RESEARCH ARTICLE   OPEN ACCESS

Fast remote data access for control of TCP/IP network using android Mobile device

Vaibhav Muddebihalkar *, R.M Gaudar**
(Department of Computer Engineering, MIT AOE Alandi Pune)
(Department of Computer Engineering, MIT AOE Alandi Pune)

ABSTRACT
In this paper we will creating architecture which will helps user to control LAN using the android mobile. As the most of the all application are now creating the cross platform version for the android, we will also make the control using the android platform. This is purely network administrative application which useful for the controlling network. The architecture will consist the nodes in the LAN and one server as well as one android phone which use to control the nodes. We use connectivity options as Wi-Fi or Internet; if connectivity internet is taken in grant then we will provide the static IP address to the server. For all this kind of application we should use JAVA technology and the android SDK in programming point of view. After testing application on LAN it works very well while file browsing and controlling the process.
Keywords - Android, Remote Control, Java, LAN control, Network Administration.

I. INTRODUCTION

In Now a day due to introduction of smart phone the synchronization between Desktop computer and smart phone is very easy. As this technology development leads to controls the devices which can be connected to the mobile phones. To this end this paper purposes and implements the architecture of system that can control the systems in the LAN as the remote control of mobile devices which can be possible by using Android protocol stack.

Due to new technological innovation of 3G networks and the development between the wireless networks and wired network it make easier and faster to performing task on mobile. Because of replacing new protocol with WAP as direct connection by socket it is easy access the network. [3]

In order to create the remote control for another system, the architecture should allows the software stack used in both system to analyze the current states of the system. While connecting the two devices the communication standards should be analyzed to created stable safe communication. [1]

Another important issue in creating the architecture for remote control system is the security of system. As the personal information should be exchange between device and mobile to perform the operation and transfer of files. [1]

II. RELATED WORK.

There are number of projects are carried out and number of the architecture are purposed for the remote control system. The remote control are mostly insist their work on the capturing the screen and events from the remote system. But this work is

mostly created for the one system to server system which controls the device.

As the some smart phone manufactures are create their application for the connecting the device for the synchronization of data from phone to desktop system. Samsung created tool as Kies which is used for synchronization of the music, video, photos and updates of firmware, but it will not help to control processes, application and services. [7]

Another aspect was considered for the remote visualization mechanisms which concentrate on achieving the remote display. The Virtual Networking Computing which is one of the most popular system that can be used for remote control of devices. This kind of application is to be implementing in the android software stack.

According to [4] purpose a control system based on VNC which can be implemented on the Symbian smart phone. According to [5] purpose system which can be implemented to android with help of VNC client. But this system can be implemented to only one to one system. According [2] we can send and execute commands on the remote system that can be sent through android mobile device in the JSON format. But they can implement without security of data which will transfer over network. To overcome this problem we used encryption technique for making secure data over network as it will command or files.

III. INTERACTIVE ARCHITECTURE

The figure 1 show the overall architecture of the system which include the android phone , one server machine and LAN which is also connected to

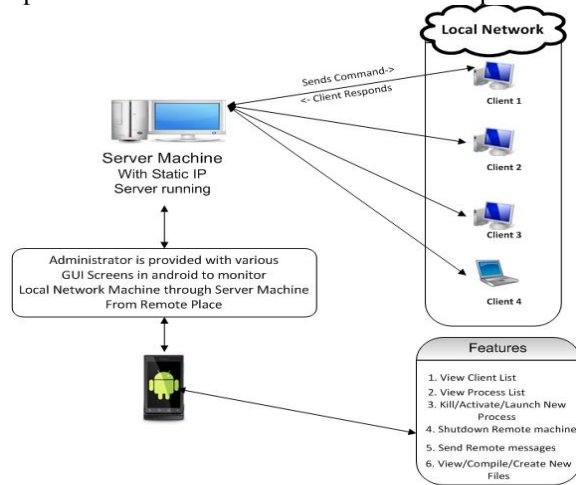the server machine.In this arechitectue we will having operation which will execute with android phone and

Figure 1 overall architecture.

also with the server machine. The whole architecture is divided on the 3 parts as client module, server module and android module. The process of the architecture will be started like first start the server application which will be installed on the machine which also in the same LAN. The server application start up collecting the list of client machine started and list out their name is the server application.

