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HYBRID SOURCE ROUTING PROTOCOL TO AVOID VOID IN WIRELESS SENSOR NETWORK

[1]M.Berlin Mary,[2] T.Samraj Lawrence

Department of CSE(with specialization in networks),

Francis Xavier Engineering College,Tirunelveli,Tamilnadu,India

Abstract-Geographic routing is that the technique to send a message to a node during a network over multiple hops. Due to the restricted communication range and high density of sensor nodes, packet forwarding in sensor networks is usually performed through multi-hop data transmission. The matter of geographic routing is that packets are also routed to a dead finish. this can be referred to as void downside. The void is also a disaster area wherever all sensors are destroyed, or it should be a bay wherever the sensors cannot survive. Once a packet is routed to the dead finish, it cannot proceed to any extent further. An necessary and extremely crucial mechanism is planned and enforced through hybrid source routing (HSR) protocol within which will play the a part of route repair just in case of void downside. In our base work we have successfully implemented the light weight proactive routing protocol, which reduces the overhead and improves the QOS in WSN. The proactive routing and we have enhanced the proactive routing protocol, and which can rebuild the route instantly. To improve the performance, we campaign the advantages of both routing techniques.

Index Terms: Geographic routing, Void downside, HSR.

I.INTRODUCTION

Wireless sensor network (WSN) consists of detector nodes capable of grouping info from the atmosphere and act with one another via wireless transceivers. The collected knowledge are going to be delivered to at least one or additional sinks, usually via multi-hop communication. The detector nodes square measure usually expected to control with batteries and square measure usually deployed to not-easily-accessible or hostile atmosphere, generally in giant quantities. It may be troublesome or not possible to exchange the batteries of the detector nodes. On the opposite hand, the sink is usually wealthy in energy. Since the detector energy is that the most precious resource within the WSN, economical utilization of the energy to prolong the network life has been the main focus of a lot of of the analysis on the WSN. detector nodes square measure resource strained in term of energy, processor and memory and low vary communication and information measure. restricted battery power is employed to control the detector nodes and is extremely troublesome to exchange or recharge it,

once the nodes die. This will have an effect on the network performance. Energy conservation and harvest home increase life of the network. Optimize the communication vary and minimize the energy usage, we want to conserve the energy of detector nodes. Detector nodes square measure deployed to collect info and desired that everyone the nodes work endlessly and transmits info as long as attainable. This address the life drawback in wireless detector networks. Detector nodes pay their energy throughout transmittal the information, receiving and relaying packets. Hence, planning routing algorithms that maximize the life time till the primary battery expires is a crucial thought. Routing is that the method of choosing ways during a network on that to send network traffic. Routing is performed for several types of networks, together with the phone network, electronicknowledgeNetworks;transportationnetwork

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s.Geographicrouting (also called rerouting or position-based routing) may be a routing principle that depends on geographic position info. It's chiefly planned for wireless networks and supported the thought that the supply sends a message to the geographic location of the destination rather than victimization the network address. the thought of victimization position info for routing was 1st planned within the Eighties within the space of packet radio networks and interconnection networks. Geographic routing needs that every node will confirm its own location which the supply is alert to the placement of the destination. With this info a message may be routed to the destination while not data of the configuration or a previous route discovery. Christo Ananth et al. [15] proposed a novel scheme for mobile Television services over WiMAX network, called the Wireless Switched Digital Video (WSDV) scheme, is proposed. Compared with the conventional broadcast or unicast schemes, the hybrid approach introduced in the proposed WSDV approach exploits the merits of two conventional schemes and mitigates their demerits, which enables it to increase wireless capacity for mobile Television services. The analytical model can capture the details of WiMAX resource allocation and take into consideration the popularity of the mobile Television contents being viewed by users enabling it to provide an accurate estimate of the amount of bandwidth required for WiMAX TV services and also enabling a designer to optimally select the number of channels via the WSDV service while meeting a desired level of blocking probability. The proposed optimized scheme outperforms the conventional schemes with respect to blocking probability. In this Paper we have a tendency to introduced Hybrid supply Routing Protocol to resolve the Void drawback. The mixture Of Proactive and Reactive Protocols square measure referred to as HSR Protocol. The Proactive protocol is additionally referred to as Table-driven Protocol. this sort of routing protocols is extremely acquainted in fastened wired networks. During this approach, every ad-hoc node consists of a topology table, that contains the up thus far networks nodes interaction info. This table is updated all the time and it offers the proactive protocols another name of table-driven. One or additional routing tables square measure maintained at every node and square measure changed sporadically to share the topology info with the neighboring nodes so as to keep up the same network read. Reactive routing techniques additionally referred to as on-demand routing, take completely different advance for routing than proactive protocols. Routes to the destination square measure discovered only really required. once supply node wants to send packet to some destination, it checks it routing table to work out whether or not it's a route. If no route exists, supply node performs route discovery procedure to seek out a path to the destination. Reactive routing protocols will dramatically cut back routing overhead as a result of they are doing not got to explore for and maintain the routes on that there's no knowledge traffic

