Abstract

This study proposes a novel, simple, and efficient algorithm using explorer nodes to overcome the replica node attack in static wireless sensor networks. In the replica node attack, the adversary captures a legitimate node in the network and extracts its important information, including its ID, to generate and inject several replica nodes in the network. These nodes are controlled by the adversary and have the ability to link legitimate nodes. Therefore, these replica nodes can easily have their corruptive impacts on network integrity. The main notion of the proposed algorithm is to collect spatial and neighborhood information by mobile explorer nodes in the network environment to detect replica nodes. The proposed algorithm consists of two parts: 1- recording information in the buffer of explorer nodes, and 2- verifying buffer content to detect potential replica nodes. The proposed algorithm is implemented and its efficiency is evaluated by a set of experiments in terms of replica node detection rate. Furthermore, evaluation results are compared with existing algorithms and indicate that the proposed algorithm outperforms other methods.
References


Index Terms

Computer Science Wireless

Keywords

Static sensor networks, replica node attack, neighborhood information, explorer node