

December 21, 2004



bandwidth

An Online Newsletter of Discovery Institute

Four Years After the Bubble:
VoIP Vampires, Wireless
Witches and Broadband
Bats Bedevil the Bells' Belfry
and Befuddle the FCC

By: Senior Fellow John Wohlstetter

That the Internet has reached deep into the fabric of American civic life was advertised by both Presidential candidates, each of whom urged viewers to visit their websites. Recently, President Bush signed S.150, extending the moratorium on Internet taxation by the states until November 1, 2007. But despite online's emergence, telecom remains troubled four years after the bursting Internet stock market bubble destroyed trillions of investment capital.

“It’s the (Telecom) Economy, Stupid!”

The magnitude of what was aptly called the telecom meltdown continues to depress telecom investment. Figures from a major study by the U.S. Chamber of Commerce tell the story. Between March 2000 and July 2004 the telecom service sector fell 67 percent, from \$1.135 trillion to \$375 billion, while the telecom equipment sector fell 74 percent, from \$1.282 trillion to \$338 billion. This is a combined telecom service and equipment sector fall of 70 percent, from \$2.6 trillion to \$700 billion. Other sector declines—Competitive Local Exchange Carriers (CLECs) fell from \$100 billion to \$2.9 billion—made the total loss in telecom value \$1.9 trillion. Between 2000 and 2003 annual telecom capital spending fell 58 percent, from \$132 to \$56 billion.¹ Between March 2001 and May 2004, 380,500 jobs—29 percent of total domestic job losses—were in telecom, with 23,000 job losses coming while the economy added 1.4 million jobs between August 2003 and May 2004.²

The salience of telecom industries for economic growth can hardly be understated. Since 1987 domestic telecom spending has grown 6.3 percent annually (to \$285.3 billion), nearly double the 3.4 percent annual

growth rate of real personal income; in the same period telecom services has grown 150 percent, almost three times the 55 percent rise in real GDP in that time.³ Vice-President Cheney pointed out during the campaign that 400,000 people make money trading on eBay⁴ (the real figure is actually 430,000⁵). George Gilder recently put telecom's role in a broader context of information revolution products like the personal computer and local area networks: Between 1980 and 2003 US per capita GDP rose 38 percent, from 4.7 to 6.5 times per capita global GDP; 36 million net new domestic jobs were created; US net household wealth trebled in real terms, to \$45.9 trillion; and total national assets reached \$80 trillion.⁶

It is fair to note that the Internet bubble was artificially inflated by the former WorldCom's fraud, with the hyperinflation of its Internet traffic figures misdirecting much investment in fiber networks and associated equipment. But regulators added fuel to the flames: the Federal Communications Commission (FCC) adopted an aggressive policy of promoting local exchange competition by subsidizing new entry—hence the CLEC portion of the bubble. Far from generating genuine market competition, the result was a Potemkin competition in which entrants took advantage of deep network access discounts—on average, 53.5 percent lower than the actual cost of providing access (*i.e.*, to use existing carrier lines rather than to build their own).⁷

Of 29 million CLEC lines as of 2004, an estimated 16 million (55 percent) were so-called UNE-P (Unbundled Network Element Platform)—essentially, the entire local network—a total reached in just four years.⁸ And for what? Legg Mason valued AT&T's 4 million UNE-P lines at zero.⁹ And as the Chamber study notes, the FCC's “stepping stone” theory—that resale lines would induce competitors to build their own lines—has been

refuted by events; there were fewer CLEC lines at end-2003 than at end-2000.¹⁰ (An additional cause of the crash, cited by the Chamber, was a credit crunch precipitated by bank regulators in late 2000; business loans fell 20 percent between January 2001 and June 2004, from \$1.1 trillion to \$880 billion.¹¹)

Rules predicated upon traditional wireline voice network market dominance are extremely ill-suited for a domestic market where more Americans—172 million versus 152 million—use wireless voice service than wireline voice, with an estimated five million homes having already “cut the cord” by dropping landline altogether (4.6 percent of the nation’s 109 million households), a figure that is expected within two years to more than double to 11 million.¹² And there is more market change in evidence.

Cable firms can already offer telephony to 15 percent of US households¹³ and in fact already provide 3.2 million access lines to 2.4 million households.¹⁴ Voice over Internet Protocol (VoIP)—so-called Internet broadband telephony—serves 600,000 households; add in 368,000 satellite plus 140,000 fixed wireless subscribers and another million households have ditched their phone service provider.¹⁵ Yankee Group projects that cable telephony will grow from 2003’s 2.8 million to 17.5 million in 2008.¹⁶ Meanwhile, cable faces a powerful competitor in satellite television, which by 2003 had garnered 22 percent of multi-channel video subscribers.¹⁷ Indeed, cable subscribership has fallen 900,000 in the past two years, the first consecutive-year drop in the industry’s history.¹⁸

On December 15, 2004 the FCC adopted new local exchange carrier unbundling rules to replace those struck down in March by a federal appeals court—the third such reversal since the first set of rules were promulgated

in August 1996.¹⁹ With its usual hedging complexities—transition periods and capacity thresholds for network access deregulation—the agency revised its UNE rules:

- *Mass Market Local Circuit-Switching.* Removed mass-market circuit-switching from the UNE regime, subject to a 12-month transition for the embedded customer base; the “UNE-P” platform (the full set of unbundled network access elements²⁰) will remain available during the transition.
- *Dedicated Interoffice Transport.* Removed DS1 (1.5 megabit-per-second—Mb/s) dedicated interoffice transport between wire centers with at least 38,000 business lines, or where both wire centers have a least four fiber-based collocators, with a 12-month transition for the embedded customer base. Removed DS3 (45 Mb/s) and “dark” fiber (deployed but not “lit” for service) transport connecting wire centers with at least 24,000 business lines, or where there are at least three fiber-based collocators, with an 18-month transition plan for the embedded customer base.
- *High-Capacity Loops.* Same rules as with dedicated interoffice transport, except that they apply to all buildings within a wire center service area that meet the line count or fiber-based collocator thresholds.
- *Unbundling Framework.* (1) wireless and long distance markets will remain exempt from the UNE regime; (2) “impairment” will be judged in accord with the capabilities of a “reasonably efficient” competitor and “reasonable inferences” as to prospects for competition based upon competition in similar geographic markets.
- *Pricing.* (1) Rates for dedicated transport UNEs and high-capacity UNE will be the higher of 115 percent of the rate paid on June 15, 2004, or the rate established by a state commission between June 16 and December 15, 2004; (2) rates for mass-market circuit-switching will be the higher of the rate paid on June 15, 2004 or the rate established by a state commission between June 16 and December 15, 2004.

