BEFORE THE

Federal Communications Commission

WASHINGTON, D.C.

In the Matter of	)	
Broadband Industry Practices	)	WC Docket No. 07-52

COMMENTS OF COMCAST CORPORATION

James L. Casserly
Ryan G. Wallach
Daniel K. Alvarez
WILLKIE FARR & GALLAGHER LLP
1875 K Street, N.W.
Washington, D.C. 20006-1238

Helgi C. Walker
Eve Klindera Reed
WILEY REIN LLP
1776 K Street, N.W.
Washington, D.C. 20006

Attorneys for Comcast Corporation

Joseph W. Waz, Jr.
COMCAST CORPORATION
One Comcast Center
1701 John F. Kennedy Boulevard
Philadelphia, PA 19103-2838

Kathryn A. Zachem
Mary McManus
COMCAST CORPORATION
2001 Pennsylvania Ave., NW
Suite 500
Washington, D.C. 20006
(202) 379-7134
(202) 379-7141

Thomas R. Nathan
Gerard J. Lewis, Jr.
COMCAST CABLE COMMUNICATIONS, LLC
One Comcast Center
1701 John F. Kennedy Boulevard
Philadelphia, PA 19103-2838

February 12, 2008

TABLE OF CONTENTS

BEFORE THE

Federal Communications Commission

WASHINGTON, D.C.

In the Matter of	)	
Broadband Industry Practices	)	WC Docket No. 07-52

COMMENTS OF COMCAST CORPORATION

Comcast Corporation ("Comcast") hereby responds to the Public Notices issued by the Wireline Competition Bureau (the "Bureau") on January 13, 2008.[1] Those Public Notices were precipitated by a Petition for Declaratory Ruling filed by Free Press et al. and a Petition for Rulemaking filed by Vuze, Inc. (collectively, the "Petitions").[2] The Bureau has asked that comments be filed in the above-captioned docket (where a variety of "net neutrality" issues are already being discussed[3]) to address two particular questions presented by the Petitions -- (1) whether managing peer-to-peer ("P2P") traffic violates the FCC's *Internet Policy Statement* and (2) whether the Commission should adopt rules defining what constitutes reasonable network management. The Public Notices raise important issues about the ability of broadband

---

1 *See* Public Notice, Wireline Competition Bureau, FCC, *Comments Sought on Petition for Declaratory Ruling Regarding Internet Management Policies*, DA 08-91, WC Docket No. 07-52 (Jan. 14, 2007) ("*Declaratory Ruling Public Notice*"); Public Notice, Wireline Competition Bureau, FCC, *Comments Sought on Petition for Rulemaking To Establish Rules Governing Network Management Practices by Broadband Network Operators*, DA 08-92, WC Docket No. 07-52 (Jan. 14, 2007) ("*Rulemaking Public Notice*").

2 *In re Petition of Free Press et al. for Declaratory Ruling That Degrading an Internet Application Violates the FCC's Internet Policy Statement and Does Not Meet an Exception for "Reasonable Network Management"*, WC Docket No. 07-52 (Nov. 1, 2007) ("Free Press Petition"); *In re Vuze, Inc. Petition To Establish Rules Governing Network Management Practices by Broadband Network Operators*, WC Docket No. 07-52 (Nov. 14, 2007) ("Vuze Petition").

3 *In re Broadband Industry Practices*, Notice of Inquiry, 22 FCC Rcd. 7894 (2007) ("*Broadband Industry Practices NOI*").

network operators to engage in reasonable network management to ensure that their customers can enjoy a positive broadband experience.

Specifically, both Petitions allege that certain network traffic management practices Comcast employs "violate" the principles of the Commission's *Internet Policy Statement* and ask the Commission to declare that these network management practices be prohibited.[4] The Petitions assert that it is per se unreasonable for Comcast to manage certain P2P protocols, even ones that have been proven to degrade customers' abilities to surf the web, watch video streaming, make voice-over-Internet Protocol ("VoIP") calls, or access other Internet content, applications, and services, particularly during periods of peak network congestion. The Petitions base their claims primarily on a "test" of Comcast's network management practices using P2P protocol services. As demonstrated below, no valid conclusions about the effects of Comcast's network management practices could be drawn from that test because the test did not replicate how P2P protocols operate in the real world. The carefully limited measures that Comcast takes to manage traffic on its broadband network -- including its very limited management of certain P2P protocols -- are a reasonable part of Comcast's strategy to ensure a high-quality, reliable Internet experience for *all* Comcast High-Speed Internet customers. Importantly, in managing its network, Comcast does not block any content, application, or service; discriminate among providers; or otherwise violate any aspect of the principles set forth in the *Internet Policy Statement*.

---

4 *See* Free Press Petition at 14-24; Vuze Petition at i, 2.

Comcast urges the Commission to declare that these and similar network management practices are "reasonable" within the meaning of the *Internet Policy Statement*,[5] and are, in any event, fully consistent with sound principles of "net neutrality." Comcast further asks the Commission to make it clear that it will not be drawn into second-guessing the reasonable network management decisions that engineers and service providers must make on a daily -- and sometimes hourly -- basis to respond to a dynamic and ever-changing Internet. These critical decisions should not be based on the demands of the vocal minority who make the most noise in public forums, but on what is needed to serve the best interests of *all* Internet users.

I. INTRODUCTION & SUMMARY

In 1998, Comcast was among the first to develop and deploy residential broadband service. Today, Comcast makes its High Speed Internet service available to nearly 48 million homes, and has attracted almost 13 million customers in an intensely competitive environment. Comcast is proud of the high-speed Internet service it provides. In order to remain competitive, Comcast must deliver an exceptionally high-quality service that provides consumers with the capabilities that they expect, including unfettered access to lawful Internet content, applications, and services, as contemplated by the Commission's *Internet Policy Statement*.

Consistent with the *Internet Policy Statement*, Comcast engages in reasonable network management. Network management that is reasonable and done for the benefit of subscribers is critical to *every* broadband service provider's ability to offer its customers the quality and reliability subscribers demand and expect. This includes using state-of-the-art technologies that do *not* prevent or block consumers from using P2P protocols but *do* ensure that such uses do not

---

[5] *In re Appropriate Framework for Broadband Access to the Internet over Wireline Facilities*, Policy Statement, 20 FCC Rcd. 14986 (2005) ("*Internet Policy Statement*").

degrade other users' access to content, applications, and service. These practices are widely accepted in engineering circles as constituting reasonable network management.

As described in detail below, Comcast manages the use of certain P2P protocols in a minimally intrusive way, and only when necessary, based on purely objective criteria; these management techniques are *not* based on the *content* of the files users are sharing *or* the *identity* of the users who are doing the sharing. More specifically, Comcast's network management practices (1) only affect the protocols that have a demonstrated history of generating excessive burdens on the network; (2) only manage those protocols during periods of heavy network traffic; (3) only manage uploads; (4) only manage uploads when the customer is not simultaneously downloading (i.e., when the customer's computer is most likely unattended) ("unidirectional sessions" or "unidirectional uploads"); and (5) only delay those protocols until such time as usage drops below an established threshold of simultaneous unidirectional sessions. These network management practices are fully consistent with the *Internet Policy Statement*.

Comcast recognizes the importance of providing its customers with appropriate disclosures about the services they purchase. Accordingly, Comcast's customer service agreements and policies have always informed Comcast customers that broadband capacity is not unlimited, and that the network is managed for the benefit of all customers. Nonetheless, in a continuing effort to ensure that consumers have the information they need, Comcast recently updated its High-Speed Internet Acceptable Use Policy ("AUP") and Frequently Asked Questions ("FAQs") to provide greater transparency in how it manages its network. Copies of the latest versions of these documents, which were posted to Comcast's website weeks ago, are attached.

For the reasons presented herein, Comcast respectfully requests that the Commission declare that Comcast's network management practices are reasonable and fully consistent with the *Internet Policy Statement*. Network management is best left to the sound, good-faith judgment of the engineers and proprietors who run and own the networks and who are best able to remedy customer service issues promptly, rather than to regulation. The self-policing marketplace and blogosphere, combined with vigilant scrutiny from policymakers, provides an ample check on the reasonableness of such judgments.

II. THE BROADBAND INTERNET MARKETPLACE FUNCTIONS EFFICIENTLY AND SUCCESSFULLY, WITH HUGE BENEFITS FOR TENS OF MILLIONS OF CONSUMERS.

Comcast is an industry leader in the deployment, delivery, and constant improvement of broadband Internet services. Although residential broadband Internet services scarcely existed a decade ago, Comcast and other companies committed the massive amounts of capital and other resources necessary to make broadband Internet a reality. Today, Comcast makes high-speed Internet services available to 99% of the homes its cable systems pass.[6] Comcast undertook this multi-billion-dollar risk before any competing providers were willing to because it had confidence from the earliest days of the Internet that broadband would revolutionize how people communicate, work, and entertain themselves. Meanwhile, Congress, the Commission, and other policymakers wisely and consciously decided to refrain from regulating the Internet, thus preserving incentives for investment in, and deployment and adoption of, broadband services. History has proven that Comcast's and other providers' commitments to broadband, and the

---

[6] Press Release, Comcast Corp., *Comcast Reports Third Quarter 2007 Results* 10 (Oct. 25, 2007) ("*Comcast 3Q Release*"), *available at* http://media.corporate-ir.net/media_files/irol/11/118591/Earnings_3Q07/release_pdf.pdf.

restraint practiced by policymakers, have yielded enormous benefits to consumers and to the economy as a whole.

A. Growth and Innovation in the Broadband Marketplace Are Strong and Growing Stronger Every Day.

Given the widespread availability and use of broadband today, it is easy to forget that, as recently as 1995, only about 17.5 million U.S. adults accessed the Internet, and virtually every one of them did so by way of a dial-up connection that had a top speed of only 56 *thousand* bits per second.[7] When Congress in 1996 expressed the hope that "high-speed, switched, broadband telecommunications capability that enables users to originate and receive high-quality voice, data, graphics, and video telecommunications" would be developed and deployed to all Americans on a "reasonable and timely" basis,[8] the prospect of that occurring anytime soon was remote. There was no obvious path to reach that destination. Moreover, the notion that cable operators could lead the way in that deployment was widely dismissed by experts as technically infeasible[9] and derided as an "interesting-sounding idea[] that will attract what venture capitalists call dumb money."[10]

---

[7] *See* Humphrey Taylor, *Internet Penetration at 66% of Adults (137 Million) Nationwide*, Table 4, The Harris Poll #18, Apr. 17, 2002, *available at* http://www.harrisinteractive.com/harris_poll/index.asp?PID=295. Although Digital Subscriber Line ("DSL") technology had been developed years earlier, phone companies "did not offer the service, for concern that it would negatively impact their other lines of businesses," most notably T1 lines (1.544 Megabits per second) that were "sold primarily to business customers . . . [w]ith a price range of $300 to $3000 per month." Cable Services Bureau, FCC, *Broadband Today: A Staff Report to William E. Kennard, Chairman, Federal Communications Commission, on Industry Monitoring Sessions Convened by Cable Services Bureau* 27 & n.73 (Oct. 13, 1999) ("*Bureau Report*"), *available at* http://www.fcc.gov/Bureaus/Cable/Reports/broadbandtoday.pdf.

[8] Telecommunications Act of 1996, Pub. L. No. 104-104, § 706, 110 Stat. 56, 153.

[9] S*ee* Thomas P. Southwick, *Cable Television, The First 50 Years*, Cable World, Sept. 1998, at S1 (reporting that, at an industry meeting in 1996, Intel founder and CEO Andy Grove "said there was little reason to expect cable would be a viable delivery system for Internet access in the near future").

[10] John C. Dvorak, *The Looming Cable Modem Fiasco*, PC Magazine, Sept. 12, 1995, at 89 ("The noisiest buzz in the industry lately has been over the emerging use of cable TV systems to provide fast network data

(footnote continued…)

Rejecting this conventional wisdom, and holding fast to their vision of the power of broadband, Comcast and other cable operators raised and invested more than $110 billion (*without* government subsidy or any assured return on investment), built an interactive infrastructure of unparalleled capacity and complexity, created and filled thousands of American jobs for technical and customer service personnel, and developed the first reliable and affordable residential broadband Internet service that is now -- just a few years later -- available to almost every home passed by cable in the United States.[11] In turn, cable operators' investment and commitment "spurred the [incumbent local exchange carriers ("ILECs")] to offer DSL or risk losing potential subscribers to cable."[12]

The introduction of cable high-speed Internet service, and the ILECs' subsequent roll-out of DSL, sparked changes that are nothing less than revolutionary. Today, there is a dynamic marketplace for broadband Internet access services, a marketplace in which broadband adoption continues to grow rapidly, new delivery technologies continue to be developed and deployed, and competition is vigorous and intensifying.[13] Residential broadband subscribers grew from

---

(…footnote continued)

transmissions using a device called a cable modem. But *the likelihood of this technology succeeding is zilch*." (emphasis added)).

[11] *See* Industry Analysis & Tech. Div., Wireline Competition Bureau, FCC, *High-Speed Services for Internet Access: Status as of December 31, 2006*, at 3 & Table 14 (Oct. 2007) (estimating that "high-speed cable modem service was available to 96% of the households to whom cable system operators could provide cable TV service") ("*FCC December 2006 High-Speed Report*"), *available at* http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-277784A1.pdf.

[12] *Bureau Report* at 27. "[P]rior to cable modem deployment, the ILECs had little incentive to deploy DSL and the consumer had no choice for high-speed Internet access." *Id.* ILECs now make DSL available to 79% of the households that can purchase their phone services. *FCC December 2006 High-Speed Report* at 3 & Table 14.

[13] *See, e.g.* Mitchell Shapiro, *High-Speed Internet Packaging and Pricing Strategies* 5 (4th ed. Pike & Fischer Nov. 2007) (explaining that "the battle over broadband pricing, data rates and service bundles has continued to intensify over the last year").

essentially zero just over a decade ago, and fewer than three million in December 1999,[14] to more than 60 million households by the end of the second quarter of 2007.[15] Comcast alone now offers its high-speed Internet service to approximately 48 million households, and 27% of those homes -- almost 13 million -- subscribe to Comcast's service.[16] The United States is "the largest broadband market in the world" and "broadband adoption is accelerating."[17] According to several recent surveys, 42% of U.S. households take broadband while the EU average is 23%.[18]

B. Policymakers Have Wisely Rejected Calls To Regulate the Internet.

From the moment broadband Internet service was first commercially introduced, certain parties began making apocalyptic predictions about the harms that would befall consumers absent government regulation of one sort or another. They warned that broadband network owners would destroy freedom of the Internet, categorically dismissed the prospects of any facilities-based competition, and repeatedly demanded government regulation to prevent hypothetical misdeeds.[19]

---

[14] *See* Wireline Competition Bureau, FCC, *High-Speed Services for Internet Access: Status as of December 31, 2004*, Table 1 (July 2005), *available at* http://www.fcc.gov/Bureaus/Common_Carrier/Reports/FCC-State_Link/IAD/hspd0705.pdf.

[15] *See* Spencer Wang et al., Bear Stearns & Co. Inc, *Broad-Based Broadband Slowdown?* 7 (Aug. 29, 2007) (reporting that as of the end of the second quarter of 2007, there were 60.7 million U.S. broadband households); Press Release, Leichtman Research Group, *60 Million Get Broadband from Top Cable and Phone Providers* (Nov. 12, 2007), *available at* http://www.leichtmanresearch.com/press/111207release.html. The Commission itself recently found that the number of broadband customers in the United States surged 61% in 2006 alone, a rate that almost doubles the 37% increase that occurred in 2005. *FCC December 2006 High-Speed Report* at 1 & Table 1.

[16] *See Comcast 3Q Release* at 10. Comcast added over 1.8 million Comcast High-Speed Internet customers in the past year alone. *Id.* at 2.

[17] Robert M. McDowell, Commissioner, FCC, *Broadband Baloney*, Wall St. J., July 24, 2007, at A15.

[18] *See id.*

[19] *See, e.g.*, Consumers Union et al. Petition to Deny, CS Docket No. 98-178, at 12-13 (Oct. 29, 1998) (warning that broadband Internet access will be available only through proprietary portals that are under the "exclusive editorial and commercial control" of cable operators who will censor content and control "[p]lacement of news, entertainment, information, hyperlinks, and commerce"); MindSpring Comments, CC Docket No. 98-146, at 16 (Sept. 14, 1998) ("At the least, the Commission will need to make sure that [a] loop owner does not unilaterally

(footnote continued…)

Fortunately, policymakers prudently resisted these calls for regulation and honored the pro-competitive, deregulatory principles of the Telecommunications Act of 1996. And they respected the national policy established by that statute to "preserve the vibrant and competitive *free market* that presently exists for the Internet and other interactive computer services, *unfettered by Federal or State regulation*."[20]

The Commission -- on multiple occasions, under FCC Chairmen of both political parties -- chose to encourage investment by facilities-based competitors by refraining from regulation.[21] Not surprisingly, the successes resulting from this approach led President Bush to call for *more* competition and *less* regulation.[22] In fact, just last June, Chairman Majoras of the Federal Trade Commission ("FTC") urged "caution, caution, caution" with respect to any actions on the part of

---

(…footnote continued)

block its customer's access to particular web sites."); Center for Media Education et al. Reply Comments, CC Docket No. 98-146, at 15 (Oct. 10, 1998) ("[N]othing will prevent cable operators from limiting content their subscribers see via the Internet in the same way that cable operators select cable channels today."); MAP *et al.* Comments, CS Docket 02-52, at 23 (June 18, 2002) ("Dominant facility owners will become gatekeepers, driving customers to affiliated content suppliers, and protecting incumbent market power over services by foreclosing or controlling innovations that threaten to compete with their core products, thereby slowing innovation.").

[20] 47 U.S.C. § 230(b)(2) (emphasis added); *see* Telecommunications Act of 1996, preamble, 110 Stat. at 56.

[21] *See, e.g.*, *In re Appropriate Framework for Broadband Access to the Internet over Wireline Facilities*, Report & Order and NPRM, 20 FCC Rcd. 14853 ¶ 1 (2005) (under Chairman Martin) ("*Wireline Broadband Order and NPRM*") (adopting a "minimal regulatory environment for wireline broadband Internet access services to benefit American consumers and promote innovative and efficient communications"); *In re Appropriate Regulatory Treatment for Broadband Access to the Internet over Cable Facilities*, Declaratory Ruling and NPRM, 17 FCC Rcd. 4798 ¶ 5 (2002) (under Chairman Powell) ("*Cable Internet Declaratory Ruling and NPRM*"), *aff'd Nat'l Cable & Telecomm. Ass'n v. Brand X Internet Servs.*, 545 U.S. 967 (2005); *In re Inquiry Concerning the Deployment of Advanced Telecomms. Capability to All Americans in a Reasonable and Timely Fashion, and Possible Steps To Accelerate Such Deployment Pursuant to Section 706 of the Telecommunications Act of 1996*, Report, 14 FCC Rcd. 2398 ¶ 105 (1999) (under Chairman Kennard).

