ABSTRACT

Mobile Ad Hoc Networks (MANETs) are a collection of autonomous mobile hosts without the help of the center base stations. Broadcasting is a fundamental service in Mobile Ad Hoc Networks. The Broadcast nature of the wireless transmission is that all the neighbors of a host will receive the packets when the host transmits them. The direct approach to perform broadcast is by flooding. A host, on receiving a broadcast message for the first time, has the obligation to rebroadcast the message. Costing n number of transmissions in a network of hosts. Flooding type of broadcasting leading to redundant rebroadcast, when a mobile host rebroadcasts a broadcast message to its neighbors. When the size of the network increases and it becomes dense, even a simple broadcast operation may trigger a huge transmission collision and contention that may lead to the collapse of the whole network. This is referred to as the Broadcast Strom Problem.

Numerous investigations are going on to solve this problem that may lead to the issues namely Redundancy, Contention and Collision, End to End Delay, Energy consumption, Power consumption, and Throughput (delivery of packets). To overcome this drawback, some sort of infrastructure is to be developed for a network enhancing the performance of the whole network, especially when it becomes dense.

The major contribution of this research is the formulation of the dynamic clusters for routing. In the proposed Dynamic Cluster Routing Protocol (DCRP), the cluster is formed dynamically by considering the transmission range. The Selection of the cluster head is based on the node connectivity, mobility and transmission range.

The building of One Hop Dynamic Cluster Network converts a dense network into a simple one to reduce the communication overhead of the whole network. The cluster structure is a simple infrastructure that has only cluster head, gateway and members .The network structure is partitioned into a group of clusters, each cluster with one cluster head that dominates all other members in the cluster. Gateways are those non cluster head nodes that have at least one neighbor that belongs to other clusters. In this research, the network is partitioned into a group of one hop clusters. Consisting of one cluster head and one gateway (forwarding node) and members (simple nodes). In this research, the cluster head way node may (act as gate way) forward packets from one cluster network to another, when the transmission range is changed.

In DCRP, each cluster head selects one gate way in its cluster network for forwarding the packets (one time) to the next one hop cluster, reducing the retransmission and in turn reducing the redundancy. The MANETs is divided into small number of cluster networks that reduce contention and collision. Each cluster head selects only one gateway to forward the packet to the destination and thus reduces the delay time of the delivery of packets to its destination. The gateway in each cluster head

forwards the packets to the next clusters only once, reducing the energy consumption and so the cost becomes low. Due to the reduced delay and collision, the throughput can improve a lot. The experimental results show that DCRP for broadcasting in Clustered MANETs gives better a performance helping address the Broadcast storm Problem issues.