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## Network Neutrality and Consumer Demand for “Better Than Best Efforts” Traffic Management

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# Network Neutrality and Consumer Demand for “Better Than Best Efforts” Traffic Management

Rob Frieden\*

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## INTRODUCTION

The Internet increasingly offers a preferred medium for access to video and other types of high value content<sup>1</sup> that may require Internet Service Providers (“ISPs”) to use special efforts to ensure

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<sup>1</sup> Viewing of [Online Video Distributors] video programming on multiple devices is becoming increasingly prevalent. SNL Kagan estimates that as of 2013, more than 53 million U.S. households watched online programming with at least one Internet-connected device, including computers, game consoles, streaming media players, television sets, and Blu-ray players, with an average of 4.8 such devices per online viewing household.

*In re* Annual Assessment of the Status of Competition in the Market for the Delivery of Video Programming, Sixteenth Report, 30 FCC Rcd. 3253, para. 10 (2015).

superior quality of service (“QOS”).<sup>2</sup> ISPs have made substantial investments in infrastructure upgrades to satisfy growing demand for networks capable of delivering bandwidth intensive traffic at higher transmission speeds. Additionally, they work to accommodate consumer expectations of having content access anytime, anywhere, through any medium, via any device, and in any screen presentation format. Early adopters of new video delivery technologies rely on both wireline and wireless alternatives to “legacy” media such as broadcast, cable, and satellite television. Consumers have declining tolerance for “appointment television”<sup>3</sup> that limits access to a specific time, on a particular channel, and in a single presentation format.

Already some video content consumers have “cut the cord” and abandoned traditional video media options replacing them with online platforms offering access to live content as well as streaming of stored content. The terms Internet Protocol Television (“IPTV”)<sup>4</sup> and Over-the-Top Television (“OTT”)<sup>5</sup> refer to the ability of content creators and new or existing content distributors

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<sup>2</sup> “OVDs account for an increasing portion of Internet traffic during peak hours. For instance, Sandvine states that Netflix accounted for 34.2 percent of peak period downstream traffic in March 2014, compared with 31.6 percent during the second half of 2013.” *Id.* para. 11.

<sup>3</sup> “A secular trend toward narrowcasting has intensified on the web, as more individuals forsake appointment television for the ‘long tail’ of online content.” Frank Pasquale, *Beyond Innovation and Competition: The Need for Qualified Transparency in Internet Intermediaries*, 104 NW. U. L. REV. 105, 110 (2010).

<sup>4</sup> IPTV offers consumers with broadband connections options to download video files or view (streaming) video content on an immediate “real time” basis. See *In re Sky Angel U.S., LLC*, Order, 25 FCC Rcd. 3879 (2010). Some of the available content duplicates what cable television subscribers receive therein triggering disputes over whether cable operators can secure exclusive distribution agreements and prevent an IPTV service provider from distributing the same content. “Sky Angel has been providing its subscribers with certain Discovery networks for approximately two and a half years, including the Discovery Channel, Animal Planet, Discovery Kids Channel, Planet Green, and the Military Channel. Sky Angel submits that these channels are a significant part of its service offering.” *Id.* para. 3. For background on IPTV, see In-Sung Yoo, *The Regulatory Classification of Internet Protocol Television: How the Federal Communications Commission Should Abstain From Cable Service Regulation and Promote Broadband Deployment*, 18 COMM.LAW CONSP. 199 (2009).

<sup>5</sup> “Over-the-top VoIP [and other] services require the end user to obtain broadband transmission from a third-party provider, and providers of over-the-top [services] can vary in terms of the extent to which they rely on their own facilities.” *In re Preserving the Open Internet*, Report and Order, 25 FCC Rcd. 17905, para. 22 n.48 (2010).

to provide consumers with access to video content via broadband links, in lieu of, or in addition to, traditional media. New distribution media have the ability to deliver “mission critical” bits requiring highly reliable conduits for the immediate (“real time”) transmission of video content and their instantaneous display. IPTV and OTT can offer consumers new options for accessing “must see” video content,<sup>6</sup> such as live sporting events.

This Article assesses whether and how ISPs can offer QOS enhancements, at premium prices for full motion video, while still complying with the new open Internet rules and regulations established by the Federal Communications Commission (the “FCC” or the “Commission”) in March, 2015.<sup>7</sup> This Article explains that having made the controversial decision to reclassify all forms of Internet access as a telecommunications service, the FCC increases regulatory uncertainty. In particular, the FCC has evidenced skepticism whether ISPs, providing retail first- and last-mile broadband service to residential subscribers,<sup>8</sup> can offer QOS enhancements that serve real consumer wants, without harming competition and the ability of most content to arrive on a timely basis using conven-

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<sup>6</sup> Video has greater potential to cause disruptions in service in light of the substantial amount of content that ISPs must handle quickly so that frames of content arrive in time for immediate display. See Henry H. Perritt, Jr., *Technologies of Storytelling: New Models for Movies*, 10 VA. SPORTS & ENT. L.J. 106, 132 (2010).

<sup>7</sup> *In re* Protecting and Promoting the Open Internet, Report and Order on Remand, Declaratory Ruling, and Order, 30 FCC Rcd. 5601 (2015) [hereinafter 2015 Open Internet Order]; see also *In re* Protecting and Promoting the Open Internet, Order Denying Stay Petitions, 30 FCC Rcd. 4681 (2015) [hereinafter Order Denying Stay] (order denying requested stay of the 2015 Open Internet Order).

<sup>8</sup> The FCC’s definition of broadband Internet access emphasizes the offering of service that reaches nearly all sources of content as opposed to services that offer enhanced delivery for specific sources of content.

[B]roadband Internet access service (BIAS) [is defined] as: [a] mass-market retail service by wire or radio that provides the capability to transmit data to and receive data from all or substantially all Internet endpoints, including any capabilities that are incidental to and enable the operation of the communications service, but excluding dial-up Internet access service. This term also encompasses any service that the Commission finds to be providing a functional equivalent of the service described in the previous sentence, or that is used to evade the protections set forth in this Part.

2015 Open Internet Order, *supra* note 7, para. 187.

tional “best efforts” routing.<sup>9</sup> This Article suggests that the FCC expand its “narrow” waiver criteria<sup>10</sup> to allow retail ISPs to join their upstream counterparts,<sup>11</sup> and provide video delivery enhancements that do not degrade conventional best efforts routing, or prioritize traffic in ways designed to disadvantage competitors.

## I. THE FCC’S 2015 OPEN INTERNET ORDER

In a controversial decision (the “2015 Open Internet Order”),<sup>12</sup> the FCC opted to reclassify elements of Internet access as

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<sup>9</sup> The Internet developed initially as an academic curiosity, based on a commitment to the “end-to-end principle.” This principle requires that all Internet traffic, whether an email, a Voice over Internet Protocol (VoIP) “call” or a video stream, be treated equally and managed through “best efforts” connections. In such a network, data packets pass from one router to another without the prioritization of any particular packets. In practice, this means that Internet traffic reaches its destination at varying times, depending on the traffic levels of the relevant Internet communications links.

Philip J. Weiser, *The Next Frontier for Network Neutrality*, 60 ADMIN. L. REV. 273, 280 (2008).

<sup>10</sup> “Under the rule we adopt today, the Commission will ban all paid prioritization subject to a narrow waiver process.” 2015 Open Internet Order, *supra* note 7, para. 107. “We anticipate granting such relief only in exceptional cases.” *Id.* para. 132.

<sup>11</sup> The 2015 Open Internet Order maintains the largely unregulated information service classification for ISPs operating upstream from operators that provide “retail” broadband subscriptions.

[Title II, common carrier regulated] broadband Internet access service does not include virtual private network (VPN) services, content delivery networks (CDNs), hosting or data storage services, or Internet backbone services (to the extent those services are separate from broadband Internet access service). The Commission has historically distinguished these services from “mass market” services and, as explained in the 2014 Open Internet NPRM, they “do not provide the capability to receive data from all or substantially all Internet endpoints.” We do not disturb that finding here.

*Id.* para. 190 (citations omitted).

<sup>12</sup> 2015 Open Internet Order, *supra* note 7; *see also* Joint Brief for Petitioners United States Telecom Ass’n et al., *United States Telecom Ass’n v. FCC*, No. 15-1063 (D.C. Cir. July 30, 2015), [https://apps.fcc.gov/edocs\\_public/attachmatch/DOC-334673A1.pdf](https://apps.fcc.gov/edocs_public/attachmatch/DOC-334673A1.pdf) [<http://perma.cc/WV2G-JCX2>] [hereinafter USTelecom Joint Brief]; Motion for Stay or Expedition of USTelecom et al., *United States Telecom Ass’n*, No. 15-1063 (D.C. Cir. May 13, 2015), [https://apps.fcc.gov/edocs\\_public/attachmatch/DOC-333494A1.pdf](https://apps.fcc.gov/edocs_public/attachmatch/DOC-333494A1.pdf) [<http://perma.cc/5YXF-FFX4>].

a Title II regulated, common carrier service<sup>13</sup> with no distinction between wireline and wireless ISPs.<sup>14</sup> The Commission will have to convince an appellate court the reclassification resulted from rational decision making based on a complete record evidencing substantially changed circumstances occurring in the ten years since 2005, when the FCC opted to classify Internet access as an information service.<sup>15</sup>

The FCC emphasized the need for narrowly crafted rules designed to “prevent specific practices we know are harmful to Internet openness—blocking, throttling, and paid prioritization—as well as a strong standard of conduct designed to prevent the dep-

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<sup>13</sup> See 2015 Open Internet Order, *supra* note 7, para. 25.

