

CloudEngine 12800 Platform Line Cards and SFU



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Product Overview

The CloudEngine 12800 (CE12800 for short) 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, CE12800 series switches provide stable, reliable, and secure high-performance L2/L3 switching capabilities to help build an elastic, virtualized, and high-quality network.

The CE12800 series switches use an advanced hardware architecture design and have the highest performance among all core switches in the industry. The CE12800 series provides as much as 178 Tbit/s (scalable to 1032 Tbit/s) switching capacity and has up to 576*100GE, 576*40GE, 2,304*25GE, or 2,304*10GE line-rate ports.

The CE12800 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 CE12800 series is available in six models: CE12816, CE12812, CE12808, CE12804, CE12808S and CE12804S.







CloudEngine 12800 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 to use B and C type SFU .






F and S types line cards are compatible with F, G types SFU.

Table 1 CloudEngine 12800 Platform Line Cards



Line Card Type	Description
100-Gbps Line Cards	
<p>CE-L36CQ-SD: 36-port 100GE interface card (SD, 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-SD card can provide a maximum port density of 36x100GE, 36x40GE, 144x25GE or 144x10GE Clos architecture, cell switching, VoQ 64-MB buffer Supported in CE 12816, CE 12812, CE12808, CE 12804, CE12808S and CE 12804S chassis Compatible with CE 12800 and CE 12800S G type SFU(CE-SFUxxG, CE-SFUG-S)
<p>CE-L36CQ-FD1: 36-port 100GE interface card (FD1, 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-FD1 card can provide a maximum port density of 36x100GE, 36x40GE, 144x25GE or 144x10GE Clos architecture, cell switching, VoQ 16-GB buffer Supported in CE 12816, CE 12812, CE12808, CE 12804, CE12808S and CE 12804S chassis Compatible with CE 12800 and CE 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 24-GB buffer Supported in CE 12816, CE 12812, CE12808, CE 12804, CE12808S and CE 12804S chassis Compatible with CE 12800 and CE 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 16-GB buffer 2MB FIB(IPv4) Supported in CE 12816, CE 12812, CE12808, CE 12804, CE12808S and CE 12804S chassis Compatible with CE 12800 and CE 12800S G type SFU(CE-SFUxxG, CE-SFUG-S)

Line Card Type	Description
<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 • 8-GB buffer • Support MACSEC • Supported in CE 12816, CE 12812, CE12808, CE 12804, CE12808S and CE 12804S chassis • Compatible with CE 12800 F and G type SFU(CE-SFUxxF, CE-SFUxxG) and CE 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 • 8-GB buffer • Supported in CE 12816, CE 12812, CE12808, CE 12804, CE12808S and CE 12804S chassis • Compatible with CE 12800 F and G type SFU(CE-SFUxxF, CE-SFUxxG) and CE 12800S G type SFU(CE-SFUG-S)
<p>CE-L12CF-EG: 12-port 100GE interface card (EG, CFP2)</p> 	<ul style="list-style-type: none"> • A 100GE port can split into two 40GE port or split into eight 10GE • One CE-L12CF-EG card can provide a maximum port density of 12x100GE, 24x40GE or 96x10GE • Clos architecture, cell switching, VoQ • 18-GB buffer • 2MB FIB(IPv4) • Supported in CE 12816, CE 12812, CE12808, CE 12804, CE12808S and CE 12804S chassis • Compatible with CE 12800 C, G, B and F type SFU(CE-SFUxxC, CE-SFUxxG, CE-SFUxxB, CE-SFUxxF) and CE 12800S C, G, B and F type SFU (CE-SFUB-S, CE-SFUC-S, CE-SFUF-S, CE-SFUG-S)
<p>CE-L08CF-FG1: 8-port 100GE interface card (FG1, CFP2)</p> 	<ul style="list-style-type: none"> • One 8-port 100GE card can provide a maximum port density of 8x100GE • Clos architecture, cell switching, VoQ • 4-GB buffer • 2MB FIB(IPv4) • Support MACSEC • Supported in CE 12816, CE 12812, CE12808, CE 12804, CE12808S and CE 12804S chassis • Compatible with CE 12800 F and G type SFU(CE-SFUxxF, CE-SFUxxG) and CE 12800S G type SFU(CE-SFUG-S)

Line Card Type	Description
<p>CE-L04CF-EF: 4-port 100GE interface card (EF, CFP)</p> 	<ul style="list-style-type: none"> • A 100GE port can split into two 40GE port or split into eight 10GE • One CE-L04CF-EF card can provide a maximum port density of 4x100GE, 8x40GE or 40x10GE • Clos architecture, cell switching, VoQ • 6-GB buffer • 1MB FIB(IPv4) • Supported in CE 12816, CE 12812, CE12808,CE 12804,CE12808S and CE 12804S chassis • Compatible with CE 12800 B, C, F and G type SFU(CE-SFUxxB, CE-SFUxxC, CE-SFUxxF, CE-SFUxxG) and CE 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 • 12-GB buffer • Supported in CE 12816, CE 12812, CE12808,CE 12804,CE12808S and CE 12804S chassis • Compatible with CE 12800 F and G type SFU(CE-SFUxxF, CE-SFUxxG) and CE 12800S F and G type SFU(CE-SFUF-S, CE-SFUG-S)
<p>CE-L36LQ-EG: 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-EG card can provide a maximum port density of 36 40GE and 144 10GE optical ports • Cell switching, VoQ • 18-GB buffer • 2MB FIB(IPv4) • Supported in CE 12816, CE 12812, CE12808,CE 12804,CE12808S and CE 12804S chassis • Compatible with CE 12800 C and G type SFU(CE-SFUxxC, CE-SFUxxG) and CE 12800S G, B, C and F type SFU(CE-SFUG-S, CE-SFUB-S, CE-SFUC-S, CE-SFUF-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 • 8-GB buffer • Supported in CE 12816, CE 12812, CE12808,CE 12804,CE12808S and CE 12804S chassis • Compatible with CE 12800 F and G type SFU(CE-SFUxxF, CE-SFUxxG) and CE 12800S F and G type SFU(CE-SFUF-S, CE-SFUG-S)

Line Card Type	Description
<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 • 12-GB buffer • Supported in CE 12816, CE 12812, CE12808,CE 12804,CE12808S and CE 12804S chassis • Compatible with CE 12800 B, C, F and G type SFU(CE-SFUxxB, CE-SFUxxC CE-SFUxxF, CE-SFUxxG) and CE 12800S C and G type SFU(CE-SFUC-S, CE-SFUG-S)
10/25-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 • 4-GB buffer • Supported in CE 12816, CE 12812, CE12808,CE 12804,CE12808S and CE 12804S chassis • Compatible with CE 12800 F and G type SFU(CE-SFUxxF, CE-SFUxxG) and CE 12800S F and G type SFU(CE-SFUF-S, CE-SFUG-S)
<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 • 4-GB buffer • Supported in CE 12816, CE 12812, CE12808,CE 12804,CE12808S and CE 12804S chassis • Compatible with CE 12800 F and G type SFU(CE-SFUxxF, CE-SFUxxG) and CE 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 CE 12816, CE 12812, CE12808,CE 12804,CE12808S and CE 12804S chassis • Compatible with CE 12800 F and G type SFU(CE-SFUxxF, CE-SFUxxG) and CE 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 • 4MB FIB(IPv4) • Supported in CE 12816, CE 12812, CE12808,CE 12804,CE12808S and CE 12804S chassis • Compatible with CE 12800 F and G type SFU(CE-SFUxxF, CE-SFUxxG) and CE 12800S F and G type SFU(CE-SFUF-S, CE-SFUG-S)

Line Card Type	Description
<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 • 1MB FIB(IPv4) • Supported in CE 12816, CE 12812, CE12808,CE 12804,CE12808S and CE 12804S chassis • Compatible with CE 12800 B, C, F and G type SFU(CE-SFUxxB, CE-SFUxxC CE-SFUxxF, CE-SFUxxG) and CE 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 • Cell switching, VoQ • 6-GB buffer • Supported in CE 12816, CE 12812, CE12808,CE 12804,CE12808S and CE 12804S chassis • Compatible with CE 12800 B, C, F and G type SFU(CE-SFUxxB, CE-SFUxxC CE-SFUxxF, CE-SFUxxG) and CE 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 CE 12816, CE 12812, CE12808,CE 12804,CE12808S and CE 12804S chassis • Compatible with CE 12800 B, C, F and G type SFU(CE-SFUxxB, CE-SFUxxC CE-SFUxxF, CE-SFUxxG) and CE 12800S B, C, F and G type SFU(CE-SFUB-S, CE-SFUC-S, CE-SFUF-S, CE-SFUG-S,)
<p>CE-L24XS-EC: 24-port 10GBASE-X interface card (EC, SFP+)</p> 	<ul style="list-style-type: none"> • One CE-L24XS-EC card can provide a maximum port density of 24 10GE/GE optical ports • Cell switching, VoQ • 3-GB buffer • Supported in CE 12816, CE 12812, CE12808,CE 12804,CE12808S and CE 12804S chassis • Compatible with CE 12800 B, C, F and G type SFU(CE-SFUxxB, CE-SFUxxC CE-SFUxxF, CE-SFUxxG) and CE 12800S B, C, F and G type SFU(CE-SFUB-S, CE-SFUC-S, CE-SFUF-S, CE-SFUG-S)
<p>10-Gbps Copper Line Cards</p>	
<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 CE 12816, CE 12812, CE12808,CE 12804,CE12808S and CE 12804S chassis • Compatible with CE 12800 B, C, F and G type SFU(CE-SFUxxB, CE-SFUxxC, CE-SFUxxF, CE-SFUxxG) and CE 12800S B, C, F and G type SFU(CE-SFUB-S, CE-SFUC-S, CE-SFUF-S, CE-SFUG-S)

Line Card Type	Description
1-Gbps Fiber Line Cards	
<p>CE-L48GS-EA: 48-port 100/1000BASE-X interface card (EA, SFP)</p> 	<ul style="list-style-type: none"> • One CE-L48GS-EA card can provide a maximum port density of 48 1000M/100M optical ports • Cell switching, VoQ • 2-GB buffer • Supported in CE 12816, CE 12812, CE12808, CE 12804, CE12808S and CE 12804S chassis • Compatible with CE 12800 B, C, F and G type SFU(CE-SFUxxB, CE-SFUxxC CE-SFUxxF, CE-SFUxxG) and CE 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 CE 12816, CE 12812, CE12808, CE 12804, CE12808S and CE 12804S chassis • Compatible with CE 12800 B, C, F and G type SFU(CE-SFUxxB, CE-SFUxxC CE-SFUxxF, CE-SFUxxG) and CE 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 CloudEngine12800Platform hardware information, visit <https://support.huawei.com/enterprise/en/doc/EDOC1000013855?idPath=7919710%7C21782165%7C21782236%7C22318638%7C7542409>

CloudEngine 12800 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.

