

ABSTRACT

Vehicular ad-hoc network (VANET) technology is serving variable applications as it uses moving vehicles as nodes in a network to create communication independent of a central infrastructure. Various types of VANET problems have emerged because of the absence of a central infrastructure as well as the random movement of the vehicles. VANETs cannot cope with network segmentation because of frequently disconnected networks in sparse environments. Therefore, several solutions have been proposed in the literature, such as integrating the VANET with other infrastructure networks by static gateways that have been fixed along the road. However, protocols based on static gateways can provide connectivity only in areas where they are deployed. Thus, the distribution and requirement of static gateways are the main drawbacks of these protocols. In this paper, a new routing protocol for robust and trust mobile gateway selection (RTMGwS) has been proposed. RTMGwS protocol uses the characteristics of vehicle movements and variant routing parameters to select an optimal mobile gateway with high robust and trust connection to an infrastructure network. The protocol is designed to spread the advertisement messages by the mobile vehicle gateway over the integrated network architecture of VANET and universal mobile telecommunications system (VANET-UMTS) without flooding the network and seamless handovers. The proposed protocol has been validated using SUMO and NS2 simulators over highways environment. The simulation results show encouraging performance in terms of increasing the packet delivery ratio and overall throughput, reducing control packet overhead and minimizing connection delay.