



Huawei CloudEngine 12800 Platform Line Cards and SFU

Huawei CloudEngine 12800 series switches use an advanced hardware architecture design, providing as much as 178Tbps (scalable to 1032 Tbps) switching capacity and has up to 576*100GE, 576*40GE, 2,304*25GE, or 2,304*10GE line-rate ports.



Product Overview

The CloudEngine 12800 series switches are next-generation, high-performance core switches designed for data center networks and high-end campus networks. Using Huawei's next-generation VRP8 software platform, CloudEngine 12800 series switches provide stable, reliable, and secure high-performance L2/L3 switching capabilities to help build an elastic, virtualized, and high-quality network.

The CloudEngine 12800 series switches use an advanced hardware architecture design, providing as much as 178 Tbps (scalable to 1032 Tbps) switching capacity and has up to 576*100GE, 576*40GE, 2,304*25GE, or 2,304*10GE line-rate ports.

The CloudEngine 12800 series switches use an industry-leading Clos architecture and provide industrial-grade reliability. The switches support comprehensive virtualization capabilities along with data center service features. Their front-to-back airflow design suits data center equipment rooms, and the innovative energy conservation technologies greatly reduce power consumption.

Product Appearance

The CloudEngine 12800 series is available in six models: CloudEngine 12816, CloudEngine 12808, CloudEngine 12804, CloudEngine 12808S and CloudEngine 12804S.





Platform Line Cards





The CloudEngine 12800 Platform supports a variety of hot-swappable line cards (Table 1) optimized for datacenter deployments.




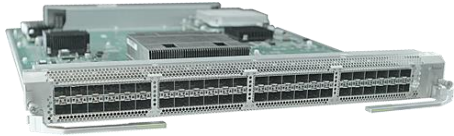

E types line cards are compatible with B, C, F, G types SFU, recommend using B and C type SFU. F and S types line cards are compatible with F, G types SFU.





CloudEngine 12800 Platform Line Cards

Line Card Type	Description
100-Gbps Line Cards	
CE-L36CQ-FD1: 36-port 100GE interface card (FD1, QSFP28) 	<ul style="list-style-type: none"> A 100GE port can be used as a 40GE port or split into four 25GE or 10GE ports. One CE-L36CQ-FD1 card can provide a maximum port density of 36x100GE, 36x40GE, 144x25GE or 144x10GE Clos architecture, cell switching, VoQ

Line Card Type	Description
	<ul style="list-style-type: none"> • 16GB buffer • Supported in CloudEngine 12816, CloudEngine 12808, CloudEngine 12804, CloudEngine 12808S and CloudEngine 12804S chassis • Compatible with CloudEngine 12800 and CloudEngine 12800S G type SFU (CE-SFUxxG, CE-SFUG-S)
<p>CE-L36CQ-FD: 36-port 100GE interface card (FD, QSFP28)</p> 	<ul style="list-style-type: none"> • A 100GE port can be used as a 40GE port or split into four 25GE or 10GE ports. • One CE-L36CQ-FD card can provide a maximum port density of 36x100GE, 36x100GE, 36x40GE, 144x25GE or 144x10GE • Clos architecture, cell switching, VoQ • 24GB buffer • Supported in CloudEngine 12816, CloudEngine 12808, CloudEngine 12804, CloudEngine 12808S and CloudEngine 12804S chassis • Compatible with CloudEngine 12800 and CloudEngine 12800S G type SFU (CE-SFUxxG, CE-SFUG-S)
<p>CE-L36CQ-FG: 36-port 100GE interface card (FG, QSFP28)</p> 	<ul style="list-style-type: none"> • A 100GE port can be used as a 40GE port or split into four 25GE or 10GE ports. • One CE-L36CQ-FG card can provide a maximum port density of 36x100GE, 36x40GE, 144x25GE or 144x10GE • Clos architecture, cell switching, VoQ • 16GB buffer • 2M FIB (IPv4) • Supported in CloudEngine 12816, CloudEngine 12808, CloudEngine 12804, CloudEngine 12808S and CloudEngine 12804S chassis • Compatible with CloudEngine 12800 and CloudEngine 12800S G type SFU (CE-SFUxxG, CE-SFUG-S)
<p>CE-L16CQ-FD: 16-port 100GE interface card (FD, QSFP28)</p> 	<ul style="list-style-type: none"> • A 100GE port can be used as a 40GE port or split into four 25GE or 10GE ports. • One CE-L16CQ-FD card can provide a maximum port density of 16x100GE, 16x40GE, 64x25GE or 64x10GE Clos architecture, cell switching, VoQ • 8GB buffer • Support MACSEC • Supported in CloudEngine 12816, CloudEngine 12808, CloudEngine 12804, CloudEngine 12808S and CloudEngine 12804S chassis • Compatible with CloudEngine 12800 F and G type SFU (CE-SFUxxF, CE-SFUxxG) and CloudEngine 12800S G type SFU (CE-SFUG-S)
<p>CE-L12CQ-FD: 12-port 100GE interface card (FD, QSFP28)</p> 	<ul style="list-style-type: none"> • A 100GE port can be used as a 40GE port or split into four 25GE or 10GE ports. • One CE-L12CQ-FD card can provide a maximum port density of 12x100GE, 12x40GE, 48x25GE or 48x10GE • Clos architecture, cell switching, VoQ • 8GB buffer • Supported in CloudEngine 12816, CloudEngine 12808, CloudEngine 12804, CloudEngine 12808S and CloudEngine 12804S chassis • Compatible with CloudEngine 12800 F and G type SFU (CE-SFUxxF, CE-SFUxxG) and CloudEngine 12800S G type SFU (CE-SFUG-S)
<p>CE-L04CF-EF: 4-port 100GE interface card</p>	<ul style="list-style-type: none"> • A 100GE port can split into two 40GE port or split into eight 10GE

