



A Survey: MANET Network QoS and Network Routing Aware Platform

Priti Kushwaha¹

TIT College, RGPV University, Bhopal

¹kpritiibecs@gmail.com

ABSTRACT: *The MANET system is the recent communication technique in wireless network in which the schedule and efficient transmission of data is required in order to make an effective delivery of data and transmission in network, various techniques are proposed in order to keep track of schedule and routing and efficiency of the network is calculated.*

Existing algorithm use the enhancement of AODV which is mobility and direction aware adhoc network routing, which take advantage of mobility speed and direction to create an routing table and environment to send the data packet. The algorithm given by them provides low overhead with high packet delivery ratio. A further enhancement to the system can be done as providing a further parameter such as energy efficient aware routing, providing the routing load aware technique with AODV such that a better parameter result can be computed over the network.

Keywords : *MANET, Routing protocols, energy aware, routing table.*

INTRODUCTION The Communication Technology is the best part of our life because we have been able to talk to each other from anywhere in the world, even though we are on another planet. It appears as if the telecommunications Industry is constantly redefining itself in an effort to satisfy its customers' needs. And continually those needs

always seem to demand higher and higher data rates. Wired and Wireless technology is giving to service from last past years to every subscriber. Now we are enjoying wireless communication/networking such as Bluetooth, Wi-Fi and WiMAX etc. Subscribers enjoy all of the application, including multimedia, voice, live video and data with very less movement with high speed.

A wireless network is any type of computer network process that is used to wireless data connections for connecting network nodes. Wireless networking is a method which homes, telecommunications networks and enterprise (business) installations avoid the costly process of introducing cables into a building, or as a connection between several equipment locations. Wireless telecommunications networks are mostly implemented the use of radio communication. This implementation takes place at the physical layer of the OSI model in network structure.

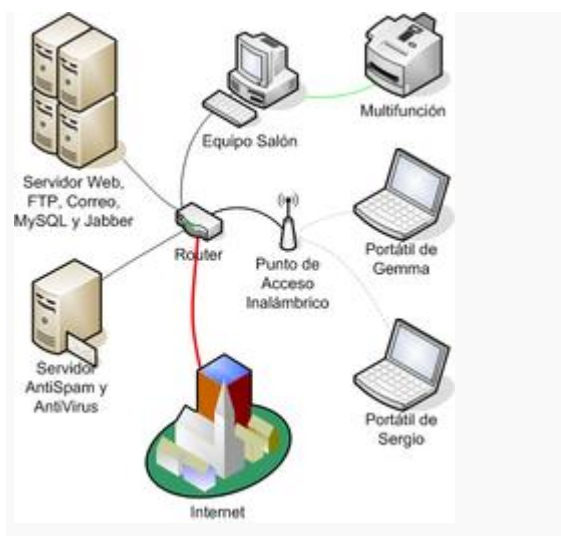
Wireless networks have gained immense popularity over the last few years. The miner growth may be attributed in part to popular wireless standards, such as IEEE 802.11 [8]. The main use of these wireless technologies has been in single hop local area networks that operate with infrastructure support.

Types of Wireless: PAN

Wireless personal area networks (WPANs)

interconnect devices within a relatively small area, that is generally within a person's reach.^[3] For example, both Bluetooth radio and invisible infrared light provides a WPAN for interconnecting a headset to a laptop. ZigBee also supports WPAN applications.^[4] Wi-Fi PANs are becoming commonplace (2010) as equipment designers start to integrate Wi-Fi into a variety of consumer electronic devices. Intel "My WiFi" and Windows 7 "virtual Wi-Fi" capabilities have made Wi-Fi PANs simpler and easier to set up and configure.

Wireless LAN



Wireless LANs are often used for connecting to local resources and to the Internet

A wireless local area network (WLAN) links two or more devices over a short distance using a wireless distribution method, usually providing a connection through an access point for Internet access. The use of spread-spectrum or OFDM technologies may allow users to move around within a local coverage area, and still remain connected to the network.

