

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).

ATM: Asynchronous Transfer Mode. A data networking protocol used for high-bandwidth, low-delay, connection-oriented, packet-like switching and multiplexing.

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.

DWDM: Dense Wavelength-Division Multiplexing. 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.

E1: European Digital Hierarchy standard used for transmitting data over an optical network containing 30 voice channels at 2.048 Mb/s.

Enterprise network: A network for a large business enterprise, generally dominated by data transmission. This kind of network may comprise a number of local area networks in various buildings on a campus that need to interface with each other, as well as a central database management system and many client workstations.

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

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

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).

OC-192: A standard optical signal transmission rate of approximately 10 gigabits per second. Equivalent to SDH STM-64.

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.

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.

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.

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: 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.

STM-64: Synchronous Transfer Module. Optical signal standards transmission rate, part of SDH. STM-64 operates at a rate of 9953.28 Mb/s. Equivalent to SONET OC-192.

Vertical-cavity surface-emitting laser (VCSEL): A semiconductor diode laser whose cavity consists of mirrors surrounding an active light-emitting layer. Light is emitted vertically from the surface, allowing the VCSEL device to be tested while still on the wafer. In conventional semiconductor lasers, the mirrors are positioned perpendicular to the active layer and the light is emitted from the edge of the wafer.

Virtual private networking (VPN): One or more wide area network links over a shared public network, typically over the Internet or an IP backbone from a network service provider (NSP), that simulates the behavior of dedicated WAN links over leased lines.