II.RELATED WORKS

Cadger F., Curran K., Santos J., and Moffett S.[4] proposed the method for "A survey of geographical routing in wireless ad-hoc networks". Geographic routing protocols have been designed for a variety of applications ranging from mobility prediction and management through to anonymous routing and from energy efficiency to QoS. They proposed Greedy

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algorithm to ensure the data transmission. Huang.P, Wang.C, and Xiao.L [18] introduces an Improving End-to-End Routing Performance of Greedy Forwarding in Sensor Networks .Greedy forwarding is a simple yet efficient technique employed by many routing protocols. Here they proposed TAR (Topology Aware Routing) to encodes a network topology into a low-dimensional virtual coordinate space and expected transmission count (ETX) is used to improves the routing quality by embedding a networktopology.Noh.Y,Lee.U,Wang.P, Choi.B.S.C, and Gerla.M [19], introduce a Void aware pressure routing for underwater sensor networks. We proposes a Void-Aware Pressure Routing (VAPR) protocol that embedded in periodic beacons to set up next hop direction using sequence number; hop count and depth information.Trajcevski.G, Zhou.F,Tamassia.R, Avci.B,Scheuermann.P, and Khokhar.A ,[13] introduces the Bypassing holes in sensor networks using Load-balance vs. latency. The proposed approaches increase the boundary of a given hole and also the lifetime of the nodes.Wang.X, Wang.J, Lu.K, and Xu .Y,[6] introduce a novel geographic K-any cast routing for wireless sensor networks.we proposed K-Any Cast Routing (GKAR) protocol for WSNs, GKAR will determine a set of potential destinations for every next hop node to reach but also the next hops at each which can efficiently route data from a source sensor to any K destinations (e.g., storage nodes or sinks). We can guarantee K-delivery, an iterative approach is adopted in GKAR. Gang Wang.F and Guodong Wang.S [21]introduce an Energy-Aware Geographic Routing Protocol for Mobile Ad Hoc Networks .We Proposed an Energy-Aware Geographic Routing (EGR) protocol is used to predict the range of a destination's association to improve the delivery fraction for MANET that combines local position information and enduring energy levels to make routing decisions. Dejing Zhang.M and Enqing Dong.S[22] introduce a Virtual Coordinate-Based Bypassing Void Routing for Wireless Sensor Networks .we proposed an efficient bypassing void routing protocol based on virtual coordinates . The fundamental scheme of the protocol is to renovate a arbitrary composition tranquil of annulled boundaries into a regular one by mapping boundary nodes coordinates to a virtual circle. By using the virtual circle, the greedy forwarding can be prohibited from failing, so that there is no course-plotting void in forwarding process from source to destination and control overhead can be reduced Wang.J, Dong.E, Qiao.F, and Zou.Z [9] introduce Wireless sensor networks node localization via leader intelligent selection Optimization algorithm. The LIS optimization algorithm is proposed based on the scheme of genetic heuristic. By designing a simple animal group leader selection mode an organizer

Candidates group is searched by the leader searcher, and an finest character is preferred from the groupasthe leader which is the global optimal solution of the optimization problem. Liu.W, Dong.E, Song.Y, and Zhang.D,[8] introduce an improved flip Ambiguity detection algorithm in wireless sensor networks node localization.In this paperExistence Of IntersectingLine(EIL)problemoccursduringdetectano deflipambiquityinrangebased wireless network node l ocaliaon .To solve the EIL problem ,we proposed a convex Hull algorithm. It has low computational density.However,forunequalradii,weproposedaComm onTangent Algorithm (CTA).Ithashigh computational

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convolution. In order to deal with the high computational density of the common tangent algorithm, it prove that the EIL problem is equal to determine any two circles to have overlapping orthogonal projection onto the line.

