comcast

VIA ECFS

February 26, 2008

Ms. Marlene H. Dortch
Secretary
Federal Communications Commission
445 12th Street, S.W.
Washington, D.C. 20554

      Re: **In the Matter of Broadband Industry Practices, WC Docket No. 07-52;**
                Ex Parte Communication

Dear Ms. Dortch:

In connection with the *en banc* hearing held yesterday in Cambridge, Massachusetts, attached for the record is the prepared statement of David L. Cohen, Executive Vice President, Comcast Corporation.

If you have any questions, please feel free to call me.

                Sincerely,

                /s/ Kathryn A. Zachem
                Kathryn A. Zachem
                Vice President, Federal Regulatory
                Comcast Corporation

cc: Mr. Scott Bergmann
       Mr. Scott M. Deutchman
       Mr. Ian Dillner
       Mr. John W. Hunter
       Mr. Chris Moore

**STATEMENT OF
DAVID L. COHEN
EXECUTIVE VICE PRESIDENT
COMCAST CORPORATION**

**FEDERAL COMMUNICATIONS COMMISSION
PUBLIC EN BANC HEARING ON
"BROADBAND NETWORK MANAGEMENT PRACTICES"
WC DOCKET NO. 07-52**

**CAMBRIDGE, MASSACHUSETTS
FEBRUARY 25, 2008**

Mr. Chairman and Commissioners,

Thank you for inviting me to speak here today. I welcome this chance to talk about the broadband marketplace; what we at Comcast have done and are doing to promote broadband deployment, adoption, and usage; and why that necessarily includes managing our network. As my remarks will make clear, Comcast is, has been, and always will be, committed to providing all of our customers with the best possible Internet experience in the marketplace by empowering and enabling them to access any content and use any applications and services they want.

There are some key facts I want to share with you today.

First, Comcast and the cable industry are committed to providing consumers with a superior broadband experience.

- 117 million homes have access to cable broadband -- that's 92% of America.

- Cable has done more to stimulate broadband deployment -- and innovation on the Internet -- than any other industry. Our investment in and deployment of high-speed data service has turbocharged the growth of the Internet and provided a stable and growing platform for Internet entrepreneurs.

- More than $110 billion in private, at-risk capital has been invested by the cable industry to build a ubiquitous, national broadband network with no government subsidies.

Second, the key to broadband success has been an Internet that has been "unfettered by Federal or state regulation."

- America has relied on the free market to stimulate the deployment of broadband.

- That free market has stimulated massive private investment in infrastructure.

- The government's consistent light regulatory touch has worked.

- The bottom line: competition and not regulation is the most effective way to ensure the continued growth of the Internet and the innovation that will follow.

Finally, and most importantly, *if consumers want it, the Comcast broadband network will deliver it*.

- Our customers can access any content and use any applications and services they want. Customers can do it all and do it fast.

These facts provide an important backdrop for today's discussion about network management and freedom of the Internet. Our vision is an Internet where innovators are free to develop and deploy new services, speakers are free to distribute the content of their choosing, service providers are free to meet the expectations and demands of their customers, and the entire Internet community is free from the heavy hand of government regulation and second-guessing. As I will explain, we do not think any of these freedoms should be sacrificed -- and our respect for those freedoms even extend to those Internet regulation advocates like Free Press who spread distortions and use rhetorical scare tactics.

I. COMCAST AND THE CABLE INDUSTRY ARE COMMITTED TO OFFERING THE BEST BROADBAND EXPERIENCE TO AS MANY AMERICANS AS POSSIBLE.

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.[1] In the years since then, consumers' Internet experience has been completely transformed by the development -- and then deployment, expansion, and constant improvement -- of residential broadband. Throughout this period, the cable industry has led the charge. No industry has done or is doing more to further the Nation's goal of universal broadband or to stimulate Internet investment, innovation, and growth.

A. The Cable Industry's Deployment of Broadband Precipitated the Broadband Explosion in America.

A decade ago, some of the finest minds in Silicon Valley were saying cable modems would never work,[2] and the telephone companies were saying that 150 kilobits

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[1]   *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.

[2]   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"); 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

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per second were all that consumers would need for years to come.[3] Rejecting this
conventional wisdom, Comcast and other cable operators raised and invested more than
$110 billion (without any government subsidy), 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
more than 96% of homes passed by cable in the United States.[4] In turn, cable operators'
investment and commitment spurred the telephone companies, and now wireless and
satellite companies, to deploy their own broadband services. According to the latest
report from the Federal Communications Commission ("FCC" or the "Commission"), as
of the end of 2006, telephone companies made DSL service available to 79% of the
households that could purchase their phone services.[5]

By rolling out our high-speed Internet service, we brought consumers the
download capacity of a T1 line for less than $50 a month, a much more affordable
alternative to paying hundreds or even thousands of dollars a month for a T1 line.[6] Since
then, Comcast has quadrupled customer broadband speeds, without increasing prices, and
added additional speed enhancements like PowerBoost™, again without increasing
prices.[7] By the end of this year, we will have begun deployment of DOCSIS 3.0, and the
speeds available to our customers will grow by leaps and bounds yet again.

