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# NEWTON'S TELECOM DICTIONARY

Covering Telecommunications, Networking, Information Technology, the Internet, the Web, Computing, Wireless and Fiber

MORE THAN 21,900 TERMS DEFINED

20th Updated and Expanded Edition

by Harry Newton

CMPBooks

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he supposedly said that the death penalty was appropriate for even so slight a crime as stealing a cabbage. Excessively severe rules or laws have come to be known as draconian in nature. See also Trivia.

**Draft Proposal** An ISO standards document that has been registered and numbered but not yet approved.

**Drag** Dragging is a way of moving an item on the screen using your mouse. To drag a window in Windows, for example, move the mouse pointer onto a window's title bar, then hold down the mouse button while moving the mouse across your desktop. When you release the mouse button, the window will remain in its new location. Apply this technique to drag any data object, such as icons or list box items.

**Drag And Drop** The "drag and drop" definition defines how objects from one desktop application can be "dragged" out of that application, through clicking on the object with a mouse, across the desktop and "dropped" on another application. Most of the graphics operating systems, like Windows, Apple's Macintosh and Sun Sparc use Drag and Drop.

**Drag Line** A length of rope or string used to pull wire and cable through conduit or inaccessible spaces. Drag lines are often inserted in wall and ceilings during construction to ease future wire installation.

**Drag Queen** A drag queen is a man who likes to dress as a woman. In the 1940s, California law made it illegal to dress as a member of the opposite sex. Drag queens avoided this restriction by pinning pieces of paper to their dresses which read "I'm a boy!" The courts accepted the argument that anyone wearing such a notice was technically dressed as a man, not a woman. Some people claim that DSL lines are really T-1 lines in drag, but at a much lower price.

**Drain Wire** In a cable, an uninsulated wire laid over the component or components and used as a ground connection.

**DRAM** 1. Dynamic Random Access Memory. Pronounced "dee-ram." The readable/writable memory used to store data in older PCs. DRAM stores each bit of information in a "cell" composed of a capacitor and a transistor. Because the capacitor in a DRAM cell can hold a charge for only a few milliseconds, DRAM must be continually refreshed to retain its data. In contrast, Static RAM, or SRAM, requires no refresh and delivers better performance, but it is more expensive to manufacture. See also DDR-SDRAM, EDO RAM, Flash RAM, FRAM, Microprocessor, RAM, RDRAM, SDRAM, SRAM, and VRAM.

2. Digital Recorder Announcer Module.

**Drawing** In the manufacture of wire, pulling the metal through a die or series of dies in order to reduce the diameter to a specified size.

**Drawing Tools** A computer imaging term. The means of creating freehand lines or basic geometric shapes. Paint packages often provide an ellipse-drawing function as a variation of the circle (or vice versa) and a square drawing function as a variation of the rectangle. Virtually all packages offer filled geometric figures, the fill item being either a solid color or a pattern.

**DRB** Digital Radio Broadcasting.

**DRCS** Digital Radio Concentrator System.

**Dress down day** A workday when employees are allowed to dress casually. When things were better economically, there were more dress down days.

**Dressing Cable** You "dress" cable by taking multiple cables and joining them together neatly with cable ties. A nicely-dressed, clean installation is a sign of telephony professionalism. It still exists.

**Drift** 1. When a carrier frequency changes due to a transmitter problem. It can be caused by bad connections or defective components, temperature changes or diffraction. Crystal oscillators are the most drift-reliable circuits.

2. When customers leave and go to another carrier. See also Churn.

3. A long-term and usually steadily increasing change in a parameter, such as frequency, from its nominal value.

4. The tendency of a geosynchronous satellite in orbit to move towards one of the two satellite stable points, at 75 øE and 105 øW.

**Drill Down** Microsoft jargon which means to learn more about a subject.

**Drip Irrigation** One thing not to do is mess your company's entire relationship with a customer in the beginning of that relationship by unveiling a massive, complicated profile or questionnaire. Instead, gather the information that is useful for the current transaction, remember it, and build your relationship's context over time, little by little. Think of the task as a kind of "drip irrigation" for the relationship. This definition from Garage.com.

**Drip Loop** Several inches of slack in a cable that prevents water from collecting on the cable or running along the surface of the cable. A drip loop between the LNB of a satellite dish and the entry point into the building also allows some free movement of the dish while adjusting it.

**Drive** Shortened word for hard drive.

**Drive By Spamming** You have an "office" in your truck. You find a local WiFi hotspot — an area you can receive and transmit 8021.11(b) or (a) wireless transmissions. You park your truck in the area. You send out three million spam emails. Then you disappear. No one can trace who sent them (and thus stop future transmissions) because you're long gone. Next time, one hopes, the owner of the WiFi hotspot you used will improve his security and you won't be able to get on. Many WiFi hotspots don't have security and can easily be found with a sniffer. See Sniffer.

**Drive Icon** A Windows NT term. An icon in a directory window in File Manager that represents a disk drive on your system. Different icons depict floppy disk drives, CD-ROM drives, network drives, etc.

**Drive Mappings** A Novell NetWare term. Drive mappings provide direct access to particular locations in the directory structure. They are a "shorthand" method for accessing directories on a disk. Instead of typing in the complete path name of a directory that you want to access, you can simply enter a drive letter that has been assigned to that directory. NetWare recognizes two types of drives (physical drives and logical drives) and three types of drive mappings (local, network, and search drive mappings).

**Drive Test** Hang a cell phone antenna from a crane in its proposed spot before construction of the permanent tower. Then technicians drive around with phones to see the range of the proposed spot. This way they see if it is worth having a tower in that proposed location.

**Drive Type** A number representing a standard configuration of physical parameters (cylinders, heads and sectors) of a particular type of hard disk drive. You need to know your drive's drive type; otherwise the BIOS of your machine will not recognize your drive on boot up and your PC will not work. Normally this information of your drive's type resides in memory kept alive by a small lithium battery. However, should the lithium battery die, your PC will "forget" which drive it has and it will ask you. If you don't know, you're in big trouble. Your PC simply won't work. My recommendation: write the drive type on two labels — one to stick on the drive and the other to stick on the bottom of your machine. This way you'll be able to find it easily. You will usually find the drive type's number on paperwork sent originally with your machine.

**Drivebar** A Windows NT term. Allows you to change drives by selecting one of the drive icons.

**Driver** A driver (which is always software) provides instructions for reformatting or interpreting software commands for transfer to and from peripheral devices and the central processor unit (CPU). Many printed circuit boards which you drop into a PC require a software driver in order for the other parts of the computer and the software you're running to work correctly. In other words, the driver is a software module that "drives" the data out of a specific hardware port. The port in question will usually have another device connected, such as a printer or modem, and the driver will be organized in software (i.e. configured) to communicate with the device.

**Drivethrough** The McDonald's in Ft. Huachuca was the first restaurant to have a drive through window. The drive through allowed soldiers from Ft. Huachuca to get food since uniforms were not permitted in business establishments.

**Driveway effect** A special quality exhibited by a radio program that causes listeners to stay in their cars after they have arrived home so they can hear the end of the program.

**Drop** 1. A wire or cable from a pole or cable terminal to a building.

2. That portion of a device that looks toward the internal station facilities, e.g., toward an AUTOVON 4-wire switch, toward a switchboard, or toward a switching center.

3. Single channel attachment to the horizontal wiring grid (wall plate, coupling, MOD-MOD adapter).

4. The central office side of test jacks.

5. To delete, intentionally or unintentionally, part of a signal for some reason, e.g., dropping bits.

**Drop And Insert** That process wherein a part of the information carried in a transmission system is demodulated (dropped) at an intermediate point and different information is entered (inserted) for subsequent transmission.

**Drop Cable** 1. The outside wire pair which connects your house or office to the transmission line coming from the phone company's central office. See also DROP WIRE, which is different.

display the exact some HTML code differently. Here is on example of a simple line of HTML code:

<H2>Call Center Magazine Editorial Calendar</H2>

This line says to the browser: Display those words as a type 2 headline. You can also include an image in an HTML page.

<img src="photos/harry.gif">

Your browser would go find the picture "harry.gif" in the subdirectory called "photos" on the computer which had the URL and the Web page you were visiting. An HTML document has three types of content: tags (which define type styles, like the one above), comments (words to tell the HTML author what he's doing, but which aren't displayed) and text (i.e. the words Call Center Magazine Editorial Calendar. Tags also let you do hyperlinking, which lets a person browsing click your HTML document, click on that hyperlink and go elsewhere — either to another page which you wrote, or to another Web page (i.e. URL) across the world.

Here's an example of text and tags you might put in your HTML document:

<h2>For more information on computer telephony, please visit</h2> <a href="http:/www.computertelephony.com"></a>

When someone browsing your page places their mouse on the words "www.computertelephony.com," their cursor changes to a hand. They click on it. A few seconds later, they see the computer telephony home page begin to download. See HTML 1.0, HTML 2.0, HTML 3.0 and HTML 3.2.

**HTML 1.0** This original specification was drafted in 1990. It was designed primarily for publishing scientific papers to the Web. The spec contained features such as six levels of headings, simple character attributes, quotations, source code listings, list, and hyperlinks to other documents and images. It is no longer used. See HTML.

**HTML 2.0** This revised specification for HTML arrived in 1994. It added forms and eliminated many seldom-used tags from the original spec. It also included support for pop-up and pull-down menus, buttons, and text-entry boxes that could be used for filling in forms. As of this writing (Winter of 1996-97), this is the specification that all products support in full. See HTML.

**HTML 3.0** The proposal for this HTML specification was published in 1995. The spec called for the inclusion of coding for tables, text flow around figures, and mathematical equations. The spec was too progressive and garnered only piecemeal product support. It has since been dropped in favor of HTML 3.2. See HTML.

**HTML 3.2** This new specification for HTML was developed by vendors that include IBM, Microsoft, Netscape, Novell, SoftQuad, Spyglass, and Sun Microsystems. It proposed the inclusion of support for tables, applets, text flow around images, superscripts, and subscripts. Both Microsoft and Netscape have added extensions to HTML that in some cases have been included in the subsequent standard. Netscape first introduced Java, tables, and frames, and Microsoft introduced ActiveX controls. See HTML.

