The Effects of the FCC Net Neutrality Repeal on Security and Privacy

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ABSTRACT
The repeal of net neutrality has caused a great public outcry from academic down to the end-users. Net neutrality was an FCC order that specified the principles for Internet Service Providers. The most prevalent principles were related to bandwidth throttling, preferential treatments, and privacy. Some described the action of the FCC will lead to the end of the Internet and consumer privacy. There have been many articles discussing about the fallout of the ruling, but it is difficult filtering fact from fiction. In this article, the authors discuss the nature of net neutrality, the history, the arguments for and against, and the roles of the FCC and their many orders. They also layout the implication of repeal on security and privacy. They present a few scenarios specifying what an ISP can do and cannot do. Finally, the authors specify what laws the consumers have left for their privacy.

KEYWORDS
FCC, Net Neutrality, Paid Service, Privacy, Repeal, Security, Throttling

1. INTRODUCTION
The term “net neutrality” was first introduced by Tim Wu (Wu, 2003) to describe the debate over an Internet Service Provider’s (ISP) control over the Internet. Wu argued for the Internet open access according to the common carriage regulations. Common carriage described the US government practice to prevent unwanted discrimination in the telecommunication industry, which falls under Title II of the Communications Act (FCC, 1934). Originally, the Federal Communications Communication (FCC) classified broadband Internet access under Title I of the Communications Act, which is under the domain of the Fair Trade Commission (FTC), because they assumed it provided information services instead of the traditional telephone communications. However, a legal case brought up by

DOI: 10.4018/IJHIoT.2018070102

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Verizon (Appeals, 2014) ruled that the FCC does not have the power to regulate ISPs as they do under Title II. The Obama administration, as a result, reclassified Internet access in 2015 to be under Title II to prevent throttling and content blocking.

At the turn of the century, Internet Service Providers (ISPs) started to deal with an increasing large amount of Internet traffic but not at an explosive amount as of today. YouTube and Netflix streaming services were not available. Most of the Internet traffic comprised of web data and file sharing (Odlyzko, 2003).

Cisco VNI’s 2016 Internet traffic data (Cisco, 2017) show that Internet traffic predominantly served Internet videos (72.8%) in contrast to web/data (15.7%). The trend continued to rise upward in their prediction. It has come a long way from the year 2003, which shows web/data took 47% and file sharing 21% on Sprint Networks (Odlyzko, 2003). This was one of the main premises for ISPs for setting priorities, providing preferential services, and charging tiers for Internet traffic.

Figure 1 shows the distribution of Internet traffic based on Web/Data, P2P/File Sharing, and Internet Video. The traffic data were compiled from 2005 to 2016. Each year Cisco Corporation collects data from around the world via service providers and its partners. The data are then used to estimate the traffic of the previous year and predict the traffic of the current year and four succeeding years. This graph below shows the data that were collected from the previous year of each reported year and does not show the forecasted years.

The graph shows that Internet traffic jumped at an exponential rate from 1.4 Exabytes in 2005 to 57.7 Zettabytes in 2016. The VNI data (not shown) also forecasted Internet traffic to continue climbing in the years ahead. What this graph points out is that videos occupied a majority bandwidth of the traffic in the recent years. Due to this disparity in traffic content and the need to provide additional infrastructure and services to support services that require additional bandwidth, the rise to regulate Internet traffic was inevitable.

The service providers’ argument is that all the infrastructure investments are taken advantages by the content providers who push a large amount of data through the pipe without paying for it. The video contents and file sharing, they argue, take up a lot of the bandwidth of the web/data traffic and they are not willing to put down more investments without getting return on them.

Figure 1. Internet traffic (petabytes per year)
The Internet of Things: Enabling Artificial Intelligence
www.igi-global.com/article/the-internet-of-things/210624?camid=4v1a

High Altitude Stratospheric Platforms (HASPs)
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