

# **Network Neutrality: Cutting Through the Layers**

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## **INTRODUCTION**

Think of the Internet as electricity. A user plugs a device into an electrical socket, and the device receives power. Electricity is generated regionally at a power plant by converting coal, nuclear, solar, or other source. The electricity travels from these regional hubs over networks via power lines, until a power line connects the user's home to the network. Manufacturers can produce devices that use electricity. The manufacturers know the standard format for electricity, and they know the electric provider will not degrade the quality of service nor block access of individual homes or devices. Electricity is a natural monopoly because the cost of building and maintaining a network presents a large entry barrier for competition. There is little competition for providing electricity to each individual home. Any competition is in the production of electricity between coal, nuclear, solar, wind, and so forth as convertible materials.

The Internet is similar to electricity because it is delivered to individual users via a vast series of networks. A user plugs an Internet enabled device to an Internet supply, and the device connects to the Internet. One of the greatest appliances that consumers plug into the Internet, is the World Wide Web, networks of hyperlinks connecting users whose Web-enabled devices speak a common language to communicate and link to each other. The Internet's many uses are due largely to the open nature of its structure. The same way producers rely on electricity to operate uniformly for all consumers, Internet content and application providers have developed a similar reliance of uniform operation. Furthermore, the Internet has many characteristics of a natural monopoly because of the high cost of building and maintaining Internet networks. There is little competition for providing broadband Internet access to individual users, while there is some competition at the source like cable, DSL, satellite, or Wi-Fi for providing access to individual users.

The Internet has fundamentally changed economic and social life in a few short years. What began as a tool for academics to share text electronically has transformed into a more efficient way of life. The Internet functions as public forum because it is an electronic version of a sidewalk, park, or street corner. Such forums have been historically preserved as a platform for free speech limiting the government's ability to censor or restrict speech.

Network Neutrality proponents believe the Internet's development is because of the physical design itself, an open and neutral series of layered networks. However, the same physical design of the networks has created a market with very high entry costs and very high maintenance costs. Phone and Cable telecommunication companies currently dominate this market because their existing networks allow IP data to travel at fast and reliable speeds. Specifically, these telecommunication companies control the "last mile,"

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<sup>1</sup> This paper is not for W1 credit.

Internet access to each individual customer. Network Neutrality proponents fear that this duopoly will use its market power to harm consumer welfare by managing the networks in anticompetitive ways such as blocking and degrading the quality of service. Network Neutrality proponents also fear that this duopoly will harm social welfare by censoring and restraining access to Internet content and applications. Therefore, this paper proposes that legislation is needed to stimulate competition in the last mile Internet service while furthering the principles set forth in the Four Internet Freedoms.

Because of these dual concerns, the Network Neutrality debate has taken two distinct approaches, Antitrust-economic approach and the First Amendment-social approach. However, most analysis attempts to use each approach in isolation rather than in conjunction. This paper identifies and applies aspects of both approaches to find a solution to increase competition at the last mile. Legal rights are often layered similar to the physical design of the Internet. Legislation needs several layers of cooperating legislation to accomplish goals while balancing rights. Adopting the Four Internet Freedoms as the “Right to Connect” to protect and promote Network Neutrality is the proper approach to improving consumers’ social and economic welfare.

The first section of this paper will explain the current physical structure of the Internet and the current Network Neutrality debate. Beginning with the fundamental structure of the Internet is necessary to show the strength ISPs have by controlling both the last mile and backbone access points. Understanding how Internet sessions operate, demonstrate how ISPs have the ability to influence the entire network or individual users experiences. The Internet is comprised of three basic layered networks, backbone, access, and edge networks. ISPs control both backbone networks, networks with physical connections to the Internet, and access networks, networks that provide Internet access to individual users. Routers are placed throughout the network to direct packets of data. ISPs also control the routers on the network.

Network Neutrality concerns begin with the natural monopoly of broadband Internet access held by Cable and DSL, and the subsequent lack of competition at the last mile of service. From this common source springs two problems, economic and social harms. Proponents of Network Neutrality are concerned with protecting two intertwined rights, third parties and users right to access any legal content or applications, and protecting the First Amendment rights of all Internet users. The first right protects the economic welfare of users and producers by preventing unreasonable constraints upon innovation. The First Amendment protects the social welfare users have come to expect and rely upon from Internet access. In 2004, then chairman of the FCC, Michael Powell, recommended the Four Internet Freedoms, to encourage the migration from slower Internet connections like dial-up towards faster Internet connections, specifically broadband.<sup>2</sup> Network Neutrality proponents have incorporated these freedoms by advocating for users to have the right to access any legal content or application, the right to attach any legal device to their home network, and the right to receive quality information

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<sup>2</sup> Powell, M. (2004, Feb 8). *hraunfoss*. Retrieved Feb. 27, 2009, from hraunfoss: [http://hraunfoss.fcc.gov/edocs\\_public/attachmach/DOC-243556A1.pdf](http://hraunfoss.fcc.gov/edocs_public/attachmach/DOC-243556A1.pdf).

about the Internet services. These freedoms combine to protect users' economic and social welfare in what I call the Right to Connect.

