



CERTIFICATE

This is certify that

NIKHIL G. CHALIKWAR

for completing list of experiments of the subject
System Administration laboratory
during academic year 2020-21

DATE:-29 OCT 2020

**HEAD OF
DEPARTMENT**

PROF. M. Bhandare
Subject in-charge

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To install HTTP server on Windows

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To install Telnet server on Ubuntu

To install Samba server on Ubuntu

*click on bookmark

Aim - Installation of Ubuntu

Theory -

Ubuntu is open source operating system and easy to operate. Open source means freely accessible and free to download.

Requirements -

At least 25 GB storage and 5 GB free for installations
2 GB RAM for Ubuntu is recommended.
Create bootable USB of Ubuntu ISO

Plug in USB and restart your system
Then select the install Ubuntu option. Then select language type, keyboard layout and time zone

Then select prepare for install. select normal installation & select media update

Then select the
→ Erase disk and install
Ubuntu option
click on install now

After installation
provide login details

It will take
some time after that installation
will be done

LVM ->

In LVM dynamic partitions
are created means you can
create / resize / delete LVM partitions
they called logical volumes

1) If you have more than
one hardwv) the logical
partitions can extend over more
than one disk i.e. they are
not limited by the size of
one disk rather than total
aggregate size

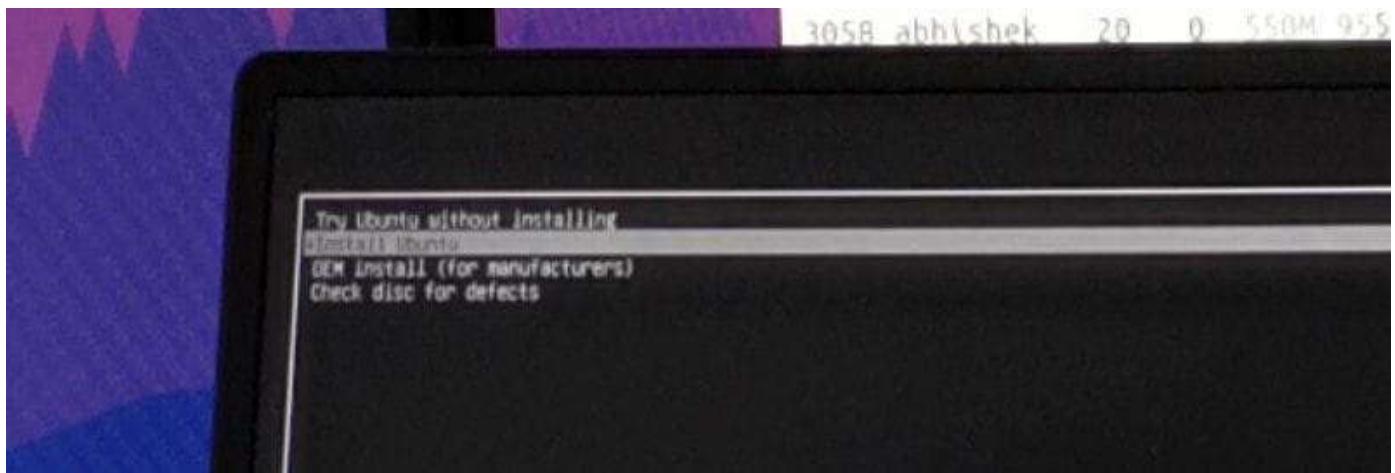
2) You can create a "striped"
LVS so that I/O can be
distributed to all LV in parallel

similar to raid-0 but easy
to set-up

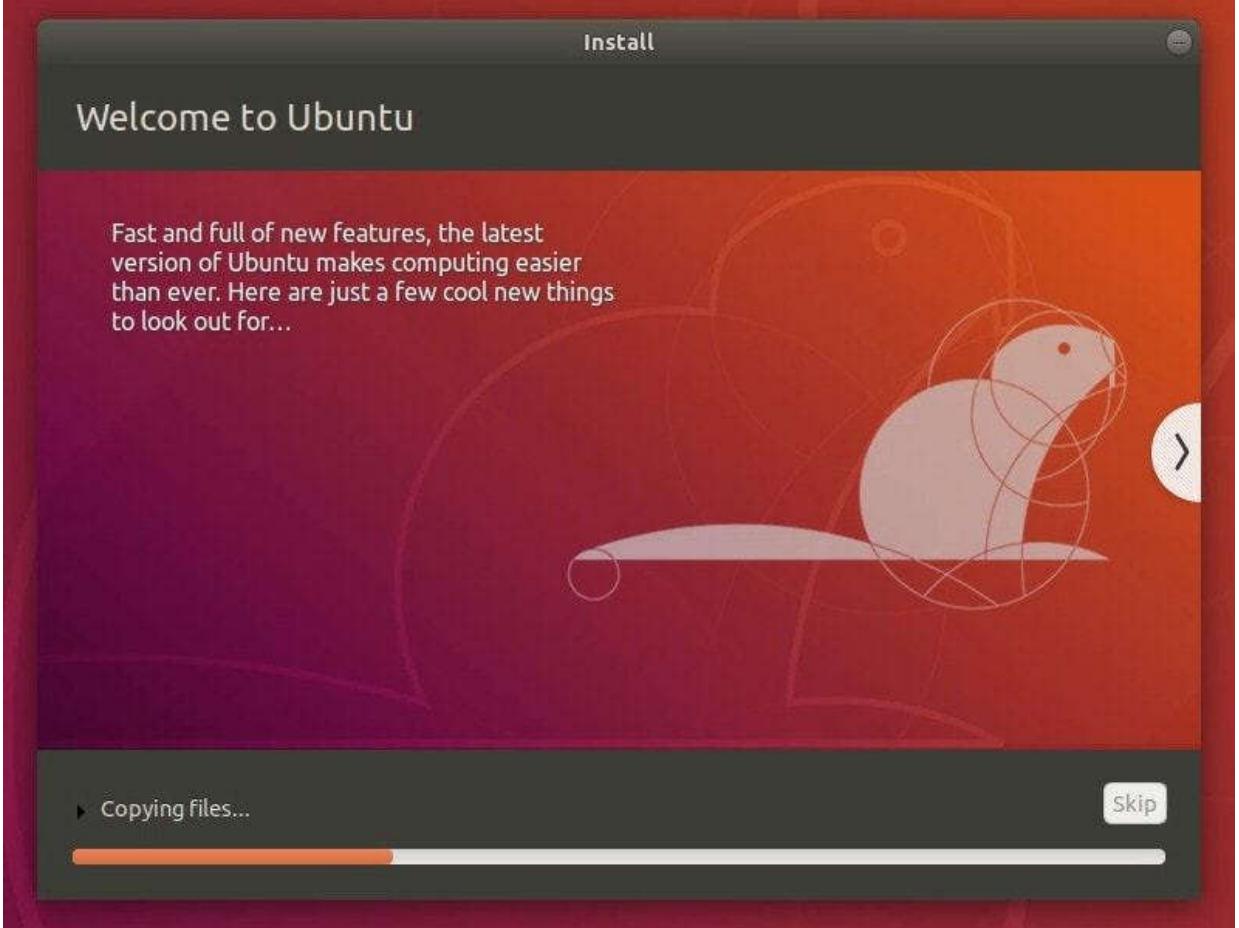
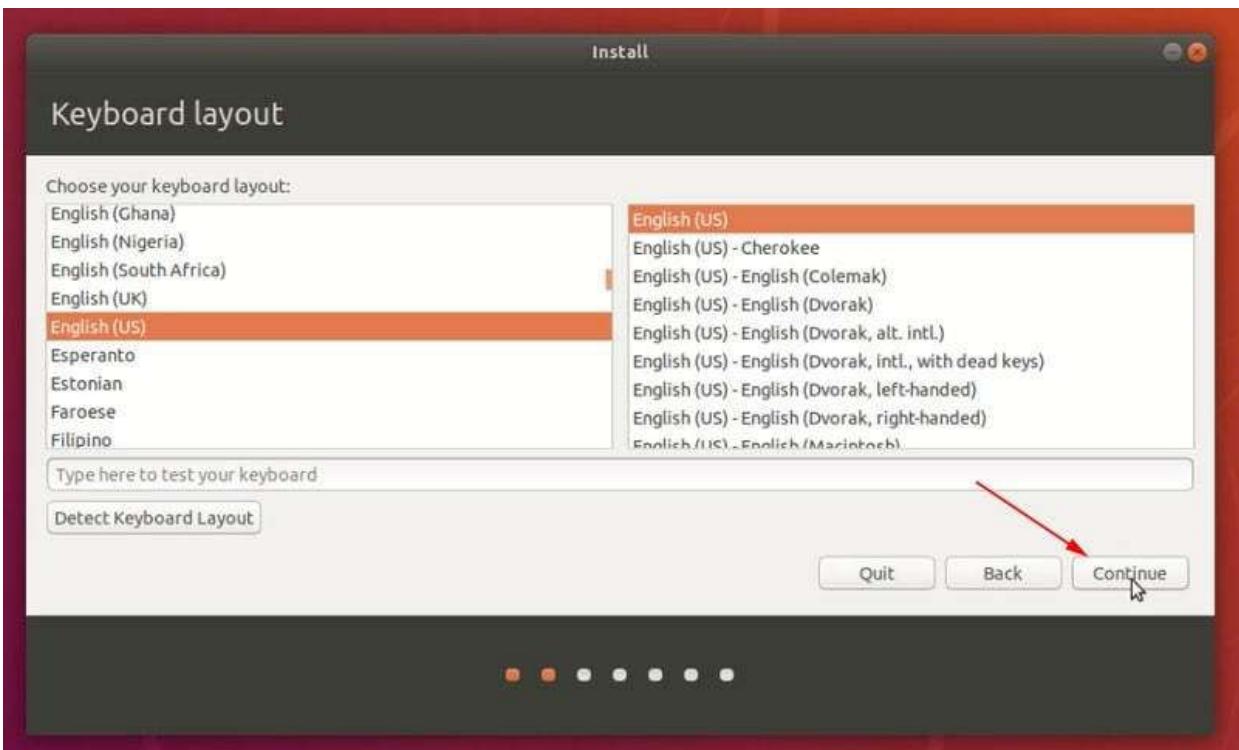
- 3) You can create read only
snapshot of LV. You can
revert the snapshot at later
time if you need it. This
is handy for server backup
process for instance if you can
not stop all application for
write the you can create snap
shot and backup the snapshot
to LV.

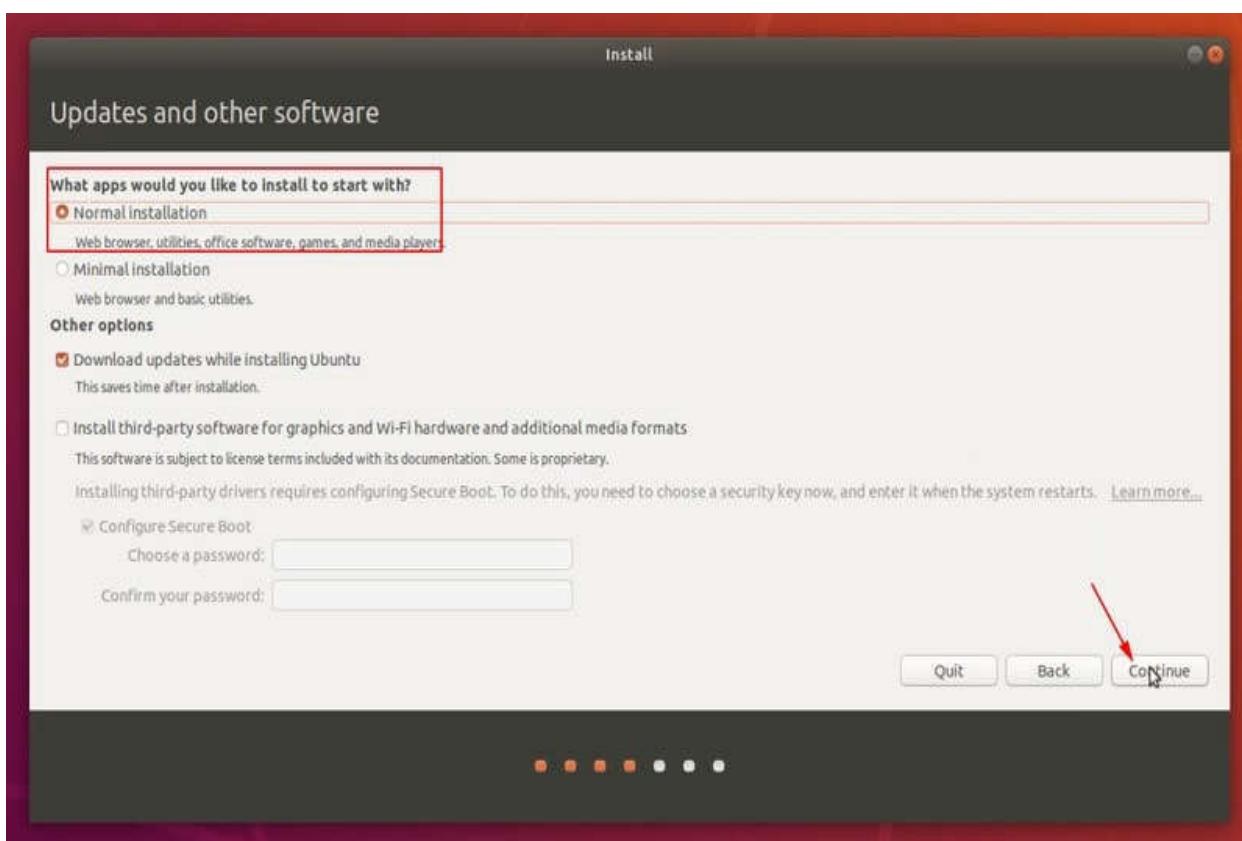
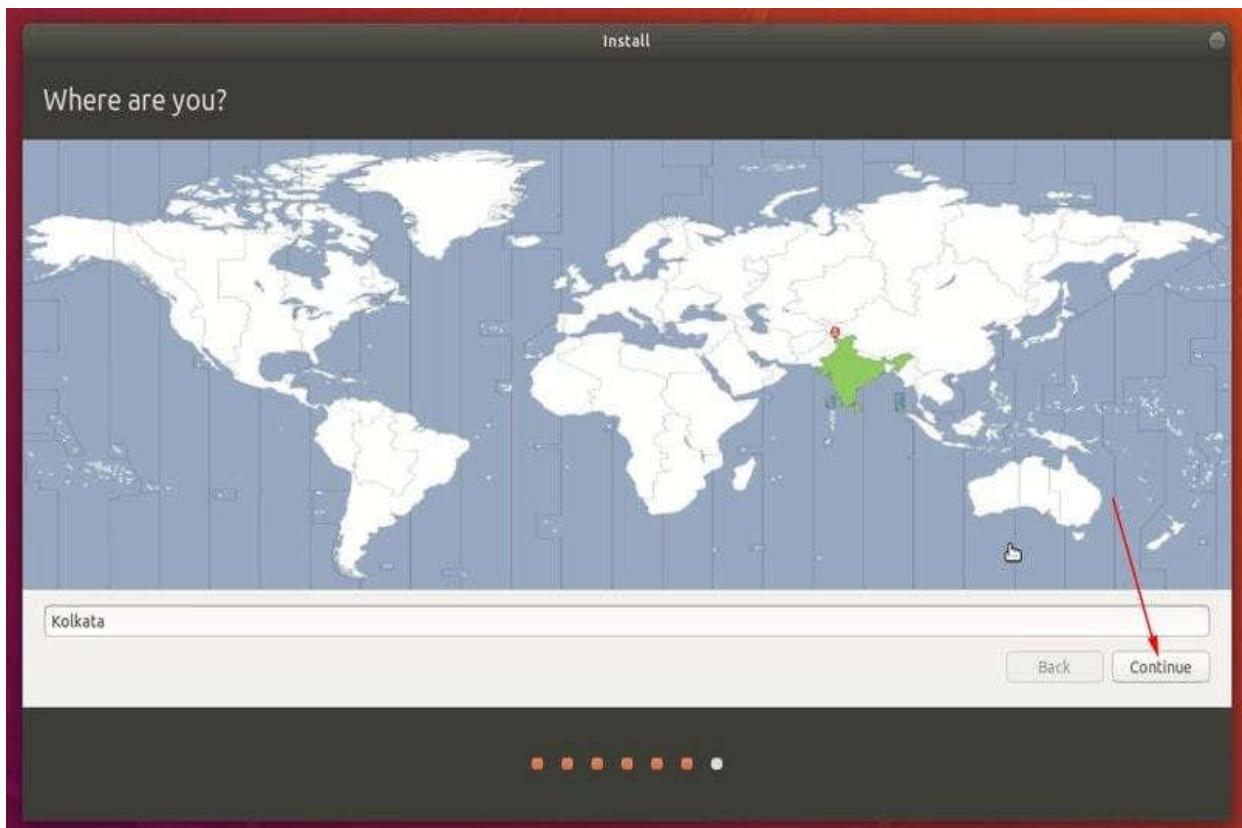
Conclusion -

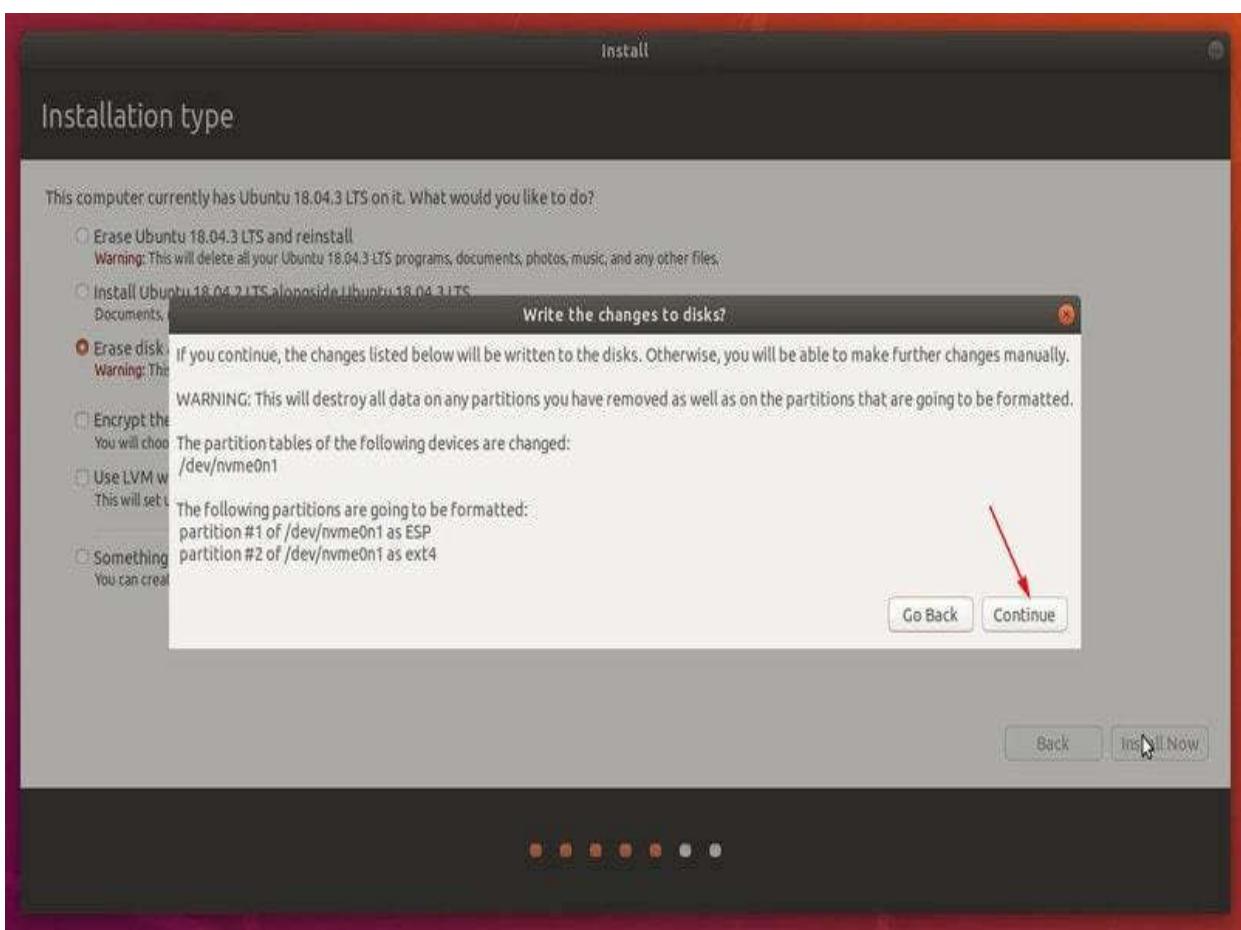
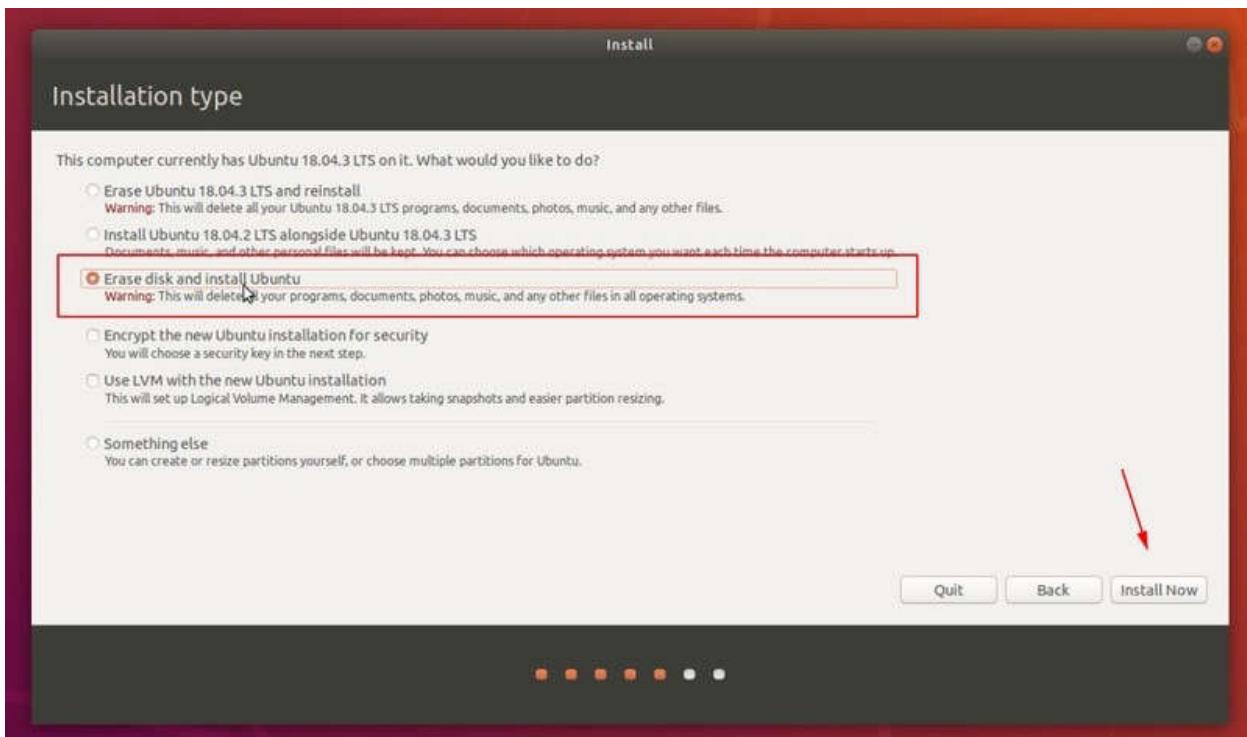
Hence successfully installed
Ubuntu.



The image shows the "Welcome" screen of the Ubuntu installer. At the top right, it says "Install". Below that, the word "Welcome" is displayed. On the left, there is a vertical list of languages: English (selected), Español, Esperanto, Euskara, Français, Gaeilge, Galego, Hrvatski, Íslenska, Italiano, Kurdi, and Latviski. A red arrow points from the text "You may wish to read the [release notes](#) or [update this installer](#)." to the "English" option. At the bottom right, there are three buttons: "Quit", "Back", and "Continue". A red arrow points to the "Continue" button, which is highlighted with a red border. Below the buttons is a horizontal progress bar consisting of seven small circles, with the first one being orange and the others being grey.







