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**Before the
Federal Communications Commission
Washington, D.C. 20554**

In the Matter of)
)
Restoring Internet Freedom) WC Docket No. 17-108

Comments of ITIF

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I. INTRODUCTION AND SUMMARY

The Information Technology and Innovation Foundation (“ITIF”)¹ has long been interested in appropriate methods to promote the Open Internet and welcomes this opportunity to comment in the above captioned proceeding.² As early as 2006 ITIF recommended a “third-way” solution to the network neutrality debate, allowing for case-by-case analysis of acceptable traffic prioritization.³ At its core, our “third way” framework was grounded in the notion that the Internet has never been “neutral” and that discrimination can be pro-innovation and pro-consumer or anti-innovation and anti-consumer. Broad dictates like “all prioritization should be banned” or “all prioritization should be allowed” are not helpful to achieving the kind of Internet that will be central to driving to innovation and consumer welfare in the decades ahead.

¹ The Information Technology and Innovation Foundation (ITIF) is a non-partisan research and educational institute – a think tank – whose mission is to formulate and promote public policies to advance technological innovation and productivity internationally, in Washington, and in the states. Recognizing the vital role of technology in ensuring prosperity, ITIF focuses on innovation, productivity, and digital economy issues.

² *Restoring Internet Freedom*, WC Docket No. 17-108 (May, 2017) Notice of Proposed Rulemaking https://apps.fcc.gov/edocs_public/attachmatch/FCC-17-60A1_Rcd.pdf (NPRM).

³ Robert D. Atkinson and Philip J. Weiser, “A ‘Third Way’ on Network Neutrality” May, 2006, <http://www.itif.org/files/netneutrality.pdf>.

The Commission proposes to reclassify broadband Internet access service as an information service under Title I of the Communications Act and reinstate mobile broadband service as a private mobile service.⁴ These efforts are laudable—broadband Internet access should be treated with light-touch regulatory oversight as these markets grow increasingly competitive. The Commission should follow through on these aspects of the proposal.

The proposal, however, appears to take a skeptical stance as to whether it has any authority over broadband whatsoever. While there is a colorable legal argument that Congress has not yet given the Commission express jurisdiction over broadband explored in the proposal, the *Verizon* decision has made clear that section 706 gives the Federal Communications Commission (FCC) a defensible claim to an affirmative grant of authority to make rules more than sufficient to protect and promote the openness of the Internet. Working to put guardrails on the virtuous cycle theory, bringing clarity and predictability to an antitrust-informed, case-by-case approach can allow for those pro-consumer, pro-competition deals to go forward on an individually negotiated basis while also protecting the openness of the Internet. This is the superior policy choice compared to abdicating authority to antitrust authorities.

II. BROADBAND INTERNET ACCESS SHOULD NOT BE REGULATED AS A PUBLIC UTILITY

Broadband Internet access services should not be regulated as a telecommunications service under Title II of the Communications Act, and ITIF applauds the Commission's proposal to reclassify broadband as a Title I information service.⁵ Common carriage regulation is not necessary to see a flourishing and open Internet, despite the attempts by advocates to conflate the two. While a strong form of net neutrality regulation may be tantamount to imposing common carriage, this strong form has not been necessary and will not be necessary in the future to ensure an open Internet. This is evident as empirical fact—for decades prior to the 2015 Title II Order, the Internet ecosystem saw tremendous growth under a bipartisan light-touch regime.

A. Common Carrier Regulation is Inappropriate for Today's Dynamic Internet

The D.C. Circuit's *Verizon* decision and the 2014-2015 FCC proceeding classifying broadband Internet access service as a telecommunications service under Title II placed the question of the appropriateness of

⁴ NPRM at para. 25 - 55.

⁵ NPRM at para. 23.

common carriage regulation for broadband access front and center of communications policy debates.⁶ There has, of course, long been a line drawn between “basic services” that grew out what was historically understood to be a natural monopoly, and enhanced services that would be more lightly regulated.⁷ The FCC should follow through on its proposal to return broadband Internet access to the lightly regulated information service classification.

Full common carriage regulation of the type found in Title II is best reserved for explicit monopoly markets with little room for innovation—not dynamic services like Internet access provision. Common carriage, where used, has proven difficult to implement as well as enforce, risks dramatically reducing the incentive to economize on costs or to innovate new technologies or business models and inevitably raises barriers to entry. In short, this is not a route we should want to go down for regulating Internet access, and the Commission is right to correct this error of the Open Internet Order.

In his paper, “Is There a Role for Common Carriage in an Internet-Based World,” Christopher Yoo examines the large body of both theoretical and empirical work criticizing common carriage regimes and the challenge of determining for which industries it is appropriate.⁸ Examining common carriage in the context of early competitive access in telephone markets, detariffed business services, and VoIP services, Yoo makes a compelling case for avoiding application of common carriage regulation in the Internet realm.

Of course, in the Open Internet Order, then-Chairman Wheeler did forebear from a wide array of Title II common carriage provisions, and the existing net neutrality rules, while grounded in common carriage, are distinct from the power available to the Commission in the form of price regulation or open access

⁶ *Verizon v. FCC*, 740 F.3d 623 (D.C. Cir. 2014) (*Verizon*); *In the Matter of Protecting and Promoting the Open Internet*, WC Docket No. 14-28, Report and Order on Remand, Declaratory Ruling, and Order, 30 FCC Rcd 5601 (2015) (*Title II Order*).

⁷ See, e.g., *Federal-State Joint Board on Universal Service*, Report to Congress, 13 FCC Rcd 11501, 11536, para. 73 (1998).

⁸ Christopher Yoo, “Is There a Role for Common Carriage in an Internet-Based World?” 51 *Houston Law Review* 545, 2013.

requirements.⁹ While this forbearance in and of itself exposes Title II as a kludge of a legal mechanism for supporting open Internet rules, it also presents a dangerous slippery slope that the Commission should remove itself from. The Title II Order spoke of forbearance “for now,” clearly leaving the possibility that these legal tools, most of which were intended for a then-monopoly telephone network, could be applied in the future.

