GSM based LAN Monitoring & Controlling

Aditya Vaidya[1], Prasad Raut[2], Prattap Naik[3], Amruta Pokhare[4]

Student, Department of Information Technology, Atharva College of Engineering, Mumbai, India[1]

Student, Department of Information Technology, Atharva College of Engineering, Mumbai, India[2]

Student, Department of Information Technology, Atharva College of Engineering, Mumbai, India[3]

Assistant Professor, Department of Information Technology, Atharva College of Engineering, Mumbai, India[4]

ABSTRACT: Now a decade's android phones are usedforthe various applications. We can use android phone for monitor and control the network. It is to control the network when network admin is in administrator office but it is so difficult to control the network system from outside the office. It is integrated software solution that allows a network admin to remotely monitor his LAN network by his Android cell phone with Graphical User Interface. The main purpose of this application is to provide all the important details of the network to the admin on their android phone with the help of GPRS or Wi-Fi. We are using data connectivity or use of wireless networks to connect the mobile phone to LAN server. And we also are using password encryption for authentication in phone.

KEYWORDS: Local Area Network, Cable, Router, Firewall, Android Application, Client Computer, Server Computer

I. INTRODUCTION

The main objective of our project is to provide maximum details about network system to the administrator on their mobile phone, when he/she is away from office / goes out station. Today, the world is rapidly changing the world of statement "We are live in the world" to "World is in our hands". The main aim of our project is to control and monitor the Local Area Network from our wireless handheld device i.e. android phone from anywhere irrespective of distance Say, you have a Local Area Network setup at your office. Sitting at home you want to learn the Local Area Network status. You can do so by storing this project in your cell phone and executing the same.The project aims to develop various network utilities which are required to effectively monitor a LAN network[1]. It aims to develop an integrated software solution that allows a network administrator to remotely monitor his LAN by his cell. In a concern, computers are grouped together to form a network to manage and control activities of network while in office is an easy task, but while you are outstation/away from office to monitor and controlling of network instead of depending on third party information you can always have your cell phone serve the purpose login anytime to application and see who is busy with what in the office. This project is to provide the maximum details about the network to the administrator on their mobile phone, when administrator when administrator is away from office/goes out station.

General objectives of the project are:
- To co-ordinate appliances and other devices through Short Message Service(SMS).
- To effectively receive and transmit data via SMS
- To eliminate the need of being physically present in any location for tasks involving the operation of appliances
  within a household/office.
- Minimize power and time wastage.
- Remotely Monitor the system with the help of android application
- Transfer files over the network
- Take Live Screenshot of Client's PC [8].

II. LITERATURE REVIEW

From literature survey our observation to various research papers that provide remote access to computers connected in LAN. Till now there are various systems for monitoring LAN cable from remote location. By referring research papers, we came to the following research categories E-mail based LAN Monitoring, GSM-SMS protocols using GSM module individually or in combination with world wide web services. Remote Monitoring using Wireless Sensor Networks (WSN), Bluetooth, WiFi, Zigbee Technologies. Applications have varied widely like Home Automation, Security Systems. Paper states that using electronic mail we can develop various network utilities which are required to effectively monitor our office LAN network [1]. It aims to develop an integrated software solution that allows a network administrator to remotely monitor his Local Area Network by his email account. But there are lots of disadvantages in system to monitor and control the network using electronic mail and Short Message Service. Cost of SMS matters a lot and there can be connection problem in email. "GSM Based Local Area Network Monitoring System", paper working a method which enables users to control their LAN network from remote location using a cell phone-based interface [4],[8]. To manage and monitor the control activities of network, user should send an authentication Short Message Service along with the required/desired function/action Short Message Service to his/her various server system via Global System for Mobile communication (GSM). Upon being properly authenticated, the android phone -based interface would relay the commands to server system that would perform the required function/action, and return a function completion Short Message Service that would be sent to the administrator(user's cell phone). Many Wireless Technologies like RF, Wi-Fi, Bluetooth and Zigbee wireless network have been developed and remote monitoring systems using these all the technologies are popular due to more flexible, low operating charges, etc [5]. Today Wireless Sensor Network are used into an increasing number of various type of office solutions, aimed at implementing Local AreaNetwork monitoring and control system in a great number of different application areas. Wireless monitoring using Bluetooth is also helps to monitor the Local Area Network. But there is problem of wireless Bluetooth range. Through this system the admin cannot monitor the Local Area Network from remote place. On referring research papers on these topics we come to know that most of the remote monitoring systems are based on the world wide web based system, hardware and embedded system and Global System for Mobile based system. In our project, we developed Android Based Local Area Network Monitoring system through which administrator can monitor [2], [3].

