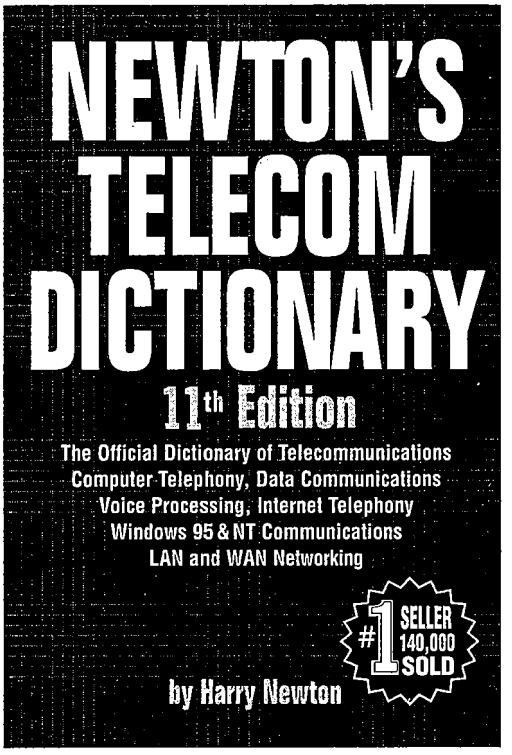
EXHIBIT G

NEWTON'S TELECOM DICTIONARY

11th Edition

The Official Dictionary of Telecommunications
Computer Telephony, Data Communications
Internet Telephony, Voice Processing
Windows 95 & NT Communications
LAN, WAN and Wireless Networking

by Harry Newton



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vates circuit use. The result is clipping of the first bit of the speech, but more efficient use of the transmission facility. TASI is used on expensive circuits, such as long submarine cables. See TASI.

Time Congestion The time resources (outgoing trunks) are busy.

Time Divert To Attendant A system feature which automatically transfers a phone to the attendant if the phone has been left off-hook too long.

Time Diversity A method of transmission wherein a signal representing the same information is sent over the same channel at different times. Often used over systems subject to burst error conditions and with the spacing adjusted to be longer than an error burst.

Time Division Controller TDC. A device which commands functions, monitors status and connects channels of TDM cards.

Time Division Multiple Access TDMA. A technique originated in satellite communications to interweave multiple conversations into one transponder so as to appear to get simultaneous conversations. A variation on TASI. A technique now used in cellular and other wireless communications. See TDMA.

Time Division Multiplex TDM. A technique for transmitting a number of separate data, voice and/or video signals simultaneously over one communications medium by quickly interleaving a piece of each signal one after another. Here's our problem. We have to transport the freight of five manufacturers from Chicago to New York. Each manufacturer's freight will fit into 20 rail boxcars. We have three basic solutions. First, build five separate railway lines from Chicago to New York. Second, rent five engines and schlepp five complete trains to New York on one railway track. Or, third, join all the boxcars together into one train of 100 boxcars and run them on one track. The train might look like this: Engine, Boxcar from Producer A, Box Car from Producer B, Producer C, Producer D, Producer E, and then the order begins again...Boxcar from Producer A, Producer B...Moving one large train of 100 boxcars is likely to be cheaper and more efficient than moving five smaller trains each of 20 boxcars on five separate railway tracks. Time Division Multiplexing, thus, represents substantial savings over have five separate networks (five separate tracks) and sending five separate transmissions (five separate trains).

This is what Time Division Multiplexing is all about. And the analogy is perfect. Take one large train (fast communications channel) and interleave pieces (boxcars) from each conversation one after another. If you do this fast enough, you'll never notice you've broken the conversations apart, moved them separately, and then put them back together at the distant end. In TDM, you "sample" each voice conversation, interleave the samples, send them on their way, then reconstruct the several conversations at the other end. There are several ways to do the sampling. You can sample eight bits (one byte) of each conversation, or you can sample one bit. The former is called word interleaving; the latter bit interleaving. The basic goal of multiplexing — whether it be time division multiplexing, or any other form — is to save money, to cram more conversations (voice, data, video or facsimile) onto fewer phone lines. To substitute electronics for copper. See also the following three definitions.

Time Division Multiplexer TDM. A device which derives multiple channels on a single transmission facility by connecting bit streams one at a time at regular intervals. It interleaves bits or characters from each terminal or device using the time. See TIME DIVISION MULTIPLEX.

