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NEWTON'S TELECOM DICTIONARY

**The Official Dictionary
of Telecommunications
Networking and
the Internet**

**16th
EXPANDED
& UPDATED
EDITION**

BY HARRY NEWTON

NEWTON'S TELECOM DICTIONARY

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Instabus1080 and Instabus1480 Trademarks for MICOM's direct host attachment products.

Installink 1. An MCI International service that allows access to a host computer in the U.S.A. from a Telex machine anywhere overseas. This allows easier retrieval of information from a U.S. database.

2. A trademark for MICOM's data-over-voice products.

Installation The physical hook-up and diagnostic testing of a PBX switch, cabinet, or peripheral item prior to a cutover and maintenance acceptance by the maintaining vendor.

Installed Base How many of whatever are in and working. Installed base is often confused with annual shipments. They're very different. Shipments is what goes out the factory. Installed base is what's out there. The equation is: Installed base at beginning of year plus annual shipments less equipment taken out of service during the year is equal to the installed base at the end of the year.

Installer's Tone Also called test tone. A small box that runs on batteries and puts an RF tone on a pair of wires. If the technician can't find a pair of wires by color or binding post, they attach a tone at one end and use an inductive amplifier (also called a banana or probe) at the other end to find a beeping tone.

Instance ID An ATM term. A subset of an object's attributes which serve to uniquely identify a MIB instance.

Instanet Trademark for MICOM's family of local data distribution and data private automatic branch exchange (PABX) products.

Instant Messaging I'm logged into the Internet. I load some software. It shows me that you're also logged into the Internet. I type you a message. You see it on your screen the moment I hit "send." You type your reply and send it. I see it. Bingo, a new Internet service that has come to be called "instant messaging." Instant messaging is essentially real-time, on-line electronic mail. Instant Messaging started with software called ICQ, then America Online introduced its hugely-popular variation (AOL Instant Messenger), then Microsoft introduced its software called MSN Messenger. As of writing, none of these softwares is compatible with the other. But there was talk in the trade press of eventual standards. There are serious reasons we need standards. Instant messaging is evolving into much more than a tool for sending typed messages to buddies online. Just as the original Web browsers revolutionized the way average users connect to Internet content, today's instant message screens are evolving into easy-to-use connections for linking people at any given moment on the Internet via text, voice and video. All the new capabilities will be built on a single critical assumption: knowing that a person is online. That, in turn, makes it possible for electronic merchants and providers of online services to reach Internet users with information or incentives — at the precise time they are able to react, namely when they are online in front of their screen, an easy target. Tools are being integrated into instant messaging software that permit the immediate delivery of an increasing array of data that does not come from friends or family. America Online has unveiled a version of its instant messaging software that automatically delivers tailored news headlines and stock quotes.

Instant On Buy a PC (Personal Computer). Turn it on. Bingo, it's already loaded with Windows or OS/2. Instant On is a new term for preloading software onto hard disks of new computers and shipping those computers already pre-loaded with that software.

Instantaneous Override Energy Function IOEF. A feature of the AT&T PBX Dimension Energy Communications

Service Adjunct (ECSA), which allows the user to turn all the ECSA energy functions ON or OFF. IOEF is most often used for periodic maintenance, or to adjust to sudden changes in weather.

Institute for Telecommunications Sciences ITS is the research and engineering branch of the National Telecommunications and Information Administration (NTIA), which is part of the U.S. Department of Commerce (DoC). www.ntia.doc.gov See NTIA

Instruction Register The register which contains the instruction to be executed and functions as the source for the subsequent operations of the arithmetic unit.

Instructional Television Fixed Service ITFS. A service provided by one or more fixed microwave stations operated by an educational organization and used mainly to transmit instructional, cultural and other educational information to fixed receiving stations.

Insulated Wire Wire which has a nonconducting covering.

Insulating Materials Those substances which oppose the passage of an electric current through them.

Insulation A material which does not conduct electricity but is suitable for surrounding conductors to prevent the loss of current.

Insulation Displacement Connection IDC. The IDC has replaced wire wrap and solder and screw post terminations as the way for connecting conductors (i.e. wires carrying telecom) to jacks, patch panels and blocks. Insulation Displacement Connections are typically two sharp pieces of metal in a slight V. As the plastic-covered wire is pushed into these metal teeth, the teeth pierce the plastic jacket (the insulation) and make connection with the inside metal conductor. This saves the installer having to strip off the conductor's insulation. This saves time. Since IDCs are very small, they can be placed very close together. This reduces the size of jacks, patch panels and blocks. IDCs are the best termination for high speed data cabling since a gas-tight, uniform connection is made. The alternate method of connecting wires is with a screw-down post. There are advantages and disadvantages to both systems. The IDC system, obviously, is faster and uses less space. But it requires a special tool. The screw system takes more time, but may produce a longer-lasting and stronger, more thorough (more of the wire exposed) electrical connection. The most common IDC wiring scheme is the 66-block, invented by Western Electric, now Lucent. But there are other systems — from other telecom manufacturers. See Punchdown Tool.

Insulation Resistance That property of an insulating material which resists electrical current flow through the insulating material when a potential difference is applied.

Insulators Some atoms hold onto their electrons tightly. Since electrons cannot move freely these material can't easily conduct electricity and are known as non-conductors or insulators. Common insulators include glass, ceramic, plastics, paper and air. Insulators are also called dielectrics.

INT Induction Neutralizing Transformer. A specially designed multipair longitudinal inductor that is spliced into a wireline facility to substantially reduce low frequency steady-state or surge induced voltages and currents that may be causing noise, equipment malfunctions and/or damages or creating a personnel safety hazard. See TEN.

INT14 A software interrupt designed to communicate with the com (serial) port in a PC. Communications programs use interrupt 14h to talk to a modem physically attached to another computer on the network.

compresses information within a single frame. Compare to Intraframe Coding.

IntralATA Telecommunications services that originate and terminate in the same Local Access and Transport Area. See also Local Access and Transport Area. This can be either Interstate or Intrastate service, traffic or facilities.

Intramodal Distortion In an optical fiber, the distortion resulting from dispersion of group velocity of a propagating mode. It is the only form of multi mode distortion occurring in single-mode fibers.

Intranet A private network that uses Internet software and Internet standards. In essence, an Intranet is a private Internet reserved for use by people who have been given the authority and passwords necessary to use that network. Those people are typically employees and often customers of a company. An Intranet might use circuits also used by the Internet or it might not. Companies are increasingly using Intranets — internal Web servers — to give their employees easy access to corporate information.

According to my friends at Strategic Networks Consulting, Boiled down to its simplest, an Intranet is: a private network environment built around Internet technologies and standards — predominantly the World Wide Web. The primary user interface, called a Web browser, accesses Web servers located locally, remotely or on the Internet. The Web server is the heart of an Intranet, making selection of Web server software a crucial decision, even though much fanfare has focused on browsers (Netscape's Navigator vs. Microsoft's Explorer).

At its core, a Web server handles two arcane languages (HTML and CGI) that are the meat and potatoes of generating Web pages dynamically, making connections and responding to user requests. But in the rush to dominate the potentially lucrative Intranet market, these simple Web functions are being bundled into operating systems and vendors are now touting pricey "Intranet suites" which encompass everything from database and application interfaces, to e-mail and newsgroups, to the kitchen sink.

