Wlan Monitoring Using Android Phone

Pooja Chaudhary[1] , Atul Bavoria[2]

[1](Department of Computer Engineering, Maharashtra Institute of Technology, Pune, India
[2](Department of Electronics and Telecommmunication, Maharashtra Institute of Technology, Pune, India

Abstract :- In this paper we explain how a wireless LAN network can be monitored using an android phone when the administrator is not present at the place of network but he/she is away from it. The features installed in the application which can be installed in an android phone are explained as well as the advantages and future scope. This paper demonstrates how the application is used and details about the architecture of the LAN with android phone are given. The problem of security and authorization is also addressed in the paper stating how the application created is accessible only to an authorized person. The current market scenario makes it necessary to handle the workload in the company/workplace located at different locations from one single location. This is possible by using the application developed and a detailed framework is given in this paper. We describe what features are in the scope of the software and what are not in the scope of the software developed. The software will control and monitor the LAN network from our wireless handheld device i.e. cell phone from anywhere irrespective of distance.

Keywords:- LAN, framework, android ,handheld device, scope

I.   INTRODUCTION

At our workplaces many computers are connected together and form a network. Normally this network is monitored through a central monitoring server. This is similar to the client-server architecture. In this application the central server is further connected to an android phone. The machines connected in the network are clients and the android phone becomes our administrator as the monitoring is going to be done through this android phone only. The whole system is WIFI enabled. Mobile phone needs to have its WIFI and internet enabled and perfectly working to be able to establish connection with the central server. There are various features given in the application developed. This project is loaded in the android phone and whenever the administrator wants to carry out any monitoring activity he needs to open the application in phone and use the features as per need. So whenever administrator wants to know what is happening at the workplace and wants to know the activities being carried on the machines, this application is ready to help him.

II.   PREVIOUS SYSTEMS IN USE

There has been a lot of technical research in monitoring of wireless networks. The changes in the market of information technology with the gradual enlargement of IT firms have made it even more competitive to develop solid user friendly softwares for network monitoring.

2.1 Network Monitoring In Schools/Colleges

In the college and school laboratories the monitoring is done through a central server. The machines are connected either wireless or wired way with the server. The administrator sits at the server and controls the activities. The basic information about the machines in the network like the machine names is displayed. We have normally observed that the administrators in colleges disable the USB ports on all machines. Whenever there is a new machine in the network the server gets informed and similarly when there is a USB device being connected. It does not notify when a new machine is entered or the personal gazettes like smart phones and laptops. A continuous monitoring has to be carried out making this a loophole from security and efficiency point of view.

2.2 GSM Based Monitoring For Lan

In this system it control and monitor the 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. You can do so by your cell phone and executing the same. In this system 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. Server sends command to the clients like start process, shutdown process, kill Process, create, delete, send task list, and 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.

2.3 Email Based LAN Monitoring

This email based LAN monitoring project 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

2.4 Monitoring Using Sniffers

The wireless monitoring system consists of a set of devices which we call sniffers, to observe traffic characteristics on the wireless medium. A wireless monitoring system can be set up and put into operation without any interference to existing infrastructure, e.g. end hosts and network routers. In fact wireless monitoring can be performed without any interaction with the existing network, and hence is completely independent of the operational network. More importantly, wireless monitoring exposes the characteristics on the wireless medium itself so that we can infer the PHY/MAC characteristics. Thus wireless monitoring allows us to examine physical layer header information including signal strength, noise level and traffic characteristics of the flowing data in the network.

