

Hargrave's Communications Dictionary

Frank Hargrave

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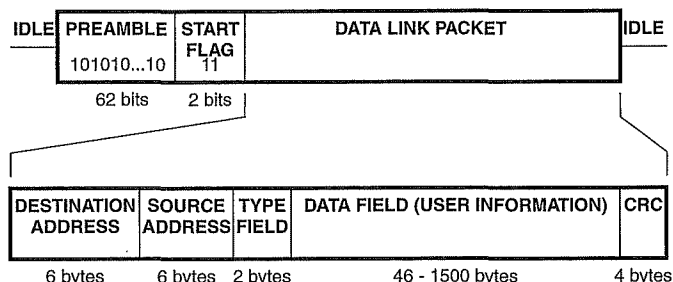
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Ethernet A 10-Mbps, baseband, carrier sense multiple access with collision detector (CSMA/CD) local area packet network (LAN) architecture invented by Xerox and developed by DEC, Intel, and Xerox in 1976 from which the IEEE 802.3 standard was developed. Later, both ANSI and the ISO standards groups adopted the IEEE standard with only slight modifications. The protocol uses Manchester waveform encoding.

Strictly speaking, the original *Ethernet* should be referred to as a *DIX Ethernet*, while the IEEE version is called an *IEEE 802.3 network*. This distinction has not generally been observed except by LAN experts. The packet structure has the form:



The term *Ethernet* is derived from "luminiferous ether," the substance nineteenth-century scientists thought was necessary for transporting lightwaves and radio waves. (They were wrong!) Several wiring standards are defined: the 1Base5 twisted pair system, the 10Base2 coaxial system, the 10Base5 coaxial system, and the 10BaseT twisted pair system. The number before "Base" indicates the data transfer rate; that is, 10 indicates a 10-Mbps data rate, "Base" stands for baseband transmission, and the final digit 2, 5, or T stands for 200 meters (185 meters rounded off to 1 digit), 500 meters, and twisted pair.

1Base5 (StarLAN)—the IEEE 802.3 designation for a 1-Mbps Ethernet LAN that uses unshielded twisted pair (UTP) cable. The physical topology is a bus with nodes attached to the common cable. AT&T's StarLAN is an example of a 1Base5 network.

10Base2 (Thin Ethernet)—the IEEE 802.3 designation for a 10-Mbps Ethernet in which a wiring segment is a single-shielded 50-Ohm coaxial cable (RG58) with BNC connectors and can be up to 185 meters in length. The maximum number of nodes per segment is 30, separated by at least 0.5 meters.

10Base5 (Thick Ethernet)—a 10-Mbps Ethernet in which the backbone wiring segment can be up to 500 meters and is a 50-Ohm twinaxial cable. Each node is connected to the Thick Ethernet cable via a transceiver and transceiver cable. Up to 100 transceivers may be installed on the backbone cable. The maximum length of the transceiver cable is 50 meters.

10BaseT (Twisted Pair Ethernet)—the IEEE 802.3 10-Mbps Ethernet in which each twisted pair wiring segment can be up to 100 meters. The cable may be either unshielded twisted pair (UTP) or shielded twisted pair (STP). The physical network is a star topology; that is, each node is connected to a central hub. The network may be expanded to five sections through four repeaters.

10BaseF—an IEEE 802.3 10-Mbps Ethernet that uses fiber optic cable for transmission.

Switched Ethernet. A method of improving the performance of traditional Ethernet networks. The technique splits the network into a number of subnets interconnected by a hub. Each subnet can use the full data transmission capacity simultaneously unless packets are di-

rected through the hub to adjacent subnets. If the subnets are arranged into natural working groups, the amount of trans-hub traffic is minimal.

Fast Ethernet. Any "extension" of the Ethernet technology which increases the data rate from 10 Mbps to 100 Mbps. See also *IEEE 802.x*.

Ethernet switch A data switch that allows users on different network segments to exchange data. When users on different segments exchange data, an Ethernet switch dynamically connects the two separate Ethernet channels without interfering with other network segments. The switch can create multiple independent connections between separate segments, allowing multiple parallel data exchanges. This multiplies network bandwidth without modification to Ethernet end station hardware or software.

EtherTalk Apple Computer's protocol for Ethernet transmissions. It is the driver used to communicate between the Macintosh and an Ethernet network interface card. Two versions of EtherTalk have been developed:

- EtherTalk Phase 1 is based on the DIX Ethernet 2 version, also known as Blue Book Ethernet.
- EtherTalk Phase 2 is based on the IEEE 802.3 Ethernet.

See also *AppleTalk*.

Ethertype A two-byte code indicating the protocol type in an Ethernet packet.

ETL An abbreviation of Effective Testing Loss.

ETSI An abbreviation of the European Telecommunications Standards Institute.

ETX An abbreviation of End of Text.

EU An abbreviation of European Union.

Eudora A client program for Internet mail users. It not only provides support for mail sending, receiving, printing, and deleting but also provides multimedia support (voice and video) and encryption for mail privacy. The program runs on UNIX, IBM PC, and Macintosh-based systems.

Eudora was originally developed by Steve Dorner at the University of Illinois circa 1989. The program's name is from the author of the short story "Why I Live at the P. O."—Eudora Welty. The original versions are *freeware* and are still available on the Internet; however, the newest version is a commercial product.

EUnet A major network in Europe, interconnecting several thousand sites across 25 countries. It is funded by subscriptions from the participating organizations. The network emphasis is on education and research.

European Academic and Research Network (EARN) Essentially, the European branch of BITNET, it links the universities and research facilities of more than 27 countries throughout Europe, the Middle East, and Africa. As with BITNET, *EARN* uses IBM's network job entry (NJE) protocol. Access to the Internet is via a gateway.

European Backbone Network (EBONE) A multi-protocol backbone service available for networking throughout Europe. It is intended to encourage the development of research, educational, and commercial networking in Europe. EBONE is the regional backbone for many European autonomous networks.