Lab 5

Setting Up and Testing a DNS Server in Cisco Packet Tracer

Objective:

- Learn how to set up a DNS server in Cisco Packet Tracer.
- Configure a DNS server to resolve domain names to IP addresses.
- Test DNS functionality by using web browsers and command-line tools.

Step-by-Step Instructions:

Step 1: Open Cisco Packet Tracer

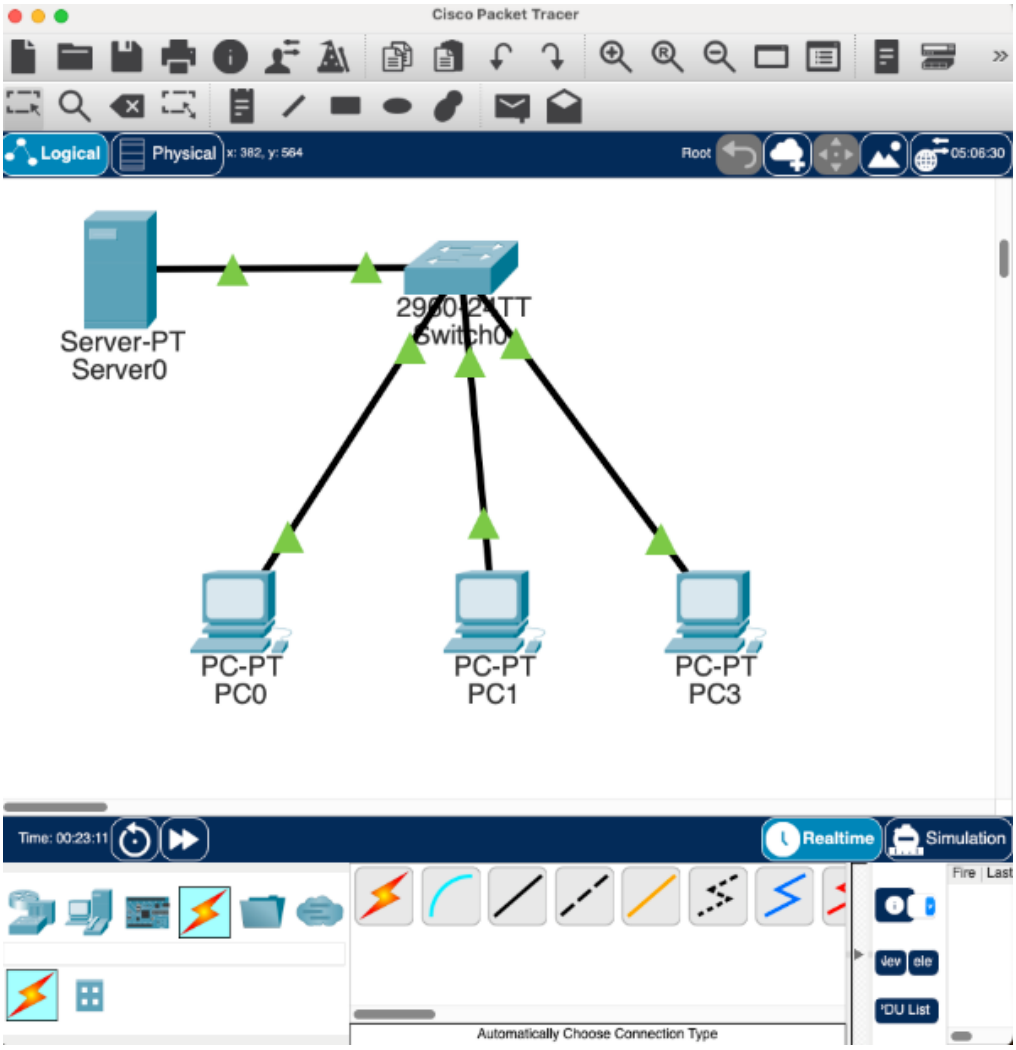
- Launch the Cisco Packet Tracer application and familiarize yourself with the interface.

Step 2: Add Devices to the Workspace

1. Go to the **End Devices** section and add the following:
    - **1 DNS Server** (drag a generic server from the list and rename it to "DNS Server").
    - **3 PCs** (PC1,PC2 and PC3).
2. Go to the **Network Devices** section and add:
    - **1 Switch** (e.g., 2960).

