

10 Gigabit Ethernet Pluggable Optics

At-A-Glance

All you need to know about XENPAK, X2, and XFP transceivers on Cisco routing and switching products.

Why Should I Care About 10 Gigabit Ethernet Pluggable Optics?

To deploy 10 Gigabit Ethernet (GE) applications across Cisco® switching and routing platforms, a system engineer faces a wide range of options in terms of port types for various reaches and media as well as transceiver technologies across Cisco switches and routers. This quick guide helps you navigate your way through GE technologies on Cisco switches and routers.

Figure 1. Cisco XFP, X2, and XENPAK Transceivers (left to right)



10 GE Port Types

To accommodate an ever-growing spectrum of 10 GE applications, Cisco Systems® currently supports eight different port types where each technology is cost-optimized for the reach and transmission media demanded by particular 10 GE applications.

Cisco provides three types of hot-pluggable transceivers for 10 GE applications: XENPAK, X2, and XFP. These will interoperate as long as they support the same port type.

Copper	Reach (m)	Cisco Port Type (IEEE 802.3ak std)
Infiniband Copper	Up to 15 m	10GBASE-CX4

Multimode Fiber ¹	Reach (m)	Cisco Port Type (IEEE 802.3ae std)
62	Up to 33 m	10GBASE-SR
62	Up to 300 m	10BASE-LX4
50	66 to 300 m	10GBASE-SR
50	240 to 300 m	10BASE-LX4

¹ Refer to Cisco data sheets for details on the reach available on each fiber type: <http://www.cisco.com/en/US/products/ps6574/index.html>

Single-Mode Fiber	Reach (km) ²	Cisco Port Type (IEEE 802.3ae std)
ITU-T G.652	10	10GBASE-LR
ITU-T G.652	10	10BASE-LW
ITU-T G.652	40	10GBASE-ER
ITU-T G.652	80	10GBASE-ZR
ITU-T G.652	200	10GBASE-DWDM

² Actual distance will vary depending on the fiber plant characteristics.

Pluggable Optics for 10 GE Applications

The following table shows the most relevant differences among the three transceiver types.

Feature	XENPAK	X2	XFP
Port Types Today	All	No LW/ZR/DWDM	No LX4/CX4/ZR/DWDM
Size (cm)	126 x 36 x 17	100 x 36 x 12	78 x 18 x 10
Connector	SC	SC	LC

10 GE Pluggable Platform Support

The following table summarizes at a high level which platforms support which pluggable optics. For additional details refer to the hardware and software compatibility matrix posted on Cisco.com: http://www.cisco.com/univercd/cc/td/doc/product/gbic_sfp/10gbxcvr/ol_6974.pdf

Platform	XENPAK	X2	XFP
Cisco Catalyst® 6500 Series, Cisco 7600 Series	Today	2006	–
Cisco 4500 Series	–	Today	–
Cisco CRS-1	Today	–	–
Cisco Shared Port Adapter (SPA) Routers	–	–	Today
Cisco Catalyst 3750 Series	Today	–	–

What are The Benefits of Cisco 10 GE Pluggable Optics?

Cisco XENPAK, X2, and XFP transceivers are designed and built according to Cisco specifications and are compatible with industry standards known as Multi-Source Agreements (MSAs). Cisco transceivers are designed and tested to provide complete hardware integration with Cisco platforms. Cisco pluggable optics, by undergoing a thorough and extensive qualification process, are certified according to industry-leading standards on quality.