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Free the Internet!

The Internet is in danger of being corrupted by government officials and the businesses they pull for. Many political officials in Congress think that allowing a major internet carrier the right to give priority to certain traffic and website while slowing or even blocking other traffic is completely fine (Weiss 2). Net neutrality is an important aspect of the Internet to maintain if open and fair access is to be available to every person that uses it.

To understand the concept of net neutrality, one must understand quality of service. Quality of service is simply put as a mechanism for prioritizing packets on a network based on source, destination, or what type of information the packet holds. It involves inspection of data packets that are en route, sending the most important packets first, while less important packets are queued and sent whenever possible. While it may not be helpful on bandwidth links that are not fully utilized, heavy traversed links and slow bandwidth pipes can definitely benefit from quality of service.

With quality of service, internet service providers can choose which packets should get priority and which packets are not as important. In the previous years, most data transversing the Internet was a web request or a file transfer. Now that applications like voice over IP, in which phone systems run over the Internet instead of the traditional public switch telephone network, quality of service is used to ensure that voice over IP traffic is prioritized and processed before another packet that may not have such strict latency requirements, like a website request.

The Internet was built on the basis that all packets are created equal, meaning that a

website request packet is no different that a file transfer packet at the core of the internet. The Internet was designed to handle packets on an equal basis rather than prioritizing certain kinds of traffic. Its architecture makes end to end service use more bandwidth capacity the further one host is from the other (Crowcroft 51). Quality of service can inspect a packet's information, determine what type of traffic is carried within, and process it accordingly. Dipankar Raychaundhuri, a Rutgers University professor, states that the Internet "works well in many situations but was designed for completely different assumptions... it is sort of a miracle that it continues to work well today" (Jesdanun).

Quality of service is a useful tool. Within their own private networks, many businesses and home users can implement it to prioritize traffic they send as a way to manage the limited amount of bandwidth given. For example, a home user may want to prioritize voice over IP traffic over file transfer, as voice over IP traffic is delay sensitive and must be sent first. However, quality of service is not a technique that should be implemented as the core of the internet, or even within an internet service provider or other communications carrier in an unfair manner (Held 1). An unfair manner may included prioritizing traffic to a search engine site that offers paid advertisement based on page views, while throttling traffic to a different search engine site in order to steer customers to use the search engine of the provider's choice (Held 1). The uncertaintity of an unfair Internet has many implications. Michael Geist explains in his article the concerns that would arise if net neutrality fails:

> The first is the fear of a two-tier Internet. As providers build faster networks, there is reason to believe that they will seek additional compensation to place content on the "fast lane" and leave those unwilling to pay consigned to the slow lane... Consider an Internet where U.S. Television and movie productions zip quickly to consumers computer because U.S. Studios have paid for the fast lane,

> while Canadian and user generated content creeps along in the slow lane... The second concern is that ISPs will block or degrade access to content or applications they don't like, often for competitive reasons. (Geist 2)

An example is that an internet service provider that offered voice over IP service. The internet service provider could throttle or block third party voice over IP traffic in an attempt to get customers using their network to switch to their voice over IP service rather than using the third party, in effect, creating a monopolization of voice over IP service within the service provider's network (Kabay 2).

Another aspect of net neutrality is to keep the communications carrier apart from what data is sent on the network. This means that if a user on the network does something illegally, then the service provider should not be responsible for that user's actions. Internet services providers who wish to use quality of service to prioritize certain traffic while throttling others may then be brought into legality of a user's actions on the network because the network is no longer content-neutral (Kabay 7). Take for example the case *Lumney v. Prodigy* in which Lumney sued Prodigy on claims that another user had stolen his identity and used his email address to sent threatening e-mails. A judge ruled in favor of Prodigy, stating that "Prodigy's role in transmitting e-mail is akin to that of a telephone company, where one neither wants nor expects to superintend the content of its subscribers' conversation. In this respect, an ISP, like a telephone company, is merely a conduit" (Kabay 6). In this regard, internet service providers should want net neutrality for the protection it offers from the government and the judicial branches.

Net neutrality is not just as simple as keeping the Internet fair. It requires that different services on the Internet or services of the internet service provider remain fair and balanced for all. Fair connectivity between networks is crucial for net neutrality, but it is not the only aspect.

Performance neutrality should include a standard for applications, while service neutrality should give the customer more choices to gain a better service (Crowcroft 54). Each aspect helps to break down net neutrality and make it easier to maintain.

