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NEWTON'S TELECOM DICTIONARY

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The Official Dictionary
of Telecommunications,
Networking and the Internet

17th Updated and Expanded Edition
by Harry Newton

NEWTON's TELECOM DICTIONARY

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mission capacity among the digital ports in the circuits. 95% of such transfers will take place within 10 seconds.

CAPC Competitive Access Provider Capacity. The highest possible reliable transmission speed that can be carried on a channel, circuit, or piece of equipment.

Capcode A capcode is a four or seven digit number on either side or rear of the casing of a pager, the type you wear on your belt. This number is a paging system necessity to know how to generate the right sequence of tones to alert the pager. Also spelled cap code.

CAPI Cryptography Application Program Interface. The first API developed (by Microsoft) for encryption programs.

Capout Capout means broken in bad French.

CAPS 1. Code Abuse Prevention System.

2. Competitive Access Providers to the local telephone network i.e., Teleport or Metropolitan Fiber System.

Capsizing When downsizing, rightsizing and upsizing fail. Contributed by Fred Schindler of IBM.

Capstan 1. A flangeless pulley used to control speed and motion of magnetic tape through a recorder or playback unit.

2. A rotating drum or cylinder used for pulling cables by exerting traction upon a rope or pull line passing around the drum.

CAPTAIN Character And Pattern Telephone Access Information Network System. A form of videotext developed in Japan and operated through the public switched telephone network. Displays are on a TV set. It's interactive.

Captain Crunch In the 1960s, boxes of a breakfast cereal called Cap'n Crunch had a promotion. It was a toy bosun's whistle. When you blew the whistle, it let out a nearly precise 2,600 Hz tone. If you blew that whistle into the mouthpiece of a telephone after dialing any long distance number, it terminated the call as far as the AT&T long distance phone system knew, while still allowing the long distance connection to the distant city to remain open. If you dialed an 800 number, blew the whistle and then pressed in a series of tones (called multi-frequency or MF tones) on your "Blue Box", you could make long distance and international calls for free, since the only thing the billing machine at the local telephone company central office knew about was the original toll-free call to the 800 number. It assumed the call was free.

The man who discovered the whistle was John Draper and he picked up the handle of Cap'n Crunch from the Quaker Oats breakfast cereal, Cap'n Crunch. A marvelous account of the exploits of phone phreaks was published in the October 1971 issue of Esquire Magazine. That article described how the Cap'n would call himself (he needed two lines and two phones) — choosing to route the call through Tokyo, India, Greece, South Africa, South America, London, New York and California — to make his second phone next to him ring. He'd have a wonderful time talking to himself, albeit with a round-the-world delay (despite the speed of light) of as long as 20 seconds. Later, AT&T closed the loophole Cap'n Crunch had discovered. AT&T turned from in-band signaling to out-of-band signaling. Cap'n Crunch's legacy (he got put in jail four times during the 1970s) is Signaling System 7, a system of immense benefit to us all. See 2600 Tone, Multi-Frequency Signaling and Signaling System 7.

Captive Effect An effect associated with the reception of frequency-modulated signals in which, if two signals are received on or near the same frequency, only the stronger of the two will appear in the output. The complete suppression of the weaker carrier occurs at the receiver limiter, where it is treated as noise and rejected. Under conditions where both signals are fading randomly, the receiver may switch from one to the other.

Captive Screw Let's say you have a couple of screws at the front of an industrial grade computer. You unscrew the two screws and a panel pops down. You can then get access to something inside the computer. The screw, however, doesn't leave the computer. No matter how much you unscrew it, you cannot remove the screw. It's "captive."

Capture Division Packet Access CDPA. Capture Division Packet Access is a new cellular access, packet-oriented architecture able to support the constant bit rate traffic and variable bandwidth on demand for multimedia traffic. According to the September 1996 issue of the IEEE Communications Magazine, the approach integrates multiple access and channel reuse issues to achieve a high rate of spectral efficiency, and presents general advantages even if used for delay-constrained circuit-oriented traffic. Unlike CDMA and TDMA, wherein the effective data rate of each connection is typically a small fraction of the total radio channel allocated for PCN, the CDPA approach allows each user to access the entire channel, if necessary, for brief periods of time (packet access). Spectrum sharing is accomplished by exploiting the different path losses suffered by the various signals as they

appear at the base stations (the capture effect), with co-channel interference abated through time diversity (colliding users do not successively retry in the same time interval). Results suggest that abating co-channel interference by random transmission may be more effective than spatial isolation at cells using the same channel, as is usual in FDMA/TDMA systems.

Capture Effect An effect associated with the reception of frequency-modulated signals in which, if two signals are received on or near the same frequency, only the stronger of the two will appear in the output. The complete suppression of the weaker carrier occurs at the receiver limiter, where it is treated as noise and rejected. Under conditions where both signals are fading randomly, the receiver may switch from one to the other.

Capture Ratio The ability of a tuner or receiver to select the stronger of two signals at or near the same frequency. Expressed in decibels, the lower the figure, the better.

Car Phone The type of cellular phone that's installed in a vehicle. There are four types of cellular phones being sold today — mobile, transportable, portable and handheld. A car phone (also called a mobile unit) is attached to the vehicle, its power comes from the vehicle's alternator (or battery if the car is not running) and the car phone has an external antenna, which works best if it's mounted in the middle of the highest point of the car and wired directly with no breaks in the wire. Many window-mounted antennas have a break in their wiring. The wiring ends at the inside. There is no electrical connection between the inside of the window and the antenna glued onto the outside of the window. The "connection" is done through signal radiation. In North America, the car phone transmits with a standard three watts of power.

Carbon Block A device for protecting cable from lightning strikes. The carbon block consists of two electrodes spaced so that any voltage above the design level is arced from line to ground. Carbon block protectors are used commonly in both local customer offices and central offices. They are effective, but can be destroyed if high voltage is directly applied — as in a direct strike by lightning. A more expensive, but more effective method of protection is the gas tube. These are glass capsules that are connected between the circuit and the ground. When a voltage higher than the design voltage strikes the line, the gas ionizes and conducts the excess voltage to ground. When the voltage is gone, the protector restores itself to normal. Gas tubes, however, take a tiny time to ionize. This may not be fast enough for very sensitive things, like PBX circuit cards. So gas tube protectors are often equipped with diodes, which clamp the interfering voltage to a safe level until the gas tube ionizes.

