Introduction

Network neutrality (or more commonly, net neutrality) is a problem related to the internet that not enough people know about. Biases abound in this politically heated debate and although most people that know even a little on the argument have strong opinions, it is becoming more and more apparent that few people are informed about this issue at all.

Tim Berners-Lee, supporter of net neutrality

To reiterate, network neutrality has great support on both sides. However, if this problem is not soon addressed, there could be major problems with how the public uses the internet.

Hypothesis

By looking at what is best for the public and for the internet as a whole, net neutrality laws should be put into place to preserve the characteristics of the internet that make it unique.

Definition of Net Neutrality

Simply put, net neutrality is a network design paradigm that argues for broadband network providers to be completely detached from what information is sent over their networks. In essence, it argues that no bit of information should be prioritized over another. This principle implies that an information network such as the internet is most efficient and useful to the public when it is less focused on a particular audience and instead attentive to multiple users.

To draw a simple example, take two content providers such as the Verizon website and the University of California website. If net neutrality were upheld, both entities would pay their monthly fees to the network provider and if all else equal, any bit of information from the Verizon website will make the same trek as one from say the UC Berkeley website. There would be no roadblocks or shortcuts any of the websites can take to make the end user desire their content more. However, without a neutral stance in what is carried over their pipes, network providers can choose to discriminate and decide how fast data will be transmitted and at what quality. So in our example, say Verizon (which is also a network provider) chooses to prioritize their data over that of UC Berkeley. Information from Verizon will then be more desirable to the end user since it is so much faster than the UC website. The problem then arises when Verizon is trying to promote something opposed to that of the beliefs of the University of California. Is it fair that Verizon has these advantages over the university? What would happen if network providers bar content providers that they think have a conflict of interest from using higher speed networks? What if the network providers degrade the service of specific content providers? These are just some of the many questions that plague the net neutrality issue.

The overall story of net neutrality is summed up nicely in this video:

Origins

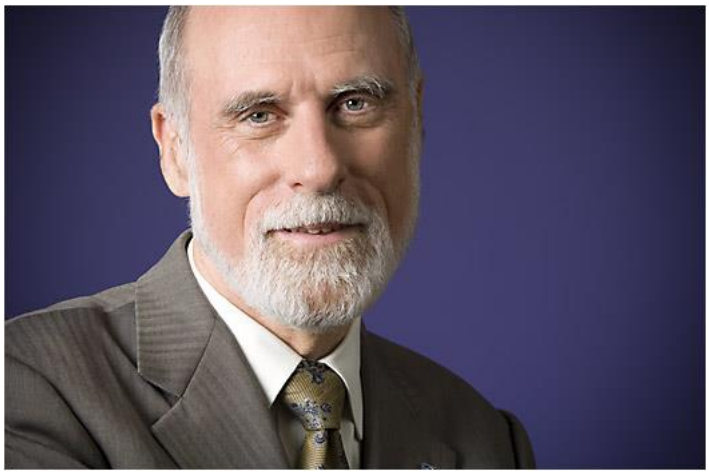
The neutrality principle did not originate nor is it limited to the internet. Other networks that people use every day rely on this idea. Take, for example, the electric network grid. It doesn't matter what you plug into your electrical outlets at home, they all get access to the same electricity. The fundamental rule behind this is that no discrimination exists between any devices that you plug in; they all work equally well. Some have argued that this idea has been around since the 1800s and the age of telegraphs.

> ...messages received from any individual, company, or corporation, or from any telegraph lines connecting with this line at either of its termini, shall be impartially transmitted in the order of their reception, excepting that the dispatches of the government shall have priority.
>
> – An act to facilitate communication between the Atlantic and Pacific states by electric telegraph., June 16, 1860

This essentially stated that all messages transmitted must be transmitted in the order in which they were received and cannot be subject to discrimination. The point to this is that the principle of net neutrality is not new.

The Current State of Affairs: Should the Internet be Tiered?

When some people hear about net neutrality, the first thing that comes to mind is government regulation. These people want to preserve the internet in its present state, a state in which people can freely express their ideas in a forum as open and egalitarian as possible. These people think that regulation would only impede the freedom associated with the internet when that is desired is to maintain the status quo. To a degree, these people are right, even the most devoted supporters of net neutrality only want to maintain what we have now. What people do not always realize is that even though there is no government regulation at present, the internet has been following these ideals until very recently.



"The remarkable success of the Internet can be traced to a few simple network principles...which together give consumers... control. This 'neutral' network has supported an explosion of innovation at the edges of the network"
- Vint Cerf [*pdf link] *Chief Internet Evangelist, Google*

To reiterate, the original internet followed the principle of neutrality without the need for any legal intervention.

