Huawei CloudEngine 8800 Data Center Switch Datasheet

CloudEngine 8800 series switches are Huawei's next-generation Ethernet switches designed for data centers (DCs). They stand out with high performance, high density, and low latency.

Product Overview

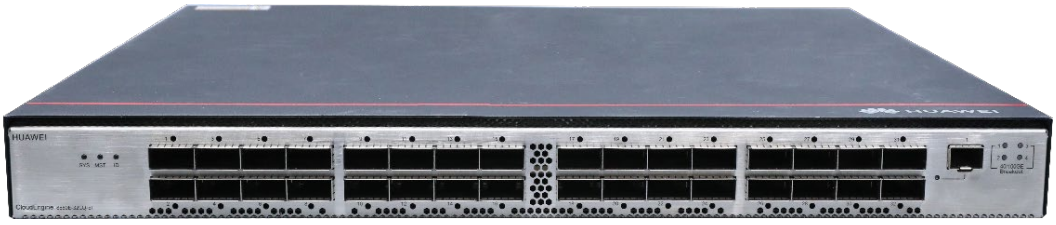
CloudEngine 8800 series are Huawei's next-generation Ethernet switches designed for DCs, featuring high performance, high density, and low latency. Built on an advanced hardware structure, the switches support high-density 100GE/40GE/25GE/10GE ports. Running on Huawei's next-generation VRP8 operating system, they provide abundant DC features and high-performance stacking, and allow flexible selection of airflow directions. In addition, they can work with CloudEngine 16800/12800/6800/5800 series switches to build an elastic, virtual, and high-quality data center network (DCN), meeting network requirements of DCs in the cloud computing era

CloudEngine 8800 series switches can function as core or aggregation switches on DCNs to help enterprises and carriers to build a DCN platform for the cloud computing era. They can also be used as aggregation or core switches on campus networks.

Product Appearance

The CloudEngine 8850-64CQ-EI series switch provides 64 x 100GE QSFP28 ports. The following figure shows the switch appearance.

The CloudEngine 8850E-32CQ-EI series switch provides 32 x 100GE QSFP28 ports and one 10GE SFP+ port. The following figure shows the switch appearance.



Key Features

High-density 100GE/40GE aggregation, delivering ultra-high capacity

- The CloudEngine 8850-64CQ-EI supports 12.8 Tbps switching capacity, 4482 Mpps forwarding performance, and L2/L3 line-speed forwarding.
- The CloudEngine 8850-64CQ-EI supports up to 64 x 100GE QSFP28 ports and 64 x 40GE QSFP+ ports and can function as a core or aggregation switch on a DCN or campus network.
- The CloudEngine 8850E-32CQ-EI supports 6.4 Tbps switching capacity, 2003 Mpps forwarding performance, and L2/L3 line-speed forwarding.
- The CloudEngine 8850E-32CQ-EI supports up to 32 x 100GE QSFP28 ports, 32 x 40GE QSFP+ ports, and one 10GE SFP+ port, and can function as a core or aggregation switch on a DCN or campus network.
- 100GE QSFP28 ports support 100GE optical modules, and each of them can be split into four 25GE SFP28 ports. 40GE QSFP+ optical modules are supported and each 40GE port can be split into 10GE SFP+ ports.

Highly reliable long-distance stacking, enabling excellent performance

- Stacking of up to 16 switches:
  - The CloudEngine 8850-64CQ-EI and CloudEngine 8850E-32CQ-EI support a stack of 16 switches, meeting high-density server access requirements in DCs.
  - Multiple devices in a stack system are virtualized into one logical device, making it possible to build a scalable and easy-to-manage DCN.
  - A stack system separates the control plane from the data plane. This eliminates the risk of single-point failures and greatly improves system reliability.
- Ultra-long-distance stacking:
  - The switches use service ports as stack ports to implement intra-rack stacking, inter-rack stacking, and long-distance stacking across areas.
  - Service bandwidth and stack bandwidth can be flexibly allocated based on the network scale so that network resources can be utilized more efficiently.

Zero service interruptions even upon faults, achieving high network reliability

- CloudEngine 8800 series switches support Multichassis Link Aggregation Group (M-LAG) to implement link aggregation among multiple devices, improving link reliability from the card level to the device level.
- Switches in an M-LAG system can be upgraded independently. During the upgrade, other switches in the system take over traffic forwarding to prevent service interruption.
- Leveraging the comprehensive inter-device link aggregation technologies, the CloudEngine 8800 series switches evolve device coupling from control-plane-based stacking to M-LAG and then finally to coupling-free M-LAG Lite. These serve to implement active-active server access and highly reliable switch upgrade.

