ISSN No: 2348-4845
International Journal & Magazine of Engineering, Technology, Management and Research
A Peer Reviewed Open Access International Journal

Economical Asset Distribution of Commitment Directing Transfer Hubs

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ABSTRACT

Course-plotting on the Overlay means the underlying network induce a complete graph of connectivity. Here no real routing is required, but one virtual hop may be many underlying hops away, thus latency and cost vary significantly over the virtual links. Contribution routing is an effective way to certain routing properties without long and boring process of standardization and global deployment of a new routing protocol. Implementing overlay routing requires the placement and maintenance of overlay infrastructure rise to the optimization problem. A great algorithmic framework can be efficient resource allocation in overlay routing. You see, the advantage can gain from techniques namely BGP Routing, TCP Improvement and VOIP Applications.

BGP Routing is up-to- date data reflecting the current BGP routing coverage in internet, a tiny quantity of below 100 relay servers is enough to permit routing over smallest paths from an individual source to all Autonomous Systems(AS's), reducing the average way period of inflated paths. Yet if the node in the network increases then the requirement of relay nodes increases. Maintenance of the relay nodes will be more cost. All of us have to maintain different routing information for each and every relay node. To decrease the maintenance cost and also the quantity of relay nodes, by implementing the queue idea in the intermediate nodes and increasing RTT in the source side can decrease the maximal peer-to- peer delay.

INTRODUCTION

BGP ROUTING

The main operation of a BGP-based method for Lowest-Cost Routing is to checking the physical environment, process the detected information, and deliver the results to some specific subside nodes. Sensor nodes are normally powered by batteries with limited energy resource. Therefore, the primary challenge for this energy- constrained system is to design energy-efficient protocols to maximize the lifetime of the network. Since radio sending is the main source of power intake the design of communication protocols for topology management, sensor power control, and energy-efficient routing has been the focus of many studies. Among these schemes, energy-efficient routing is one of the well-studied approaches for both wireless ad hoc networks and sensor networks. The basic idea is to route the packet through the least cost paths so as to minimize the overall energy intake for delivering the packet from the source to the destination. The drawback of this approach is that it tends to overwhelm the nodes on the least cost path, which is undesirable for sensor networks since all sensor nodes are collaborating for a common mission and the duties of failed nodes may not be taken by other nodes.

Overlay routing is a very good looking scheme that allows improving certain properties of the routing (such as delay or TCP throughput) without the need to change the standards of the current underlying routing.

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There is set of two ways links between the no of nodes and the network is an AS graph because the routes selection problem arises when a node has multiple potential routes to destination .The main goal is to send each packet along the least cost path (LCP), the assessment mechanism must be strategy proof so that agents have no incentives to lie about their costs.

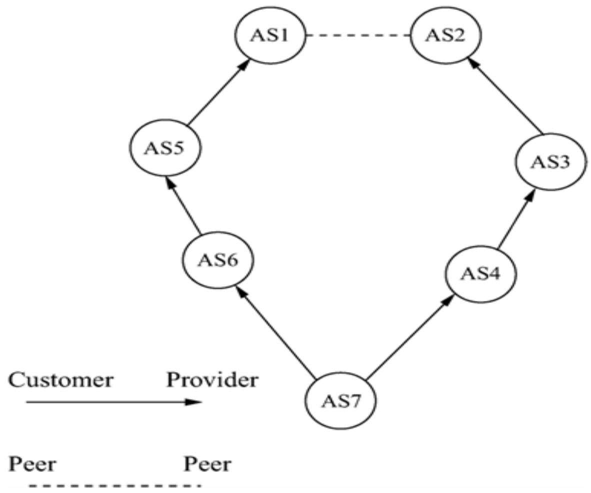

Figure: 1.1 BGP path inflation

TCP Throughput

Overlay routing is also used to improve TCP performance. TCP protocol responsive to delay and there is statistical relationship between TCP throughput and RTT. Hence it is beneficial to break high latency TCP connections in low latency sub-connections. In above figure shows that they has similar latency, the TCP connection between v and u can be fragmented using the relay node located in w, reducing the maximum RTT of the connection. With respect to the ORRA problem, from the network topology represented as graph G = (V, E) a path p is underlay routing path if it is valid path and the RTT associated with path it does not exceed previously defined RTTmax defining maximum RTT for each sub-connection.