<sup>14</sup> The FCC previously had imposed less stringent rules on wireless carriers in light of spectrum use, greater potential for congestion, and recent entry in broadband markets. The 2015 Open Internet Order treats wireless ISPs no differently than wireline ISPs:

Today, we find that changes in the mobile broadband marketplace warrant a revised approach. We find that the mobile broadband marketplace has evolved, and continues to evolve, but is no longer in a nascent stage. As discussed below, mobile broadband networks are faster, more broadly deployed, more widely used, and more technologically advanced than they were in 2010. We conclude that it would benefit the millions of consumers who access the Internet on mobile devices to apply the same set of Internet openness protections to both fixed and mobile networks.

*Id.* para. 88.

<sup>15</sup> “It is also well settled that we may reconsider, on reasonable grounds, the Commission’s earlier application of the ambiguous statutory definitions of ‘telecommunications service’ and ‘information service.’” *Id.* para. 334.

The [Supreme] Court’s application of [the] *Chevron* test in *Brand X* makes clear our delegated authority to revisit our prior interpretation of ambiguous statutory terms and reclassify broadband Internet access service as a telecommunications service. The Court upheld the Commission’s prior information services classification because “the statute fails unambiguously to classify the telecommunications component of cable modem service as a distinct offering. This leaves federal telecommunications policy in this technical and complex area to be set by the Commission.” Where a term in the Act “admit[s] of two or more reasonable ordinary usages, the Commission’s choice of one of them is entitled to deference.” The Court concluded, given the “technical, complex, and dynamic” questions that the Commission resolved in the *Cable Modem Declaratory Ruling*, “[t]he Commission is in a far better position to address these questions than we are.”

*Id.* para. 332 (citations omitted).

loyment of new [anticompetitive] practices that would harm Internet openness.”<sup>16</sup> The Commission emphasized that ISPs have both the incentive and ability to leverage access in ways that can thwart innovation and investment in the Internet ecosystem:

The key insight of the virtuous cycle is that broadband providers have both the incentive and the ability to act as gatekeepers standing between edge providers and consumers. As gatekeepers, they can block access altogether; they can target competitors, including competitors to their own video services; and they can extract unfair tolls.<sup>17</sup>

The FCC also emphasized that while subjecting ISPs to Title II, common carrier oversight, the Commission will use its statutory authority quite narrowly as evidenced by the decision to forbear<sup>18</sup> from applying “27 provisions of Title II of the Communications Act, and over 700 Commission rules and regulations.”<sup>19</sup> The Commission recognized the need to explain how the new require-

<sup>16</sup> *Id.* para. 4.

<sup>17</sup> *Id.* para. 20.

<sup>18</sup> 47 U.S.C. § 160(a) (2013) authorizes the FCC to streamline the scope of its Title II oversight by forbearing from applying many common carrier requirements:

[T]he Commission shall forbear from applying any regulation or any provision of this chapter to a telecommunications carrier or telecommunications service, or class of telecommunications carriers or telecommunications services, in any or some of its or their geographic markets, if the Commission determines that—(1) enforcement of such regulation or provision is not necessary to ensure that the charges, practices, classifications, or regulations by, for, or in connection with that telecommunications carrier or telecommunications service are just and reasonable and are not unjustly or unreasonably discriminatory; (2) enforcement of such regulation or provision is not necessary for the protection of consumers; and (3) forbearance from applying such provision or regulation is consistent with the public interest.

<sup>19</sup> 2015 Open Internet Order, *supra* note 7, para. 5. The major provisions of Title II that the 2015 Open Internet Order will apply are: nondiscrimination and no unjust and unreasonable practices under sections 201 and 202; authority to investigate complaints and resolve disputes under section 208 and related enforcement provisions, specifically sections 206, 207, 209, 216, and 217; protection of consumer privacy under section 222; fair access to poles and conduits under section 224; protection of people with disabilities under sections 225 and 255; and providing universal funding for broadband service, but not the requirement to collect contributions to such funding through partial application of section 254.

ments satisfy pressing needs, but in the most narrow and well calibrated matter in light of virulent opposition from most ISPs and two Republican Commissioners.<sup>20</sup> The 2015 Open Internet Order reports that:

[T]here will be fewer sections of Title II applied than have been applied to Commercial Mobile Radio Service (CMRS) [the regulatory classification for wireless voice telecommunications service], where Congress expressly required the application of [s]ections 201, 202, and 208, and permitted the Commission to forbear from others. In fact, Title II has never been applied in such a focused way.<sup>21</sup>

In addition to the specific prohibitions on blocking, throttling, and paid prioritization, the FCC established a general prohibition on ISP practices that would unreasonably interfere with or disadvantage downstream consumers and upstream edge providers of content, applications, and services.<sup>22</sup> The Commission will consider on a case-by-case basis whether an ISP has engaged in a practice “that unreasonably interfere[s] with or unreasonably disadvantage[s] the ability of consumers to reach the Internet content, services, and applications of their choosing or of edge providers to access consumers using the Internet.”<sup>23</sup>

The Commission opted to apply more open-ended evaluative criteria than the legal standard requiring proof of commercial reasonableness it had previously proposed.<sup>24</sup> The Commission concluded that it should “adopt a governing standard that looks to whether consumers or edge providers face unreasonable interference or unreasonable disadvantages, and makes clear that the standard is not limited to whether a practice is agreeable to commercial parties.”<sup>25</sup>

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<sup>20</sup> *Id.* paras. 4–5, 192.

<sup>21</sup> *Id.* para. 38.

<sup>22</sup> *See id.* para. 108.

<sup>23</sup> *Id.* para. 135.

<sup>24</sup> *See In re* Protecting and Promoting the Open Internet, Notice of Proposed Rulemaking, 29 FCC Rcd. 5561, para. 136 (2014) [hereinafter 2014 Open Internet NPRM].

<sup>25</sup> 2015 Open Internet Order, *supra* note 7, para. 150. The FCC identified a number of factors it will consider in future evaluations. These factors include an assessment of

The FCC also opted to use a “no-unreasonable interference/disadvantage” standard to evaluate controversial subjects including the lawfulness of “sponsored data” arrangements where an ISP accepts advertiser payment in exchange for an agreement not to meter and debit its broadband subscribers for the downstream traffic delivery.<sup>26</sup> The Commission also will use this standard to consider the lawfulness of data caps that tier service by bit transmission speed and the amount of permissible downloading volume.<sup>27</sup> In both instances, the FCC sees the potential for an ISP to create artificial scarcity to extract higher revenues and to favor corporate affiliates and third parties willing to pay a surcharge.<sup>28</sup> Additionally, the FCC views data caps as possibly handicapping OTT/IPTV vendors of video programming that compete with an ISP service, but use the ISP network to deliver content to consumers.<sup>29</sup> Conversely, the Commission recognizes that some types of service tiering can promote innovation and new, customized services.<sup>30</sup>

The 2015 Open Internet Order expresses the view that reclassifying Internet access as a telecommunications service provides the strongest legal foundation for network neutrality regulations, coupled with a secondary reference to section 706 of the Telecommunications Act of 1996<sup>31</sup> and Title III of the Communications Act of 1934, as amended,<sup>32</sup> which addresses the use of radio spectrum and applies common carriage regulation to wireless voice car-

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whether a practice allows end-user control and is consistent with promoting consumer choice, the competitive effects of a practice, whether consumers and opportunities for free expression are promoted or harmed, the effect on innovation, investment, or broadband deployment, whether the practice hinders the ability of end users or edge providers to use broadband access to communicate with each other, and whether a practice conforms to the best practices and technical standards adopted by an open, broadly representative, and independent Internet engineering, governance initiatives, or standards-setting organization. *See id.* paras. 139–45.

<sup>26</sup> *See id.* para. 152.

<sup>27</sup> *See id.* para. 153.

<sup>28</sup> *See id.* paras. 151–53.

<sup>29</sup> *See id.* para. 153.

<sup>30</sup> *See id.* para. 151.

<sup>31</sup> 47 U.S.C. § 1302(a) (2013).

