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Performance Enhancement of Channel Estimation Technique in Broadcast and Multicast Mode

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Abstract - In this paper we presented the enhanced method of channel estimation to deliver data over internet. The enhanced channel estimation method has to improve the wireless standard under orthogonal frequency division multiplexing (OFDM). The OFDM technique was allow the clients to be transmitted data simultaneously. The proposed enhanced method requires a slight change on full duplex method but still provides the end to end connectivity towards different nodes. Furthermore, the proposed method felt the knowledge of multicast groups and we do not concentrate on broadcasting concept. The multicast group selection and node electionwill be extendingour work. This method also retain the regressive compatibility and to attaining the better transmission. In addition, enhanced method to be monitored the packet flow, drop packet detail and number of transmitted/received packets. The paper does study the profound analysis of standard parameters that helps to explore this research with predefined parameters like throughput and delay.

Keywords:- *orthogonal frequency division multiplexing, Throughput ,Delay*

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1. Introduction

The wireless network not only has a huge capacity but also there is no need to share since every device gets its own ray of light. Scientists have developed a new wireless internet based on harmless infrared rays that is 100 times faster than existing wi-fi network and has the capacity to support more devices without getting congested [1]. Slow wi-fi is a source of irritation that nearly everyone experiences. Wireless devices in the home consume ever more data, and it is only growing, and congesting the wi-fi network, researchers said.

The system is simple and cheap to set up. The wireless data comes from a few central 'light antennas', for instance mounted on the ceiling, which are able to very precisely direct the rays of light supplied by an optical fibre. The antennas contain a pair of gratings that radiate light rays of different wavelengths at different angles ('passive diffraction gratings'). Changing the light wavelengths also changes the direction of the ray of light. Since a safe infrared wavelength is used that does not reach the vulnerable retina in your eye, this technique is harmless. If you walk around as a user and your smartphone or tablet moves out of the light antenna's line of sight, then another light antenna takes over, researchers said. The network tracks the precise location of every wireless device using its radio signal transmitted in the return direction, they said.

It is a simple matter to add devices: they are assigned different wavelengths by the same light antenna and so do not have to share capacity. Moreover, there is no longer any interference from a neighbouring wi-fi network. Current wi-fi uses radio signals with a frequency of 2.5 or five gigahertz [12]. The new system uses infrared light with wavelengths of 1,500 nanometres and higher. This light has frequencies that are thousands of times higher, some 200 terahertz, which makes the data capacity of the light rays much larger.Researchers managed to achieve a speed of 42.8 Gbit/s over a distance of 2.5 metres. Even if you have the very best wi-fi system available, you would not get more than 300 Megabit/s in total, which is some hundred times less than the speed per ray of light achieved by the new system [6]. The system has so far used the light rays only to download; uploads are still done using radio signals since in most applications much less capacity is needed for uploading.

1.1 Overview of Channel Frequency

The research group has developed a transmitter that achieves a communication speed of 105 gigabits per second using the frequency range from 290 GHz to 315 GHz [12]. This range of frequencies are currently unallocated but fall within the frequency range from 275 GHz to 450 GHz [4]. Last year, the group demonstrated that the speed of a wireless link in the 300-GHz band could be greatly enhanced by using quadrature amplitude modulation (QAM) [9].

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2. Literature Survey

In [2], propose to increase the number of radios and available channels to increase network throughput. Multiple radios [1]. According to their results, there is a practical limit of three radios, after which there is no additional gain. However in [3], have made experiments on WMN testbed to evaluate the use of multiple radios and the effect of channel separation. During their experiments, the authors concluded the practical limit of two radios for a single node. Furthermore, the interference between radios affects the required channel separation.Similarly as presented in our previous work [4], the authors show that using a single radio, there exists only minor interference with channel separation of four channels. According to [4], when the number of radios is increased, also larger channel separation is required.