Line Card Type	Description
<p>(EF, CFP)</p> 	<ul style="list-style-type: none"> • One CE-L04CF-EF card can provide a maximum port density of 4x100GE, 8x40GE or 40x10GE • Clos architecture, cell switching, VoQ • 6GB buffer • 1M FIB (IPv4) • Supported in CloudEngine 12816, CloudEngine 12808, CloudEngine 12804, CloudEngine 12808S and CloudEngine 12804S chassis • Compatible with CloudEngine 12800 B, C, F and G type SFU (CE-SFUxxB, CE-SFUxxC, CE-SFUxxF, CE-SFUxxG) and CloudEngine 12800S B, C, F and G type SFU (CE-SFUB-S, CE-SFUC-S, CE-SFUF-S, CE-SFUG-S)
40-Gbps Line Cards	
<p>CE-L36LQ-FD: 36-port 40GE interface card (FD, QSFP+)</p> 	<ul style="list-style-type: none"> • A 40GE port can split into four 10GE optical ports • One CE-L36LQ-FD card can provide a maximum port density of 36 40GE and 144 10GE optical ports • On a CE-L36LQ-FD card, 18 40GE ports can be used as 100GE ports, and each of them can be split into four 25GE ports • Clos architecture, cell switching, VoQ • 2GB buffer • Supported in CloudEngine 12816, CloudEngine 12808, CloudEngine 12804, CloudEngine 12808S and CloudEngine 12804S chassis • Compatible with CloudEngine 12800 F and G type SFU (CE-SFUxxF, CE-SFUxxG) and CloudEngine 12800S F and G type SFU (CE-SFUF-S, CE-SFUG-S)
<p>CE-L24LQ-FD: 24-port 40GE interface card (FD, QSFP+)</p> 	<ul style="list-style-type: none"> • A 40GE port can split into four 10GE optical ports • One CE-L24LQ-FD card can provide a maximum port density of 24 40GE and 96 10GE optical ports • Cell switching, VoQ • 8GB buffer • Supported in CloudEngine 12816, CloudEngine 12808, CloudEngine 12804, CloudEngine 12808S and CloudEngine 12804S chassis • Compatible with CloudEngine 12800 F and G type SFU (CE-SFUxxF, CE-SFUxxG) and CloudEngine 12800S F and G type SFU (CE-SFUF-S, CE-SFUG-S)
<p>CE-L24LQ-EC1: 24-port 40GE interface card (EC1, QSFP+)</p> 	<ul style="list-style-type: none"> • A 40GE port can split into four 10GE optical ports • One CE-L24LQ-EC1 card can provide a maximum port density of 24 40GE and 96 10GE optical ports • Cell switching, VoQ • 12GB buffer • Supported in CloudEngine 12816, CloudEngine 12808, CloudEngine 12804, CloudEngine 12808S and CloudEngine 12804S chassis • Compatible with CloudEngine 12800 B, C, F and G type SFU (CE-SFUxxB, CE-SFUxxC, CE-SFUxxF, CE-SFUxxG) and CloudEngine 12800S C and G type SFU (CE-SFUC-S, CE-SFUG-S)
10/25-Gbps Fiber Line Cards	
<p>CE-L48XS-FD1: 48-port 10GBASE-X interface card (FD1, SFP+)</p>	<ul style="list-style-type: none"> • One CE-L48XS-FD1 card can provide a maximum port density of 48 10GE/25GE optical ports • Cell switching, VoQ

Line Card Type	Description
	<ul style="list-style-type: none"> • 4GB buffer • Supported in CloudEngine 12816, CloudEngine 12808, CloudEngine 12804, CloudEngine 12808S and CloudEngine 12804S chassis • Compatible with CloudEngine 12800 F and G type SFU (CE-SFUxxF, CE-SFUxxG) and CloudEngine 12800S F and G type SFU (CE-SFUF-S, CE-SFUG-S)
10-Gbps Fiber Line Cards	
<p>CE-L48XS-FD: 48-port 10GBASE-X interface card (FD, SFP+)</p> 	<ul style="list-style-type: none"> • One CE-L48XS-FD card can provide a maximum port density of 48 10GE/GE optical ports • Cell switching, VoQ • 1-GB buffer • Supported in CloudEngine 12816, CloudEngine 12808, CloudEngine 12804, CloudEngine 12808S and CloudEngine 12804S chassis • Compatible with CloudEngine 12800 F and G type SFU (CE-SFUxxF, CE-SFUxxG) and CloudEngine 12800S F and G type SFU (CE-SFUF-S, CE-SFUG-S)
<p>CE-L48XS-FDA: 48-port 10GE, 2-port 40GE, 2-port 100GE interface card (FDA, SFP+, QSFP+, QSFP28)</p> 	<ul style="list-style-type: none"> • One CE-L48XS-FDA card can provide a maximum port density of 48 10GE/GE and 2 100GE/40GE optical ports • Cell switching, VoQ • 4-GB buffer • Supported in CloudEngine 12816, CloudEngine 12808, CloudEngine 12804, CloudEngine 12808S and CloudEngine 12804S chassis • Compatible with CloudEngine 12800 F and G type SFU (CE-SFUxxF, CE-SFUxxG) and CloudEngine 12800S F and G type SFU (CE-SFUF-S, CE-SFUG-S)
<p>CE-L48XS-FG: 48-port 10GBASE-X interface card (FG, SFP+)</p> 	<ul style="list-style-type: none"> • One CE-L48XS-FG card can provide a maximum port density of 48 10GE optical ports • Cell switching, VoQ • 4-GB buffer • 4M FIB (IPv4) • Supported in CloudEngine 12816, CloudEngine 12808, CloudEngine 12804, CloudEngine 12808S and CloudEngine 12804S chassis • Compatible with CloudEngine 12800 F and G type SFU (CE-SFUxxF, CE-SFUxxG) and CloudEngine 12800S F and G type SFU (CE-SFUF-S, CE-SFUG-S)
<p>CE-L48XS-EF: 48-port 10GBASE-X interface card (EF, SFP+)</p> 	<ul style="list-style-type: none"> • One CE-L48XS-EF card can provide a maximum port density of 48 10GE/GE optical ports • Cell switching, VoQ • 6-GB buffer • 1M FIB (IPv4) • Supported in CloudEngine 12816, CloudEngine 12808, CloudEngine 12804, CloudEngine 12808S and CloudEngine 12804S chassis • Compatible with CloudEngine 12800 B, C, F and G type SFU (CE-SFUxxB, CE-SFUxxC CE-SFUxxF, CE-SFUxxG) and CloudEngine 12800S B, C, F and G type SFU (CE-SFUB-S, CE-SFUC-S, CE-SFUF-S, CE-SFUG-S)
<p>CE-L48XS-ED: 48-port 10GBASE-X interface card (ED, SFP+)</p>	<ul style="list-style-type: none"> • One CE-L48XS-ED card can provide a maximum port density of 48 10GE/GE optical ports

