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The secure and energy efficient in Geocast for mobile ad hoc networks using clusters

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ABSTRACT

This paper presents a secure and energy efficient geocast protocol for mobile ad hoc network,it's based on a clustered arrangement with data assurancerelief from the source node of the network and all nodes located in one or more geocast regions on the network. Our protocol is collected the overall energy savings. The entirecluster to collect the information based on queue method and then to sending and receiving process on the system. They have using a secure base for routing of information. Our protocol performs better in terms of less broadcast rounds overhead than the model. Existing method on this process the CD-P heuristic so we implement the method for Cluster based (CD-P) on network performance. Clustering algorithm to improving the network performs and overcome the CD-P problem issues to identify and rectify the problem on the network.It's mainly focused on the saving an energy level and better network performance level on this method. GEAR Geographic Energy Aware Routing algorithm to using a retransmission heuristics give way scalable geographic flooding that outperforms option geo addressing approaches and unsalable method for improving the network performance on resources system. This secure method authenticates a data sending and receiving process on network, so we have to avoid a jamming and outside attacker or inside attacker of the networks. Energy efficient method to improving the network throughput and data delivery level and to reduces the delay on process.

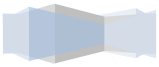
KEYWORDS: MANET, Geocast, Clustering, CD-P, GEAR, Energy Efficient.

1. INTRODUCTION

Geocast is an ad hoc network protocol. Communication between geocast-enabled devices is peer-to-peer and requires no permanent communications, like towers, routers, or access points [1]. This permits geocast-enabled devices to communicate immediately in demanding environments, like remote locations where fixed infrastructure may be engaged or untrustworthy. Securing group communication and group key organization for geocast in ad hoc networks are covered [2]. For a secure geocast protocol in ad hoc network for group communication, a group is key needed to be shared between group members to encrypt group messages CD-P is a novel heuristic designed to support geocast in high scale mobile ad hoc applications and integrated into the classic geocast framework, allowing it to complement other heuristics. A novel Recast, based on a new heuristic, the Center Distance with Priority (CD-P) Heuristic, A flexible framework for integrating geocast heuristics, including the previously studied M and T heuristics, with CD-P (and others), and An evaluation study comparing CD-P to existing geocast heuristics and showing empirically that it outperforms them, while still scaling well. This study compares many different combined parameter of using this method [2].

A method of transmitting information, the recasting that guarantees the data release to each sensor located at one or several specific locations of a network. To reach this goal we superpose two clustered architectures. The clustered is used as the cluster of level 1. Analternative of the method for important virtual architectures in [3] is developed here to produce clusters of level 2 and higher. The structure provided by the use of clusters allows the use of different approach compared to what is generally suggested in the literature on the networks.

Security attacks can come from either illegal outside nodes or legal inside nodes which have been captured and compromised by enemies. The latter nodes are called misbehaving nodes or malicious nodes and attacks from them are more difficult to detect than those from outside attackers perform on the process. At the time the data's are to be loss and network delay to be consisting on the networks.



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Geographic and Energy Aware Routing (GEAR) algorithm is a geocast protocol for mobile ad hoc networks. It uses energy aware neighbor collection to route a small package towards the geo area and Recursive Geographic Forwarding algorithm to distribute the small package inside the area. When a node receives a packet, among its neighbors GEAR picks the next hop minimizing the cost which is the grouping of thedistance to the region and the inspired energy. GEAR also includes a mechanism to route around whole network performances on the processing.

Broadcast techniques in MANETs are classified into four categories of the network simple flooding, probability based methods, area based methods, and neighbor knowledge methods [4]. The algorithm for Simple Flooding starts with a source node broadcasting a packet to all neighbors. Each of those neighbors in turn rebroadcasts the packet exactly once and this continues until all reachable network nodes have received the packet of the destination. They have implementing the clustering based center distance priority method on the networks [6]. So it's considering for the network resources problem and calculates from the energy level resources can be modified on the system methods. The data's are to be secure and most scalable performing on the networks.

