Dynamic Channel Allocation Parameters for best use

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Abstract— In Dynamic Channel allocation, parameters play a vital role. Parameters define that how data transfers without collision. Collision less transmission is a challenge in today world. But with the help of these parameters ,we can transfer data without collision. Transmission rate become fast and faster with change in generations. For instance, security and surveillance systems employ serial to Wi-Fi modules to stream surveillance video from remotely mounted security cameras to wired network systems [1].
When a collision occurs on an Ethernet LAN, the following happens:

A jam signal informs all devices that a collision occurred.The collision invokes a random backoff algorithm.Each device on the Ethernet segment stops transmitting for a short time until their backoff timers expire.

All hosts have equal priority to transmit after the timers have expired.In Dynamic channel allocation that deals with the allocation of channels to cells in a cellular network. Once the channels are allocated, cells may then allow users within the cell to communicate via the available channels.In Dynamic Channel Allocation (DCA) we transmit frames. So that during transmission their may be a collision. A single channel is used for communication. All frames are transmitted through this channel. [6]

***Key words*:** Dynamic channel, csma/ca,Load optimization.

I. INTRODUCTION

In this paper, there is description of the parameters of allocation of channel over the transmission of the frames in dynamic channel allocation. It affects some factors, like Channel Capacity, sensing, Multiple Channel Connections, Packet Transmission, Frame relay and Congestion over transmission. [7]

II. PARAMETERS OF DYNAMIC CHANNEL ALLOCATION

A. Single Channel Assumption

A single Channel is available for all communication. All stations share one medium. All stations can transmit on it and all can receive from it. The QoS is always a major concern for the services offered through cellular systems and it is observed that there are always trade-offs among various parameters.[9]

Every time when node enters in network, then node must be sense the channel. If Channel is free then it allocate the node .but if channel is not free then their might be a collision.[8]

Here I am showing some figure to allocate a channel with in the network.

- Node enters in a Network.
- Sensing in a channel for the transmission.
- If there is some collision, then allocation not performed.[3]

Fig. 1:- showing entering two nodes

Fig 2: Allocation of Node

Algorithm for Channel Allocation

B. Carrier sense multiple access with collision avoidance (CSMA/CA)

in computer networking, is a network multiple access method in which carrier sensing is used, but nodes attempt to avoid collisions by transmitting only when the channel is sensed to be "idle". When they do transmit, nodes transmit their packet data in its entirety.[4]

It is particularly important for wireless networks, where the collision detection of the alternative CSMA/CD is unreliable due to the hidden node problem.[5]

Collision avoidance is used to improve the performance of the CSMA method by attempting to divide the channel somewhat equally among all transmitting nodes within the collision domain.

1) Carrier Sense

prior to transmitting, a node first listens to the shared medium (such as listening for wireless signals in a wireless network) to determine whether another node is transmitting or not. Note that the hidden node problem means another node may be transmitting which goes undetected at this stage.[8]

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2) Collision Avoidance:
if another node was heard, we wait for a period of time for the node to stop transmitting before listening again for a free communications channel.

– Request to Send/Clear to Send
(RTS/CTS) may optionally be used at this point to mediate access to the shared medium. This goes some way to alleviating the problem of hidden nodes because, for instance, in a wireless network, the Access Point only issues a *Clear to Send* to one node at a time. However, wireless 802.11 implementations do not typically implement RTS/CTS for all transmissions; they may turn it off completely, or at least not use it for small packets (the overhead of RTS, CTS and transmission is too great for small data transfers).

– Transmission:
if the medium was identified as being clear *or* the node received CTS to explicitly indicate it can send, it sends the frame in its entirety. Unlike CSMA/CD, it is very challenging for a wireless node to listen at the same time as it transmits (its transmission will dwarf any attempt to listen). Continuing the wireless example, the node awaits receipt of an acknowledgement packet from the Access Point to indicate the packet was received and checksummed correctly. If such acknowledgement does not arrive after a timely manner, it assumes the packet collided with some other transmission, causing the node to enter a period of binary exponential backoff prior to attempting to re-transmit.