[22] President George W. Bush, President Unveils Tech Initiatives for Energy, Health Care, Internet, Remarks by the President at American Ass'n of Community Colleges Annual Convention, Minneapolis, MN (Apr. 26, 2004) ("[A] proper role for the government is to clear regulatory hurdles so those who are going to make investments do so. Broadband is going to spread because it's going to make sense for private sector companies to spread it so long as the regulatory burden is reduced -- in other words, so long as policy at the government level encourages people to invest, not discourages investment."), *available at* http://www.whitehouse.gov/news/releases/2004/04/20040426-6.html.

policymakers, warning that "regulation can have adverse and unintended consequences.[23] Bipartisan support for these deregulatory principles has resulted in ubiquitous broadband Internet availability, robust (and growing) competition, and huge economic and social benefits for this nation, including the creation of the wealthiest and most innovative cyberculture on the planet.

The Commission has correctly noted that "a wide variety of competitive and potentially competitive providers and offerings are emerging in this marketplace,"[24] and Chairman Martin has recognized that "the broadband Internet access market today is characterized by multiple platforms that are vigorously competing for customers."[25] Likewise, FTC Chairman Majoras has highlighted "national trends that appear to show an increasing number of competitive alternatives for broadband Internet access across all markets."[26] An extensive FTC staff study released this past June recognized that "the broadband Internet access industry is showing signs of robust competition, including fast growth, declining prices for higher-quality service, and the current market-leading technology (*i.e.*, cable modem) losing share to the more recently deregulated major alternative (*i.e.*, DSL)."[27]

---

[23] Deborah Platt Majoras, Chairman, FTC, *The FTC: Working for Consumers in the On-Line World* 13-14, Keynote Address of the Fed. Communications Bar Ass'n Annual Meeting (June 27, 2007), *available at* http://www.ftc.gov/speeches/majoras/070627fcba.pdf.

[24] *Wireline Broadband Order and NPRM* ¶ 50.

[25] *Id.* (Separate Statement of Chairman Martin).

[26] Majoras, *supra* note 23, at 10.

[27] FTC, *Broadband Connectivity Competition Policy* 100-01 (June 2007) ("*FTC Broadband Report*") (footnote omitted), *available at* http://www.ftc.gov/opa/2007/06/broadband.shtm. The report found that "new entrants, deploying Wi-Fi, Wi-MAX, and other broadband technologies, are poised to challenge the incumbent cable and telephone companies." *Id.* at 155-56.

In this environment, Comcast and other broadband Internet service providers have every incentive to provide their customers with the highest level of service and the best Internet experience possible.[28] This is precisely what Comcast does.

III. NETWORK MANAGEMENT IS RECOGNIZED WORLDWIDE AS AN ESSENTIAL COMPONENT OF OFFERING BROADBAND INTERNET SERVICES.

The Internet is an extremely complex ecosystem in a constant state of change and evolution. In the case of cable operators, the same hybrid fiber coaxial cable network that delivers high-speed cable Internet also is used for a variety of other purposes -- some of them government mandated (e.g., must-carry signals, leased access and PEG access channels, etc.) and some of them mandated by competitive considerations and consumer demand (e.g., video-on-demand ("VOD"), high-definition ("HD") television, HD VOD, and digital voice services). The bandwidth available for high-speed cable Internet service is not individually dedicated, but is shared among multiple users, and one household's use of the service necessarily impacts use of the service by other users in that geographic area. Notwithstanding the enormous capacity and flexibility of the cable infrastructure, there are (and always will be) some throughput limitations. Thus, the question is not whether all customers will be able to use shared bandwidth indiscriminately for any purpose they choose regardless of the effects their use has on other

---

[28] Broadband Internet access has enabled VoIP, efficient e-commerce, video streaming and downloadable video and movies, online gaming, and near-instantaneous searches of the World Wide Web. Broadband powers downloads of books, music, and video (which, in turn, has provided a substantial boost to portable consumer electronics devices), and supports increasingly graphics-rich Web pages, hundreds of thousands of blogs, myriad sites with user-generated video content, and countless other services. The rampant competition in the related markets for software applications and Internet content provide even greater incentives for broadband providers to ensure access to such content as broadly as possible while managing network security and efficiency to provide a positive experience for all customers.

customers but, rather, how to optimize every customer's online experience and ability to access all Internet content and use all Internet applications and services.

A. Network Management Protects Consumers from a Wide Variety of Internet Uses That Can Degrade Their Internet Experience.

How a service provider manages its network is an important factor in the quality of service it provides. No one can seriously question whether customers expect their service providers to protect them from spam, phishing, computer viruses and worms, Trojan horses, or denial of service attacks.[29] Without network management, such malware could neither be identified nor arrested before inflicting huge costs on users.[30] At the same time, customers do not want messages from friends caught by spam filters, or downloaded applications blocked by anti-virus software. Broadband service providers constantly re-evaluate their network management practices to ensure that they are using the best available technologies to deliver the quality and reliability their customers expect and deserve; Comcast monitors, evaluates, and tweaks its network on a daily basis.

Although the disruptive potential of spam, viruses, and worms receives the most media attention, the potential for service degradation caused by high levels of network congestion is

---

[29] Comcast catches *over 500 million* spam messages *each day* in its spam filters.

[30] For example, estimated costs for cleaning up after the Zotob worm in 2005 were $97,000 and 80 hours of cleanup *per company affected*. Gregg Keizer, *Summer's Zotob Attack Cost Companies $100K Each in Clean-Up*, TechWeb Technology News, Oct. 26, 2005, *available at* http://www.techweb.com/wire/security/showArticle.jhtml?articleID=172900645. Internet crime statistics gathered by the Internet Crime Complaint Center show that spam is the overwhelmingly predominant means by which cyber-criminals perpetrate their scams. *See* Internet Crime Complaint Center, *Internet Crime Report, January 1, 2006-December 31, 2006*, at 3 ("Electronic mail (e-mail) (73.9%) and webpages (36.0%) were the two primary mechanisms by which the fraudulent contact took place."), *available at* http://www.ic3.gov/media/annualreport/2006_IC3Report.pdf. Comcast attempts to preemptively address many of these concerns by offering its broadband subscribers free security software. *See* Press Release, Comcast Corp., *Comcast Launches Comprehensive Internet Security Solution to Help Keep Customers Safe Online* (Aug. 16, 2005) (announcing that "for no additional charge, customers can receive nearly $115 in value to protect their households and enhance their online experience with Internet security solutions"), *available at* http://www.comcast.com/About/PressRelease/PressReleaseDetail.ashx?PRID=132.

another major concern for any broadband service provider trying to ensure a positive Internet experience for all of its users.

Today's Internet is a copious buffet of multimedia content, applications, and services -- many of which consume vastly greater quantities of bandwidth than were needed just a year or two ago.[31] Just as the availability of broadband Internet service has spurred the development and growth of all manner of new broadband content, applications, and services, the growth of these items in turn helps drive the demand for broadband access.[32] Accordingly, Comcast invests hundreds of millions of dollars annually to make Comcast High-Speed Internet service even faster and more reliable; since 2003 Comcast has increased customer broadband speeds "four times, for no additional charge."[33] Just last month, Comcast announced that it "will evolve its network from broadband to wideband with the deployment of DOCSIS 3.0 (Data Over Cable Service Interface Specifications), a new standard for delivering high-speed Internet service

---

[31] On average, each Comcast High-Speed Internet customer uses more than 40% more bandwidth today than one year ago. As Commissioner McDowell recently noted, "today . . . YouTube alone requires more bandwidth than the *entire Internet* did in 2000." *In re the Commission's Cable Horizontal and Vertical Ownership Limits*, Fourth Report & Order & Further NPRM, Docket No. 92-264, Dissent of Commissioner Robert M. McDowell at 2 (adopted Dec. 18, 2007) (emphasis in original). A recent study by Nemertes Research concluded that user demand for the Internet could outpace network capacity by 2010. *See* Press Release, Nemertes Research, *User Demand for the Internet Could Outpace Network Capacity by 2010* (Nov. 19, 2007), *available at* http://www.nemertes.com/press_releases/user_demand_internet_could_outpace_network_capacity_2010. "To prevent this anticipated decline in service, the study found that a $137 billion global infrastructure investment for broadband access would be needed, with between $42 billion and $55 billion required in the United States alone." Sarah Reedy, *Internet Could Clog Networks by 2010, Study Says*, TelephonyOnline, Nov. 19, 2007, *available at* http://telephonyonline.com/home/news/internet_network_capacity_111907/ (referring to the above-mentioned study by Nemertes Research).

[32] The FTC recently reported that "[t]he demand for bandwidth has increased dramatically, as a growing number of users seek access to increasingly data-rich Internet content, such as streaming video, which often requires considerable bandwidth or has particular quality-of-service requirements." *FTC Broadband Report* at 3.

[33] Press Release, Comcast Corp., *Comcast "Boosts" Customers Broadband Speeds with New Network Technology* (June 1, 2006) (announcing the "PowerBoost™ speed enhancer -- "patent-pending Comcast network technology that increases customers' broadband performance, for no additional charge"), *available at* http://www.comcast.com/About/PressRelease/PressReleaseDetail.ashx?PRID=65.

across cable [that] will deliver significantly faster speeds of up to 100 Mbps to our customers over the next two years with the capability of delivering higher speeds . . . in the future."[34]

Just as with many other public and private networks, however -- including the phone system, wireless communications networks, the power grid, and even the highway system -- broadband networks are built on the predicate that not all the users will demand the *maximum* resources at the same moment. With the Internet, Comcast and other broadband service providers have designed, built, and continued to upgrade their networks to meet the demands of as many consumers as possible while being economically rational. Accommodating the evolving needs of the overwhelming majority of broadband users is a fairly straightforward process because the applications and services they use typically grow in a predictable and consistent manner. By contrast, a very small number of broadband users employ certain P2P protocols that utilize immense amounts of bandwidth in ways that are unpredictable and inconsistent and that can threaten to overwhelm network capacity and harm the online experience of other users. That is why, even with continuous upgrades and constant investment, the fact remains that network capacity is not -- and never will be -- unlimited.

As Congresswoman Mary Bono Mack recently explained:

> The service providers are watching more and more of their network monopolized by P2P bandwidth hogs who command a disproportionate amount of their network resources. . . . You might be asking yourself, why don't the broadband service providers invest more into their networks and add more capacity? For the record, broadband service providers are investing in their networks, but simply adding more bandwidth does not solve [the

---

[34] Fact Sheet, Comcast Corp., *Comcast's Network: America's Leading Network*, Jan. 9, 2008 (announced at the 2008 Consumer Electronics Show), *available at* http://www.comcast.com/ces/content/images/Wideband/WidebandNetworkFS.pdf.

> P2P problem]. The reason for this is *P2P applications are designed to consume as much bandwidth as is available*, thus more capacity only results in more consumption.[35]

They are not designed to make reasonable use of a resource shared among millions of users. As the inventor of BitTorrent (the most popular P2P protocol currently being used) was recently quoted explaining, "My whole idea was, 'Let's use up a lot of bandwidth.' . . . I had a friend who said, 'Well, ISPs won't like that.' And I said, 'Why should I care?'"[36]

The ability to obtain a file from hundreds or thousands of other people on the Internet whose computers are using the same P2P protocol and are acting as mini-servers -- referred to as "swarming" functionality -- is one of the key aspects of current P2P protocols that makes them so popular. As Vuze explains,

> Over time, the original peer-to-peer software approaches were optimized to accommodate larger files . . . . One popular approach relies on the use of "torrent" files and is often is [sic] referred to as "torrent technology." . . . Torrent technologies leverage the power of many individual computers by enabling each computer interested in a piece of content to obtain small pieces of it from multiple other computers, and simultaneously play the same role to others who seek the same content in the future.[37]

However, the unfortunate (albeit *intentional*) byproduct of that "torrent technology" and "swarming" functionality is that, by utilizing numerous individual users' computers and Internet service to distribute files to others who wish to make use of those files, P2P protocols effectively "shift the load" from what would have been extremely high-capacity facilities used by the

---

[35] Congresswoman Mary Bono Mack, Keynote Speech at Annual State of the Net Conference (Jan. 29, 2008) (emphasis added), *available at* http://bono.house.gov/News/DocumentSingle.aspx?DocumentID=82895.

[36] David Downs, *BitTorrent, Comcast, EFF Antipathetic to FCC Regulation of P2P Traffic*, San Francisco Weekly, Jan. 23, 2008, *available at* http://news.sfweekly.com/2008-01-23/news/bittorrent-comcast-eff-antipathetic-to-fcc-regulation-of-p2p-traffic.

[37] Vuze Petition at 6-7.

content provider to the "last-mile" networks connecting individual users.[38] Because these P2P protocols are designed to devour any and all available bandwidth on the network, it is not possible to build one's way out of the need for reasonable network management.

If the most bandwidth-consumptive users are allowed to place whatever burden they wish on the network, whenever they wish, then bandwidth can become insufficient to enable other users (who may be trying to use the Internet for email, shopping, phone calls, or even other P2P applications) to access all the content, applications, and services that they want at the level of performance they demand and deserve. As one observer put it,

> Bandwidth is a finite resource. If a handful of users disproportionately consume that finite resource, the overwhelming majority of other users are either unable, or severely limited in their ability, to access and interact with the sites they prefer. . . . The minority of [users] are engaged in bandwidth-intense activities such as file-sharing, while the majority of [users] are engaged in less-intense forays, such as blogging, or participating in online polls, or uploading short videos asking questions of presidential candidates.[39]

These bandwidth-intensive activities can not only degrade other less-intense uses, but also significantly interfere with thousands of Internet companies' businesses. As Nemertes Research recently explained,

> [T]he user experience is really just the tip of the iceberg. The real impact is the chilling effect that insufficient capacity exerts on companies that rely upon reliable Internet

---

[38] As Vuze explains, "a distributor of content need not have many large central servers to store and send a file each time an Internet user is interested in a particular piece of content; instead, the content distributor need only have a handful of servers that operate as initial 'seed servers' for the content, and can then rely on the distributed computing capacity of all of the individual user computers (the 'swarm') that have agreed to be used as a 'seed' for others." Vuze Petition at 7. In analyzing the effects of BitTorrent, Professors Martin and Westall explain that "[i]t is this [swarming] effect that can cause the total amount of upstream traffic produced during a download to exceed the total amount of downstream traffic." James J. Martin & James M. Westall, *Assessing the Impact of BitTorrent on DOCSIS Networks* 2 (Sept. 2007), *available at* http://people.clemson.edu/~jmarty/papers/bittorrentBroadnets.pdf.

[39] Pete Abel, *Fair vs. Foul in Net Neutrality Debate*, themoderatevoice.com, Nov. 24, 2007, *at* http://themoderatevoice.com/media/internet/16239/fair-vs-foul-in-net-neutrality-debate/.

> performance . . . YouTube, PhotoBucket, Amazon.com, etc[] could be faced with a crisis if their customer base simply can't access their product in a tolerable manner.[40]

Without network management, the success of new applications and services that are sensitive to interference caused by network congestion-- such as Joost, iChat, and Veoh -- is likely to be impaired. It is because of network management that most of the existing Internet content, application, and service providers, especially these and other "over-the-top" providers, are able to develop business models on the assumption that their applications and services will not be crowded out by congestion caused by hugely bandwidth-intensive protocols and software. "While congestion could impact communications over the open Internet, managed networks help ensure communications reliability . . . and help maximize the likelihood that all traffic will be delivered and that time sensitive applications will operate in a satisfactory manner despite unusual network conditions."[41]

Simply stated, there is nothing "neutral" about a network that is not managed. An unmanaged network simply means that users who make disproportionately resource-intensive demands on the network can crowd out fellow users. An unmanaged approach would adversely affect far more users than the few currently affected by commonly-used network management technologies.[42] That is why all network providers must manage bandwidth in some manner;[43]

---

[40] Nemertes Research, *The Internet Singularity, Delayed: Why Limits in Internet Capacity Will Stifle Innovation on the Web* 51 (Nov. 2007), *available at* http://www.nemertes.com/.

[41] Federal Communications Commission, Public Safety and Homeland Security Bureau, Joint Advisory Committee on Communications Capabilities of Emergency Medical and Public Health Care Facilities, *Report to Congress* 54 (Feb. 4, 2008).

[42] P2P protocols undeniably have created new challenges in allocating network resources fairly among users. Engineers at the Internet Engineering Task Force are starting to recognize that old assumptions built into the Transmission Control Protocol no longer work in a P2P world: "Briscoe argues that fairness goes out the window with P2P applications such as BitTorrent. These applications may use as many as 40 to 100 TCP sessions at the same time, while a browser uses two to four. So the P2P app not only uses a lot more traffic volume in the long run because it runs for a lengthy amount of time, it also uses up much more than its fair share of the available bandwidth

(footnote continued…)

why a wide range of commenters in this very proceeding -- including broadband Internet access providers,[44] equipment manufacturers,[45] content distribution providers,[46] and others[47] -- have acknowledged the need for, and benefits that flow from, reasonable network management;[48] and why the Commission's *Internet Policy Statement* expressly recognizes that the principles the

---

(…footnote continued)

at any given point in time because it uses so many concurrent TCP sessions." Iljitsch van Beijnum, *Growth of P2P Leads IETF To Debate "Fair"Bbandwidth Use*, ArsTechnica.com, Dec. 5, 2007, *available at* http://arstechnica.com/news.ars/post/20071205-growth-of-p2p-leads-ietf-to-debate-fair-bandwidth-use.html. For further discussion about issues of fairness in the context of network management, *see* Draft, B. Briscoe, et al., Transport Area Working Group, Internet Engineering Task Force, *Problem Statement: We Don't Have To Do Fairness Ourselves* 5 (Nov. 12, 2007), *available at* http://www.ietf.org/internet-drafts/draft-briscoe-tsvwg-relax-fairness-00.txt.