Line Card Type	Description
	<ul style="list-style-type: none"> • Cell switching, VoQ • 6-GB buffer • Supported in CloudEngine 12816, CloudEngine 12808, CloudEngine 12804, CloudEngine 12808S and CloudEngine 12804S chassis • Compatible with CloudEngine 12800 B, C, F and G type SFU (CE-SFUxxB, CE-SFUxxC CE-SFUxxF, CE-SFUxxG) and CloudEngine 12800S B, C, F and G type SFU (CE-SFUB-S, CE-SFUC-S, CE-SFUF-S, CE-SFUG-S)
<p>CE-L48XS-EC: 48-port 10GBASE-X interface card (EC, SFP+)</p> 	<ul style="list-style-type: none"> • One CE-L48XS-EC card can provide a maximum port density of 48 10GE/GE optical ports • Cell switching, VoQ • 6-GB buffer • Supported in CloudEngine 12816, CloudEngine 12808, CloudEngine 12804, CloudEngine 12808S and CloudEngine 12804S chassis • Compatible with CloudEngine 12800 B, C, F and G type SFU (CE-SFUxxB, CE-SFUxxC CE-SFUxxF, CE-SFUxxG) and CloudEngine 12800S B, C, F and G type SFU (CE-SFUB-S, CE-SFUC-S, CE-SFUF-S, CE-SFUG-S)
10-Gbps Copper Line Cards	
<p>CE-L48XT-EC: 48-port 100M/1000M/10G BASE-T interface card (EC, RJ45)</p> 	<ul style="list-style-type: none"> • One CE-L48XT-EC card can provide a maximum port density of 48 100BASE-T/1000BASE-T/10GBASE-T ports • Cell switching, VoQ • 6-GB buffer • Supported in CloudEngine 12816, CloudEngine 12808, CloudEngine 12804, CloudEngine 12808S and CloudEngine 12804S chassis • Compatible with CloudEngine 12800 B, C, F and G type SFU (CE-SFUxxB, CE-SFUxxC, CE-SFUxxF, CE-SFUxxG) and CloudEngine 12800S B, C, F and G type SFU (CE-SFUB-S, CE-SFUC-S, CE-SFUF-S, CE-SFUG-S)
1-Gbps Copper Line Cards	
<p>CE-L48GT-EA: 48-port 10/100/1000BASE-T interface card (EA, RJ45)</p> 	<ul style="list-style-type: none"> • One CE-L48GT-EA card can provide a maximum port density of 48 10BASE-T/100BASE-T/1000BASE-T ports • Cell switching, VoQ • 2-GB buffer • Supported in CloudEngine 12816, CloudEngine 12808, CloudEngine 12804, CloudEngine 12808S and CloudEngine 12804S chassis • Compatible with CloudEngine 12800 B, C, F and G type SFU (CE-SFUxxB, CE-SFUxxC CE-SFUxxF, CE-SFUxxG) and CloudEngine 12800S B, C, F and G type SFU (CE-SFUB-S, CE-SFUC-S, CE-SFUF-S, CE-SFUG-S)

NOTE

For detailed information of CloudEngine 12800Platform hardware information, visit <https://support.huawei.com/enterprise/en/doc/EDOC1000013855?idPath=7919710%7C21782165%7C21782236%7C22318638%7C7542409>

Switch Fabric Units and Performance

The CloudEngine 12800 platform has a Clos fabric design that interconnects the line cards with rear-mounted fabric modules. All SFU are directly connected to all line cards. With load balancing across fabric cards, the architecture achieves optimal bandwidth.

CloudEngine 12800 supports the following SFU.

Model	SFU Type	Maximum SFU Number
CloudEngine 12816	CE-SFU16B, CE-SFU16C, CE-SFU16F, CE-SFU16G	6
CloudEngine 12808	CE-SFU08B, CE-SFU08C, CE-SFU08F, CE-SFU08G	6
CloudEngine 12804	CE-SFU04C, CESFU04F, CE-SFU04G	6
CloudEngine 12808S	CE-SFUB-S, CE-SFUC-S, CE-SFUF-S, CE-SFUG-S	4
CloudEngine 12804S	CE-SFUB-S, CE-SFUC-S, CE-SFUF-S, CE-SFUG-S	2

E types line cards are compatible with B, C, F, G types SFU, recommend using B and C type SFU. F and S types line cards are compatible with F, G types SFU. See below table for detailed line card and SFU compatibility information.