Most medium- or larger-sized companies will need more than just a handful of simple Web servers to deploy a reasonably robust Intranet. To help a company post current job openings, or make up-to-date product specs and available inventory accessible by traveling sales reps, an Intranet needs the following capabilities:

- Database access. Getting at critical data housed in corporate databases can be accomplished via generic, universal ODBC linking or based on "native" links directly to Sybase, Oracle et al. allowing use of all the database's features.
- Application hooks. Used by developers, a standard programming interface (API) allows outside applications like Lotus Notes to interact with Web data and vice versa. In addition, proprietary APIs exist — most notably Microsoft's ISAPI (for "Internet Server API") which lets developers link directly to Microsoft applications.
- User publishing. In addition to dialogues via chat/news-group/bulletin board features, users will want to post their own content on Web servers without having to attain Webmaster status.
- Search vehicles. How does an engineer find the current specs on Project #686-2 among thousands of pages spread across a bunch of Web servers? The answer: an indexing and search engine that creates an internal Yahoo! for your own Web sites.
- Admin/management. A catch-all for loads of important, but still ill-conceived features for managing access, users, con-

tent and the servers themselves. Intranet administrators are currently fascinated with analyzing Web server logs which contain data of some sort, including user connections and page activity.

According to a white paper released by Sun Microsystems in the summer of 1996, the basic infrastructure for an intranet consists of an internal TCP/IP network connecting servers and desktops, which may or may not be connected to the Internet through a firewall. The intranet provides services to desktops via standard open Internet protocols. In addition to TCP/IP for basic network communication, these also include protocols for:

Browsing	HTTP
File Service	NFS
Mail Service	IMAP4/SMTP
Naming Service	DNS/NIS+
Directory Services	DNS/LDAP
Bootp Services	Bootp/DHCP
Network Administration	SNMP
Object Services	IIOP (CORBA)

See also Extranet and Intranet.

Intranodal Service Intranodal service is a feature of some central office switches and smaller remote switches. It means that it will continue to switch in which

Intranode Communications path which originates and terminates in the same node.

Intraoffice Call A call involving only one switching system.

Intraoffice Trunk A telephone channel between two pieces of equipment within the same central office.

Intrapreneur An entrepreneur who works inside a big company. Hence, intra, as in inside. It's hard to imagine it actually happening. But the word has become popular as a way for large companies to motivate their employees to take personal career risks and introduce new products.

Intrastate Services, traffic or facilities that originate and terminate within the same state. Therefore, if related to telephone, falling under the jurisdiction of that state's telephone regulatory procedures.

Infrastructure A term coined by "Data Communications" and referring to the software, hardware, and Internet services underlying a corporate Intranet.

Intrinsic Joint Loss That loss in optical power transmission, intrinsic to the optical fiber, caused by fiber parameters, e.g., dimensions, profile parameter, mode field diameter, mismatches when two non identical fibers are joined.

Intrinsics Intrinsics are a component of many windows toolkits. The windows toolkit intrinsics definition has been developed by the MIT X Consortium. The intrinsics define the function of specific graphical user interface and window objects. They do not define any particular look or feel, just the function. Example: A pull down menu intrinsic would define the function of a pull down menu within a toolkit but not the appearance of it.

Intrusive Test Breaking a circuit in order to test its functionality. Testing intrusively will drop service on the circuit.

INTUG International Telecommunications Users Group.

Intumescent Firestop A firestopping material that expands under the influence of heat.

Inverse ARPA See Reverse DNS.

Inverse Fourier Transform Inversion of Fourier transform to convert frequency representation of signal to time representation.

Inverse Multiplexer I-Mux. An inverse multiplexer performs the inverse function of a multiplexer. "Multiplexer"

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local loops tes for wire is. Loading ces, as dis- se used for

A group of id similarly

r loading a t) program nder DOS, device dri- y memory

managers use their own routines to load high, though they can sometimes borrow DOS commands.

Loading Plan A telephone company term. A Loading Plan is a systematic scheme for fully utilizing all existing capacity in a given switching entity; Utilizing and coordinating the capabilities and capacity limitations of various entities in a multi-entity wire center and maintaining objective service levels at all times. A Loading Plan is the basis for achieving and retaining good Load Balance.

LOC An ATM term. Loss of Cell Delineation: A condition at the receiver or a maintenance signal transmitted in the PHY overhead indicating that the receiving equipment has lost cell delineation. Used to monitor the performance of the PHY layer.

Local Pertaining to a system or device that resides within a subject device's switching domain.

Local Access The connection between a customer's premises and a point of presence of the Exchange Carrier.

Local Access and Transport Area LATA. The MFJ (Modified Final Judgement), which broke up the Bell System, also defined 196 distinct geographical areas known as LATAs. The LATA boundaries generally were drawn in consideration of SMSAs (Standard Metropolitan Statistical Areas), which were defined by the Census Bureau to identify "communities of interest" in economic terms. Generally speaking, the LATA boundaries also were coterminous with state lines and existing area code boundaries, and generally included the territory served by only a single RBOC. The basic purpose of the LATA concept was to delineate the serving areas reserved for LEC (Local Exchange Carrier) activity. In other words, IntraLATA traffic (i.e., local and local long distance) became the sole right and responsibility of the LECs. InterLATA traffic, on the other hand, became the sole right and responsibility of the IXC's. Over time, a number of state PUCs allowed the IXCs to compete for IntraLATA long distance; they also allowed CAPs (Competitive Access Providers) to provided limited local service in competition with the LECs. The Telecommunications Act of 1996 (The Act) opened the floodgates for competition with the LATA boundaries. The Act also allows the RBOCs to provide InterLATA service outside the states in which they provide local service. Additionally, The Act contains provisions for the RBOCs to offer InterLATA service within the state in which they provide local service, once they have satisfied a 14-point checklist, the most significant conditions of which relate to significant, demonstrated levels of competition within their respective local exchange serving areas. California is divided into 10 LATAs. Sparsely populated states such as South Dakota comprise only a single LATA.

Local Airtime Detail This cellular telephone carrier option (which means it costs money) provides a line-itemized, detailed billing of all calls, including call attempts and incoming calls to the mobile. What you get for free is generally a non-detailed, total summary of all calls.

Local Area And Transport Area See LATA.

Local Area Data Transport LADT. A service of your local phone company which provides you, the user, with synchronous data communications.

Local Area Network LAN. A short distance data communications network (typically within a building or campus) used to link computers and peripheral devices (such as printers, CD-ROMs, modems) under some form of standard control. Older data communications networks used dumb terminals (devices with no computing power) to talk to distant computers. But the economics of computing changed with the invention of the personal computer which had "intelligence" and which was cheap.

LANs were invented as an afterthought — after PCs — and were originally designed to let cheap PCs share peripherals — like laser printers — which were too expensive to dedicate to individual PCs. And as time went on, what LANs were used for got broader and broader. Today, LANs have four main advantages: 1. Anyone on the LAN can use any of the peripheral devices connected to the LAN. 2. Anyone on the LAN can access databases and programs running on client servers (super powerful PCs) attached to the LAN; and 3. Anyone on the LAN can send messages to and work jointly with others on the LAN. 4. While a LAN does not use common carrier circuits, it may have gateways and/or bridges to public telecommunications networks. See LAN Manager, Token Ring and Ethernet.

Local Area Signaling Services LASS is a group of central office features provided now by virtually all central office switch makers that uses existing customer lines to provide some extra features to the end user (typically a business user). They are based on delivery of calling party number via the local signaling network. LASS can be implemented on a standalone single central office basis for intra office calls or on a multiple central office grouping in a LATA (what the local phone companies are allowed to serve) for interoffice calls. Local CCS7 (Common Channel Signaling Seven) is required for all configurations. The following features typically make up LASS:

Automatic Callback: Lets the customer automatically call the last incoming call directory number associated with the customer's phone when both phones become idle. This feature gives the customer the ability to camp-on to a line.

