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Geek Speak v2.0:
A Glossary of
Common IT Terms

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10Base5 (10 Mbps, baseband, 500 meter): one of several physical media specified by IEEE 802.3 for use in an Ethernet local area network (LAN); consists of Thickwire coaxial cable with a maximum segment length of 500 meters.

10Base2 (10 Mbps, baseband, 185 meter): one of several physical media specified by IEEE 802.3 for use in an Ethernet local area network (LAN); consists of Thickwire coaxial cable with a maximum segment length of 185 meters .

10BaseT (10 Mbps, baseband, unshielded twisted-pair): one of several physical media specified by IEEE 802.3 for use in an Ethernet local area network (LAN); is ordinary telephone twisted pair wire.

100BaseT (100 Mbps, baseband, unshielded twisted-pair): one of several physical media specified by IEEE 802.3 for use in an Ethernet local area network (LAN); referred to as Fast Ethernet because of its higher transmission speed.

10 GbE (10 Gigabit Ethernet): an IEEE 802.3 Ethernet local area network protocol with a data transfer rate of 10,000 Mb/s (10 Gb/s); disruptive technology that provides high-speed data exchange between storage networks using FC technology.

3G: third-generation cell phone technology designed for data transfer and streaming services, such as video.

4G: fourth-generation cell phone technology suite that will be fully based on TCP/IP; all voice communication will be packetized for transfer as data.

AAL (ATM adaptation layer): adapts PDUs passed down from higher layers onto ATM cells.

Absorption: type of signal interference that relates to the ability of some objects to absorb radio and data waves and therefore reduce the distance, or possibly stop entirely, a transmission.

Access Control: the manner in which devices are granted or denied access to the resource in cases where two or more devices simultaneously attempt to use a shared resource (e.g., telecommunications circuit between two sites, specific printer).

Access Control List (ACL): the database that keeps track of and controls access to network services through assigned privileges for users and groups. Also called authorization profile.

Access Point (AP): a stand-alone hardware device or a computer with a wireless adaptor and software, which acts as a wireless communication hub. It enables wireless devices to connect to each other and to link wireless devices to the cabled portion of the network.

Active Hub: allows multiple devices to be wired to a central location to share the same media and regenerate the signal; also referred to as multiport repeater.

Address Resolution: a process used to associate network addresses with media access control addresses.

ADSL (asymmetric digital subscriber line): typical form of xDSL telephone companies offer to residences; digital service designed to provide high data transfer rates over traditional telephone cable.

AES (advanced encryption standard): popular encryption used primarily for Wi-Fi systems; considered to be a very secure encryption system and is used for some government data.

Agent: a software tool used to collect information about a device and make that information available to a network management system. Agents operate in managed devices on the network (e.g., hubs, switches, servers, stations).

AGP (accelerated or advanced graphics port): a high-speed, point-to-point channel for attaching a graphics card to a computer's motherboard, primarily to assist in the acceleration of 3D computer graphics.

ALU (arithmetic logic unit): a digital circuit that calculates an arithmetic operation (e.g., addition, subtraction) and logic operations between two numbers; the fundamental building block of the Central Processing Unit (CPU) or a computer.

AM (amplitude modulation): a technique used for transmitting information via a radio carrier wave by altering the power (amplitude).

Amplitude: height of the wave at any point in the wave.

Analog Signal: signal that uses continuous physical variables (e.g., amplitude or frequency variations) to transmit information; is analogous to the source transmission, such as a human voice; as the voice changes in tone and volume the waves change as well.

ANSI (American National Standards Institute): a voluntary organization that coordinates the development and use of consensus standards in the United States and represents the needs and views of U.S. stakeholders in standardization forums around the globe.

Antenna: a conductive structure specifically designed to couple or radiate electromagnetic energy. In radio frequency systems, the antenna may be used to both transmit and receive electromagnetic energy.

API (application programming interface): prewritten functions or set of routines to call on underlying network services used to make software programming easier and less likely to have errors.

Application Layer: responsible for providing mechanisms that enable software applications on different systems to use the services of a network to exchange information; performs the functions of file transfer, e-mail, etc. (see OSI Model); also known as Layer 7.

Architecture: how a system is designed; includes how the components are connected to and operate with each other.

ARP (address resolution protocol): network layer protocol provided with TCP/IP; used to map an IP (internet protocol) address to a MAC (media access card) address.

ARPANET (Advanced Research Projects Agency Network): developed by DARPA in 1983; Internet basis.

AS (autonomous system): collection of IP networks under the control of a single entity.

ASCII (American Standard Code for Information Interchange): relates a number from 0 to 255 in the binary (base 2) form to keyboard characters; 7-bit binary code created to allow compatibility among various types of computer equipment.

ASIC (application-specific integrated circuit): an integrated circuit designed for a particular use (e.g., a chip designed solely to run a cell phone).

Asynchronous Communication: describes when devices, such as computers, rely on their own internal clocks; it provides connectivity to printers, modems, fax machines, etc.

Asynchronous Signaling: a form of signaling in which each data character is coded as a string of bits. The bits are separated by start character and stop character bits.

Asynchronous Transmission: a data transmission method that does not require a clock synchronization signal for maintaining data integrity. Transmission is characterized by individual characters, surrounded by start and stop bits.

ATM (asynchronous transfer mode): high bandwidth, cell-switching technology; designed to carry many different types of information, including voice, video, image, data, and graphics; another form of STDM (statistical time division multiplexing).

Attenuation: the decrease in magnitude or the power loss of a signal that propagates between points, often expressed in decibels as the ratio of received signal to transmitted signal level; refers to loss in signal strength, due to resistance, absorption, capacitance or any characteristics of the medium.

AUI (attachment unit interface): a 15-pin connection that provides a path between a node's Ethernet interface and the medium attachment unit (MAU); also known as a transceiver.

Authentication: security mechanism that verifies a user's identity; consists of three factors: something you know, something you have, and something you are.

Authorization: process of establishing and enforcing network activities that are permitted for a given user.

AUTONEG (Autonegotiation): a feature that determines link options and optimal settings for a given Ethernet connection. When AUTONEG is enabled, a network interface card or a switch port can determine the capabilities of the device at the far end of the link and select the best mode of operation.

Availability: in security terms, ensuring that the data can actually be used by, and only by, the users who need it; measure of network response time or absence of operating failure (downtime) during a given period of time.

B Channel (bearer channel): carries voice, video, image, or data traffic, depending upon the equipment and applications available.

Backbone: a facility (e.g., pathway, cable, conductors) between any of the following spaces: telecommunications rooms, telecommunications enclosures, common telecommunications rooms, floor-serving terminals, entrance facilities, equipment rooms, and common equipment rooms.

Backup: a copy of the data stored on a device.

Backup Storage: a redundant storage mechanism that provides the means to recover from primary storage failure and the corresponding loss of data; also referred to as disaster recovery.

Balanced Cable: two or more insulated pairs of wires—identical in composition, size, and length—uniformly twisted together.

Balun: a balanced-to-unbalanced circuit-coupling device, used to convert from unbalanced to balanced transmission, and provides impedance matching for connecting twisted-pair to coaxial cable.

Bandwidth: range of frequencies available for signaling; information transport capacity of a medium, also called analog capacity; expressed in hertz.

Base 2 System: binary number system, only two discrete values (0 and 1) are possible and all numbers are a combination of these two characters; digital signals are numbers sent in the Base 2 system.

Base 10 System: the decimal numbering system.

Baseband: describes signals and systems whose range of frequencies is measured from 0 to a maximum bandwidth or highest signal frequency; sometimes used as a noun for a band of frequencies starting at 0.

Baseband signaling: method of signal transmission where the entire bandwidth of the medium is used to send a single signal. Contrast with broadband signaling.

Baselining: uses monitoring and reporting software to record network utilization and traffic patterns during smooth operation.

Batch File: MSDOS text file that contains one or more DOS commands; .BAT extension is used to identify a batch file.

BAUD: unit measuring the signaling speed of the data transmission device.

BGP (border gateway protocol): an interautonomous system routing protocol; a network or group of networks under a common administration and with common routing policies.

Bidirectional Signaling: signals that pass in opposite directions between two transmitters. In a twisted-pair cable, this may be on the same or different pairs.

Binary: simple numbering system that alternates between two states, a 1 and a 0.

Bit (b): contraction of the expression "binary digit"; smallest unit of data in a computer.

Bits Per Second (b/s or bps): common measure of data speed (transfer rate) of a device, system, or communications channel; also called bit rate.

Biometrics: security method that relies on physically verifying that you are who you say you are; examples include retinal scans, finger and palm prints.

BIOS (basic input/output system): the firmware code run by an IBM-compatible PC when first powered on, known as "booting up"; primary function is to prepare the machine so other software programs can load, execute, and assume control of the PC.

Blade Server: self-contained computer servers, designed for high density in a small footprint; "Non-core" components are removed for space, power and other considerations leaving the functional components to be considered a computer.

Blade System Server: enclosure that holds multiple Blade servers containing centralized power, cooling, networking, various interconnects and management services shared by the Blade servers.

Bootable Disk: a bootable disk contains the boot files of an operating system and is used to "boot" a computer.

Bluetooth: low-speed wireless communication protocol used for short-range data transfer; allows mobile phones, computers, and PDAs to be connected wirelessly over short ranges.

Bridge: a Layer 2 networking device used to connect separate local area network collision domains (or network segments) to extend network reach or selectively isolate network traffic. Bridges restrict collision domains but forward broadcasts.

Broadband: A high-speed wide area network digital signal.

Broadband Signaling: the simultaneous transmission of multiple signals over a medium (e.g., video signals multiplexed into channels with a bandwidth of 6 MHz each).

Broadcast: a technique for sending data simultaneously to all devices attached to a network with a single transmission.

Broadcast Domain: the span of a network as represented by the devices capable of receiving a Layer 2 frame or Layer 3 datagram addressed to all devices.

