An Efficient and Improved QOS Routing Protocol in MANET

[1]Bongu Srinivasarao, [2]Promod Kumar Sahu,[3] L.V Satyanarayana
[1]*M.Tech student,* [2]*Associate Professor,*[3]*Assistant Professor*
[1,2,3]*Department of CSE, Aditya Institute of Tech. & Management (AITAM) Tekkali, Srikakulam District, Andhra Pradesh, India.*

Abstract: *Implementation of routing protocol is always an interesting research issue in the file of mobile adhoc network. Quality of service, reliability and secure transmission are the basic factors while transmission of packets between nodes. In this paper we are proposing an efficient routing protocol which efficiently selects the neighbors by computing query delay and improves performance by cache implementation. Underlay nodes uses overlay network nodes for immediate destination reach if available, determines the qualified neighbor nodes based on queue delay and sorts them in descending order of timestamps at intermediate node level and sends packets to next nodes in the sorted is it with transmission interval*

I. INTRODUCTION

There are two types of wireless networks such as infrastructure and adhoc networks. In infrastructure wireless networks remote nodes are directly communicate directly with control point with wired network. In adhoc networks are consists of nodes that communicates over wireless medium. The limitation of adhoc networks is that there is connectivity between the network and nodes. To overcome the limitations of the infrastructure networks are internet connectivity. If we provide the internet connectivity we can build hybrid wireless networks can be built to usage of wireless networks. By building the hybrid wireless networks there are couple challenges such as protocol design and performance evaluation. The traffic in hybrid networks manages wireless and wired networks[1][2].

Applications for hybrid networks incorporate meeting situations. Meeting participants can speak with each other in an unconstrained system utilizing their cell phones, and they can likewise perform Internet-driven undertakings[3], for example, web scanning on the other hand email checking. In a sensor system, sensor hubs can participate with each other by trading information, while a few assigned or capable hubs may transmit this information back to an Internet archive. Different applications incorporate individual networks and numerous cooperation situations.

There are various applications have various settings and performance requirements. To launch hybrid networks, It is very crucial to launch hybrid networks to understand the requirements of the elements of hardware and software protocols. Because the routing protocol are based on direct transmission and the access points. It is to investigate new schemes that can adopt the hybrid networks with different application requirements. The routing schemes that are utilize a default route to give best performance with lower transfer of latency[4][5].

Portable nodes with subjective pre-allocated IP locations can get internationally addressable co-found IP addresses for Internet correspondence [6]. Then again, if a hub needs to keep its unique IP address, IP can be used; a Versatile IP remote operator can be sent at the entryroute to give Internet access to and from the hybrid networks. At long last, it is attractive to utilize impromptu steering conventions for activity inside specially appointed networks to get ideal steering route s with less movement centralization at the passage.

II. RELATED WORK

Since multi-bounce route s normally exist between versatile nodes and the passage, and between sets of versatile nodes, the essential issue is to successfully discover route s to destinations whether they are inside the specially appointed system or reachable through the wired system. Since the general area of the destination is not at first known, the ideal outline of the steering

convention is prone to be influenced by the necessities of the application.

Even though various protocols implemented by the various researchers from years of research, every approach has its own advantages and disadvantages. Quality of data packet transmission with optimal time interval is an unmet requirement. In mobile adhoc network selection of optimal neighbour node is not an easy task to determine because neighbour node should meet the basic factors like queying delay, transmission delay, threshold value etc…

- Choosing every intermediate node for communication is time complexity issue
- Transmission of data packets only through underlay network is complex
- If intermediate node queue delay is more , then data transmission rate is less

The routing of the hybrid network is very hard to achieve the traffic challenges. Because the most of the traffic is based on the local area network with lots of sessions. There is no traffic analysis for hybrid networks[7][8]. The usage of hybrid networks will also have email scenarios such as conference calls and web sessions etc. it requires the real time user applications and interactions with low bandwidth and low communication challenges. Some times more number of sessions are stay in the network in using more network bandwidths and increases the more traffic. At that time routing is more difficult to maintain the routing of networks. There are different types of routing methods and explained below.

