

Net Neutrality by Design but Not by Law

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Tim Wu defined the concept of net neutrality in 2003 [1] as follows “The idea is that a maximally useful public information network aspires to treat all content, sites, and platforms equally”. In other words, Internet Service Providers (ISP) have to transport all the packages ignoring the content. When this concept became popular and familiar in the Internet community, everybody started to have their own opinion. Therefore, governments have tried to regulate the Internet through laws and that is when the problem started. Treating net neutrality as law and not as a principle of design is wrong because it will decrease the customer experience (CoE). On the other hand, as Peter Thiel said [2] “Government attempts to regulate technology have been extraordinarily counterproductive in the past”. Internet has been working the same way for more than 20 years and the market has been self-regulating all this time.

The Internet is constantly evolving and with it, its requirements. It was design to transfer data between research centres. **Figure 1(a)** and **Figure 1(b)** show the

forecast of global traffic in the next few years. The traffic is not data anymore and in the future the content video applications will consume the majority of network resources. The different applications running over the same physical network make “Best effort” [3] principles no longer sufficient, and mandates the usage of quality of service. If all types of traffic are treated the same way the user will be disadvantaged [4] . As an illustration, streaming services such as video conferences or VoIP requires a low and control latency while web services will not be affected if the package arrives some time later.

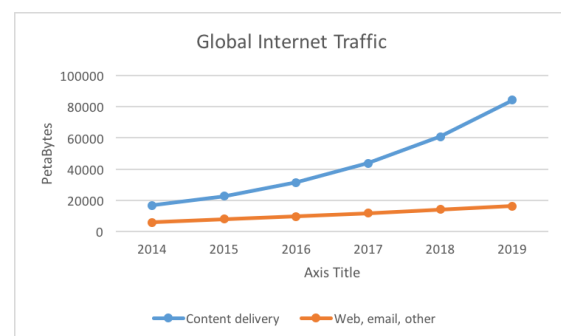


Figure 1(a): Global Traffic 2014-2019 [5], [6]

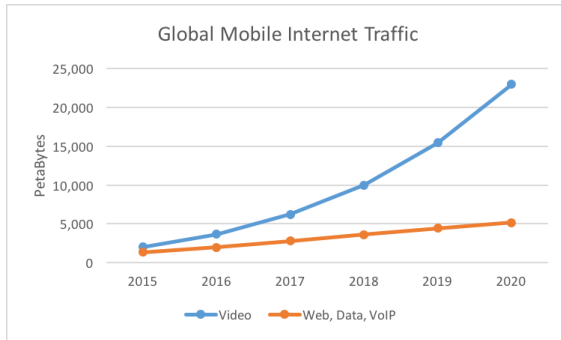


Figure 1(b): Global Mobile Traffic 2015-2020 [7]

In addition, viruses, denial of service (DoS) or spoofing attacks are some of the security threats of every day networking. The capability to drop these kinds of packages not only benefits the user experience it also mitigates the existing risk in e-commerce, tele-health and other applications. Those policies will be only possible if net neutrality is not treated as a statute because one of the law principles is that it has to be very specific.

ISP have been managing traffic using QoS and charging for that services since the beginning [9]. Lastly, OTT players are getting more and more benefit. At the end broadband operator will become commodities and this can impact how networks are deployed due to the high investment required. To differentiate between them they should be allowed to apply QoS policies based on content type instead of content provider. The clients are the leasers of the lines and they should have the capability to decide how their data will be treated. One example of this service could be one company that wants to improve the connection to a particular mail server instead of the most popular

ones (Gmail, Hotmail, etc.), In that scenario, business can make a better usage of their resources. The Customer wants individual products that match exactly their needs and this trend will be even higher in the future. It has been proved that in any industry of global economy clients want differentiate services [9]. With this requirements ISP has to be allowed to provide an offer focusing on the QoS that client want.

