



Experiment No. 7

Aim: Design VPN and Configure RIP using Packet tracer:

Resource required: Cisco Packet Tracer – Routers, Switches, End Devices, Cables

Theory:

A VPN (Virtual Private Network) in computer networking is a technology that creates a secure, encrypted connection (or “tunnel”) over a less secure network such as the Internet.

A VPN (Virtual Private Network) is like a secret tunnel on the internet.

RIP (Routing Information Protocol) is one of the oldest **distance vector routing protocols** used in computer networks. It helps routers exchange information to determine the best path for data packets within an **autonomous system (AS)**.

◆ **Advantages:**

- Very simple to configure and use.
- Low resource consumption (CPU & memory).
- Good for small networks.

◆ **Disadvantages:**

- Slow convergence (takes time to update all routers).
- Hop count limit (15) restricts use in large networks.
- Not as efficient as modern protocols like **OSPF, EIGRP, BGP**.

RIP is a simple routing protocol based on hop counts, best for small networks, but limited in scalability and speed.

By combining VPN with RIP in Packet Tracer:

- **VPN** ensures confidentiality and secure data transmission.
- **RIP** dynamically updates routes, enabling automatic communication between devices in different networks.



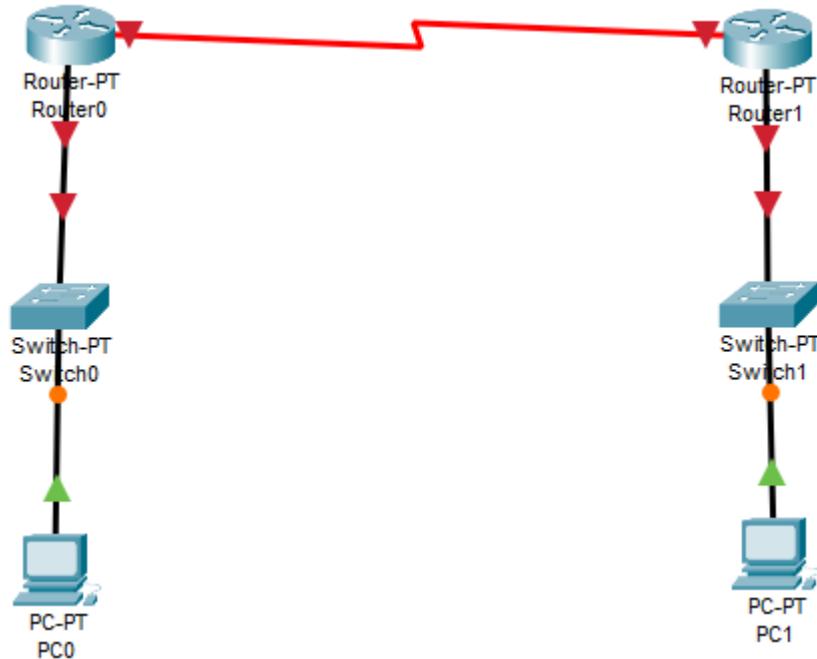
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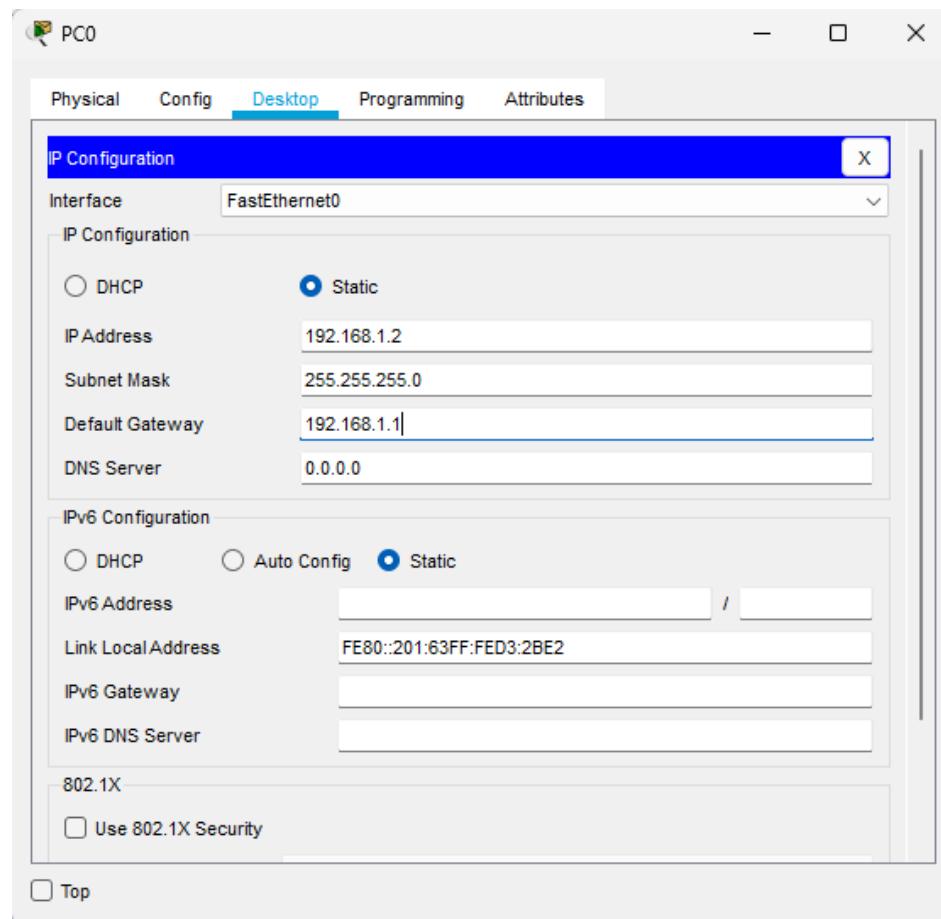
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Practical:

Connect the devices using appropriate cables (cross/straight or DCE/serial).



Assign IP addresses to all interfaces of routers and PCs.

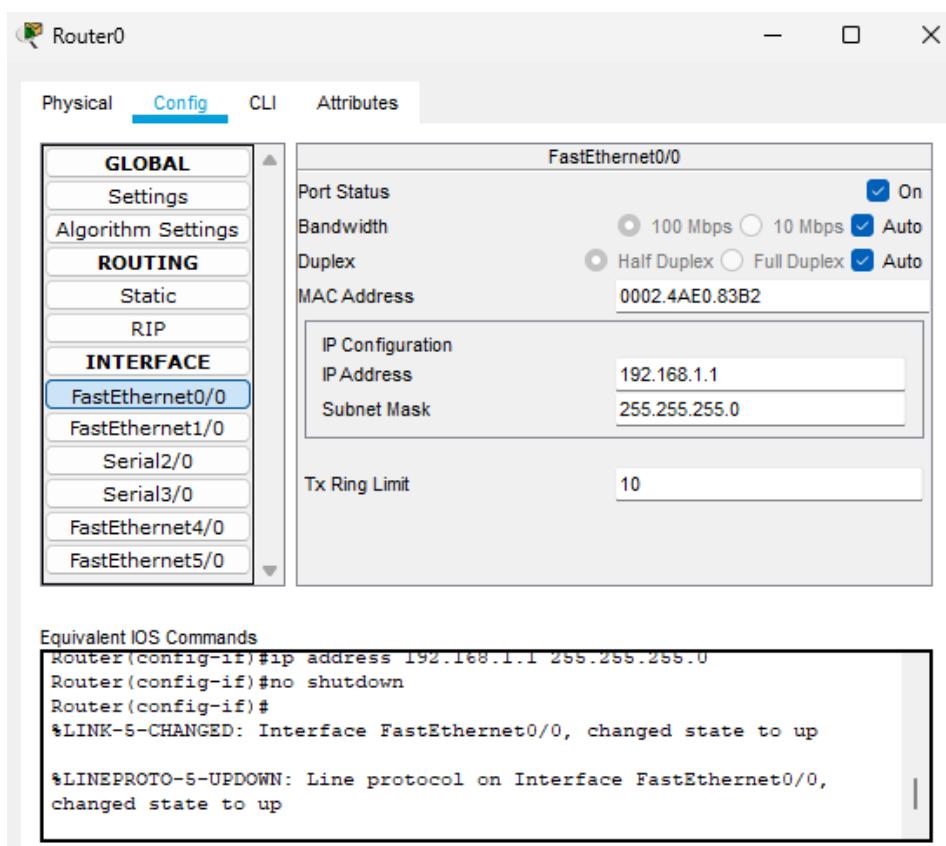
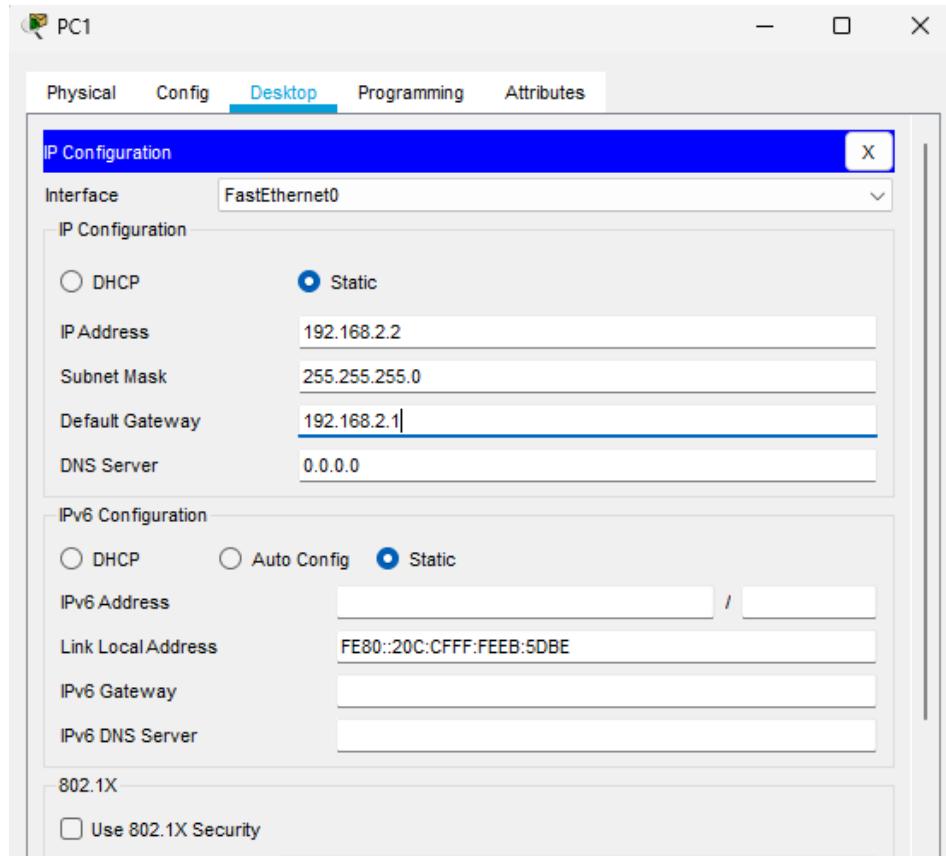