**HTML Editor** Software program that allow one to easily convert text documents to HTML code, without special training or programming skills.

**HTML Tag** A symbol used in HTML to identify a page element's type, format, and structure. The FrontPage Editor automatically creates HTML tags to represent each element on the page.

**HTR** Hard-To-Reach.

**HTTP** HyperText Transfer Protocol. HTTP is the standard way of transferring information across the Internet and the World Wide Web. It supports a variety of media and file formats across a variety of platforms. Invisible to the user, HTTP is the actual protocol used by the Web Server and the Client Browser to communicate over the "wire". In short, the protocol used for moving documents around the Internet. http://www is the standard prefix for the Internet of a site on the world wide web. See Domain, DRP, Internet, Surf, URL, Web Address and Web Browser.

**HTTPS** Hypertext Transfer Protocol Secure. A type of server software which provides the ability for "secure" transactions to take place on the World Wide Web. If a Web site is running off a HTTPS server you can type in HTTPS instead of HTTP in the URL section of your browser to enter into the "secured mode". Windows NT HTTPS and Netscape Commerce server software support this protocol.

**Hub** The point on a network where circuits are connected. In local area networks, a hub is the core of a physical star configuration, as in ARCNET, StarLAN, Ethernet, and Token Ring. Hub hardware can be either active or passive. Wiring hubs are useful for their centralized management capabilities and for their ability to isolate nodes from disruption. Hubs work at Layers 1 (Physical) and 2 (Data Link) of the OSI Reference Model, with emphasis on Layer 1. Hubs aren't switches, as they have very little intelligence, if any, and don't set up transmission paths. Rather, hubs comprise a physical bus and a bunch of ports, to which are connected a bunch of wires, to which are connected individual terminal devices. As hubs are protocol-specific (e.g., Ethernet) and are not intelligent, they are very fast and very cheap. 10Base-T and 100Base-T, for instance, are Ethernet hub technologies. The 10/100Base-T hub is an inexpensive means of allowing LAN-attached devices to share a common, collapsed bus contained within a hub chassis. The connections are via UTP (Unshielded Twisted Pair), which is much less expensive than are the classic connections through coaxial cable. Unlike switches, hubs do nothing internally to control congestion. However, they typically are workgroup-level solutions which allow a large, logical Ethernet to be subdivided into multiple physical segments. For example, you could even use a small five-port hub on your desk to connect a couple of laptops and a desktop PC. Hubs can be interconnected directly, or through switches or routers, with the traffic being forwarded from the originating hub only if the destination address of the data pocket indicates that it is necessary to do so. Therefore, hubs do reduce congestion through the control of interhub traffic. See also 10Base-T, Ethernet, Router and Switch.

**HUB Expansion Port** An older local area network term for two ports located to the right of a 2008, 2016 or 2116 repeater used to interconnect these repeaters in a stack. The interconnect cable is standard Category 5 UTP cable. These ports are now called Repeater Expansion Ports (REP).

**Hub Junction Box** A box used to connect a hub interface when a node is placed at a remote location.

**Hub Management Interface** A network management protocol developed by Novell to allow network managers to manage hubs anywhere on a NetWare LAN.

**Hub Polling** A polling system in which a polled station sends its traffic and passes the polling message (after it's sent its message) to the next station.

**Hub Site** The location(s) on a network where many circuits are brought together to be multiplexed into a single higher speed connection.

**Hubble, Edwin P.** American astronomer, (1889 - 1953), whose observations proved that galaxies are "island universes", not nebulae inside our own galaxy. His greatest discovery, called "Hubble's Law", was the linear relationship between a galaxy's distance and the speed with which it is moving. The Hubble Space Telescope is named in his honor.

**Hublet** A mini-hub, submitted by Tracy Meyer, Network Technician, Pacific Bell Mobile Services. The term was created by Mark Alexander an Engineer at Pacific Bell Mobile Services who come up with it. "It is growing in popularity here," according to Tracy.

**Huddle** The "huddle" in football originated because of a deaf player who used sign language to communicate, and his team did not want the opposition to see the signals he used so they huddled around him.

**Huddle Spaces** Areas such as cybercafes, which are designed for informal meetings, change encounters and work breaks to foster idea exchange and communications.

**Hue** The attribute by which a color may be identified within the visible spectrum. Hue refers to the spectral colors of red, orange, yellow, green, blue and violet.

**Huffman Coding** Developed by D.A. Huffman, a popular lossless data compression algorithm that creates shorter, variable-length codewords for input symbols, i.e., the letters that comprise a phrase. Huffman Coding replaces frequently occurring characters and data strings with shorter codes. For example, Huffman Coding examines the string of symbols that comprise a phrase. The symbols then are ranked according to the frequency of their occurrence, in a top-down approach. (Shannon-Fana Coding is similar, although it is a bottom-up approach that generally is considered to be less efficient.) The two symbols with the lowest probabilities are represented by one new, composite symbol with an assigned probability equal to the sum of the probabilities of the two symbols. This process continues successively up the probability rank, building a binary tree, with each node or branch being the probability of all nodes or branches beneath it. A path can be followed to an individual leaf, which is in the form of a compressed representation of an individual letter of an alphabet. Dynamic Huffman Coding reads the information twice, the first time to determine the frequency with which each data character appears in the text and the second time to accomplish the actual encoding process. Huffman Coding suffers from the fact that it does not recognize characters between 0 and 1; for instance, 4.6 would be rounded to either 4 or 5. Huffman encoding is often used in image compression. It also is used in PKZIP, along with other compression algorithms. Modified Huffman (MH) is used in many fax machines, although it supports relatively slow transmission at 9.6 Kbps, or about 30 seconds per page. See also Compression and Shannon-Fana Coding.

**KCHAR** Kilocharacter.

**Kearney System** An AT&T numbering scheme for telecom parts. See KS Number.

**Keep Alive Bits** See Fill Bits.

**Keep Alive Signal** A generic term for a signal transmitted when a DTE detects a loss of input from the customer's equipment for a specified period of time (sometimes called a blue signal or AIS). T-carrier systems, for instance, transmit a keep-alive signal during periods of circuit idleness which exceed 150 msec. The purpose of the keep-alive signal is to maintain the circuit during periods of idleness; otherwise, the circuit would time out and the logical connection between devices would be terminated.

**Keg of Nails** Putting thousands of metal shards into a 16,000 mile per hour counterorbit against the U.S.'s low-orbit satellites. Such keg of nails would be designed to destroy low orbitting satellites.

**Keiretsu** A Japanese term describing a group of affiliated corporations with broad power and reach. In Japan, six giant keiretsu — Mitsubishi, Mitsui, Dai Ichi, Kangyo, Sumitomo, Sanwa, and Fuyo — dominate much of the country's economic activity.

**Keitai** A mobile phone, a cell phone, a portable phone in Japanese. NTT DoCoMo's phones are called Keitais.

**Kelvin** A unit of absolute temperature, equal to 1/273.16 of the absolute temperature of the triple point of water, equivalent to one degree Celsius. A temperature in kelvin may be converted to Celsius by subtracting 273.16. Named after the British physicist William Thomson, first Baron Kelvin.

**Kerberos** A security system for client/server computing. Kerberos is a scheme, developed at MIT in the 1980s, to enable secure multiple system access to a client/server computing environment. Named for the three-headed dog, Cerberus, who guarded the gates of Hades in Greek mythology. Kerberos is a UNIX-based distributed database used for user authentication.

**Kermit** An asynchronous file transfer protocol originally developed at Columbia University in New York City in 1981. The protocol has become popular because of its flexibility. One of the clearest advantages of Kermit is its ability to be tailored for virtually any equipment. File transfer protocols like Kermit break a file into equal parts called blocks or packets, with the data (also known as text or payload) preceded and succeeded by specific control data. The receiving computer checks each arriving packet and sends back either an acknowledgement (ACK) or a negative acknowledgement (NAK) to the sending computer, explicitly indicating the arrival of the packet and its arrival condition. Because modems use phone lines to transfer data, noise or interference on the line will often mess up the block of data. When a block is damaged in transit, an error occurs. The purpose of a protocol is to set up a mathematical way of measuring if the block came through accurately. And if it didn't, ask the distant computer to re-transmit the block until it gets it right. Kermit believers say that Kermit is robust, platform-independent, medium-independent, extensible, and highly configurable. XMODEM, YMODEM, and ZMODEM are the file transfer protocols most commonly compared with Kermit, and which are found in numerous shareware and commercial communication software packages. XMODEM and YMODEM are stop-and-wait protocols; XMODEM uses short blocks (128 data bytes), YMODEM uses longer ones (1024 data bytes). ZMODEM is a streaming protocol. In the results of tests of file transfers shown to me, ZMODEM and Kermit are closest in terms of speed and efficiency of transfer, with Kermit edging out ZMODEM for first place. The Kermit Project can be found at www.columbia.edu/kermit/. The Kermit newsgroups are comp.protocols.kermit.misc and comp.protocols.kermit.announce.

Here are words excerpted from The Kermit Project at www.columbia.edu/kermit/: Kermit - What is it? Kermit is a file transfer protocol first developed at Columbia University in New York City in 1981 for the specific purpose of transferring text and binary files without errors between diverse types of computers over potentially hostile communication links, and it is a suite of communications software programs from the Kermit Project at Columbia University. Over the years, the Kermit Project has grown into a worldwide cooperative nonprofit software development effort, headquartered at and coordinated from Columbia University. The Kermit protocol was named after Kermit the Frog, star of the television series, The Muppet Show, used by permission of Henson Associates, Inc. Since its inception in 1981, the Kermit protocol has developed into a sophisticated and powerful tool for file transfer and management, incorporating, among other things:

File group transmission; File attribute transmission (size, date, permissions, etc); File name, record-format, and character-set conversion; File collision options, including an "update" feature; File transfer recovery Auto upload and download; Client/Server operations; Recursive directory-tree transfer, even between unlike platforms; Uniform services on serial and network connections; and An Internet Kermit Service Daemon. Kermit software has been written for hundreds of different computers and operating systems, some of it by volunteer programmers all over the world, some of it by the Kermit Project staff. The major features of the most popular Kermit programs are:

- Connection establishment and maintenance for a wide variety of connection methods (dialup, TCP/IP, X.25, LAN, etc).
- Terminal emulation.
- Error-free file transfer.
- Numeric and alphanumeric paging.
- Character-set translation during both terminal emulation and file transfer — a unique feature of Kermit software.
- Script programming to automate complicated or repetitive tasks.