Commissioner Kathleen Abernathy warned in her statement that an “impairment” test which ignores potential competition contravenes what the federal appeals court mandated, and invites yet another reversal (at least, a partial reversal).²¹ Meanwhile, telecom markets evolve despite the FCC’s foot-dragging, but at a significantly slower pace than otherwise would be the case.

Local Stirrings: Fiber Flourishes

To date, cable continues to dominate the domestic broadband market; its share of advanced service customers jumped from 44.1 percent in 1999 to 75.3 percent in 2003 (while DSL’s share rose from 9.4 to 14.9 percent).²² Local carriers are beginning to deploy fiber-to-the-home (FTTH) in earnest. FTTH offers shared bandwidth of 622 Mb/s downstream and 155 Mb/s upstream; individual access speeds range from 5 to 30 Mb/s.²³

One top telecom consultant firm estimates that as of September 2004 nationwide FTTH connections reached 146,500, up 226 percent from 64,700 as of September 2003 and less than 30,000 two years ago. Verizon has a 3 million-home FTTH target by end-2005, with the Bells aiming to spend \$10 billion to date on FTTH; at \$1,000 per home that is but one-tenth of the \$100 billion estimated cost of nationwide FTTH. A recent Verizon rollout brought \$34.95 per month Internet service.²⁴ The company also announced that its fiber rollout in Keller, Texas doubled broadband subscribership there in the first ten weeks.²⁵

SBC is making a \$6 billion fiber investment to target 18 million homes by 2007.²⁶ If current trials are successful, BellSouth plans to invest \$2 billion to provide fiber access to 80 percent of its 13.8 million households by 2007 or 2008.

Already, 46 percent of BellSouth’s households (6.35 million) are within 5,000 feet of fiber loops; 12 percent of BS customers already enjoy 3 Mb/s access. BS aims to provide 24 Mb/s service over its fiber loops (possible with VDSL—Very High Bit-Rate DSL—if fiber is within 5,000 feet of the residence).²⁷ BS has already deployed fiber-to-the-curb (FTTC—placing fiber nodes at a “pedestal” within 500 feet of residences) to an estimated one million homes by end-2003.²⁸

Also in 2003 broadband-over-power-lines (BPL) began offering 3 Mb/s trials on medium-voltage (up to 40,000 volts) power lines, with 100 Mb/s ultimately envisioned.²⁹ Satellite had an end-2003 market share of 1.3 percent of broadband—but zero advanced service lines—i.e., no satellite provider offers 200 kb/s upstream service.³⁰

Wireless Wave

Six nationwide networks serve 85 percent of America’s 172 million wireless users; between 1993 and 2002 prices fell 79 percent while usage exploded twenty-fold.³¹ The long-anticipated wireless network consolidation appears to be gathering steam, with Nextel announcing its deal with Sprint on the heels of the AT&T Wireless-Cingular merger. Approval is very likely, unless Verizon makes a higher bid. (A Verizon bid is less likely to win approval, as it would consolidate 65 million customers in one firm, 41 percent of the total for the nationwide carriers and 38 percent of the total wireless market.³²) Sprint plus Nextel would create the third largest wireless carrier, at 38.5 million customers, albeit Nextel will have invest \$3 billion to shift to Sprint’s CDMA system.³³

The top three players would then carry 75 percent of wireless traffic, and five nationwide

wireless networks would remain. In 2004 the number of 3G networks worldwide roughly doubled.³⁴ Wireless growth in the US is cramped by spectrum shortage, a key reason the US lags behind Asia's and Europe's broadband wireless deployment. With only 170 megahertz of radio spectrum allocated to wireless services, the US has roughly half that of leading countries in Asia and Europe.³⁵ Figures confirm this: US wireless carriers on average derive only 4.7 percent of revenues from data, far less than Japan's DoCoMo, at nearly 25 percent and France's Orange, at 14.3 percent. One estimate places the total wireless data market at \$57 billion in 2008, with text messaging more than half.³⁶

Between 1996 and 2002 wireless accounted for the *entire* growth in household telecom expenditures—five percent annually, as wireless revenues per household quintupled (from \$7 to \$35) while POTS revenues declined five percent (from \$51 to \$48).³⁷ Small and medium-size businesses spend 45 percent of their telecom budget on wireless data and voice. Half of the 12 to 19-year old set, famed for being glued to their cellphones, are now users, up from 19 percent five years ago. Said one teen: “My cellphone is my life.”³⁸ Confirming this, schools have dropped their longtime opposition to students bringing cellphones to schools, primarily due to pressure from parents desiring to track their children.³⁹

Adding injury to insult, the wireless world is altering social life as well, with users adding handheld devices to their cells. A Harris Interactive survey found that 15 percent of users have e-mailed from restrooms, 19 percent from restaurant tables and 21 percent in presence of friends or family.⁴⁰ Americans now sport 1.6 million Blackberry handhelds, plus 14 million smart cellphones; the latter are projected to increase 44 percent annually

over the next five years, which would make for nearly 87 million smart phones in 2009.⁴¹ In another “sign of the times” France now allows cinemas, theaters and concert halls to jam cell calls, provided emergency calls made outside those places are not jammed.⁴² Yankee Group has issued a new study with a high-range estimate that 6 percent of phone users have gone fully cordless; the number is rising at 1.5 percent per year, but in South Korea 65 percent of users rely primarily on mobile phones.⁴³

