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NEWTON'S TELECOM DICTIONARY

The Official Dictionary
of Telecommunications
Networking and
the Internet

16th
EXPANDED
& UPDATED
EDITION

BY HARRY NEWTON

┐ Annapolis, MD with over 2,000 employ-
/w.arinc.com

ing A compression technique which pro-
∍ntire message, rather than encoding each
∍ssage. Arithmetic coding improves on
g, although it is slower. See also
Huffman Encoding.

ic Unit ALU. The part of the CPU (Central
┘hat performs the arithmetic and logical
croprocessor.

ration The process that results in a math-
∍lution during the execution of an arithmetic
∍luation of an arithmetic expression.

jister A register (i.e. short-term storage
∍ the operands or the results of operations
operations, logic operations, and shifts.
┆ The part of a computing system which
ts that perform the arithmetic operations.

.arj shows that a file or program has been
must be "exploded" with the arj program
read or used. Groups of files may be com-
┘t this is more commonly done with the zip

us Response Mode. A communication
∍e primary station and at least one sec-
∍re either the primary or one of the secon-
ransmission.

oquial expression for a dumb, but beauti-
your arm, as you arrive at the party, is a
"My," say your friends, "You have great

┐e fabled battlefield where God's heavenly
t the demon-led forces of evil. The final

al protection usually accomplished by a
∍e, braid or served wires or by a combina-
∍es or wires applied over a cable sheath for
n. It is normally found only over the outer
∍ed mostly on cables lying on lake or river
┘hore ends of oceans. See Armored Cable.
1. A stainless steel handset cord which is
┐dalism. Typically used on a coin phone,
handset cords are too short. This is said to
∍re first ordered for use in prisons, where
┆ certain they would not be used by the pris-
∍ devices. Thus, they requested Western
┐n too short for such a use. Whether there is
∍tory is dubious. However, it is part of tele-
history and therefore, worth preserving.
an armored cable has its sheath covered
∍e layers: a vinyl jacket, a steel wrap, and
┘t. Armored cable is intended for use in
∍tions; the steel armor protects the sheath
g installation. See also Hard Cable.
olution Protocol. 1. A low-level protocol
ssion Control Protocol/Internet Protocol
"maps" IP addresses to the corresponding
In other words, ARP is used to obtain the
hen only the logical address is known. An
┘he IP address is broadcast onto the net-
┐ which the IP address resides responds
address in order that the packets can be
┆ of example, TCP/IP requires ARP for use

with Ethernet, in which case the physical address would be defined by the MAC address hard-coded on the NIC (Network Interface Card) of the target workstation. See also RARP.
2. A low-level protocol which serves to map IP addresses, or other non-ATM addresses, to the corresponding address of the target ATM device. Once the ATM address has been iden- tified, the ARP server can stream data to the target device as long as the session is maintained.

ARPA Advanced Research Projects Agency of the U.S. Department of Defense. (The whole DOD annual telecommuni- cations bill exceeds $1 billion.) Much of the country's early work on packet switching was done at ARPA. At one stage it was called DARPA, which stands for Defense Advanced Research Projects Agency. ARPA was the U.S. government agency that funded research and experimentation with the ARPANET and later the Internet. The group within DARPA responsible for the ARPANET is ISTO (Information Systems Techniques Office), formerly IPTO (Information Processing Techniques Office). See also DARPA Internet. DARPA has changed its name to ARPA and back again. It's hard to keep up.

ARPANET Advanced Research Projects Agency NETwork. A Department of Defense data network, developed by ARPA, which tied together many users and computers in universities, govern- ment and businesses. ARPANET was the forerunner of many developments in commercial data communications, including packet switching, which was first tested on a large scale on this network. The predecessor of the Internet, it was started in 1969 with funds from the Defense Department's Advanced Projects Research Agency (ARPA). ARPANET was split into DARPANET (Defense ARPANET) and MILNET (MILitary NETwork) in 1983. ARPANET was officially retired in 1990.

ARPM Average Revenue Per Minute.

ARQ Automatic Retransmission reQuest. The standard method of checking transmitted data, used on virtually all high-speed data communications systems. The sender encodes an error-detection field based on the contents of the message. The receiver recalculates the check field and com- pares it with that received. If they match, an "ACK" (acknowl- edgment) is transmitted to the sender. If they don't match, a "NAK" (negative acknowledgment) is returned, and the sender retransmits the message. Note: this method of error correc- tion assumes the sender temporarily or permanently stores the data it has sent. Otherwise, it couldn't possibly retransmit the data. No error detection scheme in data transmission is foolproof. This one is no exception.

Array 1. The description of a location of points by coordi- nates. A 2-D array is described with x,y coordinates. A 3-D array is described with x,y,z coordinates.
2. A named, ordered collection of data elements that have iden- tical attributes; or an ordered collection of identical structures.
3. Two or more hard disks that read and write the same data. In a RAID system, the operating system treats the array as if it were a single hard disk.

Array Antenna Take a bunch of directional antennas. Aim them at the same transmitting source. Join them together. Presto, you now have a very powerful giant antenna. Array antennas are used for picking up weak signals. They are often used in astronomical and defense communications systems.

Array Connector A connector for use with ribbon fiber cable that joins 12 fibers simultaneously. A fan-out array design can be used to connect ribbon fiber cables to non-ribbon cables.

Array Processor A processor capable of executing instructions in which the operands may be arrays rather than data elements.

Arrestor A device used to protect telephone equipment from lightning, electrical storms, etc. An arrestor is typically gas filled so when lightning strikes, the gas ionizes and, bingo, a low resistance to the ground that drains the damag- ing high voltage elements of the lightning away.

Arrival Rate A call center term. The pattern in which calls arrive. Call Arrival Rates can be smooth, like outgoing telemar- keting calls, or random, like incoming toll-free number calls, or peaked, where calls escalate in response to advertising.

ARS Automatic Route Selection, also called Least Cost Routing. A way that your phone system automatically choos- es the least expensive way of making the call that it is pre- sented with. That least expensive way may be a tie line or a WATS line, etc. It may even be dial-up. See Least Cost Routing and Alternate Routing.

Article An Internet term. An article is a USENET conversa- tion element. It is a computer file that contains a question or piece of information made available to the USENET commu- nity by posting to a newsgroup.

Artifacts Distortions in a video signal. Unintended, unwanted visual aberrations in a video image. In all kinds of computer graphics, including any display on a monitor, arti- facts are things you don't want to see. They fall into many cat- egories (such as speckles in scanned pictures), but they all have one thing in common: they are chunks of stray pixels that don't belong in the image.

Artificial Intelligence In 1930s, Alan Turing, a British mathematician, challenged scientists to create a machine that could trick people into thinking it was one of them. The idea is that a computer will have achieved intelligence when a per- son chatting over a teletype is unable to tell whether a human being or a machine is at the other end of the conversation. And this for long was THE classic definition of artificial intel- ligence. After half a century, the prospect of passing the Turing test remains so remote that many computer scientists have abandoned it as a practical goal. The real challenge these days with artificial intelligence, now more commonly called "expert systems," is not to recreate people but to rec- ognize the uniqueness of machine intelligence and learn to work with it in intelligent, useful ways.

Artificial Line Interface In T-1 transmission, refers to the ability of a piece of transmission equipment to attenuate its output level to meet the required loop loss of 15-22.5 dB normally switch selectable between 0,7.5, and dB.

ARU Audio Response Unit. A device which gives audible infor- mation to someone calling on the phone. "Press 1 for the train timetable to Boston." The ARU reads the timetable. The caller responds to questions by punching buttons on his telephone keypad. If this sounds like Interactive Voice Response — IVR, you're 100% right because that's exactly what it is. See IVR.

AS 1. Autonomous System. An Internet term. An Autonomous System is just that — a system which is autonomous. Typically, an AS is an ISP, an Internet Service Provider. Within the ISP, routers exchange information freely — all systems are trusted, as they are under a single administration in the same domain. Therefore, such systems can run an IGP (Interior Gateway Protocol) such as IGRP (Interior Gateway Routing Protocol) or OSPF (Open Shortest Path First). As the same level of trust does not exist between ASs, they must run an EGP (Exterior Gateway Protocol) such as BGP (Border Gateway Protocol) or IDRP (InterDomain Routing Protocol). See also BGP, EGP, IDRP, IGP, IGRP and OSPF.
2. Australian Standards. Standards that have been approved by Standards Australia in response to formal requests from

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ack-end can be the result of the reps selling t...
the product. See Front End Results.

'eed Pull Used in tight locations where it's ...
arge cable pulling equipment. The cable is fed...
om the mid-point. The first section of cable is...
:ction. After this is fed, the remaining cable is u...
through the opposite direction to the other end...

Haul Back haul is a verb. A communications ...
hauling when it takes traffic beyond its destina...
here are many reasons it might do this. The first...
be cheaper to go that route instead of going d...
ght, for example, have a full-time private line fr...
Dallas. You might find it cheaper to reach Nash...
o Dallas first, then dialing back to Nashville. T...
of backhauling may change from one mom...
· as the line to Dallas is empty, close to full d...
r reason for back hauling is that you may d...
nodate changes in your calling or staffing p...
ly have an automatic call distributor in Omaha a...
ago. A call from New York may come into your ...
nut when it gets there you may discover that t...
nts available to handle the call. So it may no...
to back haul the call to the Chicago ACD, w...
s available. In fiber networks, back hauling is a...
ement technique used to reduce the expense of...
y/demultiplexing.

Hoe Fade The degradation in service exper...
backhoe cuts your buried fiber optic cable. Cal...
se sometimes not all communications are cut of...
:hey are all cut off, the term becomes a euph...
to report a back hoe fade to your boss than ...
just lost 158,000 circuits between New Yo...
ngton. Our customers are not pleased."

Office Operations Management and suppo...
in be performed away from a company's head...
is telemarketing, credit card processing, data fil...
:e and many clerical and accounting function...
operations are an economic development oppo...
all communities that have the appropriate infras...
advanced telecommunications, reliable expres...
es.) Back office operations are helping share a n...
i of place, one in which, for example, geog...
eness is no longer a liability — because of tele...
ons and other linkages to the "outside" world.

