Research Article **AJTL 2018,1:2**

American Journal of Transportation and Logistics
(DOI:10.28933/AJTL)

Performance Evaluation of OTT Communication Services

Damilola Fowora*, Oludele Awodele, Olakunle Olayinka and Oyebode Aduragbemi

Department of Computer Science, Babcock University, Nigeria

ABSTRACT

This paper assesses the performance and efficiency of Over the Top service applications. Over the Top services has affected the methods and ways information is passed from content creators to consumers. This paper assesses the performance of two of the most heavily utilized over the top applications which include WhatsApp and Skype. We measure their performance on 4 metrics which includes CPU performance, Latency, End-to-End Latency and Load per Period. We see how both these applications perform based on the measurements derived from these metrics.

Keywords: Over-The-Top, Performance Evaluation, OTT, Communication Services

***Correspondence to Author:**
Damilola Fowora
Department of Computer Science,
Babcock University, Nigeria

How to cite this article:
Damilola Fowora, Oludele Awodele, Olakunle Olayinka and Oyebode Aduragbemi Performance Evaluation of OTT Communication Services. American Journal of Transportation and Logistics, 2018,1:2.

eSciPub LLC, Houston, TX USA.
Website: http://escipub.com/

Introduction

The Over-The-Top technology has changed telecommunications on a global scale. The developments experienced in the field of wireless telecommunication has brought about developments of various new technologies and services aimed at optimizing user or consumer experience with wireless communication. With this advancement in wireless communication technology, the Over-The-Top technology is created.

Over-The-Top service can be defined as content or service that is provided to a consumer over the internet. This definition implies that anything which can be shared over the internet, meaning that anything can be provided over the internet thus creating Over-The-Top service. Over the Top service include the delivery content such as VoIP, web-based contents, web hosting services, electronic mail services, search engines, chatting platforms, video, audio and multimedia contents and so on.

The Over-The-Top service provider provides service or content and also offer Information Communication Technology services but does not operate a network system and it has no ties to any telecommunication or network service operator (TRAI, 2015). The Over-The-Top service architecture rely on the global internet itself and gains network speeds in other to deliver content to consumers, hence it goes “over-the-top” of telecom service provider’s network. Content and services provided with Over-The-Top are typically tailored towards media and communications at free or lower cost rates as compared to when the same services are delivered using the traditional network delivery process. One of the major reasons for the advancement of Over-The-Top services today is the fact that it has a dynamic architecture, all a consumer needs to access quality content is internet connectivity and another reason is also that it is cheap and at low cost of access to the consumer.

Literature Review

Over the top services has been a relatively new and exciting advancement in the Sujata et al (2015) did an extensive review on the impact of over the top services on telecommunication service providers. The work gave a global view on how over the top services affects telecommunication service providers worldwide showing how over the top services has risen above traditional telecommunication services causing a decline in financial and usage decline over the years. The work hinted at a high increase in the usage of over the top services in the foreseeable future. There are many organizations, institutions and also researchers that have studied the impact of Over the top services on various key entities in the telecommunication industry has a whole. Joshi et al (2015) studied the impact of Over the top services on telecommunication service providers. They made a global review on how Over the top services affects telecommunications services, detailing how revenue is lost to this service and it also shows how there has been a global shift in the consumer preference of this service to traditional telecommunication services.

The dramatic change in the preference of the consumer to be more drawn to the Over the top services than the traditional telecommunication services is not a new phenomenon. John Sladek (2006) wrote a paper detailing how Over the top services would be the new frontier for digital content delivery to the consumer. The work showed the future of digital communication and predicted that if the telecommunication operators are not careful, they would simply be used has a tool for the Over the top services providers to ride over and provide contents to the consumer.

The South African Parliament on Telecommunications and Postal Services (2016) released a briefing on the performance of various over the top service application in the nation. It outline the growth in the user consumption of the technology and also the financial cost to the telecommunication

operators and also a growing range for over the top services. Oliveira et al (2016) did a performance assessment on WhatsApp and imo over the top services on android operations system during VoIP calls. The showed that there is increased processing generated by the applications. The work focused on how the theses applications affect mobile devices. The used two devices in their experimentation and details on how WhatsApp and imo affect these devices was adequately outlined.

