

Experiment No 9

Executing Basic Networking Commands in Linux

Aim:

To understand and execute basic networking commands in Linux to check and manage network configuration and connectivity.

Theory:

Networking in Linux is managed through a variety of command-line tools that allow users to monitor and configure network interfaces, routing, and resolve domain names. Key commands include:

- **IFCONFIG:** Displays or configures a network interface.
- **IP:** A more modern alternative to ifconfig for configuring and managing network settings.
- **PING:** Tests connectivity between the local machine and a remote host by sending ICMP echo requests.
- **NETSTAT:** Shows network statistics, including open sockets and routing tables.
- **TRACEROUTE:** Displays the path packets take to reach a network destination.
- **NSLOOKUP:** Queries DNS to resolve domain names to IP addresses.

Procedure:

1. **Check Network Interface Status:** Use the ifconfig or ip command to check the network interfaces and their configuration:

```
ifconfig
```

or:

```
ip a
```

This displays information about the network interfaces (e.g., IP addresses, MAC addresses, network status).

2. **Test Network Connectivity with ping:** Test connectivity to a remote server or host:

```
ping google.com
```

This sends ICMP echo requests to the specified host and displays the round-trip time of the packets.

3. **Check Routing Table with netstat:** Display the routing table to see how packets are routed in the network:

```
netstat -r
```

or with ip:

```
ip route show
```

This command shows the system's routing table, including the default gateway.

- 4. Trace the Path to a Host with traceroute:** Trace the route packets take to reach a network destination:

```
traceroute google.com
```

This displays each hop the packet takes to reach its destination, useful for identifying network delays or routing issues.

- 5. Resolve a Domain Name with nslookup:** Use nslookup to resolve a domain name to its corresponding IP address:

```
nslookup google.com
```

This shows the IP address associated with the domain name using DNS resolution.

- 6. Check Active Connections with netstat:** View open network connections:

```
netstat -tuln
```

This command lists all active TCP and UDP ports, helping diagnose network traffic and services.

Conclusion:

By executing basic networking commands in Linux, we can effectively monitor, configure, and troubleshoot network settings