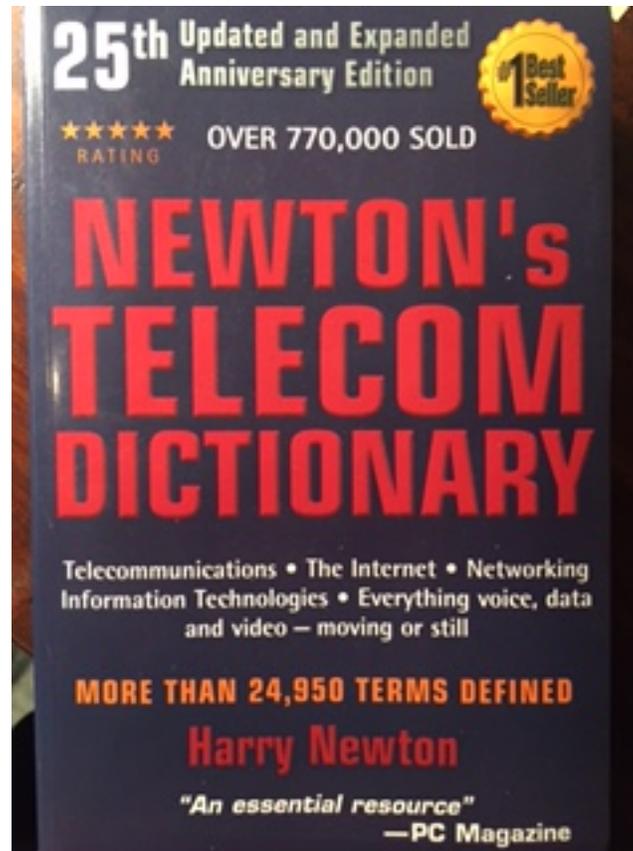


# **EXHIBIT 31**

**Excerpted pages from  
Newton's Telecom Dictionary (25<sup>th</sup> Ed. 2009)**



for the selected coding scheme. For AMI-encoded T-1 signals, 16 or more zeros are excessive. For B8ZS encoded serial data, 8 or more zeros are excessive.

**exchange 1.** Sometimes used to refer to a telephone switching center—a physical room or building. Outside North America, telephone central offices are called “Public Exchanges.”

2. A geographic area established by a common communications carrier for the administration and pricing of telecommunications services in a specific area that usually includes a city, town or village. An exchange consists of one or more central offices and their associated facilities. An exchange is not the same as a LATA. A LATA consists of several adjacent exchanges.

3. A term that refers to one of the Fibre Channel “building blocks,” composed of one or more non-concurrent sequences for a single operation. See Fibre Channel.

**exchange access** In the telephone networks, the provision of exchange services for the purpose of originating or terminating interexchange telecommunications. Such services are provided by facilities in an exchange area for the transmission, switching, or routing of interexchange telecommunications originating or terminating within the exchange area. The Telecommunications Act of 1996 defined exchange access as follows: the offering of access to telephone exchange services or facilities for the purpose of the origination or termination of telephone toll services. See also the Telecommunications Act of 1996.

**exchange area** Geographic area in which telephone services and prices are the same. The concept of exchange is based on geography and regulation, not equipment. An exchange might have one or several central offices. Anyone in that exchange area could get service from any one of those central offices. It's good to ask which central offices could serve your home or office and take service from the most modern. There will be no difference in price between being served by a one-year old central office, or a 50-year old step-by-step central office.

**exchange carrier** Any individual, partnership, association, joint-stock company, trust, government entity or corporation engaged in the provision of local exchange telephone service.

**exchange carrier code** ECC. See company code.

**exchange carriers association** An organization of long distance telephone companies with specific administrative duties relative to tariffs, access charges and payments. See Exchange Carriers Standards Association.

