

**Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554**

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



THE NATIONAL CABLE & TELECOMMUNICATIONS ASSOCIATION

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and add details to the principles already encompassed by the Policy Statement.”² Free Press goes further, asking the Commission to rule that certain network management steps taken by ISPs to alleviate network congestion are already prohibited by the Policy Statement.

Neither of these steps is warranted. As NCTA’s previous comments in this proceeding explained, the Commission has heretofore taken exactly the right approach to ensuring that the marketplace for broadband Internet services, with its ever-evolving technology, develops in a way that best meets the needs and interests of consumers. That approach began with a commitment to “vigilant restraint.”³ From the outset, the Commission recognized the possibility that facilities-based providers of Internet access could conceivably act in ways that adversely affect marketplace competition. And it therefore recognized the need to keep a watchful eye on developments. But the Commission also understood that in the absence of any clear indication of anticompetitive harm, and with no direction from Congress to regulate, imposing prophylactic regulations was not warranted and likely to do more harm than good.

The 2005 Policy Statement, while identifying certain consumer interests that should be protected as Internet services and technology develop, remained true to the spirit of vigilant restraint and expressly recognized that even the four principles that it set forth were necessarily “subject to reasonable network management.”⁴ The Commission understood that network management is not, as the petitions at issue here suggest, at odds with the principles of an open and accessible Internet but, in fact, makes it possible to offer consumers access to the broadest possible array of services, sites and applications. Nothing in these petitions should lead the FCC

² Vuze Petition at i.

³ *See, e.g.*, “FCC Chairman Kennard Releases Cable Staff Report on the State of the Broadband Industry; Provides Evidence of Emerging Competition and Importance of National Policy,” FCC Press Release, Oct. 13, 1999 (attaching “Broadband Today: A Staff Report on Industry Monitoring Practices”).

⁴ Policy Statement, ¶ 5 n.15.

to veer off the thoughtful path that it has established and others have followed.⁵ That path has led to a near nationwide buildout of broadband networks by competitive providers, an ever-widening array of services and applications, and economic growth.

I. MANAGING CONGESTION IS THE ESSENCE OF LEGITIMATE NETWORK MANAGEMENT

Minimizing congestion of available bandwidth is essential to ensuring the highest quality and diversity of broadband Internet service, and it has been critical to the growth, evolution and accessibility of that service. Consider the types of web content and applications that have developed since high-speed broadband Internet service became ubiquitously available and replaced dial-up service as the primary means by which consumers access the Internet. It was not that long ago when downloading any graphics-intensive website was painfully slow, and it took an hour just to download a simple version of Space Invaders. Music could be streamed, but only with low fidelity, and video streaming was a pipe dream. But the introduction and continual upgrading, tweaking – and management – of broadband Internet service has provided a platform for the graphic enhancement of traditional news and information websites, online games, video streaming, telecommuting and the sharing of enormous files in a way that has transformed life at home, at the office, and in school.

These new applications take advantage of the expanded bandwidth deployed by broadband Internet service providers. But some of these applications use much more than others – so much that, if not properly managed, their use would clog the entire network and affect the quality of service available to all customers on the network, including those who are using very little bandwidth to retrieve web content or send and retrieve simple e-mail messages. Congestion

⁵ See, e.g., “Broadband Connectivity Competition Policy: A Federal Trade Commission Staff Report,” June 2007, <http://www.ftc.gov/reports/broadband/v070000report.pdf>.

issues are not unique to cable broadband networks – they are a constant issue for networks of every type.⁶ Wireline and wireless phone networks, airlines, and roads all experience congestion at times of peak usage. And with all of these networks, simply “building more” is not a complete solution. It is in the nature of networks to congest and it is the obligation of network owners to manage that congestion for the benefit of their customers.⁷

Peer-to-peer services, as described in the Vuze petition, are particularly congestive insofar as their users not only download large files for long periods of time but also make their computers available as servers, *uploading* files for downloading by other users.⁸ As Vuze makes clear, the value of peer-to-peer networking is that it shifts functionality from centralized servers to consumer computers and access networks. In essence, peer-to-peer content providers solve their own congestion issues by shifting responsibility for portions of the service to their users and the networks serving those users. Indeed, in the context of peer-to-peer networks, “building more” would mean imposing massive costs on average consumers for a network engineered to meet the interests of only a few – hardly an optimal public policy solution.

