ABSTRACT

Zigbee provides layer network in implementing Wireless Sensor Network (WSN), therefore it is able to send the data with multihop using routing method (Route Discovery) to the coordinator. It is necessary because in the implementation of WSN, some problem will occur, such as the limited distance among the *Node*s and the limited energy supply. Cluster Tree Routing is one of the methods to search for a route in Zigbee Network, of which the advantages are the simplicity in its algorhytm and efficiency in energy used. However, this routing method is not efficient because there are not many routes can be used to send the data to the Zigbee coordinator. It is also possible that there will be several *Node*s which are isolated/ unable to send the data to the coordinator when a Zigbee router undergoes a breakdown. Therefore, it is necessary to create a routing method (route discovery) which is able to solve the problem and search for alternative route to the coordinator. Ad Hoc On Demand Distance Vector (AODV) can be used for route discovery in WSN.

This final assignment is purposed to simulate and analyze the utilization of Ad Hoc On Demand Vector (AODV) in WSN, so that the performance metrics in WSN can be considered if the method is used. Simulation is done by using Cygwin dan NS-2. The performance metrics which are analyzed include delay, throughput, packet loss and energy consumption.

The simulation result shows that, based on the radius node as parameter, when the active ZED simultaneously transmit data is relative a bit, a scenario that has node with 20 meters radius showed better performance with energy consumption 9,9952 Joule, throughput 13,25 kbps, packet loss 2,93% and delay 25,83 ms. however, when the density of traffic begin increase that occurs on the contrary. Based on the number of node as parameter, when there are 6 active ZED transmit simultaneously to ZC in WSN, the larger number of nodes are used in the network showed better performance metrics.

Key word : WSN, Zigbee, AODV, Performance Metrics, NS-2