Carbon Fiber A strong synthetic material that is low in mass with excellent damping characteristics, used in the manufacture of tonearms.

Carbon Rheostat A rheostat using carbon as the resistance material. See Rheostat.

Carbon Transmitter The microphone of an telephone set from yesteryear which uses carbon granules and a diaphragm. The diaphragm responds to our voice and varies the pressure on the granules and hence, their resistance. If your carbon mike isn't working well, the humidity has got to it. Tap it lightly on your desk and the carbon granules will line up and it will work much better. Carbon microphones are very reliable but are being increasingly replaced with more sensitive electret microphones.

Carbon XMTR See Carbon Transmitter. The carbon XMTR is in the sending part of older telephone hand sets.

Card 1. A printed circuit card, or Printed Circuit Board (PCB). See also Card Cage and Printed Circuit Board.

2. A discrete unit of data specifically designed to be read easily on the small screen of a handheld wireless device such as a cell phone, pager, or PDA (Personal Digital Assistant). A card can be for entering data, displaying data, or listing indexes or available menu options. Packet radio networks generally send a "deck of cards" in a single data packet for reasons of efficiency, as the individual cards are small in terms of byte count.

Card Authorization Center CAC. A computer directly linked to MCI switches for authorization and determination of billing center ID for MCI card calls.

Card Cage A frame in a telephone system or computer for mounting circuit cards, power supply, backplane and other equipment.

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



constraints on the design of cellular switching offices, which are called Mobile Telephone Switching Offices (or MTSOs). First, you have to build many cellular switching sites. That way each phone is close to a cell site. Thus there's always a cell site which can pick up the transmission. Second, because of the closeness of the cell sites, any phone conversation may be simultaneously heard by several MTSOs. As a result, the MTSO constantly monitors signal strength of both the caller and the receiver. When signal strength begins to fade, the MTSO locates the next best cell site and re-routes the conversation to maintain the communications link. The switch from one cell site to another takes about 300 milliseconds and is not noticeable to the user. All switching is handled by computer, with the control channels telling each cellular unit when and where to switch.

The Cellular Mobile Telephone System is a low-powered, duplex, radio/telephone which operates between 800 and 900 MHz, using multiple transceiver sites linked to a central computer for coordination. The sites, or "cells", named for their honeycomb shape, cover a range of three to six, or more, miles in each direction. Their range is limited only by certain natural or man-made objects.

The cells overlap one another and operate at different transmitting and receiving frequencies in order to eliminate cross-talk when transmitting from cell to cell. Each cell can accommodate up to 45 different voice channel transceivers. When a cellular phone is activated, it searches available channels for the strongest signal and locks onto it. While in motion, if signal strength begins to fade, the telephone will automatically switch signal frequencies or cells as necessary without operator assistance. If it fails to find an acceptable signal, it will display an "out of service" or "no service" message, indicating that it has reached the limit of its range and is unable to communicate.

Each mobile telephone has a unique identification number which allows the Mobile Telephone Switching Office (MTSO) to track and coordinate all mobile phones in its service area. This ID number is known as the Electronic Security Number (ESN). The ESN and Telephone Number are NOT the same. The ESN is a permanent number engraved into a memory chip called a PROM or EPROM, located in the telephone chassis. This number cannot be changed through programming as the telephone number can, although it can be replaced. Each time the telephone is used, it transmits its ESN to the MTSO by means of DTMF tones during the dialing sequence. The MTSO can determine which ESN's are good or bad; thus individual numbers can be banned from use within the system. See Cellular Radio.

Cell Tax A reference to the demands that ATM (Asynchronous Transfer Mode) places on bandwidth. ATM is a cell-switching technology which segments a data stream into cells, each of which comprises 48 octets of payload (data) and 5 octets of overhead (control information). Therefore, each cell is approximately 10.4% overhead. ATM signaling adds another 5%-10% in overhead. While ATM is wasteful of bandwidth, its benefits are significant. See also ATM and Cell.

Cell Trace Box Wireless Integration/Interface Device. Also referred to as a "Proctor" box (name of the vendor), Cell Trace Box (US West's name for it), and protocol converter.

Cell Transfer A cellular radio term. Cell Transfer is the procedure of changing the channel stream in use to a channel stream originating at a different cell.

Cellpadding The syntax used to control the "padding" or area around the contents of a table's cell. In HTML tables are used as a layout tool which allows an HTML author to render text and graphics on a Web page in columns and rows. There are many options available with tables and cellpadding is one of them. The syntax looks something like this: ****. This syntax would produce a table with a cellpadding of 5 pixels in width.

Cellphone A British term for a cellular telephone — whether car-based or handheld.

Cells on Wheels Mobile cellular towers that are used temporarily until a permanent tower is operational.

Cellular Data Link Control CDLC is a public domain data communications protocol used in cellular telephone systems. In other words, you can attach a data terminal to a cellular telephone and send and receive information. There are more than 5,000 modems using CDLC on the Vodafone Cellular System in the UK, where it is the de facto standard for cellular data communications. Features like improved synchronization field, forward error correction, bit interleaving, and selective retransmission make CDLC ideal for cellular transmissions, according to Millidyne who makes the CDLC modems in the US.

Cellular Digital Packet Data CDPD is an open standard developed by a group of cellular carriers led by McCaw. The specification provides a standard for using existing cellular networks for wireless data transmission. Packets of data are sent along channels of the cellular network. See CDPD for a much more detailed explanation.

Cellular Digital Packet Data Group In the summer of 1993, a group

of cellular carriers that supports the Cellular Digital Packet Data (CDPD) project released the complete - version 1.0 - of its open specification designed to enable customers to send computer data over an enhanced cellular network. According to the group, the packet data approach is ideally suited to those applications that require the transmission of short bursts of data, for example, authorizing a credit card number, exchanging e-mail messages or making database queries. The cellular networks deploying CDPD will enable mobile workers to use a single device to handle all of their voice and packet data needs. The 1.0 specification provides network and customer equipment manufacturers the parameters for building to this nationwide approach that sends packets of data over existing cellular networks. This version of the specification includes input from parties that reviewed the earlier release (0.8 and 0.9) and provides details of the CDPD architecture, airlink, external network interfaces, encryption and authentication, network support services, network applications services, network management, radio resource management and radio media access control. Copies of the specification can be had from CDPD Project Coordinator Tom Salazzo at Pittiglio Rabin Todd & McGrath, 714-545-9400 extension 235.

