ABSTRACT

Body Sensor Network (BSN) is a sensor device that is installed on the surface of the skin or inside the body. BSN can be used to monitor the condition of patients, especially the elderly. The emergence of BSN can make it easier for patients because patients do not need to go to the service center directly.

Cluster-based routing is a routing method that works by dividing a set of sensor nodes into several groups. In each group there is one node that functions as a cluster head to transmit information obtained from each node to the base station or sink. The I-LEACH protocol is expected to save power consumption from BSN devices because the cluster head selection is done by calculating the highest remaining power available from each node so that the lifetime of the entire network can last longer.

In the Castalia simulation results, the I-LEACH protocol can save energy up to 50% and has a LND lifetime up to two times longer than LEACH. The average PDR of I-LEACH is 84.15% and LEACH is 94.45% so that LEACH has better throughput and packet loss values. The large percentage of routing overhead with LEACH packet size has a smaller average value than I-LEACH. Therefore, as a consideration for choosing the routing protocol to be used, if what is needed is low energy consumption and a long lifetime, then I-LEACH is suitable for use. However, if a larger QoS value is required, then, LEACH is a more suitable protocol to use.

Keywords: Body Sensor Network (BSN), Cluster-based routing, I-LEACH