

Messaging and Voice Conferencing through Wi-Fi Network

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Abstract

The use of Wi-Fi enabled android phones as IP phones, and their communication within a local wireless LAN is discussed in this paper. This proposed model is a form of telecommunication that allows exchange of data and voice via Wi-Fi network. The phones, which are Wi-Fi enabled and have android operating system, can be used to communicate with each other through the Wi-Fi communication channel. Proposed system incorporates messaging (Text and voice), conferencing (group conversation) and file sharing services through the Wi-Fi network. When users enters the Wi-Fi network, proposed system displays the list of other users they are having this system on their mobile in that network. Using the system services, user can communicate with other user by exchanging packets to IP address of destination user, with the condition that both communicating person should be in same Wi-Fi network. The proposed system allows communication through Wi-Fi which requires neither any internet connectivity nor any service from the service providers. In this paper, the proposed system shall eliminate the usage of service providers for short-distance calls and decreases the cost that gets accrued in the consumer's monthly bill. This system allows free conferencing, file sharing and messaging services within the Wi-Fi network that will greatly reduce the communication cost in large organizations.

Keywords-- Messaging, File sharing, Conferencing, Wi-Fi, Android, IP address

I. Introduction

Cell phones have evolved from being simple communication devices to a powerful portable computer. The instrument has become so commercial that it's available as a key-item in everyone's pocket, benefitting the user and serving as a lucrative business for the manufacturers. The increase in the number of service providers has made it a battle-field for each of them to gain more customers, and the cheaper one always manages to outstrip others. The idea of having a common channel (air) for sending innumerable frequencies and use the bandwidth that's available has always been fascinating for all of us, but at what cost? It is a hectic task to design a communication system knowing how badly it is susceptible to noise. The whole idea of modulation made it possible to neglect the low noise frequencies and making it feasible for long distance transmission at high efficiency. There is now emerging demands to have cheap communication within a fixed range, like in an office or a township. Intercom is also a similar system but in this case it has fixed phones connected by guided media. The recent advancements in the mobile phone technology have incorporated the features of accessing Wi-Fi from Cell phones. Exploiting the entire bandwidth of 2.4GHz for making voice calls between devices, it eliminates the need of using the service provider's bandwidth. Today almost every premise is Wi-Fi enabled and knowing the fact that most of the people are having Android phones, a system can be developed through which user can communicate with other person in

same network thus saving user money. The motivation is to allow the android mobile users to communicate through the Wi-Fi without paying any internet data charges. The objective of this paper is to develop an android based communication system through which user can communicate with other person in the same Wi-Fi network.

II. Existing System

Voice over Internet Protocol (VoIP) provides the ideas for connecting two clients through voice over the network. The advent of Voice over Internet Protocol (VoIP) has fundamentally been transforming the way telecommunication evolves. Driven by the ongoing deployment of broadband infrastructure and the increasing demand of telecommunication service, VoIP technologies and systems have led to the development of economical IP phone equipment based on embedded systems. IP phone system can satisfyingly provide the necessary interfaces between telephony signals and IP networks. Although IP phone communication over the data networks such as LAN exists but these IP phones are fixed type. This project implements wireless IP phone communication using the Wi-Fi network. The disadvantages of existing system are as follows:

1. Third-party software typically must be installed on handsets.
2. Multiple numbers or special IDs are required to make Wi-Fi calls.
3. Messaging and conferencing are typically not supported.

III. Proposed System Architecture

In this paper, we propose an Wi-Fi based communication system that allows android based smartphone users to send and receive data via Wi-Fi

which requires neither any internet connectivity nor any service from the mobile service providers as shown in figure 3.1. The motivation is to allow the smartphone users to communicate in the intranet without paying any internet data charges.

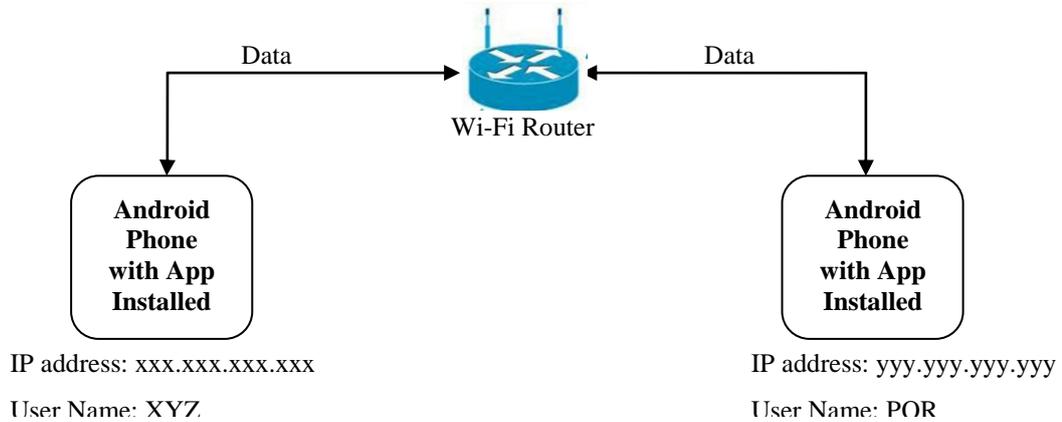


Fig 3.1: Architecture of proposed system.