<sup>32</sup> *Id.* §§ 301–399b.

riers.<sup>33</sup> By using the stronger Title II foundation, the FCC asserts that it can establish clear and unconditional statutory authority, but also use the flexibility contained in Title II to forbear from applying unnecessary common carrier requirements just as the Commission had done for wireless telephone service. However, with a Title II regulatory foundation, the 2015 Open Internet Order makes it possible for the FCC to create an open Internet conduct standard that ISPs cannot harm consumers or content providers, coupled with enforcement tools available to sanction violations.<sup>34</sup> The Commission's decision to treat aspects of Internet access as common carriage has triggered a third judicial appeal and review of whether such reclassification constitutes a reasonable decision based on a complete evidentiary record.<sup>35</sup> By opting for the reclas-

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<sup>33</sup> We ground the open Internet rules we adopt today in multiple sources of legal authority—section 706, Title II, and Title III of the Communications Act. We marshal all of these sources of authority toward a common statutorily-supported goal: to protect and promote Internet openness as platform for competition, free expression and innovation; a driver of economic growth; and an engine of the virtuous cycle of broadband deployment.

We therefore invoke multiple, complementary sources of legal authority. As a number of parties point out, our authority under section 706 is not mutually exclusive with our authority under Titles II and III of the Act.

2015 Open Internet Order, *supra* note 7, paras. 273–74.

<sup>34</sup> With an eye toward providing timely, certain, and flexible enforcement of its open Internet rules, the FCC announced its intention to use advisory opinions similar to those issued by the Department of Justice's Antitrust Division.

Advisory opinions will enable companies to seek guidance on the propriety of certain open Internet practices before implementing them, enabling them to be proactive about compliance and avoid enforcement actions later. The Commission may use advisory opinions to explain how it will evaluate certain types of behavior and the factors that will be considered in determining whether open Internet violations have occurred. Because these opinions will be publicly available, we believe that they will reduce the number of disputes by providing guidance to the industry.

*Id.* para. 229.

<sup>35</sup> See 2015 Open Internet Order, *supra* note 7; Order Denying Stay, *supra* note 7; see also USTelecom Joint Brief, *supra* note 12.

sification option, the FCC underscores the riskiness in imposing ex ante regulation<sup>36</sup> without an explicit legislative mandate.

*A. Can ISPs Offer QOS Enhancement for IPTV?*

As the Internet has commercialized and diversified, interconnection terms and conditions have changed between ISPs as they pursue alternatives to conventional models for securing the global carriage of traffic.<sup>37</sup> Because no single ISP owns or leases all the network facilities needed to link any source of content with any customer of the ISP, traffic interconnection and compensation arrangement provide necessary supplemental capacity. ISPs traditionally classified interconnection as either peering<sup>38</sup> or transiting.<sup>39</sup> The former involves interconnection between high capacity carriers whose transoceanic and transcontinental traffic volumes generally match, thereby enabling the carriers to barter network access in lieu of a financial settlement. Historically, smaller carriers have paid transit fees to larger ISPs for the opportunity to secure upstream links throughout the Internet cloud.<sup>40</sup>

In light of growing demand for bandwidth intensive video content delivered via the Internet, traffic volume disparities have increased between ISPs. Because most consumers download more

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<sup>36</sup> Ex ante rules and regulations anticipate the need for government-imposed safeguards to prevent anticompetitive practices in a specific sector of the economy, because of existing or potential harm to consumers and the national economy.

<sup>37</sup> See, e.g., Christopher S. Yoo, *Innovations in the Internet's Architecture that Challenge the Status Quo*, 8 J. TELECOMM. & HIGH TECH. L. 79, 84 (2010) (outlining new ISP interconnection variations of peering and transiting).

<sup>38</sup> "Peering" refers to a barter arrangement for traffic exchange where two Internet Service Providers agree to accept traffic from the other without the transfer of funds. The carriers agree to a settlement-free arrangement, because traffic volumes generally match.

<sup>39</sup> "Transiting" refers to an exchange of traffic that triggers a financial settlement and transfer of funds. This arrangement typically results when a small carrier needs the services of a larger carrier to reach all Internet carriers and end users.

<sup>40</sup> The "Internet cloud" refers to the vast array of interconnected networks that make up the Internet and provide users with seamless connectivity to these networks and the content available via these networks. "The increasing functionality of the Internet is decreasing the role of the personal computer. This shift is being led by the growth of 'cloud computing'—the ability to run applications and store data on a service provider's computers over the Internet, rather than on a person's desktop computer." William Jeremy Robison, *Free at What Cost?: Cloud Computing Privacy Under The Stored Communications Act*, 98 GEO. L.J. 1195, 1199 (2010).

traffic than they upload, expanding demand for downstream delivery of video content broadens the differential. A new category of carrier, commonly referred to as a Content Delivery Network (“CDN”),<sup>41</sup> targets the downstream video content delivery market, all but guaranteeing an asymmetrical traffic flow necessitating a financial settlement with retail ISPs instead of a simple barter agreement. CDNs incur transit charges, or have to negotiate other compensation arrangements with retail ISPs, because the downstream traffic requires flows to broadband subscribers from CDNs that far exceed the volume of traffic retail ISPs have available to hand off for upstream carriage.

Such asymmetry in traffic flows can generate interconnection compensation disputes such as that which occurred for Netflix content between a major CDN, Level 3, and a major ISP, Comcast, which provides “last mile” delivery of Internet content to broadband subscribers.<sup>42</sup> Content distributors, such as Netflix, also have pursued an alternative to using CDNs by securing a paid peering arrangement directly with Comcast,<sup>43</sup> and by installing servers containing the most popular content, closer to subscribers on the premises of a retail ISP.<sup>44</sup>

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<sup>41</sup> A CDN is an organized network of computers that are often placed “close” to Internet users. Commonly accessed content is then stored on those computers and requests by web users are directed to “nearby” or lightly loaded computers. Content distribution networks can be used to save bandwidth since the content for a popular item does not need to be fetched from a distant location.

Dirk Grunwald, *The Internet Ecosystem: The Potential for Discrimination*, 63 FED. COMM. L.J. 411, 426 (2011).

<sup>42</sup> See, e.g., Daniel L. Brenner & Winston Maxwell, *The Network Neutrality and the Netflix Dispute: Upcoming Challenges for Content Providers in Europe and the United States*, 23 No. 3 INTELL. PROP. & TECH. L.J. 3 (2011).

<sup>43</sup> See Shalini Ramachandran, *Netflix to Pay Comcast for Smoother Streaming*, WALL ST. J. (Feb. 23, 2014, 7:47 PM) <http://online.wsj.com/news/articles/SB10001424052702304834704579401071892041790> [<http://perma.cc/58FU-T2BH>].

<sup>44</sup> Content providers and distributors can opt to negotiate directly with retail ISPs for the right to install (“co-locate”) equipment on site, or alternatively secure the services of a company, such as Akamai, to negotiate, install, and maintain the equipment. Netflix has sought the direct negotiation option with ISPs. See Ken Florence, *Announcing the Netflix Open Connect Network*, NETFLIX: U.S. & CAN. BLOG (June 4, 2012), <http://blog.netflix.com/2012/06/announcing-netflix-open-connect-network.html> [<http://perma.cc/4SXH-8SYS>].

CDNs typically become transit payers even if previously they qualified for zero cost peering, but questions remain whether retail ISPs, such as Comcast, have an affirmative duty to try offsetting traffic imbalances. Likewise, consumers wonder what service commitments they deserve to receive from their retail ISPs that accrue sizeable monthly Internet access subscription revenues. The carriers respond that they have had to increase available network capacity and thereby enhance the value proposition of service despite not receiving additional compensation from the ventures who cause massive increases in download volume, i.e., ventures such as Netflix and YouTube.<sup>45</sup>

On occasion, retail broadband subscribers have experienced degraded service, particularly for bandwidth intensive applications such as full motion video streaming.<sup>46</sup> Identifying the actual cause of such congestion remains elusive. Content creators and distributors speculate whether retail ISPs have deliberately caused congestion, by refusing to make timely network capacity upgrades, or by allocating available capacity in ways that increase the probability of congestion for the traffic of specific content types and sources.<sup>47</sup> ISPs reject this scenario and cite to less nefarious circumstances such as weather, home-based holidays, and the decision of content distributors, such as Netflix, to release an entire season's worth of

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<sup>45</sup> For example, Comcast has provided subscribers with increased bit transmission speeds, initially without a rate increase. See *Comcast Increases Internet Speeds for 13th Time in 12 Years*, COMCAST (April 9, 2014), <http://corporate.comcast.com/news-information/news-feed/comcast-xfinity-internet-speed-increase> [<http://perma.cc/X22B-QMWM>].

<sup>46</sup> See Drew Fitzgerald & Shalini Ramachandran, *Netflix-Traffic Feud Leads to Video Slowdown*, WALL ST. J. (Feb. 18, 2014, 9:35 PM), <http://online.wsj.com/news/articles/SB10001424052702304899704579391223249896550> [<http://perma.cc/6SVS-N5M2>].

<sup>47</sup> Five major internet service providers in the U.S. and one in Europe have been accused of abusing their market share to interfere with the flow of the internet for end users. The accusations come from Level 3, a communications company that helps connect large-scale ISPs like Comcast or AT&T to the rest of the internet. According to the company, these six unnamed ISPs are deliberately degrading the quality of internet services using the Level 3 network, in an attempt to get Level 3 to pay them a fee for additional traffic caused by services like Netflix, a process known as paid peering.