Programmable network devices, enabling flexible customization

- CloudEngine 8800 series switches use the next-generation VRP8 operating system, in which an Open Programmability System (OPS) module is embedded to provide control-plane programmability.
- The OPS provides abundant open APIs for integration with mainstream cloud platforms (including commercial and open-source cloud platforms) and third-party controllers, enabling flexible customization and automatic management of network services.
- Users or third-party developers can use the open APIs to develop and deploy dedicated network management policies, implementing fast expansion of service functions, automatic service deployment, and intelligent device management. These serve to automate network operations and maintenance (O&M) and minimize management costs.
- CloudEngine 8800 series switches support Ansible — an automatic management and O&M tool — to implement unified provisioning of physical and virtual networks.
- The OPS is dedicated to seamlessly integrate DC services and networks to enable service-oriented, software-defined networks.

Virtualized hardware gateway, achieving rapid deployment

- CloudEngine 8800 series switches can work with the industry's mainstream virtualization platforms. When functioning as high-

performance hardware gateways on an overlay network (VXLAN), CloudEngine 8800 series switches can support the operations of a DC with up to 16 million tenants.

- When functioning as hardware gateways on an overlay network, CloudEngine 8800 series switches can connect to cloud platforms through open APIs, facilitating unified management of virtual and physical networks.
- The hardware virtualized gateway solution achieves rapid service deployment without having to change the customer network, protecting customer investments.
- CloudEngine 8800 series switches support Border Gateway Protocol - Ethernet VPN (BGP-EVPN), simplifying VXLAN configurations within and between DCs.

Zero Touch Provisioning (ZTP), enabling automatic O&M

- CloudEngine 8800 series switches support ZTP, which allows the switches to automatically obtain and load version files from a USB flash drive or file server. This frees network engineers from on-site configuration and deployment, reduces labor costs, and improves deployment efficiency.
- ZTP supports embedded script languages and provides them for users through open APIs, so that DC users can use a familiar programming language (such as Python) to centrally configure network devices.
- ZTP decouples the configuration time of new devices from device quantity and geographical distribution, shortening the service provisioning time and improving the service rollout efficiency.

Intelligent lossless network, meeting high performance requirements of RoCEv2 applications

- CloudEngine 8800 series switches support the iLossless algorithm to eliminate packet loss on the conventional Ethernet. This helps to build a lossless, low-latency, and high-throughput network environment for RoCEv2 traffic, meeting high performance requirements of RoCEv2 applications.
- CloudEngine 8800 series switches support PFC deadlock prevention. They can identify service flows that may cause PFC deadlocks and change queue priorities of these flows to prevent PFC deadlocks.
- CloudEngine 8800 series switches support Artificial Intelligence Explicit Congestion Notification (AI ECN). This future-oriented function can intelligently adjust the ECN thresholds of lossless queues based on the live-network traffic model to ensure low latency and high throughput with zero packet loss, maximizing the performance of lossless services.
- CloudEngine 8800 series switches support dynamic load balancing (DLB) based on equal-cost multi-path (ECMP) groups and link aggregation groups (LAGs).
- CloudEngine 8850-64CQ-EI series switches support Integrated Network and Computing (INC) to perform high-performance computing of some collective communication data in HPC scenarios. This serves to reduce the communication workload between server clusters, thereby reducing the network latency and improving the computing efficiency in the HPC small-sized packet scenario.

Intelligent O&M through collaboration with iMaster NCE-FabricInsight

- CloudEngine 8800 series switches support telemetry technology to collect device data in real time and send the collected data to iMaster NCE-FabricInsight — the DCN analysis component of Huawei iMaster NCE. Leveraging the intelligent fault identification algorithm, iMaster NCE-FabricInsight can analyze network data, accurately display the network status in real time, locate faults and identify their root causes in a timely and effective manner, and detect network problems that can affect user experience, precisely guaranteeing user experience.
- CloudEngine 8800 series switches support intelligent traffic analysis. They can perform in-depth analysis on specified service flows to obtain the flows' high-precision performance indicator data, such as packet loss rate and latency (in nanoseconds), and send the analysis results to iMaster NCE-FabricInsight for further analysis and display. This facilitates network status monitoring and rapid locating of network faults.
- CloudEngine 8800 series switches support RoCE traffic visualization. They can analyze the key performance indicators (KPIs) of RoCE traffic, including quality of service (QoS) indicators such as the traffic path, round trip time (RTT), throughput, packet loss rate, abnormal sessions, and top sessions. In addition, the RoCE network topology of each network node and threshold settings of intelligent lossless DCNs such as the ECN thresholds can be displayed in an intuitive manner. The resulting benefits include better network parameter settings, faster network fault locating, and improved network configuration and O&M efficiency.

