Before the FEDERAL COMMUNICATIONS COMMISSION Washington, DC 20554

In the Matters of:)	
)	
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
)	
Vuze, Inc. Petition to Establish Rules)	
Governing Network Management Practices)	
by Broadband Network Operators)	
)	
Broadband Industry Practices)	
-)	

COMMENTS OF TIME WARNER CABLE INC.

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February 13, 2008

SUMMARY

Free Press *et al.* and Vuze, Inc., in their respective Petitions, ask the Commission to deny broadband providers the ability to manage their networks in ways that are not only reasonable, but vital to delivering robust and reliable services to their subscribers. Petitioners cannot demonstrate any need for regulation — to the contrary, their proposed restrictions on network management would cause significant harm to consumers.

As a general matter, market forces are far more protective of consumer welfare than prescriptive regulation, in this case exerting a powerful yet narrowly tailored discipline on the conduct of broadband providers. Regulation is particularly ill-suited to the management of broadband networks in light of the dynamic character of the Internet. The increasing use of peerto-peer ("P2P") applications and related bandwidth consumption has made network congestion a serious problem that can diminish service quality for the vast majority of subscribers. In fact, P2P applications are *designed* to consume all available bandwidth and, if left unchecked, will prevent consumers from continuing to access the wealth of content available over the Internet. In light of such threats, which capacity upgrades alone cannot combat, broadband providers must retain the flexibility to employ traffic management practices to protect their networks as well as their subscribers from degraded performance and increased costs.

The Commission recognized the importance and legitimacy of reasonable network management in adopting its *Broadband Policy Statement*. Since P2P applications are causing significant bandwidth consumption that threatens network performance, management tools that impose modest constraints on such traffic are plainly reasonable. By contrast, regulating broadband providers' network management practices, as Petitioners suggest, would be unreasonable, since it would undercut important policy goals and give rise to significant statutory, administrative law, and constitutional concerns. The Commission therefore should deny the Petitions and continue to rely on the competitive marketplace to maximize consumer welfare in the Internet arena.

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COMMENTS OF TIME WARNER CABLE INC.

Time Warner Cable Inc. ("TWC") hereby responds to the Petition for Declaratory Ruling filed by Free Press *et al.* ("Free Press") and the Petition for Rulemaking filed by Vuze, Inc. ("Vuze," and together with Free Press, "Petitioners") in the above-captioned docket.¹ Petitioners ask the Commission to deny broadband providers the ability to manage their networks in ways that are not only reasonable, but vital to delivering robust and reliable services to their subscribers. The Commission should reject Petitioners' invitation to intervene in the burgeoning Internet marketplace.

As a general matter, market forces will be far more protective of consumer welfare than prescriptive regulation. The marketplace exerts a powerful yet narrowly tailored discipline on the conduct of broadband providers, forcing swift elimination of practices that consumers

See Petition for Declaratory Ruling of Free Press, et al., WC Docket No. 07-52 (filed Nov. 1, 2007) ("Free Press Petition"); Petition for Rulemaking of Vuze, Inc., WC Docket No. 07-52 (filed Nov. 14, 2007) ("Vuze Petition").

deem unreasonable. Prescriptive regulation, by contrast, is a blunt instrument capable of inflicting significant damage on the consumers it aims to protect.

Traffic management practices are especially ill-suited to being micromanaged by regulators. It would be difficult enough to make categorical judgments about the types of network management that should be permitted or proscribed today, and the dynamic character of the Internet would make it virtually impossible to draft rules that stand the test of time. As both the Federal Trade Commission ("FTC") and Department of Justice ("DOJ") have recognized, any "net neutrality" mandates would proscribe not only potentially abusive conduct, but beneficial practices as well. Confronted with explosive growth in bandwidth consumption and rapidly changing traffic patterns, broadband providers must retain the flexibility to employ a wide range of traffic management practices to protect their networks as well as their subscribers.

In particular, the increasing use of peer-to-peer ("P2P") applications has made network congestion a serious problem that capacity upgrades alone cannot solve. P2P applications — which most often are used to exchange pirated video and music files relentlessly consume all available bandwidth, both upstream and downstream, often without the user's initiation or interaction. Already, congestion caused by P2P applications is degrading service quality for the vast majority of subscribers, which in turn threatens consumers' continued access to the wealth of content available over the Internet. Moreover, while P2P applications increasingly are being used to distribute lawful web content, such distribution imposes significant costs on broadband providers and their customers. And a consumer who receives content using P2P software may have no inkling that doing so converts his or her personal computer and broadband subscription into a distribution mechanism for others to exploit, because P2P providers often do not disclose such facts.

The Commission recognized the importance and legitimacy of reasonable network management in adopting its *Broadband Policy Statement*, but Petitioners effectively ignore that determination. Ultimately, if there is to be any assessment of the reasonableness of network management, that assessment must include an examination of all of the circumstances relating to such practices, including potential harms posed by the affected applications. Since P2P applications are causing traffic jams that threaten network performance, management tools that impose modest constraints on such traffic are plainly reasonable. For example, limiting the number of simultaneous P2P sessions during periods of peak demand, rather than blocking such traffic altogether, is a measured response that helps preserve the vibrancy of the Internet and prevent consumers from bearing increased costs.

However, if the Commission were to pursue any regulation of network management practices, notwithstanding its findings of robust broadband competition, it would deal a serious blow to investment and innovation. The broadband networks we now take for granted were developed with private capital, at substantial risk to network owners, and regulatory constraints could undercut the business case for continued investment. Indeed, without the deregulatory environment fostered by the Commission, the nation might still be stuck with dial-up connections. Moreover, while Petitioners focus their ire solely on broadband providers, any discussion of regulation that is confined to last-mile providers would be myopic and unprincipled. In particular, some P2P providers actively manage traffic in an effort to mitigate the impact of their bandwidth consumption on end users. But P2P providers lack adequate incentives to protect the network as a whole; only broadband providers are positioned to ensure a quality online experience for consumers. Thus, regulating broadband providers while ignoring P2P providers (including their failure to warn consumers about the potential harms caused by P2P applications) would not advance any valid public policy goals.

