

Task 1: Study OSI & TCP/IP models

Task 2: Learn common protocols – HTTP, FTP, DNS, DHCP, SSH

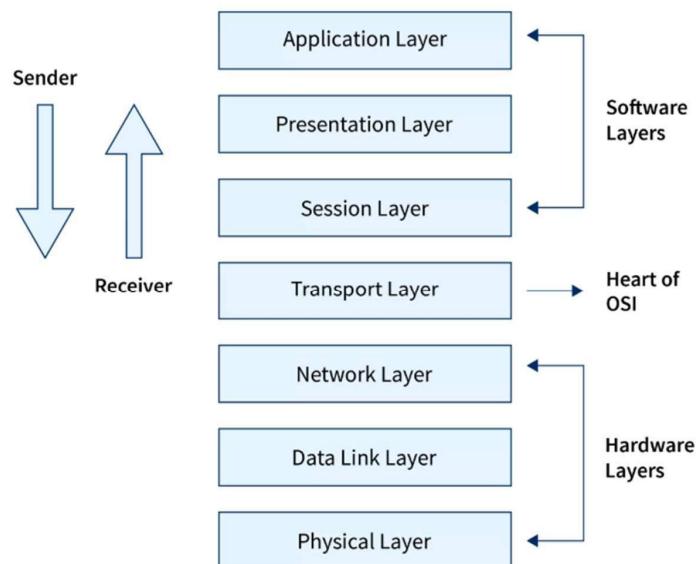
Task 3: Practice basic commands – ping, traceroute, netstat, ipconfig/ifconfig

Task 4: Write a short report explaining client-server communication

□ Task 1: Study OSI & TCP/IP models

What is OSI Model?

The OSI model stands for Open Systems Interconnection model. The OSI model is also known as the ISO-OSI model as it was developed by ISO (International Organization for Standardization).



-----OSI Model Framework-----

1. Application Layer

The Application layer is where the end-user directly interacts with the network through software applications like browsers, email, or messaging apps.

- User Interaction: It's the layer where users directly interact with applications like web browsers, email, and file transfer.

- Network Services: Provides services such as HTTP, FTP, SMTP, and DNS that enable communication between applications across networks.
- Data Preparation: Ensures data is ready to be sent or received by handling things like formatting, compression, and encryption.
- Protocols: HTTP, HTTPS, FTP, SMTP, DNS, SSH

2. Presentation Layer

The Presentation layer acts as a translator and protector, making sure the data is properly formatted and secure before it reaches the application.

- Translation: Ensures that the data format used by the sender is compatible with the format the receiver understands (e.g., ASCII to EBCDIC).
- Data Compression: Compresses data streams to improve speed, reduce storage requirements, and make communication more efficient.
- Decryption: Takes encrypted data received from the network and converts it back into its original readable form for the application.
- Protocols: SSL/TLS, JPEG, MP3, ASCII

3. Session Layer

The Session layer establishes, manages, and ends communication sessions between two systems, like keeping track of login sessions or video calls.

- Session Management: Creates and manages the “session” or dialogue between two devices, ensuring smooth communication until it ends.
- Authentication: Confirms the identity of the user or system, such as verifying a username and password before access.
- Authorization: Decides what the authenticated user is allowed to do, such as accessing files, sending emails, or using certain services.
- Protocols: NetBIOS, PPTP, RPC

4. Transport Layer

The Transport layer ensures reliable end-to-end communication between two devices, taking care of data integrity, order, and error correction.

- Segmentation: Divides large chunks of data into smaller segments for easier transmission and reassembles them at the destination.
- Flow Control: Balances the rate of data transfer so the sender doesn't overwhelm the receiver with too much information at once.
- Error Control: Checks for lost or corrupted data packets, requests retransmission if needed, and ensures that only correct data is delivered.
- Protocols: TCP, UDP

5. Network Layer

The Network layer is responsible for deciding how data packets travel across networks from the source to the destination.

- Logical Addressing: Assigns IP addresses to devices so they can be uniquely identified across networks.
- Routing: Uses routers to choose the best possible path for the data to travel to its destination.
- Path Determination: Evaluates network conditions (like traffic, distance, or cost) and picks the most efficient route for data delivery.
- Protocols: IP, ICMP, OSPF, BGP

6. Data Link Layer

The Data Link layer ensures that data can move reliably across a physical link between two directly connected devices.

- Framing: Structures raw bits into frames (packets with headers and trailers) so that data is organized for transmission.
- Addressing: Uses MAC (Media Access Control) addresses to identify devices within the same local network (like your laptop and router).
- Error Control: Detects errors caused by noise or interference in the physical medium and may request retransmission.
- Protocols: Ethernet, ARP, PPP, VLAN

7. Physical Layer

The Physical layer deals with the hardware and the physical means of sending raw bits (0s and 1s) over the medium.

- Transmission Media: Defines the medium like copper cables, fiber optics, or wireless signals used for communication.
- Bit Transmission: Converts digital data into electrical, optical, or radio signals that can travel through the medium.
- Hardware Components: Involves network devices like switches, hubs, routers, NIC cards, and connectors that physically transmit signals.
- Protocols: Ethernet, USB, Bluetooth

TCP/IP Model:

1. Application Layer

- Purpose: This is the layer that users directly interact with through applications like browsers, email clients, and file transfer tools.
- Functions:
 - Provides services for applications to communicate over the network.
 - Handles tasks like email sending/receiving, file uploads/downloads, and web browsing.
 - Sometimes includes session management, encryption, and data translation.
- Common Protocols:
 - HTTP/HTTPS: Web browsing
 - FTP: File transfer
 - SMTP, POP3, IMAP: Email communication
 - DNS: Converts website names to IP addresses
 - SSH, Telnet: Remote login

2. Transport Layer

- Purpose: Ensures data is delivered from one device to another correctly and efficiently.

- Functions:
 - Divides large data into smaller chunks called segments and reassembles them at the destination.
 - Uses port numbers to make sure the data reaches the right application.
 - Can provide reliable delivery with error checking or faster delivery without checking.
- Main Protocols:
 - TCP (Transmission Control Protocol): Reliable, connection-oriented, ensures data is received correctly; used for web, email, and file transfers.
 - UDP (User Datagram Protocol): Fast, connectionless, no guarantee of delivery; used for streaming video, VoIP, and DNS queries.

3. Internet Layer

- Purpose: Responsible for logical addressing and routing, making sure data finds the correct device across networks.
- Functions:
 - Assigns IP addresses to devices.
 - Chooses the best path for data packets to travel.
 - Breaks data into packets for transmission.
- Main Protocols:
 - IP (IPv4, IPv6): Addresses and routes packets
 - ICMP (Internet Control Message Protocol): Sends error messages and testing (like ping)
 - ARP (Address Resolution Protocol): Converts IP addresses to MAC addresses
 - Routing protocols: RIP, OSPF, BGP

4. Network Access Layer (Link Layer)

- Purpose: Handles the physical transmission of data over cables, Wi-Fi, or other hardware.
- Functions:
 - Converts packets into frames and bits for actual transmission.
 - Ensures devices use the network medium correctly (Ethernet, Wi-Fi, etc.).
 - Handles hardware addressing with MAC addresses.
- Protocols and Technologies:
 - Ethernet, Wi-Fi (802.11), Bluetooth
 - PPP (Point-to-Point Protocol)
 - Physical devices: cables, network interface cards, switches.

Task 2: Learn common protocols – HTTP, FTP, DNS, DHCP, SSH

What is Protocol?

- A network protocol is a set of rules that allows computers and devices to communicate with each other over a network. It defines how data is formatted, transmitted, and received, ensuring that all devices understand each other.
- Protocols make it possible for different devices, operating systems, and applications to work together smoothly across networks like the internet or a local network.

1. HTTP (HyperText Transfer Protocol)

- HTTP is the main protocol used whenever you access a website. Whenever you type a URL into your browser, your computer uses HTTP to request the page from the server, and the server responds with the website's data (text, images, videos).
- There's also HTTPS, which is a secure version of HTTP. It uses encryption (SSL/TLS) to protect your data so no one can spy on your activities or steal sensitive information like passwords or credit card numbers.

- Port: 80 for HTTP, 443 for HTTPS.
- Example: Opening google.com, watching videos on YouTube, or accessing web apps like Gmail.
- Importance: Without HTTP/HTTPS, web browsing would not be possible, and data would not flow in a structured way between browsers and servers.

2. FTP (File Transfer Protocol)

- FTP is used to move files between computers over a network. If you have a website, you often use FTP to upload files from your computer to the web server.
- FTP works in a client-server manner. You, as the client, connect to the FTP server using credentials. Once connected, you can upload or download files.
- Standard FTP is not secure, so encrypted versions like SFTP (uses SSH) or FTPS (uses SSL/TLS) are preferred.
- Ports: 21 for control commands, 20 for transferring data.
- Example: Uploading your website files, downloading large datasets from a server.
- Importance: Essential for managing files across networks, especially for website hosting and organizational data transfer.

3. DNS (Domain Name System)

- DNS acts like the “phonebook of the internet”. Computers work with numbers (IP addresses), but humans prefer names. DNS translates domain names like google.com into IP addresses that computers can understand.
- When you type a website address, your computer asks a DNS server to provide the corresponding IP address. Once received, your browser can connect to the correct server.
- Port: 53.
- Example: You type www.example.com → DNS converts it to 93.184.216.34.

- Importance: Without DNS, we would have to remember numeric IP addresses for every website we visit. It makes the internet user-friendly and navigable.

4. DHCP (Dynamic Host Configuration Protocol)

- DHCP automatically assigns IP addresses and other network details to devices when they join a network.
- Imagine you connect your laptop or phone to Wi-Fi. You don't manually type an IP address; DHCP handles it automatically. It also gives you the subnet mask, gateway, and DNS servers, so your device can communicate properly.
- Ports: 67 (server), 68 (client).
- Example: Your smartphone joins home Wi-Fi and receives 192.168.1.5 from the router automatically.
- Importance: Makes network management easy, prevents IP conflicts, and allows devices to join and leave networks seamlessly.

5. SSH (Secure Shell)

- SSH allows secure remote access to another computer or server. Unlike Telnet, SSH encrypts all communication so nobody can intercept sensitive commands or passwords.
- Administrators often use SSH to manage Linux servers from anywhere. You can also transfer files securely using SCP or SFTP, which use SSH encryption.
- Port: 22.
- Example: Logging into a cloud Linux server from your laptop to update software or manage files.
- Importance: Essential for remote administration and secure communication, especially for servers and network devices.

[Task 3: Practice basic commands](#)
 – [ping, traceroute, netstat, ipconfig/ifconfig](#)

1. ping Command

The 'ping' command checks connectivity between your system and another device/server by sending ICMP Echo Request packets and waiting for Echo Reply.

Main Uses:

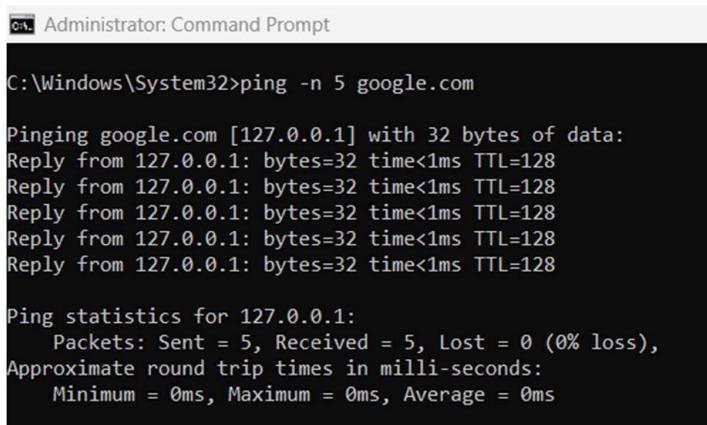
- Test if a host is reachable.
- Check for packet loss.

Commands:

Windows:

ping -n 5 google.com

- Sends 5 ping requests to google.com and then stops.



A screenshot of a Windows Command Prompt window titled "Administrator: Command Prompt". The window shows the command "ping -n 5 google.com" being run. The output displays five successful ping requests to the local loopback address (127.0.0.1) with 32 bytes of data, each taking less than 1ms. It then provides ping statistics: 5 packets sent, 5 received, 0 lost (0% loss), with approximate round trip times of 0ms for minimum, maximum, and average.

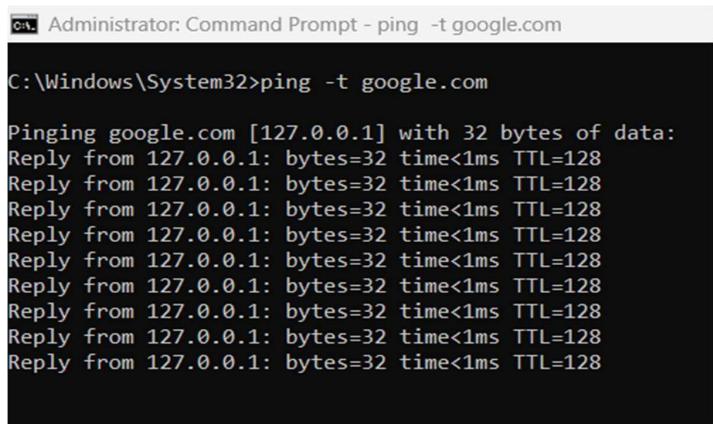
```
C:\Windows\System32>ping -n 5 google.com

Pinging google.com [127.0.0.1] with 32 bytes of data:
Reply from 127.0.0.1: bytes=32 time<1ms TTL=128

Ping statistics for 127.0.0.1:
    Packets: Sent = 5, Received = 5, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms
```

ping -t google.com

- **-t** = continuous ping.
- Keeps sending pings until you manually stop with Ctrl+C.



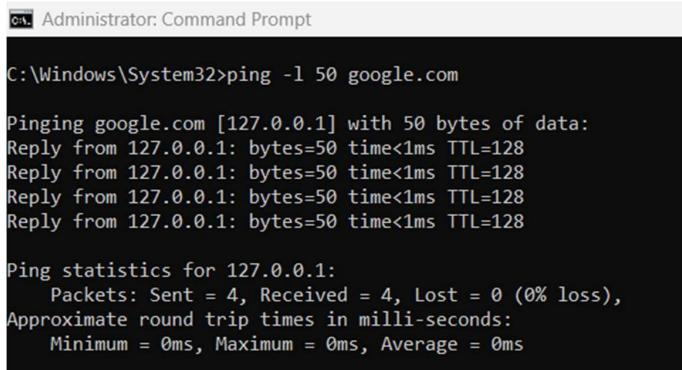
```
Administrator: Command Prompt - ping -t google.com

C:\Windows\System32>ping -t google.com

Pinging google.com [127.0.0.1] with 32 bytes of data:
Reply from 127.0.0.1: bytes=32 time<1ms TTL=128
```

ping -l 50 google.com

- -l = packet size in bytes.
- Sends ping packets of 100 bytes instead of default 32 bytes.



```
Administrator: Command Prompt

C:\Windows\System32>ping -l 50 google.com

Pinging google.com [127.0.0.1] with 50 bytes of data:
Reply from 127.0.0.1: bytes=50 time<1ms TTL=128

Ping statistics for 127.0.0.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms
```

Linux: ping -c 5
google.com ping -i 2
google.com ping -
s 100 google.com

2. tracert / traceroute Command

Shows the route packets take to reach a destination, including all intermediate routers.

Main Uses:

- Find where network delays occur.
- Troubleshoot routing problems.
- See how many hops are between you and a server.

Commands:

Windows:

tracert google.com

```
Administrator: Command Prompt
C:\Windows\System32>tracert google.com

Tracing route to google.com [127.0.0.1]
over a maximum of 30 hops:

 1 <1 ms <1 ms <1 ms youtube.com [127.0.0.1]

Trace complete.

C:\Windows\System32>
```

Linux:

traceroute google.com [Same Like Windows]

Options:

Windows:

1. tracert -d google.com

- Normally tracert tries to convert each IP address into a hostname (via DNS lookup).
- With -d, it skips DNS resolution and only shows raw IP addresses.

```
Administrator: Command Prompt
C:\Windows\System32>tracert -d w3school.com

Tracing route to w3school.com [93.127.191.6]
over a maximum of 30 hops:

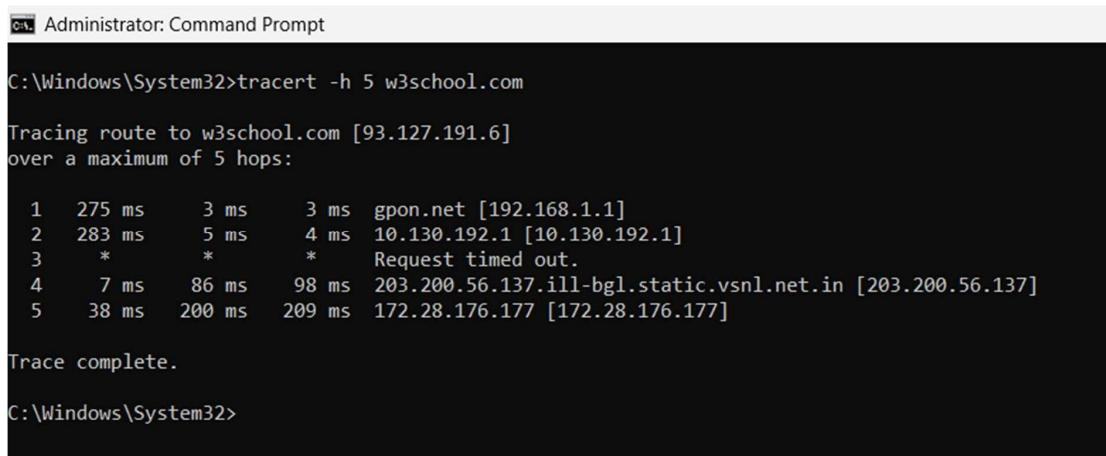
 1    7 ms    2 ms    6 ms  192.168.1.1
 2   245 ms    4 ms    4 ms  10.130.192.1
 3    *       *       * Request timed out.
 4   117 ms   176 ms   44 ms  203.200.56.137
 5   15 ms   308 ms   13 ms  172.28.176.177
 6   112 ms   302 ms   303 ms  180.87.39.25
 7   321 ms   412 ms   413 ms  180.87.12.226
 8    *       *       * Request timed out.
 9   312 ms    *       340 ms  120.29.217.12
10    *       *       * Request timed out.
11    *       *       528 ms  180.87.151.28
12    *       *       * Request timed out.
13   530 ms    *       331 ms  66.198.101.133
14    *       *       * Request timed out.
15   540 ms   303 ms   612 ms  66.198.56.202
16   513 ms   469 ms   342 ms  216.6.90.22
17   452 ms   628 ms    *     216.6.99.70
18   440 ms   707 ms   763 ms  200.244.216.221
19   445 ms   442 ms   437 ms  200.244.216.220
20   440 ms   450 ms   441 ms  200.230.220.45
21   434 ms   443 ms   435 ms  200.230.243.33
22   442 ms   441 ms   441 ms  200.230.1.8
23   434 ms   438 ms   436 ms  201.90.227.10
24    *       *       * Request timed out.
25    *       *       * Request timed out.
26   633 ms   548 ms   421 ms  179.190.19.142
27   617 ms   509 ms   612 ms  153.92.2.167
28   430 ms   431 ms   431 ms  153.92.2.179
29   420 ms   421 ms   420 ms  93.127.191.6

Trace complete.

C:\Windows\System32>
```

tracert -h 5 google.com

- Limits the maximum number of hops (routers) it will trace to 5.
- Default is 30 hops in Windows.



```
Administrator: Command Prompt
C:\Windows\System32>tracert -h 5 w3school.com

Tracing route to w3school.com [93.127.191.6]
over a maximum of 5 hops:

 1  275 ms      3 ms      3 ms  gpon.net [192.168.1.1]
 2  283 ms      5 ms      4 ms  10.130.192.1 [10.130.192.1]
 3  *          *          * Request timed out.
 4  7 ms       86 ms     98 ms  203.200.56.137.ill-bgl.static.vsnl.net.in [203.200.56.137]
 5  38 ms     200 ms    209 ms  172.28.176.177 [172.28.176.177]

Trace complete.

C:\Windows\System32>
```

Linux:

```
traceroute -n
google.com traceroute -m 10
google.com traceroute -I
google.com
```

3. netstat Command

Displays network connections, routing tables, interface statistics, and listening ports.

Main Uses:

- See active TCP/UDP connections.
- Find which ports are open and listening.
- Detect suspicious or unknown connections.

Common Commands:

Windows:

```
netstat -a
```

- Displays all active connections (TCP & UDP) and the ports your system is currently listening on.

