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Lantern-Tree Based QOS on Demand Multicast Protocol For a Wireless Ad-Hoc Networks

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Abstract: Hybrid wireless networks are a viable networking solution and provide connectivity to ad-hoc networks. Dramatic increase in the number of mobile subscriber's previous networks has not provisioned sufficient resources for multimedia applications. After analyzes existing network infrastructures we recognized routing and data transmission rates issues. We do not achieved good QoS metrics, performance and scalability. In this paper we design new routing procedure using lantern tree. Using lantern tree creates new computing paradigm. Lantern tree facilitates self configuration and self optimization solutions when embedded with cellular and ad-hoc networks. After implementation of this solutions then we can investigate QoS merits. Anyway finally we achieved efficient QoS metrics, performance and scalability compare to previous systems.

Keywords: Cellular Networks, Ad-Hoc Networks, Lantern Tree, Hybrid Network, Qos Metrics.

I. INTRODUCTION

Fundamental difficulties are in hybrid network both high data rate transmission and ubiquitous coverage. These difficulties we recognized in wireless network architecture. All difficulties we observed in between base stations connection due to lack of limited transmission range of each node. In this paper we proposed lantern tree mechanism for efficient routing transmission results. Lantern tree design has three phases. Those three phases are helpful to overcome all difficulties and enhance data transmissions as shown in Fig.1. We achieved automatically enhanced QoS metrics compare to previous approaches.

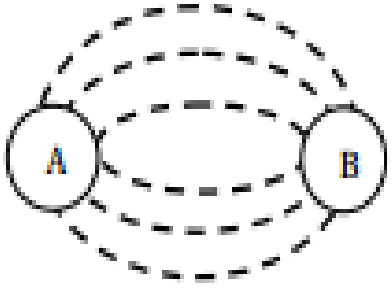

Fig.1. Lantern Tree between two nodes.

II. RELATED WORK

Things are changing now people are expecting advanced services which are support for data and voice communication. Advanced services communication fulfills by the hybrid wireless sensor networks. Hybrid wireless sensor networks has good scope for research, still research is not explored that much. Previous many existing infrastructures are available for radio resources management and routing management. Different possible infrastructures we discussed below. Those infrastructures are

- Infrastructure Networks
- MANETS
- Wireless Sensor Networks
- Hybrid wireless networks

Fig.2.Mobile Ad-ho network example.

Infrastructure networks are two types. Those networks are integrated services and differentiated services. Integrated services are reserve the resources as an individual flow and it is a stateful protocol. Integrated services have admission control and scheduler for control traffic flows. Differentiated services are stateless model for traffic management only. It does minimize the packet drop with help of queuing scheduling algorithms. Finally

differentiated services consume bandwidth also. QoS Routing protocols are used for resource reservation then automatically source messages sends to destination. Using ad-hoc routing protocols generate routing table. Select highest stability nodes from routing tables construct efficient routing and reduce effects efficiently. We cannot get solution with AODV (Ad-hoc On-demand Distance Vector) then possible to get with DSR (Dynamic Source Routing) protocol. Guranteedly and efficiently transmit the data to destination nodes. Multipath routing can enhance reliability compare to previous infrastructures. Through multi paths provides load balancing solutions and control traffic efficiently. Traffic control gets the solution with the help of cross layer environment as shown in Fig.2. Anyway multi path routing provides better and robust networking solutions.

Wireless sensor networks introduce some other new protocols for control redundant transmission and high power consumption. These protocols are introduces the priority operations for increasing reliability solutions. Here also we can perform the operations on multiple paths. Again few methods are introduced to provide QoS guaranteed routing. Here we introduced some new constraints like network capacity and cooperative nature. Cooperative networks combine signals and transmitted original data efficiently in destination. This is joint optimized solution without any noisy. Some other two hop packet transmission techniques are helpful for direct transmission and forward transmission information as shown in Fig.3.

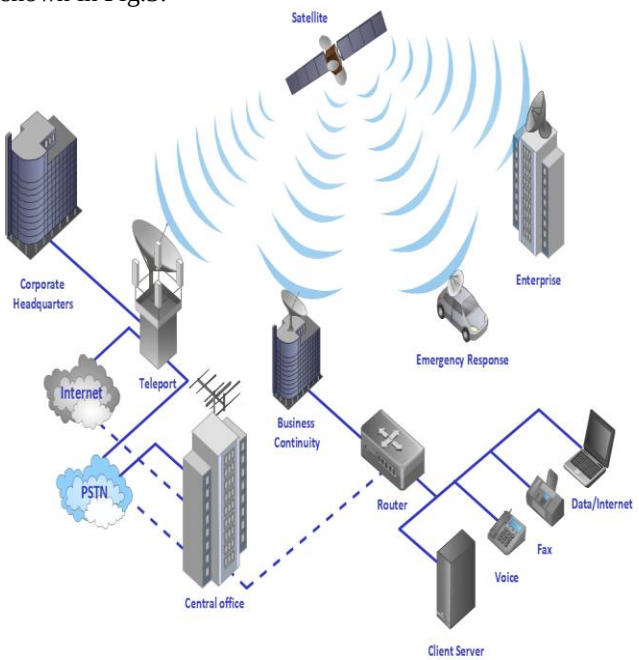

Fig.3.Hybrid Wireless Sensor Networks.