The next section describes the internal conflict of interests facing ISPs, and how they have used anticompetitive behavior in response to this conflict. Essentially, ISPs argue that to maintain the integrity of the entire network, ISPs need to restrict certain applications and/or content through network management practices. This is a valid reason for some problems that cause network congestion, but some network management practices have become unreasonable by encroaching further and further upon users' right to connect and First Amendment rights. Two examples of unreasonable network management practices shows that affirmative action is required addressing the internal conflict of interest. Blocking, the denial of access, was done by a relatively small ISP provider because it disfavored VoIP technology. Degrading Quality of Service ("QoS"), reducing or altering data sent or received by a particular user, was done by one of the largest players, Comcast, because they disfavored peer-to-peer technology. These examples provide the evidence that an internal conflict of interests exists and needs to be addressed.

The next section details the social value of the Internet as a Public forum. Examples of ISPs restricting speech are not as obvious or egregious as violations of the anticompetitive behavior were, however, the potential for such violations are ever present. The same network management argument can be used by ISPs to block or degrade access to content or the market place of ideas with little oversight.

The last section offers a solution for resolving the problems caused by the natural monopoly. Mandated opening of the pipelines to competition is not the magic bullet, but it can bring new competition to the last mile and promote disclosure of network management practices as selling points for various ISPs.

## **BACKGROUND**

### **A. Physical Structure: The Open Design**

Like the Human body, the Internet is a series of interconnected networks layered on top of each other to produce a functioning user experience. "The Internet is an international network of computers and computer networks connected to each other through routers using the IP protocol and sharing a common name and address space."<sup>3</sup> This basic structure allows for producers to develop applications and content in IP protocol, so all routers can understand the data and process it accordingly. The Internet is not a "centrally managed network, but an interconnected set of many thousands of constituent networks."<sup>4</sup> There are three basic categories of networks that create the

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<sup>3</sup> Perritt, H. H., p 6, (2001). *Law and the Information Superhighway* (Second Edition ed.). Gaithersburg, New York: Aspen Law & Business.

<sup>4</sup> Nuechterlein, J. E. (2009). *Antitrust Oversight of an Antitrust Dispute: An Institutional Perspective on the Net Neutrality Debate*. *Journal on Telecommunications & High Technology Law* , 7, 23.

Internet; (1) Backbone networks, (2) Access Networks, and (3) Edge Networks.<sup>5</sup> These networks combine to provide users and producers with Internet access.

Using the Human body metaphor, the Internet is the brain, backbone networks are the nervous system, and edge networks are body parts. Each network needs to cooperate for a task to be completed. The Internet as described above, is a series of connected networks cooperating to complete tasks. Backbone networks are the nervous system because they relay information from one part of the network to the Internet and back. Backbone networks use long-distance fiber optic cable to connect other geographically dispersed networks, including Internet Access Providers.<sup>6</sup> The backbone network is directly connected to the Internet via a physical connection the same way a human's nervous system is connected to the brain. For example, AT&T, Verizon, and Comcast have backbone networks where they place their switches and routers to control which access networks and users may access the Internet through their private backbone networks.

Access networks are the muscular system because they transfer data from the nervous system, backbone networks, to body parts, users on the edge networks. Access networks provide the "last mile" gap between the end-user, a consumer or Internet user, and the Internet backbone networks.<sup>7</sup> The "last mile" describes the difficulties of providing broadband speed Internet from access networks to individual users whether the difficulty is because of the distance the user is from the backbone network or because of the high cost of supplying an area hinders build-out. This phrase reflects the "producer bias" rampant in scholarship regarding this area because this connection point is the last mile for ISPs, but is the first mile for users. Users' rights must be recognized the same way producers' rights are recognized. The "last mile" refers to the process of connecting an individual terminal to the backbone network. The "last mile" gap was originally filled by dial-up connection, and is now more commonly filled with either high-speed broadband "Broadband" or Digital Subscription Line "DSL". Thus, the last mile gap is a duopoly.

Edge networks are your body parts because they are what end-users see and manipulate. If a user mistypes a word the first thing he checks is her hands, similarly when a user's Internet connection goes down the first thing she checks is the edge network. Edge networks are generally divided into two categories end-user networks such as home Wi-Fi networks or local area networks "LANs", such as Drexel's dragonfly network.<sup>8</sup> The second type of edge networks is a network operated by Internet-related services like Google or eBay.<sup>9</sup>

By controlling the backbone and access networks, ISPs most users Internet experience. Companies engaging in E-Commerce are subject to the same services as individual households, hospitals, and institutions. The Network Neutrality debate is

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<sup>5</sup> Id. at 23

<sup>6</sup> Id.

