Data Caps: How ISPs Are Stunting the Growth of Online Video Distributors and What Regulators Can Do About It

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TABLE OF CONTENTS

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INTRODUCTION

The advent of near-ubiquitous high speed Internet access has prompted substantial regulatory, legislative, and academic scrutiny over how much leeway Internet service providers ("ISPs") should have to offer preferred treatment for services like Hulu. Some have compared this kind of preferential treatment to creating an Internet "fast lane."[1] More attention should be devoted, however, to the limits ISPs are now placing on their customers' aggregate monthly Internet usage, also known as data caps. If other types of regulations can be characterized as governing speed limits on the information super highway, data caps will ultimately determine customer mileage.

This paper examines current data cap regimes, probable effects on network usage, and what, if any, action regulators can and should take. Part I analyzes the interconnection agreements that, in large part, determine the incremental cost ISPs pay for the data that customers download. This section finds that the most data-intensive network uses are also frequently the least expensive for ISPs and often actually serve as profit centers. Part II looks at the data cap policies imposed by various ISPs and considers the motivation behind them. Given the low incremental cost of data, caps hardly seem to be a price control mechanism. Some evidence suggests that data caps may be a price-gouging tool similar to overages on cellphones. Moreover, data cap policies seem to have the intention of dissuading customers from moving their TV viewing from traditional multichannel video programming distributors ("MVPDs"), which include cable providers, to online video services. Part III considers potential mechanisms for government regulation of data cap policies. Specifically, it proposes that the Department of Justice bring an antitrust action against cable ISPs. Additionally, the recent net neutrality rulemaking by the Federal Communications Commission ("FCC"), if upheld by the courts, also creates new opportunities and challenges for regulating all ISPs, not just cable, and individual settlements may provide quick regulation on a case-by-case basis. Part IV concludes that there is a need for regulatory pressure. If the capacity of consumer Internet access does not grow with the speed of that access, the exponential growth in data usage that has driven the information economy may falter.

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1. *See, e.g.*, Letter from Al Franken, U.S. Sen., to Julius Genachowski, FCC Chairman, Preserving the Open Internet, FCC GN Docket No. 09-191 (Dec. 10, 2010), *available at* http://ecfsdocs.fcc.gov/filings/2011/03/07/6016172764.html.

I. THE AGREEMENTS FORMING THE INTERNET

ISPs are in the business of sending information to and from customers. To do this, the ISPs—owners of the last mile of cable to a customer's house—contract with backend service providers, owners of high-bandwidth interstate and international connections, to transmit data across the globe. These contracts take a variety of forms, and the answer to even the most fundamental questions—such as "which party pays?"—will change depending on the circumstances. Understanding the agreements and technologies governing this flow of data is necessary to understanding the motivations behind data cap policies. However, unlike the morass of statutes, regulations, and cases long governing telephone interconnection and transmission,[2] the agreements between an ISP, other nearby networks, and the backend networks that connect to networks nationwide are almost entirely unregulated.[3]

Internet communication is fundamentally different than traditional phone service.[4] When a phone call is placed, a company's circuit is monopolized and no other customer can use that resource.[5] When data is sent over the Internet, however, it is shaped as a packet and shares the connection with other users.[6] This technological novelty led to a diverse array of proposed and practiced billing structures.[7] The structure negotiated by the ISP with the backend providers determines how much sending and receiving data will cost—or in some cases, profit—the ISP.[8]

A. Four Ways to Communicate: Peering, Transit, Paid Peering, and Intranetwork

ISPs and backend providers have begun to settle on the unit of accounting that will be used to calculate traffic bills. While this seems like a simple first step, experts previously suggested diverse accounting methods.[9] International telephony settlement practices provided one model, but such agreements were inapt because the Internet packet structure does

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2. *See, e.g.*, United States v. AT&T, 552 F. Supp. 131, 135 (D.D.C. 1982).
3. *See* Michael Kende, *The Digital Handshake: Connecting Internet Backbones*, 11 COMMLAW CONSPECTUS 45, 51 (2003).
4. Jonathan Weinberg, *The Internet and "Telecommunications Services," Universal Service Mechanisms, Access Charges, and Other Flotsam of the Regulatory System*, 16 YALE J. REG. 211, 212 (1999).
5. *Id.*
6. *Id.*
7. *See* Geoff Huston, *Interconnection, Peering and Settlements – Part II*, 2 INTERNET PROTOCOL J. 2, 4 (1999).
8. *See id*.
9. *See id*.

not have an analogous "call-minute" to base billings on.[10] Proposed units of billing under this model included transmission control protocol/internet protocol ("TCP/IP") call-minutes and billing based on the number of packets sent, with variants including measures of the size of the packets sent.[11] However, as of 1999, no single model was in widespread use.[12]

Rather than adopt a complex accounting unit that required detailed examination of user behavior, network providers (both ISPs and backend providers) have trended towards billing for the capacity of a connection, measured in bits per second. Although the secrecy of interconnection agreements makes it difficult to determine exactly how widespread is adoption of this or any particular billing unit,[13] one primer on the topic suggests that the common practice is for companies to reserve inter-network speed in bits per second (capacity), rather than to bill for total usage.[14] This assumption, that capacity-based billing is the standard approach to interconnection agreements, is consistent with the public information in the recent Comcast-Level 3 dispute. Comcast, an ISP, demanded that Level 3, a backend service and content delivery network provider (described in more detail *infra*), pay for its connection based on how many interconnection ports (which offer a fixed bandwidth in gigabits per second) were used.[15] Capacity-based billing is also consistent with Canadian regulations that govern interconnections between small and large ISPs.[16]

In order to send information outside of its network, i.e., to increase capacity, an ISP may enter into three types of agreements: Peering, Transit, or Paid Peering. An ISP may also avoid the need for extra network communication by using intranetwork resources.[17]

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10. *See id*. at 6-7 ("Unlike a telephony call, no concept of state initiation exists to pass a call request through a network and lock down a network transit path in response to a call response.").

11. *See id*. at 8-11 (explaining different settlement options).

12. *See id*. at 11.

13. *See* Kevin Werbach, *The Centripetal Network: How the Internet Holds Itself Together, and the Forces Tearing It Apart*, 42 U.C. DAVIS L. REV. 343, 370 n.147 (2008) (noting that peering agreements are generally confidential).

14. *See* Rudolph van der Berg, *How the 'Net Works: An Introduction to Peering and Transit*, ARS TECHNICA (Sep. 2, 2008, 12:11 PM), http://arstechnica.com/old/content/2008/09/peering-and-transit/.

15. *See* Nate Anderson, *Comcast: We Bent Over Backwards to Help Level 3! (Those Bastards)*, ARS TECHNICA (Dec. 1, 2010, 6:30 PM), http://arstechnica.com/tech-policy/news/2010/12/comcast-we-bent-over-backwards-to-help-level-3-those-bastards.

16. *See* Emily Chung, *CRTC Internet Ruling May Boost Prices*, CBC NEWS (Nov. 16, 2011, 1:13 PM), http://www.cbc.ca/news/arts/story/2011/11/16/technology-internet-ubb-crtc-billing.html (under the new rules, large ISPs may be charge for transit in 100Mbps increments, but may not charge for aggregate usage).

17. Van der Berg, *supra* note 14 (discussing peering and transit as the two types of interconnection). Paid peering is discussed by Van der Berg as a subsidiary class of peering,

1. Peering: What's a Few Bits Between Friends?

In some cases, an ISP will avoid paying for data by entering into "peering" agreements. Under these arrangements, both networks (ISP and backend) will interconnect and agree to forego any regular account settlement payments on the assumption that all sides are receiving roughly equal value from the arrangement.[18] Any data sent from one network, which is to be delivered to (or "terminated" on) a peering partner's network, is transmitted free of charge. However, no data will be delivered to any networks which are not party to the peering agreement, even if one of the peering partners purchases data from that network provider.[19]

The main advantage of this kind of arrangement is cost. In a peering agreement, the only costs a network will incur are for the equipment and physical transmission capacity.[20] There is no transactional cost related to billing or measuring peak bandwidth demand, and there is no marginal cost for sending lots of data.[21] As such, peering agreements are popular between major data carriers, or "tier-1" networks, such as Sprint, AT&T, Verizon, and Level 3, who are able to reach every other network without paying a settlement.[22] These carriers are also incentivized to make connections with as much bandwidth as technically possible, thereby diminishing the chance that packets will be dropped.[23] Small and regional ISPs may also enter into peering agreements with other small networks, where roughly equivalent amounts of data are exchanged between the two networks,[24] or with content delivery networks (CDNs), which locate servers for media rich applications like Hulu,[25] iTunes,[26] and Netflix[27] near ISP servers, reducing the time to deliver this content to end users.[28]

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but here it is useful to consider it on its own. He also asserts that there is no marginal cost to intranetwork traffic. *Id.*

18. *See* Kende, *supra* note 3, at 4-8; Werbach, *supra* note 13, at 368.