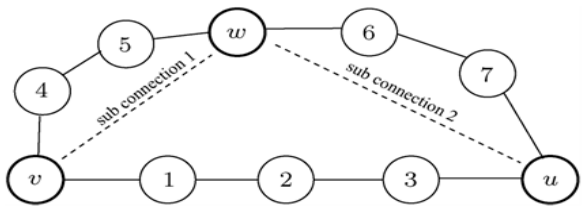

Figure: 1.2. Breaking a TCP connection into two sub connections reducing the maximum

OVERLAY NETWORK

Overlay routing has been proposed in recent years as an effective way to achieve certain routing properties, without going into the long and tedious process of standardization and global deployment of a new routing protocol. For example, in, overlay routing was used to improve TCP performance over the Internet, where the main idea is to break the end-to-end feedback loop into smaller loops. This requires that nodes capable of performing TCP Piping would be present along the route at relatively small distances. Other examples for the use of overlay routing are projects like RON and Detour, where overlay routing is used to improve reliability. Yet another example is the concept of the “Global-ISP” paradigm introduced in, where an overlay node is used to reduce latency in BGP routing.

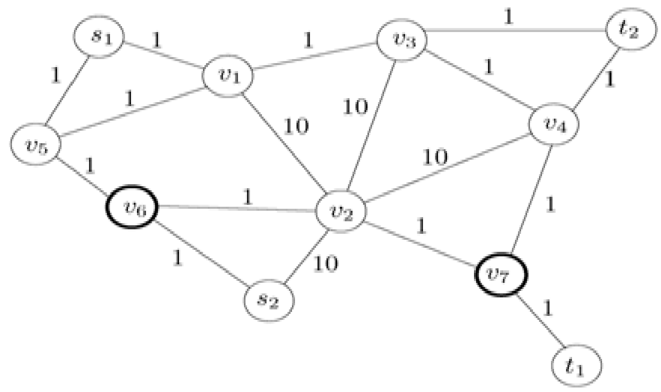

Figure:1.3. Overlay routing example: Deploying relay server on and enables

We use overlay routing to improve network performance was studied in the past by many works both practical and theoretical, very few of them consider the cost associated with the deployment of overlay infrastructure. In this paper, we addressed this fundamental problem developing an approximation algorithm to the problem. Rather than considering a customized algorithm for a specific application or scenario, we suggested a general framework that fits a large set of overlay applications.

Considering three different practical scenarios, we evaluated the performance of the algorithm, showing that in practice the algorithm provides close-to-optimal results.

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METHODOLOGY

PROPOSED SYSTEM

The minimum number of infrastructure nodes that need to be added in order to maintain a specific property in the overlay routing. In the shortest-path routing over the Internet BGP-based routing example, this question is mapped to: What is the minimum number of relay nodes that are needed in order to make the routing between a groups of autonomous systems (ASs) use the underlying shortest path between them? In the TCP performance example, this may translate to: What is the minimal number of relay nodes needed in order to make sure that for each TCP connection, there is a path between the connection endpoints for which every predefined round-trip time (RTT) and in this we use queue for diverting the Text to next shortest path to reduce the RTT, there is an overlay node capable of TCP Piping? Regardless of the specific implication in mind, we define a general optimization problem called the Overlay Routing Resource Allocation (ORRA) problem and study its complexity. It turns out that the problem is NP-hard, and we present a nontrivial approximation algorithm for it.

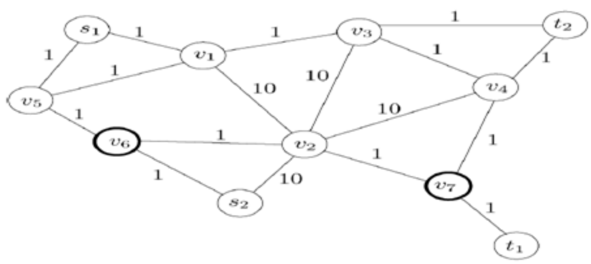

Figure: 3.1 Architecture of Proposed System

Advantages:

- Low routing overhead.
- We are only interested in improving routing properties between a single source node and a single destination, then the problem is not complicated, and finding the optimal number of nodes becomes trivial since the potential candidate for overlay placement is small, and in general any assignment would be good.