[43] This is not a new issue: "Since the Internet's earliest days . . . computer scientists have recognized that network resources are scarce and that traffic congestion can lead to reduced performance." *See FTC Broadband Report* at 2.

[44] *See, e.g.*, AT&T Comments, WC Docket. No. 07-52, at 21-46, 74-79 (June 15, 2007); Embarq Corp. Comments, WC Docket No. 07-52, at 4-13 (June 15, 2007); Internet Content and Serv. Provider Coalition Comments, WC Docket No. 07-52, at 2-4 (June 15, 2007); Time Warner Comments, WC Docket No. 07-52, at 9, 11-15 (June 15, 2007); Verizon and Verizon Wireless Comments, WC Docket No. 07-52, at 41-58 (June 15, 2007); Am. Cable Ass'n Comments , WC Docket No. 07-52, at 3 (June 15, 2007); Fiber-To-The-Home Council Comments, WC Docket No. 07-52, at 54-62 (June 15, 2007); Nat'l Cable & Telecomm. Ass'n, WC Docket No. 07-52, at 22-36 (June 15, 2007); Telecomm. Industry Ass'n Comments, WC Docket No. 07-52, at 4-7 (June 13, 2007); United States Telecom Ass'n Comments, WC Docket No. 07-52, at 11-16 (June 15, 2007); CTIA – The Wireless Ass'n Reply Comments, WC Docket No. 07-52, at 19-20 (July 16, 2007).

[45] *See, e.g.*, IP Packet Mgmt. Sys. Mfrs. Comments, WC Docket No. 07-52, at 2-4 (June 15, 2007); Alcatel-Lucent Reply Comments, WC Docket No. 07-52, at 4-13 (July 16, 2007); Cisco Sys., Inc. Reply Comments, WC Docket No. 07-52, at 3-15 (July 16, 2007); Nortel Ex Parte Comments, WC Docket No. 07-52, at 3-7 (Sept. 17, 2007).

[46] *See, e.g.*, Akamai Techs., Inc. Reply Comments, WC Docket No. 07-52, at 8-10 (July 16, 2007).

[47] *See, e.g.*, Hands Off the Internet Comments, WC Docket No. 07-52, at 22-25 (June 15, 2007); Internet Freedom Coalition Comments, WC Docket No. 07-52, at 7-9 (June 14, 2007); Media Institute Comments, WC Docket No. 07-52, at 5 (June 14, 2007); Hands Off the Internet Reply Comments, WC Docket No. 07-52, at 14-17 (July 16, 2007).

[48] As Cisco Systems, Inc. explained: "Commenters have made clear that traffic management practices respond to consumer demand and enhance a service's value to the end user. . . . Providers currently manage packets in order to maintain network security, controlling the proliferation of spam, spyware, worms, and other 'malware' They manage packets to provide parents and libraries appropriate discretion over the content accessed by children. They manage packets in order to hamper the unlawful dissemination of intellectual property. And -- perhaps most significantly for present purposes -- *they manage traffic to ensure quality of service is maintained as the demands placed on the Internet skyrocket*." Cisco Sys., Inc. Reply Comments, WC Docket No. 07-52, at 3-4 (July 16, 2007) (emphasis added).

Commission announced must be "subject to reasonable network management."[49] Even Vuze concedes that "network operators certainly should have the ability to engage in reasonable network management."[50]

B. Broadband Service Providers Worldwide Manage Their Networks for the Benefit of All Customers.

All broadband service providers face the challenges of managing their networks in a manner that ensures a quality experience for all customers. Providers typically do not disclose their network management practices in any detail, given network security and congestion concerns. It is apparent, however, that network traffic is widely managed to prevent bandwidth-intensive uses from interfering with other uses. Virtually every broadband service provider in the United States and abroad manages its network in some manner.

There are numerous technology companies and equipment makers around the world that design, develop, build, and sell equipment for the network management practices used by Comcast and countless other broadband providers. For some companies, such as Cisco, Alcatel-Lucent, Nokia, and Ericsson, these technologies comprise just a part of their entire product portfolio. For other companies, however, including Ellacoya Networks, Allot Communications, Procera Networks, Sandvine, Bivio Networks, and CloudShield Technologies, these technologies form a significant part of their overall business. Each of these vendors sells its products to a wide variety of broadband service providers, large and small;[51] from cable operators to telcos;[52]

---

[49] *Internet Policy Statement* ¶ 5 n.15.

[50] Vuze Petition at 14.

[51] *Compare* Press Release, Ellecoya Networks, *British Telecommunications plc Selects Ellacoya for Network Visibility and Service Optimization* (June 20, 2007) ("The Ellacoya solution's network visibility function . . . enables BT to effectively engineer network capacity to meet all subscriber bandwidth needs as well as to anticipate and plan for future service requirements."), *available at* http://www.ellacoya.com/bt.html, *with* Press Release, Procera,

(footnote continued…)

and from wireline networks to wireless networks.[53] These technologies are in widespread use all over the world, including the United States, Europe, and Asia, by public and private operators alike, and even on some of the highest-capacity broadband networks in the world.[54]

(…footnote continued)

Cavalier Replaces Other Vendors' Traffic Management Systems with Procera's PacketLogic Flow-Based Approach (Dec. 7, 2006) ("The system has been configured to effectively shape, manage and control the broadband access services for its commercial and multi-tenant subscribers -- many of these customers are off-campus University of Virginia students."), *available at* http://www.proceranetworks.com/2006-press-releases/cavalier-broadband-selects-procera-networks-to-shape-manage-and-control-broadband-internet-access-for-commercial-and-residential-multi-tenant.html.

[52] *See, e.g.*, Press Release, Procera, *Leading Korean Triple-Play Provider, Hanaro Telecom, Deploys Procera's Network Traffic and Application Management Solution* (Nov. 13, 2007) ("Internet-based video services are highly susceptible to latency and general network delays which can degrade performance and quality of service (QoS), resulting in customer dissatisfaction and churn."), *available at* http://www.proceranetworks.com/press-releases/leading-korean-triple-play-provider-hanaro-telecom-deploys-procera-039-s-network-traffic-and-application-management-sol-2.html.

[53] *Compare* Press Release, Allot Technology, *Vodafone Iceland Joins the Increasing List of Incumbent Carriers Adopting Allot Technology* (Aug. 8, 2007) ("Vodafone Iceland deployed Allot's NetEnforcer devices [and] soon determined that the traffic surges were caused by a relatively small number of heavy users, consuming vast quantities of bandwidth for recreational use. Reports generated by Allot NetXplorer Reporter confirmed P2P applications were responsible for 60% of inbound traffic, and 80% of outbound traffic."), *available at* http://www.allot.com/index.php?option=com_content&task=view&id=603&Itemid=18, *with* Press Release, Procera Networks, *Top Ten Wireless Internet Service Provider Mesa Networks to Deploy Procera Networks' PacketLogic Traffic Management System* (July 11, 2006) ("Procera Networks, Inc. . . . announced that Mesa Networks, one of the largest wireless Internet service providers (WISPs) in the U.S., will deploy the company's PacketLogic next generation flow-based network traffic management system"), *available at* http://www.proceranetworks.com/2006-press-releases/top-ten-wireless-internet-service-provider-mesa-networks-to-deploy-procera-networks-packetlogic-traffic-management-s-2.html.

[54] *Compare* Sandvine Corp., *Management's Discussion and Analysis* 4 (Oct. 3, 2007) (explaining that Sandvine, which develops and markets network management services for DSL and cable high-speed Internet providers, currently has over 90 customers using its services and "has products installed and operating at customer facilities in over 40 countries around the world, with networks representing over 50 million broadband subscribers"), *available at* http://www.sandvine.com/about_us/inv_docs/2007-Q3-MDA.pdf, *with* Press Release, Allot Technology, *Allot Helps Arkansas Provide Government Agencies and Public Schools with Guaranteed Bandwidth and Improved Network Quality* (Jan 3, 2007) (noting that the Arkansas State Department of Information Systems "found that peer-to-peer applications were utilizing a significant amount of bandwidth at the state's public schools" and that, in order "[t]o ensure that teachers and students had a high level of network quality, speed and availability for school and administrative work, [they] identif[ied] and shut down peer-to-peer applications running on the public school network."), *available at* http://www.allot.com/index.php?option=com_content&task=view&id=449&Itemid=18.

These vendors properly maintain the privacy of many of the broadband service providers who use their products, but it is clear -- often from the broadband service providers' own statements -- that use of tools like these is widespread. In the United States,

- AT&T and Verizon "use network-management tools to ensure P2P users can operate and trade legal content without impairing everyone else's broadband experience."[55]
- Qwest reserves the right to suspend, terminate, or limit a user's broadband service if a subscriber continues to consume bandwidth to detriment of the network at large.[56]
- Hughes automatically decreases bandwidth speeds for a 24-hour period for users who exceed their bandwidth thresholds.[57]
- Cox recently confirmed that it "actively manages network traffic through a variety of methods including traffic prioritization and protocol filtering" "to ensure that bandwidth intensive applications do not negatively impact [its customers'] service."[58]
- Charter states in its acceptable use policy that it reserves the right to "adjust, suspend or terminate Customer's account or service at any time and without notice, or [] require Customer to upgrade Customer's service level and pay additional fees in accordance with Charter's then-current, applicable, rates for such service."[59]

---

[55] Avis Yates Rivers, *Network Neutrality: Hysteria Makes for Bad Law*, Seattle Times, Dec. 20, 2007, *available at* http://seattletimes.nwsource.com/html/opinion/2004083048_broadband20.html. According to press reports, Verizon manages its network "'so individual users don't degrade the service experience of others.'" Chloe Albanesius, *Verizon Launches "20/20" FiOS Plan for $65/Month*, PC Magazine, Oct. 23, 2007 (quoting Susan Retta, Verizon's Vice President for Broadband Solutions), *available at* http://www.pcmag.com/article2/0,2704,2205370,00.asp. AT&T reportedly requires its customers to "agree that the Service is not to be used to host peer-to-peer applications that [a user is] not actively using." Drew Clark, *Highlights from the Terms of Service of the Largest Broadband Providers*, DrewClark.com, *at* http://www.drewclark.com/tosmatrix.php. In other words, AT&T openly prohibits "seeding" of P2P protocols.

[56] *See* Qwest, *Understanding the Excessive Use Policy* 2, *at* http://www.qwest.com/internethelp/eup/16915_EUP_Details-15.pdf (last visited Feb. 12, 2008).

[57] *See* HughesNet, *Fair Access Policy*, *at* http://www.hughes.com/HUGHES/rooms/displaypages/layoutinitial?pageid=fairaccess (last visited Feb. 11, 2008).

[58] *Cox Confirms P2P Throttling*, BroadbandReports.com, Nov. 19, 2007 (quoting a statement from David Deliman, Cox's Product Communications Manager), *at* http://www.dslreports.com/shownews/Cox-Confirms-P2P-Throttling-89571.

[59] *See* Charter Communications, Charter HSI Residential Acceptable Use Policy, ¶ 11, *at* http://www.charter.com/Visitors/Policies.aspx?Policy=6 (last visited Feb. 9, 2008).

- Time Warner Cable's acceptable use policy prohibits users from "engag[ing] in any conduct that interferes with Operator's ability to provide service to others, including the use of excessive bandwidth."[60]

Significantly, service providers in other countries similarly manage their networks. For example, the FTC noted recently that "an Australian ISP assigns low priority to P2P traffic between noon and midnight. Such a policy is meant to create incentives for users who use P2P technologies to shift such usage to off-peak hours."[61] And, "many operators (particularly in Europe) already limit the bit rate of their heaviest users at peak times in order to protect the experience of the majority of their customers."[62] According to one article, Vodafone stated that "traffic shaping is common in Europe" and that "80[%] of the congesting traffic [on its network] was P2P," but that "the traffic policy [it] activated gave [its] online gamers and business users very high Quality of Experience."[63] In the United Kingdom,

- Virgin Media "sometimes moderate[s] the speeds during peak times (4 p.m. till 9 p.m.) for customers who are downloading and/or uploading an unusually large amount at these times."[64]

- BT Broadband has "a peak time policy where [it] limit[s] P2P speeds to manage the amount of bandwidth that is used by this application in particular. Without these limits

---

[60] *See* Time Warner Cable, *Operator Acceptable Use Policy*, *at* http://help.twcable.com/html/twc_misp_aup.html (last visited Feb. 12, 2008)

[61] *FTC Broadband Report* at 89.

[62] *See* Briscoe, *supra* note 42, at 5.

[63] Nate Anderson, *ISPs to BBC: We Will Throttle iPlayer Unless You Pay Up*, Ars Technica, Aug. 13, 2007, *available at* http://arstechnica.com/news.ars/post/20070813-isps-to-bbc-we-throttle-iplayer-unless-you-pay-up.html.

[64] *See* Virgin Media, *Traffic Management*, *at* http://www.virgin.net/allyours/faqs/traffic_faqs.html (last visited Feb. 7, 2008). Virgin Media explains that "[w]hen someone is downloading and/or uploading a particularly large amount of information over a long period of time, it can slow down the internet speed for other users who might just be checking their email or browsing online." *Id.*

all our customers using their broadband service at peak times would suffer, regardless of whether they are using P2P or not."[65]

And, in Canada,

- Bell Sympatico customers are prohibited from "[r]estricting or inhibiting any other user from using or enjoying the Internet, impairing the operations or efficiency of the Service or creating an unusually large burden on our networks, or otherwise generating levels of Internet traffic sufficient to impede other users' ability to transmit or receive information."[66]

- Shaw Communications prohibits a broad range of unspecified behaviors that would "improperly restrict, inhibit or degrade any other customer's use of the Services," [67] which may include creating "an unusually large burden [on the providers'] networks."[68]

Different service providers may of course make different choices about precisely which network management tools and strategies to use, and any given provider may try different strategies or settings at different times. Each service provider, and especially those subject to intense competition (as in the United States), must be sensitive to the needs and demands of its customers, and must configure its network management policy to conform to those needs and demands, as well as to the unique characteristics of its network. Service providers must retain

---

[65] *See* BT Group.com, *BT Total Broadband Usage Allowance Guidelines and Fair Usage Policy* ¶ 11, *at* http://bt.custhelp.com/cgi-bin/bt.cfg/php/enduser/cci/bt_adp.php?p_faqid=10495&cat_lvl1=346&p_cv=1.346&p_cats=346 (last visited Feb. 12, 2008).

[66] Sympatico, *Sympatico™ High Speed Unplugged Service - Acceptable Use Policy*, *at* https://www.highspeedunplugged.sympatico.ca/CustomerPreSales/Agreements/AcceptableUsagePolicy.aspx (last visited Feb. 7, 2008). One blog recently reported that Bell Sympatico had stated that it is "using the latest, state-of-the-art technology to improve the customer experience for a vast majority of our customers' favorite applications (such as Internet Browsers, E-mail, Instant Messaging, Streaming Video, etc.) as required during peak times on the Internet, while ensuring all customers receive fair use of the network when there is heavy Internet traffic." *Canada's Sympatico ISP Admits Net Filtering*, Tech-Ex Blog, Nov. 6, 2007, *at* http://technologyexpert.blogspot.com/2007/11/canadas-sympatico-isp-admits-net.html (last visited Feb. 7, 2008).

[67] Shaw Communications, *Acceptable Use Policy - Internet*, *at* http://www.shaw.ca/en-ca/AboutShaw/TermsofUse/AcceptableUsePolicyInternet.htm#q8 (last visited Feb. 12, 2008) ("Shaw AUP"). . Rogers Cable has similar policies. *See* Rogers, *Acceptable Use Policy*, *at* https://www.shoprogers.com/about/legaldisclaimer/Unified_AUP_Eng.pdf (last visited Feb. 12, 2008) ("Rogers AUP").

[68] Shaw AUP ("Bandwidth, Data Storage and Other Limitation"); *see also* Rogers AUP.

the discretion to make their own engineering decisions in a complex and dynamic environment; such individualized decisions are necessary to ensure that the uses of a minority of customers do not harm the Internet experience of their other customers.

IV. COMCAST REASONABLY MANAGES ITS NETWORK IN A MANNER THAT IS FULLY CONSISTENT WITH THE COMMISSION'S *INTERNET POLICY STATEMENT*.

In view of the intense competition described above, reasonable network management is, always has been, and likely always will be, essential to providing the reliable high-speed Internet access -- or any other network-based service, for that matter -- that consumers demand. Like other Internet service providers around the world, Comcast is using reasonable network management tools. The tools that Comcast uses, and that are the subject of the Petitions, minimize the interference caused by users of certain protocols at times when such use creates levels of network traffic that, absent such management, would degrade the activities of all Comcast High-Speed Internet service users. If Comcast did not engage in such responsible and *limited* management in those *limited* geographic areas and at those *limited* times when it is required, the user experience for *all* customers, *including* the users of the managed protocols, would deteriorate to unacceptable levels. These practices are both reasonable in light of the challenges presented by rising levels of network traffic, and entirely consistent with the *Internet Policy Statement*.

Petitioners use extremist rhetoric to characterize Comcast's reasonable network management practices as villainy.[69] Free Press has even ginned up thousands of e-mails

---

[69] *See, e.g.*, Free Press Petition at 11 ("'spoofing' and 'jamming' applications [in a way that is] calculated and deliberately hidden from users"), 24 ("sabotag[ing]" providers), 32 ("deceptive practices" and "[s]ecretly degrading particular applications"); Vuze Petition at i-ii ("clandestine attempts to degrade and . . . block its users' traffic"), ii

(footnote continued…)

absurdly accusing Comcast of attempting to "smother . . . democratic communications."[70] Although Petitioners have generated much rhetorical heat, they shed no light on Comcast's network management practices; Comcast attempts to do the latter here.

A. Comcast Reasonably Manages Certain Bandwidth-Intensive Protocols.

Managing network traffic to prevent excessive congestion from causing service degradation is as much an art as a science, and there are numerous and ever-evolving means and methods that service providers employ, depending on their needs and the nature of each particular network. Nevertheless, there are several generally accepted facts that tend to guide the management process. One of the most important is that content, applications, and services that are sensitive to latency and packet loss, such as VoIP, streaming video/audio, and online gaming, are *particularly* susceptible to degradation resulting from network congestion. This means that users of competitive services, such as Vonage or Skype, customers seeking to watch streaming video or play online real-time games, or even customers simply trying to surf the web, may be unable to do so -- or may suffer a degraded experience -- if the network is not properly managed.

