

Computer terms good to know!

10BaseT - An Ethernet standard that uses twisted wire pairs.

100BaseTX - IEEE physical layer specification for 100 Mbps over two pairs of Category 5 UTP or STP wire.

1000BASE-T - Provides half-duplex (CSMA/CD) and full-duplex 1000 Mbps Ethernet service over Category 5 links as defined by ANSI/TIA/EIA-568-A. Topology rules for 1000BASE-T are the same as those used for 100BASE-T.

Category 5 link lengths are limited to 100 meters by the ANSI/TIA/EIA-568-A cabling standard. Only one CSMA/CD repeater will be allowed in a collision domain.

Adapter - Printed circuit board that plugs into a PC to add capabilities or connectivity to a PC. In a networked environment, a network interface card (NIC) is the typical adapter that allows the PC or server to connect to the intranet and/or Internet.

Auto-negotiate - To automatically determine the correct settings. The term is often used with communications and networking. For example, Ethernet 10/100 cards, hubs, and switches can determine the highest speed of the node they are connected to and adjust their transmission rate accordingly.

Backbone - The part of a network that connects most of the systems and networks together and handles the most data.

Bandwidth - The transmission capacity of a given facility, in terms of how much data the facility can transmit in a fixed amount of time; expressed in bits per second (bps).

Bit - A binary digit. The value—0 or 1—used in the binary numbering system. Also, the smallest form of data.

Boot - To cause the computer to start executing instructions. Personal computers contain built-in instructions in a ROM chip that are automatically executed on startup. These instructions search for the operating system, load it, and pass control to it.

Bottleneck - A traffic slowdown that results when too many network nodes try to access a single node, often a server node, at once....

EtherFast@Cable/DSL Routers DHCP supports static addresses for computers containing Web servers that need a permanent IP address.

DMZ - (DeMilitarized Zone) allows one IP address

(or computer) to be exposed to the Internet. Some applications require multiple TCP/IP ports to be open. It is recommended that you set your computer with a static IP address if you want to use DMZ Hosting.

DNS - The Domain Name System (DNS) is the way that Internet domain names are located and translated into Internet Protocol (IP) addresses. A domain name is a meaningful and easy-to-remember "handle" for an Internet address.

Domain - A subnetwork comprised of a group of clients and servers under the control of one security database. Dividing LANs into domains improves performance and security.

Download - To receive a file transmitted over a network. In a communications session, download means receive, and upload means transmit.

Driver - A workstation or server software module that provides an interface between a network interface card and the upper-layer protocol software running in the computer; it is designed for a specific NIC, and is installed during the initial installation of a network-compatible client or server operating system.

DSSS (Direct-Sequence Spread-Spectrum) - DSSS generates a redundant bit pattern for each bit to be transmitted. This bit pattern is called a chip (or chip-ping code). The longer the chip, the greater the probability that the original data can be recovered. Even if one or more bits in the chip are damaged during transmission, statistical techniques embedded in the radio can recover the original data without the need for retransmission. To an unintended receiver, DSSS appears as low power wideband noise and is rejected (ignored) by most narrow-band receivers.

Dynamic IP Address - An IP address that is automatically assigned to a client station in a TCP/IP network, typically by a DHCP server. Network devices that serve multiple users, such as servers and printers, are usually assigned static IP addresses.

Dynamic Routing - The ability for a router to forward data via a different route based on the current conditions of the communications circuits. For example, it can adjust for overloaded traffic or failing lines and is much

more flexible than static routing, which uses a fixed forwarding path.

CPU (Central Processing Unit) - The computing part of the computer. Also called the “processor,” it is made up of the control unit and ALU.
CSMA/CD (Carrier Sense Multiple Access/Collision Detection) - The LAN access method used in Ethernet. When a device wants to gain access to the network, it checks to see if the network is quiet (senses the carrier). If it is not, it waits a random amount of time before retrying. If the network is quiet and two devices access the line at exactly the same time, their signals collide. When the collision is detected, they both back off and each waits a random amount of time before retrying.

Daisy Chain - Connected in series, one after the other. Transmitted signals go to the first device, then to the second, and so on.