The introduction of cable high-speed Internet service and the subsequent roll-out
of other broadband services have created a dynamic marketplace for broadband Internet
services. This is a vibrant and successful marketplace. Broadband adoption continues to
grow rapidly, new delivery technologies continue to be developed and deployed, and

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

[3] *See Testimony of Stagg Newman, Vice President, Network Technology and Architecture, Applied
Research, Bellcore, Bandwidth Forum, Federal Communications Commission* 11, 14 (Jan. 23, 1997),
available at http://www.fcc.gov/Reports/970123.txt. Testifying at the Commission's *Bandwidth Forum*
just eleven years ago, Stagg Newman largely dismissed cable Internet service as a viable service and
endorsed Integrated Services Digital Network ("ISDN ") with speeds of 150 Kbps as "adequate for most of
the services people envision over the next five years." *Id.*

[4] *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) ("*FCC December 2006
High-Speed Report*"), *available at* http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-277784A1.pdf.

[5] *See id.*

[6] *See* 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) (noting that T1 lines (1.544 Megabits per second) were "sold
primarily to business customers . . . [w]ith a price range of $300 to $3000 per month"), *available at*
http://www.fcc.gov/Bureaus/Cable/Reports/broadbandtoday.pdf.

[7] 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.

competition is vigorous and intensifying.[8] Residential broadband subscribers grew from essentially zero just over a decade ago to more than 60 million households by the end of the second quarter of 2007.[9] The cable industry as a whole offers broadband service to over 117 million households (or 92% of the 128 million U.S. housing units) and has nearly 35 million broadband customers.[10] Comcast alone now offers its high-speed Internet service to more than 48 million households, and almost 28% of those homes -- over 13 million -- subscribe to Comcast's service.[11]

B.   Competition Requires All Providers To Serve the Needs of Our Customers.

Cable operators offer a premium high-speed Internet service. In Comcast's case, even after our explosive start-up growth of the past few years, we still continue to attract on average more than 100,000 net new customers each month; many are upgrading from dial-up, but just as many are upgrading from DSL. Although our competitors have traditionally offered a slower service at a cheaper price, millions of cable customers have decided that our better service is worth the extra cost. Cable's superior speed and reliability has long attracted the most avid broadband users.

At Comcast, we now provide 12-16 Mbps "PowerBoost" to accelerate downloads. Our basic 6 Mbps service is up to 100 times faster than 56 Kbps dial-up, up to 7 times faster than 768 Kbps DSL, up to 4 times faster than 1.5 Mbps DSL, and up to twice as fast as 3.0 Mbps DSL. Even with our current advantage over most of our competitors, we invest hundreds of millions of dollars each year to make our service even better because we know our competitors are doing the same. We're now working toward deploying later this year a new "wideband" service using DOCSIS 3.0 technology that will offer speeds of 50 Mbps, 100 Mbps, or even more.[12] With DOCSIS 3.0, customers "will be able to download an HD movie -- which is the equivalent of 3,000 mp3 songs -- in less than 4 minutes. On dial-up that would take days. And with wideband, [they will]

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8   *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").

9   *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.

10   Nat'l Cable & Telecomm. Ass'n, *Broadband Deployment* (reporting 117,700,000 "Housing Units Passed by Cable High-Speed Internet" as of December 2007), *at* http://www.ncta.com/Statistic/Statistic/BroadbandDeployment.aspx (last visited Feb. 22, 2008).

11   *See* Press Release, Comcast Corp., *Comcast Reports 2007 Results and Provides Outlook for 2008*, at 11 (Feb. 14, 2008), *available at* http://www.cmcsk.com/phoenix.zhtml?c=118591&p=irol-newsArticle&ID=1108172&highlight=. Comcast added over 1.7 million Comcast High-Speed Internet customers in 2007. *Id.* at 3.

12   Fact Sheet, Comcast Corp., *Comcast's Network: America's Leading Network* (Jan. 9, 2008) (announced by Comcast's Chairman and CEO, Brian Roberts, at the 2008 Consumer Electronics Show), *available at* http://www.comcast.com/ces/content/images/Wideband/WidebandNetworkFS.pdf.

be able to watch another movie while [they] download."[13] On a typical DSL service, it would take hours. With an even faster high-speed Internet service, Comcast will stimulate more innovation and investment, ushering in a new era of applications and services that require higher speeds.

The result of all our investments and upgrades is one of the best broadband Internet services available today. Our service has enabled our customers to surf the Internet faster, download videos and music faster, and watch streaming video without constant stops to buffer the video. Our service is not only faster but also safer and more secure. We provide our customers with parental controls and virus protection. We protect our customers from spam, phishing, worms, Trojan horses, and denial of service attacks.[14] These and other forms of network management are critical to our customers' enjoyment of the service we provide. As the Institute for Policy Innovation noted, "[i]n almost all cases, network management today is unnoticed by consumers. The opposite, a total lack of management, would not be true. If network operators were precluded from managing their networks, consumers would be negatively affected."[15] At the same time, we have to balance against the possibility of overprotection -- we don't want our customers' messages from friends getting caught by spam filters, or their downloaded applications blocked by our anti-virus software. We constantly re-evaluate and adjust our network management practices to ensure that we are using the best available technologies and techniques to deliver the quality and reliability our customers expect and deserve.

II.   COMCAST'S HIGH-SPEED INTERNET CUSTOMERS ARE FREE TO, AND DO, ACCESS ANY CONTENT AND USE ANY APPLICATION OR SERVICE ON THE INTERNET.

