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Beaconing Strategy for Geo-Graphic Routing In Mobile Ad Hoc Networks

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ABSTRACT: In mobile ad-hoc networks the geographic routing protocol has high priority. This routing protocol maintains the nodes nearest to destination. It requires information about final destination of a packet and neighbor node positions. For maintaining the node updates a unique strategy is used known as Adaptive Position Update (APU).It uses two principles: nodes 1) whose moments are harder to predict & 2) closer to forwarding paths are updated frequently.

KEYWORDS: wireless communication, algorithm/protocol design and analysis, routing protocols.

I. INTRODUCTION

The term MANET (Mobile Ad-hoc Network) refers to a Multihop packet based wireless network composed of a set of mobile nodes that can communicate and move at the same time, without using any kind of fixed wired infrastructure. MANET is actually self-organizing and adaptive networks that can be formed and deformed on-the-fly without the need of any centralized administration. Otherwise, a stand for "MOBILE AD HOC NETWORK" A MANET is a type of ad hoc network that can change locations and configure itself on the fly. Because MANETS are mobile, they use wireless connections to connect to various networks.

II. RELATED WORK

A pure on-demand route acquisition system, nodes that do not lie on active paths neither maintain any routing information nor participate in any periodic routing table exchanges. The routing tables of the nodes within the neighbourhood are organized to optimize response time to local movements and provide quick response time for requests for establishment of new routes. when a source node wants to find a route to another one, the source node initiates a route discovery it broadcasts a route request (RREQ) to the entire network till either the destination is reached or another node is found with a fresh enough route to the destination and each node appends own identifier when forwarding RREQ. After destination node received the first RREQ it sends RREP is on a route obtained by reversing the route appended to receive RREQ. The DSR protocol is composed of the two mechanisms of route discovery and route maintenance. Geographic random forwarding is based on the assumption that sensor nodes have a means to determine their location and that the positions of the final destination and of the transmitting node are explicitly included in each message. In this scheme, a node which hears a message is able (based on its position toward the final destination) to assesses its own priority in acting as a relay for that message. All nodes who received a message may volunteer to act as relays and do so according to their own priority. This mechanism tries to choose the best positioned nodes as relays.

In addition, since the selection of the relays is done a posterior, no topological knowledge or routing tables are needed at each node, but the position information is enough. Geographic routing is used here to enable nodes to be put to sleep and waken up without coordination and to integrate routing, MAC, and topology management into a single layer. Mac scheme based on these concepts and on collision avoidance and report on its energy and latency performance. The proposed scheme performs significantly better for sufficient node density. Overhead is high in this scheme. Wireless sensor networks (WSNS) are being designed to solve a gamut of interesting real-world problems. Limitations on available energy and bandwidth, message loss, high rates of node failure, and communication

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restrictions pose challenging requirements for these systems. Beyond these inherent limitations, both the possibility of node mobility and energy conserving protocols that power down nodes introduce additional complexity to routing protocols that depend on up to date routing or neighbourhood tables. utilizing characteristics of high node density and location awareness, we introduce IGF, a location-aware routing protocol that is robust and works without knowledge of the existence of neighbouring nodes (state-free).implicit geographic forwarding (IGF), as it makes non-deterministic routing decisions, implicitly allowing opportune receiving nodes to determine a packet's next-hop at transmission time.

Specifically, IGF works without prior knowledge of any other node in the network, using an integrated network/Mac solution to identify the best forwarding candidate at the instant a packet is sent. Aside from providing robust message delivery, increasing system stability, and reducing control overhead, we utilize the energy remaining at a node during the candidate election process to ensure nodes do not shoulder vastly unequal portions of the workload and die out sporadically. The maintenance of routing or neighbourhood tables is costly. Geographic forwarding in wireless sensor networks (WSN) has long suffered from the problem of by passing "dead ends". In this paper, we approach the problem of dealing with dead ends in a novel way that allows us to guarantee the delivery of packets to the sink without requiring the overhead and the inaccuracies incurred by "planar" methods. We use tested measurements to show that these idealized assumptions are grossly violated by real radios, and that these violations cause persistent failures in geographic routing, even on static topologies. Having identified this problem, we then fix it by proposing the cross- link detection protocol (CLDP), which enables provably correct geographic routing on arbitrary connectivity graphs.

