



Internet 3.0: Identifying Problems and Solutions to the Network Neutrality Debate

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What Internet Service Providers (ISPs) can and cannot do to diversify and differentiate services lies at the core of the debate over neutrality in network operation. In prior generations ISPs had little incentive or technological capability to deviate from plain vanilla best efforts routing for content providers and from a single standard bit rate offered on “all you can eat” terms for consumer access to the World Wide Web. The next generation Internet has the technological capability and ISPs have the commercial motivation to offer “better than best efforts” routing and premium services for both content providers and consumers seeking higher quality of service and more reliable traffic delivery.

However the potential exists for carriers, operating the major networks used to switch and route bitstreams, to go beyond satisfying diverse requirements of content provider and end users. Network neutrality advocates worry that major ISPs have both the wherewithal and incentive to bifurcate the Internet into one medium increasingly prone to congestion and declining reliability and one offering superior performance and potential competitive advantages to users able and willing to pay, or affiliated with an ISP operating a major bitstream transmission network such as AT&T, Verizon and Comcast. Opponents refuse to see a current or prospective problem and worry that network neutrality requirements legitimize common carrier regulation of the Internet, a regulatory regime heretofore limited to telecommunications services operating in a less than fully competitive environment.

This paper will examine the network neutrality debate with an eye toward refuting and dismissing the many false and misleading claims and concentrating on the real problems occasioned by the Internet’s third evolution. The paper accepts as necessary and proper many types of price and quality of service discrimination. However the paper identifies other types of discrimination, which operators can obscure, that constitute unlawful and anticompetitive trade practices. The paper identifies best practices in lawful discrimination that should satisfy most network neutrality goals without creating disincentives that might dissuade ISPs from building the infrastructure needed for

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Internet 3.0 services. The paper concludes that legitimate concerns about unlawful network discrimination warrant the presence of a referee to remedy abuses before irreparable marketplace competitive harm occurs and well before a court of law could act. The paper recommends that the FCC require ISPs to submit network usage reports that the Commission could use to determine the causes of congestion and other types of service disruption.

In quick succession the Internet has evolved from a collaborative project among governments and universities to a promising commercial medium operated primarily by private ventures.¹ The Internet's developing third generation appears poised to exploit technological innovations, expanding broadband access and converging markets² with even greater service diversity and market segmentation.³ This next generation⁴ World Wide Web will not appear as a standard, "one size fits" all medium primarily because consumers expect more and different features. For example, on line game players and Voice over Internet Protocol ("VoIP")⁵ users may want "better than best efforts"⁶ routing of bits and

¹ For background on how the Internet evolved from a government underwritten project to a privatized and commercialized medium, see Rob Frieden, *Revenge of the Bellheads: How the Netheads Lost Control of the Internet*, 26 TELECOM. POL'Y, No. 6, 125-144 (Sep./Oct. 2002); see also, See, Barry M. Leiner, Vinton G. Cerf, David D. Clark, Robert E. Kahn, Leonard Kleinrock, Daniel C. Lynch, Jon Postel, Larry G. Roberts and Stephen Wolff, *A Brief History of the Internet*, Internet Society; available at: <http://www.isoc.org/internet/history/brief.shtml>.

² For background on the impact of converging telecommunications and information processing technologies see, e.g., International Telecommunication Union, ITU Internet Report 2006, *digital.life*; portions available at: <http://www.itu.int/osg/spu/publications/digitalife/index.html>.

³ See International Telecommunication Union, What Rules for IP-enabled NGNs?, Workshop, March 23-24, 2006; website available at: <http://www.itu.int/osg/spu/ngn/event-march-2006.phtml>.

⁴ See, e.g., International Telecommunication Union, What Rules for IP-enabled NGN?, Workshop (March 23-24 2006); web site materials available at: <http://www.itu.int/osg/spu/ngn/event-march-2006.phtml>.

⁵ Voice over Internet Protocol (VoIP) refers to the use of the Internet to carry and deliver on a real time, immediate basis packets of data that correspond to a voice conversation. VoIP services range in quality, reliability and price and can link both computers and ordinary telephone handsets. For technical background on how VoIP works see Intel, White Paper, *IP Telephony Basics*, available at: http://www.intel.com/network/csp/resources/white_papers/4070web.htm; Susan Spradley and Alan Stoddard, Tutorial on Technical Challenges Associated with the Evolution to VoIP, Power Point Presentation, available at: http://www.fcc.gov/oet/tutorial/9-22-03_voip-final_slides_only.ppt. See also, Jerry Ellig and Alastair Walling, *Regulatory Status of VoIP in the Post-Brand X World*, 23 SANTA CLARA COMPUTER & HIGH TECH. L.J. 89 (No. 2006); Amy L. Leisinger, *If It Looks Like a Duck: The Need for Regulatory Parity in VoIP Telephony*, 45 WASHBURN L.J. 585 (Spring, 2006); Mark C. Del Bianco, *Voices*

presumably will accept the obligation to pay for less delay, jitter⁷ and dropped packets. Already privacy, quality of service ("QOS") and other factors support partitioning the Internet into Intranets and virtual private networks. Similarly content providers can use caching⁸ and premium traffic routing and management service to secure more reliable service than that available from best efforts routing.

Clearly service diversification can result in many reasonable and lawful types of discrimination between Internet users notwithstanding a heritage in the first two generations of nondiscrimination and "best efforts" routing of traffic. Most Internet Service Providers ("ISPs") offer access on an unmetered,

Past: The Present and Future of VoIP Regulation, 14 COMLCON 365 (2006); R. Alex DuFour, *Voice Over Internet Protocol: Ending Uncertainty and Promoting Innovation Through a Regulatory Framework*, 13 COMLCON 471 (2005); Stephen E. Blythe, *The Regulation of Voice-Over-Internet-Protocol in the United States, the European Union, and the United Kingdom*, 5 J. HIGH TECH. L. 161(2005).

⁶ "The Internet is a vast network of individual computers and computer networks that communicate with each other using the same communications language, Transmission Control Protocol/Internet Protocol (TCP/IP). The Internet consists of approximately more than 100 million computers around the world using TCP/IP protocols. Along with the development of TCP/IP, the open network architecture of the Internet has the following characteristics or parameters: 1. Each distinct network stands on its own with its own specific environment and user requirements, notwithstanding the use of TCP/IP to connect to other parts of the Internet. Communications are not directed in a unilateral fashion. Rather, communications are routed throughout the Internet on a best efforts basis in which some packets of information may go through one series of computer networks and other packets of information go through a different permutation or combination of computer networks, with all of these information packets eventually arriving at their intended destination. 2. Black boxes, for lack of a better term, connect the various networks; these boxes are called 'gateways' and 'routers.' The gateways and routers do not retain information but merely provide access and flow for the packets being transmitted. 3. There is no global control of the Internet." Konrad L. Trope, *Voice Over Internet Protocol: The Revolution in America's Telecommunications Infrastructure*, 22 COMP. & INTERNET L. 1. No. 12, 1,4 (Dec. 2005).

⁷ "When you browse the Web, for example, you generate little or no traffic while you're reading a page, but there is a burst of traffic when your browser needs to fetch a new page from a server. If a network provider is using minimal delay discrimination, and the high-priority traffic is bursty, then low-priority traffic will usually sail through the network with little delay, but will experience noticeable delay whenever there is a burst of high-priority traffic. The technical term for this kind of on-again, off-again delay is 'jitter.'" Edward W. Felten, *Nuts And Bolts Of Network Neutrality*, Practising Law Institute, 24th Annual Institute on Telecommunications Policy & Regulation, 887 PLI/PAT 317, 326 (Dec. 2006).

⁸ Caching refers to intermediate and temporary storage of data. "Google makes and analyzes a copy of each Web page that it finds, and stores the HTML code from those pages in a temporary repository called a cache." *Field v. Google, Inc.*, 412 F.Supp.2d 1106 (D. Nev. 2006) (holding that the Digital Millennium Copyright Act (DMCA) provides a "safe harbor" exemption from liability for making cached copies of copyrighted works).

monthly subscription basis, but some ISPs already offer different levels of bit delivery speeds. Likewise ISPs increasingly have the ability to examine individual traffic streams⁹ and to prioritize them creating a dichotomy between plain vanilla, best efforts routing and more expensive, superior traffic management services.

However the potential exists for carriers operating the major networks used to switch and route bitstreams to go beyond satisfying diverse consumer requirements. Advocates for the principle of network neutrality¹⁰ claim the potential exists for ISPs to engineer a fragmented and "balkanized" next generation Internet to achieve anticompetitive goals.¹¹ The worst case scenario articulated by network neutrality advocates anticipates a reduction in innovation, efficiency, consumer benefits and national productivity occasioned by a divided Internet: one medium prone to congestion and declining reliability and one offering superior performance and potential competitive advantages to users able and willing to pay, or affiliated with the ISP operating the bitstream transmission network.¹² Opponents of network neutrality

⁹ "A packet sniffer (also known as a network analyzer or protocol analyzer or, for particular types of networks, an Ethernet sniffer or wireless sniffer) is computer software or computer hardware that can intercept and log traffic passing over a digital network or part of a network. As data streams travel back and forth over the network, the sniffer captures each packet and eventually decodes and analyzes its content according to the appropriate RFC or other specifications." Wikipedia, Packet sniffer; available at: http://en.wikipedia.org/wiki/Packet_sniffer.

¹⁰ For links to a representative sample of advocacy papers and analyses of network neutrality see National Regulatory Research Institute, Diverse papers on net neutrality; available at: <http://www.nrri.ohio-state.edu/Telecom/hot-topics-links/net-neutrality/papers/>.

¹¹ See, e.g., Brett Frischmann & Barbara van Schewick, *Yoo's Frame and What It Ignores: Network Neutrality and the Economics of an Information Superhighway*, 47 JURIMETRICS J. (forthcoming 2007); Barbara van Schewick, *Towards an Economic Framework for Network Neutrality Regulation*, 5 J. ON TELECOMM. & HIGH TECH. L. (forthcoming 2007); Barbara A. Cherry, *Misusing Network Neutrality to Eliminate Common Carriage Threatens Free Speech and the Postal System*, 33 N. KY. L. REV. 483 (2006); Tim Wu, *Network Neutrality, Broadband Discrimination*, 2 J. TELECOM & HIGH TECH L. 141 (2005); available at: <http://ssrn.com/abstract=388863>; Mark A. Lemley and Lawrence Lessig, *The End of End-to-End: Preserving the Architecture of the Internet in the Broadband Era*, 48 UCLA L. Rev. 925 (2001).

