

# 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

**Updated  
15<sup>th</sup>  
Expanded  
Edition**

**by Harry Newton**

## **NEWTON's TELECOM DICTIONARY**

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email: [Harry@HarryNewton.com](mailto:Harry@HarryNewton.com)  
personal web site: [www.HarryNewton.com](http://www.HarryNewton.com)

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Published in the United States by  
Miller Freeman, Inc.  
Tenth floor  
12 West 21 Street  
New York, NY 10010  
212-691-8215 Fax 212-691-1191  
1-800-999-0345 and 1-800-LIBRARY

ISBN Number 1-57820-031-8

August, 1999

For individual orders, and for information on special discounts for quantity orders, please contact:

Telecom Books  
6600 Silacci Way  
Gilroy, CA 95020  
Tel: 800-LIBRARY or 408-848-3854  
Fax: 408-848-5784  
Email: [telecom@rushorder.com](mailto:telecom@rushorder.com)

Distributed to the book trade in the U.S. and Canada by  
Publishers Group West  
1700 Fourth St., Berkeley, CA 94710

Fifteenth Edition, Expanded and Updated  
Matt Kelsey, Publisher  
Christine Kern, Manager

Manufactured in the United States of America

# **NEWTON's TELECOM DICTIONARY**

The Official Dictionary of  
Telecommunications & the Internet

**15th Updated, Expanded and Much  
Improved Edition**

# HELP MAKE THIS DICTIONARY EVEN BETTER

I'm adding 100 new words a week. I'm updating, expanding and fixing another 100. Still, I can't keep up.

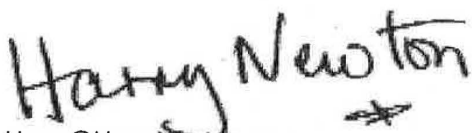
If I'm missing a definition, or if a definition is unclear or (God forbid) wrong, please email me.

I'm also looking for corporate glossaries -- not ones that just have your company's products, but ones with generic definitions of the specialized areas your company plays in. I love emailed glossaries.

I'll reward you with a big "Thank you" and a free copy of the next edition.

Apology: I'm still apologizing for cutting the size of the type in the dictionary. For 10 editions, I believed in "readability," i.e. HUGE TYPE. But my dictionary blossomed to 1,400 pages, five and a half lbs and cost \$5.50 to ship domestically and \$35+ internationally. We spent days trying different type faces, different type sizes, different leading (space between lines) and different spacing between letters. This is the most readable we could find and keep the weight down. It's not perfect. I'm sorry. If you want to suggest a different layout, please do. I'm open to anything. My eyesight is just as bad (if not worse) than yours.

Thank you.

A handwritten signature in black ink that reads "Harry Newton" with a small flourish at the end.

Harry@HarryNewton.com  
Harry Newton  
205 West 19 Street  
New York, NY 10011  
212-206-7140  
Fax 209-797-9540

[www.HarryNewton.com](http://www.HarryNewton.com)



# WHERE THE TELECOM EXPLOSION IS COMING FROM

by Harry Newton

I wrote this book for those of us desperately trying to keep up. No other industry is exploding as fast as telecommunications, networking and the Internet. The explosion is coming from:

**1. The Demand.** Traffic on the Internet is doubling every 100 days. There'll be one billion people on line by 2005. Every business will have a Web site selling and servicing their wares. My phone company tells me their average "phone" call, when it was a voice call, was three minutes. Now it's an hour. I put a DSL — Digital subscriber Line — into my house. It's 30 times as fast as my previous dial-up. Downloads that used to take me hours now take minutes. My DSL line brings me faxes, voice mail, email and alerts me to incoming phone calls. I do my shopping on my DSL line. I watch my stocks on the Internet. I do my research on them via the Internet. I read magazines and newspapers on the Internet. I talk to my children on the Internet. My wife and I arrange our social life via the Internet. My DSL's lightning speed has changed my life. It will change yours. Network speed is a narcotic. Stand on any New York street with two sandwich boards, "Free Money" and "High Speed Internet Access." Guess which one would get mobbed? The High Speed Internet Access. Everyone wants high-speed Internet Access. Demand for fast, reliable communications has barely been scratched anywhere in the world.

