Glossary of Industrial Ethernet Terms

NUMBERS

4B/5B : A block encoding scheme used to send Fast Ethernet data. In this signal encoding scheme, 4 bits of data are turned into 5-bit code symbols for transmission over the media system.

4D/PAM5 (aka PAM-5) : The encoding scheme used for 1000BASE-T over four twisted-pair links and having high bandwidth utilization. It uses four signalling levels for data and one level for forward error correction.

10BASE-T : 10 Mbps Ethernet system based on Manchester signal encoding transmitted over Category 3 or better twisted-pair cable.

10BASE-FL : Popular 10 Mbps link fibre optic solution which replaces the older FOIRL implementation utilizing 850 nm fibre optic technology.

100BASE-FX : 100 Mbps Fast Ethernet system based on 4B/5B signal encoding transmitted over fibre optic cable utilizing 1300 nm fibre optic technology.

100BASE-SX : 850 nm fibre optic technology that supports auto-negotiation. 100BASE-SX devices can communicate with 10BASE-FL devices at 10 Mbps and other 100BASE-SX devices at 100 Mbps.

100BASE-TX : 100 Mbps Fast Ethernet system based on 4B/5B signal encoding transmitted over two copper pairs.

100BASE-X : Term used when referring to any Fast Ethernet media system based on 4B/5B block encoding. Includes 100BASE-TX and 100BASE-FX media systems.

1000BASE-T : A standard for 1000 Mbps Ethernet communication over Category 5 UTP.

802.3 : The IEEE 802.3 Working Group that develops standards for Ethernet-based LANs.

A
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Analogue Data : Data that are continuous and smooth — not limited to discrete values.

Address Resolution Protocol (ARP) : A TCP/IP protocol for obtaining the physical address (MAC) of a node when the Internet address is known.

Applet : A computer program for creating an active Web document — usually written in Java.

Application Layer (Layer 7 in the OSI model) : This is the highest OSI layer in which networking application software interfaces with the human operator and uses underlying protocols to establish host-to-host connections. Examples include a Web browser, an email application, Telnet and a building management system application.

Application Programming Interface (API) : Information followed by programmers to write client-server programs.

Asynchronous Transmission : Transfer of data with start/stop bits and a variable time interval between data units.

AUI : Attachment Unit Interface. The 15-pin signal interface defined in the original Ethernet standard that carries signals between a station and an outboard transceiver.

Authentication : Verification of the identity of the sender of a message — usually with a username and a password.

Auto-Negotiation : An Ethernet standard protocol allowing devices at either end of a link to advertise and negotiate modes of operation such as the speed, half- or full-duplex operation and full-duplex flow control.

Auto-MDIX (Auto-Crossover) : A protocol allowing two Ethernet devices to negotiate their use of the Ethernet TX and RX cable pairs so two Ethernet devices can connect whether using a crossover cable or a straight-through cable.

B
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Backbone : A network that joins smaller networks together.

Bandwidth : The maximum capacity of a network channel. Usually expressed in bits per second (bps). Ethernet channels have bandwidths of 10, 100, or 1000 Mbps.

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

Best-Effort Delivery : In IP, a transmission mechanism that does not guarantee message delivery.

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.

Block Encoding : A system in which data bits are encoded as code bits to ensure synchronization and detection of errors — used in Fast Ethernet and Gigabit Ethernet.

Blocking : The condition in which a switching network is working at its full capacity and cannot accept more input.

Blocking Port : In STP and RSTP, a switch port that does not forward frames.

Bridge : A device with filtering and forwarding capabilities that connects two or more networks at the Data link Layer.

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

Browser : An application that displays a Web document — typically with the aid of other Internet services.

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

Byte : A unit of digital information — usually 8 bits. Originally, the bits needed to encode a text character. Historically, it was hardware dependent with no standard size. The term octet (8 bits) arose due to the ambiguity of the size of a byte.

C
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Cable Modem : A device integrating switch and modem functions to deliver broadband Internet via coaxial cable to a local network.

Cache : Small, fast memory for holding data that is being processed.

Category 5 : Twisted-pair cable with characteristics suitable for all twisted-pair Ethernet media systems — including 10BASE-T, 100BASE-TX and 1000BASE-T. Category 5 and Category 5e cable are preferred cable types for structural cabling systems.

