Configuring FTP Server in Multi-LAN Lab

In this project, I embarked on configuring an FTP server within a multi-LAN environment, responding to the request of an employer. The task involved using OPNsense and leveraging tools like FileZilla FTP Server and Client. The goal was to establish a functional FTP server allowing users in the Guest network to access resources from the main LAN securely. The project required not only technical prowess in configuring firewall rules but also a nuanced understanding of user-specific access controls and secure file transfers.

The following documentation outlines each step undertaken, accompanied by relevant screenshots for clarity and ease of replication. Hence, I meticulously documented each step with accompanying screenshots to provide a comprehensive guide for effective understanding and replication.

REQUIREMENTS

- Filezilla FTP server found: https://filezilla-project.org/download.php?type=server
- Filezilla FTP client found: https://filezilla-project.org/download.php?platform=win64
- 2 windows 10 client PC
- OPNsense Firewall configured with 2 LAN interfaces.

Description of each steps:

1. **Install and configure FTP Server on PC1:**
    - I initiated the installation of the FileZilla FTP Server on PC1, ensuring it was properly configured to serve as the central point for FTP communication.

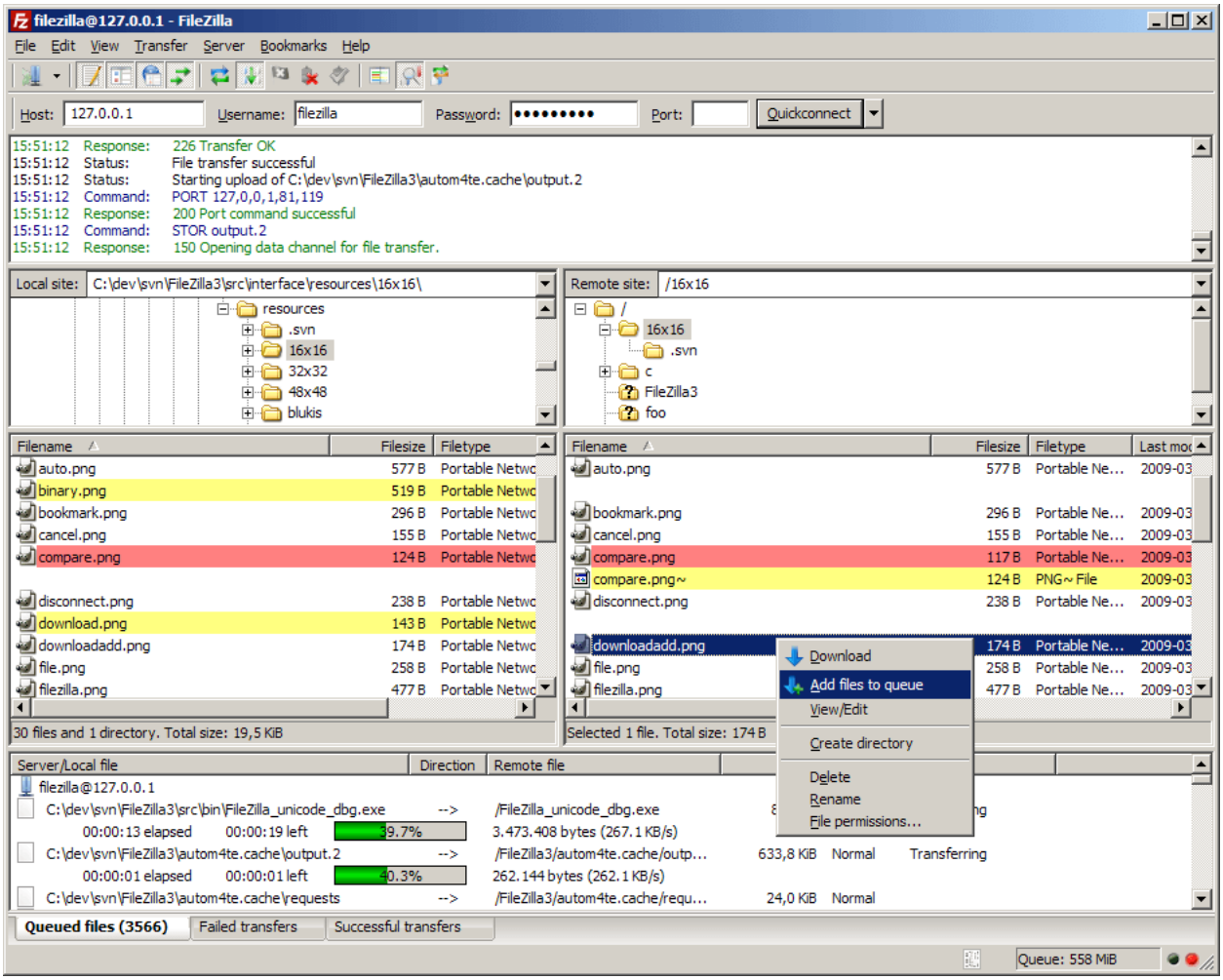


Figure 1: The Screenshot showing the GUI of FileZilla Server after Installation

2. Create Firewall inbound rules to allow ports for (21,990):

- Navigating to the OPNsense firewall settings, I established inbound rules that explicitly permitted traffic on ports 21 (FTP) and 990 (FTP over TLS).

