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Net Bias and the Treatment of “Mission-Critical” Bits

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I. Introduction

The Internet increasingly offers a preferred medium for access to video and other types of high value, bandwidth intensive content. Internet Service Providers (“ISPs”) have made substantial investments in infrastructure upgrades to satisfy growing demand and to accommodate consumer expectations of having access anytime, anywhere, via any device and in any distribution format. Early adopters of new video delivery technologies expect both wireline and wireless alternatives to “legacy” media to offer on-demand video access instead of “appointment television”¹ 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, such as broadcast, satellite and cable television, replacing them with on-demand options available via the Internet. The terms Internet Protocol Television (“IPTV”)²

¹ “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 (Winter, 2010).

² IPTV offers consumers with broadband connections options to download video files or view (streaming) video content on an immediate “real time” basis. Sky Angel U.S., LLC, Emergency Petition for Temporary Standstill, DA 10-679, 25 F.C.C.R. 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

and Over-the-Top Television (“OTT”)³ refer to the ability of content creators and new or existing content distributors 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. Options such as OTT and IPTV can offer new options for consumers to view high demand, “must see” television, such as live sporting events along with the downloading of files containing less time sensitive and cheaper content.

New media options and the convergence of markets and technologies have the potential to disrupt the business plans of incumbents that rely on a sequence of “windows” for content display that ration access based on willingness to pay. For example, movie access traditionally has run a time sequence starting with theatrical presentation and followed by pay per view, DVD sale, premium cable and satellite channel access, DVD rental, broadband download, etc. Eventually content distributors accept compensation from broadcast, cable and satellite television advertisers in lieu of direct payments from end users, or in combination with monthly subscriptions.

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.* at 3879-80. 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 COMMLAW CONSPPECTUS 199 (2009).

³ “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.” Preserving the Open Internet, Report and Order, 25 F.C.C.R. 17905, n. 48 (2010).

Broadband networks have the potential to disrupt the video content distribution window regime, because consumers have growing options for achieving access to both lawful and pirated content via multiple screens soon after initial release. Television sets, computer monitors, smartphone screens and tablets offer much of the content previously made available exclusively via the movie screen, or to only one of the other mediated screen options. These options have become available thanks to new commercial video distribution options ⁴ available from ventures such as Amazon, Hulu, Netflix and YouTube.

On the technological front content transmission speeds have substantially increased making it possible for broadband networks to deliver full motion video content as a file download, the “streaming” of such files without downloading, or the “simulcasting” of live content. As demand for broadband delivery of video content grows, Internet Service Providers (“ISPs”) need to plan how to upgrade their networks to accommodate ever increasing traffic. Additionally ISPs consider ways to recoup their investments by extracting higher payments from upstream ISPs and content sources and by diversifying retail service into various tiers, based on network transmission speed, monthly allowance of content downloading and quality of service.

Such price and quality of service discrimination constitutes a fundamental deviation from a tradition of offering a “one size fits all,” best efforts ⁵ routing of traffic. Tiering service,

⁴ “Many programmers--including both broadcast programmers and non-broadcast programmers--have increasingly begun to circle the wagons with incumbent MVPDs, concluding that they too are better off with a cut of the MVPDs’ supra-competitive profits than with the potential wild-west competition enabled by the Internet.” Marvin Ammori, *Copyright’s Latest Communications Policy: Content-Lock-Out and Compulsory Licensing For Internet Television*, 18 COMMLAW CONSPECTUS 375, 378 (2010).

⁵ “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

offering different prices points and other forms of product differentiation lead to a diversified marketplace that some consider biased, closed and not neutral. Advocates for government regulatory intervention worry that biased networks, managed by ISPs legally able to operate in a discriminatory manner, will stifle market entry by innovative ventures while also reducing consumer welfare and the value proposition of an Internet access subscription. Opponents counter that governments should have no authority to interfere with commercially driven negotiations over the terms and conditions under which ventures agree to interconnect networks.

The debate over network neutrality ⁶ and an open Internet ⁷ has become quite polarized with advocates seemingly unable to see a compromise that accommodates diversifying consumer

‘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, 277-78 (2008).

⁶ Network neutrality refers to government mandated nondiscrimination, transparency and other requirements on ISPs designed to foster a level competitive playing field among content providers and to establish consumer safeguards so that Internet users have unrestricted access limited only by legitimate concerns such as ISP network management and national security.

⁷ See, e.g., Amanda Leese, *Net Transparency: Post-Comcast FCC Authority to Enforce Disclosure Requirements Critical to “Preserving The Open Internet,”* 11 NW. J. TECH. & INTELL. PROP. 81 (Jan. 2013); Adam Candeub and Daniel McCartney, *Law and the Open Internet*, 64 FED. COMM. L.J. 493 (May, 2012); Dirk Grunwald, *The Internet Ecosystem: The Potential for Discrimination*, 63 FED. COMM. L.J. 411 (March, 2011); Rob Frieden, *Assessing the Merits of Network Neutrality Obligations at Low, Medium and High Network Layers*, 115 PA. ST. L. REV., No. 1, 49-82 (Summer, 2010); Marvin Ammori, *Beyond Content Neutrality: Understanding Content-Based Promotion of Democratic Speech*, 61 FED. COMM. L.J. 273 (March 2009); Sascha D. Meinrath & Victor W. Pickard, *Transcending Net Neutrality: Ten Steps Toward an Open Internet*, 12 J. INTERNET L., No. 6, 1 (Dec. 2008); Tim Wu and Christopher S. Yoo, *Keeping the Internet Neutral? Tim Wu and Christopher Yoo Debate*, 59 FED. COMM. L.J. 575 (June 2007); Tim Wu, *Network Neutrality, Broadband Discrimination*, 2 J. TELECOMM. AND HIGH TECH L. 141 (2005); Christopher S. Yoo, *Would Mandating Broadband Network Neutrality Help or Hurt Competition? A Comment on the End-to-End Debate*, 3 J. TELECOMM. & HIGH TECH. L. 23 (2004); Mark A. Lemley & Lawrence Lessig,

wants as well as the need for ISPs and other stakeholders to create new revenue streams that can help underwrite necessary network upgrades and generate profits. The creators, distributors and consumers of Internet-mediated video may consider paying a surcharge for “better than best efforts” of mission critical video bits that deliver “must see” television on a priority basis. To provide a higher degree of confidence that a video stream will arrive on time and with proper quality, ISPs may need to operate biased networks deliberately configured to prioritize video bits, or to provide specific content sources with dedicated pathways that reduce the potential for delay (latency) and other forms of traffic degradation. Arguably such preferential treatment would support an enhanced value proposition for video consumers particularly if ISPs refrain from deliberately devaluing and degrading the quality of service achieved for regular, non-priority traffic. A broad sense of network neutrality includes concerns about interconnection arrangements, because the availability of a premium delivery option might foreclose the standard and surcharge-free, best efforts option.