Category 5e : An enhanced version of Category 5 cable, developed to improve certain cable characteristics important to Gigabit Ethernet operation. It is recommended that all new structured cabling systems be based on Category 5e cable; however, this cable may not be the best for use in industrial installations because of noise susceptibility.

Channel : A communications pathway.

Checksum : An error detection value derived from the sum of a bit stream.

Circuit Switching : Using a dedicated path to establish an electrical connection between stations.

Cladding : The glass or plastic surrounding the core of an optical fibre.

Client : A computer or application that obtains services from another machine, called the server.

Client Process : A local program process that requests service from a remote application.

Client-Server Model : The communication model in which a client program requests service from a server.

Collision : The result of having two or more simultaneous transmissions on a common signal channel such as half-duplex Ethernet or shared Ethernet.

Collision Domain : The set of all stations connected to a network where faithful detection of a collision can occur. A collision domain terminates at a switch port.

Core : The glass (or, rarely, plastic) centre of an optical fibre.

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

Crossover Cable : Twisted-pair patch cable wired so as to route the transmit signals from one piece of equipment to the receive port of another piece of equipment, and vice versa. This allows communication between two peer devices. The opposite of a crossover cable is the straight-through cable.

Crosstalk : Line noise caused by signals from another nearby (usually parallel) line.

CSMA/CD : Carrier Sense Multiple Access/Collision Detect. The medium access control (MAC) Protocol used in Ethernet.

D
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Datagram : In packet switching, a basic data unit in which delivery is not guaranteed. Its contains a header (source and destination addresses and a type field) and data. See User Datagram Protocol (UDP).

Data Link Layer (Layer 2 of the OSI model) : Communicates between the Network and Physical layers using data groups called frames. Aka just the Link Layer, it is divided into sublayers for Media Access Control (MAC) and Logical Link Control (LLC)

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

DHCP : See Dynamic Host Configuration Protocol.

DiffServ (Differentiated Services) : A layer-three QoS method described in RFCs 2474 and 2475. It uses the 8-bit ToS field in an IP frame.

Digital Data : Data represented by discrete values or conditions.

Digital Subscriber Line (DSL) : A technology using legacy telecommunication networks to achieve high-speed data delivery.

Dotted-Decimal Notation : An IP address version that is easier for humans to read. Each byte is converted to a decimal equivalent then separated from its neighbour by a dot.

Download : To transfer data from a remote site to a local one or from a server to a client.

DNS Server : A computer that converts user-friendly names into corresponding IP addresses that identify computer systems or resources in a network or on the Internet.

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

Dynamic Host Configuration Protocol (DHCP) : A protocol which allows a server to automatically assign an IP address to a subscribing device.

E
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Electromagnetic Interference (EMI) : Also called radio frequency interference (RFI). Electromagnetic energy (usually from an external source) that disturbs the data-handling properties of the affected equipment. The source may artificial (such as electrical equipment) or natural (such as radiation from the Sun).

Encapsulation : Placing a lower protocol message into the data field of a higher protocol to utilize the enhanced transportation capability of the higher protocol.

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 examining cyclic redundancy checks (CRC) or checksum.

Ethernet : A popular LAN technology first standardized by DEC, Intel, and Xerox (or DIX) and later standardized by the IEEE 802.3 committee. It operates at the physical and data link layers of the OSI model

F
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Fast Ethernet : A version of Ethernet that operates at 100 Mbps. Although 100 Mbps is no longer the fastest data rate, this term is still used.

Fast Link Pulse : A link pulse that encodes information used in the Auto-Negotiation Protocol. Fast link pulses consist of bursts of the normal link pulses used in 10BASE-T.

Fibre 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 (10BASE-FL and 100BASE-SX) or 1300 nm (100BASE-FX).

Fiber Optic Connector Intermateability Standards (FOCIS) : A set of standards of the Telecommunications Industry Association that insures proper mating of fibre connectors. FOCIS documents are in the series TIA/EIA-604-XX.

Firewall : Security firmware (usually in a router) to safeguard one network from another — typically separating a local network from the Internet.