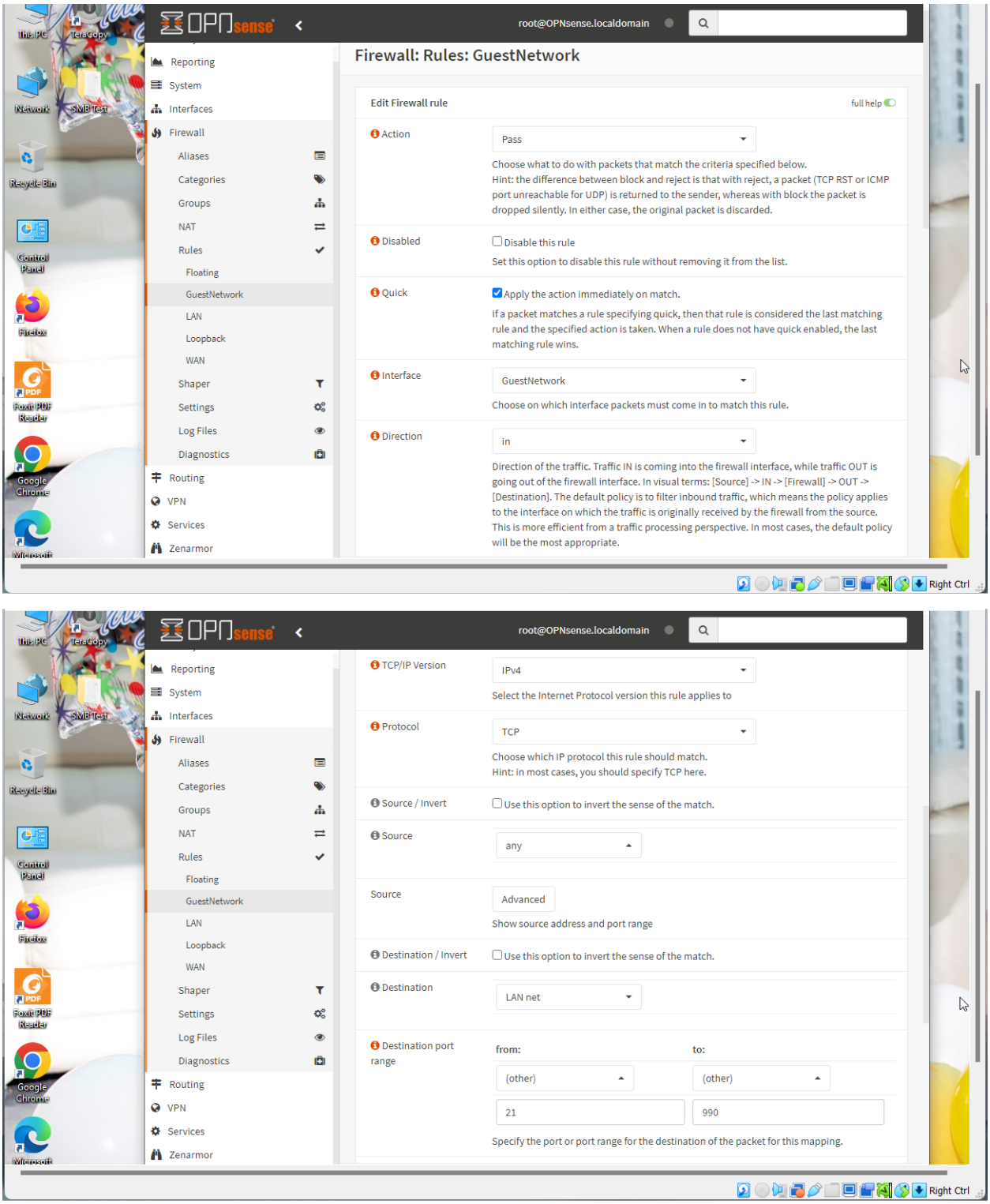


Figure 2: Creating Firewall inbound rules with the matching TCP IP Protocol highlighting the specific rules added for ports 21 and 990.

3. **Create Firewall inbound rules to allow passive port ranges:**
    - I extended the firewall configuration to include rules accommodating passive port ranges essential for FTP data transfer.
4. **Configure a network share called 'Staff':**
    - On PC1, I created a network share named 'Staff' to serve as the centralized repository for FTP resources.
5. **Create 3 subfolders ('Karen', 'Mark', 'Jin'):**
    - Within the 'Staff' share, I meticulously crafted subfolders for each user ('Karen', 'Mark', 'Jin'), ensuring a structured organization.

