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Net neutrality from legislative, technical and marketing perspective

Abstract:

Net neutrality is the principle in which Internet service providers (ISPs) treat all data traffic equally, and none of them slows down or accelerates data transfer speeds depending on who the current user is, what kind of content is being transferred, from which web site it comes, or from which platform, application or communication model. So far this kind of ISPs behavior has been a standard, but by changing certain rules, new moments which can significantly change the way the Internet is use are coming.

Also, the way that we do business over Internet might change as well. The elimination of net neutrality can be seen from several perspectives, and we will pay attention to net neutrality from legislative, technical and marketing one.

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Legislative perception

In September 2005 U.S.'s Federal Communications Commission released a Policy Statement establishing four principles in order to ensure that broadband networks are widely deployed, open, affordable, and accessible to all consumers. Those principles entitle consumers to:

1. access the lawful Internet content of their choice,
2. run applications and use services of their choice, subject to the needs of law enforcement,
3. connect their choice of legal devices that do not harm the network,
4. competition among network providers, application and service providers, and content providers.

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They set the ground for establishing net neutrality as Federal Communications Commission released Open Internet Report and Order, in December 2010, to preserve the Internet as an open platform for innovation, investment, job creation, economic growth, competition, and free expression. They adopted three basic rules that are grounded in broadly accepted Internet norms:

• Transparency. Fixed and mobile broadband providers must disclose the network management practices, performance characteristics, and terms and conditions of their broadband services.

• No blocking. Fixed broadband providers may not block lawful content, applications, services, or non-harmful devices; mobile broadband providers may not block lawful websites, or block applications that compete with their voice or video telephony services.

• No unreasonable discrimination. Fixed broadband providers may not unreasonably discriminate in transmitting lawful network traffic.

These rules were supposed to empower and protect consumers and innovators while helping ensure that the Internet continues to flourish, with robust private investment and rapid innovation at both the core and the edge of the network.

„In January 2014, the D.C. Circuit struck down the antiblocking and antidiscrimination rules in Verizon v. FCC. The court held that the FCC had the statutory authority to enact the rules, but that the agency had unreasonably interpreted sections of the Communications Act and had regulated broadband providers as "common carriers" despite declining to classify them as such, in violation of that statute." [1] . That's when the FCC started drafting new Open Internet rules, and in March 2015 released Open Internet Report and Order on Remand, Declatory Ruling, and Order whose aim was to enact strong, sustainable rules grounded in multiple sources of legal authority to protect the Open Internet and ensure that Americans reap the economic, social, and civic benefits of an Open Internet today and into the future [2]. This new Order reclassified broadband Internet access service as common carriers under Title II opposed to former classification as information services, governed by Title I of the Communications Act.

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The chairman of the FCC Ajit Pai in his speech given on April 26, 2017 said that they are proposing to return the classification of broadband service from a Title II telecommunications service to a Title I information service. Also to eliminate the so-called Internet conduct standard that gives the FCC a roving mandate to micromanage the Internet, and that they are seeking comment on how they should approach the so-called bright-line rules adopted in 2015 [3].

The FCC issued a Notice of Proposed Rulemaking (NPRM) on May 14 2017, and on December 14 2017, voted in favor of repealing these policies. American Senate passed a resolution to overturn that decision, but the resolution still needs to be voted on in U.S. House of representatives and confirmed by the president of the United States. The repeal of the FCC's rules took effect on June 11 2018 but the legal battle against it still remains.

European Union has adopted the Regulation 2015/2120 of the European Parliament and of the Council laying down measures concerning open internet access and amending Directive 2002/22/EC on universal service and users' rights relating to electronic communications networks and services and Regulation (EU) No 531/2012 on roaming on public mobile communications networks within the Union on November 25, 2015. It establishes common rules to safeguard equal and non-discriminatory treatment of traffic in the provision of internet access services and related end-users' rights, specifies transparency measures for ensuring open internet access, supervision and enforcement.

Using a Regulation as the form of EU law on net neutrality is enabling that the precise wording of the law is identical in all EU/EEA countries. „ISPs are prohibited from blocking or slowing down of Internet traffic, except where necessary. The exceptions are limited to: traffic management to comply with a legal order, to ensure network integrity and security, and to manage congestion, provided that equivalent categories of traffic are treated equally. The provisions also enshrine in EU law a user's right to be "free to access and distribute information and content, run applications and use services of their choice". Specific provisions ensure that national authorities can enforce this new right."

The Internet has greatly contributed to growth and innovation in Europe countries' economies. Information can flow freely, and new content and applications can easily be developed because of the low barriers to entry on the open platform of the Internet. The net neutrality rules in Europe are ensuring that the internet ecosystem can continue to thrive as an engine of innovation and freedom of expression. [4]

Internet neutrality and digital marketing

The end of Open Internet era - or Internet neutrality repeal, which recently came into force in the United States, can have major consequences on business, market and marketing strategies of new and small companies. Some of the authors writing about this new regulation fear that Internet providers and big corporations will use the legislature against small companies and startups.

