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

In the Matter of	)	
	)	
Protecting and Promoting the Open Internet	)	GN Docket No. 14-28
	)	
Framework for Broadband Internet Service	)	GN Docket No. 10-127
	)	

COMMENTS OF ALCATEL-LUCENT

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Alcatel-Lucent submits these comments in response to the above-captioned Notice of Proposed Rulemaking ("NPRM")[1] and Public Notice to Refresh the Record in the 2010 Proceeding on Title II and Other Potential Legal Frameworks for Broadband Internet Access Service.[2]

I. SUMMARY

As a leading provider of broadband infrastructure in the United States and throughout the world, Alcatel-Lucent is pleased to provide comments in these proceedings, which will determine the U.S. regulatory framework for the Internet. The Commission faces a daunting task: considering regulatory changes to an industry that has experienced incredible success under light-touch regulation. Under that framework, the information and communications technology ("ICT") sector has met every challenge, investing billions each year to keep up with unrelenting and growing consumer demand for broadband content.

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1 *Protecting & Promoting the Open Internet*, Notice of Proposed Rulemaking, GN Docket No. 14-28, 2014 WL 2001752 (rel. May 15, 2014).

2 *Wireline Competition Bureau Seeks to Refresh the Record in the 2010 Proceeding on Title II and Other Potential Legal Frameworks for Broadband Internet Access Service*, Public Notice, GN Docket No. 10-127, 2014 WL 2444307 (rel. May 30, 2014).

Alcatel-Lucent respectfully suggests that there is no valid legal or policy basis for the Commission to turn its back on decades of light regulation and apply Title II common carrier regulation to broadband Internet access services. Indeed, the Commission is revisiting its open Internet rules due to a court decision made on technical legal grounds, not because of any type of change in facts or circumstances that long guided the Commission away from heavy-handed utility-like regulation of the Internet. Not only would application of Title II be legally suspect, it would add a great deal of uncertainty into a market that has been successful to date. Application of Title II regulation would risk chilling investment in infrastructure, as well as opening up a Pandora's Box of proceedings covering the legal classification of edge services that also have thrived in a largely unregulated environment. As such, Alcatel-Lucent urges the Commission not to regulate broadband Internet access services under Title II of the Communications Act.

Alcatel-Lucent also supports the Commission's tentative conclusions that reasonable network management practices and specialized services should continue to be allowed. There is simply no factual basis for the Commission to stray from its conclusions in 2010 not to prohibit these practices. Reasonable network management is essential to provide the network functionality that consumers expect. The Commission should continue to rely on transparency as the most effective means to ensure that broadband providers' network management practices are not used to contravene the Commission's open Internet policies.

Similarly, specialized services should continue to be permitted as an additional means to promote new, innovative service offerings. Specialized services typically include one or several of the following quality of service ("QoS") characteristics: (1) guaranteed (low) packet loss, (2) guaranteed (low) packet delay, (3) secure connectivity, or (4) guaranteed bandwidth. These QoS requirements have implications in voice, video, gaming and other applications.

In addition to service providers offering QoS enhancements in the form of specialized services, consumers should be permitted to request their own QoS enhancements applicable to individual applications or to their overall service tier (for example, a temporary speed boost). Alcatel-Lucent requests that the Commission deem lawful any such consumer-initiated requests.

Furthermore, the Commission should not place an emphasis on *who* pays for QoS enhancements, a subject of much debate. Third-party-pays arrangements can be a powerful tool to help consumers experience content that their chosen tier of service might not otherwise support. Such arrangements can also assist small companies in reaching a critical market for their content. Ultimately, third-party-pays arrangements could lead to greater adoption by consumers who might first experience higher-tier services as part of a third-party-pays promotion, advancing one of the Commission's key public interest goals. As such, Alcatel-Lucent urges that the Commission not categorically foreclose such arrangements.

Alcatel-Lucent agrees that the Commission's open Internet rules should continue to recognize the distinction between wireless and wireline broadband platforms. From a technology perspective, the two services are subject to very different constraints that should continue to guide the Commission in the current proceedings.

II. ALCATEL-LUCENT IS A LEADER IN BROADBAND INNOVATION

Alcatel-Lucent is at the forefront of global communications, providing products and innovations in ICT and networking, including ultra-broadband fixed and wireless access infrastructure, to service providers, enterprises, web-service providers, and institutions throughout the world.

Underpinning Alcatel-Lucent's leadership in driving transformation from voice telephony to high-speed digital delivery of data, video and cloud services is Bell Labs,

one of the world's foremost technology research institutes, responsible for countless breakthroughs that have shaped the networking and communications industry. These innovations have resulted in 7 Nobel Prizes, a Turing Award, an Emmy, a Grammy and an Oscar. Alcatel-Lucent has been recognized by Thomson Reuters as a Top 100 Global Innovator, as well as being named by MIT Technology Review as amongst 2012's Top 50 "World's Most Innovative Companies." Alcatel-Lucent has also been recognized for innovation in sustainability, being named Industry Group Leader in the Technology Hardware & Equipment sector in the 2013 Dow Jones Sustainability Indices review, for making global communications more sustainable, affordable and accessible, all in pursuit of our mission to realize the potential of a connected world.

The following products represent some of Alcatel-Lucent's recent technological breakthroughs:

- Mobile cloud – A comprehensive set of network functions that are being virtualized allowing mobile networks to embrace the cloud: virtualized IP Multimedia Subsystem ("vIMS"), virtualized Evolved Packet Core ("vECP"), and virtualized radio access network ("vRAN").

