

Glossary

Access Network: Last link in a network between the customer premises and the first point of connection to the network infrastructure—a point of presence (PoP) on the edge of a metropolitan network or a central office (CO). Access networks have, up to now, consisted primarily of passive, twisted-pair copper wires, but there is a strong trend toward optical-fiber connections either directly or very close to the customer (fiber-to-the-curb).

Coarse Wavelength-Division Multiplexing (CWDM): Form of wavelength-division multiplexing that uses wider spacing between wavelengths than does DWDM. CWDM can be used over multimode and singlemode fibers, but signal distances are generally shorter than DWDM, and costs of deploying CWDM are significantly lower than for DWDM.

Chromatic Dispersion (CD): Phenomenon caused by the wavelength dependence of group velocity in an optical fiber. Since any practical light source has a certain spectral width, CD results in pulse broadening.

Cross-Connect: Optical cross-connect (OXC). Generally refers to an optical switch with multiple ports (or channels) at both the input and the output. An OXC allows any optical signal entering any input port to be directed to any desired output port. Also see Lambda Router.

Deep Channelization: The ability to process all channels in a signal simultaneously, thus testing the entire channelized bandwidth.

Dense Wavelength-Division Multiplexing (DWDM): A technology that enables a single optical fiber to carry multiple data channels (or wavelengths). Commercial DWDM systems can have as many as 160 separate channels.

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

Fiber-to-the-Home (FTTH): Also known as fiber-to-the-premises (FTTP) and fiber-to-the-building (FTTB). FTTH refers to a carrier network's optical fiber that is connected directly to the subscriber's home or enterprise. FTTH is distinguished from fiber-to-the-curb, which is only installed within 1000 feet of the premises, leaving the curb-to-building section made out of coaxial cable.

Gigabit Ethernet: A version of Ethernet that operates at 1 Gb/s (1000 Mb/s).

Hybrid Concatenation: The ability to use many different payload mappings, or channel types, in one signal (also known as mixed payload concatenation). Thanks to this technique, different channel types (e.g., STS-1, STS-3C and STS-12c) can be sent through the same OC-48 signal, rather than limiting processing to only one channel type at a time (e.g., STS-1). With new standards and technology to embed services into SONET/SDH, hybrid concatenation includes new channel types such as STS-6c, STS-9c and STS-24c.

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.

Intracytoplasmic Sperm Injection (ICSI): Laboratory procedure that involves the injection of a single sperm cell directly into an oocyte (mature egg) using a glass needle (pipette). EXFO Burleigh products are used in the reproduction of genetically identical mice for medical research, helping improve the yield of the ICSI procedure.

Lambda Router: Also called a wavelength router, this device is part of the broader class of optical cross-connects (OXC). A lambda router takes in a single wavelength of light from a specific fiber-optic strand and recombines it into another strand that is set on a different path. Lambda routers are positioned at network junction points. Also see Cross-Connect.

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

Multiplexer (MUX): A device that combines several different signals, typically at different wavelengths, into one aggregate signal to be transported via a single fiber (or transmission channel).

Nanopositioning: A positioning technique used during optical component manufacturing to align components with a precision measured in nanometers (one billionth of a meter).

Optical Layer: Commonly used to refer to specific wavelengths or channels of a DWDM network. Each wavelength carries a separate stream of data encoded in a light signal.

Optical Switch: A device that enables light signals in optical fibers to be selectively transferred from one input port to a desired output port.

Payload: Part of the SONET/SDH signal that carries data or traffic.

Physical Layer: Commonly used to refer to the propagation medium of an optical network, including the glass fiber and all in-line active and passive components. Light signals, which are forms of encoded data, are transmitted over this layer.

Polarization Mode Dispersion (PMD): Dispersion of light causing a delay between the two principal states of polarization propagating along a fiber or through a device due to the birefringence properties of the material.

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.

Protocol Layer: Commonly used to refer to the formatting rules for transmitting data over an optical network. Networks send and receive data using industry-wide formats; some examples are SONET, SDH, ATM and Ethernet.

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.

Storage Area Network (SAN): A special high-speed network that interconnects different kinds of data storage devices with associated data servers on behalf of a larger network of users. Within an enterprise, the data is typically stored in other on-site computers, but can also be archived in a geographically remote location for disaster recovery.

Transponder: Communication, monitoring or control device that picks up and automatically responds to an incoming signal. The term is a contraction of the words transmitter and responder.