<sup>7</sup> Id.

<sup>8</sup> Nuechterlein, J. E., surpa note 4 at 23.

<sup>9</sup> Problems associated with edge networks operated by Internet-related services will not be addressed in this paper.

important because how the network is managed affects competition among third party applications and content, user generated content, and every other piece of data that travels across a ISPs given network.

## **B. How the Internet Works**

Returning to the human body analogy of many layered networks combining to perform tasks for the brain is helpful to show the vulnerability of the interdependence of the physical design of the Internet. For example, typing requires that your eyes view the keyboard to collect and process information. This information is converted into data and sent to the brain via the nervous system. Next, the brain processes this information and sends data to the muscular system to tell the fingers where to go, how hard to press, and in what order the keys should be pressed. Similarly several layered networks are required to allow end-users access to the Internet, and controlling the nervous and muscular systems limits what the body parts can do.

Backbone, access, and edge networks work together to connect computers to the Internet. When networked computers communicate with each other they do so through packets or frames- standard size bundles of information into which larger files and messages are carved (packetized).<sup>10</sup> A network must have a system for carving information into packets at the sending end (packetizing) and reassembling the packets into messages and files at the receiving end (depaketizing).<sup>11</sup> There are a variety of systems or protocols for doing this. Two of the most significant are the TCP/IP protocol, which is used in the Internet, and the IPX protocol, which is used in Novell local area networks.<sup>12</sup> Switches are computers that establish connections between computers that wish to communicate with each other or that direct packets through paths in the network appropriate for them to reach their destinations.<sup>13</sup> Routers are a type of switch specializing in the routing of packets.<sup>14</sup>

The Internet is an open source network on which applications like the World Wide Web and Instant Messaging, and content like Websites, emails, and blogs are made available to any user with a connection. An Internet session begins when a user connects to the Internet and accesses a website, for example [www.facebook.com](http://www.facebook.com). The user will type in Facebook's URL to locate the website. Facebook, a third party content provider, sends packets of data from its server over the Internet to communicate with the user's computer. The content is sent over Internet Service Provider, "ISP" network to a backbone network and then through another ISPs network to the user. Each packet is transmitted from router to router until it reaches the user's computer.<sup>15</sup> If several users are sending and receiving packets, a router can become busy and packets may be delayed before the router can send

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<sup>10</sup> Perritt, H. H., supra note 3, at 5.

<sup>11</sup> Id.

<sup>12</sup> Id.

<sup>13</sup> Id. at 6.

<sup>14</sup> Id.

<sup>15</sup> Rupert, B. (2008, Spring). The 110th Congress and Network Neutrality: S. 215--The Internet Freedom Preservation Act. *DePaul Journal of Art, Technology & Intellectual Property Law* , 325-364, 327.

the data. This waiting time is called the latency period. Eventually a router's memory can become full. If a packet arrives at a full router, "then the router must drop either packets already stored in the memory or those just arriving."<sup>16</sup> Like post officers who read shipping labels, routers do not look to the content, sender, or receiver of data beyond what is needed to route the data. The Internet is designed to function on neutral networks that do not discriminate between packets.

Routers historically operate on a first-in-first-out "FIFO" principle meaning packets are sent in the order in which they are received. Delivery attempts of packets were on a "best efforts" approach because the potential of having packets dropped always exists.<sup>17</sup> There is little data directed to the chance that a user's data will be dropped, however from the continued success and growth of the Internet one can assume that the chance of drops are small. Routers can be programmed to discriminate against certain types of packets, content, or applications. Therefore, controlling which packets pass through and which get dropped can be profitable and discriminatory.

ISPs want to profit from when a packet gets delayed, dropped, or continued to its destination computer. By programming routers to read beyond the shipping label, ISPs can tell the router which packets to prioritize by sending along and which to delay or drop. Sometimes this is necessary and beneficial to all users; for example routers often discriminate against non-lag sensitive packets like emails in favor of lag sensitive packets like streaming movies, gaming, or Voice over Internet Protocol "VoIP". "Quality of Service (QoS) is the technical term that describes the quality of communication an Internet application receives from the ISP."<sup>18</sup> To guarantee QoS, ISPs are increasing bandwidth, assigning packets a higher priority, and reserving a dedicated line.<sup>19</sup> "Bandwidth controls the amount of information that can flow through the pipes at any given time."<sup>20</sup> Opponents of Network Neutrality believe that ISPs should be allowed to compete by selling higher QoS at a higher price without increasing the overall bandwidth of the network.