Active Connections			
Proto	Local Address	Foreign Address	State
TCP	0.0.0.0:80	PRIYANSHI:0	LISTENING
TCP	0.0.0.0:135	PRIYANSHI:0	LISTENING
TCP	0.0.0.0:443	PRIYANSHI:0	LISTENING
TCP	0.0.0.0:445	PRIYANSHI:0	LISTENING
TCP	0.0.0.0:902	PRIYANSHI:0	LISTENING
TCP	0.0.0.0:912	PRIYANSHI:0	LISTENING
TCP	0.0.0.0:2179	PRIYANSHI:0	LISTENING
TCP	0.0.0.0:3389	PRIYANSHI:0	LISTENING
TCP	0.0.0.0:5040	PRIYANSHI:0	LISTENING
TCP	0.0.0.0:5666	PRIYANSHI:0	LISTENING
TCP	0.0.0.0:5666	PRIYANSHI:0	LISTENING
TCP	0.0.0.0:7070	PRIYANSHI:0	LISTENING
TCP	0.0.0.0:8443	PRIYANSHI:0	LISTENING
TCP	0.0.0.0:49664	PRIYANSHI:0	LISTENING
TCP	0.0.0.0:49665	PRIYANSHI:0	LISTENING
TCP	0.0.0.0:49666	PRIYANSHI:0	LISTENING
TCP	0.0.0.0:49667	PRIYANSHI:0	LISTENING
TCP	0.0.0.0:49668	PRIYANSHI:0	LISTENING
TCP	0.0.0.0:49669	PRIYANSHI:0	LISTENING
TCP	0.0.0.0:49671	PRIYANSHI:0	LISTENING
TCP	127.0.0.1:8307	PRIYANSHI:0	LISTENING
TCP	127.0.0.1:65194	PRIYANSHI:0	LISTENING
TCP	169.254.60.17:139	PRIYANSHI:0	LISTENING
TCP	169.254.86.227:139	PRIYANSHI:0	LISTENING
TCP	169.254.111.4:139	PRIYANSHI:0	LISTENING
TCP	169.254.177.48:139	PRIYANSHI:0	LISTENING
TCP	172.18.160.1:139	PRIYANSHI:0	LISTENING
TCP	172.168.10.1:139	PRIYANSHI:0	LISTENING
TCP	192.168.1.21:139	PRIYANSHI:0	LISTENING
TCP	192.168.1.21:50939	relay-d7553589:https	ESTABLISHED
TCP	192.168.1.21:50941	4.224.112.242:https	ESTABLISHED
TCP	192.168.1.21:52188	a23-215-205-230:https	CLOSE_WAIT
TCP	192.168.1.21:52415	172.64.155.209:https	ESTABLISHED
TCP	192.168.1.21:52809	s1-in-f188:5228	ESTABLISHED
TCP	192.168.1.21:53174	172.64.155.209:https	ESTABLISHED
TCP	192.168.1.21:54157	ec2-3-233-158-24:https	ESTABLISHED
TCP	192.168.1.21:54856	gpon:domain	TIME_WAIT
TCP	192.168.1.21:56429	52.109.56.129:https	TIME_WAIT
TCP	192.168.1.21:56597	whatsapp-cdn-shv-02-del1:https	CLOSE_WAIT
TCP	192.168.1.21:56598	43.250.166.226:https	CLOSE_WAIT
TCP	192.168.1.21:56599	whatsapp-cdn-shv-01-del2:https	CLOSE_WAIT
TCP	192.168.1.21:56600	whatsapp-cdn-shv-01-del1:https	CLOSE_WAIT
TCP	192.168.1.21:56601	whatsapp-cdn-shv-02-del2:https	CLOSE_WAIT
TCP	192.168.1.21:56602	whatsapp-cdn-shv-02-bom2:https	CLOSE_WAIT

netstat -n

- By default, netstat tries to resolve hostnames and services (e.g., shows http instead of :80).
- With -n, it skips that and shows raw IP addresses and port numbers.

```
C:\Administrator: Command Prompt
C:\Windows\System32>netstat -n

Active Connections

Proto Local Address          Foreign Address        State
TCP   192.168.1.21:50860    192.168.1.1:53      TIME_WAIT
TCP   192.168.1.21:50861    52.182.143.210:443 ESTABLISHED
TCP   192.168.1.21:50862    20.189.173.14:443 ESTABLISHED
TCP   192.168.1.21:50939    148.113.16.225:443 ESTABLISHED
TCP   192.168.1.21:50941    4.224.112.242:443 ESTABLISHED
TCP   192.168.1.21:52188    23.215.205.230:443 CLOSE_WAIT
TCP   192.168.1.21:52415    172.64.155.209:443 ESTABLISHED
TCP   192.168.1.21:52809    172.253.118.188:5228 ESTABLISHED
TCP   192.168.1.21:53174    172.64.155.209:443 ESTABLISHED
TCP   192.168.1.21:56597    157.240.239.60:443 CLOSE_WAIT
TCP   192.168.1.21:56598    43.250.166.226:443 CLOSE_WAIT
TCP   192.168.1.21:56599    163.70.146.60:443 CLOSE_WAIT
TCP   192.168.1.21:56600    157.240.198.60:443 CLOSE_WAIT
TCP   192.168.1.21:56601    163.70.145.60:443 CLOSE_WAIT
TCP   192.168.1.21:56602    163.70.144.60:443 CLOSE_WAIT
TCP   192.168.1.21:56603    57.144.129.32:443 CLOSE_WAIT
TCP   192.168.1.21:56604    57.144.147.32:443 CLOSE_WAIT
TCP   192.168.1.21:59391    172.64.148.235:443 ESTABLISHED
TCP   192.168.1.21:62199    192.168.1.1:53      TIME_WAIT
TCP   192.168.1.21:64239    4.213.25.240:443 ESTABLISHED
TCP   192.168.1.21:64242    4.213.25.240:443 ESTABLISHED

C:\Windows\System32>
```

netstat -o

- Adds the process ID (PID) that is using each connection.

```
C:\Administrator: Command Prompt - netstat -o
C:\Windows\System32>netstat -o

Active Connections

Proto Local Address          Foreign Address        State      PID
TCP   192.168.1.21:49673    gpon:domain        TIME_WAIT  0
TCP   192.168.1.21:50861    52.182.143.210:https TIME_WAIT  0
TCP   192.168.1.21:50862    20.189.173.14:https TIME_WAIT  0
TCP   192.168.1.21:50939    relay-d7553589:https ESTABLISHED 5824
TCP   192.168.1.21:50941    4.224.112.242:https ESTABLISHED 8352
TCP   192.168.1.21:52142    server-3-175-86-113:https ESTABLISHED 19352
TCP   192.168.1.21:52188    a23-215-205-230:https CLOSE_WAIT 12164
```

netstat -an | find "ESTABLISHED" □ netstat -

an = all connections, numeric form.

- | find "ESTABLISHED" = only show results containing the word "ESTABLISHED".

```
Administrator: Command Prompt

C:\Windows\System32>netstat -an | find "ESTABLISHED"
  TCP    192.168.1.21:50939      148.113.16.225:443      ESTABLISHED
  TCP    192.168.1.21:50941      4.224.112.242:443      ESTABLISHED
  TCP    192.168.1.21:51604      52.123.129.14:443      ESTABLISHED
  TCP    192.168.1.21:51605      52.123.128.14:443      ESTABLISHED
  TCP    192.168.1.21:52142      3.175.86.113:443      ESTABLISHED
  TCP    192.168.1.21:52415      172.64.155.209:443      ESTABLISHED
  TCP    192.168.1.21:52809      172.253.118.188:5228      ESTABLISHED
  TCP    192.168.1.21:53174      172.64.155.209:443      ESTABLISHED
  TCP    192.168.1.21:54487      3.175.86.113:443      ESTABLISHED
  TCP    192.168.1.21:59391      172.64.148.235:443      ESTABLISHED
  TCP    192.168.1.21:64239      4.213.25.240:443      ESTABLISHED
  TCP    192.168.1.21:64242      4.213.25.240:443      ESTABLISHED

C:\Windows\System32>
```

Linux:

```
netstat -tuln
netstat -tulnp
netstat -s          netstat
-r
```

4. ipconfig (Windows) / ifconfig (Linux)

Displays IP address, subnet mask, gateway, and other network info for your device.

Main Uses:

- Find device IP and MAC address.
- Check DNS and DHCP info.
- Troubleshoot network connectivity.

Commands:

Windows:

```
ipconfig
```

```
C:\ Administrator: Command Prompt
C:\Windows\System32>ipconfig

Windows IP Configuration

Ethernet adapter vEthernet (nagios):

  Connection-specific DNS Suffix . :
  Link-local IPv6 Address . . . . . : fe80::33f6:767b:3b6a:542c%17
  Autoconfiguration IPv4 Address. . . : 169.254.86.227
  Subnet Mask . . . . . : 255.255.0.0
  Default Gateway . . . . . :

Ethernet adapter vEthernet (sos):

  Connection-specific DNS Suffix . :
  Link-local IPv6 Address . . . . . : fe80::2aca:a845:8634:485%6
  Autoconfiguration IPv4 Address. . . : 169.254.177.48
  Subnet Mask . . . . . : 255.255.0.0
  Default Gateway . . . . . :

Ethernet adapter vEthernet (int-1):

  Connection-specific DNS Suffix . :
  Link-local IPv6 Address . . . . . : fe80::f32e:a09c:2656:ee7b%15
  Autoconfiguration IPv4 Address. . . : 169.254.111.4
  Subnet Mask . . . . . : 255.255.0.0
  Default Gateway . . . . . :

Ethernet adapter vEthernet (int-2):

  Connection-specific DNS Suffix . :
  Link-local IPv6 Address . . . . . : fe80::d716:59f0:1ae0:b729%27
  Autoconfiguration IPv4 Address. . . : 169.254.60.17
  Subnet Mask . . . . . : 255.255.0.0
  Default Gateway . . . . . :

Wireless LAN adapter Local Area Connection* 1:

  Media State . . . . . : Media disconnected
  Connection-specific DNS Suffix . :

Wireless LAN adapter Local Area Connection* 2:

  Media State . . . . . : Media disconnected
  Connection-specific DNS Suffix . :
```

ipconfig /all

Shows detailed info including:

- IP address
- Subnet mask

- Default gateway
- DNS servers
- MAC (Physical) address
- DHCP info

```
Administrator: Command Prompt
C:\Windows\System32>ipconfig /all

Windows IP Configuration

Host Name . . . . . : PRIYANSHI
Primary Dns Suffix . . . . . :
Node Type . . . . . : Hybrid
IP Routing Enabled. . . . . : No
WINS Proxy Enabled. . . . . : No

Ethernet adapter vEthernet (nagios):

Connection-specific DNS Suffix . . . . . :
Description . . . . . : Hyper-V Virtual Ethernet Adapter #3
Physical Address. . . . . : 00-15-5D-BB-01-00
DHCP Enabled. . . . . : Yes
Autoconfiguration Enabled . . . . . : Yes
Link-local IPv6 Address . . . . . : fe80::33f6:767b:3b6a:542c%17(PREFERRED)
Autoconfiguration IPv4 Address. . . . . : 169.254.86.227(PREFERRED)
Subnet Mask . . . . . : 255.255.0.0
Default Gateway . . . . . :
DHCPv6 IAID . . . . . : 872420701
DHCPv6 Client DUID. . . . . : 00-01-00-01-2F-30-67-9C-F8-89-D2-64-0F-4F
NetBIOS over Tcpip. . . . . : Enabled

Ethernet adapter vEthernet (sos):

Connection-specific DNS Suffix . . . . . :
Description . . . . . : Hyper-V Virtual Ethernet Adapter #4
Physical Address. . . . . : 00-15-5D-BB-01-03
DHCP Enabled. . . . . : Yes
Autoconfiguration Enabled . . . . . : Yes
Link-local IPv6 Address . . . . . : fe80::2aca:a845:8634:485%6(PREFERRED)
Autoconfiguration IPv4 Address. . . . . : 169.254.177.48(PREFERRED)
Subnet Mask . . . . . : 255.255.0.0
Default Gateway . . . . . :
DHCPv6 IAID . . . . . : 1241519453
DHCPv6 Client DUID. . . . . : 00-01-00-01-2F-30-67-9C-F8-89-D2-64-0F-4F
NetBIOS over Tcpip. . . . . : Enabled
```

ipconfig /release

- Releases current IP address obtained from DHCP server.

```
C:\ Administrator: Command Prompt
C:\Windows\System32>ipconfig /release

Windows IP Configuration

No operation can be performed on Local Area Connection* 1 while it has its media
No operation can be performed on Local Area Connection* 2 while it has its media
An error occurred while releasing interface vEthernet (ext) : An address has not

No operation can be performed on Bluetooth Network Connection while it has its m

Ethernet adapter vEthernet (nagios):

  Connection-specific DNS Suffix . :
  Link-local IPv6 Address . . . . . : fe80::33f6:767b:3b6a:542c%17
  Autoconfiguration IPv4 Address. . . : 169.254.86.227
  Subnet Mask . . . . . : 255.255.0.0
  Default Gateway . . . . . :

Ethernet adapter vEthernet (sos):

  Connection-specific DNS Suffix . :
  Link-local IPv6 Address . . . . . : fe80::2aca:a845:8634:485%6
  Autoconfiguration IPv4 Address. . . : 169.254.177.48
  Subnet Mask . . . . . : 255.255.0.0
  Default Gateway . . . . . :

Ethernet adapter vEthernet (int-1):

  Connection-specific DNS Suffix . :
  Link-local IPv6 Address . . . . . : fe80::f32e:a09c:2656:ee7b%15
  Autoconfiguration IPv4 Address. . . : 169.254.111.4
  Subnet Mask . . . . . : 255.255.0.0
  Default Gateway . . . . . :

Ethernet adapter vEthernet (int-2):

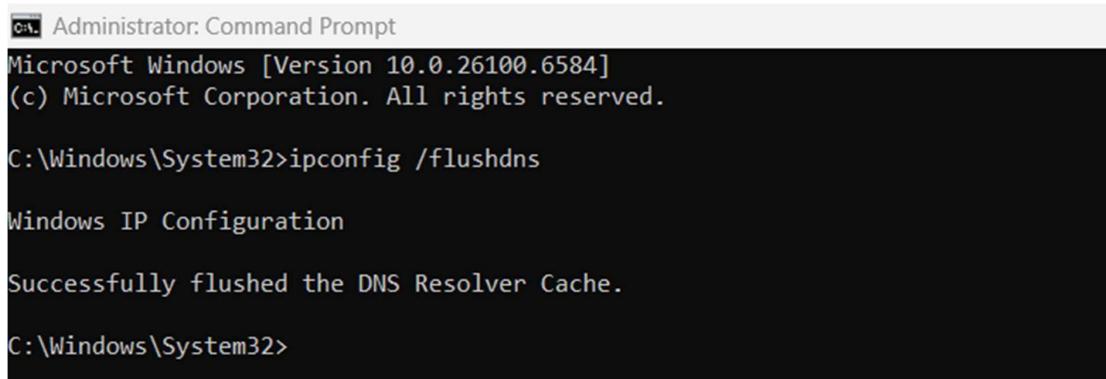
  Connection-specific DNS Suffix . :
  Link-local IPv6 Address . . . . . : fe80::d716:59f0:1ae0:b729%27
  Autoconfiguration IPv4 Address. . . : 169.254.60.17
  Subnet Mask . . . . . : 255.255.0.0
  Default Gateway . . . . . :
```

ipconfig /renew

- Requests a new IP address from the DHCP server.
- Used when internet is not working due to wrong IP.

ipconfig /flushdns

- Clears (flushes) the DNS cache.



```
Administrator: Command Prompt
Microsoft Windows [Version 10.0.26100.6584]
(c) Microsoft Corporation. All rights reserved.

C:\Windows\System32>ipconfig /flushdns

Windows IP Configuration

Successfully flushed the DNS Resolver Cache.

C:\Windows\System32>
```

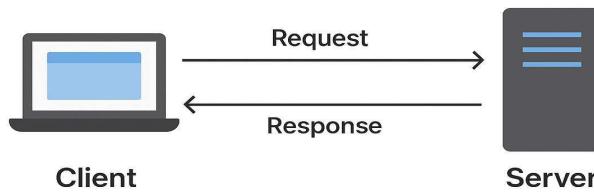
Linux:

```
ifconfig
ifconfig eth0 up/down    ip
addr show      ip route
show [ Routing Table ]
```

[Task 4: Write a short report explaining client-server communication](#)

- Client-server communication is when a computer (client) asks another computer (server) for information or services, and the server sends back the answer.
- It helps computers share data and resources over a network easily.

Client-Server Communication



How Client-Server Communication Works 1.

Client Sends a Request:

- o The client (computer, smartphone, or browser) starts the communication by asking the server for a service or data. o This could be a web page, a file, an email, or any other online service.
- o The client is basically saying, “Please give me this information or perform this task.”

2. Server Receives & Processes the Request:

- o The server gets the request and checks what is being asked. o It retrieves the needed data, runs programs, or performs tasks to prepare the response. o The server makes sure the request is handled correctly before sending it back.

3. Server Sends Back the Response:

- o After processing, the server sends the requested data, information, or result back to the client.
- o This can be a web page, an email, a file, or confirmation of a service.
- o If something goes wrong, the server may also send an error message to the client.

4. Client Uses the Response:

- o The client receives the response and displays or uses it.
- o Examples: a browser shows a web page, an email app shows new emails, or a game updates the screen.

- o The client may send more requests based on what it received, continuing the communication process.

Example:

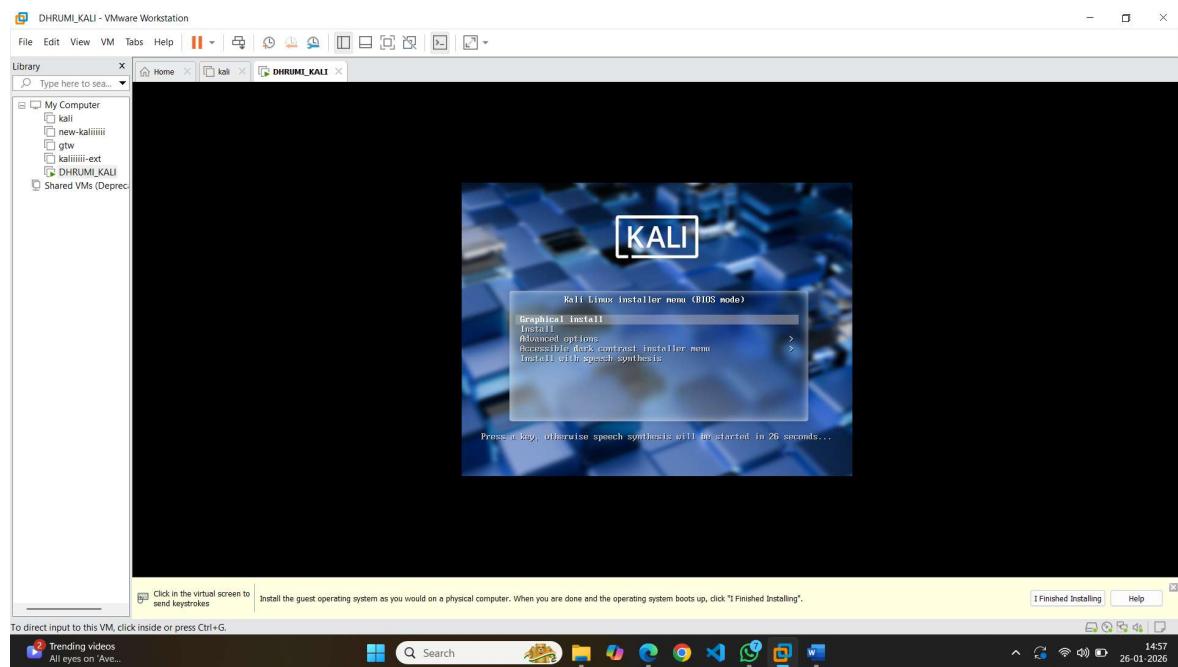
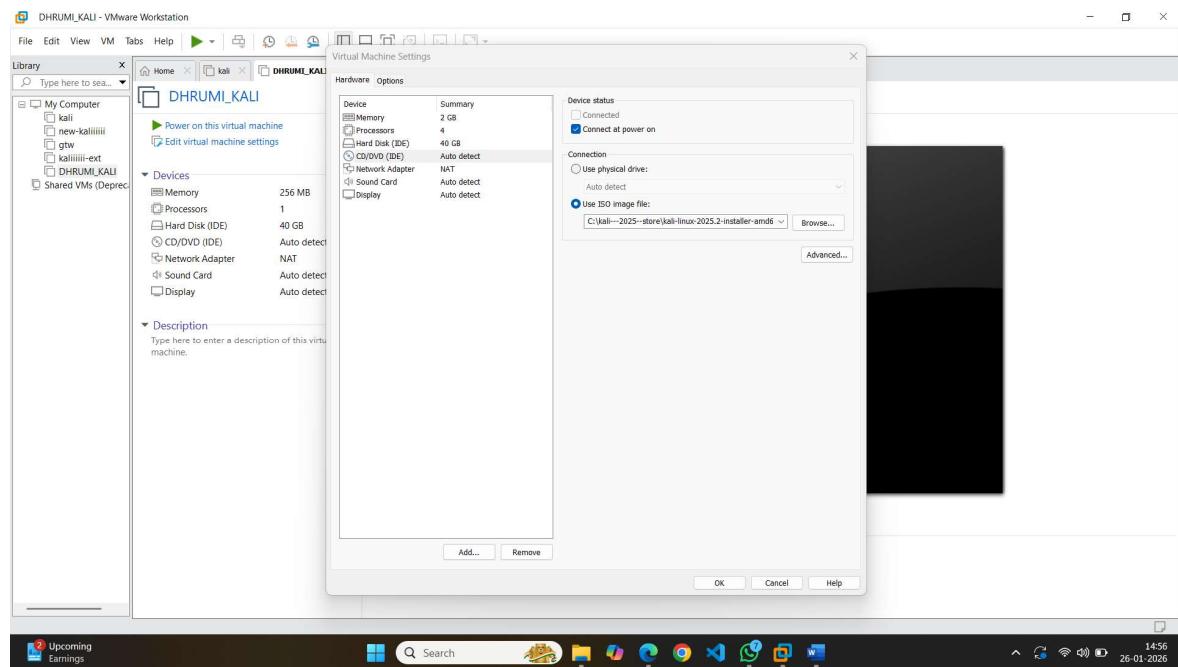
Online Shopping Website:

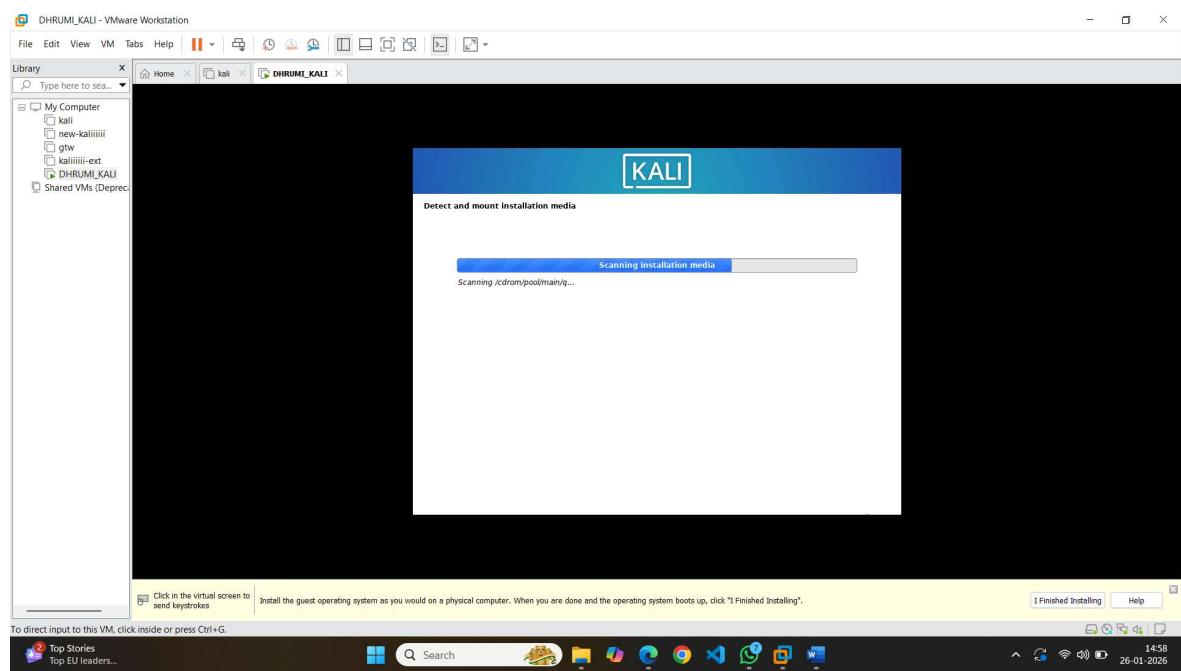
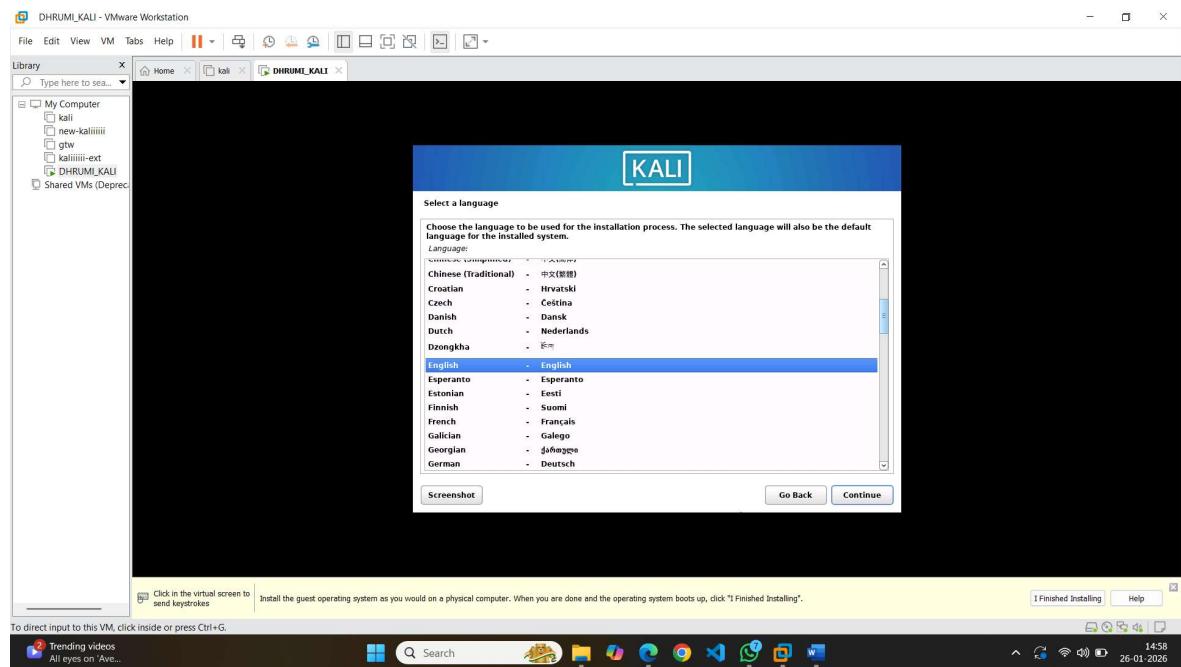
- When you visit an online store like Amazon, your web browser acts as the client.
- It sends requests to the store's server to show product pages, check prices, or add items to the cart.
- The server processes these requests, fetches the information from databases, and sends it back to your browser.
- This allows you to view products, place orders, and track deliveries seamlessly.

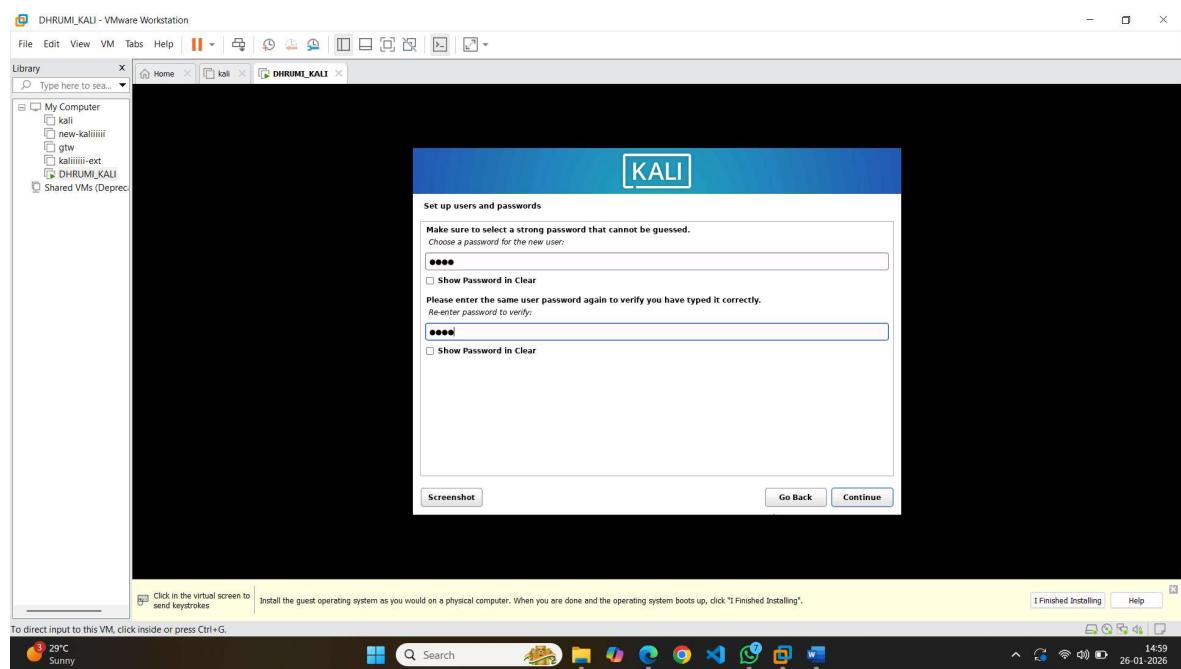
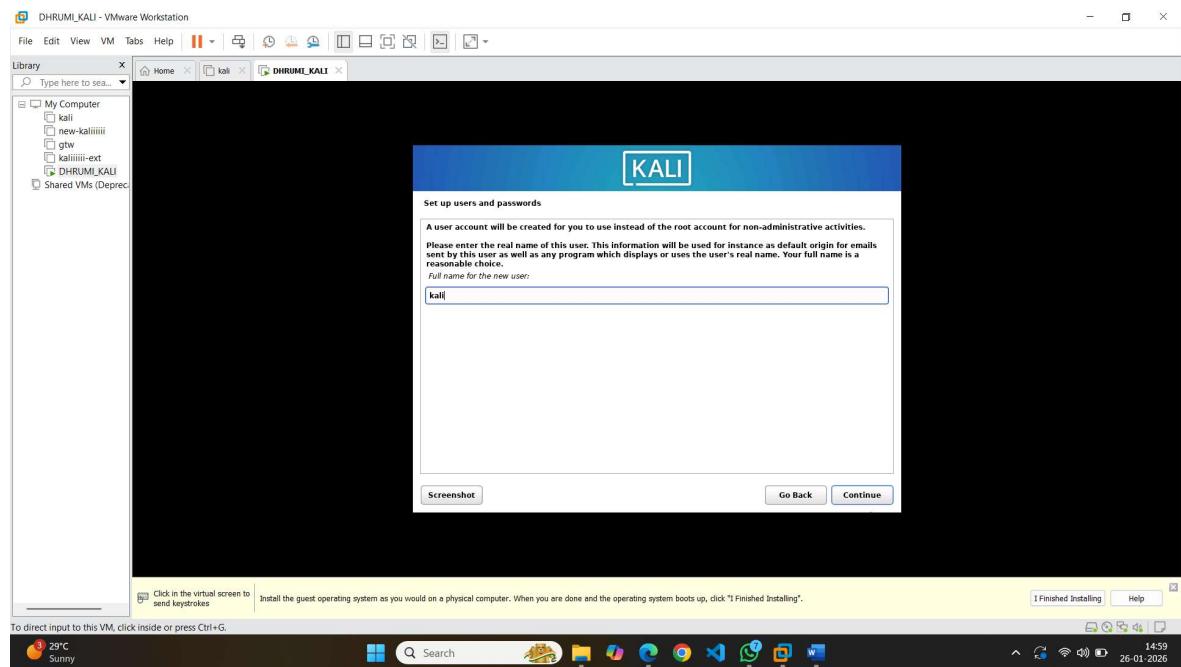
Week-2

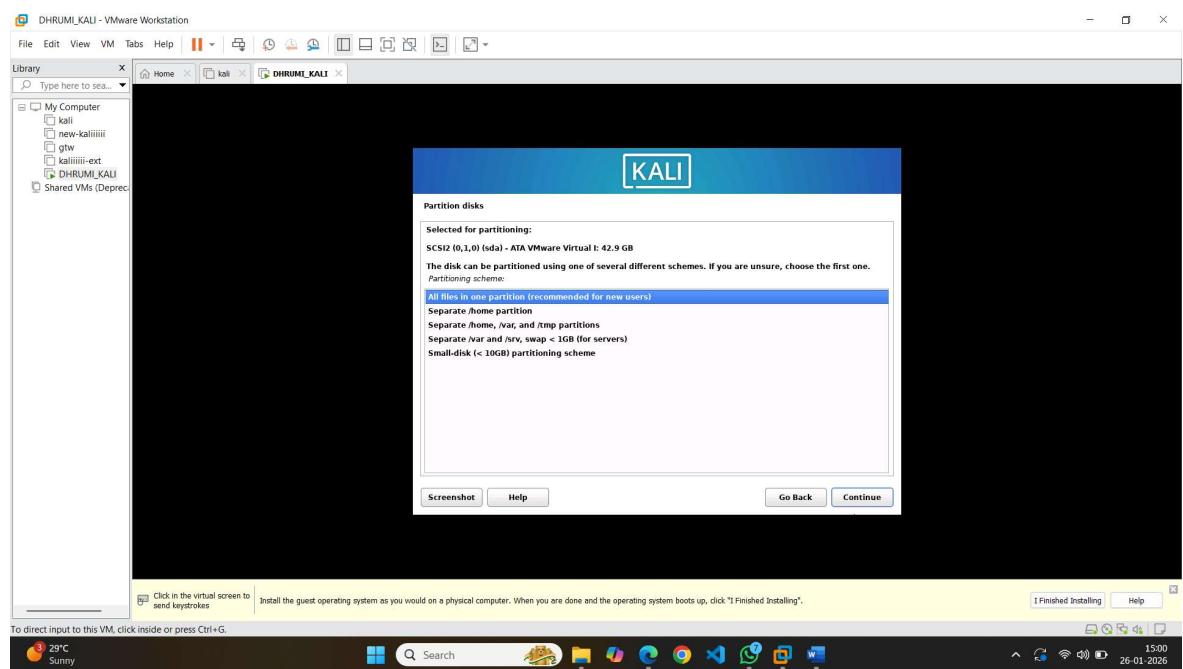
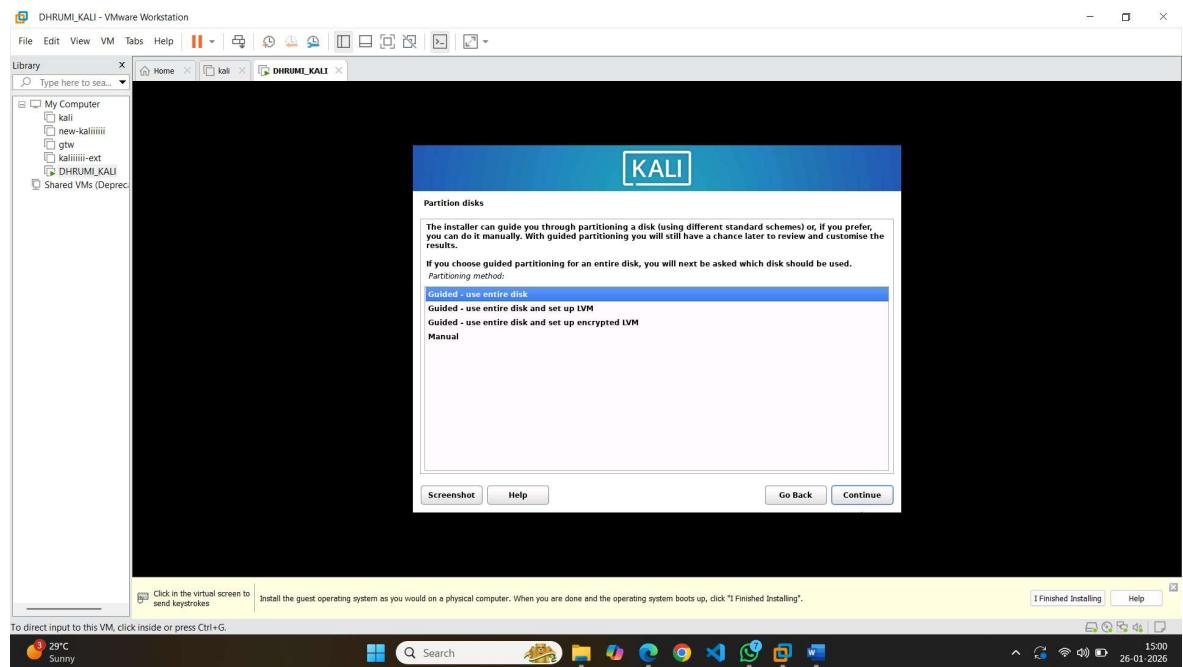
Linux & Windows Networking

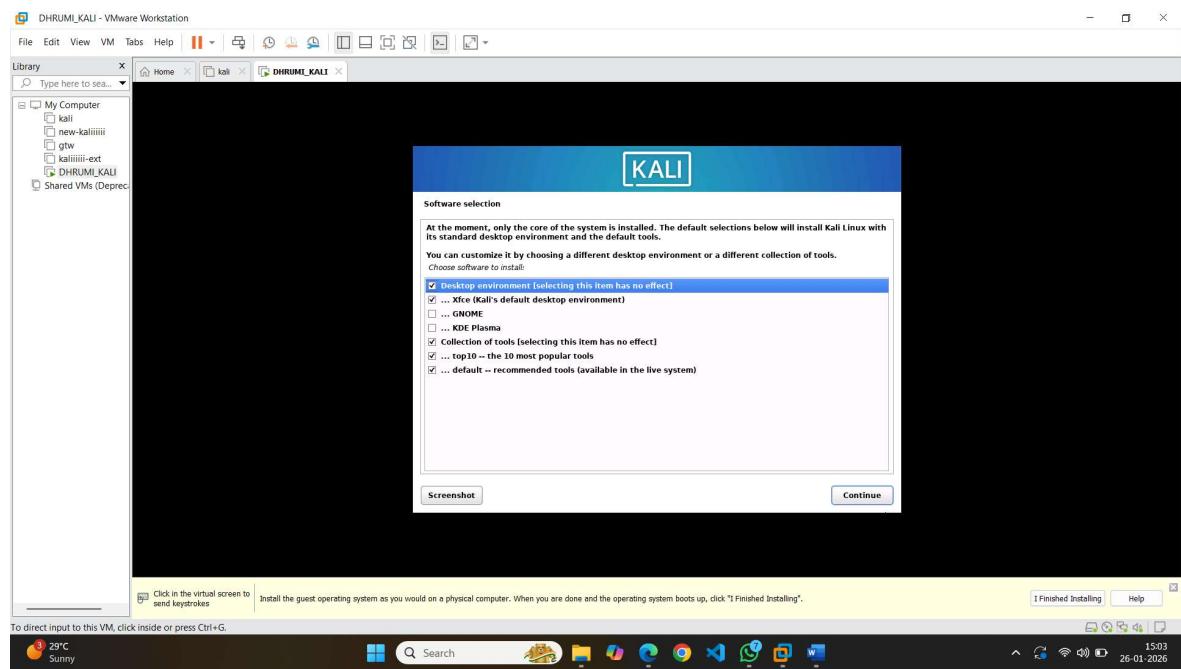
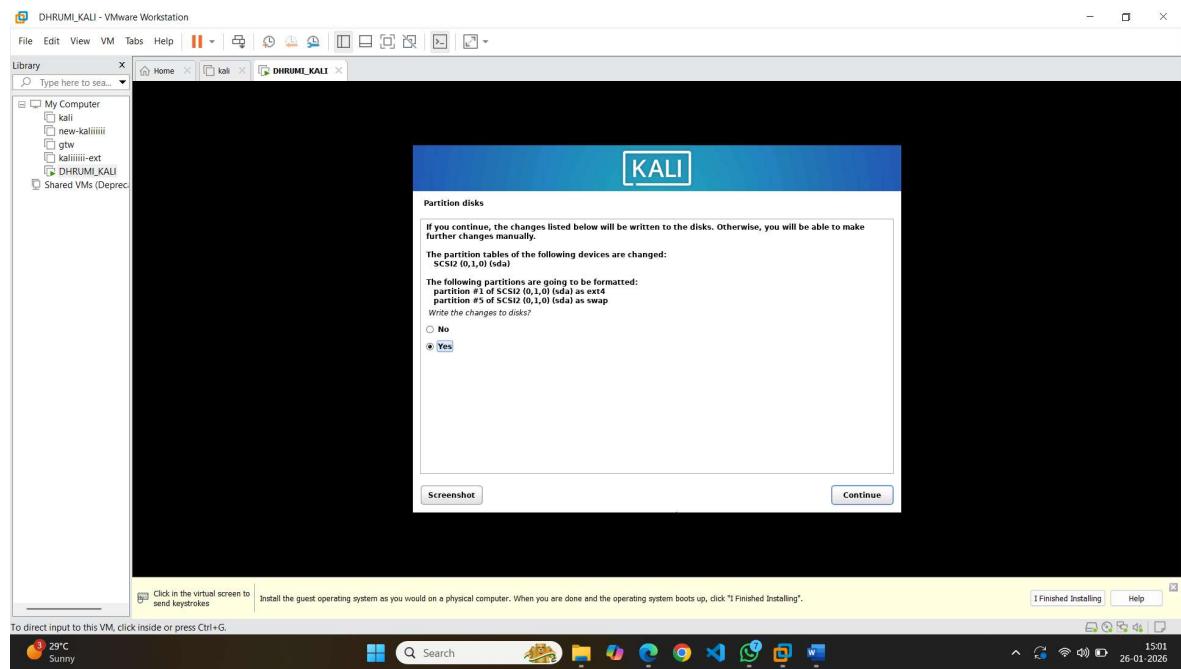
Install Linux VM

