International Journal of Scientific Research & Engineering Trends
Volume 3, Issue 1, Jan.-2017, ISSN (Online): 2395-566X

An Assessment of Location Aided Routing Protocol over MANET

Ankit Navgeet Joshi, Shivendra Dubey, Mukesh Dixit
Radharaman Engineering College, Bhopal, India
*Email: Joshiatsistec@Gmail.Com

***Abstract* – The Mobile Ad Hoc Network (MANET) is introduced in order to perform the wireless communication, in which the end users can have the power of movement in the network at anywhere anytime. Nodes in Mobile Ad hoc Network (MANET) are forming a dynamic topology by that the nodes are continuously changing their location. Efficiency of Route hunting in mobile ad-hoc network is dependent upon blind flooding of route request packets in network. Blind flooding of route request packets lead to increased redundancy over the networks. These data redundancy over the network unnecessarily increase conjunction and traffic over the network. This paper gives an bird eye over MANET, Location-Aided Routing (LAR) and lifetime of network.**

***Keywords* – MANET, LAR, Energy Efficient Routing, Lifetime of Network, AODV.**

I. INTRODUCTION

A Mobile Ad-hoc network (MANET) is a temporary network having set of wireless mobile nodes. These nodes do not use the central access authority, infrastructure and any kind of centralized management system. There are a number of features in mobile ad hoc networks, like as dynamic network topology, use of limited bandwidth and energy for each node in the network. Mobile ad- hoc network plays a special role for a military operation to ensure communication between the teams, apart from this the state of emergency in the road or places, medical surveillance, etc are also the application of MANET. The main reason is the constant change in the network structure due to the high degree of node mobility. It has developed a number of protocols to accomplish this task. Some routing protocols DSR and AODV have been used to maintain the route in the network. It should be able to detect and discover the neighboring nodes, but the transfer of a group of network interfaces MANET is very limited. Therefore, for the exchange of data from the node on the network may be multi-network "hops are required." One of the simplest ways to steer is to send packets to the destination node of the source through the market using geometric information from all network nodes. Get accurate and geometric information is still not easy. Here the node is one of the last extensions of the route by actively identifying all neighbouring nodes asking for information on the shortest route to the destination.

The popular delivery mechanism is flooding [1], where each node in the network to re-send a message to all its neighbouring countries when the message is received. Simple and easy to implement flooding and it can be expensive in terms of network performance, one of the main problems in the flood is "broadcast storm problem." The results of diffusion problems in high resend the message about the need for redundant operations storm, the network bandwidth contention and collision. Study protocol floods [2] and its result to be rebroadcast can provide 61% additional coverage to average more coverage and only 41% more compared to that already covered the old distribution. Accordingly, it was concluded that the anti-chain antibodies is very expensive and must be used with caution. To overcome this problem, it has been proposed several broadcasting systems [3,4,5]. And these plans are generally divided into two categories; peremptory regimes and probability. The inevitability of using topographic information to construct a virtual backbone network that covers all nodes in network diagrams. In order to build a virtual skeleton, and exchange of information on contracts, usually about two or immediate neighbors hop. This leads to a large overhead in terms of time and complexity of the setup message and the maintenance of the spine, particularly in the presence of motion. Probability plans, disparity, and vertebral column of the re-built zero during each broadcast. Instant contract whether a broadcast message or not using the information derived only from the broadcast heard the local decision-making posts. These systems smaller head support and the ability to appear in changing environments greater compared to deterministic adjustment systems [6]. However, these diets have the potential reach of the poor as a compromise in exchange for public expenditure. It reduces the optimal transmission protocol, and the maximum time needed to disseminate a message to reach all nodes. The average time for the entire broadcast message needed to access each contract node.

Route selection and maintenance of overhead gradually in the case of routing protocol based on demand, while the costs of these elements vary from one protocol to another. Every time a way of being discovered, and protocols have to perform some form of flood packets applications until the road is access to the destination node. And include maintenance for the reconstruction of the road, especially in a scenario of link failure or node failure.