Simplified DCN deployment via collaboration with iMaster NCE-Fabric

- CloudEngine 8800 series switches can interconnect with iMaster NCE-Fabric through standard protocols such as NETCONF and Simple Network Management Protocol (SNMP) to adapt to networks and implement automatic network management and control. This helps to provide more efficient and intelligent operation methods, simplifying network management and reducing the OPEX.

Flexible airflow design, improving energy efficiency

- Flexible front-to-back or back-to-front airflow design:
  - CloudEngine 8800 series switches use a strict front-to-back or back-to-front airflow design that isolates cold air channels from hot air channels, meeting heat dissipation requirements in DC equipment rooms.
  - Air can flow from front to back or from back to front depending on the fan modules and power modules in use.
  - Redundant power modules and fan modules can be configured to ensure service continuity.
- Innovative energy-saving technologies:
  - CloudEngine 8800 series switches use energy-saving chips and an intelligent fan speed control scheme to measure system power consumption in real time. This can reduce O&M costs and help to build a green DC.

Clear indicators, simplifying O&M

- Clear indicators:
  - The innovative port indicators can clearly show the port status, port speed, and status of all sub-interfaces.
  - State and stack indicators on the front and rear panels enable users to maintain the switch from either side.
  - CloudEngine 8800 series switches support remote positioning. Users can turn on the remote positioning indicator through the network management system (NMS) or console to easily identify the switch they want to maintain in an equipment room full of devices.
- Easy maintenance:
  - The management port, fan modules, and power modules are at the front side, which facilitates device maintenance.
  - Data ports are located at the rear, facing servers. This facilitates cabling.

Licensing

CloudEngine 8800 series switches support the CloudFabric IDN One Software (N1) business model, which bundles iMaster NCE-Fabric, iMaster NCE-FabricInsight, and CloudEngine switch function software for sales based on varying service requirements in different typical scenarios. This approach simplifies transactions, provides customers with more functions and value, and protects customers' software investment through Software License Portability.

Product Series	Feature	N1 Software Package (Mandatory)			N1 Add-On Package (Optional)		
CloudEngine 8800 series		Foundation	Advanced	Premium	AI Fabric function package	AI Fabric Add-On package in the HPC scenario	Add-On package in the multi-cloud, multi-DC scenario
	Basic functions (including basic software, IPv6, VXLAN, and hitless upgrade)	√	√	√			
	Telemetry	√	√	√			
	PTP	√	√	√			
	MPLS		√	√			
	LLETH				√		
	INC					√	
iMaster NCE-Fabric controller	SDN automation	√	√	√			
	Basic intent functions (simulation and verification, network-wide rollback)			√			
	Multi-cloud and multi-DC management						√
iMaster NCE-FabricInsight analyzer	Telemetry-based basic network analysis functions	√	√	√			
	Network health evaluation		√	√			
	Value-added functions of network traffic analysis (100 VMs)			√			

Product Series	Feature	N1 Software Package (Mandatory)	N1 Add-On Package (Optional)	
Mapping		Select one from the three packages. The Advanced package contains features of the Foundation package, and the Premium package contains features of the Advanced package.	Select one from the Management, Foundation, Advanced, and Premium packages.	Select one from the Foundation, Advanced, and Premium packages.
For details about product function differences, see the product documentation.				