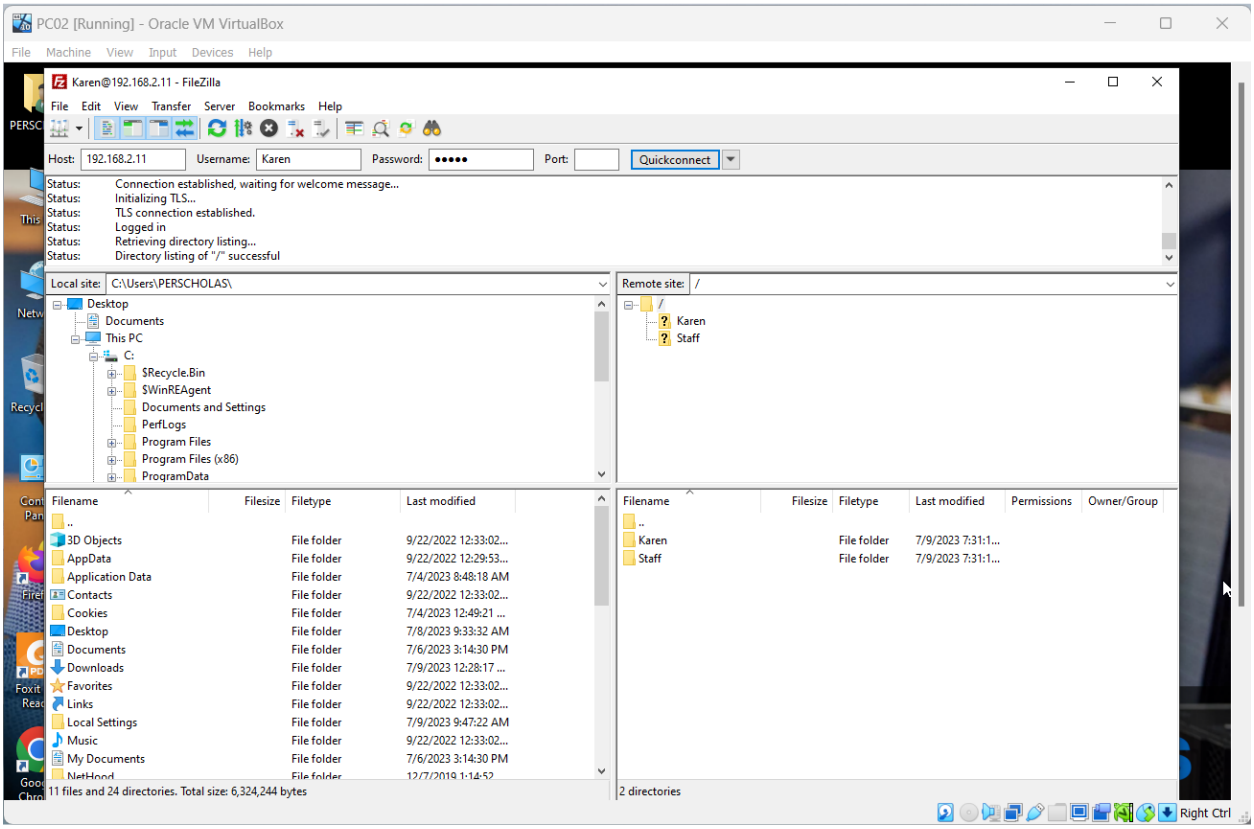


Figure 3. Successfully established connection with the Server on PC1 and retrieved the directory of the user, Karen.

6. **Create a text file in each folder titled with the user's name:**
    - I populated each user subfolder with a text file labeled with the respective user's name, contributing to a personalized user space.

7. **Create 3 user accounts on the FTP Server:**
    - I configured three distinct user accounts on the FileZilla FTP Server, tailoring permissions to align with security and access requirements.

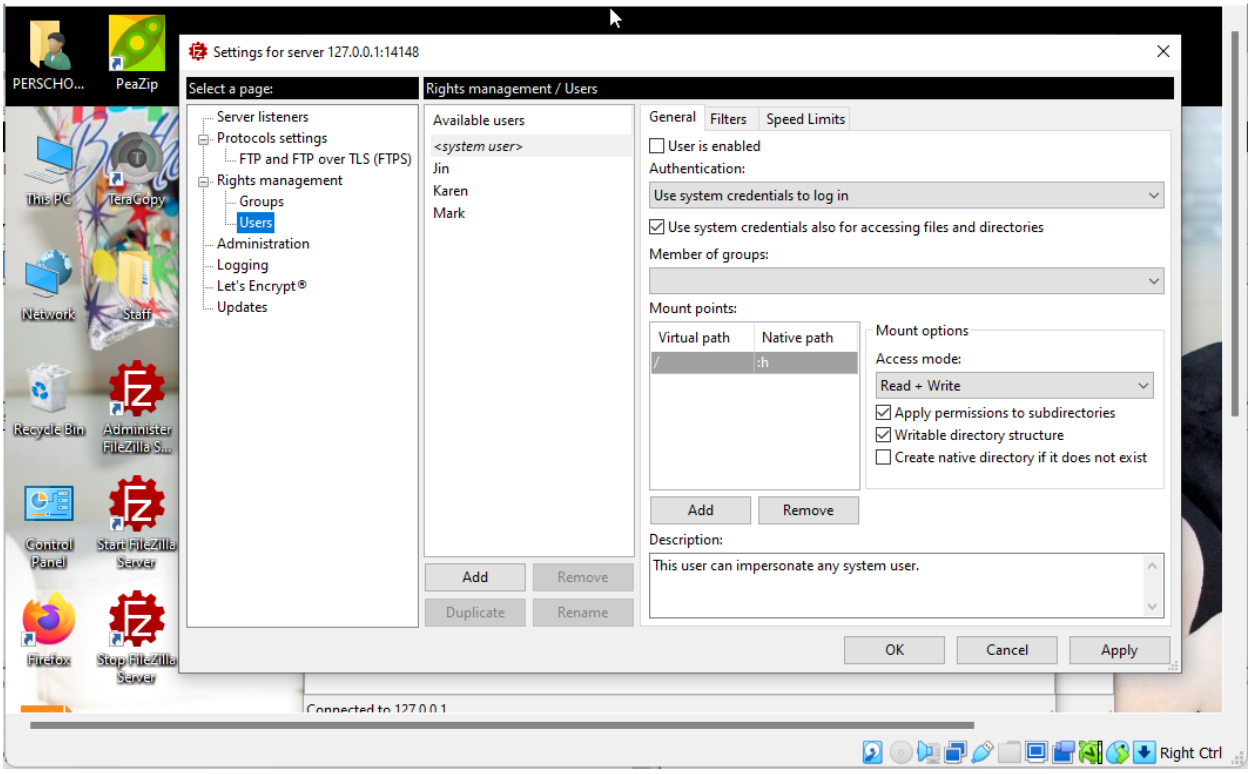


Figure 4. Configuring the FileZilla Server on PC1 and Adding 3 Users Accounts on the Server with their assigned permissions

8. **Log into PC2, install, and configure the FTP client:**
    - On PC2, I installed the FileZilla FTP client and meticulously configured its settings to establish a connection with the FTP server.
9. **Using the FTP client connect to the FTP server using the 'Karen' account:**
    - I successfully established a connection to the FTP server using the 'Karen' account through the FileZilla client, ensuring seamless access.
10. **Transfer the karen.txt file from the server to PC2:**
    - Executing a file transfer, I moved the 'karen.txt' file from the 'Karen' folder on the server to PC2 using the FileZilla client.

