

Experiment 3 – Router Configuration using RIP/OSPF

Aim

To configure a 3-router network using routing protocols (RIP or OSPF) in Cisco Packet Tracer.

Objectives

1. Understand simulation tool.
2. Learn to configure routing protocols.

Important Oral Topics & Answers

1 What is a Routing Protocol?

It is a set of rules that routers use to communicate and share information to find best paths for data transmission.

2 What is RIP?

Routing Information Protocol

- Distance-vector protocol
- Uses **hop count** as a metric (max = 15 hops)
- Updates every 30 seconds
- Prevents routing loops using **split horizon** and **route poisoning**

Commands Example:

```
R1> enable
```

```
R1# configure terminal
```

```
R1(config)# router rip
```

```
R1(config-router)# version 2
```

```
R1(config-router)# network 192.168.1.0
```

3 What is OSPF?

Open Shortest Path First

- Link-state protocol
- Uses **Dijkstra's algorithm** to calculate shortest path
- Works in "areas" within an Autonomous System
- Faster and more efficient than RIP

Commands Example:

```
R1(config)# router ospf 1
```

```
R1(config-router)# network 192.168.1.0 0.0.0.255 area 0
```

Difference between RIP and OSPF

Feature	RIP	OSPF
Type	Distance Vector	Link State
Metric	Hop count	Cost (bandwidth)
Max Hop	15	No limit
Algorithm	Bellman-Ford	Dijkstra
Convergence	Slow	Fast
Efficiency	Low	High

Outcome

Configured RIP and OSPF routing protocols and verified connectivity between routers.