- 100G-400G optical transmission – The world's first 100G and then 400G coherent optical transmission for next generation optical backbones.

- Vectoring – Noise cancelling technology that enables speeds of 100 Mbps or more over copper access infrastructure.

- 400G Packet Processing – Application Specific Integrated Circuits ("ASICs") supporting 400 Gbps simultaneously in both directions, equivalent to 70,000 users each watching a high-definition ("HD") video simultaneously.

- A new Core IP Router – 5X density of alternative solutions; meets core routing, multiprotocol label switching ("MPLS"), data center interconnection and infrastructure service needs with maximum efficiency and lowest total cost of ownership.

As a leader in wireline and wireless, legacy and cutting edge cloud infrastructures, and with the long history of Bell Labs in defining the future of communications technology, Alcatel-Lucent is in a unique position to address the many issues raised in these proceedings.

III. INCREASED REGULATION OF BROADBAND SERVICES IS ILL-ADVISED IN LIGHT OF THE TREMENDOUS SUCCESS OF LIGHT REGULATION

The success of the broadband market in the United States is perhaps best reflected in the ever increasing demands consumers place on network resources. Usage is increasing at least 50% per annum or nearly 60-fold in a decade, for both wireless and wireline networks. This is testament to the compelling user experience that these networks provide, leading consumers to incorporate broadband services into their daily home and work lives, whether it be making VoIP voice or video calls, watching online video, gaming, searching for information, engaging in e-commerce, reading the day's news, or sending files to and from their place of work. The growth of the Internet of Things will further intensify broadband devices as our thermostats, security systems and other household appliances go online and access "the cloud" and web services and systems.

By far the greatest current driver of bandwidth demand is video. In the United States alone, Internet video consumption is expected to grow at least 12 times in the next 6 years, and managed video on-demand ("VoD") services are expected to grow 28% per year until 2017.[3] And, on top of that, it is anticipated that there will be a massive increase in wireless video delivery to handheld devices, made possible by LTE and LTE-Advanced networks and their unique video capabilities (*e.g.*, support for optimized multicast and unicast services), as well as so-called "small cells" and the wireline access networks that are used to provide backhaul for these highly distributed, ultra-high capacity wireless networks.

To satisfy consumer demand for more choice and greater freedom, stakeholders in the video value chain — from content providers to tablet manufacturers to application developers — are investing in new video services, business models and

[3] Alcatel-Lucent, *How the tablet generation is pushing networks to the edge: research from Alcatel-Lucent's Bell Labs shows impact of surging video consumption* (Dec. 13, 2012), *available at* http://www.alcatel-lucent.com/press/2012/002767.

technology innovations that are already making significant contributions to video consumption. This trend will continue unabated to 2020 and beyond and will be characterized by many different technology, service and business model innovations, such as:

- More video devices. Video on TVs, PCs, tablets, phones, gaming devices and personal devices and wearables. There will be new, slim, bendable screens for glasses and wristwatches; ultra-thin readers and video wall displays; and integrated projectors, all driving more and more video consumption.

- More video business models, driven by online and web video services, IP video-on-demand "PayTV"-type services, webisodes and YouTube series. Monetization will continue to be via advertising, associated media or product pull-through sales, additional content and information and packages, or improved and personalized media search engines.

- More video applications. Video insertion in all applications such as gaming, business content, socializing/dating, education and health, e-commerce, and communications with immersive video conferencing. There will be mass content creation and publishing by consumers and devices, also leading to new "amateur" or semi-professional video content and services.

- More video quality. There will be a continued increase in resolution and reality in terms of color depth and views provided in HD, ultra-HD, and with next-generation 3D and holographic imaging.

The net effect of this activity will be to drive video consumption and broadband traffic levels overall to new highs on a continual basis. Bell Labs forecasts dramatic growth from 2012 to 2020. During this time period, the total time spent watching video will grow from 4.8 hours to 7 hours per user per day.[4] Much of this growth will come from the latest generation of consumers, whose propensity for multi-tasking will result in 7 hours worth of video being consumed in as little as 5 hours.[5] Internet video consumption is expected to grow 12 times, from 90 Exabytes to 1.1 Zettabytes.[6] Growing user demand for

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4 *Id.*

5 *Id.*

6 *Id.*

VoD will also drive spectacular growth of managed VoD services, which are expected to show a cumulative annual growth rate of 28 percent, from 44 Exabytes to 244 Exabytes.[7]

It is broadband providers' efforts to meet consumer demand, and their success in providing a quality experience to consumers — *not* regulation — which have fueled this growth in broadband consumption. On the wireless side, U.S. operators are constantly upgrading their networks, leading to U.S. global leadership in 4G LTE — the most efficient technology for providing broadband to mobile devices. And even before the nationwide LTE build-out was complete, the leading operators began deploying LTE-Advanced capabilities, allowing aggregation of multiple radio channels and radio carriers, as well as improved interference cancellation. These developments will allow speeds approaching 1 Gbps to be provided over the air interface, which, when combined with deployment of small cells, will allow consumer wireless speeds that are 10 times those achievable today.

