Small Business Network Design with Guest Network

A PROJECT REPORT

Submitted by

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Under the guidance of
Mr. K C Prabhu Shankar
(Assistant Professor, Department of Computer Science and Engineering)

SRM UNIVERSITY
(Under section 3 of UGC Act 1956)

SRM Institute of Science and Technology

Bonafide Certificate

Certified that this project report **'SMALL BUSINESS NETWORK DESIGN WITH GUEST NETWORK'** is the bonafide work of **CHANDRAMOULEESVAR V (Reg. No: RA1811032010003), ASHWATH R (Reg. No: RA1811032010008), S ARUT PRAKASH (Reg. No: RA1811032010020), SWETHA M E (Reg. No: RA1811032010037)** who carried out the project under my supervision. Certified further that, to the best of my knowledge the work reported herein does not form part of any other project report or dissertation on the basis of which a degree or award was conferred on an earlier occasion or any other candidate.

Signature

Mr. K C Prabhu Shankar

GUIDE
Assistant Professor,
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Head of Department

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Degree/ Course: B.Tech / Computer Science and Engineering – Internet of Things

Student Name: Chandramouleesvar V

Registration Number: RA1811032010003

Title of Work: Small Business Network with Guest Network

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Degree/ Course: B.Tech / Computer Science and Engineering – Internet of Things

Student Name: Ashwath R

Registration Number: RA1811032010008

Title of Work: Small Business Network with Guest Network

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Degree/ Course: B.Tech / Computer Science and Engineering – Internet of Things

Student Name: S Arut Prakash

Registration Number: RA1811032010020

Title of Work: Small Business Network with Guest Network

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Degree/ Course: B.Tech / Computer Science and Engineering – Internet of Things

Student Name: Swetha M E

Registration Number: RA1811032010037

Title of Work: Small Business Network with Guest Network

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ACKNOWLEDGEMENT

We express our humble gratitude to Dr. Sandeep Sancheti, Vice Chancellor, SRM Institute of Science and Technology, for the facilities extended for the project work and his continued support.

We extend our sincere thanks to Dr. C. Muthamizhchelvan, Pro VC, Faculty of Engineering and Technology, SRM Institute of Science and Technology, for his invaluable support.

We wish to thank Dr. B. Amutha, Professor and Head, Department of Computer Science and Engineering, SRM Institute of Science and Technology, for her valuable suggestions and encouragement throughout the period of the project work.

Our sincere respect and thanks to my guide, Mr. K.C Prabu Shankar, Assistant Professor (O.G.), Department of Computer Science and Engineering, SRM Institute of Science and Technology, for providing me an opportunity to pursue my project under his/her mentorship. He provided me the freedom and support to explore the research topics of my interest. His passion for solving the real problems and making a difference in the world has always been inspiring.

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PROJECT SCOPE

A small business network has to be designed for an organization. The organization has occasional guest users (Max 10) visiting the office. There are a total of 70 users in the organization. A FTP server has to be implemented for file transfer across the network.

OBJECTIVES

- To setup a small business network for a organization
- Admin network which can handle a maximum of 70 users
- Guest network which can handle a maximum of 10 users
- A FTP server for file transfer with restricted access for the Guest network

NETWORK REQUIREMENTS

1. Separate subnet for guest and LAN network
2. Restricted access for Guest
3. IP Network Design
4. Hardware – Switches and Routers
5. Configuration details on hardware

NETWORK PLANNING

1. The Network is divided into two:
    - Admin Network
    - Guest Network
2. A FTP server is setup for file transfer across the organisation
3. Both LAN and WiFi connection have been provided to users

Admin Network:

- Maximum of 70 users
- All types of access to files in server

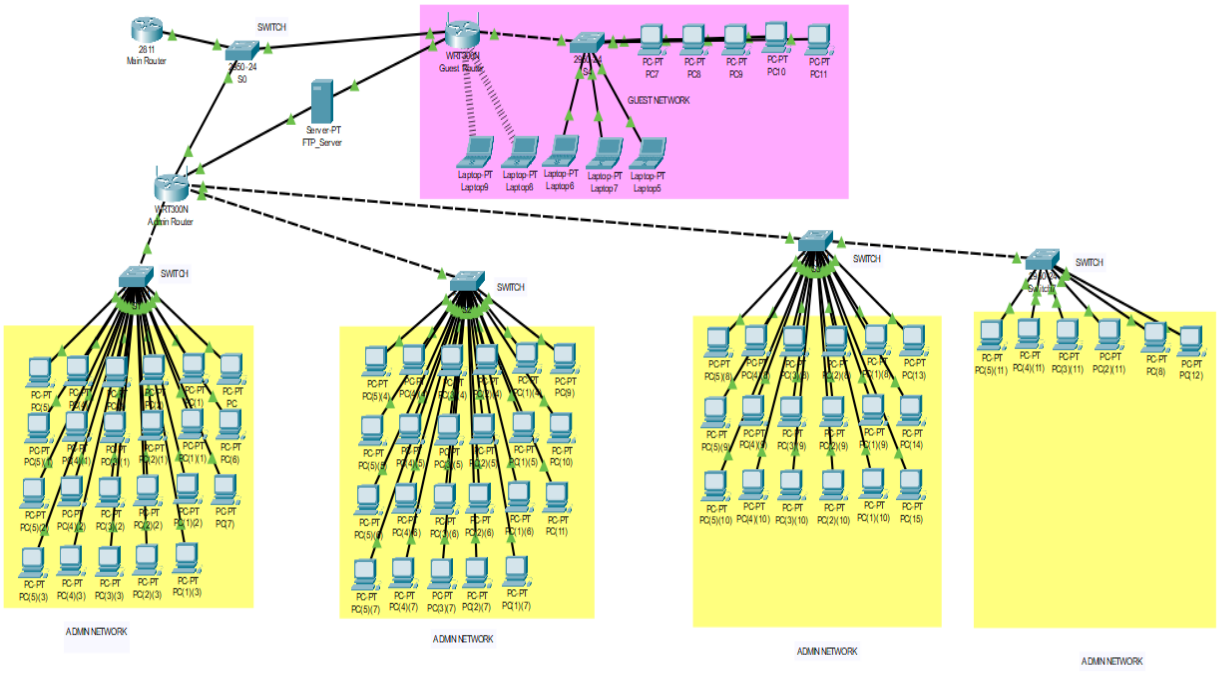
Guest Network:

- Maximum of 10 users
- Restricted access to files in server i.e Guest user is only allowed to Read and List the files in Server

IP NETWORK DESIGN TABLE

Network	Network Address	Beginning Address	Ending Address	Subnet Mask
Admin	10.0.0.1	10.0.0.100	10.0.0.170	255.255.255.0
Guest	192.168.0.1	192.168.0.100	192.168.0.110	255.255.255.0

