

Fibre solutions embrace 40G/100G

Latest developments strongly indicate the transition to 40G is occurring rapidly, forcing Data Centres to make crucial choices.

These are intriguing times. A number of “firsts” have rapidly occurred in recent months that have significant impact on local and wide area networks, especially those supporting Data Centres.

It starts with new standards for Ethernet LAN and WAN enacted in June 2010. IEEE 802.3ba now standardises on 40G (gigabits per second) and 100G speeds, a sizeable increase from the previously accepted 10G benchmark. It’s the first time two different Ethernet speeds have been specified in one standard due to the desire to support 40G rates for local server applications, and 100G for Data Centre and Internet backbones.

And in a major departure from prior specifications, it’s the first Ethernet requirement needing multiple parallel fibres. Instead of a single fibre to transmit and one to receive, the new standards specify four fibres for each transmit or receive path. Another first is the inclusion of

Multiple Fibre Push On (MPO) connectors versus traditional SC or LC single fibre connectors commonly used in 10G installations.

These latest specifications come from a High Speed Study Group formed in 2006 by the IEEE to investigate new standards for high-speed Ethernet. Researchers and engineers from Nexans were amongst the many industry participants in that group.

These new standards are now for the first time supported by LAN infrastructure products being sold this year by well-known firms like Force10 Networks and Extreme Networks that have dedicated 40G ports in the switch.

Whilst the IT profession has always changed rapidly, these developments viewed collectively have the potential to profoundly impact the field by hastening the move to 40G and beyond.

READY OR NOT - TIME TO EMBRACE 40G/100G

The quickening transition to 40G/100G for switch to switch links poses a fundamental challenge to Data Centre managers who are now, or soon will be, planning a facilities expansion.

First, consider that cabling represents only about five percent of all infrastructure costs. So preparing now for a 40G-ready network versus a 10G ceiling is undeniably cost-favourable to a Data Centres’ efficient performance throughout its average 15-20 year lifespan.

Preparing your Data Centre now with the expected high port count for 40G/100G also helps make Data Centres future-ready for new technologies and devices as they become available and avoid Data Centre interruption during complex installation of additional cables for 40G/100G.

Feature	Traditional loose tube	Micro-bundle: MPO cable	Advantage
Diameter	13.3 mm	6.4 mm	Less space Data Centres
Weight	180 kg/km	50 kg/km	Less weight in trays
Maximum pulling force	520 daN	100 daN	Sufficient for short distances
Compression	300 daN/dm	100 daN/dm	High for DC
Bending radius: static	190 mm	65 mm	Small bending radius
Bending radius: dynamic	250 mm	100 mm	Small bending radius

Nexans has three fibre technologies for the move to 40G that are also backwards compatible with original 10G networks, making such technologies cost-effective. The first is a low loss MPO connector with a guaranteed maximum insertion loss of 0.35 dB for every fibre in the connector. Common Data Centre configurations like cross connects or concatenated links can be achieved with this solution whilst meeting the demanding 1.9 dB maximum channel insertion loss over 100 meters specified by IEEE.

Another Nexans fibre solution involves micro-bundled MPO cables featuring a smaller 6.4mm diameter, lower weight, and tighter bending radius than traditional loose tube fibre products. These cables therefore take less space in

cable trays which can potentially reduce costs by lowering the number of trays required. Small diameter cables also facilitate improved airflow that positively contributes to better interior temperature control. By its special design the Micro-Bundle results in low skew values exceeding the requirements for 40G/100G by a factor of 10."

The third Nexans technology is LANmark-OF OM4, a 50-µm laser-optimised cable with extended bandwidth over OM3 and other fibre products. Though highly viable to support current 10G applications till 550 m, nearly twice the length of its predecessor or similar products, it's ideally suited for 40 to 100G speeds. LANmark-OF OM4 offers additional headroom and extends the reach for 40G/100G

beyond 100 m. As data centers and higher performance computing applications grow, the additional headroom and distance will become increasingly important.

Nexans also produces backward compatible copper solutions for Data Centres designed for short lengths, patching and switching. If not already facing the 40G challenge, high-speed service providers and Data Centres will undoubtedly have to confront the issue well before 2015.

Fortunately, there are many realistic, cost-effective migration strategies to 40G and beyond thanks to LANmark solutions. •

New high density cabinet for Data Centres

The Nexans 42HU high density cabinet is specifically designed to help Data Centres and similar facilities host dense, passive cross connects in copper and/or fibre. Using a central frame structure without corner posts, the cabinet addresses limited space issues and provides optimal front, rear and lateral access.

This openness also offers superior flexibility maintaining or accessing patch cords and connections. It facilitates the proper management and clear identification of a large number of fibre or copper cords which helps improve a facility's reliable long-term performance.

DUAL PATHWAYS PROMOTE EFFICIENT CORD ROUTING

The cabinet's dual patchcord pathways promote the efficient, clean routing of cords whilst allowing storage

space for extra lengths. The central row of cable fingers is angled for easiest access to the patch panels. Two cabinets placed back-to-back match the size of most server racks. •

Features

- Dimensions 600 X 900mm x 42U
- Double row of cable fingers
- Top and bottom cable troughs
- « L » shaped cable trays at the rear of the cabinet
- Small or large doors can be installed
- Large cable entries
- Suitable for Nexans panels with automatic bonding
- Suitable for back-to-back installation
- Can be joined to other cabinets from Cooper B-Line