III. COMPONENTS

- **Client Computer:**The client or user on the network requestsfor information (kill, delete, create file) to access, requests for rights & privileges to access. There can be multiple Client PCs in LAN but only single Administrator.

- **Administrator:** The Administrator has total control over the LAN and monitors it. The Administrator can see following features net view, process view, add /remove process, Web Site restrictions, read, open, copy, delete any files from any user's system, broadcast messages to client, etc. Admin can also receive SMS via server. Administrator can also monitor system remotely through Android App.

- **Global System for Mobile Modem:**A GSM modem is aspecialized type of modem which accepts a Subscriber Identification Module card, and operates over a subscription to a mobile operator, just like a mobile phone. From the mobile operator perspective, a Global System for Mobile modem looks just like a mobile phone. When a Global System for Mobile modem is connected to a computer, this allows the computer to use the Global System for Mobile modem to communicate over the mobile network. While these GSM modems are most frequently used to provide mobile network as well as internet connectivity, many of them can also be used for sending and receiving Short Message Service and Multimedia Messaging Service messages A GSM modem can be a dedicated modem device with a serial, Universal Serial Bus or Bluetooth connection, or it can be a mobile phone that provides Global System for Mobile modem capabilities. For the purpose of this document, the term Global System for Mobile modem is used as a generic term to refer to any modem that supports one or more than one of the protocols in the GSM evolutionary family, including the 2.5G

technologies General Packet Radio Service and EDGE, as well as the 3G technologies WCDMA, UMTS, HSDPA and HSUP.

- **Server Computer:**The server manages all the functions ofthe system. Server communicates with the local database and client PC of retrieval of data, list of processes, active process and sends it to Administrator. Server also sends data to the Android App which is used to remotely monitor the LAN. Server also helps in transfer of data from one PC to another. Server is also used in sending SMS alerts to Administrator when he is not physically present to monitor the network.

- **Android Application:**The Android App is use for remotelymonitor the LAN. The app is installed on a smartphone which receives data from the server regarding system. The app has login system through which the administrator has to first login, upon confirmation identity he can monitor various things. App will have a list view of all processes (active/non-active), users which are currently logged into the system, manage files which have been copied or should be removed.

IV.   EXISTING SYSTEM

GSM Based System In this system it control and monitor network by sending messages from anywhere from outside the server room. In this system Admin sends his request through SMS using his cell phone via Global System for Mobile modem to the control monitoring server. Server then identifies the client machine and do the work according to the request and sends response back to the admin. Server sends command to the client computer. In this system the communication between server and admin is done through the GSM service provider.Clients are controlled by admin through the SMS.

From above block diagram admin sends Short Message Service to the server through Global System for Mobile modem. In Short Message Service there is number of mobile users, client name and operation to be performed is mentioned. The client computer identified by server computer after receiving the SMS by the server. The incoming/outgoing message is parsed and specified operation is performed on the identified client computer and the server computer response is given back in same manner.