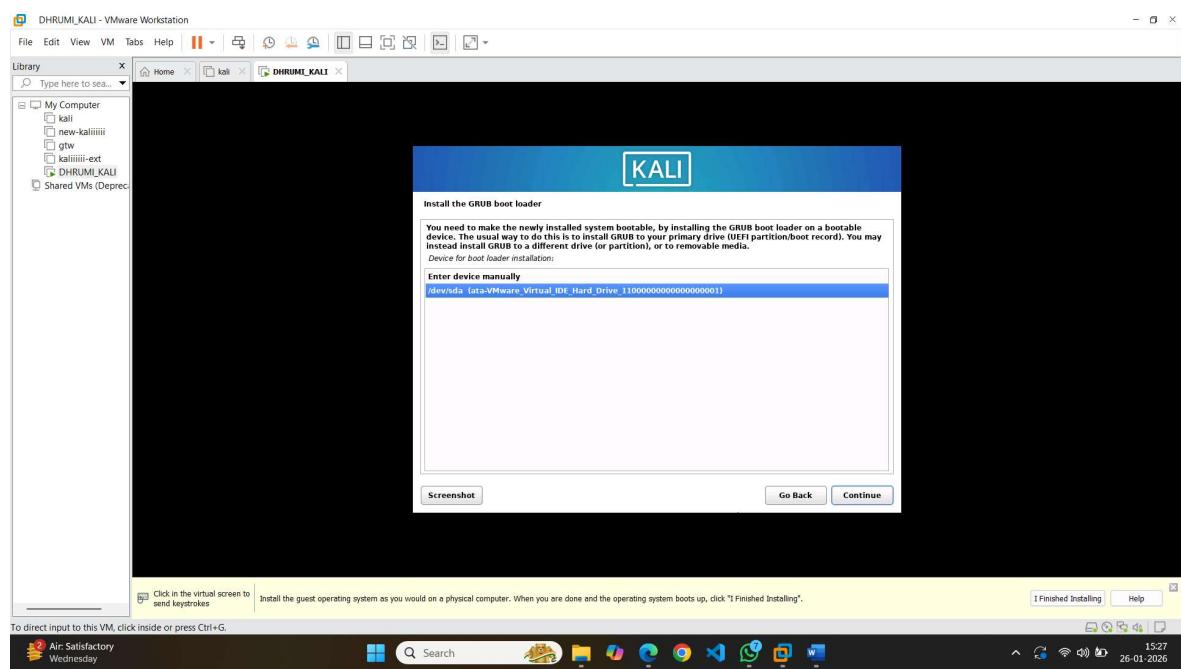
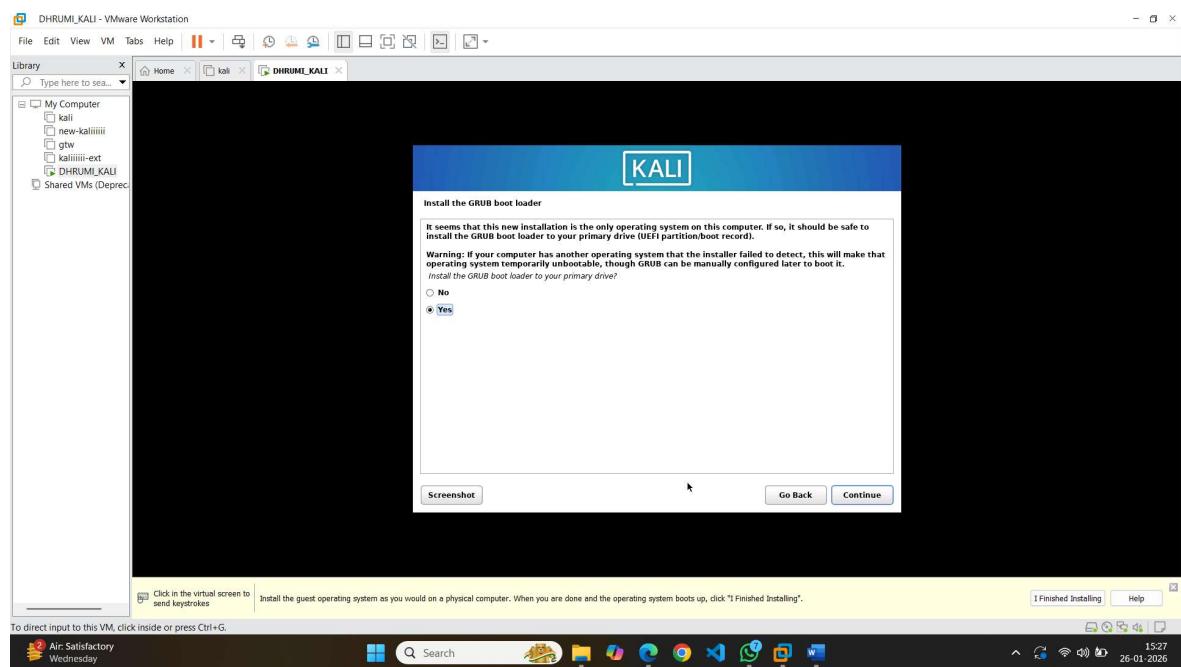


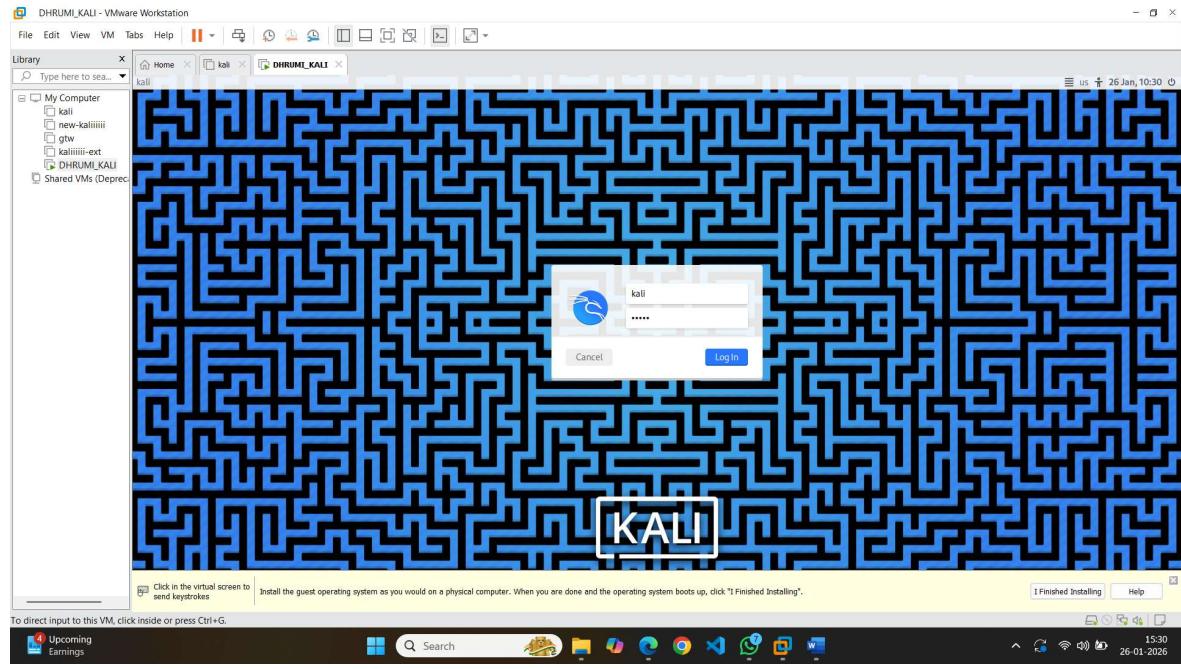
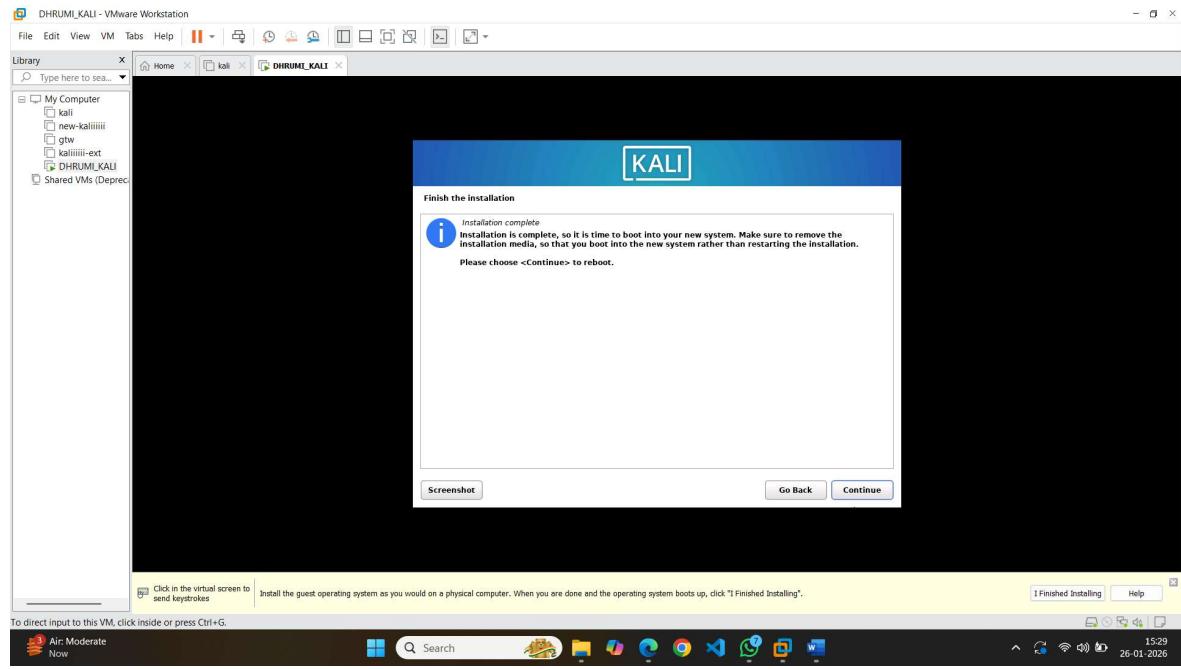












Basic Linux Commands

File & Directory Commands

- **Pwd – Print Working Directory**

Shows the full path of the current directory

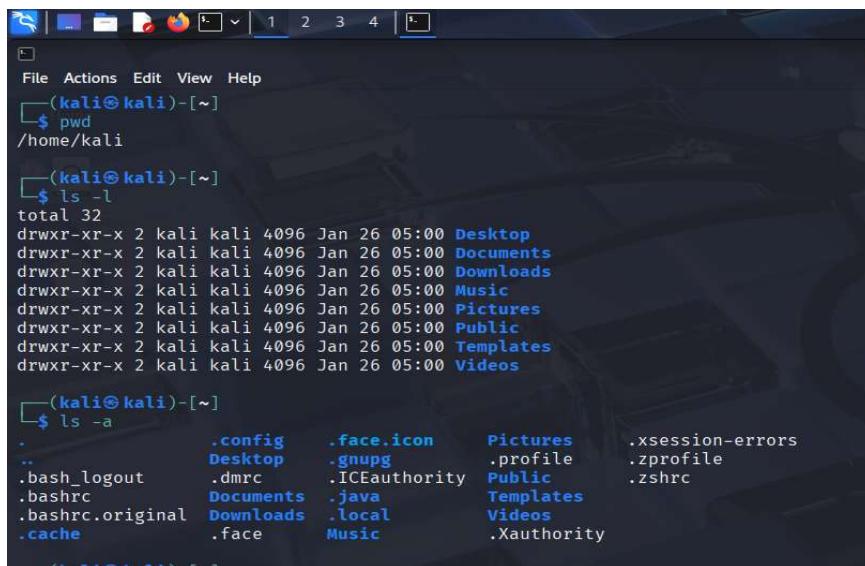
- **ls – List Files and Directories**

Lists all files and folders in the current directory.

- `ls -l` → detailed list

- `ls -a` → show hidden

files.

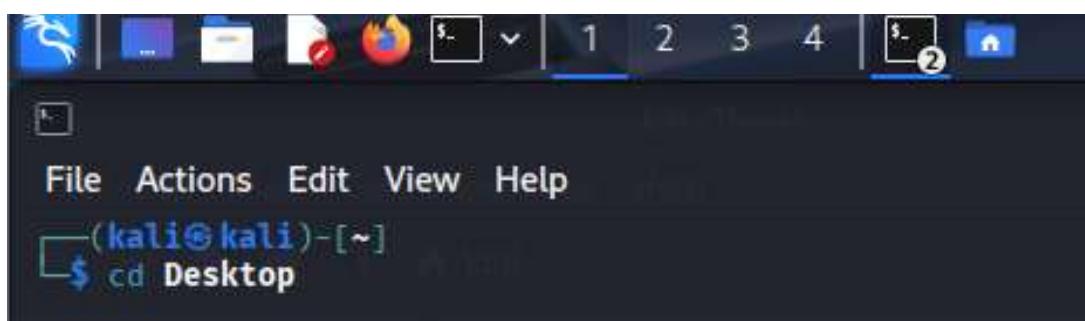


```
(kali㉿kali)-[~]
$ pwd
/home/kali
(kali㉿kali)-[~]
$ ls -l
total 32
drwxr-xr-x 2 kali kali 4096 Jan 26 05:00 Desktop
drwxr-xr-x 2 kali kali 4096 Jan 26 05:00 Documents
drwxr-xr-x 2 kali kali 4096 Jan 26 05:00 Downloads
drwxr-xr-x 2 kali kali 4096 Jan 26 05:00 Music
drwxr-xr-x 2 kali kali 4096 Jan 26 05:00 Pictures
drwxr-xr-x 2 kali kali 4096 Jan 26 05:00 Public
drwxr-xr-x 2 kali kali 4096 Jan 26 05:00 Templates
drwxr-xr-x 2 kali kali 4096 Jan 26 05:00 Videos

(kali㉿kali)-[~]
$ ls -a
. .config .face.icon Pictures .xsession-errors
.. Desktop .gnupg .profile .zprofile
.bash_logout .dmrc .ICEauthority Public .zshrc
.bashrc Documents .java Templates
.bashrc.original Downloads .local Videos
.cache .face Music .Xauthority
```

- **cd <directory> – Change Directory**

Move to another folder.



```
(kali㉿kali)-[~]
$ cd Desktop
```

- **mkdir <directory> – Make Directory**

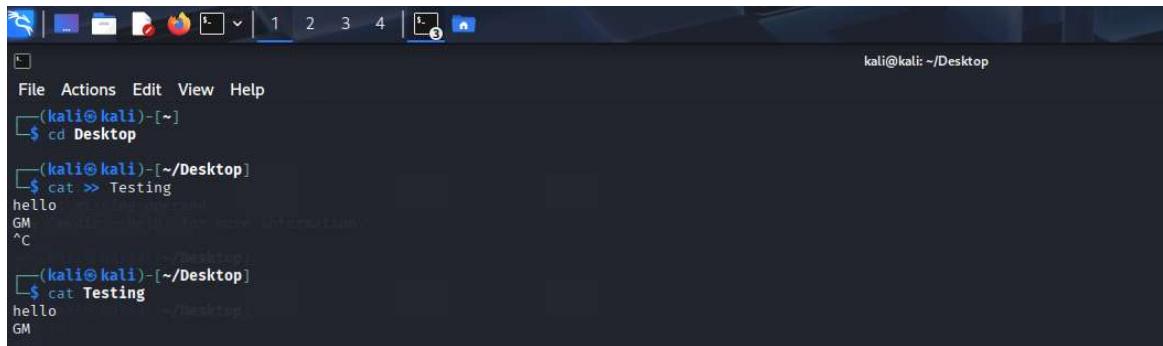
Creates a new folder.

- **rmdir <directory> – Remove Empty Directory** Deletes an empty folder.

```
(kali㉿kali)-[~/Desktop]
$ mkdir abc
(kali㉿kali)-[~/Desktop]
$ ls abc
(kali㉿kali)-[~/Desktop]
$ rmdir abc
(kali㉿kali)-[~/Desktop]
```

- **cat <file>** – Display File Content

Shows the content of a file.



```
kali㉿kali: ~/Desktop
File Actions Edit View Help
(kali㉿kali)-[~]
$ cd Desktop
(kali㉿kali)-[~/Desktop]
$ cat >> Testing
hello
GM
^C
(kali㉿kali)-[~/Desktop]
$ cat Testing
hello
GM
```

cp <source> <destination> – Copy File

Copies a file from one place to another.

```
(kali㉿kali)-[~/Desktop]
$ cp Testing Test_copy
(kali㉿kali)-[~/Desktop]
$ cat Test_copy
hello
GM
(kali㉿kali)-[~/Desktop]
```

whoami – Show Current User

Displays the username of the logged-in user.

```
GM
(kali㉿kali)-[~/Desktop]
$ whoami
kali
(kali㉿kali)-[~/Desktop]
```

id – Show User and Group Info

Shows UID, GID, and groups for the current user.

```
(kali㉿kali)-[~/Desktop]
$ id
uid:1000(kali) gid:1000(kali) groups=1000(kali),4(adm),20(dialout),24(cdrom),25(floppy),27(sudo),29(audio),30(dip),46(video),46(plugdev),100(users),101(netdev),103(scanner),116(bluetooth),121(lpadmin),124(wireless)
ark),133(kubokey)
(kali㉿kali)-[~/Desktop]
```

uname -a – System Information

Shows system/kernel details.

```

d1Ry,133(kali0x01)
└─(kali㉿kali)-[~/Desktop]
$ uname -a
Linux kali 6.12.25-amd64 #1 SMP PREEMPT_DYNAMIC Kali 6.12.25-1kali1 (2025-04-30) x86_64 GNU/Linux
└─(kali㉿kali)-[~/Desktop]
$ █

```

Process & History

ps aux – Show Running Processes

Lists all active processes.

```

DHRUMI_KALI - VMware Workstation
File Edit View VM Help ||| + | ☰ | 🌐 | 📂 | 🗃 | 🗁 | 🗄 | 🗈 | 🗉 | 🗊 | 🗋 | 🗑 | 🗑 |
Library Type here to search... DHRUMI_KALI
My Computer
  kali
  new-kaliini
  gtw
  kaliini-ext
  DHRUMI_KALI
Shared VMS (Depec...
File Actions Edit View Help
└─(kali㉿kali)-[~/Desktop]
$ uname -a
Linux kali 6.12.25-amd64 #1 SMP PREEMPT_DYNAMIC Kali 6.12.25-1kali1 (2025-04-30) x86_64 GNU/Linux
└─(kali㉿kali)-[~/Desktop]
$ ps aux
USER PID SCPU MMEM VSZ RSS TTY STAT START TIME COMMAND
root 1 0.2 0.7 23516 14572 ? S 05:00 0:01 /sbin/init splash
root 2 0.0 0.0 0.7 0 0 ? S 05:00 0:00 [kthread]
root 3 0.0 0.0 0.7 0 0 ? S 05:00 0:00 [perf_event_munmap_release]
root 4 0.0 0.0 0.7 0 0 ? I< 05:00 0:00 [worker/R-kvref_rcu_reclaim]
root 5 0.0 0.0 0.7 0 0 ? I< 05:00 0:00 [worker/R-rCU_gP]
root 6 0.0 0.0 0.7 0 0 ? I< 05:00 0:00 [worker/sync_wq]
root 7 0.0 0.0 0.7 0 0 ? I< 05:00 0:00 [worker/R-slab_flush]
root 8 0.0 0.0 0.7 0 0 ? I< 05:00 0:00 [worker/R-nets]
root 11 0.0 0.0 0.7 0 0 ? I< 05:00 0:00 [worker/0-H	events_highpri]
root 12 0.0 0.0 0.7 0 0 ? I< 05:00 0:00 [worker/R-mm_percpu_wq]
root 13 0.0 0.0 0.7 0 0 ? I< 05:00 0:00 [worker/R-mm_percpu_wq]
root 14 0.0 0.0 0.7 0 0 ? I 05:00 0:00 [rcu_task_kthread]
root 15 0.0 0.0 0.7 0 0 ? I 05:00 0:00 [migration/0]
root 16 0.0 0.0 0.7 0 0 ? I 05:00 0:00 [rcu_task_trace_kthread]
root 17 0.0 0.0 0.7 0 0 ? S 05:00 0:00 [ksoftirqd/0]
root 18 0.0 0.0 0.7 0 0 ? S 05:00 0:00 [rcu_jiffies_kthread]
root 19 0.0 0.0 0.7 0 0 ? S 05:00 0:00 [rcu_exp_gP_kthread_worker/0]
root 20 0.0 0.0 0.7 0 0 ? S 05:00 0:00 [rcu_exp_gP_kthread_worker]
root 21 0.0 0.0 0.7 0 0 ? S 05:00 0:00 [migration/0]
root 22 0.0 0.0 0.7 0 0 ? S 05:00 0:00 [idle_inject/0]
root 23 0.0 0.0 0.7 0 0 ? S 05:00 0:00 [cpuhub/0]
root 24 0.0 0.0 0.7 0 0 ? S 05:00 0:00 [cpuhub/1]
root 25 0.0 0.0 0.7 0 0 ? S 05:00 0:00 [idle_inject/1]
root 26 0.0 0.0 0.7 0 0 ? S 05:00 0:00 [migration/1]
root 27 0.0 0.0 0.7 0 0 ? S 05:00 0:00 [ksoftirqd/1]
root 28 0.0 0.0 0.7 0 0 ? I< 05:00 0:00 [worker/1-H	events_highpri]
root 29 0.0 0.0 0.7 0 0 ? S 05:00 0:00 [idle_inject/2]
root 30 0.0 0.0 0.7 0 0 ? S 05:00 0:00 [idle_inject/2]
root 31 0.0 0.0 0.7 0 0 ? S 05:00 0:00 [migration/2]
root 32 0.0 0.0 0.7 0 0 ? S 05:00 0:00 [idle_inject/2]
root 33 0.0 0.0 0.7 0 0 ? S 05:00 0:00 [migration/2]
root 34 0.0 0.0 0.7 0 0 ? I 05:00 0:00 [worker/2-H	events]
root 35 0.0 0.0 0.7 0 0 ? I< 05:00 0:00 [worker/2-mm_percpu_wq]
root 36 0.0 0.0 0.7 0 0 ? S 05:00 0:00 [idle_inject/3]
root 37 0.0 0.0 0.7 0 0 ? S 05:00 0:00 [idle_inject/3]
root 38 0.0 0.0 0.7 0 0 ? S 05:00 0:00 [migration/3]
root 39 0.0 0.0 0.7 0 0 ? S 05:00 0:00 [ksoftirqd/3]

```

Click in the virtual screen to send keystrokes | Install the guest operating system as you would on a physical computer. When you are done and the operating system boots up, click "I Finished Installing".

