DESIGN OF MOBILE AD-HOC NETWORK USING CO-OPEERATIVE RELAY

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ABSTRACT – This paper presents MANET, a mobile AD-hoc network for different routing protocol using co-operative relay.MANET is a mobile AD-hoc network that can change location and configure itself on the fly. MANET are mobile they are use wireless connection to connect to various network. This is standard wi-fi network.To achieve the high data rate and error free reception in this technology we are going to introduce the co-operative relay.Relay classified into digital and analog relays.Here we are using relay for the most of next generation wireless networks.AODV and DSDV are routing protocols in MANET. Anolog relay amplify and forward the received signal. Digital relay are consider for most next generation wireless network.The relay station decode signal and forwards it to the user terminal.In co-operative relaying, the user terminal properly combining of the signals it receives from the base station and relay station. Since these signals reduces the effect of fading significantly.

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Keywords: *Cooperative relay,MANET, packet Size, AODV, throughput and PDR.*

1.INTRODUCTION

MANET is a wireless group of computing devices like laptop, mobile phone, Personal Digital Assistant,or similar devices which can communicate directly with one another without a central coordinator. A MANET is an autonomous system of mobile routers and associated hosts connected by wireless links. It does not require a fixed network due to its wireless nature and can be deployed as a multi-hop packet network. To achieve the high data rate and error free reception in this technology we are going to introduce the cooperative relay network.In cooperative relay network the cooperative diversity used. Cooperative diversity can be performed based on a few different relaying strategies such as amplify and forward, decode-and-forward, and compress-and-forward strategies. Relays can be classified into digital and analog relays. Analog relays amplify and forward the received signal without any decoding while digital relays fully decode and forward a regenerated version of the received signal. Here we are considering digital relaying is considered as it is the focus of most of the next generation.

One of the most popular routing protocol Ad hoc on- demand distance vector AODV is used in MANET. It is a source oriented routing protocol where routes are discovered only on demand. However, AODV is vulnerable to packet dropping attack. We introduce the network to decode the signal at the destination node which is the adaptive scheme where the decoding takes place at the relay stations irrespective of channel variation. Relays can be further classified into fixed and nomadic relays. As the name implies, fixed relays are deployed by the service provider in strategic locations while nomadic relays are mobile relays that can be provided by the service provider or can be idle that help other user.

We are considering here the multipath network with transmitting node and a user terminal. The relay stations are used to decode and amplify the signal received from base station and forward it to the user terminal . This is the process of downlink which is shown in Figure. Also we are considering the uplink process in which there is L transmitting nodes and a BS. This layout is shown in Figure . Here relay station will decode and amplify the signal received from user terminal and forward it to BS station.

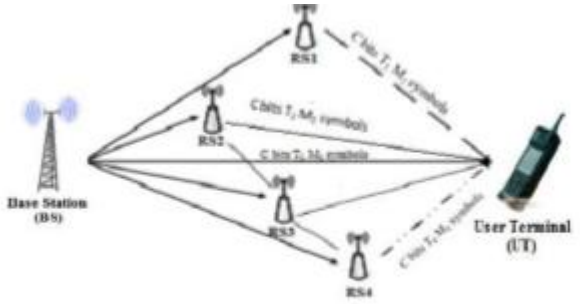

Fig. 1. System model for Downlink

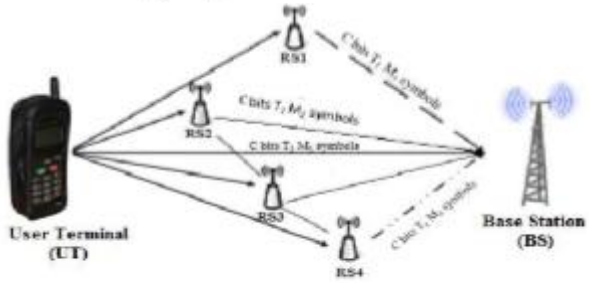

Fig. 2. System model for Uplink

In single-hop transmission, the nodes can directly communicate with each other if the MANET nodes move to the wireless coverage area and if two nodes are located near to each other under each other's range which enables them to communicate directly. In multi-hop transmission, MANET needs intermediate nodes to communicate. The out of range nodes will communicate with the nearest node to them which becomes the intermediate node. The mobile nodes will pass the packet to the nodes and they will keep passing packets to the other intermediate nodes until they reach the destination nodes. The nodes in MANET consist of laptops and cellular phones but in the implementation of simulation, only laptops were used as the nodes.

2. LITERATURE REVIEW

A number of works have been done to this security problem on the area of Ad hoc network community. This section lists some of these works.

2. In [3], Jaydip sen et al, proposed a cooperative scheme used to detect malicious node, as every node in network monitors the behavior of its neighbors upon abnormal action.Distributed algorithm used to confirm attack in network. Since only trusted nodes are used for securing routing, it is an overhead and malicious nodes are not isolated in this method.

5. In [6], Bhalaji.N et al, proposed an association based routing using DSR protocol to enhance security against selective packet drop attack which is based on trust value and threshold parameters between nodes. But the cost of maintaining the association table for each node is not evaluated.

SEARCH [7] sends on-demand route requests on everychannelusinggreedygeographicrouting,basedonwhich the destination can then derive an optimal, possibly multi- channel path which involves multiple anchor nodes with each identifying a unique PU region to be circumvented.

. In [2], Muhammad et al, proposed a two folded solution to detect and identify malicious nodes in network by setting Tmax (maximum threshold) and monitoring nodes to declare misbehaving nodes. But attacker in network in groups cannot be identified and isolated in this method

3. In [4], Sirisha et al, proposed a method where a detection manager locates malicious nodes that drop packets in MANET by setting rules for nodes with low false positive rate. The detection manager fails to detect the misrouting behavior of the node in network. 4

3.PROPOSED WORK

i)Dropping Control Packets (ii) Selectively Dropping Packets (iii) Group of nodes collaboratively drop packets quality of service provides Throughput, Jitter, Delay, Packet delivery ratio, Packet loss ratio. Ad hoc On Demand (AODV) is a protocol of Destination Sequenced Distance Vector (DSDV) routing protocol. It is an reactive routing protocol which establish route to destination only on demand. All nodes in Ad hoc network maintain a routing table which lists the next hop node information for a route to destination.

4.OBJECTIVE OF PRESENT WORK

The main objective of present work is to design and develop the network which gives error free reception to the user and provide a best quality of service to the user.

5. METHODOLOGIES ADAPTED

In this section, the proposed methodologies for against packet dropping attack are discussed. The mechanism proposed modifies the standard AODV protocol by introducing two techniques namely, 1. Data Routing Information table 2. Cross Checking These two concepts are implemented in [1] to defend against

cooperative relay. These mechanisms can be used to secure against packet dropping attack also.

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