However, when we consider one-to-many or many-to-many scenarios, then a single overlay node may affect the path property of many paths, and thus choosing the best locations.

The recursive algorithm ORRA

Algorithm ***ORRA***$(G = (V, E), W, P_u, P_o, U)$

1. $\forall v \in V \setminus U$, if $w(v) = 0$ then $U \leftarrow \{v\}$
2. If U is a feasible solution returns U
3. Find a pair $(s, t) \in Q$ not covered by U
4. Find a (minimal) *Overlay Vertex Cut* V' $(V' \cap U = \phi)$ with respect to (s, t)
5. Set $\epsilon = \min_{v \in V'} w(v)$
6. Set $w_1(v) = \begin{cases} \epsilon, & v \in V' \\ 0, & \text{otherwise} \end{cases}$
7. $\forall v$ set $w_2(v) = w(v) - w_1(v)$
8. $ORRA(G, W_2, P_u, P_o, U)$
9. $\forall v \in U$ if $U \setminus \{v\}$ is a feasible solution then set $U = U \setminus \{v\}$
10. Returns U

The algorithm picks vertices with weight that is equal to zero until a feasible set is obtained. Thus, since at each iteration at least one vertex gets a weight that is equal to zero with respect to then in the worst case the algorithm stops after iterations and returns a feasible set. In, unnecessary vertices are removed from the solution, in order to reduce its cost. While this step may improve the actual performance of the algorithm, it is not required in the approximation analysis below and may be omitted in the implementation.

Modules

The implementation consists of the following modules such as:

- Node creation
- Implementation of communication and routing
- Performance analysis
- Implementation of hybrid location – based routing protocol
- Performance analysis and result comparison

Node Creation

A Node is created. All the nodes are randomly deployed in the network area. Our network is a wireless network, nodes are assigned with mobility.

Implementation of Communication and Routing

A communication between nodes is provided. Sender and Receiver nodes are randomly selected.

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International Journal & Magazine of Engineering, Technology, Management and Research
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Communication traffic is enabled between nodes. A sample routing is performed with anyone of the familiar routing protocol

Performance Analysis

The performance of the routing protocol is analyzed. Based on the analyzed results X-graphs are plotted. Throughput, delay, energy consumption are the basic parameters considered here and X-graphs are plotted for these parameters

Implementation of Hybrid Location-Based Routing Protocol

A hybrid location-based routing protocol is implemented. Instead of using normal routing, location based routing is used to communicate with the nodes. The proposed protocol uses RREQ and RREP control packets along with location information

Performance analysis and result comparison

The performance of the proposed protocol is analyzed. Based on the analyzed results X-graphs are plotted. Throughput, delay, energy consumption are the basic parameters considered here and X-graphs are plotted for these parameters. Finally, the results obtained from this module is compared with third module results and comparison X-graphs are plotted. Form the comparison result, final RESULT is concluded.

RESULTS

BGP is a policy-based inter domain routing protocol that is used to determine the routing paths between autonomous systems in the Internet. In practice, each AS is an independent business entity and the BGP routing policy reflects the commercial relationships between connected ASs. A customer– provider relationship between ASs means that one AS (the customer) pays another AS (the provider) for Internet connectivity, a peer–peer relationship between ASs means that they have mutual agreement to serve their customers while a sibling–sibling relationship means that they have mutual- transit agreement (i.e., serving both their customers and providers).These business relationships between ASs induce a BGP export policy in which an AS usually does not export its providers and peers routes to other providers and peers .This route export policy indicates that routing paths do not contain so-called valleys nor steps. In other words, after traversing a provider–customer or a peer–peer link, a path cannot traverse a customer–provider or a peer-peer link. This routing policy may cause, among other things, that data packets will not be routed along the shortest path.