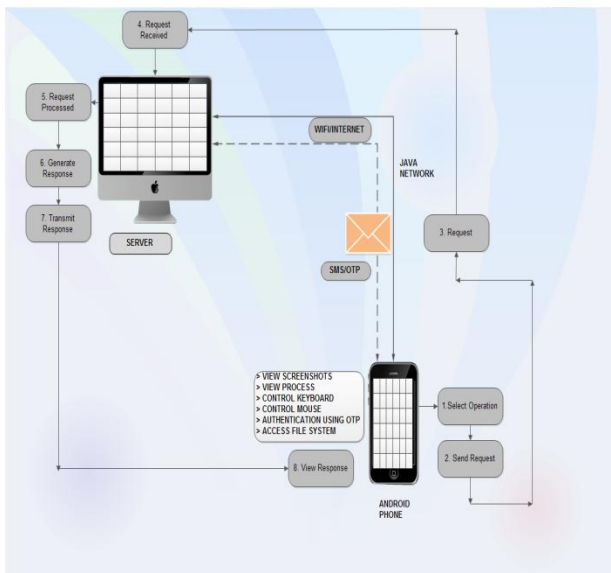Figure 2 working of architecture.

In second part we have to start the client Machine which will automatically start client application and enable the client application to take over the control by server. So by using the server application we can list out the process which are running on the client , we can fetch a particular data file and see the text contain of that file, we can create new process as new task and we can kill the process also. By selecting a particular client we can send the message to that

machine which will then displayed on the client application. The third part is to start the android app , if we are using the static IP address to the server machine then we have enter the ip address and we can access it using the internet also. If we are using not static IP address then we have to use the server machine which will capable of having Wi-Fi. So after starting the app on phone it will ask for IP address of server and password key. After successful log in it fetches the list of the client machine from server and shows on screen. The user will proceed in application by selecting a particular client and do the same operation which is available in server application.
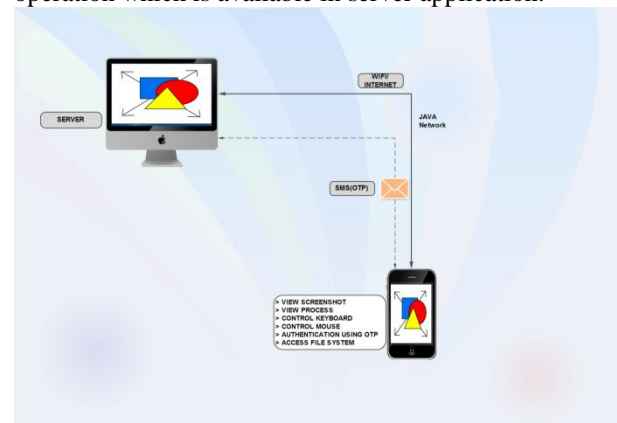

Figure 3.Connection between server and mobile.

The whole work is divided in 3 major modules as first one most important Server module, second is client module for machine in LAN, and last is Android application part, as these parts are described follows.

1. Server Module: - The server module is most important as it will make contact between client machine insides the LAN and android application. While testing the project, server application should be started first as it will collect the all information from the client apps. The server application GUI will be created with help of JAVA SWING application framework. To connect with every client we used the URL class of JAVA which will helps to connect to specific host and also it is helpful as we are providing the IP address of server to connect in the system. The URL also used to send and receive data from client to server vise versa. While sending the data we are used Object serialization to retrieve the data from the client. The servlet coding is main important part of server side application which used to retrieve data from database and also to write into database. JAVA Networking API used for the connection between the client and server. The server application can constantly check the new client make log in to LAN or logout from the LAN, if an new client make login then server send the request to collect the information of process and stored in the database.
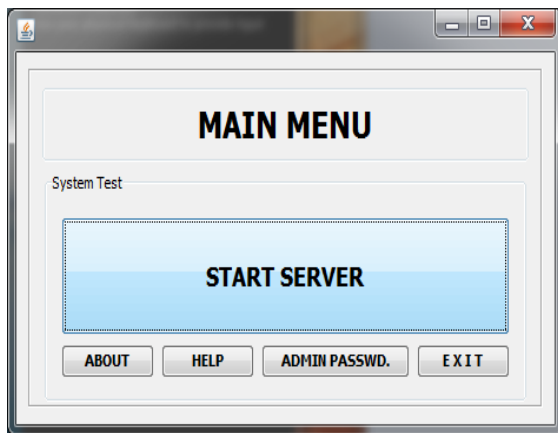
Figure4 Server Start up.

