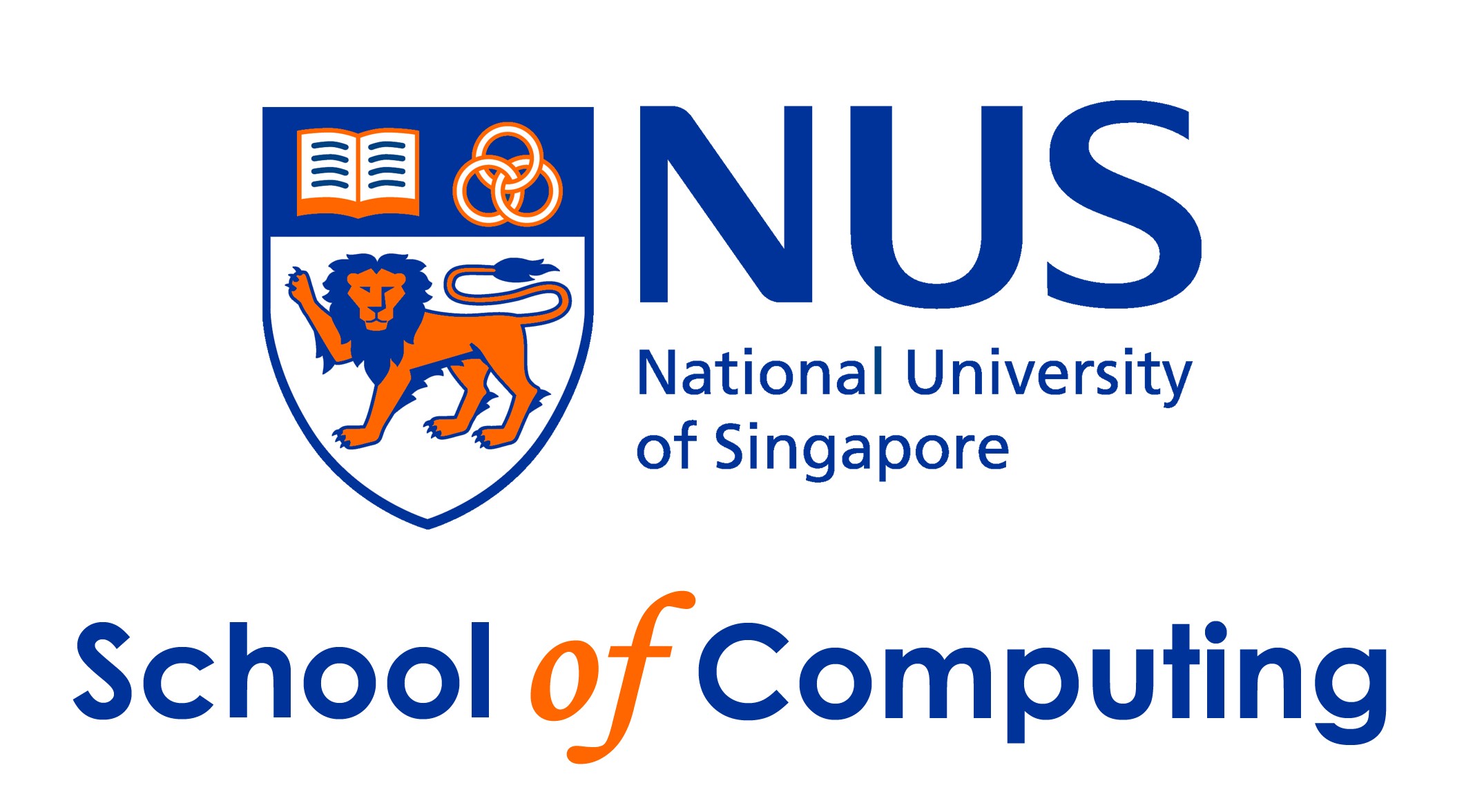
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**IS1103 IS INNOVATIONS IN ORGANISATIONS AND SOCIETY**

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**Disclaimer: I, Yap Dian Hao hereby acknowledge that this report consists purely of my work effort and I have complied with the NUS Code of Student Conduct.**

This report aims to provide an exhaustive analysis on network neutrality, and it will mainly focus on two specific countries: the United States and Singapore. Subsequently, I will also present my view on net neutrality in this report.

Net Neutrality in The United States

Net neutrality in the States dates all the way back to 2003. Columbia University Law professor Tim Wu first coined the term “network neutrality” in his paper “Network Neutrality, Broadband Discrimination”. It is defined as the equality of all traffic on the Internet, and internet service providers (ISP) are prohibited from doing otherwise (Vigliarolo, 2018). This is consistent with Finley (2018), who stated that ISPs “shouldn't be able to slide some data into ‘fast lanes’ while blocking or otherwise discriminating against other material.”