Database - A database is a collection of data that is organized so that its contents can easily be accessed, managed, and updated.

Data Packet - One frame in a packet-switched message. Most data communications is based on dividing the transmitted message into packets. For example, an Ethernet packet can be from 64 to 1518 bytes in length.

Default Gateway - The routing device used to forward all traffic that is not addressed to a station within the local subnet.

DHCP (Dynamic Host Configuration Protocol) - A protocol that lets network administrators centrally manage and automate the assignment of Internet Protocol (IP) addresses in an organization's network. Using the Internet's set of protocol (TCP/IP), each machine that can connect to the Internet needs a unique IP address. When an organization sets up its computer users with a connection to the Internet, an IP address must be assigned to each machine.

Without DHCP, the IP address must be entered manually at each computer and, if computers move to another location in another part of the network, a new IP address must be entered. DHCP lets a network administrator supervise and distribute IP addresses from a central point and automatically sends a new IP address when a computer is plugged into a different place in the network.

DHCP uses the concept of a “lease” or amount of time that a given IP address will be valid for a computer. The lease time can vary depending on how long a user is likely to require the Internet connection

at a particular location. It's especially useful in education and other environments where users change frequently.

Using very short leases, DHCP can dynamically reconfigure networks in which there are more computers than there are available IP addresses.

Full Duplex - The ability of a device or line to transmit data simultaneously in both directions.

Gateway - A device that interconnects networks with different, incompatible communications protocols.

Half Duplex - Data transmission that can occur in two directions over a single line, but only one direction at a time.

Hardware - Hardware is the physical aspect of computers, telecommunications, and other information technology devices. The term arose as a way to distinguish the “box” and the electronic circuitry and components of a computer from

the program you put in it to make it do things. The program came to be known as the software.

Hub - The device that serves as the central location for attaching wires from workstations. Can be passive, where there is no amplification of the signals; or active, where the hubs are used like repeaters to provide an extension of the cable that connects to a workstation.

IEEE - The Institute of Electrical and Electronics Engineers. The IEEE describes itself as “the world's largest technical professional society—promoting the development and application of electrotechnology and allied sciences for the benefit of humanity, the advancement of the profession, and the well-being of our members.”

The IEEE fosters the development of standards that often become national and international standards. The organization publishes a number of journals, has

many local chapters, and has several large societies in special areas, such as the IEEE Computer Society.

IP Address - In the most widely installed level of the Internet Protocol (Internet Protocol) today, an IP address is a 32-binary digit number that identifies each sender or receiver of information that is sent in packets across the Internet.

When you request an HTML page or send e-mail, the Internet Protocol part of TCP/IP includes

your IP address in the message (actually, in each of the packets if more than one is required) and sends it to the IP address that is obtained by looking up the domain name in the Uniform Resource Locator you request-ed or in the e-mail address you're sending a note to. At the other end, the recipient can see the IP address of the Web page requestor or the e-mail sender and can respond by sending another message using the IP address it received.

Ethernet - IEEE standard network protocol that specifies how data is placed on and retrieved from a common transmission medium. Has a transfer rate of 10 Mbps. Forms the underlying transport vehicle used by several upper-level protocols, including TCP/IP and XNS.

Fast Ethernet - A 100 Mbps technology based on the 10Base-T Ethernet CSMA/CD network access method.

Firewall - A firewall is a set of related programs, located at a network gateway server, that protects the resources of a network from users from other networks.

(The term also implies the security policy that is used with the programs.) An enterprise with an intranet that allows its workers access to the wider Internet installs a firewall to prevent outsiders from accessing its own private data resources and for controlling what outside resources to which its own users have access. Basically, a firewall, working closely with a router, examines each network packet to determine whether to forward it toward its destination.

Firmware - Programming that is inserted into programmable read-only memory, thus becoming a permanent part of a computing device.

Fragmentation - Breaking a packet into smaller units when transmitting over a network medium that cannot support the original size of the packet.

FTP (File Transfer Protocol) - A protocol used to transfer files over a TCP/IP network (Internet, UNIX, etc.). For example, after developing the HTML pages for a website on a local machine, they are typically uploaded to the Web server using FTP.

FTP includes functions to log onto the network, list directories, and copy files.