Broadcast Group: the group of devices receiving a broadcast transmission.

Broadcast Storm: a series of retransmitted broadcasts caused by uncontrolled duplication of the original message.

Browser Mode: a form of remote access where the remote station accesses LAN resources through a Web server on the LAN and obtains access to resources designed to operate in a Web browser environment.

BRI (basic rate interface): an integrated services digital network configuration, usually intended for the home and small enterprise (see also PRI).

Bricks and Clicks: business that existed pre-Internet that now uses e-commerce technology to sell on the Internet.

Bridge: interprets the LAN hardware adapter address contained in MAC and decide whether to filter or forward the frame; does not change the frame in any way.

Browsers: client applications that access World Wide Web servers.

Buffer: a block of RAM or other temporary storage area in a networking device used to temporarily hold incoming data until it can be processed or transferred from one device to another.

Building Backbone: connects LANs within a building.

Burst Mode: a data transmission mode in which data is sent faster than normal.

Bus: electrical connection between any two components in a computer; electrical path used to transmit control, data and address signals.

Bus Topology: networking layout where electrical signals generated by a device connected anywhere on the bus are received by all other connected devices; all devices are connected along a single wire with two endpoints.

Byte (B): the standard size of data in a computer; 8-bits; also called an octet.

Cable Tester: troubleshooting tool that consists of a two-piece system with a tester on one end and a responder on the other; tool that tests each cabling wire for breaks plus ensures that they are wired properly.

Cabling System: a specific system of telecommunications cables, equipment/patch cords, connecting hardware, and other components that is supplied as a single entity.

Cache: keeps data the processor is likely to need quickly close at hand; increases processor operation speed.

Cache Memory: buffer of high-speed memory that temporarily holds data that is being read from or written to the disk drives.

Caching: a technique that provides faster access to data by storing a copy of recently used or likely to be used data in fast, accessible memory.

Campus Area Network (CAN): a network that links local area networks located in two or more buildings in close proximity to each other.

CAD/CAM: computer-aided design/computer-aided manufacturing: software used to design products such as electronic circuit boards in computers.

Campus Backbone: connects building LANs together.

CAP (competitive access provider): company that provides network links between the customer and the InterExchange carrier or directly to the internet service provider (ISP); CAPs operate private networks independent of local exchange carriers.

Carrier Sense: CSMA principle that a network device “listens” to the medium (wired or wireless) and only transmits if it isn’t busy.

Cat 3 Cable (category 3 cable): twisted-pair cable typically used for phones; consists of two twisted pairs.

Cat5 Cable (cat 5 or category 5 cable): twisted-pair cable typically used for data communication. Allows for higher speeds of data transfer than Cat 3 cable; consists of four twisted pairs.

CD-R (compact disc – recordable): special type of CD-ROM that can be written onto by any computer with a recording drive; can only be written onto once.

CD-ROM (compact disc read-only memory): optical storage device read by lasers; can hold up to 700 megabytes of data.

CD-RW (compact disc – rewritable): special type of CD-ROM that can be written onto by any computer with a recording drive; can be written onto more than once.

Cell Style Architecture: reuses frequencies without letting them interfere with each other; also known as a cellular network.

Central Connectivity Device: required device in a Ethernet LAN; can be a hub or a switch.

Channel Service Unit (CSU): a customer premises device that physically connects the data terminal equipment to a digital line from the public network service provider; provides a loopback function for telephone company testing, and checks bipolar signal generation.

Chat: a basic text display application that allows two or more users to communicate in real-time over a network. A text message typed by any user is instantly displayed on the screens of all users.

Checksum: a count of the number of bits in a transmission unit that is included with the unit so the receiver can check to see whether the same number of bits arrived.

Chipping: encoding system that uses a string of 11 bits to represent either a 1 or a 0 to counteract potential transmission loss.

CIA Triad: acronym for data security; stands for Confidentiality, Integrity, Availability

Circuit Gateway: a firewall that permits an inbound or outbound connection to take place on the basis of authentication and authorization criteria. This type of firewall does not inspect each datagram—once a device is granted access to the communications channel, it can send and receive any type of message.

Circuit-Switched Network: WAN providing a dedicated circuit path between the source device and end device; packets are sent over one path and in order.

Circuit Switching: communications method in which a dedicated communications path is established between two devices prior to message transfer.

CIR (committed information rate): describes the user information transfer rate the network supports during normal network operations.

CLEC (competitive local exchange carrier): a US telecommunications provider company (carrier) that competes with other, already established carriers (the local telephone company; e.g., GTE, Bell South).

CLI (command line interface): allows precise control of a function, but requires remembering all the correct commands and switches necessary for a task; used in DOS; a way of interacting with computers.

Client/Server Architecture: network where some computers are clients (workstations) and some are servers; information is centralized on the server, and an administrator sets policies and manages it.

Client: network device that requests server services.

Clock Speed: timing pattern generated by the processor to synchronize the operation of the microprocessor; measured in megahertz (MHz).

Cloud Computing: service that allows you to reserve space on the Internet for storage and application processing; referred to as “cloud” computing because the Internet is commonly represented by a cloud in network diagrams.

Cluster: a collection of servers and associated storage devices interconnected using a dedicated, high-speed network that appears as a single device to the network; composed of one or more sectors and is the smallest unit of disk space for data storage.

Cold Boot: reloading a computer’s operating system by turning the power to the computer off, then on.

CMOS RAM (complementary metal-oxide semiconductor RAM): requires very little power; maintains information even when the computer is off.

Converged Network Interface Card (C-NIC): NIC that combines storage, management and data traffic on a single device.

Coaxial Cable: copper cabling used primarily for cable or satellite TV.

Codec: a device that can transform an analog signal into a digital bit stream (coder) and digital bit stream into an analog signal (decoder).

Coding: mathematical technique of repeating information to increase reliability; used to provide redundancy for digital communication.

Collapsed Backbone: an internetwork connection contained in one device; individual networks are connected to this central device and can then communicate with one another.

Collision: occurs when network users communicate at same time and interfere (collide) with one another.

Collision Detection: the process initiated when two or more network devices on an Ethernet network attempt to send a message at the same time and their messages collide.

Collision Domain: logical network segment where data packets can “collide” with one another for being sent on a shared medium

Compression: The coding or modification of data from its original form in order to save storage space or transmission time.

Computer: any machine that performs functions based on a set of instructions.

Computer Networking: a combination of hardware and software that allows the various computers in an organization communicate with one another.

Computer Room: the space that serves the purpose of providing a secure environment for the equipment and cabling directly related to the critical load; is usually part of the data center.

Concentrator: device that “unwraps” data sent via VPN and sends it to the LAN; device that combines data from several active inputs into one shared channel that can be separated after transmission.

Conferencing: the process of communicating among users over a network in real-time, using any combination of text, voice, and video.

Confidentiality: in security terms, ensuring that only the proper individuals have access to the data.

Congestion: state in which the volume of messages exceeds the designed capacity of a communications channel or network fabric, resulting in transfer delays or failures.

Connection-Oriented Protocols: ensure that data is received properly, usually by the receiver transmitting an acknowledgement of data receipt.

Connectionless Protocols: data is sent to the destination with no regard for whether it is received.

Connectivity Devices: bring users of the network into contact with one another.

Constant Bit Rate (CBR): transmission that uses a set amount of network capacity on a continual basis; used when the arrival of the information is time-sensitive.

Content Acceleration: the process of loading data accessed frequently by a large number of users onto devices capable of transferring the data more rapidly than the existing servers can transfer.

Content Access: the process of providing remote users the means to connect to a network to obtain specific information.

Content Filtering: the process of restricting the entry or exit of unauthorized or unwanted data (e.g., e-mail attachments) to and from a network.

Contention: network access method in which devices compete for use of available communications channel.

Control Mode: form of remote access where a network administrator uses the remote station to monitor or modify a specific network device or general network operations.

Convergence: the merging and sometimes clashing of voice and data networks.

Converter: a device that changes a signal from one transmission medium type to another (e.g., from copper to optical fiber).

CPE (customer premises equipment): telephones, DSL or cable modems, or purchased set-top boxes for use with communication service providers' services.

CPS (cycles per second): measure of how frequently an alternating current changes direction; has been replaced by the term hertz (Hz).

CPU (central processing unit): the brain of the computer system where calculations and decisions are made; also referred to as the processor.

CPU Speed: how fast the CPU works.

CRC (cyclic redundancy check): method of checking for errors in data that has been transmitted on a communications link; a function used to produce a Checksum against a block of data.

Crosstalk: the unwanted transfer of signal from one or more circuits to other circuits as a result of electromagnetic interference.

CS (convergence sublayer): particular protocols that gather and format higher layer information so it can be processed by the lower layers.

CSMA (carrier sense multiple access): data coordination rules for communication; based on the principles of carrier sense and multiple access and the collision detect or avoidance decision.

CSMA/CA (carrier sense multiple access collision avoidance): set of rules for determining how network devices respond to avoid a collision.

CSMA/CD (carrier sense multiple access collision detect): set of rules for determining how network devices respond when two devices collide; when a collision is detected, each device stops transmitting and waits a random amount of time before proceeding.

Cut-Through: a switching method in which messages are forwarded as soon as the destination address is received, without error checking.

D Channel (data channel): used for common channel signaling by both the telephone company switch and the customer equipment; provides the call signals that set up B channel connections.

DACS (digital access and cross-connect system): a piece of telecommunications equipment used for routing T1 lines; can cross-connect any T1 line in the system with any other T1 line in the system.

DARPA (Defense Advanced Research Project Agency): began developing and testing TCP/IP in the early 1970s.

DAS (direct-attached storage): storage system that is directly attached to a workstation or server without the use of a network; combination of a high-speed interface and shared disk drives, where the disk drives are connected directly to the servers internally or externally; primary advantage is high access speed.

