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40/100 Gigabit Ethernet Eco-System is Alive and Well

White paper

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at work

Executive Summary

A series of multi-vendor events were held to verify and demonstrate 40 and 100 Gigabit Ethernet (40/100GbE) technologies. These activities started with a closed-door interoperability test (also known as a plug-fest) and culminated with several public live demos. All of these activities proved that the 40/100GbE eco-system is alive and well. More and more, solutions and products designed to support 40/100GbE are commercially available from multiple vendors, ensuring product availability for end users and avoiding single-vendor lock-in.

CommScope was one of the leaders in these activities. CommScope LazrSPEED® 550 and 300 multimode fiber solutions were tested, qualified and demonstrated in multi-vendor closed-door and open-to-public environments at both transceiver and system levels. Results repeatedly demonstrated that the performance of LazrSPEED multimode fiber solutions far exceed the standard.

CommScope LazrSPEED pre-terminated fiber solutions utilize the standard Method B polarity scheme. Customers who have chosen CommScope fiber solutions not only have invested in high performance and high quality fiber solutions, but also have purchased peace of mind: their infrastructure is ready for 40/100GbE, whenever and wherever they need it.

Multi-Vendor Activities: From closed door to public demonstrations

It was only three months after the ratification of the standard IEEE Std. 802.3ba™-2010, "40 and 100 Gigabit Ethernet" that sixteen vendors, including CommScope, gathered in Santa Clara, CA during the week of September 13th, 2010. This gathering was arranged by the Ethernet Alliance® and the purpose was to see if 40/100GbE would operate over products from multiple vendors, the first time such an event had been attempted. The sixteen vendors conducted a series of interoperability tests with their products designed to support 40/100GbE. The products included test equipment, switches, routers, network interface cards, transceivers and fiber and copper cabling.

The plug-fest was a closed-door event as no one was certain the newly ratified technologies would work in a multi-vendor environment. It turned out that 99% of the tests were successful. CommScope LazrSPEED fiber solutions achieved huge successes since the testing results far exceeded the standard.

Due to the overwhelming success of the 40/100GbE plug-fest, the decision was made to conduct demonstrations in a public forum. A series of public demonstrations of 40/100GbE were held by the Ethernet Alliance at the SuperComputing 2010 (SC10) industry show in New Orleans, LA during the week of November 15th, 2010. Particularly, 100GbE over single-mode fiber and 40GbE over multimode fiber were showcased. CommScope, along with other 18 vendors, powered this public demonstration of interoperability over 40/100GbE. Coinciding with this event, CommScope and Cisco published a white paper titled "40 GbE: What, Why & Its Market Potential". These demonstrations at SC10 again showed 40/100GbE interoperability with multi-vendor equipment and viable test gear over a variety of cabling solutions.

Extending the success at SC10, CommScope demonstrated 100 Gigabit Ethernet with a distance reach of 340 meters over OM4 multimode fiber at Cisco Live in London during the week of February 1st, 2011. This demonstration was the world's first public 100GbE over multimode fiber demonstration. This demonstration was in collaboration with Ixia and Reflex Photonics, and operated 100GbE over a 340m channel comprising 7 MPO connections. The LazrSPEED 550 fiber solution achieved error-free transmission many times in multi-hour demos under the standard defined testing method (bit error rate test) using a reputable and commercially available test platform.

Next, a 40/100GbE multi-vendor interoperability demonstration was held by the Ethernet Alliance at OFC/NFOEC 2011 in Los Angeles, CA during the week of March 8th, 2011. In addition to participation in the live demos, CommScope had experts share their visions and solutions at the "The Future of Higher-Speed Ethernet" panel and "Ask the Expert" booth.
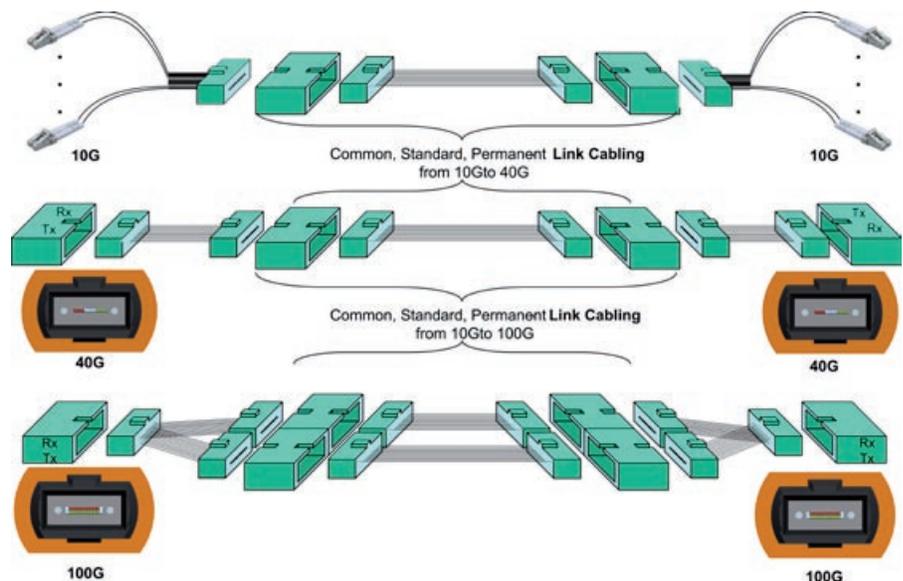
Peace of Mind: You are ready for 40/100GbE

CommScope pre-terminated fiber solutions are designed for operation at the current 1GbE and 10GbE speeds of today, while provisioning for eventual upgrade to 40 and 100GbE. This eventual upgrade is a simple and painless process.

CommScope LazrSPEED fiber solutions utilize Method B polarity per ANSI/TIA-568-C.3 "Optical Fiber Cabling Components Standard", also known as the key up / key up scheme. Method B guarantees fiber polarity when compliant components are used for the channel. Figure 1 illustrates three fiber cabling channel configuration models designed to support 1/10, 40 and 100 Gigabit Ethernet, respectively. The common denominator is the MPO-to-MPO trunk. When migrating from 1/10GbE to 40/100GbE, the MPO trunks in the middle remain the same so the trunk cable can be re-used for 40/100GbE in the future. The only change is the equipment patch cord. This provides great investment preservation.

For those customers who have chosen LazrSPEED fiber solutions, they have not only invested in high performance and high quality products, but also bought themselves peace of mind: their infrastructure is already ready for the coming 40/100GbE technologies.

Figure 1 Standard Method B Polarity for investment preservation

Conclusions

The 40/100GbE eco-system is alive and well, and has been successfully demonstrated using CommScope solutions in multiple public forums. Adoption of 40/100GbE is forecast to start taking off in 2012 and 2013, so data center builds or retrofits under consideration today need to take action now that prepares their infrastructure for these eventual faster speeds. Using CommScope LazrSPEED solutions gives peace of mind that not only will you have a high performance cabling infrastructure today but you will also be well-prepared for an easy implementation of faster network speeds tomorrow.

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