These more onerous regulations—price regulation and mandated sharing—would be difficult for a FCC to implement as a political matter. However, Title II opens the door that these may be applied to some extent at some point in the future. Considering how aspects of telecommunications policy have become markedly more political, and the partisan, populist roil that U.S. politics is currently experiencing, these fears are not wholly unfounded. As discussed below, the significant step in the direction of this much more onerous regime that Title II classification represents may well have depressed investment in the sort of long-term, sunk-cost infrastructure that supports the open Internet. The Commission is right to return to a lighter touch, but still effective, regulatory regime, even if legislation would provide more lasting certainty.

Common carriage has had a challenged history in the communications context, and the Commission should head off the slippery slope to further implementation of Title II.¹⁰ But what’s more, common carriage is not necessary to secure a continued open Internet as both a theoretical and empirical fact.

Common Carriage Regulation is Unnecessary to See a Flourishing Open Internet

The harms that net neutrality rules are intended to protect are generally overstated in popular discourse and unlikely to come to fruition even in the absence of rules, undermining the need for the strongest possible regulatory regime. To date there has been only one example of obviously anti-competitive conduct by broadband providers, which was quickly resolved despite the lack of a rigid regulatory structure in place at the time.¹¹ Every major broadband provider has made public commitments to support the open Internet.

⁹ *Title II Order*.

¹⁰ *See, e.g.,* Bruce M. Owen, “Antecedents to Net Neutrality,” *Regulation* Vol. 30, No. 3 (2007).

¹¹ Madison River Communications, LLC and affiliated companies, File No. EB-05-IH-0110, *Consent Decree*, https://apps.fcc.gov/edocs_public/attachmatch/DA-05-543A2.pdf.

Broadband providers should have little interest in stifling the fount of innovation and consumer benefit the open Internet provides, and likely no interest in blocking or degrading legitimate traffic.

It is the bounty of the open Internet that brings customers to broadband providers; the incredibly valuable innovations on the edge of the network drive demand for providers' broadband product. Undermining that edge innovation would be against their interest. This incentive for even monopolists to encourage innovation in adjacent markets is explored in the classic paper by Joseph Farrell and Philip J. Weiser, "Modularity, Vertical Integration, and Open Access Policies: Towards A Convergence of Antitrust and Regulation in the Internet Age."¹² This process, which Farrell and Weiser call "internalizing complementary efficiencies," generally sees platform operators wanting more innovation and diversity offered on their platforms. The theory has some important exceptions. Two of these are explored specifically in the net neutrality context by one of the authors: broadband providers may potentially deviate from the usual "powerful incentives for platform monopolists or oligopolists to support a wide array of applications" where (1) adjacent applications undermine a core service offered by the platform or (2) where the dynamics of price discrimination pushes platforms to a more closed system.¹³ Even considering these, writing in 2008, the author favored a "model that emphasizes after-the-fact judgments based on a legal standard rather than one that prescribes particular conduct before the fact."¹⁴ This reliance on ex-post, case-by-case analysis is even more justified today.

Much has changed in the last several years while the net neutrality debate continues along largely the same terms. We have come a long way since then SBC CEO Ed Whitacre proclaimed that "for a Google or Yahoo! or Vonage or anybody to expect to use these pipes [for] free is nuts!"¹⁵ Virtually everyone recognizes and agrees upon the importance of an open Internet as a technological platform for speech, innovation, and

¹² Joseph Farrell & Philip J. Weiser, "Modularity, Vertical Integration, and Open Access Policies: Towards A Convergence of Antitrust and Regulation in the Internet Age," 17 *Harvard Journal of Law & Technology* 85 (2003), available at <http://jolt.law.harvard.edu/articles/pdf/v17/17HarvJLTech085.pdf>.

¹³ Philip J. Weiser, "The Next Frontier for Network Neutrality," 60 *Administrative Law Review* 2 2008; U of Colorado Law Legal Studies Working Paper No. 08-05.

¹⁴ *Id* at 50.

¹⁵ Arshad Mohammed, "SBC Head Ignites Access Debate" *Washington Post* (Nov. 2005), <http://www.washingtonpost.com/wp-dyn/content/article/2005/11/03/AR2005110302211.html>.

commerce, including all major broadband providers and large incumbent edge providers. Any threats, merely perceived or legitimate, to that platform will be rooted out and exposed by the public and the media. It is especially difficult to today imagine a broadband provider truly blocking or degrading a service that directly competes with their core offerings—imagine the public outrage if a broadband provider blocked Netflix, for example. It would be a public relations disaster, and furthermore such an action would run afoul of a “commercially reasonable” standard discussed below, or would present a strong antitrust case.

Extensive two-sided price discrimination is also highly unlikely to develop. Rather, a two-sided market for enhanced broadband services will likely only emerge in those circumstances where true value would be created. For example, guaranteed end-to-end quality of service would certainly justify price discrimination, but would only make sense for applications that push the boundary of what networks are able to provide on a “best efforts” basis. Where that business model makes sense is likely far narrower than is imagined in popular discourse about net neutrality. Transaction costs for negotiating this type of agreement will limit its economic viability, regardless of net neutrality regulation or the lack thereof. The predominant broadband Internet access service is likely to remain a “best efforts” approach.

Given that the theoretical harms have not yet become manifest, despite years with little more than guiding principles, combined with the fact that the Commission now has D.C. Circuit-approved authority to police this area under section 706 (or, for that matter, the Title II sword of Damocles), resorting to the utility-style regime designed for the old monopoly telephone system is wildly imprudent. Imposing restrictive common carrier regulations would undoubtedly slow innovation, potentially requiring any company who falls under Title II’s expansive definitions to seek out permission before deploying beneficial new services.

