Forensic Investigation for Web Forgery through Java Script Obfuscation

Divya Rishi Sahu[1], Mr Anand Chourasia[2]
Sagar Institute of Research & Technology, Bhopal

Abstract: Ad-hoc Network is an infrastructure less, wireless network which can establish temporary. In this network, node can travel across the whole network with the property of mobility. The communication can perform at any time. In this network node broadcast the message in order to send the data to destination node. In this network, there is not any type of centralized administration.For any communication operation over the ad-hoc source node broadcast a message to all the other nodes in the network. Network wide broadcasting in Ad Hoc Network provides important control and route establishment functionality for a number of unicast and multicast protocols. Broadcasting in ad-hoc network poses more challenges than in wired networks due to node mobility and scarce system resources. Broadcasting is categorized into deterministic and probabilistic schemes.

Keyword: Adhoc Network, Routing, Attack, AODV, MANET, Sensor Network

I. INTRODUCTION

A Mobile Ad-Hoc Network (MANET) is a temporary network having collection of wireless mobile nodes without using central access, infrastructure or centralized administration. There are number of characteristics in Mobile ad-hoc networks having verity of features, such as the dynamic network topology, limited bandwidth and energy constraint in the network. Mobile ad hoc network is significant for military operation to provide communication between squads, emergency case in out-of-the-way places, medical control etc. The major reason for this is the constant change in network topology because of high degree of node mobility.

A number of protocols have been developed for accomplish this task. Some of them are DSR and AODV routing protocols. For communication nodes in the network should be able to sense and discover with nearby nodes, but transmission range of MANET network interfaces is very limited; so for exchanging data within the node across the network may be required multiple network “hops”. One of the simple ways for routing is to send packets to the destination from the source node through intermediate nodes using the geometric information of all the nodes in the network. Getting accurate geometric information is still not easy.

Where is one of another supplement of route determining by means of actively asking all the neighbours for information regarding shortest path to the destination.

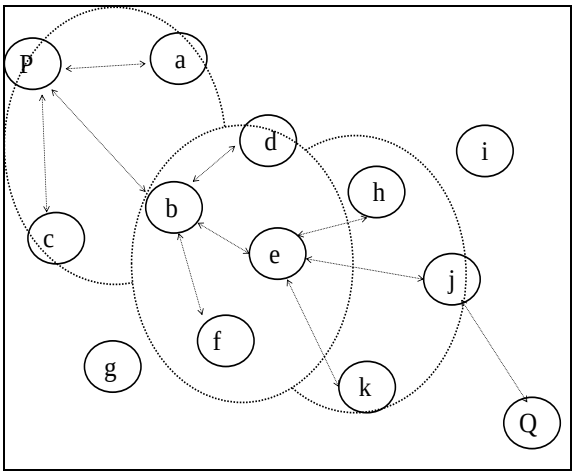


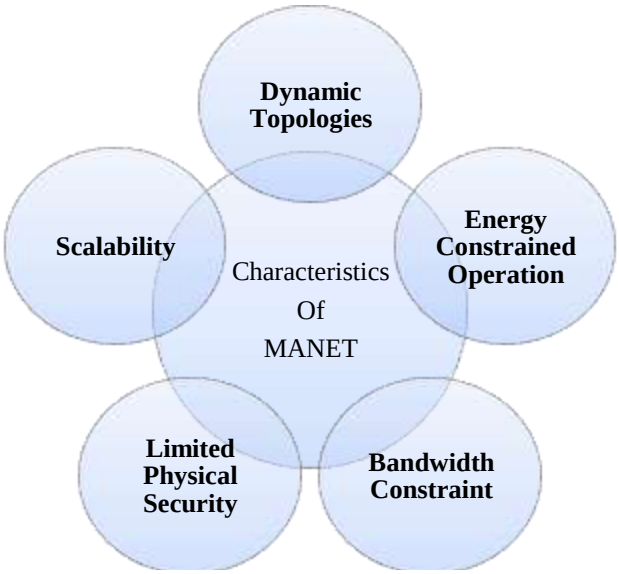
Figure 1: MANET Structure

II. MOBILE AD-HOC NETWORK

MANETs are communication networks in which all nodes are mobile and communicate with each other via wireless connections. There is no fixed infrastructure. All nodes are equal and there is no centralized control or overview. There are no designated routers: all nodes can serve as routers for each other and data packets are forwarded from node to node in a multi-hop fashion. MANET is a kind of wireless ad-hoc network and it is a self-configuring network of mobile routers (and associated hosts) connected by wireless links – the union of which forms an arbitrary topology. The routers, the participating nodes act as router, are free to move randomly and manage themselves arbitrarily; thus, the network's wireless topology may change rapidly and unpredictably. Such a network may operate in a standalone fashion, or may be connected to the larger Internet

