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The end of network neutrality in the USA and its outcomes for Brazil

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Following the Federal Communications Commission's (FCC) decision to demise network neutrality in the USA on December 14, 2017 [1] [2] [3], Brazilian newspapers have published news reporting the telecommunications companies' request to review network neutrality in Brazil [4] [5] [6].

Depending on the USA events and on the conversation results between the Brazilian representatives from the government and from the telecommunications companies, the way Brazilians access the internet might change. Therefore, it is important to understand why this subject has gained so much relevance recently and what the possible ramifications are for the citizens of our country.

The network neutrality principle in the USA

The "network neutrality" term arose in 2003 [7], but its principle dates from the first telegraph and telephone networks created between 1840 and 1850 in the USA [8] [9]. At that time, telephone calls used to be manually switched by operators, who could or could not redirect callers to competing traders, so there was already a concern that calls were carried out in an impartial manner, without privileging any type of user [10]. In 1860, the Pacific Telegraph Act [11], among other issues, established that messages exchanged by individuals, companies or corporations had to be impartially transmitted, in the order of their receipt, prioritizing the USA government dispatches only.

Over time, electronic forms of communication became indispensable in the people's and companies' lives. Around 1930, AT&T (American Telephone and Telegraph) practically held the telecommunications sector monopoly in the USA, defining prices according to its network use. In 1934, the Communications Act [12], was created to avoid unfair pricing practices based on people's or

companies' discrimination. It was understood that telecommunications companies should serve the public wellness like railway and maritime transport companies.

Other telecommunications sector regulations have been created since 1934, but on April 13, 2015, the FCC issued a "definitive" rule on network neutrality to [13]: (a) prohibit data packets blocking, acceleration, or paid prioritization; (b) prevent broadband internet service providers to unjustifiably interfere on the consumers' and local internet service providers' internet access; and (c) promote greater transparency related to network management and performance practices as well as to broadband internet access commercial terms (by wire or radiofrequency).

Critics said that the rules did not meet the reality of the modern internet era because they were based on an "archaic" law from 1934 [14].

It is noteworthy that, although the FCC demised the rules introduced in 2015, it is necessary that the USA Senate, Congress and the President' Office approve the measure so that it goes into effect [15] [16].

The network neutrality regulation in Brazil

In Brazil, network neutrality is a law that must be followed by all internet service providers, regulated by law 12965/2014, or Brazilian Civil Rights Framework for the Internet [17]. The law establishes in article 9 that the person responsible for "...

In Brazil, network neutrality is a rule that must be followed by all internet service providers and is regulated by the 12695/2014 law, or the Brazilian Civil Rights Framework for the Internet.



transmitting, switching, or routing has the obligation to treat any data packet without distinction as to its content, origin and destination, service, terminal or application”.

Thanks to this law, all people who use the public internet (the World Wide Web) to access and exchange data via computers, tablets, smartphones, or other devices, can use it without the distinction of the content that is being exchanged without being charged more, or less, for it. For the same monthly price already contracted, which varies according to the bandwidth (or data transmission capacity) chosen by the customer, it is possible to exchange in the same optical fiber, copper cable, or radiofrequency band, data packets of text, music, images, among others, without privileging or restricting the exchange of these data packages on the internet. The user is the one who decides how he will use his bandwidth.

The Brazilian Civil Rights Framework for the internet also established that exceptions to the network neutrality would be regulated by presidential decree, which occurred on May 11, 2016 by means of Decree 8771 [18]. Thus, the traffic control can be exercised in cases involving network security, sending mass messages (Spam), controlling distributed denial-of-service attacks (DDoS), and network congestion. The decree also prohibits commercial agreements that might prioritize or privilege data packets according to certain applications offered by the internet service providers (that is, by telecommunications companies) when providing internet access to its customers.

The consumers' point of view

Without network neutrality, consumers (physical or legal person) might have to pay for internet access according to the way they want to use it [19]. Therefore, a consumer who watches movies on the internet (using the services of Netflix, Amazon Prime, Apple TV or Google Play), or who listens online music (using the services of Spotify, Deezer, Apple music or Google music), or that even exchanges large amounts of data for commercial purposes might have to pay for a more expensive plan than that of another consumer who uses internet only to view text pages or to exchange simple messages.

The data packet content distinction by internet providers may create another situation besides the high value of the access packages according to the use of the network. In theory, telecommunications companies could privilege data packages of certain companies due to certain commercial agreements. Thus, there would be no way to prevent a telecommunications company from making an agreement with, say, Amazon, so that the data packets of its streaming movie service, Amazon Prime, had higher priority than the data packets of Netflix or vice versa [3].

In a more extreme situation, telecommunications companies could also privilege or block access to certain websites, certain search engines (such as Google, Bing, Yahoo, Ask, DuckDuckGo, among others), certain messaging services (such as Skype, Messenger, WhatsApp, Telegram, among others), to certain types of applications, and so on. As an example, the purposeful degradation of data traffic by a major telecommunications company, Comcast, was reported in the USA in 2007 by The Associated Press after several tests; that is, there are precedents of this type of market operation [20].

It must be highlighted that some Brazilian internet service provider companies offer access packages that privilege the use of some specific social networking and messaging applications (such as Facebook, WhatsApp, and Twitter) at "zero rating" (normally the access is subsidized by another private company). However, on September 1, 2017, CADE (Administrative Council for Economic Defense, or, *Conselho Administrativo de Defesa Econômica*) closed an administrative inquiry presented by the Federal Public Prosecutor's Office that sought to identify whether these "zero rating" access packages inflicted on any kind of economic infraction; in the end, it was decided that the practice did not violate the network neutrality principle in Brazil [21]. The decision, despite controversial, still gives rise to heated discussions on the internet [22].