: Porch The portion of a video signal that occu...
anking from the end of horizontal sync to the b...
tive video. The blanking signal portion whi...
en the trailing edge of a horizontal sync pulse ...
g edge of the corresponding blanking pulse. Col...
ated on the back porch.

x Projection When the projection is placed b...
n (as it is in television and various video conf...
:ations where the image is displayed on a mon...
· screen) it is described as a back projection sy...
systems the viewer sees the image via the trans...
ht as opposed to reflection used in front projec...
Audiences generally prefer back projection s...
they seem brighter.

x to Back Channel Bank The connection ...
ency and signaling leads between channel b...
· dropping (i.e. removing) and inserting (i.e. ad...
nels.

k to Back Connection A connection betw...
ut of a transmitting device and the input of an as...

receiving device. When used for equipment measurements or testing purposes, this eliminates the effects of the transmission channel or medium.

Back to Back Peering Peering is when large ISPs (Internet Service Providers) assume that the traffic is approximatly equal between them, and both benefit equally from a free connectivity between them since both companies need each other's network to get people to their web sites. These ISPs allow traffic from these large ISPs to enter their network for free. Companies that are allowed into this prestigious club are called Tier 1 providers. They include Sprint, CAIS, UUNet, PSINet (the first and largest independent commercial ISP in the world), Cable and Wireless, etc. Companies that do not have large enough networks have to pay Tier 1 companies to get access to their networks.

Back to Square One Back to square one (or "back at square one," which was the original way of saying it) comes from football radio commentaries from the 1930s. There being no picture, these live reports would explain the position of play by dividing the football pitch into numbered grids. Square one was just in front of the goal. So, when a ball went out of play and resulted in a goal kick, the play was "back in square one." Neat.

Back Up Server A program or device that copies files so at least two up-to-date copies always exist.

Backbone The backbone is the part of the communications network which carries the heaviest traffic. The backbone is also that part of a network which joins LANs together — either inside a building or across a city or the country. LANs are connected to the backbone via bridges and/or routers and the backbone serves as a communications highway for LAN-to-LAN traffic. The backbone is one basis for design of the overall network service. The backbone may be the more permanent part of the network. A backbone in a LAN, a WAN, or a combination of both dedicated to providing connectivity between subnetworks in an enterprise-wide network.

Backbone Bonding Conductor A copper conductor extending from the telecommunications main grounding busbar to the farthest floor telecommunications grounding busbar.

Backbone Cabling Cable and connecting hardware that comprise the main and intermediate cross-connects, as well as cable runs that extend between telecommunications closets, equipment rooms and entrance facilities.

Backbone Closet The closet in a building where the backbone cable is terminated and cross connected to either horizontal distribution cable or other backbone cable.

Backbone Facilities Plant and equipment used to provide transmission services to connect tributary facilities from clusters of dispersed users or devices. See Backbone.

Backbone Network The part of a communications facility that connects primary nodes; a primary shared communications path that serves multiple users via multiplexing at designated jumping-off points. A transmission facility, or arrangement of such facilities, designed to connect lower speed channels or clusters of dispersed users or devices.

Backbone Subsystem See Riser Subsystem.

Backbone To Horizontal Cross-Connect BHC. Point of interconnection between backbone wiring and horizontal wiring.

Backbone Wiring The physical/electrical interconnections between telecommunications closets and equipment rooms. Cross-Connect hardware and cabling in the Main and Intermediate Cross-Connects are considered part of the backbone wiring.

Backcharging A phone fraud term. Backcharging is starting the clock on a phone call at the time a customer contacts the long-distant phone service provider — not when the person being called answers the phone — which is what it should be.

Backfeed Pull A method used to pull cable into a conduit or a duct liner when the cable is long or when placing cable into controlled environmental vaults, central offices, or under streets. With this method, the cable pays off its reel at an intermediate manhole and is first pulled in one direction. The remaining cable is then removed from the reel, laid on the ground, and then pulled in the opposite direction.

Backfile Conversion The process of scanning in, indexing and storing a large backlog of paper or microform documents in preparation of an imaging system. Because of the time-consuming and specialized nature of the task, it is generally performed by a service bureau.

Backfilling To designate memory on an expanded memory card and make it available for use as conventional memory.

Background See Background Processing.

Background Area of Concern, Consequence and Incentive BACI. A questioning strategy used by Lucent Technologies for uncovering a customer's implied needs and converting them to clearly defined ones that may lead to a purchasing decision.

Background Communication Data communication, such as downloading a file from a bulletin board, that takes place in the background while the user concentrates on another application (e.g. a spreadsheet) in the foreground.

Background Music This feature allows music to be played through speakers in the ceiling and/or through speakers in each telephone, throughout the office, or office-by-office, or selectively. Background music is typically played through paging speakers, but it can also be played through the speakers of speakerphones. In fact, the two — paging and background music — often go hand-in-hand. When you want to page someone, the music turns off automatically and comes back on when the paging is over. The same thing happens on airplanes. Background music is said to motivate workers, often into shutting it off.

Background Noise The noise you hear when nothing else is being transmitted. Digital circuits are so quiet that some form of White Noise must be injeccted into them so as to prevent people from suspecting that the circuit they're speaking on has gone dead. See also White Noise.

Background Processing The automatic execution of lower priority computer programs when higher priority programs are not using the computer's resources. A higher priority task would be completing calls. A lower priority task would be running diagnostics. Some PBXs have this feature. Some insist on running their diagnostics even though they are choked with calls. The smarter ones tone down their diagnostics when they get busier, which makes sense.

Background Program A low priority program operating automatically when a higher priority (foreground) program is not using the computer system's resources.

Background Task A secondary job performed while the user is performing a primary task. For example, many network servers will carry out the duties of the network (like controlling who is talking to whom) in the background, while at the same time the user is running his own foreground application (like word processing). See also Background Processing.

Backhaul See Back Haul.

Backhoe Fade See Back Hoe Fade.

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:ring installation or manufacture to identify it.

ind Pass Filter BPF. A device which passes a specific 1ge of frequencies and (in theory) blocks all others.

ind Splitter A multiplexer designed to split the available :quency band into several smaller channels. A band splitter n use time division or frequency division multiplexing.

ind Stop Filter BSF. A device which blocks a specific 1ge of frequencies and (in theory) passes all others.

ind, Citizens One of two bands used for low power lio transmissions in the United States — either 26.965 to :225 megahertz or 462.55 to 469.95 megahertz. Citizens nd radio is not allowed in many countries, even some civi-ed countries. In some countries they use different frequen-:s. CB radios, in the United States, are limited by FCC rule four WATTS of power, which gives each CB radio a range several miles. Some naughty people boost their CBs with ternal power. The author of this dictionary has actually spo-n to Australia while driving on the Santa Monica Freeway in s Angeles. See also CB.

ind, Frequency The frequencies between the upper and wer bands. See also BAND. Here is the accepted explana-n of "bands:"

low 300 Hertz	— ELF —	Extremely low frequency
0—3,000 Hertz	— ILF —	Infra Low Frequency
3—30 kHz	— VLF —	Very Low Frequency
30—300 kHz	— LF —	Low Frequency
00—3,000 kHz	— MF —	Medium Frequency
3—30 MHz	— HF —	High Frequency
30—300 MHz	— VHF —	Very High Frequency
)0—3,000 MHz	— UHF —	Ultra High Frequency
3—30GHz	— SHF —	Super High Frequency
30—300GHz	— EHF —	Extremely High Frequency
)0—3,000 GHz	— THF —	Tremendously High Frequency

Band	American	European
P	0.2-1.0 Ghz	0.2-0.375 Ghz
L	1-2 Ghz	0.375-1.5 Ghz
S	2-4 Ghz	1.5-3.75 Ghz
C	4-8 Ghz	3.75-6 Ghz
X	8-12.5 Ghz	6-11.5 Ghz
J	-	11.5-18 Ghz
Ku	12.5-18 Ghz	
K	18-26.5 Ghz	18-30 Ghz
Ka	26.5-40 Ghz	-
Q		30-47 Ghz

inded Memory In a PostScript printer, virtual printer :mory is a part of memory that stores font information. The :mory in PostScript printers is divided into banded memo-and virtual memory. Banded memory contains graphics d page-layout information needed to print your documents. tual memory contains any font information that is sent to ur printer either when you print a document or when you wnload fonts.

inded Rate A price range for regulated telephone ser-:e that has a minimum floor and maximum ceiling. The nimum covers the cost of service; the maximum is the rate :d in the price list.

indit Mobile A mobile subscriber that is revealed in the l-ticketing records as having an invalid ESN, invalid tele-one number, or other problem that warrants denial of ser-e to that mobile.

injo Also called beaver tail. Used to connect devices to)dular jack wiring for testing. See Modular Breakout apter.

Banjo Clip See Modular Breakout Adapter.

Bandmarking A continuous circumferential band applied to an insulated conductor at regular intervals for identification.

Bandpass The range of frequencies that a channel will transmit (i.e. pass through) without excessive attenuation.

Bandpass Filter A device which transmits a band of fre-quencies and blocks or absorbs all. other frequencies not in the specified band. Often used in frequency division multi-plexing to separate one conversation from many.

Bandpass Limiter A device that imposes hard limiting on a signal and contains a filter that suppresses the unwanted products of the limiting process.

