What is a Wire?

metal drawn out into the form of a thin flexible thread or rod:"a coil of copper wire"

wire, thread or slender rod, usually very flexible and circular in cross section, made from various metals and alloys, including iron, steel, brass, bronze, copper, aluminum, zinc, gold, silver

A wire is a single strand of metal capable of transmitting power or data from one area to another. Wires are often protected in a plastic covering that is sometimes color-coded to

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What is UTP Cable or Network Cable?

are [networking hardware](https://en.wikipedia.org/wiki/Networking_hardware) used to connect one network device to other network devices or to connect two or more computers to share devices such as [printers](https://en.wikipedia.org/wiki/Printer_(computing)) or [scanners](https://en.wikipedia.org/wiki/Image_scanner). Different types of network cables, such as [coaxial cable](https://en.wikipedia.org/wiki/Coaxial_cable), [optical fiber cable](https://en.wikipedia.org/wiki/Optical_fiber_cable), and [twisted pair](https://en.wikipedia.org/wiki/Twisted_pair) cables, are used depending on the network's [topology](https://en.wikipedia.org/wiki/Network_topology), [protocol](https://en.wikipedia.org/wiki/Network_protocols), and size. The devices can be separated by a few meters (e.g. via [Ethernet](https://en.wikipedia.org/wiki/Ethernet)) or nearly unlimited distances

While [wireless networks](https://en.wikipedia.org/wiki/Wireless_network) are more easily deployed when total [throughput](https://en.wikipedia.org/wiki/Throughput) is not an issue, most permanent larger [computer networks](https://en.wikipedia.org/wiki/Computer_networks) utilize cables to transfer signals from one point to another.[[1]](https://en.wikipedia.org/wiki/Networking_cables#cite_note-1)

There are several technologies used for network connections. [Patch cables](https://en.wikipedia.org/wiki/Patch_cable) are used for short distances in offices and [wiring closets](https://en.wikipedia.org/wiki/Wiring_closet). Electrical connections using twisted pair or coaxial cable are used within a building. Optical fiber cable is used for long distances or for applications requiring high [bandwidth](https://en.wikipedia.org/wiki/Bandwidth_(computing)) or [electrical isolation](https://en.wikipedia.org/wiki/Electrical_isolation). Many installations use [structured cabling](https://en.wikipedia.org/wiki/Structured_cabling) practices to improve reliability and maintainability. In some home and industrial applications [power lines](https://en.wikipedia.org/wiki/Power_line) are used as network cabling.

What is Twisted Pair Cable?

cabling is a form of wiring in which pairs of wires (the forward and return conductors of a single [circuit](https://en.wikipedia.org/wiki/Electronic_circuit)) are twisted together for the purposes of canceling out [electromagnetic interference](https://en.wikipedia.org/wiki/Electromagnetic_interference) (EMI) from other wire pairs and from external sources. This type of cable is used for home and corporate [Ethernet](https://en.wikipedia.org/wiki/Ethernet) networks. Twisted pair cabling is used in short [patch cables](https://en.wikipedia.org/wiki/Patch_cable) and in the longer runs in [structured cabling](https://en.wikipedia.org/wiki/Structured_cabling).

There are two types of twisted pair cables: shielded and unshielded.

Twisted pair emerged during the 1990s as the leading cabling standard for Ethernet, starting with 10 [Mbps](https://www.lifewire.com/bits-per-second-kbps-mbps-gbps-818122) (10BASE-T, also known as Category 3 or Cat3), later followed by improved versions for 100 Mbps (100BASE-TX, Cat5, and Cat5e) and successively higher speeds up to 10 Gbps (10GBASE-T). Ethernet twisted pair cables contain up to eight wires wound together in pairs to minimize electromagnetic interference.

Two primary types of twisted pair cable industry standards have been defined: unshielded twisted pair (UTP) and shielded twisted pair (STP). Modern Ethernet cables use UTP wiring due to its lower cost, while STP cabling can be found in other types of networks such as Fiber Distributed Data Interface (FDDI).

Invented in the 1880s, coaxial cable (also called coax) was best known as the kind of cable that connected television sets to home antennas. Coaxial cable is also a standard for 10 Mbps [Ethernet cables](https://www.lifewire.com/what-is-an-ethernet-cable-817548).

