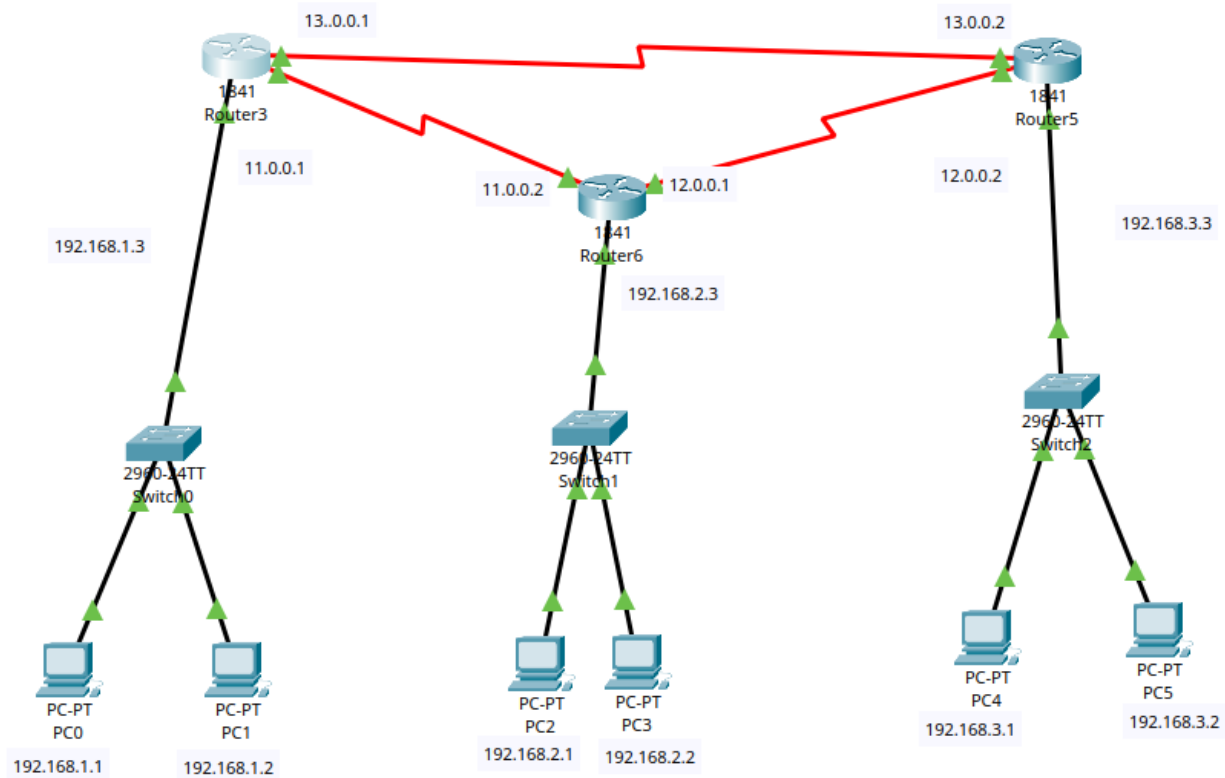


OSPF Routing with 3 Routers

1. Set Up the Network Topology

- Open **Cisco Packet Tracer**.
- Drag and drop 3 **routers** (e.g., 1841 model).
- Add **Switch** (e.g., 296024TT) to each router.
- Add **End Devices** (PCs or laptops) to each switch.
- Connect routers using **serial connections** (DCE/DTE cables).
- Connect PCs to switches using **copper straight-through cables**.
- Connect Routers to switches using **copper straight-through cables**.



2. Assign IP Addresses

- Decide on IP subnets for each network segment. Example:
 - Router3–PC1: 192.168.1.1/24
 - Router3–PC2: 192.168.1.2/24
 - Router6–PC3: 192.168.2.1/24
 - Router6–PC4: 192.168.2.2/24
 - Router5–PC4: 192.168.3.1/24
 - Router5–PC4: 192.168.3.1/24

Connect Switch0 to fa0/0 of router 3,

Connect Switch1 to fa0/0 of router 6,

Connect Switch2 to fa0/0 of router 5,

- Assign IP addresses to:
 - **PCs** (via Desktop → IP Configuration).
 - **Router interfaces** (via CLI or GUI).
 - Routers 3 fa0/0 has 192.168.1.3/24
 - Routers 3 se0/0 has 11.0.0.1/8
 - Routers 3 se0/1 has 13.0.0.1/8
 - Routers 6 fa0/0 has 192.168.2.3/24
 - Routers 6 se0/0 has 11.0.0.2/8
 - Routers 6 se0/1 has 12.0.0.1/8
 - Routers 5 fa0/0 has 192.168.3.3/24
 - Routers 5 se0/0 has 12.0.0.2/8
 - Routers 5 se0/1 has 13.0.0.2/8

3. Add OSPF Routes

4.1 You can do steps from CLI

- Each router must know how to reach other networks.
- Use the ip route command.

Example for Router3:

```
Router#en
Router#conf t
Router(config)#router ospf 1
Router(config-router)#network 192.168.1.0 0.0.0.255 area 0
Router(config-router)#network 11.0.0.0 0.255.255.255 area 0
Router(config-router)#network 13.0.0.0 0.255.255.255 area 0
```

Example for Router6:

```
Router(config)#router ospf 1
Router(config-router)#network 192.168.2.0 0.0.0.255 area 0
Router(config-router)#network 11.0.0.0 0.255.255.255 area 0
Router(config-router)#network 12.0.0.0 0.255.255.255 area 0
```

Example for Router5:

```
Router(config)#router ospf 1
Router(config-router)#network 192.168.3.0 0.0.0.255 area 0
Router(config-router)#network 12.0.0.0 0.255.255.255 area 0
Router(config-router)#network 13.0.0.0 0.255.255.255 area 0
```

5. Test Connectivity

- On each PC, open **Command Prompt**.
- Use ping to test communication across networks.
 - Example: From PC1 (192.168.1.2) ping PC4 (192.168.4.2).
- If successful, static routing is working.

6. Troubleshooting Tips

- Check if interfaces are **up** (no shutdown).
- Verify **IP addresses** and **subnet masks**.
- Ensure **clock rate** is set on DCE serial interfaces.
- Use show ip route to confirm routing tables.
- Use show running-config to check ospf configuration