This paper assesses whether and how ISPs can offer quality of service enhancements for mission critical, must see video without disadvantaging competitors by punishing content creators, distributors and consumers who reject demands for new or more compensation. The

The End of End-to-End: Preserving the Architecture of the Internet in the Broadband Era, 48 UCLA L. Rev. 925 (2001).

For background on network neutrality initiatives outside the United States, see Catherine Jasseranda, *Critical Views on the French Approach to “Net Neutrality,”* 16 J. INTERNET L. No. 9, 18 (March, 2013); European Parliament, Directorate General for Internal Policies, Policy Department, *Network Neutrality: Challenges and Responses in the E.U. and the U.S.*, IP/A/IMCO/ST/2011-02 (May, 2011); available at: <http://www.europarl.europa.eu/document/activities/cont/201108/20110825ATT25266/20110825ATT25266EN.pdf>; Toshiya Jitsuzumi, *Discussion on network neutrality: Japan’s perspective*, 3 COMMS & CONVERGENCE REV., No. 1, 71-89 (2011).

paper explains that the Federal Communications Commission (“FCC”) lacks jurisdiction to impose anti-discrimination rules and other types of rules that impose the functional equivalence of common carrier responsibilities on private carriers providing information services. The paper concludes proactive rulemaking may constrain ISPs from devising interconnection and compensation arrangements that benefit consumers and do not result in an unlevel competitive playing field. On the other hand, the paper identifies instances where a regulatory referee remains necessary to offer timely and fair dispute resolution when increasingly likely disputes arise over what constitutes fair network bias particularly for the carriage of bandwidth intensive video content.

II. The Internet Comes of Age

As the Internet has commercialized and diversified, interconnection terms and conditions have changed between ISPs as they explore alternatives to conventional models that classify interconnection as either peering,⁸ or transiting.⁹ The former typically 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 Tier-1 ISPs for the opportunity to secure upstream links throughout the Internet cloud.¹⁰

⁸ Peering refers to a barter arrangement for traffic exchange where two Internet Service Providers agree to accept traffic from the other on without the transfer of funds. The carriers agree to a settlement-free arrangement, because traffic volumes generally match.

⁹ 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.

¹⁰ 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

In light of growing demand for bandwidth intensive, video content delivered via the Internet, traffic volume disparities have increased between ISPs. A new category of ISP, commonly referred to as a Content Delivery Network (“CDN”), targets the downstream video content delivery market, all but guaranteeing an asymmetrical traffic flow necessitating a financial settlement instead of a simple barter agreement. Because CDNs have more traffic for which they need to secure delivery to end users than what ISPs providing retail services to end users (“retail ISPs”) can or will hand off to them for upstream delivery, CDNs incur transit charges. Such asymmetry in traffic flows can generate interconnection compensation disputes as occurred between the major CDN for Netflix content, Level 3, and a major ISP, Comcast, which provides “last mile,” retail delivery of Internet content.¹¹ Content distributors, such as Netflix, also consider an alternative to using CDNs involving a direct paid peering arrangement with an ISP.¹²

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

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 (April, 2010).

¹¹ See, e.g., Daniel L. Brenner and Winston Maxwell, *The Network Neutrality and the Netflix Dispute: Upcoming Challenges for Content Providers in Europe and the United States*, 23 INTELL. PROP. & TECH. L.J. 3 (March 2011); Rob Frieden, *Rationales For and Against Regulatory Involvement in Resolving Internet Interconnection Disputes*, 14 YALE J. L & TECH. 266 (2012).

¹² Shalini Ramachandran, *Netflix to Pay Comcast for Smoother Streaming*, THE WALL STREET JOURNAL (Feb. 23, 2014); available at: <http://online.wsj.com/news/articles/SB10001424052702304834704579401071892041790>.

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 causing massive increases in download volume, i.e., ventures such as Netflix and YouTube.

On occasion retail broadband subscribers have experienced degraded service, particularly for bandwidth intensive application such as full motion video streaming.¹³ Identifying the actual cause of such congestion remains elusive. Content creators and distributors speculate whether retail ISPs have deliberately caused congestion, by refusing to further upgrade network capacity, or by allocating available capacity in ways that bolster the probability of congestion for the traffic of specific content types and sources. 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 program episodes instead of the conventional weekly release of just one show.¹⁴ Consumers and regulators alike have no means

¹³ Drew Fitzgerald and Shalini Ramachandran, *Netflix-Traffic Feud Leads to Video Slowdown*, THE WALL STREET JOURNAL (Feb. 18, 2014); available at: <http://online.wsj.com/news/articles/SB10001424052702304899704579391223249896550>.

¹⁴ "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); available at: <http://www.techtimes.com/articles/3670/20140223/netflix-verizon-standoff-only-net-neutrality-can-now-stop-video-slowdown.htm>.

for identifying the cause, because multiple carriers participate in the complete routing of traffic from source to end user. Sophisticated network tracking techniques are needed to identify the network operating the weakest link with the lowest available bandwidth causing latency and dropped packets of content.

A. The Paid Peering Option

In lieu of, or in addition to the use of CDNs, content sources can opt for a direct routing option where they secure a peering arrangement for a price. Such paid peering¹⁵ provides “better than best efforts” routing by assigning traffic to dedicated transmission capacity for most, if not all, of the complete routing. This arrangement provides higher quality of service by reducing—if not eliminating--the use of other networks thereby expediting delivery of traffic even when congestion would degrade traffic over lines subject to “best efforts” routing.¹⁶ Under a paid peering arrangement traffic can arrive via the most advantageous means, resulting in less latency,

¹⁵ “Paid peering involves all of the same aspects as conventional peering relationships. Peers announce to the rest of the Internet the addresses that their peering partners control, maintain a sufficient number of interconnection points across the country, and maintain the requisite total volume and traffic ratios. The key difference is that one peering partner pays the other partner for its services.” Christopher S. Yoo, *Innovations in the Internet's Architecture that Challenge the Status Quo*, 8 J. ON TELECOMM. & HIGH TECH. L. 79, 95-96 (2010).

¹⁶ “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).

fewer circuitous routing arrangements and the use of fewer routers and other switching equipment.

