NET NEUTRALITY: RESTORING THE BALANCE

By

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I. NET NEUTRALITY AND WHY IT MATTERS

Net neutrality is the communication debate of the digital era. It is pitting Internet Service Providers (ISPs), service providers like Netflix, consumers, and regulators against each other.[1] Large telecoms want the ability to manage their network as they see fit, and service providers do not want their products and services blocked out by the telecoms. Consumers are trying to get the best quality of service, and regulators at the Federal Communications Commission (FCC) are trying to enable that quality. Discrimination of transferred data is at the center of the debate and is where the term net neutrality derives from: that all lawful data passing over networks should be treated equally.[2]

Under the FCC's Preserving the Open Internet rules, Broadband ISPs "shall not unreasonably discriminate in transmitting lawful network traffic over a consumer's broadband Internet access service."[3] This rule requires broadband ISPs to treat all lawful data equally.[4] With this form of net neutrality, ISPs are not allowed "to make deals with services like Netflix or Amazon allowing those companies to pay to stream their products to online viewers through a faster express lane on the web".[5] This commercialized "express lane" would be a way for ISPs to increase the cost of the Internet for consumers because they would have to pay their service providers for that access through increased fees.[6] ISPs would also be able to slow down non-paying service providers like peer-to-peer software users in order to free up bandwidth for companies that are willing to pay a toll.[7] This has resulted in litigation questioning the FCC's jurisdiction due to how broadband ISPs are classified.[8]

The major factor for the FCC's jurisdiction in net neutrality is the classification of broadband ISPs. In the past, the FCC classified broadband ISPs as information services instead of common carriers.[9] A common carrier is "any person engaged as a common carrier for hire, in interstate or foreign communication by wire or radio or interstate or foreign radio transmission of energy".[10] The distinction that matters between broadband ISPs being information services and telecommunication companies being common carriers is that data discrimination is not allowed for common carriers, but it is allowed for information services.[11] Information services are treated differently because they have the ability to pick and choose customers whereas common carriers must accept anyone who pays the delivery fee.[12] Under common carriage, the company must allow competitors to use those lines and is not allowed to discriminate or block other use.[13] The problem is that most consumers do not have the ability to choose which ISP they can use.[14] In more populated areas there are more choices, but in rural areas there is often only one choice.[15] For these consumers, they are often forced to use an ISP that actively discriminates data on their network.

This paper will first show how modern networks are designed in relation to the net neutrality debate. It will then discuss current interactions of service providers and the

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implications for consumers due to what is known as "the last mile". From there, a relevant history of the Telecommunications Act will be given, starting at the beginning of broadband up through the FCC's role in fostering Open Internet rules and its ensuing court battles over their jurisdiction. Then it will be shown that without the Open Internet rules, prices will increase for consumers, innovation will be stifled, and consumers will be left with no choices to counteract any network discrimination.

II. THE MODERN BROADBAND NETWORK

Network design and complexity has evolved at an extremely rapid pace over the past few decades. There are often misconceptions about how the internet works, and these misconceptions lead to impractical and damaging solutions. A firm grasp of modern network design and deployment is necessary before any real discussion of net neutrality can take place.

a. Network Design

The current design uses "connectionless" routing protocols to move data from one point to another.[16] This means that there does not have to be a direct line between one user and another user.[17] Their routing protocol finds a path that weaves, more often than not, through several networks.[18] Even if the two users have the same ISP, their data could pass through several other ISP or other intermediary networks en route.[19] Routers are how this communication remains reliable.[20] Within a router, packets of information come in and are sent out in a first-in-first-out order.[21] When the queue is too large, the last packets in are dropped and must be resent by the originating node.[22] This point in the router is what the discrimination debate is about.[23] Every packet is treated equally but it is not of equal origin or importance.[24] The process of one ISP passing their data over another ISP or other intermediaries' networks is called peering.[25] Peering was developed by traditional telecoms in order to connect phone calls.[26] This was done so that a call could be made from Los Angeles to New York without having to build a direct line by each telecom.[27] They developed a system that basically said: "[if] you connect my phone calls, I'll connect yours".[28]

