

## 10G Gigabit Cabling

In keeping with our promise at Kedington to keep you posted regarding new technologies, here is a technical briefing on the latest cabling platform available TODAY.

The 'need for speed' is never ending! Networks continue their relentless and insatiable growth in bandwidth, as applications experience ten-fold data rate increases. Clients are changing their computer room electronics for faster and faster switches and these switches push data out around their networks at incredible speeds. Computer room technology has moved on from:

1Mbps in 1990  
10Mbps in 1995  
100Mbps in 2000  
1000Mbps (or 1 Gbps) today.

1Gbps is the technology your clients will want to roll out to the desk top over the next 5 years. But there in lies the problem. You and I are designing networks that will not be rewired for 20 years! So, if 1Gbps will be rolled out over the next 5 years, what is coming over the next 20 years and what cable should we install today to cater for the future?

We know your clients will continue to do what they have always done. They will replace their:

Pc's every 3 – 4 yrs  
Comm.'s equipment 4 – 5 yrs

In other words, they will change their equipment 5 to 7 times over the life of the cable we install today! How can we plan for this increase in bandwidth? This is the art of crystal ball gazing. All we can do is install the latest cable available and hope to provide our clients with as much future proofing as is available today. The latest cable, available today, is the new 10G / category 6 Augmented (Cat 6a) cable.

The fact that there is a race between cable manufactures to produce 10G cabling (and we can tell you that the race has already been won) and the fact that electronics manufacturers are racing to produce 10G switches, is further indication that these technologies are coming fast and cables installed today will have to support them.

Further proof of the future need for 10G can be found in the old reliable, Moore's Law. Moore, a founder of Intel, predicted that the number of transistors on a chip would double every 18 months. To this date Moore's prediction have proven correct. The fact is that since 1950 the power of computers has advanced by a factor of 10 billion! and it is still growing exponentially. A typical Intel transistor can currently switch 1.5 trillion times a second. This would take a human being 25,000 years to do with a light switch! Other interesting facts: the internet is doubling in size every year, the world wide web pages are doubling every 50 days, annually more pc's are sold than TV's since 1995 and now computers are getting ready to listen, understand, translate languages in real time, handle voice, video, animation, graphics and virtual applications. We cannot imagine what they will be doing in five years and we certainly should not plan our cabling requirements based on what we do today. We should install the latest cabling available and sit back knowing we have planned as best we could for what's coming.

Advances in high speed LAN applications and multimedia software invites developers to create powerful new software products that need much more bandwidth. This, coupled with the falling price of gigabit electronics, will enable clients to roll out 1Gbps to the desk top at an affordable price. PCs already come equipped with 1 Gig network cards as standard (whether you have ordered it or not!). Today multiple applications such as Microsoft Office, Outlook, Lotus Notes, Adobe Acrobat, Instant Messaging, Media player, Streaming Media, Videoconferencing and VoIP run in the foreground while applications like virus scanning, software updates, system monitoring, encryption and compression are running in the background. These applications are putting ever increasing pressures on the network. Massive storage requirements, high end graphics, medical imaging, visualization technologies, multi-site collaboration, real time applications and grid computing are other applications that are fast

becoming the norm on the networks we design and build.

We know that the IEE 802.3an 10GBASE-T Task Force is devoted to making the best possible use of UTP cabling. They are working on the standard which we expect to be ratified in 2006. So, as before when we had Cat6 cabling in 1999 even though it was only ratified in 2002, we find ourselves with the 10G / Cat6a cabling before the standards have been ratified. The standards will again centre around a 4 connector channel, 100 metre run, RJ45 type solution, fully backward compatible.

Stop, stop we hear you say! Well there is no getting off the merry-go-round in network planning. Here is our advice...be sure you are 'in bed' with the right installer and the right product. Unlike electrical installations these networks cannot be fully tested at handover. In fact, not until the client fully loads up the 1Gbps electronics and applications, sometime in the next 3 – 5 years, will we truly know if our networks work properly. Remember, 1% error retransmission can result in a drop in data rate of 80%, and networks working at only 20% of their capacity. We said when data rates increased, networks would fall over and that is exactly what is happening. Every day we test another failing network. And what do you know, most warranties are not worth the paper they are written on, leaving the client and the engineer in a very embarrassing situation.

One way to establish whether the contractor is capable of carrying out a Structured Cabling installation, and whether or not he has the right product, is to invite the proposed installer to complete a simple questionnaire, requiring him to provide details of his staff skills, product certifications and relevant experience. We would welcome the opportunity to forward a generic questionnaire.

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