Install

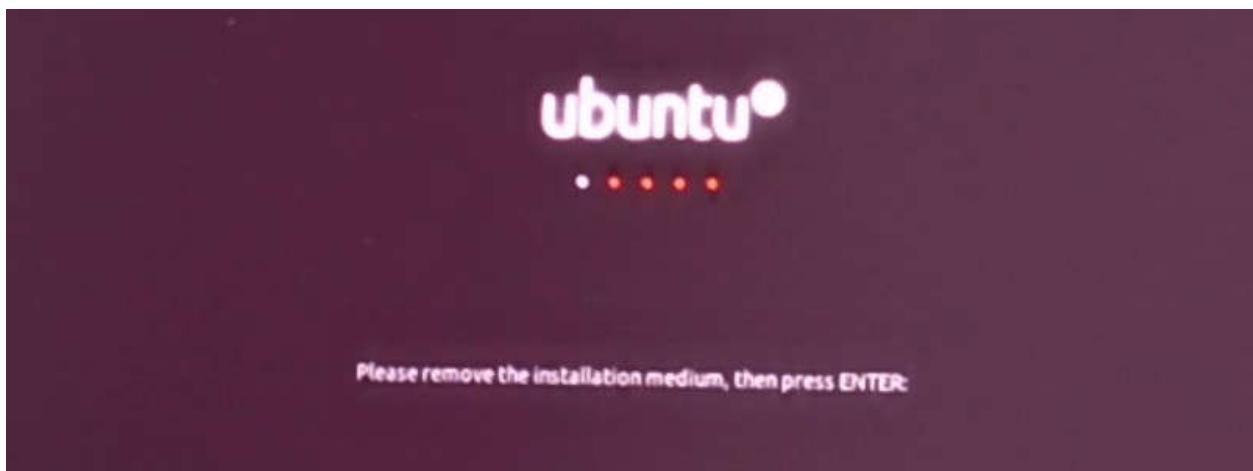
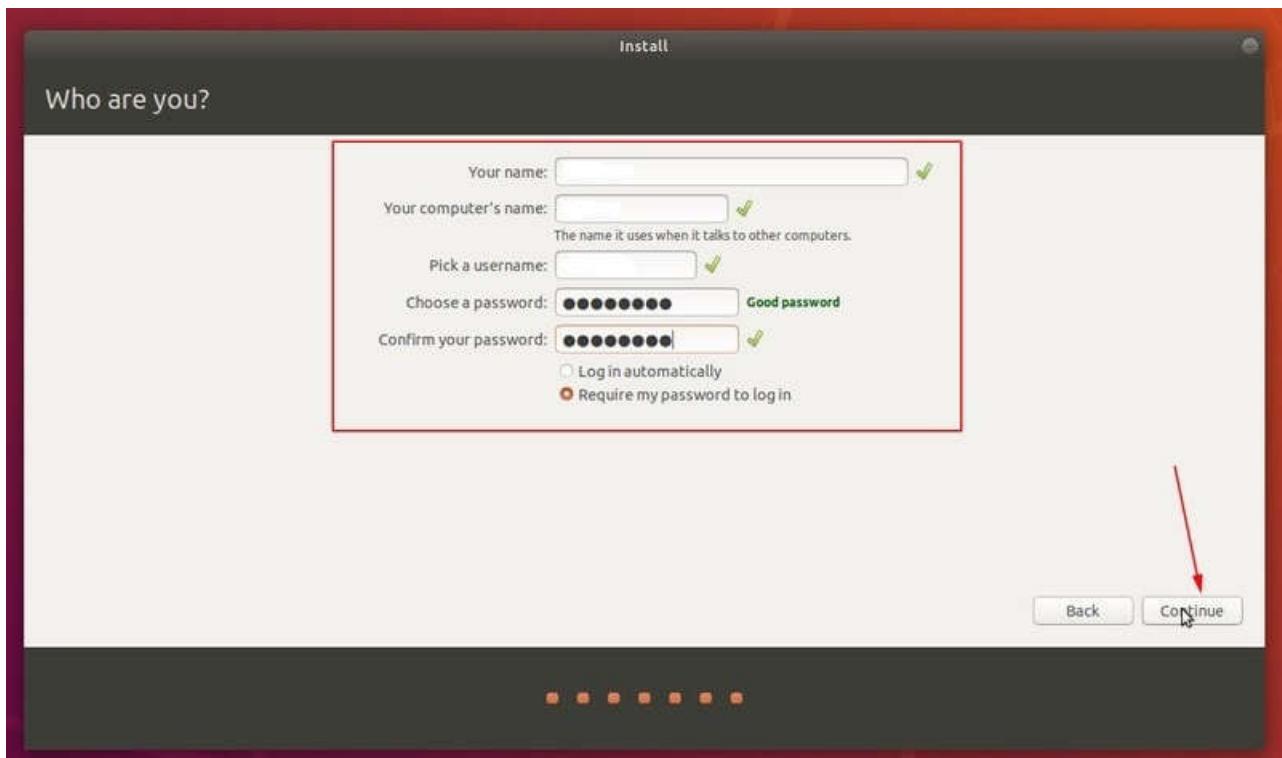
Welcome to Ubuntu

Fast and full of new features, the latest version of Ubuntu makes computing easier than ever. Here are just a few cool new things to look out for...



Copying files...

Skip



Aim - To Install FTP Server

Theory -

The file transfer protocol (FTP) is a standard network protocol used for the transfer of computer files between a client and server on a computer.

FTP build on client-server model architecture using separate control model and data connection between the client and the server.

FTP clients can authenticate themselves using clear-text protocol (login) normally in form of username and password. and encrypt the content

FTP is often secured with SSL/TSL (FTPS) or replaced by SSH file transfer protocol (SFTP)

The first FTP client application were command line program developed before

Operating system had graphical user interface and are still shipped with most windows, UNIX and Linux operating systems.

Many FTP clients and encrypt automation utilities have since been developed for desktop, servers, mobile devices and hardware and FTP has been incorporated into productivity applications such as HTML editors.

Communication and Data transfer

FTP may run into active or passive mode, which determines how the data connection is established. In both cases the client creates a TCP connection from a random usually unprivileged port 'N' to FTP command port 21.

Active mode -

In Active mode the client starts listening for incoming data connection from server on port M. It sends the FTP command PORT M to inform the server on which port it is listening. The server then initiates a data channel to the client from the port 20 to the FTP server data port.

In situations where the client is behind a Firewall and unable to accept incoming TCP connections passive mode may be used in this mode the client uses the connection control connection to send a PASV command to the server and TCP unable to accept incoming connection

Conclusion -

Hence installed FTP server

Ubuntu [Running] - Oracle VM VirtualBox

Activities Firefox Web Browser Oct 28 12:48 nikhil@nikhil-pc: ~

```
nikhil@nikhil-pc:~$ sudo apt-get update
[sudo] password for nikhil:
Hit:1 http://in.archive.ubuntu.com/ubuntu focal InRelease
Get:2 http://in.archive.ubuntu.com/ubuntu focal-updates InRelease [111 kB]
Get:3 http://security.ubuntu.com/ubuntu focal-security InRelease [107 kB]
Get:4 http://in.archive.ubuntu.com/ubuntu focal-backports InRelease [98.3 kB]
Get:5 http://in.archive.ubuntu.com/ubuntu focal-updates/main amd64 Packages [63
3 kB]
Get:6 http://security.ubuntu.com/ubuntu focal-security/main amd64 Packages [350
kB]
Get:7 http://in.archive.ubuntu.com/ubuntu focal-updates/main i386 Packages [363
kB]
Get:8 http://in.archive.ubuntu.com/ubuntu focal-updates/main Translation-en [15
9 kB]
Get:9 http://security.ubuntu.com/ubuntu focal-security/main i386 Packages [145
kB]
Get:10 http://in.archive.ubuntu.com/ubuntu focal-updates/main amd64 DEP-11 Meta
data [229 kB]
Get:11 http://in.archive.ubuntu.com/ubuntu focal-updates/main amd64 c-n-f Metad
ata [10.8 kB]
Get:12 http://in.archive.ubuntu.com/ubuntu focal-updates/restricted amd64 Packa
ges [78.7 kB]
Get:13 http://in.archive.ubuntu.com/ubuntu focal-updates/restricted i386 Packag
es [12.0 kB]
Get:14 http://security.ubuntu.com/ubuntu focal-security/main Translation-en [79
.9 kB]
Get:15 http://in.archive.ubuntu.com/ubuntu focal-updates/restricted Translation
-en [12.5 kB]
Get:16 http://in.archive.ubuntu.com/ubuntu focal-updates/restricted amd64 c-n-f
Metadata [520 kB]
```

Type here to search 0 12:51 PM 28-Oct-20

Ubuntu [Running] - Oracle VM VirtualBox

Activities Terminal Oct 28 12:49 nikhil@nikhil-pc: ~

```
nikhil@nikhil-pc:~$ sudo apt install vsftpd
Reading package lists... Done
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 397 not upgraded.
Need to get 115 kB of archives.
After this operation, 338 kB of additional disk space will be used.
Get:1 http://in.archive.ubuntu.com/ubuntu focal/main amd64 vsftpd amd64 3.0.3-1
2 [115 kB]
Fetched 115 kB in 1s (110 kB/s)
Preconfiguring packages ...
Selecting previously unselected package vsftpd.
(Reading database ... 145341 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 → /l
ib/systemd/system/vsftpd.service.
vsftpd.conf:1: Line references path below legacy directory /var/run/, updating
/var/run/vsftpd/empty → /run/vsftpd/empty; please update the tmpfiles.d/ drop-i
n file accordingly.
Processing triggers for man-db (2.9.1-1) ...
Processing triggers for systemd (245.4-4ubuntu3) ...
nikhil@nikhil-pc:~$
```

Type here to search 0 12:51 PM 28-Oct-20

Activities Terminal Oct 28 12:57

```
root@nikhil-pc:/home/nikhil
command 'aid' from deb id-utils (4.6+git20120811-4ubuntu2)
command 'tdd' from deb devtodo (0.1.20-7build1)

Try: apt install <deb name>
root@nikhil-pc:/home/nikhil# adduser ftpuser
Adding user 'ftpuser' ...
Adding new group 'ftpuser' (1001) ...
Adding new user 'ftpuser' (1001) 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 []: nikkk
  Room Number []:
  Work Phone []:
  Home Phone []:
  Other []:
Is the information correct? [Y/n] y
root@nikhil-pc:/home/nikhil# sudo gedit /etc/vsftpd.conf

(gedit:5086): Tepl-WARNING **: 12:57:06.765: GVfs metadata is not supported. Falling back to TeplMetadataManager. Either GVfs is not correctly installed or GVfs metadata are not supported on this platform. In the latter case, you should configure Tepl with --disable-gvfs-metadata.
root@nikhil-pc:/home/nikhil#
```

Type here to search

Activities Text Editor Oct 28 12:56

```
*vsftpd.conf /etc
5 # Please see vsftpd.conf.5 for all compiled in defaults.
6 #
7 # READ THIS: This example file is NOT an exhaustive list of vsftpd options.
8 # Please read the vsftpd.conf.5 manual page to get a full idea of vsftpd's
9 # capabilities.
10 #
11 #
12 # Run standalone? vsftpd can run either from an inetd or as a standalone
13 # daemon started from an initscript.
14 listen=NO
15 #
16 # This directive enables listening on IPv6 sockets. By default, listening
17 # on the IPv6 "any" address (::) will accept connections from both IPv6
18 # and IPv4 clients. It is not necessary to listen on *both* IPv4 and IPv6
19 # sockets. If you want that (perhaps because you want to listen on specific
20 # addresses) then you must run two copies of vsftpd with two configuration
21 # files.
22 listen_ipv6=YES
23 #
24 # Allow anonymous FTP? (Disabled by default).
25 anonymous_enable=YES
26 #
27 # Uncomment this to allow local users to log in.
28 local_enable=YES
29 #
30 # Uncomment this to enable any form of FTP write command.
31 write_enable=YES
32 #
```

Type here to search

Activities Terminal Oct 28 13:00 root@nikhill-pc: /home/nikhil

```
valid_lft forever preferred_lft forever
inet6 ::1/128 scope host
  valid_lft forever preferred_lft forever
2: enp0s3: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc fq_codel state UP group default qlen 1000
    link/ether 08:0e:27:59:08:61 brd ff:ff:ff:ff:ff:ff
    inet 192.168.0.157/24 brd 192.168.0.255 scope global dynamic noprefixroute
      enp0s3
        valid_lft 85402sec preferred_lft 85402sec
        inet6 fd01::54aa:bc70:daci:211d/64 scope global temporary dynamic
          valid_lft 268sec preferred_lft 268sec
          inet6 fd01::bf4:b157:baf3:24c7/64 scope global dynamic mngtmpaddr noprefixroute
            route
              valid_lft 268sec preferred_lft 268sec
              inet6 fe80::485c:37a1:adff:d419/64 scope link noprefixroute
                valid_lft forever preferred_lft forever
root@nikhill-pc:/home/nikhil# ^c
root@nikhill-pc:/home/nikhil# ftp 192.168.0.157
Connected to 192.168.0.157.
220 (vsFTPd 3.0.3)
Name (192.168.0.157:nikhil): nikhil
331 Please specify the password.
Password:
230 Login successful.
Remote system type is UNIX.
Using binary mode to transfer files.
ftp> by
221 Goodbye.
root@nikhill-pc:/home/nikhil#
```

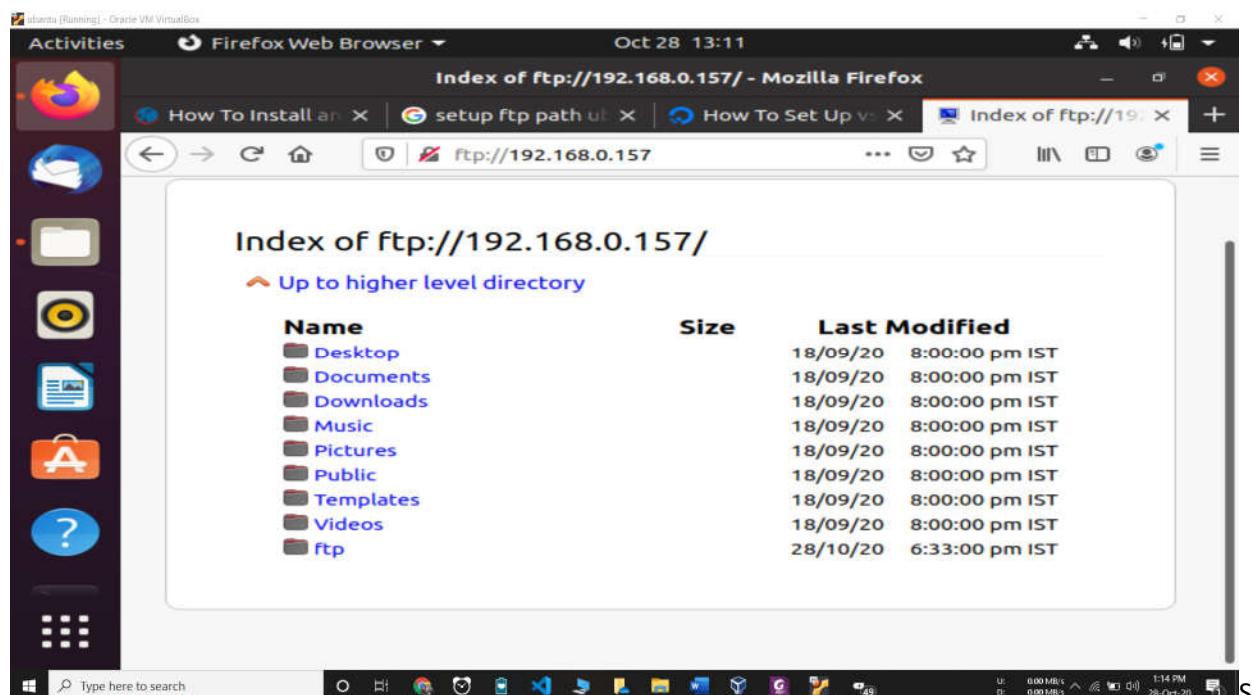
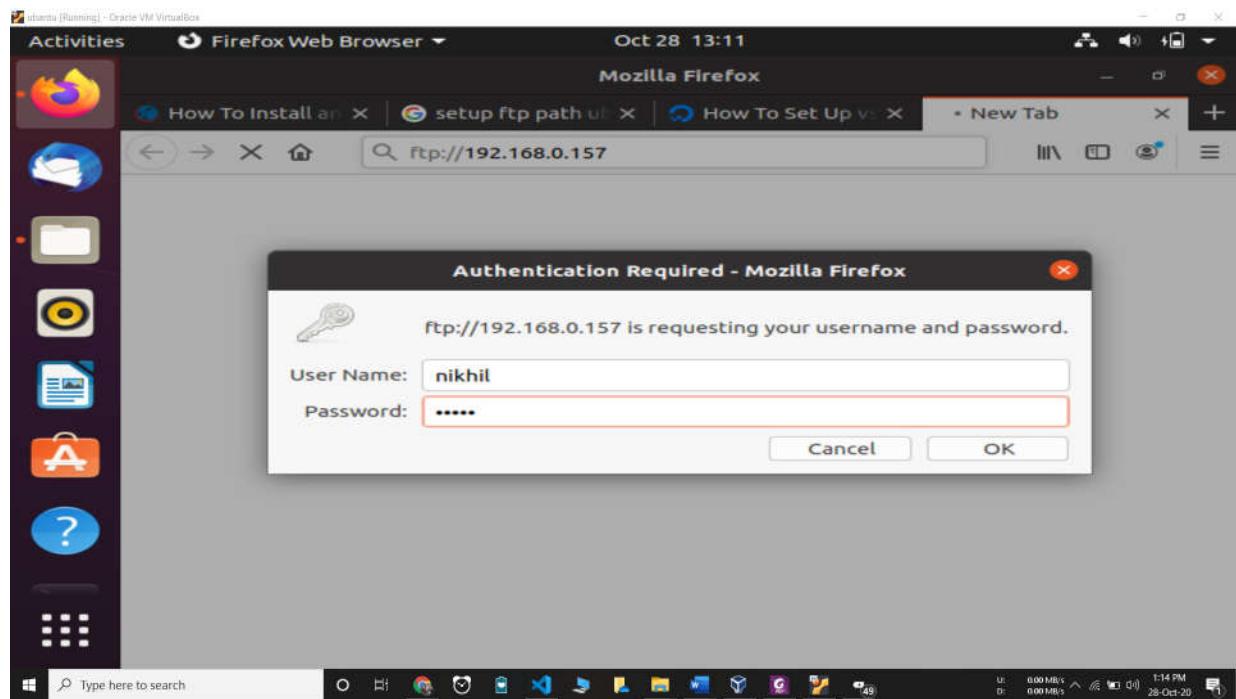
Activities Firefox Web Browser Oct 28 13:11 Index of ftp://192.168.0.157/ - Mozilla Firefox

How To Install an | setup ftp path ul | How To Set Up v | Index of ftp://192.168.0.157/

Index of ftp://192.168.0.157/

Up to higher level directory

Name	Size	Last Modified
Desktop	18/09/20	8:00:00 pm IST
Documents	18/09/20	8:00:00 pm IST
Downloads	18/09/20	8:00:00 pm IST
Music	18/09/20	8:00:00 pm IST
Pictures	18/09/20	8:00:00 pm IST
Public	18/09/20	8:00:00 pm IST
Templates	18/09/20	8:00:00 pm IST
Videos	18/09/20	8:00:00 pm IST
ftp	28/10/20	6:33:00 pm IST



udo apt-get update

d apt-get install vsftpd

sudo ifconfig

sudo passwd

SU

```
adduser ftpuser
exit
cd /home/
sudo gedit /etc/vsftpd.conf
sudo systemctl restart vsftpd
sudo systemctl enable vsftpd
start
```

[ftp 12.168.0.157](#)

ftp>ls

get put

Aim - Installation and configuration of
FTP server on windows OS

Theory -

Building own FTP file bank (Protocol) server can be one of the easiest and most convenient solution and restrictions typically found with most cloud storage services.

There are also many benefits running your FTP server.

For example

it's private and you have absolute control. It's fast depending upon internet connection speed and there is virtually no limit on the amount and type of data you can store.

Also, you don't have restrictions on the sizes either, which means that you can transfer something as small as a text file or a 100GB PC burnup, and you can store.

There are many benefits running your FTP server. For example, It's private and you have absolute control. It's fast depending on your internet connection speeds and there is virtually no limits on the amount and type of data you can store.

Also, you don't have restriction on file sizes either, which are 1000 MB per backup and you can even create multiple accounts to let friends and family access or store content separately too.

You will find many third-party software on the internet to build a file transfer server, but Windows include an FTP server feature that you can set up without the need to recourse to other situation. In this we will walk you through the steps on your PC to transfer files separately over the internet.

Very similar to previous version including the necessary component to run an FTP server. Follow the steps below to install an FTP.

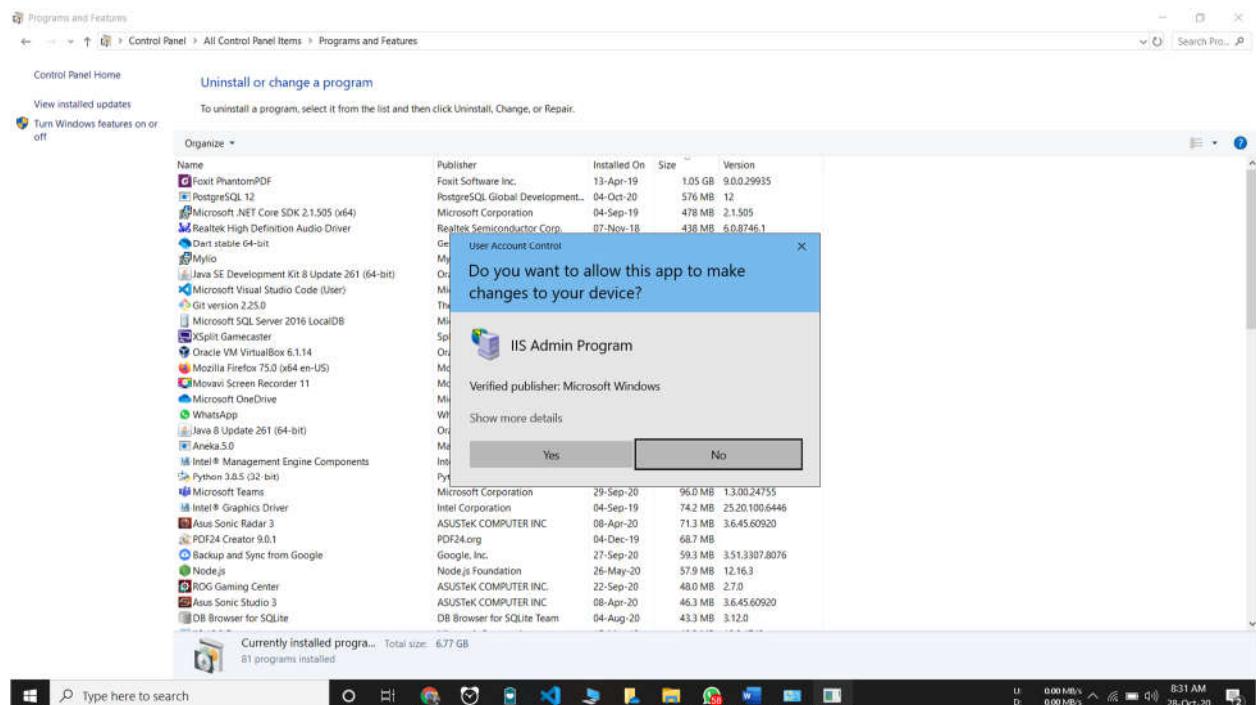
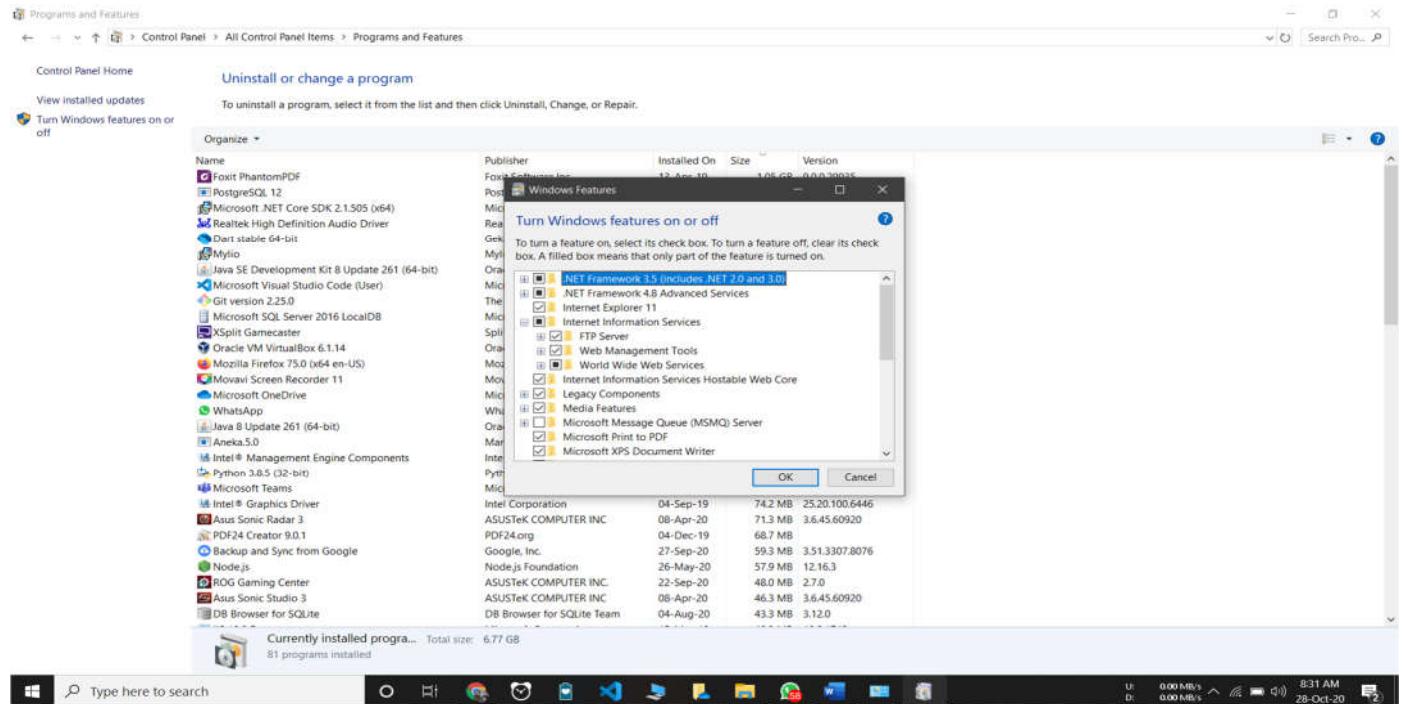
If you have windows firewall running security feature will block At the point you should be able to use newly create FTP server from your network.