III.SYSTEM ARCHITECTURE

Fig 3.1 illustrates that the architecture of the proposed system. It considers data unit as a Source. The packet is transferred from data unit to Route Discovery Unit via hybrid source routing Protocol. Here Route Discovery Unit is used to discover the neighbor node location. Then the Receiver receives the packet and transmitted to the routing manager. the routing manager save this information and sent to the node table to find the destination location. Then the node table consists of the information about the list of destination location and number of hops to reach that destination. The packet collects this information retransmits to routing manager and the packet deliver to the desired destination via HSR protocol. Here the proposed protocol checks if any void occurs during data transmission and also reduce the transmission delay. Finally it achieves the destination without void problem.

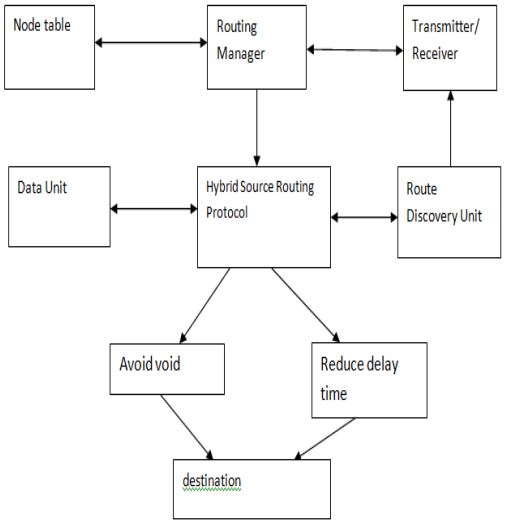

Fig 3.1System design

IV. PROBLEM DEFINITION

Reducing the communication transparency mustn't castigate the network's capability in network communication. It ought to enable go-between nodes to switch the methods conceded by knowledge packets in step with their updated network pattern data. However, this must be handled properly therefore on avoid potential loops. The planned work will effectively avoid the void, and to confirm knowledge transmission.

A. creating Neighbor information

Data Nodes have to be compelled to domestically broadcast tiny beacon packets sporadically. These periodic beacon packets embody the nodes' ID and also the current location coordinates. In wireless network the continual transmission of tiny packets that publicize the presence of a base station (access point).The detector units sense the beacons and attempt to establish a wireless association.

B. Route Discovery

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If the supply nodes has no route to the destination nodes, then supply nodes initiates the route discovery in on-demand fashion. when generating RREQ, node appearance up its own neighbor table to search out if it's any nearer neighbor nodes toward the destination nodes. If a more in-depth neighbor node is offered, the RREQ packet is forwarded thereto node. If no nearer neighbor nodes square measure the RREQ packet is flooded to any or all neighbor nodes. A destination nodes replies to a received RREQ packet with a route reply (RREP) packet in just the subsequent 3 cases:

- If the RREQ packet is that the 1st to be received from this supply nodes.
- If the RREQ packet contains the next supply sequence range than the RREQ packet antecedently suffered by the destination nodes
- If the RREQ packet contains constant supply sequence range because the RREQ packet antecedently suffered by the destination nodes. however the new packet indicates that a stronger qualityroute is offered.

Route Request Mechanism

Fig 4.1 illustrates that the route request packet identifies the host, referred to as the target of the route discovery for which the route is requested .If the route discovery is successful the initiating host receives a route reply packet listing a sequence of network hops through which it may reach the target.

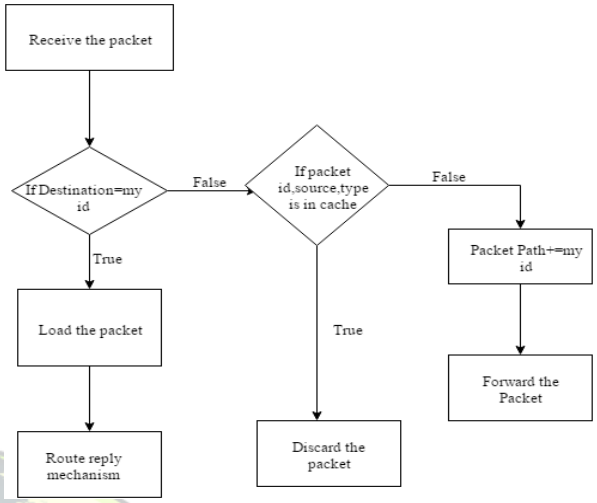

Fig 4.1 Route Request Mechanism

Route Reply Mechanism

Fig 4.2 illustrates to return the route reply packet to the initiator of the route discovery the target host must have a route to the initiator. If the target has an entry for this destination in its route cache, then it may send the route reply packet using this route in the same way as is used in sending any other packet.

