5855-24T4S2Q-EI
	Sound power at 40°C (dBA)	Front-to-back airflow: < 76 Back-to-front airflow: < 71	Front-to-back airflow: < 72 Back-to-front airflow: < 71
	Sound pressure at 27°C (dBA)	Front-to-back airflow: 49 in average (maximum: 55) Back-to-front airflow: 42 in average (maximum: 48)	Front-to-back airflow: 46 in average (maximum: 51) Back-to-front airflow: 42 in average (maximum: 48)
	Surge protection	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)	55.08	65.62
	MTTR (hour)	1.81	1.77
	Availability	0.99999625521	0.99999690870

NOTE: For detailed information of CloudEngine 5800 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 CloudEngine switches.

Certification Category	Description
Safety	<ul style="list-style-type: none"> • EN 60950-1 • EN 60825-1 • EN 60825-2 • UL 60950-1 • CSA-C22.2 No. 60950-1 • IEC 60950-1 • AS/NZS 60950-1 • GB4943
Electromagnetic Compatibility (EMC)	<ul style="list-style-type: none"> • EN 300386 • EN 55032: CLASS A • EN 55024 • IEC/EN 61000-3-2 • IEC/EN 61000-3-3 • FCC 47CFR Part15 CLASS A • ICES-003: CLASS A • CISPR 32: CLASS A • CISPR 24 • AS/NZS CISPR32 • VCCI- CISPR32: CLASS A • GB9254 CLASS A
Environment	<ul style="list-style-type: none"> • 2011/65/EU EN 50581 • 2012/19/EU EN 50419

Certification Category	Description
	<ul style="list-style-type: none"> • (EC) No.1907/2006 • GB/T 26572 • ETSI EN 300 019-1-1 • ETSI EN 300 019-1-2 • ETSI EN 300 019-1-3 • ETSI EN 300 753 GR63

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

Supported MIBs

For details about the MIB information, visit

<https://support.huawei.com/hedex/hdx.do?docid=EDOC1100101219&lang=en&idPath=24030814%7C21782165%7C21782239%7C22318540%7C7597815>

Optical Transceivers and Cable

For details about the optical transceivers and cables information, visit

<https://e.huawei.com/en/material/networking/dcs/switch/f6d91cf16df0474998087676a33fd41e>

Ordering Information

Mainframe		
CE5855-48T4S2Q-EI	CE5855-48T4S2Q-EI Switch (48-Port GE RJ45,4-Port 10GE SFP+,2-Port 40G QSFP+, Without Fan and Power Module)	
CE5855-24T4S2Q-EI	CE5855-24T4S2Q-EI Switch (24-Port GE RJ45,4-Port 10GE SFP+,2-Port 40G QSFP+, Without Fan and Power Module)	
Fan box		
Part Number	Product Description	Support Product
FAN-040A-F	Fan box(F,FAN panel side exhaust)	CE5855-48T4S2Q-EI CE5855-24T4S2Q-EI
FAN-040A-B	Fan box(B,FAN panel side exhaust)	CE5855-48T4S2Q-EI CE5855-24T4S2Q-EI
Power		

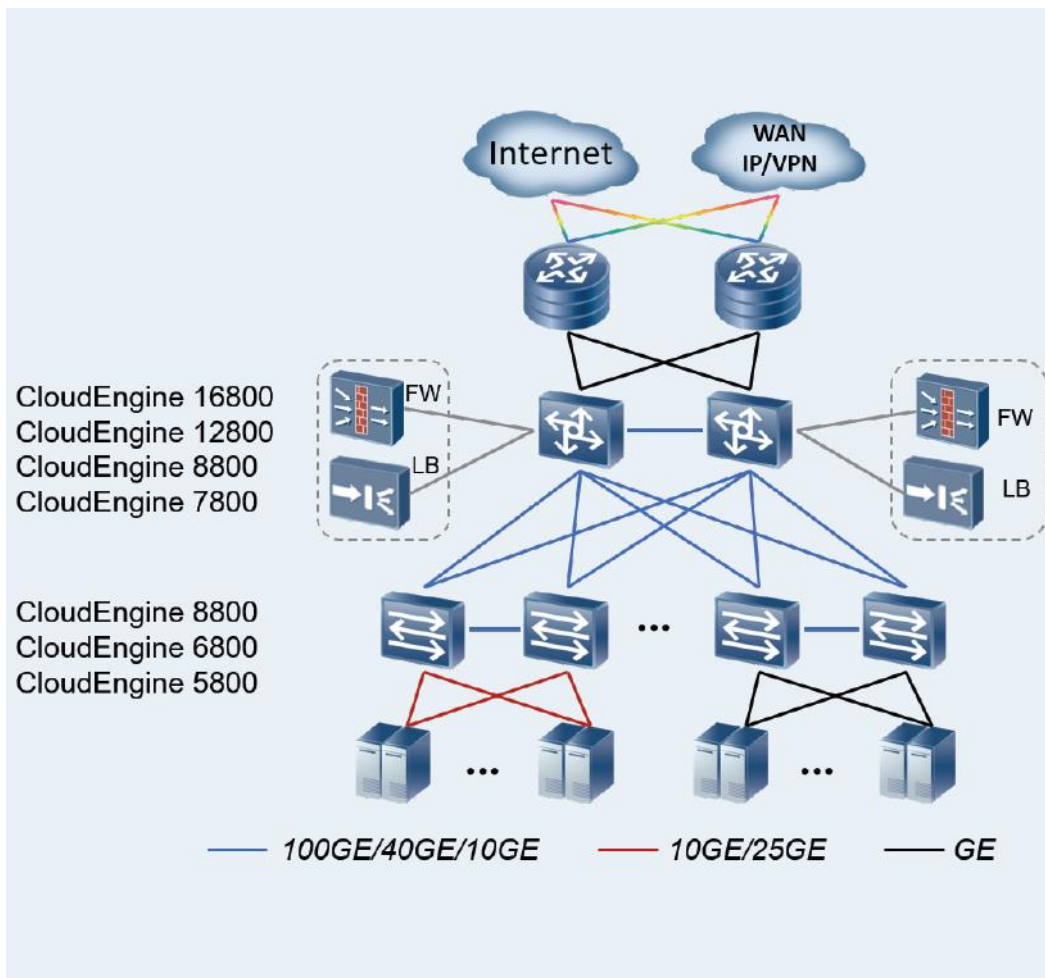
Mainframe		
Part Number	Product Description	Support Product
ES0W2PSA0150	150W AC Power Module(Black)	CE5855-48T4S2Q-EI, CE5855-24T4S2Q-EI
PDC-350WA-F	350W DC Power Module (Front to Back, Power panel side intake)	CE5855-48T4S2Q-EI, CE5855-24T4S2Q-EI
PDC-350WA-B	350W DC Power Module (Back to Front, Power panel side exhaust)	CE5855-48T4S2Q-EI, CE5855-24T4S2Q-EI

