AN EFFECTIVE ADAPTIVE PROTOCOL FOR MOBILE AD-HOC NETWORK USING FIRE FLY ALGORITHM

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ABSTRACT- Mobile Ad hoc Network (MANET) is the assortment of cooperative wireless nodes newlinewithout physical existence of any access network point or infrastructure. This thesis newlineaddresses issues pertaining to mobile adhoc networks due to lack of infrastructure and newlinedynamic mobility. MANETs are gaining attention in the increasing real life newlineapplications such as military, conference management system, search and rescue newlineapplications. Consequently, these are beneficial in classrooms, conventions where newlinestudents share their views dynamically through mobile devices. Fulfillment of this requirement has been a newlinecomplex problem due to lack of fixed infrastructure and rapid movement of nodes. NewlineThe mobility of these nodes imposes issues in terms of mobility management, energy newlineconsumption, battery life and security. The main contributions of the thesis are in the newlineareas of mobility management, random scenarios, battery life and processing activity newlineand security. In the thesis, comprehensive review of existing routing protocols and newlinetheir issues have been studied in detail. To provide secure routing in adhoc networks, newlineit is essential to authenticate each node. In this proposed work, firefly algorithms have been proposed by enhancing the AODV (AdhocOn Demand Distance Vector).

KEYWORDS-

MANET-Mobile Ad-hoc Network,

QOS-Quality Of Services,

AODV-Ad-hoc On demand Distance Vector,

MAC-Media Access Control,

PC –AODV-Power Control Ad-hoc On demand Distance Vector

MATLAB-Matrix Laboratory

INTRODUCTION

Mobile Ad-hoc Networks are a collection of two or more devices equipped withwireless communications and networking capability. These devices can communicate with other nodes that are immediately within their radio range or one that is outside their radio range. For the later, the nodes should deploy an intermediate node to be the router to route the packet from the source to the destination. The Wireless Ad-hoc Networks do not have a gateway; every node can act as the gateway. the wireless mobile ad- hoc network consists of mobile nodes that are interconnected by wireless-multi-hop communication paths.

These ad-hoc wireless networks are self-creating, self-organizing, and self-administering. These mobile ad-hoc networks offer unique benefits and versatility for certain environments and applications. With no prerequisites of fixed infrastructure or base stations, they can be created and used anytime, anywhere. Such networks could be intrinsically faulty-resilient, for they do not operate under the limitations of a fixed topology. Since all nodes are allowed to be mobile, the topology of such networks is necessarily time varying.

The set of applications for MANETs is diverse, ranging from small, static networks that are constrained by power sources, to large-scale, mobile, highly dynamic networks. The design of network protocols for these networks is a complex issue. While the shortest path (based on a given cost function) from a source to a destination in a static network is usually the optimal route, this idea is not easily extended to MANETs.

Factors such as variable wireless link quality, propagation path loss, fading, multiuser interference, power expended, and topological changes become relevant issues. The network should be able to adaptively alter the routing paths to alleviate any of these effects. Moreover, in a military environment, preservation of security, latency, intentional jamming, and recovery from failure are signify cant concerns.

Recently a large volume of research has been conducted on the issue of energy efficiency for wireless networks. Since energy conservation is not an issue of one particular layer of the network protocol stack, many researchers have focused on cross layer.Military networks are designed to maintain a low probability of intercept and/or a low probability of intercept and/or a low probability of detection. Hence, node prefer to radiate as little power as necessary and transmit as infrequently as possible, thus decreasing the probability of detection or interception.designs to conserve energy more effectively. One such effort is to employ power control at the MAC layer and to

design a power aware routing at the network layer.Traditional routing protocols cannot be applied to ad- hoc networks directly because ad-hoc networks inherently have some special characteristics and unavoidable limitations such as dynamic topologies, bandwidth-constrained, variable capacity links, and energy-constrained operations compared with traditional networks.Consequently, research on routing protocols in ad hoc networks becomes a fundamental and challenging task.prefer to radiate as little power as necessary and transmit as infrequently as possible, thus decreasing the probability of detection or interception.A lapse in any of these requirements may degrade the performance and dependability of the network.

Routing in MANETS:A routing is the mechanism by which user traffic is directed and transported through the network from the source node to the destination node. Objectives include maximizing network performance from the application point of view – application requirements- while minimizing the cost of the network itself in accordance with its capacity. The application requirements are hop count, delay, throughput, loss rate, stability, jitter, cost; and the network capacity is a function of available resources that reside at each node and number of nodes in the network as well as its density, frequency of end-to-end connection (i.e. Number of communication), and frequency of topology changes (mobility rate).The four core basic routing functionality for mobile ad hoc networks are:

***Path generation*:** which generates paths according to the assembled and distributed state information about the network and of the application; assembling and distributing network and user traffic state information.

***Path selection*:** which selects appropriate paths based on network and application state information.

***Data Forwarding*:** which forwards user traffic along the selection route forwarding user traffic along the selected route.

***Path Maintenance*:** which maintains the selected route.

TARGET OF THE THESIS: We describe routing by three approaches such as power controlled routing, energy efficient routing and QOS aware routing. The first method targets a detailed history about new power control routing which applies to wireless ad hoc networks, because applying power control into routing protocols has become a hot research issue. This report focuses on an on-demand routing algorithm based on power control termed as Power Control Ad hoc On- Demand Distance Vector(PC-AODV).Finally this thesis shows that the simulation results of ouralgorithm not only reduce the average communication energy consumption, thus prolong the network lifetime, but also improve average end-to end delay and packet delivery ratio.

