CNC Lab Experiment-5

Procedure

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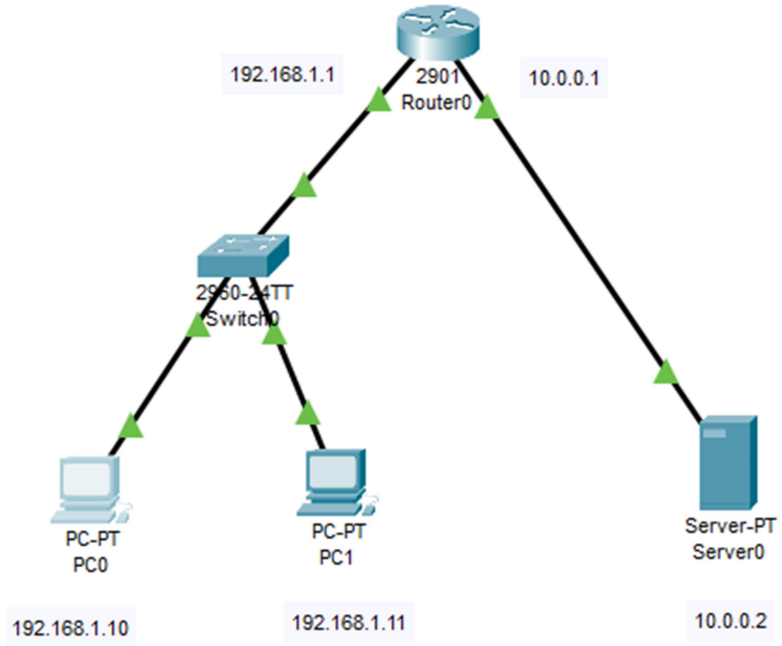
Procedure using CLI Mode

Notes: Create separate experiment for NAT (Step 4), DNAT (Step 5), and PAT (Step 6). All other steps for NAT, DNAT, and PAT are same. In CLI mode, all available commands at the current level / possible next words after a partial command can be seen using the symbol "?".

Network Setup

Device	Interface	IP Address	Subnet Mask	Description
Router0	G0/0	192.168.1.1	255.255.255.0	Inside LAN
Router0	G0/1	10.0.0.1	255.0.0.0	Outside Network
PC0	NIC	192.168.1.10	255.255.255.0	Gateway: 192.168.1.1
PC1	NIC	192.168.1.11	255.255.255.0	Gateway: 192.168.1.1
Server0	NIC	10.0.0.2	255.0.0.0	Gateway: 10.0.0.1

Step 1: Create the Network Topology



1. Open **Cisco Packet Tracer**.
2. Place the following devices:

   1 **Router (Cisco 2911),** 1 **Switch,** 2 **PCs, and** 1 **Server**

3. Connect devices using **Copper Straight-Through Cables**:
    - PCs → Switch → Router (G0/0)
    - Router (G0/1) → Server0

Step 2: Assign IP Addresses

1. **PC0:**
    - IP: 192.168.1.10
    - Subnet Mask: 255.255.255.0
    - Default Gateway: 192.168.1.1
2. **PC1:**
    - IP: 192.168.1.11
    - Subnet Mask: 255.255.255.0
    - Default Gateway: 192.168.1.1
3. **Server0:**
    - IP: 10.0.0.2
    - Subnet Mask: 255.0.0.0
    - Default Gateway: 10.0.0.1
4. **Router0 Interfaces:**
    - **Gig0/0:** IP 192.168.1.1, Mask 255.255.255.0, *Port Status: On*
    - **Gig0/1:** IP 10.0.0.1, Mask 255.0.0.0, *Port Status: On*

    Same Router0 Interface configuration can also be done in CLI mode.