Perhaps the strongest indicator of how wireless is transforming telephony is Verizon's CEO, Ivan Seidenberg, telling securities analysts that his company might spin off or sell up to 15 million of its local lines; the company lost 656,000 local lines in the third quarter of 2004. The company's local operations generated only 45 percent of total revenues, with 53 percent of Verizon's 54 million local residential customers now bundling with long distance, Internet or both. Verizon Wireless reached 42.1 million customers in that quarter.⁴⁴

In one respect, however, wireless numbers have run behind widespread expectations: only 750,000 landline users ported their numbers to a wireless phone, while 7.8 million ported numbers between wireless services.⁴⁵ This is far less than estimates that ran as high as 30 million switchers.⁴⁶ Wireless broadband, while finally being deployed in the US, is held back by incompatible network technologies, each having discrete implementation issues.⁴⁷

Long Distance Implodes

AT&T's seven-year earnings slide continues, as the company posted a 13 percent second-quarter decline in earnings (to \$7.6 billion). AT&T has ceased marketing to its 35 million residential customers, who account for less than 30 percent of company revenue (AT&T's

over 3 million business customers in 149 countries account for the rest). The full extent of AT&T's decline is graphically illustrated by the nine year, 58 percent decline in average residential customer monthly minutes-of-use (from 143 to 60), courtesy of cell phones, e-mail and Internet messaging. AT&T's corporate bonds were downgraded to "junk" status. Last fall BellSouth considered paying \$24 per share to acquire AT&T; a current share valuation estimate is \$15.10 per share. Meanwhile, MCI will no longer market to its 3 million local residential customers. Potemkin local entry is collapsing despite eight years of massive FCC regulatory assistance to its intended corporate beneficiaries.

LD flat rate pricing has spurred migration; long distance calling is increasingly being siphoned off by wireless and Internet.⁴⁸ VoIP is enabling some businesses to save up to 50 percent on LD calls; a line with 2,000-call capacity cost \$155,000 per month in January 2000, but only costs \$6,200 now.⁴⁹ (In 1946, AT&T's entire LD network could handle 1,800 simultaneous calls.) Four years after the telecom stock valuation crash LD capacity usage languishes—still—at around four percent.⁵⁰

The full extent of the Clinton-era damage done to the LD industry by artificially prolonging its life—Reed Hundt barred the vertical AT&T/SBC deal in 1997 and the Justice Department blocked a Verizon/MCI/Sprint deal in 2000—is now clear. As of October 2004 AT&T's market capitalization stood at \$11.3 billion and MCI's at \$5.3B; Verizon's was \$110B, SBC's \$87B and BellSouth's \$51B.⁵¹ Blending local and LD would have laid the foundation for the broadband boom by erasing the archaic regulatory bright line between local and LD (what nationwide pricing plans did for wireless). The LD sector's woes pile up, with no end in sight.

VoIP Vampires Begin to Bite

In-Star MOR sees Internet broadband phone connections topping one million in 2005, rising to some 3 million in 2006, 5 million in 2007 and nearly 8 million in 2008. The firm projects 682,000 VoIP users at year-end, rising to 7 million by 2008.⁵² The trade group Telecommunications Industry Association is more bullish: It sees 19 million VoIP customers by end-2007.⁵³

One estimate has 51 million homes passed (most not served, though) by VoIP in 2006.⁵⁴ One securities firm sees cable companies with 19.5 million subscribing households (18 percent of all) by 2010, causing the Bell companies—who will lose 16 million of the defectors—to lose 17.4 percent of access lines, a figure comparable to UNE-P losses to date; VoIP losses, however, will cost the Bells more dearly, because price declines will cost more than market share losses. At end-2004 some one-quarter of households will have been passed by cable-VoIP, a figure the firm estimates will double by end-2005 and reach nearly all cable homes by end-2006. The firm polled consumers and found that 51 percent would switch from Bell service if VoIP offered a 30 percent discount, and that more than 25 percent preferred cable even without a discount.⁵⁵

Last month the FCC issued a major ruling on VoIP service, in favor of leading Internet phone provider Vonage. The agency preempted the states from regulating VoIP service providers as telephone companies.⁵⁶ Three factors guided its decision: (1) Vonage subscribers must obtain broadband access separate from Vonage, but can then access Vonage service anywhere on the planet, porting their phone number; (2) Vonage customers must use specialized terminal equipment; (3) Vonage users can manage

services online in real-time, including voicemail, e-mail and the ability to access one other non-Vonage number anywhere in the US or Canada.⁵⁷ The agency noted that its ruling was not predicated on the statutory distinction in the 1996 Telecom Act between telecom and information service; rather, it was based primarily on the location-independence of Vonage service, which “preclude[s] any practical identification of, and separation into, interstate and intrastate communications for purposes of effectuating a dual federal/state regulatory scheme.”⁵⁸

Regulatory Hubris; Market Mess

The idea of forcing local exchange carriers to sell their network access to competitors at a steep discount was the brainchild of a former FCC chief economist, Joseph Farrell. He wrote in 1996 that the FCC should not merely “allow” competition, but instead “create” it.⁵⁹ The result of deregulation—in essence, eliminating the kinds of rules Farrell favored—would be, according to the Chamber of Commerce, a \$634 billion economic benefit over five years (\$167 billion GDP due to an added \$58 billion in capital investment, plus \$463 billion in GDP due to an 0.5 percent increase in productivity); in addition, 212,000 new jobs would be added to the payrolls.⁶⁰ Indicative of the consequences of “Farrell’s folly”: Among 30 OECD countries, America ranks second in cable modem deployment but only *eighteenth* in DSL.⁶¹

Regulators Awaken?

