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A Survey on Power Consumption in Routing Protocols of MANET

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Abstract-

A mobile ad- hoc network (MANET) is autonomous, self organizing and self–configuring network with the capability of rapid deployments in response to application needs. Since all sensor nodes in wireless sensor networks work by their own fixed batteries, if any node runs out of battery, the sensor network cannot operates normally. In this condition we should employ the routing protocol which can consume the energy of nodes successfully. Many protocols for energy efficient routing in MANET networks have been suggested but LEACH and PEGASIS are most well known protocols. However LEACH consume energy heavily in the head nodes and the head nodes tend die early and PEGASIS –which is known as a better energy efficient protocol has long transfer time from a source to sink node. We proposed hybrid protocol of LEACH and PEGASIS , which uses the clustering mechanism of LEACH and the chaining mechanism of PEGASIS.

Keywords:-*LEACH, PEGASIS, clustering, routing protocol, cluster, cluster head.*

I Introduction

Recent advance in computer networking have introduced a new technology for future wireless communication, a mobile ad hoc network (MANET).This technology which is the combination of point to point techniques, wireless communication, and mobile computing ,provide convenient infrastructure-less communication and could be very useful to provide communication for many application especially when the infrastructure networks is not feasible .MANET could be used to overcome geographical constraints in a military operation. As it is to deploy, it may also very useful to assist in the disaster relief operations where temporary network infrastructure is immediately needed to replace the damaged infrastructure networks.

A Mobile ad hoc network (MANET) is a temporary network set up for a particular purpose without the aid of any pre –existing infrastructure

MANET can also be defined as a decentralized network of autonomous mobile nodes that are able to communicate with each other over wireless links. With the increase of portable devices as well as progress in wireless communication, ad-hoc network is gaining importance with the increasing number of widespread applications. Different application include:-

- Miltary battlefield: military equipment now routinely contains some sort of computer equipment. Ad hoc networking can be allowed to the military to take advantage of common place network technology to maintain an information of between vehical, solder and head quarter.
- Commercial Sector: Ad hoc network can be used in emergency /rescues operations for disaster relief efforts, e.g. fire .flood, or earthquake.

- Local level: Ad hoc network can be used notebook computers or palmtop computers to spread and share information among participants at e.g. conference or classroom. Similarly in other civilian environments like, boat sports stadium, taxicab, and small aircraft, mobile ad hoc communication will have many applications.
- Personal area network: short-range MANET can simplify the intercommunication between various mobile devices. Such an ad hoc network can also extend the access to the Internet or the other networks by mechanisms e.g. Wireless LAN, GPRS, and UMTS.
- MANET-VoVoN: A MANET enable version of JXTA point to point, modren, open platform is used to support user location and audio streaming over the JXTA virtual overlay network.Using MANET –JXTA ,a client can search asynchrously for a user and a call setup until a path is available to reach the user.

II Objective of clustering in MANET

Clustering can help aggregate the topology information and reduce the size of routing tables in a mobile ad-hoc network (MANET). The maintenance of the cluster structure should be as stable as possible to reduce overhead.

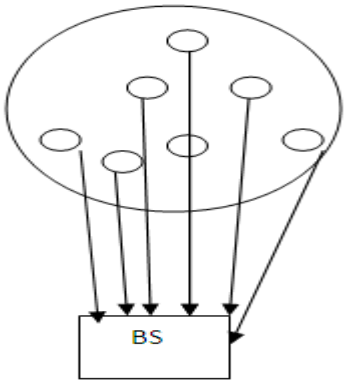

Figure 1

Figure 1 shows all nodes directly sending data to base station.

A mobile ad-hoc network (MANET) is dynmic in nature and is composed of wirelessly connected nodes that perform hop by hop routing without the help of any infrastructure one of the important requirements of Manet is the efficiency of energy, which increase the lifetime of the network.