2. RELATED WORK

The characteristic of mobile ad hoc networks (MANETs) is that they do not have permanent network communications, nodes can act as both host and router, nodes may be movable, nodes may have limited resources, limited battery life and they have capability of self organization. MANETs require fundamental changes to conventional routing protocols for both unicast and multicast communication owing to its unique features. With the rapid growth of group communication services, the multicast routing in MANET has attracted a lot of attention recently group-oriented communication is one of the key application classes in MANET environments, a number of MANET multicast routing protocols have been proposed.

2.1 Ad Hoc On-Demand Vector Protocol

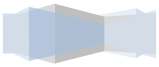
Ad hoc On-Demand Distance Vector (AODV) routing is mobile networks and other wireless networks. At the similar protocol used for a data broadcast function on this method but it performs differently on the mobile network. It is equally developed by zedeh [9]. It is an on-demand and distance-vector routing protocol, meaning that a route is established by AODV from a destination only on demand AODV protocol Route Discovery When a source node S wishes to send a packet to the destination node D, it obtains a route to D. This is called Route Discovery. AODV protocol neighborRoute Maintenance of the network. The AP clustering based to be indicated for the T. if the traffic or jamming occurs means the packets are to be loss. When present is a change in the system topology, the obtainable routes can no longer be used [11]. In such a scenario, the source S can use an alternative route to the destination D. This is called the energy aware routing method performance on the process.

2.2 Route Discovery

This type of routing creates routes only a needed by the source node. When a node needs a route to a destination, it initiates a route discovery process with in the network. This process is completed once route is found or all possible route problems has been established, it is maintained by a route maintenance procedure until either the destination becomes unreachable along every path from the source or awaiting the route is no longer necessary.

2.3 Multicast region

A node n that needs to multicast a message to all nodes currently located within a certaingeographic region. We call this specific area as "Geocast Region". The region is represented by someclosed polygonal area on fig1. Here we demonstrate performance of the adaptive geocast procedure with respect to a rectangular geocast region and then, according to generalize it for any arbitrary closed shape. Specification of a geocast region consists of coordinates of its marginal vertices. Assume that node ns recasts a data packet at time t0 and three nodes are located within the geocast region at that timeAccuracy of the multicast delivery is defined as the ratio of the number of group members actually receiving the packet and number of group members which were in the multicast region at the time of initiation of multicast routes on networks.



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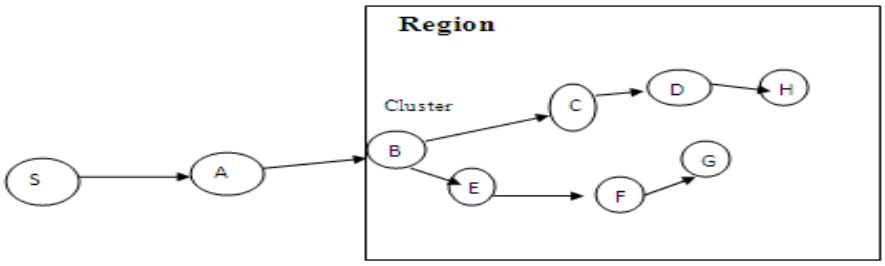

Fig: 1 Multicast Region Networks.

2.4 Multiple Target Regions

This sink wishes to send a request to all hosts located in different geocast regions; it floods a short packet in the network. This short packet contains the definition of the several geocast regions [13]. It can also send several requests one after another, each for a specific geocast region. It is not difficult to see that the delivery here is also a network performs.

2.5 Path Routing

Source node and destination node are selected, Geocasting region (R1) is created as do destination node to the center andforwarding zone is created source node to destination node [14]. Ifmobility of destination node is big extends Recasting region (R2) and reduces reconfiguration number ofunnecessary tree.There is neighborhood node (MNa, MNb) in R area of the process.

R=R1 or R2

MNa, b to R

Mobile node for a and b to send data to the Religion area of network.

3. PROPOSED APPROACH

In this paper we have proposed the geocast energy aware routing algorithm that is able to provide the best case presentation on all probable traffic demands users may on the mobile ad hoc network, the goal is to minimize the maximum Jamming and traffic to avoiding the network over all properly work demand patterns. In this work is the first attempt that investigates the cluster based center distance priority model for the network onissue in the context of mobile network.A trace of simulation study demonstrates that our cluster based energy routing solution can effectively add in the dynamics in resources of the networks.