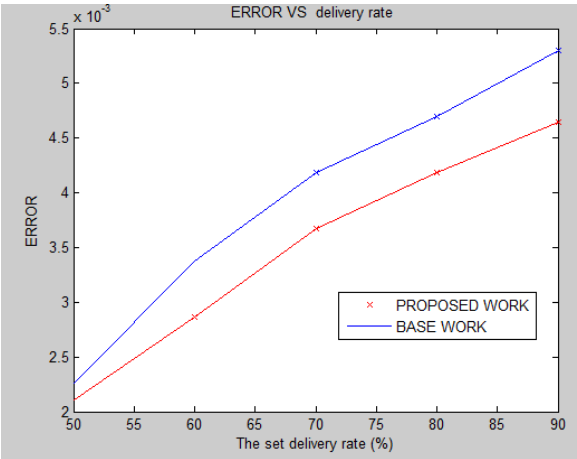
PROPOSED ROUTING ALGORITHMS FOR MANET- Mobile Ad hoc Network is a rapidly changing network having mobile nodes. The wireless links connecting a node pair is unreliable due to the mobility of nodes; thereby MANET is subjected to frequent link failures that subsequently lead to route failure.

It is required for the routing algorithms to determine routes enduring connectivity providing uninterrupted data transmission without compromising QoS and load balancing. In this study, the routing optimization in MANET is performed taking into consideration routing metrics such as, distance, cost, delay, load and reliability of the routes.

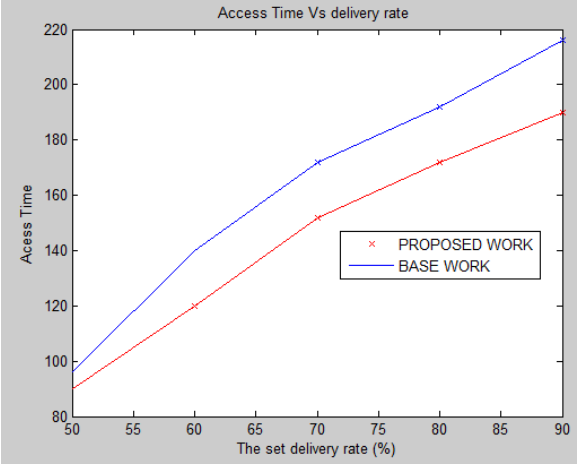
Battery power available in the Failure node that gives information about the possibility of node

MANIPULATING MATRICES

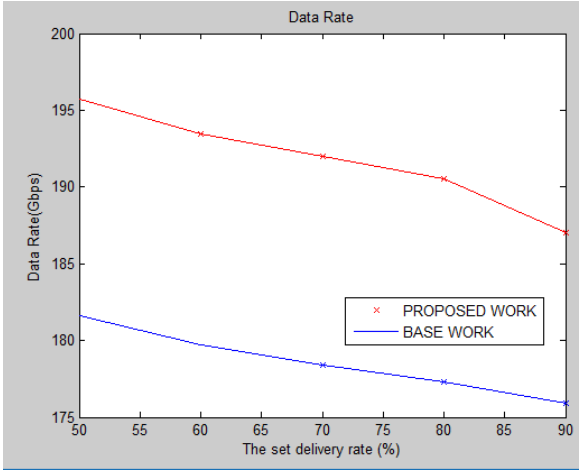
Entering Matrices: The best way for we to get started with MATLAB is to learn how to handle matrices. Start MATLAB and follow along with each example, We can enter matrices into MATLAB in several different ways:Enter an explicit list of elements.Load matrices from external data files .c & Generate matrices using built-in functions.



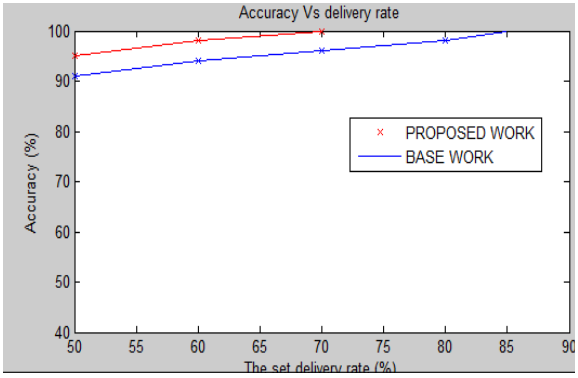
ERROR VS DELIVERY RATE



ACCESS TIME VS DELIVERY RATE



DATA RATE VS DELIVERY RATE



ACCURACY VS DELIVERY RATE

CONCLUSION:MANET routing schemes for routing are presented in this Chapter. The state-of-the-art OLSR protocol is widely used that uses minimum hop based routing strategy. This protocol is modified to determine routes based on the proposed objective vector. Also swarm intelligent routing schemes incorporating the food searching behavior of ants, bees and fireflies solve MANET routing problem. The routing solutions thus obtained are presented and compared with that of the OLSR protocol. Further investigation is made by varying the network size, packet size and velocity of the nodes and the comparison is presented in proposed work.

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