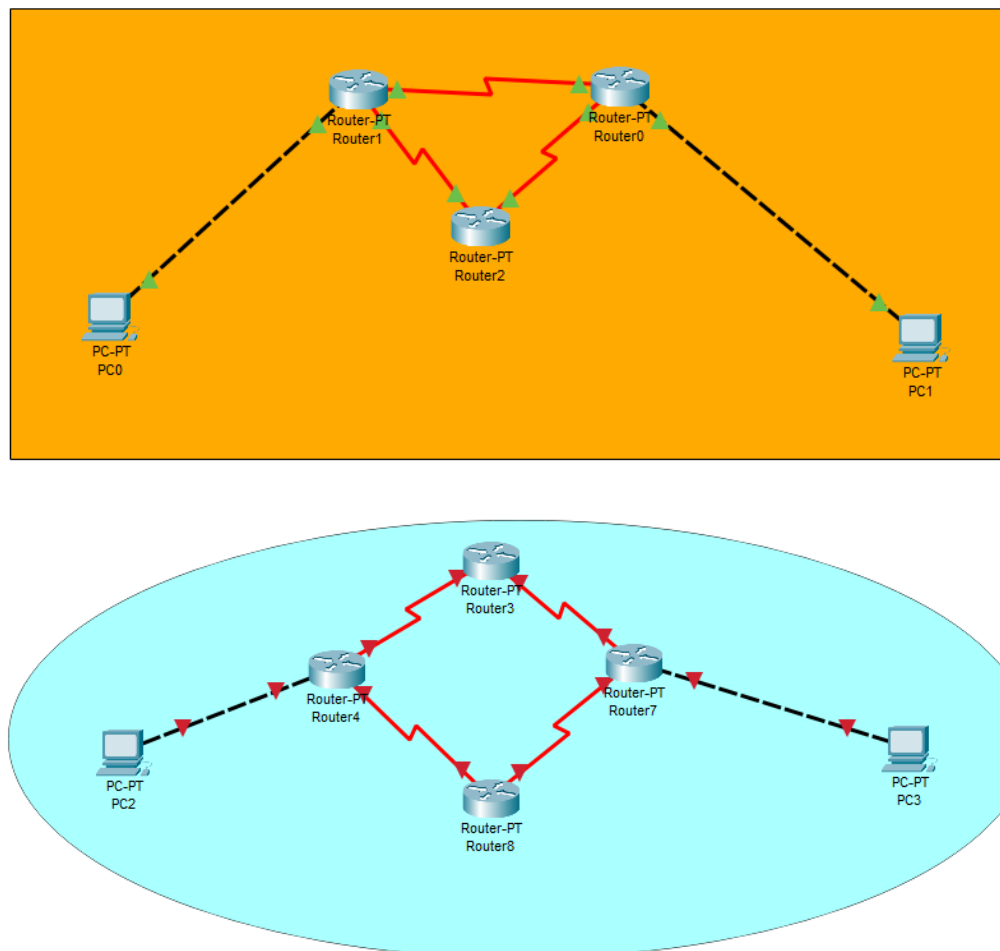# Experiment 8: Distance Vector Routing (DVR) protocol using Packet Tracker

The Distance Vector Routing (DVR) protocol is a dynamic routing algorithm that determines the best path to a destination based on distance metrics and periodic updates from neighboring routers. It is widely used in small-scale networks and is fundamental in networking concepts like RIP (Routing Information Protocol). In this assignment, we will use a network simulation tool, such as Cisco Packet Tracer, to configure and analyze the working of the DVR protocol.

1. Design the Network Topology:

   o   Create a Following network topologies.

   o   Assign appropriate IP addresses and subnet masks to the interfaces.

2. Configure Distance Vector Routing:

   o   Enable RIP as the DVR protocol on each router.

o   Define network addresses in the RIP configuration mode.

o   Verify that routers exchange updates periodically.

3. Simulate Link Failures:

o   Disable a link and observe how the routers update their routing tables.

o   Record the time taken to converge to a new route.

4. Analyze Packet Transmission:

o   Send packets between two end devices and observe the path taken.

o   Compare packet forwarding before and after a link failure.

Deliverables:

Students must submit the following as part of their assignment:

1. **Theoretical Questions:**

   o   Explain the working of the Distance Vector Routing Protocol.

   o   What is the significance of periodic updates in DVR?

   o   Discuss the key differences between Distance Vector and Link-State Routing.

   o   What are the limitations of the DVR protocol, and how can they be mitigated?

2. **Experimental Questions:**

   o   Provide a **network topology diagram** showing the connections and IP configurations.

   o   List the **configuration commands** used for enabling RIP on routers.

   o   Attach **screenshots of routing tables** before and after link failures.

   o   Write an **analysis report** discussing the DVR protocol's behavior, convergence time, and the impact of link failures.