

- Install `ftpd` service on your laptop

```
mahmoud@mahmoud-Virtual-Machine:~/Desktop$ sudo apt-get install vsftpd
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
mahmoud@mahmoud-Virtual-Machine:~/Desktop$ sudo service vsftpd start
mahmoud@mahmoud-Virtual-Machine:~/Desktop$ sudo systemctl enable vsftpd
Synchronizing state of vsftpd.service with SysV service script with /lib/systemd/systemd-sysv-install.
Executing: /lib/systemd/systemd-sysv-install enable vsftpd
```

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

```
mahmoud@mahmoud-Virtual-Machine:~/Desktop$ sudo iptables -A INPUT -p tcp --dport 20 -j ACCEPT
[sudo] password for mahmoud:
mahmoud@mahmoud-Virtual-Machine:~/Desktop$ sudo iptables -A INPUT -p tcp --dport 21 -j ACCEPT
# Completed on Wed Apr 5 15:05:40 2023
mahmoud@mahmoud-Virtual-Machine:~/Desktop$ sudo iptables-save > rules.v4
```

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

```
mahmoud@mahmoud-Virtual-Machine:~/Desktop$ ftp localhost
Connected to localhost.
220 (vsFTPd 3.0.5)
Name (localhost:mahmoud): mahmoud
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 (|||16059|)
150 Here comes the directory listing.
drwxr-xr-x  5 1000      1000          4096 Apr 05 13:04 Desktop
drwxr-xr-x  2 1000      1000          4096 Feb 01 19:55 Documents
drwxr-xr-x  2 1000      1000          4096 Feb 07 14:58 Downloads
drwxr-xr-x  2 1000      1000          4096 Feb 01 19:55 Music
drwxr-xr-x  2 1000      1000          4096 Feb 01 19:55 Pictures
drwxr-xr-x  2 1000      1000          4096 Feb 01 19:55 Public
drwxr-xr-x  2 1000      1000          4096 Feb 01 19:55 Templates
drwxr-xr-x  2 1000      1000          4096 Feb 01 19:55 Videos
drwx----- 5 1000      1000          4096 Feb 01 20:00 snap
226 Directory send OK.
```

- enable ufw service

```
mahmoud@mahmoud-Virtual-Machine:~/Desktop$ sudo ufw enable
Firewall is active and enabled on system startup
mahmoud@mahmoud-Virtual-Machine:~/Desktop$ sudo ufw status
Status: active
```

To	Action	From
--	-----	----
Apache	ALLOW	Anywhere
22/tcp	ALLOW	Anywhere
Apache (v6)	ALLOW	Anywhere (v6)
22/tcp (v6)	ALLOW	Anywhere (v6)

- block port 21 and 21 (tcp) using ufw

```
mahmoud@mahmoud-Virtual-Machine:~/Desktop$ sudo ufw deny 20/tcp
Rule added
Rule added (v6)
mahmoud@mahmoud-Virtual-Machine:~/Desktop$ sudo ufw deny 21/tcp
Rule added
Rule added (v6)
mahmoud@mahmoud-Virtual-Machine:~/Desktop$ sudo ufw status numbered
Status: active
```

	To	Action	From
	--	-----	----
[1]	Apache	ALLOW IN	Anywhere
[2]	22/tcp	ALLOW IN	Anywhere
[3]	20/tcp	DENY IN	Anywhere
[4]	21/tcp	DENY IN	Anywhere
[5]	Apache (v6)	ALLOW IN	Anywhere (v6)
[6]	22/tcp (v6)	ALLOW IN	Anywhere (v6)
[7]	20/tcp (v6)	DENY IN	Anywhere (v6)

- try to connect to ftp service.

```
mahmoud@mahmoud-Virtual-Machine:~/Desktop$ ftp localhost
ftp: Can't connect to `127.0.0.1:21': Bad file descriptor
ftp: Can't connect to `localhost:ftp'
ftp>
```

