

The IEEE 802.x Protocols

IEEE 802.1 defines Physical and Data Link Layer standards for allowing one IEEE 802 LAN station to communicate with another station on a different LAN or WAN.

IEEE 802.2 defines the Logical Link Control (LLC) sublayer of the IEEE 802.x series. It is commonly used with IEEE 802.3, 802.4, 802.5, and 802.6 implementations.

IEEE 802.2 adds header fields to identify which upper layer protocol is used in the frame and which Network layer processes the frame's source and destination use.

IEEE 802.3 specifies a variety of Physical layer options, including different signaling modes (baseband and broadband), media types, topologies, and data rates. The common element of each of the options is their use of the Carrier Sense Multiple Access/Collision Detection (CSMA/CD) media access method.

The individual implementations of 802.3 have been given names that use a three-part naming convention. The first part is a number that represents the data rate in megabits per second (Mbps). The second part indicates BASE for baseband and BROAD for broadband signals. The third part indicates a rough effective distance or is used as a special designator.

IEEE 802.4 was created, primarily, to satisfy the LAN needs of factory and industrial automation. This standard defines a physical bus topology, a token-passing media access method, both baseband and broadband media, and 75 ohm CATV-type cable or optical fiber.

IEEE 802.5 is based on IBM's Token-Ring specification. It uses a token-passing media access method and supports data rates of 1, 4, or 16 Mbps. Unlike IBM's Token-Ring, the 802.5 specification does not mandate a specific transmission medium or physical topology.

IEEE 802.6 uses a data transfer technology called Distributed Queue Dual Bus (DQDB) that allows both synchronous and asynchronous traffic for supporting voice, video, and data transmissions.

IEEE 802.7 defines a standard for the design, installation, and test parameters of broadband communication.

IEEE 802.8 defines a Fiber Optic Technical Advisory Group to work with the 802 working groups on fiber optic technology and standards.

IEEE 802.9, Isochronous Ethernet (also known as IsoEneT), focuses on the integration of voice transmissions with data transmissions and supports both sporadic and patterned traffic. This specification is rarely used.

IEEE 802.10 defines a standard for services, protocols, data formats, and interfaces that securely exchange data using encryption mechanisms.

It also defines the management and distribution of encryption key information. This standard is independent of any particular encryption algorithm or transmission media.

IEEE 802.11 defines standards for wireless LAN implementations like spread-spectrum and infrared devices.

IEEE 802.12 defines a 100 Mbps physical star topology contention-based network standard known as 100VG-AnyLAN. Unlike typical contention systems, 802.12 network devices will contend for media access by signaling a hub. When multiple simultaneous transmission requests occur, the hub grants transmission rights to the highest priority traffic first. IEEE 802.12 will support both Ethernet and token ring frame types.

You can find more information on the IEEE 802.x protocols on the Internet from the IEEE at <http://www.ieee.org>