Note: For detailed information of the Huawei CloudFabric N1 business model, visit:
https://e.huawei.com/en/material/enterprise/f3272debb1c04015a538915657a89797

Specifications

Item	CloudEngine 8850E -32CQ-EI	CloudEngine 8850-64CQ-EI
Port description	32 x 100GE QSFP28 + 1 x 10GE SFP+	64 x 100GE QSFP28
Switching capacity	6.4 Tbps/102.4 Tbps	12.8 Tbps/204.8 Tbps
Packet forwarding rate	2003 Mpps	4482 Mpps
Air duct type	Standard front-to-back or back-to-front airflow	
Device virtualization	Intelligent stack (iStack)	
	M-LAG	
Data center interconnect (DCI)	VXLAN mapping, enabling Layer 2 interconnection between DCs	
Network virtualization	VXLAN routing and VXLAN bridging	
	BGP-EVPN	
	TRILL (supported only by the CloudEngine 8850-64CQ-EI)	
	QinQ access VXLAN	
SDN	iMaster NCE-Fabric	
Network convergence	Fibre Channel over Ethernet (FCoE)	
	Data Center Bridging Exchange Protocol (DCBX), Priority-based Flow Control (PFC), and expanded trunking system (ETS)	
	Remote direct memory access (RDMA) and RoCE (RoCEv1 and RoCEv2)	
Programmability	OPS programming	
	Ansible-based automatic configuration and open-source module release	
Traffic analysis	NetStream	
	sFlow	
VLAN	Access, trunk, and hybrid ports	
	Default VLAN	
	QinQ	
	MUX VLAN	
	GARP VLAN Registration Protocol (GVRP)	
MAC address entry	Automatic MAC address learning and aging	
	Static, dynamic, and blackhole MAC address entries	
	Source MAC address filtering	
	MAC address learning limiting by port and VLAN ID	
IP routing	IPv4 dynamic routing protocols such as RIP, OSPF, IS-IS, and BGP	
	IPv6 dynamic routing protocols such as RIPng, OSPFv3, IS-ISv6, and BGP4+	
IPv6	IPv6 VXLAN over IPv4	

Item	CloudEngine 8850E -32CQ-EI	CloudEngine 8850-64CQ-EI
	VXLAN over IPv6 (supported only by the CE8850E-32CQ-EI)	
	IPv6 neighbor discovery (ND)	
	Path MTU Discovery (PMTU)	
	TCP6, IPv6 ping, IPv6 tracert, IPv6 socket, UDP6, and raw IPv6	
Multicast	Multicast routing protocols, such as the Internet Group Multicast Protocol (IGMP), Protocol Independent Multicast-Sparse Mode (PIM-SM), Protocol Independent Multicast-Dense Mode (PIM-DM), Multicast Source Discovery Protocol (MSDP), and Multicast BGP (MBGP)	
	IGMP snooping	
	IGMP proxy	
	Fast leaving of multicast member interfaces	
	Multicast traffic suppression	
	Multicast VLAN	
	Multicast VXLAN	
MPLS	Basic MPLS	
Reliability	Link Aggregation Control Protocol (LACP)	
	STP, RSTP, VBST, and MSTP	
	BPDU protection, root protection, and loop prevention	
	Smart Link and multi-instance	
	Device Link Detection Protocol (DLDP)	
	Hardware-based Bidirectional Forwarding Detection (BFD), with a minimum packet sending interval of 3.3 ms	
	G.8032 Ethernet Ring Protection Switching (ERPS)	
	VRRP, VRRP load sharing, and BFD for VRRP	
	BFD for BGP, IS-IS, OSPF, and static routing	
	BFD for VXLAN	
QoS	Traffic classification based on Layer 2 protocol headers, Layer 3 protocol headers, and Layer 4 protocol priorities	
	ACL, CAR, re-marking, and scheduling	
	Queue scheduling modes such as PQ, WRR, DRR, PQ+WRR, and PQ+DRR	
	Congestion avoidance mechanisms such as WRED and tail drop	
	Traffic shaping	
Intelligent O&M	Network-wide path detection	
	1588v2 (supported only by the CloudEngine 8850-64CQ-EI)	
	Telemetry	
	INT (IOAM) and enhanced ERSPAN	
	Intelligent traffic analysis	
	RoCE traffic visualization: RoCE traffic KPI analysis	
	Statistics collection on the buffer microburst status	
	VXLAN OAM: VXLAN ping and VXLAN tracert	
Intelligent lossless network	PFC deadlock prevention	
	AI ECN: The switch intelligently adjusts the ECN thresholds of lossless queues based on the live-network traffic model.	
	Fast CNP: The switch directly sends CNP packets to server NICs at the source end to shorten the CNP feedback path.	
	DLB	
	ECN overlay	
	INC (supported only by the CE8850-64CQ-EI)	
Configuration and	Terminal login through the console port, Telnet, and SSH	

