



Analysis and Enhancement of Energy Auditing Routing for Identification of Broken Paths in Mobile Adhoc Networks

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ABSTRACT:

Mobile ad-hoc network is a network with two or more number of nodes with restricted energy constraint, the routing protocol is an important criterion to be considered for evaluating the performance of the MANET. Hence designing the scheme that supports energy efficient is much needed for the high dynamic MANET environment concerned. all nodes are movable nodes, which cause many problems for transmitting data packets sequence manner, since the mobile nodes are connected with each other, during movement nodes makes the connection failure or damage. This kind of link damage is occurred by nodes that are travel out of range from network limit, also affect the packet success rate. This reducing the network lifetime, detection efficiency, and increases the communication overhead. Proposed Novel energetic routing method is applied to offering the energetic routing path along the relaying nodes. The broken paths are easily identified, and proceed the successful communication. The Master node selection algorithm is constructed to discover the optimal node, faultless packet transmission process between the relaying nodes in the network environment. This method chooses the master node. Energy based heavy node is also known as the master node, which are used to perform problem free communication process in the mobile network. This algorithm only accept the higher energy successful node, reaming nodes are lower energy node which are does not perform communication process. This increases the network lifetime, detection efficiency and reduces the communication overhead. The reliable transmission and reception are attained by transferring information through route nominated by the suggested system verified by means of NS-2 simulator.

Keywords: *Novel Energetic Routing method, Master node selection algorithm, broken path detection scheme.*

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I. INTRODUCTION

Individual The propagation of mobile nodes guide to the improvement of mobile ad hoc network structure. These networks have a set of wireless mobile nodes which are energetically sharing information between nodes, nodes without the dependence on any middle management or permanent sink node in network environment. Self-organizing behavior permit mobile network is used to be without difficulty to recognized in a wide variety of dissimilar conditions, like an release, urgent situation process, and battle ground packet transmission [1]. Though, mobility and self-organizing characteristics of mobile network basis the modify the topology in an irregular method. Most of the time, every mobile node with restricted communication need to search for support of its intermediate nodes for packet sharing process. As a simulation output, the characteritiics of mobile ad hoc network mainly baseds on the trustworthy communication between mobile nodes [2]. Throughout the previous decade, wide spread survey can be performed on communication in mobile ad hoc networks, that should be lead to various established routing techniques. Though, all these communication techniques are constructed with an statement so as to every nodes are entirely protected and agreeable to collaborate with remaining nodes. Thus, they are susceptible to communication interference intruders which are does not supportive else break the rules for routing [3]. Around many kinds of communication interruption by intruder which should be without difficulty introduced in mobile network, black hole, and worm hole intrusion. In energetic black hole intruder which is forever maintain that they contains the minimum distance route to the target node, yet whether they does not contain any suitable communication details [4]. This attackers can pull towards for significant quantity of data packets and loss them mutely. The attackers support for packet have communication details, which are forward to target node. Except reject all broadcasting data packets. hole intruders, as an alternative of dropping all forwarding packets, intruders can selectively broadcast these data packets which can improve its individual protection [5]. This hole intruders may alternatively perform better and wrost. However, each black hole intruders and worm hole intruders must not give wrong data into network, this only disturb the communication process [6]. Features of mobile networkhaving an highervelocity and regular link failures consequence in minimum transmission rate, and maximum packet latency. Consider to maximum demand of mobile network for transferring data packet, guide to the require to offerquality of services maintain [7]. The performance of mobile network such as their dynamic topology joined with the quality of the wireless communication intermediate make worth of Service situation a difficult problems [8]. The major intend of quality of service is used to present better data delivery service for the uses that require it by ensure enough transmission rate, selfish node cause delay, and smooth minimizing data drop. The problem to begin a link with condition across many domain operate by dissimilar node is an significant and difficult investigation [9]. In established routing, the major plan of communication scheme is used to discover the minimum coast route from sender node to receiver node, while quality of service based routing has two goals. The initial goal is used to discover the route that convene with quality of service needs iskknown as possible routes. The nex taim is to provide the global network source consumption so that network can control as many quality of service request packet as potential [10]. The main problem is to obtaining quality of service in the mobile network is consider to the regular quality of mobile ad hoc networks has a maximum node speed, distributed channel access and weak signal strength. This whole factor can be defeat with the assistance of various protocol layers to obtain quality of service [11]. Residual of the paper is designed as follows. Part II provides related works. In part III, to present the details of proposedNovel energetic routing method is used to contribution the energetic routing path along the intermediate nodes. The Master node selection algorithm is planned to find out the optimal node, faultless packet transmission process among the relaying nodes. Part IV provides simulation performance results analysis obtained under various metrics. At last part V concludes the paper with future process.