Data: information manipulated inside the computer in the form of bits and bytes.

Data Center: a physical space that contains data equipment; typically has generator backup, is temperature controlled, and physically protected.

Data Integrity: the assurance that a given data file has not been deleted, modified, duplicated, or forged without detection.

Data Service Unit (DSU): a customer premises device that frames and channelizes the user's data for transmission on the digital network.

Data Transfer Rate: the rate at which information is transferred between network devices over a communications channel; also called throughput or operating speed.

Data Link Layer: responsible for formatting data according to the medium it will be sent over (see OSI Model); provides data transfer in the form of frames on a local area network; also called Layer 2.

Datagram: packet sent over an IP network; associated with the network layer when communication protocol is connectionless; contains the data and control information necessary to transfer a message from one network to another; created at Layer 3 of the OSI Model; also called a packet.

DCE (data communications equipment *or* data circuit-terminating equipment): a device that communicates with a data terminal equipment (DTE) device in a particular standard; equipment that establishes, maintains, and terminates a connection, and performs the conversion necessary for communications.

Dynamic Data Exchange (DDE): method of inter-process communications that allows you to exchange commands and data between two applications running simultaneously.

DDP (datagram delivery protocol): a member of the AppleTalk networking protocol suite, mainly responsible for socket-to-socket delivery of datagrams over an AppleTalk network.

DE (discard eligibility): signal used to identify less important data traffic that can be dropped during periods of congestion on the system.

Decibel (dB): a logarithmic unit for measuring the relative voltage, current, or power (in watts) of a signal.

Demultiplexing: the process of reconstituting the individual channels from the composite signal.

Dialer: the software used by remote stations to connect to the network over telecommunications circuits.

Digital Certificate: a security tool used to authenticate a message. It ensures the recipient that the message originated from a source whose identity has been verified by the issuer of the certificate.

Digital Key: a bit sequence used by a security tool to encrypt a message prior to transmission to keep its contents confidential and used by the recipient to restore the encrypted message.

Digital Signal: transmission of information in the form of a sequence of discrete pulses, specifically 1s and 0s.

Digital Signature: a bit sequence used by a security tool to authenticate a message; It ensures the recipient that the message was not modified after being transmitted by the sender.

Directional Antenna: antenna characterized by a coverage zone that preferentially sends or receives signals in a specific direction; common example is the wall mounted "patch" antenna that is physically flat and generally mounted on a wall to cover a wide hallway or the offices on one side of a floor; generates a wide and tall signal that extends outward from the antenna and looks like a rectangle.

Directory: a database of the resources available on a network. Typically, it contains records for devices, software applications, data files, users, and groups.

Disaster Recovery: the procedures and actions taken to restore network operations after an event that destroys or disables some or all of the network.

Disk Fragmentation: a disk is said to be fragmented when the data of a file span several sectors, and these sectors are scattered all around the disk.

Disk Mirroring: simultaneous writing of all data to be stored onto two hard disks, where both disks are connected to same controller card. If one of the hard disks fails, the other continues to provide storage services.

Diskless Workstation: a personal computer that depends upon a network server for loading data and applications. Diskless workstations are configured without a floppy or hard disk drive, thereby providing additional security.

Diversity Reception: a technique used to improve the reception ability of a wireless network device (e.g., access point) by combining or selecting signals from two or more independent antennas. Used to mitigate the effects of fading.

DHCP Server (dynamic host configuration protocol): network server that provides automatically configured IP address information to a client computer from a preconfigured pool of IP addresses.

DLCI (data link connection identifier): a channel number that tells the network how to route the data.

DMA (direct memory access): a feature that allows certain hardware subsystems in a computer to access system memory for reading/writing and/or data transfer independently of the CPU, reducing overhead on the CPU; can include disk drive controllers, graphics cards, network cards, and sound cards.

Domain Name: a human-friendly name given to one or more IP addresses.

DOS (disk operating system): a family of closely related operating systems (COS) that ran on IBM PC-type hardware.

DNA (digital network architecture): a set of specifications or protocols created by Digital Equipment Corporation (DECnet) that evolved into one of the first peer-to-peer network architectures.

DNS (domain name system): worldwide system of servers that maps a domain name to an IP address.

DRAM (dynamic random access memory): primary choice for holding large amounts of information due to its inexpensive cost; must be refreshed or rewritten frequently (about every 386 milliseconds).

Driver: software that helps the OS communicate with hardware.

DS0 (digital signal, level 0): basic digital signaling rate of 64 kbit/s, corresponding to the capacity of one voice-frequency-equivalent channel.

DS1 (digital signal, level 1): also known as T1; widely used to transmit voice and data between devices.

DSL (digital subscriber line): technology that delivers digital data transmission over the wires of a local telephone network.

DSSS (direct sequence spread spectrum): modulation technique that takes data and spreads it across the entire 22 MHz channel and uses a "chipping code" to represent the bits for data encoding.

DSU (data service unit): transforms digital signal from a unipolar DTE to a bipolar digital network signal on the transmitting side and vice versa on the receiving side.

DTE (data terminal equipment): device that performs functions at network end of communications line; see DCE (data communications equipment); device producing data to be transmitted across an internetwork.

Dual-Ring Topology: a ring topology that allows each device or network to have two connections to each adjacent device or network.

DVD (digital versatile disc): can hold over seven times as much information as CDs; drives are backward-compatible with CD-ROM drives.

DWDM (dense wavelength-division multiplexing): an optical technology used to increase bandwidth over existing fiber optic backbones (see building backbone, campus backbone).

EBCDIC (extended binary coded decimal interchange code): 8-bit character encoding table used by ISM mainframes.

EGP (exterior gateway protocol): a protocol commonly used between hosts on the Internet to exchange routing table information.

EMI (electromagnetic interference): radiation that causes unwanted signals (interference or noise) to be induced in other circuits; also called radio frequency interference or RFI.

Emulation: the technique of modifying a device with hardware or software to make it operate in the same manner as another device.

Encapsulation: process that enables message transfer over dissimilar networks; used when messages initiated by network devices must be transported over an intermediate network using different protocols.

Encryption: act of transforming raw data using an algorithm called a cipher into an unreadable format to all except those who possess the key; mathematical method of turning real data into data that is unusable without the proper math key; modification of a bit stream to make it appear random and to control emissions.

Enterprise Network: connects many types of networks.

Equipment Room: an environmentally controlled centralized space for telecommunications equipment that usually houses a main or intermediate cross-connect.

Error Control: a process that verifies that a message is transferred successfully between devices.

Ethernet: most commonly used protocol designed to change the packets into electrical signals that can be sent out over the wire; originally based on a logical bus structure and carrier sense multiple access with collision detection.

Exterior Protocol: routing protocol used between autonomous systems.

Fabric: an interconnection scheme that enables communications between any two connected devices or networks through a series of interlinked switches.

Fabric Manager: software application that simplifies SAN management and configuration and ensures SAN availability; provides a single location for zone control.

Failover: the automatic transfer of control from a primary to a backup system as a strategy for fault tolerance.

FAT (file allocation table): table that the operating system uses to locate files on a disk; because a file may be divided into many sections that are scattered around the disk, the FAT keeps track of all the pieces.

Fault Management: the detection, isolation, and correction of hardware or software conditions that disrupt network operations.

Fault Tolerance: the ability of a system to continue operations after the failure of one or more components or communications paths.

FDDI (fiber distributed data interface): a set of ANSI protocols for sending digital data over fiber optic cable; fault-tolerant token-passing network protocol based on single or dual optical fiber rings.

FDM (frequency-division multiplexing): permits a range of input signals to be carried over a communication line that uses separate carrier frequencies for each signal channel; mostly used for analog information but can carry digital.

Fibre Channel (FC): high-speed, point-to-point network protocol utilized to transport data between servers and storage for High Performance Computing (HPC) and to define a Storage Area Network (SAN); allows concurrent communications among workstations, mainframes, servers, storage drives and other peripherals, using SCSI and IP protocols.

Fibre Channel Identifier (FCID): 24-bit port address identification; consists of three parts (domain, area, and port); typically assigned dynamically by the switch during start-up.

Fibre Channel over Ethernet (FCoE): FCP stack for transporting SCSI using the Ethernet infrastructure.

Fibre Channel Protocol (FCP): Protocol for transporting SCSI commands over Fibre Channel networks.

Fiber Optics: a communications system that uses optical fiber as media.

Field-Programmable Gate Array: hardware device that can be configured, using software, to perform functions, including logic gates or combination functions not defined by the original device manufacturer.

File Management System: way to store and retrieve information from disk drives; controls how files can be created, accessed, retrieved, and deleted.

Filtering: a process device that examines all incoming traffic for specific characteristics (e.g., source address, destination address, protocol, virus) and determines whether to accept, forward, or discard that traffic based on the established criteria.

Firewall: a software or hardware barrier between a network and the Internet through which only authorized users can pass; set of security policies to screen incoming and outgoing messages; also used to isolate one part of a network from another.

FireWire: the Apple implementation of IEEE 1394; largely been replaced by USB 2.0.

Fixed Mobile Convergence: a technology that allows a single phone device to operate on any network: home, cellular, office or other.

Floppy Drive: early versions were actually floppy; today, they use hard 3.5-inch disk; also referred to as removable drive.

Flooding: the process used by switches/bridges and routers to direct a message to all outgoing ports, with the exception of the port or interface on which the traffic was received. Flooding is used typically when the destination address of the message is not recognized or for multicast and broadcast message distribution.

FM (frequency modulation): blending data into a carrier signal; a modem modulates data by converting it to audible tones that can be transmitted on a telephone wire, and demodulates received signals to get the data.

Forwarding: the transferring of a message to another network by an internetworking device. See also filtering.

Forwarding Logic: the set of rules used by an internetworking device to transfer a received message to another network.