IV. THE COMMISSION SHOULD DECLINE TO REGULATE BROABAND UNDER TITLE II

In the NPRM, the Commission seeks comment on the proper source of authority to regulate broadband services and, as part of that inquiry, asks whether the Commission should reclassify broadband Internet access services as telecommunications services under Title II of the Act.[8] Alcatel-Lucent submits that the answer is "no." Imposing Title II's antiquated regulatory regime on broadband would be bad policy, legally suspect, and lead to considerable regulatory uncertainty.

A. Title II Is Ill-Suited for the Dynamic Broadband Marketplace

The regulation of common carriers in the United States dates back to the Nineteenth Century, when courts imposed certain obligations on companies in the

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7 *Id.*

8 NPRM ¶¶ 148-55.

transportation and communications industries.[9] Congress first imposed common carrier requirements on the railroads in the Interstate Commerce Act of 1887,[10] and this regime subsequently was extended to telephone companies in the Mann–Elkins Act of 1910.[11] Title II, which was adopted in 1934, was "largely copied" from the Interstate Commerce Act, "and the concept of common carriage remained generally unchanged."[12]

In contrast to traditional telephone services, Congress and the Commission have wisely allowed the Internet to develop free from Title II common carrier regulation.[13] Because the Internet has "flourished, to the benefit of all Americans, with a minimum of government regulation," Congress declared in 1996 as a policy of the United States that the Internet — which includes broadband Internet access services — should remain "unfettered by Federal or State regulation."[14] Application of Title II to broadband Internet access services would be antithetical to this Congressional mandate.

Furthermore, unlike the utility monopolies of the Nineteenth and early Twentieth centuries, broadband providers are competing to provide the latest advanced

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9 *Verizon v. FCC*, 740 F.3d 623, 651 (D.C. Cir. 2014).

10 *Cellco P'ship v. FCC*, 700 F.3d 534, 545 (D.C. Cir. 2012).

11 *Id.* at 546; *see also* Phil Nichols, *Redefining 'Common Carrier': The FCC's Attempt at Deregulation by Redefinition*, 1987 Duke L.J. 501, 509-11 (1987); Peter K. Pitsch & Arthur W. Bresnahan, *Common Carrier Regulation of Telecommunications Contracts and the Private Carrier Alternative*, 48 Fed. Comm. L.J. 447, 450-53 (1996).

12 *Cellco*, 700 F.3d at 546; *see also* Kenneth A. Cox & William J. Byrnes, *Title II: The Common Carrier Provisions—A Product of Evolutionary Development, in A Legislative History of the Communications Act of 1934*, at 25 (Max D. Paglin, ed. 1989).

13 *See* 47 U.S.C. § 230(b); *Federal-State Joint Board on Universal Service*, Report to Congress, 13 FCC Rcd 11501 (1998); *Appropriate Framework for Broadband Access to the Internet Over Wireline Facilities*, 20 FCC Rcd 14853 (2005) ("*Wireline Broadband Order*"); *Appropriate Regulatory Treatment for Broadband Access to the Internet Over Wireless Networks*, 22 FCC Rcd 5901 (2007); *High-Speed Access to the Internet Over Cable and Other Facilities*, 17 FCC Rcd 4798 (2002) ("*Cable Modem Order*"), *aff'd*, *NCTA v. Brand X Internet Servs., Inc.*, 545 U.S. 967 (2005).

14 47 U.S.C. § 230(a)(4), (b)(4). Any suggestion that broadband Internet access services are not part of the "Internet" is erroneous. *See id.* § 230(f)(1) (defining the Internet as "the international computer network of both Federal and non-Federal interoperable packed switched data networks").

services and products,[15] which renders unnecessary traditional common carriage protections.[16] Likewise, with dynamic changes to broadband services,[17] and with broadband platforms and network technologies rapidly evolving,[18] the broadband market is ill-suited for regulation under Title II.[19]

It is also unclear what objectives Title II would help to achieve if applied to the broadband market. Title II requires a common carrier's rates to be "just and reasonable"[20] and prohibits carriers from engaging in "unjust or unreasonable" practices.[21] As Commissioner O'Rielly highlighted in his Dissenting Statement, there is no evidence that broadband providers have been engaged in unreasonable practices in the provision of Internet

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15 *See supra* Part III.

16 *See, e.g.*, *Orloff v. Vodafone AirTouch Licensees LLC*, 17 FCC Rcd 8987, 8996-97, ¶ 20 (2002) (denying complaint which alleged that a commercial mobile radio service provider discriminated against complainant by not offering discounts and other inducements that were offered to other subscribers), *aff'd*, *Orloff v. FCC*, 352 F.3d 415 (D.C. Cir. 2003); *Competition in the Interstate Interexchange Marketplace*, Notice of Proposed Rulemaking, 5 FCC Rcd 2627, 2641-42, ¶¶ 123-25 (1990) (concluding that "further streamlining Title II regulation" of AT&T's interexchange services to business customers "does not appear to be sufficient in itself to adapt our regulatory regime to the dynamics of expanding competition in the interstate long-distance marketplace").

17 *Preserving the Open Internet*, 25 FCC Rcd 17905, 17911-10, 17933, ¶¶ 14, 46 (2010) ("*Open Internet Order*").

18 *Concerning the Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion*, 27 FCC Rcd 10342, 10347, ¶ 6 (2012) ("*Eighth Broadband Deployment Report*") (reporting advances in broadband speeds).