Bandwidth 1. In telecommunications, bandwidth is the width of a communications channel. In analog communica-tions, bandwidth is typically measured in Hertz — cycles per second. In digital communications, bandwidth is typically measured in bits per second (bps). A voice conversation in analog format is typically 3,000 Hertz, carried in a 4,000 Hertz analog channel. In digital communications, encoded in PCM, it's 64,000 bits per second. Do not confuse bandwidth with band. Let's say we're running a communications device in the 12 GHz band. What's its bandwidth? That's the space it's occu-pying. Let's say it's occupying from 12 GHz to 12.1 GHz. This means that it's occupying the space from 12,000,000,000 Hz to 12,100,000,000 Hz. This means its bandwidth is one hun-dred million cycles or one hundred megahertz (100 MHz). Affiliated terms are narrowband, wideband and broadband. While these are not precise terms, narrowband generally refers to some number of 64 Kbps channels (Nx64) providing aggre-gate bandwidth less than 1.544 Mbps (24x64 Kbps, or T-1), wideband is 1.544 Mbps-45 Mbps (T-1 to T-3) and broadband provides 45 Mbps (T-3) or better. 2. The capacity to move information. A person who can mas-ter hardware, software, manufacturing and marketing — and plays the oboe or some other musical instrument — is "high bandwidth." The term is believed to have originated in Redmond, WA in the headquarters of Microsoft. People there (e.g., Bill Gates) who are super-intelligent and have generally broad capabilities, are said to have "high bandwidth." 3. Microsoft jargon for schedule. For example, "I have a band-width problem" means that I have an overloaded schedule. 4. The combined girth of a rock band. By way of example, the band "Meatloaf" is broadband, largely due to the individual girth of the singer by the same name. On the other hand, the "Rolling Stones" are narrowband, due largely to the svelte Mick Jagger. While the "Rolling Stones" are older, they are also richer than is "Meatloaf." So, bandwidth is not everything!

Bandwidth Augmentation Bandwidth augmentation is the ability to add another communications channel to an already existing communications channel.

Bandwidth Compression A technique to reduce the bandwidth needed to transmit a given amount of information. Bandwidth compression is used typically in "picture type" transmissions — such as facsimile, imaging or video-con-ferencing. For example, early facsimile machines scanned each bit of the document to be sent and sent a YES or NO (if there was material in that spot or not). More modern machines simply skip over all the blank spaces and transmit a message to the receiving facsimile machine when to start printing dots again. A facsimile "picture" is made up of tiny dots, similar to printing photos in a magazine. Today, band-width compression is used to transmit voice, video and data. There are many techniques, few of which are standard. The key, of course, is that if you're going to compress a "conver-

sation" at one end, you must "de-compress" it at the other end. Thus, in every bandwidth compressed conversation there must be two sets of equipment, one at each end. And they bet-ter be compatible.

Bandwidth Envy I have a dial-up connnection to the Internet. You have a DSL line. You're running 20 to 30 times faster than me. I envy your good luck. I have bandwidth envy.

Bandwidth Junkie One who worships brute speed when it comes to Internet connections. He's the type of person who has a T-1 line in his bedroom. Eric Smestad, ninfan@Limbo.Alleged.com, wrote me, "After reading your definition of "Bandwidth junkie" I started to feel rather wor-ried, you see, I am afraid that two of my friends and I may be bandwidth junkies. We live in the same apartment building and have ethernet cable ran from apartment to apartment, a switched hub, and a T-1 line to the Internet with a Cisco router. These seem to be obvious symptoms, is there a cure?" Answer, there is no cure.

Bandwidth Limited Operation The condition prevail-ing when the system bandwidth, rather than the amplitude (or power) of the received signal, limits performance. The condi-tion is reached when the system distorts the shape of the sig-nal waveform beyond specified limits. For linear systems, bandwidth-limited operation is equivalent to distortion-limit-ed operation.

Bandwidth On Demand Just what it sounds like. You want two 56 Kbps circuits this moment for a videoconference. No problem. Use one of the newer pieces of telecommunica-tions equipment and "dial up" the bandwidth you need. An example of such a piece of equipment is an inverse multiplex-er. Uses for bandwidth on demand include video conferencing, LAN interconnection and disaster recovery. Bandwidth on demand is typically done only with digital circuits (they're eas-ier to combine). Bandwidth on demand is typically carved out of a T-1 circuit, which is permanently connected to the cus-tomer's premises from a long distance carrier's central office, also called a POP — Point of Presence.

Bang An exclamation point (!) used in a Unix-to-Unix Copy Program (UUCP) electronic mail address. People who are on AT&T Mail often give you their mail address as "Bang Their Name." My AT&T Mail address used to be Bang HarryNewton, i.e. !HarryNewton.

Bang Path A series of UUCP nodes mail will pass through to reach a remote user. Node names are separated by excla-mation marks nicknamed "bangs." The first node in the path must be on the local system, the second node must be linked to the first, and so on. To reach user 1 on sys2 if your com-puter's address is sys1 you would use the following address: sys1! sys2! sys3! user1

Bank A row of similar components used as a single device, like a bank of memory. Banks must be installed or removed together. See Bank Switching.

Bank Switching A way of expanding memory beyond an operating system's or microprocessor's address limitations by switching rapidly between two banks of memory. In MS-DOS, a 64K bank of memory between 640K and one megabyte is set aside. When more memory is needed, the bank, or page, is switched with a 64K page of free memory. This is repeated with additional 64K pages of memory. When the computer requires data or program instructions not in memory, expand-ed memory software finds the bank containing the data and switches it with the current bank of memory. Although effec-tive, bank switching results in memory access times that are slower than true, extended memory.

Card Dialer A device attached to a telephone which accepts a special plastic card and then automatically dials the number on the card as indicated by the holes punched in it. A card dialer is now obsolete except for unusual applications, like systems whereby you carry your card with you and use it as a security device.

Card Issuer Identifier Code CIID - (pronounced "sid") A code issued with certain calling cards. AT&T's CIID cards cannot be used by other interexchange carriers but can be used by LECs.

Card Services The software layer above Socket Services that coordinates access to PCMCIA cards, sockets and system resources. Card Services is a software management interface that allows the allocation of system resources (such as memory and interrupts) automatically once the Socket Services detects that a PC Card has been inserted. This is called "hot swapping." The idea is that you can slide PCMCIA cards in and out of PC at will and your Socket and Card services will recognize them and respond accordingly. It's a great theory. In practice, it doesn't work because certain cards, like network cards, simply can't be connected and disconnected at will. Socket Services is a BIOS level software interface that provides a method for accessing the PCMCIA slots of a computer. Card Services is a software management interface that allows the allocation of system resources (such as memory and interrupts) automatically once the Socket Services detects that a PC Card has been inserted. Both of these specifications are contained in the PCMCIA Standards document. You do not need either Socket or Card Services to successfully use PCMCIA cards in your desktop or laptop. You simply need the correct device drivers and the proper memory exclusions. See PCMCIA, Socket Services and Slot Sizes.

Card Slot A place inside a phone system or computer into which you slide a printed circuit board. See Board.

CardBus Laptops typically come with slots for what are now known as PC cards — little credit card size devices who do various things — like become a modem, become a network interface card, become a video conferencing card, become an ISDN card, etc. These cards were originally called PCMCIA cards. (For a full explanation see PCMCIA). The original PCMCIA spec was 16-bit. The new spec, called CardBus, which combines the PCI bus, has a 32-bit interface and supports 132 Mbps. The CardBus specification is the significantly improved successor to the previous PC Card standard. But the two standards are not compatible. You cannot run a laptop with both PCMCIA and CardBus cards. You must run them with cards of the same standard. And these days, the best standard to go with is CardBus. According to 3Com, which makes some excellent CardBus cards, CardBus delivers 33 MHz, 32-bit performance based on PCI bus architecture; low 3.3-volt power consumption; bus mastering for sharply improved CPU efficiency; built-in multifunction capabilities; Zoomed Video to handle multimedia applications and (so 3Com says, but I haven't found) backward compatibility with 16-bit PC Card (PCMCIA) devices. According to 3Com, CardBus provides notebook users with:

CardBus Think laptop (also called notebook). You don't have the room for a traditional PC card — say one to accommodate a modem, or a NIC (network interface card). The first crack at making small cards to fit inside laptops were called PCMCIA cards, later called PC cards. The first PC cards were 16-bit. Later the PCMCIA Association issued updated specs, called CardBus. Here are the characteristics and benefits of CardBus:

• 20 times the throughput of conventional 16-bit PC Card slots. The 32-bit CardBus interface can transmit data at 400-600 Mbps, compared to 16-bit PC Card's 20-30 Mbps. Users must have that higher bandwidth for linking to a 100 Mbps Fast Ethernet network, for quickly moving data to and from SCSI-2 storage devices (such as Zip drives) and for handling bandwidth-hungry applications like video conferencing.

• Better systems performance under Windows 95, 98 and Windows NT. Bus mastering lets a CardBus device transfer data to computer memory directly, without intervention from the notebook's processor. This boosts overall computer performance multitasking Windows 95 and Windows NT (soon to be known as Windows 2000) operating environments. Plus, it increases throughput when the notebook is connected to a Fast Ethernet LAN.

• Lower power consumption. CardBus devices run at 3.3 volts, instead of 16-bit PC Card's 5 volts. That means CardBus devices use less power than conventional PC Card devices, and generate less heat inside the computer. Thus batteries last longer.

• Easier installation of multifunctional devices. The CardBus specifications enables sharing of multiple resources on a single card with no need for special drivers. As a result, CardBus multifunction cards will be simpler to install than their 16-bit PC Card equivalents, and they will have fewer interoperability and compatibility problems.

• Optimized video performance. The CardBus Zoomed Video feature handles streamed video transmissions more efficiently by transferring the data directly to the PC's video controller over a dedicated bus. That way, video doesn't have to compete for bandwidth on the computer's PCI bus. See Card Services and PCMCIA.

CARE Customer Account Record Exchange. A system developed to make easy the exchange of customer account information between the IXC (long distance phone company) and the LEC (local phone company) to make easy the provisioning of telecom services. CARE generically identifies data elements that might be exchanged between the IXC and LEC in an industry format. It is intended to provide a consistent definition and data format for the exchange of common data elements. The C.A.R.E. records (kept at the LEC) inform the customer's long-distance provider of changes in the customer's account (i.e., customer has selected Company X as its provider, or has terminated service, etc.)

Caret The symbol ^ which is found above 6 on most keyboards. Also used to indicate the "Ctrl" key in some instruction manuals.