Tim Berners-Lee, one of the founding fathers of the internet, stating that the internet was created with the intention that it remain neutral/non-discriminatory

It was not until fairly recently after the merger of two major telecom (telecommunications) companies AT&T and SBC communications where talks of "tiering" the internet came into light. These companies proposed that there should be a high-speed "tier" to their networks where some services would be favored over others. Sites that choose to pay for this service will then get faster and more reliable service. The desire to stop tiering from taking place is the main reason that interest in net neutrality legislation has ballooned in the last few years.

The Problem with Tiered Internet

Tiered internet will mainly affect the consumer in two ways. The first is in the pocketbook. The second and possibly a bit more difficult to see is what is often called the "gatekeeper" effect, which is the truly dangerous one.

At first glance, tiered internet seems fine; companies that pay more get faster services. However, this goes against the "end-to-end"

paradigm that the internet was built on. Few people may have ever heard of this term but all users of the internet rely on this principle. The general gist of this is that all control of what goes on through the internet should be controlled by the producer and the end user, not the intermediary network provider that controls them. By being able to regulate who gets to use the faster more reliable service, they would create what Tim Wu from the Colombia Law School calls "the Tony Soprano business model". The network owners stand in between the content provider and the end user and elicit money from any bit of information that wants to pass. After that, one of two things can happen. The content provider can choose to pay the fee, the network owners make liberal profit, and the content provider passes the cost onto the consumer. Conversely, the content provider can opt out of paying and the end user is left with slow-loading and possible even degraded content. Either decision spells trouble for the average consumer. Regardless of which scenario takes place, the result will be monetary loss to the consumer and, even worse, the rise of an internet "gatekeeper".

Other than content, any bit of information is of the same value as any other. Even then, the desirability of the content is determined by the end user and no one else. However, the whole story would change if tiered internet was to be allowed. It can be assumed that fees to use upper tier would be high. This will probably mean that these people will not be able to afford access this special tier. That leaves the burning question: what about lower tier? Of course, the telecom companies promise that nothing will be degraded or blocked but that is backed only with their word and in light recent events, their word seems less than trustworthy. Madison River Communications is a North Carolina telecommunications company which intentionally blocked voice over IP traffic due to the fact that

they also operated regular telephone service and this traffic was taking away some of their telephone business. While this may seem extreme, it has happened on multiple occasions. The result is still that the telcos (telecommunications companies) use their market power to discriminate what content is fastest and most reliable and in essence become the gatekeepers of what content is shown on the internet. This is often said to be analogous to what has become of cable TV where a small number of powerful corporations decide what programming is shown depending on who can make them the best offer. Even worse, there are now talks of the big network providers such as AT&T and Verizon creating content, especially video content, which need the fast networks the most. If this happens and there is no neutrality provision in place, then there would be little reason for the telcos *not* to gouge the competition or even degrade their service since they would be indirect competition with content providers.

It should come to no surprise that regular people and not major corporations create over 60 percent of the content on the internet. Usually these people are the ones that create such web milestones as Google, yahoo, eBay and craigslist. If a tiered internet existed, the innovative startups that have defined the internet would have been relegated to the slow lane and would not have grown as they did. Instead, these companies would have suffocated from poor quality of service from the telecom companies and the best thing they could hope for is a quick buyout from these massive corporations for much less than they are worth. This leads to a decrease in the amount entrepreneurs willing to venture in new technologies and an overall decrease for innovation.

While this situation may sound dire as is, there are even more ramifications. Take for example, youtube, an online provider of user created video. Let's say Verizon has a service similar to that of youtube but more restricting and is overall inferior. Because it is the user that chooses what content suits them best, youtube becomes successful since it is deemed superior while Verizon's service flounders. However, if the internet was tiered, the startup

youtube would simply not have enough capital to pay an extra fee to make sure their connection to the end user is reliable on top of their normal fee. On the other hand, Verizon's service would be infinitely faster and more reliable since they control the pipes on which the data travels and decide to prioritize their service. What concludes is a lopsided battle with Verizon the winner not because the public thought they had a better service but because Verizon chose to favor their own content over others.

In the end, tiering will result in greater profits for the network providers at the expense of the consumer.

Response to the Arguments Against Net Neutrality

The telcos have two general complaints with a non-tiered, neutral network. They argue that the improvement of infrastructure is costly and without proper compensation, results in major content providers not paying their fair share. They also argue that tiering is a natural step in the free market system and if anything, government regulation will only result in a greater market failure. While there is some truth to both these arguments, they do not hold up under higher scrutiny.

