



Technology Watch

LAN Newsletter

2nd Quarter 2010

Table of Contents

1.0 General Technology Trend 1

2.0 Copper LAN Cabling..... 1

 2.1 General Market Trends 1

 2.2 Tyco/Bel Stewart on RJ-Point Five..... 1

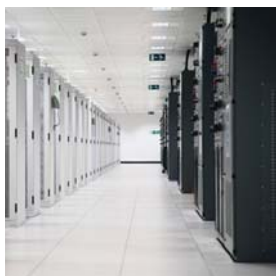
 2.3 Force10 Networks, 40 GbE switch/router 2

3.0 Optical Technologies 2

 3.1 Cisco seeks to acquire CoreOptics..... 2

4.0 Technology Innovation..... 3

 4.1 Google Patent..... 3





1.0 General Technology Trend

The long awaited ratification of the IEEE 802.3ba standard for 40 and 100 Gigabit Ethernet was finally completed on June 17th. The 802.3ba standard includes a single architecture that not only supports the two higher transmission speeds but also caters to physical layer specifications for communication across backplanes, copper cabling, multimode fiber and single-mode fiber. This is a very important milestone for Ethernet-based, bandwidth-intensive applications such as Video-on-demand, Converged network services and Social networking applications.

The aggregation speeds today that limited 10Gbps Ethernet deployments are now removed and should trigger new technology innovations that exploit these new speeds.

Already, the race is on to get capable products out to the marketplace as soon as possible now that the aggregation bottlenecks are no longer a limiting factor.

There has been an increase in the number of 10G capable electronics being released for the data center in the weeks just prior to the 40G/100G specification release. Vendors such as Force10 networks have introduced 40GigE switch/router solutions to take advantage of the specification-driven higher speeds and physical layer specifications. The day of the complicated “fat tree” architectures used to aggregate 10GigE applications by using the same speed as both the

aggregator and the aggregated will soon be a thing of the past.

2.0 Copper LAN Cabling

2.1 General Market Trends

One area of encouragement for structured cabling is in the data center where growth is expected to be up to a 23% share compared to just 18-21% of the total market in 2008. There will, however be a shift in the mix of cabling used in the data center with the fiber to copper ratio increasing with fiber now occupying more than 45% of the total data center market. Interestingly enough, the fiber content generally increases with the size of the data center, i.e., larger data centers use up to 85% fiber while the copper usage increases as the data center square-footage gets smaller.

The trend in modularity and plug-and-play connectivity has resulted in large gains for pre-terminated fiber-optic cable assemblies. The bulk of these cable assemblies have been MPO to LC cables.

2.2 Tyco/Bel Stewart on RJ-Point-Five

Tyco and Bel Stewart have initiated a second-source agreement which allows Bel Stewart to market and sell Tyco’s recently released RJ-Point-Five connector (*Released at DesignCon 2010*). This connector doubles the port density of a traditional RJ45 connector and has a specifically targeted roadmap in support of



Power over Ethernet plus (PoE+) and 10GBASE-T over CAT 6A cable.

Product Applications:

- High density Ethernet switching/routing products
- Data center switching applications
- Server I/O applications
- Wiring closet switching products

This development could be another catalyst for boosting sales of balanced twisted-pair cabling (CAT's) although possibly at some detriment to it's companion connector the RJ45.



2.3 Force10 Networks, 40GbE switch/router

In anticipation of the economic considerations which will drive the deployment of 40G solutions vs 100G in the data center, Force10 is incorporating 40G capability in their new switch/routers. From a value perspective, this move provides the most economical, incremental step from 10GbE to higher bandwidths in a

dynamically changing data center environment. Force10's move is no surprise since the IEEE 802.3ba standard governing 40G/100G bandwidth was ratified on June 17th of this year. Initially, Force10 plans to incorporate 40GbE into a 10 GbE Top-of-Rack (ToR) access switch for converging Fibre Channel and Ethernet fabrics, otherwise known in the industry as Fibre Channel over Ethernet (FCoE). Many data center managers feel that 40GbE is a more practical option to take in terms of scaling to meet increasing bandwidth demands. They want fewer network layers to manage and fewer uplinks within their networks. Configurations can migrate from 4 x 10G uplinks and move to 2 x 40 GbE, doubling bandwidth while reducing port count by 50%.