19. *See* Van der Berg, *supra* note 14, at 2.

20. *See* Kende, *supra* note 3, at 5.

21. *See* Werbach, *supra* note 13, at 368.

22. *See* Kende, *supra* note 3, at 6. For a current list of such providers, see *AS Rank: AS Ranking*, COOP. ASS'N FOR INTERNET DATA ANALYSIS, http://as-rank.caida.org (last visited Jan. 19, 2012). For a visual depiction of such networks in North America circa 2006, see, for example, Ben Worthen, *Who Owns the Internet? We Have a Map That Shows You*, CIO NET EFFECT BLOG, (Mar. 17, 2006), http://web.archive.org/web/20060323002340/http://blogs.cio.com/node/209 (accessed via the Internet Archive).

23. *See* Van der Berg, *supra* note 14, at 2.

24. *See, e.g.*, *Comcast Settlement-Free Interconnection (SFI) Policy*, COMCAST (July 2011), http://www.comcast.com/peering/.

25. *See* Rich Miller, *Equinix Peering Powers Hulu Streaming Video*, DATA CTR. KNOWLEDGE (Mar. 16, 2008), http://www.datacenterknowledge.com/archives/2008/03/16/equinix-peering-powers-hulu-streaming-video/.

26. *See* Justin Berka, *Apple Using Both Limelight and Akamai for Content Delivery*, ARS TECHNICA (Jan. 29, 2009, 9:56 AM), http://arstechnica.com/apple/news/2009/01/analyst-says-apple-also-using-limelight-for-content-delivery/.

Peering arrangements are limited by their inability to reach every network on the Internet. It is a nearly impossible for one network to connect with all the hundreds of thousands of other networks on the Internet. Even large networks such as AT&T must, in a way, rely on small networks that purchase access from the large network.[29] Significant changes in data usage by either side in a peering arrangement may also lead to "depeering," resulting in dramatic cost shifts for both sides, occasional calls for regulatory action, and network interruptions.[30]

2. Transit: The Cost of Doing Business

Transit is the opposite of peering. Rather than transmit data freely between agreeing networks, one network—for instance, a regional ISP wishing to gain access to a nationwide network—will purchase bandwidth from the second network at a recurring fee.[31] A transit customer will limit its interconnection speed as much as possible instead of attempting to connect at the fastest technically feasible speed.[32] Finally, unlike peering, a transit provider will allow its transit customers to access all other networks with which it connects—its peers, other transit customers, and transit providers.[33]

Negotiating transit agreements is complicated and even deciding which network will pay is a challenge. Networks are never identical; one might have many small customers, while another has a few large, important customers.[34] These subjective factors in reaching agreements, in addition to the transactional costs, not present in peering agreements may push more networks toward peering instead of transit. Nonetheless, most networks must purchase some transit to be able to access the entire Internet.[35]

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27. *See* Nate Anderson, *Peering Problems: Digging into the Comcast/Level 3 Grudge-match*, ARS TECHNICA (Dec. 9, 2010, 12:20 PM), http://arstechnica.com/tech-policy/news/2010/12/comcastlevel3/ (discussing a conflict between Comcast and Level 3 recently emerged after Comcast pressured Level 3 into paying for peering, see *infra* Parts I(a)(3) and I(b)).

28. *See* Miller, *supra* note 25.

29. *See* Van der Berg, *supra* note 14, at 2.

30. *See, e.g.*, Matthew Lasar, *Peers or Not? Comcast and Level 3 Slug it Out at FCC's Doorstep*, ARS TECHNICA (Feb. 25, 2011, 11:56 AM), http://arstechnica.com/tech-policy/news/2011/02/peers-or-not-comcast-and-level-3-slug-it-out-at-fccs-doorstep/; Mikael Ricknäs, *Spring-Cogent Dispute Puts Small Rip in Fabric of Internet*, PCWORLD (Oct. 31, 2008, 6:10 AM), http://www.pcworld.com/article/153123/sprint_cogent_dispute.html.

31. *See* Van der Berg, *supra* note 14.

32. *See id.*

33. *See id.*

34. *See* Kende, *supra* note 3, at 51-52

35. *See id.* at 61.

3. Paid Peering: When it Absolutely, Positively Has to be There in Twenty Milliseconds

Recently, many ISPs and mid-sized networks, like Comcast,[36] Time Warner Cable,[37] and Verizon,[38] have begun to offer "paid peering" arrangements.[39] A customer who purchases paid peering is charged a recurring fee and is only visible to the end users on the network from whom it purchases interconnection.[40]

The advantage of this type of arrangement is speed and quality of access. Content that is made available through both traditional transit and peering agreements, in addition to a paid peering agreement, is redundant and less vulnerable to accidental outages or denial of service attacks.[41] Content is also cached immediately adjacent to the network, which reduces latency (the time it takes information requested from a server to be delivered, generally measured in milliseconds) and bypasses congestion in the regular backbone.[42] While paid peering could be used by any web service, the primary clients are CDNs that purchase access from ISPs.[43] This is similar to the network-affiliate model used in broadcasting: the content producing networks (i.e., Hulu, iTunes, Netflix, YouTube, etc.) subsidize the broadcaster affiliates (Comcast, Verizon, Time Warner).[44] This cost of subsidizing is "more than offset by the additional revenue generated by the fact that advertisers can now reach more potential customers."[45]

4. Intranetwork Traffic: Not Exciting, but Free

None of the agreements described above will matter for data that is sent and terminated solely within an ISP's own network. This sort of traffic is preferable to data sent over peering or transit connections because there

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36. *See Wholesale Dedicated IP Transit*, COMCAST, http://www.comcast.com/dedicatedinternet/ (last visited Feb. 17, 2013).

37. *See What is Paid-Peering?,* AOL TRANSIT DATA NETWORK, http://www.atdn.net/paid_peering.shtml (last visited Feb. 17, 2013).

38. *See Verizon Offering Pricing Incentives to Content-Delivery Network Providers to Connect Directly to Company's Internet Backbone Network*, VERIZON (Jan. 7, 2009), http://newscenter2.verizon.com/press-releases/verizon/2009/verizon-offering-pricing.html.

39. *See* Christopher S. Yoo, *Network Neutrality, Consumers, and Innovation,* 2008 U. CHI. LEGAL F. 179, 233 (2008).

40. *See* Anderson, *supra* note 27; *see also* Christopher S. Yoo, *Innovations in the Internet's Architecture that Challenge the Status Quo*, 8 J. TELECOMM. & HIGH TECH. L. 79, 96-99 (2010) (discussing, although not defining, paid peering relationships).

41. Yoo, *supra* note 39, at 198-99.

42. *Id.*

43. *Id.*; *see also* VERIZON, *supra* note 38 (advertising its paid peering program primarily for "content owners and CDNs").

44. Yoo, *supra* note 40, at 97-98.

45. *Id.* at 98.

are no marginal or interconnection costs associated with it.[46] The volume of such traffic has, for much of the past decade, been small because ISP subscribers normally want to view content hosted by a network other than the ISP's. A common example of such intranetwork traffic is newsgroup access where newsgroup servers may be operated by the ISP on the ISP's network.[47] Peer-to-peer applications where a "swarm" of end-users combine to share files may also involve substantial intranetwork traffic.[48]

B. Technologies and Trends in Data: More Revenue and Less Expense for ISPs[49]

Recently, cost reductions and changes in market structures have placed ISPs in an ideal position. Over the last few years, the cost of a bit-per-second of transit has continued to fall from already low prices, while more of the traffic ISPs carry to end users is coming from peering partners or paid peering partners, thereby reducing costs—and sometimes even creating a revenue center—for ISPs. Since ISPs are often the only ways to reach those end users, major ISPs now have the market power to raise prices for content generators. All the while, peer-to-peer applications like BitTorrent, which have traditionally saturated an ISP's transit links, are being shaped with new technology to prefer using intranetwork connections. Together, this amounts to both cost reductions and new revenue streams for ISPs.

Without a doubt, data usage is on the rise, but prices are down. In 2010, North America generated on average 6,998 petabytes ("PB")[50] of Internet traffic per month,[51] and Cisco estimated that this figure had increased to over 10,000 PB per month by 2011.[52] Most large ISPs and

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46. *See* Van der Berg, *supra* note 14.

47. *See, e.g.*, *About Charter*, CHARTER, http://www.charter.com/footer/footerPage.jsp?tag=about (last visited Jan. 19, 2012).

48. *See, e.g.*, Nate Anderson, *BitTorrent Has New Plan to Shape Up P2P Behavior*, ARS TECHNICA (Dec. 9, 2008, 12:30 PM), http://arstechnica.com/old/content/2008/12/bittorrent-has-new-plan-to-shape-up-p2p-behavior/.

