

WHITE PAPER

ENGINEERING SERVICES FOR DATA CENTRE CABLING SOLUTIONS

The rapid worldwide growth in IT usage is increasing the demands made on ICT cabling in data centres. To facilitate this growth, in addition to high-performance and finely coordinated solutions, Datwyler also provides high-quality engineering services to data centre operators and planners.

Poorly planned fibre optic infrastructures can quickly cause data transmission in the links to slow down or stop altogether, so flexibility and future viability are aspects which merit particular consideration during planning. These are the cornerstones of a modern cabling system for high-performance applications.

The network architecture in data centres can be implemented as “Centralized Switching”, “Distributed” or “Top of Rack”, “Zoned Distribution”, or a combination thereof. As a rule the choice is made by the company network designer. The infrastructure planner must be aware of his definition, as this has a major impact, for example, on the dimensioning and management of routes, the number and mapping of links, link lengths and flexibility of the cabling solution, in other words its openness to various applications.

The system should be able to cope with one or two technological leaps. Migration steps therefore need to be incorporated early in the concept in order to address cabling requirements properly.

For data centres these are Fibre Channel evolution step 32GFC, scheduled for 2014, and Next Generation 100G Ethernet (4x 25G) via multimode fibres, expected in 2015.

“Standard-compliant” alone is not enough

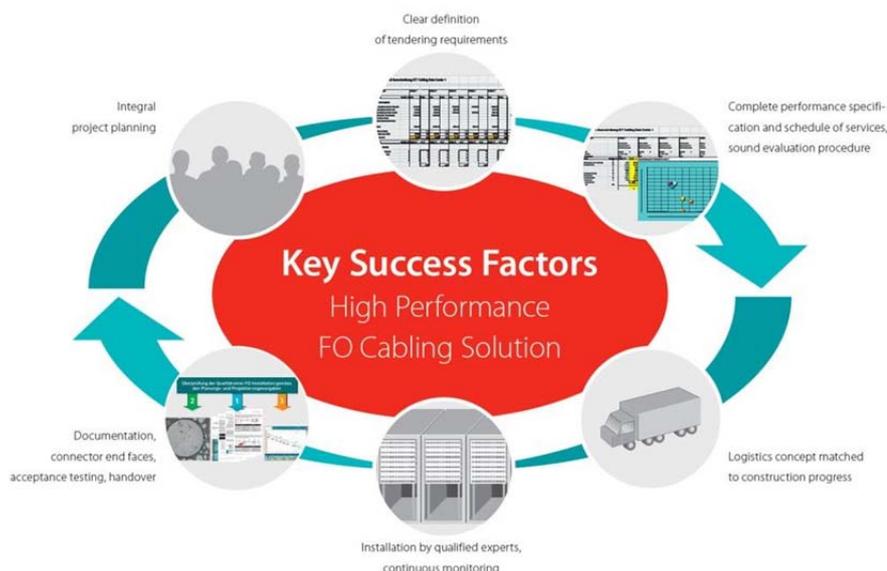
Available link power budgets are becoming ever smaller as transmission speed increases. In some cases the requirements of standards are no longer keeping pace with technical development.

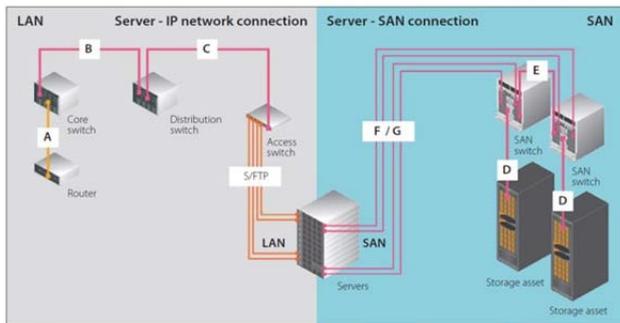
Insertion losses (IL) are one example: The higher the data rates, the more unrealistic the IL values for connectors specified in the standards. For 95% of the detachable fibre optic connectors international standards (e.g. EN50173-1:2011) allow a maximum IL value of 0.5 dB, for the remainder 5% even up to 0.75 dB. However the 16GFC application – to take one example – allows a maximum of 1.5 dB for all the connectors in the link (OM3 and OM4). This is hardly consistent. Although the fibre optic connectors available today offer better values with a typical insertion loss of 0.2 dB, even these can soon increase due to dirt or wear.

