

ORAL ARGUMENT NOT YET SCHEDULED

Case No. 11-1355

Consolidated with Nos. 11-1356, 11-1403, and 11-1404

**UNITED STATES COURT OF APPEALS
FOR THE DISTRICT OF COLUMBIA CIRCUIT**

VERIZON,

Appellant,

v.

FEDERAL COMMUNICATIONS COMMISSION,

Appellee.

On Appeal from an Order of the
Federal Communications Commission

**BRIEF OF *AMICI CURIAE* VENTURE CAPITAL INVESTORS
IN SUPPORT OF FCC**

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November 15, 2012

**CERTIFICATE AS TO PARTIES,
RULINGS, AND RELATED CASES**

A) Parties and Amici

All parties, intervenors, and amici appearing in this Court are listed in the Joint Brief of Appellants Verizon and MetroPCS, the Brief of Appellee Federal Communications Commission, and various other *amicus curiae* briefs, except the following parties who are appearing as amici herein:

Stewart Alsop, Alsop-Louie- Partner

Brian Ascher, Venrock- General Partner and principal

Brad Burnham, Union Square Ventures- Managing Partner

Bud Colligan, Accel Partners- Venture Partner

Ron Conway, SV Angel- Founder and Angel Investor

Caterina Fake, Founders Collective- Founder Partner

Peter Fenton, Benchmark Capital- General Partner (former Managing Partner)

Mark Gorenberg, Hummer Winbald- Managing Director

Nick Grossman, Union Square Ventures- Visiting Scholar at MIT Media Lab
(working with the USV team on a new advocacy effort focused on networks
and innovation.)

Greg Gretsch, Sigma West- Managing Director

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Venkat Mohan, Norwest Venture Partners- Operating Partner

Kim Polese, ClearStreet, Inc.- Chairman

Pete Sheinbaum, Linksmart, Inc.- Founder and CEO

Ram Shriram, Sheralo- Founder

David Sze, Greylock Partners- Partner

Steve Westly, Westly Group- Managing Partner

Fred Wilson, Union Square Ventures- Managing Partner.

B) Ruling Under Review

References to the ruling at issue appear in the Petitioners Brief.

C) Related Cases

This case has been consolidated with Case Nos. 11-1356, 11-1403, and 11-1404.

Cellco Partnership d/b/a Verizon Wireless v. FCC, No. 11-1135 (D.C. Cir.), present some legal issues similar to those presented here, but it involves different factual and regulatory circumstances.

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CORPORATE DISCLOSURE STATEMENT

Pursuant to Rule 26.1 of the Federal Rules of Appellate Procedure and D.C. Circuit Rule 26.1, amici curiae hereby submit the following corporate disclosure statement:

All amici are individuals.

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**Amici note there is no authority on which we principally rely.

GLOSSARY OF ABBREVIATIONS

DOCSIS	Data Over Cable Service Interface Specification
DPI	Deep Packet Inspection
FCC	Federal Communications Commission
IETF	Internet Engineering Task Force
VDSL	Very-high-bit-rate digital subscriber line
VoIP	Voice Over Internet Protocol

RULE 29 STATEMENTS

Pursuant to Fed. R. App. P. 29(c)(5), counsel for amici certifies that no counsel for any other party authored this brief either in whole or in part, and no persons other than amicus curiae and counsel for amicus curiae made any monetary contribution to its preparation or submission.

Pursuant to Circuit Rule 29(b), counsel certifies that all parties consent to amicus curiae participating in this matter.

Pursuant to Circuit Rule 29(d), counsel certifies that a separate brief is necessary. Amici include some of the nation's most preeminent venture capitalists. As venture capitalists, amici are uniquely qualified to explain: (1) how the open Internet has encouraged investment in network infrastructure and elsewhere; (2) how the Internet has changed in ways that are threatening such investment; and (3) how the Order promotes such investment. To the best of counsel's knowledge, other amici are addressing the Order from the legal and technical standpoints. The implications regarding investment and industry growth have not been fully developed by the parties, and, to the best of counsel's knowledge, will not be fully addressed by other amici.

INTEREST OF AMICI CURIAE

Amici curiae are investors and venture capital executives who want to promote the development and growth of Internet-based businesses. Amici curiae

believe that the Order is crucial to maintaining the freedom and openness of the Internet. Certainty in that freedom and openness is a major part of what drives amici curiae to invest in new Internet businesses. This investment, in turn, drives customer demand for the Internet, as well as further investment in network infrastructure. Amici curiae's interest is to continue to promote this growth cycle.

STATUTES AND REGULATIONS

All applicable statutes and regulations are contained in the Joint Brief of Appellants Verizon and MetroPCS and in the Brief of Appellee Federal Communications Commission.

SUMMARY OF THE ARGUMENT

The freedom and openness of the Internet are what allowed it to quickly and dynamically grow into the powerful and valuable economic phenomenon it is today. The Order rightly seeks to preserve that freedom and openness in order to promote, economic growth and further investment in network infrastructure.

Specifically, the freedom and openness of the Internet are responsible for a positive and iterative cycle of growth and investment. The openness of the Internet inspires individuals and companies to develop new Internet content and applications. It also inspires investors, like amici curiae, to invest in those individuals and companies, which spurs better and faster development than would happen otherwise. The newly developed Internet content and applications, in turn,

drive up customer demand for faster Internet access (bigger “pipes”). This customer demand, encourages Internet providers to invest money into bigger and better pipes. And bigger pipes encourage new developments in content and applications, which restart the cycle of growth and investment.

Because the Rules set forth in the Order encourage this cycle of growth and investment, the Order is a positive and necessary step, and is well within the Commission’s authority.

Opponents of the Order argue that the Order is not necessary because the Internet isn’t broken. They are wrong. The freedom and openness of the Internet are now being threatened in unprecedented ways, because of structural changes in the way the Internet is being offered to consumers. The providers of the Internet today—the cable and telephone companies—are now motivated, like never before, to interfere with the content that passes through their pipes. They have also acquired the technology that allows them to do just that – technology that wasn’t available before.

