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WEB BASED EFFICIENCY FOR IEEE 802.11 BASED ADHOC NETWORKS

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Abstract: In the today's competitive world, necessity of fast and convenient ways of communication was increasing day by day, wireless ad hoc networks, nodes are expected to be heterogeneous with a set of multicast destinations greatly differing in their end devices and QoS requirements. By IEEE802.11e the accuracy and efficiency of bandwidth have no mechanism in the channel .In this paper we focused on the bandwidth efficiency by using web based application. We propose an improved mechanism to estimate the available bandwidth in IEEE 802.11-based ad hoc networks our work mainly focuses on available bandwidth efficiency. These applications may benefit from a quality of service (QoS) support in the network. The aim of this paper is to reduce the collision and we want to improve the Throughput value and finally we find the Bandwidth.

Keywords*:* **Wireless communication, IEEE 802.11, Quality of Service, available bandwidth estimation.**

I. INTRODUCTION

Ad hoc networks are autonomous, self-organized, wire-less, and mobile networks. They do not require setting up any fixed infrastructure such as access points, as the nodes organize themselves automatically to transfer data packets and manage topology changes due to mobility. Many of the current contributions in the ad hoc networking community assume that the underlying wireless technology is the IEEE 802.11 standard due to the broad availability of interface card s and simulation models. This standard provides an ad hoc mode, allowing mobiles to communicate directly. As the communication range is limited by regulations, a distributed routing protocol is required to allow long distance communications. However, this standard has not been targeted especially for multi hop ad hoc operation, and it is therefore not perfectly suited to this type of networks. In this paper, we present a new method to evaluate the available bandwidth in ad hoc networks based on the IEEE 802.11 MAC layer. This method uses the nodes' carrier sense capability combined to other techniques such as collision prediction to perform this estimation [1] .It provides upper layers with an evaluation that represents an acceptable compromise between accuracy and measurement cost. Finally, even though it is closely linked to a particular technology, it may easily be adapted to similar random medium access protocols. The IEEE 802.11-based networks have been able to provide a certain level of quality of service (QoS) by the means of service differentiation, due to the IEEE 802.11e amendment. Such an evaluation would, however, be a good asset for bandwidth-constrained applications. In multi hop ad hoc networks, such evaluation becomes even more difficult. Consequently, despite the various contributions around this research topic, the estimation of the available bandwidth still represents one of the main issues in this field.

In [7], Chaudet and Lassous proposed a bandwidth reservation protocol called Bandwidth Reservation under
Interferences influence (BRuIT). This protocol's ABE mechanism takes into account the fact that, with the IEEE

802.11 standard, the carrier sense radius is larger than the transmission range. In other words, emitters share the bandwidth with other nodes they cannot communicate with. Experimental studies have shown that this carrier sense radius is at least twice the communication radius. To address this issue, each node regularly broadcasts to all its immediate neighbors' information about the total bandwidth it uses to route and emit flows (deduced from applications and routing information) and its estimated available bandwidth. It also transmits similar information concerning all its one-hop neighbors, propagating such information at a two-hop distance. Each node then performs admission control based on this two-hop neighborhood knowledge. When the carrier sense radius is equal to twice the communication radius, the authors have shown that two-hop communication represents the best compromise between estimation accuracy and cost [8].

II. RELATED WORK

The available bandwidth has two classifications for wired and wireless. The two classifications include *Active approaches* and *passive approaches*.

A. *Active Bandwidth Estimation Techniques*

A detailed survey of the different techniques to evaluate the available bandwidth in wired networks is accessible in [1]. Most of these techniques measure the end-to-end available bandwidth by sending packets of equal size from a source to a receiver. The source increases gradually the probe packet emission rate. Measurements of the characteristics of this

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particular flow are performed at the receiver's side and then converted into an estimation of the end-to-end available bandwidth. Several protocols such as SLoPS [2] or TOPP [3] fall into this category. They mainly differ in the way they increase the packet sequence rate and in the metrics measured on the probing packet flow