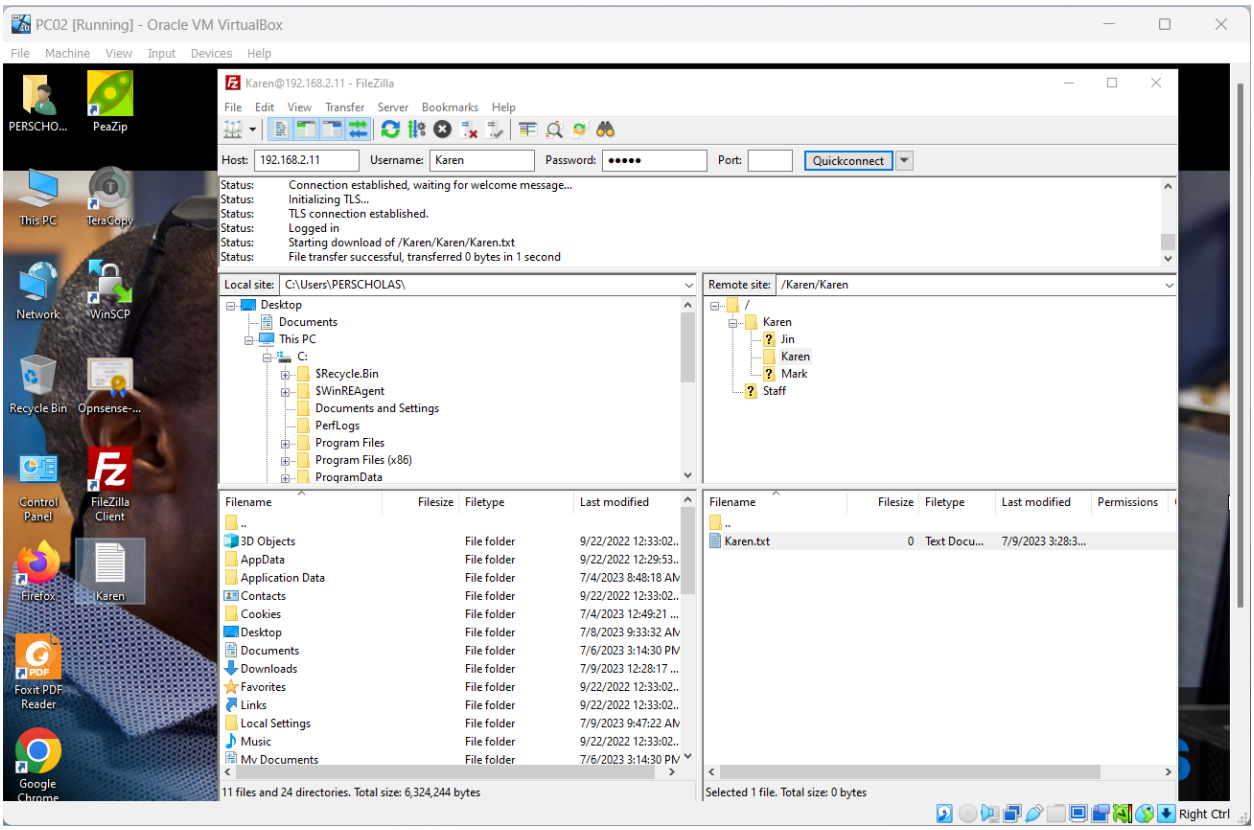


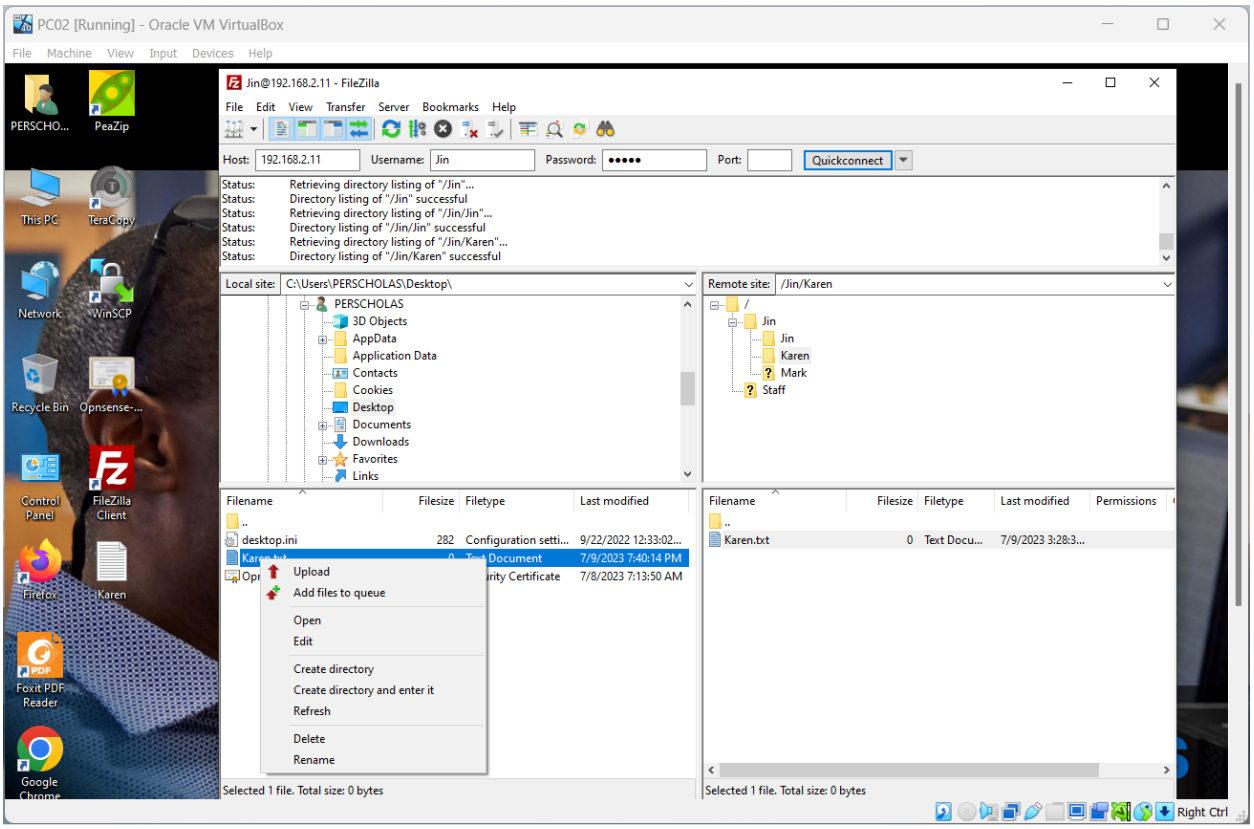
Figure 5. An Example showing the transferring of karen.txt file from the server to PC2

11. Log out of the user account 'Karen':

- I disconnected from the 'Karen' account on the FTP server, ensuring a secure logout after the file transfer.

