

1. SAMBA SHARE

Experiment no. 1

Date: 06/06/2024

Description: This experiment involves installing and configuring a Samba file server on a Linux system to facilitate file sharing over a network. The Samba server will be configured to share a directory on the system, making it accessible from other machines.

Package name: samba

Configuration details: etc/samba/smb.conf

Procedure:

i) Switch to superuser: **su -**

ii) install samba package:

- **sudo apt update**
- **sudo apt install samba**
- Navigate to Samba Configuration Directory: **cd/etc/samba**
- List Directory Contents: **ls**
- Open Samba Configuration File: **nano smb.conf**

In the opened smb.conf file, set the following:

- Name: sreelakshmi
- Path: /home/ubuntu22/share
- Configure Firewall to Allow Samba: **sudo ufw allow samba**
- Install Network Tools: **apt install net-tools**
- Check Network Configuration: **ifconfig**

Connecting to the Samba Server:

- Open File Explorer and navigate to "Other Locations."
- Connect to the server using the following address: **smb://127.0.0.1/sreelakshmi/**
- Click "Connect."
- The folder is now accessible via the network
- **Result:**

```

ubuntu22@UBUNTU:~$ su -
Password:
root@UBUNTU:~# sudo apt update
Hit:1 http://archive.canonical.com/ubuntu jammy InRelease
Hit:2 http://in.archive.ubuntu.com/ubuntu jammy InRelease
Hit:3 http://archive.ubuntu.com/ubuntu jammy InRelease
Hit:4 http://in.archive.ubuntu.com/ubuntu jammy-updates InRelease
Hit:5 http://archive.ubuntu.com/ubuntu jammy-updates InRelease
Hit:6 http://in.archive.ubuntu.com/ubuntu jammy-backports InRelease
Hit:7 http://archive.ubuntu.com/ubuntu jammy-security InRelease
Hit:8 http://archive.ubuntu.com/ubuntu jammy-backports InRelease
Get:9 http://security.ubuntu.com/ubuntu jammy-security InRelease [129 kB]
Fetched 129 kB in 5s (28.5 kB/s)
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
147 packages can be upgraded. Run 'apt list --upgradable' to see them.
root@UBUNTU:~# sudo apt install samba

```

```

PID TTY      TIME CMD
28755 pts/0    00:00:00 su
28833 pts/0    00:00:00 bash
31560 pts/0    00:00:00 ps
root@UBUNTU:~# cd /etc/samba
root@UBUNTU:/etc/samba# ls
gdbcommands smb.conf tls
root@UBUNTU:/etc/samba# nano smb.conf
root@UBUNTU:/etc/samba# sudo service smbd restart
root@UBUNTU:/etc/samba# sudo ufw allow samba
Rules updated
Rules updated (v6)
root@UBUNTU:/etc/samba# ipconfig
Command 'ipconfig' not found, did you mean:
  command 'ifconfig' from deb net-tools (1.60+git20181103.0eebece-1ubuntu5)
  command 'iwconfig' from deb wireless-tools (30-pre9-13.1ubuntu4)
  command 'iconfig' from deb ipmiutil (3.1.8-1)
Try: apt install <deb name>
root@UBUNTU:/etc/samba# ifconfig
Command 'ifconfig' not found, but can be installed with:
apt install net-tools
root@UBUNTU:/etc/samba# apt install net-tools
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following NEW packages will be installed:
  net-tools
0 upgraded, 1 newly installed, 0 to remove and 121 not upgraded.
Need to get 204 kB of archives.
After this operation, 819 kB of additional disk space will be used.
Get:1 http://archive.ubuntu.com/ubuntu jammy/main amd64 net-tools amd64 1.60+git20181103.0eebece-1ubuntu5 [204 kB]
Fetched 204 kB in 4s (51.6 kB/s)
Selecting previously unselected package net-tools.
(Reading database ... 231026 files and directories currently installed.)
Preparing to unpack .../net-tools_1.60+git20181103.0eebece-1ubuntu5_amd64.deb ...
Unpacking net-tools (1.60+git20181103.0eebece-1ubuntu5) ...
Setting up net-tools (1.60+git20181103.0eebece-1ubuntu5) ...
Processing triggers for man-db (2.10.2-1) ...
root@UBUNTU:/etc/samba# ifconfig
enp0s3: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500

```

```

;   path = /home/samba/profiles
;   guest ok = no
;   browseable = no
;   create mask = 0600
;   directory mask = 0700

[printers]
comment = All Printers
browseable = no
path = /var/spool/samba
printable = yes
guest ok = no
read only = yes
create mask = 0700

# Windows clients look for this share name as a source of downloadable
# printer drivers
[print$]
comment = Printer Drivers
path = /var/lib/samba/printers
browseable = yes
read only = yes
guest ok = no

# Uncomment to allow remote administration of Windows print drivers,
# You may need to replace 'lpadmin' with the name of the group your
# admin users are members of.
# Please note that you also need to set appropriate Unix permissions
# to the drivers directory for these users to have write rights in it
;   write list = root, @lpadmin

[Sreelakshmi]
path=/home/ubuntu22/share
browseable = yes
read only = yes
guest ok = no

```

```

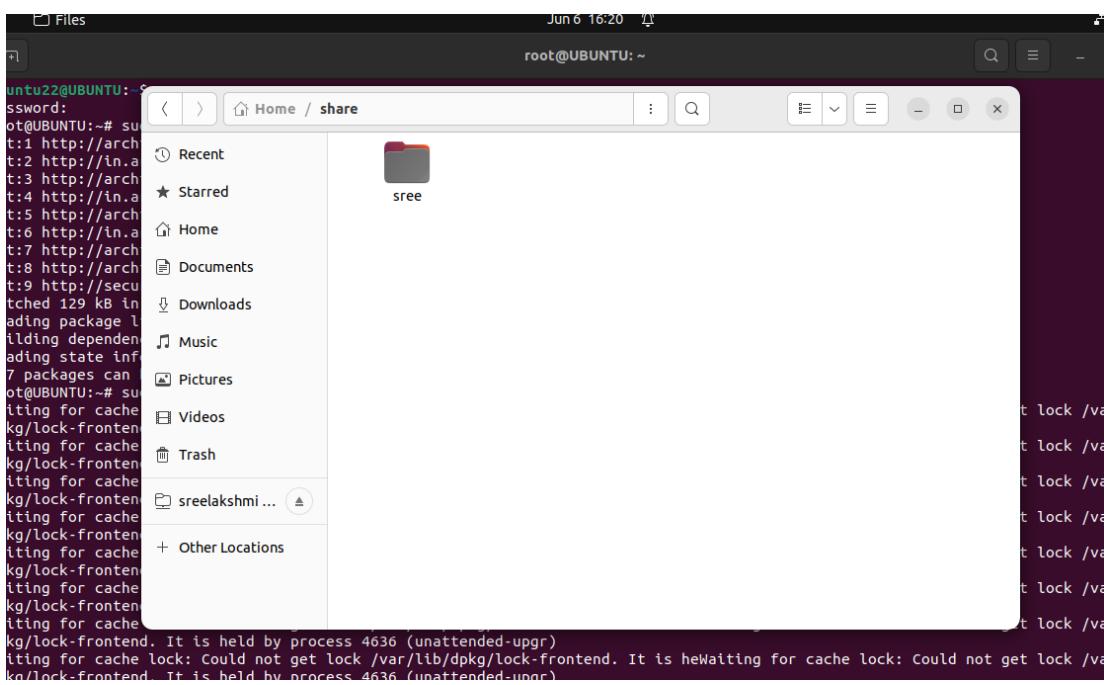
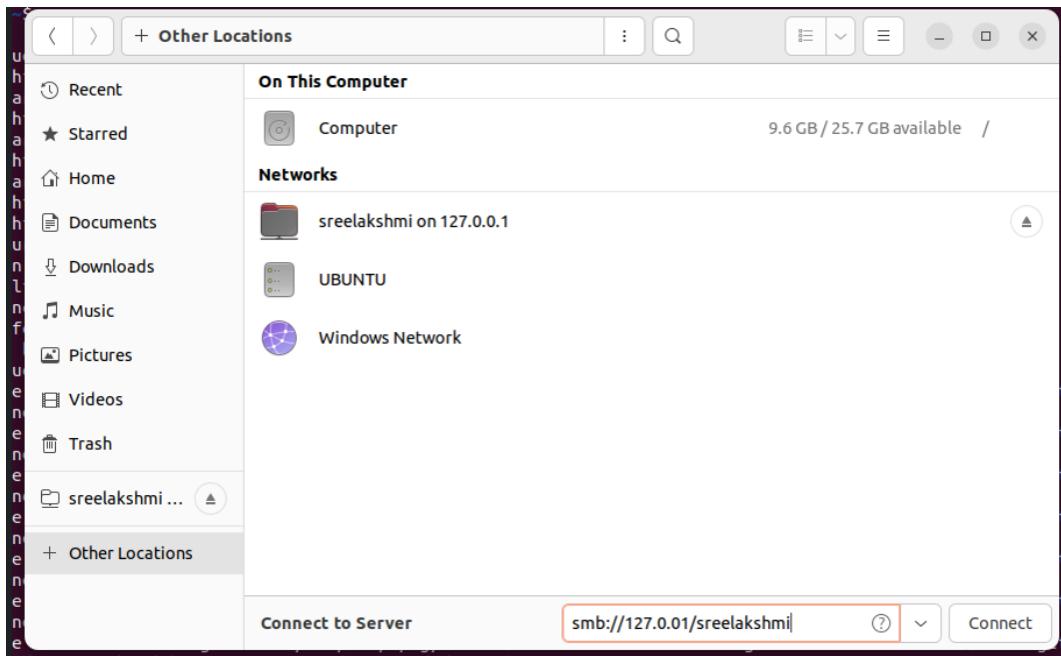
PID TTY      TIME CMD
28755 pts/0    00:00:00 su
28833 pts/0    00:00:00 bash
31560 pts/0    00:00:00 ps
root@UBUNTU:~# cd /etc/samba
root@UBUNTU:/etc/samba# ls
gdbcommands smb.conf tls
root@UBUNTU:/etc/samba# nano smb.conf
root@UBUNTU:/etc/samba# sudo service smbd restart
root@UBUNTU:/etc/samba# sudo ufw allow samba
Rules updated
Rules updated (v6)
root@UBUNTU:/etc/samba# ipconfig
Command 'ipconfig' not found, did you mean:
  command 'ifconfig' from deb net-tools (1.60+git20181103.0eebece-1ubuntu5)
  command 'iwconfig' from deb wireless-tools (30~pre9-13.1ubuntu4)
  command 'iconfig' from deb ipmiutil (3.1.8-1)
Try: apt install <deb name>
root@UBUNTU:/etc/samba# ifconfig
Command 'ifconfig' not found, but can be installed with:
apt install net-tools
root@UBUNTU:/etc/samba# apt install net-tools
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following NEW packages will be installed:
  net-tools
0 upgraded, 1 newly installed, 0 to remove and 121 not upgraded.
Need to get 204 kB of archives.
After this operation, 819 kB of additional disk space will be used.
Get:1 http://archive.ubuntu.com/ubuntu jammy/main amd64 net-tools amd64 1.60+git20181103.0eebece-1ubuntu5 [204 kB]
Fetched 204 kB in 4s (51.6 kB/s)
Selecting previously unselected package net-tools.
(Reading database ... 231026 files and directories currently installed.)
Preparing to unpack .../net-tools_1.60+git20181103.0eebece-1ubuntu5_amd64.deb ...
Unpacking net-tools (1.60+git20181103.0eebece-1ubuntu5) ...
Setting up net-tools (1.60+git20181103.0eebece-1ubuntu5) ...
Processing triggers for man-db (2.10.2-1) ...
root@UBUNTU:/etc/samba# ifconfig
enp0s3: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500

```

```

inet 127.0.0.1 netmask 255.0.0.0
inet6 ::1 prefixlen 128 scopeid 0x10<host>
loop txqueuelen 1000 (Local Loopback)
RX packets 640 bytes 77915 (77.9 KB)
RX errors 0 dropped 0 overruns 0 frame 0
TX packets 640 bytes 77915 (77.9 KB)
TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

root@UBUNTU:/etc/samba# nano smb.conf
root@UBUNTU:/etc/samba# nano /etc/samba/smb.conf
root@UBUNTU:/etc/samba# nano smb.conf
root@UBUNTU:/etc/samba# sudo service smbd restart
root@UBUNTU:/etc/samba# nano smb.conf
root@UBUNTU:/etc/samba# sudo service smbd restart
root@UBUNTU:/etc/samba# sudo smbpasswd -a ubantu22
New SMB password:
Retype new SMB password:
Failed to add entry for user ubantu22.
root@UBUNTU:/etc/samba# cd..
cd..: command not found
root@UBUNTU:/etc/samba# su -
root@UBUNTU:# nano /etc/samba/smb.conf
root@UBUNTU:# nano /etc/samba/smb.conf
root@UBUNTU:# sudo service smbd restart
root@UBUNTU:# sudo smbpasswd -a ubantu22
New SMB password:
Retype new SMB password:
Failed to add entry for user ubantu22.
root@UBUNTU:# nano /etc/samba/smb.conf
root@UBUNTU:# sudo service smbd restart
root@UBUNTU:# sudo smbpasswd -a ubantu22
New SMB password:
Retype new SMB password:
Added user ubantu22.
root@UBUNTU:# nano /etc/samba/smb.conf
root@UBUNTU:# 
```



Conclusion: All the commands have been executed and the output has been obtained successfully.

2.DNS

Experiment: 4

Date: 13-06-2024

Aim: To create and configure DNS Server

Description:

A DNS Server is a computer server that contains a database of public IP addresses and their associated hostnames, and in most cases, serves to resolve, or translate, those common names to IP addresses as requested.

Port No: 53

Package name: bind9

Configuration file: /etc/bind/named.conf. (Primary configuration file),/etc/bind/db.root (root nameservers)

Procedure:

CASHING NAMESERVER

When configured as a caching nameserver BIND9 will find the answer to name queries and remember the answer when the domain is queried again.

1. Install bind9 by typing

```
$sudo apt install bind9
```

```
$sudo apt install dnsutils
```

2. The default configuration is set up to act as a caching server. All that is required is simply adding the IP Addresses of your ISP's DNS servers. Simply uncomment and edit the following in /etc/bind/named.conf.options:

3. Restart it by typing

```
$sudo systemctl restart bind9.service
```

PRIMARY MASTER

As a primary master server BIND9 reads the data for a zone from a file on its host and is authoritative for that zone.

Forward zone file

To add a DNS zone to BIND9, turning BIND9 into a Primary Master server, the first step is to edit /etc/bind/named.conf.local:

```
$sudo cp /etc/bind/db.local /etc/bind/db.example.com
```

```
$sudo systemctl restart bind9.service
```

Reverse Zone File

Now that the zone is set up and resolving names to IP Addresses, a Reverse zone needs to be added to allows DNS to resolve an address to a name.

