

Email Based LAN Monitoring System

Prof. Chaitanya Nimodia, Prof.Suresh Asole

Abstract In a concern, computers are grouped together to form a network. To manage and control the activities of the network while in office is an easy task. But, while you are outstation away from office, how do you go about with monitoring and controlling of network? Instead of depending on third party information, you can always have your email accounts serve the purpose. The interaction between the clients and the remote administrator is achieved via a central monitoring server. The main objective of this paper is to provide maximum details about the network to the administrator on their email account, when administrator is away from office / goes out station. In the era of internet services, email are widely used and it has penetrated every part of our life, but remote monitoring of networks through email is still a mirage, this paper is an effort to make this mirage a reality, and this is where the genesis of this of this paper lies.

Index Terms— GSM, LAN, modem, POP, SMS, SMTP, Tomcat

1 INTRODUCTION

The main objective of this paper is to provide maximum details about the network to the administrator on their email account, when administrator is away from office / goes out station.

Today, the world is rapidly changing the statement “We are in the world” to “World is in our hands”. The main aim of our paper is to control and monitor the Local Area Network (LAN) network from our email i.e. internet, from anywhere irrespective of distance. Say, you have a LAN setup at your office. Sitting at home you want to learn the LAN status.

In the era of internet services, email are widely used and it has penetrated every part of our life, but remote monitoring of networks through email is still a mirage, this paper is an effort to make this mirage a reality, and this is where the genesis of this application lies[5].

The application aims to develop various network utilities which are required to effectively monitor a LAN network. It aims to develop an integrated software solution that allows a network administrator to remotely monitor his LAN network by his email account.

In a concern, computers are grouped together to form a network. To manage and control the activities of the network while in office is an easy task. But, while you are outstation / away from office, how do you go about with monitoring and controlling of network? Instead of depending on third party information, you can always have your cell phones with internet i.e. email serve the purpose. Login anytime to the application and see who is busy with what in the office.

2 LITERATURE REVIEW

In the previous systems that is in GSM based LAN monitoring system the administrator can control and monitor his/her network using SMS.

Consider a LAN setup with the server machine connected to GSM service provider via a GSM modem. The interaction between the clients and the wireless media happens through this server. A small text file residing any of the client or server machine can be opened in your cell phone. In this system the

various function are net view, process view, activate process, kill process, read, open file, broadcast message, new file , shut down[4].

2.1 ARCHITECTURE

Administrator sends his request through SMS using his phone via GSM modem 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 GSM service provider the communication is done with the GSM modem which communicates with the server and the server communicates with the client. All clients are controlled and monitored by administrator via a series of SMS [4].

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. The mobile used can be any mobile having GSM facility in it. Also the administrator can check the network load on the LAN by typing only a command. In this also serial USB interface and set of commands is used for administrator to communicate to clients.