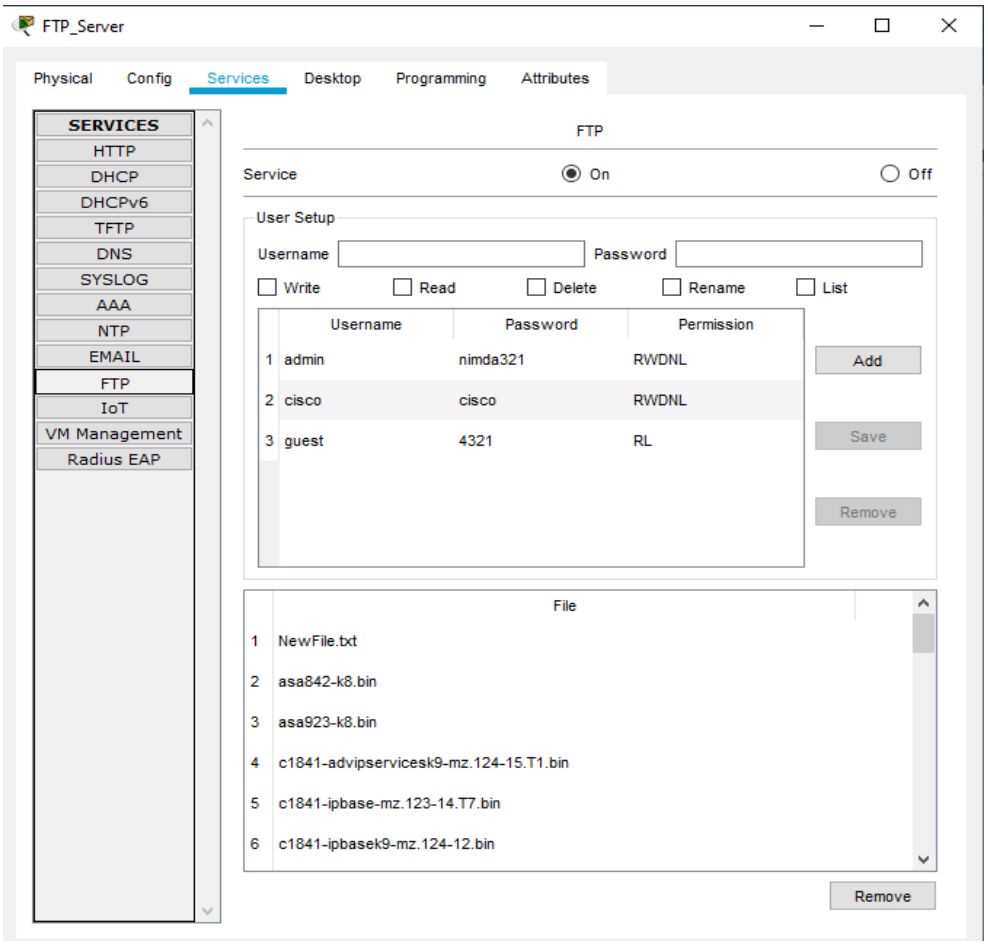
NETWORK TOPOLOGY DIAGRAM WITH IPADDRESS



Main Router: 192.168.10.1
Admin Router: 10.0.0.1
Guest Router: 192.168.0.1
FTP Server (Admin): 10.0.0.100
FTP Server (Guest): 192.168.0.100

