NETWORK NEUTRALITY 101

Why The Government Must Act To Preserve The Free And Open Internet

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INTRODUCTION

The Internet has become deeply ingrained in the lives of most Americans. It looms so large, in fact, it is easy to imagine that it is immune to change—that it will always remain the free and open medium that it is now. But there are no such guarantees. The Internet is a human institution, operated by real individuals and companies, and like most human institutions it is not static and unchanging. In fact, the history of the Internet as a mass public communications medium has been marked by two stages—and ongoing changes to the underlying architecture of the Internet, combined with a recent landmark court decision, may now be bringing us into a third stage.

In the first two stages, the freedom and openness of the Internet was protected by rules of "network neutrality." In the first stage, the era of dial-up access, those rules were written into the laws that covered the telephone network. In the second stage—what we might call the "early broadband era," a de facto continuation of those rules resulted from the constant vigilance and loud campaigning of Internet activists, combined with growing interest on the part of government officials and companies' wariness of provoking new regulations.

But the giant for-profit companies that now dominate Internet access do not want to be constrained by network neutrality rules. Their interest is in assuming more control over how the Internet is used—and they are now putting in place a new technological infrastructure that will allow them to do that. Already there have been numerous abuses. And, in early 2010, a court voided the powers of the Federal Communication Commission (FCC) to protect against such abuses under the legal framework that the agency was using.

As we enter a new phase in the Internet's history, network neutrality needs to be given legal force so that it cannot be swept away by powerful corporations and so that cyberspace remains the free and open medium that we have come to expect. If network neutrality principles are not upheld, it is abundantly clear that financial incentives will lead broadband Internet Service Providers (ISPs) to make fundamental and detrimental changes to the open network that we have today.

The term "network neutrality" has been the subject of much confusion and competing, sometimes conflicting definitions. But in essence it means applying well-established "common carrier" rules to the Internet in order to prevent companies from abusing their control of our Internet connections for profit. Common carriage prohibits the owner of a network from discriminating against information by halting, slowing, or otherwise tampering with the transfer of any data (other than for legitimate network management purposes). The purpose of common carriage is to prevent a network owner from exploiting its control over that facility to gain leverage over the actual information, products and services that flow through it—and the markets that rely upon it.

This is not a new concept. Common carriage rules have a centuries-old history; they were first established under English common law and adopted by the United States. They have long been

applied to many facilities that have been central to the economic development of our nation, including canal systems, railroads, public highways—and telegraph and telephone networks, which were broadly considered common carriers from the start.[1] These common carrier rules have already been written into the Telecommunications Act of 1996 by Congress; they just need to be applied to broadband by the FCC.

President Obama has taken a firm position in favor of network neutrality. As a candidate, he declared,

> I will take a backseat to no one in my commitment to network neutrality, because once providers start to privilege some applications or web sites over others, then the smaller voices get squeezed out, and we all lose. The Internet is perhaps the most open network in history, and we have to keep it that way.[2]

In office, President Obama has reaffirmed his support for network neutrality. "I'm a big believer in net neutrality," he said in a February 2010 interview. "We don't want to create a bunch of gateways that prevent somebody who doesn't have a lot of money but has a good idea from being able to start their next YouTube, or their next Google on the Internet."[3]

Yet, while the FCC, led by Obama appointees, has made motions toward implementing network neutrality, it has not so far (as of October 2010) taken the crucial step of declaring the Internet subject to the common carrier rules written by Congress. It is vital that it does so in order to preserve network neutrality.

Network neutrality is one of the foremost free speech issues of our time.

An issue of free speech

Network neutrality is a consumer issue, but it is also one of the foremost free speech issues of our time.[4] Freedom of expression isn't worth much if the forums where people actually make use of it are not themselves free. And the Internet is without doubt the primary place where Americans exercise their right to free expression. It's a newspaper, an entertainment medium, a reference work, a therapist's office, a soapbox, a debating stand. It is the closest thing ever invented to a true "free market" of ideas.

Free speech has been a central mission of the ACLU since its founding in 1920. From its origins amid the repression of the First World War, when an American could receive a 10-year prison sentence for writing a letter to the editor, the ACLU has been instrumental in defending and expanding the rights of free expression, and it continues to do so on the Internet—having been a principal participant in nearly all of the Internet censorship and neutrality cases that have been decided by the United States Supreme Court in the past two decades, including *Reno v. ACLU*,[5] *Ashcroft v. ACLU*,[6] *Ashcroft v. Free Speech Coalition*,[7] and *NCTA v. Brand X*.[8]

The First Amendment, of course, protects speech only from the government. But access to the Internet is provided by private corporations enabled by government, and protecting the same interests and values that the First Amendment protects, requires in this case that the government create strong policies against incursion by companies that are, at root, profit-seeking rather than civic-minded. That is why the ACLU has long supported network neutrality.[9]

The openness of American society in general, and free speech in particular, have played a crucial role in supporting the artistic, intellectual, and social vitality of our nation, and therefore its economic vitality as well. But the requirements of free speech and the requirements of profit-oriented corporations are very different. Free speech requires the protection of minority and unpopular—sometimes radically unpopular—viewpoints and expressions.