The one feature that distinguishes Kermit protocol from most others is its wide range of settings to allow adaptation to any kind of connection between any two kinds of computers.

**Kernel** The level of an operating system or networking system that contains the system-level commands or all of the functions hidden from the user. In Unix, the kernel is a program that contains the device drivers, the memory management routines, the scheduler, and system calls. This program is always running while the system is operating. See Kernel-Based Window System.

**Kernel Based Window System** Kernel-based window systems are those in which the software application executes and displays in the same physical machine. Examples include personal computers and Macintoshes. The advantage is speed. The disadvantage is that applications are closely tied to the system environment and are therefore not portable. Kernel-based window systems also do not allow users/developers to use the network as a means of sharing computer resources.

**Kernel Driver** A Windows NT term. A driver that accesses hardware.

**Kerr Effect** When polarized light is shone onto a magnetized surface, the light is reflected back at an angle and in a different direction, depending on the polarity of the magnetism. This quirk of nature is called the Kerr Effect and it is the basis of magneto-optical (erasable) discs. The Kerr Effect also affects optical fiber transmission systems. This phenomenon is manifested where the index of refraction of a fiber optic cable varies with the intensity of the transmitted light signal. This nonlinear phenomenon occurs in systems with milliwatt transmitters and very long span lengths, resulting in self phase modulation of the signal, which is not a good thing.

**Kevlar** An aramid fiber that belongs to the nylon family, Kevlar often is used in strength members surrounding optical fiber cables. Aramid fibers most commonly are used in riser cables (i.e., cables which rise vertically through a building), increasing the tensile strength of the cable so that it doesn't break under its own weight. Kevlar is a trademark of the Dupont Company. Kevlar is also used in bulletproof vests worn by police. See also Aramid.

**Key** 1. One or more characters or perhaps a field within a data record used to identify the data and perhaps control its use.

2. The physical button on a telephone set. What normal people call a "Switch", telephone people call a "Key."

3. The physical button on a key telephone set. In a KTS (Key Telephone System environment, the user selects an outside line or intercom line by depressing the appropriate key. The term "Key" originated in the manual switchboard (cordboard) systems, with the operator flipping a key (switch) to set up a talk path. What normal people call a "Switch," telephone people call a "Key."

4. In encryption, a key is a data string which, when combined with the source data according to an algorithm, produces output that is unreadable until decrypted. A key can also be used to decrypt a data string. See Key Holder.

5. The device which unlocks your front door or perhaps your terminal or computer, assuming that you haven't lost it. I have been told that all of my lost keys will be waiting for me on my desk in my next life.

**Keylogger** A keylogger is a trojan virus that monitors every keystroke its victim types — including passwords and confidential email messages — then secretly mails out copies to whoever planted the virus. Anyone who spreads this Trojan would be able to quickly harvest huge amounts of sensitive personal information. Essentially it's automated identify theft via telecommunications.

**Key Escrow** A Key Escrow is a system that keeps copies of encryption keys so that those keys can be accessed by an authorized agent to decrypt any messages created by those escrowed keys.

**REX** Routine Exercise.

**REXX** REstructured eXtended eXecutor. An interpreted script language, or procedural programming language, developed by IBM originally for users of large operating systems in a mainframe environment. REXX was designed for ease of learning and ease of use for both programmers and non-programmers. REXX offers powerful character manipulation in terms of symbolic objects (e.g., words and numbers) with which people normally deal, automatic data typing and debugging capabilities. REXX can be compared with other interpreted script languages such as Microsoft's Visual Basic, Netscape's JavaScript and Larry Wall's Perl.

**RF** Radio Frequency. Electromagnetic waves operating between 10 kHz and 3 MHz propagated without guide (wire or cable) in free space. If you have a home computer that lets you use your home TV set as a video display device, then the computer has an rf Generator. This means that this device is generating an rf carrier to carry the video signal information.

For the purposes of the FCC's regulation of cable television systems, this term includes any carrier, modulated or unmodulated, whether radiated over the air by an antenna or carried by a coaxial cable. This term dates from the early days of radio (hence, the name "radio" frequency) when the only uses for RF were AM broadcasting and ship-to-shore communications. The term is still in use today, even though it now includes video and control signals as well as audio.

**RF Channel Number** An identifier assigned to a Radio Frequency (RF) channel to distinguish it from other rf channels. A cellular radio term.

**RF Channel Pair** Two associated Radio Frequency (rf) channels, one forward and one reverse. The former is used to support forward transmissions from the Mobile Data Base Station (MDBS) to the Mobile End System (M-ES). The reverse channel carriers data information from an M-ES to an MDBS, and is a contention based communications channel.

**RF Choke** Also known as a load coil. A coil of wire that filters out high frequencies. See Load Coil and RF Leakage.

**RF CMOS** Radio Frequency Complementary Metal Oxide Semiconductor. RF CMOS is a developing technique for the manufacture of chips based on CMOS technology for a wide variety of RF-based devices such as cellphones, wireless LANs, and wireless peripherals such as headsets keyboards. The advantage of RF CMOS is its low cost compared to chip technology based on GaA (Gallium Arsenide) and various alumina hybrids. The problem is the high level of noise created by combining analog, digital and RF technologies on a single CMOS chip.

**RF Leakage** RF Leakage is defined as the amount of energy which "leaks" from the connector and/or component. Although rf Leakage will vary with frequency, it is typically tested at only one frequency. Leakage, like Insertion Loss, is expressed in dB. Very large negative dB values indicate that the device does not radiate much energy.

**RF Line Filter** A device installed on a phone line next to your phone which filters out sounds at frequencies you select. Those frequencies might be caused by adjacent machinery, nearby power lines or radio towers.

**RF Modulator** See Modulator.

**RF Splitter** Want to put attach two (or more) TV sets behind your satellite antenna? Easy, go down to Radio Shack and buy an RF Splitter. Screw the line into one side of the splitter and your two TVs sets into the other. Bingo, your two TVs will play the signal coming in from the splitter — which might be a satellite antenna, a CATV hookup, an outdoor antenna, etc. You can buy RF splitter than will allow you to hookup almost as many TVs as you, or want to have. See also Splitter.

**RFAC** Restricted Forced Authorization Code. A forced authorization code that is valid only if it is entered from a specific telephone extension.

**RFC** Request For Comment. The development of TCP/IP standards, procedures and specifications is done via this mechanism. RFCs are documents that progress through several development stages, under the control of IETF, until they are finalized or discarded. RFC#### documents Internet "Request For Comment" documents (i.e., RFC822, RFC1521, etc.). The contents of an RFC may range from an official standardized protocol specification to research results or proposals. A set of papers in which the Internet's standards, proposed standards and generally agreed-upon ideas are documented and published. RFCs are the official document series of Internet Architecture Board (IAB) and are achieved permanently. They are never deleted. See the RFCs below.

**RFC 1144** This RFC (Request For Comment) will provide overhead compression for the TCP/IP protocol down to 5 octets. It does this by anticipating that the next packet in a file transfer sequence will have the same address as the previous and will have the same sequence number plus one. This compression technique will be useful where SDLC encapsulation, or other bridging protocol encapsulation, is being used with low-speed PVCs (Private Virtual Circuits.) In these cases, the slight increase in processing power to perform the compression is more than balanced by the increase in application performance and throughput.

**RFC 1294** This Request For Comment is Inverse ARP, which allows the automatic discovery of the addresses on the router at each end of another router's DLCIs. Right now, the RFC only applies to IP, but some equipment vendors have already expanded the protocol support to include Novell, AppleTalk, Vines, and DECnet. The benefit of the RFC is to simplify network configuration.

**RFC 1315** This Request For Comment is the frame relay MIB (management information database), which standardizes what management information is made available on frame relay devices and where/how that information is accessed. This simplifies the process of integrating frame relay devices into your network monitoring and management process and programs.

**RFC 1490** This Request For Comment, RFC 1294, now renumbered RFC 1490, is for multiprotocol encapsulation. The bottom line benefits are to increase interoperability between frame relay devices from different vendors. This means that you can use one vendor's routers (or other equipment type) at some locations, and a different vendor's equipment at other locations. This ability to mix and match allows you to pick the best and most cost-effective tool for the job.

**RFC 1577** Under control of the IETF, Request For Comments (RFCs) are documents used to develop standards, procedures and specifications for TCP/IP. RFC 1577 is the document for classical IP.

**RFC 1695** Definitions of Managed Objects for ATM Management or ATM MIB.

**RFC 1918** This Request for Comment describes IP address space for building private networks, which is nowadays being used quite often for NAT. The reserved address spaces are: 10.0.0.0 - 10.255.255.255 (10/8 prefix), 172.16.0.0 - 172.31.255.255(172.16/12 prefix) and 192.168.0.0 - 192.168.255.255 (192.168/16 prefix)

**RFC 2338** This Request for Comment describes the Virtual Router Reduncancy Protocol (VRRP). See VRRP for lots of detail.

**RFC 822** This standard specifies a syntax for text messages that are sent among computer users on the ARPA Net (the precursor network to the Internet), within the framework of "electronic mail". The standard supersedes the one specified in ARPANET Request for Comments #733, "Standard for the Format of ARPA Net- work Text Messages". In this context, messages are viewed as having an envelope and contents. The envelope contains whatever information is needed to accomplish transmission and delivery. The contents compose the object to be delivered to the recipient. This standard applies only to the format and some of the semantics of message contents. It contains no specification of the information in the envelope. A distinction should be made between what the specification REQUIRES and what it ALLOWS. Messages can be made complex and rich with formally-structured components of information or can be kept small and simple, with a minimum of such information. Also, the standard simplifies the interpretation of differing visual formats in messages; only the visual aspect of a message is affected and not the interpretation of information within it. Implementors may choose to retain such visual distinctions. The formal definition is divided into four levels. The bottom level describes the meta-notation used in this document. The second level describes basic lexical analyzers that feed tokens to higher-level parsers. Next is an overall specification for messages; it permits distinguishing individual fields. Finally, there is definition of the contents of several structured fields.