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.¹⁷ The decision by Netflix to secure paid peering access to the Comcast network triggered extensive commentary and analysis.¹⁸ Some believe Netflix capitulated to extortion by succumbing to thinly veiled threats by retail ISPs like Comcast that absent surcharge payments video file downloads would regularly trigger congestion and a degraded customer experience. These observers believe Comcast caused Netflix traffic to slow down as a way to leverage tax payments or surcharges¹⁹ from high volume sources of content to help underwrite needed network upgrades.²⁰ Others consider paid peering a rational and commercially wise decision by

¹⁷ See Netflix Media Center, *Comcast and Netflix Team Up to Provide Customers Excellent User Experience* (Feb. 23, 2014); available at: <https://pr.netflix.com/WebClient/getNewsSummary.do?newsId=992>.

¹⁸ A collection of commentaries and critiques is available at Benton Foundation, *Headlines Newsletter*; available at: <http://benton.org/headlines/newsletter> (Feb. 24-27, 2014).

¹⁹ See, e.g., Tim Wu, *Comcast Versus the Open Internet*, THE NEW YORKER (Feb. 24, 2014); available at: <http://www.newyorker.com/online/blogs/elements/2014/02/comcast-versus-the-free-internet.html>. See also, Netflix, *USA ISP Speed Index Results Graph, Oct. 2013-Feb. 2014* available at: <http://ispspeedindex.netflix.com/results/usa/graph>. See also, Drew Fitzgerald and Shalini Ramachandran, (2014). *Netflix-Traffic Feud Leads to Video Slowdown*, THE WALL STREET JOURNAL (Feb. 18, 2014); available at: <http://online.wsj.com/news/articles/SB10001424052702304899704579391223249896550>.

²⁰ See, e.g., Susan Crawford, *Introducing the Comcast Tax*, BLOOMBERGVIEW (Feb. 24, 2014); available at: <http://www.bloombergvew.com/articles/2014-02-24/introducing-the-comcast-tax>.

Netflix to secure enhanced quality of service delivery guarantees to achieve greater certainty that subscribers would not experience degraded service.²¹

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.²² 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,²³ 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

²¹ See, e.g., Dan Rayburn, *Here's How The Comcast & Netflix Deal Is Structured, With Data & Numbers*, Streaming MediaBlog.com (Feb. 27, 2014); available at: <http://blog.streamingmedia.com/2014/02/heres-comcast-netflix-deal-structured-numbers.html>.

²² For background on peering, transit and new interconnection arrangements, see Dennis Weller and Bill Woodcock, *Internet Traffic Exchange*, OECD Digital Economy Papers No. 207 (Jan. 29, 2013); available at: http://www.oecd-ilibrary.org/science-and-technology/internet-traffic-exchange_5k918gpt130q-en; Ana-Maria Kovacs, *Internet Peering and Transit* (April 4, 2012); available at: <http://www.techpolicyinstitute.org/files/amkinternetpeeringandtransit.pdf>; Dr. Peering International; available at: <http://drpeering.net/index.php>.

²³ “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 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 (Winter, 2012).

common medium for the delivery of video content, more compensation disputes will arise that have the equal or greater intensity and potential for consumer inconvenience as carriage disputes between content providers and traditional media outlets such as satellite and cable television.

III. Access To, From and Within the Internet Cloud

The Internet is commonly referred to as a “network of networks,”²⁴ because many different carriers agree to interconnect so that users achieve fast and seamless access to content throughout the world. Analogies to a cloud are also used to emphasize the apparent ease with which networks interconnect to form a complete, end-to-end link from content sources at the edge of the cloud, transmission through the cloud and onward delivery to consumers at another network edge.²⁵ However, when one examines the actual means by which traffic arrives at its final destination, the Internet constitutes a complex array of facilities operated by different carriers using many types of equipment manufactured by a variety of companies over several generations of innovation.

The network of networks and cloud analogies also ignore the complex and potentially contentious matter of financial compensation when a cooperative carrier agrees to route traffic of

²⁴ “The Internet is a global network of networks that has been the platform for revolutionary innovation. The role of the Internet in enabling innovation is not accidental; rather it flows from the Internet's architecture. The key innovation-enabling feature of Internet architecture is comprised of layers, narrowly understood as defined by code or broadly understood as functional components of a communications system.” Lawrence B. Solum and Minn Chung, *The Layers Principle: Internet Architecture and the Law*, 79 NOTRE DAME L. REV. 815, 816 (April, 2004).

²⁵ 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 (April, 2010).

another carrier onward to its final destination, or to another carrier. Internet carriers initially could ignore questions about traffic flow and financial responsibility, because governments subsidized network rollouts. During the early phase²⁶ of government incubation and anchor tenancy, Internet carriers did not need to meter traffic flows and determine whether compensation should flow from one carrier to another in light of traffic imbalances. The network of networks cooperative model started with interconnection based on a “rough justice” barter system called peering where carriers agreed to eschew cash settlements on the assumption that a balance of traffic flows existed, or the view that metering traffic would prove too costly.

Interconnection based on assumed parity of traffic volume and the absence of a need to transfer funds sharply contrasts the models used by telephone companies. These carriers never have used a barter system even when parity in traffic flows existed, or when either or both carriers received subsidies to promote universal service and infrastructure expansion into the

²⁶ The industrial structure of the Internet has tracked four phases:

- 1) Incubation--government administration, first through the United States Defense Department and later through the United States National Science Foundation and universities and research institutes throughout the world (1980s-1995);
 - 2) Privatization--governments eliminate financial subsidies obligating contractors to assess whether and how to operate commercially (1995-1998);
 - 3) Commercialization—private networks proliferate as do ventures creating software applications and content that traverse the Internet. The “dotcom boom” triggers irrational, excessive investment and overcapacity (1998-2001); and
 - 4) Diversification—after the dotcom bust and market re-entrenchment, Internet survivors and market entrants expand the array of available services and ISPs offer diversified terms, conditions and rates, including price and quality of service discrimination needed by “mission critical” traffic having high bandwidth requirements, e.g., full motion video content.
- Rob Frieden, *Rationales for and Against Regulatory Involvement in Resolving Internet Interconnection Disputes*, 14 YALE L. J. & TECH. 266, 276 (2012).

hinterland. From the onset of service, financial compensation models for telephone carrier interconnection have relied on a negotiated financial settlement based on actual traffic flows.²⁷

Over time, as governments have reduced or eliminate subsidies, Internet carriers have recognized the importance of measuring traffic and using financial settlements when traffic volumes lack symmetry. However the migration from peering to payment based transiting has not always occurred smoothly, particularly when commercially driven terms impose new financial obligations on some carriers that previously used the zero payment barter process. In turn these carriers have sought to recoup these costs from end users, particularly the highest volume subscribers.