III. PROBLEM STATEMENT

A lantern-tree-based QoS multicast protocol with a reliable mechanism for wireless ad-hoc networks, where the MAC sub layer adopts the CDMA-over-TDMA channel model. Lantern-tree for developing an on-demand QoS multicast protocol to satisfy certain bandwidth requirements from a source to a set of destination nodes. The lantern-tree serves as the multicast-tree. Our lantern-tree-based scheme offers a higher success rate to construct the QoS multicast tree due to using the lantern-tree. The lantern-tree is a tree whose sub-path is constituted by the lantern-path, where the lantern-path is a special multi-path structure. This greatly improves the success rate by means of multi-path routing.

IV. PROPOSED METHODOLOGY

In this paper, we proposed a QoS-Oriented Distributed routing protocol (QOD) to extend the QoS support capability of wireless ad-hoc networks by enhancing Lantern Tree. Here we introduce bandwidth routing protocol for QoS support. QoS on demand multicast routing protocol determines end-end bandwidth estimation and allocation. Lantern tree satisfies bandwidth requirement.

A. Lantern Tree Contains Three Different Phases

Those are

- Lantern tree identification
- Lantern tree construction
- Lantern tree maintenance

Phase1: Lantern Tree Identification: Identify local link state information for each and every node in mobile ad-hoc networks environment. Link state information consists of one-hop and two-hop neighbour information. Each and every neighbour node free time slots also recognized here. Finally analyze all link state nodes information recognize the bandwidth sufficient nodes.

Phase2: Lantern Tree Construction: Lantern tree construction has two operations. Those two operations are

- Lantern search path
- Lantern path with a reliable mechanism

Lantern search path: Identified lantern paths from source to a given destinations. Finally all constructed paths are display here.

Lantern path with a reliable mechanism: Consider all possible lantern paths and construct new path. This path provides reliable communication results.

Phase3: Lantern Tree Maintenance: Lantern Tree maintenance mainly search for back up paths. Any path fails replace and assign new path. QoS requirement is not fulfil with help of back up paths. Backup paths are not work for dynamic topology. Some other new protocols are introduced for identification of dynamic paths. Using lantern tree maintenance we can continue the data transmission in real time environment also. Using lantern tree maintenance operations we can get the benefits like reduce transmission delays.

B. Lantern Tree Algorithm

Inputs: D' — A data set with attributes S.

Output: An LTM over S that contains 1 or 2 latent variables.

1: $m \leftarrow$ LCM with observed variables S and one latent variable Y with two values.
2: **loop**
3: **if** (m has only 1 latent variable) **then**
4: $m' \leftarrow$ `pickBestModel` $(NI(m) \cup SI(m))$.
5: **else**
6: $m' \leftarrow$ `pickBestModel`$(SI(m))$.
7: **end if**
8: **if** (m' was obtained from m by introducing a new latent variable Y') **then**
9: **loop**
10: $m'' \leftarrow$ `pickBestModel` $(NR(m', Y, Y'))$.
11: **if** $(BIC(m'' \mid D') \leq BIC(m' \mid D'))$, **break**.
12: $m' \leftarrow m''$.
13: **end loop**
14: **end if**
15: **if** $(BIC(m' \mid D') \leq BIC(m \mid D'))$, return m.
16: $m \leftarrow m'$.
17: **end loop**

V. EXPERIMENTAL RESULTS AND DISCUSSION

As we discussed earlier protocols are classified into three groups. Classification performs based on range of operations. Those three groups are complete, sub layer and multi layer. All protocols works based on reactive routing protocols. Here we can display different QoS metrics values in graph as shown in Fig.4.

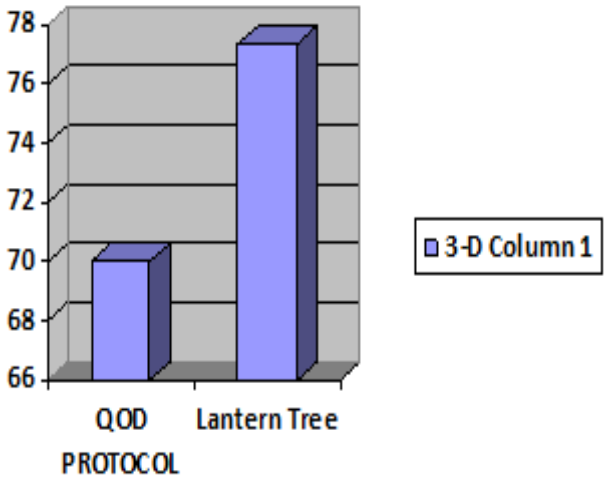

Fig.4. QOS metrics graph.

Graph consists of existing and proposed system QoS metrics results. Lantern tree system provided better QoS metrics compare to existing system protocols.

VI. CONCLUSION AND FUTURE WORK

Lantern Tree system support efficiently for enhance QoS metrics in different real time applications. In all methods considered bandwidth requirement in our implementation. Lantern tree systems provided on demand based bandwidth solution based on request. That's why in all situations we achieved QoS metrics. Different services are expect different categories of bandwidth those things also we achieved with help of artificial intelligence. Lantern tree reduced transmission range and creates minimum spanning tree. Through minimum spanning tree it's possible to save bandwidth and enhanced QoS metrics. In future lantern tree concept we can implement in large networks and save bandwidth and increases scalability and performance.

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