The example clearly demonstrates that too great a faith in the standards quickly leads to marginalisation. At the same time it shows how important it is that a system solution provider like Datwyler, with the appropriate know-how and project experience, can give expert advice to potential customers.

Technical requirements for tendering

Defining a cabling system down to the last detail represents a considerable challenge for planners who want to avoid unpleasant surprises during commissioning. In addition to general requirements for the installation and handling of products, system suppliers need to be furnished with accurate specifications, including definitions of optical and geometric limits and the scope and type of the values to be logged from pre-assembly. Last but not least this includes the in-





Definition of link types.

Inspection, documentation and cleaning of connector end faces prior to connection as an important criterion for maintaining system performance.

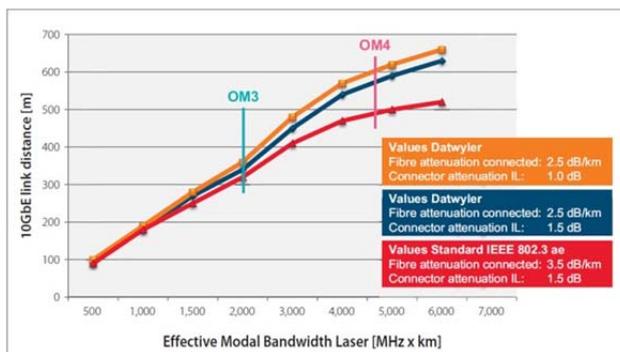
Acceptance measurements need to be specified so that measurement results are reproducible. This, for example, affects the test set-up (ISO/IEC 14763-3), measurement method and multi-mode excitation conditions (IEC 61280-4-1). The type of documentation and any desired system warranty should also be defined at the tendering stage.

Services for planners and operators

As part of its data centre products and services Datwyler's core competences include the provision of high-performance cabling systems perfectly matched to customer requirements.

To complement the system solutions Datwyler supplies comprehensive engineering services providing customers with maximum performance, migration capability and investment protection. If they so wish, data centre planners and operators can receive the requisite support from conception through to commissioning.

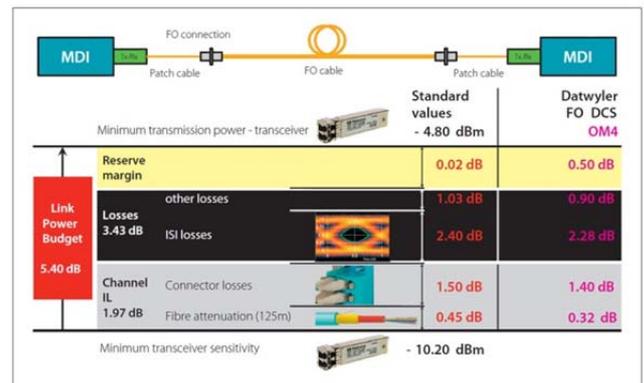
Datwyler specialists can simulate planned and future applications using computation models, and the results can be transferred directly to create optimised tailor-made concepts. This means that even at an early stage of the project a customer benefits from maximum safety and transparency in relation to the requirements of the planned cabling infrastructure. He can,



Calculated system range at 10GbE.

moreover, use such a solution design to further optimise both investment costs (CAPEX) and operating costs (OPEX).

Because Datwyler is actively involved in the relevant standardisation bodies – ISO/IEC, Cenelec and national subgroups – data centre planners and operators can also be confident that they will be kept reliably and expertly informed with regard to future standards.



FO channel power budget calculation.

Supporting software tools

In addition to these services, Datwyler provides "Panorama", a web-based, multi-client enabled management software, and "Panorama CablingView", a simpler and cost-saving solution solely for planning and documenting cabling infrastructures.

"Panorama" is deployed for planning, important management tasks and on-going documentation. This software solution provides numerous features in addition to standard tools such as error checking and a function that searches for available ports. The software shows hierarchies, cable ducts and cable runs, and automatically calculates the cable lengths required. It also provides the option of triggering orders for essential installations and mapping workflows. Various functions enable simple administration of stocks and simulations of error situations allow those responsible to identify potential single points of failure in advance. Not least, the software solution offers tools for reading the energy consumption data of individual devices and for automatically allocating these and other costs e.g. services rendered – to individual cost centres.

"Panorama CablingView" enables data centre planners and operators to carry out simple graphic planning and fast, clear, easily-to-understand "live" documentation of all the components in the cabling system itself and their interrelationships, as well as of the components and devices connected to them.