

Study the Multipath Routing With Self-Healing Technique for Qos in MANET

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Abstract: In this paper we describe the multipath routing technique for mobile ad hoc networks. Because we know that Mobile equipments having very powerful and large memory, megabytes of disk space are becoming quite common today. And mobile technology is the best becoming technology for our life and generation. In this Network connectivity options for use with mobile hosts have increased also, including support for growing number of wireless networking product based on radio and infra-red. This type of mobile computing equipments has made the possibilities to share the information between mobile users. Mobile users will meet under circumstances that are not explicitly planned for and in which no connection to a standard network (Internet) is available. The solution to these types of networking problem has come up in the form of mobile ad hoc network. And in this paper we discuss the multipath routing with self healing technique for Qos in mobile ad hoc networks.

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Introduction:

An ad hoc wireless network is a collection of two or more devices equipped with wireless communications and networking capability. Such devices can communicate with another node that is immediately within their radio range or one that is outside their radio range. For the later scenario, and intermediate node is used to rely of forward the packet from the source towards the destination. An ad hoc wireless network is self-organizing and adaptive. This means that a formed network can be de-formed on –the –fly without the need of any system administration. The term “ad hoc” tends to imply “can take different forms” and “can be mobile, standalone or networked”. Ad hoc nodes or devices should be able to detect the presence of other such devices and to perform the necessary handshaking to allow the sharing of information and services. [3]

A mobile ad hoc network is self-created and self-organized by a set of mobile nodes called hosts. The nodes are interconnected by single-hop or multiple hop wireless connection, and each node may serve as a packet level router for others nodes in the same mobile ad hoc network. Ad hoc network is the simplest form of wireless LAN which is a network of a few nodes without any bridging or forwarding capability. [1] All nodes are equal and may join or leave at any time, and have equal right to the medium. In fact, it's very much like an Ethernet, where we may add or remove node at discretion. This is the king of radio network deployed in homes of small offices. [2]

Mobile ad hoc networks consist of wireless hosts that communicate with each other in the

absence of a fixed infrastructure. Routes between two hosts in MANET may consist of hops through other hosts in the network. The task of finding and maintaining routes in MANET is nontrivial since host mobility causes frequent unpredictable changes. A number of MANET protocols for achieving efficient routing have been recently proposed. They differ in The approach used for searching a new route and / or modifying a known route, when hosts move. It is assumed that each node is aware of the geographic location of all others nodes in MANET of course, for this to work all nodes must be able to see all the other nodes of the network, to be able to establish communication with them. When a node goes out or range, it just loses connection with the rest of the ad hoc network. The vision of mobile ad hoc networking is to support robust and efficient operation mobile wireless networks by incorporating routing functionality into mobile nodes.

Though mobile ad hoc network are attractive, they are more difficult to implement than fixed networks. Fixed networks take advantage of their static nature in two ways. First, they proactively distribute network topology information among the nodes, and each node pre- computes the routes through that topology using relatively inexpensive algorithms. Second, fixed networks embed routing hints in node addresses because the complete topology of a large network is too unwieldy to process of distribute globally. Neither of these techniques works well for networks with mobile nodes because movement invalidates topology information and permanent node addresses cannot include dynamic location information. [3]

Routing of MANETs:

The knowledge of routing protocols of MANETs is important to understand the security problems in MANETs. The routing protocols used in MANETs are different from routing protocols of traditional wired world. Some of the reasons are listed below:^[5]

1. Frequent Route updates.
2. Mobility.
3. Limited transmission range.

The performance criteria of nodes in MANETs are different than that of wired networks. Some of the performance Metrics of MANET routing protocols are listed below:^[5]

1. Energy consumption.
2. Route Stability despite mobility.

CHARACTERISTICS OF MOBILE AD HOC NETWORK:

MANET has several salient characteristics that have to be taken into account when considering their design and deployment:

1. **Dynamic Topologies:** nodes are free to move arbitrarily; thus the network topology which is typically multi hop, may change randomly and rapidly at unpredictable times, and may consist of both bidirectional and unidirectional links.
2. **Bandwidth:** constrained variable capacity links: wireless links will continue to have significantly lower capacity than their hardwired counterparts. In addition, the realized throughput of wireless communications, after accounting for the effects of multiple access, fading, noise and interference conditions, etc, is often much less than a radio's maximum transmission rate. As the mobile network is often simply an extensions of the fixed network infrastructure mobile ad hoc users will demand the similar services. These demands will continue to increase as multimedia computing and collaborative network applications rise.
3. **Energy-Constrained Operations:** some or all of the nodes in a MANET may rely on batteries or other exhaustible means of their energy for these nodes, the most important system design criteria for optimization may be energy conservation.
4. **Limited Physical Security:** mobile wireless

networks are generally more prone to physical security threats than are fixed-cable nets. The increased possibility of eavesdropping, spoofing, and denial of services attacks should be carefully considered. existing link security techniques are often applied with wireless network to reduce the security threats. As a benefit, the decentralized nature of network control in MANETs provide additional the single points of failure of more centralized approaches.