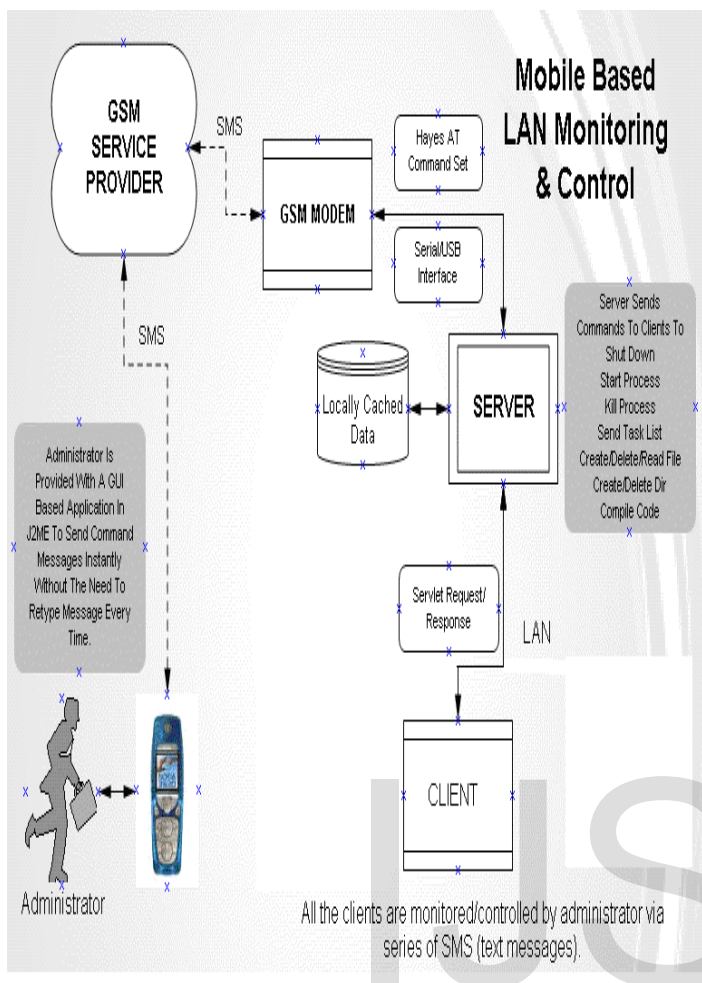


Fig. 1. Architecture diagram of gsm based LAN Monitoring system

2.2 BLOCK DIAGRAM

From the block diagram of proposed system we see that from mobile SMS is send to server through GSM modem. In SMS there is mobile number of the user, client name and operations to be perform on the client. That SMS is send to server then server recognises the client from all clients. By using SMS parser we recognise the SMS fully, by process builder class we perform that process on that client. Then after completion of that requested operation n the client, client sends the response to the server. Then server sends response to the administrator through GSM modem again SMS parsing is used to send SMS to administrator that specifies that operations on the client are performed.

There is no any database maintained there is only one temporary database or we can say file. Through database we get the data we needed. There is many clients connected to server all clients have name given to it.

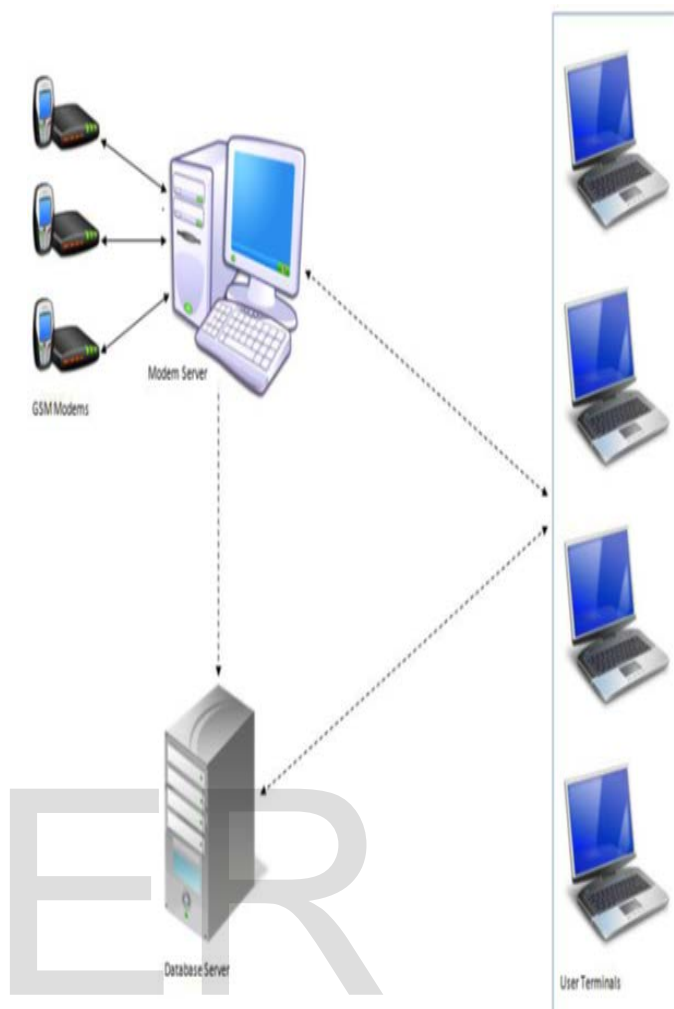


Fig 2. Block diagram of gsm based LAN Monitoring system

3. ARCHITECTURE

In the email based LAN monitoring system, the administrator is provided with internet to monitor and control the LAN remotely through server. In this paper there can be multiple administrators can monitor the networks. The Administrator sends email to the server via email service provider, where post office protocol 3 and simple mail transfer protocol are used. Through that server the series of emails monitors and controls the various activities of clients such as shut down, start process on a client, kill process on a client, fetch screen shot of any client, create files, read files, delete files, compile code, execute code

