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CCN Experiment 6

FTP

Aim: To configure file transfer protocol server using Filezilla

1. Installing vsftpd

```
shubhan@MSI:~$ sudo apt-get -y install vsftpd
[sudo] password for shubhan:
Reading package lists... Done
```

2. Making the required changes in the /etc/vsftpd.conf file

```
shubhan@MSI: ~                    ×    +   ∨

# This option should be the name of a directory which is empty.  Also, the
# directory should not be writable by the ftp user. This directory is used
# as a secure chroot() jail at times vsftpd does not require filesystem
# access.
secure_chroot_dir=/var/run/vsftpd/empty
#
# This string is the name of the PAM service vsftpd will use.
pam_service_name=vsftpd
#
# 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
ssl_enable=NO

#
# Uncomment this to indicate that vsftpd use a utf8 filesystem.
#utf8_filesystem=YES

# line 31: uncomment
write_enable=YES
# line 99,100: uncomment ( allow ascii mode transfer )
ascii_upload_enable=YES
ascii_download_enable=YES
# line 122: uncomment ( enable chroot )
chroot_local_user=YES
# line 123: uncomment ( enable chroot list )
chroot_list_enable=YES
# line 125: uncomment ( enable chroot list )
chroot_list_file=/etc/vsftpd.chroot_list
# line 131: uncomment
ls_recurse_enable=YES

# add to the end : specify chroot directory
# if not specified, users' home directory equals FTP home directory
local_root=public_html
# turn off seccomp filter
seccomp_sandbox=NO
```

3. Configuring the firewall to allow incoming connections from certain ports over TCP

```
shubhan@MSI:~$ sudo systemctl restart vsftpd
shubhan@MSI:~$ sudo ufw allow 20/tcp
Rules updated
Rules updated (v6)
shubhan@MSI:~$ sudo ufw allow 21/tcp
Rules updated
Rules updated (v6)
shubhan@MSI:~$ sudo ufw allow 990/tcp
Rules updated
Rules updated (v6)
shubhan@MSI:~$ sudo ufw allow 5000:10000/tcp
Rules updated
Rules updated (v6)
shubhan@MSI:~$
```

4. Creating a public user account "ftpuser"

```
shubhan@MSI: ~                      ×    +    ∨

shubhan@MSI:~$ sudo adduser ftpuser
Adding user `ftpuser' ...
Adding new group `ftpuser' (1002) ...
Adding new user `ftpuser' (1002) with group `ftpuser' ...
Creating home directory `/home/ftpuser' ...
Copying files from `/etc/skel' ...
New password:
Retype new password:
passwd: password updated successfully
Changing the user information for ftpuser
Enter the new value, or press ENTER for the default
        Full Name []:
        Room Number []:
        Work Phone []:
        Home Phone []:
        Other []:
Is the information correct? [Y/n] Y
shubhan@MSI:~$
```

5. Creating folder named ftp in root directory which will act as the root directory for the ftp server.

```
shubhan@Shubhan-laptop: ~    ×    +    ∨

shubhan@Shubhan-laptop:~$ sudo mkdir /ftp
shubhan@Shubhan-laptop:~$ sudo chown shubhan /ftp
shubhan@Shubhan-laptop:~$ |
```