Performance Evaluation of OTT Applications

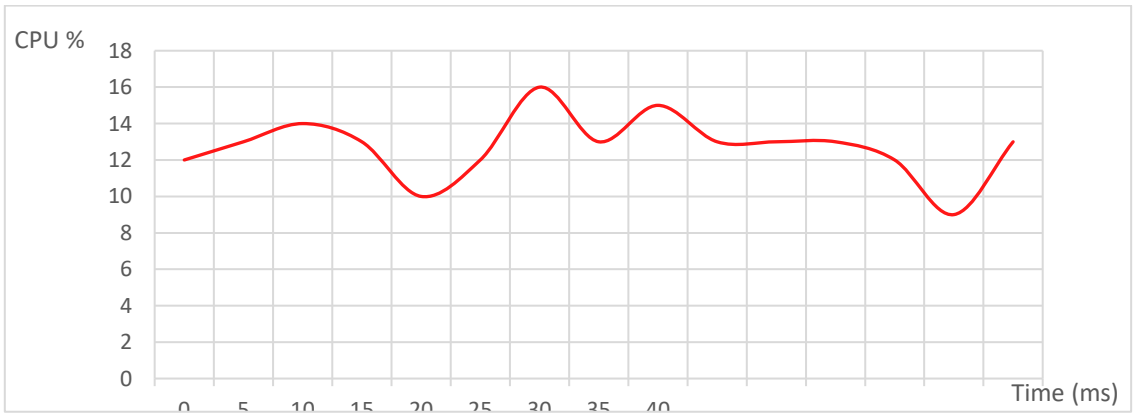
In this work, WhatsApp and Skype were utilized and their performance was recorded. The metrices used include the following:

1. CPU Performance: This shows the amount of processing power required by the application to run.
2. Latency: This refers to the round-trip time from a request to a response. Meaning the time spent for a message sent to be received by the recipient.
3. End-to-End Latency: These is the end to end latency time spent. This is the time spent sending a message to the recipient and the recipient responding time.
4. Load Per Period: This metric is related to the number of transactions, messages or calls over a certain period of time. It is critical because you want to make sure that as the load increases, the application performance doesn't degrade.

The applications were installed on various mobile devices including android and ios devices and an average performance score was obtained.

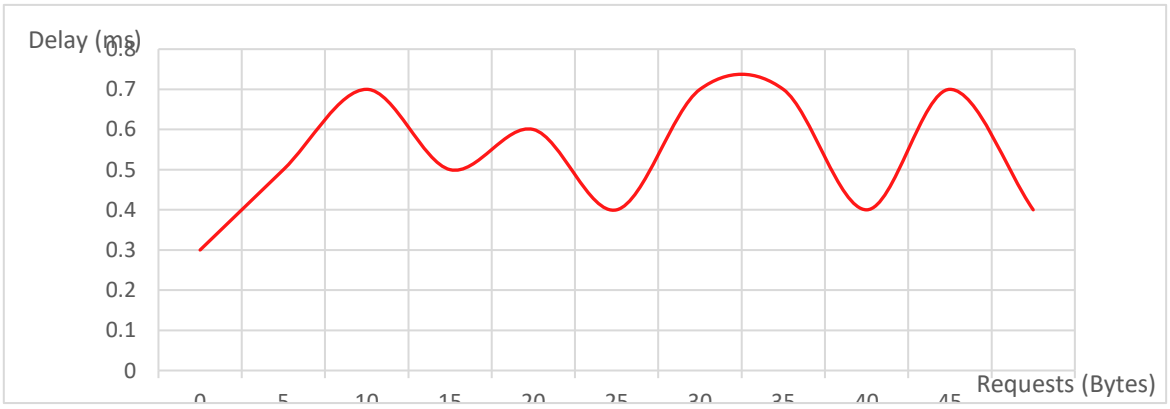
Performance Evaluation of WhatsApp on Mobile Devices

