Introduction Jamming attacks and its types in MANET

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Abstract: In MANET every node plays a part of router and routing paths in MANETs potentially contain multiple hops. This is the reason why Mobile Ad hoc network is vulnerable to attacks.

Keywords- MANET, Attacks, Types of Attack

I. Introduction

The jamming attacks can affect the throughput, load and delay of the network, where as the work of MANET routing Protocols are to improve delay, throughput, data dropped..... etc.[1,2,3,4,5,6,7,8,9,10,11,12,13]
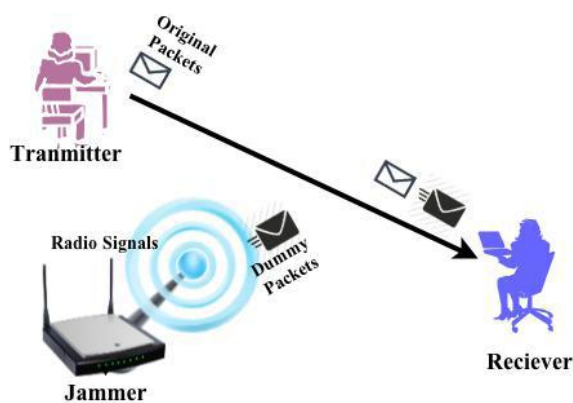
Fig.1 Jamming attack

On comparing wired networks with ad hoc networks, MANET is more prone to security threats. Jamming attack is one of the form of Denial of Service (DoS) attack. Various factors are responsible for the jamming attack. They aim at prohibiting the sender and receiver transmission. Jamming is the problem of the network that are generated after continuously sending the radio signals in between the transmission which injects the dummy packets thus causing interferences. Radio frequency is an open medium, hence jamming is a big problem for wireless networks. There are different types of attacker present in MANETs as shown in Fig.4, which tries to reduce the performance of network [14].
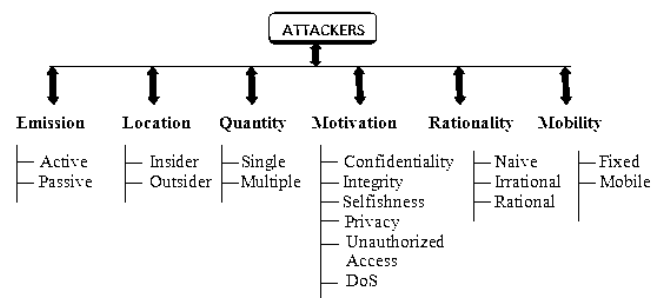
Fig 2: Classification of Attackers

There are two levels of attacks in Ad-Hoc Networks.

1) The first level of attack occurs on the basic mechanisms of the ad hoc network such as routing [14].

2) The second level of attacks tries to damage the security mechanisms employed in the network [14]. Jamming attack is one of the major attack on mobile ad-hoc network. It is a type of DoS attack. Attacker can use different strategies to attack in order to interfere with other wireless communications. Some possible strategies are given below:

Constant Jammer: A constant jammer continuously generate a radio signal that represents random bits; the signal generator does not follow any MAC protocol.

Deceptive Jammer: This jammer is different from continuous jammers, they do not transmit random bits instead they transmit semi-valid packets. That means that in the packets sent by this jammer header is valid but the payload is completely useless.

Random Jammer: It is done by Alternates between sleeping and jamming the channel. In the first mode the jammer jams for a random period of time (it will become either constant jammer or a deceptive jammer), and in the second sleeping mode the jammer turns its transmitters off for another random period of time.

Reactive Jammer: In reactive jammer the target is always receiver rather then sender. A reactive jammer tries not to waste resources by only jamming when it senses that somebody is transmitting. It trying to input noise as much as possible in the packet so that the bits of the packet can modify. For this minimum amount of power is required to perform modifications. After getting modify enough bits when a checksum is performed over that packet at the receiver it will be declare as not valid and therefore discarded.

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