DELL EMC NETWORKING TRANSCEIVERS AND CABLES

Features and benefits

- Hot-swappable for simplified maintenance (no power-down required for installation or replacement)
- Some of the smallest and lowest-power 10GbE and 40GbE optic form factors in the industry
- Optical interoperability with SFP, SFP+ and some QSFP modules
- Offers "pay-as-you-use" model for lower total cost of ownership (TCO) and ease of technology migration
- Reliability ensured by rigorous optics validation, qualification and certification
- Dell EMC product specification encoding feature allows Dell EMC Network platforms to recognize certified and supported transceivers
- Guaranteed to work with Dell EMC network platforms under temperature and process variations with optimal performance

SFP+ DAC

QSFP+ DAC

QSFP+ AOC

QSFP+ DAC breakout

SFP SFP+

QSFP+

QSFP+ MPO pigtail

SFP RJ45

Dell EMC provides a robust set of optic and cable options for each of the Ethernet speed ratings. Long- and short-range connectivity options, including simple, cost-effective direct attach cable (DAC) solutions, are suited to a wide range of data center and campus applications.

1GbE solutions

Transceivers for 1GbE range from short range (SX) up to extended long reach (LX and ZX). Transceivers for 1GbE can conform from optical to copper interfaces (1000Base-T).

10GbE solutions

Transceivers from 10GbE range from short reach lite (USR with 100m OM3 reach) to SR, LR, and up to extended long reach (ER and ZR). In many instances, standard SFP optics can be readily inserted, recognized, and utilized in the 10GbE SFP+ case. The LRM module also provides a means to support up to 220m on older OM1 and OM2 fiber grade multimode fiber.

While 10GBaseT is common as native interfaces on switches and network interface cards (NICs), no transceiver is currently available.

25GbE solutions

At this time, the 25GbE networking solution is localized to a QSFP28 to 4x SFP28 breakout cable. This cable is utilized in both our Z9100-ON and S6100-ON switches.

40GbE solutions

QSFP+ transceivers for 40GbE (4x10GbE) range from short reach (SR4), to long reach LR4, and up to extended long reach ER4. In many instances, 1GbE SFP and 10GbE SFP+ optics can be readily inserted, recognized, and utilized in the 40GbE QSFP+ interface with the utilization of a QSFP+ to SFP/SFP+ (QSA) pluggable adapter. This allows for support of standard SFP and SFP+ optics in a QSFP+ socket providing backwards compatibility, while still providing the full 40Gb/s port bandwidth for future expansion.

Breakout cables are also possible on most 40GbE QSFP+ ports where each of the 4 10Ghz optical lines are broken out to 4 individual 10GbE or 1GbE interfaces. This solution requires either the deployment of a breakout cable that has 4 physical 1G/10G transceivers, or the use of a passive fiber breakout cable/mux connected by a standard MPO/MTP optic.

Utilizing 10GbE fiber to carry 40GbE worth of capacity is another popular option for 40GbE deployments. This solution can represent a deployment savings, as existing 10GbE fiber plants can frequently be reused. This solution utilizes a Duplex solution where wavelengths are multiplexed over two fibers. Actual implementations for this technology vary.

50GbE solutions

50GbE is a new spec utilizing the QSFP28 MSA. At this time, the 50G networking solution is localized to a QSFP28 to 2x QSFP+ passive copper direct attach breakout cable (breakout DAC). Each of the 2 QSFP+ breakout DAC transceivers will utilize 2 25Gbps lanes or channels.

100GbE solutions

QSFP28 transceivers for 100GbE (4x25GbE) range from short reach (SR4) up to long reach (LR4). In many instances standard SFP+ optics can be readily inserted, recognized, and utilized in the 100GbE QSFP28 interface with the utilization of a QSFP+ to SFP/SFP+ (QSA) pluggable adapter. This reduces the affective throughput of this 100GbE port down to 10GbE but provides a cost-reduced solution.

Breakout cables are also possible on most 100GbE QSFP+ ports where each of the 4 optical lines are broken out to 4 individual 25GbE or 10GbE interfaces. This solution requires either the deployment of a breakout cable that has 4 physical 25G / 10G endpoints, or the use of a breakout mux where an SR4 optic with MPO / MTP cable is deployed.

Testing and warranties

Dell EMC applies a rigorous process in qualifying and maintaining all optics to guarantee a precise application of IEEE standards, as well as stringent reliability testing to guarantee a consistent and trustworthy solution.