Fragment-Free Switching: a switching technique in which messages are forwarded as soon as the received frame has been determined not to be a collision fragment (i.e., longer than 64 bytes). Also called modified cut-through. See also cut-through and store-and-forward.

Frame: data structure that collectively represents the transmission stream (headers, data, and the trailer) and provides the data, control, and error-checking information necessary for the correct delivery of the data.

Frame Check Sequence (FCS): an error-detecting code normally inserted as the final field in a block of transmitted data.

Frame Relay: network protocol designed to transport messages over extended distances via a mesh network, using virtual circuits and switches.

FRAD (frame relay access device): software that frames the customer's payload with the Frame Relay overhead information, including the first DLCI (data link connection identifier) address, to prepare it for delivery to the network.

Free Path Loss: concept that the farther away a signal moves from its transmission point, the weaker it is.

Frequency: number of times a wave repeats a cycle in a one-second period; measured in cycles per second, or hertz; frequency is inversely proportional to wavelength.

Frequency: the number of cycles that a periodic signal completes in a given time; if the unit of time is one second, the frequency is stated in hertz (Hz).

FTP (file transfer protocol): application used to transfer a copy of a file from one computer to another computer with one acting as client and the other as server; a login with a user name and password is typically required.

Full-Duplex Link: enables both sides to simultaneously send and receive data; could require two separate cables, one in each direction or a single multiplexed cable.

Full-Duplex Signaling: the transmission of data in opposite directions simultaneously.

Gateways: a node on a network that translates (converts protocol) from one operating system environment to another.

Gateway Routers: used to implement exterior protocols and interconnect autonomous systems.

Gbps (gigabits per second; billions of bits per second): a data transfer speed measurement for high-speed networks.

Geosynchronous Orbit: the satellite is always in a fixed position in relation to the ground because it moves at the same speed at which the earth rotates.

GPS (global positioning system): calculates location by using a system of satellites that are constantly transmitting timing information; three satellites calculate location, and a fourth includes altitude.

Guest Operating System: an operating system running in a virtual machine environment that would otherwise run directly on a separate physical system.

GUI (graphical user interface): allows users to interact with the computer by manipulating icons instead of typing in commands; pronounced "gooey".

Half-Duplex Signaling: a bidirectional signaling method in which data transfer can take place in either direction, but in only one direction at a time; information only flows in one direction at a time using a control procedure to mediate.

Handoff: the process that occurs when a mobile user moves from one cell or zone to another cell or zone in a wireless network; accomplished without disruption of the existing connection.

Hard Drive: large data storage devices permanently mounted in the computer's case; hermetically sealed unit containing multiple platters that are spun at high RPM (revolutions per minute), a magnetic reading head is attached to a motor that moves to different areas of the platters as needed.

HDD (hard disk drive): a layered system of hard disks contained in a housing; typically used for separate storage from the main computer unit.

Hardware: physical devices located on a desk or in a server-room rack.

Hardware-Level Virtualization: virtualization approach where the virtualization layer sits on top of the hardware exporting the virtual machine abstraction; the virtual machine looks like the hardware, all the software written for it will run in the virtual machine.

HDMI (high-definition multimedia interface): the standard for high quality video transmission; very popular in the home theater industry and is slowly becoming a standard for video in computers.

Header: the initial part of a message, typically containing identification and control information.

Hexadecimal: base-16 numbering system that uses 0 through 9 to represent values from 0 through 9 and A through F to represent values 10 through 15; allow you to represent large numbers in a compact format.

Hierarchical Topology: a topology that links devices or networks using a series of levels, similar to an organizational chart.

High-Level Language Virtual Machines: the virtualization layer sits as an application program on top of an operating system. The layer exports an abstraction of the virtual machine that can run programs written and compiled to the particular abstract machine definition. Any program written in the high-level language and compiled for this virtual machine will run in it.

Host: term used to describe any network-attached device that provides application-level services; generic term used to describe mainframes and minicomputers.

Host-to-Host Layer: part of TCP/IP model that performs same function as transport layer in OSI model.

Host Address: part of an IP address that is uniquely assigned by an administrator; also known as host identification or hosted.

Host Bus Adapter (HBA): Connects a server via Fiber Channel to a storage drive; improves the server's performance by relieving the data storage and retrieval tasks from the CPU.

Hosted Virtualization: virtualization approach where partitioning and virtualization services run on top of a standard OS (the host); the virtualization software relies on the host OS to provide the services to talk directly to the underlying hardware.

HTTP (hypertext transfer protocol): protocol users interact with (by means of a browser) to access Web pages over an internet or intranet.

Hub: simple central connectivity device that requires no programming or configuration; receives a signal on any physical port and repeats it out all other ports.

Hybrid Mesh Network/Topology: mesh network/topology where redundant connections exist, but unlike a true mesh not all nodes are required to connect to every other node.

Hypervisor: thin layer of software that generally provides virtual partitioning capabilities that runs directly on hardware, but underneath higher-level virtualization services; sometimes referred to as a "bare metal" approach.

Hz (hertz): unit of frequency; one hertz simply means one cycle per second, applied to any periodic event (e.g., one tick of a clock is 1 Hz; the human heart beats at 1.2 Hz).

ICANN (Internet Corporation for Assigned Names and Numbers): non-profit corporation created to oversee Internet-related tasks previously performed for the U.S. Government by other organizations; tasks include managing the assignment of domain names and IP addresses, and introducing new generic top-level domains; pronounced "I can".

ICMP (Internet control protocol message protocol): network layer protocol provided with TCP/IP; used to report errors and provide other information relevant to IP packet processing.

IEEE (Institute of Electronic and Electrical Engineers): international voluntary organization of engineers that creates consensus standards for network wiring and other technologies; pronounced "eye-triple-E".

IGMP (Internet group management protocol): a communications protocol used to manage the membership of IP multicast groups.

IGP (interior gateway protocol): set of routing protocols used within an autonomous system.

IGRP (interior gateway routing protocol): developed by Cisco to provide a robust protocol for rerouting within an autonomous system (AS); a type of IGP.

ILEC (incumbent local exchange carrier): a telephone company providing local service when the Telecommunications Act of 1996 was enacted (see CLEC).

ILP (initial loader program): reads an existing file containing database records; also called a boot-loader.

IMAP (Internet message access protocol): retrieves e-mail headers without downloading the entire message from the server.

Incident Handling: a term used to describe the organizational response to a security-related event.

InfiniBand (IB): A single fabric network that provides high-speed data transfer and low latency for computing and storage over a single, scalable fabric.

Infrared: wireless technology that typically came with laptops, PDAs, etc. in the 1990s; has been all but replaced with Bluetooth technologies; lower frequency than what the human eye can see; used over short distances and requires line of sight.

Input/Output Management Routines (I/O management routines) management routines: provide orderly control and flow of information between a computer's main memory and attached peripheral devices.

Instant Messaging: text-only, real-time conferencing.

Integrity: in security terms, maintaining the data as it should be, without allowing unauthorized users to modify or delete it.

Interface: point in the system where the rules, control codes, formats, and information direction (as dictated by the protocol) are implemented; procedures, protocols, and codes that allow two devices to interact for the purpose of exchanging information.

Interference: the undesirable signals on a device, equipment, or system. See also electromagnetic interference.

Interior Protocols: routing protocol used within/interior to an independent/ autonomous system.

Internet Layer: part of the TCP/IP model that performs the same function as the network layer of the OSI model.

iSCSI (Internet SCSI): Allows hosts to negotiate and exchange commands at high-speed over a network, utilizing existing switching and network infrastructure.

Internetwork: the communications system connecting two or more networks.

Internetworking: connecting one network to another network.

Interprocess Communication: allows programs to share information dynamically, whether running locally or remotely.

Intrusion Detection: the process of detecting and tracking actual or attempted unauthorized access to a network or a protected device.

I/O Devices (input/output devices): hardware used to enter and retrieve data from the system.

I/O Memory Management Unit: MMU that connects a DMA-capable IO bus to the main memory; It maps device-visible virtual addresses to physical addresses.

IP (internet protocol): network layer protocol provided with TCP/IP; connectionless, unreliable protocol that provides features for addressing, type or service specification, fragmentation and reassembly, and security.

IP Address: logical address assigned to every workstation, server, printer, and router on any interconnected network; 4-byte, binary number.

IPsec (Internet Protocol Security): security protocol used for data encryption when communicating over an IP-based network.

IPTV: a technology that will allow you to get television transmissions as data, not signals.

IPX/SPX (internetwork packet exchange/sequenced packet exchange): a networking protocol used by the Novell NetWare operating systems; it is a datagram protocol used for connectionless communications.

IRC (Internet relay chat): allows groups to communicate interactively via keyboard and screen display.

ISDN (integrated services digital network): a circuit-switched telephone network system designed to allow digital transmission of voice and data over ordinary copper telephone wires; digital communications facility designed to provide transparent end-to-end transmission of voice, data, audio/video, and still images across the public switched telephone network.

ISDN PRI: switched-line service from telephone companies that operates over T1 (or E1/J1) facilities.

IS-IS (intermediate system-to-intermediate system): an interior gateway protocol (IGP) intended for use within an administrative domain or network.

Isochronous Signaling: a signaling method where a set data transfer rate within a communications channel is guaranteed. Timing or synchronizing information is derived from the signal carrying the data.

ISP (Internet service provider): business or organization that provide consumers with access to the Internet and related services.

IT (information technology): broad term that can refer to anything from mainframes to PDAs; any technology that moves information (voice, video, or data).

ITU-T (ITU Telecommunication Standardization Sector): coordinates standards for telecommunications on behalf of International Telecommunication Union (ITU).

IXC (interexchange carrier): a telephone company that provides connections between local exchanges in different geographic areas.

Jitter: distortion in a digital signal caused by a shift in timing pulses; can cause data interpretation errors.

JPEG (joint photographic experts group): a compression technique for color images; pronounced jay-peg.

Jumper: series of pins protruding from a circuit board onto which a contact block is placed; used to select various circuit options.