Another important fact is that a disproportionately large amount of the traffic currently on broadband networks originates from a relatively small number of users employing certain P2P protocols in order to share files. Some observers have dubbed this the "80/20 effect," that is, "80% of the bandwidth is consumed by 20% of the users."[71] In fact, the statistics may be even

---

(…footnote continued)

("censor[ing] legal content or discriminat[ing] against applications and services"), 10 ("hacking into its own network").

[70] Thousands of informal comments approved by visitors to the Free Press website have been directed by Free Press to the wrong docket, WT Docket No. 07-54, a rulemaking that deals with antenna requirements for services using radio frequencies in the 10.7-11.7 GHz band.

[71] *See*, Martin & Westall, *supra* note 38, at 1.

more lopsided.[72] One thing is certain: these P2P protocols place enormous demands on networks' capacity, especially upstream bandwidth.

Independent research has shown that as few as 15 simultaneous BitTorrent sessions (i.e., individual file transfers, multiple ones of which may be coming from a single computer) in a geographic area served by a single node (in Comcast's systems, usually about 450 households/users) can severely slow down the time it takes for all users in that area to surf the Web and can degrade the quality and reliability of VoIP calls below the threshold of what is considered to be on par with traditional phone service ("toll quality").[73] Another study has shown that "it only takes about 10 BitTorrent users bartering files on a node (of around 500 [users]) to double the delays experienced by everybody else [on the node]."[74] What is clear from these studies is that even a small number of users simultaneously using high-volume P2P protocols to share files on any network can more than double the time it takes for a web page to download, disrupt the experience of watching streaming video or listening to streaming audio, or destroy the quality of a VoIP call.[75]

---

[72] "[A] minute number of broadband customers using the file-sharing networks can consume enormous amounts of available bandwidth in your neighborhood -- some estimate up to 90 percent." Rivers, *supra* note 55.

[73] *See* Martin & Westall, *supra* note 38, at 6, 8. For example, in measuring web response time, one study found that "15 BitTorrent users can cause a drop in performance by a factor of 2.5," and that in the case of VoIP, "[t]he effective mouth-to-ear delay exceed[ed] the performance threshold of 150 milliseconds when 15 or more BitTorrent users are active." *Id.* at 7-8. Generally speaking, in order for a VoIP call to be considered on-par with a traditional POTS call -- a.k.a., "toll quality" -- the "mouth-to-ear" latency must be less than 150 milliseconds. "[T]elephony is generally considered unusable if the latency exceeds 400 milliseconds." *Id.* at 6.

[74] Leslie Ellis, *BitTorrent's Swarms Have a Deadly Bite on Broadband Nets*, Multichannel News, May 8, 2006, *available at* http://www.multichannel.com/article/CA6332098.html; *see* Gordon Haff, *Whatever Else It Is, P2P Is Inefficient*, CNET Blogs, Nov. 20, 2007 (explaining that "P2P places more load on the aggregated systems and networks of the Internet taken as a whole than if the same content were being distributed in a centralized manner"), *at* http://www.cnet.com/8301-13556_1-9821330-61.html.

[75] Congresswoman Mary Bono Mack recently noted that "service providers are watching more and more of their network capacity monopolized by P2P bandwidth hogs who command a disproportionate amount of their network resources. This in turn is having a negative impact on their networks and the provision of core services for

(footnote continued…)

It is these effects that led Comcast to manage its network to prevent P2P usage from degrading *all* of its customers' Internet experience.[76] Specifically, in order to avoid degradation caused by congestion, when P2P unidirectional upload sessions (i.e., sessions where a computer is only uploading and not simultaneously uploading and downloading) reach a pre-determined congestion threshold in a particular neighborhood, Comcast temporarily delays initiation of any new unidirectional upload sessions until the number of active uploading sessions drops below that threshold. Comcast only manages those P2P protocols that have a demonstrated history of generating excessive burdens on the network based on objective criteria applied equally to all Internet protocols. Comcast's network management practices do not entail any form of discrimination based on the content, application, or service utilizing the P2P protocol or the identity of the entity or person offering or using the content, application, or service. Comcast only manages unidirectional upload sessions (which typically occur when a user is not at her or his computer waiting for a download or upload), not download-only sessions or sessions in

(…footnote continued)

mainstream consumers, such as web surfing and sending email." Congresswoman Mary Bono Mack Speech, *supra* note 35.

[76] "[B]roadband providers such as AT&T, Verizon and Comcast use network-management tools to ensure P2P users can operate and trade legal content without impairing everyone else's broadband experience." Rivers, *supra* note 55. One high-profile blogger, Mark Cuban, recently suggested, "BLOCK P2P TRAFFIC, PLEASE." *See* Mark Cuban, *An Open Letter to Comcast and Every Cable/Telco on P2P*, Nov. 20. 2007, *at* http://www.blogmaverick.com/2007/11/20/an-open-letter-to-comcast-and-every-cable-telco-on-p2p. Mr. Cuban explained, "As a consumer, I want my internet experience to be as fast as possible. The last thing I want slowing my internet service down are P2P freeloaders. That's right, P2P content distributors are nothing more than freeloaders. The only person/organization that benefits from P2P usage are those that are trying to distribute content and want to distribute it on someone else's bandwidth dime." *Id.* Upon further reflection (and after a number of contentious rejoinders from commenters), Mr. Cuban suggested that a better alternative may be to meter and charge for upstream traffic. Mark Cuban, *P2P Part 3*, Nov. 23, 2007, *at* http://www.blogmaverick.com/2007/11/23/p2p-part-3/. Ironically, when it was revealed last month that Time Warner is considering a trial of metered usage, immediate criticism ensued, including from Free Press. *See* SavetheInternet.com, *Time Warner Metered Pricing: Not the Solution*, Jan. 17, 2008, *at* http://www.freepress.net/news/29658.

which uploads and downloads are occurring simultaneously (which can occur when a user is at her or his computer waiting for a download or upload to finish).

To effectuate its management practices, Comcast's network issues instructions called "reset packets" -- which involve a communication between two IP addresses (and, importantly, *not* between two people) -- to temporarily delay the initiation of new unidirectional P2P file uploads. It is *not* accurate to describe these reset packets as "forged," and Free Press's attempted analogy to a telephone operator impersonating the called and calling parties to a phone conversation[77] is inflammatory hyperbole, not fact. A "reset" is nothing more than a bit in the TCP packet header that is used to signal that there is an error condition within the network and that a new connection needs to be established; the new connection is automatically established by the application or service initiating the connection. It is much like what occurs when a fax machine receives a busy signal and the machine automatically redials until the facsimile goes through, except that in the case of P2P the downloading computer may have hundreds or thousands of other computers to look to for the desired file. A reset packet is "the only machine language [P2P protocols] understand [and] this type of technique is common in the networking and software industry where alternatives don't exist."[78] This is the same message that the computer receives when any number of problems occur during a P2P file transfer, and the computer requesting the file automatically knows how to process this message and to retry its

---

[77] Free Press Petition at 12, 14.

[78] George Ou, *EFF Wants To Saddle You with Metered Internet Service*, Real World IT, ZDNet Blogs, Dec. 3, 2007, *at* http://blogs.zdnet.com/Ou/?p=914&page=3 (last visited Feb. 7, 2008). "Of course it would be nice if there were a dynamic network management protocol built in to the cable modems that actively manage traffic without the use of ugly TCP reset to manage excessive traffic, but such a mechanism doesn't exist and the Free Press is being ignorant about reality. Not only are they reckless for demanding the FCC shut down the current traffic management system, their proposed solutions simply have no effect on the RTS collision problem and their solution harms the consumer." George Ou, *A Rational Debate on Comcast Traffic Management*, Real World IT, ZDNet Blogs, Nov. 6, 2007, *at* http://blogs.zdnet.com/Ou/?p=852&page=1 (last visited Feb. 7, 2008).

request (assuming it has not already downloaded the file from other computers) without the user having to take any additional action.

Although network management practices must respond to new technological developments and necessarily change over time, Comcast to date has not found it necessary to manage traffic associated with downloads, or bidirectional traffic (i.e., uploads that occur at the same time a customer is downloading).[79] P2P file uploads that are underway before the network management threshold is reached are not interrupted, and neither bidirectional file transfers nor downloads -- including new ones -- are affected.[80] This action is nothing more than the system saying that it cannot, at that moment, process additional high-resource demands without becoming overwhelmed, just as a traffic ramp control light regulates the entry of additional vehicles onto a freeway during rush hour. One would not claim that the car is "blocked" or "prevented" from entering the freeway; rather, it is briefly delayed, then permitted onto the freeway in its turn while all other traffic is kept moving as expeditiously as possible, thereby ensuring order and averting chaos. This is an appropriate analogy to Comcast's management of P2P unidirectional uploads.[81]

---

[79] Network management practices do and must change over time. The description here of Comcast's current and past practices should not be read to foreclose different measures that may prove necessary in the future. The guiding principles, however, will not change, including most particularly Comcast's commitment to maximize the broadband experience for all users.

[80] Vuze's claim that "Comcast shuts down the connection between [a user engaged in 'pure seeding'] and other non-Comcast users" is vastly overstated. Vuze Petition at 10. Although Comcast does manage "'pure seeding' (i.e., when the user is only sending packets to others and not downloading them)," *id.*, or as Comcast calls them, unidirectional uploads, any such management has nothing to do with whether the user trying to download the file is a Comcast customer. Moreover, contrary to Vuze's claim, Comcast's network management practices do not automatically affect every unidirectional upload; they only affect unidirectional uploads that attempt to initiate after the session threshold is reached, and then they delay them as described above.

[81] *See* Joint Advisory Committee on Communications Capabilities of Emergency Medical and Public Health Care Facilities, *supra* note 41, at 53 ("Congestion is not limited to your local highway at rush hour. Broadband networks can become congested too. Utilizing network management technologies can lessen congestion on broadband networks, just like traffic lights help prevent gridlock.").

Since the Public Notices were issued, a number of individuals have submitted e-mail comments that describe technical issues they have encountered in using various applications and services, including some that use P2P protocols, all of which they attribute to Comcast's network management practices. For example, commenters allege that they cannot use Apple's iChat service, that they "are experiencing RST packets being randomly received in the RTP streams of . . . VoIP phone services," that their VoIP service "is throttled and voice quality is drastically reduced," that they cannot log onto corporate Virtual Private Networks ("VPNs"), that they cannot use their computers as chat servers, and that they "can't even check . . . email" when sending files from home to work.[82] However, putting aside the fact that some of these uses -- notably the use of a residential broadband account to run a chat server -- are prohibited by the AUP, it is entirely unclear from many of these complaints exactly what the cause of the problem is. Comcast does not manage iChat, VoIP services, VPNs, chat servers, or e-mail, and is unaware of any widespread problems that its subscribers have with using such applications or services. Broadband consumers have thousands of "problems" every hour, the vast majority of which are completely unrelated to the Internet service they purchase from their broadband service provider. In fact, Comcast's experience is that the majority of problems customers raise when calling Comcast technical support have absolutely nothing to do with Comcast's network, let alone its network management practices. These commenters' calls for Commission intervention are misplaced. Surely, the Commission has neither the resources nor the ability to turn itself into the help desk for 60 million broadband households.

---

[82] *See, e.g.*, Robert Pederson Comments (Jan. 30, 2008); Matt Blecha Comments (Jan. 30, 2008); Michael Kobiela Comments (Jan. 29, 2008); Michael Ortega-Binderberger Comments (Jan. 29, 2008); Terrance E. Neidl Comments (Jan. 30, 2008). All of the comments were filed in WC Docket No. 07-52.

Simply stated, "Comcast doesn't block customers from using BitTorrent."[83] The various value-laden verbs chosen by the Petitioners do not apply to what is straightforward and reasonable network management of the kind conducted by Comcast.[84] Despite the prevalence of terms like these in the Petitions, uncritically echoed in the mainstream media and blogosphere, none of them accurately describes Comcast's actual network management practices, which merely delay unidirectional uploads, and then only during periods of peak network congestion. Other proposed solutions for addressing P2P usage, e.g., Free Press's suggestion that Comcast instead charge for metered usage, will not change the fact that the network will still need to be managed to protect Internet customers.

The "controversy" that prompted the Petitions largely results from an experiment conducted by the Associated Press ("AP") that did not replicate real-world conditions and, thus, inaccurately portrayed the effects of Comcast's network management practices on P2P protocols.[85] In this experiment, Computer A attempted to download a file (in this case, a one-of-a-kind file on Computer B that contained a copy of the King James version of the Bible and that was not available from any other computer connected to the Internet) using a P2P protocol. Because Computer B was the only computer on the Internet that had this unique file, i.e., the

---

[83] George Ou, *A Rational Debate on Comcast Traffic Management*, *supra* note 78; *see* Comcast, *FAQ: Is My Peer-to-Peer Activity Going To Be Impacted by Comcast?*, *at* http://www.comcast.net/help/faq/index.jsp?faq=Hot118986 (explaining that Comcast "never prevent[s] peer-to-peer activity or block[s] access to any peer-to-peer applications, but rather manage[s] the network in such a way that this activity does not degrade the broadband experience for other users"); Comcast, *FAQ: Do You Discriminate Against Particular Types of Online Content?* (stating that "[t]here is no discrimination based on the type of content" and that Comcast's "customers enjoy unfettered access to all the content, services, and applications that the Internet has to offer"), *at* http://www.comcast.net/help/faq/index.jsp?faq=Hot118988 (last visited Feb. 12, 2008).

[84] *See, e.g.*, Free Press Petition at ii-iii ("degrade," "block," "filter"), 10 ("spoofing" and "jamming"); Vuze Petition at 2 ("degrade" and "block"), 13-15 ("interfere" and "discriminate").

[85] Free Press Petition at 9-12; Vuze Petition at 9.

only "seeder," the usual operation of P2P "swarming" functionality was essentially negated. In a real-world P2P situation, Computer A would have searched the entire network of Internet-connected computers connected to the Internet that utilize that P2P protocol, and would have been able to download the file (in this case, the King James Bible) simultaneously from numerous other seeders. In this extremely rare case where a specific file resided on only one computer in the world, it is possible that that unique file transfer could be delayed anywhere from a few milliseconds to a few minutes.[86]

Even as the AP was staging its experiment, "the dogs that didn't bark" were the hundreds of neighboring households served by the same node as Computer B, and who were able to converse using Vonage, listen to music on Rhapsody, and watch a streaming video on CSPAN.org precisely because the network management tools that kept P2P "seeding" from overwhelming the network at that moment were doing their job. The AP article never even mentioned these households.

This kind of reasonable network management provides maximum consumer benefits with minimum intrusion. Focusing on unidirectional upload traffic ensures that Comcast's network management will have the least intrusive impact on Comcast's customers. In the other two possible scenarios -- bidirectional file transfers and unidirectional downloading -- the user is actively engaged in the process of finding and acquiring files to download. In contrast, most computers engaged solely in unidirectional uploads are "unmanned," and most users seeking to

---

[86] Contrary to the Vuze Petition, a delay of a few minutes can hardly be considered to "effectively block the ability of certain subscribers to upload or publish content . . . frustrating their ability to distribute and possibly monetize their content." Vuze Petition at 11. And once any given file is uploaded to another user, thereafter the file would be available not only from the original user who uploaded the file but also from every other user of that P2P protocol that downloads that file, keeps a copy on his or her computer, and is connected to the Internet.

download a file from that computer will be able to find that file from another computer using the P2P protocol's swarming functionality. Thus, from the perspective of the Internet user who is downloading files using P2P protocols, there will likely be no discernible effect because the P2P protocol being used by the downloader will automatically seek out other copies of the file from millions of other computers around the world, including those of Comcast customers in other neighborhoods where the congestion threshold has not been reached.[87]

In no event does Comcast *prevent, restrict, or limit* the use of applications and services using P2P protocols. This kind of network management does not deny consumers access to content, applications, services, or devices of their choosing. To the contrary, it helps to ensure a positive Internet experience for *all* users, *including* those who may be engaged in P2P file downloads. "Hence, what Comcast is doing actually *advances* net neutrality -- a fair and equitable online experience for everyone."[88] This kind of management is not just "reasonable" but essential.

B. Comcast's Practices Are Fully Consistent with the Commission's *Internet Policy Statement*.

Comcast's network management practices do not, have not, and will not prevent its subscribers from accessing the Internet content of their choice, running applications and using services of their choice, or enjoying substantial competition among network providers, application and service providers, and content providers. Comcast's network management technologies and tools are consistent with the principles articulated in the Commission's *Internet Policy Statement*, and, as detailed above, they constitute "reasonable network management."

---

[87] As Vuze concedes, because of the "swarming" functionality, "the overall speed of content downloads" is only "*potentially degraded*." Vuze Petition at 10 (emphasis added).

[88] Abel, *supra* note 39 (emphasis in original).

Comcast's subscribers are able "to access the lawful Internet content of their choice" and "to run applications and use services of their choice, subject to the needs of law enforcement," and they enjoy substantial "competition among network providers, application and service providers, and content providers."[89] Thus, even if it were not the case that the principles set forth in the *Internet Policy Statement* "are subject to reasonable network management,"[90] Comcast's practices would still be fully consistent with those principles.

Comcast's customers are able to access all lawful content. Comcast's customers have unfettered access to any lawful content they choose, including content that is delivered via P2P protocols. Comcast's customers' P2P downloads are utterly unaffected by its network management practices, and the limited network management measures applied to certain P2P uploads in certain circumstances are entirely content-agnostic. It is important to emphasize that, if the P2P applications are running as they are designed (e.g., if the "swarming" functionality is turned on), Comcast's management of P2P uploads ordinarily will not create *any* perceptible delays for those seeking to make corresponding downloads. As such, as discussed above, it is telling that the AP story describes a scenario where the "swarming" functionality was effectively negated, and the application was forced to download the file from one particular computer.[91] With the "swarming" negated, the greatest asset of that particular P2P protocol (i.e., its ability to seek the desired files from as many different computers as possible around the world to speed

---

89 *Internet Policy Statement* ¶ 4. There is a fourth principle about which Free Press makes no allegation. Comcast's consumers are also able "to connect their choice of legal devices that do not harm the network." *Id.* Under the relevant customer agreements, the only applicable constraint is that no devices that can harm the network may be attached.

90 *Id.* ¶ 4 n.15; *see also* Press Release, FCC, *FCC Adopts Policy Statement* (Aug. 5, 2005) ("All of these principles are subject to reasonable network management.").

