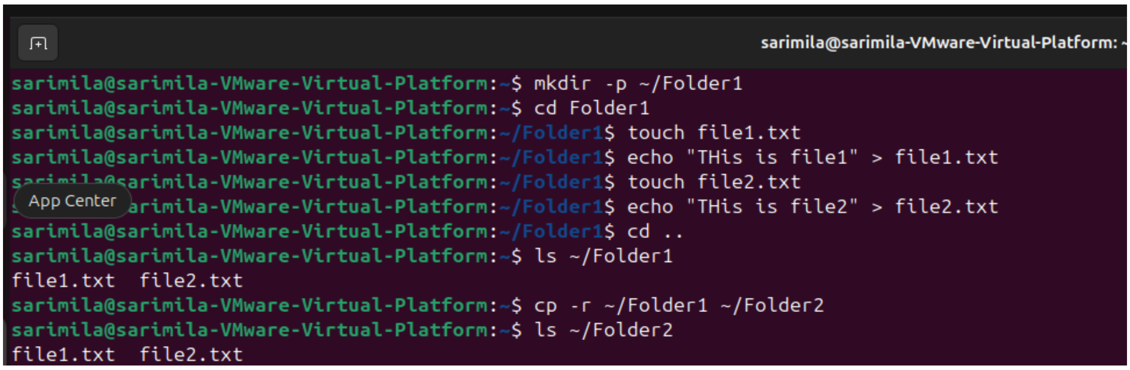
1. Consider a case, a folder has multiple files and how would copy it to destination machine path (Try using SCP, cp options in Linux)

Cp is used when both source and destination folders are on the same machine

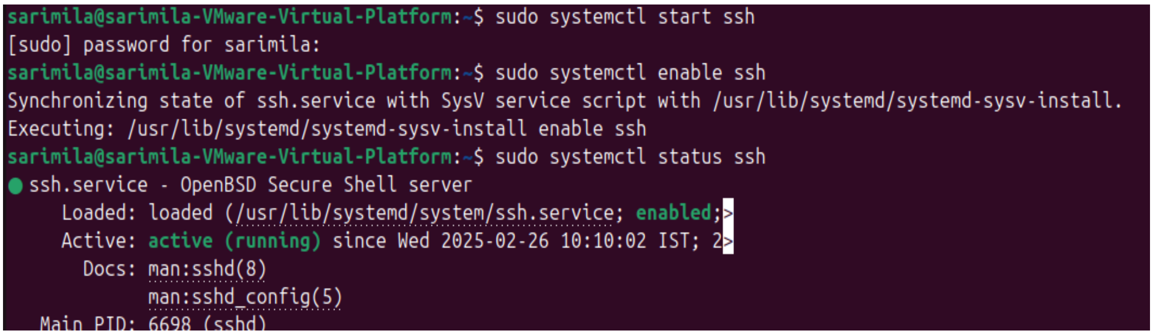
Cp -r ~/Folder1 ~/Folder2



```
sarimila@sarimila-VMware-Virtual-Platform: ~
sarimila@sarimila-VMware-Virtual-Platform:~$ mkdir -p ~/Folder1
sarimila@sarimila-VMware-Virtual-Platform:~$ cd Folder1
sarimila@sarimila-VMware-Virtual-Platform:~/Folder1$ touch file1.txt
sarimila@sarimila-VMware-Virtual-Platform:~/Folder1$ echo "THis is file1" > file1.txt
sarimila@sarimila-VMware-Virtual-Platform:~/Folder1$ touch file2.txt
s App Center arimila-VMware-Virtual-Platform:~/Folder1$ echo "THis is file2" > file2.txt
sarimila@sarimila-VMware-Virtual-Platform:~/Folder1$ cd ..
sarimila@sarimila-VMware-Virtual-Platform:~$ ls ~/Folder1
file1.txt  file2.txt
sarimila@sarimila-VMware-Virtual-Platform:~$ cp -r ~/Folder1 ~/Folder2
sarimila@sarimila-VMware-Virtual-Platform:~$ ls ~/Folder2
file1.txt  file2.txt
```

scp is used when we want to copy the folder from our VMware machine to another Linux system.

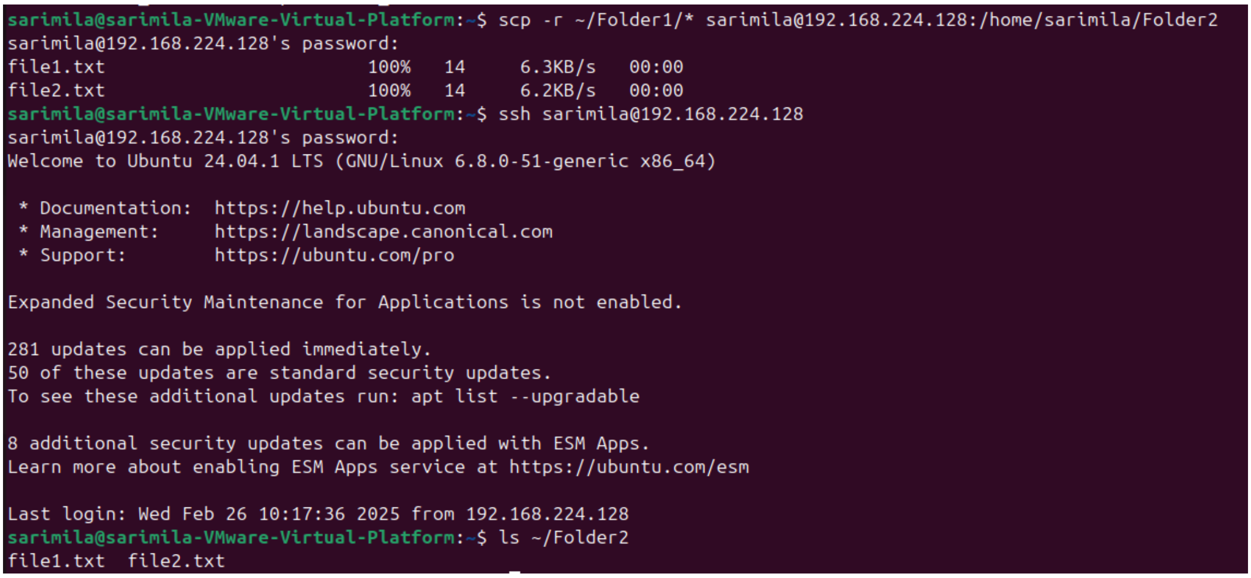
Ensure SSH is Enabled on the Destination. Here ssh status is Active



```
sarimila@sarimila-VMware-Virtual-Platform:~$ sudo systemctl start ssh
[sudo] password for sarimila:
sarimila@sarimila-VMware-Virtual-Platform:~$ sudo systemctl enable ssh
Synchronizing state of ssh.service with SysV service script with /usr/lib/systemd/systemd-sysv-install.
Executing: /usr/lib/systemd/systemd-sysv-install enable ssh
sarimila@sarimila-VMware-Virtual-Platform:~$ sudo systemctl status ssh
● ssh.service - OpenBSD Secure Shell server
     Loaded: loaded (/usr/lib/systemd/system/ssh.service; enabled;>
     Active: active (running) since Wed 2025-02-26 10:10:02 IST; 2>
       Docs: man:sshd(8)
             man:sshd_config(5)
   Main PID: 6698 (sshd)
```

Copy the Folder1 to the Destination(Folder2)

scp -r ~/Folder1/* sarimila@192.168.224.128:/home/sarimila/Folder2



```
sarimila@sarimila-VMware-Virtual-Platform:~$ scp -r ~/Folder1/* sarimila@192.168.224.128:/home/sarimila/Folder2
sarimila@192.168.224.128's password:
file1.txt                        100%   14     6.3KB/s   00:00
file2.txt                        100%   14     6.2KB/s   00:00
sarimila@sarimila-VMware-Virtual-Platform:~$ ssh sarimila@192.168.224.128
sarimila@192.168.224.128's password:
Welcome to Ubuntu 24.04.1 LTS (GNU/Linux 6.8.0-51-generic x86_64)

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

Expanded Security Maintenance for Applications is not enabled.

281 updates can be applied immediately.
50 of these updates are standard security updates.
To see these additional updates run: apt list --upgradable

8 additional security updates can be applied with ESM Apps.
Learn more about enabling ESM Apps service at https://ubuntu.com/esm

Last login: Wed Feb 26 10:17:36 2025 from 192.168.224.128
sarimila@sarimila-VMware-Virtual-Platform:~$ ls ~/Folder2
file1.txt  file2.txt
```

2.Host a FTP and SFTP server and try PUT and GET operations.

