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SURVEY ON LOAD BALANCING AND IMPROVING CAPACITY OF A NODE WITH BOUNDED STRETCH IN WIRELESS NETWORK

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Abstract: Routing in wireless networks has been heavily studied in the last decade. In a dense wireless network, a route travelled by a packet from the source to the destination usually consists of multiple hops where intermediate nodes act as relays. The packets usually follow the shortest path between source and destination in routing protocols to achieve smallest travelled distance. However, this leads to the uneven distribution of traffic load in a network. The wireless nodes in the center of the network will have heavier traffic. Since most of the shortest routes go through them. There are many algorithms available in the load balancing and improving capacity technique. In this paper, describe a novel routing algorithm called Circular Sailing Routing (CSR), which we can distribute the traffic more evenly in the network. Based on our study, found to reduced traffic distribution and capacity of a node in the wireless network compared to any other algorithm. This is because they proposed maps in the network onto a sphere via a simple stereographic projection and then the route decision is made by the distance on the sphere instead of Euclidean distance in the plane.

Keywords: Capacity, Load balancing, Circular Sailing Routing, Routing, Mobile ad-hoc networks (MANETs).

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INTRODUCTION

The objective of load balancing and improving capacity of a node in the wireless network to avoid uneven load distribution in the random network using symmetric paths. while using novel routing algorithm called CSR using AODV protocol. A load balancing routing for large wireless networks. By spreading the traffic across the wireless network via the elaborate design of the routing algorithm, load balancing routing averages the energy consumption. Load balancing is also useful for reducing congestion hot spots thus reducing wireless collisions. The CSR transmits over a circular segment in network[1][3]. The CSR is mapping all wireless nodes in 2D network and 3D sphere via stereographic projection surface is symmetric path because to communicate on the surface and traffic load is uniformly distributed in network [4]. Routing algorithm is to find an optimal route for each pair of source and destination in a given network. In CSR, wireless nodes in a 2D network are mapped to a sphere using reversed stereographic projection and the routing decision is made based on the circular distance on the sphere instead of the Euclidean distance in 2D plane. By doing so, the traffic from one side to another side of the network area will avoid the center area. Thus, “hot spots” are eliminated and the load is balanced. In [4] CSR can be easily implemented using any position-based routing protocols. Many routing protocols were proposed for different purposes. For example, there are power efficient routing for better energy efficiency, cluster-based routing for better scalability and geographical routing to reduce the overhead. In this paper, we are interested in designing a load balancing routing for large wireless networks. By spreading the traffic across the wireless network via the elaborate design of the routing algorithm, load balancing routing averages the energy consumption. In [5][7] Load balancing is also useful for reducing congestion hot spots thus reducing wireless collisions to balance the real time traffic in the network. The load based on the knowledge of current load distribution (or current remaining energy distribution), which is not very scalable for large wireless networks. In Ganjali and Keshavarzian [9] showed unless using a very large number of paths, the load distribution of multi-path routing is almost the same as single path routing. Hyyti¨a and Virtamo[2] studied how to avoid the crowded center problem by analyzing the load distribution of different routing methods in a dense network. They not only provided a general framework to analyze the load distribution of a given set of paths and traffic demands, but also proposed a randomized choice between shortest path and routing on inner/outer radii to level the load Here, we assume that individual node does not know the current load and each node may want to talk with all other nodes. We then address how to design load balancing routing for all-to-all communication scenario in a network. Most of routing protocols are based on shortest path algorithm where the packets are travelled via the shortest path between a source and a destination. Even for the

geographical localized routing protocols, such as greedy routing, the packets usually follow the shortest paths when the network is dense and uniformly distributed. In this paper, we proposed in algorithm which will provide traffic load is uniformly distributed with high capacity of a node in network. So that, multi-hop wireless network is proposed by us. This paper is organized as follows. In section II, we have related work on the paper is placed. In section III, the classification of the algorithm is taken place. In section 4, we have the various applications for the algorithms are given. In section 5, we have conclusion areas placed. Finally, in section V we concluded the overall system.

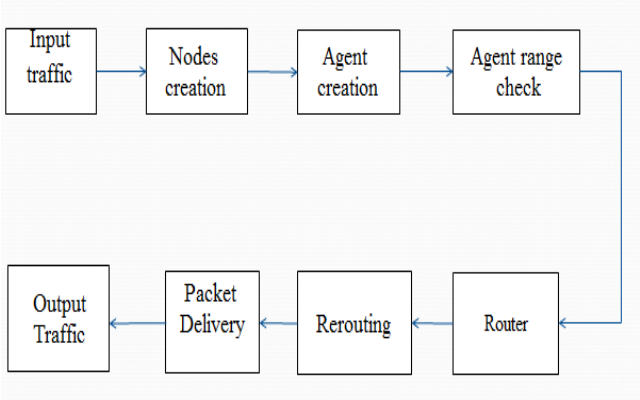

Fig 1. System Model

Here, the above diagram shows that, first take input of all nodes in input traffic block then create nodes and transfer to the agent creation block with the help of transfer agents (T.A), then check range of agents and forward nodes to router. while routing packet from source to destination in which any node will drop in that case transfer agent(T.A) will reroute that node again and forward to the packet delivery block and finally send it to the output traffic of destination node in the network . CSR can be easily implemented based on either shortest path routing or greedy routing. The only modification is a simple mapping calculation of the position information and the computational overhead is negligible. There are no changes to the communication protocol and no any additional communication overhead.

