



Network Neutrality: Phantom Problem, Unintended Consequences

*A primer for regulators, legislators
And the media on “Network Neutrality”*

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Formed in 1994, the US Internet Industry Association is the primary trade association for companies engaged in Internet commerce, content and connectivity. USIIA serves its members through legislative advocacy and professional services. The association is headquartered in Washington, DC.

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Executive Summary

The Internet, which has been around for nearly 40 years, has continued to grow and flourish due to the public policy decision to leave it alone and let it evolve based upon market demands and technological change. But this policy is under attack by special interests that wish to harm consumers and the future of the Internet.

In the past few months, these special interests have hijacked the policy of “network neutrality,” an industry initiative designed to protect consumers, and twisted it to an entirely different purpose – preventing network operators from exploring ways to guarantee the reliability of advanced Internet services over a public Internet that was not designed to be reliable.

The issue is not fairness. It is not about blocking access to web sites, or slowing data that travels over the public Internet. It is about whether Congress will vote to force America backward 40 years by legislating against efforts to enhance the speed and reliability of the Internet through the offering of premium services. It is, at its root, an effort by some companies to circumvent the natural processes of a free marketplace – and to inhibit consumer choices – by “gaming the system” through restrictive legislative language.

To date, no dire plans to choke off Internet access have been implemented, no consumers have been injured, and none of the parties have announced programs (or have any incentive to implement programs) that would be to the detriment of the nation or its consumers.

But if Congress were to enact legislation to “fix” a problem that does not exist, there is every likelihood that it will miss its mark and quash innovation and new services. Worse yet, it is likely to produce three unintended consequences:

1. **It would keep consumer costs for broadband services unacceptably high.** The rejection of premium services would eliminate the major business model for better services for typical consumers at lower costs. As the industry struggles to both pay for enhancements to the broadband networks and lower costs for broadband access, this would hurt the interests of both the industry and disadvantaged American families.

2. **It would negatively impact the buildout of advanced broadband networks and services.**

As evidence mounts that the US is falling behind in its ability to offer and expand such services, Congress would take a step to push the nation further behind by limiting the resources needed to pay for the buildout of advanced networks.

3. **It would set Internet services back by decades.** Today's broadband applications demand a more sophisticated network than the one envisioned by military planners 40 years ago. They require more speed and more reliability, without which they will simply not accommodate the growing use of the Internet. Bandwidth-intensive applications – including file sharing, advanced voice telephony services and video services – would have to be abandoned or curtailed simply because there is not way to accommodate them on an older, slower network.

By permitting ideas to be explored and tested, and rejecting calls for legislation to prevent a problem that doesn't exist, Congress will allow broadband Internet companies to seek and propose innovative ways to solve bandwidth and reliability problems in the present and future. While some of these may prove untenable, and others unpopular, allowing ideas to be advanced is the bedrock of American innovation and the future of broadband services to the nation.

A Network Neutrality Issue

The public Internet has prospered based on a cooperative model among network and service providers, all of whom have voluntarily adopted a standard protocol (TCP/IP, developed in the 1960s) for exchanging packets of digital data. As a step towards bringing some self-discipline to the heretofore unregulated Internet, the concept of “network neutrality” was created by Internet companies (The High Tech Broadband Coalition) and endorsed by the major network operators strictly as a means to assure non-discrimination against particular sites on the Internet and devices used to access the Internet. This particular concept was also endorsed by the FCC as recently as last year as a policy platform.

It is a policy platform that has been in place for the past three years, and one that major network operators embrace as the core of consumer rights on the Internet. In the only complaint yet raised over this issue – the case of Vonage versus a small rural telephone company called Madison River Communications, the Federal Communications Commission moved swiftly to correct the problem.

In the past few months, however, this policy platform for network neutrality has been twisted by a handful of companies and their advocates to an entirely different purpose – preventing network operators from exploring ways to guarantee the reliability of advanced Internet services over a network that has not previously been designed to be reliable.

A coalition of content companies, self-appointed consumer advocates and some media outlets quickly demanded that the Internet be re-regulated through dangerous and restrictive new legislative language designed to keep the Internet as it was originally designed decades ago. Campaigns have been launched, Congress is being actively lobbied, media wailing predicts the “end of the Internet as we know it,” and the telephone and cable companies that operate IP networks are blamed for everything from gross profiteering to sabotage of the Internet.

All of which misses the point that the public Internet is not now and will never again be the way it used to be. We have simply outgrown the old, unsophisticated, unreliable Internet and instead ushered in a wealth of new products and services over broadband networks that demand reliability. The Internet of 40 years ago doesn’t meet the demands of 21st-century consumers, and Congress must not legislate against the growth and future of advanced broadband networks comprising the Internet when service demand and Internet technology is constantly evolving.

