



10GBASE-T Ecosystem

Technology leaders in their respective product systems of server adapters, physical media infrastructure, and switching fabric have joined together to provide an end-to-end 10-Gbps networking system solution. The Cisco, Intel, and Panduit solution offers users a cost-effective, high-performance, and highly available 10 Gigabit Ethernet network.

Cisco 10GBASE-T Solution

The Cisco® 10GBASE-T solution for the Cisco Catalyst® platform is an industry-first 10GBASE-T solution that brings together the market leaders in enterprise switching, network adapters, and structured cabling to deliver high-performance, cost-effective, and efficient next-generation RJ-45-based server connectivity. It is available in both top-of-rack (ToR) and end-of-row (EoR) form factors and is optimized to provide 10 Gbps throughput for distances of up to 330 feet (or 100 meters) over Cat6 shielded twisted pair (STP) and Cat6A or 7 unshielded twisted-pair (UTP) and STP, and up to 181.5 feet (or 55 meters) over Cat6 UTP copper cabling, using the Intel 10 GbE Ethernet Server Adapters and Panduit TX6A 10Gig Copper Cabling System with MaTriX Technology.

Based on the IEEE 802.3an standard, 10GBASE-T is a crucial technology for designing next-generation data center architectures. It is:

- Simple to understand because of the familiar and well-understood RJ-45 cabling
- Simple to procure because of the upcoming introduction of 10GBASE-T on LAN-on-motherboard (LOM) devices
- Simple to deploy because of existing structured cabling infrastructure

The Cisco 10GBASE-T solution provides these main benefits:

- Support for virtualization over 10GBASE-T-enabled servers and storage devices
- Investment protection through use of existing chassis and power supply
- Easy transition path to 10GBASE-T
- Proven and tested ecosystem of leading network interface card (NIC), switching, and cabling vendors

Intel Server Adapters

The Intel Ethernet Server Adapter X520-T2 and Intel 10 Gigabit AT2 Server Adapter deliver easy-to-deploy, high-volume 10 Gigabit Ethernet connectivity over existing copper infrastructure. They include Intel Virtual Machine Device Queues for optimized I/O virtualization, support unified data and storage networking, and provide reliable, consistent performance across a broad range of virtualized and nonvirtualized operating systems. These adapters deliver advantages in cost, power, and server slot savings

compared to use of multiple Gigabit Ethernet adapters. Support for unified networking further increases consolidation savings by eliminating the need for dedicated storage adapters. Backward compatibility with 1000BASE-T infrastructures helps ensure easy deployment and upgrading.

The Intel Ethernet Server Adapter X520-T2 is Intel's third-generation 10GBASE-T adapter and includes new features to support high-volume 10 Gigabit Ethernet:

- Dual-port design for redundancy and greater throughput
- Send and receive offloads to accelerate Small Computer System Interface over IP (iSCSI) traffic, and optimizations for multicore processors to improve efficiency
- Intel Virtualization Technology for Connectivity; virtual machine device queues and single-root I/O virtualization (SR-IOV) support boost throughput and reduce latency to improve overall system performance
- PCI Express Generation 2-compliance for dual-port, line-rate 10 Gigabit Ethernet throughput

Panduit Copper Cabling Technology

Panduit TX6A 10Gig UTP Copper Cabling System offers an innovative cable design and advanced connector compensation techniques to reduce cable size without compromising internal and alien crosstalk performance. Panduit TX6A 10GIG UTP Copper Cabling Systems are available in 100m and now in new SD 70m versions. The new TX6A-SD version offers a very small cable diameter of 0.24 inch, which is sized similarly to Cat6 cable and allows reuse of existing pathways and cable managers, optimizing cost-effective 10 Gigabit Ethernet deployments in data centers.

Key benefits of the advanced next-generation UTP cabling system include:

- **Risk mitigation:** Advanced connectivity and cable design provides significant headroom over the Cat6A and Class Ea standards, eliminating the need to field test for alien crosstalk.
- **Agility and flexibility:** Scalable and modular system provides a clear migration path to meet next-generation application demands. A wide range of data center architectures and applications (long and short channels) are supported, and bundling and comingling of other copper category cables is allowed.
- **Reduced capital expenditures (CapEx):** Space utilization is increased through high-density physical infrastructure solutions combined with leading data center reference architectures. QuickNet pre-terminated solutions are also available, reducing installation time by up to 75%.



- **Reduced operating expenses (OpEx):** Energy efficiency is improved through better airflow management due to smaller, effectively shaped cabling.

Cisco Catalyst Switch Modules

The ToR form factor offers modular 8-port half-cards on a Cisco Catalyst 4900M Switch.

The EoR form factor offers modular 16-port line cards on a Cisco Catalyst 6500 Series Switch.

For More Information

- Visit <http://www.cisco.com/go/6500> for more information about Cisco Catalyst 6500 10GBASE-T line cards.
- Visit <http://www.cisco.com/go/4900> for more information about Cisco Catalyst 4900M 10GBASE-T line cards.
- Visit <http://www.cisco.com/go/intel> and <http://www.intel.com/go/ethernet> for more information about Intel 10GBASE-T adapters.
- Visit <http://www.cisco.com/go/panduit> for more information about Panduit 10GBASE-T cabling technology.

