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3 Reasons to go with Fiber

DSI NATIONWIDE

Fiber optic cable carries information through pulses of laser light, which are transmitted at one end and received and decoded at the other. The pulses are turned on and off at great speed. Multiple streams of information can be carried at the same time by using multiple different wavelengths—colors—of light. The equipment to create the laser pulses keeps getting faster, but the same old fiber can be used to transmit the light it creates. New equipment is just slipped into the network.

The capacity of a network to relay information is referred to as bandwidth. Lots of bandwidth allows lots of information to be carried. Fiber has a lot of advantages over copper wire and coax cable, because it's easier to maintain and delivers far more bandwidth.

The three biggest advantages of fiber are:

1. Signals travel a long distance inside fiber cable without degradation— 20 miles or more under some circumstances. In contrast, as the distance traveled by a signal in a strand of copper wire increases, the bandwidth decreases. Short lengths of coax, for instance—the lengths typically found in a small building—can carry 1 Gbps. That's a thousand time more bandwidth than a typical

broadband service using DSL over copper wire, and 200 times more than typical broadband over cable TV coax. But those speeds are impossible over longer distances. The closer fiber gets to a building, the faster the service that is available to the building's residents and businesses. Service providers have been bringing fiber closer and closer for years... and now they've managed to bring it inside the end users' buildings.

2. Fiber cable is thin. In fact, fiber can be made thinner than a human hair, and carried on a thin ribbon (or "microduct") of hollow plastic only and eighth of an inch wide. A typical fiber configuration with about 200 super-thin strands is about the thickness of a standard coax cable. That same fiber cable could theoretically carry all the information being sent on Earth at any one time today. The bottom line: Fiber can be 'hidden' easily on the surfaces of walls in old construction.
3. Fiber networks are upgraded by changing the electronics responsible for creating the light pulses that travel along the fiber, not by replacing the fiber itself. The nonconductive fiber is amazingly reliable. Nothing hurts it except a physical cut, or the destruction of the building in which it's installed. Passive Optical Networks, or PON's, are the most common type of network. They employ a minimum of electronics... in fact, between the provider's central office and the users there are no electronics at all. This vastly improves network reliability.

Bandwidth providers are increasingly bringing fiber optics all the way to customer premises. That technology, FTTH (for "fiber to the home") or FTTP (for "fiber to the premises") or FTTx (for "fiber to everyplace") is the gold standard. But in cases where the population density is too low, or where high-quality coaxial or copper networks exist, it may make more sense under some circumstances to bring fiber only partway to the customer. The fiber is then connected to the existing copper for the last "jump" to users' homes.

As time goes on, fiber is moved closer to customers to provide more bandwidth. That approach is called FTTN for "fiber to the neighborhood" or "node," or (for greater bandwidth) "fiber to the curb" (FTTC). Today, the impending bandwidth demand is so large, and FTTH construction prices so reasonable, that going straight to FTTH makes more economic sense. Single-family homes comprise the easiest group to equip with FTTH. It wasn't until 2006 that apartment building and other multiple-dwelling-unit (MDU) structures in the US started to be served with FTTH in appreciable numbers.

MDU fiber service is already common in Europe and Asia, however, so there is no "technology risk" in specifying FTTH now, in any circumstance.

[DSI Technologies on Forbes.com](#)

[The Fundamentals of Fiber to the Home \(FTTH\)](#)

[Bandwidth: The Inevitable Growth of Demand](#)

[3 Reasons to go with fiber](#)

[Builders & Developers: your starter guide to FTTH](#)

[Municipal installations](#)

[Technology Glossary: making sense of alphabet soup](#)

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