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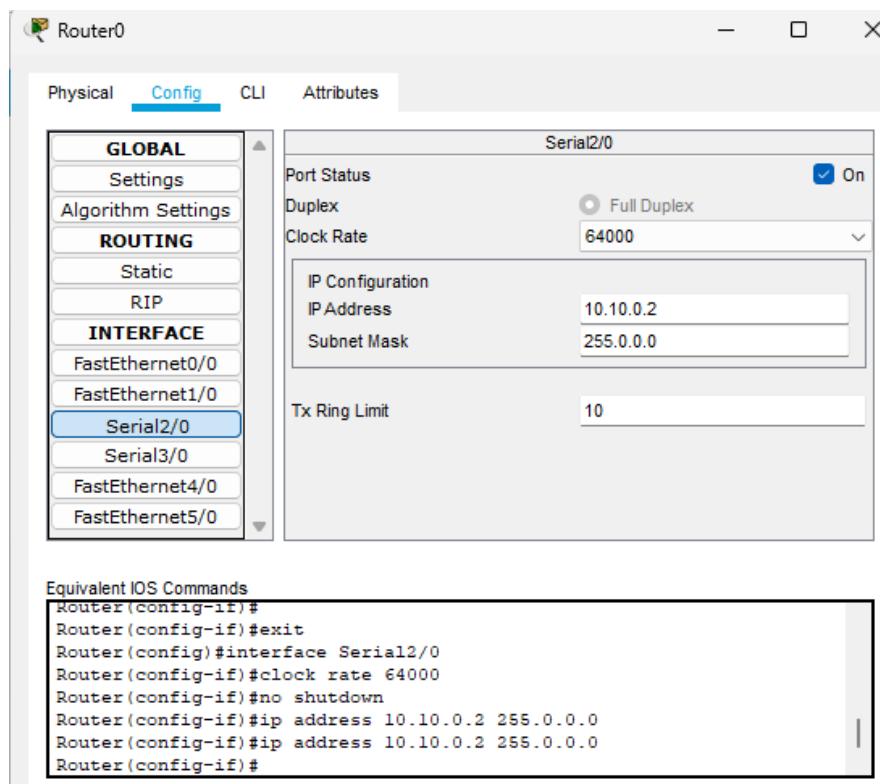
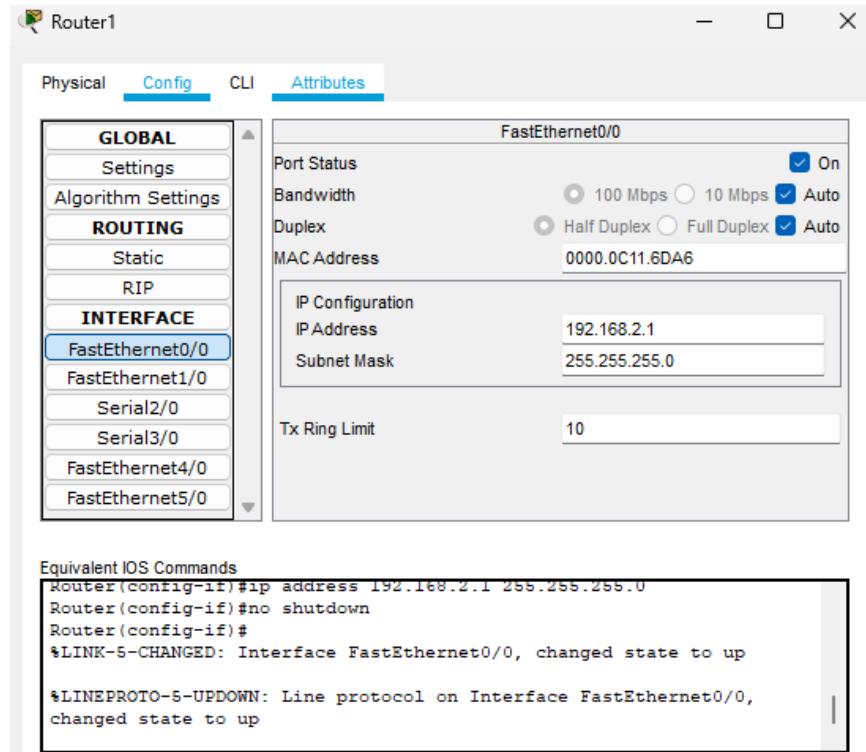