CAROT Centralized Automatic Reporting On Trunks. A test and maintenance facility associated primarily with electronic toll switching systems like the AT&T Communication's #4-ESS. CAROT is a computerized system that automatically accesses and tests trunks for a maximum of fourteen offices simultaneously. It enables rapid routine testing of all trunks to ensure quick identification of faults and potential failures.

CARP Cache Array Routing Protocol. A protocol developed to route client requests to one of a cluster, or array, of proxy servers on which databases are cached from origin Web servers. CARP contains a Proxy Array Membership Table from which an HTTP client agent (i.e., proxy server or client browser) can allocate and intelligently route URL requests to any member. Microsoft has implemented CARP in its proxy servers. See also Client, HTTP, Proxy, Server, and URL.

Carpal Tunnel Syndrome Carpal tunnel syndrome is a serious disorder of the arm caused by fast, repetitive work, such as typing without support for your wrists or with insufficient time for rest. In carpal tunnel syndrome, the tendons passing through the wrist bones swell and press on the median nerve. Surgery to take pressure off the nerve can relieve numbness and pain, but it's not always effective and many victims remain permanently disabled. The best prevention is using a wrist rest and undertaking specific exercises. A lot of "knowledge workers" have claimed that carpal tunnel syndrome is the result of working at computer keyboards all day long, day after day. There is a good book on the subject — Conquering Carpal Tunnel Syndrome by Sharon J. Butler, New Harbinger Publications, Oakland, CA. See also Computer Vision Syndrome.

Carriage Deals Let's say I want to start a new TV channel. Let's call it Harry's 24-Hour All Tennis Channel. I figure out how to fill 24-hours a day, seven days a week with great tennis. Super idea. Now I have my programming. All I need is to get it out there. I have to work "carriage deals" with satellite operators and cable TV operators to get my channel on their network (i.e. to carry my channel on their network) so their customers can see it. There are no "standard" carriage deals. Sometimes the cable TV operator or satellite operator might pay me a flat monthly fee, or a per subscriber fee. Sometimes I will pay them. It all depends on "hot" my programming is.

Carriage Return By hitting this key, the printing head or the cursor on your screen will return to the left hand margin. Usually hitting a Carriage Return or the "Enter" key includes a line feed, i.e. the paper will move up one line or the cursor will drop down one line. "Usually" does not mean always. So check. You can usually correct the problem of not having a line feed with a carriage return by moving a dip switch on the printer, changing one of the parameters of the telecommunications software program (the part where it says something about auto linefeed) or changing the computer's operating system (by doing a "Config" or the like). In most microcomputers, a Carriage Return is equivalent to a "Control M," or ASCII 13. A line feed is a "Control J".

Carried Load 1. A telephone industry definition. Carried load is the usage measured on a circuit group. A circuit has a potential carried load capacity of 36 CCS per hour which is rarely approached because of the idle time between calls.
2. A data networking definition. The traffic that occupies a group of servers on a LAN.

Carried Traffic The part of the traffic offered to a group of servers that successfully seizes a server on a LAN.

Carrier 1. A company which provides communications circuits. Carriers are split into "private" and "common." A private carrier can refuse you service. A "common" carrier can't. Most of the carriers in our industry — your local phone company, AT&T, MCI, Sprint, etc. — are common carriers. Common carriers are regulated. Private carriers are not.
2. An electrical signal at a continuous frequency capable of being modified to carry information. For analog systems, the carrier is usually a sine wave of a particular frequency, such as 1800 Hz. It is the modifications or the changes from the carrier's basic frequency that become the information carried. Modifications are made via amplitude, frequency or phase. The process of modifying a carrier signal is called modulation. A carrier is modulated and demodulated (the signal extracted at the other end) according to fixed protocols. Some of the wideband (i.e. multi-frequency) circuits are also called "carriers." T-1, which typically has 24-channel PCM voice circuits, is known as a carrier system.

Carrier Access Billing System See CABS.

CGA 1. Carrier Group Alarm. A service alarm generated by a channel bank when an out-of-frame (OOF) condition exists for some predetermined length of time (generally 300 milliseconds to 2.5 seconds). The alarm causes the calls using a trunk to be dropped and trunk conditioning to be applied.
2. Color Graphics Adapter. An obsolete IBM standard for displaying material on personal computer screens. The simplest (and conventional) CGA displays 320 horizontal picture elements, known as pels or pixels, by 200 pels vertically. There is also an Enhanced CGA, which is 640 x 400, or 128,000 pixels per screen. Older portables may use CGA monochrome mode. CGA has essentially been obsoleted by VGA. See Monitor and VGA.

CGI Common Gateway Interface. An Internet term. Programs or Scripts, usually executed on the Web server, that perform actions (like searching or running applications) when the user clicks on certain buttons or parts of the Web Screen. CGI actually refers to the pre-defined way in which these programs communicate with the Web Server but has lately come to refer to the programs themselves. The preferred programming language for CGI is PERL. See also CGI-Bin, PERL and Servlet.

CGI-Bin The most common name of a directory on a web server in which CGI programs are stored. The "bin" part of "cgi-bin" is a shorthand version of "binary" because once upon a time, most programs were referred to as "binaries." In real life, most programs found in cgi-bin directories are text files — scripts that are executed by binaries located elsewhere on the same machine.

CGI Joe A Wired Magazine definition. A hardcore CGI script programmer with all the social skills and charisma of a plastic action figure.

CGM Computer Graphics Metafile. A standard format that allows for the interchanging of graphics images.

CGSA Cellular Geographic Service Area. The actual area in which a cellular company provides cellular service. CGSAs are usually made up of multiple counties and often cross state lines.

CGSA Restriction If you own a cellular phone, you are prevented from making calls outside your own local Cellular Geographic Service Area. This restriction is an option that is available to subscribers in most cellular cities.

Chad 1. The little solid round dots of paper made when paper tape is punched with information.
2. CHAnge Display.

Chad Tape Punched tape used in telegraphy/teletypewriter operation. The perforations, called "chad," are severed from the tape, making holes representing the characters.

Chadless Tape 1. Punched tape that has been punched in such a way that chad is not formed.
2. A punched tape wherein only partial perforation is completed and the chad remains attached to the tape. This is a deliberate process and should not be confused with imperfect chadding. See Chad.

Chain Mailboxes Mailboxes that are connected together to provide a service or a number of messages (e.g. Directory, Product Information, etc.).

Chaingang A group of Web homepages which merely link to each other.

Chaining A programming technique linking one activity to another, as in a chain. Each link in the chain may contain a pointer to the next link, or there may be a master control or program instructing the programs to link together.

Chainsaw Consultant An outside "expert" brought in to reduce the employee headcount, leaving the top brass with clean hands and a clean conscience.

Challenge-Handshake Authentication Protocol CHAP. An authentication method that can be used when connecting to an Internet Service Provider. CHAP allows you to log in to your provider automatically, without the need for a terminal screen. It is more secure than the Password Authentication Protocol (another widely used authentication method) since it does not send passwords in text format. An Internet term.

Challenge-Response A type of authentication procedure into a system in which a user must respond correctly to a challenge, usually a secret key code, to gain access.

Channel 1. Typically what you rent from the telephone company. A voice-grade transmission facility with defined frequency response, gain and bandwidth. Also, a path of communication, either electrical or electromagnetic, between two or more points. Also called a circuit, facility, line, link or path.
2. An SCSA term. A transmission path on the SCbus or SCxbus Data Bus that transmits data between two end points.
3. A channel of a GPS (Global Positioning System) receiver consists of the circuitry necessary to tune the signal from a single GPS satellite.
4. A shortened way of saying "distribution channel." Let's say you make a product — hardware or software. You need to have some way of selling it. You can sell it yourself with your own salespeople. Or you can give it to distributors to sell. Such distributors could be wholesalers, small retailers, large retail chains, direct mail catalogs, etc. Each one of these categories is called a "channel." See also channel ready.
5. A Fibre Channel term. A point-to-point link, the main task of which is to transport data from one point to another.

Channel 1 When the FCC first allocated broadcast TV frequencies in 1945 in the United States. Later, the FCC decided that TV was taking up too much broadcast spectrum. Each channel requires a bandwidth 600 times as wide as an individual radio station does. Thus, the Channel 1 band, 44 to 50 MHz, was reassigned for mobile radio use.

Channel Aggregator Also known as inverse multiplexors. Devices that allow very large amounts of data to be sent down the narrow band channels of ISDN. The aggregator effectively pulls together ISDN channels at one end to form a higher bandwidth and then re-synchronizes the information at the other end. Re-synchronization is necessary because during transmission the ISDN channels may send the information along different routes, so it arrives at its destination at fractionally different times.

Channel Associated Signaling CAS. A form of circuit state signaling in which the circuit state is indicated by one or more bits of signaling status sent repetitively and associated with that specific circuit.

Channel Attached Describing the attachment of devices directly to the input/output channels of a (mainframe) computer. Devices attached to a controlling unit by cables rather than by telecommunications circuits. Same as locally attached (IBM).

Channel Bank A multiplexer. A device which puts many slow speed voice or data conversations onto one high-speed link and controls the flow of those "conversations." Typically the device that sits between a digital circuit — say a T-1 — and a couple of dozen voice grade lines coming out of a PBX. One side of the channel bank will be connections for terminating two pairs of wires or a coaxial cable — those bringing the T-1 carrier in. On the other side are connections for terminating multiple tip and ring single line analog phone lines or several digital data streams. Sometimes you need channel

banks. Sometimes, you don't. a bundle of voice conversa another across town in a T-1 ognize the signal — then you nel bank. You'll need a Char or both, of the PBXs is analo bank at the end of the transi take a digital signal. See Cha

Channel Capacity A me: bit rate through a channel, su

Channel Capture A condit MAC layer temporarily becom on a loaded network, thereby tention winner more times thar

Channel Definition announced by Microsoft in M World Wide Web Consortiur open standard for "push" tecl

Channel Efficiency In a the total information that can in a unit of time, accounting disruptions.

Channel Gate A device highway, or a highway to a ch

Channel Hopping A cellu is the process in CDPD of cha channel supporting a CDPD channel on the same cell. Thi sions with voice traffic use of

Channel Identification I or identifies the channel to be

Channel Loopback In diagnostic test that forms a l interface that returns transmi also Loopback.

