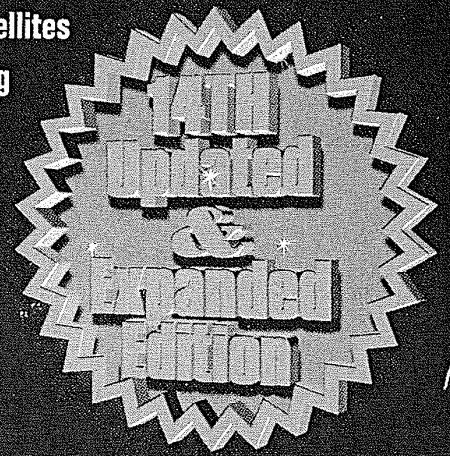# NEWTON'S TELECOM DICTIONARY

The Official Dictionary of Telecommunications & the Internet

◆ IP Telephony ◆ LANs & Intranets ◆ Call Centers & Computer Telephony
◆ Fiber Optics, SONET and DWDM ◆ Satellites
◆ Voice, Data, Image & Video Networking
◆ Wired and Wireless Telecom ◆ VoIP
◆ T-1, T-3, T-4, E-1, E-3 ◆ ISDN & ADSL
◆ Cable Modems ◆ Cellular, PCS & GSM
◆ Windows 95, 98, NT, NetWare, Apple,
Sun & Unix Networking ◆ Ecommerce

14TH Updated & Expanded Edition

by Harry Newton

NEWTON's TELECOM DICTIONARY

execution of an application under development. At the asic level, a debugger lets you look at running machine ind fiddle around with the contents of memory — great understand machine code (and are looking at machine ou've written from scratch). Not great if you don't know he code, or are looking at machine code output by a vel language compiler (e.g., C++ compiler). A basic lic debugger references the symbol table of an exe-, providing readable variable names, function entry, etc., more or less as they appear in source. Easier for ie-language folks (because of the labels). Not much for high-level language folks, because you're still deal-n machine code. A source-level symbolic debugger ref-s both the symbol table of an executable and various roduced during compilation; and lets you work with vel language source directly, during target program on. Fully-integrated debuggers like this are built into oft's Visual/X products. Functions common to most jers include the ability to set "breakpoints" (i.e., run the n until you reach this step, then stop), "watch vari-(i.e., show me how the value of this variable changes l possibly stop if it assumes a predetermined value), -step execution" (i.e., do this step and stop), change values in mid-execution, etc.

olic Language A computer programming language express addresses and instructions with symbols con-to humans rather than machines.

olic Logic The discipline in which valid arguments erations are dealt with using an artificial language d to avoid the ambiguities and logical inadequacies of languages.

ietric Balanced in proportion. In the networked world, tric or symmetrical (either is acceptable) can refer to a balance of bandwidth. For example, ISDN BRI provides tric bandwidth, as each of the two B channels provides s in each direction and the D channel operates at 16 i each direction. Symmetric also can refer to the phys-ology of the network. For example, a point-to-point cir-innects one device directly to one other device. etric, on the other hand, refers to something which is fectly balanced. See the next several definitions. See ymmetric.

etric Connection A connection with the same ith value specified for both directions.

etric Multiprocessing SMP. A type of multipro-in which more than one processor can execute kernel-de at the same time. The degree of symmetry can vary nited, where there is very little concurrency of execu-the theoretically ideal fully-symmetric system where ction can be executed on any processor at any time. ors within the same system share all processes, ig disk I/O, network I/O and memory. Compare to IETRIC MULTIPROCESSING, wherein processors in e or different systems are dedicated to specific tasks, disk I/O, network I/O or memory management. They these tasks from the main system CPU, which gener-responsible for running the operating system. Each or usually has its own dedicated memory. See SMP.

etrical Channel A channel in which the send and directions of transmission have the same data signal

etrical Compression A compression system equires equal processing capability for compression ompression of an image. This form of compression is

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used in applications where both compression and decompres-sion will be utilized frequently. Examples include: still-image databasing, still-image transmission (color fax), video pro-duction, video mail, videophones, and videoconferencing.

Symmetrical Digital Subscriber Line See SDSL.

Symmetrical Pair A balanced transmission line in a mul-tipair cable having equal conductor resistances per unit length, equal impedances from each conductor to earth, and equal impedances to other lines.

Syn, Syn Character, Synchronous Idle In synchro-nous transmission. Control character in character-oriented protocols used to maintain synchronization and as a time-fill in the absence of data. The sequence of two SYN characters in succession is used to maintain synchronization following each line turnaround. Contrast with flag.

Sync 1. Synchronization character.
2. The portion of an encoded video signal that occurs during blanking and is used to synchronize the operation of cameras, monitors, and other equipment. Horizontal sync occurs within the blanking period in each horizontal scanning line, and ver-tical sync occurs within the vertical blanking period.