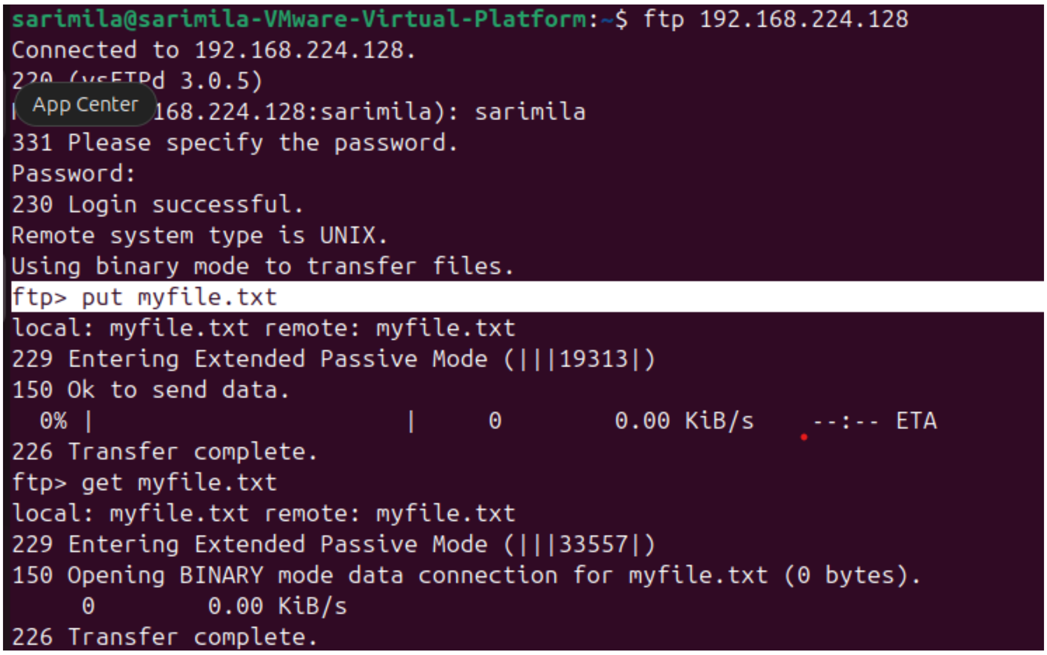
FTP

sudo apt update && sudo apt install vsftpd -y

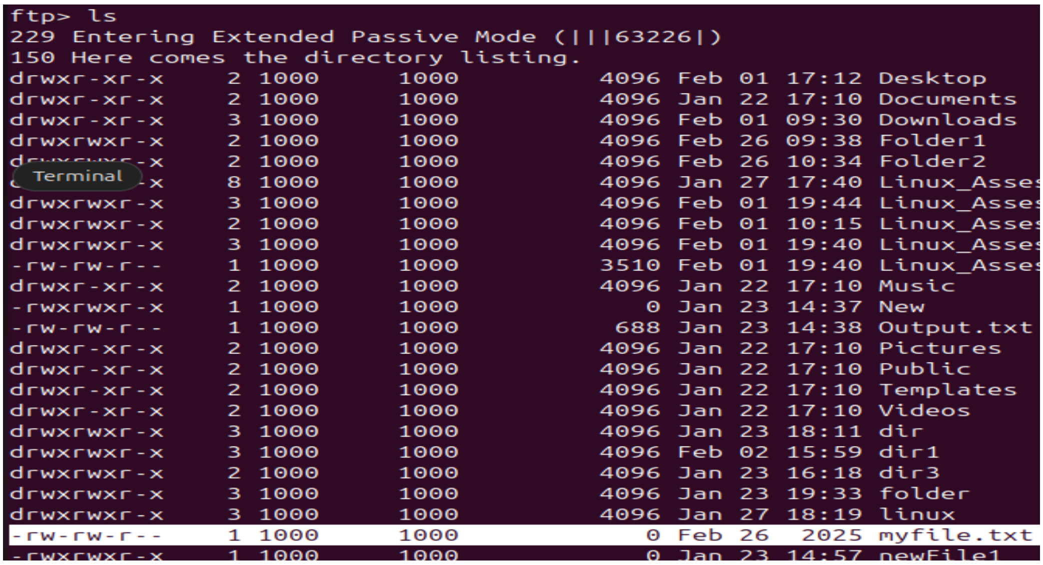
sudo systemctl start vsftpd

sudo systemctl enable vsftpd

sudo systemctl status vsftpd



```
sarimila@sarimila-VMware-Virtual-Platform:~$ ftp 192.168.224.128
Connected to 192.168.224.128.
220 (vsFTPd 3.0.5)
|          168.224.128:sarimila): sarimila
331 Please specify the password.
Password:
230 Login successful.
Remote system type is UNIX.
Using binary mode to transfer files.
ftp> put myfile.txt
local: myfile.txt remote: myfile.txt
229 Entering Extended Passive Mode (|||19313|)
150 Ok to send data.
  0% |                     |     0        0.00 KiB/s    --:-- ETA
226 Transfer complete.
ftp> get myfile.txt
local: myfile.txt remote: myfile.txt
229 Entering Extended Passive Mode (|||33557|)
150 Opening BINARY mode data connection for myfile.txt (0 bytes).
     0        0.00 KiB/s
226 Transfer complete.
```

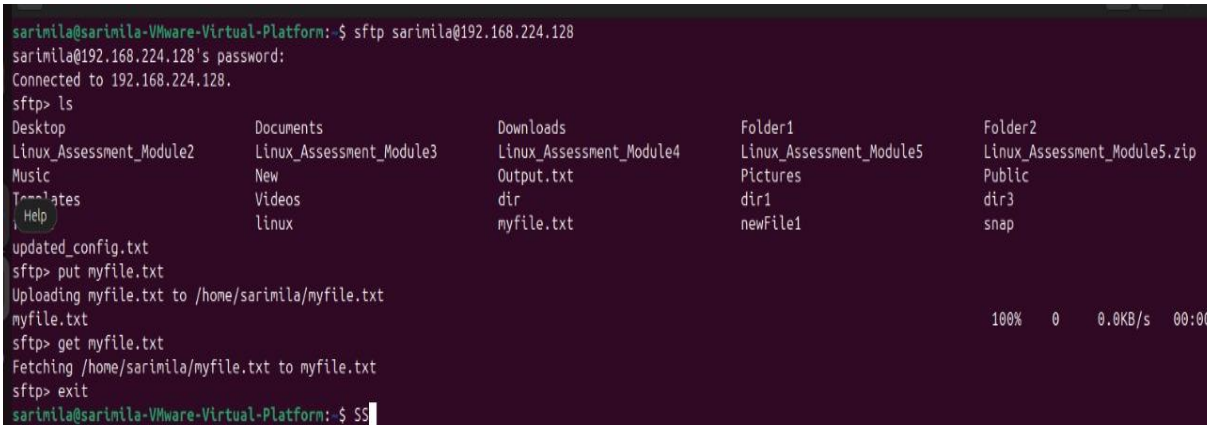


```
ftp> ls
229 Entering Extended Passive Mode (|||63226|)
150 Here comes the directory listing.
drwxr-xr-x    2 1000     1000         4096 Feb 01 17:12 Desktop
drwxr-xr-x    2 1000     1000         4096 Jan 22 17:10 Documents
drwxr-xr-x    3 1000     1000         4096 Feb 01 09:30 Downloads
drwxrwxr-x    2 1000     1000         4096 Feb 26 09:38 Folder1
d        -x    2 1000     1000         4096 Feb 26 10:34 Folder2
          x    8 1000     1000         4096 Jan 27 17:40 Linux_Asse
drwxrwxr-x    3 1000     1000         4096 Feb 01 19:44 Linux_Asse
drwxrwxr-x    2 1000     1000         4096 Feb 01 10:15 Linux_Asse
drwxrwxr-x    3 1000     1000         4096 Feb 01 19:40 Linux_Asse
-rw-rw-r--    1 1000     1000         3510 Feb 01 19:40 Linux_Asse
drwxr-xr-x    2 1000     1000         4096 Jan 22 17:10 Music
-rwxrwxr-x    1 1000     1000            0 Jan 23 14:37 New
-rw-rw-r--    1 1000     1000          688 Jan 23 14:38 Output.txt
drwxr-xr-x    2 1000     1000         4096 Jan 22 17:10 Pictures
drwxr-xr-x    2 1000     1000         4096 Jan 22 17:10 Public
drwxr-xr-x    2 1000     1000         4096 Jan 22 17:10 Templates
drwxr-xr-x    2 1000     1000         4096 Jan 22 17:10 Videos
drwxrwxr-x    3 1000     1000         4096 Jan 23 18:11 dir
drwxrwxr-x    3 1000     1000         4096 Feb 02 15:59 dir1
drwxrwxr-x    2 1000     1000         4096 Jan 23 16:18 dir3
drwxrwxr-x    3 1000     1000         4096 Jan 23 19:33 folder
drwxrwxr-x    3 1000     1000         4096 Jan 27 18:19 linux
-rw-rw-r--    1 1000     1000            0 Feb 26  2025 myfile.txt
-rwxrwxr-x    1 1000     1000            0 Jan 23 14:57 newFile1
```