Channel Mastering A te called Snickelways.

Channel Mode An AT&T cations whereby a fixed bandv or more points on a network a and is rearranged only occas

Channel Modem That pc required to derive a desired s facility.

Channel Packing A tech voice frequency channels use tiplexing a number of lower higher speed data stream for frequency channel.

Channel Queue Limit I buffers used by a station t buffers are always available.

Channel Rate-Adaptal cols tell the ISDN terminal transmission/ reception spec necting device. Europe and protocol. The U.S. uses V.12

Channel Ready A chann "distribution channel." Let's s ware or software. You need to can sell it yourself with you give it to distributors to se wholesalers, small retailers, catalogs, etc. Each one of the

:o the called party, rather than the calling party, vas pioneered in the US in 1966, where it is erically as In-WATS (Incoming Wide Area ications Service), and makes use of the 800, 877 . codes, listed in order of introduction. Freephone is known as Freecall in some countries; outside lialing prefix can be 0800, 0500, or some similar :eding digits.

1as proven particularly popular with business who are often willing to bear the cost of a tele-1 order to promote their services or to encourage 1 order their products by phone. Prior to the rel-t approvals by the ITU-T of Recommendations 152, however, companies have been restricted to reephone number in one country. Those organi-ng to offer products or services to customers on nal basis have had no choice but to register a 1ber in each country, which has proved unwieldy nefficient. The new standard for Universal Freephone Numbers (UIFNs) will encourage the of International Freephone Service (IFS), which free up companies' abilities to operate across markets, benefiting consumers by allowing them ormation or to shop around for goods and ser-1ersonal expense. It is hoped the new standard stimulate the market for Freephone services in Asia-Pacific, regions that until now have been up the service.

I market for the UIFN service is expected to be . The globalization of markets via new technolo-the Internet means that many companies are now their products and services to users in different d will benefit from being able to advertise a sin-1umber to potential customers all over the world. 1ew global market number can also be routed to :tinations, allowing companies to direct their 'Is to the most appropriate location for efficient ee also 800 Service, InWATS, International iervice, and Universal International Freephone

e Communications Radio communications :rowave, satellite and cellular.
Software that doesn't cost anything, but may well as the software you pay for.
Jo more price hikes for three years. That a three 1 prices.
1icture manipulators, the ability to stop or hold a o so that the picture is frozen like a snapshot.
1me The transmission of discrete video picture ata rate which is too slow to provide the percep-ral motion, referred to as "full-motion." An :d, digitized full-motion video signal is typically t many millions of bits per second. Freeze frame d on anything from a simple voice grade phone at 9.6 Kbps (the same speed as a Group 3 fac-1e).
or abbreviation for a "file request" for a file from : in a network. In FidoNet a node user usually rough mailer software which sends an appropri-1 a distant node that has the desired file. Freqing / in FidoNet to transfer files back and forth Ss (bulletin board systems) automatically. file transfer in PCRelay.
e Freq.

Frequency The rate at which an electromagnetic waveform (e.g., electrical current) alternates, usually measured in Hertz. Hertz is a unit of measure which means "cycles per second." So, frequency equals the number of complete cycles of ener-gy (e.g., current) occurring in one second. See Bandwidth, Bandwidth, Frequency and Hertz.

Frequency Agile Modem A modem used on some broadband LANs (Local Area Networks). A frequency agile model can search the frequencies on the LAN to find one avail-able in order to communicate with other attached devices.

Frequency Agility The ability of a cellular mobile tele-phone system to shift automatically between frequencies.

Frequency Band The portion of the electromagnetic spec-trum within a specified upper- and lower-frequency limit. Also known as Frequency Range. See also Band, Frequency for a complete list of all the frequencies.

Frequency Domain Waveforms, such as speech signals, are typically viewed in the time domain, i.e. as power levels or voltages varying over time. The 19th century French mathe-matician Fourier demonstrated an algorithm called "Fast Fourier Transform", or FFT, which can express any complex waveform over a fixed interval as the sum of a series of sine waves of different energy levels. Analyzing signals in the fre-quency domain has proven an extremely powerful technique with diverse applications, including filtering, recognition and speech modeling.

Frequency Diversity A way of protecting a radio signal by providing a second, continuously operating radio signal on a different frequency, which will assume the load when the regular channel fails. Here's another way of saying the same thing: Frequency diversity is a any method of diversity trans-mission and reception wherein the same information signal is transmitted and received simultaneously on two or more independently fading carrier frequencies.

Frequency Division Multiple Access A technique for sharing a single transmission channel (such as a satellite transponder) among two or more users by assigning each to an exclusive frequency band within the channel.

Frequency Division Multiplexing FDM. An older technique in which the available transmission bandwidth of a circuit is divided by frequency into narrower bands, each used for a separate voice or data transmission channel. This means you can carry many conversations on one circuit.

Frequency Frogging The interchanging of the frequency allocations of carrier channels to prevent singing, reduce crosstalk, and to correct for a transmission line frequency-response slope. It is accomplished by having the modulators in a repeater translate a low-frequency group to a high-fre-quency group, and vice versa. Because of this frequency inversion process, a channel will appear in the low group for one repeater section and will then be translated to the high group for the next section. This results in nearly constant attenuation with frequency over two successive repeater sec-tions, and eliminates the need for large slope equalization and adjustment. Also, singing and crosstalk are minimized because the high-level output of a repeater is at a different fre-quency from the low-level input to other repeaters.

Frequency Grease A special kind of radio lubricant that is used to overcome problems of static in radio transmis-sions. Actually, there is no such thing, but every new radio technician falls prey to the joke. It's much like a "pot stretch-er." Ray Horak, my Contributing Editor, was a Mess Sergeant in the US Army. He would send the privates on KP (Kitchen Patrol) to another mess hall to get a pot stretcher if the pot

was too small, or to get a screen door for the refrigerator dur-ing the summer. His buddies in Communications would send the new radio technicians to get some radio grease. It was a lot of fun during the Vietnam War, which was not a lot of fun. It worked only one time per private (usually). See also Bucket o' Dial Tone.

Frequency Hopping Another name for spread spectrum transmission. A technique developed by Hedy Lamarr, the actress, in the early part of the second world war to prevent the enemy from jamming or eavesdropping on conversations and on commands to steer torpedoes, etc. The idea is to hop from one frequency to another in split-second intervals as you transmit information. Attempts to jam the signal succeed only in knocking out a few small bits of it. So effective is the con-cept that it is now the principal antijamming device in the US military. Ms. Lamarr never got paid for the invention. But it was definitely hers. She invented it because of her patriotism for the United States. She had fled Austria in 1937. She received a U.S. patent in 1940. See also Spread Spectrum.

Frequency Hopping Spread Spectrum Spread spec-trum modulation technique that alters the frequency over which a data transmission occurs. Complex algorithms deter-mine the order in which data is sent and received. See also Frequency Hopping and Spread Spectrum.

Frequency Modulation A modulation technique in which the carrier frequency is shifted by an amount propor-tional to the value of the modulating signal. The amplitude of the carrier signals remains constant. The deviation of the car-rier frequency determines the signal content of the message. Commercial TV and FM radio use this technique, which is much less sensitive to noise and interference than is ampli-tude modulation (AM). In the world of modems, digital bit streams can be transmitted over analog facilities through this same technique, whereby a 0 bit might be represented by a high-frequency sine wave (or set of sine waves) and a 1 bit by a low-frequency sine wave (or set of sine waves). Contrast with Amplitude Modulation and Phase Shift Keying.

Frequency Modulation. Native digital bit stream (top) as represented over analog facilities using Frequency Modulation (bottom).
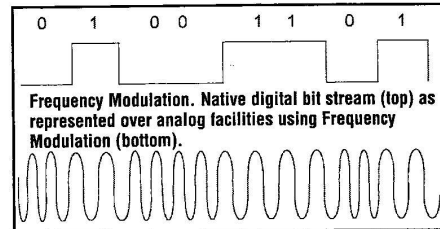
Frequency Offset Non-linear distortion that causes a shift in the frequency of a received signal.

Frequency Response The variation (dB) in relative strength between frequencies in a given frequency band, usu-ally the voice frequency band of an analog telephone line.

Frequency Reuse The ability to use the same frequencies repeatedly within a single system, made possible by the basic design approach used in cellular. Since each cell is designed to use radio frequencies only within its boundaries, the same frequencies can be reused in other cells not far away with lit-tle potential for interference. The reuse of frequencies is what allows a cellular system to handle a huge number of calls with a limited number of channels.

Frequency Shift Keying FSK. A modulation technique for data transmission. It shifts the frequency above the carrier

ID Identifier.

ID Codes ID codes are used to restrict a caller's access type, access location, or calling privileges. ID codes can be either global or access/location specific.

IDA Integrated Data Access or Integrated Digital Access.

iDAB A new Digital Audio Broadcast technology that provides enhanced sound quality, improved reception and new data services for AM and FM radio.

IDAL International Dedicated Access Line.

IDC Insulation Displacement Connection. A type of wire connection device in which the wire is "punched down" into a double metal holder and as it is the metal holders strip the insulation away from the wire, thus causing the electrical connection to be made. The alternate method of connecting wires is with a screw-down post. There are advantages and disadvantages to both systems. The IDC system, obviously, is faster and uses less space. But it requires a special tool. The screw system takes more time, but may produce a longer-lasting and stronger, more thorough (more of the wire exposed) electrical connection. The most common IDC wiring scheme is the 66-block, originally invented by Western Electric. See Punchdown Tool.

IDC Clip IDC Clips are a method of jack termination. They look like a modular jack with a mini 66-block attached to the back. They are usually more expensive than 110-type blocks but are easier to install. See IDC and Punch-Down Tool.

IDCMA Independent Data Communications Manufacturers Association, a lobbying and education group based near Washington, DC.

IDCS Integrated Digital Communications System. A computer located in Sacramento, CA that connects IDTS controllers over a X.25 Packet Switched Network.