12. Log into the account 'Jin' upload the karen.txt file to the FTP server:

- Logging into the 'Jin' account on the FTP server, I uploaded the 'karen.txt' file, demonstrating user-specific interactions.


PC02 [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
Jin@192.168.2.11 - FileZilla
File Edit View Transfer Server Bookmarks Help
Host: 192.168.2.11 Username: Jin Password: ••••• Port: Quickconnect
Status: Retrieving directory listing of "/Jin"...
Status: Directory listing of "/Jin" successful
Status: Retrieving directory listing of "/Jin/Jin"...
Status: Directory listing of "/Jin/Jin" successful
Status: Retrieving directory listing of "/Jin/Karen"...
Status: Directory listing of "/Jin/Karen" successful
Local site: C:\Users\PERSCHOLAS\Desktop\
Remote site: /Jin/Karen
PERSCHOLAS
3D Objects
AppData
Application Data
Contacts
Cookies
Desktop
Documents
Downloads
Favorites
Links
Jin
Karen
Mark
Staff
Filename Filesize Filetype Last modified
desktop.ini 282 Configuration setti... 9/22/2022 12:33:02...
Karen.txt 0 Text Document 7/9/2023 7:40:14 PM
7/8/2023 7:13:50 AM
Upload
Add files to queue
Open
Edit
Create directory
Create directory and enter it
Refresh
Delete
Rename
Filename Filesize Filetype Last modified Permissions
Karen.txt 0 Text Docu... 7/9/2023 3:28:3...
Selected 1 file. Total size: 0 bytes
Selected 1 file. Total size: 0 bytes
PERSCHO...
PeaZip
This PC
TeraCopy
Network
WinSCP
Recycle Bin
Opnsense-...
Control Panel
FileZilla Client
Firefox
Karen
Foxit PDF Reader
Google Chrome
Right Ctrl

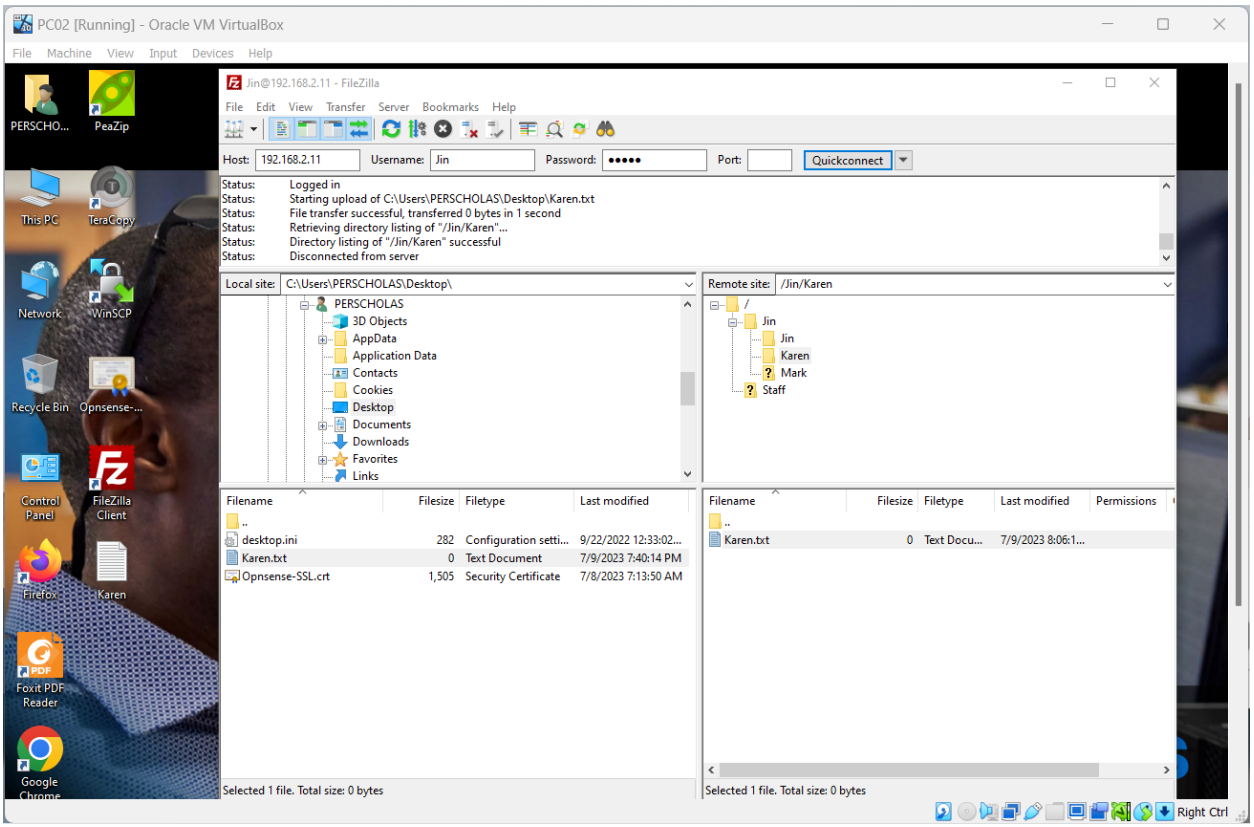


Figure 6. Log into the account "Jin" and uploaded the karen.txt file to the FTP server