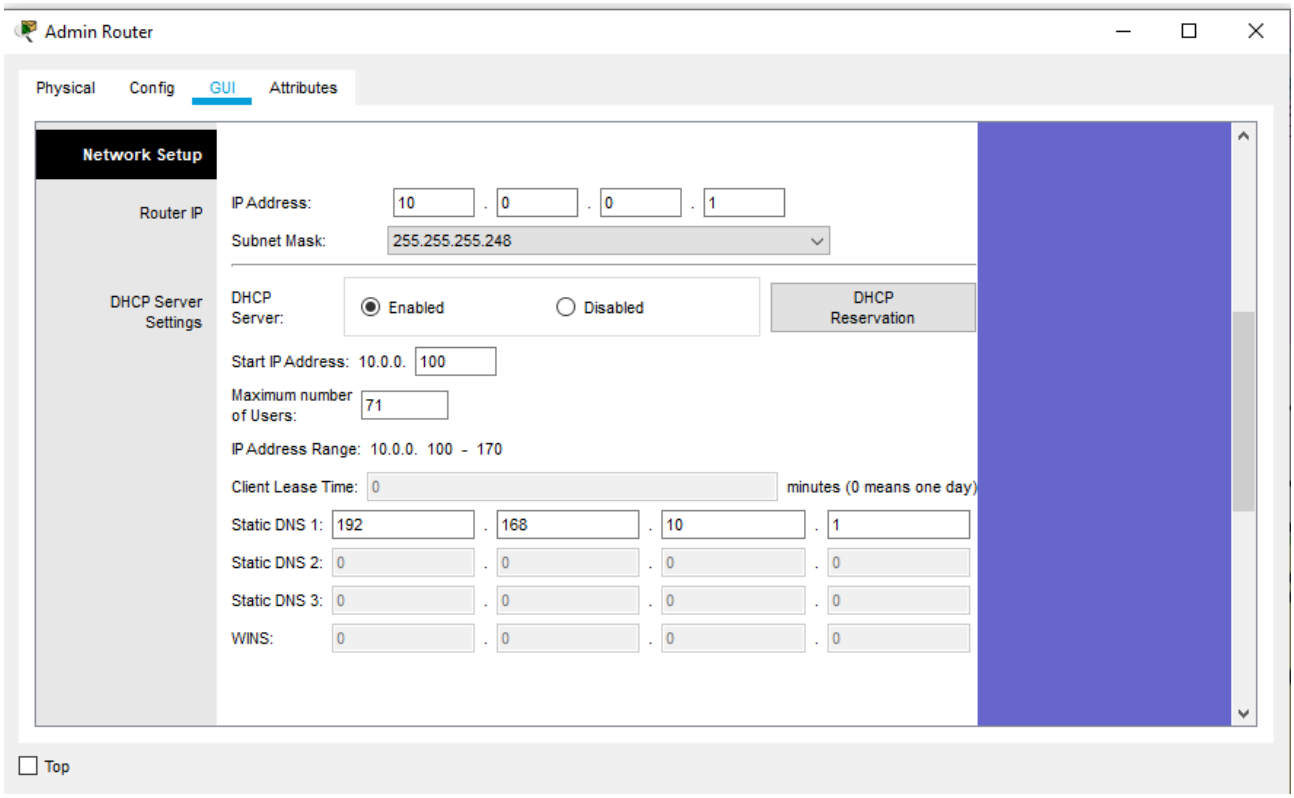
NETWORK INTEGRATION PLAN

FTP Server:

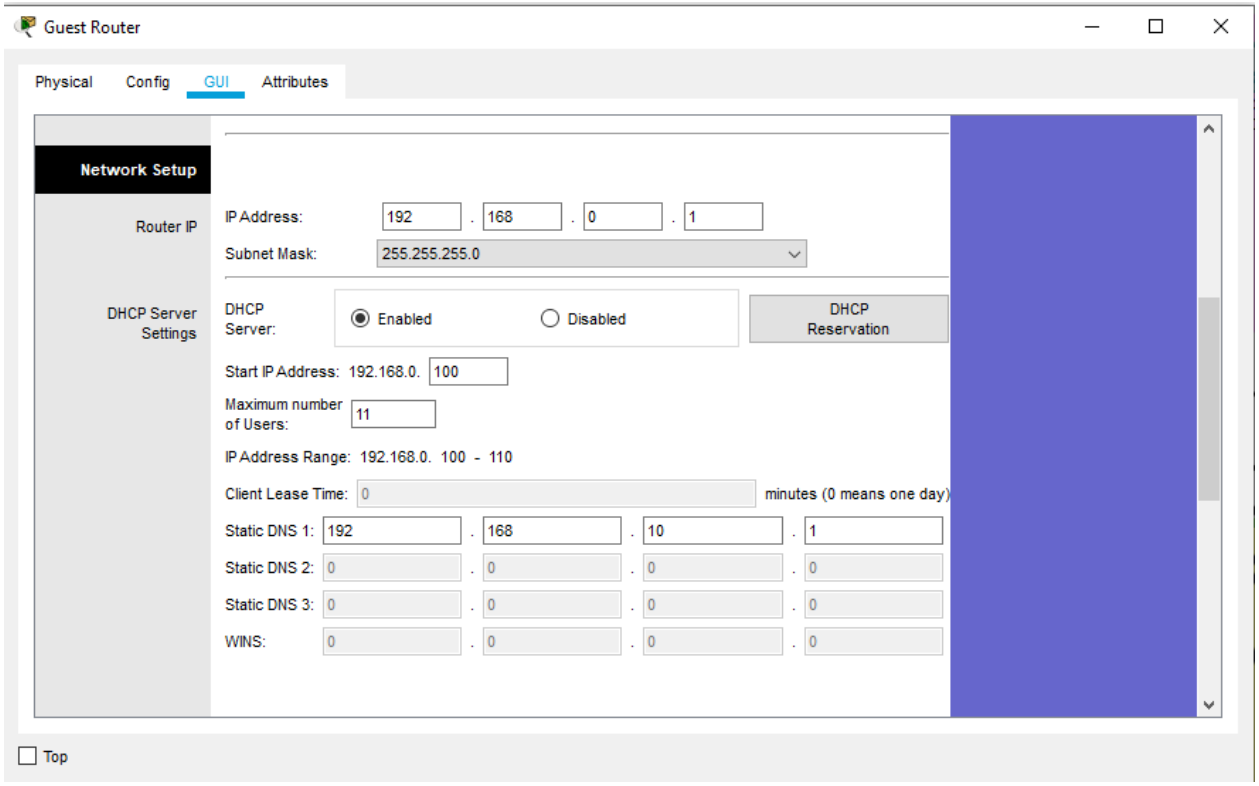


A File Transfer Protocol (FTP) is used to transfer Computer Files between the Client and Server in a Network. Here the FTP server is connected to both the Admin as well as the Guest Router so that both admin and guest can access the files. However, only restricted access is granted for Guest (i.e List, Read)

Admin Router:



Guest Router:



NETWORK CONFIGURATION

Main Router
IP Address: 192.168.10.1
Subnet Mask: 255.255.255.0

Switch
FastEthernet 0/1 VLAN 1 default (Connected to Main Router)
FastEthernet 0/2 VLAN 1 default (Connected to Admin Router)
FastEthernet 0/3 VLAN 3 guest (Connected to Guest Router)

Admin Router
DefaultGateway: 192.168.10.1
DNS_Server: 192.168.10.1
IP: 10.0.0.1
Subnet Mask: 255.255.255.0
IP Range: 10.0.0.100 – 10.0.0.170
SSID: Admin WIFI
Password: nimda321

Guest Router
DefaultGateway: 192.168.10.1
DNS_Server: 192.168.10.1
IP: 192.168.0.1
Subnet Mask: 255.255.255.0
IP Range: 192.168.0.100 – 192.168.0.110
SSID: Guest WIFI
Password: wifi4321

FTP Server (Admin):
FastEthernet0
DefaultGateway: 10.0.0.1
DNS_Server: 192.168.10.1
IP (Static): 10.0.0.100
Subnet Mask: 255.255.255.0
Username: admin
Password: nimda321
Permissions: RWDNL

FTP Server (Guest):
FastEthernet1
DefaultGateway: 192.168.0.1
DNS_Server: 192.168.10.1
IP (Static): 192.168.0.100
Subnet Mask: 255.255.255.0
Username: guest
Password: 4321
Permissions: RL

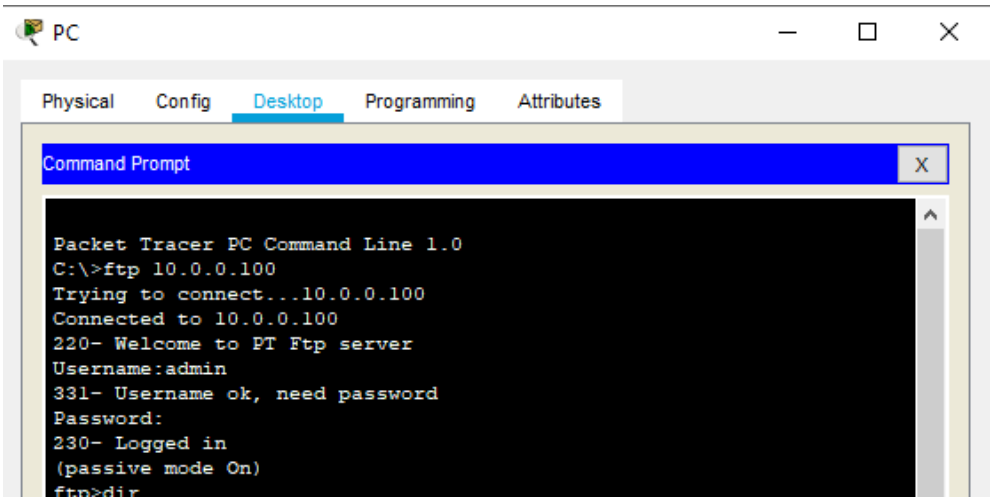
Admin Network Devices:
DefaultGateway: 10.0.0.1
DNS_Server: 192.168.10.1
IP: Dynamic

