ARCNET Glossary

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Alert: Alert Burst. Consists of six unit intervals of mark (logic "1") used at the beginning of all ARCNET transmissions.

ACK: Acknowledgement. An ARCNET transmission message sent to acknowledge either successful receipt of a data packet or to acknowledge that the destination node has a free data buffer.

AMI: Alternate Mark Inversion. Symbols that indicate a mark return to zero during the bit time and alternate in polarity on successive marks. This type of encoding is used with AC-coupled EIA-485 transmissions.

ARCNET: Attached Resource Computer Network (ARCNET) is a low-cost, token-passing LAN system, developed by Datapoint Corporation in the 1970s.

B

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BACnet: Term for the Building Automation and Control networking protocol (ANSI/ASHRAE Standard 135-2001). BACnet is a non-proprietary communication protocol standard conceived by a consortium of building managers, system users, and manufacturers under the auspices of ASHRAE.

Bandwidth: The maximum capacity of a network channel. Usually expressed in bits per second (bps) ARCNET channels have bandwidths of up to 10 Mbps.

Baud: A baud is a unit of signaling speed representing the number of discrete signal events per second and, depending upon the encoding, can differ from the bit rate.

Bit: A binary digit. The smallest unit of data, either a zero or a one.

Bit Rate: The amount of bits that can be sent per second. Usually described in units of kbps or Mbps and frequently referred to as the data rate.

Bridge: A device that connects two or more networks at the data link layer.

Bus: A shared connection for multiple devices over a cable or backplane.

Broadcast: A transmission initiated by one station and sent to all stations on the network.

C
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Category 5: Twisted-pair cable with electrical characteristics suitable for all twisted-pair Ethernet media systems, but sometimes used with ARCNET cabling.

Coaxial Cable: Electrical transmission cable with a center conductor and an outer electrical shield. Used in both broadband and baseband systems.

CRC: Cyclic Redundancy Check. An error checking technique used to ensure the fidelity of received data.

D
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Data Link Layer: Layer 2 of the OSI Reference model. This layer passes data between the network layer and the physical layer. The data link layer is responsible for transmitting and receiving frames. It usually includes both the media access control (MAC) protocol and logical link control (LLC) layers.

DCE: Data Communications Equipment. Any equipment that relays data between Data Terminal Equipme(DTE). DCE's are not considered end devices or stations.

Dipulse: An encoding symbol to indicate a mark condition consisting of a single size wave followed by an equal time of inactivity. Originally used for signaling over coaxial cable.

Driver: Software module that interfaces to a specific physical device such as a network interface card.

DTE: Data Terminal Equipment. Any piece of equipment at which a communication path begins or ends. A station (computer or host) on the network is capable of initiating or receiving data.

E
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Encoding: A means of combining clock and data information into a self-synchronizing stream of signals.

Error Detection: A method that detects errors in received data by cyclic redundancy checks (CRC) or a checksum.

Extended Timeouts: By extending the timeouts on all ARCNET controllers within a network, greater distances in overall cabling can be achieved. This may be a requirement when larger networks with fiber optic segments are to be implemented.

F
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FBE: Free Buffer Enquiry. Used to enquire if the receiving node has a free data buffer.

Fiber Optic Cable: A cable with a glass or plastic filament which transmits digital signals in the form of light pulses at wavelengths of 850 nm or 1300 nm.

Flow Control: The process of controlling data transmission at the sender to avoid overfilling buffers and loss of data at the receiver.

Frame: The fundamental unit of transmission at the data link layer of the OSI model.

Full-duplex Operation: A communications method that allows for the simultaneous transmission and reception of data.

H
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Half-duplex Operation: A communications method in which transmissions and receptions can occur in either direction, but not at the same time. ARCNET operates in half-duplex.

Hub: A DCE with three or more ports at the center of a star topology network. Hubs can usually be cascaded with a hub-to-hub connection. Frequently this name is used to mean repeating hub.

I
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IEEE: Institute of Electrical and Electronic Engineers. A professional organization and standards body.

Internet: Worldwide collection of networks based on the use of TCP/IP network protocols.

ITT: Invitation to Transmit. The token in an ARCNET LAN. The node possessing the token is the momentary master of the network.

J
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Jabber: The act of continuously sending data. A jabbering station is one whose circuitry of logic has failed, and which has locked up a network channel with its incessant transmissions.

L

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LAN: Local Area Network. Broadcast mode, packet-switched network confined to a local area, usually measured in the range of a "few" kilometers (km) to 50 km maximum separation.

Link: An ARCNET repeater that converts copper cabling to fiber optic cabling. Sometimes referred to as a media converter.

Link Layer: Short for Data Link Layer. This is layer 2 on the OSI model.

Link Segment: A point-to-point segment that connects only two devices and is "capable" of supporting full-duplex operation.

M

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MAC: Medium Access Control. A protocol operating at the data link layer used to manage a station's access to the communication channel.

MAC Address: A unique address assigned to a station interface, identifying that station on the network. With ARCNET, this is a unique 8-bit station address. Same as the physical address.

MAU: Medium Attachment Unit. The MAU provides the physical and electrical interface between an ARCNET device and the media system to which it is connected. Also referred to as a transceiver.