This promise of higher QoS has led many ISPs to adopt network management practices against the principles of Network Neutrality. Both sides of the Network Neutrality debate agree that the Internet is shifting from being text-based towards image-based with video-based lurking in the near future. Opponents of Network Neutrality believe network management practices are necessary because innovation will always outpace Internet speed making congestion and unreliability a constant problem. Contrastingly, proponents of Network Neutrality believe that without legislation protecting social and economic welfare of users, ISPs will discriminate against content and applications they compete against under the guise of network management.

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<sup>16</sup> Id. at 328.

<sup>17</sup> Wu, T. (2003, Fall). Network Neutrality, Broadband Discrimination. *Journal on Telecommunications & High Technology Law*, 141-175.

<sup>18</sup> Rupert, surpa note 15, at 332

<sup>19</sup> Id.

<sup>20</sup> Id. at 328

## NETWORK NEUTRALITY DEBATE

The Network Neutrality debate is focused on solving the problem of congestion. ISPs would like to resolve congestion by using reasonable network management to discriminate against certain kinds of packets. By charging higher fees for higher QoS, ISPs believe they will generate the capital needed to expand their networks. Proponents of Network Neutrality believe the solution to congestion is greater competition along the last mile. Allowing ISPs to discriminate provides the temptation and opportunity to do so unreasonably. Competition will force ISPs to offer better QoS and lower prices under traditional free market principles. Furthermore, ISPs have demonstrated bad faith by violating the Four Internet Freedoms in previous network management practices like blocking and degrading QoS. Violations of the Four Internet Freedoms have resulted in fines, however as technology improves, ISPs unreasonable network management practices are becoming more difficult to detect and remedy. Since ISPs have violated the Four Internet Freedoms in the past, legislation is needed to prevent future violations. Violations of the right to connect violates the First Amendment guarantee of free speech and public forum, as will be discussed later.

### A. The Four Internet Freedoms: the Right to Connect

In 2004 Michael Powell, then Chairman of the FCC, proposed Four Internet Freedoms to promote the migration of consumers toward broadband Internet access.<sup>21</sup> This proposal accompanied Congressional findings to the benefits of broadband Internet services to support broadband's adoption and deployment nationwide.<sup>22</sup> First, consumers should have access to their choice of legal content.<sup>23</sup> Second, consumers should be able to run applications of their choice.<sup>24</sup> Third, consumers should be permitted to attach any device they choose to the connection in their homes.<sup>25</sup> Fourth, consumer should receive meaningful information regarding their service plans.<sup>26</sup> The FCC in a non-binding policy statement adopted these freedoms.<sup>27</sup> Combined the four freedoms create a consumer expectation of freedom to connect to whatever applications and whatever content they choose. The accompanying responsibility to this right is for ISPs not to discriminate against applications or content by tampering with network management to their competitive advantage. This right to connect and the accompanying responsibility needs to be recognized in binging legislation.

The right to connect incorporates both consumer social and economic welfare, thus Network Neutrality proponents support the right to connect. Economic welfare is protected by the freedoms to connect devices to your home network, and the right to

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<sup>21</sup> Powell, M. surpa note 2, at 8.

<sup>22</sup> 47 U.S.C.A. § 1301, 1302, 1304.

<sup>23</sup> Powell, M. surpa note 2 at 8.

<sup>24</sup> Id.

<sup>25</sup> Id.

<sup>26</sup> Id.

<sup>27</sup> Appropriate Framework for Broadband Access to the Internet over Wireline Facilities, Policy Statement, 20 FCC Rcd. 14,986, p 4-5.

competition among network providers, applications, and service providers. Social welfare is protected by the freedoms to access content, run applications, and use services of their choice. Only legislation can preserve the right to connect that has allowed for innovation and competition on the Internet to thrive.

## **B. Network Management Practices**

Network Neutrality has two tenets: a ban on blocking consumer's access to content or applications "anti-blocking", and regulation of contracts between ISPs and content or application providers.<sup>28</sup> The right to connect is incorporated in these tenets because the tenets address consumer social and economic welfare. Network Neutrality is the freedom for a user to connect to any legal content and run any legal application. From this basic assumption, E-commerce can thrive on the producer's certainty that its data, goods and services will be treated equally. This is distinct from the position that all content and applications should be charged the same amount. Network Neutrality is not promoting a free Internet; rather it promotes an equal one. "A communications network like the Internet can be seen as a platform for a competition among application developers. Email, the web, and streaming applications are in a battle for the attention of end-users."<sup>29</sup> Therefore a neutral network is vital to E-commerce because it prevents anti-competitive behavior like blocking or degrading QoS, which is detrimental to consumer's economic welfare by offering access to the platform of competition.