Additionally, the following screenshots illustrates some of the main procedures involved in configuring the FTP server within a multi-LAN environment:

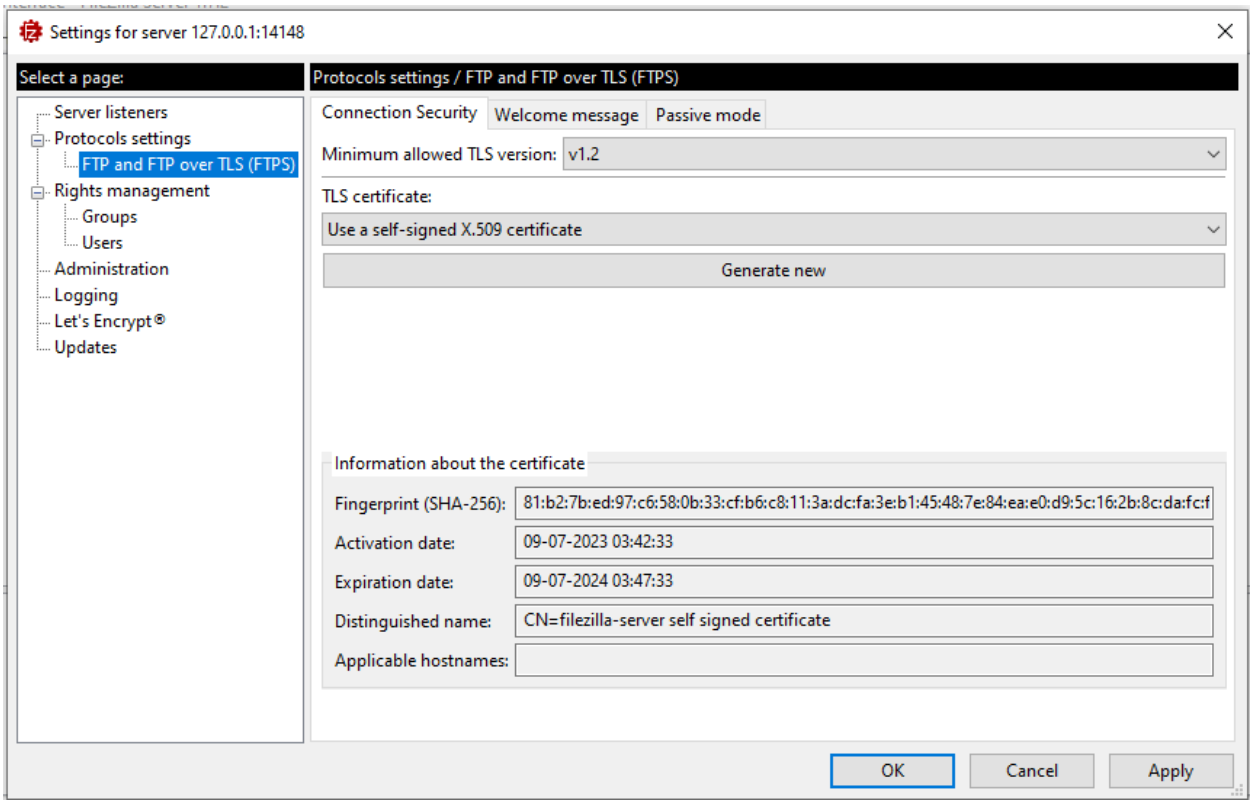


Figure 7. The FTP traffic using encryption through FTPS (FTP over TLS)