The issue is not about fairness. It is not about blocking access to web sites, or slowing data that travels over the public Internet. It is about whether a handful of special interest groups can convince Congress to force America backward 40 years.

How The Internet Works

In 1967, military planners in the Pentagon realized that their communications networks had a fatal flaw – because they routed communications through central switching offices, an enemy could easily cripple the defense network by targeting these offices. In an effort to ensure some level of military communications could survive any attack, they created a data network that linked military and research centers worldwide. Thus was born the Internet.

The Internet was designed for survivability, not reliability. Its basic building blocks – the Internet Protocol and Transmission Control Protocol (TCP/IP), deliver packets of data in streams, but can't guarantee that any particular packet of data will be transmitted successfully. Even if it is transmitted successfully, by retransmitting lost or corrupted data packets, the speed at which it arrives is not guaranteed.

This is the Internet as it was originally designed 40 years ago. For simple email and web browsing, this variability in packet arrival causes only minor problems – a slow-loading web page, or delayed email.

But for advanced applications such as health care communications, distance learning, Voice over IP and video streaming, this variability creates havoc. Voice drop-outs or jittery video interfere with the operation of these and other advanced services. In some more critical situations, they interfere with emergency first responder operations and other critical voice and data calls.

In recent years, network providers have worked to increase bandwidth and build more reliability into the transmission of data packets, in order to ensure that advanced broadband services work reliably.

The Reliability Issue

If network operators aren't planning to block access or slow the access of any consumer to any site on the Internet, what is the real issue being contested? It is the need for more speeds and reliability, but even more is the question of whether consumers will be forced to bear the full cost of this reliability.

As demands on the Internet have increased – with the advent of Voice over IP, streaming video, peer-to-peer (P2P) networking, and other services planned for the immediate future -- broadband providers (DSL, cable modem, satellite broadband, wireless broadband and cellular broadband) have responded with expanded bandwidth and increased service speeds. As competition has flourished in most areas of the nation, consumers are able to choose from a wide range of service offerings at a wide range of prices.

These expansions in speed and bandwidth require additional costs to implement. As under the current pricing strategies, consumers are forced to bear the full burden of improvements to the broadband networks. This situation will only become worse as more advanced services become available to consumers. What's more, network operators are now faced predatory Internet applications that are designed to seize and use every single bit of available bandwidth --throttling other customers' and content providers' ability to receive and offer the services they want.

Some peer to peer (P2P) protocols do exactly this. Once they are downloaded onto a client computer, they may automatically expand to take whatever bandwidth the customer has in order to allow faster uploads and downloads of just the P2P service. The more bandwidth is added, the more these P2P applications take. Indeed, these P2P applications may enlist clients' computers and their broadband connections to be "super nodes" that relay information between other peers' computers that is not even originated from or destined to the client's own computer – all of this without the users' knowledge.

Aggressive growth of these P2P applications and their creation of super nodes already have brought down corporate networks and Internet service providers and appropriated huge portions of the processing and communications capacity of personal computers that their owners had intended to be for their own use. Such burgeoning applications have no respect for network neutrality, consumer rights or other applications. Voice calls become unreliable. Video streaming becomes unreliable. And

network operators are striving to use new measures to keep pace and return control over processing and communications to the customers that purchase these services.

This is not a problem that will be solved easily. It requires enhancements to network capabilities and it requires customers, information service providers, network operators and the market jointly to determine the best way to evolve the Internet so that optimally meets these parties' needs.

Unfortunately, efforts to do exactly that face proposed new "Network Neutrality" laws that would ban any form of network evolution, even if it clearly benefits consumers and the nation. This is sure to permanently harm the public Internet, its applications, and its consumers.

Two Possible Solutions

Two ideas have been proposed to deal with the need for enhanced speed and reliability over America's broadband networks:

1. Prioritization of some data packets in order to increase the reliability of critical communications.
2. Moving priority traffic to another, faster network for some portion of its transmission in order to avoid the choke points and excessive routing common to the public Internet.

Prioritization is possible today, but is generally not feasible. First, outside of the obvious communications (e.g., health care, e-government, and emergency telephone calls) it would be challenging for any single network operator to determine what packets should be prioritized – even prioritizing among business partners would require so much content to be prioritized that the concept becomes meaningless. More to the point, inherent limitations in the Internet's protocols mean priority can't be maintained when the packets move to a different network. Finally, the use of such "packet prioritization" would require examination of each packet, raising critical privacy concerns.

