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Packet Tracer - Configure Static NAT

Objectives

Part 1: Test Access without NAT

Part 2: Configure Static NAT

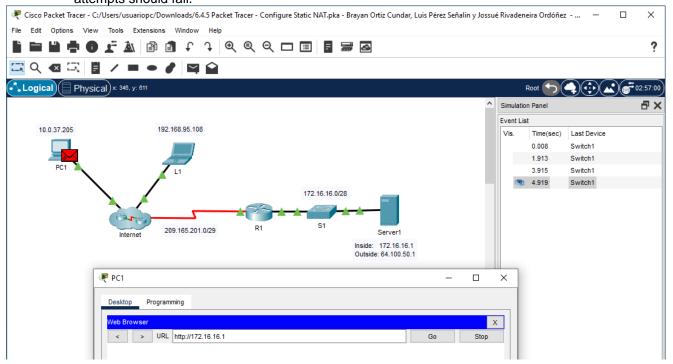**Part 3: Test Access with NAT**

Scenario

In IPv4 configured networks, clients and servers use private addressing. Before packets with private addressing can cross the internet, they need to be translated to public addressing. Servers that are accessed from outside the organization are usually assigned both a public and a private static IP address. In this activity, you will configure static NAT so that outside devices can access an inside server at its public address.

Instructions

Part 1: Test Access without NAT

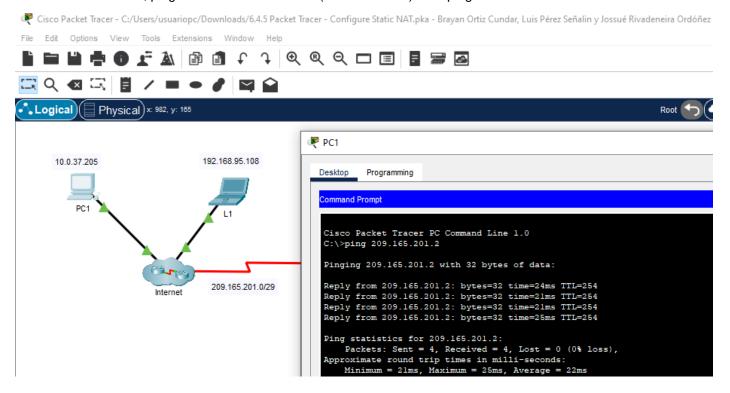### Step 1: Attempt to connect to Server1 using Simulation Mode.

a. Switch to Simulation mode.

b. From **PC1** or **L1**, use the Web Browser to attempt to connect to the **Server1** web page at 172.16.16.1. Continue to click the **Capture Forward** button, notice how the packets never leave the internet cloud. The attempts should fail.

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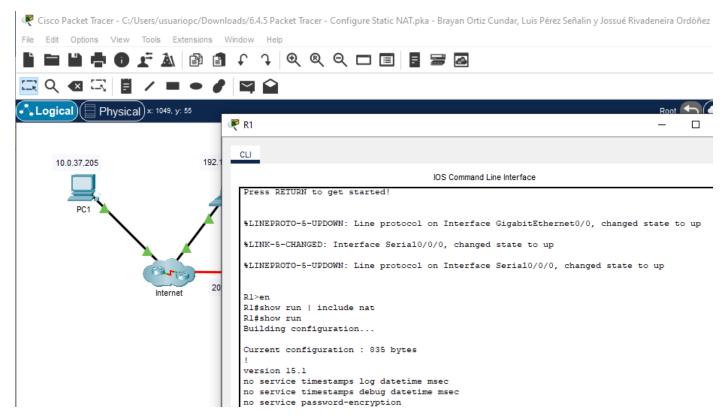
c. Exit **Simulation** mode.

d. From **PC1**, ping the **R1** S0/0/0 interface (209.165.201.2). The ping should succeed.

Step 2: View R1 routing table and running-config.

a. View the running configuration of **R1**. Note that there are no commands referring to NAT. An easy way to confirm this is to issue the following command:

```
R1# show run | include nat
```


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b. Verify that the routing table does not contain entries referring to the IP network addresses for **PC1** and **L1**.

c. Verify that NAT is not being used by **R1**.

```
R1# show ip nat translations
```

```
R1#show ip nat translations
R1#show ip nat translations
R1#
```
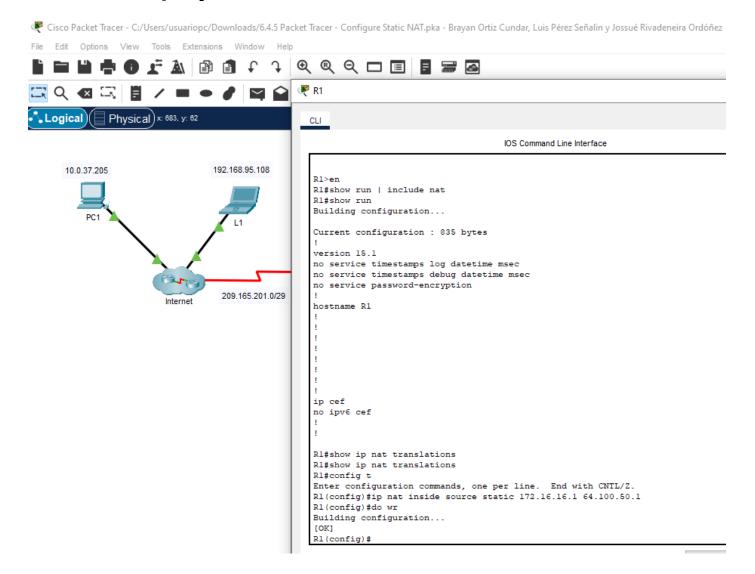
Copy | Paste