¹² See Jeff Chester, *The End of the Internet?*, THE NATION (posted Feb. 1, 2006); available at: www.thenation.com/doc/20060213/chester; Tim Wu, *Why You Should Care About Network Neutrality, The Future of the Internet Depends on it!*, Slate (May 1, 2006); available at: <http://www.slate.com/id/2140850/>; Trevor R. Roycroft, *Economic Analysis and Network Neutrality: Separating Empirical Facts From Theoretical Fiction* (June 2006); available at: http://www.freepress.net/docs/roycroft_study.pdf; Save the Internet; available at: <http://www.savetheinternet.com/>; freepress, *Net Freedom Now!*; available at:

mandates scoff at the possibility of the worst-case scenario and view government intervention as anathema.¹³

This paper will examine the network neutrality debate with an eye toward refuting and dismissing the many false and misleading claims and concentrating on the real problems occasioned by the Internet's third evolution. The paper accepts as necessary and proper many types of price and quality of service discrimination. However, the paper identifies other types of hidden and harmful discrimination. The paper concludes with an identification of best practices in legitimate discrimination that should satisfy most network neutrality goals without creating disincentives that might dissuade ISPs from building the infrastructure needed for Internet 3.0 services. Additionally the paper supports ISP traffic reporting requirements to identify instances of real versus artificial congestion.

I. The Provocation: Broadband Access and Upstream Carriers Have to Upgrade Their Networks Without Certain Profit

Incumbent telephone companies, such as Verizon and AT&T, own and operate ISPs having the largest market share and operating several of the major long haul networks.¹⁴ Internet access and data

<http://www.freepress.net/deadend/=neutrality>; Common Cause, Net Neutrality; available at:

<http://www.commoncause.org/site/pp.asp?c=dkLNK1MQIwG&b=1421497>;

Andrew Raff, Net Neutrality Reading List, at IPTA Blog (Feb. 28, 2006); available at:

http://www.iptablog.org/2006/02/28/net_neutrality_reading_list.html.

¹³ See J. Gregory Sidak, *A Consumer-Welfare Approach to Network Neutrality Regulation of the Internet*, 2 J. COMP. L. & ECON. No. 3, 349 (2006); Christopher S. Yoo, *Network Neutrality and the Economics of Congestion*, 94 GEO. L.J. 1847 (June, 2006); Thomas W. Hazlett, *Neutering the net*, FINANCIAL TIMES, FT.com Online, posted March 20, 2006; available at: <http://news.ft.com/cms/s/392ad708-b837-11da-bfc5-0000779e2340.html>; Testimony of J. Gregory Sidak, United States Senate, Committee on Commerce, Science and Transportation (Feb. 7, 2006); available at <http://commerce.senate.gov/pdf/sidak-020706.pdf>; U.S. Internet Industry Assn. Network Neutrality: Phantom Problem, Unintended Consequences (March 14, 2006); available at: <http://www.usiia.org/pubs/NNPrimer.doc>; Thomas M. Lenard and Randolph J. May (Eds.), *Net Neutrality or Net Neutering: Should Broadband Internet Services Be Regulated* (2006); <http://www.springer.com/west/home/economics/r+&+d?SGWID=4-40548-22-166923618-0>; Raymond L. Gifford, *The Internet Left Gets a Case of the Vapors*, The Progress & Freedom Foundation, Progress Snapshot, Rel. 2.15 (June 2006); available at: http://www.pff.org/issues-pubs/ps/2006/ps_2.15_intenet_left.pdf; Adam Thierer, *Are 'Dumb Pipe' Mandates Smart Public Policy? Vertical Integration, Net Neutrality, and the Network Layers Model*, 3 J. Telecomm. & High Tech. L. 275 (2005); Christopher S. Yoo, *Beyond Network Neutrality*, 19 HARVARD J. L. & TECH. (Fall 2005); Christopher S. Yoo, *Would Mandating Broadband Network Neutrality Help or Hurt Competition? A Comment on the End-to-End Debate*, 3 J. ON TELECOMM. & HIGH TECH. L. 23 (2004).

services have become increasingly significant revenue generators in light of the substantial decline in long distance voice telephony rates and lost market share for local exchange telephone service.¹⁵ The availability of Voice over Internet Protocol ("VoIP") services offering flat-rated long distance telephone service on a monthly subscription rate, or per call international rates for a few pennies a minute, show how software applications riding on top of a basic transmission link can devastate an existing business plan that anticipates ongoing, large profit margins for core services. VoIP and wireless services have adversely impacted wireline local exchange revenues as consumers migrate to a triple play bundle of services from cable television companies offering local and long distance telephone service and Internet access coupled with their core video programming services.¹⁶ To retain subscribers the incumbent telephone companies have created their own triple play bundles at prices that generate lower margins for the voice telephony portion of the package deal.

Faced with declining margins, revenues and profits from previously core services, incumbent telephone companies have belatedly embraced digital technologies and broadband services that include Internet access and Internet Protocol Television ("IPTV"), a facilities-based competitive alternative to cable television.¹⁷ The incumbents previously refrained from aggressively investing in these services for a

¹⁴ Mark Winther, *Tier-1 ISPs: What They Are and Why They Are Important*, IDC White Paper (May 2006); available at: <http://www.ntt.net/english/library/pdf/IDCTier1-Whitepaper.pdf>.

¹⁵ See International Telecommunication Union, *The Future of Voice: Consumer Issues*, Briefing Paper (Jan. 2007); available at: <http://www.itu.int/osg/spu/ni/voice/papers/FoV-Ewan-Sutherland-Final.pdf>; see also, International Telecommunication Union, *The Future of Voice Workshop* web site; available at: <http://www.itu.int/osg/spu/ni/voice/meeting.phtml>.

¹⁶ "Few doubt that the future of telecommunications will rely mostly on broadband and wireless technologies. Wireless and broadband technologies are transforming the telecommunications market, offering users ubiquitous access to voice, data, and internet services. The number of mobile subscribers has already surpassed that of end-user switched access lines served by local exchange carriers." National Regulatory Research Institute, *Methods for Analyzing the Effects of Broadband and Wireless Services on Competition in Local Telephony*, Project Announcement; available at: <http://www.nrri.ohio-state.edu/current-projects/telecommunications/methods-for-analyzing-the-impact-of-broadband-and-wireless-services-on/>.

¹⁷ "Rather than 'broadcasting' a constant stream of all available programs, as cable does and Verizon plans to do, IPTV stores a potentially unlimited number of programs on a central server, which users then call up on demand. SBC will not replace the copper lines that currently run into customer premises. Instead, to make sure there is sufficient bandwidth between the neighborhood node where the optical fiber terminates and the household premise, it will upgrade the DSL equipment currently at those nodes and in households with VDSL technology. At the household, the viewer will use the IP technology to send a signal to the SBC end-office to send a particular channel or video on demand selection. That signal will be sent over the same bandwidth used for data and VoIP service. In SBC's system, a single customer line will

number of reasons including the view that existing, "legacy" regulations, which mandated access by competitors to their facilities at below market rates,¹⁸ created severe disincentives, the necessary technologies and market demand had not matured, a post dotcom meltdown reluctance to assume greater risk¹⁹ and perhaps the failure to forecast the speed at which core wireline service revenues would decline. Now to make up for lost time the incumbent telephone companies have embraced fiber optic technology and have rapidly installed it with the expectation that they can provide a full range of information, communications and entertainment ("ICE") services free of pesky, legacy telecommunications service regulations²⁰ as well as cable television regulations, including the duty to secure a separate operating franchise for each municipality served.²¹

have enough bandwidth to support up to four active television sets per household at a time, or up to two HDTV channels at a time." Charles B. Goldfarb, *Telecommunications Act: Competition, Innovation, and Reform*, Congressional Research Service 37 (Jan. 13, 2006); available at: <http://www.educause.edu/ir/library/pdf/EPO0635.pdf>; See also Micah Schwalb, *IPTV: Public Interest Pitfalls*, 5 J. TELECOMM. & HIGH TECH. L. 305 (Fall 2006).

¹⁸ "For almost ten years, the FCC has struggled with crafting regulations that promote local exchange carrier competition by requiring incumbent carriers to lease portions of their networks to competitors.¹⁸ Such network element unbundling offers market entrants the opportunity to provide service and generate competition well before they would have completed construction of their own facilities.¹⁸ Incumbents have successfully argued that instead of jumpstarting competition, the FCC's policies made it possible for market entrants to thrive without having to risk substantial investment in physical plant. The Commission's rules permit market entrants to resell existing facilities and services of incumbent carriers on favorable terms and conditions." Rob Frieden, *What Do Pizza Delivery and Information Services Have in Common? Lessons From Recent Judicial and Regulatory Struggles with Convergence*, 32 RUTGERS COMP. & TECH. L.J., No. 2, 247, 258(2006).

¹⁹ See Rob Frieden, *Fear and Loathing in Information and Telecommunications Industries: Reasons for and Solutions to the Current Financial Meltdown and Regulatory Quagmire*, 5 THE INTERNATIONAL JOURNAL ON MEDIA MANAGEMENT, No. 1, 25-38 (Spring 2003).

²⁰ See *Review of the Section 251 Unbundling Obligations of Incumbent Local Exchange Carriers*, 18 FCC Rcd. 16978, 16984 (2003) [hereinafter *Triennial Review Order*], errata, 18 FCC Rcd. 19020 (2003), *vacated in part and remanded sub nom.*, *U.S. Telecom Assn. v. FCC (USTA II)*, 359 F.3d 554 (D.C. Cir. 2004), *cert. denied*, 543 U.S. 925 (2004).

²¹ In a controversial attempt to expedite competitive market entry by wireline telephone companies into the multi channel video program delivery marketplace the FCC establishes rules that may be construed as preempting state and municipal franchising authority. Federal Communications Commission, ***order not released Report and Order and Further Notice of Proposed Rulemaking, FCC Adopts Rules to Ensure Reasonable Franchising Process for New Video Market Entrants*, News Release (Dec. 20, 2006); available at: http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-269111A1.pdf.

Incumbent telephone companies have achieved great success in convincing the Federal Communications Commission ("FCC") and reviewing courts that competitive necessity and declining revenues alone would not generate sufficient motivation to invest in next generation facilities and services. The incumbents succeeded in creating the assumption that substantial deregulation had to occur, e.g., elimination of the duty to unbundle network access and price elements at low rates,²² before the incumbents would consider it fiscally prudent to invest in broadband access and IPTV. In the space of a few years the incumbents succeeded in convincing courts and the FCC of the need to dismantle mandatory facilities interconnection and service pricing requirements contained in the Telecommunications Act of 1996²³ that Congress previously had deemed necessary to jump start local exchange competition.²⁴ Incumbent telephone companies also succeeded in having the FCC reclassify,²⁵ or newly classify²⁶ most Internet-based services, including basic access to the Internet, as information services²⁷ not subject²⁸ to traditional, common carrier regulation under Title II²⁹ of the Communications Act, as

²² "[P]etitioners argued before the Commission that mandatory unbundling at Commission-mandated prices reduces the incentives for innovation and investment in facilities. Their reasoning, of course, is that a regulated price below true cost will reduce or eliminate the incentive for an ILEC to invest in innovation (because it will have to share the rewards with CLECs), and also for a CLEC to innovate (because it can get the element cheaper as a UNE). Indeed, many prices that *seem* to equate to cost have this effect. Some innovations pan out, others do not. If parties who have not shared the risks are able to come in as equal partners on the successes, and avoid payment for the losers, the incentive to invest plainly declines." U.S. Telecom Assn v. FCC, 290 F.3d 415, 424 (D.C. Cir. 2002) *cert. denied sub nom.* WorldCom, Inc. v. United States Telecom Assn., 538 U.S. 940 (2003 Mem.). "Each unbundling of an element imposes costs of its own, spreading the disincentive to invest in innovation and creating complex issues of managing shared facilities." *Id.* 290 F.3d at 427.