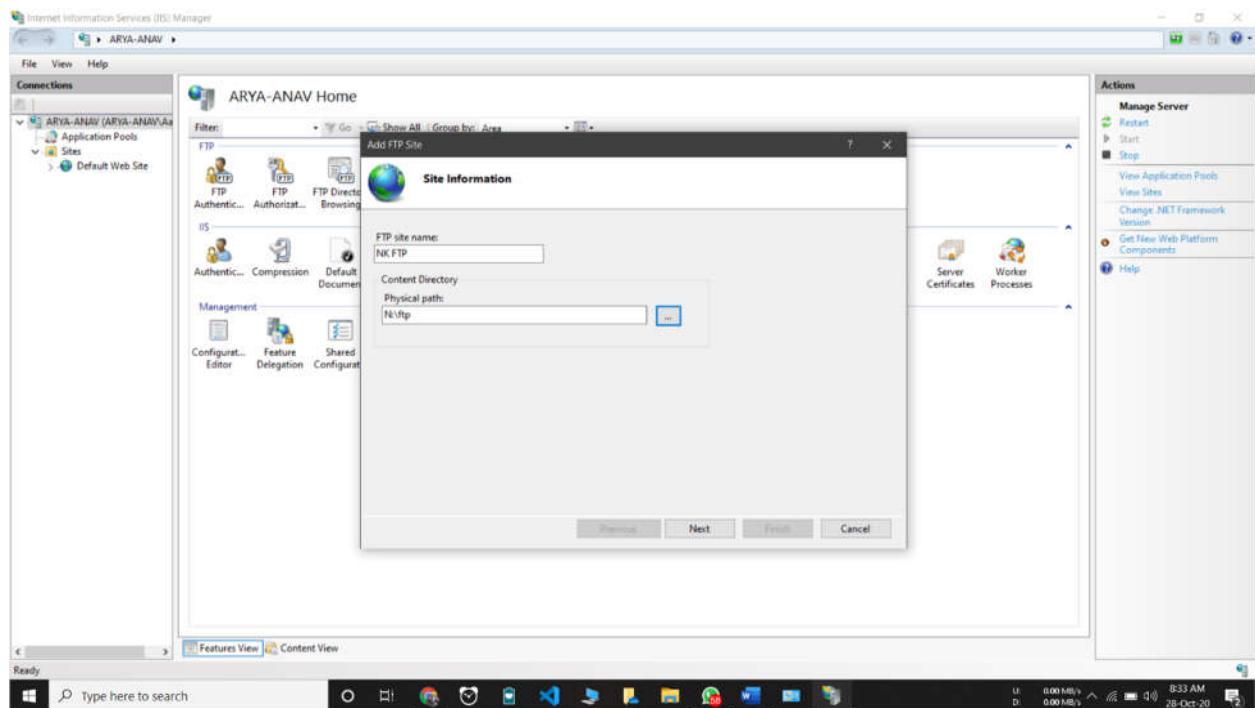
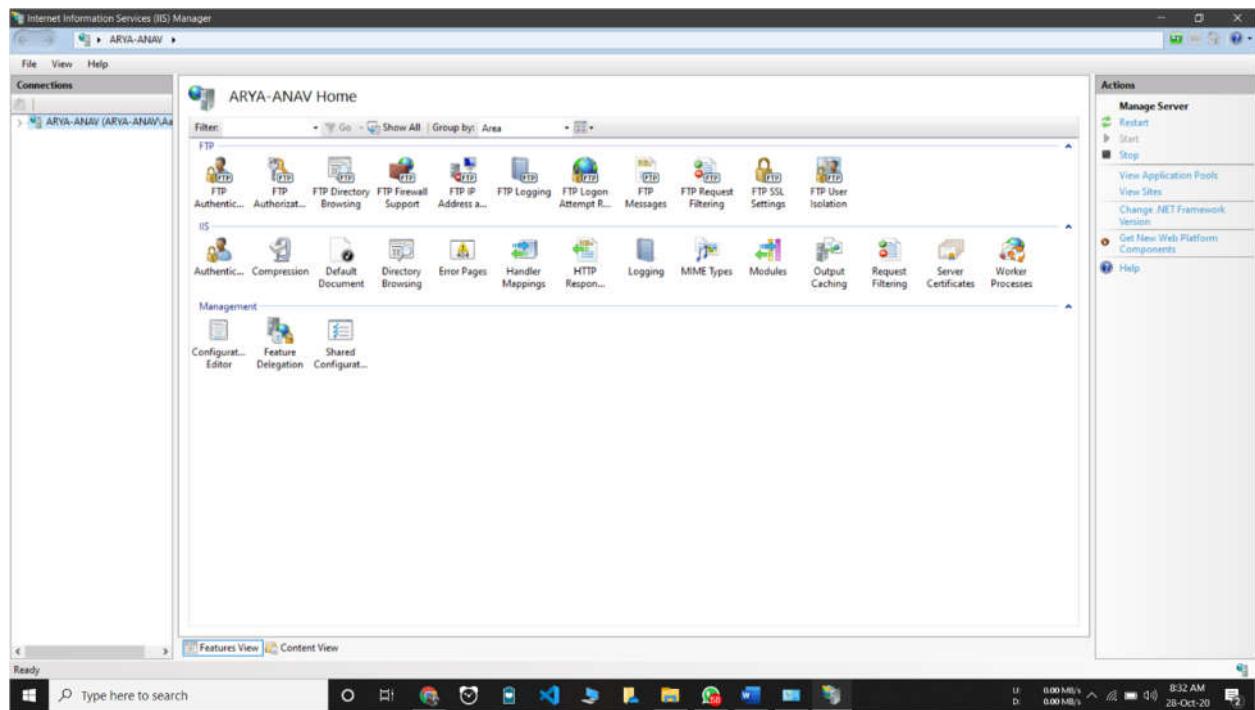
Make sure to check your software vendor support website for specific instruction to allow on FTP server If you are using another security software other than the windows firewall for your FTP server to be reachable from the internet you need to configure your router to open TCP/ZIP port number 21 to allow connection to your PC.

The instruction to forward a port will vary from routers.

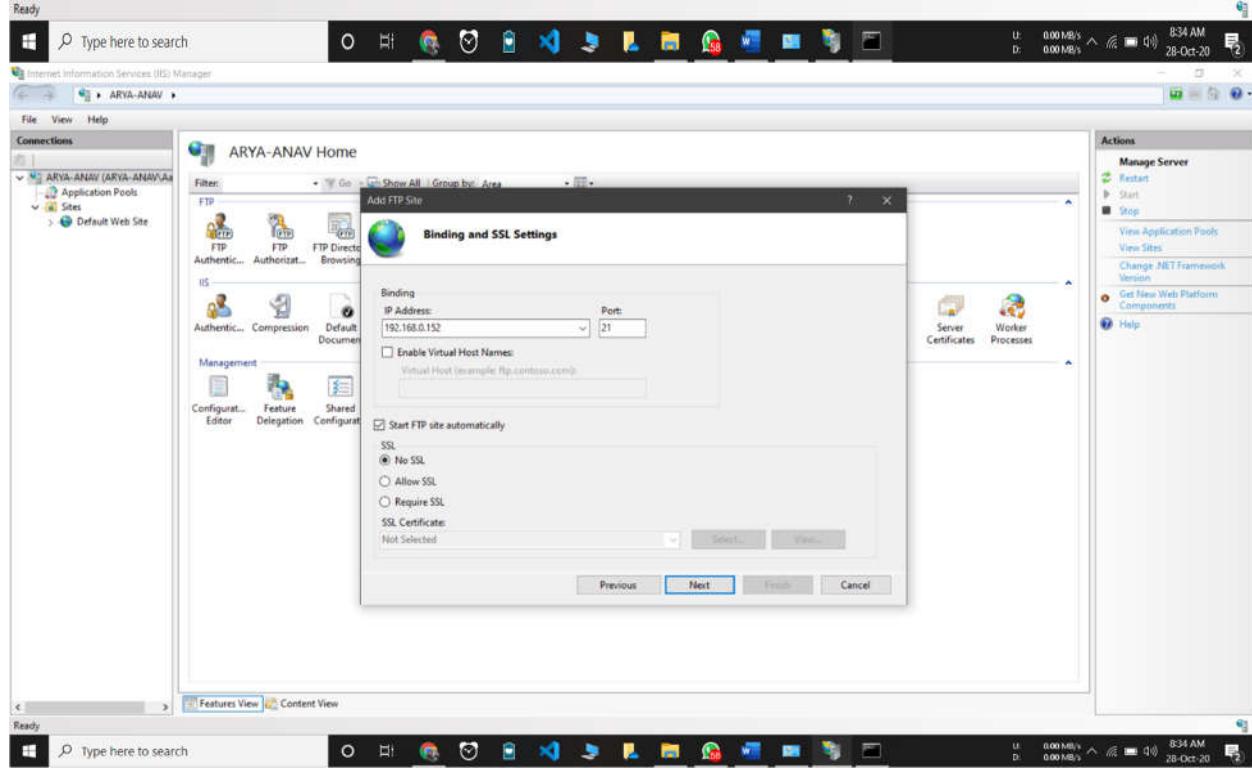
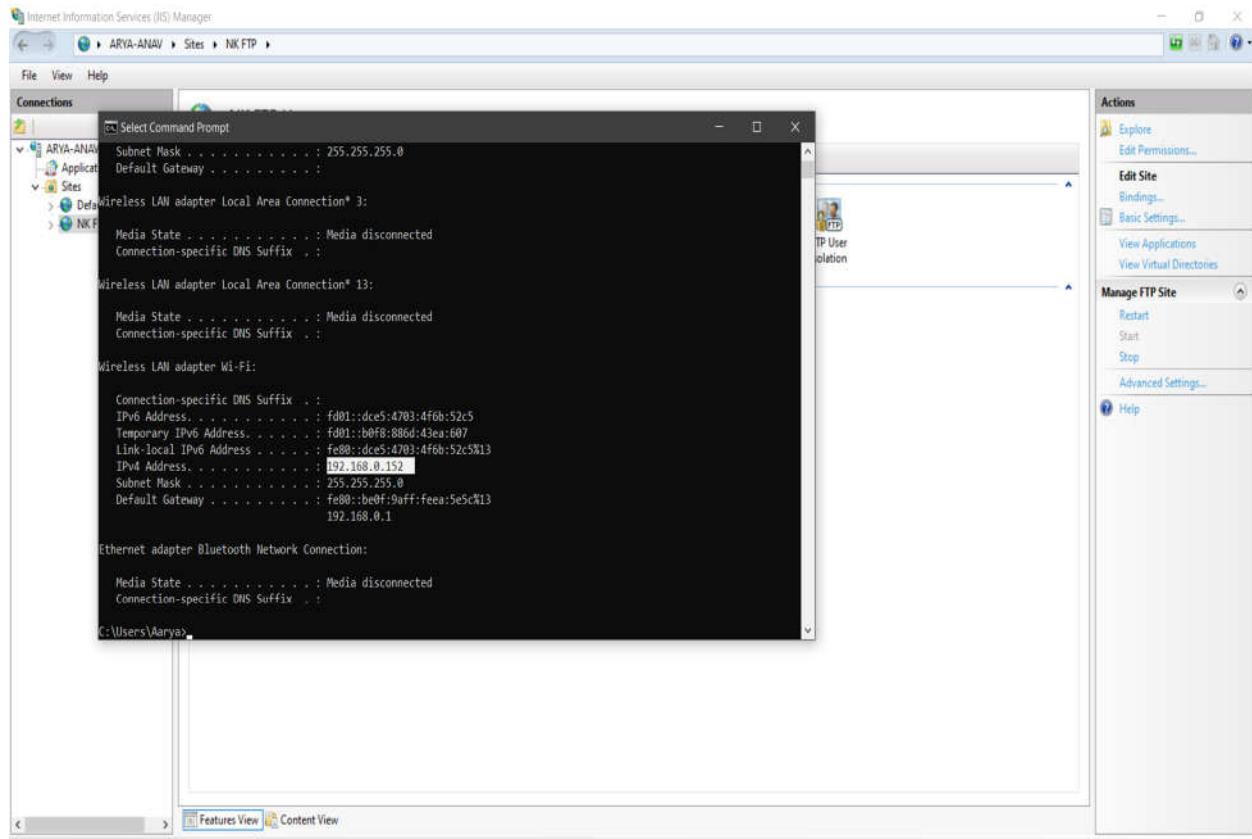
Conclusion-

Hence successfully installed FTP server on windows,





v





Index of /

Name	Size	Date Modified
mk	0	7/24/20, 7:15:00 PM



Aim - Using command) upload / download file from FTP server

Theory -

FTPS -

Explicit FTP is an extension to the FTP standard that allows clients to request FTP session to be encrypted. This is done by sending the AUTH TLS command. The server has the operation of allowing or denying connection that do not request TLS. This protocol extension is defined in RFC 4217 implicit FTP standard for FTP that requires to use SSL or TLS connection. This was required to use different port than plain FTP.

FTP over SSH is the practice of tunnelling a normal FTP session over a secure shell connection. Because FTP uses multiple

***** TCP connection . It is particularly difficult to tunnel over SSH with many SSH clients , attempting to set up tunnel for the control channel will protect only that channel . when data is transferred the FTP software at either end setup new TCP connection and thus have to compromise on confidentiality or integrity protection .

Otherwise it

is necessary for the SSH client software to have specific knowledge of FTP protocol to monitor and retransmit FTP control channel messages and automatically open new packet forwarding for FTP data channels .

The software packages that support this model include Technic connect secure of SSH communication security software suit . Most common web browsers can remove HTTP hosted on FTP servers , although they may not support protocol

extension such as FTPS where
FTP authorizes HTTP - URL is
supplied the accessible content
on web browser remote servers
are presented in manner that
similar to that used on other
web content.

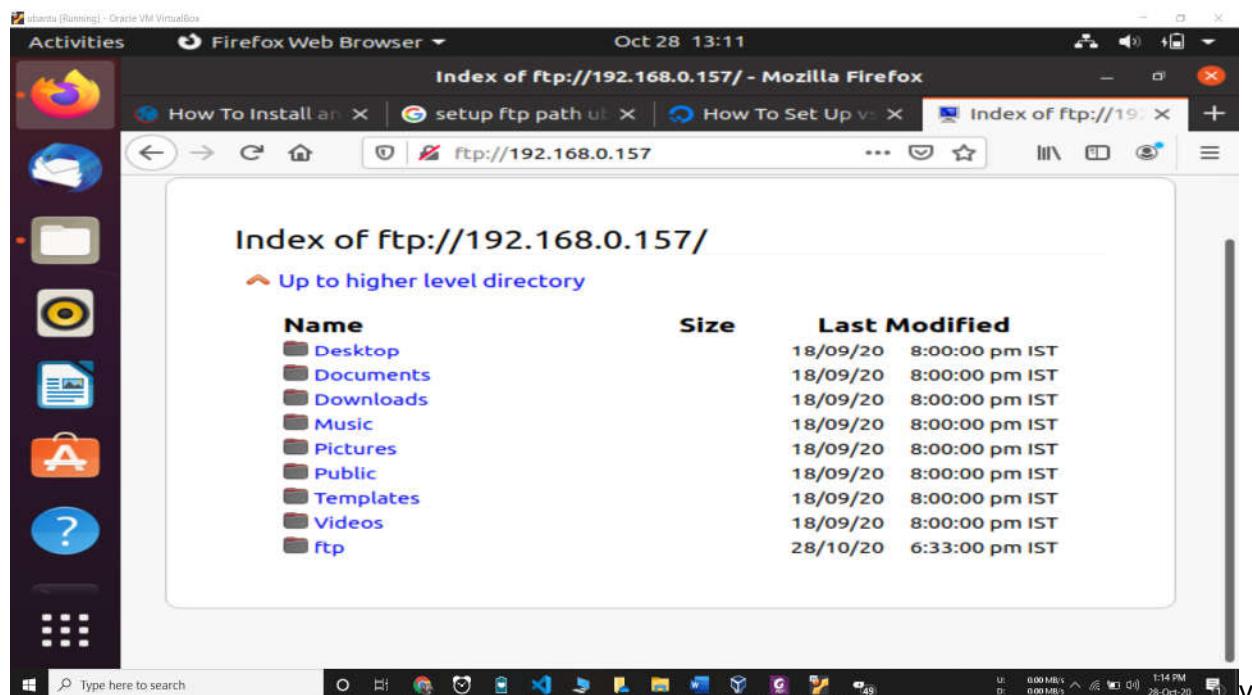
A full featured FTP
client can run within browsers
in form of extension called
fireFTP.

More details on specifying
a username and password may
be found in the browsers
documentation by default most
of browsers use passive
mode which more easily traverse
and - user firewall.

Some variations
has existed in how different
browsers treat path resolution
in C:\P\J where there is a
non-root home directory of
C:\P\J.

Conclusion -

Hence uploaded & download
- did files from FTP servers



```
331 Please specify the password.  
Password:  
530 Login incorrect.  
Login failed.  
ftp> by  
221 Goodbye.  
root@nikhil-pc:/home/nikhil# ftp 192.168.0.157  
Connected to 192.168.0.157.  
220 (vsFTPd 3.0.3)  
Name (192.168.0.157:nikhil): nikhil  
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 2 1000 1000 4096 Sep 18 14:30 Desktop  
drwxr-xr-x 2 1000 1000 4096 Sep 18 14:30 Documents  
drwxr-xr-x 2 1000 1000 4096 Sep 18 14:30 Downloads  
drwxr-xr-x 2 1000 1000 4096 Sep 18 14:30 Music  
drwxr-xr-x 2 1000 1000 4096 Sep 18 14:30 Pictures  
drwxr-xr-x 2 1000 1000 4096 Sep 18 14:30 Public  
drwxr-xr-x 2 1000 1000 4096 Sep 18 14:30 Templates  
drwxr-xr-x 2 1000 1000 4096 Sep 18 14:30 Videos  
drwxrwxr-x 2 1000 1000 4096 Oct 28 13:03 ftp  
226 Directory send OK.
```

Aim - To install HTTP server
on Ubuntu

Theory -

HTTP is a protocol which allows the fetching of resources such as HTML documents. It is the foundation of any data exchange on the web and it is client-server protocol which means request are initiated by recipient. Usually the web browser fetches the complete document is constructed from different sub documents fetched for various text layout, description, image, video, script and more.

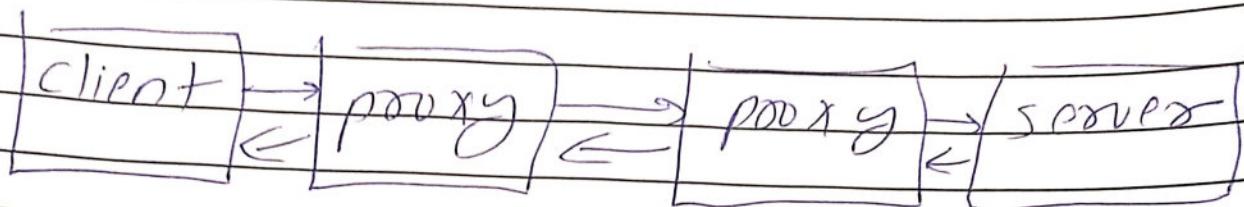
Client and server communicate by exchanging individual messages. The message sent by client usually a web browser are called request and the message sent by server as an answer are called response.

Designed in early 1990's HTTP is an extensible protocol which has evolved over time. This is an application layer protocol that is sent over TCP or over a TLS wrapped TCP connection through reliable transmission control protocol. It could theoretically be used. Due to its extensibility, it is used to not fetch only hyper text document but also images and videos or to post content to servers like HTML form results. HTTP can also be formed document to update web pages on demand.

HTTP is a client server protocol request are sent by one entity, the user agent. Most of the time the user agent is a web browser, but it can be anything, for example a robot that could the web to populate and maintain an search engine index.

Each individual request is sent to a server there are numerous clients collectively

called proxies which perform different operations and act as gateway or cache.



There are more computers between a browser and servers handling the request there are routers, modems and more. Thanks to the layered design of the web there are hidden in network and transport layers. HTTP is on top, at the application layer. Although important to diagnose network problem, the underlying layers are mostly irrelevant to the description of HTTP.

Conclusion:

Hence implemented HTTP server on ubuntu.

V

Ubuntu [Running] - Oracle VM VirtualBox

Activities Terminal Oct 28 13:13

root@nikhil-pc: /home/nikhil

```
331 Please specify the password.  
Password:  
530 Login incorrect.  
Login failed.  
ftp> by  
221 Goodbye.  
root@nikhil-pc:/home/nikhil# ftp 192.168.0.157  
Connected to 192.168.0.157.  
220 (vsFTPd 3.0.3)  
Name (192.168.0.157:nikhil): nikhil  
331 Please specify the password.  
Password:  
230 Login successful.  
Remote system type is UNIX.  
Using binary mode to transfer files.  
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drwxr-xr-x 2 1000 1000 4096 Sep 18 14:30 Desktop  
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drwxr-xr-x 2 1000 1000 4096 Sep 18 14:30 Downloads  
drwxr-xr-x 2 1000 1000 4096 Sep 18 14:30 Music  
drwxr-xr-x 2 1000 1000 4096 Sep 18 14:30 Pictures  
drwxr-xr-x 2 1000 1000 4096 Sep 18 14:30 Public  
drwxr-xr-x 2 1000 1000 4096 Sep 18 14:30 Templates  
drwxr-xr-x 2 1000 1000 4096 Sep 18 14:30 Videos  
drwxrwxr-x 2 1000 1000 4096 Oct 28 13:03 ftp  
226 Directory send OK.  
ftp>
```

Type here to search

U: 0.00 MB/s D: 0.00 MB/s 1:16 PM 28-Oct-20

V

Ubuntu [Running] - Oracle VM VirtualBox

Activities Terminal Oct 28 13:53

nikhil@nikhil-pc: ~/Desktop

```
nikhil@nikhil-pc:~/Desktop$ sudo apt install apache2  
[sudo] password for nikhil:  
Reading package lists... Done  
Building dependency tree  
Reading state information... Done  
The following additional packages will be installed:  
  apache2-bin apache2-data apache2-utils libapr1 libaprutil1  
  libaprutil1-dbd-sqlite3 libaprutil1-ldap liblua5.2-0  
Suggested packages:  
  apache2-doc apache2-suexec-pristine | apache2-suexec-custom  
The following NEW packages will be installed:  
  apache2 apache2-bin apache2-data apache2-utils libapr1 libaprutil1  
  libaprutil1-dbd-sqlite3 libaprutil1-ldap liblua5.2-0  
0 upgraded, 9 newly installed, 0 to remove and 397 not upgraded.  
Need to get 1,819 kB of archives.  
After this operation, 7,935 kB of additional disk space will be used.  
Do you want to continue? [Y/n] y  
Get:1 http://in.archive.ubuntu.com/ubuntu focal/main amd64 libapr1 amd64 1.6.5-1ubuntu1 [91.4 kB]  
Get:2 http://in.archive.ubuntu.com/ubuntu focal/main amd64 libaprutil1 amd64 1.6.1-4ubuntu2 [84.7 kB]  
Get:3 http://in.archive.ubuntu.com/ubuntu focal/main amd64 libaprutil1-dbd-sqlite3 amd64 1.6.1-4ubuntu2 [10.5 kB]  
Get:4 http://in.archive.ubuntu.com/ubuntu focal/main amd64 libaprutil1-ldap amd64 1.6.1-4ubuntu2 [8,736 B]  
Get:5 http://in.archive.ubuntu.com/ubuntu focal/main amd64 liblua5.2-0 amd64 5.2.4-1.1build3 [106 kB]  
Get:6 http://in.archive.ubuntu.com/ubuntu focal-updates/main amd64 apache2-bin amd64 2.4.41-4ubuntu3.1 [1,180 kB]  
Get:7 http://in.archive.ubuntu.com/ubuntu focal-updates/main amd64 apache2-data amd64 2.4.41-4ubuntu3.1 [1,180 kB]
```