In a world without network neutrality rules, network providers are allowed to discriminate against applications. If a network provider blocks an application, that application will not reach its users, and the application provider will not profit. Because application discrimination threatens application providers’ profits, it also

reduces application providers' incentives to innovate. Finally, it reduces the incentives of investors like *amici curiae* to invest in new technologies.

If investors and venture capitalists are hesitant to put money behind new technologies, the beneficial cycle of growth and development will break down. With fewer developments in applications, content, and services, there will be less consumer demand for new technologies, and less incentive for network providers to invest in infrastructure. Accordingly, the Commission's Order is necessary to maintain the same open Internet that enabled the immense growth we have seen to date.

ARGUMENT

A. The Internet Has Thrived Because It Is An Open System.

The Internet is, at its architectural core, an open system. And this open architecture has historically fostered innovation for three reasons. First, the original Internet had no "gatekeepers." Innovators on the Internet did not need to gain permission from anyone in order to test new ideas with Internet users. To the contrary, any person with an idea could build a Web site and have an instant audience. As stated in a 1996 IETF document: "[f]ortunately, nobody owns the Internet, there is no centralized control, and nobody can turn it off." B. Carpenter, Internet Engineering Task Force, *Architectural Principles of the Internet*, RFC 1958, at 3, § 2.4 (June 1996) (JA); *see also* Letter from Wireless Founders

Coalition for Innovation to Chairman Kevin Martin, WT Docket Nos. 06-150, 96-86, PS Docket No. 06-229, at 3 (June 7, 2007) (“What makes the wireline Internet so friendly from an entrepreneur’s perspective is its Openness. One does not have to ask Comcast or Time Warner Cable or even Verizon’s DSL division for permission to launch a new product, service, or device. To borrow the Nike slogan, you can ‘just do it.’”). As an example, Tim Berners-Lee was able to invent the World Wide Web—a system of interlinked hypertext documents accessible over the Internet—nearly two decades after engineers developed the Internet’s original protocols, without needing changes to those protocols or to obtain any approval from network operators.¹

Second, the Internet was built to be “application-blind.” The technical idea has always been that network nodes supporting the flow of traffic are generally agnostic to the substance, functionality, and content of that traffic. This is by design. To allow the Internet to be open to new applications in the future, the network was designed to be as general as possible—the network was not to provide any application-specific functionality.² In line with this principle, the devices that enabled connectivity did not “look inside” the information that was sent across the Internet—they were just supposed to look at the information’s forwarding address

¹ See Tim Berners-Lee, *Weaving the Web: The Original Design and Ultimate Destiny of the World Wide Web* 16 (1st ed. 2000) (JA).

² Barbara van Schewick, *Internet Architecture and Innovation*, 67-75 (1st ed. 2010).

and send it along. That design effectively rendered the network agnostic to applications and content at the network “edge.”³ See Carpenter, *supra*, at 2, § 2.3 (“The network’s job is to transmit datagrams as efficiently and flexibly as possible. Everything else should be done at the fringes.”) (JA). And since early Internet providers couldn’t distinguish among the applications passing through their pipes, they were unable to single out specific applications for special treatment, such as blocking or discrimination.

Third, the network itself was built as a general purpose resource, equally available to all. This has cultivated an ecosystem in which anyone can build upon the existing infrastructure, experiment, and innovate in applications and content. This open ecosystem to an explosion in Internet software and services. In the 1990s, simple, affordable, and ubiquitous dial-up infrastructure and access drove an enormous array of applications and services, including e-mail, Web services, instant messaging, and similar interactive services.⁴ Simply put, the Internet would

³ See, e.g. J.H. Saltzer et al., *End to End Arguments in System Design*, Second Int’l Conf. on Distributed Computing Systems, 509-12 (1981)(JA); Carpenter, *supra*, at 1-8 (JA); J. Kempf & R. Austein, IETF, *The Rise of the Middle and the Future of End-to-End: Reflections on the Evolution of the Internet Architecture*, RFC 3724, 1-14 (March 2004) (JA); Google Comments at 13 GN Docket No. 09-191 (Jan 14, 2010)(JA); van Schewick, *supra*, at 72-74.

⁴ See Google Reply App. A at n. 39 (April 26, 2010) (citing Shane Greenstein, *Glimmers and Signs of Innovative Health in the Commercial Internet*, 8 J. Telecomm. & High Tech. L. 25, 30-31 (2010) (JA))

not resemble anything remotely like the breathtaking economic phenomenon that it has become, had it been a closed and controlled system.

The Internet's openness has been critical to its unparalleled success.⁵ Its technological environment has enabled robust competition among many thousands of Internet application developers and content providers offering increasingly sophisticated software and content. No longer did consumers have to settle for simple static HTML pages cobbled crudely to a database. Rather, as content providers and software developers showed users what was possible with the network, users' expectations of the network grew. Once consumers were shown that they could expect to access high-resolution film or computationally complex enterprise software over the Internet, they demanded the bigger and better "pipes" required for these offerings. In response to this consumer demand, infrastructure providers invested in and developed faster and more ubiquitous networks.

For example, the increasing availability of multimedia applications on the World Wide Web during the 1990s drove demand for residential broadband services. This, in turn, drove Internet service providers to invest in new network infrastructure, modem technologies, and network protocols, and to market broadband to residential customers.⁶ By the late 1990s, a residential end user

⁵ *Notice of Proposed Rulemaking, Open Internet*, 24 FCC Rcd. 13065, 13069-71, ¶¶ 3, 17-23(2009) (JA).

⁶ *See, e.g.* Chetan Sharma, *Managing Growth and Profits in the Yottabyte Era*

could download content at speeds not achievable even on the Internet backbone during the 1980s.⁷ Higher speeds and broadband's "always on" capability stimulated innovation in applications and content, which encouraged broadband providers to increase network speeds even further.⁸ Similarly, the development of streaming video and e-commerce applications, and consumer demand for those applications, were responsible for major network improvements, such as fiber to the premises, VDSL, and DOCSIS 3.0.⁹ As an example, VDSL (Very-high-bit-rate Digital Subscriber Line) provides data transmission speeds of up to 85 Mbit/second downstream and upstream. That is over 1,000 times faster than the average download speeds of dial-up Internet.