III. LOAD OPTIMIZATION

Channel allocation is done with the optimization of load. Load can be distributed equally .But when transmission is going on rate of packet transmission become change.
This change is shown with the below graph.

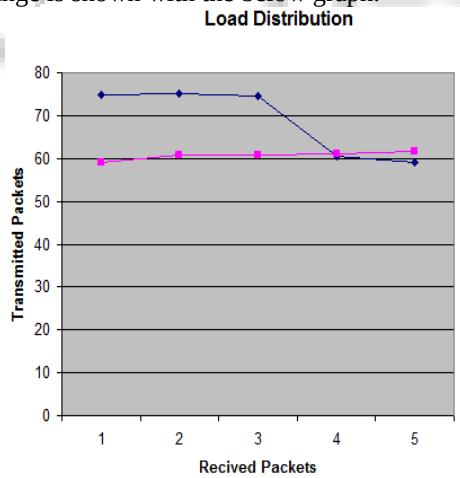

Fig. 3: Load Optimization

In this figure pink line shows the constant rate of transmission after some node enters in channel.During the start of transmission ratio of packet transmission is high.

IV. PROPOSED FEEDBACK FOR BEST USE

(1) Channel must always be sensed

(2) Throughput of the channel should be depend upon the number of users
(3) Each user should separately maintain their packets.

Transmission of data can always be depending on number of stations connected to the similar channel allocation.In the below table I shown the transmission of packets.

Transmitting Packets	Receiving Packets
3777	2823
4319	3242
9452	7040
11775	8772
45541	27504

Table 1 Transmitting and Receiving packets

V. RESULT AND CONCLUSION

In this table I am showing the transmission of packets with increasing in load. As shown from the table, when nodes enters in the network, the load of transmission if become equally distributed among all the node.

So from the whole discussion, I conclude that the on the initial level of the node, when node enters, At starting point performance of channel become high. As nodes enters in the channel performance become degardes but after some times , performance of channel become fixed (According to my analysis this performance become 60 %)

REFERENCES

[1] Michael J. Golio. *The RF and Microwave Handbook*. E-book by ElectricalENGINEERINGnetBASE, http://www.electricalengineeringnetbase.com/ejournals/books/book_summary/toc.asp?id=457
[2] Sundar G. Sankaran. *A brief Overview of Wireless Systems and Standards*. On-line article, http://www.igi-global.com/downloads/excerpts/8112.pdf
[3] Stephen S. Jones. *The Basics of Telecommunications*. International Engineering Consortium, 2004, p 493.
[4] Theodore S. Rappaport. *Wireless communications: principles and practice*. 2nd edition, Prentice-Hall, 2001, p 26.
[5] Jonathan S . Blogh and Lajos Hanzo. *Third-Generation Systems and Intelligent Wireless Networking: Smart antennas and Adaptive Modulation*. Wiley, 2002.
[6] Jonathan S . Blogh and Lajos Hanzo. *Adaptive Arrays in an FDMA/TDMA Cellular Network*. Chapter 5 of L. Hanzo, J. S. Blogh, and S. Ni, *3G, HSPA and FDD versus TDD Networking*, Second Edition. Wiley, 2008.
[7] I. Katzela and M. Nagshineh, Channel assignment schemes for cellular mobile telecommunication systems: A comprehensive survey, *IEEE Personal Communications*, June 1996, pp 10-31.
[8] Survey of Channel Allocation Algorithms Research for Cellular Systems M.P.Mishra Indra Gandhi National Open University, New Delhi, India 2School of Computer and Systems Sciences Jawaharlal Nehru University, New Delhi, India
[9] Algorithm for dynamic channel allocation in cellular network, rekha sundrarajan, Kriplanani Gopal.

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