Kbps (thousands of bits per second): a measure of data transfer speed.

KHz (kilohertz): a unit of measurement of frequency, also known as cycles per second (e.g., one kilohertz equals 1,000 Hz, or cycles per second).

LAN (local area network): network that operates within a small geographic area, usually within a building, office, or department.

LAPB (link access protocol, balanced): a data link protocol in the X.25 stack.

Last Mile: the final step in providing Internet access to the customer; the connection between the ISP and the customer's home or office network.

LATA (local access and transport area): In the US, refers to a geographic region assigned to one or more telephone companies for providing communication services.

Latency: the time it takes for a signal to pass through a device or network (e.g., the delay between the time a switch receives a message on an input port and forwards it to an output port).

Layer 2 Switches: interpret and make switching decisions on the LAN hardware adapter address contained in the data link header of MAC frames; forward frames only to the destination hardware address contained in the frame.

LCI (logical channel identifier): used to define frequencies in use on M/A-COM EDACS (Enhanced Digital Access Communications System) systems and LTR (logic trunked radio) systems; more commonly known as logical channel number (see LCN); also known as virtual channel.

LCN (logical channel number): used to define frequencies in use on M/A-COM EDACS (Enhanced Digital Access Communications System) systems and LTR (logic trunked radio) systems; also known as the logical channel identifier (see LCI); also known as virtual channel.

LE (local exchange): a regulatory term in telecommunications for local telephone company.

Leased Lines: another name for private lines, dedicated lines, or permanent circuits.

LEC (local exchange carrier): a public telephone company in the US that provides local service.

LED (light-emitting diode): a light source used for signal transmission over optical fiber cabling.

Legacy: refers to hardware or software that is considered to be out-of-date or has been surpassed by newer and presumably better devices or applications.

LGN (logical channel group number): together with the LCN (in the X.25 packet header), identifies the actual logical channel number of the DTE-DCE link; a 4-bit field representing a number between 0 and 15.

Line Layer: layer of the OSI physical layer that is responsible for synchronizing and multiplexing multiple streams of data into one SONET stream within SONET frames; also monitors and administers SONET multiplexers.

Link Aggregation: a mechanism that combines multiple network communication channels into a single large channel to allow for increased data transfer rates.

Linux: operating system developed with the vision of an open-source operating system free from licensing or cost.

LLC (logical link control): standard interface allowing any combination of MAC techniques and physical media to be used simultaneously in the same workstations; shields higher layer protocols from the peculiarities of the physical medium.

Load Balancing: mechanism for distributing incoming requests among a collection of devices or circuits to reduce response times; technology that complements server clustering.

Logical Addresses: addresses used by the network layer.

Logical Segmentation Devices: allow network designers to maintain separate networks (often for security reasons) that can still communicate with one another.

Logical Topology: the path data will take to reach its destination; actual method (ring, bus, star) by which different nodes in a network communicate with one another as compared with the physical connections.

Lossy: data compression method where compressing and then decompressing retrieves data that may well be different from the original, but is "close enough" to be useful in some way.

Low Pin Count Bus: Used to connect low-bandwidth devices to the CPU in workstations; requires fewer pins than the equivalent ISA bus to route on the motherboard.

LU (logical unit): identifies an end-user in IBM's Systems Network Architecture (SNA).

LUN (Logical Unit Number) : used to identify SCSI devices connected to a workstation; each device is assigned a LUN from 0 to 7, which serves as the device's unique address.

MAC (medium access control): set of protocols that enables a device to access a network.

MAC Address (media access control): unique 6-byte address associated with and coded into each network interface card (NIC); consists of the OUI (organizationally unique identifier) and the manufacturer ID.

MAN (metropolitan area network): connects sites in and around a large city.

Managed Hub: network hub that can be monitored and controlled through network management software.

MAU (medium attachment unit): converts signals on an Ethernet cable to and from AUI signals.

MAU (multistation access unit): centralized connectivity device, the key to the Token Ring network.

MB (megabyte): unit of information or computer storage equal to either exactly one million bytes or, in some cases, 1,048,567 bytes, or more rarely, 1,024,000 bytes; not to be confused with Mb, which stands for megabits.

Mbps (megabits per second): a unit of information storage; not to be confused with MB or megabytes.

Medium: transmission, or system that carries the message or data.

Memory: desk space of the computer system; microchips located on the motherboard that hold data and instructions for the CPU (central processing unit).

Memory Management: allocates memory to separate tasks and protects data from corruption.

Memory Virtualization: removes volatile random access memory (RAM) resources from individual systems, and aggregates those resources into a virtualized memory pool available to any computer in the cluster.

Menu: used in some DOS shells and early versions of Windows; an improvement on the command line but cumbersome when a task requires the submenu of a submenu of a submenu of a menu item.

Mesh Network/Topology: topology where all nodes are connected to every other node in the network; extremely rare because of the high cost involved.

Message: information content to be shared.

MHz (megahertz): one hertz is one cycle per second; a megahertz is equal to one million cycles per second.

MIB (management information base): a type of database used to manage the devices in a communications network.

Microwave: any frequency between 300 MHz and 300 GHz.

Mirroring: a technique used to increase the fault tolerance of a system. A backup device is configured identically to the primary device and can replace the primary device if it fails.

MMU (memory management unit): Responsible for handling accesses to memory requested by the CPU; protects memory and reduces fragmentation.

Modem: a hardware device used by remote stations for network access over public switched telephone network telecommunications circuits; also called dial-up lines; acronym for modulator/demodulator. Modems convert between digital signals and analog signals.

Modified Cut-Through: a switching method in which messages are forwarded as they are received, with minimal error checking.

Modulation: the way binary bits are represented over a wave form; can be simple (less corruption) or complex (more data).

Motherboard: a computer component that has internal and external communication ports to facilitate communication between internal devices.

MPEG (motion picture experts group): digital video format identified by “.mpg” extension after the file name; a working group of ISO/IEC charged with the development of video and audio encoding standards; pronounced m-peg.

MPLS (multiprotocol label switching): an initiative that integrates Layer 2 information about network links (bandwidth, latency, utilization) into Layer 3 (IP) within a particular autonomous system to simplify and improve IP packet exchange.

Mpps (millions of packets per second): a measurement of information sent per second.

Multicast: a technique for sending content to a selected group of devices on a network using a single point of transmission.

Multimode Fiber: optical fiber capable of high throughput in shorter distance applications; primarily used in buildings and between buildings in a campus environment.

Multiple Access: CSMA principle that multiple people or devices access a shared medium, but only one can talk at a time.

Multiplexing: process of putting multiple signals on a wire simultaneously; combining two or more communications channels into a common, high-capacity channel from which the original signals may be individually recovered.

Multipoint Repeaters: allow multiple devices to be wired to a central location, share the same media, and regenerate (repeat) the signal; also referred to as active hubs.

Multitasking Routines: permit two or more distinct tasks to be performed concurrently by the computer.

Name Resolution: process by which the peer-to-peer name used on each conversational level is related to other levels.

NAP (network access point): transitional data communications facilities at which Network Service Providers (NSPs) would exchange traffic, in replacement of the publicly-financed NSFNet Internet backbone; now replaced by modern IXPs.

NAS (network-attached storage): storage system considered to be on the “front end” of the network; can be accessed by client devices or servers and applications; bridges the connection between what the end user sees and the back-end storage services; form of data storage where shared data is placed on a high-capacity storage device with a built-in network interface card.

NAT (network address translator): involves re-writing the source and/or destination addresses of IP packets as they pass through a router or firewall; also called network masquerading, native address translation, or IP-masquerading.

NetBIOS (network basic input/output system): allows applications on separate computers to communicate over a local area network (LAN).

Network Access Device: equipment used to interconnect stations, servers, and shared peripherals devices on a local area network or internetwork.

Network Access Layer: allows a computer to exchange data with another computer over a common network medium; part of the TCP/IP model that performs the same functions as the data link and physical layers of the OSI model.

Network Address: part of an IP address that is uniquely assigned by one of the ICANN-sanctioned agencies.

Network Design: how the various clients and servers are arranged for purposes of connectivity, performance, and security.

Network Diameter: the distance between the two data terminal equipment devices farthest apart in the same collision domain; also called a collision diameter.

Network Layer: where the packet is appended with an address that will help the packet get to its final destination; also called Layer 3.

Network Resource: any device, file, or application that is to be accessed from another device.

NTP (network time protocol): synchronizes IP-based devices with master clocks.

Network Topology: the connection setup of a group of computers, categorized as physical or logical.

NIC (network interface card): hardware adapter that provides communication capabilities; responsible for building, transmitting, receiving, and decoding frames in a LAN environment; serves as the interface between the networked devices and the connecting wires.

Nonblocking: the ability of a device or network to successfully provide a communications path between all available devices.

Nonrepudiation Services: the network security processes that provide proof that a message was sent from a specific source, thereby preventing that source from denying having sent the message.

NOS (network operating system): integrated collection of software designed to optimize the client/server architecture; provides and supports network services such as file services, e-mail, Internet and intranet services, and applications.

NNTP (network news transfer protocol): makes USENET possible; protocol for the distribution, inquiry, retrieval, and posting of news articles using a reliable stream-based transmission of news among the ARPA-Internet community.

Nonvolatile Memory: chips that hold information even when the system is turned off.

Node: network device that can transmit and receive information.

NRZ-L (non-return to zero level): form of digital encoding; negative voltage is used to represent binary 1, and a positive voltage is used to represent binary 0.

NSP (network service provider): a business or organization that sells bandwidth or network access by providing direct backbone access to the Internet, and usually access to its network access points (see NAP).

Null Modem: cable that interchanges wire positions, so that a DTE device looks like a DCE or vice versa.

OC1 (optical carrier, level 1): a fiber optic connection capable of transferring data at 51.85 Mbps.

