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Net Neutrality-A Concept of Open Internet

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Abstract: ***The Internet is a global, interconnected and decentralised autonomous computer network. The idea of an open Internet is the idea that the full resources of the Internet and means to operate on it are easily accessible to all individuals and companies. This often includes ideas such as net neutrality, open standards, transparency, lack of Internet censorship, and low barriers to entry. Net neutrality is the principle that Internet service providers and governments should treat all data on the Internet equally, not discriminating or charging differentially by user, content, site, platform, application, type of attached equipment, or mode of communication. This paper illustrates about Net neutrality and it's related issues.***

Keywords: Net Neutrality, Open Internet, Internet Protocol

1. Introduction

The Internet is a global, interconnected and decentralised autonomous computer network. We can access the internet via connections provided by Internet access providers. These access providers transmit the information that we send over the Internet in so called data "packets". The success of the Internet I based on two simple but crucial components of its architecture: (a) Every connected device can connect to every other connected device. (b) All services use the "Internet Protocol", which is sufficiently flexible and simple to carry all types of content (video, e-mail, messaging etc).

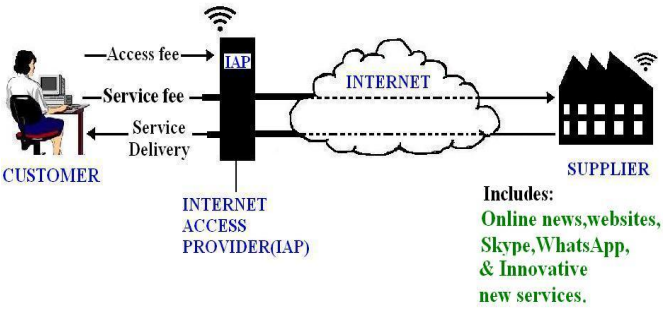

Figure (a) illustrates Open neutral access model

Net Neutrality is the most commonly defined as the principle that Internet users can connect to any other point in the network. Users can create, access, and use any content, service and application they choose, without discrimination, restriction or limitation imposed by those who run the infrastructure.

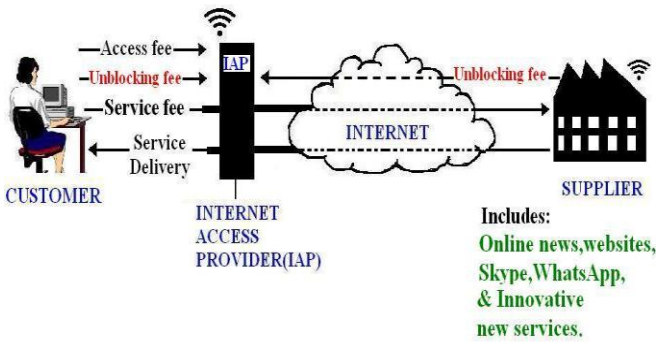

Figure (b) illustrates Non-neutrality access model

Some broadband Internet providers like Verizon, AT&T, and Comcast want to try charging content providers like Google for sending information to consumers over their lines. They have also suggested creating special Internet "fast lanes" for particular sites with high-bandwidth needs, such as streaming video, movies and the like. Critics fret that this could be the end of the Internet as we know it. Proponents say that it may help fund infrastructure expansion and promote new innovation by ensuring delivery for time-sensitive and quality-sensitive services.

Net neutrality has no widely accepted precise definition, but usually means that broadband service providers charge consumers only once for Internet access, do not favor one content provider over another, and do not charge content providers for sending information over broadband lines to end users.

In other words, "net neutrality" is actually a friendly-sounding name for price regulation. We fear that such regulation could substantially reduce investment incentives, distort innovation, and ultimately harm consumers. The government must weigh policy choices carefully.

2. Issues

Access to the Internet remains an increasingly important resource to individuals, as both consumers and citizens. As consumers, individuals gain access to digital content such as music, films, e-books, games, and any number of goods and services through e-commerce. As citizens, individual gain the ability to both access and create conduits for discourse, debate, and creativity. The wealth of information available, and the variety of applications that consumers can use to communicate, allow for an unprecedented freedom of expression and information. To access these resources, consumers rely upon Internet Service Providers (ISPs), which provide end-users access to the Internet. Because many ISPs are vertically integrated with owners of basic communications infrastructure, they have the technical ability to act as gatekeepers, blocking or degrading consumer's access to certain content and applications, or limiting the types of equipment that can be attached to the network. Such behavior can severely limit the usefulness of the Internet and

frustrate consumer's aims.

