Analysis of Proposed Network Neutrality Rules

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February 18, 2015

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Executive Summary

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1. The no-throttling rule should explicitly ban discrimination against individual applications AND classes of applications.
2. The exception for reasonable network management should require network management to be as application-agnostic as possible.
3. The FCC's rules should explicitly ban two types of zero-rating: (1) zero-rating in exchange for edge-provider payment and (2) zero-rating of selected applications within a class of similar applications without charging edge providers.

General Conduct Rule. The FCC should provide additional guidance on how it intends to evaluate practices under the proposed general conduct rule. The Open Internet Order provided an approach for how to identify a practice's impact on innovation and free speech. The FCC should adopt a similar approach in the context of the general conduct rule.

In particular, to determine whether a practice is likely to reduce innovation and free speech, the FCC should evaluate the practice based on whether it preserves the following three factors:

- User choice;
- Application-agnosticism; and
- Low costs of application innovation and free speech.

This approach would allow complainants to show that a practice is likely to reduce innovation and free speech and should therefore be prohibited by demonstrating that it violates at least one of these three factors, without requiring them to engage in a detailed analysis of the impact of the practice on application innovation, free speech and broadband deployment.

Interconnection. The FCC should prohibit providers of last-mile Internet access services from charging interconnecting networks, application providers and content delivery networks fees for access to their subscribers and clarify that last-mile ISPs can't use practices related to interconnection to evade the FCC's network neutrality rules.

I. To avoid the considerable social costs associated with evaluating behavior case-by-case, behavior that is clearly harmful should be explicitly banned by bright-line rules.[2]

The FCC's current proposal contains two types of rules: Bright-line rules against blocking, throttling and paid prioritization that clearly ban specific behavior, and a general conduct rule that allows the FCC to decide case-by-case whether certain practices should be banned.

Bright-line rules provide certainty to the market, keep the costs of regulation low and make it feasible for users, start-ups and non-profits to bring complaints. By removing the FCC's discretion in specific cases, they also limit opportunities for FCC overreach.[3]

By contrast, leaving the evaluation of specific practices to case-by-case adjudications under the general conduct rule creates considerable uncertainty, increases the costs of regulation and puts the burden on the public to bring complaints.[4]

If a practice is yet unknown or cannot be evaluated without considering the specific facts of the case, the practice cannot be evaluated in advance, so these costs are unavoidable. *But if a practice is already known to be harmful*, it should be prohibited by bright-line rules in order to avoid the considerable social costs associated with case-by-case evaluations.

1. The no-throttling rule should explicitly ban discrimination against individual applications AND classes of applications.

According to the FCC Fact Sheet describing the network neutrality rules described by the Chairman, the no-throttling rule prohibits ISPs from "impair[ing] or degrade[ing] lawful Internet traffic on the basis of content, applications, services, or non-harmful devices."[5]

It is unclear whether the rule only bans discrimination against individual applications within a class of similar applications, or also discrimination against classes of applications.[6] If the rule bans only discrimination against individual applications, but not against classes of applications, ISPs could not single out specific applications within a class of similar applications. They could, however, degrade or impair certain applications as long as they do so for all applications in the class (i.e. all online video applications, or all applications that are sensitive to delay). For example, they could not treat Netflix differently from Hulu or YouTube, or Skype

[2] This paper builds on and draws in part on my earlier work on network neutrality, including van Schewick (2010b); van Schewick (2015); van Schewick & Weiland (2015).
[3] van Schewick (2014c).
[4] See generally van Schewick (2015), pp. 69-83; van Schewick (2014c).
[5] Federal Communications Commission (2015), p. 2.
[6] Throughout this paper, the term "application" refers to a specific instance of a specific type of application. For example, Vonage is an application, as are Skype and Google Voice; each of them is a specific instance of Internet telephony applications. A "class of applications" is a group of individual applications that share some common characteristic. For example, "Internet telephony" or "Internet telephony applications" (i.e., the group of all Internet telephony applications), "latency-sensitive applications" (i.e., the group of all latency-sensitive applications), or the group of all applications that use a specific application-layer or transport-layer protocol (e.g., all applications that use the BitTorrent protocol) are all classes of applications. For a more detailed explanation of the terms "application" and "class of application", see van Schewick (2015), pp. 104-105, Box 13 and p. 125, footnote 444.

differently from Vonage. But they could slow down all online video applications, or all applications that are sensitive to delay.

While the rule might be read either way, this question is too important to be left to future adjudications. Instead, the no-throttling rule should explicitly ban discrimination against applications AND classes of applications (so-called "application-specific" discrimination).

Not explicitly banning discrimination against classes of applications would be a significant step back behind the FCC's 2010 Open Internet nondiscrimination rule. According to the text of the order, the FCC would have evaluated discriminatory conduct based on whether it is "use-agnostic" or "application-agnostic" (i.e. whether it "does not discriminate among specific uses of the network *or classes of uses*").[7] Similarly, the Open Internet rules' transparency rule required ISPs to disclose "application-specific" network practices, which the text of the order defined as behavior that "inhibits or favors certain applications *or classes of applications*."[8] Thus, in the past, the FCC has banned discrimination against applications and classes of applications, and has explicitly distinguished between the two. President Obama's network neutrality plan and Congressman Waxman's October 2010 letter proposed banning discrimination against classes of applications as well.[9]

Discriminating against classes of applications is just as harmful as discrimination against individual applications, so there is no need to evaluate this practice case-by-case.[10] Just like discrimination against individual applications, discrimination against classes of applications allows ISPs to interfere with user choice and distort competition among applications or classes of applications. For example, ISPs could slow down all Internet telephony applications that let users make calls over their Internet connection, like Skype or Vonage, to make them less competitive with their own traditional telephony offering, or impair all Internet messaging applications like WhatsApp that threaten cellular carriers' revenue from traditional text messaging services. The power to choose winners and losers online should belong to the market, not to ISPs.