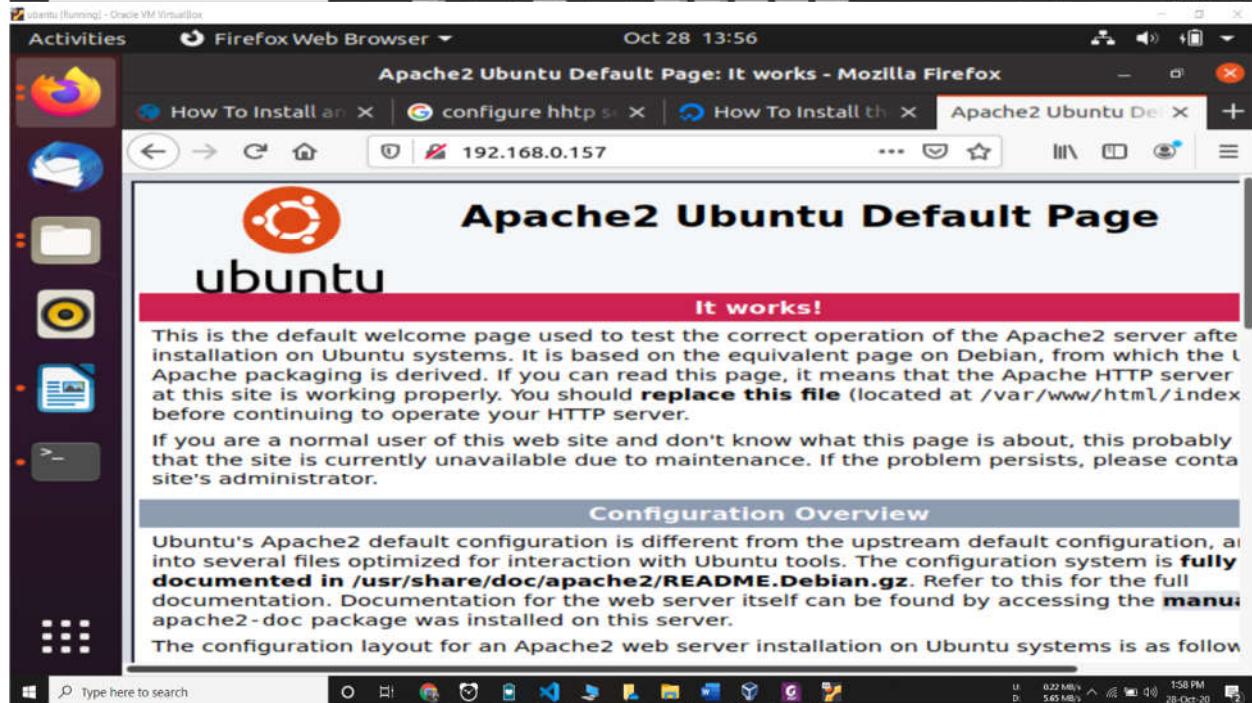
Type here to search

U: 0.00 MB/s D: 0.10 MB/s 1:56 PM 28-Oct-20

Activities Terminal Oct 28 13:55 nikhil@nikhil-pc: ~/Desktop

```
nikhil@nikhil-pc:~/Desktop$ sudo ufw app list
Available applications:
 Apache
 Apache Full
 Apache Secure
 CUPS
 OpenSSH
nikhil@nikhil-pc:~/Desktop$ sudo ufw allow 'Apache'
Rules updated
Rules updated (v6)
nikhil@nikhil-pc:~/Desktop$ sudo ufw status
Status: inactive
nikhil@nikhil-pc:~/Desktop$ sudo systemctl status apache2
● apache2.service - The Apache HTTP Server
   Loaded: loaded (/lib/systemd/system/apache2.service; enabled; vendor pres
   Active: active (running) since Wed 2020-10-28 13:53:46 IST; 1min 37s ago
     Docs: https://httpd.apache.org/docs/2.4/
   Main PID: 7605 (apache2)
      Tasks: 55 (limit: 4657)
     Memory: 4.9M
       CGrou: /system.slice/apache2.service
              ├─7605 /usr/sbin/apache2 -k start
              ├─7607 /usr/sbin/apache2 -k start
              └─7608 /usr/sbin/apache2 -k start

Oct 28 13:53:46 nikhil-pc systemd[1]: Starting The Apache HTTP Server...
Oct 28 13:53:46 nikhil-pc apachectl[7599]: AH00558: apache2: Could not reliably determine the server's fully qualified domain name, using 192.168.0.15.
Oct 28 13:53:46 nikhil-pc systemd[1]: Started The Apache HTTP Server.
lines 1-15/15 (END)
```



C

Activities Terminal Oct 28 14:06 nikhil@nikhil-pc: ~/Desktop

```
Active: active (running) since Wed 2020-10-28 13:53:46 IST; 1min 37s ago
  Docs: https://httpd.apache.org/docs/2.4/
Main PID: 7605 (apache2)
  Tasks: 55 (limit: 4657)
 Memory: 4.9M
 CGroup: /system.slice/apache2.service
           ├─7605 /usr/sbin/apache2 -k start
           ├─7607 /usr/sbin/apache2 -k start
           └─7608 /usr/sbin/apache2 -k start

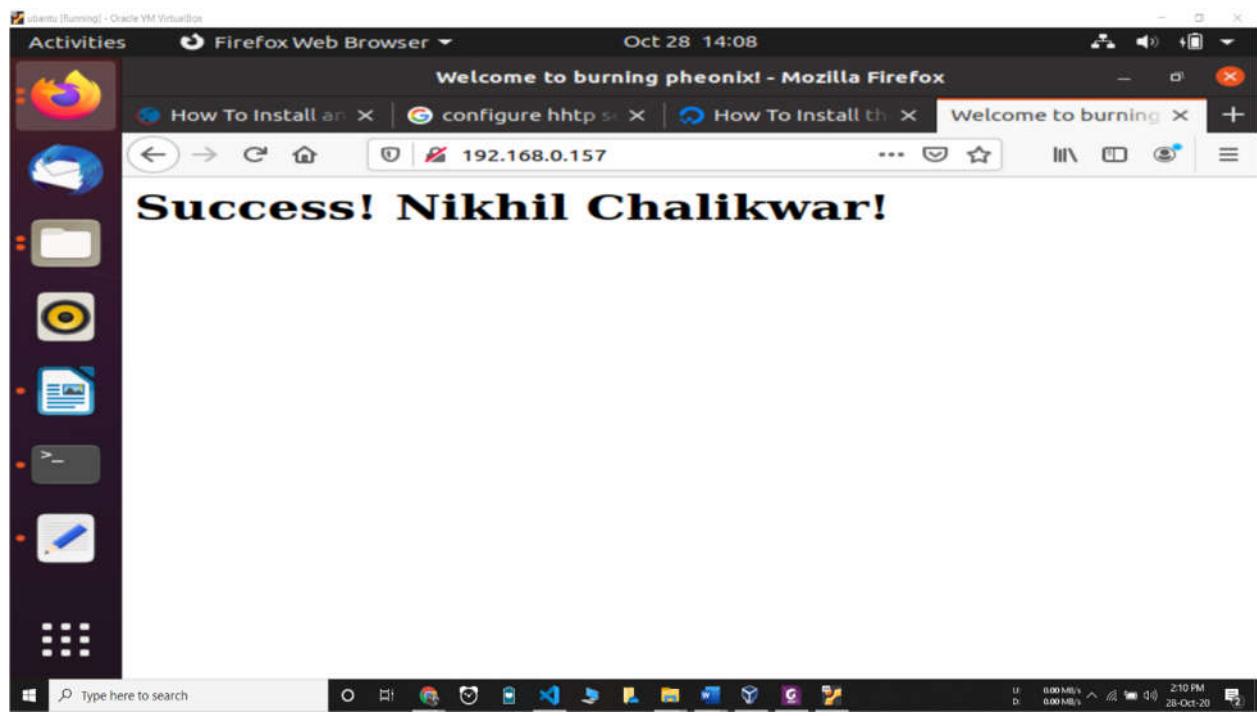
Oct 28 13:53:46 nikhil-pc systemd[1]: Starting The Apache HTTP Server...
Oct 28 13:53:46 nikhil-pc apachectl[7599]: AH00558: apache2: Could not reliably determine the server's fully qualified domain name, using 127.0.1.1. Set the 'ServerName' directive globally to suppress this message
Oct 28 13:53:46 nikhil-pc systemd[1]: Started The Apache HTTP Server.

nikhil@nikhil-pc:~/Desktop$ sudo mkdir /var/www/nikhttp
nikhil@nikhil-pc:~/Desktop$ sudo chown -R $USER:$USER /var/www/nikhttp
nikhil@nikhil-pc:~/Desktop$ sudo chmod -R 755 /var/www/nikhttp
nikhil@nikhil-pc:~/Desktop$ nano /var/www/nikhttp/index.html
nikhil@nikhil-pc:~/Desktop$ sudo nano /etc/apache2/sites-available/your_domain.conf
nikhil@nikhil-pc:~/Desktop$ sudo nano /etc/apache2/sites-available/nikhhttp.conf
nikhil@nikhil-pc:~/Desktop$ sudo a2ensite nikhhttp.conf
ERROR: Site nikhhttp does not exist!
nikhil@nikhil-pc:~/Desktop$ sudo nano /etc/apache2/sites-available/nikhhttp.conf
nikhil@nikhil-pc:~/Desktop$ sudo a2ensite nikhhttp.conf
Enabling site nikhhttp.
To activate the new configuration, you need to run:
  systemctl reload apache2
nikhil@nikhil-pc:~/Desktop$
```

C Activities Terminal Oct 28 14:06 nikhil@nikhil-pc: ~/Desktop

```
Oct 28 13:53:46 nikhil-pc systemd[1]: Starting The Apache HTTP Server...
Oct 28 13:53:46 nikhil-pc apachectl[7599]: AH00558: apache2: Could not reliably determine the server's fully qualified domain name, using 127.0.1.1. Set the 'ServerName' directive globally to suppress this message
Oct 28 13:53:46 nikhil-pc systemd[1]: Started The Apache HTTP Server.

nikhil@nikhil-pc:~/Desktop$ sudo mkdir /var/www/nikhttp
nikhil@nikhil-pc:~/Desktop$ sudo chown -R $USER:$USER /var/www/nikhttp
nikhil@nikhil-pc:~/Desktop$ sudo chmod -R 755 /var/www/nikhttp
nikhil@nikhil-pc:~/Desktop$ nano /var/www/nikhttp/index.html
nikhil@nikhil-pc:~/Desktop$ sudo nano /etc/apache2/sites-available/your_domain.conf
nikhil@nikhil-pc:~/Desktop$ sudo nano /etc/apache2/sites-available/nikhhttp.conf
nikhil@nikhil-pc:~/Desktop$ sudo a2ensite nikhhttp.conf
ERROR: Site nikhhttp does not exist!
nikhil@nikhil-pc:~/Desktop$ sudo nano /etc/apache2/sites-available/nikhhttp.conf
nikhil@nikhil-pc:~/Desktop$ sudo a2ensite nikhhttp.conf
Enabling site nikhhttp.
To activate the new configuration, you need to run:
  systemctl reload apache2
nikhil@nikhil-pc:~/Desktop$ sudo a2dissite 000-default.conf
Site 000-default disabled.
To activate the new configuration, you need to run:
  systemctl reload apache2
nikhil@nikhil-pc:~/Desktop$ sudo apache2ctl configtest
AH00558: apache2: Could not reliably determine the server's fully qualified domain name, using 127.0.1.1. Set the 'ServerName' directive globally to suppress this message
Syntax OK
nikhil@nikhil-pc:~/Desktop$
```



C

Aim - Installation and configuration
of HTTP server on ~~Windows~~
Windows OS

Theory -

In general, it's good to use IIS unless you're creating ASP.NET application on Microsoft IIS, your host is likely to use Apache. The most widespread and fully featured available, it's an open-source project, so it doesn't cost download and install.

The following instruction describes how to install Apache on Windows. Mac OS comes with Apache and PHP mostly. Linux users will find Apache pre-installed. There are some excellent all-in-one Windows distributions that contain Apache, PHP, MySQL and other applications in a single install, it's configuration option.

Backing up, reinstall or moving the web server can be achieved in seconds.

You have more control over how and when apache starts. You can install Apache anywhere such as a portable USB drive. Apache listen for request on TCP/IP port 80.

We are going to use the unofficial Apache distribution although I'm yet notice a significant difference. However it's provided as a host.

The instruction to forward a port will vary from router-to-router but below you will find the steps to configure most routers. For more specific instructions to forward TCP/IP port 80 you should check your routers' manufacturer support website.

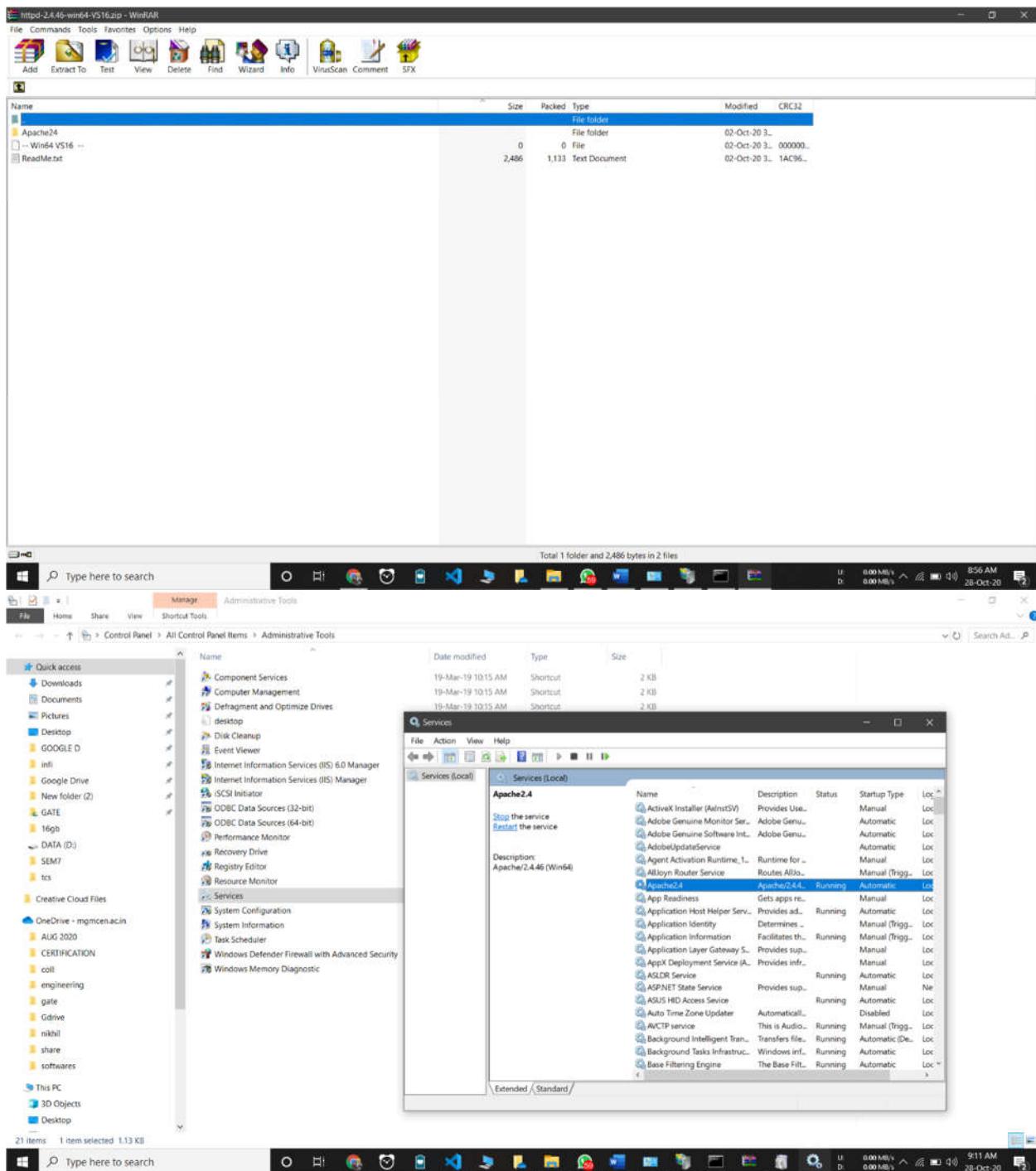
Here the quickest way to tune forward port 21 on your router

You are not limited to use only file explorer, you can use FTP client like acer, you can create multiple account with specific permission to download and upload files.

To let other people access to your FTP server, you need to create a new windows account for each user, associate each account with the FTP server, you need to create a new windows account for let other people access to your need to create home directory associate each account with the FTP home directory and configure the appropriate settings follow the steps below to accomplish these tasks

Conclusion -

Hence installed HTTP server on windows os.



```
Index of /          X  how to install ap... X  How to install Ap... X  Download - The A... X  Apache VS16 bin... X  Using Apache HT... X  localhost      X  Document      X  +  ...
← → ⌂ ⌂ ⌂ sitepoint.com/how-to-install-apache-on-windows/
Apps  C Compiler  Js compiler  CodeChef  Meet  Coursera  InfyTQ  ESG  udemy  Prime  NPTL  LCO  FTP  inst  TCSION  Heroku | Welcome t...
Paused  Other bookmarks

Command Prompt
Wireless LAN adapter Wi-Fi:
Connection-specific DNS Suffix . :
IPv6 Address . . . . . : fd01::dce5:4703:4f6b:52c5
Temporary IPv6 Address . . . . . : fd01::b0f8:886d:43ea:607
Link-local IPv6 Address . . . . . : fe80::dce5:4703:4f6b:52c5%13
IPv4 Address . . . . . : 192.168.0.152
Subnet Mask . . . . . : 255.255.255.0
Default Gateway . . . . . : fe80::b0ff:feaa:5e5c%13
192.168.0.1

Ethernet adapter Bluetooth Network Connection:
Media State . . . . . : Media disconnected
Connection-specific DNS Suffix . :

C:\Users\Marya>cd /Apache24/bin

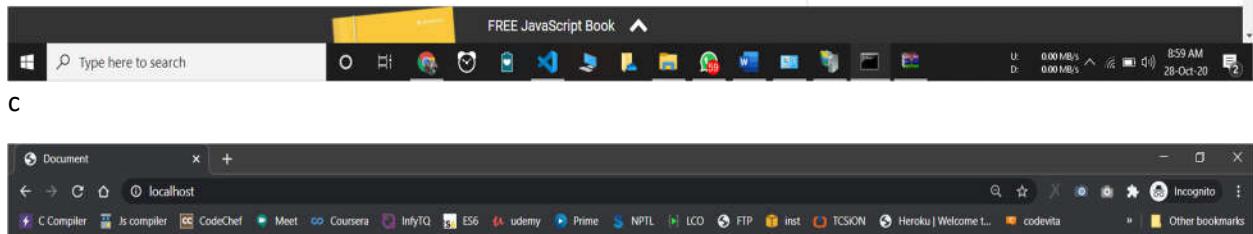
C:\Apache24\bin>httpd -t
AH00558: httpd: Could not reliably determine the server's fully qualified domain name, using 192.168.56.1. Set the 'ServerName' directive globally to s
uppress this message
Syntax OK

C:\Apache24\bin>cd /Apache24/bin

C:\Apache24\bin>httpd -k install
Installing the 'Apache2.4' service
(05)Access is denied. : AH00369: Failed to open the Windows service manager, perhaps you forgot to log in as Administrator?

C:\Apache24\bin> httpd -k install
```

Open the Control Panel, Administrative Tools, then Services and double-click Apache2.4. Set the Startup type to "Automatic" to ensure Apache starts every time you boot your PC.



Aim- SSH server

Installation and configuration
of SSH server

Theory →

SSH is secure protocol used as primary means of connecting to linux servers remotely. It provides text based interface by spawning a remote shell.

After connecting all commands you type in local terminal are sent to remote server and executed there.

Working →

When you connect through SSH, you will be dropped into shell session which is a text based interface where you can interact with your server. You can run any command that you type into local terminal that sent to encrypted SSH tunnel and

and executed on the server
the SSH server implemented
SST using client server model
mean the SSH server to be
established, the remote machine
should be running a piece
of software called SSH daemon.
This software listens on specific
network port, authenticates connection
request, and spawns appropriate
environment if user provide correct
(credentials).

The user computer must
have SSH client. This is a
piece of software that
knows how to communicate
using SSH protocol and can
give information of remote host
to connect to the username
to use and credentials are
passed to authenticate the
client can also specify certain
detail such that connection
type that like to
establish.

HOW SSH AUTHENTICATES USERS

Clients generally authenticate using passwords (less secure and not recommended) or SSH keys are which are very secure password

login are encrypted and easy to understand for new users.

However automated bots and malicious users will repeatedly try to authenticate account that allow password based login which can lead to security compromises.

Hence SSH user SSH key pair on local computer to authenticate

Conclusion -

Hence we implemented SSH SERVER on Ubuntu.

clone of ubuntu [Running] - Oracle VM VirtualBox

You have the Auto capture keyboard option turned on. This will cause the Virtual Machine to automatically capture the keyboard every time the VM window is activated and make it unavailable to other applications running on your host machine; when the keyboard is captured, all keystrokes (including system ones like Esc) will be sent to the Virtual Machine.

The Virtual Machine reports that the guest OS supports mouse pointer integration. This means that you do not need to capture the mouse pointer to be able to use it in your guest OS – all mouse actions you perform when the mouse pointer is over the Virtual Machine's display are directly sent to the guest OS. If the mouse pointer is over the Virtual Machine's display, you can click the mouse button to activate the Virtual Machine.

```
nikhil@nikhil-pc:~$ sudo apt-get update
[sudo] password for nikhil:
Hit:1 http://in.archive.ubuntu.com/ubuntu focal InRelease
Get:2 http://in.archive.ubuntu.com/ubuntu focal-updates InRelease [111 kB]
Get:3 http://in.archive.ubuntu.com/ubuntu focal-backports InRelease [98.3 kB]
Get:4 http://in.archive.ubuntu.com/ubuntu focal-updates/main i386 Packages [318 kB]
Get:5 http://security.ubuntu.com/ubuntu focal-security InRelease [107 kB]
Get:6 http://security.ubuntu.com/ubuntu focal-security/main i386 Packages [108 kB]
Get:7 http://in.archive.ubuntu.com/ubuntu focal-updates/main amd64 Packages [55.8 kB]
Get:8 http://security.ubuntu.com/ubuntu focal-security/main amd64 Packages [295 kB]
Get:9 http://security.ubuntu.com/ubuntu focal-security/main Translation-en [69.8 kB]
Get:10 http://security.ubuntu.com/ubuntu focal-security/main amd64 DEP-11 Metadata [24.3 kB]
Get:11 http://security.ubuntu.com/ubuntu focal-security/main amd64 c-n-f Metadata [4,696 B]
Get:12 http://security.ubuntu.com/ubuntu focal-security/restricted amd64 Packages [59.2 kB]
Get:13 http://security.ubuntu.com/ubuntu focal-security/restricted i386 Packages [8,920 B]
Get:14 http://security.ubuntu.com/ubuntu focal-security/restricted Translation-en [9,856 B]
Get:15 http://security.ubuntu.com/ubuntu focal-security/universe amd64 Packages [93.8 kB]
Get:16 http://security.ubuntu.com/ubuntu focal-security/universe i386 Packages
[...]
```

U: 0.00 MB/s D: 0.00 MB/s 9:21 AM 06-Oct-20

clone of ubuntu [Running] - Oracle VM VirtualBox

You have the Auto capture keyboard option turned on. This will cause the Virtual Machine to automatically capture the keyboard every time the VM window is activated and make it unavailable to other applications running on your host machine; when the keyboard is captured, all keystrokes (including system ones like Esc) will be sent to the Virtual Machine.

The Virtual Machine reports that the guest OS supports mouse pointer integration. This means that you do not need to capture the mouse pointer to be able to use it in your guest OS – all mouse actions you perform when the mouse pointer is over the Virtual Machine's display are directly sent to the guest OS. If the mouse pointer is over the Virtual Machine's display, you can click the mouse button to activate the Virtual Machine.

```
Get:29 http://in.archive.ubuntu.com/ubuntu focal-updates/universe i386 Packages [138 kB]
Get:30 http://in.archive.ubuntu.com/ubuntu focal-updates/universe Translation-en [94.2 kB]
Get:31 http://in.archive.ubuntu.com/ubuntu focal-updates/universe amd64 DEP-11 Metadata [196 kB]
Get:32 http://in.archive.ubuntu.com/ubuntu focal-updates/universe amd64 c-n-f Metadata [6,236 B]
Get:33 http://in.archive.ubuntu.com/ubuntu focal-updates/multiverse i386 Packages [4,372 B]
Get:34 http://in.archive.ubuntu.com/ubuntu focal-updates/multiverse amd64 Packages [15.1 kB]
Get:35 http://in.archive.ubuntu.com/ubuntu focal-updates/multiverse amd64 DEP-11 Metadata [2,468 B]
Get:36 http://in.archive.ubuntu.com/ubuntu focal-backports/universe amd64 Packages [4,012 B]
Get:37 http://in.archive.ubuntu.com/ubuntu focal-backports/universe i386 Packages [2,904 B]
Get:38 http://in.archive.ubuntu.com/ubuntu focal-backports/universe amd64 DEP-11 Metadata [1,768 B]
Fetched 3,174 kB in 23s (140 kB/s)
Reading package lists... Done
nikhil@nikhil-pc:~$ sudo apt-get install openssh-server
Reading package lists... Done
Building dependency tree
Reading state information... Done
openssh-server is already the newest version (1:8.2p1-4ubuntu0.1).
openssh-server set to manually installed.
0 upgraded, 0 newly installed, 0 to remove and 366 not upgraded.
```

U: 0.00 MB/s D: 0.00 MB/s 9:21 AM 06-Oct-20

You have the Auto capture keyboard option turned on. This will cause the Virtual Machine to automatically capture the keyboard every time the VM window is activated and make it unavailable to other applications running on your host machine; when the keyboard is captured, all keystrokes (including system ones like Ctrl+Alt+Delete) will be sent to the guest OS.