I. THE THREAT

When you send an e-mail, play an online game, make an internet phone call, download a web page, or watch an online video, you are communicating with other parties over the Internet. Between you and those other parties lie many different computers, routers and wires. Your data flows through servers operated by your ISP—the company you or someone else pays for Internet access—and from there across some of the over 25,000 independent "Autonomous Systems" that make up the Internet, which process that data according to a set of rules known as the "Internet Protocol," or IP.[10] Despite its complexity, users don't normally think about that process; we take it for granted that our digital data will flow between us and the parties we choose to communicate with—automatically and unaltered.

That is not necessarily the case, however.

ISPs have the technological ability to interfere with Internet traffic

Internet traffic is nothing but a stream of ones and zeroes, and the computers that run the Internet can be programmed to manipulate that data in an infinite number of ways. As a technological matter, the administrator of a broadband system has many ways of interfering with online activities—and those possibilities are expanding year by year.

In particular, the growing availability of a technology called "deep packet inspection" (DPI) has greatly expanded the potential for fine-tuned control over Internet communications by ISPs. When data is sent across the Internet, it is divided up into "packets." Each packet contains certain "header" information that is used to route the packet to its destination, as well as actual content or "payload" data. It is much like the difference between the address on the outside of a postal envelope, and the contents of the letter inside. In the past few years, new technology has given ISPs the ability to scan not only packet headers but also their contents—and quickly enough to make real-time routing decisions based on that content. This is the equivalent of delivering mail based on the contents of a letter rather than the outside of the envelope (as the FCC pointed out when Comcast was caught doing this).[11] That kind of "inspection" constitutes not only an invasion of privacy, but also opens up an entire world of possibilities for messing with Internet traffic, limited only by the imagination of the company and its programmers.

In fact, ISPs have the potential for an all-seeing, all-controlling power over the activities of customers on their network—often in ways that are invisible to their customers:

- **Basic control of the service.** Providers can control the overall speed and reliability of a customer's online experience, as well as its bandwidth (the amount of data that can be transferred per second). And they can set the price for various levels of high-speed access.

- **Control over applications.** Providers have the technological ability to block their customers from using particular applications, such as video conferencing, Internet telephony, and virtual private networks (VPNs, a common application that allows individuals to plug into secure networks from remote locations). Even if they don't block such uses outright, they can require that customers use the company's own, proprietary software for carrying them out (software that can in turn have any number of limitations and controls built in). In short, they can insert themselves between one end of the Internet information pipeline and the other by blocking particular uses of that pipe. Providers have, in fact, shown the desire to block (unrelated to the customer's use of bandwidth) specific applications such as VPNs and BitTorrent (a protocol for the decentralized or "peer to peer" distribution of large files).[12]

- **Control over access to content.** Even more troubling is the technological ability of broadband providers to interfere with content. Providers can slow or block access to certain Web sites—those that won't make a deal with the broadband company, perhaps, or those with content considered objectionable for political or competitive reasons. The same kinds of content filtering that are now imposed in many workplaces can also be carried out by an ISP. At the same time, they can speed up downloads from affiliated sites, or sites that have paid for the privilege. It is as if the phone company were allowed to own restaurants and then provide good service and clear signals to customers who call Domino's and frequent busy signals, disconnects and static for those calling Pizza Hut. That would be entirely possible if the telephone system wasn't forbidden by law from doing so. And what can be done in the commercial context could be done just as easily to political content.

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- 400 entertainment, sports and movie sites
- Top 60 news sites
- Top 1,000 blogs
- Unlimited gaming, file sharing, VPN usage
- FreeSurf® – access to most non-partner sites*

* access speed and availability not guaranteed

TERMS: Broadband Internet Services Inc. reserves the right to alter available partner sites at any time. All included sites have been certified by FamilyLife® as free of obscene or controversial material, and come with ChannelBlocker® for additional protection. ChannelBlocker® filtering can be turned off for an additional monthly fee of $16.99. Transmission of encrypted materials not permitted. Complete terms online.

- **Discrimination among users.** ISPs also possess the technological ability to discriminate among individual Internet users. They could create blacklists of disfavored customers and deny those customers access to some applications, services, or data. They could invisibly degrade the Internet service of hostile unions, critical web sites, or vocal proponents of policies they dislike. Or, they could simply require users to pay to access various parts of

the Internet a la carte, the way the cable companies sell packages of television channels (see box).

It is legitimate for a broadband provider to charge a customer more for more bandwidth—just as FedEx might charge more to deliver a heavier package. What is not legitimate is to discriminate against traffic based on the identity of communicators or the content of their communications.

ISPs have the incentive to interfere with Internet traffic

Broadband companies have not only the technological means, but also strong incentives to interfere with the neutral transport of customers' data across the Internet.[13] Those incentives include:

- Interfering with speech that directly counters the company's perceived financial or political interests. Web sites run by union activists, protesters upset at the company, political content that an ISP disagrees with, political content that might displease powerful politicians—all of these could be blocked or degraded if companies are left free to do so. In fact, many of these things have already happened (see below).