When 10 Mbps Ethernet was most popular, during the 1980s and early 1990s, networks typically used one of two kinds of coax cable — thinnet (10BASE2 standard) or thicknet (10BASE5). These cables consist of an inner copper wire of varying thickness surrounded by insulation and another shielding. Their stiffness caused network administrators difficulty when installing and maintaining thinnet and thicknet.

Ethernet crossover cable

An [Ethernet crossover cable](https://en.wikipedia.org/wiki/Ethernet_crossover_cable) is a type of twisted pair [Ethernet cable](https://en.wikipedia.org/wiki/Ethernet_cable) used to connect computing devices together directly that would normally be connected via a [network switch](https://en.wikipedia.org/wiki/Network_switch), [Ethernet hub](https://en.wikipedia.org/wiki/Ethernet_hub) or [router](https://en.wikipedia.org/wiki/Router_(computing)), such as directly connecting two [personal computers](https://en.wikipedia.org/wiki/Personal_computer) via their [network](https://en.wikipedia.org/wiki/Computer_networking) adapters. Most current Ethernet devices support [Auto MDI-X](https://en.wikipedia.org/wiki/Auto_MDI-X), so it does not matter whether crossover or straight cables are used.[[2]](https://en.wikipedia.org/wiki/Networking_cables#cite_note-donutey-2)

What is Fiber optic cable?

An [optical fiber cable](https://en.wikipedia.org/wiki/Optical_fiber_cable) consists of a center glass core surrounded by several layers of protective material. The outer insulating jacket is made of Teflon or PVC to prevent interference. It is expensive but has higher bandwidth and can transmit data over longer distances.[[3]](https://en.wikipedia.org/wiki/Networking_cables#cite_note-3) There are two major types of optical fiber cables: shorter-range [multi-mode fiber](https://en.wikipedia.org/wiki/Multi-mode_fiber) and long-range [single-mode fiber](https://en.wikipedia.org/wiki/Single-mode_fiber).

Instead of insulated metal wires transmitting electrical signals, [fiber optic network cables](https://www.lifewire.com/fiber-optic-cable-817874) use strands of glass and pulses of light. These network cables are bendable despite being made of glass. They have proven especially useful in [wide area network](https://www.lifewire.com/wide-area-network-816383) (WAN) installations where long-distance underground or outdoor cable runs are required and also in office buildings where a high volume of communication traffic is common.

Two primary types of fiber optic cable industry standards are defined—single-mode (100BaseBX standard) and multimode (100BaseSX standard). Long-distance telecommunications networks commonly use single-mode for its relatively higher bandwidth capacity, while local networks typically use multimode due to its lower cost.

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Patch cable

A [patch cable](https://en.wikipedia.org/wiki/Patch_cable) is an [electrical](https://en.wikipedia.org/wiki/Electrical_cable) or [optical cable](https://en.wikipedia.org/wiki/Optical_cable) used to connect one electronic or optical device to another for [signal](https://en.wikipedia.org/wiki/Signal) routing. Devices of different types (e.g. a switch connected to a computer, or a switch connected to a router) are connected with patch cables. Patch cables are usually produced in many different colors so as to be easily distinguishable,[[2]](https://en.wikipedia.org/wiki/Networking_cables#cite_note-donutey-2) and most are relatively short, no longer than a few meters.[[*citation needed*](https://en.wikipedia.org/wiki/Wikipedia:Citation_needed)] In contrast to [structured cabling](https://en.wikipedia.org/wiki/Structured_cabling), patch cables are more flexible.

Power lines

Although power wires are not designed for networking applications, [power line communication](https://en.wikipedia.org/wiki/Power_line_communication) (PLC) allows these wires to also be used to interconnect home computers, peripherals or other networked consumer products. The [HomePlug](https://en.wikipedia.org/wiki/HomePlug" \o "HomePlug) protocol family was an early PLC technology. In December 2008, the [ITU-T](https://en.wikipedia.org/wiki/ITU-T) adopted Recommendation [G.hn](https://en.wikipedia.org/wiki/G.hn)/[G.9960](https://en.wikipedia.org/wiki/G.9960) as the first worldwide standard for high-speed powerline communications.[[4]](https://en.wikipedia.org/wiki/Networking_cables#cite_note-4) G.hn also specifies techniques for communications over the existing [category 3 cable](https://en.wikipedia.org/wiki/Category_3_cable) used by phones and coaxial cable used by [cable television](https://en.wikipedia.org/wiki/Cable_television) in the home.