B. Passive Bandwidth Estimation Techniques

A dynamic bandwidth management scheme for single-hop ad hoc networks is proposed in [4]. In this solution, one node in the network hosts the Bandwidth Manager process, which is responsible for evaluating the available bandwidth in the cell and for allocating the bandwidth to each peer. Each no de may ask the Bandwidth Manager for an exclusive access to the channel during a proportion of time using dedicated control messages. As the topology is reduced to a single cell, the available proportion time-share is computed by this entity considering that the total load is the sum of the individual loads. The available fraction of time may then be translated into an available bandwidth by considering the capacity of the wireless link, called total bandwidth in this paper, which is deduced from a measurement of the data packets' throughput. This approach can be considered as passive as very few control packets are exchanged, usually of small size. However, this solution is adapted to network topologies where all the nodes are within communication range but cannot be directly used in multi hop ad hoc network. QoS-AODV [6] also performs such a per-node ABE. The evaluation mechanism constantly updates a value called Bandwidth Efficiency Ratio (BWER), which is the ratio between the numbers of transmitted and received packets. The available bandwidth is simply obtained by multiplying the BWER value by the channel capacity. This ratio is broad casted among the one-hop neighbors of each node through Hello messages. The bandwidth available to a node is then inferred from these values as the minimum of the available bandwidths over a closed single-hop neighborhood. QoS-AODV, therefore, considers not only the possibility to send a given amount of data but also the effect of the emissions of a node on its neighborhood

II. IMPLEMENTATIONS AND VALIDATIONS

Based on the previous literature study and considering how the IEEE 802.11 MAC protocol operates, we can point out a few phenomena that may have an influence on the bandwidth available from a node to one of its neighbors

- The carrier sense mechanism prevents two close emitters from transmitting simultaneously, unless they draw the same back off counter value. There-fore, an emitter shares the channel bandwidth with all its close neighbors. The channel utilization has to be monitored to evaluate the capacity of a node to emit a given traffic volume.

- For a transmission to take place, the receiver needs that no interference occurs during the whole transmission. Therefore, the value of the available bandwidth on a link depends on both peer channels utilization ratios and also on the idle period synchronization. This synchronization needs to be evaluated.

- Packet creation
- Apply the RREQ And get RREP
- Admission Control Mechanism
- Utilized Bandwidth

A. *Module Description*

- **Packet Creation**

In this module we split the Data in to N number of fixed size packet with Maximum length of 48 Characters.

- **Apply the RREQ and get RREP**

The aim of the RREQ is to find a route between the sender and the receiver that meets the constraints specified by the application level in terms of Bandwidth. When a source node has data to send, it broadcasts a route request (RREQ) to its neighbors. The RREQ packet contains the address of the sender, and the requirements at the application level, the destination address, and a sequence number.

- **Admission Control Mechanism**

The Admission Control Mechanism is done in the receiver side. The Admission Control Mechanism has the all status of the node so if the nodes want to send RREP or discard the message, the particular node check the status by using the Admission Control Mechanism.

- **Bandwidth Utilized**

After the source nodes send the total message to the Destination Node finally we calculate the end to end delivery of the Bandwidth and Time delay.

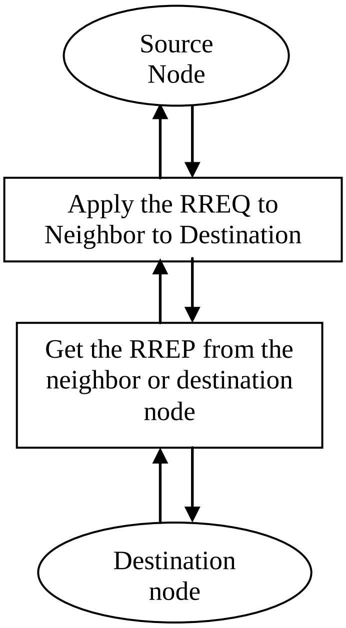

Figure . 1. Processes for Web Based Efficiency for IEEE 802.11 Based Ad hoc Networks

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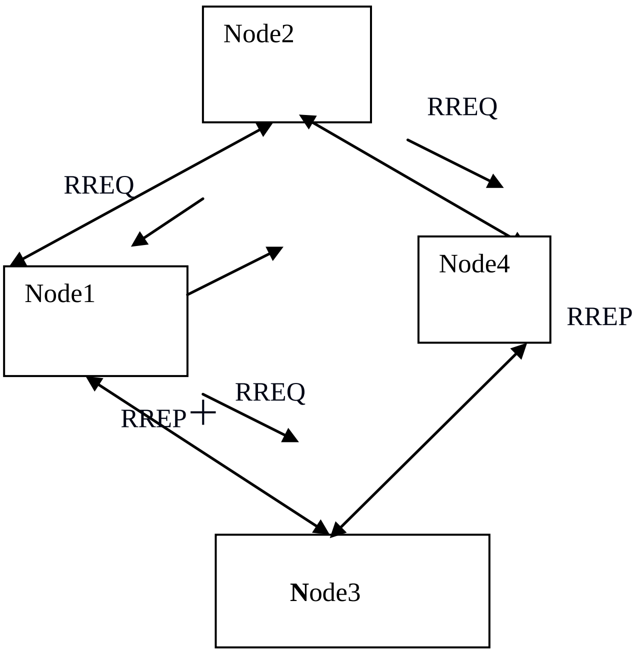