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The end of Internet neutrality could cause drastic decrease in the number of their users as well as very bad user experience. For less known Internet websites and new projects, this could mean user and revenue loss, as well as complete project shutdown. It could also have a huge effect on already well-established companies and platforms for content distribution and enable Internet Service Providers (ISPs) the possibility to limit data broadband speed when visiting certain services or different platforms. In the end, this could mean two things: 1. full speed paid by service providers, and 2. full speed paid by end user.

For existing companies, this additional cost would lower their competitiveness and make things more difficult for emerging companies. In addition, the regulation could allow ISPs to favor certain platforms and content and in extreme cases, prevent the emergence of new companies or their equal position in the market.

It should also be noted that ISP companies such as AT&T, Verizon and Comcast already own several video contents providing platforms, raising fears they will give priority to their own services.
"This might mean fewer startups get a shot at becoming the next Facebook, Netflix or YouTube. Ultimately, it could lead to your Internet experience looking more like cable TV, where all the content is curated by your provider. " [5]

As the new rules on net neutrality will be used by corporations sourcing Internet services, it may best illustrate events not so long ago when Internet neutrality abuses in the United States were prohibited and punishable. In 2012, for example, the second-largest American telecommunications company AT&T was caught in restricting Apple's FaceTime traffic, which users could use only if they activated the more expensive AT&T Internet access package. "AT&T was limiting the iPhone's FaceTime video-chat service on its cellular networks to users with new, shared data plans, which are generally more expensive. " [6].

FaceTime is a video telephony application that allows Apple users to view and chat using the front video camera on iOS mobile devices or any Apple Mac computer with the FaceTime video camera. One year later, the Advisory Committee on Open Internet, operating within the framework of the independent US regulatory agency Federal Communications Commission (FCC), presented the aforementioned case in its annual report as one of the examples of restricting open access to the Internet.

The Committee presented several opinions and stated "that blocking applications runs the risk of discouraging innovation, but that carriers also need effective ways to manage the limited resources in cellular networks. This led to three main opinions about AT&T's decision to restrict customer access to the FaceTime application over its cellular network, presented from the perspectives of different parts of the mobile broadband ecosystem - application developers, carriers, and network equipment vendors. These opinions convey the conclusions of advocates for these perspectives among the working-group members, but do not attempt to fully represent each community." [7]

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Apart from the end of Internet neutrality, it may also affect the development of new services and products (innovation) in the marketing industry, which already expressed their fears that such development could negatively affect digital advertising. Marketing professionals predict that digital ads could increase marketing costs that could be imposed on telecommunication companies. It remains unclear what can happen if telecommunication companies choose to use the new legislative framework in such a way to restrict access speeds to certain Internet destinations or the speed and turnover of adservers and companies that distribute display ads through advertising networks.

Just one decision could restrict access to content provided by small and startup companies and/or make it difficult to find, forcing them to work under completely new circumstances. Publishers and advertisers warn that consumers should and must access their content without any unfair difficulties. Concerns have also been expressed that this new regulation will enable telecommunication companies which own content providing services to give their users free data streaming of otherwise payable service.

As already said, this could have a huge effect on some of the well-established video content providing companies and/or completely prevent the emergence of new similar services. In such circumstances, publishers who cannot afford such terms unfairly lose market battle.

Marketing professionals will also have additional difficulties in their daily activities as well as in evaluation of marketing campaigns. For them, this will mean that they will be forced to completely change existing business models. As has already been said, ISPs may slow down or completely block display of marketing ads, thus making measuring and calculation of cost-effectiveness (ROI) extremely complex. This can result in reduced transparency and further destabilize client confidence in selected marketing strategy as well as general effectiveness of marketing campaigns on the Internet.

In this regard, authors mention that search engine optimization strategies (SEO) can become less important, and that SEO experts will be completely redundant in some cases. As they write, efforts of SEO experts to optimize and improve the search engine positioning can be minimized, and ultimately irrelevant if the first places on the search engines are to display only fast-line or paid content. Additionally, efforts to increase organic traffic, which is extremely important to advertisers and agencies, becomes extremely difficult and much more complex.

Marketing industry experts who deal with data analytics may also have difficulties, as they will have to find ways to compile and interpret data from different companies and at different access speeds. As stated by Comcowich [8], "Web analytics will become more complicated. Comparing web traffic of different players with varying Internet speeds will be more challenging. That may prompt marketers to approach web metrics differently."

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These are just some of the possibilities that could arise from Internet neutrality repeal. As a conclusion, it may be argued that marketers and other professionals will have to overcome many new technical and unfair difficulties to remain competitive and survive in the market in which all odds are on the side of large and powerful corporations.