TEST CASES

Test Case ID	Test Case Name	Description	Excepted Value	Actual Value	Status	Tested Data
Tc_01	Cost effective	Selecting source and destination	Please load any text file	No text file was selected	Fail	A. text
Tc_01	Cost effective	Select source file	Text file will loaded	Ready to send	Pass	A. text
Tc_02	Cost effective	Selecting either source or destination	Destination node will be selected	Ready to send	Fail	A. text
Tc_03	Cost effective	Select source and destination nodes	Available nodes will be selected	Source and destination nodes	Pass	A. text
Tc_04	Cost effective	Calculation of path length	All the route lengths from source to destination will be displayed	Shortest path will be selected	Pass	A. text
Tc_05	Cost effective	Queue over flow	It should show the busy intermediate node	It shows the route is busy	Pass	A. text

Screen Shots

Cost Effective

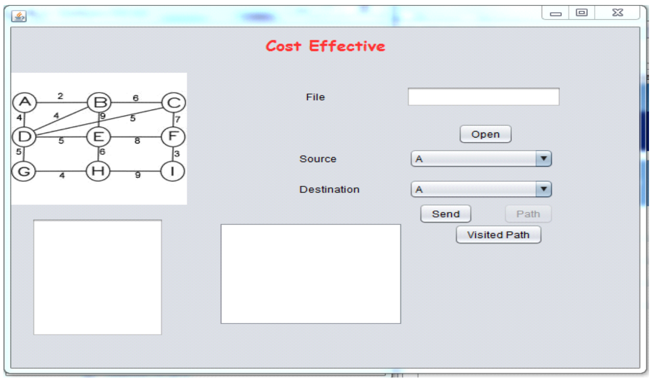

Figure: 5.1 Cost Effective

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The person who wants to send the document has to select the source and destination. And after that he has to click the send button.

Selecting the source

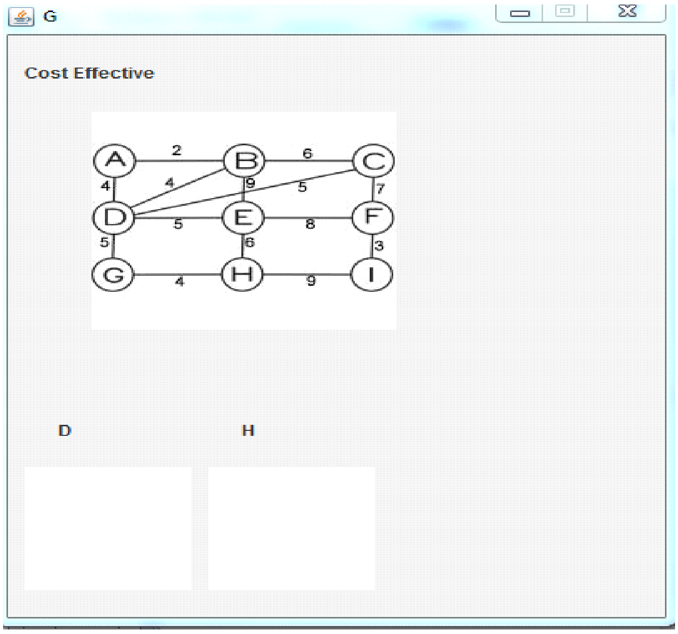

Figure: 5.2 Selecting Source

The user has to select the respected source. It is necessary to select the at least one source node to send data from the any node in the network. If we not select the source the transaction will fails.

Selecting Destination

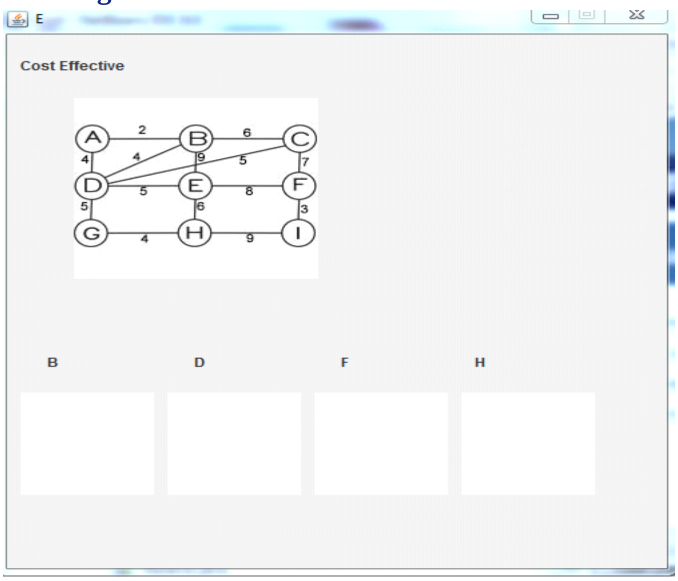

Figure: 5.3 Selecting Destination

After selecting the source, the user has to select the destination to send the packet. Here we can select any node as destination except the source node.

