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PROCTORING OF COMPUTER SYSTEMS CONNECTED IN A NETWORK

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Abstract— In today's world, electronic devices and Personal Computers are the inevitable parts one's life. Remotely monitoring these devices is an important aspect. This paper presents a way to monitor and control the computer devices connected in a network. There will be an admin and a several number of users. The admin can proctor the systems which are referred as clients. Admin who is proctoring acts as server. He/she can monitor the computer systems by remotely sharing the desktops of each system. He/she can also have full access of the Target PC, whichever he wishes to have control over. The IP address of each running client machine is known. The protocols like UDP, TCP, RFB are used for the communication between the systems. The working is based on Virtual Network Computing. This is a .NET based application. This application contributes for IT Administrators, administering students in computer labs to control any computer present in the Network remotely.

Keywords-desktop monitoring; networking; remoting; virtual computing; desktop sharing

I. INTRODUCTION

Remote Desktop Administration refers to a method of controlling any computer from any remote location. Remote location may refer to a computer in the next room or one on the other side of the world. It may be legal or illegal remote administration. This project is network based one. The primary objective behind the development of Automatic Monitoring and Controlling System of Remote Desktop is to provide a mechanism by which system administrator could remotely connect to desktop machines. The person sitting on the server can view and control the client's computer. Here controlling refers to taking control of mouse and keyboard. However the term "Remote Desktop" encompasses much more functionality and use cases. The project aims at developing an application to access and interact with the remote desktops individually.

Administering remote systems may comprise the following tasks.

1. View multiple desktops connected in a network simultaneously.
2. Monitor the activities on the user desktop.
3. Interact with the desktops individually.
4. Control the unusual activities of a particular user by notifying.

II. LITERATURE SURVEY

Through the literature survey we came across certain papers which provided remote access to a single computer. Also, presently in the android market we have applications which can access the PC using the phone as if we were actually using the PC. Some examples include, TeamViewer, LogMeIn, etc. While going through all the similar applications, we realized that no application in the current market could provide the user to monitor the computers that are connected to it. This was one of the drawbacks of the applications that are present in the android market. Keeping this drawback in

mind, we decided to develop an application which can help the user to remotely monitor all the computers that he has registered through his android phone. Also we focus on wake on LAN which can be done using certain operating system calls. What the previously developed applications lack, we focus on those areas to build an application which will be user friendly and will provide the user with better facilities.

A. Related work

The papers which have been published previously include, an application called A Framework for Wireless LAN Monitoring and its Applications, VNC architecture based remote desktop access through android mobile phones and Pocket Droid - A PC Remote Control. IJSERInternational Journal of Scientific & Engineering Research, Volume 4, Issue 4, April-2013 1538ISSN 2229-5518

1)Framework for Wireless LAN Monitoring and Its Applications

This application monitors the WLAN, here they implement an actual wireless monitoring system and demonstrate its effectiveness by characterizing a typical computer science department. Regarding the security, they identify malicious usages of WLAN, such as email worm and network scanning. The results also show excessive retransmissions of some management frame types reducing the useful throughput of the wire- less network.

2)VNC architecture based remote desktop access through android mobile phones

In this paper, they enlist the process to access the desktops of remote computer systems with the use of an android based cellular phone. A user will be able to access and manipulate the desktops of remote computers through a VNC viewer that will be provided on the user's cell-phone. The user can access and manipulate the desktop within the Wi-Fi range irrespective of various platforms like windows, mac or linux.

3)PocketDroid - A PC Remote Control

This paper presents an application named PocketDroid, using which user can connect to any computer having Server Application running on it. It is basically an Android based Mobile Application for controlling a Target PC. User can have full access of the Target PC, provided its IP address.

III. EXISTING SYSTEM

A. Existing system

The current existing systems are potentially good systems which do allow us to remotely connect to the remote machine and access their respective desktops. But most of the existing systems are quite difficult to use and implement for layman.In computer labs, during the conduction of regular lab or lab exams, students might indulge in activities like copying the programs or related information by using external hardware devices like thumb drives, removable disk, USB etc. They might copy the information using internet or any other files present in the system. Some might use internet for other activities like surfing, social networking etc. and also playing games, using other applications present in the system during lab hours which are not allowed.All these activities are monitored manually and sometimes difficult to identify. Though they can be identified using log files in the system, this doesn't help in finding it instantly. The system proposed will monitor and control mal-practice done by students in the lab.