But there are many drawbacks of Global System for Mobile based system. Cost of SMS is high, and in some situation failure of the GSM modem may happen in GSM based system. So this system is not convenient and useful for user. Another we can monitor the network via electronic mail. It provides more information about the network to the admin on their email account, when admin is out of his office. In the internet, email services are mostly used by internet users but remote location monitoring of networks through email is also not useful. There are many disadvantages of this system also. So we are implementing solution for this. We are developing android based Local Area Network monitoring system.
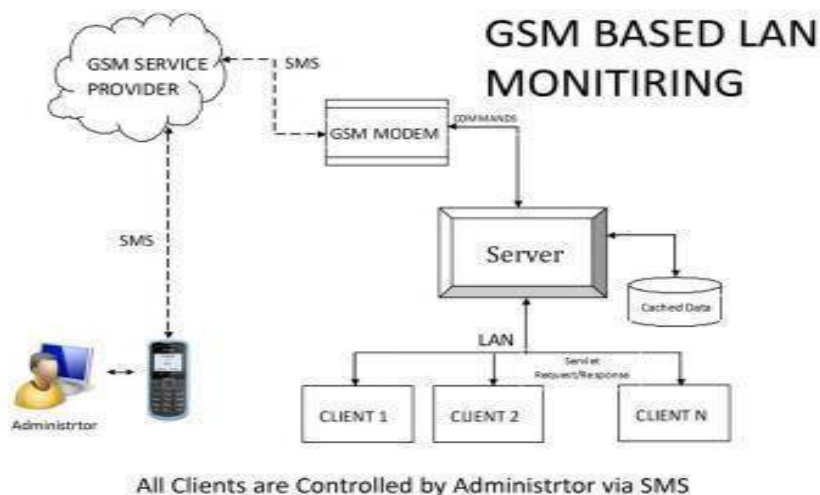
Fig. 1 GSM based LAN Monitoring

V. PROPOSED OF SYSTEM

Android Based System:

Objectives: We are going to propose a system in which theidea of network monitoring through the Android Phone is presented.

The main purpose of the system is to obtain maximum information about the network to administrator on the Android mobile Phone, whenever the administrator is not present in the server room. In this system we are going to use number of protocols to control the network.
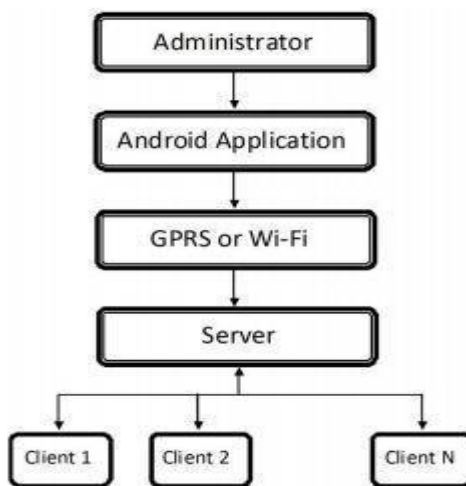

Fig 2 System Hierarchy

VI.   FEATURES

- Monitor the LAN system using Android App.
- Open applications such as web Browser, Notepad, Microsoft Word, etc using the Android App.
- And also shutdown the same applications from android app
- We can see the processes running on the Client PC on the android app.
- Broadcast messages from Server to Client or vice-a-versa
- Shut down a client PC with reason specified.
- Read and Send file/data txt files from specific folders of Client PC on Server PC.
- Screenshot of Client PC can be viewed in Server PC for live monitoring.
- If someone try to access server pc then on android app it will notify to app user(admin).
- Remotely operate LAN system using android app

VII.   METHODOLOGY

Our system consist of three modules

➢ **User/Client:** More than one user connect to LAN.
➢ **Administrator:** Admin Will view the user detail through mobile app.
➢ **Mobile Application:**Mobile app contain the details likewhich user are connected in network, net view and process view etc. Android market being the most widely used market for all types of applications; we have focused to development an application using android mobile phone. Thus concluding from the previously developed applications, we can say that, these applications did not provide the user remotely located to monitor his computer. Keeping this in mind, we decided to develop „Monitoring PCs using Android". All the computers which he need to keep an eye on. When some of the applications, which are taken in the black list, are opened, then the computers will send the alert notification to the android mobile phone user and the user can thus terminate this restricted application.