A rule that does not ban discrimination against classes of applications would leave users and application providers without protection against network neutrality violations that ISPs have engaged in in the past. For years, AT&T blocked the use of Internet telephony applications over its cellular data network to protect its traditional voice revenue. This would be illegal under the proposed no-blocking rule.[11] But under a no-throttling rule that allows discrimination against classes of applications, AT&T could reach the same result by slowing down all Internet

[7] Federal Communications Commission (2010), pp. 17,945-17,946, para. 73 (emphasis added).
[8] Federal Communications Commission (2010), pp. 17,938, para 56 (emphasis added).
[9] The White House (2014) ("No throttling. Nor should ISPs be able to intentionally slow down some content or speed up others — through a process often called 'throttling' — based on the type of service or your ISP's preferences."); Waxman (2014), p. 10 and footnote 31 ("The FCC should separately adopt a 'no throttling' rule that prohibits broadband providers from slowing down or degrading lawful Internet traffic on the basis of content, applications, services or devices, subject to reasonable network management and public safety." The footnote to this sentence clarifies that "[h]ereinafter, the term "content" in this context refers collectively to content, applications, services, and devices, and classes of content, applications, services and devices.")
[10] For a more detailed analysis, see van Schewick (2015), pp. 102-124; van Schewick & Weiland (2015), p. 90.
[11] Hansell (2009a); Hansell (2009b).

telephony applications instead. In 2007, Comcast was found to be interfering with applications that used particular peer-to-peer file-sharing protocols. According to the FCC's 2008 Order against Comcast, this behavior violated the FCC's Internet Policy Statement and did not constitute reasonable network management, but it would not violate a no-throttling rule that does not ban discrimination against classes of applications.[12]

There may be network management problems that cannot be addressed in an application-agnostic manner; solving them might require making distinctions between classes of applications. However, such cases would be dealt with through the exception for reasonable network management described below; they do not justify allowing discrimination against classes of applications in general.

2. The exception for reasonable network management should require network management to be as application-agnostic as possible.

According to the FCC Fact Sheet, the rules against blocking and throttling are subject to an exception for reasonable network management. To be considered "reasonable network management", a practice "must be primarily used for and tailored to achieving a legitimate network management — and not commercial — purpose."[13]

The fact sheet does not specify whether the rules also require network management to be as application-agnostic as possible. If the rules do not include such a requirement, ISPs could argue that slowing down or limiting the use of specific applications or classes of applications during times of congestion is a "tailored" approach to managing congestion, as long as the discrimination is limited to times of congestion.

That would be a real problem, and a significant step back from the FCC's 2008 Order against Comcast and the 2010 Open Internet Order. When ISPs weren't prohibited from engaging in application-specific network management, they have done just that. In the United States, Canada, and the United Kingdom, ISPs have routinely discriminated against specific applications or types of applications to manage congestion.[14] For example, in the United States, Comcast, RCN, and Cox managed traffic on their networks for a period of time by selectively interfering with BitTorrent and other peer-to-peer file-sharing applications, but not with other applications. In 2009, British ISP BT limited the bandwidth available to online streaming video applications to 896 kilobits per second in BT's "Up to 8 Mbps Option 1" broadband service, while continuing to allow the use of other bandwidth-intensive types of applications.[15]

[12] Often, there are a number of different applications that use a certain protocol. In this case, discriminating against all applications using that protocol is discrimination against a class of applications. See footnote 6 above.
[13] Federal Communications Commission (2015), p. 2.
[14] For a more complete overview of the available evidence, see van Schewick (2015), pp. 113-114.
[15] RCN Corporation (2010), pp. 2, 4; Comcast Corporation (2008), pp. 1, 9; Dischinger, et al. (2008), pp. 3, 7-8 (finding evidence of BitTorrent blocking by Comcast and Cox); Davis (2008) (citing a Cox statement that "Cox allows the use of file-sharing and peer-to-peer services for uploads and downloads, and we allow access to all legal content, but we must manage the traffic impact of peer-to-peer services, as most ISPs do for the benefit of the customer" (internal quotation marks omitted)); Cellan-Jones (2009).

But for the user or provider of the affected application, it doesn't matter whether an ISP engages in blocking or discrimination to increase its profits or manage its network. In both cases, users can't use the application of their choice, and application providers have problems reaching their users.

This is why the FCC and the Canadian Radio-Television and Telecommunications Commission have long required ISPs to manage their networks in a manner that is as application-agnostic as possible. Such an approach gives ISPs the tools to manage their networks and provide a quality experience for all Internet users, while protecting the Internet as a level playing field and supporting user choice even during times of congestion.[16] Since network providers can allocate bandwidth among users using application-agnostic criteria, they can prevent aggressive users from overwhelming the network and ensure fairness among users during times of congestion. For example, under the proposed exception, a network provider could give one person a larger share of the available bandwidth than another, because this person pays more for Internet access or has used the Internet less over a certain period of time. That would be application-agnostic discrimination. But it could not throttle the bandwidth available to a specific online video application such as Hulu or to online video in general. That would be application-specific discrimination.

Thus, under the proposed reasonable network management exception, the amount of bandwidth available to users during times of congestion may be limited. But how users use the bandwidth available to them, and whether they would like to give some of their applications priority over others, would be choices left to the users. At the same time, the exception provides a safety valve that allows network providers to react in more application-specific ways if a problem cannot be solved in an application-agnostic way.

This approach has been successfully applied in the US and Canada for many years. The FCC has required network management to be as application-agnostic as possible since 2008, when it adopted its order against Comcast,[17] and included this requirement in the Open Internet Order's exception for reasonable network management.[18] The FCC's Canadian counterpart, the Canadian Radio-Television and Telecommunications Commission, did the same in 2009.[19] In line with these regulatory requirements, large and small ISPs in the US and Canada have successfully managed congestion on fixed networks in an application-agnostic manner for many years.[20] Many wireless ISPs in the United States manage congestion that way, too.[21]

[16] For a more detailed description and analysis of the reasonable network management exception proposed here, see van Schewick (2015), pp. 137-140.
[17] Federal Communications Commission (2008), paras 47-50.
[18] Federal Communications Commission (2010), para 87.
[19] Canadian Radio-Television and Telecommunications Commission (2009), para 43 (asking, among other questions, whether a discriminatory network management practice results "in discrimination or preference as little as reasonably possible").
[20] For the US, see, .e.g., Comcast (2015); Bastian, et al. (2010); Meisner (2008); Frontier (2015); Lightstream (2015); Bretton Woods Telephone Company (2011); Plateau (2013). Canada: Since the CRTC's decision, most of the larger Canadian Internet service providers have changed their practices in response to the regulations regarding network management that the CRTC adopted following its investigation. In January 2012, Rogers remained the only

Contrary to the 2010 Open Internet rules, the rules proposed by the FCC would apply equally to fixed and mobile networks.[22] While mobile networks may be subject to unique constraints, the exception for reasonable network management proposed here is flexible enough to accommodate these constraints. The proposed exception only requires network management to be as application-agnostic *as possible*. Thus, if there are some technical characteristics of specific wireless technologies or special problems associated with mobility that make it impossible to solve certain network management problems in an application-agnostic manner, the exception would allow ISPs to react in more application-specific ways.

3. The FCC's rules should explicitly ban two types of zero-rating: (1) zero-rating in exchange for edge-provider payment, and (2) zero-rating of selected applications within a class of similar applications without charging edge providers.

