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AN ADJACENT COVERAGE BASED ON PACKET EXTENT RETRANSFER FOR DECREMENT ROUTING ALOFT IN MOBILE AD HOC NETWORKS

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ABSTRACT

Inadequate control of mobile nodes in ad hoc networks and the unusual segregation in the existing link which may guide to regular path breakdown and route-path identification. The aloft of a route identification is unavoidable at any cost. In route path identification a multi packet extent is a basic packet dissemination control mechanism, where a unstable node may blindly retransfer the first received request of the router packets until it identifies the packet destination, also it may cause the transmit storm issue. In this article we propose a adjacent coverage based on packet extent transfer for decrement routing aloft in mobile ad hoc networks (MANETS). In addition we propose a novel based retransfer time-lag to measure the order of the retransfer and then it's obtained by few extra coverage ratios by sensing adjacent coverage information. A perfect way to define the connectivity factor by providing the adjustment of node density and to achieve the realistic retransfer probability by adding the ratio of extra coverage and the factor of connectivity. This new idea combines the merits of the adjacent coverage information and the packet extent mechanism, which may reduces the retransmission count identifiably so as to decrement the routing aloft and may leads the healthy routing performance.

KEYWORDS: *MANET, ALOFT, Multi-packet Extent and Packet extent mechanism.*

I.INTRODUCTION

A Mobile ad hoc networks consist of a compilation of unstable nodes which may shift freely. These nodes are like a self-organized and illogical topology in networks with unstable infrastructure. A basic target of mobile ad hoc networks is to achieve the good routable protocols design along with well performance and least aloft. The proposed protocols for mobile ad hoc networks are Ad hoc On-Demand Distance Vector Routing [AODV] and Dynamic Source Routing [DSR]. These two protocols are knows as on-demand routing protocols and they are mainly used to improve the scalability by reducing the routing aloft when a new request is arrived. Since the node mobility in mobile ad hoc networks, an unusual link segregation which may leads to the regular path failures as well route path identifications. Aloft is nothing but overhead. Also it may increase the aloft of routing protocols and it may reduce the delivery ratio and increase the end to end delay of the packet. To reduce the routing aloft in route path identification may cause the big problem. The conventional on-demand routing protocols are used to identify the route path by using flooding method. A Route REQuest (RREQ) packet may be transmitted to the network for inducing the desirable retransmission of RREQ packet to make a transmit storm issue and which may leads to acceptable value of packet collisions. Hence it is an essential way to optimize this multi packet extent mechanism. Some of the existing methods had been proposed to optimize the multi packet extent. Such as, Williams and Camp furnished the multi packet extent protocols in to four types, they are (i) simple flooding, (ii) probability based methods, (iii) area based methods and, (iv) neighbor knowledge methods. They clearly said that by increasing the node numbers in a static network may downgrade the performance of the probability and area based methods. It clearly shows that the performance of neighbor knowledge method is good than area based method and the performance of area based method is really good than probability based method. Also reducing the packet extent retransfers count which may leads to optimize the multi packet extent and the neighbor knowledge method is better than the area based method. Hence, in terms of exploit the neighbor covers knowledge perfectly then it needs a novel packet extent retransfer delay to analyze the order of the packet extent retransfer. Then the accurate additional cover ratio can be obtained. By using the connectivity factor we can maintain the regular network connectivity and to decrease the redundant retransmission.This connectivity factor may decide the RREQ packet count may be sent to requested neighbors. The combinations of additional coverage ratio and connectivity factor, we initiate a packet extent retransfer probability. It is mainly used to decrease the packet extent retransfer of RREQ packet count and to increase the performance of the routing.