CE 12800 supports the following SFU

Model	SFU Type	Maximum SFU Number
CE 12816	CE-SFU16B, CE-SFU16C, CE-SFU16F, CE-SFU16G	6
CE 12812	CE-SFU12G	6
CE 12808	CE-SFU08B, CE-SFU08C, CE-SFU08F, CE-SFU08G	6
CE 12804	CE-SFU04C, CESFU04F, CE-SFU04G	6
CE 12808S	CE-SFUB-S, CE-SFUC-S, CE-SFUF-S, CE-SFUG-S	4
CE 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 to use 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-SD	36-port 100GE interface card (SD, QSFP28)	7.2Tbps	CE 12800: CE-SFUxxG CE 12800S: CE-SFUG-S	CE 12800: 6 CE 12804S: 2 CE 12808S: 4
CE-L36CQ-FD1	36-port 100GE interface card (FD1, QSFP28)	7.2Tbps	CE 12800: CE-SFUxxG CE 12800S: CE-SFUG-S	CE 12800: 6 CE 12804S: 2 CE 12808S: 4
CE-L36CQ-FD	36-port 100GE interface card (FD, QSFP28)	7.2Tbps	CE 12800: CE-SFUxxG CE 12800S: CE-SFUG-S	CE 12800: 5 CE 12804S: 2 CE 12808S: 4
CE-L36CQ-FG	36-port 100GE interface card (FG, QSFP28)	7.2Tbps	CE 12800: CE-SFUxxG CE 12800S: CE-SFUG-S	CE 12800: 6 CE 12804S: 2 CE 12808S: 4

Line Card Type	Description	Performance	Compatible SFU	Required SFU for Maximum Bandwidth
CE-L16CQ-FD	16-port 100GE interface card (FD, QSFP28)-MACSEC	3.2Tbps	CE 12800: CE-SFUxxF/CE-SFUxxG CE 12800S: CE-SFUG-S	CE 12800: CE-SFU16G: 6 Other SFU: 5 CE 12804S: 2 CE 12808S: 4
CE-L12CQ-FD	12-port 100GE interface card (FD, QSFP28)	2.4Tbps	CE 12800: CE-SFUxxF/CE-SFUxxG CE 12800S: CE-SFUG-S	CE 12800: 5 CE 12804S: 2 CE 12808S: 4
CE-L12CF-EG	12-port 100GE interface card (EG, CFP2)	2.4Tbps	CE 12800: CE-SFUxxC/CE-SFUxxG CE-SFUxxB CE 12800S: CE-SFUG-S	CE 12800: 5 CE 12804S: 2 CE 12808S: 4
CE-L08CF-FG1	8-port 100GE interface card (FG1, CFP2)-MACSEC	1.6Tbps	CE 12800: CE-SFUxxF/CE-SFUxxG CE 12800S: CE-SFUF-S/CE-SFUG-S	CE 12800: 5 CE 12804S: 2 CE 12808S: 4
CE-L04CF-EF	4-port 100GE interface card (EF, CFP)	0.8Tbps	CE 12800: CE-SFUxxB/CE-SFUxxC CE-SFUxxF/CE-SFUxxG CE 12800S: CE-SFUB-S/CE-SFUC-S CE-SFUF-S/CE-SFUG-S	CE 12800: 4 CE 12804S: 2 CE 12808S: 3
40-Gbps Line Cards				
CE-L36LQ-FD	36-port 40GE interface card (FD, QSFP+)	1.44Tbps	CE 12800: CE-SFUxxF/CE-SFUxxG CE 12800S: CE-SFUF-S/CE-SFUG-S	CE 12800: 4 CE 12804S: 2 CE 12808S: 3 CE-SFUF-S 4 CE-SFUG-S 3
CE-L36LQ-EG	36-port 40GE interface card (FD, QSFP+)	1.44Tbps	CE 12800: CE-SFUxxC/CE-SFUxxG CE 12800S: CE-SFUG-S	CE 12800: CE-SFUxxC 6 CE-SFUxxG 5 CE 12804S: 2 CE 12808S: 4
CE-L24LQ-FD	24-port 40GE interface card (FD, QSFP+)	0.96Tbps	CE 12800: CE-SFUxxF/CE-SFUxxG CE 12800S: CE-SFUF-S/CE-SFUG-S	CE 12800: 4 CE 12804S: 2 CE 12808S: 4
CE-L24LQ-EC1	24-port 40GE interface card (EC1, QSFP+)	0.96Tbps	CE 12800: CE-SFUxxB/CE-SFUxxC CE-SFUxxG CE 12800S: CE-SFUC-S/CE-SFUG-S	CE 12800: 5 CE 12804S: 2 CE 12808S: 4

Line Card Type	Description	Performance	Compatible SFU	Required SFU for Maximum Bandwidth
10/25-Gbps Fiber Line Cards				
CE-L48XS-FD	48-port 10GBASE-X interface card (FD, SFP+)	0.48Tbps	CE 12800: CE-SFUxxF/CE-SFUxxG CE 12800S: CE-SFUF-S/ CE-SFUG-S	CE 12800: 4 CE 12804S: 2 CE 12808S: 3
CE-L48XS-FD1	48-port 10GBASE-X interface card (FD1, SFP+)	0.48Tbps	CE 12800: CE-SFUxxF/CE-SFUxxG CE 12800S: CE-SFUF-S/ CE-SFUG-S	CE 12800: 4 CE 12804S: 1 CE 12808S: 2
CE-L48XS-FDA	48-port 10GE, 2-port 40GE, 2-port 100GE interface card (FDA, SFP+, QSFP+, QSFP28)	0.48Tbps	CE 12800: CE-SFUxxF/CE-SFUxxG CE 12800S: CE-SFUF-S/ CE-SFUG-S	CE 12800: 4 CE 12804S: 2 CE 12808S: 3
CE-L48XS-FG	48-port 10GBASE-X interface card (FG, SFP+)	0.48Tbps	CE 12800: CE-SFUxxF/CE-SFUxxG CE 12800S: CE-SFUF-S/ CE-SFUG-S	CE 12800: 3 CE 12804S: CE-SFUF-S 2 CE-SFUG-S 1 CE 12808S: CE-SFUF-S 3 CE-SFUG-S 2
CE-L48XS-EF	48-port 10GBASE-X interface card (EF, SFP+)	0.48Tbps	CE 12800: CE-SFUxxB/CE-SFUxxC CE-SFUxxF/CE-SFUxxG CE 12800S: CE-SFUB-S/CE-SFUC-S CE-SFUF-S/CE-SFUG-S	CE 12800: 5 CE 12804S: 2 CE 12808S: 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+)	0.48Tbps	CE 12800: CE-SFUxxB/CE-SFUxxC CE-SFUxxF/CE-SFUxxG CE 12800S: CE-SFUB-S/CE-SFUC-S CE-SFUF-S/CE-SFUG-S	CE 12800: 5 CE 12804S: 2 CE 12808S: 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+)	0.48Tbps	CE 12800: CE-SFUxxB/CE-SFUxxC CE-SFUxxF/CE-SFUxxG CE 12800S: CE-SFUB-S/CE-SFUC-S CE-SFUF-S/CE-SFUG-S	CE 12800: 5 CE 12804S: 2 CE 12808S: CE-SFUB-S/ CE-SFUC-S: 4 CE-SFUF-S/ CE-SFUG-S: 3
CE-L24XS-EC	24-port 10GBASE-X interface card (EC, SFP+)	0.24Tbps	CE 12800: CE-SFUxxB/CE-SFUxxC CE-SFUxxF/CE-SFUxxG CE 12800S: CE-SFUB-S/CE-SFUC-S CE-SFUF-S/CE-SFUG-S	CE 12800: 5 CE 12804S: 2 CE 12808S: CE-SFUB-S/ CE-SFUC-S: 4 CE-SFUF-S/ CE-SFUG-S: 3

Line Card Type	Description	Performance	Compatible SFU	Required SFU for Maximum Bandwidth
10-Gbps Copper Line Cards				
CE-L48XT-EC	48-port 100M/1000M/10G BASE-T interface card (EC, RJ45)	0.48Tbps	CE 12800: CE-SFUxxB/CE-SFUxxC CE-SFUxxF/CE-SFUxxG CE 12800S: CE-SFUB-S/CE-SFUC-S CE-SFUF-S/CE-SFUG-S	CE 12800: 5 CE 12804S: 2 CE 12808S: CE-SFUB-S/ CE-SFUC-S: 4 CE-SFUF-S/ CE-SFUG-S: 3
1-Gbps Fiber Line Cards				
CE-L48GS-EA	48-port 100/1000BASE-X interface card (EA, SFP)	0.048Tbps	CE 12800: CE-SFUxxB/CE-SFUxxC CE-SFUxxF/CE-SFUxxG CE 12800S: CE-SFUB-S/CE-SFUC-S CE-SFUF-S/CE-SFUG-S	CE 12800: 1 CE 12804S: 1 CE 12808S: 1
1-Gbps Copper Line Cards				
CE-L48GT-EA	48-port 10/100/1000BASE-T interface card (EA, RJ45)	0.048Tbps	CE 12800: CE-SFUxxB/CE-SFUxxC CE-SFUxxF/CE-SFUxxG CE 12800S: CE-SFUB-S/CE-SFUC-S CE-SFUF-S/CE-SFUG-S	CE 12800: 1 CE 12804S: 1 CE 12808S: 1

