

Instant Messaging Service on Android Smartphones and Personal Computers

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Abstract

Android is an operating system for smartphones, tablets and now will be used for Personal Computers also. It includes a touch screen user interface, widgets, camera, network data monitoring and all the other features that enable a cell phone to be called a smartphone. Basically, Multi-Purpose chat application allows users to send asynchronous messages, and enable sharing image files with other peers on the JXTA world using JXME. Instant messaging has become so ubiquitous, an entire generation of internet users is probably unaware there was ever life without it. 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.

In this paper, we shall be discussing the pros and cons of BlueStacks App Player which has been designed to enable Android applications to run on Windows PC. We will show or discuss this by using Bluestacks software which will provide an efficient and fast way to perform instant messaging which will further increase the performance. With IM, you can keep a list of people you interact with. You can IM with anyone on your **buddy list** or **contact list** as long as that person is online. You type messages to each other into a small window that shows up on both of your screens.

Keywords: Android, Instant Messaging, Intranet Server, client-server, peer to peer.

1. Introduction

Instant messaging is a set of communication technologies used for text-based communication between two or more participants over the internet. It 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; it can make a virtual conference without getting 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 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. Multi-user applications are commonly implemented using a centralized server. All participants share their views by exchanging the cryptographic digests of the chat room data set. A newly generated message causes a change of the digest at the message originator, which leads to retrieving the new data by all other participants in an efficient way and resynchronization of chat room views.

BlueStacks App Player lets you use all your favorite Android apps fast and full-screen on Windows PC and tablets. Bluestacks is a Silicon Valley-based software company that produces BlueStacks App Player and BlueStacks Cloud Connect. Both products are designed to enable Android applications to run on Windows PCs, Macintosh computers and Windows tablets. The company was founded in 2008 by Rosen Sharma, former CTO at McAfee and board member of Cloud.com. There are various versions associated with bluestacks that are 0.6, 0.7, 0.7.9, Bluestacks(beta-1) and the latest version is Bluestacks 0.7.15.909Beta.

2. Internet Based 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 (BlackBerry Messenger), Ping Chat, Imo etc. are messengers used for communication over the internet. BlackBerry Messenger (BBM) is a proprietary Internet-based instant messenger 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 Fig. 1. 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 require internet connectivity as well as any messaging service from the mobile service providers.

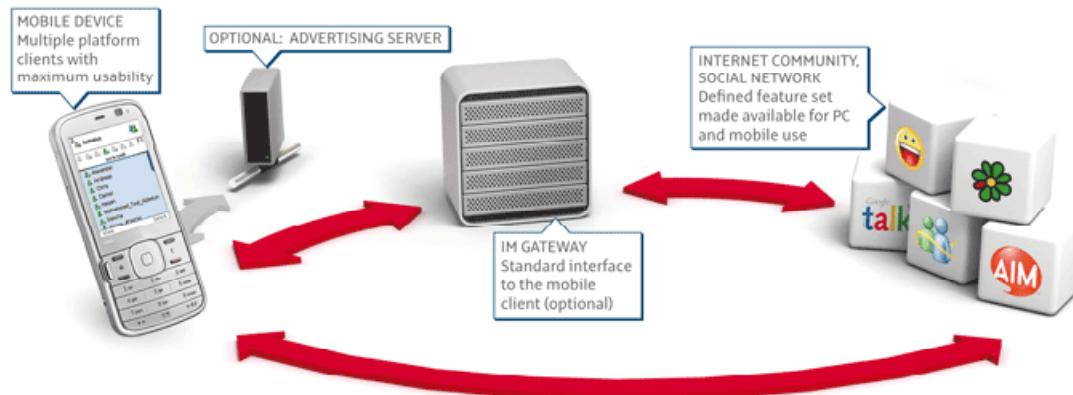


Fig. 1: Internet Based Architecture.

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. The motivation is to allow the smartphone and tablet users to communicate in the intranet without paying any internet data charges. 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.

- First of all server program runs on server machine.
- Then client program runs on android based mobile device and send a request to connect with server.
- Once the client is successfully connected, the server broadcast the list of all other active users to the client.
- Client can view the list of all active users and can communicate with them.

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. When a client sends a message to another client, this message first goes to the server. Then server sends this message to the appropriate receiver. Once the receiver receives the message, it can send. In the same way receiver can reply message to the sender. 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.

