Degradation of Ad-hoc Network Performance under Wormhole Attack

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Abstract

An ad-hoc network is self-organizing and adaptive. Networks are formed on-the-fly; devices can leave and join the network during its lifetime, devices can be mobile within the network, the network as a whole may be mobile and the network can be deformed on the-fly. In wireless ad hoc networks, nodes depend upon other node to forward packets for each other to communicate beyond their transmission range. Ad-hoc network are very useful in war, accidental, military services, flood, earthquake situations and also in normal conditions. In multihop wireless Ad-hoc networks, cooperation between nodes to route each other’s packets exposes these nodes to a wide range of security attacks. Therefore, networks are vulnerable to various attacks launched through compromised nodes because malicious nodes can easily participate in the networks. One of such type of attack is Wormhole Attack. It is a tunnel based attack in which a pair of nodes forms a tunnel with false identification [1]. In wormhole attacks, one malicious node tunnels packets from its location to the other malicious node. If source node chooses this fake route, malicious nodes have the option of delivering the packets or dropping them. In this paper we have simulated the wormhole attack in wireless Ad-hoc networks & Manet’s. And then we evaluated & discussed the impact on the network by comparing the results with secure network without wormhole attack and unsecure network with wormhole attack. In this way, the impact of the wormhole attack on the network
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performance is analyzed. Impact of wormhole attack on the network is shown using tool Ns-2. The implementation is done with the DYMO routing protocol.

References

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**Index Terms**

Computer Science  
Security

**Keywords**

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Impact on network performance  
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