Tonight, millions of Comcast customers around the country will get home from work, turn on their computers, and do anything they want to on the Internet. They will download or stream video from abc.com, cnn.com, iTunes, YouTube, Joost, Vuze, and countless other Internet video services. They will call friends all over the world using Vonage, Skype, or any other voice-over-IP ("VoIP") provider they want. They will download and upload videos, pictures, music, text, or some other file, using BitTorrent, Gnutella, eDonkey, or any other peer-to-peer ("P2P") protocol or service they want. In fact, many of our P2P-using customers are uploading content right now, having left their home computers logged on while they are away at work so that they can automatically upload, or "seed," content for others. In short, if our customers want it, Comcast's network will deliver it.

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[13]   *Id.*

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

[15]   Institute for Policy Innovation Comments, WC Docket No. 07-52, at 2 (Feb. 13, 2008). Unless otherwise specified, all references to "Comments" in this document refer to comments filed in the FCC's Broadband Industry Practices proceeding, in WC Docket No. 07-52, in response to the petitions filed by Vuze and Free Press.

Far from discouraging people from using our service to access video, as some of our critics complain, we *enable* and *facilitate* that access.[16] One of the main reasons people buy Comcast's high-speed Internet service is because it provides better speeds for watching streaming video, downloading video, and sharing videos. In fact, rather than waiting a day to download a typical 700 MB movie on dial-up, or nearly an hour to download the same movie over a 1.5 Mbps DSL line, with our service our customers can usually download that movie in less than twelve minutes.[17] Video over the Internet has grown dramatically in the past few years. As the Commission recently noted, in July 2006 alone, 107 million Americans, many of them Comcast customers, watched video online, and about 60% of all U.S. Internet users downloaded a total of more than 7 billion videos off the Internet.[18] Those numbers have only increased in the past year and a half. According to data from comScore Video Metrix, there were over *100 billion* videos streamed and downloaded from the Internet in 2007.[19] In today's Internet marketplace, no broadband service provider could impede its customers' access to video on the Internet without suffering massive subscriber defections.

Our customers are not only free to download and watch video on their computer screens, but also to connect devices that use our Internet service to display video on televisions. In fact, the TiVo Series 3 HD DVR and the new SlingProjector do precisely that. Moreover, the tru2way standard CableLabs has developed provides manufacturers with significant flexibility to design devices that further integrate online video into the television watching experience. There is nothing that stops consumer electronics manufacturers from designing and manufacturing such devices.

Please do not be fooled by clever sloganeering or rhetorical flourishes favored by some critics of Comcast and the other broadband service providers that have powered innovation on the Internet. For all the talk of the need to regulate in the name of "freedom," today's Internet is already truly open and our customers have the freedom to access any Internet content and use any Internet application, service, or device they want. This is a direct result of reasonable and successful network management, including management of network congestion. The potential for service degradation caused by high levels of network congestion is one of the most important concerns we are dealing with today. It is a concern for each and every broadband service provider that is committed to ensuring a positive Internet experience for all of its users.

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[16] *See generally*, Comcast Corp., *Learn: High-Speed Internet* (describing Comcast High-Speed Internet's ability to provide "Faster Video"), *at* http://www.comcast.com/# (last visited Feb. 23, 2008).

[17] *See* DivX, Inc., *Download Movies* (stating that it would take approximately 12 minutes with a connection speed of 10 Mbps and a transfer speed of 1.25 Mbps "to download a 700MB file (typical movie download) using your Internet connection"), *at* http://www.divxmovies.com/video/ (last visited Feb. 22, 2008).

[18] *See* News Release, FCC, *FCC Adopts 13th Annual Report to Congress on Video Competition and Notice of Inquiry for the 14th Annual Report* 4 (Nov. 27, 2007), *available at* http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-278454A1.pdf.

[19] *See* comScore, Inc., *Video Metrix Media Trend*, MyMetrix, Feb. 19, 2008.

III.   BANDWIDTH CONSUMPTION IS GROWING RAPIDLY. LEFT UNMANAGED, CONGESTION THREATENS THE INTEGRITY AND STABILITY OF THE INTERNET FOR ALL PROVIDERS AND CONSUMERS.

The robustly competitive broadband marketplace has powered innovation and driven growth. The widespread availability of Comcast High-Speed Internet and other broadband services has made it possible for all manner of Internet-based services and applications to emerge, develop, and thrive. Countless entrepreneurs and companies have created content, applications, and services that exploit the potential of broadband. In fact, *broadband in America is driving the biggest cyber-economy in the world*, and we're proud of our role in making that happen.

A.   The Widespread Availability of Broadband Service Has Fueled the Development and Production of New Applications, Services, and Devices.

Broadband service providers have enjoyed a symbiotic relationship with those who have created broadband Internet content, applications, and services. Massive investments in the deployment of broadband facilities make it possible for entrepreneurs to create viable businesses that exploit those facilities, and in turn, innovation and growth in multimedia content, applications, and services helps to drive broadband subscribership growth. Many of the most rapidly growing applications and services, however, consume vastly greater quantities of bandwidth than were needed just a year or two ago: "[T]oday, there is so much Internet video, that YouTube alone requires more bandwidth than the *entire* Internet did in 2000."[20]

On average, each Comcast High-Speed Internet customer uses approximately two and half times more bandwidth today than he or she used three years ago. This growth is expected to continue to increase at a rapid clip in the future. Consumption of broadband services has increased so dramatically that a recent study by Nemertes Research concluded that user demand for the Internet could outpace network capacity by 2010.[21] Of particular note, the study's conclusions appear to assume that networks will continue to be managed as they are today.