Notably, without such market forces driving infrastructure investment, historical evidence indicates that network providers would be slow to innovate or upgrade their networks. For example, telephone companies were sluggish to deploy DSL because it would "cannibalize" T1 connectivity services. *See e.g., Telephone Company-Cable Television Cross-Ownership Rules, Sections 63.54-*

(2009), available at <http://www.chetansharma.com/yottabyteera.htm>.

⁷ *See, e.g.,* Susan Harris & Elise Gerich, *Retiring the NSFNET Backbone Service: Chronicling the End of an Era*, 10 *ConneXions* 4 (April 1996), available at http://merit.edu/research/nsfnet_article.php. (JA).

⁸ Link Hoewing, *Twitter, Broadband and Innovation*, PolicyBlog, Dec. 4, 2010, policyblog.verizon.com/BlogPost/626/TwitterBroadbandandInnovation.aspx.

⁹ *See, e.g.,* Comcast at 2, 8 (Jan. 2010) (JA); MetroPCS Comments at 16 (October 12, 2010) (JA); SONY Comments at 5 (Jan. 14, 2010) (JA); Qwest Comments, Factual Record Appendix at 6-10 (Jan. 14, 2010) (JA); Bright House Networks PN Comments at 7 (Oct. 12, 2010) (JA).

63.58, Second Report and Order, Recommendation to Congress, and Second Further Notice of Proposed Rulemaking, 7 FCC Rcd. 5781, n. 50 (1992) (JA). Accordingly, the staggering array of applications and content enabled by an open Internet has, historically, directly and indirectly driven investment in network infrastructure.¹⁰

B. The Open Internet Is Now Threatened.

Appellants acknowledge most of the past history. But they draw a different lesson from it. They interpret the history as proof that the system “ain’t broke.” That the Internet has thrived without government intervention, they argue, proves that government intervention is unnecessary. But petitioners’ it-ain’t-broke position ignores the reality that the times are a-changin’. The providers of Internet service are very different from what they once were and consumers are using the Internet in new and different ways. Because of these changes, the businesses that deliver the Internet to consumers today (the broadband providers) now have unprecedented incentives to limit and control which parts of the Internet they deliver. New technology has made it possible for broadband providers to act on those incentives—and they have already begun to exploit their newfound capabilities. For these reasons, the Commission’s Order is now necessary to allow

¹⁰ See Patrick S. Brogan, *The Economic Benefits of Broadband and Information Technology*, 18 *Media & Pol’y* 65, 74 (2009).

the Internet to continue to be the dynamic engine of economic growth that it has become.

1. The Identities Of The Internet Providers Have Changed.

During the first decade of the public Internet, dial-up was the primary form of consumer Internet access. Companies such as America Online, CompuServe, and Prodigy provided access to the Internet over telephone companies' phone lines. There were several of these Internet service provider companies, and they operated independently from the telephone companies or the cable companies.

As broadband has replaced dial-up, however, telephone and cable companies themselves have become the major providers of Internet access service. Specifically, the 19 largest providers of broadband Internet access service in the United States are all cable and telephone companies.¹¹ Those 19 providers account for approximately 93% of all broadband subscribers.¹² There is now less competition between Internet providers than there was before.

2. What People Use The Internet For Has Changed.

The improved quality of Internet audio and video has led to significant increases in consumer use of those features. For example, an April 2009 Nielson

¹¹ See Press Release, Leichtman Research Group, Under 350,000 add Broadband in the Second Quarter of 2010: Top Telephone Companies Report a Cumulative Net Loss of Broadband Subscribers (Aug. 11, 2010), *available at* <http://www.leichtmanresearch.com/press/081110release.html> (JA).

¹² *Id.*

report found that: (1) the number of American users frequenting online video destinations has more than quadrupled since 2003; (2) time spent on video sites has increased almost 20 times over the same period; and (3) from April 2008 to April 2009, unique viewers of online video grew 10 percent, the number of streams grew 41 percent, the streams per user grew 27 percent, and the total minutes engaged with online video grew 71 percent.¹³ Internet video traffic made up 51% of all consumer Internet traffic in 2011.¹⁴ Similarly, consumers are increasingly using the Internet as their telephone.¹⁵ For example, in 2009, in the midst of a recession, Internet voice services projected a revenue *growth* of 20.1 percent.¹⁶ As another example, Skype is now “the largest provider of cross-border communications in the world, by far.”¹⁷

¹³ Nielson, *The Global Online Media Landscape: Identifying Opportunities in a Challenging Market*, 6-7 (Apr. 2009).

¹⁴ See Cisco *Visual Networking Index: Forecast and Methodology, 2011-2016* (May 30, 2012), available at http://www.cisco.com/en/US/solutions/collateral/ns341/ns525/ns537/ns705/ns827/white_paper_c11-481360_ns827_Networking_Solutions_White_Paper.html,

¹⁵ *Tel. Number Requirements for IP-Enabled Servs. Providers*, Report and Order, Declaratory Ruling, Order on Remand, and NPRM, 22 FCC Rcd 19531, 19547, para. 28 (2007).

¹⁶ See Roy Mark, *VOIP Growth Remains Strong Despite Recession*, EWEEK, Mar. 30, 2009, available at <http://www.eweek.com/c/a/VOIP-and-Telephony/VOIP-Growth-Remains-Strong-Despite-Recession-207028/>.

¹⁷ PriMetrica, Inc., Executive Summary to TeleGeography Report 3 (2009) (JA).

3. Broadband Providers Have New Incentives To Interfere With Edge Providers.

Today, the companies that supply our Internet are cable and telephone companies such as Comcast, Time Warner, Verizon, and AT&T. These companies are the same companies that we are replacing when we use the Internet for our video-viewing and telephonic needs.¹⁸ The conflict of interest is stark and irresistible. A consumer who shuns her Time Warner subscription to watch a movie on Netflix or a TV show on Hulu is hurting Time Warner's bottom line. A consumer who shuns her AT&T landline or Verizon wireless line to Skype her mother is hurting AT&T's and Verizon's bottom lines. These companies thus have a clear financial motivation to interfere with consumers' use of Internet services, such as Netflix, Hulu, and Skype.

