



## Last Mile Glossary

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**ADM:** Add/drop multiplexer. A device that manages multichannel Sonet or TDM links, picking up and assigning individual channels to a particular group of channels with a specific destination.

**Cable access router:** An access router designed to deliver Ethernet services over cable TV networks. Most cable access routers are compatible with DOCSIS specs (q.v.).

**Cable modem:** An external device or card that links to a PC to bring Ethernet data services from the cable TV network to SOHO (small office/home office) customers or residential users.

**CMTS:** Cable modem termination system. Device in the headend of a cable TV network that channels data traffic to residential customers over the hybrid fiber coax network. CMTSs achieve their task by applying quadrature amplitude modulation (QAM, q.v.) to the radio frequencies used for TV broadcasting. This technique conforms to the DOCSIS specifications (q.v.) and allows home or small business users to access the CMTS via an Ethernet link to their cable modem.

**CEV:** Controlled environmental vault. A large, underground water- and weatherproof enclosure containing telecom transmission gear.

**CWDM:** Coarse wave division multiplexing. The technique of running a small amount of wavelengths (typically four or less) over a single fiber optic connection. (See **DWDM**)

**DLC:** Digital loop carrier. A device that links services from carrier fiber to subscriber copper. DLCs are usually housed in the point of presence office or in an outdoor cabinet about 9,000 to 12,000 feet from a cluster of residences. Each DLC serves 600 to 2,000 subscribers

**DOCSIS:** Data over cable systems (or service) interface specification. A series of specs that define how data can be carried in Ethernet format over cable TV lines. Originated and regulated by [Cable Television Laboratories Inc. \(Cablelabs\)](#), a consortium of North and South American cable TV operators.

**Dropline:** The portion of the access network, usually copper, that directly serves customers.

**DSLAM:** Digital subscriber line access multiplexer. A device that controls the modulation and flow of voice and data between the carrier network and multiple copper connections.

**DSL:** Digital subscriber line. A technique for running high-speed data over analog copper phone lines and supporting voice and data on the same connection. There are different flavors of DSL for transmission of two-way voice, video, and data.

**DWDM:** Dense wavelength-division multiplexing. The technique of running many (at least four or more) individual wavelengths of light over a single fiber optic connection. DWDM wavelengths typically operate at 1310 nanometers or 1550 nm, depending on the number of wavelengths or "channels" driven over the fiber.

**Fiber multiplexer (fiber mux):** A device that converts multiple DS3s from fiber to copper for business use.

**Fiber node:** Also known as a hub in cable TV network parlance. Generally, the location in the cable TV provider's network where fiber is converted to coax for delivery of service to home or small business users. Usually housed in a box mounted outdoors on a stand or pole.

**Fiber to the curb:** Refers to the scenario when fiber is pulled from the CO to a so-called fiber node or to a high-rate digital terminal in an outdoor cabinet alongside homes or office buildings.

**FTTH:** Fiber to the home. Refers to providing last-mile fiber connectivity directly to residential users, instead of relying on coax or copper. Today's FTTH deployments are generally limited to some residential PON (q.v.) trials being undertaken by RBOCs (regional Bell operating companies) such as BellSouth, although a range of smaller independent telcos and CLECs also have installed FTTH lines.

**Fiber to the node or neighborhood:** A general term that refers to the scenario when fiber is pulled to a larger hub or ONU (q.v.), in which fiber is linked to multiple copper or coax lines, typically serving about 200 residential or small business customers with a radius of about 3,000 to 4,000 feet.

**GR-303:** A Telcordia interface that provides a generic, nonproprietary link between any conforming vendor's central office switches and third-party DLCs (q.v.).

**Headend:** The cable TV provider's equivalent of a central office. The location where TV and data broadcast signals originating in the provider's core network are transmitted to and from a network of hubs or nodes. Most headend locations serve multiple hubs in a radius of about 100 miles. A headend is typically housed in a building or data center and can be shared among many providers.

**HFC:** Hybrid fiber coax. A network in which a cable TV operator has replaced the coax connections that link its headend to neighborhood nodes with fiber -- typically to support data connectivity for its customers.

**IAD:** Integrated access device. A CPE device, typically ATM-based, that converts Sonet bandwidth to a variety of local interfaces for use on customer networks.

**M13 multiplexer:** A multiplexer specifically designed to aggregate up to 28 DS1 channels operating at 1.544 Mbit/s into DS3s operating at 44.736 Mbit/s.

**MSO:** Multi-service operator. A term coined for a new breed of service provider that offers cable TV, voice telephony, and data services.

**Multimode fiber:** Fiberoptic cable with a typical core diameter of 25 to 200 microns. This core is larger than that of singlemode fiber and allows for relatively inexpensive coupling with cheaper light sources. Multimode fiber's chief drawback is that it only supports short distances -- up to about 2 kilometers.

**MSPP:** Multiservice provisioning platform. A system that combines Sonet connectivity, DWDM, and standard Ethernet and CPE interfaces with Layers 2 and 3 data intelligence in order to help carriers provision a range of services dynamically to customers. Used to bypass the Sonet network.

**OLT:** Optical line terminal. A switch used in PONs (q.v.) to manage the two-way multiple shared connections created by the PON splitters. Also known as the headend equipment connected to a PON.

**ONU:** Optical network unit. A generic term meaning any device that converts optical signals over fiber to copper-based electrical signals, typically within 1,000 feet of a residence or business. ONUs are key elements of "fiber to the curb" approach to access. The ONUs in that case sit inside outdoor controlled environmental vaults or remote terminals.

**Pair gain:** The situation that results when a set number of twisted pair wires serve more subscribers than their physical capacity permits, as a result of the fact that subscribers don't use the pairs at the same time.

**PON:** Passive optical network. A network in which bandwidth traveling over fiber is shared among multiple users, via the use of splitters. PONs are typically viewed as an economical alternative to running dedicated fiber to home or business customers.

**QAM:** Quadrature amplitude modulation. The technique used by modems and other gear to squeeze digital data into analog format for transmission on copper phone lines.

**Set-top box:** Device used to extend the capabilities of a user's TV to handle voice, data, or more TV channels

**Singlemode fiber:** Fiber optic cable made of a single strand of glass, typically 5 to 25 microns in diameter, which supports transmission rates over distances ranging from about 15km to 45km. Most carrier networks are comprised of singlemode fiber, which is converted to multimode fiber through CPE (customer premises equipment) converters inside routers or in small boxes on customer premises. Singlemode fiber used to be significantly more expensive than multimode fiber, but the difference has lessened with the increased use of singlemode.