I Finished Installing | Help

To direct input to this VM, move the mouse pointer inside or press Ctrl+.

29°C Sunny

26-01-2026 15:42

top – Monitor Processes

Live view of CPU and memory usage.

DHRUMI_KALI - VMware Workstation

File Edit View VM Tabs Help | 1 2 3 4 | kalin@kali:~\$

Library My Computer new-kali.kali gwt kali.kali-ext DHRUMI_KALI Shared VMS (Deprec)

```
top - 05:12:31 up 12 min, 1 user, load average: 0.00, 0.07, 0.07
Tasks: 217 total, 1 running, 216 sleeping, 0 stopped, 0 zombies
Mem: 4.0 GiB total, 0.0 GiB free, 3.9 GiB used, 0.0 GiB available
Swap: 2048.0 MiB total, 2045.0 MiB free, 561.0 MiB used, 1085.6 MiB available

PID USER PR NI VIRT RES SHR S %CPU %MEM TIME+ COMMAND
1028 root 20 0 44336 157008 70364 5 8.3 7.8 0:06.99 xorg
1546 kalin 20 0 274012 287408 21172 5 8.3 1.4 0:02.01 wrapper-2.0
7660 kalin 20 0 10464 5416 1572 5 R 0.0 0.0 0:00.00 kalin
root 20 0 23516 15972 10628 5 0.0 0.7 0:01.66 sysynd
2 root 20 0 0 0 0 0 0.0 0.0 0:00.01 kthreadd
3 root 20 0 0 0 0 0 0.0 0.0 0:00.00 pool_workqueue_release
4 root 0 -20 0 0 0 0 0.0 0.0 0:00.00 kworker/kvfree_rcu_reclaim
5 root 0 -20 0 0 0 0 0.0 0.0 0:00.00 kworker/R-rcu_gd
6 root 0 -20 0 0 0 0 0.0 0.0 0:00.00 kworker/sync_wq
7 root 0 -20 0 0 0 0 0.0 0.0 0:00.00 kworker/slab_flushwq
8 root 0 -20 0 0 0 0 0.0 0.0 0:00.00 kworker/R-nets
11 root 0 -20 0 0 0 0 0.0 0.0 0:00.00 kworker/0-0h-events_highpri
12 root 20 0 0 0 0 0 0.0 0.0 0:00.00 kworker/0-ipv6_addrconf
13 root 0 -20 0 0 0 0 0.0 0.0 0:00.00 kworker/R-mm_percpu_wq
14 root 20 0 0 0 0 0 0.0 0.0 0:00.00 rcu_tasks_kthreadd
15 root 20 0 0 0 0 0 0.0 0.0 0:00.00 rcu_tasks_rude_kthreadd
16 root 20 0 0 0 0 0 0.0 0.0 0:00.00 rcu_tasks_trace_kthreadd
17 root 20 0 0 0 0 0 0.0 0.0 0:00.04 ksoftirqd/0
18 root 20 0 0 0 0 0 0.0 0.0 0:00.00 rcu_exp_gp_kthreadd
19 root 20 0 0 0 0 0 0.0 0.0 0:00.00 kworker/0-mm_percpu_wq
20 root 20 0 0 0 0 0 0.0 0.0 0:00.00 rcu_exp_gp_kthreadd_worker/0
21 root rt 0 0 0 0 0 0.0 0.0 0:00.02 migration/0
22 root -51 0 0 0 0 0 0.0 0.0 0:00.00 idle_inject/0
23 root 20 0 0 0 0 0 0.0 0.0 0:00.00 cpuhw/0
24 root 20 0 0 0 0 0 0.0 0.0 0:00.00 cpuhw/1
25 root -51 0 0 0 0 0 0.0 0.0 0:00.00 idle_inject/1
26 root 20 0 0 0 0 0 0.0 0.0 0:00.12 migration/1
27 root 20 0 0 0 0 0 0.0 0.0 0:00.03 ksoftirqd/1
29 root 0 -20 0 0 0 0 0.0 0.0 0:00.00 kworker/1-0h-events_highpri
30 root 20 0 0 0 0 0 0.0 0.0 0:00.00 kworker/1-mm_percpu_wq
31 root -51 0 0 0 0 0 0.0 0.0 0:00.00 idle_inject/2
32 root rt 0 0 0 0 0 0.0 0.0 0:00.13 migration/2
33 root 20 0 0 0 0 0 0.0 0.0 0:00.00 kworker/2-0h-events_highpri
34 root 20 0 0 0 0 0 0.0 0.0 0:00.15 kworker/2-0-mm_percpu_wq
35 root 0 -20 0 0 0 0 0.0 0.0 0:00.00 kworker/2-0h-events_highpri
36 root 20 0 0 0 0 0 0.0 0.0 0:00.00 cpuhw/2
37 root -51 0 0 0 0 0 0.0 0.0 0:00.00 idle_inject/3
```

Click in the virtual screen to send keystrokes

To direct input to this VM, move the mouse pointer inside or press Ctrl+G.

29°C Sunny

I Finished Installing Help

15:42 26-01-2026

History – Show Command History

Displays previously executed commands.

DHRUMI_KALI - VMware Workstation

File Edit View VM Tabs Help | 1 2 3 4 | kalin@kali:~\$

Library My Computer new-kali.kali gwt kali.kali-ext DHRUMI_KALI Shared VMS (Deprec)

```
top - 05:12:31 up 12 min, 1 user, load average: 0.00, 0.07, 0.07
Tasks: 217 total, 1 running, 216 sleeping, 0 stopped, 0 zombies
Mem: 4.0 GiB total, 0.0 GiB free, 3.9 GiB used, 0.0 GiB available
Swap: 2048.0 MiB total, 2045.0 MiB free, 561.0 MiB used, 1085.6 MiB available

PID USER PR NI VIRT RES SHR S %CPU %MEM TIME+ COMMAND
1 root 20 0 23516 14572 10628 5 0.0 0.7 0:01.66 sysynd
2 root 20 0 0 0 0 0 0.0 0.0 0:00.01 kthreadd
3 root 20 0 0 0 0 0 0.0 0.0 0:00.00 pool_workqueue_release
4 root 0 -20 0 0 0 0 0.0 0.0 0:00.00 kworker/kvfree_rcu_reclaim
5 root 0 -20 0 0 0 0 0.0 0.0 0:00.00 kworker/R-rcu_gd
6 root 0 -20 0 0 0 0 0.0 0.0 0:00.00 kworker/sync_wq
7 root 0 -20 0 0 0 0 0.0 0.0 0:00.00 kworker/slab_flushwq
8 root 0 -20 0 0 0 0 0.0 0.0 0:00.00 kworker/R-nets
11 root 0 -20 0 0 0 0 0.0 0.0 0:00.00 kworker/0-0h-events_highpri
12 root 20 0 0 0 0 0 0.0 0.0 0:00.00 kworker/0-ipv6_addrconf
13 root 0 -20 0 0 0 0 0.0 0.0 0:00.00 kworker/R-mm_percpu_wq
14 root 20 0 0 0 0 0 0.0 0.0 0:00.00 rcu_tasks_kthreadd
15 root 20 0 0 0 0 0 0.0 0.0 0:00.00 rcu_tasks_rude_kthreadd
16 root 20 0 0 0 0 0 0.0 0.0 0:00.00 rcu_tasks_trace_kthreadd
17 root 20 0 0 0 0 0 0.0 0.0 0:00.04 ksoftirqd/0
18 root 20 0 0 0 0 0 0.0 0.0 0:00.00 rcu_exp_gp_kthreadd
19 root 20 0 0 0 0 0 0.0 0.0 0:00.00 kworker/0-mm_percpu_wq
20 root 20 0 0 0 0 0 0.0 0.0 0:00.00 rcu_exp_gp_kthreadd_worker/0
21 root rt 0 0 0 0 0 0.0 0.0 0:00.02 migration/0
22 root -51 0 0 0 0 0 0.0 0.0 0:00.00 idle_inject/0
23 root 20 0 0 0 0 0 0.0 0.0 0:00.00 cpuhw/0
24 root 20 0 0 0 0 0 0.0 0.0 0:00.00 cpuhw/1
25 root -51 0 0 0 0 0 0.0 0.0 0:00.00 idle_inject/1
26 root 20 0 0 0 0 0 0.0 0.0 0:00.00 idle_inject/2
27 root 20 0 0 0 0 0 0.0 0.0 0:00.00 migration/1
29 root 0 -20 0 0 0 0 0.0 0.0 0:00.00 kworker/1-0h-events_highpri
30 root 20 0 0 0 0 0 0.0 0.0 0:00.00 kworker/1-mm_percpu_wq
31 root -51 0 0 0 0 0 0.0 0.0 0:00.00 idle_inject/3
32 root rt 0 0 0 0 0 0.0 0.0 0:00.13 migration/2
33 root 20 0 0 0 0 0 0.0 0.0 0:00.00 kworker/2-0h-events_highpri
34 root 20 0 0 0 0 0 0.0 0.0 0:00.15 kworker/2-0-mm_percpu_wq
35 root 0 -20 0 0 0 0 0.0 0.0 0:00.00 kworker/2-0h-events_highpri
36 root 20 0 0 0 0 0 0.0 0.0 0:00.00 cpuhw/2
37 root -51 0 0 0 0 0 0.0 0.0 0:00.00 idle_inject/4
```

Click in the virtual screen to send keystrokes

To direct input to this VM, move the mouse pointer inside or press Ctrl+G.

29°C Sunny

I Finished Installing Help

15:42 26-01-2026

df -h – Disk Usage

Shows available and used disk space in human-readable format.

```
(kali㉿kali)-[~/Desktop]
└─$ df -h
Filesystem      Size  Used Avail Use% Mounted on
udev            921M   0  921M  0% /dev
tmpfs           198M  1.1M 197M  1% /run
/dev/sda1        38G  14G  22G  40% /
tmpfs           987M  4.0K 987M  1% /dev/shm
tmpfs            5.0M   0  5.0M  0% /run/lock
tmpfs           1.0M   0  1.0M  0% /run/credentials/systemd-journald.service
tmpfs           987M  444K 987M  1% /tmp
tmpfs           1.0M   0  1.0M  0% /run/credentials/getty@tty1.service
tmpfs           198M 124K 198M  1% /run/user/1000

(kali㉿kali)-[~/Desktop]
└─$
```

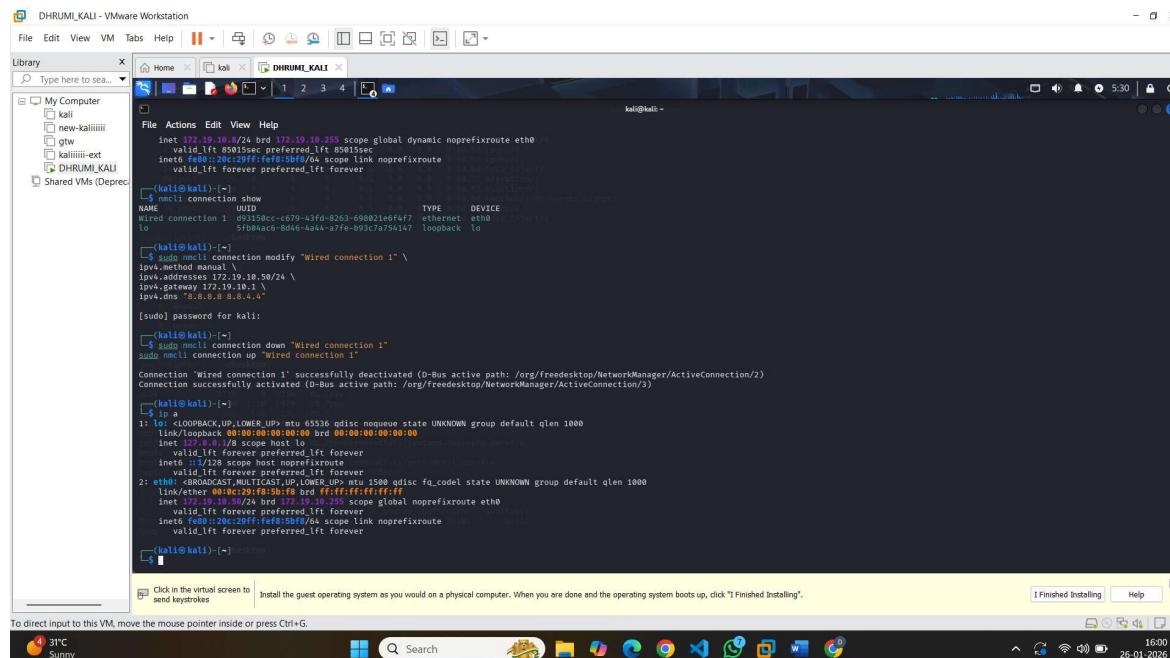
free -h – Memory Usage

Displays RAM and swap usage.

```
(kali㉿kali)-[~/Desktop]
└─$ free -h
          total        used        free      shared  buff/cache   available
Mem:       1.9Gi       876Mi      702Mi      23Mi      561Mi       1.1Gi
Swap:      2.0Gi        0B        2.0Gi

(kali㉿kali)-[~/Desktop]
└─$
```

Configure static IP



```
[kali㉿kali] ~
└─$ nmcli connection show
NAME                UUID                                  UUIDv6
Wired connection 1  8c1150cc-c679-43fd-8263-69b021e6f4f7  f808120c-20c2-4fe8-b5b8/64
to                  5fb04ac6-8d46-44a4-a7fe-093c7751a17  loopback lo
[kali㉿kali] ~
└─$ sudo nmcli connection modify "Wired connection 1" \
  ipv4.method manual \
  ipv4.addresses 192.19.10.58/24 \
  ipv4.gateway 172.19.10.1 \
  ipv4.dns '8.8.8.8 8.8.4.4'

[sudo] password for kali:
[kali㉿kali] ~
└─$ sudo nmcli connection down "Wired connection 1"
sudo: netctl: command not found
[kali㉿kali] ~
└─$ sudo netctl connection up "Wired Connection 1"

Connection 'Wired connection 1' successfully deactivated (0-Bus active path: /org/freedesktop/NetworkManager/ActiveConnection/2)
Connection successfully activated (0-Bus active path: /org/freedesktop/NetworkManager/ActiveConnection/)

[kali㉿kali] ~
└─$ ip a
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default qlen 1000
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
    inet 127.0.0.1/8 brd 127.255.255.255 scope host loopback
        valid_lft forever preferred_lft forever
2: eth0: <NO-CARRIER,BROADCAST,MULTICAST,UP> mtu 1500 qdisc fq_codel state UNKNOWN group default qlen 1000
    link/ether 00:0c:29:f8:3b:f0 brd ff:ff:ff:ff:ff:ff
    inet 172.19.10.58/24 brd 172.19.10.255 scope global noprefixroute eth0
        valid_lft forever preferred_lft forever
    inet6 fe80::20c:29ff:fe83:b5b8/64 scope link noprefixroute
        valid_lft forever preferred_lft forever
[kali㉿kali] ~
└─$
```

```

DHRUMI_KALI - VMware Workstation
File Edit View VM Tabs Help | < > | Library Type here to search... DHRUMI_KALI
My Computer
  - kali
  - new-kali001
  - gtw
  - kali001-ext
  - DHRUMI_KALI
Shared VMs (Deprec)
  - kali@kali ~
  - [kali@kali] [-]
  - $ nmcli connection show
  - Network connection 1 (Wired connection 1)          TYPE  DEVICE
    - connection.id: wired-connection-1              NM_V  eth0
    - connection.uuid: 093150cc-e679-43fd-8263-698021e6f4f7  ethernet  eth0
    - connection.state: 100 (available)
    - connection.id: wired-connection-1              NM_V  loopback
    - connection.uuid: 5fb84ac6-8d46-4a44-a7fe-b93c7a754147  loopback  lo
    - connection.state: 100 (available)
  - [kali@kali] [-]
  - $ sudo nmcli connection modify "Wired connection 1" ipv4.method manual
  - ipv4.addresses: 172.19.10.1-172.19.10.59/24 \
  - ipv4.gateway: 172.19.10.1 \
  - ipv4.dns: "8.8.8.8 8.8.4.4"
  - [sudo] password for kali:
  - [kali@kali] [-]
  - $ sudo nmcli connection down "Wired connection 1"
  - sudo nmcli connection up "Wired connection 1"
  - Connection 'Wired connection 1' successfully deactivated (D-Bus active path: /org/freedesktop/NetworkManager/ActiveConnection/2)
  - Connection successfully activated (D-Bus active path: /org/freedesktop/NetworkManager/ActiveConnection/3)
  - [kali@kali] [-]
  - $ ip a
  - 1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default qlen 1000
    link/loopback brd 00:00:00:00:00:00 state UNKNOWN group default qlen 1000
    inet 127.0.0.1/8 brd 00:00:00:00:00:00 scope host
      valid_lft forever preferred_lft forever
    inet6 ::1/128 brd 00:00:00:00:00:00 scope host
      valid_lft forever preferred_lft forever
  - 2: eth0: <NO-CARRIER,BROADCAST,MULTICAST,UP> mtu 1500 qdisc fq_codel state UNKNOWN group default qlen 1000
    link/ether 00:0c:29:f8:5b:f0 brd ff:ff:ff:ff:ff:ff
    inet 172.19.10.1/24 brd 172.19.10.255 scope global noprefixroute eth0
      valid_lft forever preferred_lft forever
    inet6 fe80::20c:29ff:fe8b:5bf0/64 scope link noprefixroute
      valid_lft forever preferred_lft forever
  - [kali@kali] [-]
  - $ ip route
  - default via 172.19.10.1 dev eth0 proto static metric 100
  - 172.19.10.0/24 dev eth0 proto kernel scope link src 172.19.10.58 metric 100
  - [kali@kali] [-]

Click in the virtual screen to send keystrokes
Install the guest operating system as you would on a physical computer. When you are done and the operating system boots up, click "I Finished Installing".
I Finished Installing Help
To direct input to this VM, move the mouse pointer inside or press Ctrl+G.

```

Dynamic ip

```

DHRUMI_KALI - VMware Workstation
File Edit View VM Tabs Help | < > | Library Type here to search... DHRUMI_KALI
My Computer
  - kali
  - new-kali001
  - gtw
  - kali001-ext
  - DHRUMI_KALI
Shared VMs (Deprec)
  - kali@kali ~
  - [kali@kali] [-]
  - $ sudo nmcli connection down "Wired connection 1"
  - sudo nmcli connection up "Wired connection 1"
  - Connection 'Wired connection 1' successfully deactivated (D-Bus active path: /org/freedesktop/NetworkManager/ActiveConnection/2)
  - Connection successfully activated (D-Bus active path: /org/freedesktop/NetworkManager/ActiveConnection/3)
  - [kali@kali] [-]
  - $ ip a
  - 1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default qlen 1000
    link/loopback brd 00:00:00:00:00:00 state UNKNOWN group default qlen 1000
    inet 127.0.0.1/8 brd 00:00:00:00:00:00 scope host
      valid_lft forever preferred_lft forever
    inet6 ::1/128 brd 00:00:00:00:00:00 scope host
      valid_lft forever preferred_lft forever
  - 2: eth0: <NO-CARRIER,BROADCAST,MULTICAST,UP> mtu 1500 qdisc fq_codel state UNKNOWN group default qlen 1000
    link/ether 00:0c:29:f8:5b:f0 brd ff:ff:ff:ff:ff:ff
    inet 172.19.10.1/24 brd 172.19.10.255 scope global noprefixroute eth0
      valid_lft forever preferred_lft forever
    inet6 fe80::20c:29ff:fe8b:5bf0/64 scope link noprefixroute
      valid_lft forever preferred_lft forever
  - [kali@kali] [-]
  - $ ip route
  - default via 172.19.10.1 dev eth0 proto static metric 100
  - 172.19.10.0/24 dev eth0 proto kernel scope link src 172.19.10.58 metric 100
  - [kali@kali] [-]
  - $ sudo nmcli connection modify "Wired connection 1" ipv4.method auto
  - [kali@kali] [-]
  - $ sudo nmcli connection down "Wired connection 1"
  - Connection 'Wired connection 1' successfully deactivated (D-Bus active path: /org/freedesktop/NetworkManager/ActiveConnection/3)
  - [kali@kali] [-]
  - $ sudo nmcli connection up "Wired connection 1"
  - Connection successfully activated (D-Bus active path: /org/freedesktop/NetworkManager/ActiveConnection/4)
  - [kali@kali] [-]

Click in the virtual screen to send keystrokes
Install the guest operating system as you would on a physical computer. When you are done and the operating system boots up, click "I Finished Installing".
I Finished Installing Help
To direct input to this VM, move the mouse pointer inside or press Ctrl+G.