SFTP

sudo apt update && sudo apt install openssh-server -y

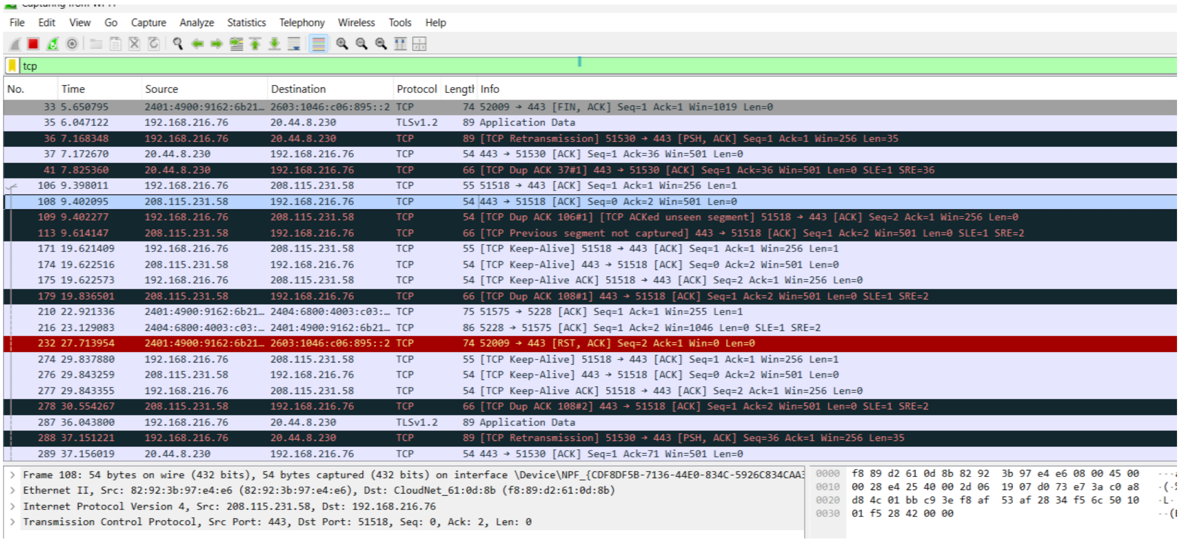
sudo systemctl status ssh



```
sarimila@sarimila-VMware-Virtual-Platform:~$ sftp sarimila@192.168.224.128
sarimila@192.168.224.128's password:
Connected to 192.168.224.128.
sftp> ls
Desktop                     Documents                   Downloads                   Folder1                     Folder2
Linux_Assessment_Module2    Linux_Assessment_Module3    Linux_Assessment_Module4    Linux_Assessment_Module5    Linux_Assessment_Module5.zip
Music                       New                         Output.txt                  Pictures                    Public
Templates                   Videos                      dir                         dir1                        dir3
                            linux                       myfile.txt                  newFile1                    snap
updated_config.txt
sftp> put myfile.txt
Uploading myfile.txt to /home/sarimila/myfile.txt
myfile.txt                                                                                             100%    0     0.0KB/s   00:0
sftp> get myfile.txt
Fetching /home/sarimila/myfile.txt to myfile.txt
sftp> exit
sarimila@sarimila-VMware-Virtual-Platform:~$ SS
```

3. Explore with Wireshark/TCP-dump/cisco packet tracer tools and learn about packets filters.

Capturing tcp packets



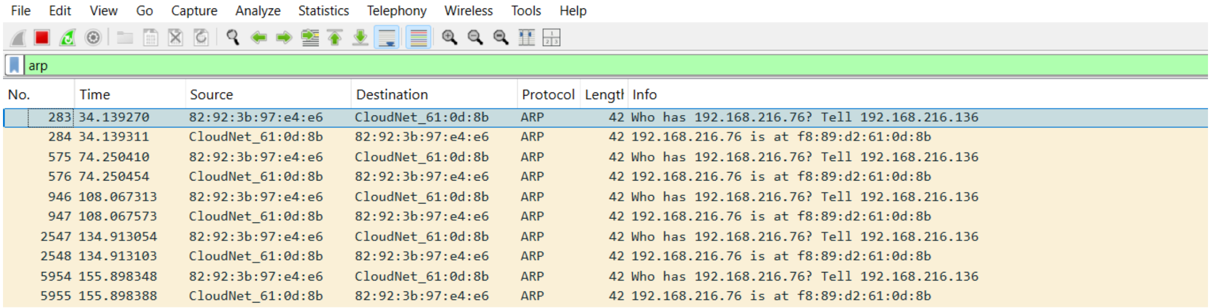
tcp

No.	Time	Source	Destination	Protocol	Lengtl	Info
33	5.650795	2401:4900:9162:6b21…	2603:1046:c06:895::2	TCP	74	52009 → 443 [FIN, ACK] Seq=1 Ack=1 Win=1019 Len=0
35	6.047122	192.168.216.76	20.44.8.230	TLSv1.2	89	Application Data
36	7.168348	192.168.216.76	20.44.8.230	TCP	89	[TCP Retransmission] 51530 → 443 [PSH, ACK] Seq=1 Ack=1 Win=256 Len=35
37	7.172670	20.44.8.230	192.168.216.76	TCP	54	443 → 51530 [ACK] Seq=1 Ack=36 Win=501 Len=0
41	7.825360	20.44.8.230	192.168.216.76	TCP	66	[TCP Dup ACK 37#1] 443 → 51530 [ACK] Seq=1 Ack=36 Win=501 Len=0 SLE=1 SRE=36
106	9.398011	192.168.216.76	208.115.231.58	TCP	55	51518 → 443 [ACK] Seq=1 Ack=1 Win=256 Len=1
108	9.402095	208.115.231.58	192.168.216.76	TCP	54	443 → 51518 [ACK] Seq=0 Ack=2 Win=501 Len=0
109	9.402277	192.168.216.76	208.115.231.58	TCP	54	[TCP Dup ACK 106#1] [TCP ACKed unseen segment] 51518 → 443 [ACK] Seq=2 Ack=1 Win=256 Len=0
113	9.614147	208.115.231.58	192.168.216.76	TCP	66	[TCP Previous segment not captured] 443 → 51518 [ACK] Seq=1 Ack=2 Win=501 Len=0 SLE=1 SRE=2
171	19.621409	192.168.216.76	208.115.231.58	TCP	55	[TCP Keep-Alive] 51518 → 443 [ACK] Seq=1 Ack=1 Win=256 Len=1
174	19.622516	208.115.231.58	192.168.216.76	TCP	54	[TCP Keep-Alive] 443 → 51518 [ACK] Seq=0 Ack=2 Win=501 Len=0
175	19.622573	192.168.216.76	208.115.231.58	TCP	54	[TCP Keep-Alive ACK] 51518 → 443 [ACK] Seq=2 Ack=1 Win=256 Len=0
179	19.836501	208.115.231.58	192.168.216.76	TCP	66	[TCP Dup ACK 108#1] 443 → 51518 [ACK] Seq=1 Ack=2 Win=501 Len=0 SLE=1 SRE=2
210	22.921336	2401:4900:9162:6b21…	2404:6800:4003:c03:…	TCP	75	51575 → 5228 [ACK] Seq=1 Ack=1 Win=255 Len=1
216	23.129083	2404:6800:4003:c03:…	2401:4900:9162:6b21…	TCP	86	5228 → 51575 [ACK] Seq=1 Ack=2 Win=1046 Len=0 SLE=1 SRE=2
232	27.713954	2401:4900:9162:6b21…	2603:1046:c06:895::2	TCP	74	52009 → 443 [RST, ACK] Seq=2 Ack=1 Win=0 Len=0
274	29.837880	192.168.216.76	208.115.231.58	TCP	55	[TCP Keep-Alive] 51518 → 443 [ACK] Seq=1 Ack=1 Win=256 Len=1
276	29.843259	208.115.231.58	192.168.216.76	TCP	54	[TCP Keep-Alive] 443 → 51518 [ACK] Seq=0 Ack=2 Win=501 Len=0
277	29.843355	192.168.216.76	208.115.231.58	TCP	54	[TCP Keep-Alive ACK] 51518 → 443 [ACK] Seq=2 Ack=1 Win=256 Len=0
278	30.554267	208.115.231.58	192.168.216.76	TCP	66	[TCP Dup ACK 108#2] 443 → 51518 [ACK] Seq=1 Ack=2 Win=501 Len=0 SLE=1 SRE=2
287	36.043800	192.168.216.76	20.44.8.230	TLSv1.2	89	Application Data
288	37.151221	192.168.216.76	20.44.8.230	TCP	89	[TCP Retransmission] 51530 → 443 [PSH, ACK] Seq=36 Ack=1 Win=256 Len=35
289	37.156019	20.44.8.230	192.168.216.76	TCP	54	443 → 51530 [ACK] Seq=1 Ack=71 Win=501 Len=0

```
> Frame 108: 54 bytes on wire (432 bits), 54 bytes captured (432 bits) on interface \Device\NPF_{CDF8DF5B-7136-44E0-834C-5926C834CAA
> Ethernet II, Src: 82:92:3b:97:e4:e6 (82:92:3b:97:e4:e6), Dst: CloudNet_61:0d:8b (f8:89:d2:61:0d:8b)
> Internet Protocol Version 4, Src: 208.115.231.58, Dst: 192.168.216.76
> Transmission Control Protocol, Src Port: 443, Dst Port: 51518, Seq: 0, Ack: 2, Len: 0
```

```
0000  f8 89 d2 61 0d 8b 82 92  3b 97 e4 e6 08 00 45 00
0010  00 28 e4 25 40 00 2d 06  19 07 d0 73 e7 3a c0 a8
0020  d8 4c 01 bb c9 3e f8 af  53 af 28 34 f5 6c 50 10
0030  01 f5 28 42 00 00
```