II.RELATED WORKS

Cai,R.J., et al., [12-17] Presenting an evolutionary self-cooperative secure method which reproduce communication process, and relies on secure level details to avoid different communication trouble by intruders. This method, the mobile nodes can share data packet frequently in secured and measure accepted secured data packet depends on its own cognitive measurement. Ultimately, every node energetically evolve its cognition to

keep out mis behaving individual [18-23]. Generally smart feature of this evolutionary self cooperative securing scheme is have an internal intruders be familiar with the protection techniques operates, which does not negotiation the network structure. To estimate the characteristics of this technique achieves an better network scalability with the communication effectiveness over intruders in mobile network. Chrysikos, T., et al., [24-26] presenting framework is the inherent path features and propagation abnormality which diverge from unsophisticated route damage assumption like an free space model else any comparable deterministic method which undervalue the alteration of the received node energy level. It denotes a logically established scheme for calculating the trustworthiness of the Wireless Information-Theoretic resolution in an barrier intense topology anywhere no central communications survive, as a output of a usual else artificial failure, anywhere harsh sufferers in packet transmission, and blast interfere with trust, and trust worthy packet transmission. Thus, a strong implement to the basis of Public protection is obtained. Jain, A. K., et al., [27-31] present routing method provides the packet transmission in mobile ad hoc network is higher protected, this should exploring an method depends on protected scheme to safe mobile network process over intruders like an black hole attack, also DOS attack. This scheme identifies an misbehaving node by evaluating protection rate of the node of mobile network. This method use creation of imitation data packets by the sender node and transmitt to the target node. Difficulty is unavailable as, to expand an approach which is protected and improve the characteristics of spontaneous communication procedure group. Kulkarni, S. B., et al., [32-34] proposed hope value updation scheme is used for group head node have trust value is restructured or re-energized for a time gap so as to choose the recent cluster head nodes are always travelling. The efficiency of this algorithm in distinguished with Power Aware On-demand Multicast Routing scheme is estimated among the experiment. The present method is compared with existing method lesser energy usage, and obtains minimum packet latency. Xia, H., et al., [35-41] proposing a narrative light-weight slanted trust protected network structure, that is separated into protected evaluation and protected forecast. The communication of node protection assessment is depends on node's historical characteristics. Then utilize the achieved secure data series, to launch the weighted Markov stochastic sequence calculate to forecast node's protection for potential choice obtaining process. Simulation is performed to measure the efficiency of the present protection model [42-46]. As an significant protection uses, depends on the model On-Demand Multicast Routing technique, to build four main enhancements that take the problem of protection into reflection, and present a novel protection depending communication method is known as the On-Demand protection depending Multicast communication method. Rao, A. R., et al., [47-51] presenting to plan a reinforcement course foundation for Quality of service directing convention. In this convention, the potential disappointments of system and hub are recognized and a reinforcement directing is started. For identification of disappointments, a way assessment work is resolved in view of the measurements vitality deplete rate and obstruction, blockage status are estimated [52-59]. The essential way fulfilling the Quality of service parameters hub's static asset limit, dynamic resource accessibility, neighborhood quality, and connection quality is built up. When disappointment is recognized, back up courses are built up and transmission is diverted on these back up courses. Recreation results demonstrate that the proposed convention has lessened recuperation delay and enhanced transmission rate. Sivakami, R., et al., [60-64] An enhanced method for anchored and solid correspondence in military utilizing mobile network is displayed in this work. This work is towards enhancing the security of the message transmission among different courses by including the most dependable courses in the dynamic way sets through the distinguishing proof and expulsion of Byzantine Faults. The course revelation process with paired inquiry testing method is strong to Byzantine disappointments caused by individual or conniving hubs. Malignant connections are recognized and these connections are then stayed away from by multiplicatively expanding their resource level. Maekawa, T., et al., [65-69] propose a communication scheme which utilizes unidirectional connections for building up ways to enhance the availability of systems and exploit multipath directing procedure. Notwithstanding, utilizing unidirectional connections presents new issues, for example, location of connection detachment. Keeping in mind the end goal to take care of these issues, we propose three components; de-visiting around a unidirectional connection, recognizing join disappointments by ants, and visually impaired retransmission. Reenactment tests demonstrated that the network expanded and a larger number of packets could be conveyed than AODV which did not utilize unidirectional connections. Yoon, S. J., et al., [70-72] propose two data blocking versatile geocasting plans for strategic portable specially appointed systems. Our first plan called the "Disappointment Based Learning" in which the sender hubs don't know about the sticking assaults and endeavor to send packets over and over. This strategy is upgraded by