In the video context, the competition between providers of broadband Internet access and providers of online video is especially clear. As shown in Figure 1, below, the major providers of broadband Internet access also offer *both* paid television offerings *and* online video services.

¹⁸ See Michael D. Pelcovits and Daniel E. Haar, MICRA, *Consumer Benefits from Cable-Telco Competition* 15-16, 21 (2007) (JA); PriMetrica, Inc., *supra*, at 6-8 (JA) (“[I]t’s difficult not to conclude that at least some of Skype’s growth is coming at the expense of traditional carriers.”).

Figure 1: Survey of Online Video Services Offered by Pay-TV Companies¹⁹

Pay-TV Company	Online Video Service	Vertically Integrated Broadband Providers
AT&T U-Verse	AT&T Entertainment	√
Cablevision	PC to TV Media Relay	√
Comcast	Fancast Xfinity	√
Time Warner Cable	Twondemand	√
Verizon	FiOS TV Online	√

Third-party providers of online video pose a threat to these offerings. In fact, the broadband providers themselves have acknowledged that third-party providers of online video programming are a competitive threat.²⁰ They publicly fret about “cord cutting where people, particularly young people, are saying all I need is broadband, I don’t need video.” *Annual Assessment of the Status of Competition in the Market for the Delivery of Video Programming*, Supplemental Notice of Inquiry, 24 FCC RCD 4401, 4417 n. 82 (2009) (recounting statement of

¹⁹ See DISH Reply Comments at 7 (Apr. 26, 2010) (JA).

²⁰ See, e.g. AT&T PM Comments at 55-56 and 56, n. 114 (Oct. 12, 2010) (noting that Hulu, YouTube, and other applications “compete” with their video services); TWC, *Caution Concerning Forward-Looking Statements* (Aug. 2010) www.timewarnercable.com/Corporate/investor_relations/caution_forward_statements.html (“companies that deliver programming over broadband Internet connections” identified as a source of “increased competition”) (JA); DirecTV, Inc. SEC Form 10-K, filed Feb. 26, 2010, at 10-11 (stating that “[w]e face substantial competition in the MVPD industry from emerging digital media distribution providers” and listing Hulu, Apple, AOL, Amazon, and Netflix among its “Video via the Internet” competitors) (JA).

TimeWarner Cable President and CEO Glenn Britt) (JA). Thus, they necessarily have incentives to interfere with the operation of third-party (“edge”) providers of online video content, such as DISH Network, DIRECTV, Hulu, YouTube, Amazon, and Netflix.

Broadband providers also have other incentives to interfere with edge providers. For example, broadband providers may be motivated to exclude certain popular Internet services from their “basic” Internet packages in order to force consumers to pay more for the ability to use certain Internet applications.²¹ For example, Comcast, might tell its customers that they must pay an additional fee to be able to access Hulu or YouTube.

Providers may also be motivated to discriminate against certain applications to manage bandwidth on their network. Rather than finding better, application-agnostic ways to manage or develop bandwidth, broadband providers that are not held to network neutrality standards may choose to allocate less bandwidth to certain applications. In the case of applications like streaming video, such a limited allocation could significantly degrade the quality of the service.²² If an application is singled out for discriminatory network management, then its users will not be able to use the application during times of congestion, or will choose to use other applications that are not affected. This puts the affected application at a

²¹ van Schewick, *supra*, at 275-78.

²² *Id.* at 264-66.

disadvantage with respect to other applications. Finally, providers may be motivated for social or political reasons to block unwanted content from passing through their pipes.²³

4. Broadband Providers Have New Tools To Interfere With Edge Providers.

Broadband providers would have the incentive to interfere with edge providers even if it were hard to do. But technological developments have made it exceedingly easy. The simplest way for a broadband provider to interfere with an edge provider is to block or slow the packets that the edge provider sends to consumers.²⁴ For example, Comcast, a broadband provider that also provides online video services, could interfere with the packets sent by Netflix, which delivers online video content over the Internet. Consumers trying to access videos on Netflix would be unable to do so, or would have a bad experience with Netflix, because its video delivery would be slow. Those consumers would then be more likely to use Comcast for their online video viewing.

²³ *Id.* at 266-70.

²⁴ See Jerry Hausman et al., *Residential Demand for Broadband Telecommunications and Consumer Access to Unaffiliated Internet Content Providers*, 18 Yale J. on Reg. 129, 158 (2001) (“an integrated provider could engage in content discrimination. . . . [I]nsulating its own affiliated content from competition by blocking or degrading the quality of outside content. Content discrimination could involve a range of strategies, from blocking outside content entirely, to affording affiliated content preferential caching treatment.”)

In the early days of the Internet, network providers were not able to interfere with edge providers in this way. This is because, as stated above, the Internet was built to be application-blind, and the network nodes that routed Internet traffic were not built to analyze the traffic that they were routing. Now, however, broadband providers have acquired specialized tools to identify packets against which the broadband providers would like to discriminate. Deep Packet Inspection (“DPI”) is a technology that allows broadband providers to look at the packets that pass along their networks in order to determine what applications they are associated with.²⁵ Specifically, DPI “allow[s] highly accurate identification of network traffic such as BitTorrent, YouTube, Skype, and others.”²⁶ Several companies, including Packeteer/Bluecoat, Packetlogic, and Arbor Networks, offer DPI products.²⁷ And broadband providers purchase those products.²⁸ In the words of one commentator:²⁹

[W]hen major ISPs deploy these products in their networks, they suddenly know a whole lot more about their users and their traffic. They also gain the ability to block, shape, monitor, and prioritize that traffic—in any direction. That makes it suddenly simple to, say, prioritize all incoming traffic from any web site that has

²⁵ See Google Comments at 32 (Jan 14, 2010) (JA).