91 *See* Peter Svensson, *Comcast Activity Hinders Subscribers' File-Sharing Traffic, AP Testing Shows*, Associated Press, Oct. 19, 2007.

downloading) was useless. Therefore, the AP story vastly overstated the practical effect of Comcast's network management practices (which are specifically designed to have as minimal an impact as possible on users). In no event is any user prevented from accessing any lawful content.

Comcast's customers are able to run the applications and use the services they choose. Comcast does not prohibit or prevent its customers from using the applications and services they wish. This includes applications and services that utilize P2P protocols to share files. Independent of network management, delays in P2P file transfers are common; only a relatively small percentage of P2P upload delays are the result of network management,[92] and these delays are minimally intrusive and do not preclude file sharing. Because delays caused by network management technologies are no more likely to affect file transfers than other factors, there is no perceptible effect that would unduly discourage the use of any application or service. As Vuze concedes, it "has been able to minimize any serious impact on its service."[93] Conversely, however, consumers' ability to use certain applications and services (such as "over-the-top VoIP" like Skype or Vonage, and real-time online gaming, including those services that compete with Comcast services) *would* be seriously impeded by P2P activity if Comcast did not properly manage its network.

---

[92] There are a number of variables that affect the time it takes P2P users to receive downloads, including speed of other networks in the distribution chain, the number of users that already cache the content to be downloaded, a "slow tracker," "trackers [being] overloaded [resulting in] timeout-related errors," and even users' uploads interfering with their download rates. *Brian's BitTorrent FAQ and Guide: My Download Speed Seems Slow, What Can I Do To Increase It?*, *at* http://btfaq.com/serve/cache/38.html (last visited Jan. 29, 2008). These variables may account for a number of the problems some individual commenters complain about, especially complaints about problems that occur during P2P downloads and bidirectional uploads, neither of which Comcast manages.

[93] Vuze Petition at 11.

Comcast's network management technologies and tools do not impede competition among network providers, application and service providers, or content providers. Comcast's network management practices ensure that all of its users are able to use the applications and services they desire, including those employing P2P protocols, while simultaneously minimizing any harmful effects on the network or the experience of its subscribers. Contrary to the allegations of Free Press and Vuze, Comcast's network management practices do not "[d]egrade[] certain applications," render them "sufficiently unreliable that people stop trying to use them,"[94] or "mak[e] it more difficult and less efficient for consumers to download content."[95] Nor do Comcast's network management practices result in "hand-selecting which service and applications providers can provide their services and applications."[96]

Free Press and Vuze blithely accuse Comcast of "discrimination,"[97] but it is clear that Comcast's policies simply are not discriminatory. As noted above, to determine whether any protocol should be managed, Comcast uses purely objective criteria that focus on the *effects* that *all* protocols have on network congestion and, correspondingly, its customers' use of the Internet. No consideration is given to the content, applications, or services that use these protocols. Currently, Comcast only manages those protocols that have already demonstrated, based on extensive analysis by Comcast, third-party vendors, and industry technical organizations, a tendency to cause congestion that disrupts the network.[98] In other words,

---

94 Free Press Petition at 24.

95 Vuze Petition at 10.

96 Free Press Petition at 24.

97 *See, e.g.*, *id.* at 3, 6; Vuze Petition at 2, 14.

98 If other protocols similarly cause sufficient congestion that risks degrading the experience of Comcast's subscribers, Comcast may need to consider managing them; likewise, if at some point in the future currently

(footnote continued…)

Comcast's approach is to manage only those protocols that negatively affect the network and its users; this is entirely content- and identity-neutral, and certainly not discriminatory.

At bottom, the Petitioners' assertion that Comcast's behavior amounts to discrimination fails to account for the fact that differential treatment of different things is not discriminatory. Even in the face of an explicit ban on "discrimination" -- something that, notably, does not exist here -- the federal courts and the Commission have made clear that unlawful discrimination occurs only when "like services under like circumstances" are treated differently.[99] Nor is Comcast's approach even arguably "unreasonable."[100] As discussed above, Comcast only manages these protocols at times when such use creates levels of network traffic that, absent such management, would degrade the activities of Comcast High-Speed Internet users. Further, Comcast seeks to manage these protocols in a manner that has the *minimum impact possible* on all users of its service, *including* users of the particular protocol being managed.

Free Press and Vuze also claim that Comcast is seeking to prevent the distribution of content that, in their view, "competes" with Comcast's cable service.[101] In fact, Comcast does *not* limit its customers' abilities to watch video over the Internet or to download video, including video distributed by P2P protocols. Quite to the contrary, one of the main drivers for the

---

(…footnote continued)

managed protocols no longer cause sufficient congestion to degrade the experience of others, Comcast will cease to manage those protocols.

99 *American Trucking Ass'ns, Inc. v. FCC*, 377 F.2d 121, 130 (D.C. Cir. 1966), *cert. denied*, 386 U.S. 943 (1967) (discussing prohibition on "unreasonable discrimination" under 47 U.S.C. § 202(a)); *see also Global NAPS, Inc. v. Verizon New England, Inc.*, 454 F.3d 91, 103 (2d Cir. 2006) (affirming district court's determination that it was not unlawful under 47 U.S.C. § 251(c)(2), which requires ILECs to provide for interconnection in a "nondiscriminatory" manner, to treat services with a "fundamental difference" differently).

100 Even common carriers are generally prohibited only from engaging in discrimination that is "unjust or unreasonable." *See, e.g.*, 47 U.S.C. § 202(a). Even if Comcast's High-Speed Internet service was a common carrier service, which it is not, reasonable network management would be entirely permissible.

101 *See* Free Press Petition at 24-25; Vuze Petition at 12-13.

superior Internet experience offered by cable high-speed Internet service is consumers' enhanced ability to stream or download video content from countless sources.[102] Similarly, if the Petitioners' logic were correct, Comcast would have every incentive to let P2P users degrade Skype, Vonage, or other over-the-top voice services that compete with Comcast Digital Voice. But, in fact, these latency-sensitive services stand to gain the most from Comcast's network management practices, which ensure that network congestion does *not* degrade these services.

Comcast knows of no basis for Free Press's claims that its practices "prevent a user's ability [*sic*] to find other Gnutella users," or that Comcast is "undermining" the ability of Bright Cove to provide cross-platform competition.[103] Moreover, the Free Press Petition, along with a number of e-mail commenters, erroneously asserts that Comcast intentionally prevents users from properly using LotusNotes and FTP.[104] On a daily basis, Comcast must make hundreds of changes to its network, including architectural, software, and configuration changes as well as changes associated with supporting new products and services.[105] This is true of Internet service providers in general. There have been and will likely always be some isolated situations in which such a change inadvertently and temporarily leads to difficulties with use of other protocols as well as particular services or applications. These kinds of situations are unavoidable given the complexity of the interactions between thousands of different services and millions of lines of complex code, and merely serve as examples of the delicate balance required to properly

---

[102] Comcast's High-Speed Internet subscribers can and do access video streaming services from numerous providers, including Joost, Veoh, Hulu, and innumerable web sites, such as Fox.com and Abc.com.

[103] Free Press Petition at 9, 10, 16, 25.

[104] *See id.* at 14, 16.

[105] In fact, each time a user adds a new program to his or her computer, opens an e-mail message, or downloads something off the Internet, that action can affect an untold number of other aspects of the user's computer and, potentially, the experience of other users connected via the Internet.

manage a network and provide the best experience possible to subscribers. This is what happened with LotusNotes and what Comcast believes may have happened to a handful of FTP users; Comcast does not manage FTP and until very recently was not aware of any reported difficulties in using FTP on its network. It is important for the Commission to know that Comcast typically diagnoses and remedies any situation like this rapidly after it is first detected or brought to Comcast's attention. Comcast is unaware of any ongoing adverse impact of its network management practices on the use of LotusNotes or FTP. Comcast wants to know when and if its customers believe that there is a problem, and Comcast always wants to be responsive to legitimate concerns about its services.

V. COMCAST GIVES CONSUMERS USEFUL INFORMATION ABOUT ITS BANDWIDTH MANAGEMENT PRACTICES.

Comcast recognizes that clear communication with its customers is an important part of a successful long-term relationship. Experience suggests that Comcast needs to ensure that its disclosures on matters such as network management are timely and in sufficient detail to ensure transparency while not providing a roadmap to those who would seek to defeat its efforts at reasonable network management. To that end, contrary to Free Press's claims,[106] Comcast has always properly and clearly informed its customers of the nature of its High-Speed Internet service and of the company's need to manage its network. Nonetheless, in the interest of creating even greater transparency in this area, Comcast has recently revised its AUP and associated FAQs that pertain to network management and posted them on its Comcast.net website. Copies of these revised documents are attached for the Commission's convenience.

---

[106] *See id.* at 32.

As noted, Comcast has regularly advised its customers that it actively manages its network to ensure a quality experience for all of its customers. For years, Comcast's Terms of Service ("TOS") have specified that Comcast High-Speed Internet service is subject to "speed and upstream and downstream rate limitations," and that the service may be used only for "personal, residential, non-commercial purposes."[107] For years, the AUP has prohibited the use of the service that "restrict[s], inhibit[s], or otherwise interfere[s] with the ability of any other person . . . to use or enjoy the [s]ervice, including . . . generating levels of traffic sufficient to impede others' ability to send or retrieve information."[108] And, for years, the AUP has required customers to ensure that their "use of the Service does not restrict, inhibit, interfere with, or degrade any other user's use of the Service nor represent . . . an overly large burden on the network."[109] Comcast has openly and readily acknowledged the management of its network, and that this includes occasionally delaying P2P uploads.[110] Contrary to the Free Press allegations, Comcast has never "misled" its customers or "secretly degrade[ed]" their applications or services.[111]

---

[107] Comcast Corp., *Residential Subscriber Agreement Terms of Service, Comcast Agreement for Residential Services* § 4, 7, *available at* http://www.comcast.net/terms/subscriber.jsp. The TOS also prohibits uses of the service for operation of "a server site for ftp, telnet, rlogin, e-mail hosting, 'Web-hosting' or other similar applications." *Id.* § 7.b. Although even service providers that use P2P protocols recognize that P2P "seeding" allows a "user's computer [to] act[] as a server to other users," *Vuze Petition* at 8, Comcast does not assert that P2P seeding is impermissible under the TOS.

[108] Comcast Corp., Comcast High-Speed Internet Acceptable Use Policy, Prohibited Uses and Activities, *at* http://www.comcast.net/terms/use.jsp.

[109] *Id.*, Network Management and Limitations on Bandwidth Consumption.

[110] *See* Chloe Albanesius, *Comcast Admits Delaying, Not Blocking, P2P Traffic*, PC Magazine, Oct. 22, 2007, *available at* http://www.pcmag.com/article2/0,1759,2204751,00.asp ("'Comcast does not block access to any web sites or online applications, including peer-to-peer services like BitTorrent,' a Comcast spokeswoman said . . . . Since P2P traffic uses 'disproportionately large amounts of bandwidth,' Comcast occasionally delays P2P traffic[.]").

[111] Free Press Petition at 32-33.

Vuze suggests that a network operator should have to disclose every network management practice or tool it uses so that application developers can build around these practices and tools.[112] Comcast always strives to be as transparent as possible to its subscribers -- a task that is incredibly complicated given that Internet applications and services change constantly -- but complete transparency of the type suggested by Vuze is both logistically untenable and ultimately more harmful than helpful.

As an initial matter, disclosing each of hundreds of tweaks that Comcast and other network operators make to their networks daily -- in response to a constantly changing environment -- would be practically impossible and would impose significant unjustifiable costs on network operators, which would ultimately be borne by consumers.[113] More important, however, is the fact that there are those actors who would use that level of transparency against Comcast and its subscribers. For example, many of the network management practices that Comcast uses are undertaken specifically to combat malicious uses such as network hacking, viruses, Trojan horses, and spam. Making public every aspect of Comcast's network management practices would not be helpful to the overwhelming majority of Comcast's subscribers -- or application or service developers -- but would certainly facilitate exactly the kinds of practices that Comcast is trying to defend against. Comcast must balance its desire to keep its customers informed with its responsibility to its customers to maintain its network in top working form.

---

112 *See* Vuze Petition at 15-16.

113 Internet application, service, and content developers surely spend as much, or more, time and resources trying to ensure that their product is compatible with the various operating systems, devices, web browsers, etc., that consumers use than they do trying to customize their product for a particular broadband network.

Mindful of the potentially self-defeating implications of expanded transparency, and of the fact that bandwidth constraints have long been highlighted in Comcast's customer agreements and notifications, Comcast nonetheless respects the views of its customers -- and of policymakers -- who have urged that the challenges of network management be explained better to consumers. In the interest of addressing any credible consumer concerns regarding this issue, Comcast's revised AUP and FAQs provide even greater transparency on these subjects.[114] These revised documents provide information about why Comcast must engage in these practices, and a reasonable level of detail about those practices. For example, Comcast's latest FAQs expressly state that "Comcast may on a limited basis temporarily delay certain P2P traffic when that traffic has, or is projected to have, an adverse effect on other customers' use of the service." These documents provide a significant amount of transparency -- more, in fact, than any other commercial broadband provider in the United States so far as Comcast is aware -- about Comcast's network management practices.

VI. THE FREE PRESS PETITION PROVIDES NO LEGITIMATE BASIS FOR COMMISSION ACTION.

The Bureau seeks comment on the Free Press Petition's request that the Commission declare Comcast's network management practices in "violation" of the *Internet Policy Statement* and, therefore, "subject to preliminary injunction, permanent injunction, and significant

---

[114] The Petition alleges that Comcast deceives customers by marketing its service as "unlimited." Free Press Petition at 3. That allegation is false. Comcast does *not* use that term because it seeks to avoid any perception that it will not manage the network to protect its customers' Internet experience. Comcast has entered into agreements with certain independent retailers that market Comcast's broadband service. Comcast cannot attest to whether any retailer has ever represented that Comcast's service offers "unlimited" access; however, to the extent they do and Comcast is notified of or discovers such advertising, Comcast will notify the retailer that the term "unlimited" is inaccurate and must not be used. Moreover, as noted above, given the terms of the AUP, no customer could reasonably believe that he or she is entitled to an unfettered right to maximum broadband capacity at all times, regardless of network conditions.

forfeitures."[115] But Free Press has not identified any statutory provision or agency regulation that has been violated; rather, Free Press mistakenly relies on the *Internet Policy Statement* as creating rules the Commission can enforce. In effect, then, Free Press seeks to circumvent the rulemaking process to achieve its political goals of shackling broadband Internet service providers with stringent and wholly unnecessary regulation.[116] By seeking comment on the Petition in the context of the *Broadband Industry Practices NOI* proceeding, the Commission appears to have recognized this problem.

The *Broadband Industry Practices NOI* proceeding, in addition to a number of other pending proceedings, provides a forum to discuss what, if any, "net neutrality" regulations are needed. Both Congress and the Commission previously have found that no such regulations are needed and refrained from regulating the Internet. Notably, the *Internet Policy Statement*, by its own terms, is not legally enforceable. Moreover, as explained above, Comcast's network management practices are reasonable and fully consistent with the Commission's *Internet Policy Statement*, and Comcast thus urges the Commission to declare them so.

A. The Commission Should Not Allow Free Press To Circumvent the Rulemaking Process.

The Free Press Petition asks the Commission to declare that certain network management practices violate the *Internet Policy Statement* and to enjoin broadband service providers from engaging in such practices.[117] A declaratory ruling of this sort, no doubt, would constitute an

---

115 *Id.* at 33.

116 As Commissioner McDowell recently warned, "Looming over the horizon are heavy-handed government mandates setting arbitrary standards, speeds and build-out requirements that could favor some technologies over others, raise prices and degrade service." *See* McDowell, *supra* note 17, at A15.

117 *See* Free Press Petition at 33-34.

adjudicatory action, and Free Press asserts, without support, that the Commission "like any administrative agency, can make policy through adjudications or rulemakings."[118] This argument is unavailing.

Free Press, in its effort to have the Commission declare the existence of "net neutrality" regulations, has jumped the gun and attempted an end-run around the Commission's rulemaking process. Although making "policy through adjudications" may be permissible and even appropriate in some situations, it is not here. There is widespread agreement that developing policies of general applicability through the rulemaking process is much more effective and raises fewer Due Process concerns.[119] Those considerations apply with additional force in this case, where the Commission has a 27-year-old policy of leaving information services unregulated.[120] Making "policy through adjudications" would be particularly problematic here, because the Commission currently has at least four open proceedings asking whether it should, or even has the authority to, adopt regulations governing the provision of broadband Internet

---

[118] *See* Letter from Marvin Ammori, General Counsel, Free Press, to Marlene H. Dortch, Secretary, FCC, WC Docket No. 07-52 at 2 (Nov. 20, 2007) ("*Free Press Ex Parte*").

[119] *E.g.*, DOJ, *Attorney General's Manual on the Administrative Procedure Act* 13-14 (1947) ("[T]he entire Act is based upon a dichotomy between rule making and adjudication. . . . Rule making is agency action which regulates the future conduct of entire groups of persons or a single person; it is essentially legislative in nature . . . The object of the rule making proceeding is the implementation or prescription of law or policy for the future, rather than the evaluation of a respondent's past conduct. . . . Conversely, adjudication is concerned with the determination of past and present rights and liabilities."); Richard J. Pierce, Jr., I Administrative Law Treatise § 6.8 (4th ed. 2002) (explaining that rulemaking: (1) "can be expected to yield higher quality rules than adjudication"; (2) will provide "enhanced political accountability of agency policy decisions"; (3) "eliminates the need to engage in expensive and time-consuming adjudicatory hearings"; (4) "eliminates the need to relitigate recurring issues"; (5) results in "rules [that] are easier and less expensive to enforce and to implement"; (6) provide "clearer advance notice of permissible and impermissible conduct;" (7) "avoid[s] the widely disparate temporal impact of 'rules' announced and applied through adjudicatory decision-making"; (8) reduces the "incidence and magnitude of interdecisional inconsistencies in implementing regulatory and benefit programs"; and (9) "allow[s] all potentially affected members of the public an opportunity to participate in the process of determining the rules that affect them").