Part 2: Configure Static NAT

Step 1: Configure static NAT statements.

Refer to the Topology. Create a static NAT translation to map the **Server1** inside address to its outside address.

```
R1(config)# ip nat inside source static 172.16.16.1 64.100.50.1
```

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File   Edit   Options   View   Tools   Extensions   Window   Help

R1

Logical | Physical   x: 683, y: 62

CLI

IOS Command Line Interface

10.0.37.205   192.168.95.108

PC1

L1

Internet   209.165.201.0/29

```
R1>en
R1#show run | include nat
R1#show run
Building configuration...

Current configuration : 835 bytes
!
version 15.1
no service timestamps log datetime msec
no service timestamps debug datetime msec
no service password-encryption
!
hostname R1
!
!
!
!
!
!
!
!
ip cef
no ipv6 cef
!
!

R1#show ip nat translations
R1#show ip nat translations
R1#config t
Enter configuration commands, one per line.  End with CNTL/Z.
R1(config)#ip nat inside source static 172.16.16.1 64.100.50.1
R1(config)#do wr
Building configuration...
[OK]
R1(config)#
```

Step 2: Configure interfaces.

a. Configure the **G0/0** interface as an inside interface.

```
R1(config)# interface g0/0
R1(config-if)# ip nat inside
```

b. Configure the s0/0/0 public interface as an outside interface.

Part 3: Test Access with NAT

Step 1: Verify connectivity to the Server1 web page.

a. Open the command prompt on **PC1** or **L1**, attempt to ping the public address for **Server1**. Pings should succeed.

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```
C:\>ping 64.100.50.1

Pinging 64.100.50.1 with 32 bytes of data:

Request timed out.
Reply from 64.100.50.1: bytes=32 time=21ms TTL=126
Reply from 64.100.50.1: bytes=32 time=20ms TTL=126
Reply from 64.100.50.1: bytes=32 time=24ms TTL=126

Ping statistics for 64.100.50.1:
    Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
Approximate round trip times in milli-seconds:
    Minimum = 20ms, Maximum = 24ms, Average = 21ms