another plan called Bypass by Anchor Point with data about the sticking assault which sent to the source hub, to such an extent that it can proactively maintain a strategic distance from the sticking locale for effective packet conveyance [73-75]. The recreation results demonstrate that our proposed plots essentially beat single and double way geocasting conventions under sticking assault. Scazzoli, D., et al., [76-79] heartbeat convention is presented along every way to ensure convenient location of any single disappointment. We present an answer that can be actualized utilizing open source programming and business off-the-rack equipment, which makes this methodology reasonable for systems with an extensive number of heterogeneous sensors. Results detailed in this paper demonstrate some example estimations and additionally the execution assessment for our pulse calculation as far as dormancy between a disappointment and a full recuperation of the framework.

III. OVERVIEW OF PROPOSED SCHEME

In the mobile computing, every mobile nodes are unstable nodes, that makes various issues for broadcasting data packets series manner, while the mobile nodes are linked with each other node, throughout relay nodes make the link failure else damage. This kind of connection failure is occurred by nodes, which are travel out of range from network limitation, also affect the packet success rate. The multipath routing process must not recover the link failure. This minimizing the network lifetime, detection efficiency, and improves the communication overhead. Then proposed Novel energetic routing method is used to contribution the energetic routing path along the intermediate nodes. The failure paths are without difficult to identified, and continue the successful packet transmission. The Master node selection algorithm is planned to find out the optimal node, faultless packet transmission process among the relaying nodes in the network structure. This way efficiently selects the master node. The energy based important node is also known as the master node, which are used to perform trouble free packet transmission procedure in the mobile network. This algorithm only recognize the higher energy successful node, remaining nodes are lesser energy node that are does not perform packet forwarding procedure. This increases the network lifetime, detection efficiency and reduces the communication overhead.