1. Edit /etc/bind/named.conf.local
2. Now create the /etc/bind/db.192 file:

```
$sudo cp /etc/bind/db.127 /etc/bind/db.192
```

3. edit /etc/bind/db.192 changing the basically the same options as /etc/bind/db.example.com:
4. After creating the reverse zone file restart BIND9:

```
$sudo systemctl restart bind9.service
```

5.Check the status

```
$Sudo service bind9 status
```

6.Check if nslookup can resolve \$nslookup ftp.example.com

```
$nslookup ubuntu.example.com
```

7.Gather information about your DNS server

```
$dig ubuntu.example.com
```

```
$dig www.example.com
```

```
$dig ftp.example.com
```

Result:

Activities Terminal Jul 17 14:48
root@UBUNTU:/etc/bind

```
inet6 fe80::babf:b255:e5ba:c37c prefixlen 64 scopeid 0x20<link>
  ether 08:00:27:0e:3c:4f txqueuelen 1000 (Ethernet)
    RX packets 23463 bytes 34643510 (34.6 MB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 4712 bytes 404938 (404.9 KB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

lo: flags=73<UP,LOOPBACK,RUNNING> mtu 65536
  inet 127.0.0.1 netmask 255.0.0.0
    inet6 ::1 prefixlen 128 scopeid 0x10<host>
      loop txqueuelen 1000 (Local Loopback)
        RX packets 15661 bytes 1151235 (1.1 MB)
        RX errors 0 dropped 0 overruns 0 frame 0
        TX packets 15661 bytes 1151235 (1.1 MB)
        TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

root@UBUNTU:/etc/bind# nano /etc/resolv.conf
root@UBUNTU:/etc/bind# dig test.example.com

; <>> DiG 9.18.24-0ubuntu0.22.04.1-Ubuntu <>> test.example.com
;; global options: +cmd
;; Got answer:
;; ->>HEADER<- opcode: QUERY, status: NOERROR, id: 45893
;; flags: qr aa rd ra; QUERY: 1, ANSWER: 1, AUTHORITY: 0, ADDITIONAL: 1
;;
;; OPT PSEUDOSECTION:
;; EDNS: version: 0, flags:; udp: 1232
;; COOKIE: 6a63d9b3170087bd0100000866978ba3c9151af5a2daebfe (good)
;; QUESTION SECTION:
;test.example.com.           IN      A
;;
;; ANSWER SECTION:
test.example.com.       604800  IN      A      192.168.56.20

;; Query time: 0 msec
;; SERVER: 192.168.56.101#53(192.168.56.101) (UDP)
;; WHEN: Wed Jul 17 14:45:15 IST 2024
;; MSG SIZE rcvd: 89
root@UBUNTU:/etc/bind#
```

root@UBUNTU:/etc/bind

```
GNU nano 6.2          db.20.16.192

; BIND reverse data file for local loopback interface

$TTL    604800
@       IN      SOA     example.com. root.example.com. (
                      1           ; Serial
                      604800      ; Refresh
                      86400       ; Retry
                     2419200     ; Expire
                     604800 )    ; Negative Cache TTL
;
@       IN      NS      example.com.
1.0.0   IN      PTR     localhost.
6       IN      PTR     sreelakshmikm.example.com

[ Read 14 lines ]
```

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

```
root@UBUNTU: /etc/bind
;; AUTHORITY SECTION:
.          10800   IN      SOA      a.root-servers.net. nstld.verisi
gn-grs.com. 2024071700 1800 900 604800 86400
;; Query time: 143 msec
;; SERVER: 172.16.30.119#53(172.16.30.119) (UDP)
;; WHEN: Wed Jul 17 16:39:40 IST 2024
;; MSG SIZE  rcvd: 144

root@UBUNTU:/etc/bind# nslookup 192.16.20.15
15.20.16.192.in-addr.arpa      name = ftp.example.com.20.16.192.in-addr.arpa.

root@UBUNTU:/etc/bind# nano db.20.16.192
root@UBUNTU:/etc/bind# sudo systemctl restart bind9.service
root@UBUNTU:/etc/bind# nslookup 192.16.20.6
6.20.16.192.in-addr.arpa      name = sreelakshmikm.example.com.20.16.192.in-addr.arpa.

root@UBUNTU:/etc/bind# nano db.20.16.192
root@UBUNTU:/etc/bind# nslookup 192.16.20.6
6.20.16.192.in-addr.arpa      name = sreelakshmikm.example.com.20.16.192.in-addr.arpa.

root@UBUNTU:/etc/bind#
```

```
root@UBUNTU: /etc/bind
;; SERVER: 172.16.30.119#53(172.16.30.119) (UDP)
;; WHEN: Wed Jul 17 16:27:53 IST 2024
;; MSG SIZE  rcvd: 138

root@UBUNTU:/etc/bind# nano db.local
root@UBUNTU:/etc/bind# cp db.127 db.20.16.192
root@UBUNTU:/etc/bind# nano db.20.16.192
root@UBUNTU:/etc/bind# nano name.conf.local
root@UBUNTU:/etc/bind# nano named.conf.local
root@UBUNTU:/etc/bind# nano db.local
root@UBUNTU:/etc/bind# nano db.127
root@UBUNTU:/etc/bind# nano db.20.16.192
root@UBUNTU:/etc/bind# sudo systemctl restart bind9.service
root@UBUNTU:/etc/bind# dig 192.16.20.15

; <>> DiG 9.18.24-0ubuntu0.22.04.1-Ubuntu <>> 192.16.20.15
;; global options: +cmd
;; Got answer:
;; ->>HEADER<<- opcode: QUERY, status: NXDOMAIN, id: 17343
;; flags: qr rd ra ad; QUERY: 1, ANSWER: 0, AUTHORITY: 1, ADDITIONAL: 1

;; OPT PSEUDOSECTION:
; EDNS: version: 0, flags:; udp: 1232
; COOKIE: a0e92b521e6b422d010000006697a6741e622cf9d1cf83d7 (good)
```

Forward

Activities Terminal Jun 13 14:08 root@UBUNTU:~

```
Unpacking bind9-host (1:9.18.24-0ubuntu0.22.04.1) over (1:9.18.18-0ubuntu0.22.04.2) ...
Preparing to unpack .../bind9-dnsutils_1%3a9.18.24-0ubuntu0.22.04.1_amd64.deb ...
Unpacking bind9-dnsutils (1:9.18.24-0ubuntu0.22.04.1) over (1:9.18.18-0ubuntu0.22.04.2) ...
Preparing to unpack .../bind9-libs_1%3a9.18.24-0ubuntu0.22.04.1_amd64.deb ...
Unpacking bind9-libs:amd64 (1:9.18.24-0ubuntu0.22.04.1) over (1:9.18.18-0ubuntu0.22.04.2) ...
Setting up bind9-libs:amd64 (1:9.18.24-0ubuntu0.22.04.1) ...
Setting up bind9-utils (1:9.18.24-0ubuntu0.22.04.1) ...
Setting up bind9 (1:9.18.24-0ubuntu0.22.04.1) ...
named-resolvconf.service is a disabled or a static unit not running, not starting it.
Setting up bind9-host (1:9.18.24-0ubuntu0.22.04.1) ...
Setting up bind9-dnsutils (1:9.18.24-0ubuntu0.22.04.1) ...
Processing triggers for ufw (0.36.1-4ubuntu0.1) ...
Rules updated for profile 'Samba'

Processing triggers for man-db (2.10.2-1) ...
Processing triggers for libc-bin (2.35-0ubuntu3.8) ...
root@UBUNTU:~# sudo apt install dnsutils
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following NEW packages will be installed:
  dnsutils
0 upgraded, 1 newly installed, 0 to remove and 123 not upgraded.
Need to get 3,916 B of archives.
After this operation, 604 kB of additional disk space will be used.
Get:1 http://archive.ubuntu.com/ubuntu jammy-updates/universe amd64 dnsutils all 1:9.18.24-0ubuntu0.22.04.1 [3,916 B]
Fetched 3,916 B in 1s (7,148 B/s)
Selecting previously unselected package dnsutils.
(Reading database ... 231075 files and directories currently installed.)
Preparing to unpack .../dnsutils_1%3a9.18.24-0ubuntu0.22.04.1_all.deb ...
Unpacking dnsutils (1:9.18.24-0ubuntu0.22.04.1) ...
Setting up dnsutils (1:9.18.24-0ubuntu0.22.04.1) ...
root@UBUNTU:~#
```

Activities Terminal Jun 13 14:29 root@UBUNTU:/etc/bind

```
GNU nano 6.2          named.conf.options *
```

```
options {
    directory "/var/cache/bind";

    // If there is a firewall between you and nameservers you want
    // to talk to, you may need to fix the firewall to allow multiple
    // ports to talk. See http://www.kb.cert.org/vuls/id/800113

    // If your ISP provided one or more IP addresses for stable
    // nameservers, you probably want to use them as forwarders.
    // Uncomment the following block, and insert the addresses replacing
    // the all-0's placeholder.

    // forwarders {
    //     8.8.8.8;
    // };

    //========================================================================
    // If BIND logs error messages about the root key being expired,
    // you will need to update your keys. See https://www.isc.org/bind-keys
    //================================================================
    dnssec-validation auto;

    listen-on-v6 { any; };
};
```

^G Help ^O Write Out ^W Where Is ^X Cut ^T Execute ^C Location M-U Undo M-A Set Mark
^X Exit ^R Read File ^A Replace ^P Paste ^J Justify ^Y Go To Line M-E Redo M-G Copy

Activities Terminal Jun 13 14:39

```
root@UBUNTU:/etc/bind
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following NEW packages will be installed:
  dnsutils
0 upgraded, 1 newly installed, 0 to remove and 123 not upgraded.
Need to get 3,916 B of archives.
After this operation, 60.4 kB of additional disk space will be used.
Get:1 http://archive.ubuntu.com/ubuntu jammy-updates/universe amd64 dnsutils all 1:9.18.24-0ubuntu0.22.04.1 [3,916 B]
Fetched 3,916 B in 7s (7,148 B/s)
Selecting previously unselected package dnsutils.
(Reading database ... 231075 files and directories currently installed.)
Preparing to unpack .../dnsutils_1%3a9.18.24-0ubuntu0.22.04.1_all.deb ...
Unpacking dnsutils (1:9.18.24-0ubuntu0.22.04.1) ...
Setting up dnsutils (1:9.18.24-0ubuntu0.22.04.1) ...
root@UBUNTU:~# cd /etc/bind
root@UBUNTU:/etc/bind# ls
bind.keys db.127 db.empty named.conf          named.conf.local    rndc.key
db.0      db.255 db.local named.conf.default-zones named.conf.options zones.rfc1918
root@UBUNTU:/etc/bind# nano named.conf.options
root@UBUNTU:/etc/bind# sudo systemctl restart bind9.service
root@UBUNTU:/etc/bind# ifconfig
enp0s3: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
      inet 10.0.2.15 netmask 255.255.255.0 broadcast 10.0.2.255
        inet6 fe80::babf:b255:e5ba:c37c/128 brd fe80::fffe:ffff:ffff:ffff
          prefixlen 64 scopeid 0x20<link>
          ether 08:00:27:0e:3c:4f txqueuelen 1000 (Ethernet)
            RX packets 23635 bytes 34959586 (34.9 MB)
            RX errors 0 dropped 0 overruns 0 frame 0
            TX packets 3906 bytes 331393 (331.3 KB)
            TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

lo: flags=73<UP,LOOPBACK,RUNNING> mtu 65536
      inet 127.0.0.1 netmask 255.0.0.0
        inet6 ::1/128 brd :: scopeid 0x10<host>
          prefixlen 128 scopeid 0x10<host>
          loop txqueuelen 1000 (Local Loopback)
            RX packets 333 bytes 37325 (37.3 KB)
            RX errors 0 dropped 0 overruns 0 frame 0
            TX packets 333 bytes 37325 (37.3 KB)
            TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0
```

Activities Terminal Jun 13 14:53

```
root@UBUNTU:/etc/bind
GNU nano 6.2                                              named.conf.options *
options {
  directory "/var/cache/bind";

  // If there is a firewall between you and nameservers you want
  // to talk to, you may need to fix the firewall to allow multiple
  // ports to talk. See http://www.kb.cert.org/vuls/id/800113

  // If your ISP provided one or more IP addresses for stable
  // nameservers, you probably want to use them as forwarders.
  // Uncomment the following block, and insert the addresses replacing
  // the all-0's placeholder.

  forwarders {
    // 8.8.8.8;
    // };

  //-----
  // If BIND logs error messages about the root key being expired,
  // you will need to update your keys. See https://www.tsc.org/bind-keys
  //-----
  dnssec-validation auto;

  listen-on-v6 { any; };

  forwarders {
    192.168.56.101;
  };

};

^G Help      ^O Write Out     ^W Where Is      ^K Cut      ^T Execute      ^C Location      M-U Undo      M-A Set Mark
^X Exit      ^R Read File     ^V Replace      ^U Paste      ^J Justify      ^I Go To Line    M-E Redo      M-G Copy
```

```
root@UBUNTU:/etc/bind# sudo systemctl restart bind9.service
root@UBUNTU:/etc/bind# named-checkzone example.com db.example.com
zone example.com: loaded serial 2
OK
root@UBUNTU:/etc/bind#
```

```
GNU nano 6.2                               named.conf.local *
// Do any local configuration here
//
// Consider adding the 1918 zones here, if they are not used in your
// organization
//include "/etc/bind/zones.rfc1918";

zone "example.com" IN{
    type master; []
    file "/etc/bind/db.example.com";
};
```

```
^G Help      ^O Write Out  ^W Where Is  ^K Cut      ^T Exec  >_  C Location  M-U Undo  M-A Set Mark  M-[ To Bracket
^X Exit      ^R Read File  ^Y Replace   ^U Paste   ^D Justify  / Go To Line  M-E Redo  M-G Copy  ^Q Where Was
```

```
root@UBUNTU:/etc/bind
```

```
GNU nano 6.2                               db.example.com *

; BIND data file for local loopback interface

$TTL    604800
@       IN      SOA     example.com. root.example.com. (
                      2           ; Serial
                      604800      ; Refresh
                      86400       ; Retry
                     2419200    ; Expire
                     604800 )    ; Negative Cache TTL

@       IN      NS      example.com.
test  IN      A       192.168.56.101
@       IN      A       127.0.0.1
@       IN      AAAA    ::1
```

```
^G Help      ^O Write Out  ^W Where Is  ^K Cut      ^T Exec  >_  C Location  M-U Undo  M-A Set Mark  M-[ To Bracket
^X Exit      ^R Read File  ^Y Replace   ^U Paste   ^D Justify  / Go To Line  M-E Redo  M-G Copy  ^Q Where Was
```

```

Activities Terminal Jun 13 15:35
root@UBUNTU:/etc/bind
root@UBUNTU:/etc/bind# cp db.local db.example.com
root@UBUNTU:/etc/bind# ls
drwxrws db.127 db.empty db.local named.conf.default-zones named.conf.options zones.rfc1918
drwxrws db.255 db.example.com named.conf named.conf.local rndc.key
root@UBUNTU:/etc/bind# nano db.example.com
root@UBUNTU:/etc/bind# named-checkzone example.com
root@UBUNTU:/etc/bind# nano db.example.com
root@UBUNTU:/etc/bind# sudo systemctl restart bind9.service
root@UBUNTU:/etc/bind# named-checkzone example.com
root@UBUNTU:/etc/bind# nslookup test.example.com
server: 127.0.0.53
Address: 127.0.0.53#53
Non-authoritative answer: can't find test.example.com: SERVFAIL

root@UBUNTU:/etc/bind# dig test.example.com
<--> DiG 9.18.24-0ubuntu0.22.04.1-Ubuntu <>> test.example.com
; global options: +cmd
; answer:
? HEADER<- opcode: QUERY, status: SERVFAIL, id: 34235
; flags: qr aa rd ra; QUERY: 1, ANSWER: 0, AUTHORITY: 0, ADDITIONAL: 1
> PSEUDOSECTION:
: version: 0, flags;; udp: 65494
: QUESTION SECTION:
test.example.com. IN A
; Query time: 0 msec
; SERVER: 127.0.0.53#53(127.0.0.53) (UDP)
; WHEN: Thu Jun 13 15:33:44 IST 2024
; MSG SIZE rcvd: 45

root@UBUNTU:/etc/bind# sudo systemctl restart bind9.service
root@UBUNTU:/etc/bind# named-checkzone example.com db.example.com
example.com/IN: loaded serial 2
root@UBUNTU:/etc/bind#

