

NEWTON's TELECOM DICTIONARY

25th Anniversary Edition

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New York

**ACTIV Exhibit 1011
ACTIV v. IP Reservoir**

25th Anniversary Edition

NEWTON's TELECOM DICTIONARY

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their users to share their lists of friends and similar information with other Web sites. It's called "data portability," and its advocates hope that one day, you'll be able to share all your information, including your searches, with anyone else you want to. The DataPortability Project is a grass-roots advocacy group pushing the idea; some of the biggest tech companies, including Microsoft Corp. and Google Inc., have joined it. According to one of the project's founders, Chris Saad, a good definition of "data portability" is the ability of users to be able choose to share some of their data between the services and being able to do so with peace of mind, security and safety. Why would users want this in the first place? It makes it easier to use multiple services on the Net, and it increases the value of those services. A typical user, according to Saad, might use six or seven services: Gmail, Google Docs, Hotmail, MySpace and/or Facebook and/or Twitter, Yahoo Messenger. If you count all the applications that ask for your user name and password and picture and favorites, it really starts to add up. Each of these applications acts like you have never used another application in your life. But with data portability, when you sign up for a new social-networking service, it will have access to your friends and your profile, assuming you give it permission to.

data protection A means of ensuring that data on the network is safe. Novell's NetWare protects data primarily by maintaining duplicate file directories and by redirecting data from bad blocks to reliable blocks on the NetWare server's hard disk. A hard disk's Directory Entry Table (DET) and File Allocation Table (FAT) contain address information that tells the operating system where data can be stored or retrieved from. If the blocks containing these tables are damaged, some or all of the data may be irretrievable. NetWare reduces the possibility of losing this information by maintaining duplicate copies of the DET and FAT on separate areas of the disk. If one of the blocks in the original tables is damaged, the operating system switches to the duplicate tables to get the location data it needs. Data protection within standard NetWare also involves such features as read-after-write verification, Hot Fix, and disk mirroring or duplexing. See Disk Mirroring and Hot Fix.

data rate The rate at which a channel carries data, measured in bits per second, also known as data signaling rate. If there are restrictions on the pattern of bits, the information capacity of the channel could be less than the data rate. In short, data rate is the measurement of how quickly data is transmitted—but it may be very different (i.e. less) than what the channel is theoretically capable of.

data rate mismatch A condition that occurs when a packet's transmission frequency (data rate) does not match the local transmit frequency.

data record See Data File and Database Management System.

Data Retention Directive A directive passed by the European Union Parliament in 2006 that requires communication service providers to retain selected call record details (CDRs) for every customer call for a period not less than six months and not more than two years from the date of the call. The purpose of retaining the CDRs is to make them available to national authorities, and in accordance with national law, for specific criminal investigations. The directive also requires European Union member states to implement measures to prevent unauthorized access to the data and to apply appropriate penalties when unauthorized access occurs.

data scope See Data Monitor.

data scrambler A device used in digital transmission systems to convert an input digital signal into a pseudo random sequence free from long runs of marks, spaces, or other simple repetitive patterns.

data secure line A single tip and ring line off the PBX which is protected against any tones (like call waiting) or break-ins that would otherwise mess up any ongoing data transmission call.

data security The protection of data from unauthorized (accidental or intentional) modification, destruction, disclosure, or delay.

data segment A pre-defined set of data elements ordered sequentially within a set, beginning and ending with unique segment identifiers and terminators. Data segments combine to form a message. Their relation to the message is specified by a Data Segment Requirement Designator and a Data Segment

Sequence. Data Segment is an EDI (Electronic Data Interchange) term. In Electronic Data Interchanges, each data segment has a specific place within a message. The data segment sequence determines exactly where a segment will occur in a message:

- **Heading area.** A segment occurring in this area refers to the entire message.
- **Detail area.** A segment occurring here is detail information only will override any similar specification in the header area.
- **Summary area.** Only segments containing total or control information may occur in this area (e.g., invoice total, etc.)

Data Service Unit DSU. Device designed to connect a DTE (Data Terminal Equipment like a PC or a LAN) to a digital phone line to allow fully-digital communications. A DSU is sort of the digital equivalent of a modem. In more technical terms, a DSU is a type of short haul, synchronous data line driver, normally installed at a user location that connects a user's synchronous equipment over a 4-wire circuit to a serving dial-central-office. This service can be for a point-to-point or multipoint operation in a digital data network. DSUs are typically used for leased lines. For switched digital services, you need a CSU/DSU (also called a DSU/CSU). See CSU/DSU and DSU/CSU.

data set In AT&T jargon, a data set is a modem, i.e. a device which performs the modulation/demodulation and control functions necessary to provide compatibility between business machines which work in digital (on-off) signals and voice telephone lines. In IBM jargon however, a data set is a collection of data, usually in a file on a disk. See also Modem.

