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## DESIGN AND IMPLEMENTATION OF VoIP MECHANISM IN DISTRIBUTED NETWORKS

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### ABSTRACT

A data communications networks WLAN handling voice traffic and spent the time in contention form, due to large overhead of protocol operations. Thus the existing WLANs are extremely inefficient. To reduce this contention a simple scheme named as VoIP is used to improve the efficiency of WLANs performance. In this paper VoIP mechanism is used in Distributed Networks. It is implemented in Wide Area Networks and Wireless Networks. By using Filters we can send and receive packets in each and every device. As wireless becomes more accessible, Voice over Internet protocol is an important developing service due to its cost. In essence, this mode of telecommunication allows to effectively carrying out its regular function regardless of position.

**Keywords:** WAN (Wide Area Networks), Routing, DHCP (Dynamic Host Configuration Protocol), OSPF (Open Shortest Path First), VoIP (Voice over Internet Protocol).

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### I INTRODUCTION

In recent years, wireless local area networks IEEE 802.11 have become more available to all over the world. For free accessing, wireless can be offered in some places like restaurants and airport lounges. Due to interference and limitations in radio communications the quality of services and bandwidth is lower also it has higher error rates. Decreasing the cost of wireless equipment will increase the effectiveness of WLANs with voice traffic by using VoIP mechanisms.

To cover a wide area that is any telecommunications network that associates across metropolitan or international boundaries using line in leased form. We can build a uniform multiservice network for data and voice by choosing the right cache of WAN technology.

For business process the utilization of WANs is to send data among employees, clients, buyers and providers from various geographical locations. The repeated network operation cost and management cost can be reduced by using VoIP and it focus on core abilities.

Here VoIP mechanisms is used in wide area networks and wireless networks. VoIP is a special kind of phone devices that is connecting to a network directly for communication. It requires separate and distinct TCP-

based traffic found in IP networks. Certainly the user expectation for web and file applications the quality of telephony services are higher level.

Due to the higher level, the user expectation VoIP traffic must be handled with care. The quality of Voice can be degraded and calls can be dropped if there is an improper configuration and support of VoIP traffic. WAN has multiple networking environments where users require ubiquitous access to corporate applications. It supports developing application by using VoIP. Wired network having additional wiring but in wireless it cannot having additional requirement. It reduces the cost of wiring. By using router we can connect it in distributed network form.

### II. RELATED WORK

In [1] the overhead protocol operation and time contention spent is large therefore handling voice traffic is inefficient in existing WLANs. In this paper, they propose a scheme called VoIPiggy. The efficiency of voice traffic in WLANs is improved by this simple scheme. The key idea is voice frame is piggyback onto the MAC acknowledgement which decreases the frame overhead and wasted time in contention. The performance is

studied by its capacity and delay analysis that is operating under VoIPiggy mechanism in WLAN. It involves programming at the firmware levels and driver. The mechanism is implemented by using commercial off-the-shelf-devices. The proposed scheme of performance is assessed in a large-scale testbed and it containing 30 devices. In [2] wireless communication such as IEEE 802.11 WLAN to increase the channel efficiency a data frame has piggybacked by the control frame. When any station has low transmission rate and the control frame. The decrease of channel efficiency and the increase in frame transmission delay for other stations can be obtained by the piggyback scheme. It has channel reservation time for control the global information. In this paper they defined the phenomenon as the problem of piggyback at the low physical transmission rate. The effect of the problem can be evaluate with physical transmission rate and normalized traffic load. They proposed delay-based piggybacked algorithm to the use of piggybacked scheme for control frame. This is based on the delay efficiency in IEEE 802.11 HCCA. In [3] Wireless communication like cell phone devices can be replaced with VoIP. In telecommunication process VoIP is an emerging service. In this paper to improve VoIP capacity a simple solution called TXOP (Transmission Opportunity Parameter of a medium access control is used. It increased TXOP for the AP and it significantly improve the voice capacity in WLAN. But there exists an optimal TXOP value beyond which the voice capacity. It cannot be improved further. In [4] existing WLANs, the support of voice traffic is extremely inefficient. This is happen when the large overhead of the operation. With the presence of voice traffic WLANs can be efficiently improved by using VoIP mechanisms. Here the frame overheads and the contention of time can be reduced by using piggybacking mechanisms. The voice quality is highly vulnerable and the operation of DCF is extremely inefficient to data traffic for short length of voice frames. In[5] By using different MAC (Medium Access Control) Parameters the EDCA (Enhanced Distributed Channel Access) mechanism of IEEE 802.11e standard supports and provides Quality of Service for different station through service differentiation. But they do not take the current wireless Local Area Networks condition. Only a set of fixed optional values can be obtained by the standard. It maximizes the acceptability region of real-time traffic. The data traffic throughput performances are also optimizes. In [6] analyze the various aspect of Skype protocol with Skype network traffic. In this they observed that the Skype can work almost effortlessly behind NAT and firewalls but the voice quality is better than other VoIP clients. For signaling TCP can be used.