```

```

Activities Terminal Jun 13 15:36
root@UBUNTU:/etc/bind
root@UBUNTU:/etc/bind# cp db.local db.example.com
root@UBUNTU:/etc/bind# ls
drwxrws db.127 db.empty db.local named.conf.default-zones named.conf.options zones.rfc1918
drwxrws db.255 db.example.com named.conf named.conf.local rndc.key
root@UBUNTU:/etc/bind# nano db.example.com
root@UBUNTU:/etc/bind# named-checkzone example.com
root@UBUNTU:/etc/bind# nano db.example.com
root@UBUNTU:/etc/bind# sudo systemctl restart bind9.service
root@UBUNTU:/etc/bind# named-checkzone example.com
root@UBUNTU:/etc/bind# nslookup test.example.com
server: 127.0.0.53
Address: 127.0.0.53#53
Non-authoritative answer: can't find test.example.com: SERVFAIL

root@UBUNTU:/etc/bind# dig test.example.com
<--> DiG 9.18.24-0ubuntu0.22.04.1-Ubuntu <>> test.example.com
; global options: +cmd
; answer:
? HEADER<- opcode: QUERY, status: SERVFAIL, id: 34235
; flags: qr aa rd ra; QUERY: 1, ANSWER: 0, AUTHORITY: 0, ADDITIONAL: 1
> PSEUDOSECTION:
: version: 0, flags;; udp: 65494
: QUESTION SECTION:
test.example.com. IN A
; Query time: 0 msec
; SERVER: 127.0.0.53#53(127.0.0.53) (UDP)
; WHEN: Thu Jun 13 15:33:44 IST 2024
; MSG SIZE rcvd: 45

root@UBUNTU:/etc/bind# sudo systemctl restart bind9.service
root@UBUNTU:/etc/bind# named-checkzone example.com db.example.com
example.com/IN: loaded serial 2
root@UBUNTU:/etc/bind#

```

Activities Terminal Jun 13 15:56 root@UBUNTU: /etc

```

; COOKIE: 04ce5501c12a305501000000666ac85c69d159f2abf782cf (good)
;; QUESTION SECTION:
;test.example.com.      IN      A

;; ANSWER SECTION:
test.example.com.    604800  IN      A      192.168.56.20

;; Query time: 0 msec
;; SERVER: 192.168.56.101#53(192.168.56.101) (UDP)
;; WHEN: Thu Jun 13 15:52:20 IST 2024
;; MSG SIZE rcvd: 89

root@UBUNTU:/etc# named-checkzone example.com db.example.com
zone example.com/IN: loading from master file db.example.com failed: file not found
zone example.com/IN: not loaded due to errors.
root@UBUNTU:/etc# nano resolv.conf
root@UBUNTU:/etc# sudo systemctl restart bind9.service
root@UBUNTU:/etc# dig test.example.com

; <>> DiG 9.18.24-0ubuntu0.22.04.1-Ubuntu <>> test.example.com
;; global options: +cmd
;; Got answer:
;; ->>HEADER<- opcode: QUERY, status: NOERROR, id: 29360
;; flags: qr aa rd ra; QUERY: 1, ANSWER: 1, AUTHORITY: 0, ADDITIONAL: 1

;; OPT PSEUDOSECTION:
;; EDNS: version: 0, flags:; udp: 1232
;; COOKIE: 9ea42daec9b86cba01000000666ac94c655d4df8ab776eb0 (good)
;; QUESTION SECTION:
;test.example.com.      IN      A

;; ANSWER SECTION:
test.example.com.    604800  IN      A      192.168.56.20

;; Query time: 0 msec
;; SERVER: 192.168.56.101#53(192.168.56.101) (UDP)
;; WHEN: Thu Jun 13 15:56:20 IST 2024
;; MSG SIZE rcvd: 89

root@UBUNTU:/etc#

```

Activities Terminal Jun 13 15:50 root@UBUNTU: /etc

```

GNU nano 6.2          /etc/bind/db.example.com

;
; BIND data file for local loopback interface
;

$TTL    604800
@       IN      SOA     example.com. root.example.com. (
                      2           ; Serial
                      604800      ; Refresh
                      86400       ; Retry
                     2419200     ; Expire
                      604800 )    ; Negative Cache TTL
;
@       IN      NS      example.com.
test   IN      A       192.168.56.20
@       IN      A       127.0.0.1
@       IN      AAAA    ::1

```

[Read 15 lines]

^C Help ^O Write Out ^W Where Is ^K Cut ^T Execute ^C Location M-U Undo
 ^X Exit ^R Read File ^A Replace ^U Paste ^J Justify ^G Go To Line M-E Redo M-A Set Mark
 M-d Copy

Conclusion: The DNS has installed and configured successfully.

3.FTP

Experiment : 3

Aim : To create and configure FTP Server

Description : FTP Server

File Transfer Protocol (FTP) is a TCP protocol for downloading files between computers. In the past, it has also been used for uploading but, as that method does not use encryption, user credentials as well as data transferred in the clear and are easily intercepted. So if you are here looking for a way to upload and download files securely. FTP works on a client/server model. The server component is called an FTP daemon. It continuously listens for FTP requests from remote clients. When a request is received, it manages the login and sets up the connection. For the duration of the session it executes any of commands sent by the FTP client.

Port No: 21

Package name: vsftpd

Configuration file: /etc/vsftpd.conf

Procedure:

1. Install the vsftpd - FTP Server Installation in the ubuntu operating system

```
$sudo apt install vsftpd
```

2. By default vsftpd is not configured to allow anonymous download. If you wish to enable anonymous download edit /etc/vsftpd.conf by changing:

```
$anonymous_enable=YES
```

3. During installation a ftp user is created with a home directory of /srv/ftp. This is the default FTP directory.

If you wish to change this location, to /srv/files/ftp for example, simply create a directory in another location and change the ftp user's home directory:

```
$sudo mkdir -p /srv/files/ftp
```

```
$sudo usermod -d /srv/files/ftp ftp
```

4. After making the change restart vsftpd:

```
$ sudo service vsftpd restart
```

5. User Authenticated FTP Configuration

By default vsftpd is configured to authenticate system users and allow them to download files. If you want users to be able to upload files, edit /etc/vsftpd.conf \$write_enable=YES

6. Now restart vsftpd:

```
$ sudo service vsftpd restart
```

7. Securing FTP

There are options in /etc/vsftpd.conf to help make vsftpd more secure.

```
$chroot_local_user=YES
```

```
$chroot_list_enable=YES
```

```
$chroot_list_file=/etc/vsftpd.chroot_list
```

8. After uncommenting the above options, create a /etc/vsftpd.chroot_list

containing a list of users one per line.

9. Then restart vsftpd:

```
$sudo service vsftpd restart
```

10. To configure FTPS, edit /etc/vsftpd.conf and at the bottom add:

```
$ssl_enable=YES
```

11. Then check the vsftpd status

```
$sudo service vsftpd status
```

12. Now connect to ftp by the command

```
$ftp -p 192.168.234.128
```

13. Now install filezilla in ubuntu and open the filezilla and specify the ip address and port number of the ftp server then click connect

Result:

The image shows a screenshot of an Ubuntu desktop environment. On the left is a vertical dock containing icons for various applications like the Dash, Home, and System Settings. The desktop background is a purple and red gradient. Three windows are open: a Dash window, a Home folder window, and two terminal windows.

The top terminal window (root shell) shows the command history:

```
ubuntu22@UBUNTU:~$ su  
Password:  
root@UBUNTU:/home/ubuntu22# cd ..  
root@UBUNTU:/home# cd ..  
root@UBUNTU:/# sudo apt install vsftpd
```

The bottom terminal window (root shell) shows the output of the `sudo apt update` command followed by the `vsftpd` installation command:

```
ubuntu22@UBUNTU:~$ su  
Password:  
root@UBUNTU:/home/ubuntu22# cd ..  
root@UBUNTU:/home# cd ..  
root@UBUNTU:/# sudo apt update  
Hit:1 http://in.archive.ubuntu.com/ubuntu jammy InRelease  
Hit:2 http://security.ubuntu.com/ubuntu jammy-security InRelease  
Hit:3 http://archive.ubuntu.com/ubuntu jammy InRelease  
Hit:4 http://in.archive.ubuntu.com/ubuntu jammy-updates InRelease  
Hit:5 http://in.archive.ubuntu.com/ubuntu jammy-backports InRelease  
Hit:6 http://archive.ubuntu.com/ubuntu jammy-updates InRelease  
Hit:7 http://archive.canonical.com/ubuntu jammy InRelease  
Hit:8 http://archive.ubuntu.com/ubuntu jammy-security InRelease  
Hit:9 http://archive.ubuntu.com/ubuntu jammy-backports InRelease  
Reading package lists... Done  
Building dependency tree... Done  
Reading state information... Done  
176 packages can be upgraded. Run 'apt list --upgradable' to see them.  
root@UBUNTU:/# sudo apt install vsftpd  
Reading package lists... Done  
Building dependency tree... Done  
Reading state information... Done  
The following NEW packages will be installed:  
  vsftpd
```

```
root@UBUNTU:/ Hit:8 http://archive.ubuntu.com/ubuntu jammy-security InRelease  
Hit:9 http://archive.ubuntu.com/ubuntu jammy-backports InRelease  
Reading package lists... Done  
Building dependency tree... Done  
Reading state information... Done  
176 packages can be upgraded. Run 'apt list --upgradable' to see them.  
root@UBUNTU:/# sudo apt install vsftpd  
Reading package lists... Done  
Building dependency tree... Done  
Reading state information... Done  
The following NEW packages will be installed:  
  vsftpd  
0 upgraded, 1 newly installed, 0 to remove and 176 not upgraded.  
Need to get 123 kB of archives.  
After this operation, 326 kB of additional disk space will be used.  
Get:1 http://archive.ubuntu.com/ubuntu jammy/main amd64 vsftpd amd64 3.0.5-0ubuntu1 [123 kB]  
Fetched 123 kB in 1s (110 kB/s)  
Preconfiguring packages ...  
Selecting previously unselected package vsftpd.  
(Reading database ... 231079 files and directories currently installed.)  
Preparing to unpack .../vsftpd_3.0.5-0ubuntu1_amd64.deb ...  
Unpacking vsftpd (3.0.5-0ubuntu1) ...  
Setting up vsftpd (3.0.5-0ubuntu1) ...  
  
root@UBUNTU:/# sudo apt install vsftpd  
Reading package lists... Done  
Building dependency tree... Done  
Reading state information... Done  
The following NEW packages will be installed:  
  vsftpd  
0 upgraded, 1 newly installed, 0 to remove and 176 not upgraded.  
Need to get 123 kB of archives.  
After this operation, 326 kB of additional disk space will be used.  
Get:1 http://archive.ubuntu.com/ubuntu jammy/main amd64 vsftpd amd64 3.0.5-0ubuntu1 [123 kB]  
Fetched 123 kB in 1s (110 kB/s)  
Preconfiguring packages ...  
Selecting previously unselected package vsftpd.  
(Reading database ... 231079 files and directories currently installed.)  
Preparing to unpack .../vsftpd_3.0.5-0ubuntu1_amd64.deb ...  
Unpacking vsftpd (3.0.5-0ubuntu1) ...  
Setting up vsftpd (3.0.5-0ubuntu1) ...  
Created symlink /etc/systemd/system/multi-user.target.wants/vsftpd.service → /lib/systemd/system/vsftpd.service.  
Processing triggers for man-db (2.10.2-1) ...  
root@UBUNTU:/# nano /etc/apt/sources.list  
root@UBUNTU:/#
```

```
root@UBUNTU:/home/ubuntu22# cd ..
root@UBUNTU:/home# cd ..
root@UBUNTU:# sudo apt update
Hit:1 http://in.archive.ubuntu.com/ubuntu jammy InRelease
Hit:2 http://security.ubuntu.com/ubuntu jammy-security InRelease
Hit:3 http://archive.ubuntu.com/ubuntu jammy InRelease
Hit:4 http://in.archive.ubuntu.com/ubuntu jammy-updates InRelease
Hit:5 http://in.archive.ubuntu.com/ubuntu jammy-backports InRelease
Hit:6 http://archive.ubuntu.com/ubuntu jammy-updates InRelease
Hit:7 http://archive.canonical.com/ubuntu jammy InRelease
Hit:8 http://archive.ubuntu.com/ubuntu jammy-security InRelease
Hit:9 http://archive.ubuntu.com/ubuntu jammy-backports InRelease
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
176 packages can be upgraded. Run 'apt list --upgradable' to see them.
root@UBUNTU:# sudo apt install vsftpd
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following NEW packages will be installed:
  vsftpd
0 upgraded, 1 newly installed, 0 to remove and 176 not upgraded.
Need to get 123 kB of archives.
After this operation, 326 kB of additional disk space will be used.
Get:1 http://archive.ubuntu.com/ubuntu jammy/main amd64 vsftpd amd64 3.0.5-0ubuntu1 [123 kB]
Fetched 123 kB in 1s (110 kB/s)
Preconfiguring packages ...
Selecting previously unselected package vsftpd.
(Reading database ... 231079 files and directories currently installed.)
Preparing to unpack .../vsftpd_3.0.5-0ubuntu1_amd64.deb ...
Unpacking vsftpd (3.0.5-0ubuntu1) ...
Setting up vsftpd (3.0.5-0ubuntu1) ...
Created symlink /etc/systemd/system/multi-user.target.wants/vsftpd.service → /lib/systemd/system/vsftpd.service.
Processing triggers for man-db (2.10.2-1) ...
root@UBUNTU:# nano /etc/apt/sources.list
root@UBUNTU:# nano /etc/vsftpd.conf
root@UBUNTU:#
```

