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# Link Interposition Detection Based Revamped Routing in Manet Based on Buffer Efficient Restore Connectivity

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**ABSTRACT**

In MANET mobile nodes communicate with each other in network, widely used in Military applications. Mobile node communication lot of connectivity issues, there is out of coverage between network causes some interposition during packet transmission affects overall performance loss. In this paper proposed Link Interposition detection based revamped routing (LIDRR) Algorithm. In first part analyze novel the mobile node connectivity in updated node position, mobile nodes move randomly along the network with different speed, so connectivity is vital role in communication. Second part Detect abnormal activities of nodes in network, connectivity interposition damage the data transmission, that time nodes goes to abnormal situation. Last part Link disturbance is removed based on revamped routing path in mobile network, with help of node buffer. It improves the network stability and throughput.

***Keywords:*** Link interposition Detection, Revamped routing, link establishment, node position updating, and node buffer.

## I. INTRODUCTION

MANET is a self processing network in mobile network has many relay nodes from source node to destination node in available path. Packet latency occurred in some transmission because of insufficient capacity of node or connection between nodes. Nowadays MANET normally used in several applications such as military and security based applications. Mobile nodes continue its position changing affects lot of process such as network overhead increases and connection breakage due to packet loss occurred.

Mobile nodes have dynamic environment it move dynamically or it grip the position of node each node establishing different connectivity. End of process cause the instability and minimize reliability of the network process. Nowadays research focus to main stable and reliable path for packet transmission. Present a navigation process to creation is very difficult because it consumes more power, node position updated every time. it need to analyze the end to end delay, transmission ratio. Probability based method gives higher probability to stable path and give lower probability to minimum instable path.

In minimum reliable wireless transmission connection shows complex spatial and temporal activities. Lot of routing protocol are designed to obtain realistic link layer methods. Present accumulative of distributed neighbor congestion state with connection stability, nearest neighbor availability, end to end delay for each transmission in particular on path [1], except this mechanism want to capture the each packet transmission and monitor the packet loss with delay time in sequence manner. Proposed have a type of dynamic supportive communication method and optimized physical layer model to enhance the strength of upper transmitting algorithm, but it achieves maximum performance in deployment of node design in simulation [2]. Proposed an Security metrics analyze the efficiency of protection technique adjacent to traffic overload occurrence with performance of minimum traffic method. It contains OBE onboard equipment for vehicle

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communication that moves frequently along the roadside network environment RSE roadside Equipment. It reduce traffic occurrence in real time transportation system, but minimum traffic occurrence not support the emergency process in dynamic network environment [3].

Estimate signal strength with SSA method to identify link stability, not give reply for link interference [4]. So easy to monitor there is no reply network cause connectivity failure during communication period. Nodes want the signal strength maintenance use RABR method to provide communication and enhance the network connection lifetime to removal of signal interference during communication [5]. The difference of signal strength is analyzed by LSPMR method; it contains the historical information of each node available in network infrastructure [6].

Residual of the paper is designed as follows. Section II provides a related works. In section III, we present the details of proposed Link Interposition detection based revamped routing (LIDRR) Algorithm provides efficient link connectivity between nodes us revamped routing path. Section IV provides simulation performance results analysis obtained under various metrics. At last section V concludes the paper with future direction.

## II. RELATED WORKS

Almomani, *et al.*, [8] present node availability of network need to damage the network performance because lot of interference occurred in communication due to reduction in network lifetime. It focuses how to maintain maximum lifetime of routing path between sources to destination node in network. Node provides efficient communication with dynamic movement of nodes in authentic path process. In real time process consider lot of traffic it damages network such as time delay and packet loss. In normal recovery system analyze the minimum and maximum availability of nodes in network environment. The uncertain node movement cause to affect network performance. The OLSR used to protect the network from traffic occurrence to attain the reliable path stability.

Muhammad Saleem Khan *et al.*, [9] present novel ATT-Adaptive Trust Threshold computation mechanism, in which it cature true fixed threshold in the transmitting protocol based on network situation connection of node modified, node density, link, and nearest neighbor reliability. To find topology conditions in which damage the threshold value in all node, and influence used to design the ATT computation model. ATT mechanism simulation output attains the important enhancement in throughput, minimize false rate, and improved traffic finding rate as compared to traditional static threshold method. It captures the true threshold for mischievous nodes discovery and separation in MANETs by taking into report each node status. Monitor the reasons for static threshold achieve poor process and situation to affect the computation of an optimal trust threshold, and present true computation model and designing the algorithm. Output of simulation indicates the efficiency of method in compared with static threshold method, in conditions of false rates, discovery rate, Throughput, and time delay below different network metrics. Present method outperforms the 724 static threshold method consider all parameters, and improves the performances of routing protocols for MANETs. To expand adaptive scheme by combining the fine-grained analysis technique it allow single to decide if it make a packet loss is an attacker node or link failure.

Gyanappa A. Walikar *et al.*, [10] present different transmissions at node stage. Propose an EAMRP - Energy Aware Multicast Routing Protocol which improves node connectivity in the network and reduces attack at connection of node level. Group of multi paths determined from single source to multicast receivers by energy efficient intermediate node chosen method. In this part Computation of residual energy of a node using node energy representation. Removing the nodes contains minimum amount of energy than threshold level. To Discovery many paths to the receiver node with REQ and REP, chose a stable paths by consider remaining energy of the nodes in particular level. Path protection for route damage and node failures cause energy loss and analyze simulation output as Throughput and time delay in process. To monitor that EAMRP

outperforms the energy well-organized AODV and AOMDV protocols for various performance metrics. EAMPR method is depends on packet transmission method during energy efficient nodes in neighbor list. it transmit a packets to multicast group member there is no packet drop since its strong path construction method. Each node energy level is estimated and also untrustworthy nodes in the route pre-process forwarding packets to the receiver node. It gives reliable path for availability of nodes in network.