Messages consist of lines of text. No special provisions are made for encoding drawings, facsimile, speech, or structured text. No significant consideration has been given to questions of data compression or to transmission and storage efficiency, and the standard tends to be free with the number of bits con- sumed. For example, field names are specified as free text, rather than special terse codes. A general "memo" framework is used. That is, a message con- sists of some information in a rigid format, followed by the main part of the message, with a format that is not specified in this document. The syntax of several fields of the rigidly-formated ("headers") section is defined in this specification; some of these fields must be included in all messages. The syntax that distinguishes between header fields is specified separately from the internal syntax for particular fields. This separation is intended to allow simple parsers to operate on the general structure of messages, without concern for the detailed structure of individual header fields. In short, a message consists of header fields and, optionally, a body. The body is simply a sequence of lines containing ASCII charac- ters. It is separated from the headers by a null line (i.e., a line with nothing preceding the CRLF). www.faqs.org/rfcs/rfc822.html

company with multiple local stores. For instance, a pizza chain might advertise a single number. The approximate physical location of the caller can be determined by the network by virtue of the originating number. Based on that data, the location can be compared to a network database defining the location of the closest pizza parlor. The caller, therefore need not sort through the phone book for this information, which can be especially difficult without a knowledge of the area. Additionally, all calls are routed automatically and without error to the outlet in closest proximity, ensuring that the pizza arrives quickly, as well as hot and fresh.

2. An optional feature for 800 IN-WATS Services which allows a subscriber who has or wants to have both intrastate and interstate 800 service to use the same 1-800 number for both services. If you'd like to buy another copy of this dictionary, call 1-800-LIBRARY. That phone number will be answered at our office in New York City. It will work for calls from inside and from outside New York State.

**Single Party Revertive Ringing** A central office feature. Single-Party Revertive Ringing provides enhanced flexibility to residential subscribers' existing telephone service by turning extension phones into intercoms. This feature creates a type of home intercom system with which subscribers can reach people in other rooms in their home and/or on a remote part of their property (i.e., barn, garage, greenhouse, etc.). To initiate a home intercom call, the subscriber dials his own number and hangs up. All extension phone rings. The intended party picks up the extension and is connected.

**Single Point of Contact** SPOC. A way of handling a multi-vendor sale and implementation in which one vendor or consultant handles contacts with the other vendors and/or departments and presents a unified proposal and project management to the customer, so that the customer needs to deal with only one person or team.

**Single Point of Failure** A single "point," or "element" at which a failure, or "hard fault," could bring down an entire network or subnetwork. The "point" could be a circuit if all traffic in the network or subnetwork passes through it. Similarly, the "point" could be a hub, switch or router if all traffic passes through it. The "point" also could be an application software system, if the operation of the network depends on it. Optical fiber networks are highly redundant in order to minimize the risk of catastrophic failure from "backhoe fade." Nonetheless, optical fiber networks sometimes suffer multiple cuts which render them out of service. Signaling System 7 (SS7) systems have occasionally suffered from software bugs which have resulted in the broadcasting of error messages which have overwhelmed all SS7 connected switches, causing entire networks to shut down. Similarly, Frame Relay networks have sometimes suffered from software bugs which shut them down. Paging networks have completely crashed because of software errors or because a satellite "disappeared" for several hours. Full redundancy is the only real protection against such catastrophic failures, but it's generally considered too expensive for all but the most mission-critical, time-sensitive applications or networks. ARPANET, the predecessor to the Internet, originally was designed so that there was no single point of failure. The idea with ARPANET was that every transmission would be sliced into packets. Each packet would travel whichever route was available at that time, there always being multiple routes between two routes. If one route crashed, the packet would go another way. ARPANET (Advanced Research Projects Agency Network) was a network in support of government and military research projects. It was conceived and build in the late 1960s, during the Cold War. The United States designed ARPANET to avoid the risk that a nuclear strike aimed at a Single Point of Failure might take down the entire network. See also ARPANET and Internet. See Back Hoe Fade.

**Single Protocol Router** A communications device using the same mix of protocols which is designed to make decisions about which of several paths a packet of information will take. The packets are routed according to address information contained within the packet.

**Single Sideband** SSB. An Amplitude Modulation (AM) technique for encoding analog or digital data using either analog or digital transmission. SSB suppresses one sideband of the carrier frequency at the source. As only one sideband is used and as the carrier signal is suppressed (i.e., carries no information), less power is used and less bandwidth (one-half) is required than is the case with DSBSC (Double SideBand Suppressed Carrier). Carrier synchronization is lost. See also Amplitude Modulation, DSBSC, DSBTC, and VSB.

**Single Sideband Transmission** A system of transmission which suppresses one side-band of the carrier frequency at the source. Also applied to receiving systems designed to reproduce such transmissions.

**Single Sign-On** SSO. An authentication and authorization mechanism that requires that a user identify himself only once. Thereafter, the user is authorized to access other connected system resources, based on his level of access privilege. The most common identification, of course, is the username / password combination. Users who access many systems often have to remember a different username/password combination for each. That results in more forgotten passwords, and more calls to the help desk. It also results in more users writing their ID information down on those little sticky notes, which they then stick to their monitors, which causes a total breakdown in security. SSO helps solve all these problems.

**Single Slot** 1. Current standard for coin phone construction that uses one slot for the deposit of all acceptable coins.

2. Cards that fit into one slot inside a Wintel (Windows/Intel) PC are called single slot cards. The significance of calling them single slot is that in the old days individual cards couldn't do very much. To build something — like an interactive voice response system — you often needed several cards. But with time, components have shrunk and cards have gotten more capabilities. Complete computer telephony systems can now be built with one single slot PC card. Thus the significance of this definition.

**Single Use Batteries** Batteries that aren't rechargeable — in other words, the Duracell and Eveready batteries at your local supermarket.

**Single Wire Line** A transmission path which uses a single conductor and a ground return to complete a circuit. Used a lot in rural areas.

**Sinister** Ancient Romans always entered the home of a friend on their right foot. The left side of the body was thought to portend evil. The Latin word for "left" is sinister, from where the English word "sinister" originates, meaning anything threatening or malevolent.

**Sink** That part of a communications system which receives information.

**SIO** 1. Serial Input/Output. The electronic methodology used in serial data transmission.

2. Scientific or Industrial Organization. An ITU (International Telecommunications Union) term. Any organization, other than a governmental establishment or agency, which is engaged in the study of telecommunication problems or in the design or manufacture of equipment intended for telecommunication services. Examples of U.S. SIOs are ADTRAN, Advanced Micro Devices, ASCEND Communications, Cisco Systems, 3Com Corporation, and Hewlett-Packard.

**SIP** 1. Single Inline Package. A type of silicon chip in which all of the pins are lined up in a row. See also DIP, PGA, and SIMM.

2. SMDS Interface Protocol.

3. Session Initiation Protocol. SIP is the emerging standard for setting up telephone calls, multimedia conferencing, instant messaging and other types of real-time communications on the Internet. SIP is touted as much faster, more scalable and easier to implement than H.323. An array of network gear including IP phoes, IP PBXs, servers, media gateways and softswitches support SIP. SIP is the Application Layer (Layer 7 of the OSI Reference Model) protocol for the establishment, modification and termination of conferencing and telephony sessions over an IP-based networks. SIP uses text-based messages, much like HTTP. SIP was developed within the IETF MMUSIC (Multiparty Multimedia Session Control) working group, and is defined in the IETF's RFC 2543. SIP is touted as being much faster, more scalable and easier to implement than H.323.SIP addressing built around either a telephone number or a Web host name. In the latter case, for example, the SIP address would be based on a URL (Uniform Resource Locator), and might look something like SIP:Harry_Newton@TechnologyInvestor.com, which makes it very easy to guess a SIP URL based on an e-mail address. The URL is translated into an IP address through a DNS (Domain Name Server). SIP also negotiates the features and capabilities of the session at the time the session is established. For example, a caller might wish to establish a call using G.711 audio and H.261 video. The codecs embedded in the two endpoints (i.e., originating and terminating multimedia terminals) negotiate a common set of voice and video compression algorithms (which might not include G.711 and H.261), prior to establishing the session. This advance negotiation process, which relies on the Session Description Protocol (SDP), is touted as greatly reducing the call setup time required for H.323 sessions. If the called party is not available, or does not wish to accept the call, it can be redirected (e.g., to voice mail or to an administrative assistant), with the negotiation process taking place in consideration of that endpoint. Once the session is established, the designated capabilities can be modified during the course of the call. For example, whiteboarding can be added if both terminals are capable and can negotiate a common compression algorithm. In addition to the unicast (i.e., one-to-one) session described above, SIP supports multicast (i.e., one-to-many) communications. See also CPL, H.323 and SDP.

**SIP for Instant Messaging and Presence Leveraging Extensions** See SIMPLE.

non-drop frame type. In GVG editors, the SMPTE time code mode enables the editor to read either drop-frame or non-drop frame code from tape and perform calculations for either type (also called mixed time code). SMTPE is a standardized edit time code adopted by SMPTE, the Society of Motion Picture and Television Engineers.

