

There is some confusion in the market around the pending Category 8 standard, which should be finalized in 2014. Much of this confusion stems from the uncertainty surrounding the latest standards development of next-generation cabling and network electronics from the Telecommunication Industry (TIA), the International Organization for Standardization (ISO), and the Institute of Electrical and Electronics Engineers (IEEE). The IEEE has established a task force named the 802.3bq that will define the performance requirements and ultimately develop the specifications for the next generation BASE-T standard, which will be termed 40GBASE-T. Similarly, the cabling standards committees (i.e., TIA and ISO) are actively creating the standards that will support 40GBASE-T delivery over twisted-pair cabling.

## Lessons Learned

The new standards build on the lessons learned from the existing IEEE 802.3an 10GBASE-T standard: reasonable power consumption and physical form factor. Both were mitigating factors in the broad adoption of 10GBASE-T technology in the market because increased heat dissipation on the higher powered chipsets and reduced port count on the networking switches made 10GBASE-T less attractive than alternatives such as SFP+ and optical interfaces from a price versus performance point of view. In order to address these issues, the IEEE, TIA and ISO committees have gained consensus to reduce the maximum supported cabling channel length to 30 meters to make sure that the power footprint for 40GBASE-T chipsets are minimized. Surveys by both the TIA and IEEE organizations have shown that 30 meters will support the majority of data center architectures when using twisted-pair cabling.

## The Specifications

The current TIA draft specification for Category 8 cabling and components has defined performance characteristics up to 2 GHz. This represents a frequency spectrum that is four times greater than

the maximum specified frequency of 500 MHz for Category 6A rated cabling systems specified within the current ANSI/TIA-568-C.2 standard. The committee is working toward a fully specified and completed standard by the end of 2014. Working under an identical time frame, the ISO committee is conducting parallel standardization efforts and is developing a next generation standard called the TR 11801-99-1. Although both standards organizations are working on cabling standards that will support 40GBASE-T, there are slight differences in the defined media types and physical interfaces that will be defined within each respective standard.

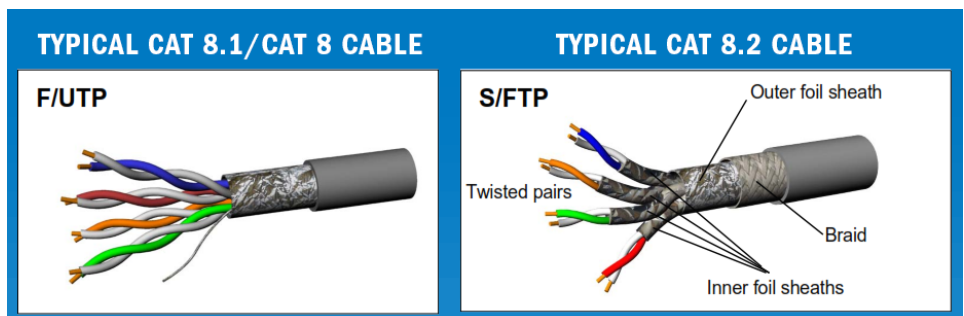
At this point, the TIA standard will likely support F/UTP cable types that use the ubiquitous RJ45 connector to support Category 8 operation. However, the committee is currently investigating connector types other than RJ45 to determine if there are alternate interfaces that can improve the overall performance of the cabling system while also providing backward compatibility with existing networking equipment. The ISO committee will also support RJ45-based connector interfaces and cabling known as Category 8.1 components for frequencies also up to 2 GHz where the associated channel performance will be termed Class I. The key difference in the ISO specification versus the proposed TIA Category 8 draft is that it will also support connector interfaces and cabling based on the ISO/IEC 11801 Category 7A/Class F<sub>A</sub> systems

that are currently specified up to 1 GHz. The components will be termed Category 8.2 with the channel being defined as Class II. It's important to note that while the Category 8.2/Class II performance criteria will be based on extended frequency performance up to 2 GHz of Category 7A/Class F<sub>A</sub> systems, the Category 7A/Class F<sub>A</sub> systems specified within the current ISO/IEC 11801, 2nd edition will not support 40GBASE-T operation.

In case 40 Gigabit Ethernet isn't enough, the Ethernet Alliance announced a new subcommittee to study 400 Gigabit Ethernet. After years of steady development, it looks like the bandwidth race is heating up, making Ethernet go farther and faster than any other time in its 40-year history.

## Ethernet Port Shipments

The need for Category 8 cable is already shown in the increasing number of high-speed ports shipped in the market. High-speed (10G+) port revenue continues to rise and is projected to double by 2017 to \$42 billion<sup>1</sup>. In the first nine months of 2012, shipments of 100G ports nearly tripled<sup>2</sup>. With revenue per port dropping up to 30 percent per year for 40/100G, the industry will be set to adopt higher speed ports with 100G to account for 10 percent of spending in 2013<sup>3</sup>. This reflects a need for a higher performing cable that can handle the increase in data streaming across the network.



<sup>1</sup> <http://www.infonetics.com/pr/2013/2H12-Networking-Ports-Market-Highlights.asp>

<sup>2</sup> <http://www.delloro.com/news/internet-moved-to-100-gigabit-technologies-at-record-rate-in-the-third-quarter>

<sup>3</sup> <http://www.infonetics.com/pr/2013/2H12-Networking-Ports-Market-Highlights.asp>

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