Install ftpd service on your laptop

```
nehad@nehad-VirtualBox:~$ sudo apt install vsftpd
[sudo] password for nehad:
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following packages were automatically installed and are no longer required:
  chromium-codecs-ffmpeg-extra gstreamer1.0-vaapi i965-va-driver
  intel-media-va-driver libaacs0 libaom3 libass9 libavcodec58 libavformat58
  libavutil56 libbdplus0 libbluray2 libbs2b0 libchromaprint1 libcodec2-1.0
  libdav1d5 libflite1 libgme0 libgsm1 libgstreamer-plugins-bad1.0-0
  libigdgmm12 liblilv-0-0 libllvm15 libmfx1 libmysofa1 libnorm1 libopenmpt0
  libpgm-5.3-0 libpostproc55 librabbitmq4 librubberband2 libserd-0-0
  libshine3 libsnappy1v5 libsord-0-0 libsratom-0-0 libsrt1.4-gnutls
  libssh-gcrypt-4 libswresample3 libswscale5 libudfread0 libva-drm2
  libva-wayland2 libva-x11-2 libva2 libvdpau1 libvidstab1.1 libx265-199
  libxvidcore4 libzimg2 libzmq5 libzvbi-common libzvbi0 mesa-va-drivers
  mesa-vdpau-drivers pocketsphinx-en-us va-driver-all vdpau-driver-all
Use 'sudo apt autoremove' to remove them.
The following NEW packages will be installed:
  vsftpd
0 upgraded, 1 newly installed, 0 to remove and 208 not upgraded.
Need to get 123 kB of archives.
After this operation, 326 kB of additional disk space will be used.
Get:1 http://eg.archive.ubuntu.com/ubuntu jammy/main amd64 vsftpd amd64 3.0.5-0
ubuntu1 [123 kB]
```

enable port 21 and 20 (tcp) using iptables command using INPUT chain

```
nehad@nehad-VirtualBox:~$ sudo iptables -t filter -A INPUT -p tcp --dport 20 -j
 ACCEPT
nehad@nehad-VirtualBox:~$ sudo iptables -t filter -A INPUT -p tcp --dport 21 -j
 ACCEPT
```

connect to ftp server (e.g: localhost) and browse the current directory

```
nehad@nehad-VirtualBox:~$ ftp localhost
Connected to localhost.
220 (vsFTPd 3.0.5)
Name (localhost:nehad): nehad
331 Please specify the password.
Password:
230 Login successful.
Remote system type is UNIX.
Using binary mode to transfer files.
ftp> ls
229 Entering Extended Passive Mode (|||37079|)
150 Here comes the directory listing.
drwxr-xr-x    2 1000      1000         4096 Feb 01 14:12 Desktop
drwxr-xr-x    2 1000      1000         4096 Feb 01 14:12 Documents
drwxr-xr-x    2 1000      1000         4096 Feb 01 14:12 Downloads
drwxr-xr-x    2 1000      1000         4096 Feb 01 14:12 Music
drwxr-xr-x    2 1000      1000         4096 Feb 01 14:12 Pictures
drwxr-xr-x    2 1000      1000         4096 Feb 01 14:12 Public
drwxr-xr-x    2 1000      1000         4096 Feb 01 14:12 Templates
drwxr-xr-x    2 1000      1000         4096 Feb 01 14:12 Videos
-rw-r--r--    1 0         0               0 Mar 04 12:53 file1
-rw-rw-r--    1 1000      1000            3 Feb 08 14:42 file1.txt
```

```
drwxr-xr-x    2 1000      1000         4096 Feb 01 14:12 Desktop
drwxr-xr-x    2 1000      1000         4096 Feb 01 14:12 Documents
drwxr-xr-x    2 1000      1000         4096 Feb 01 14:12 Downloads
drwxr-xr-x    2 1000      1000         4096 Feb 01 14:12 Music
drwxr-xr-x    2 1000      1000         4096 Feb 01 14:12 Pictures
drwxr-xr-x    2 1000      1000         4096 Feb 01 14:12 Public
drwxr-xr-x    2 1000      1000         4096 Feb 01 14:12 Templates
drwxr-xr-x    2 1000      1000         4096 Feb 01 14:12 Videos
-rw-r--r--    1 0         0               0 Mar 04 12:53 file1
-rw-rw-r--    1 1000      1000            3 Feb 08 14:42 file1.txt
-rw-r--r--    1 0         0               0 Mar 04 12:53 file2
-rw-rw-r--    1 1000      1000            3 Feb 08 14:48 file2.txt
-rw-rw-r--    1 1000      1000            0 Feb 12 03:20 index.html
drwxrwxr-x    2 1000      1000         4096 Feb 08 14:51 iti-0
drwxrwxr-x    2 1000      1000         4096 Feb 08 12:42 iti-1
drwxrwxr-x    2 1000      1000         4096 Mar 05 14:16 lab4
-rw-rw-r--    1 1000      1000           75 Feb 08 15:10 list-output.txt
-rw-rw-r--    1 1000      1000          173 Feb 08 15:10 list_output_number.txt
drwxrwxr-x    2 1000      1000         4096 Feb 12 03:19 my-website
-rw-------    1 0         0              74 Mar 05 14:02 nano.2471.save
-rw-------    1 0         0               1 Mar 05 14:04 nano.2627.save
drwxrwsr-x    4 1000      1003         4096 Feb 20 23:33 os_team_workspace
drwxrwxr-x    2 1000      1000         4096 Mar 05 13:59 script.sh
drwx------    5 1000      1000         4096 Mar 28 10:21 snap
drwxrwxr-x    2 1000      1000         4096 Feb 12 03:27 task1
226 Directory send OK.
ftp> exit
221 Goodbye.
```