3.1 Secure Cluster

It is common to find networks with many sensors, so there is a need to group those, using clusters. There are many works allowing their creation and are generally divided into two main families. On the one hand, leaderfirst protocols which first manage to elect a Cluster and to form clusters around on the other hand cluster-first protocols which first form the clusters then elect a data in each one. Our choice referred to this protocol because it is secure on the network performance. The data's are to be secured and no loss level process on the cluster methods.

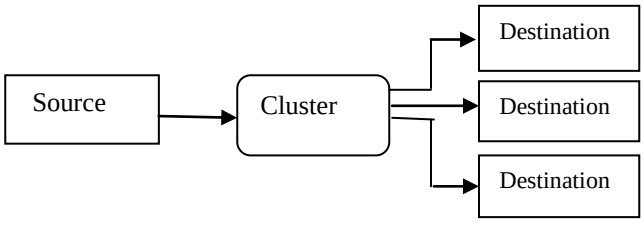

Fig: 2: Clusters Performing in Network

In this figure show the source to destination data process on the network. Here the cluster is performing between the intermediate of source to reachable node on the process**.**

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3.4 Energy Aware routing algorithm:

Cluster-C, N-node, D-destination, S-source, M-Message, E-Energy

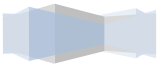
Step1: C receives on M
M checks new message by Source node on networks
Step2: If (node M is not in the region)
Send ACK (M) to C;
Find the next node N to the geocast region;
Following message to N
Step3: If (N is not in the geo region)
Check if N sends the command to the next node
Else if
Step 4: Check (N is Recasting region)
N's neighbor node
Step5: E=N (Energy)
M transmit to D (Data transmission on region)
Else
Step 6: Packet Dropped (Not send to region)
M=Loss
Step 7: E≠N (Energy Save)
No energy to nodes
Step 8: High Network performance
Stop Data
End
End

3.5 Different steps concerned in the proposed Cluster Energy AwareRouting

- **a.** The data are sending by wireless mobile ad hoc network from source (S) to destination (D) on this network topology.
- **b.** Cluster to collects the neighbor node list and source to broadcast the data to destination intermediately work through cluster.
- **c.** Cluster has to collect the data sending and receiving process on the network. The traffic conditions to be checked on this secure energy aware processing on the system.
- **d.** The data transmitted from source to another region of the process that time to implementing the save energy performance on network.
- **e.** It is the more secured method because it is reducing the packet's delay and number of loss packets in these wireless mobile ad hoc networks.
- **f.** When data are send from source to destination, this is the network which through from the cluster node of the position in the network.
- **g.** To improving the network performance, consumed energy level and minimum packet delay of the process.

4. RESULTS AND DISCUSSIONS

The goal of our simulation is to examine the behavior of the AODV by deploying mesh Networks. The simulation surroundingsare created in NS-2, a network simulator that provides maintain for simulatingwireless mobile networks. NS-2 was written using C++ language and it uses the Object Oriented Tool Command Language (OTCL). It came as an extension of Tool Command Language (TCL). The simulations were carried out using an environment consisting of 71 wireless mobile nodes



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roaming over a simulation area of 1200 meters x 1200 meters flat space operating for 10 seconds of simulation time. The radio and IEEE 802.11 MAC layer models were used. Nodes in our simulation move according to Random Waypoint mobility model, which is in random direction with maximum speed from 0 m/s to 20 m/s. A free space propagation channel is assumed for the simulation. Hence, the simulation experiments do not account for the overhead produced when a multicast members leaves a group. Multicast sources start and stop sending packets; each packet has a constant size of 512 bytes. Each mobile node in the network starts its journey from a random location to a random destination with a randomly chosen speed. In an IEEE 802.11 based wireless network there are significant problems in maintaining fairness and low delay for long-hop flows. Express forwarding, which has been proposed to the IEEE 802.11 Task Group, is a possible strategy for solving these problems.
The proposed system consists of a well-organized tree construction scheme which manages to decrease data overhead compared to customary ad hoc routing protocols. To do that, it takes full advantage of the broadcast nature of the wireless medium. We also expand that routing protocol with group association functionalities well-matched with those currently used in the Internet, allow for the ready deployment of the solution in existing networks with current equipments. In result good performance and improving highthroughput processing system on the networks. The packet delivery ratio is defined as the ratio of thenumber of data packets received by the destinations over the number of data packets sent by the sources.

