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EXPANDING GEOGRAPHICAL ROUTING USING EMPHASIS NODE ELIMINATION ALGORITHM IN MANET

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Abstract:

In mobile network relaying node transmit data packets hop by hop way, it choose the routing path based on the location information of next neighbor node, but sometimes node move out of location from particular cluster, it cause packet loss and more energy consumed for particular packet broadcasting. It reduces the packet delivery rate, and improves energy consumption. In present Expanding geographical routing (EGR) method is used to enlarge the communication along the cluster, also easy to identify the out of coverage node. That out of coverage node makes the uncertain packet loss are reduced, those nodes are added to next cluster steadily. By constructing the emphasis node elimination algorithm, to reject the emphasis nodes are present in routing path from clustering. The Expanding geographical routing (EGR) method have emphasis node elimination algorithm is designed in the mobile network, it identify the node out of coverage from particular cluster, it obtains minimum energy consumption, and higher packet delivery rate.

Keywords- Expanding geographical routing method, emphasis node elimination algorithm, Measure node coverage range.

I.INTRODUCTION

Mobile Ad-hoc Network is a wireless network which is self classify and is made up of various mobile nodes are many hops and lesser wire nodes. These nodes are capable of moving randomly in all the location, it altering its position to packet sharing does not want any network structure. Some of the vital characteristics of mobile network are processing, identity restore, decentralized environment [1]. The topology of Mobile network is energetic, also it is a identity leading network. Mobile network is applied in various security based packet sharing process, recover at the time of calamity, data packet organization mechanism, and packet drop identification scheme. Survey is mainly meeting point for path maintainence to increase the packet delivery ration in mobile ad hoc network. Ad-Hoc On demand Distance Vector Routing protocol is generally used for the path identification in the mobile ad hoc network. The reactive routing technique, is also an important scheme, that contains the ad hoc routing protocol, this supports to identify the path after accepting the Route Request packet from the sender node in network [2]. ad hoc routing manages the damages in the path finding by transmitting the

wrong reply packet to the sender node in routing path. This procotol need to retransmit packets in sequence manner . this routing method is used to share the data packets along the mobile network. The path is constructed depends on hierarchy structure. It is important technique to provide efficient routing from source node to target node [3].

Greedy path choosen does not provid an efficient result, it only used to choose the cluster member nodes in network, sometimes nodes goes out of coverage limit, it does not perform packet transmission. It break up the cluster node inter connectivity and downgrade the packet transmission in communication characteritics, particularly in maximum of dynamic network method [4]. It minimize the crash of regular connection break consider to the random node movement along the network depends on communication, the node connection stability depends on the greedy selection is launched for choosing the suitable packet transmission nodes. Considering the node connection stability calculation scheme, a long lived insatiable node that links to the source node transmitting the data packets along the path. Thus, the proposed work influences the procedure of transmitting node choosen and cluster depending multicast communication characteritics also provides the stable routing method to forward packet to sink node in network [5].

Residual part of the paper is constructed as given below. Part II denotes a related works. In Part III, explain the information about proposed, an Expanding geographical routing (EGR) is applied to achieve better communication in path, this supports to identify emphasis node, which are available in network. In Part IV obtains simulation performance report monitored with various parameters. At last Part V concludes the work includes future updates.

II.RELATED WORKS

Rao, S. A., et al., [6] Mobile network are susceptible to various intruders in which the intruders have permission for processing in the network among the attacker nodes inserting to the network in cover of trusted node in path. In mobile network necessary to check the nodes before using them to broadcast data packets from source to target node. The position verification method is used to provide authentication for geographical routing. It measure the location of the nodes earlier than using them as relaying nodes. Once the position is calculated, which is confirmed for accuracy also used for forwarding of data packets.

Salarian, H., et al., [7] present method to indicate this difficulties is to create a combined moving pattern that have a mobile target node only stay meet points of all nodes are monitored. nodes which are does not relay packet se2uencially through the network nodes. The basic issues then become compute a tour, which stayfor all these relay packets within a specified packet latency. Identify the optimal node, though, it is an packet failure issues. To denote that issue, a heuristic called weighted meeting preparation is presented, whereby all mobile node is allocates a weight equivalent to its hop space from sender and the quantity of data packets which are forwared to the nearest relaying node.

Tran, T. T., et al., [8] propose new scheme to protect in opposition to wrong packet injection intruders on network-coded multicast for delaysensitive packet. Particularly present an capable validation technique depends on null distance belongings of coded packets, plan to allow accepting to identify any false packets with maximum possibility. Construct an adaptive scheduling method depends on the Markov Decision Processes to

improve the quantity of genuine packets arrived at particular time instance.