II] RELATED WORK

Load balancing routing for wireless networks has been studied in[1][8].It is use to understand the fundamental network throughput limit and thus serves as an instruction guideline for the network design, performance of optimization MANETs [3][5]. Grossglauser and Tse [6] showed that under the (Independent of Identity data) i.i.d. mobility model, it is possible to achieve a per

node throughput by employing a two-hop relay scheme. In [10] used the traffic load of the intermediate nodes as the main route selection criteria. In the routing construction phase, each intermediate node records its current traffic load in the control packet. The destination uses this information to select the least loaded route. Moraes *et al.* further showed that under uniform mobility model, we can still have the throughput even with a variant of the two-hop relay scheme, where each packet is only broadcasted once by its source and all nodes that receive the packet will act as its relays [8]. Neely *et al.* [14],[16] established the exact capacity of cell partitioned MANETs under both the i.i.d. mobility model and the more general Markovian mobility models, where it was assumed that the transmission power (and thus transmission range) of each node is fixed and the interference among simultaneous link transmissions can be avoided by using orthogonal channels in adjacent cells. Gao *et al.* [17] later extended the above work to a class of MANETs where the group-based scheduling is adopted to schedule simultaneous link transmissions. The simple load balancing approach was proposed in which allows each node to drop RREQ or give up packet forwarding depending on its own traffic load. If the traffic load is high, node may deliberately give up packet forwarding to save its own energy. Liu *et al.* [18] explored the exact capacity for the MANETs based on a specific two-hop relay routing algorithm with limited packet redundancy, i.e., a limited number of copies can be dispatched for each packet, and further extended capacity analysis to the scenario where each transmitter is allowed to conduct multiple rounds of probing for identifying a possible receiver [19]. Closed-form models has also been developed for achievable throughput analysis in a directional antenna-based MANETs[12]. In [7] [8] throughput capacity under a general setting of node transmission range remains unknown by now. we study multi-path routing was also used for load balancing the exact per node throughput capacity of a MANET where the transmission power of each node can be flexibly controlled such that the transmission range can be adapted to a specific value. However, we showed unless using a very large number of paths the load distribution is almost the same as multi path routing. All of the above methods are different from our proposed method. Unlike them, we assume that each node does not know the current load information, and our approach focus on balance the load for the whole network under all-to-all traffic scenario using a novel geometric technique. In [15] considered a dense wireless multi-hop network at the limit when the number of nodes is extremely large. Therefore, a typical routing path in such a network consists of a large number of hops Even they can optimally handle arbitrary traffic distribution (other than all-to-all unit traffic here), CSR sends packets over spherical shortest paths on the surface of the sphere, which are big circles of the sphere. Since stereographic projection preserves circles, all paths of CSR are also on circles in the 2D plane. In other words, either CSR needs to transmit packets via nodes outside the network (the unit disk) or CSR will choose longer paths within the unit disk.

In [11] for two nodes whose projections are on the equator, there are infinite number of spherical shortest paths on the surface of the sphere also studied how to avoid the crowded center problem by analyzing the load probability in a dense network. In [18] proposed a randomized choice between shortest path and routing on inner/outer radii to level the loads in the network. we proposed in algorithms which will provide traffic load is uniformly distributed with high capacity of a nodes in network. So that, multi-hop wireless network is proposed by us.

III] MODELLING METHOD

Circular Sailing Routing Algorithm: In Circular Sailing Routing (CSR) based on stereographic projection maps an infinite plane onto a sphere. The basic idea of circular sailing routing is letting packet follow the circular shortest paths on the sphere instead of the Euclidean shortest path in 2D plane because there is no hot spot on the sphere where most of the circular shortest paths must go through. In CSR surface is symmetric path will follow because to communicate nodes on the surface and traffic load is uniformly distributed in network. Since the surface of the sphere is symmetric, if nodes only communicate on the surface and traffic demand is uniformly distributed in the network, there will be no crowded center effect on the spherical surface. A stereographic projection can map an infinite plane onto a sphere and vice versa. The mapping method used by CSR, which is a stereographic projection. For a wireless network. we expect circular sailing routing can achieve better load balancing than shortest path routing. The detailed routing algorithm is given as follows: The CSR will follow some parameters are as follows: The I/P parameter to first maps the network onto a sphere via a simple stereographic projection and then the route decision is made by the distance on the sphere instead of the Euclidean distance in the plane. O/P parameter to the distance travelled by the packets using CSR is no more than a small constant factor of the minimum shortest path to improving capacity, packet redundancy and traffic distribution in per node or multiple nodes using CSR protocols for 3D networks where nodes are distributed in a 3D space instead of a 2D plane.First take user input data from the network then arrange all the nodes in circular fashion. then to create transfer agents(T.A.) of a node with range (R) .To move that transfer agents(T.A.) in network then they will take a decision if range(R) >T.A. then deliver data to the node create in new T.A. unless move T.A. in the network. When the data is delivered to network then stop otherwise move to T.A. in network. Now again check range of data and data deliver to the node create in new T.A. otherwise move to T.A. in wireless network.

IV] APPLICATION

The load balancing routing average energy consumption. It is also useful for reducing congestion hot spots that reducing wireless collisions. This algorithm can achieve better load balancing than shortest path routing. It is clear that the load of CSR is more evenly distributed then to provide load balancing, higher throughput capacity and lower delay.

V] CONCLUSION

We therefore conclude that our proposed (CSR) algorithm for wireless networks to avoid the uneven load distribution caused by shortest path routing or greedy routing. By spreading the traffic across a virtual 3D sphere which is mapped from the network, CSR can reduce hot spots in the networks and increase the energy lifetime of the network. CSR can be easily implemented using any existing position-based routing protocols without any major changes or additional overhead. CSR can achieve the best load balancing in a large scale dense multi hop network.

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