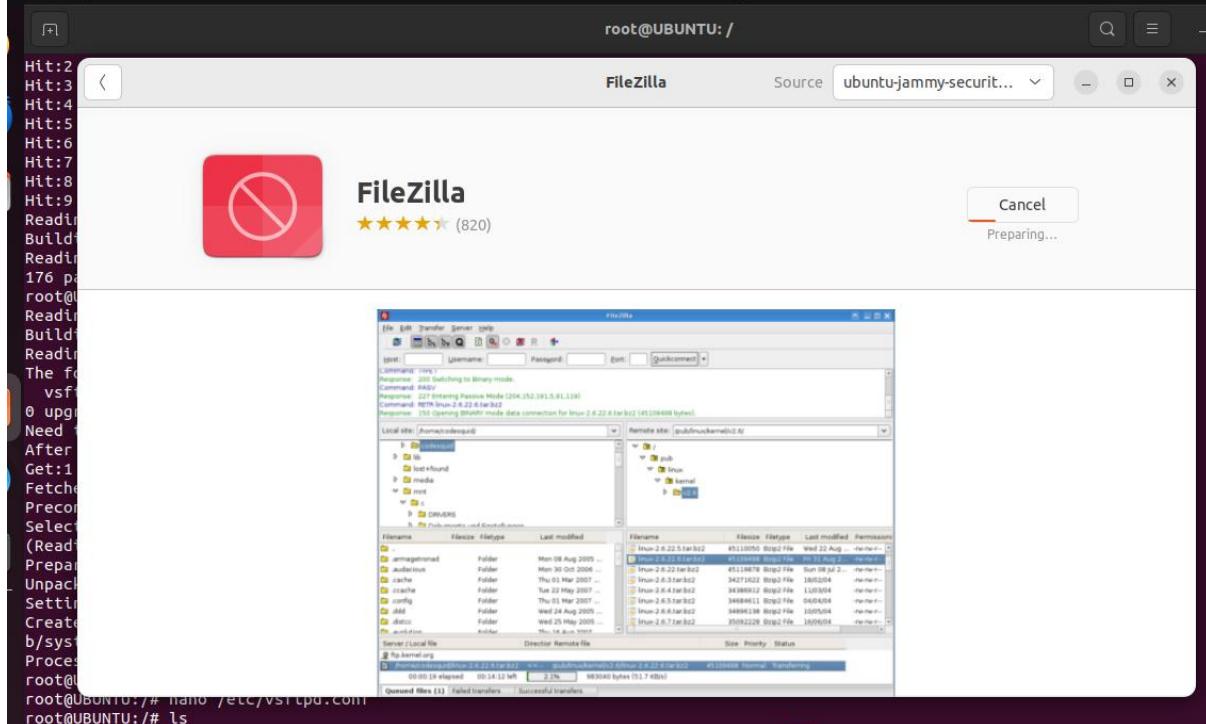
```
J+1
```

```
GNU nano 6.2
```

```
/etc/vsftpd.conf
```

```
# Example config file /etc/vsftpd.conf
#
# The default compiled in settings are fairly paranoid. This sample file
# loosens things up a bit, to make the ftp daemon more usable.
# Please see vsftpd.conf.5 for all compiled in defaults.
#
# READ THIS: This example file is NOT an exhaustive list of vsftpd options.
# Please read the vsftpd.conf.5 manual page to get a full idea of vsftpd's
# capabilities.
#
#
# Run standalone? vsftpd can run either from an inetd or as a standalone
# daemon started from an initscript.
listen=NO
#
# This directive enables listening on IPv6 sockets. By default, listening
# on the IPv6 "any" address (::) will accept connections from both IPv6
# and IPv4 clients. It is not necessary to listen on *both* IPv4 and IPv6
# sockets. If you want that (perhaps because you want to listen on specific
# addresses) then you must run two copies of vsftpd with two configuration
# files.
listen_ipv6=YES
#
# Allow anonymous FTP? (Disabled by default).
anonymous_enable=YES
#
# Uncomment this to allow local users to log in.
local_enable=YES
#
# Uncomment this to enable any form of FTP write command.
#write_enable=YES
#
# Default umask for local users is 077. You may wish to change this to 022,
# if your users expect that (022 is used by most other ftpt's)
#local_umask=022
#
[ Wrote 155 lines ]
```

```
root@UBUNTU:~# apt update
Hit:1 http://in.archive.ubuntu.com/ubuntu jammy InRelease
Hit:2 http://security.ubuntu.com/ubuntu jammy-security InRelease
Hit:3 http://archive.ubuntu.com/ubuntu jammy InRelease
Hit:4 http://in.archive.ubuntu.com/ubuntu jammy-updates InRelease
Hit:5 http://in.archive.ubuntu.com/ubuntu jammy-backports InRelease
Hit:6 http://archive.ubuntu.com/ubuntu jammy-updates InRelease
Hit:7 http://archive.canonical.com/ubuntu jammy InRelease
Hit:8 http://archive.ubuntu.com/ubuntu jammy-security InRelease
Hit:9 http://archive.ubuntu.com/ubuntu jammy-backports InRelease
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
176 packages can be upgraded. Run 'apt list --upgradable' to see them.
root@UBUNTU:~# sudo apt install vsftpd
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following NEW packages will be installed:
  vsftpd
0 upgraded, 1 newly installed, 0 to remove and 176 not upgraded.
Need to get 123 kB of archives.
After this operation, 326 kB of additional disk space will be used.
Get:1 http://archive.ubuntu.com/ubuntu jammy/main amd64 vsftpd amd64 3.0.5-0ubuntu1 [123 kB]
Fetched 123 kB in 1s (110 kB/s)
Preconfiguring packages ...
Selecting previously unselected package vsftpd.
(Reading database ... 231079 files and directories currently installed.)
Preparing to unpack .../vsftpd_3.0.5-0ubuntu1_amd64.deb ...
Unpacking vsftpd (3.0.5-0ubuntu1) ...
Setting up vsftpd (3.0.5-0ubuntu1) ...
Created symlink /etc/systemd/system/multi-user.target.wants/vsftpd.service → /lib/systemd/system/vsftpd.service.
Processing triggers for man-db (2.10.2-1) ...
root@UBUNTU:~# nano /etc/apt/sources.list
root@UBUNTU:~# nano /etc/vsftpd.conf
root@UBUNTU:~#
```



Activities FileZilla Jul 24 14:47 127.0.0.1 - FileZilla

File Edit View Transfer Server Bookmarks Help

Host: 127.0.0.1 Username: Password: Port: Quickconnect

Status: Connection established, waiting for welcome message...
Status: Insecure server, it does not support FTP over TLS.
Status: Server does not support non-ASCII characters.
Status: Logged in
Status: Retrieving directory listing...
Status: Directory listing of "/" successful

Local site: /home/ubuntu22/ Remote site: /

/ bin boot cdrom ...

Filename ^ Filesize filetype Last modified

.. .cache .config .gnupg .local .ssh Desktop

Directory Directory Directory Directory Directory Directory

07/24/24 14:37... 07/24/24 14:37... 07/24/24 14:37... 09/29/23 16:14... 04/20/24 14:58... 06/06/24 15:56...

6 files and 20 directories. Total size: 6.8 KB

Server/Local file Directio Remote file Size Priority Status

Queued files Failed transfers Successful transfers Queue: empty

Activities FileZilla Jul 24 15:27 127.0.0.1 - FileZilla

File Edit View Transfer Server Bookmarks Help

Host: 127.0.0.1 Username: Password: Port: Quickconnect

Status: Logged in
Status: Starting download of /screenshot.png
Status: Skipping download of /screenshot.png
Status: File transfer skipped
Status: Starting download of /screenshot.png
Status: File transfer successful, transferred 174.7 KB in 1 second

Local site: /home/ubuntu22/Desktop/ Remote site: /

.. .ssh Desktop Documents Downloads

Filename ^ Filesize filetype Last modified

.. ns-allinone-3.30.1 sreelakshmi screenshot.png

Directory Directory png-file

05/18/24 11:31... 06/06/24 14:49... 07/24/24 15:27...

1 file and 2 directories. Total size: 174.7 KB

Selected 1 file. Total size: 174.7 KB

Server/Local file Directio Remote file Size Priority Status

```
Main PID: 4237 (vsftpd)
  Tasks: 1 (limit: 2260)
    Memory: 876.0K
      CPU: 5ms
    CGroup: /system.slice/vsftpd.service
        └─4237 /usr/sbin/vsftpd /etc/vsftpd.conf

Jul 24 15:00:06 UBUNTU systemd[1]: Starting vsftpd FTP server...
Jul 24 15:00:06 UBUNTU systemd[1]: Started vsftpd FTP server.
root@UBUNTU:/# nano /etc/vsftpd.conf
root@UBUNTU:/# sudo service vsftpd restart
root@UBUNTU:/# cp /home/ubuntu22/Pictures/Screenshots/Screenshot from 2024-06-06 16-12-00.png /srv/file/ftp
cp: cannot stat '/home/ubuntu22/Pictures/Screenshots/Screenshot': No such file or directory
cp: cannot stat 'from': No such file or directory
cp: cannot stat '2024-06-06': No such file or directory
cp: cannot stat '16-12-00.png': No such file or directory
root@UBUNTU:/# cp /home/ubuntu22/Pictures/Screenshots/Screenshot from 2024-06-06 16-12-31.png /srv/file/ftp
cp: cannot stat '/home/ubuntu22/Pictures/Screenshots/Screenshot': No such file or directory
cp: cannot stat 'from': No such file or directory
cp: cannot stat '2024-06-06': No such file or directory
cp: cannot stat '16-12-31.png': No such file or directory
root@UBUNTU:/# cp /home/ubuntu22/Pictures/Screenshots/Screenshot from 2024-06-06 16-12-31.png /srv/file/ftp
cp: cannot stat '/home/ubuntu22/Pictures/Screenshots/Screenshot': No such file or directory
cp: cannot stat 'from': No such file or directory
cp: cannot stat '2024-06-06': No such file or directory
root@UBUNTU:/# cp /home/ubuntu22/Pictures/Screenshots/Screenshot from 2024-06-06 16-13-59.png~ /srv/file/ftp
cp: cannot stat 'S'\@33'[200-/home/ubuntu22/Pictures/Screenshots/Screenshot': No such file or directory
cp: cannot stat 'from': No such file or directory
cp: cannot stat '2024-06-06': No such file or directory
cp: cannot stat '16-13-59.png~': No such file or directory
root@UBUNTU:/# sudo cp /home/ubuntu22/Pictures/Screenshots/Screenshotfrom2024-06-0616-12-31.png /srv/file/ftp
cp: cannot stat '/home/ubuntu22/Pictures/Screenshots/Screenshotfrom2024-06-0616-12-31.png': No such file or directory
root@UBUNTU:/# sudo cp /home/ubuntu22/Pictures/Screenshots/screenshot.png /srv/file/ftp
root@UBUNTU:/#
```

```
Activities Terminal Jul 24 15:29
root@UBUNTU:/# ^X
root@UBUNTU:/# sudo service vsftpd status
● vsftpd.service - vsftpd FTP server
   Loaded: loaded (/lib/systemd/system/vsftpd.service; enabled; vendor preset: enabled)
   Active: active (running) since Wed 2024-07-24 14:56:07 IST; 2min 12s ago
     Process: 4167 ExecStartPre=/bin/mkdir -p /var/run/vsftpd/empty (code=exited, status=0/SUCCESS)
   Main PID: 4168 (vsftpd)
      Tasks: 1 (limit: 2260)
        Memory: 852.0K
          CPU: 8ms
        CGroup: /system.slice/vsftpd.service
            └─4168 /usr/sbin/vsftpd /etc/vsftpd.conf

Jul 24 14:56:07 UBUNTU systemd[1]: Starting vsftpd FTP server...
Jul 24 14:56:07 UBUNTU systemd[1]: Started vsftpd FTP server.
root@UBUNTU:/# mkdir -p /srv/file/ftp
root@UBUNTU:/# usermod -d /srv/file/ftp
root@UBUNTU:/# sudo service vsftpd restart
root@UBUNTU:/# sudo service vsftpd status
● vsftpd.service - vsftpd FTP server
   Loaded: loaded (/lib/systemd/system/vsftpd.service; enabled; vendor preset: enabled)
   Active: active (running) since Wed 2024-07-24 15:00:06 IST; 10s ago
```

Activities FileZilla Aug 7 14:15

FileZilla

File Edit View Transfer Server Bookmarks Help

Host: 127.0.0.1 Username: Reconnects to the last used server Port: Quickconnect

status:insecure server, it does not support FTP over TLS.

Command: USER anonymous

Response: 331 Please specify the password.

Command: PASS *****

Response: 530 Login incorrect.

Error: Critical error: Could not connect to server

Local site: /home/ubuntu22/Pictures/Screenshots/ Remote site:

Filename	Filesize	Filetype	Last modified	Filename	Filesize	Filetype	Last modified	Permission	Owner/Grou
...									
Screenshot from 2...	202.5 KB	png-file	06/06/24 16:12...						
Screenshot from 2...	80.4 KB	png-file	06/06/24 16:13...						
Screenshot from 2...	174.8 KB	png-file	06/06/24 16:14...						
Screenshot from 2...	187.8 KB	png-file	06/06/24 16:14...						
Screenshot from 2...	154.4 KB	png-file	06/06/24 16:14...						
Screenshot from 2...	174.7 KB	png-file	06/06/24 16:12...						
6 files. Total size: 974.3 KB									

Server/Local file Directio Remote file Size Priority Status

Queued files Failed transfers Successful transfers

Reconnects to the last used server

Queue: empty

Activities Terminal Aug 7 14:22

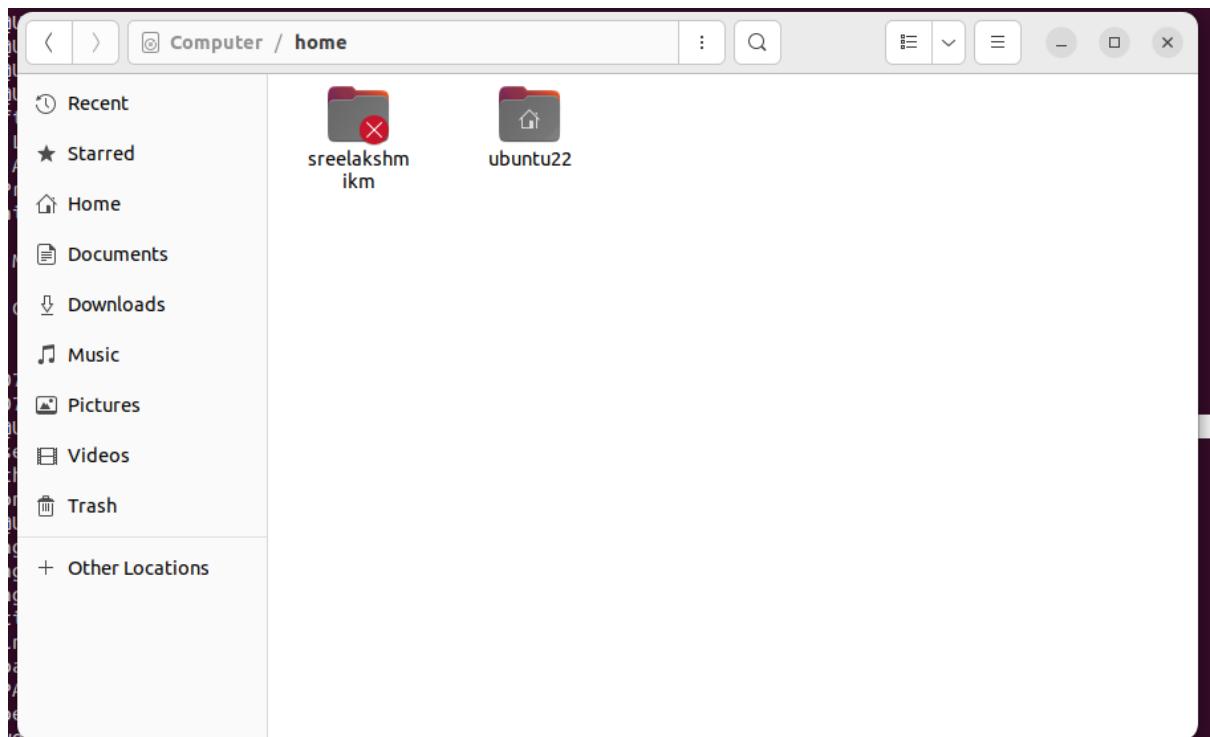
root@UBUNTU:/etc

```

root@UBUNTU:/etc# nano vsftpd.conf
root@UBUNTU:/etc# nano vsftpd.conf
root@UBUNTU:/etc# sudo service vsftpd restart
root@UBUNTU:/etc# sudo service vsftpd status
● vsftpd.service - vsftpd FTP server
   Loaded: loaded (/lib/systemd/system/vsftpd.service; enabled; vendor preset: enabled)
   Active: active (running) since Wed 2024-08-07 14:12:48 IST; 13s ago
     Process: 24240 ExecStartPre=/bin/mkdir -p /var/run/vsftpd/empty (code=exited, status=0/SUCCESS)
    Main PID: 24243 (vsftpd)
      Tasks: 1 (limit: 2260)
        Memory: 872.0K
         CPU: 4ms
        CGroup: /system.slice/vsftpd.service
                └─24243 /usr/sbin/vsftpd /etc/vsftpd.conf

Aug 07 14:12:48 UBUNTU systemd[1]: Starting vsftpd FTP server...
Aug 07 14:12:48 UBUNTU systemd[1]: Started vsftpd FTP server.
root@UBUNTU:/etc# sudo adduser SreelekshmiKM
adduser: Please enter a username matching the regular expression configured
via the NAME_REGEX[_SYSTEM] configuration variable. Use the '--force-badname'
option to relax this check or reconfigure NAME_REGEX.
root@UBUNTU:/etc# sudo adduser sreelakshmikm
Adding user `sreelakshmikm' ...
Adding new group `sreelakshmikm' (1001) ...
Adding new user `sreelakshmikm' (1001) with group `sreelakshmikm' ...
Creating home directory `/home/sreelakshmikm' ...
Copying files from `/etc/skel' ...
New password:
BAD PASSWORD: The password fails the dictionary check - it is too simplistic/systematic
Retype new password:
passwd: password updated successfully
Changing the user information for sreelakshmikm
Enter the new value, or press ENTER for the default
      Full Name []:
      Room Number []:
      Work Phone []:
      Home Phone []:
      Other []:
Show Applications on correct? [Y/n] y
root@UBUNTU:/etc#