- Blocking or degrading competing content or applications. Comcast-NBC[14] or any other company that sells both Internet access and content (such as TV shows, movies and music) has strong incentives to slow or block competing—and possibly more innovative—producers and distributors of content. So would any ISP that simply enters into a business arrangement with content producers. Comcast might allow NBC TV shows to download faster and/or in higher quality. As broadband companies expand on the premise that "synergies" will yield big profits, they will come under enormous business pressure to make good on those promises.[15]

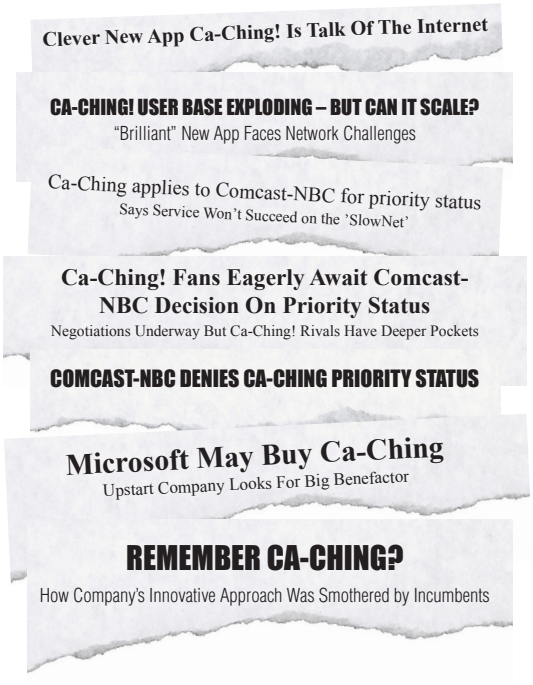
- Forcing purveyors of new applications or services to pay to avoid having their applications blocked or slowed down. Naturally, such extortion will be presented in a positive light—having one's data "expedited" or "prioritized"—but priority is a relative condition, and the net effect will be that Internet users will be forced to pay to avoid a new "slow lane."

Abuses are not theoretical—they have already happened

Broadband providers have both the incentive and the ability to interfere with the Internet. That hasn't stopped network neutrality opponents from claiming that the threat is "theoretical," or that applying time-honored common carrier principles to the Internet is a "solution in search of a problem." In fact, there have already been numerous incidents of abuse:

- **AOL/Time Warner's censorship of an online protest.** Early in 2006, America On Line (AOL) began censoring e-mails that referenced a blog entry critical of AOL over an e-mail fee system the company had instituted.[16] AOL's blatant censorship impaired e-mail services to over 300 individuals, including customers and non-customers, who reported receiving an automated message saying their e-mail had "failed permanently."[17] An AOL spokesperson said that the automated messages were due to faulty software and that AOL had lifted its block of the e-mail protests.

FUTURE HEADLINES?



- **AT&T's jamming of a rock star's political protest.** During an August 2007 performance by the rock group Pearl Jam in Chicago, AT&T censored words from lead singer Eddie Vedder's performance. The ISP, which was responsible for streaming the concert, shut off the sound as Vedder sang, "George Bush, leave this world alone" and "George Bush find yourself another home."[18] By doing so, AT&T, the self-advertised presenting sponsor of the concert series, denied viewers the complete exclusive coverage they were promised.[19] Although Vedder's words contained no profanity, an AT&T spokesperson claimed that the words were censored to prevent youth visiting the website from being exposed to "excessive profanity."[20] AT&T then blamed the censorship on an external Website contractor hired to screen the performance, calling it a mistake and pledging to restore the unedited version of Vedder's appearance online.

- **AT&T's threats to censor customers through draconian Terms of Service.** In October 2007, AT&T unilaterally revised its customer Terms of Service ("TOS") agreement to give itself the right to terminate a customer's DSL service for any activity that it considered "damaging" to its reputation, or that of its parents, affiliates or subsidiaries. AT&T's new customer contract did not specify any types of actions that it would consider to be "damaging," thereby giving the company unfettered discretion to decide this on its own. An AT&T spokesperson claimed that the TOS term was meant to "disassociate" the company from language that promotes violence or threatens children.[21] After vehement protests by AT&T customers, AT&T removed the broad discretionary language. Verizon followed suit after it was publicized that its TOS contained a similar provision.

- **Proposed filtering in the name of anti-piracy.** In January 2008, AT&T announced that it was considering installing a copyright filter on its subscribers' broadband connections.

Filtering technology would permit AT&T to examine all of its users' transmissions, facilitating the company's ability to search and block digital transfers under the pretext of preventing the dissemination of pirated materials.[22]

- **Bell South's censorship of MySpace.** In 2006, BellSouth blocked its customers in Florida and Tennessee from using MySpace and YouTube. Some suspected that BellSouth blocked the websites to test a tiered system of usage that would block certain websites if their administrators refused to pay for BellSouth's quality of service package. BellsSouth's Chief Technology Officer Bill Smith had openly supported the principle of tiered access for his company. The company issued a vague denial, and also argued that it provided warnings to its customers about potential Internet blocking.[23]

- **Cingular's blocking of PayPal.** Cingular Wireless, part of AT&T, blocked attempts by its customers to use any competing online billing services to make purchases on eBay. Cingular blocked PayPal after contracting with another online payment service called Direct Bill. Cingular made its discriminatory motives apparent in a leaked memo that stated, "Please be aware that Cingular customers should always and only be offered the Direct Bill option for payment of content and/or services. Any programs that offer PayPal and/or credit card options to Cingular Wireless customers will be escalated and reviewed by Cingular Wireless for possible immediate shut off."[24]

  Broadband providers have both the incentive and the ability to interfere with the Internet.