19 *Policy and Rules Concerning Rates for Competitive Common Carrier Services and Facilities Authorizations Therefor*, Further Notice of Proposed Rulemaking, 84 F.C.C.2d 445, 456, ¶ 33a (1981) (in a dynamic market "spurred on by rapid technological change and innovation …, the continued rigid uniform application of Title II requirements to all market participants threatens to undermine this dynamism and in turn betray the overriding goals of the Act") ("*Competitive Carrier FNPRM*"); *Amendment of Section 64.702 of the Commission's Rules and Regulations (Second Computer Inquiry)*, Final Decision, 77 F.C.C.2d 384, 432, ¶ 123 (1980) (declining to subject enhanced services to Title II regulation, finding that such regulation "would negate the dynamics of computer technology in this area").

20 47 U.S.C. § 201(b).

21 47 U.S.C. § 202(a).

access services.[22] Under the circumstances, imposing Title II requirements on the broadband Internet access services offered to end users would be a solution in search of a problem.

Similarly, imposing Title II on broadband providers in their dealings with edge providers would be a misguided attempt to address the "problem" of "fast lanes" on the Internet. Proponents of Title II have erroneously argued that pay-for-priority service would be inconsistent with Title II. Title II has always permitted common carriers to engage in "reasonable" discrimination,[23] for example by prioritizing certain traffic,[24] making sales concessions,[25] and offering volume discounts.[26] Because Title II has never been interpreted to prohibit all forms of preferential treatment, the Commission could not rely upon its Title II authority to declare all forms of paid prioritization inherently unreasonable.

B. The Commission Would Face Significant Legal Hurdles If It Were to Attempt to Regulate Broadband Services as Title II Telecommunications Services

For well over a decade, it has been settled communications policy that broadband Internet access services are "information services."[27] As the Commission recognized in the 2002 *Cable Modem Order*, consumers and businesses purchase an integrated Internet service offering, not separate or stand-alone transmission and Internet access capabilities.[28] Broadband Internet access services are information services because

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22 NPRM at 99 (Dissenting Statement of Commissioner O'Rielly).

23 *Verizon*, 740 F.3d at 657.

24 *Nat'l Ass'n of Regulatory Util. Comm'rs v. FCC*, 533 F.2d 601, 609 (D.C. Cir. 1976) (explaining that "the Commission's acceptance, or even requirement, of certain types of priority treatment . . . does not detract from the common carrier status of those subject to it").

25 *Orloff*, 17 FCC Rcd at 8996-97, ¶ 20.

26 *Private Line Rate Structure & Volume Discount Practices*, 97 F.C.C.2d 923, 947, ¶ 38 (1984).

27 47 U.S.C. § 153(24).

28 *Cable Modem Order*, 17 FCC Rcd at 4821, ¶ 36.

they combine the capabilities to store and retrieve information with transport of that information via telecommunications.[29]

Based on over a decade of Commission and court precedent, any attempt by the Commission to retreat from the longstanding classification of broadband services — from Title I "information services" to Title II "telecommunications services" — would face serious legal hurdles. Although agencies generally have discretion to change their policies, an agency reversing course must supply "a more detailed justification than what would suffice for a new policy created on a blank slate" in cases where: (1) "its new policy rests upon factual findings that contradict those which underlay its prior policy;" or (2) its "prior policy has engendered serious reliance interests that must be taken into account."[30]

There has been no great shift in the underlying facts that would be required to justify such a radical departure from prior policy. To the contrary, the Commission's rationale for classifying broadband services as information services — the integrated nature of the offerings — is even more true today than it was when the Commission first addressed the regulatory classification issue more than a decade ago. With new cloud storage and services hosting capabilities and increased security and privacy features, the processing and transmission components of broadband Internet access are becoming more intertwined, and consumers increasingly view broadband Internet access service as a single offering, providing access to and interaction with the Internet. Thus, the factual predicate that would be legally necessary for changing the classification of broadband from an information service to a telecommunications service is lacking.

Any change in the classification of broadband Internet access services also would require that the Commission acknowledge and disavow its representations to the

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29 *Id.* at 4821-22, ¶¶ 37-38.

30 *FCC v. Fox Television Stations, Inc.*, 129 S. Ct. 1800, 1811 (2009).

Supreme Court in *Brand X* that such service (when offered by cable operators) is a single, integrated offering without a separate transmission component.[31] The Supreme Court agreed with the Commission.[32] Under the circumstances, the doctrine of judicial estoppel stands as a substantial obstacle to the classification of broadband as a telecommunications service, since an administrative agency is not free to abandon facts and legal interpretations argued to, and upheld by, the courts simply to accomplish a new policy agenda or political objective.[33]

In addition, reclassifying broadband under Title II would undermine investments made in reliance on prior classification decisions. In the *Wireline Broadband Order*, the Commission expected that its decision to classify broadband Internet access service as an information service would spur broadband providers "to invest in and deploy innovative broadband capabilities that can benefit all Americans."[34] This expectation came to fruition, as broadband providers invested billions of dollars to deploy broadband services in reliance upon the Commission's light-touch regulatory treatment of such services.[35] Having successfully created an environment of investment and innovation spurred by its policy to regulate broadband under Title I, it would be unwise and legally untenable for the Commission to reverse course by now subjecting broadband services to regulation under Title II.

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[31] Reply Brief for the Federal Petitioners at 5-6, 16, *NCTA v. Brand X Internet Servs.*, 545 U.S. 967 (2005) (No. 04-277).

