ABSTRACT

Security is a fundamental issue to achieve desired QoS on Vehicular Delay Tolerant Network (VDTN). VDTN network are prone from specific attacks such as malicious nodes, one of malicious nodes is a blackhole attack which is one a kind of DoS attack where blackhole is simply dropping the packets or not forwarding the packets.

This research was implemented the IDS algorithm that previously researched on the MANET network with some improvement, the IDS on MANET is based on the node collaboration, collection and analysis of system and network audit data. Vehicle nodes run the IDS independently and will be observing the behavior of neighbor nodes, look for intrusion signs locally, and making decision to protect the system from attack or it can also requesting for data from neighboring nodes.

ONESim tool is used on the simulation to represent the vehicles mobility on real geographical map with vehicle speed clustering scenario. Meanwhile blackhole and IDS implementation is using Network Simulator (NS-2) tool to measure the key metrics performance, which consist of Throughput, Packet Loss, End to End Delay and Normalized Routing Load (NRL).

The simulation shown that the IDS algorithm can improve all performance metrics significantly. The throughput are increased by 112% in average for each cluster, the packet loss are decreased by 20% in average for each cluster, the end to end delay are increased with 46% in average, and finally the NRL has improved 118% in average. This simulation results indicating a promising performance of Vehicle to Vehicle (V2V) communication in future development.