- **Comcast's throttling of online file-sharing through BitTorrent.** In 2007, Comcast, the nation's largest cable TV operator and second largest ISP, discriminated against an entire class of online activities in 2007 by using deep packet inspection to block file transfers from customers using popular peer-to-peer networks such as BitTorrent, eDonkey, and Gnutella.[25] Comcast's actions, which were confirmed in nationwide tests conducted by the Associated Press, were unrelated to network congestion, since the blocking took place at times when the network was not congested. Comcast blocked applications that are often used to trade videos—pirated content but also much legitimate content. Critics noted that Comcast hopes to sell online video itself. The FCC subsequently took action against Comcast for this abuse; Comcast stopped the throttling but also challenged the order in court and won, leading to a crisis in enforcement of network neutrality (see below).

- **Verizon Wireless's censorship of NARAL Pro-Choice America.** In late 2007, Verizon Wireless cut off access to a text-messaging program by the pro-abortion-rights group NARAL that the group used to send messages to its supporters. Verizon stated it would not service programs from any group "that seeks to promote an agenda or distribute content that, in its discretion, may be seen as controversial or unsavory to any of our users."[26] Verizon Wireless reversed its censorship of NARAL only after widespread public outrage.

- **Interference with Vonage.** Several ISPs in the U.S. and Canada attempted to block the Internet packets generated by this application, which allows users to engage in voice conversations over the Internet, and therefore directly competes with the voice telephone businesses of many broadband providers.[27]

- **Canadian ISP's blocking of striking workers' web site.** In 2005 the Canadian telecom Telus, involved in a bitter labor dispute, blocked its Internet subscribers from accessing a website run by the union that was on strike against Telus.[28]

So far these incidents have been just that—incidents. This kind of behavior has not yet become broadly accepted or "baked in" to the structure of the Internet. But without enforceable network neutrality rules in place, that could quickly happen. And the consistency of these abuses tells us all we need to know about what will happen if companies are permitted to exploit their power over our Internet connections.

Innovation will suffer if network neutrality dies

Opponents argue that by proscribing certain activities, continued enforcement of network neutrality will hinder innovation. But as economists have pointed out, network neutrality will protect and encourage far more innovation than it blocks.[29]

- Because a neutral Internet is not optimized for any one particular use, it is very easy and inexpensive for innovators to invent new uses of the network. Anyone can write a new application, put it out there, and see if users like it. But if the network itself had to be adjusted or customized to allow new applications to run properly—as is already beginning to happen—it would become expensive or impossible for innovators to invent new applications. Just as bad, success would be determined centrally by the corporate bureaucrats who control the network, not the end-users.

Network neutrality will protect and encourage far more innovation than it blocks.

- "Innovations" in how the Internet operates must be carried out centrally by large, established telecoms—but such companies do not have much of a record of innovation. Most game-changing innovations come not from large companies but from new players taking advantage of the Internet's openness. Examples of upstart Internet innovators include eBay, Amazon, Google, Facebook, Twitter, and the inventors of Web-based e-mail and instant messaging. Meanwhile thousands of new ideas appear online constantly, and no one ever knows which ones will take off. It does not make sense to make innovation harder for upstarts so that giant telecoms can tinker with the proven, time-honored architecture of the Internet.[30]

- Not all innovation is equally useful. Much of the "innovation" that has taken place with regards to deep packet inspection, for example, appears to be intrusive mischief that is dangerous to the health of the Internet, rather than socially useful advances. Deep packet inspection has been used by the NSA to carry out illegal domestic surveillance,[31] by Comcast to throttle BitTorrent traffic (see above), and by services that want to spy on the Internet traffic of ISP customers for the purpose of serving ads.[32] There is no end to the "innovation" that could follow in manipulating web traffic and abusing personal information, but that is not the kind of invention that helps America.

Contrary to the alarms raised by broadband providers, preserving network neutrality will not reduce innovation. Indeed, preserving network neutrality would have just the opposite effect—and, as many economists have pointed out, it will likely be a boost to the economy.[33]

The push to control applications

Internet carriers claim they need to monitor and control data in order to handle increases in the amount of traffic flowing through the network. They claim that the rise in online video, for example, poses a crisis for the Internet and requires the carriers to deploy discriminatory "quality of service" technology to privilege some applications over others.

In fact, there is a long history of predictions that the Internet would run out of capacity to handle the latest generation of uses that seem bandwidth-heavy at the time. However, the carrying capacity of the Internet has always expanded enough to keep up with expanding demand.[34] According to Bell Labs, the capacity of fiber to carry bits is growing exponentially, doubling roughly every 18 months in parallel with "Moore's Law."[35]

Just as computer power and network capacity continually rise, so too do the demands on the Internet. At any given time, there will always be applications that are too data-intensive to be performed over the Internet. Ten years ago, high-definition streaming video overtaxed the Internet's carrying capacity. At every point in the future, there will probably be other applications that are just out of reach. That line will continue to move as it always has. Does it make sense for America to allow the architecture of the Internet to be changed in ways that are dangerous for free speech and innovation, in order to push that line slightly forward—for some applications—rather than continuing to invest in general increases in Internet carrying capacity that will soon wash away current limits?[36]

> Policies that allow carriers to discriminate will discourage the construction of more network capacity.

That would be bad for the public—but network providers have an interest in doing just that. They live in fear of "commoditization"—that their product (Internet bandwidth) will become an undifferentiated commodity, with a resulting downward pressure on prices. They would love nothing better than to segment the Internet into different classes of service so they could charge a premium to some users for preferential treatment over others. That only really works, however, if scarcity is actually a problem on the Internet. Public policies that allow carriers to discriminate are policies that will disincentivize and discourage the construction of more network capacity.

