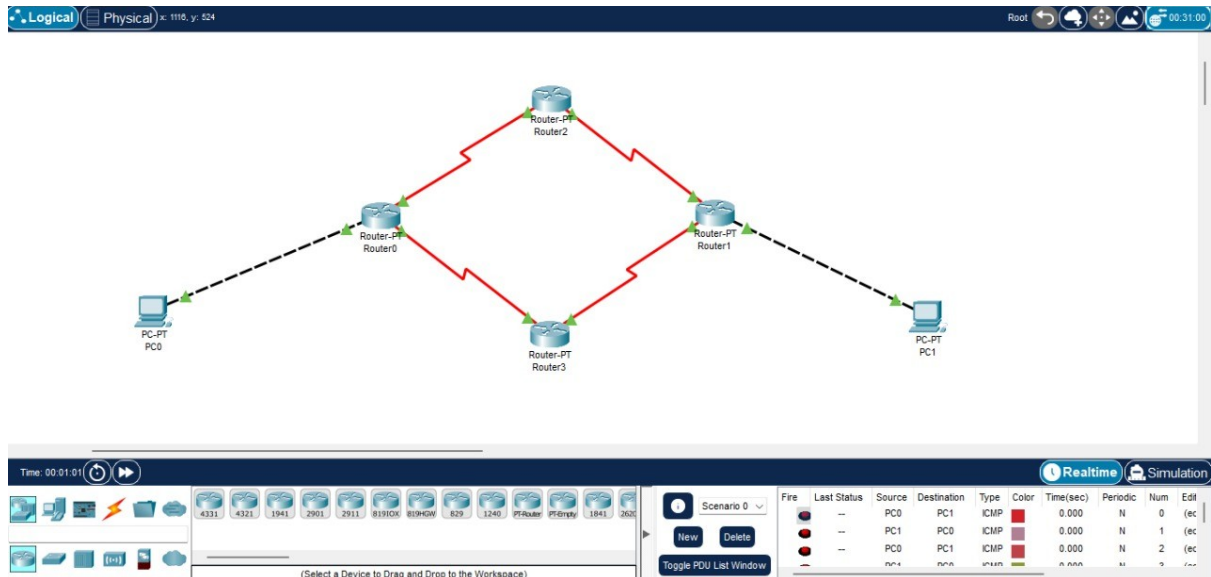


# Distance Vector Routing (DVR) protocol using Packet Tracker



# IP CONFIGURATION

The image shows a screenshot of a network configuration window titled "PC0". The window has four tabs: "Physical", "Config", "Desktop", and "Attributes". The "Config" tab is active, and within it, the "IP Configuration" sub-tab is selected. The "Interface" dropdown menu is set to "FastEthernet0".

