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SMART LAN SYSTEM FOR CONTROLLING AND MONITORING NETWORK USING AT COMMANDS IN DISTRIBUTED SYSTEM.

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Abstract - *Now-a-days, in large enterprises, the administrator has to manage the use of network resources and processes of the LAN in person. Smart LAN System For Controlling And Monitoring Network Using AT Commands In Distributed System helps preventing unauthorized use of devices and processes in a network by controlling the network remotely. The system is divided in two modules: 1) Manager and 2) Agent.*

Manager is a networked Windows + GSM application that runs on server and allows Setting Network Client Rights, Setting Right Violation Actions, Viewing reports, Controlling Network Computers states Agent is a windows service that runs on client. It automatically gets activated as the system boots and keeps monitoring the local computer devices and processes. As a client, if user uses any device (pen drive, CD/DVD, floppy, etc) or starts any process (iexplore, notepad,etc) then the Agent checks for the manager set permissions and either allows or blocks the activity and takes the preset actions. At this time, it also records the current (logged in) username, date, time, IP address of the computer and sends report to the manager.

As well as the Andoid Application is also developed in this system. Administrator can operate the system from android app remotely. Much of the functionality can be operated through App.

Key Words: **GSM, Networking, Disconnected Environment, AT Commands**

1. INTRODUCTION

The main aim behind developing such system is to control the usage of all the software applications and all the hardware components on any machine in a Local Area Network. The purpose of the system is to operate a computer from a remote location by making the use of mobile service available and controlling of a Local Area Network through GSM(1)(2) Mobile which will help in preventing the unauthorized access to any software application and hardware devices and to develop a cost effective solution. A cell phone which connect to the server system via modem.

One goal is to access any client machines currently executing processes on the server itself, and make any changes in the current status of the client machine according to the running processes by killing any or by executing any on the client right from the server itself.

1.1 System Implementation

Smart LAN System for Controlling and Monitoring Network Using AT Commands (4) In Distributed System(6) is a tool used to monitor a LAN through a mobile device by the administrator when he is at a remote site.

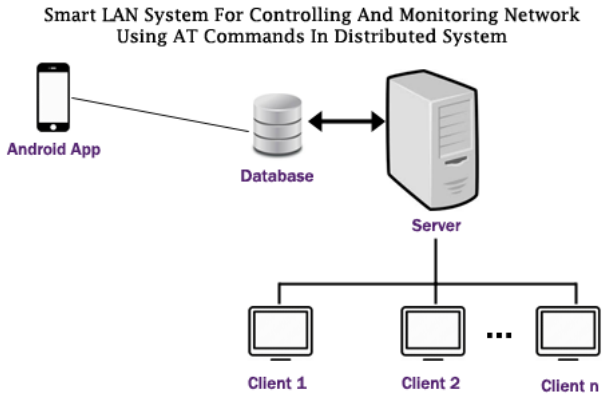

Fig.: Block Diagram

1.2 IPLEMENTATION PLANNING

Smart LAN System for Controlling and Monitoring Network Using AT Commands (4) in Distributed System is a tool used to monitor a LAN through a mobile device by the administrator when he is at a remote site.

This tool is installed on the node which has two independent parts. One is the client application which is the background process on the machine and controls

all the activities of the client and gives feedback to the server. Another is server application which works as a major process on the machine and offer the services to administrator for controlling and monitoring the LAN. The server application can control through registered mobile (gsm) device and by using the the android application we can contact to server.

Using registered mobile device the administrator can perform following actions -
1) Kill process
2) Start process
3) Broadcast message
4) Open file
5) Close file

The client application retrieves the list of processes running on the client machine and sends the logs to the server. The server keeps the list updated to check for online nodes i.e. online clients PC. The server sends the permission to the the client PC.

2. SYSTEM ARCHITECTURE

The Fig. block diagram Shows system architecture Administrator is provided with a GUI based android application to send command message without the need to retype message every time. Server sends command to the clients for e.g. start process, shut down process, kill process, create, delete, send task list etc.

Administrator sends his request through SMS using his mobile phone to the server. Server then recognizes the client machine which administrator is to monitor and extract data from locally cached data buffer storage where latest 10 sec data of each client machine is updated or stored and sends this info to the administrator as response. Through the GSM service provider the communication is done with the GSM modem, which communicates with the server and then server communicates with the client. All clients are controlled and monitored by administrator via a series of SMS text messages for which a SMS parser is used to parse the SMS.

The administrator controls the LAN through his mobile application even he is at the remote location. The clients cannot send back or communicate to the administrator the communication is unidirectional. Only the administrator can give command to the clients.

It contains following module:-

A] Manager module: - It is server.