²³ P.L. 104-104, 110 Stat. 56, *codified at* 47 U.S.C. Sec. 151 *et seq.*

²⁴ Unbundled Access to Network Elements, 19 FCC Rcd. 16783 (2004); Review of the Section 251 Unbundling Obligations of Incumbent Local Exchange Carriers, 19 FCC Rcd. 20293 (2004); Unbundled Access to Network Elements; Review of the Section 251 Unbundling Obligations of Incumbent Local Exchange Carriers, 20 FCC Rcd. 2533 (2005).

²⁵ Appropriate Framework for Broadband Access to the Internet over Wireline Facilities, 20 FCC Rcd. 14853 (2005)(reclassifying DSL from a telecommunications service to an information service).

²⁶ Inquiry Concerning High-Speed Access to the Internet Over Cable and Other Facilities, Internet Over Cable Declaratory Ruling, Appropriate Regulatory Treatment for Broadband Access to the Internet Over Cable Facilities, GN Docket No. 00-185 & CS Docket No. 02-52, Declaratory Ruling and Notice of Proposed Rulemaking, 17 FCC Rcd 4798 (2002), *affirmed sub nom.* National Cable & Telecommunications Association v. Brand X Internet Services, 125 S. Ct. 2688 (2005).

amended.³⁰

Having persuaded the FCC that Internet-based services do not constitute telecommunications services,³¹ the incumbent carriers now face a different quandary: the standard operating procedures

²⁷ Information service is defined as "the offering of a capability for generating, acquiring, storing, transforming, processing, retrieving, utilizing, or making available information via telecommunications, and includes electronic publishing, but does not include any use of any such capability for the management, control, or operation of a telecommunications system or the management of a telecommunications service." 47 U.S.C. § 153(20). "[T]he language and legislative history of [the Communications Act of 1996] indicate that the drafters . . . regarded telecommunications services and information services as mutually exclusive categories." Federal-State Joint Board on Universal Service, Report to Congress, 13 FCC Rcd. 11501, 11522 (1998); *see also* Vonage Holdings Corp., 290 F. Supp.2d at 994, 1000 (applying the FCC's dichotomy).

²⁸ The FCC retains jurisdiction to regulate information services under Title I of the Communications Act. 47 U.S.C. §151 et seq. Title I serves as the basis for "ancillary" regulation of services that have a potentially adverse impact on regulated services. Additionally Sec. 157 of this Title provides the basis for regulation that "encourage[s] the provision of new technologies and services to the public." 47 U.S.C. §157. *See also* Appropriate Framework for Broadband Access to the Internet over Wireline Facilities; Universal Service Obligations of Broadband Providers; Review of Regulatory Requirements for Incumbent LEC Broadband Telecommunications Services; Computer III Further Remand Proceedings: Bell Operating Company Provision of Enhanced Services; 1998 Biennial Regulatory Review -- Review of Computer III and ONA Safeguards and Requirements; Conditional Petition of the Verizon Telephone Companies for Forbearance Under 47 U.S.C. § 160(c) with Regard to Broadband Services Provided via Fiber to the Premises; Petition of the Verizon Telephone Companies for Declaratory Ruling or, Alternatively, for Interim Waiver with Regard to Broadband Services Provided Via Fiber to the Premises; Consumer Protection in the Broadband Era, CC Docket Nos. 02-33, 01-337, 95-20, and 98-10 & WC Docket Nos. 04-242 and 05-271, Report and Order and Notice of Proposed Rulemaking, 20 FCC Rcd 14853, 14855, para. 1 (2005) (Wireline Broadband Internet Access Services Order or Consumer Protection in the Broadband Era Notice), *petitions for review pending*, Time Warner Telecom v. FCC, No. 05-4769 (and consolidated cases) (3rd Cir. filed Oct. 26, 2005).

²⁹ 47 U.S.C. §201 *et seq.*

³⁰ Common carriers, including providers of basic telecommunications services, must offer service on a nondiscriminatory basis, subject to numerous entry regulations, tariffing, and operating requirements.

³¹ Telecommunications is defined as "the transmission, between or among points specified by the user, of information of the user's choosing, without change in the form or content of the information as sent and received." 47 U.S.C. § 153(43). Telecommunications service means "the offering of telecommunications for a fee directly to the public, or to such classes of users as to be effectively available directly to the public, regardless of the facilities used." 47 U.S.C. § 153(46). The Communications Act defines

under which ISPs interconnect networks³² prevent incumbent carriers from directly charging all consumers of their networks despite an ongoing need to invest more funds in ever increasing bandwidth to meet growing, aggregate demand. ISPs traditionally establish interconnection terms and conditions based primarily on an assessment of inbound versus outbound traffic, with additional consideration for such factors as available bandwidth, number of interconnection locations, diversity of available routes and availability of personnel.³³ Telephone companies traditionally establish interconnection terms and conditions that contemplate metering usage and payment for each and every instance of traffic carriage, regardless of direction, e.g., from or to end-users, or portion of the complete link, e.g., upstream or downstream.³⁴

telecommunications carrier as "any provider of telecommunications services, except that such term does not include aggregators of telecommunications services (as defined in section 226). A telecommunications carrier shall be treated as a common carrier under this Act only to the extent that it is engaged in providing telecommunications services, except that the Commission shall determine whether the provision of fixed and mobile satellite service shall be treated as common carriage." 47 U.S.C. § 153(44).

While information service providers use telecommunications to transmit bitstreams, the FCC has chosen not to separate this functionality from the information processing that also occurs. In other words the FCC considers telecommunications to be subordinate to and fully integrated with the predominant information service.

³² Unlike telecommunications financial settlements, which typically meter and price each and every network use, ISPs agree not to meter and price traffic they agree to carry based on the expectation that their "peer" ISP will carry an equivalent volume of traffic. Even for instances where one ISP pays another for carriage, the "transiting" agreement executed between the two ISPs specifies the bandwidth and bitstream carriage capabilities offered without typically metering each session of network usage. For more background on ISP peering and transiting see Rob Frieden, *Network Neutrality or Bias?--Handicapping the Odds for a Tiered and Branded Internet*, 29 HASTINGS COM/ENT L.J., No. 2, 171-216 (Winter, 2007).

³³ For background on the economics and logistics of peering, see Geoff Huston, *Where's the Money?--Internet Interconnection and Financial Settlements* (Jan. 2005); available at: <http://www.potaroo.net/ispcol/2005-01/>; Steve Gibbard, *Economics of Peering* (Oct. 2004); available at: <http://www.pch.net/resources/papers/Gibbard-peering-economics.pdf>; Daniel C.H. Mah, *Explaining Internet Connectivity: Voluntary Interconnection Among Commercial Internet Service Providers* (March 26, 2003); available at: http://tprc.org/papers/2003/181/Explaining_Internet_Connectivity_Mar26-03.DOC.pdf; William B. Norton, *A Business Case for ISP Peering*, Draft 1.3 (Feb. 19 2002); available at: http://www.equinix.com/pdf/whitepapers/Business_case.pdf; Jean-Jacques Laffont; Scott Marcus; Patrick Rey; Jean Tirole, *Interconnection and Access in Telecom and the Internet*, 91 AMER. ECON. REV., No. 2, 287-291 (May, 2001); Bill Woodcock, *White Paper on Transactions and Valuation Associated with Inter-Carrier Routing of Internet Protocol Traffic, or BGP for Bankers*, (Aug. 2000); available at: <http://www.pch.net/resources/papers/routing-economics/pch-routing-economics.htm>.

³⁴ For background on the international accounting rate system, see Paul W. Kenefick, *A Step in the Right Direction: The FCC Provides Regulatory Relief in International Settlements and International Services*

ISPs offer to participate in traffic routing, both upstream to other ISPs and downstream to end-users, based on the expectation that achieving global Internet access will require the participation of many interconnected ISPs, many of which having no direct, contractual, or traffic metering relationship. Conceptualizing the Internet as a "network of networks"³⁵ builds in an expectation among carriers that they will cooperate on interconnection arrangements. When carriers first established interconnection agreements they refrained from exact route mapping and traffic metering. The Transmission Control Protocol used by ISPs determines routing "on the fly" based on current conditions as opposed to fixed routing used by telephone companies.³⁶ The ISPs initially refrained from metering traffic based on the expectation that traffic volumes were roughly equivalent and the cost of metering was not worth the bother in light of the fact that third parties, such as government agencies, subsidized operations.

Even now the largest Tier-1 ISPs agree to make their networks and global network access available on a zero cost, sender keep all "peering"³⁷ basis for other Tier-1 ISPs.³⁸ Smaller ISPs now must

Licensing, 8 COMLCON 43 (2000); Rob Frieden, *Managing Internet-Driven Change in International Telecommunications*, ch. 9.1 (2001); Robert M. Frieden, *Falling Through the Cracks: International Accounting Rate Reform at the ITU and WTO*, 22 TELECOM POL'Y, 963, 963-75 (1998) (describing how heightened attention to international calling rates at the ITU and WTO has led some observers to conclude that carriers soon will impose cost-based termination charges). Rob Frieden, Robert M., Last Days of the Free Ride? The Consequences of Settlement-Based Interconnection for the Internet, 1 INFO., No. 3, 225-238 (June, 1999).

³⁵ "The idea of a computer network intended to allow general communication between users of various computers has developed through a large number of stages. The melting pot of developments brought together the network of networks that we know as the Internet." Wikipedia, History of the Internet; available at: http://en.wikipedia.org/wiki/History_of_the_Internet.

³⁶ "TCP/IP routes packets anonymously on a 'first come, first served' and 'best efforts' basis. Thus, it is poorly suited to applications that are less tolerant of variations in throughput rates, such as streaming media and VoIP, and is biased against network-based security features that protect e-commerce and ward off viruses and spam." Christopher S. Yoo, *Beyond Network Neutrality*, 19 HARV. J.L. & TECH. 1, 8 (Fall 2005).

³⁷ Internet peering refers to a reciprocal traffic routing arrangement whereby one ISP agrees to accept traffic for onward routing in exchange for a similar routing commitment by another ISP. Peering typically involves no settlement or payment of funds as ISPs agree to peer only if they generate and receive roughly the same volume of traffic. See also, Wikipedia, <http://en.wikipedia.org/wiki/Peering>.

³⁸ "Tier 1 networks typically seek to protect their relatively rare status by preventing new networks from becoming Tier 1's and thus potentially competing. The networks often accomplish this by setting "peering requirements" which are intended to be too high for new networks to meet. Some experts in the field of Internet interconnections have compared the collective behaviors and motivations of Tier 1 networks to

pay for "transiting"³⁹ access to larger ISPs' networks and the access these ISPs have secured to other ISPs' networks. In addition to transiting payments from smaller ISPs, Tier-1 ISPs, affiliated with incumbent telephone companies, also receive payment from end-users that they serve directly, e.g., through Digital Subscriber Line monthly subscriptions and new fiber optic residential and business Internet access services.

