Voip Based Wifi Calling System

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Abstract

This document is a survey of the current state of the art in voice communication over wireless networks. The properties VoIP are presented, then the issues related to the deployment of VoIP are analyzed. The main findings of this survey are the following. WLAN QoS parameters have high variability in real-world environments, with a significant effect on application performance. Existing WLAN QoS mechanisms are only of limited use for managing contention for applications with different QoS requirements. VoIP is a multimedia application that requires timely servicing of voice traffic; this is a challenging task, even when using QoS enforcement. Roaming between access points introduces communication gaps that can be unacceptably large for real-time applications.

Keywords — *VoIP,QoS,WLAN,Security, Usage,* **Capacity.**

INTRODUCTION

Voice over Internet Protocol (VoIP) is a form of communication that allows you to make phone calls over a broadband internet connection instead of typical analog telephone lines. Basic VoIP access usually allows you to call others who are also receiving calls over the internet. Interconnected VoIP services also allow you to make and receive calls to and from traditional landline numbers, usually for a service fee. Some VoIP services require a computer or a dedicated VoIP phone, while others allow you to use your landline phone to place VoIP calls through a special adapter.

VoIP is becoming an attractive communications option for consumers. Given the trend towards lower fees for basic broadband service and the brisk adoption of even faster internet offerings, VoIP usage should only gain popularity with time. However, as VoIP usage increases, so will the potential threats to the typical user. While VoIP vulnerabilities are typically similar to the ones users face on the internet, new threats, scams, and attacks unique to IP telephony are now emerging. Voice over Internet Protocol (VoIP) is a technology for communicating using "Internet protocol" instead of traditional analog systems. Some VoIP services need only a regular phone connection, while others allow you to make telephone calls using an Internet connection instead. Some VoIP services may allow you only to call other people using the same service, but others may allow you to call any telephone number - including local.

Wireless technology is being more and more widely deployed at present. They are a key element in dynamic business environments where permanent access to network resources is vital. They also provide a perfect solution for the creation of networks in emergency conditions within areas where dense wireless networks are in place.

Voice over IP (VoIP) is a form of voice communication that uses data networks to transmit voice signals. The signal is appropriately encoded at one end of the communication channel, sent as packets through the data network, then decoded at the receiving end and transformed back into a voice signal.

Since both technologies are sufficiently mature at the moment, VoIP over wired communication is being developed. However, the intrinsic characteristics of each of these two technologies cause specific issues to appear that must be addressed in order to ensure a successful deployment of VoIP. This is particularly important when considering the use of WLAN technology in the context of emergency situations.
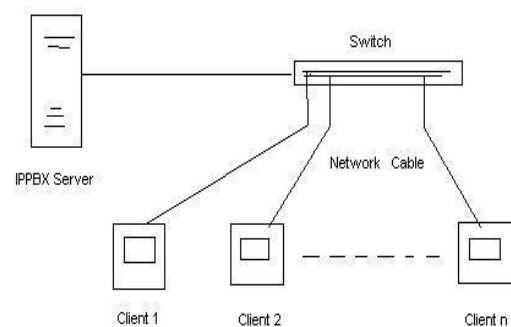

Fig:1 Exchange System

EXISTING SYSTEMS

A. *Wireless LANs*

As computer equipment users choosecell phones over desktops, so the technology had to adapt and offer wireless connectivity. Wireless replace

fixed connections making mobile phones the method of choiceforperson-to-person communication.

Wireless LAN standards

Wireless LAN standards can be grouped into several families. The most important ones will be briefly described below:

• 802.11a – Up to 54 Mb/s in the 5 GHz band, using OFDM3 modulation scheme and WEP 4 & WPA 5 security;

• 802.11b – Up to 11 Mb/s in the 2.4 GHz band, using DSSS-CCK 6 modulation, and WEP & WPA security;

• 802.11g – Up to 54 Mb/s in the 2.4 GHz band, using OFDM or DSS with CCK modulation, and WEP & WPA security.

At the moment 802.11b is probably the most widely used WLAN standard, but there are devices that are compatible with all three standards at the same time. As always in the ITC the tendency is to migrate to faster technologies as soon as they become affordable.

Each standard from the 802.11 families has its strengths and weaknesses. For example, there is less potential for Radio Frequency (RF) interference for 802.11a, than other two. Given the larger bandwidth, this solution is better than 802.11b at supporting multimedia voice, video and large-image applications in densely populated environments. However the range is shorter than for 802.11b and they are not interoperable.

B. Asterisk

Asterisk is an open-source system for building interchanges applications. Asterisk transforms a conventional PC into a correspondences server. Asterisk powers IP PBX frameworks, VoIP portals, gathering servers and that's only the tip of the iceberg. It is utilized by private companies, huge organizations, call focuses, transporters, and governments around the world. The bullet is free and open source. Asterisk is supported by Digium, the Indicator Organization. The indicator gives an amazing rundown of abilities and components like IVR and wifi free calling.

