Abstract

Ad hoc networks are vulnerable due to their structure less property. A Mobile Ad-Hoc Network (MANET) is an infrastructure less collection of mobile nodes that can arbitrarily change their geographic locations such that these networks have dynamic topologies and random mobility with constrained resources. They also have capability of network partition. The Wormhole attack
Prevention of Wormhole Attack in Ad-Hoc Network

is the most attention seeking attack in ad hoc networks; it consists of two malicious nodes and a
tunnel between malicious nodes. In wormhole attack, attacker records the packets at one
location and tunnels them in another location in same network or in different network. In this
paper, we present a mechanism which is helpful for detection and defend against wormhole
attack in ad hoc network is “multipath hop counting analysis” (MHA) in which accepting all route
request at destination node with in a fixed time period called time to live (TTL) period and then
verification of digital signature of sending node by receiving node because each legitimate node
in the network contains the digital signature of every other legitimate nodes of same network. In
proposed solution, if sender wants to send the data to destination, firstly it creates a secure path
between sender and receiver with the help of multipath hop count analysis with verification of
digital signature. If there is presence of any malicious node in between the path then it is
identified because malicious node does not have its own legal digital signature.

Reference

- M. Bouhorma, H. Bentaouit and A. Boudhir, “Performance Comparison of Ad-Hoc Routing
  511-514, 2009.
- David L. Mills, “A Computer-Controlled LORAN-C Receiver for Precision Time Keeping,”
  Technical Report 92-3-1, Department of Electrical and Computer Engineering, University of
  97-8-1, Department of Electrical and Computer Engineering, university of Delaware, DE, August
  1997.
- Tom Clark, “Tom Clark's Totally Accurate Clock FTP Site. Greenbelt, Maryland.”
- I. Khalil, S. Bagchi, N.B. shroff, “LiteWorp: Detection and isolation of the wormhole in
  static mulihop wireless network. Journal,” Acm: The international Journal of Computer and
  wormhole attacks on wireless ad hoc networks,” in WASA 2008, LNCS 5258, pp. 491-502,
  2008.
- I. Khalil, S. Bagchi, N.B. Shroff, “MOBIWORP: Mitigation of wormhole attack in mobile
  2007.
- XL. Hu and D. Evans, “Using Directional Antennas to Prevent Wormhole Attacks,” in

**Index Terms**

Computer Science

Information Technology

**Key words**

Mobile ad hoc network

digital signatures

wormhole attack

multipath hop count analysis (MHA)