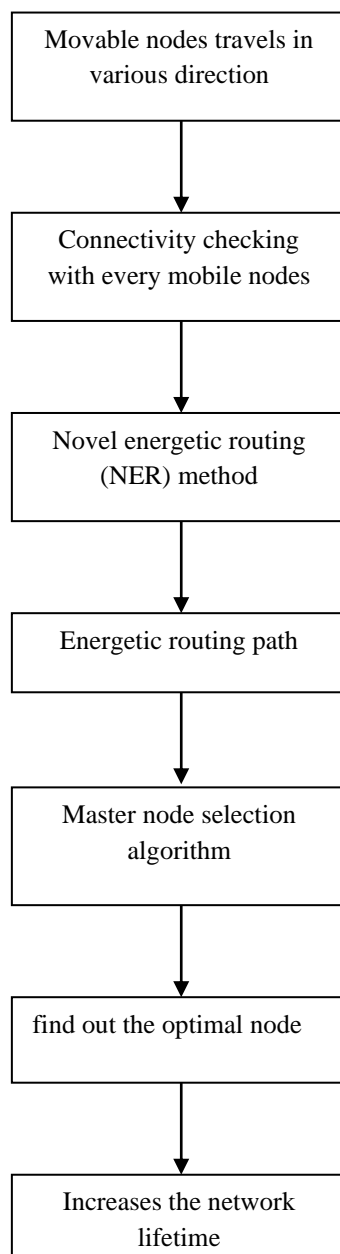


Figure 1: Block Diagram of Novel energetic routing method

Figure 1 shows the proposed Novel energetic routing) method. Movable nodes travels in various direction along the network environment, Connectivity checking with every mobile nodes. Novel energetic routing method is used to contribution the energetic routing path along the intermediate nodes. This avoids the damage path communication process. Master node selection algorithm is constructed to find out the optimal path. This algorithm only recognize the higher energy successful node, remaining nodes are lesser energy node that are does not perform packet forwarding procedure. This increases the network lifetime, detection efficiency and reduces the communication overhead.

3.1 Movable nodes travels in various direction

Mobile nodes are move frequently, using transmission control scheme to a mobile nodes raise a recent concern, the maximum energy usage for simultaneous utilize of multiple network interconnections. Meantime, the mobile nodes have very restricted energy level consider to the battery storage equipment. Regrettably, the baseline data transmission only be familiar with the link establishment of routes, and not its energy level, it just simply make completely utilize of multiple network connections for simultaneous multipath communication, lacking of

allowing for the energy usage of every routes. The sightless energy consumption in packet transmission can improves the energy usage of mobile nodes and reduce its network lifetime. Sequence to improve performance on a battery energy level restricted mobile node, it is essential to optimize the multipath consumption and constructrouting pathmaximum effective routing. Where O_s optimal node selection, Er energetic routing, Mn master node.

$$O_s = Er + Mn - (1)$$

In fact, suitableavoiding the consumption of poor-performance routes, and the subsequent network connections may probablyminimize the energy usage in the packet transmission, the mobile nodes are move frequently. Though, the standard transmission scheme only knows an energetic elsenot a energetic route, it does not differentiate the poor-performing routes, and thus additionaldoes not quiet the equivalent network connections for energy discount. The aim of routing is used to optimize data transmission scheduling, and support ofdata transmission be maximum energy efficient, by equallyallowing for the transmission status, and the energy price of everyroute. Additional exactly, to the routes marked as not energetic, this also avoids the routes with potentially failure status from being additional used by data transmission. Where Mt mobile node travels, sr stable routing.

$$Er = Mt * sr - (2)$$

In addition to muting the potentially failure network connections for use of data transmission success ratio, and energy save, this also process data packet as maximumpotential from a more energy usage route to a lesser one sequence to achieve the principle of energy reserves. The quantity of use data that can be off-load to the energy-efficient route based on every energy-efficient routes. In movable node communication, it ispreviouslyrecognized, all of the individual route has its own routing to maximum the total count of data packet, the sender node can allocate to it for jamming control. Where $T(n) * C(n)$ node travel, and connection establishment, SnR stable node routing.

$$Mt = T(n) * C(n) - (3)$$

$$Mt = n(T * C) - (4)$$

By equally allowing for together the transmission status, and energy level of every route, this routing can attain potential energy-savings, while probably rejecting the happening of network traffic in the multipath communications. furthermore, sequence to avoid an failure, whether all the routes are marked as connection failure, the route with the minimum energy range will be used by the sender node for data success rate. This operation can guarantee that routing obtains better energy-savings is distinguish with each routes within the network link have probably failed.