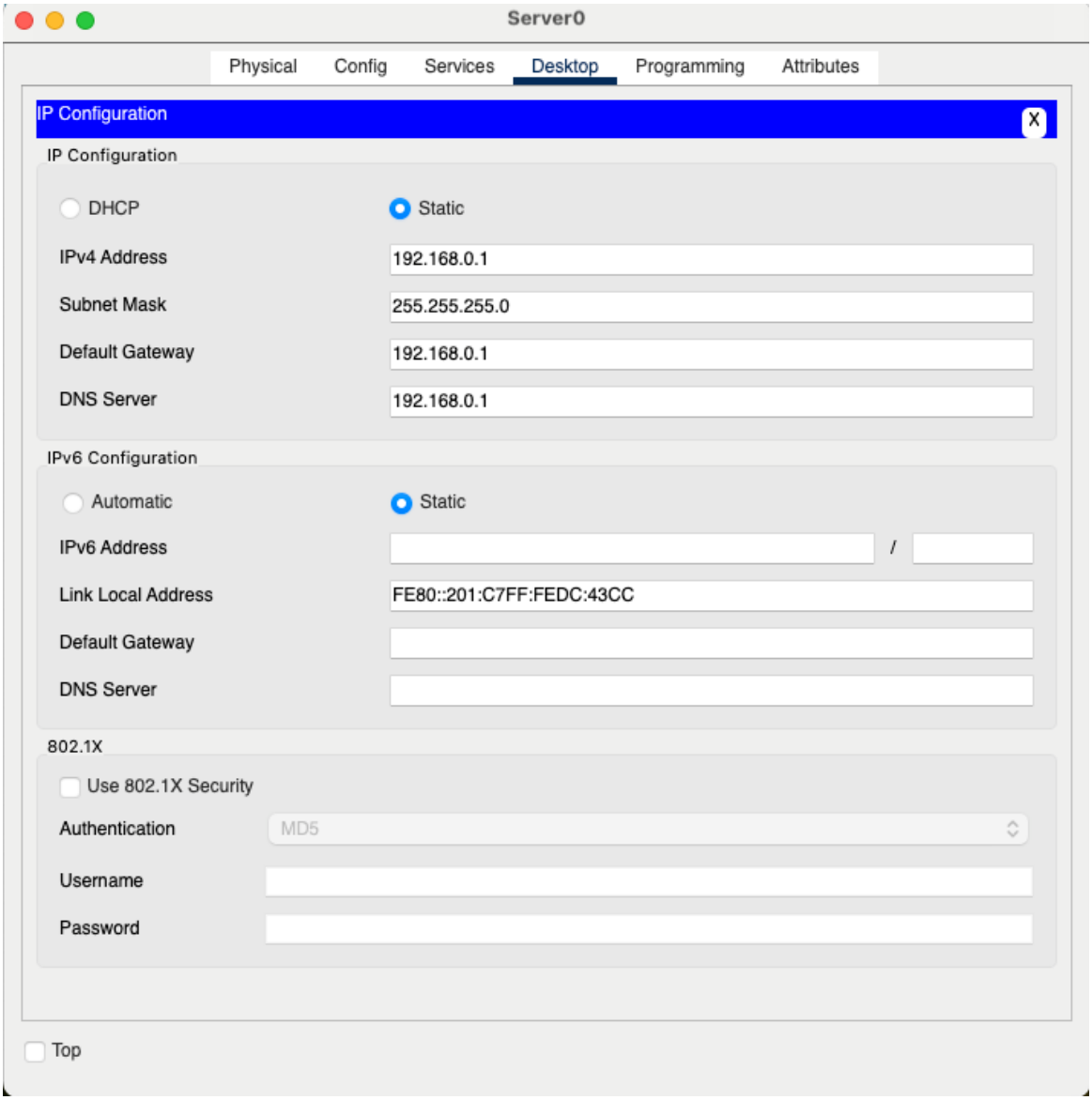
Step 3: Connect Devices

1. Use **Copper Straight-Through** cables to connect:
    - **DNS Server** to the switch.
    - **PC1** to the switch.
    - **PC2** to the switch.



Step 4: Configure the IP Addresses

1. **DNS Server**:
    - Click on the server, go to the **Config** tab, and assign:
        - **IP Address**: 192.168.0.1
        - **Subnet Mask**: 255.255.255.0
        - **Default Gateway**: 192.168.0.1.
        - **DNS** : 192.168.0.1