NOTE

For detailed information of CloudEngine12800 Platform hardware information, visit <https://support.huawei.com/enterprise/en/doc/EDOC1000013855?idPath=7919710%7C21782165%7C21782236%7C2318638%7C7542409>

Product Specifications¹

Item	CE 12804S	CE 12808S	CE 12804	CE 12808	CE 12812	CE 12816
Switching capacity (Tbit/s)	30/ 258 ²	59/ 516 ²	45/ 258 ²	89/ 516 ²	134/ 774 ²	178/ 1032 ²
Forwarding rate (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	Virtual System (VS)					
	Cluster Switch System (CSS) ³					
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					
	Ethernet Virtual Network (EVN) for inter-DC Layer 2 network interconnections					
	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					
	Hardware-based sFlow					

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

2. Roadmap

3. For details about the configuration, please see: http://support.huawei.com/online/toolsweb/virtual/en/dc/stack_index.html?dcf

Item	CE 12804S	CE 12808S	CE 12804	CE 12808	CE 12812	CE 12816
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					
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					

Item	CE 12804S	CE 12808S	CE 12804	CE 12808	CE 12812	CE 12816
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 tracert					
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					
	User operation logs					
	Zero Touch Provisioning (ZTP)					

Item	CE 12804S	CE 12808S	CE 12804	CE 12808	CE 12812	CE 12816
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	EG 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-L08CF-FG1/CE-L36CQ-FG: 2,000,000	32,000	32,000	256,000	1,000,000	Default Mode: 1,000,000 Large Route Mode: 2,000,000
Maximum number of Forwarding routes (FIB IPv6)	CE-L48XS-FD1/CE-L16CQ-FD/CE-L36CQ-FD1/CE-L36CQ-SD: 140,000 CE-L36CQ-FD/CE-L12CQ-FD/CE-L08CF-FG1/CE-L36LQ-FD/CE-L24LQ-FD/CE-L48XS-FD/CE-L48XS-FDA: 128,000	512,000	8,000	8,000	128,000	512,000	EG(12CF): 128,000 EG(36LQ): 256,000
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	ARP expansion mode: up to 1,000,000
Maximum number of VRF	16384	16384	4096	4096	4096	4096	4096

Item	FD/FD1/SD Series	FG Series Cards	EA Series Card	EC Series Card	ED Series Card	EF Series Card	EG Series Card
IPv6 ND(Neighbour Discovery) table size	Up to 64,000	Up to 96,000	Up to 8,000	Up to 8,000	Up to 52,000	Up to 52,000/33.52 years	Up to 64,000
Maximum Number of multicast routes (Multicast FIB IPv4)	32,000	32,000	16,000	16,000	60,000	60,000	CE-L12CF-EG: 60,000 CE-L36LQ-EG: 16,000
Maximum Number of multicast routes (Multicast FIB IPv6)	8,000	8,000	2,000	2,000	8,000	8,000	CE-L12CF-EG: 8,000 CE-L36LQ-EG: 2,000
Maximum VRRP groups	4096						
Maximum number of ECMP paths	64						
Maximum Number of broadcast domains	32,000			4,000			
Maximum number of BDIF	32,000			4,000			
Maximum number of tunnel endpoints (VTEP)	16,000			8,000			
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 CE 12800.

Certification Category	Description
Safety	<ul style="list-style-type: none"> • EN 60950-1: 2006+A11: 2009+A1: 2010+A12: 2011 • EN 60825-1: 2007 • EN 60825-2: 2010 • UL 60950-1: 2007 2nd Edition • CSA C22.2 No.650: 2007 2nd Edition • IEC 60950-1: 2005+A1: 2009 • AS/NZS 60950-1: 2011 • GB4943: 2011
Electromagnetic Compatibility (EMC)	<ul style="list-style-type: none"> • FCC 47CFR Part15 CLASS A • ETSI EN 300 386 V1.6.1: 2012 • ICES-003: 2012 CLASS A • CISPR 22: 2008 CLASS A • CISPR 24: 2010 • EN 55022: 2010 CLASS A • EN 55024: 2010 • AS/NZS CISPR 22: 2009 CLASS A • IEC 61000-3-2: 2005+A1: 2008+A2: 2009/EN 61000-3-2: 2006+A1: 2009+A2: 2009 • IEC 61000-3-3: 2008/EN 61000-3-3: 2008 • CNS 13438: 2006 CLASS A • VCCI V-4: 2012 CLASS A • VCCI V-3: 2012 CLASS A • EC Council Directive 2004/108/EC • GB9254
Environment	<ul style="list-style-type: none"> • 2002/95/EC, 2011/65/EU • 2002/96/EC, 2012/19/EU • EC NO.1907/2006 • ETSI EN 300 019-1-1 V2.1.4 • ETSI EN 300 019-1-2 V2.1.4 • ETSI EN 300 019-1-3 V2.3.2 • ETSI EN 300753 V1.2.1
ROHS	<ul style="list-style-type: none"> • EN50419 • 2002/95/EC • 2011/65/EU

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
- IEEE: Institute of Electrical and Electronics Engineers
- RoHS: restriction of the use of certain hazardous substances

MIB and Standards Compliance

Supported MIBs

The following table lists the MIBs supported by CE 12800.

Category	MIB
Public MIB	<ul style="list-style-type: none"> • BRIDGE-MIB • BGP4-MIB • BRIDGE-MIB • DISMAN-PING-MIB • DISMAN-TRACEROUTE-MIB • ENTITY-MIB • IF-MIB • IP-FORWARD-MIB • IP-MIB • IPMCAST-MIB • IPv6-ICMP-MIB • IPv6-MIB • IPv6-TCP-MIB • IPv6-UDP-MIB • ISIS-MIB • LAG-MIB • LLDP-EXT-DOT1-MIB • LLDP-EXT-DOT3-MIB • LLDP-MIB • MAU-MIB • MGMD-STD-MIB • MPLS-FTN-STD-MIB • MPLS-L3VPN-STD-MIB • MPLS-LDP-GENERIC-STD-MIB • MPLS-LDP-STD-MIB • MPLS-LSR-STD-MIB • MSDP-MIB • NOTIFICATION-LOG-MIB • NQA-MIB • OSPF-MIB • OSPF-TRAP-MIB • OSPFV3-MIB • P-BRIDGE-MIB • PIM-BSR-MIB • PIM-STD-MIB • Q-BRIDGE-MIB • RADIUS-AUTH-CLIENT-MIB • RFC1213-MIB • RIPv2-MIB • RMON-MIB • SNMP-FRAMEWORK-MIB • SNMP-MPD-MIB • SNMP-NOTIFICATION-MIB • SNMP-PROXY-MIB • SNMP-TARGET-MIB • SNMP-USER-BASED-SM-MIB • SNMPv2-MIB • SNMP-VIEW-BASED-ACM-MIB • TCP-MIB • UDP-MIB • VRRP-MIB

Category	MIB
Huawei-proprietary MIB	<ul style="list-style-type: none"> • HUAWEI-AAA-MIB • HUAWEI-ACL-MIB • HUAWEI-ALARM-MIB • HUAWEI-BASE-TRAP-MIB • HUAWEI-BFD-MIB • HUAWEI-BGP-VPN-MIB • HUAWEI-BRAS-RADIUS-MIB • HUAWEI-CBQOS-MIB • HUAWEI-CE-PING-MIB • HUAWEI-CLOCK-MIB • HUAWEI-CONFIG-MAN-MIB • HUAWEI-CPU-MIB • HUAWEI-DAD-MIB • HUAWEI-DATASYNC-MIB • HUAWEI-DEVICE-MIB • HUAWEI-DEVICE-EXT-MIB • HUAWEI-DHCPR-MIB • HUAWEI-DHCP-SNOOPING-MIB • HUAWEI-DHCPV6-SERVER-MIB • HUAWEI-DLDP-MIB • HUAWEI-ENERGYMNGT-MIB • HUAWEI-ENTITY-TRAP-MIB • HUAWEI-ENTITY-EXTENT-MIB • HUAWEI-ETHOAM-MIB • HUAWEI-ERPS-MIB • HUAWEI-ERRORDOWN-MIB • HUAWEI-ETHARP-MIB • HUAWEI-EVC-MIB • HUAWEI-FCOE-MIB • HUAWEI-FLASH-MAN-MIB • HUAWEI-FTP-MIB • HUAWEI-FWD-RES-TRAP-MIB • HUAWEI-FWD-PAF-TRAP-MIB • HUAWEI-GTL-MIB • HUAWEI-HWTACACS-MIB • HUAWEI-INFOCENTER-MIB • HUAWEI-IF-EXT-MIB • HUAWEI-IPFPM-MIB • HUAWEI-ISIS-CONF-MIB • HUAWEI-L2IF-MIB • HUAWEI-L2MAM-MIB • HUAWEI-L2MULTICAST-MIB • HUAWEI-L2VLAN-MIB • HUAWEI-L3VPN-EXT-MIB • HUAWEI-LDT-MIB • HUAWEI-LINE-MIB • HUAWEI-LLDP-MIB • HUAWEI-M-LAG-MIB • HUAWEI-MACSEC-MIB • HUAWEI-MEMORY-MIB • HUAWEI-MFLP-MIB • HUAWEI-MIB • HUAWEI-MPLS-EXTEND-MIB • HUAWEI-MPLSLSR-EXT-MIB • HUAWEI-MSTP-MIB • HUAWEI-ND-MIB • HUAWEI-NETCONF-MIB

Category	MIB
Huawei-proprietary MIB	• HUAWEI-NETSTREAM-MIB
	• HUAWEI-NTP-TRAP-MIB
	• HUAWEI-NVO3-MIB
	• HUAWEI-OPENFLOW-MIB
	• HUAWEI-OSPFV2-MIB
	• HUAWEI-OSPFV3-MIB
	• HUAWEI-OVSDB-MIB
	• HUAWEI-PERFMGMT-MIB
	• HUAWEI-PIM-STD-MIB
	• HUAWEI-PORT-MIB
	• HUAWEI-PTP-MIB
	• HUAWEI-RIPv2-EXT-MIB
	• HUAWEI-RM-EXT-MIB
	• HUAWEI-SECURITY-MIB
	• HUAWEI-SMARTLINK-MIB
	• HUAWEI-SNMP-EXT-MIB
	• HUAWEI-SSH-MIB
	• HUAWEI-STACK-MIB
	• HUAWEI-SWITCH-L2MAM-EXT-MIB
	• HUAWEI-SYS-CLOCK-MIB
	• HUAWEI-SYS-MAN-MIB
	• HUAWEI-TASK-MIB
	• HUAWEI-TCP-MIB
	• HUAWEI-TRILL-CONF-MIB
	• HUAWEI-TRNG-MIB
	• HUAWEI-VBST-MIB
• HUAWEI-VP-MIB	
• HUAWEI-VPLS-EXT-MIB	
• HUAWEI-VRRP-EXT-MIB	
• HUAWEI-XQOS-MIB	

NOTE

For detailed information of MIB information, visit <http://support.huawei.com/hedex/hdx.do?docid=EDOC1100020534&lang=en> or contact your local Huawei sales office.

