

Cisco Support for IEEE 802.3 25- and 50-Gbps Ethernet Group

Over the last two decades, Cisco has made significant contributions to networking industry standards. As an active member of more than 70 world standards bodies and forums, Cisco recognizes that our customers and the industry as a whole achieve greater success through standards that are developed with contributions from partners, customers, and competitors working together.

Data Center Trends Influencing the Need for 25- and 50-Gbps Speeds

Cisco's contributions in the IEEE standards body have helped create numerous Ethernet link-speed standards, ranging from Fast Ethernet (100 Mbps) to 100-Gbps Ethernet. These standards have provided an incremental transition path to meet the increasing bandwidth demands as technology has evolved. Today, 1- and 10-Gbps Ethernet speeds are the predominant interface speeds for server access in the data center. However, as server performance continues to increase, the number of workloads per virtualized server is also increasing, placing higher demands on server-access connectivity. These demands are especially apparent in highly virtualized server farms and cloud environments running scale-out elastic applications through containers; in such environments, top-of-rack (ToR) server connectivity is pushing the limits of 10 Gigabit Ethernet bandwidth. Currently, 40 Gbps is the next higher standardized link speed; however, large-scale customers with tens and thousands of servers are seeking an intermediate Ethernet speed that offers a lower price per gigabit for server connectivity in environments in which the full bandwidth of 40-Gbps Ethernet is not required.

With this goal in mind, the networking industry has rallied around the creation of a 25-Gbps Ethernet standard to provide a cost-effective and power-efficient solution for server connectivity. A primary reason for the push for 25-Gbps Ethernet link speed is that most of the technology for 25-Gbps Ethernet already exists, having been defined by the IEEE 100-Gbps Ethernet standard, which is based on four 25-Gbps lanes. This existing technology can be repurposed to accelerate time to standardization and time to market for a cost-optimized 25-Gbps Ethernet solution that offers an intermediate speed for server connectivity.

Standards Activities: Cisco's Role

Cisco is leading or actively participating in two efforts underway to standardize and bring 25 Gigabit Ethernet to market:

- In July 2014, IEEE approved the formation of the [IEEE 802.3 25 Gb/s Ethernet Study Group](#) to explore the opportunities and needs for a single-lane 25-Gbps speed for server Ethernet interconnects. Cisco's Mark Nowell is chairing the study group.

"The application of single-lane 25 Gb/s signaling technologies provide Ethernet with a solution set that can be reused by those companies building the data centers of tomorrow. The new study group expects to lay the groundwork for a new Media Access Control (MAC) rate that will enable cost-optimized single-lane solutions that will increase network deployment efficiency," said Mark Nowell, chair of the IEEE 802.3 25 Gb/s Ethernet Study Group and senior director, Cisco.

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- In early July 2014, a consortium of networking companies announced the availability of a 25 Gigabit Ethernet specification optimized to allow data center networks to run over a 25- or 50-Gbps Ethernet link protocol. Cisco is a member of the [25G Ethernet Consortium](#).

Approximate Timing of Support

With broad industry backing for 25-Gbps Ethernet and most of the required technology already in place, we expect the 25-Gbps Ethernet standard to be fast-tracked and 25-Gbps Ethernet products to be shipping as early as 2HCY15. And with Cisco's active participation and commitment to standards efforts, Cisco will be at the forefront of the 25-Gbps Ethernet technology rollout.



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