```

Enable SSH between two VMs

new-kali - VMware Workstation

```

File Edit View VM Tabs Help | 
Administrator: C:\WINDOWS\system32\iconhost.exe

Library X Type here to search...
My Computer
  - kali
    - new-kali
    - gtw
    - kali-rolling-ext
    - DHRUMI_KALI
Shared VMS (Deprecated)

File Actions Edit View Help
[ kali:kali ] [-]
$ ip link
1: ens3: CLOUDBACKUP LOWER_UP mtu 65536 qdisc noqueue state UNKNOWN group def
  ault qlen 1000
  link/loopback brd 00:00:00:00:00:00 brd 00:00:00:00:00:00
  inet 127.0.0.1/8 brd 0.0.0.0 scope host loopback
    valid_lft forever preferred_lft forever
    inet6 ::1/128 scope host
      valid_lft forever preferred_lft forever
2: eth0: MULTICAST LOWER_UP mtu 1500 qdisc fq_codel state UP group default qlen 1000
  link/ether 00:0c:29:36:bd:7b brd ff:ff:ff:ff:ff:ff
  inet 172.18.9.24/24 brd 172.18.9.255 scope global dynamic noprefixroute
    valid_lft 65328sec preferred_lft 65328sec
    inet6 fe80::20c:29ff:fe36:bd7b/128 brd ff:ff:ff:ff:ff:ff scope link
      valid_lft forever preferred_lft forever
[ kali:kali ] [-]
$ ping 172.18.9.14
PING 172.18.9.14 (172.18.9.14) 56(84) bytes of data.
64 bytes from 172.18.9.14: icmp_seq=1 ttl=128 time=14.3 ms
64 bytes from 172.18.9.14: icmp_seq=2 ttl=128 time=14.3 ms
64 bytes from 172.18.9.14: icmp_seq=3 ttl=128 time=1.68 ms
64 bytes from 172.18.9.14: icmp_seq=4 ttl=128 time=1.53 ms
[ kali:kali ] [-]
$ 172.18.9.14 ping statistics --
4 packets transmitted, 4 received, 0% packet loss, time 3007ms
rtt min/avg/max/mdev = 1.526/5.837/14.323/5.381 ms
[ kali:kali ] [-]
$ sudo apt update
[sudo] password for kali:
Get:1 http://kali.download/kali kali-rolling InRelease [34.0 kB]
Get:2 http://kali.download/kali kali-rolling/main amd64 Packages [20.7 MB]
Get:3 http://kali.download/kali kali-rolling/main amd64 Contents [deb] [52.1 kB]
Get:4 http://kali.download/kali kali-rolling/contrib amd64 Packages [117 kB]
Get:5 http://kali.download/kali kali-rolling/contrib amd64 Contents [deb] [26.8 kB]
Get:6 http://kali.download/kali kali-rolling/non-free amd64 Packages [190 kB]
Get:7 http://kali.download/kali kali-rolling/non-free amd64 Contents [deb] [9.05 kB]
Get:8 http://kali.download/kali kali-rolling/non-free-firmware amd64 Packages [11.8 kB]
Get:9 http://kali.download/kali kali-rolling/non-free-firmware amd64 Contents

```

To direct input to this VM, move the mouse pointer inside or press Ctrl+G.

28°C Mostly sunny 18:23 26-01-2026

new-kali - VMware Workstation

```

File Edit View VM Tabs Help | 
Administrator: C:\WINDOWS\system32\iconhost.exe

Library X Type here to search...
My Computer
  - kali
    - new-kali
    - gtw
    - kali-rolling-ext
    - DHRUMI_KALI
Shared VMS (Deprecated)

File Actions Edit View Help
[ kali:kali ] [-]
$ 172.18.9.14 ping
[ kali:kali ] [-]
$ sudo apt install openssh-client -y
[sudo] password for kali:
Get:1 https://kali.download/kali kali-rolling InRelease [34.0 kB]
Get:2 http://kali.download/kali kali-rolling/main amd64 Packages [20.7 MB]
Get:3 http://kali.download/kali kali-rolling/main amd64 Contents [deb] [52.1 kB]
Get:4 http://kali.download/kali kali-rolling/contrib amd64 Packages [117 kB]
Get:5 http://kali.download/kali kali-rolling/contrib amd64 Contents [deb] [26.8 kB]
Get:6 http://kali.download/kali kali-rolling/non-free amd64 Packages [190 kB]
Get:7 http://kali.download/kali kali-rolling/non-free amd64 Contents [deb] [9.05 kB]
Get:8 http://kali.download/kali kali-rolling/non-free-firmware amd64 Packages [11.8 kB]
Get:9 http://kali.download/kali kali-rolling/non-free-firmware amd64 Contents
Fetched 74.3 MB in 12s (6,374 kB/s)
2073 packages can be upgraded. Run 'apt list --upgradable' to see them.
Upgrading:
  openssh-client openssh-sftp-server
Summary:
Upgrading: 3, Installing: 0, Removing: 0, Not Upgrading: 2070
Download size: 1,720 kB
Space needed: 217 kB / 8,312 MB available
Get:3 https://kali.download/kali kali-rolling/main amd64 openssh-client amd64
1:10.2pl-3 [1,029 kB]
Get:4 http://mirrors.estoonetwork/kali kali-rolling/main amd64 openssh-sftp-
server amd64 1:10.2pl-3 [66.4 kB]
Get:2 http://mirrors.estoonetwork/kali kali-rolling/main amd64 openssh-server
amd64 1:10.2pl-3 [1.729 kB]
Preconfiguring packages
(Reading database ... 13227 files and directories currently installed.)
Preparing to unpack .../openssh-sftp-server_1:10.2pl-3_amd64.deb ...
Unpacking openssh-sftp-server (1:10.2pl-3) over (1:10.0pl-5) ...
Preparing to unpack .../openssh-server_1:10.2pl-3_amd64.deb ...
Unpacking openssh-server (1:10.2pl-3) over (1:10.0pl-5) ...
Preparing to unpack .../openssh-client_1:10.2pl-3_amd64.deb ...
Unpacking openssh-client (1:10.2pl-3) over (1:10.0pl-5) ...
Setting up openssh-client (1:10.2pl-3) ...

```

To direct input to this VM, move the mouse pointer inside or press Ctrl+G.

28°C Mostly sunny 18:24 26-01-2026

The screenshot shows a Kali Linux VM running in VMware Workstation. The terminal window displays an SSH session from the Kali host to a Windows 10 target. The session starts with a file download from a mirror, followed by the extraction and configuration of the OpenSSH server. It then attempts to connect to a Windows host at 172.18.9.14, prompting for a fingerprint verification. The Windows host's details are shown, including its version (10.0.26100.1742) and copyright information. The terminal prompt ends with the administrator's name.

```
Administrator: C:\WINDOWS\system32\cmdhost.exe

Administrator@WIN-05L568KMS5: ~
$ ssh administrator@172.18.9.14
The authenticity of Host '172.18.9.14 (172.18.9.14)' can't be established.
ED25519 key fingerprint is: SHA256:n2wFeTxH19UElwpxY+oW3mXvCjwZefkSC1zr
This key is not known by any other names.
Are you sure you want to continue connecting (yes/no/[Fingerprint])? yes
Warning: Permanently added '172.18.9.14' (ED25519) to the list of known hosts
```
WARNING: connection is not using a post-quantum key exchange algorithm.
```
This session may be vulnerable to "store now, decrypt later" attacks.
The server's certificate needs to be upgraded. See https://openssh.com/pq.html
administrator@172.18.9.14: ~
Microsoft Windows [Version 10.0.26100.1742]
(c) Microsoft Corporation. All rights reserved.

administrator@WIN-05L568KMS5: ~
```

The screenshot shows a Kali Linux VM running in VMware Workstation. The terminal window displays a Windows command prompt (cmdhost.exe) running as administrator. The user runs several commands to check for system files and integrity. The output shows the path C:\Windows\system32\cmdhost.exe and various file paths related to the command host application.

```
Administrator: C:\WINDOWS\system32\cmdhost.exe

Administrator@WIN-05L568KMS5: ~
$ whoami
Administrator@WIN-05L568KMS5: ~
$ ls -la
total 0
Administrator@WIN-05L568KMS5: ~
$ whoami
Administrator@WIN-05L568KMS5: ~
$ whoami
Administrator@WIN-05L568KMS5: ~
```

splunk_server4 on LAPTOP-K7E1N23 - Virtual Machine Connection

Administrator: Windows PowerShell ISE

```
C:\Users\Administrator>IPCONFIG
Windows IP Configuration

Ethernet adapter Ethernet:

  Connection-specific DNS Suffix . : mshome.net
  Link-local IPv6 Address . . . . . : fe80::312f:bff%21c7:a%af%4
  IPv4 Address . . . . . : 172.18.9.14
  Subnet Mask . . . . . : 255.255.240.0
  Default Gateway . . . . . : 172.18.0.1

C:\Users\Administrator>ping 172.19.10.9
Pinging 172.19.10.9 with 32 bytes of data:
Reply from 172.19.10.9: bytes=32 time=1ms TTL=63
Reply from 172.19.10.9: bytes=32 time=1ms TTL=63

Ping statistics for 172.19.10.9:
  Packets: Sent = 2, Received = 2, Lost = 0 (0% loss),
  Approximate round trip times in milli-seconds:
    Minimum = 1ms, Maximum = 1ms, Average = 1ms
Control-C
C:\Users\Administrator>ssh root@172.19.10.9
ssh: connect to host 172.19.10.9 port 22: Connection refused

C:\Users\Administrator>
```

Page 1

28°C Mostly sunny

ENIG 4:54 AM 18:24 26-01-2026

splunk_server4 on LAPTOP-K7E1N23 - Virtual Machine Connection

Administrator: Windows PowerShell ISE

```
PS C:\Users\Administrator> New-NetFirewallRule -Name "SSH" -DisplayName "Allow SSH" -Enabled True -Direction Inbound -Protocol TCP -Action Allow -LocalPort 22
PS C:\Users\Administrator> New-NetFirewallRule -Name "SSH" -DisplayName "Allow SSH" -Enabled True -Direction Inbound -Protocol TCP -Action Allow -LocalPort 22

Name:          SSH
 DisplayName:  Allow SSH
 Description:
 DisplayGroup:
 Group:
 Enabled:      True
 Profile:      Any
 Platform:
 Action:        Allow
 Direction:    Inbound
 EdgeTraversalPolicy:
 LooseSourceMapping:
 LocalOnlyMapping:
 Owner:
 PrimaryStatus: OK
 Status:       The rule was parsed successfully from the store. (65536)
 EnforcementStatus: NotApplicable
 PolicyStoreSource: PersistentStore
 PolicyStoreType: Local
 RemoteKeywords:
 RemoteAddresses:
 PolicyAppId:
 PackageFamilyName:
```

```
PS C:\Users\Administrator> netstat -an | findstr :22
Completed

C:\Users\Administrator>
```

Page 1

28°C Mostly sunny

ENIG 4:55 AM 18:25 26-01-2026

splunk_server4 on LAPTOP-K7E11N23 - Virtual Machine Connection

Administrator: Windows PowerShell ISE

```
Name          : SSH
DisplayName   : Allow SSH
Description   :
DistinguishedName:
Group        :
Enabled      : True
FromPort     : Any
Platform     : []
Inbound      : Inbound
Direction    : All
EdgeTraversalPolicy:
LooseSourceMapping:
LocalOnlyMapping:
Name          : OK
PrimaryStatus : The rule was parsed successfully from the store. (65536)
Status        : NotApplicable
PolicyStoreSource:
PolicyStoreSourceType:
PolicyId      : Local
PolicyKeyWords:
PackageFamilyName:
```

PS C:\Users\Administrator> netstat -an | findstr :22

TCP	0.0.0.0:22	0.0.0.0:0	LISTENING
TCP	[::]:22	[::]:0	LISTENING

PS C:\Users\Administrator> sudo apt update

sudo apt install openssh-client -y

<<

Completed

C:\Users\Administrator>

Network 7 Internet access

Evaluation for 29 days 40331-1435

18:25 26-01-2026

splunk_server4 on LAPTOP-K7E11N23 - Virtual Machine Connection

Administrator: Windows PowerShell ISE

```
PS C:\Users\Administrator> Start-Service sshd
```

PS C:\Users\Administrator>

Completed

C:\Users\Administrator>

Azure Arc

Evaluation for 29 days 40331-1435

18:25 26-01-2026

splunk_server4 on LAPTOP-K7E11N23 - Virtual Machine Connection

Administrator: Windows PowerShell ISE

```
PS C:\Users\Administrator> Start-Service sshd
```

PS C:\Users\Administrator> whoami

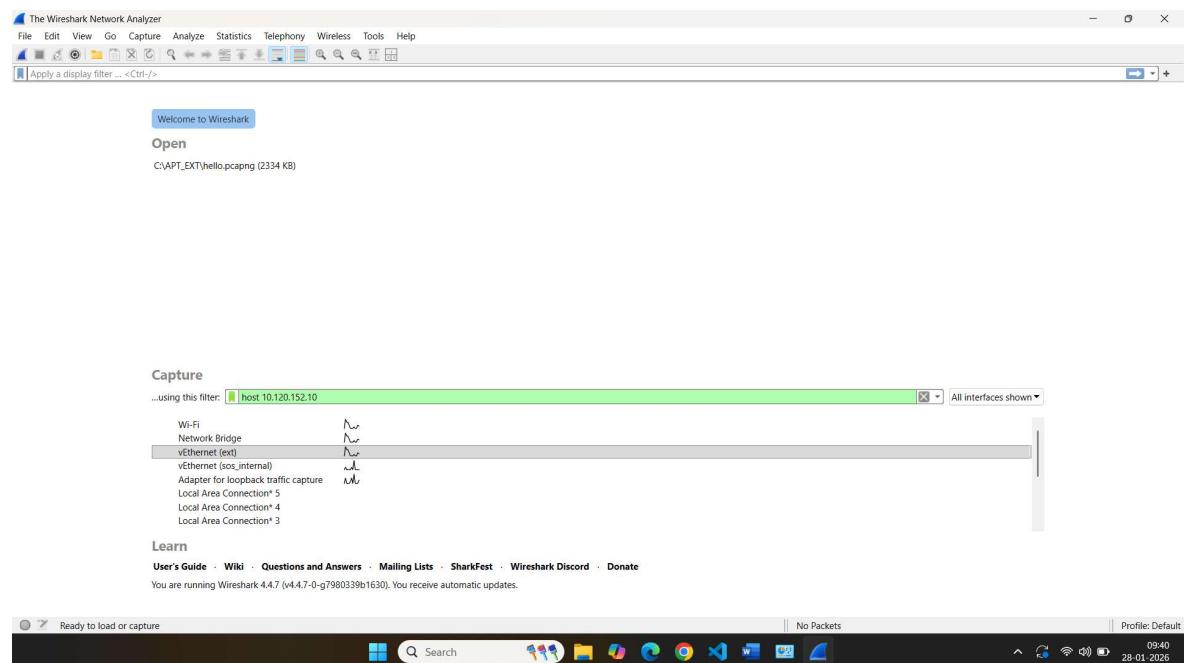
win-0515gb8kms\administrator

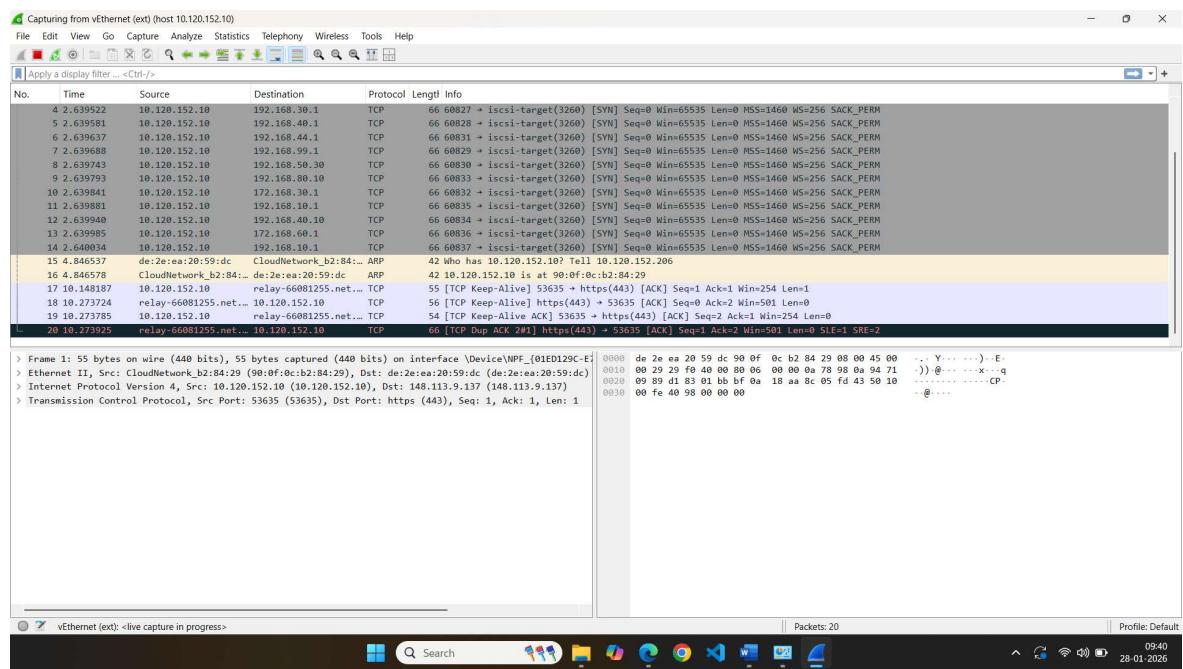
Week-3

Task 9: Use Wireshark to capture packets and analyze traffic.