Internet carriers typically offered an unmetered, “all you can eat” subscription model in the early phases of development and promotion. Now they consider, or already have migrated to, service tiers that place caps on the volume of traffic a subscriber can consume, or slow down transmission delivery speed (“throttling”) after a downloading volume has occurred within one month.²⁸ While arguably more efficient and fair, new metered retail subscription models have

²⁷ Geoff Huston, APNIC, *Internet peering and settlements*; available at: http://www.apnic.net/community/ecosystem/i*orgs/number-misuse/internet-peering-and-settlements; For a critique of proposals to use telecommunications settlements for Internet interconnection see Michael Kende, *Internet global growth: lessons for the future* (September 2012); available at: <http://www.analysismason.com/Research/Content/Reports/Internet-global-growth-lessons-for-the-future/Internet-global-growth-lessons-for-the-future/>.

²⁸ See, e.g., Comcast, Acceptable Use Policy for XFINITY® Internet; available at: <http://www.comcast.com/Corporate/Customers/Policies/HighSpeedInternetAUP.html>; (reserving the right to throttle traffic, but imposing no downloading cap).

triggered much consumer opposition and assertions that tiering discriminates and reduces the value of a subscription.²⁹

The need for Internet carriers to pay attention to traffic flows and the cost of providing peering and transit services to other carriers evidence the importance of network interconnection and perhaps as well to the risks of disconnections and financial disputes. A carrier dissatisfied with the status quo will seek new and more favorable commercial terms to which other carriers may not readily agree. If negotiations reach an impasse the carriers at least temporarily will no longer interconnect and accept traffic from each other. Such “de-peering” typically can occur without service disruption, because alternative routing arrangements exists with other carriers.³⁰ However the viability of the alternative carrier option depends on where in the cloud the network disconnection occurs.

The Internet ecosystem operates with highly varying degrees of competition and alternative routing options. Content providers and distributors generally have many options for

²⁹ “Consumers scored a big win today when Time Warner Cable announced it would halt proposed trials of ‘metered’ Internet broadband services, where users would pay extra for going over ‘caps’ on the plans they subscribed to.

‘It is clear from the public response over the last two weeks that there is a great deal of misunderstanding about our plans to roll out additional tests on consumption-based billing,’ said Time Warner Cable CEO Glenn Britt. ‘As a result, we will not proceed with implementation of additional tests until further consultation with our customers and other interested parties, ensuring that community needs are being met.’” Martin H. Bosworth, *Time Warner Cable Backs Down On Bandwidth Caps, Company halts trials of “metered broadband” after negative publicity blitz*, CONSUMER AFFAIRS (April 16, 2009); available at: <http://www.consumeraffairs.com/time-warner-metered-billing>.

³⁰ In 2008, Sprint and Cogent “de-peered” their networks, causing temporary service disruptions between their customers. See Om Malik, *Cogent, Sprint Disconnect Networks, May Cause Web Slowdown*, GigaOM (Oct. 30, 2008), available at: <http://gigaom.com/2008/10/30/cogent-sprint-un-peer-may-cause-web-slowdown>.

securing the long haul carriage of traffic. So-called Tier-1 ISPs offer redundant, duplicative and low cost options for transcontinental and transoceanic carriage. So even if a major Tier-1 ISP decided not to carry the traffic of another ISP, on financial or other grounds, the disconnected content provider/distributor could readily find alternative routes and carriers.

First and last mile “retail” access presents a different picture. End users may have a limited number of ISP service options for content uploading and downloading. Typically the incumbent telephone company provides a Digital Subscriber Line (“DSL”) option, the cable television company provides a faster and more expensive broadband alternative and one or two satellite carriers provide a comparatively more expensive and slower speed delivery option possibly most attractive to rural users lacking other choices. Terrestrial wireless carriers have begun to offer a competitive option, albeit one typically already imposing content downloading caps and raising questions about their ability to maintain advertised broadband speeds during peak demand conditions.³¹

Most retail consumers select one and only one carrier to handle all of their Internet traffic requirements. Should a service disruption occur upstream almost all ISPs can secure

³¹ Hibah Hussain, Danielle Kehl, Benjamin Lennett and Patrick Lucey, New America Foundation, *Capping the Nation’s Broadband Future? Dwindling competition is fueling the rise of increasingly costly and restrictive Internet usage caps* (Dec. 17, 2012); available at: http://newamerica.net/publications/policy/capping_the_nation_s_broadband_future. “[D]ata usage is highly skewed: a small group of very intensive data users tie up the network and degrade service for moderate users, who paid the same price. The arrival of high-quality mobile video turbo-charges this: one high-def TV show is most of a gigabyte, while smartphone users who are voice and text-oriented (like me) are unlikely to consume more than 2-3 GB/month.” Todd Hixon, *Verizon Makes Wireless Pricing Rational*, FORBES (Aug. 28, 2012); available at: <http://www.forbes.com/sites/toddhixon/2012/08/28/verizon-makes-wireless-pricing-rational/>.

interconnection options quickly. But at the retail sector, even consumers with competitive options will encounter some delay and expense in migrating from one carrier to another.

In light of the possibly limited competitive options available for retail Internet access subscribers and their sole reliance on one carrier, the chosen ISP has significant negotiating power with both end users and upstream ISPs. End users may balk at the inconvenience of changing carriers and upstream ISPs will have no migration option at all if they want to secure access to all end users. Put another way, if a single ISP enjoys a dominant market share of the retail market, which occurs in many localities, a substantial portion of the market exclusively relies on that single ISP making it absolutely necessary for upstream ISPs to secure an agreement with that ISP for its delivery of content. A single ISP has the potential to exert exclusive control over access to a majority of the end user market in many places. Content providers and distributors are captive to that ISP in the sense that they must secure delivery to the televisions, computer monitors, smartphones and tablets that access the Internet solely via a single ISP.³²

IV. 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 increase 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 stimulating greater download demand. While retail ISPs receive compensation from both end user subscribers and upstream ISPs, they understandably grow frustrated at helping far upstream

³² For a summary of major peering disputes see Jon Brodtkin, *Why YouTube buffers: The secret deals that make—and break—online video*, ARS TECHNICA, (Jul. 28, 2013); available at: <http://arstechnica.com/information-technology/2013/07/why-youtube-buffers-the-secret-deals-that-make-and-break-online-video/>.

ventures achieve great commercial success without having the opportunity to capture a share of the increased revenues. 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.

Most retail ISPs no longer consider their service as a single unmetered commodity priced on an unmetered basis. 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. 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.

Rather than consider high volume consumers as pesky “bandwidth hogs,” retail ISPs have begun to consider them favored customers in light of the greater revenue and profit generated by the higher tiered services offering faster bit transmission rates and a higher monthly download allotment. The retail broadband access subscription increases in value when consumers can avoid “appointment television”³³ access to content at a time prescribed by content creators or distributors 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 have turned their attention upstream to CDNs and content sources such as Netflix³⁴ for higher payments.³⁵

³³ “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); available at: <http://mashable.com/2011/08/25/tv-mobile-personalization/>.