**2. The Increasing Digitization.** This is relatively old, but continuing in an escalated fashion. We started digitizing phone conversations many years ago for two basic reasons: First, it improved their quality. On long distance calls, calls were regenerated and noise picked up along the way was no longer amplified. Digitization made cross country calls sound as clear as cross office. Second, it was simply cheaper. Digital componentry is cheaper, and getting cheaper. Digitization techniques — such as TDM, DWDM, packet switching, etc. — are simply more efficient, and therefore more cost-effective.

**3. The Hardware.** The excitement centers on the dramatically improving price-performance of fiber optics (switching and transmission), digital signal processors and the high-speed routers of the Internet, now switching terabits of information each second. Fiber is amazing. No one knows how much capacity you can pump down one single fiber strand. In labs, we've sent 1,000,000,000,000 bits per second down a fiber strand a little thicker than one strand of your hair. Totally amazing speed. That trillion bits per second is enough to carry the entire world's Internet. Telecom's three building blocks — fiber, DSPs and routers — are improving far faster in cost performance than computing's microprocessors and memory — though computing improvements get national publicity. Telecom's annual cost-performance improvement blows away Moore's Law (defined under M).

**4. New Standards.** Ten years ago, the telecom industry was entirely closed. Every manufacturer had its own set of standards, proprietary to itself. You couldn't connect a Siemens phone to an Ericsson switch, or a Lucent phone to Nortel PBX. Telecom standards existed only at the very lowest levels — basic analog phone lines. A persevering bunch of pioneers, coming chiefly from the computer industry, has pushed openings in the telecom industry, promulgating real, open standards that we can all use to build, Lego-style, new telecom products. These pioneers work in a hodge-podge of volunteer and semi-government bodies — from the ATM Forum to the ECTF, from GO-MVIP to the ITU-T, from ANSI to the Internet Engineering Task Force and to private companies, from Microsoft to Intel, from Cisco to Juniper Networks. As a result, there's been an explosion of new telecom standards, defining everything from telecom operating systems, to buses that carry voice inside and outside PCs, to new, cheap ways of encoding voice digitally, to new high-speed lines, to new telecom "building block" software (called applications generators) and, of course, to IP Telephony — phone calls

over the Internet or Internet-like networks. Open standards lead to low prices, low barriers to entry and fast creation of new products. All this leads to explosive growth. We haven't seen nothing yet.

**5. New Government Awareness That Competition Is Better Than Monopoly.** The telecom industry has historically been closed — closed in architecture, closed to new suppliers, closed to new entrants. Telecom users have been mauled by high monopoly prices, typically those set by government phone companies. No longer. The United States de-regulated in the late 1960s and 1970s. Canada followed quickly. Israel and Australia deregulated in 1997. Europe de-regulated in January, 1998. Governments everywhere are waking to two powerful realizations: First, globalization is the most powerful economic force in the world today. Ignore it at your peril. Second, telecom is economic infrastructure. Companies and business go where globalization is friendliest and infrastructure is strongest. You can't make modern development-friendly infrastructure and have a modern society when you have one bloated, glacial, government-run phone company charging ten times what phone companies one mile across the border charge. And you can't limit your entire country's telecommunications purchases to two or three gigantic, favored, cumbersome suppliers (as Europe, Japan and Australia had historically done). By the end of this century, European and Japanese telecom should be as open as and as cheap as North America is today. Then come India and China, also opening up.

**6. New Startups.** Telecommunications is the hottest place for venture capital. No industry in the world — neither software nor petroleum — can match the incredible profitability of the zero-marginal-cost telephone carrier. If I call from New York to California, my call costs my supplier — AT&T, MCI, Sprint, Qwest or whoever — basically nothing. All my carrier's costs are fixed. Other than billing me for my call, my carrier incurs no marginal cost for carrying my 3,000 mile call. An incredible business. Even the oil business incurs variable costs — for dragging its stuff out of the ground and schlepping it to markets across the world.

