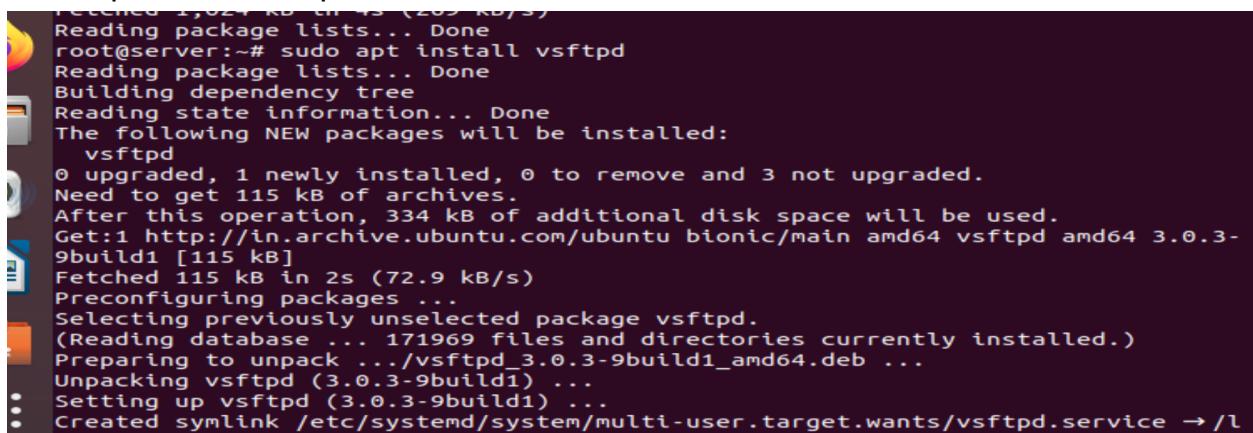


FTP(File Transfer Protocol)

```
sudo apt update
```

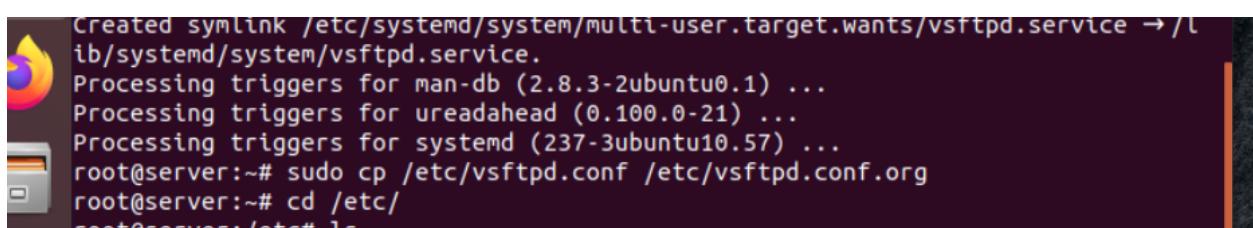
```
sudo apt install vsftpd
```



```
Reading package lists... Done
root@server:~# sudo apt install vsftpd
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 3 not upgraded.
Need to get 115 kB of additional disk space will be used.
Get:1 http://in.archive.ubuntu.com/ubuntu bionic/main amd64 vsftpd amd64 3.0.3-9build1 [115 kB]
Fetched 115 kB in 2s (72.9 kB/s)
Preconfiguring packages ...
Selecting previously unselected package vsftpd.
(Reading database ... 171969 files and directories currently installed.)
Preparing to unpack .../vsftpd_3.0.3-9build1_amd64.deb ...
Unpacking vsftpd (3.0.3-9build1) ...
Setting up vsftpd (3.0.3-9build1) ...
Created symlink /etc/systemd/system/multi-user.target.wants/vsftpd.service → /lib/systemd/system/vsftpd.service.
```

