

ANDROID BASED NETWORK MONITOR

Aditya Bhosale ,Kalyani Thigale,Sayali Dodke,Tanmay Bargal

Department Of Computer Engineering
PESMCOE, University of Pune

Abstract — The paper depicts a method in which a remote LAN network can be controlled by a user from anywhere using a mobile based application (running on ANDROID operating system). The necessity of such a system arises when the user is unavailable at the actual site of the network. In such a case, to monitor and control the various activities of the network, a wireless and user friendly interface needs to be created through which the user can execute different commands to control the various activities of the network.

Keywords- Internet, Android, Remote Monitoring & Control, SHA, Password Security, Mobile phone.

I. INTRODUCTION

Due to rapid growth of businesses and new enterprises in recent times, it has become important out find new solutions to manage the various technical setups used in such organizations. Each organization has its own set of communication networks used for sharing information either with other parties or within the organizational limits. The existence of such a network demands for a well planned and efficient system to control and monitor the various activities of the network. Sometimes it becomes necessary to manage the network from remote places also.

Thus our project aims at developing a system wherein the user can execute various commands to control the activities of the network even when he is not present at the actual site of the network using a mobile based application (running on ANDROID O.S.). The user would enter the commands through the ANDROID application which would be sent to a remote server which would carry out the further functions. The administrator of the network would be authenticated using SHA (Secure Hash Algorithm) and then would gain the rights to monitor the network. The commands would be forwarded to the server through the internet.

II. SYSTEM IMPLEMENTATION

The network can be controlled in two ways. One way is to enter the commands through the mobile device while the other way is to control the network directly through the server which is a part of the network.

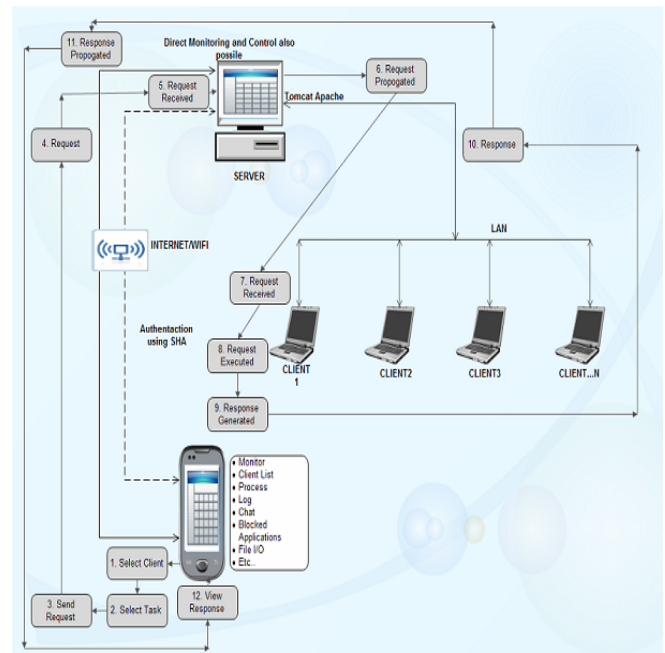


Fig 1: Block diagram of the system using Cell phone

A. MODULE WISE DETAILS:

This tool would be installed on the server machine where commands from the user would be received and accordingly various functions would be carried out. These commands would be received at the client machine to perform the required activity and provide necessary feedback to the server. The mobile device (Android application) can be used to monitor the server application by the user from a remote place.

So the complete system can be briefed up into three major parts:

1. Server:

It receives the requests or control commands from the user (administrator). These commands are then processed by the server for performing the desired functions on the network. It also communicates with all the other client destinations on the network and monitors the activities carried out by them.

2. Client:

A client is the primary unit of any network. A number of clients (controlled by the main Server) work in co-ordination to complete the task as assigned to it by the server. Every client is installed with a client Demon tool which continuously keeps track of all the processes running on the client and performs the activities as instructed by the server.

3. Mobile application (based on Android):

It is an application which is installed on the administrator's Android based mobile phone. The basic use of this application is to allow the user to control the activities of the network from any remote location. The user enters the commands through an Android based graphical user interface which are received by the server for further processing. This application can also be used to monitor the status of any client machine on the network.