49. Much of the following discussion focuses on the practices of Comcast and Level 3. This is not only because Level 3 carries a plurality of wireline Internet traffic, but also because the recent dispute between the two companies has made public the usually secret peering and transit agreements that connect the Internet. Comcast was also in the FCC spotlight earlier due to its network management practices. However, the economics, technologies and regulations extend across many U.S. ISPs, CDNs, and backend networks, and the trends described should be widely applicable.

50. A "byte" is eight bits. A petabyte is one quadrillion (1,000,000,000,000,000) bytes, or 1 million gigabytes.

51. *See Cisco Visual Network Index: Forecast and Methodology, 2010-2015*, CISCO (June 1, 2011), http://www.df.cl/prontus_df/site/artic/20110602/asocfile/20110602113637/white_paper_c11_481360_1_.pdf.

52. *See Cisco Visual Networking Index: Forecast and Methodology, 2011-2016*, CISCO (May 30, 2012), http://www.cisco.com/en/US/solutions/collateral/ns341/ns525/

backend service providers have agreements that are shrouded in secrecy, which makes company-specific data difficult to obtain, but several studies on transit prices have been generated by polling providers that asked for a quote for interconnection at the minimum rate. One study polled worldwide metropolitan areas and found that rates in New York in 2011 had fallen fairly consistently since at least 2007, and that these rates were among the cheapest in the world.[53] Another study of Internet transit prices in the United States observed an exponential decline, from a price of $1,200 per megabit per second ("Mbps") in 1998 to $5 per Mbps in 2010, with the expectation that prices will continue their "twelve year quest towards $0/Mbps pricing."[54]

Perhaps more importantly, more data is coming from CDNs, which means that ISPs can take advantage of peering or paid peering arrangements. In 2011, Netflix alone accounted for 27.6% of Internet traffic received by wireline ISPs, and over 30% of traffic at peak hours.[55] At least Comcast, and perhaps other ISPs, have been able to secure paid-peering agreements from the CDN that delivers content for Netflix.[56] This means that over one quarter of Comcast's data is actually a revenue source, not a cost center. Overall, Internet video currently makes up 37% of consumer Internet traffic, and is expected to grow to 62% of overall traffic by 2015.[57]

This shift in data use is coupled with a shift in bargaining power away from content producers and backend providers and towards ISPs. The high cost of upgrading ISP networks and the network externalities that such ISPs with a large number of end users enjoy will tend to funnel money from the CDNs to the ISPs.[58] While some parties have expressed concern about this new power shift in favor of ISPs, the status quo seems to have the government's blessing. This economic theory was displayed in a recent peering dispute between Level 3 and Comcast. Level 3 sells transit on its nationwide network, runs a CDN, and, until 2010, connected to Comcast's network under a peering arrangement. In fall 2010, Level 3 won a contract

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ns537/ns705/ns827/white_paper_c11-481360_ns827_Networking_Solutions_White_Paper.html (this figure includes non-residential uses such as business and wireless).

53. *See IP Transit Prices Continue to Decline, Geographic Differences Remain*, TELEGEOGRAPHY (Nov. 1, 2011), http://www.telegeography.com/products/commsupdate/articles/2011/11/01/ip-transit-prices-continue-to-decline-geographic-differences-remain/.

54. ANNA-MARIA KOVACS, TECH POLICY INST., INTERNET PEERING AND TRANSIT 16-20 (2012), *available at* http://www.techpolicyinstitute.org/files/amkinternetpeeringandtransit.pdf; *see also* William B. Norton, *Internet Transit Prices – Historical and Projected*, DRPEERING (Aug. 2010), http://drpeering.net/white-papers/Internet-Transit-Pricing-Historical-And-Projected.php.

55. *See* SANDVINE, GLOBAL INTERNET PHENOMENA REPORT 2 (Oct. 2011), *available at* http://www.sandvine.com/downloads/documents/10-26-2011_phenomena/Sandvine%20Global%20Internet%20Phenomena%20Report%20-%20Fall%202011.pdf.

56. *See* Anderson, *supra* note 27.

57. *See Cisco Visual Networking Index*, *supra* note 52, at 2, 5.

58. *See* Yoo, *supra* note 40, at 96.

to serve as the primary CDN for Netflix and asked Comcast to provide more ports on which to interconnect. Comcast balked and required that Level 3 begin to pay for peering.[59]

Level 3 initially complained in a press release that this agreement violated "open internet" principles because it required Level 3 to pay for faster access.[60] However, the FCC was dismissive of the issue.[61] Level 3 went so far as to formally file a complaint with the Commission.[62] The Commission addressed the issue in a footnote in its final notice of proposed rulemaking on net neutrality, entitled *Preserving the Open Internet*. The FCC stated "[w]e do not intend our rules to affect existing arrangements for network interconnection, including existing paid peering arrangements."[63]

Finally, new technologies are lessening the problems that network services like BitTorrent create. BitTorrent is problematic for ISPs because rather than utilizing the network in short bursts, it continues to consume bandwidth hour after hour, even when all files have finished downloading. This led one ISP to describe the technology as "a cancer that will consume all the bandwidth that I can provide."[64] But Comcast seems well on its way to solving this technological hurdle in a way that allows customers to use BitTorrent while not overpowering the ISP's network. While simultaneously fighting a court battle against the FCC over its network management practices,[65] Comcast cooperated with BitTorrent and agreed to implement "protocol agnostic" policies, which would throttle the heaviest

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59. For a neutral explanation of the events, see Anderson, *supra* note 27. For an explanation of the dispute from Comcast's perspective, see Anderson, *supra* note 15. *See also* Letter from Joseph Waz, Senior Vice President, External Affairs and Pub. Policy Counsel & Lynn Charytan, Vice President, Legal Regulatory Affairs, Comcast Corp. to Sharon Gillet, WCB Bureau Chief, FCC, Preserving the Open Internet, FCC GN Docket No. 09-191 (rel. Nov. 30, 2010), *available at* http://apps.fcc.gov/ecfs/document/view?id=7020921811. For more on Level 3's perspective, see Nate Anderson, *How Comcast Became a Toll-Collecting, Nuke-Wielding Hydra*, ARS TECHNICA (Nov. 30, 2010, 4:35 PM), http://arstechnica.com/tech-policy/news/2010/11/how-comcast-became-a-toll-collecting-hydra-with-a-nuke/.

60. *See* Press Release, Level 3, Level 3 Communications Issues Statement Concerning Comcast's Actions (Nov. 29, 2010), *available at* http://web.archive.org/web/20101225065848/http://www.level3.com/index.cfm?pageID=491&PR=962 (accessed via the Internet Archive).

61. *See* Cecilia Kang, *FCC Defends Net Neutrality to Lawmakers, Says Level 3-Comcast Not Covered by Rules*, WASH. POST (Feb. 16, 2011), http://voices.washingtonpost.com/posttech/2011/02/fcc_defends_net_neutrality_to.html.

62. Letter from John M. Ryan, Exec. Vice President & Chief Legal Officer, Level 3, to Julius Genachowski, Chairman, FCC, Preserving the Open Internet, FCC GN Docket No. 09-191 (rel. Feb. 17, 2011), *available at* http://fjallfoss.fcc.gov/ecfs/document/view?id=7021030031.

63. Preserving the Open Internet, *Report and Order*, FCC 10-201, para. 67 n.209 (2010), *available at* http://fjallfoss.fcc.gov/edocs_public/attachmatch/FCC-10-201A1.pdf.

64. *Comcast Throttles BitTorrent Traffic, Seeding Impossible*, TORRENTFREAK (Aug. 17, 2007), http://torrentfreak.com/comcast-throttles-bittorrent-traffic-seeding-impossible/.

65. *See* Comcast Corp. v. FCC, 600 F.3d 642 (D.C. Cir. 2010).

users during peak usage time, but not target BitTorrent specifically.[66] BitTorrent has also developed new technologies that prefer connecting to intranetwork peers, rather than taxing Comcast's existing transit.[67] These policies and technologies, again, seem to have the government's blessing because not only did Comcast win its court case,[68] but the final net neutrality rules state that Comcast's current congestion management policy "likely satisfies the transparency rule with respect to congestion management practices."[69]

II. ISPS INSTITUTE DATA CAPS

Despite these interconnection arrangements, many ISPs have instituted usage limits, or "data caps," which are restrictions on the amount of data a subscriber may send or receive.[70] The terms of these arrangements vary greatly among ISPs. While the motivations behind such programs are not uniform, one key motivation, particularly for cable ISPs, is to stem the conversion of cable TV subscribers to online video subscribers.[71]

A. Cataloguing Data Caps: Size, Penalties, and Staying Power

Data cap policies come in a variety of forms, depending on the ISP offering them. The limits have ranged from 1GB per month to 600 GB per month.[72] Similarly, the penalties have included warnings, overage fees, and even disconnection. Finally, some plans have been instituted with relatively little resistance while others have spawned congressional legislation.[73] By listing the different plans, policies, and reactions, one can better understand what the motives for data caps might be.