All optics and cables released by Dell EMC have passed a comprehensive optical analytics check as well as an extensive dynamic test suite. Dell-labeled optics are warrantied alongside the Dell EMC switches in which they are deployed.

DELL EMC TRANSCEIVERS

Product	Model	Max. distance	IEEE Standard	MSA	Receptacle	Fiber	Mode	Power	Wavelength	Temperature
1G optics										
SFP SX Optic, 1GbE	SFP-1G-SX	550 over OM2, 220 over OM1 multimode fiber	802.3z	SFP	Duplex LC	MMF	1-1	≤ 1.0W	850nm	0 to 70ºC
SFP LX Optic, 1GbE	SFP-1G-LX	10km over single-mode fiber	802.3z	SFP	Duplex LC	SMF	1-1	≤ 1.0W	1310nm	0 to 70ºC
SFP FX Optic, 100MB	SFP-100M-FX	2km over OM1 or OM2 multimode fiber		SFP	Duplex LC	MMF	1-1	≤ 1.0W	850nm	0 to 70ºC
SFP ZX Optic, 1GbE	SFP-1G-ZX	80km over single-mode fiber		SFP	Duplex LC	SMF	1-1	≤1.5W	1550nm	0 to 70ºC
SFP 1000BASE-T, 1GbE	SFP-1G-T	100m over Cat5/6 Ethernet cabling		SFP	Duplex LC	Cat 5E	1-1	≤1.5W	N/A	0 to 85ºC
10G optics										
SFP+ USR Optic, 10GbE	SFP-10G-USR	10GbE Ultra-Short reach (USR) SFP+ optic target range 100M over OM3/OM4	802.3ae, max 100m	SFP+	Duplex LC	MMF	1-1	≤1.5W	850nm	0 to 70ºC
SFP+ SR Optic, 10GbE	SFP-10G-SR	26 m (FDDI grade) 33m (OM1) 82m(OM2) 300m(OM3) 400m(OM4) “	802.3ae	SFP+	Duplex LC	MMF	1-1	≤1.5W	850nm	0 to 70ºC
SFP+ SR Optic, 10GbE (12 pack)	Pack of 12 SFP-10G-SR	26 m (FDDI grade) 33m (OM1) 82m(OM2) 300m(OM3) 400m(OM4)	802.3ae	SFP+	Duplex LC	MMF	1-1	≤1.0W	850nm	0 to 70ºC
SFP+ LR Optic, 10GbE	SFP-10G-LR	10 km	802.3ae	SFP+	Duplex LC	SMF	1-1	≤1.0W	1310nm	-5 to 70ºC
SFP+ LRM Optic, 10GbE	SFP-10G-LRM	220m (FDDI grade, OM1, OM2, OM3, OM4)	802.3ae	SFP+	Duplex LC	MMF	1-1	≤1.5W	1310nm	0 to 70ºC
SFP+ ER Optic, 10GbE	SFP-10G-ER	40km	802.3ae	SFP+	Duplex LC	SMF	1-1	≤1.5W	1550nm	0 to 70ºC
SFP+ ZR Optic, 10GbE	SFP-10G-ZR	80km	802.3a	SFP+	Duplex LC	SMF	1-1	≤1.5W	1550nm	0 to 70ºC
SFP+ ZR DWDM Optic, 10GbE	Range SFP-10G-W1 to SFP-10G-W61	80km	N/A	SFP+	Duplex LC	SMF	1-1	≤1.5W	C Band, 100 GHz	0 to 70ºC
FC SFP+ SW Optic, 2/4/8Gb	SFP-8GFC-SW	150m on OM3 LC multimode fiber		SFP+	Duplex LC	MMF	1-1	≤1.5W	850nm	0 to 70ºC
FC SFP+ LW Optic, 2/4/8Gb	SFP-8GFC-LW	4km		SFP+	Duplex LC	SMF	1-1	≤1.5W	1310nm	0 to 70ºC