CPU Performance



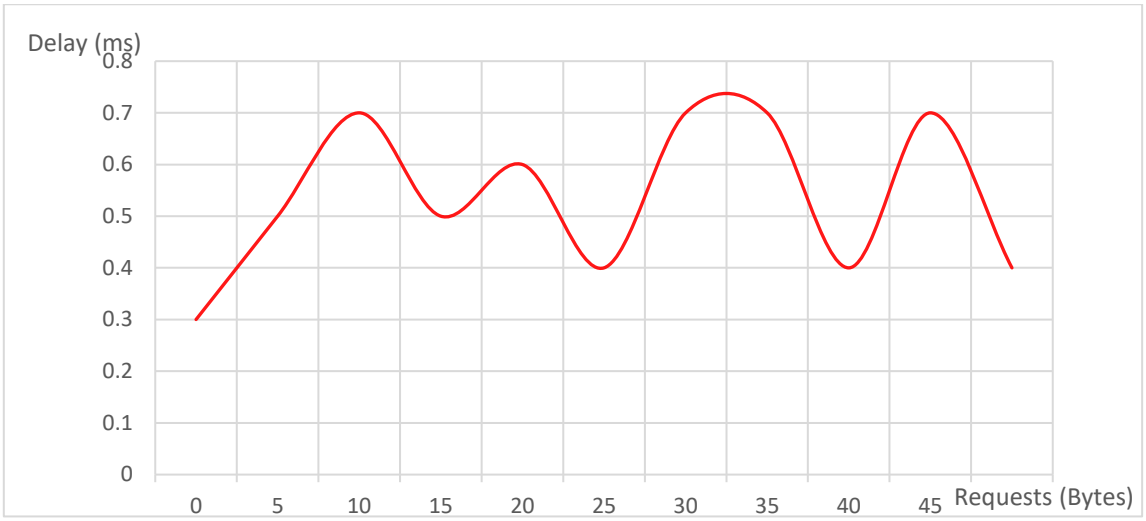
Whatsapp uses an average of about 14% which is significantly high.

Whatsapp Latency



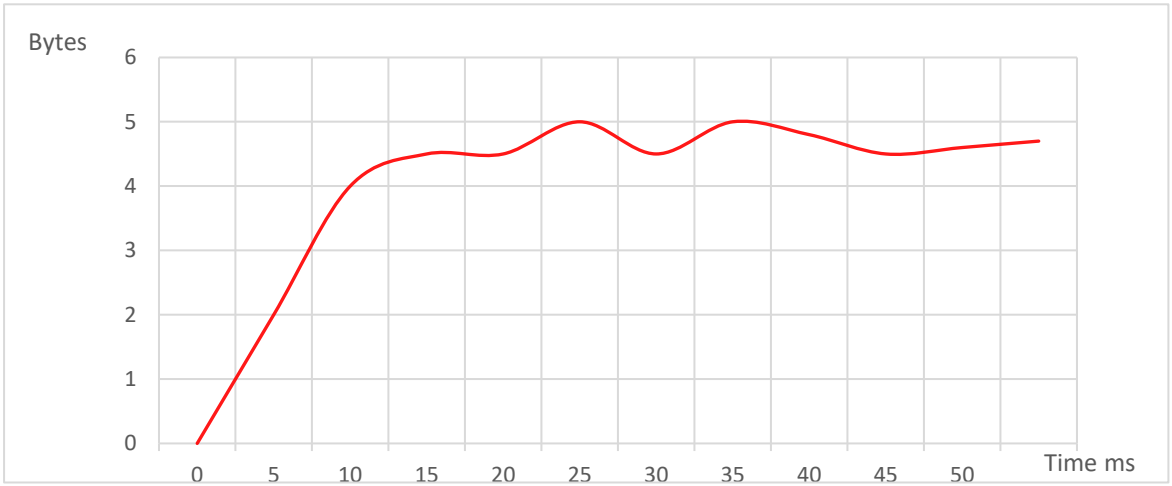
WhatsApp performs efficiently and ensure that messages are sent with little delay.

End-to-End Application Latency



From the graph we see that WhatsApp is very efficient with very little delay experienced on both ends of communication.