Time Warner Cable ("TWC") was one of the first ISPs to not only announce a data cap plan, but also to cancel it. In its trial program, users were assigned usage caps ranging from 1GB per month to 60GB per month, depending on their subscription plan.[74] Customers who exceeded

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66. Jonathan Skillings, *Happily Ever After for Comcast and BitTorrent?*, CNET NEWS (Mar. 27, 2008, 7:17 AM), http://news.cnet.com/8301-10784_3-9904448-7.html?tag=txt.

67. Anderson, *supra* note 48.

68. *Comcast*, 600 F.3d at 644.

69. Preserving the Open Internet, *supra* note 63, at para. 34.

70. Daniel Havivi, *Metered-Usage Billing and the Broadband Internet Fairness Act*, 11 N.C. J.L & TECH. ONLINE EDITION 214, 216-18 (2010).

71. *Id.*

72. *Id.*; *see also* Jon Brodkin, *Comcast Data Caps Hit Test Cities, Range from 300GB to 600GB*, ARS TECHNICA (Sept. 18, 2012, 2:55 PM), http://arstechnica.com/business/2012/09/comcast-data-caps-hit-test-cities-range-from-300gb-to-600gb/.

73. Havivi, *supra* note 70, at 216-18.

74. *Id.*; *see also* Nate Anderson, *The Price-Gouging Premiums of Time Warner Cable's Data Caps*, ARS TECHNICA (Apr. 9, 2009, 9:16 AM), http://arstechnica.com/tech-policy/news/2009/04/the-price-gouging-premiums-of-time-warner-cables-data-caps/.

those limits would be charged $1 per GB of data used beyond the caps.[75] The tremendous unpopularity of this plan led lawmakers to propose legislation that would require ISPs to justify charges for usage-based service plans and prevent them from charging monopoly prices.[76] In response to customer complaints and looming legislation, TWC reversed its policy, and has not introduced any data cap plan to date.[77]

In 2008, Comcast also rolled out a data cap scheme, although with much higher limits than TWC.[78] Under this Comcast plan, any use over 250 GB per month was considered excessive, and customers who exceeded the limit would be contacted by customer service and told to cut back.[79] Customers who continued to exceed the 250 GB limit risked having their service disconnected.[80] Unlike the TWC plan, Comcast has no provisions for charging overages.[81] AT&T has a similarly high cap (150 GB and 250 GB, depending on the plan) for its customers, and charges overages of $10 per 50 GB.[82] These sorts of caps seem to have attracted less scrutiny, with at least one industry watchdog admitting the caps are "relatively high."[83]

In mid-2012, Comcast announced that it would be suspending data caps, but this change was short-lived. Citing its desire to periodically review its service offerings, Comcast removed the 250 GB limit and told journalists that it was "out of the cap business."[84] In the same press release announcing the end of the 250 GB cap, however, Comcast stated it would begin testing data limits of 300 GB while allowing customers to purchase additional allotments of 50 GB for $10.[85] Tests of such plans began in

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75. Ryan Paul, *40GB for $55 Per Month: Time Warner Bandwidth Caps Arrive*, ARS TECHNICA (June 3, 2008, 10:18 AM), http://arstechnica.com/old/content/2008/06/40gb-for-55-per-month-time-warner-bandwidth-caps-arrive/.

76. *See* Havivi, *supra* note 70, at 222 (citing H.R. 2902, 111th Cong. § 1 (2009)).

77. Nate Anderson, *They're Gone! After Outcry, Time Warner Uncaps the Tubes*, ARS TECHNICA (Apr. 16, 2009, 4:02 PM), http://arstechnica.com/tech-policy/news/2009/04/theyre-gone-after-outcry-time-warner-uncaps-the-tubes/.

78. *See* Jacqui Cheng, *It's Official: Comcast Starts 250GB Bandwidth Caps October 1*, ARS TECHNICA (Aug. 28, 2008, 5:16 PM), http://arstechnica.com/old/content/2008/08/its-official-comcast-starts-250gb-bandwidth-caps-october-1/.

79. *Announcement Regarding An Amendment to Our Acceptable Use Policy*, COMCAST, http://xfinity.comcast.net/terms/network/amendment/ (last visited Dec. 20, 2012).

80. Brian Stelter, *Comcast to Place a Cap on Internet Downloads*, N.Y. TIMES (Aug. 29, 2008), http://www.nytimes.com/2008/08/30/technology/30comcast.html?_r=0.

81. *See id.*

82. Ryan Singel, *Shed a Tear: The Age of Broadband Caps Begins Monday*, WIRED (Apr. 29, 2011, 3:26 PM), http://www.wired.com/business/2011/04/att-broadband-caps/.

83. *See* Cheng, *supra* note 78 (citing a spokesperson for Free Press).

84. Cathy Avgiris, *Comcast to Replace Usage Cap With Improved Data Usage Management Approaches*, COMCAST (May 17, 2012), http://blog.comcast.com/2012/05/comcast-to-replace-usage-cap-with-improved-data-usage-management-approaches.html; Jon Brodkin, *Comcast Answers Data Cap Questions*, ARS TECHNICA (May 17, 2012, 4:05 PM), http://arstechnica.com/business/2012/05/comcast-answers-data-cap-questions/.

85. Avgiris*, supra* note 84.

limited markets in August of 2012, and additional data packages with caps as high as 600 GB per month are also available.[86]

Data caps are not unique to the United States. Rogers, a Canadian wireless and cable provider, currently offers plans with data usage caps ranging from a TWC-esque 2 GB per month to a Comcast sized 500 GB per month for customers with a fiber optic connection.[87] Similar to the AT&T and TWC arrangements, overage fines up to $50 per month will be charged.[88] As discussed *supra*, the Canadian Radio-television and Telecommunications Commission ("CRTC") has regulated the sale of transit by Rogers to other ISPs,[89] but they have not yet prohibited data caps imposed by ISPs.

B. Why Cap? ~~Costs and Congestion~~ Money and Power

Why have ISPs instituted these sometimes draconian network management policies? While ISPs tout these plans as equitable solutions to make heavy data users pay their fair share, the true reasons are to create a new revenue source and retain high value cable TV subscribers.

A popular way to sell data caps to users is to maintain that it is unfair that the 99% should be subsidizing the excessive usage of the top 1% of data users.[90] However, this argument does not survive close scrutiny. As noted in Part I, *supra*, video—the most data intensive Internet use and a plurality, if not majority, of most ISP traffic—may actually become a revenue source, as CDNs capitulate to ISP power. This economic analysis is supported by the ISPs' own facts and figures. In 2008, the same year TWC's data cap program launched, TWC's costs for data access dropped 12% while the number of subscribers climbed 10%.[91] Likewise, Rogers' regulatory filings admitted that the price of overages "does not necessarily reflect the cost of supplying network capacity."[92]

Another argument used to promote the validity of data cap policies is that caps are needed to prevent network congestion. ISPs argue that without drastic action existing infrastructure will not be able to accommodate the

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86. Brodkin, *supra* note 72.

87. *See Rogers Hi-speed Internet Service*, ROGERS, http://www.rogers.com/web/link/hispeedBrowseFlowDefaultPlans (last visited Mar. 21, 2013).

88. *See id.*

89. *See* Chung, *supra* note 16.

90. *See* Anderson, *supra* note 74.

91. *See* Ryan Singel, *Time Warner Cable Earnings Refute Bandwidth Cap Economics*, WIRED (April 9, 2009, 2:50 PM), http://web.archive.org/web/20090502032412/http://www.wired.com/epicenter/2009/04/time-warner-cab/ (accessed via the Internet Archive).