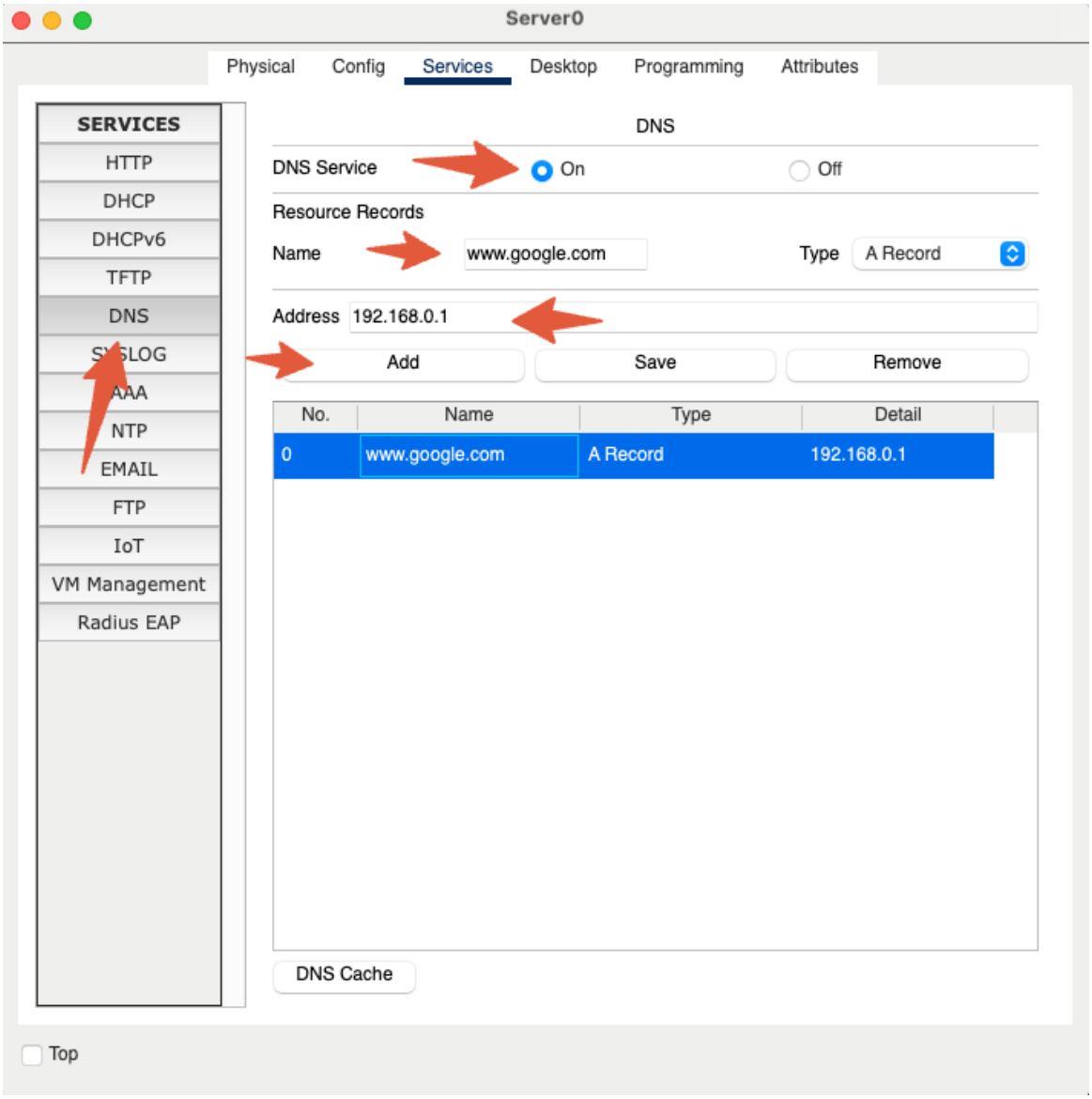
Enable DHCP from Lab 4.

Step 5: Configure the DNS Server

1. Click on the **DNS Server**, go to the **Services** tab, and select **DNS**.
2. Turn the DNS service **ON** by toggling the switch.
3. Add DNS records in the **DNS Table**:
    - **Name**: www.google.com
    - **Address**: 192.168.0. 1
    - Click **Add**.

Add another record:

- **Name**: www.facebook.com
- **Address**: 192.168.0.1
- Click **Add**.

