THE "SPEED" OF GIGABIT ETHERNET

OPTICAL CABLE CORPORATION

Which weighs more a pound of lead or a pound of feathers? The answer is, of course, they both weigh a pound, right? The same answer applies to the ability of a cabling system to carry Gigabit Ethernet traffic.

Gigabit Ethernet (a.k.a. 1000BaseT) was released in October of 1998 as IEEE 802.3ab. The protocol provides 1000 Mbps (megabits per second) or 1 Gbps (gigabit per second) of data throughput and has a minimum cabling specification of Category 5.

Category 5 was the predominately installed based of cabling system at the time the Gigabit Ethernet protocol was in development. IEEE, in an effort to expand their potential customer base, used Category 5 as the starting point. The initial Category 5 standard as published by TIA required further definition. This further definition took place in the form of TSB95.

In this TSB, Power Sum, Far End Cross Talk, and Return Loss specifications were added to the Category 5 specification to address the bi-directional 4-pair nature of Gigabit Ethernet. TSB95 was not a new or more stringent standard, but instead was a further definition of the existing specification and made allowances for the higher throughput. In later consolidation of standards, TIA updated the Category 5 specifications, incorporating TSB95 into the Category 5e standard. Current industry references are to Category 5e as the Category 5 standard was superseded.

Cabling Systems offering higher frequency bandwidth and enhanced performance over Category 5e cabling are now on the market. These systems, while providing a bigger highway, do not make the cars go any faster. One Gigabit of data per second is still one gigabit of data per second.

One of the least asked questions when discussing the cabling requirements for a project is, "What are your throughput requirements?" MIS/IT departments are usually very aware of the existing requirements and have insight into their future requirements. This is quite true in high maintenance network segments like data centers.

Currently, 10/100BaseT(X) is the primary copper protocol being used in the data center. However, new installations and lower costs of network interface ports are increasing gigabit port sales exponentially. Given that the life span of a data center is about two to five years and that a 10 Gbps protocol over copper is still in development; Gigabit Ethernet is still the most viable option for this network segment.

To simply state the point, Gigabit Ethernet will run over Category 5e cabling systems by definition created by IEEE and by all technical specifications required by TIA. After accepting this fact, specification of the cabling system in the data center should specify a minimum of Category 5e cabling. Within electrically compliant systems, manufacturer solutions should be evaluated on benefits to the End User.