The server application should be having the different operation as it can listed out the process list of the client machine , create new process on client, kill a specific process , get list of the files from specified directory and read a specific file. We are restricting the readable ability for file types up to only text file due file size limitation. While requesting file or process for the client for first time, client will send all the data which is required for the next time. The server can send the message to the specific client or all selected clients at a time. The last operation which shutdown the specified client.
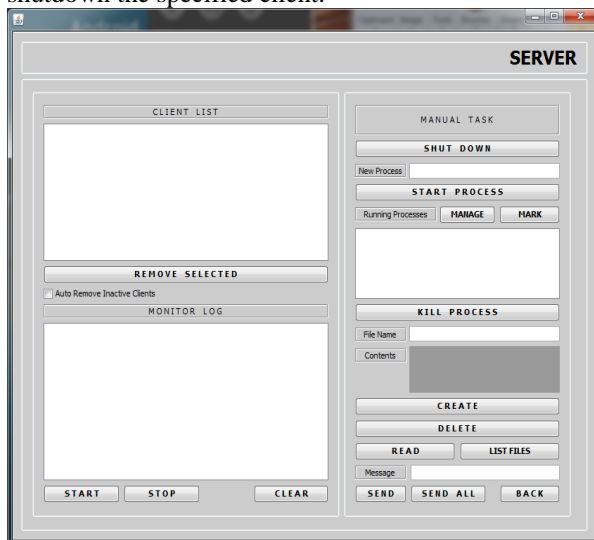

Figure 5 Server Control.

In the point of security we are adding the security algorithm on both commands and file transfer. also while starting the sever also we are using administrator password privilege to start the
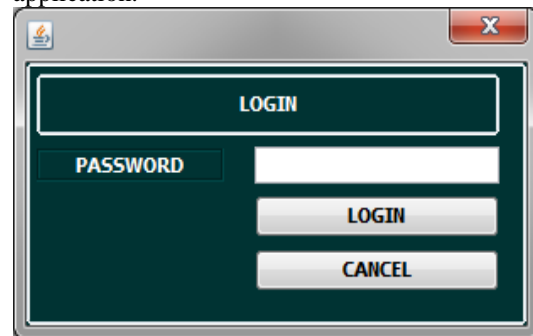
application.

Figure 6 Server login .

2. Client Module:-
The client module will be installed on the client machine which will connect in LAN. The client module will have GUI which helps the user to enable or disable the demon to be connected to server or not. The client demon tool has to enter the IP address of server to connect to server. The demon tool has blank areas which will display the all commands executed by server and also message sent by the client. The client module will use the process and process builder class of JAVA for creating, destroying process and list down the running process. To send and receive the data from client to server or vice versa we used Object Serialization which used to convert object into bytes which helps to transfer over the network.
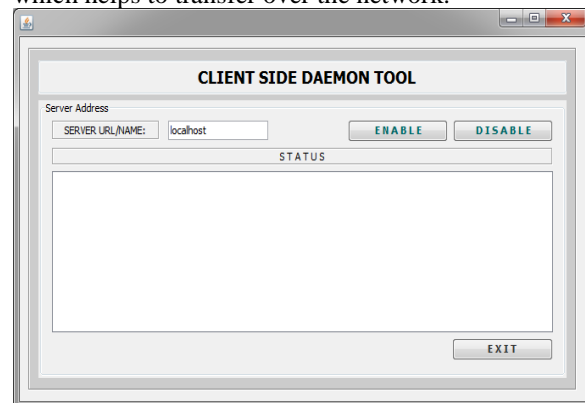

Figure 8 Client GUI.