**SMR** Specialized Mobile Radio. Also known as PAMR (Public Access Mobile Radio), PMR (Private Mobile Radio), TMR (Trunked Mobile Radio), and TRS (Trunked Radio System). A two-way radio telephony service making use of macrocells covering an area of up to 50 miles in diameter. The first SMR system was placed in service by the Detroit Police Department in 1921. The first commercial SMR service was offered in 1946 in St. Louis by AT&T. Subsequently, private SMR was widely used, and still is, in dispatch applications by truck and taxi fleets. Eventually, SMR took the form of IMTS (Improved Mobile Telephone Service), which used smaller frequency channels in support of many more conversations through improved efficiency. Many SMR operators have converted their SMR networks to digital so they can deliver both voice and data to a single device with improved efficiency and security, and thus compete with cellular and PCS radio providers. SMR systems have far less radio spectrum than cellular has, but the signal can reach 25 times farther, which means it's cheaper to build a national network. In the U.S., the frequency bands used by SMR include 220 MHz, 800 MHz, and 900 MHz. See also ESMR.

**SMRP** Simple Multicast Routing Protocol. Apple Computer's specialized network protocol for routing multimedia data streams on AppleTalk networks.

**SMRT** Single Message-unit Rate Timing. USA telephone company tariff under which local calls are timed in 5-minute increments — with a single message unit charge applied to each complete or partial increment.

**SMS** 1. Service Management System, a term coined by Bellcore (now called Telcordia Technologies) for the Intelligent Network. The SMS allows provision and updating of information on subscribers and services in near-real time for billing and administrative purposes. See SMSC.

2. Short Message Service. A means to send or receive, short alphanumeric messages to or from mobile telephones. See Short Message Service.

**SMS-R** Subscriber Carrier Module-100S REmote.

**SMS/800** The national database Service Management System that retains all 800 records. This database provides long distance carriers a single interface for 800 number reservations and record maintenance. Developed by Bellcore, the database has been in use by various Regional Bell Operating Companies (RBOCs) since 1988. The FCC mandated that a neutral third party administer the database after 800 portability, which occurred in May, 1993. That administration responsibility now lies with the SMS/800 Number Administration Committee (SNAC), which is part of the OBF (Ordering and Billing Forum), which operates under the auspices of the Alliance for Telecommunications Industry Solutions (ATIS). See also ATIS, OBF and SNAC.

**SMSA** Standard Metropolitan Statistical Area. A metropolitan area consisting of one or more cities as defined by the Office of Management and Budget and used by the FCC to allocate the cellular radio market.

**SMSC** Short Messaging Service Center. On a wireless network, SMSC allows short text messages to be exchanged between mobile cell telephones and other networks. Sample message: "Honey, I'll be home late tonight." It is the entity that stores and forwards Short Message Service (SMS) messages. SMSC supports message storage, point-to-point, mobile terminated short message service (SMS-PP/MT). SMSC is being enhanced to support mobile originated messages also. The product can be interfaced with multi-vendor mobile switching centers (MSCs) over an SS7 link; it can work with Gateway as well as non-Gateway MSCs. See SMS and SMSCH.

**SMSCH** Short Message Service CHannel. Specified in IS-136, SMSCH carries signaling information for set up and delivery of short alphanumeric messages from the cell site to the user terminal equipment. SMSCH is a logical subchannel of SPACH (SMS (Short Message Service) point-to-point messaging, Paging, and Access response CHannel), which is a logical channel of the DCCH (Digital Control CHannel), a signaling and control channel which is employed in cellular systems based on TDMA (Time Division Multiple Access). The DCCH operates on a set of frequencies separate from those used to support cellular conversations. See also DCCH, IS-136, SMS, SPACH and TDMA.

**SMT** 1. Surface Mounting Technology.

2. Station Management. The part of FDDI that manages stations on a ring.

3. Simultaneous MultiTasking. The idea of SMT is to mix instructions from different threads or programs (known as "processes") together in the same CPU pipeline. Normally in a microprocessor, a pipeline executes an instruction stream from a single process at a time, just as a car factory assembly line manufacturers one type of vehicle at a time. The

**SMTA** Single-line Multi-extension Telephone Apparatus.

**SMTP** Simple Mail Transfer Protocol. SMTP is a TCP/IP protocol for sending e-mail between servers. Virtually all e-mail systems that send mail via the Internet use SMTP to send their messages. Typically, you will send your email via SMTP to a POP3 (Post Office Protocol) server, from where your addressee will retrieve your message. Because of SMTP and POP3, you need to specify both your POP3 server and your SMTP server when you configure your e-mail client application, e.g. Microsoft Outlook, Eudora. Your email system will ask you for your SMTP server. Mine is mail.technologyinvestor.com while my POP3 server is mail.technologyinvestor.com. SMTP is actually an application-level protocol which runs over TCP/IP, supporting text-oriented e-mail between devices supporting Message Handling Service (MHS). You can send complex attachments, however, with SMTP, by simply using MIME, which stands for Multipurpose Internet Mail Extension. MIME is an SMTP extension supporting compound mail, which is integrated mail, including perhaps e-mail, a Word document, an Excel spreadsheet, an image, a voice WAV file and perhaps also a video clip in an AVI format. The SMTP is used as the common mechanism for transporting electronic mail among different hosts within the Department of Defense Internet protocol suite. Under SMTP, a user SMTP process opens a TCP connection to a server SMTP process on a remote host and attempts to send mail across the connection. The server SMTP listens for a TCP connection on a well-known port (25), and the user SMTP process initiates a connection on that port. When the TCP connection is successful, the two processes execute a simple request/response dialogue, defined by the SMTP protocol, in which the user process transmits the mail addresses of the originator and the recipient(s) for a message. When the server process accepts these mail addresses, the user process transmits the message. The message must contain a message header and message text formatted in accordance with RFC 822. See also POP3.

**SMU** 1. Subscriber Carrier Module-100 URBAN.

2. System Management Unit. The card or equipment in an xDSL unit that takes care of the management of the unit.

**Smurf Attack** A category of Denial of Service Attack on a computer system. The New York Times defines a smurf attack as involving the use of many spoofed machines "but it also employs a large third party network of computers to "amplify" the data used in the attack and greatly increases the effectiveness of the assault. See Denial of Service Attack and Smurfing.

**Smurfing** A Denial of Service (DoS) attack by a hacker, usually a very young hacker hence, the origin of the term. Such an attack involves the sending of a stream of diagnostic "ping" messages to a list of IP servers, each of which forwards them to all LAN-attached workstations, each of which responds. The return address, however, is forged to reflect that of the target of the attack. The resulting stream of responses, which is magnified many times as the pinged servers and attached devices try over and over again to respond, effectively shuts down the targeted server. The targeted server might be a single server or it might be a complete Web site. See also Hacker and www.mcs.net/smurf. See also Smurf Attack.

**SN** An ATM term. Sequence Number: SN is a 4 octet field in a Resource Management cell defined by the ITU-T in recommendation 1.371 to sequence such cells. It is not used for ATM Forum ABR. An ATM switch will either preserve this field or set it in accordance with 1.371.

**SN Cell** An ATM term. Sequence Number Cell: A cell sent periodically on each link of an AIMUX to indicate how many cells have been transmitted since the previous SN cell. These cells are used to verify the sequence of payload cells reassembled at the receiver.

**SNA** Systems Network Architecture. An IBM product. The most successful computer network architecture in the world. See IBM and Systems Network Architecture.

**SNAC** SMS/800 Number Administration Committee. SNAC is responsible for administering the Service Management System/800 (SMS/800) database for 800 and other toll-free numbers in the U.S. The SMS/800 database is the central repository for toll-free numbers, identifying the carriers to which they have been assigned, or to which they have been transferred at the request of the user. The SMS/800 database comprises all toll-free numbers, which are defined as 8NN, where NN is a set of two identical numbers (e.g., 800, 888 and 877). SNAC is a committee of the Ordering and Billing Forum (OBF), which operates under the auspices of the Alliance for Telecommunications Industry Solutions (ATIS). See also ATIS, OBF and SMS/800.

**SNADS** SNA Distribution Services. An IBM protocol that allows the distribution of electronic mail and attached documents through an SNA network.

**SNAFU** Situation Normal All Fouled Up. World War II military slang, that often describes

**SSCOP** Service Specific Connection Oriented Protocol: An adaptation layer protocol defined in ITU-T Specification: Q.2110.

**SSCP** 1. System Services Control Point. A host based network entity in SNA that manages the network configuration, coordinates network operator and problem determination requests, maintains network address and mapping tables and provides directory support and session services.

2. Service Specific Convergence Sublayer: The portion of the convergence sublayer that is dependent upon the type of traffic that is being converted.

**SSD** Shared Secret Data. A secret key defined in the ANSI-41 (formerly IS-41C) standard, the SSD is used in cellular networks. In conjunction with the A-key (Authentication key), the SSD provides an authentication mechanism for cell phone security. Both keys are encrypted through the CAVE algorithm, and both are known only to the cell phone and the AC (Authentication Center). See also A-key, AuC and CAVE.

**SSH** Secure Shell (SSH) is a UNIX-based command interface and protocol for securely getting access to a remote computer. Network administrators use it to control Web and other kinds of servers remotely. SSH is a suite of three utilities — slogin, ssh, and scp - that are secure versions of the earlier UNIX utilities, rlogin, rsh, and rcp. SSH commands are encrypted and secure in several ways. Both ends of the client/server connection are authenticated using digital certificates and passwords are protected by being encrypted. SSH uses RSA Laboratory's public key cryptography for both connection and authentication. Encryption algorithms include Blowfish, DES, and IDEA. IDEA is the default. SSH2, the latest version, is a proposed set of standards from the Internet Engineering Task Force (IETF).

**SSL** The Internet has opened a new world of commerce through electronic transactions. To keep unsavory characters that prowl the alleys and byways of cyberspace from stealing important, sensitive information that is sent across a network, secure socket layer (SSL) is used to provide authentication, encryption, and message integrity services. Secure socket Layer, a transport level technology for authentication and data encryption between a Web server and a Web browser, i.e. sending documents around the Internet and the Web. Developed by Netscape, SSL negotiates point-to-point security between a client and a server. SSL sends data over a "socket," a secure channel at the connection layer existing in most TCP/IP applications. Both Netscape Navigator and Internet Explorer support SSL, and many Web sites use the protocol to obtain confidential user information, such as credit card numbers. By convention, Web pages that require an SSL connection start with https: instead of http:. You can recognize the secure nature by the S. In short, SSL is the dominant security protocol for Internet monetary transactions and communications. Information being transmitted is encrypted, and only the user's Web browser and the computer server at the other end running the Web site have the key, and thus can understand what each other is saying. But no one else can. See also S-HTTP.