For these and other reasons, regulating broadband providers' network management practices would not just undercut important policies, but likely would founder on statutory, administrative law, and constitutional grounds. The Commission therefore should deny the Petitions and continue to rely on the competitive marketplace to maximize consumer welfare.

I. MARKET FORCES BEST DETERMINE WHAT TOOLS BROADBAND PROVIDERS SHOULD EMPLOY IN MANAGING THEIR NETWORKS.

Petitioners' campaign to declare certain network management practices unlawful disregards the efficacy of market forces (even apart from the serious risk of harm entailed by prescriptive regulation, *see infra* Section IV). In contrast, Congress has recognized the need "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.*"² Consistent with that statement of national policy, the broadband arena in fact is robustly competitive, and the need to attract as many customers as possible forces service providers to hew to consumer preferences. Notwithstanding Petitioners' attacks on policies aimed at mitigating potential harm caused by P2P applications, Petitioners fail to demonstrate any market failure warranting regulatory intervention. Rather, while the network management practices at issue are eminently reasonable, as shown below (*see infra* Section III), any conduct that consumers might find objectionable would be unsustainable in the competitive marketplace, thus obviating the need for heavy-handed regulation.

A. Broadband Providers Are Subject to Vigorous and Growing Competition.

As the Commission has repeatedly found, the broadband arena is marked by vigorous and growing competition, and there is every reason to conclude that market forces will remain more than sufficient to ensure that broadband providers act consistent with their

⁴⁷ U.S.C. § 230(b) (emphasis added).

customers' interests. In 2005, the Commission observed that, although broadband remained a nascent service, "[v]igorous competition between different platform providers already exist[ed] in many areas and [was] spreading to additional areas."³ The Commission anticipated that "intermodal and intramodal competition [would] continue to encourage" cable and DSL providers to expand their service areas, and "the threat of competition from other forms of broadband Internet access, whether satellite, fixed or mobile wireless, or a yet-to-be-realized alternative, [would] further stimulate deployment of broadband infrastructure, including more advanced infrastructure such as fiber to the home."⁴

Those expectations have been realized. As Chairman Martin stated last year: "[B]roadband platforms are engaged in fierce competition. In addition to telephone and cable providers, broadband access is increasingly being delivered to consumers via satellite, wireless, and fiber or powerline providers This competition is leading to broadband providers offering customers faster and faster connections at lower and lower prices."⁵ Other sources corroborate these findings. As one recent study concluded, "the data on broadband competition show a vibrant, expanding competitive industry" in which consumer choice is increasing and prices continue to decline.⁶ The FTC likewise observed that broadband competition is causing "declining prices for higher-quality service."⁷

³ Appropriate Framework for Broadband Access to the Internet over Wireline Facilities, Report and Order and Notice of Proposed Rulemaking, 20 FCC Rcd 14853 ¶¶ 47, 62 (2005) ("Wireline Broadband Order").

⁴ *Id.* ¶ 57.

⁵ Kevin J. Martin, *United States of Broadband*, WALL ST. J., July 7, 2005, at A12.

⁶ STEPHEN B. POCIASK, THE AMERICAN CONSUMER INSTITUTE, NET NEUTRALITY AND THE EFFECTS ON CONSUMERS 10 (2007).

⁷ Federal Trade Commission Internet Task Force, *Staff Report: Broadband Connectivity Competition Policy*, at 100 (June 2007) ("FTC Report").

B. Market Forces Will Ensure That Network Management Practices Are Beneficial to Consumers.

Notwithstanding such competition, Petitioners discount the ability of the marketplace to determine which types of network management practices should be employed. Yet there has been no demonstration of market failure that could justify substituting the judgment of regulators for that of consumers. As the FTC noted in its June 2007 Staff Report, its thorough review failed to uncover evidence "of any significant market failure or demonstrated consumer harm from conduct by broadband providers."⁸ The FTC Report accordingly concluded that "[p]olicy makers should be wary of enacting regulation solely to prevent prospective harm to consumer welfare, particularly given the indeterminate effects on such welfare of potential conduct by broadband providers and the law enforcement structures that already exist."⁹ Similarly, DOJ expressed its belief that "[t]he FCC should be highly skeptical of calls to substitute special economic regulation of the Internet for free and open competition enforced by the antitrust laws."¹⁰

While Petitioners seem to believe that the traffic management practices employed by Comcast represent a "smoking gun" that undercuts these conclusions, the "harm" Petitioners allege exists only in their imagination. As explained below, network management practices that affect the delivery of P2P traffic are essential to easing congestion, protecting consumers' ability to receive quality service, and avoiding significant price increases. *See infra* Sections II-III. But even if Petitioners could mount a more persuasive case that Comcast or other broadband providers were engaging in conduct that *un*reasonably affects some P2P applications, there is

⁸ *Id.* at 160.

⁹ *Id. See id.* at 125 (finding that "it is not possible . . . to conclude that the online content and applications market suffers or will suffer from anticompetitive conduct").

¹⁰ Ex Parte Filing United States Department of Justice, WC Docket No. 07-52, at 1 (Sept. 6, 2007) ("DOJ Ex Parte").

every reason to let the marketplace respond, rather than risking premature and potentially counterproductive regulation.

Recent events demonstrate that, where consumers are aggrieved by a service provider's policies, the marketplace exerts the very discipline that proponents of regulatory restraint have long predicted. In September 2007, for example, Verizon Wireless captured headlines when it rejected a request from NARAL, an abortion-rights group, to send text messages to its supporters, claiming that it had the right to block "controversial or unsavory" text messages.¹¹ This action prompted a spasm of public outcry, which led Verizon Wireless to reverse its position almost immediately.¹² Thus, although some proponents of "net neutrality" regulation have treated this incident as a call to arms, it powerfully undermines the argument for government intervention. Absent any legal compulsion, Verizon Wireless swiftly eliminated a policy that many consumers frowned upon — and conformed to the principles set forth in the Broadband Policy Statement — to avoid subscriber unrest and retribution. By the same token, if consumers object to the policies targeted by the Petitions, broadband providers employing such policies will be punished in the marketplace. In the competitive broadband arena, there is simply no reason why regulators — or Petitioners, for that matter — should supplant consumers as the arbiters of which network management practices are appropriate.