Such limitations on access are not merely theoretical. In the United States, Madison River Communications, a telecommunications company and ISP, blocked customers from using Voice over IP (VoIP) services, which would compete with its own telephony services. Comcast, a major ISP which also provides television programming through its cable television service, sent false data along its network to prevent its customers from using a wide range of popular protocols and applications, including P2P application widely used for online distribution of legal movies, television programs, and open source software. A Canadian ISP, Telus, prevented its users from reaching the website of a labor union that represented the company's striking employees. Around the world, additional examples abound of ISPs blocking content either to disadvantage competition or limit access to dissenting political views. Such incidents demonstrate the skewed incentives that result when a network access provider also has a stake in the content and applications accessed by its customers. When the provide can selectively control access, it may select against speech or services that it perceives as harmful to its self-interests. This may include content, applications, or devices that compete with the provider's own interests; or content that the provider disfavors, such as criticism of the provider itself.

These issues are exacerbated when a lack of competition prevents users from migrating away from discriminatory providers, as well as when customers lack the ability and information necessary to discover any discriminatory practices.

3. The Three Main Reasons Why Net Neutrality is Violated

There are many reasons why Net Neutrality is been violated, the most frequent ones are as follows:

(a) Access providers violate Net Neutrality to optimize profits

Some Internet access providers demand the right to block or slow down Internet traffic for their own commercial benefit. Internet access providers are not only in control of Internet connections, they also increasingly start to provide content, services and applications. They are increasingly looking for the power to become the "gatekeepers" of the Internet. For example – the Dutch telecoms access provider KPN tried to make their customers use KPN's own text-messaging service instead of web-based chat services by blocking these free services. Another notable example of discrimination is T-Mobile's blocking of Internet telephony services (Voice over IP, or VoIP in short), provided for example by Skype, inorder to give priority to their own and their business partner's services.

(b) Access providers violate Net Neutrality

Blocking measures by access providers have frequently been misused to block unwanted content. The private company providers access to the internet and increasingly uses Deep Packet Inspection. *Deep Packet Inspection(DPI)* – Information that we send and receive through the network is called as "packets", with "envelopes" indicating sender and receiver. Unlike normal network equipment, DPI looks not just at the envelopes but into packet contents, and can be used to disrupt or block certain packets based on what they contain. DPI can be used for innocuous reasons (to fight spam o viruses), but also to carry out surveillance or to censor information as this technology makes it possible to capture information from network traffic and assess it in real time. Therefore private companies police their user's connections to block access to certain websites so that, the users can't access the data from another website, which is violation of Net Neutrality.

(c) Access Providers violate Net Neutrality to comply with the law

Governments are increasingly asking access and service providers to restrict certain types of traffic, to filter and monitor the Internet to enforce the law, and at the same time demanding that they do not use this technology for their own business purposes.. This is done for reasons as varied as protecting national gambling monopolies and implementing demonstrably ineffective efforts to protect copyright.

4. The Goal of Net Neutrality

Inorder to ensure that Internet Service Providers (ISPs) and communications networks do not unfairly limit the applications and information available to consumers. Net Neutrality is a state in which users have the freedom to access the content, services, applications, and devices of their choice.

a) ***In a neutral Internet, consumers*** –

- have the right to attach devices of their choice;
- have the right to access or provide content, services, and applications of their choice;
- have the right for their access to be free from discrimination according to source, destination, content, or application.

b) In a neutral Internet, ISPs and communications network

- do not unfairly block content, applications or devices;
- do not deliberately degrade access for content, applications, or devices;
- do not prioritize data according to its source or destination;
- do not discriminate against particular providers of content, applications, services, or devices.

