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# MPLS BASED HIGH SPEED WIRELESS NETWORKS

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**Abstract— It is 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. Reducing the overhead of computing constrained shortest paths is practically important for the successful design of a high-throughput QoS router, which is limited at both processing power and memory space. Our simulations show that the new algorithms reduce the execution time by an order of magnitude on power-law topologies with 1000 nodes.**

## 1. INTRODUCTION

A path that satisfies the delay requirement is called a feasible path. Finding the cheapest (least-cost) feasible path is NP-complete.There has been considerable work in designing heuristic solutions for this problem. Xue [1-2] and Juttner et al. [3] used the Lagrange relaxation method to approximate the delay-constrained least-cost routing problem. However, there is no theoretical bound on how large the cost of the found path can be Korkmaz and Krunz used a nonlinear target function to approximate the multi-constrained least-cost path problem [4]. It was proved that the path that minimizes the target function satisfies one constraint and the other constraints multiplied by $\sqrt[\lambda]{k}$, where λ is a predefined constant and K is the number of constraints. However, no known algorithm can find such a path in polynomial time. Ref. [5] proposed a heuristic algorithm, which has the same time complexity as Dijkstra’s algorithm. It does not provide a theoretical bound on the property of the returned path, nor provide conditional guarantee in finding a feasible path when one exists. In addition, because the construction of the algorithm ties to a particular destination, it is not suitable for computing constrained paths from one source to all destinations.

Another thread of research in this area is to design polynomial time algorithms that solve the NP complete problem with an accuracy that is theoretically bounded. Let m and n be the number of links and the number of nodes in the network, respectively.[6-10]

Given a small constant ε, Hassin’s algorithm has a time complexity of 0((mn/ε) log log (UB/LB)), where UB and LB are the costs of the fastest path and the cheapest path from the source node to the destination node respectively. The algorithm finds a feasible path if there exists one. The cost of the path is within the cost of the cheapest feasible path multiplied (1 + ε). Lorenz and Raz

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improved the time complexity to 0(mn (1/ε+log n)).[11-15]

## 2. PROBLEM DEFINITION

Our technique to control error is to perform discretization on the path level, using the interval partitioning method for combinatorial approximation. For a path P, ideally, discretization is performed once as follows.

$$d'(P) = \left\lfloor \frac{d(P)}{r}\lambda \right\rfloor$$

Because only one discretization is performed, the maximum discretization error on any path is bounded by r/λ, independent of the path length.

We design the path discretization algorithm (PDA) based on the above intuition. The algorithm solves the ε–approximation with the same worst-case complexity as RDA. However, its average execution time is better than RDA according to our simulations.

## 3. PERFORMANCE ANALYSIS

### Detecting the Malicious Node

The watchdog node will be finding about the malicious node and give alert signal to another node and cluster head. The data will not be transfer to the malicious node. Sometimes the data will be send to malicious node at that time the will be lost in fig-1.

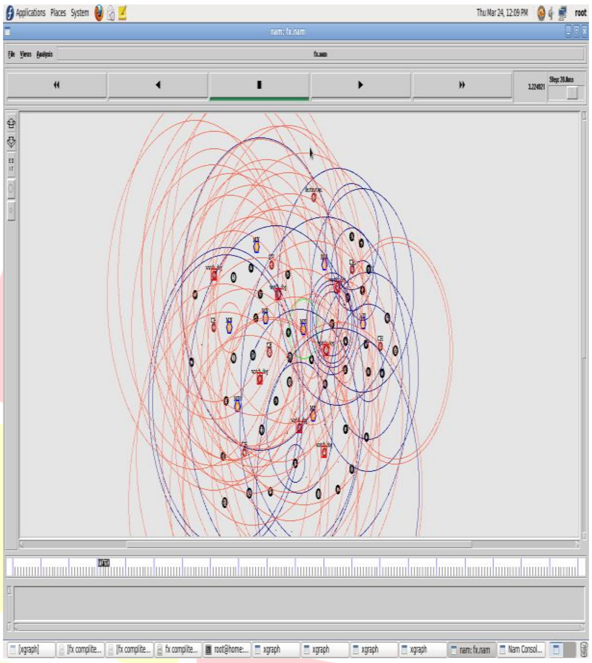

Fig-1 Detecting the Malicious Node

### 5.1.8 Moved the Malicious Node

In fig 2 every malicious node will be slowly removed from the group.

