



Mobile Telephony Over Wi-Fi Using VOIP

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Abstract: Voice telephony over mobile is currently supported at a cost using service provider such as GSM, or using IP service provider at cheaper cost. The purpose of this research is to design and implement a telephony program that uses WIFI in p2p (Peer -to- Peer) or 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 p2p voice connections, This system will use SIP (Session Initiation Protocol) and VOIP (Voice Over Internet Protocol) protocols for the communication. The system will use a hashing algorithm to store the IP address of mobile.

Keywords: VoIP; WIFI P2P; WLAN; Mobile Telephony

I. INTRODUCTION

The support of telephony services over mobile phone has been used everywhere using technology such as GSM (Global System for Mobile) and 3rd Generation mobile telecommunication 3G but at high cost. On the other hand, IP telephony try to reduce the cost for supporting this service over mobile phone, but it is facing difficulties since the same feature is supported on desktop and laptop at lower complexity. VOIP (Voice over Internet Protocol) is used for communication of two persons by sending voice packets in a real time fashion. Various protocols are involved in implementing VoIP. The tasks are divided into two. The major task is to establish a session between the two communicating parties. The protocols involved in establishing the session are called as Control plane protocols. Session Initiation Protocol and H.323 are some of the control plane protocols. These protocols are also called as signaling protocols as they are used to establish sessions between the users. Due to various advantages which are offered by Session Initiation Protocol (SIP), it has been majority adopted by the telecommunication industry. One of the main advantages of SIP is that it is human readable and is less complex when compared with H.323 which is mainly binary. So, in this application we implemented SIP as our signaling protocol.

II. SCOPE AND NEED FOR SYSTEM

The efficient, fast communication between the employees is very important in company. This leads to more informed employees with the ability to make better, faster decisions. This in turn leads to better productivity. The proposed system can be used for communication in company by their employee. This system will provide good quality of communication within the company employee with no charges. Communication with this system will not be PSTN (public switched telephone network) so system will be less expensive. The system uses Wireless technology (particularly wireless LANs) offers a good solution to the problems of mobility, flexibility and availability.

In proposed system, the server will store the IP address and details of the users, call logs. The client side will be on the mobile phones of users by which they will register with server and will able to make call other registered users.

III. WORKING OF THE SYSTEM

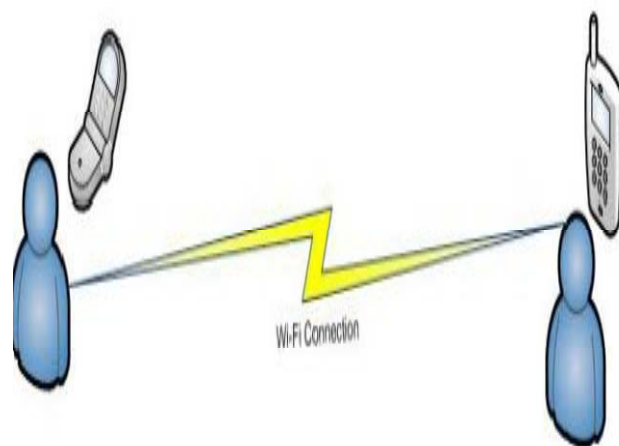


Figure.1-Peer to Peer Network For Wi-Fi.

The proposed system will work with Wi-Fi network and mobile phones having Wi-Fi. When mobile user S1 willing to call other registered mobile user S2, S1 will register to the server by with unique key and IP address. The calling request of S1 will be send to sever, sever with respond with IP address of user S2. Then S1 will try to establish the peer to peer connection with S2 with virtual connection between S1 and S2. If S2 accepts the calling request, mobile phones S1 and S2 will able to communicate to each other use VOIP. However, if caller or receiver are not covered by any WIFI network, a message will be popped up to user asking if he/she is willing to continue the call through GSM. Then the user would have the choice to carry on or cancel the call. Hashing algorithm would allow the mapping the IP addresses.