A battle for control

Ultimately, the network neutrality battle is a battle for control between customers and innovators on one side, and the large and powerful broadband providers on the other. When you pay for a broadband connection for your home, for example, you connect whatever computer you want to buy, run whatever software you want, and send whatever data you want over your internet connection. You are in control. But it's the opposite with the mobile Internet. Your mobile carrier usually dictates exactly what computers (i.e., phones) you can connect to their network, they control the operating system that runs on those phones, they control which applications customers can run, and of course govern the network that customers use. Efforts to open up the mobile platform have started to meet with a little success—but at the same time, broadband carriers would like to make the wireline Internet more like the closed mobile ecosystem.[37]

Broadband companies are forced to sit back and watch as innovators such as Google, eBay, Facebook and many others make billions offering useful services to the public over the carriers' Internet wires. The carriers are stuck merely providing a boring utility that just happens to be vital to the U.S. economy and to the expressive activities of Americans. The carriers would like a piece of the action, but the only way they can get it is by changing the architecture of the Internet to their own advantage. Using technologies such as deep packet inspection, they now have the power to do that. The issue at stake in the network neutrality battle is: are we going to sit back and let them do that?

II. THE FCC'S CHALLENGE

Network neutrality has been key to the explosion of the Internet in American life in the past two decades. Because the Internet serves as a neutral, nondiscriminatory pipeline that automatically carries data from origin to destination without prejudice or interference, no company, individual, or institution has had the power to decide what applications are allowed to run by users at the ends of the network, what kinds of data can be moved through the network, or whose data moves slower or faster.

This structure, referred to as "end-to-end" networking, has enabled the tremendous explosion of innovation we have witnessed in the past 20 years. Anyone with an idea can create a new application and distribute it to anyone else on the Internet—they don't have to ask the permission of Ma Bell, Comcast, the government, or any other gatekeeper, or get through anyone's filter, in order to have a shot at the greatest success. Google started as nothing but two students with an idea for a mathematically superior way to do search. If they had had to negotiate deals with Comcast, Verizon and other big telecommunications companies, they might never have overcome the search giants of the time—now-forgotten companies like Excite and Alta Vista.

The history of the Internet so far can be broadly divided into two eras, both of which were governed by legal or de facto network neutrality rules. But now we are beginning to see the emergence of a third era—what we might call the "filtering era," which could fundamentally alter the architectural structure of the Internet, with significant implications for free speech as well as the nation's economy.

The parable of the bridge and the marketplace

In order to help farmers bring their goods to market, a town awards a company a charter to build a bridge across a river and gives the company the right to collect a toll.[38] But the toll collector begins treating farmers differently—making some wait longer to cross, and charging higher tolls to some farmers based on the food that the farmer is carrying, whether the bridge keeper approves of the farmer's lifestyle and politics, and whether the farmers are willing to make individual side deals with the bridge keeper.

In response, farmers and others call for the city to declare the bridge a common carrier—impose a "bridge neutrality" rule that says it can still charge a toll but cannot discriminate among those who pass. Friends and beneficiaries of the bridgekeeper protest that such a rule would interfere with the "free market." But the bridge is not much of a market—and permitting the bridgekeeper to do these things actually *distorts* the other marketplace that depends upon it, as farmers with inferior produce gain an advantage just because they have gained favor with the bridge keeper and can bring their vegetables across more cheaply. The city's action doesn't threaten markets; to the contrary it protects them and helps them operate for the maximum benefit of all.[39]

1. The Dial-up Era

In the early to mid 1990s, when the Internet first became a mass communications medium, most people got online through dial-up connections, in which consumers access the Internet by connecting directly to their ISPs through the telephone network. Dialup was well suited to a model of free-market competition, because every individual Internet surfer could choose which ISP to use, and then connect directly to that company. If they didn't like their ISP, they could switch providers and then connect to the new provider simply by dialing a different phone number. And it was very easy to go into business as an ISP. This spurred development of an extremely healthy and competitive ISP marketplace, with tens of thousands of providers offering Internet access across the United States.

> Network neutrality has been key to the explosion of the Internet in American life in the past two decades.

The open nature of the telephone system helped ensure the Internet's network neutrality—although in fact it wasn't the telephone system's "nature" to be open and nondiscriminatory, it was the very conscious result of government regulation, as was the Internet's network neutrality. It was the result of a common carriage framework designed to promote the principles of openness and nondiscrimination, which has been applied to the telephone system since the early 20th century. The Internet would never have emerged as it did if it had not been protected at the "last mile" by telephone common carrier rules as well as other, more specific regulations issued by the FCC that curbed the power of the telephone companies:

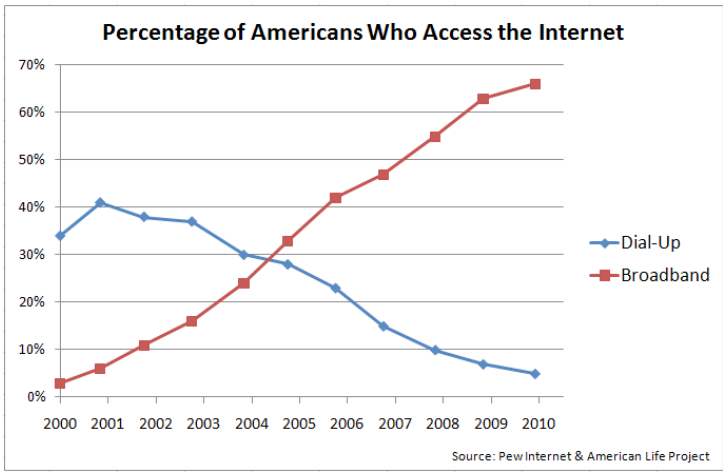
- In 1975, the FCC issued a landmark regulation which said telephone companies could not block their customers from attaching their own equipment to the phone network. If the agency had decided this issue the other way, regular Americans would not have been able to use computer modems without permission from AT&T, and the explosion of online activity would almost certainly have been blocked.[40]

