



GEO ROUTE LOCATION AND DETECTION BASED INFORMATION FOR MULTIPATH MANETS

RAJARAM.M¹, DR.V.SUMATHY²

¹ M.Rajaram Assistant Professor Department of Electronics and Communication Engineering
Park college of Engineering and Technology, Coimbatore, India

² Dr.V.Sumathy Associate Professor, Department of Electronics and Communication Engineering
Government College of Technology Coimbatore, India

Abstract: Hybrid and Classical routing algorithms proposed within the MANET working group of IETF(Internet Engineering Tasking Force) were basically route based, and thus constrained by certain limitations due to the need for the establishment and maintenance of routes. Recently, a family of routing protocols has been proposed as a potentially scalable solution for mobile ad hoc networks. These protocols are location-based; Proper management of location and detection information of the nodes in a mobile ad hoc network is a critical issue for the design of location based routing schemes. In this paper we have carried out the systematic design of Layered Square Quadrant (LSQ) location management scheme with the effective implementation of the major location and detection management functions. Achieved scalability benefits from NS-2

I. INTRODUCTION

A mobile ad-hoc network (MANET)] is a kind of wireless ad-hoc network, and is a self configuring network of mobile routers (and associated hosts) connected by wireless links the union of which form an arbitrary topology. Along with recent development of the ad hoc networks, their expected size will become large. It is thus required to assure the management of the large ad hoc networks efficiently. Many routing protocols have been proposed for the ad hoc networks.[1] They are classified into plane routing protocols and hierarchical routing protocols. the plane routing Proto cols are composed of table driven (Proactive) and source-initiated on-demand driven (Reactive) protocols. “Classical routing algorithms” for MANET are basically route based, i.e. nodes maintain routes to the other clients in the mesh. Many existing routing protocols (DSDV, WRP, FSR, ANDMAR, DSR, AODV, TORA)[2] proposed within the MANET working group of the IETF, have been planned. These algorithms are fundamentally of two types – proactive and responsive.

II. SYSTEM ANALYSIS

A model a wireless ad-hoc network as a set of wireless nodes deployed in a predetermined two-dimensional area, which is referred to as the deployment part. We assume each client possesses a unique ID, and it is aware of its own position through the support of GPS devices. We further accept that the guests may be fluid, i.e., positions of nodes may vary over time. Similar to GLS, we partition the mesh into a hierarchy of grids with squares of increasing size for the purpose of mobility management. Nevertheless, our partitioning scheme is different, and we deploy a novel addressing model based on such partitioning scheme of the mesh. In the upcoming discussions, we use the terms “partial” and “region” interchangeably,[3] referring to the logical partitions as a result partitioning scheme.

III. PROPOSED SYSYTEM:

Location based routing protocols need not store the path data. Here the principal component is the geographic positioning information of the clients. In our proposed Layered Square Quadrant (LSQ) location management scheme we have struck that each client is equipped with GPS system through which the client can acquire its current geographic position.[4][5] We also take for granted that each client receives a transmitting range of artwork. In our strategy we have split up the entire network area into the L level of square regions. The system is such that each level I square region encapsulates the level (I-1) square region and is encapsulated by level (i+1) square region. Each square region has a side length of $2.2l.s$, where l denotes the floor number and thus depends on the node density. The innermost area is the level-1 square region and the outermost region are the level-L square region The square area at each layer is further subdivided into four sub-areas. In each floor we have four location server regions, where each location server region is a square area having a side length of r . All the nodes residing in the location server regions act as location servers.[6] These location servers are responsible for keeping track of the location information of the clients.