Nobody to this day knows how many conversations or how much information we can put down a single strand of fiber. Read the incredible developments in my definition of DWDM — Dense Wave Division Multiplexing. Add more photonics and electronics at the end. Put more calls down the fiber. More electronics. Photonic switching. More calls. More opportunities. No one knows what voice and video marvels the Internet can deliver. Smart engineers are leaving big, sluggish telecom manufacturers in droves and starting new companies. What's new is they're now leaving "hot" software companies like Microsoft to get into telecom. There already are hundreds of "new telecom" millionaires already. Soon, there will be thousands.

**7. Dramatically Falling Prices.** All the above brings dramatically lower prices. Germany's long distance prices dropped 91% in 1998. Israel used to have the highest international calling prices of any developed country. Then the government allowed in a handful of new carriers. The criterion for getting a permit was not financial, but simply how far you were prepared to drop your long distance and international prices. The carriers proposing the lowest possible prices won. International rates from Israel to the U.S. promptly dropped 94%.

This new telecom environment is driving radically new paradigms into an erstwhile staid industry. Among them.. read on..

# WHERE THE EXPLOSION IS TAKING US

• **Because of fiber, long distance and international calling are becoming incredibly cheap.** As the world is increasingly fibered up, costs will continue to plummet. Communications will be postalized — one low price wherever you call. I see the day coming when we'll all pay \$25 a month and call anywhere in the world and speak as long as we want, for as often as we want. Flat rate calling everywhere. I see the day when everyone will be connected at high speed to the Internet all the time on whatever device we choose — our PC, our phone (wired or wireless), our PDA, our TV set. On The Net All The Time. Instant email. Instant news. Soon everyone will have high-speed channels to their houses and their offices. Over the air TV brought us 5 channels. CATV (cable TV) brought us 50. Satellite TV brought us 500. Internet TV will bring us 50,000. People will live and work where they choose.

• **Wireless will get more interesting. As I write this, there are more cell phone users each day than there are Internet users** — a statistic I saw that blew me away. Wireless has exploded because of digitization and digital techniques that enabled providers to cram many many times the number of users into the same sliver of bandwidth. Virtually all of today's wireless "conversations" are voice — people speaking to each other. But tomorrow, most wireless "conversations" will be data, as people send each other messages, receive their stock quotes, and even surf the Internet. Essentially a wireless phone is a far better business tool than a wired phone. You can get in touch with your customers. They can get in touch with you. A functioning accessible wireless phone obsoletes the aggravation of voice mail. Wireless is easier to deploy. Load a Coke machine with a cell phone. It can call when it's empty. It can raise prices when the temperature rises. Deploying a Coke machine with a cell phone is a lot faster than waiting for a landline to be installed. Wireless has a long way to go. But I'm always comforted by the fact that there's far more spectrum waiting to be used than is presently used. The lack of spectrum is a myth.

• **Telecom switching hardware will go through the same mainframe-to-client/server PC revolution that the computer industry went through in the past 20 years — with one big difference:** The telecom industry will skip the mini-computer generation. In telecom, we are very close to the "central office inside the PC." As competition and new technology arrives, the time to market new telecom features will drop from three years to three weeks. As telephone central offices move to shoe box size, so each desk will become its own central office, with individual telecom customization opportunities beyond anyone wildest imagination. One day everyone's telephone system will be as personal as their PC. Telephone software will be available for downloading from the Internet or buying shrinkwrapped from your local Wal-Mart.