IDDD International Direct Distance Dialing. The capability to directly dial telephones in foreign countries from your own home or office telephone.

IDDS Installable Device Driver Server. A Dialogic term.

IDE 1. Integrated Drive Electronics. IDE is a hard disk drive standard interface for PCs. It appeared in 1989 as a low-cost answer to two other standard hard disk interfaces, ESDI and SCSI. The distinguishing feature of the IDE interface is that it incorporates the drive controller functions right on the drive. Instead of connecting to a controller card, an IDE drive attaches directly to the motherboard with a 40-pin connector. IDE drives offer a data transfer rate of three megabytes per second, which is not very fast. Several methods of data encryption can be used with the IDE interface, including MFM and RLL. Many laptops use IDE drives. IDE has a limit of 528 megabytes. Enhanced IDE drives, which appeared around 1994 to solve the problem that computers had gotten much faster and IDE wasn't keeping up, have a data transfer rate of between 11 and 13 megabytes per second and can handle drives of up 8.4 gigabyte. See Enhanced IDE.

2. Integrated Development Environment. A term for products such as Microsoft's Visual C++ and Borland's Delphi that combine a program editor, a compiler, a debugger, and other software development tools into one integrated software package. The first of the IDEs, Borland's Turbo Pascal changed the way programmers write code by allowing programs to be edited and compiled within the same application.

IDEA 1. International Data Encryptions Algorithm. A secret key encryption algorithm developed by Dr. X. Lai and Professor J. Massey in Switzerland to replace DES.

2. Internet Development & Exchange Association, formed in 1995 and developed as part of a capstone MBA strategy project at West Virginia University to address the ever increasing competitive nature of the ISP market. Today, IDEA claims to be the largest trade association of independent Internet Service Providers (ISPs) in the world. www.auidea.org

iDEN Integrated Dispatch Enhanced Network. A wireless technology developed by Motorola, iDEN operates in the 800 MHz, 900 MHz and 1.5 GHz radio bands; the 900 MHz development is aimed at operators of digital Commercial Mobile Radio Service (CMRS), also known as ESMR (Enhanced Specialized Mobile Radio). iDEN is a digital technology using a combination of VSELP (Vector Sum Excited Linear Prediction) and 16QAM (Quadrature Amplitude Modulation) for compression, and TDMA (Time Division Multiple Access) over frequency channels of 25 kHz. Through a single proprietary handset, iDEN supports voice in the form of both dispatch radio and PSTN interconnection, numeric paging, SMS (Short Message Service) for text, data, and fax transmission. See also ESMR, QAM, SMS, TDMA, and VSELP.

Identification Failure Automatic Number Identification (ANI) equipment in the originating office failed to identify the calling number. See ANI.

Identified Outward Dialing Same as AIOD. It's a PBX feature which provides identification of the PBX extension making the outward toll calls. This identification may be provided by automatic equipment or by attendant identification of the extension.

Identifier The name of a database object (table, view, index, procedure, trigger, column, default, or rule). An identifier can be from 1 to 30 characters long.

IDF Intermediate Distribution Frame.

IDLC See Integrated Digital Loop Carrier.

Idle 1. Not being used but ready.

2. An SCSA term. A state of the SCbus or SCxbus Message Bus where no information is being transmitted and the bus line is pulled high.

Idle Cell An ATM cell used for cell stuffing where rate adaption is required. As Physical Layer cells, idle cells are required and cannot, therefore, be replaced by assigned cells during the process of cell multiplexing; this is unlike Unassigned Cells, which are not necessary at a network level and which can be replaced, therefore. See also ATM Reference Model, Physical Layer, Rate Adaption and Unassigned Cell.

Idle Channel Code A repetitive pattern (code) that identifies an idle channel.

Idle Channel Noise Noise which exists in a communications channel when no signals are present.

Idle Line Termination An electronic network which is switch controlled to maintain a desired impedance at a trunk or line terminal when that terminal is in an idle state.

Idling Signal Any signal that indicates no data is being sent.

IDN Integrated Digital Network.

IDNE Integrated Digital Network Exchange.

IDNX International Data Exchange Network.

IDP InterDigital Pause.

IDR Intermediate Data Rate.

IDS Internal Data Services.

IDSL A developing xDSL technology which uses ISDN technology to deliver transmission speeds of 128 Kbps on copper loops as long as 18,000 feet. IDSL is a dedicated service for data communications applications, only; whereas ISDN is a circuit-switched service technology for voice, data, video and multimedia applications. IDSL terminates at the user premise on a standard ISDN TA (Terminal Adapter). At the LEC CO, the loop terminates in collocated ISP electronics in the form of

either an IDSL
nected to a rou
POP via a high
ADSL, ISDN, H
IDSU Intelliger
IDT 1. Inter-D›
2. Inter-Machin
IDTS Integrated
allows the user
1 Circuits, rem
IDTV Improv
Definition Telev
IDU 1. Interface
to/from the upp
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much of which i
are in a position
bandwidth they
you have an IRL
IE Incoming Exc
IEC 1. InterExc
IntereXchange C
mon carrier auth
missions betwee
his brother who
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Except for AT&T
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2. International
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computing stand
LANs — e.g. the
IEEE 1394 Also
that supports up
The bus can be
supports both as\

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:am PSAP (Public Service Answering Position), it is it that the caller never be left in disconcerting silence. it is an emergency call. "No hold" features allow the ce or transfer to be done while the PSAP 911 agent uninterrupted communication with the caller.

oming Calls A cell phone carrier restriction that incoming calls to the assigned cellular number. Only j calls are permitted. This is an optional feature that llular phone users subscribe to because it saves them n North America, calls coming into a cell phone typ-st the user a per minute charge that is equal to the in outgoing call. This not the case in most GSM cell /stems in Europe, Japan and Australia, etc.

e Preference Requires the user to manually select ch down) a line for each call.

Instruction that does nothing. It is used to hold the future insertion of a machine instruction.

National Oceanic and Atmospheric Administration. A rnment agency which runs satellites used, inter alia, wildlife movements. Two satellites, called NOAA-11 ,A-12, orbit the earth via the poles every 100 minutes. :arth revolves beneath them, they are able to scan int on its surface. The satellites work by listening for pler Shift" in the signal being transmitted by a collar i animal's neck. The shift is a change in the perceived y of the radio signal — similar to what a pedestrian ppen to the pitch of a police siren as the police car iy. Using this technique, you can track animals to with acy of a little more than half a mile, or one kilometer. Network Operations Business Information System. twork Operations Center, a group which is responsi-e day-to-day care and feeding of a network. Each ser-vider usually has a separate NOC, so you need to ich one to call when you have problems. Also called Network Control Center.

:twork Outward Dialing. A service feature of an auto-' switched telephone network that allows a calling lial directly all user numbers on the network without intervention. See also Direct Outward Dialing.

Architectures Also called Hub architectures. :twork architectures means that network traffic from :ations are connected into a single network site for ation and aggregation to higher speed circuits. The then transmitted from this hub site to a central net-:, or to other hub sites. Nodal architectures save)ut also increase the risk of a single network failure multiple network locations.

Attribute A nodal state parameter that is consid-vidually to determine whether a given node is accept-/or desirable for carrying a given connection.

Clock The principal clock or alternate clock located cular node that provides the timing reference for all ictions at that node.

Constraint A restriction on the use of nodes for :ction for a specific connection.

ID Another name for a MAC address. Every Network Card (NIC) has a MAC address hardcoded into it. ress is unique in all the world to that NIC card. The Jress effectively identifies the LAN-attached device :h it is associated. A NIC works with the network soft-computer operating system to transmit and receive s on the network. I first saw the use of the term Nodal ructions to instal a PCMCIA network card into a lap-ing Windows NT. Those instructions asked you for

the card's nodal ID, which happened (though I didn't know it) to be printed on the card itself. I had never run into this prob-lem because Windows for Workgroups, Windows 95 and Windows 98 automatically recognize the MAC address whenver you install a PCMCIA network card in a laptop ru See Network Interface Card.

Nodal Metric A nodal parameter that requires the values of the parameter for all nodes along a given path to be combined to determine whether the path is acceptable and/or desirable for carrying a given connection.

Nodal State Parameter Information that captures an aspect or property of a node.

Node 1. A point of connection into a network. In multipoint networks, it means it's a unit that's polled. In LANs, it's a device on the ring. In packet switched networks, it's one of the many packet switches which form the network's backbone. 2. An SCSA term. An independent SCSA unit in a distributed processing SCSA network, consisting of one or more resource and/or network boards, and one or more SCxbus adapter boards. Communication between nodes take place via the SCxbus. From a device programming point of view, a node is simply an addressable system unit which contains boards connected by an SCbus. See S.100.

Node Address The unique identifier used to describe a specific node. See Node Number.

Node Number A node number identifies a network board on a local area network. Every station on a network must con-tain at least one network board. Each network board must have a unique node number to distinguish it from all the other network boards in that network. In a file server with more than one network board, the node number in LAN A is designated for all traffic addressed to that server. Node numbers can be set in a variety of ways, depending on which network board you use: (1) with jumpers or switches on boards such as Arcnet, (2) at the factory for Token-Ring and Ethernet boards, or (3) with software.

Node Type In IBM's SNA, the classification of a network device based on the protocols it supports and the network addressable units (NAUs) it can contain. Type 1 and Type 2 nodes are peripheral nodes. Type 4 and 5 nodes are subarea nodes.

NOI Notice Of Inquiry. The first public notification that the FCC is about to hold a public inquiry into a particular subject.

NOIS Microsoft has coined the term, NOIS, for the group of four Net-centric companies that tend to believe that what hap-pens on the Internet might be so strong as to alleviate Microsoft's hegemony over the PC industry. The four mem-bers are Netscape, Oracle, IBM and Sun.

Noise Unwanted electrical signals introduced into telephone lines by circuit components or natural disturbances which tend to degrade the performance of the line. Also known as Line Noise.

