

IEEE Standard Glossary of Computer Networking Terminology

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Abstract: Terms that pertain to data communications and networking, from the following areas, are defined: Data transmission, general communications, general networks, local area networks, network communications security, network errors, networking hardware, network management, network nodes, network signaling, open system architecture, packet, protocols, standards and standards organizations, telephony. The glossary is primarily a compilation of terms defined in individual IEEE standards, but also includes a number of common terms.

Keywords: computer glossary, computer networking, computer terminology

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- 3.307 error control:** A technique used to detect the presence of errors and add refinements to correct the detected errors. *See also:* **echo check.**
- 3.308 error rate:** The ratio of the number of characters of a message incorrectly received to the total number of characters of the message received.
- 3.309 ESS:** Acronym for **electronic switching system.**
- 3.310 ETB character:** Acronym for **end of transmission block character.**
- 3.311 exception condition:** A condition assumed by a secondary or remote station when it receives a command that it cannot execute, or when it receives data it cannot process.
- 3.312 exchange:** *See:* **central office.**
- 3.313 exchange area:** In North America, an area within which there is a single uniform set of charges for telephone service. An exchange area may be served by a number of end offices. *Note:* In Europe, the area of service of a single end office is an exchange area. A call between any two points within an exchange area is a local call.
- 3.314 Exchange Carriers' Standards Association (ECSA):** The Secretariat for ASC T1, which develops the ASC T1's series of standards on telecommunication.
- 3.315 exchange service:** In data communications, a service that permits interconnection of any two customers' stations through the use of the exchange system.
- 3.316 exchange system:** In data communications, a system that controls the connection of incoming and outgoing lines.
- 3.317 extended acknowledgment (EACK):** *See:* **selective acknowledgment.**
- 3.318 failure management:** *See:* **fault management.**
- 3.319 fair queuing:** In networking, a method for controlling congestion in a network node by restricting other nodes to an equal share of the node's bandwidth. *See also:* **source quench.**
- 3.320 fan-out box:** A device that provides the capability to connect multiple devices to a single transceiver. *See also:* **tap.** *Syn:* **multi-port; multi-tap.**
- 3.321 fast packet switching:** A packet switching technique in which formats and procedures are designed to minimize packet processing time. *See also:* **cell relay; frame relay.**
- 3.322 fault management:** In networking, a management function that is defined for detecting, isolating, and recovering from abnormal network behavior. *Syn:* **failure management.**
- 3.323 FCC:** Acronym for **U. S. Federal Communications Commission.**
- 3.324 FCS:** Acronym for **frame check sequence.**
- 3.325 FDDI:** Acronym for **fiber distributed data interface.**
- 3.326 FDM:** Acronym for **frequency division multiplexing.**
- 3.327 FEC:** Acronym for **forward error correction.**
- 3.328 fiber bundle:** An assembly of unbuffered optical fibers, usually employed as a single transmission channel.
- 3.329 fiber distributed data interface (FDDI):** An ANSI standard based on fiber optics configured in a dual, counter-rotating ring and operating at 125 million baud with a user data rate of 100 Mb/s. FDDI uses a token passing MAC so that it can operate on non-fiber media such as unshielded twisted pair. *Notes:* With the physical layer protocol overhead removed, the net throughput is 100 000 000 b/s and with the MAC overhead removed, the net throughput is less than 100 000 000 b/s. 2) For more information, refer to the specific ISO/IEC 9314 standard.
- 3.330 fiber optic cable:** A cable containing one or more of the optical fibers. [ISO/IEC 8802-3 : 1993]
- 3.331 fiber optics:** A technology that uses light as a digital information carrier. [IEEE Std 610.10-1994a]
- 3.332 file server:** On a network, a server that provides access to requesters at the file level; that is, an entire file or a file segment is sent to a requestor. *See also:* **database server; disk server; mail server; network server; print server; terminal server.**

3.333 file transfer protocol (FTP): A protocol for transferring files between computers.

3.334 fixed routing: A routing strategy for store-and-forward network, in which the next path to each specific destination is always the same at each point in the network.

3.335 FM: Acronym for **frequency modulation**.

3.336 forced collision: A collision that occurs when a packet is transmitted even when traffic is detected on the network and, therefore, the packet will collide with other packets already on the network.

3.337 foreign exchange (FX): An exchange that connects a customer's location to a remote customer.

3.338 foreign exchange circuit: A circuit that provides foreign exchange service. *See also:* **dial-up circuit; four-wire circuit; leased circuit; simplex circuit; two-wire circuit.**

3.339 foreign exchange service: A service that provides a connection between a customer and a central office other than the one that serves the exchange area in which the customer is located.