This communication process of Skype is encrypted. Under different network setups, Skype functions can be analyzed. Conferencing and instant messaging can be cooperated in Skype. In [7] wireless medium IEEE 802.11 MAC (Medium Access Control) is a strong protocol for

the best effort service. It having higher data rate. So that it is not very efficient. The problem of MAC is overhead. In this paper two novel mechanisms are proposed by author to reduce the overhead of IEEE 802.11 protocol. Concatenation and piggyback mechanism can be used to reduce overhead. It shows the concatenation threshold value could be large from the characteristics of collisions. The channel utilization derivation is shown in [8]. It results shows that without affecting the channel utilization, small number of retransmissions can be considerably reduce the voice packet drop rate. IEEE 802.11 standards have been widely used in different wireless networks.

### III. PROBLEM STATEMENT

The voice capacity cannot be improved while they are in bulky transfer of voice traffic results it is extremely inefficient if the given protocol operations is large overheads. Thus the quality of voice is highly vulnerable to data traffic. By introducing the higher data rates also the inefficiency issue is not solved because of protocol overhead. Also the number of voice calls is limited in IEEE 802.11 WLAN. To overcome all these, we propose a simple mechanism called VoIP. Some WAN optimization vendors have been making significant claims regarding their ability to accelerate and improve VoIP traffic that make and receive telephone call with an unlimited calling plans over the internet by the VoIP Providers. It is cost saving, flexible and also having rich features. Our extensive measurements are by using VoIP mechanism seamless data and voice communications is in next-generation wireless world. The quality of VoIP is fine as long as network throughput limit is not exceeded.

### IV. TECHNIQUES USED IN DISTRIBUTED NETWORKS

The techniques used in WAN and wireless networks are routing configuration, DHCP, IP Phones, OSPF, and VoIP in WAN. Wireless routers, wireless PC, Analog Phones, Home VoIP devices are used for Wireless Routers. The first step is to configure the router with PC. It is to manage the flow of data between network segments. It is shown in figure1.

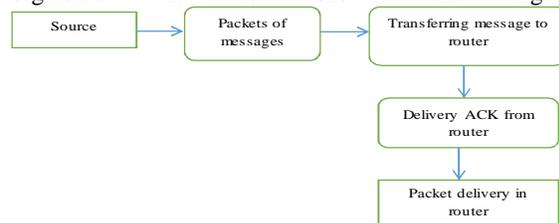


Figure 1: Message flow Diagram

The next part is to configure DHCP. It works by providing an automatic way to allocate and update IP addresses and further configuration information on networks.

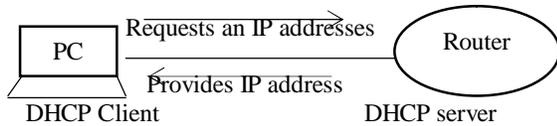


Figure 2: DHCP Process

Next step is to introduce IP Phone devices. It involves digital phone systems based on the number of IP in an area of communication. It is used as business term for VoIP. It is connected to the data network rather than phone network. Here by using Graphical User Interface IP phones number are displayed. It is used for communication purpose. These devices are connected with multilayer Switch. Next process is to configure OSPF. For the better use of bandwidth we prefer OSPF algorithm. Here there is no limitation on the hop count. To send link-state updates it uses IP multicast. The link part of the protocol on the router is like an interface, and the state relates how the neighbor relates also includes its address and the information about the information.

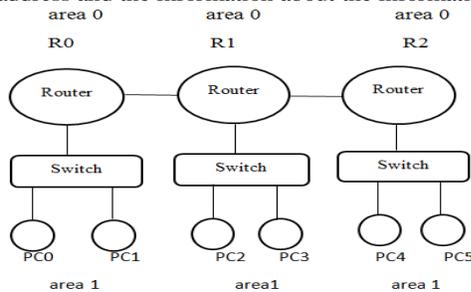


Figure 3: OSPF Connection Process

Final process is to configure VoIP. It is a group of technologies and methodology for the delivery of voice communications and multimedia sessions over internet protocol networks. IP phone and VoIP telephone adapters connect to router or cable modems which depend on the availability of generated power.

