Abstract

MANET is a self-organizing system of mobile nodes that can be connected by wireless links on an ad hoc basis. In a MANET, the nodes are free to move randomly, causing the network’s topology to change dynamically. Their high mobility and ad hoc nature poses greater security threats. Moreover, because they do not have a centralized controlling entity, it may be advantageous for individual nodes not to cooperate. Misbehavior of nodes can be commonly found in either forwarding or routing. Among these, timing attack at the MAC layer leads to serious consequences such as violation of QoS. Reputation systems can handle such kind of misbehavior that is observable. This paper proposes a MAC Layer based Reputation System for MANETs. It incorporates misbehavior observation, statistical calculation of reputation index, diagnosis and mitigation. The proposed model is implemented with modifications in the MAC component of ns2 and the results are compared with the existing MAC protocol. Result shows that the proposed model enhances the network performance by reducing the number of packet drops by 11% and increasing the throughput in the network by 23%.
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Index Terms

Computer Science

Wireless

Keywords

MANET  Timing Misbehavior  MAC Layer  Trust  Reputation.