FCC Chairman Michael Powell recently proclaimed his vision for his agency’s telecom policy goal: “[I]t is the country’s next challenge to deploy a network that is at least

as capable as any other nation’s.”⁶² At last, commissioners acknowledge the obvious: First-generation US broadband service is not in the same class as that enjoyed by the Asian tigers, and that a next-generation service must be deployed. Commissioner Copps said that the current broadband definition “should have been dropped by the wayside long ago;” Commissioner Adelstein called the definition “woefully out of step with the global leaders.”⁶³

The three-person Republican majority nonetheless reported to Congress that the agency is meeting its statutory goal (per section 706 of the 1996 Telecom Act) to promote deployment of advanced telecom capability (two-way broadband of at least 200 kb/s) to all Americans, “on a reasonable and timely basis.”⁶⁴ This is in accord with the agency’s first-generation definition, which more accurately denotes speeds ranging from narrowband deluxe to broadband lite, well short of the turbo-speed broadband being deployed in Asia. *South Korean broadband subscribers enjoy 40 times more bandwidth than FCC-style broadband delivers to American consumers.*⁶⁵

The FCC acknowledges that 200 kb/s speeds merely enable faster web page downloads, compared to dial-up speeds that “paint the page” onscreen while downloading. Yet the most it offers is that it will ask carriers for more “granular” data so as to break out access speed tiers.⁶⁶ Its report notes that several major cable companies are now offering Internet access speeds from 3 to 6 Mb/s.⁶⁷

With PCs in 71 percent of households as of June 2004—a figure that tops cable penetration for the first time—the potential for next-generation broadband Internet growth is considerable.⁶⁸ By March 2004 an estimated 55 percent of adult Internet users

had broadband either at home or at work.⁶⁹ In terms of broader Internet usage, online is catching on with everyone: By May 2004 penetration for whites, at 61 percent, was only two points ahead of Hispanics and nine points ahead of African-Americans.⁷⁰

To its credit, the agency did take one step forward in October, deciding to forbear from applying UNE rules to home (FTTH) and curb (FTTC) fiber loops, packet switching and the “packet functionality” of hybrid fiber-copper (HFC) loops.⁷¹ But many loops are so long that fiber is not even on the horizon: about 70 percent of Bell wireline loops lie within 12 kilofeet from the central office, a distance that is the outer limit for 1.5 Mb/s DSL: 20 percent lie between 12 and 21 kilofeet away and the remaining 10 percent are over 21 kilofeet away—18 kilofeet is the standard service limit for DSL under 1 Mb/s.⁷²

America the Also-Ran

South Korea’s broadband connections per 100 population is roughly triple thirteenth-place America’s which trails, among others, Iceland.⁷³ Underscoring the significance of also-ran status is the FCC’s own statement in its latest report to Congress: “Policymakers can reasonably predict that broadband will move from a high-end luxury item, to a mainstream expectation, and, eventually, to a necessity for civic life.”⁷⁴

How, then, can the FCC conclude that broadband deployment proceeds at a “reasonable and timely” pace, when America ranks thirteenth globally and its telecom sector remains years from financial health after a two trillion dollar plunge? Turning around the telecom sector is more like turning an aircraft carrier than an F-16. With virtually no broadband remotely comparable to the turbo-level service enjoyed by Asia’s top

tigers, “reasonable and timely” rollout of faster web-page screen painting is re-arranging the proverbial *RMS Titanic* deck chairs.

Putting broadband in wider perspective, SBC reports that between 2002 and 2007 one set of projections has voice lines declining 17 percent and dial-up Internet lines by 42 percent, while wireless links increase 21 percent, DBS video 38 percent, digital cable video 79 percent, broadband (FCC-defined) 358 percent and VoIP from zero explodes to 12.9 million.⁷⁵ Between 2000 and 2003 wireline calls fell 21 percent while non-voice use more than doubled.⁷⁶ Annual wireless voice usage is growing seven percent while landline voice usage shrinks two percent; should this rate continue wireless usage will top wireline in 2010.⁷⁷ Wireless minutes-of-use, seven percent of total minutes in 2001, are now 23 percent in 2004, more than trebling.⁷⁸ SBC’s mid-range estimate sees the number of wireless households cutting the cord nearly *quintupling* between 2003 and 2008.⁷⁹ (A Forrester Research survey shows cord-cutters nearly tripling in three years.⁸⁰)

Data demand will be increasingly driven by digital cameras, now in 38 percent of US households; broadband will enable rapid online exchange of photos.⁸¹ Between 2001 and 2003 the time average US household telecom services use jumped 36.6 percent, from 147.2 to 201.1 minutes daily.⁸² The best indicator of the radical change in telecom market usage is that *by 2003 wireless plus data now collectively comprise 60 percent of telecom services industry revenues*.⁸³ A just-released Competitive Enterprise Institute study finds that wireless voice is an economic substitute for wireline voice, and constrains wireline pricing; the author found that a one percent rise in wireline price would stimulate nearly a two percent rise in demand for wireless voice service—in other words, some users would

migrate rather than pay the added one percent to their wireline provider.⁸⁴

A recent Commerce Department survey found that broadband users are especially more likely to use the Internet for online banking (38.7 v. 23.8 percent), online purchases (64.3 v. 49.2 percent), online radio/tv (30.91 v. 17.3 percent) and online games (43.1 v. 37.1 percent).⁸⁵ President Bush has called for “universal, affordable” broadband access by 2007, a daunting task given that 43 million households (36.2 percent) are offline and another 52.8 million (44.4 percent) are dial-up users, while the 23.1 million broadband households comprise but 19.4 percent of the total.⁸⁶ But the broadband of which he speaks will run the economy on the FCC’s fumes, not the tiger in Asia’s tank.