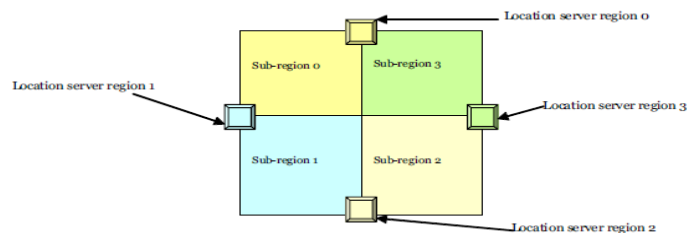


Fig 1: Assignment of Location server regions

Location Server Region 0	Sub-Region 0
Location Server Region 1	Sub-Region 1
Location Server Region 2	Sub-Region 2
Location Server Region 3	Sub-Region 3

TABLE 1 :ASSIGNMENT OF SUB-REGIONS TO LOCATION SERVER REGIONS

Every bit in case of MANET changes in mesh topology can be frequent and mobility of the nodes can be high, therefore, cost for location update will be a major burden. If we keep track of only the exact location information of the nodes, then there is a possibility of this information becoming stale quickly if the mobile nodes frequently change their position and thus needing to invoke expensive location update routines. Here we use the concept of multi-level location data.[8][11] We have assumed that the location information can be of two types – fully qualified location information and relative positioning data.

IV. LOCATION UPDATE

I>Location update for node movement within the sub - region: When a node A moves within the sub-region in which it is currently residing it needs to notify only the location servers currently in charge of that particular sub-neighborhood. This is because only this set of location servers is currently keeping track of the fully qualified location information of node A and any changes in the x and y coordinate location of the node A must be speculated in them. II>Location update for node movement between sub-regions: When a node A moves from one sub-region to another inside the same level I square region, then after achieving its new surgeon. It will probe its neighbors to acquire information about its new location server region.[9][12] Once it comes to know about this new location server region, it transmits its current x and y coordinate locations and the node id to the new location server region. As this new location server region is along the same level I square as of its previously assigned location server region.

V. LOCATION QUERY

Suppose node S wants to transport a data package to a destination node D but the positioning information of node d is unknown to S. Corresponding to three location update scenarios three situations can develop. In this event the location server region that is in charge of the sub-region comprises the fully qualified address of node D. The source node S sends the data packet to the location server region. The location server region extracts the current x and y coordinate location of node D from its fully qualified address and posts the information packet to node D at that location. II>Destination D is within the other sub - region at the same level as of source S: In this case the source S sends the data packet to the assigned location server region of its sub-neighborhood. Merely as the destination D is within a different sub-region, therefore, the location server region of node S contains only the relative positioning information about destination D. From this information, the location server region of node S can determine which location server region currently contains the fully qualified address of node D. [14]The location server region of node S then sends the data packet forwarded from S to that particular location server region. This new location server region ultimately sends the information packet to the destination node D..

VI. DETECTION

The appropriate feature selection for Efficient anomaly detection in routing process is the first and the most important activity that must be done and then delineates the module of the detection scheme [4] based on the enhance projection distance calculation and improve the scalability benefits. We introduce ELDAD (Efficient located dynamic anomaly detection) method

I) First appearance and meaning of Features

Every node, it has a specified time slots to stack or record of parcels in this efficient anomaly detection we introduced time slot $\Delta\tau_f$ and $\Delta\tau_l$ in the content value of $\Delta\tau$

$\Delta\tau_f$ and $\Delta\tau_l$ in the compounded value of $\Delta\tau$ 1

Network state, expressed as $x = [x_1, x_2, \dots, x_p]^T \dots\dots\dots 2$

P-dimensional vector $x_p = (x_l + x_f) \dots\dots\dots 3$

where each feature

$x_l = (1 \dots\dots\dots l) \dots\dots\dots 4$

$x_f = (1 \dots\dots\dots f) \dots\dots\dots 5$

is measured

We calculate the Mean vector from Equation (4) using training data set D of NM time slots

$$\mathbf{x}^p = \frac{1}{MN} \sum_{i=1}^{NM} x_i y_j \dots\dots\dots 6$$

VII. IMPLEMENTATION

It also forwards the package to the location server region of the square region that is manipulated by the current level square region.[16][13] The location server regions at other levels now follow the previously mentioned steps for location query and this process is continued until the destination node D is found or the network limit is hit. In this mode we introduced to combine of Location and Detection as come under specific way. [15] Thus if the destination node falls within the network boundary, the data packet is propagated from the source node S to the destination node D through the intermediate location server regions.