Furthermore, more robust, faster broadband will continue to further reduce the need for stronger rules. The greater the available bandwidth, the less likely the network is to see congestion, and the less likely there will be a need for prioritization or otherwise differential treatment. The efforts by the Commission and others to lower the barriers to infrastructure investment will not only see more and better broadband, they will help further obviate the need for restrictive net neutrality rules.

Title II Classification Likely Hinders Infrastructure Investment

The question as to whether broadband capital investment is up or down after the 2015 Open Internet Order’s Title II designation has played a prominent role in public debates and the Commission’s proposal. Economic impact of any policy decisions is of course a nuanced and complicated inquiry, and any serious analysis would at least attempt to hold for several other variables constant and look only at what investment would have been if the policy had been different.

Many have weighed in on the issue, but the most distinct sides of this debate have been laid out by advocacy group Free Press on one side, and economist Hal Singer on the other. Free Press argues that aggregate broadband investment increased by 5.3 percent in 2015 and 2016 relative to 2013 and 2014, whereas Singer argues there was a 5.6 percent decline relative to 2014 levels.¹⁶ What is odd is that these two are using more or less the same financial data, over the same time period, but come to different results, yet one sees investment up after the Title II Order, and the other sees it down.

Whether investment is up or down after Title II classification doesn't necessarily tell us much about to what extent FCC policy is to thank (or blame) for those changes. Not only is the time period far too short, investment overall could very well be up, but not up as much as it otherwise would be without Title II (same if there was a decline). But these counterpoised, if simplistic, narratives are out there. Some stakeholders, most notably the Internet Association, have been relying on Free Press's figures for their own advocacy—it's worth clarifying the disagreement.¹⁷

Examining both Singer and Free Press's data carefully, and taking minor steps to control for slight variations in the data sets, the differences become clear.¹⁸ Singer, in his analysis, controlled for three of the most obvious external factors that have nothing to do with Title II that should be subtracted from Free Press's figures: (1)

¹⁶ S. Derek Turner, "It's Working: How the Internet Access and Online Video Markets are Thriving in the Title II Era," *Free Press* (May 2017), <https://www.freepress.net/sites/default/files/resources/internet-access-and-online-video-markets-are-thriving-in-title-ii-era.pdf>; Hal Singer, "2016 Broadband Capex Survey: Tracking Investment in the Title II Era," *Hal Singer* (March, 2017), <https://haljsinger.wordpress.com/2017/03/01/2016-broadband-capex-survey-tracking-investment-in-the-title-ii-era/>.

¹⁷ Internet Association, "Preliminary Net Neutrality Investment Findings," <https://internetassociation.org/wp-content/uploads/2017/05/InternetAssociation-NetNeutrality-Facts.pdf>.

¹⁸ See Doug Brake, "Broadband Myth Series, Part 1: What Financial Data Shows About the Impact of Title II on ISP Investment," *Innovation Files* (June 2017), <https://itif.org/publications/2017/06/02/broadband-myth-series-part-1-what-financial-data-shows-about-impact-title-ii>.

the mid-period change in how Sprint treats handsets for accounting purposes, (2) AT&T's investment in Mexico, and (3) AT&T's investment in DirecTV.¹⁹

Sprint's decision to capitalize its handsets is a simple change in their accounting that doesn't materially affect their business. There is absolutely nothing wrong with capitalizing customer equipment like handsets (though some financial analysts have noted this "change is more of an issue of accounting allocation" that "artificially flattered" Sprint's margins).²⁰ The point here is simply that Free Press should control for this mid-period change as a matter of basic analytical rigor.

Similarly, with DirecTV, it wasn't counted in the mix in AT&T's capital expenditures in 2014, but then it was included in 2015 and 2016. These video investments are not really the type of broadband investment we would consider impacted by Title II (if anything, it represents capital flight away from broadband Internet access services), but more importantly, this is an artificial change halfway through the time period that should be controlled for. Similar for AT&T's investment abroad: The competitive dynamics of Mexico's telecom industry are generally unaffected by U.S. regulatory decisions. Controlling for only those factors—again, a rather rudimentary analysis considering the numerous factors that go into investment decisions—the Free Press figures line up closely with Singer, with industry seeing about a 2.9 percent decline in capital investment in 2015 and 2.15 percent decline in 2016.²¹

Jason Furman, then-chairman of the White House Council of Economic Advisers, explained in 2013 that "investments in infrastructure depend critically on a stable, predictable, and light touch regulatory regime."²² While there are many legitimate goals of regulation, he said, this need for stability and predictability has

¹⁹ *Id.*

²⁰ Ted Barac, "Sprint: All's Not as it Seems" *Seeking Alpha*, (Feb. 2017), <https://seekingalpha.com/article/4042202-sprint-all-seems>.

²¹ Doug Brake, "What Financial Data Shows About the Impact of Title II on ISP" *ITIF* (June 2017), <https://itif.org/publications/2017/06/02/broadband-myth-series-part-1-what-financial-data-shows-about-impact-title-ii>.

²² Jason Furman, "Total Factor Productivity and Telecommunications: Policy Ingredients for Shared Growth" Remarks as Prepared, AEI's Center on Internet, Communications and Technology Policy" (Sept. 2013), https://obamawhitehouse.archives.gov/sites/default/files/docs/aei_jf_telecom_9.17.13.pdf.

historically been “the motivation for the approach this administration and the Federal Communications Commission have taken in a wide range of areas like the Open Internet.” Returning the broadband regulatory regime to one that is stable, predictable, and light-touch should be the ultimate goal—retuning broadband to Title I is an important step in that direction.

At the same time, the Commission should take care not to overstate the impact of Title II regulation on broadband investment. It is important to get these policies right, but the overall impact of flawed regulation on investment can be relatively small compared to competitive pressure, changes in technology, or shifts in business models. Dramatic changes in cost structure, revenues, margins, or growth prospects would have a bigger impact on investment than regulatory follies, and numerous variable impact the incentive to invest. Except for Craig Moffett’s downgrade of cable stocks on Title II classification, we did not see a big move for or against broadband providers from Wall Street.²³ The current Commission, and others who resist Title II regulation, should pause before making too much of investment trends, lest they be hoist on their own petard should investment not rebound after a return to Title I classification.