III. SCOPE OF RESEARCH

The Existing System focus on Geographic routing. In this routing, forwarding decision at each node and the maintenance of one-hop neighbour's location has been often neglected. Some geographic routing schemes, simply assume that a forwarding node knows the location of its neighbour's; others use periodical beacon broadcasting to exchange neighbour's locations. in the periodic beaconing scheme, each node broadcasts a beacon with a fixed beacon interval. The problems in existing system are:

- Increase in Position updating.
- Increases Node Energy Consumption.
- Packet collisions.
- Decrease in routing performance.
- Increases End -to- End delays.

IV. PROPOSED METHODOLOGY

- First we create the network environment for adaptive position update for Geographic routing system. The network creation module will be as follows:
- SOURCE NODE--->SINK NODE-->INTERMEDIATE NODE
- In this network environment we are going to perform our technique of Adaptive position update (APU).
- In the router node, we design as the network nodes perform the operations of Beaconing information, mobility prediction rule and On-demand Learning Rule.
- The Source node perform the operation of triggering router node by sending the data using Socket technique by giving the IP address from one node to another node.
- The destination node performs the operation of receiving data and acknowledging the details.
- Secondly Beaconing information is gathered, after triggering the router node, the node initialization process is carried out. Then, the beacon packets are transmitted to all the nodes in the network.

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- We check the nodes distance between previous position and current position.
- The node distance greater than acceptable threshold update their position to its neighbour's through beacon packets.
- The Node Prediction rule is triggered when there is change in the location of the node.
- The change in the location of the node is cannot be predicated because it moves in the random direction.
- So the beacon packet is send when the deviation is greater than the threshold condition and it is known as Acceptable Error Range (AER).
- It act node to send the beacon packets to the neighbouring nodes.
- As the name suggests On Demand Learning Rule (ODL), a node broadcasts beacons on-demand, i.e., in response to data forwarding activities that occur in the vicinity of that node.
- According to this rule, whenever a node overhears a data transmission from a new neighbour, it broadcasts a beacon as a response.
- By a new neighbour, we imply a neighbour who is not contained in the neighbour list of this node.
- In reality, a node waits for a small random time interval before responding with the beacon to prevent collisions with other beacons.
- Recall that, we have assumed that the location updates are piggybacked on the data packets and that all nodes operate in the promiscuous mode, which allows them to overhear all data packets transmitted in their vicinity.
- In addition, since the data packet contains the location of the final destination, any node that overhears a data packet also checks its current location and determines if the destination is within its transmission range.
- If so, the destination node is added to the list of neighbouring nodes, if it is not already present. Note that, this particular check incurs zero cost, i.e., no beacons need to be transmitted.
- Through Graph Analysis, we analyse our and we evaluate the impact of varying the mobility dynamics and traffic load on the performance of APU and also compare it with periodic beaconing and two recently proposed updating schemes: distance-based and speed-based beaconing (SB).
- The simulation results show that APU can adapt to mobility and traffic load well.
- For each dynamic case, APU generates less or similar amount of beacon overhead as other beaconing schemes but achieve better performance in terms of packet delivery ratio, average end-to-end delay and energy consumption.

ADVANTAGES OF PROPOSED SYSTEM:

- The Proposed Scheme eliminates the drawbacks of periodic beaconing by adapting to the system variations.
- The simulation results show that APU can adapt to mobility and traffic load well.
- Achieve better performance in terms of packet delivery ratio, average end-to-end delay and energy consumption.
- The main reason for all these improvements in APU is that beacons generated in APU are more concentrated

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along the routing paths, while the beacons in all other schemes are more scattered in the whole network.