Octet: a data unit of eight bits; also called a byte.

OLE (object linking and embedding) - enhancement to DDE process that allows you to link data created in one application to a document created in another application; allows editing of data in the original application without leaving the compound document.

Omni-Directional Antenna: antenna that covers a relatively small area and radiates signals in all directions equally, creating a coverage pattern shaped like a doughnut; its area is wider than it is high and is good for small indoor environments; also called a dipole antenna.

OOB (out of band): data transmitted with the primary data stream that is considered a control signal and which demands immediate attention; receiving side must pass the out-of-band data to the appropriate software routine in front of any other data that has been buffered and not yet processed, because the command must be executed as soon as possible.

Open Source: software code that is free for anyone to view, modify, or copy.

Operating Environment: how the OS controls the hardware and application programs.

Operating System (OS): software interface between the application (word processor, spreadsheet, etc.) and the computer hardware; controls the execution of all programs and the utilization of resources on a device such as a personal computer.

Operating System-Level Virtualization: virtualization approach where the virtualization layer sits between the operating system and the application programs that run on the operating system. The virtual machine runs applications, or sets of applications, that are written for the particular operating system being virtualized.

Optical Fiber: clear glass or plastic strands that allow light to move from one end to another; faster alternative to copper wiring.

Optoelectronics: the components or circuitry used to perform the necessary conversions between light-based signaling and electricity-based signaling.

OSI Model (open systems interconnection): seven-layer architecture developed to provide a view of the distinct functionalities that are required to implement each protocol layer; defines a complete range of functions that can be achieved with data communications equipment.

OSPF (open shortest path first): a link-state hierarchical interior gateway protocol (see IGP) for network routing protocol.

OUI (organizationally unique identifier): unique number found in MAC addresses assigned to a card manufacturer by the IEEE.

Packet: data structure that collectively represents the transmission stream (headers and data); associated with the network layer when the communication protocol is connection-oriented.

Packet Filter: firewall that looks at each packet and uses an access control list to determine if it should be discarded (filtered) or allowed to pass through.

Packet-Switched Network: WAN that sends the data packets over any available path; packets are assembled into the original message at the end device based on their numbers.

Packet Switching: a data communications switching and transmission system in which an input data stream is broken into packets that are transferred between devices on different networks without first establishing a dedicated communications path between the devices.

PAD (packet assembler/disassembler): device that assembles X25 packets on the sending end for transmission over the X25 PSDN, or disassembles X25 packets on the receiving end for onward transmission to the local network.

PAN (personal area network): network that includes devices that are close to the person (within a few meters range); can be wired or wireless and connect to each other or to a WAN; devices include PDAs (personal digital assistants) and phones.

Parabolic Dish Antenna: most common example are those used for satellite TV service; generates a very narrow radiation pattern; used to connect two physically distant – up to 25 miles – networks together.

Parallel Communication: refers to sending multiple bits at one time “parallel” with each other.

Parallel Port: port where the bits travel down parallel paths, arriving one byte at a time; can supply more bytes of data per unit time.

Passive Hubs: used in a LAN environment; special form of repeater that allow multiple devices to be wired into a central location and share the same media; do not regenerate (repeat) the signal; hub that does not require electrical power to operate.

Para-Virtualization: virtualization approach that exports a modified hardware abstraction, which requires operating systems to be explicitly modified and ported to run.

Parity: an error-detecting scheme which uses an extra checking bit, called the parity bit, to allow the receiver to determine whether there has been an error in the received data bits.

Partition: electronic division of a hard disk that must be created before the disk can be formatted.

Partitioning: ability to run multiple operating systems on a single physical system and share the underlying hardware resources.

Path Layer: layer of the OSI physical layer that is responsible for reliable end-to-end transport and payload delivery, including automatic recovery from failure points.

PBX (private branch exchange): a telephone exchange that serves a particular business or office.

PC (personal computer): a microcomputer whose price, size, and capabilities make it useful for individuals.

PCI (peripheral component interconnect): a computer bus for attaching peripheral devices to a computer motherboard.

PCIe (Peripheral Component Interface express): an industry standard bus, consisting of a transaction layer, a data link layer, and a physical layer; for attaching peripheral IO devices to a CPU, structured around point-to-point serial links.

PCM (pulse code modulation): process for converting from analog to digital.

PDA (personal digital assistant): hand-held computer with a touch screen.

PDU (protocol data unit): information that is delivered as a unit among peer entities of a network; in layered systems, a unit of data that is specified in a protocol of a given layer.

Peripheral Device: any hardware that is added to the computer to serve extra purposes.

Peer-to-Peer Network: network in which each computer is capable of functioning as a client and a server; users on the network can freely share resources on their computer or access shared resources on other computers.

Phase: where in the wave cycle the wave currently is; measured in degrees; a comparison of one signal to another.

Photonic Layer: layer of the OSI physical layer that specifies fiber cable with optical light sources and receivers.

Physical Layer: creates the physical link between two devices (see OSI Model); referred to as the PHY, pronounced "fie"; also called Layer 1.

Physical Medium Attachment (PMA): in Ethernet, the part of the Physical layer that controls transmission, reception, collision detection, clock detection, and skew alignment.

Physical Segmentation Device: divides collision domains to improve network performance.

Physical Topology: the physical connections between the nodes on a network; for example the wiring and connection devices used in the network.

Piconet: a single Bluetooth wireless personal area network that can contain a maximum of eight active devices, one of which is the master.

Ping: sonar concept implemented with the Echo Request and Echo Reply application; basic connectivity test between two TCP/IP network devices.

Point-to-Point Topology: two nodes are connected by one single physical connection; the simplest of all topologies.

Point-to-Multipoint Topology: nodes are connected from one point to several other points.

POP (points of presence): an artificial demarcation point or interface point between communications entities.

POP (post office protocol): how clients access their mailboxes on the messaging server; set of rules for retrieving e-mail from the e-mail server of your ISP (Internet service provider); usually done in its third version, POP3.

Port: a physical connection point on a network access device (e.g., a hub or switch).

Port Mirroring: the process of copying the data passing through one or more ports of a switch to a network management port for monitoring purposes.

Port Number: tells the computer what type of data is being received; each type of data traffic is assigned a standardized port number; examples are port 80: HTTP (Web sites), port 110: POP3 (receiving e-mail).

POST (power-on self-test): the pre-boot sequence for a computer, router, or printer.

POTS (plain old telephone service): standard telephone service, the basic form of residential and small business telephone service.

Presentation Layer: responsible for presenting information to the application layer in the manner that it is expecting (see OSI Model); also known as Layer 6.

Prioritization: a function performed by a network interface card (NIC) that makes it possible to assign different levels of priority to the requests made by applications using the NIC.

Private Key Encryption: a security process in which information is encrypted with a key that both the sender of the information and the receiver possess. The parties involved are expected to agree on a key in a way that does not compromise the established security processes.

PRI (primary rate interface): an integrated services digital network (ISDN) configuration that consists of twenty-three 64 kb/s B channels and one 64 kb/s D channel using a T-1 line or thirty 64 kb/s B channels and one 64 kb/s D channel using an E-1 channel, usually intended for large users (see also BRI).

Process and Application Layer: part of the TCP/IP model that performs the same functions as the application, presentation, and session layers of the OSI model.

Processor: brain of the computer system where calculations and decisions are made; also referred to as the CPU.

Processor Memory: referred to as the L1 (level 1), an interface between the processor and the cache.

Propagation Delay: the time required for a signal to travel from one end of the transmission path to the other end.

Proprietary Protocols: developed by vendors to allow communication between their own products.

Protocol: set of rules used to control the exchange of information that is understood by the transmitter and receivers.

Protocol Analyzer: troubleshooting tool that displays the actual protocol down to the binary level; use requires a specialized skill set; can be used on both wired and wireless networks.

Protocol Stack: a comprehensive set of specifications that define how network hardware and software interact at various levels to transfer messages between devices on a network.

Proxy Server: firewall security mechanism that sits between the network router and the Internet; talks to the Internet on behalf of a network's resources, allowing real network addresses to be hidden.

PS/2: most referenced by its use as a mouse and keyboard connector; widely replaced by USB.

PSDN (packet-switched data network): a publicly available network supporting packet-switched data, separate from PSTN.

PSTN (public switched telephone network): the network of the world's public circuit-switched telephone networks; in much the same way the Internet is the network of the world's public IP-based packet-switched networks.

Public Key Encryption: a security technique in which a user is assigned two related keys, one held privately and the other distributed publicly. Anyone wishing to send a confidential message to the user encrypts it with the user's public key. When the message is received, the user decrypts it with the corresponding private key.

PU (physical unit): a value or magnitude conventionally adopted as a unit or standard of physical measurements (e.g., length, mass, and time); identifies a network node that supports communication sessions between logical units (LU) which represent end users in IBM's SNA.

Punch Card: one of the first ways to store data for a computer; physical piece of cardstock with holes punched in to signify bits or characters.

Pure Play: newly developed business built on advantages afforded by e-commerce.

PVC (permanent virtual circuit): software-defined logical connection in a switched network in which users define logical connections and required bandwidths between end points while the switched network technology achieves the defined connections and manages the traffic; uses a real, shared circuit in the service provider's backbone.

QoS (quality of service): the capability of a network to provide better service to selected network traffic over various technologies; commitment to performance, based on predefined service parameters; measure of the level of service provided on a network.

QWERTY Keyboard: a keyboard with the characters Q, W, E, R, T, and Y on top row of alpha keys.

RADIUS (remote authentication dial-in user service): an authentication, authorization, and accounting service used to verify identities prior to granting access to network resources.

RAID (redundant array of independent disks): array of hard drives that act as one single hard drive; can be software or hardware; classified into levels that each provide a different balance of performance and reliability.

RAM (random access memory): fast, temporary data storage; chips capable of storing and later dumping data in preparation for other uses.