**Exchange Carriers Standards Association** ECSA. According to their literature ECSA is “the national problem-solving and standards-setting organization where local exchange carriers, interexchange carriers, manufacturers, vendors and users rationally resolve significant operating and technical issues such as network interconnection standards and 800 database trouble reporting guidelines. The Association was created in 1983. The major committees sponsored by ECSA are The Carrier Liaison Committee (to coordinate and resolve national issues related to provision of exchange access); the Telecommunications Industry Forum (TCIF) (to respond to the growing need for voluntary guidelines to facilitate the use of new technology that offers cost savings throughout the telecommunications industry—e.g. EDI, bar coding, automatic number identification); and the Information Industry Liaison Committee (IILC) (an inter-industry forum for discussion and voluntary resolution of industry wide concerns about the provision of Open Network Architecture (ONA) services and related matters and Committee T1-Telecommunications (an accredited standards group under ANSI to develop technical standards and reports for US telecommunications networks. In October, 1993, The Exchange Carriers Standards Association (ATIS). It is based in Washington, D.C. See ATIS. www.atis.org.

**exchange facilities** Those facilities included within a local access and transport area.

**Exchange Network Facilities For Interstate Access**  
See ENFIA.

**Exchange Message Record/Exchange Message Interface** EMR/EMI. The standard format used for exchange of telecommunications message information among Local Exchange Carriers for billable,

non-billable, sample, settlement and study data. EMR format is contained in Telcordia Technologies (formerly Bellcore) Publication BR-010-200-010 CRIS Exchange Messaging.

**Exchange Message Record** EMR. Bellcore standard format of messages used for the interchange of telecommunications message information among telephone companies. Telephone companies use EMR to exchange billable, non-billable, sample, settlement and study data. EMR formatted data is provided to all interdepartmental applications and to large customers (users) who request reproduced message records for control and allocation of their communication costs.

**Exchange, Private Automatic Branch** EPABX. A private telephone exchange which transmits calls internally and to and from the public telephone network.

**exchange service** All basic access line services, or any other services offered to customers which provide customers with a telephone connection to, and a unique telephone number address on, the PSTN, and which enable these customers to place and/or receive calls to all other stations on the PSTN.

**Exchange Termination** ET. In Integrated Services Digital Network (ISDN) nomenclature, ET refers to the central office link with the end user.

**excise tax** The long-distance federal excise tax was 3% on long-distance calls. It was originally established in 1898 to finance the Spanish-American War. On May 25, 2006 the U.S. Treasury Department announced that this tax would be discontinued. The Department of Justice will no longer pursue litigation and the Internal Revenue Service (IRS) will issue refunds of tax on long-distance service for the past three years. Taxpayers will be able to apply for refunds on their 2006 tax forms, to be filed in 2007.

**excite** An RFID term. The reader is said to “excite” a passive RFID tag when the reader transmits RF energy to wake up the tag and enable it to transmit back.

**exciting** The most boring and the most over-used word in the whole high-tech world. If I read another press release describing their shiny new product as “exciting,” I’ll puke. If it excites, I’ll get excited. But I don’t need (or want) to be told I’m about to be excited.

**exclude** A memory management command-line option that tells the memory manager in an MS-DOS machine not to use a certain segment of memory. For example, you may exclude upper memory locations D200 through D800 (hexadecimal) because your network adapter card uses that space. The reciprocal term—include—specifically directs the memory manager to use an area of memory.

**exclusion** A PBX feature that prevents the attendant from silently monitoring a call once he/she has extended it.

**exclusion zone** A geographical area where radio transmissions within certain frequency bands are forbidden, in order to avoid interference with sensitive and critical operations, such as U.S. Coast Guard and coastal maritime radio stations and radio observatories.

**exclusive hold** Only the telephone putting the call on hold can take it off. This feature assures that the call on hold will not be picked up by someone at another telephone who can then listen to your call.

**exclusive hold recall** When a call is placed on “exclusive hold” and is not picked up after a predetermined amount of time, you will hear a beeping at that phone, which indicates the call is still on hold.

**exclusive or private unit** A circuit card installed in each key telephone set sharing the same line or intercom path that causes the first caller on the line to lock out (exclude) all other stations from using or listening in, until the line is released (or privacy feature is defeated by the active caller).

