Huawei CloudEngine Series Switches

HUAWEI TECHNOLOGIES CO., LTD.

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Positioning Map of Data Center Switch

Modular Switch	CloudEngine 12800	CoudEngine 16800
Fixed Switch	CloudEngine 5800 (GE TOR) CloudEngine 6800 (10GE/25GE TOR)	CloudEngine 7800 (40GE TOR) CloudEngine 8800 (100GE TOR)

Performance & Scalability ⟶ High

Product and Solution Overview

Huawei CloudEngine series switches are high-performance cloud switches designed for next-generation data centers and high-end campus networks. This series includes Huawei's flagship CloudEngine 16800/12800 core switches, CloudEngine 8800/7800/6800/5800 high-performance aggregation and access switches, and CloudEngine 1800V distributed virtual switch. The CloudEngine series uses Huawei's next-generation VRP8 software platform and supports extensive data center and campus network service features.

The CloudFabric solution is based on Huawei's flagship CloudEngine 16800/12800 series data center core switches, CloudEngine 8800/7800/6800/5800 series high-performance fixed switches, and CloudEngine 1800V virtual switch. These switches are used with the Huawei Agile Controller to provide customers with an all-cloud data center network. The solution also integrates transmission, routing, security, and network management products, which can be combined with the data center switches to deliver a one-stop data center network solution.

CloudEngine 16800 Series

Huawei CloudEngine 16800 series data center switches are built for the AI era. The switches have embedded AI chips and use the innovative iLossless algorithm to learn and train network-wide traffic, implement zero packet loss and E2E μs-level latency, and achieve maximum throughput. The CloudEngine 16800 series provides up to 734 Tbit/s switching capacity, and supports 36 x 100GE, 18 x 100GE, 36 x 40GE, 24 x 40GE, and 48 x 10GE interface cards.

Figure 1 CloudEngine 16800 series

Item	CloudEngine 16804	CloudEngine 16808	CloudEngine 16816
Switching capacity (Tbit/s)	43/387[1]	86/774[1]	173/1,548[1]
Forwarding performance (Mpps)	11,280	22,560	45,120
Service slots	4	8	16
Fabric architecture	Clos architecture, cell switching, and VoQ		
Airflow design	Strict front-to-back		
Features	VXLAN, BGP-EVPN, CSS, M-LAG, NSH, Microsegmentation, iLossless AI algorithm, Telemetry, NetStream, and enhanced ERSPAN		

1 Roadmap

CloudEngine 12800 Series

CloudEngine 12800 switches are high-performance core switches designed for data center networks and high-end campus networks.

Their advanced hardware architecture offers 178 Tbit/s (scalable to 1032 Tbit/s) per chassis switching capacity and up to 576*100GE, 576*40GE, 2,304*25GE, or 2,304*10GE line-rate ports.

The CloudEngine 12800 switches use an industry-leading Clos architecture and a front-to-back airflow design to provide industrial-grade reliability. The switches also provide comprehensive virtualization capabilities and data center service features. Moreover, their energy-saving designs greatly reduce power consumption.

The CloudEngine 12800 series is available in six models: 12816, 12812, 12808, 12804, 12808S, and 12804S. They all use interchangeable modules to reduce costs of spare parts. This design ensures device scalability and provides investment protection.

Figure 2 CloudEngine 12800 series

Item	CloudEngine 12804S	CloudEngine 12808S	CloudEngine 12804	CloudEngine 12808	CloudEngine 12812	CloudEngine 12816
Switching capacity (Tbit/s)	30/258	59/516	45/258	89/516	134/774	178/1032
Forwarding performance (Mpps)	17,280	34,560	17,280	34,560	51,840	69,120
Service slots	4	8	4	8	12	16
Switching fabric module slots	2	4	6	6	6	6
Fabric architecture	Clos architecture, cell switching, VoQ, and distributed large buffer					
Airflow design	Strict front-to-back					
Device virtualization	VS, CSS, M-LAG					
Network virtualization	BGP-EVPN, VxLAN					
Intelligent O&M	Proactive path detection on the entire network, real-time monitoring of network health status					

CloudEngine 8800 Series

The CloudEngine 8800 series switch is a high-performance 100GE TOR switch released for data centers and high-end campus networks. It can act as an access node to support high-density 25GE/10GE server access, a compact core or aggregation node on a small-sized network, or connect to High- Performance Computing (HPC) servers. The CloudEngine 8800 switches provide L2/L3 line-rate forwarding.

The CloudEngine 8860 provides high-density 100GE/40GE uplink ports for connection with core switches. It provides up to 32*100GE, 64*40GE, or 128*25GE/10GE ports, which can be used in combinations through cards, delivering flexible, high-density access and aggregation capabilities. The CloudEngine 8800 switch provides high-density 100GE QSFP28 ports, L2/L3 line-rate forwarding, extensive data center features, and high-performance stacking capability.