The Virtual Machine reports that the guest OS supports mouse pointer integration. This means that you do not need to capture the mouse pointer to be able to use it in your guest OS – all mouse actions you perform when the mouse pointer is over the Virtual Machine's display are directly sent to the guest OS. If the

```
applicable law.

root@nikhil-pc:~# exit
logout
Connection to localhost closed.
nikhil@nikhil-pc:~$ sudo nano /etc/ssh/sshd_config
nikhil@nikhil-pc:~$ sudo systemctl status ssh
● ssh.service - OpenBSD Secure Shell server
    Loaded: loaded (/lib/systemd/system/ssh.service; enabled; vendor preset: >
    Active: active (running) since Tue 2020-10-06 09:32:43 IST; 18min ago
      Docs: man:sshd(8)
             man:sshd_config(5)
    Process: 3445 ExecStartPre=/usr/sbin/sshd -t (code=exited, status=0/SUCCESS)
   Main PID: 3461 (sshd)
     Tasks: 1 (limit: 4657)
    Memory: 1.4M
       CGroup: /system.slice/ssh.service
               └─3461 sshd: /usr/sbin/sshd -D [listener] 0 of 10-100 startups

Oct 06 09:32:43 nikhil-pc systemd[1]: Starting OpenBSD Secure Shell server...
Oct 06 09:32:43 nikhil-pc sshd[3445]: /etc/ssh/sshd_config line 35: Deprecated>
Oct 06 09:32:43 nikhil-pc sshd[3461]: /etc/ssh/sshd_config line 35: Deprecated>
Oct 06 09:32:43 nikhil-pc sshd[3461]: Server listening on 0.0.0.0 port 22.
Oct 06 09:32:43 nikhil-pc sshd[3461]: Server listening on :: port 22.
Oct 06 09:32:43 nikhil-pc systemd[1]: Started OpenBSD Secure Shell server.
Oct 06 09:32:55 nikhil-pc sshd[3467]: reexec line 35: Deprecated option UseLogin
Oct 06 09:32:57 nikhil-pc sshd[3467]: Accepted password for root from 127.0.0.>
Oct 06 09:32:57 nikhil-pc sshd[3467]: pam_unix(sshd:session): session opened f>
lines 1-21/21 (END)
```

You have the Auto capture keyboard option turned on. This will cause the Virtual Machine to automatically capture the keyboard every time the VM window is activated and make it unavailable to other applications running on your host machine; when the keyboard is captured, all keystrokes (including system ones like Ctrl+Alt+Delete) will be sent to the guest OS.

The Virtual Machine reports that the guest OS supports mouse pointer integration. This means that you do not need to capture the mouse pointer to be able to use it in your guest OS – all mouse actions you perform when the mouse pointer is over the Virtual Machine's display are directly sent to the guest OS. If the

```
GNU nano 4.8          /etc/ssh/sshd_config          Modified

# Expect .ssh/authorized_keys2 to be disregarded by default in future.
#AuthorizedKeysFile      .ssh/authorized_keys .ssh/authorized_keys2

#AuthorizedPrincipalsFile none

#AuthorizedKeysCommand none
#AuthorizedKeysCommandUser nobody

# For this to work you will also need host keys in /etc/ssh/ssh_known_hosts
#HostbasedAuthentication no
# Change to yes if you don't trust ~/.ssh/known_hosts for
# HostbasedAuthentication
#IgnoreUserKnownHosts no
# Don't read the user's ~/.rhosts and ~/.shosts files
#IgnoreRhosts yes

# To disable tunneled clear text passwords, change to no here!
PasswordAuthentication yes
PermitRootLogin yes
UseLogin yes
#PermitEmptyPasswords no

# Change to yes to enable challenge-response passwords (beware issues with
# some PAM modules and threads)
```

```
clone of ubuntu [Running] - Oracle VM VirtualBox
You have the Auto capture keyboard option turned on. This will cause the Virtual Machine to automatically capture the keyboard every time the VM window is activated and make it unavailable to other applications running on your host machine; when the keyboard is captured, all keystrokes (including system ones like Ctrl+Alt+Delete) will be sent directly to the guest OS. If the guest OS supports mouse pointer integration, this means that you do not need to capture the mouse pointer to be able to use it in your guest OS - all mouse actions you perform when the mouse pointer is over the Virtual Machine's display are directly sent to the guest OS. If the guest OS does not support mouse pointer integration, you will need to capture the mouse pointer to be able to use it in your guest OS.

The Virtual Machine reports that the guest OS supports mouse pointer integration. This means that you do not need to capture the mouse pointer to be able to use it in your guest OS - all mouse actions you perform when the mouse pointer is over the Virtual Machine's display are directly sent to the guest OS. If the guest OS does not support mouse pointer integration, you will need to capture the mouse pointer to be able to use it in your guest OS.

nikhil@nikhil-pc:~$ sudo nano /etc/ssh/sshd_config
nikhil@nikhil-pc:~$ sudo systemctl reload sshd
nikhil@nikhil-pc:~$ sudo service sshd restart
nikhil@nikhil-pc:~$ sudo ssh root@localhost
root@localhost's password:
Welcome to Ubuntu 20.04 LTS (GNU/Linux 5.4.0-26-generic x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:    https://landscape.canonical.com
 * Support:       https://ubuntu.com/advantage

363 updates can be installed immediately.
139 of these updates are security updates.
To see these additional updates run: apt list --upgradable

Your Hardware Enablement Stack (HWE) is supported until April 2025.

The programs included with the Ubuntu system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/*copyright.

Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by
applicable law.

root@nikhil-pc:~# exit
logout
Connection to localhost closed.
nikhil@nikhil-pc:~$ sudo nano /etc/ssh/sshd_config
nikhil@nikhil-pc:~$
```

sudo apt-get update

sudo apt-get install openssh-server

sudo systemctl status ssh

- If not running enable the ssh server and start it as follows by typing the systemctl command: sudo systemctl enable ssh and sudo systemctl start ssh

sudo nano /etc/ssh/sshd_config

add lines
PasswordAuthentication yes

PermitRootLogin yes

UserLogin yes

Sudo systemctl reload sshd

Sudo service sshd restart

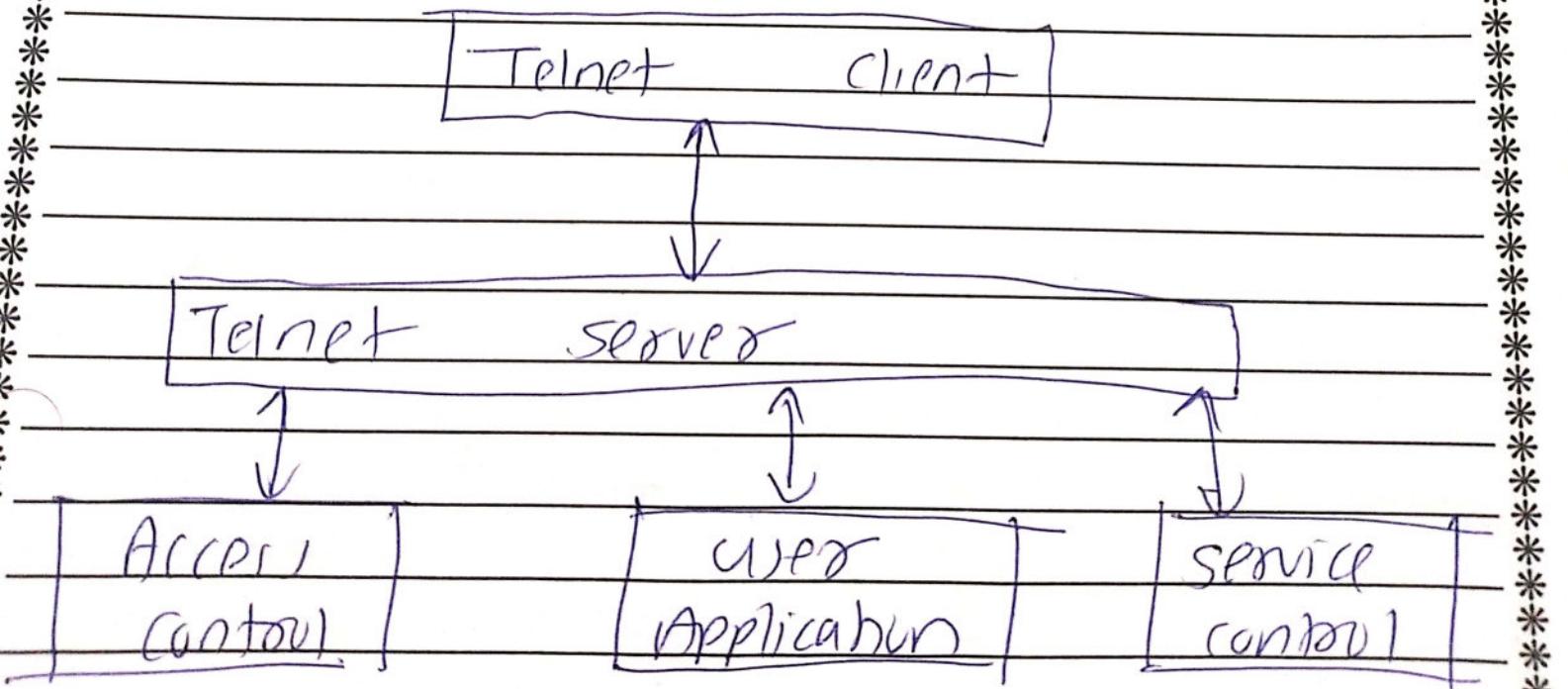
Sudo ssh root@localhost

Aim - To install telnet server

Theory -

Telnet server allows command line access to an embed module over IP network.

Telnet is a protocol used on a network to provide a two line command line interface (CLI) using a virtual terminal connection. User data and Telnet control information is transferred data on TCP connection.



* (contd) interface explains how to start/stop the Telnet server and manage built-in user accounts

* Access and multiuser interface shows how to logout hosts which are not allowed to connect to the Telnet server and how to add additional user accounts and to manage access rights to each user

* User callback sends notification about events in Telnet server to the CWP application

* Configuration explains option Telnet server

Telnet is an unencrypted and insecure protocol. Telnet client and server in case your mail servers

In early 1969 during nine month of work ARPANET The development of Telnet (Teletype) network was practically completed. But it was in 1973 that the protocol allowing access to the remote computer host received its final specification in RFC 495 (Request for comment). It was implemented by most platforms as the official channel of internet community task force (IETF). The terminal protocol and basic working methods and extensions are characterized in more efficient standards) RFC 854 and RFC 855.

Conclusion -

Hence we have implemented Telnet server

clone of ubuntu [Running] - Oracle VM VirtualBox

Activities Terminal Oct 10 08:17 nikhil@nikhil-pc: ~

```
nikhil@nikhil-pc:~$ sudo apt-get update
[sudo] password for nikhil:
Hit:1 http://in.archive.ubuntu.com/ubuntu focal InRelease
Get:2 http://in.archive.ubuntu.com/ubuntu focal-updates InRelease [111 kB]
Get:3 http://in.archive.ubuntu.com/ubuntu focal-backports InRelease [98.3 kB]
Get:4 http://security.ubuntu.com/ubuntu focal-security InRelease [107 kB]
Get:5 http://in.archive.ubuntu.com/ubuntu focal-updates/main amd64 Packages [588 kB]
Get:6 http://in.archive.ubuntu.com/ubuntu focal-updates/main i386 Packages [347 kB]
Get:7 http://in.archive.ubuntu.com/ubuntu focal-updates/main Translation-en [150 kB]
Get:8 http://in.archive.ubuntu.com/ubuntu focal-updates/main amd64 DEP-11 Metadata [208 kB]
Get:9 http://in.archive.ubuntu.com/ubuntu focal-updates/main amd64 c-n-f Metadata [10.3 kB]
Get:10 http://in.archive.ubuntu.com/ubuntu focal-updates/universe amd64 Packages [666 kB]
Get:11 http://in.archive.ubuntu.com/ubuntu focal-updates/universe i386 Packages [501 kB]
Get:12 http://in.archive.ubuntu.com/ubuntu focal-updates/universe Translation-en [124 kB]
Get:13 http://in.archive.ubuntu.com/ubuntu focal-updates/universe amd64 DEP-11 Metadata [200 kB]
Get:14 http://in.archive.ubuntu.com/ubuntu focal-updates/universe amd64 c-n-f Metadata [12.0 kB]
Get:15 http://in.archive.ubuntu.com/ubuntu focal-updates/multiverse amd64 DEP-11 Metadata [2,468 B]
Get:16 http://in.archive.ubuntu.com/ubuntu focal-backports/universe amd64 DEP-11 Metadata [51760 B]
```

Type here to search 0 820 AM U: 0.32 MB/s D: 0.01 MB/s 10-Oct-20

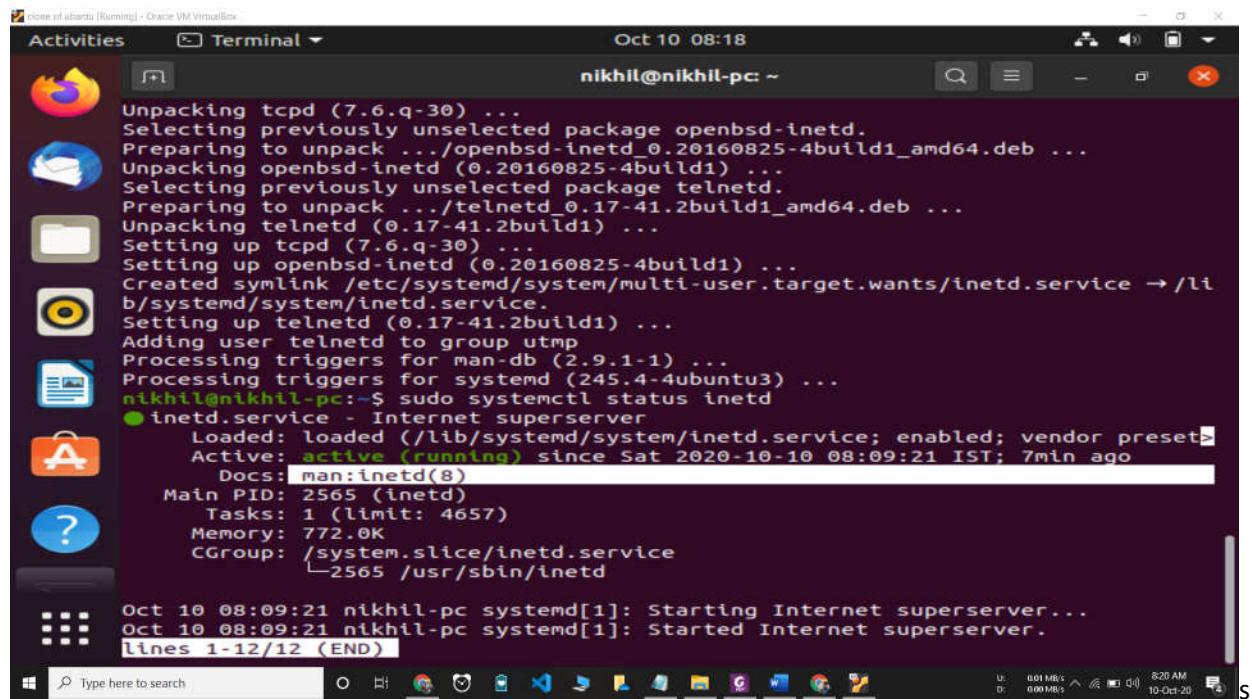
ip a

clone of ubuntu [Running] - Oracle VM VirtualBox

Activities Terminal Oct 10 08:18 nikhil@nikhil-pc: ~

```
ta [5,000 B]
Get:22 http://security.ubuntu.com/ubuntu focal-security/universe amd64 Packages [506 kB]
Get:23 http://security.ubuntu.com/ubuntu focal-security/universe i386 Packages [405 kB]
Get:24 http://security.ubuntu.com/ubuntu focal-security/universe Translation-en [62.8 kB]
Get:25 http://security.ubuntu.com/ubuntu focal-security/universe amd64 DEP-11 Metadata [55.6 kB]
Get:26 http://security.ubuntu.com/ubuntu focal-security/universe amd64 c-n-f Metadata [8,484 B]
Fetched 4,730 kB in 5s (1,045 kB/s)
Reading package lists... Done
nikhil@nikhil-pc:~$ ip a
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default qlen 1000
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
        inet 127.0.0.1/8 scope host lo
            valid_lft forever preferred_lft forever
    inet6 ::1/128 scope host
            valid_lft forever preferred_lft forever
2: enp0s3: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc fq_codel state UP group default qlen 1000
    link/ether 08:00:27:59:08:61 brd ff:ff:ff:ff:ff:ff
        inet 10.0.2.15/24 brd 10.0.2.255 scope global dynamic noprefixroute enp0s3
            valid_lft 86397sec preferred_lft 86397sec
        inet6 fd01::4108:29b6:6ea7:175c/64 scope global temporary dynamic
            valid_lft 255sec preferred_lft 255sec
        inet6 fd01::bf4:b157:baf3:24c7/64 scope global dynamic mngtmpaddr noprefix
```

Type here to search 0 820 AM U: 0.32 MB/s D: 0.01 MB/s 10-Oct-20

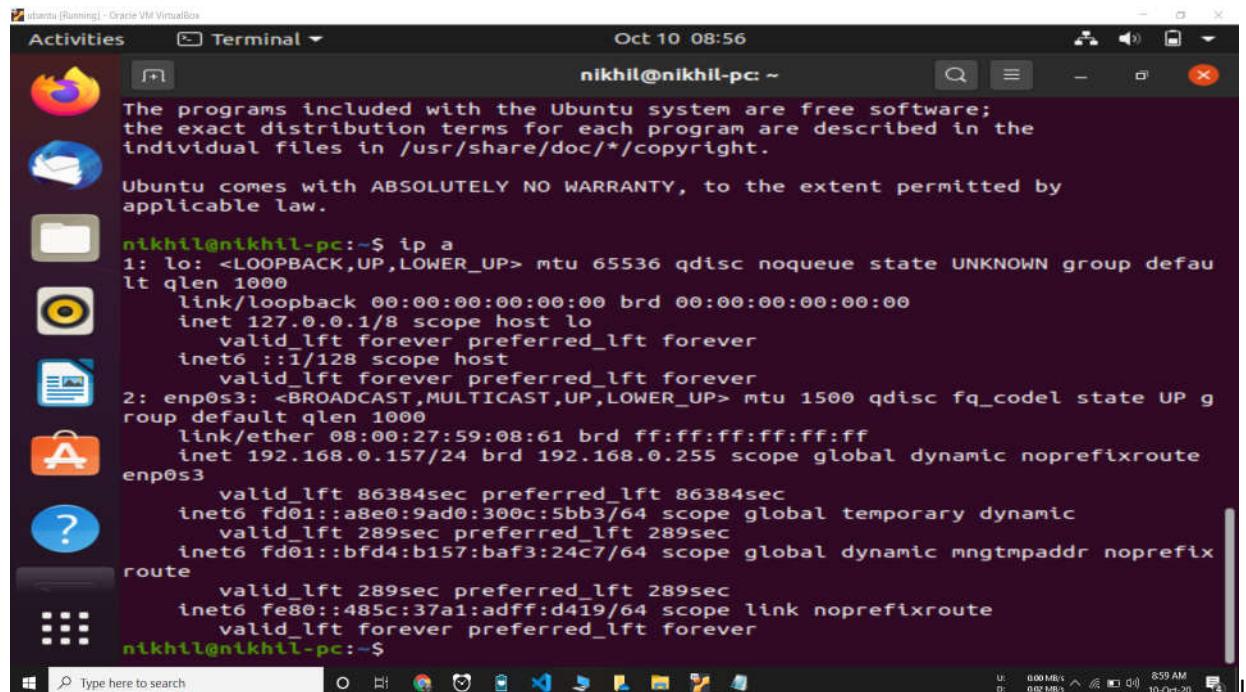


A screenshot of an Ubuntu desktop environment. The terminal window shows the following output:

```
Unpacking tcpd (7.6.q-30) ...
Selecting previously unselected package openbsd-inetd.
Preparing to unpack .../openbsd-inetd_0.20160825-4build1_amd64.deb ...
Unpacking openbsd-inetd (0.20160825-4build1) ...
Selecting previously unselected package telnetd.
Preparing to unpack .../telnetd_0.17-41.2build1_amd64.deb ...
Unpacking telnetd (0.17-41.2build1) ...
Setting up tcpd (7.6.q-30) ...
Setting up openbsd-inetd (0.20160825-4build1) ...
Created symlink /etc/systemd/system/multi-user.target.wants/inetd.service → /lib/systemd/system/inetd.service.
Setting up telnetd (0.17-41.2build1) ...
Adding user telnetd to group utmp
Processing triggers for man-db (2.9.1-1) ...
Processing triggers for systemd (245.4-4ubuntu3) ...
nikhil@nikhil-pc:~$ sudo systemctl status inetd
● inetd.service - Internet superserver
    Loaded: loaded (/lib/systemd/system/inetd.service; enabled; vendor preset: enabled)
    Active: active (running) since Sat 2020-10-10 08:09:21 IST; 7min ago
      Docs: man:inetd(8)
      Main PID: 2565 (inetd)
        Tasks: 1 (limit: 4657)
       Memory: 772.0K
      CGroup: /system.slice/inetd.service
             └─2565 /usr/sbin/inetd

Oct 10 08:09:21 nikhil-pc systemd[1]: Starting Internet superserver...
Oct 10 08:09:21 nikhil-pc systemd[1]: Started Internet superserver.
lines 1-12/12 (END)
```

server is
active



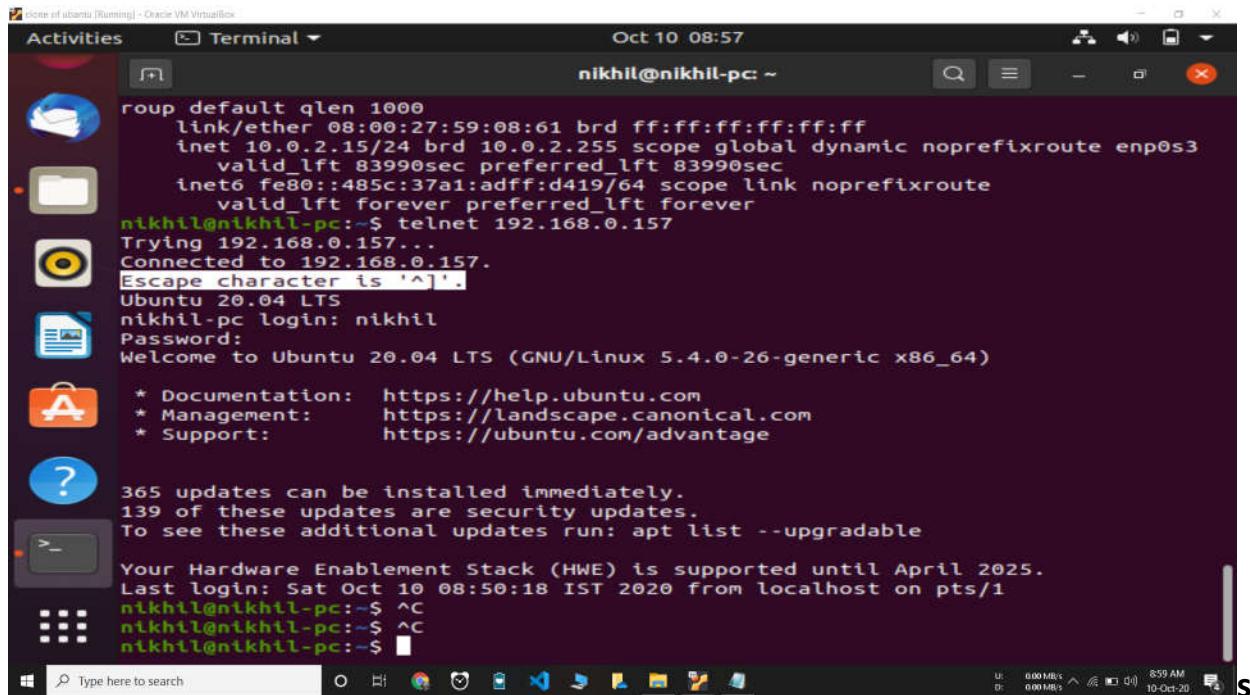
A screenshot of an Ubuntu desktop environment. The terminal window shows the following output:

```
The programs included with the Ubuntu system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*copyright.

Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by
applicable law.

nikhil@nikhil-pc:~$ ip a
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
        inet 127.0.0.1/8 scope host lo
            valid_lft forever preferred_lft forever
            inet6 ::1/128 scope host
                valid_lft forever preferred_lft forever
2: enp0s3: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc fq_codel state UP group default
    link/ether 08:00:27:59:08:61 brd ff:ff:ff:ff:ff:ff
        inet 192.168.0.157/24 brd 192.168.0.255 scope global dynamic noprefixroute
            enp0s3
                valid_lft 86384sec preferred_lft 86384sec
                inet6 fe80::485c:37a1:adff:d419/64 scope link noprefixroute
                    valid_lft forever preferred_lft forever
nikhil@nikhil-pc:~$
```

ip a -on remote system



```
Activities Terminal Oct 10 08:57
nikhil@nikhil-pc: ~
roup default qlen 1000
link/ether 08:00:27:59:08:61 brd ff:ff:ff:ff:ff:ff
inet 10.0.2.15/24 brd 10.0.2.255 scope global dynamic noprefixroute enp0s3
    valid_lft 83990sec preferred_lft 83990sec
inet6 fe80::485c:37a1:adff:d419/64 scope link noprefixroute
    valid_lft forever preferred_lft forever
nikhil@nikhil-pc:~$ telnet 192.168.0.157
Trying 192.168.0.157...
Connected to 192.168.0.157.
Escape character is '^]'.
Ubuntu 20.04 LTS
nikhil-pc login: nikhil
Password:
Welcome to Ubuntu 20.04 LTS (GNU/Linux 5.4.0-26-generic x86_64)

 * Documentation: https://help.ubuntu.com
 * Management: https://landscape.canonical.com
 * Support: https://ubuntu.com/advantage

365 updates can be installed immediately.
139 of these updates are security updates.
To see these additional updates run: apt list --upgradable

Your Hardware Enablement Stack (HWE) is supported until April 2025.
Last login: Sat Oct 10 08:50:18 IST 2020 from localhost on pts/1
nikhil@nikhil-pc:~$ ^C
nikhil@nikhil-pc:~$ ^C
nikhil@nikhil-pc:~$
```

Sudo apt-get install telnetd -y

sudo systemctl status inetd

Test Telnet Connection from Remote System

Telnet server is now installed and listening on port 23. It's time to connect Telnet server from the remote system.