3.2 Novel energetic routing method

A route under a connection failure can regularly communication process time exceeds, and it without difficulty to turn into a broken route. Throughout, this path organization is very straightforward and just inherit Transmission control protocolprocess for broken routeidentification. As a performance, the intruded and failure route may still be measured as energetic and it is used for data rebroadcasting awaiting the transmission keep-alive time has expire, thatrequires quite a maximum time to state a failure route, and thus guide to severeissues.

$$Mt = n1(T * C) + n2(T * C) + ..nn(T * C) - (5)$$

$$Mt = \sum n(T * C) - (6)$$

While new data packet is assigned to a broken failure for forwarding, the sender nodeunavoidablyexecuteredundant rebroadcastingthrough the failure route; and performance communication. The communicationdistruption in the failure routecertainlyinvolve the broadcasting efficiency of previous stable routes, and corrupt the characteristics of routing process. This can apply the maximum amount of

retransmissions to observe the every route status. The huge amount of rebroadcasting control the count of times that a data section should be rebroadcasted by the sender node. whether the retransmission count on a route achieves the value of more data rebroadcasting, then maximum count of packet transmission alters the route to the motionless status. Though, the connection failure detection scheme is also called as solitary sample-based failure identification scheme.

$$sr = SnR - (7)$$

To enhance on data transmission process by detecting a failure path as rapidly as potential and avoiding it from individual additional utilize in the multipath communication process. To this communication process ending creates a route error count technique, and a recent potentially broken status to data transmission process. The design of network in which the time instance among rebroadcasting is twice every time. Because the data transmission process is exponential backoff methods which improves the rebroadcasting time gap at two times once have a rebroadcasting to be introduced, motivated by this characteristics, this also improves the packet transmission at twice over while the rebroadcasting timer terminate for every path within the transmission of packet, the connection do set rebroadcasting quantity.

$$Er = \sum n(T * C) * SnR - (8)$$

Fix the path status as energetic, whether the rebroadcasting timer exceeds then fix the path, end whether it mark path status as not a energetic. The route failure count-based identification scheme. Consequently, the use of energetic node can basis a route under failures, and with permanent or explode time expires to fastly arrive at the maximum data rebroadcasting rate, which the model route establish communication procedure, while the pec significance on a path arrive at the value of maximum data rebroadcasting. The route is denoted as potentially broken down status. This does not use any potentially failure route for use of data packet broadcasting, this only sends data packets to further identify the link establishment of the potentially failure routes. In this way, this do not only timely identify dissimilar types uninterrupted else error free of timeout, except it also probably cut down the time for route status identification, and evolution. Novel energetic routing (NER) method is used to contribution the energetic routing path along the intermediate nodes. The failure paths are without difficult to identified, and continue the successful packet transmission.

Algorithm for Novel energetic routing (NER) method

Step1: Construct the many routes from source to destination node

Step 2: for each node find neighbor node

Step3: Check the connectivity between nodes in the routing path

Step 4: *if{ node == broadcast }*

Step 5: stable path is discovered

Step 6: *elseif{ node == rebroadcast }*

Step 7: unstable path is discovered.

Step 8: End if

Step 9: End for

3.3 Master node selection algorithm

The movable nodes are presented in network which breakdown occur consider to velocity of the nodes. Beginning the group of relaying nodes, individual can selected on the origin of breakdown rate and least processing time instance. The Master node's need to fix the threshold value include two metrics specifically breakdown rate and higher processing time instance. The nodes contain equivalent else fewer values than the threshold are chosen as relay nodes by the master node. In master node have to set threshold value of connection damage and greatest processing time instance. The node is chosen as a relaying node as it energetic rate is minimum than the threshold rate, correspondingly this node is also chosen as relay nodes. Where O_{pn} optimal node selection.

$$Mn = O_{pn} - (9)$$

$$O_s = \sum n(T * C) * SnR + O_{pn} - (10)$$

The relaying nodes contain breakdown rate is greater than threshold value, consequently they are does not chosen as relay node. At the present the chosen relay nodes are beginto procedits communication process by towards the inside the amount of packet transmission in contribution. whetherthroughoutperforming communication process, it travels out beginning its position then possibility of breakdownoccur at that indication. To overcome this issur a novel energetic routing methodis proposed that defeat failure problem consider to velocity of the nodes. The algorithm inserts a new metrics to the active master node time that is the resulting time to avoid failure of communication.

Master node selection algorithm

Step 1: monitor the node threshold level for failure rate.

Step 2: for each node discover master node

Step 3: *if {failurethres == low}*

Step 4: These nodes are stable link node

Step 5: *elseif {failurethres == high}*

Step 6: These nodes are unstable link nodes.