Line Card Type	Description	Performance	Compatible SFU	Required SFU for Maximum Bandwidth
CE-L36CQ-FD1	36-port 100GE interface card (FD1, QSFP28)	7.2Tbps	CloudEngine 12800: CE-SFUxxG CloudEngine 12800S: CE-SFUG-S	CloudEngine 12800: 6 CloudEngine 12804S: 2 CloudEngine 12808S: 4
CE-L36CQ-FD	36-port 100GE interface card (FD, QSFP28)	7.2Tbps	CloudEngine 12800: CE-SFUxxG CloudEngine 12800S: CE-SFUG-S	CloudEngine 12800: 5 CloudEngine 12804S: 2 CloudEngine 12808S: 4
CE-L36CQ-FG	36-port 100GE interface card (FG, QSFP28)	7.2Tbps	CloudEngine 12800: CE-SFUxxG CloudEngine 12800S: CE-SFUG-S	CloudEngine 12800: 6 CloudEngine 12804S: 2 CloudEngine 12808S: 4
CE-L16CQ-FD	16-port 100GE interface card (FD, QSFP28)-MACSEC	3.2Tbps	CloudEngine 12800: CE-SFUxxF/CE-SFUxxG CloudEngine 12800S: CE-SFUG-S	CloudEngine 12800: <ul style="list-style-type: none"> CE-SFU16G: 6 Other SFU: 5 CloudEngine 12804S: 2 CloudEngine 12808S: 4
CE-L12CQ-FD	12-port 100GE interface card (FD, QSFP28)	2.4Tbps	CloudEngine 12800: CE-SFUxxF/CE-SFUxxG CloudEngine 12800S: CE-SFUG-S	CloudEngine 12800: 5 CloudEngine 12804S: 2 CloudEngine 12808S: 4
CE-L04CF-EF	4-port 100GE interface card (EF, CFP)	0.8Tbps	CloudEngine 12800: CE-SFUxxB/CE-SFUxxC CE-SFUxxF/CE-SFUxxG	CloudEngine 12800: 4 CloudEngine 12804S: 2 CloudEngine 12808S: 3

Line Card Type	Description	Performance	Compatible SFU	Required SFU for Maximum Bandwidth
			CloudEngine 12800S: CE-SFUB-S/CE-SFUC-S CE-SFUF-S/CE-SFUG-S	
40-Gbps Line Cards				
CE-L36LQ-FD	36-port 40GE interface card (FD, QSFP+)	2.88Tbps	CloudEngine 12800: CE-SFUxxF/CE-SFUxxG CloudEngine 12800S: CE-SFUF-S/CE-SFUG-S	CloudEngine 12800: 4 CloudEngine 12804S: 2 CloudEngine 12808S: <ul style="list-style-type: none"> • CE-SFUF-S: 4 • CE-SFUG-S: 3
CE-L24LQ-FD	24-port 40GE interface card (FD, QSFP+)	1.92Tbps	CloudEngine 12800: CE-SFUxxF/CE-SFUxxG CloudEngine 12800S: CE-SFUF-S/CE-SFUG-S	CloudEngine 12800: 4 CloudEngine 12804S: 2 CloudEngine 12808S: 4
CE-L24LQ-EC1	24-port 40GE interface card (EC1, QSFP+)	1.92Tbps	CloudEngine 12800: CE-SFUxxB/CE-SFUxxC CE-SFUxxG CloudEngine 12800S: CE-SFUC-S/CE-SFUG-S	CloudEngine 12800: 5 CloudEngine 12804S: 2 CloudEngine 12808S: 4
10/25-Gbps Fiber Line Cards				
CE-L48XS-FD1	48-port 10GBASE-X interface card (FD1, SFP+)	2.4Tbps	CloudEngine 12800: CE-SFUxxF/CE-SFUxxG CloudEngine 12800S: CE-SFUF-S/ CE-SFUG-S	CloudEngine 12800: 4 CloudEngine 12804S: 1 CloudEngine 12808S: 2
10-Gbps Fiber Line Cards				
CE-L48XS-FD	48-port 10GBASE-X interface card (FD, SFP+)	0.96Tbps	CloudEngine 12800: CE-SFUxxF/CE-SFUxxG CloudEngine 12800S: CE-SFUF-S/ CE-SFUG-S	CloudEngine 12800: 4 CloudEngine 12804S: 2 CloudEngine 12808S: 3
CE-L48XS-FDA	48-port 10GE, 2-port 40GE, 2-port 100GE interface card (FDA,	0.96Tbps	CloudEngine 12800: CE-SFUxxF/CE-	CloudEngine 12800: 4 CloudEngine 12804S: 2

Line Card Type	Description	Performance	Compatible SFU	Required SFU for Maximum Bandwidth
	SFP+, QSFP+, QSFP28)		SFUxxG CloudEngine 12800S: CE-SFUF-S/ CE-SFUG-S	CloudEngine 12808S: 3
CE-L48XS-FG	48-port 10GBASE-X interface card (FG, SFP+)	0.96Tbps	CloudEngine 12800: CE-SFUxxF/CE-SFUxxG CloudEngine 12800S: CE-SFUF-S/ CE-SFUG-S	CloudEngine 12800: 3 CloudEngine 12804S: <ul style="list-style-type: none"> CE-SFUF-S: 2 CE-SFUG-S: 1 CloudEngine 12808S: <ul style="list-style-type: none"> CE-SFUF-S: 3 CE-SFUG-S: 2
CE-L48XS-EF	48-port 10GBASE-X interface card (EF, SFP+)	0.96Tbps	CloudEngine 12800: CE-SFUxxB/CE-SFUxxC CE-SFUxxF/CE-SFUxxG CloudEngine 12800S: CE-SFUB-S/CE-SFUC-S CE-SFUF-S/CE-SFUG-S	CloudEngine 12800: 5 CloudEngine 12804S: 2 CloudEngine 12808S: <ul style="list-style-type: none"> CE-SFUB-S/ CE-SFUC-S: 4 CE-SFUF-S/ CE-SFUG-S: 3
CE-L48XS-ED	48-port 10GBASE-X interface card (ED, SFP+)	0.96Tbps	CloudEngine 12800: CE-SFUxxB/CE-SFUxxC CE-SFUxxF/CE-SFUxxG CloudEngine 12800S: CE-SFUB-S/CE-SFUC-S CE-SFUF-S/CE-SFUG-S	CloudEngine 12800: 5 CloudEngine 12804S: 2 CloudEngine 12808S: <ul style="list-style-type: none"> CE-SFUB-S/ CE-SFUC-S: 4 CE-SFUF-S/ CE-SFUG-S: 3
CE-L48XS-EC	48-port 10GBASE-X interface card (EC, SFP+)	0.96Tbps	CloudEngine 12800: CE-SFUxxB/CE-SFUxxC CE-SFUxxF/CE-SFUxxG CloudEngine 12800S: CE-SFUB-S/CE-SFUC-S CE-SFUF-S/CE-SFUG-S	CloudEngine 12800: 5 CloudEngine 12804S: 2 CloudEngine 12808S: <ul style="list-style-type: none"> CE-SFUB-S/ CE-SFUC-S: 4 CE-SFUF-S/ CE-SFUG-S: 3
10-Gbps Copper Line Cards				

