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DESIGN OF FAULT TOLERANCE PROTOCOL FOR MOBILE DISTRIBUTED SYSTEMS

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ABSTRACT

Distributed mobile systems are ubiquitous now-a-days. These systems are important building blocks and are useful for constructing efficient protocols for client-server systems, transaction processing, web applications, and scientific computing. Distributed mobile systems are not fault tolerant computing. The vast computing potential of these systems is often hampered by their susceptibility to failures. Mobile computing highlights many issues, such as lower throughput and latency, low bandwidth of wireless channels, lack of stable storage on mobile hosts, connection breakdowns and inadequate battery life that make the classical checkpointing protocols incongruous. Many techniques like group communication, transaction and rollback recovery have been developed to add reliability to such systems.

Reliability can be roll backed using the methods of distributed mobile systems. Proposed methods are used to make system fault tolerant and works error free. The proposed methods justifies the objectives of my research work, which are Increase the reliability (Focuses on a regular service without any fault), Increases the availability (focuses with willingness of the system), Security (Stops any unwanted access). So I conclude that the objectives defined can be met with the proposed methods.

I. INTRODUCTION

1.1 Distributed system

Distributed system is a collection of n number of systems that are connected to each other over a network but for user it looks to be only one system. All the systems interact with each other to give the required output. All the systems in the distributed are connected through an network which is hidden from the user i.e. the user don't know which system is system is generating the output, all user knows is that the system which there in front of him only fetching the data. A disseminated scheme can have a universal objective, such as cracking a large overhead issue the user then perceives the group of independent processors as a item. Otherwise, each scheme can have its individual user with personal requirements, and the point of the disseminated scheme is to manage the utilization of mutual assets or offer statement services to the users.

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1.2 Distributed Mobile System

Distributed mobile System is global now days. These systems are plays important roles in generating blocks and are used for developing effective protocol for client-server systems, online transactions, websites, and scientific computing.

1.3 Fault Tolerance

Fault tolerance helps the system to come back in a error free state whenever a failure is occurred in its components. If the system stops functioning properly, then the fault has occurred in the system and if the fault is not removed then the system may breakdown. The skill of continue functioning as soon as parts of a system stops performing is referred like skilled indignity. A error tolerance plan helps a scheme to carry on its deliberate work, may be at a lower level, apart from stops
completely. The terminology is generally used to define systems planned to carry on additional or fewer entirely working through, possibly, a subtraction in throughput otherwise an boost in reply occasion in the incident of various small failure. The complete scheme has not congested due to faults whichever in the hardware otherwise in the software. A system is capable of maintaining its virtue in the incidence of error owing to reasons such as exhaustion, rust, developed error or collision.

1.4 Checkpoints

Check-pointing is a method that assists to tolerate faults which would force long-running process to restart. The most common way to apply check-pointing, is to copy all the data of an process from the memory to reliable storage and then go on with the execution. Check-pointing utilization should retain system consistency. There are two main approaches for check-pointing: coordinated check-pointing and uncoordinated check-pointing. In coordinated check-pointing approach, processes must make sure that regular checkpoints are made. This is generally applied by two-phase commit protocol algorithm. In uncoordinated check-pointing, each process has to checkpoints itself environment individually. It must make sure that command processes to checkpoint their state at regular time intervals is not enough to certify consistency. The requirement for achieving a continues state (i.e., no lost messages or replica messages) might cause other processes to roll back to last checkpoint.

II. PROPOSED WORK

In this paper we have focused on Increase the throughput: units of information a system can process in a given amount of time, Reduce the Packet drop: one or additional package of information travelling crosswise a computer set-up fall short of reaching their objective, Reduce end to end delay: time taken for a packet to be transmitted across a network from source to destination.

2.1 Ad hoc On Demand Distance Vector Protocol (AODV)

The AODV steering procedure is planned for use by portable nodes in the set-up. It provides swift alteration to active connection conditions, low meting out and reminiscence overhead, low network utilization, and defines unicast route to purpose inside the set-up. Objective sequence numbers is used to guarantee loop freedom every time, rejecting the issues associated with typical distance vector protocols.

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2.2 Flower Pollination Algorithm (FPA)

Optimization is largely old to pick up the capability and direct and to decrease the charge. The tiny belongings similar to instance and changes are to be implementing accurately and efficiently in genuine world programme like built-up, design, setting up software evolution. So it is important to come up with explanation to model use of these imperative property under different constraint precisely, Optimization is the considerate of ideal development and functioning out the design effort using mathematical apparatus. benchmark optimization method set many log jam while conniving the mathematical and functioning study replica. Replica answers in benchmark optimization algorithms are chiefly pass on the kind of purpose and imperfect function. The efficacy of conventional algorithms relay on the bulk of the explanation, figure of variables and constraint used for deception the effort. Moreover the touchstone algorithms do not propose all-purpose explanation scheme which will be used for deception the trouble having various variables and limitation]

2.3 Four Rules of FPA

Biotic and irritable pollination be able to be measured development of universal pollination, and these can be delivered pollen travel in a way that substantiate to Levy running away

Limited pollination, a biotic pollination and nature pollination are used.

