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Improvement in Performance of the VoIP Over WLAN

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***Abstract*- Today scenario all most WLAN application are data centric, and growing the popularity of internet as required in today are for voice conversation in all field over the network scenario. So in this paper we measure wireless local area network (WLAN) for voice performance and capacity of speech quality caused by Pocket delay and loss of voice quality. The voice traffic or background data traffic is an important issue in VoIP system. This motivation led me to do the analysis of VoIP capacity in IEEE standard 802. 11 WLAN for that we using back of control and priority queuing at the access point (AP). In this paper we planned and survey a scheme that can improve the VoIP capacity by close towards without changing the standard 802.11 CSMA/CA protocol. The problem can be mostly solved by simple solutions that required only change to medium-access control (MAC) protocol at access point.**

Keyword - capacity voice over internet protocol (VoIP), wireless local area network (WLAN), IEEE standard 802.11, Quality of service (QOS).

I. INTRODUCTION

Today voice internet protocol are one to the fastest growing internet application it has two uses compare with voice over telephone network first voice techniques bandwidth showing packet switch network and the VoIP can improve bandwidth efficiency . Second one is, it can creation of new service that combine with voice communication such as video, voice conference etc.

The VoIP is a technology for transmitting voice, video faxed, over the packet switch network. When we use the VoIP techniques, than voice information is converting into digital information packet and send on the internet [1]. After than the internet converting back into analogy signals to reaching the phone receiver at the end.

When we call from one phone to another phone or one computer to another computer than we transmitting voice single , video, etc over internet than the voice must be efficiency, reliability and high quality and voice must not be suffer a delay light than 150ms.

In this enterprise wireless local area network (WLAN) increasing in way into residential commercial industrial and public areas like hotels airports coffee shop and university compose or conference setting also benefit from, WLAN since they provide flexible connection and network access at reduce costs voice over IP application is deteriorate. It is also important in vertical industrial like construction, healthcare and banking etc. so it is more difficult to understand voice performance in WLAN. Mostly we focus in IEE802.11b. It's most popular significantly develop WLAN standard. In this standard 802.11b, we also investigate MAC layer and queuing mechanisms that can improve voice performance. We calculate the effects of back off control and priority queuing (BC-PQ) at access point (AP). A characteristic VOIP packet at the IP layer consists of 40-B IP/user datagram protocol (UDP)/real time transport protocol(RTP) header and a payload range from 10 to 30 B, its depend on the code used. The efficiency at the IP layer for VoIP is previously less than 50%. At the standard 802.11 MAC/physical layer, the drop of efficiency is much worse [2].

II. DIFFICULTIES IN VOIP OVER WLAN.

There are two major difficulties such as:-

a. One difficulty is how to increase system capacity for voice customer (users), when the noise traffic due to large overhead.
b. Another one difficulty is how to increase quality of service (QOS) provisioning for voice user. Voice traffic is sensitive to delay and day filter.

III. BACKGROUND/RELATED WORK

In the literature review the design of MAC protocol that is supporting voice traffic and also has drawn some interest. The 802.11b standard provides two modes of MAC operation.

a). Distributed point coordination function (DCF) mode.

b). Optional point coordination function (PCF) mode. That is design for real time services like voice.

c) VoIP Attributes:-

VoIP attribute is the analogue or pulse code modulation (PCM) voice signal are encoded and compacted into a low – rate packet flow by codes. Commonly, the code generates regular bit-rate audio frames consisting of 40 bit IP/UDP/RTP headers followed by a comparatively diminutive payload.

d) IEE802.11

There are two access mechanism specified in the IEE 802.11 standard: distributed coordination function

(DCF) and point coordination function (PCF). PCF is a federal mechanism, where one central coordinator polls other station and allows them conflict free access to the channel. DCF is based on the Carrier Sense Multiple Access with collision Avoidance (CSMA/CA) protocol. That this problem does not arise in the ordinary Ethernet, in which collisions of multicast packets can be detect by the sender itself and the packets, can be retransmitted. In IEE 802.11, the sender relies on the receiver to revisit an ACK after it has received a packet. If an ACK is not return instantly, the sender deduces that the packet has been lost. [1][2]

IV. MECHANISMS

In this paper we are using two MAC level mechanisms in our study.

A). First mechanism that we used that is standard 802.11b DCF mode.

B). Second mechanisms we used that is Spectrlink net link SVP, which is support back off control and priority queuing (BC-PQ) at the access point (AP) [1] [2].

A) Standard 802.llb DCF mode:-

We use the IEEE802.11b DCF mode because it is support to "listen before-talk" mechanisms, in this the distributed coordination function mode (DCF) have two made. First one is inter frame spacing (IFS), which is involving distributed IFS and second one is short inter frame spacing (SIFS). This SIFS was including with internal value 10 microseconds but DIFS is including with internal 50 microseconds.

B) Process how we were sending a packet in VoIP over WLAN:-

When we transmitting a data packet from source to destination then each station must be wait at least a DIFS. When a data packet pass through in a medium, than if medium is free for duration of a DIFS then it will transmit the packet to destination. Otherwise the data packet enter into back off control and priority queuing (BC-PQ)

In BC-PQ phase we choose a random back off timer uniformly from a connection a value that is known as connection window. And the standard providing minimum connection window is 32 bit time slots. And the maximum connection window is 1024 time slots.[3][5] while time slots is defined is 20 micro seconds, After a back off time has been choose station continue to search medium is free or not, that means the medium until idle time equal to DIFS and it is decreasing back off time with every idle time slot. If medium again become busy than again decreasing back off time until than it become zero. It become zero then packed will be transmitting successful. After connection window will be reset.

V. BACK OFF CONTROL WITH PRIORITY QUEUING (BC-PQ)

Back off control with priority queuing mechanisms is an address of two short coming of the distributed coordination made with respect to voice. The back off control with priority queue (BC-PQ) firstly it is illustrious voice packet from the data packet with providing high priority to the voice traffic and priority queuing check at the access point. In this the incoming voice packet will move head of queue. Than back off control with priority queue (BC-PQ) applying on both non voice traffic or voice traffic. Then the priority queue transmitting voice packet by using zero back off, the back off as required by the standard 802.11b[4]. The back off control process providing means to reduce these delays for voice packet from the data packet. When we zero back off implies that means, voice packet will not waiting in the queue while the medium is available.

When we transmitting voice packet from data packet than the packet will go in priority queue it is check the back off control. If the back off control will zero than the packet does not waiting in queue it is transmit to the destination and if back off control is not zero the packet will waiting in priority queue because the medium is not available.

VI. CONCLUSION

This paper investigates two critical technical problems in VOIP over WLAN. First low VoIP capacity in a WLAN. And Second unacceptable VoIP performance and low quality of services over a WLAN. Due to the limitation of DCF and PCF, we defined the standard 802.11, which is single coordination function for quality of service QOS data transmission. When we use for more number of voice calls than it compare to DCF made and there are large polling over head and we try to overcome that problems in this paper. We are implementing my work on simulation by using ns-2 or MAT lab and we choose MAT lab to implementing this work on graphics representation. In this paper we using two mechanisms to implementing my work which is standard 802.11 DCF mode and second is back off control with priority queuing.

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