Standard Compliance

The following table lists the standards the CE 12800 complies with.

Standard Organization	Standard or Protocol
IETF	<ul style="list-style-type: none"> • RFC 768: UDP Basic • RFC 791: IPv4 Basic • RFC 792: ICMPv4 Basic • RFC 793: TCP Basic • RFC 813: TCP FlowControl-Basic • RFC 826: Ethernet • RFC 854: Telnet • RFC862: NQA Echo • RFC879: TCP Basic-MSS • RFC896: IP Common-CongestionControl • RFC919: IPv4 Basic-Broadcast • RFC922: IPv4 Basic-Broadcast • RFC950: IPv4 Address-Subnet • RFC959: FILE TRANSFER PROTOCOL (FTP) • RFC988: Host extensions for IP multicasting. S.E. Deering • RFC 1027: Proxy ARP • RFC 1034: Domain names - concepts and facilities • RFC 1035: Domain names - concepts and facilities • RFC 1042: Standard for the transmission of IP datagrams over IEEE 802 networks • RFC 1054: Host extensions for IP multicasting. S.E. Deering • RFC 1058: RIP v1 • RFC1071: IPv4 Basic-Checksum • RFC1091: TELNET • RFC 1112: IGMP v1 • RFC 1122: Host Requirements • RFC 1123: Host Requirements • RFC 1131: OSPF • RFC 1155: SNMP • RFC 1157: SNMP • RFC1191:IPv4 PMTU • RFC1195: ISIS • RFC1212: SNMP • RFC1214: SNMP • RFC1215: SNMP • RFC1245: OSPF • RFC1247: OSPF

Standard Organization	Standard or Protocol
IETF	<ul style="list-style-type: none"> • RFC1247: OSPF • RFC1264: BGP • RFC1305: NTP • RFC1321: Security • RFC1350: TFTP • RFC1389:RIP • RFC1403:BGP • RFC1493: Bridges MIB • RFC 1757: RMON • RFC1701/RFC1702:GRE • RFC1721/RFC1722/RFC1723/RFC1724: RIP • RFC 1765: OSPF Database Overflow • RFC 1771: Border Gateway Protocol 4 • RFC 1772: Application of the Border Gateway Protocol in the Internet • RFC 1773: Experience with the BGP-4 protocol • RFC 1774: BGP-4 Protocol Analysis • RFC 1812: Requirements for IP Version 4 Routers • RFC1829: The ESP DES-CBC Transform • RFC1850: OSPF Version 2 Management Information Base • RFC1851: The ESP Triple DES Transform • RFC1860: Variable Length Subnet Table For IPv4 • RFC1878: Variable Length Subnet Table For IPv4 • RFC1901: Introduction to Community-based SNMPv2 • RFC1918: Address Allocation for Private Internets • RFC1930: Guidelines for creation, selection, and registration of an Autonomous System (AS) • RFC 1981: Path maximum transmission unit (MTU) discovery for IPv6 • RFC 1997: BGP Communities Attribute • RFC 1998: An Application of the BGP Community Attribute in Multi-home Routing • RFC 2080: RIPng for IPv6 • RFC 2081: RIPng Protocol Applicability Statement • RFC 2082: RIP-2 MD5 Authentication • RFC2104: HMAC: Keyed-Hashing for Message Authentication • RFC2104: HMAC: Keyed-Hashing for Message Authentication • RFC2113: IP Router Alert Option

Standard Organization	Standard or Protocol
IETF	<ul style="list-style-type: none"> • RFC2117: Protocol Independent Multicast-Sparse Mode (PIM-SM): Protocol Specification • RFC2131: Dynamic Host Configuration Protocol • RFC2132: DHCP Options and BOOTP Vendor Extensions • RFC 2236: IGMP v2 • RFC 2246: The TLS Protocol Version 1.0 • RFC 2270: Using a Dedicated AS for Sites Homed to a Single Provider • RFC 2285: Benchmarking Terminology for LAN Switching Devices • RFC 2328: OSPF v2 (Edge mode) • RFC 2329: OSPF Standardization Report • RFC 2338: VRRP • RFC 2365: Administratively Scoped IP Multicast • RFC 2385: TCP MD5 Authentication for BGPv4 • RFC 2401: Security Architecture for the Internet Protocol • RFC 2402: IP Authentication Header • RFC2403: The Use of HMAC-MD5-96 within ESP and AH • RFC2404: The Use of HMAC-SHA-1-96 within ESP and AH • RFC2405: The ESP DES-CBC Cipher Algorithm With Explicit IV • RFC2410: The NULL Encryption Algorithm and Its Use With IPsec • RFC 2439: BGP Route Flap Damping • RFC 2451: The ESP CBC-Mode Cipher Algorithms • RFC 2452: IP Version 6 Management Information Base for the Transmission Control Protocol • RFC 2453: RIP v2 • RFC 2453: IP Version 6 Management Information Base for the User Datagram Protocol • RFC 2454: IP Version 6 Management Information Base for the User Datagram Protocol • RFC2464: Transmission of IPv6 Packets over Ethernet Networks • RFC 2465: Management Information Base for IP Version 6: Textual Conventions and General Group • RFC2466: Management Information Base for IP Version 6: ICMPv6 Group • RFC2472: IP Version 6 over PPP • RFC2519: A Framework for Inter-Domain Route Aggregation • RFC 2545: Use of BGP-4 Multiprotocol Extensions for IPv6 Interdomain Routing • RFC 2547: BGP/MPLS VPNs • RFC 2576: Coexistence between Version 1, Version 2, and Version 3 of the Internet-standard Network Management Framework

Standard Organization	Standard or Protocol
IETF	<ul style="list-style-type: none"> • RFC2578: Structure of Management Information Version 2 (SMIPv2) • RFC2579: Textual Conventions for SMIPv2 • RFC2580: Conformance Statements for SMIPv2 • RFC2618: RADIUS Authentication Client MIB • RFC2644: Changing the Default for Directed Broadcasts in Routers • RFC 2710: Multicast Listener Discovery (MLD) for IPv6 • RFC 2711: IPv6 Router Alert Option • RFC 2715: Interoperability Rules for Multicast Routing Protocols • RFC 2763: Dynamic Hostname Exchange Mechanism for IS-IS • RFC 2764: A Framework for IP Based Virtual Private Networks • RFC 2784: Generic Routing Encapsulation (GRE) • RFC 2787: Definitions of Managed Objects for the Virtual Router Redundancy Protocol • RFC2819: Remote Network Monitoring Management Information Base • RFC2863: The Interfaces Group MIB • RFC2865: Remote Authentication Dial In User Service (RADIUS) • RFC2866: Radius Accounting • RFC2873: TCP Processing of the IPv4 Precedence Field • RFC2903: Generic AAA Architecture • RFC2904: AAA Authorization Framework • RFC2906: AAA Authorization Requirements • RFC2906: AAA Authorization Requirements • RFC2917: A Core MPLS IP VPN Architecture • RFC2918: Route Refresh Capability for BGP-4 • RFC2934: Domain-wide Prefix Distribution with Two-Level IS-IS • RFC2966: Domain-wide Prefix Distribution with Two-Level IS-IS • RFC2973: IS-IS Mesh Groups • RFC3014: Notification Log MIB • RFC3031: Multiprotocol Label Switching Architecture • RFC 3036: LDP Specification • RFC 3037: LDP Specification • RFC 3039: VLAN Aggregation for Efficient IP Address Allocation • RFC 3101: The OSPF Not-So-Stubby Area (NSSA) Option • RFC3152: Delegation of IP6.ARPA • RFC3162: RADIUS and IPv6 • RFC3170: IP Multicast Applications: Challenges and Solutions • RFC3195: Reliable Delivery for syslog

Standard Organization	Standard or Protocol
IETF	<ul style="list-style-type: none"> • RFC3209: RSVP-TE: Extensions to RSVP for LSP Tunnels • RFC3215: LDP State Machine • RFC3272: Overview and Principles of Internet Traffic Engineering • RFC3277: Intermediate System to Intermediate System (IS-IS) Transient Blackhole Avoidance • RFC3315: Dynamic Host Configuration Protocol for IPv6 (DHCPv6) • RFC3358: Optional Checksums in Intermediate System to Intermediate System (ISIS) • RFC3359: Reserved Type, Length and Value (TLV) Codepoints in Intermediate System to Intermediate System • RFC3363: Representing Internet Protocol version 6 (IPv6) Addresses in the Domain Name System (DNS) • RFC 3446: Anycast Rendezvous Point (RP) Mechanism using PIM and MSDP • RFC3469: Framework for Multi-Protocol Label Switching (MPLS)-based Recovery • RFC 3478: Graceful Restart for Label Distribution Protocol • RFC3479: Fault Tolerance for the Label Distribution Protocol (LDP) • RFC 3484: Default Address Selection for IPv6 • RFC 3512: Configuring Networks and Devices with Simple Network Management Protocol (SNMP). • RFC 3569: PIM-SSM PIM Source Specific Multicast • RFC 3587: IPv6 Global Unicast Address Format • RFC3596: DNS Extensions to Support IP Version 6 • RFC3602: The AES-CBC Cipher Algorithm and Its Use with IPsec • RFC 3618: Multicast Source Discovery Protocol (MSDP) • RFC 3623: OSPF Graceful Restart • RFC 3630: Traffic Engineering (TE) Extensions to OSPF Version 2 • RFC3682: The Generalized TTL Security Mechanism (GTSM) • RFC3719: Recommendations for Interoperable Networks using Intermediate System to Intermediate System (IS-IS) • RFC3756: IPv6 Neighbor Discovery (ND) Trust Models and Threats • RFC3768: Virtual Router Redundancy Protocol (VRRP) • RFC3785: Use of Interior Gateway Protocol (IGP) Metric as a second MPLS Traffic Engineering (TE) Metric • RFC3787: Recommendations for Interoperable IP Networks using Intermediate System to Intermediate System (IS-IS) • RFC3809: Generic Requirements for Provider Provisioned Virtual Private Networks(PPVPN) • RFC3810: Multicast Listener Discovery Version 2 (MLDv2) for IPv6