Fig 3.1 represents the overall architecture of proposed system. Wi-Fi enabled android phones are required for installing the proposed system. After installing an system, user can communicate with each other by transferring data through Wi-Fi router. The communication between the users is possible, if they are in the same Wi-Fi connection and the transfer of data between the systems are done using TCP and UDP protocol. Proposed architecture mainly consists of six modules they are:

A. Contact Management module:

Contact management module allows user to store IP address and Username of other person to whom application user wants to communicate and this information is stored using SQLite database.

B. Text Messaging module:

Text Messaging module allows user to send and receive the text message and received messages are stored in database.

C. Voice Messaging module:

Voice Messaging module allows users to send and receive the voice message and received voice messages are stored in database.

D. Call module:

Call module allows users to place and receive calls by exchanging voice as data.

E. Voice Conferencing module:

Voice Conferencing module allows more than one users to communicate with each other at the same time by exchanging voice as data with lesser delay.

F. File Sharing modules.

The File sharing module allows users to send any type of file like audio, video and text to other user in the same network.

IV. Flow of Data in the Proposed System

The System should be activated by the user, when he/she want to communicate with other user in the Wi-Fi network. After activating the system the data flows to the database, requesting to load the contacts currently in the database along with status of the users like online or offline. Once contacts gets loaded user can select the different services like Sending text or voice messages, file share, call or conference call as shown in the Figure 4.1.

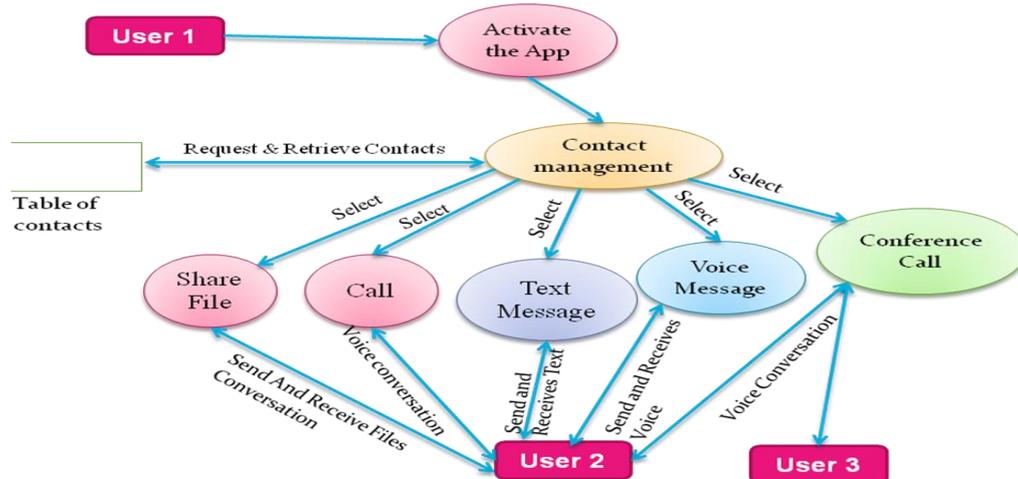


Fig 4.1 System data flow.

Service should be activated before performing any operation through application (service is a method, contains thread which perform listening operation on ports for reception and forwarding of data), that is, system provides an option for receiving and sending the data. If users don't want to allow any incoming data, when they are busy, then they can disable all incoming service by deactivating service option. All the modules should interact with the

Contact Management module to extract the IP addresses from the database. The proposed system performs the communication through IP address of the mobile phone not through any phone number.

This approach allows transfer of data between android based devices which is implemented and tested between mobile phones which uses android platform as shown in the following figures..



Fig 4.2 Option Window.

Fig 4.2 represents the option window which appears when user long press on the destination user name.

