Abstract

A mobile ad hoc network (MANET) is comprised of mobile hosts that communicate with each other using wireless links and based on the peer-to-peer paradigm. A MANET is a self-configuring network that can have an arbitrary topology along the time. Each mobile host works as a router and it is free to move randomly and connect to other hosts arbitrarily. Thus,
the network topology can change quickly and unpredictably since there may exist a large number of independent ad hoc connections. The default mechanism of route discovery in MANETs is flooding. Many routing protocols (such as AODV and DSR) and applications are operated based on flooding and data dissemination to all nodes in network. Therefore, a robust and efficient flooding algorithm is necessary in an ad hoc network environment. In this paper, an intelligent AODV protocol is proposed and analyzed that follows a efficient method of route discovery based on network density and probability, and adjusts itself dynamically based on the network density of MANET. The proposed algorithm is analyzed on GloMoSim simulator in various scenarios of mobility, network density, traffic load etc. The simulation results show that I-AODV (intelligent-AODV) method significantly reduces the no. of rebroadcasts and hence reduces the contention and collision rate among the neighbor nodes. The results show great improvements over simple flooding approach in AODV, in terms of performance measures such as routing overheads, collisions rate, end to end delay, no. of broadcast requests etc. hence solves the problem of broadcast storm in MANETs.

Reference

Modeling and Analysis of an Intelligent AODV Routing Protocol based on Route Request Retransmission Strategy in MANETs

(IWWAN’04), University of Oulu, Finland, 2004.


Index Terms

Computer Science

Wireless

Key words

AODV
flooding
MANETs
GloMoSim
mobility
route discovery