```



```
Activities Terminal Aug 7 14:27 root@UBUNTU: /home/sreelakshmikm
root@UBUNTU: ~
Tasks: 1 (limit: 2260)
Memory: 872.0K
CPU: 4ms
CGroup: /system.slice/vsftpd.service
└─24243 /usr/sbin/vsftpd /etc/vsftpd.conf

Aug 07 14:12:48 UBUNTU systemd[1]: Starting vsftpd FTP server...
Aug 07 14:12:48 UBUNTU systemd[1]: Started vsftpd FTP server.
root@UBUNTU: /etc# sudo adduser Sreelakshmikm
adduser: Please enter a username matching the regular expression configured
via the NAME_REGEX[_SYSTEM] configuration variable. Use the '--force-badname'
option to relax this check or reconfigure NAME_REGEX.
root@UBUNTU: /etc# sudo adduser sreelakshmikm
Adding user 'sreelakshmikm' ...
Adding new group 'sreelakshmikm' (1001) ...
Adding new user 'sreelakshmikm' (1001) with group 'sreelakshmikm' ...
Creating home directory '/home/sreelakshmikm' ...
Copying files from '/etc/skel' ...
New password:
BAD PASSWORD: The password fails the dictionary check - it is too simplistic/systematic
Retype new password:
passwd: password updated successfully
Changing the user information for sreelakshmikm
Enter the new value, or press ENTER for the default
    Full Name []: sreelakshmikm
    Room Number []:
    Work Phone []:
    Home Phone []:
    Other []:
Fz Is the information correct? [Y/n] y
root@UBUNTU:/etc# cd /home
root@UBUNTU:/home# ls
sreelakshmikm  ubuntu22
root@UBUNTU:/home# cd ./sreelakshmikm
bash: cd: ./sreelakshmikm: No such file or directory
root@UBUNTU:/home# cd sreelakshmikm
root@UBUNTU:/home/sreelakshmikm# mkdir ftp
root@UBUNTU:/home/sreelakshmikm# ls
ftp
root@UBUNTU:/home/sreelakshmikm#
```

Activities Terminal Aug 7 14:28 root@UBUNTU: /home/sreelakshmikm

```
Tasks: 1 (limit: 2260)
Memory: 872.0K
CPU: 4ms
CGroup: /system.slice/vsftpd.service
└─24243 /usr/sbin/vsftpd /etc/vsftpd.conf

Aug 07 14:12:48 UBUNTU systemd[1]: Starting vsftpd FTP server...
Aug 07 14:12:48 UBUNTU systemd[1]: Started vsftpd FTP server.
root@UBUNTU:/etc# sudo adduser Sreelakshmikm
adduser: Please enter a username matching the regular expression configured
via the NAME_REGEX[_SYSTEM] configuration variable. Use the '--force-badname'
option to relax this check or reconfigure NAME_REGEX.
root@UBUNTU:/etc# sudo adduser sreelakshmikm
Adding user `sreelakshmikm' ...
Adding new group `sreelakshmikm' (1001) ...
Adding new user `sreelakshmikm' (1001) with group `sreelakshmikm' ...
Creating home directory `/home/sreelakshmikm' ...
Copying files from `/etc/skel' ...
New password:
BAD PASSWORD: The password fails the dictionary check - it is too simplistic/systematic
Retype new password:
passwd: password updated successfully
Changing the user information for sreelakshmikm
Enter the new value, or press ENTER for the default
  Full Name []: sreelakshmikm
  Room Number []:
  Work Phone []:
  Home Phone []:
  Other []:
Is the information correct? [Y/n] y
root@UBUNTU:/etc# cd /home
root@UBUNTU:/home# ls
sreelakshmikm ubuntu22
root@UBUNTU:/home# cd /sreelakshmikm
bash: cd: /sreelakshmikm: No such file or directory
root@UBUNTU:/home# cd sreelakshmikm
root@UBUNTU:/home/sreelakshmikm# mkdir ftp
root@UBUNTU:/home/sreelakshmikm# ls
ftp
root@UBUNTU:/home/sreelakshmikm#
```

Activities Terminal Aug 7 14:33 root@UBUNTU: /etc

```
GNU nano 6.2
vsftpd.conf *

# chroot)
chroot_local_user=YES
chroot_list_enable=YES
# (default follows)
chroot_list_file=/etc/vsftpd.chroot_list
#
# You may activate the "-R" option to the builtin ls. This is disabled by
# default to avoid remote users being able to cause excessive I/O on large
# sites. However, some broken FTP clients such as "ncFTP" and "mirror" assume
# the presence of the "-R" option, so there is a strong case for enabling it.
#ls_recurse_enable=YES
#
# Customization
```

Activities Terminal Aug 7 14:40 root@UBUNTU: /etc

```
GNU nano 6.2
vsftpd.conf

# chroot_list_enable below.
#chroot_local_user=YES
#
# You may specify an explicit list of local users to chroot() to their home
# directory. If chroot_local_user is YES, then this list becomes a list of
# users to NOT chroot().
# (Warning! chroot'ing can be very dangerous. If using chroot, make sure that
# the user does not have write access to the top level directory within the
# chroot)
chroot_local_user=YES
chroot_list_enable=YES
# (default follows)
chroot_list_file=/etc/vsftpd.chroot_list
user_sub_token=$USER
local_root=/home/$USER/ftp
allow_writeable_chroot=YES
#
# You may activate the "-R" option to the builtin ls. This is disabled by
# default to avoid remote users being able to cause excessive I/O on large
# sites. However, some broken FTP clients such as "ncFTP" and "mirror" assume
# the presence of the "-R" option, so there is a strong case for enabling it.
#ls_recurse_enable=YES
#
# Customization
#
# Some of vsftpd's settings don't fit the filesystem layout by
# default.
#
# This option should be the name of a directory which is empty. Also, the
# directory should not be writable by the ftp user. This directory is used
# as a secure chroot() jail at times vsftpd does not require filesystem
# access.
secure_chroot_dir=/var/run/vsftpd/empty
#
# This string is the name of the PAM service vsftpd will use.
pam_service_name=vsftpd
```

[Wrote 158 lines]

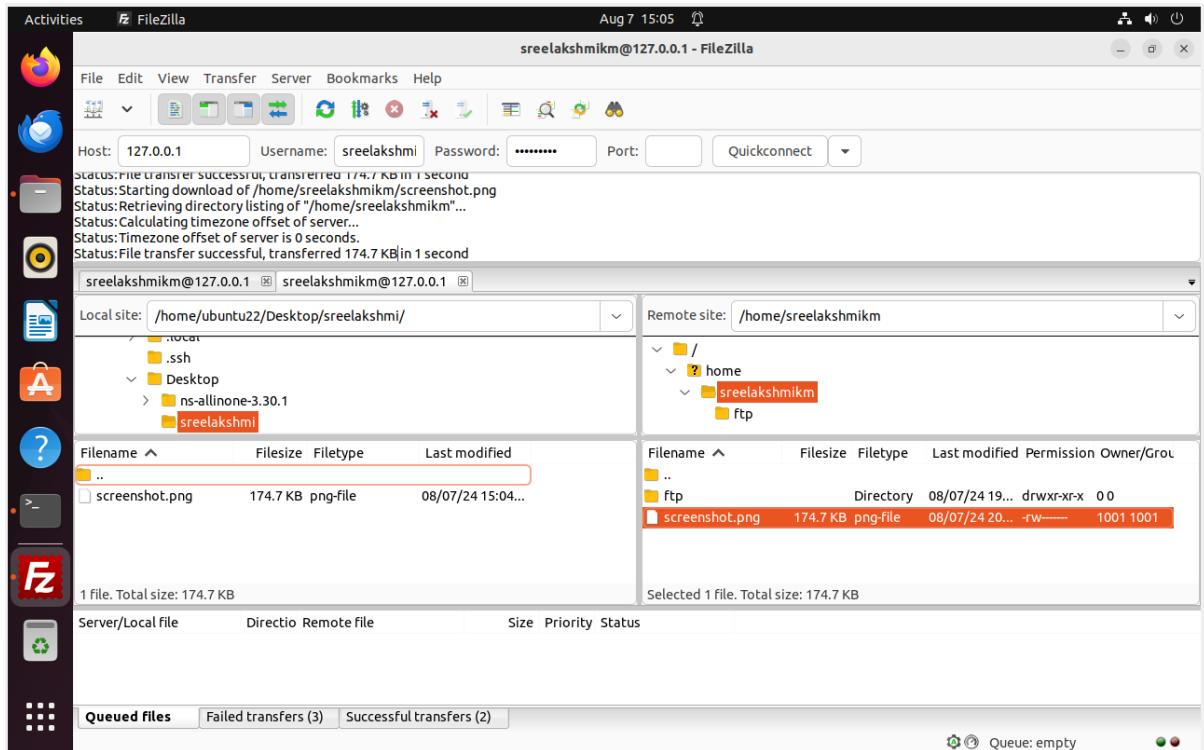
^G Help ^O Write Out ^W Where Is ^K Cut ^J Execute ^C Location M-U Undo ^X Exit ^R Read File ^L Replace ^U Paste ^D Justify ^I Go To Line M-B Redo M-A Set Mark M-C Copy

Activities Terminal Aug 7 14:48

```
root@UBUNTU:/etc#
root@UBUNTU:/etc# sudo service vsftpd restart
root@UBUNTU:/etc# sudo service vsftpd status
● vsftpd.service - vsftpd FTP server
   Loaded: loaded (/lib/systemd/system/vsftpd.service; enabled; vendor preset: enabled)
   Active: active (running) since Wed 2024-08-07 14:43:18 IST; 7s ago
     Process: 25182 ExecStartPre=/bin/mkdir -p /var/run/vsftpd/empty (code=exited, status=0/SUCCESS)
   Main PID: 25184 (vsftpd)
      Tasks: 1 (limit: 2260)
        Memory: 1.2M
         CPU: 5ms
        CGroup: /system.slice/vsftpd.service
               └─25184 /usr/sbin/vsftpd /etc/vsftpd.conf

Aug 07 14:43:18 UBUNTU systemd[1]: Starting vsftpd FTP server...
Aug 07 14:43:18 UBUNTU systemd[1]: Started vsftpd FTP server.
root@UBUNTU:/etc# cat vsftpd.chroot_list
cat: vsftpd.chroot_list: No such file or directory
root@UBUNTU:/etc# nano vsftpd.chroot_list
root@UBUNTU:/etc# sudo service vsftpd restart
root@UBUNTU:/etc# sudo service vsftpd status
● vsftpd.service - vsftpd FTP server
   Loaded: loaded (/lib/systemd/system/vsftpd.service; enabled; vendor preset: enabled)
   Active: active (running) since Wed 2024-08-07 14:48:00 IST; 3s ago
     Process: 25203 ExecStartPre=/bin/mkdir -p /var/run/vsftpd/empty (code=exited, status=0/SUCCESS)
   Main PID: 25204 (vsftpd)
      Tasks: 1 (limit: 2260)
        Memory: 864.0K
         CPU: 4ms
        CGroup: /system.slice/vsftpd.service
               └─25204 /usr/sbin/vsftpd /etc/vsftpd.conf

Aug 07 14:48:00 UBUNTU systemd[1]: Starting vsftpd FTP server...
Aug 07 14:48:00 UBUNTU systemd[1]: Started vsftpd FTP server.
root@UBUNTU:/etc#
```



Conclusion: All the commands have been executed and the output has been obtained successfully.

4.SQUID

Experiment: 4

Aim: To create and configure Squid -proxy server

Description: SQUID – PROXY SERVER

Squid is a full-featured web proxy cache server application which provides proxy and cache services for HyperText Transport Protocol (HTTP), File Transfer Protocol (FTP), and other popular network protocols. Squid can implement caching and proxying of Secure Sockets Layer (SSL) requests and caching of Domain Name Server (DNS) lookups, and perform transparent caching. Squid also supports a wide variety of caching protocols, such as Internet Cache Protocol (ICP), the HyperText Caching Protocol (HTCP), the Cache Array Routing Protocol (CARP), and the Web Cache Coordination Protocol (WCCP). The Squid proxy cache server is an excellent solution to various proxy and caching server needs, and scales from the branch office to enterprise-level networks while providing extensive, granular access control mechanisms, and monitoring of critical parameters via the Simple Network Management Protocol (SNMP). When selecting a computer system for use as a dedicated Squid caching proxy server for many users ensure it is configured with a large amount of physical memory as Squid maintains an in-memory cache for increased performance.

Port No: 3128

Package name: squid

Configuration file: /etc/squid/squid.conf

Procedure:

1. At a terminal prompt, enter the following command to install the Squid server:

```
$sudo apt install squid
```

2. Squid is configured by editing the directives contained within the /etc/squid/squid.conf configuration file.

3. Change the access as shown below:
acl localnet src 192.168.234.139(your ip address)
acl blocksite dstdomain "/etc/squid/blocksite"
http_access deny blocksite
http_access allow localnet
#http_access deny all
http_access allow all

4. To block access to the website we must configure using "/etc/squid/blocksite" we edit the file by running: \$cd /etc/squid \$sudo gedit blocksite

5. Add the websites to block: in this case, I am blocking youtube, facebook, google

6. To check the actual functioning of the proxy server go to the browser and click settings, search proxy in connection settings.