Item	CloudEngine 8850E -32CQ-EI	CloudEngine 8850-64CQ-EI
maintenance	Network management protocols, such as SNMPv1/v2/v3	
	File upload and download through FTP and TFTP	
	Boot Read-Only Memory (BootROM) upgrade and remote online upgrade	
	802.3az Energy Efficient Ethernet (EEE)	
	Hot patch	
	User operation log	
	Configuration rollback	
	ZTP	
Security and management	802.1X authentication	
	Command line authority control based on user levels, preventing unauthorized users from using commands	
	Defense against DoS, ARP, and ICMP attacks	
	Port isolation, port security, and sticky MAC	
	Binding of the IP address, MAC address, port ID, and VLAN ID	
	Authentication methods, including AAA, RADIUS, and HWTACACS	
	RMON	
Dimensions (H x W x D)	442.0mm × 420.0mm × 43.6mm	442.0mm×600.0mm×86.1mm
Weight (full configuration)	8.6 kg	16.4 kg
Environment requirements	Operating temperature: 0°C to 40°C (0 m to 1800 m) Storage temperature: -40°C to +70°C Relative humidity: 5% RH to 95% RH (noncondensing)	
Operating voltage	600 W AC&240 V DC power module: AC: 90 V AC to 290 V AC, 45 Hz to 65 Hz DC: 190 V DC to 290 V DC 1000 W DC power module: -38.4 V DC to -72 V DC 1200 W high-voltage DC power module: 190 V DC to 400 V DC	1200 W AC&240 V DC power module: AC: 90 V AC to 290 V AC, 45 Hz to 65 Hz DC: 190 V DC to 290 V DC 1200 W DC power module: -38.4 V DC to -72 V DC; +38.4 V DC to +72 V DC
Typical power consumption	203 W (100% traffic load, copper cables on half of the ports, normal temperature, dual AC power modules) 244 W (100% traffic load, short-distance optical modules on half of the ports, normal temperature, dual AC power modules)	376 W (100% traffic load, QSFP28 high-speed cables on 32 ports, normal temperature, dual AC power modules) 455 W (100% traffic load, QSFP28 short-distance optical modules on 32 ports, normal temperature, dual AC power modules)

Ordering Information

Active Device		
CE8850-EI-F-B0B	CE8850-64CQ-EI Switch(64-Port 100GE QSFP28,2*AC Power Module,Port-side Exhaust)	
CE8850-EI-B-B0B	CE8850-64CQ-EI Switch(64-Port 100GE QSFP28,2*AC Power Module,Port-side Intake)	
CE8850-64CQ-EI	CE8850-64CQ-EI Switch(64-Port 100GE QSFP28,Without Fan and Power Module)	
CE8850E-32CQ-EI	CE8850E-32CQ-EI Switch(32*100GE QSFP28,1*10GE SFP+,without fan and power module)	
CE8850E-32CQ-EI-B	CE8850E-32CQ-EI Switch(32*100GE QSFP28,1*10GE SFP+,2*AC power module,4*fan module,port-side intake)	
CE8850E-32CQ-EI-F	CE8850E-32CQ-EI Switch(32*100GE QSFP28, 1*10GE SFP+, 2*AC power module,4*fan module, port-side exhaust)	
Power module		
Model	Description	Applicable product
PHD-1K2WA-F	1200W HVDC Power Module(Power panel side intake)	CE8850-64CQ-EI