• **Voice, fax, imaging and video will migrate to and join data in one common IP network — the Internet and the corporate Intranet (the corporate equivalent of the Internet).** This will drive telecommunications pricing further down, add features and new capabilities (bandwidth on demand to the home, follow-me-find-me, etc.). It will shrink space, shrink time and vastly expand (and improve) every aspect of human endeavor — from remote education to business telecommuting, from remote medical diagnosis to high definition TV entertainment, from massive joint gaming adventures to serious understanding of our neighbors' failings (my tiny hope for world peace).

• **Ecommerce will explode.** Who would have imagined the 1992-1995 phenomenon which produced the democratization and commercialization of the Internet? Who could have imagined prime time TV showing www Web site addresses to the great unwashed American public on prime time TV. How easy mainstream America has accepted www addresses. The Internet happening is, I believe, as important to the dissemination of knowledge as the invention of the Gutenberg Press was in 1453. The Internet and the Web as a buying mechanism is immature — five years old. Physical shops are 5,000 years old. Even call centers are older (and more mature). As ecommerce matures in the next few years, it will become a totally pleasurable experience (it isn't at present), eclipsing in emotion and excitement anything physical shops have ever delivered.

We'll have avatars — personal shoppers. We'll have 3D movies of distant vacation spas we're interested in visiting. We'll have access to all the information about the products and services we're interested in — not just the smatterings that are on today's Web. It will take time (and bandwidth). But the journey will be unbelievably rewarding, exciting and bubbling with serious business and personal opportunities.

• **This revolution will change the way we work more than any other.** The industrial revolution brought us into the city. But its primary by-products — the automobile and the highway — delivered pollution, downtown decay, urban crime and other unwanted problems. The low-energy, non-polluting "telecom" revolution is different. It gives each of us the opportunity to live where we choose — downtown Detroit, in the mountains of Colorado, or in Sri Lanka, where Arthur Clarke lives. More of us will telecommute. By the end of the year 2000, over 50% of Americans will not work out of conventional offices. They'll work out of their homes, their cars, their RVs, their hotels and their temporary offices.

This telecom revolution gives our cousins overseas grand new opportunities. As telecom calling costs plummet, the industrial world will export its service jobs in the next 20 years, just as it exported its manufacturing jobs in the past 20. U.S. airlines will answer their calls from U.S. customers in India, Nepal, China. Already, Microsoft, HP and Swissair have call centers in India and answer calls from customers in North America. They're already calling the Indian city of Hyderabad — Cyberbad.

I wish I were 30 years younger. The next 20 years in this — the most fantastic of all industries — will be totally incredible. Adjectives can't describe the excitement I feel.

Writing telecom dictionary updates every day and delivering new versions every six months is exhausting, exhilarating and very time-consuming. Claire and Michael, my children, and Susan, my wife, nag me, "Get a life!" I apologize to them for seeing so much of Daddy's back as he worked on this dictionary.

## HOW TO USE THIS DICTIONARY

This is a dictionary to work with every day. Companies give it to their new employees to bring them up the telecom and Internet learning curve. Salespeople include the definitions in proposals to customers. Novices love it because it cuts through the clutter. Users explain telecom things to their boss. Management uses it to understand telecom technicalities. Lawyers even use it in court. Sometimes they rely on it. God help the justice system.

Blank Space	= ASCII 32	5	= ASCII 53
!	= ASCII 33	6	= ASCII 54
#	= ASCII 35	7	= ASCII 55
& (Ampersand)	= ASCII 38	8	= ASCII 56
-(Hyphen or dash)	= ASCII 45	9	= ASCII 57
.(Period)	= ASCII 46	:(colon)	= ASCII 58
/(Forward slash)	= ASCII 47	;(semi colon)	= ASCII 59
0 (zero)	= ASCII 48	A (capital A)	= ASCII 65
1	= ASCII 49	Capital letters to ASCII 90	
2	= ASCII 50	\ (back slash)	= ASCII 92
3	= ASCII 51	Lower case letters	
4	= ASCII 52	start with a	= ASCII 97

Give my dictionary to your new employees, your users, your customers, your prospective customers, to your boss. Give it to your kids to let them understand what you do. They'll understand why you, too, have no life.

