How structured cabling can help scale networks, ease complexity

By Networks Asia Special Projects Team

Accelerating change brought on by disruptive trends such as cloud computing, Internet of Things (IoT) and network convergence will require data center (DC) and enterprise building networks to support the seemingly insatiable need for more bandwidth. By 2021, traffic within the DC could be expected to account for 71% of annual global data center traffic, which is expected to hit 20.6 ZB per year.

Inevitably, the infrastructure will have to carry higher speeds to keep pace with not only today's demands but also tomorrow's unknowns. Here, structured cabling offers an organized standards-based approach to managing and utilizing DC and building connectivity. It allows for flexibility, scalability and speed of migration to comply with industry standards redefining infrastructure in buildings and DCs for emerging bandwidth-intensive applications.

In September last year, for instance, all six parts of the 3rd Edition of ISO/IEC 11801 were approved. This significant development upgrades the minimum horizontal cabling requirements in offices from Category 5e to Category 6 and recommends Category 6A cabling to support applications with data rates exceeding one gigabit per second. The upgrades align with an increasing number of devices becoming available with 2.5GBASE-T, 5GBASE-T and 10GBASE-T ports. They include the newest generation of IEEE 802.11ac wireless access points, machine vision cameras, and high-end desktop workstations.

For fiber deployments, a key update is the addition of OM5 multimode fiber cabling, which facilitates cost-effective, high-speed migration. The inclusion supports short-wave division multiplexing technologies with higher speeds over fewer multimode pairs for 200 Gbit/s, 400 Gbit/s and beyond being specified by IEEE.

Meanwhile, structured cabling networks are also poised to integrate a growing assortment of IoT-based sensors and devices. Some will require the power output or bandwidth capacity that only four-pair Ethernet cabling supports. But devices with minimal power and bandwidth requirements — such as some equipment sensors and actuators, alarm systems and RFID readers — have spurred the industry to explore possibilities in the more cost-effective and space-efficient single-pair Ethernet. IEEE is developing specifications such as the 802.3cg 10 Mbps Ethernet to support these applications.

Reliable base to scale

In the IoT era, balanced copper cabling will still be required to provide data and remote power connectivity to a host of networked sensors and actuators used in building automation applications. Supporting wired and wireless technologies, workhorse cabling like the SYSTIMAX GigaSPEED X10D, which can run up to 10 Gbps, is an integral part of the intelligent CommScope Universal Connectivity Grid.

Yet, faced with constant change and spiraling cost of network downtime, the stakes are probably highest for data centers, which form the heart of network operations and data communications.

Not surprising then that organizations are re-evaluating their IT and networking strategies. Data center managers are now challenged to deploy faster and more efficient optics; switch from the traditional three-layer vertical hierarchy to flatter, heavily meshed leaf-and-spine architectures; and migrate to higher lane speeds.

A case in point is Zhongshan Securities, a securities trading company based in Shenzhen. It needed a network that could support not only its existing complex service delivery mechanisms and advanced technologies, but also scale to support future operations.

To support its growing network of more than 80 branches in China that manages assets worth hundreds of billions of dollars, the company deployed CommScope’s high-density copper cable modular panels that are designed to support 48 modular ports in 1U with SYSTIMAX Category 6/Category 6A cabling. The modular panels support 48 ports without...
High speed, small spaces

These two case studies highlight how the SYSTIMAX platform of advanced copper and fiber connectivity, with automated infrastructure management and high-efficiency interfaces, is helping organizations to easily support multiple generations of applications while ensuring standards compliance. Backed by a global alliance of CommScope-certified expertise, organizations can now find innovative and yet standards-compliant ways to enable more connections in increasingly crowded data center spaces.

For example, the SYSTIMAX portfolio includes the LazrSPEED OM5 Wideband Multimode fiber, which enables duplex transmission of 100G and higher bandwidth to practical distances in the data center. It is also backward-compatible with the substantial embedded base of LazrSPEED 300 and 550 fibers. Complementing fiber connectivity is high-speed copper cabling like the GigaSPEED X10D – the smallest Category 6A cable – that offers superior crosstalk performance on a reduced core.

All in, the SYSTIMAX structured cabling solutions enable organizations to tackle current connectivity needs as well as future challenges with options that install quickly, scale easily and perform as fast as standards will allow.

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