Now, log in to other Ubuntu system and run the following command:

telnet 192.168.0.100

clone of ubuntu [Running] - Oracle VM VirtualBox

Activities Terminal Oct 10 08:17 nikhil@nikhil-pc: ~

```
nikhil@nikhil-pc:~$ sudo apt-get update
[sudo] password for nikhil:
Hit:1 http://in.archive.ubuntu.com/ubuntu focal InRelease
Get:2 http://in.archive.ubuntu.com/ubuntu focal-updates InRelease [111 kB]
Get:3 http://in.archive.ubuntu.com/ubuntu focal-backports InRelease [98.3 kB]
Get:4 http://security.ubuntu.com/ubuntu focal-security InRelease [107 kB]
Get:5 http://in.archive.ubuntu.com/ubuntu focal-updates/main amd64 Packages [58.8 kB]
Get:6 http://in.archive.ubuntu.com/ubuntu focal-updates/main i386 Packages [347 kB]
Get:7 http://in.archive.ubuntu.com/ubuntu focal-updates/main Translation-en [150 kB]
Get:8 http://in.archive.ubuntu.com/ubuntu focal-updates/main amd64 DEP-11 Metadata [208 kB]
Get:9 http://in.archive.ubuntu.com/ubuntu focal-updates/main amd64 c-n-f Metadata [10.3 kB]
Get:10 http://in.archive.ubuntu.com/ubuntu focal-updates/universe amd64 Packages [666 kB]
Get:11 http://in.archive.ubuntu.com/ubuntu focal-updates/universe i386 Packages [501 kB]
Get:12 http://in.archive.ubuntu.com/ubuntu focal-updates/universe Translation-en [124 kB]
Get:13 http://in.archive.ubuntu.com/ubuntu focal-updates/universe amd64 DEP-11 Metadata [200 kB]
Get:14 http://in.archive.ubuntu.com/ubuntu focal-updates/universe amd64 c-n-f Metadata [12.0 kB]
Get:15 http://in.archive.ubuntu.com/ubuntu focal-updates/multiverse amd64 DEP-11 Metadata [2,468 B]
Get:16 http://in.archive.ubuntu.com/ubuntu focal-backports/universe amd64 DEP-11 Metadata [51.760 kB]
```

Type here to search 0 820 AM U: 0.32 MB/s D: 0.01 MB/s 10-Oct-20

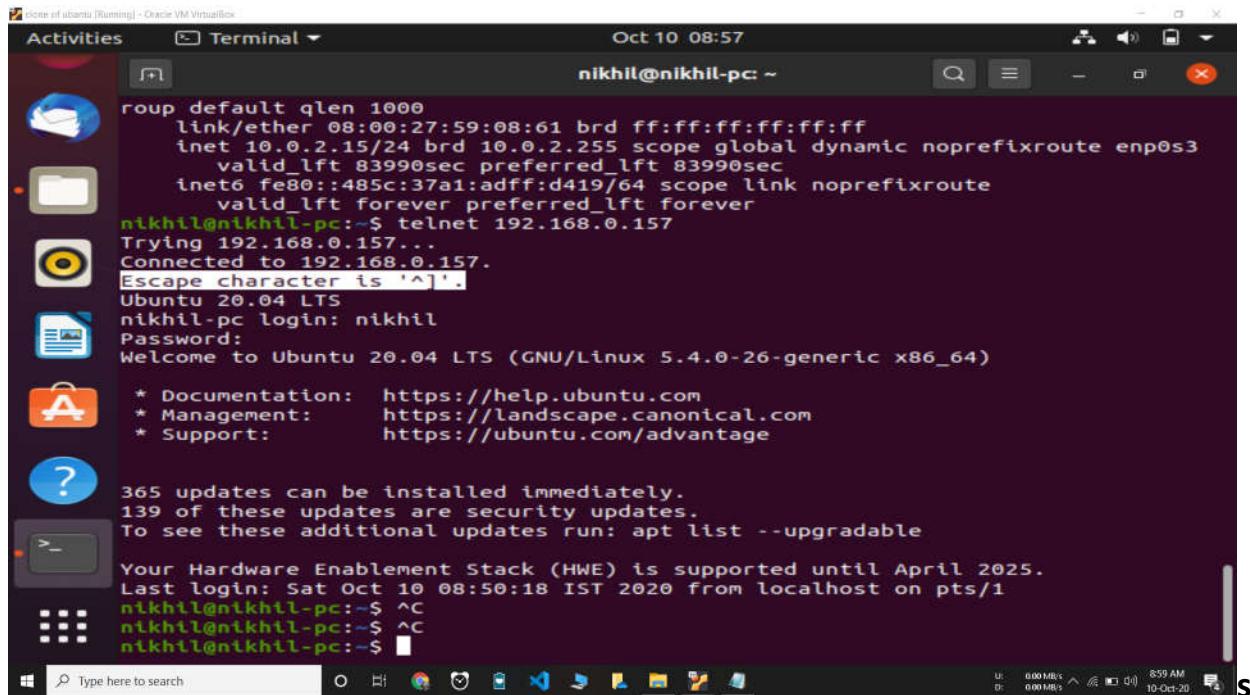
ip a

clone of ubuntu [Running] - Oracle VM VirtualBox

Activities Terminal Oct 10 08:18 nikhil@nikhil-pc: ~

```
ta [5,000 B]
Get:22 http://security.ubuntu.com/ubuntu focal-security/universe amd64 Packages [506 kB]
Get:23 http://security.ubuntu.com/ubuntu focal-security/universe i386 Packages [405 kB]
Get:24 http://security.ubuntu.com/ubuntu focal-security/universe Translation-en [62.8 kB]
Get:25 http://security.ubuntu.com/ubuntu focal-security/universe amd64 DEP-11 Metadata [55.6 kB]
Get:26 http://security.ubuntu.com/ubuntu focal-security/universe amd64 c-n-f Metadata [8,484 B]
Fetched 4,730 kB in 5s (1,045 kB/s)
Reading package lists... Done
nikhil@nikhil-pc:~$ ip a
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default qlen 1000
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
        inet 127.0.0.1/8 scope host lo
            valid_lft forever preferred_lft forever
    inet6 ::1/128 scope host
            valid_lft forever preferred_lft forever
2: enp0s3: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc fq_codel state UP group default qlen 1000
    link/ether 08:00:27:59:08:61 brd ff:ff:ff:ff:ff:ff
        inet 10.0.2.15/24 brd 10.0.2.255 scope global dynamic noprefixroute enp0s3
            valid_lft 86397sec preferred_lft 86397sec
            inet6 fd01::4108:29b6:6ea7:175c/64 scope global temporary dynamic
                valid_lft 255sec preferred_lft 255sec
                inet6 fd01::bf4:b157:baf3:24c7/64 scope global dynamic mngtmpaddr noprefix
```

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The screenshot shows a Linux desktop environment with a terminal window open. The terminal window title is "Terminal" and the date and time are "Oct 10 08:57". The terminal content shows the user has run the command "telnet 192.168.0.157" and connected to the host. It also displays the standard Ubuntu 20.04 LTS login screen, including the password prompt and welcome message. The desktop interface includes a dock with various icons and a system tray at the bottom.

```
root@nikhil:~# roup default qlen 1000
link/ether 08:00:27:59:08:61 brd ff:ff:ff:ff:ff:ff
inet 10.0.2.15/24 brd 10.0.2.255 scope global dynamic noprefixroute enp0s3
    valid_lft 83990sec preferred_lft 83990sec
inet6 fe80::485c:37a1:adff:d419/64 scope link noprefixroute
    valid_lft forever preferred_lft forever
nikhil@nikhil:~$ telnet 192.168.0.157
Trying 192.168.0.157...
Connected to 192.168.0.157.
Escape character is '^]'.
Ubuntu 20.04 LTS
nikhil@nikhil:~$ login: nikhil
Password:
Welcome to Ubuntu 20.04 LTS (GNU/Linux 5.4.0-26-generic x86_64)

 * Documentation: https://help.ubuntu.com
 * Management: https://landscape.canonical.com
 * Support: https://ubuntu.com/advantage

365 updates can be installed immediately.
139 of these updates are security updates.
To see these additional updates run: apt list --upgradable

Your Hardware Enablement Stack (HWE) is supported until April 2025.
Last login: Sat Oct 10 08:50:18 IST 2020 from localhost on pts/1
nikhil@nikhil:~$ ^C
nikhil@nikhil:~$ ^C
nikhil@nikhil:~$
```

sudo apt-get install telnetd -y

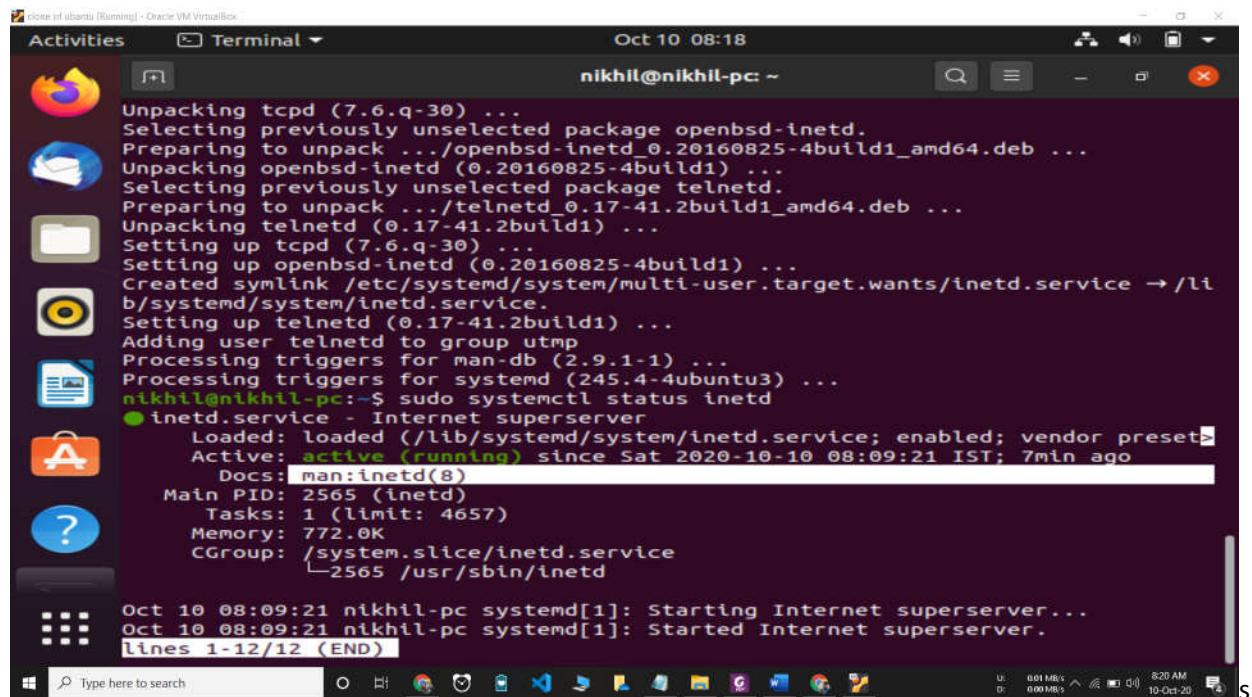
sudo systemctl status inetd

Test Telnet Connection from Remote System

Telnet server is now installed and listening on port 23. It's time to connect Telnet server from the remote system.

Now, log in to other Ubuntu system and run the following command:

telnet 192.168.0.100

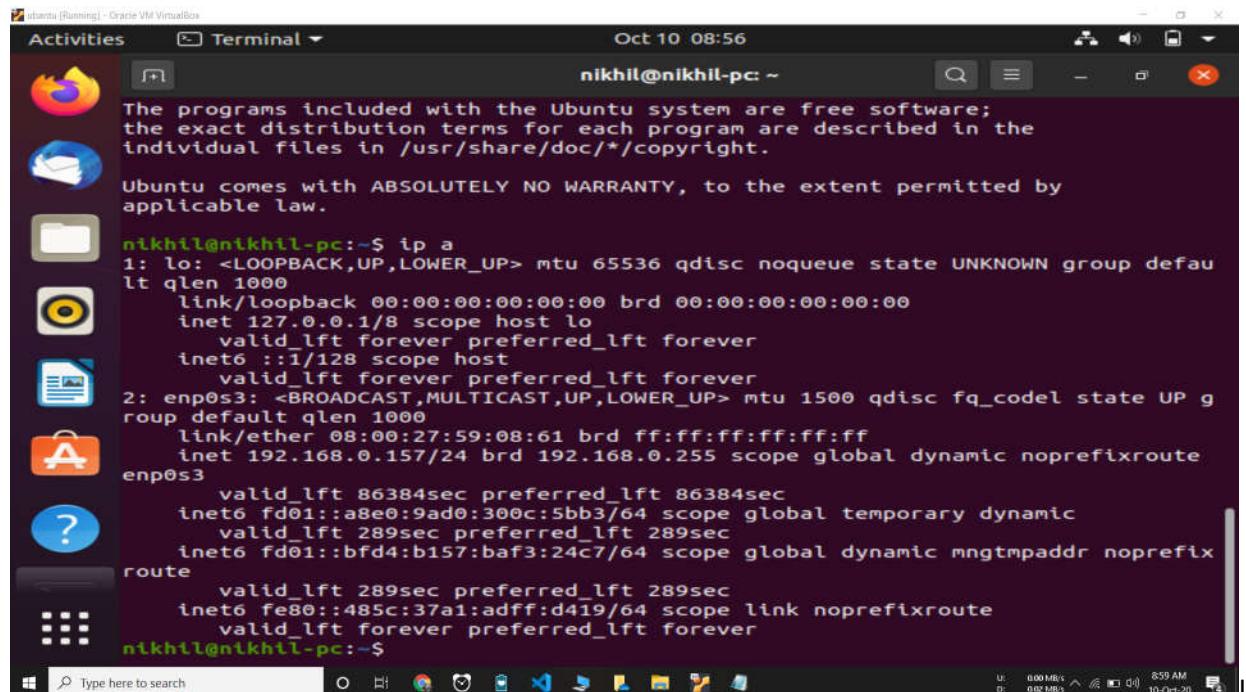


A screenshot of an Ubuntu desktop environment. The terminal window shows the following output:

```
Unpacking tcpd (7.6.q-30) ...
Selecting previously unselected package openbsd-inetd.
Preparing to unpack .../openbsd-inetd_0.20160825-4build1_amd64.deb ...
Unpacking openbsd-inetd (0.20160825-4build1) ...
Selecting previously unselected package telnetd.
Preparing to unpack .../telnetd_0.17-41.2build1_amd64.deb ...
Unpacking telnetd (0.17-41.2build1) ...
Setting up tcpd (7.6.q-30) ...
Setting up openbsd-inetd (0.20160825-4build1) ...
Created symlink /etc/systemd/system/multi-user.target.wants/inetd.service → /lib/systemd/system/inetd.service.
Setting up telnetd (0.17-41.2build1) ...
Adding user telnetd to group utmp
Processing triggers for man-db (2.9.1-1) ...
Processing triggers for systemd (245.4-4ubuntu3) ...
nikhil@nikhil-pc:~$ sudo systemctl status inetd
● inetd.service - Internet superserver
    Loaded: loaded (/lib/systemd/system/inetd.service; enabled; vendor preset: enabled)
    Active: active (running) since Sat 2020-10-10 08:09:21 IST; 7min ago
      Docs: man:inetd(8)
      Main PID: 2565 (inetd)
        Tasks: 1 (limit: 4657)
       Memory: 772.0K
      CGroup: /system.slice/inetd.service
             └─2565 /usr/sbin/inetd

Oct 10 08:09:21 nikhil-pc systemd[1]: Starting Internet superserver...
Oct 10 08:09:21 nikhil-pc systemd[1]: Started Internet superserver.
lines 1-12/12 (END)
```

server is
active



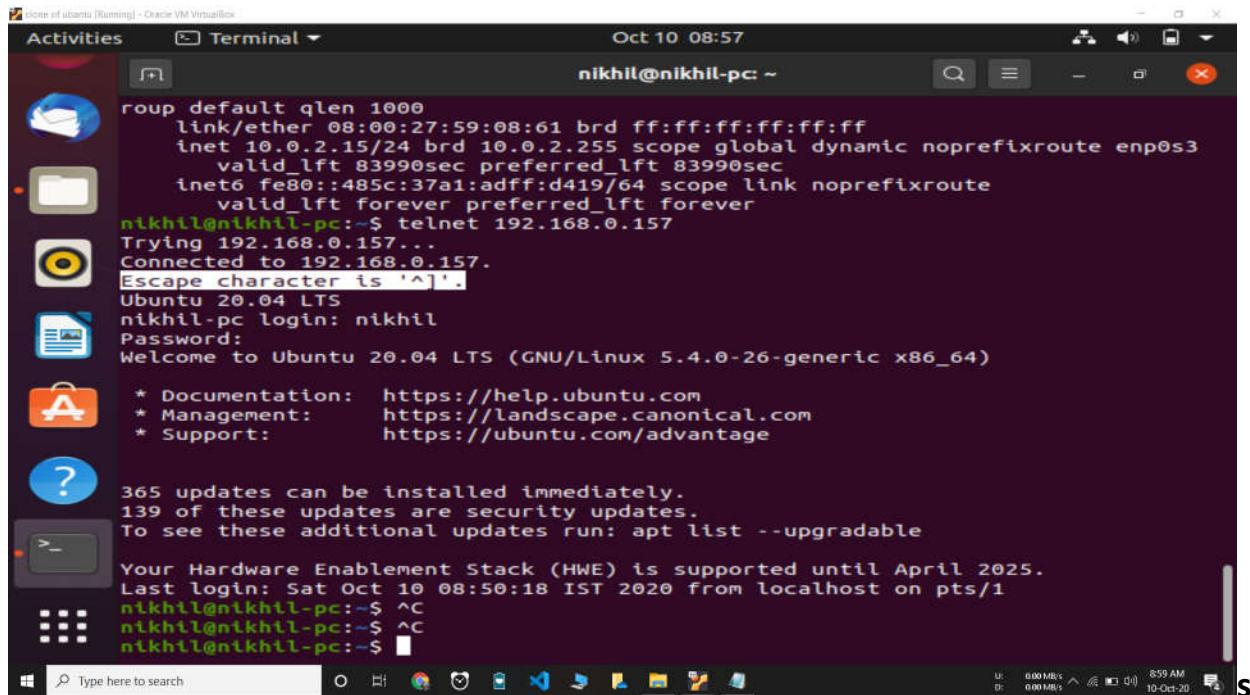
A screenshot of an Ubuntu desktop environment. The terminal window shows the following output:

```
The programs included with the Ubuntu system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*copyright.

Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by
applicable law.

nikhil@nikhil-pc:~$ ip a
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
        inet 127.0.0.1/8 scope host lo
            valid_lft forever preferred_lft forever
            inet6 ::1/128 scope host
                valid_lft forever preferred_lft forever
2: enp0s3: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc fq_codel state UP group default
    link/ether 08:00:27:59:08:61 brd ff:ff:ff:ff:ff:ff
        inet 192.168.0.157/24 brd 192.168.0.255 scope global dynamic noprefixroute
            enp0s3
                valid_lft 86384sec preferred_lft 86384sec
                inet6 fe80::485c:37a1:adff:d419/64 scope link noprefixroute
                    valid_lft forever preferred_lft forever
nikhil@nikhil-pc:~$
```

ip a -on remote system



The screenshot shows a Linux desktop environment with a terminal window open. The terminal window title is "Terminal" and the date and time are "Oct 10 08:57". The terminal content shows the user has run the command "telnet 192.168.0.157" and connected to the host. It also displays the standard Ubuntu 20.04 LTS login screen, including the password prompt and welcome message. The desktop interface includes a dock with various icons and a system tray at the bottom.

```
root@nikhil:~# roup default qlen 1000
link/ether 08:00:27:59:08:61 brd ff:ff:ff:ff:ff:ff
inet 10.0.2.15/24 brd 10.0.2.255 scope global dynamic noprefixroute enp0s3
    valid_lft 83990sec preferred_lft 83990sec
inet6 fe80::485c:37a1:adff:d419/64 scope link noprefixroute
    valid_lft forever preferred_lft forever
nikhil@nikhil:~$ telnet 192.168.0.157
Trying 192.168.0.157...
Connected to 192.168.0.157.
Escape character is '^]'.
Ubuntu 20.04 LTS
nikhil@nikhil:~$ login: nikhil
Password:
Welcome to Ubuntu 20.04 LTS (GNU/Linux 5.4.0-26-generic x86_64)

 * Documentation: https://help.ubuntu.com
 * Management: https://landscape.canonical.com
 * Support: https://ubuntu.com/advantage

365 updates can be installed immediately.
139 of these updates are security updates.
To see these additional updates run: apt list --upgradable

Your Hardware Enablement Stack (HWE) is supported until April 2025.
Last login: Sat Oct 10 08:50:18 IST 2020 from localhost on pts/1
nikhil@nikhil:~$ ^C
nikhil@nikhil:~$ ^C
nikhil@nikhil:~$
```

sudo apt-get install telnetd -y

sudo systemctl status inetd

Test Telnet Connection from Remote System

Telnet server is now installed and listening on port 23. It's time to connect Telnet server from the remote system.

Now, log in to other Ubuntu system and run the following command:

telnet 192.168.0.100

Aim - To install samba server

Theory -

Samba is an extremely useful networking tool for anyone who has both windows and unix machine on his network. Running on unix system it allows windows to share files and printers on unix host, and it also allows unix users to access resources shared by windows system.

Although it might seem natural to use a windows server files and printers to a network containing windows clients there are good reasons for preferring a samba server for this duty. Samba is reliable software that runs on reliable unix operating system requiring infrequent problems and a low cost maintenance. Samba also offers better performance under heavy loads outperforming servers.

According to published third party benchmark. When common inexpensive third party PC hardware fails to meet the demand of huge client load, output of the samba server can easily match "big iron" main frame which can outperform windows on PC many times. If all that wasn't enough, samba has very nice cost advantage, the i) software (SPPY) available but no client licence required and it runs on high quality open source system such as a) Linux and FreeBSD.

Samba is largely used by thousands of organizations.

Samba is a sort of unix application that speaks the server management block (SMB) protocol.

By supporting this protocol Samba enables the computers running unix to set up shares.

Samba developed by Andrew Tridgell who currently heads the Samba development team. Andrew started project in 1991 while working with a digital equipment (DEC) software suite called Path Work created for connecting DEC VAX computers to computers made by other companies without knowing the significance of what he was doing. Andrew created a file server protocol for an odd protocol that was part of Pathwork that protocol later turn of SMB. After that SMB custom made SMB distributed.

Conclusion -

Hence installed samba server on Ubuntu.