- In 1980, the FCC set out rules that required telephone companies to offer "data services" through separate affiliates because they would have had both the ability and the incentive to use their control of the telephone network to discriminate against unaffiliated, competing data services.[41]

- In 1983, the FCC issued a regulation preventing telephone companies from charging ISPs by the minute for their use of the local telephone network; if they had allowed such charges, consumers would have to pay per-minute fees for Internet access. That would have slowed the growth of the Internet, as such fees did in Europe.[42]

In short, the impression held by some that the Internet is the product of an unregulated, "government-free zone" is mistaken. Of course, it is always possible that other, counterproductive regulations *could* have blocked or stunted development of the Internet. So far, the Internet has largely escaped such harmful regulations—for example, it remains free from censorship, despite two efforts by Congress (both of which were blocked by the courts as overly broad restrictions on free speech).[43] But the addition of harmful regulation is not the only danger to the Internet—an equal danger is the *subtraction* of the basic "rules of the road" that protect the environment of freedom in which the online world has thrived.

2. The Broadband Era



Though common carriage concepts protected the Internet during the dial-up era, by the early 2000s, more and more Americans began to obtain high-speed Internet access to replace the pokey speeds available via dial-up. But the economic, technical, and legal structure of broadband connections was far different from dial-up.

Technologically, broadband Internet was provided either through DSL connections that made augmented use of regular telephone wires, or though the coaxial cable used by cable television companies to send TV signals into their customers' homes. These connections were subject to far more centralized control than dial-up connections over the regulated telephone networks. As a result, the growth of broadband meant an ever smaller number of very powerful companies delivering Internet access to an ever larger slice of the population.

Cable television, which has become the dominant source of broadband Internet connections to the home, operates on a model characterized by centralized control over a limited number of channels. Television content providers are forced to negotiate with cable owners to secure one of a finite number of spots in the channel line-up, while consumers receive little ability to customize the content and services they purchase, and find themselves subject to the opportunistic pricing whims of their cable provider. Cable companies are not covered by common carrier regulations.

The centralized technological architecture, inadequate regulatory structure, monopolistic economic status, and controlling corporate culture of cable television operators were all cause for concern. As a result, consumer and free-speech advocates and many others, beginning in the late 1990s, began calling for the FCC to place cable broadband under time-honored common carrier rules.

In 2002, however, the Bush-era FCC decided to classify broadband Internet service over cable as an "information service," rather than a "telecommunications service."[44] That redefinition had very important consequences, because "information services" are not subject to common carriage requirements, unlike "telecommunications services," which are. By forcing cable companies to carry traffic for other ISPs, open Internet advocates as well as small ISPs hoped to continue the era of vigorous competition among ISPs.

The FCC's decision to exempt cable broadband from common carriage requirements was challenged by public interest advocates (including the ACLU) and went to the Supreme Court. The cable industry argued that it should be classified as an information service because it offered not just Internet telecommunications service, but also information services such as e-mail and web sites. In 2005, the Supreme Court deferred to the FCC, and allowed the classification to stand.[45] (After the ruling, the FCC also classified DSL as an "information service," thus releasing it, too, from common carrier rules.[46])

Meanwhile, dial-up access continued to be replaced by broadband. In June 2000 only 3% of Americans had broadband access while 34% had dial-up; by 2005 more people had broadband than dial-up and the trend has continued (see graphic).[47] Through the decade, fewer and fewer Americans were protected by the common carrier telephone regulations that had helped guarantee the openness of the Internet in the 1990s.

3. A new era of filtering?

In April 2010, a key court case freed broadband carriers to do as they please

In recent years, deep packet inspection and related technologies have become more advanced and more widespread. The market for "network traffic management" was $300 million in 2009 according to one industry leader, with most anticipating continued rapid growth in the field.[48] Though they have been available for over a decade, "traffic-shaping" technologies have become steadily more prevalent as they are incorporated into new off-the-shelf products, and more powerful with the overall increase in the processing power of computers. This potentially represents a significant rewiring of the fundamental architecture of the Internet. Network operators used to be "application blind"—unable to tell what data crossing their wires was generated by video conferencing, gaming, file sharing, or Internet telephone applications such as Skype and Vonage. Increasingly, however, DPI and related technologies let carriers efficiently determine which applications Internet end-users are running as they send data across the network—and treat that data differently if they want.[49]

In the past decade, we have moved steadily toward a situation where the architecture of the Internet threatens to veer sharply away from network neutrality. This trend, however, has been

matched by increasingly assertive scrutiny by the FCC. However, that came to a sudden end in April 2010, as a key court case freed broadband carriers to do as they please with the new technologies at their disposal.

