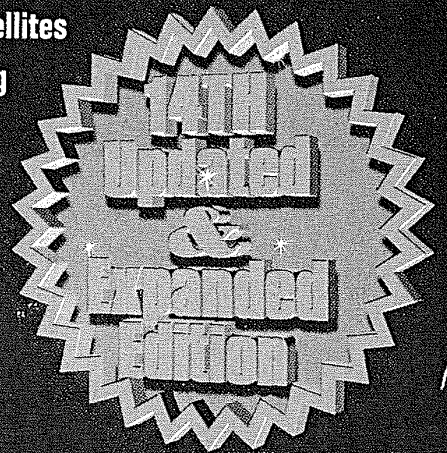


NEWTON'S TELECOM DICTIONARY

**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



by Harry Newton

NEWTON's TELECOM DICTIONARY

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West Coast through the use of a bridge. See the next several definitions. See also ADSL and Symmetric.

Faster in one direction than the other. The faster direction is called the main channel and the slower is the back channel.

Asymmetric Digital Subscriber Line See ADSL and ASYMMETRIC DIGITAL SUBSCRIBER LINE TRANSCEIVER.

Asymmetric Digital Subscriber Line Transceiver A microprocessor chip that is the crux of asymmetric digital subscriber line service. I found the following description of just such a chip in Motorola literature describing their MC145650 144-pin transceiver. "The MC145650 is a single integrated circuit transceiver device for ANSI (American National Standard Institute) T1.413 category 2 ADSL modems, based on the Discrete Multi-Tone (DMT) line code. The category 2 specification requires payload rates of (6.144 Mbps + 640 Kbps) downstream and 640 Kbps upstream, with crosstalk, over carrier serving area (CSA) range loops, and to achieve (1.544 Mbps + 176 Kbps) downstream and 176 Kbps upstream with crosstalk, over selected ANSI integrated services digital network (ISDN) loops. The payload makeup is flexible, thereby allowing multiple data streams to be multiplexed and demultiplexed. The MC145650 is capable of data rates up to 8 Mbps downstream and 1 Mbps bidirectionally; however, actual data rates obtained in any system are dependent on loop length, impairments, and transmitted power. The ADSL and DMT techniques are adaptive, changing system parameters based on loop characteristics in order to optimize the data route."

Asymmetrical Compression Techniques where the decompression process is not the reverse of the compression process. Asymmetrical compression is more computer-intensive on the compression side so that the decompression of video images can be easily performed at the desktop or in applications where sophisticated codecs are not cost effective. In short, any compression technique that requires a lot of processing on the compression end, but little processing to decompress the image. Used in CD-ROM creation, where time and costs can be incurred on the production end, but playback must be inexpensive and easy. See ASYN.

Asymmetrical Modem A type of modem which uses most of the available bandwidth for transmission and only a small part for reception.

Asymmetrical Modulation A duplex transmission technique which splits the communications channel into one high speed channel and one slower channel. During a call under asymmetrical modulation, the modem with the greatest amount of data to transmit is allocated the high speed channel. The modem with less data is allocated the slow, or back channel. The modems dynamically reverse the channels during a call if the volume of data transfer changes.

Asymmetrical Multiprocessing A relatively simple implementation of multiprocessing in which the operating system kernel runs on one dedicated CPU and assigns tasks as they come in to other "slave processors." It is also known as "master/slave" processing.

Asymmetrical PVC This term refers to a PVC (Private Virtual Circuit) which supports simplex, or asymmetrical, assignments of committed information rate in each direction of transmission. A PVC transmission path is duplex, meaning that there must be a communications path in each direction between the two points being connected. However with an asymmetrical PVC, the network capacity in each direction does not necessarily have to be equal.

Asyn Greek prefix meaning "not."

Asynchronous See ASYNCHRONOUS TRANSMISSION.

Asynchronous Balanced Mode ABM. Used in the IBM Token Ring's Logical Link Control (LLC), ABM operates at the SNA data link control and allows devices on a Token Ring to send data link commands at any time and to initiate responses independently.