DELL EMC TRANSCEIVERS

Product	Model	Max. distance	IEEE Standard	MSA	Receptacle	Fiber	Mode	Power	Wavelength	Temp.
40G optics										
QSFP+ SR Optic, 40GbE	QSFP-40G-SR4	40GbE Short reach (SR) QSFP optic (LC) for up to 150m over MMF	802.3ba	QSFP+	MPO	MMF	1-1 or 1-4 PSM4	≤1.5W	850nm	0 to 70ºC
QSFP+ ESR Optic, 40GbE	QSFP-40G-ESR4	40GbE ESR QSFP optic (LC) for up to 400m over MMF	802.3ba	QSFP+	MPO	MMF	1-1	≤1.5W	850nm	0 to 70ºC
QSFP+ LR4 Optic, 40GbE	QSFP-40G-LR4	40GbE LR QSFP optic (LC) for up to 10km over SMF	802.3ba	QSFP+	Duplex LC	SMF	1-1	≤1.5W	CWDM 1310-bands	0 to 70ºC
QSFP+ PSM4 pigtail	QSFP-40G-PSM-1M QSFP-40G-PSM-5M QSFP-40G-PSM-15M	40GbE PSM, 5M or 15M QSFP optic (MPO) for up to 2km over SMF	Proprietary	QSFP+	Duplex MPO	parallel SMF	1-1	≤3.5W	1490mn	0 to 70ºC
QSFP+ PSM4 LR Optic	QSFP-40G-PSM4-LR	40GbE PSM LR QSFP optic (LC) for up to 10km over SMF	40G Proprietary 4x10G 802.3ae	QSFP+	MPO	parallel SMF	1-4	≤3.5W	1310nm	0 to 70ºC
QSFP+ LM4 Optic, 40GbE	QSFP-40G-LM4	40GbE LM QSFP optic (LC) for up to 150m over MMF	Proprietary	QSFP+	Duplex LC	MMF	1-1	≤3.5W	CWDM 1310	0 to 70ºC
QSFP+ LM4 UNIV	QSFP-40G-LM4-UNIV	40GbE LM QSFP optic (LC) for up to 160m over MMF or 1Km over SMF	Proprietary	QSFP+	Duplex LC	MMF or SMF	1-1	≤3.5W	CWDM 1310	0 to 70ºC
QSFP+ SM4 Optic	QSFP-40G-SM4	40GbE SM QSFP Optic (LC) for up to 150m over MMF	Proprietary	QSFP+	Duplex LC	MMF	1-1	≤2.0W	SWDM 850nm	0 to 70ºC
QSFP+ to SFP+ Adapter	QSA-QSFP-SFP+	40GbE SFP optic (LC) for varying distance over MMF/SMF	SFP Dependent Standard	QSFP+	Duplex LC	corresponds to SFP or SFP+ module inserted	corresponds to SFP/SFP+ transceiver used	Module Dependent	N/A	0 to 70ºC
100G optics										
QSFP-100G-CWDM4	QSFP-100G-CWDM4	100GbE Long reach (LR) CWDM4 QSFP optic (LC) for up to 3km over SMF	802.3ba	QSFP28	LC	SMF	1-4	<= 3.5W	1310nm	0 to 70C
QSFP-100G-SWDM4*	QSFP-100G-SWDM4	100GbE Short reach (SR) SWDM4 QSFP optic (LC) for up to 100m over MMF	802.3ba	QSFP28	LC	MMF	1-1	<= 3.5W	1310nm	0 to 70C
QSFP-100G-SR4	QSFP-100G-SR4	100GbE Short reach (SR) QSFP optic (LC) for up to 100m over MMF	802.3bm	QSFP28	MPO	MMF	1-1 or 1-4	≤3.5W	850nm	0 to 70ºC
QSFP-100G-LR4	QSFP-100G-LR4	100GbE LR QSFP optic (LC) for up to 10km over SMF	802.3ba	QSFP28	LC	SMF	1-1	≤4.5W	1310nm	0 to 70ºC
QSFP-100G-LR4Lite	QSFP-100G-LR4Lite	100GbE LR4Lite QSFP optic (LC) for up to 2km over SMF	802.3ba	QSFP28	LC	SMF	1-1	≤4.5W	1310nm	0 to 70ºC
QSFP-100G-PSM-5m pigtail*	QSFP-100G-PSM-5m	100GbE PSM, 5M QSFP optic (MPO) for ≤500m over SMF	PSM4 MSA	QSFP28	MPO	Parallel SMF	1-4	≤3.5W	1310nm	0 to 70ºC
QSFP-100G-PSM-IR*	QSFP-100GPSM-IR	100GbE PSM, 5M QSFP optic (MPO) for ≤500m over SMF	PSM4 MSA	QSFP28	MPO	Parallel SMF	1-4	≤3.5W	1310nm	0 to 70ºC
CXP-100G-SR10	CXP-100G-SR10	100GbE SR CXP optic for up to 150m over MMF	802.3ba	CXP	MPO	MMF	1-1	≤3.5W	850nm	0 to 70ºC