VIII.   RESULT

As we can from figure 3,Server Application can perform various on Client PC such as shutdown, File Transfer, Image Transfer, Connect with android app. Server and Client PC along with the Android app must be in same network. Multiple Clients can be connected at the same time. Server and Client will be connected by means of   socket programming they will be able to send requests to each other over the network.
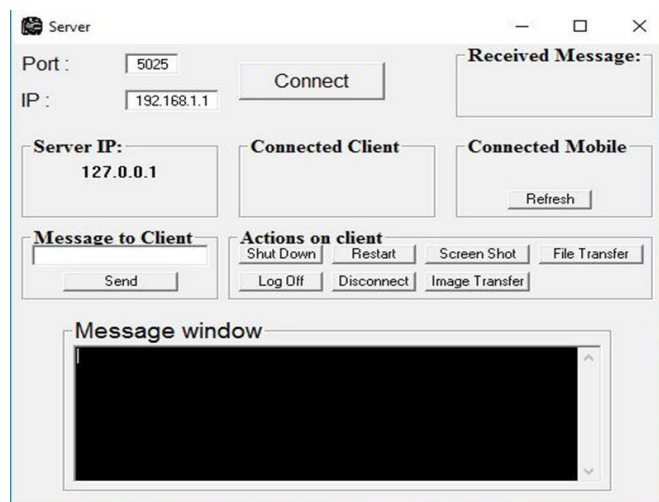
Fig 3 Server Application

As you can see from figure 4, the Client is connected to Server PC. It can send/receive messages from server. Client application also sends Screenshots of Client, opens up application after command is received from the android application. It gives notification in the form of pop-ups.
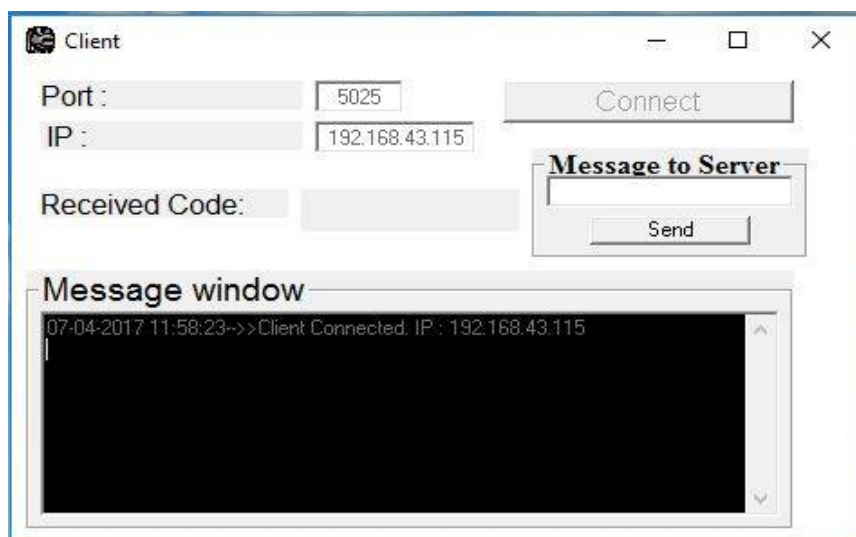

