ABSTRACT

Wireless Sensor Network (WSN) is a wireless network device composed of one or more sensor nodes that have the ability to communication and data processing. To be able to operate the sensor node on WNS is only supplied by the battery as its energy source. The lifetime of the sensor node depends on the energy consumption of the sensor node to perform the work process. Therefore, energy efficiency is very influential on a network to overcome the problem of energy shortage. One such energy efficiency is designing WSN with routing protocols that are expected to provide longer lifespan for node sensors.

In this study simulated two routing protocols namely PDORP (PEGASIS-DSR Optimization Routing Protocol) which is a combination of PEGASIS with optimized DSR and PEGASIS (Power Efficient Gathering Sensor Information System). As for the differences of these two types of routing protocols namely, PDORP takes advantage of the characteristics of the proactive PEGASIS protocol and the reactive DSR protocol. While PEGASIS itself is a hierarchical chain-based routing protocol that each sensor node will form a chain.

For the node-changing scenario, the PDORP Protocol has an energy consumption that is always lower than the PEGASIS Protocol for all scenarios. Total consumption of PEGASIS is greatest in the number of nodes 10 is 0,590 joules whereas PDORP requires only 0.431 joules. For the highest energy consumption, occurs at the number of nodes 90, PEGASIS consumes 2,700 joules while the lower PDORP is 2,023 joules. For the longest death experienced during 90 node scenario that is round 282 for PDORP and round 312 for PEGASIS. For the total death experienced by the PEGASIS Protocol is the fastest in the 10 node scenario with total death at round 554, whereas the PDORP Protocol is the fastest experiencing total death at round to 762 for the same scenario.

For the initial energy conversion scenario, the maximum energy consumption in the PDORP Protocol is 1.3 Joule while in PEGASIS the magnitude is 1.6 joules. For minimal energy consumption, the PDORP protocol consumes 1.2 joules while at PEGASIS of 1.45 joules. The fastest total mortality occurred in the PDORP Protocol is round 427 while in PEGASIS round to 375. The longest network life period in the PDORP Protocol is 3755 round and PDORP at 3341 round.

Kata kunci : Wireless Sensor Network, Efisiensi energi, PDORP, PPEGASIS, DSR