Hybrid LTE-VANETs Based Optimal Radio Access Selection

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ABSTRACT

In road networks, the mutual metric for the location of the optimal route relaying on two points is either the length of the path or the time of the trip. Hence, the selection of access to any radio access technology (RAT) from a variety of RATs by a user for onward association has been intensively investigated by vehicular ad hoc network (VANET). In particular, it carries and distributes information, inter-communicates, and is capable of communicating with other stationary units deployed along the roadways. The problem is low data packet delivery ratio, high delay, link transmission instability, and the number of hopes per route. This paper proposed an ancient hybrid optimal radio access selection algorithm (ORAS) which combines the LTE and VANET networks with accomplishing high data packet delivery ratios and low delay, while maintaining the minimum level of cellular infrastructure usage by means of increasing the stability of link transmission and reducing the number of hopes per route. The proposed algorithm is the multi-hop-routing-protocol-based IEEE 802.11p/LTE hybrid architecture. The optimal radio access selection algorithm (ORAS), based on IEEE 802.11p radio resource management (RRM), examines the IEEE 802.11p network load through the monitor mechanism of network load. The monitor mechanism, in turn, observes the queue length to determine the current network loads. The ORAS/RRM entity broadcasts beacons through its IEEE 802.11p interface once the queue length is inferior to a particular threshold limit. Nonetheless, the existing network load might cause a collision case which leads to severe performance degradation on the condition that the queue length exceeds specific threshold limit.

KEYWORDS

QoS; Hybrid vehicular networks; LTE IEEE 802.11p; Routing Hanover