Dhaval Dave *et al.,* [11] proposed survey that characteristic of MANET is vulnerable due to dynamic network topology, open network any node can be act as malicious at any time comparing to the wired networks. To detect the black hole attack a permutation based acknowledgement mechanism is introduced for reactive protocol ad-hoc on demand distance vector routing. To improve the efficiency the mechanism is enhanced with AACK adaptive acknowledgement and TWO-ACK. The proposed system does not require any database, any extra memory and more processing power. The simulation results shows that the proposed system effectively detect black hole node.

Shitalkumar A Jain *et al.,* [12] present LUNAR -Load equilibrium Neighbor Aware Routing, which integrates the merits of intermediate coverage knowledge and load balancing methods to construct optimal decision at all intermediate nodes available in network. Present LUNAR considerably minimize the retransmission of RREQ and that minimize the routing overhead within the network. Check the present method using ns2 simulations of different models. The model has different node count, node speed, count of source-destination links and queue distance end to end. The parameters used to compare with other protocols are packet delivery ratio, normalized routing overhead and time delay, output denotes LUNAR enhance overall performance of the network as compared to other routing previous methods.

Shan-Hung Wu *et al.,* [13] present inspect the usage of asynchronous active method to Mobile nodes. To find that, although it is agreeable to nodes has minimum speed, inactive state of nodes more in response to the slight modification in connection, it banned more energy consumption node available in network process. Maximum speed mobility node active earlier to prevent network separation, denote the issues propose a new wakeup scheme, named unilateral scheme, for MANETs that analyze nodes with minimum mobility goes to inactive state not affect the network connection. It wires both the entity speed and set of nodes speed, thus has broad acceptance. Detected various shortcomings of active quorum schemes whether it given to the MANETs, and present the Uni scheme. It contains several aspects given below: idea of unilateral active state is launched allows only minimum speed nodes to minimize energy usage. It shortens the neighbor finding delay from start to end node, all node should choose the series distance end to end depends on its own mobility in network. It is applicable to MANETs with set of node mobility; watchfully implemented it is well-matched with previous quorum method for networks clustering.

Ali Kies *et al.,* [14] present latest self-organization architecture depends on an optimized CDS designing. In this method, the intermediate chose CDS nodes logically. Estimation process, a recent load parameter based on energy, link value and connectivity is launched direct to improve the CDS lifetime and network performances also increased. Survey advantages of this new design, present a new routing protocol called PROC-(Proactive Routing based on Optimized CDS. NS2 output denotes that PROC reduces the network overhead and the energy usage compared to the famous OLSR routing method. Structure focus to make easy the network management task and allows deploying wide coverage of forces and protocols in network. To show the efficiency of our virtual structure, present and designed a new a routing protocol known as PROC. Output confirm that PROC optimizes the energy usage within the network and also has the benefit of following speed and network overhead reduction.

Suvadip Batabyal *et al.,* [15] present try to detect the impact of RWP-Random Waypoint speed on Throughput. Analyze speed factors such as node density encounters, connectivity time, and inter-contact time which in turn depends upon total network area, bit-rate and Nodes radio frequency range. Present a limited form of RWP speed model, known as the affinity depends on speed model. The network situation

has a source and a destination node that is positioned at two great corners of the square playfield and communicates data packets with the help of mobile helper nodes in network. Sender node and the destination node are fixed. Mobile nodes only help in forwarding packets. To confirm how similarity based speed model supports in augment the network dependability thereby increasing the Throughput and reduce end to end delay. An approximate of some vital parameters like node density, link connection time, and inter-contact time which involve the performance of choice process. Detect that the given factors are straight connected to node count, node speed and movement model of the nodes for a given simulation network. Present a naive similarity based speed model. Deploy a many helper node and settlement nodes which take out the duty of coordinate the message between the source to the destination node. Output of simulation shows similarity depends on speed model improved packet delivery ratio and minimized delay time which contains similar overhead ratio reduction in network.

Mazda Salmanian *et al.*, [16] present method consider nodes in more groups using the same path interface and a top down traffic model characteristic of a planned process. It indicates inter-group SAs, between group heads, require a different trust model against of intra-group SAs if the network overhead is efficient one. Belief model, relate it to the group heads, and adapt their SA time to their hop space left from their trusty. Simulation output indicates group heads, the density of hops is a more efficient parameter to which their SA time should be adapted than FER link acceptance. It distinguish a trust model that adapts to average system FER, indicates that the new trust model minimize the overhead of verification for group heads. Calming the security rule one can reduce the authentication overload so that group heads not simple to find the traffic. Regarding a node's role in a MANET and its traffic pattern, it improves efficiency and flexibility of the security architecture in trust the overhead low and issues detection in communication is efficient manner.