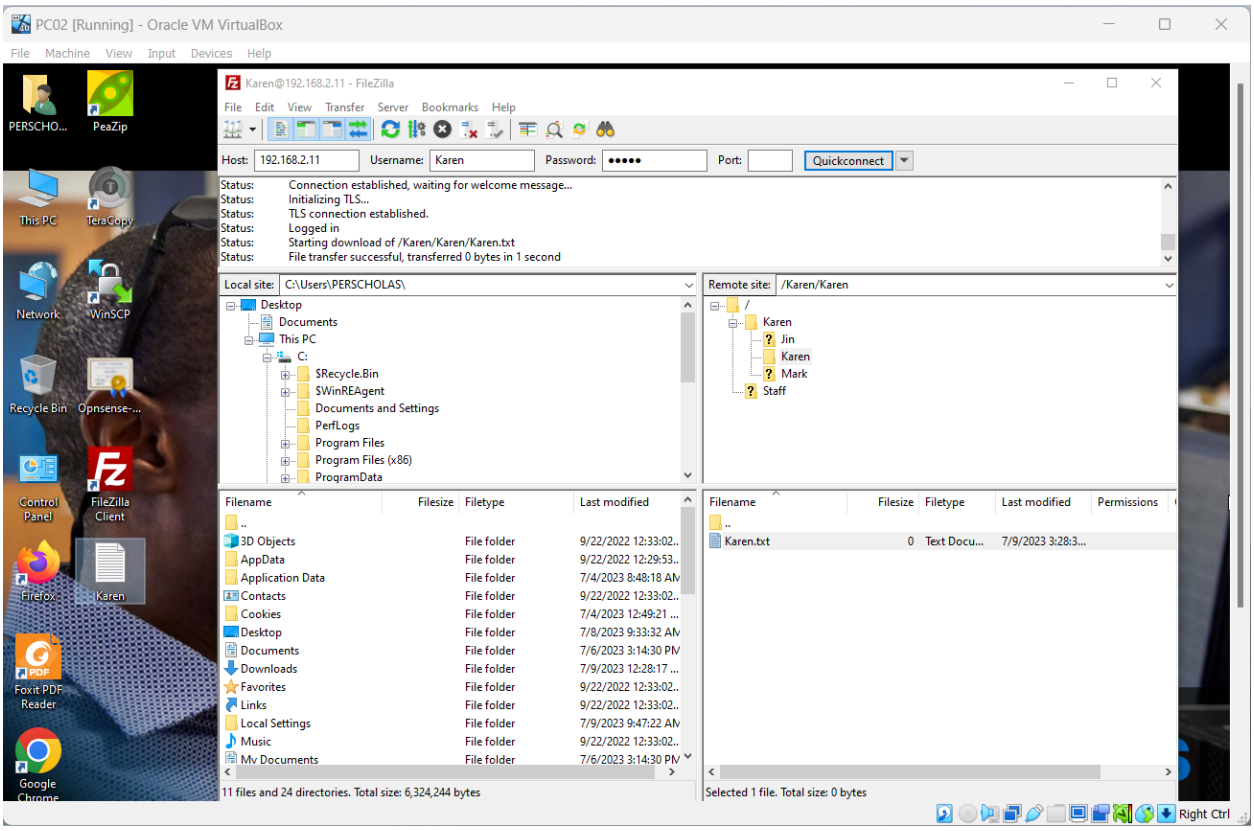


Figure 8. Transferring the karen.txt file from the server to PC2

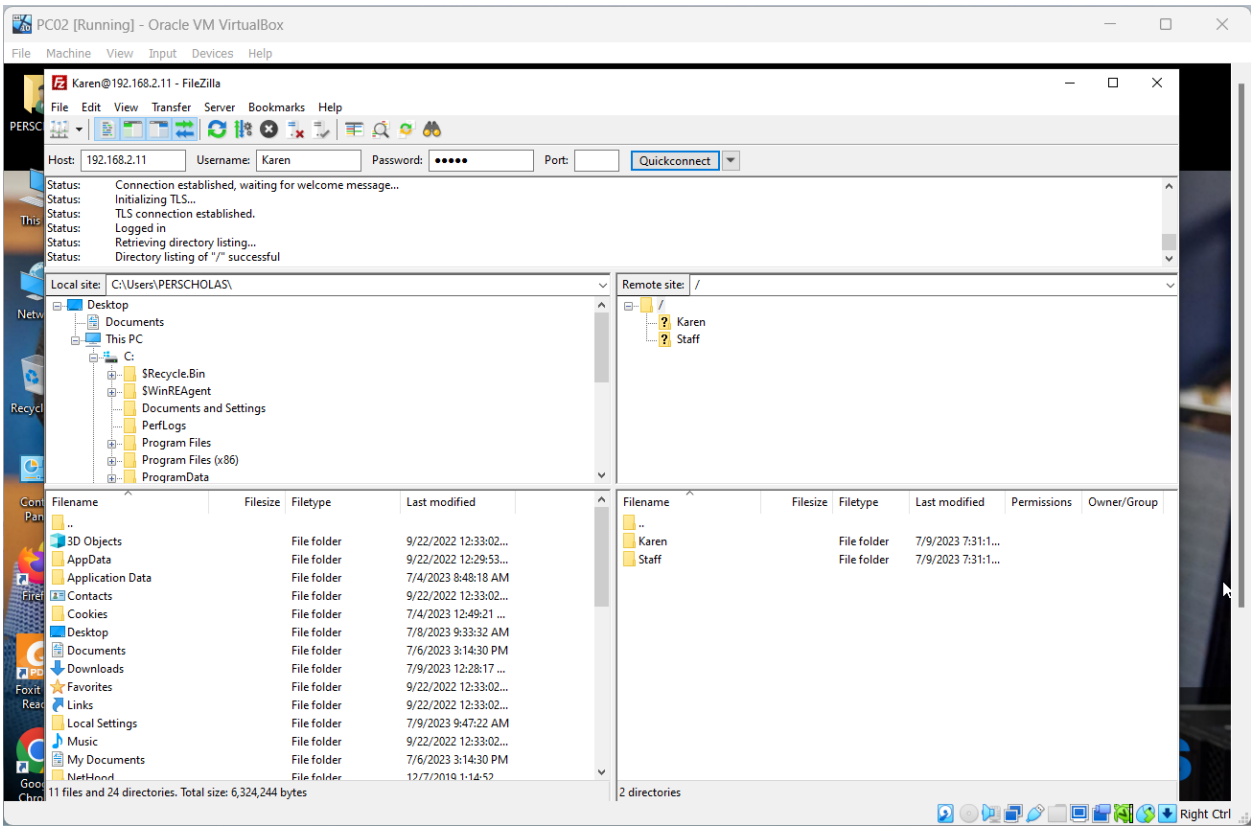
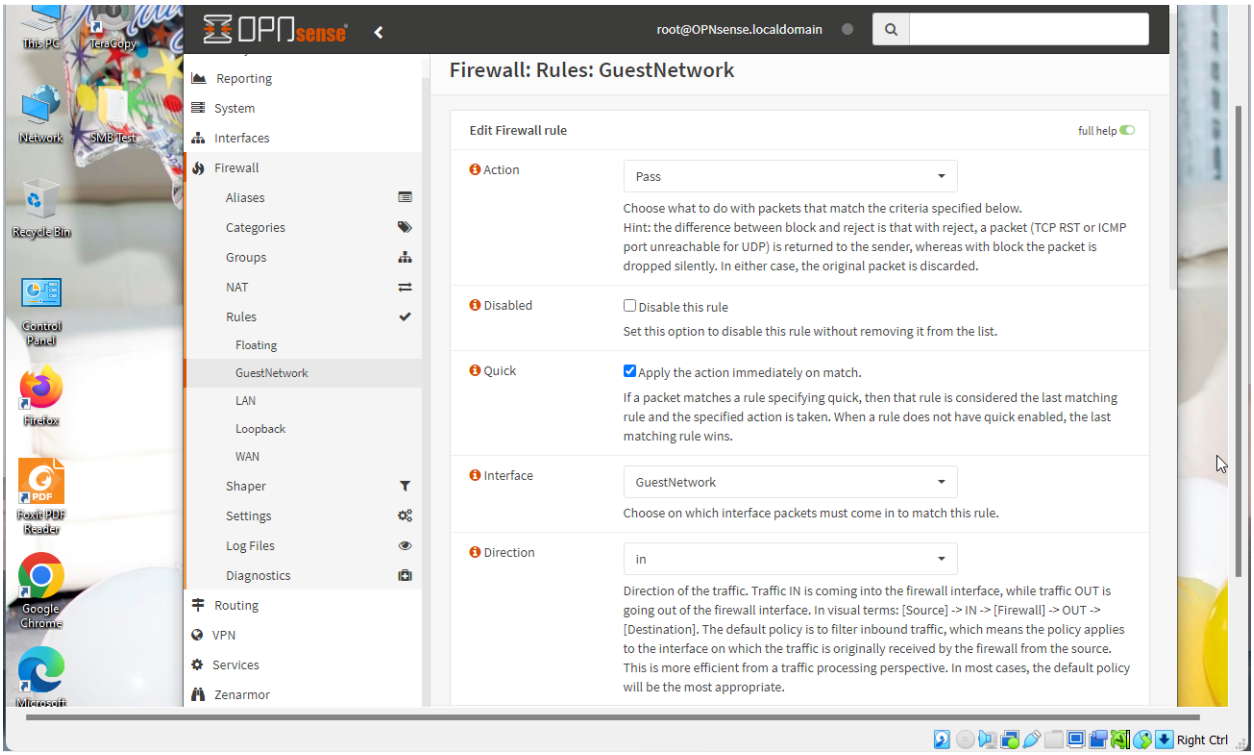