B. Limitations of Existing System

- The student activities are difficult to monitor and control manually.
- The history of the login details, use of external devices can be used to track mal-practice, but it cannot be done at that instant. There will be difficulty in identifying the culprit.
- Sometimes history details can also be deleted which makes no information available to track details.
- Students indulge in mal practice and this hinders their learning.

IV. PROBLEM FORMULATION

This system helps in monitoring each individual's desktop simultaneously, controlling particular client desktop, identifying and controlling the usage of external hardware devices, tracking the navigation between windows by admin.

V. DESIGN MODULES

A. Active System Detection Module

In Active System Detection module, Admin System will detect the active systems in the network by sending broadcast message to the network so that only active systems will respond by sending their IP and mac address. After getting the response from active systems, admin system will display mac address of active systems. This model is implemented by using TCP protocol.Transmission Control Protocol (TCP) is a connection oriented and reliable protocol. This protocol establishes connection between source and destination. It is used to identify individual systems in the network.

B. System Initialization Module

After getting IP and mac addresses of the active systems, admin system initializes client systems with the necessary applications which are allowed to the user. For Example: Terminals used by students, excel application for office usage etc. System disables the applications which are not required and not allowed. For Example: Gaming Applications, web browsers in collage laboratories etc. Admin can disable/enable external hardware device drivers based on the circumstance of usage. For Example: pen drive, USB Cable etc. This module uses TCP protocol.

C. Application Monitoring and Alert Module

Application Monitoring and Alert Module helps monitoring the applications running in the user system. There are some situations where in the users have to be active only on particular and certain number of applications. For example: During online exams, the test has to be taken honestly. If the user tries to navigate from the test window, trying to get information from internet or some other source present in the system, admin will be alerted. System admin can send a warning notification to the user system or automatically the test window gets closed.

This can be achieved by getting the current window running in the user system. For example: By using API GetActiveWindow. It is a function used to grab the window title of current active window. This can be used to detect the window on which the user is working.

My computer ->C Drive->Windows->System32->User32 is the system path for library functions. Here GetActiveWindow API is also available. This module is implemented by using TCP protocol.

D. Remote Desktop Sharing Module

Remote Desktop Sharing module is used to share the remote system desktops, in the Admin system window like frames.System will display entire network desktop surveillance.

Fig. 1. Desktop Sharing

The above stated can be done by using Remote Frame buffering Protocol. RFB is a simple protocol for remote access to graphical user interfaces. It works at the frame-buffer level. It is applicable to all windowing systems and applications. RFB is the protocol used in Virtual Network Computing (VNC) and its derivatives. . Continuous motion of pictures is video. Similarly, in this protocol grabs the desktop of the user, converts it as a frame, send it to the admin continuously without any latency. This is an iterative process. This module is implemented by Using TCP protocol.

E. Remote Control Module

Remote Control Module helps Admin System to take control of any system in the network in the admin console. By clicking on a particular frame, presentation mode is switched to full screen mode. Admin system can have complete control over the system selected. This is done by using techniques like Virtual Network Computing. Control to the system can be taken by using Keyboard Event and Mouse Events so that admin can give input to remote system as well as he can view the activity of the user in the system.

Virtual Network Computing (VNC) is a graphical desktop sharing system that uses the Remote Frame Buffer protocol (RFB) to remotely control another computer. It transmits the keyboard and mouse events from one computer to another, relaying the graphical screen updates back in the other direction, over a network. VNC is platform-independent. There are clients and servers for many GUI-based operating systems and for Java. Multiple clients may connect to a VNC server at the same time. Popular uses for this technology include remote technical support and accessing files on one's work computer from one's home computer, or vice versa.