²⁶ *Id.* at 33 n. 103.

²⁷ *Id.* at 33.

²⁸ *Id.* at 33 ns. 102, 103.

²⁹ Nate Anderson, *Deep Packet Inspection Meets ‘Net neutrality, CALEA*, Jul. 26, 2007, available at <http://arstechnica.com/hardware/news/2007/07/Deep-packet-inspection-meets-net-neutrality.ars>.

handed over a briefcase stuffed with unmarked bills while leaving every other site to fight its way through the tubes as best it can. It also becomes trivial to start blocking or actively degrading services that a company dislikes—like VoIP, for example.

Indeed, in Cox Communications' ("Cox") Comments to the NPRM, Cox admitted that, in 2009, Cox acquired the capability to identify packets associated with: (1) online video streaming; and (2) VoIP (Voice over IP, telephone calls made over the Internet), in order to treat those packets differently from others. Cox Communications Comments at 20-30 (Jan. 14, 2010) (JA). Cox further admitted that Cox has made use of this technology. *Id.*

5. Broadband Providers Have Acted To Limit Openness.

This problem isn't hypothetical. Broadband providers have in fact used their unique and powerful position to block the services of competing edge providers or Web sites that they find objectionable. For example, in 2005, a broadband provider that was a subsidiary of a telephone company was accused of blocking Internet ports used for competing VoIP applications.³⁰ That broadband provider paid \$15,000 to settle the Commission's investigation.³¹ Similarly, AT&T has limited consumers' access to VoIP applications over its 3G mobile wireless

³⁰ See *Madison River Communications, LLC and affiliated companies*, File No. EB-05-IH-0110; Acct. No.; FRN: 0004334082, Consent Decree, 20 FCC Rcd. 4295 (EB 2005) (*Madison River Consent Decree*) (JA).

³¹ *Id.*

network.³² And in 2008, the Commission found that Comcast had disrupted certain peer-to-peer uploads of its subscribers without a reasonable network management justification and without disclosing its actions.³³ A 2008 study by the Max Planck Institute revealed that network providers, such as Comcast and Cox, had been involved in significant blocking of BitTorrent applications in the United States.³⁴ Finally, in 2005, a Canadian Internet Service Provider blocked its Internet subscribers from accessing a Web site that supported a union that was on strike against that provider.³⁵ For every example that has been exposed, there undoubtedly are countless other abuses that have escaped detection.

³² DISH PN Reply at 7 (Nov. 4, 2010) (“In reality, it took nine months of regulatory scrutiny and pressure from the public and DISH for AT&T to ‘work with’ DISH so that AT&T subscribers could access their Slingbox offerings over the wireless network. Other third-party application providers have experienced similar restrictions. VoIP operators such as Skype have faced significant difficulty in gaining access across wireless Internet connections.”)(JA).

³³ See *Comcast Network Management Practices Order*, 23 FCC Rcd. 13028, 13028, 13055–56, paras. 1, 47–48 (2008) (*Comcast Order*); see also Comcast Corporation, Description of Current Network Management Practices, downloads.comcast.net/docs/Attachment_A_Current_Practices.pdf. (JA)

³⁴ See generally Marcel Dischinger et al, *Detecting BitTorrent Blocking*, INC’08 (October 20-22, 2008) available at <http://www.mpi-sws.org/~mdischin/#research>. (JA); see also Marcel Dischinger et al, *Glasnost: Results from Tests for BitTorrent Traffic Blocking*, NSDI, April 2010, available at <http://www.mpi-sws.org/~mdischin/#research>. (JA).

³⁵ See, e.g., *Telus Cuts Subscriber Access To Pro-Union Website*, CBCNEWS, JULY 24, 2005, available at <http://www.cbc.ca/news/canada/story/2005/07/24/telus-sites050724.html>.

6. Competition Among Broadband Providers Does Not Alleviate The Dangers.

The broadband providers argue that competition between broadband providers will keep those providers from engaging in practices that hurt consumers. *See, e.g.*, Charter Comments at 6-7 (Oct. 12, 2010) (JA). They argue that a consumer who consistently experienced a bad connection to Netflix would switch to another broadband provider. This argument fails for several reasons. First, it assumes that the consumer *knows* that the broadband provider is at fault for her problems with Netflix. Second, it assumes that the consumer would prefer to undertake the onerous task of switching network providers, instead of simply trying a different video Web site. Third, and perhaps most important, it assumes that another broadband provider would offer the consumer an Internet service that did not interfere with Netflix. This assumes a level of competition among broadband providers that simply does not exist.

Most residential end users today have only one or two choices for wireline broadband Internet access service.³⁶ As of December 2009, nearly 70 percent of

³⁶ *See, e.g.*, Wireline Competition Bureau, FCC, *Internet Access Services: Status as of December 31, 2009* at 49, tbl. 24 (Dec. 2010), available at http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-303405A1.pdf (JA); FCC, National Broadband Plan at 37; Google Comments at 19-20 (Jan. 14, 2010) (JA); IFTA Comments at 10-11 (Jan. 2010), Netflix Comments at 5 (Jan. 2010); Vonage Comments at 7-8 (JA); Broadband Institute of California (BBIC) Reply at 21 (Apr. 2010); Google Reply at 3-7 (JA), IPI Reply at 14 (Jan. 2010); OIC Reply at 14-15 (Apr. 26, 2010).

households lived in census tracts where only one or two wireline or fixed wireless firms provided advertised download speeds of at least 3 MBPS.³⁷ For Internet service with advertised download speeds of at least 10 MBPS, nearly 60 percent of households lived in census tracts served by only one wireline or fixed wireless broadband provider.³⁸ These numbers are not likely to change any time soon, as the fundamental economics of broadband networks include extremely high barriers to entry.³⁹

Competition does not solve the problem that has arisen here.⁴⁰ The Commission needed to take action, and properly did so, in order to preserve the cycle of growth and investment that the free and open Internet has created.