VIII. SIMULATION

Network Simulator version 2 (NS-2) is a free and open source discrete event network simulator developed at UC Berkeley can add your own protocol, contribute to the code and, from time to time, you need to troubleshoot some of the bugs. NS is a discrete event simulator where the progression of time depends on the timing of events which are asserted by a scheduler.

SIMULATION PARAMETER

S.No.	Parameters	Value
1.	Source Type	MAC
2.	Number of Nodes	50, 75 & 100
3.	Simulation Time	50, 100 & 150 (sec)
4.	Pause Time	5 ms
5.	Environment Size	800x800
6.	Transmission Range	250 m
7.	Traffic Size	CBR (Constant Bit Rate)
8.	Packet Size	512 bytes
9.	Packet Rate	5 packets/sec
10.	Maximum Speed	20 m/s
11.	Routing Protocols	AODV, DSDV & DSR
12.	Simulator Used	NS - 2.35

Table: 2

a) **Packet delivery ratio:** The proportion of packets that are successfully driven home to a destination compared to the number of packages that have been mailed out by the sender. The ratio of the number of delivered information packets to the address. This exemplifies the level of delivered data to the terminus.

$\sum \text{Number of packets receive} / \sum \text{Number of packets send}$

The larger value of the packet delivery ratio means better carrying out of the protocol. Pdr obtained as 20% higher than adobe.

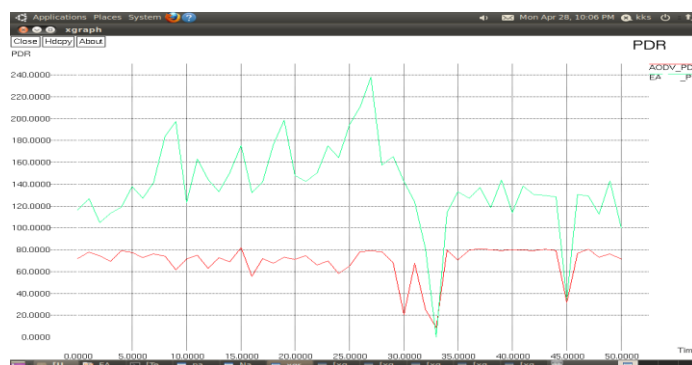


Fig. 4 : Packet delivery ratio

b. Throughput: Its is basically synonymous to digital bandwidth consumption; it can be analyzed mathematically by means of queueing theory.. It is one of the dimensional parameters of the net, which happens on the fraction of the channel capacity used for useful transmission selects a destination at the beginning of the simulation, i.e., information whether or not data packets correctly delivered to the destinations great is better than AODV 23% Improved The ratio of the number of data packets sent and the number of data packets received. Throughput of the protocol shows number of messages delivered per one minute

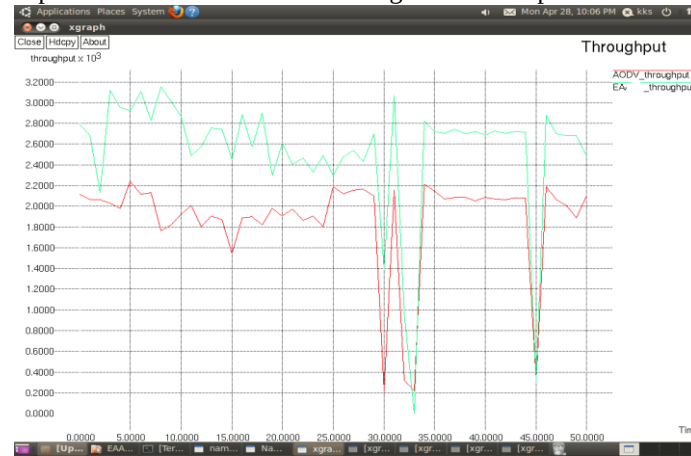


Fig. 5 : Throughput

c. Energy Consumption: Energy consumption percentage of Total transmission and taking in energy due to control packets with 10 guests. And with 50 nodes The protocol type REQUEST, REPLY and ERROR packets are routing control packets. Request to Send (RTS), Clear to Send (CTS) and Acknowledgment (ACK) are the MAC control packets. Energy consumed by routing control packets is increased with increasing the number of nodes while energy consumed by MAC control packets is increased with increasing the number of nodes.