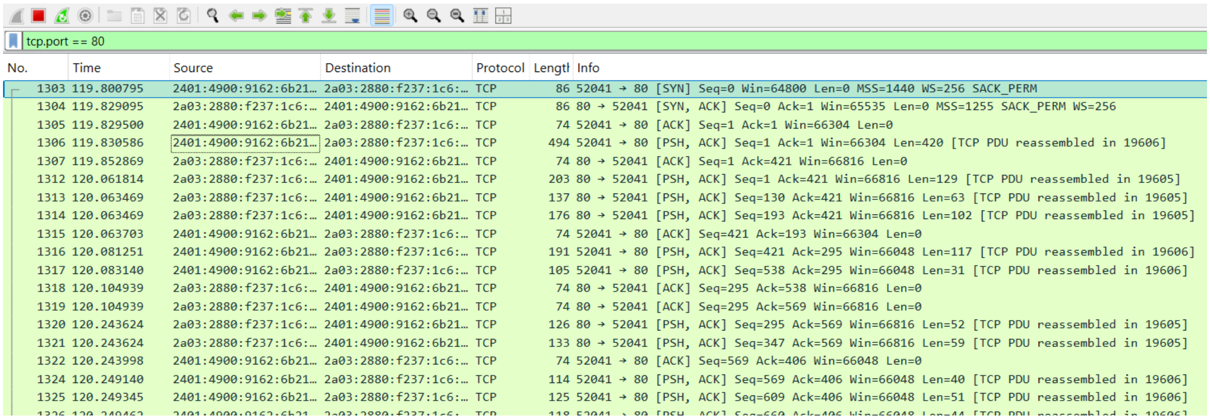
Capturing arp packets



arp

No.	Time	Source	Destination	Protocol	Lengtl	Info
283	34.139270	82:92:3b:97:e4:e6	CloudNet_61:0d:8b	ARP	42	Who has 192.168.216.76? Tell 192.168.216.136
284	34.139311	CloudNet_61:0d:8b	82:92:3b:97:e4:e6	ARP	42	192.168.216.76 is at f8:89:d2:61:0d:8b
575	74.250410	82:92:3b:97:e4:e6	CloudNet_61:0d:8b	ARP	42	Who has 192.168.216.76? Tell 192.168.216.136
576	74.250454	CloudNet_61:0d:8b	82:92:3b:97:e4:e6	ARP	42	192.168.216.76 is at f8:89:d2:61:0d:8b
946	108.067313	82:92:3b:97:e4:e6	CloudNet_61:0d:8b	ARP	42	Who has 192.168.216.76? Tell 192.168.216.136
947	108.067573	CloudNet_61:0d:8b	82:92:3b:97:e4:e6	ARP	42	192.168.216.76 is at f8:89:d2:61:0d:8b
2547	134.913054	82:92:3b:97:e4:e6	CloudNet_61:0d:8b	ARP	42	Who has 192.168.216.76? Tell 192.168.216.136
2548	134.913103	CloudNet_61:0d:8b	82:92:3b:97:e4:e6	ARP	42	192.168.216.76 is at f8:89:d2:61:0d:8b
5954	155.898348	82:92:3b:97:e4:e6	CloudNet_61:0d:8b	ARP	42	Who has 192.168.216.76? Tell 192.168.216.136
5955	155.898388	CloudNet_61:0d:8b	82:92:3b:97:e4:e6	ARP	42	192.168.216.76 is at f8:89:d2:61:0d:8b

tcp.port = = 80   Show only HTTP packets.

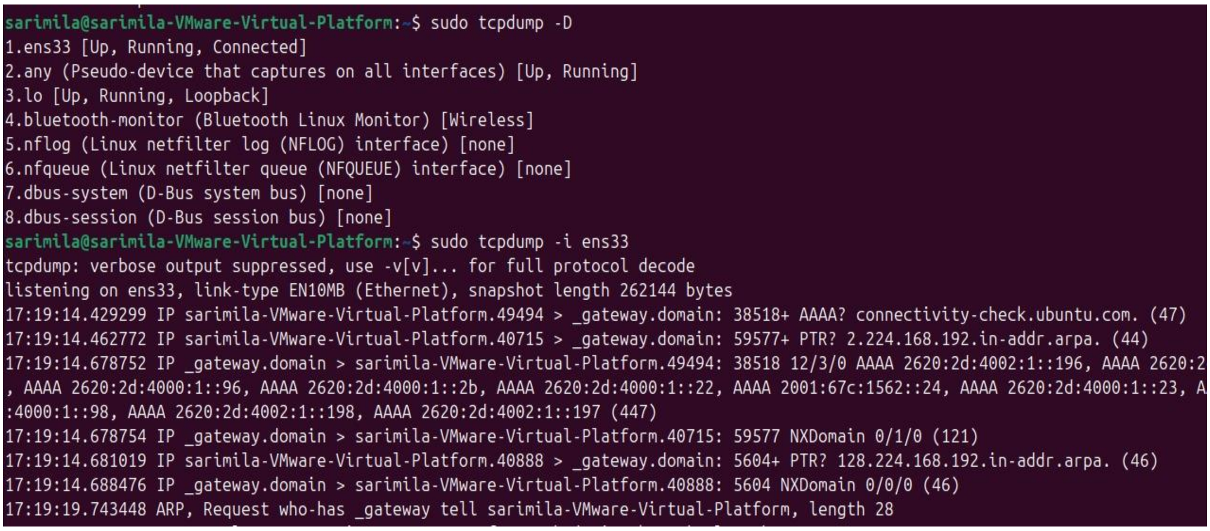


tcp.port == 80

No.	Time	Source	Destination	Protocol	Lengtl	Info
1303	119.800795	2401:4900:9162:6b21…	2a03:2880:f237:1c6:…	TCP	86	52041 → 80 [SYN] Seq=0 Win=64800 Len=0 MSS=1440 WS=256 SACK_PERM
1304	119.829095	2a03:2880:f237:1c6:…	2401:4900:9162:6b21…	TCP	86	80 → 52041 [SYN, ACK] Seq=0 Ack=1 Win=65535 Len=0 MSS=1255 SACK_PERM WS=256
1305	119.829500	2401:4900:9162:6b21…	2a03:2880:f237:1c6:…	TCP	74	52041 → 80 [ACK] Seq=1 Ack=1 Win=66304 Len=0
1306	119.830586	2401:4900:9162:6b21…	2a03:2880:f237:1c6:…	TCP	494	52041 → 80 [PSH, ACK] Seq=1 Ack=1 Win=66304 Len=420 [TCP PDU reassembled in 19606]
1307	119.852869	2a03:2880:f237:1c6:…	2401:4900:9162:6b21…	TCP	74	80 → 52041 [ACK] Seq=1 Ack=421 Win=66816 Len=0
1312	120.061814	2a03:2880:f237:1c6:…	2401:4900:9162:6b21…	TCP	203	80 → 52041 [PSH, ACK] Seq=1 Ack=421 Win=66816 Len=129 [TCP PDU reassembled in 19605]
1313	120.063469	2a03:2880:f237:1c6:…	2401:4900:9162:6b21…	TCP	137	80 → 52041 [PSH, ACK] Seq=130 Ack=421 Win=66816 Len=63 [TCP PDU reassembled in 19605]
1314	120.063469	2a03:2880:f237:1c6:…	2401:4900:9162:6b21…	TCP	176	80 → 52041 [PSH, ACK] Seq=193 Ack=421 Win=66816 Len=102 [TCP PDU reassembled in 19605]
1315	120.063703	2401:4900:9162:6b21…	2a03:2880:f237:1c6:…	TCP	74	52041 → 80 [ACK] Seq=421 Ack=193 Win=66304 Len=0
1316	120.081251	2401:4900:9162:6b21…	2a03:2880:f237:1c6:…	TCP	191	52041 → 80 [PSH, ACK] Seq=421 Ack=295 Win=66048 Len=117 [TCP PDU reassembled in 19606]
1317	120.083140	2401:4900:9162:6b21…	2a03:2880:f237:1c6:…	TCP	105	52041 → 80 [PSH, ACK] Seq=538 Ack=295 Win=66048 Len=31 [TCP PDU reassembled in 19606]
1318	120.104939	2a03:2880:f237:1c6:…	2401:4900:9162:6b21…	TCP	74	80 → 52041 [ACK] Seq=295 Ack=538 Win=66816 Len=0
1319	120.104939	2a03:2880:f237:1c6:…	2401:4900:9162:6b21…	TCP	74	80 → 52041 [ACK] Seq=295 Ack=569 Win=66816 Len=0
1320	120.243624	2a03:2880:f237:1c6:…	2401:4900:9162:6b21…	TCP	126	80 → 52041 [PSH, ACK] Seq=295 Ack=569 Win=66816 Len=52 [TCP PDU reassembled in 19605]
1321	120.243624	2a03:2880:f237:1c6:…	2401:4900:9162:6b21…	TCP	133	80 → 52041 [PSH, ACK] Seq=347 Ack=569 Win=66816 Len=59 [TCP PDU reassembled in 19605]
1322	120.243998	2401:4900:9162:6b21…	2a03:2880:f237:1c6:…	TCP	74	52041 → 80 [ACK] Seq=569 Ack=406 Win=66048 Len=0
1324	120.249140	2401:4900:9162:6b21…	2a03:2880:f237:1c6:…	TCP	114	52041 → 80 [PSH, ACK] Seq=569 Ack=406 Win=66048 Len=40 [TCP PDU reassembled in 19606]
1325	120.249345	2401:4900:9162:6b21…	2a03:2880:f237:1c6:…	TCP	125	52041 → 80 [PSH, ACK] Seq=609 Ack=406 Win=66048 Len=51 [TCP PDU reassembled in 19606]
1326	120.249462	2401:4900:9162:6b21…	2a03:2880:f237:1c6:…	TCP	118	52041 → 80 [PSH, ACK] Seq=660 Ack=406 Win=66048 Len=44 [TCP PDU reassembled in 19606]

