

NETWORKING COMMANDS:

1. ping

- **What it does:** Checks if a device or server is reachable over the network by sending ICMP packets.
- **Use cases:**
 - Test network connectivity to a specific host.
 - Measure response time (latency).

2. netstat

- **What it does:** Displays network connections, routing tables, and active ports on your system.
- **Use cases:**
 - Check which ports are open and in use.
 - Identify active connections to/from your system.
 - Troubleshoot network issues.

3. ifconfig

- **What it does:** Shows or configures the network interfaces on a system.
- **Use cases:**
 - View IP addresses of network interfaces.
 - Enable or disable an interface.
 - Change IP address manually. (*Note: replaced by ip command in modern systems.*)

4. traceroute

- **What it does:** Tracks the path packets take to reach a specific destination, listing each hop.
- **Use cases:**
 - Diagnose where network delays or failures occur.
 - Understand the routing path to a server.

5. mtr (My Traceroute)

- **What it does:** Combines ping and traceroute to provide real-time packet loss and latency reports.
- **Use cases:**
 - Identify network performance issues.
 - Continuously monitor latency and loss at each hop.

6. nslookup

- **What it does:** Queries DNS servers to get domain name to IP address mappings.
- **Use cases:**
 - Find the IP address of a domain.
 - Troubleshoot DNS issues.

7. Reverse Lookup (using nslookup or similar tools)

- **What it does:** Finds the domain name associated with an IP address.
- **Use cases:**
 - Verify the domain behind an IP address.
 - Investigate suspicious IPs.

8. telnet

- **What it does:** Connects to remote servers on a specific port to test connectivity.
- **Use cases:**
 - Check if a port is open on a server.
 - Debug plain-text communication protocols (e.g., SMTP, HTTP).
(Note: It's insecure; use alternatives like SSH for secure connections.)

9. dig (Domain Information Groper)

- **What it does:** Performs DNS lookups, providing detailed query and response information.
- **Use cases:**
 - Check DNS records (A, CNAME, MX, etc.).
 - Test how DNS servers resolve domains.

10. whois

- **What it does:** Queries information about domain registrations and owners.
- **Use cases:**
 - Find out who owns a domain.
 - Check domain expiry or registration details.

11. curl

- **What it does:** Transfers data from or to a server using various protocols (HTTP, FTP, etc.).
- **Use cases:**
 - Test APIs.
 - Download or send data from/to a server.
 - Fetch website content programmatically.

12. wget

- **What it does:** Downloads files from the web using HTTP, HTTPS, or FTP.
- **Use cases:**
 - Download large files or entire websites for offline use.
 - Automate file downloads in scripts.

EXAMPLES FOR EACH NETWORKING TOOL:

1. ping

- **Example:**

ping google.com

Explanation: This sends packets to google.com to check if it's reachable and measures the response time.

2. netstat

- **Example:**

netstat -tuln

Explanation: Shows all active listening ports (-t for TCP, -u for UDP, -l for listening ports, -n to show numeric addresses).

3. ifconfig

- **Example:**

ifconfig

Explanation: Displays the configuration of all network interfaces, including IP addresses and status.

4. traceroute

- **Example:**

traceroute google.com

Explanation: Traces the path from your computer to google.com, showing each hop along the way.

5. mtr

- **Example:**

mtr google.com

Explanation: Provides a real-time, continuous trace to google.com with latency and packet loss stats.

6. nslookup

- **Example:**

```
nslookup google.com
```

Explanation: Queries DNS to find the IP address associated with google.com.

7. Reverse Lookup (using nslookup)

- **Example:**

```
nslookup 8.8.8.8
```

Explanation: Looks up the domain name associated with the IP address 8.8.8.8 (Google's DNS server).

8. telnet

- **Example:**

```
telnet google.com 80
```

Explanation: Connects to google.com on port 80 (HTTP) to test if the port is open and accessible.

9. dig

- **Example:**

```
dig google.com
```

Explanation: Performs a detailed DNS query for google.com, including IP addresses and other DNS records

10. whois

- **Example:**

```
whois google.com
```

Explanation: Retrieves information about the domain google.com, including the owner, registrar, and expiration date.

11. curl

- **Example:**

```
curl https://jsonplaceholder.typicode.com/todos/1
```

Explanation: Fetches data from a sample API (JSON format) from jsonplaceholder and prints it to the terminal.

12. wget

- **Example:**

```
wget https://example.com/file.zip
```

Explanation: Downloads the file file.zip from example.com to your current directory.