Standard Organization	Standard or Protocol
IETF	<ul style="list-style-type: none"> • RFC3813: Multiprotocol Label Switching (MPLS) Label Switching Router (LSR) Management Information Base (MIB) • RFC3814: Multiprotocol Label Switching (MPLS) Forwarding Equivalence Class To Next Hop Label Forwarding Entry (FEC-To-NHLFE) Management Information Base (MIB) • RFC 3815: Definitions of Managed Objects for the Multiprotocol Label Switching (MPLS), Label Distribution Protocol (LDP) • RFC3826: The Advanced Encryption Standard (AES) Cipher Algorithm in the SNMP User-based Security Model • RFC3879: Deprecating Site Local Addresses • RFC3906: Calculating Interior Gateway Protocol (IGP) Routes Over Traffic Engineering Tunnels • RFC3916: Requirements for Pseudo-Wire Emulation Edge-to-Edge (PWE3) • RFC3936: Procedures for Modifying the Resource reSerVation Protocol(RSVP) • RFC3954: Cisco Systems NetFlow Services Export Version 9 • RFC3956: Embedding the Rendezvous Point (RP) Address in an IPv6 Multicast Address • RFC3971: SEcure Neighbor Discovery (SEND) • RFC3972: Cryptographically Generated Addresses (CGA) • RFC3973: Protocol Independent Multicast - Dense Mode (PIM-DM):Protocol Specification (Revised) • RFC3985: Pseudo Wire Emulation Edge-to-Edge (PWE3) Architecture • RFC3988: Maximum Transmission Unit Signalling Extensions for the Label Distribution Protocol • RFC4007: IPv6 Scoped Address Architecture • RFC4022: Management Information Base for the Transmission Control Protocol(TCP) • RFC4023: Encapsulating MPLS in IP or Generic Routing Encapsulation (GRE) • RFC4026: Provider Provisioned Virtual Private Network (VPN) Terminology • RFC4031: Service Requirements for Layer 3 Provider Provisioned Virtual Private Networks (PPVPNs) • RFC4090: Fast Reroute Extensions to RSVP-TE for LSP Tunnels • RFC4105: Requirements for Inter-Area MPLS Traffic Engineering • RFC4110: A Framework for Layer 3 Provider-Provisioned Virtual Private Networks (PPVPNs) • RFC4113: Management Information Base for the User Datagram Protocol (UDP) • RFC4133: Entity MIB (Version 3)

Standard Organization	Standard or Protocol
IETF	<ul style="list-style-type: none"> • RFC4188: Definitions of Managed Objects for Bridges • RFC4191: Default Router Preferences and More-Specific Routes • RFC 4213: Basic Transition Mechanisms for IPv6 Hosts and Routers • RFC4216: MPLS Inter-Autonomous System (AS) Traffic Engineering (TE) Requirements • RFC4245: High-Level Requirements for Tightly Coupled SIP Conferencing • RFC4250/ RFC4251/ RFC4252/ RFC4253/ RFC4254:SSH • RFC4264: BGP Wedgies • RFC4265: Definition of Textual Conventions for Virtual Private Network (VPN) Management • RFC4271/ RFC4272/ RFC4273/ RFC4274/ RFC4276/ RFC4277: BGP • RFC4291: IP Version 6 Addressing Architecture • RFC4292: IP Forwarding Table MIB • RFC4293: Management Information Base for the Internet Protocol (IP) • RFC4294: IPv6 Node Requirements • RFC4302/ RFC4303: IPSec • RFC4344/ RFC4345: SSH • RFC4360: BGP Extended Communities Attribute • RFC4363: Q-BRIDGE-MIB • RFC4364/ RFC4365/ RFC4382: L3VPN • RFC4379: NQA MPLS-LSP Ping/Trace • RFC4385/ RFC4446/ RFC4447/ RFC4448: L2VPN • RFC4419: Diffie-Hellman Group Exchange for the Secure Shell (SSH) Transport Layer Protocol • RFC4443: Internet Control Message Protocol (ICMPv6) for the Internet Protocol Version 6 (IPv6) Specification • RFC4451/ RFC4486:BGP • RFC4541: Considerations for Internet Group Management Protocol (IGMP)and Multicast Listener Discovery (MLD) Snooping Switches • RFC4552/ RFC4576/ RFC4577:OSPF v3 • RFC4560: Definitions of Managed Objects for Remote Ping, Traceroute, and Lookup Operations • RFC4562: MAC-Forced Forwarding: A Method for Subscriber Separation on an Ethernet Access Network • RFC4576: OSPF as the Provider/Customer Edge Protocol for BGP/ MPLS IP Virtual Private Networks (VPNs) • RFC4602/ RFC4607/ RFC4608/ RFC4609/ RFC4610: PIM

Standard Organization	Standard or Protocol
IETF	<ul style="list-style-type: none"> • RFC4604: Using Internet Group Management Protocol Version 3 (IGMPv3) and Multicast Listener Discovery Protocol Version 2 (MLDv2) for Source-Specific Multicast • RFC4611/ RFC4624:MSDP • RFC4632: Classless Inter-domain Routing (CIDR): The Internet Address Assignment and Aggregation Plan • RFC4649: Dynamic Host Configuration Protocol for IPv6 (DHCPv6) Relay Agent Remote-ID Option • RFC4659: BGP-MPLS IP Virtual Private Network(VPN) Extension for IPv6 VPN • RFC4664/ RFC4665:L2VPN • RFC4724: Graceful Restart Mechanism for BGP • RFC4741: NETCONF Configuration Protocol • RFC4742: Using the NETCONF Configuration Protocol over Secure SHell (SSH) • RFC4750: OSPF Version 2 Management Information Base • RFC4762: Virtual Private LAN Service (VPLS) Using Label Distribution Protocol (LDP) Signaling • RFC4781: Graceful Restart Mechanism for BGP with MPLS • RFC4798: Connecting IPv6 Islands over IPv4 MPLS using IPv6 Provider Edge Routers (6PE) • RFC4822: RIPv2 Cryptographic Authentication • RFC4829: Label Switched Path (LSP) Preemption Policies for MPLS Traffic Engineering • RFC 4861: Neighbor Discovery for IPv6 • RFC 4862: IPv6 Stateless Address Autoconfiguration • RFC4868: Using HMAC-SHA-256, HMAC-SHA-384, and HMAC-SHA-512 with IPsec • RFC4874: Exclude Routes - Extension to Resource Reservation Protocol-Traffic Engineering (RSVP-TE) • RFC4884: Extended ICMP to Support Multi-Part Messages • RFC4893: BGP Support for Four-octet AS Number Space • RFC4906: Transport of Layer 2 Frames Over MPLS • RFC4940: IANA Considerations for OSPF • RFC4950: ICMP Extensions for Multiprotocol Label Switching • RFC5004: Avoid BGP Best Path Transitions from One External to Another • RFC5015: Bidirectional Protocol Independent Multicast • RFC5036: LDP Specification • RFC5059: Bootstrap Router (BSR) Mechanism for Protocol Independent Multicast (PIM)

Standard Organization	Standard or Protocol
IETF	<ul style="list-style-type: none"> • RFC5060: Protocol Independent Multicast MIB • RFC5063: Extensions to GMPLS Resource Reservation Protocol RSVP Graceful Restart • RFC5085: Pseudowire Virtual Circuit Connectivity Verification (VCCV): A Control Channel for Pseudowires • RFC5095: Deprecation of Type 0 Routing Headers in IPv6 • RFC5110: Overview of the Internet Multicast Routing Architecture • RFC5130: A Policy Control Mechanism in IS-IS Using Administrative Tags • RFC5132: IP Multicast MIB • RFC5156: Special-Use IPv6 Addresses • RFC5176: Dynamic Authorization Extensions to Remote Authentication Dial In User Service (RADIUS) • RFC5186: Internet Group Management Protocol Version 3 (IGMPv3) / Multicast Listener Discovery Version 2 (MLDv2) and Multicast Routing Protocol Interaction • RFC5187: OSPFv3 Graceful Restart • RFC5227: IPv4 Address Conflict Detection • RFC5240: Protocol Independent Multicast (PIM) Bootstrap Router MIB • RFC5250: The OSPF Opaque LSA Option • RFC5277: NETCONF Event Notifications • RFC5286: Basic Specification for IP Fast Reroute: Loop-Free Alternates • RFC5291: Outbound Route Filtering Capability for BGP-4 • RFC5292: Address-Prefix-Based Outbound Route Filter for BGP-4 • RFC5294: Host Threats to Protocol Independent Multicast (PIM) • RFC5301/ RFC5302/ RFC5303/ RFC5304/ RFC5305/ RFC5306/ RFC5308/ RFC5309/ RFC5310/ RFC5311: ISIS • RFC5340: OSPF for IPv6 • RFC5342: IANA Considerations and IETF Protocol Usage for IEEE 802 Parameters • RFC5396: Textual Representation of Autonomous System (AS) Numbers • RFC5398: Autonomous System (AS) Number Reservation for Documentation Use • RFC5424/ RFC5425/ RFC5426: Information Management • RFC5443: LDP IGP Synchronization • RFC5462: Multiprotocol Label Switching (MPLS) Label Stack Entry: "EXP" Field Renamed to "Traffic Class" Field • RFC5492: Capabilities Advertisement with BGP-4 • RFC5495: Description of the Resource Reservation Protocol - Traffic-Engineered (RSVP-TE) Graceful Restart Procedures