    - Enter privileged EXEC mode and do the following:

```
Router> enable
Router# configure terminal
Router(config)# interface gig0/0
Router(config-if)# ip address  192.168.1.1  255.255.255.0
Router(config-if)# no shutdown
Router(config)# interface gig0/1
Router(config-if)# ip address  10.0.0.1  255.0.0.0
Router(config-if)# no shutdown
Router(config)# exit
```

Step 3: Define Inside and Outside Interfaces

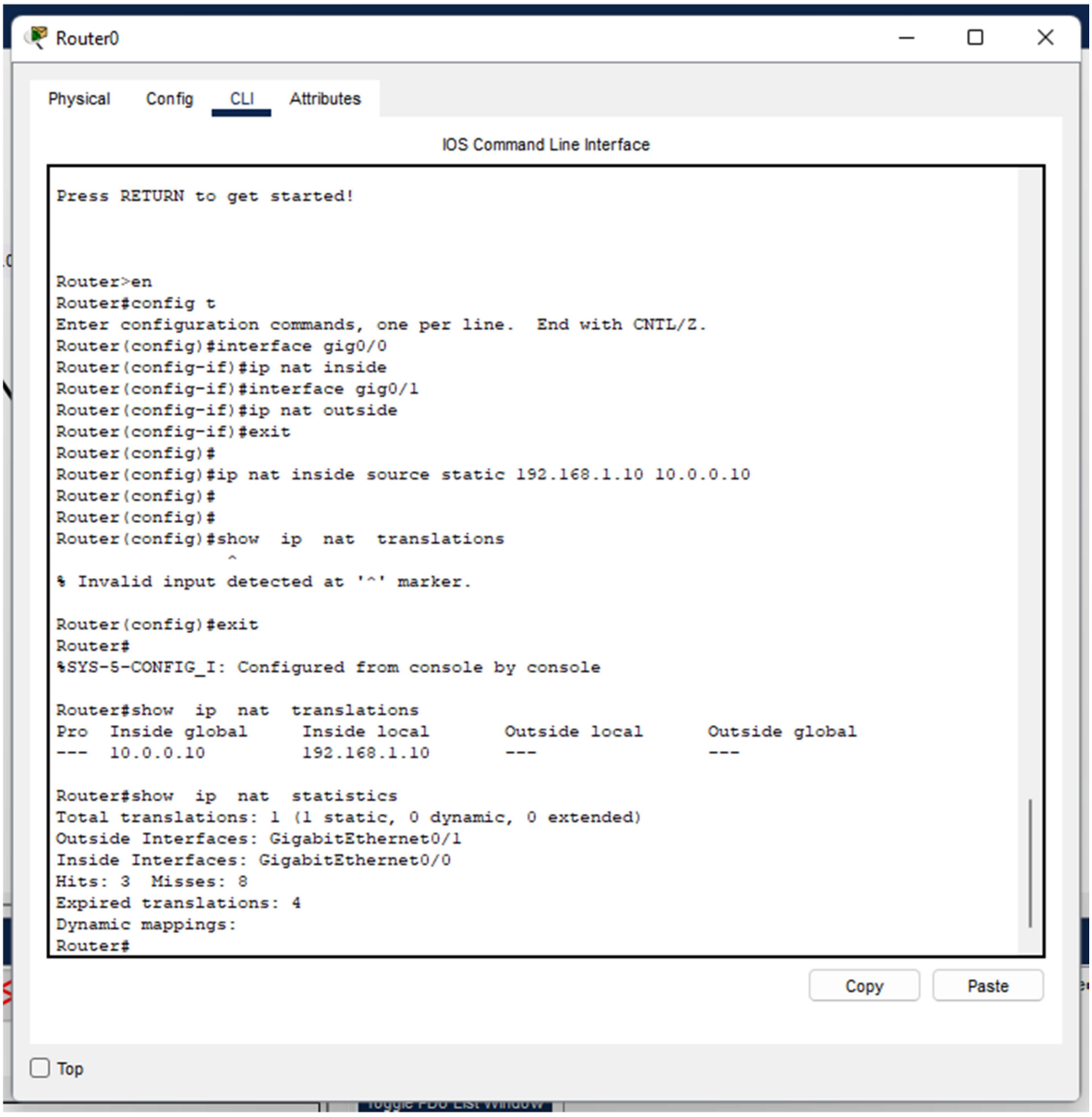
```
Router(config)# interface gig0/0
Router(config-if)# ip nat inside
Router(config)# interface gig0/1
```