R. S. Mangrulkar *et al.,* [17] present a routing algorithm that include a field in REQ that stores trust value indicating node trust on nearest neighbour node. Depends on stage of trust factor, the forwarding information will be transmitted based on maximum level of trust value among every. It not minimizes power usage also consider the packet information, path allocation details, it is vital role in MANET. The misbehaving node drops control packet and misuse in the network .The misbehaving node is good else bad node. Present use trusted path irrespective of small or large routing path which can be used for message in the network nodes. To estimate path trust value on the total reply path which can be utilize by sender node for next neighbor communication in the network infrastructure.

Chandreyee Chowdhury *et al.,* [18] presents consider MAS have a number of self-governing mobile agents functioning concurrently. It evaluates the reliability of mobile agent system allowing for altered failures of the original network environment. The simulation output the strength of the present algorithm a reliability estimation model for MAS in MANET and shows that reliability is almost self-governing on the many agents or many mobile nodes but highly charge on the situation of the links especially on the connectivity of the nodes. Mobile nodes are not fed with a given forward rather they make a decision their next destination aimlessly. Node movement changes output, proposed method improves the reliability of network.

Shiqiang Wang *et al.*, [19] proposed model to forecast the link constancy in mobile nodes in network environment. Forecast model is depends on link connectivity modified and applied on the network layer, lacking the need of low layer data packets. Consider the link connectivity follows the sequential-time Markov chain scheme, and consider the case of infrequent node movement. Present method to calculate approximately the transmission rates of the link connectivity scheme. Constancy of the link is analyzed depends on its node transmission. Forecast scheme is copied logically and requires no before information about parameters of the node speed scheme. Output of simulation indicates gives correct forecast in both stable and unstable path.

Kennett W. Saari *et al.,* [20] present method node ability, the HyPR-Hybrid Pseudo-Random Dynamic Force Generator. Nodes abilities use geographic location data of choose ground platforms in an operational unit to quickly generate realistic, dynamic location updating for the remaining network environments. It is constructed to create model linked lay downs for an entire infrastructure. The communications are held by URS-Unit Requirements Sheet and provide guidelines for FCS and its spinouts. The HyPR creates mobility level information was then input into a wireless connectivity analysis simulation Mobile Ad-Hoc Network system performance model of JTRS-Joint Tactical Radio System and other radio coverage to allow network performance. HyPR provides a mobility and robust capability to build up high fidelity compared to previous protocol.

## III. OVERVIEW OF PROPOSED SCHEME

In MANET unplanned movement of mobile nodes cause the connectivity loss, link damage the packet, cause packet drop on minimum connection node. Each packet size is varied, transmit maximum size packet loss occurred in which connectivity fall down. Historical information's are stored in node buffer is helpful to restore the connectivity to remove packet losses with neighbor nodes.

Figure 1 shows Link interposition detection based revamped routing source node routing the packet in efficient manner to establish the communication between nodes. Every time check connectivity there is any interposition occurred or not. If any interposition detected to revamped routing path with help of buffer restore connectivity due to improves the network stability between nodes.

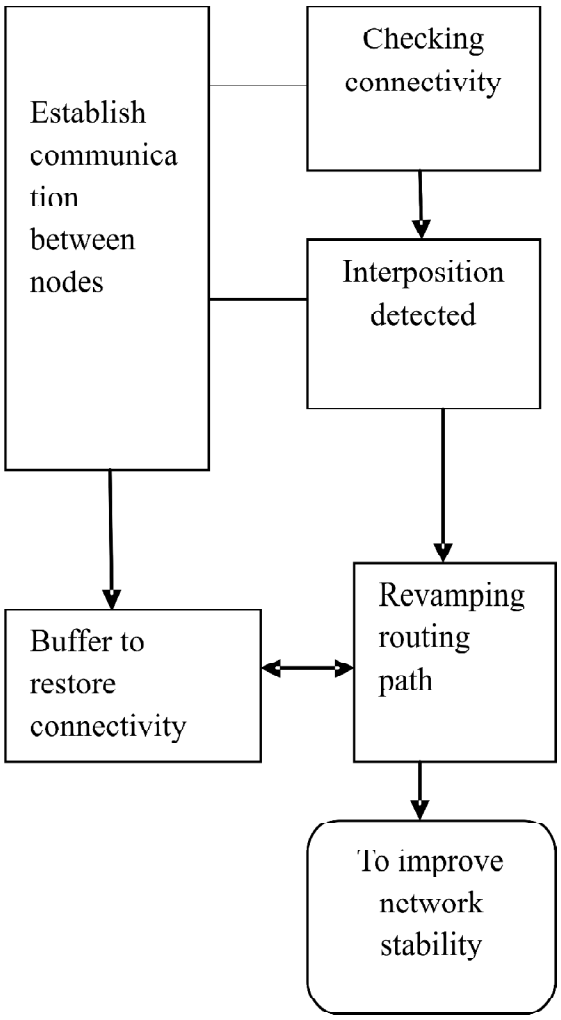


**Figure 1: Block Diagram of Link Interposition detection based revamped routing**

### 3.1. Establish link among updating position of each nodes

Partitioning network based on node speed, provides connectivity between nodes and establishes end point connections to achieve efficiently along the network. Mobile node has more chance to attempt the lot of packet loss in transmission period. Mobile node has many facilities to achieve efficient communication between networks. Mainly focus on network connections establishment, normally node position updating connectivity changes required, it cause the weak connectivity damage network transmission, if node transmit maximum size packet, packet not fully forwarded to particular path, packet loss occurred during transmission.

