

# Security: Cross Layer Protocols in Wireless Sensor Network

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**Abstract:** Due to the limited resource constraint in wireless sensor network, security in protocols is sacrificed or kept minimal. But, in real-world applications such as military, environmental and health monitoring communication security becomes a necessity. Unfortunately, traditional wireless network security schemes cannot be used directly in WNS. Hence a trade-off between security and resource constraints still remains a dilemma to researchers.

The Denial of Service (DoS) attack on sensor network not only diminishes the network performance but also the reliability of the information is lost. Detection of a DoS threat is more crucial than recovering from the attack. Hence in this paper a novel approach in detecting the DoS attack is discussed by formulating a hypothesis. Attacks occur mainly due to the security features neglected in the protocol at the design stage. As security could possibly be ignored in any or every layer, there are different types of DoS attacks that can occur. For e.g., In the routing and network layer, due to “misdirection” attack the messages are flooded over the network. This information could also happen by looking at the routing table or negative advertising by the adversary to flood either a sender, receiver or an arbitrary node.

The DoS attack is dependent on the vulnerabilities in each layer. In this paper the physical layer DoS attack is analyzed and a defense mechanism is proposed. Classification of the jammer under various attack is formulated to predict the genuinity of the DoS attacks on the sensor nodes using receiver operating characteristics (ROC). This novel approach helps in achieving maximum reliability on DoS claims improving the Quality of Service (QoS) of WSN.