Cellular Floor Method A floor distribution method in which cables pass through floor cells, constructed of steel or concrete, that provide a ready-made raceway for distributing power and communication cables.

Cellular Geographic Service Area CGSA. The geographic area served by the wireless (cellular) system within which a WSP is authorized to provide service.

Cellular Mobile Radio See Cellular Radio.

Cellular Mobile Telephone Service See CMTS.

Cellular Modem A device that combines data modem and cellular telephone transceiver technologies in a single unit. This allows a user to transfer data on the cellular network without the use of a separate cellular telephone.

Cellular On Light Truck See COLT.

Cellular Phone Service See CMTS.

Cellular Protocols Conventions and procedures which relate to the format and timing of device communications. In data transmission communications, there are currently three major protocols, which are converging into a de facto standard: MNP, SPCL, and PEP.

Cellular Radio A mobile radio system. In the old days, there was one central antenna and everything homed in on that and emanated from it. With cellular radio, a city is broken up into "cells," each maybe no more than several city blocks. Every cell is handled by one transceiver (receiver/transmitter). As a cellular mobile radio moves from one cell to another, it is "handed" off to the next cell by a master computer, which determines from which signal the strength is strongest. Cellular mobile radio has several advantages:

1. You can handle many simultaneous conversations on the same frequencies. One frequency is used in one cell and then re-used in another cell. You can't do this on a normal mobile radio system.
2. Because one cellular system can accommodate many more subscribers than a normal mobile radio system, and therefore because it can achieve certain economies of scale, it has the potential of achieving much lower transmission costs.

3. Because the transceiver is always closer to the user than in a normal mobile system, and the user's radio device thus needs less power, the device can be cheaper and smaller. Cellular radios started at over \$5,000 and are now well under \$500. From the first portable units, weight has already dropped to under one pound. There are several units that will fit in your breast pocket and not overly stretch your suit.

The following are specific cellular radio terms, or general telecom terms that mean something special in cellular radio:

A/B Switch Permits user to select either the wireline (B system) or the nonwireline (A system) carrier when roaming.

Alphanumeric memory Capability to store names with phone numbers.

Call-in-absence horn alert User-activated feature that sounds car horn upon receiving a call.

Call-in-absence indicator Feature that displays what calls came in while user was absent.

Call-in-progress override Insures that power to the phone is not lost if the car's ignition is turned off.

Call restriction Security feature that limits phone's use without completely locking it. Variations might include dial from memory only, dial last number only, seven-digit dial only, no memory access, etc.

Call timer Displays information on call duration and quantity. Variations might include present call, last call, total number of calls, or total accumulated time since last reset. Call-timer beep serves as a reminder to help keep calls brief. It might be set to go off once a minute,

Cellular Radio Switching Office / Central Office Battery

ten seconds before the minute, for example.

Continuous DTMF (touch-tones) Sends DTMF (dual-tone, multi-frequency) tones — also called touchtones — allowing access to voice mail and answering machines that require long-duration tones. “Continuous” means you get the tone so long as your finger is on the button. This may seem obvious to you and me, except that some “modern” phones just give a short tone no matter how long you keep your finger on the touchtone button. **Dual NAM** Allows user to have two phone numbers with separate carriers (see multi-NAM).

Electronic lock Provides security by completely locking phone so it can't be used by unauthorized persons.

Expanded spectrum Full 832-channel analog cellular spectrum currently available to users. **Hands-free operation** Allows user to receive calls and converse while leaving handset in cradle (similar to office speakerphone).

Hands-free answering Phone automatically answers incoming call after a fixed number of rings and goes to hands-free operation.

Memory linkage Allows programming specific memory locations to dial a sequence of other memory locations.

Multi-NAM A cellular telephone term to allow a phone to have more than two phone numbers, each of which can be on a different cellular system if desired. This lets the user register with both carriers in home city, expanding available geographic coverage.

Mute Silences the telephone's microphone to allow private conversations without discontinuing the phone call. Audio mute turns off the car stereo automatically when the phone is in use, and turns it back on when the call is completed.

NAM Numerical Assignment Module. Basically, your cellular phone number, although it refers specifically to the component or module in the phone where the number is stored.

On-hook dialing Allows dialing with the handset in the cradle.

Roaming Using any cellular system outside your home system. Roaming usually incurs extra charges.

Scratch pad Allows storage of phone numbers in temporary memory during a call. Silent scratch pads allows number entry into scratch pad without making beep tones.

Signal strength indicator Displays strength of cellular signal to let user know if a call is likely to be dropped.

Speed dialing Dialing phone number from memory by pressing a single button.

Standby time Maximum time cellular phone operating on battery power can be left on to receive incoming calls.

Talk time Maximum time cellular phone operating on battery power can transmit.

Voice-activated dialing Your cellular phone recognizes your words and dials accordingly. You say “Dial Mom” and it dials mom.

Cellular Radio Switching Office The electronic switching office which switches calls between cellular (mobile) phones and wireline (i.e. normal wired) phones. The switch controls the “handoff” between cells and monitors usage. Different manufacturers call their equipment different things, as usual.

Cellular Switching See Cell Switching.

Cellular Telecommunications Industry Association CTIA. A trade association of cellular and PCS carriers that represents the interests of the wireless telecommunications industry.

Celluplan II A proposed national standard to place packets of data between idle spaces on a cellular voice network.

CELP Code Excited Linear Prediction. An analog-to-digital voice coding and compression scheme used in the transmission of voice over packet data networks. VoFR (Voice over Frame Relay) and VoIP (Voice over Internet Protocol) are excellent examples. CELP, and its several derivatives, depend on a “code book,” which essentially is a binary (digital) description of a set of voice samples. All voice starts out as an analog signal, of course. The first step is the conversion of that analog signal is to convert it to a digital (data) format. This step is accomplished in a codec (coder/decoder) through the use of a standard technique known as PCM (Pulse Code Modulation). PCM involves the sampling of the analog voice stream at very precise points in time. Specifically, PCM involves the sampling of the amplitude (volume level) of the voice stream every 125 microseconds, or every 8,000th of a second. Each sample is converted into an 8-bit byte, which describes its value in digital terms. Now, PCM was designed with digital circuit switching and TDM (Time Division Multiplexing) in mind. Circuit switches provide bandwidth (capacity) on demand, as available, and on a basis which is temporary, exclusive and continuous in nature. Digital circuits such as T-1 rely on TDM, as do digital circuit switches. TDM provides time slots (slots of time) spaced every 8,000th of a second, in consideration of the voice application for which

they were developed. Therefore, from end-to-end and through all of the switches and transmission facilities, PCM-based voice is supported very effectively. But it turns out that PCM is not very efficient. That is to say that voice can be compressed to a considerably greater extent than PCM does. Further, compressed voice can be transmitted quite effectively over packet-switched networks, which certainly are more efficient than their circuit-switched counterparts.