III. BASIC ARCHITECTURE

The client side has a central client, one central server and one android phone. The clients are connected in WIFI creating a WLAN. Server is connected to the central client side. The connection establishment between android phone and server is done through basic socket programming. Operating environment of the software is Android. But client machine and server machine involved in the operation may have any windows based operating system (windows XP onwards).The application developed using java as java provides wide options for creating articulate GUIs.
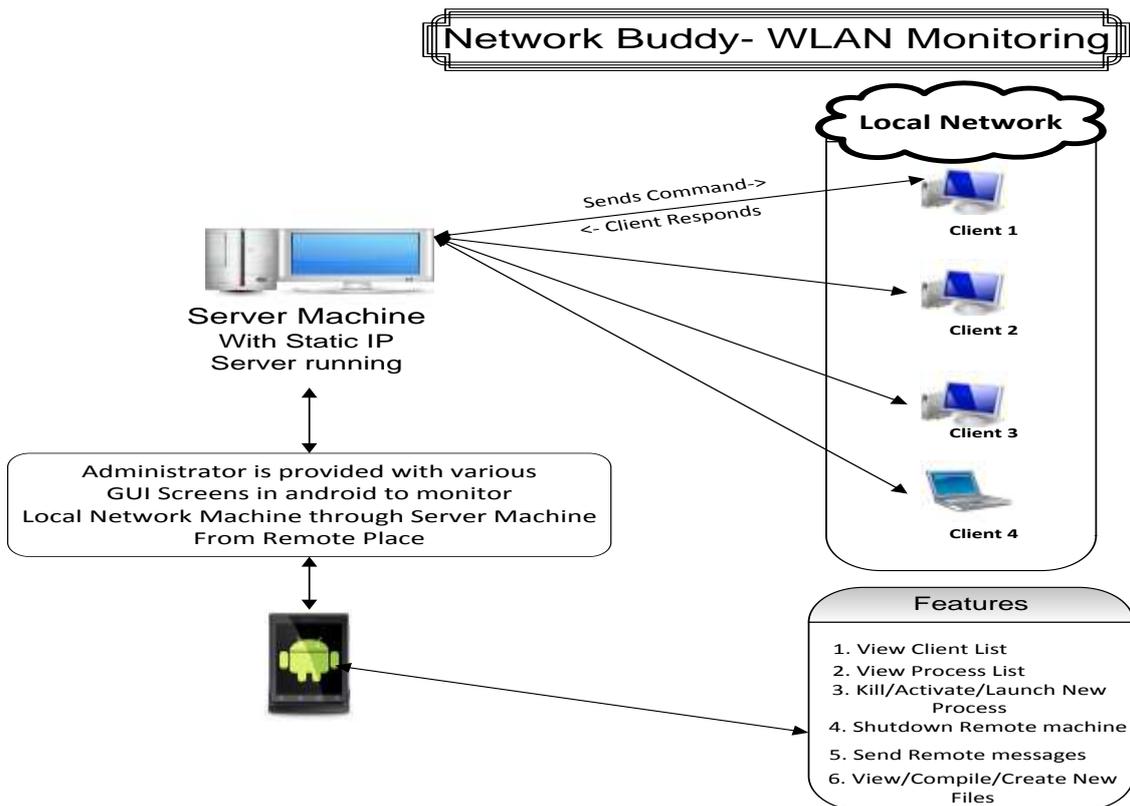

Fig 1. Architecture diagram of application system

3.1 User Classes and Characteristics

1. General users: These types of users can be client. They can communicate among themselves. They cannot modify or delete content of another computer.

2. Admin: Admin is the user who can monitor complete LAN system using cell phone.

3. Server program: this is the communication medium between the server and clients.

3.2   Processing of request from phone to network

The feature which is selected by the admin on phone, a HTTP request is sent from the phone in URL form and received by the server. This same HTTP request is read and encoded and sent further to the client. The client reads this URL message and extracts the command name and other required parameters. The command is executed on the particular machine to which the server sent the URL to.

The URL from phone contains the IP address of central server and its port number. In client-server connection we normally use 9977 for server port and 9988 as client port. The ports for clients are kept common i.e. 9988.

URL from phone to server is written in the java code which is at the server side. The client side will only have the client-server connection code.

url 1 : url from phone to server :

http:// <ip address of server><port no>

url 2 : from server to client :