A number of routing protocols have been proposed using a variety of routing techniques to use in the network from intruders. Dedicated on-demand distance vector routing (AODV) [9], a dynamic source routing (DSR) [10], ordered and temporally routing algorithm (TORA)

© 2017 IJSRET

[11], the location using the orientation (LAR) [12] (in any contract or Find keep on the road when you need the way), and periodically (proactive) protocols such as the distances from destination vector sequences (DSDV) [13] distributed Bellman Ford [14] (in any exchange contract periodic routing information can be while the current always know the road on each hand). In addition, several protocols used both reactive and proactive, as protocol analysis zone mechanism (ZRP) [15], the protocol block-based-routing (CBRP) [16]. The basic idea of routing protocols based on demand is that the source node sends a route request and makes a decision based on guidance received from responding the way, and that can be sent by hand or nodes averages. At the request routing has several advantages such as simplicity, flexibility and health. However, at the request routing algorithms have the disadvantage of increasing public spending per pack. This additional network click View reduces the bandwidth available for data transfer, latency and increases each packet transmission and consumes extra energy in devices to send and receive network. Because of the way the request propagation paths (floods), it is difficult to limit the deployment of unnecessary packets. According to the routing table, the source node knows the track or the next hop to its destination at any time when the road needs. In anticipatory guidance, guidance information is available when needed, resulting in a little delayed by the data transfer. However proactive routing protocols are not suitable for mobile ad hoc networks, it is also used continuously for much of the network's capacity to keep the current routing information. Proactive routing protocols tend to distribute topographical changes on a large scale in the network, although the creation / destruction of a new link in one end of the network may not be a big piece of information to another end. Hybrid routing protocols inherit claim to be the best parts of each of the reactive and proactive management protocols. The main idea of routing protocols is hybrids that limit the scope of the contract using the management and the proactive routing algorithm mode almost from data usually at the forward contract and storing.

II. MOBILE AD-HOC NETWORK

The proliferation of mobile computing and communication devices (eg, telephones, laptop computers, digital phones, mobile digital devices and personal computers or assistance can be worn) leads a revolutionary change in society information we have. We move from the PC era (ie a person by computing device) at the age of ubiquitous computing, which uses the user, at the same time, most electronic platforms in which they can access to all information required whenever and wherever the need arises [2,6,8]. The nature of the devices makes everywhere easy wireless solution for interconnection and consequently the wireless arena was growing rapidly in the last decade. Users can use a mobile cellular phone to check e-mail and Internet browsing. Travellers with laptops can surf the Internet from airports, railway stations, and Starbucks and other public places. Tourists can use the global positioning system

(GPS) stations installed within the car rental to determine the maps and tourist attractions the training site, and researchers can exchange wires and other information by connecting laptops via wireless local area networks wire while attending conferences. At home, users can synchronize data and transfer fi between portable devices and desktops.

The Mobile devices smaller, cheaper, more convenient, more powerful, and it also operates several ecological network applications and services, usually fuel the explosive growth of the market for mobile computing equipment not only. The number of ex-agglutination of Internet users and mobile head of this increase in computer growth [2,8]. Forecasts indicate that in the next two years, the number of mobile communications, the number of deliveries of yellow flares and Internet radio to grow after by another 20-50% Anbar [2,8]. With this trend, we can expect that the total number of Internet users via mobile phone soon surpass that of fixed Internet users – wi-Fi line.

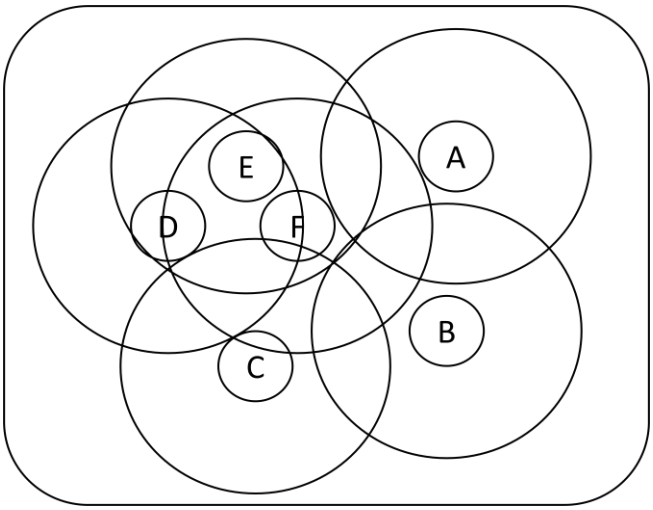

Fig.1.1. Mobile Ad-Hoc Networks

The all applications and services that run mobile devices and network connections and related data services are perhaps the most demand for mobile service users. According to a study by Cahners In-Stat Group, the number of subscribers to wireless data services will grow rapidly from 170 million worldwide in 2000 to over 1.3 billion in 2004, and many have sent messages wirelessly significant monthly increase in the period of December December 3 billion in 1999 to 244 000 million in December 2004. At present, most of the communication is made between wireless devices across the service provider 'fixed infrastructure or private networks. For example, communications between the two mobile phones are setting BA and MA in cellular networks. It is connected laptops to the Internet via a wireless access point. While existing networks to provide infrastructure for a great way for portable devices for network services, it takes time

© 2017 IJSRET

possible to create the necessary infrastructure and the high cost. There are, moreover, situations in which the user will be required network connections are not available in a particular geographical area, and the provision of communications services and network necessary in such cases, it becomes a real challenge.