Line Card Type	Description	Performance	Compatible SFU	Required SFU for Maximum Bandwidth
CE-L48XT-EC	48-port 100M/1000M/10G BASE-T interface card (EC, RJ45)	0.96Tbps	CloudEngine 12800: CE-SFUxxB/CE-SFUxxC CE-SFUxxF/CE-SFUxxG CloudEngine 12800S: CE-SFUB-S/CE-SFUC-S CE-SFUF-S/CE-SFUG-S	CloudEngine 12800: 5 CloudEngine 12804S: 2 CloudEngine 12808S: <ul style="list-style-type: none"> CE-SFUB-S/ CE-SFUC-S: 4 CE-SFUF-S/ CE-SFUG-S: 3

1-Gbps Copper Line Cards

CE-L48GT-EA	48-port 10/100/1000BASE-T interface card (EA, RJ45)	0.096Tbps	CloudEngine 12800: CE-SFUxxB/CE-SFUxxC CE-SFUxxF/CE-SFUxxG CloudEngine 12800S: CE-SFUB-S/CE-SFUC-S CE-SFUF-S/CE-SFUG-S	CloudEngine 12800: 1 CloudEngine 12804S: 1 CloudEngine 12808S: 1
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NOTE

For detailed information of CloudEngine 12800 Platform hardware information, visit

<https://support.huawei.com/enterprise/en/doc/EDOC1000013855?idPath=7919710%7C21782165%7C21782236%7C22318638%7C7542409>

Product Specifications

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

Item	CloudEngine 12804S	CloudEngine 12808S	CloudEngine 12804	CloudEngine 12808	CloudEngine 12816
Switching capacity (Tbps)	30/258	59/516	45/258	89/516	178/1032
Forwarding rate (Mpps)	17,280	34,560	17,280	34,560	69,120
Service slots	4	8	4	8	16
Switching fabric module slots	2	4	6	6	6
Fabric architecture	Clos architecture, cell switching, VoQ, and distributed large buffer				
Airflow design	Strict front-to-back				

Item	CloudEngine 12804S	CloudEngine 12808S	CloudEngine 12804	CloudEngine 12808	CloudEngine 12816
Device virtualization	Virtual System (VS)				
	Cluster Switch System (CSS)				
Network virtualization	M-LAG				
	TRILL				
	VXLAN routing and bridging				
	EVPN				
	QinQ access VXLAN				
VM awareness	Agile Controller				
Network convergence	FCoE				
	DCBX, PFC, ETS				
Data center interconnect	BGP-EVPN				
	VXLAN mapping, implementing interconnection between multiple DCI networks at Layer 2				
Programmability	OpenFlow				
	OPS programming				
	Ansible-based automatic configuration and open-source module release				
Traffic analysis	NetStream				
	sFlow				
VLAN	Adding access, trunk, and hybrid interfaces to VLANs				
	Default VLAN				
	QinQ				
	MUX VLAN				
	GVRP				
MAC address	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, IS-IS, and BGP				
	IPv6 routing protocols, such as RIPng, OSPFv3, IS-ISv6, and BGP4+				
	IP packet fragmentation and reassembling				
IPv6	VXLAN over IPv6				
	IPv6 VXLAN over IPv4				
	IPv6 Neighbor Discovery (ND)				
	Path MTU Discovery (PMTU)				
	TCP6, ping IPv6, tracer IPv6, socket IPv6, UDP6, and Raw IP6				

Item	CloudEngine 12804S	CloudEngine 12808S	CloudEngine 12804	CloudEngine 12808	CloudEngine 12816
Multicast	IGMP, PIM-SM, PIM-DM, MSDP, and MBGP				
	IGMP snooping				
	IGMP proxy				
	Fast leaving of multicast member interfaces				
	Multicast traffic suppression				
	Multicast VLAN				
	Multicast VXLAN				
MPLS	Basic MPLS functions				
	MPLS VPN/VPLS/VPLS over GRE				
Reliability	Link Aggregation Control Protocol (LACP)				
	STP, RSTP, VBST, and MSTP				
	BPDU protection, root protection, and loop protection				
	Smart Link and multi-instance				
	Device Link Detection Protocol (DLDP)				
	Ethernet Ring Protection Switching (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				
	Segment Routing (SR)				
QoS	Traffic classification based on Layer 2, Layer 3, Layer 4, and priority information				
	Actions including ACL, CAR, and re-marking				
	Queue scheduling modes such as PQ, WFQ, and PQ+WRR				
	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 tracet				
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				
	Hot patches				

Item	CloudEngine 12804S	CloudEngine 12808S	CloudEngine 12804	CloudEngine 12808	CloudEngine 12816
	User operation logs				
	Zero Touch Provisioning (ZTP)				
Security and management	802.1x authentication				
	RADIUS and HWTACACS authentication for login users				
	Command line authority control based on user levels, preventing unauthorized users from using commands				
	DoS, ARP, MAC address attacks, broadcast storms, and heavy-traffic and ICMP attack defenses				
	Ping and traceroute				
	Remote Network Monitoring (RMON)				

