Abstract

Three dangerous attacks in wireless sensor network is handled in this proposed security solution. This paper proposes a lightweight and fast mobile agent technology based security solution against cloning attack, sinkhole attack and black hole attack for wireless sensor networks (WSNs). Recently mobile agents have been proposed in wireless sensor networks to reduce the communication cost especially over low bandwidth links. The proposed scheme is to defend against cloning attack, sink hole attacks and black hole attacks using mobile agents. In the cloning attack, adversary introduces replicas of compromised node. In the sinkhole attack, an adversary lures traffic through a compromised node. A black hole attack is a type of denial-of-service attack accomplished by dropping packets for a particular network destination in bulk (by dropping all packets). For dealing with black hole attacks more than one base station concept is also added with mobile agent concept to bring the best result. Here we implement a simulation-based model of our solution to recover from cloning attack, sinkhole attack and black hole attack in a Wireless Sensor Network. This mechanism does not require more energy. Comparison of communication overhead and cost were made between the proposed attack detection system using mobile agent against the security system in the absence of mobile agents. Comparison was also done between the proposed security system with the security system handling single attack. The mobile agents were developed using the Aglet.
- Yingpei Zeng, Jiannong Cao, Senior Member, IEEE, Shigeng Zhang, Shanqing Guo and Li Xie, "Random walk based approach to detect clone attacks in wireless sensor networks", IEEE Journal of selected areas in communication, vol 28, No. 5, June 2010.
Mollifying the Effect of Cloning, Sink Hole and Black Hole Attacks in Wireless Sensor Networks using Mobile Agents with Several Base Stations


Index Terms

Computer Science
Wireless

Keywords

WSN mobile agent cloning attack sink hole attack black hole attack multiple base station