The leak of flexibility that characterized the laws is contradictory to the dynamism of Telco industry. Technology and Internet change very fast and laws require to much time to be enact. Proof of that is the net neutrality timeline in USA. In September of 2007, it was demonstrated that Comcast was blocking BitTorrent traffic and in august of 2008 FCC orders Comcast to stop. On the other hand, in 2006 the the Senate considered a bill that includes a reference to net neutrality. And finally 26 of February of 2015 approved net neutrality [10]. It means that it took almost 10 years for the US government to promulgate the law and only one year to a specialized organization to regulate it. Similar times are needed in different countries [8] and is because legislators require technical teams to evaluate every aspect. All countries have telecommunications organizations that run in parallel to the industry, they are the appropriate bodies to solve this cases more efficient than legislative power.

Net neutrality at the beginning was trying to regulate broadband operators but in the

future it will need to regulate an even more difficult scenario. In **Figure 1(a)** we can see that the on 2014 were estimated ~5600 Petabytes(PB) per month in web, email and other. In other words, ~187 PB per day. In the same period Google transferred ~100 PB of data daily [11]. This means that Google manages around 53% of web based Internet traffic. The traffic that Google processes is bigger than any Telco in the world and the results of the search engines are not and can't be regulated by law.

The Telco market is very competitive and it has the capabilities to regulate itself. Some authors [12] said that "The last-mile broadband access marketplace is characterized by a lack of competition, high entry barriers and end user switching costs". But this is not a reality anymore. Due to the NBN and the incursion of the Virtual Network Operators (VNO) entry barriers has been decreasing. As an example, up to today on the Central Business District in Melbourne there are 27 operators that the customer can choose [13]. Also, Figure 2, illustrates that big players have been eating the small ones. And up to this year there are more than 30 operators with more than 10 thousand customers. In countries like Australia, the penetration of Internet broadband is more than 80% [14] so the ISP need to take of customers of the competence. Under those circumstances, the market will become even more competitive and this will increase the capabilities for the self-regulation. The main asset for an ISP are the customers and if the Telco is charging or applying policies that customers don't

want it they will move to other that fits their needs. In the case of net neutrality, the operator can't have bad service on content delivery neither block applications. Customers and generation Y and Z are very sensitive to quality and they don't bother to change or switch companies if they aren't happy.

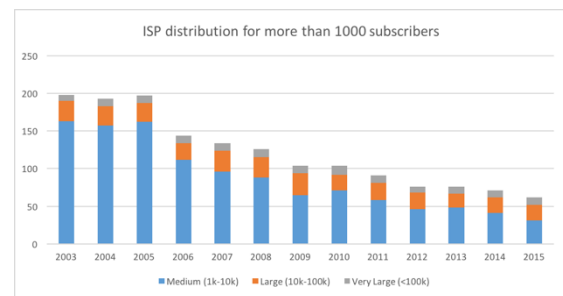


Figure 2: ISP distribution in Australia [15]

In conclusion, even though the laws have been dictated by the government is very difficult and in some cases impossible to regulate. Cases such as Chile where net neutrality policies were implemented in 2010 have demonstrated a leak of audit capabilities by the government [16]. Furthermore, the needs of all clients are not the same. One product cannot fit every single Internet user requirement because applications need to be treated in different ways. It is necessary for the improvement of CoE that telecommunication industry will be allowed to manage QoS. Finally, with the incursion of MNO and in markets with higher penetration, the last-mile offer to the clients will increase, and with this the market will self-regulate.

I agree with Tim Burton [9], that telecommunications providers should be allowed to manage the traffic but based on

content type without any kind of discrimination to the application itself. To achieve that ISP, need to be transparent to the consumer. So that, people know exactly how the Telco works and they can decide if they want to change or stay in some provider. This policy has been applied in Norway [4] where customers can request special treatment of their pipes. To assure the fair play of Telco specialized organization such as, TIO, should solve each individual case instead of legislative power and government laws.

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