However, the combined revenues from these two sources have not satisfied top management officers, for two reasons: 1) proliferating ICE services, such as search engines, online gaming and real time delivery of video generate ongoing need to upgrade broadband capacity, often without a commensurate ability to raise rates; and 2) sources of content upstream from an incumbent telephone company's ISP network get to have content delivered downstream to the end user without having to pay the intermediary ISPs that have participated in the routing and bitstream delivery of the traffic as part of their transiting and peering agreements with other ISPs. In the first instance the incumbent companies have found that Internet access services may have become a commodity business, or at the very least offer lower margins than anticipated. In the second instance, the incumbent companies have identified another potential source of access payments that heretofore have avoided having to make direct payments to some of the carriers participating in the link from content source to recipient.

The apparent inability of ISPs to demand and receive payment from each ISP or ISP customer has frustrated senior management and motivated them to utter provocative claims that heavy users of their networks, such as Google, have become free riders:

Now what they would like to do is use my pipes free, but I ain't going to let them do that because we have spent this capital and we have to have a return on it. So there's going to have to be some mechanism for these people who use these pipes to pay for the portion they're using. Why should they be allowed to use my pipes? The Internet can't be free in that sense, because we and the cable companies have made an investment

those of a cartel, in that they attempt to reduce competition in Internet bandwidth pricing through tacit collusion, and attempt to restrict the admission of new members. When one Tier 1 is perceived to be "cheating" the cartel by selling transit for too low a price, or by "dumping" too much outbound heavy bandwidth (which is significantly easier to deliver for the sending network than the receiving network), other members may move to de-peer that network." Wikipedia, Tier1 network, Politics; available at: http://en.wikipedia.org/wiki/Tier_1_carrier.

³⁹ Internet transiting refers to a traffic routing arrangement whereby one ISP agrees to accept traffic for onward routing for compensation. Transiting involves a settlement and payment of funds because one ISP requires access to the links, subscribers and content available via another ISP's network and its peering arrangements. "Transit is the business relationship whereby one ISP provides (usually sells) access to all destinations in its routing table." William B. Norton, *Internet Service Providers and Peering*, Draft 2.5 (undated) available at: <http://www.equinox.com/pdf/whitepapers/PeeringWP.2.pdf>.

and for a Google or Yahoo! or Vonage or anybody to expect to use these pipes [for] free is nuts! ⁴⁰

A. Incumbents Perceive Network Neutrality as Foreclosing Pricing Realalignments and Reimposing Aspects of Telecommunications Common Carrier Regulation

Incumbent carriers and like-minded opponents to network neutrality have characterized their opposition to network neutrality in terms of standing firm against government intrusion, ⁴¹ the imposition of a remedy in search of a problem ⁴² and the need to remedy free ridership of ISP networks. ⁴³ Outside the headlines and Congressional committee hearing rooms, ⁴⁴ these carriers object to network neutrality

⁴⁰ At SBC, It's All About "Scale and Scope," BUSINESSWEEK, ONLINE EXTRA November 7, 2005.

⁴¹ See, e.g., Hands Off the Internet, World Wide Web Site; available at: <http://handsoff.org/blog/>. "Hands Off The Internet is a nationwide coalition of Internet users united together in the belief that the Net's phenomenal growth over the past decade stems from the ability of entrepreneurs to expand consumer choices and opportunities without worrying about government regulation." http://handsoff.org/hoti_docs/aboutus/.

⁴² "Currently there are no principles of network neutrality encoded into law. So ISPs are already free to block or favor content as they please. It's telling that none of them has. In fact, no proponent of network neutrality can cite an existing problem to which network neutrality is a solution." Arpan Sura, *The Problem With Network Neutrality*, FreedomWorks World Wide Web Site, (May 2, 2006); available at: http://www.freedomworks.org/informed/issues_template.php?issue_id=2571; Other web-based organizations hotly dispute this view: "The constant refrain of the Astroturf groups like McCurry's 'Hands Off the Internet' is that Network Neutrality is a solution in search of a problem. They cite the absence of numerous examples of blocking or degradation to back this argument. This is a red herring. There are multiple real-world instances of blocking and impairment." Save the Internet.com, Big Lie of the Week: No. 3, undated; available at: <http://www.savetheinternet.com/=lie3>.

⁴³ "The network builders are spending a fortune constructing and maintaining the networks that Google intends to ride on with nothing but cheap servers," Arshad Mohammed, Verizon Executive Calls for End to Google's 'Free Lunch,' Washington Post, D1 (February 7, 2006); available at: <http://www.washingtonpost.com/wp-dyn/content/article/2006/02/06/AR2006020601624.html>.

⁴⁴ See, e.g., United States Senate, Committee on Science, Commerce and Transportation, Net Neutrality, Full Committee Hearing, (Feb. 7 2006); available at: <http://commerce.senate.gov/hearings/witnesslist.cfm?id=1705>; United States House of Representatives, Committee on Energy and Commerce, Subcommittee on Telecommunications and the Internet, Hearings on H.R. 5252, Committee Print on the Communications Opportunity, Promotion, and Enhancement Act of 2006 (March 30, 2006); available at: <http://energycommerce.house.gov/reparchives/108/Hearings/03302006hearing1823/hearing.htm>.

on two more practical concerns: 1) it would foreclose pricing and service initiatives that if successful might contribute to the bottom line; and 2) it would resurrect some of the regulatory constraints the carriers thought they had avoided once and for all having won the right to recharacterize most of their infrastructure as providing largely unregulated information services.

1) Network Neutrality as a Constraint on Price Discrimination

Network neutrality, whether imposed by law or public interest based FCC regulation, can impose direct restrictions on ISP pricing, but not in the grave and broadly restrictive manner as articulated by incumbent carriers. Not all network neutrality advocates object to "access tiering"⁴⁵ that constitutes price and QOS discrimination on the end user, demand side. ISPs already offer different subscription rates based of bandwidth and bitrates. Additional differentiation could involve variable service quality, based on the ability to handle peak demand bursts as occurs in peer-to-peer networking, video gaming, delivery of large files and real time streaming of video programming.

Similarly the concept of network neutrality does not foreclose attempts by incumbent carriers to reshape access pricing into a conventional two-sided market where ISPs would demand and receive payments downstream and upstream regardless whether they serve end-users. Under the current pricing arrangement a two sided market⁴⁶ already exists for ISPs that can collect an Internet access subscription from end-users for DSL and cable modem access to the Internet cloud⁴⁷ and also charge transit fees for small ISPs seeking access to portions of the Internet cloud these small ISPs cannot reach via their own networks.

Ed Whitacre has objected to the one-sided market scenario where AT&T receives subscription payments from end-users, but no additional payments from content generators who "use" AT&T networks without making direct payments to AT&T. Nothing about network neutrality forecloses AT&T from erecting a service so attractive to Google and other heavy users of the Internet as to entice them to opt for premium carriage of their traffic in lieu of the shared routes made available through the peering and transit arrangements secured by the ISPs directly serving these heavy users. For example, Akamai and other network management firms offer clients enhanced Internet traffic routing and content delivery by

⁴⁵ Net Neutrality: Hearing Before the S. Comm. on Commerce, Science & Transportation, 109th Cong. 5 (2006) (statement of Prof. Lawrence Lessig) [hereinafter Lessig Testimony], available at <http://commerce.senate.gov/pdf/lessig-020706.pdf>.

⁴⁶ "Two-sided (or more generally multi-sided) markets are roughly defined as markets in which one or several platforms enable interactions between end-users, and try to get the two (or multiple) sides "on board" by appropriately charging each side. That is, platforms court each side while attempting to make, or at least not lose, money overall." Jean-Charles Rochet and Jean Tirole, *Two-Sided Markets: An Overview* (March 12, 2004); available at: http://faculty.haas.berkeley.edu/hermalin/rochet_tirole.pdf.

⁴⁷ The Internet cloud refers to the vast array of interconnected networks that make up the Internet and provider users with seamless connectivity to these networks and the content available via these networks.

offloading traffic from best efforts routing options and onto better than best efforts options. Traffic can reach consumers with greater likelihood of on time delivery and reliability when ISPs and other Internet companies directly manage particular traffic streams with an eye toward reducing the number of routers the traffic has to traverse, avoiding circuitous routing and inserting traffic on the most reliable and least congested networks.

Many universities, along with corporations, government research agencies, and not-for-profit networking organizations, have agreed to achieve this type of outcome by underwriting superior routing through the Internet-2 network,⁴⁸ a series of broadband links not regularly available to non investors. Internet-2 has links to and from the plain vanilla Internet, but investors have enhanced the likelihood of reliable and qualitative superior routing by creating a direct or near direct links among investing organizations. The corporate equivalent to this better than best efforts complete link from content source to consumer are virtual private networks and Intranets that carve out a small portion of the overall infrastructure used to provide Internet telecommunications.

Nothing would foreclose AT&T and other incumbent carriers from engineering a superior and complete Internet routing arrangement using the carrier's own facilities, or those of other carriers with which AT&T negotiated a special traffic management and routing agreement.⁴⁹ Network neutrality only would foreclose AT&T from punishing Internet users who have declined the managed service option with less than best efforts routing, i.e., deliberately dropping packets, creating artificial network congestion, violating Service Level Agreements⁵⁰ and otherwise deteriorating the quality of service provided by network links that AT&T has agreed to make available to other peers and transit customers, including the ISPs directly serving heavy content providers such as Google.

2) Reimposition of Common Carrier Responsibilities

The incumbent carriers make a valid point that elements of network neutrality would impose regulatory burdens on ISPs that they have avoided outright, or through a reclassification of services by the FCC. Having avoided common carrier regulation, the incumbent carriers assert that a similar form of regulation would impose costly burdens that limit flexibility, stifle innovation and subverts the opportunity for self-regulation via unfettered marketplace forces. Opponents to network neutrality also consider enforcement of the antitrust law a sufficient safeguard that could punish abuses after the fact without the cost and burdens of ex ante regulation.

⁴⁸ See Internet2 Network, World Wide Web site; available at: <http://www.internet2.edu/network/>.

⁴⁹ See Craig McTaggart, *Was The Internet Ever Neutral?*, paper presented at the 34th Research Conference on Communication, Information and Internet Policy, George Mason University School of Law, Arlington, Virginia (rev. Sep. 30, 2006); available at: <http://web.si.umich.edu/tprc/papers/2006/593/mctaggart-tprc06rev.pdf>.

⁵⁰ Service Level Agreements specify network performance commitments typically between ISPs and their customers.

While common carrier regulation imposes some degree of constraints that would not otherwise exist, one should examine closely the nature of common carrier restrictions that network neutrality would impose. Not all common carriers face the same level of constraints, and the Telecommunications Act of 1996 provides a method for selective elimination of common carrier burdens when the public interest supports such a reduction.⁵¹ Technically cellular telephone companies still operate under some of the constraints of common carrier regulation,⁵² but one could hardly say such regulation imposes any significant constraint on pricing and operational flexibility. Indeed cellular carriers have avoided most common carrier restrictions including limitations on erecting "walled garden," preferred access to video and Internet-based content accessible on the screens of handsets used by subscribers.

