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Quality of Service Improvement through Signal Strength Aware Routing

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ABSTRACT: Quality of Service (QoS) in Ad hoc networks (MANETs) and more precisely in routing is the subject of several studies with the aim of providing better solutions for new applications required high throughput and very low delay. The objective of this work is to enhance the AODV (Ad hoc On Demand Distance Vector) routing strategy in maintenance phase, to improve QoS. It aims to Ad hoc On-Demand Distance Vector (AODV) routing protocol during the route selection process, the sender determines the best signal strength node capable enough for best effort transmission. When signal quality is declining due to neighbor node remoteness, a discovery of a part of road rescue with two hops will be established and it will be used when disconnection happens. Simulations under Network Simulator (Ns2) were conducted to measure traffic control, packets delivery ratio and high throughput in AODV protocol which are presented in this project.

KEYWORDS: AODV Ad-hoc On Demand Distance Vector, QoS Quality of Service, MANETs Mobile Ad hoc Networks, Ns2 Network Simulator.

I.INTRODUCTION

AODV (Ad hoc on-demand distance vector routing) is a Source drive type routing protocol. When a source node sent message to a target node without the routing, it sent RREQ (Route Request) first. When the adjacent node received RREQ with the addresses of source node and target node, it judged if it was same with the target node's address. If it was, sent RREP (Route Reply) to source node, otherwise, checking the routings in the rout table that could reach the target node, then send RREP to source node, or continue to flooding send RREQ. AODV protocol can maintain routing nodes through broadcasting hello message regularly. If one link break, it sent ERROR message to nodes, meanwhile deleted broken records or repaired the routing.

Inliterature [1] PF AODV provides better performance in terms of throughput, loss and delay. Future extensions of AODV protocol to add control admission to handle each traffic type separately and determine what kind of traffic should be penalized to free up bandwidth to support traffic priority. Another direction in addition to the idea developed to regulate conflicts caused by more than one procedure launch to ensure handoff phase between neighboring nodes to minimize control load is to introduce a random delay before each node initiates handoff phase, one node initiates this phase earlier than other or to promote nodes near the destination. In [2] CBR traffic, SSAODV is more beneficial at large network. As the number of nodes increases SSAODV take lesser end-to- end delay than AODV due to lesser retransmissions compare to AODV.

In [3] MANETs require a reliable, efficient, and scalable and most importantly, a secure protocol as they are highly insecure, self-organizing, rapidly deployed and they use dynamic routing. IN [4] cross layering approach will help to improve the energy efficiency of the network without degrading the QoS parameters of the ad hoc network. In[5] StAC-multirate protocol adds multiple link transmission rate awareness to the AC and routing method, yet as options to route around briefly low-quality links. Adaptive modulation permits higher SINR links to be exploited by StAC-multirate for admitting additional traffic, yet as facilitating the variation of the packet reception chance to the shadowing-dependent time variant link quality. In [6] the challenges and basic concepts behind QoS routing in

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MANETs and provided a through overview of QoS routing metrics and design considerations. MANETs are likely to expand their applications in the future communication environments. The support for QoS will thus be an important and desirable component of MANETs. In [7] the accurate measurement of the capacity of a multi hop mobile network is an open issue right now. Further study of the 802.11 MAC layer's behavior could be helpful to understand this capacity issue. Also, in a real scenario, shadowing will cause a node's transmission range to vary, and it will not be the ideal circle.

In [8] many cluster based hierarchical algorithms have been proposed for improving QoS Parameters in the ad hoc networks. The need for clustering and the techniques for improving Quality of Service in dynamic MANET. In [9] The QoS metrics incorporated into the routing algorithm are battery life, signal strength, bandwidth, and latency. In [10] a channel-based routing metric is proposed which utilizes the average nonfading duration, combined with hop-count, to select stable links. A channel-adaptive routing protocol, CA-AOMDV,extending AOMDV, based on the proposed routing metric. In [11] a channel-based routing metric is proposed which utilizes the average nonfading duration, combined with hop-count, to select stable links. In [12]the relative strength, weakness, and applicability of existing QoS routing protocols are also studied and compared. QoS routingprotocols are classified according to the QoS metrics used type of QoS guarantee assured.

