

ABSTRACT

Wireless Sensor Network (WSN) is a wireless network infrastructure that requires sensor nodes to process information and communicate. Small sensor nodes generally use batteries as their energy source, causing sensor nodes to have limited power, therefore energy efficiency is needed to extend network life. One solution to overcome these problems is by using the clustering method. In this study the cluster-based routing protocol algorithm used is Low Energy Adaptive Clustering Hierarchy-Centralized (LEACH-C) which can function to allocate overall energy consumption between sensor nodes. LEACH-C divides the network into several clusters in which each has a cluster head (CH). Cluster head formation is carried out at the base station based on the average energy level of all nodes. Each non-cluster head node that has data to transfer will send its data to the CH as long as the transmission time is provided. Meanwhile the radio will be turned off until the transmission time is over to save energy in the non-cluster head nodes. If CH has received all the data, CH will process the signal and then send it to the BS. In this study using a scenario of changing the number of nodes, namely 50, 100, and 150 nodes. From the simulation results of the LEACH-C algorithm, it can be seen that the large number of nodes affects network performance. In terms of energy consumption, the LEACH-C algorithm still saves 80% of the energy and the LEACH-C network parameter simulation is included in the good category because the total percentage of packet loss is still below 5%.

Keywords: *Wireless Sensor Network, LEACH-C, Clustering, Sensor node.*