Media Converter: A device that converts signals from one media type to that of another. An ARCNET version is usually called a link.

Modbus: First published in the 1970s. Modbus is a protocol that provides the internal standard that Modicon controllers use for prsing messages.

N

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NAK: Negative Acknowledgment. An ARCNET message indicating that the destination node does not have a free buffer—sent in response to an FBE.

NIM: Network Interface Module. Also called an adapter, network interface card, resource interface module or interface card. The set of electronics that provides a connection between a computer and a network.

Node: Points in a network where service is provided, service is used, or communication—interpreting of the information sent and received. Each node has a unique address. Sometimes called a station.

NRZ: Non-return to zero. Symbols that indicate a mark remains in a marking state during the complete bit time. This type of encoding is commonly used with DC-coupled EIA-485 transmissions.

O
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OPC: Originally, OLE for Process Control. A process control communications standard for accessing process data from multi-vendor systems.

OSI: Open Systems Interconnection. A seven-layer reference model for networks, developed by the International Organization for Standardization (ISO). The OSI reference model is a formal method for describing the interlocking sets of networking hardware and software used to deliver network services. It is a good model, but strict compliance to the model is seldom accomplished.

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PAC: Packets. An information subset of information. Referred in ARCNET as the protocol data unit (PDU).

Packet: A unit of data exchanged at the network layer. This is a much abused definition and the terms "frame" and "packet" are frequently interchanged.

Patch Cable: A twisted-pair or fiber optic jumper cable used to make a connection between a network interface (on a station or network port on a hub) and a media segment or to directly connect stations and hub ports together.

Physical Layer: The bottom layer in the OSI seven-layer reference model. This layer is responsible for physical signaling—including connectors, timing, voltages, and related issues. Data sent over the physical layer are termed symbols.

Plenum Cable: A cable that is rated as having adequate fire resistance and satisfactorily low, smoke-producing characteristics for use in plenums (air handling spaces). Air-handling spaces are often located below machine room floors, or above suspended ceilings and require the use of plenum-rated cable.

Point-to-Point Technology: A network system component of point-to-point links. Each point-to-point link connects two and only two devices, one at each end. Devices could be DTEs or DCEs but no more than two can be connected on one link.

Port: A connection point for a cable on a repeate, link or hub.

Promiscuous Mode: A mode of operation where a device is configured to receive all frames on a network regardless of the destination addresses. Typically used by network analyzer tools.

Propagation Delay: The signal transit time through a cable, network segment, or device. Important in making extended timeout calculations.

Protocol: A set of agreed-upon rules and message formats for exchanging information among devices on a network.

R
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RECON: Reconfiguration Burst. A unique ARCNET transmission that interfaces with the normal token-passing protocol; thus, allowing one or more nodes to begin participating in a segmented token loop.

Repeater: A physical layer DCE used to interconnect segments within the same network. An ARCNET repeater can only link ARCNET segments that are all operating in half-duplex mode and at the same speed. Some repeaters can offer media conversions as well.

Repeating Hub: A repeater with more than two ports. This name is frequently shortened to simply "hub."

RJ-11: A 6-pin modular connector used on twisted-pair links.

RJ-45: A 8-pin modular connector used on twisted-pair links.

RIM: Resource Interface Module. Datapoint's description of an ARCNET interface to a computer functions identically to a network interface module.

RZ: Return to Zero. Signals return to zero volts within a bit time.

S
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Segment: A cable made up of one or more cable sections and connections joined together to produce the equivalence of a continuous cable.

SMA: Older style fiber optic connector with a continuous thread. There is a risk of overtightening this type of connector.

ST: Straight Tip. This is a more modern type of fiber optic connector used with ARCNET. The male end of this connector has an inner sleeve with a slot cut into it, and an outer ring with a bayonet latch. The inner sleeve is aligned with a mating key inthe socket and the outer ring is turned to complete the bayonet latch.

Star Topology: A network topology in which each station on the network is connected directly to a port or a hub.

Station: A unique, addressable DTE on a network. Sometimes referred to as a node.

T
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Token: In an ARCNET local area network (LAN), the token is a unique combination of bits which grants a node the permission to transmit.

Token Loop: The logical connections of nodes within the network that are participating in the token- passing protocol. Sometimes referred to as the logical ring.

Token Passing: An access method where nodes must receive the token in sequence. The node with the token becomes the momentary master of the network.

Topology: The physical layout of a network.

Transceiver: A combination of the words "transmitter" and "receiver." A transceiver is the set of electronics that sends and receives signals on a media system. Transceivers may be internal or external. Sometimes called a MAU.

Twisted-Pair Cable: A multiple-conductor cable whose component wires are paired together, twisted, and enclosed in a single jacket. A typical Category 5 twisted-pair segment is composed of a cable with four twisted pairs contained in a single jacket. Each pair consists of two insulated copper wires that are twisted together. When using twisted pair cable, ARCNET requires the use of only one cable pair.

U
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UTP: Unshielded Twisted-Pair Cable. UTP cable is a popular type of cable used in computer networking that consists of two unshielded wires twisted around each other without an overall shield.

W
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Web Server: A computer or device that serves up Web pages. By installing server software and connecting a computer or device to the network, it can become a Web server. Every Web server has an IP address and possibly a domain name.