Ditto when the FCC tells Congress that broadband deployment is reaching a “tipping point.”⁸⁷ So long as “Farrell’s folly” and UNE-P continue, the US will have little skin in the big broadband game. The FCC knows: (1) in the telecom world wireless subscribership tops landline; (2) nationwide pricing plans are collapsing historical price structures—in 2003 and 2004 combined monthly local plus long distance voice fell from \$52 to \$45 while broadband fell from \$51 to \$31⁸⁸; (3) online access is mainstream at home and at work; (4) calling coast-to-coast costs the same on the margin as calling next door; and (5) network technology disruption is on the verge of making \$300 billion worth of in-place landline plant obsolete. The FCC took the right step with Vonage and VoIP, pre-empting state regulation that would have retarded, if not killed, VoIP deployment. It has gone part of the way with its latest rules for unbundling of local exchange carrier networks. But the FCC did not go far enough. Its transition periods carry into 2006, with minimal change—a small interim price hike for network access.

Thus US policymakers, like Nero, fiddle while Rome burns. Domestic carriers do not have that luxury, as their Asian counterparts rocket into fiber-optic orbit.

Et Cetera

Lightning Strikes—AT&T Was Right in the 1970s: An Iowa teenager working on his PC at home was knocked unconscious when a lightning strike was conducted through his computer’s electronic hardware. Back in the 1970s the old Ma Bell argued that equipment registration rules were needed to protect the network against possible harm, including lightning strikes. Over objections from equipment manufacturers the FCC adopted Part 68, which includes safety rules.⁸⁹

Costly Cells: Slightly more than twenty years ago cellular service was introduced (Chicago, October 1983). The first cellphones cost \$5,000 for a handset (good for bicep curls as well), or a bargain basement \$2,500 for a car phone. Applying the approximate change in the Consumer Price Index, a dollar twenty years ago is worth about \$1.85 today. Hence, the handset of 1984 cost \$9,250 current dollars, while the car phone cost \$4,625. By comparison, a Dell top-end Pentium 4-powered desktop PC has a base price under \$2,000, and Nokia cell handsets range in price from \$40 to \$450—a 20- to 230-fold drop (that is, when your provider does not throw them in with a long-term contract).⁹⁰

Don’t Tax Me: The late Senator Russell Long once described voters’ position on taxes as “Don’t tax you, don’t tax me. Tax that fellow behind the tree!” A CNET News poll confirms this, as regards broadband. Respondents, asked if they would support

universal broadband service, answered in the affirmative—until, that is, they were asked if they would help pay for it. Asked if they would pay higher Internet access fees to support low-income and rural access, 35.7 percent chose “not at all likely”, 34 percent “not very likely,” 24.3 percent “somewhat likely,” only 5.1 percent “very likely” and 0.8 percent “extremely likely.” Curiously, three important questions yielded a 63 percent response figure: would pay a \$1 tax and keep broadband service; spends more time online than when using dial-up; and watches as much television since going online as previously.⁹¹

Online Banking: In 2004 electronic payment transactions topped checks for the first time, 44.5 billion versus 36.7 billion.⁹² Between September 2001 and October 2003 online banking usage rose fastest of all online applications, by 10.4 percent; by comparison, e-commerce grew 8.0 percent.⁹³

Super-Duper: IBM announced it has brought back to the US, after a three year hiatus, the title of world’s fastest supercomputer; its Blue Gene/L clocked 36.01 teraflops (trillions of floating-point operations per second) IBM plans a follow-on model to run up to ten times faster by May 2005.⁹⁴

Digital Diddling: AP warned its members to delete a photo purportedly showing flooding in China, upon being alerted by a Finnish source that the photo was digitally doctored to show higher flooding than actually occurred. AP policy allows for digital alteration of photos if it is deemed unavoidable.⁹⁵

Spam Count: Spammers are branching out. Spam over Internet telephony—“spit” in web-speak, will greet web-phone users. Computers can send 1,000 spam voice

messages per minutes over IP telephony links. Other delights: “spim”—spam over Instant Messages—was an estimated 2 billion messages in 2003, with 4 billion expected for 2005; cell-phone spam nailed 20 percent of users in 2004, up from 14 percent in 2003 and at 150 million text messages twice the 2003 total, with 450 million cell-spam messages predicted for 2005.⁹⁶

E-Spamonomics: A spammer faces a possible nine-year prison term arising out of the nation’s first felony prosecution for spamming (brought in Virginia because AOL is located there). He made \$24 million spamming, up to \$750,000 per month. He used 16 high-speed lines to send ten million messages per 24 hours, getting enough positive responses, a \$40 revenue per response, to make his pile. His response rate was about one positive per 30,000 messages (less than one-hundredth of one percent).⁹⁷

Hollywood: DVD Rules: The most contentious issue between stars and studios in the current contract negotiations is DVD residuals. No wonder: DVD sales are now — \$15 billion, more than 60 percent of the \$24.5 billion total video sales and rental market. Studios currently take a larger cut on DVDs than other media.⁹⁸

\$46,000 Phone Customers: The 15 residents of Mink, Louisiana are finally getting phone service after the Louisiana Public Service Commission ordered BellSouth to extend its service area to include Mink. A state fund will cover the \$700,000 cost next year, as to date the federal Universal Service Fund does not cover Louisiana.⁹⁹

You’ve Got (Corporate and Space-Eating) Mail: The average storage volume

per corporate user consumed by incoming and outgoing e-mail messages has doubled in the past two years, to 10 megabytes daily. By 2008 e-mail may take up 15 megabytes per day per user, with wider use of video attachments.¹⁰⁰

(Endnotes)

¹ *Sending the Right Signals: Promoting Competition Through Telecommunications Reform*, pp. 38-39, U.S. Chamber of Commerce (September 22, 2004).

² *Id.*, p. iv (executive summary).

³ *Id.*, pp. 34-35.

⁴ *Cheney: Economic Stats Miss EBay Sales*, wjla.com, 9/9/04.

<<http://www.wjla.com/news/stories/0904/171981.html>>

⁵ The figure was provided by economist Brian Wesbury. *A Technological Tsunami*, tas.org, 12/8/04.

<http://www.spectator.org/dsp_article.asp?art_id=7478>

⁶ Gilder, George, *America's New Jingoos*, Wall Street Journal, P. A16 (Oct. 9, 2004).

