

Cisco 10GBASE-T Solutions for Data Center

Customer Questions

Q. What is 10 Gigabit Ethernet?

A. The 10 Gigabit Ethernet standard was first published in 2002 as IEEE Standard 802.3ae-2002 and is the fastest of the Ethernet standards. It defines a version of Ethernet with a nominal data rate of 10 Gbps--10 times as fast as Gigabit Ethernet.

Q. Why should IT departments consider migrating to 10 Gigabit Ethernet in the data center?

A. 10 Gigabit Ethernet as a technology category provides the following benefits:

- Accelerates server virtualization
 - Increases server network bandwidth, thereby removing I/O bottlenecks
 - Provides higher virtual machine density per physical server
- Reduces cabling costs
 - Reduces cabling by aggregating server connectivity
 - Consolidates servers into fewer and more powerful servers
- Improves application performance
 - Supports bandwidth-intensive applications including video, data backup, and network storage
 - Supports high-performance computing (HPC) applications
- Enables unified fabric
 - Consolidates LAN and iSCSI storage traffic onto a single Ethernet fabric network

Q. What is 10GBASE-T and what is the motivation for developing the technology?

A. 10GBASE-T, or IEEE 802.3an-2006, is a standard released in 2006 to provide 10 Gbps connections over unshielded or shielded twisted-pair cables, over distances of up to 330 feet (100 meters).

The main objective of 10GBASE-T is to provide a cost-effective and highly scalable 10 Gigabit Ethernet implementation over structured copper cabling infrastructure that is widely used in data centers.

Q. How does 10GBASE-T compare to previous 10 Gigabit Ethernet ?

A. Ethernet (IEEE 802.x) has evolved over the years with several physical connection types for Ethernet. The most common type is copper (Cat3, 4, 5, 6, and 7 cabling is used as the physical medium), but fiber has also been widely used as well as some other less common physical media types such as BNC coax. The most common 10 Gigabit Ethernet adapter until very recently has been optical only.

10GBASE-T (IEEE 802.3an) was approved as a 10 Gigabit Ethernet standard in 2006 by IEEE for copper-based networking deployments. Networking silicon and adapters that follow this specification are designed to communicate over augmented Cat6 (or 6A or 7) copper cabling up to 330 feet (100 meters) long.

10GBASE-T is viewed as a very attractive 10 Gigabit Ethernet implementation because it will work within the most widely used Cat6A- and 7-based infrastructure that is already in place. For this flexibility, 10GBASE-T trades off higher power and higher latency.

Q. Is 10GBASE-T compatible with Gigabit Ethernet ?

A. 10GBASE-T-capable switches can interoperate with endpoints that are capable of negotiating either Gigabit Ethernet or 10 Gigabit Ethernet over structured copper cabling.

Q. What are the target use cases for 10GBASE-T ?

A. The primary use case for 10GBASE-T is high-speed server connectivity. Other less common scenarios use 10GBASE-T for interconnecting distribution or core switches that reside within a 330-foot (100-meter) distance.

Q. What is Cisco's 10GBASE-T solution?

A. The 10GBASE-T solution from Cisco is a holistic joint solution from Cisco, Intel, and Panduit. It consists of Cisco® 10GBASE-T modules, Intel next-generation server adapters, and Panduit 10 Gigabit Ethernet copper cabling systems.

Q. How is the Cisco 10GBASE-T solution implemented?

A. Cisco's 10GBASE-T solution is based on the IEEE 802.3an standard and is deployed similarly to today's Gigabit Ethernet structured copper cabling solutions.

Q. Why is the Cisco 10GBASE-T solution better than other second-generation 10GBASE-T implementations?

A. Besides offering standards-based performance and specifications, the Cisco 10GBASE-T solution provides the industry's broadest data center switching portfolio in all form factors, including fixed and modular, top-of-rack (ToR), and end-of-row (EoR) switches, giving organizations exceptional flexibility and investment protection when migrating to 10 Gigabit Ethernet.

Q. What specific products are being featured as part of the Cisco 10GBASE-T solution?

A. The first solution set will be available on the Cisco Catalyst® 6500 and 4900 Series Switches, targeting organizations that need to preserve their existing investments in Cisco software and hardware. These mainstream organizations can take advantage of 10GBASE-T now by mixing and matching the new 10GBASE-T interface modules with existing Gigabit Ethernet copper and 10 Gigabit Ethernet fiber modules on their Cisco Catalyst 6500 and 4900 Series Switches, without the need for major equipment upgrades. The first solution set will consist of the following products:

- 16-port line card on the Cisco Catalyst 6500 Series platform
- 8-port half-card on the Cisco Catalyst 4900M Switch
- Intel AT2 and X520-T family of 10GBASE-T server adapters
- Panduit TX6A 10Gig Unshielded Twisted Pair (UTP) and Shielded Copper Cabling Systems

The second solution set will be available later in calendar in 2010 on the Cisco Nexus® product family, targeting organizations that require increased 10GBASE-T density.