**SSML** Speech Synthesis Markup Language is a VXML (Voice eXtensible Markup Language) language for text-to-speech markup. See also VXML.

**SSN** Subsystem Number. The address used in the Signaling Connection Control Part (SCCP) layer of the SS7 protocol to designate an application at an end signaling point. For example, an SSN for CNAM (Calling Name) at the end office designates the CNAM application within the end office. Usually, the SSN is a three digit number. BellSouth happens to use a CNAM SSN of 232.

**SSO** See Single Sign-On.

**SSP** Service Switching Point. Also called Signal Switching Point. A PSTN switch(End Office or Tandem) that can recognize IN (Intelligent Network) calls and route and connect them under the direction of an SCP (Service ControlPoint. A computer database that holds information on IN (IntelligentNetwork) services and subscribers. The SCP is separated from the actual SCP switch, making it easier to introduce new services on the network. See SCP. For a full explanation of the Advanced Intelligent Network, see AIN.

**SSRP** Simple Server Redundancy Protocol. The LANE simple server redundancy feature creates fault-tolerance using standard LANE protocols and mechanisms.

**SST** Spread Spectrum Technology. See Spread Spectrum.

**SSTP** 1. Switched Services Transport Protocol. See SCTP.

2. Double-Shielded Twisted Pair, as in Shielded-Shielded Twisted Pair. Also known as PiMF (Pairs in Metal Foil). A cabling system involving multiple twisted pairs contained within the same cable sheath. Each twisted pair is separately shielded by a metallic foil. The entire group of shielded pairs is then surrounded by another shield of metallic braid or foil. See also Category 7.

**SSU** Session Support Utility. a DEC-proprietary protocol that allows multiple sessions to run simultaneously over a single serial cable. SSU is used to allow terminals to provide two session "windows" that can display session output simultaneously.

**SSUTR2** Sous-Syst...me Utilisateur Téléphonie RNIS. This French national SSUT standard for the SSUT+ was defined in 1986 by the ETSI. SSUTR2 and Telephone User Part + (TUP+) are closely related. The French TUP is the interface between fixed and mobile, using SS7.

**ST** 1. STart signal to indicate end of outpulsing.

2. Straight Tip. A fiber-optic connector designed by AT&T which uses the bayonet style coupling rather than screw on as the SMA uses. The ST is generally considered the eventual replacement for the SMA type connector.

3. Signaling terminal.

**ST Connection** An optical medium connector plug and socket.

**ST Connector** See Straight-Tip Connector.

**ST-506/412 Interface** One of several industry standard interfaces between a hard disk and hard disk controller. The "intelligence" is on the controller rather than the drive.

**ST-Bus** Serial Telecom Bus. Mitel Semiconductor, which makes telecom componentry, has structured its digital component product line around the ST-BUS. The ST-BUS is a high speed, synchronous serial bus for transporting information in a digital format. Whether the digital information is voice, data, or video — or a mixture of each — the ST-BUS is designed to accommodate it. The ST-BUS consists of one or several serial data streams with a framing signal and clock signals. The framing signal always has a period of 125 us, resulting in 8,000 frames per second, with the original ST-BUS clock rate of 2.048 Mbit/s (thirty two 64 kbit/s channels). The ST-BUS standard now includes higher speed modes of 4.096 or 8.192 Mbit/s ST-BUS, resulting in 64 or 128 channels of 64kbit/s, respectively. This provides the bandwidth necessary for newer multimedia applications. According to Mitel, the advantages of using the ST-BUS are:

1. Printed circuit board area devoted to information transfer between functional modules is minimized.

2. Fewer tracks, backplane connections, and intra-shelf cables are needed compared to systems that use parallel paths.

3. The ST-BUS is designed to be divided down into individual channels of 64 kbit/s, resulting in improved efficiency and lower cost when several information paths are able to share the same ST-BUS.

4. Additional glue logic is not required when using ST-BUS compatible components.

5. From an IC perspective, the ST-BUS results in lower pin counts, improved reliability, and less power consumption.

**STA** 1. Spanning Tree Algorithm. A technique based on an IEEE 802.1 standard that detects and eliminates logical loops in a bridged network. When multiple paths exist, STA lets a bridge use only the most efficient one. If that path fails, STA automatically reconfigures the network so that another path becomes active, sustaining network operations.

2. Special Temporary Authority. A special temporary authority granted by the FCC to operators of Public Mobile Services (e.g., cellular radio and Specialized Mobile Radio, or SMR) "upon a finding that there are extraordinary circumstances requiring operation in the public interest and that delay in the institution of such service would seriously prejudice the public interest." See also IOA and SMR.

**Stack** A set of data storage locations that are accessed in a fixed sequence. The list of internal instructions being executed by a computer is known as a "stack," just like the one made of trays at the start of a cafeteria line. When you add an instruction, you "push" it onto the stack; you remove an instruction with a "pop," just like you're taking off a tray.

**Stackable** A term referring to devices/system the capacity of which can be increased through connecting (daisy-chaining) the device to additional devices. Thereby, it is not necessary to increase device/system capacity through a complete replacement, often known in the telephone equipment business as a "forklift upgrade." LAN hubs and switches are often stackable. Such devices often can be interconnected (stacked) in a wiring closet, See also Daisy Chain, Forklift, and Scalable.

**Stackable Hubs** Single protocol units designed to link various hubs, thereby effectively creating one large interconnected local area network (LAN). See Stackable.

**Staffing Basis** A call center term. The basis upon which staffing requirements are calculated. Can be either desired service quality for a given day of the week or the number of staff that will product the highest net revenue.

**Staffing Requirements Forecast** A call center term. A calculation of the number of employees required in each period of the day to handle the forecast call volume for that period.

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directory information through central servers situated at strategic points throughout the network. These X.500 servers then exchange directory information so each server can keep all its local mail directory information current. With X.500, any e-mail user, whether on OpenVMS, Macintosh, DOS, or UNIX workstations, can be listed in a central directory that can be accessed using an X.500-compatible user agent.

**X.509** A cryptography term. The part of the ITU-T X.500 Recommendation which deals with Authentication Frameworks for Directories. Within X.509 is a specification for a certificate which binds an entity's distinguished name to its public key through the use of a digital signature. Also contains the distinguished name of the certificate issuer.

**X.51** Fundamental parameters of multiplexing scheme for the international interface between synchronous data networks using 10-bit envelop structure.

**X.51 bis** Fundamental parameters of a 48Kbit/s transmission scheme for the international interface between synchronous data networks using a 10-bit envelope structure.

**X.58** Fundamental parameters of multiplexing scheme for the international interface between synchronous data networks using a 10-bit envelope structure.

**X.60** Common channel signaling for circuit switched data applications.

**X.61** Signaling system no. 7 — data user part.

**X.70** Terminal and transit control signaling for asynchronous services on international circuits between anisochronous data networks.

**X.700** Management Framework for Open Systems Interconnection (OSI) for CCITT Applications.

**X.71** Decentralized terminal and transit control signaling on international circuits between synchronous data networks.

**X.75** An international standard and CCITT recommendation for linking X.25 packet switched networks. X.75 defines the connection between public networks, i.e. for a gateway between X.25 networks. X.75 defines terminal and transit call control procedure and data transfer system between packet switched public data networks.

**X.80** Interworking of inter-exchange signals for circuit switched data services.

**X.92** Hypothetical reference connections for synchronous PDNs in a packet switched network.

**X.95** ITU-T specification dealing with a number of internal packet-switched network parameters such as packet size limitations and service restrictions.

**X.96** Call progress signals in PDNs.

**X/Open** A group of computer manufacturers that promotes the development of portable applications based on UNIX. Formed in 1984, X/Open is dedicated to the identification, agreement and wide-scale adoption of information technology standards which reduce issues of incompatibility and which help users realize the benefits of open information systems. In February 1996, X/Open and the Open Software Foundation (OSF) consolidated to form The Open Group (www.opengroup.org). See The Open Group.

**X1** See Blind Dialing.

**X10** X10 is a powerline carrier protocol that allows compatible devices throughout the home to communicate with each other via the existing 110 volt AC (alternating current) electricity wiring in the house. With X10 it is possible to control lights and virtually any other electrical device from anywhere in the house with no additional wiring. What Can I Control? According to the X10 proponents, Lighting is the most popular control category. Starter kits begin at $10 or so and are plug-and-play. You can also control Security Systems & Access Control; Home Theater & Entertainment; Phone Systems; Thermostats for adjusting room temperatures; Irrigation Have your sprinklers turn on only when it's dry. Because X10 devices don't use dedicated wiring, they can mysteriously stop working. Here's why. When X10 modules suddenly stop responding, it's usually due to something that was recently plugged into the electricity lines. Some electrical devices, like computers, televisions, and A/V gear, which have nothing to do with X10, may cause interference. Since the X10 signal goes everywhere in your home, some devices will have more effect on the signal strength. Power supplies in the following devices were designed to kill electrical noise, however, X10 signal looks like noise: Televisions, computers and monitors, battery chargers for cell phones and laptop computers, satellite receivers, surge-protection power strips, computer UPS'.

**X12** ANSI (American national Standards Institute) standard that is the dominant EDI (Electronic Data Interchange) standard in the U.S. today; designed to support cross-industry exchange of business transactions. Standard specifies the vocabulary (dictionary) and format for electronic business transactions.