In other proceedings the FCC has shown that it can and will impose quasi-common carrier responsibilities on non common carriers if the public interest warrants, or Congress requires it. The FCC has required non-common carrier, cable and satellite television companies to carry broadcast television signals as a form of economic and public interest regulation designed to safeguard the continuing viability of broadcast television stations.⁵³ Recently the FCC has required, non-common carrier VoIP service providers to contribute to universal service funding,⁵⁴ to support enhanced 911 emergency access⁵⁵ and to

⁵¹ Communications Act of 1934, as amended, Sec. 10(c), *codified at* 47 U.S.C. §160(c).

⁵² Personal Communications Industry Association's Broadband Personal Communications Services Alliance's Petition for Forbearance For Broadband Personal Communications Services, WT Docket No. 98-100, Memorandum Opinion and Order and Notice of Proposed Rulemaking, 13 FCC Rcd 16857 (1998); In re Implementation of Sections 3(n) and 332 of the Communications Act, Regulatory Treatment of Mobile Services, Second Report and Order, 9 FCC Rcd. 1411, 1478 (1994). *Orloff v. FCC*, 352 F.3d 415, 419 (D.C. Cir. 2003) (noting that although the Commission found that the competitiveness of the commercial mobile radio service market justified exempting such carriers from the tariffing requirements of section 203 of the Act, the Commission has nonetheless declined to exempt them from Sections 201 or 202).

⁵³ See Communications Act of 1934, as amended ("Communications Act"), 47 U.S.C. §§ 325, 338-40, 534-35, 543, 548; 47 C.F.R § 76.55-62 (cable must carry); 47 C.F.R. § 76.64 (cable retransmission consent); 47 C.F.R. § 76.66 (DBS signal carriage). *Turner Broadcasting System, Inc. v. FCC*, 512 U.S. 622, 114 S. Ct. 2445, 129 L.Ed.2d 497 (1994) (Turner-I); *Turner Broadcasting System, Inc. v. FCC*, 520 U.S. 180 (1997) (Turner II).

⁵⁴ Universal Service Contribution Methodology, WC Docket No. 06-122, Report and Order and Notice of Proposed Rulemaking, FCC 06-94, 38 Communications Reg. (P&F) 1013, 2006 WL 1765838 (F.C.C.) (rel. June 27, 2006).

⁵⁵ IP-Enabled Services, WC Docket No. 04-36, E911 Requirements for IP-Enabled Service Providers, WC Docket No. 05-196, First Report and Order and Notice of Proposed Rulemaking, 20 FCC Rcd. 10245 (2005). The FCC declined to determine the statutory classification of interconnected VoIP services, but

cooperate with law enforcement officials⁵⁶ in much the same way as common carrier regulated telephone companies.

3) Network Neutrality Requirements as Confiscatory and a Taking of Property

Opponents to network neutrality also claim that network neutrality requirements constitute a "confiscatory" and unlawful "taking" of their property.⁵⁷ Having invested in next generation infrastructure at significant expense both incumbent telephone and cable television operators expect to have nearly complete freedom from telecommunications service regulation. However, next generation networks will offer an integrated blend of ICE services, including the functional equivalent of traditionally regulated, legacy voice telephony and cable television.

The incumbent carriers appear ready to make two key arguments that equate regulation going forward as confiscatory: 1) robust facilities-based competition obviates the need for regulation, including common carrier aspects of network neutrality; and 2) commingling and integrating services that use telecommunications for bitstream transmission converts all retail offerings into information services. The incumbents have convinced many legislators and regulators that network neutrality requirements do not make sense in a competitive environment where the Internet serves as single medium for convergent ICE services.

a) The True Current State of Broadband Competition

Incumbent carriers, through direct advocacy and advocacy by sponsored researchers, confidently assert that robust competition already exists both inside the Internet cloud and at the first and last mile broadband link from residences and businesses to ISPs. For its part, the FCC has generated glowing

asserted ancillary jurisdiction under Title I of the Act to require interconnected VoIP service providers to supply 911 emergency calling capabilities to their customers.

⁵⁶ Communications Assistance for Law Enforcement Act and Broadband Access and Services, 20 FCC Rcd. 14,989 (2005), *on partial reconsideration*, 21 FCC Rcd. 5008 (2006).

⁵⁷ While reviewing courts have questioned the nature, type and rates of the FCC mandated common carrier interconnection and facilities-leasing requirements, the judiciary has not deemed the requirements confiscatory: "There is no evidence that the decision to adopt TELRIC [i.e., compulsory pricing of local exchange service elements on the basis of quite low Total Element Long Run Incremental Cost] was arbitrary, opportunistic, or undertaken with a confiscatory purpose. Indeed, the indications in the record are very much to the contrary." *Verizon Communications, Inc. v. F.C.C.*, 535 U.S. 467, 472, 122 S. Ct. 1646, 1652 (2002). *F.C.C. v. Florida Power Corp.*, 480 U.S. 245, 107 S. Ct. 1107 (1987) (rate set by the FCC was not confiscatory and thus did not amount to an unconstitutional taking).

endorsements of this assumption based on statistical compilations,⁵⁸ no doubt influenced by its appreciation for the political and public relations dividends in compiling positive results. On the other hand other less partisan calculations show the U.S. significantly behind in terms of overall market penetration, competitiveness and cost, even as compared to nations that have unfavorable geographical and demographic characteristics.⁵⁹

The FCC has deliberately overstated broadband penetration progress by using an overly generous and unrealistic definition of what qualifies as broadband service⁶⁰ and by using zip codes as the primary geographic unit of measure.⁶¹ Additionally the FCC includes as competition services lacking any true cross-elasticity with other services based on substantial price differences. More credible calculations by the International Telecommunication Union and the Organization for Economic Cooperation and Development

⁵⁸ Federal Communications Commission, Industry Analysis and Technology Division Wireline Competition Bureau, *High-Speed Services for Internet Access: Status as of June 30, 2006* (Jan. 2007); available at: http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-270128A1.doc.

⁵⁹ The Organization for Economic Cooperation and Development reports that the United States ranked 12th in broadband penetration as of June 2006. *OECD Broadband Statistics to June 2006* available at: http://www.oecd.org/document/9/0,2340,en_2649_34225_37529673_1_1_1_1,00.html#Data2005; The International Telecommunication Union ranked the United States 15th in the world in terms of broadband penetration per 100 inhabitants as of 1 January 2006. International Telecommunication Union, Strategy and Policy Unit Newslog - ITU Broadband Statistics for 1 January 2006; available at: <http://www.itu.int/osg/spu/newslog/CategoryView,category,Broadband.aspx>; The ITU's broader benchmarking of the most important indicators for measuring a nation's capability to promote information and communications technologies and the "Information Society" ranked the United States 21st in the world. International Telecommunication Union, Digital Opportunity Index (using 2005 statistics); available at <http://www.itu.int/osg/spu/statistics/DOI/index.phtml>.

⁶⁰ "We use the term 'high-speed' to describe services that provide the subscriber with transmissions at a speed in excess of 200 kilobits per second (kbps) in at least one direction. 'Advanced services,' which provide the subscriber with transmission speeds in excess of 200 kbps in each direction, are a subset of high-speed services." Federal Communications Commission, *High-Speed Services for Internet Access: Status as of June 30, 2006*, 1, n. 1 [hereinafter cited as FCC High Speed Internet Access Statistics].

⁶¹ "The Commission's data collection program requires providers to list the ZIP Codes in which the provider has at least one high-speed connection in service to an end-user" *High-Speed Services for Internet Access: Status as of June 30, 2006* at 3. "No consideration is given to the price, speed or availability of connections across the ZIP code." S. Derek Turner, *Broadband Reality Check-The FCC Ignores America's Digital Divide* (2005); available at: http://www.freepress.net/docs/broadband_report.pdf.

show the U.S. well behind many nations both in terms of broadband market penetration, e.g., subscribers per one hundred inhabitants and expense, e.g., cost per kilobit.⁶²

A fair-minded assessment of broadband competition in the United States shows a mixed bag. It appears that ISP competition inside the Internet cloud remains robust. Instances where one ISP has threatened to “de-peer”⁶³ with another have not resulted in long term service outages,⁶⁴ nor have any smaller ISPs declared an inability to cobble together all the transiting agreements needed to access the entire Internet cloud.

However, the state of competition for first and last mile access to competing ISPs is far less robust. Even the FCC’s own statistics acknowledges that incumbent telephone and cable television companies provide the vast majority of all broadband services.⁶⁵ But rather than acknowledge that a

⁶² “The price of bandwidth in September 2005 varies greatly across the OECD with prices ranging from USD 0.29 (PPP) per Mbit/s in Japan to over USD 150 (PPP) from several operators in the OECD It seems that the level of competition in the market is a much stronger determinant of price than the underlying technology. Japanese, French and Korean broadband connections are the least expensive per Mbit/s for cable, ADSL and fibre.” Organization for Economic Co-Operation and Development, Directorate for Science, Technology and Industry, Committee for Information, Computer and Communications Policy, Working Party on Telecommunication and Information Services Policies, *Multiple Play: Pricing and Policy Trends*, DSTI/ICCP/TISP(2005)12/FINAL 24 (April 7, 2006); see Figure 8. Broadband prices per Mbit/s, top 15 firms, by technology, September 2005, USD/PPP; *id.* at 24; available at: <http://www.oecd.org/dataoecd/47/32/36546318.pdf>.

“[ISPs in] South Korea and Japan . . . routinely offer 100 Mbps connections in both directions, uploading and downloading, for around \$40 per month. But in the United States, the best connections top out at 1/3 this speed and cost 400% more—and very few places even have access to the new fiber-optic services being offered.” Bruce Kushnick, Where’s that broadband fiber-optic access? Nieman Watch Dog, Ask This (March 14, 2006); available at: http://www.niemanwatchdog.org/index.cfm?fuseaction=ask_this.view&askthisid=186.

⁶³ De-peering refers to the discontinuation of a zero cost interconnection agreement typically based on the determination that traffic flows are not symmetrical.

⁶⁴ See, e.g., Stacy Cowley, Level 3, Cogent resolve peering spat, renew deal, NETWORK WORLD (Oct. 28, 2005); available at: <http://www.networkworld.com/edge/news/2005/102805-cogent-level3.html>.

