Lab Exam 2 Exercise

Configuring RIP and OSPF Routing Protocols in Cisco Packet Tracer

Objective:

To set up and configure a network topology using RIP and OSPF routing protocols in Cisco Packet Tracer. Each computer is assigned a name and an IP address using the last three digits of the roll number.

1. Network Topology Design:

Devices:

- **Computers**: 10-12 devices, distributed across two LANs.
- **Switches**: 2 switches (one for each LAN).
- **Routers**: 2 routers connected via a WAN link.

Steps:

1. **Add Devices**:
    - Open Cisco Packet Tracer and drag 10-12 computers, 2 switches, and 2 routers onto the workspace.
    - Connect the computers to their respective switches using copper straight-through cables.
    - Connect each switch to one router.
    - Connect the two routers using a serial cable (for WAN link).
2. **Naming the Computers**:
    - Name each computer in the format `PC_018`.

2. IP Address Configuration:

Subnets:

- **LAN 1**: `192.168.1.0/24`
- **LAN 2**: `192.168.2.0/24`

Steps:

1. **Assign IP Addresses to Computers**:
    - Assign IP addresses for LAN 1 in the range `192.168.1.018`.
    - Assign IP addresses for LAN 2 in the range `192.168.2.018`.
    - Ensure the subnet mask is `255.255.255.0`.
2. **Assign IP Addresses to Routers**:

- Router connected to LAN 1: `192.168.1.1`.
- Router connected to LAN 2: `192.168.2.1`.
- Assign serial IP addresses for the WAN link (e.g., `10.0.0.1/30` on Router 1 and `10.0.0.2/30` on Router 2).

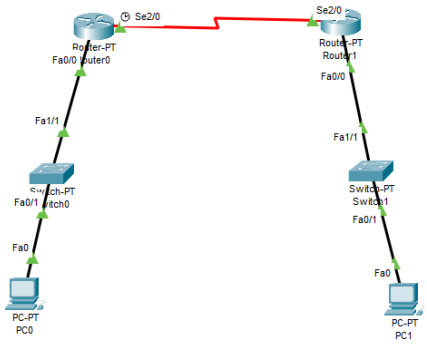
3. Routing Protocol Configuration:

RIP Configuration on Router 1:

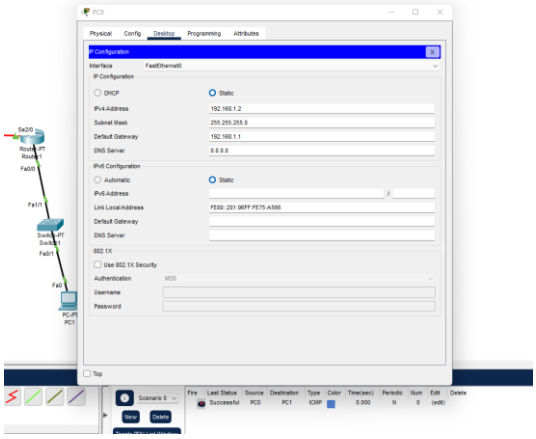
1. Go to the CLI of Router 1.
2. Enter the following commands to configure RIP v1:

```
Router> enable
Router# configure terminal
Router(config)# router rip
Router(config-router)# version 1
Router(config-router)# network 192.168.1.0
Router(config-router)# network 10.0.0.0
Router(config-router)# exit
```

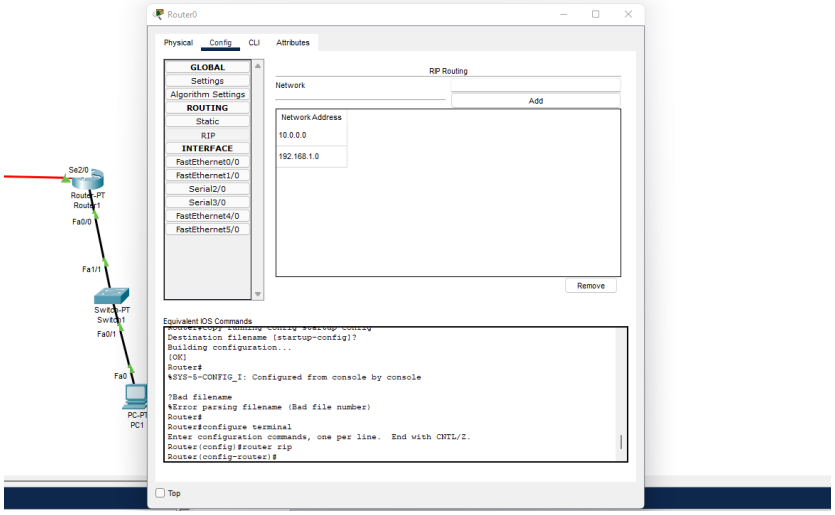
Build the network topology.



