

ABSTRACT

Generally, ad hoc networks known as wireless telecommunications model that connects multiple computers in a network without using additional devices such as access point. These networks are widely used because they have a simple model. Wireless Ad Hoc has no center, so each node determines their own routing patterns. There are several routing protocols for ad hoc networks, such as AODV, OLSR, ZRP, etc.. These protocols offer a variety of methods to find the shortest path from the sender node to the destination node that sent the packet. Choosing a routing protocol is certainly very important, because the routing process that occurs on an ad hoc network affects QoS (Quality of Service) of the network itself.

In this final task, simulations will be performed to analyze the QoS in Ad Hoc networks that implement ZRP (Zone Routing Protocol) as their routing protocol. ZRP divides the network into several zones, where each node has a zone. This area is from the node until ρ hops (ρ is a constant number). In ZRP, nodes that are in a zone can communicate with IARP (Intrazone Routing Protocol) and the nodes of different zones may communicate using IERP (Interzone Routing Protocol), with a delivery charge of its route request is BRP (Broadcast Resolution Protocol).

Simulation model is used in this final task, because the simulation model is an effective technique for evaluating the performance of a network protocol. In this final task, the writer uses NS2, a network simulator.

The results of this final assignment show that ZRP gives optimum values in throughput, end-to-end delay, packet loss, and routing overhead when the total number of nodes is 20 until 30 nodes and the speed of movement of those nodes is 0 m/s until 2 m/s. The fewer number of nodes and less frequently changing in speed movement makes fewer number of zones and less movement on zones.

Keywords : *Wireless, Ad Hoc, ZRP, QoS, Throughput, Delay, Packet Loss*