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

FOIRL : Fiber Optic Inter-Repeater Link. An early version of fibre optic link segment. FOIRL was replaced by 10BASE-FL.

Forwarding : The process of moving frames from one port to another in a switching hub.

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

Full-Duplex Operation : A communication method that allows simultaneous transmission and reception of data.

G
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Gateway : A device that exchanges data between two networks that use different communication protocols.

Gigabit Ethernet (aka GbE or 1 GigE) : A version of Ethernet that operates at 1000 Mbps.

H
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Half-Duplex Operation : A communication method in which transmissions and receptions can occur in either direction but not at the same time.

Host (Node) : A station on a network.

Hub : A DCE with three or more ports at the centre 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.

Hypertext : Text that transfers the application focus to other documents via hyperlinks.

Hypertext Markup Language (HTML) : Computer language specifying the content and format of a Web document.

Hypertext Transfer Protocol (HTTP) : An application service for retrieving a Web document.

I
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IEEE : Institute for Electrical & Electronics Engineers. A professional organization and standards body.

IGMP Snooping : The ability of a switch to observe Internet Group Multicast Protocol (IGMP) traffic in order to learn IP Multicast group membership for the purpose of restricting multicast transmissions to only those ports which have requested them.

Interface : A means of communicating between components or technologies — involving either hardware (such as a graphics card) or software (such as a browser) or both.

Internet : Worldwide collection of networks based on the use of TCP/IP network protocols. The most common example of an Internetwork.

Internet Protocol (IP) : The Network-Layer protocol in the TCP/IP protocol suite that provides unguaranteed (connectionless) data exchanges across packet switching networks.

Internet Protocol Suite : The collection of protocols that are used for Internet messaging. The two main protocols are TCP (Transmission Control Protocol) and IP (Internet Protocol). It is commonly called TCP/IP but includes several more protocols.

Internetwork : A network of networks — connected with devices such as routers and gateways.

Intranet : A private network that uses the TCP/IP protocol suite.

ISP : Internet Service Provider.

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

Java : A programming language used to create interactive Web documents.

L
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LAN (Local Area Network) : A network of limited geographical area, high data-transfer rates and no need for leased telecommunication lines — unlike Wide Area Networks (WANs) that typically connect to the Internet.

Late Collision : A failure of the network in which the collision indication arrives too late in the frame transmission to be automatically dealt with by the medium access control (MAC) Protocol. The defective frame may not be detected by all stations requiring that the application layer detect and retransmit the lost frame, resulting in greatly reduced throughput.

Layer 3 Switch (L-3 Switch) : An unofficial marketing term for a device that can route IP messages within an organization but lacks full router functionality — such as a WAN port and firewall that are unneeded for internal routing.

LC (Lucent Connector, aka "Little Connector") : A fibre optic connector which resembles a small SC connector. Both simplex and duplex form factors are in common use. The duplex connector houses both transmit and receive channels in the same assembly. Named after Lucent Technologies which developed it. Standardized in TIA/EIA-604-10 (FOCIS 10).

Link Integrity Test : This test verifies that an Ethernet link is connected correctly and that signals are being received correctly. This is a helpful aid but does not guarantee the link is completely functional.

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

Link Pulse : A test pulse sent between transceivers on a 10BASE-T link segment during periods of no traffic, to test the signal integrity of the link.

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

Local Access : Using a terminal directly connected to a computer or networking device such as a switch. Since the access does not use a network signal path, greater communication security is provided.

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 Ethernet, this is the unique 48-bit station address. It is also known as the physical address.

Manchester Encoding : Signal encoding method used by all 10 Mbps Ethernet media. Each bit is converted into a "bit symbol" which is divided into a high half and a low half. This yields a 20 Mbaud stream although data is only sent at 10 Mbps.

Mask (Subnet Mask) : In a subnetted IP network, the value (common to all subnet hosts) that determines the subnet prefix value. Each host is then specified with the value of the rest of the IP address.

MAU : Medium Attachment Unit. The MAU provides the physical and electrical interface between an Ethernet device and the media system to which it is connected. It is also known as a transceiver.

MDI : Medium Dependent Interface. The name for the connector used to make a physical and electrical connection between a transceiver and a media segment. For example, the RJ-45-style connector is the MDI for 10BASE-T and 100BASE-TX.