**x2** A pre-standard 56-Kbps modem solution developed by US Robotics, x2 was one of two proprietary (read non-standard) approaches for running data over dial-up phone lines at up to 56 Kbps (actually 53.3 Kbps) one way and up to 33.6 Kbps the other way. The standard was developed for use on the Internet, with the 53.3 Kbps channel flowing downstream (i.e., to you) and the 33.6 Kbps channel running upstream (i.e., away from you). The logic is that at 53.3 Kbps, Web pages fill a lot faster on your screen. x2 was developed by US Robotics. K56flex, the competing proprietary 56-Kbps solution, was developed by Rockwell Semiconductor and Lucent Technologies. x2 was not compatible with K56flex. In other words, a K56flex modem could not talk to a x2 modem at full speed. The modems can, however, communicate at speeds up to 33.6 Kbps, which is the maximum speed of the predecessor V.34+ modems. In February 1998, the ITU-T finalized the specification for V.90, the international standard for 56-Kbps modems. While V.90 is an amalgamation of x2 and K56flex, neither conforms to V.90, and not all x2 and K56flex modems are upgradable to V.90. See also 56 Kbps Modem (for a much longer explanation), K56flex, V.90, V.91, and V.92.

**X3.15** Bit sequencing of ASCII in serial-by-bit data transmission.

**X3.16** Character structure and character parity sense for serial-by-data communications in ASCII.

**X3.36** Synchronous high speed data signaling rates between data terminal equipment and data circuit terminating equipment.

**X3.41** Code extension techniques for use with 7-bit coded character set of ASCII.

**X3.44** Determination of the performance of data communications systems.

**X3.79** Determination of performance of data communications systems that use bit oriented control procedures.

**X3.92** Data encryption algorithm.

**X.Windows** A networked GUI developed at the Massachusetts Institute of Technology (MIT) as part of Project Athena. Based on a client/server architecture it displays information from multiple networked hosts on a single workstation.

**XA** Transaction management protocol.

**XA-SMDS** Exchange Access SMDS. An access service provided by a local exchange carrier to an interexchange carrier. It enables the delivery of a customer's data over local and long distance SMDS networks.

**Xanadu** An idyllic place in which "did Kubla Khan a stately pleasure-dome decree," according to Samuel T. Coleridge in his poem (1798) "Kubla Khan." Jump forward to 1941, when Orson Wells released "Citizen Kane." Charles Foster Kane (allegedly William Randolph Hearst) built Xanadu, an elaborate palace (allegedly modeled on the San Simeon mansion of William Randolph Hearst). The place (Coleridge) didn't exist, and the mansion (Wells) brought only heartache. Jump forward to 1980, when Ted Nelson starts the project and the company Xanadu, a system for the network sale of documents with automatic royalty on every byte — hypertext and copyright protection (and royalty) on every byte. Nelson is a genius, but his Xanadu never (yet) was successful (more heartache). His "hypertext" concept is what we now see on the World Wide Web. See also Hypertext; Nelson, Ted; and World Wide Web.

**XAPIA** X.400 Application Program Interface Association. Microsoft has a new concept. It's called an Enterprise Messaging Server (EMS). The idea is to allow users to transparently access the messaging engine from within desktop applications to route messages, share files, or retrieve reference data. According to Microsoft, corporate developers will be able to add capabilities using Visual Basic and access EMS by writing either to the X.400 Application Program Interface Association's (XAPIA's) Common Mail Calls (CMC) or to Microsoft's Messaging API (MAPI). (ftp://nemo.ncsl.nist.gov/pub/olw/dssig/xapia/) See MAPI.

**XAUI** XAUI (pronounced "Zowie") is an interface employed by 10GbE (10 Gigabit Ethernet). "X" denotes the Roman numeral for 10, implying 10 Gbps, and "AUI" is derived from Ethernet Attachment Unit Interface. The XAUI is an interface extender for the XGMII (10 gigabit Media Independent Interface), a 74-signal wide interface comprising one 32-bit wide data path for the transmit direction and one for receive direction used to attach the Ethernet MAC (Media Access Control Layer) to the PHY (PHYsical Layer). The XAUI is a self-clocked serial bus evolved directly from the GbE 1000BASE-X PHY. The XAUI interface speed is 3.125Gbps (gigabits per second) and makes use of four serial lanes that operate in parallel over a WWDM optical fiber in order to achieve aggregate transmission speed of 10 Gbps. As is the case with 1000BASE-X, 10GbE employs the 8B10B transmission code in order to ensure signal integrity through the copper circuitry of PCBs (Printed Circuit Boards). See also 10GbE.

**Xbar** Crossbar. The second generation of automatic voice switching systems, Xbar switches are voice circuit switches that can be characterized as electromagnetic in nature.

First installed in 1938, they quickly rendered obsolete electromechanical SxS (Step-by-Step) switches, and in turn were rendered obsolete by ECC (Electronic Common Control) systems. The first common control switches, Xbar systems also sometimes are known as Xreed (Crossreed). They rely on a common, centralized set of programmed logic to set up, maintain, and tear down conversation paths, and to provide various features to end users. An end user's request for dial tone is recognized by a "marker," which directs a "sender" to store the dialed digits. At that point, a "translator" is directed to route the call by reserving a path through a switching matrix. The switching matrix is a centrally-controlled network of electromagnetic switches which work with magnets and which interconnect horizontal and vertical paths to establish a path from port to port. Xbar switches served in various capacities, including COs (Central Offices), tandems, and PBXs. See also Xbar and ECC.

**XC** Cross connect.

**XD** See DD.

**XDMCP** X Display Manager Control Protocol. Protocol used to communicate between X terminals and workstations running the UNIX operating system.

**XDP** Ron Stadler of Panasonic dreamed this one up. It stands for eXtra Device Port. It's an analog RJ-11 equipped port on the back of a Panasonic digital telephone, which is driven by Panasonic's Digital Super Hybrid switch. The XDP is an extension line completely separate to your digital voice line. You can be speaking on the phone while receiving or sending a fax or while sending or receiving data. Or plug a cordless phone or answering machine into the XTP.

**XDR** External Data Representation. Standard for machine-independent data structures developed by Sun Microsystems. Similar to BER.

**xDSL** A generic — the letter x means generic — term for Digital Subscriber Line equipments and services, including ADSL, HDSL, IDSL, SDSL and VDSL. xDSL technologies provide extremely high bandwidth over the twisted-pair that runs from your phone company's central office to your office or home. Some xDSL lines are symmetrical (the same bandwidth in both directions). Some xDSL lines (for example, ADSL) are asymmetrical — different bandwidth (and thus speed) in both directions. Many xDSL loops are already installed. xDSL technology is being installed by local phones in order to provide faster access for their subscribers to the Internet and also (and most importantly) to counter the competition from the CATV industry with its cable modem. See ADSL, G.990, G-Lite, HDSL, IDSL, RADSL, SDSL, Splitter, Splitterless and VDSL for more detailed explanations.

**xEMS** xDSL Element Manager System

**Xenix** Microsoft name for a 16-bit microcomputer operating system derived from AT&T Bell Labs' UNIX. See also Linux.

**Xerographic Recording** Recording by action of a light spot on an electrically charged photoconductive insulating surface where the latent image is developed with a resinous powder.

**Xerox Network Services** XNS. An old multilayer protocol system developed by Xerox and adopted, at least in part, by Novell and other vendors. XNS is one of the many distributed-file-system protocols that allow network stations to use other computers files and peripherals as if they were local. XNS is used by some companies on Ethernet LANs. In local area networking technology, special communications protocol used between networks. XNS/ITP functions at the 3rd and 4th layer of the Open Systems Interconnection (OSI) model. Similar to transmission control protocol/internet protocol (TCP/IP), which, of course, is now much more popular, since it is the foundation of the Internet. See Internet.

**Xerox Network Systems** XNS. A peer-to-peer communications standard, developed by Xerox and designed for Ethernets.

**Xerox Subsidy** Euphemism for swiping free photocopies from one's workplace.

**XFN** X/Open Federated Naming. Used in Sun's Enterprise Server. Provides enterprise directory name Service for simplified access to and federation among multiple naming services. Works with Distributed Computing Environment (DCE), ONC, and Internet Domain Name Service (DNS).

**XFN/NIS+** Part of Sun Microsystems' ENOS Networking Solutions. It's a secure repository of network information.

**XFR** TransFeR.

**XGA** eXtended Graphics Array. A new IBM level of video graphics which has a screen resolution of 1,024 dots horizontally by 768 vertically, yielding 786,432 possible bits of information on one screen, more than two and a half times what is possible with VGA. See also Monitor.

**XGL** Part of Sun Microsystems' Imaging and Graphics Solutions. Solaris' graphics library for 2-D/3-D applications development.

**XHTML 1.0** XHTML 1.0 is a reformulation of HTML 4.0 as an XML 1.0 application. The hybrid language allows users to migrate from HTML to XML as users can create documents in HTML but also mix in XML functions. For example, complex documents can be created in HTML but can incorporate things like mathematical equations and music from XML. See XML.

**XID Frame** A High-Level Data Link Control (HDLC) transmission frame used to transfer operational parameters between two or more stations.

**XIL** Part of Sun Microsystems' Imaging and Graphics Solutions, XIL is an open Imaging API used for image enhancement, scaling, compression, color conversion, and display.

**XIP** eXecute-In-Place. Refers to specification for directly executing code from a PCMCIA Card without first having to load it into system memory.

**XIWT** Cross-Industry Working Team. About 28 companies (and growing) whose work centers on the Clinton-Gore administration's document "National Information Infrastructure — Agenda for Action." The document spells out policy initiatives required to achieve the benefits of widespread, convenient and affordable access to existing and future information resources. In short, the Information SuperHighway.

**XJACK** A registered trademark of modem manufacturer, MegaHertz, for one of the most innovative ideas in PCMCIA modems. XJACK is the world's tiniest female RJ-11. It's about a quarter of an inch wide and the most convenient way of attaching your laptop's modem to the phone network.

**xLC** xDSL Line Card, in Line Concentrating Module.

**XLIU** X.25/X.75/X.75' Link Interface Unit.

**XLL** eXtensible Linking Language. A XML linking language which provides for multidirectional linking of documents written in XML. Unlike HTML-based sites, XML sites with XLL support are capable of linkage at the object level, rather than at the page level, only. See XML.

**XLR Connector** "X"-Series "L"ockheed "R"ubber. It's a three pin connector used in all sorts of applications, including video conferencing. It was originally used by the Lockheed Corp. on fighter plane's dashboards. It's now also known as a "QG" connector or Quick Ground, because the grounding pin is longer than the other two pins making the connection grounded first.