C. The Commission's Order Is Proper Because The Order Removes Barriers To Infrastructure Investment.

As the Commission explains in the Order and in its appeal brief, section 706 of the 1996 Telecommunications Act directs the Commission to remove barriers to infrastructure investment. *See* 47 U.S.C. § 1302. The Order is proper because it removes such barriers by ensuring that the same expansion of Internet applications

³⁷ *See* FCC Internet States Report at 7, fig. 3(a).

³⁸ *Id.*

³⁹ Google Comments at 18-19 (JA).

⁴⁰ *See* Ad Hoc Telecommunications Users Comments at 7-8 (Jan. 14, 2010) (“[T]he notion that there are ‘competitive marketplace forces’ sufficient to force monopoly or duopoly incumbents to operate in a non-discriminatory and competitively neutral manner is not borne out by marketplace realities.”) (JA).

and services that has driven infrastructure investment in the past will continue into the future.

The open Internet encourages entrepreneurship and innovation by “edge” providers that offer Internet applications and services.⁴¹ This point is not disputed. The staggering array of content, applications and online services enabled by the open Internet, as it has existed to date, is incontrovertible.⁴² As one economist put it:

[The Internet’s] open and public standards and the fact that no one has had to ask permission from network operators to innovate have resulted in rapid innovation that contributed to one of the greatest periods of economic growth in history, unprecedented access to information, and fostered amazing creative interactions.

The Internet’s tremendous success has also been based on harnessing and benefiting from network effects. The Internet exhibits network effects because each user’s value from connecting to the Internet increases as more computers and users are added to the network.

Google Comments, App. A at 1 (Jan. 2010) (Nicholas Economides, Why Imposing New Tolls on Third-Party Content and Applications Threatens Innovation and Will Not Improve Broadband Providers’ Investment (Jan. 2010)) (JA).

⁴¹ See Joseph Farrell & Philip J. Weiser, *Modularity, Vertical Integration, and Open Access Policies: Toward a Convergence of Antitrust and Regulation in the Internet Age*, 17 Harv. J. L. & Tech. 85, 95 (2003).

⁴² See Order, FCC 10-201 at pp. 8-11 (JA).

As explained above, and as noted by a wide array of industry leaders, venture capitalists, and public interest groups, network neutrality promotes entrepreneurship and innovation by edge providers, because those edge providers are more likely to develop new technologies when they know that a broadband provider will not be able to selectively block those technologies. *See, e.g.*, Google Comments at 12 (Jan. 14, 2010) (“Entrepreneurs will not make steep economic investments without assurances that broadband network providers will not stymie their likelihood of achieving commercial success.”) (JA);⁴³ *see also* Barbara van Schewick, *Opening Statement at the Federal Communications Commission's Workshop on Innovation, Investment and the Open Internet*, Federal Communications Commission (2010), *available at* <http://fjallfoss.fcc.gov/ecfs/document/view?id=7020382126>. Indeed, the threat of

⁴³ *See, e.g.*, Free Press Comments at 10 (Jan. 14, 2010); PIC Comments at 28, Jan 14, 2010; Statement of Ron Conway, founder of SV Angel (Dec. 1, 2010) (JA); Statement of Craig Newmark, founder of craigslist (Dec. 1, 2010) (JA); Dec. 8, 2010 letter from Jeremy Liew, Managing Director, Lightspeed Venture Partners to Julius Genachowski, FCC Chairman (JA); Dec. 1, 2010 letter from Jed Katz, Managing Director, Javelin Venture Partners to Julius Genachowski, FCC Chairman) (JA); Statement of Ram Shriram, founder of Sherpalo Ventures (Dec. 1, 2010) (JA), Statement of John Doerr, Kleiner Perkins Caufield & Byers (Dec. 1, 2010) (JA); Statement of CALinnovates.org (Dec. 1, 2010) (JA), Statement of Larry Cohen, President of the Communications Workers of America (Dec. 1, 2010) (JA); Statement of Dean Garfield, President and CEO of the Information Technology Industry Council (Dec. 1, 2010) (JA); Statement of Gary Shapiro, President and CEO of the Consumer Electronics Association (Dec. 2, 2010) ((JA); Statement of Rey Ramsey, President and CEO of TechNet (Dec. 1, 2010) (JA); Statement of John Chambers, Chairman and CEO of Cisco (Dec. 1, 2010) (JA); XO Reply at 6 (Apr. 26, 2010) (JA).

discrimination that is posed by the current system—without network neutrality rules—is already harming application innovation. See Barbara van Schewick, , *Oral Testimony at the FCC’s Second Public En Banc Hearing on Broadband Network Management Practices* (Apr. 17, 2008), Dkt. No. 07-52 at 2 (telling the story of an innovative Stanford graduate with an online video start-up, who did not receive funding from venture capitalists because of the risk that network providers would block or degrade his application); Srinivasan, Venky & Vivek Gupta. Dec. 10, 2010, Ex Parte Letter to Federal Communications Commission. GN Docket No. 09-191(explaining that Zediva, an online DVD Rental company, is “directly affected by the lack of clarity around Open Internet rules”). Network neutrality, as enforced by the Commission’s Order, will restore the levels of innovation and entrepreneurship that made the Internet environment what it is today.

