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Security Issues In Mobile Ad Hoc Networks

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Abstract

In wired networks, there are lots of protections while communication occurs. In these networks, the intruders are pass through the firewalls and secured gateways for safe and secured communications. Moreover, the wired networks ensure the secured communications. But, in the case of wireless mobile ad hoc networks, the nodes are dynamic and the topology based and also needs more power consumptions. Because of mobility in wireless mobile adhoc networks, also there are lots of vulnerabilities when the attackers wish to collapse the partial or entire networks. Hence, there are lots of requirement for an understanding of the various problems associated with the wireless mobile networks. In this paper, the various vulnerabilities, attacks and security mechanisms are discussed for mobile ad hoc networks (MANETs) in detail.

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1. Introduction

Mobile Ad hoc Networks(MANETs) refers the one kind of mobile networks encompass the wireless mobile nodes for communication. These nodes organize themselves dynamically in random and volatile topologies. In such a scenario, a wireless system which can deliver information from a source to destination, considering the mobility of the nodes in mind, is crucial. It is so, because a node can receive a packet of data that is sent within it's frequency range. So, when the nodes are mobile, the receiving node can move out of frequency range at anytime. It allows people and devices to inter network in areas with no pre-existing communication infrastructure.

The main characteristics of MANETs are [1]

1. Self-organizing and self-managing
2. Most or all of the nodes are mobile
3. Network topology changes
4. Wireless
5. Node is both a host and a router
6. Multiple hop routing
7. Power constraint
8. Variation in scale
9. Heterogeneity
10. Decentralization
11. Variable routing paths
12. Dynamic topology
13. No access point required
14. Distributed Operation

MANETs are used in the following areas

1. Military Battlefield
2. Sensor Networks
3. Commercial Sector
4. Medical Service
5. Personal Area Network

1. SECURITY GOALS

2.1. Availability

A node always provides the services it is designed for. It concentrates crucially on denial-of-service attacks. Some selfish nodes make some of the network services unavailable [2].

2.2. Integrity

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