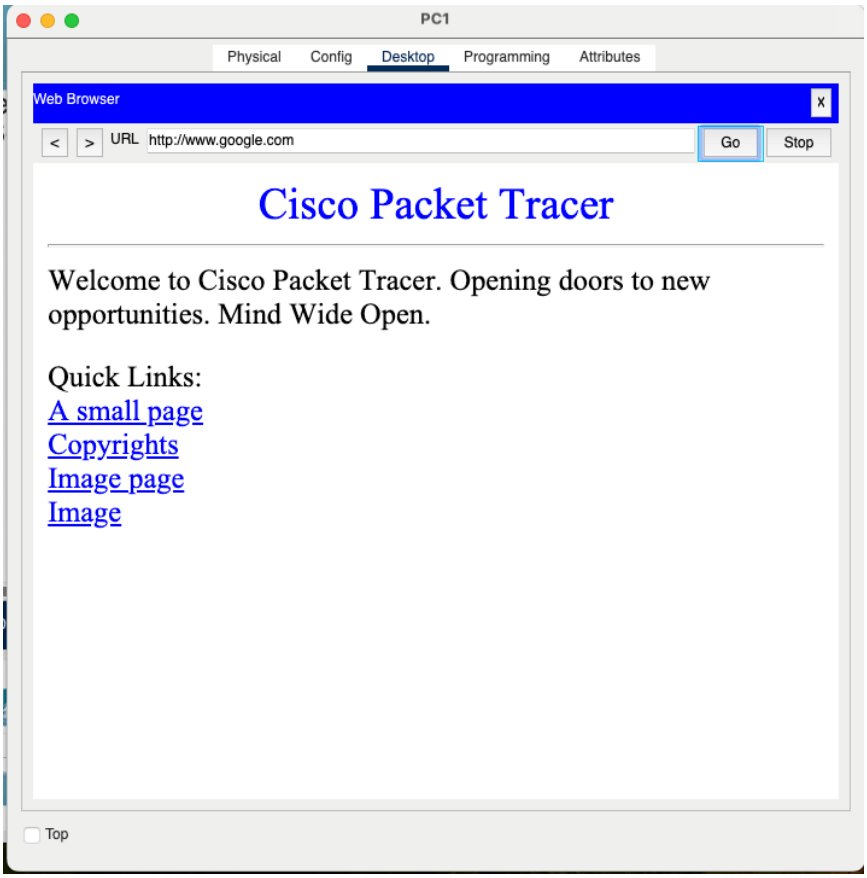


Step 6: Test the DNS Setup

1. **Testing with Ping**:
   - Go to **PC1**, open the **Command Prompt** in the **Desktop** tab.

- Type ping www.google.com and press **Enter**. You should see replies from 192.168.0. 1.
- Type ping www.google.com to confirm connectivity to 192.168.0.1.

2. **Testing with Web Browser**:
   - On **PC1**, open the **Web Browser** in the **Desktop** tab.
   - Type www.google.com in the URL bar and press **Enter**. You should see a successful connection message.
   - On **PC2**, type www.google.com and check the results.



Conclusion:

In this lab, you've successfully configured a DNS server to resolve domain names to IP addresses. You learned how to:

- Set up a DNS server in Cisco Packet Tracer.
- Configure end devices to use the DNS server for name resolution.
- Test DNS functionality using both ping commands and web browsers.

Lab 6

Configuring a Router with Two Switches in Cisco Packet Tracer

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Objective:

- Set up a network with two switches connected to a router.
- Assign IP addresses to devices in two different subnets.
- Configure a router to allow communication between the two subnets (router-on-a-stick configuration).
- Test connectivity using ping and observe packet flow in simulation mode.

Network Topology:

- **Router**: Connects two switches, each representing a different subnet.
- **Switch 1**: Connected to **PCs in Subnet 1** (192.168.1.0/24).
- **Switch 2**: Connected to **PCs in Subnet 2** (192.168.2.0/24).

Requirements:

- Cisco Packet Tracer
- Basic knowledge of subnetting and routing

Step-by-Step Instructions:

Step 1: Open Cisco Packet Tracer

- Launch the software and start a new project.

Step 2: Add Devices to the Workspace

1. **Router**:
    - Go to **Network Devices → Routers** and drag a router (e.g., **1841**) to the workspace.

2. **Switches**:
    - Go to **Network Devices → Switches** and add two switches (e.g., **2960** series).
3. **End Devices**:
    - Go to **End Devices** and add:
        - **3 PCs** for **Switch 1** (PC1, PC2,PC3).
        - **3 PCs** for **Switch 2** (PC4, PC5,PC6).