Time Division Signaling Signaling over a time division multiplex system in which all voice channels share a common signaling channel, with time division providing the separation between signaling channels. See SIGNALING SYSTEM 7.

Time Division Switching The connection of two circuits in a network by assigning them to the same time slot on a common time division switched bus.

Time Domain Reflectometer TDR. A testing device that acts on radar-like principles to determine the location of metallic circuit faults.

Time Guard Band A time interval left vacant on a channel to provide a margin of safety against interference in the time domain between sequential operations, such as detection, integration, differentiation, transmission, encoding, decoding, or switching.

Time Jitters Short-term variation or instability in the duration of a specified interval.

Time Marker A reference signal, often repeated periodically, enabling the correlation of specific events with a time scale. markers are used in some systems for establishing synchronization.

Time Multiplexed Switch The space switch of which the cross point settings are changed in each time slot.

Time Of Day Display The time and date displays on phones. Actually, it's very useful information. Sometimes it's not displayed on the operator's console. As a result, the operator may never know that every phone in the office is showing the wrong time and date.

Time Of Day Routing 1. This feature automatically changes access to certain types of lines at times when the lines change from being expensive to cheap, or vice versa. For example, it's cheaper to use WATS lines before 8:00 AM in the morning. A company has offices in New York and Los Angeles. It might be cheaper to route calls to Chicago in the morning over the tie lines to LA and then out the LA WATS lines to Chicago, than to go directly out the New York WATS lines. This is a way to allocate bandwidth for LAN traffic over corporate T-1 Networks. By programming T-1 multiplexers, customers can allocate the amount of T1 bandwidth that can be used by voice, data, and LAN traffic on a time of day basis. For example, during the day, most of the T1 bandwidth can be allocated for voice. At night, after employees go home, more bandwidth can be allocated to LAN and other computer data traffic so that file transfers can be done faster. This is particularly useful in IBM mainframe environments where large amounts of data needs to be transferred form remote offices/divisions to the headquarters.

Time Out In telecommunications and computer networks, an event which occurs at the end of a predetermined interval of time is called Time Out. For example if you lift the phone off the cradle and do not proceed to dial, after a certain number of seconds you will hear either a voice telling you to get on with it or a howling sound of some sort. Data networks have the same thing. Don't do anything for x minutes and the system will knock you off the air, i.e. hang up on you. In more technical terms, time out is the amount of time that hardware or software waits for an expected event before taking corrective action. In its most common form, time out is the amount of time an OCC or telephone system waits after your call goes through before it begins billing or timing the call. Also see ANSWER SUPERVISION.

Time Sharing A mode of operation that provides for the interleaving of two or more independent processes on one functional unit. Its most common use is the interleaved use of time on a computing system enabling two or more users to execute computer programs concurrently. Time sharing of computer resources is now relatively obsolete. See also TIMESHARING below.

Time Slice In a multi tasking environment, each task is allotted a portion of the CPU's overall processing power. This portion is called a time-slice. And it's usually measured in milliseconds. The CPU switches between tasks, and those with higher priority receive more time-slices than lower-priority tasks. See TIME SLICING.

Time Slicing The term used to describe the dividing of a computer resource so multiple applications or tasks requesting the resource are

allocated some amount of the resource's time. See TIME SLICE.

Time Slot 1. In time division multiplexing or switching, the slot belonging to a voice, data or video conversation. It can be occupied with conversation or left blank. But the slot is always present. You can tell the capacity of the switch or the transmission channel by figuring how many slots are present.

2. An SCSA term. The smallest switchable data unit on the SCbus or SCxbus Data Bus. A time slot consists of eight consecutive bits of data. One time slot is equivalent to a data path with a bandwidth of 64 Kbps.

Time Space Time System TST. The most common form of switching matrix for small digital telephone exchanges in which a space switch is sandwiched between two time switches.

Time Switch A device incorporating a clock which arranges to switch equipment on or off at predetermined times.

Time Varying Media An SCSA definition. Time-varying media, such as audio data (as opposed to space-varying media, such as image data).

Timed Detection As a substitute for answer supervision, some long distance phone companies use call timing and estimate that a call is completed if the caller remains off-hook for 30 seconds or more. This is not necessarily accurate, of course. The caller might be holding, thinking the person is in the shower, out in the garden, etc. Little does the caller know he is now being charged to listen to ringing signals. A long distance phone company that is "equal accessed" doesn't have this problem. A long distance company that isn't equal accessed — one that you have to dial directly with a local call — might well have this problem. Rule: When in doubt, don't wait too long on the phone listening to endless ringing. Hang up. Count to ten. Then redial.