backup

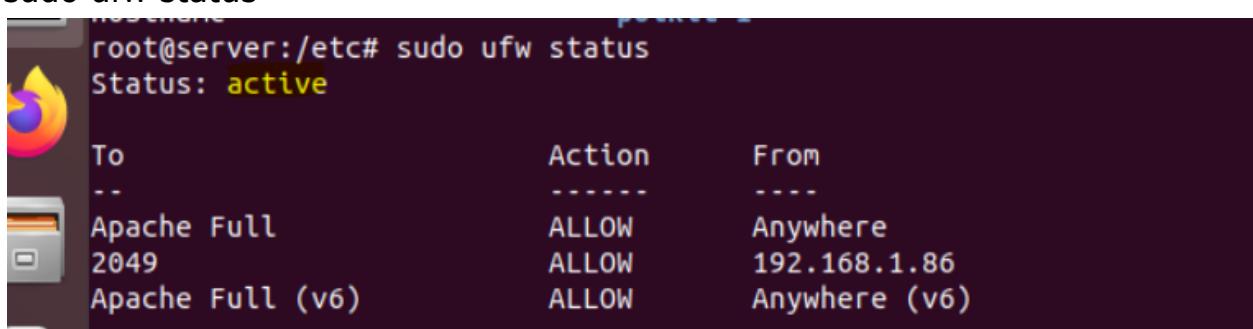
```
sudo cp /etc/vsftpd.conf /etc/vsftpd.conf.orig
```



```
Created symlink /etc/systemd/system/multi-user.target.wants/vsftpd.service → /lib/systemd/system/vsftpd.service.
Processing triggers for man-db (2.8.3-2ubuntu0.1) ...
Processing triggers for ureadahead (0.100.0-21) ...
Processing triggers for systemd (237-3ubuntu10.57) ...
root@server:~# sudo cp /etc/vsftpd.conf /etc/vsftpd.conf.org
root@server:~# cd /etc/
root@server:~/etc# ls
```

opening firewall

```
sudo ufw status
```

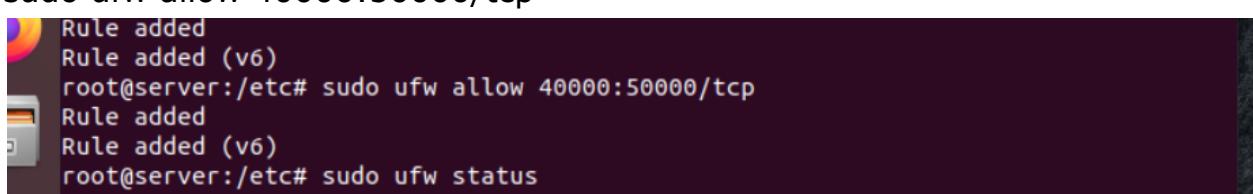


```
root@server:/etc# sudo ufw status
Status: active

To                         Action      From
--                         ----       --
Apache Full                 ALLOW      Anywhere
2049                       ALLOW      192.168.1.86
Apache Full (v6)            ALLOW      Anywhere (v6)
```

```
sudo ufw allow 20,21,990/tcp
```

```
sudo ufw allow 40000:50000/tcp
```



```
Rule added
Rule added (v6)
root@server:/etc# sudo ufw allow 40000:50000/tcp
Rule added
Rule added (v6)
root@server:/etc# sudo ufw status
Status: active
```

```
sudo ufw status
```

```
root@server:/etc# sudo ufw status
Status: active

To                         Action      From
--                         ----       ---
Apache Full
2049                       ALLOW      Anywhere
20,21,990/tcp               ALLOW      Anywhere
40000:50000/tcp             ALLOW      Anywhere
Apache Full (v6)
20,21,990/tcp (v6)          ALLOW      Anywhere (v6)
40000:50000/tcp (v6)        ALLOW      Anywhere (v6)

root@server:/etc#
```

USER DIRECTORY

```
sudo adduser jim
```

```
root@server:~# cd /home/jacqulin/
root@server:/home/jacqulin# sudo adduser jim
Adding user `jim' ...
Adding new group `jim' (1001) ...
Adding new user `jim' (1001) with group `jim' ...
Creating home directory `/home/jim' ...
Copying files from `/etc/skel' ...
Enter new UNIX password:
Retype new UNIX password:
passwd: password updated successfully
Changing the user information for jim
Enter the new value, or press ENTER for the default
      Full Name []: jim kernel
      Room Number []: 1
      Work Phone []: 4321
      Home Phone []:
      Other []:
Is the information correct? [Y/n] y
root@server:/home/jacqulin# cd
root@server:~# sudo mkdir /home/jim/ftp
root@server:~#
```