It can also convert between the ASCII and EBCDIC character codes. FTP operations can be performed by typing commands at a command prompt or via an FTP utility running under a graphical interface such as Windows. FTP transfers can also be initiated from within a Web browser by

entering the URL preceded with ftp://.

Unlike e-mail programs in which graphics and program files have to be "attached," FTP is designed to handle binary files directly and does not add the

overhead of encoding and decoding the data.

NetBEUI (NetBIOS Extended User Interface) -

The transport layer for NetBIOS. NetBIOS and NetBEUI were originally part of a single protocol suite that was later separated. NetBIOS sessions can be transported over NetBEUI, TCP/IP, and SPX/IPX protocols.

NetBIOS - The native networking protocol in DOS and Windows networks. Although

originally combined with its transport layer protocol (NetBEUI), NetBIOS today provides a programming interface for applications at the

session layer (layer 5). NetBIOS can ride over NetBEUI, its native transport, which is not

routable, or over TCP/IP and IPX/SPX, which are routable protocols. NetBIOS computers are

identified by a unique 15-character name, and Windows machines (NetBIOS machines)

periodically broadcast their names over the network so that Network Neighborhood can catalog

them. For TCP/IP networks, NetBIOS names are turned into IP addresses via manual configuration

in an LMHOSTS file or a WINS server. There are two NetBIOS modes. The Datagram mode is

the fastest mode, but does not guarantee delivery. It uses a self-contained packet with send and

receive name, usually limited to 512 bytes. If the recipient device is not listening for messages, the

datagram is lost. The Session mode establishes a connection until broken. It guarantees delivery of

messages up to 64KB long.

Network - A system that transmits any combination of voice, video, and/or data between users.

Network Mask - also known as the "Subnet Mask."

NIC (Network Interface Card) - A board installed in a computer system, usually a PC, to provide network communication capabilities to and from

that computer

system. Also called an adapter.

Notebook (PC) - A notebook computer is a battery-powered personal computer generally smaller than a briefcase that can easily be transported and conveniently used in temporary spaces such as on airplanes, in libraries, at

temporary offices, and at meetings. A notebook computer, sometimes called a laptop computer, typically weighs less than five pounds and is three inches or less in thick-ness.

Packet Filtering - Discarding unwanted network traffic based on its originating address or range of addresses or its type (e-mail, file transfer, etc.).

IPCONFIG - A utility that provides for querying, defining and managing IP addresses within a network. A commonly used utility, under Windows NT and 2000, for configuring networks with static IP addresses.

IPSec - IPSec (Internet Protocol Security) is a developing standard for security at the network or packet processing layer of network communication. A big advantage of IPSec is that security arrangements can be handled without requiring changes to individual user computers.

IRQ (Interrupt ReQuest) - A hardware interrupt on a PC. There are 16 IRQ lines used to signal the CPU that a peripheral event has started or terminated. Except for PCI devices, two devices cannot use the same line.

ISP - An ISP (Internet service provider) is a company that provides individuals and companies access to the Internet and other related services such as website building and virtual hosting.

LAN - A local area network (LAN) is a group of computers and associated devices that share a common communications line and typically share the resources of a single processor or server within a small geographic area (for example, within an office building).

Latency - The time delay between when the first bit of a packet is received and the last bit is forwarded.

MAC Address - The MAC (Media Access Control) address is a unique number assigned by the manufacturer to any Ethernet networking device, such as a network adapter, that allows the network to identify it at the hardware level.

Mbps (MegaBits Per Second) - One million bits per second; unit of measurement for data transmission.

mIRC - mIRC runs under Windows and provides a graphical interface for logging onto IRC servers and listing, joining, and leaving channels.

Motherboard - A motherboard is the physical arrangement in a computer that contains the computer's basic circuitry and components.

NAT - NAT (Network Address Translation) is the translation of an Internet Protocol address (IP

address) used within one network to a different IP address known within another network. One network is designated the inside network and the other is the outside.

98.EtherFast@Cable/DSL Routers nostic tool or debugging feature, especially when fending off an attack. It enables the administrator to keep close track of switch performance and alter it if necessary. Port mirroring can be managed locally or remotely.