The use of peer-to-peer services by only a small fraction of Internet customers can consume a very large portion of the network’s resources and capacity and can, at times, interfere with the use and enjoyment of the Internet by other customers. And, in fact, only a small fraction of Internet users do make extensive use of peer-to-peer services. Broadband Internet service providers have an interest to ensure that usage of peer-to-peer services (and any other services with the potential to cause disproportionate congestion) do not significantly degrade the

⁶ See generally, e.g., A. Tanenbaum, *Computer Networks* 374-395 (1996).

⁷ *Id.* at 375 (“Congestion tends to feed upon itself and become worse.”).

⁸ See, e.g., J. Martin and T. Shaw, “Understanding the Impact of BitTorrent on Cable Networks,” NCTA Technical Papers (2006). In fact, one study demonstrates that bandwidth “upgrading makes most users worse off.” See, e.g., Internet-Draft “Problem Statement: We Don't Have To Do Fairness Ourselves,” November 12, 2007, Appendix A, <ftp://ftp.isi.edu/internet-drafts/draft-briscoe-tsvwg-relax-fairness-00.txt>.

Internet experience for the vast majority of their customers – an interest shared by those customers. At the same time, they also have an interest in ensuring that peer-to-peer services are available to those customers who enjoy their use, without causing undue congestion.

Dealing with congestion in a way that balances these interests is precisely the task of network management – a duty whose exercise the Commission expressly endorsed in its Policy Statement. Yet it is also precisely what the petitioners contend should be deemed impermissible under the Policy Statement. Thus, Vuze complains that particular network management actions affecting the provision of peer-to-peer services should be prohibited not because they block or prohibit use of such services but merely because they “mak[e] it more difficult and less efficient for consumers to download content” and because “the overall speed of content downloads is potentially degraded.”⁹

But absent network management, heavy usage of certain peer-to-peer protocols can make it more difficult and less efficient for the vast majority of Internet customers to access Internet applications and content. And it can degrade the overall speed of Internet access for all customers. Managing congestion and traffic in order to maximize satisfaction for all customers is hardly detrimental to the public interest and does not in any way contravene the principles of the Policy Statement.

II. NETWORK MANAGEMENT DOES NOT CONSTITUTE CENSORSHIP OF CONTENT, NOR DOES IT DENY CONSUMERS THE ABILITY TO ACCESS THE APPLICATIONS OF THEIR CHOICE

Free Press argues that any action that “delays” downloading and uploading of data via peer-to-peer service is tantamount to blocking and denying access to the service and should be prohibited. Free Press, which characterizes efforts to control congestion that effectively delay

⁹ Vuze Petition at 10.

use of peer-to-peer transmissions during times of peak congestion as “similar [to] the censorship systems used by the Chinese government,”¹⁰ argues that if delays were not deemed unreasonable and unlawful blocking of Internet content, “[a] network provider could ‘delay’ applications until the year 2009, or 3009, without violating this principle of the Policy Statement.”¹¹

These far-fetched allegations only serve to contrast reasonable and wholly legitimate network management activities aimed at minimizing congestion with the types of actions that *would* potentially contravene the principles set forth in the Policy Statement. Network management intended to alleviate congestion is not “censorship.” To the extent that cable operators use network management techniques, they are agnostic as to source and content. Those techniques address particular applications and protocols only to the extent to which they are likely sources of congestion and degradation of service across the network.

It’s true that some of the most bandwidth-consuming peer-to-peer applications can be used to obtain video programming that may compete to some extent with the viewing options offered by Internet service providers who also offer cable service. Vuze suggests that allegations that network management techniques that affect peer-to-peer applications are simply aimed at congestion should therefore “be met with a degree of skepticism”¹² and should instead be viewed as a means of thwarting competition. But the burden that certain peer-to-peer protocols impose on Internet facilities and networks is hardly a speculative matter, and similar tools for managing congestion caused by such services have been adopted by network operators that have no conceivable anticompetitive intentions.¹³ Colleges and universities across the country, for

¹⁰ Free Press Petition at ii.

¹¹ *Id.* at 17.

¹² Vuze Petition at 14.

¹³ In the particular instance of network management discussed in the petitions, as described by an Associated Press news story, the file transfer that was temporarily delayed was not, of course, anything that competed with the

example, have recognized that “[p]eer-to-peer file-sharing consumes a disproportionate amount of resources, both in bandwidth and human technical support,”¹⁴ and have restricted and even banned the use of such services.¹⁵ There is no reason why their efforts to deal with the congestive effects of peer-to-peer services on all users’ Internet access should be met with skepticism, and there is no reason why all network providers would not have the same legitimate concerns.