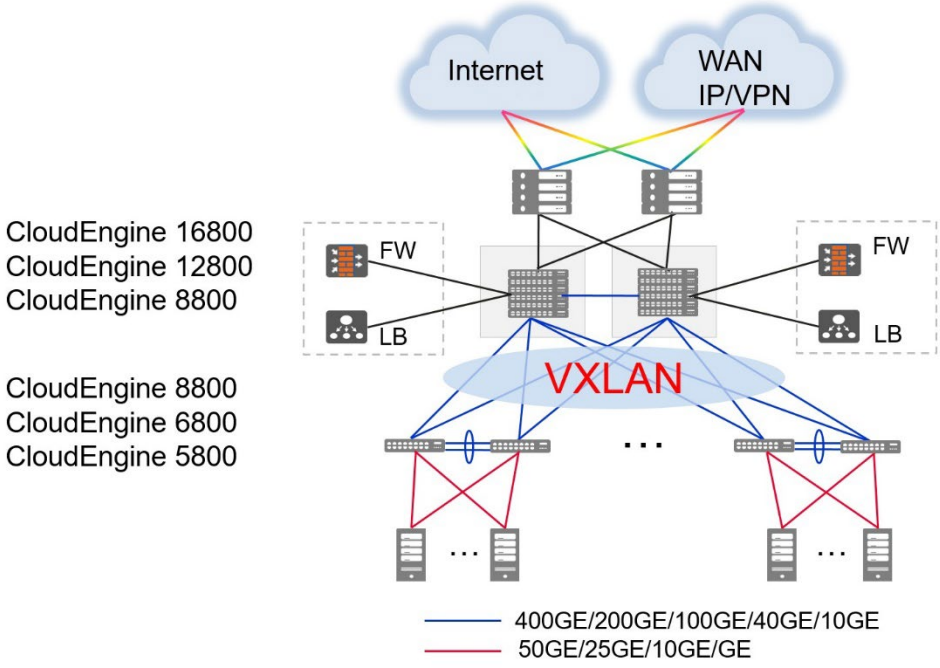
Active Device		
PHD-1K2WA-B	1200W HVDC Power Module(Power panel side exhaust)	CE8850-64CQ-EI
PDC-1K2WA-B	1200W DC Power Module(Power panel side intake)	CE8850-64CQ-EI
PDC-1K2WA-F	1200W DC Power Module(Power panel side exhaust)	CE8850-64CQ-EI
PAC1K2S12-PB	1200W AC&240V DC Power Module (Back to Front,Power panel side exhaust)	CE8850-64CQ-EI
PAC1K2S12-PF	1200W AC&240V DC Power Module (Front to Back,Power panel side intake)	CE8850-64CQ-EI
PHD1K2S12-DB	1200W HVDC Power Module (Back to Front,Power panel side exhaust)	CE8850E-32CQ-EI
PDC1000S12-DB	1000W DC Power Module (Power panel side exhaust)	CE8850E-32CQ-EI
PDC1000S12-DF	1000W DC Power Module (Power panel side intake)	CE8850E-32CQ-EI
PAC600S12-EB	600W AC&240V DC Power Module (Back to Front,Power panel side exhaust)	CE8850E-32CQ-EI
PAC600S12-EF	600W AC&240V DC Power Module (Front to Back,Power panel side intake)	CE8850E-32CQ-EI
Fan module		
Model	Description	Applicable product
FAN-180A-F	Fan box(F,FAN panel side intake)	CE8850-64CQ-EI
FAN-180A-B	Fan box(B,FAN panel side exhaust)	CE8850-64CQ-EI
FAN-031A-F	Fan box(F,FAN panel side intake)	CE8850E-32CQ-EI
FAN-031A-B	Fan box(B,FAN panel side exhaust)	CE8850E-32CQ-EI
Software		
CE88-LIC-BUN01	CE8800 Function License Bundle 1	
CE88-LIC-TLM	CE8800 Telemetry Function	
CE88-LIC-PTP	CE8800 PTP Function (supported only by the CE8850-64CQ-EI)	
CE88-LIC-AIF	CloudEngine 8800 AI Fabric Function	
N1-CE88LIC-CFFD	N1-CloudFabric Foundation SW License for CloudEngine 8800	
N1-CE88CFFD-SnS1Y	N1-CE8800 CloudFabric Foundation Software Package-Subscription and Support-Year	
N1-CE88LIC-CFAD	N1-CE8800 CloudFabric Advanced Software Package-Subscription and Support-Year	
N1-CE88CFAD-SnS1Y	N1-CE8800 CloudFabric Advanced Software Package-Subscription and Support-Year	
N1-CE88LIC-CFPM	N1- CloudEngine 8800 CloudFabric Premium Software Package	
N1-CE88CFPM-SnS1Y	N1- CloudEngine 8800 CloudFabric Premium Software Package-Subscription and Support-Year	
N1-CE88LIC-AIF	N1-CloudEngine 8800 AI Fabric Function	
N1-CE88AIF-SnS1Y	N1-CE8800 AI Fabric Function-Subscription and Support-Year	
N1-CE88LIC-HPC	N1-CloudEngine 8800 AI Fabric HPC Scenario Value-added Package	
N1-CE88HPC-SnS1Y	N1-CloudEngine 8800 AI Fabric HPC Storage Scenario Value-added Package-Subscription and Support-Year	
N1-CE-F-LIC-MDCA	N1-CloudEngine Data Center Switch Multi-cloud Multi-DC Value-added Package - Fixed	
N1-CEFMDCA -SnS1Y	N1-CloudEngine Data Center Switch Multi-cloud Multi-DC Value-added Package, Per Fixed Device-Subscription and Support-Year	
N1-CE88UPG-F-A	N1-CloudEngine 8800 Upgrade SW License: Foundation to Advanced	
N1-CE88UGFA-SnS1Y	N1-CloudEngine 8800 Upgrade SW License: Foundation to Advanced- Subscription and Support-Year	
N1-CE88UPG-A-P	N1-CloudEngine 8800 Upgrade SW License: Advanced to Premium	
N1-CE88UGAP-SnS1Y	N1-CloudEngine 8800 Upgrade SW License: Advanced to Premium-Subscription and Support-Year	