The CloudEngine 8800 comes in the following models.

Model and Appearance	Description

CloudEngine 8861-4C-EI	• Supports four half-width interface cards:
	  » 24-port 10GE/25GE SFP28 and 2-port 100GE QSFP28 interface card
	  » 24-port 10GE BASE-T and 2-port 100GE QSFP28 interface card
	  » 8-port 100GE QSFP28 interface card
	  » 16-port 40GE QSFP+ interface card
	  » 24-Port 25GE/16G FC (SFP28) and 2-Port 40GE/100GE (QSFP28) Interface Card
	• 6.4Tbit/s switching capacity, forwarding performance 2030Mpps
	• Rich data center features: M-LAG, VxLAN, BGP-EVPN, iStack
	• Flexible front-to-back or back-to-front airflow
	• Supports Telemetry, AI Fabric, and Micorsegmentation

CloudEngine 8860-4C-EI	• Supports four half-width interface cards:
	  » 24-port 10GE/25GE SFP28 and 2-port 100GE QSFP28 interface card
	  » 24-port 10GE BASE-T and 2-port 100GE QSFP28 interface card
	  » 8-port 100GE QSFP28 interface card
	  » 16-port 40GE QSFP+ interface card
	  » 24-Port 25GE/16G FC (SFP28) and 2-Port 40GE/100GE (QSFP28) Interface Card
	• 6.4Tbit/s switching capacity, forwarding performance 3200Mpps
	• Rich data center features: M-LAG, VxLAN, BGP-EVPN, iStack
	• Flexible front-to-back or back-to-front airflow
	• Supports Telemetry

CloudEngine 8850-32CQ-EI	• 32*100GE QSFP28 ports, 2*10GE SFP+ ports • 6.44Tbit/s switching capacity, forwarding performance 3200Mpps • Rich data center features: M-LAG, VxLAN, BGP-EVPN, iStack • Flexible front-to-back or back-to-front airflow • Supports Telemetry
CloudEngine 8850-64CQ-EI	• 64*100GE QSFP28 ports • 12.8Tbit/s switching capacity, forwarding performance 4482Mpps • Rich data center features: M-LAG, VxLAN, BGP-EVPN, iStack • Flexible front-to-back or back-to-front airflow • Supports Telemetry

CloudEngine 7800 Series

The CloudEngine 7800 switches can be used as core or aggregation switches on data centers and campus networks.

Using an advanced hardware design, the CloudEngine 7800 series provides high-density 40GE QSFP+ ports (each can be split into four 10GE SFP+ ports), L2/L3 line-rate forwarding , extensive data center features, high-performance stacking capability. CloudEngine 7800 switches support front-to-back and back-to-front airflows for you to choose based on the airflow direction in your equipment room.

The CloudEngine 7800 series comes in one model.

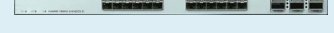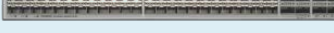| Model and Appearance	Description
CloudEngine 7855-32Q-EI	• 32*40GE QSFP+ ports • 2.56Tbit/s switching capacity, forwarding performance 1440Mpps • Rich data center features: M-LAG, VxLAN, BGP-EVPN, iStack • Flexible front-to-back or back-to-front airflow • Supports Telemetry

CloudEngine 6800 Series

The CloudEngine 6800 switches provide high-density 10GE/25GE access in data centers and can also be used as core or aggregation switches on campus networks.

The CloudEngine 6800 series has an advanced hardware design, which provides high density of 10GE/25GE downlink ports as well as 100GE QSFP28 or 40GE QSFP+ uplink ports. The CloudEngine 6800 switches provide L2/L3 line-rate forwarding on these interfaces and support extensive data center features, high-performance stacking capability. They support front-to-back and back-to-front airflows for you to choose based on the airflow direction in your equipment room.

The CloudEngine 6800 series comes in the following models.

