

## Virtual Controller: managing a remote computer using network communication

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**Abstract:** - Conventionally, the computer system has a monitor, CPU, keyboard, and mouse. To perform several activities on the computer such as typing a word document, opening some file or doing any operation on a computer, we need to sit in front of a computer with hardware devices such as keyboard and mouse. Moreover, sitting in front of a computer for hours, one suffers from eye problems and other health issues. So, to overcome such cases, a virtual controller program is developed. It allows any computer to control other PCs remotely. This paper aims at administering a remote computer using network communication. The remote computer acts as a client, and the controlling computer acts as a server. Any number of clients can be connected to the server. The core function of the client is sending a screenshot of the client's desktop at a predefined amount of time. A new frame is generated for each client, and the screenshot is displayed on the server-side. The client's control is communicated in mouse movement and keystrokes. It allows the IT administrators to access the database of their computer remotely. It is utilized by doing the operations on PC like sending video.

**Keywords:** View remote desktop, Mouse movement control, Mouse buttons control, Keyboard control, Develop Remote Server, Develop Remote Client.

### 1. Introduction

Administration in computer organization is a modern professional responsible for the maintenance of computer hardware and software that comprises a computer network. This normally includes the deployment, configuration, maintenance and monitoring of active Employee function. A related role is that of the network specialist, or network analyst, who concentrates on network design and security. Network administrators are responsible for making sure computer hardware and the network infrastructure itself is maintained properly for an IT organization[1]. They are deeply involved in the rolling out new software installs, and as well as employee tasks what actually they are doing in the time of job. But there is a problem to maintain all network with one administrator .so our virtual controller program allows any computer to

control other PCs remotely[2]. Project aims at administering a remote computer using network communication. The remote computer acts as client and the controlling computer acts as a server.

Any number of clients can be connected to the server. The core function of client is sending a screen shot of the client's desktop at a predefined amount of time. For each client a new frame is generated and the screen shot is displayed at the sever side. The clients control is communicated in the form of mouse movement and key strokes.

Virtual Controller[3] provides some very useful and general important functions for the administrator to maintain the clients function or tasks in computer network and, in this application, reduce the burden on administrator work and saving the time for all levels of network. This the client side, its core function is sending a screen shot of the client's

desktop every predefined amount of time. Also it receives server commands such as "move the mouse command", and then executes the command at the client's PC. Any number of clients can be connected to the server. The core function of client is sending a screen shot of the client's desktop at a predefined amount of time.

## 2. Related Work

The whole system was deployed based on client-server architecture with the hand-held smart devices as clients, providing real-time network access to network administrators to their remote servers. The secure RFB protocol proposed and implemented in the android app was compared with other existing software for remote system administration such as Remote Desktop (RDP), and RFB protocols using ICMP ping command [4] The Remote Desktop Protocol (RDP) is a proprietary protocol designed by Microsoft for remote input and display of host running the windows operating systems which is based on the Multipoint Application Sharing [5]

By default, the data that travels between the terminal server and the client is protected by the RC4 symmetric encryption algorithm which provides three levels (high level, medium level and low level) of security [6]. The high level security encrypts data sent from the client to the server using a 128 bit key and does same to data sent from server to client, the medium level security encrypts both data sent from client and server using a 56 bit key if the client is using at least windows 2000 and low level security only encrypts data sent from client to server using 56 bit key or 40 bit key.

According to author [7] though the data sent between the server and client is encrypted, the RDP protocol may be prone to Man-In-The-Middle attack because there is no verification of the identity of the server when setting up the encryption keys for a session.

## 3. Problem statement

Although virtual Controller is an innovative application, the modern formulation of it is often given in terms of the existing system problems, in generally administrators are responsible for making sure computer hardware and the network infrastructure itself is maintained properly for an IT organization. They are deeply involved in the rolling out new software installs, and as well as employee tasks what actually they are doing in the time of job. But there is a problem to maintain all networks with one

administrator. This is the administrator waits for clients connections and per each connected client, a new frame appears showing the current client screen. When you move the mouse over the frame, this results in moving the mouse at the client side. The same happens when you right/left click mouse button or type a key while the frame is in focus.

## 4. Methodology

Networking process can be implemented only by using the concept of Socket Programming. In order to provide communication between the computer and the mobile device, Sockets are being used. This can be done using the Transmission Control Protocol (TCP). First, a socket is created at the client-side to establish a connection with the server. Socket is also created at the server side. Now, the client and the server communicate by means of sending messages between themselves. Server Socket object is created by the server which detects the port number at which the occurrence of communication happens.

### 3.1 Existing System

Administrators are responsible for making sure rolling out new software installs, and as well as employee tasks what actually they are doing in the time of job. But there is a problem to maintain all networks with one administrator. If admin want to know the details and the clients tasks he should do manually see and take the information from the clients or using the Ip address he can connect the system but there is problem will occurs in the client said like system hanging and etc .

### 3.2 Proposed System

This program allows any computer to control other PCs remotely. Project aims at administering a remote computer using network communication. The remote computer acts as client and the controlling computer acts as a server. Any number of clients can be connected to the server. The modern virtual controller achieves in terms of the existing system problems, in generally administrators are server part which waits for clients connections and per each connected client, a new frame appears showing the current client screen. When you move the mouse over the frame, this results in moving the mouse at the client side. The same happens when you right/left click mouse button or type a key while the frame is in focus. Client side, its core function is sending a screen shot of the client's desktop every predefined amount of time. Also it receives server commands such as "move the mouse command", and then executes the command at the client's PC.