Guest Network Devices:
DefaultGateway: 192.168.0.1
DNS_Server: 192.168.10.1
IP: Dynamic

NETWORK TESTING AND VERIFICATION

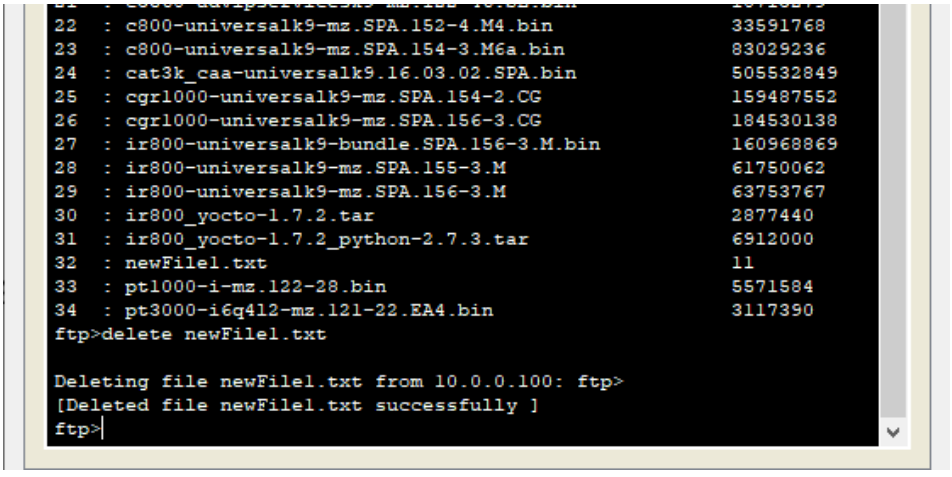
Admin Device:

1. Login



2. Perform any operation on files in server. Here we will see how the delete operation works

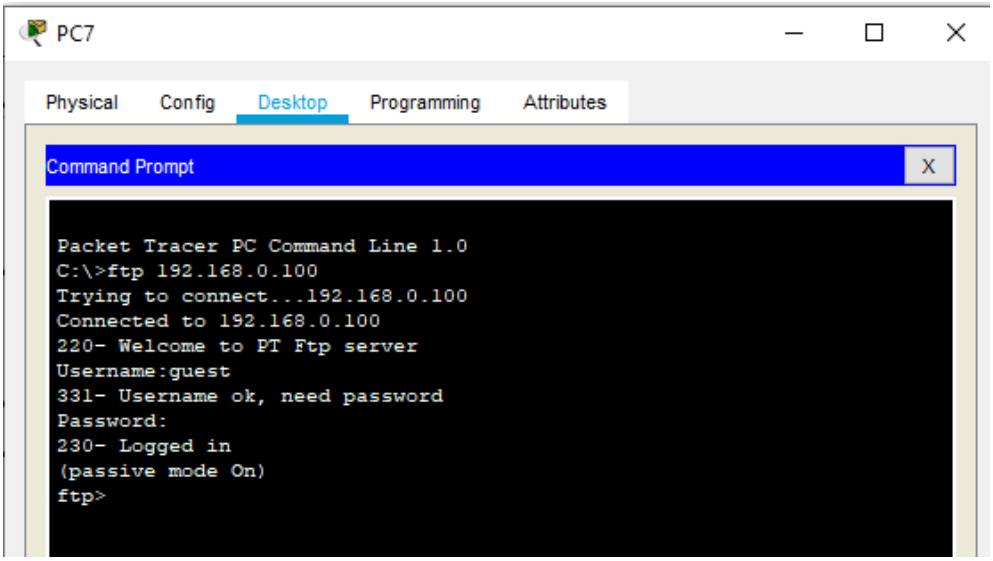
   We are going to delete a file named ‘newFile1.txt’