At the point when there is an extensive percent of traffic crossing the wired/remote entry, and applications are short web-situated sessions, it is attractive for mobile hubs to dependably have a default route to the entry. This will fundamentally lessen the route obtaining inactivity, along these lines decreasing the information transmissions. It is vital to web clients, since clients can't endure visit long sitting tight times for site page recoveries. Additionally, web clients normally visit site pages at numerous spaces. Absence of a default entry route would require a route revelation every time another web server was questioned. Further, by utilizing a default route, the handling and storing overhead is fundamentally decreased, in this manner sparing the constrained assets of mobile devices. The to begin with plan is adapted towards web-driven traffic designs and gives productive routing to this kind of utilizations[8][9].

In this scheme, foreign agents periodically broadcastAgent Advertisement messages, and all the mobile nodes rebroadcastthese messages. Each mobile node is required toregister with the foreign agent. Mobile nodes can also useadvertisements to initialize and update the route between theforeign agent and themselves. In high mobility scenarios[10][12],where the route freshness cannot be guaranteed solely by beaconmessages, mobile nodes can use ad hoc routing protocolsto acquire a route to the foreign agent.

III. PROPOSED WORK

In this paper we are proposing an efficient routing protocol with quality oriented service ,it determines the optimal neighbor node which satisfies que delay which satisfies threshold value and each neighbor node can be determined by receiving the send request from the source node, initially gets all the neighbour nodes which satisfies query delay parameters, underlay source nodes transfers data packet through intermediate nodes and check the path in overlay network, if path available chooses overlay nodes otherwise follows un-delay network path and cache implementation improves performance and periodically updates cache table.

- Using over lay network improves the performance of the data transmission
- Time complexity for transmission of data packets between source and destination is less
- Optimal usage of intermediate node allocation

In node communication establishment module we construct a general node to node communication through the socket programming, Every node can communicate with each other .data packet can be transmitted from source node to destination node, each node acts as server, it can accept the any connection and receives the data packets from any other node and transmits the data packets to other nodes

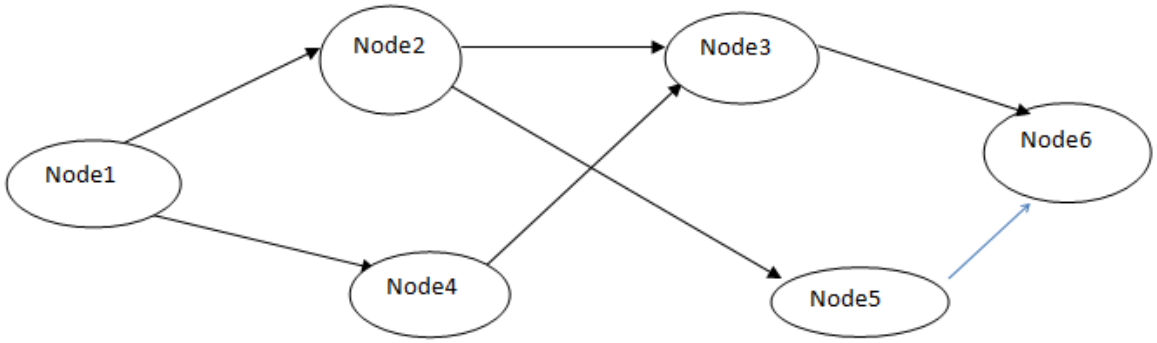

Figure1: **Node construction**

Queue delay:

Every node maintains a transmission table which contains node id, queue delay ,because various nodes may use same node as intermediate node,in such situations nodes should be free or should have minimum time span to process to new incoming request,if it meets the time span threshold new incoming request node can be added to current intermediate node otherwise chooses other intermediate node which is free or it takes less time to process,it follows first in first out.