⁷ *Right Signals*, note 1 *supra*, p. 22. The estimate comes from Moody's.

⁸ *Id.*, p. 6.

⁹ *Id.*, p. 26.

¹⁰ *Id.*, p. 22.

¹¹ *Id.*, pp. 40-41.

¹² *Id.*, p. 8. The Chamber report's actual figure is 164 million, but a more current number is 172 million. *Sprint and Nextel Discuss Merging As Cellular Giant*, p. A1, Wall Street Journal (Dec. 10, 2004).

¹³ *Id.*, p. 6.

¹⁴ *Id.*, p. 9.

¹⁵ *Id.*, p. 10 & p. 12. Satellite radio, at 3.4 million subscribers, is nearly ten times bigger than satellite Internet service; but even the radio figure is dwarfed by 19 million non-satellite Internet weekly radio subscribers—and both are minuscule compared to broadcast radio's 277 million weekly audience. *Where the Listeners Are*, Wall Street Journal, p. R4 (Dec. 13, 2004).

¹⁶ *The FCC, Telecom Reform, and the Rule of Law: A Scorecard for Evaluating the Rules*, p. 4, Progress & Freedom Foundation (Nov. 20, 2004).

¹⁷ *Right Signals*, note 1 *supra*, p. 50.

¹⁸ *Id.*, p. 54.

¹⁹ *Unbundled Access to Network Elements* (WC Docket No. 04-313); *Review of the Section 251 Unbundling Obligations of Incumbent Local Exchange Carriers* (CC Docket No. 01-338), adopted Dec. 15, 2004 (FCC News Release) ("Fourth UNE Remand Order").

²⁰ UNE-P is the combination of an unbundled loop,

unbundled local circuit-switching and shared transport.

²¹ *Fourth UNE Remand Order*, note 19 *supra*, Statement of Commissioner Kathleen Q. Abernathy, p. 1.

²² *Availability of Advanced Telecommunications Capability in the United States, Fourth Report to Congress*, p. 17, Chart 2, Federal Communications Commission (Sept. 9, 2004).

²³ *Id.*, p. 17.

²⁴ *Phone Line Alchemy: Copper Into Fiber*, New York Times, p. C1 (Oct. 11, 2004). Source: Render, Vanderslice & Associates, Tulsa, Oklahoma.

²⁵ *Verizon Considers Shedding Portion of Its Local Lines*, Wall Street Journal, p. A3 (Oct. 29, 2004).

²⁶ *The Fiber-Optic Quagmire*, Business Week, p. 42 (Dec. 6, 2004).

²⁷ *BellSouth Targets Web Market As Battle With Cable Intensifies*, wsj.com, 12/06/04 (link unavailable).

²⁸ FCC Report, note 22 *supra*, p. 18.

²⁹ *Id.*, pp. 22-23.

³⁰ *Id.*, p. 23.

³¹ *Sprint and Nextel Discuss Merging As Cellular Giant*, p. A1, Wall Street Journal (Dec. 10, 2004).

Cingular leads the wireless subscriber parade with 47 million, followed by Verizon at 42 million; T-Mobile would be fourth, at 16.3 million, if Sprint and Nextel merge. Alltel, with 12 million, rounds out the top tier, and would move up from sixth to fifth in a five-network nationwide market. *Sprint, Nextel May Close Deal by Wednesday*, Wall Street Journal, p. C1 (Dec. 13, 2004).

³² *A Telecom Frenzy Over Sprint*, Wall Street Journal, p. C1 (Dec. 14, 2004).

³³ *Motorola May Lose Sales if Nextel and Sprint Merge*, New York Times, p. C3 (Dec. 14, 2004). Among the six nationwide wireless networks, Nextel uses an iDEN network, Cingular & T-Mobile use GSM (a TDMA system used in Europe) and Verizon, Sprint & Alltel use CDMA; with half of the spectrum already CDMA, 60 percent will be CDMA if the Sprint-Nextel deal wins approval. CDMA equipment is manufactured by Motorola, Lucent and Nortel, GSM by Nortel, Nokia, Ericsson and Siemens, and iDEN by Motorola. Source: Lehman Brothers.

³⁴ Consultant Andrew Seybold estimates 113 3G networks worldwide. *In U.S. Market, Cellphone Users Are Often All Talk*, New York Times, p. C1 (Dec. 13, 2004).

³⁵ *Right Signals*, note 1 *supra*, p. 67 & pp. 9-10. US spectrum allocation totals 189 MHz, but some 19 MHz is tied up in litigation arising out of the NextWave fiasco. *Id.*, p. 67.

³⁶ SMS (short message service) would have 56%; e-mail, 16%; photo messaging, 12%; video messaging, 6%; rich messaging (text plus limited video), 6%; and IM (instant messaging—real-time exchanges), 4%.

Sources: Nokia & Oppenheimer & Co, Inc. Presentation by Lincoln Hoewing, VP, Internet & Regulatory Policy, Verizon, Briefing on Communications Trends, Discovery Institute, Dec. 9, 2004.

³⁷ Source: SBC.

³⁸ Source: Yankee Group, from Communications Daily, July 20, 2004. *Cell Phones That Link Teens Also Cut Off Parents*, Washington Times, p. D1 (Sept. 12, 2004). Source: market research firm Teenage Research Unlimited.

³⁹ *School Cellphone Bans Topple (You Can't Suspend Everyone)*, nytimes.com, 9/29/04.

<http://www.nytimes.com/2004/09/29/national/29cellphone.html?ei=5006&en=3c0a91cdd9a3ac14&ex=1097035200&partner=ALTAVISTA1&pagewanted=print&position=>>

⁴⁰ *No Escape From E-Mail: Wireless Blackberrys Push Limit of Etiquette*, Washington Post, p. A1 (Sept. 29, 2004). The survey was commissioned by T-Mobile.