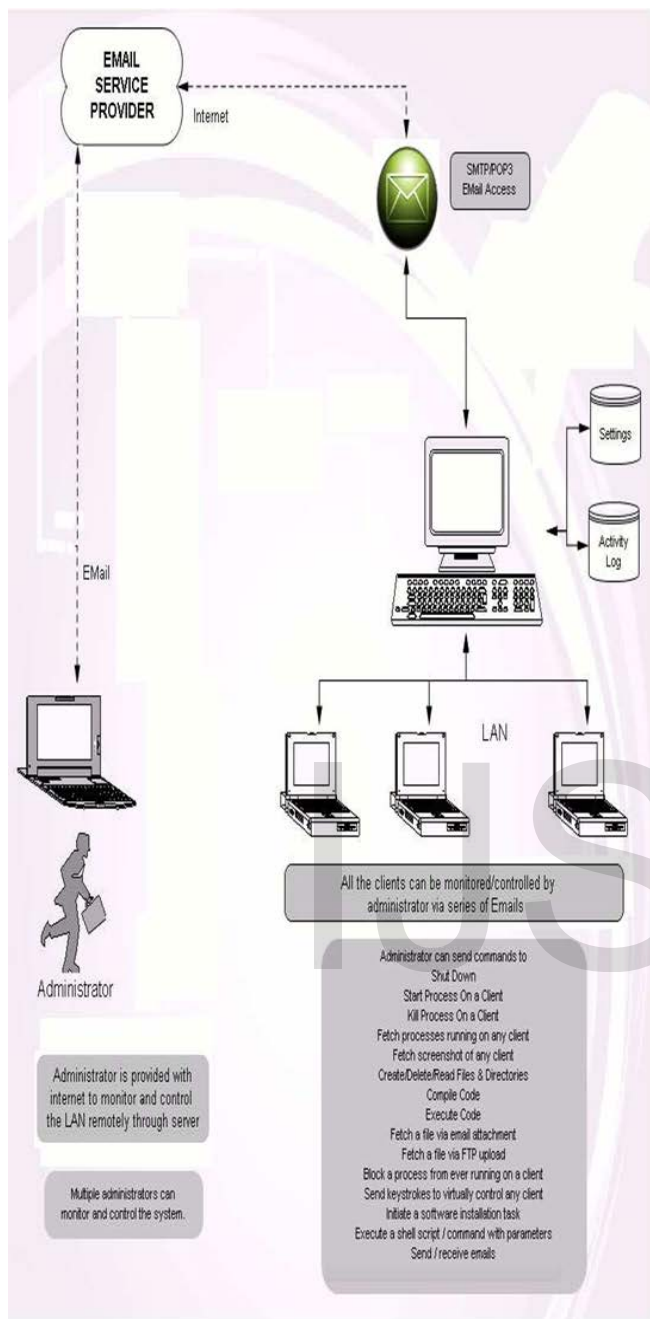


Fig 3. Architecture diagram of email based LAN Monitoring system

3.1 TOMCAT APACHE

Apache Tomcat (formerly under the Apache Jakarta Project; Tomcat is now a top level project) is a web container developed at the Apache Software Foundation. Tomcat implements the servlet and the JavaServer Pages (JSP) specifications from Sun Microsystems, providing an environment for Java code to run in cooperation with a web server. It adds tools for configuration and management but can also be configured by editing configuration files that are normally XML-formatted.

Tomcat includes its own HTTP server internally

3.2 ENVIRONMENT

Tomcat is a web server that supports servlets and JSPs. Tomcat comes with the Jasper compiler that compiles JSPs into servlets. The Tomcat servlet engine is often used in combination with an Apache webserver or other web servers. Tomcat can also function as an independent web server. Earlier in its development, the perception existed that standalone Tomcat was only suitable for development environments and other environments with minimal requirements for speed and transaction handling. However, that perception no longer exists; Tomcat is increasingly used as a standalone web server in high traffic, high-availability environments. Since its developers wrote Tomcat in Java, it runs on any operating system that has a JVM.