Nodes moves around the network with different speed, then establish the effective connection is very difficult. Node connectivity based visited path details are maintained by node buffer, Buffer contains all information's such as packets, node location, time of packet transmission, and starts from which node to neighbor node. Every time packet transmitted, find another updated position of neighbor node connectivity until reaches the destination node present in network.

Network stability is changed depends on MANET performance, packet loss cause the network stability minimized during transmission over weak connectivity established in network. Minimum distance path and the minimum count of node, fine as the more capability to connect newly added node in particular coverage area. It improves the path worth; the new node is tending to be connected to the closer nodes.

Intermediate node receives the packet and check next connectivity to establish the path, after broadcast packet to next node. If any weak connectivity the rebroadcasting is very difficult to achieve efficient routing that also cause same kind of connectivity issues occurrence chances available in network. All path packet transmission information's are maintained in node buffer, it support further process. Distance between each node connection consider as important factor to establish the node connectivity. Node rebroadcast packet to another possible neighbor node maximizes the end to end delay during packet transmission.

### 3.2. Detect abnormal activities of nodes

While the source node si need to forward request packet to destination node Di, it obtains the path finding mechanism. Node verify its routing table routing path available for destination node or otherwise not possible to route. Whether sender node si not discovers its path, it basically starts the path finding technique by generating a request packet for transmission. The source node creates request packet forward sequentially, adds energetic route Count Data that contains many energetic routes analyzed by the node during creation of request packets.

$$EN(e) = N1 + N2 + \ldots + Nn/Sie \tag{1}$$

Mobile node weak connectivity makes abnormal activity between each node in network. Where $N1$ to $Nn$ neighbor node list and $Sie$ source node energy level. In neighbor node check the path in sequentially behind got reply packet from receiver node. If the receiver gives reply packets when it accepts request packets. Else it loss the packets during transmission every intermediate node detects the expose node like weak connectivity node ($EN(ni)$) from the coverage set ($CS$) packet collected from sender node ({Si}) else its existing node ($EN(e)$) and its own coverage set ($CS(ni)$). $EN$ is computed as

$$EN\,(ni) = CS(ni) - [CS(ni) \cap EN\,(e)] - \{S_i\} \tag{2}$$

Whether the $EN$ set is empty then it just loss the Request packet, empty indicates all neighbor node received packet from source or existing node in same path. Whether $EN$ set is not blank it evaluates collective energetic routing count ($CERC\,(ni)$) as average of $CERC\,(CERC\,(p))$ arriving Request packet and its own ERC ($ERC\,(ni)$). ($ERC\,(ni)$) is computed as

$$ERC(ni) = Sie + EN(e) - \tag{3}$$

All neighbor nodes hold its process until false Request packet coming from nearest neighbor nodes within its particular time period. Behind collecting the false Request packets from nearest neighbours, in favour of all request packet node re-evaluate the Exposed node *EN* set. *CERC* is estimated independently in all request packets, meant for all probable paths, whether the *EN* is not blank. Sender node retransmits the Request that have minimum *CERC*. The neighbor nodes energetically contribute in path finding procedure and obtain the result of retransmitting of request packets. *CERC* is computed as

$$CERC(ni) = \left[\frac{ERC(ni)}{n}\right] + \left[\frac{CERC(p)}{n}\right] \tag{4}$$

$$CERC(ni) = \frac{[ERC(ni) + CERC(p)]}{n} \tag{5}$$

In destination node while several request packets from same sender are arriving from dissimilar paths, then it differentiates the CERC report. Destination node chooses the overturn route depends on minimum value of CERC report from these many request packets. Destination also launches the Reply packet with transmit it next to the overturn route path to sender node. All intermediate nodes maintain record for the routing path information with its routing tables, concerning the path way between source and destination node in network. Behind accepts the reply packet from destination node, the source mobile node starts transmitting the data packet to the destination mobile node.

**Algorithm for Abnormal activities of nodes**

Step 1: Start

Step 2: Initialize source node *si* and Destination node *Di*.

Step 3: Source node passes on the request packet to its expose node available in network range.

Step 4: whether the expose node have empty in packet *EN* (*ni*).

$$EN(ni) < -EN(e)$$

Step 5: It losses the packet during transmission time because of weak connectivity between nodes available in network environment.

$$EN(ni) = EN(ni) + (CS(ni))$$

Step 6: else

Step 7: the time delay increased when packet loss occurred during transmission.

Step 8: end if

Step 9: When EN is not empty, collective energetic routing checks to collect the request packet arriving *CERC* (*ni*).

$$CERC(p) = routing\ packet\ from\ source$$

Step 10: Request packet reaches the destination node instead of energy.

$$request \rightarrow Di$$

Step 11: Destination forward reply packet to source node with help of neighbouring nodes available in the routing path.

Step 12: if $Di > ni^{th}$ then

Step 13: Stop packet Transmission.

Step 14: else

Step 15: Gather the request packet in inward node header and relay further reply packet across the network.

Step 16: Continues until source receiving node received the reply packet.

Step 17: end if

Step 18: End

### 1.3. Removing link disturbance based on revamped routing path

Network disturbance aim to minimize the packet transmission period yet network failure occurred. Implement a method connect pair of nodes to perform operation simultaneously. Present method, source node can forward data packets smooth when the node weakly connected to neighbor. Revamped routing path process is valuable for handling weak connectivity and restores information during transmission period with varied density network nodes. Node buffering that contains many steps: deployment, path finding and connection establish based revamped routing path. Node buffer maintains lot of information about the connectivity between two nodes in particular path and check sequentially to achieve an efficient path.

