

## 1. Install ftpd service on your laptop

```
vboxuser@ubuntu:~$ sudo apt install vsftpd
[sudo] password for vboxuser:
Sorry, try again.
[sudo] password for vboxuser:
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following NEW packages will be installed:
  vsftpd
0 upgraded, 1 newly installed, 0 to remove and 248 not upgraded.
Need to get 115 kB of archives.
After this operation, 338 kB of additional disk space will be used.
Get:1 http://us.archive.ubuntu.com/ubuntu focal/main amd64 vsftpd amd64 3.0.3-12 [115 kB]
Fetched 115 kB in 1s (96.0 kB/s)
Preconfiguring packages ...
Selecting previously unselected package vsftpd.
(Reading database ... 214759 files and directories currently installed.)
Preparing to unpack .../vsftpd_3.0.3-12_amd64.deb ...
Unpacking vsftpd (3.0.3-12) ...
Setting up vsftpd (3.0.3-12) ...
Created symlink /etc/systemd/system/multi-user.target.wants/vsftpd.service → /lib/systemd/system/vsftpd.service.
Processing triggers for man-db (2.9.1-1) ...
Processing triggers for systemd (245.4-4ubuntu3.20) ...
```

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

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

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

```
vboxuser@ubuntu:~$ ftp localhost
Connected to localhost.
220 (vsFTPd 3.0.3)
Name (localhost:vboxuser): vboxuser
331 Please specify the password.
Password:
230 Login successful.
Remote system type is UNIX.
Using binary mode to transfer files.
ftp> ls
200 PORT command successful. Consider using PASV.
150 Here comes the directory listing.
drwxr-xr-x  3 1000      1000          4096 Feb 08 14:18 Desktop
drwxr-xr-x  2 1000      1000          4096 Feb 01 12:47 Documents
drwxr-xr-x  2 1000      1000          4096 Feb 11 15:33 Downloads
drwxr-xr-x  2 1000      1000          4096 Feb 01 12:47 Music
drwxr-xr-x  2 1000      1000          4096 Feb 01 12:47 Pictures
drwxr-xr-x  2 1000      1000          4096 Feb 01 12:47 Public
drwxr-xr-x  2 1000      1000          4096 Feb 01 12:47 Templates
drwxr-xr-x  2 1000      1000          4096 Feb 01 12:47 Videos
-rw-rw-r--  1 1000      1000           198 Feb 25 01:16 bg_ser.service
-rw-rw-r--  1 1000      1000        20480000 Mar 03 19:29 disk.img
-rw-rw-r--  1 1000      1000        10240000 Mar 28 16:55 disk1.disk
-rw-rw-r--  1 1000      1000        10240000 Mar 28 16:52 disk2.disk
-rw-rw-r--  1 1000      1000        10240000 Mar 28 16:52 disk3.disk
-rw-rw-r--  1 1000      1000        10240000 Mar 28 16:52 disk4.disk
drwxrwxr-x  2 1000      1000          4096 Feb 24 23:23 lab4
drwxrwxr-x  2 1000      1000          4096 Mar 03 18:14 lab5
drwxrwxr-x  2 1000      1000          4096 Feb 17 01:40 mydir1
-rw-rw-r--  1 1000      1000       1073741824 Mar 28 14:11 new.img
-rw-rw-r--  1 1000      1000       1073741824 Mar 28 15:35 new1.img
drwxrwsrwx  2 1000      1005          4096 Feb 17 01:10 os_team_workspace
drwxrwxr-x  2 1000      1000          4096 Feb 17 01:07 os_team_workspce
-rw-rw-r--  1 1000      1000       1073741824 Mar 28 14:01 pv1.img
-rw-rw-r--  1 1000      1000           99 Feb 25 00:55 script.sh
drwx----- 3 1000      1000          4096 Feb 18 01:23 snap
226 Directory send OK.
ftp> AZ
```

#### 4. enable ufw service

```
vboxuser@ubuntu:~$ sudo ufw enable
Firewall is active and enabled on system startup
vboxuser@ubuntu:~$
```

