Volume 6, Issue 4, April 2016 ISSN: 2277 128X
International Journal of Advanced Research in Computer Science and Software Engineering
Research Paper
Available online at: www.ijarcsse.com

Cost Minimization for Multicasting in Wireless Communication Networks

[1]N. Kumaran, [2]Bibha Kumari
[1] Assistant Professor of Information Technology, SCSVMV University, Kanchipuramm, Tamilnadu, India
[2] PG Student, SCSVMV University, Kanchipuram, Tamilnadu, India

Abstract: ***In a wireless communication network the MULTICASTING is defined as the information shared with a group. UDP (user datagram protocol) helps to do the communication .we also know that in a wireless network the packets or Data sent are not guaranteed for its delivery. In this paper, we minimize the cost of data and energy in multicasting while sending our data from source to destination. The intermediate nodes present in the netwokrs helps the sender to send data from source to destination. In this paper ,we have also used (Capacity optimized CO-operative) COCO Topology. COCO TOPOLOGY helps to improve network capacity in MANETS also in upper layer network capacity and physical layer co-operative communication.***

Keywords: UDP, Multicasting, Packets, source, wireless network, COCO Topology, Intermediate nodes, MANET

I. INTRODUCTION

Wireless communication is possible by the help of radio waves or microwaves to do our communication worldwide. The main objective of this paper is to do cost minimization for multicasting in a wireless communication network.
We know that in a wireless network user or client is able to send the data with the help of UDP(user data gram protocol)which is an end to end transport level protocol which adds only port address, checksum error control, and also length of data. The Intermediate nodes present between source and destination helps in wireless network to do the communication from source to Destination. The most important Topology called as COCO helps a lot in this paper to implement our works. It is so because COCOC Topology is capacity optimized.

Some Standards wireless technology are:
802.11b(first world wide used networking technology called as WI-FI)
802.11g(speed and range)
802.11n

II. RELATED WORKS

1. Rudolf Ahlswede et al has used the Acyclic networks, cyclic networks and says that In existing computer networks, each node functions as a switch in the sense that it either relays information from an input link to an output link, or it replicates information received from an input link and sends it to a certain set of output links and they found the problem with one information source.
2. Raif Koetter, Muriel Medard et al has used Greedy Algorithm and found the problem of network recovery for non ergodic link failures. And they found the gap For multicast setup we prove the surprising result that there exist coding strategies that provide maximally robust networks, that don't require adaptation of the network interior to the failure pattern in question
3. Fang Zhao et al used canonical algorithm and says Subgraph Optimization for multicast connections with network coding and found the Sub gradient method converges to optimal solutions quickly and that it is robust to network changes.
4. Kapil Bhattad et al has used the distributed algorithm and says that In optical networks the operation of a computing linear combination of inputs may require conversion of optical signals to electrical signals which is expensive and hence we may want to minimize the number of packets that undergo network coding. The problem of minimal cost network coding where the cost is the number of packets that need to be network coded.

III. PROPOSED SYSTEM

In the proposed system We have presented paper which is fully based on a Multicasting system in wireless communication We also propose a Capacity-Optimized Cooperative (COCO) topology control scheme which helps to improve the network capacity in MANETs by jointly considering both upper layer network capacity and physical layer cooperative communications. The intermediate nodes present in network helps to do communication between source and destination. In the wireless network in Multicasting so many nodes are present, but only ACTIVE NODE helps to do the communication. we also do cost minimization in Multicasting by help of nodes which gives the path to send data.

Through simulations, we show that physical layer cooperative communications have significant impacts on the network capacity, and the proposed topology control scheme can also substantially improve the network capacity in MANETs with the help of cooperative communications networks.