Each type of network has its own unique architecture. The power of cable networks derives in significant measure from multi-billion dollar investments in hybrid fiber-coax systems. Despite the enormous capacity of these networks, bandwidth is by no means unlimited. For one thing, most of the capacity is dedicated to the delivery of a rich array of video programming services, as well as various channels whose carriage is

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[20]   *In re the Commission's Cable Horizontal and Vertical Ownership Limits*, Fourth Report & Order and Further Notice of Proposed Rulemaking, FCC 07-219, Dissent of Commissioner Robert M. McDowell 95 (Feb. 11, 2008) (emphasis in original).

[21]   *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.

required by the government. Plus, 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. It also is asymmetric -- with more bandwidth provisioned downstream than upstream -- because that is how the Internet has always been used by the vast majority of consumers. Even today, with the widespread proliferation of services that invert this basic broadband engineering principle, most consumers still download much more than they upload, and so we have architected our network to maximize our customers' experience as much as possible.

Notwithstanding the enormous capacity and flexibility of the cable infrastructure, there is -- and always will be -- some need for appropriate network management. Just as in the case of any other network (roads, electricity, telephones, etc.), economic realities make it futile to design and build a network that will allow all customers to demand the maximum resources simultaneously. As the Information Technology & Innovation Foundation ("ITIF") explained, "optimal design of any network must balance investment needs with peak traffic demands. Seldom do networks, whether telecommunications or others, build enough capacity to meet peak needs, because this means that much of the network will remain under-utilized during other times."[22] 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 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.

B.   Some P2P Protocols Present Unique Network Management Challenges.

Although we have invested billions to build and upgrade our networks, the demands on those networks have grown just as rapidly. And while network congestion has always been a concern, the challenges of network management have been magnified by the vast increase in network resources consumed by certain P2P protocols.

Certain P2P protocols are designed to consume as much bandwidth as possible. In fact, "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."[23] These protocols have a particularly drastic effect on upstream bandwidth.

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

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[22]   Information Technology & Innovation Foundation Comments at 8.

[23]   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; *see* Verizon Comments at 31.

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 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."[24]

And a recent Federal Trade Commission staff study reported:

> Some observers suggest that the use of bandwidth-intensive applications like certain peer-to-peer file-sharing protocols by even a small minority of users is already consuming so many network resources as to be worrisome. This situation is of particular concern to some experts, who 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. Some observers suggest that such applications are already testing the Internet's existing capacity and may even potentially crash the Internet, or parts of it.[25]

Unmanaged, these protocols can have serious adverse effects on other users of the Internet. Independent research has shown that it takes as few as 15 active BitTorrent (currently the most popular P2P protocol) users uploading content in a particular geographic area to create congestion sufficient to degrade the experience of the hundreds of other users in that area.[26] One article reports 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]."[27] The effects are particularly acute with respect to applications and services that are sensitive to latency, for example VoIP and streaming video, but also can affect more traditional Internet applications, such as web surfing.

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[24] 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; *see* Comments of Richard Bennett at 6 ("The fundamental design goal of BitTorrent is to use up all available bandwidth; network operators have no choice but to limit the bandwidth seen by such applications if they're to provide stability and satisfaction to the bulk of their consumers.").

[25] Staff, FTC, *Broadband Connectivity Competition Policy* 28-29 (June 2007) (footnotes omitted), *available at* http://www.ftc.gov/opa/2007/06/broadband.shtm.

[26] James J. Martin & James M. Westall, *Assessing the Impact of BitTorrent on DOCSIS Networks* 8 (Sept. 2007), *available at* http://people.clemson.edu/~jmarty/papers/bittorrentBroadnets.pdf.

[27] 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.

Bram Cohen, the inventor of BitTorrent, recently commented that his "whole idea was [to] use up a lot of bandwidth."[28] When his friend said that service providers "won't like that," Mr. Cohen bluntly responded, "Why should I care?"[29] Although he has the freedom not to care how other customers are affected, network operators do not. If the most bandwidth-consumptive users are allowed to place whatever burden they wish on the network, whenever they wish, then bandwidth could become insufficient to enable other users (who may be trying to use the Internet for email, shopping, phone calls, or even their own bandwidth-intensive applications and services) to access the content, applications, and services that they want at the level of performance they expect and deserve.[30] That is why Comcast and other network operators manage certain P2P protocols.

Bandwidth-intensive activities not only degrade other less-intense uses, but also significantly interfere with thousands of Internet companies' businesses. As Nemertes Research explained, "the user experience is really just the tip of the iceberg. . . . 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."[31] 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 a lot 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 expectation that their applications and services will not be crowded out by congestion caused by hugely bandwidth-intensive protocols and software. And many of these services arguably compete in one way or another with Comcast's services. Thus, far from managing our network in a discriminatory way to benefit our own offerings -- other than managing our network to make our high-speed Internet service faster and better -- our limited network management practices ensure that everyone else's applications and services, even those that may compete with our services and use P2P protocols, work.

In light of these challenges, Comcast and other broadband service providers -- and their vendors -- are working tirelessly to find solutions that will ensure consumers can

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28   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.

29   *Id.*

30   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." 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/.