3.340 forward error correction (FEC): A technique that identifies errors incurred in transmission and allows corrections to be done at the receiving station without retransmission of the message. *See also:* **Hamming code.**

3.341 forward supervision: The use of supervisory sequences sent from a primary station or node to a secondary station or node. *Contrast with:* **backward supervision.** [ISO/IEC 2382]

3.342 four-wire circuit: A leased circuit in which two pairs of conductors are set up for a two-way transmission path. *See also:* **dial-up circuit; foreign exchange circuit; simplex circuit; two-wire circuit.**

3.343 four-wire terminating set: (1) An arrangement in which four-wire circuits are terminated on a two-wire basis for interconnection with two-wire circuits. (2) An arrangement by which a four-wire equivalent circuit is converted to a four-wire circuit.

3.344 frame: (1) A group of digits transmitted as a unit that carries a protocol data unit on a network.

(2) A unit of transmission at the data link layer or, sometimes, the physical layer.

3.345 frame check sequence (FCS): A field in a bit-oriented protocol frame containing the remainder of the cyclic redundancy check calculation on the contents of the frame.

3.346 frame check sequence error: An error in which the frame check sequence value contained in a received frame does not match the frame check sequence value calculated by the receiver. *See also:* **cyclic redundancy check.**

3.347 frame relay: A fast packet switching technology that provides a virtual circuit service relaying variable-size frames but only employing physical layer and data link layer protocols. *See also:* **cell relay.**

3.348 frequency: The number of times per second that a wave cycle (one peak and one trough) repeats at a given amplitude.

3.349 frequency division multiplexing (FDM): A multiplexing technique for sharing a transmission channel wherein carrier signals of different frequencies are transmitted simultaneously.

3.350 frequency modulation (FM): A modulation technique in which a data signal is sent onto a carrier by modifying the transmitted frequency.

3.351 frequency shift keying (FSK): A modulation technique in which binary 0 and 1 are represented by two different frequencies. *See also:* **amplitude-shift keying; binary phase shift keying.**

3.352 frequency-derived channel: A channel obtained from multiplexing a channel by frequency division. [IEEE Std 610.10-1994]

3.353 front-end computer: A computer that interfaces between a group of terminals, communication links, and a host computer and performs communications, error checking code conversion, and other special purpose functions. *See also:* **communications computer.** *Syn:* **front-end processor.** [IEEE Std 610.10-1994a]

3.354 front-end processor: *See:* **front-end computer.**

3.355 FSK: Acronym for **frequency shift keying.**

3.356 FTP: Acronym for **file transfer protocol**.

3.357 full duplex operation*: *See:* **two-way simultaneous operation**.

* Deprecated

3.358 full duplex transmission*: *See:* **duplex transmission**.

* Deprecated

3.359 functional grouping: A grouping of functions into sets such that all the functions within the same group are performed by a homogenous set of equipment. *Note:* Grouping is based upon equipment's function rather than upon the actual physical realization. One function may be spread over multiple physical boxes or one physical device may perform several functions.

3.360 functional model: An OSI management model that provides a conceptual and terminological framework for specific management functional areas.

3.361 functional unit: An entity of hardware and software, or both, capable of accomplishing a specified purpose.

3.362 FX: Acronym for **foreign exchange**.

3.363 gateway: (1) A dedicated computer that attaches to two or more networks and that routes packets from one to the other. (2) In networking, a device that connects two systems that use different protocols. *Contrast with:* **bridge**. *See also:* **mail gateway; router**.

3.364 Gaussian noise: Noise characterized by a wide frequency range with regard to the desired signal of communication channel, statistical randomness, and other stochastic properties.

3.365 GHz: Abbreviation for **gigahertz**.

3.366 gigahertz (GHz): A unit of frequency equal to 1 000 000 000 Hz, that is, 10^9 Hz.

3.367 Go-Back-N: A transmission scheme where the transmitter may send multiple PDUs without waiting for an acknowledgment. If the receiver indicates that an error occurred in a given PDU, the sender will retransmit the errored PDU and all subsequently transmitted PDUs. *Note:* In this scheme,

the receiver will only accept PDUs in sequential order. *Contrast with:* **selective retransmission**.

3.368 half-duplex (HD or HDX) transmission: Transmission in which data may be sent in either direction but only in one direction at a time on a transmission medium. *Contrast with:* **duplex transmission; simplex transmission**.