Pollinators, same as creature build up flower allegiance, which is analogous to the duplicate opportunity comparative of alike of two flowers concerned.

Control or contact of international pollination and limited pollination can be twisted by a key probability p [0, 1], to some extent unfair on the way to local pollination.

min or max objective $f(x)$, $x = (x_1, x_2, \ldots, x_d)$

Initialize n flowers population with arbitrary key. Classify the top result (g_*) in preliminary inhabitants.

State a control chance p [0, 1]

While (Max Generation > t)for i = 1 : n (all n flowers in the residents) **if** $p >$ rand,

Draw a dimensional (d) step vector L from a Levy sharing universal pollination via

$$x_i^{t+1} = x_i^t + \gamma L(g_* - x_i^t) \quad \text{....(i)}$$

else

Draw a homogeneous sharing in [0,1] make an local pollination using

$$x_i^{t+1} = x_i^t + (x_j^t - x_k^t) \quad \text{....(ii)}$$

end if

Estimate new results.

If fresh result is enhanced, make them up to date in population end for Discover existing top explanation conclusion as Output the best solution obtained.

In belief, flower pollination progression can occur at in cooperation of local and global levels. Except in actuality, flowers in the quarter have superior probability of accomplishment pollinated from local flowers than persons which are far gone. To reproduce this characteristic, a immediacy probability (p) can be worthily used to control stuck between exhaustive local pollination for ordinary universal pollination. To commence with, a unrefined value of p = 0.5 can be used as an original value. A opening parametric study point out that p = 0.8 may work enhanced for mainly submission.

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III. COMPRESSION WITH EXISTING TECHNIQUE AND RESULTS

3.1 Drop packet VS Round Number

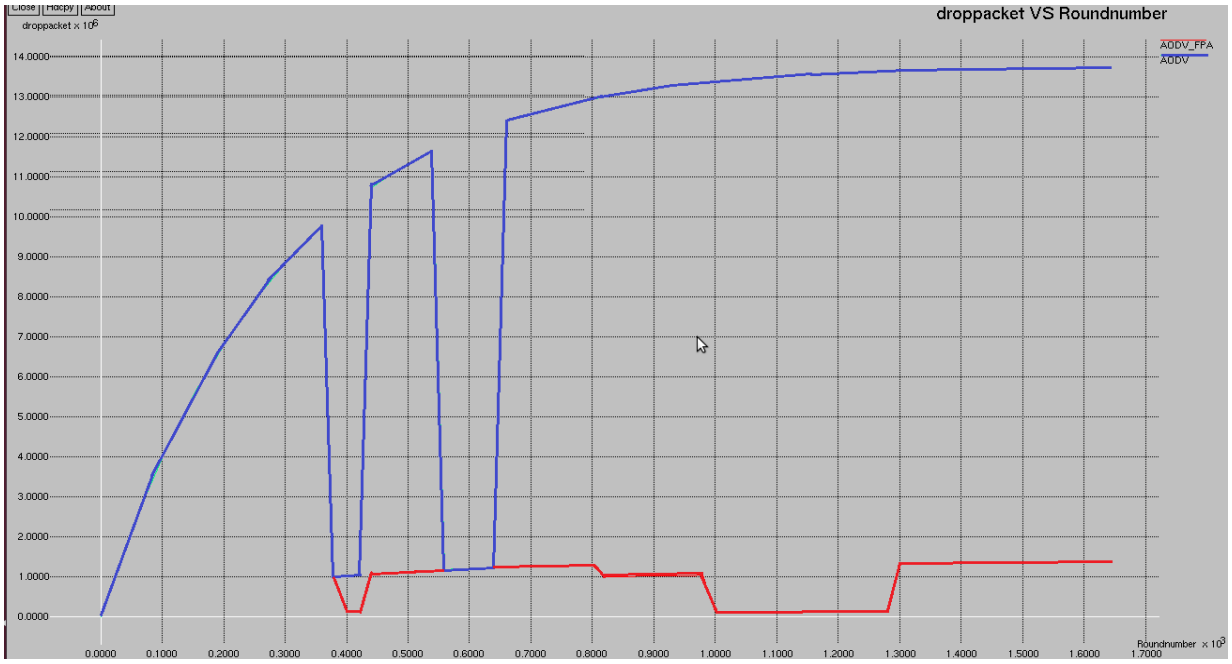

Figure 3.1: Comparison of Drop packet VS Round numbers

Rounds	AODV_FPA drop	AODV drop
40	2	4
60	3	5
90	4	19
110	7	29
140	10	42
160	14	46

Table 3.1: Comparison of Drop packet VS Round numbers

Table 3.1 gives an clear indication of the fact that the dropping packet is reduced after applying FPA in AODV protocol. Initially when the no. of rounds were increasing more no. of packets were lost and when the FPA is applied to the protocol than the less no. of packets are lost while transmitting the data.

