A Survey on Providing Security To MANETs Against Black Hole Attacks

J.Poornimha
Assistant Professor, Dept of Computer Science
KG College of Arts and Science, Coimbatore.

Abstract- *MANET or Mobile ad hoc Network is self-configuring network. MANET infrastructure is dynamic in nature; it is disposed to various types of attacks. These types of attacks are harmful to working of MANET. Black Hole attack is one of the types of those attacks which lead to dropping of messages. In this type of attack, the attacking node leading agrees to forward packets and then not succeeded to do so. This attack is possible because of the presence of malicious node which is misbehaving in the wireless environment. So the nodes in the network attempting to find out the path to the destination, which loses their packets. This paper represents the ways of black hole attacks in MANET proposed by various researchers.*

Keywords- MANET, Black hole attack, dynamic

I. INTRODUCTION

A Mobile Adhoc Network self organizing infrastructure less network of mobile devices which are connected through wireless network. Each device in MANET is travelling on any route,so that it alters it's path frequently.Each node in a network acting as a router.It may joined to the network of network such as Internet.It is represented by following figure i.

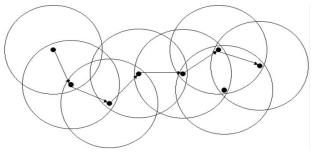

Figure i. MANET

II. SECURITY ISSUES IN MANET

In MANET security is most important factor for discussion. Due to it's features like dynamic topology, open medium, decentralized monitoring and no clear steps for fighting against the attacks it is often suffer from security attacks. So it has to prove the security for data to achieve confidentiality and integrity [7]. In the few years, security of computer networks has been of serious issue for discussion. Problems arise for routing are different for wired network and MANET. In previous days routing table was created for the hosts which are linked to wired to a non-dynamic structure[1].

III. PREVIOUS WORK

[2]Shivani et al, surveyed the different proposed methods to detect and mitigate the attacks in the network. In this paper they discussed about black hole attack in the MANET. They stated that effect of that attack is Denial of Service attack which results in reduction of network performance. They showed that methods for implementing, preventing, detection mechanisms for black hole attack using AODV protocol.Finally they summarized about the methods of detecting single black hole node in MANET and how they affect the network parameters like PDR,end to end delay,routing overhead,threshold based on TSDRP ,Sequence number of nodes,SRD-AODV,Modified RREP methods.

[3] Vasantavalli et al,proposed the PL2 (PreLude,PostLude)technique which is enhancement of AODV protocol, to protect against Black hole attack.In this method,first it check for malicious node exists.After that it starts to find and remove the black hole nodes,During the Route discovery PL2 messages are added for detection otherwise it is same as AODV.

[4] Mohamed Elboukhari et al, explained about the effects of black hole attack in MANET.They showed the results by simulating nodes in NS2.They compared average packet loss with two black holes and without black hole nodes depends on the parameters like packets sent, received, dropped. They concluded that when the black hole get increased the Packet delivery Ratio get decreased.

[5] Sushil Kumar et al, measured the performance of AODV protocol with and without black hole attack under various parameters in NS2 simulator. They stated that when the node get attacked by black hole effect it will result in AODV performance. They concluded that efficient functionalities are needed to stop the attacks.

[6] In this paper the author analysed about proposed AODV algorithm. In this proposed method the malicious nodes are

identified by their sequence number. It is checked for large difference between sequence number of source node with or intermediate node which sent back their RREP.It propose a method for identifying malicious node by identification number. So that it is very useful for disqualifying the message from those nodes for not forwarding in the network.

IV. CONCLUSION

In this paper, the effect of black hole attacks in MANET is discussed.

Various studies show the effects of black hole nodes in the ad hoc networks. In the simulation scenario, it explores that when the effect of black hole nodes increases the number of packet losses also get increases. The another study shows that the effect of black hole increases it also decrease in the (PDR) Packet Delivery Ratio. We can conclude that in black hole attack all traffics are forwarded to specific stations or from the malicious stations causes the damage to the MANETs. The detection of black hole attack in MANETs is still challenging task.

REFERENCES

[1] S.Marti, T.J.Giuli, K.Lai, M.Baker, “Mitigating Routing Misbehavior in Mobile Ad-Hoc Networks”.

[2] Shivani, Pooja Rani, Pritpal Singh,” Comparison of Different Techniques used to Detect and Mitigate Black Hole Attack in AODV Routing Protocol based on MANET”, International Journal of Advance Research, Ideas and Innovations in Technology. (Volume2, Issue4), 2016.

[3] Vasanthavalli.S, R.Bhargava Rama Gowd,S.Thenappan “Peruse Of Black Hole Attack and Prevention Using AODV on MANET”, International Journal of Innovative Research in Science Engineering and Technology,Vol. 3, Issue 5, May 2014, ISSN: 2319-8753.

[4] Mohamed Elboukhari, Mostafa Azizi and Abdelmalek Azizi, “Impact Analysis of Black Hole Attacks On Mobile Ad Hoc Networks Performance” , International Journal of Grid Computing & Applications (IJGCA) Vol.6, No.1/2, June 2015

[5] Sushil Kumar Chamoli, Santosh Kumar, Deepak Singh Rana, “Performance of AODV against Black Hole Attacks in Mobile ad-hoc Networks”,International.J.Computer Technology &Applications,Vol 3 (4), 1395-1399, july-august 2012.

[6] Dr. S. Tamilarasan, “Securing AODV Routing Protocol from Black Hole Attack”, International Journal of Computer Science andTelecommunications [Volume 3, Issue 7, July 2012].

[7] Keerthana.V,”A Survey paper on Security Protocols of Wireless Detector Networks”,International Journal for Research in Applied Science &Engineering Technology,Volume 5,Issue :10,October 2017].