PPPoE (Point to Point Protocol over Ethernet) - A method used mostly by DSL providers for connecting personal computers to a broadband modem for Internet access. It is similar to how a dial-up connection works but at higher speeds and quicker access.

PPTP (Point-to-Point Tunneling Protocol) - A protocol (set of communication rules) that allows corporations to extend their own corporate network through private "tunnels" over the public Internet. Effectively, a corporation uses a wide-area network as a single large local area network. A company no longer needs to lease its own lines for wide-area communication but can securely use the public networks. This kind of interconnection is known as a virtual private network (VPN).

PrintServer - A hardware device that enables a printer to be located anywhere in the network.

RIP (Routing Information Protocol) - A simple routing protocol that is part of the TCP/IP protocol suite. It determines a route based on the smallest hop count between source and destination. RIP is a distance vector protocol that routinely broadcasts routing information to its neighboring routers and is known to waste bandwidth. AppleTalk, DECnet, TCP/IP, NetWare, and VINES all use incompatible versions of RIP.

RJ-11 (Registered Jack-11) - A telephone connector that holds up to six wires. The RJ-11 is the common connector used to plug a telephone into a wall.

RJ-45 - A connector similar to a telephone connector that holds up to eight wires, used for connecting Ethernet devices.

Router - Protocol-dependent device that connects subnetworks together. Routers are useful in breaking down a very large network into smaller subnetworks; they introduce longer delays and typically have

much lower throughput rates than bridges.

Server - Any computer whose function in a network is to provide user access to files, printing, communications, and other services.

Partitioning - To divide a resource or application into smaller pieces.

PCI (Peripheral Component Interconnect) - A peripheral bus commonly used in PCs, Macintoshes and workstations. It was designed primarily by Intel and first appeared on PCs in late 1993. PCI provides a high-speed data path between the CPU and peripheral devices (video, disk, network, etc.). There are typically three or four PCI slots on the motherboard. In a Pentium PC, there is generally a mix of PCI and ISA slots or PCI and EISA slots. Early on, the PCI bus was known as a "local bus." PCI provides "plug and play" capability, automatically configuring the PCI cards at startup. When PCI is used with the ISA bus, the only thing that is generally required is to indicate in the CMOS memory which IRQs are already in use by ISA cards. PCI takes care of the rest.

PCI allows IRQs to be shared, which helps to solve the problem of limited IRQs available on a PC. For example, if there were only one IRQ left over after ISA devices were given their required IRQs, all PCI devices could share it. In a PCI-only machine, there cannot be insufficient IRQs, as all can be shared.

PCMCIA - The PCMCIA (Personal Computer Memory Card International Association) is an industry group organized in 1989 to promote standards for a credit card-size memory or I/O device that would fit into a personal computer, usually a notebook or laptop computer.

Ping (Packet INternet Groper) - An Internet utility used to determine whether a particular IP address is online. It is used to test and debug a network by sending out a packet and waiting for a response.

Plug-and-Play - The ability of a computer system to configure expansion boards and other devices automatically without requiring the user to turn off the system during installation.

Port - A pathway into and out of the computer or a network device such as a switch or router. For example, the serial and parallel ports on a personal computer are external sockets for plugging in communications lines, modems, and printers.

Port Mirroring - Port mirroring, also known as a roving analysis port, is a method of monitoring network traffic that forwards a copy of each incoming and outgoing packet from one port of a

network switch to another port where the packet can be studied. A network administrator uses port mirroring as a diag-100.EtherFast@Cable/DSL Routers

TCP/IP - Transmission Control Protocol/Internet Protocol (TCP/IP) is the basic communication language or protocol of the Internet. It can also be used as a communications protocol in a private network (either an intranet or an extranet). When you are set up with direct access to the Internet, your computer is provided with a copy of the TCP/IP program just as every other computer that you may send messages to or get information from also has a copy of TCP/IP.

TFTP (Trivial File Transfer Protocol) - A version of the TCP/IP FTP protocol that has no directory or password capability.

Throughput - The amount of data moved successfully from one place to another in a given time period.