data set ready One of the control signals on a standard RS-232-C connector. It indicates whether the data communications equipment is connected and ready to start handshaking control signals so that transmission can start. See RS-232-C and the Appendix.

data signaling rate The total of the number of bits per second in the transmission path of a data transmission system. A measurement of how quickly data is transmitted, expressed in bps, bits-per-second.

data sink Part of a terminal in which data is received from a data link.

data slicer A circuit interface to a radio scanner which provides a means of determining the performance of a radio system (e.g., microwave) using FSK (Frequency Shift Keying) for purposes of digital transmission. FSK shifts frequencies at specific points in time in order to represent ones and zeros. The data slicer allows a technician or engineer to determine whether the radio system is working properly. It does this by logically "slicing" the radio waves in time in order to view the ones and zeros of the data stream.

data source 1. The originating device in a data communications link.

2. An object identifier in RMON that represents a particular interface.

data span Any digital service, T-1, 56K, ISDN or data carrying service.

data steward A new role of data caretaker emerging in business units. Individual takes responsibilities for the data content and quality.

data stream 1. Collection of characters and data bits transmitted through a channel.

2. An SCSA term. A continuous flow of call processing data.

data surfer A person who makes a living doing online research and information retrieval. Also known as a Cybrarian (comes from cyberspace librarian) or a super searcher. See Cybrarian.

Data Switching Exchange DSE. The equipment installed at a single location to perform switching functions such as circuit switching, message switching, and packet switching.

data synchronization The process of keeping database data timely and relevant by sending and receiving information between laptops, between desktops in the field and between bigger computers at headquarters. See also Synchronization and Replication.

data terminal A generic term for a piece of equipment in a system capable of sending and/or receiving data signals.

Data Terminal Equipment DTE: A terminal device in the data world. DTE is part of a broader grouping of equipment known as CPE (Customer Premises Equipment), which includes voice, as well as data, terminals. At the

data conversion Converting data from one format to another. Conversion typically falls into three basic categories. 1. To convert to a form usable by the equipment you have, e.g. you convert some data from tape to disk (because you don't have a tape drive). Or you may convert from one method of encoding data to another, say from EBCDIC to ASCII, because you don't have software which can understand IBM's EBCDIC method of coding. 3. Or you may convert from one format to another, e.g. from the dBASE method of encoding databases to the Paradox method, or from WordPerfect to Word. There are many service bureaus whose job is to convert computer data from one form to another and there are now many programs out to do the conversion. Most of the leading PC programs now contain data conversion software built into them, so it's possible to open a dBASE database file in Microsoft Access or a WordPerfect file in Word. Conversion becomes part of the process of opening the file. It wasn't always that way. See also Data Compression.

data country code A 3-digit numerical country identifier that is part of the 14-digit network terminal number plan. This prescribed numerical designation further constitutes a segment of the overall 14-digit X.121 numbering plan for a ITU-T X.25 network.

data dialtone Networking as widespread as the telephone. The Internet is widely thought to contain the beginnings of Data Dialtone. See Internet, Metcalfe's Law, and World Wide Web.

data dictionary 1. A part of a database management system that provides a centralized meaning, relationship to other data, origin, usage, and format.

2. An inventory that describes, defines, and lists all of the data elements that are stored in a database.

data diddling Unauthorized altering of data before, during or after it is input into a computer system.

data directory An inventory that specifies the source, location, ownership, usage, and destination of all of the data elements that are stored in a database.

data dump A sample or whole extract of the information contained on a database. Used to develop a better picture of the data on a database.

data element A basic unit of information having a unique meaning and subcategories (data items) of distinct units or values. Examples of data elements are military personnel grade, sex, race, geographic location, and military unit.

Data encryption Standard DES. A 56-bit, private key, symmetric cryptographic algorithm for the protection of unclassified computer data issued as Federal Information Processing Standard Publication. DES, which was developed by IBM in 1977, was promulgated by the National Institute of Standards and Technology (NIST) — formerly the National Bureau of Standards (NBS) — for public and Government use. It was thought to be uncrackable until 1997, when a nationwide network of computer users broke a DES key in 140 days. Triple DES, a later version, encodes the data three times for additional security. As the cost of computer equipment has dropped and as computer power has increased, DES no longer is considered to be totally secure. It has been said that anyone who can afford a BMW can afford a DEScracker. As a result, NIST is searching for a replacement encryption standard to be known as AES (Advanced Encryption Standard). See also Encryption and AES.

data entry Using an I/O device (input/output device), such as a keyboard on a terminal, to enter data into a computer.

data file A database typically contains multiple files of information. Each file contains multiple records. Each record is made up of one or more fields. Each field contains one or more bytes of data. The terms file, record and field find their roots in manual office filing systems.

