

## Experiment 3: Static NAT Configuration in Cisco Packet Tracer

**Date:** 23/7/25

**Aim:** To configure and test Static Network Address Translation (NAT) in Cisco Packet Tracer using multiple hosts and routers.

### Procedure:

1. **Understand NAT Terminology:** Familiarize yourself with the four NAT addressing terms: Inside Local, Inside Global, Outside Local, and Outside Global.
2. **Network Topology Creation:** Build the network topology using three laptops, two routers (R1 and R2), and one server, according to the provided IP configuration table.
3. **Device IP Assignment:** Assign IP addresses to Laptop0, Laptop1, Laptop2, and Server0 using the "Desktop → IP Configuration" option.
4. **R1 Router Configuration:**
  - Set the hostname to R1.
  - Configure FastEthernet0/0 with the IP address 10.0.0.1 and subnet mask 255.0.0.0.
  - Configure Serial0/0/0 with the IP address 100.0.0.1, subnet mask 255.0.0.0, clock rate 64000, and bandwidth 64.
  - Activate both interfaces using the 'no shutdown' command.
5. **DCE/DTE Check:** Use 'show controllers serial 0/0/0' to determine if the interface is DCE or DTE. Configure clock rate and bandwidth only if it is DCE.
6. **R2 Router Configuration:**
  - Set the hostname to R2.
  - Configure FastEthernet0/0 with the IP address 192.168.1.1 and subnet mask 255.255.255.0.
  - Configure Serial0/0/0 with the IP address 100.0.0.2 and subnet mask 255.0.0.0.
  - Activate interfaces using 'no shutdown'.
7. **Static NAT Configuration on R1:**
  - Map the inside local IP to an inside global IP using: `ip nat inside source static 10.0.0.10 50.0.0.10`
  - Define FastEthernet0/0 as the inside interface: `interface Fa0/0 → ip nat inside`
  - Define Serial0/0/0 as the outside interface: `interface Serial0/0/0 → ip nat outside`
8. **Static NAT Configuration on R2:**
  - Map the inside local IP to an inside global IP using: `ip nat inside source static 192.168.1.10 200.0.0.10`
  - Define FastEthernet0/0 as the inside interface and Serial0/0/0 as the outside interface, similar to R1.
9. **Static Routing Configuration:**
  - **On R1:** `ip route 200.0.0.0 255.255.255.0 100.0.0.2`
  - **On R2:** `ip route 50.0.0.0 255.0.0.0 100.0.0.1`

#### 10. NAT Configuration Testing:

- **From Laptop0:**

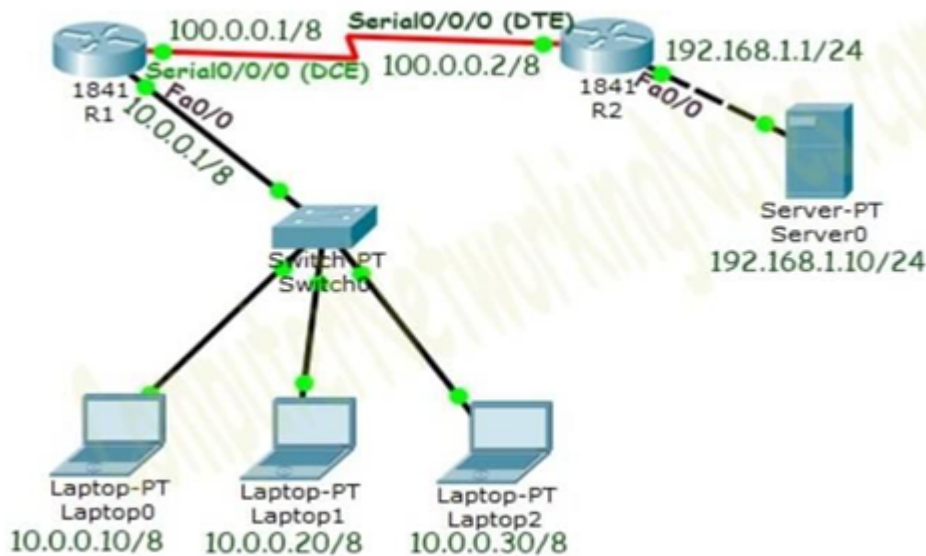
- Run `ipconfig`.
- Ping 200.0.0.10 (should respond due to NAT).
- Ping 192.168.1.10 (should not respond).
- Open a web browser and access 200.0.0.10 (should load successfully).

- **From Laptop1:**

- Repeat the same tests. It should fail as NAT is not configured for 10.0.0.20.

11. **Translation Verification:** Use the `show ip nat translation` command on both routers to confirm the mapping. Note that NAT hides the original IP addresses, and routers will only display the translated IPs.

**Output:**



**Result:** Static NAT was successfully configured in Cisco Packet Tracer. The inside local IP address was translated to an inside global IP address, enabling external communication with a server on a different network.