⁶⁵ “Of the 64.6 million total high-speed lines, 44.1% were cable modem, 34.9% were ADSL, 1.5% were symmetric DSL (SDSL) or traditional wireline, 1.1% were fiber to the end-user premises, and 18.4% used other technologies.” FCC High Speed Internet Access Statistics at 2. “Of the 50.4 million lines which were faster than 200 kbps in *both* directions, 55.9% were cable modem, 36.3% were ADSL, 1.9% were SDSL or traditional wireline, 1.4% were fiber to the end-user premises, and 4.5% used other technologies.” *Id.* at 3. Of the 45.9 million lines serving residential subscribers, “cable modem represented 59.9% while

duopoly exists in most parts of the United States, the FCC pads the number of available broadband services providers in a manner that promotes the inference that widespread and robust competition exists based on the promise of new technologies, such as broadband over power lines⁶⁶ and Wi-Max,⁶⁷ the existence of at least one subscriber throughout the geographical area represented by a ZIP code and the availability of satellite and terrestrial wireless options, albeit at prices significantly higher than wireline cable and DSL options. The Commission uses an unrealistically low bitrate of 200 kilobits to define broadband service. It makes no distinction between a facilities-based operator and one that resells the services of the two primary facilities-based carriers. The Commission includes operators whose services might be available only within a small portion of a wide geographical area defined by zip codes. Additionally, the Commission includes broadband services, such as that offered by satellite and terrestrial wireless operators, that offer comparatively slower services at far higher prices thereby making these options unlikely competitors with limited attractiveness for users in fixed location having cheaper options available, e.g., DSL and cable modem service.

b) The Information Service Classification "Safe Harbor"

Incumbent telephone companies led a successful campaign to have the FCC deem as information services the broadband first and last mile links to the Internet cloud, viz. DSL and cable modem access. Having classified Internet access as an information service, the FCC will have to resort to clever and probably unsustainable semantic maneuvering to classify as a telecommunications service any software

35.8% were ADSL, 0.2% were SDSL or traditional wireline, 1.0% were fiber to the end-user premises, and 3.2% used other technologies." *Id.* at 3.

⁶⁶ "[W]e find that resolving the narrow classification issues of BPL-enabled Internet access service immediately will promote the deployment of BPL technology and the proliferation of this nascent service. Perhaps more importantly, we find that saddling this service with conditions that do not apply to other competing forms of broadband Internet access services would create a regulatory disparity antithetical to our creation of a level playing field for all modes of this service." United Power Line Councils Petition For Declaratory Ruling Regarding the Classification of Broadband Over Power Line Internet Access Service as an Information Service, WC 06-10, Memorandum Opinion and Order, FCC 06-165, 2006 WL 3207080 (F.C.C.) (rel. Nov. 7, 2006) (deeming BPL an information service and a competitive alternative to other wireline Internet access technologies).

⁶⁷ "WiMAX (World Interoperability for Microwave Access, Inc.) is a wireless broadband technology based on the IEEE 802.16 standard, which supports delivery of last mile wireless broadband access as an alternative to cable and DSL. WiMAX can support fixed and nomadic, as well as portable and mobile wireless broadband applications without the need for direct line-of-sight with a base station." Consolidated Request of the WCS Coalition for Limited Waiver of Construction Deadline for 132 WCS Licenses, WT 06-102, DA 06-2461, Order 2006 WL 3491617 (F.C.C.), n.56 (rel. Dec. 1, 2006); (*citing* WiMAX Forum White Paper, Third Plugfest -- Sophia Antipolis at 4 (Mar. 2006).

application, riding on top⁶⁸ of the information service classified bitstream transmission functionality.⁶⁹ If this scenario plays out the FCC would have to extend its information service classification to other services made available to end-users on a retail basis via information service classified DSL and cable modem links, including VoIP and IPTV. These services compete with and constitute the functional equivalent of

⁶⁸ The FCC uses telecommunications service and information service definitions to establish regulatory classifications, without considering the several layers of functionality involved. For example companies supplying software, which can be installed for use when initiating an Internet session, properly avoid FCC regulation. Likewise the FCC can avoid having to regulate the protocols and standards establishing standard operating procedures for switching, routing and managing Internet traffic. *See, e.g.*, United States Senate, Committee on Commerce, Science and Transportation, Prepared Statement of Vinton G. Cerf, Vice President and Chief Internet Evangelist, Google, Inc. available at: http://commerce.senate.gov/hearings/testimony.cfm?id=1705&wit_id=4958. “The Internet’s open, neutral architecture has proven to be an enormous engine for market innovation, economic growth, social discourse, and the free flow of ideas. The remarkable success of the Internet can be traced to a few simple network principles—end-to-end design, layered architecture, and open standards—which together give consumers choice and control over their online activities.”

⁶⁹ While the FCC also exempts bitstream transmitting carriers from regulation, in light of the information service classification, the Commission could opt to examine separately the different layers combined to support the delivery of a service, such as VoIP. For background on a revised regulatory regime that applies different degrees of government oversight based on the scope of competition in each layer of service that blends telecommunications packet delivery with intelligent networking, software applications and content see Richard S. Whitt, *A Horizontal Leap Forward: Formulating A New Communications Public Policy Framework Based on the Network Layers Model*, 56 FED. COMM. L.J. 587 (May, 2004); Yochai Benkler, *From Consumers to Users: Shifting the Deeper Structures of Regulation Toward Sustainable Commons and User Access*, 52 FED. COMM. L.J. 561 (2000); Scott Marcus, *The Potential Relevance to the United States of the European Union’s Newly Adopted Regulatory Framework for Telecommunications*, Federal Communications Commission, Office of Plans and Policy Working Paper Series No. 36 (July, 2002); available at: <http://www.fcc.gov/osp/workingp.html>; Douglas Sicker, *Further Defining a Layered Model for Telecommunications Policy* (2002); unpublished paper available at: <http://intel.si.umich.edu/tprc/papers/2002/95/LayeredTelecomPolicy.pdf>; Kevin Werbach, *A Layers Model for Internet Policy*, 1 J. TELECOM. & HIGH TECH. L., 37 (2002); John T. Nakahata, *Regulating Information Platforms: The Challenge of Rewriting Regulation From the Bottom Up*, 1 J. ON TELECOM. & HIGH TECH. L., 95 (2002); Phillip J. Weiser, *Law and Information Platforms*, J. ON TELECOM. & HIGH TECH. L., 1 (2002); Craig McTaggart, *A Layered Approach to Internet Legal Analysis* (Dec. 21, 2002); available at <http://www.innovationlaw.org/cm/ilg2002/reading/layered1.pdf>; Robert Cannon, *The Legacy of the Federal Communications Commission’s Computer Inquiries*, 55 FED. COMM. L.J. 167 (2003); Rob Frieden, *Adjusting the Horizontal and Vertical in Telecommunications Regulation: A Comparison of the Traditional and a New Layered Approach*, 55 FED. COMM. L.J. 207 (2003).

legacy services heretofore subject to regulation, common carriage telecommunications service regulation for voice telephony and cable television regulation. If the information service classification extends vertically up to software applications, then the FCC will have created a deregulated safe harbor for just about any ICE service carried via DSL and cable modem links, regardless of its functional equivalency with legacy, regulated services.

The FCC already has begun to realize the quandary it has created for itself by fashioning such an elastic and expanding safe harbor. Now bereft of Title II jurisdiction, the Commission has resorted to Title I of the Communications Act, as amended, to retain an "ancillary" regulatory hook if and when necessary. The Commission already has applied this exception to the information service regulatory safe harbor by requiring VoIP service providers to contribute to universal telephone service funding, to make available emergency 911 access available and to cooperate with law enforcement officials. The Commission has rationalized its imposition of quasi-common carrier, telecommunications service regulation by invoking broad notions of the public interest, by making a distinction between how different laws define telecommunications⁷⁰ and by making a questionable differentiation between the use of telecommunications to transport bits corresponding to an information service and the use of telecommunications to transport bits corresponding to retail telecommunications services.⁷¹

The FCC may yet again face close judicial scrutiny and reversal for creating a regulatory safe harbor only to chip away at it. First, the Commission may have overly stretched its general public interest mandate under Title I of the Communications Act. Second, the Commission may not persuade reviewing courts that ancillary jurisdiction, under Title I, as opposed to conventional telecommunications service jurisdiction, under Title II, should apply to VoIP, particularly in light of the Commission's selective imposition of telephone company regulations on VoIP service providers. Third, the Commission's telecommunications versus telecommunications service distinction, may not pass muster with reviewing

⁷⁰ Section 102(8)(B)(ii) of the Communications Assistance For Law Enforcement Act, PL 103-414, 108 Stat 4279 (October 25, 1994), *codified at* 47 U.S.C. § 1001(8)(B)(ii) defines a "telecommunications carrier" as "a person or entity engaged in providing wire or electronic communication switching or transmission service to the extent that the Commission finds that such service is a replacement for a substantial portion of the local telephone exchange service and that it is in the public interest to deem such a person or entity to be a telecommunications carrier for purposes of this title." The FCC has interpreted this section as requiring the Commission "to deem certain service providers to be telecommunications carriers for CALEA purposes even when those providers are not telecommunications carriers under the Communications Act of 1934, as amended." Communications Assistance for Law Enforcement Act and Broadband Access and Services, ET Docket No. 04-295, First Report and Order and Further Notice of Proposed Rulemaking, 20 FCC Rcd. 14989, 14993 (2005).

⁷¹ See Rob Frieden, What Do Pizza Delivery and Information Services Have in Common? Lessons From Recent Judicial and Regulatory Struggles with Convergence, 32 RUTGERS COMPUTER AND TECHNOLOGY LAW JOURNAL, No. 2, 247-296 (2006).

courts in light of the fact that telecommunications bitstream delivery occurs in the very same way for both telecommunications services and information services.⁷²

B. Calibrating Carrier Rights and Responsibilities

Common carriers historically incur both responsibilities and special opportunities, e.g., rights of way access to federal, state, municipal and private property for little if any payment.⁷³ So too have the telephone and cable television companies that now complain that regulation confiscates their property. It comes across as disingenuous for both telephone and cable television companies to rationalize the right to extend legacy privileges, acquired during their regulated years, to convergent ICE services, many or all of which qualify for the information service safe harbor.

Currently cable television operators and telephone companies can leverage preexisting rights of way or secure new rights of way based on their former, or existing, but possibly now temporary, regulated status. There appears to be no distinction in terms of the scope of rights of way access available to carriers operating in their legacy, regulated mode and the very same carriers providing a larger array of services, some or all of which falling outside legacy regulators' jurisdiction.⁷⁴ For example, cable television operators regularly install equipment, including large above ground pedestals, without any payment to the property owner, so that the operators can offer triple play services regardless of whether the land owner wants these new services and without regard to the limited scope of services the carrier first offered as the basis for securing the rights of way initially. Similarly telephone companies continue to install new or

⁷² In *National Cable & Telecommunications Association v. Brand X Internet Services*, 125 S. Ct. 2688 (2005) the Supreme Court affirmed the FCC's regulatory distinction between telecommunications and telecommunications services primarily on procedural grounds that favor judicial deference to expert regulatory agency decision making articulated by the Court in *Chevron U.S. A. Inc. v. Natural Resources Defense Council, Inc.*, 467 U.S. 837, 104 S. Ct. 2778 (1984). See also Rob Frieden, *What Do Pizza Delivery and Information Services Have in Common? Lessons From Recent Judicial and Regulatory Struggles with Convergence*, 32 RUTGERS COMP. & TECH. L.J., No. 2, 247, 258(2006).

⁷³ For example, the Telecommunications Act of 1996, as amended, specified the right of wireless telecommunications service providers to secure rights of way and tower siting access to federally owned property. Telecommunications Act of 1996, P.L. 104-104, 110 Stat. 56 (1996), Sec. 734(c) (2006), *codified at* 47 U.S.C. §332(c)(7). Generally a telecommunications service provider can secure nondiscriminatory access to the poles, ducts, conduits, and rights-of-way owned or controlled by another telecommunications service provider. 47 U.S.C. §224.