Table 1: Values for simulation

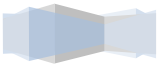
Parameters	**value**
Version	**Ns-allinone 2.28**
Protocols	**AODV**
Area	**1500m x 1500m**
Transmission Range	**250 m**
Traffic model	**UDP,CBR**
Packet size	**512 bytes**

The simulation scenario is designed specifically to assess the impact of network attention on the performance of the protocols. The impact of network density is assessed by deploying 30 –71 nodes over a fixed square topology area of 1200m x 1200m using 5m/s node speed and 3 the same source-destination connections. AODV have a number of quantitative metrics that can be used for evaluating the performance of mesh network. We have used the following metrics for evaluating the performance.

Table 2: metrics for evaluating the performance

S.No	**No Of Nodes**	**Protocol**	**Throughput**	**Average Delay**	**Pdf**
1	**50**	**AODV-CD-P**	**0.65**	**28.99**	**83.60**
2	**50**	**AODV-C-CD-P**	**0.78**	**25.89**	**87.90**

Throughput is the ratio of throughput performance overall network performance improve network performance and packet delivery ratio and minimize packet delay.



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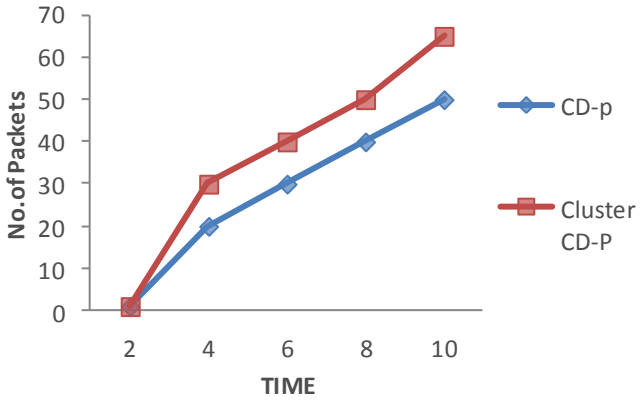

Fig. 3a Clustering throughput level

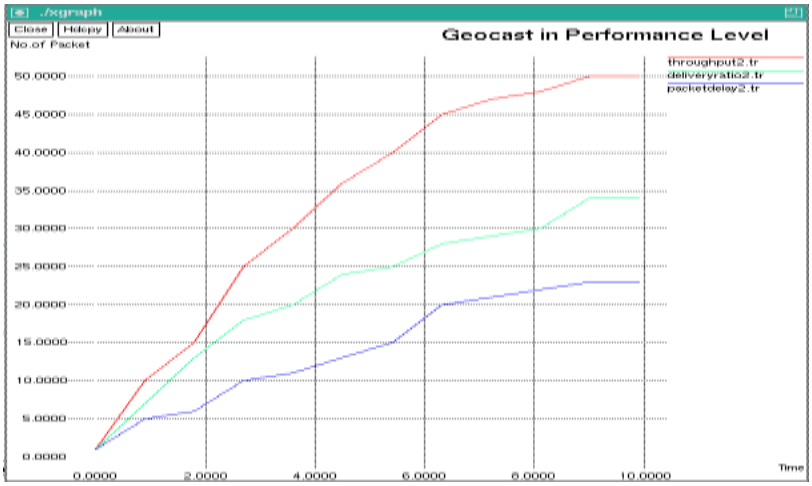

Fig. 3b Screen Snap shot for the performance of throughput for the Geocast

The performance of the throughput for oblivious routing and the proposed routing is depicted in Fig. 3a. The performance of based routing throughput level is higher than routing of the network. It is calculating the performance of throughput level and high accuracy of the data transferring on source to destination of the method. The higher in performance is due to the logic engine is presented as an intelligent technique for discriminating packet loss due to congestion from packet loss by wireless induced errors. The results have shown that theengine may distinguish congestion from channel error conditions on this time .This graph is to distinguish between the oblivious routing and then fuzzy logic performance of the networks. X and Y are to mention the number of packets sending and receiving level.