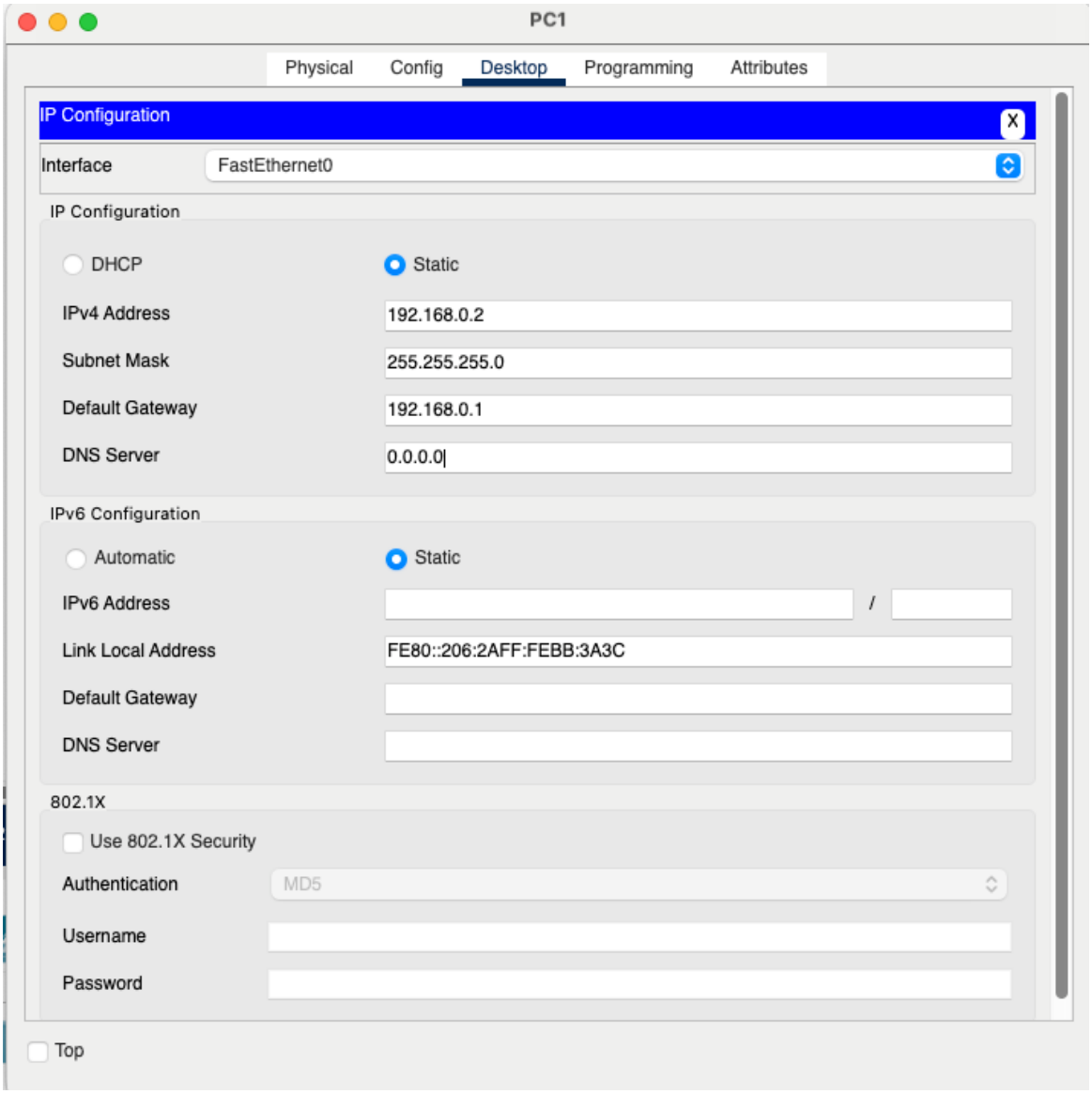
Step 3: Connect Devices

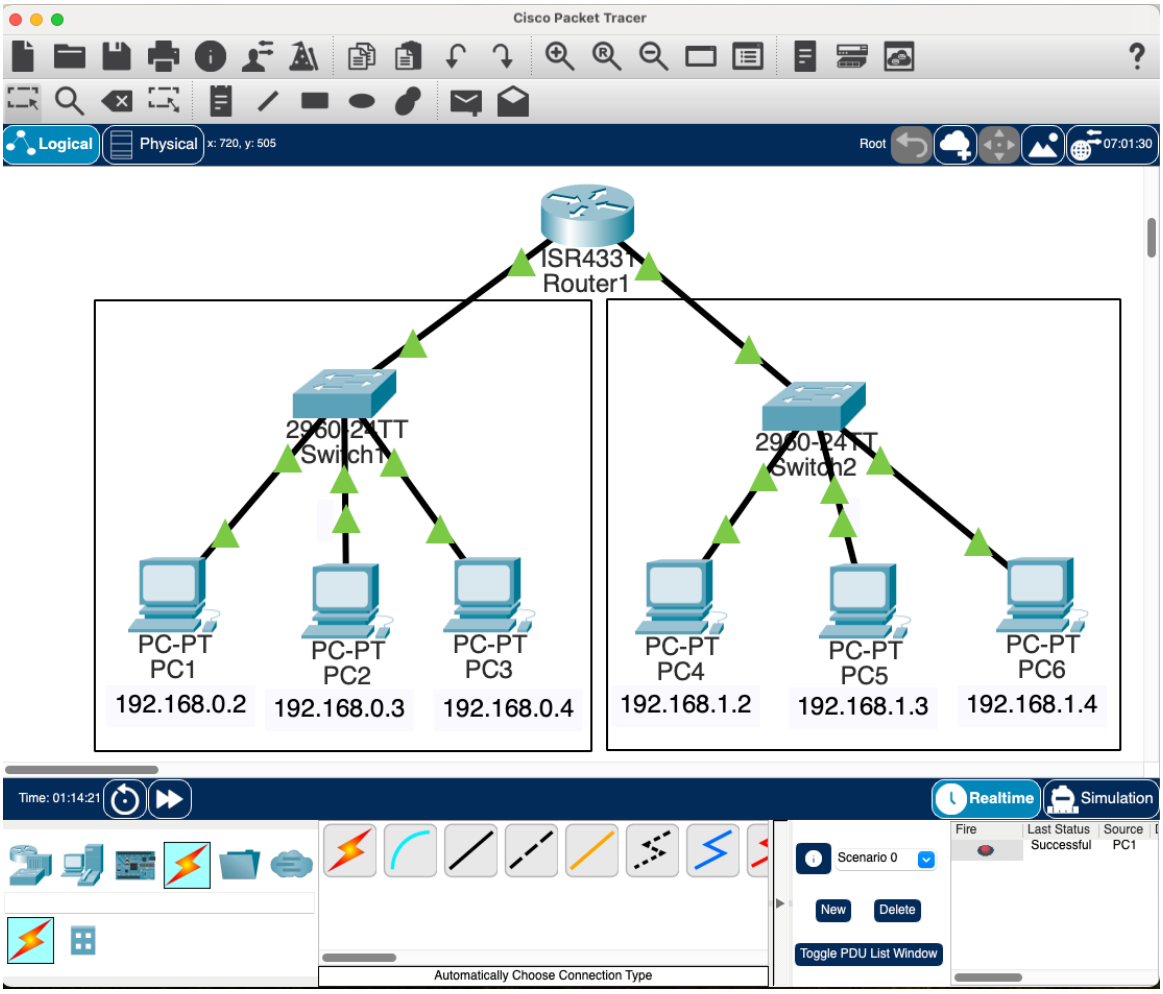
1. **Router to Switches**:
    - Use **Copper Straight-Through** cables to connect:
        - Router's **FastEthernet0/0** to Switch 1's **FastEthernet0/1**.
        - Router's **FastEthernet0/1** to Switch 2's **FastEthernet0/1**.
2. **PCs to Switches**:
    - Connect **PC1,PC2** and **PC3** to **Switch 1** (e.g., ports **FastEthernet0/2** and **FastEthernet0/3**).
    - Connect **PC4,PC5** and **PC6** to **Switch 2** (e.g., ports **FastEthernet0/2** and **FastEthernet0/3**).

Step 4: Configure IP Addresses

1. **PC1,PC2 and PC3** (Subnet 1: 192.168.0.1/24):
    - PC1:
        - **IP Address**: 192.168.0.2
        - **Subnet Mask**: 255.255.255.0
        - **Default Gateway**: 192.168.0.1
    - PC2:
        - **IP Address**: 192.168.0.3
        - **Subnet Mask**: 255.255.255.0
        - **Default Gateway**: 192.168.0.1
    - PC3:
        - **IP Address**: 192.168.0.4
        - **Subnet Mask**: 255.255.255.0
        - **Default Gateway**: 192.168.0.1
2. **PC4,PC5 and PC6** (Subnet 2: 192.168.1.1/24):
    - PC4:
        - **IP Address**: 192.168.1.2
        - **Subnet Mask**: 255.255.255.0
        - **Default Gateway**: 192.168.1.1
    - PC5:
        - **IP Address**: 192.168.1.3
        - **Subnet Mask**: 255.255.255.0
        - **Default Gateway**: 192.168.1.1
    - PC6:

- **IP Address**: 192.168.1.4
- **Subnet Mask**: 255.255.255.0
- **Default Gateway**: 192.168.1.1