Create the ftp folder:

```
sudo mkdir /home/jim/ftp
```

```
root@server:~# sudo mkdir /home/jim/ftp
root@server:~# sudo chown nobody:nogroup /home/jim/ftp/
root@server:~# sudo chmod a-w /home/jim/ftp/
root@server:~# sudo ls -la /home/jim/ftp/
total 8
dr-xr-xr-x 2 nobody nogroup 4096 Aug 14 14:56 .
drwxr-xr-x 3 jim    jim    4096 Aug 14 14:56 ..
root@server:~#
```

Set its ownership:

```
sudo chown nobody:nogroup /home/jim/ftp
```

```
root@server:~# sudo mkdir /home/jim/ftp
root@server:~# sudo chown nobody:nogroup /home/jim/ftp/
root@server:~# sudo chmod a-w /home/jim/ftp/
root@server:~# sudo ls -la /home/jim/ftp/
total 8
dr-xr-xr-x 2 nobody nogroup 4096 Aug 14 14:56 .
drwxr-xr-x 3 jim      jim      4096 Aug 14 14:56 ..
root@server:~#
```

Remove write permissions:

```
sudo chmod a-w /home/jim/ftp
```

```
root@server:~# sudo mkdir /home/jim/ftp
root@server:~# sudo chown nobody:nogroup /home/jim/ftp/
root@server:~# sudo chmod a-w /home/jim/ftp/
root@server:~# sudo ls -la /home/jim/ftp/
total 8
dr-xr-xr-x 2 nobody nogroup 4096 Aug 14 14:56 .
drwxr-xr-x 3 jim      jim      4096 Aug 14 14:56 ..
root@server:~#
```

Verify the permissions:

```
sudo ls -la /home/jim/ftp
```

```
root@server:~# sudo mkdir /home/jim/ftp
root@server:~# sudo chown nobody:nogroup /home/jim/ftp/
root@server:~# sudo chmod a-w /home/jim/ftp/
root@server:~# sudo ls -la /home/jim/ftp/
total 8
dr-xr-xr-x 2 nobody nogroup 4096 Aug 14 14:56 .
drwxr-xr-x 3 jim      jim      4096 Aug 14 14:56 ..
root@server:~#
```

Next, create the directory for file uploads:

```
sudo mkdir /home/jim/ftp/upload
```

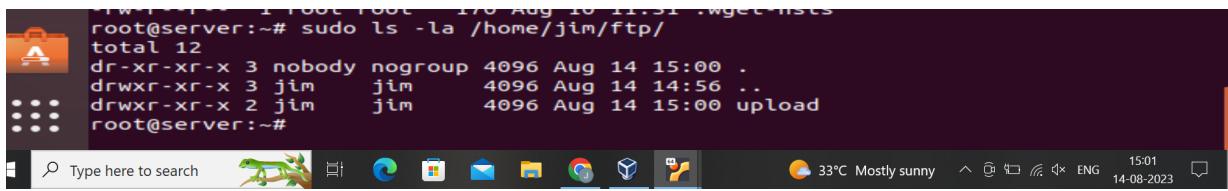
```
drwxr-xr-x 2 nobody nogroup 4096 Aug 14 14:56 ..
root@server:~# sudo mkdir /home/jim/ftp/upload
root@server:~# sudo chown jim:jim /home/jim/ftp/upload/
root@server:~# sudo ls -la
total 60
```

Then assign ownership to the user:

```
sudo chown jim:jim /home/jim/ftp/upload
```

```
dr-xr-xr-x 2 nobody nogroup 4096 Aug 14 14:56 .
drwxr-xr-x 3 jim      jim      4096 Aug 14 14:56 ..
root@server:~# sudo mkdir /home/jim/ftp/upload
root@server:~# sudo chown jim:jim /home/jim/ftp/upload/
```

```
sudo ls -la /home/jim/ftp
```