Node buffer keeps information, if any weak connectivity detected, go to revamped routing path. Buffer gives all node information to network, so it restores the information and provide effective routing path. The link interposition is removed restoring that information, delete weak connectivity and create link between efficient paths available in network. Every time revamped path routing method monitoring the network performance to achieve an effective result of packet transmission. All packets are transmitted in constant speed, node position updating to get weak connectivity path, node position are minutely captured that information are stored in node buffer. Where $r_c$ restore connectivity between $S_i$ to $D_i$ $B_i$ Computes as

$$B_i = r_c \Sigma \{S_i \pm D_i\} \tag{6}$$

Revamped routing give protected and best connectivity path with help of node buffer, it checks overall connectivity and restore only the effective connectivity, and network can retrieve the information from node buffer used to solve various connectivity issues during transmission time. Revamped routing path reduce the end to end delay and enhance the connectivity ratio in network environment.

**Algorithm for revamped routing path**

Step 1: For each sender search neighbor node

Step 2: Neighbor node establish connectivity.

Step 3: if neighbor have weak connectivity, packet loss occurred.

Step 4: revamped routing path use node buffer.

Step 5: restore the effective path use node buffer.

Step 6: ELSE further check connectivity until reaches destination node.

Step 7: Establish the effective routing path link between nodes in network.

Step 8: END IF

Step 9: End for.

In MANET use the revamped routing path method in connectivity searching manner, best and protected connectivity path is chosen only to achieve effective transmission among network. Weak connectivity path are removed based on the proposed revamped routing method. It analyzes the historical information about the node; weak connectivity is simple way to find. It stores the visited node quality and that information retrieved by network to improve packet delivery ratio.

**Packet ID:** Packet ID maintains each and every mobile node data's. It additionally has node's location and normal position detection present in network environment.

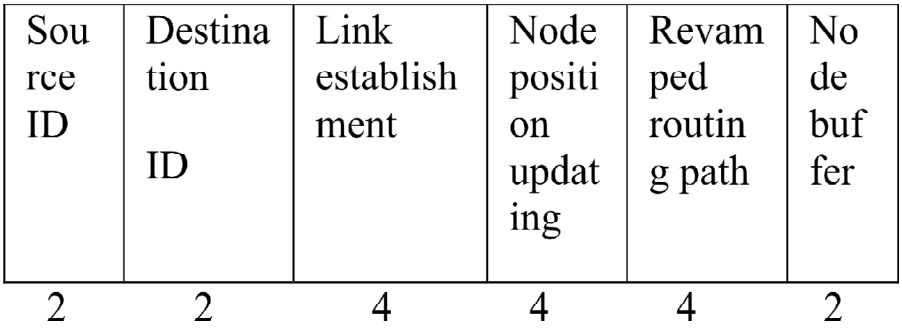


**Figure 2: Proposed Packet format**

In figure 2: the proposed packet format is shown. Here the source and destination node ID field takes 2 bytes. Third one is link establishment contains 4 bytes. Network simulator starts its process provides connectivity between neighbor nodes available in network. In fourth field occupies 4 bytes. Node position updating is clearly monitored it's useful to detect abnormal activity node. In fifth occupies 4 bytes, the Revamped routing path is denoted, estimate the efficient path with its request and reply packets. The last filed node buffer, it keeps all transmitted packet backup occupies 2 bytes, to categorize the network nodes present.

## VI. PERFORMANCE EVALUATION

### (A) Simulation Model and Parameters

The proposed LIDRR is simulated with Network Simulator tool (NS 2.34). In our simulation, 100 mobile nodes move in a 800 meter x 600 meter square region for 30 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. AODV Ad hoc on demand distance vector routing protocol is used to assign energetic path for packet transmission. Table 1 shows Simulation setup is Estimation.

**Table 1**
**Simulation Setup**

| | |
|---|---|
| No. of Nodes | 100 |
| Area Size | 800 X 600 |
| Mac | 802.11 |
| Radio Range | 250m |
| Simulation Time | 30ms |
| Traffic Source | CBR |
| Packet Size | 150 bytes |
| Mobility Model | Random Way Point |
| Protocol | AODV |

**Simulation Result:** Figure 3 show that the proposed LIDRR method detect the dual face attack use Query arise technique is best compared with existing EMRP [7] and EERM [8]. LIDRR sincerely monitors the packet transmission to block bad node activities. It improves the detection efficiency for identifying dual face attacks in network.