The Kyu-Han Kim et.al. [8] presented an autonomous network reconfiguration system (ARS) that enables a multiradio WMN to autonomously recover from local link failures to preserve network performance. The ARS (autonomously reconfigure system) its local network settings channel, radio, and route assignment for real-time recovery from link failures. The accurate link quality information from the monitoring protocol is used to identify network changes that satisfy applications' new QOS demands or that avoid propagation of QoS failures to neighboring links.

3. Proposed Study

The proposed can pave the way for full duplex wireless channel capable of delivering internet service to far-flung places. In addition, by incorporating a signal modulation method called orthogonal frequency division multiplexing, or OFDM, we were transmitted more than 2 Gbps despite the system's bandwidth of 100 MHz. the proposed approach allow the devices to operate simultaneously on the same network without sacrificing speed/performance. This unique feature in the network allows the device to act like a single user communicative with respondent in a same channel as depicted in figure 1.

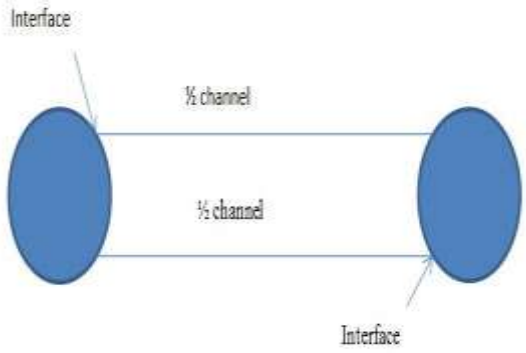

Figure 1: Multi-channel assignment (Full Duplex)

The advantage of our representation is to meet increasing user demands and to stay ahead of emerging applications, while preserving interoperability.

4. Proposed Model

The proposed model behaviour or communication has systematic manner and the model works under same conditions like TCP three way handshakemethod [10].This method had worked on related request and response messages before setting up the connection request. We have drawn the behaviour and our work something similar to existing scenarios. We have used 0 to 65535 ports and out of these port numbers, we randomly selected dynamic port number i.e. 49152 to 65535. Now, we have understood the method that we used, in this study the socket were behave according the port number and IP addresses. Sockets are the combination of port number and IP address that were mentioned on the TCP/UDP Header (as represented in figure 2).

Destination MAC Address	source MAC Address	Source IP address	Destination IP address	Destination port	Source port	User DATA	Trailer

Figure 2: Header Structure [4].

4.1 TCP Server Processes

When TCP at the source host has not received an acknowledgement after a predetermined amount of time [11], it goes back to the last acknowledgement number that it received and retransmits data from that point forward.

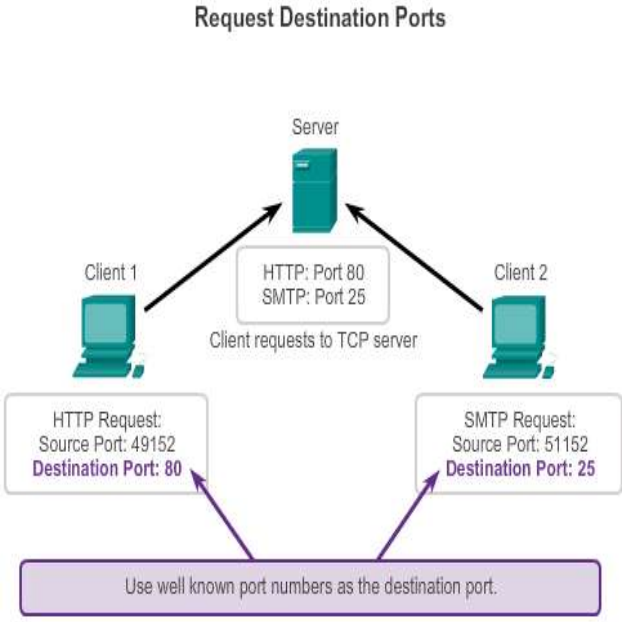

Figure 3: Port configuration in client/server machines

The following process has some responsibilities:

- Establishes that the destination device is present on the network

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- Verifies that the destination device has an active service and accepts requests on the destination port number that the initiating client intends to use for the session
- Informs the destination device that the source client intends to establish a communication session on that port number

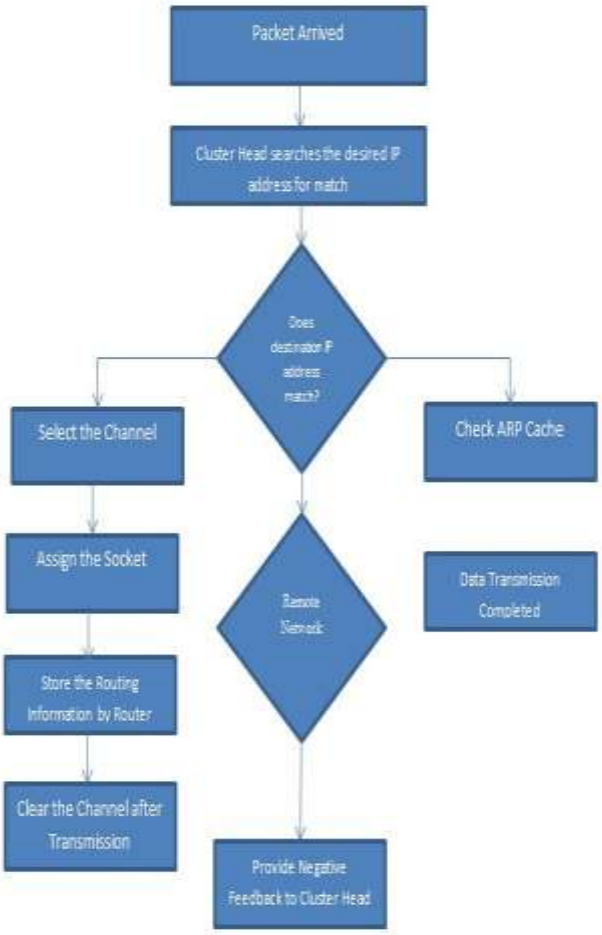

Figure 4: Proposed Flowchart

4.2 Proposed Experimental Testbed

The proposed model considers for computer simulation [13] and illustrated in figure 5.Each terminal or Access point is located at x,y and z coordinators, the value given to these coordinators according to their position. The number of available of channel and number of OFDM subcarriers are assumed to be C=18 respectively. In each simulation run, the access point is random fashion and channel is assumed to be static. The initial channel is generated randomly.

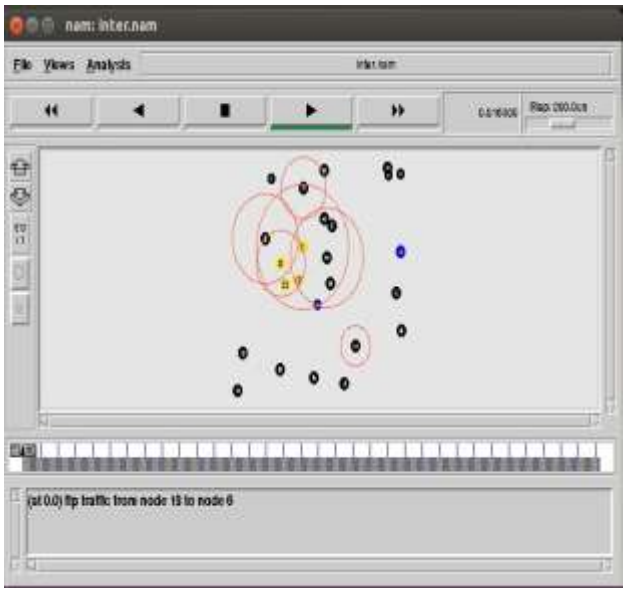

Figure 5: Proposed Working Model of Scenario

5. Results and Discussions

5.1 Throughput

Figure 6, shows the autocorrelation of channel estimation and allocation.