The telecom companies often argue that large content providers such as Google were taking advantage of the network providers. A Washington Post article recently quoted Verizon senior vice president John Thorne accusing Google of receiving a "free lunch" (expanded quote at right) in which Google receives the benefit of faster service to the end user without paying more per bit. That line however is deceiving. It makes the reader think that Google pays a flat rate, much like end users, and sends as much data over the network as they want and that is simply not true. Google pays the network for exactly how much bandwidth they use. If they choose to use more bandwidth in April than they did in March, then they will have to pay more that month. Therefore, if the service becomes faster and they are able to send more data out than they previously could, it would result in a higher bill. Not only that, but the consumer pays the same people to access the information that

Google paid so much to send out. To make content providers pay this extra fee would only result into costs trickling back to the consumer and in yet a third time the network providers are paid.

Still, even if the telcos are being paid multiple times, they argue that it is fair since it should be the market that decides how much they can charge and if the market allows tiering and it maximizes profits then it is a natural part of the economy. Again, this statement, although true, is misleading. The free market only works if there is ample competition. As studies show, 98 percent of American have two choices or less for broadband service, and is a situation as then House of Representatives Judiciary Committee chairman Jim Sensenbrenner calls "a virtual duopoly" that requires a "clear anti-trust remedy".

Jim Sensenbrenner (R-WI)

Essentially what Sensenbrenner states is that prices, which would usually decrease in the face of competition between network providers, will remain high due to lack of competitors and the consumer will be the one to feel the brunt of this extra cost. Thus, without net neutrality legislation, consumers lose.

Conclusion

It is true that many people fear government regulation of anything and net neutrality legislation is no different. In this case, however, the presence of the telecom oligopolies have proven that the market will only hurt consumers if there is no government intervention.

By allowing the telcos to tier the internet, consumers will be forced to pay multiple times for the same service. On top of that, tiering could result in telcos becoming an internet "gatekeeper" that could greatly influence what stays and goes on the internet.

Even still, the cases against net neutrality and for tiering are weak at best. Their arguments that content providers are receiving a "free lunch" are unsubstantiated and, in fact, the telcos are paid twice already. There should be no need for them to be paid a third time. Worse of all is their misleading view that the free market will even out any inequities of their plans when they should clearly know that their industry is anything but a free market.

If the internet is tiered, the greatest losses will be to the consumers.

Works Cited

1. Berners-Lee, Tim. "Net Neutrality: This is Serious." Decentralized Information Group. 21 June 2006. MIT Computer Science and Artificial Intelligence Laboratory. 1 May 2007 <http://dig.csail.mit.edu/breadcrumbs/node/144>.
2. Berners-Lee, Tim. "Neutrality of the Net." Decentralized Information Group. 2 May 2006. MIT Computer Science and Artificial Intelligence Laboratory. 1 May 2007 <http://dig.csail.mit.edu/breadcrumbs/node/132>.
3. Broache, Anne, and Declan McCullagh. "Playing Favorites on the Net?" News.Com. 21 Dec. 2005. 1 May 2007 <http://news.com.com/Playing+favorites+on+the+Net/ 2100-1028_3-6003281.html>.
4. Lessig, Lawrence, and Robert W. McChesney. "No Tolls on the Internet." Washington Post 8 June 2006. 1 May 2007 <http://www.washingtonpost.com/wp-dyn/content/article/2006/06/07/AR2006060702108.html>.
5. Mohammed, Arshad. "Verizon Executive Calls for End to Google's 'Free Lunch'" Washington Post 7 Feb. 2006. 1 May 2007 <http://www.washingtonpost.com/wp-dyn/content/article/2006/02/06/AR2006020601624.html>.
6. O'connell, Patricia, ed. "At SBC, It's All About "Scale and Scope"" Business Week 7 Nov. 2005. 1 May 2007 <http://www.businessweek.com/ @@n34h*IUQu7KtOwgA/magazine/content/05_45/ b3958092.htm>.
7. Taylor, Paul. "AT&T Chief Warns on Internet Costs." Financial Times 30 Jan. 2006. 1 May 2007 <http://www.ft.com/cms/s/3ced445e-91c5-11da-bab9- 0000779e2340.html>.
8. Weitzner, Daniel J., comp. The Neutral Internet: an Information Architecture for Open Societies. MIT Computer Science and Artificial Intelligence Laboratory. 1 May 2007 <http://dig.csail.mit.edu/2006/06/neutralnet.html>.
9. Wu, Tim. "Network Neutrality FAQ." Columbia Law School. 1 May 2007 <http://timwu.org/network_neutrality.html>.
10. Wu, Tim. "Why You Should Care About Network Neutrality." Slate 1 May 2006. 1 May 2007 <http://www.slate.com/id/2140850/>.