II. RELATED WORK

A multi packet extent is an effortless mechanism to the route path identification. At the same time routing aloft is combined with the multi packet extent may be large in high dynamic networks. As we may know about the multi packet extent protocols practically and it has been showed that the packet extent retransfer is quite costlier and it may consumes more network terminal sources. The multi packet extent deserves the huge routing aloft and it may cause more issues like redundant retransmissions, collisions and contentions. To optimize the multi packet extent in route path identification is an effortless resolution to increase the routing performance. With the help of gossip-based approach we might have concluded that all the packets may have a probability which has been sent by different nodes in the network. It clearly shows the results up to 36.12% aloft when compared with flooding. Although, when a density of the network is high or heavy traffic then the development of the gossip based approach may shortened [8]. Kim [12] said that a probabilistic multi packet extent method based on coverage area and confirmation of the neighbor area. It may use the coverage area to set the packet extent retransfer probability and it may use the confirmation of the neighbor to guarantee reachability. A neighbor knowledge method may be named as scalable multi packet extent algorithm. It determines the packet extent retransfer of a packet ensures that the packet extent retransfer may reach all the added nodes. Abdulai [7] said that a Dynamic probabilistic Route path identification method is based on neighbor coverage. Each node from this approach may determine the forward probability depends of its neighbors weigh and their last multi packet extent. This method may depend the previous node coverage ratio. It does not think about duplicate RREQ packet that may be received by neighbor coverage. The DPR protocols further optimization and extension can be done in one single place. Some of the robust protocols are being proposed and it keeps the existing optimization problem for multi packet extent. Chen said that an AODV protocol with forward directional routing which may used in geographic routing in to AODV protocol. If a break in a route then the protocol may automatically look forward the next hop to forward the packet. Keshavarz-Haddad [09] said that there may be two different timer based multi packet extent methods. Those are (i) Dynamic Reflector, (ii) Dynamic Connector. These two methods are very effective and idealistic lossless over a MAC layer. They are very efficient and robustness against node and mobility failure. Stann [10] said that the robust multi packet extent protocol is used to provide accurate reliability and better efficiency against flooding in un-bounded networks.

III. PROPOSED WORK

The values of packet extent retransfer and its probability must be calculated. The upstream coverage ratio is being used for received RREQ packet from the last node and its packet extent retransfer delay should be calculated. In terms of using RREQ packets additional coverage ratio is to calculate the protocol connectivity factor and packet extent retransfer probability values. At this point each node in a network requires any one hop of neighborhood information to proceed. If the node *ni* receives RREQ packet from the last node *s* and it may use the neighbor list from the well known packet to calculate uncovered neighbors RREQ packet sent by node *s*. It defines when node *ni* uses packet extent retransfer method to transfer the RREQ packet to all the additional neighbor nodes in a network. The uncovered additional neighbors and their set U(ni) of node *ni* as follows:

$$\mathbf{U}(n_i) = \mathbf{N}(n_i) - \{\mathbf{s}\} - [\mathbf{N}(n_i) \cap \mathbf{N}(\mathbf{s})]$$

Here, *N(S)* & *N(ni)* are neighbors sets.

$$T_p(n_i) = 1 - \frac{|N(s) \cap N(n_i)|}{|N(s)|}$$

$$T_d(n_i) = T_p(n_i) \times \text{MaxDelay}$$

Here, *Tp(ni)* is *ni* node delay ratio and the *MaxDelay* is tiny constant value. Then *|.|* is called number of set elements.

$$F_c(n_i) = \frac{N_c}{|N(n_i)|}$$

Here *Nc = 5.2100 log n.*

We may determine that *|N(ni)| > Nc* and *Fc(ni) < 1.* It defines that the node *ni* belongs to the huge area of the network. The only one part of the neighbors of node *ni* may send the RREQ packet to retain connectivity of the network. If *|N(ni)| < Nc* and *Fc(ni) > 1,* which means that node *ni* is the thin area in the network.

$$P_{re}(n_i) = F_c(n_i).R_a(n_i)$$

Ould-Khaoua [12] said that NCPR (Neighbor Coverage: A Dynamic Probabilistic Route Discovery for Mobile Ad hoc Networks). By merging the additional coverage ratio and connectivity factor and we may achieve the packet extent retransfer probability *Pre(ni)* of node *ni*:

Algorithm 1 NCPR

Definitions:
$RREQ_v$: RREQ packet received from node v.
$R_v.id$: the unique identifier (id) of $RREQ_v$.
$N(u)$: Neighbor set of node u.
$U(u,x)$: Uncovered neighbors set of node u for RREQ whose id is x.
$Timer(u,x)$: Timer of node u for RREQ packet whose id is x.
{Note that, in the actual implementation of NCPR protocol, every different RREQ needs a UCN set and a Timer.}