[32] *Brand X*, 545 U.S. at 987.

[33] *Comcast Corp. v. FCC*, 600 F.3d 642, 647 (D.C. Cir. 2010) ("Courts may invoke judicial estoppel '[w]here a party assumes a certain position in a legal proceeding, . . . succeeds in maintaining that position, . . . [and then,] simply because his interests have changed, assume[s] a contrary position.'"); *see also, e.g.*, *Iowa Utilities Board v. FCC*, 219 F.3d 744, 756 (8th Cir. 2000), *aff'd in part, rev'd in part on other grounds sub nom., Verizon Commcn's, Inc. v. FCC*, 535 U.S. 467 (2002).

[34] *Wireline Broadband Order*, 20 FCC Rcd at 14855, ¶ 1.

[35] *Eighth Broadband Deployment Report*, 27 FCC Rcd at 10347, ¶ 6 (finding that broadband providers "invest tens of billions of dollars annually in the networks that make broadband possible, and since the 1996 Act, they are reported to have invested more than $1 trillion dollars combined").

The Commission need not go down the legally dubious Title II path because the D.C. Circuit has provided the Commission with a roadmap to adopt lawful open Internet rules. As the Commission is well aware, the D.C. Circuit held in *Verizon v. FCC* that the Commission has authority under section 706 to promulgate rules that preserve the virtuous cycle on the Internet.[36] The *Verizon* court also found that the Commission could regulate arrangements between broadband providers and edge providers under a "commercially reasonable" standard.[37] Following the D.C. Circuit's roadmap would be a far more prudent and sustainable approach to preserving the open Internet than the risky gambit of Title II regulation.

C. Transitioning to Title II Regulation Would Introduce Considerable Uncertainty in the Marketplace

Apart from the legal challenges to applying Title II to broadband services, the policy concerns are at least as troubling. The Commission also should reject Title II regulation because of the uncertainty it would inject into the broadband marketplace. Classifying broadband Internet access services as telecommunications services would subject broadband providers to every provision of Title II and every Commission rule promulgated to implement that title, absent forbearance by the Commission.[38] It could take years for the Commission to sort through which Title II requirements should apply to broadband, and the inevitable legal appeals would only prolong a state of regulatory instability. The industry has endured multiple administrative proceedings and appellate cases in connection with the Commission's efforts to craft lawful open Internet rules, and forcing the industry to slog through the Title II quagmire would threaten the Commission's efforts to expand broadband availability and adoption.

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36 *Verizon*, 740 F.3d at 636-42.

37 *Id.* at 657.

38 NPRM ¶ 153.

The widely held view that forbearance would be needed to make any application of Title II consistent with the technical and market realities of broadband Internet access services underscores the problems with applying legacy rules to cutting-edge services. The NPRM's request for comment is similar to the Commission's 2010 "Third Way" approach, on which the Commission seeks to "refresh the record,"[39] and both suffer from the same infirmities.

As an initial matter, there is an obvious tension between classifying broadband services as telecommunications services while simultaneously forbearing from various Title II requirements. The premise of Title II regulation is "to constrain the exercise of substantial market power possessed by firms providing communications services."[40] By contrast, section 10 of the Communications Act allows the Commission to forbear from enforcing regulatory requirements that, in the agency's judgment, are: (i) not necessary to ensure that charges and practices are just and reasonable and not unjustly or unreasonably discriminatory; (ii) not necessary to protect consumers; and (iii) not in the public interest.[41] It would be a difficult needle for the Commission to thread to find that broadband providers have market power to justify the imposition of Title II regulation while at the same time making the requisite findings under section 10 that Title II requirements are unnecessary to constrain that alleged market power.

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39 *Framework for Broadband Internet Service*, Notice of Inquiry, 25 FCC Rcd 7866 (2010) ("*Broadband NOI*"); Public Notice, 2014 WL 2444307, at *1. Under the Third Way approach, wired "broadband Internet connectivity" would be classified as a telecommunications service, but the Commission would forbear from applying most requirements of Title II to that connectivity service, except for some subset of otherwise applicable statutory requirements.

40 *Competitive Carrier FNPRM*, 84 F.C.C.2d at 447, ¶ 6.

41 47 U.S.C. § 160(a).

Furthermore, even applying only the "fundamental provisions" of Title II to broadband services would lead to substantial marketplace uncertainty.[42] As Commissioner O'Rielly pointedly observes:

> Even if the Commission granted forbearance from all the provisions that it has eliminated for incumbent telephone companies — and then some — advocates are ignoring that broadband providers and services would still be subject to a host of unnecessary rules. The idea that the Commission can magically impose or sprinkle just the right amount of Title II on broadband providers is giving the Commission more credit than it ever deserves.[43]

Even after the Commission settles on which Title II obligations to retain, substantial difficult questions would remain. For example, how would the Commission determine whether rates for broadband services when offered on a standalone basis and as part of a bundle with non-Title II offerings (*e.g.*, VoIP service, cable service, etc.) are "just and reasonable" as required by section 201(b)? Would it be an "unjust or unreasonable" practice in violation of section 201(b) for a broadband provider to offer lower rates — whether on a standalone or bundled basis — to non-customers than existing customers? And, would a broadband provider run afoul of section 202(a) if it "discriminated" against subscribers by not offering discounts and other inducements that are offered to other subscribers? These questions are fundamental to the continued successful functioning of the broadband market to which the Commission has no ready answers.[44]

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42 *Broadband NOI*, 25 FCC Rcd at 7898, ¶ 75.