The FCC's Fact Sheet does not explain how the FCC plans to address zero-rating – i.e. the practice of not counting certain applications against users' monthly bandwidth caps. While the Fact Sheet's description of the ban on paid prioritization could be read to include the zero-rating of applications against a fee, press reports suggest that the FCC intends to evaluate all forms of zero-rating under the general conduct rule.[23]

It is critical to address this issue now. The FCC's 2010 Open Internet order prohibited fixed ISPs from charging application providers for zero-rating. Not explicitly banning this practice would be a significant step back from that order.[24] In this proceeding and in the press, ISPs have consistently asserted their desire to engage in zero-rating.[25] In a recent filing, Verizon argued that it appealed the Open Internet Rules because its lawyers recognized the order banned zero-rating for a fee and Verizon wanted to engage in this practice.[26]

Since the FCC adopted its Open Internet Rules in 2010, zero-rating has spread from developing countries and is now used by operators in almost all OECD and European countries where it is not explicitly prohibited.[27] As a result, the question whether network neutrality rules should ban zero-rating has become a key point of contention in network neutrality debates around the world. In the past year, regulators in Chile, the Netherlands, Slovenia and Canada explicitly prohibited zero-rating, while regulators in Germany, Austria and Norway publicly stated that zero-rating violates network neutrality.[28]

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larger Canadian provider that was still engaging in discriminatory network management that had not announced an intention to phase out that policy. Geist (2007); Schmidt (2012).

[21] Mosaic Telecom (2011); HardyNet (2015); Telispire (2014); Carolina West Wireless (2011); Wireless Hometown (2011); Anderson (2008).

[22] Federal Communications Commission (2015), p. 2.

[23] Higginbotham (2015); Brustein (2015).

[24] See footnotes 29 and 30 below and accompanying text.

[25] Bergen (2015).

[26] Verizon (2015).

[27] Drossos (2015); Digital Fuel Monitor (2014) (listing 92 cases of zero-rating in OECD and EU countries).

[28] See, e.g., Meyer (2015b); Meyer (2015a); Meyer (2014a); Meyer (2014b); Drossos (2015).

Given the considerable social costs associated with leaving zero-rating to later case-by-case adjudications outlined, the FCC should explicitly ban the following two types of zero-rating that are clearly harmful.

Ban zero-rating in exchange for edge-provider payment.

First, the rules should explicitly prohibit ISPs from charging application providers for zero-rating. To realize this goal, the bright-line rule banning paid prioritization should prohibit ISPs from charging application providers for any form of preferential treatment, including zero-rating.

Not banning zero-rating against a fee would be a significant step back from the FCC's 2010 Open Internet rules. The text of the order effectively prohibited ISPs from striking deals with application providers "to directly or indirectly favor some traffic over other traffic."[29] As Verizon explained in a recent ex parte letter, the Open Internet rules prohibited it from entering into commercial arrangements that would allow application providers to pay for zero-rating; Verizon appealed the rules because it was interested in exploring such arrangements.[30]

Fees in exchange for zero-rating pose the same threat to innovation and free speech as fees in exchange for technical forms of preferential treatment.[31] As the record shows, start-ups, small businesses and low-cost speakers will often be unable to pay to be in the fast lane; they won't be able to pay for zero-rating, either. But if some companies can pay so that their content loads faster or does not count against users' bandwidth cap, then those who can't pay won't have a chance to compete and be heard.

In addition, ISPs would have an incentive to lower monthly bandwidth caps or increase the per-byte price for unrestricted Internet use in order to make it more attractive for application providers to pay for zero-rating, harming users and providers of applications that do not pay for exclusion from the cap.[32] This effect can already be observed in Europe.[33]

These problems exist regardless of whether an ISP offers the opportunity to pay for zero-rating to all applications (as in AT&T's sponsored data offering), to all applications in a class of similar applications (i.e. to all music streaming applications) or exclusively to some, but not all applications within a class of similar applications (i.e. only to YouTube, but not to Netflix). Thus, the rules should categorically ban all forms of zero-rating for a fee, regardless of how they are being offered.

[29] FCC Open Internet Order, p. 43, para 76.
[30] Verizon (2015) ("As we explained to the court in our briefs, the Commission's earlier rules foreclosed voluntary business arrangements, such as 'innovative arrangements (such as advertiser-supported services) that would help recover the costs of building and maintaining broadband networks.' These types of 'sponsored data' arrangements – where online content or service providers voluntarily pick up the tab for usage associated with their traffic, rather than the end user doing so – also hold promise for saving consumers money and enabling interested providers to differentiate themselves and better compete.", ibid. at 2)
[31] van Schewick (2014b); van Schewick & Weiland (2015), p. 87.
[32] See, e.g., Ananny, et al. (2015), p. 3.
[33] Rewheel (2014a); Rewheel (2014b); Digital Fuel Monitor (2015).

Congressman Waxman's October 2014 letter proposed banning zero-rating against a fee as well.[34]

Ban zero-rating of selected applications within a class of similar applications without charging edge providers.

Second, the rules should explicitly prohibit ISPs from zero-rating selected applications within a class of similar applications without charging the providers of the zero-rated application. This ban should apply regardless of whether the zero-rated applications are affiliated with the ISP or not. Thus, this ban would prohibit Comcast from zero-rating only the XFinity TV App for the Xbox, but not competing online video applications, or from zero-rating only YouTube, but not Netflix.

Like technical discrimination that singles out specific applications for special treatment, zero-rating certain applications artificially makes these applications more attractive than others.[35] And just like technical discrimination, zero-rating selected applications, but not other, competing applications allows ISPs to tilt the market in favor of specific applications and to "pick winners and losers" on the Internet. This is exactly the kind of harm that network neutrality rules are designed to prevent.

Congressman Waxman's October 2014 letter proposed prohibiting ISPs from zero-rating affiliated applications, but would have allowed the zero-rating of unaffiliated applications in the absence of an edge-provider fee.[36] However, the harm from the practice is the same, regardless of whether an ISP is affiliated with the application or not.

Review zero-rating of all applications in a class that does not involve edge-provider payments under the general conduct rule.

Third, while zero-rating all applications in a class is likely to be harmful as well, the harms from the practice may not be as obvious. If the FCC feels unprepared to fully evaluate this practice in advance, it could evaluate this type of zero-rating under the general conduct rule. T-Mobile's Music Freedom program, which seems to allow any interested music streaming application to apply to be zero-rated without payment, seems to belong to this category.

[34] Waxman (2014), p. 11 ("The FCC should adopt a separate bright-line rule that outlaws paid prioritization. The rule would prohibit broadband providers from entering into "pay-for-play" schemes with content providers and bar the use of access charges for obtaining preferential treatment such as faster speeds, guaranteed quality of service, exemptions from data plan limits, or other favorable terms and conditions.")

[35] van Schewick (2015), pp. 30-33; van Schewick & Weiland (2015), pp. 89-90.

