Implementation and Analysis of Wifi VOIP using Raspberry pi

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Abstract:

This paper highlights the design & implementation aspects of a VoIP based Asterisk voice exchange, developing a totally purposeful voice exchange has to line up a server supported Asterisk, connecting purchasers thereto server with the assistance of mobile phones so configuring the mobile phones with the assistance of a server because the trendy phone networks begun to require form, personal companies saw a bigger reliance on phone communication. Several plan to implement their own service. so they might handle calls internal to the organization. Voice medium over mobile is presently supported at a value practice service provider like GSM or mistreatment IP service supplier at the cheaper value. the aim of this analysis is to style and implement a telephone program that uses WLAN in p2p (Peer-to-Peer) or Wireless native space Network as a method of communication between mobile phones at no value. The asterisk package will use a correlation between current address books accessible in mobile phones to convert phone numbers into branch of knowledge addresses

Keywords: *Raspberry Pi, IP PBX, VOIP, GSM Dongle.*

I. INTRODUCTION

Voice over web Protocol (VoIP) might be a sort of communication that permits you to create phone calls over a broadband web association instead of typical analog phone lines. Basic VoIP access generally permits you to call alternative international organization agency area unit receiving calls over the online. Interconnected VoIP services to boot allow you to create and receive calls to and from ancient telephone circuit numbers, generally for a charge. Some VoIP services want a laptop computer or an infatuated VoIP phone, whereas others allow you to use your telephone circuit phone to position VoIP calls through a special adapter. The system based} is based depends on the software referred to as "Cent OS for pi" that's operating system software system based VoIP PBX server software for the raspberry pi. These operative systems comprise the phone package referred to as "Asterisk". This software with asterisk is put in in Raspberry Pi. The Raspberry Pi might be a series of a credit card–sized single-board computers developed among the United Kingdom by the Raspberry Pi. Though vox information processing (VoIP) has existed for many years, it's solely recently begun to require off as a viable different to ancient voice systems. Interest in VoIP has a big part as a result of the technology will facilitate the enterprises to cut back prices by employing a single information processing network for each knowledge and voice applications. VoIP provides a way of transmission auditory communication over associate degree information processing primarily based network. VoIP will use a spread of kinds of protocols, far and away the foremost common varieties square measure SIP i.e. session initiation protocol. The IPPBX system could be a phone switch serving a business or organization. The PBX provides phone services together with internal vocation, auto-attendant, voice-mail, and automatic decision distribution services for the organization. within the ancient circuit-switched telephone world, folks were connected by dedicated circuits that were designed over one hundred years past. The introduction of information processing (Internet Protocol) has modified the telephone market on several levels. IPPBX offers another to EAPBX for voice, and with it, information processing primarily based solutions for telephone systems. one amongst the explanations giant enterprises square measure drawn to information processing telephone is that the potential potency gained from combining the voice and knowledge in an or functions in one single organization.

II VIRTUAL BOX

Virtual box is the open source programming program. It is to make the gap for Cent-OS working contraption in our PCs (server). Virtual field programming program shows a very virtualized set of hardware to the visitor running gadget. Virtual box programming virtualizes the gear for a video connector, a system connector, and extraordinary plate connectors. The host gives avoid through drivers to visitor USB, successive, and parallel contraptions.

III LINUX

Linux is the best-known and most-used open source operating system. As an operating system, Linux is software that sits underneath all of the other software on a

computer, receiving requests from those programs and relaying these requests to the computer's hardwareReference bullet

Reference bullet is an open stock system for developing interchanges applications. Mark transforms an ordinary pc into an interchanges server. Reference bullet powers IP PBX frameworks, VoIP entryways, show servers and the sky is the limit from there. It is utilized by little gatherings, a gigantic undertaking, name focuses, organizations and governments worldwide. Reference mark is free and open source. Indicator is upheld by Digium, the Asterisk Company. Reference mark exhibits a marvelous rundown of abilities and capacities alongside:

Intuitive Voice Response (IVR): This machine utilizes pre-recorded voice menus to actuate guests to make picks through their cellphone comprising of "press 1for deals, 2 for help".