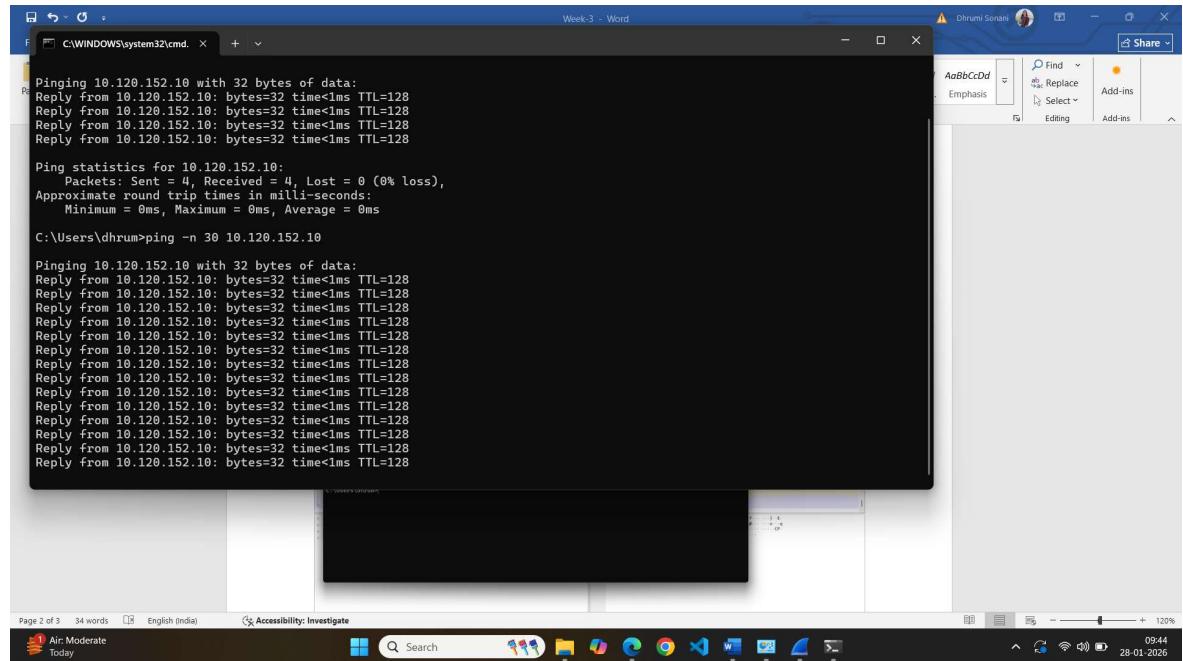
Enter Host IP and start capture:

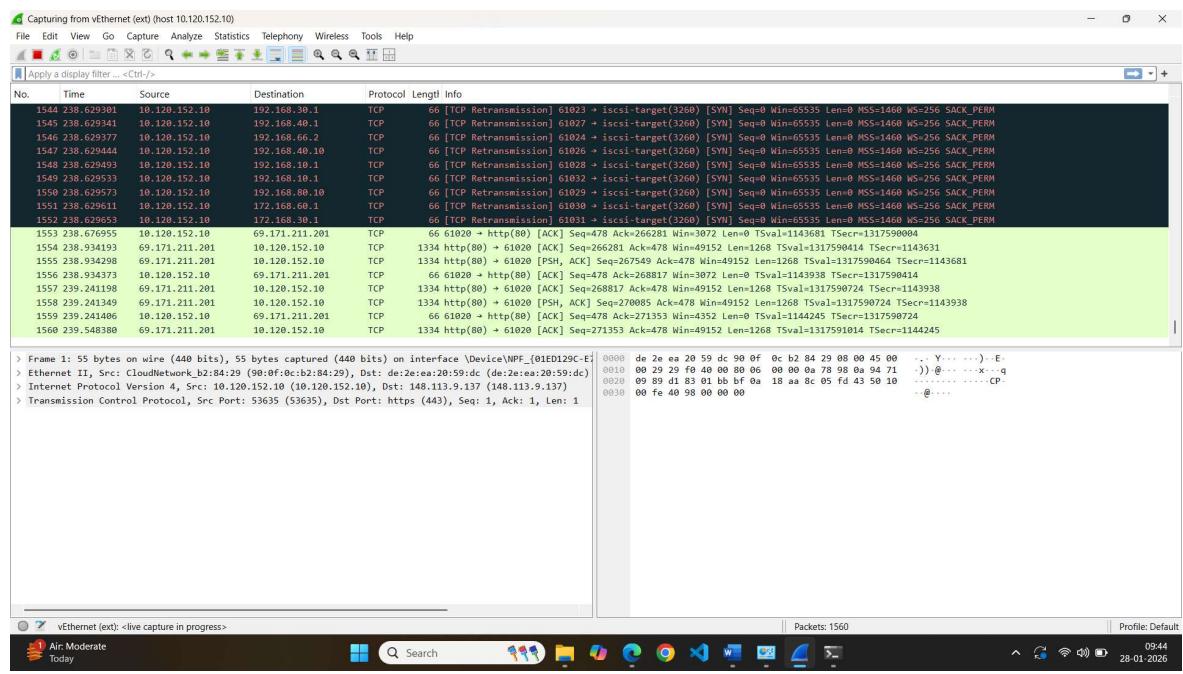
Target IP: Ethernet : 10.120.152.10



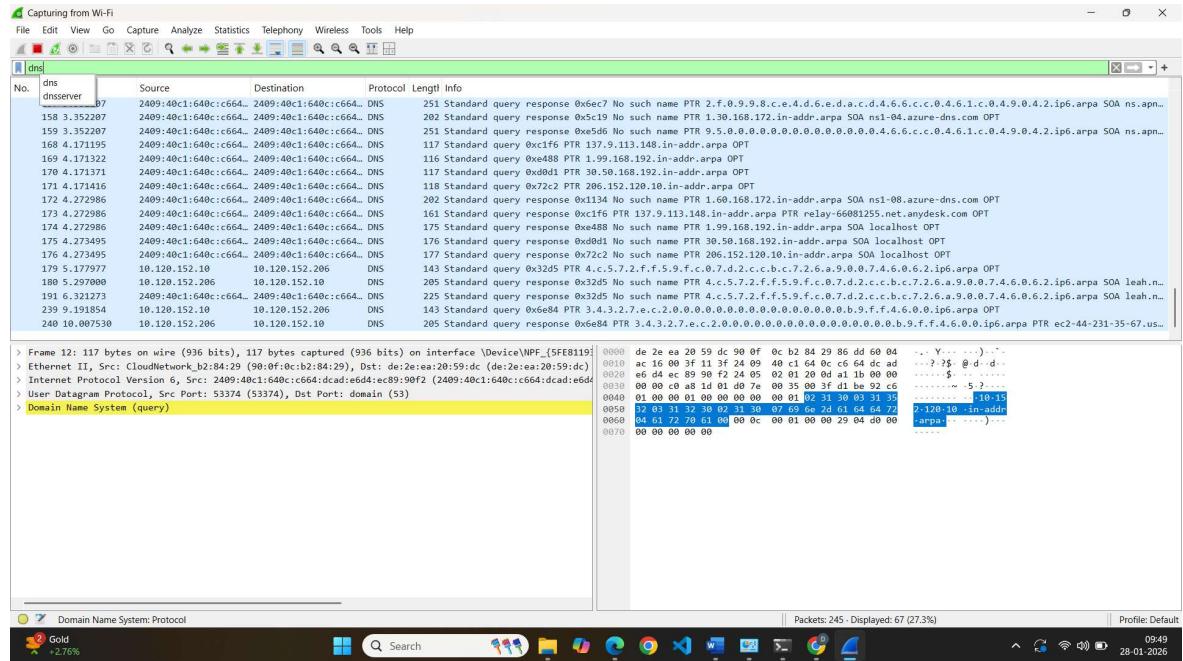


Filters: [first pinging target system IP than apply filters]:





DNS • Display all DNS records



Perform Nmap Scans (Ping, Port, OS Detection)

```
kali@kali:~  
File Actions Edit View Help  
└─(kali㉿kali)-[~]  
└─$ nmap 192.168.1.10  
  
Starting Nmap 7.95 ( https://nmap.org ) at 2026-01-27 23:23 EST  
Note: Host seems down. If it is really up, but blocking our ping probes, try  
-Pn  
Nmap done: 1 IP address (0 hosts up) scanned in 3.20 seconds
```

```
kali@kali:~  
File Actions Edit View Help  
└─(kali㉿kali)-[~]  
└─$ nmap -sS -p 1-1000 192.168.1.10  
  
Starting Nmap 7.95 ( https://nmap.org ) at 2026-01-27 23:24 EST  
Note: Host seems down. If it is really up, but blocking our ping probes, try  
-Pn  
Nmap done: 1 IP address (0 hosts up) scanned in 3.19 seconds  
  
└─(kali㉿kali)-[~]  
└─$ █
```

```
kali@kali:~  
File Actions Edit View Help  
[(kali㉿kali)-[~]]  
$ nmap -sV 192.168.1.10  
  
Starting Nmap 7.95 ( https://nmap.org ) at 2026-01-27 23:24 EST  
Note: Host seems down. If it is really up, but blocking our ping probes, try  
-Pn  
Nmap done: 1 IP address (0 hosts up) scanned in 3.70 seconds  
  
[(kali㉿kali)-[~]]  
$ sudo nmap -O 192.168.1.10  
  
[sudo] password for kali:  
Starting Nmap 7.95 ( https://nmap.org ) at 2026-01-27 23:24 EST  
Note: Host seems down. If it is really up, but blocking our ping probes, try  
-Pn  
Nmap done: 1 IP address (0 hosts up) scanned in 3.36 seconds  
  
[(kali㉿kali)-[~]]  
$
```

Destination IP = 192.168.1.10

Week-4

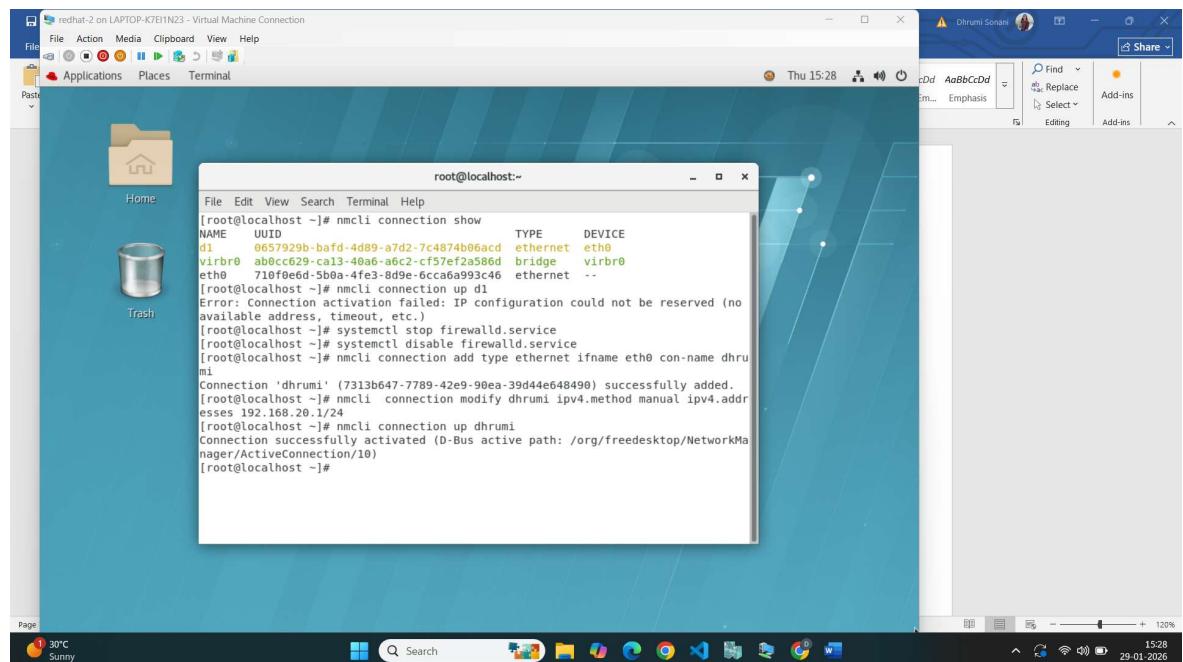
Configure LAN with 2 VMs

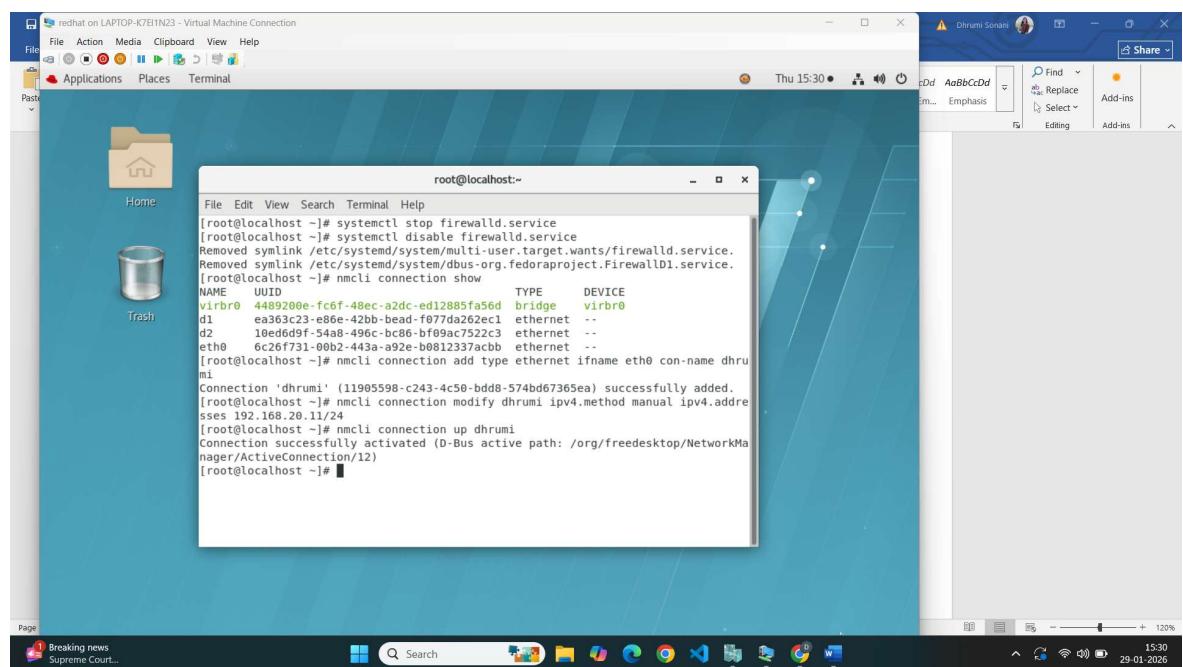
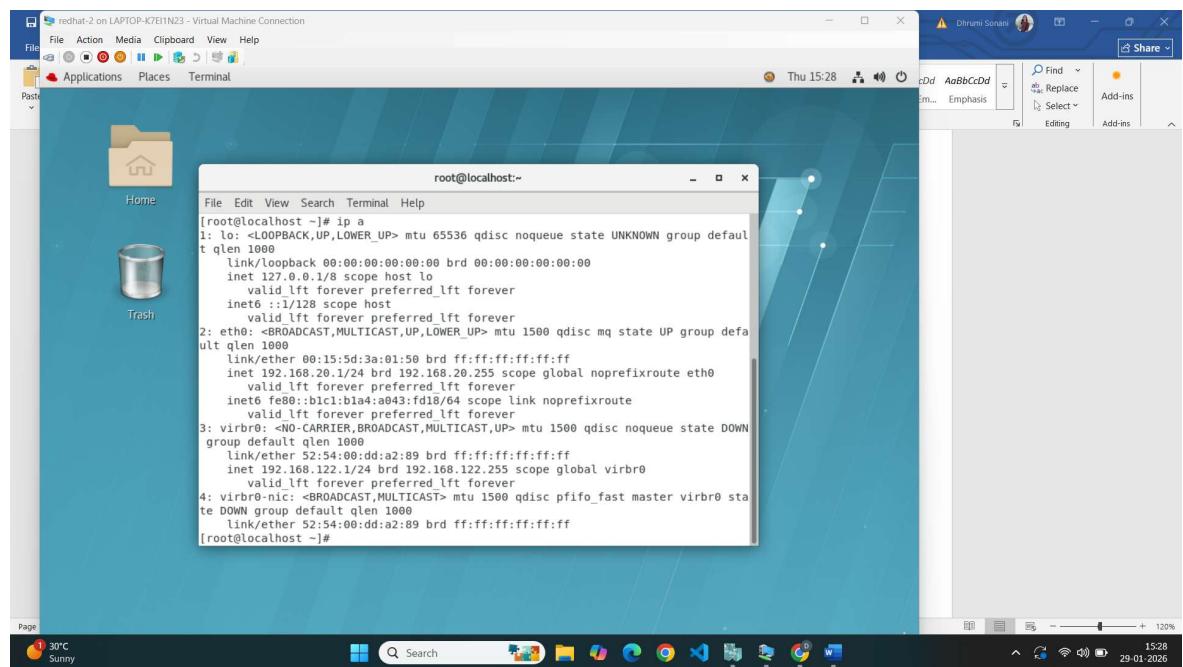
Run FTP services