Step 7: end if

Step 8: reduces communication overhead

Step 9: End for.

The master node selection algorithm is constructed to detect the link failure node, also to select the master node, which perform energetic routing. This increases the network lifetime, detection efficiency and reduces the communication overhead.

Packet ID: Packet ID contains the every mobile node communication details. the node location, node connectivity, and transmission rate of nodes are maintainedin specific routing table.

Source ID	Destination ID	Movable nodes travels in various direction	Connectivity checking with every mobile nodes	Novel energetic routing method	Decisive connection identification algorithm
3	3	2	4	2	2

Figure 2: proposed Novel energetic routing method Packet format

In figure 2: the proposed Novel energetic routing (NER) method packet format is shown. Here the source and destination node ID field each takes two bytes. Third one is Movable nodes travels in various direction along the network environment takes two bytes. Connectivity checking with every mobile nodes. In fourth field takes four bytes. Novel energetic routing (NER) method is used to contribution the energetic routing path along the intermediate nodes. This avoids the damage path communication process. In fifth occupies two bytes. The last field takes two bytes, Master node selection algorithm is constructed to find out the optimal path. This increases the network lifetime, detection efficiency and reduces the communication overhead.

VI. PERFORMANCE EVALUATION

Simulation Model and Parameters

The Novel energetic routing method is simulated with Network Simulator tool (NS 2.34). In our simulation, 100 mobile nodes are placed in a 1077 meter x 1065 meter square region for 25 milliseconds simulation time. Each Mobile node goes random manner among the network in different speed. All nodes have the same transmission range of 250 meters. CBR Constant Bit Rate provides a constant speed of packet transmission in network to limit the traffic rate. DSDV Destination sequence distance vector routing protocol is used to contribution the energetic routing path along the intermediate nodes. Table 1 shows Simulation setup is Estimation.

Table 1: Simulation Setup

No. of Nodes	100
Area Size	1077 X 1065
Mac	802.11g
Radio Range	250m
Simulation Time	25ms
Traffic Source	CBR
Packet Size	512 bytes
Mobility Model	Random Way Point
Protocol	DSDV

Simulation Result:

Figure 3 shows that the proposed Novel energetic routing method is used to offering the energetic routing path along the intermediate nodes compared with existing SOL [21] and TES [22]. Master node selection algorithm is constructed to find out the optimal path. This algorithm only recognize the higher energy successful node, remaining nodes are lesser energy node that are does not perform packet forwarding procedure. This increases the network lifetime, detection efficiency and reduces the communication overhead.

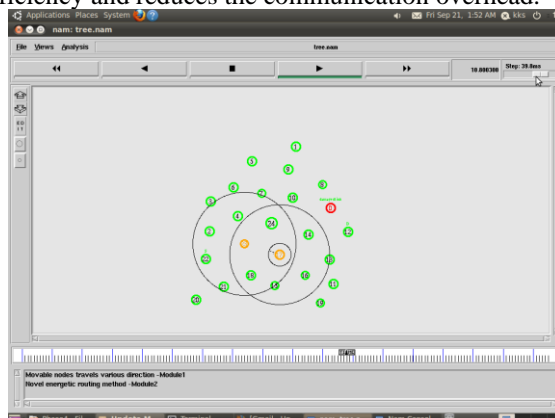


Figure 3: Proposed NER Result

Performance Analysis

In simulation to analyzing the following performance metrics using X graph in ns2.34.

End to End Delay: Figure 4 shows end to end delay is estimated by amount of time used for packet transmission from source node to destination node, Master node selection algorithm is constructed to find out the optimal path. In proposed NERmethodend to end delay is minimized compared to Existing scheme ECAR, ERLN, NLEC, SOL, and TES.