Available Paths

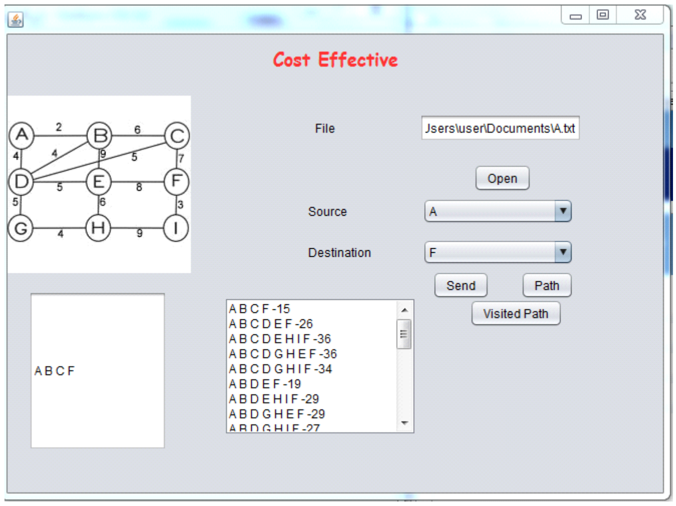

Figure: 5.4 Available Paths

The number of the available paths will be displayed with their cost, and the shortest paths from the source to destination will be selected to transform.

Calculating path costs

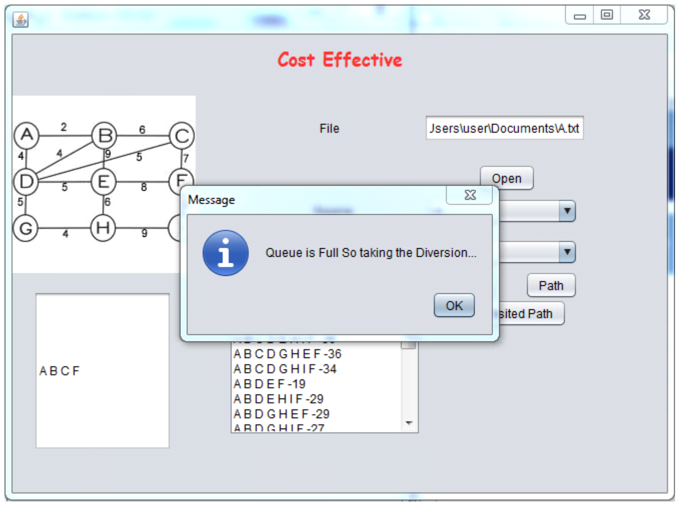

Figure: 5.5 Calculating Cost

After selecting the destination, the paths which are available will be displayed. We have to select the low cost path to send data. If any intermediate node is busy then immediately the data transfer from that node to the second shortest intermediate node. The path which is having least cost will be displayed.

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CONCLUSION

Overlay routing is to improve network performance. Very few of them consider the cost associated with the deployment of overlay infrastructure. The fundamental problem developing an approximation algorithm rather than considering a customized algorithm for a specific application or scenario, a general framework that fits a large set of overlay applications. Considering three different practical scenarios and evaluated the performance of the algorithm, showing that in practice the algorithm provides close-to-optimal results using queue and diverting the data to other path when the path is busy.

One interesting direction is an analytical study of the vertex cut used in the algorithm. It would be interesting to find properties of the underlay and overlay routing that assure a bound on the size of the cut. It would be also interesting to study the performance of our framework for other routing scenarios and to study issues related to implementation of the scheme. The connection between the cost in terms of establishing overlay nodes and the benefit in terms of performance. The one-to-many BGP routing scheme can be used by a large content provider in order to improve the user experience of its customers.

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