Andrew Webster, *Major ISPs Accused of Deliberately Throttling Traffic*, VERGE (May 6, 2014, 10:06 AM), <http://www.theverge.com/2014/5/6/5686780/major-isps-accused-of-deliberately-throttling-traffic> [<http://perma.cc/3M7H-8FBL>].

a program instead of the conventional weekly release of just one episode.<sup>48</sup> Consumers and regulators alike have no easy means for identifying the cause because multiple carriers participate in the complete routing of traffic from source to end user.<sup>49</sup> Sophisticated network tracking techniques are needed to identify the weakest link—the network operating with the lowest available bandwidth and switching capacity, which can cause end users to experience delays in downloads and even dropped packets of content.<sup>50</sup> Parties will disagree on the cause of congestion as well as the required remedy.<sup>51</sup>

### B. Regulatory Uncertainty

The 2015 Open Internet Order provides a quite complex and uncertain assessment of IPTV traffic routing depending on what kind of venture handles the traffic, as well as its location in the sequence of network facilities linking content source and consumer. The FCC continues to treat the caching<sup>52</sup> of video content by proxy

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<sup>48</sup> “The hit political drama series of Netflix kept about 60,000 subscribers glued onto their screens on Valentine’s Day to watch the whole 13-hour production. However, the shifting behavior of consumers to watch videos on demand over the Internet is causing some clogged pipes on the information highway.” Randell Suba, *Netflix-Verizon Standoff: Only Net Neutrality Can Now Stop Video Slowdown*, TECH TIMES (Feb. 23, 2014, 7:27 AM), <http://www.techtimes.com/articles/3670/20140223/netflix-verizon-standoff-only-net-neutrality-can-now-stop-video-slowdown.htm> [<http://perma.cc/XJH9-YAR9>].

<sup>49</sup> *See id.*

<sup>50</sup> *See* 2015 Open Internet Order, *supra* note 7, para. 85.

<sup>51</sup> If you are trying to get Netflix and use Verizon’s broadband, then there is a good chance that your video performance is less than optimal. Some Verizon customers might even go as far as calling it a crappy Netflix experience. The reason: a behind-the-scenes power play between Verizon and Cogent Communications, one of the largest bandwidth providers.

Om Malik & Stacey Higginbotham, *Having Problems with Your Netflix? You Can Blame Verizon*, GIGAOM (June 17, 2013, 7:23 PM), <https://gigaom.com/2013/06/17/having-problems-with-your-netflix-you-can-blame-verizon/> [<http://perma.cc/7KU3-6DQ8>]; *see also* Dan Rayburn, *Here’s How the Comcast & Netflix Deal Is Structured, With Data & Numbers*, STREAMINGMEDIABLOG.COM (Feb. 27, 2014, 12:14 PM), <http://blog.streamingmedia.com/2014/02/heres-comcast-netflix-deal-structured-numbers.html> [<http://perma.cc/QUZ3-HXSX>].

<sup>52</sup> “Caching is the storing of copies of content at locations in a network closer to subscribers than the original source of the content. This enables more rapid retrieval of information from websites that subscribers wish to see most often.” 2015 Open Internet Order, *supra* note 7, para. 356 n.973.

servers<sup>53</sup> as an information service.<sup>54</sup> CDNs can continue to distribute video content across a wide geographical area in ways that reduce delay (latency) and improve overall QOS by reducing the number of networks and routers traversed.<sup>55</sup> CDNs, such as Akamai Technologies, offer services that appear to enhance consumer welfare without harming the marketplace of ideas or the competitive marketplace for Internet content carriage services.<sup>56</sup>

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<sup>53</sup> An Internet Service Provider, considered here as an entity that operates a telecommunications network and provides access to the Internet, may also install a proxy server to deal with the requests sent by its users.

A proxy may serve many different purposes, for example, filtering the traffic. However, the key purpose I want to consider now is the one of saving bandwidth, and thus improving the efficiency of the network. An ISP can save bandwidth by means of a proxy by keeping a copy of the responses originated by previous requests, and using those copies to serve subsequent requests made by the same user or by a different one. This function is called “caching,” or more precisely “proxy-caching.”

A proxy that implements a caching function is known as a “caching proxy,” or a “proxy cache.” Caching proxies have been widely used by Internet Service Providers (ISPs) to store copies of Web pages frequently requested by their users, so that they could show the cached copy to users that subsequently request the same Web page.

Miquel Peguera, *When the Cached Link is the Weakest Link: Search Engine Caches Under the Digital Millennium Copyright Act*, 56 J. COPYRIGHT SOC'Y U.S.A. 589, 603 (2009).

<sup>54</sup> “We adopt our tentative conclusion in the 2014 Open Internet NPRM that broadband Internet access service does not include virtual private network (VPN) services, content delivery networks (CDNs), hosting or data storage services, or Internet backbone services (to the extent those services are separate from broadband Internet access service).” 2015 Open Internet Order, *supra* note 7, para. 190. “The record in this proceeding leads us to the conclusion that providers today market and offer consumers separate services that are best characterized as (1) a broadband Internet access service that is a telecommunications service; and (2) ‘add-on’ applications, content, and services that are generally information services.” *Id.* para. 341.

<sup>55</sup> *See id.* para. 190.

<sup>56</sup> CDNs have become useful primarily because they provide a way to provide scalable service. The canonical example for this is the success that Victoria’s Secret (a retailer) had in hosting online content before and after using a commercial CDN. In the initial offering, demand for the retailer’s content exceeded the capabilities of its own web services, but successive offerings using a CDN were much more successful.

Grunwald, *supra* note 41, at 426; *see also* AKAMAI TECHNOLOGIES, *THE BUSINESS INTERNET A PREDICTABLE PLATFORM FOR PROFITABLE E-BUSINESS* (2004),

Additionally, the FCC does not apply its prohibition of blocking, throttling, and paid prioritization on ISPs operating upstream from last mile, retail ISPs.<sup>57</sup> However, the Commission retains Title II jurisdiction to investigate and resolve interconnection disputes between retail ISPs and both CDNs and upstream ISPs.<sup>58</sup>

The FCC faces a major regulatory quandary in identifying instances where it must intervene rather than allow arm's length, commercial negotiations between ventures partnering in the delivery of video content from content source to end user. On one hand, the FCC noted the existence of several high visibility conflicts between content distributors, such as Netflix, and downstream ISPs, such as Comcast.<sup>59</sup> The likelihood for disruption to consumers caused by these disputes appears to have motivated the FCC to deem both the downstream delivery to retail broadband subscribers and most of the routing of traffic upstream from retail ISPs as a telecommunications service.<sup>60</sup>

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[http://www.diku.dk/OLD/undervisning/2004e/358/Akamai\\_Business\\_Internet\\_White\\_paper.pdf](http://www.diku.dk/OLD/undervisning/2004e/358/Akamai_Business_Internet_White_paper.pdf) [<http://perma.cc/3PRD-VMK9>].

<sup>57</sup> See 2015 Open Internet Order, *supra* note 7, para. 190.

<sup>58</sup> “[T]he Commission will be available to hear disputes regarding arrangements for the exchange of traffic with a broadband Internet access provider raised under sections 201 and 202 on a case-by-case basis.” *Id.* para. 193.

<sup>59</sup> See *id.* para. 199.

<sup>60</sup> [W]e classify fixed and mobile broadband Internet access service as telecommunications services. The definition for broadband Internet access service includes the exchange of Internet traffic by an edge provider or an intermediary with the broadband provider’s network. We note that anticompetitive and discriminatory practices in this portion of broadband Internet access service can have a deleterious effect on the open Internet . . . .

*Id.* para. 195.

Broadband Internet access service involves the exchange of traffic between a last-mile broadband provider and connecting networks. . . . Thus, disputes involving a provider of broadband Internet access service regarding Internet traffic exchange arrangements that interfere with the delivery of a broadband Internet access service end user’s traffic are subject to our authority under Title II of the Act.

*Id.* para. 204.

On the other hand, the FCC determined that it should not apply network neutrality rules to traffic upstream from retail ISPs,<sup>61</sup> and also that it should limit the scope of Title II safeguards available for application to traffic exchanges between upstream CDNs and retail ISPs.<sup>62</sup> The potential for regulatory intervention presents uncertainty for both the Commission and commercial ventures because no clear standard exists for understanding what constitutes unreasonable and anticompetitive “better than best efforts” routing and what does not. A retail ISP could create artificial congestion as leverage to nudge or push a content distributor to more expensive, “premium” service, but this paid prioritization option might simply constitute a necessary safeguard to ensure high quality IPTV service even during instances where real congestion occurs.

While expressing support for commercially driven interconnection and compensation arrangements, the Commission does not provide sufficient guidance on when it would intervene to reverse or condition arrangements that might provide desirable QOS enhancements, but also trigger other public interest concerns.<sup>63</sup> The Commission strongly implies a disinclination to grant paid prioritization waivers, but it appears almost exclusively concerned about last mile arrangements.