5. Net Neutrality Principles

(a)**Ensure Neutrality on All Public Networks**: Neutrality is an essential characteristic of public broadband Internet access. The principles that follow must apply to all broadband providers and Internet Service Providers (ISPs) who provide service to the general public, regardless of underlying transmission technology (e.g., wireline or wireless) and regardless of local market conditions.

(b)**Prohibit Blocking**: ISPs and public broadband providers should not be permitted to block access to legal web sites, resources, applications, or Internet-based services.

(c)Protect Against Unreasonable Discrimination: Every person should be able to access legal content, applications, and services over the Internet, without "unreasonable discrimination" by the owners and operators of public broadband networks and ISPs. This will ensure that ISPs do not give favorable transmission to their affiliated content providers or discriminate against particular Internet services based on the identity of the user, the content of the information, or the type of service being provided.

(d) Prohibit Paid Prioritization: Public broadband providers and ISPs should not be permitted to sell prioritized transmission to certain content, applications, and service providers over other Internet traffic sharing the same network facilities. Prioritizing certain Internet traffic inherently disadvantages other content, applications, and service providers—including those from higher education and libraries that serve vital public interests.

(e)Prevent Degradation: Public broadband providers and ISPs should not be permitted to degrade the transmission of Internet content, applications, or service providers, either intentionally or by failing to invest in adequate broadband capacity to accommodate reasonable traffic growth.

(f)Enable Reasonable Network Management: Public broadband network operators and ISPs should be able to engage in reasonable network management to address issues such as congestion, viruses, and spam as long as such actions are consistent with these principles. Policies and procedures should ensure that legal network traffic is managed in a content-neutral manner.

(g)Provide Transparency: Public broadband network operators and ISPs should disclose network management practices publicly and in a manner that- (1) allows users as well as content, application, and service providers to make informed choices; and (2) allows policy-makers to determine whether the practices are consistent with these network neutrality principles. This rule does not require disclosure of essential proprietary information or information that jeopardizes network security.

(h) Continue Capacity-Based Pricing of Broadband Internet Access Connections: Public broadband providers and ISPs may continue to charge consumers and content, application, and service providers for their broadband connections to the Internet, and may receive greater compensation for greater capacity chosen by the consumer or content, application, and service provider.

(i)Adopt Enforceable Policies: Policies and rules to enforce these principles should be clearly stated and transparent. Any public broadband provider or ISP that is found to have violated these policies or rules should be subject to penalties, after being adjudicated on a case-by-case basis.

(j)Accommodate Public Safety: Reasonable accommodations to these principles can be made based on evidence that such accommodations are necessary for public safety, health, law enforcement, national security, or emergency situations.

(k) Maintain the Status Quo on Private Networks: Owners and operators of private networks that are not openly available to the general public should continue to operate according to the long-standing principle and practice that private networks are not subject to regulation. End users (such as households, companies, coffee shops, schools, or libraries) should be free to decide how they use the broadband services they obtain from network operators and ISPs.

6. Benefits of Achieving Net Neutrality

(a) No discrimination: Net neutrality is the principle that all types of content and all senders and recipients of information are treated equally. This principle upholds the right of freedom of expression. The freedom to seek, receive and impart information and ideas of all kinds. Without Net Neutrality, Internet access providers would become gatekeepers of the access to content on the Internet, with the power to decide what we can read and write and whom we are allowed to communicate.

(b) Free Expression: The history of Internet shows very clearly that Net Neutrality encourages creative expression. The ability to publish content and to express opinions online does not depend on financial or social status and is not restricted to an elite. There is a huge trend towards people sharing information and expenses online. This means that individuals, small businesses, traditional news sources and large businesses can all create content that is available to everybody. Net Neutrality enables information to travel through the network without being restricted or blocked, thereby enabling a vibrant digital environment, full of ideas and innovation.

(c)Privacy: Measures to undermine Net Neutrality can have a direct impact on our privacy. For example- The private company providers access to the internet and increasingly uses Deep Packet Inspection(DPI) and police their user's connections to block access to certain websites so that, the users can't access the data from another website, which is violation of Net Neutrality.