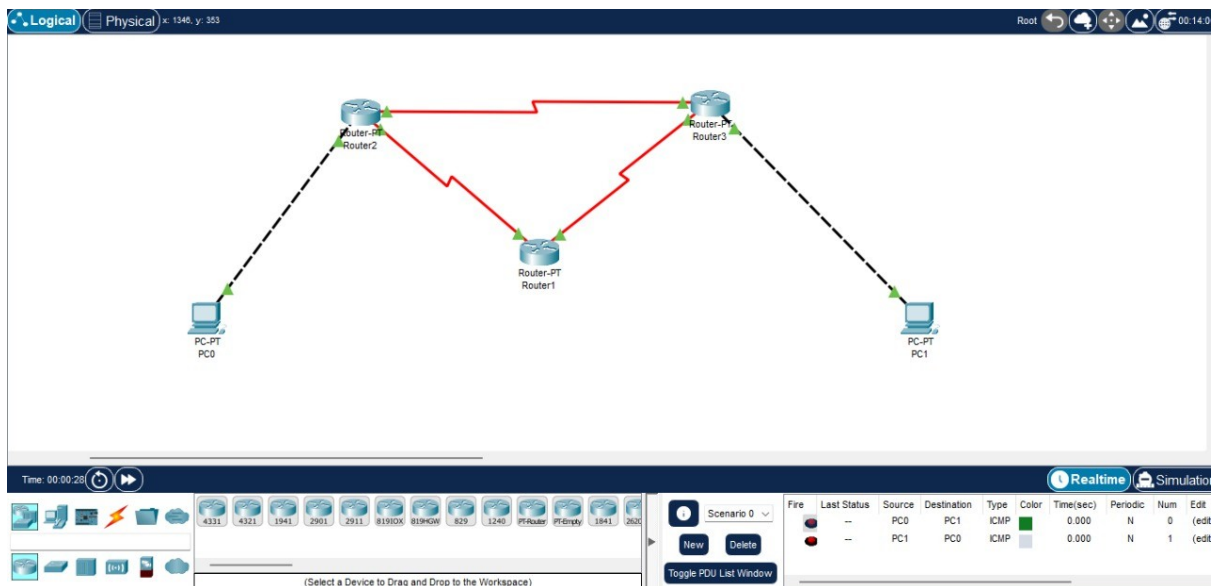
The "IP Configuration" section contains two radio buttons: "DHCP" (unselected) and "Static" (selected). Below these are four input fields for IPv4 configuration:

- IPv4 Address: 192.168.1.1
- Subnet Mask: 255.255.255.0
- Default Gateway: 192.168.1.10
- DNS Server: 0.0.0.0

The "IPv6 Configuration" section also has two radio buttons: "Automatic" (unselected) and "Static" (selected). Below these are four input fields for IPv6 configuration:

- IPv6 Address: (empty)
- Link Local Address: FE80::201:63FF:FE74:BA37
- Default Gateway: (empty)
- DNS Server: (empty)

The "802.1X" section is at the bottom and includes a checkbox for "Use 802.1X Security" (unchecked). Below this is a dropdown menu for "Authentication" set to "MD5", and two empty input fields for "Username" and "Password".



## IP CONFIGURATION

PC0

Physical Config **Desktop** Programming Attributes

**IP Configuration** [X]

Interface: FastEthernet0

IP Configuration

☐ DHCP ☒ Static

IPv4 Address: 192.168.1.1

Subnet Mask: 255.255.255.0

Default Gateway: 192.168.1.10

DNS Server: 0.0.0.0

IPv6 Configuration

☐ Automatic ☒ Static

IPv6 Address: /

Link Local Address: FE80::204:9AFF:FEE6:BAB

Default Gateway:

DNS Server:

802.1X

☐ Use 802.1X Security

Authentication: MD5

Username:

Password:

## THEORY QUESTIONS

### EXPERIMENT-8

1. Explain the working of the distance vector routing protocol?

⇒ It is a routing algorithm used in computer networks to determine the best path for data packets. Each router maintains a routing table that contains the distance (cost) and direction (next-hop) to reach all network destinations. Routers periodically exchange their routing with connected neighbours. They update their own table using the Bellman-Ford Algorithm, selecting the shortest path to each destination.

2. What is the significance of periodic updates in DVR?

⇒ Periodic updates ensure that all routers are aware of network topology changes. These updates help routers detect broken links, new routes, or changes in path costs. However, excessive updates can lead to high bandwidth consumption and slow convergence.

3. Discuss the key differences between distance vector and link-state Routing?



### → Distance vector routing

- i) Entire routing table shared with neighbours.
- ii) Slower due to periodic updates.
- iii) Computational overhead is low.
- iv) It is less scalable due to high bandwidth usage.

### link-state routing

- i) Only link-state information is shared.
- ii) Faster due to triggered updates.
- iii) Computational overhead is low.
- iv) It is more scalable for large networks.

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

- i) It takes time to adapt to network changes, causing delays.
- ii) Incorrect routes may loop indefinitely.
- iii) Periodic updates consume excessive network resources.
- iv) Becomes inefficient in large networks due to frequency updates.