Manager module is a networked Windows cum GSM application that runs on the server side and allows:

I. Setting up the software applications and hardware components usage permissions node wise.

II. It also controls the GSM Handler.

III. It commands the agent module.

IV. It generates reports.

V. It also Provides Voice alerts.

B] GSM Handler: - It is connected to the server.

A GSM modem is a special type of modem, in which accepts a SIM card and operates over a subscription to a mobile operator just like a mobile. From the mobile operator perspective, a GSM modem looks just like a mobile. A GSM modem can be a dedicated modem device with a serial, USB or Bluetooth connection r it may be a mobile phone that provides GSM modem capabilities. Any phone that supports the "extended AT command (3) set" for sending and receiving SMS messages.

This is a sub module of the manager module which runs on the server, and performs following tasks :

I. Creating a serial interface with mobile

II. Fetching and parsing SMS.

III. Compose and send SMS.

C] Agent module: - It is client PC/PCs

This is the second module of the system, which is nothing but a windows service that runs on each and

every client machine in a Local Area Network which is to be monitored. Some features of agent module are as follows:

I. It is an Intelligent module, i.e. even if there is no connection between server and client, it keeps on monitoring and stores the events in its own database

II. It gets activated when system boots up.

III. Keeps on monitoring the local computer devices and processes.

D] Android Application:

Add node: The node(Client PC) is added using this application.

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

Activate Process: Activate different processes only for the client's machines.

Hardware List: add and block hardware for any client.

Kill Process: Kill the desired processes of clients.

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

Broadcast messages: Broadcast messages to server then client from cell.

Shut Down: The client machines from mobile.

Events logs: The logs are maintained in the android application for violation actions.

3. TESTING AND ANALYSIS

A] Successful Authentication with GSM Network the GSM receiver 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:

I. The cellular phone sends SMS to the GSM receiver's modem number.

II. Once connection is established SMS will be sent to the GSM receiver.

III. The GSM receiver will send SMS asking for password. The password received will be observed on end to verify its authentication.

IV. The GSM receiver and mobile both established a successful communication over GSM network.

B. Successful Implementation to monitor Client

I. A client in LAN network is monitored by administrator using his mobile phone.

II. A SMS "KILL" to delete a process from clients list is send by the administrator to GSM modem which communicates with Server.

III. Server further decodes the message into action event to kill respective process.

IV. A task completion message is sent by the server to the administrator.

4. ADVANTAGE

I. Prevents unauthorized access to any software applications and any hardware component as well.

II. Booting up any pc in Local Area Network.

III. Shut down any PC in LAN.

IV. Setting up the rights for the clients for making use of the software applications and hardware components.

V. Dynamically change all the settings.

VI. Monitoring all the client machines in LAN without making them aware of the stuff that they are being monitored, so the security increases.

VII. View log of all the events happened i.e. any violations and the actions performed in order to take care of those violations, all can be viewed once on the server itself.

VIII. Also you can get events on mobile as a text message.

5. APPLICATION

Smart LAN System for Controlling and Monitoring Network Using AT Commands(4) in Distributed System can be used in various areas where Local Area Network has been established. Some of the domains can be as follows:

I. Institutes: - Prevent unauthorized use of institutional data.

II. College Laboratories: - In the practical examination system students may try to copy with USB Pen drives. Our system will block such uses.

III. Companies: - Our reminder system using GSM-SMS will be helpful for management to secure the network.

IV. Cyber cafes: - To prevents unauthorized access of software process and hardware devices.

V. Online examination centers: - In the online examination system students may try to copy with USB Pen drives or by taking the help of Internet through browser. Our system will block such uses.

6. FUTURE SCOPE

Currently we are fetching user logs in SMS format. In future these activities can be recorded and fetch as MMS format. The system can be further implemented to add the following modules:

I. Screen recording of client pc for all the events.
II. Generating a MMS/video of screens and send it so Admin Phone via GPRS/Internet connectivity.

7. CONCLUSION

The system provides a low cost, secure, accessible, remotely monitored and controlled solution for LAN monitoring using GSM is been introduced. The use of a mobile, GSM modem, Server provides exciting possibilities. However the industrial applications concerned this can be viewed as a low cost, customized wireless LAN monitoring system. This solution can be customized to suit any other industrial requirement related to monitoring and controlling Local Area Network. It is used to control LAN network remotely using the GSM SMS-based system satisfying user needs and requirements. GSM technology capable solution has proved to be controlled remotely, provide security and is cost-effective as compared to the previously existing systems. Such systems can be used in houses for operating an individual machine and also for the colleges, companies, cyber cafes and many more places as well, where the LAN has been established. Through which, one can do the network management and protection of the system data. Add-on feature is remote management using GSM technology.

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