Li, H. G., et al., [9] propose local optimization method for drooping time and calculate, it consider to node energy for its behavior. The method intially make simpler the logical battery method under the principle of improving energy model exactness, and then distributes the present drooping time among various process. It choose only best node for communication ,and reduce energy usage of each node.

Pal, S., et al., [10] present technique contains queuing model at each sensor node that separates an max priority and min priority packets and that are forwarded in various path, consequently that max priority packets arrive at target nodes with minimum delay distinguish to min priority packets. The many path communication method that are supports to improve traffic at particular part in the network, also manages the failure across various mobile nodes, and improves the network lifespan by minimizing the energy usage of node.

III.OVERVIEW OF PROPOSED SCHEME

In mobile network have huge amount of forwarding node, which forward data packets in frequent manner. This selects the communication route depends on the position details of nearest relaying node, except that node sometimes travel to out of coverage place from specific group, this makes packet drop and maximum energy used for single packet transmission along the path. This should minimizes the packet delivery rate, and enhances energy usage.

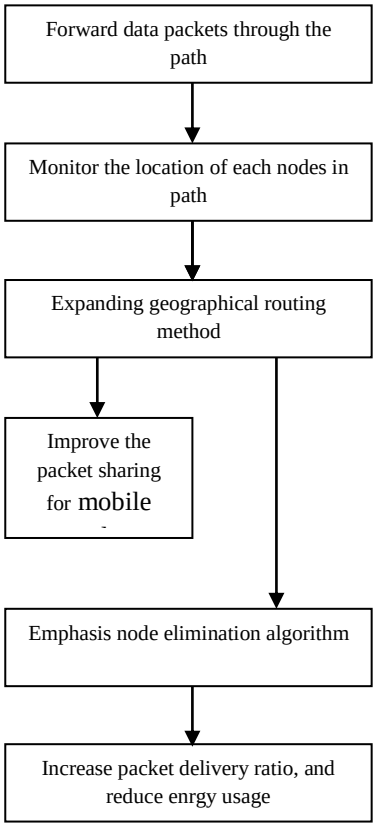

Figure 1: Block Diagram of Expanding geographical routing method

Figure 1 shows the Expanding geographical routing method. Data packets are forwarded along the path, each nodes location in path is monitored. Expanding geographical routing method is used to improve the packet sharing for mobile nodes. The Emphasis node elimination algorithm is designed to reduce energy consumption, and improve packet delivery rate.In present Expanding geographical routing (EGR) method is applied in network, it should lead to improve the packet sharing for sensor nodes in specific network environment, it also better to detecting the out of coverage nodes in cluster. These out of coverage nodes causing unpredictable packet

drop are minimized, those nodes are inserted to another cluster, to provide stable routing. By designing of the emphasis node elimination algorithm, is used to find and eliminate emphasis nodes which are available in routing path from clustering. It identify the node out of coverage from for an specific cluster, it provides an lesser energy usage, and maximum packet delivery rate.

3.1 Forward data packets through the path

Communication route have an link connection from source nodes to the cluster head node in various techniques. The packet forward through cluster member nodes depends on communication scheme, Maximum energy clusters depends on routing technique and Localization depending routing method. The sink node that need to collect the data packets upcoming from many clusters member and cluster head forward data's to sink node efficiently. Creation of group also selection of cluster head through the support of cluster member nodes in specific cluster. Atlast, designing an recent path for the better success rate of packets moreover through forwarding nodes depends on routing method else maximum energy clusters depending communication method. Er expanding routing, Fp forwarding packet, LD Location detection.

$$Er = Fp * LD \text{ - (1)}$$

The packets are collected by cluster member, which is accepted by the cluster head of the individual cluster also transmitts the packets to the nearest neighbor nodes that nodes are work as gateway nodes among the source and sink node with also alter its route, so launch its path with the support of cluster member nodes to attain the target node. The initial procedure of the organizer node (or) cluster head node is need to collect the data packets upcoming from many individual clusters also broadcast to target or sink node effectively. Communication technique is applied to consumes more energy when broadcasting the data packets among the intermediate cluster member nodes. It easily find out of coverage node, and remove that node from particular cluster. It reduces the energy consumption for every packet forwarding from sender to sink node.