**Execunet** An intercity switched telephone service introduced by MCI in 1975. Execunet was the first dial-up switched service introduced by a long distance phone company in competition with AT&T. At that time, all of AT&T's competitors, including MCI, were selling full-time private lines and shared private lines. The service was named by Carl Vorder-Bruegge, MCI's VP marketing at that time and introduced and made successful by Jerry Taylor, who was MCI's regional manager in Texas and is now president of MCI. The service



such as the Commonwealth of North Mariana Islands, Midway/Wake, Guam, and other Caribbean islands. 9xx was assigned by Bellcore to areas covered by Southern New England Telephone (SNET), Cincinnati Bell, and the Navajo Nation (one LATA in Arizona and one in Utah). Since the initial designation of LATAs, a number of subLATAs have been identified, for a variety of reasons.

There are 17 subLATAs in Florida, mandated in 1984 by the Florida Public Utilities Commission for equal access purposes. There are 23 "900" LATAs set aside for places like SNET (CT), Cincinnati Bell (OH), and the Navajo nation (1 in AZ and 1 in UT). Add to that the "800" LATAs for Puerto Rico, the Virgin Islands, the Bahamas, Jamaica, AK, HI, and the various other Caribbean, Atlantic and Pacific Islands and it gets very strange. Most of these are pseudo-LATAs set up by Bellcore for toll routing purposes, especially since many of the island nations were only recently added to the NANP. Equally interesting, if not more so, is the story on the 8xx area codes. There are 8 NPAs in the 8xx range—with 1,298 NXXs—set aside for "non-dialable toll points." These are remote areas served by a cordboard. The subscribers are reached from the cordboard via ring-down circuits.

**LATA Access** Any activity or function performed by a local phone company in connection with the origination or termination of interLATA telecommunications for an IC. This includes, but is not limited to, the provision of network control signaling, answer supervision, automatic calling number identification, carrier access codes, directory services, testing and maintenance of facilities, and the provision of information necessary to bill customers. See LATA.

**LATA Tandem** LT. An LEC switching system that provides an intraLATA traffic concentration/distribution point for end office switching systems or other tandems within a LATA.

**late collision** A networking term. Late collision is an Ethernet collision that takes place on the local segment after 64 bytes of a frame have been placed on the network by the originating device. Late collisions are usually detected only on coax networks, because the 10Base-T monitor station would have to be transmitting at the same time in order to detect a late collision. Late collisions may also be inferred by detecting the presence of a "jam" signal at the end of a frame that is larger than 64 bytes. Note that traditional Ethernet (versus Gigabit Ethernet) specifies a frame size minimum of 64 octets (bytes) and a maximum of 1,514 octets. Also note that a single logical Ethernet may comprise multiple physical segments, with the segments being connected by bridges, hubs, switches or routers. If all of this seems a trite confusing, it's because it is. At some level, however, it's really pretty simple. First, it takes a certain amount of time for a data bit, and certainly a frame of data bits, to propagate (move) across a wire and through all of the intermediate devices that might be involved. The original Ethernet standard specifies big, thick coaxial cable that will support LAN (Local Area Network) communications over a maximum reach of 2.5 kilometers, from one extreme end of the cable to the other. As many as 1,024 devices may be attached, each with a minimum spatial separation of one meter (due to issues of echo, or signal reflection) and with a maximum spatial separation of 500 meters (due to issues of signal attenuation, or power loss). In the most extreme case, therefore, as many as 1,022 devices might be positioned between transmitting device and receiving device. Each device must read the incoming frame of data, determine if it is intended for it, and, if not, pass it on. This process takes some time, and it takes some time for the frame of data to work its way across the wire to the next device, where the process is repeated. Second, Medium Access Control (MAC), or collision control, technique used in Ethernet is CSMA/CD (Carrier Sense Multiple Access with Collision Detection). CSMA/CD allows multiple devices to sense the status of the carrier frequency to determine whether it is "clear" to send a frame of data. Assuming that they sense that it is "clear," they can access the wire at their own option, and at their own risk. If multiple devices access the wire at about the same time, a collision is likely. All attached devices constantly monitor the wire. If a collision is detected, they broadcast a "jam" signal, or collision detection, over a separate subcarrier frequency. All attached devices also monitor the subcarrier frequency, and adjust as necessary, backing off and re-accessing the wire when it becomes available again.