Topology - A network's topology is a logical characterization of how the devices on the network are connected and the distances between them. The most common network devices include hubs, switches, routers, and gateways. Most large networks contain several levels of interconnection, the most important of which include edge connections, backbone connections, and wide-area connections.

TX Rate - Transmission Rate.

UDP (User Datagram Protocol) - A communications method (protocol) that offers a limited amount of service when messages are exchanged between computers in a network that uses the Internet Protocol (IP). UDP is an alternative to the Transmission Control Protocol (TCP) and, together with IP, is sometimes referred to as UDP/IP. Like the Transmission Control Protocol, UDP uses the Internet Protocol to actually get a data unit (called a datagram) from one computer to another. Unlike TCP, however, UDP does not provide the service of dividing a message into packets (datagrams) and reassembling it at the other end. Specifically, UDP doesn't provide sequencing of the packets that the data arrives in. This means that the application program that uses UDP must be able to make sure that the entire message has arrived and is in the right order.

Network applications that want to save processing time because they have very small data units to exchange (and therefore very little message reassembling to do) may prefer UDP to TCP.

Upgrade - To replace existing software or firmware with a newer version.

Upload - To send a file transmitted over a network. In a communications session, upload means transmit, and download means receive.

Software - Instructions for the computer. A series of instructions that performs a particular task is called a "program." The two major categories of software are "system software" and "application software."

System software is made up of control programs such as the operating system and database management system

(DBMS). Application software is any program that processes data for the user. A common misconception is that software is data. It is not.

Software tells the hardware how to process the data.

SOHO (Small Office/Home Office) - Market segment of professionals who work at home or in small offices.

Static IP Address - A permanent IP address that is assigned to a node in a TCP/IP network.

Static Routing - Forwarding data in a network via a fixed path. Static routing cannot adjust to changing line conditions as can dynamic routing.

Storage - The semi-permanent or permanent holding place for digital data.

STP (Shielded Twisted Pair) - Telephone wire that is wrapped in a metal sheath to eliminate external interference.

Subnet Mask - The method used for splitting IP networks into a series of sub-groups, or subnets. The mask is a binary pattern that is matched up with the IP address to turn part of the host ID address field into a field for subnets.

Swapping - Replacing one segment of a program in memory with another and restoring it back to the original when required.

Switch - 1. A data switch connects computing devices to host computers, allowing a large number of devices to share a limited number of ports. 2. A device for making, breaking, or changing the connections in an electrical circuit.

TCP (Transmission Control Protocol) - A method (protocol) used along with the Internet Protocol (Internet Protocol) to send data in the form of message units between computers over the Internet. While IP takes care of handling the actual delivery of

the data, TCP takes care of keeping track of the individual units of data (called packets) that a message is divided into for efficient routing through the Internet.

URL (Uniform Resource Locator) - The address that defines the route to a file on the Web or any other Internet facility. URLs are typed into the browser to

access Web pages, and URLs are embedded within the pages themselves to provide the hypertext links to other pages.

UTP - Unshielded twisted pair is the most common kind of copper telephone wiring. Twisted pair is the ordinary copper wire that connects home and many

business computers to the telephone company. To reduce crosstalk or electro-magnetic induction between pairs of wires, two insulated copper wires are twisted around each other.

Each signal on twisted pair requires both wires. Since some telephone sets or desktop locations require multiple connections, twisted pair is sometimes installed in two or more pairs, all within a single cable.

VLAN (Virtual LAN) - A logical association that allows users to communicate as if they were physically connected to a single LAN, independent of the actual physical configuration of the network.

Virtual Server - Multiple servers that appear as one server, or one system image, to the operating system or for network administration.

Wake-on-LAN - Wake on LAN is a technology that allows a network professional to remotely power on a computer or to wake it up from *sleep mode*.

WAN - A communications network that covers a wide geographic area, such as a state or country.

WEP (Wired Equivalent Privacy) - A data privacy mechanism based on a 64-bit shared key algorithm, as described in the IEEE 802.11 standard.

WINIPCFG - Configuration utility based on the Win32 API for querying, defining, and managing IP addresses within a network. A commonly used utility for configuring networks with static IP addresses.

Workgroup - Two or more individuals that share files and databases.