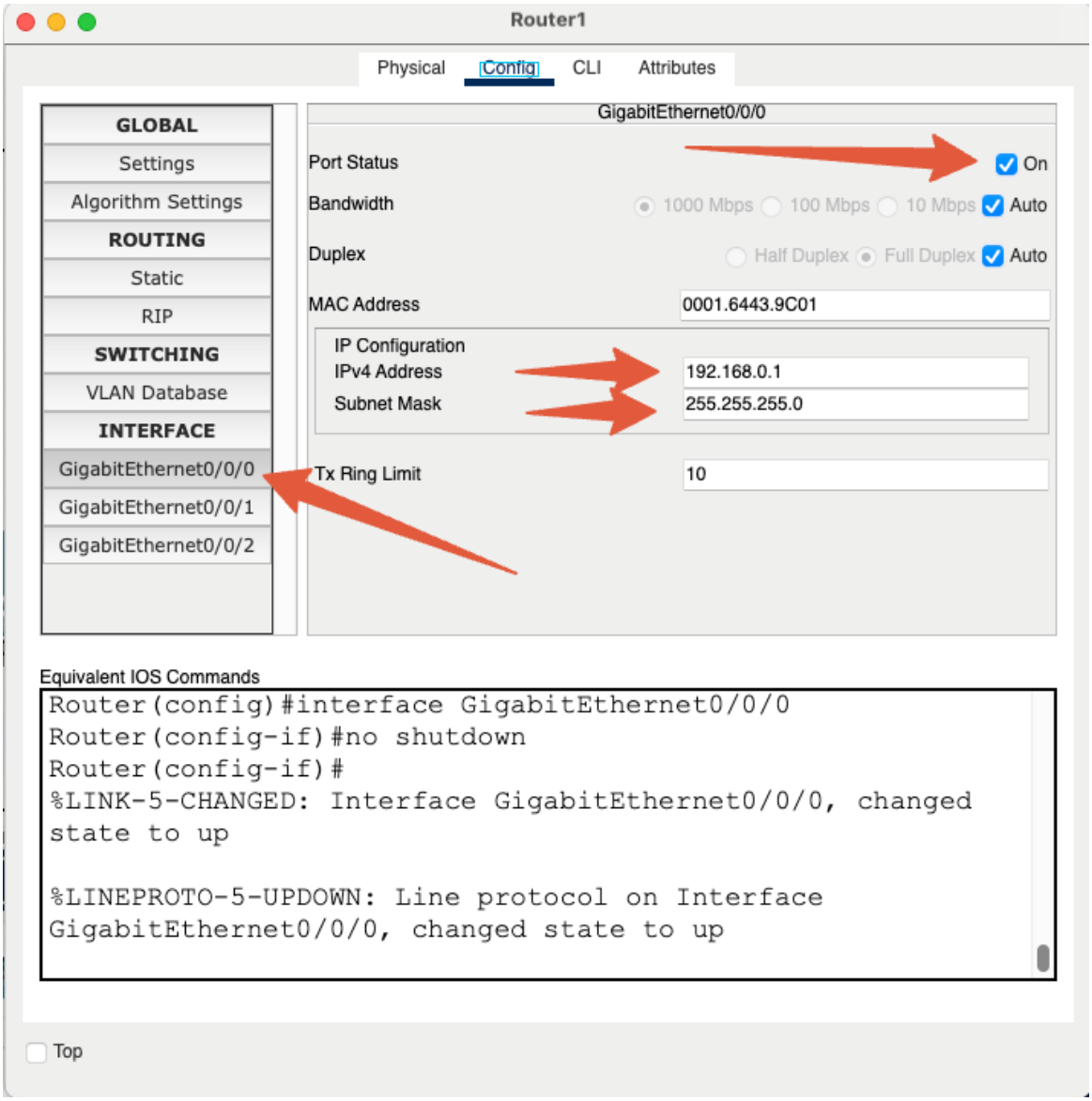




Step 5: Configure the Router

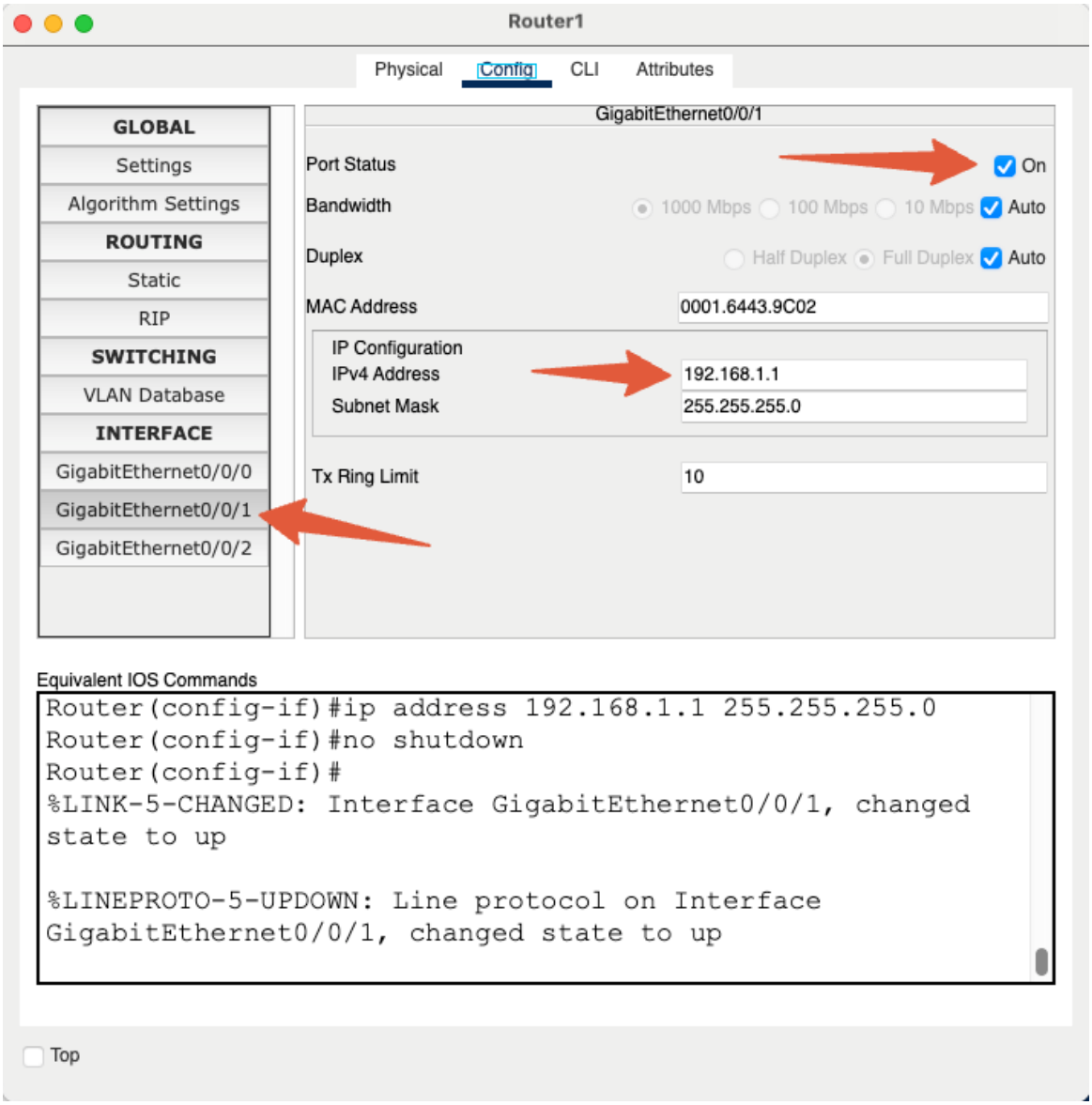
Edit GigabitEthernet0

IP Address: 192.168.0.1



Edit GigabitEthernet1

IP Address: 192.168.1.1



Step 6: Test Connectivity

1. Go to **PC1**, open the **Command Prompt** in the **Desktop** tab, and run:
2. ping 192.168.0.3
    - This tests connectivity within Subnet 1 (between PC1 and PC2).
3. From **PC1**, run:
4. ping 192.168.1.2
    - This tests connectivity between Subnet 1 and Subnet 2 (router-mediated).
5. Similarly, test from **PC4**:
6. ping 192.168.1.2

Step 7: Observe Traffic in Simulation Mode

1. Switch to **Simulation Mode** in the bottom-right corner of Packet Tracer.
2. Generate pings from one subnet to the other (e.g., from **PC1** to **PC4**).
3. Observe the flow of packets:
    - Packets from **PC1** reach the router, are routed to the appropriate interface, and arrive at **PC4**.
    - This demonstrates inter-subnet routing via the router.

Conclusion:

In this lab, you've set up a router to connect two switches, each representing a different subnet. You configured IP addresses, enabled routing, and tested connectivity. This configuration is the basis of inter-network communication, a core concept in networking.

Extra Tasks:

1. Add more PCs to each subnet and test connectivity.
2. Configure a **DHCP Server** on the router to dynamically assign IP addresses.
3. Explore advanced features like Access Control Lists (ACLs) to restrict communication between subnets.

This lab introduces the practical setup of routers and switches for subnet communication, providing a foundational understanding of routing in networks.