enable ufw service

```
nehad@nehad-VirtualBox:~$ sudo ufw enable
[sudo] password for nehad:
Firewall is active and enabled on system startup
```

block port 21 and 21 (tcp) using ufw

```
nehad@nehad-VirtualBox:~$ sudo ufw deny 20/tcp
Rule added
Rule added (v6)
nehad@nehad-VirtualBox:~$ sudo ufw deny 21/tcp
Rule added
Rule added (v6)
```

try to connect to ftp service.

```
nehad@nehad-VirtualBox:~$ ftp localhost
Connected to localhost.
220 (vsFTPd 3.0.5)
Name (localhost:nehad): nehad
331 Please specify the password.
Password:
230 Login successful.
Remote system type is UNIX.
Using binary mode to transfer files.
ftp> ls
229 Entering Extended Passive Mode (|||43729|)
150 Here comes the directory listing.
drwxr-xr-x    2 1000     1000         4096 Feb 01 14:12 Desktop
drwxr-xr-x    2 1000     1000         4096 Feb 01 14:12 Documents
drwxr-xr-x    2 1000     1000         4096 Feb 01 14:12 Downloads
drwxr-xr-x    2 1000     1000         4096 Feb 01 14:12 Music
drwxr-xr-x    2 1000     1000         4096 Feb 01 14:12 Pictures
drwxr-xr-x    2 1000     1000         4096 Feb 01 14:12 Public
drwxr-xr-x    2 1000     1000         4096 Feb 01 14:12 Templates
drwxr-xr-x    2 1000     1000         4096 Feb 01 14:12 Videos
-rw-r--r--    1 0        0               0 Mar 04 12:53 file1
-rw-rw-r--    1 1000     1000            3 Feb 08 14:42 file1.txt
-rw-r--r--    1 0        0               0 Mar 04 12:53 file2
-rw-rw-r--    1 1000     1000            3 Feb 08 14:48 file2.txt
-rw-rw-r--    1 1000     1000            0 Feb 12 03:20 index.html
drwxrwxr-x    2 1000     1000         4096 Feb 08 14:51 iti-0
drwxrwxr-x    2 1000     1000         4096 Feb 08 12:42 iti-1
drwxrwxr-x    2 1000     1000         4096 Mar 05 14:16 lab4
```

