Identifying and Averting the MAC Layer Misbehavior in AD-HOC Networks

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Abstract

The all-encompassing nature of the ad-hoc network and its design architecture in the multi-hop communication system, where trust value of the participant nodes cannot be necessarily taken for granted, is prone to selfish misbehavior by participant nodes. Therefore, the compliance of the MAC layer protocol has become pertinent to the proper functioning of the network. The optimal performance of the network and the judicious and fare usage of network resources can only be achieved by reliable and timely detection of illegitimate protocol operation. In this paper, it is envisaged that the determination factor quantifies the probability of the misbehavior whereas the trust value quantifies the probability of the well-behaved nodes. Thus, these values provide fair insight into the behavioral pattern of any ad-hoc network. The robust detection framework is, therefore implemented to timely notification of the selfish node. Here, the inherent defense mechanism is also incorporated which enhances efficiency, efficacy of the network and provides fare utilization of resources among the nodes. Proposed scheme is validated through simulation results using NS2.
References


Index Terms

Computer Science Wireless

Keywords

Ad-hoc networks, selfish misbehavior, MAC layer, determination factor, trust value.