III. CHARACTERISTICS OF MANET

There are many characteristics of MANET. some of them are describe here



- **Dynamic Topologies:** Nodes are free to move arbitrarily. The network topology may change randomly and have no restriction on their distance from other nodes. As a result of this random movement, the whole topology is changing in an unpredictable manner, which in turn gives rise to both directional as well as unidirectional links between the nodes.
- **Energy Constrained Operation :**Almost all the nodes in an ad-hoc network rely on batteries or other exhaustive means for their energy. The battery depletes due to extra work performed by the node in order to survive the network. Therefore, energy conservation is an important design optimization criterion.
- **Bandwidth Constraint:** Wireless links have significantly lower capacity [28] than infrastructures networks. Throughput of wireless communication is much less because of the effect of the multiple access, fading, noise, interference conditions. As a result of this, congestion becomes a bottleneck in bandwidth utilization.
- **Limited Physical Security:** MANETs are generally more prone to physical security threats than wireless networks because the ad hoc network is a distributed system and all the security threats relevant to such a system are pretty much present, as a result, there is an increased possibility of eavesdropping, spoofing, masquerading[29], and denial-of-service type attacks.
- **Scalability:** Networks may be large, normally more than 10 nodes and reaching 1000 nodes in a sensor network. Thus, routing protocols should be able to scale to this amount. A number of algorithms have been proposed, and can be categorized as either proactive or reactive protocols.

IV. PROTOCOLS OF MANET

Classification of routing protocols in MANET's can be done in many ways, but most of these are done depending on routing strategy and network structure. In general, Routing states can be divided into three categories - Static, Quasi Static and Dynamic in MANETs. Further, each of the three basic routing functions may be implemented in three ways- Centralized, Decentralized and Distributed.

The routing protocols can be mainly categorized as: Flat routing, Hierarchical routing and Location aware routing on network structure. In flat-based routing, all nodes play the same role. In hierarchical –based routing, however, nodes will play different role in network. In location aware-based routing, nodes positions are exploited to route data in the network.

This paper describes several concepts concerning the operation of that kind of routing protocols. According to the routing strategy the routing protocols can be categorized as Table-driven and source initiated, while depending on the network structure these are classified as flat routing, hierarchical routing and location aware routing. Both the Table-driven and source initiated protocols come under the Flat routing.

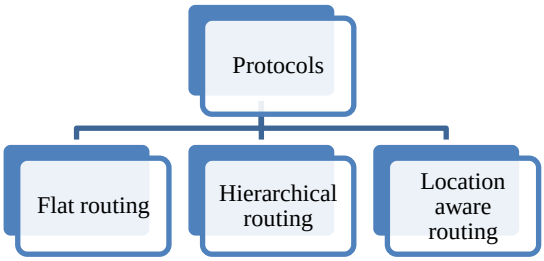


Figure 2: Classification of Protocol

The four core basic routing functionalities for mobile ad hoc networks are:

- **Path generation:** This generates paths according to the assembled and distributed state information of the network and of the application; assembling and distributing network and user traffic state information.
- **Path selection:** This selects appropriate paths based on network and application state information.
- Data Forwarding: This forwards user traffic along the select route forwarding user traffic along the selected route.
- **Path Maintenance:** maintaining of the selected route. Due to its characteristics, other desirable features of ad hoc routing protocol include- fast route establishment, multiple routes selection, energy/bandwidth efficiency and fast adaptability to link changes. Almost all routing systems respond in

some way to the changes in network and user traffic state. However, routing systems vary widely in the types of state changes to which they respond and the speed of their response.

V. DEMPSTER-SHARFER THEORY

Dempster-Shafer Theory (DST) is a mathematical theory of evidence. The seminal work on the subject is [Shafer, 1976], which is an expansion of [Dempster,1967]. In a finite discrete space, Dempster-Shafer theory can be interpreted as a generalization of probability theory where probabilities are assigned to sets as opposed to mutually exclusive singletons. In traditional probability theory, evidence is associated with only one possible event.

In DST, evidence can be associated with multiple possible events, e.g., sets of events. As a result, evidence in DST can be meaningful at a higher level of abstraction without having to resort to assumptions about the events within the evidential set. Where the evidence is sufficient enough to permit the assignment of probabilities to single events, the Dempster-Shafer model collapses to the traditional probabilistic formulation.