Allocated in the field of communication, wireless sensor networks play a special role. The sensor consists of net work for a large number of small sensor nodes, which is usually crowded (and randomly) deployed in the area that is monitored phenomenon. Building a network of ad hoc wireless technologies also the basis for sensor networks. However, the limits imposed by the unique characteristics of the sensor and the requirements of the application, and do a lot of custom solutions for multiple wireless networks hip (in general) are not suitable for sensor networks [12]. This puts an ad hoc sensor networks outside the scope of this literature paper and wide. However, the interested reader can Fi in the second cover excellent and comprehensive sensor networks in a recent study [12].

III. Location Aided Routing

The location aided routing is Leading an important aspect in mobile ad hoc network protocols that find a way to be followed by the data packets from the source node to the destination routing node. One of the main challenges Routing Protocol designed for ad hoc wireless networks is facing resource constraints. The devices used in wireless networks allocated in most cases require portability, and therefore they also have the size and weight restrictions with restrictions on the power source. Increase the battery power has made huge phones and fewer contracts. Energy efficiency remains one of the major networks such design considerations. Network Routing Protocol dedicated to

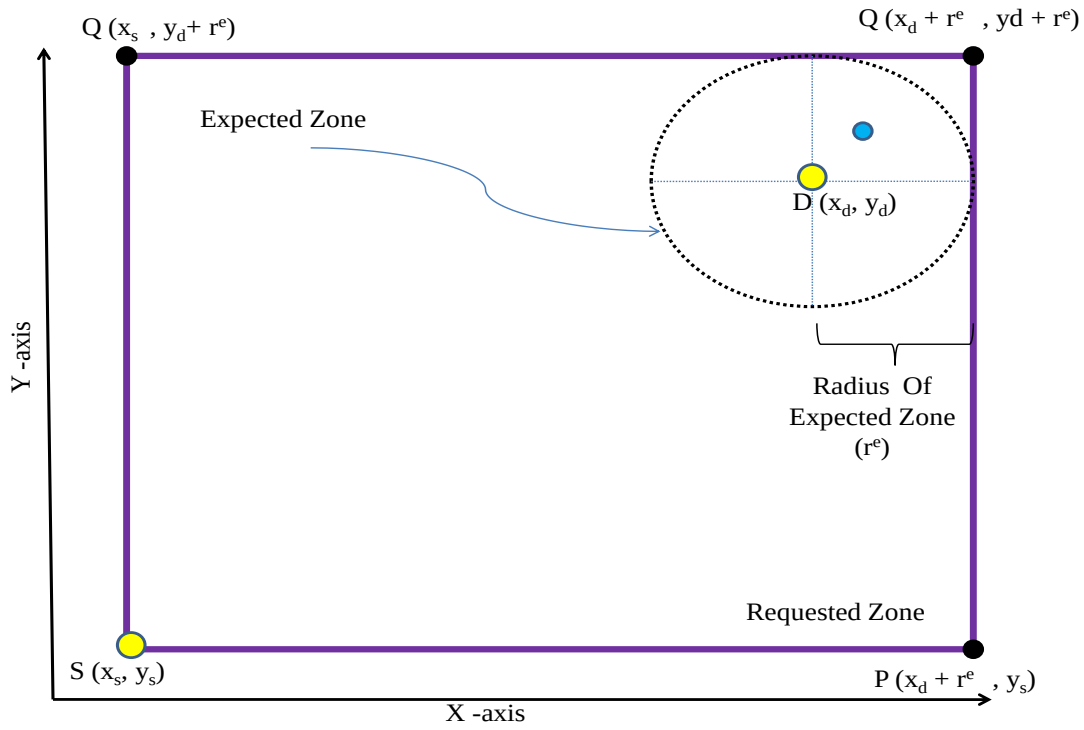

Fig.1.2. Example of Location Aided Routing

You must achieve an optimal balance of these conflicting aspects. In the existing guidelines on the block, it was a vital network organization into sections called groups to maintain a relatively stable effective topology. The Membership in each group may be change over time in response of node mobility. It can also the failure of the node or access to a new node. But with the help of a location aided routing protocol (LAR) [12] it is possible to uses the location of the routing information. However, LAR assumes the availability of the global positioning system (GPS) to the geographic location of necessary routing information. All nodes involved a decade with his position, which consumes a lot of energy into account. Also during the routing process, the number of hops is relatively higher than guidance on the block basis. Higher charges hop, more energy consumption to guide the packet from the source to the destination. These problems have led us to propose a protocol to improve the performance of LAR in the field of energy efficiency