(d) Access to Information: Net Neutrality is also the catalyst for the creation of diverse and abundant online content. Non-profit projects like Wikipedia, blogs and user-generated content in general have the same conditions to access and publish information as large, commercial Internet players. Without Net Neutrality, we would have a two-tier internet where only those who can pay would be able to access information or get content delivered faster than others.

(e) Democratic Process: Net Neutrality improves the quality of democracy by ensuring that the Internet remains an open forum in which all voices are treated equally. It ensures that the ability to voice opinions and place content online does not depend on one's financial capacity or social status. It is therefore a powerful tool in facilitating democracy, enabling diverse ideas to be expressed and heard.

(f) Tool against censorship: Without Net Neutrality, network operators can block or throttle not only services, but also content. The fundamental shift in information communications technologies over the last 10 years has facilitated revolutions and it offers the possibility of greater social reforms through greater transparency and the free flow of information.

(g) Consumer choice: Net Neutrality ensures access to content and offers greater consumer choice by allowing more players to enter the marketplace. Therefore, the amount of online information is vast and growing, leading to intellectual and cultural interaction that was scarcely imaginable twenty years ago. Without a neutral net, access providers can prioritise applications or services, thereby creating "walled gardens" in which consumer choice is limited.

(h) Innovation and Competition: Net Neutrality continues to foster innovation, as individuals and companies alike can create content and provide new services with the online world as their audience. Any individual can upload content at relatively little cost. An unrestricted Internet gives market access to small and medium enterprises to small and medium enterprises or start-ups that might not otherwise have a competitive edge against larger corporations. Without Net Neutrality however, access providers are allowed to restrict access needed by innovators that seek to develop online services. Innovators would have a smaller and less predictable marketplace for their services.

(i) Digital Signal Market: Net Neutrality is a cornerstone for the completion of the Digital Signal Market. It removes barriers and allow users freely communicate, fully express themselves, access information and participate in the public debate- without unnecessary interference by gatekeepers or middlemen. By contrast, a non-neutral internet contributes to the fragmentation of the Digital Signal Market.

(j) Protecting a global Internet: As soon as access providers start making use of traffic discrimination tools interfere in global communications for their own commercial benefit, governments will be tempted to use the technology for public policy goals. In fact, governments are more and more often asking providers to restrict certain types to traffic, and to filter and monitor the Internet to enforce the law.

7. The Following are the Points to Safeguard Net Neutrality

a) The Internet must be kept neutral and open.
b) Accessibility between all endpoints connected to the Internet without any form of restriction must continue to be upheld.
c) All forms of discriminatory traffic management, such as blocking or throttling should be prohibited, unless as part of objectively necessary traffic management measures.
d) Traffic management should only be allowed as a narrowly targeted deviation from the rule. It must be either necessary, proportionate and legally required, or required to address a transient network management problem which cannot be dealt with otherwise.
e) Legal clarity must be established to determine what types of traffic management are legitimate under which circumstances.
f) Access providers have to indicate in their contracts and advertisements a guaranteed minimum bandwidth, maximum latency and quality measures for the connection.
g) We need to establish a clear set of obligations for access providers regarding the neutrality and best effort of the Internet broadband services on the one hand, and for specialized services that are not transported via the Internet on the other.
h) By default, only header information should be used for traffic management. The use of Deep Packet Inspection(DPI) should be reviewed by national Data Protection Authorities.
i) End-users should be able to report violations of the points above to an authority defined by the government. This authority must have the necessary resources to enforce the above conditions.

8. Conclusion

Net Neutrality is the principle that every point on the network can connect to any other point on the network, without discrimination on the basis of origin, destination, or type of data. This principle is the central reason for the success of the Internet. Net Neutrality is crucial for innovation, competition and for the free flow of information. Most importantly, Net Neutrality gives the Internet its ability to generate new means of exercising civil rights such as the freedom of expression and the right to receive and impart information.

Restricting the access to the Internet won't encourage innovations and due to lack of competition the standard of the Internet will come down. Hence, we need the Open Internet to foster job growth, competition and innovation. Competition leads to innovation which intern leads in quality of service.

Therefore Internet Service Providers and governments should treat all data on the Internet equally, not discriminating or charging differentially by user, site, platform, application, type of attached equipment, or mode of communication

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