The telecommunications companies' point of view

As with telephony, the internet has also become indispensable in everyone's life. The data traffic will always increase due to new equipment that will be connected to the network and to new applications that will demand intense data traffic. For this, investments in infrastructure and innovation are essential.

According to the telecommunications companies, network neutrality discourages investments in infrastructure and innovation creation [23], because to maintain the internet traffic with the same quality of service (without interruption, delays, or traffic degradation) and with high bandwidth, modern equipment and infrastructure are required for the use of fixed (mobile) and mobile (radiofrequency) internet. Given that companies cannot create distinct service classes to offer internet access packages with differentiated prices according to the degree of network usage, the returns on investments that allow investment in infrastructure and new technologies gets reduced [24].

Telecommunications companies and the FCC also maintain that internet access packages with differentiated prices would allow greater digital inclusion because low-income people would be able to sign cheaper packages, even though they can only access certain specific sites and platforms [25].

Another claim is that internet access providers are not paid for the high value aggregated services that run using their infrastructure. Giants like Facebook, Amazon, Netflix, and Google access the internet by paying equivalent values to what an ordinary consumer pays, while these companies get the highest profits from the traffic they generate for themselves [26].

Criticisms and arguments

In the USA, network neutrality critics argue that the government regulations are "excessive", which discourage competition and the search for innovations [27]. But the Free Press, a nonprofit organization in favor of network neutrality, published a survey showing that internet providers have increased their investments by 5 percent in the two years following the network neutrality regulations in 2015 [28] [29], contradicting the notion that companies were affected by regulation.

There are critics who say that companies like Facebook, Amazon, Netflix and Google, despite being companies that most benefit from network neutrality, are also the ones that could affect most small companies starting in the internet industry. That is because the current internet regulations in the USA help these large companies become large monopolies capable of eliminating any competitors if they desire to do so [30]. Nowadays, technology companies have stopped being mere companies that produce hardware, software, and services to also become content producers of movies and music, consequently, the network neutrality maintenance plays an important role in the business agenda of these companies [31] [32].

More pragmatic analysts warn that most of the debated points about network neutrality are artificial, such as the fact that the end of network neutrality will allow that only the technology giants will be able to contract broader internet bandwidths from access providers, giving no chance to small companies starting in the IT industry [33]. In fact, even with network neutrality in the US, companies like Google already have direct connections to the telecommunications companies (this process is known as peering) and they also maintain their own content servers inside those companies (creating content delivering networks), thus content is delivered to users in a much faster way and without having to routed only through the internet backbone [33].

According to Professor Andy Lippman of MIT (Massachusetts Institute of Technology), current director of the MIT Media Lab, one of the main benefits associated with network neutrality is precisely to encourage innovation (despite the opinion of telecommunications companies), because "When

there's a need for innovation that gives us the chance to rise to the occasion". Network neutrality imposes certain technical limitations, but these same limitations lead engineers to create new network equipment, new communication protocols, and more efficient forms of data exchange; it is these same limitations that allow startups such as Netflix to come up, despite their tight budgets, and innovate in the movie industry via the internet, stimulating competition and offering content at more affordable prices [34].

Outcomes for Brazil

According to Demi Getschko, one of the internet pioneers in Brazil, "The signing of

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the Brazilian Civil Rights Framework for the internet in 2014 enshrined important concepts that it was desired to protect by a law (...), thus network neutrality cannot be changed through by a regulation since it is a law" [35].

Ensuring network neutrality through a law is one of the main differences with respect to the US, which controls network neutrality through a set of regulations. In addition, the USA government does not directly interfere in its federations administration, which allows several USA states to maintain network neutrality [36].

However, if Brazilian telecommunications companies really intend to change the Brazilian Civil Rights Framework for the internet, they will have to make huge efforts, because change proposals need to be articulated with the Chamber of Deputies, the Federal Senate, the Ministry of Science, Technology, Innovation, and Communications, Anatel (*Agência Nacional de Telecomunicações*) and the President's Office.

Reviewing laws and amending them is part of the process of any democratic country like Brazil, provided that changes happen according to the law, conscientiously, without taking sides, to avoid abusive commercial practices that restrict the free flow of information on an internet that was created to be "open, neutral and decentralized where users are the engine for collaboration and innovation," as advocated by Tim Berners-Lee, the creator of the World Wide Web, in his letter extolling the Brazilian Civil Rights Framework for the internet [37].

In Portugal, there is no network neutrality. The MEO operator markets mobile plans in the same way that cable TV plans are commercialized in Brazil [38]. There are specific packages of "unlimited" access to send messages, access social media, and video streaming, but all packages include the applications of only a few companies, normally the largest and well known, such as Facebook, Twitter, Google YouTube), Spotify, Netflix, among others. How could a new video streaming company initiating in the IT industry (on a tight budget) compete and thrive in such a market?

Everyone has the right to have his or her own opinion regarding network neutrality. However, before picking a side or another it is recommended that an analysis be done to know: (a) how the internet actually works with or without network neutrality; (b) what the relationship between the positioning of information and communications technology companies and their business agendas is (hidden or not); (c) which the interests of politicians and bodies involved in creating laws and regulations are; (d) how the country citizens can be better served in a fair, egalitarian and sustainable manner.

As said by Nelson Mitsuo Takayanagi, an Anatel representative at the Futurecom event, in Sao Paulo, on October 27, 2010, "The discourse on network neutrality is both economic and financial, with ethical and sociological dimensions" [39]. For this reason, congressmen, legislators, judges, and technicians from any country need to take a more holistic view of the benefits that network neutrality might or not bring to society in the long run, always considering freedom of choice, freedom of expression, and the citizens right to security and privacy.



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