Model and Appearance	Description
new CloudEngine 6863-48S6CQ	• 48*25GE SFP28 ports and 6*100GE QSFP28 ports • 3.6Tbit/s switching capacity, 42 MB buffer • Rich data center features: VxLAN, BGP-EVPN, iStack, M-LAG • Flexible front-to-back or back-to-front airflow • Supports Telemetry, Microsegmentation, NSH
new CloudEngine 6881-48S6CQ	• 48*10GE SFP+ ports and 6*100GE QSFP28 ports • 2.16Tbit/s switching capacity, 42 MB buffer • Rich data center features: VxLAN, BGP-EVPN, iStack, M-LAG • Flexible front-to-back or back-to-front airflow • Supports Telemetry, Microsegmentation, NSH
CloudEngine 6880-24S4Q2CQ-EI	• 24*10GE SFP+ ports, 4*40GE QSFP+ ports, and 2*100GE QSFP28 ports • 1.2 Tbit/s switching capacity • Rich data center features: VxLAN, BGP-EVPN, iStack • Flexible front-to-back or back-to-front airflow • Supports Telemetry and Micorsegmentation
CloudEngine 6870-48T6CQ-EI	• 48-port 10GE BASE-T , and 6-port 100GE QSFP28, • 4GB deep buffer, 2.16 Tbit/s switching capacity, forwarding performance 720Mpps • Rich data center features: M-LAG, VxLAN, BGP-EVPN, iStack • Flexible front-to-back or back-to-front airflow • Supports Telemetry
CloudEngine 6870-48S6CQ-EI	• 48*10GE SFP+ ports, 6*100GE QSFP28 ports • 4GB deep buffer, 2.16 Tbit /s switching capacity, forwarding performance 720Mpps • Rich data center features: M-LAG, VxLAN, BGP-EVPN, iStack • Flexible front-to-back or back-to-front airflow • Supports Telemetry
CloudEngine 6875-48S4CQ-EI	• 48*10GE SFP+ ports, 4*100GE QSFP28 ports • 4GB deep buffer, 1.76 Tbit/s switching capacity, forwarding performance 835Mpps • Rich data center features: M-LAG, VxLAN, BGP-EVPN, iStack • Flexible front-to-back or back-to-front airflow • Supports Telemetry
CloudEngine 6865-48S8CQ-EI	• 48*25GE SFP28 ports, 8*100GE QSFP28 ports • 4Tbit/s switching capacity, forwarding performance 2000Mpps • Rich data center features: M-LAG, VxLAN, BGP-EVPN, iStack • Flexible front-to-back or back-to-front airflow • Supports Telemetry and Micorsegmentation

Model and Appearance	Description
CloudEngine 6860-48S8CQ-EI	• 48*25GE SFP28 ports, 8*100GE QSFP28 ports • 4Tbit/s switching capacity, forwarding performance 3200Mpps • Rich data center features: M-LAG, VxLAN, BGP-EVPN, iStack • Flexible front-to-back or back-to-front airflow • Supports Telemetry
ClodEngine 6857-48S6CQ-EI	• 48*10GE SFP+ ports, 6*40GE / 6*100GE QSFP28 ports • 2.16Tbit/s switching capacity, forwarding performance 1000Mpps • Rich data center features: M-LAG, VxLAN, BGP-EVPN, iStack • Flexible front-to-back or back-to-front airflow • Supports Telemetry and Micorsegmentation
CloudEngine 6856-48S6Q-HI	• 48*10GE SFP+ ports, 6*40GE QSFP+ ports • 1.44Tbit/s switching capacity, forwarding performance 1080Mpps • Rich data center features: M-LAG, VxLAN, BGP-EVPN, iStack • Flexible front-to-back or back-to-front airflow • Supports Telemetry
CloudEngine 6856-48T6Q-HI	• 48*10GE Base-T ports, 6*40GE QSFP+ ports • 1.44Tbit/s switching capacity, forwarding performance 1080Mpps • Rich data center features: M-LAG, VxLAN, BGP-EVPN, iStack • Flexible front-to-back or back-to-front airflow • Supports Telemetry
CloudEngine 6855-48S6Q-HI	• 48*10GE SFP+ ports, 6*40GE QSFP+ ports • 1.44Tbit/s switching capacity, forwarding performance 1080Mpps • Rich data center features: M-LAG, VxLAN, VxLAN RIOT, BGP-EVPN, iStack • Flexible front-to-back or back-to-front airflow • Supports Telemetry
CloudEngine 6855-48T6Q-HI	• 48*10GE Base-T ports, 6*40GE QSFP+ ports • 1.44Tbit/s switching capacity, forwarding performance 1080Mpps • Rich data center features: M-LAG, VxLAN, BGP-EVPN, iStack • Flexible front-to-back or back-to-front airflow • Supports Telemetry
CloudEngine 6851-48S6Q-HI	• 48*10GE SFP+ ports,6*40GE QSFP+ ports • 1.44Tbit/s switching capacity, forwarding performance 1080Mpps • Rich data center features: M-LAG, VxLAN, BGP-EVPN, iStack • Flexible front-to-back or back-to-front airflow • Supports Telemetry
CloudEngine 6820−48S6CQ	• 48*10GE SFP+ ports, 6*100GE QSFP28 ports • 2.16Tbit/s switching capacity, forwarding performance 470Mpps • Rich data center features: M-LAG, iStack • Flexible front-to-back or back-to-front airflow

