



Working of Offline Cloud Storage Using FTP, RDP and RPC with Router

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Abstract: -

Now a day's first the issues is hard drive is the storage technology used which is not secure. Even second issues is Internet usage to store files on cloud. Raspberry pi is the safest devices so this system is proposed to use for security reasons.

A hard drive is the hardware component that stores all of your digital content like documents, pictures, music, videos, programs, application preferences, and operating system represent digital content stored on a hard drive. Hard drives can be of two types external or internal.

The Raspberry Pi is ease, charge card estimated PC that connects to a PC screen or TV, and utilizations a standard console and mouse. This able little gadget empowers individuals of any age to investigate registering, and to figure out how to program in dialects like Scratch and Python.

This system works on two protocols file transfer protocol (FTP), remote desktop protocol (RDP) and remote procedure call (RPC) with router. It works wireless only in same network so it's secure too.

Therefore, I suggest this system to be use for practical purposes. With RDP access, you do not have just what is on the computer; you can copy over files and start an attack anyway. Once you are in, you are in.

Objective: -

Working of Remote Desktop Protocol (RDP), File Transfer Protocol (FTP) and Remote Procedure Call (RPC) using offline router, raspberry pi and laptop.

Introduction: -

What is cloud storage?

Cloud storage is a cloud-computing model that stores data on the Internet through a cloud-computing provider who manages and operates data storage as a service. It is deliver on demand with just-in-time capacity and costs, and eliminates buying and managing your own data storage infrastructure.

How it files are storage on cloud?

Cloud storage involves stashing data on hardware in a remote physical location, which can be access from any device via the internet. Clients send files to a data server maintained by a cloud provider instead of (or as well as) storing it on their own hard drives.

What is FTP?

The File Transfer Protocol (FTP) is standard network protocol used for the transfer of computer files between a client and server on a computer network.

FTP is built on a client-server model architecture using separate control and data connections between the client and the server. FTP users may authenticate themselves with a clear-text sign-in protocol, normally in the form of a

username and password, but cannot anonymously if the server is configured to allow it. For secure transmission that protects the username and password, and encrypts the content, FTP is often secured with SSL/TLS (FTPS) or replaced with SSH File Transfer Protocol (SFTP).

Types of FTP: -

FTP: - File Transfer Protocol

FTPS: - File Transfer Protocol Secure or

SFTP: - Secure File Transfer Protocol

FTPES: - File Transfer Protocol over Secure Sockets Layer (SSL) / Transport Layer Security (TLS)

How it Works?

The FTP server may support Active or Passive connections, or both. In an Active FTP connection, the client opens a port and listens and the server actively connects to it. In a Passive FTP connection, the server opens a port and listens and the client connects to it.

Most FTP client programs select passive connection mode by default because server administrators prefer it as a safety measure. Firewalls generally block connections that are “initiated” from the outside. Using passive mode, the FTP client is “reaching out” to the server to make the connection. The firewall will allow these outgoing connections, meaning that no special adjustments to firewall settings are required.

What is RDP?

The Remote Desktop Protocol (RDP) is a proprietary protocol developed by Microsoft, which provides graphical

interface to user to connect another device over a network connection.

Microsoft currently refers to their official RDP client software as Remote Desktop Connection, formerly “Terminal Services Client”

How it Works?

Remote Desktop Connection allows one Windows computer to connect to another network-connected computer. You can use all your work computer’s programs, files, and network resources from your home computer.

The Remote Desktop is that you can still access all your files and accounts because you are controlling your office computer. Remote Desktop allows employees to be more flexible, while keeping their workflow nearly unchanged.

What is RPC?

In distributed computing, a Remote Procedure Call (RPC) is when a computer program causes a procedure (subroutine) to execute in a different address space (commonly on another computer on a shared network), which is coded as if it were a normal (local) procedure call, without the programmer explicitly coding the details for the remoter interaction.

