

## ABSTRACT

Worldwide Interoperability for Microwave Access (WiMAX) is one of the most important broadband wireless technologies and is anticipated to be a viable alternative to traditional wired broadband techniques due to its cost efficiency. Being an emerging technology, WiMAX supports multimedia applications such as voice over IP (VoIP), voice conference and data. It is necessary to provide Quality of Service (QoS) guaranteed with different characteristics for Broadband Wireless Access (BWA) networks. Based on IEEE 802.16, in network topology point to multipoint, one BS can control many independent SSs simultaneously. Therefore, an effective scheduling is critical for the WiMAX system in manner to provide service for diverse QoS requirements.

Adaptive Proportional Fairness (APF) scheduling algorithm, which aims to extend the PF scheduling from the IEEE 802.11 WLAN. APF algorithm supports real time data services and it's designed according IEEE 802.16 WiMAX therefore APF efficiently scheduled the traffic for the need of QoS requirements.

Simulation result show that on the worst condition scenario of the traffic request, UGS connection have 53,6 % throughput from the offered traffic, delay about 8,6 ms , average jitter is about 10,8 ms, and the packet loss is about 0,012%. For the rtPS connection, the result show it has 35,8% throughput from the offered traffic, delay is about 77 ms, jitter is about 23 ms, and packet loss is about 2,09%. For BE connection, the result show that it has 0,004% throughput from the offered traffic, delay is about 463 ms, jitter is about 590 ms, and packet loss is about 3,5 ms. The simulation result show that APF scheduling algorithm worked according to the standard IEEE 802.16, it's due of the differentiation services of QoS classes.

**Keys:** Proportional Fairness, Adaptive Scheduling Algorithm, QoS, MAC Layer