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IMPACT OF MOBILITY ON QOS OF MOBILE WIMAX NETWORK

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ABSTRACT

WiMAX or better known as World Interoperability for Microwave Access provides an innovative fixed as well as mobile platform for broadband internet access. Mobile WiMAX has been designed to support wide range of applications including VOIP (Voice over Internet Protocol).VoIP is a technology for the transmission of voice and multimedia over the Internet Protocol based network. In this study, OPNET 14.5 is used to simulate the Mobile WiMAX network as it can provide the real life platform of network environment. The goal of this study is to investigate the impact of mobility on VoIP application. The voice codecs of G.711 and G.729A have been chosen as it can perform well under UGS class. The performance matrices used for the evaluation are throughput, end-to-end delay, jitter and MOS value. The results of deploying the voice codec using different speeds and multipath channel models have been compared. From the simulated results, it shows that G.711 can serve VoIP application better than G.729A. Furthermore, variation of speeds in Mobile WiMAX does not have any significant effects and VoIP still can be supported at 100 km/h rate.

Keywords- throughput, delay, jitter, and packet dropped

ACKNOWLEDGEMENT

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CHAPTER 1

INTRODUCTION

1.1 BACKGROUND OF STUDY

The IEEE 802.16 standard had been designed as an access network and emerging technology in providing triple plays multimedia services to the end users with promising Quality of Service (QoS). In the meantime, WiMAX (Worldwide Interoperability for Microwave Access) uses QoS mechanism based on the connections between the base station and the user device. Each connection is based on specific scheduling algorithm. As the world of wireless network is moving to the age of velocity, there is a need for wireless network to have faster facilities [1]. Consequently, the IEEE 802.16e is a connection-oriented technolog where the subscriber station (SS) cannot transmit data until it been allocated a channel by base station (BS). This allows 802.16e provide a very good support in QoS. Furthermore, QoS is supported by allocating each connection between subscriber station (SS) and base station (BS) to a specific QoS class. There are 5 QoS classes defined by the Mobile WiMAX standard as shown in Table 1:-

Table 1: QoS classes

Service Class	Application	Definition QoS classes
Unsolicited Grant	T1/E1	Real-time data streams comprising fixed-