CELP involves the gathering in a buffer of a set of 80 PCM voice samples, representing 10 ms (10 milliseconds, or 1/100th of a second) of a voice stream. Once gathered, the set of voice samples is considered as a block of data. The data block is compressed to remove silence and redundancy, the volume level is normalized, and the resulting smaller data set is compared to a set of candidate descriptions in the codebook. The data transmitted across the network are only the index number of the selected code description, and the average loudness level of the set of samples. Every 10 ms, the code is sent across the network in a block of 160 bits, yielding a data rate of 16 Kbps, which compares very favorably with PCM voice over circuit-switched TDM networks at 64 Kbps. The compression rate is 4:1. At the receiving end of the transmission, the transmitted code is compared to the code book, the PCM signal is reconstructed and, eventually, an approximation of the analog signal is reconstructed. The reproduction is not perfect, but generally is close enough to yield good perceived quality through this process of voice synthesis. The devices which perform these processes of compression and decompression are DSPs (Digital Signal Processors), which include the basic codec function. This definition is courtesy of “Communications Systems & Networks,” a great book written by Ray Horak, who is my Contributing Editor. Since you already have either bought this book, or have borrowed it from a colleague, or have stolen it, let me recommend that you buy Ray's book. Together, his book and this book tell the whole story. See also Circuit Switching, PCM, and TDM. See also the following derivatives of CELP: ACELP, CS-ACELP, LD-CELP and QCELP.

CEMH Controlled Environment ManHole. Environmental control of the CEMH is maintained by a heat pump (a fancy name for an air conditioner — cooler and heater).

CEN Comité Européen de Normalisation (French); the English translation is European Committee for Standardization. CEN is responsible for European standardization in all fields except electrotechnical (CENELEC) and telecommunications (ETSI). Certified products are awarded the CE Mark, signifying that a company has met the applicable essential health and safety requirements and the specific conformity assessment requirements to market its product in the European Union under the “New Approach” directives. CEN membership includes all EU countries, as well as affiliate members including Turkey, Cyprus, and many countries which formerly were members of the Soviet Bloc. Technical committees address standards in the areas of medical informatics, geographic information systems, character set technology for multilingual information, infrastructure, and advanced manufacturing technologies.

CENELEC Comité Européen de Normalisation ELEctrotechnique (French); the English translation is European Committee for Electrotechnical Standardization. CENELEC is responsible for European standardization in the electrotechnical field, working closely with ETSI (telecommunications) and CEN (all other fields). Certified products are awarded the CE Mark, signifying that a company has met the applicable essential health and safety requirements and the specific conformity assessment requirements to market its product in the European Union under the “New Approach” directives. CENELEC is the European technical organization responsible for coordination of standards for safety and electromagnetic emissions for electrical equipment in the European Economic Community (EEC). The EEC is working toward having a uniform set of standards that will apply for all EEC countries. Membership includes all EU countries, as well as affiliate members including Turkey, Cyprus, and many countries which formerly were members of the Soviet Bloc.

Central Office CO. (pronounced See-Oh). Central office is an ambiguous term in North America. It can mean a telephone company building where subscribers' lines are joined to switching equipment for connecting other subscribers to each other, locally and long distance. Sometimes, that central office means a wire center in which there might be several switching exchanges. That means there will be switches, cable distribution frames, batteries, air conditioning and heating systems, etc. But a central office is sometimes simply a single telephone switch, what Europeans call a public exchange. In short, you have to figure out by the context if central office means a building or a switch, or a collection of switches. Simple, eh?

Central Office Battery A group of wet cells joined in series to provide 48 volts DC. Central office batteries are typically charged off the main 120 volts AC. The batteries have two basic functions. 1. To provide a constant source of DC power for eight hours or

netic spectrum and the photon. Fiber optics, cellular telephony, and satellite communications are examples. George Gilder made this term up. It's the name of one of his books. This is his definition.

Telecrats High-ranking telephone company executives who speak more like government bureaucrats than businesspeople. There are many of them.

Teledensity A measure of the number of phone lines per 100 of population. Between 40 and 50 lines per 100 of population indicates pretty good density. Under 10 indicates pretty bad density. Teledensity is a measure of a country's economic development. Over 70 means your country is pretty advanced. Some towns, like Washington, D.C., are over 100. That means there is more than one phone for every person. Whether this means Washington, D.C. is more advanced than other places is an interesting question.

Teledesic Teledesic LLC is a private company which is undertaking to build a global, broadband "Internet-in-the-Sky." Teledesic will deploy a global constellation of 288 LEOs (Low-Earth-Orbiting satellites) plus spares, and will operate in the Ka-band of radio spectrum (28.6-29.1 GHz uplink and 18.8-19.3 GHz downlink). The system is proposed to support millions of simultaneous users, with each having asymmetric, two-way connectivity at rates of up to 2 Mbps on the uplink and up to 64 Mbps on the downlink. The user equipment will be in the form of small (laptop-size) antennae which will mount flat on a rooftop. Teledesic proposes to provide affordable access to a broad array of advanced information services ranging from high-quality voice channels to broadband channels supporting videoconferencing, interactive multimedia and other real-time, two-way digital data applications. Teledesic plans to begin service in the year 2001. Rather than marketing services directly to users, the company will provide an open network for the delivery of such services by others. The Teledesic network will enable local telephone companies and government authorities in host countries to cost-effectively modernize existing communications systems and bring fiber-like services to areas that would never get such capabilities through wireline means. Teledesic was founded in June of 1990 and is headquartered in Kirkland, Washington, near Seattle. The Teledesic vision was created by Craig O. McCaw, founder of McCaw Cellular Communications (now AT&T Wireless), and William H. Gates III, co-founder of Microsoft. Principal investors include McCaw, Gates, Saudi Prince Alwaleed Bin Talal (\$200 million), and Boeing, which is providing the launch vehicles. Motorola and Matra Marconi Space round out the founding industrial team. Latest estimate of the required total investment—a mind-boggling \$9 billion. See also LEO and Ka-band.