[120] *See In re Amendment of Section 64.702 of the Commission's rules and Regulations (Second Computer Inquiry)*, Final Decision, 77 F.C.C.2d 384 ¶¶ 114-118 (1980).

services.[121] Thus, as the Public Notices appear to acknowledge, the appropriate course here is for the Commission to consider whether it can or should adopt rules to govern provider conduct in this area, not to impose backwards-looking penalties against Comcast based on any alleged "violations" of the *Internet Policy Statement.*

B. The *Internet Policy Statement* Did Not Create Enforceable Rules.

Comcast respects the Commission's *Internet Policy Statement* and abides by it. Comcast respectfully reminds the Commission, however, of its own words: that the *Internet Policy Statement* expressly sets forth "guidance and insight in its approach to the Internet and broadband,"[122] not legally binding rules.[123] Accordingly, as a matter of law, the Commission must reject Free Press's request for a declaration that Comcast has "violated" the *Internet Policy Statement*, and, *a fortiori*, Free Press's call for the imposition of penalties on Comcast for such "violations."[124]

The Administrative Procedure Act ("APA") distinguishes between "general statements of policy" and "rules," and only the latter -- which must be adopted in conformity with the APA's notice-and-comment rulemaking requirements -- are legally enforceable.[125] By its plain terms, the *Internet Policy Statement* "offers guidance and insight into its approach to the Internet and

---

121 *See generally Cable Internet Declaratory Ruling and NPRM*; *Broadband Industry Practices NOI*; *Wireline Broadband Order and NPRM*; *In re IP-Enabled Services*, Notice of Proposed Rulemaking, 19 FCC Rcd 4863 (2004).

122 *Internet Policy Statement* ¶ 3.

123 The Free Press Petition did not reference any substantive rules that were alleged to have been violated.

124 *See* Free Press Petition at 33-34.

125 *See, e.g.*, *Wilderness Soc'y v. Norton*, 434 F.3d 584, 597 (D.C. Cir. 2006) (denying claims based on document entitled "MANAGEMENT POLICIES" "because they are predicated on unenforceable agency statements of policy"); *Lutheran Church-Missouri Synod v. FCC*, 154 F.3d 487, 489 (D.C. Cir. 1998) ("a 'policy statement' . . . does not bind the Commission to a result in any particular case").

broadband [Internet access]," and sets forth "principles," not rules.[126] Significantly, the *Internet Policy Statement* was not published in the Federal Register and is not contained in the Code of Federal Regulations, further demonstrating that it was not intended to, and cannot, have binding legal effect.[127]

Furthermore, at the time of its issuance, Chairman Martin stated that "policy statements do not establish rules nor are they enforceable documents."[128] Commissioner Copps similarly distinguished between the import of the principles announced in the *Internet Policy Statement* and "a rule that we could use to bring enforcement action."[129] And Thomas Navin, then-Wireline Competition Bureau Chief, explained in a press conference immediately following adoption of the *Internet Policy Statement* that it set forth "principles," but that "they are not enforceable."[130] Just last year, the Commission reiterated that "[t]he Policy Statement did not contain rules."[131]

---

126 *Internet Policy Statement* ¶¶ 3, 4.

127 *See, e.g., Brock v. Cathedral Bluffs Shale Oil Co.*, 796 F.2d 533, 539 (D.C. Cir. 1986) ("The real dividing point between regulations and general statements of policy is publication in the Code of Federal Regulations, which the statute authorizes to contain only documents 'having general applicability and legal effect,' . . . and which the governing regulations provide shall contain only 'each Federal regulation of general applicability and current or future effect.'") (citations omitted). Notably, the APA also requires "general statements of policy" to be published in the Federal Register. *See id.* (citing 5 U.S.C. §§ 555(a)(1)(D), 553(d)).

128 FCC, News Release, *Chairman Kevin J. Martin Comments on Commission Policy Statement* (Aug. 5, 2005), *available at* http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-260435A2.pdf.

129 *Wireline Broadband Order and NPRM* (Separate Concurring Statement of Commissioner Michael Copps).

130 *FCC Adopts a Policy Statement Regarding Network Neutrality*, TechLawJournal.com, Aug. 5, 2005, *available at* http://www.techlawjournal.com/topstories/2005/20050805.asp.

131 *Broadband Industry Practices NOI* ¶ 11 n.20; *see In re Applications for Consent to the Assignment and/or Transfer of Control of Licenses; Adelphia Communications Corp., to Time Warner Cable Inc., and Comcast Corp.*, Memorandum Opinion and Order, 21 FCC Rcd. 8203 ¶ 223 (2006) ("*Adelphia Order*") ("The Commission *held out the possibility of codifying* the Policy Statement's principles where circumstances warrant in order to foster the creation, adoption, and use of Internet broadband content, applications, services, and attachments, and to ensure consumers benefit from the innovation that comes from competition. Accordingly, *the Commission chose not to adopt rules in the Policy Statement*.") (emphases added).

Fundamentally, an agency may not implement or attempt to enforce rules that were not adopted in compliance with the APA's notice-and-comment requirements.[132] The *Internet Policy Statement*, of course, was not the product of notice-and-comment rulemaking. In fact, as noted above, the Commission has several proceedings open that seek public comment on the question of *whether* it should adopt rules that might implement, in a formal and enforceable manner, the principles set forth in the *Internet Policy Statement*, and *whether* the Commission has the statutory authority to adopt any such rules.[133] Moreover, the Commission recently and expressly determined that imposing binding net neutrality obligations on Comcast was *not warranted*.[134]

Accordingly, having not yet established any binding rules and having not even finally determined what statutory authority it has to adopt any such rules, the Commission could not lawfully declare that Comcast's network management techniques "violate" a non-enforceable Policy Statement, nor, of course, impose penalties on Comcast, based on the Free Press Petition.[135] As the Supreme Court has made clear, "[c]ertainly regulations subject to the APA

---

132 5 U.S.C. § 553.

133 *See Wireline Broadband Order and NPRM* ¶¶ 146-159; *Cable Modem Declaratory Ruling and NPRM* ¶¶ 72-111; *see also Broadband Industry Practices NOI*.

134 *Adelphia Order* ¶¶ 212-223.

135 *See, e.g.*, *United States v. Picciotto*, 875 F.2d 345 (D.C. Cir. 1989) (reversing conviction for violation of Park Service rule that had been promulgated without notice and comment); *Hoctor v. Dep't of Agric.*, 82 F.3d 165 (7th Cir. 1996) (vacating administrative determination that individual violated standard contained in "internal memorandum" due to failure of agency to comply with notice and comment requirements). Indeed, the D.C. Circuit has frequently vacated agency documents that, while styled as informal policy statements, were found to constitute attempts to impose binding rules but had not been subject to notice and comment. *CropLife Am. v. EPA*, 329 F.3d 876, 885 (D.C. Cir. 2003) (finding EPA "directive" to set forth a substantive rule but "vacat[ing]" it for failure to comply with statutory notice and comment requirements); *United States Tel. Ass'n v. FCC*, 28 F.3d 1232, 1233 (D.C. Cir. 1994) ("set[ting] aside" FCC "schedule" that set forth standards for assessing forfeitures because "the Commission violated the [APA] by issuing the standards without notice and an opportunity to comment").

cannot be afforded the 'force and effect of law' if not promulgated pursuant to the statutory procedural minimum found in that Act."[136]

It is important to note that the one case in which the Commission took action with respect to an alleged violation of net neutrality principles did not entail any determination that the *Internet Policy Statement* is enforceable, and in fact predated its adoption. In *Madison River*, the complainant alleged that particular conduct directly violated a specific statutory provision, Section 201(b), which does not apply to cable high-speed Internet providers.[137] Petitioners in this case have not alleged -- let alone demonstrated -- a violation of any specific statutory provision or Commission rule, regulation, or order. Moreover, by asking the Commission to adopt prospective rules regulating broadband service providers' network management techniques,[138] the Vuze Petition correctly acknowledges that the *Internet Policy Statement* is not itself enforceable and that the Commission would first have to establish legally binding regulations in this area before there can be anything to enforce.

---

136 *Chrysler Corp. v. Brown*, 441 U.S. 281, 313 (1979). To the extent that it may be thought that a particular provider that has market power has engaged in a practice that causes serious injury, there are at least two federal agencies (the Antitrust Division of the Justice Department and the FTC) that have the jurisdiction and the expertise to conduct any necessary investigation and, if appropriate, to take remedial action. *See* 15 U.S.C. §§ 1, 2 (Sherman Act provisions); 15 U.S.C. § 45 (FTC Act). Moreover, to the extent that Petitioners believe that a particular provider has engaged in practices that are deceptive, those concerns can be raised with the FTC, or state Attorneys General, which can investigate and provide a remedy. *Id.* The FTC can address such conduct whether the alleged violator is a facilities-based provider of Internet services (wired or wireless), or a manufacturer or provider of an Internet application, operating system, search engine, electronic auction, consumer electronic device, or any other product. *See FTC Broadband Report* at 3 (noting that *Brand X* and the Commission's orders have "confirmed that the larger categories of broadband Internet access services, as information services, are not exempt from FTC enforcement of the FTC Act").

137 *In re Madison River Communications, LLC*, Order, 20 FCC Rcd. 4295 (Enforcement Bureau 2005). And in that case, the Commission made no findings or conclusions of law; it merely adopted a consent decree negotiated by the company and the Enforcement Bureau.

138 Vuze Petition at 15.

C. The Commission Cannot Use Adjudication To Retroactively Enforce Nonexistent Rules.

The imposition of forfeitures based on conduct that does not violate any statute or Commission rule or order would violate the APA and the U.S. Constitution for another reason as well -- the Commission has no authority to retroactively enforce prospective rules. Free Press asserts generally that, even in the absence of any enforceable rules or a specific statutory provision that proscribes Comcast's conduct, the Commission can use its Title I "ancillary jurisdiction" and "ancillary authority" to grant the relief Free Press requests.[139] Free Press fundamentally misunderstands the concept of "ancillary authority" and conflates two distinct aspects of the Commission's authority: statutory authority to *adopt* rules, and statutory authority to *enforce* the Communications Act and the Commission's rules. The Commission's ancillary authority relates solely to its statutory authority to adopt rules and regulations that are ancillary to an express grant of statutory authority; it is not a general grant of enforcement authority to punish entities for engaging in conduct that would violate a rule that Free Press thinks should be adopted but that the Commission has consciously *not* adopted.

The two precedents Free Press invokes do not prove its point; in fact they confirm that the Commission's ancillary authority relates solely to its statutory authority to adopt rules. Specifically, Free Press cites Paragraph 16 of the Commission's order in *In re Policies and Rules Implementing the Telephone Disclosure and Dispute Resolution Act*, but that paragraph expressly states that the Commission was acting pursuant to its "ancillary jurisdiction under Title I of the Communications Act to impose additional regulations to protect consumers from fraudulent and

---

[139] *See, e.g.*, Free Press Petition at 32; Free Press Ex Parte at 1 (asserting that "the Commission has authority to grant interim relief such as a preliminary injunction under its Title I authority").

deceptive practices."[140] In other words, the Commission was using its ancillary authority -- after issuance of a Notice of Proposed Rulemaking -- to promulgate rules, not to enjoin conduct that did not violate the statute or any existing rules. Similarly, Free Press's reliance on the Commission's order in *In re Implementation of the Telecommunications Act of 1996; Amendment of Rules Governing Procedures To Be Followed when Formal Complaints Are Filed Against Common Carriers*,[141] conveniently overlooks the facts that that order resulted from appropriate rulemaking procedures and that the order expressly states that whatever enforcement authority the Commission has under Title I is limited to "empower[ing] the Commission to act promptly to restrain, on a temporary or interim basis, apparent or prima facie violations of the Act and our rules and orders."[142]

Nor can the Commission accept Free Press's invitation to use general Title I "ancillary jurisdiction" to punish Comcast for an allegedly "deceptive" practice.[143] Even if Comcast had engaged in such a practice, which it has not, the Commission does not have free-ranging statutory authority to promulgate rules that address allegedly deceptive practices, much less to enforce rules that it has not even purported to adopt. The Commission's punitive enforcement authority is limited by Title V of the Act (as well as the Due Process Clause of the Constitution) to redressing willful, knowing, or repeated violations of the Act or any rule, regulation, or order

---

140 9 FCC Rcd. 6891 ¶ 16 (1994) (emphasis added).

141 12 FCC Rcd. 22497 (1997).

142 *Id.* ¶ 159 (emphasis added). In fact, the sentence preceding the footnote Free Press cites for support clearly states: "We further conclude that, apart from the interim enforcement actions authorized under Sections 260(b) and 275(c), the Commission retains discretion under Section 4(i) of the Act to entertain requests for interim relief in other Title II complaint proceedings *involving alleged violations of the Act or our rules and orders.*" *Id.* (emphasis added).

143 Free Press Petition at 32-33.

that has been duly adopted by the Commission.[144] As noted before, the Free Press Petition does not allege -- let alone demonstrate -- a violation of any specific statutory provision or Commission rule, regulation, or order.

A Commission decision to impose forfeitures in this case would constitute impermissible retroactive rulemaking. As the U.S. Supreme Court has recognized, "[r]etroactivity is not favored in the law."[145] The Commission always has been careful to abide by this stricture.[146] The reasons are clear -- "[e]lementary considerations of fairness dictate that individuals should have an opportunity to know what the law is and to conform their conduct accordingly; settled expectations should not be lightly disrupted."[147] Moreover, such action would violate Comcast's due process rights.[148] Even if the Commission did have authority to promulgate rules through a rulemaking process or to make prospective policies through adjudication, it cannot enforce them retroactively by imposing forfeitures on Comcast for behavior that always has been considered lawful and indeed is perfectly reasonable in light of the network management challenges presented by the growing use of broadband.

---

144 *See* 47 U.S.C. §§ 501-503.

145 *Bowen v. Georgetown Univ. Hosp.*, 488 U.S. 204, 208 (1988).

146 *See, e.g.*, *In re Implementation of Sections 12 and 19 of the Cable Television Consumer Protection and Competition Act of 1992, Development of Competition and Diversity in Video Programming Distribution and Carriage*, First Report and Order, 8 FCC Rcd 3359 ¶ 120 (1993).

147 *Landgraf v. USI Film Prods.*, 511 U.S. 244, 265 (1994).

148 *Id.* at 266 ("The Due Process Clause also protects the interests in fair notice and repose that may be compromised by retroactive legislation; a justification sufficient to validate a state's prospective application under the Clause may not suffice to warrant its retroactive application.") (internal citations and quotations omitted).

VII. THE COMMISSION SHOULD DENY THE VUZE PETITION'S REQUEST TO INITIATE A NEW RULEMAKING TO ADOPT NET NEUTRALITY RULES.

The Bureau also seeks comment on the Vuze Petition's request that the Commission initiate a rulemaking to establish rules regulating how broadband service providers manage their networks. The Commission, however, already has multiple proceedings that address precisely that issue, and there is no need to launch another one. As numerous parties in those proceedings have already explained, it is not at all clear that the Commission has statutory authority to adopt rules regulating broadband service providers' network management practices. Indeed, as Comcast has previously observed, although the Commission has subject matter jurisdiction over the Internet, the Commission's statutory authority to regulate broadband Internet services is limited, and the success of the broadband marketplace fully validates the regulatory restraint that the Commission and Congress have shown.[149]

Notably, the Vuze Petition does not address the issue of the Commission's statutory authority to regulate how broadband service providers manage their networks. Although the Commission asserted in the *Broadband Industry Practices NOI* that it "has the ability to adopt and enforce the net neutrality principles . . . in the Internet Policy Statement,"[150] it provided no citation or analysis as to its statutory authority. And, while the NOI summarily asserted that both

---

[149] *See, e.g.*, Comcast Comments, WC Docket No. 05-271, at 9-12 (Jan. 17, 2006); Comcast Reply Comments WC Docket No. 05-271, at 7-9 (Mar. 1, 2006). In *American Library Ass'n v. FCC*, 406 F.3d 689 (D.C. Cir. 2005), the D.C. Circuit made clear that the Commission only has ancillary authority where "(1) the Commission's general jurisdictional grant under Title I covers the subject of the regulations and (2) the regulations are reasonably ancillary to the Commission's effective performance of its statutorily mandated responsibilities" *Id.* at 700 (citing *United States v. Southwestern Cable Co.*, 392 U.S. 157, 178 (1968)). The court expressly noted that, "[a]lthough somewhat amorphous, ancillary jurisdiction is nonetheless constrained.". *Id.* at 692.

[150] *Broadband Industry Practices NOI* ¶ 4. In fact, later in the *NOI* the Commission asks whether it has "the legal authority to enforce the Policy Statement in the face of particular market failures or other specific problems" and specifically inquires about the ramifications and timeliness of adopting any rules. *Id.* ¶ 11. This makes clear that the Commission's statutory authority to adopt "net neutrality" rules is at best an open question.

conditions of the test for ancillary authority "are met" -- "(1) the Commission's general jurisdictional grant under Title I covers the subject of the regulations and (2) the regulations are reasonably ancillary to the Commission's effective performance of its statutorily mandated responsibilities"[151] -- it provided no analysis as to why regulatory action based on the *Internet Policy Statement* would be "reasonably ancillary" to the performance of any "statutorily mandated responsibilities" of the Commission.[152] The *NOI* simply quoted Sections 1 and 230 of the Act, and never explains how those provisions establish mandatory duties for the Commission or how the assertion of authority to regulate residential broadband reasonably relates to the effective performance of any such duties.[153] Ultimately, the Commission's "ancillary authority" must be "ancillary" to something, but here it is not clear what that something might be.[154] In fact, Congress has expressly decided not to regulate the Internet and has made clear that it

---

[151] *American Library Ass'n*, 406 F.3d at 700 (citing *United States v. Southwestern Cable Co.*, 392 U.S. 157, 178 (1968)). Where the Commission recently attempted to use its Title I authority to impose broadcast copy protection regulations on consumer electronics equipment, the D.C. Circuit found that the Commission lacked jurisdiction because "Title I does not authorize the Commission to regulate receiver apparatus after a transmission is complete." *Id.* at 692. Thus, "the FCC's purported exercise of ancillary authority founder[ed] on the first condition." *Id.*

[152] *Broadband Industry Practices NOI* ¶ 5.

