ABSTRACT

The IEEE 802.16 standard for Worldwide Interoperability for Microwave Access (WiMAX) supports realtime and non-realtime services. WiMAX supports four types of scheduling class : UGS, realtime Polling Service (rtPS), non-realtime Polling Service (nrtPS) and Best Effort (BE). Each types of service need bandwidth requirement differently. Therefore, a suitable scheduling method is needed to support Quality of Service (QoS) for each services.

WiMAX regulates lower layers of seventh-Layer OSI Model, mainly Medium Access Control (MAC) layer and physical (PHY) layer. While PHY layer responsibles for creating connections in physical cannel, MAC layer responsibles for maintaining those connections between MAC peers. MAC layer on WiMAX uses schedule-based algorithm for its access methods. The main part of MAC layer responsibles for this task is the scheduler. Using scheduling algorithm, scheduler guarantees that a service with certain bandwidth requirement can be met. Therefore, an efficient and effective scheduling algorithm is needed to get optimal scheduling.

This final Project will compare algorithms scheduling, there are Weighted Fair Queuing (WFQ), First In First Out (FIFO), Priority Queuing (PQ) and Custom Queuing (CQ) which are completed by simulation using software Opnet Modeler 14.0 and analyze those impact for mobile WiMAX performance if implement on WiMAX networks. The performance's parameter of this system are throughput, data dropped, delay, and queue delay.

The system's testing results show that increasing amount of user will be proportional with increasing of throughput and decreasing delay. The system's testing, WFQ algorithm has thr highest average throughput among the other algorithm scheduling. In addition to, increasing value of queue delay is not significant among algorithm scheduling that used. The usage of other algorithm scheduling and the usage of downlink direction are suggested on this final project, so that the performance of the system of scheduling will be more optimal.

Keywords : *WiMAX, scheduling, algorithm scheduling, Opnet Modeler 14.0*