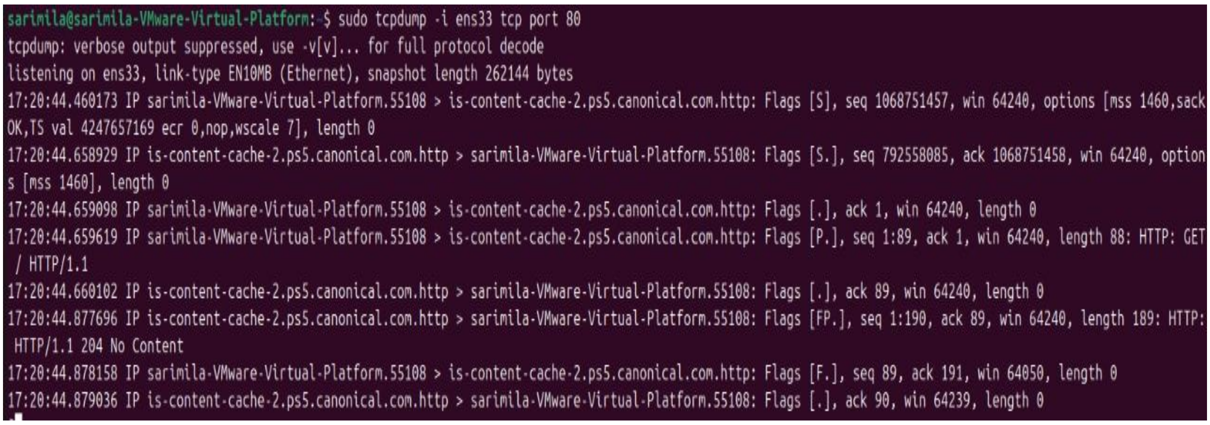
TCP-dump

capture all packets on ens33



```
sarimila@sarimila-VMware-Virtual-Platform:~$ sudo tcpdump -D
1.ens33 [Up, Running, Connected]
2.any (Pseudo-device that captures on all interfaces) [Up, Running]
3.lo [Up, Running, Loopback]
4.bluetooth-monitor (Bluetooth Linux Monitor) [Wireless]
5.nflog (Linux netfilter log (NFLOG) interface) [none]
6.nfqueue (Linux netfilter queue (NFQUEUE) interface) [none]
7.dbus-system (D-Bus system bus) [none]
8.dbus-session (D-Bus session bus) [none]
sarimila@sarimila-VMware-Virtual-Platform:~$ sudo tcpdump -i ens33
tcpdump: verbose output suppressed, use -v[v]... for full protocol decode
listening on ens33, link-type EN10MB (Ethernet), snapshot length 262144 bytes
17:19:14.429299 IP sarimila-VMware-Virtual-Platform.49494 > _gateway.domain: 38518+ AAAA? connectivity-check.ubuntu.com. (47)
17:19:14.462772 IP sarimila-VMware-Virtual-Platform.40715 > _gateway.domain: 59577+ PTR? 2.224.168.192.in-addr.arpa. (44)
17:19:14.678752 IP _gateway.domain > sarimila-VMware-Virtual-Platform.49494: 38518 12/3/0 AAAA 2620:2d:4002:1::196, AAAA 2620:2
, AAAA 2620:2d:4000:1::96, AAAA 2620:2d:4000:1::2b, AAAA 2620:2d:4000:1::22, AAAA 2001:67c:1562::24, AAAA 2620:2d:4000:1::23, A
:4000:1::98, AAAA 2620:2d:4002:1::198, AAAA 2620:2d:4002:1::197 (447)
17:19:14.678754 IP _gateway.domain > sarimila-VMware-Virtual-Platform.40715: 59577 NXDomain 0/1/0 (121)
17:19:14.681019 IP sarimila-VMware-Virtual-Platform.40888 > _gateway.domain: 5604+ PTR? 128.224.168.192.in-addr.arpa. (46)
17:19:14.688476 IP _gateway.domain > sarimila-VMware-Virtual-Platform.40888: 5604 NXDomain 0/0/0 (46)
17:19:19.743448 ARP, Request who-has _gateway tell sarimila-VMware-Virtual-Platform, length 28
```

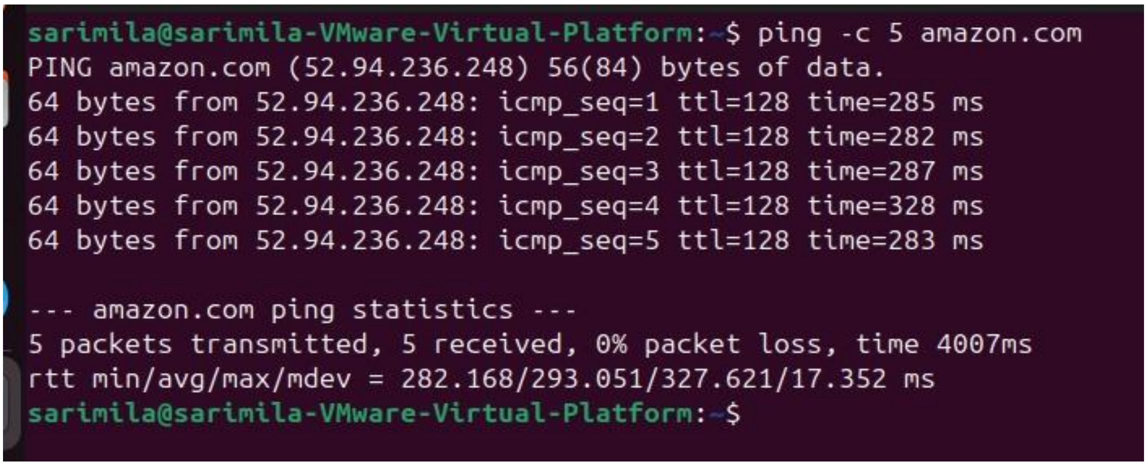
Capture Only TCP Traffic on Port 80 (HTTP)



```
sarimila@sarimila-VMware-Virtual-Platform:~$ sudo tcpdump -i ens33 tcp port 80
tcpdump: verbose output suppressed, use -v[v]... for full protocol decode
listening on ens33, link-type EN10MB (Ethernet), snapshot length 262144 bytes
17:20:44.460173 IP sarimila-VMware-Virtual-Platform.55108 > is-content-cache-2.ps5.canonical.com.http: Flags [S], seq 1068751457, win 64240, options [mss 1460,sack
OK,TS val 4247657169 ecr 0,nop,wscale 7], length 0
17:20:44.658929 IP is-content-cache-2.ps5.canonical.com.http > sarimila-VMware-Virtual-Platform.55108: Flags [S.], seq 792558085, ack 1068751458, win 64240, option
s [mss 1460], length 0
17:20:44.659098 IP sarimila-VMware-Virtual-Platform.55108 > is-content-cache-2.ps5.canonical.com.http: Flags [.], ack 1, win 64240, length 0
17:20:44.659619 IP sarimila-VMware-Virtual-Platform.55108 > is-content-cache-2.ps5.canonical.com.http: Flags [P.], seq 1:89, ack 1, win 64240, length 88: HTTP: GET
 / HTTP/1.1
17:20:44.660102 IP is-content-cache-2.ps5.canonical.com.http > sarimila-VMware-Virtual-Platform.55108: Flags [.], ack 89, win 64240, length 0
17:20:44.877696 IP is-content-cache-2.ps5.canonical.com.http > sarimila-VMware-Virtual-Platform.55108: Flags [FP.], seq 1:190, ack 89, win 64240, length 189: HTTP:
 HTTP/1.1 204 No Content
17:20:44.878158 IP sarimila-VMware-Virtual-Platform.55108 > is-content-cache-2.ps5.canonical.com.http: Flags [F.], seq 89, ack 191, win 64050, length 0
17:20:44.879036 IP is-content-cache-2.ps5.canonical.com.http > sarimila-VMware-Virtual-Platform.55108: Flags [.], ack 90, win 64239, length 0
```

