

## **ABSTRACT**

*Wireless Sensor Network (WSN) is one of wireless technology that consists of a group of nodes that can communicate each other. Routing Low Energy Adaptive Clustering Hierarchy (LEACH) is one of the hierarchical cluster-based routers with the lowest delivery delay when compared to other hierarchical routing clusters. Routing with a good criteria is still allowing high packet loss when exist in extreme conditions.*

*In this thesis, LEACH-WSN was modified to optimize network capabilities in the presence of a bundle layer capable of storing packet data if needed especially in extreme conditions. The test is performed to see the performance of LEACH-WSNoverDTN with change of node number, buffer size and message size.*

*In the node-changing scenario, LEACH-WSNoverDTN is able to improve performance by decreasing packet loss value by 50% of LEACH-WSN packet loss. In the buffer resizing scenario, LEACH-WSNoverDTN also improves performance on PDR values that increase by 1.8% of LEACH-WSN. In the message resizing scenario, the average LEACH-WSNoverDTN delay is 0.002ms-0.0015ms lower than the LEACH-WSN delay average. In the test of energy consumption in all three scenarios, LEACH-WSN and LEACH-WSNoverDTN have significant differences in energy consumption but when viewed in the lifetime of the network which depends on energy consumption, LEACH-WSNoverDTN has first death compared to LEACH-WSN.*

**Keyword :** WSN, DTN, LEACH