Most technical dictionaries define terms tersely, often in other technical terms. As a result they leave you more confused. This dictionary is different, deliberately so. My definitions tell you what the term is, how it works, how you use it, what its benefits are, what its negatives are. I tell you how it fits into the greater scheme of things, and I occasionally sound warnings or issue buying checklists.

## **HOW THIS DICTIONARY IS ORGANIZED**

My definitions are a combination ASCII / alphabetical order. Definitions containing non-letters — like @, #, / and numbers — are in ASCII order. Definitions with real letters are in alphabetical order. I use ASCII because it gives order to hyphens, periods, forward slashes, numbers, etc. Here is the order you'll find in this dictionary:

## **HOW THE DICTIONARY SPELLS**

My dictionary conforms to American spelling. To convert American spelling to British and Canadian spelling typically requires adding a second "L" in words like signaling and dialing (they're American) and changing "Z" in words like analyze to analyse. Center in American is Center. In Britain, Europe, Australia and Canada, it's Centre. This dictionary contains more British, Australian and European words than my previous editions — a result of several overseas lecture tours.

## **WHAT STYLE THIS DICTIONARY FOLLOWS**

All high-tech industries make up new words by joining words together. They typically start by putting two words next to each other. Later, they join them with a hyphen. Then, with age and familiarity, the hyphen tends to disappear. An example: Kinder garten. Kinder-garten. and now Kindergarten.

Sometimes it's a matter of personal choice. Some people spell database as one word. Some as two, i.e. data base. I prefer it as one, since it has acquired its own logic by now. Sometimes it's a matter of how it looks. I prefer T-1 (T-one), not T1, simply because T-1 is easier to recognize on paper. I define co-location as co-location. Webster's spells it collocation, with two Ls, one more than mine. I think mine is more logical. And Mr. Webster is dead. He can't argue with me.

Plurals give trouble. The plural of PBX is PBXs, not PBX's. The plural of PC is PCs, not PC's, despite what the New York Times says. The Wall Street Journal and all the major computer magazines agree with me. The plural possessive is PBXs' and PCs', which looks a little strange, but is correct. In this dictionary, I spell the numbers one through nine. Above nine, I write the numbers as arabic numerals, i.e. 10, 11, 12, etc. That conforms to most magazines' style.

Sometimes the experts don't even get it right. Take something as common as 10Base-T. Or is it 10BaseT? 10Base-T thing is an IEEE standard. So you'd think they'd know. Forget it. Go to their web site, [www.ieee.org](http://www.ieee.org). You'll find as many hits for 10Base-T as for 10BaseT. Ray and I checked every known and unknown expert in the Western world (i.e. those living within a block or two of Ray). We now believe the correct spelling is 10Base-T.

Sometimes, I don't simply know. So I may list the definition twice — once as two separate words and once as one complete word. As words and terms evolve, I change them in each edition. I try to conform each new edition to "telecomese" and "Internetese" as it's spoken and written at that time.

## **BITS AND BYTES PER SECOND. ALL ABOUT SPEED**

Telecom transmission speed has confused many of my readers. Read this. I hope this will help:

The telecom and computer literature is loaded with references to Bps and bps. You'll see them as Kbps or KBps, or Kbits/sec. You'll see them as Mbps or MBps. You'll see them as Gbps or GBps. Not much consistency. Let me explain:

First, K means Kilo or a thousand. M means mega or one million. And G means giga, which is a thousand million, or 1,000,000,000. Kbps means a thousand bits per second. And that's a telecom transmission term meaning that you're transmitting (and/or receiving) one thousand bits in one second.



Kbps (with a big B) means one thousand bytes per second. That's a computer term. And it usually refers to speeds inside the computer, e.g. from your hard disk to your CPU (central processing unit — your main microprocessor). There's a big difference between a bit and a byte. A byte is eight bits.