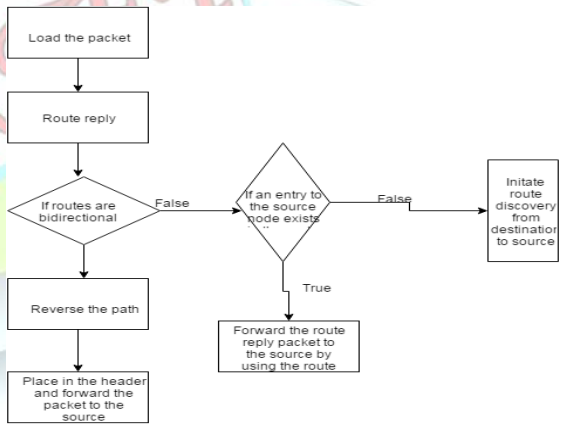

Fig 4.2 Route Reply Mechanism

C. Hybrid Routing

HRP could be a hybrid protocol that separates the network into many zones, that makes a class-conscious protocol because the protocol ZHLS (zone-based class-conscious link state). HRP is predicated

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on GPS (Global positioning system), that permits every node to spot its physical position before mapping a district with table to spot it to that it belongs. the quantity of messages changed in high ZHLS is what influences the occupation of the information measure. HRP makes an attempt to cut back the quantity of messages changed, therefore increasing network performance and repair life. this kind of protocols combines the benefits of proactive and of reactive routing. The routing is at first established with some proactively prospected routes then serves the demand from in addition activated nodes through reactive flooding.

D.Local Repair

Nodes quality can cause the communication links between nodes to ofttimes be broken. an area repair can, in general, additionally price less power consumption relative to reestablishing a brand new source-to-destination route. Intermediate nodes that participate in exchanging knowledge traffic area unit allowed to regionally repair broken routes through a route repair (RRP) packet rather than simply coverage a broken route to its supply nodes. Once associate degree intermediate node acknowledges a broken link to an exact destination nodes, it buffers the received knowledge packets for those destination nodes. Then, the intermediate nodes find its own neighbor table to seek out if it's any neighbor nodes nearer to the supposed destination nodes. If a better neighbor nodes is out there, knowledge packets area unit forwarded to it nodes once the intermediate nodes has updated its own neighbor table.

E.rooting Path Analysis

To maintain the consistency of routing tables during a dynamically variable topology, every station sporadically transmits updates, and transmits updates instantly once vital new data is out there. The DSDV protocol needs every mobile station to advertise, to every of its current neighbors, its own routing table (for instance, by broadcasting its entries). The entries during this list might modification fairly dynamically over time that the publicity should be created typically enough to confirm each that mobile laptop will nearly always find every alternative mobile laptop of the gathering. Additionally, every mobile laptop agrees to relay information packets to alternative computers upon request. During this manner a mobile laptop might exchange information with the other mobile laptop within the cluster even though the target of the information isn't inside vary for direct communication? If the notification of that alternative mobile laptops area unit accessible from any explicit computer within the assortment is completed at layer two, then DSDV can work with no matter higher layer (e.g., Network Layer) protocol could be in use.

Ad hoc On-Demand Distance Vector (AODV) Routing could be a routing protocol for mobile accidental networks (MANETs) and alternative wireless accidental networks. The AODV (Ad-Hoc On-Demand Distance Vector) routing protocol could be a reactive routing protocol that uses some characteristics of proactive routing protocols. Routes area unit established on-demand, as they're required. However, once established a route is maintained as long because it is required. Reactive (or on-demand) routing protocols notice a path between the supply and therefore the destination only if the trail is required (i.e., if there are a unit information to be changed between the supply and therefore the destination). a bonus of this approach is that the

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routing overhead is greatly reduced. In AODV, the network is silent till a affiliation is required.

