

# Delving into Category 6A

If there is a killer application for 10GBASE-T it is this whole concept of “virtualization” particularly as it applies to servers.

It is now common knowledge that the Category 6A (Augmented Category 6) standard has been approved for publication by the TIA TR 42 engineering committee for Telecommunications Cabling Infrastructure.

It has been a long time in coming. It almost seemed like an anticlimax when the standard was unanimously approved by TR 42.7 subcommittee members.

It is a major accomplishment. The standard is a thorough document and represents the most advanced set of network cabling requirements specified up to 500 MHz. Category 6A is fully backward compatible with all the previous categories, including Category 6, Category 5e and Category 5.

The question that must be asked at this point is what does this mean to the end user? What does Category 6A offer more than the previous generations?

The first and most important benefit is that is designed to support the next generation 10GBASE-T Ethernet standard for all implementations including worst case “bundled cable” implementations for channels up to 100 metres as well as for short reach mode (low power) implementations for distances up to 30 metres in a data centre.

This is an important consideration for new installations.

Network cabling is part of the infrastructure of a building and is intended to serve the needs of the occupants for a minimum lifetime of 10 years.

Structured cabling installed today will need to support at least two generations of Ethernet over this period. 10GBASE-T is expected to be widely deployed by 2013 and will be driven by economics, advances in computer technology and networking demands.

This means that the cabling system installed today should be capable of supporting 10 Gigabit data rates.

Although Category 6 and maybe even Category 5e cabling may provide limited support for 10GBASE-T under certain conditions for distances up to 55 metres, network performance is not assured.

These cables would need to be tested and validated to ensure satisfactory the alien crosstalk performance in the field. This makes Category 6A the best choice when considering long term needs for cabling infrastructure.

The cable itself is designed with larger conductors (23 AWG minimum), tighter twists and more airspace in the core.

This provides a cable with much lower losses at high

frequencies and significantly better alien crosstalk isolation between cables.

In terms of the applications that will drive the need for 10 Gigabit Ethernet in the network, the first one relates to the amount of time it takes to transfer large amounts of data.

For example, it would take approximately 100 minutes to move the information contained on a Blue Ray DVD disc, which holds about 50 GB of data, at 100 Mb/s, 10 minutes at 1 Gb/s and only one minute at 10 Gb/s speeds. This is a substantial savings in time.

If there is a killer application for 10GBASE-T it is this whole concept of “virtualization,” particularly as it applies to servers. As the cover story in this issue reveals, there are a lot benefits realized for designers of data centres and IT managers.

System virtualization is the ability to present the resources of a single computer as if it is a collection of separate computers (“virtual machines”), each with its own virtual CPUs, network interfaces, storage, and operating system.

The server administrator uses a software application to divide one physical server into multiple isolated virtual environments.

Using this concept can reduce the proliferation of servers and improve server utilization from 20% to 80% or better.

All that is very nice you might say, but what “does that have to do with me? I am just a typical user running office and e-mail applications and tapping into the file server for data storage and retrieval once in a while.”

Well, let’s fast forward to the future. Five years from now I have this powerful laptop with quad-core processor running at 4 GHz with 16 GB of physical memory and 1.6 TB of disk storage.

Lo and behold, I boot up my computer and I have access to several operating systems all running concurrently, each tapped into a separate resource on the network, one of which is dedicated to high definition video streaming, which I can use for training or video conferencing.

It sure beats traveling and waiting at airports. Today’s server is tomorrow’s desktop. **CNS**



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