[36] Zero-rating in exchange for a fee would have been prohibited by his proposed ban on paid prioritization. Waxman (2014), p. 11 ("Arrangements between a broadband provider and an affiliate that give the affiliated entity prioritization should also be considered a violation of this ban [on paid prioritization]." The footnote following this sentence clarified that "[a]ffiliates of broadband providers already have a monetary relationship with the provider and thus [are] subject to the ban on paid prioritization." Ibid., footnote 34).

II. The FCC should provide additional guidance on how it intends to evaluate practices under the proposed general conduct rule.

According to the FCC Fact Sheet, "the proposal would create a general Open Internet conduct standard that ISPs cannot harm consumers or edge providers."[37] The general conduct rule would apply to all practices that are not captured by the bright-line rules against blocking, throttling and paid prioritization, allowing the FCC to react to ISPs' practices as they evolve. Under this general conduct rule, the FCC would review case-by-case whether certain practices undermine Internet openness and should be prohibited.

The Fact Sheet does not provide additional details regarding the standard, nor does it outline which factors the FCC intends to use to evaluate specific practices under that standard. These are key details that will affect the standard's ability to effectively protect Internet openness in the future.

Fortunately, the FCC has provided clear, overarching goals that can guide how the agency operationalizes this standard. According to the FCC Fact Sheet, the FCC's proposed network neutrality rules aim to protect users' ability to use the applications of their choice without interference from ISPs and to foster application innovation, competition and free expression.[38] In line with these goals, the general conduct rule should prohibit specific practices that interfere with users' ability to use the applications or their choice or with edge providers' ability to reach their users, or that are likely to reduce application innovation, competition or free expression.

While this standard aims at the correct goals, it would not be specific enough to be administrable without further clarification. Thus, the key challenge is to structure the application of the the standard in a way that is administrable, provides certainty to the market, makes it feasible for users, start-ups and non-profits to bring successful complaints and keeps the costs of regulation low.

The Open Internet Order provides a blueprint for how to identify practices that reduce application innovation and free speech.

The agency has successfully confronted a similar problem when it adopted the Open Internet Order. The approach it chose there can serve as a blueprint for the operation of the general conduct rule today.

The initial draft order circulated to the Commissioners in December 2010 included a nondiscrimination rule that applied to fixed, but not mobile, Internet access service. The rule banned "unreasonable" discrimination without specifying how to interpret the term and left it to

[37] Federal Communications Commission (2015), p. 2.
[38] Federal Communications Commission (2015), p. 1.

later case-by-case adjudication to decide whether specific discriminatory conduct meets this criterion.[39]

This proposal—without further clarification—met widespread criticism for lack of sufficient guidance to the market and potential complainants. Entrepreneurs and investors explained that the proposal would not give them the certainty that their applications would not be discriminated against, which would make it difficult for them to get funding.[40] Commenters criticized the proposal for creating high costs of regulation and making it difficult, if not impossible, for actors with few resources and little experience with FCC processes to bring successful complaints.[41]

To provide more clarity to industry participants and to provide guidance to future adjudications, the text of the Order specified that the FCC would evaluate discriminatory conduct under the nondiscrimination rule based on how well the conduct preserves two factors—application-agnosticism and user choice—that have fostered application innovation and allowed the Internet to serve as a platform for social, political, and cultural interaction in the past.[42] (The same factors would have been used to evaluate discriminatory or exclusionary conduct under the Rules' exception for reasonable network management.)[43] Use-agnostic discrimination (also called "application-agnostic" discrimination), the Order explained, is "[d]ifferential treatment that does not discriminate among specific uses of the network or classes of uses." According to the Order, use-agnostic discrimination is likely to be reasonable, which suggests, in turn, that differential treatment that discriminates among specific uses of the network or classes of uses is likely to be unreasonable.[44]

As the order made clear, these factors were chosen because they are central to protecting user choice and fostering application innovation and free speech: Indeed, as Commissioner Copps explained in his concurring statement, "[i]n discussing the 'no unreasonable discrimination' standard, we put particular emphasis on keeping control in the hands of users and preserving an application-blind network—a key part of making the Internet the innovative platform it is today."[45]

The order justified the adoption of these factors as follows:

> "Maximizing end-user control is a policy goal Congress recognized in Section 230(b) of the Communications Act, and end-user choice and control are touchstones in evaluating the reasonableness of discrimination. As one commenter observes, 'letting users choose how they want to use the network enables them to use the Internet in a way that creates

[39] The draft rules were not released publicly, but they were described by the Chairman in public remarks when he circulated the draft rules: "And so the proposed framework includes a bar on unreasonable discrimination in transmitting lawful network traffic." Genachowski (2010).
[40] See, e.g., Burnham (2010); Srinivasan & Gupta (2010).
[41] See, e.g., The Council of Scientific Society Presidents (2010); NYSERNet (2010); van Schewick (2010a).
[42] Federal Communications Commission (2010), paras 69-74.
[43] Federal Communications Commission (2010), para 87.
[44] Federal Communications Commission (2010), para 73.
[45] Copps (2010).

> more value for them (and for society) than if network providers made this choice,' and 'is an important part of the mechanism that produces innovation under uncertainty.'"[46]
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> "Use-agnostic discrimination (sometimes referred to as application-agnostic discrimination) is consistent with Internet openness because it does not interfere with end users' choices about which content, applications, services, or devices to use. Nor does it distort competition among edge providers."[47]

The FCC explicitly clarified that the nondiscrimination rule did not require complainants to demonstrate harm to competition or harm to consumers:

> "We also reject the argument that only 'anticompetitive' discrimination yielding 'substantial consumer harm' should be prohibited by our rules. We are persuaded those proposed limiting terms are unduly narrow and could allow discriminatory conduct that is contrary to the public interest. The broad purposes of this rule—to encourage competition and remove impediments to infrastructure investment while protecting consumer choice, free expression, end-user control, and the ability to innovate without permission—cannot be achieved by preventing only those practices that are demonstrably anticompetitive or harmful to consumers. Rather, the rule rests on the general proposition that broadband providers should not pick winners and losers on the Internet—even for reasons that may be independent of providers' competitive interests or that may not immediately or demonstrably cause substantial consumer harm."[48]

The FCC should adopt a similar approach here.

To determine whether a practice is likely to reduce innovation and free speech, the FCC can adopt an administrable rule that provides greater certainty to all market participants. To do so, it should, in line with its prior thinking, evaluate the practice based on whether it preserves the following three factors:

1. User choice;
2. Application-agnosticism; and
3. Low costs of application innovation and free speech.

Practices that deviate from at least one of these factors are likely to reduce competition, application innovation and free speech.