3. Android Client:- The third module will be android application which has same functionality as server. The android client will directly connected with the server with Wi-Fi or with help of internet if sever will be provided with static IP address. Android app has login screen which helps user to IP address of server and password to make login in app. After making login user will see the list of client which are already connected to the server. User has to select one client and proceed to make operations. The operation includes the Managing Process of client, listing directories on specific location and reading, creating files. Sending Message to client and shutting down client machine. In the system we are restricted the

reading file over network as file stored on the client machine will have more size and system has to buffer that file in android phone as lot mobile phone have less size if RAM . User can read only text and image files.

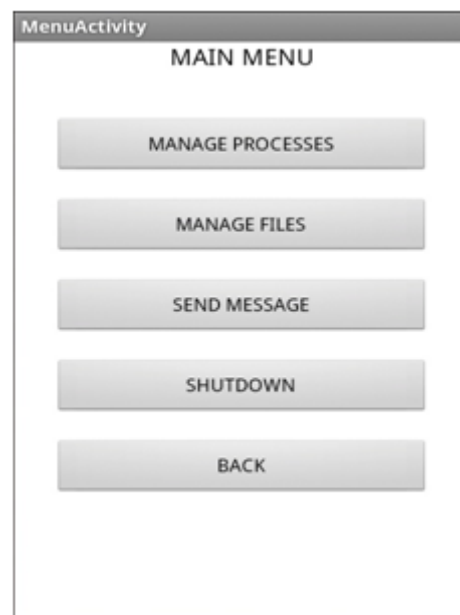Figure 9 Android Login

Figure 10 android Client list

Figure 11 Android Task control Menu.

III. IMPLEMENTATION

The flow control of the overall process is given in figure 12 as flow chart.
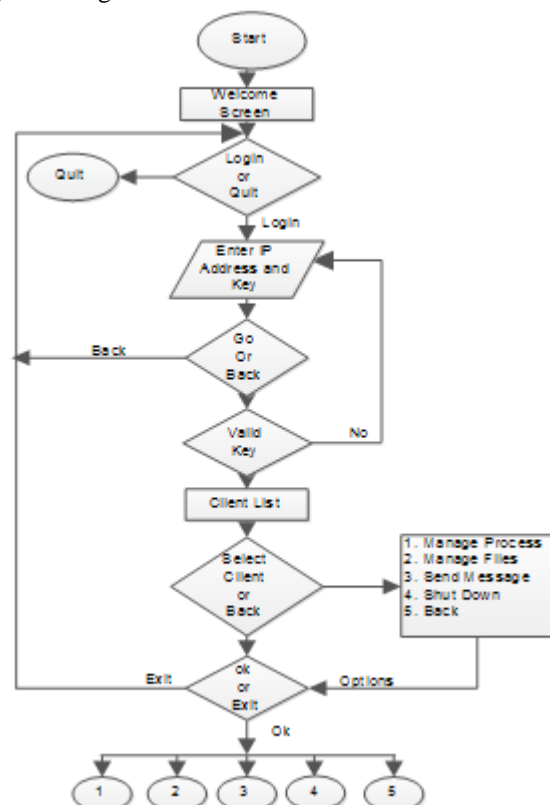

Figure 12 overall process.

The flow chart for the process handling given in figure 13 and for file handling in figure 14
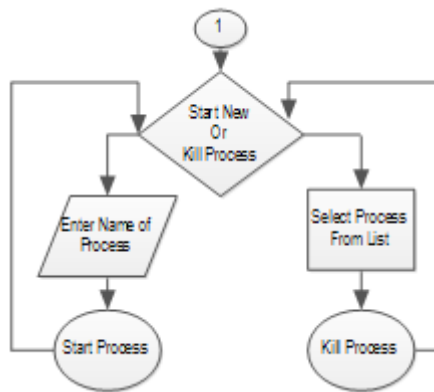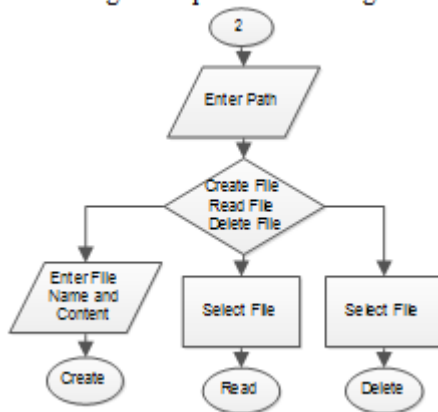
Figure 13 process handling

Figure 14 file handling.