Telefax 1. European term for fax.

2. A high-speed, 64 kilobit per second facsimile service that uses Group 4 fax machines and one Bearer channel of an ISDN circuit, or any other 64 Kbps circuit. Group 4 fax machines take about six seconds to transmit a page. They're fast and impressive.

Telefelony Another made-up word from the people who are trying to sell you consulting services. This from Jennifer Poulsen, Consultant, High Road Communications, jpoulsen@highrd.com: "Telco fraud is a big problem, and getting bigger. In 1997, phone companies across North America lost more than \$12 billion in long distance to telefelony, a term that accurately describes one of the biggest issues facing the telephone world. The perpetrators for this crime have been dubbed telefelons. Telefelons hack their way into company phone systems and make lengthy and expensive long distance calls all over the world. They gain access to corporate calling card numbers for the same purpose. They even let friends make such calls from a number where they work. And the damage doesn't stop at the phone system. Once the PBX is hacked, it's merely a conduit to the computer system and a gold mine of valuable data. Here are some facts:

Fraudsters love targeting new competitive carriers first as they know (or hope) the infrastructure is not in place. An average hit by an organized fraud group costs telcos \$350,000 per occurrence (two hits by an organized fraud group could wipe out a new telco's entire yearly profit). A telco's image as a quality service provider is tarnished without fraud protection. Fraud is a cause of customer churn and retaining customers is crucial to the long-term viability of CLECs."

Telegaming Using communications lines — from dial-up through local area networks through WANs — to play games interactively with someone at the other end. The upcoming expected explosion of telegaming is what's driving the growth of DSVD (Digital Simultaneous Voice Data) modems and ultimately the growth of ISDN lines.

Telegram Hard-copy information, in written, printed or pictorial form, routed to the general telegraph service for transmission and delivery to the addressee. Telegrams are dying due to the high cost of delivery.

Telegraph A system employing the interruption of, or change in, the polarity of DC current signaling to convey coded information.

Telegraph Key A type of switch for making and breaking a circuit at will for the purpose of transmitting dots and dashes.

Telegraphy Aging data transmission technique characterized by maximum data rates of 75 bits per second and signaling where the direction, or polarity, of DC current flow is reversed to indicate bit states.

Teleguerilla A term coined by Telecom Australia for "the first wave of informal and unofficially sanctioned telecommuters — those who occasionally work from home with the informal approval of their immediate boss." Says Telecom Australia, "They're the ones whose bosses say, 'I don't care where you work as long as you get the project finished.'"

Telehousing Offering space, security, and environmental controls for equipment owned by various carriers. This allows a telecom giant like a RBOC to rent space to friends and competitors in their Network Access Points and other similar facilities.

Telemanagement A term for the application of computer systems to the management of the telephone and telecommunications expenses of a user organization. Telemanagement includes virtually every function which the contemporary corporate telecommunications manager performs. Ray Horak, my Contributing Editor, says that telemanagement comprises the management of costs, assets, processes and security. Cost management includes call accounting, cost allocation, bill consolidation, and bill reconciliation—costs include usage-sensitive network costs (e.g., long distance calls), nonrecurring costs (e.g., installation and repair), and recurring costs (e.g., circuits and maintenance agreements). Asset management includes the cradle-to-grave management of systems (e.g., PBXs and computer systems), terminals (e.g., phones and PCs), and inside cable and wire systems. Process management includes work order and trouble ticket management, traffic analysis, and network design and optimization. Security management includes the management of toll fraud and network abuse/misuse. Telemanagement systems generally are in the form of premise-based application software systems, which typically are modular. Such systems typically are either PC-based, or client/server (PC-LAN) in nature; very large user organizations make use of mainframe-based systems. Service bureaus also offer telemanagement services, although they tend to be limited to call accounting and cost allocation.

TeleManagement Forum TMF. Previously known as the Network Management Forum (NMF). A global not-for-profit organization of over 250 service providers, computing and network equipment suppliers, software vendors, and customers of communications services. TMF promotes the streamlining and automation of business processes through its SMART TMN (Telecommunication Management Network) program. See also TMN. www.nmf.org

Telecommunications Maintainer The European terms for a company that does not sell or install a business telephone system, but is authorized by the manufacturer to maintain it. This is more common in Europe than in North America.

Telecommunications Management Network See TMN.

Telemarketing Marketing and sales conducted via the telephone. There are two sides to telemarketing — incoming and outgoing. Incoming telemarketing is largely run through 800 toll-free IN-WATS numbers and local FX (foreign exchange) lines. Outgoing telemarketing is organized over OUT-WATS lines. An expanding range of telecom gadgetry is being developed to automate telemarketing — including automated outbound dialers, voice processing technology and automatic call distributors. The tone recognition, voice detection and transaction audiotex and transaction processing capabilities of voice processing gear can be used to enhance all telemarketing applications.

Telemarketing and Consumer Fraud and Abuse Protection Act A Congressional bill passed in August 1994 with the stated purpose of combating the growth of telemarketing fraud. The bill gave law enforcement agencies new tools, and consumers new protections and guidance to help prevent the planned, fraudulent use of the telephone. See Telemarketing Sales Rule.

Telemarketing Sales Rule This rule was adopted by the FTC December 31, 1995 pursuant to the Telemarketing and Consumer Fraud and Abuse Protection Act of 1994. Key provisions require specific disclosures, prohibit misrepresentations, set limits on the times when telemarketers may call customers, prohibit calls after a consumer requests not to be called, set payment restrictions for the use of certain goods and services, and require that specific business be kept for two years. See Telemarketing and Consumer Fraud and Abuse Protection Act.

Telematic Agent TLMA. An X.400 AU (Access Unit) serving Teletex users of other telematic services (using Teletex, Fax, etc.).