31   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/.

access the applications, content, and services they demand at the performance level they expect and deserve. For example, "Broadband service providers are investing hundreds of billions of dollars in their networks to handle the increased bandwidth needs of P2P applications and other multimedia content."[32] In addition, through the "P4P Working Group," we are collaborating with others in the industry to devise network management solutions that will be mutually beneficial to network operators, P2P software firms, and consumers.[33]

These and other efforts are ongoing, and may hold some promise if we can get all the major parties to discuss the issues in an open and frank way, without the grandstanding by and hyperbole of some that marks too much of the net neutrality debate in Washington and in the blogosphere. In the meantime, however, congestion is a real-world problem with real-world effects that are happening today, and broadband service providers need the flexibility to deal with these issues in a manner that allows them to meet consumer expectations.

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.

IV.   COMCAST MANAGES ITS NETWORK TO ENSURE THAT ALL OF OUR CUSTOMERS HAVE A HIGH-QUALITY INTERNET EXPERIENCE.

As numerous parties including the FCC and Congress have acknowledged, there is a real-world need for broadband providers to manage their networks in order to deliver high quality and safe broadband services to their consumers. Comcast does so in a reasonable and minimally intrusive way.

Specifically, in addition to managing spam and malware, we currently manage certain P2P protocols that have a demonstrated history of generating excessive burdens on the network. We do so only to the limited extent necessary to prevent them from interfering with the enjoyment of our services by other customers during peak network congestion periods. We *only* manage those protocols during limited periods of heavy network traffic when such protocols reach a threshold level that they can degrade other network traffic. We *only* manage uploads, not downloads. And we *only* manage uploads when the customer is not simultaneously downloading (i.e., when the customer's

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[32]   U.S. Chamber of Commerce Comments at 8-9 ("Securities analysts at Bernstein Research and other investment banks estimate that deploying these networks will cost as much as $400 billion.").

[33]   The P4P Working Group was organized "to formulate an approach to P2P network traffic management as a joint optimization problem. The objective of certain participating ISPs, for example, was to minimize network resource utilization by P2P services. The objective of certain participating P2P software firms, conversely, was to maximize throughput. The joint objective of both ISPs and P2P software developers was to protect and improve their customers' experience." Distributed Computing Industry Ass'n Comments at 4.

computer is likely unattended). If and when we delay those P2P uploads, we *only* do so until usage drops below the threshold.

From the perspective of the Internet user who is downloading files using P2P protocols, our management practices will likely have no discernible effect because the P2P protocols 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 those neighborhoods where the congestion threshold has not been reached.[34]

To manage these P2P protocols, we use something called a "reset" packet. 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. This is a communication between two IP addresses and, contrary to the mischaracterization of Free Press and some in the blogosphere, does *not* involve "forging" packets or impersonating a user. As AT&T explained in its comments, "[t]he 'reset' command has been [around] for more than a quarter century" and "is commonly used to enable one computer to abort a TCP connection with another computer for any of a number of reasons, such as when the communications between the two computers become unsynchronized."[35] What we are trying to accomplish is much like what occurs when a fax machine receives a busy signal (either because the other line is busy or the phone network is congested) 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 that may have a copy of the desired file.

Different operators use different management practices because of the different goals, technologies, and resources of their networks.[36] Some network operators, such as Amplex, choose to manage their networks by imposing a "rate limit" on P2P traffic.[37]

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[34] The "controversy" that prompted this latest debate about network management 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. *See* Peter Svennsson, *Comcast Blocks Some Internet Traffic*, Assoc. Press, Oct. 19, 2007, *available at* http://www.msnbc.msn.com/id/21376597/. 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 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 computers connected to the Internet that utilize that P2P protocol, and would have been able to download the file simultaneously from numerous other seeders. In this extremely rare case where the specific file resided on only one computer in the world, it is possible that that unique file transfer could have been delayed anywhere from a few milliseconds to a few minutes.

[35] AT&T Comments at 25-26.

[36] *See, e.g.*, Amplex Comments at 3 (explaining how a wireless broadband service provider manages its network); Part 15 Organization Comments at 5 ("Prioritizing traffic is important to network management."); Verizon Comments at 3-4, 27, 37-38 (describing various management techniques); Embarq Comments at 3, 8.

[37] *See* Amplex Comments at 3.

Others, such as Harvard Law School, simply request their users not use P2P protocols.[38] And still others, like Harvard Medical School, prohibit P2P use on their network and "take[] active steps against Peer to Peer file sharing and may shut down your connection."[39] In an ecosystem as dynamic as the Internet, management flexibility is essential. Each network operator must make judgments based on its network architecture and its current situation. We have chosen the least intrusive method that we think works best for our network.

Some critics claim we manage P2P protocols because they compete with some of our services. There are two major problems with that thesis. First, Comcast customers view millions of video files, streamed and downloaded, every day. Second, that thesis fails to explain why numerous respected academic institutions -- with no conceivable commercial motive and a strong commitment to freedom and academic inquiry -- have P2P management and use policies as or more restrictive than ours.

For example, as noted above, Harvard Medical School prohibits and blocks P2P. "To maintain network performance Columbia University Information Technology" imposes bandwidth quotas so that a "host exceeding either [a download or upload] limit in a given hour will have its bandwidth in that direction restricted to a lower rate for the remainder of the hour and the hour following if excessive bandwidth use continues."[40] And the University of North Carolina prohibits its users from "engag[ing] in actions that disrupt or interfere with the legitimate use by other Users of any computers and/or networks. . . . Such conduct includes, but is not limited to: placing of unlawful information on the system . . . or any other use that causes congestion of any networks or interferes with the work of others."[41]

Those who allege that Comcast has an anticompetitive animus cannot account for these policies and practices (and those of many other academic institutions). There is a real-world need for network management, on campuses and everywhere else.