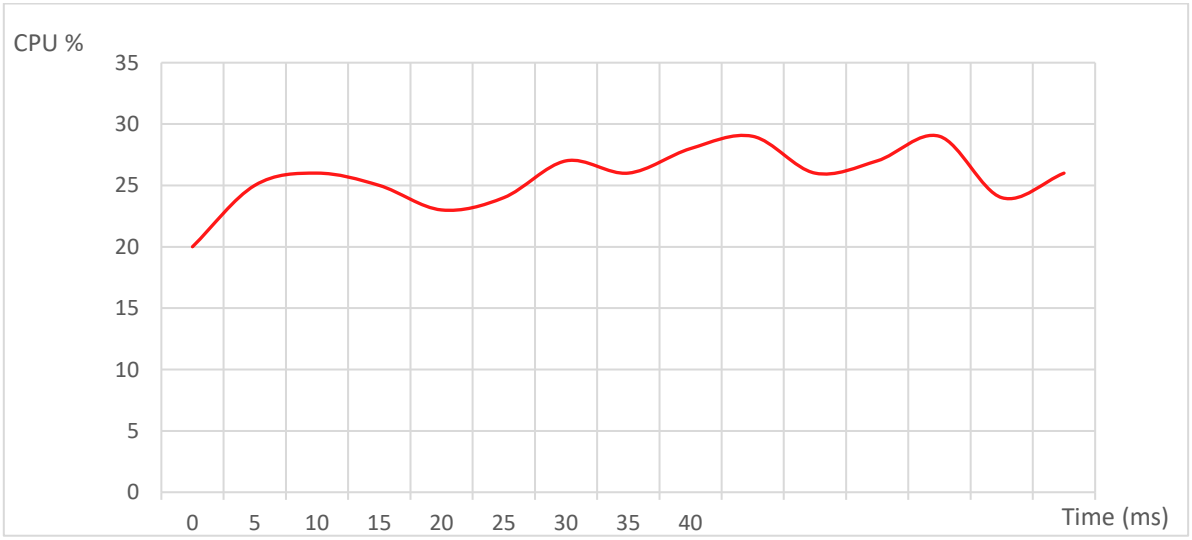
WhatsApp Load Per Period



WhatsApp has the tendency to crash which heavy load.

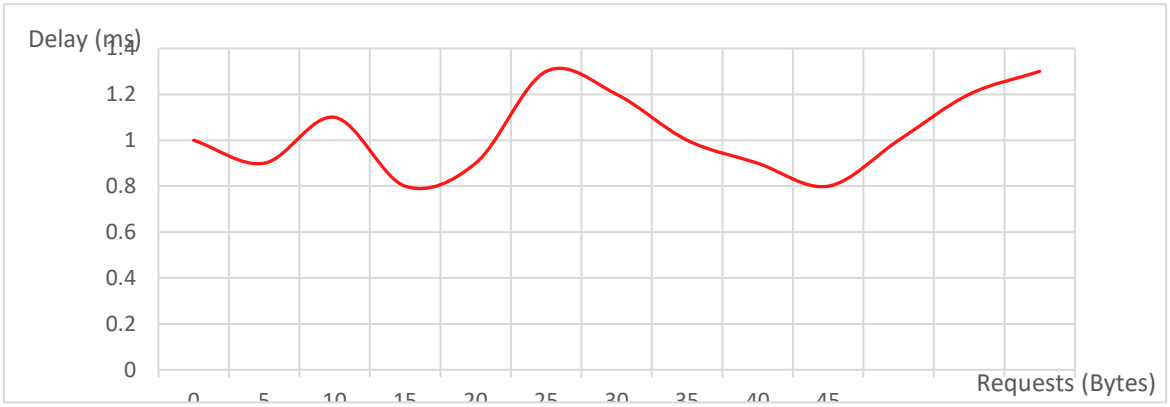
Performance Evaluation of Skype on Mobile Devices

CPU Performance



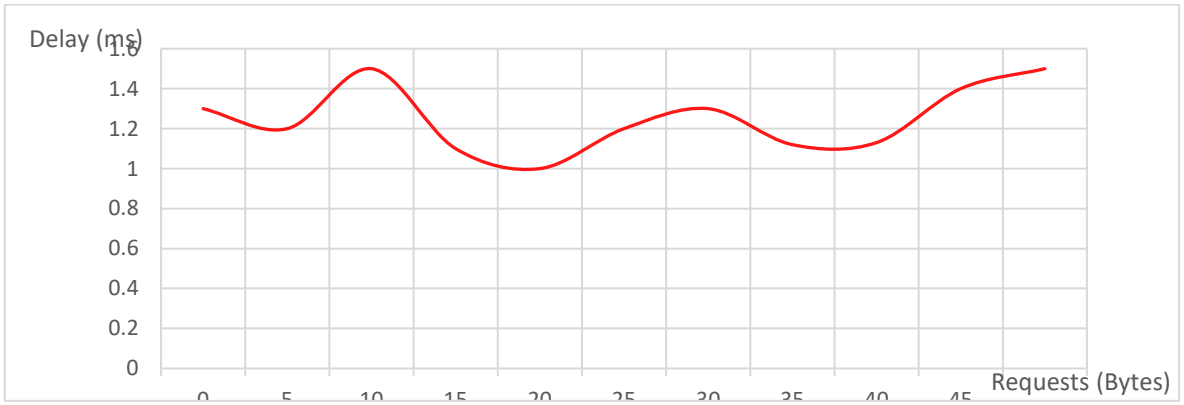
We see that skype has an average CPU performance of about 25%.