MDI-X : An MDI port on a hub or media converter that implements an internal crossover function. This means that a "straight-through" patch cable can be used to connect a station to this port, since the required signal crossover is performed inside the port instead of in the cable.

Mesh (Topology) : A network configuration in which each device has a dedicated point-to-point link to every other device.

MIB : Management Information Base. An MIB describes a set of managed objects. An SNMP management console application can manipulate the objects on a specific computer if the SNMP service has an extension agent DLL that supports the MIB. Each managed object in a MIB has a unique identifier. The identifier includes the object's type (such as counter, string, gauge or address), the object's access level (such as read, or read/write), size restrictions and range information.

MII : Medium Independent Interface. Similar to the original AUI function, but designed to support both 10 and 100 Mbps, an MII provides a 40-pin connection to outboard transceivers (also called PHY devices). Used to attach 802.3 interfaces (MACs) to a variety of physical media systems.

Media Converter : A device that converts signals from one media type to that of another.

Modem : A device that converts between digital and analogue signals.

Multicast : A transmission initiated by one station and sent to many stations on the network.

N

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NAT (Network Address Translation) : A technology allowing private addresses for internal communication and a Internet addresses for external communication.

Network : A system of connected nodes (hosts) that share data.

Network Layer (Layer 3 in the OSI model) : Provides switching and routing technologies — creating logical paths for data exchange between nodes. IP is its most common protocol and IP addressing occurs at this layer.

NIC (Network Interface Card) : Also called an adapter, network interface module, or interface card. The electronic circuitry that connects a computer (node or host) to a network.

Node (aka Host) : An addressable network device (such as a computer or router) where data enters and exits a network.

Noise : Unwanted electromagnetic energy that degrades the quality of the signal.

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). It describes the interlocking sets of networking hardware and software used to deliver network services. Although a good model, strict compliance is seldom accomplished.

OUI (Organizationally Unique Identifier) : A 24-bit value assigned to an organization by the IEEE and used by Ethernet vendors as a core part of each unique 48-bit Ethernet address. Contemporary Controls has been assigned a vendor OUI.

Overhead : Control bits added to the data.

P
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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.

Packet-Switched Network : A network in which data are exchanged using packets.

PAM-5 : See 4D/PAM5.

Parity : An error-detection method in which an extra bit (the parity bit) is added to the data so the sum of all 1-bits becomes either odd (used in Odd Parity) or even (used in Even Parity).

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

Path : The channel through which a signal travels.

PAUSE : A unique frame sent by full-duplex capable stations to indicate to the sender to slow down transmissions.

PHY : Physical Layer Device. The name used for a transceiver in Fast Ethernet and Gigabit Ethernet systems.

Physical Address (MAC address) : The address of a device used at the Data Link layer.

Physical Layer (Layer 1 in the OSI model) : The lowest of the OSI layers, it converts physical impulses — electrical, light or radio — into network-usable data using data groups called symbols.

Ping (Packet InterNet Groper) : An Internet Control Message Protocol (ICMP) echo request to a specific host who responds by returning an echo. It is a simple, quick means of determining if a working signal path exists between the origin and destination devices. Some machines may not respond if Ping service is disabled or if a firewall gateway interferes.

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

Point-to-Point Topology : A network system composed 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.

Poll : A procedure in which the primary station asks a secondary station if it has any data to transmit.

Port (Logical) : A number associated with an IP address to identify a TCP or UDP channel endpoint for an application or process. This allows different activities to use the same IP address simultaneously. Well-known port numbers are reserved for common services — such as 21 for FTP or 80 for HTML.

Port (Physical) : A connection point for a cable. Repeater hubs and switching hubs typically provide multiple ports for connecting Ethernet devices.

Port Forwarding (Port Mapping) : A firewall modification allowing an IP port from one network to be used in another network.

Port Mirroring : Port Mirroring allows a switch port to monitor packets from any or all of its ports so that traffic can be analyzed.

Port Security : Prevents a switch port from learning MAC addresses. Thus, frames pass through only if their destinations are listed in the switch address look-up table. Static addresses are not affected. This feature is typically used to limit device access to a network.