3.2 Expanding geographical routing method

The geographical location routing method is used to manages the energy usage during network communication. sender node that are willing to relaying the data packets to sink node, appear for nearest possible groups and modifying its communication route. This routing method provides the output in regular energy usage as location and possible behaviors of groups are occupied into description whether the data packets broadcast. $bN1+..bNn$ best node one to n number.

$$Fp = bN1+..bNn \text{ - (2)}$$

Geographical location based routing, whether an packet loss in any of the clusters, again this initate to construct the communication hierachy by relaying the data packets in the direction of the possible group which is next to sender node, in that way modifying its nodes in routing path to attain its target node. At this time the cluster select for communication process is based on the space. While the sender node in cluster perform data packets broadcasting, it chosen moreover maximum else minimum energy group whih is closer to attain the sink node in an better manner. The organizer or cluster head node is

used to collect the data packet from two various location also relayed to the sink node in network. cluster member nodes work as gateway node that are able to broadcasting data packets in an better manner. This routing method is used to improve the packet sharing for mobile nodes in network environment.

Algorithm for Expanding geographical routing method

Step 1: for each sender analyze the each node loaction

Step 2: if {Path==best}

Step 3: path is efficient

Step 4: path is chosen to forward data packets sequencially.

Step 5: increase packet delivery ratio

Step 6: else

Step 7: if{Path!=best}

Step 8: That path is not efficient

Step 9 :Analyze various path to perform communication.

Step 10: End if.

Step 11: End For.

3.3 Emphasis node elimination algorithm

The packet organization is improved using routing this algorithm, thereby data to the sink node reach betterly. The intruder nodes in the communication route experimental output in the failure of data packets broadcasting. The motive for emhasis nodes considering the availability of difficulty, packet loss in network environment, nodes sometimes perform process out of energy level. A quantity of survey depends on emphasis node elimination algorithm is used to restore failure routes and in that way to find the recent paths to broadcast packets along the network environment. This technique is acceptable in for improving the residual energy of nodes. During the network packet loss time, that are identified also eliminated from the routing path. The present communication techniques have emphasis node altering mechanism by node restore scheme. The emphasis node is altered by another efficient node by incorporate speed technique. Thus the relaying node move towards to the location of the emphasis node and thus overcome packet drop.

$$Er = bN1+..bNn * LD \quad -(3)$$

This algorithm is constructed to identify and ignore the emphasis node in communication rout from cluster member node to sink node in a network environment. The node try to drop packet that nodes are emphasis node, which damage entire communication process. That kind of nodes are identified, and eliminated from mobile network environment.

Emphasis node elimination algorithm

Step 1: Monitor each node behavior
Step 2: For each check valid routing path for packet transmission
Step 3: if {node==emphasis}
Step 4: that node is detected from path, and remove it
Step 5: else
Step 6: if { node!= emphasis }
Step 7: That node is used to forward data packets
Step 8: minimize energy consumption.
Step 9: End for.
Step 10: end if.

This algorithm supports to detect and remove emphasis node in network environment. it increase packet delivery rate, and minimize enrgy consumption.

IV. Performance Evaluation

A. Simulation Model and Parameters

The proposed Expanding geographical routing (EGR) is simulated with Network Simulator tool (NS 2.34). In our simulation, 100 mobile nodes move in 950 meter x 900 meter square region for 20 milliseconds simulation time. Each sensor node goes random manner among the network in different speed. Mobile nodes have coverage area is 250 meters. CBR Constant Bit Rate provides a constant speed of packet transmission in network to limit the traffic rate. AODV- Ad hoc On Demand Distance Vector routing protocol is used to obtain sequence of packet transmission without overflow for node battery. Table 1 indicates Simulation setup is analyzed.

Table 1: Simulation Setup

No. of Nodes	100
Area Size	950 X 900
Mac	802.11g
Radio Range	250m
Simulation Time	11.3ms
Traffic Source	CBR
Packet Size	150 bytes
Mobility Model	Random Way Point
Protocol	AODV

Simulation Result: Figure 2 indicates that the Expanding geographical routing (EGR) method is used to improves the communication between every cluster member nodes in cluster, also compared with existing PVT [6]. EGR having an emphasis node elimination algorithm, it find that node and remove from routing path. It reduce energy consumption, and enhance packet delivery ratio.

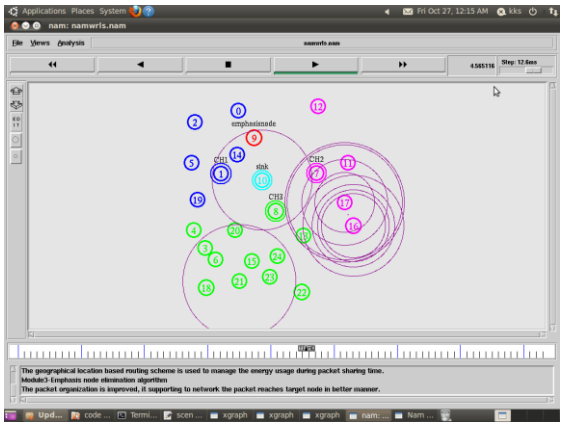

Figure 2: Proposed EGR Result

Performance Analysis

In simulation to analyzing the following performance metrics using X graph in ns2.34.

