

## ABSTRACT

As technology expands day by day, all application will be based on Internet Protocol (IP). Several methods used to transmit services over IP network. IP network itself is data communication network which is packet-switch based. One of the services that can be transmitting over IP network is voice services or called Voice over Internet Protocol (VoIP). VoIP is a technology that is able to transfer voice traffic in packet form through IP network.

Real time communication such as voice is a very susceptible to delay where as access network that existing gives long delay for this service. One of the alternate networks which can be used is WiMAX (*Worldwide Interoperability for Microwave Access*). This technology gives data speed until 70 Mbps in radius 50 km<sup>[9]</sup>. Radiuses that make WiMAX become broadband telecommunication network replacing fixed line technology. With WiMAX, the dream about cheap data information services with high speed data will be come true.

This Final Project will analyze performance of VoIP over WiMAX network. Parameters that will be analyzed are delay, jitter and packet loss that happens between source node and destination node. Beside that, this Final Project will analyze about the throughput to proof the consistency from technical spec or theoretical from WiMAX itself.

Based on research, result of one way delay, jitter and packet loss are still on range which is recommended by ITU, that is maximum result of one way delay is 116,399 ms, for jitter is 6.546 ms and for packet loss is 3.175%. Whereas maximum throughput is 1.91 Mbps for downlink and 0.475 for uplink on Rancaekek and maximum result that measured on research is 63.67% from spec equipment or theoretic. On Rancaekek, Bale Endah and Seminar Room, SNR value obtain approximately 30 dB, so modulation that used is 64 QAM. The lowest RSSI is -120 dBm on Jl. Sudirman and the biggest RSSI is -93 dBm on Bale Endah. The longest distance where is signal stiiil got properly is on Rancaekek with 32,8 km.