Our network management does not "discriminate" based on the content users are uploading or the identity of the provider or customer using the P2P protocols, or the

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38   *See* Information Technology Services, Harvard Law School, *Peer-to-Peer File Sharing Programs*, *at* http://www.law.harvard.edu/administration/its/students/p2p.php (last visited Feb. 23, 2008). Harvard Law School's "Peer-to-Peer File Sharing Programs" Policy specifically advises its students not to use BitTorrent clients. *See id.* (Tip #3). The Policy also notes that "[t]he nature of BitTorrent clients makes it impossible to disable file sharing. If you use a BitTorrent client to download copyrighted material, you are simultaneously sharing out that copyrighted material, thus violating both the HLS Network Usage Agreement and Federal copyright law." *Id.*

39   *See* Harvard Medical School, Information Technology Dept., *Frequently Asked Questions About Computer Security* (emphasis omitted), *at* http://hms.harvard.edu/hmsit/pg.asp?pn=security_faqs#p2p (last visited Feb. 22, 2008).

40   Columbia University, *Columbia University Network Bandwidth Quotas*, *at* http://www.columbia.edu/cu/policy/bandwidth.html (last visited Feb. 23, 2008).

41   University of North Carolina-Chapel Hill, *UNC-Chapel Hill Interim Data Network Acceptable Use Policy* § II.3., *at* https://help.unc.edu/1672 (last visited Feb. 23, 2008).

potential competitive positioning of the application.[42] Our decision to manage certain P2P protocols is based on objective criteria widely used to determine when the usage patterns of a particular protocol may cause congestion that will degrade the performance of *other* applications and services. Although there may be other options for managing networks, broadband providers need to be free to experiment with the approaches that best respond to the particular challenges that their networks face.[43] Different providers have different architectures, but they all require management.

Even those networks with substantial capacity must still manage traffic; it is impossible to build your way out of the need for network management.

> Because, like everything else, Internet bandwidth is a finite commodity, it is subject to Say's Law, which says that "supply creates its own demand." Thus, an abundant supply of bandwidth will create abundant demand, and thus there will NEVER be "enough" bandwidth. However much bandwidth we are able to bring on-line, there will always be a need to manage it efficiently. *In other words, as expanded resources are made available so too will people find clever and useful ways to use those expanded resources.*"[44]

As Verizon recently explained to the Commission, although "fiber-to-the-premises (FTTP) networks include dedicated capacity to particular homes . . . thus alleviating some of the risks of congestion . . . [n]o network . . . is completely immune from congestion concerns."[45]

AT&T correctly notes that upgrading networks to meet the demands of the most bandwidth-consumptive users "would thus compel the great majority of broadband users, who make moderate use of shared network resources, to subsidize the extreme bandwidth consumption of a few."[46] This would have detrimental effects on broadband deployment

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[42]   *See* Comments of George Ou at 2 ("Comcast does not discriminate based on content . . . but it is a fact that BitTorrent and P2P are the biggest upstream bandwidth users.").

[43]   *See, e.g.*, Time Warner Cable Comments at 2 ("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."); Part 15 Organization Comments at 4-5.

[44]   Institute for Policy Innovation Comments at 4 (emphasis added); *see* Information Technology & Innovation Foundation Comments at 8 ("Many advocates, including Free Press, . . . believe that if ISPs just build 'the big pipe' there would be no need for pricing tools or network management practices. Of course, we all want a bigger pipe, but network expansion and capacity improvements require significant capital investment that ultimately will have to be paid for by price-sensitive consumers."). The ITIF also notes that "Free Press and many other advocates argue that if networks were symmetrical, with equal amounts of upstream and downstream bandwidth, peer-to-peer traffic would not present a problem." *Id.* But, as ITIF explains, "[t]his argument ignores the fact that investments in symmetrical networks do not represent the most efficient use of scarce investment capital," *id.*, and that "unique aspect[s] of peer-to-peer protocols also means that ISPs that try to build their way out of the problem by expanding their network capacity instead become a target for more peer-to-peer traffic." *Id.* at 5.

[45]   Verizon Comments at 34.

[46]   AT&T Comments at 20.

and adoption. As Harry C. Alford, President & CEO, Black Chamber of Commerce explained, "One of the most serious threats to widespread broadband adoption, particularly for minorities in America, is unbridled peer-to-peer activity that will sop up the majority of available bandwidth, raise prices for internet access and dampen the pace of investments of new networks in underserved communities."[47]

By engaging in limited management of a limited number of P2P protocols during limited periods of peak congestion, we make the aggregate online service better for all users and all services, particularly video, voice, online gaming, and other interactive services for which latency and jitter are critical factors. Customers seeking to watch streaming video, play online games, download movies, call family members (or even 911) on their Vonage or Skype service, help patients using novel telemedicine applications, or even simply trying to surf the web, may be unable to do so -- or may suffer a degraded experience -- if the network were not properly managed.[48]

As far as the claims that Comcast's network management practices somehow limit our consumers' abilities to access the content and use the applications and services they want, we think the facts speak for themselves. Even before there was any such thing as an Internet Policy Statement from the FCC, we committed to operating our networks in a manner that allowed our customers to access any content and use any application or service on the Internet. We do not and have never blocked access or discouraged our customers from accessing the content and using the applications and services of their choice, including accessing video online.