92. Omar El Akkad, Susan Krashinsky & Iain Marlow, *Netflix Tweaks Canadian Service to Lower Data Usage*, GLOBE & MAIL (Mar. 29, 2011, 12:01 PM), http://www.theglobeandmail.com/news/technology/tech-news/netflix-tweaks-canadian-service-to-lower-data-usage/article1961342/.

volume of traffic.[93] This makes some intuitive sense—certainly most Internet users have occasionally been frustrated with a slow connection—but data caps will do little to deal with congestion. Netflix CEO Reed Hastings observed that congestion is a product of "peak usage times, and monthly caps do little to alter the times at which customers use the Internet."[94] Similarly, BitTorrent CEO Doug Walker criticized the TWC metering plans as a business decision that does not help customers and stated that "Time Warner wouldn't have to do this if they worked with P2P companies like BitTorrent to make their networks more efficient."[95] Even one Comcast Senior Vice President, Joe Waz, suggested that peak usage was a main source of congestion and that bandwidth caps do little to change that.[96] Additionally, Comcast's own white paper on its network management practices related to BitTorrent states:

> These congestion management practices are independent of, and should not be confused with, our recent announcement that we will amend the "excessive use" portion of our Acceptable Use Policy, effective October 1, 2008, to establish a specific monthly data usage threshold of 250 GB per account for all residential HSI customers . . . . That cap does not address the issue of network congestion, which results from traffic levels that vary from minute to minute.[97]

Overall, this concern about congestion is a recurring theme, akin to Chicken Little yelling "the sky is falling!" As early as 1993, the New York Times wrote of data congestion on the information superhighway, with one network operator complaining that with thousands of people connecting to his system at once "free services like those on the Internet can't continue indefinitely."[98] In 1996, technologist Bob Metcalfe warned of coming "gigalapses" where billions of users would suffer Internet outages.[99] More

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93. *See*, *e.g.*, Nate Anderson, *Time Warner Tries Again, Fails to Justify Caps and Charges*, ARS TECHNICA (April 10, 2009, 2:37 PM), http://arstechnica.com/tech-policy/news/2009/04/time-warner-cable-to-press-stop-questioning-our-caps/.

94. El Akkad et al., *supra* note 92.

95. Marguerite Reardon, *BitTorrent to Comcast: Let's be Friends*, CNET NEWS (Mar. 20, 2008, 12:00 PM), http://news.cnet.com/8301-10784_3-9899677-7.html.

96. Declan McCullagh, *Q&A with Comcast's Joe Waz About BitTorrent Detente*, CNET NEWS (Mar. 27, 2008, 10:32 AM), http://news.cnet.com/8301-10784_3-9904689-7.html (interviewing Mr. Waz before Comcast had announced its own data caps).

97. Filing of Comcast Corp., Attachment B at 1-2 & n. 3, Broadband Indus. Practices, WC Docket No. 07-52 (rec. Sept. 25, 2008), *available at* http://downloads.comcast.net/docs/Attachment_B_Future_Practices.pdf.

98. John Markoff, *Business Technology; Jams Already on Data Highway*, N.Y. TIMES (Nov. 3, 1993), http://www.nytimes.com/1993/11/03/business/business-technology-jams-already-on-data-highway.html.

99. *See* Bob Metcalfe, *Yes! The Internet is on the Verge of Collapse*, NETWORK WORLD (Nov. 18, 1996), http://www.networkworld.com/netresources/1118metcalfe.html.

recently, in 2007 the Discovery Institute[100] warned that the incredible volume of exabytes of data being sent over the Internet (an "Exaflood") would bring the network to its knees, causing Internet brownouts by 2009 (especially if net neutrality rules were implemented).[101]

Of course, the Internet has continued on past 1993, 1996, and 2009, and is now steadily continuing through 2013. Assertions that the only way to avoid devastating Internet congestion is by implementing data caps do not truly address the causes of congestion. Instead they reiterate the cry that "the sky is falling."

So why are data caps being implemented? One possible reason is money. Rogers is not only a cable company but is also the largest cellular phone service provider in Canada.[102] As such, they are familiar with the money that overage charges can bring in and would love to extend this business model to Internet access. AT&T and TWC's now defunct plans may also have been an extension of this line of reasoning. Indeed, the practice has been termed "price-gouging."[103]

But this reasoning alone is incongruous with Comcast's data cap proposals. Comcast's initial 250 GB limit, in place from 2008 to 2012, made no provision for charging overage fees, only for disconnection. Even under the 300 GB plan, Comcast emphasizes that "very few customers" would use more than the 300 GB allotted to them.[104] Furthermore, all the ISPs that have data caps emphasize how only a tiny fraction of users would exceed the data limits or pay overages.[105] Limiting traffic also limits potential revenue from paid peering agreements. Therefore, simply creating another revenue source is not the entire purpose of data cap policies.

A significant reason for implementing data caps is to prevent customer migration from traditional television services to Internet video providers. Comcast and TWC both derive a majority of their revenue from traditional cable TV offerings. In 2010, Comcast derived 54.5% of its total revenue, or $19.5 billion, from cable video services, compared to $8.6

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100. The organization is most notable as proponents and lobbyists for Intelligent Design as an "alternative" theory to evolution. *See* DISCOVERY INST., http://www.discovery.org (last visited Mar. 11, 2013).

101. *See* Bret Swanson, *The Coming Exaflood*, WALL ST. J. (Jan. 20, 2007), http://www.discovery.org/a/3869.

102. *See* ROGERS, http://www.rogers.com (last visited Nov. 25, 2012).

103. Anderson, *supra* note 74.

104. Avgiris, *supra* note 84.

105. *See, e.g.*, *About Excessive Use of Data*, COMCAST (Mar. 9, 2012, 8:58:03 PM), http://web.archive.org/web/20120427202025/http://customer.comcast.com/help-and-support/internet/common-questions-excessive-use (accessed via the Internet Archive); Nate Anderson, *Time Warner Rationale for Bandwidth Caps Doesn't Add Up*, ARS TECHNICA (Apr. 1, 2009, 9:16 PM), http://arstechnica.com/tech-policy/news/2009/04/get-ready-for-metered-broadband-texas/; Nate Anderson, *AT&T Data Cap Explanation Invites Skepticism*, ARS TECHNICA (Mar. 18, 2011, 3:02 PM), http://arstechnica.com/tech-policy/news/2011/03/att-officially-announces-data-caps-wont-talk-about-congestion/.

billion from high speed Internet.[106] TWC derived 58.2%, or $11 billion, from cable TV, compared to $5 billion from high speed Internet.[107] Even AT&T, which was not traditionally a cable provider, now offers cable-like TV services and has over 3 million users.[108] Peering revenues, which are not itemized in filings, are unlikely to replace those profits. Even if they might, no business would want to risk such a dramatic shift in its product offerings if it did not have to.

Further, most data caps are set at levels that allow customers to use Internet video offerings to complement, but not replace, traditional subscription TV services. Americans watch a lot of TV—about 153 hours per person per month.[109] Comcast's own FAQ explains that Netflix "best quality" uses 2.3 GB per hour.[110] Simple math reveals that to replace the high definition ("HD") Comcast viewing experience with HD Netflix would use approximately 352 GB of data per month (with no room for other web browsing). This is substantially in excess of the 250 GB cap Comcast previously used, or even the 300 GB cap to which it is currently migrating. The 352 GB figure also does not account for the possibility of multiple video users on the same connection.

As if to emphasize the preferential status of its cable TV subscribers, Comcast, while still operating under the 250 GB cap, announced changes to its "Xfinity" streaming TV service. Customers streaming Xfinity online TV to their Xbox 360s would not have such content counted against their 250 GB cap.[111] Of course, such a preferential service was only available to customers who subscribed to both Comcast TV and Internet services.[112] Similar self-promotion policies have been engaged in by Canadian ISP Shaw.[113]

At the time of the change to the Xfinity streaming policy, Comcast argued that such differential treatment is permissible because the data is "being delivered over [Comcast's] private IP network."[114] However, this

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106. Comcast Corp., 2010 Annual Report (Form 10-K), at 39 (Feb. 25, 2011), *available at* http://www.sec.gov/Archives/edgar/data/1166691/000119312511047243/d10k.htm.

107. Time Warner Cable Inc., Annual Report (Form 10-K), at 42 (Feb. 18, 2011), *available at* http://www.sec.gov/Archives/edgar/data/1377013/000095012311015515/g25889xxe10vk.htm.

108. *See* Jim O'Neill, *AT&T Adds 202,000 U-verse TV Subs in Q2; Revenue Up, Profits Slip*, FIERCEIPTV (July 21, 2011) http://www.fierceiptv.com/story/att-adds-202000-u-verse-tv-subs-q2-revenue-profits-slip/2011-07-21.

109. *See Americans Watching More TV Than Ever; Web and Mobile Video Up Too*, NIELSENWIRE (May 20, 2009), http://blog.nielsen.com/nielsenwire/online_mobile/americans-watching-more-tv-than-ever/.

110. *See About Excessive Use of Data, supra* note 105.

111. *See* Kyle Orland, *Comcast: Xbox 360 On Demand Streams Won't Count Against Data Caps*, ARS TECHNICA (Mar. 26, 2012, 2:54 PM), http://arstechnica.com/gaming/2012/03/comcast-xbox-360-on-demand-streams-wont-count-against-data-caps/.