Telematics A generic term for a wireless network supporting the collection and dis-

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Telemedicine / Telephone Equipment Order

semination of data. Static, or fixed, applications include SCADA (Supervisory Control And Data Acquisition), which is used in the power utility industry for meter reading and load control (e.g., load shedding). Mobile applications include vehicle tracking and positioning, on-line navigation, and emergency assistance. Probably the best known example is GM's OnStar system, which automatically calls for assistance if the vehicle is in an accident. These systems can also perform such functions as remote engine diagnostics, tracking stolen vehicles, providing roadside assistance, etc. www.onstar.com

Telemedicine The provision of health-care services from a distance using networks supporting audio, video, and computer data transmissions. Telemedicine traditionally uses videoconferencing to diagnose illness and provide medical treatment over a distance. Often used to view or teach surgical procedures. Used also in rural areas where health care is not readily available and to provide medical services to prisoners. At the ICA Show in 1994, Southwestern Bell demonstrated telemedicine applications including a dermatology microscope, a video scope, an electronic stethoscope and a telepathology system that allows a pathologist to exercise computer control over a remote microscope.

Telemetry A communications system for the transmission of digital or analog data which represents status information on a remote process, function or device.

Telemetry, tracking and control TT&C. These three functions control and monitor a group of satellites.

Telemonkey I was given this definition by a fine gentleman, who'd just been given the job of running his company's call center. He was, as you can, quickly disgusted with the quality of the labor he had to manage. He says he didn't make this term up. It's for real. Maybe. Anyway, here goes. A perjorative word for a call center agent. Originally companies staffed their centers with highly educated, well-paid agents who were usually capable of thinking independently when dealing with a customer's inquiry, but now companies have started to replace such staff with less educated, less trained, and lower paid agents who are trained to respond to customers' inquiry by referring to a database help desk, guide book or manual. Hence the idea that monkeys could handle an agent's job.

Telenet A private, commercially available network providing both packet-switched and circuit-switched service to subscribers in North America, Europe and some parts of Asia.

Telenet Remote Login Protocol A virtual terminal-service specified by the U.S. Department of Defense and implemented by most versions of UNIX.

Telenet International Quotations TIQ. A market data information subscription service operated by Telrate International Co. over a network that uses proprietary protocols to enhance security and other functions.

Teleos IRX-9000 Teleos' Intelligent Call Distribution platform. Teleos makes a programmable switch which can be controlled by an external computer. It calls the switch the IRX-9000 and the ability to write software for it, its intelligent call distribution platform.

Teleparents Parents who equip their children with pagers before allowing them to go out.

Telephone 1. The invention of the devil.

2. Telephone in London cockney rhyming slang is dog 'n' bone, bone obviously rhyming with phone. In most cases of cockney the rhyming word is dropped, leaving just dog.

3. The most intrusive device ever invented.

4. The biggest time waster of all time, as in: "What did you do all day?" "Nothing. Just spent the day on the phone."

5. Also a truly remarkable invention. Here are the eight things a telephone actually does.

a. When you lift the handset, it signals you with a dial tone wish to use the worldwide phone system. (The dial tone actually comes from the central office, not the phone. But b. It indicates the phone system is ready for your wish by receiving a tone, called a dial tone.

c. It sends the number of the telephone to be called.

d. It indicates the progress of your call by receiving tones — ringing, busy, etc.

e. It alerts you to an incoming call.

f. It changes your speech into electrical signals for transmission to someone distant. It also changes the electrical signals it receives from the distant person to speech so you can understand them.

g. It automatically adjusts for changes in the power supplied to it.

h. When you hang up, it signals the phone system your call is finished.

And, most remarkably, most simple telephones cost under \$20. See Bell and Bell, Alexander.

Telephone Account Management TAM. A telemarketing/call center term. Using the telephone channel to proactively cover an assigned group of customers with

the objectives of building and retaining revenues from these customer accounts. Most often primary coverage and revenue responsibility lies with the Telephone Account Management team and individual Telephone Account Management Representatives "own" a specific set of accounts within the team. TAM coverage often requires multiple outbound and inbound contacts with assigned customers driven by information uncovered by the TAM Representatives and not by any preset campaign parameters.

Telephone Amplifier A device to amplify the sound of the receiver. Something no phone should be without. Some devices work strictly on line power. They can only increase volume by 10 dB, which is often not enough (especially if you're over 40). The best telephone amplifiers are powered by AC/DC adapters. Newer ones are powered by nicad batteries. They will amplify to 20 dB.

Telephone Answering A feature of some voice mail systems in which incoming callers are immediately directed to the called party's voice mailbox where they hear a personalized greeting in the called party's voice and are prompted to leave a detailed message.

Telephone Channel A transmission path suitable for carrying voice signals. Defined by its ability to transmit signals in a frequency range of about 300 to 3000 Hz.

Telephone Circuit 1. All telephones are made up of just three circuits, The Ringer Circuit, The Mouthpiece Circuit, and the Earpiece Circuit. The ringer circuit and the mouthpiece circuit are connected in parallel. The hookswitch keeps the mouthpiece circuit open whenever the telephone is hung up. The earpiece circuit is coupled to the mouthpiece circuit with a transformer.

The Ringer circuit is across the incoming telephone line pair at all times. The ringer circuit consists of a ringer, some sort of bell or buzzer, and a capacitor. The capacitor serves to block DC current since the telephone company's central office determines whether a phone is on or off hook by measuring the DC resistance across its line pair. To ring the telephone's bell, a high voltage alternating current is sent down the telephone line pair.

The mouthpiece circuit is also referred to as the primary circuit, talk circuit, and DC loop. When the handset is lifted from the cradle to the off-hook position, the hookswitch closes, and creates a closed DC circuit from the central office through the line pair and to the microphone in the handset of the telephone and the primary coil of the transformer that couples the microphone circuit to the earpiece of the phone.

The DC resistance of the mouthpiece circuit is lower than the resistance of the ringer circuit. When the telephone is off hook, the central office detects the change in resistance. When the telephone is off hook, the central office will disconnect the ringing generator so as not to send high voltage down the line to a phone that is in use.

The earpiece circuit is also referred to as the secondary circuit and listen circuit. The last of the three circuits differs from the other two in that it is never directly across the incoming lines. Instead it is coupled to the primary circuit by a transformer. The current in the primary coil of the transformer is modulated by the microphones at both ends of the telephone call. This varying current induces a current in the secondary winding of the transformer. This induced current generates sound from the loudspeaker in the earpiece of the phone.

2. Electrical connection permitting the establishment of telephone communication in both directions between two telephone exchanges.

Telephone Consumer Protection Act TCPA. Legislation passed by Congress and signed by the president in 1991. It restricts specific types of unsolicited telephone calls. Among the provisions were a prohibition on calling emergency numbers or numbers for which the recipient was charged, limiting the placement of unsolicited calls to between 8 am and 9 pm, and removing people from calling lists who request that they not be called again.

