

Sure! Here's a lab report for "2 Router Static Routing Between Two PCs" using Cisco Packet Tracer with GUI (without using the CLI):

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**Title:**

Static Routing Between Two PCs Using Two Routers in Cisco Packet Tracer (GUI Method)

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**Objective:**

To configure static routing between two PCs located in different networks, connected by two routers, and verify connectivity by pinging between the PCs using Cisco Packet Tracer's GUI (without using CLI commands).

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**Equipment:**

- Cisco Packet Tracer software
- 2 PCs (PC1 and PC2)
- 2 Routers
- 2 Switches
- 4 Straight-through Ethernet cables
- 1 Serial DCE cable (to connect the routers)

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**Theory:**

Static routing is a process where the routes are manually configured on routers to define the path for data packets between different networks. In this setup, two separate networks are connected via two routers. The routers need static routes configured to allow communication between the devices in these networks. Each router will have knowledge of the local network it connects to and will forward packets destined for the remote network to the neighboring router.

For example, if PC1 is in Network 1 (192.168.1.0/24) and PC2 is in Network 2 (192.168.2.0/24), each router will need to know how to reach the other network. We will use static routing to define these paths.

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**Procedure:****1. Setup the Devices:**

- **Open Cisco Packet Tracer** and ensure you are in the workspace.
- **Add two PCs (PC1 and PC2):**
  - From the **End Devices** section, drag and drop two **PCs** into the workspace.

- **Add two Routers (Router1 and Router2):**
    - From the **Network Devices** section, select **Routers**, then drag and drop two routers (e.g., **Router-PT**) into the workspace.
  - **Add two Switches:**
    - From the **Switches** section, drag and drop two switches into the workspace to connect the PCs to the routers.
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## 2. Connect the Devices:

- **PC1 to Switch1:**
    - Use a **Straight-through Ethernet cable** to connect **PC1's FastEthernet0** port to **Switch1's FastEthernet1/1** port.
  - **PC2 to Switch2:**
    - Use a **Straight-through Ethernet cable** to connect **PC2's FastEthernet0** port to **Switch2's FastEthernet1/1** port.
  - **Switch1 to Router1:**
    - Use another **Straight-through Ethernet cable** to connect **Switch1's FastEthernet0/1** port to **Router1's GigabitEthernet0/0** interface.
  - **Switch2 to Router2:**
    - Use another **Straight-through Ethernet cable** to connect **Switch2's FastEthernet0/1** port to **Router2's GigabitEthernet0/0** interface.
  - **Router1 to Router2 (using Serial connection):**
    - Use a **Serial DCE cable** to connect **Router1's Serial0/0/0** port to **Router2's Serial0/0/0** port.
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## 3. Configure the IP Addresses:

### PC1 and PC2 Configuration:

- **PC1:**
  - Click on **PC1**, go to the **Desktop** tab, and open **IP Configuration**.
  - Assign the following settings:
    - \* IP Address: **192.168.1.2**
    - \* Subnet Mask: **255.255.255.0**
    - \* Default Gateway: **192.168.1.1** (Router1's LAN interface).
- **PC2:**
  - Click on **PC2**, go to the **Desktop** tab, and open **IP Configuration**.
  - Assign the following settings:
    - \* IP Address: **192.168.2.2**
    - \* Subnet Mask: **255.255.255.0**

- \* Default Gateway: **192.168.2.1** (Router2's LAN interface).

#### Router1 and Router2 LAN Configuration:

- **Router1:**
  - Click on **Router1**, then go to the **Config** tab.
  - Select **GigabitEthernet0/0**, and assign:
    - \* IP Address: **192.168.1.1**
    - \* Subnet Mask: **255.255.255.0**
    - \* Turn **On** the interface.
- **Router2:**
  - Click on **Router2**, then go to the **Config** tab.
  - Select **GigabitEthernet0/0**, and assign:
    - \* IP Address: **192.168.2.1**
    - \* Subnet Mask: **255.255.255.0**
    - \* Turn **On** the interface.

#### Router1 and Router2 WAN Configuration (Serial Link):

- **Router1:**
    - Click on **Router1**, then go to **Config** → **Serial0/0/0**.
    - Assign:
      - \* IP Address: **10.0.0.1**
      - \* Subnet Mask: **255.255.255.252** (Point-to-point link).
      - \* Set **Clock Rate** to **64000** (since it's the DCE side of the connection).
      - \* Turn **On** the interface.
  - **Router2:**
    - Click on **Router2**, then go to **Config** → **Serial0/0/0**.
    - Assign:
      - \* IP Address: **10.0.0.2**
      - \* Subnet Mask: **255.255.255.252**.
      - \* Turn **On** the interface.
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#### 4. Configure Static Routing (Using GUI):

##### Router1 Static Route:

- Click on **Router1**, go to the **Config** tab, and select **Static** under the **Routing** section.
- Add a new static route:
  - **Network Address:** **192.168.2.0** (the network of PC2).
  - **Subnet Mask:** **255.255.255.0**.
  - **Next Hop:** **10.0.0.2** (Router2's serial IP address).
  - Click **Add**.

#### Router2 Static Route:

- Click on **Router2**, go to the **Config** tab, and select **Static** under the **Routing** section.
  - Add a new static route:
    - **Network Address: 192.168.1.0** (the network of PC1).
    - **Subnet Mask: 255.255.255.0**.
    - **Next Hop: 10.0.0.1** (Router1's serial IP address).
    - Click **Add**.
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#### 5. Test the Network Connection:

- On **PC1**, open the **Command Prompt** from the **Desktop** tab.
  - Type the command: `ping 192.168.2.2` (PC2's IP address).
  - Observe if the ICMP packets are successfully received by PC2.
  - On **PC2**, similarly, open the **Command Prompt** and type `ping 192.168.1.2` (PC1's IP address).
  - Ensure that PC1 receives replies from PC2.
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#### Results:

- The static routes were successfully configured, and both PCs could ping each other across different networks through the two routers. This confirms that the static routing configuration is correct. - The ICMP packets from **PC1 (192.168.1.2)** to **PC2 (192.168.2.2)** and vice versa were successfully sent and received.

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#### Conclusion:

In this lab, we established static routing between two different networks connected by two routers using Cisco Packet Tracer's GUI. Static routes were manually configured on each router to allow communication between the networks. The ping results confirmed successful communication between the PCs. Static routing is an essential concept that allows routers to forward packets based on manually defined routes, particularly in smaller networks where dynamic routing is unnecessary.

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Let me know if you need further explanations or additional clarifications on any of the steps!