RPCs are a form of inter-process communication (IPC), in that different processes have different address spaces: if on the same host machine, they have distinct virtual address spaces, even though the physical address space is the same; while if they are on different hosts, the physical address space is different. Many different (often incompatible) technologies have been used

How it Works?

The programmer writes essentially the same code whether the subroutine is local to the executing program, or remote. This is a form of client-server interaction (caller is client, executor is server), typically implemented via a request-response message-passing system. In the object-oriented programming paradigm, RPCs are represented by remote method invocation (RMI). The RPC model implies a level of location transparency, namely that calling procedures are largely the same whether they are local or remote calls. Remote calls are usually orders of magnitude slower and less reliable than local calls, so distinguishing them is important.

What is Router?

A router is a networking device that forwards data packets between computer networks. Routers perform the traffic directing functions on the Internet. Data sent through the internet, such as a web page or email, is in the form of data packets. A packet is typically forwarded from one router through the networks that constitute an internetwork until it reaches its destination node.

How it Works?

A router may have interfaces for different types of physical layer connections, such as copper cables, fiber optic, or wireless transmission. It can also support different network layer transmission standards. Each network interface is used to enable data packets to be forwarded from one transmission system to another. Routers may also be used to enable data packets to be forwarded from one transmission system to another. Routers may also be

used to connect two or more logical groups of computer devices known as subnets, each with a different network prefix.

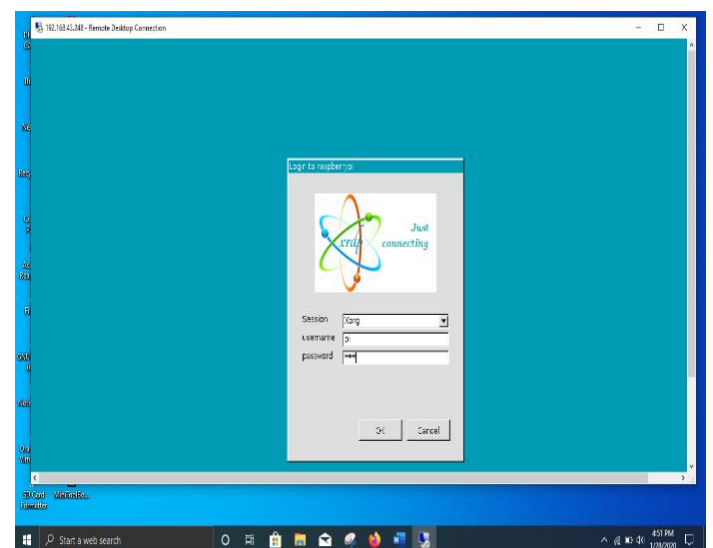
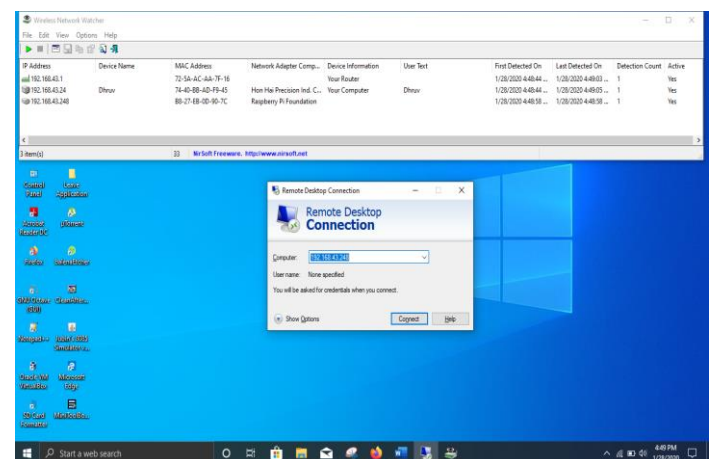
Simulation: -

