Multicast Multi-Path Power Efficient Routing In Mobile Adhoc Networks

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***Abstract*-Multicast traffic over the Internet is growing rapidly with increasing number of demands applications that means Internet broadcasting, video conferences, audio conferences, data stream applications and web distributions. This approach utilized more efficiently than with current approaches to satisfy the rate of requirements. load balancing is one particular method to carry out network traffic engineering, which deals with the problem of assigning the traffic load onto pre-established paths to meet certain delivery requirements. Our focus is to the effects of load balancing the multicast traffic in an intra-domain network as well as inter-domain network. Proposing a problem solution is to optimally distribute the traffic along multicast trees. However, the solution covers the case when there is all source is deactivate and only one active source in the network. In addition, it is assumed that the gradient of an analytical cost function is available, which is continuously differentiable and strictly convex. These assumptions may not be reasonable due to the dynamic nature of the multicast networks. Theproposal of this paper is to show a measurement-based routing algorithm to load balance intra domain traffic along multiple paths in network for multiple multicast sources. Multiple paths are established using application-layer overlay. The algorithm is derived from simultaneous perturbation stochastic approximation and relies only on noisy estimates from measurements.**

Key words:
Load Balancing, Consumption, Lifetime, Perturbation, Stochastic

1. INTRODUCTION

Multicast traffic over the Internet or intranet is grow steadily with increasing number of demanding applications including Internet broadcasting, video conferences, audio conferences, data stream applications and web application [1]. Many of these applications require guarantees, and demand that the network be utilized efficiently than with current approach to satisfy the rate of requirements. Traffic mapping is one most powerful and particular method to carry out traffic, which deals with the problem of assigning the network traffic load onto pre-established paths to meet certain requirement. Our literature survey is on the existing work on multicast routing with power constraint. [2],[3],[4],[5],[7].Propose a solution to optimally distribute the traffic along with multiple multicast trees over a distributed network. However, the solution covers to all the case when there is only one active source in the network and all other sources are deactivated.It is assumed that the gradient function is available, which is continuously differentiable and strictly convex in network. These assumptions may not be reasonable in multicast multipath in mobile ADHOC network due to the dynamic nature of networks. [8], [9], [11].

Even though they approach the problem under a more architecture, practicality of these solutions is limited due to the assumption that the network is lossless. Moreover, a packets loss is actually much costly when network coding is employed since it potentially affects the decoding of a large number of other related packets. In addition, any factor that changes the min-cut max-flow values between a source and destination requires the code to be updated at every node concurrently, which brings high level complexity and coordination among them. The proposal in this paper presented a distributed more performance routing algorithm to balance the load along multiple paths for multiple multicast networks. Our measurement-based algorithm never assumes the existence of the gradient of an analytical function which depends on cost and is inspired by the unicast routing algorithm that is depend on Perturbation Stochastic Approximation (SPSA). In addition, we address the optimal multipath multicast routing algorithm in a more general framework than having multiple trees in a session. We consider different network models with different functions. [13]

2. MULTIPATH MULTICASTING

The proposed scheme is multicast video in multiple paths over wireless networks. It consists of two parts. The first part is to split the video into multiple parts and transmit each part in a different path. In the latter part, employ multicast method to transmit the video packets to all the

nodes. In this scheme, we assume that the network is lightly loaded, i.e., mobility and poor channel condition rather than congestion are major reasons for packet drop. Begin by showing the feasibility of multiple path multicasts, and then move on to describe ways to forward packets through multiple paths. The proposed method has three basic steps, discovery of the shortest route, maintenance of the Route and Data Transmission.

2.1 Discovery of Route

In the first criteria in wireless medium is to discover the available routes and establish them before transmitting into the network. To understand this better let us look at the example given below. The below architecture consists of 11 nodes in which two being source and destination others will be used for data transmission. The selection of path for data transmission is done based on the availability of the nodes in the region using the ADHOC network on demand of the distance vector routing algorithm. By using come protocol that is the Ad hoc on Demand Distance Vector routing protocol, the routes are created on demand basis, i.e. only when a route is needed for which there is no "NEW" is also called fresh record in the routing table. In order to facilitate determination of the freshness of routing information, AODV maintains the time since when an entry has been last used. A routing table entry is "expired" after a certain predetermined time but that is threshold time. Consider all the nodes to be in the position. Now the shortest path is to be determined by implementing the Ad hoc on Demand Distance Vector routing protocol in the wireless simulation environment.

2.2 MaintenanceOver Route

In multicast network algorithm the next step is the maintenance of these routes which is equally important in session. The source has to continuously monitor the position of the nodes to make sure the data is being carried through the particular path to the destination without any loss. In any case, if the position of that nodes changes and the source doesn't make a note of it then the packets will be lossand eventually it has resent.

2.3 Transmission of A Data

The path selection, maintenance and data transmission are main process which happen in within seconds in real-time transmission. Hence the paths allocated priory is used for data transmission over a network. The previous or first path allocated previously is now used for data transmission. The data is transferred through the highlighted that means darken path. The second path selected is now used for data transmission. The data is transferred through the highlighted path.