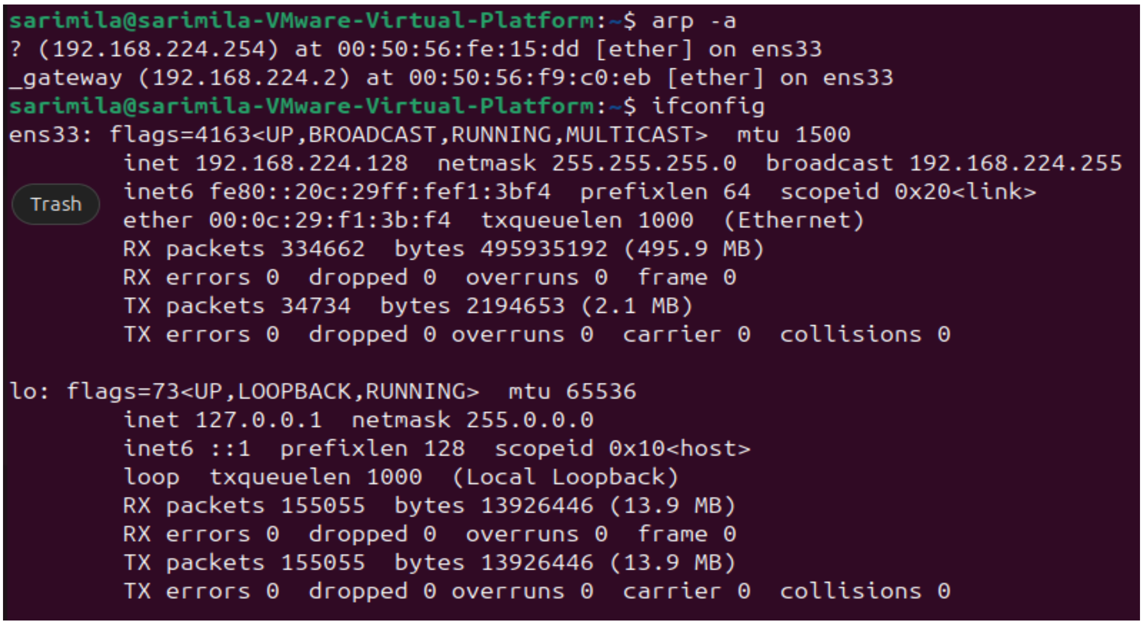
4. Understand linux utility commands like - ping, arp

Ping command



```
sarimila@sarimila-VMware-Virtual-Platform:~$ ping -c 5 amazon.com
PING amazon.com (52.94.236.248) 56(84) bytes of data.
64 bytes from 52.94.236.248: icmp_seq=1 ttl=128 time=285 ms
64 bytes from 52.94.236.248: icmp_seq=2 ttl=128 time=282 ms
64 bytes from 52.94.236.248: icmp_seq=3 ttl=128 time=287 ms
64 bytes from 52.94.236.248: icmp_seq=4 ttl=128 time=328 ms
64 bytes from 52.94.236.248: icmp_seq=5 ttl=128 time=283 ms

--- amazon.com ping statistics ---
5 packets transmitted, 5 received, 0% packet loss, time 4007ms
rtt min/avg/max/mdev = 282.168/293.051/327.621/17.352 ms
sarimila@sarimila-VMware-Virtual-Platform:~$
```

arp & ifconfig command



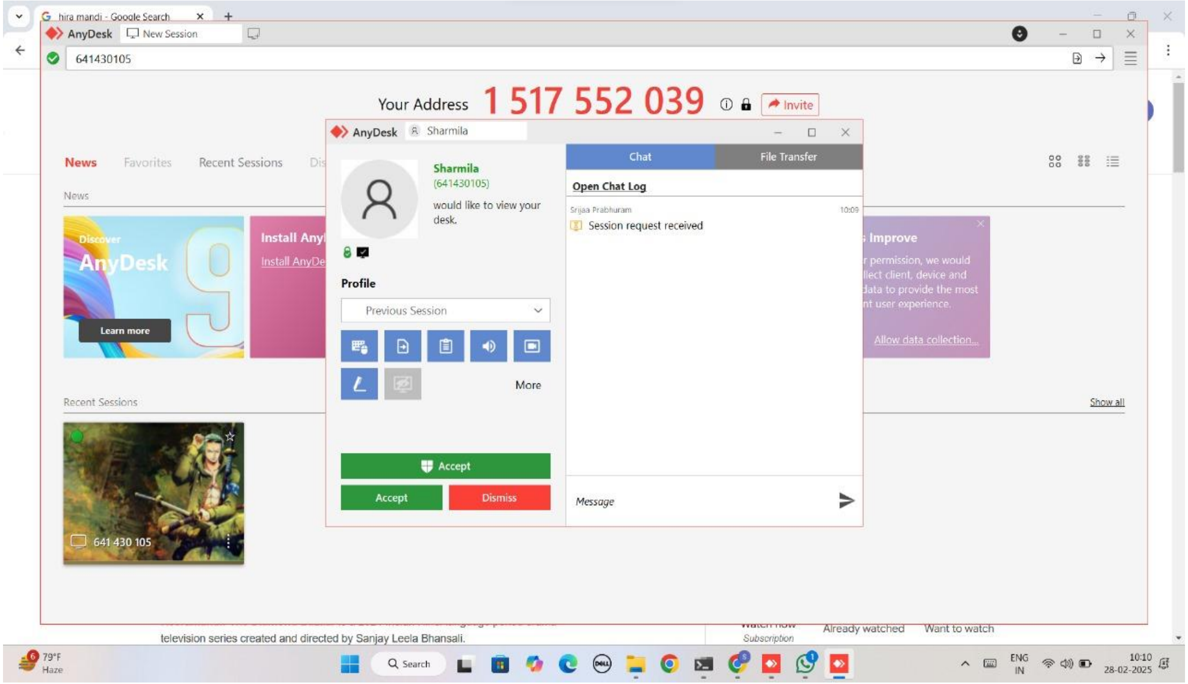
```
sarimila@sarimila-VMware-Virtual-Platform:~$ arp -a
? (192.168.224.254) at 00:50:56:fe:15:dd [ether] on ens33
_gateway (192.168.224.2) at 00:50:56:f9:c0:eb [ether] on ens33
sarimila@sarimila-VMware-Virtual-Platform:~$ ifconfig
ens33: flags=4163<UP,BROADCAST,RUNNING,MULTICAST>  mtu 1500
        inet 192.168.224.128  netmask 255.255.255.0  broadcast 192.168.224.255
        inet6 fe80::20c:29ff:fef1:3bf4  prefixlen 64  scopeid 0x20<link>
        ether 00:0c:29:f1:3b:f4  txqueuelen 1000  (Ethernet)
        RX packets 334662  bytes 495935192 (495.9 MB)
        RX errors 0  dropped 0  overruns 0  frame 0
        TX packets 34734  bytes 2194653 (2.1 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 155055  bytes 13926446 (13.9 MB)
        RX errors 0  dropped 0  overruns 0  frame 0
        TX packets 155055  bytes 13926446 (13.9 MB)
        TX errors 0  dropped 0 overruns 0  carrier 0  collisions 0
```

5. Understand what happens when duplicate IPs configured in a network.

- Devices with the same IP cannot communicate properly. ARP maps IP addresses to MAC addresses.
- If two devices have the same IP, ARP will randomly assign one MAC address, causing data to be sent to the wrong machine.
- One or both devices with duplicate IPs will lose network connectivity.

6. **Understand how to access remote system using (VNC viewer, Anydesk, teamviewer and remote desktop connections)**

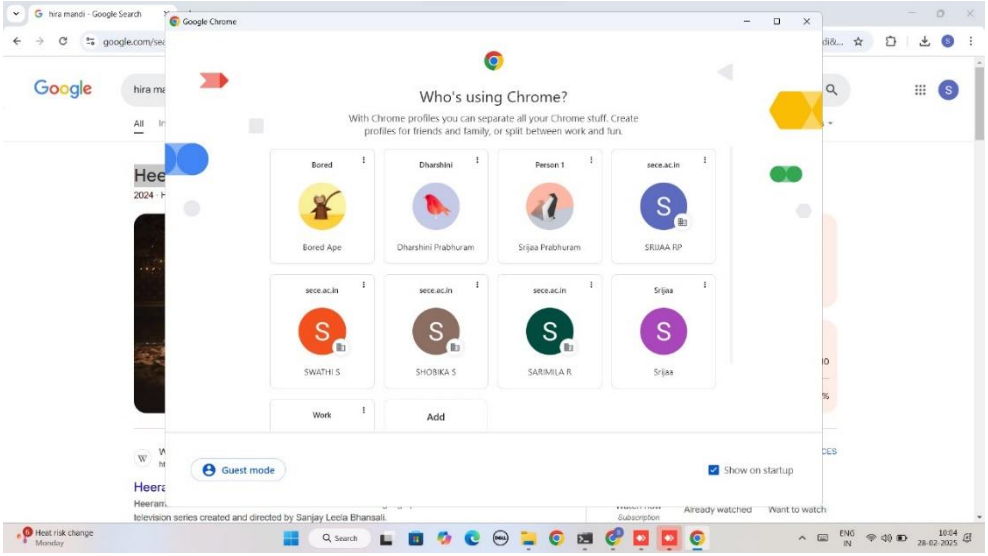
Using Anydesk



Your Address 1 517 552 039

Sharmila
(641430105)
would like to view your desk.