The Commission Should Avoid Opening the Door to Price Regulation Here and Abroad

For some advocates, net neutrality is a vehicle not so much to protect the open Internet, but to push for broader Title II utility-style regulations like mandatory unbundling and price regulations.²⁴ These advocates see the ideal broadband infrastructure as a publicly-owned monopoly, and Title II as the first step for them to get to a world of heavily regulated “dumb pipes.” For them, the Internet is not a dynamic technology system, but rather a utility-like technology that has already matured. Therefore, the primary task is to prevent, not spur, change and innovation. Despite some advocates’ broader ideological goals, many of the requirements of Title II are simply not suited for regulating broadband and have rightly been avoided for years.

Similarly, the Title II precedent can be leveraged by foreign countries as a precedent for more extensive price regulation in the Internet space. Indeed, the tariffing present in telecommunications regimes around the world historically did not have a zero price for the sending party. Although Title II in the United States is

²³ Mike Farrell, “Moffett Downgrades Cable Sector on Title II Woes,” *Multichannel News* (Feb. 2015), <http://www.multichannel.com/news/news-articles/moffett-downgrades-cable-sector-title-ii-woes/388046>.

²⁴ Robert D. Atkinson & Doug Brake, “How Broadband Populists are Pushing for Government-Run Internet One Step at a Time,” ITIF (Jan. 2017), <http://www2.itif.org/2017-broadband-populism.pdf>.

now seen as a tool to ensure a “fair” and open Internet, other countries, especially ones as not amenable to our most successful edge providers, could use the same legacy telecommunications regulatory regimes to protect their own operators, contrary to the interests of both the United States and the open and interconnected global Internet.

B. As a Legal Matter, Broadband Internet Access is an Information Service

We believe the Commission has wide deference under the *Verizon* interpretation of section 706 to craft rules and design an institution to predictably address conduct that legitimately undermines the openness of the Internet. This can be done through antitrust-informed case-by-case analysis of problematic conduct, while stopping short of per-se common carriage requirements. However, as a factual matter broadband Internet access service is an information service, and the Commission would be on surer legal footing returning broadband to a Title I information service.

Broadband Internet Access Service is an Information Service

The Commission correctly points out in this NPRM that there is lengthy agency precedent defining broadband internet access as an information service—for good reason.²⁵ The departure from this definition in the *Title II Order* created significant uncertainty in the broadband internet access regulatory framework.²⁶ Though the court ultimately upheld Title II classification in *USTA v FCC*, much of their analysis was based on deference towards the agencies decision.²⁷

The term “information service” was defined in the 1996 Telecommunications Act as meaning “the offering of a capability for generating, acquiring, storing, transforming, processing, retrieving, utilizing, or making available information via telecommunications, and includes electronic publishing, but does not include any use of any such capability for the management, control, or operation of a telecommunications system or the management of a telecommunications service.”²⁸ This definition clearly displays a Congressional intent to

²⁵ NPRM.

²⁶ *Title II Order*.

²⁷ *USTA v FCC*, 825 F.3d 674, 697 (D.C. Cir. 2016).

²⁸ 47 U.S.C. § 153(24) (2012).

ensure room for enhanced services room to grow separately from the pure transmission telephone service. While, as indicated in the proposal, broadband Internet access service certainly offers the capability for generating information, acquiring information, etc. in that it allows for consumers to undertake these tasks, broadband access is itself an information service in more fundamental ways.

The former FCC read the record incorrectly in dismissing the importance of both caching and Domain Name System (DNS), and the D.C. Circuit should not have granted deference in this interpretation, especially with regard to caching. DNS arguably fits within the Communications Act's "telecommunications management" exception, but it is odd that DNS could be considered a management of a telecommunication service, when it does not serve to necessarily transmit information between or among points specified by a user, as required by the definition of "telecommunications." DNS translates a domain name to an IP address, but that IP address is usually not specified by a user, and sometimes is not even the IP address of the destination the user intended their information to go.

Caching is fundamentally an information processing service inextricably intertwined with the offering of broadband Internet access service. Caching does much more than simply "enabling the user to obtain more rapid retrieval of information through the network," as was argued by the prior Commission.²⁹ Caching depends on complex algorithms to determine what information to store where and in what format.³⁰ This requires extensive information processing, storing, retrieving, and transforming performed constantly for much of the most popular content on the Internet.

Under former-Chairman Wheeler, the prior Commission misread the record when concluding that caching does not make broadband Internet access service an information service, but more importantly significant changes in networking technology—namely software defined networking (SDN)—have become far more widely adopted since the 2015 Title II Order record was developed. SDN allows for network managers to decouple the control of the network from the data itself and base forwarding decisions on data flows rather

²⁹ *Title II Order* at 5770, para 372.

³⁰ See, e.g., Samrat Bhattacharjee et al., "Self-Organizing Wide-Area Network Caches," *Georgia Institute of Technology*, <http://www.cc.gatech.edu/projects/canes/papers/infocom98.pdf>.

than simple destinations specified in a packet header.³¹ This paradigm shift in network management makes the network itself programmable.³² Internet access is increasingly offering consumers distributed computing, where information is stored and processed throughout the network. Not only did the prior administration's FCC misread the record, much has also changed in the interim to further support that as a factual matter broadband is an information service.

The Internet is the type of complex and evolving system that Congress intended be shielded from sclerotic, common carrier regulation when making the distinction between information and telecommunications services. Internet access should be allowed to continue to evolve, and software defined networking, which makes broadband access even more clearly an information service, is the next step in its evolution.