Telephone Disclosure and Dispute Resolution Act TDDRA. The federal law that governs the pay-per-call industry, such as 900 number services. It mandates disclosure requirements and outlines the responsibilities of service providers while providing some relief for consumers with disputed charges.

Telephone Drop-in Mouthpiece A telephone drop-in mouthpiece used for bugging looks very much like the carbon microphone in the mouthpiece of a telephone. It is installed by unscrewing the mouthpiece, removing the old microphone, and dropping in the wiretap device. The transmitter draws power from the telephone line and only operates when the telephone is off hook. Both sides of the conversation are picked up and transmitted to a remote location. The telephone line is used as an antenna. Drop-in transmitters are simple to install and hard to detect. They require access to the telephone instrument.

Telephone Equipment Order TEO. TEOs are orders placed by Central Office Engineering for telephone apparatus and equipment. These orders may be telephone com-

tude 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 assembled 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 transaction monitors will work with one another to complete transactions 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 databases — to coordinate the work of multiple applications on different 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 complex 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 transaction 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 reference 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-ntp-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 transaction you were working on when your network got sick.

Transaction Processing A processing method in which transactions are executed immediately when they are received by the system, rather than at some later time as in batch-processing systems. Airline reservation databases and automatic teller machines are examples of transaction-processing systems.

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 different 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 international 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 becoming 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 connecting 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 conversations 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, carried 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 interface between a computer, which produces electron-based signals, 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 probably the most commonly used and misused feature on a PBX. Before you buy a PBX, check out how easy it is to transfer a call. If you have a single line phone, you should simply hit the touch hook, hear a dial tone and then dial the chosen extension number and hang up. This sounds easy in principle, but many people find it difficult since they associate the touch hook with hanging up the phone. Some companies have gotten around this by putting a "hook flash" button on the phone itself. Such a button is like having an autodial button which just makes the exact short tone you make when you quickly hit the hook flash button. An even better solution is an electronic phone with a button specially marked "transfer," or a button next to a screen which lights up "transfer." Failing to efficiently transfer a call is the easiest way to give your customers the wrong impression of your firm. Think of how many times have you called a company only to be told it wasn't the fellow's job and he will transfer the call, but "If we get cut off, please call Joe back on extension 2358." There are typically four types of Transfer: Transfer using Hold, Transfer using Conference, and Transfer with and without Announcement.

Transfer Callback A phone system feature. After a specified number of rings, an unanswered transferred call will return to the telephone which originally made the transfer.

Transfer Delay A characteristic of system performance that expresses the time delay in processing information through a data transmission system.

Transfer Impedance A measure of shield effectiveness.

Transfer Mode A fundamental element of a communications protocol, transfer mode refers to the functioning arrangement between transmitting and receiving devices across a network. There are two basic transfer modes: connection-oriented and connectionless. Connection-oriented network protocols require that a call be set up before the data transmission begins, and that the call subsequently be torn down. Further, all data are considered to be part of a data stream. Examples of connection-oriented protocols include analog circuit-switched voice and data, ISDN, X.25 and ATM.

Connectionless protocols, on the other hand, do not depend on such a process. Rather, the transmitting device gains access to the transmission medium and begins to transmit data address to the receiver, without setting up a logical connection across the physical network. LANs (e.g. Ethernet and Token Ring) make use of connectionless protocols, as does SMDS, which actually is an extension of the LAN concept across a MAN (Metropolitan Area Network). For more detail, see Connection Oriented and Connectionless Mode Transmission.

Transfer Protocols Protocols are all of the packaging "that surround actual user data to tell the network devices where to send the data, who it comes from, and how to

Transmission Sending electrical signals carrying information over a line to a destination. Bellcore says that transmission has the following definitions: (a) Designates a field work, such as equipment development, system design, planning, or engineering, in which electrical communication technology is used to create systems to carry information over a distance. (b) Refers to the process of sending information from one point to another. (c) Used with a modifier to describe the quality of a telephone connection: good, fair, or poor transmission. (d) refers to the transfer characteristic of a channel or network in general or, more specifically, to the amplitude transfer characteristic. You may sometimes hear the phrase, "transmission as a function of frequency."

Transmission Block A group of bits or characters transmitted as a unit, with an encoding procedure for error control purposes.

Transmission Channel All of the transmission facilities between the input (to the channel) from an initiating node and the output (from the channel) to a terminating node. In telephony, transmission channels may be of various bandwidths: e.g. nominal 3-kHz, nominal 4-kHz, or nominal 48-kHz (group). "Transmission channel" should not be confused with the more general term "channel."

Transmission Code A code by which information is sent and received on a transmission system.

Transmission Coefficient The ratio of the transmitted field strength to the incident field strength when an electromagnetic wave is incident upon an interface surface between media with two different refractive indices. In a transmission line, the ratio of the complex amplitude of the transmitted wave to that of the incident wave at a discontinuity in the line. A number indicating the probable performance of a portion of a transmission circuit. The value of a transmission coefficient is inversely related to the quality of the link or circuit.

Transmission Control Category of control characters intended to control or help transmission of information over telecommunication networks. See TCP.

Transmission Control Characters A group of characters used to facilitate or control data transmission. Examples are NAK (Not acknowledge) and EOT (end of transmission).

Transmission Control Protocol TCP. A specification for software that bundles outgoing data into packets (and bundles incoming data), manages the transmission of packets on a network, and checks for errors. TCP is the portion of the TCP/IP protocol suite that governs the exchange of sequential data. In more technical terms, Transmission Control Protocol is ARPAnet-developed transport layer protocol. Corresponds to OSI layer 4, the transport layer. TCP is a connection-oriented, end-to-end protocol. It provides reliable, sequenced, and unduplicated delivery of bytes to a remote or local user. TCP provides reliable byte stream communication between pairs of processes in hosts attached to interconnected networks. It is the portion of the TCP/IP protocol suite that governs the exchange of sequential data. See TCP/IP for a much longer explanation.

Transmission Convergence TC. Transmission Convergence Sublayer, a dimension of the ATM Physical Layer (PHY). See TC.

Transmission Electronics Any of the various devices used in conjunction with different transmission media to convert from one transmission method to another. Transmission electronics devices typically include multiplexing equipment and Asynchronous Data Units.