Indeed, the case for regulatory restraint is particularly powerful in the context of network management practices. Prescriptive mandates are especially ill-suited to addressing the highly technical and remarkably dynamic issues posed by network management. The imposition

¹² Adam Liptak, *Verizon Reverses Itself on Abortion Messages*, N.Y. TIMES, Sept. 27, 2007, *available at* http://www.nytimes.com/2007/09/27/business/27cndverizon.html?ex=1348545600&en=be862e23ae5b54e9&ei=5090&partner=rssuserland&e mc=rss.

¹¹ Adam Liptak, *Verizon Blocks Message of Abortion Rights Group*, N.Y. TIMES, Sept. 27, 2007, *available at* http://www.nytimes.com/2007/09/27/us/27verizon.html.

of "net neutrality" mandates would require government regulators to make blanket judgments about whether certain traffic management practices should be permitted or prohibited. There is simply no way for the government to make such determinations without creating a substantial threat of harming consumers. Scholars have recognized that any attempt to make such distinctions would require "difficult line-drawing" and would create an enforcement regime that would be costly and prone to errors.¹³ The FTC likewise cautions that, if broadband providers use network management techniques to differentiate among applications and content, it would be impossible to determine through *ex ante* regulation whether such discrimination is harmful or beneficial, on balance, to consumer welfare.¹⁴ For example, any regulation that aims to combat potentially anticompetitive practices may also impact essential traffic management techniques, such as those designed to address latency-sensitive applications,¹⁵ or even protections against viruses and other malicious code. And even if the Commission could somehow develop blanket rules that make sense in today's marketplace, technological and competitive developments would quickly render any such mandates obsolete.¹⁶

In short, while broadband providers and Petitioners fundamentally disagree about the reasonableness of network management practices, the Commission need not — and should not — attempt to determine who has the better of that argument. *Consumers* are best equipped to

¹³ See, e.g., EDWARD W. FELTEN, CENTER FOR INFO. TECH. POLICY, NUTS AND BOLTS OF NETWORK NEUTRALITY 5 (July 6, 2006).

¹⁴ FTC Report, at 7, 157.

¹⁵ *Id.* at 86, 96-97.

¹⁶ See, e.g., DOJ Ex Parte, at 10 ("Without knowing what services and technologies will be introduced in the future, it will be difficult to craft regulations that take into account the dynamic nature of the Internet."). Unfortunately, it is neither quick nor easy to undo regulations once they are in place; eliminating regulations normally requires a full rulemaking proceeding. In the meantime, the very existence of a given regulatory framework can skew the marketplace and stifle innovation.

make such judgments, expressing their views by purchasing or declining to purchase services based on their mix of price, performance, and any applicable restrictions. As the FTC, DOJ, and a majority of this Commission have all recognized, there is no basis for substituting the judgment of regulators for the proven welfare-maximization of the free market, particularly in light of the rapidly changing attributes of the Internet arena.

II. THE GROWTH OF THE INTERNET AND RISE IN P2P TRAFFIC IN PARTICULAR PRESENT SIGNIFICANT CHALLENGES FOR BROADBAND PROVIDERS AND CONSUMERS.

Since the early days of the Internet, the one constant has been continual change. Service providers have been forced to remain nimble to survive, providing ever more robust service to attract customers. The recent explosion in bandwidth consumption, much of which results from the proliferation of P2P applications, presents a new set of challenges for broadband providers. As P2P applications degrade network performance and threaten to increase costs to consumers, broadband providers have been required to develop policies and technical tools to safeguard their networks and protect their subscribers' interests.

Since the early days of the Internet, the amount of available content and the number of users have grown exponentially. Netcraft estimates that the number of websites has grown from approximately 18,000 in mid-1995 to over 155 million as of the end of 2007.¹⁷ The rate of website growth has accelerated over time, as an ever-increasing array of participants have continued to find increasingly diverse uses for the Internet.¹⁸ As of December 2007, the number of estimated Internet users exceeded 1.3 billion, with over 238 million users in North America

See Netcraft December 2007 Web Server Survey, at http://news.netcraft.com/archives/ 2007/12/29/december_2007_web_server_survey.html (Dec. 2007) (last visited Feb. 13, 2008).

¹⁸ *Id.*

alone.¹⁹ Moreover, according to the Pew Internet & American Life Project survey, as of February 2007 nearly half of all Americans had broadband in their homes, up from less than five percent in mid-2000.²⁰ These dramatic shifts have fundamentally changed the way that Americans use and rely on the Internet. Put simply, "a high speed, 'always on' connection clearly allows users to engage frequently in a wider range of online activities than dialup users."²¹ Among other things, widespread broadband availability has allowed websites to display richer graphics as well as video and other bandwidth-intensive content.

The explosive growth in bandwidth consumption is placing severe strains on the capacity of existing infrastructure, however — and in turn threatens to undermine consumers' enjoyment of broadband content and applications. Since 2006 alone, peak international Internet backbone traffic has grown by an estimated 60 percent.²² Experts have warned of a developing "Internet exaflood" that will cause even more network congestion.²³ As discussed below, broadband providers are investing heavily in their networks to meet this enormous demand, but capacity increases alone are insufficient; rather, network management is vital to delivering a reliable and robust Internet experience to consumers.

²¹ *Id.* at 11.

²² See Telegeography, GLOBAL INTERNET GEOGRAPHY 2007, Executive Summary (2008), available at http://www.telegeography.com/products/gig/samples07/GIG_Exec_ Summary.pdf.

¹⁹ Internet World Stats, *Internet Usage Statistics*, *at* http://internetworldstats.com/stats.htm (last visited Feb. 13, 2008).

²⁰ John B. Horrigan, *Home Broadband Adoption 2007*, PEW INTERNET & AM. LIFE PROJECT (2007), *available at* http://www.pewinternet.org/pdfs/PIP_Broadband%202007.pdf.

²³ Internet Could Max Out in 2 Years, Study Says, PC WORLD, Nov. 24, 2007; Bruce Mehlman & Larry Irving, Bring on the Exaflood!, WASH. POST, May 24, 2007, at A31 ("Exaflood' stems from the term exabyte, or 1.074 billion gigabytes. Two exabytes equal the total volume of information generated in 1999. The Internet currently handles one exabyte of data every hour. This mushrooming amalgamation of data is pushing the Internet to its limits.") (emphasis added).