That's the way it's meant to be. But, there's a lot of sloppy writing out there. You'll see MBps or MB/s also meaning one million bits per second as a telecom transmission speed. You really have to figure out if the writer means telecom transmission — i.e. anything outside the computer — or if it's internal to the computer in which case it's bytes and a computer term. You can usually tell from the context.

Measuring the speed of a communications line is not easy. And tools to measure lines are still very primitive. Look at the strange speed reports you get from Microsoft Windows Dial-up Networking, or from its reports of download speeds. Notice how inconsistent Microsoft is about measuring speed. About the only certain thing you know is that the speed of a circuit is always measured by the slowest part of the circuit. Look at the Internet. You might be getting horribly slow downloads, despite being on a T-1. That might be due to a horribly overloaded server at the other end or it might be due to the fact that your T-1 is overloaded with other users at the office, also downloading. These days with faster lines what's often a gating factor is the speed of your PC. It may be simply not be fast enough for your PC's browser to keep up with the speed of your incoming bits. In which case you need a faster PC — it happened at our home when we got the DSL line. We had to upgrade to faster machines.

Virtually all telecom transmission is full duplex and symmetrical. This means if you read that T-1 is 1,544,000 bits per second, it's full duplex (both ways simultaneously) and symmetrical (both directions the same speed). That means it's 1,544,000 bits per second in both directions simultaneously. If the circuit is not full duplex or not symmetrical, this dictionary points that out. For now, the major asymmetrical (but still full duplex) circuit is the xDSL family, starting with ADSL, which stands for asymmetric, which means unbalanced. The DSL "family" no longer starts with "A," and most of it (but not all of it) is still asymmetrical. The one major exception, SDSL (Symmetrical Digital Subscriber Line) is clearly symmetrical.

There's one more complication. Inside computers, they measure storage in bytes. Your hard disk contains this many bytes, let's say eight gigabytes (thousand million bytes). That's fine. But they're not bytes the way we think of them in internal computer transmission terms. They're different and they have to do with a way computer stores material — on hard disks or in RAM. They're what I call "storage bytes." When we talk 1 Kb of storage bytes, we really mean 1,024 bytes. This comes from the way storage is actually handled inside a computer, and calculated thus: two raised to the power of ten, thus  $2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 = 1,024$ . Ditto for one million, two raised to the power of twenty, thus 1,048,576 bytes. See also BPs.

## **WHICH WORDS GET DEFINED?**

Which words get defined? These are my rules: All the important terms in the field. No proprietary products, i.e. those made by only one firm. No proprietary terms. My rules are not precise. Writing a dictionary is very personal. I read over 100 magazines a month. I study. I cogitate. I try to understand. Eventually, my wife calls, "Enough with the words, already. It's 2:00 AM. Time to sleep."

## **HOW THIS DICTIONARY HANDLES PLURALS**

Plurals give trouble. The plural of PBX is PBXs, not PBX's. The plural of PC is PCs, not PC's, despite what the New York Times says. The Wall Street Journal and all the major computer magazines agree with me. The plural possessive is PBXs' and PCs', which looks a little strange, but is correct. In this dictionary, I spell the numbers one through nine. Above nine, I write the numbers as arabic numerals, i.e. 10, 11, 12, etc.

There are no rights or wrongs in the spelling business, except that my dictionary is now the correct way of spelling telecom words. My dictionary is correct, because it's the biggest seller (by far). Lawyers use it in court. They get judgments based on what's in my dictionary. Or what was in my dictionary. They often call me

and beg me for a ten-year old copy of my dictionary. I always put an outrageous price on my "precious personal library" copies. Sometimes they pay. Most times they don't. Cheaper people you'll rarely find.

## **A OR AN? HERE'S THE LOGIC**

I admit my fallibility. This edition of this book is riddled with "a" when it should be "an" and "an" when it should be "a." I've never been confused. I always believe "an" is used before vowels, and "a" before consonants. Not so, says my friend, Jay Delmar, who edits technical documentation. Here's his explanation.