This system worked well until the advent of broadband. Broadband is the high-speed option for accessing the Internet.[29] To provide fast service, broadband uses multiple connections over a single line whereas dial-up could only create one connection over a line.[30] It comes in several flavors: cable, digital subscriber line (DSL), fiber, wireless, and satellite.[31] Cable broadband uses TV cable lines and networks for the transmission of data and has speeds ranging from 1.5 megabits per second (Mbps) to 100 Mbps.[32] DSL has several subsets, and the most common residential type is asymmetrical DSL (ADSL) which ranges between 500 kilobits per second (Kbps) to 10 Mbps.[33] Fiber uses the new high-speed fiber networks and is by far the fastest broadband option with speeds starting at 100 Mbps and going all the way up to 1000 Mbps.[34] Wireless broadband is the type that is supplied for smartphones, and can also be used for home Internet with speeds comparable to a DSL line.[35] Satellite broadband is accessible anywhere that has a good line of sight but download speeds are approximately 500 Kbps, making satellite a non-option for many of the services that broadband customers are seeking.[36] Non-broadband dialup has a speed of 56 Kbps, which is drastically slower than broadband offerings.[37]

b. Broadband Implications

These high speeds have led to exponential growth in network traffic that has changed how peering works.[38] Companies like Netflix hire intermediaries that provide an onramp to the backbone of the Internet.[39] This backbone is owned and operated by the large ISPs. Netflix paid companies like Level 3 and Cogent.[40] Intermediaries pay for an onramp with a specific speed, and their customers pay them for partial access to that line.[41] During peak usage, intermediary companies either pay the ISPs a higher rate for better access, or degrade and bottleneck the data stream to save money.[42] Netflix requires approximately 3 terabits per second (Tbps) to service their subscribers that use Comcast for broadband access and Level 3 to service customers using AppleTV.[43] Recently there have been Netflix customer complaints about their video not being of high quality during peak hours.[44] All of these customers were accessing Netflix through Comcast.[45] Customers using AppleTV to access Netflix had no video degradation.[46] This led customers to believe that Comcast was degrading Netflix traffic, but this was not the case.[47] During peak hours Cogent was not paying the premium to Comcast, but Level 3 was.[48] After the *Verizon v. FCC* (2014) decision, Comcast and Netflix contracted to cut out their intermediaries for an estimated $12 million per year so that Comcast would directly deliver Netflix's content.[49]

On the consumer side of the debate, an important aspect is the "last mile."[50] The last mile refers to the final and singular connection between a consumer and their ISP.[51] This is the bottleneck when it comes to accessing the Internet for consumers.[52] Outside of major urban areas, there is often only one company controlling the last mile for approximately 28% of consumers.[53] Even in highly populated areas, there could be a duopoly or oligopoly with very little competition, with 37% of consumers only having the choice between two ISPs.[54] If the one or few ISPs that control the last mile interfere with data in the same way, the customer has no way to find a solution to their broadband needs in the marketplace, even though that solution may exist elsewhere.[55]

III. HISTORY OF REGULATION AND LITIGATION

The regulation of broadband ISPs has seen a rocky road since they were first classified as information services in 2002. There have been lawsuits challenging the classification, and more recently, lawsuits challenging the jurisdiction of the FCC due to the classification.

a. The Telecommunications Act and Classifications

To respond to the rapid change in technology, Congress passed the Telecommunications Act of 1996 in order to update the antiquated Communications Act of 1934 (Communications Act). This was done at the advent of the Internet but prior to the proliferation of broadband ISPs. At the time, Internet was delivered by plain old telephone services (POTS) that used traditional phone lines. These POTS had long been classified as "common carriers." A common carrier is defined by the Communications Act as "any person engaged as a common carrier for hire, in interstate or foreign communication by wire or radio or interstate or foreign radio transmission of energy."[56] The Communications Act required incumbent common carriers to provide unbundled access to their network.[57] Unbundled access means that a common carrier must provide access to their network for companies that provide competing Internet or phone services, but could charge a transport fee.[58] This also requires incumbent carriers to not discriminate or slowdown data that passes over their network.[59] This means that upstart companies could use the existing infrastructure of their incumbent competitors for a regulated fee. This creates de facto price

controls that create disincentives for common carriers to invest in their infrastructure. When broadband became a commercial medium for the Internet, the FCC classified these services as "information services" in 2002.[60] The Communications Act defines information services as: "the offering of a capability for generating, acquiring, storing, transforming, processing, retrieving, utilizing, or making available information via telecommunications".[61] Information services have the fewest regulations and do not have the bundling requirement that common carriers have.[62] This was done in order to encourage innovation in broadband rather than burden broadband ISPs with the onerous regulations that come with a common carriage classification.[63]

Brand X, an ISP that used the unbundled infrastructures of POTS, sued in order to gain access to cable networks' broadband infrastructure by having broadband ISPs and their infrastructure treated like common carriers.[64] The Supreme Court ruled that this was a case of *Chevron* deference.[65] Chevron deference refers to the case of *Chevron U.S.A v. Natural Resources Defense Council*, where the court ruled to defer interpretation of statutes to the agency tasked with enforcing them if Congress expressly stated that in the law, or if not expressly stated, if the law gives room for their interpretation.[66] This resulted in the affirmation that broadband ISPs were to be treated like information services instead of common carriers.[67]

b. The First Open Internet Policy

In 2005, the FCC adopted a policy statement with four directives for an Open Internet:

> (1) Consumers are entitled to access the lawful Internet content of their choice;
> (2) Consumers are entitled to run applications and services of their choice, subject to the needs of law enforcement;
> (3) Consumers are entitled to connect their choice of legal devices that do not harm the network; and
> (4) Consumers are entitled to competition among network providers, application and service providers, and content providers … All of these principles are subject to reasonable network management.[68]

The first enforcement of these policies came the same year with the case of Madison River Communications.[69] VoIP is Voice over Internet Protocol, a way to make telephone calls using an Internet connection.[70] Madison River was a DSL ISP that also offered normal telephone services.[71] Madison River customers were purchasing their DSL service and then getting their phone service from VoIP companies like Vonage to save money.[72] Madison River decided to actively interfere with VoIP traffic traveling over its network in order to stifle competition.[73] The FCC stepped in and stopped Madison River from blocking VoIP traffic pursuant to all four sections of their open Internet policy.[74] Madison River could not say this was in the name of reasonable network management because the blocking occurred regardless of network traffic volume, and the desired result was for their DSL customers to purchase Madison River's telephone service.[75]

In 2007 Comcast was caught interfering with the data streams of users using peer-to-peer software.[76] This interference resulted in slowing the download speed for certain types of data passing over a network.[77] The FCC ordered Comcast to stop the practice even though Comcast claimed that this practice was necessary for the proper management of their network.[78] Comcast

complied with the order but challenged in court in 2010 whether the FCC could meet part two of the *Am. Library Ass'n v. FCC* ancillary authority test.[79] Ancillary authority is the ability of an agency to claim jurisdiction when it is not explicitly stated in the law, but the authority is needed to carry out the responsibilities given to them by the law.[80] There is ancillary authority if: "(1) the Commission's general jurisdiction granted under Title I covers the regulated subject and (2) the regulations are reasonably ancillary to the Commission's effective performance of its statutorily mandated responsibilities."[81] Comcast conceded that the FCC does have the jurisdiction over its network, but challenged whether the FCC had a need to regulate Comcast interfering with its users' data.[82] The court agreed with Comcast because "if accepted, [the FCC's argument] would virtually free the Commission from its congressional tether."[83] This tether is the FCC's mandated responsibilities.[84]

c. The Open Internet Order

The FCC then released its "Open Internet Order" after the Comcast decision in 2010 in order to address the issues that the court brought up against the FCC.[85] These rules were an order, unlike the 2005 version, which was just a policy statement meant to guide the FCC.[86] The 2010 rules were: transparency of network practices, no blocking of lawful data, and no unreasonable discrimination of network data, except in the case of reasonable network management.[87] The FCC asserted its power to create and enforce these orders using section 230 of the Communications Act of 1934:

> In Section 230 of the Act, for example, Congress announced "the policy of the United States" concerning the Internet, which includes "promot[ing] the continued development of the Internet" and "encourag[ing] the development of technologies which maximize user control over what information is received by individuals, families, and schools who use the Internet," while also "preserv[ing] the vibrant and competitive free market that presently exists for the Internet and other interactive computer services" and avoiding unnecessary regulation.[88]

These orders and the discussion of the FCC's authority to create them was a direct response to what the court found their shortfalls to be in the *Comcast* case.[89] The FCC was trying to keep net neutrality alive, but had to find a place within the law that establishes direct authority to regulate the networks of broadband ISPs.[90]

Verizon challenged the Open Internet Order in court one month after it was issued, questioning the FCC's authority.[91] In its order, the FCC extensively cites section 230 of the Communications Act.[92] On January 14th, 2014, the Appeals Court of the District of Columbia found that because the FCC derived its authority from this section, it could not enforce the anti-blocking and anti-discrimination rules.[93] Section 230 is a subsection of the rules and regulations for common carriers.[94] As seen in the case of Brand X, broadband providers are not common carriers, they are information services.[95] This strikes down the Open Internet rules dealing with anti-discrimination and anti-blocking, but leaves the transparency rule intact because it just deals with general transparency and competition.[96] The court suggested that the FCC could rewrite the order and use a different legal framework to make the order stand up to scrutiny.[97]

