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Intranet Based Messaging Service on Android Smartphones and Tablets

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Abstract-- Instant messaging has been widely used with the power of internet; people can use an IM talk to family, friends and co-workers. In the company, colleagues can send and reply instant message in real time without face to face; meanwhile the work report can be shared during the instant chat session. People can speak to multiple people in the virtual conference, share ideas and get conclusions. People on a business trip can contact the co-works inside the company through IM as well. What's more, the staff can talk to customers or vendors online as well, in other word, now people can do business through the instant messenger direct rather than use the traditional method like make phone calls. The use of instant messaging nowadays is more than the calling function itself. The main objective of this paper is to introduce a methodology to provide instant Messaging Service over the intranet which is addressed to android based smartphone and tablet users connected over intranet via Wi-Fi. The proposed method is based on sending/receiving messages in intranet through intranet server via Wi-Fi connection without the need of taking any service from mobile service provider and without the use of internet connection.

General Terms-- Smartphones, Tablets, messaging, client-server

Keywords-- Instant Messaging, Intranet server, Wi-Fi, Android

I. Introduction

Instant messaging is a set of communication technologies used for text-based communication between two or more participants over the Internet. IM allows effective and efficient communication, allowing immediate receipt of acknowledgment or reply. In the company, colleagues can send and reply instant message in real time without face to face, meanwhile the work report can be shared during the instant chat session; the IM can make a virtual conference without get all the related people together in a physical meeting room. Using instant messages for interoffice communication is quicker than phone calls or emails. More than one person can chat at the same time. This is a huge benefit of using an instant messenger. Instead of relying on a conference call or copying others on an email message, everybody can join and have a discussion in real time. Better than email, if you truly want to communicate instantly you need to consider all your options. Sure, an email gets sent instantly but do you really know when if the other person receives it? With an instant message you can send a message and receive a reply within a matter of seconds. Email was the first killer application for the Internet but now instant messaging is coming to cellphones. Instant messaging (IM) is a form of communication over the Internet that offers quick transmission of text-based messages from sender to receiver. The instant messaging provides a means of sending messages to and from global system for communication, because of its ease of use and cost effectiveness it has become one of the popular service in the communication world.

II. Internet Based Instant Messaging Architecture

Internet- based instant messaging applications allow users to send/receive messages over the internet. It requires internet connection to transfer messages from one device to another device. There are various applications like BBM (Black Berry Messenger), Ping Chat, Imo etc. are messengers used for communication over the internet. BlackBerry Messenger (BBM) is a proprietary Internet-based instant messanger application included on BlackBerry devices that allows messaging between BlackBerry users. The service communicates over the phone's Internet connection using the mobile phone network. A wireless LAN ("Wi-Fi") network connected to the Internet may also be used to send messages, however, most service providers will not allow sign-in to BlackBerry Messenger without the purchase of a BlackBerry data plan. All above application are based on internet that provides connectivity which includes internet access charges and also need to take the service from mobile service provider as shown in figure 2.1. What if a user wants to communicate only inside the

organization? It means intranet based communication may not require the internet connectivity. However, to the best of our knowledge, there is still no instant messaging service that offers intranet based communication in such a way that does not requires internet connectivity as well as any messaging service from the mobile service providers.

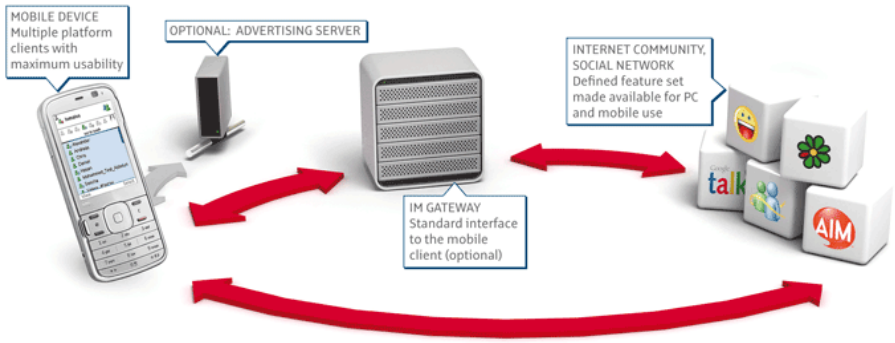

Figure2.1. Instant Messaging through Internet connectivity

III. Proposed Instant Messaging Architecture

. In this paper, we propose an intranet based communication system that allows android based smartphone and tablet users to send and receive messages over the intranet via Wi-Fi which requires neither any internet connectivity nor any messaging service from the mobile service providers as shown in figure 3.1. The motivation is to allow the smartphone and tablet users to communicate in the intranet without paying any internet data charges.