Standard Organization	Standard or Protocol
IETF	<ul style="list-style-type: none"> • RFC5512: The BGP Encapsulation Subsequent Address Family Identifier (SAFI) • RFC5519: Multicast Group Membership Discovery MIB • RFC5556: Transparent Interconnection of Lots of Links (TRILL): Problem and Applicability Statement • RFC5642/ RFC5643: OSPFv3 • RFC5656: Elliptic Curve Algorithm Integration in the Secure Shell Transport Layer • RFC5659: An Architecture for Multi-Segment Pseudowire Emulation Edge-to-Edge • RFC5668: 4-Octet AS Specific BGP Extended Community • RFC5681: TCP Congestion Control • RFC5709: OSPFv2 HMAC-SHA Cryptographic Authentication • RFC5711: Node Behavior upon Originating and Receiving Resource Reservation Protocol (RSVP) Path Error Messages • RFC5714: IP Fast Reroute Framework • RFC5722: Handling of Overlapping IPv6 Fragments • RFC5796: Authentication and Confidentiality in Protocol Independent Multicast Sparse Mode (PIM-SM) Link-Local Messages • RFC5798: Virtual Router Redundancy Protocol (VRRP) Version 3 for IPv4 and IPv6 • RFC5880/ RFC5881/ RFC5882/ RFC5883/ RFC5884: BFD • RFC5905: Network Time Protocol Version 4: Protocol and Algorithms Specification • RFC5952: A Recommendation for IPv6 Address Text Representation • RFC6020: YANG - A Data Modeling Language for the Network Configuration Protocol (NETCONF) • RFC6021/ RFC6022: NETCONF • RFC6037: Cisco Systems' Solution for Multicast in BGP/MPLS IP VPNs • RFC6073: Segmented Pseudowire • RFC6138: LDP IGP Synchronization for Broadcast Networks • RFC6204: Basic Requirements for IPv6 Customer Edge Routers • RFC6232: Purge Originator Identification TLV for IS-IS • RFC6239: Suite B Cryptographic Suites for Secure Shell (SSH) Not supported X-509 certificates • RFC6241/ RFC6242/ RFC6243: NETCONF • RFC6246: Virtual Private LAN Service (VPLS) Interoperability with Customer Edge (CE) Bridges • RFC6274: Security Assessment of the Internet Protocol Version 4 • RFC6286: Autonomous-System-Wide Unique BGP Identifier for BGP-4 • RFC6325/ RFC6326/ RFC6327: TRILL

Standard Organization	Standard or Protocol
IETF	<ul style="list-style-type: none"> • RFC6398: IP Router Alert Considerations and Usage • RFC6434: IPv6 Node Requirements • RFC6439: RBridges: Appointed Forwarders • RFC6472: Recommendation for Not Using AS_SET and AS_CONFED_SET in BGP • RFC6528: Defending against Sequence Number Attacks • RFC6536: Network Configuration Protocol (NETCONF) Access Control Model • RFC6540: IPv6 Support Required for All IP-Capable Nodes • RFC6563: Moving A6 to Historic Status • RFC6565: OSPFv3 as a Provider Edge to Customer Edge (PE-CE) Routing Protocol • RFC6607: Virtual Subnet Selection Options for DHCPv4 and DHCPv6 • RFC6633: Deprecation of ICMP Source Quench Messages • RFC6668: SHA-2 Data Integrity Verification for the Secure Shell (SSH) Transport Layer Protocol • RFC6676: Multicast Addresses for Documentation • RFC6691: TCP Options and Maximum Segment Size (MSS) • RFC6718: Pseudowire Redundancy • RFC6724: Default Address Selection for Internet Protocol Version 6 (IPv6) • RFC6774: Distribution of Diverse BGP Paths • RFC6793: BGP Support for Four-Octet Autonomous System (AS) Number Space • RFC6890: Special-Purpose IP Address Registries • RFC6905: Requirements for Operations, Administration, and Maintenance (OAM) in Transparent Interconnection of Lots of Links (TRILL) • RFC6918: Formally Deprecating Some ICMPv4 Message Types • RFC6938: Deprecation of BGP Path Attributes: DPA, ADVERTISER, and RCID_PATH / CLUSTER_ID • RFC6939: Client Link-Layer Address Option in DHCPv6 • RFC6987: OSPF Stub Router Advertisement • RFC6996: Autonomous System (AS) Reservation for Private Use • RFC7084: Basic Requirements for IPv6 Customer Edge Routers • RFC7130: Bidirectional Forwarding Detection (BFD) on Link Aggregation Group (LAG) Interfaces • RFC7153: IANA Registries for BGP Extended Communities • RFC7166: Supporting Authentication Trailer for OSPFv3 • RFC7174: Transparent Interconnection of Lots of Links (TRILL) Operations, Administration, and Maintenance (OAM) Framework

Standard Organization	Standard or Protocol
IETF	<ul style="list-style-type: none"> • RFC7178: Transparent Interconnection of Lots of Links (TRILL): RBridge Channel Support • RFC7196: Making Route Flap Damping Usable • RFC7223: A YANG Data Model for Interface Management • RFC7224: IANA Interface Type YANG Module • RFC7277: A YANG Data Model for IP Management • RFC7317: A YANG Data Model for System Management • RFC7348: Virtual eXtensible Local Area Network (VXLAN): A Framework for Overlaying Virtualized Layer 2 Networks over Layer 3 Networks • RFC7361: LDP Extensions for Optimized MAC Address Withdrawal in a Hierarchical Virtual Private LAN Service (H-VPLS) • RFC7365: Framework for Data Center (DC) Network Virtualization • RFC7379: Problem Statement and Goals for Active-Active Connection at the Transparent Interconnection of Lots of Links (TRILL) Edge • RFC7407: A YANG Data Model for SNMP Configuration • RFC7447: Deprecation of BGP Entropy Label Capability Attribute • RFC7455: Transparent Interconnection of Lots of Links (TRILL): Fault Management • RFC7540: Hypertext Transfer Protocol Version 2 (HTTP/2) • RFC7607: Codification of AS 0 Processing • RFC7705: Autonomous System Migration Mechanisms and Their Effects on the BGP AS_PATH Attribute • RFC7752: North-Bound Distribution of Link-State and Traffic Engineering (TE) Information Using BGP • RFC7761: Protocol Independent Multicast - Sparse Mode (PIM-SM): Protocol Specification (Revised). • RFC7770: Extensions to OSPF for Advertising Optional Router Capabilities • RFC7783: Coordinated Multicast Trees (CMT) for Transparent Interconnection of Lots of Links (TRILL) • RFC7895: YANG Module Library • RFC7938: Use of BGP for Routing in Large-Scale Data Centers • RFC7950: The YANG 1.1 Data Modeling Language • RFC7951: JSON Encoding of Data Modeled with YANG • RFC7964: Solutions for BGP Persistent Route Oscillation • RFC8022: A YANG Data Model for Routing Management • RFC8040: RESTCONF Protocol • RFC8077: Pseudowire Setup and Maintenance using the Label Distribution Protocol • RFC8093: Deprecation of BGP Path Attribute Values 30, 31, 129, 241, 242, and 243

Standard Organization	Standard or Protocol
IEEE	<ul style="list-style-type: none"> • 802.1A: Overview and Architecture • 802.1AB: Station and Media Access Control Connectivity Discovery • 802.1AC: Media Access Control Service revision • 802.1AG: IEEE Standard for Local and metropolitan area networks—Virtual Bridged Local Area Networks Amendment 5:Connectivity Fault Management • 802.1AP: Management Information Base (MIB) definitions for VLAN Bridges • 802.1AX: Link Aggregation • 802.1B: LAN/WAN Management • 802.1D: Media Access Control (MAC) Bridges • 802.1H: Media Access Control (MAC) Bridging of Ethernet V2.0 in LocalArea Networks • 802.1Q Virtual Bridged Local Area Networks • 802.1q 2005: Local and metropolitan area networks-Virtual Bridged Local Area Networks • 802.1QAZ: Enhanced Transmission Selection • 802.1QBB: Priority-based Flow Control • 802.1S: Multiple Spanning Trees • 802.1W: Rapid Reconvergence of Spanning Tree (RSTP) • 802.1X: Port Based Network Access Control • 802.2: IEEE Standards for Local Area Networks: Logical Link Control (LLC) • 802.3AC: VLAN tagging • 802.3AD: Port Trunk, LACP • 802.3AH: Operations, Administration, and Maintenance (OAM) • 802.3AX: (IEEE P802.1AX) Link Aggregation Task Force • ISO10598:ISIS
ITU	<ul style="list-style-type: none"> • Y.1344: Ethernet ring protection switching

NOTE

The listed standards and protocols are fully or partially supported by Huawei switches. For details, visit <https://e.huawei.com/ca/material/onLineView?MaterialID=821895aad0bd48e6aa079c06e82fb7f8> or contact your local Huawei sales office.

Ordering Information

Switch Fabric Unit ⁴	
CE-SFU-S	CE12800S Switch Fabric
CE-SFU04	CE12804 Switch Fabric
CE-SFU08	CE12808 Switch Fabric
CE-SFU12	CE12812 Switch Fabric
CE-SFU16	CE12816 Switch Fabric
GE BASE-T Interface Card	
CE-L48GT	48-Port 10/100/1000BASE-T Interface Card (RJ45)
GE BASE-X Interface Card	
CE-L48GS	48-Port 100/1000BASE-X Interface Card (SFP)
10GBASE-T Interface Card	
CE-L48XT	48-port 100M/1000M/10G BASE-T Interface Card (RJ45)
10GBASE-X Interface Card	
CE-L24XS	24-Port 10GBASE-X Interface Card (SFP/SFP+)
CE-L48XS	48-Port 10GBASE-X Interface Card (SFP/SFP+)
40GE Interface Card	
CE-L06LQ	6-Port 40G Interface Card (QSFP+)
CE-L12LQ	12-Port 40G Interface Card (QSFP+)
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-L08CF	8-Port 100G Interface Card (CFPS)
CE-L12CF	12-Port 100G Interface Card (CFP2)
CE-L12CQ	12-Port 100G Interface Card (QSFP28)
CE-L16CQ	16-Port 100G Interface Card (QSFP28)
CE-L36CQ	36-Port 100G Interface Card (QSFP28)

⁴ 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.