V.SIMULATION RESULTS

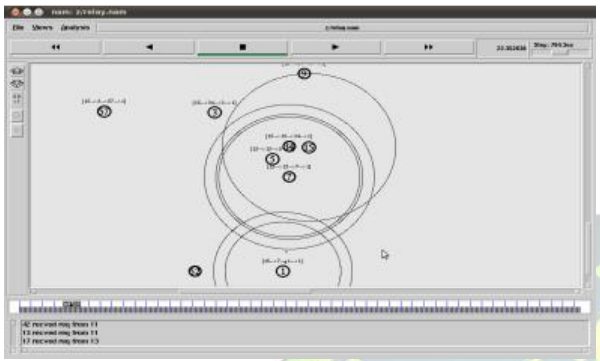

Fig 5.1 Creating Neighbor Node Location

Figure 5.1 shows the Creating Neighbor node location. Consider source node as 15 and destination node as 1.In between nodes create a node table to find the neighbor node location. Source node 15 moves in particular coverage area. In node table, node 1 chooses their previous node as 7.so source node transmit the packet to destination via node 7.

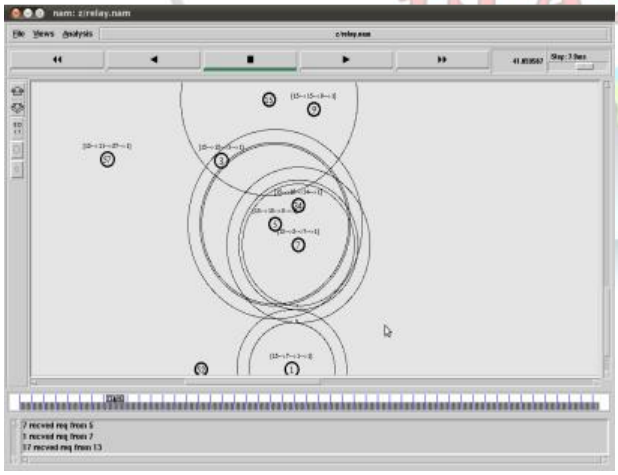

Fig 5.2 Route Discovery

Figure 5.2 represents the Route Discovery. Source node sends the data packet from node 15 to node 1 via node 7 and 5 without void. Further source node is moving in particular coverage area.

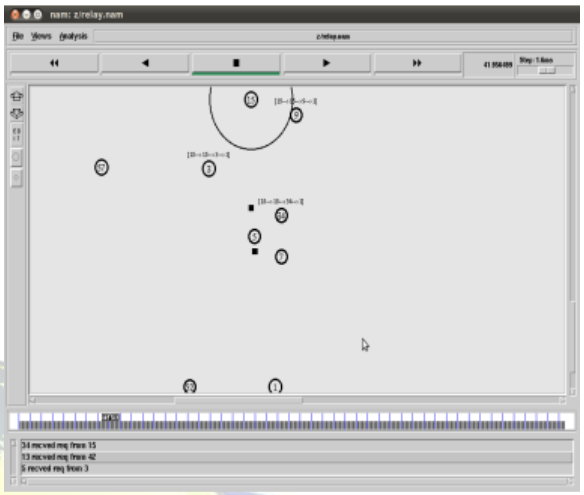

Fig 5.3 Packet Loss Occurs In Void Route

Figure 5.3 represents the Packet loss occurs in void Route. Node 34 and node 7 are containing void problem. Packet loss occurs during transmit the packet via node 34.so source node transmit the packet via another node (node 3).

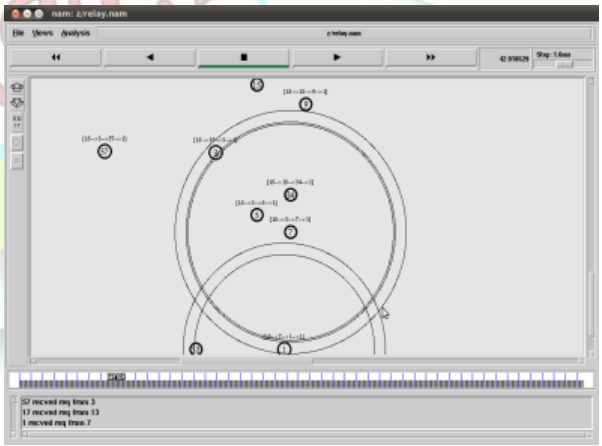

Fig 5.4 Finding Alternate Path to Avoid Void

Figure 5.4 represents the finding alternate path to avoid void. Node 34 lies on the outside of the coverage area. So void problem occurs during data transmission. So the source node chooses alternate

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node 3 for data transmission to avoid the void and packet loss.

