

XR Optics Frequently Asked Questions

What is XR optics?

XR optics represents a new class of pluggable solutions that allow a single laser to be divided into independently routable data streams using Nyquist subcarriers, providing the industry's first point-to-multipoint coherent optical subcarrier aggregation technology optimized for hub-and-spoke traffic patterns. This enables network operators to design more efficient, flexible, and cost-effective transport networks optimized for the applications driving network growth.

Why is this technology innovation called XR?

First, let's start with the R. Many, if not all, pluggables have an R in them, which originally stood for reach – these include SR, LR, IR, and so on. As XR optics is a pluggable form factor, it follows the same nomenclature. Meanwhile, X is universally known as the letter that signifies a variable. It reflects a key capability of the technology: XR optics is not limited to a fixed bit rate. XR optics-based transceivers can be designed to support a variable number of subcarriers from a single subcarrier to numerous.

How is XR optics different from conventional optical technology?

All optical networks today are fundamentally built using a series of bookended point-to-point optical links. In many networks, particularly metro networks, traffic flow is typically point to multipoint, with connectivity between a set of lower-capacity sites and a smaller number of higher-capacity hub sites. XR optics technology is designed specifically to address this asymmetry.

How does XR optics reduce network costs?

Leveraging innovation in coherent optical subcarrier aggregation, XR optics makes it simple to optically aggregate the traffic from multiple lower-capacity XR optics modules at the coherent edge into a single, higher-speed XR optics module at the hub. This both reduces the number of optical modules in the network by almost 50% and can eliminate the need for expensive intermediate aggregation devices.

With dramatically fewer transceivers, elimination of intermediate aggregation devices, and enabling the use of higher speed and more efficient interfaces at hub locations, XR optics provides significant capital and operational savings via reduced equipment, less space, lower power, and seamless upgrades.

How will XR Optics be made available in the market?

Pioneered by Infinera, XR optics has broad-based applications and will be facilitated by an ecosystem of partners to ensure a multi-source supply model at the module level. XR optics is designed to be used in a wide variety of networking platforms, such as IP routers, Ethernet switches, and optical transport platforms (OTN/WDM), enabling a new generation of devices optimized for higher density and lower power consumption. More

information on industry partnerships and productization timelines will be made available soon.

How does XR optics compare with and work with ZR optics?

XR optics and ZR optics technologies are fundamentally different. XR optics allows operators to deploy point-to-multipoint networks using a single optical device. ZR optics provides a short-reach point-to-point optical solution. While XR optics can be used for point-to-point applications and will provide advantages in reach and capacity when compared to ZR, it is optimized for point-to-multipoint applications and hub-and-spoke traffic patterns.

The place where XR and ZR optics have commonality is in the formfactor for 400G interfaces. Both XR and ZR will likely be offered in QSFP-DD and OSFP form factors. Hence any device that is capable of support a 400G ZR transceiver for short reach point-to-point applications will also be able to use an XR optics based transceiver in that same 400G port for either aggregation applications or longer reach point-to-point applications.

How do I learn more about XR optics?

[Contact Infinera](#) for additional information.