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DESIGN OF RANDOMIZED DISCRETIZATION AND PATH DELAY DISCRETIZATION BASED ATM NETWORKS

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Abstract— NP-complete, much research has been designing heuristic algorithms that solve the -approximation of the problem with an adjustable accuracy. A common approach is to discretize (i.e., scale and round) the link delay or link cost, which transforms the original problem to a simpler one solvable in polynomial time. The efficiency of the algorithms directly relates to the magnitude of the errors introduced during discretization. In this paper, we propose two techniques that reduce the discretization errors, which allow faster algorithms to be designed.

1. INTRODUCTION

The path computed using CSPF could be exactly same as that of computed from OSPF and IS-IS, or it could be completely different depending on the set of constraints to be met. A major obstacle against implementing distributed multimedia applications (e.g., web broadcasting, video teleconferencing, and remote diagnosis) is the difficulty of ensuring quality of service (QoS) over the Internet. A fundamental problem that underlies many important network functions such as QoS routing, MPLS path selection, and traffic engineering, is to find the constrained shortest path—the cheapest path that satisfies a set of constraints [1]–[10]. For interactive real-time traffic, the delay-constrained least-cost path has particular importance. It is the cheapest path whose end-to-end delay is bounded by the delay requirement of a time-sensitive data flow. The additional bandwidth requirement, if there is one, can be easily handled by a pre-processing step that prunes the links without the required bandwidth from the graph.

The randomized discretization cancels out the link errors along a path. The larger the topology, the greater the error reduction. The path delay discretization works on the path delays instead of the individual link delays, which eliminates the problem of error accumulation. Based on these techniques, design fast algorithms to solve the -approximation of the constrained shortest-path problem. We prove the correctness and complexities of the algorithms. [11-15]

2. PROBLEM DEFINITION

There are two existing discretization approaches.

1. Round to Ceiling
2. Round to Floor

Round to ceiling (RTC): For every link, the delay value is divided by r/λ. If the result is not an integer, it is rounded to the nearest larger integer.

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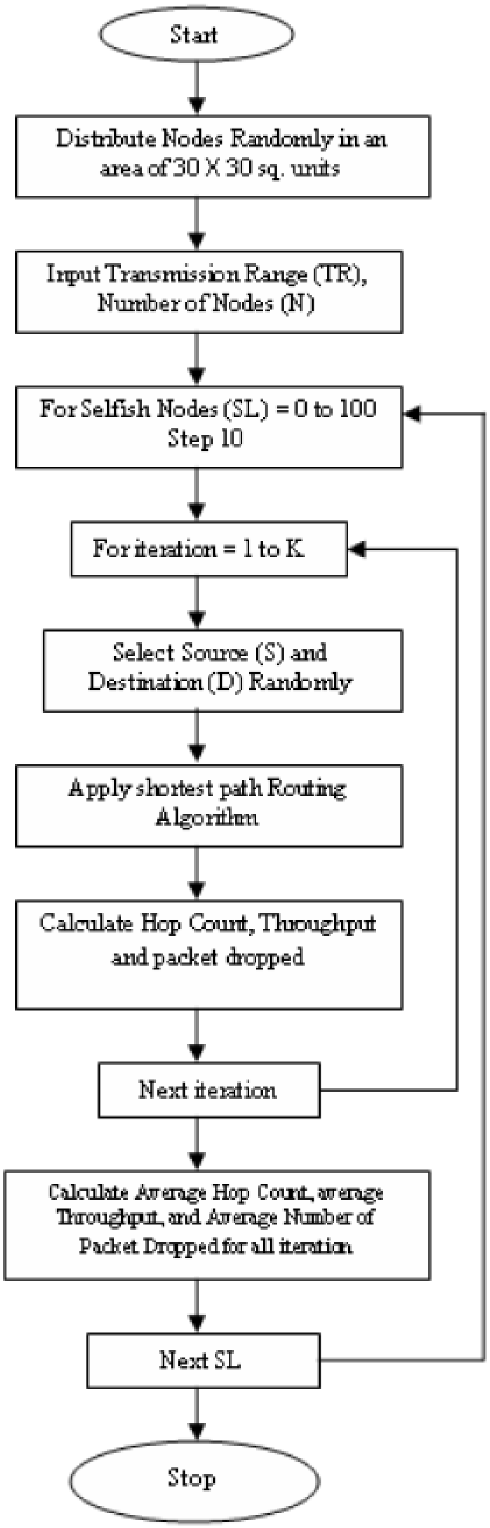

Fig. 1 Flow diagram of proposed system

Round to floor (RTF): For every link, the delay value is divided by r/λ. If the result is not an integer, it is rounded to the nearest smaller integer.

3. PERFORMANCE ANALYSIS

Stop Communication with Malicious Node

In fig 2 when the malicious node will be find by the watchdog after that the malicious node will be removed from the group of node. Then the data will not be send from other nodes and protect the data from dataloss.