Mobile Broadband Internet Access Service is a Private Mobile Service

All of the above arguments apply to fixed as well as mobile broadband Internet access service, however, the Commission should also make clear that mobile broadband is a private mobile service as proposed. In conjunction with defining broadband access (both fixed and mobile) as an information service, returning mobile broadband to a private mobile service will create consistency between broadband services, and accurately reflect mobile broadband service under the statute.

The prior Commission's interpretation of mobile broadband as interconnected with *the* public switched network was a contortion to put it mildly. There is no single network that interconnects between ten-digit number based PSTNs and IP addresses. However, the proposed restoration of meaning of "public switched network" to focus on the public switched *telephone* network would also be permissible and would focus on the singular network implied by the language of the statute.³³

Furthermore, the highly competitive nature of the US wireless market should encourage the FCC to limit regulatory burdens on this market sector. Returning to the prior classification of private mobile service, under

³¹ See, e.g., Diego Kruetz, et al., "Software-Defined Networking: A Comprehensive Survey" 103 Proceedings of the IEEE Issue 1 (Jan. 2015), <http://ieeexplore.ieee.org/document/6994333/>.

³² *Id.*

³³ 47 U.S.C. § 332(d).

which the wireless market previously operated, is unlikely to create any significant disadvantage to wireless consumers or the marketplace in which they participate.

C. Restoring Broadband to Title I Rightly Returns Privacy Oversight to the FTC

The broadband privacy rules, voted on by the prior Commission but never implemented, effectively shut broadband providers out of new data-driven business models. It is important that broadband consumers have choice and control over how their data is used, but the overly restrictive defaults imposed by the rules, since struck down by a Resolution of Disapproval under the Congressional Review Act, would have come at a real cost to the economy and would not have aligned with an average consumer's best interest. The Commission's instant proposal, to return broadband access to an information service classification would rightly allow the Federal Trade Commission (FTC) to resume its successful privacy oversight of broadband providers.

The FCC's privacy rulemaking was initiated in part because of the classification of broadband as a common carrier under Title II of the Communications Act. This common carrier status prevents the normal privacy cop, the FTC, from pursuing its usual privacy oversight duties when it comes to broadband providers due to the "common carrier exemption." But sector-specific privacy rules for broadband providers are fundamentally misguided; broadband privacy belongs with the FTC.³⁴ Under the FTC's enforcement of best practices and broadband provider policies, privacy protections are already well balanced with other values, such as cost, usability, and innovation.

The FCC's sector-specific rulemaking underappreciated the impact of increasingly prevalent privacy-protecting technologies like encryption and virtual networks.³⁵ What's more, all major broadband providers already allowed consumers to control how their information is used.³⁶ FTC-style privacy oversight comes with numerous benefits—the instant rulemaking thankfully allows the FTC to resume privacy oversight. The

³⁴ Doug Brake, et al., "Broadband Privacy: The Folly of Sector Specific Rules," *ITIF* (March 2016), <https://itif.org/publications/2016/03/01/broadband-privacy-folly-sector-specific-rules>.

³⁵ See Peter Swire, "Online Privacy and ISPs" *The Institute for Information Security and Privacy at Georgia Tech* (Feb. 2016), http://www.iisp.gatech.edu/sites/default/files/images/online_privacy_and_isps.pdf.

³⁶ "The Folly of Sector Specific Rules" at 8.

greater flexibility under the FTC enforcement framework allows room for new business models that could support expensive, next-generation networks with revenue other than consumers' monthly bills.

The FCC's deviation from the historical privacy protections of the FTC framework has the potential to significantly disrupt ongoing dynamic competition in innovative new uses of Internet data, ultimately slowing the rate of growth of broadband deployment and adoption and also degrading the broadband users' online experience, and should be corrected. Beyond the obvious opportunities to put downward pressure on broadband prices through more targeted advertising, data is increasingly becoming a key fuel for innovation. Recent breakthroughs in artificial intelligence are predicated on "training" algorithms on large pools of data, so to effectively shut data collected by broadband providers out of this burgeoning field would be a mistake.

The FCC's prior privacy rulemaking set a poor precedent for privacy rules touching other sectors of the economy, undermined the U.S. position when negotiating privacy issues abroad, dramatically deviated from the usual consensus-driven multistakeholder model of developing Internet rules, and unnecessarily expanded the scope of utility-style regulation of broadband. Indeed, it was an unfortunate step toward a European-style privacy regime based on the precautionary principle. It's no coincidence that the EU has stringent privacy rules but few global Internet leaders of its own.

The FCC is right to return broadband privacy to the FTC.

D. Legislation would be Ideal, but the Commission Should Aim for Balanced, Lasting Regulations

Many involved in the open Internet debate argue that legislation is the only way to secure lasting net neutrality protections and prevent the so-called "ping-pong" whereby FCC rules would shift back and forth depending on which party is in control. This is probably true. Net neutrality policy has grown far more partisan than it needs to be. Some Title II supporters see this as an ideal stalking horse to drag the Internet into full-blown public utility rate regulation, whereas some on the right see any FCC action, even antitrust-style rules under section 706, as impermissible centralized control over the market.³⁷ These two sides seem locked in an intractable tug-of-war.

³⁷ For discussion, see Robert D. Atkinson & Doug Brake, "How Broadband Populists are Pushing for Government-Run Internet One Step at a Time," ITIF (Jan. 2017), <http://www2.itif.org/2017-broadband-populism.pdf>.

Legislation certainly would be preferred—it would bring certainty and stability to this important sector of the economy. However, this Commission has the rare opportunity to implement legally sustainable, middle ground rules under section 706. The FCC’s majority have expressed skepticism as to Congressional intent that 706 is an affirmative grant of authority as well as displeasure with the open-ended nature of the “virtuous-cycle” that underpins 706 authority. While the claim that 706 is not a grant of authority is colorable, the D.C. Circuit has made clear, in *Verizon* and *Cellco* the agency can indeed step in under its ancillary authority as long as its actions stop short of per se common carriage treatment.