Router(config-if)# ip nat outside

Router(config)# exit

Step 4: Configure Static NAT

Router(config)# ip nat inside source static 192.168.1.10 10.0.0.10

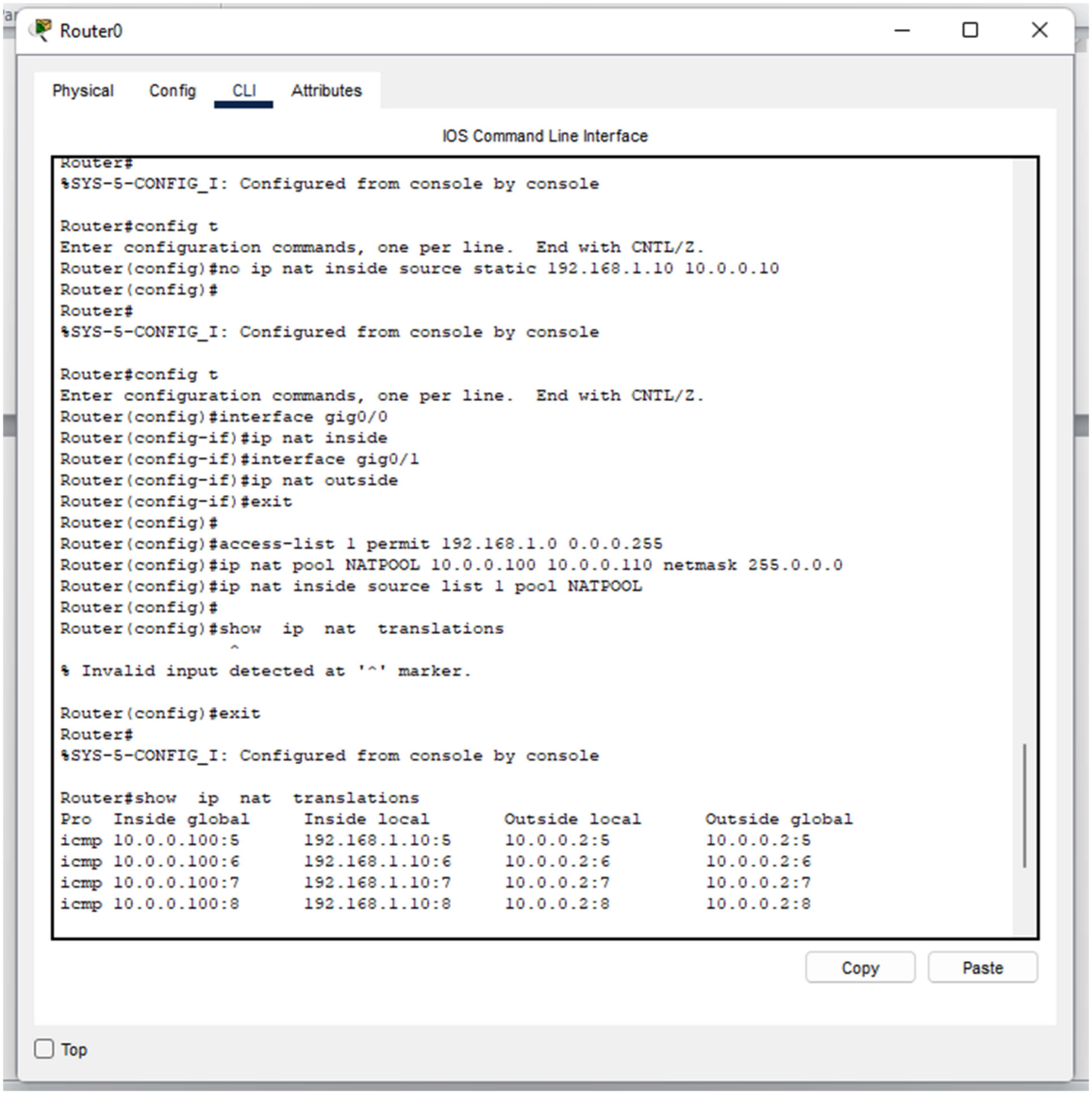


Step 5: Configure Dynamic NAT (do a separate experiment)

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

Router(config)# ip nat pool NATPOOL 10.0.0.100 10.0.0.110 netmask 255.0.0.0

Router(config)# ip nat inside source list 1 pool NATPOOL



Step 6: Configure Port Address Translation (PAT)