43 NPRM at 98 (Dissenting Statement of Commissioner O'Rielly).

44 However laudable the so-called Third Way proposal may have been at the time, it has largely been rendered moot by subsequent events. In particular, the Commission released the *Broadband NOI* in response to the D.C. Circuit's *Comcast* decision which found that the Commission had failed to establish that it had the requisite "ancillary authority" to regulate a broadband provider's network management practices. *See Comcast*, 600 F.3d at 661. However, since that decision, the D.C. Circuit has affirmed the Commission's authority to regulate such practices under section 706. *See Verizon*, 740 F.3d at 636-42. Under the circumstances, no need exists for the Commission to develop a new "legal framework" to address threats to the openness of the Internet.

Changing the classification of broadband services from Title I to Title II also threatens to reopen long settled debates about the classification of a host of information services — like voice mail and interactive voice response technologies. These offerings have flourished as a result of a consistent light-touch regulatory treatment by the Commission. Any threat of changes in such treatment to a more prescriptive regulatory approach would only further unsettle a communications industry in dire need of some degree of regulatory certainty.

For these reasons, the Commission should decline to impose Title II, utility-like regulation on broadband Internet access services.

V. THE COMMISSION SHOULD ALLOW REASONABLE NETWORK MANAGEMENT PRACTICES, SPECIALIZED SERVICES AND OTHER COMMERCIALLY REASONABLE SERVICES AND ENHANCEMENTS

A. Reasonable Network Management

Alcatel-Lucent has long advocated that reasonable network management practices should be permitted and broadly defined.[45] The Commission's *Open Internet Order* agreed and recognized the need for service providers to manage their networks.[46] Indeed, network management is essential to provide the network functionality that consumers expect — from enforcing per-subscriber service-level agreements, to preventing harms to the network by malicious activities, such as Denial of Service attacks, to ensuring the requisite security of virtual private networks ("VPN"). And, as mentioned above, consumers will expect even greater "management" of networks with the increasing number of cloud services, and as their media, content and files are continually transmitted to, stored in, and retrieved from, the cloud.

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45 Comments of Alcatel-Lucent at 8-10, GN Docket No. 09-191 (Jan. 14, 2010) ("Alcatel-Lucent Open Internet Comments").

46 *Open Internet Order*, 25 FCC Rcd at 17951-56, ¶¶ 80-92.

Recognizing that network management is essential, the Commission exempted "reasonable network management" from the 2010 no blocking and no unreasonable discrimination rules.[47] The Commission also declined to strictly define at that time what constitutes "reasonable network management," but rather concluded that it would "develop the scope of reasonable network management on a case-by-case basis."[48]

Alcatel-Lucent urges that this approach has been successful and agrees with the Commission's tentative conclusion that it should continue to permit reasonable network management. Alcatel-Lucent further advocates that the Commission should continue to rely on transparency as the key to ensuring that network management practices are lawful. Indeed, the NPRM observes that:

> If designed correctly, disclosure policies are among the most effective and least intrusive regulatory measures at the Commission's disposal. Applied here, the Commission continues to believe that access to accurate information about broadband provider practices encourages the competition, innovation, and high-quality services that drive consumer demand and broadband investment and deployment.[49]

As such, the Commission should continue to allow reasonable network management practices coupled with disclosure policies that provide consumers with the appropriate level of transparency into these practices.

B. Specialized Services

Alcatel-Lucent also has been a longstanding proponent of specialized services,[50] and the *Open Internet Order* expressly permitted service providers to offer such

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47 *Id.* at 17942-43, 17944, 17959-62, ¶¶ 63-66, 68-69, 99-103.

48 *Id.* at 17952, ¶ 83.

49 NPRM ¶ 66.

50 Alcatel-Lucent Open Internet Comments at 10-23; Comments of Alcatel-Lucent at 1-10, GN Docket No. 09-191 (Oct. 12, 2010) ("Alcatel-Lucent Further Inquiry Comments").

services.[51] Alcatel-Lucent supports the Commission's conclusion that "these services can benefit end users and spur investment."[52]

The specialized services demanded by consumers 12 months from now may not even exist today, given the dynamic nature of the application, web service and cloud service marketplace. As such, the Commission's rules, which are amended by rulemaking proceedings measured in years, will constrain the development of these services if overly prescriptive rules are adopted. It is effectively impossible to predict the next "killer app" and the network treatment it needs. So the Commission should defer to service providers and consumers, who should be free to (continuously) decide the future set of specialized services and the performance required for an optimal user experience.

From an engineering viewpoint, "specialized services" are those services that have some level of guaranteed quality of service, thereby differentiating them from services or applications that run on the "best effort" broadband service. Specialized services typically include one or several of the following characteristics: (1) guaranteed (low) packet loss, (2) guaranteed (low) packet delay, (3) secure connectivity, or (4) guaranteed bandwidth. This characterization of a specialized service does not depend on whether the service is carried over a private network, a VPN, the public Internet, or even whether the service is IP-based.

1. Services sensitive to packet loss. A common service that benefits from guaranteed (low) packet loss is video. A video specialized service could provide QoS guarantees to so-called "over the top" video services of premium interest to the end user, allowing these services to be delivered with similar resolution and quality as conventional specialized service video offerings. As noted above, video over broadband has exploded in popularity as users consume streaming web video that is long-form HD, for which the

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51 *Open Internet Order*, 25 FCC Rcd at 17965-66, ¶¶ 112-14.

