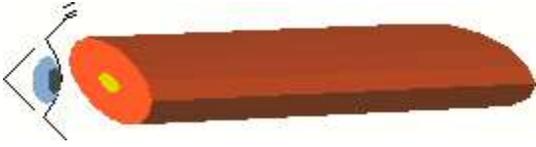**Fiber Optic Services And Products**

EYE ON FIBER

3 BLACK LIES, 3 WHITE LIES AND 1 STATISTICAL LIE ABOUT FIBER TO THE DESK NETWORKS

Executive Summary

This application note provides the network planner with realistic information concerning fiber to the desk (FTTD). With this information, the network planner can: 1) made rational decisions concerning network design and 2) reduce his network cost through FTTD.

INTRODUCTION

The savvy network manager will implement new or retrofit data networks in the most cost effective manner possible. Usually, cost effective means lowest initial installed cost. Alternatively, cost effective means lowest life cycle cost. In many situations, fiber to the desk (FTTD) has both lowest costs.

Unfortunately, a number of myths and misconceptions about fiber exist. Belief in these myths prevents planners from benefiting from fiber to the desk. In this application note, we present the realities of fiber to the desk. We label these myths and misconceptions: black lies, when they are blatantly untrue; white lies, when they may be true but irrelevant to making an intelligent and practical decision; and statistical lies, when they can be true but are not true most of the time.

BLACK LIE #1: FIBER NETWORKS ARE TOO EXPENSIVE

This black lie is that optical fiber networks are too expensive to justify. This lie is a black lie because the truth is the opposite.

The Reality

When the fiber network is properly configured and a total initial installed cost or a life cycle cost analysis is performed, the initial installed cost or life cycle cost favors FTTD in most medium and large corporate networks.

The reason for this reality is that there are at least two cost factors that are higher in UTP networks than in fiber networks. The UTP proponents will not mention these two factors.

These two factors, by themselves, can cause the initial installed cost of a fiber to the desk network to be less than that of a traditional UTP network. If a fiber to the desk (FTTD) network has the lowest initial installed cost, it will, automatically have the lowest life cycle cost.[1]

WHITE LIE #1: FIBER CABLE IS MORE EXPENSIVE

This lie is a white lie in that it can be true, may not be true, and is irrelevant and misleading. In the past and the present, fiber cables have been or are more expensive than UTP. However, some fiber cables are less expensive. For example, the FOLS issued a cost comparison of $0.30/foot for UTP and $0.24/foot for fiber cable.

The Reality

Regardless of the cable cost comparison, the cost of the cable is irrelevant and the comparison is misleading. The total installed cost or the life cycle cost comparison is being used to make a rational and realistic comparison. When the decision maker or network planner calculates either of these two costs, the comparison can, and often does, show the fiber to the desk network to be lower in cost than the UTP network.

WHITE LIE #2: FIBER IS FRAGILE

This lie is a white lie for three reasons:

¸ Because it is true but irrelevant

¸ Because it is not a fair comparison and

¸ Because it is misleading.

The Reality

This white lie is irrelevant. It is true that fiber can be fragile, but only when the primary coating is removed. However, you never use fiber in a network. Instead, you use a fiber cable.

To be a fair comparison, you would have to compare fiber to the conductor in the UTP cable. But you never use a conductor. Instead you use a UTP cable.

When you compare cables, fiber cable is stronger than UTP cable: fiber cable has a typical maximum pulling load of over 100 pounds-force while UTP is limited to 25 pounds-force.[2] The reality is that fiber cable will withstand loads higher than those that UTP will withstand.

STATISTICAL LIE #1: FIBER NETWORKS ARE MORE EXPENSIVE

This is a statistical lie, in that it can be true. A few corporate network configurations are more expensive with FTTD than with UTP. However, when you consider all costs of both types of networks, most corporate networks will have a lower initial installed cost with FTTD than with UTP.

The Reality

There are three cost factors in a UTP network that are higher than in a FTTD network: TR real estate cost, TR support cost and real switch cost per port. As detailed elsewhere, the real estate and support costs can be $400-$1000 per node higher in a UTP network than in a FTTD network. The real cost per switch node can be 31.74 % higher in a UTP network higher than in a FTTD network. In a FTTD network, the reduction in these costs can be more than the increased cost of fiber optic media converters. Thus, FTTD network costs less than the UTP network.

Some switch manufacturers do not want you to use FTTD. Doing so will reduce the number of ports you need. If you design a FTTD network, you will need 31.74 % fewer ports than you would need with a UTP network. These manufacturers price their fiber switches high enough to force your decision back to UTP. They benefit but you lose..

However, if you use media converters, you will find that the initial installed cost of a FTTD network is less than that of a UTP network. The media converter manufacturers have the same interest you have: reduce the network cost. Their products are priced to allow you to reduce network cost by using FTTD.

Pearson Technologies has developed a detailed cost comparison model. Without trying to bias the numbers against UTP, all 12 of the comparisons show FTTD networks are lower in cost than UTP networks. This result is significant because the model has a slightly bias against FTTD! We expect real comparisons to favor FTTD more than the model indicates.

WHITE LIE #3: MEDIA CONVERTERS ARE AN ADDITIONAL POINT OF FAILURE

This is a white lie because it is technically true, but irrelevant.

The Reality

As you increase the number of components in any system, the probability of failure increases. Thus, this lie is technically true. But media converter manufacturers offer lifetime or 5 year warranties for their products. Thus, this lie is irrelevant. Pearson Technologies Inc. has had its FTTD network in operation for 3.5 years without a single failure or other problem with its media converters. In the mid 1990s, BellSouth personnel reported that its data network operated for 5 years without any failures.

BLACK LIE #2: FIBER AND POE

This white lie is that use of FTTD does not let you implement POE. This lie is a white lie in that you can deliver power to any location.

The Reality

This lie is misleading because very few networks need POE to all locations. Installing POE in all cables drives up the cost per port by $10-$15/port. This increase in cost results in FTTD saving the planner more than a network without POE.

For example, you can transmit [power over the fiber](#) . In addition, you can transmit power to the necessary location without UTP-you can use existing phone cable. Or you can install fiber optic cables with a twisted pair to carry the power.

BLACK LIE #3: FIBER AND VOIP

The lie is that you cannot implement VOIP in a FTTD network. The opposite is true.

The Reality

3Com offers four port switches with a [integral fiber converter](#). With this product, you can run VOIP and data from a desktop in a FTTD network.

Respectfully submitted for your consideration,

Eric R. Pearson, CPC, CFOS

President

Pearson Technologies Inc.

Pearson Technologies Web Sites

http://www.ptnowire.com   http://www.FTTDnow.info

http://www.fiberopticlawsuits.info   http://www.sfoi.info

[Contact Pearson Technologies Inc.](#)

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[1] Increased bandwidth available from fiber translates to longer life.

[2] Check the UTP standard. Compare this load to the loads allowed on fiber optic cables.