112. *See id.*

113. *See id.*

114. *Id.*

reasoning has already come under attack. Vint Cerf noted that Comcast's explanation for its Xfinity streaming service "sounds as if they are prioritizing [in violation of net neutrality principles] to say nothing of not counting against the caps."[115] Internet advocacy group Public Knowledge has also commented to the FCC that by any reasonable definition, "the Xfinity app is plainly a broadband service: it is delivered over the same broadband connection as other Internet services to Internet-connected devices, and consists of streaming video using the Internet Protocol."[116]

The effects of data caps are already being felt by Netflix. In response to the extremely low data caps offered by Canadian ISPs, Netflix has lowered its default streaming quality to one that uses less bandwidth.[117] These problems are only likely to be exacerbated as Netflix rolls out more content in high definition, considers 3D streaming, and starts to host exclusive content.[118]

III. REGULATORY SOLUTIONS: ANTITRUST, NET NEUTRALITY, AND PRIVATE AGREEMENTS

Fortunately, there are several tools available to regulators to ensure that customers can transition to high quality online video programming. Given the regional power that cable companies have, antitrust action may be an appropriate tool to ensure that cable ISPs do not over-limit customer broadband. The new net neutrality rules may also open the door to FCC regulation of all ISPs (not just cable companies), although the vagueness of the actual rulemaking might hinder attempts to regulate this ISP conduct.[119] Finally, individual settlements with ISPs may also allow regulators to chip away at bandwidth caps on an ad hoc basis.

A. Antitrust Regulation

Cable companies that engage in data capping may be subject to regulation under the Sherman Antitrust Act. Under this statute, "[e]very person who shall monopolize, or attempt to monopolize, . . . any part of the trade or commerce among the several States, or with foreign nations, shall

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115. Cyrus Farivar, *Extra Lane: How Comcast Assures that Xfinity TV on Xbox 360 Works Well*, ARS TECHNICA (May 22, 2012, 8:20 AM), http://arstechnica.com/tech-policy/2012/05/extra-lane-how-comcast-assures-that-xfinity-tv-on-xbox-360-works-well/.

116. Comments of Pub. Knowledge, Petition to Enforce Merger Conditions, FCC MB Docket No. 10-56 (rel. Aug. 1, 2012).

117. *See* El Akkad et al., *supra* note 92.

118. *See, e.g.*, Catharine Smith, *Netflix Gets Exclusive 'Arrested Development' Streaming Rights for New Season*, HUFFINGTON POST (Nov. 19, 2011, 12:00 PM), http://www.huffingtonpost.com/2011/11/18/netflix-arrested-development_n_1102443.html.

119. Note that this paper does not address whether the FCC's net neutrality rules will ultimately be upheld, only what effect regulation based on such rules might have.

be deemed guilty of a felony."[120] The Supreme Court has identified two elements to a monopoly offense action under the Sherman Antitrust Act: "(1) the possession of monopoly power in the relevant market and (2) the willful acquisition or maintenance of that power. . . ."[121]

1. Possession of Monopoly Power: Too Much Success

Over the past two decades, the cable industry has worked to cement its importance to home viewers while simultaneously shaking off attempts at local regulation. It has largely succeeded, but through that success the cable industry has demonstrated that it has monopoly power within its regional service area. This was enunciated in the recent settlement agreement between Comcast, the FCC, and the Department of Justice ("DOJ") to get regulatory approval of Comcast's purchase of a majority share in NBC Universal ("NBCU"). The underlying reasoning in the consent decree is arguably applicable to other cable companies.

During the 1980s, the DOJ and FCC were hesitant to engage the cable industry in antitrust actions. At that time, the FCC took a broad view of the market in which cable companies competed and concluded that franchises facing competition from three or more unduplicated broadcast signals did not have monopoly power and should not be subject to intense scrutiny.[122] The DOJ took a much narrower view of the market cable TV companies compete in, but it concluded that regulation was best left to local regulators.[123]

The FCC's initial reasoning regarding cable's monopoly power has not stood the test of time. As noted in the DOJ's complaint opposing the Comcast-NBCU merger, some cable companies have launched their own networks with exclusive programming.[124] Additionally, the order of distribution has changed. While movies used to make their television premiere on broadcast channels, they now first appear on premium cable channels like HBO, then on regular cable channels, before ultimately ending up on the network channels.[125] Finally, the traditional model of content distribution, where a particular national network presents the first run of a show before broadcast syndication and finally cable syndication[126]

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120. 15 U.S.C. § 2 (2006).

121. United States v. Grinnell Corp., 384 U.S. 563, 570-71 (1966).

122. *See* Glenn B. Manishin, *Antitrust Regulation in Cable Television: Federal Policy at War with Itself*, 6 CARDOZO ARTS & ENT. L.J. 75, 86 n.68 (1987) (citing Amendment of Parts 1, 63, and 76 of the Comm'n's Rules to Implement the Provisions of the Cable Commc'ns Policy Act of 1984, *Report and Order*, FCC 85-179, 50 Fed. Reg. 18637, para. 100 (1985)).

123. *See id.* at 87.

124. *See* Complaint at para. 30, United States v. Comcast Corp., No. 1:11-CV-00106, 2011 WL 5402137 (D.D.C. Jan. 18, 2011).

125. *See id.* at para. 23

126. *See id.* at para. 22.

is being upset by increasing amounts of original programming hosted on cable networks, such as USA Network.[127]

Similarly, the DOJ can no longer claim that local franchises provide a complete check on cable companies. The power of municipalities to regulate cable franchises is premised on those franchises being a "cable service" as defined in the Communications Act. This premise was destroyed by the *City of Portland* case,[128] in which the Ninth Circuit held that municipalities can only regulate the one-way communication (i.e., traditional TV service) of a cable franchise, not its telecommunication services.[129] While municipalities may still have some power to regulate old fashioned TV offerings, even this line is being blurred as content moves online to services like XfinityTV.[130] Local boards certainly do not have the power to regulate Internet usage caps.

These factors have led to regulators being much more willing to address potential antitrust actions by the cable companies. Both the FCC and DOJ investigated Comcast after it announced its plans to merge with NBCU.[131] The DOJ reached a settlement with the defendant[132] while the FCC promulgated complementary rules.[133] While the facts of this case were specific to Comcast and related to their potential acquisition of nationwide monopoly power through the purchase of a major content producer (NBCU),[134] the shifts in content creation, distribution, and regulation are common across the cable industry and would likely allow the DOJ to have wide latitude to conclude that cable ISPs have monopoly power over the distribution of professional full-length video programming within their local franchise areas.

2. Willful Maintenance of Monopoly Power

Attempting to retain cable TV subscribers by denying competitors sufficient capacity to compete is nearly the hornbook definition of willful maintenance of monopoly power. In fact, one hornbook defines

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127. The DOJ notes that USA is the highest-rated cable network. *Id.* at para. 50. It has also substantially increased its original programming over approximately the last half-decade. *See* USA NETWORK, http://www.usanetwork.com (last accessed Jan. 19, 2012).

128. *See* AT&T Corp. v. City of Portland, 216 F.3d 871, 876 (9th Cir. 2000) (holding that the provision of broadband service was not a cable service, and the city could not force the franchise to give competitors access to its local network).

129. *Id.* at 876-77.

130. *See* XFINITYTV, http://xfinitytv.comcast.net (last visited Jan. 19, 2012).

131. *See* App'ns of Comcast Corp., Gen. Elec. Co. & NBC Universal, Inc., For Consent to Assign Licenses & Transfer Control of Licensees, *Memorandum Opinion and Order*, FCC 11-4, para. 1 (2011) [hereinafter *Comcast-NBCU Order*], *available at* http://hraunfoss.fcc.gov/edocs_public/attachmatch/FCC-11-4A1.pdf.

132. *See* United States v. Comcast Corp., No. 1:11-CV-00106, 2011 WL 5402137 (D.D.C. Sep. 1, 2011).

133. *See Comcast-NBCU Order*, *supra* note 131.

134. *See Comcast*, 2011 WL 5402137.

anticompetitive conduct as "conduct to obtain or maintain monopoly power as a result of competition on some basis other than the merits . . . . It may . . . be conduct without a legitimate purpose that makes sense only because it eliminates competition."[135] With data caps, Comcast, TWC, Rogers, et al. are not competing on the quality of the programming, the variety of the shows offered, or the timeliness of new releases, but instead on the amount of programming that can be viewed. Furthermore, the amount of programming is not being limited because it costs the cable company tremendous amounts to deliver—in fact, it is likely generating them revenue.[136] Instead, the amount of programming is being limited primarily because such limits will prevent TV subscribers from changing their viewing habits.[137]

Any defense would likely focus on the reasonability of data caps, with the TV cable companies arguing that the data cap policies are actually for the competitive purpose of preventing network congestion, saving costs, and being fair to end users who do not consume substantial amounts of data.[138] However, as already discussed at length, these measures do little to reduce congestion since they do not target peak use periods,[139] and much of the data used by applications like Netflix is actually a revenue source for ISPs. Certainly, the ISPs will argue otherwise. Given these conflicting views on data caps, a court might shy away from in depth analysis, as in *Telex v. IBM*, where the district court refused to hold that the development of Integrated Circuits amounted to an illicit tying agreement, noting "to rule otherwise would enmesh the courts with technical and uncertain inquiry into the technological justifiability of functional integration and cast unfortunate doubt on the legality of product innovations in serious detriment to the industry and without any legitimate antitrust purpose."[140] However, data caps are not, at their core, a technology issue. An antitrust investigation of capping practices would not focus on the technological innovations that make caps possible, but instead the economic motives that make such caps desirable. Courts have been comfortable with such economically grounded inquiry even when major technology firms are involved.[141] Additionally, discovery could shed light on the peering, transit,

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135. 58 C.J.S. *Monopolies* § 37 (2012).