Figure . 2. Data Flow diagram for Web Based Efficiency for IEEE 802.11 Based Ad hoc Networks

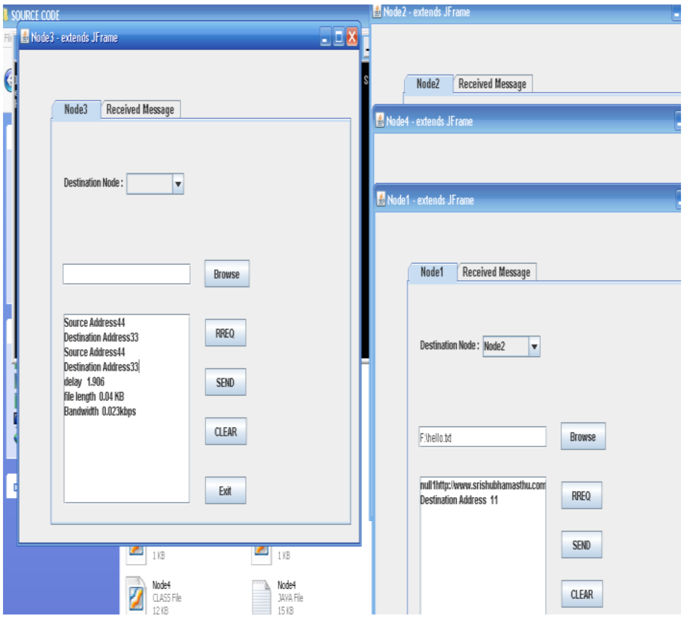

Figure . 3. Execution Screen shot of Web Based Efficiency for IEEE 802.11 Based Ad hoc Networks.

- As We seen the Figure 3 we see the Execution by showing the bandwidth efficiency and file length source address and destination address

III. Advantages of using Web Based Efficiency for IEEE 802.11 Based Ad hoc Networks

- Lower getting-started cost because no need to install base stations
- We reduce the collision and network congestion problem
- In this system they are using 802.11 MAC layer to evaluate the correct bandwidth.
- This method combines channel monitoring to estimate each node's medium occupancy.
- Probabilistic combination of the values is to account for synchronization between nodes, estimation of the collision probability between each couple of nodes, and variable overhead's impact estimation.

A Applications

- **Peer-to-Peer**
  - Direct communication between peers is mandatory
  - No centralized authority at the application level

Channel Time Proportion (CTP)

- Use this in admission control for both single- and multi-hop IEEE 802.11 networks

Admission control inaccurate

- Admitting new traffic increases contention in the shared channel
- Changes bandwidth estimate of flows

Ad-hoc networks are suited for use in situations where an infrastructure is unavailable or to deploy one is not cost effective. . Nowadays, several applications generate multimedia data flows or rely on the proper and efficient transmission of sensitive control traffic. These applications may benefit from a quality of service (QoS) support in the network. That is why this domain has been extensively studied and more and more QoS solutions are proposed for ad hoc networks. The IEEE 802.11-based networks have been able to provide a certain level of quality of service (QoS) by the means of service differentiation, due to the IEEE 802.11e amendment. Such an evaluation would, however, be a good asset for bandwidth-constrained applications. In multi hop ad hoc networks, such evaluation becomes even more difficult. Consequently, despite the various contributions around this research topic, the estimation of the available bandwidth still represents one of the main issues in this field.

IV. CONCLUSION

In this paper a new technique a computer the available bandwidth between two neighbor's nodes and extension along a path by using this method the channel bandwidth efficiency can get efficient result. We prove this by using web based. This mechanism only requires one-hop information communication and may be applied without generating a too high additional overhead.

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