Automatic Recall: Lets the customer automatically call the last outgoing call currently associated with the customer's station when both stations become idle. This feature gives the customer the ability to camp-on to a line.

Customer-Originated Trace: Lets the terminating party request an automatic trace of the last call received. The trace includes the calling line directory number and time and date of the call. This information is transmitted via an AM IOP channel to a designated agency, such as the telephone company or law enforcement agency.

Individual Calling Line Identification: Consists of two distinct features:

1. **Calling Number Delivery** which transmits data on an incoming call to the terminating phone. 1. **Directory Number Privacy** which prevents delivery of the directory number to the terminating phone.

Also, LASS has some selective features:

Selective Call Acceptance: Allows users to restrict which incoming voice calls can terminate, based on the identity attribute of the calling party. Only calls from parties identified on a screening lists are allowed to terminate. Calls from parties not specified on a screening list are rerouted to an appropriate announcement or forwarded to an alternate directory number.

Selective Call Forwarding: Allows a customer to pre-select which calls are forwarded based on the identity attribute of the calling party.

Selective Call Rejection: Allows a customer to reject incoming voice calls from identity attributes which are on the customer's rejection list. Call attempts from parties specified on the rejection list are prevented from terminating to the customer and are routed to an announcement which informs the caller that his/her call is not presently being accepted by the called party.

Selective Distinctive Alert: Allows a customer to pre-select which voice calls are to be provided distinctive alerting treatment based on the identity attributes of the calling party.

Users can, at their convenience, activate or modify any of

Social Computing A term that emerged in the summer of 1993. Defined by Peter Lewis in the New York Times of September 19, 1993, social computing is a "communications-rich brew," which is "expected to create new ways for businesses and their customers to communicate, over new types of wireless as well as wired pathways, using new types of computers called personal communicators." According to Peter Lewis, "The rise of social computing is expected to shift the emphasis of computing devices away from simple number crunching and data base management to wider-ranging forms of business communications...Where client server broke away from mainframe-based systems and distributed computing power to everyone in the organization, social computing goes the next step and extends the distribution of computing power to a company's customers."

Social Contract An arrangement between the local telephone company and its local regulatory authority whereby the telephone company's services are detariffed, but cannot be priced at less than cost. Quality of service standards apply.

Social Engineering Gaining privileged information about a computer system (such as a password) by skillful lying — usually via a phone call. Often done by impersonating an authorized user.

Socket 1. A synonym for a port.

2. A technology that serves as the endpoint when computers communicate with each other.

3. The socket in a PC which is responsible for accepting a PCMCIA Card and mapping the host's internal bus signals to the PCMCIA interface signals.

4. An operating system abstraction which provides the capability for application programs to automatically access communications protocols. Developed as part of the early work on TCP/IP.

Socket Interface The Sockets Interface, introduced in the early 1980s with the release of Berkeley UNIX, was the first consistent and well-defined application programming interface (API). It is used at the transport layer between Transmission Control Protocol (TCP) or User Datagram Protocol (UDP) and the applications on a system. Since 1980, sockets have been implemented on virtually every platform.

Socket Number In TCP/IP, the socket number is the joining of the sender's (or receiver's) IP address and the port numbers for the service being used. These two together uniquely identifies the connection in the Internet.

Socket Services The software layer directly above the hardware that provides a standardized interface to manipulate PCMCIA Cards, sockets and adapters. Socket Services is a BIOS level software interface that provides a method for accessing the PCMCIA slots of a computer, desktop or laptop (but most typically a laptop). Ideally, socket services software should be integrated into the notebook's BIOS, but few manufacturers have done so to date. For PCMCIA cards to operate correctly you also need Card Services, which is (not are) a software management interface that allows the allocation of system resources (such as memory and interrupts) automatically once the Socket Services detects that a PC Card has been inserted. You can, however, happily operate PCMCIA cards in your laptop without using socket and card services. You simply load the correct device drivers for those cards. Such drivers always come with PCMCIA cards when you buy the cards. You will, however, have to load new drivers every time you change cards and allocate the correct memory exclusions. You will have to reboot if you disconnect your network card. Theoretically, with socket and card services loaded, you

do not have to reboot every time you change cards. My experience is that this works, except with network cards, which cannot be hotswapped. See PCMCIA.

Sockets An application program interface (API) for communications between a user application program and TCP/IP. See Socket and Socket Number.

SOCKS A circuit-level security technology developed by David Koblas in 1990 and since made publicly available by the IETF (Internet Engineering Task Force). SOCKSv5, the current version, provides security in a client/server environment, running at the Session Layer, Layer 5 of the OSI Reference Model. SOCKSv5 supports multiple means of authentication, negotiated between client and server over a virtual circuit, and on a session-by-session basis. SOCKSv5 also supports the transfer of UDP data as a stream, avoiding the need to treat each packet of UDP data as an independent message. SOCKSv5 also allows protocol filtering, which offers enhanced access control on a protocol-specific basis. For example, a network administrator can add a SMTP (Simple Mail Transfer Protocol) filter command to prevent hackers from extracting from a mail message information such as a mail alias. Reference implementations exist for most UNIX platforms, as well as Windows NT. The cross-platform nature of SOCKS offers portability to Macintosh and other operating systems and browsers. According to Network World Magazine, September 27, 1999, "the latest version of SOCKSv5 offers network managers an easier way to run videoconferencing and video and audio streaming through firewalls, which has been difficult and time-consuming. Socks5 does this by providing a single and powerful method of authenticating users and managing security policies for all Internet applications, including multimedia." SOCKSv5 also interoperates on top of IPv4, IPsec, PPTP, L2TP and other lower-level protocols.

SOFT Start Of File

Soft Copy 1. A copy of a file or program which resides on magnetic medium, such as a floppy disk, or any form that is not a hard copy — which is paper.

2. Old legacy systems term reapplied to distributed computing in which reports are created on-screen from data residing within different applications.

Soft Decision See SISO.

Soft Ferrite Ferrite that is magnetized only while exposed to a magnetic field. Used to make cores for inductors, transformers, and other electronic components. See Barium Ferrite, Ferrite and Hard Ferrite.

Soft Font A font, usually provided by a font vendor, that must be installed on your computer and sent to the printer before text formatted in that font can be printed. Also known as downloadable font.

Soft Handoff A cellular radio term. A soft handoff is a handoff between cell sites that involves first making the connection with the new cell site before breaking the connection with the previous cell site. A hard handoff, or "break and make" handoff, is not noticeable in a voice conversation, but has disastrous impact on a data communication. See also Hard Handoff.

Soft Input-Soft Output See SISO.

Soft Key There are three types of keys on a telephone: hard, programmable and soft. HARD keys are those which do one thing and one thing only, e.g. the touchtone buttons 1, 2, 3, * and # etc. PROGRAMMABLE keys are those which you can program to do produce a bunch of tones. Those tones might be "dial mother." They might be "transfer this call to my home

- Dealing with the various vendors and providers, including verifying and paying the bills.
- Preparing and managing the Telecommunications budget.
- Keeping abreast of changes in technology, services, industry structure, and rates.
- Assisting company management in developing a corporate telecommunications policy that meets business objectives.
- Developing and implementing company telephone and telecommunications procedures for efficient and cost effective use, and training company employees in these procedures.
- Upgrading, procurement, selecting, contracting, or purchasing a system, new system, equipment, or services.
- Planning and analyzing for growth, new requirements, or future functionality.

