

Examining Network Address Translation (NAT) using Cisco Packet Tracer

Aim: Examining Network Address Translation (NAT) using Cisco Packet Tracer involves several steps. NAT is commonly used to allow multiple devices on a local network to share a single public IP address for accessing the internet. Here's how you can set up and examine NAT using Cisco Packet Tracer:

• Setting Up the Network Topology

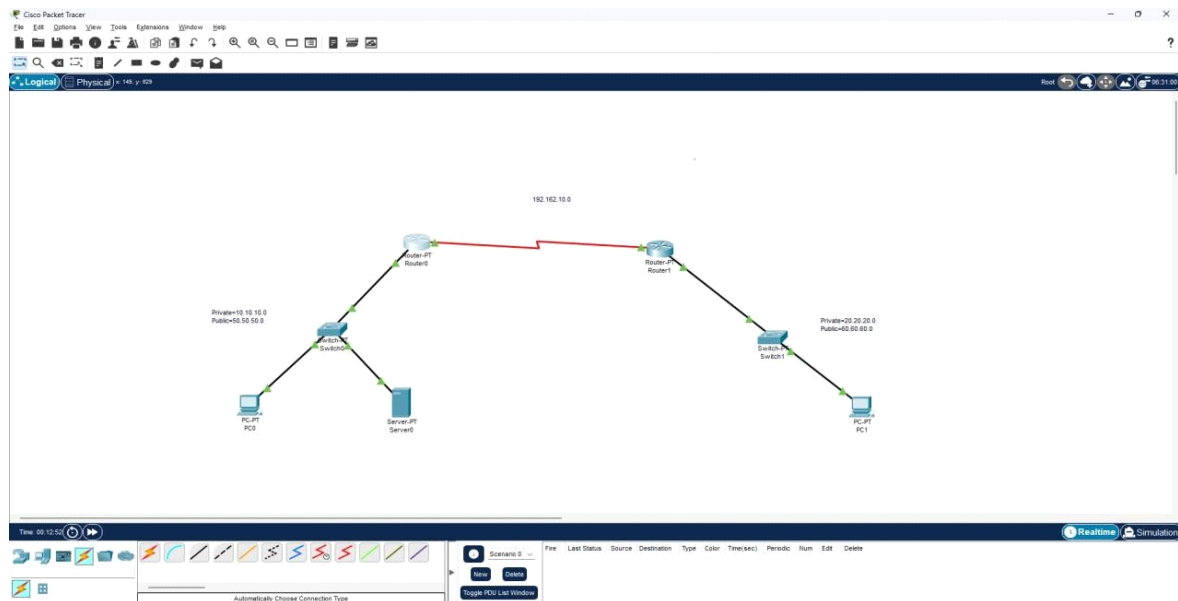
- **Devices Required:**
 - One or more PCs (for testing connectivity)
 - One router (to configure NAT)
 - One switch (to connect the PCs and the router)
 - One server (to simulate an external network, like the internet)
- **Steps:**
 - **Place the Devices:** Drag and drop the required devices onto the workspace.
 - **Connect the Devices:** Use the appropriate cables (copper straight-through for PCs to the switch, copper cross-over for switch to router) to connect the devices.
 - **Assign IP Addresses:**
 - Assign private IP addresses (e.g., 192.168.1.0/24) to the PCs and the router's internal interface.
 - Assign a public IP address (e.g., 200.0.0.1/30) to the router's external interface.
 - Assign an IP address to the server that simulates an external network (e.g., 200.0.0.2/30).

• Configuring NAT on the Router

- **Steps:**
 - **Access the Router CLI:** Click on the router and go to the CLI tab.
 - **Enter Global Configuration Mode:**

```
Router> enable
Router# configure terminal
```

3,Configure Interfaces:



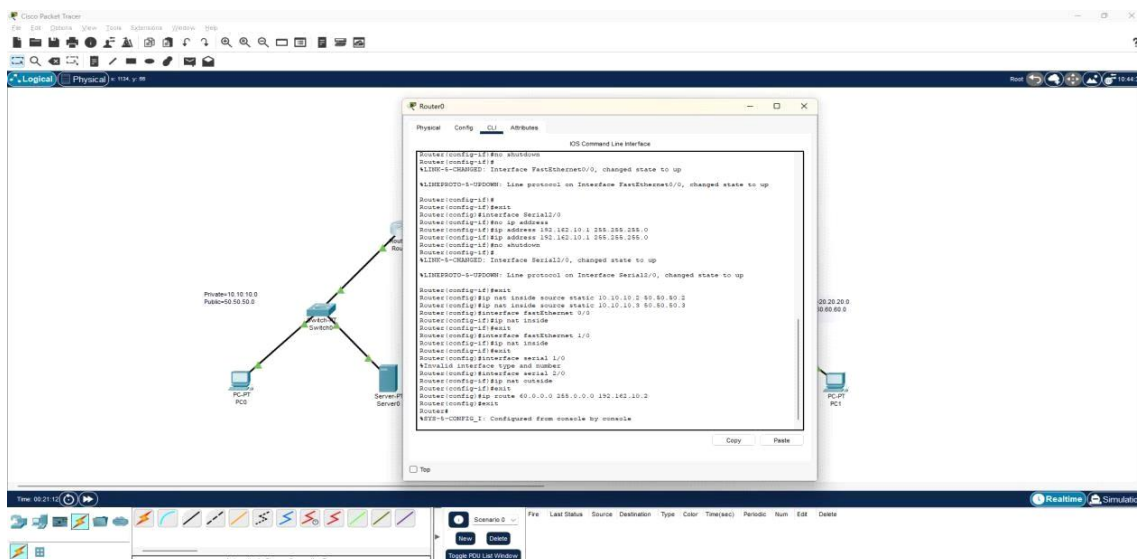
up the internal and external interfaces:

- **Configure NAT Overload (PAT):**

```
Router(config)# access-list 1 permit 192.168.1.0 0.0.0.255
```

Define an access list to match the internal IP range:

Configure NAT to translate the internal addresses to the external address:



This configures PAT (Port Address Translation), which allows multiple internal IPs to share a single external IP.

- **Testing NAT**

- **Steps:**

- **Ping from a PC to the External Network:**

- From one of the PCs, open the command prompt and try to ping the external server (e.g., `ping 200.0.0.2`).

- **Verify NAT Translations:**

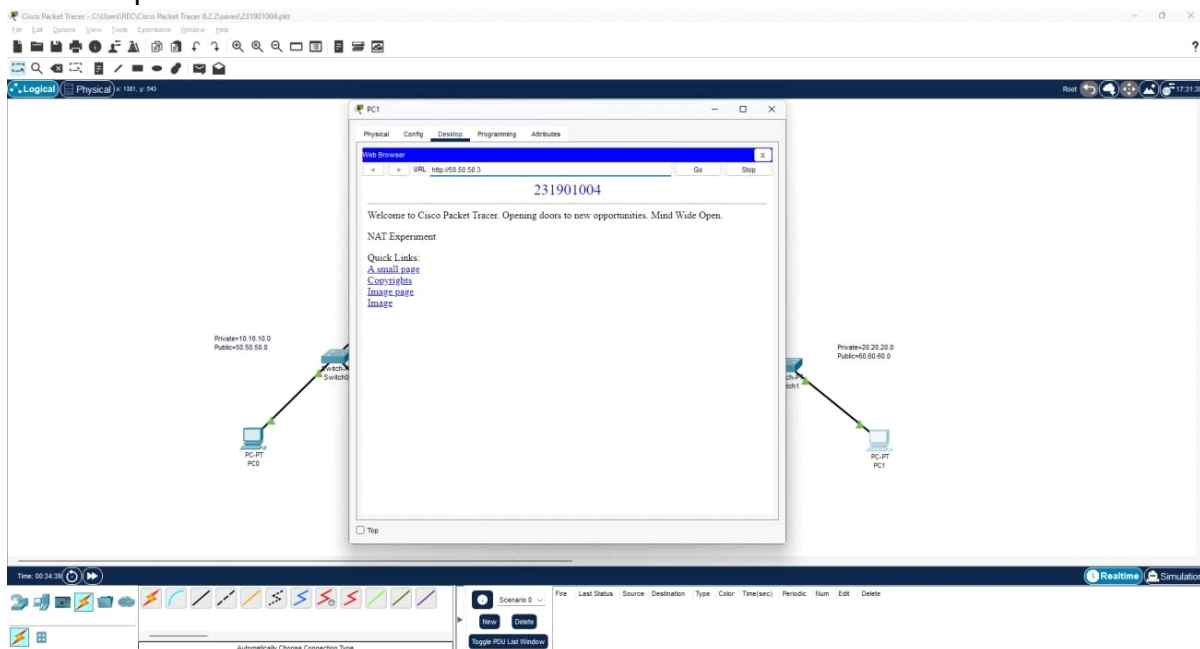
```
Router# show ip nat translations
```

On

the router CLI, check the NAT translation table to see the active translations:

Observe the Output:

The NAT translation table should show the mapping of the internal private IP addresses to the external public IP.



- **Observing the Traffic**

- Use the simulation mode in Packet Tracer to visually observe the NAT process as packets move from the internal network to the external network.

- **Saving the Configuration**

```
Router# copy running-config startup-config
```

Don't forget to save the configuration on the router to avoid losing the settings:

By following these steps, you can effectively examine and understand how NAT works in a network environment using Cisco Packet Tracer.

Result:

Thus, the experiment of Network Address Translation(NAT) was Examined.