³⁴ “[I]n negotiations that almost never become public, the world's biggest Internet providers and video services argue over how much one network should pay to connect to another. When

A. Broadcast Television Retransmission Consent Disputes

The incentive for Comcast to inconvenience its subscribers to discipline a peering partner parallels what happens when television broadcasters cannot reach closure with cable television operators on the terms and compensation for cable delivery of local broadcast stations. Such “retransmission consent” negotiations sometimes fail to reach closure before the cable company has to stop carriage. Consumer anger at denied access to “must see” television, such as live sporting events, ultimately forces cable operators to capitulate, but content providers, such as CBS and Fox have identified and used new Internet access denial strategies to secure even greater negotiating leverage.

The companies used techniques to identify the Internet Protocol addresses used by broadband subscribers of the cable companies with which they had a retransmission dispute. By identifying these subscribers’ identities, the companies succeeded in blocking cable broadband subscribers’ access to video content available at the CBS and Hulu web sites. These content creators had a perverse incentive to deny access to eager viewers despite a reduction in audience ratings and the commensurate impact on advertising revenues. The companies understood that they had more to gain from higher cable television operator retransmission fees and willingly

these negotiations fail, users suffer. In other words, bad video performance is often caused not just by technology problems but also by *business decisions* made by the companies that control the Internet.” Jon Brodtkin, *Why YouTube buffers: The secret deals that make—and break—online video*, ARS TECHNICA (July, 28, 2013): available at: <http://arstechnica.com/information-technology/2013/07/why-youtube-buffers-the-secret-deals-that-make-and-break-online-video/>.

³⁵ “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 and Marjory S. Blumenthal, *The End-To-End Argument and Application Design: The Role of Trust*, 63 FED. COMM. L.J. 357, 364-65 (March 2011).

used Internet access blocking techniques to secure even more negotiating leverage with cable operators that also provide broadband Internet access.

The ability of CBS and Fox to block access to content far away from retail ISP facilities identifies a new location where carrier interconnection disputes can arise and frustrate consumers. Much of the debate about network neutrality has focused on the incentive and ability of retail ISPs to operate in discriminatory ways that could favor corporate affiliates and other content providers and distributors willing to pay a surcharge for preferential delivery services. By blocking access to content far upstream at the source, or between the source and a content aggregator, such as Hulu, CBS and Fox have shown how selective blocking of another type of network interconnection in the Internet cloud can occur. Much to their dismay and displeasure, subscribers of broadband services experienced blocked access to Internet content based on a cable television carriage dispute involving their broadband Internet access provider.

V. Changes in Cloud Interconnection Arrangements

ISPs have responded to a maturing and diversifying Internet marketplace with new negotiation strategies and contractual agreements with downstream end users and with upstream ISPs, CDNs and content sources. Increasing diversity in the characteristics of interconnecting parties has prompted closer examination who triggers increases in ISP cost of doing business. In addition to the key variable of traffic volume, other relevant factors now include subscriber numbers, points of interconnection, available transmission capacity, portion of the total traffic carried constituting video, geographical scope of service, whether the interconnecting party has upstream capacity available for barter and the availability of alternative delivery options.

New interconnection and compensation arrangements have arisen as alternatives and adjustments to the traditional dichotomy of barter (peering) or payment (transiting)³⁶ largely because a significant portion of parties seeking interconnection have more traffic requiring downstream delivery than the terminating carrier possibly could generate for upstream carriage. Examples of such asymmetrical traffic flows include content creators, distributors and CDNs, but also retail ISPs that operate in only a few metropolitan areas. While the balance of power in commercial negotiations typically favor retail ISPs controlling access to “many eyeballs,” such carriers serving end users in only a few locations may have less negotiating clout unless they serve clients whose services and content are in high demand.

Many carriers, which no longer qualify for peering with the largest multi-national, long haul Tier-1 ISPs, have opted to peer with other similarly situated operators, often at mutually convenient Internet Exchange Points.³⁷ However even agreements to co-locate at the same facility does not necessary resolve all possible compensation disputes.³⁸ ISPs also have increased

³⁶ See Christopher S. Yoo, *Innovations in the Internet's Architecture that Challenges the Status Quo*, 8 J. TELECOMM. & HIGH TECH. L. 79 (Winter, 2010).

³⁷ For background on Internet Exchange Points, see Mike Jensen, *Promoting the Use of Internet Exchange Points: A Guide to Policy, Management, and Technical Issues* (2009); available at: http://www.internetsociety.org/sites/default/files/promote-ixp-guide_0.pdf; March 2012 update, available at: <http://www.internetsociety.org/sites/default/files/Promoting%20the%20use%20of%20IXPs.pdf>.

³⁸ Even interconnections at Internet Exchange facilities have the potential for dispute. “High-profile flare-ups between content providers and broadband providers over traffic exchange are becoming an annual or even semi-annual Internet tradition. The latest flare-up is between Cogent Communications, which provides backbone connectivity for Netflix, and Verizon. But this time there’s a new issue embedded in an old issue.

The old issue is how to deal with traffic imbalances between broadband providers and content providers who tend to send more traffic to broadband providers than they receive from them. The new issue pertains to a new approach to solving those traffic exchange problems – allowing the content provider to put servers in key broadband provider connection points, thereby minimizing the distance content has to travel between the two companies. The goal is to

the number of peering partners, a process commonly referred to as multihoming, to reflect diversity in the available traffic routing options.

Content creators, distributors, CDNs and ISPs also can acquire the benefits of peering by paying for the privilege. Paid peering³⁹ differs from transiting, because the paying party does not simply select, interconnect with and pay one Tier-1 ISP for complete access to the entire Internet cloud. Instead the paying party might select several carriers, not limited to Tier-1 ISPs, to handle a portion of the total downstream access requirement. Parties opting for paid peering may operate a significant network of their own, but find it necessary to secure more transmission and switching capacity at locations where they do not operate, or where traffic flow lacks parity with disproportionately higher downstream volumes. For example, both Netflix and at least for the period of time before the company sought a paid peering option, CDNs handling Netflix downstream traffic, entered into a paid peering relationship with retail ISPs, such as Comcast.

minimize transport costs and enhance the quality of the end user experience. And the fight now seems to be over who controls those arrangements.” Joan Engbretson, *Verizon, Netflix Dispute Not Just over Peering; Servers are New Battlefield*, TELECOMPETITOR (June 20, 2013); available at: <http://www.telecompetitor.com/verizon-netflix-dispute-not-just-over-peering-servers-are-new-battlefield/>.

