Vehicular communication ad hoc routing protocols: A survey

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Abstract

Vehicular communications are now the dominant mode of transferring information between automobiles. One of the most promising applications of vehicular communications is the vehicular ad hoc network (VANET), an approach to the intelligent transportation system (ITS). VANET is a subclass of the mobile ad hoc network, which does not depend on fixed infrastructure, in which the nodes are highly mobile. Therefore, the network topology changes rapidly. The design of routing protocols in VANETs is crucial in supporting the ITS. As a prerequisite to communication, the VANET routing protocols must establish an efficient route between network nodes. Furthermore, they should adjust efficiently to the quickly varying topology of moving vehicles. In this paper, we discuss the main characteristics and the research challenge of routing in VANETs, which may be considered in designing various routing protocols. We also created taxonomy of the current routing protocols for VANETs, and we surveyed and compared symbolized instances for all the classes of protocols. This organization and description present the advantages and weaknesses of the current protocols in this field, and paves the way for solutions to unaddressed problems.