Entrepreneurship and innovation on the edge, in turn, drive investment in network infrastructure. This is because consumers’ demand for more bandwidth is driven by consumers’ demand for faster access to attractive services and content:

[C]onsumers don’t buy fat pipes; they buy applications and content that require fat pipes. As consumer demand for more bandwidth-intensive applications and content increases, so does the incentive for network owners to provide more bandwidth

Commissioner Robert M. McDowell, Address to the Broadband Policy Summit III, Arlington, VA, at 13-14 (June 7, 2007) (JA). Network providers competing for

customer demand in the open environment mandated by the Order will be incentivized to put further investment into infrastructure, in order to meet the consumers' expectations. This is not surprising. Economists have observed of many "general purpose technologies"—from steam engines to integrated circuits—that "the more [applications of such technology] and the larger their demands, the higher will be the level of investment" in the general purpose technology.⁴⁴

The Commission's Order enables this self-reinforcing cycle of investment and innovation in which new uses of the network lead to increased adoption of broadband, which drives investment and improvements in the network itself, which in turn lead to further innovative uses of the network and further investment in content, applications, services, and devices. *See, e.g.*, Skype Reply at 14 (Apr. 26, 2010) ("a virtuous cycle of innovation among all parts of the broadband ecosystem benefits consumers. Innovative software applications drive demand for broadband access, leading to greater deployment.") (JA); SONY Reply at 6 (Apr. 26, 2010) ("the availability of compelling content, applications and services has driven, and will continue to drive, demand for broadband") (JA); Google Comments at 5-8 (Jan. 14, 2010) ("In the current de facto environment of openness, broadband providers have continued to invest tens of billions of dollars in their networks.") (JA); MetroPCS Comments at 16 (Jan. 14, 2010) (the Internet "is the model of

⁴⁴ Timothy F. Bresnahan, et al., *General purpose technologies 'Engines of growth,'* 65 *Journal of Econometrics* 83-108, 94 (1995) (JA).

the virtuous cycle: innovators are creating content and application products that customers desire, which drives consumers to purchase from service and equipment providers, which in turn drives investment in infrastructure and new technology in response to consumer demand”)(JA); OIC Comments at 23-27 (Jan. 14, 2010) (discussing network effects) (JA).

Internet infrastructure providers *themselves* have repeatedly recognized that an open Internet encouraging greater content and applications drives their own investment in infrastructure. XO Communications observed that adoption of the proposed rules will increase XO’s incentive “to invest further in its broadband facilities.”⁴⁵ Broadband provider PAETEC stated that neutrality rules “more than likely has a positive effect” on “broadband network investment.”⁴⁶ Broadband companies supporting the Order “have committed to network investment even as they embrace openness.”⁴⁷

In the FCC’s ongoing National Broadband Plan (NBP) proceeding, broadband providers acknowledged that the *Internet Policy Statement* (enacted in 2005, espousing openness) has not deterred their incentives to make network investments.⁴⁸ When AT&T and SBC merged, when Verizon and MCI merged,

⁴⁵ XO Comments at 3-5(Jan. 14, 2010) (JA).

⁴⁶ PAETEC Comments at 21-22 (JA).

⁴⁷ Google Comments at 8 (Jan. 14, 2010) (JA).

⁴⁸ *See* Comments of Comcast at 2, GN Dkt. 09-51 (filed Jun. 8, 2009) (“[t]he cable industry alone has invested \$145 billion in broadband networks” since the mid-

and when AT&T and BellSouth merged, they had to make *commitments* to abide by the Internet Policy Statement.⁴⁹ There is no evidence that their investments declined during that period. To the contrary, evidence indicates that network providers invest more when regulations promote competition. For example, AT&T's overall network investment increased by \$1.8 billion in a single year after it consented to operate as a neutral network under the FCC imposed conditions relating to the BellSouth merger.⁵⁰ And at a conference in November of this year, AT&T announced plans to invest billions more in broadband infrastructure.⁵¹ In addition, many commentators have observed that open Internet rules will increase

1990s) (JA); Comments of AT&T at vii, n. 13, GN Dkt. 09-51 (filed Jun. 8, 2009) (“For its part, AT&T has invested \$38 billion over the past two years to enhance our wireline and wireless networks, and we plan to spend another \$17 to \$18 billion in 2009.”) (JA); Comments of Verizon at 18, GN Dkt. 09-51 (filed Jun. 8, 2009) (“Verizon has invested more in capital expenditures over the last several years—more than \$80 billion from 2004 through 2008—than any other company in the United States in any industry.”) (JA). Verizon also has announced that it is investing nearly \$19 billion in its wireless network and is ready to support anticipated wireless data growth. See Spencer E. Ante, *Verizon Wireless Prepares for the iPhone*, BUS. WK., Dec. 17, 2009, available at http://www.businessweek.com/technology/content/dec2009/tc20091217_788391.htm.

⁴⁹ See *AT&T-BellSouth Merger Order*, Appendix F; *SBC Communications Inc. and AT&T Corp. Applications for Approval of Transfer of Control*, Memorandum Opinion and Order, 20 FCC Rcd. 18290, Appendix F (2005) (“*AT&T-SBC Merger Order*”); *Verizon Communications Inc. and MCI, Inc. Applications for Approval of Transfer of Control*, Memorandum Opinion and Order, 20 FCC Rcd. 18433, Appendix G (2005) (“*Verizon-MCI Merger Order*”).

⁵⁰ See Google Comments, App. A at 14 (JA).

⁵¹ See *Laying a Foundation for Future Growth*, Presentation at AT&T Analyst Conference 2012 (Nov. 7, 2012), available at http://www.att.com/Common/about_us/files/pdf/analyst_presentation_c.pdf.

incentives to invest in network infrastructure by preserving the virtuous cycle of innovation.⁵²

The greater regulatory predictability enabled by the Order will, in itself, encourage investment in infrastructure and provide other benefits.⁵³ Even leading broadband providers have recognized that the rules would provide such certainty. For example, AT&T has recognized generally that open Internet rules “would reduce regulatory uncertainty, and should encourage investment and innovation in next generation broadband services and technologies.”⁵⁴ Similarly, Comcast

⁵² See, e.g., CCIA/CEA Comments at 7 (Jan 13, 2010) (“[C]odifying an open Internet access regime is the best solution for guiding existing market forces in a manner that encourages investment, innovation, and subscription.”) (JA); Free Press Comments at 77 (Jan 14, 2010) (JA); Google Comments at 5-8, 37-39 (Jan. 14, 2010) (JA); CDT Reply at 9 (April 26, 2010) (JA); SONY Reply at 5-6 (April 26, 2010) (JA).

⁵³ See Google Comments at 37 (JA). The FCC has long agreed that regulatory certainty is tied to investment. See, e.g., *1998 Biennial Regulatory Review Spectrum Aggregation Limits for Wireless Telecommunications Carriers*, Report and Order, 15 FCC Rcd. 9219, ¶ 51 (1999) (“[r]egulatory certainty is critical to providing the industry with incentives to make investments, including in new technologies such as 3G service.”) (JA).