Third, a transmitting device is assumed to be transmitting a series of frames of data. The series of frames is assumed to be associated with the transmission of a set of information, which is organized into frames of certain sizes. Some information, such as a query, are very small. Some sets of information, such as file transfers, are potentially very large, and are fragmented into data frames of as much as 1,500 bytes, plus overhead. The maximum size of a frame is set so that no single transmitting device can lay claim to all of the bandwidth of the network, thereby giving other devices a chance. The minimum size is mandated so that a device can be advised of a collision, and have a chance to adjust in that event, and before it assumes that the first frame was transmitted without collision. When you extend the traditional Ethernet with multiple hubs and switches, you mess with the original concept, and with the physics of signal propagation, which is tuned to network length and the number of attached devices and the processes, all of which are a function of minimum and maximum frame sizes, in consideration of assumptions for the supported applications. It's all very confusing at some level, but seems simple at another. Read this explanation by Ray Horak several times (http://www.ietf.org/rfc/rfc1601.txt).

**late target channel keyup** A cellular term. A condition in which a mobile, caused by link delays between MTSO and target cell site, does not retune to the target cell, noise will be heard on the downlink channel from the target cell, as the assigned voice channel is not on the air (yet).

**latency** A fancy term for waiting time or time delay. The time it takes to get information through a network. Real-time, interactive applications such as voice and desktop conferencing are sensitive to accumulated delay, which is referred to as latency. For example, telephone networks are engineered to provide less than 400 milliseconds (ms) round-trip latency. You can get there in several ways:

1. From propagation delay—the length of time it takes information to travel the distance of the line. This period is mostly determined by the speed of light; therefore, the propagation delay factor is not affected by the network technology in use.

2. From transmission delay—the length of time it takes to send a packet across the given media. Transmission delay is determined by the speed of the media and the size of the packet.

3. From processing delay—the time required by a networking device to do route lookup, changing the header, and other switching tasks. In some cases, the packet also must be manipulated; for instance, changing the encapsulation type, changing the hop count, and so on. Each of these steps can contribute to the processing delay.

4. Rotation delay. The delay in accessing data which comes from a disk for a disk to rotate to the current location.

In a bridge or a router, latency is the amount of time elapsed between receiving and retransmitting the LAN packet. The length of time the packet is stuck in a bridge or router. See Interrupt Latency.

**latency sensitive** Describes a service such as IPTV or VoIP, or an application such as an online game, which becomes severely degraded when there is network latency, i.e. when there are delays sending packets. See latency.

**latent cooling capacity** An air conditioner's capability to remove moisture from the air.

**lateral** A fancy word for a trench. In the parlance of digging up roads in the countryside and laying cable, trenching (i.e. building a trench in which to lay cable) is often called "building laterals." As one way put it, it's where the rubber meets the road as far as enterprise customers go.

**latitude** The distance, expressed in degrees, from the Earth's equator to the points North and South. The equator is assigned the value of 0 degrees, and the North and South poles are 90 degrees.

**lattice tower** A lattice tower is a self supported tower without guy wires. There are generally three types of telecommunications towers: lattice

Straight solid pole, Guy supported, and Lattice. **LATTIS** Local Area T **launch** A new term what might happen is individual lines showing mail documents. You an electronic mail m software and get it software.

**launch fiber** / optical source into a equilibrium mode dis **Laurus Unit A** **LAVC** Local Area V **law of unit** every action, there disproportionate rec **lawful inter**

by law enforcement laws of the land. tion are the Ornit Intelligence Survei Enforcement Act ( laws governing lay States and Europe

**lawful inte** switching centers Mobile Telecomm mobile data traff other words, it's f Wireless operato

network before describes the col the process by w do it. See the pr

**law sale** **LAWRS** Limit **lawsuit** Ac named Russell tion was filed negligence in l to strike her h appear in court

**lawyers** two.—Mark **lay** The len single strand turn about th the process o See lay leng **lay leng** cable. For ex (TPF). See c **layer** See **layer 0** **Layer 1** nizes the co categories i with the ph cal and fun Layer 1 prc

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# EXHIBIT 32

**AT&T correspondence to Sprint counsel  
regarding withdrawal from IUB Docket No.  
SPU-2001-0004 (ATT0000710),  
dated September 28, 2012**

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