Technical background

The development of the TCP / IP protocol, available since the 1970s, has created the prerequisites for transferring large amounts of data from one physical location to another. This protocol represents the basis of all current network connectivity and although it is a very old technology (in terms of modern technology development) it contains robust mechanisms for assuring stable Internet connection, even at high data transfer speeds. Until today, TCP/IP has two main versions: old IPv4 that is used today, and IPv6. IPv6 will replace old protocol because of numerus reasons, but for purpose of this paper we will mention Network Address Translation service (NAT) and much bigger IP address pool. One of the major goals for accepting IPv6 protocol, particularly for real time data transfer, is all new support for quality of service. IP packets that are sent over network in new version of protocol have flow label field that can contain information about packet priority [9]. This contributes to robustness and failover of network, needed for modern applications, and with accent to high availability mobile networks.

Connection of different devices into a single system is a technological challenge that scientists and experts in various IT and technology fields have been dealing with for decades. The result of their work is visible in the created development environments for application and device programming, communication protocols, and ways for physical communication between people, computers, and machines. Over the last few years, direct communication between Machine to Machine (M2M) has been expressed and it is assumed that by the end of 2020, there will be 25 to 50 billion network devices in some form connected to the network [10].

As a result, approximately 40% of the total Internet traffic is expected to generate digital communication between the two [11], without any human interaction. Such predictions are certainly a remarkable innovation potential, and it is expected to explore several new opportunities arising from the explosion of network connectivity. This undoubtedly represents good prerequisites for the development of many business ideas.

Data transfer issues arise at the moment when Internet services that require a secure and stable high-speed connection have appeared. For example, the classic web that is being used today is not so demanding toward a computer network and Internet service providers (ISPs). But, real-time voice or video applications like Skype, Apple Facetime, Google Hangouts, Viber and so on, that are dependent on low latency and higher-than-usual connection speed can create problems for their users. Even applications that are based on video streaming in one way, such as Netflix, can

suffer from low speed network. If multiple network users actively use the Internet, e.g. downloading files from the web, there is a great possibility that VoIP and other demanding applications will not work properly. Because of this, network administrators and ISPs use certain technologies for bandwidth shaping, and the collective name for them is QoS (Quality of Service). QoS can detect types of data packets that are transported via communication network and prioritize applications that are important. Quality of Service can be used by network administrators to create network environment fast and prone to many simultaneous download sessions. As written in IBM Knowledge center [12], network administrator can:

- Regulate the amount of traffic of a certain type injected into the network;
- Mark selected packets according to some policy so that subsequent routers can deliver the indicated service;
- Support services such as the virtual leased line service with proper QoS support along the route; and
- Participate in the resource reservation requests from receivers and announce sender sessions available for resource reservation requests.

QoS support provides functionality as:

- Differentiated services that are transferred thru network
- Traffic policing
- In-profile and out-of-profile packet marking
- Traffic shaping
- Metering
- Integrated services for client and server applications as defined in RFC 1633
- RSVP signaling (RFC 2205)
- Guaranteed service (RFC 2212)
- Controlled-Load service (RFC 2211)
- Policy-based networking

So, QoS system is already fully developed and in use not only by local network administrators, but by ISPs as well. QoS enabled equipment used today provides resources to slow down Internet connection and helps to create different Internet connection payment plans so every user can choose data plan that suits him best. Of course, more expensive data plan provides better connections speeds and more bandwidth, redundant data connections or high-speed streaming for video dependent applications.

In many cases, it is useful to use QoS as it allows setting priorities in data transfer. For example, in an enterprise where there are more simultaneous Internet users, it is desirable that applications such as emails have higher priority than viewing Youtube video content. Email download is a network communication that lasts only a few seconds, while video streaming is an application that, if its priority is not set to a lower level, can disable email reception until video streaming is over. Of course, todays this is not the case because of various mechanisms for QoS, but also because of higher speeds of network connectivity.

Intentional slowdown in Internet access may therefore prevent users from using certain

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services. If the sensors, actuators and other IoT devices are connected to the Internet, it is impossible to create the prerequisites for a new generation of services that result from comprehensive and powerful network connectivity.

Conclusion

Enforcing net neutrality is crucial to maintain balanced and equal possibilities for both personal and business use. From economic point of view, if ISPs have granted the right to enforce their own bandwidth throttling schemes, it would lead to bad environment for small startups and other businesses that enter arena with bigger players like Netflix, Google or Amazon. This would eventually lead to monopolistic behavior that can stop fair business development.

Current network technology is already developed enough so ISPs don't need to invest resources in enabling bandwidth throttling. Of course, if legislative allow. If that happens, todays web sites will not suffer much from that decision. It is because not much data is moved from client to server, and vice versa. So, there is nothing much to slow down. But, modern web sites that are based on video and audio streaming, high bandwidth demanding applications, and applications that requires very low latency network connections can have numerous problems.

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