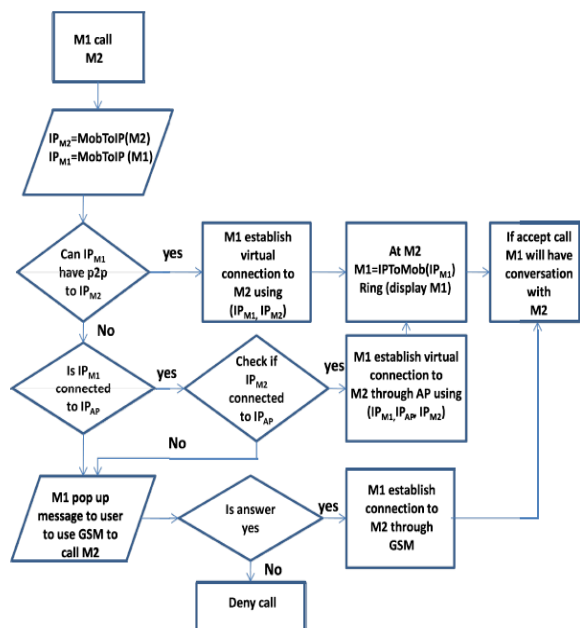


Figure.2 Using WiFi p2p and Peer to P and AP to establish call between mobile phones in addition to GSM.

In this figure, if mobile user (M1) is willing to make a call to other mobile user (M2), the invented algorithm will convert both mobile numbers to 2 unique IP numbers using IP6. Then M1 will try to establish a p2p call to M2 using the mapped IP to Mobile (IPM1, IPM2). If M2 is within the range of WIFI of M1, then a virtual connection will be established between M1 and M2, and then M2 will convert IPM1 to M1 and make the ring by showing the calling number coming from M1. If user of M2 accepts the call, M1 and M2 will be able to communicate to each other using voice over IP. However, if M2 is far from M1, then M1 will try to see if M2 is connected to close AP within the same range of M1. If both M1 and M2 are connected through AP, then M1 and M2 will establish a virtual connection using (IPM1, IPAP, IPM2). Then if user of M2 accepts the call, M1 and M2 will be able to communicate to each other using voice over IP. However, if M1 and M2 are not covered by any WIFI network, a message will be popped up to user of M1 asking if he/she is willing to continue the call through GSM or other wireless network. Then the user would have the choice to carry on or cancel the call. As it was described in the previous section, WIFI would require the mapping of mobile number to a unique IP address, and vice versa. The algorithm described in this paper would allow the mapping without the need for storing this mapping since it will convert mobile number to unique IP and unique IP to mobile number. This algorithm needs to be applied to all mobiles wishing to use this technique. It is very clear that the new technique using WIFI would allow users to make a voice call through mobile phone at no cost.

A. Advantages:

The system has following advantages:-

- It is used to make voice
- Communication is cost free
- It has call logs.

B. Drawbacks:

The System has following drawbacks:-

- It does not allow call wait and call conference.
- It only work in Wi-Fi network.
- Cost of devices is high.