III. THE COMMISSION SHOULD RETAIN SECTION 706 AUTHORITY

The Commission should not abdicate all authority over broadband, but instead put guardrails on existing Title I authority and craft narrow, light touch rules to effectively address practices that legitimately undermine the openness of the Internet.

A. Antitrust-style Enforcement is Superior to Prophylactic Rules

Economists have generally favored using a case-by-case approach akin to antitrust enforcement to address net neutrality concerns.³⁸ A case-by-case approach, with clearly defined guidelines of acceptable behavior, would allow the Commission to predictably step in where any practice harms consumers, competition, or innovation in any part of the Internet ecosystem. This approach also allows for adaptability in the network and economically efficient, welfare-enhancing deals that enable applications for which best-efforts Internet is not sufficient. We do not know in advance whether a particular traffic differentiation practice will be welfare enhancing or diminishing—prophylactic regulation risks over-enforcement, curtailing deals that may otherwise be good for consumers or competition. We should prefer an antitrust-informed, case-by-case approach, but the FCC’s rulemaking authority allows it to craft specialized institutions to best address open-Internet concerns.

B. Antitrust Alone is Not Ideal for the Broadband Context

To be clear, rigid prophylactic rules are not necessary or appropriate for policing broadband Internet access. The potential for wide-spread two-sided price discrimination is small, and opportunities for paid prioritization may well be welfare enhancing. The Commission should generally allow these deals to go

³⁸ William J. Baumol et al., “Economists Statement on Network Neutrality Policy,” March 2007.

forward, and only intervene on a case-by-case basis where deals are not commercially reasonable. However, a pure antitrust approach, leaving enforcement to the FTC or the courts, is not ideal.

High Fixed Costs Mean Internet Infrastructure is Likely to Remain Relatively Concentrated

Construction of large scale broadband networks, particularly wired ones, is an incredibly expensive and complicated undertaking. New entrants into the market, such as Google Fiber, have often started with lofty goals, only to have the realities on the ground unfortunately curb their aspirations.³⁹ While the FCC continues to undertake steps to make network deployment easier, the reality is that network infrastructure is likely to remain concentrated in a relatively small number of broadband providers.⁴⁰ A small number of providers is not necessarily a bad thing—indeed, it is likely the most efficient way to provide high-quality broadband access at reasonable cost. However, it does mean that these markets are unlikely to rely on competition to police conduct in a way that will be satisfactory to a political majority. Oversight—in a manner that allows Internet access to evolve—while providers explore opportunities for an efficient two-sided market is appropriate.

Non-Monetary Values and Future Innovators Deserve Protection

Access to high speed internet is a powerful force for democracy, education, and commerce. Any enforcement regime should acknowledge that there are more than purely economic harms at stake when a free and open internet is challenged. Furthermore, the critical role that the internet plays in enabling innovation throughout the US economy deserves a forward-looking regulatory approach. Antitrust enforcement actions are often only focused on the particulars of the cases involved in the enforcement proceeding, and lack a forward-looking approach. Relying solely on antitrust principals does not ensure that the interests of future innovators are represented.

Unintended Consequences of Network Management Practices are Best Resolved through Collaborative Effort in front of an Expert Agency

³⁹ Associated Press, “Google Fiber halts expansion plans in eight cities, including L.A.,” *Los Angeles Times* (Oct. 26, 2016), <http://www.latimes.com/business/technology/la-fi-tn-google-fiber-20161026-snap-story.html>.

⁴⁰ *In the Matter of Accelerating Wireless Broadband Deployment by Removing Barriers to Infrastructure Investment*, WT Docket No. 17-79, Notice of Proposed Rulemaking and Notice of Inquiry, FCC 17-38 (2017).

The Internet is an incredibly complex system that supports a dizzying array of services and applications. It is possible, if not likely, that problems will eventually arise that implicate open Internet concerns. These problems may be legitimate threats to Internet openness or perfectly innocuous. Challenges can be unintended consequences of subtle technical changes in the network. It would be better that the FCC design an institutional process to collaboratively uncover the truth in a complex and contentious technical environment, rather than rely on adversarial processes.

The FCC should take advantage of the authority that the courts have agreed 706 authorizes and seek to create a collaborative process to resolve disputes in front of an expert agency with clear guidelines and rules. The FCC can institute a clear, predictable multi-factor test to guide whether it would step in should practices harm the open Internet, and should inform its analysis through an outside multistakeholder body such as the Broadband Internet Technical Advisory Group.⁴¹

C. Section 706 is an Affirmative Grant of Authority Recognized by the Courts

In *Verizon v. FCC*, the court held that the Commission's new understanding of section 706(a), as an affirmative grant of regulatory authority, represented a reasonable interpretation of an ambiguous statute. Accordingly, the FCC was free to promulgate regulations necessary to implement the policy goals laid out for them by Congress. However, the court also noted limiting principals on that authority which the FCC laid out in its reinterpretation of section 706. These two principals required that any regulation must be designed to encourage the deployment on a reasonable and timely basis of advanced telecommunications capability to all Americans, and that the section must be read in conjunction with other provisions of the Communications Act.

There is a clear path forward to developing appropriately flexible and light-touch regulation of the Internet, and the Commission should explore this approach. Section 706 gives the Commission the ability to craft an appropriate nondiscrimination standard allowing for only those commercial arrangements that are welfare enhancing. There is opportunity for arrangements, both commercial and non-commercial, that are not strictly "neutral" yet do not threaten the openness of the Internet as a platform for innovation, free expression, and exploration of new services—a flexible framework under section 706 allows those arrangements to grow with the appropriate oversight.

⁴¹ See Broadband Internet Technical Advisory Group, <https://www.bitag.org/>.

IV. A LIGHT-TOUCH COMMERCIALLY REASONABLE STANDARD WOULD ENCOURAGE DEPLOYMENT OF, AND INNOVATION IN, BROADBAND INTERNET ACCESS

Section 706 authority gives the Commission leeway to craft processes and institutions that leverage the best of both antitrust and regulation.