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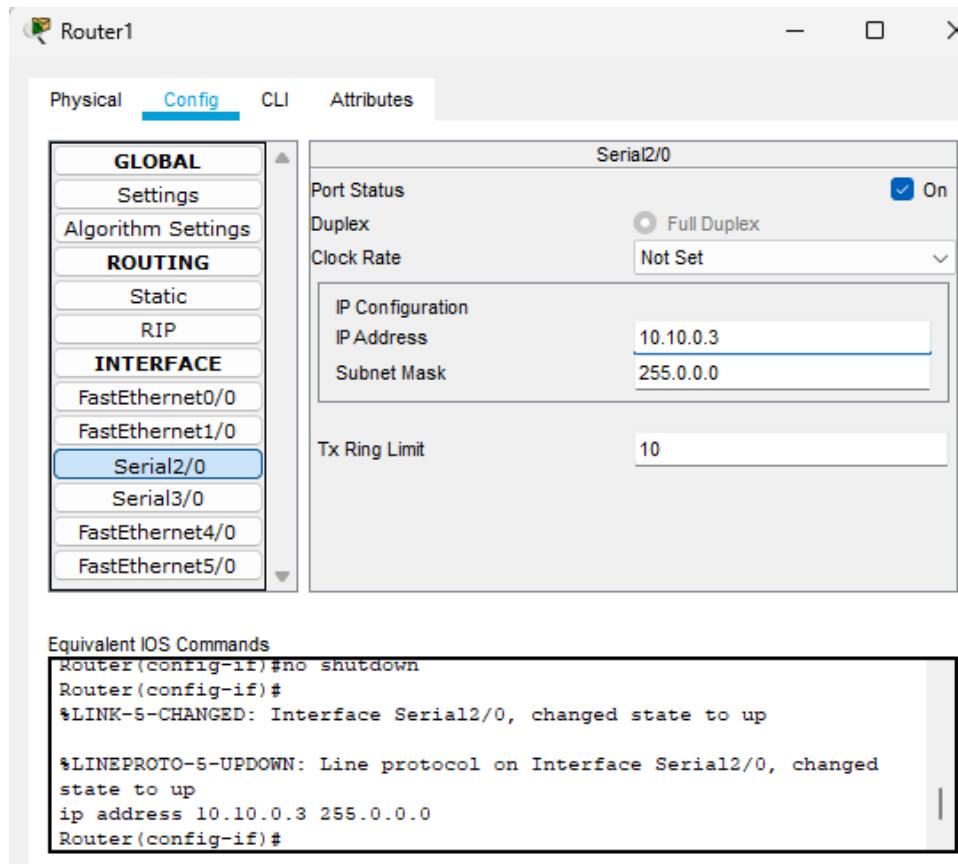




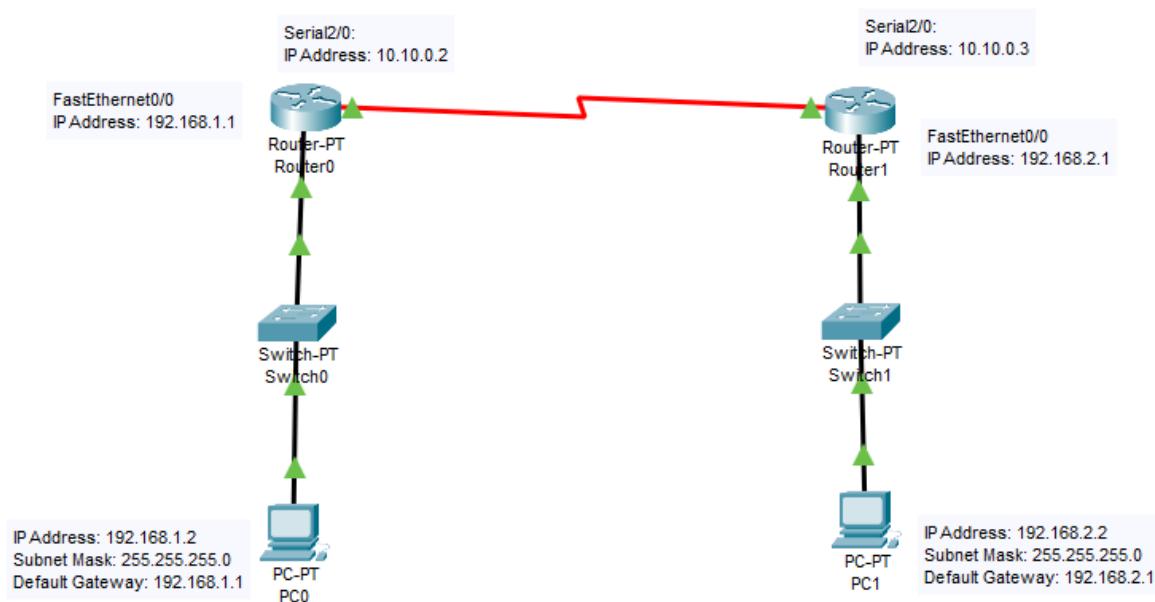
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Realtime Components with Ip Address and Subnet Mask:





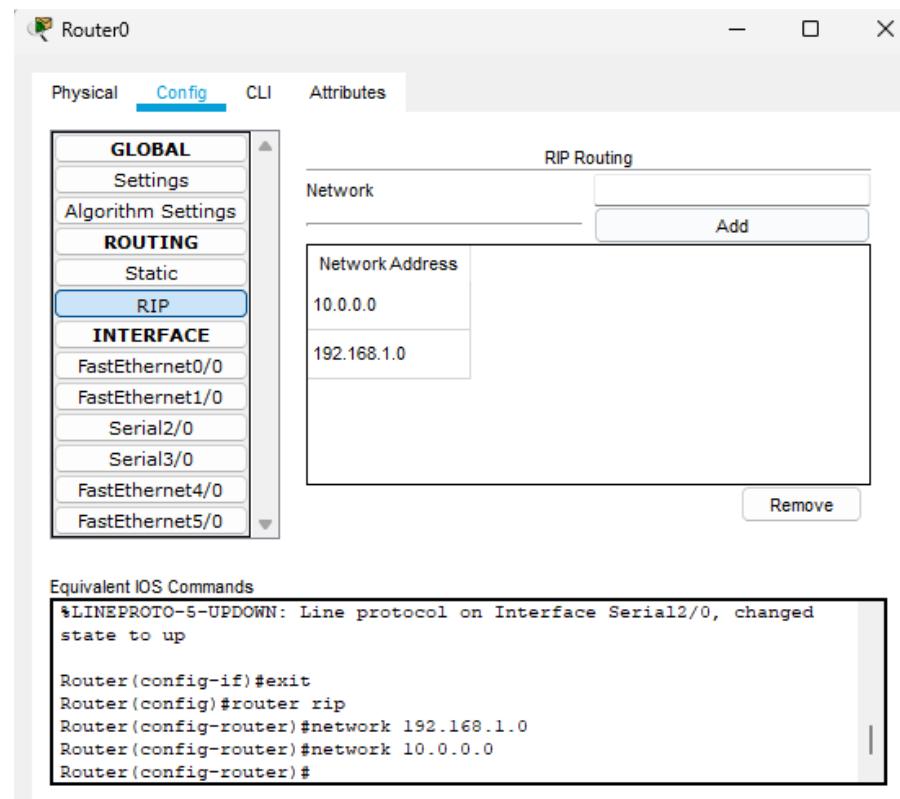
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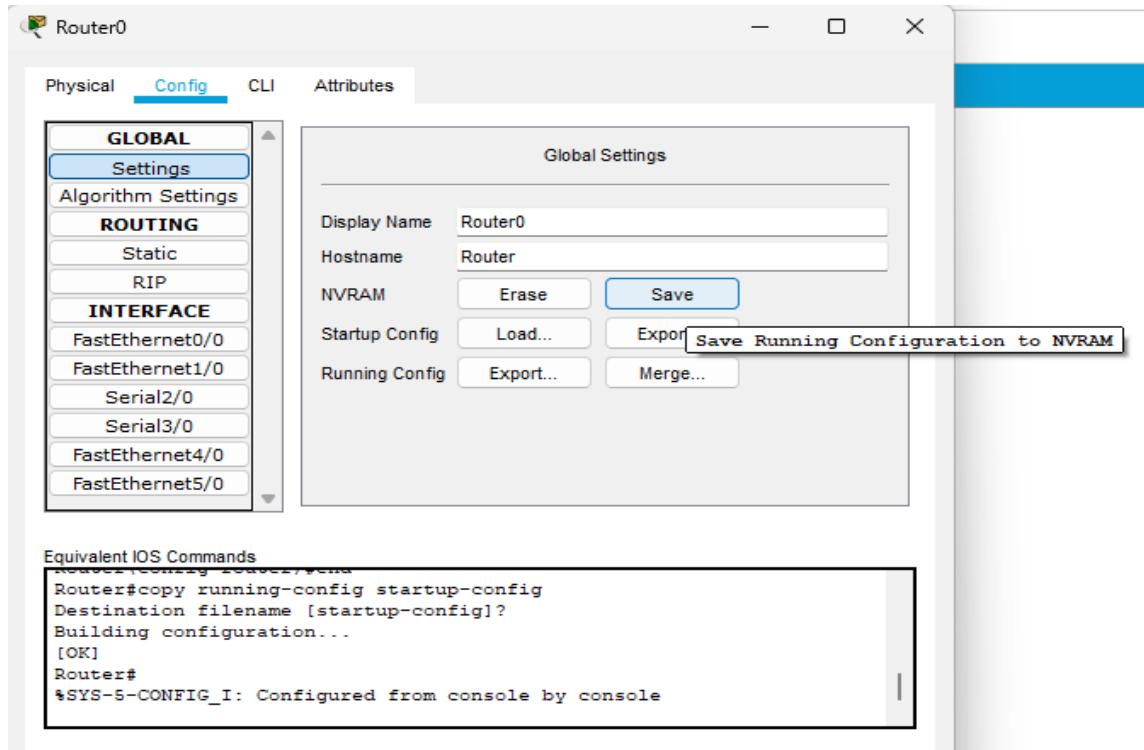
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Configure RIP on each router:

- Enable RIP routing and Specify the version (RIPv2).
- Add network addresses to RIP.



Save the configuration:





The screenshot shows the Router1 configuration interface. The top navigation bar includes tabs for Physical, Config (which is selected), CLI, and Attributes. On the left, a sidebar lists GLOBAL, Algorithm Settings, ROUTING (with Static and RIP options), and INTERFACE (with FastEthernet0/0, FastEthernet1/0, Serial2/0, Serial3/0, FastEthernet4/0, and FastEthernet5/0). The main panel displays 'Global Settings' with fields for Display Name (Router1) and Hostname (Router). It also includes buttons for NVRAM (Erase, Save), Startup Config (Load..., Export...), and Running Config (Export..., Merge...). A tooltip for the 'Save' button indicates it saves the running configuration. Below this is a section titled 'Equivalent IOS Commands' containing the following text:

```
Router#copy running-config startup-config
Destination filename [startup-config]?
Building configuration...
[OK]
Router#
%SYS-5-CONFIG_I: Configured from console by console
```

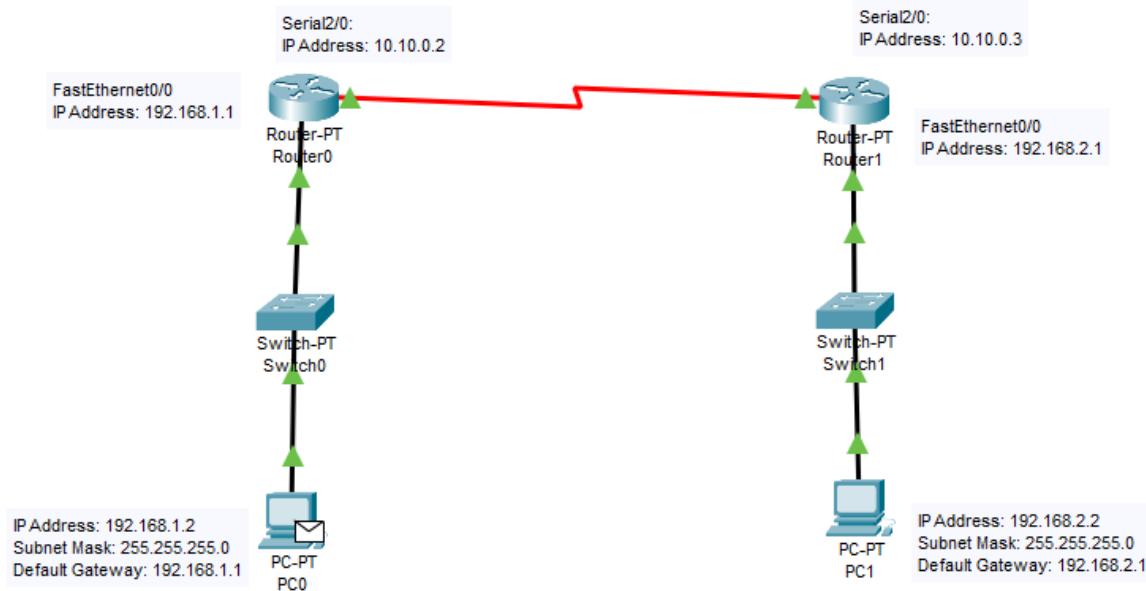


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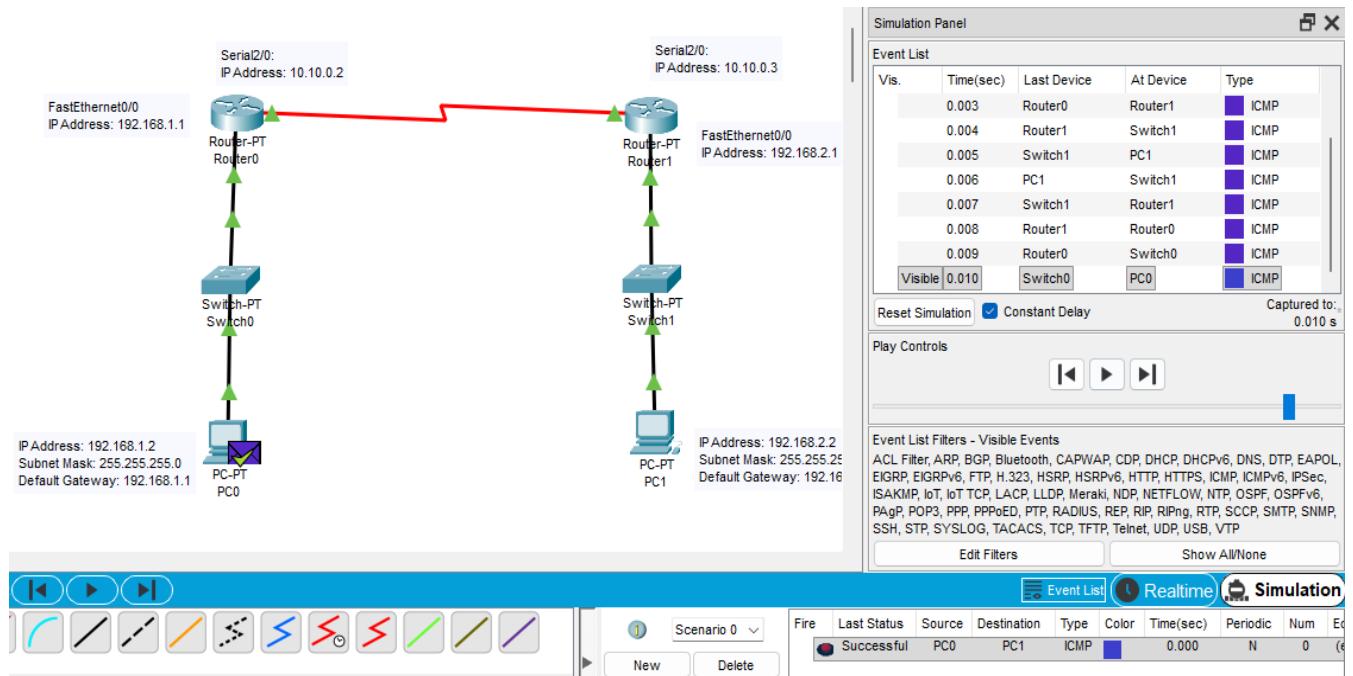
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Packet are transferred from PC0 to PC1



Packet Transferring Simulation



Conclusion:

The implementation of VPN (Virtual Private Network) and RIP (Routing Information Protocol) in Cisco Packet Tracer demonstrates how secure communication and dynamic routing can be achieved in a network. VPN ensures confidentiality, integrity, and secure data transfer between remote networks, while RIP simplifies the routing process by automatically updating routes using the distance vector algorithm.