V. COMCAST RECOGNIZES THE NEED TO GIVE CONSUMERS REASONABLE AND USEFUL INFORMATION ABOUT THE SERVICES THEY PURCHASE.

We have long recognized that clear communication with our customers is an important part of a successful long-term relationship. For years, our written usage policies have informed customers that our Internet service is a shared resource and that we manage our network to ensure as high a level of performance for all users as possible.[49] Nonetheless, in the interest of creating even greater transparency in this area,

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[47]	Harry C. Alford, President & CEO, Black Chamber of Commerce, *Net Neutrality Is Seen as a Benefit for Minorities*, Wall St. J., Feb. 20, 2008, at A13; *see* Joseph A. Marquez, President & CEO of Latinos in Information Sciences, *Fair Sharing of the Internet's Capabilities*, Wash. Post, Feb. 21, 2008, at A14 ("For too many Latino families, the right combination of bandwidth, price and availability is elusive. Given that about 70 percent of Latinos lack broadband service at home, the idea of some users taking P2P 'sharing' to absurd levels and driving up the cost for all is galling.").

[48]	*See*, *e.g.*, Comments of Curtis Lowery, M.D., University of Arkansas School for Medical Services at 1 ("Telemedicine applications require 100 percent reliability. Transmission delays can distort a medical image and render it useless. . . . Rules that limit the use of smart technologies to keep data moving create unacceptable risk to patients whose well being may depend on telemedicine.").

[49]	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." 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

almost a month ago we revised our Acceptable Use Policy and Frequently Asked Questions that pertain to network management and posted them on our Comcast.net website.[50]

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."[51] These documents provide a significant amount of transparency -- more, in fact, than any other commercial broadband provider in the United States so far as we are aware -- about Comcast's network management practices.

As we noted in our comments, however, there are significant concerns about providing too much disclosure about the proprietary details of our network management practices. The Institute for Policy Innovation, AT&T, Verizon, and others expressed similar concerns.[52] As Discovery Institute explained, "[d]etailed disclosure of network management practices could lead to a host of unintended consequences. For one thing, it could facilitate modifications to the BitTorrent protocol which would defeat legitimate necessary traffic management."[53] We have tried to give consumers useful information without providing information that would overwhelm and confuse them, and without providing a roadmap for those who seek to undermine our management efforts for their own benefit.

Unfortunately, as the Discovery Institute predicted, less than three days after we filed our comments, several BitTorrent developers openly stated that they have every intention of using the now-public information about Comcast's network management efforts to circumvent those efforts, regardless of the harm such evasions would cause to other customers.[54] Thus, network operators are forced to walk a tight line between

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"a server site for ftp, telnet, rlogin, e-mail hosting, 'Web-hosting' or other similar applications." *Id.* § 7.b. Similarly, for years, the Acceptable Use Policy ("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." 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."

[50]   *See* Comcast Corp., *Frequently Asked Questions About Network Management*, *at* http://www.comcast.com/customers/faq/FaqDetails.ashx?ID=4567 (last visited Feb. 22, 2008); Comcast Corp., *Comcast Acceptable Use Policy for High-Speed Internet Services*, *at* http://www6.comcast.net/terms/use/ (last visited Feb. 22, 2008).

[51]   Comcast Corp., *Frequently Asked Questions About Network Management*, *at* http://www.comcast.com/customers/faq/FaqDetails.ashx?ID=4567 (last visited Feb. 22, 2008).

[52]   *See* Institute for Policy Innovation Comments at 2, 5; AT&T Comments at 33; Verizon Comments at 16; Center for Democracy Comments at 7; NCTA Comments at 11.

[53]   Discovery Institute Comments at 3.

[54]   Cade Metz, *BitTorrent Busts Comcast BitTorrent Busting*, *The Register*, Feb. 19, 2008 (explaining that "a quartet of BitTorrent developers - including three staffers at BitTorrent Inc. - proposed a new

providing our customers with enough information to make an informed decision and disclosing too much information that will result in harm to our customers and the network. It is critically important for the Commission to understand this delicate balance, and to avoid measures that will disrupt it.

VI.   THE GOVERNMENT HAS WISELY STAYED OUT OF INTERNET REGULATION.

The only way -- the *only* way -- to ensure continued growth in the Internet and continued innovation is to allow the marketplace to work. Government regulation of the Internet (even under the guise of a clever but meaningless slogan like "net neutrality") will inevitably retard the growth, and increase the cost, of broadband deployment -- in direct contravention of nearly universal shared policy objectives.[55] It would be senseless for the government to interject the heavy hand of regulation in a vibrant, dynamic, and innovative marketplace because of ethereal, academic concerns of what might happen if the marketplace ever fails.

In 1996, a Republican Congress and a Democratic President came together and agreed on a deregulatory policy for the Internet: "It is the policy of the United States . . . 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*."[56] That policy has worked well. The FCC, under Democratic and Republican chairmen, has repeatedly rejected calls to regulate the Internet.[57] This decision has encouraged providers to invest the billions of dollars needed to deploy and constantly improve broadband networks.

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extension to the popular P2P protocol that would circumvent" Comcast's network management practices), *available at* http://www.theregister.co.uk/2008/02/19/bittorrent_developers_hit_back_at_comcast/.

[55]   *See* AT&T Comments at 20 ("Worse yet, the pricing pressures imposed by Free Press's elitist agenda would depress broadband subscribership most in those low-income communities where consumers are most sensitive to variations in price. In this respect as well, the net neutrality agenda is at war with the Commission's objective of bridging the 'digital divide.'").

