GSM Based LAN Monitoring and Controlling

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Abstract-The aim of this paper is to develop various network utilities which are essential to effectively monitor a LAN network. The aim of this paper is development of an integrated software solution that allows the network administrator to monitor his LAN by his android cell. In concern of LAN, computers are clustered together to create a network, to manage and control activities of network while you are in office is an easy task but when you are not present in office, then monitoring and controlling of network when you are not physically available in the office you have to depend on third party for the LAN status information, due to this reason you can always have your cell phone to serve the purpose of login to an application anytime and see who is busy with what task which are assigned to them in the office. This paper aims to provide the maximum details about the network to the administrator on their mobile phone, when administrator is not in the office but present within the WI-FI range.

Keywords: - LAN, GSM, SMS, Wi-Fi, J2SE, Remote Monitoring.

I. INTRODUCTION

Network monitoring is a term which refers to the use of a system which constantly monitors a computer network for slow or failing components and then it notifies the network administrator via messages or email in case of outages.

"GPRS based LAN monitoring and controlling" is developed to regulate and monitor the LAN network from our wireless handheld device, i.e. a smart phone using SMS at anyplace within the Wi-Fi range. You have a LAN setup at your agency or bureau. By sitting within office premises if you want to recognize the standing of LAN then you can do it by just checking work status on your android application. Wireless devices are broadly used and it has breakthrough impact in every part of our life. To monitor a network through Wi-Fi system is an illusion, the concept of monitoring and controlling LAN through Wi-Fi is an attempt to get this illusion into reality, and this is where the origin of LAN monitoring and controlling concept lays. LAN monitoring using GPRS technology can be employed in administrative bureau, shopping mall and at college and university level.

The main objective of GPRS based LAN monitoring and controlling is to provide maximum details about the network to the administrator on their smart phone, when the administrator is not in office but within the Wi-Fi premises.

II. PROBLEM DEFINITION

LAN monitoring and controlling using GSM technology can be used in offices, malls and at college or university level. The purpose of this paper is to provide maximum details about the activities to the administrator on their android mobile phone application, when administrator is not present in the office but is present within range of Wi-Fi.

III. GSM IMPLEMENTATION PLAN

GSM LAN monitoring and controlling using mobile phone is a tool which is used to monitor and control a LAN through a mobile device by the administrator.
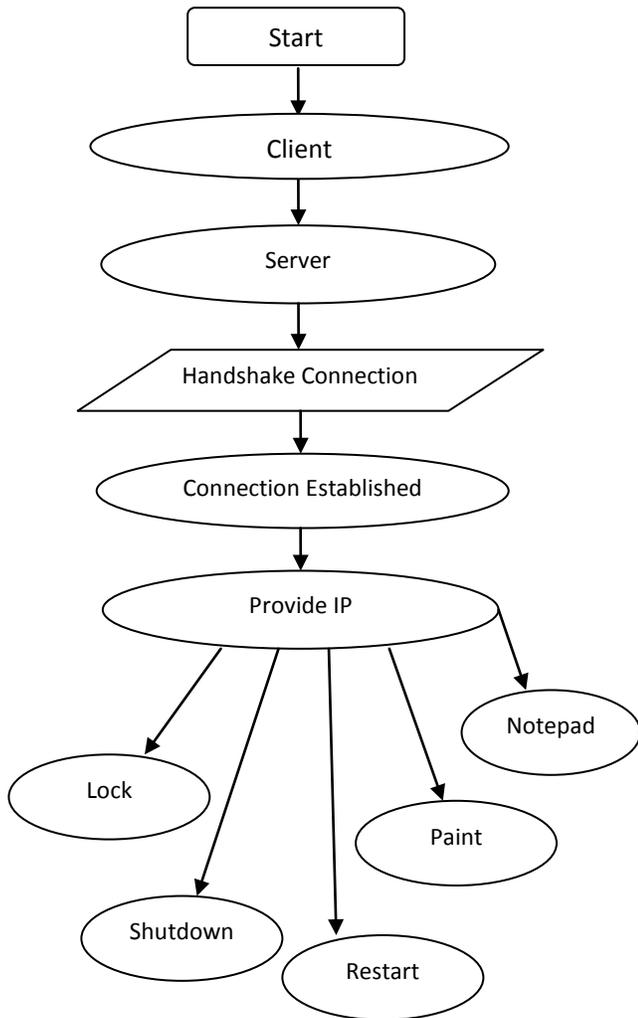
This tool is installed on the node which consists of two independent parts. First part of this tool is the server application whose purpose is to work as major process on the machine and offer the services to administrator for monitoring the LAN. The second part of this tool is the client application which serves as background process on the machine and controls all the activities of the client and gives feedback to the server.

