EAST WEST UNIVERSITY

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Department of CSE

**Lab Assignment-**

**Course Title: Computer Networks**

**Course Code: CSE405**

**Section: 05**

**Semester: Spring 2025**

**Submitted to,**

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**Implementation of Static and Dynamic Routing using Cisco Packet Tracer**

1. **Introduction:**

The purpose of this assignment is to understand and implement static and dynamic routing in a computer network using Cisco Packet Tracer. We designed a network topology with 5 routers, 4 switches, and 4 PCs. First, we implemented static routing to manually configure the routing tables. Then, we replaced it with RIP (Routing Information Protocol) to automate the routing process. This assignment helped us learn how different routing techniques function in a real-world-like environment.

1. **Topology Overview:**

We designed a network topology with the following components:

- 5 Routers (renamed: Sarafat0, Sarafat1, Sarafat2, Sarafat3, Sarafat4)

- 4 Switches

- 4 PCs (PC0, PC1, PC2, PC3)

A diagram of a network

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1. **IP Addressing Table:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Device | Interface | IP Address | Subnet Mask | Remarks |
| PC0 | Fa0 | 192.168.0.1 | 255.255.255.0 | Connected to Switch0 |
| PC1 | Fa0 | 192.168.1.1 | 255.255.255.0 | Connected to Switch1 |
| PC2 | Fa0 | 192.168.2.1 | 255.255.255.0 | Connected to Switch3 |
| PC3 | Fa0 | 192.168.3.1 | 255.255.255.0 | Connected to Switch2 |
| Sarafat0 | Se0/0/0 | 13.0.0.2 | 255.0.0.0 | Connected to Sarafat3 |
| Sarafat0 | Se0/0/1 | 14.0.0.2 | 255.0.0.0 | Connected to Sarafat4 |
| Sarafat0 | Se0/2/0 | 12.0.0.2 | 255.0.0.0 | Connected to Sarafat1 |
| Sarafat0 | Se0/2/1 | 11.0.0.2 | 255.0.0.0 | Connected to Sarafat2 |
| Sarafat1 | Se0/2/1 | 10.0.0.2 | 255.0.0.0 | Connected to Switch0 |
| Sarafat1 | Se0/2/0 | 12.0.0.1 | 255.0.0.0 | Connected to Sarafat0 |
| Sarafat1 | Fa0/0 | 192.168.0.2 | 255.255.255.0 | Connected to Switch0 |
| Sarafat2 | Fa0/0 | 192.168.1.2 | 255.255.255.0 | Connected to Switch1 |
| Sarafat2 | Se0/2/1 | 10.0.0.1 | 255.0.0.0 | Connected to Sarafat1 |
| Sarafat2 | Se0/2/0 | 11.0.0.1 | 255.0.0.0 | Connected to Sarafat0 |
| Sarafat3 | Fa0/0 | 192.168.3.2 | 255.255.255.0 | Connected to Switch2 |
| Sarafat3 | Se0/2/0 | 13.0.0.1 | 255.0.0.0 | Connected to Sarafat0 |
| Sarafat3 | Se0/2/1 | 15.0.0.1 | 255.0.0.0 | Connected to Sarafat4 |
| Sarafat4 | Se0/2/0 | 14.0.0.1 | 255.0.0.0 | Connected to Sarafat0 |
| Sarafat4 | Fa0/0 | 192.168.2.2 | 255.255.255.0 | Connected to Switch3 |
| Sarafat4 | Se0/2/1 | 15.0.0.2 | 255.0.0.0 | Connected to Sarafat3 |

1. **Static Routing Configuration:**

**Sarafat0**:

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**Sarafat1**:

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**Sarafat2**:

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**Sarafat3**:

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**Sarafat4**:

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1. **Dynamic Routing Configuration (RIP):**

**Sarafat0:**

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**Sarafat1:**

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**A screenshot of a computer program

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**Sarafat2:**

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**A screenshot of a computer program

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**Sarafat3:**

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**A screenshot of a computer

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**Sarafat4:**

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1. **Result & Output:**

**Static Routing Ping**:

**PC0:**

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**A screenshot of a computer program

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**PC1:**

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**PC2:**

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**PC3:**

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**Dynamic Routing Ping:**

**PC0:**

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**PC1:**

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**PC2:**

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**PC3:**

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1. **Conclusion:**

In this assignment, we successfully implemented both static and dynamic routing using Cisco Packet Tracer. Through the process, we learned the differences between manually configured static routes and automatically updated routes using the RIP protocol. Static routing gave us control but required manual updates for each route, making it suitable for small networks. On the other hand, dynamic routing using RIP simplified the process by allowing routers to share routing information automatically. This made the network easier to manage as it grew. Overall, this assignment helped us understand the practical applications of routing protocols and how they are used to maintain efficient communication within a network.