V. IMPLEMENTATION DETAILS

The hassle of assigning static IP address on each system is overcome by Dynamic host configuration. It eliminates static assigned address and it allows configuring setting in dynamic manner. We have to configure IP address in DHCP mode. It having the basic information as IP address, subnet mask and default gateway. Here IP addressing and configuration information is dynamically distributed and it is allowed by server side communication to client side communication. This communication can be done via router. The connection is between two or more data lines from different networks. By this way first we have to set default route ip address to forwarding packet rule. It takes the result when no other path can be in given IP destination address. All destination packets are not well-known in routing table are sent through the default route. This type of route usually points to another router, which gives the packets the same way. The packet is

forwarded if a router matches; if it is not matched the packet is sent to the default route of the router. This process takes place until a packet is sent to the destination. The Transmission path for the one hop counts distance calculation can be traversal by each router. Then the configuration of OSPF can be done in router. The interior gateway protocol of OSPF is for routing protocol internet protocol packets only within a single routing domain such as autonomous system. For exchanging routing updates with other routers OSPF establish a link state routing protocol to maintain neighbor relationships. It forms only with the routers directly connected to it. The interfaces used to form the neighbor relationship must be in the same area. Here hello interval and dead interval is used to send and receive packets. The hello packets function as keepalives to allow routers to quickly notice if a neighbor is down. Then network address and area have to be configuring in router. The TCP/IP parameters and server details can be configured with DHCP client if a network part uses dynamic IP address configuration. DHCP client provides the central and automatic controlling of VoIP phones configuration. Then dial peer voice for each session target is assigned. The telephony service is assigned to give maximum number of ephones that uses our data connection so it is able to call the world at lowest rates. Here we also assigned the maximum number of directory. By this method the device type has showed phone has registered. With the use of Graphical User Interfaces the communication process takes place. For wireless networks VoIP mechanism is used with wireless router and wireless PC. Here Analog phone is introduced with line number and it is connected to Home VoIP phones with line number. Analog phone receives ip and line number. We are able to call the IP communicator from analog phone and vice versa. These devices are connected to switch. Wireless router having the router functions. It does not need a wired link. The connections are in wireless form.

Description of System Architecture:

1. First the key idea is to set up the cabling and devices.
2. Plan IP based Infrastructure
3. IP phones provides IP voice to the desktop
4. Introduce MLS devices
5. Develop routing Strategies
6. Design IP addressing scheme
7. Plan IP configuration strategy
8. Introduce Wireless Routers
9. Introduce Wireless PC, Home VoIP
10. Test our design

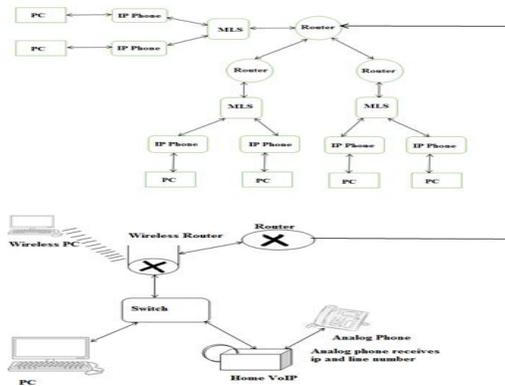


Figure 4: System Architecture

## VI. CONCLUSION

Thus, both in Wide Area Networks and Wireless Networks VoIP mechanism plays a strong support for the communication. And also packets get transmitted by sending and receiving packets with Protocol Data Unit information about each and every device by using filters. Using many features it may be accessible and can be solved in many small business techniques. By this it provides with the call as systematic method, and communication as in voice. It plans the calling as unlimited. A small business person can make a large communications by making a call to another person. It seems to be good in both faster and efficient way. By this it deals facilities as voice communication unified messaging and cisco unified communications manager. As wireless become more available, voice over internet protocol (VoIP) is a developing services by its lower cost. Now, the industry takes a handful of different wireless technologies. As it is used in several all places it increases the configuration of network. It gets greater capacity by sending and receiving larger number of packets.

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