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<sup>61</sup> “[W]e conclude that, at this time, application of the no-unreasonable interference/disadvantage standard and the prohibitions on blocking, throttling, and paid prioritization to the Internet traffic exchange arrangements is not warranted.” *Id.* para. 195.

<sup>62</sup> The definition for broadband Internet access service includes the exchange of Internet traffic by an edge provider or an intermediary with the broadband provider’s network. We note that anticompetitive and discriminatory practices in this portion of broadband Internet access service can have a deleterious effect on the open Internet, and therefore retain targeted authority to protect against such practices through sections 201, 202, and 208 of the Act (and related enforcement provisions), but will forbear from a majority of the other provisions of the Act.

*Id.*

<sup>63</sup> “Internet traffic exchange agreements have historically been and will continue to be commercially negotiated. We do not believe that it is appropriate or necessary to subject arrangements for Internet traffic exchange (which are subsumed within broadband Internet access service) to the rules we adopt today.” *Id.* para. 202.

For example, Netflix and Comcast have agreed to a “paid peering” solution to traffic congestion.<sup>64</sup> This arrangement provides higher quality service by reducing the use of other networks, thereby expediting delivery of traffic even when congestion would degrade traffic over lines subject to traditional, best efforts routing.<sup>65</sup> Under a paid peering arrangement, traffic can arrive via the most advantageous means, resulting in less latency, fewer circuitous routing arrangements, and the use of fewer routers and other switching equipment. Because the traffic prioritization offered by Comcast to Netflix occurs at interconnection points far upstream from last mile delivery, the FCC rules all but ignore the arrangement.

Companies such as Netflix have opted to pay for peering rather than risk the consequences of degraded network delivery of “mission critical” bandwidth intensive video. The decision by Netflix to secure paid peering access to the Comcast network triggered extensive commentary and analysis.<sup>66</sup> Some believe Netflix capitu-

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<sup>64</sup> See *Comcast and Netflix Team Up to Provide Customers Excellent User Experience*, NETFLIX (Feb. 23, 2014), <https://pr.netflix.com/WebClient/getNewsSummary.do?newsId=992> [<http://perma.cc/X3QY-KQM5>].

<sup>65</sup> Paid peering, for example, resembles normal peering in almost every respect, except that one network pays the other network even when the exchange of traffic is roughly the same. These more sophisticated agreements reflect the fact that while the traffic exchange may be equal, the cost of maintaining the networks’ respective infrastructures may be unequal. ISPs serving a smaller number of large internet content websites (known as “content networks”) have lower costs in maintaining their infrastructure than ISPs serving home users (“eyeball networks”), since residential neighborhoods require more equipment investment (such as wiring) and maintenance than commercial areas. These interconnection agreements create the economic incentives for ISPs to route internet traffic along the lowest-cost paths, which can sometimes have a discriminatory effect on certain types of content, applications, and services.

Alexander Reicher, *Redefining Net Neutrality After Comcast v. FCC*, 26 BERKELEY TECH. L.J. 733, 752 (2011).

<sup>66</sup> For a collection of commentaries and critiques, see *February 24, 2014 (Netflix Agrees to Pay Comcast to End Traffic Jam)*, BENTON FOUND., <https://www.benton.org/node/175252> [<http://perma.cc/9W64-432W>] (last visited Oct. 6, 2015); *February 25, 2014 (More on Netflix-Comcast and Comcast-TWC)*, BENTON FOUND., <https://www.benton.org/node/175351> [<http://perma.cc/3QZG-YKX8>] (last visited Oct. 6, 2015); *February 26, 2014 (Comcast-Netflix; Unlocking Cellphones)* BENTON FOUND., <https://www.benton.org/>

lated to extortion by succumbing to thinly veiled threats by retail ISPs like Comcast that, absent surcharge payments, Netflix video file downloads would regularly trigger congestion and a degraded customer experience.<sup>67</sup> These observers believe Comcast caused Netflix traffic to slow down as a way to extort a surcharge payment<sup>68</sup> from high volume sources of content to help underwrite needed network upgrades.<sup>69</sup> Others consider paid peering a pragmatic and commercially wise decision by Netflix to secure enhanced QOS delivery guarantees and achieve greater certainty that

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node/175425 [http://perma.cc/4RM8-3HNQ] (last visited Oct. 6, 2015); and *February 27, 2014 (Net Neutrality; Comcast; Wireless)*, BENTON FOUND., <https://www.benton.org/node/175497> [http://perma.cc/B68Z-Y6F9] (last visited Oct. 6, 2015).

<sup>67</sup> From what information is public, it appears that the largest ISPs are demanding payment from networks that deliver content and services that residential broadband consumers demand. Because the large residential ISPs themselves are the ones keeping the terms of their deals secret, it is [sic] raises the question of whether they have something to hide.

Bartees Cox Jr., *Public Knowledge Raises Concerns over Netflix/Comcast Agreement*, PUB. KNOWLEDGE (Feb. 23, 2014), <https://www.publicknowledge.org/press-release/public-knowledge-raises-concerns-over-netflixcomca> [http://perma.cc/K2R6-XLNF].

Alexis Ohanian, startup investor and co-founder of Reddit, lashed out at U.S. broadband policy on Thursday, calling on the FCC to reclassify internet broadband as “the utility we all know it to be.” Ohanian aimed special vitriol at Comcast, affecting a mafia-style voice to accuse the cable giant of “legal extortion” for fiddling with Netflix speeds until the video site paid it to restore proper service.

Jeff John Roberts, *Comcast “Extortion” Shows the Need to Treat Broadband as a Utility, Reddit’s Ohanian Said*, GIGAOM (Oct. 16, 2014, 8:31 AM), <https://gigaom.com/2014/10/16/comcast-extortion-shows-the-need-to-treat-broadband-as-a-utility-reddits-ohanian-said/> [http://perma.cc/9CJZ-5AXA].

<sup>68</sup> See, e.g., Tim Wu, *Comcast Versus the Open Internet*, NEW YORKER (Feb. 24, 2014), <http://www.newyorker.com/online/blogs/elements/2014/02/comcast-versus-the-free-internet.html> [http://perma.cc/U86G-MXZJ]; see also *ISP Speed Index*, NETFLIX, <http://ispspeedindex.netflix.com/country/us> (on the ISP Comparison Chart, from field for Oct. 2013 and to field for Feb. 2014) [http://perma.cc/6TFA-WXXB] (last visited Oct. 1, 2015) (providing Netflix subscribers with a graphical measure of how their ISP compares with other carriers in terms of measured bit transmission speed).

<sup>69</sup> See, e.g., Susan Crawford, *Introducing the Comcast Tax*, BLOOMBERGVIEW (Feb. 24, 2014, 3:24 PM), <http://www.bloombergview.com/articles/2014-02-24/introducing-the-comcast-tax> [http://perma.cc/EFM3-YERA].

subscribers would not experience degraded service,<sup>70</sup> in light of the real possibility that Netflix traffic could trigger congestion.<sup>71</sup>

The migration from peer to transit, or paid peering partner, represents one of many adjustments in interconnection compensation arrangements triggered by changes in traffic flows.<sup>72</sup> Heretofore, commercially driven negotiations have managed the transition without resulting in many service disruptions. However, it appears increasingly likely that interconnection negotiations will become more contentious and protracted,<sup>73</sup> particularly when retail ISPs demand compensation from sources of high volume, bandwidth intensive video content with which the ISPs do not interconnect directly. As the Internet becomes a more common medium for the

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<sup>70</sup> See, e.g., Rayburn, *supra* note 51.

<sup>71</sup> Netflix traffic constitutes as much as thirty-four percent of the total volume carried by retail ISPs during peak hours. See Drew Fitzgerald, *Netflix's Share of Internet Traffic Grows*, WALL ST. J. (May 14, 2014, 10:48 PM), <http://www.wsj.com/articles/SB10001424052702304908304579561802483718502> [<http://perma.cc/P4RS-SHGX>].

<sup>72</sup> For background on peering, transit, and new interconnection arrangements, see DRPEERING INT'L, <http://drpeering.net/index.php> [<http://perma.cc/RFS7-JQBE>] (last visited Oct. 4, 2015); Ana-Maria Kovacs, *Internet Peering and Transit*, TECH. POL'Y INST., 10–11 (Apr. 4, 2012), <http://www.techpolicyinstitute.org/files/amkinternetpeeringandtransit.pdf> [<http://perma.cc/ZD4C-RQ8C>]; Dennis Weller & Bill Woodcock, *Internet Traffic Exchange: Market Developments and Policy Challenges*, OECD DIGITAL ECON. PAPERS, No. 207 (Jan. 29, 2013), [http://www.oecd-ilibrary.org/science-and-technology/internet-traffic-exchange\\_5k918gpt130q-en](http://www.oecd-ilibrary.org/science-and-technology/internet-traffic-exchange_5k918gpt130q-en) [<http://perma.cc/KEV2-CJE8>].

