ISSN 2394-3777 (Print)
ISSN 2394-3785 (Online)
Available online at www.ijartet.com

International Journal of Advanced Research Trends in Engineering and Technology (IJARTET)
Vol. 2, Issue 2, February 2015

Design of Qos based on CSPF Method

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Abstract: MPLS path selection, ATM circuit routing, and traffic engineering. The problem is to find the cheapest path that satisfies certain constraints. In particular, finding the cheapest delay-constrained path is critical for real-time data flows such as voice/video calls. Because 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. Our simulations show that the new algorithms reduce the execution time by an order of magnitude on power-law topologies with 1000 nodes. The reduction in memory space is similar.

1. INTRODUCTION

Constrained Shortest Path First (CSPF) is an extension of shortest path algorithms. The path computed using CSPF is a shortest path fulfilling a set of constraints. It simply means that it runs shortest path algorithm after pruning those links that violate a given set of constraints. A constraint could be minimum bandwidth required per link (also know as bandwidth guaranteed constraint), end-to-end delay, maximum number of link traversed, include/exclude nodes. CSPF is widely used in MPLS Traffic Engineering .The routing using CSPF is known as Constraint Based Routing (CBR). 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. [11-15]

In practice, on-line algorithms are not always desired. When the request arrival rate is high (major gateways may receive thousands or tens of thousands of requests every second), even the time complexity of Dijkstra's algorithm will overwhelm the router if it is executed on a per-request basis.1 To solve this problem, the second scheme is to extend a link-state protocol (e.g., OSPF) and periodically pre-compute the cheapest delay-constrained paths for all destinations, for instance, for voice traffic with an end-to-end delay requirement of 100 ms. [1-5]

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. [6-10]

2. PERFORMANCE ANALYSIS

Creation of Nodes

Creation of node to transferring the data from one node to another node in this totally 64 nodes are used in this fig 1

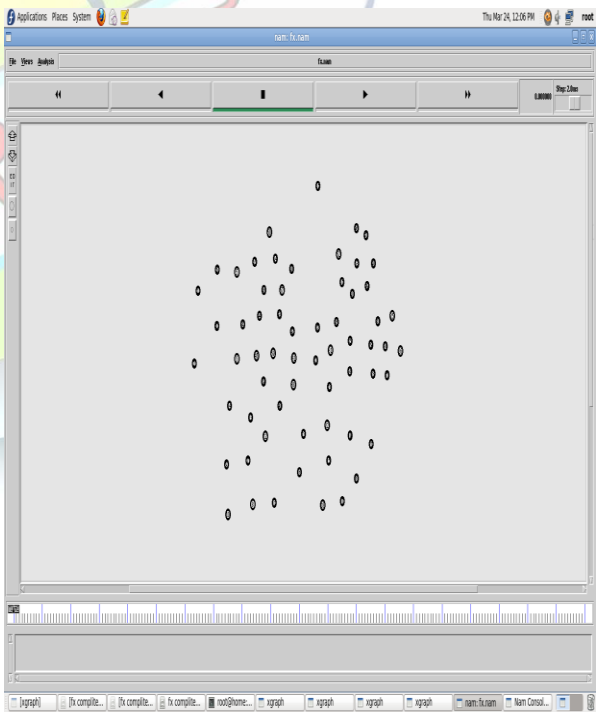

Fig-1 Creation of nodes

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Creating the Cluster Head

In this fig 2 the cluster node source node and destination node will be identified according to that the data will be transmitted from source to destination by cluster information cluster node is group controller source and destination is used to communicate between other nodes.

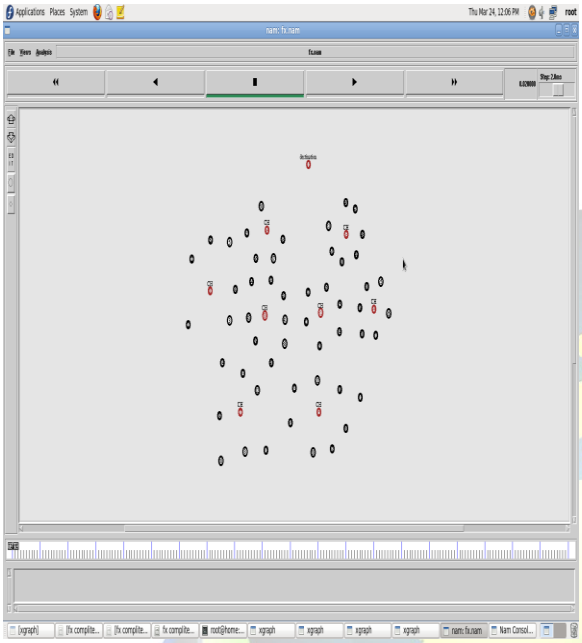

Fig-2 Creating the cluster Head

Collaborative Contact of Nodes

Green and Red color is shown in fig 3 In green color used to know the acknowledgement and red color is used to find the whether the node is active or not.

