A Defense against Wormhole Attacks in Wireless Ad hoc Networks using Cluster Technique

A Proceedings on Emerging Trends in Computer Science and Information Technology (ETCSIT2012) etcsit1001

© 2012 by IJCA Journal

ETCSIT - Number 2

Year of Publication: 2012

Authors:
Amol V. Zade
Vijaya K. Shandilya

Abstract

In multi-hop wireless systems, the need for cooperation among nodes to relay each other's packets exposes them to a wide range of security attacks. A particularly devastating attack is the wormhole attack, where a malicious node records control traffic at one location and tunnels it to another compromised node, possibly far away, which replays it locally. Routing security in ad hoc networks is often equated with strong and feasible node authentication and lightweight cryptography. Unfortunately, the wormhole attack can hardly be defeated by cryptographical measures, as wormhole attackers do not create separate packets. We present a cluster based counter-measure for the wormhole attack that alleviates these drawbacks and efficiently mitigates the wormhole attack in MANET. The Wormhole attack does not require exploiting any nodes in the network and can interfere with the route establishment process. We also discuss previous works which require the role of administrator and their
reliance on impractical assumptions.

References

- Kuldeep Sharma, Dr. G. Mahadevan, "Advance Hop-Count Analysis Scheme for Avoiding Wormhole Attacks in MANET", International Journal On Recent Trends in Engineering & Technology, Vol. 05, No. 01, Mar 2011
- Baruch Awerbuch, Reza Curtmola, David Holmer, Cristina Nita-Rotaru &quot;Mitigating Byzantine Attacks in Ad Hoc Wireless Networks," March 2004
- Shang-Ming Jen, Chi-Sung Laih and Wen-Chung Kuo, &quot;A Hop-Count Analysis Scheme for Avoiding Wormhole Attacks in MANET," Sensors 2009, 9, 5022-5039.

Index Terms

Computer Science         Emerging Trends in Technology

Keywords

Manet  Wormhole Attack  Cluster  Guard  Node