6. Configuring vsftpd for secure operation, and setting the local_root directory for the ftp server.

```
shubhan@MSI: ~              ×    +    ∨

  GNU nano 6.2                                                    /etc/vsftpd.conf

#
# Uncomment this to indicate that vsftpd use a utf8 filesystem.
#utf8_filesystem=YES

# line 31: uncomment
write_enable=YES
# line 99,100: uncomment ( allow ascii mode transfer )
ascii_upload_enable=YES
ascii_download_enable=YES
# line 122: uncomment ( enable chroot )
chroot_local_user=YES
# line 123: uncomment ( enable chroot list )
chroot_list_enable=YES
# line 125: uncomment ( enable chroot list )
chroot_list_file=/etc/vsftpd.chroot_list
# line 131: uncomment
ls_recurse_enable=YES

pasv_min_port=5000
pasv_max_port=10000

# add to the end : specify chroot directory
# if not specified, users' home directory equals FTP home directory
local_root=/ftp
# turn off seccomp filter
seccomp_sandbox=NO

                                                      [ Undid line join ]
^G Help          ^O Write Out     ^W Where Is      ^K Cut           ^T Execute
^X Exit          ^R Read File     ^\ Replace       ^U Paste         ^J Justify
```

```
 GNU nano 6.2                                                          /etc/vsftpd.conf *
#ascii_download_enable=YES
#
# You may fully customise the login banner string:
#ftpd_banner=Welcome to blah FTP service.
#
# You may specify a file of disallowed anonymous e-mail addresses. Apparently
# useful for combatting certain DoS attacks.
#deny_email_enable=YES
# (default follows)
#banned_email_file=/etc/vsftpd.banned_emails
#
# You may restrict local users to their home directories.  See the FAQ for
# the possible risks in this before using chroot_local_user or
# chroot_list_enable below.
chroot_local_user=YES
#
# You may specify an explicit list of local users to chroot() to their home
# directory. If chroot_local_user is YES, then this list becomes a list of
# users to NOT chroot().
# (Warning! chroot'ing can be very dangerous. If using chroot, make sure that
# the user does not have write access to the top level directory within the
# chroot)
#chroot_local_user=YES
chroot_list_enable=YES
# (default follows)
chroot_list_file=/etc/vsftpd.chroot_list

allow_writeable_chroot=YES
local_umask=0002

^G Help          ^O Write Out     ^W Where Is      ^K Cut           ^T Execute       ^C Lo
^X Exit          ^R Read File     ^\ Replace       ^U Paste         ^J Justify       ^/ Go
```

7. Restarting vsftpd to apply changes

```
shubhan@MSI:~$ sudo nano /etc/vsftpd.conf
shubhan@MSI:~$ sudo nano /etc/vsftpd.conf
shubhan@MSI:~$ sudo nano /etc/vsftpd.chroot_list
shubhan@MSI:~$ sudo systemctl restart --now vsftpd
shubhan@MSI:~$
```