The screen shot of the results are presented in Fig. 3b. It is desirable to implement a wireless routing protocol with the maximum probability of data delivery, minimum probability of data loss. So, in wireless networks, the attempt has always been to its calculating the packet dropped and delay of the data transmission on the network performed. If they have any packets to be dropping means to delay on the network. Time based to intimate on the delay performing on the whole network performing of process. A new model is to investigate the use of fuzzy logic theory for assisting the routing error detection mechanism in an ad hoc network. An elementary fuzzy logic engine was presented as an intelligent technique for discriminating packet loss due to congestion from packet loss by wireless induced errors. The results have shown that the geocast engine may distinguish congestion from channel error conditions on this time. Here we are using the packets to be drooped at a time the data to be reached the destination to take several times on the network. At the same time delay to be taken a high level perform on this graph. Packet delivery fraction is the ratio of data packets delivered to the destination to those generated by the sources. It is calculated by dividing the number of packet received by destination through the number packet originated from source.

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PDF = (Pr/Ps)*100, where, Pr is total Packet received & Ps is the total Packet sent.

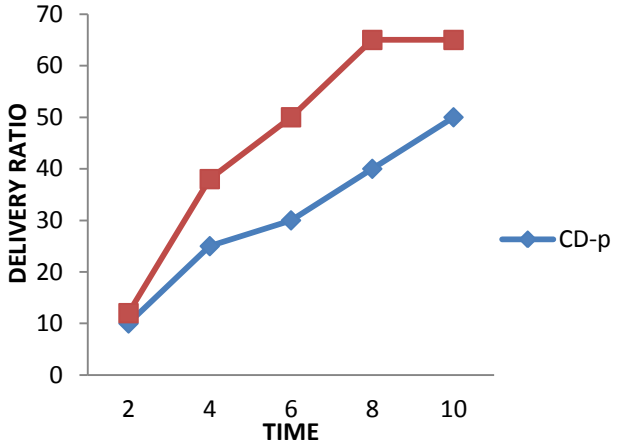

Fig. 4a: Packet deliver ratio for CD-P and CCD-P

Delivery fraction is calculating the data transmission between the nodes of the network. The performance of the packet delivery fraction for the proposed routing and the oblivious routing based on manual calculation is presented in Fig. 4a. Geocast Logic has been used for routing and management of an ad hoc wireless network. The geocast logic based routing algorithm takes into account input variables, delay, throughput and energy consumption. It is differentiating performance between the existing and geocast performance on the network. It is stating that at a time of process how many packets send and received during the process on the transmission and intermediately showing the difference in calculating the time take by packets to reach the destination.