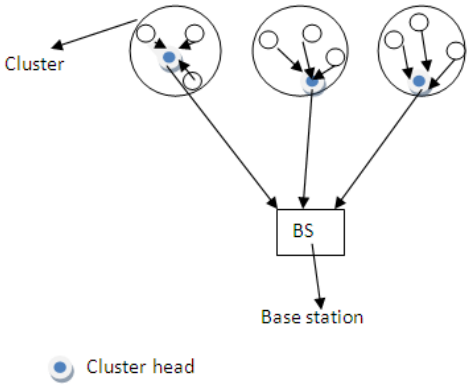

Figure 2

Figure 2 shows efficient use of clustering. All nodes sending data to cluster head and cluster head sending data to base station.

Several techniques have been proposed by researches to achieve this goal and one of them is clustering in MANETs that can help in providing an energy efficient solution.

III Literature Survey

Aishwary Agrawal ,Damodar Tiwari, Dr.Shailendra Singh described as a mobile ad-hoc network (MANET) is independent, self organizing and self configuring network with the capability of rapid deployement in response application needs. He proposed in this paper LEACH and DSR routing and find out reliable path, in our proposal LEACH generates cluster and gives information .In this paper we also analyze the result in the form of network parameter like throughput, packet delivery, energy consumption via node and routing [3]

Owais Ahmed, Athsham Sajid And Mirza Amair Mehmood described as diffirent protocol were described for WSN out of which the research has been done on hierarchical protocols to find out longer network lifetime.LEACH, PEGASIS and VGA protocols were analyzed for network lifetime by changing the sensing range of sense

nodes and increasing the network size.PEGASIS support large network and LEACH is more suitable for less than hundered number of nodes[2].

Ibikunle Frank And Ebiesuwa Seun described as a mobile ad- hoc network is a self starting dynamic network made up of mobile nodes where each and every participation node willingly transmit the packets destined to some remote node using transmission MANET is the hybrid protocol which combines the advantage of the proactive and the reactive protocols.[1]

Neha Gupta ,Manish Shrivastava,Angad Singh described as ad-hoc network is a model in wireless device interaction , which represent that users wanting to communicate with each other form a temporary network, without any form of centralized administration. For this purpose that routing protocol is needed. This means that routing protocols should try to minimize control traffic, such as periodic update message. Clustering in mobile ad-hoc network (MANET) has many advantages compared to the traditional networks [4]

IV Power consumption

In mobile ad hoc networks, energy consumption is an important issue as most mobile nodes operate on limited battery resources.The nodes in MANET are fitted with batteries with limited capacities. In order to achieve an optimum route connection by extending the network lifetime.we should be used routing protocols which can consume the energy.Various protocol can be using energy consumption have been suggested LEACH and PEGASIS are most well known protocols.we proposed hybrid protocols of LEACH and PEGASIS.

LEACH (low energy Adaptive clustering hierarchy) is awidely accepted hierarchical routing protocol. In LEACH all nodes are organized as set of cluster.Each cluster has a cluster head to communicate with base station. LEACH allow the data fusion and aggregation in order to minimize the amount of data to be transmit, Because for energy concerns local computation require less energy than transmitting signals to BS.LEACH is more suitable for networking having less than hundered number of nodes. It does not support large network .LEACH also has week point to make the route from the source to sink node significantly lengthy.

PEGASIS are more efficient than LEACH. It is a chain based architecture in which transmission occurs in such a way that node sends and receive data only from the closet neighbor. PEGSIS allows data to be fused but doesn't support data aggregation. On receiving data, node fuses with its own data and forwords to the next node. PEGASIS is more efficient than LEACH because routing technique has various weak points with one core matter which is energy. The problem also occurred while forming a chain when a node that has weak energy must also form chain again, this result in energy constrained.

V Conclusion

This paper is based on two main protocols for energy efficiency LEACH and PEGASIS. This paper also a show clustering is very useful in MANET as it saves resources and efforts. Small changes in routing protocols to adapt to network characteristics can able it to improve performance while maintaining interoperability with its unmodified version

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