Compare the Based on Demand Routing Protocols with Fuzzy Algorithm for Mobile Ad-Hoc Networks

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Abstract— Mobile Ad-Hoc network are wireless networks without infrastructure. In this network the nodes is mobility And repeatedly change network topology. In this network routing protocols is very important. Energy and bandwidth constraints are important challenge in mobile ad-hoc networks. Routing protocol should provide a little overhead. Results occupy the little bandwidth. In this paper compared the based on Demand routing protocols with fuzzy algorithm. And their Characteristics is shown.

Keywords— routing protocol; wireless networks; bandwidt; mobile ad-hoc network networks

I. INTRODUCTION

In the mobile ad-hoc networks, due to dynamic topology routing is important. In addition, there are nodes in Mobile ad-hoc network networks, that energy resources, range communication, capabilities calculations are limited. In these environments, each node must be capable of packets routing. And due to limited range of dispersed nodes, both nodes maybe to communicate through need a chain of nodes. Due to the unstable nature of these networks to find and keep rout of the discussion is important.

Two factors: 1. Lack of broadband 2. Limited battery power, lead to a routing protocol to be affordable. Generally the goal of routing packets is sure transmitted from source to destination. In addition, The maximum network capacity and minimum packet delay is one of the other goal routing [1]. In the first part, we review some of the based on Demand routing protocols. In the part two, some of the based on position routing protocols is reviewed. In part 3, the routing algorithm based on fuzzy computing has been investigated. In the part 4, the on Demand routing protocols with fuzzy algorithm is compared.

II. RELATED WORKS

2.1. On-demand routing protocols

In this protocol the routs only made when needed. Consists of two stages: 1. Route discovery 2. Keep rout. The discovery phase created during in source need to rout. But the keep rout stage, Eliminates invalid paths and a new route discovery phase will begin either the public or locally. This protocols in the resource network Consumption savings. But more delay in comparison with those based on Table 1. Difference of these protocols together is route discovery and maintenance.

2.2. Position assisted routing methodology

The Packages are dispatched based on the geographical destinations in this methodology. Thus odes should query the final destination of the package and receive the required data. Since ad hoc Networks play a fixed infrastructure, the position in which a distributed algorithm is used is a key design method for a specific service. Services should not be disconnected due to the malfunctioning of individual nodes. Scalability is an optimum feature of networks. When routing is carried out based on position, nodes are dispatched based on the position of a package and the immediate position of the neighboring nodes. The destination position is situated in a closed header. If any of the nodes contains data about the precise position of the destination, the position may be updated in the package before dispatching. Unilateral emissions reveal the position of adjacent nodes. These ideas waves are periodically dispatched by all the nodes, and they have data about the sender's node. Three chief strategies can be specified for position-assisted routing. In the first two strategies, one of the nodes sends a specific package to a greedy forwarding or flooding directed node in the adjacent one, in a way that these nodes are nearer the destination as compared to the sending node. The third strategy is used to form a hierarchy for scalability with plenty of mobile nodes. Hierarchical mechanisms use various types of ad hoc routing protocols in diverse hierarchical levels. (Thus position assisted routing is carried out in one level and non-position-based routing is executed in another level [16].

2.3. Location-Aided Routing : LAR

As it is evident in LAR Schematic view the S departure point reveals the request in its route. S double node has two portions. One of them pertains the routing data. Suppose S node contains the data concerning Wd, Wd Position of node D at the moment of T0.When S node contains data about the routing detection, T1 is larger than T0. The distance from S node up to Xd, Xd is calculated. This matter has been depicted in Dists. The data of the above distance is inserted into the message. Xd, Xd positions are added to the message request in the routing. When an I node receives data from S dispatching node, node I calculates the pertinent distance from Xd, XdDisti has been depicted based on parameters A,B. if Adists + Bdist I is a valid relation, I node will send the request to its adjacent units. When I node forward the routing request, the message contains data about Xd, XdDisti. The data received in Dist S is replaced by the data received in Disti [17][18].

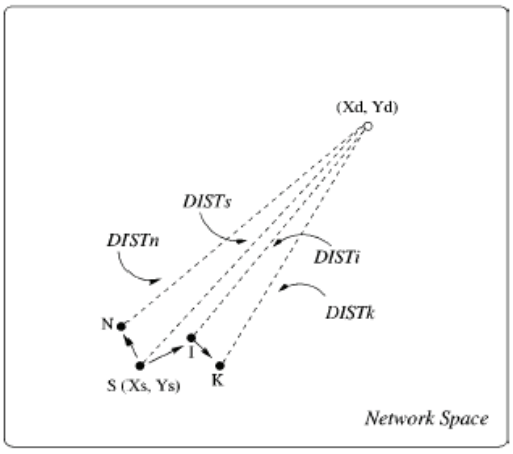

Figure 2. The schematic view of the LAR routing algorithm

2.4. FLAR

FLAR is a routing algorithm for based on fuzzy calculations. We will deal with our suggested algorithm in this chapter. We will enumerate the essential hypotheses that we consider in this algorithm. We will deal with the routing methods for the suggested algorithm [19].