The advent of P2P applications may be the most significant cause of this mounting network congestion. The origins of P2P networking lie in early file transfer protocol (FTP) applications — common mechanisms for transferring files among users.²⁴ The increase in broadband availability and the proliferation of P2P applications have fundamentally altered the impact of file sharing on network performance. While pre-broadband file-transfer applications typically were used to exchange relatively small music files (about 4 megabytes each), in the broadband era P2P applications increasingly are used to transfer video content (often more than 700 megabytes). Such consumption patterns have resulted in fewer than five percent of users consuming as much as 60-70 percent of all available bandwidth,²⁵ an imbalance that is conducive neither to optimal network performance nor to consumer satisfaction. Rather, the network congestion caused by P2P applications has degraded transmission capabilities of the network for the vast majority of consumers (most of whom do not use P2P software at all).

Packet switching technology allows multiple users to share the same communications channels efficiently without maintaining a dedicated channel for any single use. P2P networks, however, function by gathering the unused power of millions of computers that have downloaded P2P software,²⁶ and thus negate the fundamental efficiency gains associated with packetized communications. In "pure" P2P applications (which now predominate),²⁷ when

²⁴ DEJAN S. MILOJICIC, ET. AL., PEER-TO-PEER COMPUTING 20 (2003).

²⁵ Christopher S. Yoo, *Network Neutrality and the Economics of Congestion*, 94 GEO. L. J. 1847, 1879 n. 145 (2006).

²⁶ Quentin Hardy & Evan Hessel, *Peer Play*, FORBES, Mar. 26, 2007, *available at* http://www.forbes.com/forbes/2007/0326/082_print.html.

²⁷ The "pure" model is characterized by a lack of a central server, allowing individuals, also called nodes, to form a peer-to-peer network. David Liben-Nowell, et. al., *Analysis of the Evolution of Peer-to-Peer Systems* (2002), *available at* http://nms.lcs.mit.edu/papers/podc2002.pdf. In contrast, a "hybrid" model consists of a central server that performs search functions to identify nodes with whom the requesting

a peer requests a file, that request is broadcast or "flooded" to directly connected peers, which then flood other peers until the request is finally answered.²⁸ This flooding consumes a large amount of network bandwidth, and, making matters worse, P2P applications "do not slow their rates of data transmission" when congestion occurs.²⁹ Normally, the Transmission Control Protocol/Internet Protocol ("TCP/IP") acts to delay and slow packet-transmission rates in order to minimize Internet congestion.³⁰ But P2P applications "aggressively take advantage of TCP's built-in reduction mechanism and, instead, send data as fast as they can."³¹ In fact, P2P applications "*relentlessly consume all of the end user's available Internet bandwidth* attempting to download chunks of the files from any sources online at the time."³² In other words, P2P applications actively work to eliminate the benefits of TCP/IP for the network as a whole.

Further exacerbating network congestion, P2P applications continue to consume downstream and upstream bandwidth even after a user's file download is complete. Once a consumer downloads P2P software, his or her computer may engage in many simultaneous transmissions to and from other computers, often without the user's knowledge, intervention, or instruction. Even if a host is not actively sharing files, the host still consumes bandwidth (called protocol chatter) by leaving the P2P connection running constantly, as network nodes send

peer can be connected, after which the two peers exchange files directly with each other. MILOJICIC, *supra* n.24, at 7, 10.

- ²⁸ MILOJICIC, *supra* n.24, at 10.
- ²⁹ FTC Report, at 29.
- ³⁰ *Id.*
- ³¹ *Id*.

³² William B. Norton, *The Evolution of the U.S. Internet Peering Ecosystem*, at 8 (2003) (emphasis in original), *available at* http://www.equinix.com/pdf/whitepapers/ PeeringEcosystem.pdf.

maintenance messages to one another to maintain connectivity.³³ As BitTorrent's founder candidly acknowledged in a recent interview: "My whole idea was, 'Let's use up a lot of bandwidth." When asked about the problems that this would cause for broadband providers, he replied: "Why should I care?"³⁴

As a result of the enormous consumption of bandwidth caused by P2P applications, many experts "believe that the use of such applications by even a small portion of Internet users may effectively degrade service for the remaining majority of end users."³⁵ Indeed, the FTC has observed that "the Internet's continued exponential growth" together with the proliferation of video file-sharing applications "may outstrip the Internet's current capacity and cause it to become significantly congested or crash altogether."³⁶

Broadband providers can ameliorate some effects of network congestion by deploying more fiber and upgrading bandwidth through other means. But there can be no doubt that such measures alone will not be sufficient. Any "arms race" strategy focused solely on quantity (here, available bandwidth) is doomed to fail. Networks are designed based on estimates of peak demand, but such concepts lose meaning where P2P applications consume *all available bandwidth* — effectively making peak usage a constant state of affairs. Thus, increases in capacity in an unmanaged environment would have little, if any, impact on network congestion, as P2P applications would continually consume the whatever new bandwidth comes online.

³³ Liben-Nowell, *supra* n.27, at 1; SANDVINE, PEER-TO-PEER FILE SHARING 10 (2002).

³⁴ David Downs, *BitTorrent, Comcast, EFF Antipathetic to FCC Regulation of P2P Traffic,* SF WEEKLY, Jan. 23, 2008, *available at* http://www.sfweekly.com/2008-01-23/news/bittorrent-comcast-eff-antipathetic-to-fcc-regulation-of-p2p-traffic/.

³⁵ FTC Report, at 28-29.

³⁶ *Id.* at 21.

Petitioners tout the use of P2P applications to distribute lawful content — and not simply pirated video and music files, as historically has been the case³⁷ — as a supposed basis for prohibiting network management.³⁸ Far from undercutting the need or justification for broadband providers to manage P2P traffic, however, the increasing use of P2P software as a commercial distribution mechanism heightens the importance of network management. Rather than streaming content from centralized servers — which entails costs for data storage and transmission (and often for caching by content delivery networks like Akamai) — P2P providers store files on end users' computers and commandeer the broadband transmission supplied by broadband providers. Such use of individuals' broadband connections — which often occurs without their knowledge or participation — is a mounting cause of congestion that impedes other uses of shared transmission facilities.