ON and UN intermediate node Communication:

Overlay network maintains a virtual path for communication between the nodes in underlying networks, edges can be formed from vertex to vertex or node with some specified weight ,cost can be computed from source to destination with possible number of paths and finds the shortest path from all possible path but what if the node in the path is not a good transmission or transmission rate is low, for such situations how we can identify such nodes and remove from the paths while computation of optimal path

IOR based Routing Cost Algorithm:

Input: Overlay Network (ON), Underlay network (UN), Pair set(v1, v2), weight (w), IOR, T (threshold).

Cost :=0 ,min_cost :possible _firstpath_cost

Procedure:

Step1: Consider all set of pairs (paths) S for (V_i,V_j)

Step2: if route (V_i,V_j) does not exists then

Return 0

Step3: else

Generate set of possible pairs tp pair set

Stpe4: for each (var path in possible_paths[V_i,V_j])

IORStatus=NextpairStatus (V_i,current_pair,V_j)

If (IORStatus==TRUE)

Cost :=Cost+weight(current_pair)

Next

If Cost<Min_Cost

Begin

set optimalpath :=current_path

End

Else

Begin

Set cost=0

cuttent_pair:=null

current_path := null

End

Step5: Exit

Cache module improves the performance by eliminating the redundancy of data packets through network node, every node maintains a cache table at its end, it contains source node, destination node,meta data , data packets and time stamp.

Time stamp helps to expire the data packets because it may increase overload at certain point of time.

IV. CONCLUSION

We have been concluding our current research work with efficient in and out transmission based model,to improve the efficiency and performance . Source node requests for shortest path and it is a NP hard problem, so service need to compute paths of all possible solution until we reach shortest path. In our proposed model along with cost factor we are considering the in and out reliability ratio of packet (IOR) it needs to be satisfied while computation of cost of the nodes,it obviously improves the performance

REFERENCES

[1] "A Majority of U.S. Mobile Users Are Now Smartphone Users,"http://adage.com/article/digital/a-majority-u-s-mobile-userssmartphone-users/241717, 2013.
[2] Qik, http://qik.com, 2013.
[3] Flixwagon, http://www.flixwagon.com, 2013.
[4] Facebook, http://www.facebook.com, 2013.
[5] H. Wu and X. Jia, "QoS Multicast Routing by Using MultiplePaths/Trees in Wireless Ad Hoc Networks," Ad Hoc Networks,vol. 5, pp. 600-612, 2009.
[6] H. Luo, R. Ramjeey, P. Sinhaz, L. Liy, and S. Lu, "UCAN: AUnified Cell and Ad-Hoc Network Architecture," Proc. ACMMobiCom, 2003.
[7] P.K. Mckinley, H. Xu, A. Esfahanian, and L.M. Ni, "Unicast-BasedMulticast Communication in Wormhole-Routed Direct Networks,"IEEE Trans. Parallel Data and Distributed Systems, vol. 5,no. 12, pp. 1252-1265, Dec. 1992.
[8] H. Wu, C. Qiao, S. De, and O. Tonguz, "Integrated Cell andAd Hoc Relaying Systems: iCAR," IEEE J. Selected Areas in Comm.,vol. 19, no. 10, pp. 2105-2115, Oct. 2001.
[9] J. Zhou and Y.R. Yang, "PAR CelS: Pervasive Ad-Hoc Relaying forCell Systems," Proc. IFIP Mediterranean Ad Hoc Networking Workshop(Med-Hoc-Net), 2002.
[10] R. Braden, D. Clark, and S. Shenker, Integrated Services in theInternet Architecture: An Overview, IETF RFC 1633, 1994.
[11] E. Crawley, R. Nair, B. Rajagopalan, and H. Sandick, ResourceReservation Protocol RSVP, IETF RFC 2205, 1998.
[12] A QoS-Oriented Distributed Routing Protocol for Hybrid Wireless Networks by Ze Li and Haiying Shen