³⁹ “As the Internet has become more commercial, the traditional roles of various Internet entities have become less clear, researchers said. The roles of access ISPs, transit or backbone ISPs, content providers and content delivery networks used to be fairly distinct Over the last few years, those distinctions have become more and more blurry, he said. ‘Everybody’s basically trying to play all of these roles all the time.’ This increases the likelihood of disputes

‘I don’t think settlement-free peering is going away,’ said a Tier 1 ISP executive. What’s changing is that new charging agreements are becoming available, he said. Paid peering is one of them, but there are others that fall between the extremes of free peering and paying for transit, he said.” *Paid Internet Peering on the Rise, Disputes Possible*, COMMUNICATIONS DAILY (July 1, 2013); available at: <http://www.cs.columbia.edu/~misra/news/CD070113.pdf>.

Comcast was able to demand and receive payments, despite previously having executed peering agreements that did not trigger a transfer of funds.⁴⁰

Netflix, whether directly, or indirectly via CDNs, generates such a huge volume of downstream traffic that even Tier-1 ISPs could not offset with an equivalent upstream volume. Because of asymmetry in traffic flows, Netflix and its CDNs cannot qualify as zero cost peers and accordingly they had to renegotiate their peering arrangements with downstream ISPs for use of their networks in delivering traffic to a large number of geographically dispersed recipients.

CDNs and their upstream sources of content may object to a payment obligation in addition to the sizeable Internet access charges paid by the retail ISPs' subscribers, but retail ISPs have successfully framed their right of compensation as accruing from two sources in what economists have termed a two-sided market: 1) the retail, Internet access service provided to end users and 2) the downstream delivery service provided to upstream CDNs, or to content sources agreeing to paid peering.⁴¹

⁴⁰ The parties resolved their differences, but did not disclose their settlement. Drew Fitzgerald, *Level 3, Comcast Reach Accord on Internet Traffic Costs Deal to Share Costs of Data Flow Resolves Three-Year Dispute*, THE WALL STREET JOURNAL (July 16, 2013); available at: <http://online.wsj.com/article/SB10001424127887323394504578609963298727892.html>.

⁴¹ “Informally, a two-sided market can be thought of as a meeting place that brings together two distinct user groups, each of which benefits from the presence of the other. Examples include auctions, credit cards, dating bars, newspapers, video game consoles, and the Yellow Pages. No car auction would be possible without the presence of buyers willing to purchase and sellers willing to sell vehicles; thus, auctioneers must set their commissions to make sure there are a sufficient numbers of buyers and sellers at a given auction. In the case of heterosexual ‘singles’ bars, bar owners must attract both men and women and often set different prices for men and women to attract each gender in the desired proportions. Newspapers derive their revenues from both subscribers and advertisers; thus, the prices that newspapers set for subscribers and the prices they set for advertising space must be calibrated due to the fact that

Retail ISPs can leverage access from the Internet cloud downstream to end users, but also upstream from their subscribers. ISPs serving end users appear to benefit from a superior bargaining position, because they operate the first and last mile needed to originate and complete delivery of high value, must see video content. For end users, the retail ISP can demand compensation for broadband access to the Internet cloud where desirable content resides. For upstream ISPs, CDNs and content sources the retail ISP controls access to customers who have paid for such content and now await its timely delivery.⁴²

A. Do Paid Peering Agreements Violate Network Neutrality Commitments or Obligations?

Substantially increased volume of video downloading by retail broadband subscribers have made it possible for retail ISPs to demand and receive new, or increased compensation from upstream carriers and content sources. Many network neutrality advocates consider this shift in negotiation clout evidence that retail ISPs can extort surcharges absent regulatory safeguards. However shifts in the balance of power in interconnection compensation negotiations does not necessarily mean that retail ISPs can target specific competitors with discriminatory terms and conditions simply to handicap them in the marketplace. For example, Netflix's decision to secure direct interconnection with Comcast under a paid peering arrangement should reduce or

advertisers' willingness to pay will be determined by subscriber-ship." Dennis L. Weisman and Robert B. Kulick, *Price Discrimination, Two-Sided Markets, and Net Neutrality Regulation*, 13 TUL. J. TECH. & INTELL. PROP. 81, 87-88 (Fall 2010); *See also*, Marc Rysman, *The Economics of Two-Sided Markets*, 25 J. ECON. PERSP. 125 (2009).

⁴² Jon Brodtkin, *Why YouTube buffers: The secret deals that make—and break—online video*, ARS TECHNICA (July 28, 1013); available at: <http://arstechnica.com/information-technology/2013/07/why-youtube-buffers-the-secret-deals-that-make-and-break-online-video/>. Stacey Higginbotham, *Peering pressure: The secret battle to control the future of the internet*, GigaOM (June 19, 1013); available at: <http://gigaom.com/2013/06/19/peering-pressure-the-secret-battle-to-control-the-future-of-the-internet/>.

eliminate payments to CDNs that previously had agreed to surcharges—if not paid peering—based on asymmetrical traffic flows.

The migration to paid peering does provide evidence that retail ISPs like Comcast have greater leverage with upstream carriers and content sources in light of the torrent of must see, mission critical bitstreams that reach end users via retail ISP networks. Retail broadband consumers typically subscribe to one ISP and while some competitive alternatives exist, nothing prevents all retail ISPs from demanding the same kind of surcharge payments. Additionally retail consumers may not quickly change ISPs in light of the real or perceived cost and inconvenience.

Without adequate regulatory oversight nothing prevents retail ISPs from making paid peering—and the surcharge it incorporates—standard operating procedure. In other words ISPs might try to eliminate the plain vanilla “best efforts” routing option by making it so prone to congestion and high latency that even low volume upstream ISPs and content sources see the need to migrate to a higher quality of service arrangement and price. Retail ISPs can demand similar payments from other content providers and distributors backed up by a not so veiled threat that it simply will not have adequate downstream delivery capacity to accommodate even traffic flows that it previously handled without congestion and a surcharge demand.

Such contrived congestion forces almost every upstream venture, with the financial resources available, onto some type of premium service provisioning. In other words retail ISPs might nudge or push upstream carriers and content sources onto a “Most Favored Nation” quality of service making it the default standard, even though retail ISPs previously accommodated increasing network demand without upstream carrier surcharges. Retail ISPs either absorbed the

cost of upgrades as a cost of doing business, but now they more likely can leverage network upgrades in exchange for higher interconnection fees.