Energy Consumption: Figure 3 shows energy consumption, how extended energy spends for communication, that means calculate energy consumption starting energy level to ending energy level. In proposed EGR method provides sequence of packet forwarding by cluster member nodes, and also eliminate the emphasis node from routing path, energy consumption is minimized compared to Existing method PVT.

$$\textit{Energy Consumption} = \textit{Initial Energy} - \textit{Final Energy}$$

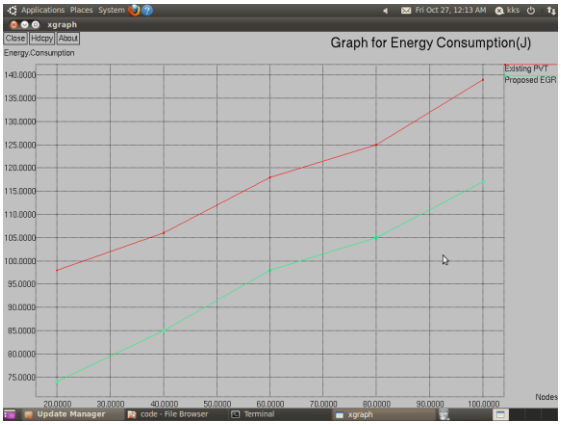

Figure 3: Graph for Nodes vs. Energy Consumption

End to End Delay: Figure 4 shows End to End delay is calculated based on time taken to forward data packets from source to sink node, all node information is maintained in routing table. In proposed EGR scheme end to end delay is reduced compared with existing method PVT.

$$End\ to\ End\ Delay = End\ Time - Start\ Time$$

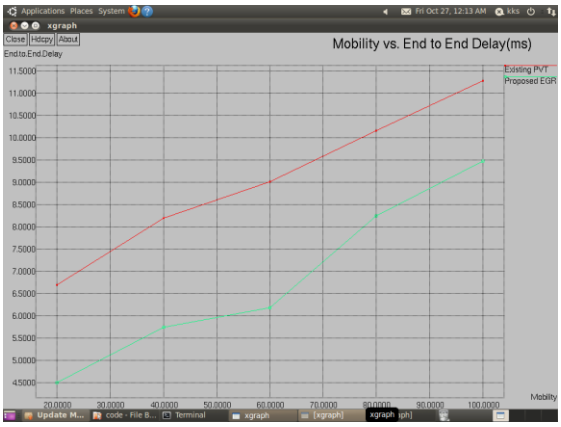

Figure 4: Graph for Mobility vs. End to End Delay

Packet Delivery Ratio: Figure 5 shows packet delivery ratio is estimated depends on the number of packet get received from no of packet sent in certain velocity. Mobility or speed not be a constant, simulation mobility is set to 100(bps). In proposed EGR scheme packet delivery ratio is improved compared with existing method PVT.

$$Packet\ Delivery\ Ratio = (Number\ of\ packet\ received/Sent) * speed$$

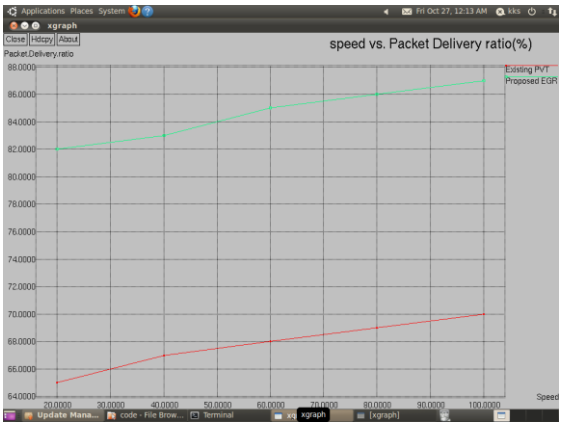

Figure 5: Graph for Speed vs. Packet Delivery Ratio

V. CONCLUSION

The routing path in mobile network having an relaying node, which forwards data packet frequently from sender to cluster head node, it does not find out of coverage node from particular cluster. It increase energy usage, also minimize packet success rate. In present Expanding geographical routing (EGR) method is applied to improve communication through the routing path, also it find the out of coverage node. The emphasis node elimination algorithm is designed to identify and remove the emphasis node available in cluster. It decrease the energy consumption, and improves the packet

delivery rate. In future propose Stable path optimization in unclear structure nodes, to analyze various parameters in mobile environment.

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