7. To configure Proxy access to the internet

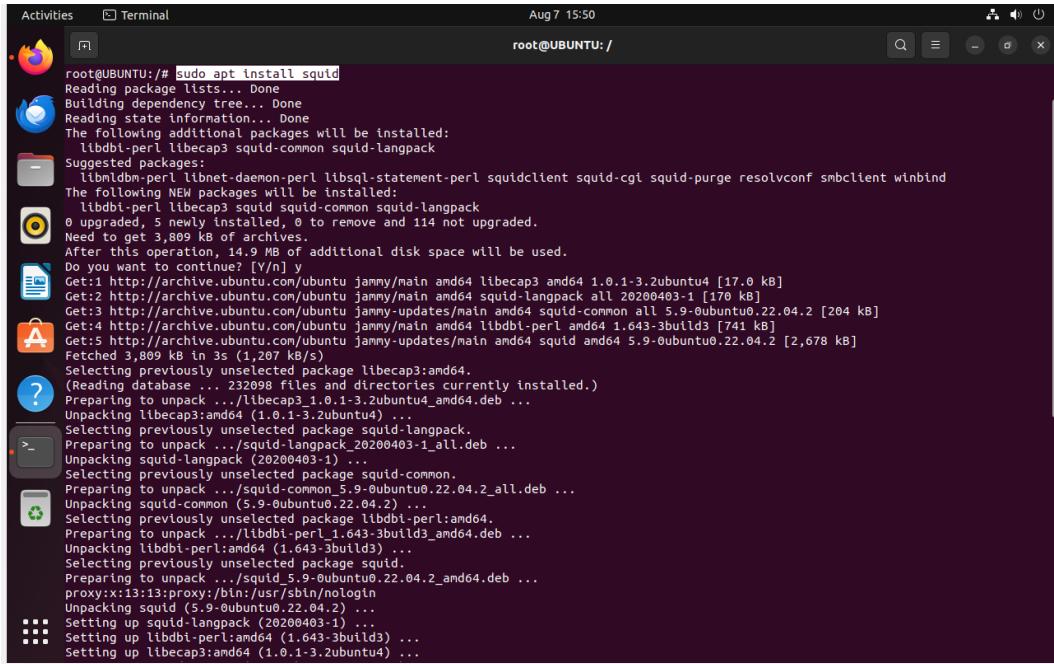
8. Select Manual Proxy configuration

9. Type your HTTP Proxy(IP Address) and Port number as 3128.

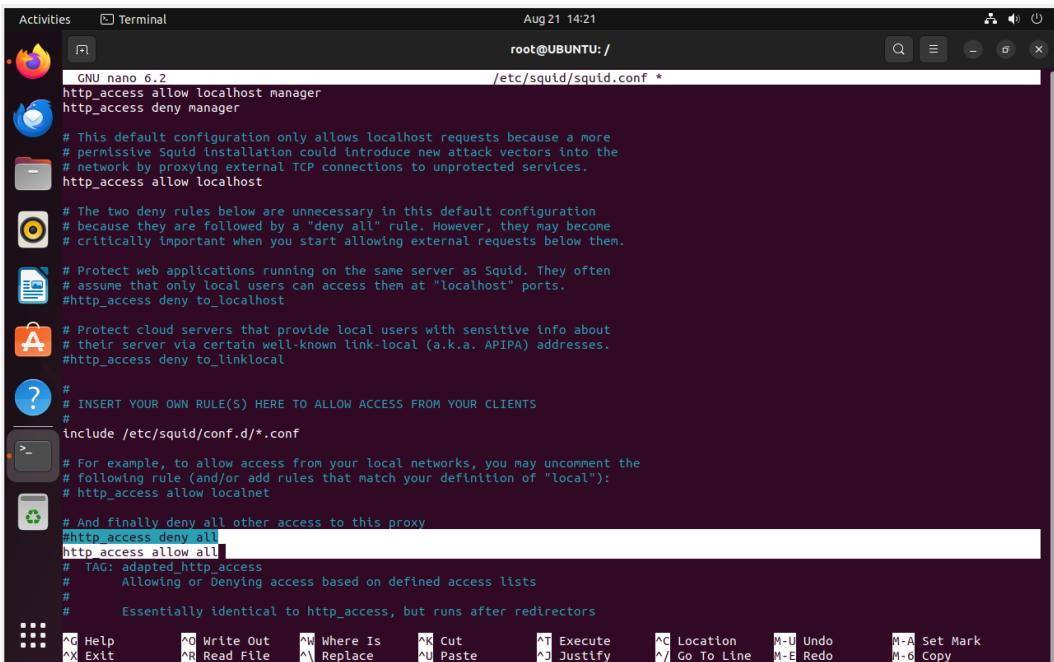
10. Select SOCKS v5 CONNECTING TO WEBSITE

11. Search for the blocked websites 12. Access is denied to the above websites.

Result:

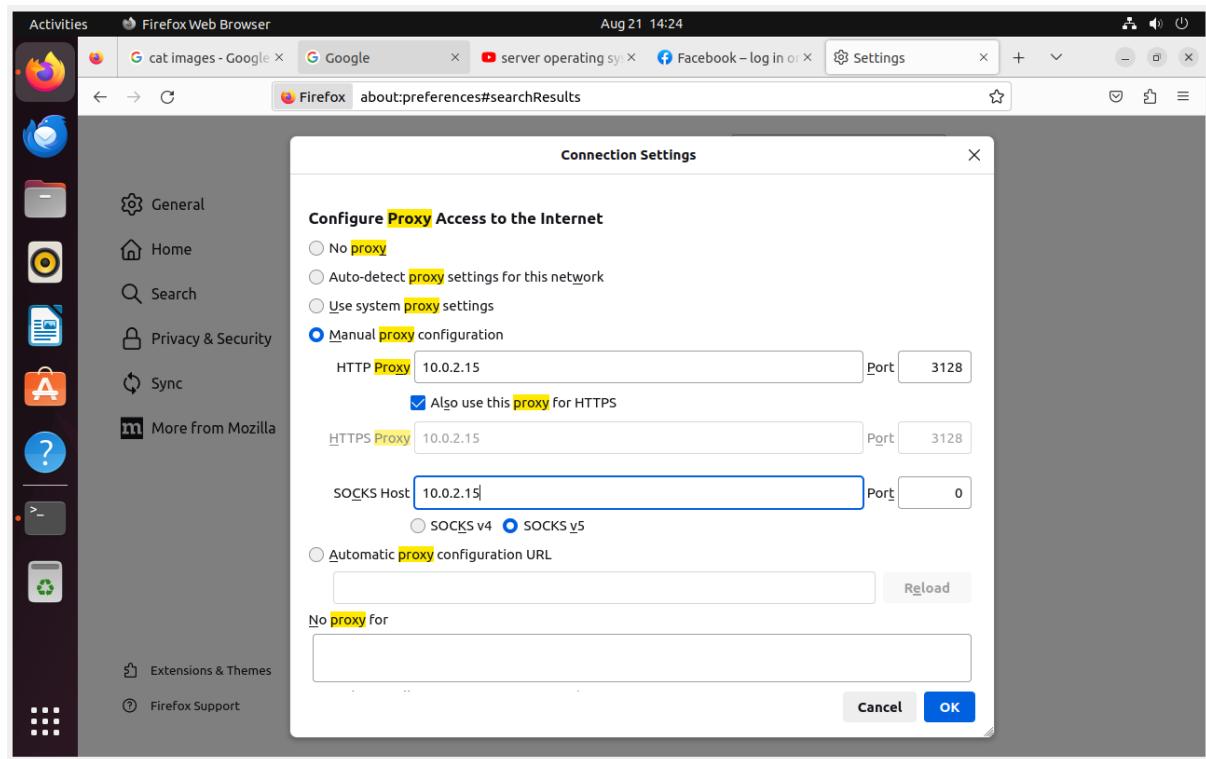


```
root@UBUNTU:/# sudo apt install squid
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following additional packages will be installed:
  libdbi-perl libbechap3 squid-common squid-langpack
Suggested packages:
  libltdbm-perl libnet-daemon-perl libsql-statement-perl squidclient squid-cgi squid-purge resolvconf smbclient winbind
The following NEW packages will be installed:
  libdbi-perl libbechap3 squid squid-common squid-langpack
0 upgraded, 5 newly installed, 0 to remove and 114 not upgraded.
Need to get 3,809 kB of archives.
After this operation, 14.9 MB of additional disk space will be used.
Do you want to continue? [Y/n] y
Get:1 http://archive.ubuntu.com/ubuntu jammy/main amd64 libbechap3 amd64 1.0.1-3.2ubuntu4 [17.0 kB]
Get:2 http://archive.ubuntu.com/ubuntu jammy/main amd64 squid-langpack all 20200403-1 [170 kB]
Get:3 http://archive.ubuntu.com/ubuntu jammy-updates/main amd64 squid-common all 5.9-0ubuntu0.22.04.2 [204 kB]
Get:4 http://archive.ubuntu.com/ubuntu jammy/main amd64 libdbi-perl amd64 1.643-3build3 [741 kB]
Get:5 http://archive.ubuntu.com/ubuntu jammy-updates/main amd64 squid amd64 5.9-0ubuntu0.22.04.2 [2,678 kB]
Fetched 3,809 kB in 3s (1,207 kB/s)
Selecting previously unselected package libbechap3:amd64.
(Reading database ... 232098 files and directories currently installed.)
Preparing to unpack .../libbechap3_1.0.1-3.2ubuntu4_amd64.deb ...
Unpacking libbechap3:amd64 (1.0.1-3.2ubuntu4) ...
Selecting previously unselected package squid-langpack.
Preparing to unpack .../squid-langpack_20200403-1_all.deb ...
Unpacking squid-langpack (20200403-1) ...
Selecting previously unselected package squid-common.
Preparing to unpack .../squid-common_5.9-0ubuntu0.22.04.2_all.deb ...
Unpacking squid-common (5.9-0ubuntu0.22.04.2) ...
Selecting previously unselected package libdbi-perl:amd64.
Preparing to unpack .../libdbi-perl_1.643-3build3_amd64.deb ...
Unpacking libdbi-perl:amd64 (1.643-3build3) ...
Selecting previously unselected package squid.
Preparing to unpack .../squid_5.9-0ubuntu0.22.04.2_amd64.deb ...
proxy::x::13::proxy:/bin/usr/sbin/nologin
Unpacking squid (5.9-0ubuntu0.22.04.2) ...
Setting up squid-langpack (20200403-1) ...
Setting up libdbi-perl:amd64 (1.643-3build3) ...
Setting up libbechap3:amd64 (1.0.1-3.2ubuntu4) ...
```



```
root@UBUNTU:/# nano 6.2
/etc/squid/squid.conf *
http_access allow localhost manager
http_access deny manager
# This default configuration only allows localhost requests because a more
# permissive Squid installation could introduce new attack vectors into the
# network by proxying external TCP connections to unprotected services.
http_access allow localhost
# The two deny rules below are unnecessary in this default configuration
# because they are followed by a "deny all" rule. However, they may become
# critically important when you start allowing external requests below them.
# Protect web applications running on the same server as Squid. They often
# assume that only local users can access them at "localhost" ports.
#http_access deny to_localhost
# Protect cloud servers that provide local users with sensitive info about
# their server via certain well-known link-local (a.k.a. APIPA) addresses.
#http_access deny to_linklocal
#
# INSERT YOUR OWN RULE(S) HERE TO ALLOW ACCESS FROM YOUR CLIENTS
#
include /etc/squid/conf.d/*.conf
# For example, to allow access from your local networks, you may uncomment the
# following rule (and/or add rules that match your definition of "local"):
# http_access allow localnet
#
# And finally deny all other access to this proxy
#http_access deny all
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

```



The screenshot shows a terminal window with the command 'root@UBUNTU:/' and the file '/etc/squid/squid.conf' open in the nano editor. The file contains the following configuration:

```
GNU nano 6.2 /etc/squid/squid.conf *
# assume that only local users can access them at "localhost" ports.
#http_access deny to_localhost

# Protect cloud servers that provide local users with sensitive info about
# their server via certain well-known link-local (a.k.a. APIPA) addresses.
#http_access deny to_linklocal

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

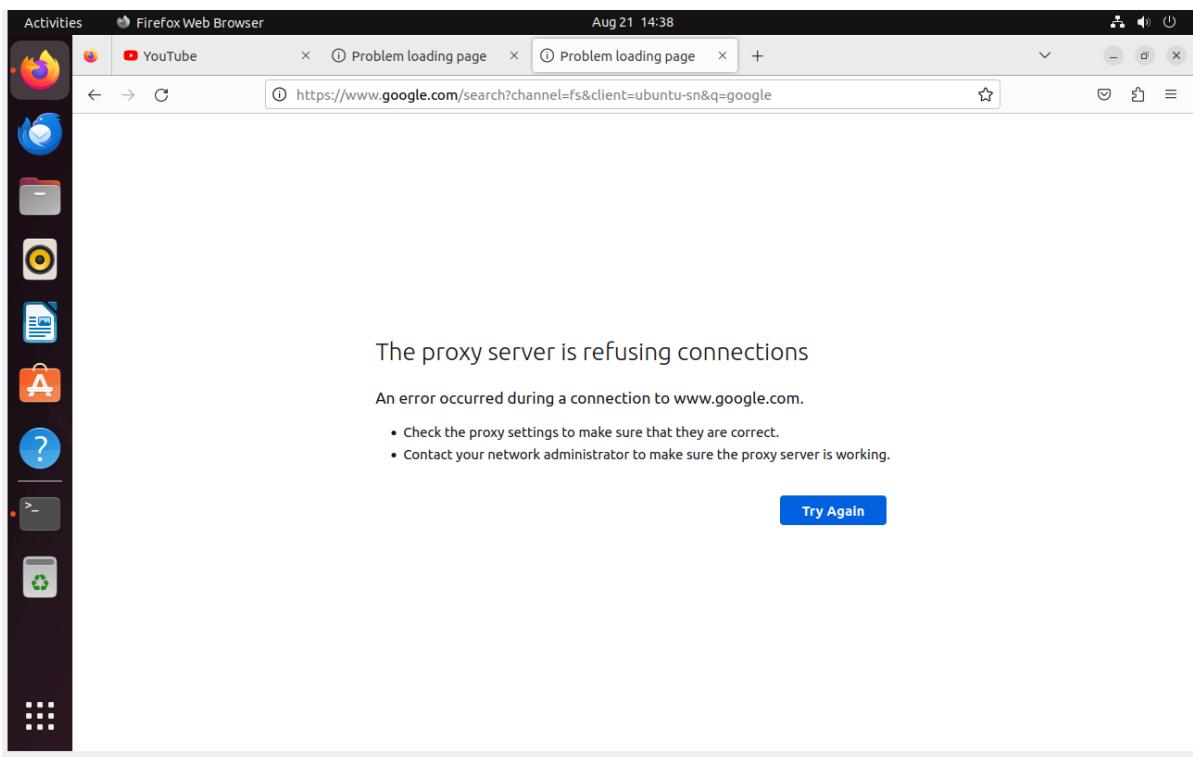
# For example, to allow access from your local networks, you may uncomment the
# following rule (and/or add rules that match your definition of "local"):
# http_access allow localnet

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

^G Help      ^O Write Out    ^W Where Is     ^K Cut        ^T Execute    ^C Location    M-U Undo    M-A Set Mark
^X Exit      ^R Read File    ^M Replace     ^U Paste      ^J Justify    ^V Go To Line  M-F Redo    M-G Copy
```



A screenshot of a terminal window. The title bar says "Activities Terminal Aug 21 15:06". The command "root@UBUNTU:/" is shown. The terminal window displays the contents of the "/etc/squid/squid.conf" file. The configuration includes rules for access, such as "# http_access deny to_localhost" and "# http_access allow localnet". It also includes a section for "# INSERT YOUR OWN RULE(S) HERE TO ALLOW ACCESS FROM YOUR CLIENTS". The terminal window has a dark background and uses white text. The bottom of the window shows a menu bar with various keyboard shortcuts for file operations like Help, Exit, Write Out, Read File, Cut, Paste, Execute, Justify, Location, Go To Line, Undo, Redo, Set Mark, and Copy.

```
GNU nano 6.2 /etc/squid/squid.conf
# assume that only local users can access them at "localhost" ports.
#http_access deny to_localhost

# Protect cloud servers that provide local users with sensitive info about
# their server via certain well-known link-local (a.k.a. APIPA) addresses.
#access deny to_linklocal

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

# For example, to allow access from your local networks, you may uncomment the
# following rule (and/or add rules that match your definition of "local"):
# http_access allow localnet

# And finally deny all other access to this proxy
#http_access deny all
http_access allow all
acl localhost src 10.0.2.15
acl blocksite dstdomain "/etc/squid/site"
http_access deny blocksite

# TAG: adapted_http_access
#     Allowing or Denying access based on defined access lists
#
# Essentially identical to http_access, but runs after redirects
# 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.

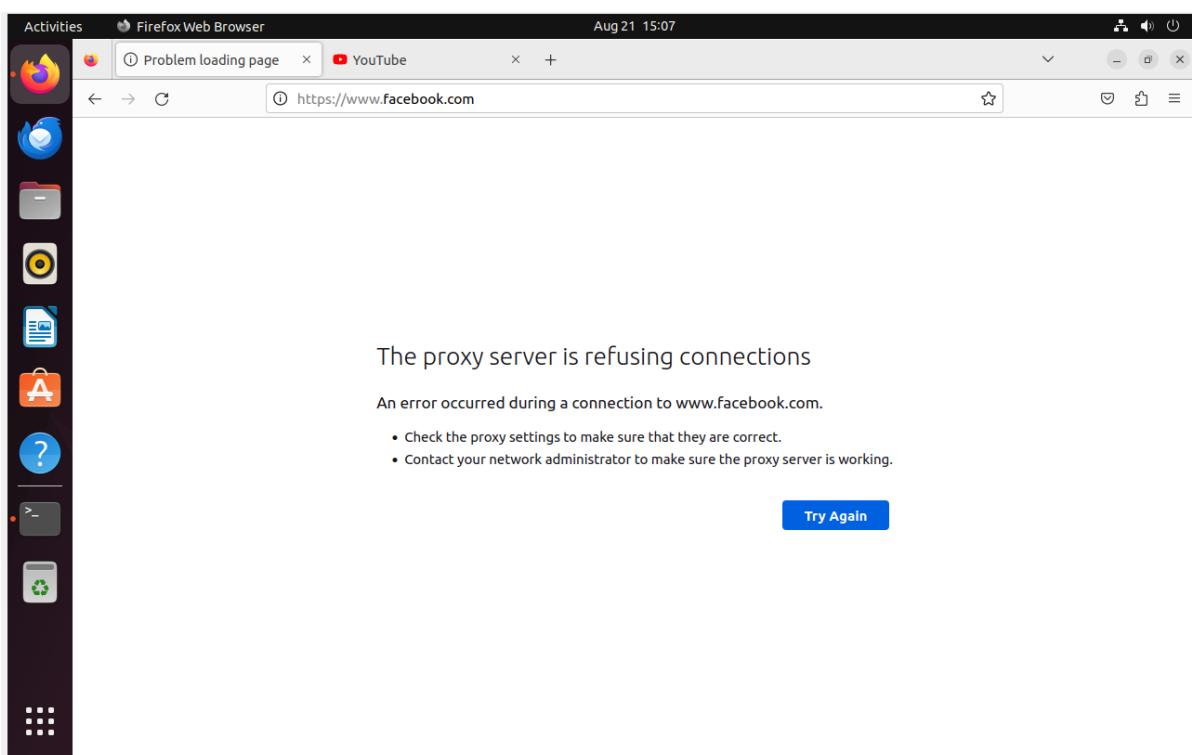
# TAG: http_reply_access
#     Allow replies to client requests. This is complementary to http_access.
```