V

Ubuntu [Running] - Oracle VM VirtualBox

Activities Terminal Oct 28 14:23

nikhil@nikhil-pc: ~/Desktop\$ sudo apt-get update
[sudo] password for nikhil:
Hit:1 http://in.archive.ubuntu.com/ubuntu focal InRelease
Hit:2 http://in.archive.ubuntu.com/ubuntu focal-updates InRelease
Hit:3 http://in.archive.ubuntu.com/ubuntu focal-backports InRelease
Get:4 http://security.ubuntu.com/ubuntu focal-security InRelease [107 kB]
Get:5 http://security.ubuntu.com/ubuntu focal-security/main amd64 DEP-11 Metadata [24.3 kB]
Get:6 http://security.ubuntu.com/ubuntu focal-security/universe amd64 DEP-11 Metadata [56.5 kB]
Fetched 188 kB in 2s (76.2 kB/s)
Reading package lists... Done
nikhil@nikhil-pc: ~/Desktop\$ sudo apt-get install samba
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following additional packages will be installed:
attr ibverbs-providers libcephfs2 libibverbs1 libldb2 librados2 librdmacm1
libsmbclient libwbclient0 python3-crypto python3-dnspython python3-gpg
python3-ldb python3-markdown python3-packaging python3-pygments
python3-pyparsing python3-samba python3-tdb samba-common samba-common-bin
samba-dsdb-modules samba-libs samba-vfs-modules tdb-tools
Suggested packages:
python-markdown-doc python-pygments-doc ttf-bitstream-vera
python-pyparsing-doc bind9 bind9utils ctdb ldb-tools ntp | chrony
smbldap-tools winbind heimdal-clients
The following NEW packages will be installed:
attr ibverbs-providers libcephfs2 libibverbs1 librados2 librdmacm1
python3-crypto python3-dnspython python3-gpg python3-ldb python3-markdown

Type here to search 0 226 PM 28-Oct-20

V

Ubuntu [Running] - Oracle VM VirtualBox

Activities Terminal Oct 28 14:48

nikhil@nikhil-pc: ~/Desktop\$
Setting up samba-vfs-modules:amd64 (2:4.11.6+dfsg-0ubuntu1.5) ...
Setting up samba-common-bin (2:4.11.6+dfsg-0ubuntu1.5) ...
Checking smb.conf with testparm
Load smb config files from /etc/samba/smb.conf
Loaded services file OK.
Server role: ROLE_STANDALONE
Done
Setting up samba (2:4.11.6+dfsg-0ubuntu1.5) ...
Samba is not being run as an AD Domain Controller: Masking samba-ad-dc.service
Please ignore the following error about deb-systemd-helper not finding those services.
(samba-ad-dc.service masked)
Created symlink /etc/systemd/system/multi-user.target.wants/nmbd.service → /lib
/systemd/system/nmbd.service.
Failed to preset unit: Unit file /etc/systemd/system/samba-ad-dc.service is masked.
/usr/bin/deb-systemd-helper: error: systemctl preset failed on samba-ad-dc.serv
ice: No such file or directory
Created symlink /etc/systemd/system/multi-user.target.wants/smbd.service → /lib
/systemd/system/smbd.service.
samba-ad-dc.service is a disabled or a static unit, not starting it.
Processing triggers for ufw (0.36-6) ...
Rules updated for profile 'Apache'

Processing triggers for systemd (245.4-4ubuntu3) ...
Processing triggers for man-db (2.9.1-1) ...
Processing triggers for libc-bin (2.31-0ubuntu9) ...
nikhil@nikhil-pc: ~/Desktop\$

Type here to search 0 251 PM 28-Oct-20

V

A screenshot of an Ubuntu desktop environment. The terminal window shows the output of a command that loads Samba configuration files from /etc/samba/smb.conf. It indicates that the server role is 'ROLE_STANDALONE' and provides details about the setup process, including the creation of symlinks and the masking of certain services due to system configuration changes. The terminal window title is 'nikhil@nikhil-pc: ~/Desktop'.

```
Load smb config files from /etc/samba/smb.conf
Loaded services file OK.
Server role: ROLE_STANDALONE

Done
Setting up samba (2:4.11.6+dfsg-0ubuntu1.5) ...
Samba is not being run as an AD Domain Controller: Masking samba-ad-dc.service
Please ignore the following error about deb-systemd-helper not finding those se
rvices.
(samba-ad-dc.service masked)
Created symlink /etc/systemd/system/multi-user.target.wants/nmbd.service → /lib
/systemd/system/nmbd.service.
Failed to preset unit: Unit file /etc/systemd/system/samba-ad-dc.service is mas
ked.
/usr/bin/deb-systemd-helper: error: systemctl preset failed on samba-ad-dc.serv
ice: No such file or directory
Created symlink /etc/systemd/system/multi-user.target.wants/smbd.service → /lib
/systemd/system/smbd.service.
samba-ad-dc.service is a disabled or a static unit, not starting it.
Processing triggers for ufw (0.36-6) ...
Rules updated for profile 'Apache'

Processing triggers for systemd (245.4-4ubuntu3) ...
Processing triggers for man-db (2.9.1-1) ...
Processing triggers for libc-bin (2.31-0ubuntu9) ...
nikhil@nikhil-pc:~/Desktop$ whereis samba
samba: /usr/sbin/samba /usr/lib/x86_64-linux-gnu/samba /etc/samba /usr/share/sa
mba /usr/share/man/man7/samba.7.gz /usr/share/man/man8/samba.8.gz
nikhil@nikhil-pc:~/Desktop$
```

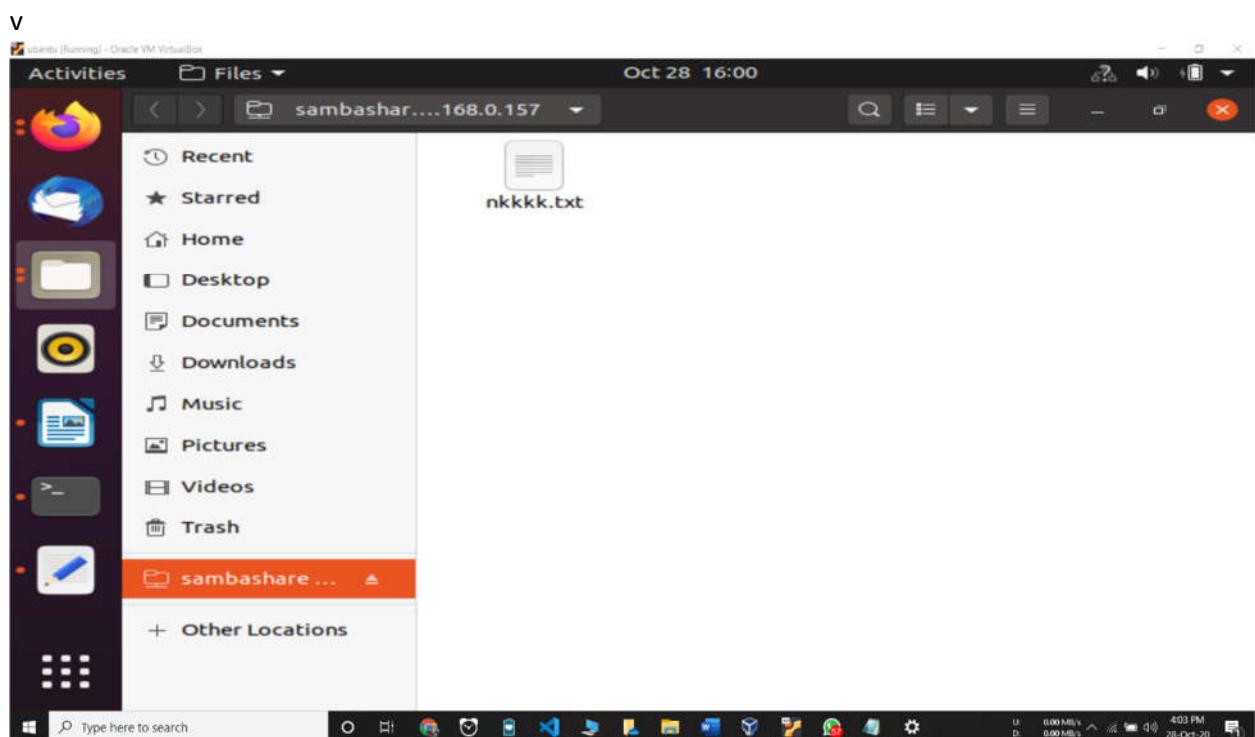
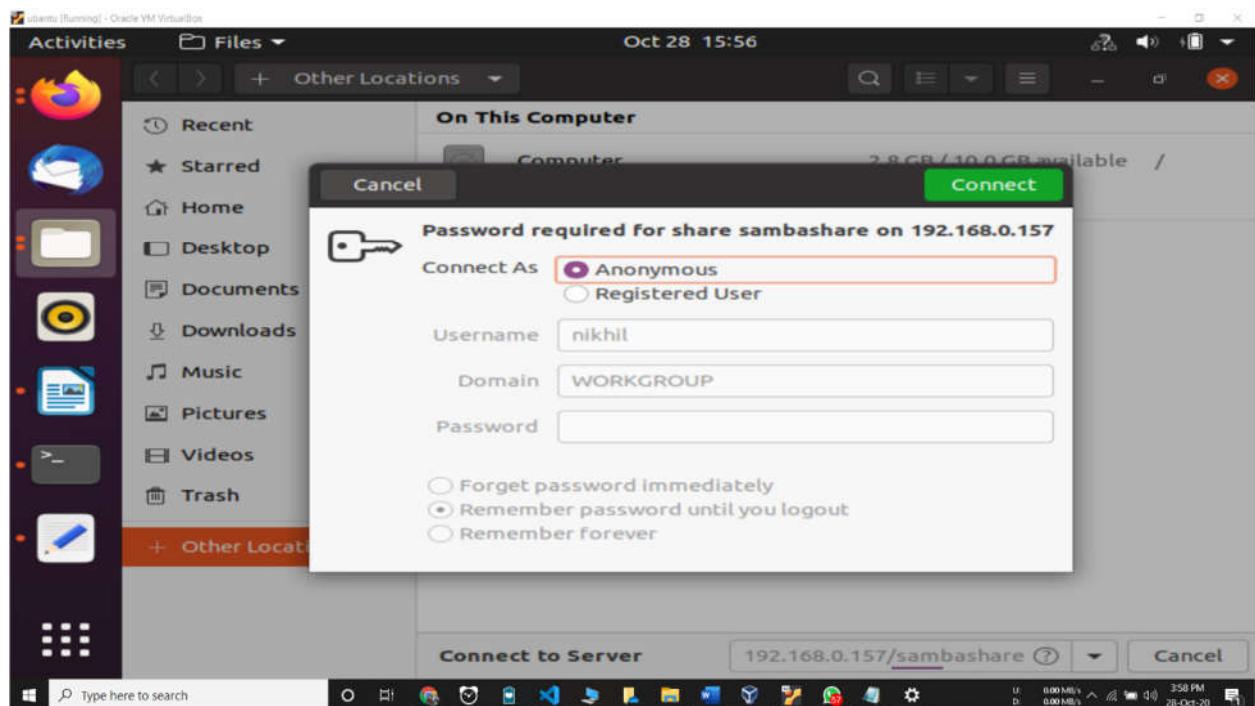
V

A screenshot of an Ubuntu desktop environment. The terminal window shows the output of commands to restart the Samba service and check its status. It uses sudo to run the commands. The status command shows that the 'smbd' service is active and running. The logs at the bottom of the terminal show the start of the Samba Daemon at 15:52:27 on October 28, 2020.

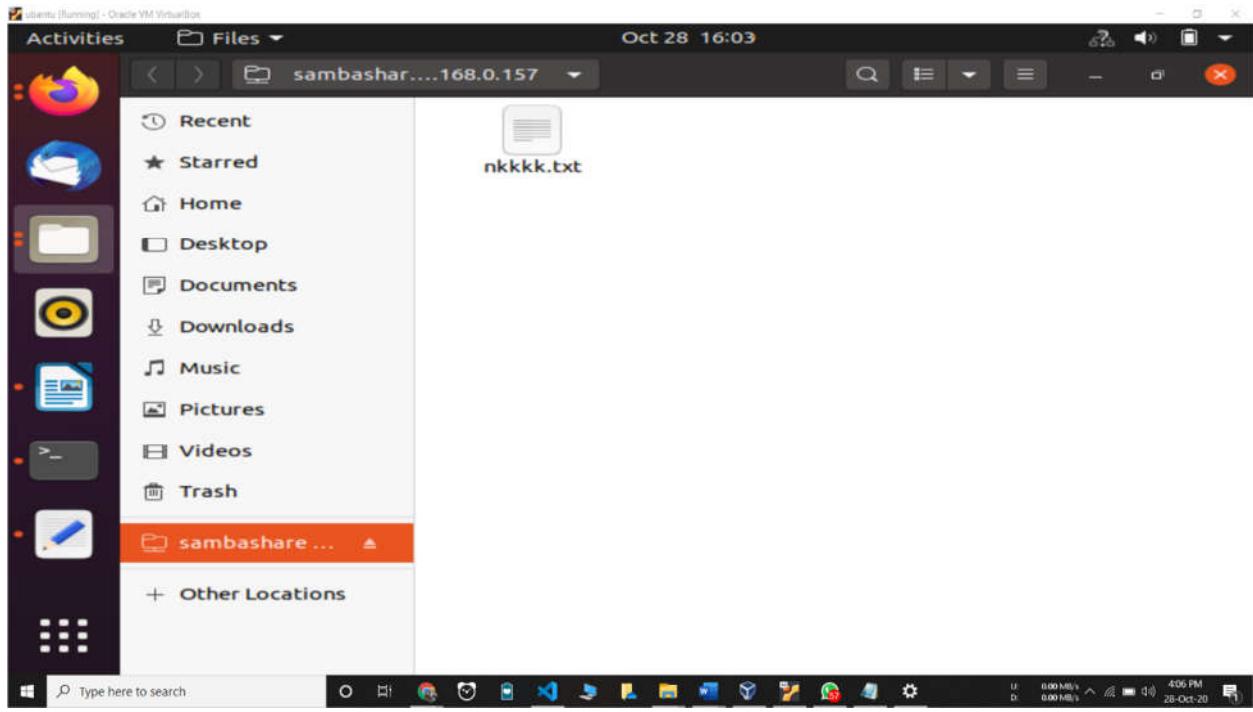
```
[sudo] password for nikhil:
nikhil@nikhil-pc:~/Desktop/sambashare$ sudo service smb restart
Failed to restart smb.service: Unit smb.service not found.
nikhil@nikhil-pc:~/Desktop/sambashare$ sudo service smbd restart
nikhil@nikhil-pc:~/Desktop/sambashare$ sudo systemctl smb status
Unknown operation smb.
nikhil@nikhil-pc:~/Desktop/sambashare$ sudo systemctl status smb
Unit smb.service could not be found.
nikhil@nikhil-pc:~/Desktop/sambashare$ sudo systemctl status smbd
● smbd.service - Samba SMB Daemon
   Loaded: loaded (/lib/systemd/system/smbd.service; enabled; vendor preset: a
   Active: active (running) since Wed 2020-10-28 15:52:27 IST; 2min 24s ago
     Docs: man:smbd(8)
           man:samba(7)
           man:smb.conf(5)
   Process: 13581 ExecStartPre=/usr/share/samba/update-apparmor-samba-profiles
   Main PID: 13609 (smbd)
      Status: "smbd: ready to serve connections..."
        Tasks: 4 (limit: 4657)
       Memory: 6.7M
      CGroup: /system.slice/smbd.service
              └─13609 /usr/sbin/smbd --foreground --no-process-group

Oct 28 15:52:27 nikhil-pc systemd[1]: Starting Samba SMB Daemon...
Oct 28 15:52:27 nikhil-pc systemd[1]: Started Samba SMB Daemon.
lines 1-19/19 (END)
```

VVV



V



```
nikhil-nk@nikhilnk:~$ sudo apt-get update
```

```
nikhil-nk@nikhilnk:~$ sudo apt-get install samba
```

```
nikhil-nk@nikhilnk:~$ sudo apt-get install samba
```

```
install samba
```

```
nikhil-nk@nikhilnk:~$ whereis samba
```

```
now get some files
```

```
nikhil-nk@nikhilnk:~$ pwd
```

```
current working directory
```

```
nikhil-nk@nikhilnk:~$ sudo mkdir sambashare
```

```
create file for samba
```

```
nikhil-nk@nikhilnk:~$ cd
```

```
go to root location
```

```
nikhil-nk@nikhilnk:~$ cd sambashare
```

```
nikhil-nk@nikhilnk:~/sambashare$ ls
```

```
nikhil-nk@nikhilnk:~/sambashare$ sudo touch aa.txt
```

```
nikhil-nk@nikhilnk:~/sambashare$ sudo touch bb.txt
```

```
added some files to sambashare folder
```

```
nikhil-nk@nikhilnk:~/sambashare$ cd
nikhil-nk@nikhilnk:~$ pwd
nikhil-nk@nikhilnk:~$ sudo nano /etc/samba/smb.conf
nikhil-nk@nikhilnk:~$ sudo nano /etc/samba/smb.conf
add to bottom of file
[sambashare]
comment = samab server on ubantu comment for refernce only
path = /home/nikhil-nk/sambashare
read only = no #yes/no
Browsable = yes
guest ok= no #yes/no
nikhil-nk@nikhilnk:~$ sudo service smbd restart
restart after configue
nikhil-nk@nikhilnk:~$ sudo systemctl status smbd
check status ACTIVE
nikhil-nk@nikhilnk:~$ ip a
get ip 192..... wala
go in files
click other location on side bar
click on connect server
type..
smb://ip/sambashare
nikhil-nk@nikhilnk:~$ sudo nano /etc/samba/smb.conf
guest ok =no
nikhil-nk@nikhilnk:~$ sudo service smbd restart
nikhil-nk@nikhilnk:~$ sudo systemctl status smbd
nikhil-nk@nikhilnk:~$ sudo smbpass -a nikhil-nk
create plus set pass for user
nikhil-nk@nikhilnk:~$ sudo smbpasswd -a nikhil-nk
```

click other location on side bar

click on connect server

type..

smb://ip/sambashare

nikhil-nk@nikhilnk:~\$ ^C

Aim - Configuration of DHCP server on ubuntu

Theory -

A DHCP server is a network server that automatically provides and assign IP addresses, default gateway and other network parameters to clients devices.

It relies on the standard protocol known as Dynamic Host configuration protocol or DHCP to respond to broadcast queries by clients.

A DHCP server automatically sends the required network parameters for clients to properly communicate over the network, without it the network parameters for clients to properly communicate on the network without it, the network administrator has to manually set up every client that joins the network, which can be cumbersome, especially

in large network parameters for clients to properly communicate on the network.

DHCP server usually provide each client with unique dynamic IP address, which changes when the client leave for that IP address has expired.

* when to use a router/switch at your DHCP server

There are many companies who are still using DHCP for IPv4 on their routers/switches. This is typically done by the network administrator who needs the DHCP capabilities of and running quickly but does not have access to RIPv2 servers. Most of the routers and switches have the DHCP support.

→ A DHCP client and obtain an interface (IPv4 address) from an upstream DHCP server

***** () *****

- A DHCP relay and forward UDP DHCP messages from clients on LAN to and from DHCP server
- A DHCP server whereby the router/switch is a DHCP server
- Running a DHCP server on router/switch consumes resources on the network device. These DHCP packets are handled in software (not hardware accelerated forwarding). The resource required make this procedure not suitable for a network with a large number (>150) of DHCP clients.
- Does not support dynamic DNS. The router/switch DHCP server cannot create entry behalf of client board (IPv4 address) that leased to the client.

Conclusion-

Hence, successfully installed & configured DHCP Server on Ubuntu.

ubuntu [Running] - Oracle VM VirtualBox

Activities Terminal Nov 25 13:40 •

```
nikhil@nikhil-pc:~$ sudo apt-get update
[sudo] password for nikhil:
Hit:1 http://in.archive.ubuntu.com/ubuntu focal InRelease
Get:2 http://in.archive.ubuntu.com/ubuntu focal-updates InRelease [114 kB]
Get:3 http://in.archive.ubuntu.com/ubuntu focal-backports InRelease [101 kB]
Get:4 http://security.ubuntu.com/ubuntu focal-security InRelease [109 kB]
Get:5 http://in.archive.ubuntu.com/ubuntu focal-updates/main amd64 Packages [67
0 kB]
Err:5 http://in.archive.ubuntu.com/ubuntu focal-updates/main amd64 Packages
Hash Sum mismatch
Hashes of expected file:
- Filesize:670096 [weak]
- SHA256:e734f9ba2ada40b6ac37ac1aeea8b45def359fd9def21cdcaa8362ccf1b2cfabe
- SHA1:f77a1b58a232054267cc64baf0a795d385b7c4b3 [weak]
- MD5Sum:379b7748d99007533c6ce59b26dcc409 [weak]
Hashes of received file:
- SHA256:e734f9ba2ada40b6ac37ac1aeea8b45def359fd9def21cdcaa8362ccf1b2cfabe
- SHA1:166e0e53dea074711aa264007d571c75bf1194cc [weak]
- MD5Sum:379b7748d99007533c6ce59b26dcc409 [weak]
- Filesize:670096 [weak]
Last modification reported: Wed, 25 Nov 2020 01:07:53 +0000
Release file created at: Wed, 25 Nov 2020 05:55:45 +0000
Get:6 http://in.archive.ubuntu.com/ubuntu focal-updates/main i386 Packages [378
kB]
Get:7 http://in.archive.ubuntu.com/ubuntu focal-updates/main Translation-en [16
7 kB]
Get:8 http://in.archive.ubuntu.com/ubuntu focal-updates/main amd64 DEP-11 Metad
ata [236 kB]
Get:9 http://in.archive.ubuntu.com/ubuntu focal-updates/main amd64 c-n-f Metada
ta [236 kB]
```

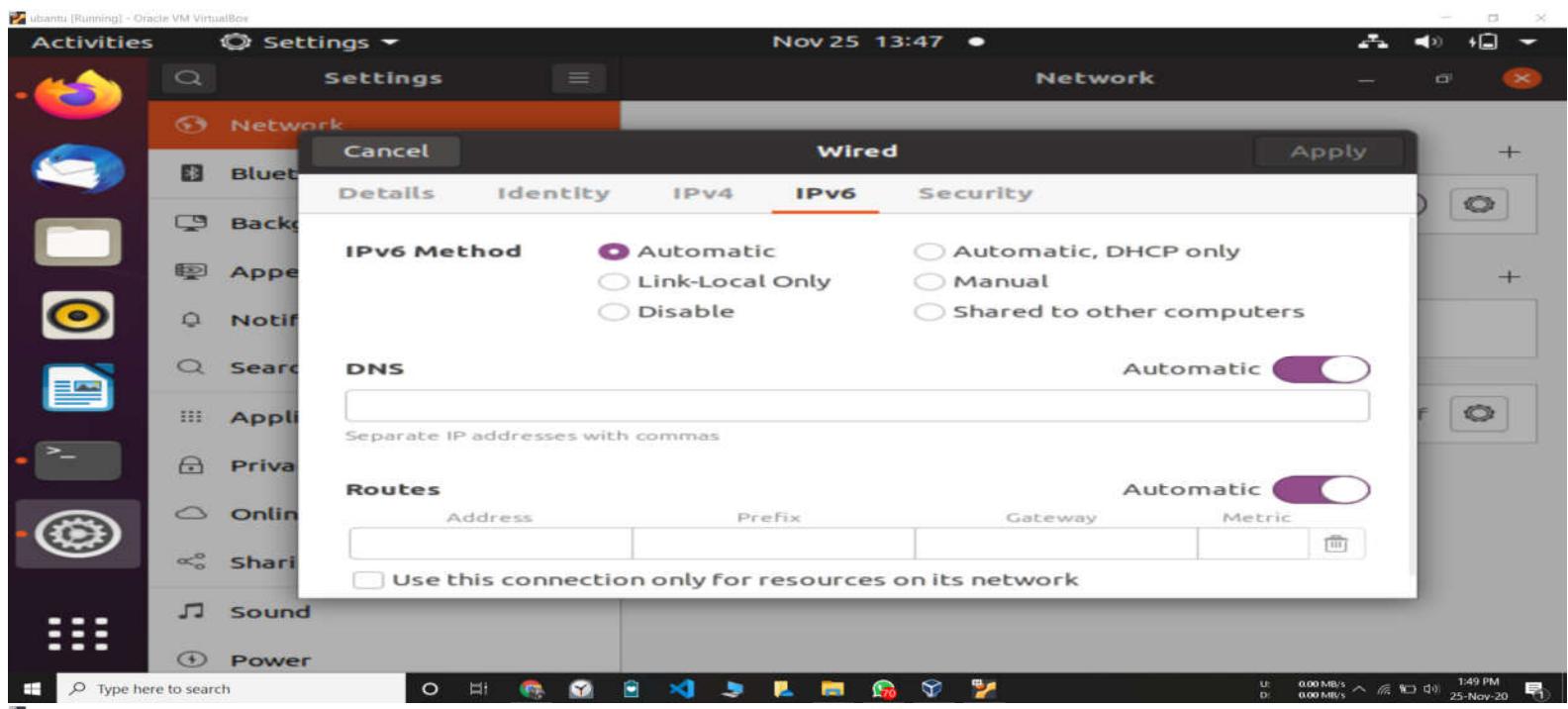
Type here to search 0 Hi 🌐 🎯 📁 🖼 📤 📈 📥 📨 📧 📱 📲 1:42 PM 25-Nov-20

ubuntu [Running] - Oracle VM VirtualBox

Activities Terminal Nov 25 13:40 •

```
nikhil@nikhil-pc:~$ sudo apt install isc-dhcp-server
[sudo] password for nikhil:
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following additional packages will be installed:
  libirs-export161 libiscfg-export163
Suggested packages:
  isc-dhcp-server-ldap policycoreutils
The following NEW packages will be installed:
  isc-dhcp-server libirs-export161 libiscfg-export163
0 upgraded, 3 newly installed, 0 to remove and 393 not upgraded.
Need to get 518 kB of archives.
After this operation, 1,863 kB of additional disk space will be used.
Do you want to continue? [Y/n] y
Get:1 http://in.archive.ubuntu.com/ubuntu focal-updates/main amd64 libiscfg-ex
port163 amd64 1:9.11.16+dfsg-3~ubuntu1 [45.9 kB]
Get:2 http://in.archive.ubuntu.com/ubuntu focal-updates/main amd64 libirs-expo
rt161 amd64 1:9.11.16+dfsg-3~ubuntu1 [18.6 kB]
Get:3 http://in.archive.ubuntu.com/ubuntu focal/main amd64 isc-dhcp-server amd6
4 4.4.1-2.1ubuntu5 [453 kB]
Err:3 http://in.archive.ubuntu.com/ubuntu focal/main amd64 isc-dhcp-server amd6
4 4.4.1-2.1ubuntu5
Hash Sum mismatch
Hashes of expected file:
SHA256:e734f9ba2ada40b6ac37ac1aeea8b45def359fd9def21cdcaa8362ccf1b2cfabe
SHA1:f77a1b58a232054267cc64baf0a795d385b7c4b3 [weak]
MD5Sum:379b7748d99007533c6ce59b26dcc409 [weak]
```