This approach would allow complainants to show that a practice is likely to reduce application innovation and free speech and should therefore be prohibited by demonstrating that it violates at least one of these three factors, without requiring them to engage in a detailed analysis of the impact of the practice on application innovation, free speech and broadband deployment.[49]

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[46] Federal Communications Commission (2010), para 71 (footnote omitted).
[47] Federal Communications Commission (2010), para 73.
[48] Federal Communications Commission (2010), para 78.
[49] Each of these factors separately affects the Internet's ability to serve as a platform for innovation and free expression. As a result, practices that deviate from one of the factors will affect innovation and free speech. For

While the Open Internet Order did not *explicitly* specify the third factor – low costs of application innovation and free speech –as a criterion for evaluating discriminatory conduct, the FCC's analysis and condemnation of edge provider payments for preferential treatment under the nondiscrimination rule relied heavily on this factor. According to the text of the order, allowing ISPs to charge edge providers for preferential treatment increases the costs of application innovation and free speech, which in turn reduces application innovation, low-cost, and non-commercial speech and other non-commercial uses of the network.[50] While the Open Internet Order clearly recognized the central importance of this factor,[51] it effectively banned edge provider payments for any forms of differential treatment, so there was no need to list this factor separately. By contrast, the bright-line ban on paid prioritization in the FCC's current proposal only seems to apply to edge provider payments for technical forms of differential treatment, leaving payments for other forms of preferential treatment for the general conduct rule. Thus, explicitly including the third factor today would more fully capture the approach in the agency's earlier Order.

The Open Internet Order set out two additional factors for evaluating discriminatory conduct under the nondiscrimination rule and the exception for reasonable network management: transparency (i.e., whether differential treatment is disclosed) and conformity of the practice with "best practices and technical standards adopted by open, broadly representative, and independent Internet engineering, governance initiatives, or standards-setting organizations."[52]

These factors should not be part of the evaluation. The Open Internet Rules disclosure rule, which was upheld by *Verizon v. FCC*, already requires ISPs to disclose conduct that discriminates against on applications or classes of applications, so this factor is not needed here.[53]

Whether a practice is based on standards says little about its effect on application innovation and free speech. If a practice discriminates against applications or classes of applications, standardizing the practice may make it easier for application providers to adopt their applications to the practice.[54] However, this small, positive effect on applications is unlikely to outweigh the negative effect on application innovation and free speech created by the

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example, the proposed rule's ban on paid prioritization does not distinguish between application-specific and application-agnostic fees for preferential treatment. That's because one of the main concerns with allowing ISPs to charge edge providers for preferential treatment stems from the resulting increase in the costs of application innovation and speech, and this concern exists regardless of whether the ISP offers the ability to pay for preferential treatment to all interested applications (application-agnostic), to all interested applications in a class or only to a subset of applications in a class. See, e.g., van Schewick (2014b); van Schewick (2014a).

[50] Federal Communications Commission (2010), para 76.

[51] When discussing the importance of low costs of application innovation, the Commission generally uses the term "barriers to entry." See, e.g., Federal Communications Commission (2010), para 18 (importance of low barriers to entry for minorities and underserved groups), paras 25-26 (importance of low barriers to entry for application innovation), para 76 (importance of low barriers to entry for application innovation and of the low costs of speech for non-commercial speakers and non-commercial uses).

[52] Federal Communications Commission (2010), para 70 (transparency), para 74 (conformity with industry practices).

[53] Federal Communications Commission (2010), para 56.

[54] See, e.g., van Schewick (2015), pp. 79-80 (discussing examples).

practice. Thus, whether a practice fails to be application-agnostic, interferes with user choice or increases the costs of application innovation and free speech will have a far more powerful effect on application innovation and free speech than whether it is in line with standards. As a result, the conformity of a practice with best practices and standards should at most be considered as a secondary factor, but should not be allowed to save a practice that violates one of the primary three factors mentioned above.

These factors are based on a solid theoretical foundation and strongly supported by the record.

A substantial body of research shows that user choice, application-agnosticism and low-costs of application innovation are the key factors to promote the very goals that the FCC seeks to promote with the general conduct rule. According to that research, these three key factors have allowed the Internet to foster application innovation, improve democratic discourse, facilitate political organization and action, and provide a more decentralized environment for social, cultural, and political interaction in which anybody can participate.[55] Thus, preserving these factors is critical for realizing the FCC's stated goals.

1. *User Choice.* Users independently choose which applications they want to use without interference from network providers).[56] Letting users, not network providers, choose which applications will be successful is an important part of the mechanism that produces innovation under uncertainty.[57] At the same time, letting users choose how they want to use the network enables them to use the Internet in a way that creates more value for them (and for society) than if network providers made this choice for them.[58]

2. *Application-Agnosticism.* The network is application-agnostic. While an application-agnostic network may have some information about the applications on the network, it does not make distinctions among data packets based on that information.[59] This ensures

[55] The factors that have fostered application innovation in the past are described in detail in van Schewick (2010b), p. 12 tbl.I.2 (pointing to the parts of the book discussing these factors). For shorter overviews, see van Schewick (Forthcoming 2015); van Schewick (2010d). For a brief discussion of the factors that are at the core of the Internet's political, social, and cultural potential, see Balkin (2009); van Schewick (2010b), pp. 359-65; and Benkler (2000), pp. 565-68. The original Internet created an environment characterized by these factors as a consequence of its architectural design. In particular, they are the result of the application of the layering principle and the broad version of the end-to-end arguments. On the layering principle, the broad version of the end-to-end arguments, and their relationship to the original architecture of the Internet, see van Schewick (2010b), pp. 61-75, 96-103; and van Schewick (2004), pp. 81-109, 114-29. On early arguments that the architecture of the Internet, due to the end-to-end arguments, created a beneficial environment for innovation that regulation should preserve, see Lemley & Lessig (1999) (in the context of the debate over open access to cable networks) and, in the context of network neutrality, Lessig (2001); Lessig (2002), pp. 34-46, 153-68, 246-49; Wu (2003); Wu & Lessig (2003), pp. 2-7; van Schewick (2004); Wu (2004), pp. 145-51, 154-55, 170-72; Cerf (2006), pp. 8-14; Lessig (2006); Lessig (2008); pp. 3-4, 102-03, 237-349, 362-64.

[56] *See* Cerf (2006), pp. 8-9, 13; van Schewick (2010b), pp. 144, 152-55, 293-95, 362-64.

[57] *See* van Schewick (2010d), p. 6; *see also* van Schewick (2010b), pp. 349-51.

[58] *See* van Schewick (2010b), pp. 362-63; Cerf (2006), pp. 8-9, 13. On the importance of user choice for the Internet's social, cultural, and political potential, see, for example, Balkin (2009); and van Schewick (2010b), pp. 359-65.