Products using the IEEE 802.11 WLAN standards are marketed under the Wi-Fi brand name. Fixed wireless technology implements point-to-point links between computers or networks at two distant locations, often using dedicated microwave or modulated laser light beams over line of sight paths. It is often used in cities to connect networks in two or more buildings without installing a wired link.



Wireless mesh network

A wireless mesh network is a wireless network made up of radio nodes organized in a mesh topology. Each node forwards messages on behalf of the other nodes. Mesh networks can "self heal", automatically re-routing around a node that has lost power.

Wireless MAN

Wireless metropolitan area networks are a type of wireless network that connects several wireless LANs.

- WiMAX is a type of Wireless MAN and is described by the IEEE 802.16 standard.

Wireless WAN

Wireless wide area networks are wireless networks that typically cover large areas, such as between neighbouring towns and cities, or city and suburb. These networks can be used to connect branch offices of business or as a public internet access system. The wireless connections between access points are usually point to point microwave links using parabolic

dishes on the 2.4 GHz band, rather than omnidirectional antennas used with smaller networks. A typical system contains base station gateways, access points and wireless bridging relays. Other configurations are mesh systems where each access point acts as a relay also. When combined with renewable energy systems such as photo-voltaic solar panels or wind systems they can be stand alone systems.

Advantages of multi-hop scheduling

Multi-hop wireless networks can provide data access for large and original spaces, but they have long faced serious limits on the amount of data they can transmit. Now researchers have developed a most effective data transmission approach that can boost the amount of data the networks can transmits.

LITERATURE REVIEW

This paper [1] present the first results that provide approximation guarantees independent of the topology of the network. Their main contributions are the following.

- Given an arbitrary set of requests, they present a simple greedy algorithm that chooses a subset of the requests that can be transmitted concurrently without violating the SINR constraints. This subset is guaranteed to be within a constant factor of the optimal subset.
- Furthermore, by applying the single-slot subroutine repeatedly, they realize an ϵ -approximation (where ϵ is the number of communication links) for the problem of minimizing the number of time slots needed to schedule a given set of arbitrary requests. Simulation results indicate that this approximation algorithm, besides having an exponentially better approximation ratio in theory, is also practical. It is easy to implement and achieves superior performance in various network scenarios.

This paper [2] by IEEE Working Group on BWA, it is made available for a wide variety of both public and private uses. This std specifies the air interface, including the medium access control layer (MAC) and physical layer (PHY), of combined fixed and mobile point to multipoint broadband wireless access (BWA) systems providing multiple services.

They [3] presented an overview of the IEEE 802.16m PHY layer issues, MAC layer protocol, specifically issues associated with scheduling and QoS provisioning. For high quality voice and video, internet and mobility, demand for bandwidth is more. To address these needs IEEE 802.16m appears as a strong candidate for providing aggregate to high speed mobile subscribers at the range of Gbps.

In this paper [4], authors propose a simple and standard-compliant scheduling algorithm for downlink and uplink connections. The proposed

algorithm calculates and grants the needed resources in terms of slots based on the QoS requirement and the priority of the service classes. The scheduling algorithm has fulfilled the QoS provisions of all service classes of WiMAX system in term of delay and throughput requirements.

In this paper [5] authors proposed “A fair an efficient packet scheduling scheme for IEEE 802.16 BWA to satisfy both delay and throughput guarantees for the real and non-real time application. Their simulation result show that the proposed scheduling scheming can provide best choice for QoS scheduling in WiMAX, the BS scheduler can guarantee the minimum bandwidth for each service flow and the same time the scheduler in SS can provide differentiated and flexible QoS support.

