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Implementation of GRP Routing Protocol in MANET

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Abstracts: Mobile Adhoc Networks (MANETs) are used most commonly all around the world, because it has the ability to communicate each other without any fixed network. It has the tendency to take decisions on its own that is autonomous state. MANET is generally known for infrastructure less. The bridges in the network are generally known as a base station. In, this paper we simulate GRP routing Protocol, to know the network performance in the MANET.

Keywords: MANET, Routing Protocol, GRP .

I. Introduction:

Ad-Hoc network is called Independent Basic Service Set (IBSS) Stations. IBSS communicate with each other directly and do not have any access point. Because of the mobility of nodes in ad-hoc networks, they are commonly called MANET (Mobile Ad-hoc Network). Mobile Ad-Hoc network [1] is a group of mobile nodes which are free to move haphazardly while being able to communicate with each other without the help of an existing network infrastructure.. MANETs eliminate this dependence on a fixed network infrastructure where each station acts as an intermediate switch. Security in MANETs is a complex issue. This complexity is due to various factors like insecure wireless communication links, absence of a fixed infrastructure, node mobility, dynamic topology and resource constraints.. The primary concern of routing protocols of MANETs is to establish an efficient and optimal route between the communicating entities. Any attack can mess up overall communication and the whole network will be destroyed. Nodes are more vulnerable to security attacks in mobile ad-hoc networks than in traditional networks with a fixed infrastructure..



Fig 1. MANET Network

II. MANETs Characteristics

1) Distributed operation: There is no background network for the central control of the network operations, the control of the network is distributed among the nodes. The nodes involved in a MANET should cooperate with each other and communicate among themselves and each node acts as a relay as needed, to implement specific functions such as routing and security.

2) Multi hop routing: When a node tries to send information to other nodes which is out of its communication range, the packet should be forwarded via one or more intermediate nodes.

3) Autonomous terminal: In MANET, each mobile node is an independent node, which could function as both a host and a router.

4) Dynamic topology: Nodes are free to move arbitrarily with different speeds; thus, the network topology may change randomly and at unpredictable time. The nodes in the MANET dynamically establish routing among themselves as they travel around, establishing their own network.

5) Light-weight terminals: In maximum cases, the nodes at MANET are mobile with less CPU capability, low power storage and small memory size. **6) Shared Physical Medium:** The wireless communication medium is accessible to any entity with the appropriate equipment and adequate resources. Accordingly, access to the channel cannot be restricted.

III. Advantages of MANET

- They provide access to information and services regardless of geographic position .
- Independence from central network administration. Self-configuring network, nodes are also act as routers. Less expensive as compared to wired network.
- Scalable—accommodates the addition of more nodes.
- Improved Flexibility.
- Robust due to decentralize administration.
- The network can be set up at any place and time.

IV. Classification of Manets Routing Protocols:

Routing is the act of moving information from a source to a destination in an internetwork. During this process, at least one intermediate node within the internetwork is encountered. This concept is not new to computer science since routing was used in the networks in early 1970's. But this concept has achieved popularity from the mid-1980's. The major reason for this is because the earlier networks were very simple and homogeneous environments; but, now high end and large scale internetworking has become popular with the latest advancements in the networks and telecommunication technology. The routing concept basically involves, two activities: firstly, determining optimal routing paths and secondly, transferring the information groups (called packets) through an internetwork. The later concept is called as packet switching which is straight forward, and the path determination could be very complex[12].

1) Proactive Protocols: Proactive, or table-driven routing protocols. In proactive routing[11], each node has to maintain one or more tables to store routing information, and any changes in network topology need to be reflected by propagating updates throughout the network in order to maintain a consistent network view. Example of such schemes are the conventional routing schemes: Destination sequenced distance vector (DSDV). They attempt to maintain consistent, upto-date routing information of the whole network. It minimizes the delay in communication and allow nodes to quickly determine which nodes are present or reachable in the network.

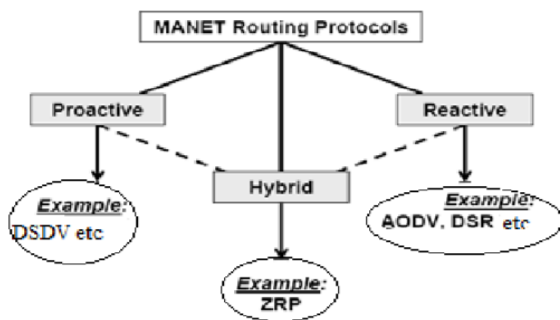


Fig 2. Classification of Manets Routing Protocols

2) Reactive Protocols: Reactive routing is also known as on-demand routing protocol since they do not maintain routing information or routing activity at the network nodes if there is no communication. If a node wants to send a packet to another node then this protocol searches for the route in an on-demand manner and establishes the connection in order to transmit and receive the packet. The route discovery occurs by flooding the route request packets throughout the network. Examples of reactive routing protocols are the Ad-hoc On-demand Distance Vector routing (AODV)[7, 8] and Dynamic Source Routing (DSR).