C:\>
```

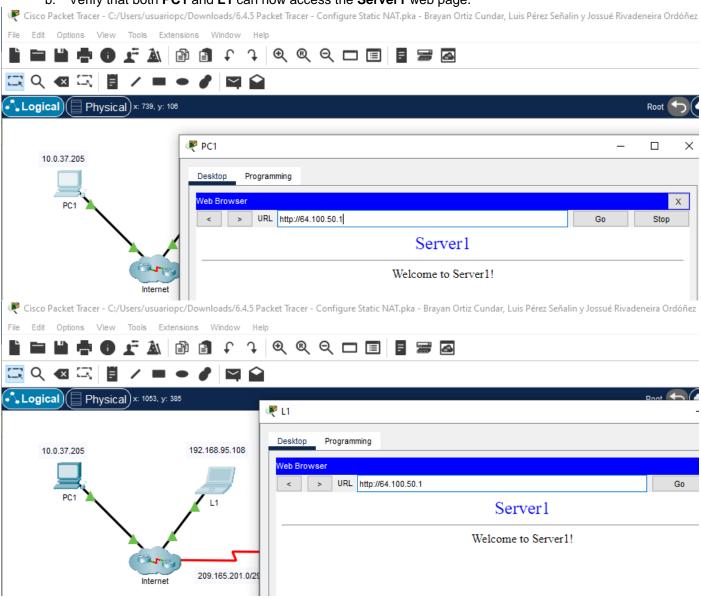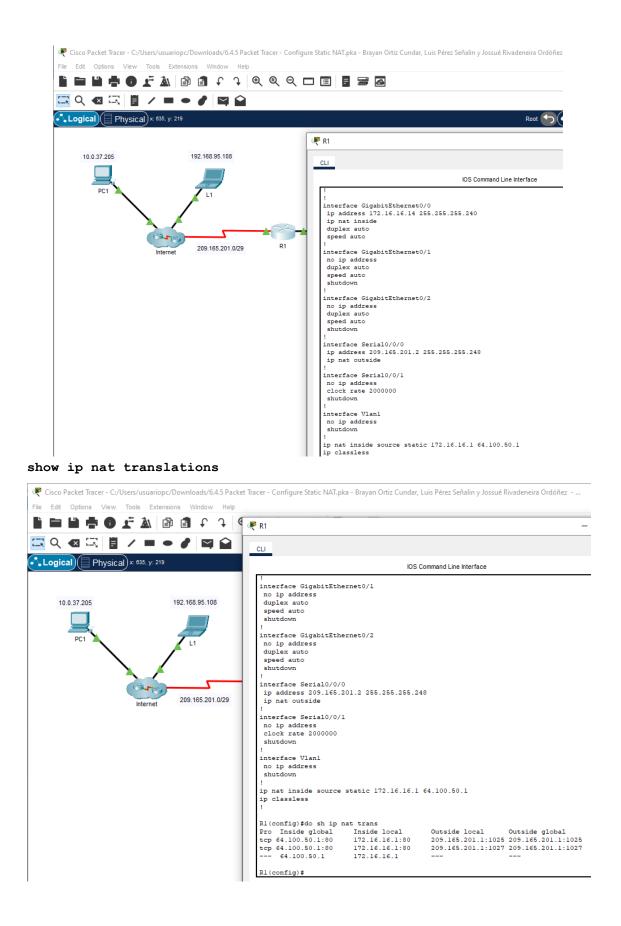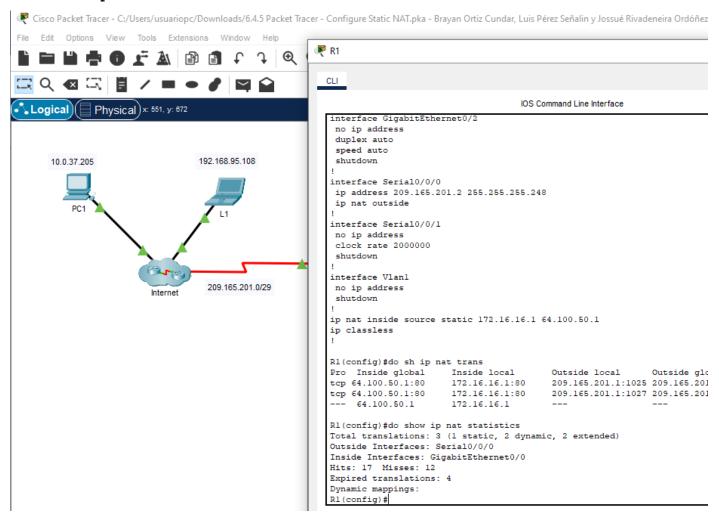   b.   Verify that both **PC1** and **L1** can now access the **Server1** web page.

Step 2: View NAT translations.

Use the following commands to verify the static NAT configuration on **R1**:

```
show running-config
```

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File   Edit   Options   View   Tools   Extensions   Window   Help

Logical | Physical x: 635, y: 219   Root

10.0.37.205   192.168.95.108

PC1   L1

Internet
209.165.201.0/29   R1

R1

CLI

IOS Command Line Interface

```
!
!
interface GigabitEthernet0/0
 ip address 172.16.16.14 255.255.255.240
 ip nat inside
 duplex auto
 speed auto
!
interface GigabitEthernet0/1
 no ip address
 duplex auto
 speed auto
 shutdown
!
interface GigabitEthernet0/2
 no ip address
 duplex auto
 speed auto
 shutdown
!
interface Serial0/0/0
 ip address 209.165.201.2 255.255.255.248
 ip nat outside
!
interface Serial0/0/1
 no ip address
 clock rate 2000000
 shutdown
!
interface Vlan1
 no ip address
 shutdown
!
ip nat inside source static 172.16.16.1 64.100.50.1
ip classless
```

show ip nat translations

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File   Edit   Options   View   Tools   Extensions   Window   Help

Logical | Physical x: 635, y: 219

10.0.37.205   192.168.95.108

PC1   L1

Internet
209.165.201.0/29

R1

CLI

IOS Command Line Interface

```
!
interface GigabitEthernet0/1
 no ip address
 duplex auto
 speed auto
 shutdown
!
interface GigabitEthernet0/2
 no ip address
 duplex auto
 speed auto
 shutdown
!
interface Serial0/0/0
 ip address 209.165.201.2 255.255.255.248
 ip nat outside
!
interface Serial0/0/1
 no ip address
 clock rate 2000000
 shutdown
!
interface Vlan1
 no ip address
 shutdown
!
ip nat inside source static 172.16.16.1 64.100.50.1
ip classless
!

R1(config)#do sh ip nat trans
Pro  Inside global    Inside local    Outside local      Outside global
tcp 64.100.50.1:80    172.16.16.1:80  209.165.201.1:1025 209.165.201.1:1025
tcp 64.100.50.1:80    172.16.16.1:80  209.165.201.1:1027 209.165.201.1:1027
--- 64.100.50.1       172.16.16.1     ---                ---

R1(config)#
```

```
show ip nat statistics
```


Verificación:

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