136. *See supra* Part I(b).

137. *See supra* Part II(b).

138. *See, e.g.*, Anderson, *Time Warner Rationale for Bandwidth Caps Doesn't Add Up*, ARS TECHNICA (April 1, 2009, 9:16 PM), http://arstechnica.com/tech-policy/news/2009/04/get-ready-for-metered-broadband-texas/.

139. *See* Bill D. Herman, *Opening Bottlenecks: On Behalf of Mandated Network Neutrality*, 59 FED. COMM. L.J. 103, 144 (2006) (also observing that peak use periods are the cause of congestion, not heavy data users).

140. Telex Corp. v. IBM Corp., 367 F. Supp. 258, 347 (N.D. Okla. 1973), *rev'd on other grounds*, 510 F.2d 894 (10th Cir. 1975).

141. *Cf.* United States v. Microsoft Corp., 253 F.3d 34, 91 (D.C. Cir. 2001).

and paid peering agreements which are normally secret, taking much of the uncertainty out of a court's ultimate decision.

The DOJ may be taking the first steps in such an investigation. In June of 2012, a probe of Comcast's data cap policy was underway, according to unnamed sources at the Department.[142] The investigation centers on whether failing to count Xfinity streaming against a bandwidth cap is an unreasonable network management policy, contrary to the 2011 NBCU-Comcast Joint Venture Consent Decree.[143] Such a pro-consumer investigation is laudable, and the DOJ should use it as a stepping stone to launch a broader investigation into the overall anticompetitive implications of a data cap program.

B. Net Neutrality: Vague Rules with an Uncertain Effect

The effect that the FCC's Open Internet rules will have on data cap policies is even less clear than whether those rules will survive judicial scrutiny. Despite occupying 44 pages in very small type in the Federal Register,[144] the Open Internet rules use the terms "usage-based" or "usage limit" only four times.[145] Similarly, although at least 490 law review and journal articles deal with net neutrality, only 32 of those mention either "usage limits" or "metered."[146] Of those, only three articles offer more than the most cursory examination of data caps.[147] The most direct, salient analysis reads: "would a . . . Net neutrality rule prohibit such innovative [metered] pricing schemes from being employed in the first place? The answer remains uncertain."[148]

However, within that uncertainty are two areas of analysis. First, do the net neutrality rules restrict data caps? Second, what effect, if any, might net neutrality rules have on other attempts to regulate data cap practices?

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142. Thomas Catan & Amy Schatz, *U.S. Probes Cable for Limits on Net Video*, WASH. POST (Jun. 13, 2012), http://online.wsj.com/article/SB10001424052702303444204577462951166384624.html.

143. *Id.*

144. Preserving the Open Internet, 76 Fed. Reg. 59,191 (Sept. 23, 2011) (codified at 47 C.F.R. pts. 0, 8).

145. Preserving the Open Internet, *supra* note 63, at paras. 56, 72, 94.

146. Per a search of WestlawNext on Nov. 12, 2011.

147. *See* Christopher S. Yoo, *Network Neutrality and the Economics of Congestion*, 94 GEO. L.J. 1847, 1884-85 (2006) (noting tiered pricing would require monotiring bandwidth); Havivi, *supra* note 71, at 216-19 (pointing out analogous attempts at setting caps); *see generally* Adam Thierer, *Are "Dumb Pipe" Mandates Smart Public Policy? Vertical Integration, Net Neutrality and the Network Layers Model*, 3 J. TELECOMM. & HIGH TECH. L. 275 (2005).

148. Thierer, *supra* note 147, at 299. Thierer and I reach opposite conclusions on the normative question of whether or not net neutrality should prohibit data caps; however, we do agree that it is unclear whether they do presently.

1. Do Data Caps Block Access? Only if the FCC Wants Them To

The Open Internet rules have three core principles, and the most important as relates to data caps is "no blocking."[149] "Fixed broadband providers may not block lawful content, applications, services, or non-harmful devices."[150] Regulators will likely have a difficult time qualifying data caps as "blocking," but such contortionism remains conceivable.[151]

There are two plausible explanations of how data caps operate as a block. First, with Comcast's original data caps where users are disconnected after exceeding a certain threshold a certain number of times, data caps literally block access to *all* content. Second, with Rogers-type tiny data caps, users are functionally prohibited from accessing HD content; a two hour movie at 2.3 GB per hour would consume a user's entire 2 GB monthly bandwidth quota before the movie was halfway over. Even Comcast's 300 GB data cap effectively prohibits use of Netflix or Hulu as a TV replacement without paying substantial fees.

However, "usage limits" and "usage-based fees" are mentioned only a few times throughout the FCC's Open Internet rules, suggesting, sometimes strongly, that such restrictions are permissible. In explaining the transparency requirement, one of the Open Internet rules' key principles, the FCC noted that "Commercial Terms," including "usage-based fees," must be disclosed.[152] Two arguments may allow the FCC to regulate data caps notwithstanding the language in the transparency requirement. First, the fact that such limits might exist for some ISPs is not an unequivocal endorsement of all such limits. Second, these rules are meant to clarify the transparency requirements,[153] not what is meant by blocking.[154]

On the same page, the transparency rules also require the disclosure of "usage limits,"[155] with a footnote concluding that "the description of congestion management practices provided by Comcast in the wake of the Comcast-BitTorrent incident likely satisfies the transparency rule with respect to congestion management practices."[156] While this seems to endorse Comcast's practices, it could still be argued that it neither endorses all data caps in all cases nor applies outside the context of analyzing an

149. *See Open Internet*, FCC, http://www.fcc.gov/openinternet (last visited Feb. 17, 2012).

150. Preserving the Open Internet, *supra* note 63, at para. 1.

151. *See, e.g., id.* at paras. 2-3.

152. *Id*. at para. 56.

153. *Id.* at para. 1 (stating that the rules are meant "[t]o provide greater clarity and certainty regarding the continued freedom and openness of the Internet").

154. "No blocking" is only one of the "three basic rules," *id.*, intended to preserve "Internet freedom and openness," which are the overarching goals of the rules. *Id.* (Statement of FCC Chairman Julius Genachowski).

155. *Id.*, at para. 56 n.177.

156. *Id.*, at para. 24 n.64.

ISP's compliance with the transparency provisions of net neutrality. Furthermore, the practice being described, according to Comcast, "has nothing to do with aggregate monthly data usage."[157] Finally, the publication of the net neutrality rules predates Comcast's preferential treatment of Cable TV subscribers who stream Comcast services through their Xbox 360.

One other statement might give the FCC's blessing to data caps:

> We are, of course, always concerned about anti-consumer or anticompetitive practices, and we remain so here. However, prohibiting tiered or usage-based pricing and requiring all subscribers to pay the same amount for broadband service, regardless of the performance or usage of the service, would force lighter end users of the network to subsidize heavier end users. It would also foreclose practices that may appropriately align incentives to encourage efficient use of networks. The framework we adopt in this Order does not prevent broadband providers from asking subscribers who use the network less to pay less, and subscribers who use the network more to pay more.[158]

Again, interpreting this as anything other than an FCC endorsement of data caps requires some creative reading. The paragraph above appears in the section defining discrimination, not blocking. Furthermore, it could be read as an endorsement of different speed tiers, not different aggregate usage tiers. Simultaneously, the Comcast model is both anticompetitive and anticonsumer, contrary to the FCC's stated goals.

The net neutrality argument is certainly more convoluted than the antitrust argument, but it also would apply to all high speed ISPs, not just the cable companies that possess monopoly power. Such a nuanced regulatory interpretation is also not unprecedented: the FCC held that cable Internet is neither a cable service, nor a telecommunications service, and that the Supreme Court upheld that pained statutory reading.[159]

2. Net Neutrality as a Defense: The FCC Made Me Do It!

Net neutrality may also have an odd side effect. By prohibiting data discrimination, ISPs are unable to target users who engage in heavy use of *transit*, rather than peering, paid peering, or intranetwork connections. For instance, if a residential customer was secretly running a voice over

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157. *Network Management Policy*, COMCAST, http://xfinity.comcast.net/terms/network/update/ (last visited Dec. 20, 2012).

158. Preserving the Open Internet, *supra* note 63, at para. 72

159. *See* Nat'l Cable & Telecomm. Ass'n v. Brand X Internet Servs., 545 U.S. 967, 974 (2005).

