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of Telecommunications,
Networking and the Internet

17th Updated and Expanded Edition
by Harry Newton

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personal web site: www.HarryNewton.com
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Networking and Internet

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Help Make This Dictionary Even Better

by Harry Newton

I love this industry. I love writing this dictionary. My wife says "Come on. 20 years is enough, already. I'm sick of seeing your back bobbing up and down as you get excited by yet another concept, another idea, another invention, another word. How many words can you keep adding? ... Get a life." Sorry, wife, I love doing this. I'll keep updating this dictionary until I die and then, my poor children will take over, maybe ... well, that's their problem.

I wrote this book for those of us turned on by this wonderful industry, for those of us desperately trying to keep up, for those of us new to this industry and for those of us who simply want a respite from life for a few moments. Dip into this book. Dig around. You'll find something interesting, something you didn't know, something irrelevant, something relevant, something amusing, something warming. If I have fun writing this dictionary, you should have fun reading it.

I'm adding, updating, expanding and fixing 100 words a week. Still, neither Ray Horak, who's the absolute best technical contributing editor ever, nor I can keep up. So I beg you. If I'm missing a definition, or if a definition is unclear or, God forbid, wrong, please email me. Harry_Newton@HarryNewton.com.

I'm also looking for corporate glossaries and dictionaries — not ones that just have your company's products, nor ones that are secret, but ones with generic definitions of the specialized technical areas your company plays in. I love emailed glossaries. Please don't send lists of acronyms. There are more stupid acronyms in this world than Carter had liver pills. If I included all the ones I get sent, this poor dictionary would be 5,000 pages long. Each acronym would have at least five different meanings — which would be totally useless cause you'd never know what one meant. So no acronyms, please. Pretty please.

If you send me a glossary or several new, legitimate (not made-up) definitions I can use, I'll reward you with a free copy of the next edition. Please send me your street address. I can't send 1,000-page paper dictionary to email addresses. We aren't there, yet.

By the way, check out my new venture — Harry Newton's Technology Investor Newsletter — www.TechnologyInvestor.com.

Thank you.

Harry Newton

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

Where The Telecom, Networking, Fiber, Internet, Web Explosion Is Taking Us

by Harry Newton

No other industry is exploding as fast as the one we're in — whatever you call telecommunications, networking, fiber optics, the Internet and the World Wide Web. No industry is delivering as many benefits as this one. No industry is creating as many opportunities as these industries are. No industry is creating wealth as fast as this incredible industry is — or whatever it's now called. If you're an investor you MUST join me on my new venture, Harry Newton's Technology Investor Newsletter. www.TechnologyInvestor.com.

Where's it all coming from:

1. The Demand. Communications traffic worldwide is exploding — wired and wireless. Data and voice. Video and Music. Traffic on the Internet is doubling every 100 days. There'll be one billion people on the Internet by 2005. The demand is coming from everywhere — ecommerce, video, Internet radio, employee collaboration, business to business, business to consumer, etc. The traffic is coming on landlines and on wireless. It's coming on cell phones and on PDAs. It's coming on DSL and cable modems. We're "wiring" the world. Today — even after the huge growth in Internet usage in the last few years — more people are actually gabbing away on cell phone networks than are surfing the Internet. And now they're surfing the Web on cell phones using WAP and 802-11G wireless networks, and maybe soon Bluetooth. Ubiquitous, universal high-speed quality communications have created the "virtual" corporation, with mobile employees carrying laptops, cell phones and two-way pagers. This has led to a huge growth in virtual private networks, fueling more demand. Every business in the industrialized world has set up their own Web site — peddling and servicing their wares and buying their own raw materials over the Internet. More and more businesses are convinced they won't survive unless they have a Web site. More and more are convinced there are billions to be saved by having suppliers bid against each other online, using the Internet. They're right.

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 cable modem into my house. It's 30 times as fast as my previous dial-up and twice as fast as my previous DSL and virtually as fast as the T-1 line in the office. Downloads that used to take me hours now take minutes. My cable modem (thank you AOL Time Warner) is on all the time. It constantly brings me faxes, voice mail, email and alerts me to incoming phone calls. I do my shopping on my cable modem. I listen to Internet Radio. My favorite radio station is Klassik Radio from Homburg, Germany. Listen on <http://windowsmedia.com/radiotuner/default.asp>. It's great station. Always "up" music. Lots of music. No commercials. And mercifully little talking. I watch my stocks on the Internet. I do my research on them via my cable modem and the Internet. I listen to conference calls when the executives report their results. I hear the analysts asking probing (and occasionally rude) questions. I hear the answers. I read magazines and newspapers on the Internet via my cable modem and my home local area network. I talk to my children on the Internet. My wife and I arrange our social life via the Internet. We share each other's Microsoft Outlook Calendar... Correction, she gets mine. I don't see hers. My cable modem's lightning speed and its immediacy — being on all the time — has changed my life. It (and other high-speed Internet access, like DSL) will change yours.

Network speed is a narcotic. Stand on any New York City street corner 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. My travels in the past year to Asia, Australia and Europe confirm this. Everyone asks me "When will we get high speed Internet access in our homes and in our offices?"

2. The Increasing Digitization. This is relatively old, but speeding up. We started digitizing phone conversations 30 years ago for two basic reasons: First, it improved their quality. You were no longer amplifying the crud (static and noise) that long distance analog calls picked up. With digital, you regenerated the calls. You recreated them like new. Digitization made cross-world calls sound as clear as cross-office. Second, digitization make the whole process cheaper. Digital componentry is cheaper, and getting cheaper day by day.

3. The Increasing Packetizing of Everything. A packet network is a lot more efficient than a circuit switched one. Packet networks "squeeze" zillions of conversations onto one line. Circuit switched networks have one conversation per line. Packet networks are cheaper, more efficient. The Internet is packet switched. The dial-up telephone network is circuit switched. Now you know why everything — including voice telephone calls — are switching to packet networks — private Intranets and the public Internet. It's much, much cheaper to call my sister in Australia over the Internet than over the normal switched phone network. About half as expensive.

4. 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 3,000,000,000,000 bits per second (three trillion bits per second) down a fiber strand a little thicker than one strand of your hair. The speed is totally awesome. A trillion bits per second (one million million bits per second) is enough to carry the entire world's Internet. That's the entire world's Internet traffic on one strand of fiber not much thicker than a strand of your hair. Imagine, bringing a strand of fiber to your house. The whole Internet could pass your door every second of every day.

Telecom's three building blocks — fiber, DSPs and routers — are improving about ten times faster in cost performance each year than computing's microprocessors and computer memory - silicon or magnetic. Though computing improvements get national publicity, telecom's improvements are more impressive and faster. Telecom's annual cost-performance improvement blows away Moore's Law (defined under M) by a huge margin. Computing's cost-performance improvements get the publicity. But telecom's win the race.

5. 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

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