Concerning the problem of what article ("a" or "an") should be used with a word or an acronym, it all depends on how the acronym is pronounced, that is, whether it's pronounced as a string of letters or as a word. In some cases, the article would be the same. In others, the form would have to switch. Usually "an" is used before vowels, but some consonants require it as well, and some vowels require an "a." It all depends on the sound. Whether a letter is intrinsically a vowel or a consonant doesn't really matter; what matters is if it's pronounced as a vowel or a consonant in the particular context.

If an acronym is pronounced as a string of letters, the following shows the appropriate article to use with the first letter of the acronym:

An A	A J	An S
A B	A K	A T
A C	An L	A U
A D	An M	A V
An E	An N	A W
An F	An O	An X
A G	A P	A Y
An H	A Q	A Z
An I	An R	

If an acronym is pronounced as a word, the article might need to change:

An RS-232, but a RAM (pronounced "ram")  
An STP, but a SRDM (pronounced "sardem") and a SLC (pronounced "slick")  
An FTP, but a FAIC (pronounced "fackey")  
An HIC, but a HICUP (pronounced "hiccup")

According to The New York Public Library Writer's Guide to Style and Usage, "The article a is used before all consonant sounds, including a sounded h, a long u, and an o with sound of w (as in one). The article an is used before all vowel sounds except a long u and before words beginning with a silent h." This definition has never helped me because I've never really understood why in "an STP" the "s" sound is a vowel sound and in "a SRDM" the s sound is a consonant sound. Basically, I rely on my ear.

The real trouble, of course, is that unless one is really, really familiar with the acronym, one doesn't know how it's actually used: pronounced as a string of letters or as a word. I thought SIPL would be "an SIPL" (an ess-eye-pea-ell) until fairly recently. I didn't know it was pronounced "a sipple"-or "a sighpull" (I've heard it both ways).

Jay makes sense. I'm going to try to be more in line with his concepts in upcoming editions. But this one may have a few inconsistencies.

been assigned the appropriate rights.

2. Under ISO 9660, a single CD-Rom disc.

**Volume Label** A name you can assign to a floppy or hard disk in MS-DOS. The name can be up to 11 characters in length. You can assign a label when you format a disk or, at a later time, using the LABEL command.

**Volume Serial Number** A number assigned to a disk by MS-DOS. The FORMAT command creates the serial number on a disk.

**Volume Unit** VU. The unit of measurement for electrical speech power in communications work. VUs are measured in decibels above 1 milliwatt. The measuring device is called a VU meter.

**VOM** Abbreviation for VOLT-OHM-MILLIAMETER, probably the most common form of electronic test equipment. It measures voltage, resistance and current, and may have either a digital or analog meter readout. Some VOMs have other test functions such as audible continuity signals and special tests for semiconductors.

**Vomit Comet** A plane used to simulate zero-G for astronaut flight training. Trainers often get motion sickness inside.

**VON** Voice On the Net (Internet), involving packetized voice. A recent development, initiating a VON call typically requires a multimedia PC or Mac computer with special software which matches that on the receiving device. More recently, Internet servers have been equipped with such software, although appropriate client (workstation) software must be installed to take advantage of this approach. More recently still, VON has been demonstrated from workstation to telephone, telephone to workstation, and telephone to telephone. Additionally, new compression techniques and new DSPs have dramatically improved the quality of VON transmission, mitigating the impacts of packet delay. See Internet Telephony for a detailed explanation. See also VON COALITION and PACKETIZED VOICE.

**VON Coalition** The "Voice on the Net" (VON) Coalition is an Internet organization devoted to "educating consumers and the media by monitoring and supporting present and new developed telephony, video and audio technologies that are specifically designed and manufactured for the Internet community." It was formed, inter alia, to provide a forum against the ACTA (America's Carriers Telecommunications Association) petition to the FCC which sought to ban VON as a threat to the integrity of the PSTN and the concept of Universal Service. VON Coalition, [www.von.org](http://www.von.org). See Universal Service Fund.