It is obvious that the routing function is the at most importance for the viability of an ad hoc network. It is also a big challenge since all the characteristics of the mobility and wireless channel previously mentioned, must be, taken into account when designing such protocols.

MULTIPATH ROUTING in MANETs:

To improve the reliability of the mobile ad hoc network for the support of QoS demanding applications, we propose a multipath routing algorithm.^[3]

The following assumptions are made for the proper working of our protocol.

- Mobile ad hoc networks considered are of small to medium size networks
- All links are bi-directional.
- Mobile nodes in ad-hoc networks cannot move too fast to render QoS routing impossible and thus the topology of the network will not change significantly while a packet is being transmitted.
- The transmission channel is treated as a pure erasure channel.

Mobile and Wireless Applications are used in these fields:

The following are the application area:

1. Military
2. Radar Technology
3. Aircrafts
4. Internet
5. Banking area
6. Health
7. Transportation
8. Education
9. Entertainment
10. Commercial

Advantages and Disadvantages:

Mobile and wireless networks are increasingly utilized at the edge of the Internet and in localized LANs in place of wired connectivity. These wireless nets, normally built with commercially available wireless routers and network cards based on the Institute of Electrical and Electronics Engineers (IEEE) 802.11 series of standards collectively known

as Wi-Fi (wireless fidelity), allow greater flexibility in deploying new nodes or redeploying existing ones without having to acquire or adjust a large wired infrastructure. However, the cost benefits and ease of use associated with wireless networks come at the price of limited bandwidth, limited range and connectivity difficulties due to environmental factors, and security concerns. ^[4]

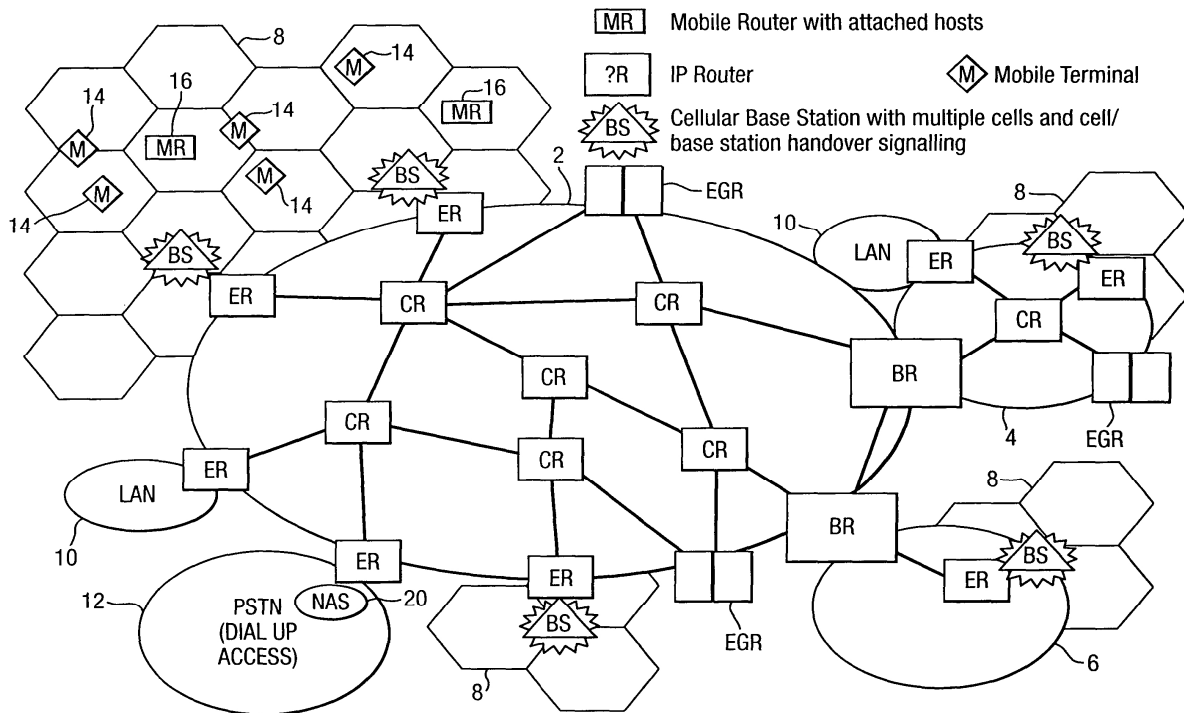


Figure (a)

CONCLUSION

In this paper we present work evaluates the effect of multipath routing in network size and degree for total hop counts, total successful hop counts, delivery rate and MFR routing algorithm in mobile AD Hoc Network. In this we can simulate the routing algorithm result for the success rate greatly depends on network degree. We can change the more than on path and transfer the rate ratio and convert the data ratio density in the present data networks.

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