52 NPRM ¶ 60.

tolerance for packet loss is low but the probability of loss is high due to the significant load that such services put on the network.

2. Services sensitive to packet delay. Applications or services that contain enhanced service treatment because they are sensitive to packet delay also should be considered as prime candidates for "specialized services." There is a set of applications for which users have shown a tolerance for packet loss, but very limited tolerance for packet delay. Three such applications or services are: (i) voice or communications services; (ii) interactive gaming; and (iii) virtual desktop services.

For voice communications services, the round trip time ("RTT") — the time between the speaker finishing speaking and the response to arrive — must be less than 300-400 milliseconds for there not to be a perceptible delay in the communication. Therefore, voice services delivered as a specialized service would consist of marking the voice packets as "highest priority" and expediting the forwarding of these packets using the highest priority class (which is served before *any* other traffic). Looking forward, the same specialized service treatment will clearly be beneficial for any inter-person communications service, such as video calling, video conferencing, interactive videocasting (sharing live audio and video with friends and family), as well as for e-health and e-learning, and remote monitoring/security services, all of which depend on such interactive communications services.

For gaming, an RTT (known to gamers as "ping") of below 60 milliseconds is optimal for online interactive gaming to be acceptable to users. In order to optimize their Internet-based gaming experience, avid gamers may choose to upgrade their high-speed Internet access service to a higher tier (more bandwidth) because this diminishes the data transfer time even though it does not directly impact the RTT. The preferred alternative would, however, be to use a specialized service for the particular gaming application, with

expedited forwarding (low delay) characteristics, if such a service were available on a subscription or on-demand basis.

Similar timing constraints exist for hosting of certain interactive applications in the cloud, as the responsiveness to the user tap, click or key press needs to be similarly perceived as instantaneous. Examples include: virtual desktop services, virtual customer premises equipment services, and interactive web services.

3. Services requiring secure private connectivity. Another category of "specialized services" would be services that incorporate those applications or services that contain enhanced service treatment because they require secure, private connectivity. There is a set of services that do not have particular delay or packet loss requirements, but do require security of connectivity with freedom to choose the packet addressing schema and with guaranteed immunity from impingement by any other traffic whether malicious or not. Layer 2 and Layer 3 VPN services are two such specialized services, with the former creating the VPN using Ethernet header information, and the latter using IP header information, to map the traffic to MPLS tunnels across the IP/MPLS core to the destination(s). Such VPN schemas also prevent any unauthorized traffic from unknown Ethernet or IP sources from traversing these connections. The requirement for secure communication alone does not mandate the need for a specialized service, as techniques such as IPSec can be used to secure connections over the Internet, but a combination of: (i) secure communication, (ii) prevention of other traffic traversing the same connection, and (iii) support for the subscriber-selected addressing scheme does mandate the use of a specialized service.

4. Services requiring bandwidth guarantees. A final example of a type of service that has guaranteed QoS needs would be services that contain enhanced service treatment because they require bandwidth guarantees. In many cases the service requirement may not be for a specified packet loss, or packet delay, or secure private communication, but

instead for a guaranteed bandwidth associated with a specific service so as to provide a well-defined data throughput. An example of such a service is a file transfer for back-up to a cloud-based store, or download of specific content to an end-user device within a specified period of time. A basic form of such a service could be provided as an upgrade to the subscriber's Internet service tier and implemented using network management techniques, but the advanced concept described here is for an application-specific temporary bandwidth boost that is more appropriately defined as a specialized service offering.

C. Customer-Requested Enhanced Treatment Should Be Deemed Lawful

The preceding subsections described applications that would benefit from delivery as specialized services in order to guarantee the level of packet loss, packet delay, security, and/or bandwidth required for a desirable customer experience. In addition to the potential for operator-driven specialized service offerings, there are myriad other applications that have emerged — and will continue to emerge — and are of sufficient value to the consumer that individual users will desire to see them enhanced in order to receive a guaranteed quality of service.

In the majority of cases, the service requirements will be those outlined above, but there will also be times where a consumer wants certain defined services that are not a broadband provider-defined specialized service. While, as a practical matter, broadband providers will not be able to fulfill every individualized consumer request for unique service attributes, it is important that the Commission not prohibit consumers from defining additional specialized services or other service enhancements that may suit consumers' needs. Such user-requested specialized services or service enhancements could include:

- Temporary boost or guaranteed level of bandwidth for a fast file download, *e.g.*, for a large movie/video file requested by the end user;

- Temporary boost or guaranteed level of bandwidth for a fast file upload, *e.g.*, for online storage or backup, or for remote access to specific content stored in the home requested by the end user;
- Guaranteed low level of delay for a communications application selected by the end user;
- Guaranteed low level of packet loss for a video application selected by the end user; and/or
- A temporarily higher level of security for sensitive information defined by the end user.

In each case, the user may desire the enhanced service to only be applied to a specific end point or application, as a more efficient (and economical) alternative to boosting their entire service tier.

