DELL EMC NETWORKING TRANSCEIVER AND CABLE SOLUTIONS

Network connectivity drivers

Today's networking architects are faced with the challenge of determining the optimal means of connecting switches to the broader IT infrastructure. Some of the key considerations in solving connectivity problems are reach, power, CAPEX, and OPEX. The existing cable infrastructure can also dictate how a switch needs to be connected. In addition, with the age of multi-rate speed options, the number of feasible solutions has grown substantially. Dell EMC Networking offers a wide range of solutions to support each of the possible scenarios our customers may encounter.

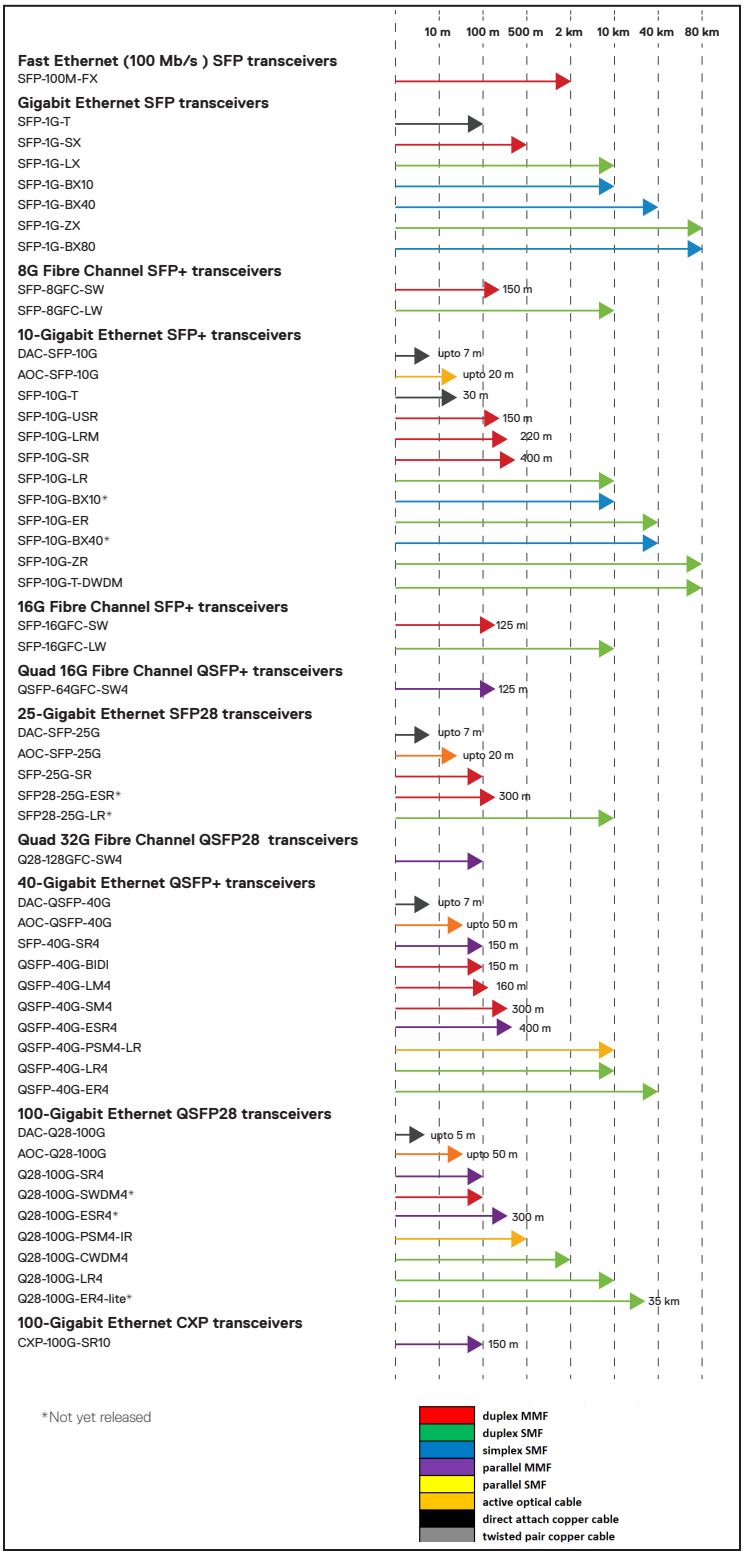
How does Dell EMC deliver?