**XM** XM Radio is a company which launched two satellites (one called Rock, the other called Roll) in the S-band. These satellites transmit music and talk (some commercial-free) to monthly paying subscribers on earth sitting at home or traveling in cars and equipped with the appropriate satellite antenna. The service is known as Satellite Digital Audio Receiver Services (SDARS). XM's competitor is called Sirius.

**XMA** eXtended Memory specificAtion. Interface that lets DOS programs cooperatively use extended memory in 80286 and higher computers. One such driver is Microsoft's HIMEM.SYS, which manages extended memory and HMA (high memory area), a 64k block just above 1Mb.

**XMGII** XGMII is a 74-signal wide interface comprising one 32-bit wide data path for the transmit direction and one for receive direction used to attach the 10GbE (10 Gigabit Ethernet) MAC (Media Access Control Layer) to the PHY (PHYsical Layer). The "X" is from the Roman numeral for 10, implying 10 Mbps, and the "GMII" stands for Gigabit Media Independent Interface. See 10GbE for more detail.

**Xmit** Transmit.

**XML** eXtensible Markup Language. XML, the language is a standard way of tagging data so it can be read and interpreted by a variety of Web browsers, by a variety of software, servers, and clients, regardless of how it was created. The vast bulk of the largest companies in the world use XML for electronic transactions with their customers or their suppliers, including using XML for EDI (Electronic Data Interchange). XML allows companies to automatically order from and sell to each other — without having to have a human in between physically translating between the different systems, or worse, physically entering the information again into another incompatible computer system. Developed by the W3C (World Wide Web Consortium), XML is a pared-down version of SGML, designed especially for Web documents. It enables designers to create their own customized tags to provide functionality not available with HTML. For example, XML supports links that point to multiple documents, as opposed to HTML links, which can reference just one destination each. Whether XML eventually supplants HTML as the standard web formatting specification depends a lot on whether it is supported by future Web browsers. The World Wide Web Consortium released the first spec on XML in February, 1998. According to Inter@ctive Week, a week-

ly newspaper covering the Internet, companies are seizing upon the ability of XML to allow structured exchanges of data between machines attached to the Web. That will enable one Web server to talk to another Web server, meaning manufacturers and merchants can begin to quickly swap data, such as pricing, stock-keeping numbers, transaction terms and product descriptions. See also HTML, OFX, SGML and the three definitions following.

**XML Attributes** XML attributes are used to provide more information, often meta-information, about an XML element. They are made up of the name of the attribute, an equals (=) sign, and the value of the attribute, where the value is surrounded by quotes. See XML.

**XML Elements** XML elements are the basic building blocks of an XML document or data stream. There are three basic elements in the XML protocol: message, presence and iq. See XML.

**XML Namespace** An XML namespace provides a simple method for qualifying element and attribute names used in XML documents by associating them with namespaces identified by a URI reference. The XML Namespace specification is currently a recommendation with the W3C. See XML.

**XML Schema** XML Schema is a language for writing rules that constrain the kinds of elements that can appear in in documents and the ways in which they can be sequenced, grouped and nested. XML Schema is still a relatively new specification. The W3C Recommendation for XML Schema was published in May, 2001. See XML.

**XML/EDI** Extensible Markup Language (XML), a Web markup language, combines with scripting languages and electronic data interexchange to form XML/EDI. XML/EDI may be the means to bridge EDI into Internet Electronic Commerce (EC) by making the existing EDI (Electronic Data Interchange) knowledge base more readily usable to the Internet EC developers. See HTML.

**XModem** Also called "Christiansen Protocol". An error-correcting file transfer, data transmission protocol created by Ward Christiansen of Chicago for transmitting files between PCs. A file might be anything — a letter, an article, a sales call report, a Lotus 1-2-3 spreadsheet. The XModem protocol sends information in 128-byte blocks of data. Error control is provided through checksums, which are performed on each data block, and transmitted along with it. If the result does not check out at the other end, the computer at the other end sends a NAK (Negative AcKnowledgement), requesting that the transmitting device re-transmit that block. If the block checks out, the computer sends an ACK (Acknowledgement). In this way, relatively error-free transmission can be accomplished.

XModem was first used by computer hobbyists and then by business users of PCs. If you're buying a telecommunications software program for your PC — IBM, Compaq, Apple, etc. — it's a good idea to buy a program with XModem. It's among the most common data communications protocols. But it's not the fastest, just the most common. AT&T Mail supports XModem protocol. So does TELECONNECT Magazine's own E-mail InfoBoard system. MCI Mail does not support XModem protocol. We don't know why. There are many variations of XModem including XModem 1K (which uses blocks of 1,025 bytes), Modem7, YModem, Y-Modem-G, and ZModem. Most common communications software packages only support (i.e. will handle) the original version of XModem (checksum) and the newer CRC variation. A study in Byte Magazine (March, 1989) showed ZModem to be a far more efficient file transfer protocol than XModem, YModem, or W/XModem. The author now tends to use ZModem more commonly. It is supported by most on-line services, such as CompuServe, etc. See also Data Compression Protocols, Error Controls Protocols, File Transfer Protocol, YModem and ZModem.

**XModem-1K** Xmodem-1K is an error-correcting file transfer, data transmission protocol for transmitting files between PCs. It is essentially Xmodem CRC with 1K (1024 byte) packets. On some systems and bulletin boards it may also be referred to as Ymodem.

**XModem-CRC** Cyclic Redundancy Checking is added to XMODEM frames for increased reliability of errors detection. See XMODEM.

**XMP** X/Open Management Protocol; an API and software interface specified in the Open Software Foundation's Distributed Management Environment.

**XMPP** eXtensible Messaging and Presence Protocol. XMPP is the part of the XML Protocol that supports Instant Messaging functionality.

**XMS** An acronym for eXtended Memory Specification. To run this standard, your system must have 350K of extended memory. XMS creates the HMA (High Memory Area), then governs access to and the allocation of the remainder of extended memory.

**XnLC** xDSL Line Card in AccessNode Express.

**XNS** Xerox Network System. The LAN architecture developed at the Xerox Palo Alto Research Center (Parc). It is a five-layer architecture of protocols and was the foundation of the OSI seven-layer model. It has been adopted in part by Novell and other vendors. XNS is one of the many distributed file system protocols that allow network stations to use other computers files and peripherals as if they were local. XNS is used by some companies on Ethernet LANs.

**XO** Crystal Oscillator.

**XON/XOFF** XON/XOFF are standard ASCII control characters used to tell an intelligent device to stop or resume transmitting data. In most systems typing <Ctrl>-S sends the XOFF character, i.e. to stop transmitting. Some devices understand <Ctrl>-Q as XON, i.e. start transmitting again. Others interpret the pressing of any key after <Ctrl>-S as XON.

**XOpen** A group of computer manufacturers that promotes the development of portable applications based on UNIX. They publish a document called the X/Open Portability Guide. X/Open is the correct spelling.

**XOR Gate** A digital device which outputs a high state only if either of its inputs are high (but not both).

**XPAD** An eXternal Packet Assembler/Disassembler.

**XPC** A set of protocols developed by British Telecom Tymnet to allow asynchronous terminals to connect to an X.25 packet-switched network.

**XPM** 1. Cross-phase Modulation.
2. eXtended Peripheral Module.

**XPL** A Private Line provided by a long distance carrier in the U.S.

**XRB** Transmit Reference Burst.

**Xremote** Tool that lets you grab the mouse and keyboard of another Windows based machine and control them with your local mouse and keyboard. It creates a form of remote control of other machines. All mouse- and keyboard-actions on the local machine are forwarded to the remote display.

**XSG** X.25 Service Group.

**XSL** eXtensible Stylesheet Language. An extension of XML which allows the automatic transformation of XML-based data into HTML and other presentation formats. Thereby, the presentation format can vary from the underlying data structure. See XML.

**XT** Abbreviation for crosstalk.

**XTEL API** The Sun Solaris Teleservices Application Programming Interface. See Teleservices for a long explanation.

**XTELS** The Sun Solaris Teleservices protocol. The XTELS protocol is essentially the XTEL provider protocol with extensions to support multiple clients and multiple XTEL providers. See Teleservices for a long explanation.

**XTELTool** A window-based tool used to configure providers in the Sun Solaris Teleservices platform. Basically a graphical user interface. See TELESERVICES for a long explanation.

**XTL** Sun Microsystems' "Teleservices" architecture for Solaris. XTL is the foundation library for applications using or controlling telecom data streams. It is used for computer telephony application development. The XTL subsystem and API includes call control functions. It establishes a call or connection, and data stream access methods to control the flow of data over that connection.

**XTL API** Part of the Sun XTL Teleservices architecture. An object-oriented interface accessed using the C++ language. The API includes XtlProvider, XtlCall, XtlCallState, and XtlMonitor objects. These base objects define the command and callback methods of XTL teleservices. There are three methods types on these objects: synchronous requests, asynchronous commands, and asynchronous events.

**XTL Call Object** Part of Sun Microsystems' XTL Teleservices architecture. C++ objects created by developers with the XTL API. Each XtlCall object corresponds to a telephone call. An XtlCall object has command methods to query the current state of a call or request a change in state (to put a call on hold). An XtlCall object also has callback methods for the asynchronous notification of state changes.

**XTL Provider Configuration Database** Part of the Sun XTL Teleservices architecture. Means of registering third-party "providers" in an XTL-based system. The database shows the existence of each provider, how to invoke it (used by the XTL system internally) and describes the specific capabilities of that provider.

**XTL Provider Interface** Part of Sun Microsystems' XTL Teleservices architecture. The means for third-party developers and Independent Hardware Vendors (IHVs) to integrate provider, technology or call-type-specific features into an XTL environment. Developers use the XTL Provider Library (MPI) to do this.

**XTL Provider Library** Part of Sun Microsystems' XTL Teleservices architecture. Isolates the provider code from the intricacies of the XTL system services. The library sup-