Similarly, nobody has alleged that the network management techniques at issue are tantamount to denials of access to content – nor could they. Rather, the network management techniques at issue here merely defer access to content using a particular peer-to-peer protocol to a time when its delivery will not exacerbate congestion and thereby diminish network throughput for the vast majority of users. Traffic management that temporarily defers or slows down large file transfers during times of peak usage in no way denies consumers the use of such applications. Indeed, it is only because cable operators have continually upgraded the capabilities and speed of their high-speed Internet service that peer-to-peer and other large file transfer technologies can be used at all by residential customers. Not very long ago, even those “delayed” transfers would have seemed impossibly fast, given available transmission speeds.

network provider’s cable service; it was the Bible. It is the congestion caused by extensive use of applications for uploading and downloading of very large files that necessitates network management, and this would be the case without regard to the content of those files.

¹⁴ “Ohio University announces changes in file-sharing policies,” Ohio University Press Release, April 25, 2007. <http://www.ohio.edu/students/filesharing.cfm>.

¹⁵ See, e.g., Fairleigh Dickinson University, “Blocking Peer-to-Peer Applications,” <http://isweb.fdu.edu/computing/p2p.html>; “Bandwidth restrictions save almost \$1 million,” *The Daily of the University of Washington*, Oct. 22, 2002, <http://thedaily.washington.edu/2002/10/22/bandwidth-restrictions-save-almost-1-million/>. (“Those using peer-to-peer software on campus, such as the file-sharing program KaZaA, may notice their network connection has been acting slow lately. New technical restrictions placed within the campus networks have provided a limit to the amount of bandwidth users may access for Web sites and servers. The restrictions, implemented last month, do not create any new rules or regulations, but implement long-standing network regulations, said Oren Sreenby, assistant director of Computing & Communications (C&C”).

That continual upgrading, often at no additional cost to customers, belies any suggestion that cable operators are using network management to thwart the availability of applications that compete with their own multichannel video programming services. This investment is not undertaken solely to make web browsing that much faster. Access to high-speed file transfers and more robust streaming of video are among the most obvious advantages of enhanced network capability and speed. If cable operators wanted to discourage such applications, offering and vigorously promoting ever-increasing high-speed capabilities would hardly be the way to do it.

III. THERE IS NO REASON TO DENY NETWORK OPERATORS THE FLEXIBILITY TO DEVELOP AND DEPLOY THE MOST EFFICIENT AND EFFECTIVE MEANS OF MANAGING CONGESTION

Both Vuze and Free Press suggest that there are ways for Internet service providers to try to deal with network congestion without identifying particular applications or technologies that are principal sources of congestion – and, indeed, there are. But whether such approaches are the most effective and efficient at preventing congestion without unnecessarily raising costs and deterring non-harmful use of Internet services is unclear, and the choice among these approaches is most appropriately left with network providers rather than the government.

Internet service providers could simply continue to expand their capacity indefinitely in an effort to keep one step ahead of bandwidth intensive peer-to-peer applications. Wholly apart from the fact that such an approach results in never-ending costs (which would eventually be borne by consumers), there is no reason to believe that, absent other network management techniques, peer-to-peer transfers and other bandwidth-intensive applications will not simply continue to make disproportionate use of the expanded capacity and continue to degrade service for the majority of consumers using other applications. So far, cable operators *have* continually expanded and upgraded their facilities, and problems of congestion have hardly disappeared.

Alternatively, cable operators could attempt to price their services in a way that takes into account predicted or actual usage in order to prevent congestion. In the telephone context, the Commission has recognized that peak period pricing makes sense as a theoretical matter, but that it may be difficult to implement. That is even more true with respect to Internet services, where demand has been much more difficult to predict. And whereas analog telephone calls each consumed more or less the same switch capacity, broadband customers use varying amounts of upstream and downstream capacity minute by minute, making pricing decisions difficult and open to claims of unfairness. Perhaps billing options will develop along these lines, but for the government to mandate particular approaches while restricting others – especially in the absence of any evidence of harm – would be a mistake.