ISPs can use their dominant market power to adversely affect users and producers access speed and QoS by using unreasonable network management practices. "In most of the country, one or two providers dominate the market and therefore enjoy substantive market power over price and quality of service."<sup>30</sup> For example, Verizon could degrade or block the QoS for third party VoIP applications attempting to use Verizon's network while promoting the quality of their own VoIP service. End-users will use these applications, not have a pleasant experience, blame the third party provider for the poor service, and either switch to Verizon's VoIP service or not adopt the new technology. Similarly, Quest Communications could favor a particular politician and block or degrade the QoS for all the opposing party's websites, emails, and other content. An ISP can easily violate a user's First Amendment rights while pursuing economic goals. Network Neutrality proponents recognize this overlap, and are concerned that the current duopoly composition of Broadband Internet access will allow for ISPs to continue to pursue higher profits to the detriment of consumers' economic and social welfare.

The current landscape of Broadband Internet access is a duopoly. "Today, cable and DSL providers control almost 98 percent of the residential and small-business broadband market."<sup>31</sup> In fact the market concentration of this duopoly has increased from 94.5

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<sup>28</sup> The regulation of contracts between ISPs and content or application providers is not the focus of this paper.

<sup>29</sup> Wu, T. *supra* note 17, at 153.

<sup>30</sup> Herman, B. D. (2006). Opening the Bottlenecks: On Behalf of Mandated Network Neutrality. *Federal Communications Law Journal*, 104-155, 125.

<sup>31</sup> Herman, *supra* note 30, at 126.

percent in 1999 to 97.5 percent in 2004 as more Americans adopt the better performance of Broadband speed Internet.<sup>32</sup> The duopoly is furthered by the natural monopoly characteristics of Broadband Internet. Like water, electricity, and sewage pipes, building duplicative piping for Broadband Internet access would “cost an enormous amount of money, significantly outweighing any consumer benefits from more competition.”<sup>33</sup> This high cost to both the producer and society is why most homes only have one water, electricity, and sewage pipelines. A natural monopoly or duopoly eliminates competition at the last mile. Therefore, the duopoly of broadband Internet access will always have little to no competition at the last mile. Legislation in favor of Network Neutrality needs to address this broadband duopoly by opening access of existing pipelines while limiting the network management practices of current ISPs.

Consumers’ First Amendment rights are also in danger of being violated by ISPs unreasonable network management practices. Currently routers do not look to the content, application, or service of the data they transfer. ISPs believe this nondiscrimination combined with the Internet’s shift from being text-based to image-based causes inefficient networks and bottlenecks. Network Neutrality proponents believe that competition at the last mile will force ISPs to become more efficient and transparent or risk losing customers. Moreover, Network Neutrality proponents would like to preserve free speech and public forum that the Internet’s unique structure can provide. The Internet is a marketplace of ideas for education, politics, economics, art, health, and every other conceivable viewpoint and content. The same network management practices that threaten the economic viability of the Internet pose an even greater danger to the marketplace of ideas the Internet provides. The Internet was invented for scientist to share research, and has remained committed to the goal of connecting people and ideas. Network Neutrality preserves this goal of free speech because the network is designed to move data not read and discriminate between data based on economic incentive.

## **ARGUMENT**

### **A. The Economics of the Internal Conflict of Interest for ISPs**

Network Neutrality legislation is needed to balance the conflicting interests ISPs face as both suppliers of a dynamic platform and as producers of applications and content that operate on this platform. ISPs are currently experimenting with network management techniques to take competitive advantage of Internet access points and routers, which will make E-Commerce anticompetitive. ISPs are programming routers to adversely affect competing producers by denying uniform QoS, and by denying users freedom to connect. Blocking and degrading quality are especially disturbing practices that highlight the need for legislation. The broadband market duopoly combined with significant conflict of interest presents a grim future for Internet users, unless Network Neutrality legislation is passed.

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<sup>32</sup> Id. at 129.

<sup>33</sup> Atkinson, R. D. (2009). The Digital Broadband Migration: Information Policy for the Next Administration. *Journal on Telecommunications & High Technology Law* (Winter), 1-18.

Blocking occurs when ISPs degrade or prevent its users from accessing specific Internet content or applications. Blocking is the most basic form of a non-neutral network because it allows ISPs the ability to restrict how consumers use the Internet. Blocking often occurs when an ISP is attempting to preserve or gain a competitive advantage as a market supplier. For example, if a new technology emerged that allowed users to stream cable channels for a nominal fee, cable companies would be threatened. When the cable company is also an ISP this creates an internal conflict of interest. They generate money from consumers of cable channels, and from consumers of broadband Internet access. But the cable company does not profit from third party Internet content or applications, so users that consume the new technology represents a decrease in profits for the cable company and a drain on its Internet network performance. To regain these profits, the cable company has four options: (1) to ban the technology based in Intellectual Property law, (2) to block access to the content and application for its customers, (3) to duplicate the service to attract customers, or (4) to charge a higher Internet fee for consumers of the new technology. A combination of all four options is likely, but the cheapest option is blocking and therefore has the greatest potential for abuse. This internal conflict can easily be masqueraded as network management, however one cannot overlook the influence this conflict generates.