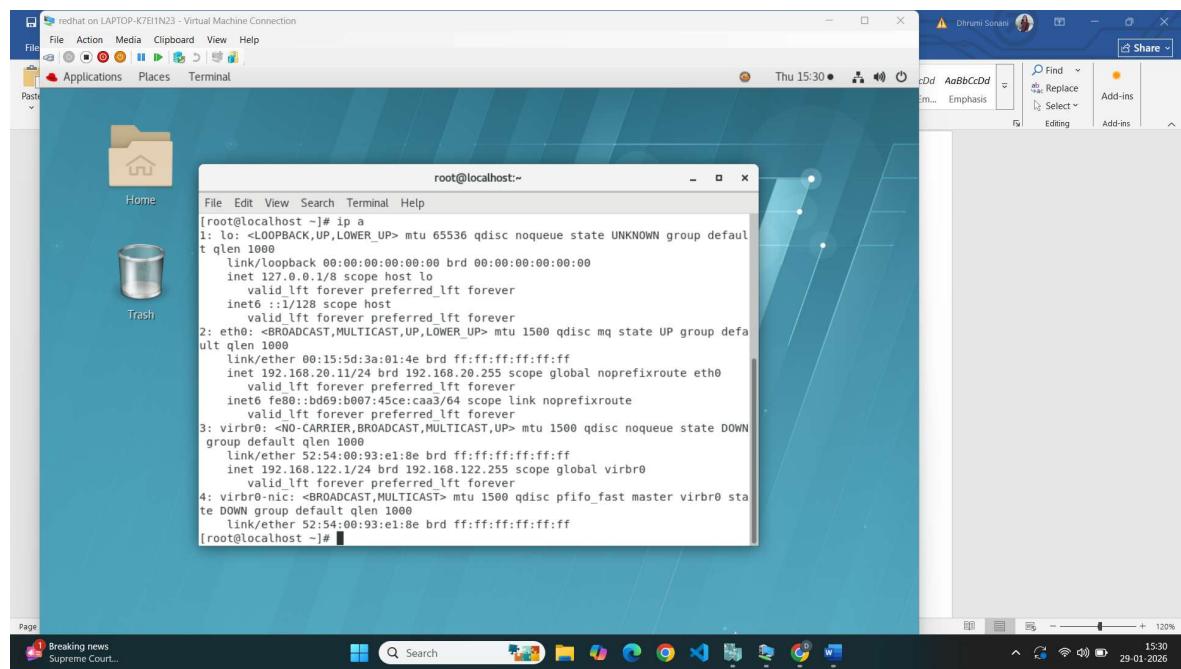
Scan services

Vm1 IP=192.168.20.11

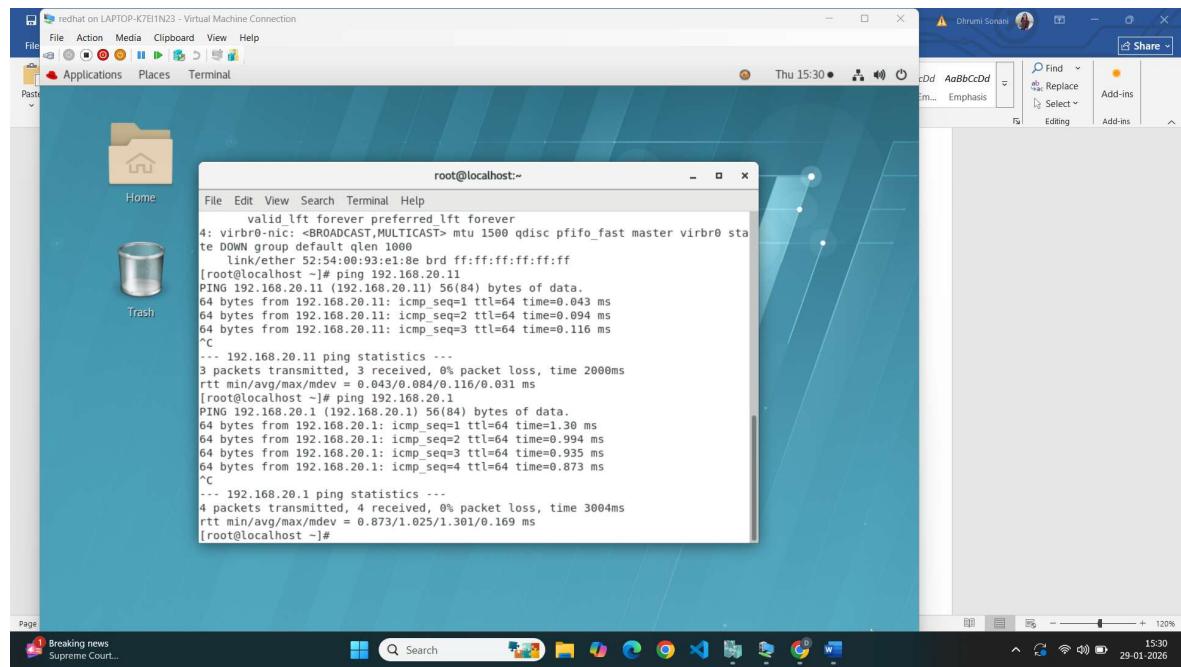
Vm2 IP=192.168.20.1

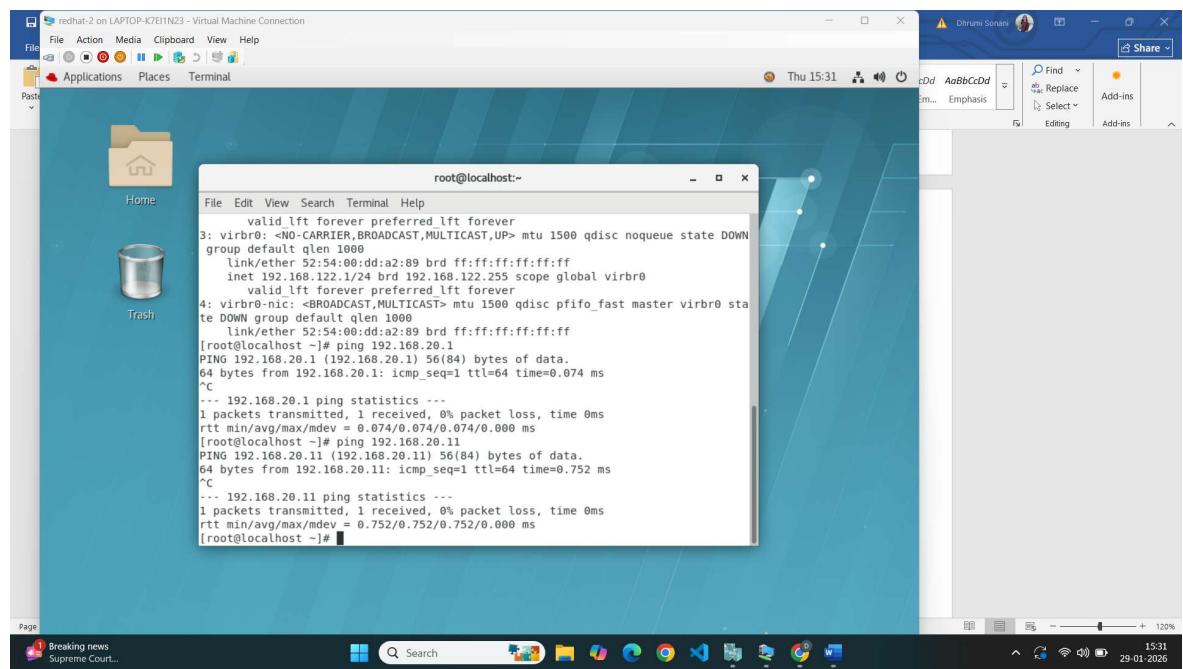




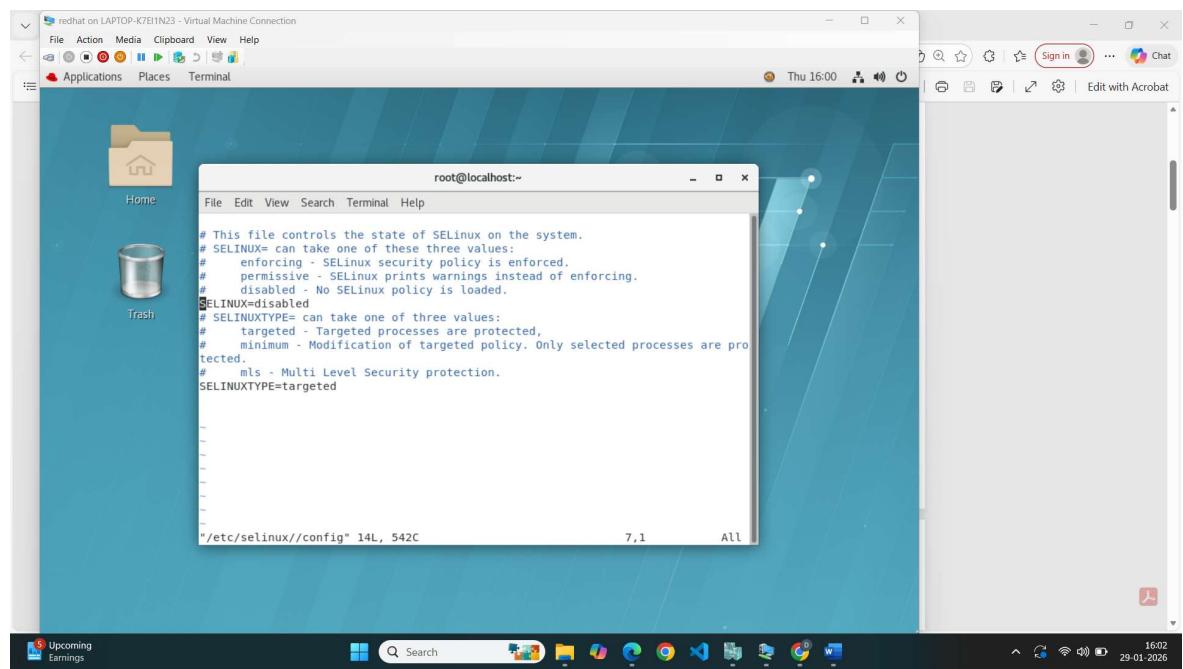


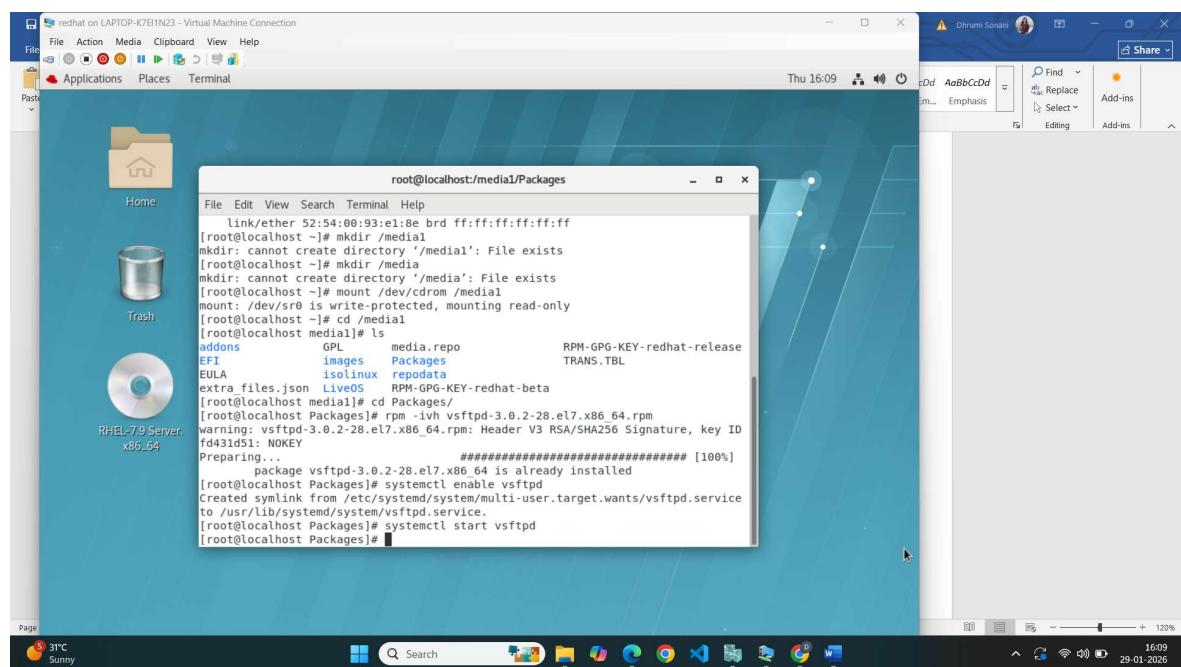
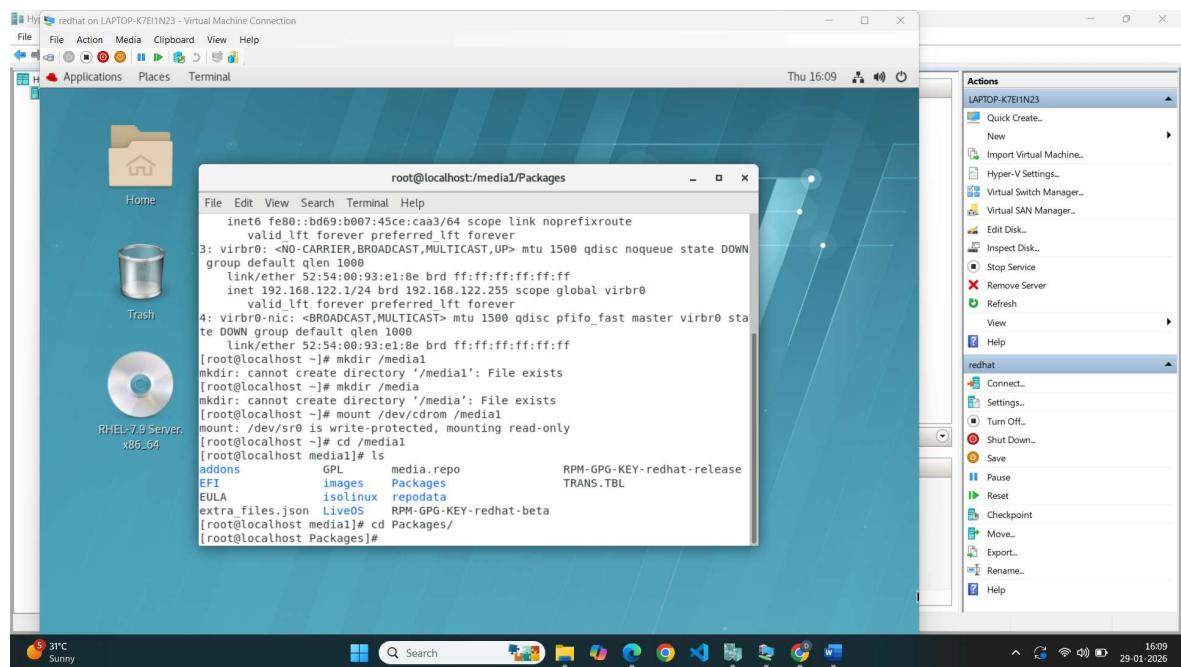
Check the connectivity of both VM

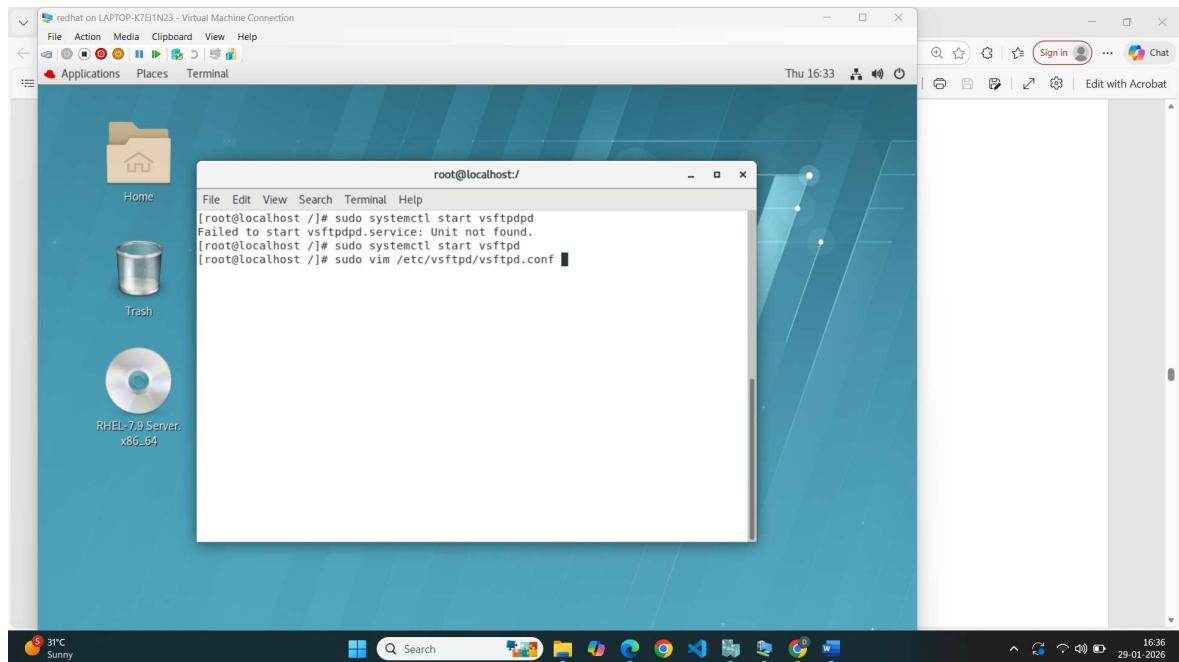
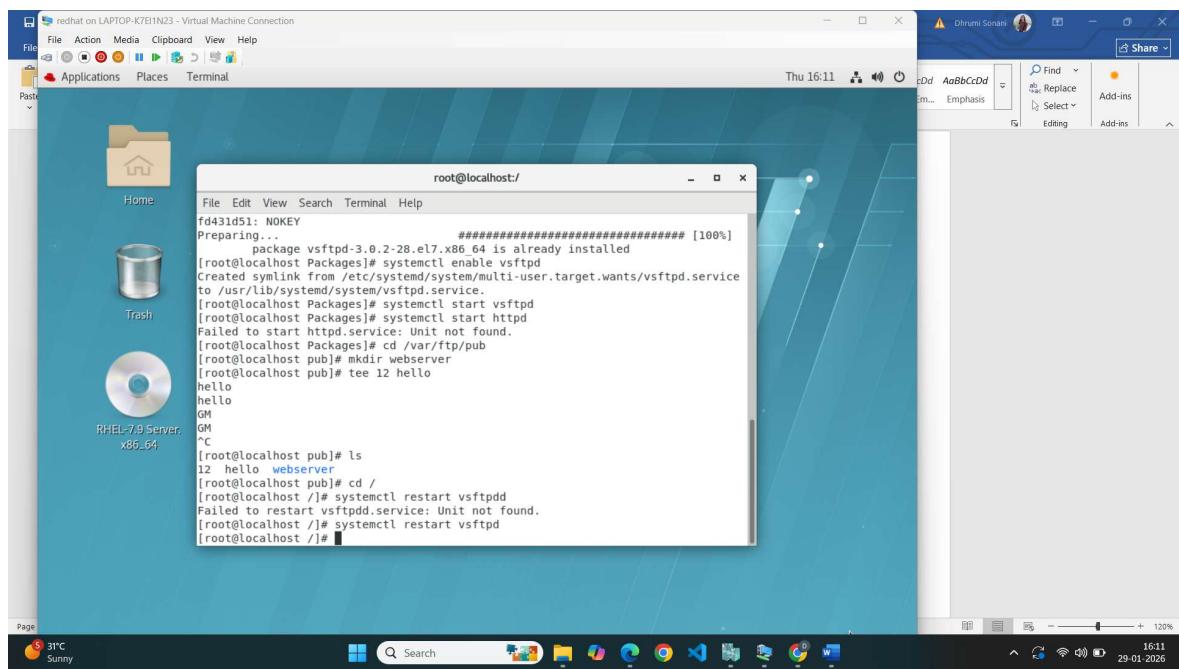




Selinux Disabled





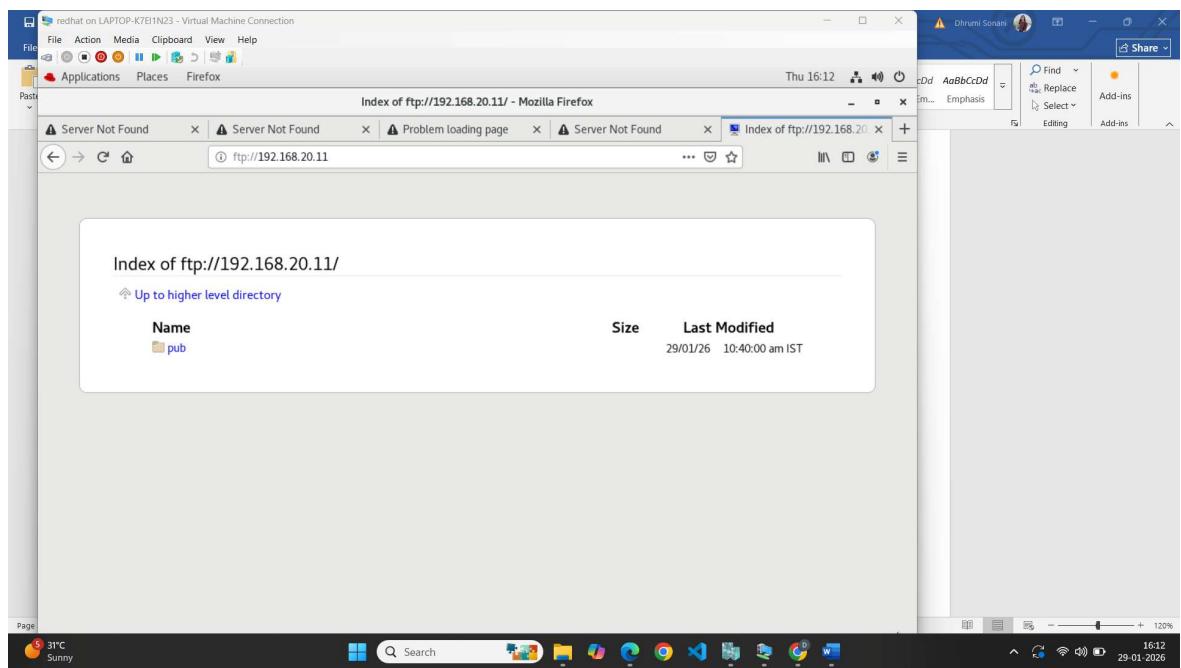
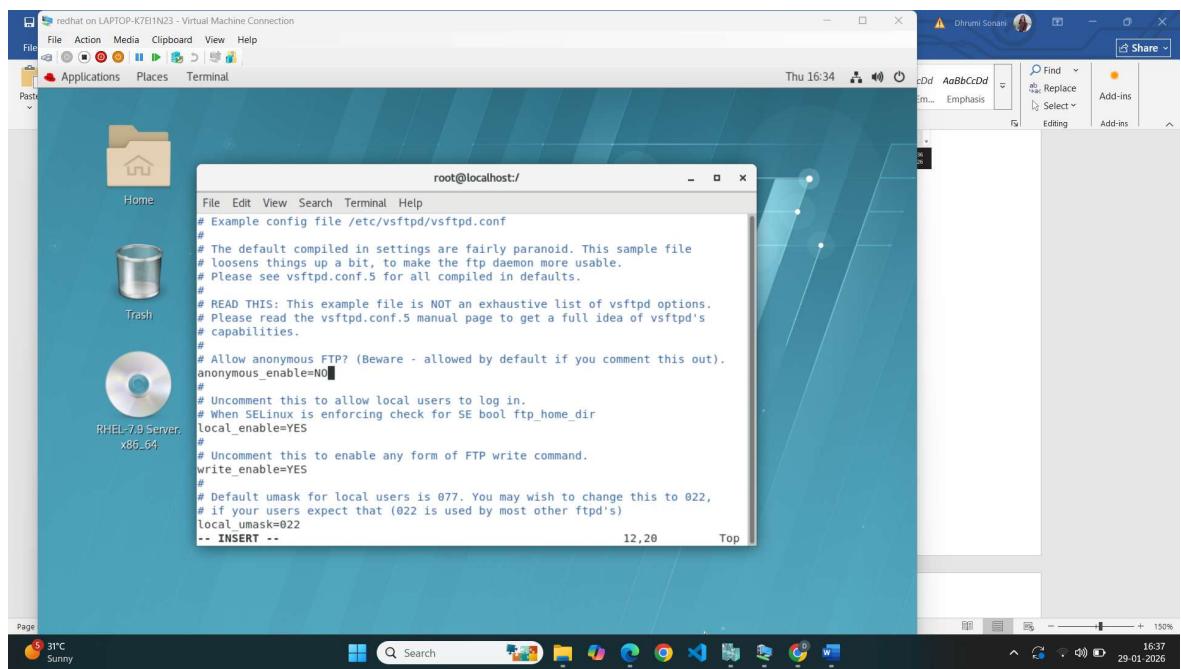


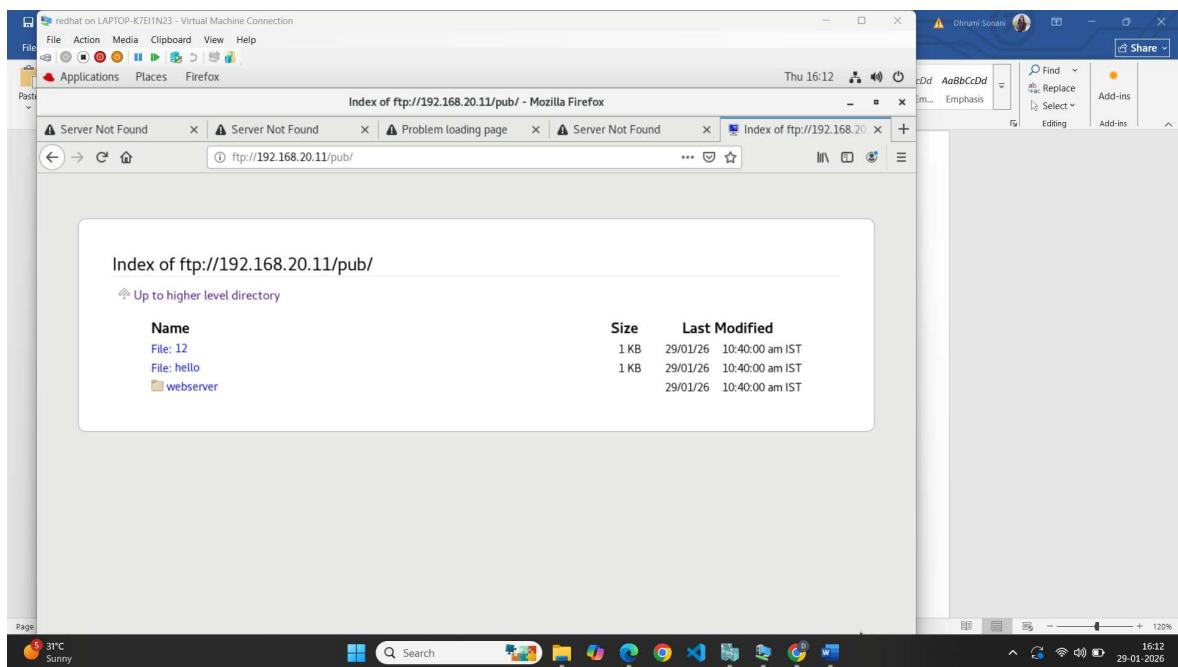
anonymous_enable=NO

local_enable=YES

write_enable=YES

chroot_local_user=YES





2nd vm to access FTP server