Perhaps other content providers, generating less traffic, may continue to squeeze by with standard best efforts routing. But why would a competitor of Netflix risk the consequences knowing that retail ISPs can operate biased networks with the readily available option of throttling, degrading and creating artificial congestion without regulatory agency sanction. Bear in mind that retail ISPs can create problem bitstream delivery problems without their broadband subscribers knowing the cause and the responsible party. Consumers can complain all they want about a reduced value proposition from their \$30-75 monthly subscription payments, but competitive carriers are scarce and unlikely to refrain from such higher rent extraction options themselves.

B. Consumer Impacts of a Net Biased Ecosystem

ISPs now offer alternatives to traditional best efforts neutrality with better than best efforts quality of service enhancements at a higher price. Such discrimination has an upside benefit for consumers, particularly ones seeking real time streaming of bandwidth intensive video content. Consumers, or more likely their content providers, seeking enhanced “shipping and handling” can now pay for it. ISPs, operating the first and last mile broadband link, should have the opportunity to offer enhanced quality of service options, provided they do not structure their networks to all but guarantee as unusable the previous standard best efforts option.

The possibility exists that retail ISPs will succeed in generating higher revenues from both downstream broadband subscribers and upstream ISPs, CDNs and content sources. The former already has occurred as retail ISPs have announced, without any significant consumer pushback, general rate increases and additional tiering on the basis of transmission bit rate and

download allotments.⁴³ Retail ISPs probably also can increase revenues by substantially narrowing in the gap of download caps between what they have allowed consumers and what wireless broadband carriers allow. Currently wireline options have nominal caps in the 200-300 Gigabyte range while wireless carriers have hard caps from 250 megabytes to 10 Gigabytes with specified surcharges when subscribers exceed their allowance.

Wireline ISPs can squeeze out higher margins simply by forcing “bandwidth hogs” onto more expensive tiers. Less generous download allotments reduce the broadband subscription value proposition, but the competitive alternatives from terrestrial wireless and satellites typically have a far higher per-megabyte download cost.

We can expect retail ISPs to “soften the blow” of stingy download caps with expanded opportunities for content and service providers to pay in lieu of metering the download.⁴⁴ This might come across as “pay to play,” but heightened consumers sensitivity to a download cap means they are even less likely to respond to additional commercial pitches that debit their download allotment.

ISPs now have greater ability to leverage network upgrades in exchange for better interconnection terms with content providers and their downstream CDNs. The possibility exists that compensation disputes will increase as retail ISPs press their advantage and seek to modify zero cost peering agreements with a new payment scheme. A recent and probably temporary

⁴³ See, e.g., Sean Buckley, *AT&T U-verse broadband, TV users face price hikes*, FIERCE TELECOM (Feb. 21, 2014); available at: <http://www.fiercetelecom.com/story/att-u-verse-users-face-price-hikes/2014-02-21>.

⁴⁴ See, e.g., Ina Fried, *In Wireless First, AT&T Says It Is Ready to Offer “Toll-Free” Data*, RE CODE (Jan. 6, 2014); available at: <http://recode.net/2014/01/06/in-wireless-first-att-says-it-is-ready-to-offer-toll-free-data/>.

surge in broadband demand points to the potential for consumers to experience degraded service. Depending on who frames the issue, congestion, or at least slower bit transmission speeds have become more frequent because of expanded video content availability, including the option of streaming and entire season rather than on a weekly installment basis.

C. Limited Regulatory Oversight

On two separate occasions a reviewing court has largely rejected efforts by the Federal Communications Commission (“FCC”) to assert jurisdiction to establish rules that anticipate anticompetitive and discriminatory practices.⁴⁵ The court decisions held that the FCC lacked statutory authority to establish rules prohibiting discrimination and content blocking in light of the Commission’s determination that when ISPs provide broadband Internet access they offer a largely unregulated information service instead of regulated, common carrier telecommunications service.

In *Comcast v. FCC*, the D.C. Circuit Court of Appeals held that the FCC could not sanction Comcast for using software to disable peer-to-peer file sharing by subscribers even though the company did not need to reduce congestion and had financial incentives to prevent subscribers from sharing movies it might otherwise lease on a pay per view basis. The court determined that the FCC had no direct statutory authority to impose network neutrality obligations on information service providers, nor could the Commission assert “ancillary

⁴⁵ Comcast Corp. v. F.C.C., 600 F.3d 642 (D.C. Cir. 2010); available at: <http://pacer.cadc.uscourts.gov/common/opinions/201004/08-1291-1238302.pdf>; Verizon v. FCC, __F.3d __, slip op. (D.C. Cir. Jan. 14, 2014)(No. 11-1355); available at: [http://www.cadc.uscourts.gov/internet/opinions.nsf/3AF8B4D938CDEEA685257C6000532062/\\$file/11-1355-1474943.pdf](http://www.cadc.uscourts.gov/internet/opinions.nsf/3AF8B4D938CDEEA685257C6000532062/$file/11-1355-1474943.pdf).

jurisdiction” based on its duty to ensure that new technologies do not adversely impact regulated services.

In its review of the FCC’s second attempt to establish jurisdiction over ISPs, the D.C. Circuit Court of Appeals again rejected common carrier rules requiring nondiscrimination and prohibiting traffic blocking.⁴⁶ The court did agree with the FCC that it could impose non-common carrier rules based on the FCC’s reading of Section 706 in the Communications Act⁴⁷ that authorizes the FCC to promote nationwide access to advanced services such as the Internet.

Some network neutrality advocates had expressed hope that the court would have considered nondiscrimination and anti-blocking rules as permissible in light of a recent case that approved as non-common carriage specific interconnection requirements on wireless carriers. In *Cellco Partnership v. FCC*,⁴⁸ the court approved the FCC requirement that wireless carriers negotiate commercial terms and conditions for data roaming, Internet access via smartphones located outside the customer’s home service territory. The FCC treats all forms of Internet access as non-common carriage by classifying the offering as an information service. The court affirmed the FCC, because the imposition of some duties to deal, e.g., providing data roaming, does not rise to the level of compulsory carriage, particularly because the FCC only required

⁴⁶ “[E]ven though the Commission has general authority to regulate in this arena, it may not impose requirements that contravene express statutory mandates. Given that the Commission has chosen to classify broadband providers in a manner that exempts them from treatment as common carriers, the Communications Act expressly prohibits the Commission from nonetheless regulating them as such. Because the Commission has failed to establish that the anti-discrimination and anti-blocking rules do not impose per se common carrier obligations, we vacate those portions of the Open Internet Order.” *Verizon v. FCC*, at 4.

⁴⁷ 47 U.S.C. §1302 (2012).

⁴⁸ 700 F.3d 534, 541 (D.C. Cir. 2012).

commercial negotiations and recognized that the duty is not mandatory if technologically infeasible, or that the terms and conditions be uniform across all instances of interconnection.

