ABSTRACT

WiMAX is a broadband technology wireless access (BWA) technology. It is implemented based on IEEE Standard 802.16. Mobile WiMAX 802.16e or 802.16-2005 standard is an amendment to the previous standards to meet the mobility functionality in WiMAX. WiMAX in Indonesia is implemented via WiMAX 2.3 GHz neutral-technology scheme. The regulation is governed by Direktur Jenderal Sumber Daya dan Perangkat Pos dan Informatika numbers 213 and 214. Given this scheme, WiMAX operation will run in coexistence (sharing resources) with other technologies, such as LTE. It is required for the competitive value of WiMAX to compete with similar technologies, ie QoS.

WiMAX has the ability to guarantee Quality of Service (QoS) for different types of applications. This warranty is applied in the form of five types of QoS classes. In order to meet the QoS guarantees as promised, we need a scheduling algorithm in WiMAX. Scheduling algorithm to schedule the delivery of packets served in accordance with priorities so that when a state of busy traffic, the promised QoS guarantees can still be met as well.

IEEE Standard 802.16 does not define a scheduling algorithm. Scheduling algorithm that is not part of standard WiMAX left the system designers to choose the most suitable algorithm to be applied in accordance with network conditions. Testing framework for algorithm can determine the quality of the scheduling algorithm based on QoS metrics.

This research builds a framework for testing scheduling algorithms on Point to Multipoint topology with mobile WiMAX 2.3 GHz neutral-technology scheme on the channel Bandwidth of 10 MHz and 5 MHz. The test is not developed in the real network, but using the OPNET simulator.Simulation is used to perform the test of several scheduling algorithms FIFO (First In First Out), PQ (Priority Queuing), WFQ (Weighted Fair Queuing), DWRR (Deficit Weighted Round Robin) and MDRR (Modified Deficit Round Robin).

Simulations made using OPNET simulator. Testing with a channel Bandwidth of 10 MHz and 5 MHz in each of 10 scenarios with a comparison of the data type and level of traffic density are different, MDRR and WFQ algorithm obtained dominate QoS metric value of the average throughput and average delay.

Keywords: IEEE 802.16e, WiMAX, Quality of Service, FIFO, PQ, WFQ, DWRR, MDRR, Throughput, Delay, OPNET.