http://<ip address of client>/<port no of client/?method=method_name&parameter value=val;
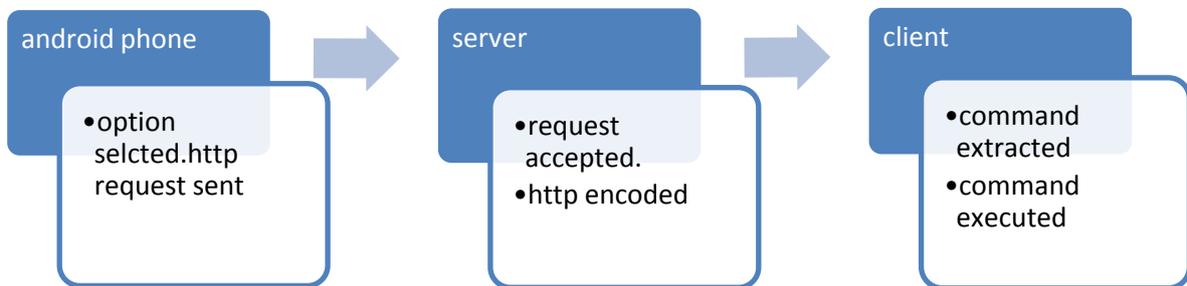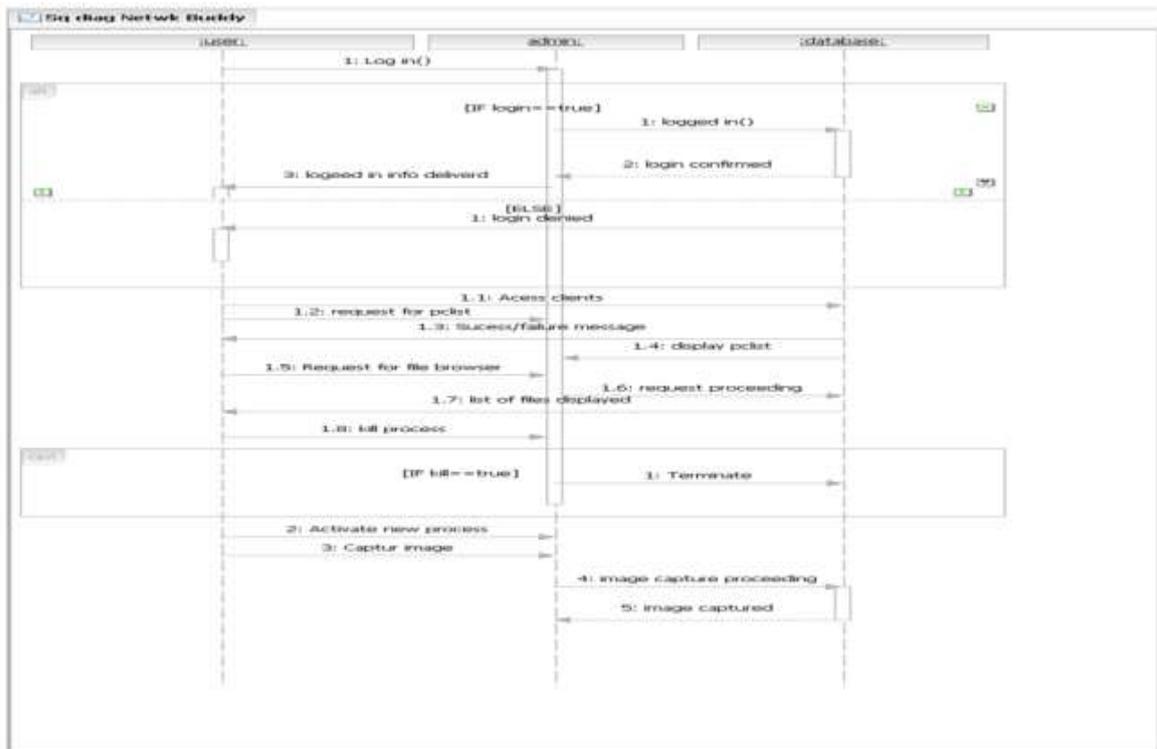

Fig 4. Flow of http request

Fig 4. Diagram showing sequence of activities after user launches the application

3.2 Features controlled from cell phone:
1. Net View: Get in your cell phone, 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 offline, its name is removed from the list.
2. Activate Process: Activate different processes in either the server machine or any of the client's.
3. Kill Process: Kill the desired processes in either the server or clients.
4. Read: You can read the drives, folders, files of any of the client machines/ the server machine from cell.
5. Open File: A small text file residing in any of the client or the server machine can be opened in your cell phone.
6. Compile & Execute: Compile and execute java programs. Get the acknowledgement in cell phone.
7. Chatting: You can establish half-duplex chat between clients, server and cell phone.
8. Broadcast messages: Broadcast messages to clients, Server from cell.
9. New File: Create a new document in the cell phone and save the same in either the server or client machine.
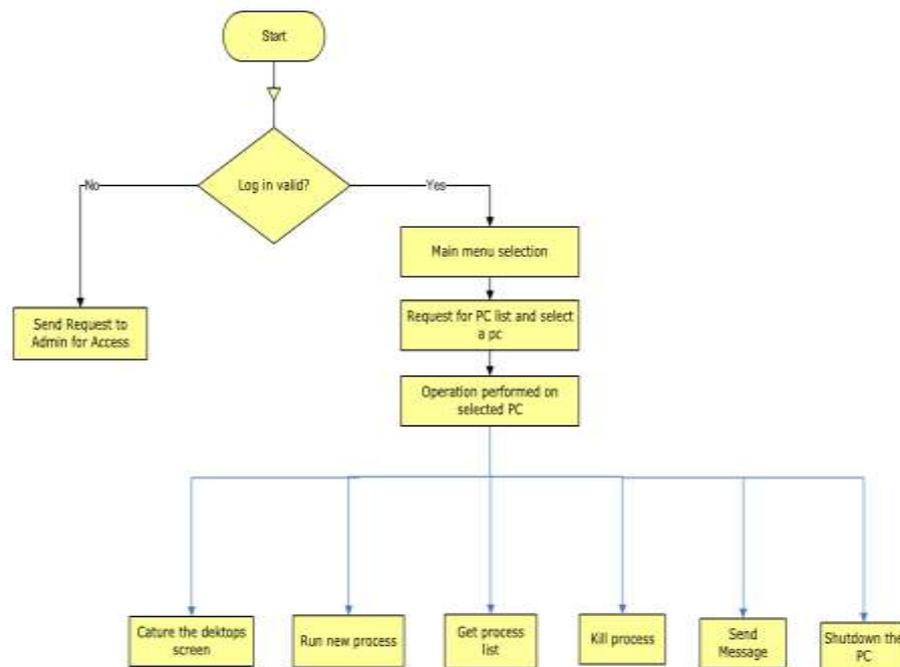10. Shut Down the client machines from mobile

