

Ex.No:08b	Distance Vector Routing
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Section & Slot	S23 & Slot-1

Objective(s):

To design and implement Distance Vector routing using packet tracer

Introduction:

Distance-Vector routing protocols select the best path for data packets. Here distance is reference of hop in network. Distance-Vector protocols calculate the distance between source and destination on the basis of hop count. Suppose there are two path available for data packet from source and destination. Distance-Vector protocol select the path in which the number of hopes are less. RIP and IGRP are example of Distance-Vector routing protocol.

Distance vector routing protocols manage the selection of best path for data packets by routers. Routing table of all routers update by sharing the information on the network. The destination network path defines by hop count up to destination network. Distance vector routing protocols generally known as DVRP. Distance vector routing protocols is mostly used protocol in present scenario. DVRP sent the data packets over the internet protocol.

There are two terms in DVRP. The first term is distance and second is vector. Distance is number of hop or step to send the data packets up to destination network. Path selection for a data packet is depends on the hop count. **Minimum hope count path selected by the Distance vector routing protocols.** The term vector refers to the propagating of the packet on a given set of network nodes. Routers broadcast the information of remote network to next router. **Every router does the same thing so the routing table of all routers updated automatically.** All router informs about the connected networks to next router then router update its own routing table.

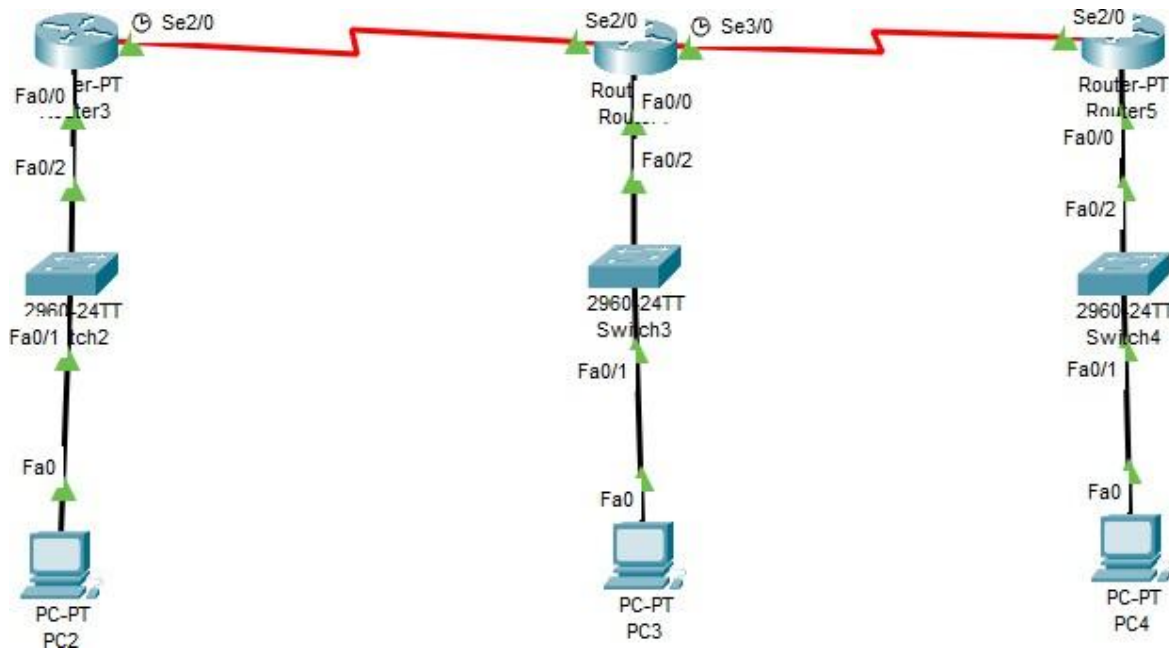
Network topology changes time to time. Adding or removing a router in a network is very common phenomena. **Any change in network should be updated in all router's routing table.** Doing this manually is very critical work. Distance vector routing protocols do this job automatically. The process of broadcasting any update in routing table and updation in all routing tables is known as convergence.

The algorithm distance vector routing protocol find the routes on a internetwork. The other algorithm used to select the best path for data packets is Link State routing protocols. DVRP algorithm allow routers to exchange the routing tables with each other. Each router received the routing table from neighbour router, update own routing table and share the updated table to next neighbour router. This process repeat after a fix predefined time interval. By repeating this process all devices connected in the network maintain the routing table which allow the flow of data packets efficiently.

