

7) In Cisco Packet Tracer, create a small network with multiple devices (e.g., 2 PCs and a router). Use private IP addresses (e.g., 192.168.1.x) on the PCs and configure the router to perform NAT to allow the PCs to access the internet.

Task: Test the NAT configuration by pinging an external IP address from the PCs and capture the traffic using Wireshark. What is the source IP address before and after NAT?

NAT Configuration Process

Enabled NAT Overload – Configured NAT overload using the GigabitEthernet0/1 interface.

Assigned Inside and Outside Interfaces – Set GigabitEthernet0/0 as the inside interface and GigabitEthernet0/1 as the outside interface.

Checked NAT Translations – Initially, show ip nat translations showed no active translations.

Verified IP Routing – Used show ip route to check the routing table and found no default route set.

Identified Next Hop IP – Determined the next-hop IP as 203.0.113.2 by pinging it successfully.

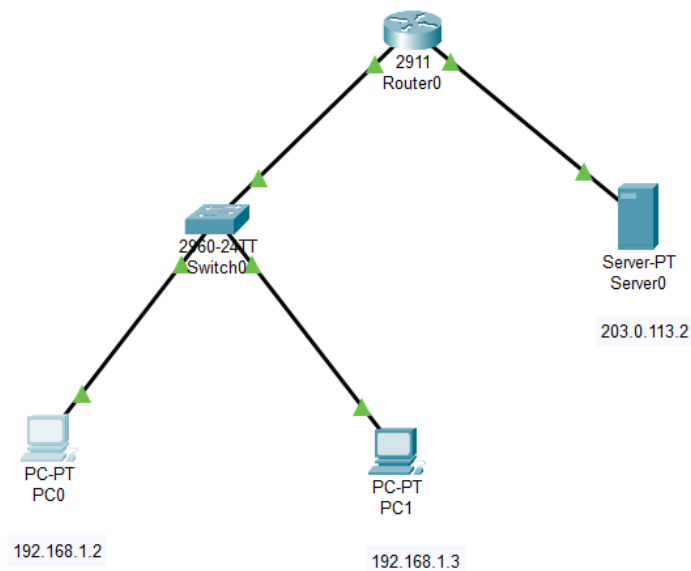
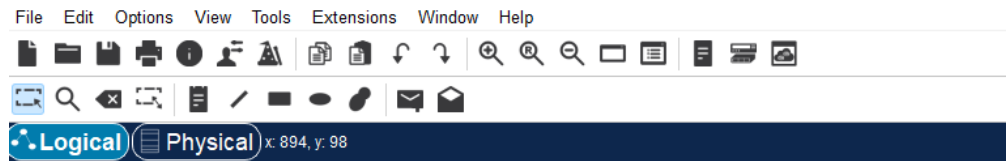
Tested Internet Connectivity – Initially, ping 8.8.8.8 failed due to a missing route. After fixing, NAT translations appeared.

Checked NAT Translations Again – After sending traffic, show ip nat translations displayed successful IP address mappings.

Confirmed NAT Success – Verified that internal IPs were correctly translated to the public IP, confirming NAT was working.

Source IP Address Before NAT (Inside Local): 192.168.1.2:10

Source IP Address After NAT (Inside Global): 203.0.113.1:10



NAT configuration

```
Router>enable
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#interface GigabitEthernet0/0
Router(config-if)#ip address 192.168.1.1 255.255.255.0
Router(config-if)#no shutdown

Router(config-if)#
%LINK-5-CHANGED: Interface GigabitEthernet0/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0, changed state to up
exit
Router(config)#interface GigabitEthernet0/1
Router(config-if)#ip address 203.0.113.1 255.255.255.0
Router(config-if)#no shutdown

Router(config-if)#
%LINK-5-CHANGED: Interface GigabitEthernet0/1, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/1, changed state to up
exit
```

```

Router#enable
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#access-list 1 permit 192.168.1.0 0.0.0.255
Router(config)#ip nat inside source list 1 interface GigabitEthernet0/1 overload
Router(config)#interface GigabitEthernet0/0
Router(config-if)#ip nat inside
Router(config-if)#exit
Router(config)#interface GigabitEthernet0/1
Router(config-if)#ip nat outside
Router(config-if)#exit
Router(config)#

```

Testing NAT Configuration

```

C:\>ping 203.0.113.2

Pinging 203.0.113.2 with 32 bytes of data:

Reply from 203.0.113.2: bytes=32 time=11ms TTL=127
Reply from 203.0.113.2: bytes=32 time<1ms TTL=127
Reply from 203.0.113.2: bytes=32 time<1ms TTL=127
Reply from 203.0.113.2: bytes=32 time<1ms TTL=127

Ping statistics for 203.0.113.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 11ms, Average = 2ms

```

Packet Analysis

Simulation Panel				
Event List				
Vis.	Time(sec)	Last Device	At Device	Type
	0.000	--	PC0	ICMP
	0.000	--	PC0	ICMP
	0.001	PC0	Switch0	ICMP
	0.001	--	PC0	ICMP
	0.002	PC0	Switch0	ICMP
	0.002	Switch0	PC1	ICMP
	0.002	Switch0	Router0	ICMP
	0.003	Switch0	PC1	ICMP
	0.003	Switch0	Router0	ICMP
	0.003	PC1	Switch0	ICMP
	0.004	PC1	Switch0	ICMP
	0.004	Switch0	PC0	ICMP
	0.005	Switch0	PC0	ICMP
	0.738	--	Switch0	STP
	0.739	Switch0	PC1	STP
	0.739	Switch0	PC0	STP
	0.739	Switch0	Router0	STP

Reset Simulation ☒ Constant Delay

Captured to: 0.739 s

p nat inside (for internal traffic).

ip nat outside (for external traffic).

```
Router#show ip nat translations
Router#show ip nat translations
Router#show running-config | include nat
ip nat inside
ip nat outside
ip nat inside source list 1 interface GigabitEthernet0/1 overload
Router#show ip nat translations
Pro  Inside global    Inside local    Outside local    Outside global
icmp 203.0.113.1:10    192.168.1.2:10  203.0.113.2:10  203.0.113.2:10
icmp 203.0.113.1:7    192.168.1.2:7   203.0.113.2:7   203.0.113.2:7
icmp 203.0.113.1:8    192.168.1.2:8   203.0.113.2:8   203.0.113.2:8
icmp 203.0.113.1:9    192.168.1.2:9   203.0.113.2:9   203.0.113.2:9
Router#|
```

Outside Local/Global: The destination IP of the external server 203.0.113.2

The NAT translations table confirms that NAT is correctly translating private addresses into a public IP (203.0.113.1)