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Quality of Service in Wireless Network

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Abstract:

In the present paper an important discussion involving case oriented mobile webs will be examined. Case oriented mobile webs are defined as webs that are established without any special substructure and may be used in conferences and military actions, etc. Here it is tried to make a structural change in rout locating protocols of wireless webs in order to increase the speed rate of broadcasting packages as well as make sure high level reliability in that. The results of simulation show improved function of new protocol in comparison with the base one.

Key words: case oriented mobile webs, multi sectional rout location, speed rate of broadcasting information, reliability

Introduction

Wireless webs can be divided into two categories from their architectural point of view: with and without substructure. Case oriented mobile webs are without substructure types in which the relation between mobile hosts may be possible through the antennas and there is no central control on them. Furthermore the broadcasted packages in target are usually amplified by several hosts. Thus in this type of webs each host act as a rout locater.

In this type of webs generally several sections are used to broadcast a package. Multi sections can be defined as broadcasting data packages to the hosts with the same target address. The quality of service and reliability are the questions considered in this kind of webs. The elements such as delay in reply time, band width, etc are influential in quality of service.

In this article the objective is to develop a multi sectional rout locating method which has a high level of reliability and the ability to broadcast information with high rate of speed. The results of simulation show that using suggested method in the reliability, the group reliability can be increased by increasing surcharge quantitatively.

Multi section in wireless webs

Current protocols generally in wireless webs act as multi section and use the concept of thrust group to make a broadcast screen for individual multi section group. The thrust group consists of a set of nodes which are responsible of broadcasting the packages to a certain target. If there is a receiving group in broadcast rout of the other receiving node, then, it can also be defined as thrust group. Forming the screen can be resulted in higher consistency and reliability of the routs. A multi sectional source can broadcast the receivers its packages through the selected routs and thrust groups when the group is made and the process of creating the rout is formed.

Controlling packages will continue to be broadcasted until there are packages to be broadcasted. Each node which received a data package, will lead it ahead if the flag of its thrust group is raised up.

The process of package broadcast

When the initial node requires a rout to other nodes it broadcasts the desired package. This package includes list of its immediate neighbors who are to receive it. Another field of this package is the value of required band width to broadcast the package. Receiving given package each A node broadcasts “Hello” massage to its neighbors and put its address into it. The neighbors, in their turns, broadcast reply to A node. The A node recognizes its own neighbors or updates them in its table.

Thus, as it mentioned, reply is broadcasted the A node by its own neighbors. These neighbors address the value of their free band width, too. This value should be compared with required value of band width and at the end the node deserving it should be chosen as the next node. One idea to increase the speed rate of broadcasting the information packages is that among nodes broadcasting reply, the node should be chosen as next one that, firstly, should have the required band width, secondly, broadcast reply quickly because it is nearer to the source node. However it is possible that the route would be destroyed while the source node is broadcasting its package to the next node or the required band width would be no longer available, for example the source node may have to find another “next node” as a result of moving the node supposed to be the next one. In this case, other neighboring nodes along with their time priority of broadcasting reply should be maintained so that the node whose reply arrived after this node can be chosen as next in case one node couldn’t be chosen as next node. So some field is added to the table which may preserve the turns of successive broadcasted packages as index.

Another reason why the information of all nodes maintained is that if the route is destroyed it won't be needed to rebroadcast the application package rather the route itself could be repaired locally using the table.

Another idea to increase the speed rate of broadcasting the information packages is that considering to broadcast a package to next selected node, the number of immediate neighbors of individual neighboring nodes is also maintained in addition to maintaining information of neighboring nodes in the table of information of neighbors. So it is better to select a node which has more immediate neighbors among the neighbors that can be chosen as next and thrust node. Because in this case there is the possibility of quick reparation of the route in case it would be destroyed, besides, it is possible that nodes could be placed nearer to each other thus speed rate of broadcasting the packages will be increased.

By now three discussions have been considered: band width, number of immediate neighboring nodes, and time of broadcasting reply all of which can be considered together or at any order.

Here we continue to discuss about the mechanism of local reparation which is resulted from maintaining information of neighboring nodes and then we will attempt to evaluate the results of simulation.

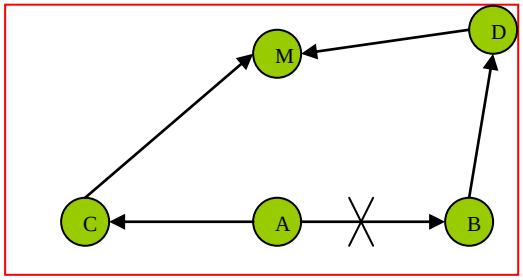

Fig1 . Local recovery with proposed method

There may be number of reasons why the routes between the source and target are destroyed. Considering the fact that we preserve information of routs in a table, if the straight route of node A to node B is destroyed the indirect route of A ---C --- M can be used. If a thrust node broadcasts a package to its immediate neighbor and receive no reply from its neighbor, it may recognize that this route has been expired. For example it is possible that its immediate neighbor has been moved or has not received the application package. Then the discussed node places broadcasted data package in its local memory and broadcasts one package with two steps and changes the target of the package into C --- M. By this way the reply package is broadcasted by the node that its target address placed in this package. This can be possible when each node add its name into its own reply package. As a result, each thrust node can recognize other thrust nodes placed between itself and target. Of course it is possible that the distance between the source and target may be longer. In this case the number of thrust nodes can be increased but

maintaining these nodes will cost a lot so it is possible to define some limitation, that is, involving 2 or 3 next nodes not require much surcharge.

Simulation

The proposed project about repairing the route was evaluated by ODMRP and suggested protocols. The model of the web consists of 30 mobile nodes which are distributed randomly in a space of 1000×1000 square meters. The time of simulation is considered to be 250 seconds. Chosen speed of simulation is 1 meter m/s at minimum and 20 m/s at maximum. Time gaps of broadcasting of application package of "Hello" massage, is 2 seconds.

The table of simulation on the percentage of group reliability in comparison with the changes of speed and the speed of broadcasting:

Number of occures	Packet delivery ratio in Base protocol	Packet delivery ratio in proposed protocol
1	95	90
5	78	80
10	46	55
15	30	40
20	22	34
25	19	32

Fig2 .packet delivery in proposed protocol, ODMRP is base protocol

Notes of figure (2)

1. As it is shown in the figure, increasing speed of nodes can be resulted in increasing of the reliability.
2. In the suggested method, the number of broadcasting application package is decreased so the possibility of destroying data packages resulting from crashing or being crowded can be minimized. Because of the fact that control packages of , "Hello" were used, increasing rate of congestion in the web can be resulted in decreasing the number of broadcasting nodes, so the rate of package delivery may be increased.

Conclusion

The objective of this article is increase the rate of broadcasting data packages and the mechanism of local restoring to relate the nodes to multi sectional groups in minimal time rate. The percent of group reliability and the rate of package delivery were examined in relation of the number of source nodes to the base protocol ODMRP and the graphs showed functional

improvement in both cases mentioned above; because the nodes can attach to the web quickly in case of destroying the route. As a result, they can receive more packages, and although they are broadcasted three times, the nodes never wait to receive more application packages because they have already received more packages. So they broadcast the reply right after they receive the local restoring packages and as a result the quality of service in the web may be improved.

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