ABSTRACT

The needs of people globally in the information era today is very high. People wants somethings that are easy, practical and efficient but does not reduce the quality. An ad hoc network is one of such technology that offers the convenience talked-about. An ad hoc network is a wireless LAN technology which does not require the existence of a network infrastructure because each node in the network will always move (mobile) thus forming a network topology that always switch over. A node in the ad hoc network can be either telecommunication equipments which is often has limited resource such as the extent of the transmission range, battery power, and bandwidth. IEEE 802.11ah standard was created to solve that problems because it supports wireless networking scenarios such as controlling the number of devices, the extent of coverage area and power consumption mechanisms for limited energy.

This final project will be discussed about the influence of IEEE 802.11ah for energy consumption and performance on ad hoc routing protocols. The routing protocols used in this research are Destination Sequenced Distance Vector (DSDV) and Optimized Link State Routing (OLSR). System designs and Simulations are performed with two scenarios, they are the increment number of nodes and the increment of distance between nodes and access point. Furthermore, the network performance will be measured using the simulation results which generated by Network Simulator 3. Metrics of work to be measured are including packet delivery ratio, throughput, average delay, and energy consumption.

We can conclude that performance of the network using OLSR routing protocol is better than DSDV routing protocol relatively on IEEE 802.11ah standard. OLSR routing protocol getting average packet delivery ratio is about 5,9352%; average delay is about 0,24757144 seconds; average throughput is about 34200 Bps; and average energy consumption is about 14.96142791 J for the increment number of nodes scenarios. Whereas for the increment of distance between nodes and access points on a OLSR routing protocol getting 71.54% for average packet delivery ratio; 0,00215684 seconds for average delay; 6637,8 Bps for average throughput; and 14.16508545 J for average energy consumption. DSDV routing protocol getting average packet delivery ratio is about 1,664%; average delay is about 0,4938553 seconds; average throughput is about 9088,1 Bps; and average energy consumption is about 14,80851968 J for the increment number of nodes scenarios. Whereas for the increment of distance between nodes and access points on a DSDV routing protocol getting 6,48% for average packet delivery ratio; 0,23936 seconds for average delay; 1085 Bps for average throughput; and 13,82875636 J for average energy consumption.

Keywords : *Ad hoc, Network Simulator 3, DSDV, OLSR, IEEE 802.11ah*