OBJECTIVES

- The main objective of the article is to provide benefits of VOIP as the medium of telecommunication.

- Develop a network that implements VOIP using asterisk PBX

- Proposing suggestions for the betterment of VOIP implementations.

- To utilize any open source software and Asterisk PBX for this article.

- To nullify the cost for calling plans and internet plans.

LITERATURE SURVEY

- VoIP over IP mobile telephony using wifi by Rahul Vaidya and Prof.S.S.kulkarni proposed that a telephony program that uses WIFI in WLAN (Wireless Local Area Network) as a means of communication between mobile phones at no cost. The system will allow users to search for other individuals within WIFI range and to establish free peer to peer connection for voice communication and also for file transfer and chat.

- A Survey Paper on Voice over Internet Protocol (VOIP)Urjashee Shaw and Bobby Sharma proposed the protocols which are used to support VoIP technology, the threats that may occur in a VoIP communication and the security measures taken to avoid the threats. The load of the VoIP system should be accommodated by the network and the servers involved.Packet loss, delay jitter and throughout all contribute to degraded voice quality. Additionally, because network congestion can occur at any time in any portion of the network.

- Paper on Proposed System for Placing Free Call over Wi-Fi Network Using VoIP and SIP b Bhushan R. Jichkar Implemented a wifi technology supporting calling,community interactive services and also provides secured Wi-Fi network, based on open technologies such as android programming, MySQL database, and SIP.

SCOPE OF PROBLEM

In Electronics Private Branch Exchange system the cost of wiring for the extensions was increased as well as it is unable to increase the extensions and not flexible for users.

Reasons for selecting the problem

- To reduce the cost of the private branch exchange system
- To made flexible for user as well as administrator to install and maintain the PBX system.
- To provide the wifi calling feature.

Research Methodology to be employed

A. **Hardware Setup:**

- Raspberry pi 3 B, 16 GB SD card and Wifi Router.

B. **Software:**

- Linux operating system for Raspberry pi
- Softphone - Zoiper

HYPOTHESIS

The IPPBX system employees the features for the organization such as call transfer, music on hold, voice mail and audio conference. It uses the existing network infrastructure so the cost of wiring reduces. It is easy to configure the softphone. It is also flexible for the users as well as an administrator. It is easy to create and delete the extensions.

CONCLUSION

This paper is a brief description of VOIP over WLAN, its advantages and challenges. We provided a comprehensive knowledge about VOIP and its advantages over PSTN to prove that VOIP is better than PSTN. VOIP has been developed immensely over the last couple of years and thus it can be considered as a mature technology. Therefore, VoIP's future appears bright since a terminal only needs to support IPv6 and SIP. Also, the importance of VOIP on Asterisk PBX for corporate and home users due to its versatile features and most importantly is cost-effectiveness. By reducing the cost and providing a better calling experience with the help of Asterisk PBX, VOIP calls can be improved even to a greater extent.

REFERENCES

[1] Akshay Khamankar1, Amogh Phirke2, Khushboo Shah3 , Diksha Rangare4 Proffesor Ashwin Shinde5 International Research Journal of Engineering and Technology (IRJET) e-ISSN: 2395 -0056 Volume: 04 Issue: 02 | Feb -2017

[2] Rahul C. Vaidya, Prof. S.S. Kulkarni International Journal of Scientific & Engineering Research Volume 3, Issue 12, December-2012

[3] Urjashee Shaw Department of CSE & IT School of Technology Assam Don Bosco University Guwahati, Assam, India Bobby Sharma Department of CSE & IT School of Technology Assam Don Bosco University Guwahati, Assam, India International Journal of Computer Applications (0975 – 8887) Volume 139 – No.2, April 2016

[4] Haniyeh Kazemitabar, Sameha Ahmed, Kashif Nisar, Abas B Said, Halabi B Hasbullah Department of Computer & Information Sciences Universiti Teknologi PETRONAS Vol. 2 (2) – September 2010

[5] Răzvan Beuran Internet Research Center Japan Advanced Institute of Science and Technology (JAIST) April 20, 2006.

[6] VoIP Implementation Using Asterisk PBX , IOSR Journal of Business and Management (IOSR-JBM) e-ISSN: 2278-487X, p-ISSN: 2319-7668. Volume 15, Issue 6 (Jan. 2014), PP 47-53 www.iosrjournals.org

[7] Implementing the Voip Communication with Asterisk as Server using Raspberry Pi, International Journal of Engineering Research & Technology (IJERT) ISSN: 2278-018 2017

[8] Voice Over Internet Protocol (VoIP) By BUR GOODE, SENIOR MEMBER, IEEE

[9] Design and Implementation of Wi-Fi based Intercom System using ARM 11, International Journal of Innovative Research in Science, Engineering and Technology 2018

[10] A. S. Abdelrahman, Rashid A. Saeed, and R. A. Alsaqour, "Qos Performance Study Of Real-Time Transport Protocol Over VoIP", ARPN Journal of Engineering and Applied Sciences, vol. 11, no. 9, May2016.