

ABSTRACT

SIMULATION OF THE EFFECT HEIGHT SENSOR NODE *MICAZ MOTE* TO *QUALITY OF SERVICES (QOS)* WIRELESS SENSOR NETWORK WITH *NETWORK SIMULATOR 2*

By

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Wireless Sensor Networks (WSN) consists of a large number of sensor node that can used to perform a variety of monitoring, one of it is environmental monitoring. The natural circumstances have the variation of height, so we conducted a simulation with a height sensor node randomly. The focus of this research is to measure and to analyze the effect variation of height with measure of the average of value of the *Quality of Service (QoS)* WSN, while is an average *throughput, delay, jitter and packet loss* percentage. The research was conducted based on device specifications WSN of MICaz Mote and performed simulation using Network Simulator 2 (NS-2). This research assumed that the wide area of simulation of 500 m x 500 m with a sensor node 4, 16, 25, 49, 64, 100 and 144 sensor node. The position of sensor node is constant but the variation of height sensor node are 0-5 meters and 0-10 sensor meters is randomly and the interval time delivery is 0.5, 1 and 2 seconds. Based on test results, the optimum value is 64 sensor node where average performance level of *throughput* (2.805 KBps) almost reached its maximum value with the average value of the minimum *delay* (203 ms), *jitter* (1 ms) and the achieving the *packet loss* (24.70%). Variation interval censorship affect the value of the average *throughput, delay, jitter* but not affect of the *packet loss*. Based on the simulation of comparison with 0 meter variation of height and variation of height randomly, it obtained the optimum value for QoS results is better in 0 meter variation of height. It shows that sensor with variation of height have been effect toward QoS JSN performance.

Keyword : Wireless Sensor Network, Micaz mote, *Quality of Service*, Network Simulator 2