data fill One name for the specifications of your ISDN phone lines. Ask for your ISDN Data Fill. It will give you useful information, such as how your lines are set up — voice, data, data/voice, etc.

data flow Grouping of traffic, identified by a combination of source address/mask, destination address/mask, IP next protocol field, and source and destination ports, where the protocol and port fields can have the values of

any. In effect, all traffic matching a specific combination of these values is grouped logically together into a data flow. A data flow can represent a single TCP connection between two hosts, or it can represent all the traffic between two subnets. IPSec protection (A collection of IP security measures) is applied to data flows.

data frame An SCSI term. A set of time slots which are grouped together for synchronization purposes. The number of time slots in each frame depends on the SCbus or SCxbus Data Bus data rate. Each frame has a fixed period of 125us. Frames are delineated by the timing signal FSYNC.

data freight The long-haul transport of bits in bulk. Any corporation with cross-country rights-of-way can get into the datafreight biz by laying fat fiber. Qwest is in the datafreight business.

data grade circuit A circuit which is suitable for transmitting data. High speed data needs better quality phone lines than normal dial-up phone circuits. You can acquire such circuits from many telephone companies. To upgrade voice phone lines to high-speed data circuits, you must sometimes "condition" the phone line. See Conditioning.

data group A number of data lines providing access to the same resource.

data hunt group An AT&T Merlin term. A group of analog or digital data stations that share a common extension number. Calls are connected in a round-robin fashion to the first available data station in the group.

data-in-flight Data that is traversing a network.

data-in-transit Data that's moving across a network is called (what else?) data-in-transit. Data that is stored on disk or tape, i.e., data that neither is traversing a network nor is residing in computer memory, is called data-at-rest.

data integrity 1. The data you receive is exactly what was sent you. Typically the concept of data integrity relates to data transmission. Data integrity is also a performance measure based on the rate of undetected errors, a measure of how consistent and accurate computer data is. In data transmission, error correcting protocols, such as LAP-M, MNP and X-modem — provide methods of ensuring that data arrives at the destination in its full integrity. This is done in many ways, including retransmitting messed-up blocks. Data integrity can be threatened by hardware problems, power failures and disk crashes, but most often by application software. In a database system, data integrity can be threatened if two users are allowed to update the same item or record of data at the same time. Record locking, where only a single user at a time is allowed access to a given data record, is a method of insuring data integrity.

2. A service provided by cryptographic technology that ensures data has not been modified. In a network environment, data integrity allows the receiver of a message to verify that data has not been modified in transit. Windows 2000 and Windows XP Professional use access control mechanisms and cryptography, such as RSA public-key signing and shared symmetric key one-way hash algorithms, to ensure data integrity.

data leakage The leakage of confidential data or information from the corporate network.

data line interface The point at which a data line is connected to a telephone system.

data line monitor A measuring device that bridges a data line and looks at how clean the data is, whether the addressing is accurate, the protocol, etc. Being only a monitor, it does not in any way affect the information traveling on the line. See Data Monitor.

data line privacy Prohibits activities which would insert tones on a data station line used by a facsimile machine, a computer terminal or some other device sensitive to extraneous noise.

data link A term used to describe the communications link used for data transmission from a source to a destination. In short, a phone line for data transmission. Or, a fiber optic transmitter, cable, and receiver that transmits digital data between two points.

Data Link Control DLC. Characters used in data communications that control transmission by performing various error checking and housekeeping

terminal end of a data transmission, DTE comprises the transmit and receive equipment. DTE can be in the form of a dumb terminal (i.e., a terminal without embedded intelligence in the form of programmed logic), a semi-intelligent terminal, or an intelligent host computer (i.e., a PC, mid-range or mainframe computer). DTE interfaces to a circuit through DCE (Data Communications Equipment). See DCE and DTE.

data transfer ready One of the control signals on a standard RS-232-C connector. It indicates if the data terminal equipment is present, connected and ready and has had handshaking signals verified. See RS-232-C and the Appendix.

data transfer rate The speed at which data is transferred from one device to another. Data transfer rates are typically expressed in megabits (a million bits) or megabytes (a million bytes) per second.

data transfer request signal A call control signal transmitted by a DCE to a DTE to indicate that a distant DTE wants to exchange data.

data transfer time The time that elapses between the initial offering of a unit of user data to a network by transmitting data terminal equipment and the complete delivery of that unit to receiving data terminal equipment.

data typing When converting a database from one format to another, several conversion programs will convert the data to a common format before converting it to the final version. During the conversion process a program may check through the data in the database to determine what it is and arbitrarily make one field numeric, one field character, one field memo, etc.

data user part DUP. Higher layer application protocol in SS7 for the exchange of circuit switched data; not supported by ISDN.

