Abstract

MANET consists of spatially distributed autonomous small devices which creates a self-connected environment. MANETs are originally motivated by military applications such as border surveillance and battlefield monitoring; today MANET can be used in many civilian applications, including home automation, healthcare, traffic control and habitat/environment monitoring. Basic security services of MANET include authentication, confidentiality, integrity, anonymity and availability. However, in contrast to traditional wireless networks, in MANET [1], physical security of sensor nodes are not granted as they are usually deployed in remote and hostile environments. Therefore, attackers can easily compromise sensor nodes and use them to degrade the network’s performance. Due to lack of physical security, the existing security solutions that are developed for traditional wireless networks cannot be directly employed in MANET. The security requirements of many protocols changed the situation and a more detailed research is currently underway to develop secure ad hoc routing protocols. MANETs are extremely vulnerable to attacks due to their dynamically changing topology, absence of conventional security infrastructures and open medium of communication, which, unlike their wired counterparts, cannot be secured. This paper focuses on wormhole based
attacks and their detection mechanisms are analyzed. In this paper we specifically considering Tunneling attack which do not require exploiting any nodes in the network and can interfere with the route establishment process. Instead of detecting suspicious routes as in previous methods, we implement a new method which detects the attacker nodes and works without modification of protocol, using a hop-count and time delay analysis from the viewpoint of users without any special environment assumptions. The proposed work is simulated using OPNET-14, and results showing the advantages of proposed work.

References

- A. A. Pirzada and C. S. McDonald. "Circumventing sinkholes and wormholes in


**Index Terms**

Computer Science  Wireless

**Keywords**

Sensor Node  Tunneling Attack  Battlefield Monitoring  Habitat/environment  Protocols  Manet