
Guide to Telecommunications Technology

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COURSE TECHNOLOGY
CENGAGE Learning®



Guide to Telecommunications Technology
is published by Course Technology

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ISBN-13: 978-0-6190-3547-1

ISBN-10: 0-619-03547-1

Course Technology

25 Thomson Place
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Table 4-1 Traditional common carriers (continued)

Acronym	Full Name	Description	Industry Examples
CLEC	Competitive local exchange carrier	A type of LEC that never enjoyed a monopoly on telephone service, but since the Telecommunications Act of 1996 has competed with the ILECs.	COVAD Communications, KMC Telecommunications, Fairpoint Communications, and many others
IXC	Interexchange carrier	A carrier that provides interLATA telephone service (also known as long-distance service).	AT&T, Sprint, WorldCom, and many others

Nontraditional Common Carriers

Not all modern common carriers can be clearly identified as either LECs or IXCs. The definition of a common carrier (according to the FCC) includes companies that supply regulated “telecommunications services.” Since the origin of the FCC, “telecommunications services” has come to include more than traditional, wireline voice communications. Now, it also includes wireless and data communications. Consequently, wireless communications providers (including those that provide paging, cellular telephone, and satellite communication services) are also considered common carriers. Examples of such nontraditional common carriers include Cingular, Iridium, and U.S. Cellular. In addition, some companies that offer connections to the Internet, such as high-speed cable operators or ISPs, may be considered common carriers. Examples of this type of common carrier include Aerie Networks, Level 3 Communications, and Norlight Telecommunications. However, despite the proliferation of nontraditional common carriers, regulators such as the FCC are still primarily concerned with monitoring basic telephone service providers.

OUTSIDE PLANT

Outside plant refers to the system of cabling, poles, towers, and other connectivity equipment between the customers and central offices. In the telecommunications business, outside plant is sometimes known as simply **OSP**. Although most of the elements of outside plant are indistinguishable to a layperson, each portion has a different purpose and a different name, all of which are familiar to telecommunications technicians. The following sections detail each component of a carrier’s outside plant.

Demarcation Point

The **demarcation point** (or **demarc**) is the location where one entity’s telephone or network facilities connect to another entity’s telephone or network facilities. The term “demarcation point” does not technically refer to a physical item, but rather a logical distinction, similar to the boundary between neighborhoods in a city. The physical equivalent of the demarcation point is the **network interface device (NID)**. In the case of the public network, this is where a telephone subscriber’s wires terminate and connect with the local service provider’s wires. (You learn more about wires and how

they are terminated in Chapter 8). The NID is typically enclosed in a box (which may or may not be locked), both to prevent unauthorized tampering and to protect it from environmental damage. In most cases, this **demarc box** is the property of the LEC.

On a residence, the demarc box is attached to the outside of the house or is located in the basement. Figure 4-1 depicts a typical residential demarcation point. Inside the box, one or two wire pairs terminate (depending on if the residence has one or two phone lines) and connect to a jack, which in turn connects with the LEC's incoming telephone lines. On the LEC's side of the box, each line is connected to a grounded **station protector**, which prevents the customer's telephone equipment from being damaged in the event of excessive current affecting the line. Figure 4-2 shows the inside of a demarc box. Notice the customer wire pairs terminating on the right hand side of the box while the LEC wire pairs terminate on the left side.

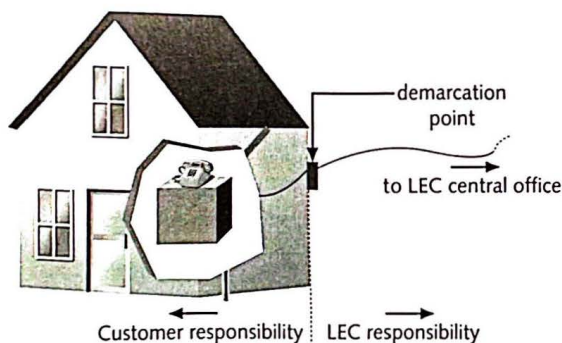


Figure 4-1 A residential demarcation point

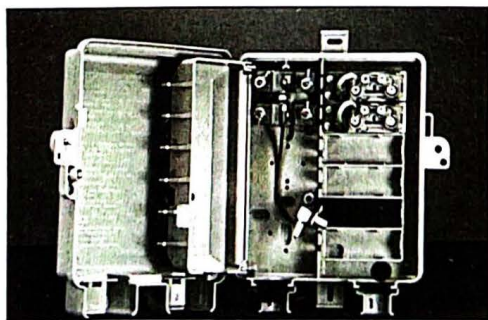


Figure 4-2 A residential demarc box

The demarcation point for a business is usually found in a much larger box, containing dozens of numbered wire pair terminations. Alternatively, the network interface device may terminate fiber connections between the business and the carrier. A business demarc is often

network — A group of computers and other devices (such as printers) that are connected by communications channel. Networks enable multiple users to easily share resources and exchange data.

network access method — A networking technology defined by its Data Link layer data packaging and Physical layer signaling techniques. Also known as network transport system or access method. Ethernet and Token Ring are examples of network access methods.

network access point (NAP) — A facility operated by one large network service provider where Internet traffic is aggregated and exchanged. In the United States, there are five major NAPs.

network adapter — See network interface card (NIC).

network administrator — A professional charged with installing, maintaining, and troubleshooting a network.

network interface card (NIC) — The device that enables a workstation to connect to the network and communicate with other computers. NICs are manufactured by several different companies and come with a variety of specifications that are tailored to the workstation's and the network's requirements.

network interface device (NID) — The physical point at which a subscriber's facilities connect with a service provider's facilities.

Network layer — The third layer in the OSI model. The Network layer translates network addresses into their physical counterparts and decides how to route data from the sender to the receiver.

Network layer addresses — The addresses that reside at the Network level of the OSI model, follow a hierarchical addressing scheme, and can be assigned through operating system software.

Network News Transfer Protocol (NNTP) — The protocol that supports the process of reading newsgroup messages, posting new messages, and transferring news files between news servers.

network operating system (NOS) — The software that runs on a server and enables the server

to manage data, users, groups, security, applications, and other networking functions. The most popular network operating systems are Microsoft Windows NT, Windows 2000, UNIX, and Novell's NetWare.

network service provider (NSP) — A telecommunications company that provides infrastructure for either public or private traffic. NSPs aren't necessarily ISPs because they may simply provide the infrastructure for connections, but not operate access servers for a consumer's initial entry to the Internet. However, most NSPs are ISPs.

Network Termination 1 (NT1) — A device used on ISDN networks that connects the incoming twisted-pair wiring with the customer's ISDN terminal equipment.

Network Termination 2 (NT2) — An additional connection device required on PRI to handle the multiple ISDN lines between the customer's network termination connection and the local phone company's wires.

neutrons — An atomic subparticle found at the center of an atom, which possesses no charge (and is said to be neutral).

next generation network (NGN) — A network that provides voice, video, and data services over the same infrastructure.

newsgroup — An Internet service similar to e-mail that provides a means of conveying messages, but in which information is distributed to a wide group of users at once rather than from one user to another.

node — A computer or other device connected to a network that has a unique address and is capable of sending or receiving data.

noise — Unwanted interference from external sources, such as fluorescent lights, cathode ray tubes, or broadcast towers, that may degrade a signal. Noise may include electromagnetic interference or radio frequency interference.

North American Numbering Plan (NANP) — The scheme for assigning unique numbers to every telephone line in North America. NANP