- **Cable and optic diversity**
  Delivering both copper and fiber, point-to-point and breakout, 1GbE to 100GbE, the Dell EMC portfolio stands as a ready reference to satisfy the diverse needs each customer demands.
- **Unparalleled quality**
  Dell EMC requires each transceiver and cable to qualify under a diverse set of test conditions before it can receive the Dell EMC logo. An exceptional amount of time and effort is poured into each solution to guarantee its quality and reliability. The qualification process is among the most extensive in the industry.
- **Customer satisfaction**
  Dell EMC is in the optics business for the long term. Customer satisfaction due to reliability and consistency is our quality benchmark.
- **Passionate focus**
  Exceptional effort is applied to make certain each optic and cable is ready for prime time before it is released. Dell EMC is passionate about providing industry-leading standards of excellence.

Fiber connectivity concerns

With a variety of fibers already deployed, it is important to understand the interoperability of new optics with existing fibers. Multimode fibers are graded as OM1, OM2, OM3 and OM4. Higher number grade fibers will support transmission over longer distances.

Generally, upgrading to higher data rates either shortens the usable fiber length or increases the number of parallel fiber lanes. Increasing the number of parallel fiber lanes can require installation of either 12- or 24-fiber multi-fiber cabling. Through the use of wavelength division multiplexing (WDM), Dell EMC's 40G/100G duplex solutions put 4 separate laser wavelengths onto a single fiber increasing the number of parallel data lanes without increasing fiber count. Dell EMC provides fiber-saving WDM 40G/100G transceivers for both MMF and SMF applications.



Key MSAs in the industry

	SFP (1G) A 1GbE transceiver utilizing either fiber or copper media to achieve 1GbE communication in each direction
	SFP+ (10G) a 10GbE transceiver utilizing either fiber or copper media to achieve 10GbE communication in each direction
	QSFP+ (40G) a 4x10GbE transceiver utilizing either fiber or copper media to achieve 40GbE communication in each direction. This transceiver has 4 individual 10GbE lanes which can be used together to achieve 40GbE throughput or separately as 4 individual 10GbE connections (using 4 SFP+ modules).
	QSFP28 (100G - 2x50G) with a fully populated QSFP28 end and two de-populated QSFP28 ends, each with 2x25GbE lanes. This product is only available as DAC cables.
	QSFP28 (100G) transceiver utilizing either fiber or copper media to achieve 100GbE communication in each direction. This transceiver has 4 individual 25GbE lanes which can be used together to achieve 100GbE throughput or separately as 4 individual 25GbE connections (using 4 SFP28 modules).
	CXP (100G) transceiver utilizing fiber cable to achieve 100GbE communication in each direction. It requires a 24 fiber MPO terminated fiber cable to connect to similar transceivers in CXP or CFP form-factor.

Service, support and warranty

Dell EMC approved optics are covered by Dell EMC warranty and support options. However, there are limitations and different terms based on the type of warranty. Please find more detail here: http://www.dell.com/learn/us/en/19/campaigns/lifetime-warranty. Typically, the warranty support on the Dell EMC-approved optic aligns with the hardware warranty; Dell EMC-approved optics are covered as long as the original customer owns the product. Dell EMC-approved optics are covered under the same terms and conditions as the ProSupport contract (for example, if a customer purchases a 3 year NBD ProSupport contract, then that approved optic will also be covered NBD for 3 years).

Additional information

- Transceivers and Cables Spec Sheet
- Optics Guide

Transceiver summary

Transceivers plug into a mechanical cage of the appropriate MSA size and form.

1G SFP – 1000BaseT, SX, LX, ZX, BX, FX	10G SFP+ – 10GBaseT, SR, LR, Tunable DWDM USR, BX, ZR, ER	40G QSFP+ - SR4, ESR4, LM4, SM4, LR4, PSM4-LR, ER4	100G QSFP28 – SR4, LR4, CWDM4, PSM4: CXP – SR10, SWDM4, ESR, ER4-lite

AOC cable summary

AOC cables consist of a single unit of a fully integrated pair of transceivers connected by high-grade fiber. Length limits are similar to MMF connections.

10G AOC of varying lengths in SFP+ to SFP+	40G AOC of varying lengths in QSFP+ to QSFP+ as well as QSFP+ to 4xSFP+. The breakout AOC can also be used as 1G.	100G AOC of varying lengths in QSFP28 to QSFP28

DAC cable summary

DAC cables consist of a single unit of a fully integrated pair of passive modules connected by twinax copper cable. Length limits vary by data rate. These cables are typically deployed for within rack or adjacent rack connections.

10G DAC of varying lengths in SFP+ to SFP+ – can also be used as 1G	40G DAC of varying lengths in QSFP+ to QSFP+ as well as QSFP+ to 4xSFP+	100G DAC of varying lengths in QSFP28 to QSFP28, QSFP28 to 4xSFP28, and QSFP28 to 2 x de-populated QSFP28
		

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