ABSTRACT

Vehicular Ad-hoc Network (VANET) is an Ad-hoc network environment with nodes (vehicle) which is a high speed moving router. This causes VANET have arbitrary topology with a very short time. Therefore, VANET is vulnerable from the outside strike by attacking the used routing protocol. When routing protocol attacked by malicious node, it will cause a disturbance in the function of the routing protocol, which can cause a data packet is lost during transmission, even cause accidents at VANET communication. One type of routing protocol on VANET which is vulnerable to an attack is reactive routing protocol. Therefore, to overcome the security gap, Intrusion Detection System is used as a prevention attack.

This final project analyze the performance comparation of the routing protocol Ad-hoc On-Demand Distance Vector (AODV) with simulation scenario changes in the number of nodes 30, 50, 70, and 90 and the speed of the node 70, 80, 90, 100 km/h with Denial of Service attacks type that used the Blackhole and Grayhole without and with Intrusion Detection System simulated by Network Simulator 2 (NS2) with node mobility modeling using ONE Simulator. Simulation parameters in terms of Quality of Service (QoS): packet delivery ratio, end-to-end delay, and throughput.

Based on simulation results show that AODV routing protocol on a freeway mobility model with the changing scenario of nodes number and speed affects the generated QoS performance. In a scenario without the attack with the effect of changes in the number of nodes, shows that the more the number of nodes in the network, the performance of throughput, delay, and PDR will rise. Whereas the effect of node speed changing scenario, the faster the node moves in a network, the throughput performance and PDR will fall, while the delay will rise. In such a scenario the addition of Blackhole attacks and Grayhole cause a decrease in the performance of AODV routing protocol. So that to cope with such attacks used IDS as a deterrent to attacks. With the addition of the IDS system will reduce the impact of attacks by raising the performance of the state stricken routing protocol.

Keywords: VANET, reactive routing protocol, AODV, DSR, IDS, Blackhole, Greyhole, packet delivery ratio, end to end delay, dan throughput.