DELL EMC

* Future release

DELL EMC TRANSCEIVERS

Product	Model	Max. distance	IEEE Standard	MSA	Receptacle	Fiber	Mode	Power	Wavelength	Temp.
Straight DAC/AOC options										
SFP+ DAC 10GbE	DAC-SFP-10G-0.5M DAC-SFP-10G-1M DAC-SFP-10G-3M DAC-SFP-10G-5M DAC-SFP-10G-7M	0.5M to 7M	N/A	SFP+	N/A	Copper	1-1	mW	N/A	0 to 70ºC
SFP+ AOC 10GbE	AOC-SFP-10G-2M AOC-SFP-10G-3M AOC-SFP-10G-5M AOC-SFP-10G-10M AOC-SFP-10G-15M AOC-SFP-10G-20M	2M to 20M	N/A	SFP+	N/A	Fiber	1-1	≤1.5W	N/A	0 to 70ºC
QSFP+ DAC 40GbE	DAC-QSFP-40G-0.5M DAC-QSFP-40G-1M DAC-QSFP-40G-2M DAC-QSFP-40G-3M DAC-QSFP-40G-5M DAC-QSFP-40G-7M	0.5M to 7M	N/A	QSFP+	N/A	Copper	1-1	≤1.5W	N/A	0 to 70ºC
QSFP+ AOC 40GbE	AOC-QSFP-40G-7M AOC-QSFP-40G-10M AOC-QSFP-40G-50M	7M to 50M	N/A	QSFP+	N/A	Fiber	1-1	≤1.5W	N/A	0 to 70ºC
QSF28 DAC 100GbE	DAC-Q28-100G-1M DAC-Q28-100G-2M DAC-Q28-100G-3M DAC-Q28-100G-5M	1M to 5M	N/A	QSFP28	N/A	Copper	1-1	≤1.5W	N/A	0 to 70ºC
QSFP28 AOC 100G	AOC-Q28-100G-7M AOC-Q28-100G-10M AOC-Q28-100G-30M AOC-Q28-100G-50M	7M to 50M	N/A	QSFP28	N/A	Fiber	101	≤1.5W	N/A	0 to 70ºC
Breakout cables										
QSFP+ DAC 40GbE Breakout 4xSFP+	DAC-QSFP-4SFP-10G-0.5M DAC-QSFP-4SFP-10G-1M DAC-QSFP-4SFP-10G-3M DAC-QSFP-4SFP-10G-5M DAC-QSFP-4SFP-10G-7M	0.5M to 7M	N/A	QSFP+ to SFP+	N/A	Copper	1-4	<=1.5W	N/A	0 to 70C
QSFP+ AOC 40GbE Breakout 4xSFP+	DAC-QSFP-4SFP-10G-10M DAC-QSFP-4SFP-10G-30M	10M to 30M	N/A	QSFP+ to SFP+	N/A	Fiber	1-4	<=1.5W	N/A	0 to 70C
QSFP+ DAC break-out 4xRJ45	DAC-QSFP-4RJ45-1G-1M	1M	N/A	QSFP+ to RJ45	N/A	Copper	1-4	<=1.5W	N/A	0 to 70C
QSFP28 DAC 100GbE Breakout 2x50QSFP	DAC-Q28-4SFP28-50G-1M DAC-Q28-4SFP28-50G-2M DAC-Q28-4SFP28-50G-3M	1M to 3M	N/A	QSFP28 to QSFP	N/A	Copper	1-2	<=1.5W	N/A	0 to 70C
QSFP28 DAC 100GbE Breakout 4x25SFP28	DAC-Q28-4SFP28-25G-1M DAC-Q28-4SFP28-25G-2M DAC-Q28-4SFP28-25G-3M	1M to 3M	N/A	QSFP28 to SFP28	N/A	Copper	1-4	<=1.5W	N/A	0 to 70C