Asynchronous Completion A Versit definition. A domain issues a service request and need not wait for it to complete. If the application waits for this completion, this is known as synchronous, but if it is sent off to another system entity and the domain goes on to other activities before the service request completes (and the system later sends a message to the domain announcing the service's completion), that completion is known as Asynchronous.

Asynchronous Gateway A routing device used for dial-up services such as modem communications.

Asynchronous Request An SCSI term. A request where the client does not wait for completion of the request, but does intend to accept results later. Contrast with synchronous request.

Asynchronous Teleconferencing. An interactive group communication that allows individuals to communicate as a group without being present together in time or place. Participants to join and exit the conference when it is convenient for them, leaving messages for others and receiving messages left for them. Computer conferencing is an example of asynchronous teleconferencing.

Asynchronous Terminal A terminal which uses asynchronous transmissions. See ASYNCHRONOUS TRANSMISSION.

Asynchronous Time Division Multiplexing A multiplexing technique in which a transmission capability is organized in a priori unassigned time slots. The time slots are assigned to cells upon request of each application's instantaneous real need.

Asynchronous Transfer Mode ATM is the technology selected by the Consultative Committee on International Telephone & Telegraph (ITU) International standards organization in 1988 (now called the ITU-T) to realize a Broadband Integrated Services Digital Network (B-ISDN). It is a fast, cell-switched technology based on a fixed-length 53-byte cell. All broadband transmissions (whether audio, data, imaging or video) are divided into a series of cells and routed across an ATM network consisting of links connected by ATM switches. Each ATM link comprises a constant stream of ATM cell slots into which transmissions are placed or left idle, if unused. The most significant benefit of ATM is its uniform handling of services, allowing one network to meet the needs of many broadband services. ATM accomplishes this because its cell-switching technology combines the best advantages of both circuit-switching (for constant bit rate services such as voice and image) and packet-switching (for variable bit rate services such as data and full motion video) technologies. The result is the bandwidth guarantee of circuit switching combined with the high efficiency of packet switching. For a longer explanation, see ATM.

Asynchronous Transmission Literally, not synchronous. A method of data transmission which allows characters to be sent at irregular intervals by preceding each character with a start bit, and following it with a stop bit. It is the method most small computers (especially PCs) use to communicate with each other and with mainframes today. In every form of data transmission, every letter, number or punctuation mark is transmitted digitally as "ons" or "offs." These characters are also represented as "zeros" and "ones" (See ASCII). The

problem in data transmission is to define when the letter, the number or the punctuation mark begins. Without knowing when it begins, the receiving computer or terminal won't be able to figure out what the transmission means.

One way to do this is by using some form of clocking signal. At a precise time, the transmission starts, etc. This is called **SYNCHRONOUS TRANSMISSION**. In **ASYNCHRONOUS** transmission there's no clocking signal. The receiving terminal or computer knows what's what because each letter, number or punctuation mark begins with a start bit and ends with a stop bit. Transmission of data is called **SYNCHRONOUS** if the exact sending or receiving of each bit is determined before it is transmitted or received. It is called **ASYNCHRONOUS** if the timing of the transmission is not determined by the timing of a previous character.

ASYNCHRONOUS is used in lower speed transmission and by less expensive computer transmission systems. Large systems and computer networks typically use more sophisticated methods of transmission, such as **SYNCHRONOUS** or **BISYNCHRONOUS**, because of the large overhead penalty of 20% in **ASYNCHRONOUS** transmission. This is caused by adding one start bit and one stop bit to an eight bit word — thus 2 bits out of ten.

The second problem with large transfers is error checking. The user sitting in front of his own screen checks his **ASYNCHRONOUS** transmission by looking at the screen and re-typing his mistakes. This is impractical for transferring long files at high speed if there is not a person in attendance.

In **SYNCHRONOUS** transmission start and stop bits are not used. According to the book *Understanding Data Communications*, characters are sent in groups called blocks with special synchronization characters placed at the beginning of the block and within it to ensure that enough 0 to 1 or 1 to 0 transitions occur for the receiver clock to remain accurate. Error checking is done automatically on the entire block. If any errors occur, then the entire block is retransmitted. This technique also carries an overhead penalty (nothing is free), but the overhead is far less than 20% for blocks or more than a few dozen characters.

