

Chapter 65

Security Issues in Mobile Devices and Mobile Adhoc Networks

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ABSTRACT

For successful data transmission in wireless networks, security features are very much essential to implement. A mobile adhoc network contains a set of autonomous mobile stations that can correspond with each other instead of some adverse situation of wireless environment. Those mobile nodes that are not in the same series can communicate with others through intermediate hops. Security is a challenging mission in mobile adhoc network (MANET) due to many serious issues in the network such as hop-to-hop persistent wireless connectivity, high frequency of variation in topology of the network, and increasing rate of link failure due to higher mobility. So, it is very challenging to develop a secured, dynamic, and efficient routing protocol for such a magnificent network. In this chapter, vulnerability issues of MANET are focused on with a spotlight on prominent MANET protocols. A brief study on technical issues responsible for vulnerability in MANET has been depicted with systematic review on various issues and protocols that provide secured routing in the network.

INTRODUCTION

There are many essential features of MANET which makes it well known and very special. But susceptibility still emerges because of the inbuilt features of self-arrangement and frequent re-configuration. There are some reasons mentioned below that causes vulnerability in MANET.

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Lack of Restriction

There is no such constraint for nodes to combine, join, detach and go in or outside of the network. Along these lines, the absence of security measures makes the MANET inclined to the attacks. The MANET is open to attacks (Razak et al, 2014) because of absence of firewall and network gateway.

- **Dynamic Change in Topology:** Due to high mobility of the nodes, the topology of MANET changes very frequently (Joshi, 2011). Since, nodes are changing & joining the mobile network, It is impractical to record the freed in a dynamic network. Some of these nodes can be scoundrel and can be put to danger as these nodes do not have a place with the trusted zone.
- **Absence of Central Authority:** There is no central administrator in MANET that controls the working of activities in MANET . During the hop to hop data transmission, this issue sometimes brings about breakdown and failure in transmitted data. Thus, nodes don't contribute in any security operations (Ghoreishi et al, 2014). An inadequacy of this type cause can hamper the general operations of the nodes association and disjoints.
- **Restricted Power Supply:** Nodes in a MANET rely on their battery power for any activities such as packet forwarding, processing, sending, receiving etc. But the limited power supply is not sufficient because the power drains away with use of it during functioning of the nodes.
- **Inconsistent Scalability:** Everything well thought-out in wired network scale is predefined when outlined and not change such all through the usage, however scale is changing each time in case of compliance in MANET. There is no network to anticipate number of nodes in MANET, due to which the congestion (Rashidi et al, 2009) occurs in routers and secured congestion control (Kumaran et al, 2010) mechanism need to be employed. This infers that network needs scale all over at every one time in network.

In this section important work has been presented which are carried out by eminent persons with their proposed protocols with security features executed by them.

Table 1. Details of security mechanisms studied

Literature	Year	Basic Security Mechanism
V. Sheesha Bhargavi et.al.	2016	Improvement of the security of files shared across MANET
Vishnu Sharma et.al.	2016	Attacks on the network layer of the protocol stack. Has been prevented
Shilpi burman Sharma et.al.	2015	Security issues in MANET has been analyzed
Seyed-Mohsen Ghoreishi et.al.	2014	Rushing attack prevention has been carried out
Praveen Joshi	2010	Security threats in Network layer are analyzed
Jan Von Mulert et.al.	2012	Focuses on networks that use AODV and SAODV protocols for security
Rashid Sheik et.al.	2010	Identification mechanism is needed between nodes using identification and credentials and this leads to privacy attack
Athuly MS et.al.	2012	Secure transmission of audio over the network
Md. Qayyum et.al.	2011	Security issues of data query processing and location monitoring has been discussed
Edl Echchaachoui et.al.	2014	Data security as a key issue in MANET has been emphasized

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