The most famous blocking was not done by an industry giant like Comcast; rather it was by Madison River Communications, which had 238,675 connections in service in 2006.<sup>34</sup> Madison River was blocking their consumers' connections to VoIP services to preserve their long distance telephone service.<sup>35</sup> The matter was quickly settled, and Madison River paid a small fine agreeing to stop blocking third party VoIP applications.<sup>36</sup> However, this case is illustrative of the internal conflicts of interest facing today's ISPs. Madison River had a conflict between adopting a new technology to offer its own version of VoIP to compete with third parties, or to block users access to competing companies connecting with users on its network. Madison River choose to block access. Critics of Network Neutrality cite this case as evidence that no regulation is needed because the practice was stopped; however they fail to address the ever-present conflict of interest. This blatant form of prior restraint and censorship was quickly found and disposed of, but the conflict of interest was never resolved. The case did not mention that Madison River was the only provider of both telephone and Internet services, nor how this internal conflict of interest led to unreasonable network management practices.

Now blocking is done much more ingeniously as a form of network management called "delaying". The current Internet configuration as described above creates bottlenecks of packets at routers, and delays are expected and random. Programming routers to discriminate between packets can exacerbate or reduce delays. For example, user A can send an email, while user B is streaming a movie. A router can delay some of the packets of email data in favor of packets of streaming video data. User A, the emailer, does

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<sup>34</sup> [www.madisonriver.net/about\\_us/who\\_we\\_are.php](http://www.madisonriver.net/about_us/who_we_are.php)

<sup>35</sup> Nuechterlein, surpa note 4, at 27.

<sup>36</sup> Id.

not notice the delay in the email they receive, while the quality of the video is not lessened by excessive delays. This is positive network management and society may benefit from this example of reasonable network management. ISPs now want to charge a higher fee in exchange for lessening delay times by manipulating this reasonable network practice.

The difference between delaying and blocking is semantics. In 2008, Comcast was fined and reprimanded for a practice of degrading peer-to-peer communications.<sup>37</sup> Comcast was fined for routing packets based on their contents rather than their destination. Comcast disfavored peer-to-peer transmissions, so it monitored its customers' TCP connections to find how many disfavored uploads each customer was responsible for.<sup>38</sup> If Comcast, based on internal policies and practices, determined there were too many peer-to-peer uploads for a given geographic region, then Comcast would terminate some connections by sending reset packets to each user.<sup>39</sup> Users experienced extraordinary delays in the transmission of all content sent via peer-to-peer technology.

This practice prevented users from exchanging ideas and content because their ISP disfavored the technology they used. "In laymen's terms, Comcast opens its customers' mail because it wants to deliver mail not based on the address or type of stamp on the envelope but on the type of letter contained therein."<sup>40</sup> This action violates FCC policy of "promoting the continued development of the Internet" because that interference: (1) impedes consumers from "running applications of their choice," (2) limits consumers' ability to "access the lawful Internet content of their choice," and (3) discourages the "development of technologies" such as peer-to-peer technology.<sup>41</sup>

In addition to discriminating against peer-to-peer connections, Comcast compounded its malfeasance by withholding its "network management" practices from customers. A free market requires information about a supplier's prices and services. Consumers need to know that Comcast discriminates against peer-to-peer technology to make an informed decision about which ISP to choose. The FCC found "Comcast's practice selectively blocks and impedes the use of particular applications, and [the FCC] believe[s] that such disparate treatment poses significant risks of anticompetitive abuse."<sup>42</sup> The FCC also defined a reasonable network management test as the "practice should further a critically important interest and be narrowly or carefully tailored to serve that interest."<sup>43</sup> Although this test is not binding, it does illustrate the need for regulation for Network Neutrality and the prevention of unreasonable network management practices.

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<sup>37</sup> In the matters of formal complaint of Free Press, 2008 WL 3862114 (FCC Aug. 1, 2008).

<sup>38</sup> *Id.* at 13

<sup>39</sup> *Id.*

<sup>40</sup> *Id.* at 15.

<sup>41</sup> *Id.* at 16.

<sup>42</sup> *Id.* at 18.