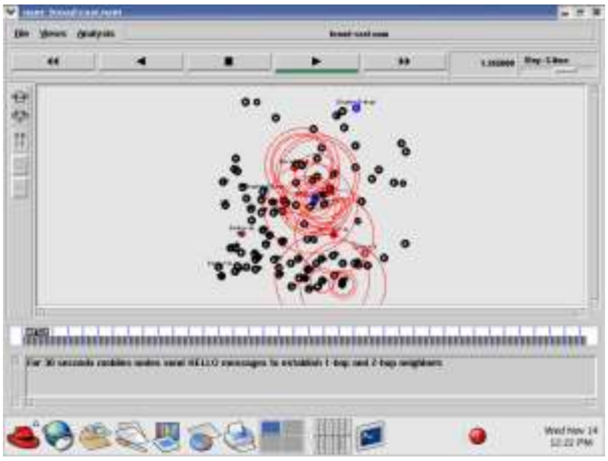
```
if n_i receives a new RREQ_s from s then
    {Compute initial uncovered neighbors set U(n_i, R_s.id) for RREQ_s:}
    U(n_i, R_s.id) = N(n_i) − [N(n_i) ∩ N(s)] − {s}
    {Compute the rebroadcast delay T_d(n_i):}
    T_p(n_i) = 1 − |N(s) ∩ N(n_i)| / |N(s)|
    T_d(n_i) = MaxDelay × T_p(n_i)
    Set a Timer(n_i, R_s.id) according to T_d(n_i)
end if

while n_i receives a duplicate RREQ_j from n_j before Timer(n_i, R_s.id) expires do
    {Adjust U(n_i, R_s.id):}
    U(n_i, R_s.id) = U(n_i, R_s.id) − [U(n_i, R_s.id) ∩ N(n_j)]
    discard(RREQ_j);
end while

if Timer(n_i, R_s.id) expires then
    {Compute the rebroadcast probability P_re(n_i):}
    R_a(n_i) = |U(n_i, R_s.id)| / |N(n_i)|
    F_c(n_i) = N_c / |N(n_i)|
    P_re(n_i) = F_c(n_i) · R_a(n_i)
    if Random(0,1) ≤ P_re(n_i) then
        broadcast(RREQ_s)
    else
        discard(RREQ_s)
    end if
end if
```

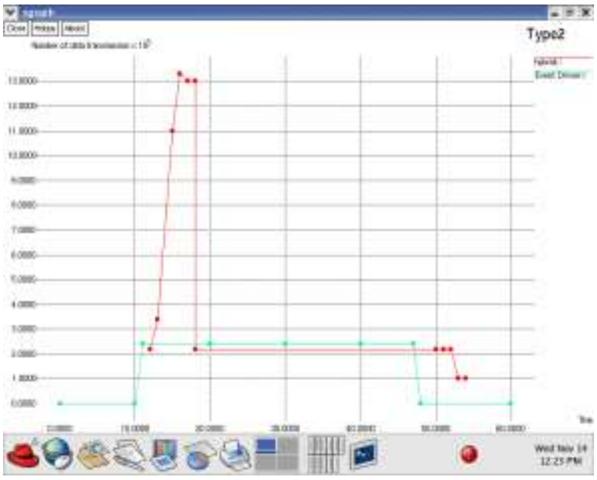
IV. EXPERIMENTAL RESULTS

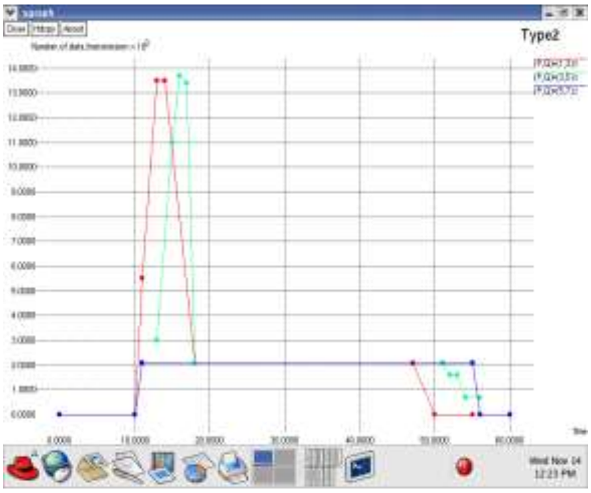
To determine the effortless of our approach, we have executed the hybrid data gathering protocol on a JProwler network simulator which is done by java. It can be used in either the deterministic to generate replicable results when testing the application (or) in probabilistic mode is used to generate nondeterministic nature of the communication channel and low level communication protocol for the sensor nodes.

We have performed the simulation on a network which may consist of <100 sensor nodes in a fixed base station.

These node are not constant nodes so it may be placed randomly in a desired network and the node position may not get changed.







V. CONCLUSION

We have proposed a new probabilistic packet extent retransfer protocol based on neighbor coverage to decrement the routing aloft in mobile ad hoc networks.

A neighbor coverage idea includes some additional coverage ratio and connectivity factor. It is a new method to evaluate packet extent retransfer delay successfully. It is used to verify the forwarding order and more successfully utilize the knowledge of the neighbor coverage. The simulation results shows that the protocol which we proposed is generate less value of packet extent retransfer traffic than the flooding.

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