Networking Application

Typical Applications in DCs

On a typical DCN, CloudEngine 16800, CloudEngine 12800, or CloudEngine 8800 series switches function as core switches, and CloudEngine 8800, CloudEngine 6800, or CloudEngine 5800 series switches function as ToR switches and interconnect with CloudEngine 16800, CloudEngine 12800, or CloudEngine 8800 series switches through 100GE/40GE/10GE ports. These

switches use VXLAN and other fabric protocols to establish a non-blocking large Layer 2 network, which allows large-scale VM migration and flexible service deployment.



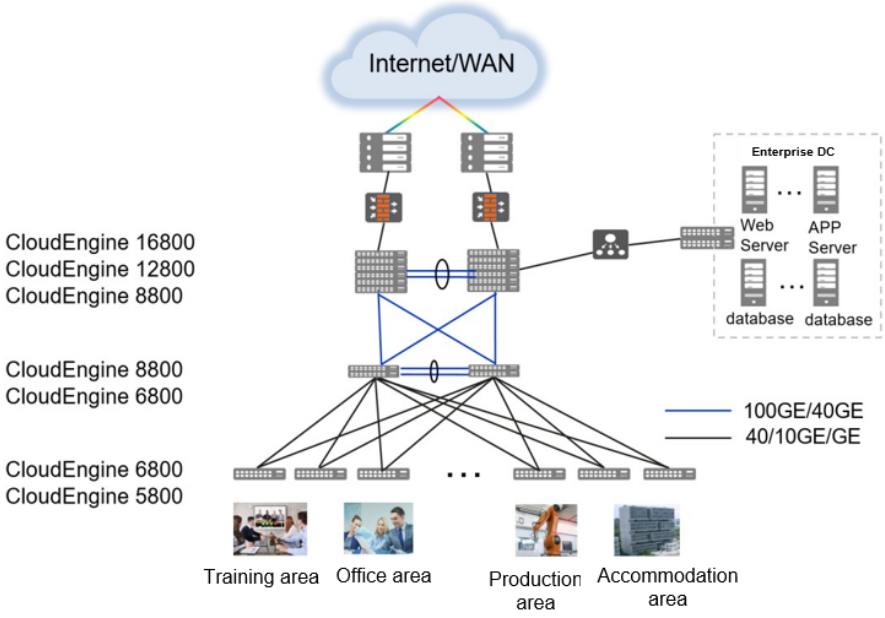
Note: VXLAN can also be used on campus networks to support flexible service deployment in different service areas.

Typical Applications on Campus Networks

CloudEngine 8800 series switches can be used on campus networks. They provide industry's leading high-density full-line-speed 100GE/40GE ports and high-performance stacking to meet increasing network bandwidth requirements. CloudEngine 8800 series switches also stand out with abundant features and an innovative energy-saving mechanism. Thanks to their high cost-effectiveness, they are ideal for campus networks.

On a typical campus network, multiple CloudEngine 16800, CloudEngine 12800, or CloudEngine 8800 series switches are virtualized into a logical core switch using CSS or iStack technology. Multiple CloudEngine 8800 or CloudEngine 6800 series switches at the aggregation layer form a logical switch using iStack technology. The resulting benefits include enhanced network reliability and simplified network management. At the access layer, CloudEngine 6800 or CloudEngine 5800 series switches are virtualized using CloudFabric technologies such as M-LAG to provide high-density line-speed ports.

Note: CSS and M-LAG are also widely used in DCs to simplify network management.



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