⁴¹ *Id.* Sources: BlackBerry figure: manufacturer, Research in Motion Ltd.; smart phones: Instat/MDR.

⁴² *France May Allow Jamming of Cell Phones*, yahoofinance.com, 10/12/04.

http://biz.yahoo.com/ap/041011/france_immobilizing_mobiles_4.html

⁴³ *Consumers Give Up Land-Line Phones For Cell Phones*, NewsFactor.com, 10/22/04.

http://www.newsfactor.com/story.xhtml?story_title=Consumers-Give-up-Land-Lines-for-Cell-Phones&story_id=27822#story-start

⁴⁴ Source: Verizon Communications.

⁴⁵ *FCC Observes First Anniversary of Wireless Number Portability*, FCC News, 11/24/04.

http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-254499A1.pdf

⁴⁶ Source: *Telecommunications Policy Review* (private newsletter), p. 13, 11/28/04.

⁴⁷ Wi-Fi (Wireless Fidelity), offers access speeds of 11, 54 and 108 Mb/s in the 2.4 and 5 GHz spectrum bands, over distances up to 300 feet; Wi-Max (Worldwide Interoperability for Microwave Access) offers up to 75 MB/s over up to 30 miles, in the spectrum range of 2 to 66 GHz; Personal area Networks (PANs) use Ultra Wideband (UWB) to send 20 – 120 Mb/s, with gigabit ranges in testing, over short distances; Verizon's EV-DO (evolution data only) first-generation 3G network offers 2 Mb/s downstream and 300 – 500 Mb/s upstream; AT&T's Wideband CDMA and Universal Mobile Telecommunications System (UMTS) offers 2 Mb/s downstream and 220 – 300 kb/s upstream; fixed microwave wireless services offer download speeds up to 20 Mb/s. FCC Report, note 22 *supra*, pp. 18-22.

⁴⁸ *Bride or Bridesmaid: AT&T and MCI May Compete for Suitors*, Wall Street Journal, p. C1 (Aug. 2, 2004).

⁴⁹ *PC, Phone Home*, nypost.com, 9/12/04.

<http://www.nypost.com/business/28417.htm>

⁵⁰ LD rates have continually fell, with rare exceptions, since the beginning. A 10-minute call between New York and Los Angeles cost \$26.17 in 1920--\$286.96 in 2004 dollars; \$5.50 in 1946--\$50 in 2004 dollars; and cost 80 cents in 1998, the last year before flat-rate calling made measuring average cost impossible. *So Long to Long Distance?*, Washington Post, p. E1 (Aug. 5, 2004). Capacity figures from consultant firm TeleGeography; LD call cost figures from A. Michael Noll, UCLA. Inflation figure based upon Bureau of Labor Statistics Inflation Price Calculator.

⁵¹ *AT&T Primps Books as Phone Industry Girds for Takeovers*, Wall Street Journal, p. C1, Oct. 4, 2004.

⁵² *Battle Brews on Regulation of Internet-Based Telephone Service*, New York Times, p. C1 (July 29, 2004).

⁵³ *The FCC, Telecom Reform, and the Rule of Law*, note 16 *supra*, p. 5.

⁵⁴ *Right Signals*, note 1 *supra*, p. 12.

⁵⁵ Bernstein Research Call, Dec. 7, 2004.

⁵⁶ *In the Matter of Vonage Holding Corporation Petition for Declaratory Ruling Concerning an Order of the Minnesota Public Utilities Commission*, Memorandum Opinion and Order, WC Docket No. 03-211 (adopted November 9, 2004).

⁵⁷ *Id.*, paras. 5-7. Vonage callers can link up with any PSTN wireline or wireless number. *Id.*, para. 8.

⁵⁸ *Id.*, para. 14. Traditional telephone service jurisdiction is based upon geographic end-points that define the type of call made. *Id.*, para. 17. Vonage has no "service-driven" reason to separate calls by location. *Id.*, para. 29. Indeed, it cannot even do so now. *Id.*, para. 5. This impedes Vonage's ability to offer a full set of public safety calling services, a situation Vonage has committed to remedy. *Id.*, para. 42-45.

⁵⁹ *Id.*, p. 6.

⁶⁰ *Id.*, p. 85.

⁶¹ FCC Report, note 22 *supra*, p. 40.

⁶² *Id.*, Statement of Chairman Michael K. Powell, p. 3 (Sept. 9, 2004).

<http://www.fcc.gov/broadband/706.html>

⁶³ *Id.*, Statement of Commissioner Kevin J. Martin, p. 6; Statement of Commissioner Michael J. Copps, Dissenting p. 5; Statement of Commissioner Jonathan S. Adelstein, Dissenting, p. 7.

⁶⁴ *Id.*, p. 9 (executive summary).

⁶⁵ Gilder, note 6 *supra*.

⁶⁶ FCC Report, note 22 *supra*, pp. 10-11.

⁶⁷ *Id.*, p. 14.

⁶⁸ *Id.*, note 22 *supra*, p. 38. That PC penetration now surpasses cable is based upon a Department of Commerce study finding that as of October 2003 PC and cable penetration were at rough parity, and that since

then (the FCC's finding) PC households have increased while cable households have further declined. See *A Nation Online*, note 85 *infra.*, p. 3.

⁶⁹ *Id.*, p. 32. Source: The Pew Internet and American Life Project.

⁷⁰ *Id.*, p. 36. Source: Pew.

⁷¹ *Federal Communications Commission Further Spurs Advanced Fiber Network Deployment*, FCC News, Oct. 22, 2004.

⁷² Source: phone company figures. REA-supported independents have longer loops, with 50 percent within 12 kft. of a central office, one-sixth between 12 and 21 kft. and one-third longer than 21 kft.