Fig.2. Virtual Network Computing

VI. DESIGN AND DEVELOPMENT DIAGRAM

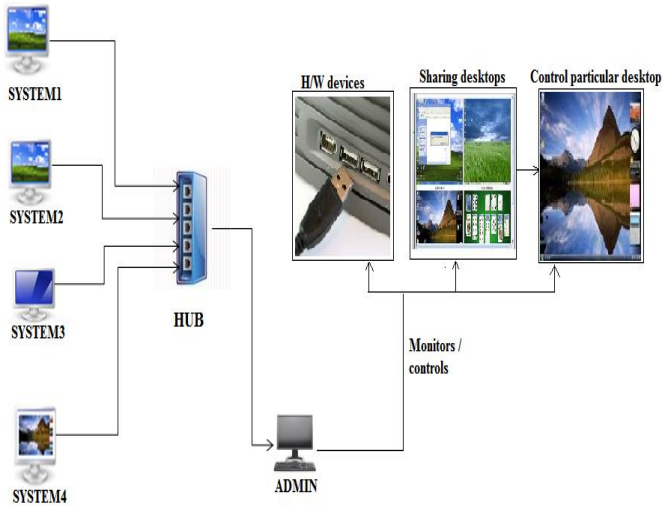

Fig. 3. Design Diagram

In this design, multiple systems are connected to network hub, in turn it is connected to admin system. Admin can view and monitor all the connected active systems simultaneously. He /she can control the usage of external hardware devices, navigation between windows. He/she can get the control over particular system in the network.

VII. ARCHITECTURAL DESIGN

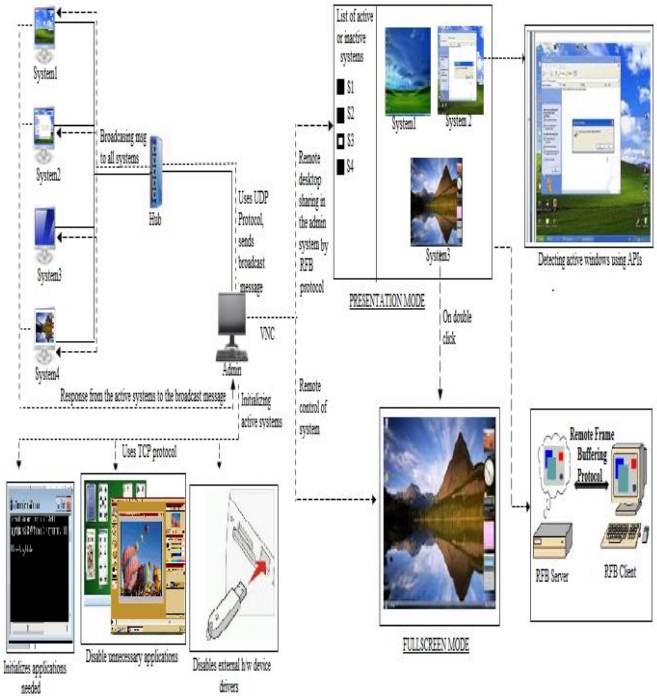

Fig.4. System Architecture

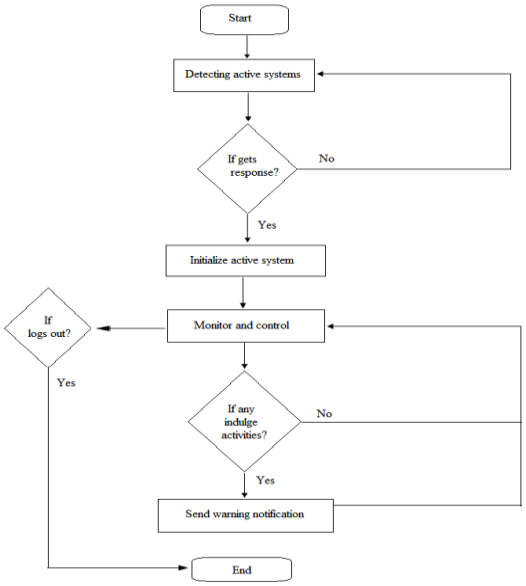

FIG.5. Data Flow diagram

VIII. APPLICATIONS

- Computer Laboratories in schools and colleges.
- E-Libraries in colleges.
- Workstations where the use of computers have to be monitored.
- Proctoring of online exams.
- File transfer.
- Modifying System services.
- Voice and Video Chat.

IX.CONCLUSION

- The proposed system reduces manual work .Person sitting at one place can monitor.
- Automatically the usage of applications are monitored and controlled.
- It is user friendly software.
- Admin gets the control of individual systems, as if he is sitting in that system itself and working on it.

If the number of systems in the network increases it will be a problem to the single admin. He may not be able to handle because of overload To overcome from this additional admin systems can be incorporated.

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