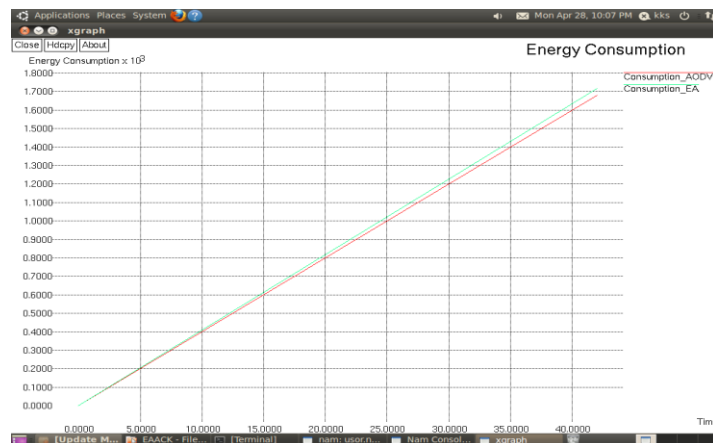


Fig. 6 : Energy Consumption

d. Packet loss ratio: A packet may lose due to transmission errors, no route to the destination, broken links, congestions, etc. The effects of these causes are tightly associated with the network context (e.g., host mobility, number of connections). In this Geo local EA is low packet loss than aodv

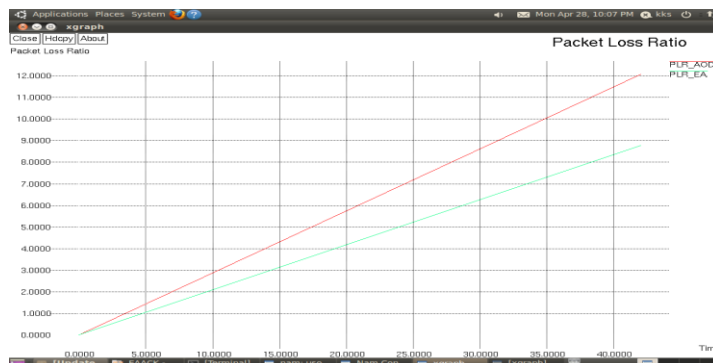


Fig. 7 : Packet loss ratio

IX. RESULTS

A. Scalability benefits

S.NO	GEO LOCAL
PDR(%)	23% Improved
Node Mobility	36% Improved
Cost of Location	51% Improved

Table 3 Results

B. Results

S.NO	PARAMETERS	AODV	GEO LOC
1	PDR	3.6%	7.2%
2	THROUGHPUT	3.62%	4.53%
3	ENERGY CON-SUMPTION	58KB	128KB
4	PACKET LOSS	7.02%	2.87%

Table 4 Results

X. CONCLUSION:

We have presented Layered Square Quadrant (LSQ) location management in Android based operating system, a novel system for the management of location information of the nodes in a mobile ad hoc network. The potency of a location management scheme depends on scaling down the monetary values connected with the major location management functions- fix update and location query. In our scheme by dividing the entire network area into the L level of square areas and using multi-level location information we have been able to offer a singular way to dilute the cost associated with both location update and location query. Further investigation on performance analysis of Scalability benefits like PDR, Throughput, packet loss, and Energy are achieved.

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AUTHORS PROFILE

Rajaram M. received his degree in Electronics and Instrumentation and Engineering from Bharathiar University, Coimbatore (India) in 2003. He received M.E degree in 2006 from Government college of Technology Cimbatore, and currently he is working as an Assistant Professor in Park college of Engineering and Technology Coimbatore His research interest includes Routing, Embedded systems , and Network Security.

Dr.V.Sumathy: received her Ph.D degree in Networking Professor in Government college of Technology Combatore Her research interest includes Adhoc networks, Embedded systems , Network Security and Vlsi. She guided ten Ph.D Research scholars and several number of Research and development Projects Under the Department of Information and Communication Engineering from Anna University, Chennai (India) in 2006., and currently she is working as an Associate and motivated students to get high carrier based developments.