3.369 Hamming code: Any of several error-correcting codes invented by the mathematician Richard Hamming, which use redundant information bits to detect and correct any single error in a transmitted character. [IEEE Std 1084-1986]

3.370 handshaking: The exchange of predetermined signals or control measures between two systems or system components upon initial exchanges. *Note:* When the connection is established, the two components acknowledge each other. [IEEE Std 610.10-1994]

3.371 HD: Acronym for half-duplex.

3.372 HDLC: Acronym for ISO's **high-level data link control protocol**.

3.373 HDX: Acronym for **half-duplex**.

3.374 headend: (1) A point where two or more half-duplex data paths are joined on the communications network. (2) The location in a broadband system that serves as the root for the branching tree comprising the physical medium; the point to which all inbound signals converge and the point from which all outbound signals emanate. [ISO/IEC 8802-3 : 1993]

3.375 header: The contiguous control bits preceding a frame, packet, block, or other data stream of bits that contain information about the message such as the address, type of frame, and/or sequencing. *Contrast with:* **trailer**.

3.376 header hub (HH): The highest-level hub in a hierarchy of hubs. The header hub broadcasts signals transmitted to it by lower-level hubs or DTEs, such that they can be received by all DTEs that may be connected to it, either directly or through intermediate hubs. *Note:* This term is contextually specific to IEEE Std 802.3, clause 12. [ISO/IEC 8802-3 : 1993]

3.585 out-of-band signaling: The transmission of a signal using a frequency that is within the pass band of the transmission facility but outside a frequency range normally used for data transmission. *Contrast with:* **in-band signaling.**

3.586 over-sized packet: *See:* **long packet.**

3.587 overhead bit: In data communications, additional bits transmitted for control framing, synchronization, and error checking purposes.

3.588 PABX: Acronym for private automatic branch exchange. *See:* **private branch exchange.**

3.589 packet: A unit of data of some finite-size that is transmitted as a unit. *Note:* Usually consists of a header containing control information such as a sequence number, the network address of the station that originated the packet, and the network address of the packet's destination. *See also:* **long packet; short packet.** [IEEE Std 610.10-1994]

3.590 packet assembler/disassembler (PAD): A protocol conversion device that performs packet assembly/disassembly. *Note:* Generally refers to a terminal multiplexer device that connects hosts and terminals on a network.

3.591 packet assembly/disassembly (PAD): The process of dividing a message into packets for transmission over a packet switching network and then reassembling the packets in the original message.

3.592 packet data network: *See:* **packet switching network.**

3.593 packet error: An error that occurs when a packet is lost in the network. *See also:* **abnormal preamble; address error; alignment error; type error.**

3.594 packet switched network: *See:* **packet switching network.**

3.595 packet switching: A technique used in data communications in which messages are broken into finite-size packets and are forwarded to the other party over the network. Packets may vary in size so long as the size does not exceed the maximum size convention for the local network or protocol in use. *Note:* The packets need not travel the same path. At the end of the circuit, the packets are reassembled into the messages and are then passed on to the

receiving terminals. *Contrast with:* **cell switching.** *See also:* **fast packet switching; virtual circuit.**

3.596 packet switching network: A network that uses packet switching techniques for transmission of data. *Syn:* **packet data network; packet switched network.**

3.597 PAD: (1) Acronym for **packet assembler/disassembler.** (2) Acronym for **packet assembly/disassembly.**

3.598 PAM: Acronym for **pulse amplitude modulation.**

3.599 parallel transmission: In data communications, the simultaneous transmission of all the bits making up a character or byte where each bit travels on a different path. *Contrast with:* **serial transmission.**

3.600 parity: The value, even or odd, of the sum of a string of binary digits. For example, the parity of the string 0000111101001 is even. *Contrast with:* **cyclic redundancy check.** *See also:* **parity bit; parity check; parity error.**

3.601 parity bit: An extra bit attached to a byte, character string, or word, used to enable detection of transmission errors. Based on system convention, the bit is set making the number of ones in a grouping of bits either always even or always odd. *Note:* This permits detection of bit groupings containing single errors. [IEEE Std 610.10-1994a]

3.602 parity check: An error detecting code that uses the parity bit(s). *Contrast with:* **cyclic redundancy check.** *See also:* **longitudinal redundancy check; vertical redundancy check.**

3.603 parity error: An error that occurs when the parity bit of a string is found to be incorrect.

3.604 pass band: A range of frequencies transmitted to a terminal at low attenuation. *See also:* **bandwidth.**

3.605 path: *See:* **channel; channel path.**

3.606 PAX: Acronym for **private automatic exchange.**