## 4. Methodology

In this section we have described following things such as ;

### Program Features

- ✓ View remote desktop
- ✓ Mouse movement control
- ✓ Mouse buttons control
- ✓ Keyboard control

### Modules:

- ✓ Develop Remote Server
- ✓ Develop Remote Client.

### Remote Server

This is the server part which waits for clients connections and per each connected client, a new frame appears showing the current client screen. When you move the mouse over the frame, this results in moving the mouse at the client side. The same happens when you right/left click mouse button or type a key while the frame is in focus.

### I. Remote Client

This the client side, its core function is sending a screen shot of the client's desktop every predefined amount of time. Also it receives server commands such as "move the mouse command", and then executes the command at the client's PC.

### II. Block diagram of virtual controller

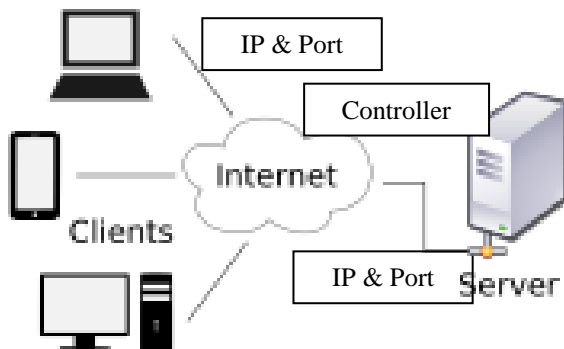


Figure 1. Block Diagram

### III. Use case diagram of virtual controller

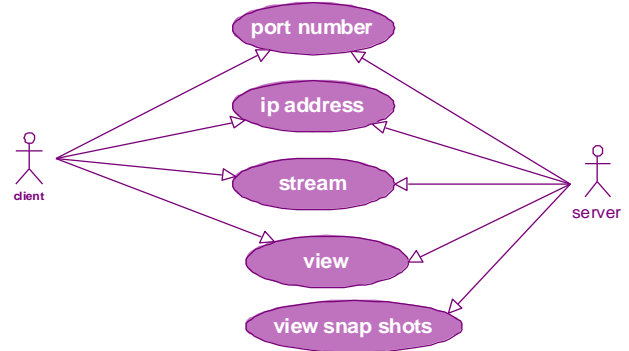


Figure2. Use case diagram

## 5. Result and Analysis

As we are developing this virtual controller Application on Java 2 platform edition which is an open source and free of cost. Once we started developing this application in Java 2 platform edition then they is no need of purchasing any special software or application software for support. Java itself provides all necessary functionalities and resources for developing virtual controller Application. For Example like developing GUI can be developed by AWT or Swing Framework which is much available in Java. Software Requirements are Windows as Operating System, Linux or Mac operating system. Java 2 standard edition, Java swings.

Hardware Requirements are P2 above processor, 128MB+ of main memory (RAM) and 100MB hard disk and data base memory, LAN connection or internet connection.

### System Design

System design is transition from a user oriented document to programmers or data base personnel. The design is a solution, how to approach to the creation of a new system. This is composed of several steps. It provides the understanding and procedural details necessary for implementing the system recommended in the feasibility study. Designing goes through logical and physical stages of development, logical design reviews the present physical system, prepare input and output specification, details of implementation plan and prepare a logical design walkthrough.

### Software Design

In designing the software following principles are followed:

1. Modularity and partitioning: software is designed such that, each system should consists of hierarchy of modules and serve to partition into separate function.

2. Coupling: modules should have little dependence on other modules of a system.
  3. Cohesion: modules should carry out in a single processing function.
  4. Shared use: avoid duplication by allowing a single module is called by other that needs the function it provides.
- In this initially user selects the java programming file and those should be in the form of either recurs or class files and source files. After that he add the source file and class file and also set some important setting then select go for processing controller application.

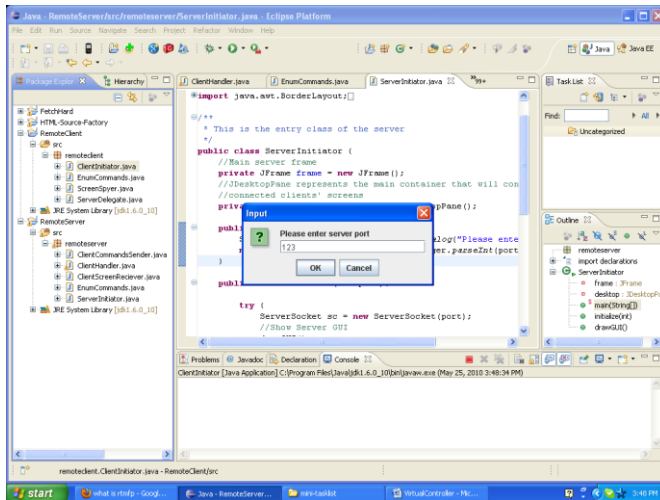


Figure 3. Output screen

## 6. Conclusion

Virtual Controller provides some very useful and general important functions in the administration tasks, in this application. The remote computer acts as client and the controlling computer acts as a server. Any number of clients can be connected to the server. The modern virtual controller achieves in terms of the existing system problems, in generally administrators are server part which waits for clients connections and per each connected client, a new frame appears showing the current client screen. When you move the mouse over the frame, these results in moving the mouse at the client side.

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