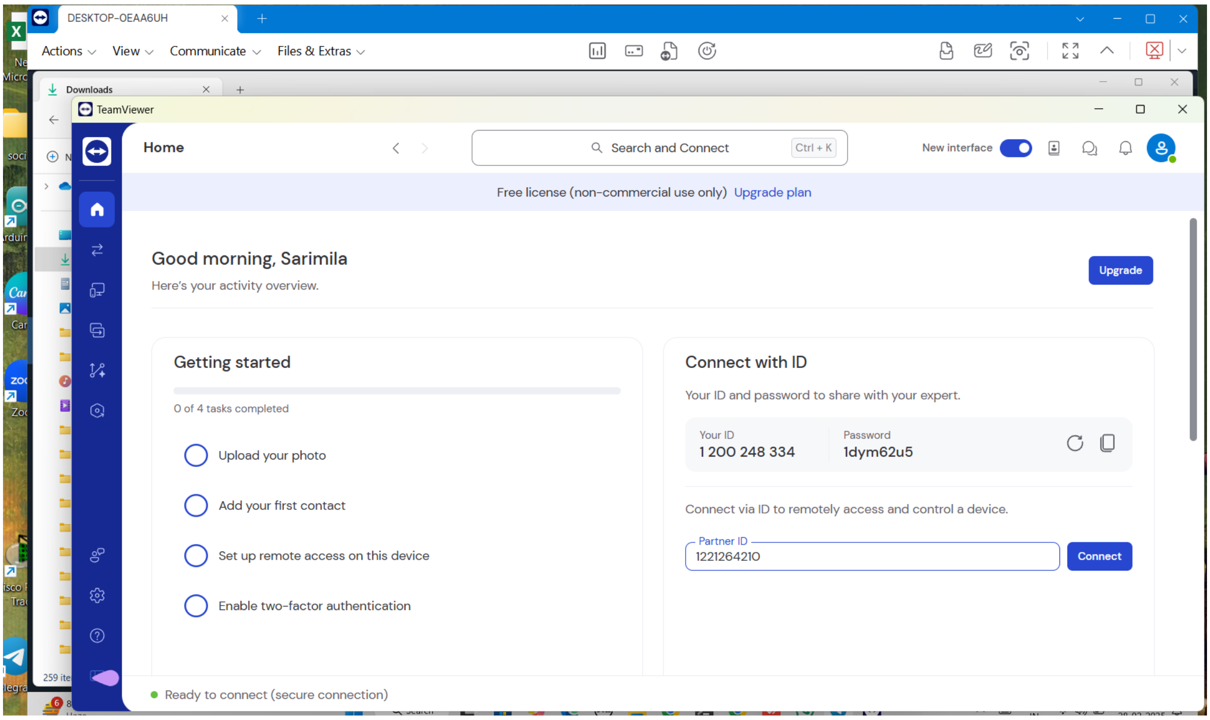
Srijaa Prabhuram 10:09
Session request received



Who's using Chrome?

With Chrome profiles you can separate all your Chrome stuff. Create profiles for friends and family, or split between work and fun.

Using TeamViewer



Free license (non-commercial use only) Upgrade plan

Good morning, Sarimila

Here's your activity overview.

Getting started

0 of 4 tasks completed

○ Upload your photo

○ Add your first contact

○ Set up remote access on this device

○ Enable two-factor authentication

Connect with ID

Your ID and password to share with your expert.

Your ID: 1 200 248 334

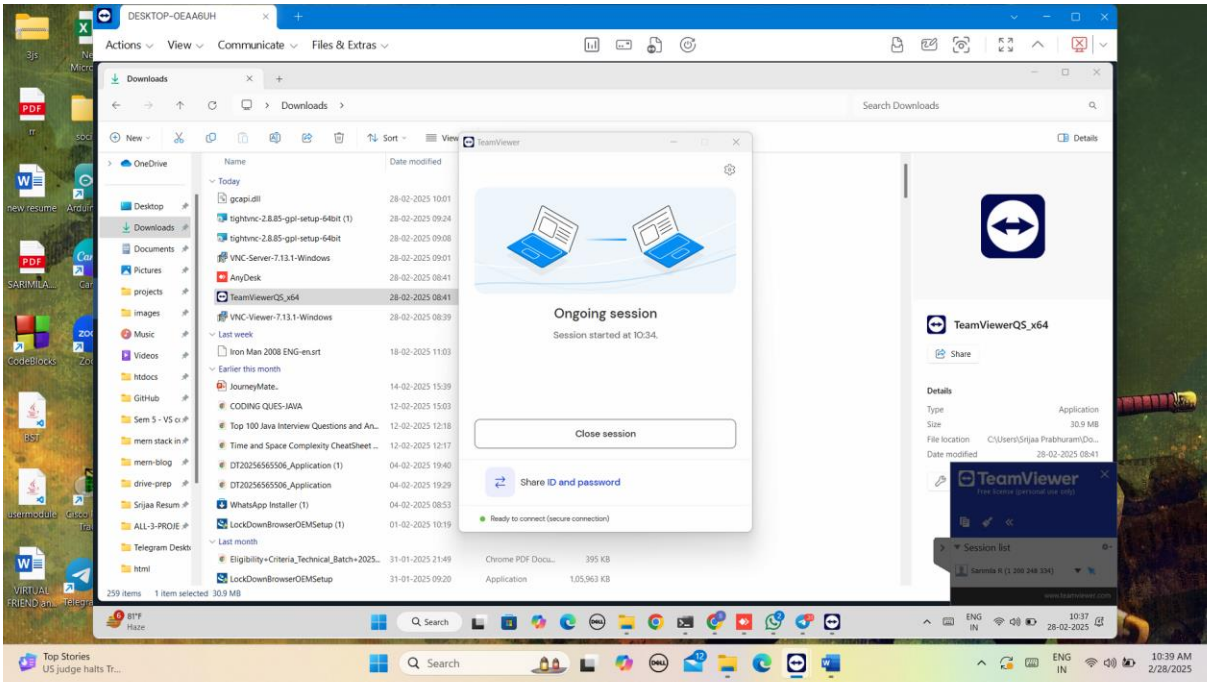
Password: 1dym62u5

Connect via ID to remotely access and control a device.

Partner ID: 1221264210

Connect

● Ready to connect (secure connection)



Name	Date modified		
Today			
gcapi.dll	28-02-2025 10:01		
tightvnc-2.8.85-gpl-setup-64bit (1)	28-02-2025 09:24		
tightvnc-2.8.85-gpl-setup-64bit	28-02-2025 09:08		
VNC-Server-7.13.1-Windows	28-02-2025 09:01		
AnyDesk	28-02-2025 08:41		
TeamViewerQS_x64	28-02-2025 08:41		
VNC-Viewer-7.13.1-Windows	28-02-2025 08:39		
Last week			
Iron Man 2008 ENG-en.srt	18-02-2025 11:03		
Earlier this month			
JourneyMate.	14-02-2025 15:39		
CODING QUES-JAVA	12-02-2025 15:03		
Top 100 Java Interview Questions and An...	12-02-2025 12:18		
Time and Space Complexity CheatSheet ...	12-02-2025 12:17		
DT20256565506_Application (1)	04-02-2025 19:40		
DT20256565506_Application	04-02-2025 19:29		
WhatsApp Installer (1)	04-02-2025 08:53		
LockDownBrowserOEMSetup (1)	01-02-2025 10:19		
Last month			
Eligibility+Criteria_Technical_Batch+2025...	31-01-2025 21:49	Chrome PDF Docu...	395 KB
LockDownBrowserOEMSetup	31-01-2025 09:20	Application	1,05,963 KB

259 items 1 item selected 30.9 MB

TeamViewer

Ongoing session

Session started at 10:34.

Close session

Share ID and password

● Ready to connect (secure connection)

TeamViewerQS_x64

Share

Details

Type	Application
Size	30.9 MB
File location	C:\Users\Srijaa Prabhuram\Do...
Date modified	28-02-2025 08:41

TeamViewer

Free license (personal use only)

Session list

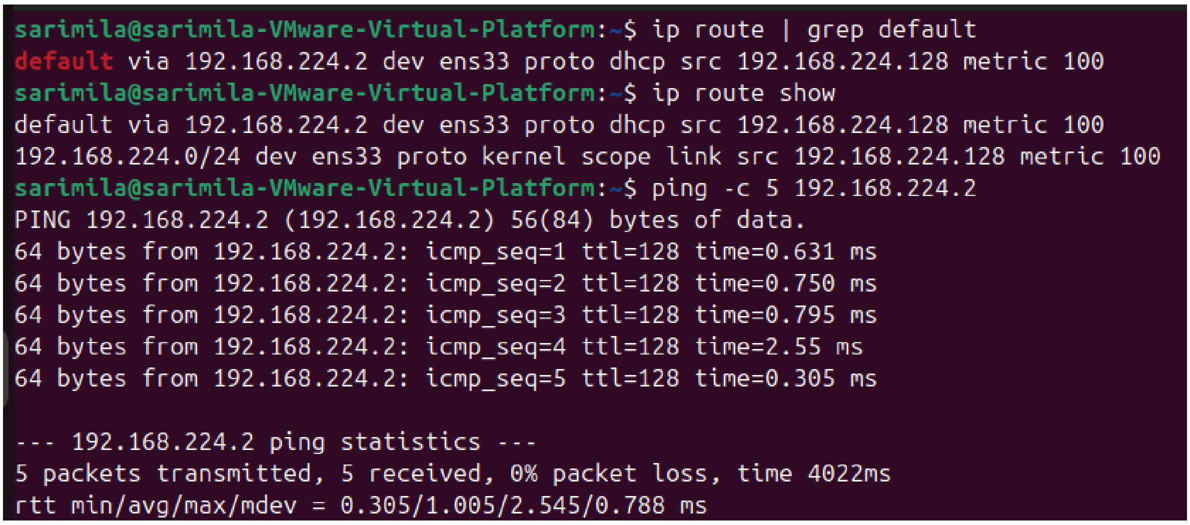
Sarimila K (1 200 248 334)