Figure 9. Successfully established connection with the Server on PC1



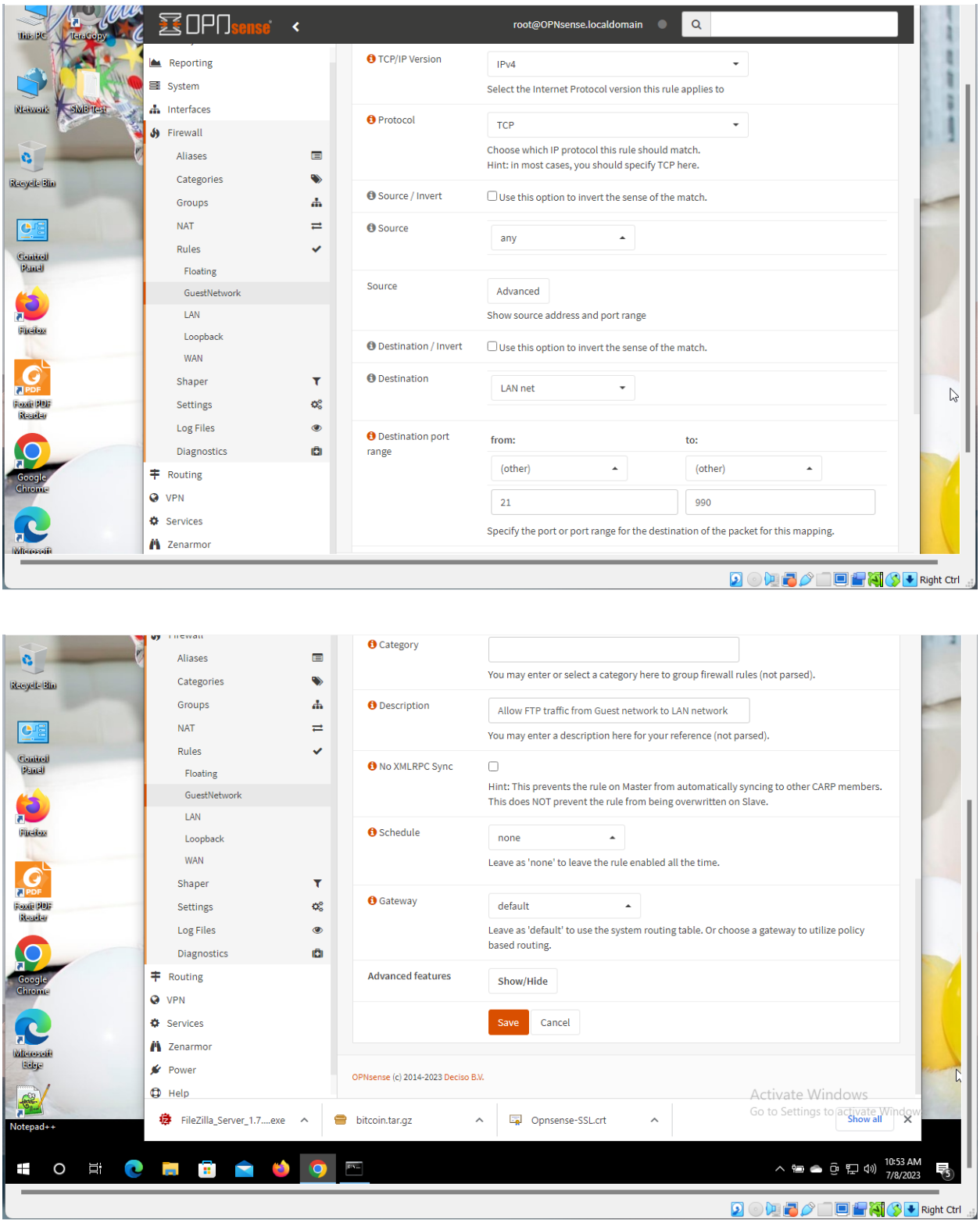


Figure 10. Creating Firewall inbound rules to allow ports from 21 (default for explicit FTPS) to Port 990 (default for implicit FTPS)

Concluding Remark:

In this lab, I successfully configured and managed an FTP server in a multi-LAN environment. Through tasks such as installing and configuring the FTP server, creating firewall rules, establishing network shares and user accounts, and conducting file transfers, I gained hands-on experience in setting up secure and efficient file sharing within the network. The lab showcased my ability to deploy and manage essential network services in a practical environment, contributing to my skills in network administration and security.