Internet protocol call center from their house, they might truly represent a high cost, high usage user, whom low usage users are subsidizing. An ISP wanting to avoid such subsidization *and* comply with the net neutrality rules would have to adopt a usage agnostic rule to deal with such eventualities (i.e., data caps). The ISP could then argue to the DOJ that, while it might not adopt such a rule in the free market, the perverted incentives of a post-net neutrality regulated world forced it into such a situation.[160]

The first problem with this scenario is that it is unrealistic; there is no data to suggest that excessive users consume so much transit relative to paid peering that it is more efficient for the ISP to meter usage and terminate those users' accounts rather than to simply accept them as a cost of doing business. Furthermore, such a residential user could likely be terminated for using the connection for business, rather than residential purposes.[161] Lastly, taking such a position would be inconsistent with the position of most ISPs—that they are not bound by the FCC net neutrality rules.[162]

Overall, it is too early to tell what effect, if any, the new net neutrality rules will have on data caps. It is likely they will have no effect, but with substantial regulatory willpower, they could be used to pressure not only cable companies, but all ISPs, into abandoning data caps.

C. Individual Agreements: Ending Data Caps One at a Time

One of the most effective regulatory tools used over the past decade has been the settlement agreement. Even as Comcast was winning a court case to prevent the imposition of Open Internet rules,[163] it agreed to become bound by such rules in order to secure its merger with NBCU.[164] These particular agreements are unlikely to have much impact on data caps because they explicitly sanction such caps. However, they are examples of the gains that can be realized through aggressive regulatory action.

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160. *See generally* Yoo, *supra* note 147, at 1907-08 (suggesting, generally, that the free market solves best).

161. *See, e.g.*, *Comcast Acceptable Use Policy for High-Speed Internet*, COMCAST, http://www.comcast.com/Corporate/Customers/Policies/HighSpeedInternetAUP.html (last visited Feb. 14, 2011) ("The Service is for personal and non-commercial residential use only and you agree not to use the Service for operation as an Internet service provider or for any business enterprise or purpose (whether or not for profit)").

162. *See* Nate Anderson, *Verizon Sues to Halt FCC's Net Neutrality Rules*, ARS TECHNICA (Oct. 2, 2011, 5:00 PM), http://arstechnica.com/tech-policy/news/2011/10/verizon-sues-to-halt-fccs-net-neutrality-rules/.

163. *See* Comcast Corp. v. FCC, 600 F.3d 642 (D.C. Cir. 2010).

164. *See* United States v. Comcast Corp., No. 1:11-CV-00106, 2011 WL 5402137, at *1 (D.D.C. Sep. 1, 2011); *see also* Comcast-NBCU Order, *supra* note 131. In its form 10-K, Comcast states that it agreed to be bound by the FCC's Open Internet rules, *see* Comcast Corp., *supra* note 106, at 13.

Admittedly, the language of the Comcast-NBCU Consent Decree that otherwise could be used to prohibit data caps goes on to expressly allow for such caps. Part V(G) of the Consent Decree prohibits Comcast from unreasonably discriminating and requires them to allow subscribers to "typically achieve download speeds of at least 12 megabits per second."[165] However, the ruling goes on to state that it "does not restrict Comcast's ability to impose byte caps or consumption-based billing."[166] Similar provisions exist within the FCC-approved conditions to the merger.[167]

But again, this agreement was finalized before Comcast began offering preferential treatment to Xfinity streamers. Based on such preferential treatment, Public Knowledge filed a petition requesting that the FCC force Comcast to stop discriminating against online video providers.[168] Specifically, Public Knowledge argues that offering streaming cable services while capping competing online video services is counter to the requirement that "[n]either Comcast nor C-NBCU shall engage in unfair methods of competition . . . the purpose or effect of which is to hinder significantly or prevent any MVPD or OVD from providing Video Programming to subscribers or customers."[169] Public Knowledge concludes: "The Commission should therefore order Comcast to immediately stop exempting only its Xfinity service from the data caps it imposes on its customers' activity. Going forward, the Commission should prohibit Comcast from using unnecessarily discriminatory data caps."[170]

Even if the current FCC dispute is unsuccessful in changing Comcast's data cap policies, the mere existence of the NBCU-Comcast Consent Decree language emphasizes the power such agreements have; when threatened with the delay or destruction of a business opportunity, Comcast will capitulate. This is not an isolated case. When threatened with new legislation that would affect its ability to charge monopoly pricing for high speed Internet, Time Warner Cable quickly abandoned its data cap plans.[171] Similarly, Verizon ultimately capitulated to the FCC's open device rules in order to gain access to the 700 MHz spectrum.[172] These cases suggest that if regulators make data caps a priority, they can find appropriate carrots or sticks to make such regulation a reality.

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165. *Comcast Corp.*, 2011 WL 5402137 at *11.

166. *Id.*

167. See Comcast-NBCU Order, *supra* note 131, at para. 103, §1V(E)(3).

168. See Petition to Enforce Merger Conditions, supra *note* 119, at 13.

169. *Id.* at 9 (internal citations omitted).

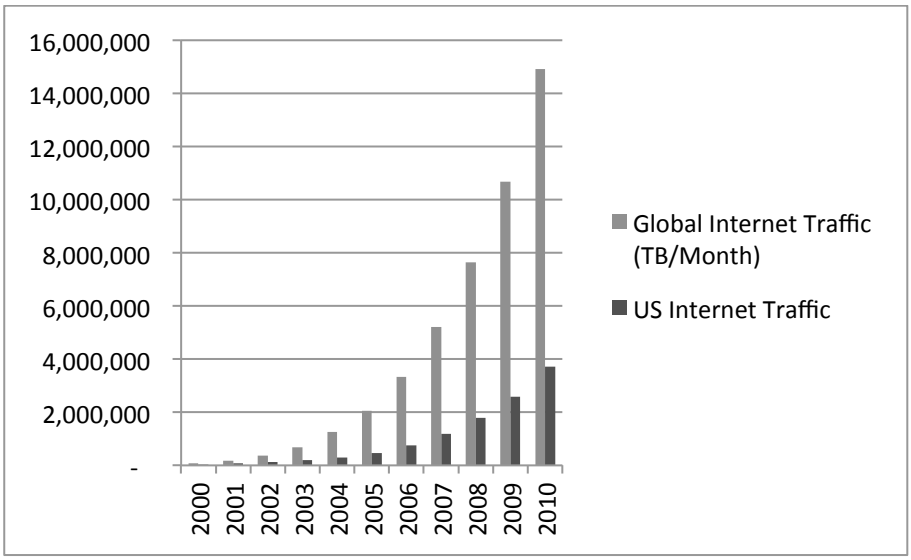
170. *Id.* at 15.

171. *See* Anderson, *supra* note 77.

172. This happened admittedly without legal action, which was ultimately dropped. *See* Grant Gross, *CTIA Drops Lawsuit Against FCC's Open Access Rules*, PC WORLD (Nov. 13, 2008, 2:00 PM), http://www.pcworld.com/businesscenter/article/153848/ctia_drops_lawsuit_against_fccs_open_access_rules.html.

IV. CONCLUSION: MORE THAN JUST TV – DATA CAPS AND THE INTERNET'S EXPONENTIAL GROWTH

The graph below shows the growth in average monthly data usage over the past decade:



United States and global monthly Internet traffic growth (2000-2010).[173]

Data usage, for both the United States and the rest of the world, has been growing exponentially and is poised to continue doing so. This exponential growth is responsible not only for a new way to watch five hours of TV per day, but also for the phenomenal economic growth the United States experienced since the 1990s, the fundamentally novel ways we communicate and exchange information today, and the continued success of many San Francisco Bay area companies, not the least of which is Netflix.

Should data caps—even ones which today seem large—become the norm in the United States, this growth may falter. Promised advances in video conferencing, telemedicine, and communications technologies, including those not yet invented, may never come to pass, or they may pass by the United States. Already, U.S. broadband speed is, on average, a

173. CISCO SYS., CISCO VISUAL NETWORKING INDEX: GLOBAL IP TRAFFIC FORECAST, 2010-2015 (2011) (on file with the author).

quarter of what it is in South Korea.[174] Data caps would only exacerbate this disparity.

Regulators can and should challenge the growing prevalence of data cap policies. They are unnecessary to control costs or congestion, and primarily serve the anticompetitive purpose of preventing cable TV (or MVPD) subscribers from switching to online video services. More fundamentally, regulation of data caps will help ensure that the Internet continues to work as an engine for free-market creative destruction for years to come.

174. *See* John Paczkowski, *The Median U.S. Broadband Speed? South Korea's Divided by Four*, ALL THINGS D (Aug. 26, 2009, 5:41 AM), http://allthingsd.com/20090826/cwa/.