The US’ agency in charge of regulating communications is the Federal Communications Commission (FCC). In 2004, then-FCC chairman Micheal Powell urged ISP to provide four freedom to users: to access content, to run applications, to attach devices, and to obtain service plan information (Wikipedia contributors, 2019). Its very first effort manifested in the Madison River Communications case. In early 2005, FCC fined Madisons River Communications, an ISP who blocked Vonage, a voice over Internet Protocol (McCullagh, 2005). In September 2005, FCC updated its four principles to as follows: consumers are entitled access the lawful internet content of their choice, run applications and services of their choices, connect their choice of legal devices that do not harm the network, and deserve to choose their network providers, application and service providers, and content providers of choice (Wikipedia Contributors, 2019).

In 2007, Comcast, the States’ largest cable company, was found to be interfering with BitTorrent network traffic. Although Comcast argued that the blocking was due to heavy network traffic (Ernesto, 2008) , experiments showed that it was deliberate and FCC requested Comcast to stop the throttling due to the violations of its principles. Comcast sued FCC, and the federal court, the [United States Court of Appeals for the District of Columbia Circuit](https://en.wikipedia.org/wiki/United_States_Court_of_Appeals_for_the_District_of_Columbia_Circuit), overturned FCC’s order against Comcast, on the grounds that although

“FCC relied on laws that gave it some jurisdiction over regulating broadband services”, the laws did not equip FCC enough power to give Comcast a cease-and-desist order (Reardon, 2015).

Later in December 2010, FCC adopted the Open Internet Order which has three criteria: transparency, which includes the disclosure of network management services; no blocking, which prohibits the act of restricting lawful content; and no discrimination, which bans broadband providers from discriminating based on the consumer’s Internet access service. Again, the agency was sued by Verizon, claiming that it has no authority without classifying network providers as common carriers , hence the order could only be applied to common carriers instead of broadband providers (Wikipedia contributors, 2018). As a result, only the transparency rule was sustained, while the other two was dropped.

Then-FCC chairman Tom Wheeler released a controversial proposal in May 2014 regarding companies could pay ISPs to create faster lanes to deliver their content to users, which violates net neutrality (Wikipedia contributors, 2018). After the FCC passed Wheeler’s proposal on a 3-2 vote, Comedian John Oliver aired a 13-minute rant about net neutrality in June 1 2014, and it drew over 4 million comments which is in favour of net neutrality and crashed the FCC’s website (Reardon, 2015). In November 2014, President Obama stepped in, and requested the need of tighter regulations to preserve “a free and open Internet” (Reisinger, Cheng, 2014) . He then gave his endorsement in reclassifying broadband as a Title II telecommunications service.

February 26 2015 marked a huge day in the States’ net neutrality history. In a 3-2 vote, FCC passed the Open Internet rule that reclassify broadband as Title II telecommunications service. In brief, the Order consists of 3 rules, namely no blocking, in which broadband internet access services (BIAS) may not block legal content from users; no throttling, in which BIAS providers may not impair lawful internet traffic; and no paid prioritisation, in which BIAS providers may not create “fast lanes” in exchange of consideration of any kind (Heitmann et al, 2015). As expected in March 2015, an alliance of several telecommunications firms sued FCC, such as USTelecom and Alamo Broadband which argued the rules were “arbitrary, capricious, and an abuse of discretion” (Snider, 2015). However, the federal court that twice overturned the FCC’s previous attempts at regulating net neutrality rules now fully upheld the Open Internet rule, and according to the judges, previously the FCC failed to classify broadband service as a Title II service, but the tables are turned after they reclassified broadband service in the Order (Selyukh, 2016).

After the decade-lasting battle ended, the glorious victory of the FCC did not hold for long. After President Trump won the United States’ election, he soon appointed Ajit Pai as the new chairman of the Republican FCC in January 23 2017. Later in April 2017, Pai announced that he plans to reverse Title II net neutrality regulations. According to Pai (2018), network investments dipped by billions of dollars after the introducing of the Title II regulations. Furthermore, he contended that small ISPs who serve rural areas would forfeit these neighbourhood for the sake of cutting down funds due to regulatory compliance. Also, apart from hurting innovations, he argued that the passing of the 2015 Order caused the FCC to pull rank on the Federal Trade Commission (FTC) , which has authority over ISPs. However, the FTC is an enforcement agency, in other words, it does not possess the rule-making authority that the FCC has (Reardon, 2018). Nevertheless, Pai placed much emphasis on transparency, and urged that ISPs must disclose information about their network management practices, either on their website or on FCC’s. Consequently, Pai along with two other Republic Commissioner supported the repealing of the net neutrality rules, giving them a 3-2 upper hand in discarding Title II regulations (Kang, 2017).

