Why Fiber Optic Cable Should be the Media of Choice in all Commercial Building Network Installations

It seems that old, bad habits are always hard to break. This article focuses on why fiber cabling should be used in all networks (new and retrofit) and why copper cabling should be completely done away with and tossed in the dumpster. It further discusses the myths and misunderstandings of fiber optic cabling and why the networking industry should insure and demand that fiber optic cabling be the media of choice in all commercial building installations.

As the demand for bandwidth increases it appears that common sense decreases at a proportional rate with regards to the installation of fiber optic cabling. There are those that continue to insist on installing Unshielded Twisted Pair (UTP) Copper in lieu of fiber cabling in most installations. I had a contactor once tell me that he is aware that fiber is a better media and is less costly in the long run. However, he insists that if he installed fiber on a regular basis it would not be long before he would be out of business. He felt that it would take less time to install a fiber network which would mean less billable man hours and most importantly, he knew he would not have to go back to the job site for many years to upgrade, troubleshoot, or otherwise service the customer's network. As a matter of fact, once the fiber network was properly installed, terminated and tested, he would probably never hear from that customer again. Apparently he relied on repeat business from each of his customers as that had been the norm for the past 25 years and was just the normal set of circumstances that came with installing UTP.

This supports the fact that for the last 25 years, in order to upgrade a building's network one would have to re-cable the entire building to support the required bandwidth demand. Notwithstanding the fact that fiber has been around for years, UTP cooper became the media of choice even after it became apparent in the late 1990's that fiber in many cases was less expensive to install and maintain. So therefore the copper manufactures have continued to twist it tighter, make the conductor larger and put shielding around it to try and squeeze the final drop of capability out of it. One can compare that to tightly twisting a wet wash rag in an attempt to squeeze out all of the dirty water. If one cannot squeeze out all of the water then the rag must be hung out to dry – which is what should be done with UTP copper. Even though UTP copper continues to falter on a regular basis when the demand for bandwidth increases, there are still those that insist on following the path of insanity which is, of course, is continuing to do the same thing over and over again expecting different results. Concerning 10Gig Ethernet, UTP Copper continues to be installed even with the common maladies associated with UTP cabling such as the infamous Alien (UFO Subterranean Crosstalk).

Fiber cabling is immune to Electromagnetic Interference (EMI) and Radio Frequency interference (RFI) so it therefore has none of the problems commonly associated with copper cabling. This issue of fiber being too fragile is nonsense. Optical fiber is not your typical kind of glass. It is made of ultra-pure silica which is an extremely strong material that has the ability to handle exposure to temperature and pressure extremes. The tensile strength (resistance to

pulling) of optical fiber exceeds 600,000 pounds per square inch which actually makes it stronger than copper or steel strands of the same diameter and easily surpassing the strength requirements of today's communications applications. At the time it is manufactured and cabled, it is usually joined with aramid (Kevlar) or fiberglass yarns and placed into various jacketing materials depending on its intended use.

The myth that fiber's performance capabilities are unnecessary is another ridiculous statement. Fiber has proven time and time again that it can transmit information error-free over much greater distances than copper and support higher data rates at the same time. If a local area network is experiencing bottlenecks, high error rates, or slow throughput, an optical fiber solution will, in fact, support a broader range of bandwidth capabilities, further supporting the fact that ALL computer networks should be copper and not fiber. Optical fiber itself is capable of supporting runs beyond the 100-meter limit for any grade of copper cabling available today. Standard 62.5-micron (μm) fiber can run effectively up to 300 meters at 100 Mbps, and LOF, 10Gig, 50- μm fiber can run up to 500 meters. With proper training and awareness, contractors will find that fiber networks are easier to install and test and offer outstanding opportunities for business growth.

I have heard contractors and students alike say, "fiber is difficult to install". This is far from the actual truth. In fact, fiber cabling is much easier and less time consuming to install when compare to the installation of UTP copper. As a matter of fact, even the fiber network test equipment is easier to use and much less expensive. Besides ease of installation, SFF connectors make fiber faster to install, as the connection time per connector is much quicker.

Another leading myth is that upgrading from copper to fiber is expensive and not worth the effort. This is so far from the truth that it borders on being absolutely silly. Fiber has already surpassed the cost parity with copper, even when considering installed first costs. Now, in many cases, fiber is actually a less expensive alternative for cabling than copper.

Before you follow the path to insanity, get some good education and some exceptional hand-on training from a reputable fiber optic training company. Forget about attending those schools where the curriculum is written by college professors with little or no actual hands on experience. Pursue your knowledge of fiber optics networking with aggression and conviction. And by all means be sure you make a knowledgeable decision on the use of fiber optics in your network. Remember, installing copper is installing the past. --- *Bob Ballard, RCDD, CFOI, Owner*