Laws are already in place to ensure net neutrality stays. The Net Neutrality Act of 2006 keeps broadband providers in line by requiring fair treatment of traffic, content, and users on a network. An internet service provider also must not throttle bandwidth or disrupt users from receiving information from the Internet in a fair manner. The act allows home users to run any network device within their network with protection from the internet service provider. It also allows competition for services; an internet service provider cannot block a competing company's device or traffic, even if the internet service provider offers the same service (Hand 2). Traffic could also be throttled, taking for example, BitTorrent, a peer to peer file sharing protocol widely used for pirating movies and film, but is also legitimately used by artists and movie makers to distribute their work (Geist 2).

Though maybe not apparent at first, the First Amendment to the United States Constitution supports the idea of net neutrality. The idea of free speech is one of the core traits of the Internet today. Many people use the Internet as a debate forum for political and social issues affecting the world today. Broadband providers can choose to throttle traffic or even block sites that may contain material the service provider does not like. This is a clear obstruction of freedom of speech and cannot be tolerated. Net neutrality protects freedom of speech by allowing equal access to information by any user. If any other argument for net neutrality is not valid enough, the argument for freedom of speech infringement should settle the dispute.

Net neutrality is not a widely known issue, which may be why there is not much support for it. If the public knew about the issues at hand, then maybe more concern would be directed toward the problem. The general public must unite against the corporations that oppose net

neutrality and put pressure on our legislative branch of government to enact laws to protect net neutrality (Hand 3). The Internet consists of a global community and all people within the community should take the stand in favor of net neutrality, less they be unfairly discriminated by simply because they may not have enough money to pay for the quality of service that a big business could buy. As it currently stands, the big telcos like Verizon and AT&T currently adhere to net neutrality because of laws enacted, however, the expiration date of these laws ends by 2009 (Engebretson 2).

Opponents of net neutrality are usually in political positions or stand monetary gain from getting rid of the idea. Opponents of the idea argue that taking away service from some users or downgrading the quality of some applications will boost service greatly for other users or applications (Crowcroft 54). However, they fail to realize that creating this unfairness is not what the Internet is about. Frannie Wellings, the associated policy director for Free Press, said that, "We're concerned that the Internet will turn into the cable model, where gatekeepers control access to content" (Engebretson 1). She goes on by stating that the innovation of users on the Internet will dwindle because of the high price cost of enforcing an unfair quality of service, and notes that giants now, like Google, may not have survived had net neutrality not been in place.

Instead of implementing quality of service on the Internet and disrupting net neutrality, it is better to just build another Internet. A program at Stanford university is currently researching the necessary steps it would take to bring a new Internet that will be equipped to handle data, voice, and video, while ensuring that no service is disrupted from the use of another. In a paper released by the research team at Stanford, they described their views of the Internet as:

> We believe that the current Internet has significant deficiencies that need to be solved before it can become a unified global communication infrastructure. Further, we believe that the Internet's shortcomings will not be resolved by the

> conventional incremental and "backward-compatible" style of academic and industrial network research... In summary, we don't believe that we can or should continue to rely on a network that is often broken, frequently disconnected, unpredictable in its behavior, ramping with (and unprotected from) malicious users, and probably not economically sustainable. (McKeown 1-2)

Internet2 makes this idea come true. Take for example that astronomers wish to share data transmitted from a telescope with other astronomers around the world, all in real time (Graves 1) . This can partially be accomplished on today's Internet, however, the scenario demands a quality of service that simply cannot be built into the Internet currently (Graves 2). With Internet2, not only the end to end bandwidth is increased, but quality of service techniques to insure specifications on throughput and latency so that such scenarios become a reality, while also using the IPv6 addressing scheme for its enhanced functionality over the current IPv4 implementation that is dominant on the Internet today.

Another new global network that is in its early stages is Next Generation Internet. It is very similar to Internet2, but it is not exactly the same. Four existing networks – DREN, NREN, ESnet, and the National Science Foundation Network (NSFNET) – combine to make up Next Generation Internet. It is in the process of testing, as routers and switch are continuously upgraded to perfect the network, while the fiber optic cable is already in place (Fowler 27). The project also hopes that the current Internet developers will pick up on the technology being used and apply it to increase bandwidth on the Internet (Fowler 28).

Not only does the core of these networks need to be fast, but in order for the end user to receive the upgraded service, the service needs to be included at the "last mile" of the network. The last mile refers to the portion of the network closest to the end user, for example, at a home or a small business. The network technologies must be able to handle the service, as well as the

user's computer and network. While computers now may be able to handle the traffic now, it is possible that these machines will become obsolete within years (Fowler 28).

In conclusion, the Internet needs to remain fair and balanced to keep net neutrality. The Internet has united communications throughout the world with the instant ability to receive news, send electronic messages, or to collaborate with people at a distance not possible beforehand. Although another Internet can be built, perhaps with quality of service engrained into its design, the original should stay fair as it is currently, as it helps to advance communications across the world, making the world just a bit smaller. If net neutrality does not prevail on the current Internet, then the world starts to slowly expand again.

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