

RSU Aggregated Message Delivery for VANET

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Abstract : V2V communication brings up several questions of scalability issues although message sharing in vehicular ad-hoc networks comprises of both Vehicle-to-Vehicle communications (V2V) and Vehicle to Infrastructure communication (V2I). It is not an easy task for a vehicle to verify all signatures of the messages sent by its neighboring vehicles in a timely manner, without resulting in message loss. Moreover, the communication overhead of a vehicle to authenticate another vehicle would increase together with the security of the system. Another issue to be addressed is the continuous mobility of vehicles which requires at least some information on the node's own position to be revealed to the neighboring vehicles. This may facilitate the attacker to congregate information on a node's position or its mobility patterns. In order to tackle these issues, this paper introduces a RSU aggregated message deliverance scheme called RAMeD. With RAMeD, roadside units (RSUs) are responsible for verifying the identity of the vehicles entering in its range, collect messages from genuine vehicles and to aggregate similar messages into groups before sending them to all the vehicles in its communication range. This aggregation will tremendously improve the rate of message delivery and reduce the message lose ratio by avoiding similar messages being sent to the vehicles redundantly. The proposed protocol is analyzed extensively to evaluate its merits and efficiency for vehicular communication.

Keywords : vehicular ad-hoc networks, V2V, V2I, VANET communication, scalability, message aggregation

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