III. THE NETWORK MANAGEMENT PRACTICES AT ISSUE ARE REASONABLE AND FULLY CONSISTENT WITH THE COMMISSION'S *BROADBAND POLICY STATEMENT*.

In the *Broadband Policy Statement*, the Commission expressly recognized that consumers' access to Internet content and use of online applications and services are subject to "reasonable network management" by broadband providers.³⁹ Chairman Martin has likewise observed that consumers' ability to access Internet content is "[s]ubject, of course, to the

³⁷ See Scott Morrison & Peter Thal Larson, Hollywood's Piracy Epic, FT.COM, Sept. 12, 2003, available at http://search.ft.com/ftArticle?queryText=%22Rob+Friedman%22&id= 030912001753&ct=0 (tracking the rise of piracy through P2P services such as Kazaa, Morpheus and Grokster). As discussed below, the prevalence of pirated material provides a justification for traffic management even apart from the congestion and network performance issues that are paramount to broadband providers. See infra Section III.

³⁸ *See, e.g.*, Free Press Petition, at 17; Vuze Petition, at 8.

³⁹ Appropriate Framework for Broadband Access to the Internet over Wireline Facilities, et al., Policy Statement, 20 FCC Rcd 14986 ¶ 5 n.15 (2005) ("Broadband Policy Statement").

bandwidth limits and quality of service terms of the particular Internet access service plan that they have chosen to purchase."⁴⁰ The overriding goals established by the *Broadband Policy Statement* are to encourage broadband deployment while preserving and promoting the open and interconnected nature of the public Internet.⁴¹ Far from violating these key objectives, as Petitioners suggest, network management is essential to fulfilling them.

The *Broadband Policy Statement* wisely refused to provide an enumerated list of network management practices deemed reasonable, given the inherently dynamic nature of the Internet. The Commission properly recognized that any such list would inevitably fail to include practices that would not only be reasonable but necessary to maintain network integrity. For similar reasons, it would be a mistake for the Commission to make any categorical judgment concerning the reasonableness of the network management practices at issue here. Indeed, given the absence of any evidence of harm to consumers, any verdict regarding such practices would be premature. If the Commission nevertheless proceeds to scrutinize the network management practices targeted by Petitioners, the relevant facts and circumstances demonstrate that imposing modest limits on P2P traffic to protect consumers from service degradation and cost increases is plainly reasonable.

A. The Significant Challenges Confronting Broadband Providers Demonstrate the Reasonableness of the Traffic Management Policies at Issue.

As shown above, P2P applications' relentless consumption of bandwidth degrades network performance, particularly because of the shared nature of broadband transmission

⁴⁰ News Release, Chairman Kevin J. Martin Comments on Commission Policy Statement, n.1 (Aug. 5, 2005), *available at* http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-260435A2.pdf.

⁴¹ Broadband Policy Statement ¶ 4.

facilities.⁴² As a result, during periods of peak demand, a broadband provider faces the choice of imposing modest limits — such as a cap on the number of simultaneous P2P sessions — on the small number of users whose P2P usage threatens to clog up the network, or forcing the entire subscriber base to experience slower throughput. The dramatic and widespread performance degradation caused by P2P applications easily justifies imposing limits on such applications, consistent with a broadband provider's terms of service. Indeed, a broadband provider's *failure* to respond to the threats entailed by P2P traffic would be irresponsible, and would threaten to undermine consumers' ability to access online content in derogation of the *Broadband Policy Statement*.

Simply increasing network capacity cannot solve the problems caused by P2P applications because such applications are designed to consume any such capacity.⁴³ Rather, network management is indispensable. In this sense, broadband networks are "[1]ike road networks, rail networks, electrical networks, and traditional telephone networks" in that they "cannot function efficiently and cost-effectively without management," and, in fact, cannot be operated at all "without regard to prioritization of traffic, peak loads, and capacity management."⁴⁴ Thus, as experts have observed, "active network management, prioritization, and other types of quality-of-service assurances are needed to prevent the Internet, or its individual parts, from slowing down or crashing altogether."⁴⁵

Another key indication of the reasonableness of managing P2P traffic is the modest impact of measures like temporarily capping the number of new P2P sessions that may be

⁴² See supra Section II.

⁴³ See supra Section II.

⁴⁴ FTC Report, at 63 n.282 (quoting testimony of Walter McCormick, Jr.).

⁴⁵ *Id.* at 63.

initiated on a per-user basis during times of peak network congestion. Importantly, such policies do not prevent P2P users from accessing any particular content, service, or application at all. Any applicable limits have no bearing on the consumer's ability to access content from any website on the World Wide Web. Moreover, a cap on the number of simultaneous upstream P2P sessions and similar measures are far more benign than many alternative responses to the threats posed by P2P traffic. Indeed, some institutions that operate private networks have resorted to far more restrictive policies that block access to P2P applications (or other high-bandwidth applications) to prevent local service degradation.⁴⁶ If the Commission sought to restrict network management, some broadband providers might respond by withdrawing from the mass market and concentrating only on niches, such as business users or residential areas marked by high income levels, in an effort to increase per-subscriber revenue. Consumers are far better off in an environment where P2P traffic may be subject to some modest limits, consistent with applicable terms of service, rather than more draconian responses to P2P-induced network congestion.

In spite of these common-sense rationales for traffic management, Petitioners appear to believe that consumers' entitlement to use applications of their choosing entails a right to consume network resources without limitation — and regardless of the broadband provider's terms of service. That clearly proves too much. Under Petitioners' construction of the *Broadband Policy Statement*, the explicit authorization to engage in reasonable network

See, e.g., Ohio University Announces Changes in File-Sharing Policies, Apr. 25, 2007, available at
http://www.privacydigest.com/2007/04/26/ohio+university+announces+changes+file+sha
ring+policies (describing ban on P2P applications); Leo Shane III & T.D. Flack, DOD
Blocking YouTube, Others, STARS & STRIPES, May 13, 2007, available at
http://www.stripes.com/article.asp?section=104&article=53421&archive=true
(describing Defense Department policy of denying access to websites such as YouTube).

management would have no meaning. Petitioners' position not only would bar broadband providers from ameliorating network congestion to improve performance, but also would leave broadband providers powerless to respond to conduct that harms the network or breaks the law. Whereas virtually all interested parties agree that broadband providers should be able to block or degrade traffic that constitutes "malware," Free Press appears to take the extreme position that broadband providers should be denied the right to block, delay, or degrade any application or class of applications whatsoever (including viruses and the like).⁴⁷ And while Petitioners take pains to emphasize that P2P software can be used for legitimate purposes,⁴⁸ they do not seriously dispute that the overwhelming majority of P2P traffic currently represents illegal transfers of copyrighted music and video files.⁴⁹ Broadband providers have a strong interest in working with content owners to combat this rampant piracy, or the supply of high-value content ultimately will be diminished, to the detriment of consumers.⁵⁰ The Commission should take no action that would inhibit such efforts.