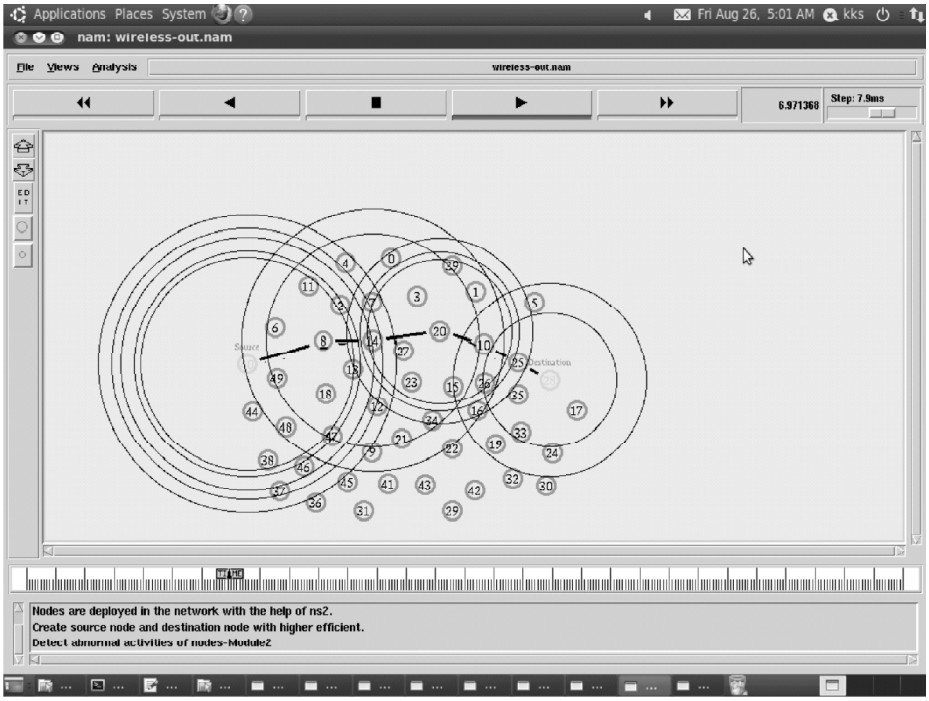


**Figure 3: Proposed LIDRR Result**

## 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, all node connectivity stored by node buffer. In proposed LIDRR method end to end delay is reduced compared to Existing method EMRP, EERM, and CGBPPF.

*End to End Delay = End Time – Start Time*

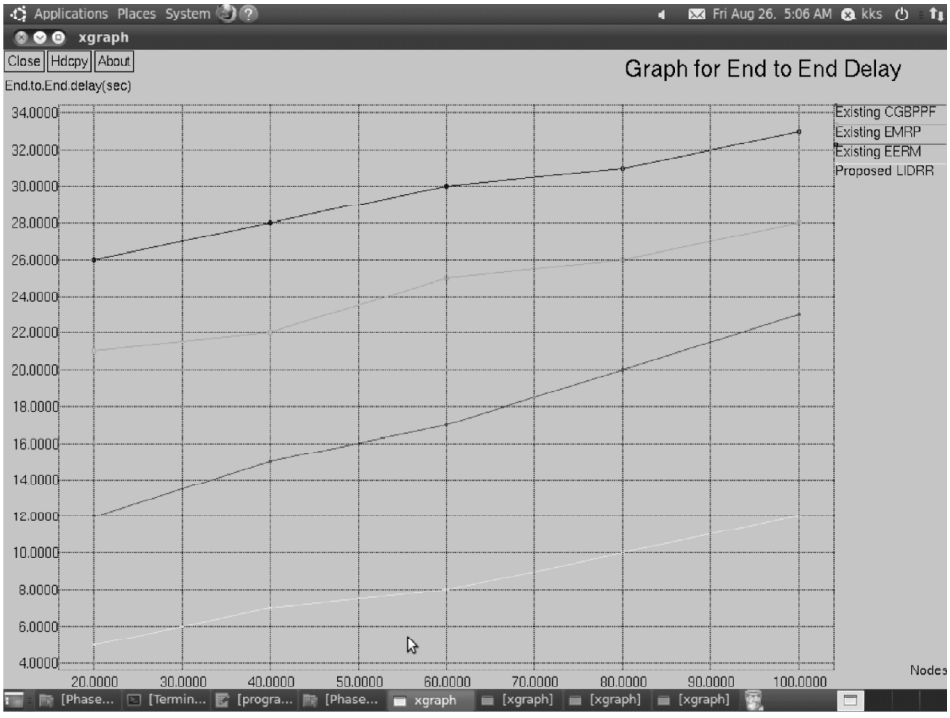


**Figure 4: Graph for Nodes Vs. End to End Delay**

**Network overhead:** Figure 5 shows Network overhead is minimized in which sender transmit packet to receiver node, revamped routing method provides effective path for packet transmission. In proposed LIDRR method Network overhead is minimized compared to Existing method TDRT, EMRP, EERM, and CGBPPF.