A. Rigid Ex Ante Rules are Unnecessary

Rigid prophylactic rules are unnecessary. As discussed above, blocking—especially of the type imagined by uninformed form-letter commenters—is highly unlikely. However, at the same time, network operators already engage in blocking of certain types of traffic in order to protect consumers. Networks block spam and malware, for example, without objection. The issue is not whether the Internet should be an open free-for-all in an absolute sense. Blocking malware and spam violates strong versions of openness, and we are thankful for it. The risk of networks expanding these practices to block legitimate applications is vanishingly small. If blocking that harmed the openness of the Internet were to happen for any reason, it would likely be a clear violation of a commercially reasonable standard and could be stopped (and faster through the FCC than an antitrust proceeding).

Best-Efforts Internet Access Will Likely Remain the Predominant Offering

Best-efforts access is likely to remain the predominant offering. It is not clear that prioritization would be a compelling offering for most applications, services, or websites, especially considering its transaction costs. Furthermore, speeds continue to increase substantially as technology improves and intermodal competition spurs providers to upgrade networks. U.S. networks see consistently above average growth in broadband speeds.⁴²

Moreover, some new entrants, most notably Google, have built entirely new networks in some markets, which will hopefully continue as policies and market conditions improve. The impressive growth in fiber deployment in recent years, by new entrants and incumbents alike, greatly reduce the need for any sort of discrimination based on bandwidth. These faster networks offer more bandwidth than most of today's applications require. According to Reed Hastings, CEO of Netflix, next-generation 4K resolution video

⁴² Akamai's State of the Internet, Q1 2017 Report, <https://www.akamai.com/us/en/about/our-thinking/state-of-the-internet-report/global-state-of-the-internet-connectivity-reports.jsp>.

streaming will only require 15 Mbps⁴³ largely thanks to advances in compression algorithms.⁴⁴ Granted, by these estimates, streaming 4K will require a *constant* bitrate of at least 15 Mbps, meaning broadband users will need to subscribe to a higher tier, but the point remains: most networks provide bandwidth in excess of even next-generation demands. Furthermore, with the future introduction of next generation DSL technologies,⁴⁵ DOCSIS 3.1,⁴⁶ and fiber being pushed further into the last mile, networks will likely continue to get faster as applications become more demanding or increased load comes from unexpected future innovations. In a world where bandwidth wildly outstrips demand in, the economic case for discrimination based on throughput is significantly reduced.

Furthermore, the rapid growth of content delivery networks (CDNs) has dramatically improved the ability of new companies to scale the provision of streaming video over broadband networks. CDNs store content closer to consumers, effectively removing the long “lane” from a remote server – much better than a “fast lane.” While the possibility of prioritization over a last-mile network remains, CDNs have very effectively reduced costs and improved performance of data-intensive Internet applications. It is unlikely broadband providers have a compelling business case for prioritizing buffered video, especially when CDNs are so prevalent.

⁴³ See, e.g., Ryan Waniata, “The 4K Revolution will be Televised, and Netflix Says You’ll Only Need 15 Mbps to Watch,” *Digital Trends* (Sept. 2013), <http://www.digitaltrends.com/home-theater/netflix-ceo-says-4k-streaming-will-only-require-15mbps-bandwidth/#!bekKin>.

⁴⁴ See, e.g., Gary J. Sullivan *et. al.* “Overview of the High Efficiency Video Coding (HEVC) Standard, 22 *IEEE Transactions on Circuits and Systems for Video Technology* 1649, http://www.ee.cuhk.edu.hk/~mhwang/website_files/eleg5431/HEVC_Overview.pdf.

⁴⁵ See, e.g., Alcatel-Lucent sets new world record broadband speed of 10 Gbps for transmission of data over traditional copper telephone lines, *Alcatel-Lucent Press Releases* (July 2014), <http://www.alcatel-lucent.com/press/2014/alcatel-lucent-sets-new-world-record-broadband-speed-10-gbps-transmission-data-over-traditional>. Note, however, these advances in DSL technology (G.fast and the recent XG-FAST) rely on utilizing additional spectrum which sees significant attenuation over distance in copper. They will still require significant cap-ex in the form of deeper fiber.

⁴⁶ See New Generation of DOCSIS Technology, *CableLabs*, <http://www.cablelabs.com/news/new-generation-of-docsis-technology/>.

Transparency Can do Most of the Heavy Lifting

The Commission should retain its rules around transparency. A simple transparency requirement, informing users and civil society of traffic management practices and the basic technical details of an offering can do much of the heavy lifting in securing an open Internet.

B. Networks Should be Able to Evolve and Adapt to Applications' Needs

The Internet is Not Inherently Neutral

A fundamental question rarely addressed by those advocating for a “neutral” net is “neutral with respect to what?” The architecture of the Internet favors delivery of static content (e.g., web pages, email, etc.) over dynamic, real-time communications (e.g., VoIP or telepresence). Overly strong net neutrality regulations risk limiting the growth of real-time applications in order to lock-in an architecture that favors plain-text web pages. As Tim Wu, who coined the term “net neutrality,” has put it:

[T]o the extent an open access rule inhibits vertical relationships, it can help maintain the Internet’s greatest deviation from network neutrality. That deviation is favoritism of data applications, as a class, over latency-sensitive applications involving voice or video.⁴⁷

Broadband networks are the future of all communications, and the network should be allowed to be intelligent enough to compensate for architectural biases to support higher order systems. The key of course has been, is and will continue to be crafting rules that enable pro-consumer and pro-innovation discrimination, rather than banning all discrimination motivated by some anti-corporate, populist ideology.

Those commercially reasonable deals that will gain the most value from prioritization will be for exactly these sorts of dynamic, latency sensitive applications the Internet’s current architecture discriminates against. High-definition video conferencing or future data-intensive, real-time cloud services would benefit from a flexible “commercially reasonable” standard.