RARP (reverse address resolution protocol): protocol used to resolve an IP address from a given hardware address (e.g., an Ethernet address).

RAS (remote access service): allows users to access the network through dial-up modem connections.

Reboot: the process of shutting down and restarting a device or group of devices on the network after configuration changes.

Receiver: destination of the message or data.

Recovery Routine: enables a computer to resume operation after encountering a problem, such as a power outage or program error.

Reflection: type of signal interference that happens when radio waves bounce off of something and travel in a different direction.

Remote Login: allows a user at one computer to interact with another, as if the user's computer is directly attached to the remote computer.

Removable Storage: a way to store information on disks that can be removed and used on different systems; most removable drives (also known as floppy drives) use a hard 3.5-inch disk.

Repeater: device that regenerates and reshapes digital pulses and allows a signal to be transmitted further than a single circuit can achieve.

RFID (remote frequency identification): a method of identifying objects, people, pets, and consumer goods with radio frequency.

RIP (routing information protocol): used by routers connecting LANs to exchange routing table information to determine the best path through the network at any point in time.

Ring Topology: physical or logical network topology in which nodes are connected along a single wire with no endpoints; similar to a network except with the last two devices connected to each other.

Roaming: act of using a mobile or wireless device outside a specified geographic area defined by the service provider.

ROM (read-only memory): chips that store data that needs to be maintained constantly.

Router: basic piece of network hardware necessary to connect one network to another; makes decisions about packet forwarding based on IP address information in the packet; directs traffic between network segments.

Router Table: a database containing information on the routes a datagram can take.

RTMP (routing table maintenance protocol): a communication protocol used by AppleTalk to ensure that all routers on the network have consistent routing information.

SAN (storage area network): specialized high-speed network of multiple hard drives that are directly or virtually connected to servers.

SAP (service access point): represent internal software addresses in the sending or receiving computer.

SAR (segmentation and reassembly): the process used to fragment and rebuild packets that allow them to be transported across asynchronous transfer mode (ATM).

SATA (serial advanced technology attachment): one type of internal connections to a DAS; serial connected disc drive interface used to control and transfer data and information from a server or storage drive; SATA is less complex bus than SCSI but has a lower data transfer rate.

Satellite Phones: more reliable phone system used when a clear view of the sky, rather than an Earth-based tower, is needed.

Scalability: the ability of a network to grow without degradation of performance

Scale-Out: Server architecture in which more servers are added to a group of servers sharing a workload, for example in a web server farm or through a cluster.

Scale-Up: Server architecture in which more computing power is added within a server to handle more workload.

Scattering: type of signal interference that happens when a signal impacts objects that have many reflective or jagged edges.

Scripting: The process of determining which configuration tasks can be performed unattended and then automating the process.

SCSI (small computer system interface): set of ANSI standard electronic interfaces that allows computers to communicate with peripheral hardware (e.g., disk drives, tape drives, CD-ROM drives, printers, scanners); parallel connected disc drive interface for connecting workstations and servers with peripheral devices such as storage drives; It operates at higher transfer rates than achievable with SATA.

SDH (synchronous digital hierarchy): international counterpart of SONET.

SDRAM (synchronous dynamic random access memory): version of DRAM that allows for increased speed.

SEAL (simple and efficient AAL): method of relaying ATM (asynchronous transfer mode) cells between ATM Layer and a higher layer.

Section Layer: layer of the OSI physical layer that creates frames, monitors the conditions of the transmission between the SONET equipment, and converts optical signals to and from electrical signals.

Security Management: the protection of all network resources, including physical devices, operating systems, applications software, organizational data, and network operations.

Security Plan: set of principles, rules, and practices used to implement security in an organization.

Security Routines: protect data and applications from unauthorized use, execution, or change.

Segment: an electrically continuous network created within a hub; single collision domain on a network consisting of multiple collision domains.

Segmentation: the process of dividing a large collision domain into multiple smaller collision domains to improve overall network performance.

Semaphores: messages sent when a file is opened that prevent other users from opening the same file at the same time and compromising the integrity of the data.

Serial-Attached SCSI: a serial-connected SCSI that allows for higher data transfer rates compared to standard SCSI.

Serial Communication: information that is passed through a medium one bit at a time, in sequence.

Serial Port: handles data one bit at a time traveling sequentially across a single line from one device to the next.

Server: a network device that combines hardware and software to provide and manage shared services and resources on the network to the other workstations.

Server Farm: alternate name for a data center.

Session Layer: allows applications functioning on devices to establish, manage, and terminate a dialog (or session) through a network (see OSI Model); also known as Layer 3.

Signal Encoding: the conversion of data into a form suitable for transmission over a medium.

Signal-to-Noise Ratio (SNR): the ratio between the amount of signal power and the noise power at some point in a given communications system (e.g., at the input to the receiver), expressed in decibels.

Simplex Signaling: a unidirectional signaling method in which data transfer can take place in only one direction, with no capabilities to change directions.

Simplex Transmission: information flows from the transmitter to one or more receivers with no provision for a return signal; like radio and TV broadcasts.

Single-Factor Authentication: simple but flawed form of security; common example is the user ID and password.

Single-Mode Fiber: optical fiber capable of higher distances; primarily used for WAN applications.

Single Sign-On (SSO): system that makes it possible to store all identity information (e.g., various user names and passwords for each user and administrator) in a centralized database on the network.

Site Survey: a process used to identify the physical and electromagnetic characteristics of an environment impacting the installation of wired or wireless network components.

SLA (service level agreement): contract with a service provider that spells out specifics as to minimum required "up" time, speed of recovery, etc.

Smartphone: a handheld device, capable of providing wireless voice communications along with support for other applications including data (text and multimedia messaging) e-mail, audio players, and Web surfing.

SMLI (stateful multi-layer inspection): similar to application gateways; however, no proxy is used between the network and the Internet.

SMLIS (stateful multilayer inspection servers): sophisticated firewalls that inspect each frame for suspicious communications.

SMTP (simple mail transfer protocol): electronic mail service that allows a user to send or receive messages.

SNA (systems network architecture): IBM's mainframe network standards.

Sneakernet: slang term for the act of physically walking large amounts of data from one department to another.

SNMP (simple network management protocol): application layer protocol in the TCP/IP family; provides remote network management capabilities to a network administrator; implemented with centralized management stations that collect network information from agents throughout the network; can also send commands to the agents to alter the configuration or status of remote devices.

SOA (service-oriented architecture): provides new functionality for existing programs by encapsulating services (process steps).

SP (service provider): a public or private organization that provides telecommunications circuits (carrier), private wide area networking facilities (network service provider), or connections to the Internet (Internet service provider).

SOAP (service oriented architecture protocol): XML-based protocol for exchanging messages over a network; consists of three parts: envelope, encoding, & RPC representation.

Socket: method of associating a program or process with a software address so they can communicate with other programs or processes; hardware defined socket connection is the combination of a data communication device address and a logical channel (port) number.

SOCKS (an abbreviation of SOCKetS): protocol for handling TCP though a proxy server; library of software added to an individual application for secure communication through the firewall.

SOCKS Servers: specialized servers for prearranged communications through a firewall.

Software: instructions that tell computers how and under what circumstances to function.

SaaS (software as a service): a service that allows you to subscribe to and use applications over the Internet.

Solid State Drive: state of the art storage drive with no moving parts.

SONET (synchronous optical network): standardized hierarchy of digital transmission rates for North American and ITU-T rates; a scalable wide area network transport technology designed to provide high-speed data transfer over extended geographic distances using an optical fiber infrastructure.

Source Address Table (SAT): the internal database used by bridges to track the medium access control addresses of devices connected to each bridge port.

Spanning Tree: advanced switch function that avoids loops by ensuring that only one link is used at a time and provides redundancy if another switch goes down; mathematical algorithm used by bridges and switches to create a logical topology that connects multiple collision domains ensuring that no path loops exist on the internetwork.

Spooling: the use of secondary or auxiliary storage as a buffer to temporarily store data until it can be queued for processing (e.g., print spooling).

Spread Spectrum: a radio transmission technology that distributes the transmitted signal power over a wide frequency bandwidth to increase the overall immunity of the signal to noise, prevent message interception, and increase spectral efficiency.

SQL (structured query language): computer language used to create, retrieve, update, and delete data from relational database and/or object-relational database management systems; pronounced "sequel".

Star Topology: physical topology where all devices attach to a common wiring point; alternative to Bus topology.

SRAM (static random access memory): holds information until the electricity is turned off; faster and more expensive than DRAM; most computer manufacturers use SRAM for caching.

Supercomputer: computer with hundreds of processors that work in conjunction.

Stackable Hub: multiple hubs that are in close proximity, capable of being connected to each other using a short length of specialized cable assembly, and functioning together as a single unit.

Standardized Protocols: developed by a group or organization and can be used across different products.

Start Bit: a bit used in asynchronous communications to indicate the beginning of a character.

Star Network/Topology: network topology in which all nodes are connected together via a central connectivity device.

Stop Bit: bit used in asynchronous communications to indicate the end of a character.

Store-and-Forward: switching method in which messages are stored as they are received, fully checked for errors, and then forwarded.

STDM (statistical time-division multiplexing): a method for transmitting several types of data simultaneously across a single transmission cable or line.

STM-1 (synchronous transport module, level 1): the basic rate of transmission of the SDH ITU-T fiber optic network transmission standard.

Storage Devices: means of storing data in the computer system for later retrieval and use.

Streaming: a group of technologies developed to enable the transfer of multimedia content over a network for immediate play at the receiving device before the entire file has been downloaded.

Striping: a data storage technique in which the content of a given file to be stored is divided and placed on multiple hard disk drives for faster retrieval and improved fault tolerance.

STS-1 (synchronous transport signal, level 1): base signal in SONET (synchronous optical network).

Subnetting: logical segmentation of the network into smaller, more manageable parts; process of dividing a single broadcast domain into two or more smaller broadcast domains by modifying Layer 3 address assignments.