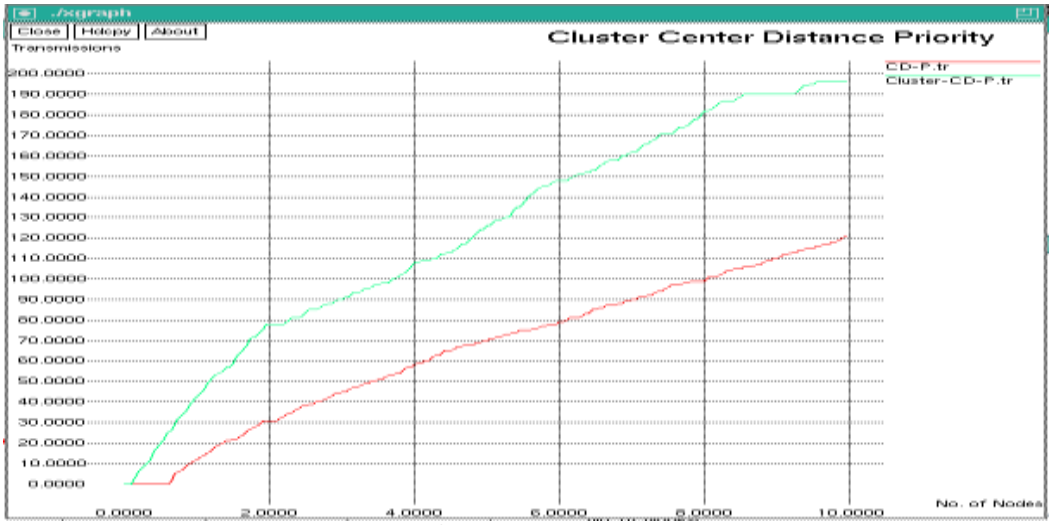

Fig. 4b: Screen snap shot of cluster based center distance priority method

The simulation output of the packet delivery ratio of the proposed geocast routing protocol is shown in Fig. 4b. The optimal performance in the network is guaranteed a controlled randomized routing strategy which can be viewed as cost of exploration. The cost of exploration is proportional to the total number of packets whose route deviates from the optimal path. To increases sub linearly with the number of delivered packets hence the per packet exploration cost are the numbers of delivered packets grow. It represents the number of control packets divided by the total number of received data packets. For this computation, every time a control packet is retransmitted, it is considered as a new control packet from the oblivious routing on the total area network performance of the process.

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Average end to end delay includes all possible delay caused by buffering during route discovery latency, queuing at the interface queue, retransmission delay at the MAC, propagation and transfer time. It is defined as the time taken for a data packet to be transmitted across an MESH network from source to destination. Average end-to-end delay is written as
D = (Tr –Ts), where, Tr is receive Time and Ts is sent Time.

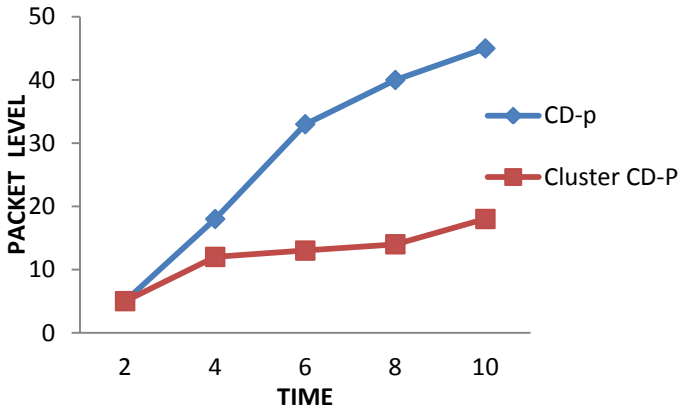

Fig. 5a: Comparision of delay for the proposed routing protocol with oblivious routing protocol