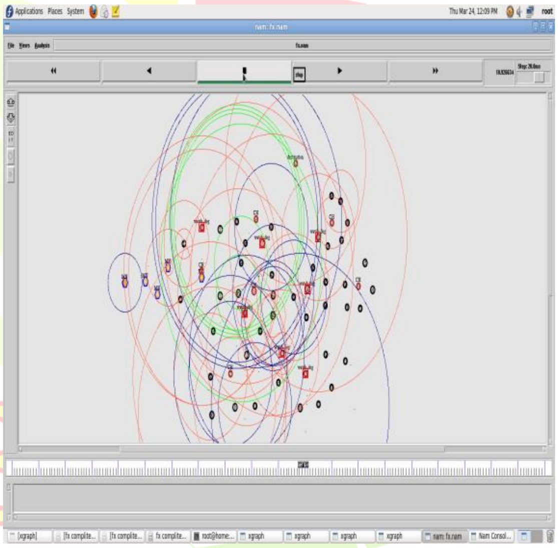

Fig.2 Stop Communication with Malicious Node

Checking the Malicious Node

In the above fig.3 after removing malicious node from the group the cluster head will be check whether the malicious node will be present not and watchdog also after checking that data will be transfer from the source to destination

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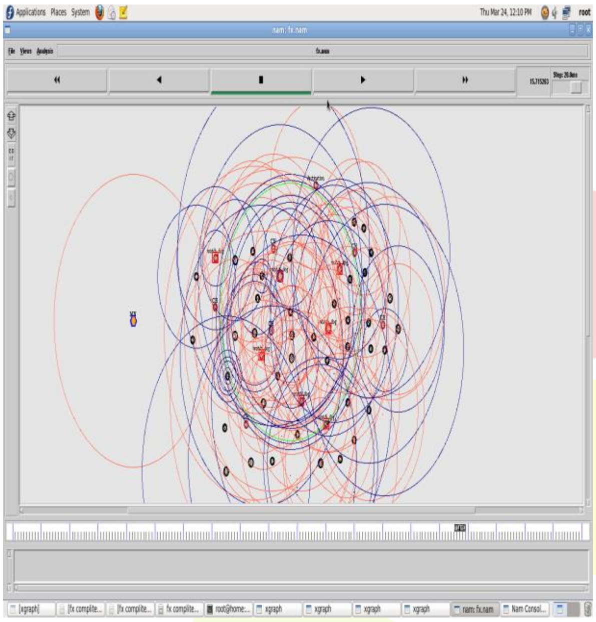

Fig-3 Checking the Malicious Node

GRAPHICAL REPRESENTATION

Throughput

In the above graph 4 shown the difference of throughput and time. The red color line will be indicates the proposed system and green color line will be indicates the existing system.

Table 1 Throughput

S.No	Existing System		Proposed System	
	Time	Energy	Time	Energy
1	0.0000	0.0000	0.0000	0.0000
2	10.0000	0.1800	10.0000	0.5000
3	20.0000	0.6200	20.0000	0.8000
4	30.0000	0.7800	30.0000	1.0000
5	40.0000	0.8100	40.0000	1.2600

Energy

In this graph is shown the difference between delay and time. The red color will be indicates the node energy and green color will be indicates the watchdog energy .

Table 2 Energy

S.No	Node		Watchdog	
	Time	Delay	Time	Delay
1	0.0000	0.0000	0.0000	0.0000
2	10.0000	1.6500	10.0000	3.2000
3	20.0000	1.8000	20.0000	3.3000
4	30.0000	2.1800	30.0000	3.4000
5	40.0000	2.3800	40.0000	3.6500

Delay

In this graph is shown 5.the difference between existing delay and proposed delay. The red color indicates the energy level of delay the green color indicates the proposed system delay. The energy indicates the delay slowly and proposed will be color indicates the delay fastly.

Table 3 Delay

S.No	Existing System		Proposed System	
	Time	Delay	Time	Delay
1	0.0000	0.0000	0.0000	0.0000
2	10.0000	0.4800	10.0000	0.2000
3	20.0000	0.8200	20.0000	0.6100

4	30.0000	1.0900	30.0000	1.0000
5	40.0000	1.6500	40.0000	1.2200

Losses

In this graph is shown 4 the difference between energy loss and proposed loss. The red color indicates energy loss and green color indicates the proposed system loss.

Table 4 Losses

S.No	Existing System		Proposed System	
	Time	Energy	Time	Energy
1	0.0000	0.0000	0.0000	0.0000
2	10.0000	0.7000	10.0000	0.3800
3	20.0000	0.8200	20.0000	0.6200
4	30.0000	1.1800	30.0000	0.8500
5	40.0000	1.3500	40.0000	1.0000

4. CONCLUSION

In this paper, we proposed two techniques, randomized discretization and path delay discretization, to design fast algorithms for computing constrained shortest paths. While the previous approaches (RTF and RTC) build up the discretization error along a path, the new techniques either make the link errors to cancel out each other along the path or treat the path delay as a whole for discretization, which results in much smaller errors. The algorithms based on these techniques run much faster than the best existing algorithm that solves the ε-approximation of DCLC

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