The goal of the TCM is to provide good telecommunications services for an organization and its employees at the lowest possible cost. This definition courtesy, Robert J. Perillo, Perillo@dockmaster.ncsc.mil.

TCN Collective Number Group Table.

TCNS Thomas Conrad Networking System is a 100 million bit per second proprietary networking system (LAN) based on ARCnet that can use most standard ARCnet drivers on any network operating systems.

TCO Total Cost of Ownership. A term coined by The Gartner Group to bring attention to the actual, total cost to the enterprise of owning a PC. The most figure in 1997 was \$29,353 for owning a standard, networked, Windows 95 PC for a period of three years. Gartner cites the cost of a NetPC (Thin Client) at a much lower cost. The point is clear and fairly obvious — consider not only the acquisition/implementation cost of a workstation (networked or not), but also consider the total cost, including administration, maintenance, support, software upgrades and training.

TCP 1. Transmission Control Protocol. ARPAnet-developed transport layer protocol. Corresponds to OSI layers 4 and 5, transport and session. TCP is a transport layer, connection-oriented, end-to-end protocol. It provides reliable, sequenced, and unduplicated delivery of bytes to a remote or local user. TCP provides reliable byte stream communication between pairs of processes in hosts attached to interconnected networks. It is the portion of the TCP/IP protocol suite that governs the exchange of sequential data. See TCP/IP for a much longer explanation.

2. An ATM term. Test Coordination Procedure: A set of rules to coordinate the test process between the lower tester and the upper tester. The purpose is to enable the lower tester to control the operation of the upper tester. These procedures may, or may not, be specified in an abstract test suite.

3. Total Call Processor.

TCP/IP According to Microsoft: Transmission Control Protocol/Internet Protocol (TCP/IP) is a networking protocol that provides communication across interconnected networks, between computers with diverse hardware architectures and various operating systems. TCP (Transmission Control Protocol) and IP (Internet Protocol) are only two protocols in the family of Internet protocols. Over time, however, "TCP/IP" has been used in industry to denote the family of common Internet protocols. The Internet protocols are a result of a Defense Advanced Research Projects Agency (DARPA) research project on network interconnection in the late 1970s. It was mandated on all United States defense long-haul networks in 1983 but was not widely accepted until the integration with 4.2 BSD (Berkeley Software Distribution) UNIX. The popularity of TCP/IP (Harry's note: it's the Internet's networking protocol) is based on:

- Robust client-server framework. TCP/IP is an excellent client-server application platform, especially in wide-area network (WAN) environments.
- Information sharing. Thousands of academic, defense, scientific, and commercial organizations share data, electronic mail and services on the connected Internet using TCP/IP.
- General availability. Implementations of TCP/IP are available on nearly every popular computer operating system. Source code is widely available for many implementations. Additionally, bridge, router and network analyzer vendors all offer support for the TCP/IP protocol family within their products.

TCP/IP is the most complete and accepted networking protocol available. Virtually all modern operating systems offer TCP/IP support, and most large networks rely on TCP/IP for all their network traffic. Microsoft TCP/IP provides cross-platform connectivity and a client-server development framework that many software vendors and corporate developers are using to develop distributed and client-server applications in heterogeneous enterprise networks over TCP/IP.

How TCP Works: TCP is a reliable, connection-oriented protocol. Connection-oriented implies that TCP first establishes a connection between the two systems that intend to exchange data. Since most networks are built on shared media (for example, several systems sharing the same cabling), it is necessary to break chunks of data into manageable pieces so that no two communicating computers monopolize the network. These pieces are called packets. When an application sends a message to TCP for transmission, TCP breaks the message into packets, sized appropriately for the network, and sends them over the network.

Because a single message is often broken into many packets, TCP marks these packets with sequence numbers before sending them. The sequence numbers allow the receiving system to properly reassemble the packets into the original message. Being able to reassemble the original message is not enough, the accuracy of the data must also be verified. TCP does this by computing a checksum. A checksum is a simple mathematical computation applied, by the sender, to the data contained in the TCP packet. The recipient then does the same calculation on the received data and compares the result with the checksum that the sender computed. If the results match, the recipient sends an acknowledgment (ACK). If the results do not match, the recipient asks the sender to resend the packet. Finally, TCP uses port IDs to specify which application running on the system is sending or receiving the data.

The port ID, checksum, and sequence number are inserted into the TCP packet in a special section called the header. The header is at the beginning of the packet containing this and other "control" information for TCP.

How IP Works: IP is the messenger protocol of TCP/IP. The IP protocol, much simpler than TCP, basically addresses and sends packets. IP relies on three pieces of information, which you provide, to receive and deliver packets successfully: IP address, subnet mask, and default gateway.

The IP address identifies your system on the TCP/IP network. IP addresses are 32-bit addresses that are globally unique on a network. They are generally represented in dotted decimal notation, which separates the four bytes of the address with periods. An IP address looks like this: 102.54.94.97

Although an IP address is a single value, it really contains two pieces of information: (a.) Your system's network ID, and (b.) Your system's host (or system) ID.

The subnet mask, also represented in dotted decimal notation, is used to extract these two values from your IP address.

The value of the subnet mask is determined by the number of work ID bits of the IP address to one. The result allows TCP/IP to determine the network IDs of the local workstation. Here's an example:

When the IP address is 102.54.94.97 and the subnet mask is 255.255.0.0, the network ID is 102.54 (IP address AND subnet mask = network ID). The host ID is 94.97 (IP address AND NOT subnet mask = host ID). The above was Microsoft's definition of the subnet mask, which covers some areas Microsoft's protocols developed by the Department of Defense's Advanced Research Projects Agency (DARPA) as a military standard for multi-vendor connectivity for commercial users as well, who consequently, TCP/IP now is suppliers of minicomputers, personal computers, technical workstations and data communications networks. It is also the protocol commonly used in LANs (as well as X.25) networks. Everything from PC LANs to minisupercomputers use TCP/IP. TCP/IP currently divides networking into four layers:

1. Network Interface Layer that corresponds to the Data Link Layer. This layer manages the communication between a device and the network. It routes data between devices on the local network. The Internet Layer which corresponds to the Internet Protocol (IP) subset of this layer. IP provides the addressing to forward packets across a multi-protocol network. In IEEE terms, it provides connection-oriented communication, which means it attempts to deliver data without error. It provides provision for retransmitting lost data. It leaves such error correction, if required, to higher layers, such as TCP.

2. Transport Layer. IP addresses are 32 bits in length. The Network Identifier (Net ID) and the Host Identifier (Host ID) are assigned by a central authority, unique across the Internet, group of networks. Assigned by the host, the Host ID specifies a particular node in a given network and need only be unique within that network. A Transport Layer, which corresponds to the Transmission Control Protocol (TCP) at this layer. TCP provides end-to-end communication between source and destination with error control, flow control, and error control lacking in lower layers. It examines the message segment sequence of segments is received. It sends an acknowledgment (ACK) to the source, containing the sequence number of the next byte expected at the destination.

3. Application Layer, which corresponds to the application layers of the OSI model. It manages the function required to

IP is an excellent
cially in wide-area

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are data, electronic
et using TCP/IP.
TCP/IP are available
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all offer support for
tacts.

networking proto-
oting systems offer
rely on TCP/IP for
provides cross-plat-
development framework
ate developers are
ver applications in
CP/IP.

