A Distributed Algorithm to Detecting Node Replication Attack in Mobile Wireless Sensor Networks

Abstract

One of the dangerous attacks in mobile wireless sensor networks is node replication attack. In this attack, adversary captures one of the network's legitimate nodes and extracts its important information including ID and key materials and uses this information to create duplicate (or replica nodes) and inject them to the network. In this paper, a distributed algorithm based on neighborhood information is proposed for identifying replica nodes in mobile wireless sensor networks. In the proposed algorithm, each node is responsible for handling √N other nodes (N is total number of nodes in the network). Efficiency of the proposed algorithm is evaluated in terms of detection probability, replica nodes and false detection rate. Simulation results show that after 100 traffic monitoring rounds, detection probability of replica nodes is more than 0.95 and false detection rate is less than 4%.

References


**Index Terms**

Computer Science  Wireless

**Keywords**

Replica attack, mobile wireless sensor networks, neighborhood information.