Timed Purge A feature of interactive voice response systems, especially fax-back systems. If the document isn't requested for x number of days or weeks or if the document ages to a certain point, the system automatically deletes the document.

Timed Recall Your PBX can be instructed to place a call at a designated time. When the time comes, your PBX rings your phone. When you answer your phone, the PBX places the call.

Timed Reminders At 20-second intervals, timed reminders will alert an attendant that a call is still waiting, a called line has not yet been answered or a call is still on hold. Timed reminders can be made longer or shorter. They can alert attendants to all sorts of events and non-events.

Timeout Two computers are "talking." One (for any reason) to respond. The other computer will keep on trying for a certain amount of time, but will eventually "give up." This is called time-out. A time also happens in a single computer. If a device (e.g. a printer) is not performing a task or responding, timeout is the amount of time the computer should wait before detecting it as an error. That period is called time-out.

Timesharing The use of one computer by many users at one time. Each user is typically sitting in front of a data terminal and connected to the master computer through communications lines — local or long distance. The user asks the computer to work on his task, whether it be a simple as looking up some stock prices, checking an airline reservation or doing some accounting calculations. It appears to each user as if he/she has a computer dedicated to his own task, but the computer is large and powerful, and is moving rapidly from one user's task to the next. Timesharing's advantages are twofold:

1. The user may find it cheaper to time share a computer than to buy his own. 2. The computer may have valuable and extensive information in it, which would be virtually impossible to duplicate or handle in many stand-alone computers. Timesharing was more popular when computers were more expensive.

Timing Jitter Deviation of clock recovery that can occur when a receiver attempts to recover clocking as well as data from the received signal. The clock recovery will deviate in a random fashion from the transitions of the received signal.

Timing Recovery The derivation of a timing signal from a received signal.

Timing Signal The output of a clock. A signal used to synchronize connected equipment.

Timing Slip A sudden timing delay change during high-speed digital transmission often caused by using T-1 carriers from different suppliers.

TINA-C Telecommunications Information Networking Architecture Consortium. An international standards body.

Tinned Wire Copper wire coated with tin to make soldering easier.

Tinsel A component of some phone line cord conductors. Tinsel is made by rolling copper into very thin, narrow rolls and then winding several strands of tinsel around a non-metallic core (a string) and then placing an insulating cover over the resulting conductor. A cord is then built up of two or more conductors encased in a plastic jacket. The essential reason for this type of construction is to obtain good cord flexibility and long life.

Tint Another name for hue.

Tip The first wire in a pair of phone wires. The second wire is called the "ring" wire. The tip is the conductor in a telephone cable pair which is usually connected to positive side of a battery at the telephone company's central office. It is the phone industry's equivalent of Ground in a normal electrical circuit. See TIP & RING.

Tip & Ring An old fashioned way of saying "plus" and "minus," or ground and positive in electrical circuits. Tip and Ring are telephony terms. They derive their names from the operator's cordboard plug. The tip wire was connected to the tip of the plug, and the ring wire was connected to the slip ring around the jack. A third conductor on some jacks was called the sleeve. That's it. Nothing more sinister. Nothing more interesting. See TIP, RING & GROUND.

Tip Cable A small cable connecting terminals on a distributing frame to cable pairs in the cable vault.

Tip Conductor The first conductor of a customer line.

Tip Side That conductor of a circuit which is associated with the tip of a plug, or of a telephone circuit.

Tip, Ring, Ground The conductive paths between a central office and a phone. The tip and ring leads constitute the circuit that carries a balanced speech or a data signal. The ground path in combination with the conductor is used occasionally for signaling.

TIPI Telephone Industry Price Index.

TIQ Telrate International Quotations.

TIS Technical Information Sheets.

Titanic On December 21, 1993 Vice President, Al Gore, told the National Press Club in Washington, "There is a lot of romance surrounding the sinking of the Titanic 91 years ago. But when you strip the romance away, a tragic story emerges that tells us a lot about human beings — and telecommunications. Why did the ship that couldn't be sunk steam full speed into an ice field? For in the last few hours before the Titanic collided, other ships were sending messages like this one from the Mesaba: "Lat42N to 41.25 Long 49W to Long 50.30W. Saw