In any event, the increasingly prevalent use of P2P applications to distribute lawful content (rather than the typical exchange of pirated content) further justifies broadband providers' reliance on traffic management. Whether P2P applications are used for distributing lawful or unlawful content, these applications, if left unmanaged, create disruptions for end users

⁴⁷ Free Press Petition, at 14.

⁴⁸ *See* Free Press Petition, at 17; Vuze Petition, at 8.

 ⁴⁹ Jack M. Germain, *The Shrouded Sharing Shenanigans of P2P Programs*, TECHNEWSWORLD, June 14, 2007, *available at* http://www.technewsworld.com/story/ 57829.html (noting that in 2006, "more than US\$2 billion worth of illegal music downloads and movies were pirated at more than \$20 billion loss to the industry").

⁵⁰ *See, e.g.*, Motion Picture Ass'n of America Comments, WC Docket No. 07-52, at 7-8 (June 15, 2007) ("The production of creative and unique content that has so benefited consumers and spurred the growth of the Internet will inevitably be stifled if illegal P2P file trafficking is not addressed.").

and the network as a whole. When consumers download files using P2P applications, they often are not informed and likely do not understand that their computers will take the place of commercial servers, and that their personal broadband subscriptions will be used by third parties to transmit copies of the content in question. Most consumers have no interest in allowing their accounts to be used without limitation for such purposes, especially since many of them are unaware that unmanaged use (i) can slow the processing speed of a personal computer; (ii) can open up the contents of the end user's hard drive to third parties; (iii) can expose the end user to copyright liability; and (iv) if left unchecked, would increase consumer costs and degrade the quality of their service. In addition, many broadband providers' terms of service prohibit the use of mass market service offerings for transmission by commercial entities. Network owners act reasonably when they use traffic management policies in a manner that enforces limitations in their terms of service — particularly where, as here, they affect a class of applications that shift costs to purchasers of broadband connectivity.⁵¹

See, e.g., T. KARAGIANNIS ET AL., SHOULD INTERNET SERVICE PROVIDERS FEAR PEER-ASSISTED CONTENT DISTRIBUTION 1, available at http://www.cs.ucr.edu/~tkarag/ (explaining that P2P software has "an adverse impact on ISPs' costs by shifting the associated capacity requirements from the content providers and [Content Distribution Networks] to the ISPs themselves"); Press Release, Zattoo, Quick-Start, Long-Play Internet Television Arrives with Zattoo P2P IPTV (May 24, 2006), available at https://zattoo.com/news (noting that Zattoo's product "shift[s] network and server costs to viewers with peer-to-peer technology"). Notably, placing reasonable limits on the excessive consumption of bandwidth by P2P applications benefits not only consumers, but also website providers, by maintaining their ability to deliver content to consumers. Such limits help avoid a potential "race to the bottom" by ensuring that no website provider is compelled to use P2P applications simply because other website providers might do so, thereby gaining a competitive advantage through comparatively lower costs.

B. Even Proponents of "Net Neutrality" Regulation Have Recognized That Such Network Management Practices Are Reasonable and Should Not Be Subject to Regulation.

Even many parties that advocate "net neutrality" mandates have recognized the need to distinguish reasonable network management practices of the sorts at issue here from the kind of unreasonable discrimination that in their view warrants a regulatory response. There is broad consensus that network owners should be permitted to protect themselves against viruses, worms, denial-of-service attacks, spam, and other malicious software (or "malware").⁵² Many proponents of regulation also recognize that using traffic management to ease congestion and for related purposes is eminently reasonable as well. For example, although Google has argued for regulation to address what it perceives as threats to competition, it has recognized both the need for, and legitimacy of, network management. Google has observed that the massive increase in demand for Internet-delivered video may produce a "traffic jam that threatens the net's development."⁵³ In its FCC comments, Google stated that it "does not dispute that the broadband providers should have the ability to manage their networks" or that "[m]ost known network management techniques will create few if any competitive and discrimination issues."54 In particular, Google acknowledges that a broadband provider should be permitted to "prioritize all packets of a certain application type, such as streaming video," as long as it does not

⁵² See, e.g., David Farber, Michael Katz, Gerald Faulhaber & Christopher S. Yoo, Hold Off On Net Neutrality, WASH. POST, Jan. 19, 2007, at A19; Gregory J. Sidak, A Consumer-Welfare Approach to Network Neutrality Regulation of the Internet, 2 J. OF COMPETITION L. AND ECON., 349, 376 (2006), available at http://ssrn.com/abstract=928582.

⁵³ *Rise of Video Downloads Threatens Gridlock on Net*, THE GUARDIAN, Feb. 10, 2007, *available at*. http://www.guardian.co.uk/technology/2007/feb/10/news.newmedia. *See Google and Cable Firms Warn of Risks From Web TV*, USA TODAY, Feb. 7, 2007, *available at* http://www.usatoday.com/tech/news/2007-02-07-google-web-tv_x.htm.

⁵⁴ Google Comments, WC Docket No. 07-52, at 22 (June 15, 2007).

discriminate "based on an intention to impair the offerings of competitors."⁵⁵ Other advocates of regulation similarly acknowledge that broadband providers should be able to "police what they own," and thus "generally *may* discriminate in their treatment of traffic on the basis of *local* network criteria," such as "bandwidth, jitter, or other local Quality of Service indicia."⁵⁶

While Petitioners seek to establish that Comcast's P2P mitigation techniques in fact are motivated by anticompetitive designs, that assertion is both unsupported and illogical. The network management practices at issue of course *affect* P2P software, but nothing in the record remotely suggests that broadband providers target particular applications or website providers in pursuit of anticompetitive objectives, rather than to protect their subscribers' interests in being able to obtain reliable service at affordable rates.