Noise Cancelling Headset manufactures have long sought to reduce the background noise transmitted via headsets. One approach is the use of noise cancelling microphones. These microphones consist of two separate microphones, one direct-ed at the headset user's mouth, the other in the opposite direc-tion. The room side element will pick up ambient room noise along with some ambient user sound. The microphone direct-ed at the user will receive the same amount of ambient room noise as the other microphone, but a much greater amplitude of the user's voice. Both signals are then transmitted to the amplifier. At this point, signals common to both microphones

are cancelled out. What remains is the extra voice signals received by the user side microphone. This signal is then amplified and transmitted to the party on the receiving end of the call. This approach has one drawback. It demands perfect microphone positioning, because without it, the headset user's voice is cancelled. The technology works well with highly-trained people such as pilots, astronauts, and military person-nel, but can be difficult to implement in the office environment where less skilled personnel struggle to properly position sen-sitive microphones. Headset manufacturers compromised by using noise cancelling microphones with more limited capa-bilities but that were easier to use.

A second approach to noise reduction is the use of voice switching technology. This technique only allows the micro-phone to transmit when volume reaches a predetermined level. When the headset user is not talking, or is pausing dur-ing the conversation, no sound is transmitted. When the headset user speaks at a normal level, the microphone is "live" and will transmit in a normal fashion. This approach also has it drawbacks. When the microphone is "live" it picks up not only the voice of the person using the headset, but any and all background noise. Voice switching helps the headset user hear what is being said more clearly, but does little to help the person to whom they are talking.

As a solution, some headset manufacturers have merged the two technologies. By using a noise cancelling microphone and voice switching, they achieve near perfect noise reduc-tion. Each manufacturer offers noise cancelling technology on some of their headsets.

Noise cancelling is important in a telephone call center. In a large center, as room noise rises, agents speak louder. For those employees, noise is more than just an inconvenience, or a black spot on a professional image, it directly affects pro-ductivity. When conversations must be repeated, call dura-tions increase. Multiply this by enough calls, and staffing and equipment must also be increased. The above information from headset distributor, CommuniTech.

Noise Equivalent Power At a given data-signaling rate or modulation frequency, operating wavelength, and effective noise bandwidth, the radiant power that produces a signal-to-noise ratio of unity at the output of a given optical detector. Information Gatekeepers defines NEP as a measurement in fiber optics that at a given modulation frequency, wavelength, and for a given effective noise bandwidth, the radiant power that produces a signal-to-noise ratio of 1 at the output of a given detector. Some manufacturers and authors, according to Information Gatekeepers, define NEP as the minimum detectable power per root unit bandwidth; when defined in this way, NEP has the units of watts/(hertz) 1/2. Therefore, the term is a misnomer, because the units of power per watts. Some manufacturers define NEP as the radiant power that produces a signal-to-dark current noise ratio of unity. This is misleading when dark-current noise does not dominate, as is often true in fiber systems.

Noise Figure NF. The ratio (in dB) between the signal-to-noise ratio applied to the input of the microwave component and the signal-to-noise ratio measured at its output. It is an indication of the amount of noise added to a signal by the component during normal operation. Lower noise figures mean less degradation and better performance.

Noise Floor The lowest input signal power level which will produce a detectable output signal from a microwave compo-nent, determined by the thermal noise generated within the microwave component itself. The noise floor limits the ulti-

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Tone An audio signal consisting of one or more superimposed amplitude modulated frequencies with a distinct cadence and duration. See Tone Set and Tones.

Tone Alternator A motor-driven AC generator that produces audio-frequency tones.

Tone Dial What the Australians call tone dial, Americans call touchtone. Tone dial or touchtone dial makes a different sound (in fact, a combination of two tones) for each number pushed. The correct name for tone dial is "Dual Tone MultiFrequency" (DTMF). This is because each button generates two tones, one from a "high" group of frequencies — 1209, 1136, 1477 and 1633 Hz — and one from a "low" group of frequencies — 697, 770, 852 and 841 Hz. The frequencies and the keyboard, or tone dial, layout have been internationally standardized, but the tolerances on individual frequencies vary between countries. This makes it more difficult to take a touchtone phone overseas than a rotary phone. You can "dial" a number faster on a tone dial than on a rotary dial, but you make more mistakes on a tone dial and have to redial more often. Some people actually find rotary dials to be, on average, faster for them. The design of all tone dials is stupid. Deliberately so. They were deliberately designed to be the exact opposite (i.e. upside down) of the standard calculator pad, now incorporated into virtually all computer keyboards. The reason for the dumb phone design was to slow the user's dialing down to the speed Bell central offices of early touch tone vintage could take. Today, central offices can accept tone dialing at high speed. But sadly, no one in North America makes a phone with a sensible, calculator pad or computer keyboard dial. On some telephone/computer workstations you can dial using the calculator pad on the keyboard. This is a breakthrough. It is a lot faster to use this pad. The keys are larger, more sensibly laid out and can actually be touch-typed (like touch-typing on a keyboard.) Nobody, but nobody can "touch-type" a conventional telephone tone pad. A tone dial on a telephone can provide access to various special services and features — from ordering your groceries over the phone to inquiring into the prices of your (hopefully) rising stocks.

Tone Disabling A method of controlling the operation of communications equipment by transmitting a certain tone over the phone line.

Tone Diversity A method of Voice Frequency Telegraph (VFTG) Transmission wherein two channels of a 16-channel VFTG carry the same information. This is commonly achieved by twinning the channels of a 16-channel VFTG to provide eight channels with dual diversity.

Tone Generator A handheld device which puts a tone on a cable. The tone is picked up with an inductive amplifier at connection points or the other end of the cable. Slang for the tool is Toner. See Inductive Amplifier and Tone Probe.

Tone Probe A testing device used to detect signals from a tone generator to identify phone circuits, often the size of a fat pencil or skinny banana. Some models contain speakers; others must be used with a headset or a butt set. See also Tone Generator.

Tone Ringing Either a steady or oscillating electronic tone at the phone to tell you someone is calling.

Tone Sender 1. A printed circuit card in Rolm CBX which supplies the data bus with the digital representations of the following tones: dial, ring, busy, error, howler (off-hook timeout) and pulse (after flashing).
2. A printed circuit card which generates the following tones: dial, ring, busy, error, howler (off-hook timeout) and pulse (after flashing).

Tone Set A collection of tones which are customarily used as a set for the purposes of call setup and teardown (e.g., DTMF, R1 MF, R2 MF). In the case of DTMF, the tone set can also be used by the client application during the conversation portion of a call.

Tone Signaling The transmission of supervisory, address and alerting signals over a telephone circuit by means of tones. Typically inband. See also Signaling System 7.

Tone To Dial Pulse Conversion Converts DTMF (Dual Tone Multiple Frequency) signals to dial pulse signals when trunks going to carry outgoing calls are not equipped to receive tone signals. A lot of electronic phones with touchtone dials have a sliding switch that allows you to choose whether the phone will outpulse in rotary, or whether it will touchtone out. You choose whichever your trunk line will accept.

Tone/Pulse Switchable Most phones in North America come with a pushbutton dial. Many of these phones have a switch that says "Tone/Pulse." By sliding the switch one way, the pushbutton pad will dial by sending out touchtones. By sliding the switch the other way, the pushbutton pad will dial by rotary pulses. See Rotary Dial.

Toner Tone generator used for identifying cable pairs.

Tones There are four basic tones which you will hear as you use the telephone. These tones are used to indicate what's going on. 1. Dial tone (also called dialing tone in Europe) is typically a continuous low frequency tone of around 33 Hz depending upon the telephone company. It indicates that the line is ready to receive dialing. 2. Busy Tone when the line or equipment is in use, engaged or occupied. This is typically 400 Hz 0.75 sec on and 0.75 sec off. 3. Ring Tone is typically 133 Hz make and break 0.4 sec On: 0.2 sec Off: Indicates called line is ringing out (17 Hz intermittent applied at called end to operate the telephone bell or buzzer). 4. Number Unobtainable continuous at 400 Hz indicates out of service or temporarily suspended. Tones vary considerably from country to country and between telephone companies.

Tonnage The unit of measurement used in air conditioning systems to describe the heating or cooling capacity of a system. One ton of heat represents the amount of heat needed to melt one ton (2000 lbs.) of ice in one hour. 12,000 Btu/hr equals one ton of heat. My office is on a 5,000 square foot floor. We use a ten ton air conditioner. It works most days. I wouldn't put more in. It would be a waste.

Tool In some computer languages, a small program executed as a shell command. In other computer languages, such as BASIC, it is called a "utility."

Toolbar A series of shortcut buttons providing quick access to commands. Usually located directly below the menu bar. Not all windows have a toolbar.

Toolkit A Dialogic word for an Applications Generator.

Toolkit Developer Program A strategic alignment by Dialogic with suppliers of voice processing applications development software to provide high-level application development tools.

Tone Dialing Same as touchtone dialing. See Touchtone.

TOP Technical Office Protocol. A version of the Open Systems Interconnection (OSI) model for use in the non-shop floor environment, i.e. in the office, developed by Boeing, the people who make the planes. TOP was designed from the outset to be compliant with the ISO OSI seven-layer model. Development has been merged with MAP, and the two functional profiles share a common integration strategy, and have a single (MAP/TOP) user group.

Top Down This is a method of distributing incoming calls to a bunch of people. It always starts at the top of a list of agents and proceeds down the list looking for an available agent. See also Round Robin and Longest Available.

Top Level Domain A certain segment of a network in the Transmission Control Protocol/Internet (TCP/IP) UNIX environment. A network is segmented into a hierarchy of domain or groupings. In the Internet in the United States, there are several top-level domains: com (commercial organizations), edu (education organizations), gov (government agencies), mil (Military, milnet hosts), net (networking organizations), and org (non-profit organizations). The next lower level relates to specific companies, and the level below to devices within a company.

Topology Network Topology. The configuration of a communication network. The physical topology is the way the network looks. LAN physical topologies include bus, ring and star. WAN physical topology may be meshed, with each network node directly connected to every other network node, partially meshed. The logical topology describes the way the network works. For example, a 10Base-T LAN looks like a star, but works like a bus.

Topology Aggregation The process of summarizing and compressing topology information at a hierarchical level to be advertised at the level above.