4. FEATURES CONTROLLED FROM EMAIL

- Net View:** Get in your email, the list of entire client's in LAN. Keep pinging every time to check the latest status of the PC's. Anytime, the PC goes off line, its name is removed from the list.
- Process List:** Get the list of all the processes running in the remote machine.
- Activate Process:** Activate different processes in either the server machine or any of the client's.
- Kill Process:** Kill the desired processes in either the server or clients.
- Read:** You can read the drives, folders, files of any of the client machines/ the server machine from email.
- Open File:** A small text file residing in any of the client or the server machine can be opened in your email.
- Broadcast messages:** Broadcast messages to clients, Server from email.
- New File:** Create a new document and save the same in either the server or client machine.
- Delete File:** Deletes a file activated on client side.
- Shut Down:** the client machines through email.
- Keystroke:** Sends keystroke to client machine to perform a particular operation.
- Mail File:** Mails a client file to administrator when requested.
- Screen Shots:** Gives screen shots of the desktop of the selected client machine.

5. COMMANDS USED FOR MONITORING LAN

- LISTALL :** Gives list of all connected clients.
- STARTP##CLIENTNAME##ProcessName :** To start process on particular client
- KILL##CLIENTNAME##ProcessName:** To start process on particular client.

4. LISTSS: To Get screen shot of all connected clients at that instant.
5. SD##CLIENTNAME: Shut down particular client.
6. DEL##CLIENTNAME##fname: To delete a file on particular client.
7. READ##CLIENTNAME##fname: To read a file on particular client.
8. ATTACH##Local Filename: To attach any file to the mail.
9. LIST##CLIENTNAME:To get a list of processes of particular clients.
10. MAILFILE##CLIENTNAME##fname: To get any file from particular client as attachment.
11. MAIL####to##sub##msg :- To Send Mail.
12. LINK##CLIENTNAME##URL:-To open a link on particular client.
13. OPEN##CLIENTNAME##FILE: To open a file on particular client.
14. PRINT##CLIENTNAME##File: To print a file on particular client.
15. KEYPRESS##CLIENTNAME##Keystroke: To Send a key-strokes on particular client.

5.1 Steps to Monitor And Control LAN via Mail

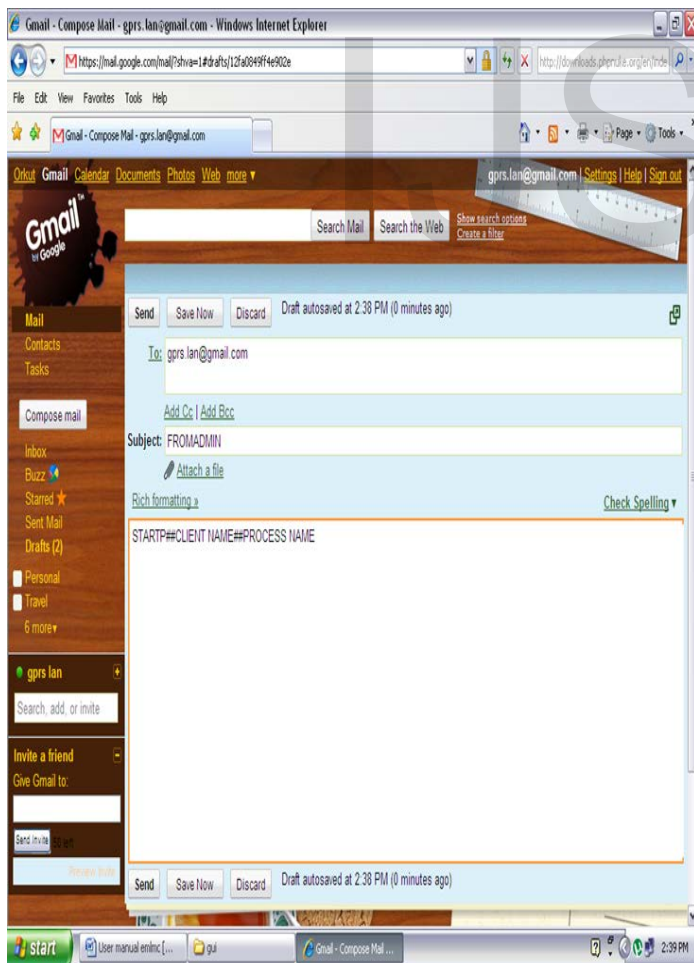


Fig 5. Screen shot of gmail while monitoring LAN

First open `www.gmail.com` and log in with your gmail id and password. Then click on to compose mail. In the To field type the server id at which you have to monitor and control the activities. In subject field enter FROMADMIN. In the message box type any command from above commands which activity you have to perform. Then click on the send button. At last you will get the reply whichever might be if done successfully or might not.