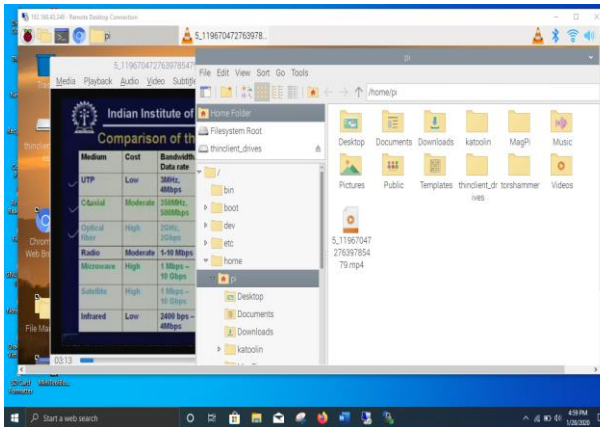
Software: -

<https://wireless-network-watcher.en.softonic.com/> :- Wireless Network Watcher

<https://winscp.net/eng/download.php> :- WinSCP software

<https://www.datenreise.de/en/raspberry-pi-install-remote-desktop-xrdp/> :- XRDP Configuration in raspberry pi

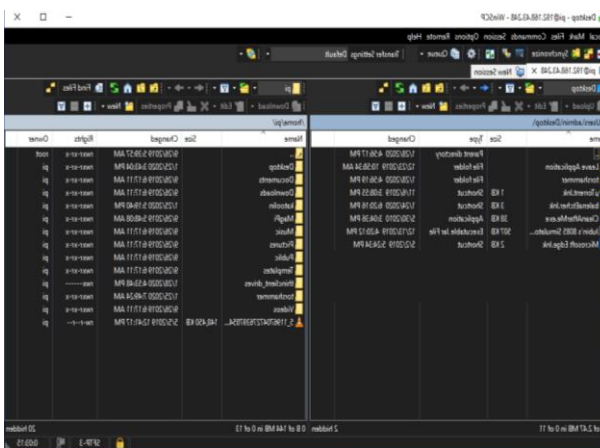




First process starts with configuration of raspberry pi with XRDP. After it connect both raspberry pi and device with router offline.

Second process starts with wireless network watcher. Find internet protocol address of raspberry pi.

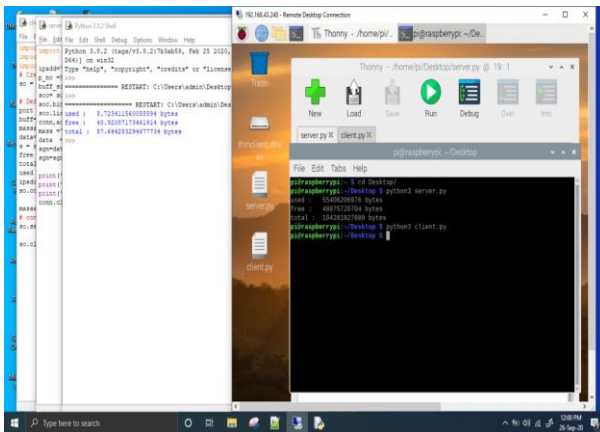
Third process is to connect raspberry pi by RDP in remote desktop connection inbuilt in Microsoft windows 10 with internet protocol address found in wireless network watcher. Input id and password of raspberry pi.



Fourth process is to connect raspberry pi by FTP in WinSCP software with internet protocol address found in wireless network watcher. Input id and password of raspberry pi.

Fifth process start with transfer of file with drag and drop at location where you want to store from destination to source.

Use of File Transfer Protocol (FTP)



Sixth process starts to know free space which is possibly done by socket programming in python coding language. Which is also use RPC.

Reference: -

Linux Basics for Hackers: Getting Started with Networking, Scripting, and Security in Kali By: - OccupyThe Web

Uploading Files Using FTP: - Steve Comstock

FTP client -Free & Open Source Software: - Curiosity Publishers

To know Free Space in Raspberry Pi by Remote Procedure Call (RPC) : - when server is run in raspberry pi it means to know free space of pc and wise versa

Conclusion: -

The experimental process concludes that this process is much easier and faster to transfer files offline between two devices.

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