II. PROPOSED SYSTEM

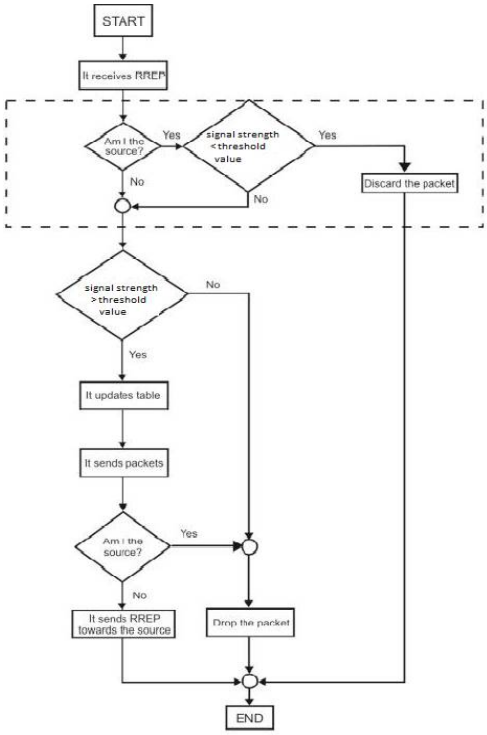

Fig.1 Flowchart of Receiving a RREP Packet Based on signal strength

In proposed method to start the data transmission the source node received the RREP packet. If the signal strength of the node is very low (not capable for data transmission) when the sender do not select that node for data transmission. The packet will be drop. If the signal strength of the node is good (capable for data transmission) when sender select that node for data transmission and data transmission is continued in fig.1. This concept improve the Qos in terms of best effort transmission, low delay, high throughput.

The objective of QoS provisioning is to accomplish a more deterministic system conduct with the goal that data conveyed by the system can be better conveyed and system assets can be better used. QoS provisioning in MANETs is critical keeping in mind the end goal to bolster continuous correspondences, for example, sound and video. Yet,

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provisioning of QoS over remote systems is much more difficult than for wired systems in light of fluctuation of remote connections, hub versatility, and absence of focal coordination expert for QoS and channel task, constrained battery control, multi jump correspondence and conflict for getting to the remote channel. Nature of administration some of the time alludes to the level of nature of administration, i.e. the ensured benefit quality.

III.TRANSMISSION RANGE OF NODE

Transmission scope of a hub alludes to the normal most extreme separation in regular working conditions between two hubs. We can change the radio range by fluctuating the transmitter control (RADIO-TX-POWER) or the collector control (RADIO-RXTHRESHOLD), it is some way or another fitting to change the transmitter control, in light of the fact that the recipient control depends of the radio environment while we can control the transmitter control.

The information rate is 2 Mbps while the information parcel size is 512 bytes. The information parcels are send at a rate of 4 bundles/sec by every source. Every recreation is executed for 30 minutes. Be that as it may, information parcels are created by CBR sources just amid most recent 800 seconds of recreation time. To maintain a strategic distance from starting transient issue and the issue with RWMM show as detailed in, in our recreations we dispose of the underlying 1000 seconds of reproduction period. Five keeps running with various seeds have been led for every situation and gathered information is arrived at the midpoint of over these runs. A synopsis of multi-bounce organize striking reenactment parameters for both situation are displayed in results.

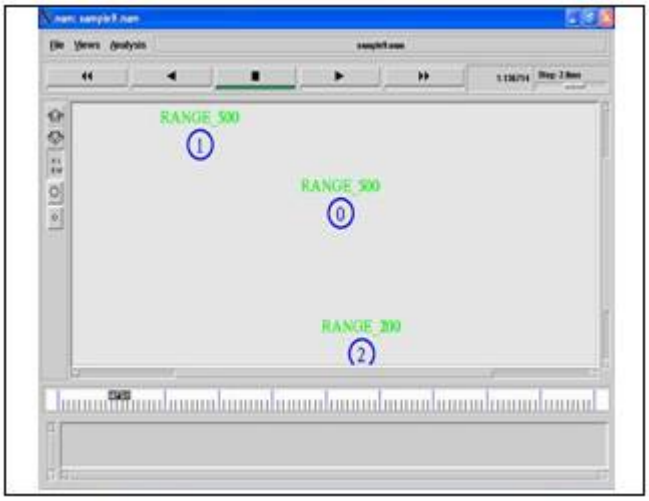

Fig.2 Different Transmission Range of Node

Signal strength, in telecommunications, is the magnitude of an electric field at a reference point, which is located at a significant distance from the transmitting antenna. This is expressed in terms of the signal power of the receiver or the voltage per length received by the reference antennain telecommunications, particularly in radio frequency, signal strength (also referred to as field strength) refers to the transmitter power output as received by a reference antenna at a distance from the transmitting antenna.