B. SYSTEM ARCHITECTURE

Administrator sends his request through the client application on his mobile phone via the internet service provider to the server. Server then recognizes the client machine which administrator is supposed to monitor and extract data from locally cached data buffer where latest 15 sec data of every machine is updated or stored and sends this info to the administrator as response.

Administrator is provided with a GUI based application in J2ME to send command message instantly without the need to retype message every time. Server sends command to the clients like start process, shutdown process, kill process, create, delete, send task list, compile code. Through the GPRS service provider the communication is done with the ISP server which communicates with the server and the server communicates with the client. All clients are controlled and monitored by administrator via a series of messages.

The administrator controls the LAN through his mobile even he is at the remote place. The clients cannot send back or communicate to the administrator the communication is unidirectional it is not two way. Only the administrator can give command to the clients.

The mobile used can be any mobile which has an Android operating system in it. Also the administrator can check the network load on the LAN by typing only a command.

The administrator controls the LAN through his mobile even he is at the remote place. The clients cannot send back or communicate to the administrator the communication is unidirectional it is not two way[7]. Only the administrator can give command to the clients.

The software developed is a server based software application that provides ability to send and receive commands through the network and communicates through standard TCP/IP protocol. The software is capable of sending the notification to the network administrator on his mobile device and thereafter the corrective action can be taken by the network administrator by sending a notification in a prescribed format.

FEATURES CONTROLLED BY CELL PHONE

Overall View: Get the list of all the clients in the LAN on your cell phone. Check the current status of the clients by ping. As soon as any client goes offline its name is removed from the list.

Process List: Get the list of all the processes running on the remote machine.

Initiate Process: Start various processes on server or client machine.

Kill Process: Terminate the undesirable processes on the client machine.

Access files: You can read the drives, folders, files of any of the client machines / the server machine from cell.

Open File: A small text file residing in any of the client or the server machine can be opened in your cell phone.

Send messages: Send messages to clients, Server from cell.

Broadcast messages : Broadcast message over the entire network.

New File: Create a new document in the cell phone and save the same in either the server or client machine.

Shut Down: to shutdown the desired client machine.

C. TECHNOLOGIS TO BE USED

1) GPRS TECHNOLOGY:

GPRS technology has become the most efficient communication system for pushing the content on to the mobile devices. Usage of GPRS has grown tremendously over the past few years and many GPRS based applications are the most prevalent services in the wireless world today. GPRS are already being used to control remote devices such as precision air-conditioning systems, building automation systems, monitoring the temperature and switching on/off electronic devices. Therefore adding GPRS capabilities into your existing network and managing the desktops and servers is the obvious step in going forward [5].

2) ANDROID TECHNOLOGY

One of the most widely used mobile OS these days is ANDROID. Android[1] does a software bunch comprise not only operating system but also middleware and key applications. Android is a powerful Operating System supporting a large number of applications in Smart Phones. These applications make life more comfortable and advanced for the users. Hardware's that support Android is mainly based on ARM architecture platform. Some of the current features and specifications of android are:

1. Application framework- it enables reuse and replacement of components
2. Dalvik virtual machine- it is optimized for mobile device
3. Integrated browser- it is based on the open source web kit engine
4. Optimized graphics- it is peered by a custom 2D, 3D graphics library.
5. SQLite
6. media support
7. GSM technology
8. Bluetooth, EDGE, 3G, Wi-Fi, camera, GPS, compass etc [5].

III. TESTING AND ANALYSIS

A. Successful Authentication using SHA .

The mobile application has tested for successful communication with network. This test will includes automation and consistency of the connection and will be conducted in the following way :

- 1) Mobile application will ask for password and administrator is authenticated by unique identity key.
- 2) Once connection is established commands will be sent to the remote server.

B. Successful Implementation to monitor Client

- 1) A client in LAN network is monitored by administrator using his mobile phone.
- 2) A command on GUI based application is used to

“KILL” i.e. to delete a process from clients list .

- 3) Server further decodes the command into action event to kill respective process.
- 4) A task completion message is sent by the server to the administrator.
- 5) Similar commands such as create, start, read, shutdown, log activity, delete, send message , broadcast message, list files are successfully implemented by administrator using android mobile.