SVCs (switched virtual circuits): temporary connection in the service provider's backbone created on an as-needed basis and used for the duration of the call or connection only.

Switch: intelligent device that looks at the destination MAC address in a frame and decide whether it should be forwarded or filtered; works like bridges with more ports; makes decisions in hardware rather than software for a faster response.

Switch Fabric: the multiple switches used to link storage area network devices to server clusters.

Switch Latency: the amount of time it takes for an incoming message to be inspected, processed, and forwarded through a switch.

Switch Matrix: the connections that link each port to every other port in a switch; also called a backplane.

Switched Lines: another name for dial-up or circuit switched lines.

Switching: preferred method of interconnecting devices in the LAN environment; provides greater throughput at lesser cost than traditional routers.

Synchronous Signaling: a form of signaling in which no start and stop bits are used. Each data character is coded as a string of bits and the sending and receiving devices are synchronized with each other, using a common clock.

T1: leased-line services from telephone companies that provide the most popular high-speed connectivity; digital communications circuit consisting of 24 channels and a data transfer rate of 1.544 Mb/s.

TCP/IP (transmission control protocol/Internet protocol): dominant protocol suite used in networking.

TCP (transport control protocol): connection-oriented, reliable protocol that has end-to-end responsibility for making sure that information arrives without errors and in the correct order.

Telephony: a speech transmission by radio or telephone sets; the telephone equipment and telephone technology.

Telnet: protocol that allows administrators to remotely connect to network devices.

TDM (time-division multiplexing): used in the T1 frame format; different channels are multiplexed by being assigned their own individual time slots.

Terminal Emulation: the process that enables a personal computer to operate as a terminal for connecting to a mainframe or minicomputer.

Terminal Mode: a form of remote access where the remote station accesses local area network (LAN) resources through a specialized terminal server, which makes all requests for LAN resources on behalf of the remote station.

Terminator: small devices at the two endpoints on the bus network that absorb the extra electrical energy of a signal at the end of the wire.

Thin Client: network station similar to a personal computer in processing power, memory capacity, and graphics capability, but easier to secure and manage.

Threads: individual processes within a single application.

Three-Layer Network Model: shows network communications as a set of three conversations.

Timeslicing: a method of multitasking that allocates CPU time to tasks.

Topology: the physical or logical arrangement of devices on a network.

Track: a concentric ring encoded on a disk during the low-level format.

Traffic Shaping: a technique that directs data streams on the basis of their address, protocol, priority, or application content.

Transceiver: radio transmitter and receiver combined into a single unit.; device that acts as an interface between the network and the connected device.

Transmitter: source that generates message or data.

Transport Layer: layer that is responsible for delivering information in sequence and to the correct end-user (see OSI Model).

Trap: SNMP protocol function used by the agent in a managed device to report important events or alarms.

Token Ring Network: uses a physical star topology but a logical ring topology; a device must have a token before it can transmit; superseded by Ethernet.

Topology: the physical (how the wires are laid out) and/or logical (how the wires work) arrangement of the devices on the network.

Trojan Horse: a malicious payload (i.e., virus) surreptitiously delivered inside a benign host.

Twisted-Pair Cable: widely used in the workplace for phone and data communication; different categories are used for different communications: Cat3 (Category 3) is two-pair cable typically used for phones; Cat5 cable, which has four twisted pairs, is the most used cable for data communication.

Two-Factor Authentication: combines any two of the three forms of authentication; common examples are ID card plus user name/password.

UART (universal asynchronous receiver/transmitter): a computer component or chip that handles asynchronous serial communication through serial/parallel conversion.

UDP (user datagram protocol): connectionless, unreliable protocol that exchanges datagrams without acknowledgments or guaranteed delivery; requires error processing and retransmission by other protocols.

Unified Communications (UC): seamless combination of different forms of communication, such as voicemail, e-mail, and text messages.

Unicast: a technique for sending data to a single network device; one-to-one mode of communication.

UPS (uninterruptible power supply): a device that is inserted between a primary power source and the primary power input of equipment to be protected to eliminate the effects of transient anomalies or temporary outages.

UNIX: the most powerful and diverse operating system in the history of computing; runs a significant portion of the Internet servers in use today; extreme stability makes it ideal for companies' critical, real-time applications.

Unterminated Endpoint: problem with bus topologies where a wire becomes disconnected at a single device, causing an echo on the system until corrected.

USB Port (universal serial bus): standard external communication medium used to connect to devices such as scanners, printers, digital cameras, etc; designed to replace the RS-232 connection with one that can handle up to 127 devices.

USENET (USEr NETwork): Internet service that enables open forum discussions with people all over the world through newsgroups.

User Interface: how you interact with the computer.

Utility Routines: diagnostic, tracing, monitoring, and resource housekeeping functions.

UTP (unshielded twisted-pair): the most common cable used in computer networking; cable made up of one or more pairs of twisted copper conductors with no metallic shielding, covered with an insulating sheath.

VBR (variable bit rate): transmissions that are not time sensitive - the receiving computer can reconstruct the information regardless of how quickly or in what order the parts are received; also called "bursty" transmission.

VCI (virtual channel identifier): identifies the virtual channel between ATM switch nodes.

VGA (video graphics array): the de facto standard for video output for personal computers; usually used to connect the monitor to your computer.

Virtual Circuit (VC): a communications path through a network that simulates a dedicated connection between two network devices.

Virtual Channel: separate traffic paths that share the same bandwidth within the same interconnect or virtual path; Delays in one don't affect the others.

Virtual Machine (VM): representation of a real machine using software that provides an operating environment which can run or host a guest operating system.

Virtual Machine Monitor: software that runs in a layer between a hypervisor or host operating system and one or more virtual machines that provides the virtual machine abstraction to the guest operating systems.

Virtual Memory: a technique of simulating additional memory for an application to use.

Virtual Switch: software created virtual switch allows the connection of virtual machines to a network.

Virtualization: technology that partitions the resources on one physical machine and makes each OS think that it is on a physical machine by itself; allows one machine to run multiple operating systems and/or applications simultaneously; the separation of a resource or request for a service from the underlying physical delivery of that service; software and procedures that makes it possible for users and administrators to view and manage a group of storage devices as a single unit regardless of differences in capacities, locations, and device types.

VLAN (virtual LAN): splits a single physical switch into multiple smaller virtual switches; technique made possible by switching technologies that permits the logical grouping of any number of network devices into one or more broadcast domains or subnetworks to improve traffic management and/or security.

VoIP (voice over Internet protocol): routing of voice conversations over the Internet or through any other IP-based network; system in which voice signals are converted to datagrams and transmitted over an organizational network or the Internet; also called broadband phone.

Volatile Memory: chips that lose whatever information they are holding if power is interrupted.

VPI (virtual path identifier): traces the virtual path, from endpoint-to-endpoint, through the ATM network.

VPN (virtual private network): combination of hardware and software technologies designed to enable secure access to private LAN over the public Internet.

Wait State: the pausing of CPU processing allowing memory time to catch up with data delivery requests.

Warm Boot: a complete reload of computer's operating system through use of the system reset keys on the keyboard.

Wavelength: the distance between consecutive corresponding points of the same phase, such as crests, troughs, or zero crossings; is inversely proportional to frequency.

WDM (wavelength-division multiplexing): when two or more different wavelengths of light each carrying information are multiplexed together on a fiber link, and demultiplexed at the receiving end to recapture the individual information carried by each wavelength used.

WAN (wide area network): geographically dispersed network of computers; data communications system that uses telecommunications circuits to link organizational local area networks that are located in multiple sites.

W3C (World Wide Web Consortium): user and developer forum dedicated to developing interoperable Web technologies (specifications, guidelines, software, and tools).

Web Site Acceleration: a term used to describe a content acceleration appliance that is used to cache the locally stored content requested by remote users; also called reverse proxy.

Wi-Fi: describes the underlying technology of WLANs; originally developed for mobile computing devices in LANs, but is now used for more services, including Internet and VoIP phone access; shortened form of wireless fidelity.

Wi-Fi (802.11): IEEE standard governing short-range high-speed communication between wireless devices using the 2.4-GHz and 5-GHz frequency.

WiMAX: new standard for point-to-point and point-to-multipoint data access in an outdoor environment; provides point-to-point data connectivity for last mile data access.

Wireless: telecommunications in which electromagnetic waves (rather than some form of wire) carry the signal over part or all of the communication path.

Word: smallest unit of data (4 octets); words are packaged into frames.

Word Size: number of bits that a processor can manipulate at a time.

WPAN (wireless personal area networks): wireless network for interconnecting devices centered around an individual person's workspace; typically limited to a 10 meter range.

WLAN (wireless local area network): computer network used for wireless communications among computer devices (including telephones and PDAs); also known as LAWN (local area wireless network).

WWN (world wide name): unique identifiers assigned to manufacturers by IEEE and hard-coded into fibre channel devices.

WWW (world wide web): server-based application that organizes information using hypermedia.

X.25: an established communications service for digital transmission over extended distances; sometimes described as a packet switched data network.

XDSL (digital subscriber line): family of digital technologies that provide high data digital data transmission over the existing wires of a local telephone network to residential or commercial subscribers.

XML (extensible markup language): W3C- (World Wide Web consortium) recommended general-purpose markup language that supports a wide variety of applications.

Yagi Antenna: indoor antenna that looks physically like a square baton usually mounted over doorways to provide coverage for long hallways; creates a coverage area of around 80 degrees and looks like a piece of pie.

Yellow Book: standard used to specify how digital information is to be stored on the CD-ROM and read by the computer.

Zero Code Suppression: a method of inserting a "ONE" bit to prevent the transmission of number of consecutive "ZERO" bits.

Zoning: method of arranging Fibre Channel devices into logical groups over the physical configuration of the fabric; utilized to implement compartmentalization of data for security purposes.

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