Transmission Facility A piece of a telecommunications system through which information is transmitted, for example, a multi pair cable, a fiber optic cable, a coaxial cable, or a microwave radio.

Transmission Frame A data structure, beginning and ending with delimiters, that consists of fields predetermined by a protocol for the transmission of user and control data.

Transmission Level The power of a transmission signal at a specific point on a transmission facility. See Decibel.

Transmission Level Point TLP. A designated physical point on a circuit where the transmission level, or amplitude, is measured. Referencing this point in relation to others in the network can determine the performance of the network. See also Level, Loss, and Pad.

Transmission Limit The wavelengths above and below which the fiber ceases to be transparent and therefore, can no longer transmit information.

Transmission Line A coaxial cable or waveguide used for connecting a transmitter to an antenna.

Transmission Loss Total loss encountered in transmission through a system.

Transmission Media Anything, such as wire, coaxial cable, fiber optics, air or vacuum, that is used to carry an electrical signal which has information. Transmission media

usually refers to the various types of wire and optical fiber cable used for transmitting voice or data signals. Typically, wire cable includes twisted pair, coaxial, and twinaxial. Optical fiber cable includes single, dual, quad, stranded, and ribbon.

Transmission Objectives A stated set of desired performance characteristics for a transmission system. Characteristics for which objectives are stated include loss, noise, echo, crosstalk, frequency shift, attenuation distortion, envelope delay distortion, etc.

Transmission Pattern See Radiation Pattern.

Transmission Payload The interface bit rate minus the overhead bits.

Transmission Protocol 0 (TPO) OSI (Open Systems Interconnection) Transmission Protocol Class 0 (Simple Class). This is the simplest OSI Transmission Protocol, useful only on top of an X.25 network (or other network that does not lose or damage data).

Transmission Protocol 4 (tp4) OSI (Open Systems Interconnections) Transmission Protocol Class 4 (error detection and recover class). This is the most powerful OSI Transmission Protocol, useful on top any type of network. TP4 is the OSI equivalent to TCP (Transmission Control Protocol).

Transmission Security Key TSK. A key that is used in the control of transmission security processes such as frequency hopping and spread spectrum.

Transmission Speed Number of pulses or bits transmitted in a given period of time, expressed variably in Bits Per Second (BPS), Words Per Minute (WPM), Characters Per Second (CPS), an occasionally as Lines Per Minute (LPM) in printer transmission. Skilled technologists can translate one to the other.

Transmissive The way many LCD (liquid crystal display) screens on laptops reflect light.

Transmit Bus In AT&T's Information Systems Network (ISN), the circuit on the backplane of the packet controller that transports message packets from sending device interface modules to the switch module.

Transmit Digital Intertie TDI. A 16-channel serial converter which converts the TDM Data Bus from parallel format to serial format for transmission between nodes.

Transmittance The ratio of transmitted power to incident power. In optics, frequently expressed as optical density or percent; in communications applications, generally expressed in decibels.

Transmitter The device in the telephone handset which converts speech into electrical impulses for transmission.

Transmitter Distributor A device in a teletypewriter system which converts the information from the parallel form in which it is used in the keyboard-printer to and from the serial form which it is transmitted on the transmission line.

Transmitter Start Code A coded control character or code sequence transmitted to a remote terminal instructing that terminal to begin sending information.

Transmobile The transmobile (not to be confused with a TRANSPORTABLE) is another type of cellular phone. It is essentially a standard 3-watt mobile unit — without an external battery pack — that can be quickly and easily moved from one vehicle to another. It draws its power from the vehicle's battery via a cigarette lighter plug. See Bag Phone.

Transmultiplexer A device that takes a bunch of voice analog phone conversations and converts them directly into a T-1 1.544 megabit per second bit stream — without the need for de-multiplexing the bunches down to individual conversations, then digitizing them, then bundling them up into a T-1 digital bit stream. A transmultiplexer does it all in one go.

Transparency 1. A data communications mode that allows equipment to send and receive bit patterns of virtually any form. The user is unaware that he is transmitting to a machine that receives faster or slower, or transmits to him faster or slower, or in a different bit pattern. All the translations are done somewhere in the network. He is unaware of the changes occurring — they are transparent. ISDN is planned to be transparent.

Transparency "Transparent Communications" 1. A basic objective of telecommunications systems, to make the transportation of information invisible to the user.

2. In data communications, a suspension of control character recognition in certain systems while information transfer is in progress.

Transparency/Opacity An imaging term. A setting available in many image-processing functions that allows part of the underlying image to show through. 80 percent opacity is equivalent to 20 percent transparency.

Transparent Fine or sheer enough to be seen through. Something that is transparent exists for some reason, but is invisible, or nearly so. In other words, it does not impair or affect the users' operation of the system or feature. In fact, the user need not

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NEWTON'S TELECOM DICTIONARY

The Official Dictionary of Telecommunications, Networking and the Internet

by Harry Newton with Ray Horak contributing editor

17th Updated and Expanded Edition

I wrote this book for those of us in the world's most exciting industries - telecommunications, networking and the Internet. I deliberately didn't write a book that only geeks could understand. I wrote a business book that you and I could understand. I explain technical concepts in non-technical, business language that anyone in business (whether buying, selling or investing) should be able to understand. Some of my definitions are short. Some are encyclopedic. My focus is 100% practical. What the term means. What the technology does. What benefits the technology confers. Which pitfalls to watch for. Use this book in your day-to-day business life. Dip into it before a meeting with a vendor, a customer, a broker or a boss. I've got 19 years in this book. My readers and my contributing editor, Ray Horak, have contributed enormously over the years. By now, all of us have made this dictionary pretty darn good. I'm proud of this edition.



Harry Newton

Harry Newton has 30 years in telecommunications. He founded LAN (now Network) Magazine, the first networking magazine. He founded three leading monthly telecom magazine - Call Center, Computer Telephony, and Teleconnect. He also founded the enormously successful trade show, Computer Telephony Conference and Exposition (CT Expo). He is (of late) a successful angel (early venture capitalist) in tele-

com, networking and Internet ventures. Recently he started a monthly newsletter, Harry Newton's Technology Investor. For a subscription go to www.TechnologyInvestor.com. Newton holds an MBA from the Harvard Business School and an Economics undergraduate degree from the University of Sydney, Australia. He is not an engineer. But he knows enough to be dangerous in front of them. And that, he says, is the ultimate thrill.

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