Net Neutrality in Singapore

Next, let us shift our focus to a country where we live in, Singapore. The agency in charge of handling net neutrality matters is the InfoComm Development Authority (IDA). After seeking opinions from several industries and individuals, the IDA published the Policy Framework for Net Neutrality on 16 June 2011 (Wikipedia contributors, 2019). According to the Framework (IDA, 2011), proponents of net neutrality argued that without the existence of these rules, ISPs may block or discriminate certain network traffic in order to favour their own services. As a result, this would hurt innovation and limits user’s choice in choosing ISPs. As for the opposing side, they contend that ISPs have the authority to impose charges on content providers to utilise their bandwidth to deliver content. With the effect of net neutrality rules, it is bound that network investments will plummet, as well as unbalanced distribution of network traffic for users who are constantly dealing with large amounts of data.

In order to seek for the equilibrium between the two opposing viewpoints, IDA announced a three-pronged policy approach towards net Neutrality. The first prong, which is regarding the encouraging of a competitive Internet access market; and the second prong, which is information transparency; and the third prong, which places boundaries on the first prong, has to do with the prohibition of blocking. To promote healthy competition and innovation, IDA allowed ISPs and network operators to “offer specialised or customised Internet content, applications and services”, but are subjected to IDA’s competition and interconnection rules in the Telecom Competition Code (TCC). Furthermore, although ISPs are permitted to carry out reasonable network management practices that follows the Quality of Standard (QOS), they are prohibited from perform discriminatory practices, such as blocking lawful internet content from the user.

Besides restricting ISPs to perform reasonable network management practices, the IDA also protects end-users by enhancing information transparency. By far, ISPs promote their services by referencing to their maximum download speeds, and some even does not indicate them at all. However, as users may not always experience the maximum Internet access speed, IDA is working with ISPs to determine the typical Internet access speed based on several criteria and factors. The determined typical Internet access speed, along with the ISPs’ network management practice, is to be disclosed to help end-users better understand the plans they are offered and how their networking experience will be affected.

IDA also introduced a new concept - the “cooling down period’- to further shield consumers after recognising the inadequacy even with the information transparency in place. For instance, consumers could only determine their ISPs actual Internet access speed by running them via external websites after they subscribed. What if they are unsatisfied? Will the switching costs kill their thoughts of switching? What are the impact and costs on ISP providers? Given the complexities of this concept, this is another issue yet to be studied by the IDA following the QOS requirements and the parameters of a typical Internet speed.

Despite the repealing of the 2015 Open Internet Order by the Republican FCC, Singapore’s net neutrality policy remains intact (Hio, 2017). Before the repealing, Singapore’s net neutrality policy slightly differs from the Open Internet Order as it does not ban bandwidth throttling under certain conditions, and “legal and Internet experts said that Singapore does not strictly follow the definition of what is called net neutrality” (Hio, 2017). However, after Ajit Pai took over the leading role of the FCC following President Trump’s victory in the election, it is likely that the FCC will side with Singapore’s view on net neutrality.

According to Pai’s statement, the main problem of the Internet is not about content blocking by ISPs, but the lack of ISP or competition. Consistent with Singapore’s view in promoting competition, ISPs are allowed to perform certain network practices as long as they do not render legal websites inaccessible. Second, Singapore’s viewpoint on net neutrality is further strengthened by the present FCC’s emphasize on transparency. Both sides require ISPs to disclose their business practices, with Singapore being more detailed, as it included the ISPs’ typical Internet speed. As for Singapore’s no banning policy, although the FCC does repeal it, but not strongly object, is it possible that the FCC will express no opinion on it.

My Viewpoint on Net Neutrality

After considering net neutrality in two different countries, it is evident that net neutrality gets much more complex when a third party, other than the consumer and the service provider, steps in. Consider the States in which the fate of net neutrality falls in the hands of the ruling party, the Republic or the Democrat. After enduring a series of hardship, the Open Internet Order which seeks to protect consumer’s rights was passed by the Democrat. However, it was repealed shortly when the Republic won the presidential election, and rendered the Order obsolete, which is now in favour of the ISPs. Hence, the battle is still going on, and the future of net neutrality in the States remains a mystery. On the other hand, Singapore, which implements policy that safeguards both the consumer and the provider, does not get much interfering from the government. Instead, IDA recognised the rising issue of net neutrality in 2011, and took a much more efficient approach: it called for public consultation, considered opinions of all sides regardless of industry or individual, and crafted three policies based on the received responses that pacifies both the consumers and the providers. The aftermath of this wise decision is prominent: no ISP breached the policies (Hio, 2017), and the need to revise the policy is redundant in 2017 while people in the States are fighting for the restoration of net neutrality.

In conclusion, it is my firm stand that the net neutrality, be it definition or implementation, should be decided by the market, and the government should not lay their hands on the matter, other than enforcing and implementing what the market has come up with.

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