

ABSTRACT

Nowadays, one of the many technologies developed, hybrid network technology (combination of wired-wireless architectures) is the technology most commonly developed. To streamline the performance of hybrid networks, it requires the routing protocol to route data traffic. In general, routing protocols can be divided into two kinds, proactive and reactive routing. Proactive routings determine the route to some nodes in a network that has been determined and this route will always be ready when needed. The examples of them are Destination Sequenced Distance Vector (DSDV) and UM-OLSR. Whereas, reactive routings determine routes only if necessary. The examples of them are Ad Hoc On Demand Distance Vector (AODV) and Temporally Ordered Routing Algorithm (TORA).

In this thesis, the author examines the performance of proactive routing protocols are represented by the UM-OLSR. As for reactive routing protocols, the author takes AODV. In the research, both of them simulated on a hybrid network using the network simulator NS-2. Test parameters include Quality of Service (QoS) parameters, like throughput, average end to end delay and packet delivery ratio (PDR). Node speed and number of nodes is a variable that changes in this research.

The results of this research indicate that the UM-OLSR has better performance than AODV in a network with more number of nodes (fixed speed = 10 m/s), UM-OLSR has an average throughput of 500 to 600 kbps, PDR above 50%, and average total end to end delay 65.35657 ms. While AODV has a value of average total end to end delay amounted to 78.6853 ms. When the number of nodes is over 14 nodes, AODV's throughput value dropped dramatically to below 500 kbps and PDR to below 40% while the number of nodes in the top 18 nodes. In the other hand, with fixed number nodes (four nodes) and the influence of velocity changes, AODV works better than the UM-OLSR because AODV's mobility is better than UM-OLSR. AODV has throughput above 600 kbps, PDR above 84% and average total end to end delay 47.9619 ms. While the UM-OLSR has a total average end to end delay 56.3428 ms. At speeds above 12 m / s, PDR can goes down to below 60% and throughput just up to 390 kbps.

Key words: *hybrid network, routing protocol, AODV, UM-OLSR, QoS*