- capture the ufw log to detect the blocked operation

```
mahmoud@mahmoud-Virtual-Machine:~/Desktop$ sudo cat /var/log/ufw.log
mahmoud@mahmoud-Virtual-Machine:~/Desktop$ tail /var/log/kern.log
```

- install `nfs` service on your system

```
mahmoud@mahmoud-Virtual-Machine:~/Desktop$ sudo apt install nfs-kernel-server
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
```

- enable `nfs` service on the firewall

```
mahmoud@mahmoud-Virtual-Machine:~/Desktop$ sudo ufw allow 2049/tcp
Rule added
Rule added (v6)
mahmoud@mahmoud-Virtual-Machine:~/Desktop$ sudo ufw allow 2049/udp
Rule added
Rule added (v6)
mahmoud@mahmoud-Virtual-Machine:~/Desktop$
```

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

```
mahmoud@mahmoud-Virtual-Machine:~/Desktop$ mkdir /tmp/shares
mahmoud@mahmoud-Virtual-Machine:~/Desktop$ vim /tmp/shares/file.txt
mahmoud@mahmoud-Virtual-Machine:~/Desktop$ ls /tmp/shares/
file.txt
mahmoud@mahmoud-Virtual-Machine:~/Desktop$ sudo chmod 777 /tmp/shares
[sudo] password for mahmoud:
mahmoud@mahmoud-Virtual-Machine:~/Desktop$
```

```
GNU nano 6.2 /etc/exports *
# /etc/exports: the access control list for filesystems which may be exported
# to NFS clients. See exports(5).
#
# Example for NFSv2 and NFSv3:
# /srv/homes hostname1(rw,sync,no_subtree_check) hostname2(ro,sync,no_subtree_check)
#
# Example for NFSv4:
# /srv/nfs4 gss/krb5i(rw,sync,fsid=0,crossmnt,no_subtree_check)
# /srv/nfs4/homes gss/krb5i(rw,sync,no_subtree_check)
#
/tmp/shares *(rw)
```

```
mahmoud@mahmoud-Virtual-Machine:~/Desktop$ sudo exportfs -a
exportfs: /etc/exports [1]: Neither 'subtree_check' or 'no_subtree_check' specified for export "*/tmp/shares".
Assuming default behaviour ('no_subtree_check').
NOTE: this default has changed since nfs-utils version 1.0.x
```

```
mahmoud@mahmoud-Virtual-Machine:~/Desktop$ showmount -e
Export list for mahmoud-Virtual-Machine:
/tmp/shares *
```

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

```
mahmoud@mahmoud-Virtual-Machine:~/Desktop$ sudo mount localhost:/tmp/shares /mnt
mahmoud@mahmoud-Virtual-Machine:~/Desktop$
```

- copy some files to the remote share

```
mahmoud@mahmoud-Virtual-Machine: ~/Desktop$ sudo ls
disk1.disk  disk3.disk  disk5.disk  file2  iti-0      Lab5          rules3.v4      rules.v4
disk2.disk  disk4.disk  file1       file3  iti-0.zip  os_team_workspace  rulesRemove.v4  script-.sh
mahmoud@mahmoud-Virtual-Machine: ~/Desktop$ sudo cp file1 /mnt
mahmoud@mahmoud-Virtual-Machine: ~/Desktop$ ls /mnt
file1  file.txt
mahmoud@mahmoud-Virtual-Machine: ~/Desktop$
```

- save iptables rules to /tmp/iptables-backup file

```
mahmoud@mahmoud-Virtual-Machine: ~/Desktop$ sudo iptables-save > /tmp/iptables-backup
mahmoud@mahmoud-Virtual-Machine: ~/Desktop$ ls /tmp
```

```
mahmoud@mahmoud-Virtual-Machine: ~/Desktop$ ls /tmp | grep "backup"
iptables-backup
```