PPP (Point-to-Point Protocol) : A Data Link protocol for building a direct connection between two nodes with the options of authentication, encryption and compression.

PPPoE (Point-to-Point Protocol over Ethernet) : A protocol for encapsulating PPP frames within Ethernet frames. Used mainly with DSL services. It is described by RFC 2516.

PPTP (Point-to-Point Tunneling Protocol) : A method to achieve a VPN using TCP and a tunnelling protocol. Relying on PPP for security, no encryption or authentication is specified — but security is provided by the Windows PPTP stack.

Preamble : The first 7 bytes of an IEEE 802.3 frame — having alternating 1s and 0s that alert and synchronise the receiver.

Presentation Layer (Layer 6 in the OSI model) : In casual discussion, this function (aka the syntax layer) is seldom distinguished from the Application Layer. It translates data from machine-oriented to human-friendly for use at the Application Layer. An example would be the conversion from and EBCDIC-coded text file to an ASCII-coded file.

Private Network : A network that is isolated from the Internet.

Promiscuous Mode : A mode of operation where a device receives all frames on a network regardless of their destination address. Typically used by network analyzer tools.

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

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

Q

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Quality of Service (QoS) : Some switches support QoS (per 802.1p and 802.1Q standards) whereby tagged measures, or messages received on a certain port can be assigned one of eight levels of priority. QoS can be important where time-critical applications can be impaired by data delays.

See a tutorial on Quality of Service (QoS)

R

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RapidRing® : Contemporary Controls' proprietary redundant ring technology which provides an alternate path in the event of a single break in the ring.

Rapid Spanning Tree (RSTP) : Newer version of Spanning Tree Protocol that is backward compatible while providing a faster recovery time.

RARP (Reverse Address Resolution Protocol) : A TCP/IP protocol for obtaining the Internet address of a node when the physical (MAC) address is known.

Rate Limiting : The ability of a switch to limit the throughput of particular ports on the switch. Used to prevent certain ports from consuming all the bandwidth.

Redundant Cabling : Standby (back-up) cabling designed to carry network traffic if the primary signal path fails. Since a redundant path creates an unacceptable loop in Ethernet messaging, the redundant path must be deactivated until needed.

Remote Access : Using a terminal that is not directly connected to a computer or networking device such as a switch. Since the access uses a network signal path, less communication security is provided.

Remote Host : A computer accessed by someone at a different computer.

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

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

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

Route : A path travelled by a packet.

Router : An internetworking device attached to two or more networks (or subnet) for forwarding packets from one network (or subnet) to another.

S

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SC (Subscriber Connector) : A type of fibre optic connector used in 100BASE-FX fibre optic media systems. It is designed to be pushed into place and automatically seat itself. It was standardized in TIA/EIA-604-3 (FOCIS 3).

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

Segmentation : Splitting a message into multiple packets; usually performed at the transport layer.

Server : A computer or application that provides services to other machines, called clients.

Session Layer (Layer 5 in the OSI model) : This layer is seldom distinguished from the Application Layer. It coordinates communication session connections between applications.

Shielded Twisted Pair (STP) : Twisted-pair cable wrapped in a foil or mesh shield that protects against electromagnetic interference. Its use is controversial because it can impart greater signal immunity if properly installed, but it can degrade reliability if improperly installed.

Signal : A electronically encoded message carried from a transmitter to a receiver through a communications channel where it is decoded for subsequent use.

Signal-to-Noise Ratio (SNR) : Signal strength divided by noise, both in decibels.

Slot Time : A unit of time used in the medium access control (MAC) Protocol for Ethernet.

SNMP (Simple Network Management Protocol) : The de facto standard for switch management. A familiarity with MIB objects is necessary to manage a switch with an SNMP management program. SNMP is not necessarily limited to TCP/IP networks.

Socket (Logical) : An IP channel end point — specified by the combination of an IP address and a port (which serves this particular channel) into a single identity. Example: 1.2.3.4:80.

Spanning Tree Protocol (STP) : A link management protocol providing path redundancy and preventing network loops by defining a tree to span all switches in a network. It forces redundant data paths into a standby (blocked) state. If a path malfunctions, the topology is reconfigured and the link re-established by activating the standby path.

