

LI-AODV: lifetime improving AODV routing for detecting and removing black-hole attack from VANET

ABSTRACT

Vehicular Ad-hoc Network (VANET) is an emerging technology and is an application of Mobile Ad-hoc Network (MANET). So it has same characteristics like wireless medium, dynamic topology, collision interference. Objective of VANET is to create and provide communications among group of vehicles without any central base station. An attack like Black hole in VANET is a main issue that degrades performance of whole network. Many existing algorithms tried to solve this issue but not completely. In order to solve above problems in VANET from black hole attack, we propose a new routing protocol named Lifetime Improving Ad-hoc On-demand Distance Vector (LI-AODV). To reduce overload in routing process we introduce a scheduling algorithm named Hybrid Round Robin with Highest Response Ratio Next (HRRHRRN). To prevent the network from Black hole attack we propose a new security algorithm called HMAC-SHA3-384 which is a combination of SHA3-384 and HMAC. This LI-AODV achieves better performance in lifetime of the network, reduces black hole attack, End-to-End delay, throughput, packet loss, Packet delivery ratio. Our experimental procedure provides efficient identification and removal of black hole attack in urban VANET.

Keyword: VANET; Black hole attack; AODV routing protocol; Ad-hoc network; HMAC; SHA3-384