

# Top performance

Luca Rozzoni of Chatsworth Products (CPI) looks at how to take a best practice approach to cable management

High density deployments are rapidly becoming the norm rather than the exception. An increasing reliance on the infrastructure means that managing and maintaining the cables and patch cords that provide the critical support, reliability and flexibility of the network have never been more important.

## ROLE PLAY

The way in which cables are deployed can play a key role in thermal efficiency, as heavy cable bundles within the cabinet can negatively affect airflow if not properly managed. As the average rack power density for individual server racks increases to 4kW and 11kW, with many even higher, causing heat within the cabinet to rise, it is crucial to employ best cable management practices that enable adequate ventilation for the equipment and that is suitable for future growth.

The care given to telecommunications cables during installation and use is the primary factor in maintaining good equipment performance. The latest industry standards recognise this fact and recommend installation and management practices that will minimise changes in the physical properties of cable.

## THE COMMERCIAL BUILDING

Telecommunications Pathways and Spaces

Standard – ANSI/TIA/EIA-569B – suggests size, layout and provisioning for planning telecommunications rooms based on the number of users and floor space being served. The Commercial Building Telecommunications Cabling Standard – ANSI/TIA/EIA-568B – defines specific types of cables that can be used within the network, maximum distances for these cables at each point to point within the network and minimum performance requirements for testing the installed cables as standards compliant.

## DEPTH AND WIDTH

A more recent standard for data centre facilities and



infrastructure – EN 50600 – dictates that cabinets should be provisioned with additional depth and width for vertical cable management. Additionally, cable managers should not be filled at more than 50 per cent of their capacity to allow for future growth.

In simple terms, practices such as cable slack management, bend radii ranges and

organisation are critical for cable performance and the health of the network. For example, whenever cable changes direction, the bend in the cable has potential to change the electrical properties of the cable by changing the size, twist rate, relative proximities or lengths of the individual conductors. Tight bundling of the cable or improper support that deforms, stretches or adds tension to the cable can negatively affect circuit performance.

Also, the higher wattages of advanced

power over Ethernet (PoE) applications also require adequately spaced, smaller cable bundles to avoid excessive heat accumulation around equipment.

## RACK AND ROLL

The basic support solution for a low density application with cable management is an open two post rack with cabling sections along both sides of the rack to provide a vertical pathway for premise cable and patch cords. Cabling sections in between adjacent racks in a multiple rack bay must be larger – wider and/or deeper – to support cable from both racks.

Open two post racks provide the most cost effective and efficient use of floor space, but four post racks are superior when supporting larger equipment, such as modular network switches that require front and rear support. Two post racks can be used in most applications, but generally are used with rackmount equipment that is less than 20 inches (510mm).

The rackmount width must match equipment requirements. The depth of the rack, especially when selecting a four post rack, must be carefully considered so that it matches the size of the equipment. The height of the rack also determines the number of rackmount unit (U) spaces on the rack. It is important to pick a height that provides enough overhead space for cable runway or cable trays.

## SELECTION PROCEDURE

Cable runways should be used to support backbone and premise cable between the wall and the rack. It is best to bring cable runway over the rack(s) so that the weight of the cable is supported by the runway and does not pull against the connections on the patch panels.



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It is advisable to support cable runway from the top of racks, walls, ceilings or floors. Radius drops should be used when cable enters or exits the pathway, and bends and corner brackets should be used when the pathway changes directions or forms a 90° intersection, T intersection or crossing intersection.

The aforementioned ANSI/EIA/TIA-569B and EN 50600 standards limit cable runway cable fill to 50 per cent and cable cannot be stacked more than 150mm high on the cable runway. The cable fill value for cable runway should equal the combined cable fill values of the cabling sections.

### EFFICIENCY DRIVE

Whether you are upgrading a current infrastructure or designing a new installation, considering how the cabling within the rack will be managed will be vital to end performance and reliability.

The most efficient cable management solution will streamline the management of the cables and cords to optimise the signal quality and network speed of the information exchange. It will also organise cables so that they can be easily traced from start to finish when performing moves, adds and changes – saving valuable time and money. It should fulfil high density cabling requirements while maintaining



proper bend radius and slack management for maximum network performance. Any chosen solution should also meet ANSI/TIA/EIA and EN 50600 installation guidelines for copper and fibre cabling. □



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Prior to CPI, Rozzoni worked for companies where he was responsible for developing new partnership and sales opportunities for passive optical LAN technology. He also held the role of business development/product manager, where he was responsible for developing cabinet and rack portfolios, with a particular emphasis on optical fibre solutions.