**VORTAC** VOR (VHF Omnidirectional Range) collocated and/or combined with TACAN (Tactical Air Navigation Equipment).

**Vote ACK** Also known as Mass ACK; in Usenet, the posting of the e-mail address of each person that voted for or against a newsgroup proposal.

**Voting** A teleconferencing term. Also known as Polling. In a large, event-style teleconference, the participants can vote on an issue via the touchtone keypad. The teleconference service provider tabulates the electronic votes and advises the conference sponsor of the results.

**Voting Receivers** A group of mobile base phone receivers operating on the same frequency as a control unit to pick the best signal from among them.

**VOTS** VMS OSI Transport Services. A Digital Equipment Corp. software product that modifies Digital's DECnet transport layer to conform to the International Standards Organization (ISO) Transport Protocol Class Four (TP4).

**VOX** Voice Operated eXchange. Your voice starts it. When you stop speaking, it stops. Tape recorders use it to figure when to start recording and when to stop. There are pros and cons to VOX. With VOX you often miss the beginning of the conversation. And the tape goes on for 3 or 4 seconds after you've stopped talking. Also if ambient noise is high, VOX might mistake it for speaking and turn the recorder on and keep it running. Cellular phones also use VOX to save battery. A cellular phone without VOX is continuously transmitting a carrier back to the cell site the entire time your call is in progress. The VOX operation used in smaller phones allows the phone to transmit only when you're actually talking. This reduces battery drain and enables handheld phones to operate longer on a smaller battery.

**VoxML** Voice Markup Language. See Voice Browser.

**Voycall** An early key system manufacturer, which made a combination 1A2 handsfree intercom telephone system. It was wood grained, inlaid into black plastic. An impressive phone system. Sadly, no more.

**VP 1.** Virtual Path. A SONET term for an end-to-end route between 2 points. Many Virtual Paths may share a common physical path. Each Virtual Path consists of Virtual Tributaries which, in turn, consist of Virtual Channels. In the ITU-T SDH terminology, a Virtual Path is known as a Virtual Container.

2. An ATM term. Virtual Path is a unidirectional logical association or bundle of VCs, which are communications channels that provide for the sequential unidirectional transport of ATM cells.

**VPA** Voice Port Adaptor.

**VPAR** Voice Port Adaptor Rack.

**VPC** An ATM term. Virtual Path Connection: A concatenation of VPLs (Virtual Path Links) between Virtual Path Terminators (VPTs). VPCs are unidirectional.

**VPDN** Virtual Private Data Network. A private data communications network built on public switching and transport facilities rather than dedicated leased facilities such as T1s.

**VPDS** Virtual Private Data Services. MCI's equivalent of Vnet for data.

**VPDS 1.1** Virtual Private Data Service 1.1. VPDS 1.1 provides Switched T1 and Switched T3 over a platform of Digital switch Corporation's ECS1 (DXC 3/1) and ECS3 (DXC 3/3) Cross-Connects, respectively. This is a switched data service and is intended for customers who do not want to pay a fixed price for private line services such as TDS1.5 and TDS45. VPDS 1.1 requires a customer to have dedicated access and egress, which is priced at a fixed rate. The network portion is priced on a usage basis and is the "switched" portion of the end-to-end circuit.

**VPI** Virtual Path Identifier. An ATM term. Virtual Path Identifier is an eight bit field in the ATM cell header which indicates the virtual path over which the cell should be routed. See VPI/VCI.

**VPIM** Voice Profile for Internet Messaging, a proposed Internet messaging protocol to allow disparate voice messaging systems to automatically exchange voice mail over the Internet. VPIM also will allow a voice messaging system to communicate with other such systems outside the organization. VPIM works like this: You record a message and enter the target telephone number of the intended recipient. Your voice processing system does a directory look-up to a public electronic directory, using LDAP (Lightweight Directory Access Protocol) to find the e-mail address assigned for voice messages for that individual. Your system converts the