#### 5. block port 20 and 21 (tcp) using ufw

```
vboxuser@ubuntu:~$ sudo ufw deny 20/tcp
Rule added
Rule added (v6)
vboxuser@ubuntu:~$ sudo ufw deny 21/tcp
Rule added
Rule added (v6)
vboxuser@ubuntu:~$
```

#### 6. • try to connect to ftp service.

```
vboxuser@ubuntu:~$ ftp localhost
Connected to localhost.
220 (vsFTPd 3.0.3)
Name (localhost:vboxuser): vboxuser
331 Please specify the password.
Password:
230 Login successful.
Remote system type is UNIX.
Using binary mode to transfer files.
ftp> ls
200 PORT command successful. Consider using PASV.
150 Here comes the directory listing.
drwxr-xr-x   3 1000    1000          4096 Feb 08 14:18 Desktop
drwxr-xr-x   2 1000    1000          4096 Feb 01 12:47 Documents
drwxr-xr-x   2 1000    1000          4096 Feb 11 15:33 Downloads
drwxr-xr-x   2 1000    1000          4096 Feb 01 12:47 Music
drwxr-xr-x   2 1000    1000          4096 Feb 01 12:47 Pictures
drwxr-xr-x   2 1000    1000          4096 Feb 01 12:47 Public
drwxr-xr-x   2 1000    1000          4096 Feb 01 12:47 Templates
drwxr-xr-x   2 1000    1000          4096 Feb 01 12:47 Videos
-rw-rw-r--   1 1000    1000           198 Feb 25 01:16 bg_ser.service
-rw-rw-r--   1 1000    1000       20480000 Mar 03 19:29 disk.img
-rw-rw-r--   1 1000    1000       10240000 Mar 28 16:55 disk1.disk
-rw-rw-r--   1 1000    1000       10240000 Mar 28 16:52 disk2.disk
-rw-rw-r--   1 1000    1000       10240000 Mar 28 16:52 disk3.disk
-rw-rw-r--   1 1000    1000       10240000 Mar 28 16:52 disk4.disk
drwxrwxr-x   2 1000    1000          4096 Feb 24 23:23 lab4
drwxrwxr-x   2 1000    1000          4096 Mar 03 18:14 lab5
drwxrwxr-x   2 1000    1000          4096 Feb 17 01:40 mydir1
-rw-rw-r--   1 1000    1000       1073741824 Mar 28 14:11 new.img
-rw-rw-r--   1 1000    1000       1073741824 Mar 28 15:35 new1.img
drwxrwsrwx   2 1000    1005          4096 Feb 17 01:10 os_team_workspace
drwxrwxr-x   2 1000    1000          4096 Feb 17 01:07 os_team_workspce
-rw-rw-r--   1 1000    1000       1073741824 Mar 28 14:01 pv1.img
-rw-rw-r--   1 1000    1000           99 Feb 25 00:55 script.sh
drwx-----  3 1000    1000          4096 Feb 18 01:23 snap
226 Directory send OK.
ftp>
```