$$\text{EndtoEndDelay} = \text{EndTime} - \text{StartTime}$$

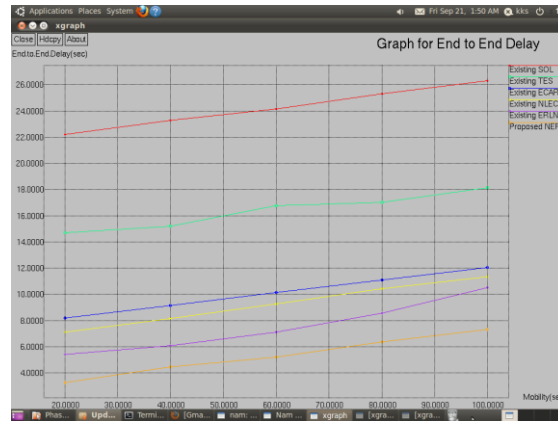


Figure 4: Graph for Mobility vs. End to End Delay

Communication overhead: Figure 5 shows communication overhead is minimized in which sender transmit packet to receiver node, Master node selection algorithm is constructed to find out the optimal path. In proposed NERmethodcommunication overhead is reduced compared to existing scheme ECAR, ERLN, NLEC, SOL, and TES.

$$\text{Communicationoverhead} = (\text{NumberofPacketLosses/Received}) * 100$$

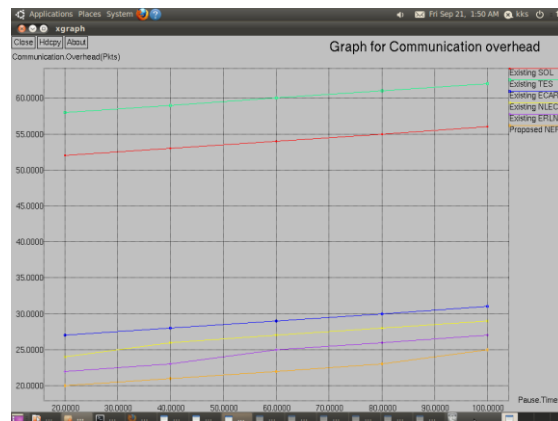


Figure 5: Graph for Pause time vs. Communication overhead

Throughput: Figure 6 shows throughput is measured by no of received from no of packet sent in particular speed. Node velocity is not a constant, simulation mobility is fixed at 100(bps). In proposed NERmethodPacket delivery ratio is improved compared to Existing scheme ECAR, ERLN,NLEC, SOL, and TES.

$$\text{Throughput} = (\text{Numberofpacketreceived/Sent}) * \text{speed}$$

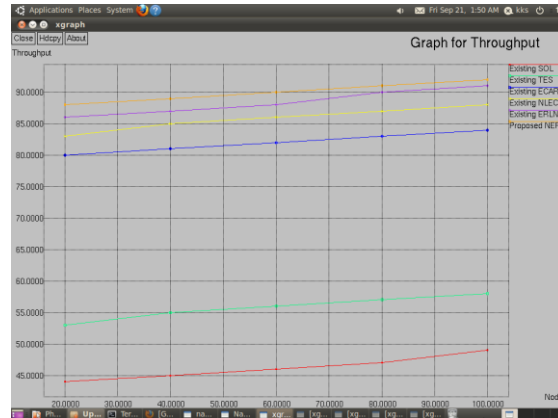


Figure 6: Graph for Nodes vs. Throughput

Detection efficiency: Figure 7 shows Detection efficiency, failures are occurred for efficient routing path based local neighboring node allocation,Novel energetic routing method is used to obtaining the stable routing path through relay nodes in the network. In proposed NER method detection efficiency is improved compared to Existing scheme ECAR, ERLN, NLEC, SOL, and TES.

$$\text{Detectionefficiency} = \text{attackdetectionrate/overalltime}$$

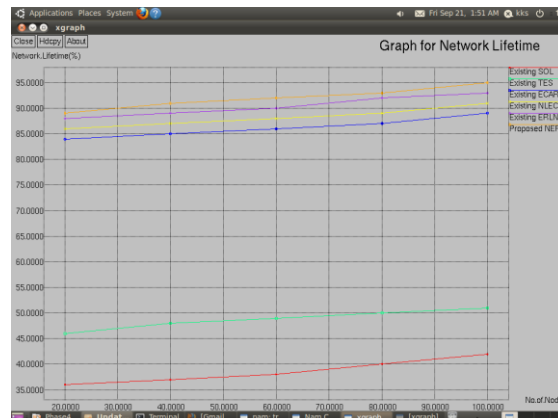


Figure 7: Graph for Nodes vs. Detection efficiency

Network Lifetime: Figure 8 shows that Lifetime of the network is measured by nodes process, the time taken to utilize network from the overall network ability, Novel energetic routing (NER) method is used to offering the energetic routing path along the intermediate nodes. In proposed NER method network Lifetime is increased compared to Existing scheme ECAR, ERLN, NLEC, SOL, and TES.