*Network overhead = (Number of Packet Losses/Received) * 100*

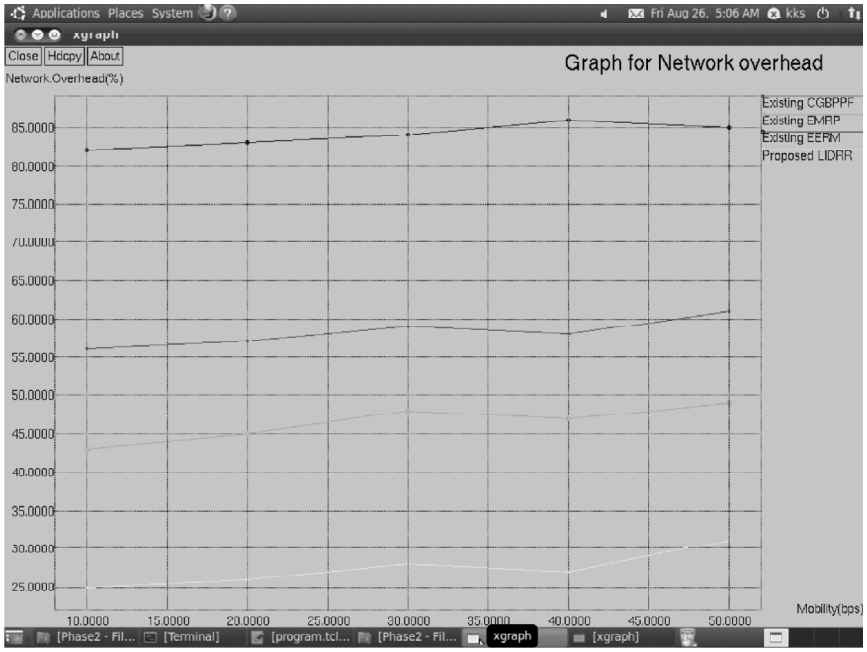


**Figure 5: Graph for Mobility Vs. Network overhead**

**Packet Delivery Ratio:** Figure 6 shows Packet delivery ratio 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 LIDRR method Packet delivery ratio is improved compared to existing method EMRP, EERM, and CGBPPF.

*Packet Delivery Ratio = (Number of packet received / Sent) ∗ speed*

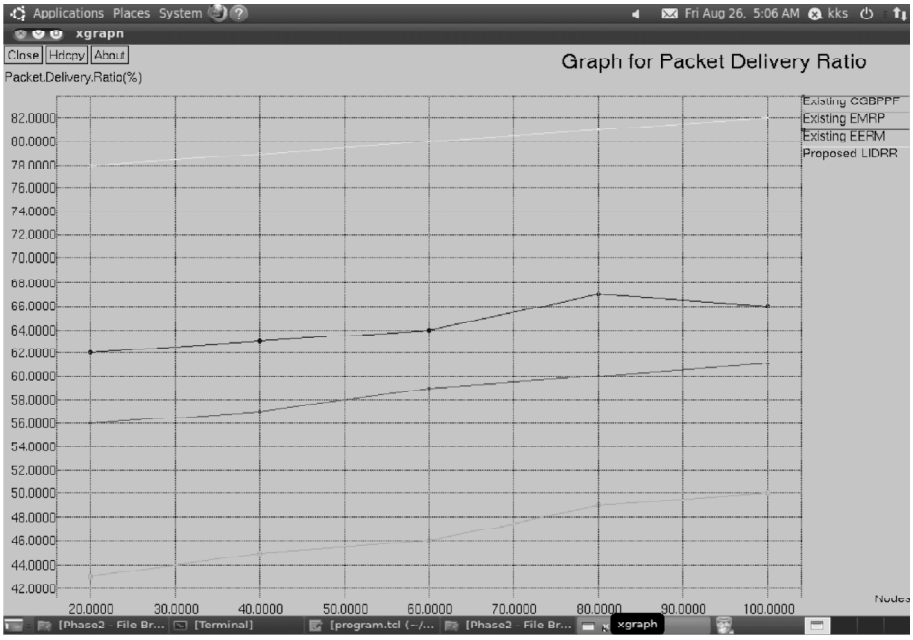


**Figure 6: Graph for Nodes Vs. Packet Delivery ratio**

**Connectivity ratio:** Figure 7 shows Connectivity ratio, weak connectivity between nodes in routing path is removed by revamped routing method. In proposed LIDRR method Connectivity ratio is increased compared to existing method EMRP, EERM, and CGBPPF.

*Connectivity ratio = weak connection / overall connection*

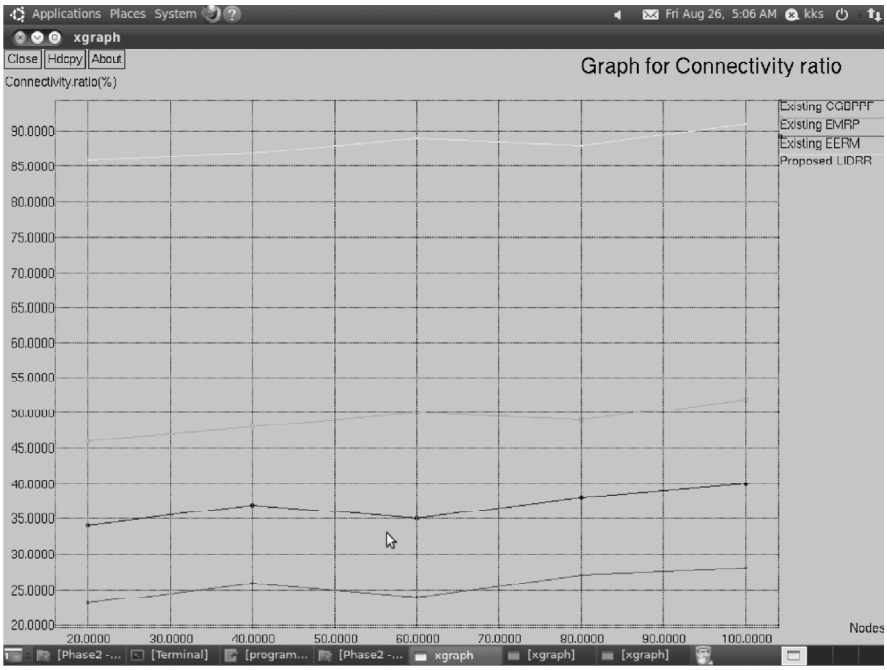


**Figure 7: Graph for Nodes Vs. Detection Efficiency**

**Energy:** Figure 8 shows energy consumption, how extended energy spends for communication, that means calculate energy consumption starting energy level to ending energy level. In proposed LIDRR method restore the effective connectivity with help of node buffer in network infrastructure; energy consumption is compared to Existing method EMRP, EERM, and CGBPPF.