5.2 Working of server

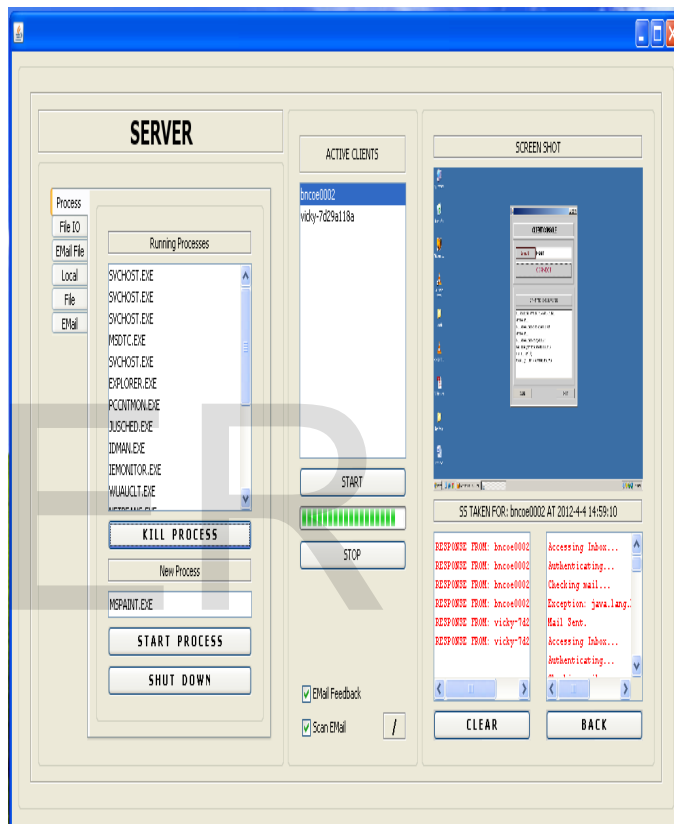


Fig 6. Screen shot of working of server

When we start the sever we get the results as shown in screen shot. At first we have to click on the “start” button the server system get started, then automatically we can view the list of connected clients on which the client console is running of the application. As we select any client, so on the left hand side under process tab we get the list of processes running on that particular client. If we want to kill a process, then select a process and click on the “kill process button”, so the process is killed. Similarly to start a new process types the name of process in the textfield and click on start process, so that process is started on that client. To shut down the client machine, click on the “shut down” tab. Also on the right hand side we are getting the desktop of the selected client. Similarly for read and delete the files, we have to click the “file IO” on the extreme left hand side. To email the file the “email file” tab is

provided. To get the email feedback and scan email, we have to mark the checkboxes given on the server machine.

6. BENEFITS AND APPLICATIONS

6.1 Benefits

1. **High performance:** It aims to develop an integrated software solution that allows a network administrator to remotely monitor his LAN network by his email account. As speed of internet is high, performance of application increases.
2. **Scalability:** We can connect any number of clients to the server as per our requirement.
3. **Availability:** - It is available any time any where even administrator is remotely moving.
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 to administrate the LAN remotely. Our System is easily understandable to user.
6. **Platform independent:** This application runs on any platform.

6.2 Applications

Application in **banking** system is where Administrator of the bank can remotely monitor and control their network. Application in **Business offices** where Administrator can prevent any unauthorized process perform by their clients. Application in **Colleges** where LAB in-charge can monitor student's activities and also solve their programming queries even he not Present in the LAB. Similarly in **Call centers** and **Industries** it is used.

7. FUTURE SCOPE

In the future the same system can be implemented on mobile cell phones in various operating systems such as ios, android, bada, Symbian, so that there is no need a computer or laptop for monitoring and controlling the LAN. If some application is implemented then such sytem can be used very efficiently and very easily if the application having good user interface.

8. CONCLUSION

So the network monitoring and control using email is successfully implemented with good efficiency and transparency. The system can be used on any operating system so the application is platform independent.

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