IV. WHY ACTION IS NEEDED

Without action, every stakeholder in the internet except for broadband ISPs stand to unduly suffer. Consumers will see their favorite services drastically increase in price. Internet entrepreneurship will have extremely high barriers to entry, resulting in a stifling of innovation and venture investment. All of this done behind the scenes so that consumers are unaware of the real reason for the increase of cost.

a. Increased Cost to the Consumer

Now that ISPs are free to discriminate data, they are actively doing so at the expense of the consumer.[98] The first target was Netflix with the "peering" agreement they were forced to make with Comcast.[99] This agreement was not made by choice.[100] According to Reed Hastings, the CEO of Netflix, "Some big ISPs are extracting a toll because they can – they effectively control access to millions of consumers and are willing to sacrifice the interests of their own customers to press Netflix and others to pay."[101] Following the *Verizon v. FCC* decision, Netflix released an SEC Form 8-K on January 22nd, 2014.[102] Form 8-K is what is known as a "current report" that companies must use when there are "major events that shareholders should know about."[103] Part of the reason for this report was Verizon's successful challenge of net neutrality rules.[104] At the time of their report in January, Netflix did not believe that it was possible for "this draconian scenario to unfold," but that if it did, they would "vigorously protest and encourage our members to demand the open Internet they are paying their ISP to deliver."[105] Now that the "draconian scenario" has unfolded, Netflix must look to increasing their subscription prices.[106] The increase will be for all Netflix customers, not just those customers who use Comcast, effectively creating a toll for consumers who do not even use Comcast's networks.[107] It is estimated that this toll could result in a 60% price hike for Netflix users, though the fee hikes could take time to prevent an uproar from customers.[108] Though it may not have immediate effect, eventually this will unduly cost consumers.

In the FCC's Strategic Plan for 2014-2018, it is specifically stated that: "Protecting all consumers from marketplace abuses and empowering them to address and resolve any problems they encounter are necessary elements of the FCC's responsibilities."[109] Allowing companies to increase costs for consumers that are not even customers of that company would go against one of the FCC's primary functions: to protect consumers. According to Tim Berners-Lee, the inventor of the World Wide Web:

> Control of information is hugely powerful. In the US, the threat is that companies control what I can access for commercial reasons. (In China, control is by the government for political reasons.) There is a very strong short-term incentive for a company to grab control of TV distribution over the Internet even though it is against the long-term interests of the industry.[110]

This control grab was seen with the attempts by Madison River to fully block their customers' data, or Comcast interfering with peer-to-peer software.[111, 112] Now with the anti-discrimination rules struck down, Madison River would be allowed to block the data of their competitors from passing over their network.[113] This causes an increase of cost for consumers because they are no longer free to choose exactly what services they want to use, unless those services are heavily commercialized, but would still cost more.[114] Tim Berners-Lee also brings up the point that net

neutrality proponents are "NOT asking for the internet for free," or that "one shouldn't pay more money for high quality of service".[115] As a broadband customer, you pay for the speed that you want.[116] If you want to connect to another broadband customer who pays for the same amount of speed, the two parties should be able to communicate at that speed without having to pay extra tolls to ISPs for connections that the consumers are already paying for.[117] Unfortunately the tolls are going to become a reality without net neutrality because, according to Reed Hastings, "ISPs can make these demands – driving up costs and prices for everyone else – because of their market position."[118] Abuse by ISPs of their customers is unacceptable and without reenactment of the Open Internet rules, will only continue.

b. Upstarts and the Stifling of Innovation

Not every company is like Netflix and can provide the exorbitant fees that an ISP would require for reliable content delivery. Startups and innovators of the Internet will be adversely impacted by the fees associated with the proper content delivery that had previously been available.[119] Fred Wilson, a technology venture capitalist whose fund was behind Twitter, Tumblr, and Etsy, says that the new environment will become a "nightmare" for future technology investors and entrepreneurs.[120] This is because ISPs "will pick their preferred partners, subsidize the data costs for those apps, and make it much harder for new entrants to compete with the incumbents," which will reduce competition.[121] On his blog, Fred Wilson envisions future exchanges between an entrepreneur and a venture capitalist not going like they have in the past.[122] In one exchange, an entrepreneur describes a better streaming music service that would incorporate aspects previously unseen in this market that would improve the user experience.[123] Unfortunately for the hypothetical entrepreneur, large incumbent companies like Spotify, Beats, and Apple had already paid for premium access to the major ISPs.[124] Since this would greatly increase the cost of the startup, the venture capitalist decides to pass when they would have otherwise immediately funded them "back in the good old days of the open Internet."[125] As a result of data discrimination, ISPs will "make it much harder for new entrants to compete with the incumbents," stifling innovation.[126]