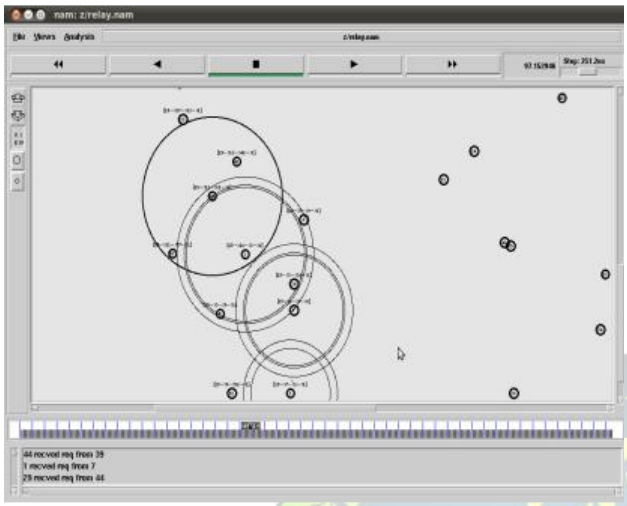

Fig 5.5 Efficient Data Transmission

Figure 5.5 represents the efficient data transmission. Source node 15 checks each node in network within the coverage area to avoid the void problem. Finally source node sends the data packet to destination node without void problem.

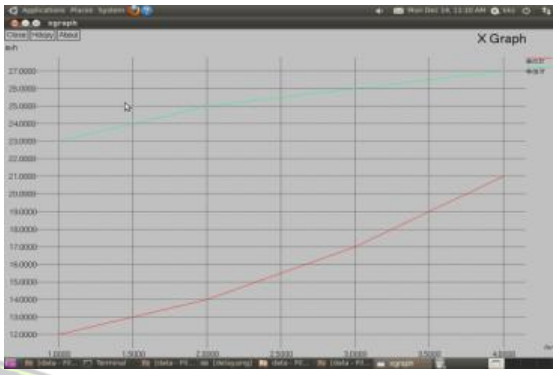

Fig 5.6 comparison of average hop

Fig 5.6 shows that comparison of the existing and proposed system average hop using AODV. The average hop is high for the proposed system when compared to the existing system.

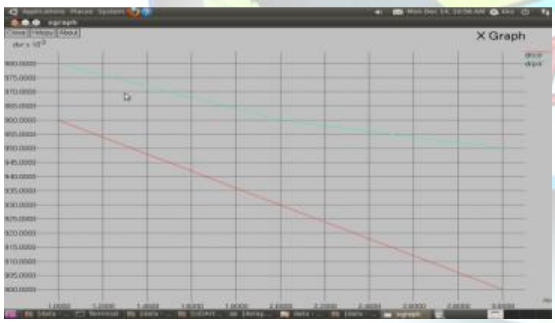

Fig 5.7 comparison of delivery ratio

Fig 5.7 represents the comparison of delivery ratio between existing and proposed system. the packet delivery ratio will be increased when the number of void decreases. Figure shows that the packet delivery fraction of the proposed system is increasing when compared to the existing system.

VI.CONCLUSION

The planned hybrid source routing protocol uses making Neighbor data, Route Discovery, Hybrid Routing and native Repair to resolve the void drawback. The characteristics of proactive and reactive routing protocols may be integrated to realize hybrid routing technique. Hybrid routing protocols could exhibit proactive or reactive behavior betting on the circumstance, therefore permit

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flexibility supported the wireless network. Here DSDV and AODV area unit incorporate along to resolve the void drawback. Simulations show that the planned hybrid supply routing protocol has blessings in terms of average delivery ratio relation, transmission delay, and lower management overhead conjointly reduces the energy consumption. Future work is going to be to create planned protocol comprehensive to common applications. To eliminate the chance that the invention packet might overload when detecting large voids, the methodology of void detection are going to be taken into thought.

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