Another option is usage-based pricing, but such an approach to Internet services has not always met marketplace approval in the past. For example, dial-up Internet services long ago replaced charges based on the number of minutes of use with flat fees for unlimited usage.¹⁶ In any event, whether such consumption-based billing would be effective and desirable is hardly clear, pending experimentation with this approach by some providers. It could deter more usage than necessary, since, unlike more active management techniques, it could impose costs for using peer-to-peer applications even at times when such usage would not result in deleterious congestion. Or, depending on the elasticity and intensity of demand by peer-to-peer users, it could be ineffective in deterring sufficient usage to effectively reduce congestion in peak hours.

In the absence of any evidence that particular network management techniques have a clear purpose or effect other than to prevent congestion and maximize overall customer satisfaction, methods of network management should be determined in the marketplace – not by

¹⁶ See, e.g., “The Revamping of Online Services,” *Smart Computing*, February 1997, <http://www.smartcomputing.com/editorial/article.asp?article=articles%2F1997%2Ffeb97%2F97n0233%2F97n0233.asp>.

rulemaking and regulation. That marketplace has so far done nothing but expand the capacity and capabilities of broadband networks, making possible more and more diverse and robust applications. And it has done so in a way that addresses and balances the needs and demands of *all* customers – those who make heavy use of peer-to-peer services and video streaming as well as those who check their e-mail, browse the web, and shop online.

The market is working in other ways as well. Without any government involvement, the national press conducted tests of Comcast’s service and reported on the results, which were then disseminated and discussed extensively on blogs. In response, Comcast both addressed questions regarding the specific incident and has clarified its policies. All of this occurred within a matter of weeks. It is doubtful that protracted proceedings before a government agency would produce a better or more timely resolution, and *ex ante* rules designed to micromanage the Internet would undoubtedly do more harm than good.¹⁷

There is no evidence that network management techniques are in any way at odds with the purposes and principles of the Commission’s Policy Statement or that they are in any way thwarting rather than promoting the public interest in maximizing availability, usage and access to Internet services. There is, in short, no reason for the Commission to abandon a policy of vigilant restraint that is working well.

IV. REGULATION OF DISCLOSURES REGARDING ACCEPTABLE USE AND NETWORK MANAGEMENT ARE UNNECESSARY AND WOULD BE COUNTERPRODUCTIVE

Finally, Vuze, in its petition, contends that the Commission should not only regulate network management practices but should also scrutinize and regulate Internet service providers’ disclosures regarding such practices. Cable operators who offer their customers access to the

¹⁷ See “Broadband Connectivity Competition Policy: A Federal Trade Commission Staff Report,” *supra*.

Internet should – and do – disclose to those *customers* any restrictions that they may impose on such access, including the fact that they may use network management to prevent excessive use of bandwidth by certain applications or protocols. Virtually all cable operators include such “acceptable use” and “network management” disclosures in their subscriber agreements, and there is no evidence that customers have suffered any significant losses or damages because they were unaware of such restrictions.

What Vuze wants, however, is rules that require more specific and “transparent” disclosure to web content *distributors* (like itself) of the particular network management techniques used by network operators. According to Vuze, “While network operators certainly should have the ability to engage in reasonable network management, without clear rules and greater transparency, Vuze and other content distribution companies will have no assurance that a redesigned distribution mechanism will be acceptable to network operators.”¹⁸

But network management is not about identifying protocols and distribution mechanisms that are “acceptable” to online service providers. It is about managing traffic to avoid undue congestion. It is practically impossible to identify in advance which protocols and mechanisms will result in excessive and congestive use and require occasional traffic management. Disclosure of the details of specific existing network management technologies could, however, be counterproductive to the extent that it enables web content distributors (and Internet customers) to *circumvent* such technologies without reducing the potential congestion caused by such distributors.

¹⁸ Vuze Petition at 14.

CONCLUSION

At this stage of the Internet's development, there are a multitude of open-ended questions regarding the best marketplace mechanisms for providing – and paying for – accessibility to the broadest array of services in a manner that best serves the needs and interests of all users. As NCTA has maintained throughout this proceeding, regulation that precludes, restricts or encumbers experimentation with various mechanisms – whether technological or contractual – would only provide a roadblock to finding the best answers to those questions.

The marketplace is working to continue to enrich the Internet experience for consumers, and network management to deal with congestion is a response to this competitive imperative – not an effort to block access to particular content or otherwise contravene the principles in the Policy Statement. Vigilant restraint remains the appropriate path, and the petitions for regulatory action should be denied.

Respectfully submitted,

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