[59] The original Internet was application-blind and application-agnostic. This was a consequence of its architecture, in particular of the broad version of the end-to-end arguments and of the layering principle. *See* van Schewick (2010b),

that network providers cannot interfere with innovators' and users' choices, that they cannot distort competition among applications (or classes of applications), and that they cannot reduce application developers' profits through access fees.[60]

3. *Low Costs of Application Innovation and Speech.* The low costs of application innovation not only make many more applications worth pursuing, but also allow a large and diverse group of people to become innovators.[61] If there is uncertainty (for example, about technology or user needs) or user needs are heterogeneous, a larger and more diverse group of innovators will create more and better application innovation than a smaller, less diverse group of innovators, and these applications will better meet the needs of Internet users.[62] In the current Internet, there is uncertainty and user needs are heterogeneous, so the conditions under which innovator diversity increases the amount and quality of innovation are met.[63]

In addition, the records of the FCC's Open Internet proceeding and the current proceeding provide ample evidence that deviations from these factors are likely to reduce application innovation and free speech.

Scholars and commenters often mention a fourth factor:

4. *Innovation without permission.* Innovators independently choose which applications they want to pursue; they do not need support or "permission" from network providers in order to realize their ideas for an application. Adding additional decisionmakers who need to endorse the idea or take action before an idea can be realized increases transaction costs and reduces the chances that innovative ideas can be realized.[64]

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pp. 72-75, 217-18; van Schewick (2004), pp. 101-03; *see also, e.g.*, Cerf (2006), pp. 8-10, 13; Lemley & Lessig (1999), p. 7; Reed (2010). For a short summary of the importance of application-blindness, see van Schewick (2010d), pp. 3-4. For a detailed analysis, see van Schewick (2010b), pp. 215-81, 286-95, 349-53, 355-65. While the analysis in these sources focuses on the impact of application-blindness, the analysis equally applies to application-agnosticism. An application-blind network is necessarily application-agnostic. In particular, both create the same environment for application innovation and network use. Thus, their economic, social, cultural, and political impact is the same. *See also Balkin (2009)*; van Schewick (2010b), pp. 359-65 (focusing on the social, cultural, and political implications); Benkler (2000), pp. 565-568.

[60] Access fees are fees that the network provider imposes on application and content providers who are not its Internet service customers. Access fees come in two variants: In the first variant, a network provider charges application or content providers for the right to access the network provider's Internet service customers. In the second variant, which is sometimes called "paid prioritization" or "third-party-paid prioritization," a network provider charges application or content providers for prioritized or otherwise enhanced access (e.g., access that does not count towards the users' monthly bandwidth cap) to these customers.

[61] For a short version of the argument, see van Schewick (2010d), pp. 2-3, 5-6; and van Schewick (2010c), pp. 4-5. On the low cost of application innovation in the original Internet, see van Schewick (2010b), pp. 138-48, 204-05, 289-90. On the impact of low-cost innovation on who can innovate, see *id.* at 204-13, 292-93. *See also* Balkin (2009) (focusing on the social, cultural, and political implications); Benkler (2000), pp. 565-68 (same).

[62] For a short version of the argument, see van Schewick (2010d), pp. 5-6; and van Schewick (2010c), pp. 4-5. For a detailed version, see van Schewick (2010b), pp. 298-349.

[63] *See* van Schewick (2010b), pp. 356.

[64] On innovation without permission in the original Internet, see van Schewick (2010b), pp. 204, 211, 293. On the impact of innovation without permission on innovation, see *id.* at 345-48. *See also* Cerf (2006), pp. 8-10; Balkin (2009) (focusing on the social, cultural, and political implications).

However, the third factor – low costs of application innovation and speech – is broad enough to capture these concerns, so there is no need to add innovation without permission as a fourth factor.

The factors provide for administrability and avoid significant social costs.

These three factors provide the specificity needed to ensure that the general Open Internet conduct standard is administrable, and that it is properly interpreted and applied. By allowing complainants to show that a practice is likely to reduce application innovation and free speech by demonstrating that it violates at least one of these three factors, the general conduct rule would be significantly more administrable. Evaluating behavior based on these factors removes the need to engage in detailed investigations of the impact of the behavior on application innovation and free speech. At the same time, it is easy to determine whether a practice interferes with these factors. Thus, such an approach would increase certainty, reduce the costs of regulation, and make it more feasible for users, start-ups and non-profits to bring successful complaints.

In the absence of such specific guidance, the standard might be interpreted to require, for instance, a detailed showing of how exactly a specific practice affects application innovation, competition, or free speech, which would likely require expert witnesses from a variety of disciplines. Such an interpretation of the standard would create considerable social costs: *First*, it would make it difficult to determine how the general conduct rule would apply to specific practices. The resulting lack of certainty would harm ISPs, entrepreneurs and investors alike, which, in turn, would reduce innovation and investment.[65] *Second*, a standard that requires detailed showings involving expert witnesses would tilt the playing field in favor of large, established players that can afford long, costly proceedings at the FCC and make it difficult for actors with few resources and little experience navigating FCC processes – users, start-ups, or non-profits – to bring successful complaints.[66] During the current proceeding, start-ups uniformly explained that such a standard would make it all but impossible for them to bring complaints.[67] *Third*, applying such a standard creates high costs of regulation.[68] *Finally*, a vague,

[65] See generally van Schewick (2015), pp. 70-73.
[66] See generally van Schewick (2015), pp. 74.
[67] See, e.g., Comments of Y Combinator, GN Docket No. 14-28, July 14, 2014, at 3, *available at* http://apps.fcc.gov/ecfs/document/view?id=7521383177 ("No startup has the funds and lawyers and economists to take on billion-dollar ISPs in an FCC action based on the vague legal standards in the proposal. Indeed, the startup ecosystem needs a bright-line, per se rule against discrimination."); Comments of Tumblr, GN Docket No. 14-28, Sept.9, at 10, available at http://apps.fcc.gov/ecfs/comment/view?id=6018347452, ("Notably, Tumblr has only two lawyers, and no telecommunications lawyers or lobbyists on staff. Tumblr cannot afford to engage in what would likely be multi-year challenges against the biggest broadband providers, with large legal teams experienced in telecommunications law, simply to secure access for its users equal to that of its current, and future, competitors with deeper resources."); Reddit at 8, http://apps.fcc.gov/ecfs/document/view?id=7521679127, ("We have no lawyers on staff, and we devote our resources solely to meeting the needs of our 100 million visitors. We do not have the resources to engage ISPs in a legal fight, with only a vague standard as our weapon, without any firm ground on which to stand. We need clear, bright-line rules."). Comments of Meetup, GN Docket No. 14-28, July 14, 2014, at 8, *available at* http://apps.fcc.gov/ecfs/document/view?id=7521382127 ("It is simply unrealistic to think that a resource-constrained company such as Meetup would be able to avail itself of a vague and amorphous 'commercial reasonableness' standard that requires extensive and expensive adversarial proceedings."). For additional quotes, see Ammori (2014), footnote 1.
[68] See generally van Schewick (2015), p. 73.

multi-factor standard gives the FCC ample discretion to decide specific cases and so interfere with competitive markets for websites and services, providing opportunities for FCC overreach.[69]

These factors support a truncated inquiry, mitigating problems inherent in case-by-case adjudications.