2.5. Essential Hypotheses

The following essential hypotheses will be available in this algorithm.GPS Equipment has adequate According to Table 1 can be seen that some of the protocols for the Ad-hoc networks are not suitable. Because has many overhead routing. We can be seen that the overhead discover routing in all protocols, is greater than CBRP protocol. Because they are sent request packet to all network nodes. But in the CBRP only sent to the head cluster node. Of course the overhead discovery routing in CBRT Is slightly diminished. Because the first request packet will be sent to neighbors, and if not find rout, broadcast in network. The protocols are use source routing Need for higher volume storage. In some protocols, such as precision. (Hence, they return X and y quantities distinctively and correctly as the node moves along it). The nodes motion pattern is fixed while samplings are made. The time intervals regarded for samplings are considered in a way that the nodes motion pattern will be fixed during these intervals. The membership function which has been used for the position numbers is triangular and right angle. There is a fixed interval between the two samplings and the consecutive sampling, to obtain information about the fixed position. These parameters are determined with regard to the GPS tool precision and the motion coefficient of nodes. The velocity of each node is constant.

III. Routing Method

The second schematic view of LAR algorithm has been selected for this algorithm. Fuzzy calculations have been utilized to quantify and collate the interstice of each node up to the destination. Thus, the departure and destination data are inserted in the message, when a message is sent. This interstice is based on a non-fuzzy number. It is sent to the destination based on a fuzzy number in the message. The fuzzy extent is quantified for X and y position of each node. Suppose tp is the time required to make consecutive updates of each node position. This is the time that each node has to request its position from the position-rendering unit. Since positions are regarded based on fuzzy extents, each time the position of a node is updated, two consecutive requests are sent to the service-rendering unit. Suppose this the interstice between two consecutive requests. Thus the following will apply for making fuzzy quantifications in the positions.

IV. Compression of Different Protocols

In this section examines the based on the demand protocols and algorithm based on fuzzy computing routing (FLAR) in Table 1. Then their properties are compared in Table 2.

Cluster CBRP, there are maintenance information such as cluster information, and updating information. This makes overhead storage and overhead updating.

But in return speed data transferring in increase. Information is always provided. But in terms of productivity data: In conditions of high load or network crowding is reduced the productivity DSR. Because each node to face with multi rout no have diagnostic criterion for being Diagnosis newly rout. This causes loss of batch data. AODV has a better status. But during a connection failure creates delay. But in return speed data transferring in increase.

According to Table 2, in FLAR stability rout increase in during time period and overhead rout discovery is little from LAR.

V. Results

You can see the belated delivery of LAR is a little less than FLAR. The delay in FLAR is due to the short-time calculations that it has to perform each time. Although few calculations of this ilk are carried out, nonetheless. They have their own effect when packages are being delivered. You can see that the success rate of FLAR to deliver packages is considerably higher. When the interstice between the message exchanging nodes is little, LAR and FLAR variances not noticeable.

The extant position of a node is being portended in both methods. Some of the physical formulas can be utilized to calculate the position through this method.

TABLE 1.

Criteria	*The path reconstruction schema*	*Sending radio signal*	*Loop-free*	*Multi routing*	*Supported of one-way connection*	*Support of sleep period*	*Overhead Route discovery*	*Overhead storage*	*Data productivity*	*Characterized*	*Method*
1.speed 2. shortly path	*local*	*yes*	*no*	*No*	*No*	*No*	*Less than DSR*	*Middle*	*More than AODV*	*Use the hierarchical and High speed data transfer*	*CBRP*
1.speed 2. speed path	*source*	*no*	*yes*	*No*	*No*	*YES*	*Much more than DSR*	*Less Than DSR*	*Better than DSR*	*No need to send periodic and delay during the connection failure*	*AODV*
Shortly path	*Through the origin*	*NO*	*YES*	*YES*	*YES*	*YES*	*More*	*More*	*Less*	*No need for periodic sending of each packet*	*DSR*
1.speed 2. short path	*LOCAL*	*NO*	*YES*	*YES*	*NO*	*YES*	*Large-scale*	*Middle*	*Less*	*High latency when the network is divided*	*LMR*
Speed path	*LOCAL*	*NO*	*NO*	*YES*	*NO*	*YES*	*MORE*	*Middle*	*LESS*	*High overhead*	*TORA*
1.stability 2. shortly 3. amountload path	*LOCAL*	*YES*	*YES*	*NO*	*NO*	*NO*	*Large-scale*	*MORE*	*Large-scale*	*Lower delay and using multiple criteria path*	*ABR*
Power communication path	*Through the origin*	*Yes*	*Yes*	*NO*	*No*	*NO*	*More*	*Middle*	*Large-scale*	*high delay for route discovery*	*SSR*
With intermediate nodes	*Through the origin*	*NO*	*Yes*	*NO*	*NO*	*Yes*	*More*	*Middle*	*Large-scale*	*Less congestion of paths*	*DLAR*
Speed path	*Local*	*NO*	*Yes*	*NO*	*NO*	*Yes*	*Modest*	*Middle*	*Large-scale*	*Lower delay of route discovery*	*LAR*

TABLE 2. Compression LAR and FLAR

method	*Criteria*	*The path reconstruction schema*	*Loop-free*	*Support of sleep period*	*Overhead Route discovery*	*Overhead storage*	*Data productivity*	*Characterized*
LAR	*Speed rout*	*local*	*Yes*	*Yes*	*modest*	*Middle*	*Large scale*	*Little overhead route discovery*
FLAR	*1. Stability 2. speed rout*	*local*	*Yes*	*Yes*	*Little fromLAR*	*Slightly more than LAR*	*Large scale*	*Stability rout during the time period specified*

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