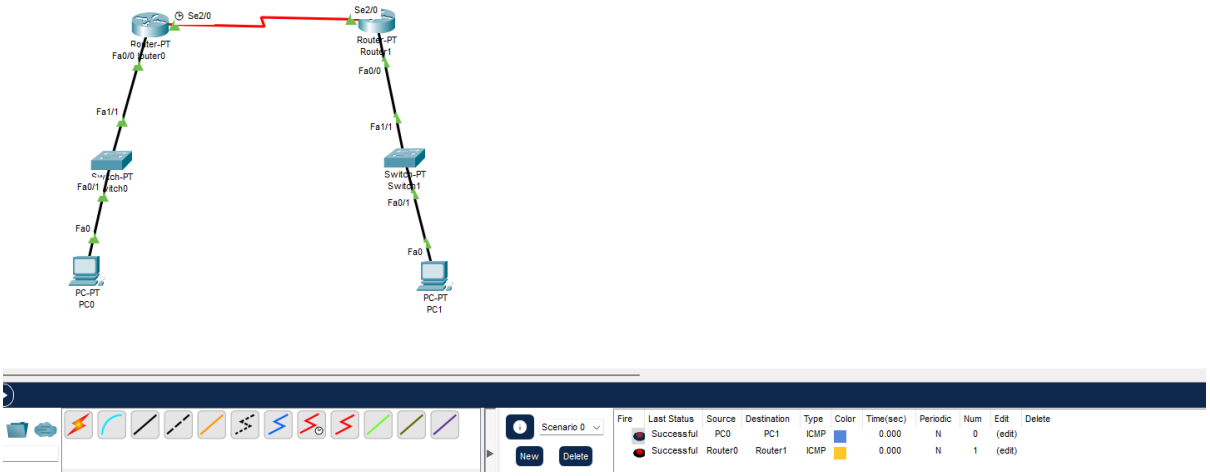
Configure IP addresses on the PCs and the routers.



Configure RIPv2 on the routers



Simulation Checking

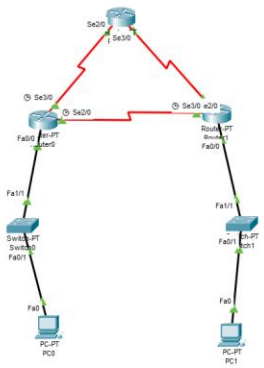


OSPF Configuration on Router 2:

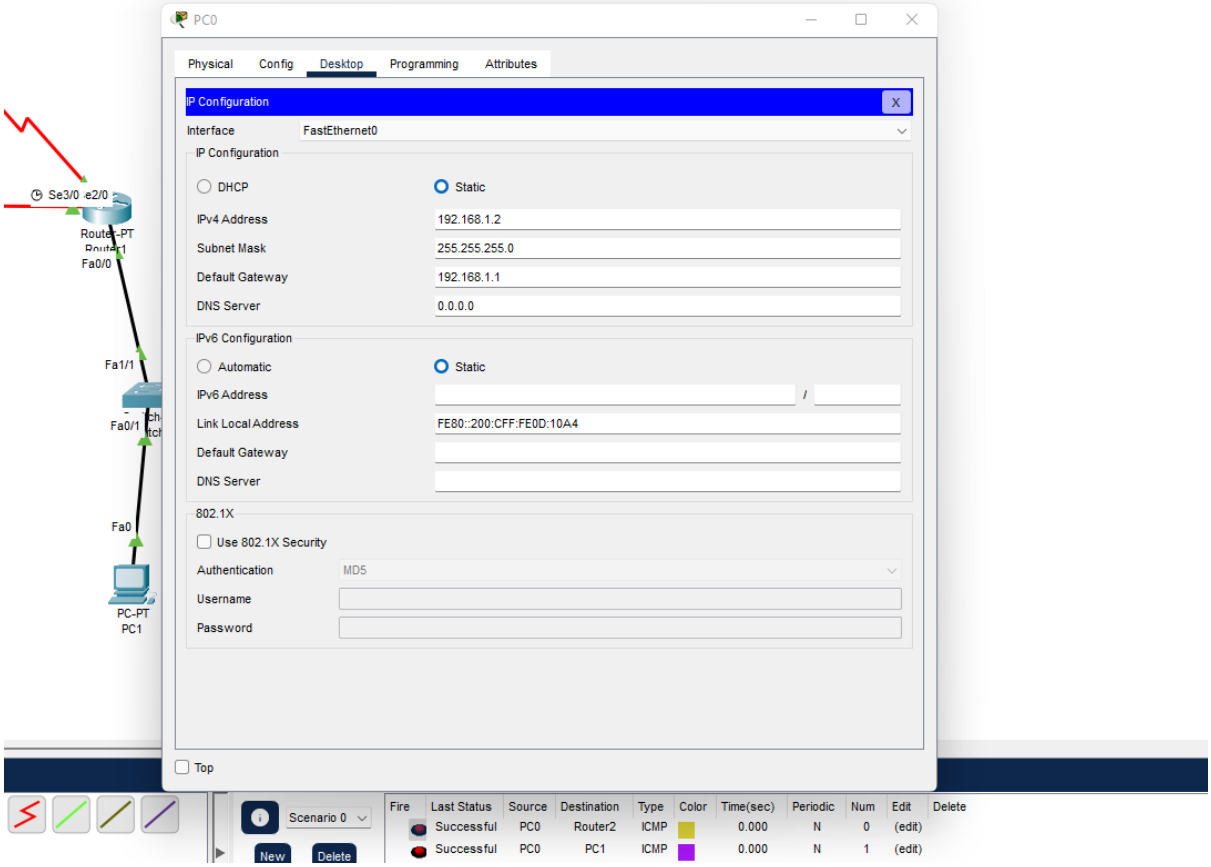
1. Go to the CLI of Router 2.
2. Enter the following commands to configure OSPF:

```
Router> enable
Router# configure terminal
Router(config)# router ospf 1
Router(config-router)# network 192.168.2.0 0.0.0.255 area 0
Router(config-router)# network 10.0.0.0 0.0.0.3 area 0
Router(config-router)# exit
```

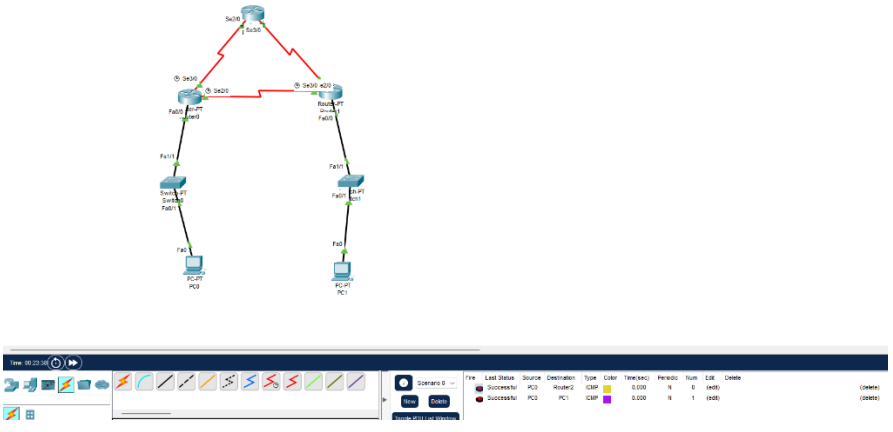
Build the network topology.



Configure IP addresses on the PCs and the routers.



Simulation



4. Packet Tracer Configuration Steps:

1. **Add IP Addresses** to the computers and routers according to the previous IP configuration steps.
2. **Set Up Routing**:
    - Enable RIP on Router 1 and OSPF on Router 2 as described in the previous steps.
3. **Verify Routing**:
    - Use the `show ip route` command to check if the routing tables have been updated.

5. Simulation Testing:

1. **Switch to Simulation Mode** in Cisco Packet Tracer.
2. **Send a message** (e.g., a ping) from one computer in LAN 1 to a computer in LAN 2.
3. **Verify** that the message is successfully transmitted by monitoring the simulation.