Abstract

A mobile ad hoc network (MANET) is a collection of mobile nodes and is autonomous having communication through the insecure wireless links. Security is very important issue for this type of networks because the nodes in the network dynamically add and join the network. This nature of nodes makes them vulnerable to malicious attacks. One of the widely adopted network routing protocols for Mobile Ad hoc Network (MANET) is AODV (Ad hoc on demand Distance Vector) protocol. Black hole attack is one such attack in which a malicious node makes use of susceptibility of Route Request (RREQ) packets of routing protocol to advertise itself with a fake Route Reply (RREP) message as having the shortest path to the destination node. Black hole attack has serious impact on routing and delivery ratio of packets. Most of the conventional methods to detect and avoid such attacks are likely to be suffered from high rate of errors in detection. To detect the black hole it is proposed to check the replies from all neighboring nodes to find the safe route but all such approaches suffered from high processing delay. In this paper we proposed a new approach called Agent based method to detect and eliminate black hole attack. Agent based method will not only efficiently detect the black holes but completely overcome the problem by eliminating the black hole from participating in MANET
thus improving the security of the AODV. In simulation using NS - 2. 33, the Agent based AODV has shown outstanding results as compared to AODV in presence of black holes. Results obtained from simulation have shown that Agent based method does not introduce high overhead for the duration of secure time (no attacks) and provide better performance during attack time (presence of Black hole) in the network.

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Index Terms

Computer Science

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Mobile Ad Hoc networks (MANET)  AODV  malicious node  Black hole attack

RREQ

RREP