3. Multipurpose Chat Application

Multi-purpose chat application is based on JXME proxyless version ported to Peerdroid. It allows users to send a synchronous messages, and enable sharing image files with other peers on the JXTA world. The application is designed for Android mobile phone users. The application first connects to the JXTA world, and then discovery the peers already connected to the network and the resources available. The peer should also publish advertise the resources it has multipurpose chat application has a edit text field which allow a user to write the message content then press the send button to send message content out the unicast bi-directional pipe. The edit text is designed to handle a certain amount of characters. When number of characters exceeds the buffer size, an exception occurs. Along with message is the name of the sender. The name is included to show the receiver from whom the message is from and the time of arrival. The Incoming messages will be displayed in scrollable form and can be retrieved later as chat history. When a peer received a message can reply back. First should write the message then click send. A user will be able to download image from the remote web server and share with other users of the system. The downloaded image files could be saved in a local SD card as compressed files and retrieved later for the future uses. As it seems my mobile chat application has many features in common as features available on chat applications above but still all applications already on market use a common communication technology (client-server) to work while my application is based on P2P technology. The Bluetooth Chat uses Bluetooth to transfer data /instant messages between devices. The IMS SIP chat uses IMS SIP protocol for communication. In my case peer does not need a central server to discovery and talk to each other, they Just needs a rendezvous peer to enable discovery and make advertisement for resources They have Multi-purpose chat application downloads files directly from remote web Server then share with other peers online. When a peer has a content to share then must retrieve it from the secure digital card (sdcard) and send the compressed file to other users.

Multi-purpose chat receives messages with vibration in scrollable format also application is implemented to allow users to log out when they wish to do so, but peerdroid sample doesn't. Multi-purpose chat allows users to download files from

remote web server and save to local SD card. The last thing is different approach in graphical user interface approach in both cases.

3.1 Peer to Peer Architecture

Peer-to-peer networking is a network architecture which allows a group of nodes (peers) to connect with each other and share resources, and any node can operate as either a server or a client. Hence participants in a P2P network do not need a central server to communicate like the traditional client-server architecture which has existed for many years. Unlike client-server architecture, a P2P network is considered alive even if only one peer is active. The network is unavailable only when no peers are active. [3]. Nowadays the most popular P2P networks file sharing system such as Napster, Ares, Limewire, and Gnutella use decentralized topology, Instant Messaging (ICQ) and distributed computing. [4] Though peers all have equal status in the network, they do not all necessarily have equal physical capabilities. A P2P network might consist of peers with varying capabilities, from mobile devices to mainframes. A mobile peer might not be able to act as a server due to its intrinsic limitations[3].Peers in P2P network have equal chance in such a way that any peer can act as a server or a client at the same time.

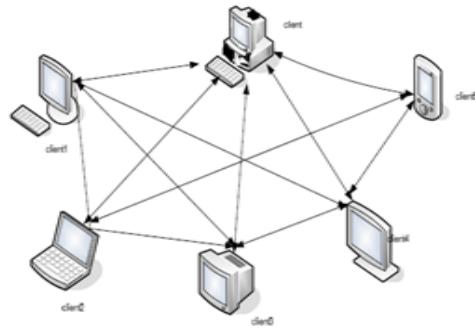


Fig. 2: Peer to peer architecture

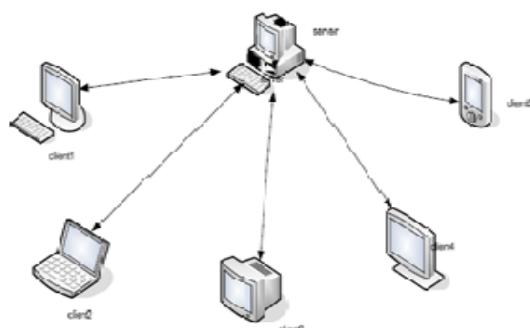


Fig. 3: Client Server Architecture.

3.2 Client Server Architecture

Client-server architecture is the oldest technology where a client machine contacts the server when the services are needed. In other words it is called centralized architecture where the whole network depends on a central point. If the central point fails, the entire system will collapse. With no server the network would make no sense. The procedure is as follows;

- Client sends a request for a service to a server.
- The server receives the request and processes the request, and then sends back the response to the client.
- The client receives the response.