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3.2 End to End Delay VS Time

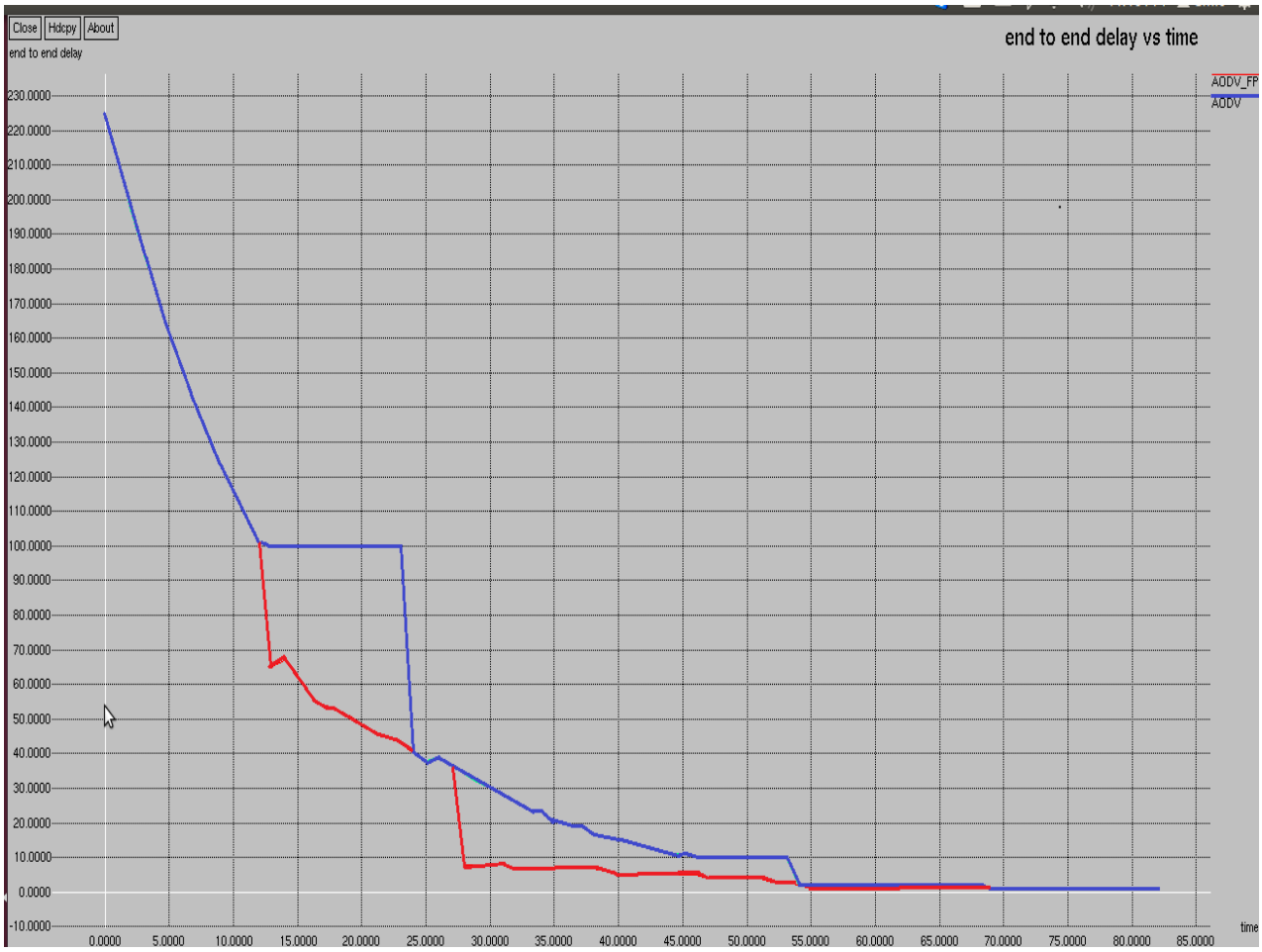

Figure 3.2: Comparison of End-to-End delay VS Time

Packets	AODV_FPA_timedelay	AODV timedelay
15	60 ms	110ms
30	10 ms	50ms
45	5 ms	10ms
50	4ms	9ms

Table 3.2: Comparison of End-to-End delay VS Time

Table 3.2 give an clear indication that when we use FPA less time is taken by the packet to reach the destination and as the no. of packets sent in time is increased time take by those packets to reach the destination is quit less as compared to initial protocol.