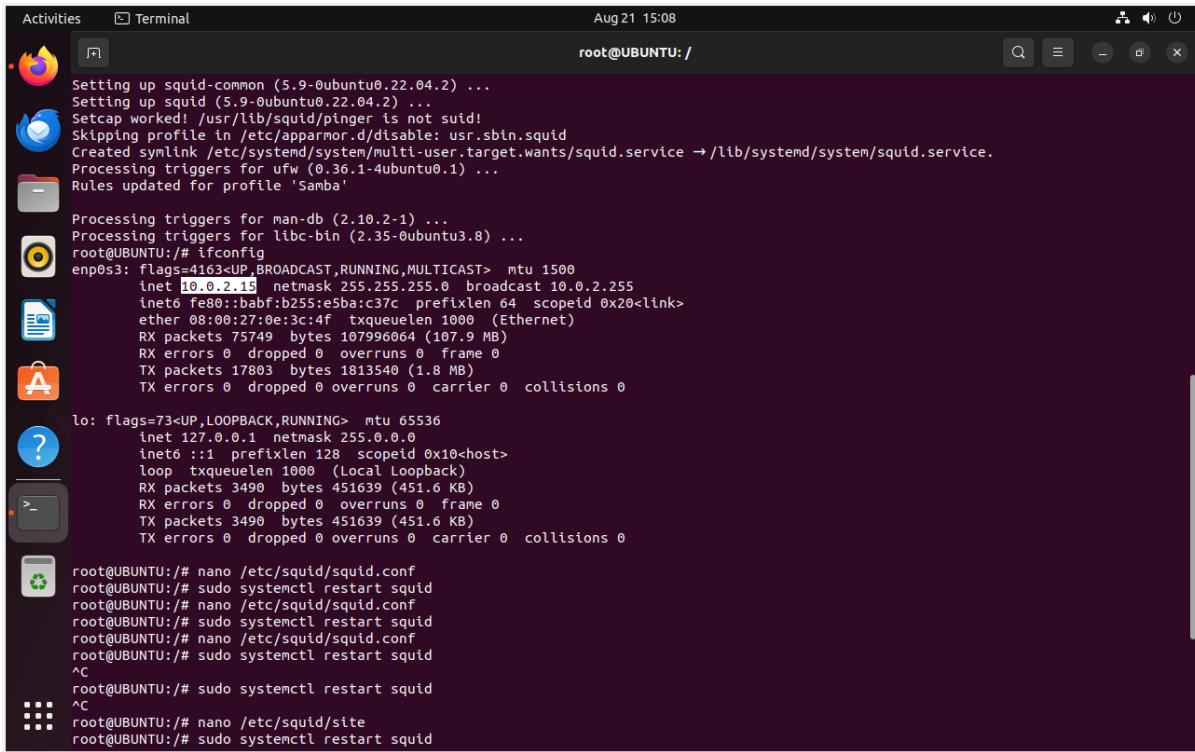
Activities Terminal Aug 21 14:50

root@UBUNTU:/ /etc/squid/site *

GNU nano 6.2 www.facebook.com

^C Help ^O Write Out ^W Where Is ^K Cut ^T Execute ^C Location M-U Undo ^R Read File ^A Replace ^U Paste ^J Justify ^/ Go To Line M-E Redo ^? Set Mark ^M-A Copy ^M-6



A screenshot of a Ubuntu desktop environment. In the top left corner, there's a dock with icons for Dash, Home, Activities, Terminal, and others. A terminal window is open in the foreground, showing a root shell session. The terminal title bar says "root@UBUNTU:/". The terminal content shows the following command-line session:

```
Setting up squid-common (5.9-0ubuntu0.22.04.2) ...
Setting up squid (5.9-0ubuntu0.22.04.2) ...
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 (0.36.1-4ubuntu0.1) ...
Rules updated for profile 'Samba'

Processing triggers for man-db (2.10.2-1) ...
Processing triggers for libc-bin (2.35-0ubuntu3.8) ...
root@UBUNTU:/# ifconfig
enp0s3: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
    inet 10.0.2.15 netmask 255.255.255.0 broadcast 10.0.2.255
        inet6 fe80::babf:b255:esba:c37c prefixlen 64 scopeid 0x20<link>
            ether 08:00:27:0e:3c:4f txqueuelen 1000 (Ethernet)
            RX packets 75749 bytes 107996664 (107.9 MB)
            RX errors 0 dropped 0 overruns 0 frame 0
            TX packets 17803 bytes 1813540 (1.8 MB)
            TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

lo: flags=73<UP,LOOPBACK,RUNNING> mtu 65536
    inet 127.0.0.1 netmask 255.0.0.0
    inet6 ::1 prefixlen 128 scopeid 0x10<host>
        loop txqueuelen 1000 (Local Loopback)
        RX packets 3490 bytes 451639 (451.6 KB)
        RX errors 0 dropped 0 overruns 0 frame 0
        TX packets 3490 bytes 451639 (451.6 KB)
        TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

root@UBUNTU:/# nano /etc/squid/squid.conf
root@UBUNTU:/# sudo systemctl restart squid
root@UBUNTU:/# nano /etc/squid/squid.conf
root@UBUNTU:/# sudo systemctl restart squid
root@UBUNTU:/# nano /etc/squid/squid.conf
root@UBUNTU:/# sudo systemctl restart squid
^C
root@UBUNTU:/# sudo systemctl restart squid
^C
root@UBUNTU:/# nano /etc/squid/site
root@UBUNTU:/# sudo systemctl restart squid
```

Conclusion:

All the commands have been executed and the output has been obtained successfully.

5.SSH

Experiment: 5

Aim: Installation of Open SSH between two ubuntu machines.

Description:

Remote File Sharing using SSH

OpenSSH is a powerful collection of tools for the remote control of, and transfer of data between, networked computers. You will also learn about some of the configuration settings possible with the OpenSSH server application and how to change them on your Ubuntu system.

OpenSSH is a freely available version of the Secure Shell (SSH) protocol family of tools for remotely controlling, or transferring files between computers. Traditional tools used to accomplish these functions, such as telnet or rcp, are insecure and transmit the user's password in cleartext when used. OpenSSH provides a server daemon and client tools to facilitate secure, encrypted remote control and file transfer operations, effectively replacing the legacy tools.

Port No: 22

Package name: openssh-client

Configuration file: /etc/ssh/sshd_config

Procedure:

1. create two EC2 instance of ubuntu ssh client and ssh server
2. Create the password for the instance of ssh server by \$sudo passwd ubuntu
3. Now check whether the ssh server is running by the command \$sudo service ssh status
4. configure the sshd_config file by the following command \$sudo vim /etc/ssh/sshd_config and include the following changes
PasswordAuthentication yes , KbdInteractiveAuthentication no ,KerberosGetAFSToken no

5. Now check the status of the ssh server by the command \$sudo service ssh status
6. Now create a text file by the command \$touch text.txt
7. Now log in to the ssh_client and create a ssh_keygen by the command \$ssh_keygen
8. Now copy the ssh_keygen form the ssh_client \$ssh-copy-id
ubuntu@privateip
9. Now restart the client machine
10. Then connect to the ssh_server by ssh_client
11. then type ls you will be prompted with the screen with your text file which you have created

Result:

Launch an instance | EC2 | eu-north-1

eu-north-1.console.aws.amazon.com/ec2/home?region=eu-north-1#LaunchInstances:

aws Services Search [Alt+S]

EC2 Instances Launch an Instance

Launch an instance [Info](#)

Amazon EC2 allows you to create virtual machines, or instances, that run on the AWS Cloud. Quickly get started by following the simple steps below.

Name and tags [Info](#)

Name Add additional tags

Application and OS Images (Amazon Machine Image) [Info](#)

An AMI is a template that contains the software configuration (operating system, application server, and applications) required to launch your instance. Search or Browse for AMIs if you don't see what you are looking for below.

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Recent [Quick Start](#)

Amazon Linux macOS Ubuntu Windows Red Hat SUSE Li [Browse more AMIs](#)

Amazon Machine Image (AMI)

Ubuntu Server 24.04 LTS (HVM), SSD Volume Type [Free tier eligible](#)

Description
Ubuntu Server 24.04 LTS (HVM), EBS General Purpose (SSD) Volume Type. Support available from Canonical

Number of instances [Info](#)

Software Image (AMI)
Canonical, Ubuntu, 24.04, amd64... [read more](#)
ami-04cd91e49cb06165

Virtual server type (instance type)
t3.micro

Firewall (security group)
New security group

Storage (volumes)
1 volume(s) - 8 GiB

Free tier: In your first year includes 750 hours of t2.micro (or t3.micro in the Regions in which t2.micro is unavailable) instance usage on free tier AMIs per month, 750 hours of public IPv4 address usage per month, 30 GiB of EBS storage, 2 million I/Os, 1 GB of snapshots, and 100 GB of bandwidth to the internet.

Cancel [Launch instance](#) Review commands

Launch an instance | EC2 | eu-north-1

eu-north-1.console.aws.amazon.com/ec2/home?region=eu-north-1#LaunchInstances:

aws Services Search [Alt+S]

EC2 Instances Launch an Instance

Launch an instance [Info](#)

Amazon EC2 allows you to create virtual machines, or instances, that run on the AWS Cloud. Quickly get started by following the simple steps below.

Name and tags [Info](#)

Name Add additional tags

Application and OS Images (Amazon Machine Image) [Info](#)

An AMI is a template that contains the software configuration (operating system, application server, and applications) required to launch your instance. Search or Browse for AMIs if you don't see what you are looking for below.

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Recent [Quick Start](#)

Amazon Linux macOS Ubuntu Windows Red Hat SUSE Li [Browse more AMIs](#)

Amazon Machine Image (AMI)

Ubuntu Server 24.04 LTS (HVM), SSD Volume Type [Free tier eligible](#)

Description
Ubuntu Server 24.04 LTS (HVM), EBS General Purpose (SSD) Volume Type. Support available from Canonical

Number of instances [Info](#)

Software Image (AMI)
Canonical, Ubuntu, 24.04, amd64... [read more](#)
ami-04cd91e49cb06165

Virtual server type (instance type)
t3.micro

Firewall (security group)
New security group

Storage (volumes)
1 volume(s) - 8 GiB

Free tier: In your first year includes 750 hours of t2.micro (or t3.micro in the Regions in which t2.micro is unavailable) instance usage on free tier AMIs per month, 750 hours of public IPv4 address usage per month, 30 GiB of EBS storage, 2 million I/Os, 1 GB of snapshots, and 100 GB of bandwidth to the internet.