3. MULTIPATH MULTICASTING USING POWER ALGORITHM

MANET may consist of nodes which are not able to be re-charged in anparticular as well as expected time period, energy conservation is crucial to maintain the life-time of such a node. In networks consisting of these nodes, where it is impossible to replenish the nodes power, techniques for energy-efficient routing as well as efficient data dissemination between nodes is crucial within that network.

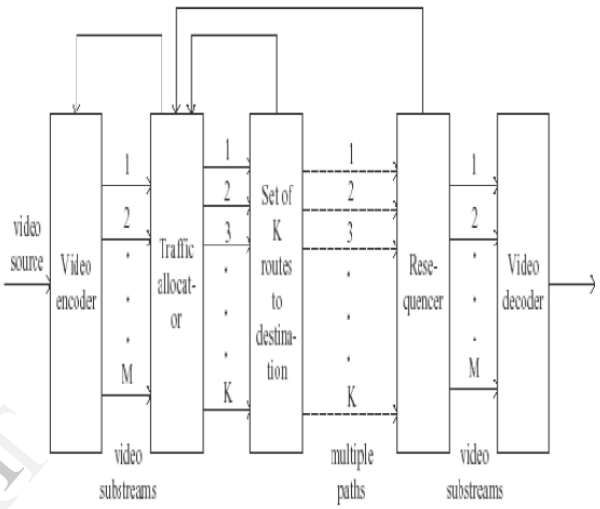

Fig: 1 Multipath multicast power Routing

The way of the Directed diffusion is on-demand routing approach. it was designed for energy efficiency so it only sets up a path if there is data between a source and a sink that means destination. However, the major drawback of the scheme, in terms of energy efficiency, is the periodic flooding of data. In order to avoid the flooding overhead, proposes the setup and maintenance as well as performance of alternate paths in advance using a localized path setup technique.

4. EXPERIMENTAL EVALUATION OF POWER AWARE IN MULTI-PATH MULTICASTING

In those local proposed algorithms, the nodes in the network make routing decisions based solely on the location of itself within that network, the location of the destination and the location of its nears. Localized algorithms are distributed algorithms where simple local node behavior achieves a desired global objective [12]. Non-localized algorithms are those in which the nodes require the complete knowledge of all the nodes in the network along with the corresponding edges. In ad hoc mobile networks, nodes are moving at all times and there may be several nodes exiting and entering the network at any given point of time. To keep a track of all these nodes and their corresponding edges is cumbersome and requires a huge overhead. To avoid this condition, the remaining

battery power of each node needs to be taken into consideration [10].

4.1 Routing Algorithms and Existing Power Aware Metrics

There are so many of power and cost aware metrics present. The two basic are Power aware routing. In this case, the transmission power depends on the distance between the source and the destination in particular network. Cost aware routing: In this case, the routing decisions are made based on the remaining life-time of nodes on the multicast network between the source and the destination.

4.2Our Proposed Power aware Algorithm

Our proposed algorithm and the factors or impact are considered for conducting this experiment extends the power-cost efficient algorithm to implement timing constraints. The results of the power-cost aware algorithm show that it performs better when the graph is dense. In a large network, a node will have a large number of neighbors in that network. The computation time for calculating the minimum power-cost among the nodes' neighbors is quadratic or exponential (depending on the algorithm used, power+cost or power*cost). In order to decrees this computational time we introduce a threshold value for the remaining battery power of the nodes.

Our modified proposed algorithm
Threshold = 50%; success = 0; cutoff = 10%
Initial condition A: = S;
Repeat,
If g(A) >= threshold then
B := A; // it show same values
Let A be neighbor of B that minimizes
//pc-power cost
pc(B,A) = power-cost(B,A) + v(s)f`(A);
Send message to A;
Success = 1;
Until
A = D /* Destination reached */
Or if success <> 1 then
If threshold > cutoff then,
Threshold = threshold /2;
Or A = B /* Delivery failed */;

5. RESULT ANALYSIS FOR OUR MULTI-PATH MULTICAST POWER MODEL APPROACH

We conducted Experimentswith the intra domain network topology. It is a close approximation to analyze how our routing algorithm performs under these conditions since; recent findings suggest that many ISPs are in the process of increasing the node connectivity of their networks on the internet. Each link has a bandwidth of 20 Mbps. The topology has 3 sources that simultaneously send multicast traffic within that network, where each source has 18 receivers and nodes 10 and 23 are selected as additional overlay nodes. Each source-destination group has three paths including the min-hop path starting at the source node and each source generates Poisson traffic with an average of 10 Mbps rate. The routing algorithm starts from the setting that all overlay rates other than the source nodes are set to model, the algorithm starts with basic unicast routing to reach each and every destination. It starts with a single shortest path multicast multipath tree rooted at each source node shifts traffic to alternative trees rooted at overlay nodes 10 and 23.

6. CONCLUSION

The proposed power aware multicast identifies the characteristics of the proposed routing algorithm. It evaluates its performance under various network conditions. Each plot presented illustrates the average of 10 independent runs that are initiated with different random seeds. For the optimization algorithm, the link cost function is selected, and introduced. In all simulations, the period of link state measurements is selected as one second. As a consequence, source nodes can update their rates at best approximately every two seconds since it require two measurements for estimating the gradient vector according to the modified power algorithm. For simplicity set the rate of redundancy due to source coding, to zero. So we conclude we can find out easily multicast multipath power efficient in mobile ADHOC network.

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