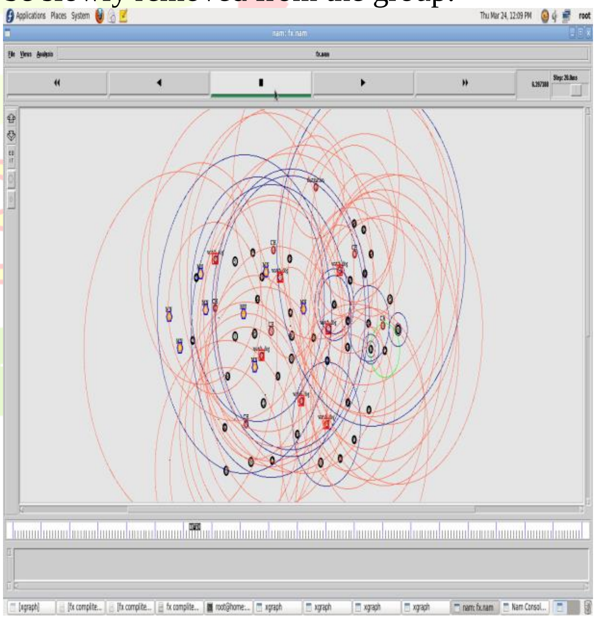

Fig-2 Moved the Malicious Node

### 5.1.9 Stop Communication with Malicious Node

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In fig 3 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.

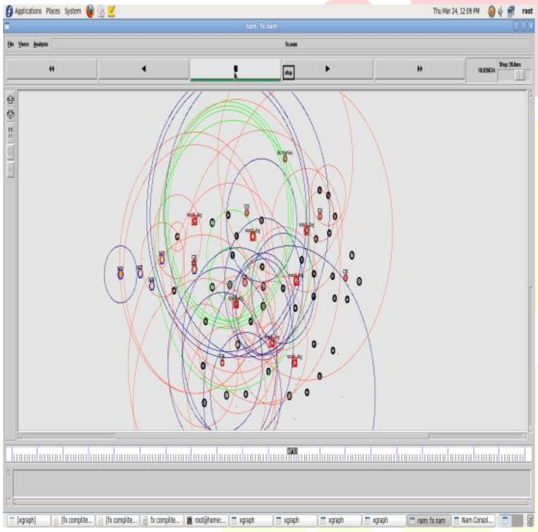

Fig-3 Stop Communication with Malicious Node

## 4 GRAPHICAL REPRESENTATION

### Delay

In this graph is shown 4 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 1 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 |

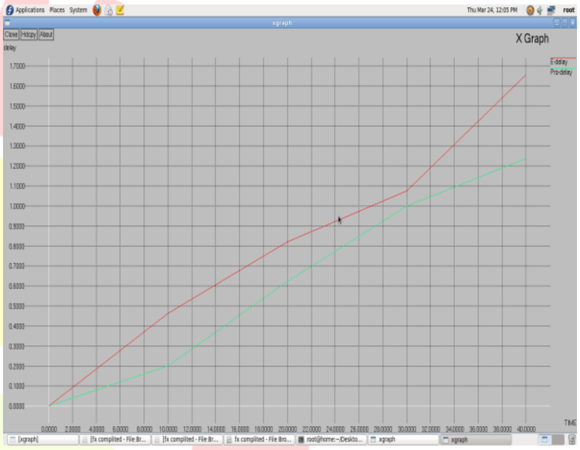


Fig-4 Delay Graph

## 5. CONCLUSION

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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