Available Online at www.ijcsmc.com

International Journal of Computer Science and Mobile Computing

A Monthly Journal of Computer Science and Information Technology

ISSN 2320–088X

IJCSMC, Vol. 3, Issue. 11, November 2014, pg.266 – 274

RESEARCH ARTICLE

GPSR BASED POSITION UPDATE FOR GEOGRAPHIC ROUTING IN MANET'S

Miss. G. Anitha*, Mr. M.Baskar, M.Sc., M.Phil.**

*M.Phil(Computer Science), Research Scholar,
Vivekanandha College for Women, Unjanai, Tiruchengode, India
******Assistant Professor in Computer Science
Vivekanandha College for Women, Unjanai, Tiruchengode, India

ABSTRACT: APU communication has received tremendous interest for wireless networks. Most existing works on cooperative communications are focused on link-level physical layer issues. Consequently, the impacts of cooperative communications on network-level upper layer issues, such as topology control, routing and network capacity, are largely ignored. In this article, we propose a Capacity-Optimized Cooperative (COCO) topology control scheme to improve the network capacity in MANETs by jointly considering both upper layer network capacity and physical layer cooperative communications. Through simulations, we show that physical layer cooperative communications have significant impacts on the network capacity, and the proposed topology control scheme can substantially improve the network capacity in MANETs with cooperative communications.

Keywords: COCO, GPSR, Distance Vector, MANET, Local Area Network

1. INTRODUCTION

Mobile computing offers significant benefits for organizations that choose to integrate the technology into their fixed organizational information system. Mobile computing is made possible by portable computer hardware, software, and communications systems that interact with a non-mobile organizational information system while away from the normal, fixed workplace. Mobile computing is a versatile and potentially strategic technology that improves information quality and accessibility, increases operational efficiency, and enhances management effectiveness. A detailed analysis, supported by selective presentation of published literature is used to elucidate and support these asserted benefits of mobile computing. Additionally, a set of heuristics called the MOBILE framework is developed. The MOBILE framework assists information technology professionals in achieving the stated benefits of mobile computing by defining the types of problems, opportunities, and directives that are best addressed through mobile computing technology.

1.1 Limitations of Mobile Computing

Range & Bandwidth: Mobile Internet access is generally slower than direct cable connections, using technologies such as GPRS and EDGE, and more recently HSDPA and HSUPA 3G and 4G networks. These networks are usually available within range of commercial cell phone towers. Higher speed wireless LANs are inexpensive but have very limited range.

Security standards: When working mobile, one is dependent on public networks, requiring careful use of VPN. Security is a major concern while concerning the mobile computing standards on the fleet. One can easily attack the VPN through a huge number of networks interconnected through the line.

Power consumption: When a power outlet or portable generator is not available, mobile computers must rely entirely on battery power. Combined with the compact size of many mobile devices, this often means unusually expensive batteries must be used to obtain the necessary battery life.

Transmission interferences: Weather, terrain, and the range from the nearest signal point can all interfere with signal reception. Reception in tunnels, some buildings, and rural areas is often poor.

Potential health hazards: The mobile devices while driving are often distracted from driving and are thus assumed more likely to be involved in traffic accidents. While this may seem obvious, there is considerable discussion about whether banning mobile device use while driving reduces accidents. Cell phones may interfere with sensitive medical devices. Questions concerning mobile phone radiation and health have been raised.

Human interface with device: Screens and keyboards tend to be small, which may make them hard to use. Alternate input methods such as speech or handwriting recognition require training.