The android application can control through registered mobile phone. Using the registered mobile phone the administrator can perform following actions –

1. Shutdown
2. Notepad
3. Paint
4. Restart
5. Lock process

The client application provides us the list of processes running on the machine and sends feedback to the server application for monitoring purpose.

IV.   FLOWCHART

```
                 Start

                 Client

                 Server

          Handshake Connection

          Connection Established

                Provide IP

                                Notepad

    Lock

                            Paint

          Shutdown

                    Restart
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V.   FEATURES CONTROLLED BY SYSTEM

1. Net View:
We will get the list of entire clients connected to LAN in our cell phone. We can check the latest status of the PC's by pinging every time.

2. Process View:
The list of all the running processes will be displayed on remote machine.

3. Activate Process:
Activate various processes in the server machine or any one of the client's machines.

4. Lock:
We can lock the client's machine if the client is performing any unrestricted work.

5. Pop-up Messages:
We can pop-up a message to client from cell.

6. Shut Down:
Shut down the client machine using mobile.

7. Restart:
The client machine will restart at any time using Mobile phone.

VI.   PROPOSED SYSTEM'S ARCHITECTURE

Administrator establishes the handshake connection between the client and android application which resides in admin's phone. Administrator establishes connection with the client machine to control the activities performed by client machine. Administrator asks the client machine for the IP address which is provided by the wireless network in which both are connected.

The android application is a way of communication between the client and the administrator through his mobile phone. The client machine is having its own IP address which is provided by WIFI network in which both client and admin are connected, and then the IP address will be given to the android application. After getting an IP address the connection is established between them, so the admin can control all the processes in the client machine.
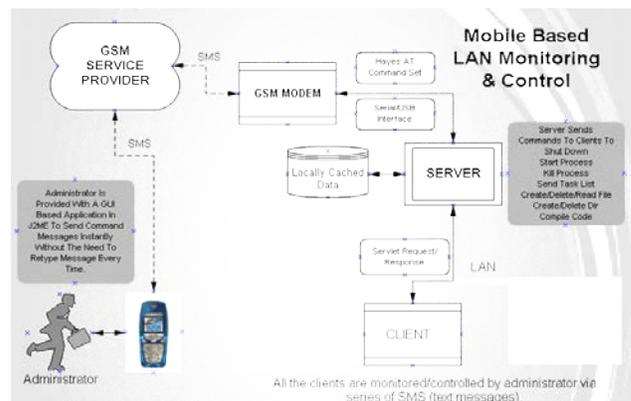

Fig.1 Architecture of mobile phone (GSM) Based LAN monitoring and controlling. Image source: IEEE paper

Administrator is provided with a GUI based   application in J2ME to send command message instantly which will be displayed on their screen as pop-up message. Admin sends command to the clients like activate process (e.g. Notepad, paint, calculator), shutdown process, lock process, restart process. The administrator controls the LAN through his

mobile phone even he is at the remote place within the WIFI range. As the communication is one way, the client cannot interact or communicate with the administrator. The mobile used can be any android mobile phone having WIFI facility in it.

VII. TECHNOLOGY USED IN PROPOSED SYSTEM

The technologies which are used in GSM Based LAN monitoring system are:

1. Servlet:
In this system Servlet is use for communication purpose.

2. Net Beans:
Net beans are use for designing this system for better programming.

3. Process Builder:
For creating operating system processes this class is used.

4. Abstract Window Toolkit:
In this system the purpose of windowing graphics and user interface creation in this type of   java's toolkit is used.

5. J2EE
J2EE is a platform-independent, Java-based environment to develop, build and deploy Web-based enterprise operations

VIII. APPLICATIONS

1. Monitoring and controlling of LAN network at university and college level can be used for monitoring, controlling and retention of network packets that traverse university networks. The main aim of this project is to provide integrity, confidentiality as well as availability of the university network infrastructure and information assets.

2. LAN monitoring and controlling at the office level can be used to control the office LAN by the administrator at any time if at a particular time he/she cannot be present there. Administrator does not have to depend on any third party information regarding the LAN and can instead check the LAN status himself using his mobile.

3. LAN monitoring and controlling at the malls is used to monitor and control all information of malls by administrator.

IX. ADVANTAGES

1. GSM networks are popular as well as widespread wireless communication media across the world which is having a wide customer base.

2. Offers greater portability and mobility where the client can move terminals around his plant.

3. The infrastructure costs of putting up significant masts and installing antennae has not to be funded by user.

4. "Quick" and "Easy" to implement if the Wi-Fi service exists in the area of installation.

5. System offers High Performance and provides increased Availability, Reliability as well as Transparency.

X. CONCLUSION

This paper explains the basics of GSM based LAN monitoring. The software provides ability to send and receive SMS messages and control activities of client through GSM network and communicates through standard TCP/IP protocol.

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