A truncated inquiry that asks whether a practice violates these three factors without requiring a more detailed analysis of the impact of the practice on application innovation, free speech, and broadband deployment avoids key problems that could undermine the FCC's goals. Specifically, such an approach allows the agency to continue to rely on the general insights and trade-offs gleaned from the current proceeding, while preserving its flexibility to react to future practices as they arise.

To operationalize this approach, the order should clarify that if a practice violates at least one of the three factors, the FCC will not consider arguments that the practice increases ISPs' profits and, thereby, increases their incentives to invest in or deploy networks. These arguments are problematic because they effectively force the FCC to re-litigate the foundation of its network neutrality rules every time it applies the general conduct rule. While limiting ISPs' ability to engage in blocking, throttling, paid prioritization, and other practices that undermine Internet openness could reduce their profits, the FCC's adoption of network neutrality rules is based on the general assessment that (1) banning these practices increases application innovation and free speech, and (2) that the resulting positive effect on broadband deployment outweighs any potential countervailing effects that may result from the reduction of ISP profits.[70] In *Verizon v. FCC*, this assessment was upheld by the Court of Appeals for the D.C. Circuit.[71]

Thus, the FCC has already determined that the long-term benefits of banning practices that reduce application innovation and free speech outweigh any short term harm that ISPs may be able to show.

Revisiting this assessment in the context of individual adjudications is unnecessary and will undermine the agency's priorities. While a general rulemaking proceeding like the current proceeding allows the FCC to collect the information necessary to weigh the social benefits of banning certain practices against the social costs, individual adjudications are ill-suited to adequately evaluate this trade-off.[72] Case-by-case adjudications are systematically skewed in favor of short-term considerations, providing a hostile environment for the types of long-term considerations underlying network neutrality rules. In individual adjudications, ISPs will generally be able to point to very specific short-terms harms. By contrast, the beneficial effect of a ban on application innovation and free speech will often arise in the future and will be more

[69] van Schewick (2014d).

[70] See the summary of the Commission's argument in *Verizon v. FCC*, http://www.cadc.uscourts.gov/internet/opinions.nsf/3AF8B4D938CDEEA685257C6000532062/$file/11-1355-1474943.pdf, pp. 31-44.

[71] Ibid.

[72] For a more detailed version of the following arguments, including a discussion of examples, see van Schewick (2015), pp. 77-80.

difficult to quantify. While we understand the mechanisms through which application-agnosticism, user choice and low costs of application innovation foster application innovation and free speech in general, we don't know which applications will not be developed as a result of allowing specific deviations from these factors. Moreover, it will often take a while to understand the negative implications of specific practices for the application innovation ecosystem. Finally, an adjudicator may underestimate the cumulative effect of allowing several seemingly minor deviations.

All of this will lead an adjudicator to overestimate a ban's negative impact on ISPs' incentives to invest and to underestimate a ban's positive effect on application innovation and free speech. Adopting the truncated inquiry suggested here avoids these problems.

Modeling the general conduct rule after the Open Internet Order's nondiscrimination rule will make the rule easier to apply and enforce and increases the likelihood that the rule will be upheld in court.

Modeling the operation of the general conduct rule after the Open Internet Order's nondiscrimination rule has a number of advantages:

Since the factors were part of the Open Internet Order's non-discrimination rule, market participants are already familiar with these factors, making it easier for the agency to apply and enforce the rule.

In addition, closely following the approach taken in the Open Internet Oder increases the likelihood that the rule will be upheld in court. In *Verizon v. FCC*, the D.C. Circuit explicitly endorsed the FCC's theory that practices that violate the Open Internet Rules' ban on blocking, discrimination and paid prioritization harm application innovation and free speech, and that the resulting reduction in application innovation and free speech would reduce broadband deployment. The court struck down the rules only because the order's effective ban on edge provider payments for preferential treatment violated the Communications Act's prohibition on imposing common carrier obligations on entities that – like ISPs – have not been classified as common carriers by the FCC. By reclassifying broadband Internet access service as a telecommunications service under Title II of the Communications Act, the FCC would remove this hurdle.

But even if a court were to strike down the FCC's decision to reclassify broadband ISPs, the general conduct rule proposed here would still likely be upheld in court. The factors allow ISPs to engage in a wide variety of practices, providing room for individual differentiation. The Open Internet Order's ban on edge provider payments for preferential treatment was part of the Open Internet Order's nondiscrimination rule, so the fact that this ban violated the common carrier prohibition led the court to invalidate the entire nondiscrimination rule. By contrast, under the rules now proposed by the FCC, the ban on paid prioritization is moved to a separate bright-line rule. Thus, a court's decision to strike down that ban because it violates the common carrier prohibition would not affect the viability of the general conduct rule.

The FCC should explicitly reject calls to evaluate ISP practices based on an antitrust standard.

As in the Open Internet Order, the FCC should explicitly reject calls to evaluate ISPs' practices based on an antitrust framework. As the Open Internet Order recognized, using such a framework would make it impossible for the FCC to effectively protect Internet openness.[73] As 36 leading scholars explained in a recent letter to the FTC and FCC:[74]

> "While the FCC is tasked with promoting the public interest, antitrust law focuses more narrowly on preventing anticompetitive behavior that reduces competition and harms consumers. Antitrust law does not protect important non-economic values such as free expression and diversity, and, although the protection of innovation is a stated goal of antitrust policy, competition policy has at times struggled to incorporate innovation or dynamic efficiency concerns in its analysis. As a result of these differences, U.S. antitrust law does not prohibit many forms of conduct that harm the values that Open Internet rules are designed to protect."

III. The FCC should prohibit providers of last-mile Internet access services from charging interconnecting networks, application providers and content delivery networks fees for access to their subscribers and clarify that last-mile ISPs can't use practices related to interconnection to evade the FCC's network neutrality rules.

According to the FCC's Fact Sheet, the FCC "would have authority to hear complaints and take appropriate enforcement action if necessary, if it determines the interconnection activities of ISPs are not just and reasonable."[75] Thus, the FCC intends to review practices related to interconnection with last-mile ISPs case by case. The Fact Sheet does not specify which criteria the FCC intends to use to determine whether practices violate this standard.