Cancel [Launch instance](#) Review commands

```

[+] ubuntu@ip-172-31-16-219:~ 
Microsoft Windows [Version 10.0-19045.4788]
(c) Microsoft Corporation. All rights reserved.

C:\Users\PC-1>cd Downloads

C:\Users\PC-1\Downloads>ssh -i "sshsERVER.pem" ubuntu@ec2-50-19-14-45.compute-1.amazonaws.com
The authenticity of host 'ec2-50-19-14-45.compute-1.amazonaws.com (50.19.14.45)' can't be established.
ECDSA key fingerprint is SHA256:JzqfZLjwvDgkQdLJyXWzGKtHmN8.
Are you sure you want to continue connecting (yes/no)? [FingerPrint]
Warning: Permanently added 'ec2-50-19-14-45.compute-1.amazonaws.com,50.19.14.45' (ECDSA) to the list of known hosts.

Welcome to Ubuntu 24.04 LTS (GNU/Linux 8.0.0-1022-aws x86_64)

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

System information as of Wed Sep 4 09:24:05 UTC 2024

System load: 0.82 Processes: 111
Usage of /: 22.8% of 6.71GB Users logged in: 0
Memory usage: 23% IPv4 address for enX0: 172.31.16.219
Swap usage: 0%

Expanded Security Maintenance for Applications is not enabled.

0 updates can be applied immediately.

Enable ESM Apps to receive additional future security updates.
See https://ubuntu.com/esm or run: sudo pro status

The list of available updates is more than a week old.
To check for new updates run: sudo apt update

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.

To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

ubuntu@ip-172-31-16-219:~$ sudo ssh passwd
ssh: could not resolve hostname passwd: Temporary failure in name resolution
ubuntu@ip-172-31-16-219:~$ sudo passwd ubuntu
New password:
Retype new password:
password updated successfully
ubuntu@ip-172-31-16-219:~$ sudo service ssh status
● ssh.service - OpenBSD Secure Shell server
  Loaded: loaded (/usr/lib/systemd/system/ssh.service; disabled; preset: enabled)
  Drop-In: /usr/lib/systemd/system/ssh.service.d
            └─ec2-instance-connect.conf
    Active: active (running) since Wed 2024-09-04 09:24:02 UTC; 1min 25s ago
      TriggeredBy: ● ssh.socket
      Docs: man:sshd(8)
      Main PID: 977 (sshd)
     Process: 976 ExecStartPre=/usr/sbin/sshd -t (code=exited, status=0/SUCCESS)
      Tasks: 1 (limit: 1100)
      Memory: 3.9M (peak: 4.4M)
      CPU: 27ms
      CGroup: /system.slice/ssh.service
              └─ 977 sshd: /usr/sbin/sshd -D -o AuthorizedKeysCommand /usr/share/ec2-instance-connect/eic_runAuthorizedKeysCommandUser ec2-instance-connect [listener] @ of 10-100 startups

Sep 04 09:24:01 ip-172-31-16-219 systemd[1]: Starting ssh.service - OpenBSD Secure Shell server...
Sep 04 09:24:01 ip-172-31-16-219 sshd[977]: Server listening on :: port 22.
Sep 04 09:24:02 ip-172-31-16-219 systemd[1]: Started ssh.service - OpenBSD Secure Shell server.
Sep 04 09:24:02 ip-172-31-16-219 sshd[977]: Accepted publickey for ubuntu from 103.135.95.46 port 54493 ssh2: RSA SHA256:i3iFMGw1QwpFAZpWZ4DNv3Nmz9w5+gjjUUSBSJTrKH
Sep 04 09:24:05 ip-172-31-16-219 sshd[979]: pam_unix(sshd:session): session opened for user ubuntu(uid=1000) by ubuntu(uid=0)
ubuntu@ip-172-31-16-219:~$ sudo vi /etc/ssh/sshd_config
ubuntu@ip-172-31-16-219:~$ sshd: /usr/sbin/sshd -D -o AuthorizedKeysCommand /usr/share/ec2-instance-connect/eic_runAuthorizedKeysCommandUser ec2-instance-connect [listener] @ of 10-100 startups

Sep 04 09:24:01 ip-172-31-16-219 systemd[1]: Starting ssh.service - OpenBSD Secure Shell server...
Sep 04 09:24:01 ip-172-31-16-219 sshd[977]: Server listening on :: port 22.
Sep 04 09:24:02 ip-172-31-16-219 systemd[1]: Started ssh.service - OpenBSD Secure Shell server.
Sep 04 09:24:02 ip-172-31-16-219 sshd[977]: Accepted publickey for ubuntu from 103.135.95.46 port 54493 ssh2: RSA SHA256:i3iFMGw1QwpFAZpWZ4DNv3Nmz9w5+gjjUUSBSJTrKH
Sep 04 09:24:05 ip-172-31-16-219 sshd[979]: pam_unix(sshd:session): session opened for user ubuntu(uid=1000) by ubuntu(uid=0)
ubuntu@ip-172-31-16-219:~$ touch test.txt
ubuntu@ip-172-31-16-219:~$
```

```
ubuntu@ip-172-31-16-219:~$ 
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.

To run a command as administrator (user "root"), use "sudo <command>".
see "man sudo_root" for details.

ubuntu@ip-172-31-16-219:~$ sudo ssh passwd
ssh: Could not resolve hostname passwd: Temporary failure in name resolution
ubuntu@ip-172-31-16-219:~$ sudo passwd ubuntu
New password:
Retype new password:
passwd: password updated successfully
ubuntu@ip-172-31-16-219:~$ sudo service ssh status
● ssh.service - OpenBSD Secure Shell server
   Loaded: loaded (/usr/lib/systemd/system/ssh.service; disabled; preset: enabled)
     Drop-In: /etc/systemd/system/ssh.service.d
               └─ec2-instance-connect.conf
     Active: active (running) since Wed 2024-09-04 09:24:02 UTC; 1min 25s ago
   TriggeredBy: ● sshd(8)
   Docs: man:sshd(8)
          man:sshd_config(5)
     Process: 977 ExecStartPre=/usr/sbin/sshd -t (code=exited, status=0/SUCCESS)
    Main PID: 1 (peak: 4.4M)
      Memory: 3.9M (peak: 4.4M)
         CPU: 27ms
        CGroup: /system.slice/ssh.service
                └─977   "sshd: /usr/sbin/sshd -D -o AuthorizedKeysCommand /usr/share/ec2-instance-connect/eic_runAuthorizedKeys %u %f -o AuthorizedKeysCommandUser ec2-instance-connect [listener] @ of 10-100 startups"

Sep 04 09:24:01 ip-172-31-16-219 systemd[1]: Starting ssh.service - OpenBSD Secure Shell server...
Sep 04 09:24:02 ip-172-31-16-219 sshd[977]: Server listening on :: port 22.
Sep 04 09:24:02 ip-172-31-16-219 systemd[1]: Started ssh.service - OpenBSD Secure Shell server.
Sep 04 09:24:05 ip-172-31-16-219 sshd[979]: Accepted publickey for ubuntu from 103.135.95.46 port 54493 ssh2: RSA SHA256:i3lFMGwlgwpfA2pwZ4DNv+3Nmz9dS+gjJUUSBS7rnKH
Sep 04 09:24:05 ip-172-31-16-219 sshd[979]: pam_unix(sshd:session): session opened for user ubuntu(uid=1000) by ubuntu(uid=0)
ubuntu@ip-172-31-16-219:~$ sudo vi /etc/ssh/sshd_config
ubuntu@ip-172-31-16-219:~$ sudo service ssh status
● ssh.service - OpenBSD Secure Shell server
   Loaded: loaded (/usr/lib/systemd/system/ssh.service; disabled; preset: enabled)
     Drop-In: /etc/systemd/system/ssh.service.d
               └─ec2-instance-connect.conf
     Active: active (running) since Wed 2024-09-04 09:24:02 UTC; 4min 5s ago
   TriggeredBy: ● sshd(8)
   Docs: man:sshd(8)
          man:sshd_config(5)
     Process: 977 ExecStartPre=/usr/sbin/sshd -t (code=exited, status=0/SUCCESS)
    Main PID: 1 (peak: 4.4M)
      Memory: 3.9M (peak: 4.4M)
         CPU: 27ms
        CGroup: /system.slice/ssh.service
                └─977   "sshd: /usr/sbin/sshd -D -o AuthorizedKeysCommand /usr/share/ec2-instance-connect/eic_runAuthorizedKeys %u %f -o AuthorizedKeysCommandUser ec2-instance-connect [listener] @ of 10-100 startups"

Sep 04 09:24:01 ip-172-31-16-219 systemd[1]: Starting ssh.service - OpenBSD Secure Shell server...
Sep 04 09:24:02 ip-172-31-16-219 sshd[977]: Server listening on :: port 22.
Sep 04 09:24:02 ip-172-31-16-219 systemd[1]: Started ssh.service - OpenBSD Secure Shell server.
Sep 04 09:24:05 ip-172-31-16-219 sshd[979]: Accepted publickey for ubuntu from 103.135.95.46 port 54493 ssh2: RSA SHA256:i3lFMGwlgwpfA2pwZ4DNv+3Nmz9dS+gjJUUSBS7rnKH
Sep 04 09:24:05 ip-172-31-16-219 sshd[979]: pam_unix(sshd:session): session opened for user ubuntu(uid=1000) by ubuntu(uid=0)
ubuntu@ip-172-31-16-219:~$ touch text
ubuntu@ip-172-31-16-219:~$
```

Ubuntu 24.04 LTS - 64-bit (x86_64)

Type here to search     

30°C Partly sunny 15:13 ENG 04-09-2024

```
[~] shuru@ip-172-31-89-204 ~
[~] cd Downloads
[~] ls
client.pem
[~] ssh -i "client.pem" ubuntu@ec2-54-163-195-217.compute-1.amazonaws.com
[~] Documentation: https://help.ubuntu.com
[~] Management: https://landscape.canonical.com
[~] Support: https://ubuntu.com/pro
[~] System information as of Wed Sep 4 09:31:37 UTC 2024
[~] System load: 0.0 Processes: 195
[~] Usage of /: 22.9% of 6.71GB Users logged in: 0
[~] Memory usage: 19% IPv4 address for enX8: 172.31.89.204
[~] Swap usage: 0%
[~] expanded Security Maintenance for Applications is not enabled.
[~] Updates can be applied immediately.
[~] Enable ESM Apps to receive additional future security updates.
[~] See https://ubuntu.com/esm or run: sudo pro status

[~] The list of available updates is more than a week old.
[~] To check for new updates run: sudo apt update
[~] Last login: Wed Sep 4 09:21:58 2024 from 103.135.95.46
[~] To run commands as administrator (use "root"), use "sudo <command>".
[~] See "man sudo root" for details.

[~] ssh -i "client.pem" ubuntu
[~] command 'ssh_kexgen' not found, did you mean:
[~]   command 'ssh-keygen' from deb openssh-client (1:9.6p1-0ubuntu13.4)
[~] Try: sudo apt install <deb name>
[~] Generating public/private ed25519 key pair.
[~] Enter file in which to save the key (/home/ubuntu/.ssh/id_ed25519):
[~] Enter passphrase (empty for no passphrase):
[~] Your identification has been saved in /home/ubuntu/.ssh/id_ed25519.
[~] Your public key has been saved in /home/ubuntu/.ssh/id_ed25519.pub
[~] The key fingerprint is:
[~] SHA256:JzqQd2ZkDwzJyoplGMrarbflJlygI1lQsmPExS ubuntu@ip-172-31-89-204
[~] The key's randomart image is:
[~] (ED05519 256) ->
[~] +----+ . . .
[~] | . ooo |
[~] | . Eoo .o |
[~] | . + o .o .. |
[~] | . o . . . . |
[~] | . . . . . . |
[~] | . . . . . . |
[~] | . . . . . . |
[~] | . . . . . . |
[~] | . . . . . . |
[~] [SHA256]-----
```

29°C Partly sunny ENG 04-09-2024

```
ssh ubuntu@ip-172-31-16-219 ~
#Include /etc/ssh/sshd_config.d/*.conf

#Port 22
#AddressFamily any
#ListenAddress 0.0.0.0
#ListenAddress ::

#HostKey /etc/ssh/ssh_host_rsa_key
#HostKey /etc/ssh/ssh_host_ecdsa_key
#HostKey /etc/ssh/ssh_host_ed25519_key

# Ciphers and keying
#RekeyLimit default none

# Logging
#SyslogFacility AUTH
#LogLevel INFO

# Authentication:

#LoginGraceTime 2m
#PermitRootLogin without-password
#StrictModes yes
#MaxAuthTries 6
#MaxSessions 10

#PubkeyAuthentication yes

# 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
# the rest of this file. We recommend you set it to no.
#IgnoreUnknownHosts 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
#PermitEmptyPasswords no

# Change to yes to enable challenge-response passwords (beware issues with
# some PAM modules and threads)
#KbdInteractiveAuthentication no

# Kerberos options
#KerberosAuthentication no
#KerberosOrLocalPasswd yes
#KerberosTicketCleanup yes
#KerberosGetAFSToken no

# GSSAPI options
#GSSAPIAuthentication no
#GSSAPICleanupCredentials yes
#GSSAPIStrictcreds yes
# /etc/ssh/sshd_config 122L, 32558

# Type here to search
                                            68,1 18% 29°C Party sunny 29°C Party sunny 04-09-2024 04-09-2024

ubuntu@ip-172-31-16-219 ~
/usr/bin/ssh-copy-id: INFO: attempting to log in with the new key(s), to filter out any that are already installed
/usr/bin/ssh-copy-id: INFO: 1 key(s) remain to be installed -- if you are prompted now it is to install the new keys
ubuntu@ip-172-31-89-204:~$ ssh-copy-id ed25519 ubuntu@ip-172-31-89-204
ssh-copy-id: E025519: command not found
ubuntu@ip-172-31-89-204:~$ ssh-copy-id ed25519 ubuntu@ip-172-31-89-204
ubuntu@ip-172-31-89-204:~$ ssh-copy-id ed25519 ubuntu@ip-172-31-16-219
/usr/bin/ssh-copy-id: INFO: Source of key(s) to be installed: "/home/ubuntu/.ssh/id_ed25519.pub"
The authenticity of host 'ip-172-31-16-219 (172.31.16.219)' can't be established.
ED25519 key fingerprint is SHA256:0x435c48435c48435c48435c48435c4843.
This key is not known by any other names.
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
ubuntu@ip-172-31-16-219:~$ ssh-copy-id ed25519 ubuntu@ip-172-31-16-219
/usr/bin/ssh-copy-id: INFO: Source of key(s) to be installed: "/home/ubuntu/.ssh/id_ed25519.pub"
ubuntu@ip-172-31-16-219:~$ ssh-copy-id ed25519 ubuntu@ip-172-31-16-219
/usr/bin/ssh-copy-id: INFO: attempting to log in with the new key(s), to filter out any that are already installed
/usr/bin/ssh-copy-id: WARNING: All keys were skipped because they already exist on the remote system.
(if you think this is a mistake, you may want to use -f option)

ubuntu@ip-172-31-89-204:~$ ls
ubuntu@ip-172-31-89-204:~$ ls
ubuntu@ip-172-31-89-204:~$ ls
ubuntu@ip-172-31-89-204:~$ ssh ubuntu@ip-172-31-16-219
welcome to Ubuntu 24.04 LTS (GNU/Linux 6.0.0-1012-aws x86_64)

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

System information as of Wed Sep 4 10:30:30 UTC 2024

System load: 0.0 Processes: 122
Usage of /: 23.1% of 6.71GB Users logged in: 1
Memory usage: 34% IPv4 address for enx0: 172.31.16.219
Swap usage: 0%
```

```
Ubuntu@ip-172-31-16-219:~$ sudo service ssh status
Unit ssh.service could not be found.
Ubuntu@ip-172-31-16-219:~$ sudo service ssh status
● ssh.service - OpenBSD Secure Shell server
   Loaded: loaded (/usr/lib/systemd/system/ssh.service; disabled; preset: enabled)
     Drop-In: /usr/lib/systemd/system/ssh.service.d
               └─ec2-instance-connect.conf
     Active: inactive (dead) since Wed 2024-09-04 09:24:02 UTC; 52min ago
       Docs: man:sshd(8)
     TriggeredBy: ● ssh.socket
   Main PID: 977 (sshd)
      Tasks: 1 (limit: 1180)
        CPU: 39ms
       CGroup: /system.slice/ssh.service
               └─977 "sshd: /usr/sbin/sshd -D -o AuthorizedKeyCommand /usr/share/ec2-instance-connect/ec2_runAuthorizedKeys %u %f -o AuthorizedKeyCommand user ec2-instance-connect [listener] @ of 10-100 startups"

Sep 04 09:24:01 ip-172-31-16-219 systemd[1]: Starting ssh.service - OpenBSD Secure Shell server...
Sep 04 09:24:02 ip-172-31-16-219 sshd[977]: Server listening on :: port 22
Sep 04 09:24:02 ip-172-31-16-219 sshd[977]: Accepted RSA publickey for root from 103.135.95.46 port 54493 ssh2: RSA SHA256:131fFMGuLGwpfAzpWZ4DNv+3Nmz9wS+gjJUUSBSJTrKQ
Sep 04 09:24:05 ip-172-31-16-219 sshd[979]: Accepted publickey for root from 103.135.95.46 port 54493 ssh2: RSA SHA256:131fFMGuLGwpfAzpWZ4DNv+3Nmz9wS+gjJUUSBSJTrKQ
Sep 04 09:24:05 ip-172-31-16-219 sshd[979]: pam_unix(sshd:session): session opened for user root(uid=0) by root(uid=0)
Sep 04 10:06:21 ip-172-31-16-219 sshd[1223]: banner exchange: Connection from 64.62.197.221 port 27973 to my host format
Sep 04 10:15:14 ip-172-31-16-219 sshd[1244]: pam_unix(sshd:session): session opened for user root(uid=0) by root(uid=0)
Sep 04 10:15:14 ip-172-31-16-219 sshd[1244]: pam_unix(sshd:session): session opened for user root(uid=0) by root(uid=0)

Ubuntu@ip-172-31-16-219:~$ sudo vim /etc/ssh/sshd_config
Ubuntu@ip-172-31-16-219:~$ sudo vim /etc/ssh/sshd_config
[1]+  Stopped                  sudo vim /etc/ssh/sshd_config
Ubuntu@ip-172-31-16-219:~$ sudo vim /etc/ssh/sshd_config
[2]+  Stopped                  sudo vim /etc/ssh/sshd_config
Ubuntu@ip-172-31-16-219:~$ ls
restart test.txt
Ubuntu@ip-172-31-16-219:~$ touch txt.txt
Ubuntu@ip-172-31-16-219:~$ sudo vim /etc/ssh/sshd_config
Ubuntu@ip-172-31-16-219:~$ sudo service ssh restart
Ubuntu@ip-172-31-16-219:~$ ls
restart test.txt txt.txt
Ubuntu@ip-172-31-16-219:~$
```

Conclusion: All the commands have been executed and the output has been obtained successfully.