data warehouse A data warehouse is a central repository for all or significant parts of the data that an enterprise's various business systems collect. This data can either be accessed quickly by users or put on an OLAP server for more thorough analysis. Data warehouses often use OLAP servers. OLAP stands for On Line Analytical Processing, also called a multidimensional database. These databases can slice and dice reams of data to produce meaningful results that go beyond what can be produced using the traditional two-dimensional query and report tools that work with most relational databases. OLAP data servers are best suited to work with data warehouses. See also data warehousing.

data warehousing A software strategy in which data is extracted from large transactional databases and other sources and stored in smaller databases, making analysis of the data easier. See Data Warehouse.

database Lots of data structured and organized in a disciplined way so that you can get to the information you want quickly. There are many ways of organizing databases. Databases are made up of two elements, a record and a field. A record is one complete entry in a database, e.g. Harry Newton, 50 Central Park West, New York, NY 10023. A field would be the zip code field, namely 10023. Databases are stored on computers in different ways. Let's take a simple one — comma delineated. They separate their fields with commas. A more common way of storing databases is with fixed length records. Here, all the fields and all the records are of the same length. The computer finds fields by an index and by counting. For example, my first name might occupy the first 15 characters. My last name might be the next 20 characters, etc. Where my name is too short to fill the full 15 or 20 characters, their fields are "padded" with specially-chosen characters which the computer recognizes as padded characters to be ignored. Most "databases" are not one single, huge file. They are multiple databases related to each other by some common thread, e.g. an employee identification number. In this structure, called a relational database, one database might have addresses, another might have salary and tax information. And they're all "related" by one (or more common) threads. The most important thing to remember about databases is that many common database software don't automatically make automatic backups of their files. There are a thousand different ways of making sure your database is backed up regularly. I'm not getting into the various ways. I'm simply pleading with you — backup, backup, backup. I have always believed that the major asset in most busi-

nesses are their databases — e.g. of their customers. Losing a database is corporate suicide.

database administrator A person who organizes, designs, implements and runs the company's databases. Since I personally believe databases — especially of prospects and customers — are pretty well a company's most important asset, this job of database administrator is very important. See database.

database clustering Database clustering is a technology that allows a bunch of computers connected together to work as one and serve a single relational database. The idea is that together they can create a fault-tolerant, high performance, scalable solution that's a low-cost alternative to large, expensive servers. Database clustering is also called real application clustering (RAC). When I wrote this it was new and relatively unproven. There are two common methods of clustering relational databases, known as "shared-disk" and "shared-nothing" clustering. IBM's DB2 Universal Database (DB2 UDB) uses a shared-nothing approach. In this architecture, each node in the cluster holds only one segment of the database, and the node also handles all of the computational work that corresponds to the data it stores. A master server assesses the task at hand and then parcels it out, distributing a portion of the job to each node that contains data to be processed. The task is then executed by all of the nodes in parallel, and the master server reports the result: Oracle uses shared disk clustering — a design that's structured around a single large data store (for example, a disk array). Each node on the cluster has equal access to all of the information in the data store. Only the processing work is divided amongst them, and not the data itself. The result is particularly fault-tolerant database. Even if one or more servers fails, all of the application data remains available to the other nodes. By comparison, if one node on a shared-nothing database crashes, all of the data stored on that node likewise goes offline, until a failover system can recover from the fault.

database dictionary A specific type of system table that stores information about the structure of a particular database. Primarily used in relational databases to store the names and data types of the tables and columns in a database.

database dip See dip.

database lookup A software program which allows telephone users to find information on someone calling via the LCD window on their phone. This information comes to the user via CLID (Calling Line Identification) or ANI (Automatic Number Identification). See also Class.

database management system DBMS. Computer software used to create, store, retrieve, change, manipulate, sort, format and print the information in a database. Database management systems are probably the fastest growing part of the computer industry. Increasingly, databases are being organized so they can be accessible from places remote to the computer they're kept on. The "classic" database management system is probably an airline reservation system.

database mining You have a database of your customers. You have information on your customers' buying habits. You slice and dice your database to find out which of your customers might be interested in purchasing new items and which items. For example, let's say you make clothes. 20% of your customers buy in "fall" Next time you make some tall men's clothes, you may want to tell those customers — with an email or a direct mail catalog. That, in its simplest example, is called database mining or collaborative filtering.

database object One of the components of a database: a table, view, index, procedure, trigger, column, default, or rule.

database server A specialized computer that does out database data to PCs on a LAN the way a file server does out files. Where a traditional DBMS runs both a database application and the DBMS program on each PC on the LAN, a database server splits up the two processes. The application you wrote with your DBMS runs on your local PC, while the DBMS program runs on the database server computer. With a regular file server setup, all the database data has to be downloaded over the LAN to your PC, so that the DBMS can pick out what information your application wants. With a database server, the server