Skype Latency



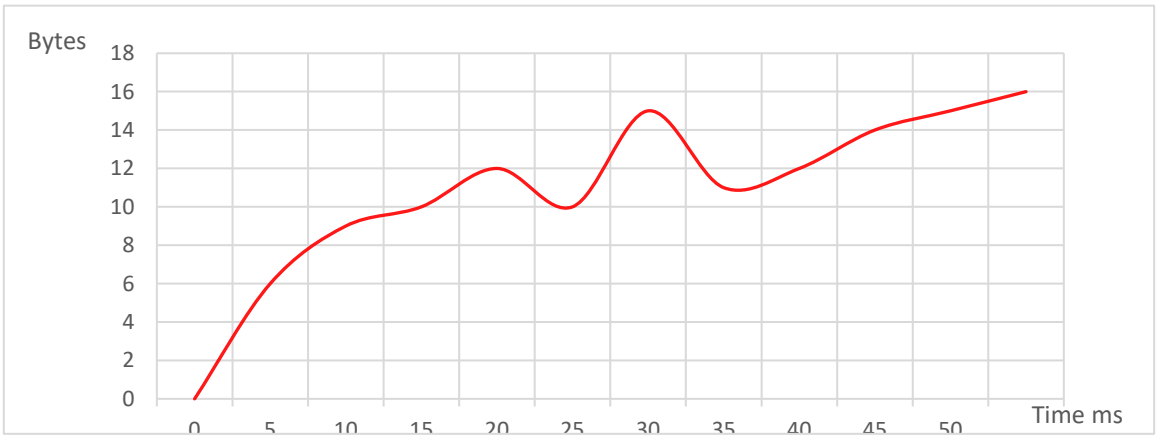
Skype performs moderately efficient. Messages can often experience some level of delay.

End-to-End Application Latency



Skype has the tendency to experience some delay between communications ends and this can me attributed to its moderately high CPU performance percentage.

Skype Load Per Period



Skype has a high tendency to crash due to its high load per period.

Conclusion

In conclusion, the performance of WhatsApp and skype as over the top services was obtained and adequately presented. WhatsApp and Skype are two of the most popular Over The Top service providers available today. We have been able to show how efficient these applications run, there latency periods and also how they perform under heavy traffic.

References

1. Adebayo, G. (2017). “Over the Top” (OTT) Provision of Telecoms Services in Nigeria. Las Vagas: Associan of Licensed Telecommunications Operators in Nigeria.

2. Alkharashi, A. (2016). Wireless & Telecommunication. Open Access Jorunal, 8(4), 56-60.
3. Ekekwe, N. (2017, June 24). How MTN, Glo, Etisalat, Airtel Will Solve OTT Problems And Boost Revenue In Nigeria. Retrieved from Tekedia: https://www.tekedia.com/how-mtn-glo-etisalat-airtel-will-solve-ott-problems-and-boost-revenue-in-nigeria/
4. Gabriel, O. (2016, February 8). Telecommunications Spurs Growth in GDP. Retrieved from Vanguard: https://www.vanguardngr.com/2016/02/telecommunications-spur-growth-in-gdp/
5. J. Sujata, S. S. (2015). Impact of Over the Top (OTT) Services on Telecom Service Providers. Indian Journal of Science and Technology, 8(4), 145 – 160.
6. R. Friedrich, C. B. (2013). Enabling the OTT revolution & How telecom operators can stake their claim,. Booz & Company.
7. S. Baldry, M. S. (2014). The Rise Of OTT Players – What is the Appropriate Regulatory Response. Deutsche Telecom Group.
8. Selian, A. (2002). 3G Mobile Licensing Policy: GSM Case Study (Vol. 2). Navada: International Telecommunication Union.
9. SUGENG, W., ISTIYANTO, J. E., MUSTOFA, K., & ASHARI, A. (2015). The Impact of QoS Changes towards Network Performance . International Journal of Computer Networks and Communications Security .
10. TRAI. (2015). Regulatory Framework for Over-The-Top (OTT) Services. India: Telecom Regulatory Authority of India.