A Survey on Various Scheduling Techniques Based on Qos Factors in Manet

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ABSTRACT   *Mobile ad hoc networks consist of a collection of mobile nodes without having a fixed infrastructure. Due to infrastructure less network, there exists a common link breakage which leads to common path failure and route finding. A mobile node blindly rebroadcasts the first received route request packets unless it has a route to the destination and thus it cause the broadcasting problem. So, a neighbor coverage-based probabilistic rebroadcast protocol for reducing routing overhead in mobile adhoc networks and propose a novel rebroadcast delay to determine the rebroadcasting packets and then we can obtain the more accurate additional coverage ratio by sensing neighbor coverage knowledge. By using this neighbor coverage and the probabilistic mechanism which can considerably decrease the number of retransmissions so as to reduce the routing overhead and can also improve the routing performance. In this research paper, it deals about the analysis of link breakage problem that can be occurred by using routing techniques and thus it can be enhancement of scheduling techniques can be carried out in future work.*

I. Introduction

A mobile ad hoc network (MANET) is defined as a network that has many free or autonomous nodes and it is composed of mobile devices or other mobile pieces that can arrange themselves in various ways and operate without strict top-down network administration. Due to infrastructure less network, there exists a common link breakage which leads to common path failure and finding the route path. A mobile node blindly rebroadcasts the first received route request packets unless it has a route to the destination and thus it cause the broadcasting problem. Williams and Camp categorized broadcasting protocols into four classes: "simple flooding, probability-based methods, area based methods, and neighbor knowledge methods." These are the four classes of broadcasting protocols, they can

show the enhance in the number of nodes in a static network will degrade the performance of the probability-based and area-based methods [1]. So, a neighbor coverage-based probabilistic rebroadcast protocol for reducing routing overhead in mobile adhoc networks and propose a novel rebroadcast delay to determine the rebroadcasting packets and then we can obtain the more accurate additional coverage ratio by sensing neighbor coverage knowledge to reduce the routing overhead.

II. Related work

The blueprint for scheduling the process management is used to handles the removal of the running process from the CPU and the selection of another process on the basis of a particular strategy[2].

Types of scheduling:

Schedulers are special system software's which handles the scheduling process in a selection of routine. The most vital task is to select the jobs to be submitted into the system and to decide which process to run and execute[2].

There are three types of Schedulers are:

- Long Term Scheduler

- Short Term Scheduler

- Medium Term Scheduler

Long Term Scheduler

It is also called job scheduler and it can determine which programs are admitted to the system for processing. It is used to select the process from the queue and loads them into memory for implementation. The main goal of this scheduler is to provide a balanced mix of jobs and it also controls the degree of multiple jobs run at similar time.

Short Term Scheduler

It is also called CPU scheduler. The main goal is to increase the system performance in accordance with the chosen set of criteria. It is the change of state from ready state to running state. It selects the process among all of the processes that are ready to execute and allocates CPU to one of them. It is also known as dispatcher which can execute most frequently and makes the well grained decision of the process to execute next job. It is faster than long term scheduler.

Medium Term Scheduler

It is a part of the swapping method. It removes the process from the memory and it reduces the degree of multiple programs runs at the same time. It is in-charge of the handling the swapped out-processes of the jobs. The running process may become suspended and it makes the request of a particular input and output. Hanging processes cannot make any progress towards completion. In this condition, it helps us to remove the process from memory and make space for other process and the suspended process is moved to the secondary storage. This process is called swapping and it may be necessary to improve the process mix[2] (swapped out or rolled out).

Scheduling algorithms:

There are four major scheduling algorithms:

- First Come First Serve (FCFS) Scheduling

- Shortest-Job-First (SJF) Scheduling

- Priority Scheduling

- Round Robin(RR) Scheduling

- Multilevel Queue Scheduling

First Come First Serve (FCFS)

➢ Jobs can be executed as first come first serve basis[3].

➢ Easy to understand and implement.

➢ Poor performance as much as average waiting time is high.

Shortest Job First (SJF)
➤ To minimize waiting time.

➤ Impossible to implement.

➤ How much time will be taken should known in advance.

Priority Based Scheduling
➤ Each process is assigned by a priority. Process with the highest priority is to be executed first and so on.