C. Factors to be considered to implement the system

- 1) The android client and the server should be connected using GPRS technology.
- 2) The only person who can communicate with the control module is the person who will be successfully authenticated.
- 3) The Android based phone should have version 2.3 and above to successfully run the application.

D. Advantages

- 1) High Throughput: It aims to develop an integrated software solution that allows a network administrator to remotely monitor his LAN network by his cell phone. As speed of internet is high, performance of project increases.
- 2) Scalability: We can connect any number of clients to the server as per our requirement.
- 3) Availability: - It is available any time anywhere irrespective of the presence of network administrator near the LAN.
- 4) Reliability:-We can perform all functions required to administrate the LAN remotely. It fails only when internet connection fails.
- 5) Transparency: Meet the Administrator's requirements and satisfaction, since perform all

Functions required administrating the LAN remotely.
Our System is easily understandable to user.

E. Limitations

- 1) The security model and algorithms of GPRS were developed in secrecy and were never published.
- 2) The system does not support duplex communication between client and server.

Applications can be found in almost any segment or environment such as:

Security, Agriculture, Automatic meter reading, CCTV, Vending machines, Water Treatment, Elevators and escalators, Pollution Control, Process Control, Personnel Monitoring, Cargo tracking, Access control.

V. CONCLUSION

This application will provide assistance to the system administrator in monitoring the tasks and also provide file transfer. For preparing this paper we did the detailed survey and comparative analysis of SMS based monitoring and email based monitoring. After analyzing the pros and cons of the two above systems we came on conclusion that android based monitoring is more efficient and reliable [5].

FURTHER STUDY

In its current version of the software, we have included basic functionalities to assist network administrators in their job. Network administration though, includes a wide range of responsibilities. In the future version to come, effort can be made to include as many functions of a network administration is possible.

The system can be further implemented to add the following modules:

- 1) Chatting application.
- 2) Two way communication between client and server.
- 3) By keeping the logs of activities of clients further analysis of clients can be done
- 4) Hardware and software inventories of the desktops.

ACKNOWLEDGMENT

We express great many thanks to our guide, teachers for their effort of supervising and leading us, to accomplish this fine work. To college and department staff, they were a great source of support and encouragement. To our friends and families, for their warm, kind encourages and love. To every person gave us something too light our pathway, we thank for believing in us.

REFERENCES

- [1]. Vieira Junior, A.C., Anido, M.L., 'The Architecture of a Novel Tool for Network Management Using GSM/GPRS Mobile Devices', IEEE, 2004
- [2]. Shashi Kumar N.R., R Selvarani, Pushpavathi T.P., 'GPRS Based Intranet Remote Administration GIRA',

JRI- Journal of Research & Industry Volume 1 Issue, 1 December 2008

[3]. Nitin D. Shelokar, Dr. S.A.Ladhake, 'Network Handle by mobile', International Journal of Computer Trends and Technology, May to June Issue 2011

[4]. Prof. Mamata Bhamare, Tejashree Malshikare, Renuka Salunke, Priyanka Waghmare, 'GSM Based LAN Monitoring and Controlling', International Journal of Modern Engineering Research (IJMER), Vol.2, Issue.2, Mar-Apr 2012

[5]. Prof. C. S. Nimodia, Prof. S. S. Asole, 'A survey on Network Monitoring and Administration using email and android phone', International Journal of Emerging Technology and Advanced Engineering, ISSN 2250-2459, ISO 9001:2008 Certified Journal, Volume 3, Issue 4, April 2013

[6] "Java Complete Reference" by Herbert Schildt

[7] Amol Poman, Mahesh Gundras, Prashant Pujari, GSM Based LAN Monitoring System, International Journal of Computer Science and Information Technologies, Vol. 3 (3), 2014, 3848-3851

Authors Profile

1.	First Aditya S. Bhosale Author (B.E. Computer)Student of P.E.S MCOE,Pune
2.	Second Kalyani V. Thigale Author (B.E. Computer)Student of P.E.S MCOE,Pune
3.	Third Sayali S. Dodke Author (B.E. Computer)Student of P.E.S MCOE,Pune
4.	Fourth Tanmay R. Bargal Author (B.E. Computer)Student of P.E.S MCOE,Pune