ST (Straight Tip) : A type of fibre optic connector used in 10BASE-FL and FOIRL links, but also in 100BASE-TX links. The male portion 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 in the socket and the outer ring is turned to complete the bayonet latch. It was standardized in TIA/EIA-604-2 (FOCIS 2).

Star Topology : A network topology in which each station on the network is connected directly to a hub. If multiple hubs are present, the topology is called a distributed star.

Straight-Through Cable : A cable where connections at both ends are pinned the same way. Used to interconnect non-peer devices such as a hub to a station.

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

Subnet (Subnetwork) : The practice of logically subdividing an IP network is called subnetting. All hosts on a subnet share identical values in the most-significant bits of their IP address — creating two fields: a common network or routing prefix and the rest of the address which uniquely identifies each host.

Switching Hub : A switching hub is another name for a bridge; a DCE that interconnects network segments at the data link layer. Switching hubs are typically located in the centre of a star topology, and provide multiple ports for connections to network stations. Frequently this name is shortened to switch.

Switched Ethernet : An Ethernet LAN that uses switches (instead of repeating hubs) to direct a message to its destination.

T
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Table : A collection of address/port associations that allows a switch or router to pass network traffic to the proper destination.

TCP (Transmission Control Protocol) : A core protocol of the Internet Protocol Suite.

TCP/IP (TCP/IP Suite) : A common casual name for the Internet Protocol Suite and so-named because its principal protocols are TCP (Transmission Control Protocol) and IP (Internet Protocol) — although many more protocols are involved.

Terminator : A device to prevent signal reflection at the end of a cable.

TELNET (Terminal Network) : An Application Layer protocol that provides interactive text-oriented communications using a virtual terminal connection. Useful for remote login.

Throughput : The number of bits passing through a point in one second.

TIA-568A and TIA-568B : Two standards used to define RJ-45 pin connectors and wire colour-coding schemes.

Topology : The physical layout of a network.

TOS (Type of Service) : A type of priority using the second octet (the TOS field) of the IP frame header. ToS priority is now largely superseded by DiffServ, but is provided as a QoS option in managed switches from Contemporary Controls to serve legacy equipment. This octet has been used inconsistently over the years — defined differently by five RFCs.

Traffic : Messages on 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.

Transport Layer (Layer 4 in the OSI model) : Ensures reliable data transfer between end systems (hosts) using error recovery and flow control. TCP is its most common protocol.

Trunking : Two or more ports grouped together as one logical path to increase bandwidth between a switch and a network node when a single path cannot handle the traffic. Loops are avoided because specific paths are designated. Often a single link is designated for flooding broadcasts and packets of unknown destination. Trunks can provide redundancy to critical devices.

Twisted-Pair Cable : A multiple-conductor cable whose wires are paired together, twisted, and enclosed in a single jacket. A Category 5 twisted-pair segment is a cable with 4 pairs in a single jacket. Each pair consists of two insulated copper wires that are twisted together. Twisted-pair cable may be shielded (STP) or unshielded (UTP).

U
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Unicast : A message sent to just one destination.

Unshielded Twisted Pair (UTP) : Twisted-pair cable that lacks a shield. Although shielded cable (STP) can impart greater signal immunity, if improperly installed STP can degrade reliability. Consequently, UTP is often preferred over STP.

Upload : To send a local file or data to a remote site or from a client to a server.

URL (Uniform Resource Locator) : A string of characters (address) identifying a document (file) on the World Wide Web.

User Datagram Protocol (UDP) : The IP protocol for simple, connectionless (non-guaranteed) data delivery.

V

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VLAN (Virtual Local Area Network) : A LAN that maps stations on a basis other than location — such as by department, user type or application. Managing traffic, workstations, and bandwidth can be easier with a VLAN and improve network efficiency.

VPN (virtual Private Network) : A technology that creates a network that is physically public, but virtually private because it logically includes/excludes specified stations (hosts).

W

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WAN (Wide Area Network) : A network of large geographical area that uses leased telecommunication lines and has slower data-transfer rates than Local Area Networks (LANs). Typically, a WAN connects to the Internet.

Web Page : A hypertext document viewable by a Web browser.

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