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802.11 ec: Collision Avoidance With Contention Algorithms

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Abstract—In this paper uses, Medium Access Protocol with the use of proactive messages. The 802.11 ec: collision avoidance with contention algorithms provides a better efficiency, robustness, improves throughput and reduce hidden terminal collision. The most popular MAC protocols use contention based algorithms to ensure proper channel utilization and sharing. The problem with control message based techniques is the high time requirement for managing the control messages. A possible enhancement is to use a turn based approach similar to time division multiplexing allocation, which provides different time-slots to different data-streams (in the time division multiplexing case to different transmitters) in a cyclically repetitive frame structure. For example, node 1 may use time slot 1, node 2 time slot 2, etc. until the last transmitter. Then it starts all over again, in a repetitive pattern, until a connection is ended and that slot becomes free or assigned to another node. Here will be caring out experimental simulation NS2 using Linux platform.

Keywords—IEEE 802.11 standards, channel allocation, correlation, wireless LAN, RTS, CTS, computer networks

I. INTRODUCTION

Nowadays, the basic standard for the wireless lan (WLans)| became IEE.802.11. That is, it is a high enabling technology of high speed wireless networks. In the field of communication this provide enhanced performance for crucial innovations. It works for both the medium access control and physical layer (PHY). Encoding/decoding of signals, bit transmission and reception, preamble generation are the main functions of the PHY layer. The data link layers of sublayer is MAC layer. The main function of this are ontransmission, assemble and diassemble of the frame, transperant data transfer and protection against errors.

Instead of control messages can be use correlatable symbol sequences. These are transmitting togother with the data at the time of transmission. The use of correlatable symbol sequence provides several advantages. That is, will get better efficiency, reduction of the control time increase robustness and can be codes are shortly detactable at the lower signal to inference plus noise ratio. Uses a dictionary of correlatable symbol sequences for the control information it can be assigned by a limited dictionary.

The objective of this paper is to decrease the hidden terminal collision. For this using proactive messages with the data at the time of transmission. The experimental simulation can be done in NS2 using Linux platform. The most popular MAC protocols use contention based algorithms to ensure proper channel utilization and sharing. The problem with the use of control message and correlatable symbol based techniques is the high time requirement for managing these control messages and symbols. A possible enhancement is to use a turn based approach similar to TDMA, which provides different time-slots to different data-streams (in the TDMA case to different transmitters) in a cyclically repetitive frame structure. It can perform a large number of experiments and show that, compared to 802.11 using with and without RTS/CTS that is requires to send/clear to send, 802.11ec achieves a vast efficiency gain in conveying control information and resolves key throughput and fairness problems in the presence of hidden terminals, asymmetric topologies, and general multihop topologies.

II. RELATED WORKS

In the case of internet, Wireless LANs are most important access networks technologies. Most popular is the IEEE 802.11 wireless LAN, known also as Wi-Fi. There are several standards for wireless LAN technology. These are 802.11a, 802.11b, 802.11g, 802.11n. Basic Service Set (BSS) is the fundamental building block of the architecture. It can contain one or more wireless stations and one central base station, also known as Access Point (AP).Typical architecture consist of few BSSs connected to some interconnection device like hub or switch which lead to the Internet. Infrastructure wireless LAN is a term often referred to wireless LANs that deploy AP, with the infrastructure being the APs along with wired Ethernet infrastructure that connects APs and router, hub or switch. IEEE 802.11 stations can also group together and form adhoc type network with no connection to internet.

Carrier Sense Multiple Access with Collision Acceptance : To deal with problems of hidden station and exposed station problems 802.11 supports two modes of operation . DCF(Distributed Coordination Function) , does not use any kind of central control. PCF(Point Coordination Function) , uses the base station to control all activity in its cell. All implementations must support DCF but PCF is optional. In 802.11 networks uses a protocol like carrier sense multiple access/collision avoidance (CSMA/CA) for carrier transmission. In this protocol , at the time of node receives a packet that is to be sent it checks to be sure the channel is clear that is, no other node is transmitting at the time. If the channel is not free, the node waits for some pre defined period of time, and again to see is at the time of the channel become free. This type period of time is called back off factor, and is counted by a back off counter. When become channel is clear the backoff counter reached zero, the nde transmits the packet. At that time the channel is not free ,the back off counter reaches zero, the back off tracker is set again and the process again repeated.

Carrier Sense Multiple Access with Collision Niotification :The wireless transmitter learn of a packet failure and finds smash merely past finishing the intact communication. But the transmitter may perhaps notice the smash early [such as with carrier sense multiple access with smash (collision) detection (CSMA/CD) in wired networks], it could suddenly eliminate its transmission, freeing the channel for useful communication. There are two main hurdles to realize CSMA/CD in wireless networks. First, a wireless transmitter cannot simultaneously transmit and listen for a collision. Second, any channel activity around the transmitter may not be an indicator of collision at the receiver. This paper attempts to approximate CSMA/CD in wireless networks with a new scheme called CSMA/CN (collision notification).

III. PROPOSED WORK

The proposed scheme uses proactive messages instead of correlatable symbol sequences. The experiment is done by using NS2 in Linux platform. By using proactive messages can be reducing hidden terminal collision. Conventionally, using RTS/CTS mechanism. That is , at the time of data sending the source send one request to receiver, the receiver sends clear message then data send to the receiver, at last the receiver returns an acknowledgement to the source. The following figure is the conventional mechanism of message transmission. DIFS is the destination frame sequence, SIFS is the shourt inter frame sequence, and ACK is acknowledgement.