2. LITERATURE SURVEY

J. Hightower and G. Borriello. Our approach involves assigning virtual co-ordinates to each node and then applying standard geographic routing over these coordinates. These virtual coordinates need not be accurate representations of the underlying geography but, in order to serve as a basis of routing, they must reflect the underlying connectivity. Thus, we construct these virtual coordinates using only local connectivity information. B. Karp And H.T. Kung This project suggests an approach to utilize location information (for instance, obtained using the global positioning system) to improve performance of routing protocols for ad hoc networks. By using location information, the proposed Location-Aided Routing (LAR) protocols limit the search for a new route to a smaller “request zone” of the ad hoc network. This results in a significant reduction in the number of routing messages. We present two algorithms to determine the request zone, and also suggest potential optimizations to our algorithms. L. Blazevic, S. Giordano, and J.-Y. LeBoudec, Geographic routing (or position-based routing) uses location information for packet delivery in multihop wireless networks. Neighbors locally exchange location information obtained through GPS (Global Positioning System) or other location determination techniques. Since nodes locally select next hop nodes based on this neighborhood information and the destination location, neither route establishment nor per-destination state is required in geographic routing. D. Johnson, Y. Hu, And D. Maltz, The problem of optimizing the quorum size under different network traffic and mobility patterns is treated numerically. A dynamic and distributed HLR scheme, as a limiting case of the UQS, is also analyzed and shown to be suboptimal in general. It is also shown that partitioning of the network is sometimes necessary to reduce the cost of mobility management.

3. ALGORITHM

- In networks comprised entirely of wireless stations, communication between source and destination nodes may require traversal of multiple hops, as radio ranges are finite.
- A community of ad-hoc network researchers has proposed, implemented, and measured a variety of routing algorithms for such networks.
- Topology changes more rapidly on a mobile, wireless network than on wired networks, where the use of Distance Vector (DV), Link State (LS), and Path Vector routing algorithms is well established.
- New wireless routing protocol Greedy Perimeter Stateless Routing (GPSR) proposes an aggressive use of geography to achieve scalability.
- The aim for scalability under increasing numbers of nodes in the network, and increasing mobility rate.

Measures of scalability are:

- Routing protocol message cost: How many routing protocol packets does a routing algorithm send?
- Application packet delivery success rate: What fraction of applications' packets are delivered successfully by a routing algorithm?
- Per-node state: How much storage does a routing algorithm require at each node.

GPSR Greedy Forwarding Algorithm

Input: Forwarding Node F, Destination D, Neighbor-List (F)
Auxiliary Variables: Progress (F, I) where I∈ Neighbor-List(F)
Maximum-Progress
Output: Next-Hop-Node // if Greedy forwarding is successful
NULL // if Greedy forwarding is not successful and
perimeter forwarding is needed
Initialization: Next-Hop-Node = NULL
Maximum-Progress _ 0.0
Begin GPSR Greedy Forwarding Algorithm

DistanceF-D = (XX) (Y Y) F D F D

forevery neighbor node I∈ Neighbor-List(F) **do**

DistanceI-D = (XX) (Y Y) I D I D

if(DistanceI-D <DistanceF-D) **then**

if(Maximum-Progress <Progress (F, I)) **then**

Maximum-Progress = Progress (F, I)

Next-Hop-Node _ I

end if

end if

end for

if(Maximum-Progress > 0.0) **then**

returnNext-Hop-Node// Greedy forwarding is successful

else

returnNULL // Greedy forwarding is not successful and

// perimeter forwarding is needed

end if

End GPSR Greedy Forwarding Algorithm

Routing Algorithms

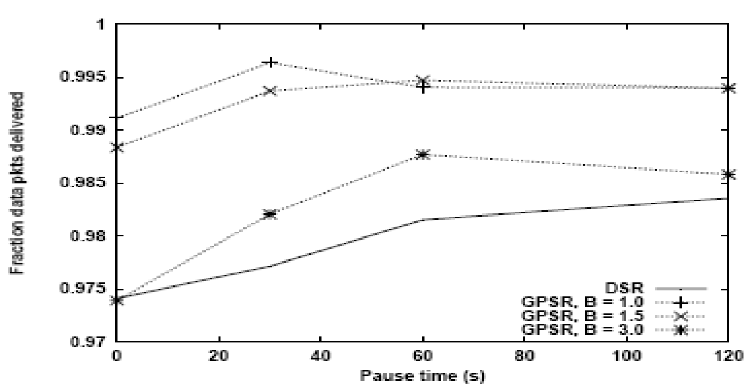
Most QoS routing algorithms represent an extension of existing classic best-effort routing algorithms. Many routing protocols have been developed which support establishing and maintaining multi-hop routes between nodes in MANETs. These algorithms can be classified into two different categories: on-demand (reactive) such as DSR, AODV, and TORA, and table-driven (proactive) such as Destination Sequenced Distance Vector protocol (DSDV). In the on-demand protocols, routes are discovered between a source and a destination only when the need arises to send data.