capture the ufw log to detect the blocked operation.

```
nehad@nehad-VirtualBox:~$ tail /var/log/kern.log
Apr  9 16:22:16 nehad-VirtualBox kernel: [   49.566299] audit: type=1326 audit(
1681050136.811:55): auid=1000 uid=1000 gid=1000 ses=2 subj=snap.snapd-desktop-i
ntegration.snapd-desktop-integration pid=1178 comm="snapd-desktop-i" exe="/snap
/snapd-desktop-integration/57/usr/bin/snapd-desktop-integration" sig=0 arch=c00
0003e syscall=314 compat=0 ip=0x7f8cf944ca3d code=0x50000
Apr  9 16:22:20 nehad-VirtualBox kernel: [   52.277531] audit: type=1326 audit(
1681050140.873:56): auid=1000 uid=1000 gid=1000 ses=2 subj=snap.snapd-desktop-i
ntegration.snapd-desktop-integration pid=1253 comm="snapd-desktop-i" exe="/snap
/snapd-desktop-integration/57/usr/bin/snapd-desktop-integration" sig=0 arch=c00
0003e syscall=314 compat=0 ip=0x7fc195a12a3d code=0x50000
Apr  9 16:22:30 nehad-VirtualBox kernel: [   62.243190] rfkill: input handler d
isabled
Apr  9 17:26:51 nehad-VirtualBox kernel: [ 3695.144604] e1000: enp0s3 NIC Link
is Down
Apr  9 17:26:55 nehad-VirtualBox kernel: [ 3699.177335] e1000: enp0s3 NIC Link
is Up 1000 Mbps Full Duplex, Flow Control: RX
Apr  9 21:58:07 nehad-VirtualBox kernel: [17666.104356] e1000: enp0s3 NIC Link
```

install nfs service on your system

```
nehad@nehad-VirtualBox:~$ sudo apt install nfs-kernel-server
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following packages were automatically installed and are no longer required:
  chromium-codecs-ffmpeg-extra gstreamer1.0-vaapi i965-va-driver
  intel-media-va-driver libaacs0 libaom3 libass9 libavcodec58 libavformat58
  libavutil56 libbdplus0 libbluray2 libbs2b0 libchromaprint1 libcodec2-1.0
  libdav1d5 libflite1 libgme0 libgsm1 libgstreamer-plugins-bad1.0-0
  libigdgmm12 liblilv-0-0 libllvm15 libmfx1 libmysofa1 libnorm1 libopenmpt0
  libpgm-5.3-0 libpostproc55 librabbitmq4 librubberband2 libserd-0-0
  libshine3 libsnappy1v5 libsord-0-0 libsratom-0-0 libsrt1.4-gnutls
  libssh-gcrypt-4 libswresample3 libswscale5 libudfread0 libva-drm2
  libva-wayland2 libva-x11-2 libva2 libvdpau1 libvidstab1.1 libx265-199
  libxvidcore4 libzimg2 libzmq5 libzvbi-common libzvbi0 mesa-va-drivers
  mesa-vdpau-drivers pocketsphinx-en-us va-driver-all vdpau-driver-all
Use 'sudo apt autoremove' to remove them.
The following additional packages will be installed:
  keyutils libevent-core-2.1-7 libnfsidmap1 nfs-common rpcbind
Suggested packages:
  open-iscsi watchdog
The following NEW packages will be installed:
  keyutils libevent-core-2.1-7 libnfsidmap1 nfs-common nfs-kernel-server
  rpcbind
0 upgraded, 6 newly installed, 0 to remove and 208 not upgraded.
Need to get 615 kB of archives.
After this operation, 2,235 kB of additional disk space will be used.
```

enable nfs service on the firewall

```
nehad@nehad-VirtualBox:~$ sudo ufw allow 2049/tcp
Rule added
Rule added (v6)
nehad@nehad-VirtualBox:~$ sudo ufw allow 2049/udp
Rule added
Rule added (v6)
```

create and share /tmp/shares folder using exportfs command and /etc/exports file

```
nehad@nehad-VirtualBox:~$ sudo echo '/tmp/shares *(rw)' | sudo tee -a /etc/expo
rts
/tmp/shares *(rw)
```

mount the remote share on /mnt folder (you can using localhost as well)

```
nehad@nehad-VirtualBox:~$ mkdir /tmp/shares
nehad@nehad-VirtualBox:~$ sudo mount -t nfs localhost:/tmp/shares /mnt
```

copy some files to the remote share

```
nehad@nehad-VirtualBox:~$ scp /tmp/fileTest.txt /mnt/
```

save iptables rules to /tmp/iptables-backup file

```
nehad@nehad-VirtualBox:~$ sudo iptables-save > /tmp/iptables-backup
```