- In APU, the nodes located in the hotspots, which are responsible for forwarding most of the data traffic in the network have an up-to-date view of their local topology, thus resulting in improved performance.

V. PSEUDO CODE

Step 1: Detect node location
Step 2: If a node location changes, mobility prediction is applied.
Step 3: If node moves randomly then it can't be predicted
Step 4: If deviation greater than threshold (called acceptable error range, AER) ->packet send
Step 5: Neighbouring nodes get packets from node
Step 6: If data overhears by new node then broadcast beacon as response
Step 7: Identifying new node which isn't contains in the neighbours list
Step 8: Before responding with beacon to prevent collisions with other beacons
Step 9: if (new node isn't in neighbours list) ->Add new node to neighbour list

VI. SIMULATION RESULTS

The The Simulations have been shown through the network simulator (NS2), and by using the TCL tool and Network Animator Window (NAM).

Fig 1: Network topology is created so that the Nodes are present within the range and each node is Sensed and source and destination nodes are shown In this figure.Nodes.

Fig**2**: Nodes in the topology are sensed and the related path is selected to send the packet or related data from source to destination

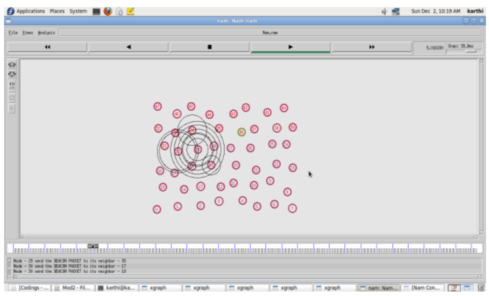


Fig 3: the packets are sent one by one without checking The previously sent packets so that overhead occurs and Energy consumption reduces which is shown In below figure

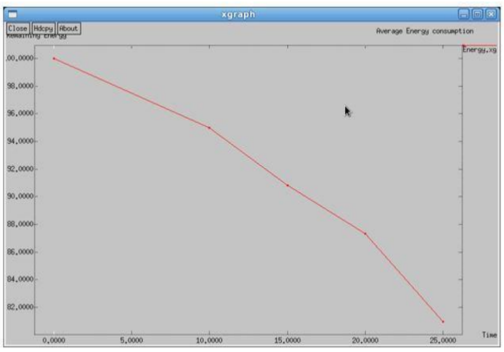
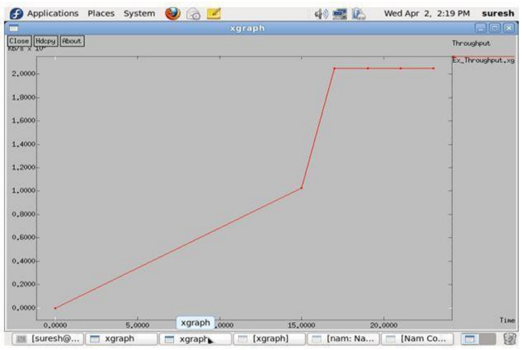


Fig 4: the novel scheme APU is used. The throughput is increased by using two rules i.e.; Mp & ODL.



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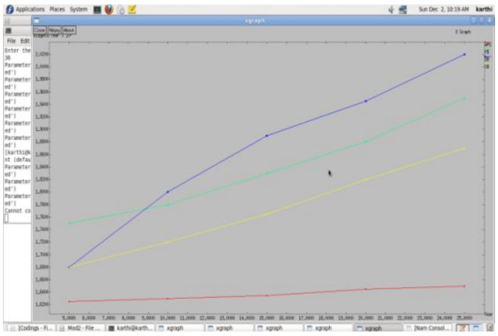

Fig 5: Simulations shown in this figure are Calculated based on speed, distance, and consumption & position updating.