Performance and Scalability

Item	FD/FD1/SD Series	FG Series Cards	EA Series Card	EC Series Card	ED Series Card	EF Series Card
Maximum number of MAC address entries	750,000		256,000			
Maximum number of Forwarding routes (FIB IPv4)	Default Mode: 380,000 Specified Mask length: 750,000	Extended FIB mode: CE-L48XS-FG : 4,000,000 CE-L36CQ-FG: 2,000,000	32,000	32,000	256,000	1,000,000
Maximum number of Forwarding routes (FIB IPv6)	CE-L48XS-FD1/CE-L16CQ-FD/CE-L36CQ-FD1: 140,000 CE-L36CQ-FD/CE-L12CQ-FD/ CE-L36LQ-FD/ CE-L24LQ-FD/ CE-L48XS-FD/ CE-L48XS-FDA: 128,000	512,000	8,000	8,000	128,000	512,000
ARP table size	ARP expansion mode: up to 750,000	ARP expansion mode: up to 1,000,000	ARP expansion mode: up to 128,000	ARP expansion mode: up to 128,000	ARP expansion mode: up to 256,000	ARP expansion mode: up to 1,000,000
Maximum number of VRF	16384		4096			
IPv6 ND (Neighbor Discovery)	Up to 64,000	Up to 96,000	Up to 8,000	Up to 8,000	Up to 52,000	Up to 52,000

Item	FD/FD1/SD Series	FG Series Cards	EA Series Card	EC Series Card	ED Series Card	EF Series Card
table size						
Maximum Number of multicast routes (Multicast FIB IPv4)	32,000		16,000	16,000	60,000	60,000
Maximum Number of multicast routes (Multicast FIB IPv6)	8,000		2,000	2,000	8,000	8,000
Maximum VRRP groups	4096					
Maximum number of ECMP paths	128					
Maximum Number of broadcast domains	32,000			4,000		
Maximum number of BDIF	32,000			4,000		
Maximum number of tunnel endpoints (VTEP)	2,000			1,000		
Maximum number of lag group	1024/512/256/128					
Maximum number of links in a lag group	16/32/64/128					
Maximum number of MSTP instance	64					
VBST (Maximum number of VLANs where VBST can be configured)	240					

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

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 • (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=EDOC1100101217&lang=en&idPath=24030814%7C21782165%7C21782236%7C22318638%7C7542409>

Ordering Information

Basic Configuration	
CE-RACK-A01	FR42812 Assembly Rack (800x1200x2000mm)
CE12804S-AC1	CE12804S AC/HVDC Assembly Chassis(with Fans)
CE12804SA-B0	CE12804S Bundle0 (Assembly Chassis,1*MPUA-S,1*SFUB-S,2*PHD-3000WA)
CE12804SA-B1	CE12804S Bundle1 (Assembly Chassis,2*MPUA-S,2*SFUB-S,2*PHD-3000WA)
CE12804SA-B2	CE12804S Bundle2 (Assembly Chassis,2*MPUA-S,2*SFUC-S,2*PHD-3000WA)
CE12804SA-B3	CE12804S Bundle3 (AC Assembly Chassis,2*MPUA-S,2*SFUF-S,2*PHD-3000WA)
CE12804SA-B6	CE12804S Bundle 6(AC/HVDC Assembly Chassis,2*MPUA-S,2*SFUG-S,2*PHD-3000WA)
CE12804SA-B7	CE12804S Bundle 7(AC/HVDC Assembly Chassis,2*MPUA-S,2*SFUG-S,2*PHD-3000WA,2*CE-L36CQ-SD)
CE12804SA-B8	CE12804S Bundle 8(AC/HVDC Assembly Chassis,2*MPUA-S,2*SFUG-S,2*PHD-3000WA,2*CE-L36CQ-SD,2*CE-L48XS-FD)
CE12804SA-BA	CE12804S Bundle A(Assembly Chassis,2*MPUA-S,2*SFUB-S,2*PHD-3000WA,2*CE-L48XS-EC,OS)
CE12804SA-BB	CE12804S Bundle B (Assembly Chassis,2*MPUA-S,2*SFUC-S,2*PHD-3000WA,2*CE-L24LQ-EC1,OS)
CE12804SA-BC	CE12804S Bundle C(AC Assembly Chassis,2*MPUC-S,2*SFUF1-S,2*PHD-3000WA)
CE12804SA-BD	CE12804S BundleD(AC Assembly Chassis,2*MPUC-S,2*SFUG-S,2*PHD-3000WA)
CE12808S-AC1	CE12808S AC/HVDC Assembly Chassis(with Fans)
CE12808SA-B0	CE12808S Bundle0 (Assembly Chassis,2*MPUA-S,2*SFUB-S,2*PHD-3000WA)
CE12808SA-B1	CE12808S Bundle1 (Assembly Chassis,2*MPUA-S,4*SFUB-S,2*PHD-3000WA)
CE12808SA-B2	CE12808S Bundle2 (Assembly Chassis,2*MPUA-S,3*SFUC-S,2*PHD-3000WA)
CE12808SA-B3	CE12808S Bundle3 (AC Assembly Chassis,2*MPUA-S,4*SFUF-S,2*PHD-3000WA)
CE12808SA-B6	CE12808S Bundle 6(AC/HVDC Assembly Chassis,2*MPUA-S,4*SFUG-S,2*PHD-3000WA)
CE12808SA-B7	CE12808S Bundle 7(AC/HVDC Assembly Chassis,2*MPUA-S,4*SFUG-S,2*PHD-3000WA,2*CE-L36CQ-SD)
CE12808SA-B8	CE12808S Bundle 8(AC/HVDC Assembly Chassis,2*MPUA-S,4*SFUG-S,2*PHD-3000WA,2*CE-L36CQ-SD,2*CE-L48XS-FD)
CE12808SA-BA	CE12808S Bundle A (Assembly Chassis,2*MPUA-S,4*SFUB-S,2*PHD-3000WA,3*CE-L48XS-EC,OS)
CE12808SA-BB	CE12808S Bundle B (Assembly Chassis,2*MPUA-S,4*SFUC-S,2*PHD-3000WA,2*CE-L24LQ-EC1,OS)
CE12808SA-BC	CE12808S BundleC (AC Assembly Chassis,2*MPUC-S,4*SFUF1-S,2*PHD-3000WA)