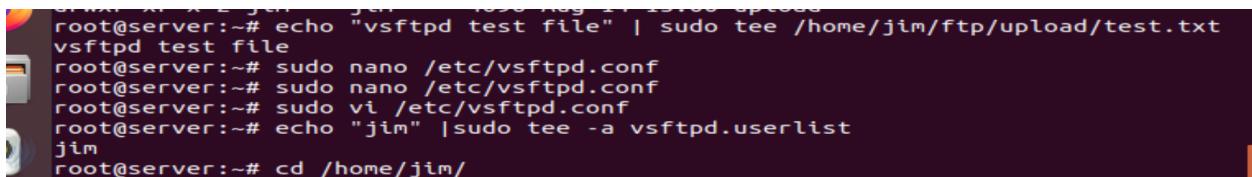


```
root@server:~# sudo ls -la /home/jim/ftp/
total 12
dr-xr-xr-x 3 nobody nogroup 4096 Aug 14 15:00 .
drwxr-xr-x 3 jim jim 4096 Aug 14 14:56 ..
drwxr-xr-x 2 jim jim 4096 Aug 14 15:00 upload
root@server:~#
```

Type here to search 33°C Mostly sunny 15:01 14-08-2023

add a file for testing

```
echo "vsftpd test file" | sudo tee /home/jim/ftp/upload/test.txt
```



```
root@server:~# echo "vsftpd test file" | sudo tee /home/jim/ftp/upload/test.txt
vsftpd test file
root@server:~# sudo nano /etc/vsftpd.conf
root@server:~# sudo nano /etc/vsftpd.conf
root@server:~# sudo vi /etc/vsftpd.conf
root@server:~# echo "jim" |sudo tee -a vsftpd.userlist
jim
root@server:~# cd /home/jim/
```

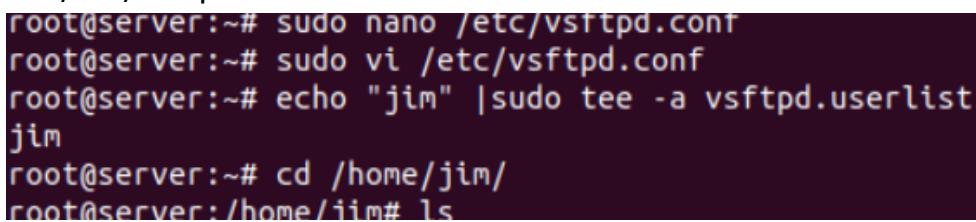
Configuring FTP Access

```
sudo nano /etc/vsftpd.conf
```

```
Unset
...
# Allow anonymous FTP? (Disabled by default).
anonymous_enable=NO
#
# Uncomment this to allow local users to log in.
local_enable=YES
write_enable=YES
chroot_local_user=YES
user_sub_token=$USER
local_root=/home/$USER/ftp
pasv_min_port=40000
pasv_max_port=50000
userlist_enable=YES
userlist_file=/etc/vsftpd.userlist
userlist_deny=NO
```

```
echo "jim" | sudo tee -a /etc/vsftpd.userlist
```

```
cat /etc/vsftpd.userlist
```



```
root@server:~# sudo nano /etc/vsftpd.conf
root@server:~# sudo vi /etc/vsftpd.conf
root@server:~# echo "jim" |sudo tee -a vsftpd.userlist
jim
root@server:~# cd /home/jim/
root@server:/home/jim# ls
```

```
sudo systemctl restart vsftpd
```

TESTING FTP Access

```
ftp -p 192.168.1.26
```

Now change into the files directory:

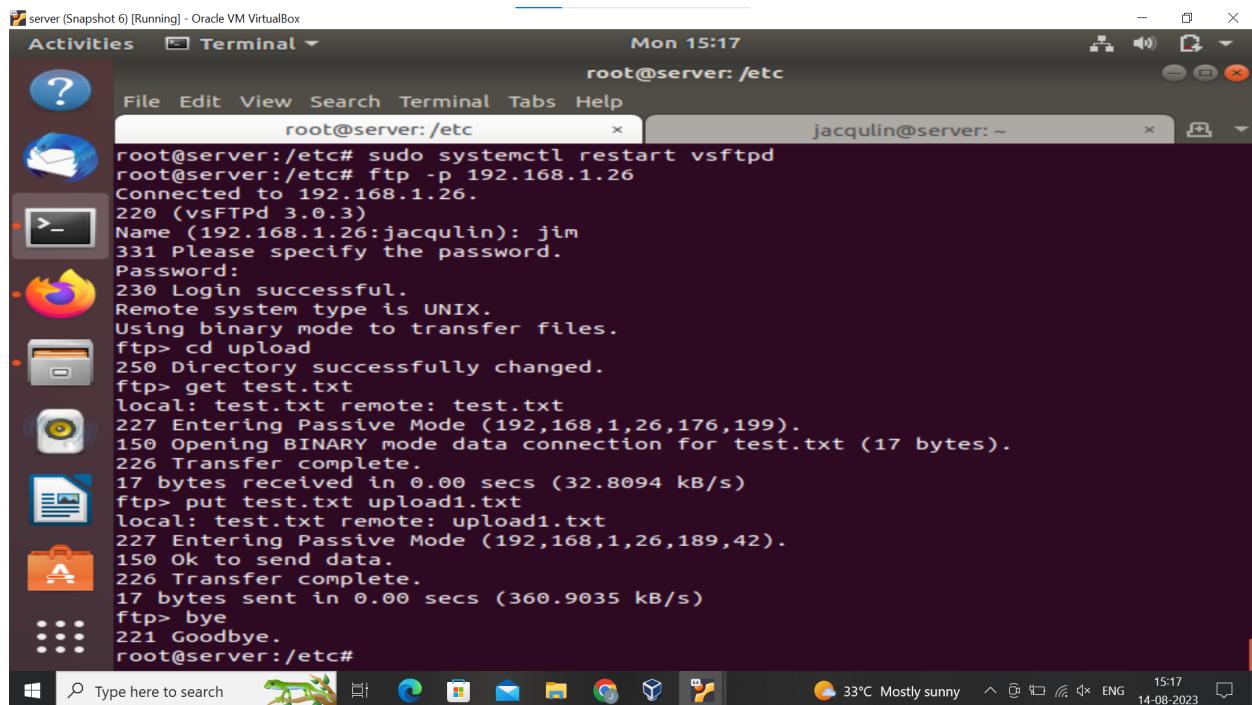
```
cd files
```

run **get** to transfer the test file you created earlier to your local machine:

```
get test.txt
```