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3.3 Throughput VS Time

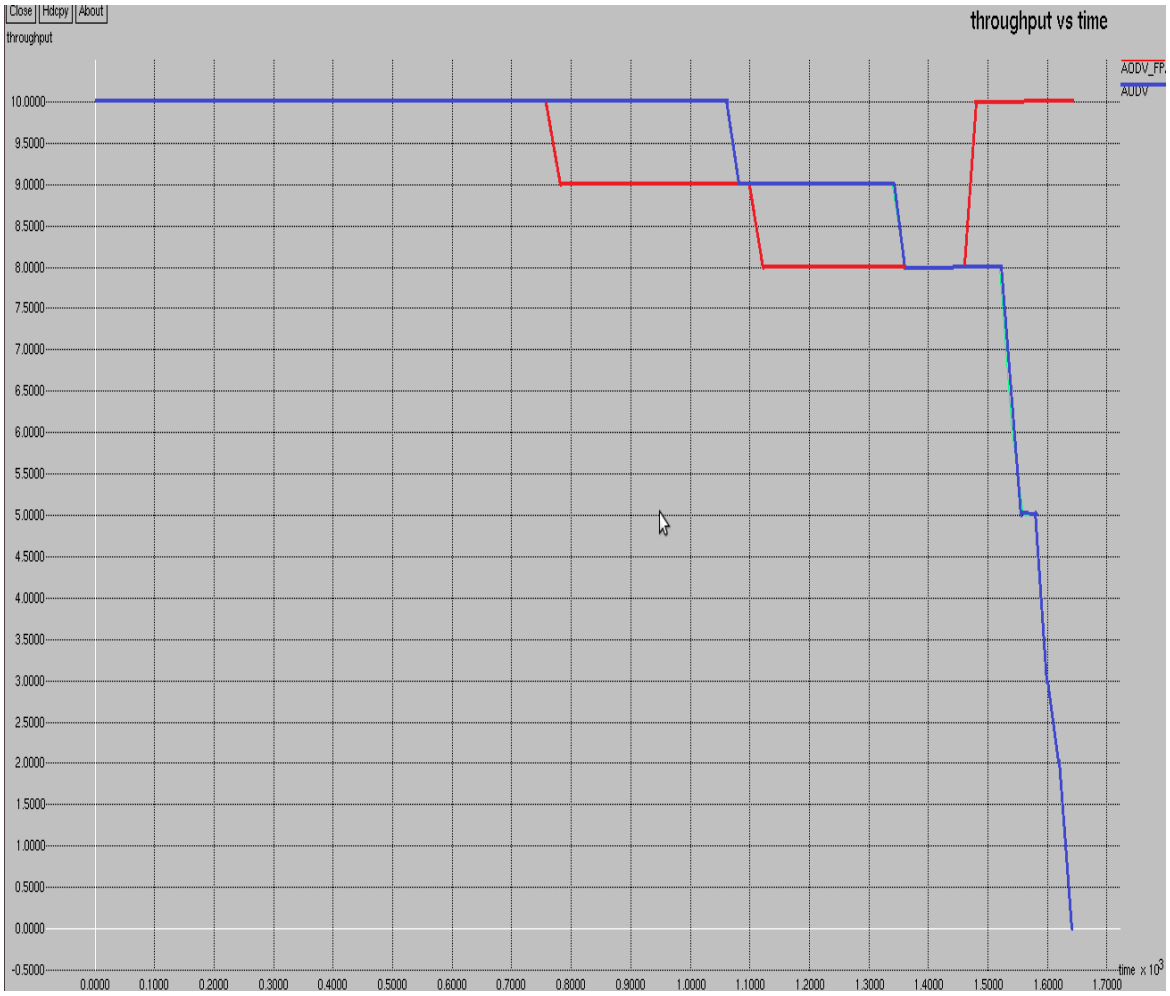

Figure 3.3: Comparison of Throughput VS Time

Time (ms)	AODV_FPAthroughput	AODVthroughput
10	9	8.5
40	9.5	8.7
80	8.5	9
100	8.7	8.2
140	10	7
200	10	5

Table 3.3: Comparison of Throughput VS Time

Table 3.3 gives an indication that after applying FPA more no. of packets are transferred in the desired time allotted to the packet. We can say the success rate of transmitting data in a give time has increased after applying FPA.

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IV. CONCLUSION AND FUTURE SCOPE

Study states so as to FPA is straightforward, elastic plus enhanced towards determining optimization concern. FPA can be capable of be old for trade with equally lone purpose and multipurpose optimization concern. Study point out that FPA diminish packet loss, end-to-end delay, throughput, develop the marks and the routine is enhanced contrast to former optimization process FPA appear extremely shows potential and still in its original period and be capable of using in medicinal ground as well.

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