FCC enforcement of network neutrality

Starting in 2005, the FCC under new chairman Kevin J. Martin began to make some moves in the direction of protecting network neutrality principles, which helped bolster the status quo in which such principles were generally honored, even as the technological capacity for breaching them began to increase. The commission cited its "ancillary" authority to impose "additional regulatory obligations," even upon facilities the FCC had deemed to be information services, such as broadband. In 2005, the FCC released a "Policy Statement" announcing four principles that it would use to guide its oversight activity.[50] These "Four Internet Freedoms" stated that Internet users are entitled to:

1. access any lawful content
2. use any applications or services
3. connect any devices that do not harm the network
4. benefit from competition among network providers

These broad principles would not block all mischief, but they represented a good start. In 2008, after Comcast was discovered to have been throttling data being exchanged through the BitTorrent application (see above), the FCC formally voted to order Comcast to stop its discriminatory action. Comcast took the FCC to court, arguing that the FCC did not have the authority to issue such an order against an information service.

In April 2010, Comcast won, in a decision that changed the Internet legal landscape overnight.[51]

The decision of the D.C. Circuit of the U.S. Court of Appeals in the case *Comcast v. FCC* swept away the commission's authority to impose rules protecting network neutrality, with the result that the FCC now has no authority to enforce its Four Internet Freedoms or most other aspects of network neutrality.

This situation left the FCC with several choices. It could

1. Pursue an appeal having only a small probability of success.
2. Abandon any attempt to continue enforcing network neutrality practices.
3. Continue trying to protect the Internet under the information service framework by attempting to work around the *Comcast* decision and advancing novel and untested legal arguments.
4. Correct the FCC's faulty decision during the Bush Administration to classify broadband providers as "information services" rather than "telecommunications services."

The first three options being plainly inadequate, the FCC in June 2010 sought public comments on reclassifying broadband as a telecommunications service.[52] The commission collected comments, but as of October 2010, it had taken no further action. Amid furious lobbying by broadband providers, the FCC appears to be wavering.

Meanwhile, attempts to solve the issue legislatively in Congress have failed. In the fall of 2010, Rep. Henry Waxman attempted to fashion a bipartisan bill to address the post-*Comcast* vacuum in protection from abuses by Internet carriers. However, the effort, like several previous attempts, collapsed in a cloud of partisan disagreement, making it clear that FCC reclassification is the best and most viable course open to preserve network neutrality.

Network neutrality still in effect due to public pressure, not competition

Despite the FCC's failure to act in the public interest from 2002 to the present by extending enforceable common carrier rules from dial-up to broadband, an uneasy, de facto regime of network neutrality has continued to be observed. That is not to say that broadband carriers were not eager to violate it. Indeed, throughout the decade, incidents in which broadband providers violated network neutrality regularly came to public attention. In almost all cases, however, the companies backed off amid public criticism.

Some might argue this shows that such rules are unnecessary, since public pressure and competition will suffice to keep providers honest. This is wrong for several reasons.

First, violations of network neutrality are not always easily detectable. Instead of the crude blocking of content, content can be delayed or distorted in subtle ways. Second, public pressure has come not just in the form of customer objections, but also in the form of political agitation in support of network neutrality, and also from increasing interest on the part of the FCC in enforcing such principles. But that atmosphere cannot last forever, and as soon as public vigilance falters, companies will quickly begin to exploit their control over network access.

It would be folly to think that competition will keep broadband providers honest.

In addition, it would be folly to think that competition will keep broadband providers honest, because competition is not very vigorous in this utility-like market. Fully 21% of home broadband users report that they have just one choice of provider where they live—and most have just two or three.[53]

A market with two, three or four competitors—known as an oligopoly—does not make for healthy and vigorous competition. As anti-trust experts have long noted, when an industry comes under

the control of just a few players, competition is nearly always reduced, because even without explicit (and therefore illegal) collusion among the few remaining competitors, companies are often able to establish implicit anti-competitive understandings through such mechanisms as price signaling and other unspoken communications.

In addition to the limited number of choices available in most communities, the broadband industry as a whole is highly concentrated, with just a few providers serving the majority of customers in the United States. In 2008, AT&T, Comcast, Verizon and Time Warner together had fully 69% of all U.S. broadband subscribers.[54]

Furthermore, even if true competition among broadband technologies did exist, the need for open access remains. Passenger trains were never freed from common carrier obligations just because people could also drive or fly to their destination—and in fact the highways and airlines are also subject to open-access rules. The law recognizes that even if alternative facilities are broadly available, in many specific situations only one is practical for a given customer. And it recognizes that an openness mandate is necessary because such a broad variety of far-flung markets, activities, and social functions depend upon these facilities, or receive crucial inputs from them.

III. THE SOLUTION

Network neutrality principles need to be made enforceable through the imposition of common carrier rules on the Internet.

We do not allow the postal service to route mail according to the content of letters; we do not allow telephone companies to provide better connections to those whose conversations are more important; we do not allow governments to grant parade permits only to those protesters it thinks are reasonable; we do not let airlines change their fares if they do not like the purpose of your trip; we do not allow the chair of a hearing to alter Robert's Rules of Order according to the sagacity and eloquence of the speaker. Once the operator of a forum begins to alter or distort the forum based on the content of communications, it opens up the potential for all manner of mischief, especially where there is money to be made.