[153] *Cf. Wireline Broadband Order and NPRM* ¶ 146 (asserting, without explanation, that there is "ample" Title I authority to adopt a wide variety of "consumer protection" regulations). Contrary to the Commission's suggestion, Section 230, far from establishing regulatory obligations for the FCC, makes clear that "the policy of the United States" with respect to the Internet is decidedly deregulatory, i.e., "to preserve the vibrant and competitive free market that presently exists for the Internet and other interactive computer services, *unfettered by Federal or State regulation*." 47 U.S.C. § 230(b)(2) (emphasis added); *see also* Telecommunications Act of 1996, § 706, 110 Stat at 153. And while the Commission points to the Supreme Court's decision in *Brand X* as supporting the assertion of ancillary authority over the provision of broadband Internet access, *Broadband Industry Practices NOI* ¶ 4 & n.9 (stating that "[t]he Supreme Court reaffirmed that the Commission 'has jurisdiction to impose additional regulatory obligations under its Title I ancillary jurisdiction to regulate interstate and foreign communications") (quoting *Brand X*, 545 U.S. at 976); *see id.* ¶ 4 & n.10 (stating that "the Supreme Court specifically recognized the Commission's ancillary jurisdiction to impose regulatory obligations on broadband Internet access providers") (citing *Brand X* , 545 U.S. at 996), the Court's discussion of that issue did not bless all exercises of such authority, noted that the Commission has asked whether it "*can*" adopt regulations in this area pursuant to ancillary authority, and in any event was not necessary to its decision and is, therefore, dicta.

[154] *See American Library Ass'n*, 406 F.3d at 692 ("There is no statutory foundation for the [Commission's] rules, and consequently the rules are ancillary to nothing.").

intended "to preserve the vibrant and competitive free market that presently exists for the Internet . . . unfettered by Federal or State regulation."[155]

The exercise of Title I authority over network management practices would also constitute an abrupt departure from the Commission's numerous, consistent, and successful precedents regarding the reasons why "broadband services should exist in a minimal regulatory environment."[156] Absent a reasoned explanation for its conduct, such a "sharp departure" from established Commission policy would be arbitrary and capricious in violation of the APA.[157]

VIII. VOCAL CONSUMERS COMBINED WITH VIGILANT POLICYMAKERS ABLY PROTECT CONSUMERS AND ENSURE CONTINUED GROWTH AND INNOVATION IN THE BROADBAND MARKETPLACE.

Since broadband service was first introduced, the Commission has been on constant alert for any conduct that might stifle the innovation and investment in broadband deployment and adoption. Despite urgent entreaties from some quarters that the Commission needed to impose one sort of regulation or another, the Commission has repeatedly determined that regulation of the Internet is unnecessary and inappropriate in light of competition and Congress's deregulatory program for broadband services.[158] This reliance on the marketplace to police service providers'

---

155 47 U.S.C. § 230(b)(2).

156 *See Cable Modem Declaratory Ruling and NPRM* ¶ 5 (internal citation and quotation marks omitted). *See also Wireline Broadband Order and NPRM* ¶ 1 ("This framework establishes a minimal regulatory environment for wireline broadband Internet access services[.]").

157 *See Motor Vehicle Mfrs. Ass'n, Inc. v. State Farm Mut. Auto. Ins. Co.*, 463 U.S. 29, 42 (1983) (explaining that an agency must "supply a reasoned analysis for the change beyond that which may be required when an agency does not act in the first instance"); *Wisc. Valley Improvement Co. v. FERC*, 236 F.3d 738, 748 (D.C. Cir. 2001) (rejecting agency's imposition of condition where condition "mark[ed] a sharp departure from" agency's previous practice and agency failed to provide a reasoned explanation for the departure).

158 *See Cable Modem Declaratory Ruling and NPRM* ¶ 5 ("[W]e believe broadband services should exist in a minimal regulatory environment that promotes investment and innovation in a competitive market." (internal citations and quotation marks omitted)); *Wireline Broadband Order and NPRM* ¶ 1 ("This framework establishes a minimal regulatory environment for wireline broadband Internet access services . . . ."). The one notable departure from this pattern proves the wisdom of the general rule. *See In re Applications for Consent to the Transfer of*

(footnote continued…)

conduct has been a tremendous success. In the Internet age, when a user concern arises, it comes to a service provider's attention almost immediately from its customers, the press, the blogs, etc., and when a provider needs to modify its behavior, it often does so in a matter of days -- or even hours -- without regulatory or legislative action. There are powerful marketplace incentives to do so.[159] To date, a watchful eye and the occasional raised eyebrow have been all the government oversight necessary to enable the broadband marketplace to function as it should. That is all the more true today given widening consumer choice among broadband services and the powerful means that broadband consumers have to share their experiences and communicate their sentiments to their service providers and to other consumers.

Rather than rushing to judgment based on the unsubstantiated claims of a small but vocal minority of broadband users, the Commission should continue to monitor the marketplace for any genuine problems that may arise and that might require remediation beyond that which results from fierce competition and empowered consumers. If any such problems occur, the Commission can address those problems at that time and determine whether there is a set of facts that requires some *surgical* intervention that the Commission has authority to implement. As the Free Press and Vuze Petitions illustrate, however, it is not desirable to create a regulatory forum that invites a new regulatory proceeding on each and every network management practice or allegation of "abuse." The Commission should not allow itself to be drawn into such a

---

(…footnote continued)

Control of Licenses and Section 214 Authorizations by Time Warner Inc. and America Online, Inc., Transferors, to AOL Time Warner Inc., Transferee; Petition of AOL Time Warner Inc. for Relief from the Condition Restricting Streaming Video AIHS, Memorandum Opinion & Order, 18 FCC Rcd. 16835 (2003) (removing a merger condition that proved to be unnecessary).

[159] As the Commission itself has found, given the various alternatives, if a broadband service provider "sought to discriminate against competing content or service providers, it would risk losing customers to competing broadband service providers." *AT&T Inc. & BellSouth Corp. Application for Transfer of Control*, Memorandum Opinion & Order, 22 FCC Rcd. 5662 ¶ 117 (2007).

regulatory morass, nor should it allow for second-guessing of good-faith reasonable network management practices that are essential to provide a quality broadband experience to tens of millions of U.S. households.

IX. CONCLUSION

Comcast respectfully requests that the Commission declare that Comcast's network management practices are reasonable and wholly consistent with its *Internet Policy Statement*. In addition, the Commission should deny the Vuze Petition's request to initiate a rulemaking proceeding to micromanage which particular broadband network management practices are reasonable.

Respectfully submitted,

/s/ Kathryn A. Zachem

James L. Casserly
Ryan G. Wallach
Daniel K. Alvarez
WILLKIE FARR & GALLAGHER LLP
1875 K Street, N.W.
Washington, D.C. 20006-1238

Kathryn A. Zachem
Mary McManus
COMCAST CORPORATION
2001 Pennsylvania Ave., NW
Suite 500
Washington, D.C. 20006
(202) 379-7134
(202) 379-7141

Helgi C. Walker
Eve Klindera Reed
WILEY REIN LLP
1776 K Street, N.W.
Washington, D.C. 20006

Joseph W. Waz, Jr.
COMCAST CORPORATION
One Comcast Center
1701 John F. Kennedy Boulevard
Philadelphia, PA 19103-2838

Attorneys for Comcast Corporation

Thomas R. Nathan
Gerard J. Lewis, Jr.
COMCAST CABLE COMMUNICATIONS, LLC
One Comcast Center
1701 John F. Kennedy Boulevard
Philadelphia, PA 19103-2838

February 12, 2008

ATTACHMENT A:

COMCAST ACCEPTABLE USE POLICY
FOR HIGH-SPEED INTERNET SERVICES

COMCAST ACCEPTABLE USE POLICY
FOR HIGH-SPEED INTERNET SERVICES

Contents

Why is Comcast providing this Policy to me?

Comcast's goal is to provide its customers with the best residential cable Internet service possible. In order to help accomplish this, Comcast has adopted this Acceptable Use Policy (the "Policy"). This Policy outlines acceptable use of the Comcast High-Speed Internet service (the "Service"). This Policy is in addition to any restrictions contained in the Comcast Agreement for Residential Services (the "Subscriber Agreement") available at http://www.comcast.net/terms/subscriber/. All capitalized terms used in this Policy that are not defined here have the meanings given to them in the Subscriber Agreement.

What obligations do I have under this Policy?

All Comcast High-Speed Internet customers and all others who use the Service (the "customer," "user," "you," or "your") must comply with this Policy. Your failure to comply with this Policy could result in the suspension or termination of your Service account. If you do not agree to comply with this Policy, you must immediately stop all use of the Service and notify Comcast so that it can close your account.

How will I know when Comcast changes this Policy?

Comcast may revise this Policy from time to time by posting a new version on the Web site at http://www.comcast.net or any successor URL(s) (the "Comcast.net Web site"). Comcast will use reasonable efforts to make customers aware of any changes to this Policy, which may include sending e-mail announcements or posting information on the Comcast.net Web site. Revised versions of this Policy are effective immediately upon posting. Accordingly, customers of the Comcast High-Speed Internet Service should read any Comcast announcements they receive and regularly visit the Comcast.net Web site and review this Policy to ensure that their activities conform to the most recent version. You can send questions regarding this Policy to, and report violations of it at, http://www.comcast.net/help/contact/.

I. Prohibited Uses and Activities

What uses and activities does Comcast prohibit?

In general, the Policy prohibits uses and activities involving the Service that are illegal, infringe the rights of others, or interfere with or diminish the use and enjoyment of the Service by others. For example, these prohibited uses and activities include, but are not limited to, using the Service, Customer Equipment, or the Comcast Equipment, either individually or in combination with one another, to:

Conduct and information restrictions

- undertake or accomplish any unlawful purpose. This includes, but is not limited to, posting, storing, transmitting or disseminating information, data or material which is libelous, obscene, unlawful, threatening or defamatory, or which infringes the intellectual property rights of any person or entity, or which in any way constitutes or encourages conduct that would constitute a criminal offense, or otherwise violate any local, state, federal, or non-U.S. law, order, or regulation;
- post, store, send, transmit, or disseminate any information or material which a reasonable person could deem to be indecent, pornographic, harassing, threatening, hateful, or intimidating;
- upload, post, publish, transmit, reproduce, create derivative works of, or distribute in any way information, software or other material obtained through the Service or otherwise that is protected by copyright or other proprietary right, without obtaining permission of the owner;
- transmit unsolicited bulk or commercial messages commonly known as "spam;"
- send numerous copies of the same or substantially similar messages, empty messages, or messages which contain no substantive content, or send very large messages or files that disrupts a server, account, newsgroup, or chat service;
- initiate, perpetuate, or in any way participate in any pyramid or other illegal scheme;
- participate in the collection of e-mail addresses, screen names, or other identifiers of others (without their prior consent), a practice sometimes known as spidering or harvesting, or participate in the use of software (including "spyware") designed to facilitate this activity;
- collect responses from unsolicited bulk messages;
- falsify, alter, or remove message headers;
- falsify references to Comcast or its network, by name or other identifier, in messages;
- impersonate any person or entity, engage in sender address falsification, forge anyone else's digital or manual signature, or perform any other similar fraudulent activity (for example, "phishing");
- violate the rules, regulations, or policies applicable to any network, server, computer database, or Web site that you access;

Technical restrictions

- access any other person's computer or computer system, network, software, or data without his or her knowledge and consent; breach the security of another user or system; or attempt to circumvent the user authentication or security of any host, network, or account. This includes, but is not limited to, accessing data not intended for you, logging into or making use of a server or account you are not expressly authorized to access, or probing the security of other hosts, networks, or accounts without express permission to do so;
- use or distribute tools or devices designed or used for compromising security, such as password guessing programs, decoders, password gatherers, unauthorized keystroke loggers, analyzers, cracking tools, packet sniffers, encryption circumvention devices, or Trojan Horse programs. Unauthorized port scanning is strictly prohibited;
- copy, distribute, or sublicense any software provided in connection with the Service by Comcast or any third party, except that you may make one copy of each software program for back-up purposes only;
- distribute programs that make unauthorized changes to software (cracks);
- use or run dedicated, stand-alone equipment or servers from the Premises that provide network content or any other services to anyone outside of your Premises local area network ("Premises LAN"), also commonly referred to as public services or servers. Examples of prohibited equipment and servers include, but are not limited to, e-mail, Web hosting, file sharing, and proxy services and servers;
- use or run programs from the Premises that provide network content or any other services to anyone outside of your Premises LAN, except for personal and non-commercial residential use;
- service, alter, modify, or tamper with the Comcast Equipment or Service or permit any other person to do the same who is not authorized by Comcast;

Network and usage restrictions

- restrict, inhibit, or otherwise interfere with the ability of any other person, regardless of intent, purpose or knowledge, to use or enjoy the Service, including, without limitation, posting or transmitting any information or software which contains a worm, virus, or other harmful feature, or generating levels of traffic sufficient to impede others' ability to use, send, or retrieve information;
- restrict, inhibit, interfere with, or otherwise disrupt or cause a performance degradation, regardless of intent, purpose or knowledge, to the Service or any Comcast (or Comcast supplier) host, server, backbone network, node or service, or otherwise cause a performance degradation to any Comcast (or Comcast supplier) facilities used to deliver the Service;
- resell the Service or otherwise make available to anyone outside the Premises the ability to use the Service (for example, though wi-fi or other methods of

networking), in whole or in part, directly or indirectly. The Service is for personal and non-commercial residential use only and you agree not to use the Service for operation as an Internet service provider or for any business enterprise or purpose (whether or not for profit);

- connect the Comcast Equipment to any computer outside of your Premises;
- interfere with computer networking or telecommunications service to any user, host or network, including, without limitation, denial of service attacks, flooding of a network, overloading a service, improper seizing and abusing operator privileges, and attempts to "crash" a host; and
- accessing and using the Service with anything other than a dynamic Internet Protocol ("IP") address that adheres to the dynamic host configuration protocol ("DHCP"). You may not configure the Service or any related equipment to access or use a static IP address or use any protocol other than DHCP unless you are subject to a Service plan that expressly permits you to do so.

II. Customer Conduct and Features of the Service

What obligations do I have under this Policy?

In addition to being responsible for your own compliance with this Policy, you are also responsible for any use or misuse of the Service that violates this Policy, even if it was committed by a friend, family member, or guest with access to your Service account. Therefore, you must take steps to ensure that others do not use your account to gain unauthorized access to the Service by, for example, strictly maintaining the confidentiality of your Service login and password. In all cases, you are solely responsible for the security of any device you choose to connect to the Service, including any data stored or shared on that device. Comcast recommends against enabling file or printer sharing unless you do so in strict compliance with all security recommendations and features provided by Comcast and the manufacturer of the applicable file or printer sharing devices. Any files or devices you choose to make available for shared access on a home LAN, for example, should be protected with a strong password or as otherwise appropriate.

It is also your responsibility to secure the Customer Equipment and any other Premises equipment or programs not provided by Comcast that connect to the Service from external threats such as viruses, spam, bot nets, and other methods of intrusion.

How does Comcast address inappropriate content and transmissions?

Comcast reserves the right to refuse to transmit or post, and to remove or block, any information or materials, in whole or in part, that it, in its sole discretion, deems to be in violation of the “Content and information restrictions” section above in this Policy, harmful to its network or customers using the Service, negatively affecting its network or customers using the Service, or otherwise inappropriate, regardless of whether this material or its dissemination is unlawful. Neither Comcast nor any of its affiliates, suppliers, or agents have any obligation to monitor transmissions or postings (including,

but not limited to, e-mail, file transfer, newsgroup, and instant message transmissions as well as materials available on the Personal Web Pages and Online Storage features) made on the Service. However, Comcast and its affiliates, suppliers, and agents have the right to monitor these transmissions and postings from time to time for violations of this Policy and to disclose, block, or remove them in accordance with this Policy and the Subscriber Agreement.

What requirements apply to electronic mail?

The Service may not be used to communicate or distribute e-mail or other forms of communications in violation of the "Content and information restrictions" section above in this Policy.

Comcast is not responsible for deleting or forwarding any e-mail sent to the wrong e-mail address by you or by someone else trying to send e-mail to you. Comcast is also not responsible for forwarding e-mail sent to any account that has been suspended or terminated. This e-mail will be returned to the sender, ignored, deleted, or stored temporarily at Comcast's sole discretion. In the event that Comcast believes in its sole discretion that any subscriber name, account name, or e-mail address (collectively, an "identifier") on the Service may be used for, or is being used for, any misleading, fraudulent, or other improper or illegal purpose, Comcast (i) reserves the right to block access to and prevent the use of any of these identifiers and (ii) may at any time require any customer to change his or her identifier. In addition, Comcast may at any time reserve any identifiers on the Service for Comcast's own purposes. In the event that a Service account is terminated for any reason, all e-mail associated with that account (and any secondary accounts) will be permanently deleted as well.

What requirements apply to newsgroups?

Messages posted to newsgroups must comply with the written charters, policies, or frequently asked questions (FAQs) for those newsgroups as well as any other terms and conditions applicable to any particular newsgroups or provider of newsgroups. You are responsible for determining the policies of a given newsgroup before posting to it. Comcast reserves the right to discontinue access to any newsgroup at any time for any reason. Comcast permits users of the Service to download a fixed maximum of newsgroup content in any one month as specified in the applicable newsgroup terms of service, unless users are subject to a Service plan that permits downloading more newsgroup content.

What requirements apply to instant, video, and audio messages?

Each user is responsible for the contents of his or her instant, video, and audio messages and the consequences of any of these messages. Comcast assumes no responsibility for the timeliness, mis-delivery, deletion, or failure to store these messages. In the event that a Service account is terminated for any reason, all instant, video, and audio messages

associated with that account (and any secondary accounts) will be permanently deleted as well.

What requirements apply to personal web pages and file storage?

As part of the Service, Comcast provides access to personal Web pages and storage space through the Personal Web Pages and Online Storage features (collectively, the "Personal Web Features"). You are solely responsible for any information that you or others publish or store on the Personal Web Features. You are also responsible for ensuring that all content made available through the Personal Web Features is appropriate for those who may have access to it. For example, you must take appropriate precautions to prevent minors from receiving or accessing inappropriate content. Comcast reserves the right to remove, block, or refuse to post or store any information or materials, in whole or in part, that it, in its sole discretion, deems to be in violation of the "Content and information restrictions" section above in this Policy. For purposes of this Policy, "material" refers to all forms of communications including narrative descriptions, graphics (including photographs, illustrations, images, drawings, logos), executable programs and scripts, video recordings, and audio recordings. Comcast may remove or block content contained on your Personal Web Features and terminate your Personal Web Features and/or your use of the Service if we determine that you have violated the terms of this Policy.

III. Network Management and Limitations on Bandwidth Consumption

Why does Comcast manage its network?

Comcast manages its network with one goal: to deliver the best possible broadband Internet experience to all of its customers. High-speed bandwidth and network resources are not unlimited. Managing the network is essential as Comcast works to promote the use and enjoyment of the Internet by all of its customers. The company uses reasonable network management practices that are consistent with industry standards. Comcast tries to use tools and technologies that are minimally intrusive and, in its independent judgment guided by industry experience, among the best in class. Of course, the company's network management practices will change and evolve along with the uses of the Internet and the challenges and threats on the Internet.

