

Glossary

Asymmetric Digital Subscriber Line (ADSL): Transmission technology that consists of modems attached to twisted-pair copper wiring that transmit from 1.5 Mb/s to 8 Mb/s downstream (to the subscriber) and up to 1.5 Mb/s upstream, depending on line distance. See also Digital Subscriber Line and Twisted-Pair Copper.

Circuit-Switched Network: A type of network in which a continuous link is established between a source and a receiver. Circuit-switching is used for voice and video to ensure that individual parts of a signal are received in the correct order by the destination site.

Digital Subscriber Line (DSL): The generic term that refers to the entire family of DSL technologies. DSL refers to digital modems placed at either end of a local loop. DSL bypasses the circuit-switched lines that make up that network and yields much faster data transmission rates than analog modem technologies.

Ethernet: Protocol for data networking. Ethernet networks typically operate at 10, 100 or 1000 Mb/s.

Ethernet Passive Optical Network (EPON): A type of PON technology that runs on the Ethernet protocol. EPON is applicable for data-centric networks, as well as full-service voice, data and video networks. See Passive Optical Network.

Fiber-to-the-x (FTTx) Technology: The x in fiber-to-the-x is a variable indicating the point at which the fiber in a network stops and copper (coaxial or twisted-pair) cabling takes over. The further the fiber goes, the wider the bandwidth, the quicker the speed, and the more applications and services can be offered.

Fiber-to-the-Curb (FTTC): Network in which fiber is installed typically within 1000 feet of the premises, leaving the curb-to-building section made out of twisted-pair copper cable.

Fiber-to-the-Node (FTTN): Network in which fiber is used for part, but not all, of the link from the fiber distribution hub to the end-user. An optical-to-electrical conversion takes place at an active device called a node, which typically serves a neighborhood or geographically similar area. Most current cable TV and telephony networks have FTTN architectures.

Gigabit Passive Optical Network (GPON): A further evolution of PON technology. The GPON is optimized to support higher data rates, greater distances and higher split ratios than other PON technologies, and it is particularly useful for delay-sensitive traffic such as voice and video communications. See Passive Optical Network.

Internet Protocol (IP): Method or protocol by which data is sent from one computer to another on the Internet. Each computer on the Internet has at least one IP address that uniquely identifies it from all other computers on the Internet. Because of these standardized IP addresses, the gateway receiving the data can keep track of, recognize and route messages appropriately.

Metropolitan Network: Metropolitan area network (MAN). A network, often ringed in structure, that covers an entire city and its suburbs.

Optical Time-Domain Reflectometer (OTDR): Instrument for evaluating optical fiber based on detecting and measuring backscattered (reflected) light. Used to measure fiber length and attenuation, evaluate splice and connector joints, locate faults and certify cabling systems.

Nanometer-Scale Positioning: Also known as nanopositioning. A positioning technique used during optical component manufacturing to align components with a precision measured in nanometers (one billionth of a meter).

Packet: Bits grouped serially in a defined format, containing a command or data message sent over a network. Same as a frame.

Passive Optical Network (PON): Network in which fiber-optic cabling (instead of copper) brings signals all or most of the way to the end-user. It is described as passive because no active equipment (electrically powered) is required between the central office (or hub) and the customer premises. Depending on where the PON terminates, the system can be described as an FTTx network, which typically allows a point-to-point or point-to-multipoint connection from the central office to the subscriber's premises; in a point-to-multipoint architecture, a number of subscribers (for example, up to 32) can be connected to just one of the various feeder fibers located in a fiber distribution hub, dramatically reducing network installation, management and maintenance costs.

Piezoelectric (PZT) Technology: Technology of piezoelectricity, which refers to the electrical field created by some ceramic materials when subjected to pressure. Precision positioning devices use the inverse effect; that is, when an electric field is applied to a piezoelectric material, it changes shape, and this shape change is used to create precise mechanical movements.

Protocol: A formal set of rules governing the format, timing, sequencing and error control of data exchange across a network. Many protocols may be required and used on a single network.

SDH: Synchronous Digital Hierarchy. Standardized by the International Telecommunication Union (ITU-TSS). A protocol for transmitting information over optical fiber.

SONET: Synchronous Optical NETwork. Standardized by the American National Standards Institute (ANSI). A protocol for backbone networks capable of transmitting at extremely high speeds and accommodating gigabit-level bandwidth.

Spot Curing: Technology by which a dose of energy of a specific wavelength band and irradiance is used to cause an adhesive, encapsulant or sealant to change from a liquid to a solid in a small area.

Triple-Play Services: Also known as bundled services. The ability of a telecommunications carrier to supply voice, data and video applications at once. A typical example of a triple-play proposal would include one or multiple phone lines, a high-speed Internet connection and television/video services (such as HDTV), all offered by the same provider.

Twisted-Pair Copper: The set of two copper wires used to connect a telephone customer with a switching office. A twisted pair is loosely wrapped around each other to minimize interference from other twisted pairs in the same bundle.

Very-High-Data-Rate Digital Subscriber Line (VDSL): A developing technology that promises much higher data rates over relatively short distances (up to 52 Mb/s over lines up to 1,000 ft or 300 m in length). It is envisioned that VDSL may emerge somewhat after ADSL is widely deployed and coexist with it.

Voice-over-Internet-Protocol (VoIP): Refers to communications services—voice, facsimile and/or voice-messaging applications—that are transported via the Internet, rather than the public switched telephone network. In an Internet-based telephone call, the voice signals are converted to digital format and compressed/translated into Internet protocol (IP) packets for transmission over the Internet; the process is reversed at the receiving end.