Traffic Differentiation is Not Zero-Sum and Would Support Innovation

⁴⁷ Tim Wu, “Network Neutrality, Broadband Discrimination,” 2 *Journal on Telecommunications and High Technology Law* 141 (2003).

There is an incredible diversity of applications that leverage the Internet, and this diversity only promises to increase. Accordingly, different applications have incredibly diverse demands on the network. The success or failure of an application can turn on its sensitivity to latency, jitter, throughput, packet loss, for example. Applications also have varying scope of operations – they can be a video intended to be streamed by millions simultaneously, or a chat with two close friends. Other applications may have other various requirements, such as an unusually fast start-up or resumption of a high send rate after a long idle period.⁴⁸ Overly strong neutrality requiring dumb pipes to carry only best efforts traffic would limit potential performance of real-time applications.

In order for broadband to continue enabling the increasing number of diverse applications that push the boundaries of networks today, network providers need to be able to expand intelligence in the core. Networks should have the flexibility to respect the diverse needs of applications. In some circumstances, special treatment will justify payment from those application providers that desire more than best-efforts treatment. Regulations should not stifle the exploration of these new innovative services for fear that the entire Internet will collapse into a series of tolls. Any such commercial arrangements should be strictly voluntary with all applications having the option of free best efforts last mile delivery. But future real-time, cloud-based applications that require extremely low latency should not be shut out by regulation.

While there is little evidence to fear that specialized traffic management will be the norm or required for the vast majority of new websites or services to succeed, there is tremendous potential for real gain by allowing commercially reasonable discrimination. Furthermore, increasing the intelligence to the core of the network and allowing equipment to recognize applications' needs is important for increasing resiliency and security as important, even safety-of-life, functions are digitized and reliant on broadband networks. A strict “dumb pipes” rule some advocates push for does not appreciate the limits of our ability to predict the demands place on these complex systems.

The potential for valuable innovation to be enabled by future networking technologies like software defined networking and network function virtualization is very real, but not yet well understood.⁴⁹ Any Commission

⁴⁸ See S. Floyd & M. Allman, “Comments on the Usefulness of Simple Best-Efforts Traffic,” RFC 5290 at 4, IETF (July 2008), (discussing the limitations of best-efforts traffic).

⁴⁹ For an introduction to these technologies, see, e.g., 6WIND, “SDN/NFV Primer,” <http://www.6wind.com/software-defined-networking/sdn-nfv-primer/>.

action should be careful to allow these technologies to be fully explored. A standard of commercial reasonableness under 706 should provide the appropriate oversight.

In many ways a “dumb pipe” network determines winners by inherently discriminating against particular classes of applications, especially high-bandwidth, real-time interactive applications. We should want a smart network that lets all application types win or lose on the basis of customer decisions, not to the extent they comport to a one size fits all network imposed by over-zealous neutrality advocates.

C. Multi-Factor Analysis Can Guide the Commission’s “Commercially Reasonable” Enforcement

The FCC has previously asked for comment on six broad categories of principals which would form the basis for a commercially reasonable standard on paid prioritization. These factors included (1) impact on present and future competition; (2) impact on consumers; (3) impact on speech and civic engagement; (4) technical characteristics; (5) good faith negotiation; and (6) industry practices. These categories would allow the FCC to prevent the malicious behavior that is a threat to the competitive marketplace of the Internet, but still allowed paid prioritization where it can serve a legitimate network purpose.

It is important that the Commission lay out clear guidelines for what will be considered commercially reasonable in order to give edge providers the assurance that these rules will predictably protect their ability to innovate. That said, any rules should be flexible enough to address changing practices in a rapidly developing environment. The Commission should rely on outside bodies of experts such as the Broadband Internet Technical Advisory Group to develop appropriate best practices to guide them in evaluating arrangements.

The Commission should ensure the prevention of a thorough-going two-sided market from developing whereby all edge providers would have to pay specifically for carriage through the last mile. The vast majority of edge providers should not have a need for prioritization or specialized deals. It would be commercially unreasonable to not offer free best efforts traffic carried within the last mile. If large numbers of edge providers began signing up for prioritization in the belief that it is necessary for competitive advantage, something is probably amiss and the Commission should investigate or alter its policies. Also, any prioritization deals should not result in manifest degradation to other services. Although ITIF does not believe “throttling” or targeted degradation to be a concern, such practices would also not be commercially reasonable.

ITIF also strongly believes that it is not appropriate to impose the same or similar burdens on both wired and wireless broadband networks. It is important to recognize that wireless broadband is still in a nascent stage,

with technology and services rapidly evolving. Furthermore, the fundamental constraint on capacity imposed by limited availability to spectrum means that wireless networks operate differently from their wired counterparts. Correspondingly, wireless networks require specialized management so that they can meet customers' expectations. Any arguments for a wireless non-discrimination rule must go beyond "wireless is increasingly important" and address the fundamental differences in capacity. Here the consideration should be whether discrimination is needed for a wireless Internet service to operate effectively.

V. CONCLUSION

The Commission is right to return broadband to a lighter-touch regulation by classifying broadband as an information service—the same legal mechanism that oversaw the flourishing of the open Internet up until 2015. The alternative—common carrier, utility-style regulation—is inappropriate for today's dynamic Internet. Utility regulation unnecessarily limits innovation in networks, and risks opening the door to price regulation here and abroad. Treating broadband as an information service is not only legally correct, it allows broadband privacy to rightfully be returned to the Federal Trade Commission.

However, the FCC should retain oversight over broadband networks by establishing case-by-case oversight of traffic differentiation, allowing experimentation with commercially reasonable deals that do not harm the openness of the Internet. Courts have recognized that the FCC has great latitude under section 706 in protecting the open Internet, and antitrust-informed regulation allows for flexible oversight tailored to the goal of promoting an evolving, but fundamentally open, Internet.

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