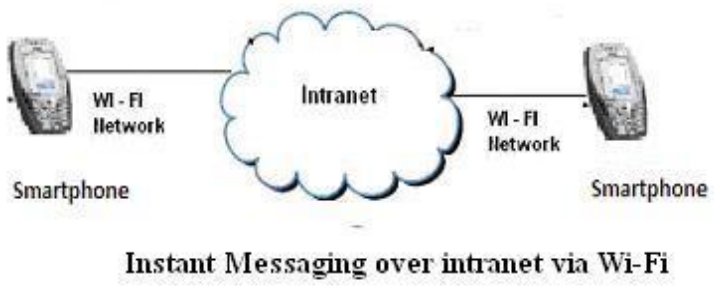

Figure3.1. Messaging through intranet server

As illustrated in figure3.1, smartphone users can communicate through the service which is developed and deployed on the intranet server. This service allows intranet users to communicate with each other via Wi-Fi network without using any internet connectivity. When a user wants to send a message to another user, a request goes to the intranet server and now it is the responsibility of the intranet server to deliver the message to the receiving party successfully.

Proposed architecture basically consists of client and server module which may include the following steps.

1. First of all server program runs on server machine.
2. Then client program runs on android based mobile device and send a request to connect with server.
3. Once the client is successfully connected, the server broadcast the list of all other active users to the client.
4. Client can view the list of all active users and can communicate with them.
5. Server creates a separate connection for each client, for that server creates a separate thread for each client connection. This thread will be responsible to send/receive data to/from the client.
6. When a client sends a message to another client, this message first goes to the server.
7. Then server sends this message to the appropriate receiver.
8. Once the receiver receives the message, can read it.
9. In the same way receiver can reply message to the sender.
10. This application basically uses the concept of socket programming and multithreading. There will be one thread for executing server program and a separate thread to handle each client connection.

This approach allows Message transfer between android based devices which is implemented and tested between Aakash tablets which uses android platform as shown in figure 3.2, 3.3 and 3.4

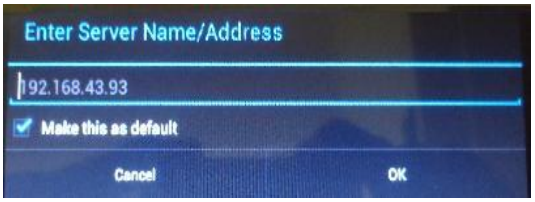

Figure 3.2 Client interface

Figure 3.2 represents that client specifies server address to connect with server.

Figure 3.3 Active users List at client side

Once the user is successfully connected with server, server broadcasts the list of all other connected user to each user as shown in figure 3.3

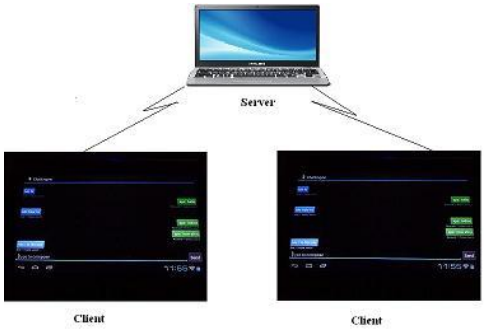

Figure 3.4 Message transfer between android devices (Aakash Tablets) via intranet server using Wi-Fi.

Figure 3.3 represents message passing between android devices using server program. Multiple android based devices can be connected to server at the same time and can communicate to each other through message transfer.

IV. Conclusion

This paper presents an idea to develop a service for the intranet users, this service will be deployed on the intranet server of any organization that allows smartphone and tablet users to send and receive messages within an organization at free of cost. 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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