81°F Haze

10:37 28-02-2025

10:39 AM 2/28/2025

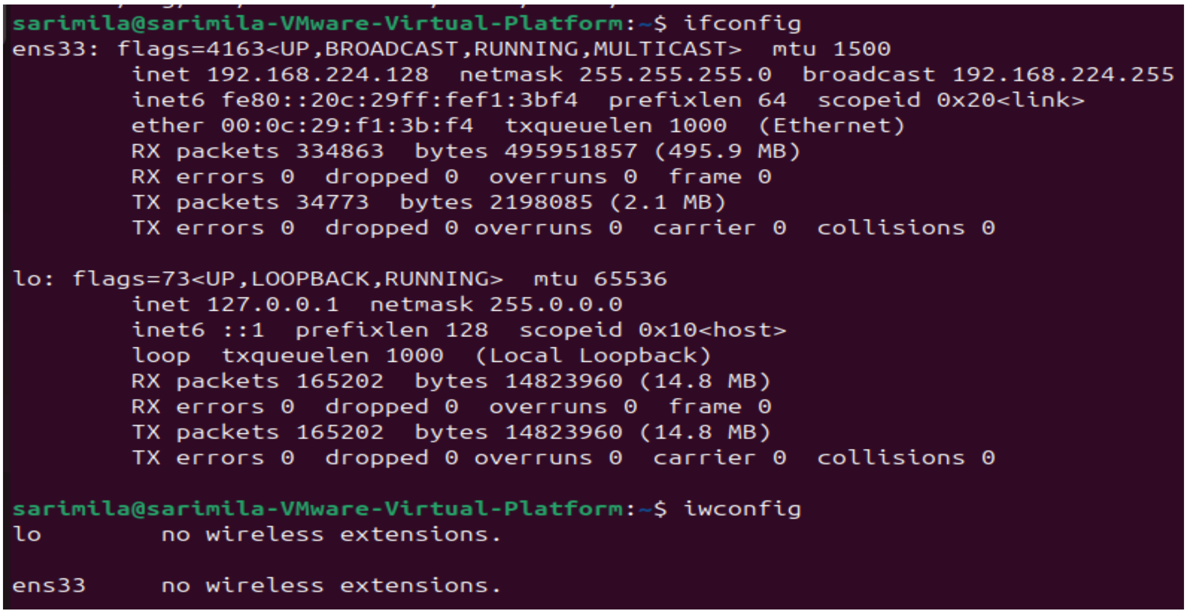
7. **How to check your default gateway is reachable or not and understand about default gateway.**



```
sarimila@sarimila-VMware-Virtual-Platform:~$ ip route | grep default
default via 192.168.224.2 dev ens33 proto dhcp src 192.168.224.128 metric 100
sarimila@sarimila-VMware-Virtual-Platform:~$ ip route show
default via 192.168.224.2 dev ens33 proto dhcp src 192.168.224.128 metric 100
192.168.224.0/24 dev ens33 proto kernel scope link src 192.168.224.128 metric 100
sarimila@sarimila-VMware-Virtual-Platform:~$ ping -c 5 192.168.224.2
PING 192.168.224.2 (192.168.224.2) 56(84) bytes of data.
64 bytes from 192.168.224.2: icmp_seq=1 ttl=128 time=0.631 ms
64 bytes from 192.168.224.2: icmp_seq=2 ttl=128 time=0.750 ms
64 bytes from 192.168.224.2: icmp_seq=3 ttl=128 time=0.795 ms
64 bytes from 192.168.224.2: icmp_seq=4 ttl=128 time=2.55 ms
64 bytes from 192.168.224.2: icmp_seq=5 ttl=128 time=0.305 ms

--- 192.168.224.2 ping statistics ---
5 packets transmitted, 5 received, 0% packet loss, time 4022ms
rtt min/avg/max/mdev = 0.305/1.005/2.545/0.788 ms
```

8. **Check iwconfig/ifconfig to understand in detail about network interfaces**

ifconfig is used to view and configure network interfaces.
iwconfig is used for wireless network configurations.



```
sarimila@sarimila-VMware-Virtual-Platform:~$ ifconfig
ens33: flags=4163<UP,BROADCAST,RUNNING,MULTICAST>  mtu 1500
        inet 192.168.224.128  netmask 255.255.255.0  broadcast 192.168.224.255
        inet6 fe80::20c:29ff:fef1:3bf4  prefixlen 64  scopeid 0x20<link>
        ether 00:0c:29:f1:3b:f4  txqueuelen 1000  (Ethernet)
        RX packets 334863  bytes 495951857 (495.9 MB)
        RX errors 0  dropped 0  overruns 0  frame 0
        TX packets 34773  bytes 2198085 (2.1 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 165202  bytes 14823960 (14.8 MB)
        RX errors 0  dropped 0  overruns 0  frame 0
        TX packets 165202  bytes 14823960 (14.8 MB)
        TX errors 0  dropped 0 overruns 0  carrier 0  collisions 0

sarimila@sarimila-VMware-Virtual-Platform:~$ iwconfig
lo        no wireless extensions.

ens33     no wireless extensions.
```

9. Log in to your home router’s web interface (usually at 192.168.1.1 or 192.168.0.1) and check the connected devices list.

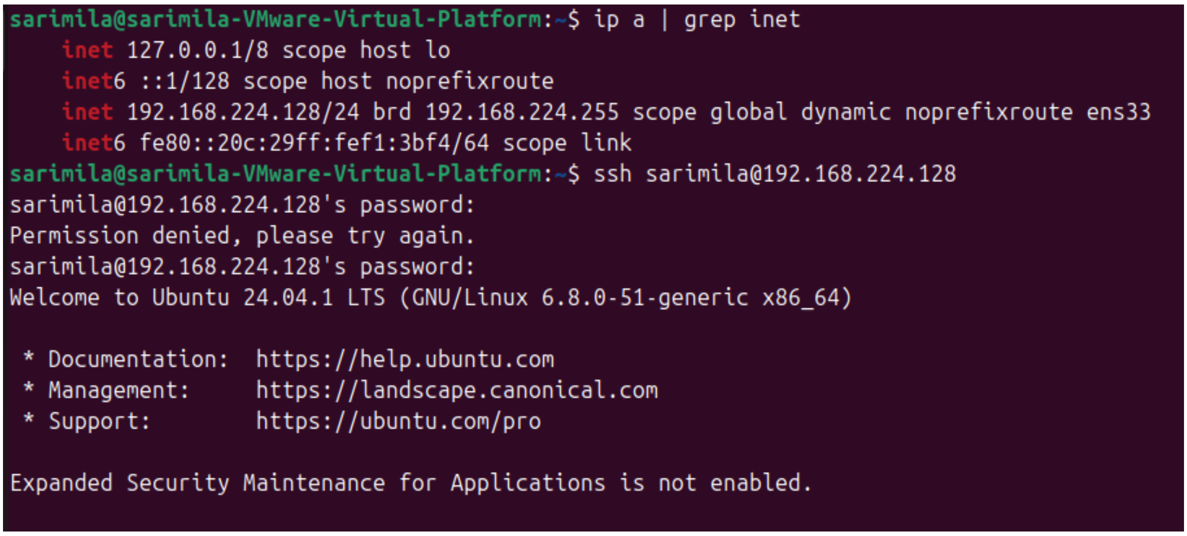
I don’t have a home router. Steps to check connected devices:
ipconfig - Look for the Default Gateway
Enter the IP in the browser, login page will appear.
Enter router username & password.
Here, all the list of connected devices with details will appear.

10. Explain how a DHCP server assigns IP addresses to devices in your network.

A DHCP server automatically assigns IP addresses to devices in a network, ensuring no conflicts.
(DORA)

- Client Request (DHCP Discover)
- Server Offers IP (DHCP Offer)
- Client Accepts (DHCP Request)
- Server Confirms (DHCP Acknowledgment)
- Renewal

11. Using a terminal, connect to a remote machine via SSH and telnet.



```
sarimila@sarimila-VMware-Virtual-Platform:~$ ip a | grep inet
    inet 127.0.0.1/8 scope host lo
    inet6 ::1/128 scope host noprefixroute
    inet 192.168.224.128/24 brd 192.168.224.255 scope global dynamic noprefixroute ens33
    inet6 fe80::20c:29ff:fef1:3bf4/64 scope link
sarimila@sarimila-VMware-Virtual-Platform:~$ ssh sarimila@192.168.224.128
sarimila@192.168.224.128's password:
Permission denied, please try again.
sarimila@192.168.224.128's password:
Welcome to Ubuntu 24.04.1 LTS (GNU/Linux 6.8.0-51-generic x86_64)

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

Expanded Security Maintenance for Applications is not enabled.
```