Related work

IV. Related Work

Wireless networks come into existence in the 1970s, it increased attention since. During the last decade, and especially at the end, and attention that almost exploded probably due to the rapid growth of the Internet. The explosive growth of personal computers and the use of

© 2017 IJSRET

laptops in handy require the exchange of information between computers. At present, this information exchange is difficult, because users need to perform administrative tasks and the preparation of stable, bidirectional links between computers.

Goyal, M.,at al [10] proposed an algorithm for the intended area. The area is divided into six sectors aims and eases away the destination. The proposed approach is suitable for both high and low network stupidity. The objective of this document is found, frankly knot position, as well as to find the direction of the node using a probability distribution function (PDF. In addition to the flow account, the proposed approach will also improve the speed of data transfer fell, pregnancy, and attempts to re-transmission network in ad hoc.

Dahai Du;at al [11] propose energy efficiency site routing protocol (read), which is based on the node location information. The main objective of this protocol is to reduce energy consumption and extend the life of networks. Especially as the number of mobile contract and sources RBC increases in networks, the simulation results become better. This can reduce energy consumption and extend the life of dedicated networks.

Mangai, S. at al [12] This document focuses on the routing protocol for intruders GPS network enable the design of the site with the help of a hybrid routing protocol to allow groups of MANET GPS (HLRP). Using a routing protocol is based on the market are divided into groups. The packet routing between the blocks using the location information of the contract. The simulation is performed using NS2 by changing the movement of the contract and the number of nodes. The results show that the proposed algorithm better performance compared to different routing protocols such as CBRP, LAR and LACBER in terms of time end-to-end, and control of public expenditure, and the proportion of delivery packages.

Jia Meng;at al [13] propose an adaptive strategy based on the combination of these two situations and then apply this strategy to Location-Aided Routing (LAR) protocol to keep the routing performance from degradation. In the adaptive strategy we use the Multiple Attribute Decision Making (MADM) to establish the control function which can accommodate message transmission to the circumstances dynamically.

Nen-Chung Wang;at al [14] propose a directive with the help of improved website (ILAR) plan to improve site efficiency with the help of a guidance system (LAR) using the Global Positioning System (GPS). In this scheme, we must first decide on the base, which is the dividing line between the source node, destination node, to discover the road. It was broadcast request packet of the request based on the reference area to determine next broadcast nodes. Is selected neighbor node with the shortest distance to the next base line diffusion nodes. **Kai-Ten Feng;at al [15]** this paper, the speed offered with the help of routing protocol (VAR) to determine the future of the intended direction and the destination node package that is based on the relative speed between the node plan. Routing performance can be increased by improving the speed and space with the help of the routing protocol (VLAR), which combines the protocol signed with the help of the orientation (LAR) with the algorithm VAR. Two types of predictive models of movement, and the movement pattern Gauss-Markov model of movement and constant speed, and are included in the design of algorithms and VAR VLAR. Simulation studies indicate that the proposed protocol VLAR outperforms other routing algorithms, in particular for small networks built with high mobility.

The routing in MANET is completely dependent on the flooding of routing packets in network by that the nodes energy is wasted in flooding. Due to limited working capacity of mobile nodes is the major problem in MANET. In MANET the energy is the limited resource because there is a no source is available in network by that the nodes are regain their energy. It means if the node is lost their energy then the battery replacement is only the option to retain the node in network with full capability and the second one option is to utilize the energy of nodes efficiently. The meaning of efficient use of battery power is to reduce the possibility of packet loss and retransmission in network. The routing protocol has no capability to reduce the motion of mobile nodes that is the major region of link breakage and energy wastage. The energy efficient routing scheme is utilizes the nodes power in communication..

