# UNIVERSITI TEKNOLOGI MARA

# 802.11n Wireless Network Performance Measurements using Open and WPA2-PSK Encryption Methods on Mobile and Server Operating Systems

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# ABSTRACT

This paper investigates the mobile client to webservers network performance connected via 802.11n. Using Android 4.1.2 Jelly Bean as the operating system for mobile client and CentOS Apache, Windows Server 2012 IIS and FreeBSD 9.0 Nginx as the webserver, the evaluation has look into the impact on TCP and UDP while operating in the Open System and WPA2-PSK security encrypted wireless network. The result demonstrates that the Android 4.1.2 Jelly Bean works best with the FreeBSD 9.0 Nginx webserver in terms of having the highest throughput and transfer rate and the lowest jitter and datagram packet loss when compared to the CentOS Apache and Windows Server 2012 IIS.

# ACKNOWLEDGEMENT

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# CHAPTER ONE: INTRODUCTION

Thanks to the rapid economic development and the wide spread of Internet in schools, universities, libraries, research laboratories and private sectors, Malaysia has now the ability to provide better infrastructure and other necessary conditions for public and private educational institutions to evolve and compete in the century of nanotechnology. The Malaysian government has initiated a number of national projects to set up or upgrade the current infrastructure in academic institutions such as 1BestariNet (Zakaria, 2012) and establishing long distance learning colleges offering various immersive m-learning programs.

According to Safaa S. Mahmoud (2008), the director of E-Learning Center, Ain Syams University in Cairo, Egypt, e-learning can be defined as a collection of information packages in education, available to students electronically at any time and any place where else the m-learning is termed as the association of mobile technology in a teaching and learning environment. Based on the reference given, parallel with the current trend of globalization, technology advancement and education evolution, the combinations of wireless networking and m-learning is believed to be a promising approach since it offers students ways to interact with experienced tutors or professors from anywhere and anytime.

With the exponential growth of smartphone users worldwide, and the presentation of information are no longer dull texts and static images, a better understanding of the communication between mobile client and servers are in dire need of discussions. And as the community and society of information and communication technology continue to assume and contemplating the best web servers and the most fulfilling mobile operating systems that suit every needs, there is no scientific research agreeing or saying otherwise about this particular subject.