WDM TRANSCEIVERS

Product	Ethernet standard	Connector type	Max distance	Output wavelength (nm)	Rx input wavelength (nm)	Tx output max/min (dBm)	Rx input max/min (dBm)
SFP+ DWDM Optic, 10GbE (Corresponds to both fixed and tunable wavelengths)	G.709, 10GBASE-R	LC	40km (engineered SMF link)	1528.77–1563.86 (see channel grid below)	1265–1610	4.0/0.0	(n)/-1.0

ITU G.694.1 Channel Number	Model	Output wavelength Max: +0.1nm, Min: -0.1nm
SFP+ DWDM		
17	SFP-10G-W17	1563.86
18	SFP-10G-W18	1563.05
19	SFP-10G-W19	1562.23
20	SFP-10G-W20	1561.42
21	SFP-10G-W21	1560.61
22	SFP-10G-W22	1559.79
23	SFP-10G-W23	1558.98
24	SFP-10G-W24	1558.17
25	SFP-10G-W25	1557.36
26	SFP-10G-W26	1556.55
27	SFP-10G-W27	1555.75
28	SFP-10G-W28	1554.94
29	SFP-10G-W29	1554.13
30	SFP-10G-W30	1553.33
31	SFP-10G-W31	1552.52
32	SFP-10G-W32	1551.72
33	SFP-10G-W33	1550.92
34	SFP-10G-W34	1550.12
35	SFP-10G-W35	1549.32
36	SFP-10G-W36	1548.51
37	SFP-10G-W37	1547.72
38	SFP-10G-W38	1546.92

ITU G.694.1 Channel Number	Model	Output wavelength Max: +0.1nm, Min: -0.1nm
39	SFP-10G-W39	1546.12
40	SFP-10G-W40	1545.32
41	SFP-10G-W41	1544.53
42	SFP-10G-W42	1543.73
43	SFP-10G-W43	1542.94
44	SFP-10G-W44	1542.14
45	SFP-10G-W45	1541.35
46	SFP-10G-W46	1540.56
47	SFP-10G-W47	1539.77
48	SFP-10G-W48	1538.98
49	SFP-10G-W49	1538.19
50	SFP-10G-W50	1537.4
51	SFP-10G-W51	1536.61
52	SFP-10G-W52	1535.82
53	SFP-10G-W53	1535.04
54	SFP-10G-W54	1534.25
55	SFP-10G-W55	1533.47
56	SFP-10G-W56	1532.68
57	SFP-10G-W57	1531.9
58	SFP-10G-W58	1531.12
59	SFP-10G-W59	1530.33
60	SFP-10G-W60	1529.55
61	SFP-10G-W61	1528.77

PRODUCT SUPPORT - SFP

Product	SFP (1 Gb/s)	SFP+ (10 Gb/s)	SFP28 (25 Gb/s)
Transceivers			
SMF	ZX (80km) BX80 (80km)* BX40 (40km)* LX (10km) 100MbE-FX (2km) BX10 (10km)*	ZR (80km) Tunable DWDM (80km)* ER (40km) BX40 (40km)* LR (20km) BX10 (10km)*	LR (2 or 10km)*
MMF	SX (550m)	SR (400m) LRM (220m) USR (100m)	SR (100m)* SRlite (tbd)*
RJ-45 TP	BASE-T (100m)	BASE-T (30m, tbd)*	
Cables			
AOC		AOC (2 to 20m)*	AOC (tbd)*
DAC		CR (0.5 to 7m)	CR (1 to 3m)*