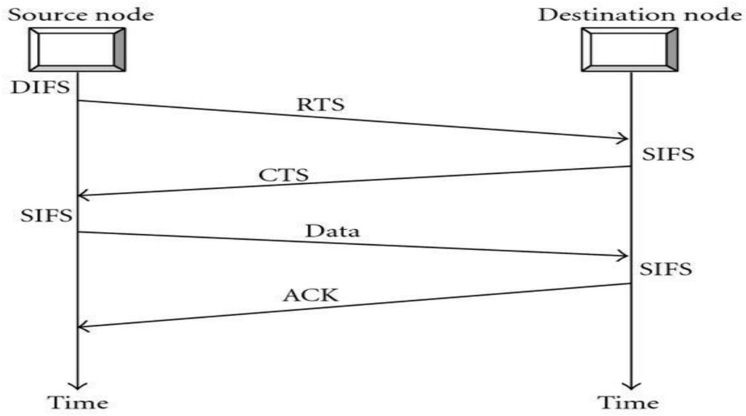

Fig. 1 Conventional mechanism of transmission

In this experiment there will be used four nodes. That is, A,B,C and D. A and B are senders. D is the receiver. C is the common path for the A and B. At the time of transmission of A and B through the C node to D node will be occurring collision. For this using one type of contention based algorithm. The most popular MAC protocols use contention based algorithms to ensure proper channel utilization and sharing. The problem with such control message based techniques is the high time requirement for managing these control messages. A possible enhancement is to use a turn based approach similar to TDMA, which provides different time-slots to different data-streams (in the TDMA case to different transmitters) in a cyclically repetitive frame structure. For example, node 1 may use time slot 1, node 2 time slot 2, etc. until the last transmitter. Then it starts all over again, in a repetitive pattern until a connection is ended and that slot becomes free or assigned to another node.

The main aim of the 802.11 ec: collision avoidance with contention algorithms is t reduce the hidden terminal collision. Here uses mainly two senders passes the packets through the one node to the destination. The destination does not know about sender node. Similarly the sender node does not know about source node, that is ; it is a hidden terminal. This work is used for uniform wireless network with time limit. By using proactive messages , increase the efficiency and improves network throughput and mitigate hidden terminal collision.

IV. RESULTS

In this section, comparison shown between the base method, no packet method and enhanced method. Fig 2 shows that the comparisons with number of nodes over the end to end delay. End-to-end delay is mainly affected by the hop distance between the source node and a destination node. Whereas base method is the transmission with the correlatable symbol sequence, no packet method is the transmission at the time of packets are not participating in the communication and the request method is the enhanced method; in this using proactive messages for communication. In the performance evaluation, investigate the performance of 11 encoded control basic topologies and flow network topologies.

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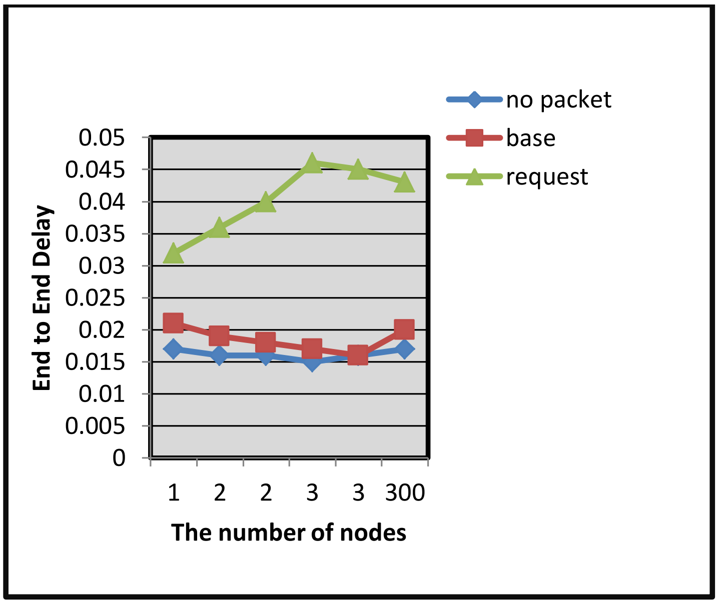

Fig. 2. Comparison of end to end delay

Here implement proactive message reception and detection as an autonomous physical layer component, independent of the packet detection architecture., i.e., proactive messages are not simulated via small packets. Specifically, nodes store incoming proactive messages, and schedule their evaluation after a delay corresponding to proactive messages length, i.e., 6.35 s for a 127-symbol proactive messages. For any stored proactive messages, the emulator keeps track of the variation of the background interference. At the moment of the evaluation, the average SINR of the proactive messages is computed, and proactive messages detection is triggered if the SINR exceeds a threshold tuned to 6 dB for 127-symbol proactive messages.

Here implementation permits each node to simultaneously store, evaluate, and potentially detect multiple proactive messages overlapping with other proactive messages or incoming packets. Note that the original implementation of proactive messages for packet decoding does not support any of the following features, i.e., delayed evaluation and simultaneous multi signal reception. In particular, the design integrates the novel procedures corresponding, e.g., to deferral and timeout management.

V. CONCLUSION

In this paper using proactive messages at the time of data transmission. It will improve the efficiency and robustness and reduce hidden terminal collision. By using this decreasing collision of hidden terminals and improving network throughput. The experiment done on the NS2 by using Linux platform. It can perform a large number of experiments and show that, compared to 802.11 using with and without RTS/CTS that is , request to send/clear to send, 802.11ec achieves a vast efficiency gain in conveying control information and resolves key throughput and fairness problems in the presence of hidden terminals, asymmetric topologies, and general multihop topologies. This work is used for uniform network with the help of time limit. The participated communication node are active other ndes are set by idle in the network.

As a future work it is possible to add the concept for the non uniform network It will be done by using non time limit transmission.

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