Abstract

On denial-of-service (DoS) attacks for wireless sensor networks (WSNs), we investigated the security aspects of the physical layer. We conducted the simulative performance analysis of jamming attacks for signal-to-noise ratio (SNR), bit error rate (BER), network throughput and packet delivery ratio (PDR) using IEEE 802.15.4 based OPNET simulative model for WSN under constant and varying intensity of jamming attacks. Under constant jamming attack, simulations revealed that average sink node PDR degrades from 79.01% in a normal scenario, to 59.22% in jammed scenario. Also, normal scenario shows maximum PDR of 89.68% and minimum PDR of 70.02% while jammed scenario shows a maximum PDR of 64.93% and minimum PDR of 49.90%. Under varying intensity of jamming attack, simulations revealed that average sink node PDR decreases, from 79.01% in a normal scenario, by 5.54%, 4.53%, 6.36% and 3.35% with the introduction of one, two, three and four jammers respectively. Further, the average SNR decreases, from 73.59%, in a normal scenario, by 5.43%, 5.63%, 10.44% and 20.39% with the introduction of one, two, three and four jammers respectively.

References
On Denial of Service Attacks for Wireless Sensor Networks

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Index Terms

Computer Science Security

Keywords