# Experiment No. 7

Date: 24/09/2025

## Title: Traffic Analysis using Cisco Packet Tracer

**Aim:** To perform network traffic analysis using Cisco Packet Tracer, simulate data communication between devices, observe real-time traffic flow, and analyze packet details for different network protocols.

## Apparatus / Software Required:

• Cisco Packet Tracer software • Two or more PCs and network devices (switch, router) • Ethernet cables • Basic IP addressing scheme

## Procedure:

1. Open Cisco Packet Tracer and create a new network topology.
2. Place two PCs, one switch, and one router on the workspace.
3. Connect the devices using appropriate cables (Copper Straight-through).
4. Assign IP addresses to each device and configure interfaces on the router.
5. Verify connectivity using the ‘ping’ command between PCs.
6. Start simulation mode to observe the flow of packets in the network.
7. Send a simple data request (e.g., using HTTP or ICMP).
8. Use the simulation panel to analyze packet details at each OSI layer.
9. Observe packet encapsulation and de-encapsulation during transmission.
10. Record the data transfer time, packet path, and protocol used.

## Observation:

The simulation successfully displayed packet flow through various network devices. Each packet could be analyzed layer-by-layer, showing encapsulation details such as Ethernet, IP, and TCP/UDP headers.

### *Sample Packet Analysis Table:*

| Sl. No | Protocol | Source IP | Destination IP | Info |
|---|---|---|---|---|
| 1 | ICMP | 192.168.1.2 | 192.168.1.3 | Echo Request |
| 2 | ICMP | 192.168.1.3 | 192.168.1.2 | Echo Reply |
| 3 | HTTP | 192.168.1.2 | 192.168.1.10 | GET /index.html |
| 4 | TCP | 192.168.1.10 | 192.168.1.2 | ACK |

## Result:

The network traffic was successfully simulated using Cisco Packet Tracer. Packet movement between devices was analyzed, and different network protocols such as ICMP, TCP, and HTTP were observed during transmission.

## Conclusion:

Traffic analysis using Cisco Packet Tracer helps understand real-time network communication, protocol behavior, and data flow within the OSI layers. It provides a strong foundation for diagnosing and optimizing network performance.

## Remarks:

The experiment was completed successfully, and the observed results matched the expected data flow patterns. Simulation verified accurate communication across network layers.