Sync Bits Synchronizing bits (more properly bytes or char-acters) used in synchronous transmission to maintain syn-chronization between transmitter and receiver.

Sync Generator A video term. A device that generates syn-chronizing pulses need by video source equipment to provide proper equipment or studio timing. Pulses typically produced by a sync generator include subcarrier, burst flag, sync, blank-ing, H & V drives, color frame identification, and color black.

Sync Pulse Timing pulses added to a video signal to keep the entire video process synchronized in time.

Synchronet Service Dedicated point to point and multi-point digital data transmission service offered by BellSouth at speeds of 2.4, 4.8, 9.6, 19.2, 56 and 64 Kbps.

Synchronization 1. A networking term which means that the entire network is controlled by one master clock and trans-missions arrive and depart at precise times so that information is neither lost nor jumbled. For a bigger explanation, see NET-WORK SYNCHRONIZATION and SYNCHRONOUS.
2. An uninterruptible power supply (UPS) definition. Specially designed circuitry is "synchronized" to your AC power outlet to ensure continuity of power. Without this feature, power reversal can occur on the input.
3. A multimedia term. Synchronization is very precise real-time processing, down to the millisecond. Some forms of multimedia, such as audio and video, are time critical. Time delays that might not be noticeable in text or graphics delivery, but are unaccept-able for audio and video. Workstations and networks must be capable of transmitting this kind of data in a synchronized man-ner. Where audio and video are combined, they must be time stamped so that they can both play back at the same time.
4. Start with a database on your server. Now, take a copy of part of it on your laptop — for example, your very own sales leads. Go traveling. Come back in a week. You want to update the database with your changes. But you don't want to destroy other peoples' changes. Some people are calling this "file synchro-nization." Synchronization is a critical part of what is increas-ingly being called "Groupware." See also REPLICATION.
5. A Video term referring to the timing of the vertical and hor-izontal presentation of the multiple still images. Vertical synch prevents the picture from flipping, or scrolling unnat-urally. Horizontal synch keeps the picture from twisting. If both vertical and horizontal are out of synch, the picture looks truly wretched.

Synchronization Bit A binary bit used to synchronize the transmission and receipt of characters in data communications.

Synchronization Bits Bits transmitted from source to destination for the purpose of synchronizing the clocks of the transmitting and receiving devices. The term "synchronization bit" is usually applied to digital data streams, whereas the term "synchronization pulse" is usually applied to analog signals.

Synchronization Code In digital systems, a sequence of digital symbols introduced into a transmission signal to achieve or maintain synchronism.

Synchronization Pulses Bits transmitted from source to destination for the purpose of synchronizing the clocks of the transmitting and receiving devices. The term "synchronization pulse" is usually applied to analog signals, whereas the term "synchronization bit" is usually applied to digital data streams.

Synchronize The word synchronize means "to cause to match exactly." When you're synchronizing, you're causing one file on one computer to precisely match another one on another computer. Why would you want to do this? Let's say you have a database of sales contacts on a file server. One of your salesman takes a copy of his sales contacts with him on his laptop. He travels and makes changes to his contacts. Now he dials into the office via modem and wants to "synchronize" his changed database with the now-changed main database, and make them both the same, i.e. into synch. This process is far more difficult than it sounds because it means allowing for the changes made at the server and by the salesman. You have to set up elaborate rules.
In operating systems, such as Windows NT, the word "syn-chronize" has a narrower meaning. Windows NT instruction manual defines "synchronize" as "to replicate the domain con-troller to one server of the domain, or to all the servers of a domain. This is usually performed automatically by the sys-tem, but can also be invoked manually by an administrator." See also REPLICATE.

Synchronizing Achieving and maintaining synchronism. In facsimile, achieving and maintaining predetermined speed relations between the scanning spot and the recording spot within each scanning line.

Synchronizing Pilot In FDM, a reference frequency used for achieving and maintaining synchronization of the oscilla-tors of a carrier system or for comparing the frequencies or phases of the currents generated by those oscillators.

Synchronous The condition that occurs when two events happen in a specific time relationship with each other and both are under control of a master clock. Synchronous transmission means there is a constant time between successive bits, char-acters or events. The timing is achieved by the sharing of a sin-gle clock. Each end of the transmission synchronizes itself with the use of clocks and information sent along with the transmit-ted data. Synchronous is the most popular communications method to and from mainframes. In synchronous transmission, characters are spaced by time, not by start and stop bits. Because you don't have to add these bits, synchronous trans-mission of a message will take fewer bits (and therefore less time) than asynchronous transmission. But because precise clocks and careful timing are needed in synchronous transmis-sion, it's usually more expensive to set up synchronous trans-mission. Most networks are synchronous these days. See ASYNCHRONOUS and NETWORK SYNCHRONIZATION.

Synchronous Completion A computing domain issues a service request and need not wait for it to complete. If the com-puting domain waits for this completion, this is known as SYNCHRONOUS, but if it is sent off to another system entity

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