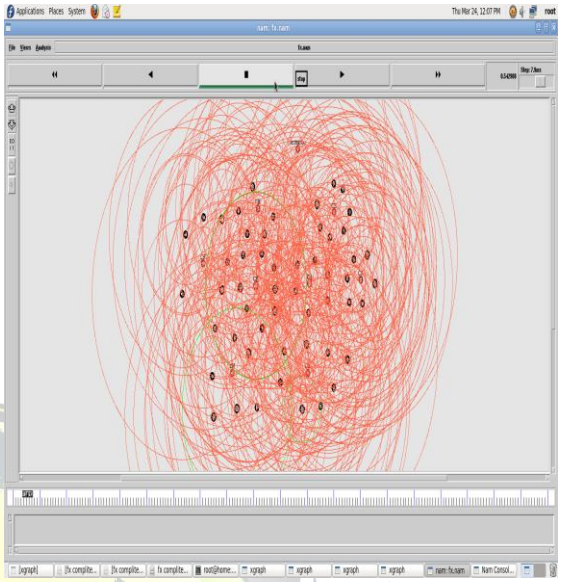

Fig-3 Collaborative Contact of nodes

Data Transferring

Blue color is used to identify whether the data is transfer or not from one node to another node is shown in fig 4

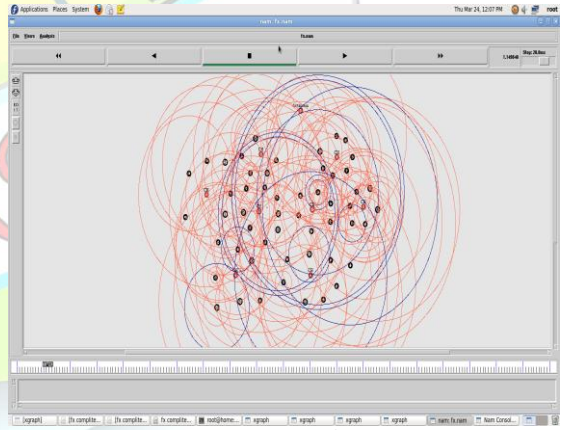

Fig-4 Data Transferring

GRAPHICAL REPRESENTATION

Throughput

In the above graph 5 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.

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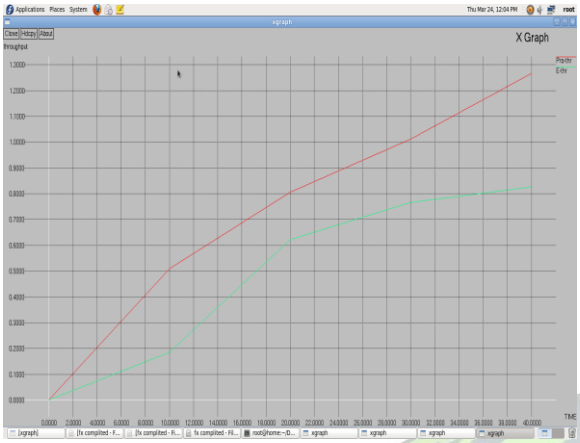

Fig-5 Throughput Graph

Energy

In this graph is shown 6 the difference between delay and time. The red color will be indicates the node energy and green color will be indicates the watchdog energy .

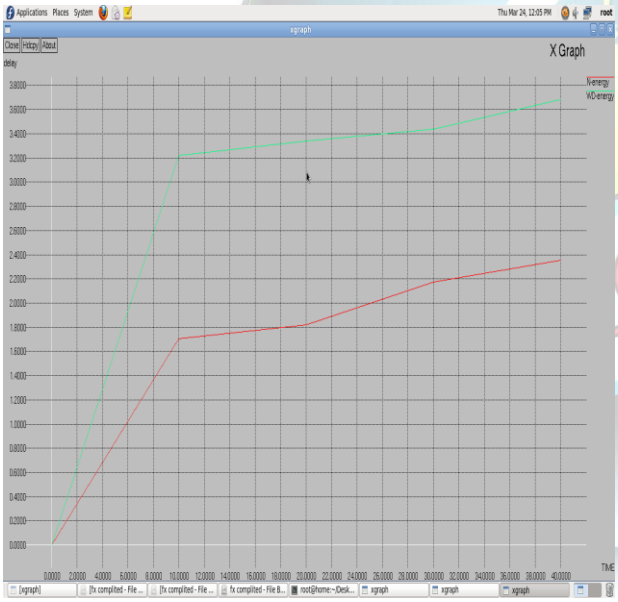

Fig-6 Energy Graph

Delay

In this graph is shown 7 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.

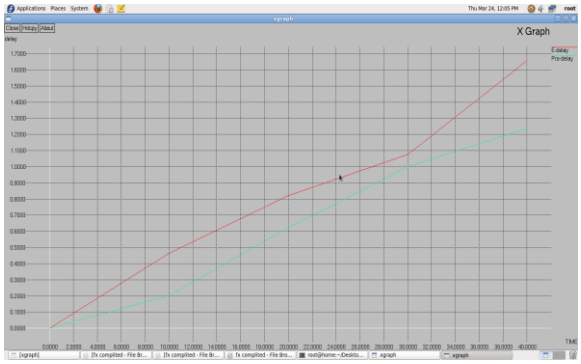

Fig-7 Delay Graph

5.2.4 Losses

In this graph is shown 8 the difference between energy loss and proposed loss. The red color indicates energy loss and green color indicates the proposed system loss.

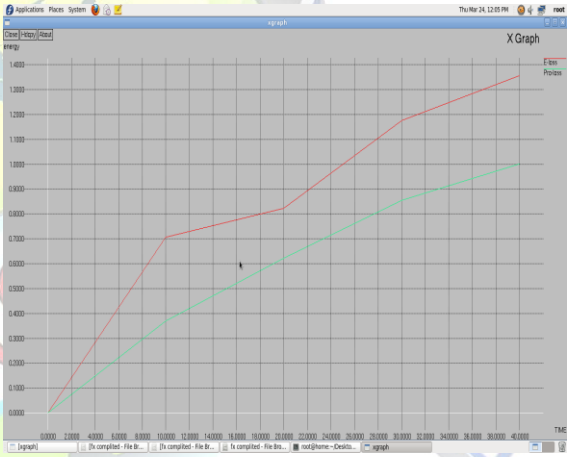

Fig-8 Losses Graph

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.

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