Unless the FCC prohibits last-mile ISPs from charging interconnecting networks, application providers and content delivery networks fees for access to their subscribers, the rules will not address the very real, ongoing problems in the market for interconnection with last-mile ISPs that continue to harm millions of users, companies, application providers and interconnecting providers.[76] While Netflix has received adequate performance since it agreed to

[73] Federal Communications Commission (2010), para 78 ("We also reject the argument that only 'anticompetitive' discrimination yielding 'substantial consumer harm' should be prohibited by our rules. We are persuaded those proposed limiting terms are unduly narrow and could allow discriminatory conduct that is contrary to the public interest. The broad purposes of this rule—to encourage competition and remove impediments to infrastructure investment while protecting consumer choice, free expression, end-user control, and the ability to innovate without permission—cannot be achieved by preventing only those practices that are demonstrably anticompetitive or harmful to consumers. Rather, the rule rests on the general proposition that broadband providers should not pick winners and losers on the Internet—even for reasons that may be independent of providers' competitive interests or that may not immediately or demonstrably cause substantial consumer harm." (footnotes omitted)).

[74] Ananny, et al. (2015), p. 5. For a more detailed analysis, see ibid., pp. 3-8; van Schewick (2015), pp. 10, 16-18, 54-64.

[75] Federal Communications Commission (2015), p. 3.

[76] See, e.g., The Open Technology Institute at New America Foundation (2014); Crawford (2014); Measurement Lab (2014).

pay a fee for access to several large last-mile ISPs including Comcast, connections by Level 3, Cogent and other interconnecting providers that refuse to pay are still congested, harming every user and edge provider whose traffic enters these networks via these providers.[77]

Prohibiting last-mile ISPs from charging interconnecting networks, application providers and content delivery networks fees for access to their subscribers is good policy and is strongly supported by Commission precedent.

First, banning these fees prevents last-mile ISPs from exploiting their terminating monopoly by charging interconnecting entities excessive prices for access to the ISPs' subscribers or enhanced access to these subscribers.[78] Excessive fees not only hurt large application providers like Netflix that directly interconnect with last-mile ISPs, but also are likely to increase the costs for large and small companies that rely on the services of content delivery networks or transit providers like Level 3 and Cogent to reach subscribers around the country.[79] By contrast, reviewing access fees case-by-case to ensure they are just and reasonable would effectively require the FCC to engage in rate regulation – a complex, messy, and costly process. *Second*, banning access fees at the point of interconnection is in line with principles of cost causation, since the ISPs' subscribers are the ones who request the traffic delivered by the interconnecting entity. *Third*, as long as last-mile ISPs are allowed to charge fees for access to their subscribers in the context of interconnection, they have an incentive to let unpaid routes into the network congest in order to motivate interconnecting providers to pay for good-quality interconnection. Thus, allowing these fees imposes considerable collateral damage on users and application providers (including small startups, small businesses or nonprofit sites) whose traffic enters last-mile networks via unpaid routes. Only a ban removes that incentive.[80] *Fourth*, banning these fees creates lower costs of regulation and provides more certainty to the market than reviewing such fees case by case under an unjust and unreasonable standard.

A ban on access fees would be narrowly tailored to address these harms. The ban would prohibit last-mile ISPs from charging interconnecting providers fees for the transmission of data between the point of interconnection and an ISP's subscribers. But it would not prevent the interconnecting parties from sharing the costs of "physical" interconnection (i.e. the non-

[77] See, e.g., Measurement Lab (2014); Anderson (2015) (presenting data showing that congestion is not limited to Cogent or specific services and is ongoing as of Q4 2014).

[78] As the FCC recognized in its 2010 Open Internet rules, last-mile ISPs have a terminating monopoly over access to their users. This terminating monopoly allows them to charge monopoly prices to application providers for access to their users or enhanced access to users, regardless of the amount of competition in the market for broadband Internet access services. Federal Communications Commission (2010), para 21, 24-26, 32.

[79] Vimeo LLC (2014) ("Because video hosting and sharing is a high-bandwidth business, Vimeo views terminating access fees as a significant threat to its current and future growth. The ability of consumers to access our content at the highest possible speed—and thus highest possible video resolution—is essential to our business. Like other similarly situated content providers, Vimeo purchases third-party CDN services to deliver videos to customers. […] Vimeo strenuously disagrees with Comcast that interconnection costs "are irrelevant to small OVDs because they would have no need for direct interconnection." When a CDN pays an interconnection fee to a large ISP, that fee is passed to the CDN's customers through increased CDN charges. This makes interconnection fees directly relevant to our business and our bottom line. Moreover, as we grow, developing and deploying our own CDN will be a natural step—at which point the interconnection fee will be directly, rather than indirectly, assessed on our services.", ibid., p. 2).

[80] See, e.g., Level 3 Communications LLC (2014), pp. 2-3.

recurring costs of purchasing ports and cross-connect cable to establish the interconnection), nor would it affect ISPs' ability to buy or sell transit services (which provide access to the entire Internet, not just to a last-mile ISP's own subscribers) or to offer and charge for CDN services.

Commission precedents in the areas of interconnection and network neutrality strongly support a ban. In the telephony context, the FCC has long regulated local exchange carriers to prevent them from exploiting their terminating monopoly by charging excessive prices to interconnecting providers.[81] In the Intercarrier Compensation Reform Order, the FCC finally prohibited access charges for access to users based on policy arguments directly applicable here.[82] In addition, the arguments in the FCC's Open Internet Order that supported a ban on fees for access to end users equally justify a ban on access fees in the context of interconnection.[83]

In addition, the FCC should clarify that interconnection with the last mile cannot be used as means to circumvent the Commission's bright line rules against blocking, throttling, and paid prioritization. As the past few years have shown, ISPs can block, discriminate, or impose access fees either while data is traveling across the ISP's last-mile access network or when it enters that network at the point of interconnection. Although the interference happens at a different point in the network, the impact of blocking, discrimination, or access fees on users and application providers is the same, as is the harm to innovation and free speech. Users don't care whether the eagerly awaited new season of *House of Cards* buffers because their video encounters congestion when entering the last-mile network at the point of interconnection or after it has entered that network. Application providers don't care whether the fee they have to pay to get acceptable quality and remain competitive is for interconnection or for transport across the end users' access network. Under these circumstances, prohibiting practices only on the access network, but not necessarily at the point of interconnection with last-mile networks will ultimately be ineffective and irrelevant—allowing ISPs to evade the ban by engaging in the banned practices at point of interconnection.[84]

[81] See the overview in Ad Hoc Telecommunications Users Committee (2014), pp. 9-13.
[82] Federal Communications Commission (2011), paras 741-756. See, e.g., Ad Hoc Telecommunications Users Committee (2014), pp. 16-23.
[83] Federal Communications Commission (2010), paras 21, 24, 25, 29, 32, 128. See also, e.g., Level 3 Communications LLC (2014), pp. 2-3.
[84] van Schewick & Weiland (2015), pp. 94-95.

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