The need to engage in network management is not limited to Comcast. In fact, all large Internet service providers manage their networks. Many of them use the same or similar tools that Comcast does. If the company didn't manage its network, its customers would be subject to the negative effects of spam, viruses, security attacks, network congestion, and other risks and degradations of service. By engaging in responsible network management including enforcement of this Policy, Comcast can deliver the best possible broadband Internet experience to all of its customers.

How does Comcast manage its network?

Comcast uses various tools and techniques to manage its network, deliver the Service, and ensure compliance with this Policy and the Subscriber Agreement. These tools and techniques are dynamic, like the network and its usage, and can and do change frequently. For example, these network management activities may include (i) identifying spam and preventing its delivery to customer e-mail accounts, (ii) detecting malicious Internet traffic and preventing the distribution of viruses or other harmful code or content, (iii) temporarily delaying peer-to-peer sessions (or sessions using other applications or protocols) during periods of high network congestion, (iv) limiting the number of peer-to-peer sessions during periods of high network congestion, and (v) using other tools and techniques that Comcast may be required to implement in order to meet its goal of delivering the best possible broadband Internet experience to all of its customers.

Are there restrictions on bandwidth consumption that apply to the Service?

The Service is for personal and non-commercial residential use only. Therefore, Comcast reserves the right to suspend or terminate Service accounts where bandwidth consumption is not characteristic of a typical residential user of the Service as determined by the company in its sole discretion. Common activities that may cause excessive bandwidth consumption in violation of this Policy include, but are not limited to, numerous or continuous bulk transfers of files and other high capacity traffic using (i) file transfer protocol ("FTP"), (ii) peer-to-peer applications, and (iii) newsgroups, whether provided by Comcast or a third party. You must also ensure that your use of the Service does not restrict, inhibit, interfere with, or degrade any other person's use of the Service, nor represent (as determined by Comcast in its sole discretion) an overly large burden on the network. In addition, you must ensure that your use of the Service does not limit or interfere with Comcast's ability to deliver and monitor the Service or any part of its network.

If you use the Service in violation of the restrictions referenced above, that is a violation of this Policy. In these cases, Comcast may, in its sole discretion, suspend or terminate your Service account or request that you subscribe to a version of the Service (such as a commercial grade Internet service, if appropriate) if you wish to continue to use the Service at higher bandwidth consumption levels. Comcast may also provide versions of the Service with different speed and bandwidth consumption limitations, among other characteristics, subject to applicable Service plans.

IV. Violation of this Acceptable Use Policy

What happens if you violate this Policy?

Comcast reserves the right immediately to suspend or terminate your Service account and terminate the Subscriber Agreement if you violate the terms of this Policy or the Subscriber Agreement.

How does Comcast enforce this Policy?

Comcast does not routinely monitor the activity of individual Service accounts for violations of this Policy, except for determining aggregate bandwidth consumption in connection with the bandwidth consumption provisions of this Policy. However, in the company's efforts to promote good citizenship within the Internet community, it will respond appropriately if it becomes aware of inappropriate use of the Service. Comcast has no obligation to monitor the Service and/or the network. However, Comcast and its suppliers reserve the right at any time to monitor bandwidth, usage, transmissions, and content in order to, among other things, operate the Service; identify violations of this Policy; and/or protect the network, the Service and Comcast users.

Comcast prefers to inform customers of inappropriate activities and give them a reasonable period of time in which to take corrective action. Comcast also prefers to have customers directly resolve any disputes or disagreements they may have with others, whether customers or not, without Comcast's intervention. However, if the Service is used in a way that Comcast or its suppliers, in their sole discretion, believe violates this Policy, Comcast or its suppliers may take any responsive actions they deem appropriate under the circumstances with or without notice. These actions include, but are not limited to, temporary or permanent removal of content, cancellation of newsgroup posts, filtering of Internet transmissions, and the immediate suspension or termination of all or any portion of the Service. Neither Comcast nor its affiliates, suppliers, or agents will have any liability for any of these responsive actions. These actions are not Comcast's exclusive remedies and Comcast may take any other legal or technical actions it deems appropriate with or without notice.

Comcast reserves the right to investigate suspected violations of this Policy, including the gathering of information from the user or users involved and the complaining party, if any, and examination of material on Comcast's servers and network. During an investigation, Comcast may suspend the account or accounts involved and/or remove or block material that potentially violates this Policy. You expressly authorize and consent to Comcast and its suppliers cooperating with (i) law enforcement authorities in the investigation of suspected legal violations, and (ii) and system administrators at other Internet service providers or other network or computing facilities in order to enforce this Policy. Upon termination of your Service account, Comcast is authorized to delete any files, programs, data, e-mail and other messages associated with your account (and any secondary accounts).

The failure of Comcast or its suppliers to enforce this Policy, for whatever reason, shall not be construed as a waiver of any right to do so at any time. You agree that if any portion of this Policy is held invalid or unenforceable, that portion will be construed consistent with applicable law as nearly as possible, and the remaining portions will remain in full force and effect.

You agree to indemnify, defend and hold harmless Comcast and its affiliates, suppliers, and agents against all claims and expenses (including reasonable attorney fees) resulting

from any violation of this Policy. Your indemnification will survive any termination of the Subscriber Agreement.-

V. Copyright and Digital Millennium Copyright Act Requirements

What is Comcast's DMCA policy?

Comcast is committed to complying with U.S. copyright and related laws, and requires all customers and users of the Service to comply with these laws. Accordingly, you may not store any material or content on, or disseminate any material or content over, the Service (or any part of the Service) in any manner that constitutes an infringement of third party intellectual property rights, including rights granted by U.S. copyright law. Owners of copyrighted works who believe that their rights under U.S. copyright law have been infringed may take advantage of certain provisions of the Digital Millennium Copyright Act of 1998 (the "DMCA") to report alleged infringements. It is Comcast's policy in accordance with the DMCA and other applicable laws to reserve the right to terminate the Service provided to any customer or user who is either found to infringe third party copyright or other intellectual property rights, including repeat infringers, or who Comcast, in its sole discretion, believes is infringing these rights. Comcast may terminate the Service at any time with or without notice for any affected customer or user.

How do copyright owners report alleged infringements to Comcast?

Copyright owners may report alleged infringements of their works that are stored on the Service or the Personal Web Features by sending Comcast's authorized agent a notification of claimed infringement that satisfies the requirements of the DMCA. Upon Comcast's receipt of a satisfactory notice of claimed infringement for these works, Comcast will respond expeditiously to either directly or indirectly (i) remove the allegedly infringing work(s) stored on the Service or the Personal Web Features or (ii) disable access to the work(s). Comcast will also notify the affected customer or user of the Service of the removal or disabling of access to the work(s).

Copyright owners may send Comcast a notification of claimed infringement to report alleged infringements of their works to:

G. Lipscomb and C. Padgett
Comcast Cable Communications, LLC
650 Centerton Road
Moorestown, NJ 08057 U.S.A.
Phone: (856) 317-7272
Fax: (856) 317-7319
E-mail: dmca@comcast.net

Copyright owners may use their own notification of claimed infringement form that satisfies the requirements of Section 512(c)(3) of the U.S. Copyright Act. Under the

DMCA, anyone who knowingly makes misrepresentations regarding alleged copyright infringement may be liable to Comcast, the alleged infringer, and the affected copyright owner for any damages incurred in connection with the removal, blocking, or replacement of allegedly infringing material.

What can customers do if they receive a notification of alleged infringement?

If you receive a notification of alleged infringement as described above, and you believe in good faith that the allegedly infringing works have been removed or blocked by mistake or misidentification, then you may send a counter notification to Comcast. Upon Comcast's receipt of a counter notification that satisfies the requirements of DMCA, Comcast will provide a copy of the counter notification to the person who sent the original notification of claimed infringement and will follow the DMCA's procedures with respect to a received counter notification. In all events, you expressly agree that Comcast will not be a party to any disputes or lawsuits regarding alleged copyright infringement.

If a notification of claimed infringement has been filed against you, you can file a counter notification with Comcast's designated agent using the contact information shown above. All counter notifications must satisfy the requirements of Section 512(g)(3) of the U.S. Copyright Act.

Revised and effective: January 25, 2008

ATTACHMENT B:

COMCAST HIGH-SPEED INTERNET SERVICES
Frequently Asked Questions about Excessive Use

Frequently Asked Questions about Excessive Use

Comcast is committed to providing the best online experience possible for all of its customers. The company uses reasonable network management practices that are consistent with industry standards. Comcast maintains an Acceptable Use Policy ("AUP") located at http://www.comcast.net/terms/use/ for its High-Speed Internet Service customers. The AUP includes requirements regarding bandwidth or data usage that all Comcast customers and users of the service must follow.

The vast majority of Comcast High-Speed Internet customers – more than 99% - use the service within the terms of the AUP. However, a very small number – well less than 1% - use excessive amounts of bandwidth, or data, beyond what is permitted under the AUP.

Comcast determines excessive usage in relation to typical residential uses of its service. The company does so in order to identify truly excessive use while not impacting the vast majority of Comcast customers who use the service as intended.

The following Frequently Asked Questions are intended to help clarify what Comcast means by excessive use and how it handles excessive use situations.

What is bandwidth usage or data usage?

Bandwidth usage, or data usage, is the amount of data, such as images, movies, photos, videos and other files, that customers send, receive, download or upload over a specific period of time. Data usage is not the same as the speed of an Internet service. For example, a typical customer who uses the service to send and receive e-mail, surf the Internet, and watch streaming video may consume 2 Gigabytes ("GB") of data in a month; while another customer who uploads or downloads 1,000 pictures in a month may use 10GB. In both cases, however, the speed of each customer's service could be the same (for example, 6 Megabits per second ("Mbps") downstream and 1 Mbps upstream).

What is excessive use?

Excessive use means data usage that is not characteristic of a typical residential user of the service as determined by Comcast. Based on Comcast's current policies, here are a few examples of activities any one of which represents excessive use in one month:

- Sending 20,000 high resolution photos,

- Sending 40 million e-mails;
- Downloading 50,000 songs; or
- Viewing 8,000 movie trailers.

Typical residential Internet users don't come close to this level of usage. In fact, an excessive user consumes more data in one month than a typical residential customer would use over a period of many years.

What is normal or typical use?

Data usage changes over time as Comcast's customers use the Internet and the services and applications available for it. Currently, the median data usage by Comcast High-Speed Internet customers is approximately 2GB each month. This reflects typical residential use of the service for purposes such as sending and receiving e-mail, surfing the Internet, and watching streaming video.

Do I need to worry that I may be an excessive user?

There are very few excessive users. The vast majority – more than 99% - of Comcast customers are not excessive users and never need to be concerned with excessive use. Comcast currently identifies well less than 1% of Comcast High-Speed Internet customers as excessive users each month. Here are some additional facts to keep in mind based on Comcast's current policies:

- 95% of service customers could increase their data usage many times over and *still* not be considered an excessive user.
- An excessive user who is a residential customer greatly exceeds a typical *small business* customer's usage.
- Many excessive users consume more data than a business-class T1 line running at full capacity in a month.

How does Comcast identify excessive users?

Currently, each month Comcast identifies the top bandwidth users of its High-Speed Internet service by determining aggregate data usage across its entire customer base nationwide. This method has several advantages. First, it permits the company to focus on the small fraction of truly excessive users who consume exponentially greater amounts of data than the vast majority of residential Internet customers. Second, it accommodates the varied uses that typical residential Internet customers make of the service. As use of new applications, including those that use more data, becomes commonplace, excessive user compliance remains focused on the tiny fraction of users whose use is truly excessive relative to all users. Third, it is fair to the vast majority of our users who can and do use the service without ever having to be concerned about excessive use.

How does Comcast notify excessive users?

Comcast's standard process is to alert a customer whose account has been identified for excessive use in a particular month by calling the customer of record. When the company speaks with the customer, it informs that person of the possible reasons the account was identified for excessive use, and what he or she can do to avoid being identified again as an excessive user. The company also clearly informs all customers that if their account is identified again as an excessive user account within the next six months, their service will be terminated for one year. After the one year period expires, the customer may resume service by subscribing to a service plan appropriate to their needs.

How does Comcast help customers who have been identified as excessive users?

Comcast's experience shows that some customers identified as excessive users were not aware of the activity that caused the excessive use. For example, after being notified by Comcast some customers identify another person in their household, such as a child or roommate, who uses the service in ways that generate excessive use. In other cases, a customer's personal computer may be compromised by a virus or spyware that uses the computer to send large amounts of spam or perform repeated bulk transfers of large files. Still other customers may be using our residential High-Speed Internet service for a commercial or business purpose and not the intended residential purpose. In each of these situations, and many others, Comcast is able to help the customer identify and address the cause of the excessive use made with his or her account. In fact, most customers identified as excessive users change their usage patterns or make other adjustments and continue to use the service. Only a small fraction of the tiny number of users who are identified as excessive users ever have their service terminated for one year because of continued excessive use.

Does this mean that you monitor what specific activities customers are doing with their Internet accounts?

No. Comcast determines aggregate data usage. The company does not monitor specific customer activities on the Internet in order to identify excessive users. It looks for excessive data consumption in the aggregate and then identifies the customer account associated with that usage.

Do you offer usage tiers based on bandwidth consumption?

Not currently. Comcast currently offers varying speed plans for its residential service as well as several business level services to support customers' individual needs.

Is it possible that someone could fall victim to a hacker or bandwidth hijacker which could look like excessive use?

Yes. In a small number of instances, Comcast finds that outsiders exploiting a customer's personal computer and High-Speed Internet service may cause excessive use. For example, a customer using an unsecured wi-fi or wireless connection in an apartment building could have his or her service used by another tenant in the building. Or, a customer's computer may be compromised with a virus or spyware used to send large amounts of spam or perform repeated bulk transfers of large files. The company will work with customers in these and similar situations to secure their computers and services wherever possible. You can read more about security at the Comcast Security Channel located at http://security.comcast.net/.

ATTACHMENT C:

COMCAST HIGH-SPEED INTERNET SERVICES
Frequently Asked Questions about Network Management

Frequently Asked Questions ("FAQs") about Network Management

Comcast is committed to providing the best online experience possible for all of its customers. The company uses reasonable network management practices that are consistent with industry standards. Comcast maintains an Acceptable Use Policy ("AUP") located at http://www.comcast.net/terms/use/ for its Comcast High-Speed Internet Service customers. The AUP and these FAQs discuss why Comcast manages its network and how it may do so.

The following Frequently Asked Questions are intended to help clarify what Comcast means by network management.

Why does Comcast manage its network?

Comcast manages its network with one goal: to deliver the best possible broadband Internet experience to all of its customers. High-speed bandwidth and network resources are not unlimited. Managing the network is essential as Comcast works to promote the use and enjoyment of the Internet by all of its customers. The company uses reasonable network management practices that are consistent with industry standards. Comcast tries to use tools and technologies that are minimally intrusive and, in its independent judgment guided by industry experience, among the best in class. Of course, the company's network management practices will change and evolve along with the uses of the Internet and the challenges and threats on the Internet.

The need to engage in network management is not limited to Comcast. In fact, all large Internet service providers manage their networks. Many of them use the same or similar tools that Comcast does. If the company didn't manage its network, its customers would be subject to the negative effects of spam, viruses, security attacks, network congestion, and other risks and degradations of service. By engaging in responsible network management including enforcement of the AUP, Comcast can deliver the best possible broadband Internet experience to all of its customers.

What does Comcast mean when it says it manages its network?

Network management means that Comcast uses a combination of hardware and software products and programs in its network to help deliver fast, reliable, and safe service to all of its customers. These tools permit Comcast to manage a complex, nationwide network with millions of users, a large percentage of whom often use the network at the same time, to deliver a consistent and excellent online experience. Comcast's network management is directed to support many aspects of its service. These include securely delivering e-mail, providing

advertised speeds, preventing network congestion, and protecting customers and the network from malicious and harmful content and programs found on the Internet.

How does Comcast manage its network?

Comcast uses various tools and techniques to manage its network, deliver the Service, and ensure compliance with the AUP and the Comcast Agreement for Residential Services available at http://www.comcast.net/terms/subscriber/. These tools and techniques are dynamic, like the network and its usage, and can and do change frequently. For example, these network management activities may include (i) identifying spam and preventing its delivery to customer e-mail accounts, (ii) detecting malicious Internet traffic and preventing the distribution of viruses or other harmful code or content, (iii) temporarily delaying peer-to-peer sessions (or sessions using other applications or protocols) that users of the Service may wish to establish during periods of high network congestion, (iv) limiting the number of peer-to-peer sessions users of the Service may establish, and (v) using other tools and techniques that Comcast may be required to implement in order to meet its goal of delivering the best possible broadband Internet experience to all of its customers.

Does Comcast block peer-to-peer ("P2P") traffic or applications like BitTorrent, Gnutella, or others?

No. Comcast does not block P2P traffic or applications like BitTorrent, Gnutella, or others as part of its network management. The company's customers use the Internet for downloading and uploading files, watching movies and videos, streaming music, sharing digital photos, accessing peer-to-peer sites, communicating over VOIP applications, and for thousands of other applications.

Comcast may on a limited basis temporarily delay certain P2P traffic when that traffic has, or is projected to have, an adverse effect on other customers' use of the service. Comcast manages certain P2P traffic specifically because, in certain situations, that type of traffic consumes a disproportionately large amount of network resources. This kind of traffic poses the biggest challenge we face today to maintaining a consistent and excellent experience for all users – including for the great majority of users who don't use P2P applications.

Does Comcast discriminate against particular types of online content?

No. Comcast provides its customers with full access to all the content, services, and applications that the Internet has to offer. However, the company is committed to protecting customers from spam, phishing, and other unwanted or harmful online content and activities. Comcast uses industry standard tools and generally accepted policies to help it meet this customer commitment. In cases where these tools and policies identify certain online content as harmful and

unwanted, such as spam or phishing websites, this content is usually prevented from reaching customers. In other cases, these tools and policies may permit customers to identify certain content that is not clearly harmful or unwanted, such as bulk e-mails or websites with questionable security ratings, and inspect the content further if they want to do so.

Does network management change over time?

Yes. The Internet is highly dynamic. As the Internet and technology continue to advance, Comcast's network management tools will evolve and keep pace so that the company can deliver an excellent, reliable, and safe online experience to all of its customers.