Power

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

Software

CE128-LIC-B25	CloudEngine 12800 Basic SW
CE128-LIC-TRILL	TRILL Function License
CE128-LIC-MPLS	MPLS Function License
CE128-LIC-VS	Virtual System Function License
CE128-LIC-IPV6	IPV6 Function License
CE128-LIC-EVN	EVN Function License
CE128-LIC-FCFAL	CloudEngine 12800 FCF All Ports
CE128-LIC-FCF48	CloudEngine 12800 FCF 48 Ports
CE128-LIC-TLM	CE12800 Telemetry Function
CE128-LIC-MACSEC	CE12800 MACsec Function
N1-CE128LIC-CFFD	N1-CloudFabric Foundation SW License for CloudEngine 12800
N1-CE128CFFD-SYS1Y	N1-CloudFabric Foundation SW License for CloudEngine 12800-SnS-1 Year
N1-CE128LIC-CFAD	N1-CloudFabric Advanced SW License for CloudEngine 12800
N1-CE128CFAD-SYS1Y	N1-CloudFabric Advanced SW License for CloudEngine 12800-SnS-1 Year

Document

CE128-DOC	CloudEngine 12800 Series Switches Product Documentation
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Optical transceivers and Cables

Part Number	Product Description
FE-SFP Optical Transceivers	
SFP-FE-SX-MM1310	Optical Transceiver,SFP,100M/155M,Multi-mode Module (1310nm, 2km,LC)
eSFP-FE-LX-SM1310	Optical Transceiver,eSFP,100M/155M,Single-mode Module (1310nm, 15km, LC)
S-SFP-FE-LH40-SM1310	Optical Transceiver, eSFP, FE, Single-mode Module (1310nm, 40km, LC)
GE-SFP Optical Transceivers	
SFP-1000BaseT	Electrical Transceiver, SFP, GE, Electrical Interface Module (100m, RJ45)
eSFP-GE-SX-MM850	Optical Transceiver, eSFP, GE, Multi-mode Module (850nm, 0.55km, LC)
SFP-GE-LX-SM1310	Optical Transceiver, eSFP, GE, Single-mode Module (1310nm, 10km,LC)
S-SFP-GE-LH40-SM1310	Optical Transceiver, eSFP, GE, Single-mode Module(1310nm,40km,LC)
S-SFP-GE-LH80-SM1550	Optical Transceiver, eSFP, GE, Single-mode Module(1550nm,80km,LC)
eSFP-GE-ZX100-SM1550	Optical Transceiver, eSFP, GE, Single-mode Module(1550nm,100km,LC)
BIDI-SFP Optical Transceivers	
SFP-FE-LX-SM1550-BIDI	Optical Transceiver, eSFP, FE, BIDI Single-mode Module (TX1550/RX1310, 15km, LC)
SFP-FE-LX-SM1310-BIDI	Optical Transceiver, eSFP, FE, BIDI Single-mode Module (TX1310/RX1550, 15km, LC)
SFP-GE-LX-SM1490-BIDI	Optical Transceiver, eSFP, GE, BIDI Single-mode Module (TX1490/RX1310, 10km,LC)
SFP-GE-LX-SM1310-BIDI	Optical Transceiver, eSFP, GE, BIDI Single-mode Module (TX1310/RX1490, 10km, LC)
LE2MGSC40ED0	Optical Transceiver, eSFP, GE, BIDI Single-mode Module (TX1490/RX1310, 40km, LC)
LE2MGSC40DE0	Optical Transceiver, eSFP, GE, BIDI Single-mode Module (TX1310/RX1490, 40km,LC)
SFP-10G-ER-SM1330-BIDI	Optical Transceiver,SFP+, 10G,BIDI Single-mode Module(TX 1330nm/RX 1270nm,40km,LC)
SFP-10G-ER-SM1270-BIDI	Optical Transceiver,SFP+, 10G,BIDI Single-mode Module(TX 1270nm/RX 1330nm,40km,LC)

SFP-10G-BXU1	10GBase,BIDI Optical Transceiver,SFP+, 10G,Single-mode Module (TX1270nm/ RX1330nm,10km,LC)
SFP-10G-BXD1	10GBase,BIDI Optical Transceiver,SFP+, 10G,Single-mode Module (TX1330nm/ RX1270nm, 10km, LC)
10G-SFP+ Optical Transceivers	
SFP-10G-USR	10GBase-USR Optical Transceiver,SFP+, 10G,Multi-mode Module (850nm, 0.1km, LC)
OSXD22N00	Optical Transceiver,SFP+, 10G,Multi-mode Module(1310nm,0.22km,LC,LRM)
OMXD30000	Optical Transceiver,SFP+, 10G,Multi-mode Module(850nm,0.3km,LC)
SFP-10G-LR	Optical Transceiver,SFP+, 10G,Single-mode Module(1310nm,10km,LC)
OSX040N01	Optical Transceiver,SFP+, 10G,Single-mode Module(1550nm,40km,LC)
SFP-10G-ZR	10GBase-ZR Optical Transceiver, SFP+, 10G, Single-mode Module (1550nm, 80km, LC)
SFP-10G-iLR	Optical Transceiver,SFP+,9.8G,Single-mode Module(1310nm,1.4km,LC)
10G-SFP+ DWDM Optical Transceivers	
SFP-10G-ZDWT	Optical Transceiver,SFP+, 10G,Single-mode Module(DWDM,1560.61- 1529.16nm,60km,LC)
25GE-SFP28 Optical Transceivers	
SFP-25G-SR	Optical Transceiver,SFP28,25GE, Multi-mode Module(850nm,0.1km,LC)
40GE-QSFP+ Optical Transceivers	
QSFP-40G-SR-BD	40GBase-BD Optical Transceiver,QSFP+,40G,Multi-mode (850nm,0.1km,LC)
QSFP-40G-iSR4	40GBase-iSR4 Optical Transceiver, QSFP+, 40G, Multi-mode (850nm, 0.15km, MPO) (Connect to four SFP+ Optical Transceiver)
QSFP-40G-eSR4	40GBase-eSR4 Optical Transceiver, QSFP+, 40G, Multi-mode (850nm, 0.3km, MPO) (Connect to four SFP+ Optical Transceiver)
QSFP-40G-LX4	40GBase-LX4 Optical Transceiver, QSFP+, 40GE, Single-mode (1310nm, 2km, LC), Multi-mode(1310nm, 0.15km, LC)
QSFP-40G-eSM4	40GBase-eSM4 Optical Transceiver, QSFP+, 40G, Single-mode Module (1310nm, 10km, MPO) (Connect to four SFP+ Optical Transceiver)
QSFP-40G-LR4	40GBase-LR4 Optical Transceiver, QSFP+, 40GE, Single-mode Module (1310nm, 10km, LC)

QSFP-40G-LR4-Lite	40GBase-LR4 Lite Optical Transceiver,QSFP+,40G,Single-mode Module(1310nm,2km,LC)
QSFP-40G-ER4	40GBase-ER4 Optical Transceiver, QSFP+, 40G, Single-mode Module (1310nm, 40km, LC)
QSFP-40G-SDLC-PAM	40GBase-SDLC Optical Transceiver, QSFP+, 40G, Multi-mode (850nm, PAM4, 0.1km, LC)
QSFP-40G-eSDLC-PAM	40GBase-eSDLC Optical Transceiver, QSFP+, 40G, Multi-mode (850nm, PAM4, 0.3km, LC)

40GE-CFP Optical Transceivers

CFP-40G-LR4	High Speed Transceiver, CFP, 40G, Single-mode Module (1310nm band, 41.25G, 10km, straight LC)
CFP-40G-ER4	High Speed Transceiver, CFP, 40G, Single-mode Module (1310nm band, 41.25G, 40km, straight LC)

100GE-CFP Optical Transceivers

CFP-100G-SR10	High Speed Transceiver, CFP, 100G, Multimode Module (850nm, 10*10G, 0.1km, MPO)
CFP-100G-LR4	High Speed Transceiver,CFP,100G,Single-mode Module(1310nm band,4*25G,10km,stright LC)
CFP-100G-ER4	High Speed Transceiver,CFP,100G,Single-mode Module(1310nm band,4*25G,40km,stright LC)
CFP-100GE-ZR4	100GBase,CFP Module,100G,Single-mode Module(1310nm band,4*25G,80km,stright LC)

100GE-CFP2 Optical Transceivers

CFP2-100G-SR10	High Speed Transceiver, CFP2, 100G, Multimode Module(850nm, 10*10G, 0.1km, MPO)
CFP2-100G-LR4	High Speed Transceiver, CFP2, 100G, Single-mode Module(1310nm band, 4*25G, 10km, straight LC)
CFP2-100G-ER4	High Speed Transceiver, CFP2, 100G, Single-mode Module(1310nm, 4*25G, 40km, straight LC)