3) Hybrid Protocols: They introduces a hybrid model that combines reactive and proactive routing protocols. The (GRP) is a hybrid routing protocol that divides the network into zones. GRP provides a hierarchical architecture where each node has to maintain additional topological information requiring extra memory[8,9].

V. Simulation:

We create MANET network with 5 nodes and a mobile server is created in which all the nodes are connected to them. In this, two other nodes such as Application Configuration & Profile Configuration have been used. These are used to define the application definition & profile definition. GRP protocol manages a network & shows how hello packet travels in the network. In this simulation we create a MANET network with GRP Routing protocol to check the network Performance.

S. No	Parameter	Scenario 1
1	Hello Interval(sec)	5
2	Neighbor Expiry Time	10
3	Distance Moved	1000(meter)
4	Position Request Timer	5(sec)



Fig 3: Manet Network with GRP Routing Protocol

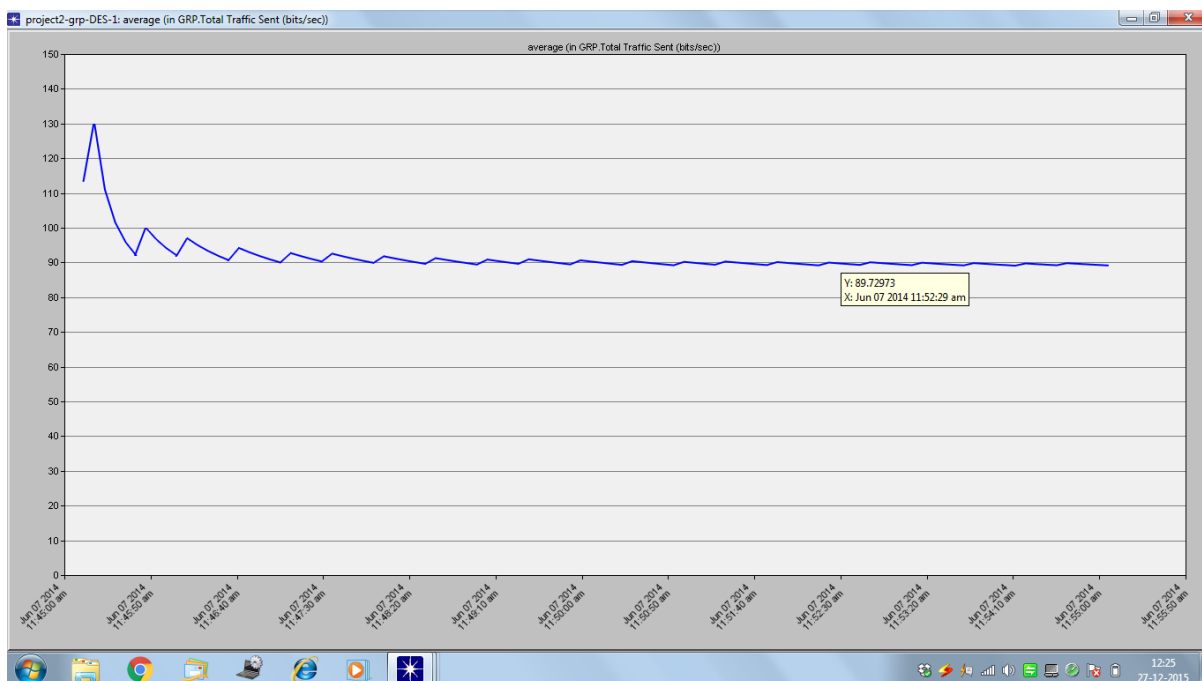


Fig 4: Manet Network with GRP Routing Protocol

VI. RESULT:

When we apply a MANET network with GRP Routing Protocol then the bit rate Performance is 90bits/sec.

VII. Conclusions:

In which we study how GRP protocol works, how network perform activities such as packet sending bits. In this we studied how a GRP works in our network the result shown that the performance of the MANET network when we apply Geographical Multicast routing Protocol. Further, we apply various Schemes to increase the network performance.

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