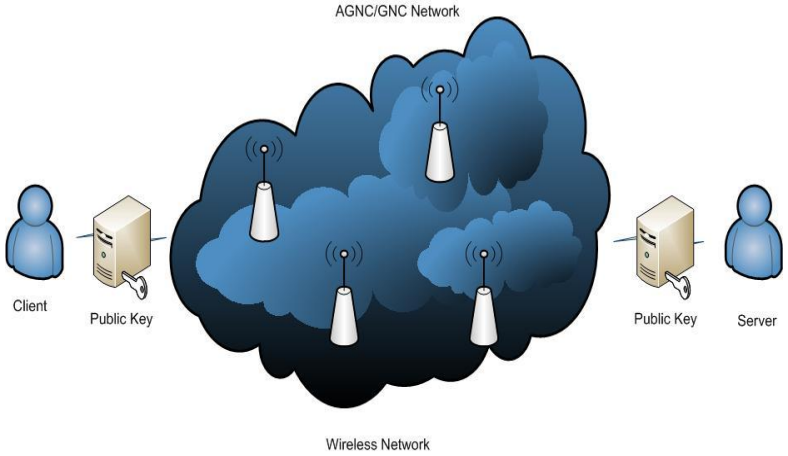

Fig.1.Multicasting in wireless communication networks

Advantages:

1. Improve the network capacity in MANETs.
2. Dynamic Traffic pattern and dynamic network without a fixed infrastructure.
3. There are a source, a destination and several relay nodes.
4. Co-operation can benefit not only the physical layer, but the whole network in many different aspects.

IV. IMPLEMENTATION MODULES

1. Virtual traffic allocation.
2. Offline Link Weight Optimization.
3. Network Monitoring.
4. Adaptive Traffic Control.

4.1 Virtual Traffic Allocation

In this Module, the diverse MT-IGP paths according to the link weights will be computed by OLWO. It will also Monitor the network and traffic in data such as incoming traffic volume and link utilizations. At each short-time interval, ATC will compute a new traffic splitting ratio across individual VRTs for re-assigning traffic in an optimal way to the diverse IGP paths between each S-D pair. This functionality is handled by a centralized TE manager .The TE Manager has complete knowledge about the network topology and periodically it gathers the up-to-date monitored traffic conditions of the operational network. These new splitting ratios are then configured by the TE manager to individual source PoP nodes, who use this configuration for remarking the multi-topology identifiers (MTIDs) of their locally originated traffic accordingly.

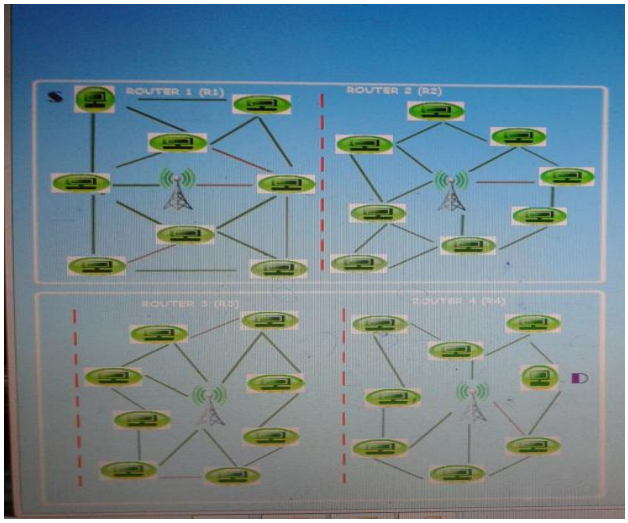

Fig 2.Message sent in Traffic in Network between nodes.

4.2 Offline Link Weight Optimization

In this module, to determine the definition of "path diversity" between PoPs for Traffic engineering. Let's consider the following two scenarios of MT-IGP link weight configuration. In the first case, highly diverse paths (e.g. end-to-end disjoint ones) are available for some Pop-level S-D pairs, while for some other pairs individual paths are completely

overlapping with each other across all VRTs. In the second case, none of the S-D pairs have disjoint paths, but none of them are completely overlapping either. Obviously, in the first case if any "critical" link that is shared by all paths becomes congested, its load cannot be alleviated through adjusting traffic splitting ratios at the associated sources, as their traffic will inevitably travel through this link no matter which VRT is used. Hence, our strategic targets the second scenario by achieving "balanced" path diversity across all S-D pairs.