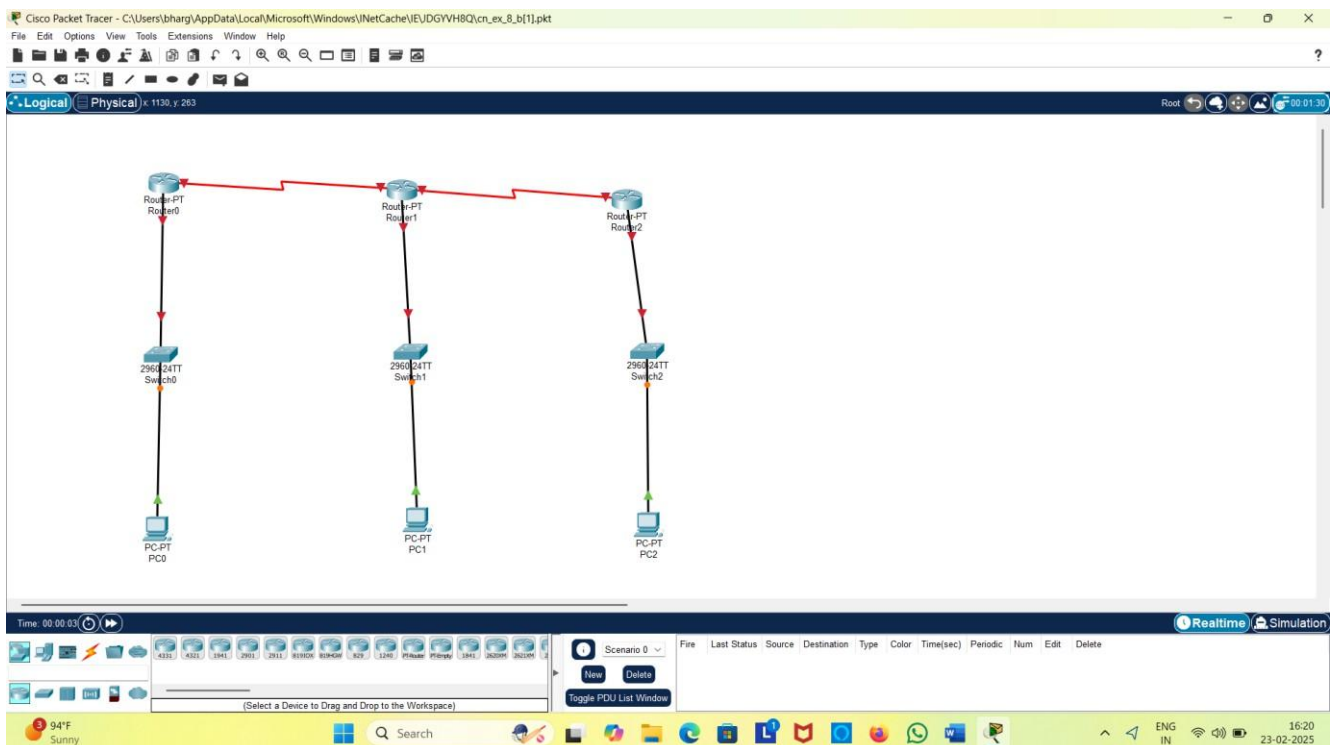
1. Device Requirements:

1. Router-3
2. Switches -3
3. PC's -3
4. Copper cross over wire

2. Network Diagram for your experiment (draw the diagram either hand drawing/ms paint or any other drawing tools)



3. Network Diagram (Packet tracer diagram before configuration):



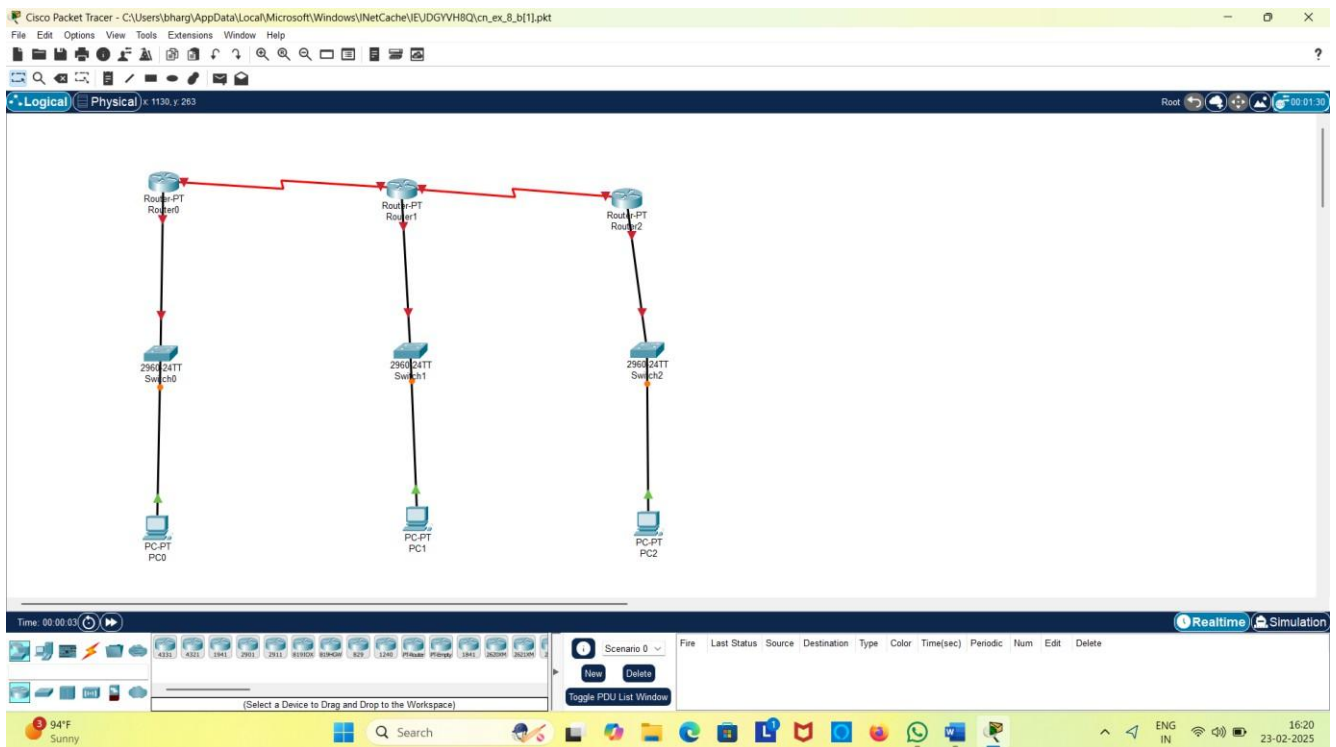
4. Configuration details:

Device Name	Interface Name	IP Address	Subnet mask	Default Gateway
Router-3	Se2/0	10.0.0.1	255.255.255.252	0.0.0.0
Router-4	Se3/0	10.0.0.2	255.255.255.0	0.0.0.0
Router-5	Se2/0	10.0.0.3	255.255.255.252	0.0.0.0
PC2	Fa0/0	192.168.1.1	255.255.255.0	0.0.0.0
PC3	Fa0/1	192.168.1.2	255.255.255.0	0.0.0.0
PC4	Fa0/2	192.168.1.3	255.255.255.0	0.0.0.0

5. Describe step by step configuration steps properly (you may copy the commands used in the configuration tab and paste it.)

1. Ping
2. ip config/all

6. Output Diagram (Minimum 3 screenshot):



Cisco Packet Tracer - C:\Users\bharg\AppData\Local\Microsoft\Windows\NetCache\W20FX3Q7\cn_ex_8_b[1].pkt

File Edit Options View Tools Extensions Window Help

Logical Physical x 648, y 339

Time: 00:00:43

Scenario 0

(Select a Device to Drag and Drop to the Workspace)

94°F Sunny

PC0

Physical Config Desktop Programming Attributes

IP Configuration

Interface FastEthernet0

IP Configuration

☐ DHCP ☒ Static

IPv4 Address 192.168.1.1

Subnet Mask 255.255.255.0

Default Gateway 0.0.0.0

DNS Server 0.0.0.0

IPv6 Configuration

☐ Automatic ☒ Static

IPv6 Address

Link Local Address FE80::202:16FF:FE71:6392

Default Gateway

DNS Server

802.1X

☐ Use 802.1X Security

Authentication MDS

Username

Password

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22:50

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File Edit Options View Tools Extensions Window Help

Logical Physical x 648, y 339

Time: 00:01:14

Scenario 0

(Select a Device to Drag and Drop to the Workspace)

94°F Sunny

PC0

Physical Config Desktop Programming Attributes

Command Prompt

Cisco Packet Tracer PC Command Line 1.0

C:\>ping 192.168.1.1

Pinging 192.168.1.1 with 32 bytes of data:

Reply from 192.168.1.1: bytes=32 time<1ms TTL=128

Reply from 192.168.1.1: bytes=32 time<1ms TTL=128

Reply from 192.168.1.1: bytes=32 time<1ms TTL=128

Reply from 192.168.1.1: bytes=32 time<1ms TTL=128

Ping statistics for 192.168.1.1:

Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),

Approximate round trip times in milli-seconds:

Minimum = 0ms, Maximum = 3ms, Average = 0ms

C:\>

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16:18 23-02-2025

Rubrics for Experiment Assessment:

Rubrics	Good	Normal	Poor	Marks
Creation of Topology (4)	Created the topology, Identify the proper devices and making the connections (4)	Created the topology, Identify the proper devices, making the connections But missing some features (3)	Created wrong topology, Failed to Identify the proper devices and making connections (1)	
Verify the connectivity (4)	Verified the connectivity in all the levels (4)	Verified the connectivity at some levels (only some nodes) (2)	Verified the connectivity is not done. (1)	
Timely Completion (2)	Completed the lab before the allotted time (2)	Completed the lab after the deadline (1)	Did not submitted before grading (0)	
Total				

Google Drive link of the packet tracer file (give view permission):

Link: https://drive.google.com/file/d/1mf7XSPyJyPKBl1Q_Ez3ECAKB7ungZJrT/view?usp=drivesdk

CONCLUSION (provide conclusion about this experiment):

Vector routing successfully propagated shorted path to all modes using the cisco packet tracer.