[56]   Telecommunications Act of 1996, Pub. L. No. 104-104, § 509, 110 Stat. 56, 137 (codified at 47 U.S.C. § 230(b)(2)).

[57]   *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), *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). Contrary to the claims of those who fault the Commission for "repealing" common carriage regulation of Internet services and ask that such regulation be "restored," cable high-speed Internet service has never been regulated and, as the Supreme Court affirmed in *Brand X*, is not a telecommunications service under Title II of the Communications Act. *See Brand X*, 545 U.S. at 986-87, 997.

From the very first days of residential broadband, certain groups have sounded alarms that the open Internet would be slammed closed if the FCC didn't regulate it.[58] Despite these oft-repeated "Chicken Little" claims that the demise of the open Internet was imminent, the FCC didn't regulate, and the Internet continued to improve. Today's Internet marketplace is more open, vibrant, and diverse than ever. Comcast's network management practices have helped make it that way by ensuring that all consumers can access the new applications and services they want and developers can be assured that their applications and services will not be degraded by congestion caused by protocols designed to use as much bandwidth as possible. The ever-more-powerful broadband networks that have flourished precisely because of the government's wise decision to avoid the heavy hand of regulation even make it easier for those who wish to spread misinformation and hysteria to do so; there is no better way to download Free Press videos that criticize Comcast than by using Comcast High-Speed Internet service.

There is no compelling reason for the government to interfere in the Internet marketplace. As recently as last year, Chairman Martin and Commissioner Tate agreed in a joint statement, asserting that an additional net neutrality principle was "not necessary and may impede infrastructure deployment."[59] The pace of innovation in the Internet marketplace and the constantly changing techniques used to manage networks would make any government regulation of network management wholly unworkable. The government does not have the expertise or resources to second-guess each of the thousands of network management decisions engineers make every day, much less to make those decisions at a pace that is consistent with the dynamic and vibrant nature of the Internet marketplace and technologies.[60]

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[58]   *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 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.").

[59]   *In re AT&T Inc. and BellSouth Corp. Application for Transfer of Control*, Memorandum Opinion & Order, 22 FCC Rcd. 5662, 5827 (Joint Statement of Chairman Kevin J. Martin and Commissioner Deborah Taylor Tate) (2007) ("We continue to believe [an additional net neutrality principle] is not necessary and may impede infrastructure deployment.").

[60]   It is instructive that the merger of AOL and Time Warner was delayed while the Commission considered consumer advocates' insistent pleas that a condition be adopted to prevent some wholly imaginary and anticipated harm with regard to "advanced [instant-messaging]-based applications." *In re Applications for Consent to the Transfer of Control of Licenses and Section 214 Authorizations by Time Warner Inc. and America Online, Inc., Transferors, to AOL Time Warner Inc., Transferee*, Memorandum Opinion and Order, 16 FCC Rcd. 6547 ¶ 18 (2001). Less than two years later, the condition was quietly abandoned, with nary a word from any of the consumer advocates who deemed it so essential. *See In re Applications for Consent to the Transfer of Control of Licenses and Section 214 Authorizations by Time*

Of greater concern is that any government attempt to micromanage how engineers manage the network would inevitably lead to new and higher costs for broadband and likely will make it harder -- and more expensive -- to raise the capital necessary for continued deployment and improvement of broadband networks.[61]

And once the government starts regulating the Internet, there is nothing to limit its regulatory reach only to broadband service providers. Even Google is now encouraging government intervention and regulation of a combined Microsoft-Yahoo! Google should remember the old admonition: "be careful what you wish for." If Google gets its way, where will it stop? Should the FCC second-guess whether Google search results are presented "neutrally," or require "disclosure" of the now-secret algorithms that dictate how search results are presented to consumers? Should the FCC oversee how Microsoft designs its operating systems or its web browser? We don't think so, but the same voices calling for regulation of broadband service providers will not stop there.

VII.   CONCLUSION

Today's hearing and the Commission's ongoing inquiry regarding network management raise many important and complex issues. The Commission, however, has studied this issue over and over, and every time has decided that competition, not regulation, is the answer.

Given the undeniable success of these decisions, the Commission should not change course. Rather than focusing on regulating today's networks and services, we and the Commission should focus on liberating tomorrow's networks so that broadband can be deployed to more Americans and the Internet can deliver what consumers want -- a vast array of communications, information, and entertainment options that are available anytime, anywhere. That's going to take lots more investment, lots more innovation, and lots more competitive differentiation. It will also take network management.

Thank you for asking me to participate today.

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 and Order, 18 FCC Rcd. 16835(2003).

[61]   *See, e.g.*, Discovery Institute Comments at 2 ("Investment will dry up if Wall Street perceives there's a possibility broadband networks are on a trajectory toward further regulation."); U.S. Chamber of Commerce Comments at 9 ("[N]ow is not the time to introduce policies that would inflict regulatory uncertainty, stifle investment, slow the development of new technologies, and inhibit U.S. economic development and competitiveness."); Thomas Nolle, *Access Wars*, Reality Check, Feb. 20, 2008 ("There are all kinds of public pressures to somehow promise that the Internet will do more without costing more, but what do you think would happen if the government told Ford or GM to sell new cars for twenty bucks? There'd be no cars sold, because none would be produced. The same holds for bits. If access providers can't produce them at a reasonable profit, we won't see much bit sales either."), *available at* http://www.networkworld.com/columnists/2008/022008-nolle.html.