The FCC must reclassify broadband services

The FCC can protect the Internet simply by recognizing the commonsense fact that the Internet is a "telecommunications service." Congress defined telecommunications services as "The transmission, between or among points specified by the user, of information of the user's choosing, without change in the form or content of the information as sent and received." That accurately describes the role of broadband connectivity providers. Information services, on the other hand, are more akin to publishers, which Congress rightly did not want the FCC to regulate. They are defined as being involved in "Generating, acquiring, storing, transforming, processing, retrieving, utilizing, or making available information via telecommunications."[55] Few people, when they go online, want their Internet provider to "transform," "process," "store," or "utilize" the data that they exchange with others. Most people just want their provider to get out of the way and transmit their data from one end of the Internet to the other, without "change in the form or content" of that data.

Despite the pleas of various telecom foxes that they be allowed to feast at the Internet henhouse, the FCC's purpose is to protect the public interest—period. It is not to broker a "compromise" between the public interest and the interests of powerful and wealthy corporations. The FCC's job is to draw firm boundaries around those corporations when their interests threaten the interests of the public. To do that they just need to restore the commonsense classification of broadband connectivity as a "telecommunications service."

Several issues confront the FCC as it considers acting to restore common carrier rules to the Internet:

1. **Reasonable network management.** Everyone recognizes that ISPs need some flexibility in order to manage their networks if and when they become congested, and to keep out viruses and malware. But such functions must be monitored very carefully lest they be abused for financial gain or discriminatory purposes. In late 2009, the FCC sought comments on the complex question of how it should go about defining and monitoring "reasonable network management," and received much detailed and valuable expert feedback about how that could be done.[56] Most importantly, the commission needs to require ISPs to be open and transparent about their network management practices. That alone will go a long way toward serving as a check on their behavior.

2. **Wireless.** While some major telecoms such as Verizon have grudgingly accepted the idea of network neutrality rules for wireline Internet, they are arguing that wireless networks ought to be exempt. The problem is that wireless networks appear to be well on their way to becoming one of the most common means through which people access the Internet;[57] if they are exempted, that exception may swallow the rule. Internet users seek access for a broad variety of purposes, but rarely do we care whether our connectivity is wireline or wireless. Increasingly we will likely switch seamlessly between wireline (including Wi-Fi) and mobile connections—and should be able to depend on standard, uniform protections regardless of the precise technology used to transfer data from moment to moment.

3. **Managed services.** Broadband carriers are also insisting that they be allowed to run "specialized" or "managed" data services over their communications wires to consumers, which are separate from the Internet, and to which common carrier rules would not apply. It is a vague concept and unclear exactly what such services would be. Proponents cite a few examples such as medical imaging, which they argue would be better provided over a dedicated connection rather than the regular Internet. Opponents ask why such services could not make use of the regular Internet. The idea is also controversial because the carriers' incentives would be to invest in building up these services, and to stop investing in Internet capacity and services. If carriers can charge people a premium to evade network congestion using special high-speed data pipes, their interest in continuing to stave off network congestion through technological upgrades will inevitably wane.[58]

Network neutrality is the status quo

Opponents of network neutrality claim that restoring common carrier rules to the Internet in an enforceable form would constitute "regulation" of the Internet, as if that is something new and ominous. Some have even called it, ridiculously, a government "takeover" of the Internet. A corporate-backed group recently launched a campaign called "No Internet Takeover" dedicated to opposing network neutrality.[59]

Yet as we have seen, the Internet was always subject to de facto common carrier rules, at least until the *Comcast* decision in April 2010. Reinstating common carrier is a conservative, not a radical step. The radical step would be to allow the telecom giants that control our Internet access to do as they please.

Reinstating common carrier is a conservative, not a radical step.

The refusal to extend common carrier status to broadband appears to be the product of a naïve anti-regulatory attitude that scorns any government protections as contrary to the "free market." What this viewpoint fails to account for is the fact that competition and government protections are not always at odds. In fact, it is often impossible to have competition *without* such protections. Government intervention is needed not only to set ground rules so that competition is kept within socially desirable boundaries (for example by prohibiting cheating on measurements, or gangland hits on one's business competition), but sometimes to create the very arena in which competition can take place. For example, without government rules establishing and protecting copyrights, intellectual property would not even exist as "property" and therefore there would be no market for it. Sometimes the protection of government is needed to provide a level playing field—and sometimes it is needed to create the playing field itself.

Limits on the powerful to protect freedom for all

When a handful of corporations control access to the Internet, and have both the technical means and the financial incentives to interfere with the free flow of information, they will do so. Americans cannot expect major corporations to refrain from such interference on their own. They are under intense pressure from Wall Street to meet earnings expectations every quarter, and in any case see their primary duty as serving the interests of their shareholders, not protecting free speech. So the important question becomes: what will hold them back? As we have seen, broadband providers are currently restrained neither by competition nor by rules to protect the Internet, and their technological powers to interfere are greater than ever.

The broadband situation would be bad enough if it were just a case of a market where monopolistic companies are restrained neither by competition nor by the government. But Internet access is not just any business; it involves the sacred role of making available to citizens a forum for speech and self-expression.

As Isaiah Berlin put it, "Freedom for the wolves has often meant death to the sheep."[60] "Freedom" for giant telecoms to violate network neutrality will mean injury or death to freedom and innovation for individuals, upstart companies, and the proper functioning of markets that depend on the Internet infrastructure—including, quite possibly, the "marketplace of ideas." Without network neutrality rules, the online world will be transformed into a place where the thoughts, expressions, publications, and other content of the favored few will receive preference over those of the disfavored.

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