IV. SYSTEM IMPLEMENTATION

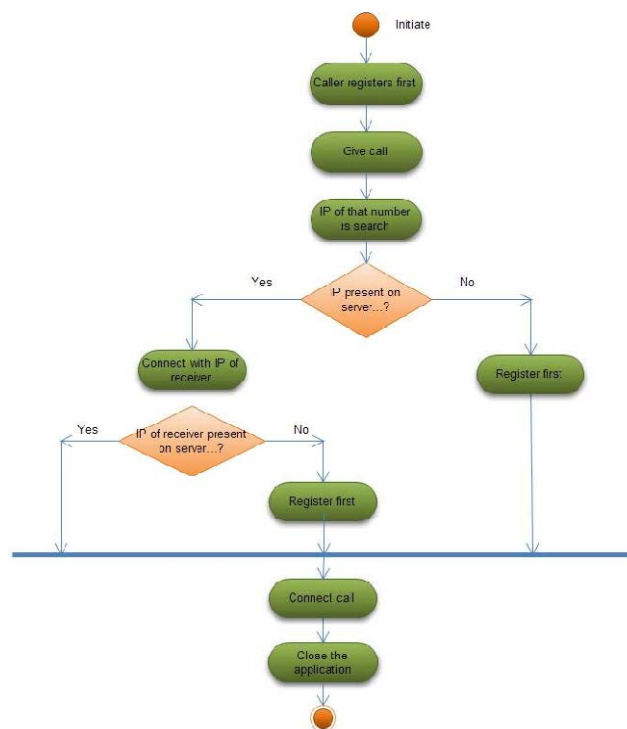


Figure.3- Activity Diagram

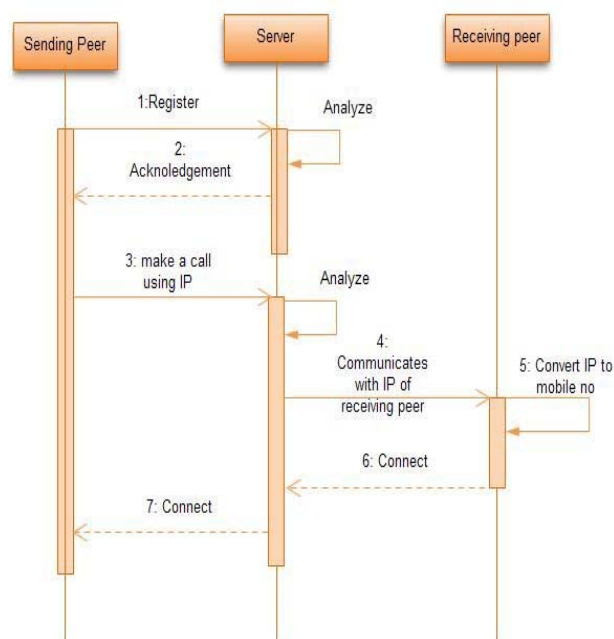


Figure.4-Sequence Diagram

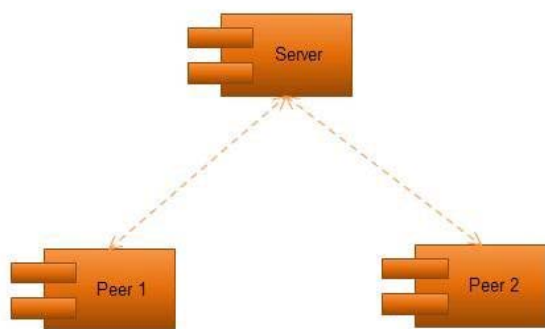


Figure.5- Component Diagram

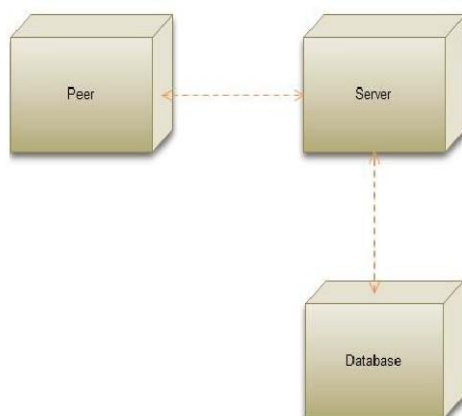


Figure.6-Deployment View

V. CONCLUSION

Voice over WIFI telephony is a challenging research topic. Voice over IP has made the communication cheaper. The work presented in this paper is a first step for developing a p2p voice to voice communication between 2 mobile users using the WIFI network. The work presented in this paper is a first step for developing a peer to peer voice communication between two mobile users in the same WiFi network using VOIP and SIP protocol. The system described in this paper play a major role in field of cost effective.

VI. REFERENCES

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