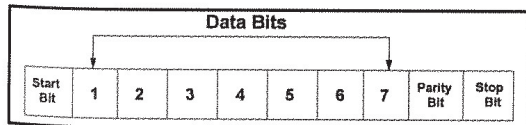
AT 1. Access Tandem.

2. Advanced Technology. Refers to a 16 bit Personal Computer architecture using the 80X86 processor family which formed the basis for the ISA Bus as found in the first IBM PC.

3. AudioTex. See **AUDIOTEX**.

4. See **AT COMMAND SET**.

AT Bus The electrical channel used by the IBM AT and compatible computers to connect the computer's motherboard and



peripheral devices, such as memory boards, video controllers, PC card modems, bus mouse boards, hard and floppy disk controllers and serial/parallel input/output devices. The AT bus supports 16 bits of data in one slug, whereas the original IBM PC supported only 8 bits (and was called the ISA bus for Industry Standard Architecture). These days there are much faster "buses," including the EISA, MCA (MicroChannel Architecture), Local Bus, PCI, VESA, etc.

AT Command Set Also known as the Hayes Standard AT Command Set. A language that enables PC communications

software to get an asynchronous and "Hayes-compatible modem" to do what you want it to do. So called "AT" because all the commands begin with "AT," which is short for **Attention**. The most common commands include **ATDT** (touchtone a number), **ATA** (manually answer the phone), **ATZ** (reset modem — it will answer OK), **ATSO=0** (disable auto-answer), and **ATH** (hang up the phone).

To avoid having yourself knocked off your data call by the beep that comes in on the phone company's call waiting, put the following line in your modem setup: **ATS10=20**. That will increase your S10 register to two seconds. This register sets the time between loss of carrier (caused by the 1.5 second call waiting signal) and internal modem disconnect. Factory default on most modems is 1.4 seconds — just perfect to be cut off by the wall waiting tone! (Dumb.)

If you have to dial through several phone systems, waiting for dial tone on the way and/or going through fax/modem switches, you may consider a dial stream that looks like **ATDT 1-800-433-9800 [W]212-989-4675 [W]22**, where **[W]** means (in some software programs) "Wait for any key. When you get it, touchtone out the next digits." In other software programs — pure Hayes command — **W** means wait for second dialtone. If **[W]** doesn't work for you, then change **X3** in your setup line to **X1**; change your computer's dialed number to 9; and dial your distant computer with your phone. When you hear the modem at the other end answer, tell your computer's software to dial 9. It will dial 9, hear the modem tone at the other end and connect as though it had dialed it all by itself. **X1** tells your modem to dial (or touchtone) immediately — without waiting for dial tone.

You can use several AT commands on one line. You only need **AT** before the first one. Some modems require commands typed in capital letters. When your dialing fails and you can't figure why, get out of your communications software program and start again. Or in total desperation, turn your computer and modem completely off and start again. The word "Hayes" comes from the manufacturer of modems called Hayes Microcomputer, Norcross, GA, the creator of the command set. Not all Hayes compatible modems are. See also **AT+V** and **HAYES COMMAND SET**.

At Local Mode One of the command modes available on the ISDN set. It is used for compatibility with existing communications packages for analog modems or for data-only application programs. See **AT COMMAND SET**.

At Work Pronounced "At Work." Microsoft's office equipment architecture announced on June 9, 1993. Microsoft's idea is to put a set of software building blocks into both office machines and PC products, including:

• Desktop and network-connected printers.
• Digital monochrome and color copiers.
• Telephones and voice messaging systems.
• Fax machines and PC fax products.
• Handheld systems.
• Hybrid combinations of the above.

According to Microsoft, the Microsoft At Work architecture focuses on creating digital connections between machines (i.e. the ones above) to allow information to flow freely throughout the workplace. The Microsoft At Work software architecture consists of several technology components that serve as building blocks to enable these connections. Only one of the components, desktop software, will reside on PCs. The rest will be incorporated into other types of office devices (the ones above), making these products easier to use, compatible with one another and compatible with Microsoft Windows-based