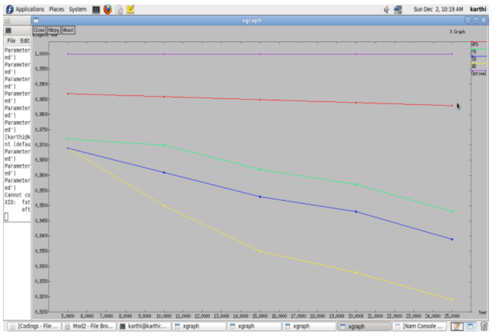

Fig 6; Simulations shown in this figure packet delivery ratio calculated based Energy Speed, distance, energy consumption & position updating.

VII. CONCLUSION AND FUTURE WORK

In this project, the need to adapt the beacon update is identified and the corresponding policy is employed in geographic routing protocols to the node mobility dynamics and the traffic load. The Adaptive Position Update (APU) strategy is proposed to address these problems. The APU scheme employs two mutually exclusive rules. The MP rule uses mobility prediction to estimate the accuracy of the location estimate and adapts the beacon update interval accordingly, instead of using periodic beaconing. The ODL rule allows nodes along the data forwarding path to maintain an accurate view of the local topology by exchanging beacons in response to data packets that are overheard from new neighbours. Performance of APU is evaluated using extensive NS-2 simulations for varying node speeds and traffic load. Results indicate that the APU strategy generates less or similar amount of beacon overhead as other beaconing schemes but achieve better packet delivery ratio, less overhead and energy consumption.

REFERENCES

1. J. Hightower and G. Borriello, “Location Systems for Ubiquitous Computing,” Computer, vol. 34, no. 8, pp. 57-66, Aug. 2001.
2. B. Karp and H.T. Kung, “GPSR: Greedy Perimeter Stateless Routing for Wireless Networks,” Proc. ACM MobiCom, pp. 243-254, Aug. 2000.
3. L. Blaze Vic, S. Giordano, and J.-Y. Libode, “A Location Based Routing Method for Mobile Ad Hoc Networks,” IEEE Trans. Mobile Computing, vol. 4, no. 2, pp. 97-110, Mar. 2005.
4. Y. KO and N.H. Vaidya, “Location-Aided Routing (LAR) in Mobile Ad Hoc Networks,” ACM/Blazer Wireless Networks, vol. 6, no. 4, pp. 307-321, Sept. 2002.
5. Michele Zorzi, Senior Member and Ramesh R. Rao, Senior Member, IEEE. Geographic Random Forwarding (GeRaF) for Ad Hoc and Sensor Networks: Energy and Latency Performance. IEEE Trans. Mobile Computing, VOL. 2, NO. 4, oct-dec 2003.
6. Erik Kuiper and Simin Nadjm-Tehrani, Member, IEEE. Geographical Routing With Location Service in Intermittently Connected MANETs. IEEE Trans. on vehicular technology, VOL. 60, NO. 2, Feb. 2011.
7. D. Johnson, Y. Hu, and D. Maltz, The Dynamic Source Routing Protocol (DSR) for Mobile Ad Hoc Networks for IPv4, IETF RFC 4728, vol. 15, pp. 153-181, Feb. 2007.
8. Ljubica Blazevic, Member, IEEE, Jean-Yves Le Boudec, Fellow, IEEE, and Silvia Giordano.A Location-Based Routing Method for Mobile Ad Hoc Networks , IEEE Trans. Mobile Computing,VOL. 3, NO. 4, oct-dec 2004.
9. Z.J. Haas and B. Liang, “Ad Hoc Mobility Management with Uniform Quorum Systems,” IEEE/ACM Trans. Networking, vol. 7, no. 2, pp. 228-240, Apr. 1999.
10. J. Yuan, Z. Li, W. Yu, and B. Li, “A Cross-Layer Optimization Framework for Multihop Multicast in Wireless Mesh Networks,” IEEE J. Selected Areas in Comm., vol. 24, no. 11, pp. 2092-2103, Nov. 2006.

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