100GE-QSFP28 Optical Transceivers

QSFP-100G-SWDM4	100GBase-SWDM4 Optical Transceiver,QSFP+,100GE,Multi-mode Module(850,0.0.075km-OM3,0.1km-OM4,LC)
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QSFP28-100G-SR4	100GBase-SR4 Optical Transceiver, QSFP28, 100G, Multi-mode (850nm, 0.1km, MPO)
QSFP28-100G-LR4	100GBase-LR4 Optical Transceiver, QSFP28, 100G, Single-mode module (1310nm, 10km, LC)
QSFP28-100G-PSM4	100GBase-PSM4 Optical Transceiver, QSFP28, 100G, Single-mode module (1310nm, 0.5km, MPO)
QSFP-100G-CWDM4	100GBase-CWDM4 Optical Transceiver, QSFP28, 100G, Single-mode module (1310nm, 2km, LC)
QSFP-100G-eCWDM4	100GBase-eCWDM4 Optical Transceiver, QSFP28, 100G, Single-mode module (1310nm, 10km, LC)
QSFP-100G-ER4-Lite	100GBase-ER4-Lite Optical Transceiver, QSFP28, 100G, Single-mode module (1310nm, 30km(FEC OFF), 40km(FEC ON), LC)
QSFP-100G-SR4-NT	100GBase-SR4 Optical Transceiver, QSFP28, 100G, Multi-mode (850nm, 0.1km, MPO, NT) , 20-60C
QSFP-100G-CWDM4-NT	100GBase-CWDM4 Optical Transceiver, QSFP28, 100G, Single-mode module (1310nm, 2km, LC, NT) , 20-65C

AOC High-Speed Cables

SFP-10G-AOC-5M	Active Optical Cable , SFP+, 10G, (850nm, 5m, AOC)
SFP-10G-AOC-7M	Active Optical Cable , SFP+, 10G, (850nm, 7m, AOC)
SFP-10G-AOC10M	AOC Optical Transceiver, SFP+, 850nm, 1G~10G, 10m
SFP-10G-AOC20M	Optical transceiver, SFP+ AOC, 850nm, 2.5G~10.5G, 20m
SFP-10G-AOC-3M	Optical transceiver, SFP+, 1G~10.5G, (850nm, 3m, AOC)
QSFP-H40G-AOC10M	Optical transceiver, QSFP+, 40G, (850nm, 10m, AOC)
QSFP-4SFP10-AOC10M	Optical transceiver, QSFP+, 40G, (850nm, 10m, AOC)(Connect to four SFP+ Optical Transceiver)
SFP-25G-AOC-3M	Active Optical Cable , SFP28, 25G, (850nm, 3m, AOC)

SFP-25G-AOC-5M	Active Optical Cable , SFP28, 25G, (850nm, 5m, AOC)
SFP-25G-AOC-7M	Active Optical Cable , SFP28, 25G, (850nm, 7m, AOC)
SFP-25G-AOC-10M	Active Optical Cable , SFP28, 25G, (850nm, 10m, AOC)
QSFP-100G-AOC-10M	Active Optical Cable ,QSFP28,100G,(850nm,10m,AOC)
QSFP-100G-AOC-30M	Active Optical Cable ,QSFP28,100G,(850nm,30m,AOC)

Copper Cable

SFP-10G-CU1M	SFP+, 10G, High Speed Direct-attach Cables, 1m, SFP+20M, CC2P0.254B(S), SFP+20M, Used indoor
SFP-10G-CU3M	SFP+, 10G, High Speed Direct-attach Cables, 3m, SFP+20M, CC2P0.254B(S), SFP+20M, Used indoor
SFP-10G-CU5M	SFP, 10G, High Speed Cable, 5m, SFP+20M, CC2P0.254B(S), SFP+20M, LSFRZH For Indoor
SFP-10G-AC7M	SFP, 10G, Active High Speed Cable, 7m, SFP+20M, CC2P0.254B(S), SFP+20M, LSFRZH For Indoor
SFP-10G-AC10M	SFP+, 10G, Active High Speed Cables, 10m, SFP+20M, CC2P0.32B(S), SFP+20M, Used indoor
SFP-25G-CU1M	SFP28, 25G, High Speed Direct-attach Cables, 1m, (SFP28), CC8P0.254B(S), SFP28
SFP-25G-CU3M	SFP28, 25G, High Speed Direct-attach Cables, 3m, (SFP28), CC8P0.254B(S), SFP28
SFP-25G-CU3M-N	SFP28, 25G, High Speed Direct-attach Cables, 3m, (SFP28), CC2P0.4B(S), SFP28
SFP28-25G-CU5M	SFP28, 25G, High Speed Direct-attach Cables, 5m, (SFP28), CC2P0.4B(S), SFP28
QSFP-40G-CU1M	QSFP+, 40G, High Speed Direct-attach Cables, 1m, QSFP+38M, CC8P0.254B(S), QSFP+38M, Used indoor
QSFP-40G-CU3M	QSFP+, 40G, High Speed Direct-attach Cables, 3m, QSFP+38M, CC8P0.32B(S), QSFP+38M, Used indoor
QSFP-40G-CU5M	QSFP+, 40G, High Speed Direct-attach Cables, 5m, QSFP+38M, CC8P0.40B(S), QSFP+38M, Used indoor
QSFP-4SFP10G-CU1M	QSFP+, 4SFP+10G, High Speed Direct-attach Cables, 1m, QSFP+38M, CC8P0.254B(S), 4*SFP+20M, Used indoor

QSFP-4SFP10G-CU3M	QSFP+, 4SFP+10G, High Speed Direct-attach Cables, 3m, QSFP+38M, CC8P0.32B(S), 4*SFP+20M, Used indoor
QSFP-4SFP10G-CU5M	QSFP+, 4SFP+10G, High Speed Direct-attach Cables, 5m, QSFP+38M, CC8P0.4B(S), 4*SFP+20M, Used indoor
QSFP28-100G-CU1M	QSFP28, 100G, High Speed Direct-attach Cables, 1m, (QSFP28), CC8P0.254B(S), QSFP28, Used indoor
QSFP28-100G-CU3M	QSFP28, 100G, High Speed Direct-attach Cables, 3m, (QSFP28), CC8P0.254B(S), QSFP28, Used indoor
QSFP28-100G-CU5M	QSFP28, 100G, High Speed Direct-attach Cables, 5m, (QSFP28), CC8P0.4B(S), QSFP28, Used indoor
QSFP-4SFP25G-CU1M	100GE QSFP28-4SFP25G, High Speed Direct-attach Cables, 1m, (QSFP28), (4*(CC2P0.254B(S))), (4SFP28)
QSFP-4SFP25G-CU3M	100GE QSFP28-4SFP25G, High Speed Direct-attach Cables, 3m, (QSFP28), (4*(CC2P0.254B(S))), (4SFP28)
QSFP-4SFP25G-CU3M-N	100GE QSFP28-4SFP25G, High Speed Direct-attach Cables, 3m, (QSFP28), (4*(CC2P0.4B(S))), 4SFP28
QSFP-4SFP25G-CU5M	100GE QSFP28-4SFP25G, High Speed Direct-attach Cables, 5m, (QSFP28), (4*(CC2P0.4B(S))), 4SFP28

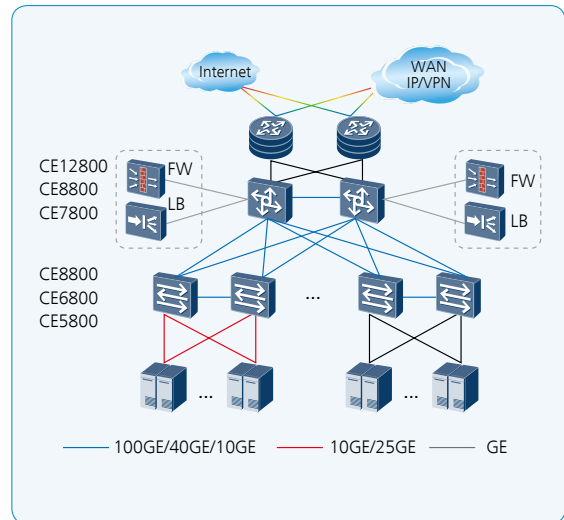


Networking and Application

Data Center Applications

On a typical data center network, CE12800/CE8800/CE7800 switches work as core switches, whereas CE8800/CE6800/CE5800 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.

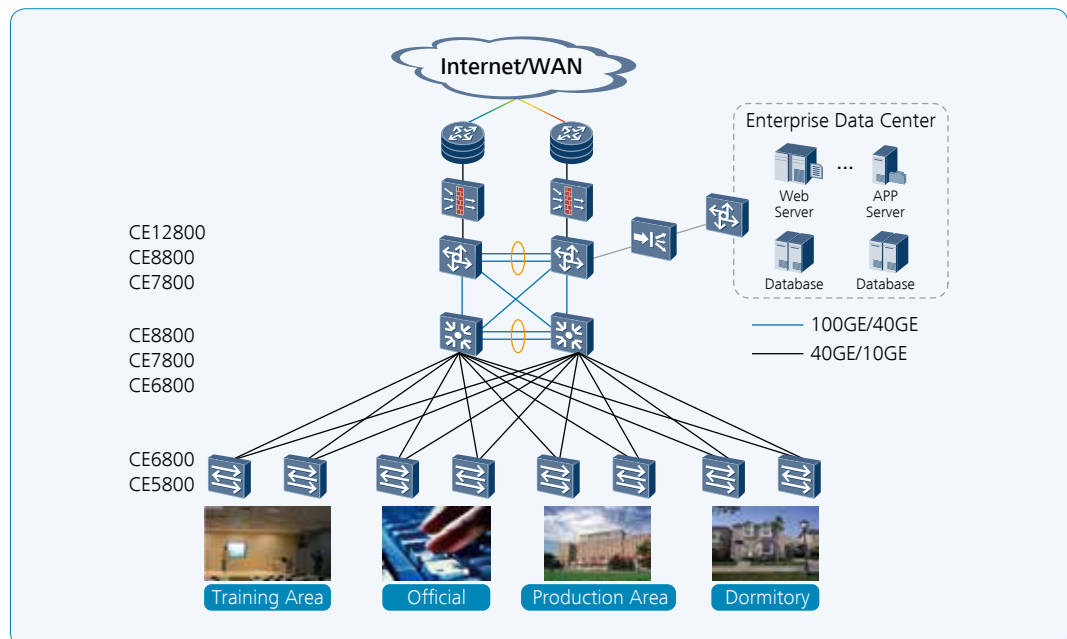
Note: TRILL and VXLAN can be also used on campus networks to support flexible service deployments in different service areas.



Campus Network Applications

On a typical campus network, multiple CE12800/CE8800/CE7800 switches are virtualized into a logical core switch using CSS or iStack technology. Multiple CE8800/CE7800/CE6800 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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