Fig 4 Client Application

Above figure is the main screen of Android Application, after the admin logs into the server by entering his login credentials. He will reach this screen, the android app is used for remote monitoring purpose. It carries out many functions such as open and close applications in the client, shutdown or log off the client, view running processes and kill them if necessary, send broadcast messages to client/server, etc. Android app is very useful is remote monitoring of the system and an integral part of this LAN Monitoring system.
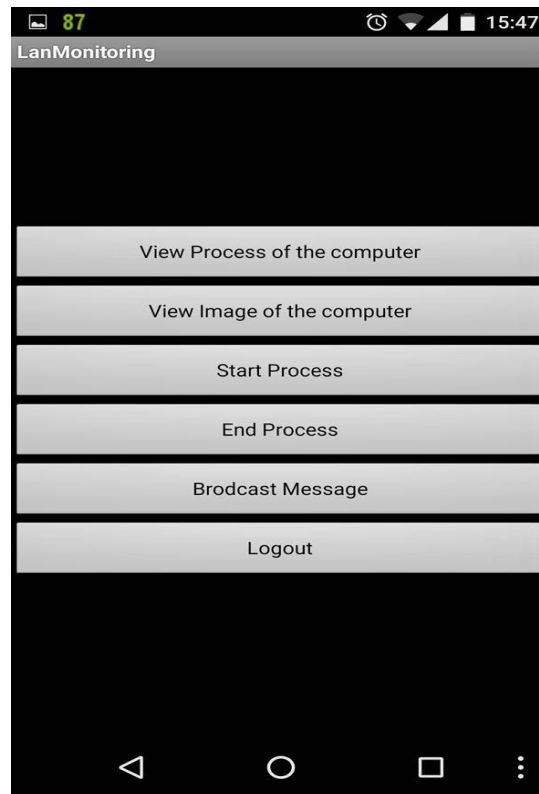
Fig 5 Android App Main Screen

IX.   CONCLUSION

The Global System for Mobile based system is not convenient for user. We have done the detailed survey of the SMS based system and from that information we developing Android based system for LAN monitoring. The Android based App monitoring system is very convenient and secure the whole system. The android application system gives detail information of the network whenever administrator is away from the server computer room just by stating application using Wireless network or GPRS.Admin can use the mobile app anytime for viewing the client and process performed by client. Admin can restart shutdown the current services which is use by client anytime from anywhere. Admin can able to see which user are connected in network or which is disconnected from network.

REFERENCES

[1]   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).
[2]   Ha-Young Ko, Jae-Hyeok Lee, Jong-Ok Kim, "Implementation and Evaluation of Fast Mobile VNC Systems", IEEE Transactions on Consumer Electronics, Vol. 58, No. 4, 2012.
[3]   Jaya Bharathi chintalapati, Srinivasa Rao T.Y.S, "Remote computer access through Android mobiles", IJCSI International Journal of Computer Science Issues, Vol. 9, Issue 5, No 3, September 2012.
[4]   Archana Jadhav, Vipul Oswal, SagarMadane, HarshalZope, Vishal Hatmode "VNC ARCHITECTURE BASED REMOTE DESKTOP ACCESS THROUGH ANDROID MOBILE PHONES", International Journal of Advanced Research in Computer and Communication Engineering, Vol. 1, Issue 2, April 2012.

[5]   Dr. Khanna SamratVivekanandOmprakash, "Concept of Remote controlling PC with Smartphone Inputs from remote place with internet", International Journal of Advanced Research in Computer Science and Software Engineering, Volume 2, Issue 1, January 2012.

[6]   Zhang Juan, "The design of intertranslation dictionary software of online access and desktop access", Electric Information and Control Engineering (ICEICE), 2011, International Conference, 15-17 April 2011.

[7]   MamataBhamare, TejashreeMalshikare, RenukaSalunke, Priyanka Waghmare , Department of computer engineering, MITpune-411038, India, "GSM Based LAN Monitoring and Controlling ", International Journal of Modern Engineering Research (IJMER).

[8]   KarishmaGidge, Kalyani Patil, Priyanka Wadnere, GES's R.H.Sapat College of Engineering, Management Studies and Research,Nashik, India, "Android Based LAN Monitoring System", International Journal for Research in Applied Science & Engineering Technology (IJRASET), Volume 3 Issue I, January 2015 ISSN: 2321-9653.

[9]   Amol Poman et al, / (IJCSIT), International Journal of Computer Science and Information   Technologies, Vol. 3 (3), 2012,3848-3851, "GSM Based LAN Monitoring System".