⁵⁴ AT&T, *Statement on Proposed FCC Rules to Preserve an Open Internet*, AT&T Public Policy Blog (Dec. 1, 2010) (JA). In general, network infrastructure providers have repeatedly emphasized the value of regulatory certainty in driving their investment in infrastructure. See Comments of AT&T—NBP Public Notice #23 at 1-2, GN Dkt. 09-51 (filed Dec. 4, 2009) (“broadband providers are investing billions to expand their networks and to bring fast, reliable broadband service to American households. ... the Commission should facilitate those efforts by providing regulatory certainty and stability.”) (JA); *Cable Executive Continue to Hit 9th Circuit Decision on Modems*, Commc’n Daily (Dec. 5, 2003) (“Investment follows regulatory certainty” (quoting Terry Bienstock, Executive Vice President, Government Affairs, Comcast)); Comments of NCTA at 14, WC Dkt. 09-154

acknowledged that the proposed rules would strike “a workable balance between the needs of the marketplace and the certainty that carefully-crafted and limited rules can provide to ensure that Internet freedom and openness are preserved.”⁵⁵

Prior to the Order, network providers “may have [had] the ability and incentive to exclude rival content, applications or portals from its network.”⁵⁶ As discussed, allowing network providers to discriminate this way would discourage entrepreneurship and innovation by edge providers, because they will be uncertain as to whether their innovations will ever reach the end user. This, in turn, would reduce the amount of new applications, content and services compared to a world

(filed Sept. 24, 2009) (regulatory certainty “drives broadband investment and provides customers more meaningful choices among providers.”) (JA); *See also* John Eggerton, *Cohen: Clear Internet Rules Would be Better than Confusion*, *Broadcasting & Cable* (Jan. 11, 2010), *available at* http://www.broadcastingcable.com/article/443396-Cohen_Clear_Internet_Rules_Would_Be_Better_Than_Confusion.php

⁵⁵ David L. Cohen, *FCC Proposes Rules to Preserve an Open Internet*, *Comcast Voices* (Dec. 1, 2010) *available at* <http://blog.comcast.com/2010/12/fcc-proposes-rules-to-preserve-an-open-internet.html>.

⁵⁶ Barbara van Schewick, *Toward an Economic Framework for Network Neutrality Regulation*, 5 *J. On Telecomm. & High Tech. L.* 329, 370 (2007); *see also* Joseph Farrell, *Open Access Arguments: Why Confidence is Misplaced*, in *Net Neutrality or Net Neutering: Should Broadband Internet Services Be Regulated* 195 (Thomas M. Lenard & Randolph J. May eds., 2006) (recognizing the incentives of network operators to discriminate against unaffiliated applications and content); *see also* DISH Comments at 2, Oct. 12, 2010 (JA); Google Comments at 35 (Jan. 14, 2010) (JA); The Ad Hoc Telecommunications Users Committee Comments at 8-99 (Jan. 14, 2010) (JA); ALA Comments at 2, Jan. 2010 (JA); Free Press Comments at 3-4, 22-23 (JA); IFTA Comments at 10-12, Jan. 14, 2010 (JA); Netflix Comments at 3, 5, Jan. 14, 2010 (JA); Skype Comments at 2, 10-11 (JA); Vonage Comments at 19 (Jan. 14, 2010); Google Reply at 16-17 (Apr. 26, 2010) (JA); Vonage Reply at 4 (Apr. 26, 2010) (JA).

with network neutrality rules, making the Internet less attractive to consumers. Lower demand for Internet services would reduce incentives for network providers to invest in infrastructure.⁵⁷

Indeed, if network providers were permitted to charge premium rates for “prioritized” traffic and to discriminate against services that compete with the network providers’ own services, there would be disincentives for network providers to further invest in infrastructure. Economic analysis of this situation suggests that “the ISP’s incentive to invest on capacity under a discriminatory network is smaller than under a neutral regime” and “content providers’ investment incentives can be higher under the net neutrality regime.”⁵⁸ As one economist put it, “if broadband providers are allowed to charge content providers for prioritized access, they will have incentives to *reduce* investments in their networks” for two reasons: (1) there would be incentives for the networks to create artificial “congestion” enabling higher rates for prioritized access; and (2) networks would divert resources from improving the network to monitoring traffic.⁵⁹

In other words, without the Order, there is a significant risk that investment in infrastructure would be restrained, resulting in technological stagnation,

⁵⁷ See e.g. Order, FCC 10-201 at pp. 11-27 (JA).

⁵⁸ Jay Pil Choi & Byung-Cheol Kim, *Net Neutrality and Investment Incentives*, 41 RAND J. OF ECON. 3 448, 464-65 (Autumn 2010) (broadband providers have an incentive to limit capacity in order to charge a greater premium for priority service) (JA).

⁵⁹ Google Comments, App. A at 12-14 (April 26, 2010) (JA).

reduction in incentives to innovate, reduction in consumer offerings and a fundamental change in the nature of the Internet, harming the public's interest in that critical public resource.

CONCLUSION

For the foregoing reasons, this Court should uphold the Order.

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CERTIFICATE OF COMPLIANCE

Pursuant to Rule 32(a)(7)(C) of the Federal Rules of Appellate Procedure, I certify the following:

This brief complies with the type-volume limitations of Fed. R. App. P. 29(d) because it contains 6972 words, excluding the parts of the brief exempted by Fed. R. App. P. 32(a)(7)(B)(iii) and D.C. Circuit Rule 32(a)(1).

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CERTIFICATE OF SERVICE

I hereby certify that on this 15th day of November, 2012, a true and correct copy of the foregoing instrument was filed with the Clerk of the United States Court of Appeals for the D.C. Circuit via the Court's CM/ECF system, which will send notice of such filing to all counsel who are registered CM/ECF users. Others, marked with an asterisk, will receive service by mail unless another attorney for the same party is receiving service through CM/ECF.

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