CP first establishes
Intend to exchange
shared media (for
cabling), it is nec-
essary pieces so that
polize the network.
Application sends a
rears the message
etwork, and sends

into many packets,
nbers before send-
e receiving system
original message.
age is not enough,
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s a simple mathe-
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globally unique on
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54.94.97
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your IP address.

The value of the subnet mask is determined by setting the net-
work ID bits of the IP address to ones and the host ID bits to
zeros. The result allows TCP/IP to determine the host and net-
work IDs of the local workstation. Here's how to understand an
IP address. For example:

When the IP address is 102.54.94.97 (specified by the user)
and the subnet mask is 255.255.0.0 (specified by the user)
the network ID is 102.54 (IP address and subnet mask) And
the host ID is 94.97 (IP address and subnet mask)

OK, the above was Microsoft's definition. Here's my definition,
which covers some areas Microsoft doesn't. TCP/IP is a set of
protocols developed by the Department of Defense to link dis-
similar computers across many kinds of networks, including
homogeneous ones and ones connected to dissimilar LANs.
TCP/IP is the protocol used on the Internet. It is, in essence,
the glue that binds the Internet. Developed in the 1970s by the
U.S. Department of Defense's Advanced Research Projects
Agency (DARPA) as a military standard protocol, its assur-
ance of multi vendor connectivity has made it popular among
commercial users as well, who have adopted TCP/IP.
Consequently, TCP/IP now is supported by many manufac-
turers of minicomputers, personal computers, mainframes,
technical workstations and data communications equipment.
It is also the protocol commonly used over many Ethernet
LANs (as well as X.25) networks. It has been implemented on
everything from PC LANs to minis and mainframes.

TCP/IP currently divides networking functionality into only
four layers:

1. Network Interface Layer that corresponds to the OSI Physical
and Data Link Layers. This layer manages the exchange of data
between a device and the network to which it is attached and
routes data between devices on the same network.

2. Internet Layer which corresponds to the OSI network layer.
The Internet Protocol (IP) subset of the TCP/IP suite runs at
this layer. IP provides the addressing needed to allow routers
to forward packets across a multiple LAN inter network. In
IEEE terms, it provides connectionless datagram service,
which means it attempts to deliver every packet, but has no
provision for retransmitting lost or damaged packets. IP
leaves such error correction, if required, to higher level pro-
tocols, such as TCP.

IP addresses are 32 bits in length and have two parts: the
Network Identifier (Net ID) and the Host Identifier (Host ID).
Assigned by a central authority, the Net ID specifies the
address, unique across the Internet, for each network or related
group of networks. Assigned by the local network administra-
tor, the Host ID specifies a particular host, station or node with-
in a given network and need only be unique within that network.
3. Transport Layer, which corresponds to the OSI Transport
Layer. The Transmission Control Protocol (TCP) subset runs
at this layer. TCP provides end-to-end connectivity between
data source and destination with detection of, and recovery
from, lost, duplicated, or corrupted packets — thus offering
the error control lacking in lower level IP routing. In TCP,
message blocks from applications are divided into smaller
segments, each with a sequence number that indicates the
order of the segment within the block. The destination device
examines the message segments and, when a complete
sequence of segments is received, sends an acknowledgement
(ACK) to the source, containing the number of the next
byte expected at the destination.

4. Application Layer, which corresponds to the session, pre-
sentation and application layers of the OSI model. This layer
manages the function required by the user programs and

includes protocols for remote log-in (Telnet), file transfer
(FTP), and electronic mail (SMTP). See OSI.

TCR 1. Transaction Confirmation Report. A report from a fax
machine listing the faxes received and transmitted. It provides
details about each fax, including date, time, the remote fax's
number, results, total pages.

2. An ATM term. Tagged Cell Rate: An ABR service parameter,
TCR limits the rate at which a source may send out-of-rate
forward RM-cells. TCR is a constant fixed at 10 cells/second.

TCS 1. Transmission Convergence Sublayer: This is part of
the ATM physical layer that defines how cells will be trans-
mitted by the actual physical layer.

2. TCS is a manufacturer of excellent call center manpower
scheduling software packages. It is based in Nashville, TN.

TCU 1. Timing Control Unit.

2. Closed User Group Table.

TCV Address Conversion Table.

TDAS See Traffic Data Administration System.

TDC 1. Time Division Controller.

2. Dial Code Table.

TDD 1. Time Division Duplex. A method used in cellular and
PCS networks employing TDMA (Time Division Multiple
Access) to support full duplex communications. Each radio
channel is divided into multiple time slots through TDMA,
thereby supporting multiple conversations. TDD supports
transmission in the forward direction (from the cell phone to
the cell site) through one radio frequency channel and one
time slot. Another radio channel and time slot supports trans-
mission in the backward direction (from the cell site to the cell
phone). TDD is flexible with regard to allocation of timeslots
for forward and reverse, making it best suited for asymmetri-
cal applications, such as web browsing. See also FDD.

2. Telecommunications Device for the Deaf. Under the
Communications Act of 1934, a TDD is defined as a machine
"that employs graphic communication in the transmission of
coded signals through a wire or radio." TDD devices (which
typically look like simple computer terminals) use the Baudot
method of communications. Most TDD devices are acousti-
cally coupled and are slow, running at 300 baud.

There is a special TDD/TTY Operator Services number. It's
800-855-1155. Users of TDDs often abbreviate commonly
used words or expressions to save time. Here are some of the
most frequently used:

ANS	Answer	R	Are
CUD	Could	REC	Receive
GA	Go Ahead	SK	Stop Keying
LTR	Letter	THRU	Through
MSG	Message	THX	Thank You
MIN	Minute	U	You
NITE	Night	UR	Your
PLS	Please	WUD	Would
QQ	Question	XOX	Hugs & Kisses

TDDRA Telephone Disclosure and Dispute Resolution Act. A
US federal act passed in 1992 which required both the FCC
and the FTC to prescribe regulations governing pay-per-call
services. Subsequently, the FTC adopted its 900-Number
Rule, which became effective November 1, 1993. Under the
TDDRA, a consumer's telephone service cannot be discon-
nected for failure to pay charges for a 900-number call, and
900-number blocking must be made available to consumer
who do not wish to have access to 900-number services. See
also 900-Number Rule.

TDEL Technical Development and Evaluation Laboratory.

TDF 1. Trunk Distributing Frame.

UBR Undefined Bit Rate or Unspecified Bit Rate. Traffic class defined by the ATM Forum. UBR is an ATM service category which does not specify traffic related service guarantees. Specifically, UBR does not include the notion of a per-connection negotiated bandwidth. No numerical commitments are made with respect to the cell loss ratio experienced by a UBR connection, or as to the cell transfer delay experienced by cells on the connection.

UC 1. Universal Controller.

2. Unit Controller.

UCA Utility Communications Architecture. An architecture for networks used to monitor and control electric power distribution systems.