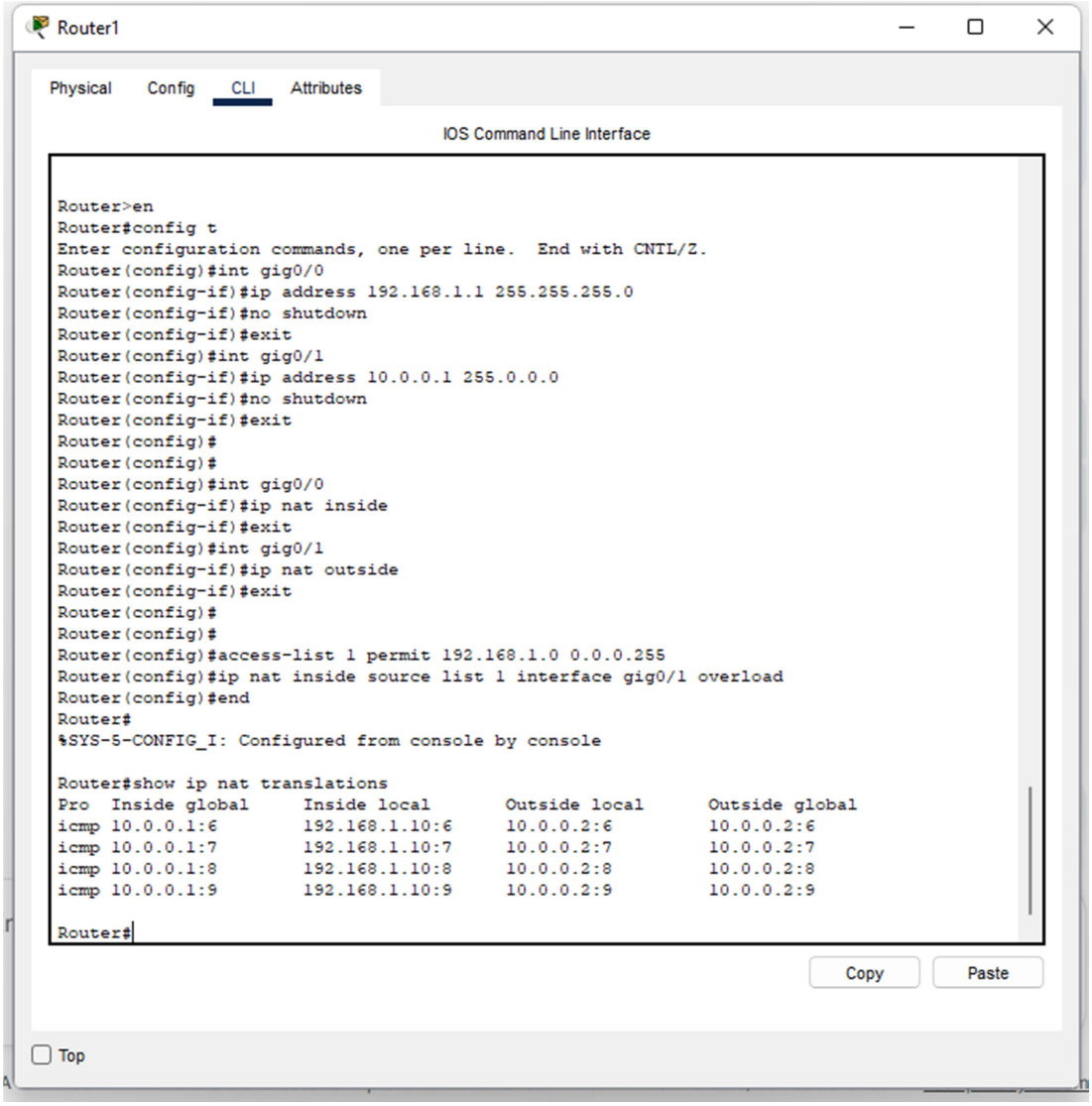
To enable PAT, we need to

- Define an **Access Control List (ACL)** to identify which **inside** source addresses are allowed to be translated.
- Configure the **NAT Overload** rule, using the router's **outside interface IP address** and the **overload** keyword.

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

Router(config)# ip nat inside source list 1 interface gig0/1 overload

Router(config)# end



Step 7: Verification

From **PC0**, ping the server: **ping 10.0.0.2**

You should receive successful replies.

Step 8: Check Translations

Check NAT translations on the router: **Router# show ip nat translations**

Check NAT statistics: **Router# show ip nat statistics**

Step 9: Save Configuration

Router# copy running-config startup-config