Basic Configuration	
CE12808SA-BE	CE12808S BundleE (AC/HVDC Assembly Chassis,2*MPUC-S,4*SFUG-S,2*PHD-3000WA)
CE12804S-DC	CE12804S DC Assembly Chassis (with Fans)
CE12804SD-B0	CE12804S DC Bundle0 (DC Assembly Chassis,1*MPUA-S,1*SFUB-S,2*PDC-2200WA)
CE12804SD-B1	CE12804S DC Bundle1 (DC Assembly Chassis,2*MPUA-S,2*SFUB-S,2*PDC-2200WA)
CE12804SD-B2	CE12804S DC Bundle2 (DC Assembly Chassis,2*MPUA-S,2*SFUC-S,2*PDC-2200WA)
CE12808S-DC	CE12808S DC Assembly Chassis (with Fans)
CE12808SD-B0	CE12808S DC Bundle0 (DC Assembly Chassis,2*MPUA-S,2*SFUB-S,4*PDC-2200WA)
CE12808SD-B1	CE12808S DC Bundle1 (DC Assembly Chassis,2*MPUA-S,4*SFUB-S,4*PDC-2200WA)
CE12808SD-B2	CE12808S DC Bundle2 (DC Assembly Chassis,2*MPUA-S,3*SFUC-S,4*PDC-2200WA)
CE12804-AC	CE12804 AC Assembly Chassis (with CMUs and Fans)
CE12804-AC1	CE12804 AC/HVDC Assembly Chassis(with CMUs and Fans)
CE12804A-B08	CE12804 Bundle8 (AC Assembly Chassis,2*MPUA,5*SFU04G,4*PHD-3000WA)
CE12804A-B11	CE12804 Bundle11 (AC Assembly Chassis,2*MPUB,5*SFU04G1,4*PHD-3000WA)
CE12808-AC	CE12808 AC Assembly Chassis (with CMUs and Fans)
CE12808-AC1	CE12808 AC/HVDC Assembly Chassis(with CMUs and Fans)
CE12808A-B08	CE12808 Bundle8 (AC Assembly Chassis,2*MPUA,5*SFU08G,4*PHD-3000WA)
CE12808A-B12	CE12808 Bundle12 (AC Assembly Chassis,2*MPUB,4*SFU08F1,4*PHD-3000WA)
CE12808A-B13	CE12808 Bundle13 (AC Assembly Chassis,2*MPUB,5*SFU08G1,4*PHD-3000WA)
CE12816-AC	CE12816 AC Assembly Chassis (with CMUs and Fans)
CE12816-AC1	CE12816 AC/HVDC Assembly Chassis(with CMUs and Fans)
CE12816A-B02	CE12816 AC Bundle2 (AC Assembly Chassis,2*MPUA,5*SFU16B,8*PHD-3000WA)
CE12816A-B10	CE12816 Bundle10 (AC Assembly Chassis,2*MPUB,4*SFU16F1,4*PHD-3000WA)
CE12804-DC	CE12804 DC Assembly Chassis (with CMUs and Fans)
CE12808-DC	CE12808 DC Assembly Chassis (with CMUs and Fans)
CE12816-DC	CE12816 DC Assembly Chassis (with CMUs and Fans)

Main Processing Unit	
CE-MPU-S	CE12800S Main Processing Unit
CE-MPU	Main Processing Unit

Switch Fabric Unit ²	
CE-SFU-S	CE12800S Switch Fabric
CE-SFU04	CE12804 Switch Fabric

Switch Fabric Unit ²	
CE-SFU08	CE12808 Switch Fabric
CE-SFU16	CE12816 Switch Fabric

»»2 Fx series interface cards must be used with F or G series switch fabric units. For example, a CE-L36CQ-FD interface card must be used with CE-SFUxxG switch fabric units.

GE BASE-T Interface Card	
CE-L48GT-EA	48-Port 10/100/1000BASE-T Interface Card (RJ45)

10GBASE-T Interface Card	
CE-L48XT-EC	48-port 100M/1000M/10G BASE-T Interface Card (RJ45)

10GBASE-X Interface Card	
CE-L48XS	48-Port 10GBASE-X Interface Card (SFP/SFP+)

40GE Interface Card	
CE-L24LQ	24-Port 40G Interface Card (QSFP+)
CE-L36LQ	36-Port 40G Interface Card (QSFP+)

100GE Interface Card	
CE-L04CF	4-Port 100G Interface Card (CFP)
CE-L12CQ	12-Port 100G Interface Card (QSFP28)
CE-L16CQ	16-Port 100G Interface Card (QSFP28)
CE-L36CQ	36-Port 100G Interface Card (QSFP28)

Power	
PHD-3000WA	3000W HVDC Power Module
PDC-2200WA	2200W DC Power Supply

Software	
CE128-LIC-B29	CloudEngine 12800 Basic SW,V200R019
CE128-LIC-TRILL	TRILL Function License
CE128-LIC-MPLS	MPLS Function License
CE128-LIC-VS	Virtual System Function License

Software	
CE128-LIC-IPV6	IPV6 Function License
CE128-LIC-EVN	EVN Function License
CE128-LIC-TLM	CE12800 Telemetry Function
CE128-LIC-MACSEC	CE12800 MACsec Function
N1-CE128LIC-CFMM	N1-CloudFabric Management SW License for CloudEngine 12800
N1-CE128CFMM-SnS1Y	N1-CloudFabric Management SW License for CloudEngine 12800 -SnS-1 Year
N1-CE128LIC-CFFD	N1-CloudFabric Foundation SW License for CloudEngine 12800
N1-CE128CFFD-SnS1Y	N1-CloudFabric Foundation SW License for CloudEngine 12800-SnS-1 Year
N1-CE128LIC-CFAD	N1-CloudFabric Advanced SW License for CloudEngine 12800
N1-CE128CFAD-SnS1Y	N1-CloudFabric Advanced SW License for CloudEngine 12800-SnS-1 Year
N1-CE128LIC-SEC	N1-CloudEngine 12800 Security Function
N1-CE128SEC-SnS1Y	N1-CloudEngine 12800 Security Function-SnS-1 Year