   The Admin network has all types of access on the files in the server, hence the message ‘Deleted file newFile1.txt successfully’ is displayed and the specified file has been deleted.

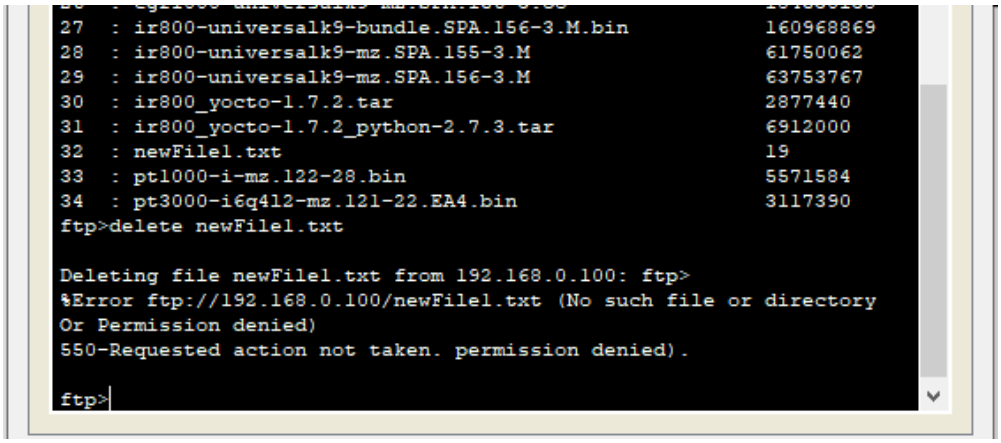
Guest Device:

1. Login



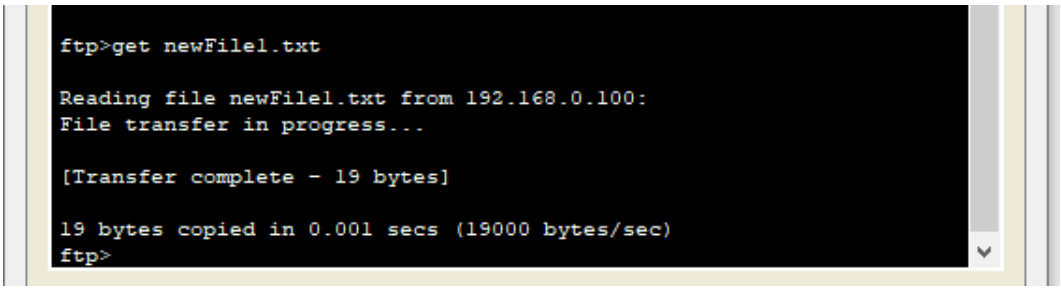
2. Perform delete operation

We are going to delete a file named ‘newFile1.txt’



Here the guest does not have the access to delete the files in the server,it only has Read and List, hence the ‘Permission denied’ is displayed.The guest cannot upload Write,Delete or Rename the files in the server.

3. Perform Read operation



The guest can Read the files in the server and hence this message 'Transfer Complete' is displayed.

HARDWARE AND SOFTWARE

Hardware:

- Computers
- Laptops
- Routers
- Server
- Switches

Software:

Cisco Packet Tracer