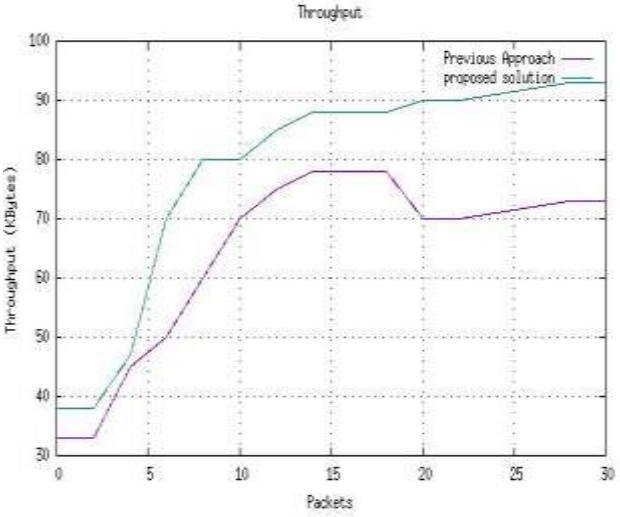

Figure 6: Throughput

The channel that is assigned statically and packets which is to be transmitted in the source to destination nodes are allocated 30 packets (maximum limit) and minimum to be assigned from 2 packets. The observation of maximum throughput in the case of our approach is 91 Mbps and exiting approach was 79 Mbps. The calculation which is defined in the case of fig 5, total transmitted packets with packet received. Now, the statement that we assumed in our case was to transmission of packets either in the case of broadcast and multicast mode [16].

5.2 Delay

Figure 7, shows the delay for each access point (AP), the access point act like an router for routing the data packet.

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The packet transmission sense evaluates from the source AP and each factor determined by end to end delay factor. This include the distance from source node, hop count and final destination AP. The slope of previous approach enlarged than proposed solution and find that the delay of each node is 30 ms but in proposed solution is 24 ms.

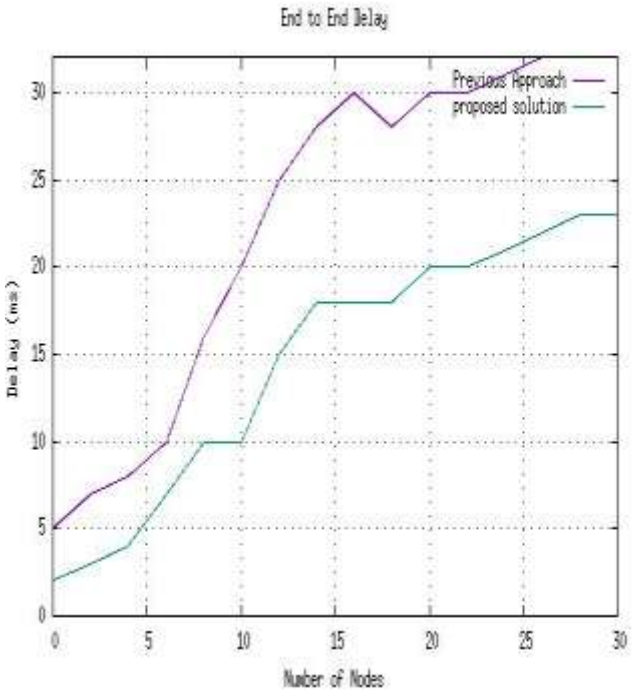

Figure 7: Delay

6. Conclusion

This paper has proposed the channel estimation and apportionment mechanism that would enhanced the efficiency of full duplex mode. We are simulating the network with the networking tool- NS2 Simulator, the tool upkeep wired and wireless simulation. We are distributing the random channel to every node that present on the network and provide stable, random fashion to allocate the channel so that appropriate transmission would be there.We are removing the certain backward compatibilities issues like frequency allocation, logical channel assignment before predict the estimation of data flow. The investigated parameters have enhanced the network performance against existing technique and we determine that the proposed method was operative in multicast, broadcast categories.

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