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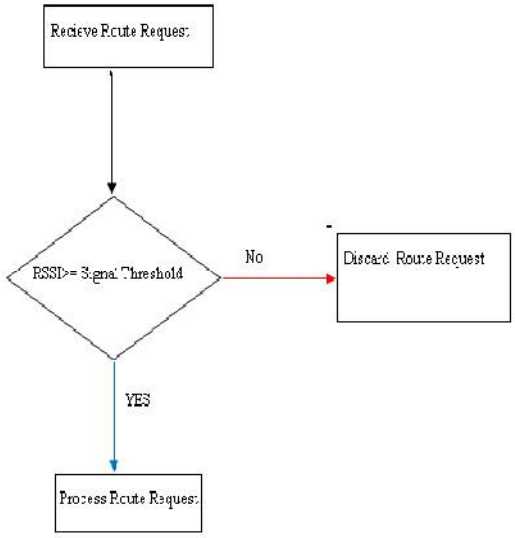

Fig.3 Processing of Route Request based on signal strength

The source sends the RREQ packet to his entire neighbor after that intermediate node does following steps:

First it checks the signal strength of the packet if it is greater than SIGNAL THRESHOLD value then it process the request otherwise it discard this RREQ packet then intermediate node checks its routing table for the desired destination. If it found then send a reply to the source otherwise it forwards the RREQ to his neighbor nodes.

IV. RESULT AND DISCUSSION

In Fig 4 The simulation results prove that better throughput is obtain compared to previous techniques.

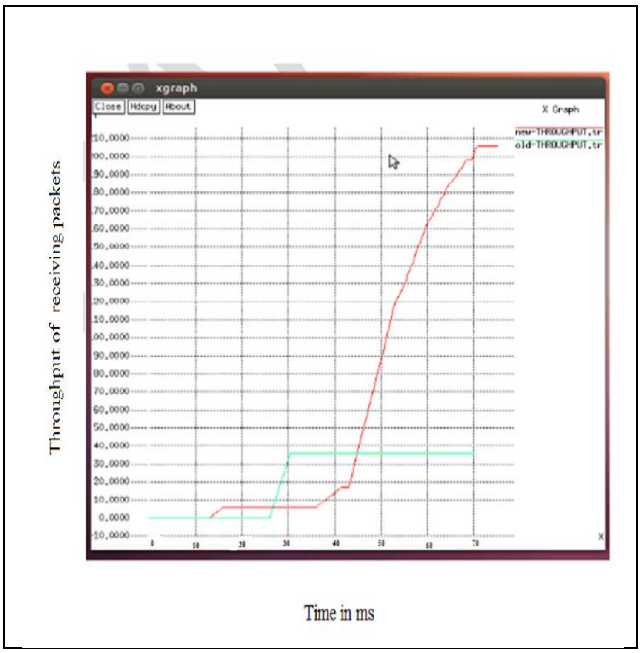

Fig.4 Simulation Time vs. Throughput of Receiving Packets.

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In Fig 5 the blue line indicates the proposed system and red line indicates the existing system with respect to packet delivery ratio and transmission rate.

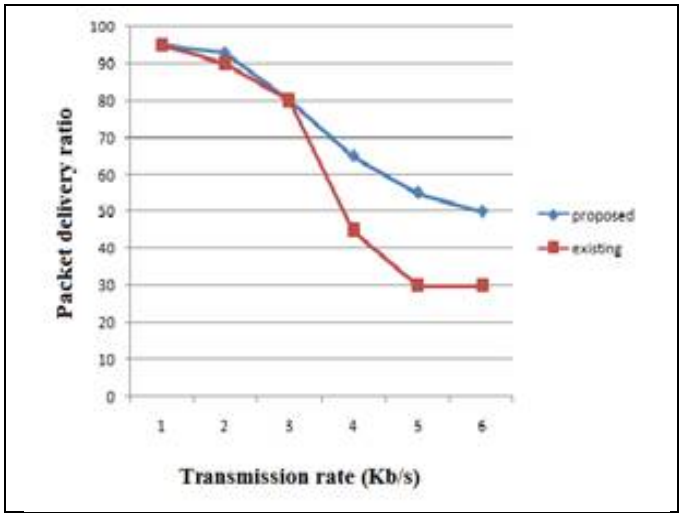

Fig.5.Packet Delivery Ratio Vs Transmission Rate

In Fig 6 the red line indicates the proposed system and blue line indicates the existing system with respect to average end to end delay and pause time.

