

## **FIBRE TO THE DESK, THE ENABLING TECHNOLOGY FOR 21<sup>ST</sup> CENTURY NETWORKING**

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Fibre media is rapidly moving from the telecom closet to the desk, driven by the insatiable demand for higher bandwidth across Local Area Networks (LAN) as telephony, voice, data and video converge on the desktop. For those responsible for providing an organisation's infrastructure services, upgrading the LAN has been very much a "no-win" activity, with every improvement just about keeping pace with the developments in computing power and file sizes. However much bandwidth is provided, it will never be enough. Full-screen real-time video conferencing, word processing documents with embedded voice read out, animated graphics and video clips will make today's file sizes look puny. Full colour DTP files, which for a large document today easily approach 100Mb, will be routinely exchanged in a matter of minutes. A single printing quality image can already run to 20 or 30Mb in size: there will be no need to use compression techniques such as JPG in the future. 2Gb/s Internet access is already a reality: in five or ten years time, this will seem as outmoded as a 9.6k fax does today. Imagine everyone on the network trying to access the Internet at the same time, the bandwidth required is horrendously large. How many times does one hear the dreaded words, "Hold on, my machine is very slow today."

The problem is that the LAN will normally have been constructed using copper media. We have all heard of Category 5, 5e, 6 and 7, each of which was apparently going to do the impossible: provide sufficient bandwidth headroom in the LAN. Unfortunately, each advance in copper cabling technology is only a relatively small step forward; any alleviation of the bandwidth problem is only short term. To genuinely future-proof the network, fibre to the desk (FTTD) is the only solution. In an all-fibre network, the bandwidth limitation is in the electronics, not the interconnect media.

With advances in fibre cable manufacturing and the de-skilling of the termination process, the actual installation cost for a fibre-based network is only slightly higher than for an equivalent copper one. However, over the lifetime of the network, the total cost of ownership is considerably lower. Less network outages occur because fibre is immune to electrical interference and upgrades to increase bandwidth are a thing of the past.

The Fibreoptic Industry Association, formed in the early 1990's, is widely recognised as *the* reference source. Its Web page, [www.fibreoptic.org.uk](http://www.fibreoptic.org.uk), is the primary source of information on fibre optics, the first port of call for anyone seeking detailed information. The FIA is a technically biased organisation, generating Standards and Codes of Practice; it exists to serve both its members and the wider fibre optic community. It is heavily involved with other government and private organisations in raising operational standards relevant to all aspects of the fibre industry. As an industry body, the Fibreoptic Industry Association is primarily concerned with promoting fibre as a technology, and is strictly impartial on commercial issues between the different manufacturers in the market.

FTTD systems are a reality and some prestigious installations have already been completed. For instance, a 3M Volition FTTD network went live in the Lego headquarters building in Denmark earlier in 1999. Some of the world's largest manufacturers such as 3M Telecom Systems, AMP, Honeywell, Lucent, Panduit and Siemens have all invested huge amounts in developing an integrated, comprehensive family of FTTD products, covering all aspects of a LAN from the telecommunications cabinet, through the backbone, along the horizontal breakouts and finally to the desk. The system components, copper to fibre media converters, patch panels, patch cords, wall boxes and plugs and sockets, are supported by dedicated test kits, reference cables and termination kits.

To specify a complete FTTD network is a significant decision. In the real world, very few organisations have the luxury of a completely clean sheet of paper when installing a new structured cabling network. Even if a blank sheet of paper is made available for the network infrastructure design, there are legacy hardware and software issues to be taken into account. However, any business which is heavily dependent on its IT infrastructure – and, let's face it, today, that is just about any business one cares to mention – needs to consider very carefully its future networking requirements. It would be very difficult to find an organisation which expects its IT requirements to reduce. Already, application-specific servers are a reality: Web servers, e-mail servers, CAD servers and so on all co-exist and inter-operate across the network.

With the future so clearly mapped out, there is only one logical route to follow. Install FTTD and be confident that the network can cope with demand for the foreseeable future, or don't install it and restrict the company's development. Not much of a choice really, is it?