<sup>43</sup> *Id.*

## B. The Public Forum

Network Neutrality should be legislated incorporating the principles of the First Amendment to protect the social welfare of Internet users. The same unreasonable network management practices that hinder competition poses an even greater harm of violating the First Amendment rights of Internet users. The First Amendment guarantees the right to the freedom of speech; included in this freedom of speech is access to public forums from which to speak. The Internet, although privately owned, has become a public forum for speech. The government has less authority to limit free speech in places that have traditionally been used as a place for free speech. The Public Forum doctrine has historically been limited, however, the doctrine should be extended to the Internet. The government has the least ability to restrict speech in traditional public forums like parks, sidewalks, and streets because “in places which by long tradition or by government fiat have been devoted to assembly and debate, the rights of the state to limit expressive activity are sharply circumscribed.”<sup>44</sup> Private property can become a public forum from which the marketplace of ideas thrives the more the owner opens the property for public use.<sup>45</sup>

The Internet is a traditional public forum. There are three basic types of public forums traditional, voluntarily open, and non-traditional.<sup>46</sup> Traditional public forums such as streets and parks are held in the public trust and used for the purposes of expressive activity with a principal purpose of promoting the free exchange of ideas.<sup>47</sup> Since its inception, the Internet’s principal purpose is the promotion of the free exchange of ideas in the form of emails, e-bulletin boards, blogs, and other forms of expression. This interest is the key to the Network Neutrality debate because ISPs have the technology and motive to prevent, control and monitor the free exchange of ideas.

Any individual, group, organization, or company can create a webpage, post blogs, use social networks, or an array of other Internet applications to inform a wide array of people about issues that concern them. The Internet allows users to circumvent traditional barriers to mass media communications like the cost of owning newspapers, radio stations, or television stations. ISPs should not have the discretion of which voices are heard because ISPs own the traditional barriers, and have the power to replace these traditional costs with new costs restricting access. The public forum doctrine promotes three important goals. First, it ensures that speakers can have access to a wide array of people to press the concerns that other citizens may forget.<sup>48</sup> Second, it allows speakers to have access to specific people and specific institutions with whom they have a complaint.<sup>49</sup>

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<sup>44</sup> Perry Educators’ Association v Perry Local Educators’ Association, 460 U.S. 37 (1983).

<sup>45</sup> Marsh v Alabama, 326 U.S. 501 (1946) (A Jehovah’s Witness was arrested for leafleting on the sidewalks. Her arrest was overturned by the Supreme Court which held, “the more an owner, for his advantage, opens up his property for use by the public in general, the more do his rights become circumscribed by the statutory and constitutional rights of those who use it.”)

<sup>46</sup> Stone, S. S., *The First Amendment*, 316, Austin: Aspen Publishers Third edition ed. 2008.

<sup>47</sup> *Id.* at 301.

<sup>48</sup> Stone, S. S., *surpa* note 46, at 301.

<sup>49</sup> *Id.*

Third, it increases the likelihood that people generally will be exposed to a wide variety of people and views.<sup>50</sup> The Internet embodies these same goals. For example the Internet application the World Wide Web, gives users connectivity and access to a wide array of people far greater than any street, park, or sidewalk. A user can input the proper URL or conduct a web search using other websites to locate content, upload or download content, or store content about issues concerning them. Websites also have the ability to filter content to control the avalanche of information contained on the Internet.<sup>51</sup> This is in accordance with the first goal of the First amendment.

As commercial industries adapt to an Internet based economy, they avail themselves more on the Internet, which promotes the second goal of the Public Forum doctrine access to specific people and institutions. Companies dedicate web pages to allow consumers to post questions, reviews, complaints, or comments. In fact, the Internet has allowed for consumers with similar problems to communicate and troubleshoot together. This also promotes the third goal of public forum exposing people to a wide variety of views. The Internet currently allows for individuals to research various views for a relatively low cost and high convince. Thus the Internet supports important goals of the First Amendment, and provides a better forum for the expression of ideas.

ISPs can prevent all the benefits and functions of the Internet by discriminating at access points along the last mile. ISPs have the technology to violate this important First Amendment right using the same unreasonable network management practices of blocking and degrading. Although there is no specific example of this kind of discrimination, there is an excuse for such discrimination, network management. For example, an ISP can disagree with a particular website's content and decide to disrupt any attempted connection to the site by slowing the connection speed at a router. The ISP can make a similar argument to Comcast's argument that during peak Internet usage, this particular site is overcrowded and slowing the network, therefore the ISP degrades the QoS of that site in favor of QoS for the rest of the network.