➤ Priority can be determined based on memory necessities, time availability from one resource to other resource requirement.

Round Robin Scheduling
It assigns a fixed time unit per process and cycles to be executed.

It involves extensive overhead, especially with a small time unit and

it provides good average response time, waiting time is dependent on number of processes, and not average process length.

Because of high waiting time and the deadline are very rarely met in a pure RR system.

Multi Queue Scheduling
➤ Several queues are maintained for processes to changing its behavior of the controls.

➤ Each queue can have seperate scheduling algorithms.

➤ Priorities are assigning to each queue.

Short term scheduling Techniques
It can categorize scheduling techniques as two types:

(1) Forward scheduling and

(2) Backward scheduling.

Forward scheduling:
It starts the schedule as soon as the job necessities are known. It is used in a variety of organizations such as hospital, fine dining room restaurants, and machine tool manufacturers. It causes a buildup of work-in-process inventory.

Backward scheduling:
It begins with the suitable day scheduling for the final process. Steps of the job are to be scheduled one at a time and in reverse order.

Scheduling Criteria:
The following scheduling criteria are:

➤ Minimize completion time.

➤ Maximize utilization.

➤ Minimize work-in-process (WIP)

Inventory and minimize customer waiting time.

➤ It can be evaluated by determining the standard number of jobs to be completed.

III. Literature work

However, due to node mobility in MANETs, there is a common link breakages may lead to frequent path failures and route find-ing which could increase the overhead of routing protocols and reduce the packet delivery ratio and increasing the end-to-end delay [5]. Thus, reducing the routing overhead in route discovery is an vital problem. The conventional on-demand routing protocols use flooding to discover a route. They broadcast a Route REQuest (RREQ) packet to the network and the broadcasting bring on excessive redundant retransmissions of RREQ packet and causes the broadcast storm problem [5], which leads to a considerable number of packet collisions especially in dense networks [6].

Xin Ming Zhang [7], In order to reduce the retransmissions in the mobile adhoc networks, we use neighbor coverage-based probabilistic rebroadcast protocol. In order to effectively exploit the neighbor coverage knowledge, we require a novel rebroadcast delay to determine the rebroadcast order and then we can obtain a more correct additional coverage ratio. In order to maintain the network connectivity and reduce the redundant retransmissions, we need a metric named as connectivity factor to determine how many neighbors should receive the RREQ packet. It can be used to combining the additional coverage ratio and the connectivity factor.Then,we engaged with an innovative technology a rebroadcast probability, it can be used to reduce the number of rebroadcasts of the RREQ packet, to improve the routing performance.Therefore,the rebroadcast delay enables the information that the nodes have transmitted the packet spread to more neighbors, which is the key to success for the planned scheme to calculate the rebroadcast probability. It considers the information about the uncovered neighbors (UCN), connectivity metric and local node density to calculate the rebroadcast probability.

Dr.Karthik.S[8],it deals based on transmission grouping based scheduling and routing HMAC calculation provides support for one-hop broadcast operation.

I. Jawhar[9],it deals about the infrastructure wireless networks,QoS condition has been proposed for Qos routing, which often requires node concession, permission control, resource condition and priority scheduling of packets.

IV. Conclusion and future work
In future work we are going to implemented the priority based scheduling concept to calculate the packet delivery based on these metrics based on QOS factors scheduling algorithm:

1. Initialize N as Number of nodes in the Manet.

2. Set the nodes in the identifier set from the nodes are Id = 1, 2, 3,......N.

3. Scheduling the routing packetsbased on the QOS factors based scheduling algorithm.

4. Calculate the interference of the node by using the formula.

Signal to interference noise-pulse ratio = Power level of the node that can transmits from one node to another node / calculating distance between two nodes.

5. Calculate the bandwidth of the node by using the formula.

Bandwidth = total number of the packet size / total time interval of the packet.

6. Calculate the stability of the node by using the formula.

Residual life time of the link = Maximum life time of the link – life time for processing.

7. Select the node based on stability, interference and bandwidth and scheduling the routing packets based on node selection and queuing time of the packets.

Q(t) = maximum amount of the resources / Transmission delay and arrival time interval of the packet.

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