The second solution -- taking priority packets off of the Internet and running them on a faster private network – is already in use. Competitive Voice over IP services such as cable companies move their voice traffic to a separate network in order to assure the necessary reliability of voice calls. Financial institutions, major corporations and other entities already move their data via private networks. To date, the public Internet has suffered no harm and no consumers have complained.

Networks are engineered so that all services used over that network will work well. It is only after this engineering that prioritization comes into play in instances of congestion on the networks. This has the practical effect that routing via prioritization will only occur in limited circumstances. And the public internet as we know it – one where packets are sent and arrive over different paths – will continue and customers will maintain the same level of service as they enjoy today.

Unintended Consequences

Legislating “network neutrality,” no matter how well-intended, takes America back to the communications technologies of 1983. It literally destroys advances made in broadband and broadband technologies, and could serve to permanently cripple America’s ability to compete in the global economy as well as the ability of consumers to maintain their current choices in telecommunications services.

This is because there is currently no problem in the way companies are approaching the needed enhancements to the broadband networks and services. Rather, the issue is about whether companies that use the Internet for the distribution of goods they sell will help pay for these enhancements, or whether the full financial burden will be shifted onto end users as part of their monthly subscription fee.

Nearly every industry has adopted a model in which some customers pay for premium services in order to keep costs low for others. Airline business and first class passengers keep costs down for passengers in coach. Business telephone customers subsidize rural and residential services. Business mail helps pay for personal mail. What is at issue for the Internet is whether such a model would help to reduce the cost of broadband for families by having some of the burden shift to business customers – in the same way that Google offers a variety of free services to consumers by offering paid tiers of service to its business partners.

It’s a simple marketing squabble that the marketplace is capable of sorting out without legislation, but some companies are hoping to short-circuit the workings of a free and open market by “gaming the system” to get their way through legislation. Perversely, some of the applications and content providers whose very existence depends on the continued deployment of broadband networks want to

stymie innovation on these very same networks -- in effect, locking consumers into the Internet of the 1980s. These darlings of Wall Street haven't been around long enough to understand how the unintended consequences of anticipatory regulation will harm consumers and their own stock price.

But if Congress were to enact legislation to “fix” a problem that does not exist, there is every likelihood that it will miss its mark and quash innovation and new services. Worse yet, it is likely to produce four unintended consequences:

1. **It would keep consumer costs for broadband services unacceptably high.** The rejection of premium services would eliminate the major business model for better services for typical consumers at lower costs. As the industry struggles to both pay for enhancements to the broadband networks and lower costs for broadband access, this would hurt the interests of both the industry and disadvantaged American families.

2. **It would negatively impact the buildout of advanced broadband networks and services.** As evidence mounts that the US is falling behind in its ability to offer and expand such services, Congress would take a step to push the nation further behind by limiting the resources needed to pay for the buildout of advanced networks.

3. **It would set Internet services back by decades.** Today’s broadband applications demand a more sophisticated network than the one envisioned by military planners 40 years ago. They require more speed and more reliability, without which they will simply not accommodate the growing use of the Internet. Bandwidth-intensive applications – including file sharing, advanced voice telephony services and video services – would have to be abandoned or curtailed simply because there is not way to accommodate them on an older, slower network.
 1. **It would give law enforcement authority over Internet services and applications.** Michael Powell's original "Four Freedoms" included a "Freedom to Use Applications" that was stated as “consumers should be able to run applications of their choice.” But when the FCC adopted the “Freedoms” as a policy platform on August 4, 2005, it had changed to: "(2) consumers are entitled to run applications and services of their choice,

subject to the needs of law enforcement;" FCC Order 05-151 does not elaborate, define or place any restrictions as to what "the needs of law enforcement" may or may not include. This is also the language that would become law if current legislative drafts are adopted. This means that the Federal Communications Commission would permit law enforcement agencies to decide what applications and services should be available over the Internet, with no provision for judicial, regulatory or legislative review. The practical application of this would entail some sort of law enforcement agency that would review applications and services, rejecting those that are believed to be in any way not within the "needs of law enforcement." This could include overturning the Supreme Court's Peer-to-Peer software ruling, killing new technologies at a whim, mandating ISP data retention, and more.

By permitting ideas to be explored and tested, and rejecting calls for legislation to prevent a problem that doesn't exist, Congress will allow broadband Internet companies to seek and propose innovative ways to solve bandwidth and reliability problems in the present and future. While some of these may prove untenable, and others unpopular, allowing ideas to be advanced is the bedrock of American innovation and the future of broadband services to the nation. A free Internet has brought us to where we are today. And this sound public policy will lead to the innovation needed to create the robust internet that America needs to compete in the 21st century.