V. CONCLUSION

Performance of routing over Mobile Ad Hoc Network (MANET) varies on network density and mobility of node. Any routing protocol is ideal when it search route with minimal utilization of network resource like bandwidth, time, and energy. Route hunting in mobile ad-hoc network is carried by blind flooding of route request packets in network. Blind flooding of route request packets lead to increase traffic, conjunction and redundancy over the networks. This paper discusses pros and cons of Location-Aided Routing (LAR) protocol and minimizes the conjunction and overhead of route discovery by utilizing location information of mobile nodes obtained using Global Positioning System (GPS).

REFERENCES

[1] B. Williams and T. Camp, Comparison of broadcast in techniques for mobile ad-hoc networks. In Proc. ACM Symposium on Mobile Ad Hoc Networking & Computing (MOBIHOC 2002), pp. 194–205, 2002.

[2] J. Cartigny and D. Simplot, "Border node retransmission based probabilistic broadcast protocols in ad hoc networks," Telecommunication Systems,, vol. 22, pp. 189-204, 2003.

[3] C. E. Perkins, and E. M. Royer, "Ad-hoc on-demand distance vector routing," 2nd IEEE Workshop on Mobile Computing Systems and Applications, Monterey, California, USA: Feb 25 – 26, 1999: 90-100.

© 2017 IJSRET

[4] H D-Ferriere, M Grossglauser, and M Vetterli, "Age Matters: Efficient Route Discovery in Mobile Ad Hoc Networks Using Encounter Ages," 4th ACM International Symposium on MANET and Computing, 2003

[5] C. E. Perkins, E. M. Belding-Royer, and S. Das, "Ad hoc on-demand distance vector (AODV) Routing," RFC 3561, July 2003,

[6] David Johnson, David Maltz and Yih-Chun Hu, "The Dynamic Source Routing Protocol for Mobile Ad Hoc Networks," Internet Draft, draft-ietf-manet-dsr10.txt,July 2004

[7] V. Park and S.Corson "Temporally-Ordered Routing Algorithm," Internet Draft, draft-ietf-manet-tora-spec-03.txt, work in progress, June 2001.

[8] Y.-B. Ko and V. N. H.,"Location-Aided Routing in mobile Ad hoc networks," ACM/IEEE Mobicom, pages 66-75, October 1998.

[9] C. E. Perkins and P. Bhagwat , "Highly Dynamic Destination-Sequenced Distance Vector (DTDV) for Mobile Computers," Proc. of the SIGCOMM 1994 Conference on Communications Architectures, Protocols and Applications, Aug 1994, pp 234-244.

[10] Goyal, M., "A modify the directional aware nodes using LAR Routing Protocol & GPS technology in MANET," in Green Computing, Communication and Conservation of Energy (ICGCE), 2013 International Conference on , vol., no., pp.909-913, 12-14 Dec. 2013

[11] Dahai Du; Huagang Xiong, "A Location aided Energy-Efficient Routing protocol for Ad hoc Networks," in Wireless and Optical Communications Conference (WOCC), 2010 19th Annual, vol., no., pp.1-5, 14-15 May 2010

[12] Mangai, S., Tamilarasi, A., "Hybrid location aided routing protocol for GPS enabled MANET clusters", IEEE 2010, pp 404 – 409.

[13] Jia Meng; Hao Wu; Hengliang Tang; Xingyu Qian "An Adaptive Strategy for Location-Aided Routing Protocol in Vehicular Ad Hoc Networks" IEEE 2013, pp 405-410.

[14] Nen-Chung Wang; Si-Ming Wang, "An efficient location-aided routing protocol for mobile ad hoc networks," in Parallel and Distributed Systems, 2005. Proceedings. 11th International Conference on , vol.1, no., pp.335-341 Vol. 1, 20-22 July 2005

[15] Kai-Ten Feng; Tse-En Lu, "Velocity and location aided routing for mobile ad hoc networks," in Vehicular Technology Conference, 2004. VTC2004-Fall. 2004 IEEE 60th , vol.4, no., pp.2789-2793 Vol. 4, 26-29 Sept. 2004

[16] Deb, D.; Roy, S.B.; Chaki, N., "Design of a low-cost positioning framework for location aided energy efficient routing," in Wireless Communication and Sensor Networks (WCSN), 2009 Fifth IEEE Conference on , vol., no., pp.1-6, 15-19 Dec. 2009

[17] Xudong Yang; Jiangtao Yin; Sunzheng Yuan, "Location-Aided Opportunistic Routing for Mobile Ad Hoc Networks," in Wireless Communications, Networking and Mobile Computing, 2009. WiCom '09. 5th International Conference on , vol., no., pp.1-5, 24-26 Sept. 2009

© 2017 IJSRET