Q. What are the cabling requirements and associated distances with the Cisco 10GBASE-T solution?

A. The Cisco Catalyst 10GBASE-T solution is optimized to provide 10 Gbps throughput for distances of up to:

- 330 feet (100 meters) over Cat6, 6A, and 7 shielded copper cable and Cat6A UTP copper cable
- 181.5 feet (55 meters) over Cat6 UTP copper cable

Cisco Catalyst 6500 Series 10GBASE-T Questions

Q. What is the 10GBASE-T solution offering on the Cisco Catalyst 6500 Series?

A. Cisco is launching an 16-port 4:1 oversubscribed 10GBASE-T line-card module for the Cisco Catalyst 6500 Series. The line card can be inserted in any of the line-card slots on a Cisco Catalyst 6500 Series Switch. Customers can also mix and match the 10GBASE-T line card with other copper and line cards within the same Cisco Catalyst 6500 Series chassis, providing an easy migration from Gigabit Ethernet to 10 Gigabit Ethernet connectivity.

Q. When will the 10GBASE-T line card be available for ordering on the Cisco Catalyst 6500 Series?

A. The 10GBASE-T line-card module will be available for ordering in the first half of calendar year 2010 (1HCY10).

Q. Can the 10GBASE-T line card on the Cisco Catalyst 6500 Series be connected to Gigabit Ethernet network adapters using auto-negotiation?

A. No, the 10GBASE-T line-card module will not support Gigabit Ethernet. It will support 10 Gigabit Ethernet network adapters only.

Cisco Catalyst 4900M 10GBASE-T Questions

Q. What is the 10GBASE-T solution offering on the Cisco Catalyst 4900M?

A. Cisco is launching an 8-port 2:1 oversubscribed 10GBASE-T half-line-card module for the Cisco Catalyst 4900M Switch. The line card can be inserted in any of the two half-card slots on the Cisco Catalyst 4900M Switch. Customers can also mix and match the 10GBASE-T line card with 4- or 8-port 10 Gigabit Ethernet Fiber line cards or the 20-port Gigabit Ethernet RJ-45 line card.

With an expansive portfolio of Gigabit Ethernet and 10 Gigabit Ethernet copper and fiber line cards, the Cisco Catalyst 4900M offers exceptional flexibility as a top of rack (ToR) data center access switch, enabling an easy transition from Gigabit Ethernet to 10 Gigabit Ethernet while protecting the investment in the Cisco Catalyst 4900M base unit.

Q. When will the 10GBASE-T line card be available for ordering on the Cisco Catalyst 4900M?

A. The 10GBASE-T line card module will be available for ordering in 1st half calendar 2010.

Q. Is the 10GBASE-T line card on the Catalyst 4900M compatible with Gigabit Ethernet?

A. The 10GBASE-T line-card module on the Cisco Catalyst 4900M supports Gigabit Ethernet or 10 Gigabit Ethernet mode for each port group. The eight ports are divided into four port groups, and each port group can be configured to operate in either Gigabit Ethernet or 10 Gigabit Ethernet mode. All ports within the same port group must have the same mode. This allows customers an easy migration path from Gigabit Ethernet to 10 Gigabit Ethernet network connectivity.

Q. What are the common 10GBASE-T deployment scenarios on the Cisco Catalyst 4900M?

A. The 10GBASE-T line card facilitates Gigabit Ethernet to 10 Gigabit Ethernet server access transition while protecting the investment in the base switch. Typical deployment scenarios for the transition are as follows:

- Two 20-port Gigabit Ethernet line cards on the Cisco Catalyst 4900M (40 Gigabit Ethernet server access)
- One 20-port Gigabit Ethernet and one 8-port 10 Gigabit Ethernet (10GBASE-T) line cards on the Cisco Catalyst 4900M (20 Gigabit Ethernet and eight 10 Gigabit Ethernet server access)
- Two 8-port 10 Gigabit Ethernet (10GBASE-T) line cards on the Cisco Catalyst 4900M (sixteen 10 Gigabit Ethernet server access)

The Cisco Catalyst 4900M also offers a mixed 10 Gigabit Ethernet server access deployment with copper and fiber ports with one 8-port 10GBASE-T and one 8-port 10 Gigabit Ethernet fiber (X2) line card.



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