Networking and Application

Data Center Applications

On a typical data center network, CloudEngine 16800/CloudEngine 12800/ CloudEngine 8800/CloudEngine 7800 switches work as core switches, whereas CloudEngine 8800/CloudEngine 6800/CloudEngine 5800 switches work as ToR switches and connect to the core switches using 100GE/40GE/10GE ports. These switches use a fabric protocol, such as CSS or M-LAG, to establish a non-blocking large Layer 2 network, which allows large-scale VM migrations and flexible service deployments.

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

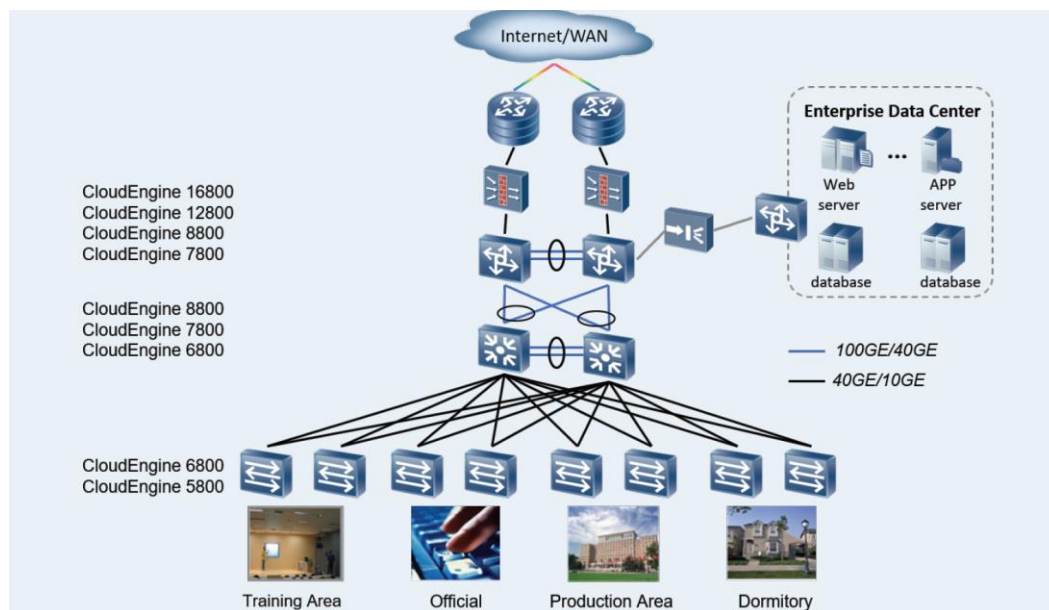


Campus Network Applications

CloudEngine 5800 switches can be used as aggregation or access switches on a campus network. Their high-density, line-speed GE ports, unique 40GE uplink ports, and high stacking capabilities can meet the ever-increasing demand for network bandwidth. CloudEngine 5800 switches are cost-effective campus network switches, thanks to their extensive service features and innovative energy-saving technologies.

On a typical campus network, multiple CloudEngine 16800/CloudEngine 12800/CloudEngine 8800/CloudEngine 7800 switches are virtualized into a logical core switch using CSS or iStack technology. Multiple CloudEngine 8800/CloudEngine 7800/CloudEngine 6800 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, CloudEngine 6800/CloudEngine 5800 switches are virtualized with CloudFabric technology, such as M-LAG, to provide high-density line-rate ports.

Note: CSS, iStack and M-LAG are also widely used in data centers to facilitate network management.



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