Call Parking: This component alludes to taking care of a name into a holding realm that it could be gotten up expansion.

Call Recording: The capacity to report inbound or outbound calls.

Call Parking: This trademark alludes to placing a name into a holding realm with the goal that it can be gotten up other expansion.

Call Queuing: A framework that enables inbound guests to sit in a holding room observing melody on-hold till the beside be had specialist is to be needed to converse with them.

Call Transfer: This alludes back to the ability to move a present name to some other expansion..
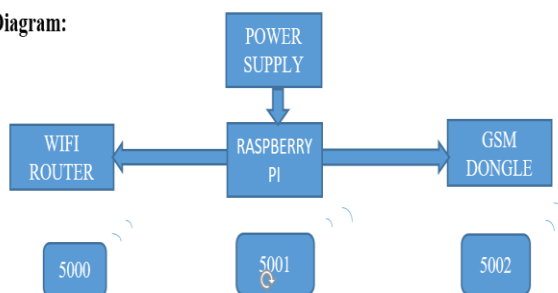
Block Diagram:

Fig 1.Block diagram of the overall system

IV PROPOSED WORK

INSTALLATION OF LINUX
In this work the Raspberry Pi ARM 11 board is the principle CPU in which the Linux OS called Cent-OS is hooked up then after login to pi the Asterisk server packages are mounted

INSTALLATION OF ASTERISK
There are many exceptional regions that we can get right of entry to from right here and the majority of our system configuration may be executed inside this properly laid out and consumer-friendly web interface. The web interface can be accessed by way of pointing the browser to the URL we

have been proven in advance whilst we logged into the text console.

Download and deploy Asterisk 1.4. After installation we must create the users in sip.Conf and dialplan in extensions.Conf

Extension. Conf : This document defines the Dial plan for numerous users that determines how they interact inside the Asterisk.

Sip . Conf -: In this file the various sip customers have been described of their context for the Asterisk PBX.

INSTALLATION OF CLIENT
CLIENT ANDROID MOBILE:
Download Zoiper
Step 1: Gather information for every consumer.
Step 2: Download ZoiPerLite
from the App Store
Step 3: Configure Of IP PBX user account information. Enter on your credentials inside the fields.
Username@PBX/VoIP company: SIP Address
Password: SIP Password
Click "Create Account"

V EXPERIMENTAL SETUP

Fig 2 hardware setup using Raspberry Pi-3

Steps for noting the clients

1. On the Wi-Fi get to critical telephones enrolls its fixed IP .Where the Wi-Fi will stimulate this delicate telephone being vigorous.
2. Each telephone is realized by a client call. refreshing the IP address with a matching username.
3. In the event that you Call any client name and the statistics is usable to all clients confirmed in the scheme.
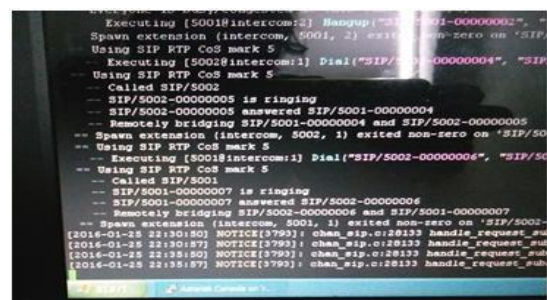   4. When the Wi-Fi run isn't available, at that point call handoff

Fig 3.Software Setup

CONCLUSION:

VoIP time is one of the most extreme broadly utilizing innovation which help to manage discussion from anyplace inside the global. VoIP designing is essentially different communication venture, empowering now not just considerably less costly calls yet in addition providing progressively brilliant and rich highlights and additional bendy contributions. Expanding number of administrations organization is one of the thought processes of VoIP innovation to be less expensive moderately with others. Despite the fact that, challenges live in the back of, VoIP time as of now plays a key capacity in bunches interchanges and is hurriedly different the private and supporter scene of local and universal dispatch issue.

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