*Future release

PRODUCT SUPPORT

10G optics	SFP-10G-USR	SFP-10G-SR	SFP-10G-SR-12	SFP-10G-LR	SFP-10G-LRM	SFP-10G-ER	SFP-10G-ZR	SFP-10G-W17 through SFP-10G-W61	Tunable-DWDM
Z9500		✓	✓	✓		✓	✓		✓
Z9100	✓	✓	✓	✓		✓	✓		✓
Z9000									
S6100	✓	✓	✓	✓		✓	✓		
S6000 / S6000-ON		✓	✓	✓		✓	✓		✓
S5000		✓	✓	✓		✓	✓		✓
S4820T									
S4810 / S4810-ON		✓	✓	✓	✓	✓	✓	✓	✓
S4048 / S4048-ON		✓	✓	✓		✓	✓	✓	✓
8100 / N4000	✓	✓	✓	✓	✓	✓	✓		
X4012	✓	✓	✓	✓		✓	✓		
S60		✓	✓	✓	✓	✓			
S55		✓	✓	✓	✓	✓			
N20XX / N30XX	✓	✓	✓	✓	✓	✓	✓		
S3048-ON		✓	✓	✓		✓		✓	✓
35XX	Not applicable								
28XX	Not applicable								
X10XX	Not applicable								
X1052	✓	✓	✓	✓		✓			
MXL & IO Agg		✓		✓	✓	✓	✓		✓
VRTX IOA & MXL		✓		✓	✓	✓			✓
FN IOM pass-through		✓	✓	✓	✓				✓
M8024-K		✓		✓	✓				
M6220		✓		✓	✓				
M6348		✓		✓	✓				
10Gb Pass-thru-K		✓		✓					
M8428-K	Not applicable								
C-Series 48pt 1000Base-T Line Card	Not applicable								
C-Series 48pt 1000Base-T PoE Line	Not applicable								
C-Series 48pt 1Gb SFP Line Card	Not applicable								
C-Series 36pt 1000BASE-T (and PoE) Comb Line Card: 2 10Gb SFP+ ports		✓		✓		✓			
C-Series 36pt 1000BASE-T (and PoE) Comb Line Card: 8pt 1Gb SFP	Not applicable								
C-Series 4 pt 10Gb XFP Line Card	Not applicable								
C-Series 8 pt 10Gb XFP Line Card	Not applicable								
C-Series 8 pt 10Gb SFP+ Line Card		✓	✓	✓	✓	✓	✓		
C-Series Line Card QSFP+ ports	Not applicable								
C9010		✓	✓	✓		✓	✓	✓	✓

PRODUCT SUPPORT

	40G optics	QSFP-40G-SR4	QSFP-40G-ESR4	QSFP-40G-PSM-1M	QSFP-40G-5M	QSFP-40G-15M	QSFP-40G-LR4	QSFP-40G-PSM4-LR	QSFP-40G-LM4	QSA-QSFP-SFP+	40G-SM4
10GbE TOR switches	Z9500	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Z9100	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Z9000	✓	✓	✓	✓	✓	✓				
	S6100	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	S6000 / S6000-ON	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	S5000	✓	✓				✓	✓	✓	✓	✓
	S4820T	✓	✓	✓	✓	✓	✓				✓
	S4810 / S4810-ON	✓	✓	✓	✓	✓	✓	✓	✓		✓
	S4048 / S4048-ON	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	8100 / N4000	✓	✓	✓	✓	✓	✓				
	X4012	Not applicable									
1GbE TOR	S60, S55, N20XX / N30XX, S3048 / S3048-ON, 35XX, 28XX, X10XX,, X1052	Not applicable									
M100e, VRTX and FN blade switches	MXL & IO Agg	✓	Not applicable								✓
	VRTX IOA & MXL	✓	Not applicable								
	FN IOM pass-through	Not applicable									
	M8024-K	✓	Not applicable								
	M6220	N/A	Not applicable								
	M6348	N/A	Not applicable								
	10Gb Pass-thru-K	N/A	Not applicable								
	M8428-K	N/A	Not applicable								
C-Serees Line Cards	C-Series 48pt 1000Base-T Line Card	N/A	Not applicable								
	C-Series 48pt 1000Base-T PoE Line	N/A	Not applicable								
	C-Series 48pt 1Gb SFP Line Card	N/A	Not applicable								
	C-Series 36pt 1000BASE-T (and PoE) Comb Line Card: 2 10Gb SFP+ ports	N/A	Not applicable								
	C-Series 36pt 1000BASE-T (and PoE) Comb Line Card: 8pt 1Gb SFP	N/A	Not applicable								
	C-Series 4 pt 10Gb XFP Line Card	N/A	Not applicable								
	C-Series 8 pt 10Gb XFP Line Card	N/A	Not applicable								
	C-Series 8 pt 10Gb SFP+ Line Card	N/A	Not applicable								
	C-Series Line Card QSFP+ ports	✓	✓	✓	✓	✓					
	C9010	✓	✓	✓	✓	✓	✓	✓	✓		✓

100G optics	QSFP28-100G-SR4	QSFP28-100G-LR4	Q28-100G-LR4-LITE	Q28-100G-PSM4-5M	Q28-100G-PSM4-IR	CXP-100G-SR10	Q28-100G-CWDM4	Q28-100G-SWDM4
Z9100	✓	✓	✓	✓	✓		✓	✓
S6100	✓	✓	✓	✓	✓	✓	✓	✓