<sup>73</sup> By regulating the terms upon which content providers use their networks to reach consumers, broadband providers could manipulate the flow of information in society. For example, Comcast could conceivably block consumer access to websites like [www.comcastsucks.org](http://www.comcastsucks.org) that criticize the company. Perhaps more realistically, Comcast could block or degrade content and applications like Netflix that compete against its other revenue-generating services. Unlike America Online and other first-generation dial-up Internet access providers, most broadband providers do not specialize in providing Internet access alone. Rather, the largest broadband providers are cable and telephone companies, which have incentives to prevent customers from using their broadband connections in ways that threaten their other revenue streams. For example, consumer groups have expressed concerns that broadband Internet providers that also offer on-demand movie rentals via cable might discriminate against other services (such as Netflix or BitTorrent) that make movies available over a broadband connection.

Daniel A. Lyons, *Net Neutrality and Nondiscrimination Norms in Telecommunications*, 54 ARIZ. L. REV. 1029, 1034 (2012) (citations omitted).

delivery of video content, more compensation disputes will arise that have possibly greater potential for consumer inconvenience than carriage disputes between content providers and traditional media outlets, such as satellite and cable television operators.

The FCC has delivered a mixed message to prospective disputants. It has created a regulatory dichotomy between retail ISPs, now reclassified as telecommunications service providers, and upstream ventures, who retain the largely unregulated information service classification if they are not corporate affiliates of the retail ISP and do not offer public services. Additionally, the Commission has opted not to apply the no blocking, throttling, and paid prioritization open Internet rules to interconnection between the upstream ISPs and retail ISPs.<sup>74</sup> Notwithstanding the service classification dichotomy and the decision eschewing specific interconnection rules, the Commission reserves the option to intervene, on a case-by-case basis, in the likely event that interconnection and compensation disputes occur between upstream carriers and retail ISPs.<sup>75</sup>

The Commission has created a “no-unreasonable interference/disadvantage standard”<sup>76</sup> for evaluating both voluntary and

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<sup>74</sup> [T]his Order does not apply the open Internet rules to interconnection. . . . While we have more than a decade’s worth of experience with last-mile practices, we lack a similar depth of background in the Internet traffic exchange context. Thus, we find that the best approach is to watch, learn, and act as required, but not intervene now, especially not with prescriptive rules.

2015 Open Internet Order, *supra* note 7, paras. 30–31.

<sup>75</sup> [C]ommercial arrangements for the exchange of traffic with a broadband Internet access provider are within the scope of Title II, and the Commission will be available to hear disputes raised under sections 201 and 202 on a case-by-case basis: an appropriate vehicle for enforcement where disputes are primarily over commercial terms and that involve some very large corporations, including companies like transit providers and Content Delivery Networks (CDNs), that act on behalf of smaller edge providers.

*Id.* para. 29.

<sup>76</sup> Under the no-unreasonable interference/disadvantage standard: [T]he Commission can prohibit practices that unreasonably interfere with the ability of consumers or edge providers to select, access, and use broadband Internet access service to reach one another, thus causing harm to the open Internet. This no-unreasonable interference/disadvantage standard will operate on a case-by-case

disputed terms and conditions under which retail ISPs and upstream carriers cooperate in the routing of broadband traffic. However, the FCC explicitly states that upstream ISPs and CDNs can prioritize traffic<sup>77</sup> even though the Commission explicitly prohibits this option for retail ISPs. The FCC also exempts interconnection between CDNs and retail ISPs from the no-unreasonable interference/disadvantage standard of evaluation.<sup>78</sup>

The FCC wisely defers to commercial incentives to achieve beneficial outcomes, but stands ready to intervene when disputes arise, or if a negotiated arrangement violates the Commission's somewhat ambiguous sense of what constitutes an anticompetitive practice that harms consumers. The Commission attempts to reserve ample flexibility to act and it may have expertly calibrated the scope of its possible intervention. On the other hand, it may come across as an understatement to note that the FCC has generated uncertainty over what commercially negotiated terms and conditions could trigger its intervention.

## II. EXPEDITING DELIVERY OF "MISSION CRITICAL," "MUST SEE" VIDEO BITS

As the Internet becomes an increasingly important medium for the delivery of video, the volume of traffic downloaded increases and carriers must expand network capacity to handle the growth. The prospect for disputes over compensation increase when downstream retail ISPs must regularly upgrade capacity, but believe they are inadequately compensated by the ventures that have stimulated greater download demand by "binge viewing" broadband subscribers. While retail ISPs receive compensation from both subscribers

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basis and is designed to evaluate other current or future broadband Internet access provider policies or practices—not covered by the bright-line rules—and prohibit those that harm the open Internet.

*Id.* para. 108.

<sup>77</sup> "We also clarify that the ban on paid prioritization does not restrict the ability of a broadband provider and CDN to interconnect." *Id.* para. 128.

<sup>78</sup> "Thus, we conclude that, at this time, application of the no-unreasonable interference/disadvantage standard and the prohibitions on blocking, throttling, and paid prioritization to the Internet traffic exchange arrangements is not warranted." *Id.* para. 195.

and upstream ISPs, they have not achieved the same remarkable commercial success as other ventures like Google and Netflix which use their networks to deliver content to consumers. Accordingly, disputes have arisen and may increase in number when retail ISPs and upstream content sources disagree on the value of the delivery service performed.

As the diversity, value, and volume of downloaded content increases, retail ISPs incur higher costs in delivering the content, and accordingly seek ways to secure higher payments.<sup>79</sup> For retail subscribers downloading much more content, ISPs can tier service and charge higher rates based on the volume of content downloaded in a month, rather than offer a single, “all you can eat” (“AYCE”) unmetered rate.<sup>80</sup>

Rather than consider high volume consumers as pesky “bandwidth hogs,” retail ISPs have begun to consider them as favored customers in light of the greater revenue and profit, which is generated by the higher tiered and more expensive services that offer faster bit transmission rates and a higher monthly download allotment. The retail broadband access subscription increases in value when consumers can substitute on demand video access in lieu of “appointment television”<sup>81</sup> access to content that is prescribed by content creators or distributors at a specific time and available only on a single broadcast, satellite, or cable channel. With successful migration from unmetered, AYCE service for retail subscribers to a tiered and metered system, retail ISPs now have turned their atten-

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<sup>79</sup> For example, in 2015 two major broadband providers, Comcast and Time Warner, raised their cable modem rental rate by twenty-five and thirty-three percent respectively to \$120 and \$96 per year. See Jose Pagliery, *Comcast and Time Warner Cable Hike Modem Fees as Much as 33%. Time to Buy Your Own*, CNNMONEY (Jan. 5, 2015, 2:59 PM), <http://money.cnn.com/2015/01/02/technology/comcast-time-warner-cable-modem/> [<http://perma.cc/B8BZ-ULQW>].

<sup>80</sup> See Daniel A. Lyons, *Internet Policy's Next Frontier: Usage-Based Broadband Pricing*, 66 FED. COMM. L.J. 1, 3–4 (2013).

<sup>81</sup> “Consumers are changing their viewing habits in favor of ‘TV Everywhere.’ They no longer make ‘appointments’ to sit down and view content, and are no longer limited by TV programming schedules. They want content whenever and wherever they are.” John Clancy, *Why the Future of TV Is All About Personalization*, MASHABLE (Aug. 25, 2011), <http://mashable.com/2011/08/25/tv-mobile-personalization/> [<http://perma.cc/W8C4-X9X2>].

tion upstream to CDNs and content sources, such as Netflix, for higher payments.<sup>82</sup>

### III. THE WAY FORWARD

Current and likely future Internet interconnection disputes raise many of the same issues as the retransmission consent negotiations between television broadcasters and multichannel video programming distributors, such as cable and satellite television operators.<sup>83</sup> Consumers are denied access to desirable video content as a result of blackouts when incumbent media ventures fail to reach closure by a contractual deadline, and through network congestion when retail ISPs will not improve QOS without receiving additional compensation.

Consumers have the right to expect that their significant monthly broadband subscription payments entitle them to reliable and high quality service that is not contingent on whether the retail ISP succeeds in its demands for surcharges from specific carriers and content sources. Without a regulatory safeguard, retail ISPs can punish holdouts by inconveniencing their consumers with degraded service. Most consumers may not know how vulnerable their Internet access is to service interruptions, whether caused by real or artificial congestion. When an upstream carrier or content source refuses to pay a surcharge by generating artificial congestion, the possibility exists that a retail ISP can retaliate.<sup>84</sup> IPTV viewers have a low pain threshold for degraded service, but they have limited recourse in terms of shifting carriers, or demanding a speedy resolution to a squabble between their ISP and an upstream CDN or content source like Netflix.<sup>85</sup>

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<sup>82</sup> “Today, much Web content is not delivered to the ultimate recipient directly from the Web server belonging to the original creator, but via a content delivery network (CDN)—a collection of servers that cache the content and deliver it on demand.” David D. Clark & Marjory S. Blumenthal, *The End-To-End Argument and Application Design: The Role of Trust*, 63 FED. COMM. L.J. 357, 364–65 (2011).

