Chapter 19
An Outline of Threats and Sensor Cloud Infrastructure in Wireless Sensor Network

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ABSTRACT
Wireless sensor networks are utilized in vital situations like military and commercial applications, traffic surveillance, habitat monitoring, and many other applications. WSNs have to face various issues and challenges in terms of memory, communication, energy, computation, and storage, which require efficient management of huge amount of sensor data. Therefore, storage is an important issue in the WSN. Emergence of Sensor-Cloud infrastructure overcomes several shortcomings of WSN such as storage capacity and offers high processing capabilities for huge sensor data. Security is also the major challenge that is faced by the sensor network. This chapter includes a brief overview of the importance of cloud computing in sensor networks and the goal of DDoS and Node Capture Attack in WSN. This chapter includes descriptions of different modeling techniques of Node Capture attack and various detection and key pre-distribution schemes to invent a new technique to improve network resilience against node capture attacks.

INTRODUCTION
Wireless Sensor Networks are heterogeneous systems containing several tiny devices known as sensor nodes and actuators with general computing components. These networks will composed of lots of low cost, low power and self-organizing sensor nodes which are distributed either within the network or near it. These sensor nodes contain three main elements—sensing, data processing and communication. Two other elements are also there called, aggregation and base station. Aggregation
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nodes collects data from the nodes located near it combines the collected data and then sends it to the base station. Figure-1 represents the overview of the basic architecture of the Wireless Sensor Network.

Numerous applications of Wireless sensor network includes habitat monitoring, manufacturing and logistics, environmental observation and forecast systems, military applications, health, home and office application and a variety of intelligent and smart systems. WSNs have to face several issues and challenges in terms of memory, communication, energy, computation and storage which require efficient management of huge amount of sensor data. So, storage is important issue in the WSN to deal with it. The computation and processing ability of sensing nodes are limited as a result of nodes affected by energy constraint because they are run by battery power. Emergence of cloud computing is seen as a promising technique to offer a flexible stack of massive computing, storage and software services in a virtualized way at very less cost. So, integration of cloud computing with Sensor network provides enormous solutions for it which is called as Sensor-Cloud. Sensor-Cloud is a new technique for cloud computing that contains physical sensor nodes to gather its sensor data and then transmits complete sensor data into a cloud computing infrastructure.

Security is one of the major issues that are faced by wireless sensor network today. Robust security schemes are needed for transmitting

Figure 1. Wireless sensor network overview