Model and Appearance	Description
CloudEngine 6810-48S4Q-LI	• 48*10GE SFP+ ports, 4*40GE QSFP+ ports • 1.28Tbit/s switching capacity, forwarding performance 960Mpps • Rich data center features: M-LAG, iStack • Flexible front-to-back or back-to-front airflow
CloudEngine 6810-32T16S4Q-LI	• 32*10GE BASE-T ports, 16*10GE SFP+ ports, 4*40GE QSFP+ ports • 1.28Tbit/s switching capacity, forwarding performance 960Mpps • Rich data center features: M-LAG, iStack • Flexible front-to-back or back-to-front airflow

CloudEngine 5800 Series

The CloudEngine 5800 switches provide high-density GE access in data centers and can also be used as aggregation or access switches on campus networks.

The CloudEngine 5800 series provide 40GE uplink ports, and the advanced hardware design supports high density of GE access ports. The CloudEngine 5800 switches provide L2/L3 line-rate forwarding, extensive data center features, and high-performance stacking capability. They support front-to-back and back-to-front airflows for you to choose based on the airflow direction in your equipment room.

The CloudEngine 5800 series comes in the following models.

Model and Appearance	Description
CloudEngine 5880-48T6Q-EI	• 4*GE RJ45, 4*10GE RJ45; 6*40GE QSFP+ • 648 Gbit/s switching capacity, forwarding performance 406Mpps • VXLAN Bridge and Routing, BGP EVPN, Microsegmentation • Hardware-based BFD, Telemetry, Enhanced ERSPAN
CloudEngine 5855-48T4S2Q-EI	• 48*GE BASE-T ports, 4*10GE SFP+ ports, 2*40GE QSFP+ ports • 336Gbit/s switching capacity, forwarding performance 252Mpps • Rich data center features: M-LAG, iStack • Flexible front-to-back or back-to-front airflow
CloudEngine 5855-24T4S2Q-EI	• 24*GE BASE-T ports, 4*10GE SFP+ ports, 2*40GE QSFP+ ports • 288Gbit/s switching capacity, forwarding performance 215Mpps • Rich data center features: M-LAG, iStack • Flexible front-to-back or back-to-front airflow
CloudEngine 5850-48T4S2Q-HI	• 48*GE BASE-T ports, 4*10GE SFP+ ports, 2*40GE QSFP+ ports • 336Gbit/s switching capacity, forwarding performance 252Mpps • Rich data center features: M-LAG, iStack • Flexible front-to-back or back-to-front airflow

CloudEngine 1800V

Huawei CloudEngine 1800V is a distributed virtual switch designed for virtualized environments in cloud data centers. It provides high forwarding performance, open architecture, and enhanced security protection. And it can run on multiple compute virtualization platforms such as Huawei FusionSphere and open-source platforms.

The CloudEngine 1800V can be combined with Huawei CloudEngine hardware switches and Huawei Agile Controller to offer a Software-Defined Networking (SDN) solution for data centers based on hybrid or host overlays. This solution supports Virtual Machines (VMs), containers, and physical servers with the same architecture.

Award and Certification

Best of ShowNet Award Grand Prize

- At Interop Tokyo 2016, Huawei CloudEngine 8860 and CloudEngine 6850 data center switches received the Best of Show Award Grand Prix in the ShowNet Product category for the Open SDN Capabilities.

Huawei Positioned as a Leader in Data Center Hardware Platforms for SDN

- Huawei has been positioned as a Leader in the new report "The Forrester Wave™: Hardware Platforms For Software-Defined Networking, Q1 2018" published by Forrester Research, a top technology industry research and advisory firm. This was the first time for Forrester Research to evaluate data center hardware platforms for software-defined networking (SDN) and included nine players in the industry. According to this report, CloudEngine series switches, core components in Huawei CloudFabric Solution, had the highest score in the product strategy category and the third highest score in the current offering and market presence categories.

Huawei Recognized as an April 2019 Gartner Peer Insights Customers' Choice for Data Center Networking

- Huawei CloudFabric Data Center Network Solution has multiple building blocks, such as CloudEngine data center switches, Agile Controller-DCN (an SDN controller), and FabricInsight (a data center network analyzer). Gartner Peer Insights Customers' Choice analyzes more than 200,000 reviews across more than 300 markets posted to Gartner Peer Insights. These reviews are based on direct peer experiences of purchasing, implementing, and operating a solution. In markets with sufficient data available, Gartner Peer Insights recognizes the vendors that are the most highly rated by their customers through the Customers' Choice distinction.

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HUAWEI TECHNOLOGIES CO., LTD.

Huawei Industrial Base
Bantian Longgang
Shenzhen 518129, P.R. China
Tel: +86-755-28780808

www.huawei.com