3.0 Optical Technologies

3.2 Cisco Seeks to Acquire CoreOptics

Cisco has decided to acquire CoreOptics in an effort to control the business for high-speed, extended reach, optical networking applications. By leveraging CoreOptics' expertise in 100Gb/s capabilities, this gives Cisco the option of using the acquisition to bolster their router performance or prepare it to address emerging transmission technology built around coherent polarized quadrature phase-shift keying (CP-QPSK). This technique is being pushed by the Optical Internetworking Forum (OIF) for 100Gb/s DWDM specification work.



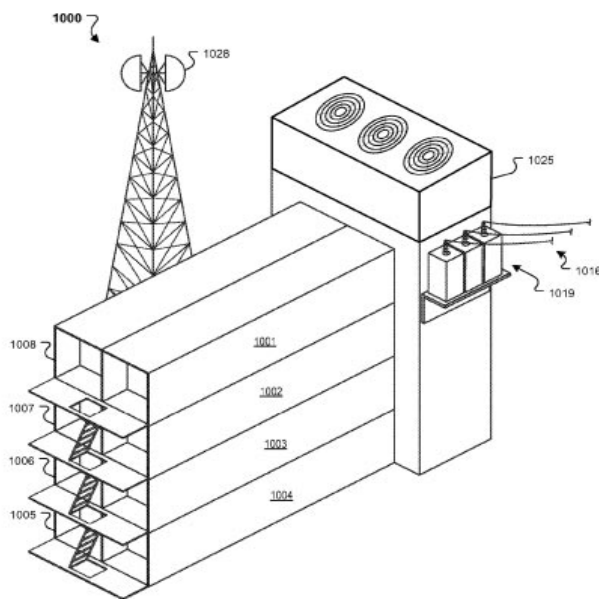
4.0 Technology Innovation

4.1 Google Patents Tower Data Center

Google has been busy innovating containerized data centers and was recently awarded a patent for stacked data center. They applied for a previous patent for a floating design for such data centers as part of their push for these mobile, “data center in a box” and they have quietly built a containerized facility as far back as 2005 but continue to introduce new variations on this theme. These data centers are gaining wider acceptance as they are now being deployed as a quick way to expand or upgrade existing data centers in a more efficient way. Because these units are self contained, i.e., they are manufactured with all the functionality of a typical data center, they can be deployed “On demand” in any location where a power supply can be accessed from the electric grid or other stand-alone power supply unit.

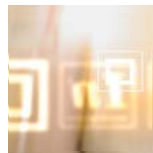
The patent awarded on June 15th was for data center layouts that stack containers up to four high, with other designs featuring rows of containers attached to a central utility spine. This spine provides protection for supply lines to provide power, network connectivity and cooling fluids (water or refrigerants). Each container houses up to 2,000 microprocessors and 5 terabytes of storage and can be deployed in quantities of up to 100 units to complete a data center installation.

As these containerized data centers gain acceptance, it could mean a boon for pre-terminated cable assemblies, cassette-type solution sets and also for smaller cable/connector solutions. The use of small form factor connectors using optical fiber and small diameter copper cables, whether Twinax or Twisted-pair will play a large part in this emerging containerized trend.



Data Communications Competence Center

Nexans' Data Communications Competence Center, located at the Berk-Tek Headquarters in New Holland, Pennsylvania, focuses on advanced product design, applications and materials development for networking and data communication cabling solutions. The Advanced Design and Applications team uses state-of-the-art, proprietary testing and modeling tools to translate emerging network requirements into new cabling solutions. The Advanced Materials Development and Advanced Manufacturing Processes teams utilize sophisticated analytical capabilities that facilitate the design of superior materials and processes. The Standardization and Technology group analyzes leading edge and emerging technologies and coordinates data communication standardization efforts to continuously refine Nexans' Technology Roadmap. An international team of experts in the fields of cable, connectors, materials, networking, standards, communications and testing supports the competence center. The competence center laboratories are a part of an extensive global R&D network that includes eight competence centers, four application centers and two research centers dedicated to advanced technologies and materials research.



Global expert in cables and cabling systems