REMOTE DESKTOP CAPTURING: TERMINAL SERVICES SESSIONS

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ABSTRACT
Microsoft Remote Desktop Protocol (RDP) is used to control the screen activities of a remote computer. The RDP supports various mechanisms to reduce the amount of data transmitted over a low-bandwidth network connection, such as data compression, caching of bitmaps, etc. We used all these features to develop a remote screen capturing system, which can be applied to computer education and business presentation. Presently, a variety of screen recording tools are available. However, these video based screen recording systems have problems with poor output quality and large storage. Comparatively remote desktop capturing system produces excellent output quality and requires a smaller recorded file than the compressed video files.

1. INTRODUCTION

The aim is to develop a Remote Desktop Capturing system can display the screen of remote computer via Local area network. The program allows user to use your mouse and keyboard to control the other computer remotely. It means that one can work on a remote computer, as if one was sitting in front of it, regardless of distance between computers. It is a connection to a “remote” computer that allows you to work on it as if you were directly interacting with it. The purpose of the Remote Desktop Capturing System includes two client applications which utilize terminal services: the first, Remote Assistance. It allows one user to assist another user. The second, Remote Desktop, allows a user to log in to a remote system and access the desktop, applications and data on the system as well as control it remotely. The Remote Desktop Capturing system consists of two programs – a Client and a Server.

The Client program takes snapshots of the remote operating system's desktop once every certain period of time and sends them to the Server program over network. Thus, the server program, by communicating with the clients, allows you to see what is happening on remote computers' screens.

2. RDP PROTOCOL

RDP is protocol for exchanges between terminal servers and their Windows OS clients. This protocol is called RDP (remote desktop protocol)

2.1 TERMINAL SERVER

Terminal Server is the server component of Terminal services. It handles the job of authenticating clients, as well as making the applications available remotely. It is also entrusted with the job of restricting the clients according to the level of access they have. The remote session information is stored in specialized directories, called Session Directory which is stored at the server. Session directories are used to store state information about a session, and can be used to resume interrupted sessions. The terminal server also has to manage these directories.
Terminal Services has been a part of the Windows server OS since NT 4.0.

2.2 TERMINAL SERVICES

A terminal server has two special Windows services that are used for multiple-user operation.

**Terminal Services** Allows multiple users to create interactive connections, display the desktop, and see applications on remote clients. This service is the basis for remote desktops, remote support, and terminal servers.

**Terminal Services Session Directory**
Forwards a connection request to a terminal server in a load-sharing system. If this service is stopped, all connection requests are directed to the first available server.

3. WORKING METHODOLOGY OF RDP

Most data is transmitted from the server to the client. RDP was originally designed to support different network topologies.

In its current state, it can be executed only via TCP/IP networks and is internally divided into several layers.

![RDP layers](image.png)

**Figure 2. RDP layers**

The protocol is basically exchangeable; Terminal Services provides a flexible platform for multi-user mode. This platform allows other manufacturers to develop alternative protocols that use Terminal Services functions. Due to its higher capacity, a kernel driver provides the remaining runtime environment to generate the RDP data stream. The kernel is subdivided into a section for the transport protocol (TCP/IP) and a section for the session-specific communication protocol (RDP). The latter is executed by the TermEd driver, which transfers mouse and keyboard input from the remote clients to the kernel. The packets are encrypted as per the requirement of the network protocol. Currently only TCP/IP is supported by RDP.

The RDP data content may include keyboard input and mouse moment coordinates, as well as graphical bitmap and printer redirection output. The return RDP packet goes in reverse through the same protocol stack, is decrypted and unwrapped and the TCP/IP header information is stripped for the specific client session. Four service primitives are needed, three of which are for connection administration:
1) connection request,
2) connection confirmation
3) disconnection request.

![Image](image1.png)

**Figure 3. Connection with the Remote Machine**

Connection and disconnection come from the client. When the server ends the connection, the client is not specially notified. The fourth service primitive handles data transmission.

![Image](image2.png)

**Figure 4. Various Features of Remote Desktop Capturing System**

### 3.1 CASHING MECHANISM

The proposed Mechanism to reduce the amount of data transmitted. It is called *caching*, or temporary storage. In this process, the client reserves memory that houses frequently used image fragments that can be displayed again without any network transmission taking place.

#### 3.1.1. Bitmap cache

Cache minimizes the amount of bitmap data transferred between the RDP client and server. The RDP client creates an uncompressed, temporary bitmap cache file that contains bitmaps that are repeatedly sent from the terminal server to the client.

#### 3.1.2. Font cache

Cache for glyphs (character bitmaps). The cache size must be sufficient for storing all characters of a defined character set.

#### 3.1.3. Desktop cache

Cache for a desktop screenshot. A character command store outputs this special bitmap.

#### 3.1.4. Cursor cache

Cache for mouse cursors that need special handling. It ensures that the correct mouse cursor is displayed on the desktop without generating a lot of network traffic and overloading the local processor resources.

### 4. CONCLUSION
A Remote Desktop Capturing system is fully facilitated with the features such as references ordered listing of remote computer screenshots by the server. It can be able to do flexible configuration of screenshot size and display order. It perform ordered screenshot logging for all or individual clients. Computer Managing individual clients or all clients simultaneously. Remote File access and transferring file from remote machine. Sending text messages. Remote power management. The program start is invisible to users.

5. REFERENCES

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