Networking Commands

1. Basic Network Configuration

ifconfig: Displays current network interface configuration.

ifconfig

(Note: ifconfig may be deprecated in favor of ip.)

ip: A more modern command for displaying and manipulating routing, devices, policy routing, and tunnels.

ip addr show   # Show all IP addresses
ip link show   # Show all network interfaces

hostname: Shows or sets the system's hostname.

hostname   # Show the current hostname
hostnamectl set-hostname new-hostname # Set a new hostname

2. Network Connectivity

ping: Tests connectivity to another host.

ping google.com   # Sends ICMP echo requests to the specified domain

traceroute: Traces the route packets take to a network host.

traceroute google.com

mtr: Combines ping and traceroute, providing a real-time view of the network path.

mtr google.com

3. DNS Lookup

nslookup: Queries the DNS to obtain domain name or IP address mapping.

nslookup google.com

```
Server:          127.0.0.53
Address:         127.0.0.53#53

Non-authoritative answer:
Name:    guvi.com
Address: 172.67.146.154
Name:    guvi.com
Address: 104.21.79.166
Name:    guvi.com
Address: 2606:4700:3037::ac43:929a
Name:    guvi.com
Address: 2606:4700:3031::6815:4fa6
```

dig: Another DNS lookup utility with more options and detailed output.

dig google.com

```
; <<>> DiG 9.18.28-0ubuntu0.24.04.1-Ubuntu <<>> guvi.com
;; global options: +cmd
;; Got answer:
;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 14559
;; flags: qr rd ra; QUERY: 1, ANSWER: 2, AUTHORITY: 0, ADDITIONAL: 1

;; OPT PSEUDOSECTION:
; EDNS: version: 0, flags:; udp: 65494
;; QUESTION SECTION:
;guvi.com.                      IN      A

;; ANSWER SECTION:
guvi.com.             300      IN      A      104.21.79.166
guvi.com.             300      IN      A      172.67.146.154

;; Query time: 3 msec
;; SERVER: 127.0.0.53#53(127.0.0.53) (UDP)
;; WHEN: Sat Nov 02 03:40:42 UTC 2024
;; MSG SIZE  rcvd: 69
```

4. Routing

route: Displays or modifies the IP routing table.

route -n   # Show routing table in numeric format

Column	Description
Destination	The destination network or host. This indicates the IP address of the destination you want to reach.
Gateway	The next-hop IP address where packets destined for the destination should be sent. If it's `0.0.0.0`, it indicates a direct connection to the destination.
Genmask	The subnet mask for the destination. It defines the network range for the destination.
Flags	This shows various flags for the route:

```
- **U**: The route is up.
- **G**: The route uses a gateway.
- **H**: The destination is a host.
- **R**: The route is a reinjection route (not commonly seen).
- **D**: The route was created dynamically.
```

ip route: View and manipulate the routing table.

ip route show   # Show routing table

5. Network Statistics

netstat: Displays networking statistics and information about open connections.

netstat -tuln   # Show listening ports

ss: A utility to investigate sockets and their status. It's a modern replacement for netstat.

ss -tuln   # Show listening sockets

iftop: Displays bandwidth usage on an interface in real-time.

sudo iftop -i eth0 # Monitor network traffic on eth0

6. Firewall Management

ufw: Uncomplicated Firewall, an easy-to-use interface for managing firewall rules.

sudo ufw status   # Check firewall status
sudo ufw allow 22   # Allow SSH
sudo ufw deny 80   # Deny HTTP

7. Network Services

curl: Transfers data to or from a server using various protocols, useful for testing API endpoints.

curl http://example.com   # Fetch a webpage
curl -I http://example.com   # Get HTTP headers only

wget: Non-interactive network downloader.

wget http://example.com/file.zip # Download a file

8. Network Interface Management

nmcli: Command-line tool for managing NetworkManager.

nmcli d   # Show devices
nmcli c show   # Show connections
nmcli c up <connection_name> # Activate a connection

9. Testing Open Ports

telnet: Tests connectivity to a specific port.

telnet google.com 80 # Connect to HTTP port

nmap: Network exploration tool and security/port scanner.

nmap -p 22,80,443 google.com # Scan specific ports

10. Miscellaneous Commands

arp: Displays or modifies the ARP table.

arp -a   # Show the ARP table