Abstract

Wireless Sensor Networks (WSNs), besides its huge application areas, is prone to various types of attacks and security threats. Due to its dynamic topology, highly decentralized infrastructure and resource constraint sensors, proper energy utilization becomes a challenging issue. These entities are responsible to make WSNs susceptible to various types of denials of service attacks which results in disastrous consequences like energy-hole creation in the network. Various cluster head selection based energy efficient protocols have been proposed to
improve the lifetime of WSNs. In most of the energy efficient techniques, different approaches for energy utilization by sensors are proposed to extend lifetime of WSNs. The proposed scheme is defend against cooperative Gray-Hole and Black-Hole attacks that lead to performance degradation in WSNs containing mobile sensors. In order to overcome this, energy efficient technique is presented in this paper to mitigate the impact of both attacks simultaneously, on improving cluster head selection mechanism. Proposed protocol implements a energy efficient technique, on detecting and preventing compromised node to be a part on network communication in WSNs. It also determines honest nodes to become cluster head during packets transmission phase in WSNs. NS2 simulation result compare proposed protocol with LEACH proves that implemented scheme effectively minimize the chance of compromised node to become cluster head and significantly achieves better network performance related to packet delivery ratio (PDR), throughput, end-to-end delay and energy utilization in WSNs.

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**Index Terms**

Computer Science  
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**Keywords**

Black-hole Attack; Cluster Head Selection; Delay; Energy Efficiency; Gray-hole Attack; Leach; Network Lifetime; Packet Delivery Ratio; Throughput; wireless Sensor Networks.