⁷⁴ The Supreme Court has endorsed this leveraging of access rights. In *National Cable & Telecommunications Association, Inc., v. Gulf Power Co.*, 534 U.S. 327, 122 S. Ct. 782 (2002) the Supreme ruled that cable television companies have the same legal right to access and attach wires to poles owned and operated by other utilities regardless of which such pole attachments are used to provide regulated video or unregulated broadband services.

replacement lines on private property without having to pay land owners, based on preexisting rights of way granted to the companies in their capacity as telecommunications service providers.

For so long as incumbent carriers continue to exploit the privileges conferred upon them in their capacity as regulated operators, these carriers should continue to accept limited quasi-common carrier responsibilities. For example, the broadcast television channel "must carry" obligations of cable television operators do not evaporate simply because telephone companies may offer competing video program delivery services, or that cable television operators now can use existing copper, a blend of copper and fiber optics cables, or a completely fiber optic medium to provide both cable television video programming, IPTV, telephony, Internet access and other telecommunications or information services. Likewise, the responsibilities applied to incumbent telephone companies operating the only telecommunication wire into homes did not evaporate simply because a second wire became available, or the fact that the telephone company now can use existing or new media to provide telecommunications and information services.

II. The Response: Established Ground Rules Plus Enforcement

Network neutrality advocates have both well placed apprehension and a misguided sense of what ISPs owe the public and their customers. ISPs do not operate in a transparent and fully competitive marketplace in light of nondisclosure agreements that shield interconnection agreements from scrutiny and still limited broadband competition at end-user premises. Absent transparency and competition, network neutrality advocates have every reason to suspect large ISPs of leveraging their Tier-1 status to favor affiliates and preferred content suppliers, to punish unaffiliated content suppliers that have rejected premium service options and to block, degrade or generate artificial congestion for non-premium routing services. Users of ISP bitstream transmission and routing services cannot readily determine whether any particular ISP has acted on its incentives to tilt the competitive playing field and to play favorites, primarily because any complete end-to-end routing involves several ISPs and delays for any particular segment may result from a number of legitimate factors.

A. Justified Apprehension

Network neutrality advocates primarily have only anecdotal information of intentional efforts to delay, block and drop packets.⁷⁵ The FCC has intervened in only one instance involving a telephone

⁷⁵ See, e.g., SavetheInternet.com, How does this threat to Internet freedom affect you? available at: <http://www.savetheinternet.com/=threat> (claiming blocked access by Canadian incumbent telephone company to a Web site sympathetic to the Telecommunications Workers Union during a contentious labor dispute; intentional degradation of competing VoIP service by Shaw, a major Canadian cable, internet, and telephone service company and blocked emails that mentioned www.dearaol.com -- an advocacy campaign opposing an attempt by AOL-Time Warner's to secure payment from e-mail senders).

company's refusal to terminate VoIP traffic.⁷⁶ The Commission secured an agreement by Madison River Communications to resume the proper delivery of such traffic, in light of the company's status as a telecommunications service provider legally obligated to perform traditional common carrier duties. Had Madison River Communications operated as an ISP providing Internet access, the FCC might not have responded in a timely manner, if at all, based on the view that the Commission lacked jurisdiction to compel ISPs to interconnect with anyone.

ISPs' incentive and apparent desire to differentiate service, the costly and widespread opposition to network neutrality and the provocative assertions of incumbent carrier senior managers point to a keen interest in pursuing network tiering. The often-cited Madison River case may offer little evidence that Internet content and service providers regularly risk unfair price and quality of service discrimination, or worst yet absolute blockage. However, it does support apprehension that an enforcement mechanism does not exist when an ISP and not a telephone company common carrier engages in unreasonable discrimination, or absolute blockage. The FCC could threaten an investigation with the prospect of enforcement sanction only because the offending traffic blocker had an affirmative duty to accept traffic and deliver it to the final destination.

ISPs as non common carriers, not subject to Title II of the Communications Act, have no absolute obligation to accept and deliver VoIP traffic. Indeed ISPs have every incentive to favor their own VoIP service, or to block any VoIP traffic to enhance the likelihood that telephony traffic will trigger higher termination charges as has traditionally been the case when local exchange carriers originate and terminate voice traffic.⁷⁷ In other words, an ISP receiving VoIP traffic has every incentive to act in the very same manner as the Madison River telephone company. Should an ISP block VoIP traffic the FCC would not have Title II as an ironclad legal basis for mandating interconnection. Instead the FCC could defer to an ISP's decision whether to accept VoIP traffic, or the Commission might invoke its general Title I jurisdiction to mandate interconnection on public interest grounds.

Until such time as the first and last mile of broadband access becomes robustly competitive customers will have as few as one or two carriers available for broadband access to the Internet and VoIP service providers. Under these conditions a decision by DSL and cable modem service providers to block VoIP traffic, or to degrade the traffic of unaffiliated or non-preferred VoIP service providers would have an immediate, identifiable and adverse impact on the public interest. Under such circumstances the FCC should act, because the failure to do so would frustrate the Commission legislative mandate to promote

⁷⁶ Madison River Communications, LLC, Order, DA 05-543, 20 FCC Rcd 4295 (2005), available at: http://hraunfoss.fcc.gov/edocs_public/attachmatch/DA-05-543A1.pdf.

⁷⁷ The charges imposed by local exchange carriers for use of their networks to originate and terminate traffic depend on the nature of the service regardless of whether different services impose different costs. For example, local exchange carriers typically charge more to terminate a wireless, cellular telephone call than a conventional, wireline telephone call even though the costs of doing so are identical. Traffic characterized as voice telephony also triggers carrier liability for contributing to universal service funding.

ubiquitous access to "advanced telecommunications capability."⁷⁸ Additionally the failure to act probably would motivate some state regulatory agencies to intervene with possibly divergent remedies. More broadly the Commission would face clear evidence of market failure, bottleneck abuse and price squeezing behavior that it presumed could not occur in the competitive marketplace it assumed to exist.

The VoIP market will have displayed market failure characteristics if VoIP service providers cannot readily offer services to any DSL and cable modem subscriber, and deliver traffic to any telephone service subscriber whether connected via DSL, cable modems or conventional telephone lines. Bottleneck abuse would occur if DSL and cable modem service providers, lacking true, facilities-based competition, refuse to accept and deliver VoIP traffic, or do so only if VoIP service providers pay a higher and discriminatory charge for the origination or termination⁷⁹ of traffic on the DSL or cable modem carrier's network. The higher charge applicable only to unaffiliated VoIP service providers exemplifies a classic price squeeze where a competitor of the ISP incurs a higher charge for an essential service element than the rate charged by ISP to affiliates and favored VoIP service providers.

B. Unjustified Apprehension

⁷⁸ Section 706 of the Telecommunications Act created an express mandate for the FCC and state public utility commissions to "encourage the deployment on a reasonable and timely basis of advanced telecommunications capability to all Americans." 47 U.S.C. §157(a). The Act defines advanced telecommunications capability "without regard to any transmission media or technology, as high-speed, switched, broadband telecommunications capability that enables users to originate and receive high-quality voice, data, graphics, and video telecommunications using any technology." 47 U.S.C. §157(c)(1).

⁷⁹ The FCC acknowledges that different types of carriers pay different rates to originate and terminate traffic over identical local exchange telephone company facilities. "Existing intercarrier compensation rules may be categorized as follows: *access charge rules*, which govern the payments that interexchange carriers ("IXCs") and CMRS carriers make to LECs to originate and terminate long-distance calls. . . . The access charge rules can be further broken down into *interstate* access charge rules that are set by this Commission, and *intrastate* access charge rules that are set by state public utility commissions. Both the interstate and intrastate access charge rules establish charges that IXCs must pay to LECs when the LEC originates or terminates a call for an IXC, or transports a call to, or from, the IXC's point of presence ("POP"). CMRS carriers also pay access charges to LECs for CMRS-to-LEC traffic that is not considered local and hence not covered by the reciprocal compensation rules. Other customers carrying traffic to or from points within an exchange area to points outside the exchange area may also pay access charges to the LEC. These access charges may have different rate structures- *i.e.*, they may be flat-rated or traffic-sensitive. In general, where a long-distance call passes through a LEC circuit switch, a per-minute charge is assessed. In order to keep local telephone rates low, access charges have traditionally exceeded the forward-looking economic costs of providing access." Developing a Unified Intercarrier Compensation Regime, 16 FCC Rcd. 9610, 9611 (2001); Further Notice of Proposed Rulemaking, 20 FCC Rcd. 4685 (2005).

Network neutrality advocates fear that the next generation Internet will contain so much bias and preferential treatment as to jeopardize the fundamental end-to-end connectivity that has contributed to success. This "curtains for the Internet" perspective overstates the potential harm from network tiering, even unlawful, anticompetitive practices, for several reasons. ISPs may want to squeeze out additional revenues and may resort to heavy handed, extortionate tactics, but surely they would stop when such strategies make the ISP's network performance inferior vis a vis other available alternatives, if such competition existed. Absent collusion or consciously parallel conduct among DSL and cable modem carriers, should one ISP overshoot the mark on network tiering, customers could migrate to the less biased carrier. Put another way, if AT&T deliberately dropped or delayed delivery of Google packets, some customers might migrate to the faster delivery options paid for by MSN or Yahoo!, but other customers might abandon AT&T in light of its shoddy performance.

While it may prove difficult to detect deliberate packet dropping and other anticompetitive tactics, after the fact forensic examination may provide the basis for remedies as was the case when Enron employees created artificial congestion in the electricity delivery grid to run up prices.⁸⁰ Similarly, deep-pocketed content providers recoiling from what they consider extortionate rate increases might pursue the option of constructing alternative broadband access options for consumers such as Google's support for a city wide WiFi network in San Francisco.⁸¹

But even if network neutrality becomes codified into law or regulation, network neutrality advocates have to accept that the next generation Internet will contain more bias, options and service diversification than previously available. Advocates for network neutrality need to accept that customer and network tiering constitutes a predictable, and not always lamentable, product of a maturing marketplace. As networks evolve and the technologies used become more diverse and mature, network operators have available the resources to recalibrate their pricing structure and to diversify services.

In light of the marketing tactics used to entice initial subscriptions most Internet users expect access to a lot of free content, on an all you can eat unmetered basis,⁸² at a low fixed price with delivery

⁸⁰ "[I]n Load Shift, Enron traders submitted false energy schedules and bids to the California market to create the appearance of congestion on a transmission line. This would trigger payments attached to easing congestion and let Enron profit from its own lies when it used its transmission rights to ease the sham congestion." Mary Flood and Tom Fowler, *The Fall of Enron: Ex-Trader Pleads Guilty To Schemes; Prison, Fines Likely In California Deals*, *The Houston Chronicle*, Business, p.1 (Feb. 5, 2003).

⁸¹ Laurie J. Flynn, *Some Worries as San Francisco Goes Wireless*, *New York Times*, Technology (April 10, 2006); available at: <http://www.nytimes.com/2006/04/10/technology/10wifi.html?ex=1302321600&en=93da4b89b4623e07&ei=5088&partner=rssnyt&emc=rss>.