Some of the servers existing on the Internet are web servers, mail servers, FTP and so on. The communication between the server and the client.

4. Proposed Work of Instant Messaging Via Bluestacks in Personal Computers

Bluestacks App Player is a quick, compact install[10] to your boot drive and works like an Android emulator on your Windows or Mac machine and run all of the Android apps that you've grown to love. A version is even available for Windows 8 Surface tablets. Load up to 750,000 Android apps like whatsapp, games, SMS text messaging, and media apps. The free product that lets you do this is BlueStacks App Player, and it claims more than 5 million downloads. BlueStacks App Player is a versatile program that bridges the gap between mobile and desktop by allowing users to run their favorite Android apps on their Windows or MacOS-X devices. An innovative "Cloud Connect" feature[8] allows you to push apps from your Android device to the app player. BlueStacks actually gives the Android crowd that cross device functionality already and puts the Android and Windows crowd a step ahead of[9] Apple. The apps themselves launch in a full-screen virtualized version of the Android operating system, so they run smoothly. The only obstacle I encountered is that since the apps are designed for a touch screen device, running them on a desktop computer with keyboard and mouse was less than ideal. Using a laptop with a multitouch pad was definitely an improvement. Overall, the integration with Windows via a simple desktop gadget proved to be clean and seamless[5].

4.1 Installation of Bluestack

Step 1: Browse to the [BlueStacks](#) Web page on a desktop computer or laptop and click on the download button for your operating system. Choose between XP, Vista and Windows 7; Windows 8; or Mac. Follow the usual steps for installing software, opening the .exe file. Follow the prompts to allow installation and then accept the terms of the license agreement by clicking on the Welcome to BlueStacks Continue button.

Step 2: Verify that App Store Access and App Notification check boxes are enabled on the following screen and then click Install. Allow the BlueStacks application to load. Search for an app that you use regularly on your smartphone or tablet. For example, I searched for Whatsapp (a multi-user chat application) for instant messaging with other users. Allow the in-Bluestacks search to complete and then click on the Install button adjacent to the search result.

Step 3: Choose an app store from the selection. I chose the Google native store, but there will be others listed, including Amazon.

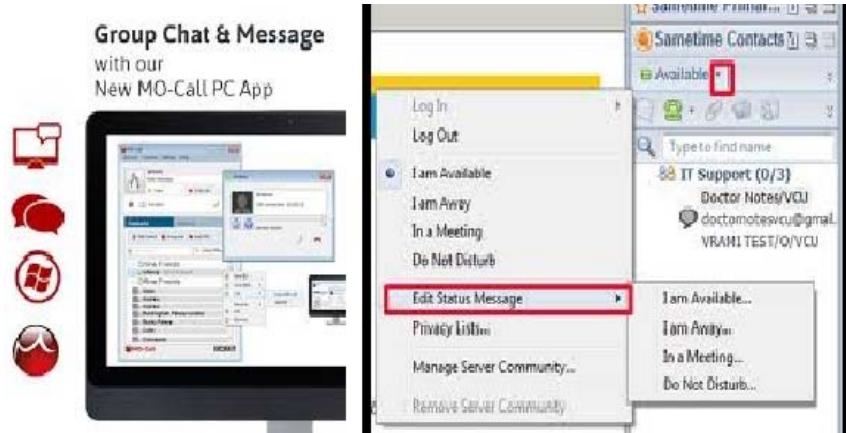


Fig. 4: Instant Messaging on Personal Computer.

Step 4: Add your account details if prompted. If you already have a Google account, add it here. Allow any sync to take place and then select Finish Setup. Click on any terms and conditions check boxes and then press Continue. Perform a second search for the app that you want to install. Allow the search to take place and then choose Accept and Download. Allow the app to install and then open the app. This search is from within the store that you may be familiar with, like Play.

Step 5: Perform Sync function on your tablet, laptop and Personal Computers by touching on "1-Click Sync." And selecting it. Perform a search for BlueStacks Cloud Connect from within the Play store and install it to your device.

5. 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 and increases the communication between various devices which gives compatibility with the Personal Computers with the help of Bluestacks which provides an interface between the user and the personal computers or tablets to provide an efficient communication by increasing its performance. It can be downloaded free of cost, so it is economical also.

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