c. Lack of Information and Lack of Choice

Consumers have overwhelmingly said that they do not want their ISP to discriminate data.[127] According to a survey by Consumer Reports of 800 current broadband customers in February 2014, 71% said that they would switch providers if their ISP was blocking or slowing services like Netflix, Pandora, and Skype.[128] There are two problems with this. The first is that these consumers clearly do not realize that their ISPs are already doing this, as seen in *Comcast v. FCC*.[129] They also may not realize that coming price increases for services like Netflix are due to their ISP charging Netflix a toll. This is why transparency of ISP network management practices is necessary. The second problem is that most consumers have little to no choice when it comes to their service provider.[130] 67% of consumers have access to two broadband ISPs or less.[131] 28% of consumers have only one choice, so even if they found their ISP to be discriminating their data, they would have no choice but to keep their service.[132]

V. WHAT ABOUT THE RIGHTS OF ISPS?

When dealing with government regulation, the rights of all involved parties must be taken into account, and should not trample on one party's rights for the benefit of another's. Ed Whitacre, the former CEO of AT&T put it bluntly when he said, referring to Google, MSN, and Vonage, that:

> How do you think they're going to get customers? Through a broadband pipe. Cable companies have them. We have them. Now what they would like to do is use my pipes free, but I ain't going to let them do that because we have spent this capital and we have to have a return on it. So there's going to have to be some mechanism for these people who use these pipes to pay for the portion they're using. Why should they be allowed to use my pipes?[133]

This is the main argument by ISPs against net neutrality and non-discrimination of data. The logic goes that these companies have made large capital investments to build the infrastructure and should be able to run and manage it as they see fit.[134] The problem with this logic comes from how the Internet itself works. AT&T and ISPs in general are already being paid by their customers, whether they are commercial or just a consumer, for access to the Internet. The Internet encompasses all connected consumers and service providers like the ones that Ed Whitacre was lamenting. It is not that service providers are getting some sort of free ride from their ISPs, it is the ISPs getting a free ride from the service providers. If not for those service providers, consumers would not so readily adopt broadband service from the ISPs because they would have no reason to pay for high speed access.

Another aspect that goes with the companies that have made the infrastructure investment is that they would not make future investments if net neutrality is upheld.[135] This argument is made by the current major ISPs like Comcast, AT&T, and Verizon.[136] The problem with this argument is that there are plenty of companies that are not incumbent providers making significant investments despite there being net neutrality rules in place.[137] After *Verizon v. FCC*, one of those companies, Google, is fighting for the reinstatement of net neutrality.[138] They are making this fight all the while expanding their broadband access from three cities to 34 new markets.[139] Such expansion while still fighting for net neutrality clearly shows that the incumbent ISPs are trying to use scare tactics in order to pad their bottom line.

A former FCC commissioner has suggested that the FCC just reclassify broadband ISPs from information services to common carriers so that there then becomes no question of the FCC's authority, and would then not require congressional action.[140] The problem with this lies in the extra burdens that common carriage creates.[141] Under common carriage, the FCC would then have pricing authority over the broadband ISPs.[142] This would lead to restricting of companies making further investment in the expansion of broadband infrastructure.[143] Without the ability to charge a higher price for new, often expensive, innovations, the companies will not make the required investment.[144] For a long time, DSL providers were forced to adhere to common carriage rules.[145] During this time cable broadband ISPs saw rapid growth while DSL providers floundered.[146] Once the FCC freed DSL providers of common carriage requirements, there was a rapid growth in investment and proliferation of higher speed DSL lines.[147] A balance between the interests of broadband ISPs and the interests of consumers is needed to foster continued growth and innovation.

VI. THE NEED FOR ACTION NOW

Net neutrality is the communication debate of modern times. Until recently, the FCC's Open Internet rules very nearly balanced the interests of broadband ISPs, consumers, and internet companies like Netflix. After these rules were struck down in January, Comcast and Verizon have begun turning their networks into burdensome toll ways. Soon enough consumers will begin feeling the monetary pain of these tolls, and then in the long term everyone will suffer from the stifling of innovation that will result. Before this imbalance can entrench itself, Congress needs to give the FCC just enough authority to enforce the Open Internet rules. Blanket authority or reclassification as common carriers could result in overregulation. This would cause the balance to be thrown off in the direction of underinvestment in broadband infrastructure. Once given the proper authority, the FCC must continue their previous track record of enforcing net neutrality. Reed Hastings says that without net neutrality, "humanity's most important platform for progress" will be lost.[148] Just a few rules, properly enforced, can restore the balance that this delicate system has known for so long.

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