IV. INPUT AND OUTPUT.
1 Client Module:-

Input	Output
User Put IP address of Server and Click on Enable	User Starts the Client Application

2 Server Modules:-

Input	Output
User Enter the Password	User Login to Server System
User Click on Start Server	Server get Started
User click on start	Server listening the Client who are online
User Select client	List of Process displayed
User select process and click on Kill Process	Specific Process killed on Client Machine
User Enter New Process name and click on Start Process	Specific Process Started on Client Machine
User Enter the path of Directory and Click on List files	Files from that directory will displayed
User Enter file name and Click on Create	New File created in Directory

Input	Output
User Enter File Name and Click on Read	File Contents displayed
User Enter Message and click on Send	Message displayed in client
User Select Different Users and Enter Message and Click on Send All	Message displayed on Specific clients

3 Android Modules:-

Input	Output
User Enter IP address of Server Machine and Key Click on Login	User logged in system and Client List displayed
User Click on Refresh Button	Client List refreshed
User Select on client and click in forward	User got four options of operations.
User click on Manage processes	Process list displayed
User Select process and click on Kill process	Process killed on client machine
User Enter process name and click on create process	New process will created on client machine
User click on Manage Files	Next Screen with File Fetching.
User Enter path of directory and click on Fetch	List of files in directory displayed
User Select File and Click on Read	File Content displayed
User Click on Create File	Creating file screen displayed
User Enter File name and content of files and click on create	New file created with contents.
User click on Send message	New Message sending screen get opened
User enter message and click on send	Messaged displayed on Client Machine
User Click on shutdown	Client Machine shutdown.

V. CONCLUSION
In this paper we have presented the architecture for Remote control of LAN, this architecture also include the socket programming , RMI for transferring object over network and storing information at remote database. The architecture will also socket programming for connection between mobile and system, architecture also allow to executes operating system commands for manipulating files. This application provides the network administrative tasks such as monitoring the LAN with only one application. The application test on Wi-Fi, if static IP address assigned to server then user can do the task from anywhere by using internet. The application tested on the android 2.3.3 but should be implemented

to android 4.2 and above. For future work taking screenshot of client machine facility should be added which helps user to see the current desktop of the client machine. The extended scope of this application will prove helpful and ease of use for the network administrator while using of their mobile devices.

REFERENCES

[1] Remote Control of Mobile Devices in Android Platform , Angel Gonzalez Villan, and Josep Jorba Esteve, , IEEE 2012

[2] PocketDroid - A PC Remote Control Chaitali Navasare, Deepa Nagdev and Jai Shree, IPCSIT vol. 37 (2012)

[3] Design and Application of Remote Control System Using Mobile Phone with JNI Interface Lingyan Bi1, Weining Wang1, Haobin Zhong1,Wenxuan Liu ,International Conference on Embedded Software and Systems Symposia (ICESS2008)

[4] VNC ARCHITECTURE BASED REMOTE DESKTOP ACCESS THROUGH ANDROID MOBILE PHONES Archana Jadhav , International Journal of Advanced Research in Computer and Communication Engineering Vol. 1, Issue 2, April 2012

[5] Adam, Skurski, Bartlomiej Swiercz, "VNC-based Remote Control for Symbian OS smartphones", MIXDES (Mixed Design of Integrated Circuits and Systems) 2009, June 25-27, 2009

[6] Samsung, "Kies Manual", http://www.samsung.com/es/support/mobileso ftwaremanual/mobilesoftwaremanual.do?page =MOBILE.SOFTWARE.MANUAL, Retrieved March 1st, 2011.