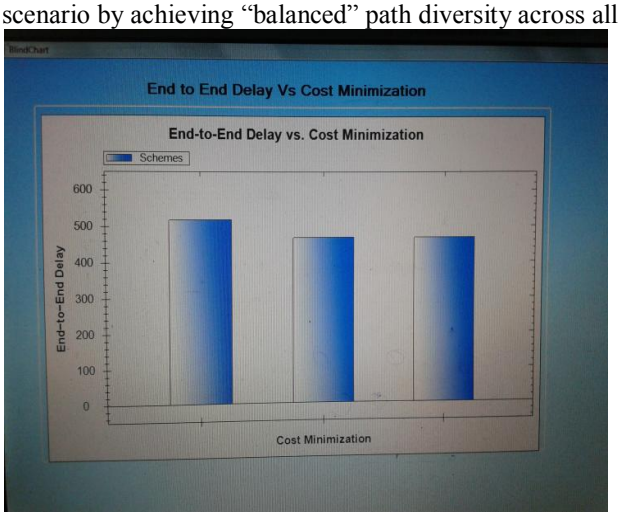

Fig.3. End to end delay vs cost minimization

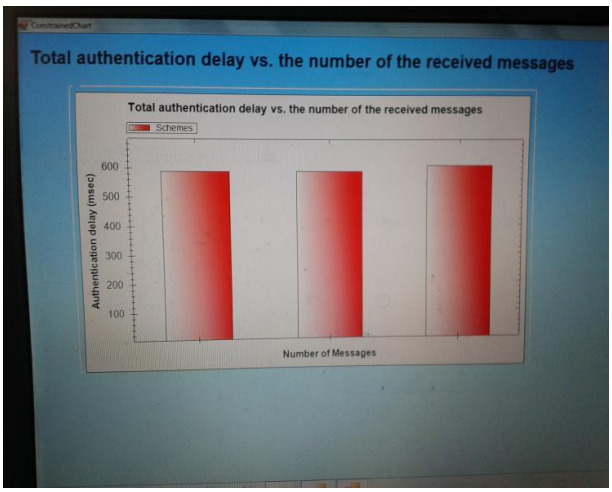

Fig.4. Total authentication delay

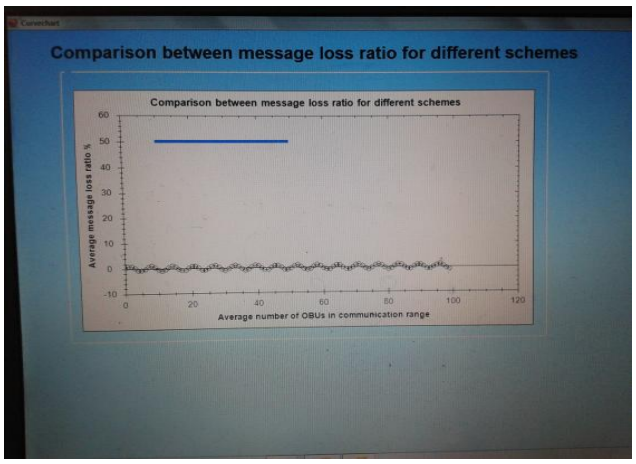

Fig.5. Messagae loss ratio

4.3 Network Monitering

In this Module, Network monitoring is responsible for collecting up-to-date traffic conditions in real-time and plays an important role in supporting the ATC operations. AMPLE adopts a hop-by-hop based monitoring mechanism that is similar to the proposal.

The basic idea is that a dedicated monitoring agent deployed at every PoP node is responsible for monitoring:

- ✓ The volume of the traffic originated by the local customers toward other PoPs (intra- PoP traffic is ignored).