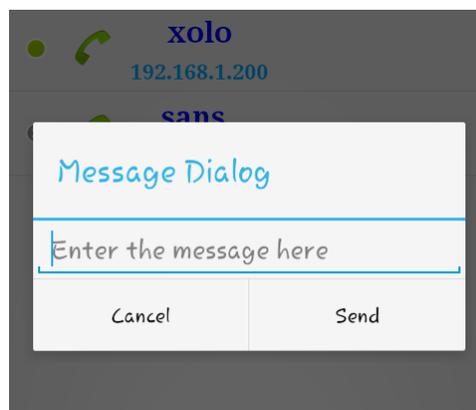


Fig 4.3 Message Window.

Fig 4.3 represents the Message service window which appears when user selects message option from Fig 4.2.

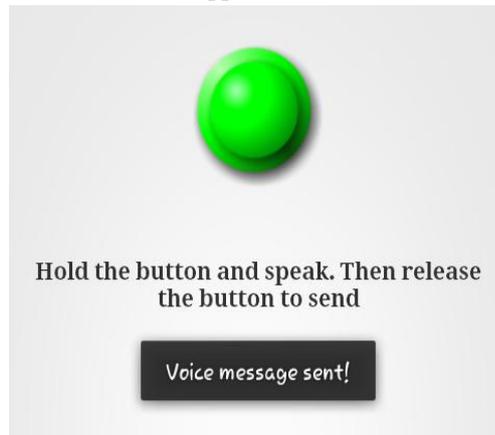


Fig 4.4 Voice Message Window.

Fig 4.4 represents the voice message option window which appears when user selects voice message option

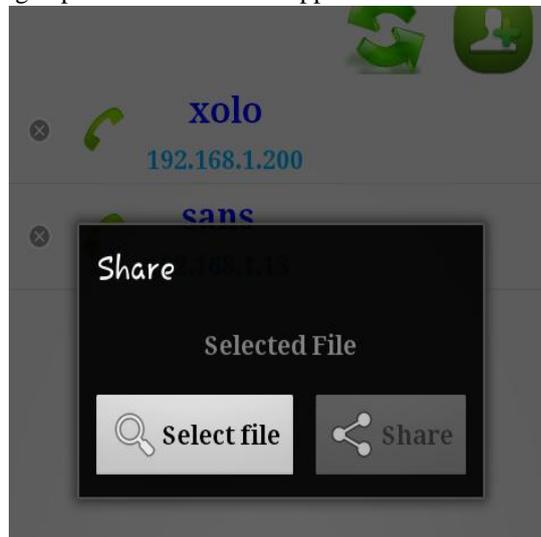


Fig 4.5 Share File Window.

Fig 4.5 represents the select file option window which appears when user selects share file option from Fig 4.2

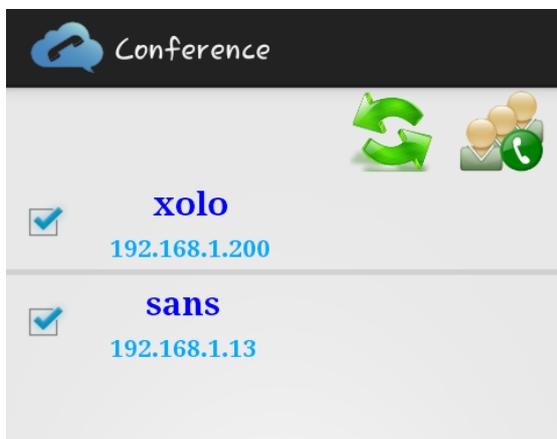


Fig 4.6 (a): Usernames selected for conversation

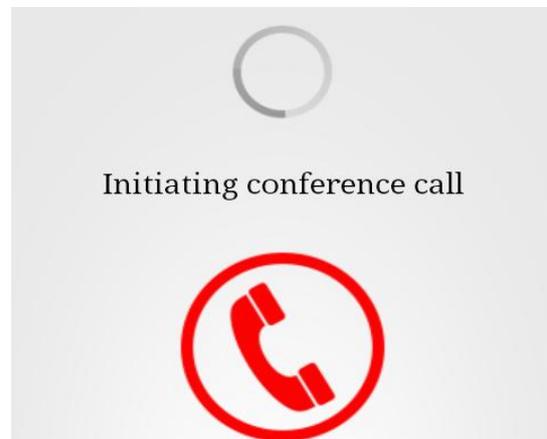


Fig 4.6 (b): Initiation of conference service

Fig 4.6(a) and (b) represents the voice conference windows. Multiple user can communicate with each other at the same time using conference service.

V. Conclusion

This paper presents an idea to develop services for the Wi-Fi users; proposed system does not require intermediate users for reception and forwarding of information to destination users. System does not require any extra hardware to be installed in the device. This communication does not need to interact with mobile service provider or no need to take any data plan. Internet connectivity is also not required. So this way it reduces the cost of communication.

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