Topology Attribute A generic term that refers to either a link attribute or a nodal attribute.

Topology Constraint An ATM term. A topology constraint is a generic term that refers to either a link constraint or a nodal constraint.

Topology Database As an ATM term, it is the database that describes the topology of the entire PNNI routing domain as seen by a node.

Topology Metric A generic term that refers to either a link metric or a nodal metric.

Topology State Parameter A generic term that refers to either a link parameter or a nodal parameter.

TOPS 1. Traffic Operator Position System. A specialized console designed for telephone company operators to help them complete toll calls.
2. A computer operating system, which originally stood for the transcendental operating system.
3. The operating system used by Digital Equipment Corp DECSYSTEM-10 and DECSYSTEM-20 computers. The computers have been discontinued, but many are still in use.

TOPS MPX Northern Telecom's Traffic Operator Position System designed on a token ring for interface between operator positions and the IBM Directory Assistance system database.

Torn Tape Relay An antiquated tape relay system in which the perforated tape is manually transferred by an operator to the appropriate outgoing transmitter. In short, it's a torn tape relay is a store and forward message switching system which uses punched paper as the storage medium.

TOS Type of Service.

Total Harmonic Distortion The ratio of the sum of powers of all harmonic frequency signals (other than the fundamental) to the power of the fundamental frequency signal. This ratio is measured at the output of a device under specified conditions and is expressed in decibels.

Total Internal Reflection The reflection that occurs when light strikes an interface at an angle of incidence (with respect to the normal) greater than the critical angle.

Total Network Data System. TNDS. A telephone company term. The Total Network Data System is the overall data system for all types of switching equipment.

Total Transaction Call Processing A Rockwell t

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ıks busy, etc.. The types of occurrences measured vary lely according to the type of system.

ıffic Sensitive A telephone company term. Applies to ıipment whose ability to provide a specific level of service ies as the calling load varies.

ıffic Service Position System TSPS. A toll switch-ırd position configured as a push button console.

ıffic Shaping A generalized term for a congestion con-management procedure in which data traffic is regulated ırder that it conform to a specified, desirable behavior pat-ı. Such a behavior pattern may include reduction or elimi-ion of excessive traffic bursts from a LAN as it is present-to a Frame Relay WAN through a router. Such bursts may eed the CIR (Committed Information Rate) and, therefore, marked DE (Discard Eligible). During periods of Frame ay WAN congestion, such bursts may result in discarded nes, which require retransmission. Should the excessively g bursts be transmitted successfully across the Frame ay WAN, surcharges may apply (such surcharges are ısual for U.S. carriers). All things considered, traffic shap-may be the best approach in such a scenario. In an ATM ʼ\ environment, traffic shaping responsibility can be omplished by the ATM switch, which actively would alter traffic characteristics of a cell stream on a VCC (Virtual ınnel Connection) or VPC (Virtual Path Connection). This cedure may serve to reduce the peak cell rate, limit the st length, or minimize the cell delay variation by re-spac-the cells in time in order that traffic flow not congest the tch. This can be particularly important when dealing with g bursts of high priority traffic, as such traffic literally can ıg the rest of the user traffic flow to its knees. See also ʼ\, Committed Information Rate, Discard Eligible, Frame ay, VCC and CPC.

ıffic Table A computer database into which a PBX enters ount of feature activity. Certain detected operating errors also entered in the traffic table.

ıffic Theory The branch of probability theory used to dict how many telephone lines you need for how much fic you are likely to put on the lines.

ıffic Usage Total occupancy of a network. This is calcu-:d a the product of holding time and calling rate and can be ressed as call-hours. Traffic usage may be made up of ny short calls or few long calls — it doesn't matter.

ıffic Usage Recorder A device for measuring and ırding the amount of telephone traffic carried by a group, several groups, of switches or trunks.

ıffic Use Code A telephone company definition. A sys-ı standard two character alpha code designating the type of fic offered to a trunk group. Traffic Use Codes are listed I defined in Section 795-400-100 (Common Language :uit Identification — Message Trunks).

ıil As an ATM term, it is an entity that transfers informa-ı provided by a client layer network between access points ı server layer network. The transported information is mon-ed at the termination points.

ıiler 1. A nonstandard way of standard way of sending ı. Trailers are used on some networks by 4BSD UNIX and ʼe of its derivatives.

ʼ\ block of controlling information transmitted at the end of ʼessage to trace error impacts and missing blocks. Also ʼrred to as a trace block.

ıin The creation of word reference data by presenting ʼds to a recognizer. A voice recognition term.

ıining A feature of some modems which adjust to the

conditions including amplitude response, delay distortions, timing recovery, and echo characteristic, of a particular telecommunications connection by a receiving modem. See Training Up.

Training up A technique that adjusts modems to current telephone line conditions. The transmitting modem sends a special training sequence to the receiving modem, which makes necessary adjustments for line conditions.

Transaction 1. It is a completed event that can be assem-bled in chronological sequence for an audit trail.
2. An entry or an update in a database.

Transaction Capabilities Function that controls non-circuit-related information transfer between two or more nodes via a SS7 signaling network.

Transaction Capabilities Application Part TCAP. The application layer protocol of SS7. Transaction capabilities in the SS7 protocol are functions that control non-circuit related information transferred between two or more signaling nodes. Definition from Bellcore in reference to its concept of the Advanced Intelligent Network.

Transaction Detail The detail of a transaction record.

Transaction Internet Protocol TIP. The Transaction Internet Protocol protocol ensures that multivendor transac-tion monitors will work with one another to complete transac-tions over the Internet (RFC 2371). TIP came from a joint Microsoft/Tandem effort. I excerpted the following from a Microsoft Market Bulletin.

Two companies (Microsoft and Tandem) team have combined to publish a specification for a two-phase commit protocol to make it easier for businesses to do transaction processing across the Internet. Two-phase commit is the commonly-used application protocol used by high-end system software — including Transaction Processing (TP) Monitors and databas-es — to coordinate the work of multiple applications on dif-ferent computers as a single unit, or transaction. Businesses want to link existing transaction processing systems together across the Internet using two-phase commit protocols, but existing implementations of two-phase commit are too com-plex for use on the Internet. TIP is designed to solve this problem, defining a simple protocol that existing vendors of TP Monitors and databases can easily implement into their products, solving the problem of transaction coordination across the Internet. Microsoft will implement TIP in the Distributed Transaction Coordinator (DTC), Microsoft's trans-action manager that first shipped with SQL Server 6.5. DTC currently supports other open two-phase commit protocols, including OLE Transactions, the X/Open's XA protocol, and has future plans to support SNA LU 6.2 Sync Level 2. Windows NT Server 5.0 will provide native support for TIP. Tandem will support TIP in its NonStop systems. Both the ref-erence implementation and the TIP specification can be downloaded directly from www.microsoft.com/pdc or www.tandem.com/menu_pgs/svwr_pgs/svwrnews.htm. Microsoft and Tandem have submitted the TIP specification to the Internet Engineering Task Force, who have published it at http://ds.internic.net/internet-drafts/draft-lyon-itp-nodes-00.txt.

Transaction File A collection of transaction records. A transaction data entry program allows for the creation of new transaction files used to update the data base.

Transaction Link Rockwell's link from its Galaxy ACD to an external computer. See Open Application Interface.

Transaction Tracking Your software keeps track of each transaction as it happens. And if a component of your network fails, your transaction tracking software backs out of the

incomplete transaction. This allows you to maintain your database's integrity. You may, however, lose the single trans-action you were working on when your network got sick.

Transactional Integrity A term that describes how your computing/telecom system handles making sure that the transaction you just made is solid and clean and that the next time you want to get to the results of the transaction you can. "Transactional integrity" becomes critical when you're storing bits and pieces of your transactions on different media, in dif-ferent places. For example, you might want to store your data on a magnetic hard drive and your associated images on a separate optical drive.

Transborder Data Flow TDF. Transborder data flows are movements of machine-readable data across internation-al boundaries. TDF legislation began in the 1970s and has been put into effect by many countries in an attempt to protect personal privacy of citizens. This term has particular meaning as it relates to electronic commerce or EDI and is becomming more and more relevant with the use of the Internet as a means to conduct global business.

Transceiver 1. Any device that transmits and receives. In sending and receiving information, it often provides data packet collision detection as well.
2. In IEEE 802.3 networks, the attachment hardware connect-ing the controller interface to the transmission cable. The transceiver contains the carrier-sense logic, the transmit/receive logic, and the collision-detect logic.
3. A device to connect workstations to standard thick Ethernet-style (IEEE 802.3).

Transceiver Cable In local area networks, a cable that connects a network device such as a computer to a physical medium such as an Ethernet network. A transceiver cable is also called drop cable because it runs from a network node to a transceiver (a transmit / receiver) attached to the trunk cable. See Transceiver.

Transcoder A device that combines two 1.544 megabit per second bit streams into a single 1.544 megabit per second bit stream to enable transmission of 44 or 48 voice conversa-tions over a DS-1 medium.

Transcoding A procedure for modifying a stream of data carried so that it may be carried via a different type of network. For example, transcoding allows H.320 video encoding, car-ried via circuit switched TDM systems to be converted to H.323 so that it can connect with and be transmitted across packet switched ethernet LAN.

Transcriptionist A person who listens to a tape recording and types the words he hears. The word, transcriptionist, derives from the verb to transcribe. The most common employment of transcribers is in the medical industry, where busy doctors talk into tape recorders telling good and bad news of their patients. And even busier transcriptionists type those words into the patient's medical records, or whatever.

Transducer A device which converts one form of energy into another. The diaphragm in the telephone receiver and the carbon microphone in the transmitter are transducers. They change variations in sound pressure (your voice) to variations in electricity, and vice versa. Another transducer is the inter-face between a computer, which produces electron-based sig-nals, and a fiber-optic transmission medium, which handles photon-based signals.

Transfer A telephone system feature which provides the ability to move a call from one extension to another. It is prob-ably the most commonly used and misused feature on a PBX. Before you buy a PBX, check out how easy it is to transfer a