25G Optics	SFP28 -25G-SR*	SFP28-25G-LR*
Z9100	✓	✓
S6100	✓	✓

*Future Release

ORDERING INFORMATION

Part number	Description
1G optics	
SFP-1G-SX	550 over OM2, 220 over OM1 multimode fiber
SFP-1G-LX	10km over single-mode fiber
SFP-100M-FX	2km over OM1 or OM2 multimode fiber
SFP-1G-ZX	80km over single-mode fiber
SFP-1G-T	100m over Cat5/6 Ethernet cabling
10G optics	
SFP-10G-USR	10GbE Ultra-Short reach (USR) SFP+
SFP-10G-SR	10GbE Short reach (SR) SFP+ optic (LC) for up to 400m over MMF
SFP-10G-LR	10GbE Long reach (LR) SFP+ optic (LC) for up to 10km over SMF
SFP-10G-LRM	10GbE Long reach (LRM) SFP+ optic (LC) for up to 220m over FDDI grade, OM1, OM2, OM3, OM4 MMF
SFP-10G-ER	10GbE ER SFP+ Optic (LC) for up to 40 km over SMF
SFP-10G-ZR	10GbE ZR SFP+ Optic (LC) for up to 80 km over SMF
SFP-10G-T-DWDM	10GbE Long reach SFP+ optic (LC) CLI set wavelength for up to 80km over SMF
SFP-8GFC-SW	150m on OM3 LC multimode fiber
SFP-8GFC-LW	4km
40G optics	
QSFP-40G-SR4	40GbE Short reach (SR) QSFP optic (MPO) for up to 150m over MMF
QSFP-40G-ESR4	40GbE ESR QSFP optic (MPO) for up to 400m over MMF
QSFP-40G-PSM-1M QSFP-40G-PSM-5M QSFP-40G-PSM-15M	40GbE PSM, 5M or 15M QSFP optic (LC) for up to 2km over SMF
QSFP-40G-LR4	40GbE LR QSFP optic (LC) for up to 10km over SMF
QSFP-40G-ER4	40GbE ER QSFP optic (LC) for up to 40km over SMF
QSFP-40G-PSM4-LR	40GbE PSM LR QSFP optic (MPO) for up to 10km over SMF
QSFP-40G-LM4	40GbE LM QSFP optic (LC) for up to 150m over MMF
QSA-QSFP-SFP+	40GbE QSFP+ to SFP adapter. Distance will match the SFP+/SFP plugged in
100G optics	
Q28-100G-SR4	100GbE, Short reach (SR4) QSFP28 optic (MPO) for up to 150m
Q28-100G-LR4	100GbE, Long reach (SR4) QSFP28 optic (LC) for up to 10km
Q28-100G-LR4-LITE	100GbE, Long reach (SR4) QSFP28 optic (LC) for up to 2km
Q28-MTP-PSM4-5M	100GbE PSM, 5M QSFP28 optic (MPO) for up to 2km over SMF
Q28-100G-PSM4-IR	100GbE, PSM, Medium reach, QSFP28 optic (MPO) for up to 500m
Q28-100G-CWDM4	100GbE, Long reach QSFP28 optic (MPO) for up to 2km
Q28-100G-SWDM4	100GbE, Short reach QSFP28 optic Duplex) (LC) for up to 100m
Accessories	
SFP+ DAC	SFP+ Direct Attach Cable (Twinax). Available in 1, 2, 3, 5, 7m.
QSFP+ DAC	QSFP+ Direct Attach Cable. Available in 1, 3, 5, 7m.
QSFP+ AOC	QSFP+ Active Fiber Direct Attach Cables. Available in 10 and 50m.
QSFP+ to 4xSFP+ DAC	QSFP+ to 4x SFP+ Breakout Direct Attach Cable. Available in 1, 3, 5, 7m.
QSFP+ to 4xSFP+ AOC	QSFP+ to 4x SFP+ Active Fiber Direct Attach Cable. Available in 10, 30m
QSFP28 DAC	QSFP28 Direct Attach Cable. Available in 1,3,5m
QSFP28 AOC	QSFP28 Active Fiber Direct Attach Cables. Available in 7, 10, 30, 50m

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