<sup>83</sup> See Rob Frieden, *The Costs and Benefits of Regulatory Intervention in Internet Disputes: Lessons from Broadcast Signal Retransmission Consent Negotiations*, 37 HASTINGS COMM. & ENT. L.J. 1, 8–9 (2015).

<sup>84</sup> See *id.* at 15.

<sup>85</sup> [T]he Commission found that most residential customers have only one or two options for wireline broadband Internet access service,

Commercial negotiations, unfettered by regulatory agency oversight, constitute the preferred arrangement for parties to anticipate and resolve disputes. However, the likelihood of protracted negotiations and outages that are harmful to consumers appears increasingly likely, particularly now that substitutes for the traditional dichotomy of peering or transit have arisen. Consumers, upstream ISPs, and content sources need a complaint resolution forum that can reach timely and fair resolution of predictable disputes.

Retail ISPs have a right to recoup higher costs, including the network upgrades made necessary by increased downloading of bandwidth intensive video content. The problem lies in how retail ISPs lawfully can recover such costs. The FCC concluded that it needed to impose a near absolute bar on paid prioritization, because some retail ISPs might nudge or force upstream ISPs, CDNs, and content sources to pay surcharges for “fast lane” access to consumers.<sup>86</sup> The Commission appears to discount the possibility that retail ISPs might offer QOS enhancements that benefit consumers without harming competition. Retail ISPs ought to have the option of offering reasonable types of price and QOS discrimination, based on actual differences in the cost of service and proof that the arrangement will not harm consumers by degrading service unless surcharge payments are received.

Put another way, not all forms of price discrimination and traffic prioritization evidence price gouging and unfair leveraging of access to bottleneck facilities. For example, Comcast’s paid peering arrangement with Netflix provided permissible preferential access by providing high level access to Comcast’s nationwide network of peering points, normally made available to other major carriers.<sup>87</sup> Netflix secured enhanced QOS by paying Comcast in its

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increasing the risk of market power, and found the future of mobile Internet access service as a competing substitute remained unclear. Moreover, the Commission emphasized that customers may incur significant costs in switching from one provider to another, thus creating “terminating monopolies” for content providers needing high-speed broadband service to reach end users.

*Id.* at 20 n.78 (quoting 2014 Open Internet NPRM, *supra* note 24, para. 42).

<sup>86</sup> See 2015 Open Internet Order, *supra* note 7, para. 18.

<sup>87</sup> See Frieden, *supra* note 83, at 8 n.27.

capacity as an upstream ISP or CDN.<sup>88</sup> The FCC has not implied that such paid peering violates the 2015 Open Internet Order, even though the very same type arrangement would constitute impermissible paid prioritization had Comcast offered such QOS enhancement for last mile delivery of the same content.

By reclassifying Internet access as a telecommunications service, the FCC wants clear statutory authority to prevent unreasonable discrimination. The Commission considers upstream paid prioritization from retail ISPs as reasonable QOS differentiation, while downstream paid prioritization would constitute unlawful discrimination.

A regulatory agency can change its statutory interpretations and the regulatory classifications it has made in implementing statutorily imposed duties. For example, the FCC changed the regulatory classification of Digital Subscriber Line service from a telecommunications service to an information service.<sup>89</sup> When making a reclassification that triggers less or no regulation, the Commission receives ample support from stakeholders that benefit from lowered or eliminated regulatory costs.

A reclassification from reduced or nonexistent regulation to one that imposes new regulatory oversight will generate substantial opposition, legal challenges, and high political costs for the FCC.<sup>90</sup> In both types of reclassifications, the FCC must provide evidence, ideally supported with empirical data, to support conclusions that

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<sup>88</sup> See *id.* at 24.

<sup>89</sup> See *In re* Appropriate Framework for Broadband Access to the Internet over Wireline Facilities et al., Report and Order and Notice of Proposed Rulemaking, 20 FCC Rcd. 14853, para. 5 (2005).

<sup>90</sup> [C]able is willing to embrace the core principles of network neutrality with the caveat that it will fight hard—very hard—against any pursuit of rules that attempt to change the definition of broadband from an information service, as it is today, to a common carrier service. If rule makers try to regulate broadband services as common carrier services under Title II of the Communications Act of 1934, “that’s World War III,” [National Telecommunications and Cable Association CEO Michael] Powell said.

Jeff Baumgartner, *Powell On NCTA’s 2014 Priorities: “Broadband, Broadband and Broadband,”* MULTICHANNEL NEWS (Oct. 22, 2013, 4:31 PM), <http://www.multichannel.com/news/content/powell-ncta-s-2014-priorities-broadband-broadband-and-broadband/357180> [<http://perma.cc/2WFD-E6QG>].

changed circumstances favor new or different regulatory requirements. Armed with the lawful authority to select from a larger set of oversight tools, the FCC must closely calibrate the application of new regulatory burdens so that only necessary market-countervailing rules apply.

Additionally, the FCC should recognize that having Title II regulatory authority does not empower it to prevent any and all forms of discriminatory practices. Title II regulated common carriers can offer services, on different terms and conditions, provided that any “similarly situated”<sup>91</sup> consumer can qualify to become a subscriber. This means that even regulated telecommunications service providers can engage in certain types of price and QOS differentiation. Arguably a “better than best efforts” offering, promising higher QOS and faster delivery speeds, does not constitute “unreasonable” discrimination, the only type of discrimination Title II prohibits.

Unfortunately, the FCC’s 2015 Open Internet Order does not provide sufficient clarity about what types of QOS enhancements lawfully can be made available to content providers and on behalf of consumers. The Commission states that a retail ISP cannot offer paid prioritization that would create a premium fast lane for content delivery in exchange for “payment (monetary or otherwise) to manage its network in a way that benefits particular content, applications, services, or devices.”<sup>92</sup> However, carriers upstream from a retail ISP, including major ISPs providing very high capacity “backbone service” and CDNs, can offer such QOS enhancement based on the rationale that these ventures do not provide access to

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<sup>91</sup> [T]he [Communications] Act defines the terms “common carrier” and “carrier” to include “any person engaged as a common carrier for hire, in interstate or foreign communication by wire or radio.” . . . Various regulatory obligations and entitlements set forth in the Act—including a prohibition on unjust or unreasonable discrimination among similarly situated customers and the requirement that all charges, practices, classifications, and regulations applied to common carrier service be “just and reasonable”—attach only to entities meeting this definition.

*In re* IP-Enabled Services, Notice of Proposed Rulemaking, 19 FCC Rcd. 4863, para. 24 (2004).

<sup>92</sup> 2015 Open Internet Order, *supra* note 7, para. 18.

and from the entire Internet cloud.<sup>93</sup> Retail ISPs can seek a waiver of the prohibition on paid prioritization, but the 2015 Open Internet Order explicitly imposes a “high bar”<sup>94</sup> narrowing this option to exceptional cases:

In support of any waiver request, the applicant therefore must make two related showings. First, the applicant must demonstrate that the practice will have some significant public interest benefit, such as providing evidence that the practice furthers competition, innovation, consumer demand, or investment. Second, the applicant must demonstrate that the practice does not harm the nature of the open Internet, including, but not limited to, providing evidence that the practice:

- does not materially degrade or threaten to materially degrade the broadband Internet access service of the general public;
- does not hinder consumer choice;
- does not impair competition, innovation, consumer demand, or investment; and
- does not impede any forms of expressions, types of service, or points of view.<sup>95</sup>

It appears that an individual content provider or distributor, such as Netflix, can lawfully secure a “better than best efforts”

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<sup>93</sup> Broadband Internet access service does not include virtual private network (VPN) services, content delivery networks (CDNs), hosting or data storage services, or Internet backbone services. The Commission has historically distinguished these services from “mass market” services and, as explained in the 2014 Open Internet NPRM, they “do not provide the capability to transmit data to and receive data from all or substantially all Internet endpoints.”

*Id.* para. 340.

The FCC opted not to apply any of the open Internet rules to these carriers: “[W]e exclude this portion of broadband Internet access service—interconnection with a broadband Internet access service provider’s network—from application of our open Internet rules. We note that this exclusion also extends to interconnection with CDNs.” *Id.* para. 193. Likewise, the “ban on paid prioritization does not restrict the ability of a broadband provider and CDN to interconnect.” *Id.* para. 128.

<sup>94</sup> *Id.* para. 132.

<sup>95</sup> *Id.* para. 131.

routing arrangement through paid peering, a type of paid prioritization.<sup>96</sup> The Commission reports that such payments do achieve higher QOS, but notes the controversy when such payments occur in light of the possibility that a retail ISP could impose a surcharge to abate traffic congestion it artificially created.<sup>97</sup> The FCC will rely on its complaint resolution process to sort out paid peering arrangements, but apparently, the FCC will not risk an after the fact forensic investigation into whether retail ISP paid prioritization arrangements can enhance consumer welfare without market distortion.