The utilization of the directly attached inter-PoP links

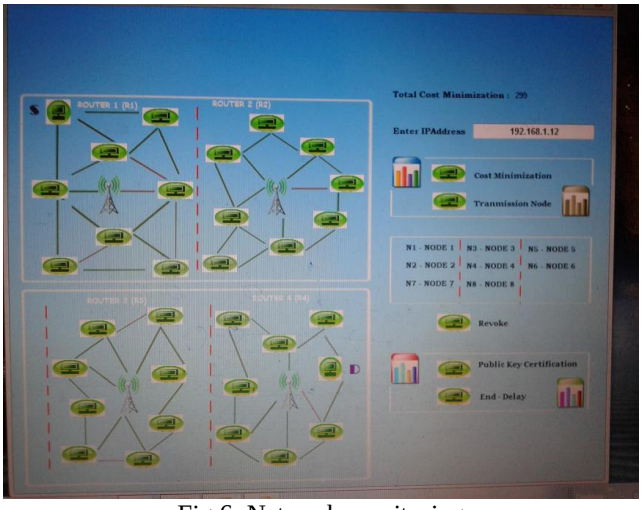

Fig.6. Network monitoring

4.4 Adaptive Traffic Control

In this Module, We Measure the incoming traffic volume and the network load for the current interval as compute new traffic splitting ratios at individual PoP source nodes based on the splitting ratio configuration in the previous interval, according to the newly measured traffic demand and the network load for dynamic load balancing.

V. CONCLUSION AND FUTURE ENHANCEMENT

In this paper the resulted work will formulate and solve the minimum energy ,minimize the cost of data sending. will also maximum data bandwidth rate using the multipath wireless routing system and it will also increase the speed of data sending. It will also save our time as it will send our data in a group at a Time .It will also minimize the LOAD of nodes as it sends data very speedily. It is also useful to minimize the energy cost and collision occurred in wireless network to send the data efficiently. It will give the security of the data while sending but there is also a chance of DATA HACK by other agents. So in the future, it is necessary to implement more authenticated network ,which will give full security , although the authenticating keys are used but not giving full security.

REFERENCES

[1] R. Ahlswede, N. Cai, S.-Y.R. Li, and R.W. Yeung, "Network information flow," *IEEE Trans. Inform. Theory*, vol. 46, no. 4, pp. 1204-1216, July 2000.

[2] R. Koetter and M. Médard, "An algebraic approach to network coding," *IEEE/ACM Trans. Networking*, vol. 11, no. 5, pp. 782-795, Oct. 2003.

[3] L. Zhao, D. S. Lun, M. Médard, and E. Ahmed, "Decentralized algorithms for operating coded wireless networks," *IEEE Information Theory Workshop* , Sept. 2007.

[4] K. Bhattad, N. Ratnakar, R. Koetter and K.R. Narayanan, "Minimal network coding for multicast," *Proc. IEEE International Symposium on Information Theory*, 2005

[5] S. Jaggi, P. Sanders, P.A. Chou, M. Effros, S. Egner, K. Jain, and L.Tolhuizen, "Polynomial time algorithms for network code construction," *IEEE Trans. Inform. Theory*, vol. 51, pp. 1973-1982, June 2005.

[6] Erez and M. Feder, "Convolutional network codes for cyclic networks," in *Proc. 1st Workshop Network Coding, Theory, and Appl*. (NetCod), Riva del Garda,Italy, Apr. 2005.

[7] S.-Y.R. Li, R.W. Yeung, and N. Cai, "Linear network coding," *IEEE Trans. Inform. Theory*, vol. IT-49, no. 2, pp. 371-381, Feb. 2003

[8] D. S. Lun, N. Ratnakar, R. Koetter, M. Médard, E. Ahmed, and H. Lee,"Achieving minimum-cost multicast: A decentralized approach based on network coding", *IEEE INFOCOM*, March 2005.

[9] D. S. Lun, M. Medard, T. Ho, and R. Koetter, "Network coding with acost criterion," *Proc. 2004 International Symposium on Information Theory and its applications* (ISITA 2004), Oct. 2004.