For example, the end user may be satisfied with a particular service tier for "best effort" Internet access, but he/she may desire specialized service level of quality and reliability for online gaming or for a specific gaming service not offered as a pre-packaged operator specialized service. The service provider can therefore provide the consumer with two choices: (i) the choice of a higher tier subscription service that would provide more bandwidth in general; or (ii) a specific applications enablement option where the specialized service level of quality and reliability is provided for the online gaming application while maintaining the current "best effort" Internet access subscription. This increase in consumer choice with regard to service quality will lead to greater adoption of Internet applications both as "best effort" services and specialized services, which in turn will lead to greater stimulus for innovation and investment in next generation Internet services and networks.

As such, consumer-driven enhancements would be a clear benefit to the broadband ecosystem, would serve the public interest, and should be presumed lawful under any open Internet framework that the Commission adopts.

D. A Blanket Prohibition on Third-Party-Pays Business Models Would Disserve the Public Interest

As described above, there are a host of potential consumer benefits to permitting increased consumer-enabled enhancements to allow a better consumer experience. It is also axiomatic that consumers should have the ability to choose among various service tiers to meet their needs. Not every consumer wants or needs the capability to watch five HD videos at once or to gain a latency edge in a gaming application — but those who do should be permitted to obtain a level of service to enable that capability. Not every consumer, however, can afford the highest available bandwidth or speeds, and many customers who *can* afford higher-tier services simply do not choose to upgrade their subscription because they deem their current service sufficient to meet their needs. It is precisely these types of customers who could benefit from third-party-pays arrangements. In sum, third-party-pays arrangements provide a way for services that demand high QoS to reach customers who may not have connections that support those services.

While critics of prioritization claim only large service providers and large content providers would benefit from third-party-pays arrangements, Alcatel-Lucent respectfully submits that such business arrangements would have immense utility for consumers and for small content providers and could have the added benefit of facilitating the Commission's goal of increased adoption.

For an example of a clear win for consumers, consider a person who wishes to enroll in an online class but would have difficulty affording a broadband tier to support the required level of QoS for coursework and testing. An online university should be permitted to "sponsor" higher-tier connectivity for one of its students during relevant times (for example, two hours each week) or, in the alternative, to tag its content for priority treatment, to enable that student to successfully complete the coursework. This type of arrangement should be encouraged by the Commission, not prohibited.

With respect to how third-party-pays arrangements can help a small content provider, consider a start-up company that wants to reach new customers with a bandwidth intensive application that will not work as intended below a certain service tier. If a QoS test shows the content will not perform well on the consumer's chosen tier of service, that third-party content provider should be allowed to offer to boost the consumer's bandwidth so he or she can experience their product as intended. Without the option to sponsor enhanced QoS, the start-up may never be able to reach a host of consumers.

Note that the scenarios above are most likely to benefit lower-income consumers, since those that already purchase high-tier services are less likely to need the third-party-pays QoS enhancement. Perhaps most valuable from a public interest perspective, consumers in the two scenarios described above would have the opportunity to experience better service at no personal cost, which could facilitate a consumer experiencing the value of higher-tier service and adopting that higher-tier going forward. This increased consumer adoption would benefit the entire broadband ecosystem. In fact, one potential outcome would be business arrangements where the broadband service provider partners with a content provider to run promotions at no charge in the hopes that the consumer will be willing to pay for premium service once the promotion ends. Such promotions are well-known to the subscription video market, where short-term premium-service promotions are the norm.

In sum, pay-for-priority arrangements have the potential to benefit consumers, start-up companies, and spur adoption. A blanket prohibition of such arrangements would disserve the public interest and should be rejected.

VI. THE COMMISSION SHOULD CONTINUE TO RECOGNIZE PLATFORM DISTINCTIONS

In the 2010 *Open Internet Order*, the Commission recognized distinctions between "fixed" and "mobile" Internet access services, which led the Commission to apply a lighter touch approach to mobile services.[53] In particular, the no blocking rule applied a different standard to mobile broadband Internet access services, and mobile Internet access services were completely excluded from the no unreasonable discrimination rule. Alcatel-Lucent has consistently supported rules that recognize the distinctions between different technology platforms and agrees with the Commission's tentative conclusion that any new rules should continue to distinguish between fixed and mobile broadband services.[54]

The NPRM poses the question as to whether mobile marketplace changes since 2010 warrant revisiting the distinctions made between fixed and mobile platforms.[55] Alcatel-Lucent respectfully submits that the answer is "no." Wireless broadband services are constrained by limited and dynamically changing radio resources shared among multiple users, and service providers need to be free to manage their networks in order to meet the current and expected consumer demand and service quality obligations. Although the Commission has unlocked new spectrum bands for auction since 2010 and carriers continue to find ways to wring every last drop of efficiency from their limited spectrum resources, wireless service demand is far outpacing these advances. The basic physics of wireless networks continue to limit the available bandwidth when compared to higher capacity wireline networks, and the comparatively greater need of wireless operators to manage network capacity must continue to be recognized.

As such, the Commission should continue to recognize the distinctions between different Internet access platforms to allow all platforms to continue to flourish.

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53 *Open Internet Order*, 25 FCC Rcd at 17956-58, ¶¶ 94-96.

54 *See* Alcatel-Lucent Open Internet Comments at 27-28; NPRM ¶ 62.

55 NPRM ¶ 108.

VII. CONCLUSION

For the foregoing reasons, the Commission should continue to apply, at most, a light-touch regulatory framework to broadband Internet access services, to permit reasonable network management practices, specialized services, and other QoS enhancements, and to recognize distinctions between wireline and wireless broadband platforms.

Respectfully submitted,

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/s/

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