UCAID University Corporation for Advanced Internet Development. Here's the explanation: Internet2 is the next generation Internet, replacing the current Internet exclusively for the use of member universities. Internet2 is a UCAID project. As a result of what they saw as the deteriorating performance of the Internet, 34 U.S. universities announced in October, 1996 the formation of Internet 2. Subsequently, the central goals of the project were adopted as part of the Clinton administration's Next Generation Initiative (NGI). This second version of the Internet is a collaboration of the National Science Foundation (NSF), the U.S. Department of Energy, over 110 research universities, and a small number of private businesses. Each participating university has committed at least \$500,000 to fund the project. Intended to serve as a private Internet for the exclusive use of its member organizations, it will be separate from the traditional Internet. The network eventually will operate over fiber optic transmission facilities at speeds of up to 2.4 Gbps (SONET OC-48), although current speeds of connection are at 155 Mbps (OC-3) and 622 Mbps (OC-12), but going higher to OC-48. Internet2 will connect through gigIPOPs, switches with throughput in the range of billions of packets per second, and will run the IPv6 protocol. www.internet2.edu. See also Internet.

UCC Uniform Commercial Code.

UCD Uniform Call Distributor. A device for allocating incoming calls to a bunch of people. Less full-featured than an Automatic Call Distributor. For a bigger explanation see Uniform Call Distributor.

UCT Universal Coordinated Time. See ZULU Time.

UDC Connector These connectors are used to terminate 2-pair STP cable. UDC connectors form a hermaphroditic connection, meaning that there is no jack (female end) or plug (male end).

UDF Universal Disk Format. See OSTA.

UDI Unrestricted Digital Information.

UDK A dumb GTE abbreviation, for Universal Dialing Keyset, a key pad that is switchable for either TONE or PULSE dialing. Outside GTE's private world, a keyset would mean a KEY TELEPHONE, not part of a phone.

UDLC 1. Universal Digital Loop Carrier

2. Univac Data Link Control. Sperry-Univac (now UNISYS) version of a bit-oriented computer protocol based on the CCITT's HDLC.

UDOP The ultimate dumb, open programmable (UDOP) switch built from multi-vendor SC-based products. A term coined by Dialogic.

UDP User Datagram Protocol. A TCP/IP protocol describing how messages reach application programs within a destination computer. This protocol is normally bundled with IP-layer software. UDP is a transport layer, connectionless mode protocol, providing a (potentially unreliable, unsequenced, and/or duplicated) datagram mode of communication for

delivery of packets to a remote or local user.

UDP User Datagram Protocol. User Data Protocol is part of the TCP/IP protocol suite. It was created to provide a way for applications to access the connectionless features of IP. UDP provides for exchange of datagrams without acknowledgements or guaranteed delivery. UDP is at layer 4 relative to the OSI reference model. See also CLTP.

UDP/IP User Datagram Protocol/Internet Protocol. See UDP.

UDPU Universal Data Patch Unit.

UDSL Unidirectional HDSL (High-bit-rate Digital Subscriber Line). A variation on the HDSL theme proposed by a small group of companies in Europe. See HDSL and xDSL.

UEM Universal Equipment Module. A Northern Telecom acronym. The basic unit of Meridian 1 PBX modular packaging. A UEM is a self-contained hardware cabinet housing a card cage, with a power supply, backplane, and circuit cards. If the UEM has the card cage for an AEM installed, it functions as an AEM.

UFGATE A program which enables a FIDO compatible bulletin board system to exchange UUCP mail with UUCP sites.

UFSS Upstream Failed Signal State.

UG Underground.

UHF Ultra High Frequency. Portion of the electromagnetic spectrum ranging from about 300 MHz to about 3 GHz. The frequency band includes television and cellular radio frequencies.

UI 1. User Interface, as in GUI, or Graphical User Interface.

2. UNIX International is a consortium of computer hardware and software vendors which is interested in the development of open software standards for the UNIX industry. Prominent members include AT&T, Sun, UNISYS and Fujitsu.

UIFN Universal International Freephone Number. In early June 1996, the ITU-T released its approval of a new standard, E.169. This standard will allow International Freephone Service (IFS) customers to be allocated a unique Universal International Freephone Number (UIFN) which will remain the same throughout the world, regardless of country or telecommunications carrier. "Freephone" is a service which permits the cost of a telephone call to be charged to the called party, rather than the calling party. In North America, "Freephone" numbers are in the area codes 800, 888, and 877 (in order of introduction). According to the ITU-T, a UIFN is composed of an international prefix (e.g., 011), a three-digit country code for global service application (e.g., 800), and an 8-digit Global Subscriber Number (GSN). The resulting eleven-digit fixed format allows companies to choose the digits they wish and embed existing Freephone numbers into the available number space. See also 800 Service.

UIS Universal Information Services. AT&T's vision of a single fully-integrated, user-defined digital network with a universal port of entry. Very similar to ISDN, now aggressively adopted by AT&T.

UKERNA UK Education and Research Networking Association. See JANET, Super-JANET.

UL Underwriters Laboratories, a privately-owned company that charges manufacturers a stiff fee to make sure their products meet the safety standards which UL itself develops. A UL label on a product has a very specific message. It says the product conforms to the safety standards UL has developed - nothing more. It does not affirm that the product will work. UL is now beginning to concern itself with adopting and promulgating standards (which have nothing to do with safety standards) including those relating to cabling. www.ul.com. See UL Approved, UL Cable Certification Program and UL NNNN. APPENDIX, www.ul.com

UL 1449 A method of rating and approving surge suppressors. This Underwriters Laboratories measure tells you if you're buying a true surge suppressor, an extension cord. This listing measures actually reaches the attached equipment at the surge suppressor. It's on a scale from 1 to 6,000 volts. The lower the rating, the greater the surge suppressors tend to be rated for the basic units and 340 for the advanced models. In short, check for UL 1449 rating before you buy it.

UL 1459 Effective 7/1/91, telephone equipment will be required to provide protection against overloads and power line crosses on equipment systems covered under this listing. This includes single- and multi-line telephones, and central office switches. In general, the requirements apply to any location where wires enter the public network, as well as in most IRB (Building) situations. See also NEC Underwriters Laboratories.

UL 1863 This requirement covers requirements intended to be electrically connected to a communications network. The listing requirements that comprise the premises communication system from the point of demarcation up to an outlet providing modular plug and jack (cable). Requirements are listed under Code Accessories, UL 1863. Listing equipment will be covered under UL 1459, etc. See also NEC Requirements and Underwriters Laboratories.

UL 497 & 497A According to the NEC, primary and secondary protection used on a telephone circuit must be listed. The listing requirements are UL 497 for primary systems and UL 497A for secondary protection. See also NEC Requirements and Underwriters Laboratories.

UL Approved Tested and approved by Underwriters Laboratories. The Underwriters Laboratories, established by the National Board of Fire Underwriters, is a not-for-profit organization that focuses on the power supply feeding the power supply is that little black box that takes 120 volt AC at one end, takes 120 volt AC at the other end, and provides DC power that the phone system uses. The power supply tests OK, then that's testing. For it is the power supply — an commercial AC power that feeds into the phone system that determines the potential fire hazard. After many fire deaths in recent years, communities are a lot more concerned about installed telephone equipment. Fire departments are known to zealously enforce these rules. For approval, the other major fire concern is wire in new building construction, with teflon-covered cable in plenum ceilings which talks about UL's expanding certification. See also UL Cable Certification Program.