$$\text{Network Lifetime} = \frac{\text{time taken to utilize network}}{\text{overall ability}}$$

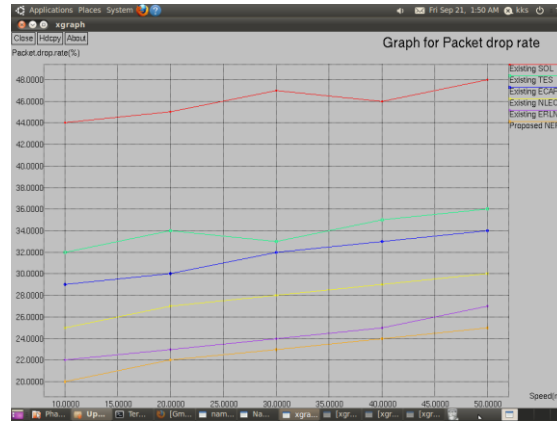


Figure 8: Graph for Nodes vs. Network Lifetime

Packet drop rate: Figure 9 shows that Packet loss of particular communication in network is calculated by nodes loss packet with link breakdown is overcome by using this Novel energetic routing (NER) method. In proposed NER method Packet drop rate is reduced compared to Existing scheme ECAR, ERLN, NLEC, SOL, and TES.

$$\text{Packet drop rate} = \left(\text{Number of packet} \frac{\text{dropped}}{\text{Sent}} \right) * 100$$

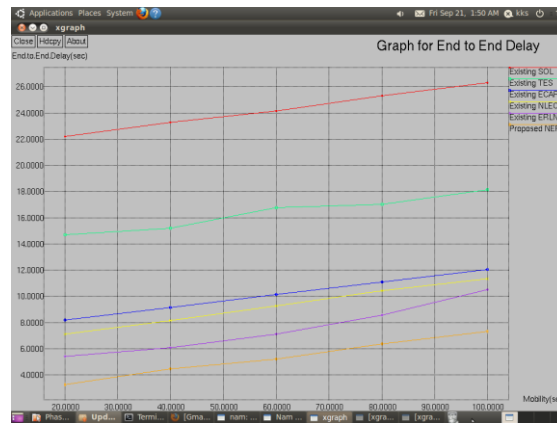


Figure 9: Graph for Speed vs. Packet drop rate

V. CONCLUSION

The system we projected in this paper is the much essential routing methodology in the highly dynamic mobile ad-hoc environment, all nodes are unstable nodes, that creates a lot of issues for broadcasting the data packets seriously, because the mobile nodes are linked with each other neighboring node, when the movement of mobile nodes make the link breakdown. This routing mechanism applied vital measures directs to path loss in mobile ad-hoc network whereas determine path on the request. This type of link breakdown is made by mobile nodes, which are move out of range from network area limitation; also have an effect on the packet delivery. This minimizing the network lifetime, detection efficiency, and improves the communication overhead. Proposed Novel energetic routing method is applied to achieving the energetic routing path the length of the intermediate nodes. The breakdown routes are simply detected, and continue the failure free packet transmission. The Master

node selection algorithm is designed to determine the optimal node, flawless packet communication between the relaying nodes in the network structure. This method selects the master node. Energy based high capacity node is also known as the master node, that are used to proceed difficulty free routing. This algorithm need to permit the higher energy successful node, other nodes are lower energy node that are must not proceed routing. This increases the network lifespan, detection efficiency and minimizes the communication overhead. In future work use abnormal path avoiding technique is applied to analyze various parameters.

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