## 7. • capture the ufw log to detect the blocked operation

```
vboxuser@ubuntu:~$ sudo tail -f /var/log/kern.log
Apr  5 14:38:03 ubuntu kernel: [  55.490160]  exe="/usr/bin/dbus-daemon" sauid=103 hostname=? addr=? terminal=?
Apr  5 14:38:03 ubuntu kernel: [  55.490662]  audit: type=1107 audit(1680698283.697:45): pid=579 uid=103 auid=4294967295 ses=4294967295 subj=unconfined msg='apparmor="DENIED" operation="dbus_method"
  bus="system" path="/org/freedesktop/PolicyKit1/Authority" interface="org.freedesktop.PolicyKit1.Authority" member="CheckAuthorization" mask="send" name="i1.5" pid=1957 label="snap.snap-store.snap
  peer_pid=599 peer_label="unconfined"
Apr  5 14:38:04 ubuntu kernel: [  55.490662]  exe="/usr/bin/dbus-daemon" sauid=103 hostname=? addr=? terminal=?
Apr  5 14:38:04 ubuntu kernel: [  56.780183]  audit: type=1400 audit(1680698284.985:46): apparmor="DENIED" operation="open" profile="snap.snap-store.snap-store" name="/etc/PackageKit/Vendor.conf" p
  7 comm="snap-store" requested_mask="r" denied_mask="r" fsuid=1000 ouid=0
Apr  5 14:38:06 ubuntu kernel: [  58.093330]  audit: type=1400 audit(1680698286.296:47): apparmor="DENIED" operation="open" profile="snap.snap-store.snap-store" name="/etc/appstream.conf" pid=1957
  snap-store" requested_mask="r" denied_mask="r" fsuid=1000 ouid=0
Apr  5 14:39:13 ubuntu kernel: [ 125.040651]  audit: type=1400 audit(1680698353.241:48): apparmor="DENIED" operation="open" profile="snap.snap-store.snap-store" name="/var/lib/snapd/hostfs/usr/shar
  greeter/applications/gnome-initial-setup.desktop" pid=1957 comm="pool-org.gnome." requested_mask="r" denied_mask="r" fsuid=1000 ouid=0
Apr  5 14:39:13 ubuntu kernel: [ 125.102557]  audit: type=1400 audit(1680698353.377:49): apparmor="DENIED" operation="open" profile="snap.snap-store.snap-store" name="/var/lib/snapd/hostfs/usr/shar
  greeter/applications/gnome-initial-setup.desktop" pid=1957 comm="pool-org.gnome." requested_mask="r" denied_mask="r" fsuid=1000 ouid=0
Apr  5 14:39:14 ubuntu kernel: [ 126.304892]  audit: type=1320 audit(1680698354.497:50): auid=1000 uid=1000 uid=1000 gld=1000 ses=3 subj=snap.snap-store.snap-store pid=1957 comm="pool-org.gnome." exe="/snap
  store/630/usr/bin/snap-store" sigpe=archc000003e syscall=93 compat=0 ip=0x7f3411c4039b code=0x50000
Apr  5 14:43:50 ubuntu kernel: [ 402.130197]  loop15: detected capacity change from 0 to 447264
Apr  5 14:48:30 ubuntu kernel: [ 682.625700]  bpfILTER: Loaded bpfILTER_unh pid 4605
```

## 8. • install nfs service on your system

```
vboxuser@ubuntu:~$ sudo apt-get update
Hit:1 http://us.archive.ubuntu.com/ubuntu focal InRelease
Get:2 http://security.ubuntu.com/ubuntu focal-security InRelease [114 kB]
Get:3 http://us.archive.ubuntu.com/ubuntu focal-updates InRelease [114 kB]
Get:4 http://us.archive.ubuntu.com/ubuntu focal-backports InRelease [108 kB]
Get:5 http://us.archive.ubuntu.com/ubuntu focal-updates/universe amd64 Packages [1,047 kB]
Get:6 http://us.archive.ubuntu.com/ubuntu focal-updates/universe i386 Packages [721 kB]
Get:7 http://us.archive.ubuntu.com/ubuntu focal-updates/universe Translation-en [247 kB]
F  Show Applications  in 6s (419 kB/s)
```

## 9. • enable nfs service on the firewall

```
vboxuser@ubuntu:~$ sudo ufw allow 2049/tcp
Rule added
Rule added (v6)
vboxuser@ubuntu:~$ sudo ufw allow 2049/udp
Rule added
Rule added (v6)
vboxuser@ubuntu:~$
```

## 10. • create and share /tmp/shares folder using exportfs command and /etc/exports file

```
Rule added (v6)
vboxuser@ubuntu:~$ mkdir /tmp/shares
vboxuser@ubuntu:~$ echo '/tmp/shares*(rw)|' | sudo tee -a /etc/exports
/tmp/shares*(rw)
```

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

```
vboxuser@ubuntu:~$ sudo mount -t nfs localhost:/tmp/shares /mnt
```

## 12. • copy some files to the remote share

```
vboxuser@ubuntu:~$ sudo cp /tmp/tt.txt /mnt
vboxuser@ubuntu:~$
```

## 13. • save iptables rules to /tmp/iptables-backup file

```
vboxuser@ubuntu:~$ sudo iptables-save > /tmp/iptables-backup
vboxuser@ubuntu:~$
```