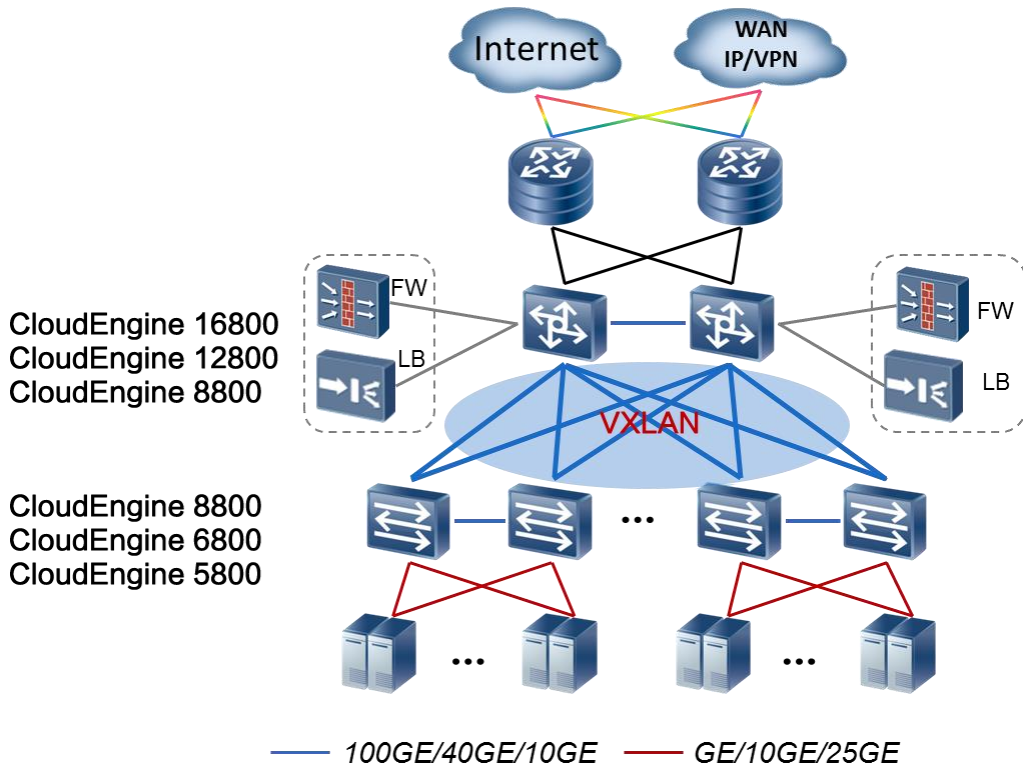
Document	
CE128-DOC	CloudEngine 12800 Series Switches Product Documentation

Networking and Application

Data Center Applications

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

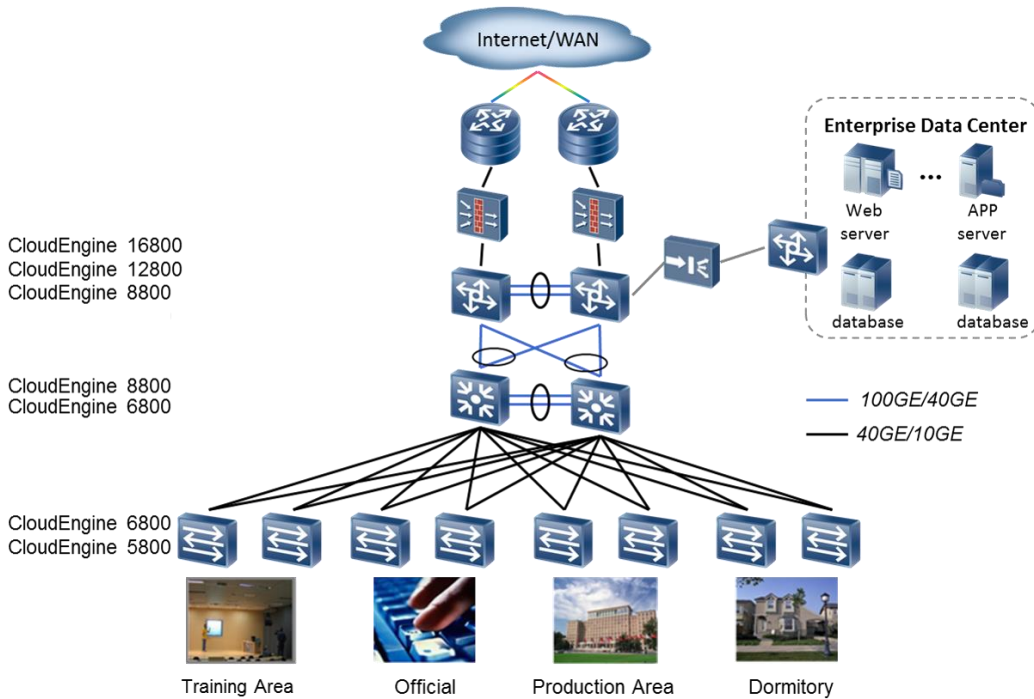
Note: VXLAN can be also used on campus networks to support flexible service deployments in different service areas.



Campus Network Applications

On a typical campus network, multiple CloudEngine 16800/12800/8800 switches are virtualized into a logical core switch using CSS or iStack technology. Multiple CloudEngine 8800/6800 switches at the aggregation layer form a logical switch using iStack technology. CSS and iStack improve network reliability and simplify network management.

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



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