⁷³ FCC Report, note 22 *supra*, p. 40, chart 14. South Korea, 21.3 per 100; Hong Kong, (14.9; Canada (11.2), Taiwan (9.4), Iceland, Belgium, Denmark (all 8.4), Sweden (7.8), Netherlands (7.2), Japan (7.1). Rounding out the top fifteen are four countries trailing the US: Austria (6.6), Switzerland (6.3), Singapore (5.5) and Finland (5.3). Two more countries have passed the US according to figures released since the FCC report was issued, but their names were not available at press time. The FCC's numbers per 100 are thus subject to revision.

⁷⁴ *Id.*, p. 46.

⁷⁵ Voice falls from 106.8M to 89.1M; dial-up from 67.5M to 39.1M; wireless rises from 99.8M to 121.1M, DBS video from 19.4M to 27.6M; digital cable video from 19.1M to 34.1M; broadband from 15.5M to 53.7M; VoIP from 0 to 12.9M Sources: IDC and Yankee Group, re-compiled by SBC.

⁷⁶ Wireless minutes-of-use jumped 168 percent, e-mail messages 105 percent and instant messages 115 percent. Source: FCC, IDC, Wachovia Securities, re-compiled by SBC.

⁷⁷ Source: IDC (wireline), Deutsche Bank (wireless), re-compiled by SBC. Wireless users make more long distance calls: 39 percent versus 25 percent for landline users. Source: SBC.

⁷⁸ Pociask, Stephen B., *Wireless Substitution and Competition*, p. 3, Competitive Enterprise Institute (Dec. 15, 2004).

⁷⁹ From 2003's 7 million to 34 million in 2008. Assumes 1.7 wireless phones per household. SBC sees faster displacement yielding 45 million households by 2008, and slower pace yielding 26 million then.

⁸⁰ Hoewing, note 36 *supra*. Source: Forrester Research, Consumer Technographics™ Q4 2003 North American Study.

⁸¹ *Id.*

⁸² *Id.* Source: : Forrester Research, Consumer Technographics™ Q2 2003 North American Mall Study

⁸³ *Id.* Source: Testimony of Blake Bath, Lehman Brothers, before the House Energy & Commerce Committee, Feb. 5, 2003.

⁸⁴ *Wireless Substitution*, note 78 *supra*, p. 15. Goods are *substitutes* if more use of one triggers less use of the other; they are complements if more use of one triggers more use of the other; and they are extraneous if use changes do not affect the other. *Id.*, pp. 2-3.

⁸⁵ *A Nation Online: Entering the Broadband Age*, p. 9, U.S. Department of Commerce (Sept. 2004). Data reflect usage as of October 2003.

⁸⁶ Hoewing, note 36 *supra.*, Source: Forrester Research.

⁸⁷ *Id.*, p. 44.

⁸⁸ Source: SBC.

⁸⁹ *Lightning Jolts Teen Working on Computer*, seattelpi.com, 8/6/04).

<http://seattlepilnwsource.com/national/apus_story.asp?category+1110&slug+Lightning20%Strike>

⁹⁰ *Love/Hate Relationship Marks Cell Phone's 20th Year*, stltoday.com, 7/18/04.

<<http://www.stltoday.com/stltoday/news/stories.nsf/News/St.+Louis+City+%2F+County/D9DA17066B0049A486256ED6001ECEA5?OpenDocument&Headline=Love%2Fhate+relationship+marks+cell+phone's+20th+year>>.

CPI online reference:

<<http://rad.dli.state.mt.us/program/cpi.asp>>

⁹¹ Source: Harris Interactive poll. (Live weblink not available—see CNET website.)

⁹² *Electronic Payments Surpass Paper Checks*, usatoday.com, 12/06/04.

<http://UStoday.printthis.clickability.com/pt/cpt?action=cpt&title=USTODAY.com+-+Plastic+finally+surpasses+paper+checks&expire=&urlID=12504655&fb=Y&url=http%3A%2F%2Fwww.UStoday.com%2Fmoney%2Findustries%2Fbanking%2F2004-12-06-checks-eclipsed_x.htm%3FPOE%3DNEWISVA&partnerID=1661>

⁹³ *A Nation Online*, note 86 *supra*, p. 10.

⁹⁴ *IBM Claims Computer Speed Title*, Yahoo News, 9/29/04.

<http://news.yahoo.com/news?tmpl=story&cid=1804&u=/washpost/20040929/tc_washpost/a58100_2004sep28&printer=1>

A list of the top 500 computer speed demons is compiled at <<http://top500.org/>>.

⁹⁵ *AP Eliminates Digitally Altered Photo*, Newsday.com, 7/16/04.

<<http://www.newnewsday.com/news/nationworld/wire/sns-ap-altered-photo.0.7719988.story?coll=sns-ap-nationworld-headlines>>

⁹⁶ *Irritated by Spam? Get Ready for Spit*, usatoday.com, 11/9/04.

<http://www.UStoday.com/money/industries/technology/2004-11-09-spit_x.htm>

⁹⁷ *Spammer Got Rich, But Price is Prison*, washtimes.com, 11/15/04.

<<http://www.washtimes.com/business/20041115-124039-7833r.htm>>

⁹⁸ *Getting a Piece of a DVD Windfall*, New York

Times, p. C1 (Dec. 13, 2004).

⁹⁹ *In the Age of the Wireless Phone, a Louisiana Town Awaits the Real Thing*, New York Times, p. 25 (Dec. 12, 2004).

¹⁰⁰ *Taming the E-Mail Monster*, Wall Street Journal, p. R8 (Dec. 13, 2004).

bandwidth

Is published by Discovery Institute

Discovery Institute is a non-profit, non-partisan, public policy think tank headquartered in Seattle and dealing with national and international affairs. For more information, browse Discovery's website at: <http://www.discovery.org>

DISCOVERY
INSTITUTE

To subscribe or unsubscribe to *bandwidth* or to forward a copy of this issue to a friend visit:

<http://www.discovery.org/bandwidth>

Discovery Institute's mailing address is:

1511 Third Avenue
Suite 808
Seattle, WA 98101

Questions and comments may be emailed to:

<mailto:wohlstetter@discovery.org>