Fig 3. Behavioral diagram of system.

IV.   SECURITY AND PROTECTION OF NETWORK

While WLANs were once used to offer network access to guests or employees in common areas, they are now often extended to reach every laptop and desktop in the enterprise. What's more, they also support both corporate and personal smart phones and tablets, as well as embedded Wi-Fi devices, such as copy machines and surveillance cameras. With all these users and clients, network managers must implement granular WLAN access control and network authorization. The application in the android phone protects and secures the network. Only the phone whose   no matches the database record already provided in the server side will be connected to the server. Thus a random phone cannot access the network. The use of   no provides a high level security as the   no for every phone is unique. No one can forge or fake this no. Also the database has only selected no provided by the authorized member of the company or workplace.

Other requirements that have been fulfilled such as:

1.   Extensibility: Allows new component   to the system, replaces the existing once. This is done without affecting that component those are in their original place.

2.   Compatibility: Compatibility is the measure with which user can extend the one type of application with another. The presentation tool is compatible with any type of Operating system. Because of this its usability is highly flexible.

V.   CONCLUSION

1.   The "Network Monitoring: WLAN monitoring" Software will be able to identify different clients connected in a network and will be able to monitor them through a mobile phone irrespective of distance. This will reduce the workload on network administrator to great extent. This project makes it possible to support even the personal smart phones, laptops in the vicinity of LAN in use.

2.   Concurrent working on the same process, but one on the machine and the other through the android cell phone we are using.

REFERENCES

[1].   I.F. Akyildiz, W. Su, Y. Sankarasubramaniam, and E. Cayirci,"Wireless Sensor Networks: A Survey," Computer Networks, vol. 38, no. 4, pp. 393-422, 2002.

[2].   T. Gao, D. Greenspan, M. Welesh, R.R. Juang, and A. Alm, "Vital Signs Monitoring and Patient Tracking over a Wireless Network,"Proc. IEEE 27th Ann. Int'l Conf. Eng. Medicine and Biology Soc. (EMBS), Sept. 2005.

[3].   http://archive.itmanagementnews.com/itmanagementnews5420060301TheTopFiveLANSecurityIssues Fac ing ITManagersToday.html.

[4].   Covkun and Ardam, A Remote Controller for Home and Office Appliances By Telephone, IEEE Transactions on Consumer Electronics, Vol. 44, No. 4, NOVEMBER 1998.

[5].   W.-T. Leung, D. L. Lee, and W.-C. Lee, "Personalized web search with location preferences," in Proc. of IEEE ICDE Conference, 2010.

[6].   Dinesh C. Verma, Simplifying Network Administration Using Policy-Based Management, IEEE Network, March/April 2002.

[7].   Allen Householder, Kevin Houle, and Chad Dougherty, Computer Attack Trends Challenges Internet security, IEEE Security and Privacy 2002

[8].   Evangelos P. Markatos, Dionisios N. Pnevmatikatos, Web-Conscious Storage Management for Web Proxies, IEEE/ACM TRANSACTIONS ON NETWORKING, VOL. 10, NO. 6, DECEMBER 2002.

[9].   Ninghui Li and John C. Mitchell, Securing Java RMI-based Distributed Applications, Proceedings of the 20th Annual Computer Security Applications Conference (ACSAC'04).

[10]. L. Deri, nCap: Wire-speed Packet Capture and Transmission, IEEE 2005.

[11]. 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 pp-387-389 ISSN: 2249-6645.