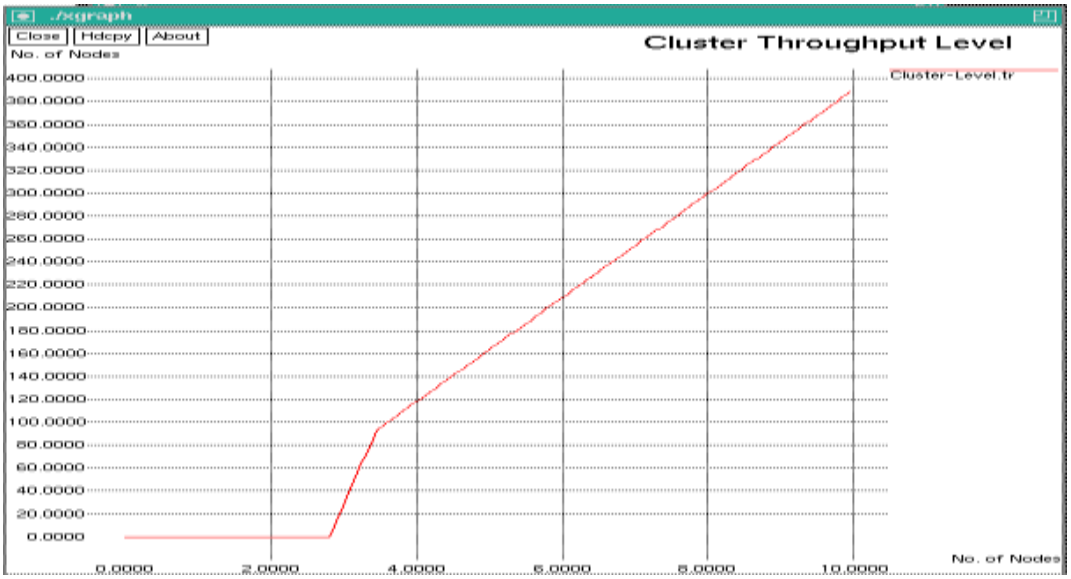

Fig. 5b Screen snap shot of cluster throughput level of nodes

The performance of delay for the proposed routing protocol with the oblivious routing protocol is depicted in Fig. 5a. and also a comparison of delay for different nodes for the proposed geocast based routing protocol and the real time output is depicted in Fig. 5b. Delay is used to calculate the packet droping level of the networks and then if data are dropped means the time taken by geocast logic routing is very low but oblivious routing is delaying to send and receive the data processing of the networks. The route discovery process can take some time and this delay can be increased due to problems in the medium access, such as busy channel and collisions. If they have any problem in transmitting the data to route geocast logic is discovering the neighbour node to get active and send the data quickly when compred to oblivious routing which delays its process.

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CONCLUSION

The CD-P is a novel heuristic designed to support geocast in high-scale MANET applications and integrated into the Classic Geocast framework, allowing it to complement other heuristics. Its integration in the Classic Geocast framework allows combining it with other heuristics for increased performance in more situations. This study compares many different combined parameter settings, showing they have using the cluster based geocast method on the network. Its better routine and then high throughput of the whole network process. The C-CD-P method to perform at all kind of resources level on the system. They have better delivery ratio, low end to end delay of the process. To improve to network performance and reducing the energy level on network.

REFERENCES

[1]. Rajashekhar Biradar, Sunil kumar Manvi, "Mesh Based Multicast Routing in MANET: Stable Link Based Approach", at Vol. 2, No. 2, April, 2010.

[2]. young chul shim and sehunnoh, "an energy aware geocast algorithm using 2-hop neighbor knowledge in sensor networks", Vol 4, No 4, August 2012.

[3]. Nandinimishra, neelammaurya, "performance evaluation of mobile ad hoc network Extension to routing protocols simulation based", Vol. 2 No. 10 October 2012.

[4]. Young-BaeKo, Nitin H. Vaidya, "GeoTORA: A Protocol for Geocasting in Mobile Ad Hoc Networks", at 2003.

[5]. Nitin H. Vaidya,"Geocasting in Mobile Ad Hoc Networks: Location-BasedMulticast Algorithms".

[6]. Yao Yu, Lincong Zhang," A Secure Clustering Algorithm in Mobile Ad Hoc Networks", IPCSIT vol. 29 (2012).

[7]. Tzay-farn shih, chao-cheng shih, "Location-Based Multicast Routing Protocol for Mobile Ad Hoc Networks", at Issue 8, Volume 7, August 2008.

[8]. Anuradha Banerjee, ParamarthaDutta, "Fuzzy Controlled Adaptive Geocasting in Mobile Ad Hoc Networks" Vol. 14 No. 2, 2008.

[9]. Alain Bertrand Bomgni, Jean Frederic Myoupo," An Energy-Efficient Clique-Based Geocast Algorithm for Dense Sensor Networks", Online May 2010.

[10]. Seong-pyo Hong, Cheol-seung Lee, "Design of Variable Geocaste based on Ad-hoc Networks", at 2007 IEEE.

[11]. YOUNG-CHUL SHIM," Secure Efficient Geocast Protocolfor Sensor Networks with Malicious Nodes", 8th WSEAS International Conference.

[12]. S. D. Hermann, C. Michl, "Time-Stable Geo in Intermittently Connected IEEE 802.11 MANETs", atSeptember 2007.

[13]. A. JenifusSelvarani, P. Arul Selvam, "Study of Routing Protocols in Mobile Ad Hoc Networks", atijca 2011.

[14]. LokeshLaddhani, Umesh Kumar Singh, "Algorithm for Mobile Ad Hoc Network", vol 1 issues in December 2011.

[15]. Rajesh Krishna Panta, Robert J. Hall, "Geocast for Wireless Sensor Networks" in 2011.