One of the most important features of Dempster-Shafer theory is that the model is designed to cope with varying levels of precision regarding the information and no further assumptions are needed to represent the information. It also allows for the direct representation of uncertainty of system responses where an imprecise input can be characterized by a set or an interval and the resulting output is a set or an interval. There are three important functions in Dempster-Shafer theory: the basic probability assignment function (bpa or m), the Belief function (Bel), and the Plausibility function (Pl).

The basic probability assignment (bpa) is a primitive of evidence theory. Generally speaking, the term "basic probability assignment" does not refer to probability in the classical sense. The bpa, represented by m, defines a mapping of the power set to the interval between 0 and 1, where the bpa of the null set is 0 and the summation of the bpa's of all the subsets of the power set is 1.

The value of the bpa for a given set A (represented as m(A)), expresses the proportion of all relevant and available evidence that supports the claim that a particular element of X (the universal set) belongs to the set A but to no particular subset of A [Klir, 1998]. The value of m(A) pertains only to the set A and makes no additional claims about any subsets of A. Any further evidence on the subsets of A would be represented by another bpa, i.e. B ϵA, m(B) would the bpa for the subset B. Formally, this description of m can be represented with the following three equations:

$$m: P(x) \rightarrow [0,1]$$
$$m(\emptyset) = 0$$

$$\sum_{A \in P} m(A) = 1$$

Where, P (X) represents the power set of X, ϕ is the null set, and A is a set in the power set (AϵP (X)). [Klir, 1998] Some researchers have found it useful to interpret the basic probability assignment as a classical probability, such as [Chokr and Kreinovich, 1994], and the framework of Dempster-Shafer theory can support this interpretation. The theoretical implications of this interpretation are well developed in [Kramosil, 2001].

This is a very important and useful interpretation of Dempster-Shafer theory but it does not demonstrate the full scope of the representational power of the basic probability assignment. As such, the bpa cannot be equated with a classical probability in general. From the basic probability assignment, the upper and lower bounds of an interval can be defined.

This interval contains the precise probability of a set of interest (in the classical sense) and is bounded by two non additive continuous measures called Belief and Plausibility. The lower bound Belief for a set A is defined as the sum of all the basic probability assignments of the proper subsets (B) of the set of interest (A) (B Í A). The upper bound, Plausibility, is the sum of all the basic probability assignments of the sets (B) that intersect the set of interest (A) (B ∩A ≠ ∅). Formally, for all sets A that are elements of the power set (AÎ P (X)), [Klir, 1998].

$$Bel(A) = \sum_{B/B \in A} m(b)$$

$$pl(A) = \sum_{B/B \in A \neq \emptyset} m(B)$$

The two measures, Belief and Plausibility are non additive. This can be interpreted as is not required for the sum of all the Belief measures to be 1 and similarly for the sum of the Plausibility measures.

VI. CONCLUSION

Geographical and time radiant historical information is very to compute highly probabilistic route from source to destination and towards reduce the probability of collision, rebroadcast at the expense of lower packet loss and enhanced scheme has with lower latency rate and better reach ability by using a D-S belief method. This paper is a review on the mobile ad-hoc network and Dempster-Shafer Theory.

ACKNOWLEDGMENT

The research presented in this paper would not have been possible without our college, at **college name**, Bhopal. We wish to express our gratitude to all the people

who helped us the World-Wide Web into the useful and popular distributed hypertext it is. We also wish to thank the anonymous reviewers for their valuable suggestions.

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] S.-Y. Ni, Y.-C. Tseng, Y.-S. Chen, and J.-P. Sheu, "The broadcast storm problem in a mobile ad hoc network", Proc.Mobicom_99, 1999.

[3] Y. Sasson, D. Cavin, and A. Schiper, Probabilistic Broadcast for flooding in wireless mobile ad hoc networks, In Proc. IEEE Wireless Communications & Networking Conference (WCNC 2003), pp. 1124–1130, March 2003.

[4] J. Wu and W. Lou, "Forward-node-set-based broadcast in clustered mobile ad hoc networks," Wireless Communication andMobile Computing, vol. 3, pp. 155 – 173, 2003.

[5] A. Keshavarz-Haddad, V. Ribeiro, and R. Riedi, "Color- Based Broadcasting for Ad Hoc Networks," in Proceeding of the 4thInternational Symposium on Modeling and Optimization in Mobile,Ad Hoc, and Wireless Network (WIOPT' 06). Boston, MA, 2006, pp. 1 - 10.

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

[7] 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.

[8] 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

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

[10] 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

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

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

[13] 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.

[14] Dimitri P. Bertsekas and Robert G. Gallager , "Distributed Asynchronous Bellman-Ford Algorithm," Data Networks, pp. 325-333, Prentice Hall, Enlgewood Cliffs, 1987.