UL Cable Certification Program In conjunction with companies such as Data-Transmission Performance-Lab that covers UL Listed communications circuit cable. The UL program identifies

way transfers of information.
s are less important than the

mail message is 43 seconds,
is 3.4 minutes. Voice mail is

if voice mail:
ice mail improves communi-
cate in non-real time.
ive messages on voice mail,
r. You get right to the point,
je "chit chat" - wasting time

hour dilemma. No more wait-
) to call bi-coastally or across

of answering phones and tak-
ee to do more vital tasks.
es, as many as 50%.
oice mail is much more accu-
s. Messages are in your own
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ling times.

aps to stay in contact - morn-

rd interruptions.
ice Mail System.
ens when you reach a voice
ach a human by punching "0"
o another voice mail box and
or some other number you're
reach a human. You're stuck
t voice mail machine, being
another, never reaching a real

ee to record, store and retrieve
ypes of voice mail devices —
nd those which profess some
e system. A stand alone voice
ition of single person answer-
ed features. You can instruct
) to forward messages among
to allocate your friends and
own mail boxes so they can
essages from you, pass mes-
dit messages, add comments
ilbox at a pre-arranged time.
nt" or "non-urgent" or stored
of voice mail options varies

includes two additional fea-
ave any messages. It does this
and/or putting a message on
play. Second, if your phone
rings (you set the number), the
tomatically to your voice mail
ee, deliver a little "I am away"
cord the caller's message.
tion. You might have a phone
n alphanumeric display. That

display might label your phone's soft buttons like those on a
cassette recorder — forward, reverse, slow, fast, stop, etc. so
you can go through your messages any way you like.
Telenova has such a phone. It's very impressive.

There are pros and cons to voice mail systems. Some
employees will hide behind them, forwarding calls from their
customers into voice mail boxes and never returning them.
Some employees will make good use of them. They dial in for
their messages, research what the customer wants and return
the voice mail calls quickly. Many voice mail systems are
being combined with automated attendants. Many are being
combined with interactive voice processing systems, includ-
ing sophisticated tie-ins to mainframe databases. Some peo-
ple hate voice mail systems. Others love them. It all depends
on how the system is used, managed and sold. See also Voice
Mail, Audiotex, Automated Attendants, Information Center
Mailboxes, Enhanced Call Processing and Voice Processing.

Voice Markup Language See Voice Browser.

Voice Message Service A leased service typically over
dial up phone lines which provides the ability for a phone
user to access a voice mail system and leave a message for a
particular phone user. See Voice Mail System

Voice Message Exchange See VMX.

Voice Messaging Recording, storing, playing and distrib-
uting phone messages. Essentially voice messaging takes the
benefits of voice mail (such as bulk messaging) beyond the
immediate office to almost any phone destination you select.
Voice messaging is often done through service bureaus.
Nynex has an interesting way of looking at voice messaging.
Nynex sees it as four distinct areas: 1. Voice Mail, where mes-
sages can be retrieved and played back at any time from a
user's "voice mailbox"; 2. Call Answering, which routes calls
made to a busy/no answer extension into a voice mailbox; 3.
Call Processing, which lets callers route themselves among
voice mailboxes via their touchtone phones; and 4.
Information Mailbox, which stores general recorded informa-
tion for callers to hear.

Voice Modem A new type of modem which handles both
voice and data over standard analog phone lines. A voice
modem is the classic computer telephony device, since it
applies intelligence to the making and receiving of normal
analog phone calls. Such voice modem might be a full-duplex
speakerphone and an answering machine / voice mail device.
Such modem might be able to detect incoming and outgoing
touchtone and other signals, such as Caller ID. Such modem
might also include music on hold, pager dialing, bong and
SIT tone detect, line break detect, local phone on / off detect,
extension off hook detect, remote ring back detection and
VoiceView. The thrust towards voice modems is coming from
chip manufacturers, including Sierra Semiconductor,
Rockwell and Cirrus Logic. Some standards bodies are work-
ing on voice modems. Two standards are emerging — IS-101
and PN-3131.

Voice On The Net Coalition An organization formed to
stop regulatory attempts to stifle the growth of voice on the
Internet. See VON Coalition. 802-878-9884 and www.von.org

Voice Operated Relay (VOX) Circuit A voice-operat-
ed relay circuit that permits the equivalent of push-to-talk
operation of a transmitter by the operator.

Voice Over TIE/communications name for a totally won-
derful feature on a phone system — namely that while you are
speaking to someone on the phone, your operator can talk to
you "over" the conversation you're having. What happens is
that you hear your operator in your telephone's handset

receiver, but the person you're speaking with can't. You can
reply to the operator (telling him/her you'll be one minute,
please call back, etc.) by hitting a DND/MIC (Do Not
Disturb/Microphone) button on your phone. Voice Over has
major benefits. It saves on long distance calls you don't have
to return. It closes deals that can't wait. And it gives cus-
tomers immediate answers. In short, it improves corporate
efficiency and customer satisfaction.

Voice over IP VoIP. The technology used to transmit voice
conversations over a data network using the Internet Protocol.
Such data network may be the Internet or a corporate Intranet.
There are several potential benefits to moving voice over a
data network using Internet Protocol: First, You may save
some money. Second, you may achieve benefits of managing
a voice and data network as one network. Third, if you have IP
phones, moves, adds and changes will be easier and cheaper.
(IP phones have individual numbers, with memories. So
they're more "user friendly.") And fourth — the key attraction
of IP telephony — is added (and integrated) new services,
including integrated messaging, bandwidth on demand, voice
emails, the development of "voice portals" on the Web and the
much simplified setting up, tearing down and transferring of
phone calls. See Internet Protocol.

Voice Paging Access Gives attendants and phone users
the ability to dial loudspeaker paging equipment throughout
the building. An unbelievably useful feature, if your people are
prone to wander.

Voice Portal Call a phone number, have an interactive voice
response system answer you, respond to your words with
speech recognition, read your emails with text-to-speech
skills, perhaps even allowing you to "surf" the Web. The clas-
sic definition of a portal is a door, gate, or entrance, especial-
ly one of imposing appearance, as to a palace. In the Internet /
World Wide Web business, a portal is a site, which the owner
positions (through marketing) as an entrance to other sites on
the Internet. There are two types of portals — the convention-
al PC-based, browser based — and the newer one using the
telephone. For a bigger explanation of a portal, see Portal.

Voice Print See Voiceprint.

Voice Processing Think of voice processing as a voice
computer. Where a computer has a keyboard for entering
information, a voice processing system recognizes touch-
tones from remote telephones. It may also recognize spoken
words. Where a computer has a screen for showing results, a
voice processing system uses a digitized synthesized voice to
"read" the screen to the distant caller.

Whatever a computer can do, a voice processing system can
too, from looking up train timetables to moving calls around
a business (auto attendant) to taking messages (voice mail).
The only limitation on a voice processing system is that you
can't present as many alternatives on a phone as you can on
a screen. The caller's brain simply can't remember more than
a few. With voice processing, you have to present the menus
in smaller chunks.

Voice processing is the broad term made up of two narrower
terms — call processing and content processing. Call pro-
cessing consists of physically moving the call around. Think
of call processing as switching. Content consists of actually
doing something to the call's content, like digitizing it and
storing it on a hard disk, or editing it, or recognizing it (voice
recognition) or some purpose (e.g. using it as input into a
computer program.) See Voice Board, Voice Response Unit
and Voice Server.

Voice Profile for Internet Messaging See VPIM.

Voice Recognition The ability of a machine to recognize your particular voice. This contrasts with speech recognition, which is different. Speech recognition is the ability of a machine to understand human speech — yours and most everyone else's. Voice recognition needs training. Speech recognition doesn't. See Speaker Dependent and Speaker Independent Voice Recognition.