*Energy Consumption = Initial Energy – Final Energy*

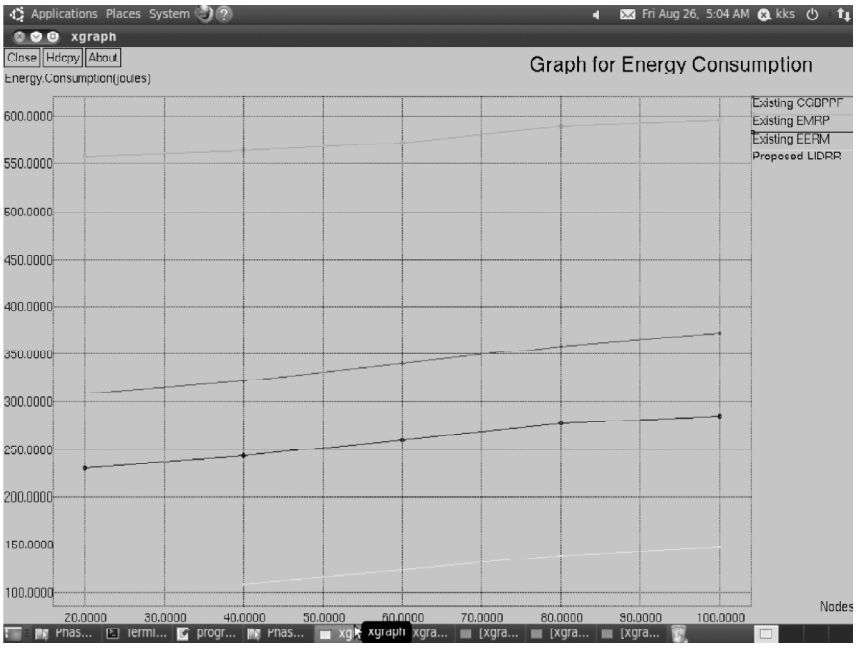


**Figure 8: Graph for Nodes Vs. Energy Consumption**

**Packet loss:** Figure 9 show that Packet loss of particular communication in network is calculated by nodes loss packet with weak connectivity to obtain efficient transmission, retrieve in node buffer to revamp them. In proposed LIDRR method Packet loss is reduced compared to Existing method EMRP, EERM, and CGBPPF.

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

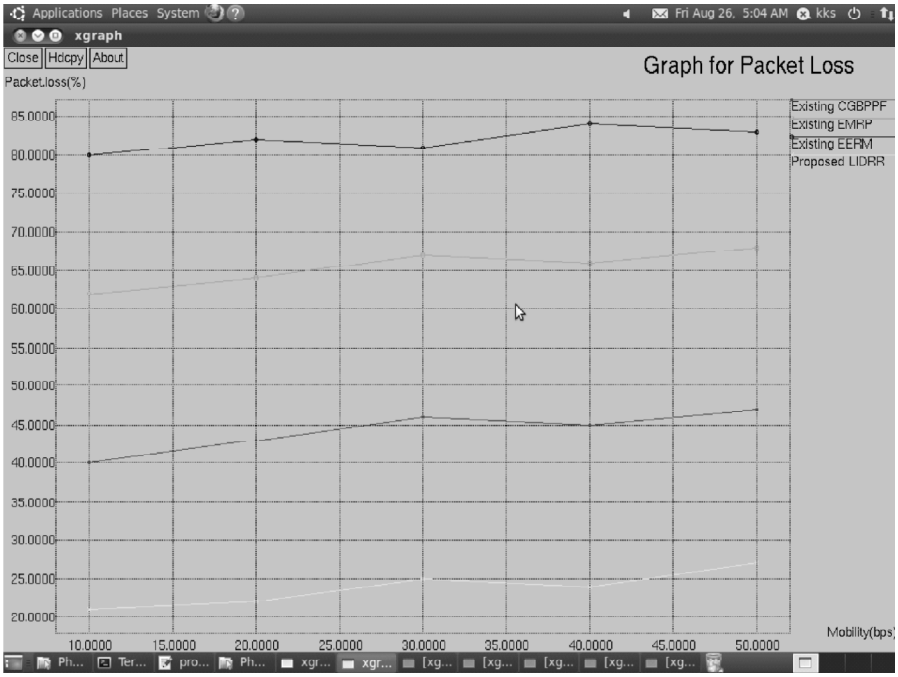


**Figure 9: Graph for Mobility Vs. Packet loss**

## V. CONCLUSION

Mobile node link connectivity is vital role for communication between network nodes, node move along network with its radio coverage range infrequently, communication period weak connectivity cause packet loss. Present LIDRR method to remove weak link in transmission time use node buffer has to store nodes connectivity details, time delay and nodes capacity also analyzed, if packet loss made goes to restore connection with help of node buffer and establish the revamped efficient routing path. It minimizes the energy usage, and packet loss, also increase packet delivery ratio and connectivity ratio. In future propose link connectivity with cross layer, to analyze the connectivity ratio with different mobility of node in Mobile environment.

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