⁸² "What the ISPs don't tell the public is that there are no free-riders among the content companies. They pay handsomely for their bandwidth. In fact, they are the true bread and butter for the major telecoms and ISPs. The reason that this "Network Neutrality" controversy exists today is that ISPs don't want to

speeds progressively increasing without a higher charge. The Internet's value proposition has increased over the years as consumers tap into increasingly diverse sites, now offering material that requires a network capable of delivering a broadband bitstream in real time. The power users of the Internet, spammers, gamers, peer-to-peer file sharers and full motion video watchers have become quasi-free riders in light of their ability to pay the same price as lower volume users, while forcing ISPs at both the end user link and farther upstream, to upgrade their networks while maintaining the same subscription rate.

III. The Resolution

Legislation would solve the network neutrality debate by providing principles for which the FCC would have express legal authority to enforce. Additionally legislation could expressly authorize the FCC to impose traffic reporting requirements on ISPs and to investigate and remedy instances where dropped bits did not result from actual congestion. In light of the controversy surrounding this issue, the lack of consensus and well-funded policy expressions, Congress may not remedy the problem in a timely manner.⁸³ Absent legislation the stakeholders will have to take affirmative steps on their own toward resolution.

One step toward resolution came from AT&T when it made some network neutrality commitments to secure approval of its merger with BellSouth.⁸⁴ AT&T may have offered concessions with some regret, and the language of its offer has generated concerns that AT&T offered less than one might infer.⁸⁵

admit that their whole business model is flawed. They don't want to admit to their home customers that they need to pay for metered bandwidth just like they pay for metered water and electricity." Code Monkey Ramblings Blog, Network Neutrality, posted May 20, 2006; available at: http://www.codemonkeyramblings.com/2006/05/network_neutrality.php.

⁸³ Both the United States Senate and House of Representatives have considered network neutrality bills without enacting any into law. Wallace Koehler, Network Neutrality Under Challenge (May 1, 2006); available at: <http://www.infoday.com/newsbreaks/nb060501-1.shtml>; Anne Broache, Net neutrality field in Congress gets crowded, cnetnews.com (May 19, 2006); available at: http://news.com.com/Net+neutrality+field+in+Congress+gets+crowded/2100-1028_3-6074564.html; Net neutrality showdown, cnetnews.com; available at: http://news.com.com/Net+neutrality+showdown/2009-1028_3-6055133.html.

⁸⁴ See Letter from Robert W. Quinn, Jr., Sr. Vice President Federal Regulatory AT&T to Ms. Marlene H. Dortch, FCC Secretary (Dec. 28, 2006); *attached to* Federal Communications New Release, FCC Approves Merger Of AT&T Inc. and BellSouth Corporation--Significant Public Interest Benefits Likely to Result (rel. Dec. 29, 2006); available at: http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-269275A1.pdf[hereinafter cited as AT&T Concessions Letter].

⁸⁵ AT&T proposed to embrace the FCC's four Network Freedoms for 30 months running from the merger closing date, and to apply network neutrality principles for its broadband Internet access services running

Additionally FCC Chairman Kevin Martin and Commissioner Tate issued a joint statement where they reject some of the concessions as the product of coercion which they believe the FCC should never enforce.⁸⁶ Nevertheless AT&T has provided a document that, reluctantly perhaps, acknowledges network neutrality as a concept that parties can convert into actual practices and service commitments.

The AT&T network neutrality commitments contain a time limited agreement to comply with a previous FCC statement of principles that articulate a baseline code of conduct for ISPs. In a non-binding, non-compulsory Policy Statement the FCC articulated four "principles":

- (1) consumers are entitled to access the lawful Internet content of their choice;
- (2) consumers are entitled to run applications and services of their choice, subject to the needs of law enforcement;
- (3) consumers are entitled to connect their choice of legal devices that do not harm the network;
and
- (4) consumers are entitled to competition among network providers, application and service providers, and content providers.⁸⁷

between subscribers and the first Internet exchange point for a period of two years running from the merger closing date or upon the effective date of federal legislation. AT&T expressly reserved the option not to apply network neutrality principles for its Internet Protocol Television ("IPTV") service and for link beyond the first Internet Exchange point. The commitment does not provide specificity whether these conditions exempt AT&T from a network neutrality commitment for any fiber optic broadband link that might also offer IPTV.

⁸⁶ "Importantly, however, while the Democrat Commissioners may have extracted concessions from AT&T, they in no way bind future Commission action. Specifically, a minority of Commissioners cannot alter Commission precedent or bind future Commission decisions, policies, actions, or rules. Thus, to the extent that AT&T has, as a business matter, determined to take certain actions, they are allowed to do so. There are certain conditions, however, that are not self-effectuating or cannot be accomplished by AT&T alone. To the extent Commission action is required to effectuate these conditions as a policy going forward, we specifically do not support those aspects of the conditions and will oppose such policies going forward." AT&T BellSouth Merger Approval, Joint Statement of Chairman Kevin J. Martin and Commissioner Deborah Taylor Tate (Dec. 29, 2006); available at: http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-269275A2.doc.

⁸⁷ Federal Communications Commission, Public Notice, FCC Adopts Policy Statement (Aug. 5, 2005); available at: http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-260435A1.doc. The FCC has proposed to reassess its role in supporting non-discriminatory Internet access. See Federal Communications Commission, Public Notice, FCC Launches Inquiry Into Broadband Market Practices (rel. March 22, 2007); available at:

Until AT&T's 30-month commitment to adopt the FCC's four "Network Freedoms," the Commission had issued a document having no enforceability.

AT&T also committed to maintain the same number and types of existing peering agreements and for two years from the closing date of the merger, or the effective date of any legislation enacted by Congress subsequent to the merger closing, "to maintain a neutral network and neutral routing in its wireline broadband Internet access service . . . from the network side of the customer premise equipment up to and including the Internet Exchange Point closest to the customer's premise."⁸⁸ AT&T expressly reserved the right to tier service upstream and exempted its enterprise managed IP services and IPTV from any network neutrality commitment, two loopholes that will grow in significance as AT&T migrates from copper-based transitional DSL broadband service to fiber optic networks ostensibly installed primarily to provide IPTV.

Beyond AT&T's conditional, time limited and ambiguous commitment, incumbent ISPs should commit to transparency and full disclosure of network and customer tiering activities. This means that Tier-1 ISPs, including those networks owned and operated by AT&T, Verizon Qwest, and Comcast, should publicly disclose their peering and transiting policies, as well as offers and acceptances of Service Level Agreements that deviate from best efforts routing. A voluntary agreement to disclose might foreclose regulatory intervention by the FCC, Federal Trade Commission and other agencies, and it would not prevent better than best efforts service arrangements. Such arrangements could include variable bandwidth and throughput services to end-users, peers and transiting customers, bandwidth partitioning and service metering.

Additionally any ISP that serves both end-users, whether by resale or facilities it owns and operates, should commit to a "best practices" collection of service commitments including the following:

- an affirmative obligation not to drop packets and create congestion when actual traffic conditions do not necessitate such action;
- no retaliation through targeted degradation in service quality for any network user that has refused to pay for premium services;
- no port blocking and other refusals to deliver traffic onward to another ISP or the intended recipient except when such action would violate laws or cause harm to the ISP's or other ISPs' networks;
- a commitment to make available any better than best efforts to any similarly situated customer;

http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-271687A1.doc.

⁸⁸ AT&T Concessions Letter at 9.

- an agreement not to override firewalls, filters and other traffic management technologies or services made available to customers or installed by customers, except when such action would violate laws or cause harm to the ISP's or other ISPs' networks; and
- no intentional failures to comply with existing Service Level Agreements executed with end-users, peers and transiting customers.

Lastly, the FCC should impose reporting requirements on ISPs so that the Commission might assess the consequences of a bifurcated best efforts/better than best efforts Internet. Traffic data compiled and disclosed by ISPs can provide the FCC with a better sense of how often network congestion occurs and what circumstances trigger poor service. With such empirical data, the Commission should have a better capability for determining when an ISP has artificially created congestion as a ruse for degrading service to non-premium paying content providers and retail customers. Likewise, such data could corroborate an ISP's assertion that it did nothing to degrade overall service, or target specific bitstreams for inferior service.

Absent Congressional authority to impose reporting requirements, the FCC should prepare to justify the lawfulness of its action and the accruing public interest benefits. Nothing in the Communications Act limits reporting requirements to a specific set of regulated operators. Additionally, the broad public interest mandate under Title I should support the FCC's reasonable examination of ISP network performance and reliability.

IV. Conclusion

The network neutrality debate highlights a particularly contentious time in ICE policy making. Stakeholders appear to have little inclination to find a middle ground, and decision makers appear to have even less. Policymaking has become predominated by sponsored research, politics, campaign contributions and rhetoric. In light of an apparent disinterest for the facts it comes as no surprise that the network neutrality debate highlights opposing perceptions about the impact from changes in the next generation Internet. Regrettably no unbiased fact-finding appears readily available, because politicization at the FCC prevents fair-minded assessment by the Democratic and Republican Commissioners and heretofore the conflict has not generated a question of law or fact reviewable by a court.

Network neutrality opponents have overstated the case that competition would remedy any and all instances of illegal network bias. A fully self-regulating Internet marketplace does not exist, nor can one confidently assert that the Internet marketplace would remedy all attempts at unreasonable network bias. On the other hand, the Internet has not failed to function when network operators and content providers cut exclusive and preferential deals, or when network providers offer better than best efforts routing.

For better or worst, Internet 3.0 will adopt many of the biased networking characteristics of current vintage cable television and third generation cellular telephony. Cable television operators enjoy

substantial freedom to cut special content delivery deals, but lawful "must carry" obligations impose affirmative carriage duties, notwithstanding cable operators' First Amendment speaker rights and non-common carrier status. Commercial mobile radio service providers retain the common carrier, telecommunications service provider status, yet they can use new broadband carriage capabilities to deliver a biased, walled garden access to video and Internet content.

In light of a mixed likely outcome for Internet 3.0, legislators and regulators should identify what baseline nondiscrimination requirements an ISP must satisfy, even if it has entered a safe harbor from Title II telecommunications service regulation. At the risk of stretching Title I ancillary regulation, the FCC cannot abdicate Internet 3.0 oversight based on the currently suspect conclusions that a competitive broadband marketplace exists everywhere, and the information service classification of DSL and cable modem Internet access renders the entire Internet off limits to public interest policymaking and regulation. At the very least the FCC should put ISPs on notice that they must compile reports on network usage and explain instances where real or contrived congestion has caused service disruptions.

The FCC may someday receive complaints about Internet tiering and service bias involving an ISP as opposed to a telecommunications service provider such as Madison River Communications. Dismissing the complaint for lack of Commission jurisdiction will not make the problem go away, elevate the effectiveness of antitrust enforcement, or successfully insulate the FCC from having to consider how alleged violations of network neutrality adversely affect the nation's advanced telecommunications capabilities.

The FCC should agree to examine allegations of network bias and evaluate the complaint from a public interest template that considers whether discrimination constitutes an unfair trade practice, or a reasonable attempt at diversifying and proliferating information services.