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

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

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Index Terms

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Keywords

Manet   Wormhole Attack   Cluster   Guard   Node