Ultimately, while TWC emphatically disagrees with proponents of "net neutrality" mandates regarding the wisdom of regulating the Internet, the key point is that there is broad recognition that network management aimed at easing congestion is not only unobjectionable but vital to maintaining a healthy Internet.

IV. REGULATION OF NETWORK MANAGEMENT WOULD THREATEN TO CAUSE SIGNIFICANT HARM TO CONSUMERS AND WOULD LIKELY BE UNLAWFUL.

Regulating broadband providers' traffic management practices not only is unnecessary, *see supra* Section I, but would be affirmatively harmful in several respects. Such regulation would chill investment and innovation. In addition, regulating only providers of lastmile transmission facilities would be indefensible, since it is the practices of many other entities (including in particular P2P providers) that cause the congestion to which traffic management

⁵⁵ *Id.* at 22-23.

⁵⁶ Letter from Timothy Wu and Lawrence Lessig to Marlene H. Dortch, CS Docket No. 02-52, at 14 (Aug. 22, 2003) (emphasis in original).

practices respond. For these and other reasons, mandates governing traffic management would likely violate the Communications Act, the Administrative Procedure Act, and the Constitution.

A. In the Dynamic Internet Marketplace, Any Attempt To Impose Prophylactic Regulations Almost Certainly Would Harm Consumers.

Imposing network-management restrictions on broadband providers would chill infrastructure investment and innovation, as well as drive up prices for broadband access. Broadband providers have expended an enormous amount of capital upgrading their networks, with no assurance of positive return. With the threat of enforcement proceedings and related litigation attendant to new regulations, the chilling effect on investment could be severe. As the FTC recognized in its Staff Report, "[i]ndustry-wide regulatory schemes — particularly those imposing general, one-size-fits-all restraints on business conduct — may well have adverse effects on consumer welfare, despite the good intentions of their proponents."⁵⁷ Without reasonable means to manage their networks, broadband providers would have less incentive to invest in their infrastructure.⁵⁸ As one observer summarized:

If regulations limit the ability of network investors to differentiate their services, find innovative pricing solutions, prioritize and manage network traffic, network costs will increase and make investment less attractive, which will reduce network investment. Less investment means poorer service quality, and higher network costs means rising broadband service prices. Higher broadband prices can result in depressed demand, which will raise the cost of service for remaining consumers.⁵⁹

Undercutting investment incentives in turn would exacerbate the existing problem of network congestion and undermine the paramount interest in promoting broadband deployment.

⁵⁷ FTC Report, at 11.

⁵⁸ *Id.* at 160.

⁵⁹ POCIASK, *supra* n. 6, at 14.

In addition to chilling investment in new broadband infrastructure, government mandates would destroy incentives to innovate. As the FTC Report observed, "[e]ven if regulation does not have adverse effects on consumer welfare in the short term, it may nonetheless be welfare-reducing in the long term, particularly in terms of product and service innovation."⁶⁰ While intended to benefit application and website providers, "net neutrality" regulation could have the opposite effect, as the FTC Report recognized in connection with an analogous type of restriction: "[R]egulation that nominally seeks to protect innovation in content and applications by prohibiting broadband providers from charging for prioritized delivery over their networks actually could erect barriers to new content and applications that require higherquality data transmission."⁶¹ By stifling innovation, Internet regulation would diminish network performance, particularly for latency-sensitive applications.⁶²

Moreover, regulation ostensibly aimed at network management would prevent broadband providers from experimenting to identify rate structures that are most responsive to consumer preferences. In today's deregulatory environment, network operators are able test a variety of rate structures reflecting different trade-offs that may be attractive to consumers. For example, network operators might offer plans with (i) higher monthly rates but minimal network management (implicitly charging users for the costs associated with unrestricted use of P2P applications and other sources of congestion); or (ii) lower rates but a greater degree of network management. The "net neutrality" regulations sought by Petitioners, however, would deny

⁶⁰ FTC Report, at 15.

⁶¹ *Id.* at 160.

⁶² ROBERT W. HAHN & ROBERT E. LITAN, AEI-BROOKINGS JOINT CENTER FOR REGULATORY STUDIES, THE MYTH OF NETWORK NEUTRALITY AND WHAT WE SHOULD DO ABOUT IT 11 (2006); *see* DOJ Ex Parte, at 11-12 (suggesting that "'net neutrality' regulation that requires broadband providers to offer the same quality of service to everyone may be inefficient and reduce overall welfare").

consumers the ability to select a network operator that chooses to control costs through network management. Instead, such regulations would likely rule out the lower rate structures, with a consequent loss of consumer welfare.

TWC's plan to introduce consumption-based billing on a trial basis represents the very sort of experimentation that should continue unimpeded by regulatory intervention.⁶³ Consumption-based billing could provide a solution to some (but not all) network congestion concerns associated with P2P applications.⁶⁴ Yet some "net neutrality" proposals could prohibit or limit consumption-based billing and likely would have chilled any voluntary offering along the lines TWC is planning. The Commission should not create disincentives to test new value propositions by making regulatory costs a new factor in the equation. Particularly because there is no telling how the marketplace will respond to consumption-based billing, the Commission should leave broadband providers free to continue testing the appropriate mix of solutions to performance-related concerns, subject to the ultimate veto power held by consumers.

B. Focusing Solely on Broadband Providers' Traffic Management Practices Would Be Myopic and Unsustainable.

Another reason to reject the Petitions is that it would be irrational and arbitrary for the Commission to restrict broadband providers' ability to manage their own networks, as Petitioners propose, without addressing the harms caused by P2P providers. The Internet is a complex ecosystem, and any effort to regulate would have to address many interrelated

⁶³ See Time Warner Links Web Prices with Usage, ASSOCIATED PRESS, Jan. 17, 2008, available at http://ap.google.com/article/ALeqM5jzb1sVxxqr1RdJLc5i_ 6nmTZq7CAD8U7KREG0.