The FCC readily acknowledges that “[c]ontent providers have come to rely on the services of commercial and private CDNs, which cache content close to end users, providing increased QOS and avoiding transit costs.”<sup>98</sup> The Commission bars active participation by retail ISPs, either in coordination with an upstream carrier or unilaterally, based on the enhanced risk of harm to competition and consumers. This risk surely exists, but on the other side of the ledger, consumers can benefit from many types of network management functions that enhance QOS.

The FCC should have considered instances where retail ISP network management providing better than best efforts routing could facilitate the delivery of “must see” video without forcing consumers and other carriers to migrate to this more expensive option. The Commission should not have imposed a near total ban on

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<sup>96</sup> Backbone ISPs can barter reciprocal carriage agreements without the transfer of money. *See id.* paras. 197–201. Content providers and distributors can secure similar carriage if they offer compensation for “paid peering.”

<sup>97</sup> Some edge and transit providers assert that large broadband Internet access service providers are creating artificial congestion by refusing to upgrade interconnection capacity at their network entrance points for settlement-free peers or CDNs, thus forcing edge providers and CDNs to agree to paid peering arrangements. These parties suggest that paid arrangements resulting from artificially congested interconnection ports at the broadband Internet access service provider network edge could create the same consumer harms as paid arrangements in the last-mile, and lead to paid prioritization, fast lanes, degradation of consumer connections, and ultimately, stifling of innovation by edge providers.

*Id.* para. 200.

<sup>98</sup> *Id.* para. 197.

paid prioritization by retail ISPs. Rather than assign waiver seekers a near impossible burden of proving that a paid prioritization arrangement could never harm anything, the Commission could have afforded more flexibility, subject to a combination of transparency, reporting, and complaint resolution safeguards to ensure that any retail ISP's QOS enhancement does not harm competitors and consumers. The FCC has lawful authority to require carrier disclosure of specialized network arrangements and pricing options as part of the Commission's authority to require transparency into the way ISPs do business.<sup>99</sup>

Likewise, the FCC can use its conventional dispute resolution process in response to complaints submitted to it. Nothing prevents the FCC from investigating and remedying instances of unfair competition and trade practices that harm consumers and frustrate the Commission's ability to achieve the goals articulated in section 706 of the Communications Act, as amended, which affords ample latitude in identifying and resolving impediments to widespread and affordable broadband access.<sup>100</sup>

For example, the FCC has clear statutory authority under section 706 to require ISPs to satisfy transparency requirements. These transparency requirements include requiring ISPs to dis-

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<sup>99</sup> While reversing the FCC's nondiscrimination rules as impermissible common carrier regulation, the D.C. Circuit Court of Appeals affirmed the FCC's transparency requirements. *See Verizon v. FCC*, 740 F.3d 623, 659 (D.C. Cir. 2014). The FCC's existing transparency requirements state:

A person engaged in the provision of broadband Internet access service shall publicly disclose accurate information regarding the network management practices, performance, and commercial terms of its broadband Internet access services sufficient for consumers to make informed choices regarding use of such services and for content, application, service, and device providers to develop, market, and maintain Internet offerings.

47 C.F.R. § 8.3 (2015). The 2015 Open Internet Order requires additional disclosure by broadband Internet access providers, including information on subscription fees, data caps and allowances, network performance and network practices, including specific disclosures related to congestion management, application-specific behavior, device attachment rules, and security.

<sup>100</sup> "The record amassed by the Commission contains many similar examples, and Verizon has given us no basis for questioning the Commission's determination that the preservation of Internet openness is integral to achieving the statutory objectives set forth in section 706." *Verizon*, 740 F.3d at 645.

close network management practices, performance characteristics, and the terms and conditions of their broadband services, including special arrangements negotiated with one carrier or customer, an example of which is the paid peering agreement between Comcast and Netflix.<sup>101</sup>

A reactive dispute resolution process should abate concerns that the FCC has unlimited and intrusive power to regulate the Internet and the commercial terms and conditions of interconnection and compensation. The D.C. Circuit Court of Appeals made it clear that while the FCC cannot impose common carrier duties,<sup>102</sup> it does have lawful authority to promote access to the Internet and to remove impediments that frustrate achievement of this goal. To identify the permissible scope of FCC compelled duties, the court devoted considerable attention to a cable television case precedent.<sup>103</sup> The court concluded that the FCC can impose obligations to accommodate the needs of a select group of worthy stakeholders, such as broadcasters, but in the interest of openness and nondiscrimination the FCC cannot impose requirements to accommodate a broader, undifferentiated group.<sup>104</sup> Additionally, the

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<sup>101</sup> Comcast, the country's largest cable and broadband provider, and Netflix, the giant television and movie streaming service, announced an agreement Sunday in which Netflix will pay Comcast for faster and more reliable access to Comcast's subscribers. The deal is a milestone in the history of the Internet, where content providers like Netflix generally have not had to pay for access to the customers of a broadband provider.

Edward Wyatt & Noam Cohen, *Comcast and Netflix Reach Deal on Service*, N.Y. TIMES (Feb. 23, 2014), <http://www.nytimes.com/2014/02/24/business/media/comcast-and-netflix-reach-a-streaming-agreement.html> [<http://perma.cc/EW3U-6X72>].

<sup>102</sup> "We think it obvious that the Commission would violate the Communications Act were it to regulate broadband providers as common carriers." *Verizon*, 740 F.3d at 650.

<sup>103</sup> The court cited *United States v. Southwestern Cable Co.*, 392 U.S. 157 (1968) (affirming FCC jurisdiction to regulate cable television and to impose rules restricting what signal it can retransmit) and *United States v. Midwest Video Corp. (Midwest Video I)*, 406 U.S. 649 (1972) (affirming FCC rules requiring certain cable companies to create their own programming and maintain facilities for local production). See also *Turner Broad. Sys. Inc. v. FCC*, 520 U.S. 180 (1997) (holding that must-carry obligations satisfy intermediate scrutiny of rule impacting cable operator's First Amendment speech rights); *Turner Broad. Sys. Inc. v. FCC*, 512 U.S. 622 (1994) (affirming the duty of cable operators to carry significantly viewed local broadcast television signals).

<sup>104</sup> The *Midwest Video II* cable operators' primary "customers" were their subscribers, who paid to have programming delivered to them in

FCC must first defer to commercial negotiations between broadcasters and cable operators.

The D.C. Circuit also identified a previous instance where the FCC overstepped its statutory authority in the area of compulsory carriage. In *FCC v. Midwest Video Corp. (Midwest Video II)*,<sup>105</sup> the court rejected the FCC mandated access—not by a small group like local broadcasters, but by a far larger group of public access channel lessees—as too much like common carriage.<sup>106</sup> The court rejected the FCC rules because they usurped the right of cable operators to make their own decision on how to load their inventory of channel capacity.<sup>107</sup>

Retail ISPs have a similar right to determine how to load their bandwidth and what price to charge, subject to a regulatory dispute resolution process that assesses whether an ISP practice would have a harmful effect on consumer access to the Internet cloud. Section 706 provides the basis for the FCC to examine whether or not ISPs have used resource allocation decisions to promote public access to widespread and affordable broadband service.

Unfortunately, the FCC has opted to reclassify broadband Internet access as common carriage, rather than devise remedies that require ISPs, as private carriers, to operate with greater transparency, to disclose service terms and conditions, and to negotiate in good faith. While reclassification offers the opportunity for more

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their homes. There, as here, the Commission's regulations required the regulated entities to carry the content of third parties to these customers—content the entities otherwise could have blocked at their discretion. Moreover, much like the rules at issue here, the *Midwest Video II* regulations compelled the operators to hold open certain channels for use at no cost—thus permitting specified programmers to “hire” the cable operators' services for free. Given that the cable operators in *Midwest Video II* were carriers with respect to these third-party programmers, we see no basis for concluding that broadband providers are not similarly carriers with respect to third-party edge providers.

*Verizon*, 740 F.3d at 654.

<sup>105</sup> 440 U.S. 689 (1979).

<sup>106</sup> *See id.* at 708.

<sup>107</sup> “The access rules plainly impose common-carrier obligations on cable operators. Under the rules, cable systems are required to hold out dedicated channels on a first-come, nondiscriminatory basis. Operators are prohibited from determining or influencing the content of access programming.” *Id.* at 701–02 (citations omitted).

muscular and clear-cut regulatory oversight, it will reenergize ISPs to litigate whether the FCC has engaged in rational decision making based on a complete evidentiary record. Such litigation will extend the period of regulatory uncertainty.

The FCC has asserted its legal right to reclassify services in light of changed circumstances. However, it could have fine-tuned and recalibrated its regulatory inventory over private carriers without broadly expanding its wingspan with the promise of forbearance and limited appetite for more extensive oversight. As well, the Commission could have prevented possibly harmful regulatory uncertainty by establishing a simple and clear rule that ISPs can offer QOS enhancements that help expedite the delivery of IPTV without degrading their conventional, best efforts traffic routing.