upload the file with a new name to test write permissions

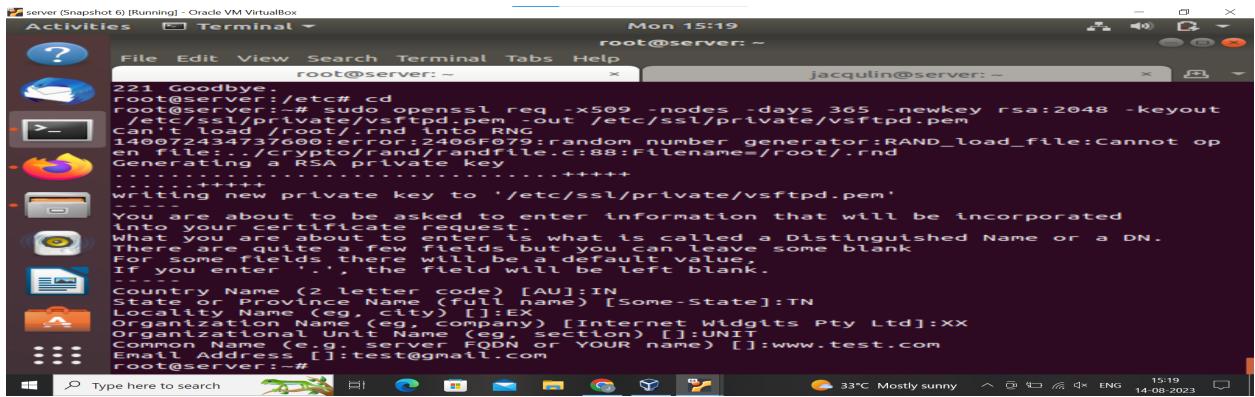
```
put test.txt upload.txt
```



```
server (Snapshot 6) [Running] - Oracle VM VirtualBox
Activities Terminal Mon 15:17
root@server: /etc
File Edit View Search Terminal Tabs Help
root@server: /etc x jacqulin@server: ~
root@server:/etc# sudo systemctl restart vsftpd
root@server:/etc# ftp -p 192.168.1.26
Connected to 192.168.1.26.
220 (vsFTPd 3.0.3)
Name (192.168.1.26:jacqulin): jim
331 Please specify the password.
Password:
230 Login successful.
Remote system type is UNIX.
Using binary mode to transfer files.
ftp> cd upload
250 Directory successfully changed.
ftp> get test.txt
local: test.txt remote: test.txt
227 Entering Passive Mode (192,168,1,26,176,199).
150 Opening BINARY mode data connection for test.txt (17 bytes).
226 Transfer complete.
17 bytes received in 0.00 secs (32.8094 kB/s)
ftp> put test.txt upload1.txt
local: test.txt remote: upload1.txt
227 Entering Passive Mode (192,168,1,26,189,42).
150 Ok to send data.
226 Transfer complete.
17 bytes sent in 0.00 secs (360.9035 kB/s)
ftp> bye
221 Goodbye.
root@server:/etc#
```

Securing Transactions

```
sudo openssl req -x509 -nodes -days 365 -newkey rsa:2048 -keyout
/etc/ssl/private/vsftpd.pem -out /etc/ssl/private/vsftpd.pem
```



```
221 Goodbye.
root@server:/etc# cd
root@server:# sudo openssl req -x509 -nodes -days 365 -newkey rsa:2048 -keyout
/etc/ssl/private/vsftpd.pem out /etc/ssl/private/vsftpd.pem
Can't load /root/.rnd into RNG
1400072434737600:error:2406F079:random number generator:RAND_load_file:Cannot op
en file:../crypto/rand/randfile.c:88:Filename=/root/.rnd
Generating a RSA private key
.....+++++
writing new private key to '/etc/ssl/private/vsftpd.pem'
-----
You are about to be asked to enter information that will be incorporated
into your certificate request.
What you are about to enter is what is called a Distinguished Name or a DN.
There are quite a few fields but you can leave some blank
For some fields there will be a default value.
If you enter '.', the field will be left blank.
-----
Country Name (2 letter code) [AU]:IN
State or Province Name (full name) [Some-State]:TN
Locality Name (eg, city) []:EX
Organization Name (eg, company) [Internet Widgits Pty Ltd]:xx
Organizational Unit Name (eg, section) []:UNIT
Common Name (eg, server IP address or YOUR name) []:www.test.com
Email Address []:test@gmail.com
root@server:#
```

```
sudo nano /etc/vsftpd.conf
```

Unset

```
# This option specifies the location of the RSA certificate to use for SSL
# encrypted connections.
#rsa_cert_file=/etc/ssl/certs/ssl-cert-snakeoil.pem
#rsa_private_key_file=/etc/ssl/private/ssl-cert-snakeoil.key
rsa_cert_file=/etc/ssl/private/vsftpd.pem
rsa_private_key_file=/etc/ssl/private/vsftpd.pem
ssl_enable=YES
allow_anon_ssl=NO
force_local_data_ssl=YES
force_local_logins_ssl=YES
ssl_tlsv1=YES
ssl_ssly2=NO
ssl_ssly3=NO
require_ssl_reuse=NO
ssl_ciphers=HIGH
```

```
sudo systemctl restart vsftpd
```