Even with a quasi-common carrier option,⁴⁹ the FCC cannot expressly impose non-discrimination and anti-blocking duties. Section 706(a) of the Communications Act requires the FCC to “encourage the deployment on a reasonable and timely basis of advanced telecommunications capability to all Americans . . .” Section 706(b) requires the Commission to conduct a regular inquiry “concerning the availability of advanced telecommunications capability” and if it determines that access is not available on “a reasonable and timely fashion” “to take immediate action to accelerate deployment of such capability by removing barriers to infrastructure investment and by promoting competition in the telecommunications market.”

The court determined that the FCC could reasonably interpret Sec. 706 as providing statutory authority for some degree of private carrier oversight, despite the FCC having previously determined that this Section provided no such foundation when the Commission previously sought to classify ISPs as information service providers entitled to a largely deregulated status. The court defers to the FCC and its subsequent decision to consider Sec. 706(a) as providing a statutory basis for regulatory oversight: “Does the Commission’s current understanding of section 706(a) as a grant of regulatory authority represent a reasonable interpretation of an ambiguous statute? We believe it does.”⁵⁰

⁴⁹ For discussion on successful and unsuccessful FCC efforts to impose quasi-common carrier duties, see Rob Frieden, *The Rise of Quasi-Common Carriers and Conduit Convergence*, 9 ISJLP, No. 3, 471 (2014).

⁵⁰ *Id.* at 22.

The court accepts the ability of the FCC to change course and even change factual determinations, as when the Commission determined that the Internet access market lacked sufficient competition having previously determined that it did. The court also does not dispute the FCC's finding that ISPs have the ability to engage in discriminatory practices: "there appears little dispute that broadband providers have the technological ability to distinguish between and discriminate against certain types of Internet traffic,"⁵¹ nor does the court dispute that the Internet access subscribers cannot or will not quickly change providers if potentially harmful discrimination actually occurs:

For example, a broadband provider like Comcast would be unable to threaten Netflix that it would slow Netflix traffic if all Comcast subscribers would then immediately switch to a competing broadband provider. But we see no basis for questioning the Commission's conclusion that end users are unlikely to react in this fashion.⁵²

However, the ability to discriminate does not automatically translate into illegal discrimination particularly when the FCC has determined that discrimination is something only common carriers cannot pursue. The FCC may seize upon the approval of its reliance on Sec. 706 to assert statutory authority to regulate ISPs.⁵³ However, the Commission may not have much latitude and even less deference to craft quasi-common carrier duties on ISPs.

⁵¹ *Id.* at 38.

⁵² *Id.* at 39.

⁵³ See e.g., Statement by FCC Chairman Tom Wheeler on the FCC's Open Internet Rules (Feb. 19, 2014); available at: <http://www.fcc.gov/document/statement-fcc-chairman-tom-wheeler-fccs-open-internet-rules>.

VI. The Way Forward

As the Internet becomes an increasingly predominant medium for video content delivery interconnection and compensation disputes will become more frequent. Already one can draw parallels between disputes between television broadcasters and cable television operators on one hand and disputes between content sources and downstream ISPs on the other hand. In the former consumers are denied access to desirable video content, but the parties typically reach a settlement before consumers become too inconvenienced, or they miss access to “must see television” such as the regular season of the National Football League. In the latter, the stakes increase, because consumers have an increasing and recurring demand for “mission critical bits” such that any blockage or degradation becomes offensive immediately.

Consumers have a right to expect that their significant monthly broadband subscription payments entitle them to reliable and high quality service, not contingent on whether the retail ISP succeeds in its demands for surcharges from specific carriers and content sources. But without a regulatory safeguard, retail ISPs can immediately punish holdouts and their consumers immediately with network bias that translates into degraded service. Most consumers may not know how vulnerable their Internet access can be to service interruptions whether caused by real, or artificial congestion. Nothing prevents a retail ISP from retaliating when an upstream carrier, or content source, refuses to pay a surcharge, or to migrate to paid peering. End users may quickly complain about service degradation, but they have limited recourse in terms of shifting carriers, or demanding that their broadband provider solve the problem quickly.

Retail ISPs clearly 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 the absence of safeguards that limit retail ISPs to reasonable types of price and quality of

service discrimination, based on actual differences in the cost of service, versus pressing their negotiating leverage and control of the last mile to achieve anticompetitive goals and to price gouge.

Commercial negotiations, unfettered by regulatory agency intrusion, constitutes the preferred arrangement for parties to anticipate and resolve disputes. However, the likelihood of protracted negotiations and outages harmful to consumers appear increasingly likely, particularly now as 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. While the FCC cannot impose common carrier regulations, Section 706 of the Communications Act does provide it with some latitude to identify and resolve impediments to widespread and affordable broadband access.

The Commission should require ISPs to disclose specialized network arrangements and pricing options as part of its right to require transparency in the way ISPs do business. Likewise the FCC should use its conventional dispute resolution process in response to complaints submitted to it. The FCC should not impose broad sweeping, general rules of conduct on ISPs, but it should have the power to investigate and remedy instances of unfair competition and trade practices that harm consumers and the goals articulated in Section 706.

A reactive dispute resolution process should abate concerns that the FCC still 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 quite clear that the FCC cannot impose common carrier duties, so ISPs can operate biased networks with diverse quality of service and price discrimination. The court devoted considerable attention to

cable television case precedent to identify the permissible scope of FCC compelled duties.⁵⁴ The court concluded that the FCC can impose obligations to accommodate the needs of a select group of worthy stakeholders, e.g., broadcasters, but not impose requirements to accommodate a broader, undifferentiated group in the interest of openness and nondiscrimination.⁵⁵ Additionally the 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 *Midwest Video II*⁵⁶ the court rejected as too much like common carriage FCC mandated access not by a small group like local broadcasters, but by a far larger group of public access channel leasees. The court rejected FCC rules, because they usurped the right of cable operators to make their own decision how to load their inventory of channel capacity.

⁵⁴ 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 is can retransmit) and *United States v. Midwest Video Corp.*, 406 U.S. 649 (1972) (“*Midwest Video I*”)—(affirming FCC rules requiring certain cable companies to create their own programming and maintain facilities for local production). *See also*, *Turner Broadcasting v. Federal Communications Commission*, 512 U.S. 622 (1994) (affirming the duty of cable operators to carry significantly viewed local broadcast television signals); 520 U.S. 180 (1997) (must carry obligations satisfy intermediate scrutiny of rule impacting cable operator’s First Amendment speak rights).

⁵⁵ “The *Midwest Video II* cable operators’ primary “customers” were their subscribers, who paid to have programming delivered to them in 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 v. FCC* at 54.

⁵⁶ *FCC v. Midwest Video Corp.*, 440 U.S. 689 (1979).

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