Voice Response Unit VRU. Think of a Voice Response Unit (also called Interactive Voice Response Unit) as a voice computer. Where a computer has a keyboard for entering information, an IVR uses remote touchtone telephones. Where a computer has a screen for showing the results, an IVR uses a digitized synthesized voice to "read" the screen to the distant caller. An IVR can do whatever a computer can, from looking up train timetables to moving calls around an automatic call distributor (ACD). The only limitation on an IVR is that you can't present as many alternatives on a phone as you can on a screen. The caller's brain simply won't remember more than a few. With IVR, you have to present the menus in smaller chunks. See IVR and Voice Board.

Voice Ring Multiple Digital Intertie Buses connected in series to all nodes. Provides extra channels for voice data transmission when direct link (DI) channels are busy.

Voice Server A PC sitting on a LAN (Local Area Network) and containing voice files which are accessible by the PCs on the LAN. Such voice files may be transmitted on the LAN or over phone lines under the control of the PCs on the LAN. A voice server might contain voice mail. It might contain voice annotated electronic mail. Its primary function is to store voice in such a way that it's accessible easily. Voice servers are typically faster, have more disk capacity and more backup provisions than normal PCs. According to a letter I received in early May, 1993 from the lawyers for a company called Digital Sound Corporation, that company owns federal trademark registration number 1,324,258 for the mark Voicesserver, spelled as one word, not two.

Voice Store And Forward Voice mail. A PBX service that allows voice messages to be stored digitally in secondary storage and retrieved remotely by dialing access and identification codes. See Voice Mail System.

Voice Switched A device which responds to voice. When the device hears a voice, it turns on and transmits it, muting the receive side. The most common voice-switched device is the desk speakerphone. With voice switching, it's easy to hog a circuit. Just keep making a noise. Watch out for voice hogging. If you're calling someone and waiting for them by listening in on your speakerphone, mute your speakerphone. This way you'll hear them when they answer.

Voice Switching Equipment used in voice and video conferences. The equipment is activated by sounds of sufficient amplitude; hopefully speech, but also loud noises. Fast switching activates microphones so that only one conference participant can speak at a time. See also Voice Activated Video.

Voice Terminal A pretentious AT&T term for a Telephone.

Voice Verification The process of verifying one's claimed identity through analyzing voice patterns.

Voiceband A transmission service with a bandwidth considered suitable for transmission of audio signals. The frequency range generally is 300 or 500 hertz to 3,000 or 3,400 hertz — the frequency range the common analog home phone service is made at.

VoFR Voice over Frame Relay.

Voiceprint A voice recognition term. A voiceprint is a speech template used to recognize and verify callers. For

example, Home shopping Network, voice systems

When a system is operating, the user's speech is compared to the stored voice prints. If they match, the system recognizes the word and executes the command.

VoIP Voice over Internet Protocol. The technology used to transmit voice conversations over a data network using the Internet Protocol. Such data network may be the Internet or a corporate Intranet. For a much longer explanation, see Voice over IP and VoIP Forum.

VoIP Forum Voice over Internet Protocol. The Voice over IP Forum was formed in 1996 by Cisco Systems, VocalTec, Dialogic, 3Com, Netspeak and others as a working group of the International Multimedia Teleconferencing Consortium (IMTC), which promotes the implementation of the ITU-T H.323 standard. The VoIP Forum is focused on extending the ITU-T standards to provide implementation recommendations as a means of supporting Voice over IP in order that devices of disparate manufacture can support voice communications over packet networks such as the Internet. By way of example, the VoIP Forum intends to establish directory services standards in order that Internet voice users can find each other. They also plan to port touch-tone signals to the Internet to allow the use of ACDs and voice mail systems. See also VON Coalition.

VolanoMark VolanoMark is a popular Java benchmark for measuring server throughput... it measures messages per second.

Volatile Storage Computer storage that is erased when power is turned off. RAM is volatile storage.

Volser An MCI term used to denote a volume of calls. Based on the words "Volume Serial." The term "Volser" can be applied to the manual collection of calls from a switch on a switch tape or through call data transmitted via NEMAS.

Volt The unit of measurement of electromotive force. Voltage is always expressed as the potential difference in available energy between two points. One volt is the force required to produce a current of one ampere through a resistance or impedance of one ohm.

Volt Meter An instrument for measuring voltages, resistance and current.

Voltage Electricity is an essentially a flow of electrons. They're pushed into a gadget — toaster, computer, phone — on one wire and they sucked out on the other wire. For this movement of electrons to occur there must be "pressure," just as there must be pressure in the flow of water. The pressure under which a flow of electrons moves through a gadget is called the electric voltage. Voltage doesn't indicate anything about quantity, just the pressure. The amount of electricity moving through a wire is called its current and is measured in amps. You figure the power in an electron flow (i.e. in electricity) by multiplying the flow's current by the voltage under which it flows.

Voltage Drop The voltage differential across a component or conductor due to current flow through the resistance or impedance of the component or conductor.

Voltage Rating The highest voltage that may be continuously applied to a conductor in conformance with standards or specifications.

Voltage Regulator A circuit used for controlling and maintaining a voltage at a constant level.

Voltage Spike An extremely high voltage increase on an electrical circuit that lasts only a fraction of a second, but can damage sensitive electronic equipment like telephone systems or can cause it to act "funny." If your phone system starts

acting "funny," one "cure" is to shut it off, cool then turn it on again. This sometimes clears the

Voltage Standing Wave Ratio VSWR. The maximum effective voltage to the minimum effective voltage measured along the length of mis-matched transmission line.

Voltmeter A device for measuring the difference in volts.

Volume 1. A volume is a partition or collection of files that have been formatted for use by a computer. In Windows NT volume can be assigned a drive letter to organize directories and files. In NetWare, the physical amount of hard disk storage space. It is defined during installation. NetWare v2.2 volumes are limited to 255MB and one hard disk, but can contain several volumes. A NetWare volume is the lowest level in the NetWare directory structure (or as a DOS root directory). A NetWare file server can contain 32 volumes. NetWare volumes can be subdivided by network supervisors or by users assigned the appropriate rights.

2. Under ISO 9660, a single CD-Rom disc.

Volume Label A name you can assign to a disk in MS-DOS. The name can be up to 11 characters in length. You can assign a label when you format a disk later time, using the LABEL command.

Volume Serial Number A number assigned to a disk in MS-DOS. The FORMAT command creates it on a disk.

Volume Unit VU. The unit of measurement of speech power in communications work. VUs are measured in decibels above 1 milliwatt. The measuring unit is VU meter.

VOM Abbreviation for VOLT-OHM-MILLIAMPERE. The most common form of electronic test equipment measures voltage, resistance and current, and is read on a digital or analog meter readout. Some VOM functions such as audible continuity signals are for semiconductors.

Vomit Comet A plane used to simulate weightlessness for astronaut flight training. Trainers often get motion sickness.

VON Voice On the Net (Internet), involving a recent development, initiating a VON call from a multimedia PC or Mac computer with which matches that on the receiving device. Internet servers have been equipped with although appropriate client (workstation) software installed to take advantage of this approach. Still, VON has been demonstrated from workstation, telephone to workstation, and telephone. Additionally, new compression techniques have dramatically improved the quality of VON by mitigating the impacts of packet delay. See also VON for a detailed explanation. See also VON PACKETIZED VOICE.

VON Coalition The "Voice on the Net" Coalition is an Internet organization devoted to "educating the media by monitoring and supporting developed telephony, video and audio technology specifically designed and manufactured for the Internet." It was formed, inter alia, to provide the ACTA (America's Carriers Telecommunications Association) petition to the FCC which sought a threat to the integrity of the PSTN and