8. Securing vsftpd with SSL. Generating self-signed certificate to use with FTPS (FTP over SSL)

9. Connecting to ftp server using filezilla.
(Used my ip address and ftpuser and its password as username and password)
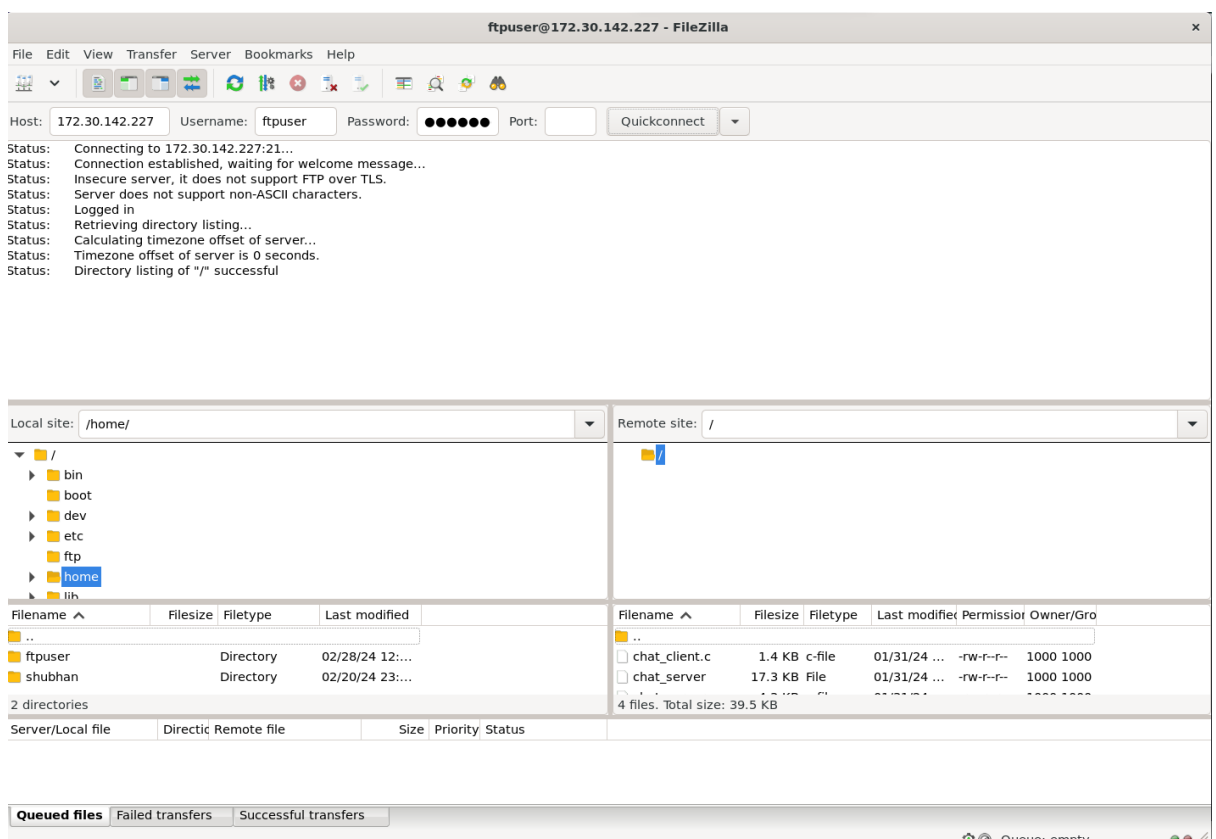
(As can be seen, this is my ip address)

```
shubhan@MSI:~/programs/CCN$ ifconfig
eth0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST>  mtu 1500
        inet 172.30.142.227  netmask 255.255.240.0  broadcast 172.30.143.255
        inet6 fe80::215:5dff:feae:77aa  prefixlen 64  scopeid 0×20<link>
        ether 00:15:5d:ae:77:aa  txqueuelen 1000  (Ethernet)
        RX packets 541  bytes 558411 (558.4 KB)
        RX errors 0  dropped 0  overruns 0  frame 0
        TX packets 384  bytes 70275 (70.2 KB)
        TX errors 0  dropped 0 overruns 0  carrier 0  collisions 0

lo: flags=73<UP,LOOPBACK,RUNNING>  mtu 65536
        inet 127.0.0.1  netmask 255.0.0.0
        inet6 ::1  prefixlen 128  scopeid 0×10<host>
        loop  txqueuelen 1000  (Local Loopback)
        RX packets 55  bytes 3722 (3.7 KB)
        RX errors 0  dropped 0  overruns 0  frame 0
        TX packets 55  bytes 3722 (3.7 KB)
        TX errors 0  dropped 0 overruns 0  carrier 0  collisions 0
```

(The files available on the server match the ones placed in the /ftp directory we created earlier)

Local site: /home/			
▼ 📁 /			
▶ 📁 bin			
📁 boot			
▶ 📁 dev			
▶ 📁 etc			
📁 ftp			
▶ 📁 home			
▶ 📁 lib			

Filename ⌃	Filesize	Filetype	Last modified
📁 ..			
📁 ftpuser		Directory	02/28/24 12:...
📁 shubhan		Directory	02/20/24 23:...

2 directories

Remote site: /	
📁 /	

Filename ⌃	Filesize	Filetype	Last modified	Permission	Owner/Gro
📄 chat_client.c	1.4 KB	c-file	01/31/24 ...	-rw-r--r--	1000 1000
📄 chat_server	17.3 KB	File	01/31/24 ...	-rw-r--r--	1000 1000
📄 chat_server.c	4.3 KB	c-file	01/31/24 ...	-rw-r--r--	1000 1000

4 files. Total size: 39.5 KB

Server/Local file   Directc Remote file   Size Priority Status

⟳ 🖥 > Linux > Ubuntu > ftp   Search ftp

📋 📋 🔤 📤 🗑 ↕ Sort ∨ ☰ View ∨ •••

Name	Date modified	Type	Size
🇨 chat_client	30-01-2024 23:51	C Source File	2 KB
📄 chat_server	30-01-2024 23:51	File	17 KB
🇨 chat_server	31-01-2024 01:27	C Source File	5 KB
📄 chclient	30-01-2024 23:52	File	17 KB