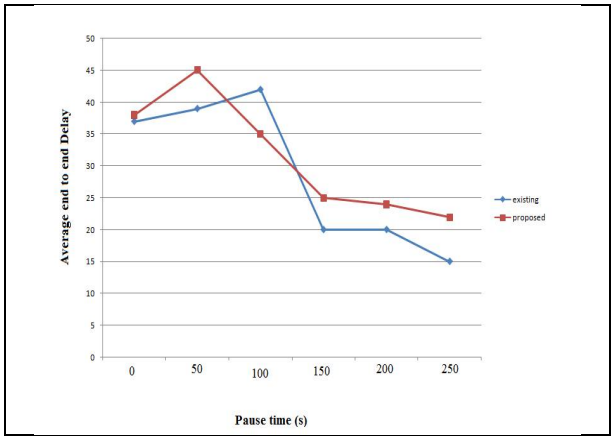

Fig.6.Average end to end Delay Vs Pause Time

V.CONCLUSION

In this paper investigated a QoS improvement through signal aware routing using AODV protocol. The AODV protocol is reactive protocol. It contains two phases, route discovery and route maintenance. These phases are used to predict the disconnection of data flow. The main concept of the project is Ad hoc On-Demand Distance Vector (AODV) routing protocol during the route selection process, the sender determines the best signal strength node capable enough for best effort transmission. If the signal strength of the node is very low (not capable for data transmission) when the sender do not select that node for data transmission and the packet will be drop. If the signal strength of the node is good (capable for data transmission) when sender select that node for data transmission and the data transmissions are continued. The simulation results prove that the proposed method improve the Qos in terms of best effort transmission, low delay, high throughput.

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REFERENCES

1. BenyahiaAbderezzak andSedratiMaama, " Predict Link Failure in AODV Protocol to Provide Quality of Service in MANET" International journal computer network information security ,vol. 3, pp.1-9,2016.
2. Nitin Manjhi1 and Nilesh Patel2, "Signal Strength Based Route Selection in MANETs" International Journal of Computer Science and Telecommunications Vol. 3, pp.1-4, 2012.
3. AvinashTripathiand Anjnesh Kumar Tiwari, "Secure Data Transmission in MANET Routing Protocol" International Journal Computer Technology and Applications Vol. 3 (6), pp.1-7, 2010.
4. Remya K and Sangeetha C,"ASurveyon Energy Aware Routing Issues and Cross Layering in MANETS"IJECT, Vol.5, pp. 47-54, 2012.
5. SarikaDongre, "QoS Aware Routing and Admission Control in Shadow Fading" International Journal of Design Applications, vol.144, pp.0975-8887, 2012.
6. K.N.S.L. Kumar, G. Naga Satish, and P. Suresh Varma,"Challenges and Advances in QoS Routing Protocols for Mobile Ad Hoc Networks", International Journal of Advanced Research in Computer Science and Software Engineering Vol.3, pp.1-7, 2013.
7. B. Heinzelman, "QoS-Aware Routing Based on Bandwidth Estimationfor Mobile Ad Hoc Networks", International Journal of Selected Areas in Communications vol. 23, pp.561-572,2005.
8. Lakshmi Rajamani andNarendar Reddy Mandhadi, "QoS aware Hierarchical Multi-hop Routing Protocols in MANETs", International Journal of Computer Science & Engineering Survey (IJCSES), Vol.4, pp.1-8, 2013.
9. Knut-Helge Vik and Sirisha R. Medidi, " Quality of Service-Aware Source-Initiated Ad-hoc Routing" , International Journal of Electrical Engineering and Computer Science, vol.4,pp.1-10,2014.
10. Mr.B.V.Baiju and Mr.SudhakarRajendran, "Channel Aware Routing Protocol for MANET", International Journal of Power Control Signal and Computation (IJPCSC), Vol.3, pp.1-7, 2012.
11. Stephane Lohier and Sidi Mohammed, "A Reactive QoS Routing Protocol for Ad-hoc Network", International Journal of Selected Areas in Communications, pp.1-7, 2012.
12. Sanjeev Gangwar and Dr.Saurabh pal, "Mobile Ad-hoc Networks:AComparitve Study of QoS Routing Protocol",IJCSET,vol.2,pp.1-5,2012.
13. Philipp Becker, "QoS Routing Protocols for Mobile Ad-hoc Networks-A Survey", International Journal of Computer Science & Engineering Survey (IJCSES), pp.1-19, 2007.
14. AlameluNachipan and G.Santhi, "A survey of QoS Routing Protocols for Mobile Ad-hoc Networks", International Journal of Computer Science & InformationTechnology, vol.2, pp.1-12, 2010.
15. Chenxi Zhu and M.Scott Corson, "QoS Routing for Mobile Ad-hoc Networks", International Journal of Computer Science and Telecommunications, pp.1-10, 2002.