They [6] provided routing protocols especially designed for wireless networks. In the investigation of proposing scheme they found the performance matrix includes packet delivery fraction, throughput, end-to-end delay and number of packet dropped were identified. After simulation, the subscriber station maintains routing table for its own network is made. This setup is made due to make sure the traffic flow is sending the data directly to the destination without the help of base station. However, if one subscriber station has to send data to a station located in another network, it must send data through the base station and vice versa.

PROBLEM FORMULATION

As per the discussion with different available technique for multi hop routing here are few basic problem formulation based on observation:

1. The problem of scheduling one-hop communication requests without power control. He was not considering routing nor power control problems.

2. In a single hop it focuses only an approximation that is optimal up to a factor that is logarithmic in the number of requests. In this type scheduling algorithm The NP-hard problems are occurred when it compute any network's capacity up to a small insecurity.
3. In existing paper, they have worked with energy efficient routing but still and route balance and low consumption node list is not being defined. Determining those nodes and avoidance can be made.
4. Overall network lifetime is not being calculated by the existing EE-Routing Algorithm.

EXPECTED OUTCOME:

In expected Simulation for obtaining efficient and required result we are going to use One Simulator.

The NS2 is a simulation environment that is capable of

- generating node movement using different movement models
- routing messages between nodes with various routing algorithms and sender and receiver types
- Visualizing both mobility and message passing in real time in its graphical user interface.

Further the following results are going to observe :

1. Efficient in PDR and end to end delay.
2. Efficient path optimization.
3. Overall high throughput and performance comparing with existing approach.

CONCLUSION In this paper, we are using multi-hop network to improve the performance capacity of wireless networks. Multi-hop wireless networks can provide data access for large and original spaces, but they have long faced serious limits on the amount of data they can transmit. Now researchers have developed a most effective data transmission approach that can boost the amount of data the networks can transmits. A further work is going to perform with multi-hop network scheduling algorithm such that the improvement in network capacity and QoS can be improved.

REFERENCES

- [1]. Mohammed Aashkaar, Purushottam Sharma, "Enhanced Energy Efficient AODV Routing Protocol for MANET", IEEE 2016.
- [2]. Olga Goussevskaia, Magnús M. Halldórsson, and Roger Wattenhofer, "Algorithms for Wireless Capacity" IEEE/ACM TRANSACTIONS ON NETWORKING, VOL. 22, NO. 3, JUNE 2014.
- [3]. M. M. Halldórsson, "Wireless scheduling with power control," Trans. Algor., vol. 9, no. 1, p. 7, 2012.
- [4]. T. Kesselheim, "A constant-factor approximation for wireless capacity maximization with power control in the SINR model," in Proc. 22nd ACM-SIAM SODA, Jan. 2011, pp. 1549–1559 .
- [5]. O. Goussevskaia, M. M. Halldórsson, R. Wattenhofer, and E. Welzl, "Capacity of arbitrary wireless networks," in Proc. 28th Annu. IEEE, INFOCOM, Apr. 2009, pp. 1872–1880.
- [6]. M. M. Halldórsson and P. Mitra, "Wireless capacity with oblivious power in general metrics," in Proc. 22nd ACM-SIAM SODA, Jan. 2011, pp. 1538–1548.



[7]. Z.G. Al-Mekhlafi and R. Hassan. Evaluation study on routing information protocol and dynamic source routing in ad-hoc network. In Information Technology in Asia (CITA 11), 2011 7th International Conference on, pages 1–4, 2011.

[8]. T. Kesselheim and B. Vöcking, “Distributed contention resolution in wireless networks,” in Proc. 24th DISC, 2010, pp. 163–178.

[9]. Gagan Raj Gupta and Ness B Shroff. Delay analysis for wireless networks with single hop traffic and general interference constraints. Networking, IEEE/ACM Transactions on, 18(2):393–405, 2010.

[10]. M. M. Halldórsson and R. Wattenhofer, “Wireless communication is in APX,” in Proc. 37th ICALP, Jul. 2009, pp. 525–536.