Trusted Secure Adhoc On-Demand Multipath Distance Vector Routing in MANET

A mobile ad hoc network (MANET) is a collectionof wireless nodes, which works well only if those mobile nodes aregood and behave cooperatively. The lack of infrastructuresupport and resource constraint is the key issue that causesdishonest and non-co-operative nodes. Therefore, MANET isvulnerable to serious attacks. To reduce the hazards from suchnodes and enhance the security of the network, this paperextends an Ad hoc On-Demand Multipath Distance Vector(AOMDV) Routing protocol, named as Trust-based Secured Adhoc On-demand Multipath Distance Vector (TS-AOMDV), whichis based on the nodes' routing behavior. The proposed TSAOMDVaims at identifying and isolating the attacks such asflooding, black hole, and gray hole attacks in MANET. With thehelp of Intrusion Detection System (IDS) and trust-based routing, attack identification and isolation are carried out in two phases ofrouting such as route discovery and data forwarding phase. IDSfacilitates complete routing security by observing both controlpackets and data packets that are involved in the routeidentification and the data forwarding phases. To improve therouting performance, the IDS integrates the measured statisticsinto the AOMDV routing protocol for the detection of attackers. This facilitates the TS-AOMDV to provide better routingperformance and security in MANET. Finally, the Trust basedSecured AOMDV, TS-AOMDV is compared with the existingAOMDV through the NS2 based simulation model. Theperformance evaluation reveals that the proposed TS-AOMDVimproves the performance in terms of throughput by 57.1%more than that of an AOMDV under adversary scenario. Thesimulated results show that the TS-AOMDV outperforms theAOMDV routing protocol.