⁶⁴ Even if all consumers were to embrace consumption-based billing, spikes in traffic will continue to require active management to maintain service quality. Moreover, it may not be feasible to expect end users to control P2P usage, as the surreptitious nature of P2P applications makes it difficult to gauge consumption.

components.⁶⁵ While Petitioners focus on broadband providers' impact on P2P applications, they overlook the fact that P2P providers themselves engage in active traffic management. BitTorrent's website extols its "sophisticated traffic management techniques," which include its "proprietary transport technology" that "leverages the full available network capacity of all paths" — *i.e.*, controls the flow of traffic over broadband providers' networks.⁶⁶ Although BitTorrent claims that it can do so "with minimal impact to the end-user experience,"⁶⁷ even that untested assertion depends entirely on its ability to engage in traffic management of the very sort that broadband providers would be barred from utilizing if Petitioners had their way.

More fundamentally, the fact that BitTorrent engages in active traffic management at all reflects its recognition that P2P applications are disruptive. As long as *some* P2P providers are indifferent to the adverse effects of their applications — which is the case today and inevitably will remain true, unfortunately — the harms caused by P2P applications will persist. And while the traffic management techniques employed by "responsible" P2P providers may tend to improve the experiences of end users running their P2P applications, these techniques do nothing to ameliorate the effects of network congestion on *other* end users. In fact, as discussed above, P2P providers have incentives to maximize their exploitation of network resources (and minimize the use of corrective traffic management techniques). Even if they were uniformly interested in minimizing congestion, P2P providers are not in a position to monitor the entire network or make appropriate judgments about what actions should be taken to maximize network integrity and efficiency. That role can only be filled by broadband providers. As a

⁶⁵ In addition to the traffic management engaged in by P2P providers (as discussed below), most major search engines prioritize results on the basis of payments and thus present content in a manner that departs from strict "neutrality."

⁶⁶ See BitTorrent Home Page, http://www.bittorrent.com/dna (last visited Jan. 9, 2008).

⁶⁷ *Id.*

result, any regulatory scheme that focuses on broadband providers, but excludes P2P providers, would be irrational and counterproductive.

C. Regulation That Limits a Broadband Provider's Ability To Manage Its Network Would Be Unlawful.

Finally, apart from the serious policy defects that warrant rejection of the Petitions, "net neutrality" regulation would likely violate bedrock legal requirements. The Commission's ability to rely on Title I as authority for the sweeping and intrusive regulations sought by Petitioners, which run directly counter to the congressional policy established in Section 230(b) of the Act, is uncertain at best.⁶⁸ And regulations that restrict a broadband provider's ability to manage its network — particularly if such rules were to leave others free to manipulate the flow of traffic over the very same facilities — almost certainly would be arbitrary and capricious.⁶⁹

In addition, "net neutrality" regulation likely would run afoul of the First Amendment. The most obvious infringement of speech would arise if the Commission sought to limit broadband providers' ability to determine what information they transmit through contentbased restrictions. But even assuming regulations constraining network management were content-neutral, such mandates also can impermissibly burden speech.⁷⁰ Both the Supreme Court and the Commission have recognized that broadband providers do not function as common

See FCC v. Midwest Video Corp., 440 U.S. 689, 708-09 (1979) (striking down cable regulations imposed under Commission's Title I ancillary authority on the ground that rules were antithetical to the Act's basic regulatory parameters); see also Am. Library Ass'n v. FCC, 406 F.3d 689, 692 (D.C. Cir. 2005) (holding that the Commission lacked authority under Title I to impose broadcast flag regulations); Motion Picture Ass'n of Am., Inc. v. FCC, 309 F.3d 796, 798-99 (D.C. Cir. 2002) (holding that the Commission lacked authority under Title I to impose video description requirements for the benefit of visually impaired individuals).

⁶⁹ See supra Section III.

⁷⁰ *See U.S. v. O'Brien*, 391 U.S. 367, 377 (1968) (government regulation justified only if, *inter alia*, "the incidental restriction on alleged First Amendment freedoms is no greater than is essential to the furtherance" of "an important or substantial governmental interest").

carriers required to transmit all traffic.⁷¹ Rather, broadband providers, like newspaper publishers or cable operators, are protected speakers entitled to editorial discretion under the First Amendment.⁷² A broadband network is "more than a passive receptacle or conduit for news, comment, and advertising;" rather, decisions with respect to the manner in which capacity may be used — the equivalent of "size and content" decisions in the newspaper context — "constitute the exercise of editorial control and judgment" which cannot be subjected to governmental interference.⁷³

Such interference with broadband providers' editorial discretion threatens to violate the First Amendment in several different respects. Any regulation restricting a network operator's ability to manage its network potentially compels speech in violation of the First Amendment.⁷⁴ Moreover, restrictions on network management likely would expose broadband providers to increased costs for transmission, processing, and data storage. Such burdens would pose a serious risk of constitutional harm, particularly if imposed solely on providers of last-mile facilities.⁷⁵

By contrast, upholding network operators' freedom to employ reasonable network management practices promotes First Amendment values. By maximizing the aggregate ability of subscribers to communicate over broadband networks, policies that mitigate the harms caused by P2P applications promote increased speech among consumers. At the same time, private network management, unlike any governmental *restrictions* on such practices, does not constitute state action and consequently does not implicate the First Amendment.

⁷¹ See, e.g., Nat'l Cable & Telecomm. Ass'n v. Brand X Internet Serv., 545 U.S. 967 (2005).

⁷² *See Miami Herald Publ'g Co. v. Tornillo*, 418 U.S. 241 (1974).

⁷³ See id. at 258.

⁷⁴ See Comcast Cablevision v. Broward County, 124 F. Supp. 2d 685 (S.D. Fla. 2000).

⁷⁵ *See Tornillo*, 418 U.S. at 256.

At the very least, because of the First Amendment interests at stake, the

Commission should not adopt any regulation in this area without first identifying a concrete, non-speculative harm that must be redressed. As discussed above, no such harm has been identified. The Commission accordingly should not endanger critical First Amendment values by adopting unnecessary regulations.

V. CONCLUSION

For the reasons discussed herein, TWC urges the Commission to reject the Free Press and Vuze Petitions and refrain from adopting any regulations that would restrict a broadband provider's right to adopt reasonable network management practices.

Respectfully Submitted,

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February 13, 2008