# **EPH - International Journal of Science And Engineering**

ISSN (Online): 2454 - 2016 Volume 06 Issue 03 September 2020

DOI: https://doi.org/10.53555/eijse.v6i3.66

## QOS PARAMETER BASED TESTING ON LOCAL MOBILE PHONE

#### Kuljeet Kaur<sup>1</sup>\*, Dr. Pankaj Deep Kaur<sup>2</sup>

\*<sup>1,2</sup>Department of Computer Science and Engineering Guru Nanak Dev University Regional Campus, Jalandhar, India

#### \*Corresponding Author:-

#### Abstract:-

The development of the mobile phone has been rapid. From being a device mainly used for phone calls, chatting, and click the photo on the mobile phone in these days or commonly referred to as smartphone, has become a multi-purpose device. Because of its size and there are some limitation in area of battery life, computational capabilities and energy consumption. Mobile computing is provision of applications on mobile devices. MCC provides mobile users with the data processing and storage services in clouds. In this paper we create a circuit and design machine for testing the power consumption on local mobile device. In this paper we will test the power consumption on Wi-Fi and Bluetooth.

Keywords: - Mobile Cloud Computing, Energy testbed,

#### INTRODUCTION

The Cloud computing is the evolving paradigm that is defined in the term of the virtual infrastructure which can provide shared information and communication technology services, via an internet cloud, for "multiple external users" through use of the Internet or "large-scale private networks [6]. Cloud computing can much improve the availability of IT resources and it can easily access through the Internet to share IT resources include server, storage, network, application, service and so on [13],[3]. They can be released with minimal management effort or service provider interaction [4].

The term cloud refers as like a network on internet. In other words, cloud is something is present at remote location. It is provide services over the network, like public network or private network [2]. The cloud computing platform guarantees subscribes that it stick to the services level agreement by providing resources as a service and by needs [1]. The number of online services like search, online gaming, social networks and video streaming has exploded [5]. The mobile Cloud computing is a combo of Cloud Computing and mobile cloud computing. In mobile cloud Smartphones are playing an important role [7]. Smartphones have played a more and more significant role in people's daily life due to the convenience and entertainment they bring. People can talk with their family members, trade stocks, click photo on mobile camera and play games wherever they are [8]. However, the full potential for smartphones and tablet PCs may be constrained by certain technical limits such as battery endurance, computation and faster frame rate, which consume more battery energy. These issues are called Quality based issues in mobile device and in their applications like energy consumption, battery lifetime, privacy and performance etc [10]. These issues can test and improved by many techniques. In this paper, we proposed a new technique in form of power metering system that does check the processing speed of application on local mobile device.

This paper is organized as, In Section II, we had discussed about some related works to our proposed work, In Section III, Problem is formulated discussed. Experimental Settings are described in Section IV. Results, Conclusion and Future work are detailed in Section V and VI. Finally the paper is closed with References.

#### I. Related work

Li Chunlin in [11] presents exploiting composition of mobile devices for maximizing user QoS under energy constraints in mobile grid. Mobile device service composition process includes two parts: mobile device service provisioning through device service market and mobile device resource allocation through device resource market.

The problem of services composition of mobile devices is formulated by utility optimization. Author proposed algorithm for services composition of mobile devices is conducted and compared with other related works.

Sonal Dubey in [10] describes the two algorithms for quality of services mashup model. Author defines the services and mashup concept that suitable for mobile application combination. Author includes QoS aware services mashup model and describing two efficient algorithms for selecting an optimal sequence of infrastructure resources for end-to-end QoS provisioning. EXACT and (FPTAS) Fully Polynomial Time Approximation Scheme algorithms are general and efficient thus are applicable to practical Cloud computing systems. These algorithms to resolve QoS-aware service composition (QSC).

Bhaskar Prasad Rimal in [12] presented the cloud computing models, and related cloud computing services model, architecture also. Author gives the future research direction for academia. Author proposed taxonomy will provide researchers and developers the idea on the current issues in cloud computing. Author defines the cloud related services and architecture comparisons.

#### **III.** Problem formulation

The purpose of the paper is to investigate the applicability of cloud computing in the area of mobile phone applications. The application performed three different tasks, locally on the mobile phone. The tasks was timed which in turn will answer if it is faster to perform the functions locally on the mobile phone. As previously mentioned there are crucial factors like mobile phone computation capacity and network connection to consider [10]. The mobile phone model information was saved as well as upload/download application time, play back videos and audios etc. The mobile phone applications to get results from various conditions.