This provides a reduced overhead of communication and scalability. In the table-driven protocols, routing tables which contain routing information between all nodes are generated and maintained continuously regardless of the need of any given node to communicate at that time. The latency for route acquisition is relatively small, which might be necessary for certain applications, but the cost of communications overhead incurred in the continued update of information for routes which might not be used for a long time if at all is too high.

4. EXPERIMENTS AND RESULT

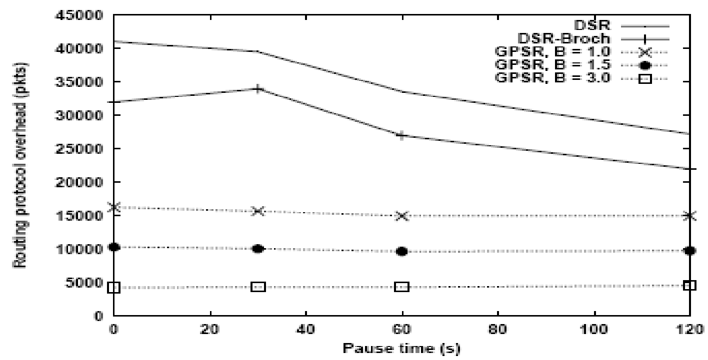
Upon arriving at the chosen waypoint, the node pauses for a configurable period before repeating the same process. In this model, the pause time acts as a proxy for the degree of mobility in a simulation; longer pause time amounts to more nodes being stationary for more of the simulation. The ns-2 wireless simulation model simulates nodes moving in an unobstructed plane. Motion follows the random waypoint model: a node chooses a destination uniformly at random in the simulated region, chooses a velocity uniformly at random from a configurable range, and then moves to that destination at the chosen velocity.

Simulations are for networks of 50, 112, and 200 nodes with 802.11 WaveLAN radios, with a nominal 250-meter range. The nodes are initially placed uniformly at random in a rectangular region. All nodes move according to the random waypoint model, with a maximum velocity of 20 m/s. Pause times simulated of 0, 30, 60, and 120 seconds, the highest mobility cases, as they are the most demanding of a routing algorithm.



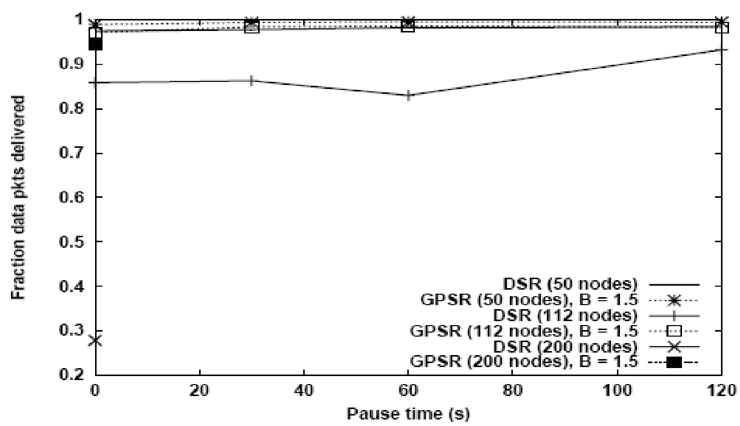
Packet Delivery Success Rate.