Type here to search 0 Hi 🌐 🎯 📁 🖼 📤 📈 📥 📨 📧 📱 📲 1:42 PM 25-Nov-20



The screenshot shows a terminal window with the command "nano /etc/dhcp/dhcpd.conf" running. The terminal title is "nikhil@nikhil-pc: ~". The file content is as follows:

```
GNU nano 4.8          /etc/dhcp/dhcpd.conf          Modified
#subnet 10.254.239.32 netmask 255.255.255.224 {
#  range dynamic-bootp 10.254.239.40 10.254.239.60;
#  option broadcast-address 10.254.239.31;
#  option routers rtr-239-32-1.example.org;
#}

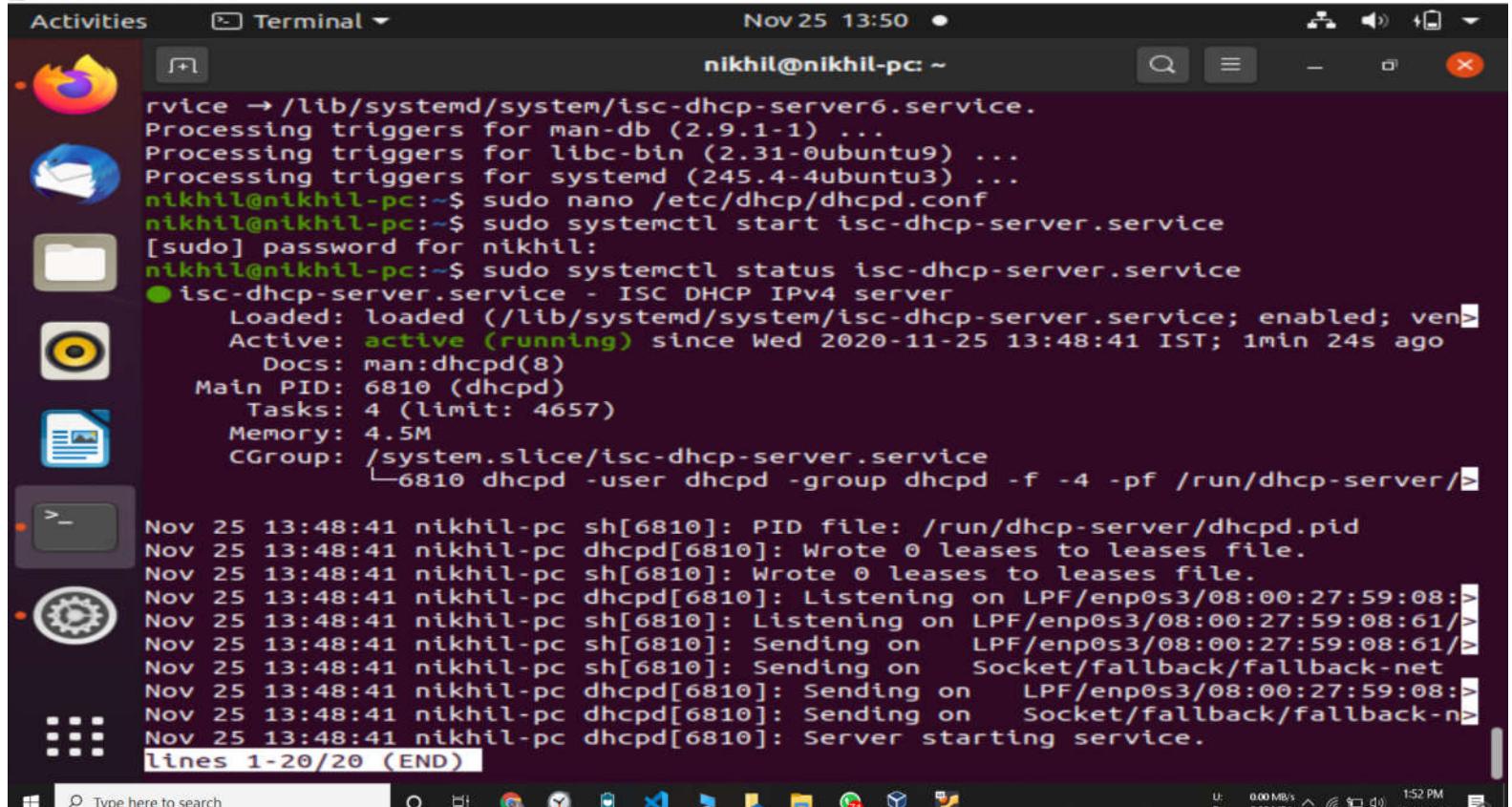
# A slightly different configuration for an internal subnet.
subnet 192.168.0.0 netmask 255.255.255.0 {
    range 192.168.0.51 192.168.0.200;
    #  option domain-name-servers ns1.internal.example.org;
    #  option domain-name "internal.example.org";
    #  option subnet-mask 255.255.255.224;
    #  option routers 10.5.5.1;
    option broadcast-address 192.168.0.255;
    #  default-lease-time 600;
    #  max-lease-time 7200;

    # Hosts which require special configuration options can be listed in
    # host statements.  If no address is specified, the address will be
    # allocated dynamically (if possible), but the host-specific information
    # will still come from the host declaration.

    host passacaglia {
        hardware ethernet 0:0:c0:5d:bd:95;
```

The terminal includes standard nano key bindings at the bottom:

- ^G Get Help
- ^O Write Out
- ^W Where Is
- ^K Cut Text
- ^J Justify
- ^X Exit
- ^R Read File
- ^V Replace
- ^U Paste Text
- ^T To Spell



```
ubuntu [Running] - Oracle VM VirtualBox
Activities Terminal Nov 25 13:50 •
nikhil@nikhil-pc: ~
rvice → /lib/systemd/system/isc-dhcp-server6.service.
Processing triggers for man-db (2.9.1-1) ...
Processing triggers for libc-bin (2.31-0ubuntu9) ...
Processing triggers for systemd (245.4-4ubuntu3) ...
nikhil@nikhil-pc:~$ sudo nano /etc/dhcp/dhcpd.conf
nikhil@nikhil-pc:~$ sudo systemctl start isc-dhcp-server.service
[sudo] password for nikhil:
nikhil@nikhil-pc:~$ sudo systemctl status isc-dhcp-server.service
● isc-dhcp-server.service - ISC DHCP IPv4 server
   Loaded: loaded (/lib/systemd/system/isc-dhcp-server.service; enabled; vendor=)
   Active: active (running) since Wed 2020-11-25 13:48:41 IST; 1min 24s ago
     Docs: man:dhcpd(8)
     Main PID: 6810 (dhcpd)
        Tasks: 4 (limit: 4657)
       Memory: 4.5M
      CGroup: /system.slice/isc-dhcp-server.service
              └─ 6810 dhcpd -user dhcpd -group dhcpd -f -4 -pf /run/dhcp-server/>
Nov 25 13:48:41 nikhil-pc sh[6810]: PID file: /run/dhcp-server/dhcpd.pid
Nov 25 13:48:41 nikhil-pc dhcpd[6810]: Wrote 0 leases to leases file.
Nov 25 13:48:41 nikhil-pc sh[6810]: Wrote 0 leases to leases file.
Nov 25 13:48:41 nikhil-pc dhcpd[6810]: Listening on LPF/enp0s3/08:00:27:59:08:>
Nov 25 13:48:41 nikhil-pc sh[6810]: Listening on LPF/enp0s3/08:00:27:59:08:61/>
Nov 25 13:48:41 nikhil-pc sh[6810]: Sending on   LPF/enp0s3/08:00:27:59:08:61/>
Nov 25 13:48:41 nikhil-pc sh[6810]: Sending on   Socket/fallback/fallback-net
Nov 25 13:48:41 nikhil-pc dhcpd[6810]: Sending on   LPF/enp0s3/08:00:27:59:08:>
Nov 25 13:48:41 nikhil-pc dhcpd[6810]: Sending on   Socket/fallback/fallback-n>
Nov 25 13:48:41 nikhil-pc dhcpd[6810]: Server starting service.
lines 1-20/20 (END)
```

sudo apt-get update

Sudo apt-get install isc-dhcp-server

**Goto network setting>ipv4>turn setting auto to
manua>add 192.168.0.1 || 255.255.255.0 ||keep
blank**

Sudo systemctl status isc-dhcp-server.service

Aim - configuration of proxy server on ubuntu.

Theory -

A proxy server acts as a gateway between you and the internet. It's an intermediary server separating end user from the website they browse. They browse varying levels of functionality and security, privacy depending on user care needs or company policy.

If you're using a proxy server, internet traffic flows through the proxy server on its way to the address you requested. The request then back through that same proxy server and then the proxy server forward the data received from the website to you.

Modern proxy servers do much more than forwarding web requests all in the name of data security and network performance. Proxy servers act as a firewall and web filter, providing shared network connection and cache data to speed up common requests. A good proxy server keeps users and the internal network protected from the bad stuff that lives out in the wild internet. Lastly proxy servers can provide a high level of privacy.

Every computer on the internet needs to have a unique internet protocol (IP) address. Think of this IP address as your computer's street address. Just as the post office knows to deliver your mail to your street address, the internet knows how to send the correct data to the correct computer.

street address). Just as the post office knows to deliver mail to your street address. the internet knows how to send the correct data to the correct computer by the IP address).

A proxy server is a basically a computer on the internet with its own IP address. Your request goes to proxy server first. The proxy server then makes your web request on your behalf, collect the response from the web server and forward it to you. The proxy server can change your IP address so the web server doesn't know who

Conclusion -

Hence implemented proxy server on ubuntu.

```
nikhil@nikhil-VirtualBox:~$ sudo apt-get install squid
[sudo] password for nikhil:
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following additional packages will be installed:
  libdbi-perl libecap3 squid-common squid-langpack
Suggested packages:
  libclone-perl libldbmi-perl libnet-daemon-perl libsql-statement-perl
  squidclient squid-cgi squid-purge resolvconf smbclient winbind
The following NEW packages will be installed:
  libdbi-perl libecap3 squid squid-common squid-langpack
0 upgraded, 5 newly installed, 0 to remove and 267 not upgraded.
Need to get 3,666 kB of archives.
After this operation, 15.6 MB of additional disk space will be used.
Do you want to continue? [Y/n] y
Get:1 http://in.archive.ubuntu.com/ubuntu focal/main amd64 libecap3 amd64 1.0.1-3.2ubuntu1 [17.4 kB]
Get:2 http://in.archive.ubuntu.com/ubuntu focal/main amd64 squid-langpack all 2:0191103-1 [167 kB]
Get:3 http://in.archive.ubuntu.com/ubuntu focal-updates/main amd64 squid-common all 4.10-1ubuntu1.2 [194 kB]
Get:4 http://in.archive.ubuntu.com/ubuntu focal/main amd64 libdbi-perl amd64 1.643-1 [730 kB]
Get:5 http://in.archive.ubuntu.com/ubuntu focal-updates/main amd64 squid amd64 4.10-1ubuntu1.2 [2,558 kB]
Fetched 3,666 kB in 8s (485 kB/s)
Selecting previously unselected package libecap3:amd64.
(Reading database ... 180369 files and directories currently installed.)
```

```
GNU nano 4.8                               /etc/squid/squid.conf
# Adapt to list your (internal) IP networks from where browsing
# should be allowed
acl localnet src 0.0.0.1-0.255.255.255    # RFC 1122 "this" network (LAN)
acl localnet src 10.0.0.0/8                  # RFC 1918 local private network (LAN)
acl localnet src 100.64.0.0/10                # RFC 6598 shared address space (CGN)
acl localnet src 169.254.0.0/16               # RFC 3927 link-local (directly plugged)
acl localnet src 172.16.0.0/12                # RFC 1918 local private network (LAN)
acl localnet src 192.168.0.0/16               # RFC 1918 local private network (LAN)
acl localnet src fc00::/7                   # RFC 4193 local private network range
acl localnet src fe80::/10                  # RFC 4291 link-local (directly plugged)

acl SSL_ports port 443
acl Safe_ports port 80                      # http
acl Safe_ports port 21                      # ftp
acl Safe_ports port 443                     # https
acl Safe_ports port 70                      # gopher
acl Safe_ports port 210                     # wais
acl Safe_ports port 1025-65535             # unregistered ports
acl Safe_ports port 280                     # http-mgmt
acl Safe_ports port 488                     # gss-http
acl Safe_ports port 591                     # filemaker
acl Safe_ports port 777                     # multiling http
acl CONNECT method CONNECT
```

sudo apt-get update

sudo apt-get install squid

sudo nano /etc/squid/squid.conf

copy [Running] - Oracle VM VirtualBox

Activities Terminal Nov 28 13:33 nikhil@nikhil-VirtualBox: ~ Modified

```
GNU nano 4.8 /etc/squid/squid.conf
# Deny requests to certain unsafe ports
http_access deny !Safe_ports
=====
http_access allow safe_ports
=====new line added=====
# Deny CONNECT to other than secure SSL ports
http_access deny CONNECT !SSL_ports

# Only allow cachemgr access from localhost
http_access allow localhost manager
http_access deny manager

# We strongly recommend the following be uncommented to protect innocent
# web applications running on the proxy server who think the only
# one who can access services on "localhost" is a local user
#http_access deny to_localhost

#
# INSERT YOUR OWN RULE(S) HERE TO ALLOW ACCESS FROM YOUR CLIENTS
#
include /etc/squid/conf.d/*

# Example rule allowing access from your local networks.
# Adapt localnet in the ACL section to list your (internal) IP networks
# from where browsing should be allowed

^G Get Help ^O Write Out ^W Where Is ^K Cut Text ^J Justify
^X Exit ^R Read File ^\ Replace ^U Paste Text ^T To Spell
```

Type here to search

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copy [Running] - Oracle VM VirtualBox

Activities Terminal Nov 28 13:35 nikhil@nikhil-VirtualBox: ~ Modified

```
GNU nano 4.8 /etc/squid/squid.conf
# Adapt localnet in the ACL section to list your (internal) IP networks
# from where browsing should be allowed
#http_access allow localnet
http_access allow localhost

# And finally deny all other access to this proxy
http_access allow all

# TAG: adapted_http_access
#     Allowing or Denying access based on defined access lists
#
#     Essentially identical to http_access, but runs after redirectors
#     and ICAP/eCAP adaptation. Allowing access control based on their
#     output.
#
#     If not set then only http_access is used.
#Default:
# Allow, unless rules exist in squid.conf.

# TAG: http_reply_access
#     Allow replies to client requests. This is complementary to http_access.
#
#     http_reply_access allow|deny [!] aclname ...
#
#     NOTE: if there are no access lines present, the default is to allow

^G Get Help ^O Write Out ^W Where Is ^K Cut Text ^J Justify
^X Exit ^R Read File ^\ Replace ^U Paste Text ^T To Spell
```

Type here to search

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http_access allow all

copy [Running] - Oracle VM VirtualBox

Activities Terminal Nov 28 13:37 nikhil@nikhil-VirtualBox: ~

```
GNU nano 4.8 /etc/squid/squid.conf Modified
# require-proxy-header
#           Require PROXY protocol version 1 or 2 connections.
#           The proxy_protocol_access is required to whitelist
#           downstream proxies which can be trusted.
#
# If you run Squid on a dual-homed machine with an internal
# and an external interface we recommend you to specify the
# internal address:port in http_port. This way Squid will only be
# visible on the internal address.
#
#
# Squid normally listens to port 3128
http_port 4444 transparent
#=====http 3128 to this new

# TAG: https_port
#       Usage: [ip:]port [mode] tls-cert=certificate.pem [options]
#
#       The socket address where Squid will listen for client requests made
#       over TLS or SSL connections. Commonly referred to as HTTPS.
#
#       This is most useful for situations where you are running squid in
#       accelerator mode and you want to do the TLS work at the accelerator
#       level.
```

Get Help Write Out Where Is Cut Text Justify
Exit Read File Replace Paste Text To Spell

Type here to search

copy [Running] - Oracle VM VirtualBox

Activities Terminal Nov 28 13:46 nikhil@nikhil-VirtualBox: ~

```
GNU nano 4.8 /etc/squid/squid.conf Modified
#           the connection before seeing that risky request, the user gets an error
#           from Squid. In most cases, that error response will be HTTP 502 (Bad Gateway)
#           with ERR_ZERO_SIZE_OBJECT or ERR_WRITE_ERROR (peer connection reset) etc.
#
#           If an allow rule matches, Squid reuses an available idle persistent connection
#           (if any) for the request that Squid cannot retry. If a deny rule matches, Squid
#           opens a new connection for the request that Squid cannot retry.
#
#           This option does not affect requests that Squid can retry. They will reuse
#           persistent connections (if any).
#
#           This clause only supports fast acl types.
#           See http://wiki.squid-cache.org/SquidFaq/SquidAcl for details.
#
#           Example:
#               acl SpeedIsWorthTheRisk method POST
#                   server_pconn_for_nonretryable allow SpeedIsWorthTheRisk
#
#           Default:
#           # Open new connections for forwarding requests Squid cannot retry safely.
#           # add new lines to last
acl localnet src 192.168.0.0/24
acl localnet src 10.0.2.15
acl safe_ports port 4444
acl bad_urls dstdomain "/etc/squid/block_sites.acl"
http_access deny bad_urls
```

Get Help Write Out Where Is Cut Text Justify
Exit Read File Replace Paste Text To Spell

Type here to search

http_port 4444 transparent

add lines according to ss at last of squid.conf located in /etc/squid

```
copy [Running] - Oracle VM VirtualBox
Activities Terminal Nov 28 13:56
nikhil@nikhil-VirtualBox: ~ /etc/squid/block_sites.acl Modified
GNU nano 4.8
www.facebook.com
www.instagram.com
www.mgmcen.ac.in

^G Get Help ^O Write Out ^W Where Is ^K Cut Text ^J Justify
^X Exit ^R Read File ^A Replace ^U Paste Text ^T To Spell

Type here to search 0 119 159 PM 28-Nov-20

copy [Running] - Oracle VM VirtualBox
Activities Terminal Nov 28 13:56
nikhil@nikhil-VirtualBox: ~
Unpacking libdbi-perl:amd64 (1.643-1) ...
Selecting previously unselected package squid.
Preparing to unpack .../squid_4.10-1ubuntu1.2_amd64.deb ...
proxy:x:13:13:proxy:/bin:/usr/sbin/nologin
Unpacking squid (4.10-1ubuntu1.2) ...
Setting up squid-langpack (20191103-1) ...
Setting up libdbi-perl:amd64 (1.643-1) ...
Setting up libecap3:amd64 (1.0.1-3.2ubuntu1) ...
Setting up squid-common (4.10-1ubuntu1.2) ...
Setting up squid (4.10-1ubuntu1.2) ...
Setcap worked! /usr/lib/squid/pinger is not suid!
Skipping profile in /etc/apparmor.d/disable: usr.sbin.squid
Created symlink /etc/systemd/system/multi-user.target.wants/squid.service → /lib/systemd/system/squid.service.
Processing triggers for ufw (0.36-6) ...
Processing triggers for systemd (245.4-4ubuntu3.2) ...
Processing triggers for man-db (2.9.1-1) ...
Processing triggers for libc-bin (2.31-0ubuntu9) ...
nikhil@nikhil-VirtualBox:~$ sudo nano /etc/squid/squid.conf
nikhil@nikhil-VirtualBox:~$ sudo gedit /etc/squid/squid.conf

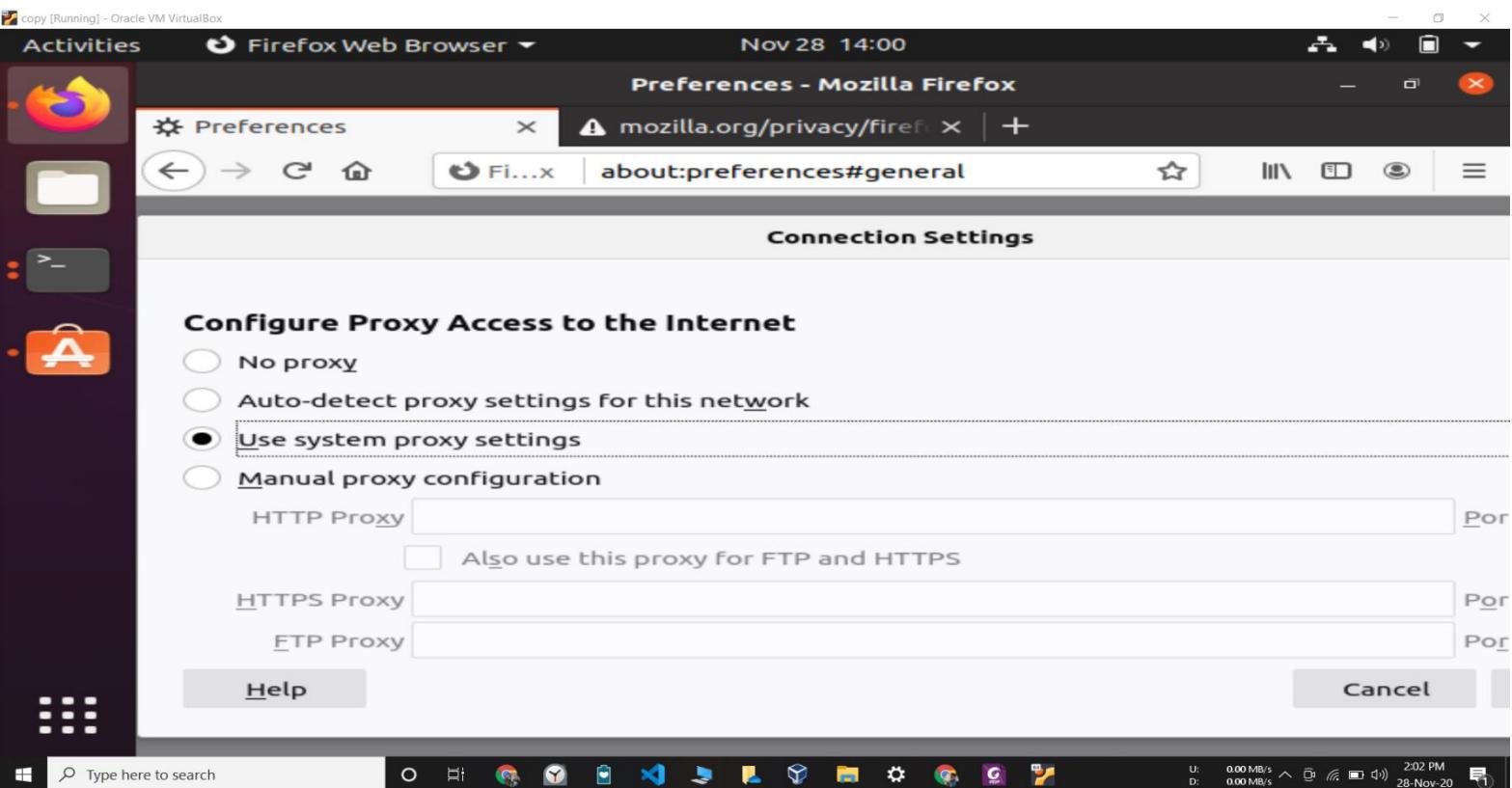
(gedit:3701): Tepl-WARNING **: 13:30:12.194: GVfs metadata is not supported. Fallback to TeplMetadataManager. Either GVfs is not correctly installed or GVfs metadata are not supported on this platform. In the latter case, you should configure Tepl with --disable-gvfs-metadata.
nikhil@nikhil-VirtualBox:~$ sudo nano /etc/squid/squid.conf
nikhil@nikhil-VirtualBox:~$ sudo nano /etc/squid/block_sites.acl
[sudo] password for nikhil:
nikhil@nikhil-VirtualBox:~$
```

Create block_sites.acl

Add block sites list

Sudo systemctl restart squid

Sudo systemctl status squid



```
ubuntu [Running] - Oracle VM VirtualBox
Activities Terminal Sat 15:58
nikhil@nikhil-VirtualBox: ~
File Edit View Search Terminal Help
Processing triggers for systemd (237-3ubuntu10.42) ...
Processing triggers for man-db (2.8.3-2ubuntu0.1) ...
Processing triggers for ufw (0.36-0ubuntu0.18.04.1) ...
Processing triggers for ureadahead (0.100.0-21) ...
Processing triggers for libc-bin (2.27-3ubuntu1.2) ...
nikhil@nikhil-VirtualBox:~$ sudo systemctl start squid
nikhil@nikhil-VirtualBox:~$ sudo systemctl enable squid
squid.service is not a native service, redirecting to systemd-sysv-install.
Executing: /lib/systemd/systemd-sysv-install enable squid
nikhil@nikhil-VirtualBox:~$ sudo systemctl status squid
● squid.service - LSB: Squid HTTP Proxy version 3.x
  Loaded: loaded (/etc/init.d/squid; generated)
  Active: active (running) since Sat 2020-11-28 15:55:11 IST; 2min 3s ago
    Docs: man:systemd-sysv-generator(8)
   Tasks: 4 (limit: 4046)
  CGroup: /system.slice/squid.service
          └─2891 /usr/sbin/squid -YC -f /etc/squid/squid.conf
              ├─2896 (squid-1) -YC -f /etc/squid/squid.conf
              ├─2897 (logfile-daemon) /var/log/squid/access.log
              └─2902 (pinger)

Nov 28 15:55:11 nikhil-VirtualBox systemd[1]: Starting LSB: Squid HTTP Proxy ve
Nov 28 15:55:11 nikhil-VirtualBox squid[2850]: * Starting Squid HTTP Proxy squ
Nov 28 15:55:11 nikhil-VirtualBox squid[2850]: ...done.
Nov 28 15:55:11 nikhil-VirtualBox systemd[1]: Started LSB: Squid HTTP Proxy ver
Nov 28 15:55:11 nikhil-VirtualBox squid[2891]: Squid Parent: will start 1 kids
Nov 28 15:55:11 nikhil-VirtualBox squid[2891]: Squid Parent: (squid-1) process
lines 1-17/17 (END)
```