#### IV. Power metering test bed circuit



Figure1: Circuit of power metering machine

#### Parts of this Circuit

- 1. Power supply 5.0 volt. / 0.7A
- 2. Digital Volt meter
- 3. Digital Ampere meter
- 4. Diode- IN 4007
- 5. Electronic capacitor 330uF / 16v
- 6. Zenor Diode
- 7. Ribbon wire

In the figure 5 the circuit requires only 5 voltages. It must not be high or low then this and positive and negative must directly attached to the voltmeter. Afterwards a positive end and one diode (IN 4007) series are connected to ampere meter and the left pin is left to be connected to mobile to get output from there. As shown in diagram, there exists a zener diode of 5 volt. And it has two wires exiting from it to be attached to phone to generate output. The thing must be taken care is the positive and negative points, which must be correctly attached to specific slots. After all such setup, to get output switch on the supply and opening mobile applications will show the corresponding readings on ampere meter and power consumption. According To the specifications of the circuit we made power machine and put the readings. With the help of this circuit machine according we will take smart phones power and energy consumption readings and note the timing also with the timing machine.

#### V. Experimental results



Figure 2: Energy Test bed for testing on single mobile device

In order to calculate the energy consumed by different operations carried out by a device in a mobile device cloud, we need to know the power taken for each of the different operations that the device performs. With the help of circuit create an energy test bed to be able to make these measurements. As shown in Figure 2, we create this by removing the battery from the device being tested and soldering wires connected to a power supply from which voltage is supplied. The power supply that we use comes with a built in ammeter and voltmeter. We then provide a constant voltage according to the manufacturer specifications and power the device on. Using the current and voltage readings from the ammeter and voltmeter respectively, we are able to determine the power being consumed by the phone at any instance.

Figure 3 (a) and (b) compares different energy measurements while performing wireless transfers using WiFi between Samsung SII devices and iphone devices. We send the same data size using both Bluetooth and WiFi Direct and show that Bluetooth is 80% to 120% more energy effcient than WiFi Direct. Moreover we notice that sending data 10% to 25% more energy than receiving data independently of the wireless communication used. This plot confirms the fact that WiFi Direct is an energy expensive technology in fact Samsung with WiFi Direct radio on and connected to another iphone consumes almost the same energy than Samsung sending via Bluetooth to iphone device.



Figure 3 (a): Energy Test bed along with power consumption results with Wi-Fi



Figure 3 (b): Energy Test bed along with power consumption results with Bluetooth

## Acknowledgment

I am grateful to the almighty for his constant blessing. The paper publication would not be possible without the guidance of my Guide Dr. Pankajdeep Kaur and constant support of my family and friends. So I would like to thanks my all near and dear ones for being there with me in my entire journey of research and publication.

## VI. CONCLUSION AND FUTURE WORK

The application source code is the same for the cloud and the local tests. The local test results most probably are affected by the mobile phones' performance. The tests are all computation intensive tasks and should therefore be affected by the mobile phone's CPU and RAM. CPU and RAM values are both part of the benchmark test and should therefore affect the value of the local based tests. In this testing showing the locally power consumption on mobile device. The mobile devices in different application consume power according to their size or data. In this testing we used Wi-Fi and Bluetooth task and according to these two tasks run the applications and test the energy. On the Wi-Fi application consume less energy. In future used the cloud for running application on cloud and test their consumed energy.

## REFRENCES

- [1]. Vikas Kumar, "Survey Paper on Cloud Computing", International Journal of Engineering and Advanced Technology (IJEAT), August 2013
- [2]. J.Srinivas, K.Venkata Subba Reddy, "Cloud computing basics" International Journal of Advanced Research in Computer and Communication Engineering, July 2012
- [3]. Mustaq Ahmed, Mohiuddin Ahmed, "An Advanced Survey on Cloud Computing and State of the art Research Issues" IJCSI (International Journal of Computer Science Issues), 2012
- [4]. Markus Schuring, "Mobile cloud computing open issues and solutions" 15thTwente Student Conference on IT, June 20th, 2011
- [5]. Alexa Huth and James Cebula, "Basic of Cloud Computing", US-CERT

- [6]. Ashish Sharma, Vikas Gupta, "Multimedia Data Security Enhancing DES &UTF8 Parameterizing Time Constraint" International Journal of Computer Science and Communication Engineering Volume 2 issue 4(November 2013 issue) ISSN 2319-7080.
- [7]. Pragya gupta, "Mobile cloud computing: the future cloud", IIAREEIE, vol.1, issue 3, September 2012
- [8]. Saqib Hakak, Suhaimi A Latif, Gulshan Amin, "A Review on Mobile Cloud Computing and Issues in it" International Journal of Computer Applications (0975 – 8887) Volume 75– No.11, August 2013
- [9]. Hoang T. Dinh, Chonho Lee, Dusit Niyato, and Ping Wang, "A Survey of Mobile Cloud Computing Architecture, Applications, and Approaches" Accepted in Wireless Communications and Mobile Computing – Wiley
- [10]. Sonal Dubey, "Methods to Ensure Quality of Service in Cloud Computing Environment" IJARCSSE, June 2013
- [11]. Li Chunlin, Li Layuan, "Exploiting composition of mobile devices for maximizing user QoS under constraints in mobile grid" ELSEVIER Journals,2014
- [12]. Bhaskar Prasad Rimal, Eunmi Choi, Ian Lumb, "A Taxonomy and Survey of Cloud Computing Systems" Fifth International Joint Conference on INC, IMS and IDC, 2009