GPSR with varying beacon intervals, B, compared with DSR 50 nodes.



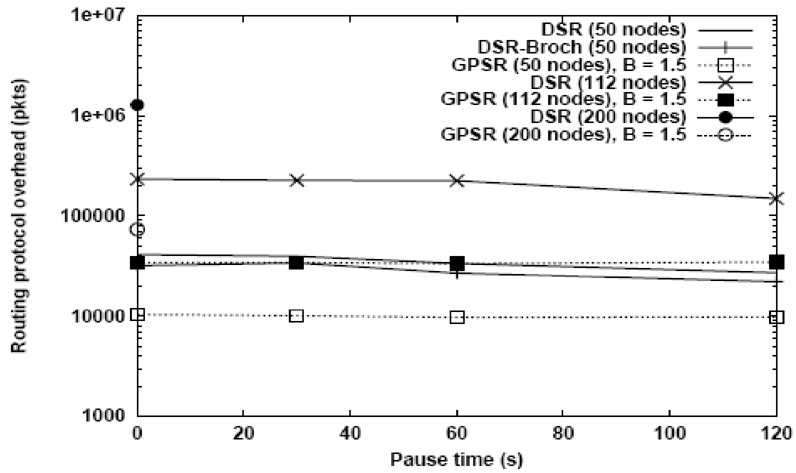
Routing Protocol Overhead

Total routing protocol packets sent network-wide during the simulation for GPSR with varying beacon intervals, B, compared with DSR.50 nodes.



Packet Delivery Success Rate

For GPSR with B=1.5 compared with DSR. 50,112,and 200 nodes.



Routing Protocol Overhead

Total routing protocol packets sent network-wide during the simulation for GPSR with B=1.5 compared with DSR.y axis log-scaled.50,112,and200 nodes.

5. CONCLUSION & FUTURE ENHANCEMENT

A location monitoring system for wireless sensor networks. The design two in-network location anonymization algorithms, namely, resource- and quality-aware algorithms that preserve personal location privacy, while enabling the system to provide location monitoring services. Both algorithms rely on the well established k-anonymity privacy concept that requires a person is indistinguishable among k persons. The resource-aware algorithm aims to minimize communication and computational cost, while the quality-aware algorithm aims to minimize the size of cloaked areas in order to generate more accurate aggregate locations. To provide location monitoring services based on the aggregate location information, propose a spatial histogram approach that analyzes the aggregate locations reported from the sensor nodes to estimate the distribution of the monitored objects. The estimated distribution is used to provide location monitoring services through answering range queries. Shows that query answer error gets worse when the objects are moving faster, the query accuracy of the quality-aware algorithm is consistently better than the resource-aware algorithm.

REFERENCES

1. Laneman, D. Tse, and G. Wornell, **"Cooperative Diversity in Wireless Networks: Efficient protocols and Outage Behavior,"** IEEE Trans. Info. Theory, vol. 50, no. 12, 2004, pp. 3062–80.

2. P. H. J. Chong et al., **"Technologies in Multihop Cellular Network,"**IEEECommun. Mag., vol. 45, Sept. 2007, pp. 64–65.

3. K. Woraditet al., **"Outage Behavior of Selective relaying Schemes,"**IEEE Trans. Wireless Commun., vol. 8, no. 8, 2009, pp. 3890–95.

4. Y. Wei, F. R. Yu, and M. Song, **"Distributed Optimal Relay Selection in Wireless Cooperative networks with Finite-State Markov Channels,"**IEEE Trans. Vehic. Tech., vol. 59, June 2010, pp. 2149–58.

5. Q. Guan et al., **"Capacity-Optimized Topology Control for MANETs with Cooperative Communications,"**IEEETrans. Wireless Commun., vol. 10, July 2011, pp. 2162–70.

6. P. Santi, **"Topology Control in Wireless Ad Hoc and sensor Networks,"** ACM Computing Surveys, vol. 37, no. 2, 2005, pp. 164–94.