The legality of denying the First Amendment right would be left to a finder of fact applying the Comcast reasonable network management test; if the "practice further[s] a critically important interest and [is] narrowly or carefully tailored to serve that interest."<sup>52</sup> Madison River provides an example of the direct prevention of idea exchange. Madison River disfavored third party VoIP, so it denied access to VoIP technology, which prevented the free exchange of ideas of customers communicating via long distance phone calls using third party VoIP service. Comcast disfavored peer-to-peer technology, so it prevented the exchange of ideas among any peer-to-peer communications. Although content has not been directly targeted like emerging technologies have been, ISPs have demonstrated the ability to adversely affect applications they disfavored.

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<sup>50</sup> Id.

<sup>51</sup> For example, [www.current.com](http://www.current.com) allows users to repost interesting articles from various websites, which are organized by type and ranked by popularity.

<sup>52</sup> In the Matters of Comcast, supra, note 37, at 18.

Network Neutrality is critical to the continued First Amendment rights and goals expressed on the Internet. ISPs blocking access to content and applications have an adverse effect on both innovation and demand. Maintaining equal access to the Internet by both users and content providers is vital to the Internet's survival as new technologies and content transforms the way the Internet is used. More is needed than ISPs promise to not engage in discriminatory, arbitrary, and anticompetitive ways.

Internet users have come to expect the freedom to choose between applications and content and that their choice will be treated equally. Network Neutrality supports the concept that any form of network management needs to be narrowly tailored to addressing a specific issue of performance. The threat of Network congestion is not sufficient to allow for unreasonable denial of the right to connect, nor censorship of content and applications that violate First Amendment rights. ISPs have an internal conflict of interest in how to participate in E-Commerce. They can participate as wholesale providers of the Internet, a neutral platform with tiered pricing, to allow for all applications to run at optimal levels. Additionally, ISPs can participate as application and content producers, and must be prevented from favoring their own network, applications, and content to the disadvantage of competition. Therefore, Federal legislation guaranteeing Network Neutrality is needed to ensure the continued success of the Internet.

## SOLUTION

Economic and social problems spring from the same source, a lack of competition at the last mile, therefore, a solution needs to generate competition at the last mile. Regulating the existing duopoly is not a proper solution because users would be left with regulated monopoly prices. Since broadband Internet is a natural monopoly, building more broadband pipelines is unlikely. Rather the current pipelines need to be opened to competition, or limits need to be placed on how many networks a given ISP can control. "Broadband policy would be better served if such efforts were directed towards identifying and increasing the competitiveness of the last mile, which remains the industry segment that is the most concentrated and protected by barriers."<sup>53</sup> Mandating ISPs to open the existing pipelines is best short-term option. Allowing competition to lease pipe space and install its own maintenance equipment can reduce the cost to enter the market and increase user choice. Opening the existing pipelines is not sufficient to protect the social welfare of users. Therefore, Congress or the FCC needs to adopt or codify the right to connect.

There are many models for opening broadband pipelines. The most common form is an incumbent leasing pipeline to competition.<sup>54</sup> The United Kingdom has a virtual separation model, in which the incumbent Telecom was required to separate retail and wholesales division.<sup>55</sup> "The wholesale division manages the pipes, and the retail division sells broadband and other services in competition with many other broadband service

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<sup>53</sup> Yoo, C. S. (2005). Beyond Network Neutrality. *Harvard Journal of Law and Technology* (Fall), 1-76, 18.

<sup>54</sup> Atkinson, supra note 33, at 15.

<sup>55</sup> Id.

providers.”<sup>56</sup> This approach to opening the pipelines should be adopted in the United States because it addresses ISPs internal conflict of interests. Under this approach, network management practices have less incentive to discriminate against individual users or applications. Removing network management from ISPs is vital to the preservation of Network Neutrality. This approach may discourage large investments in building or improving networks; however, competition at the last mile will encourage new forms of technology including new forms of Internet access. Furthermore, the resale of pipeline is a limited resource with high demand, so it is likely that the resale will be a valuable endeavor.

The right to connect and First Amendment rights are also furthered by this separation approach. Violations of the right to connect also violate First amendment rights when the network management practices target content. Thus, the separation of wholesale broadband Internet access from retail user sales will reduce the fear that ISPs can censor content on the Internet or otherwise block access to the Internet as a public forum. Anti-child pornography laws are examples of how government mandated reasonable network practices could benefit society. However, the decision to censor content should not be left to the discretion of ISPs. Only an open, neutral, separated network can provide the continued guarantee of the right to connect, and the access to the Internet as a public forum.

### **Conclusion**

The broadband Internet market is a duopoly at the last mile access points. As a result, ISPs have a disproportional amount of power and influence in controlling users’ right to connect. Network Neutrality legislation is needed to separate ISPs as wholesale broadband Internet providers from ISPs as last mile Internet providers, to increase competition along the last mile. This will benefit users because increased competition will protect users from unreasonable network management practices like blocking and degrading QoS, while keeping the price of QoS and bandwidth low.

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<sup>56</sup> Id.