

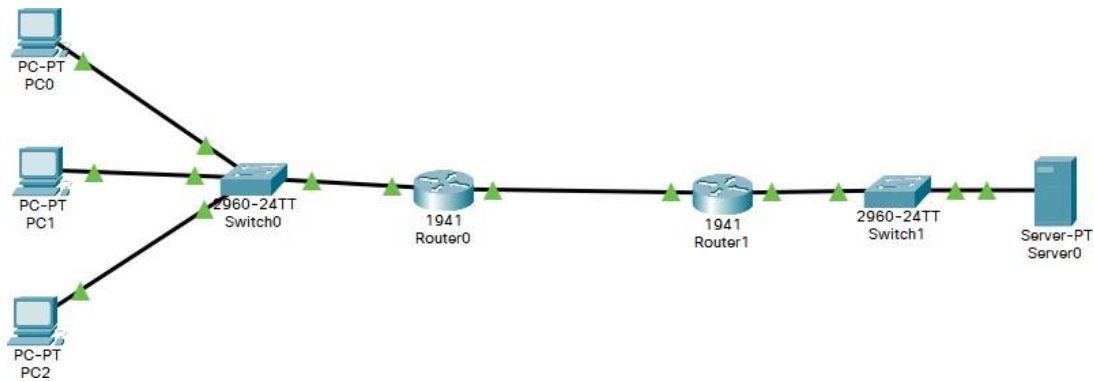
Laboratorio No. 10

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Objetivo

Realizar configuraciones de servicios de red implementando NAT y permitir la comunicación entre diferentes dispositivos, sin tener conocimiento de las direcciones IP Reales.

Topología



1. Red Básica

- a. Agregue un Router 2901 R1
 - i. Ip GE-1 10.0.0.1 / 8
 - ii. ip GE-0 100.0.0.1 / 8
- b. Agregue un Router 2901 R2
 - i. Ip GE-1 192.168.1.1 / 24
 - ii. ip GE-0 100.0.0.2 / 8
- c. Agregue un switch 2960 / S1
- d. Agregue un switch 2960 / S2
- e. Agregue 3 computadoras (A, B, C)
 - i. A: asigne el ip 10.0.0.10 / 8 default gw 10.0.0.1
 - ii. A: asigne el ip 10.0.0.20 / 8 default gw 10.0.0.1
 - iii. A: asigne el ip 10.0.0.30 / 8 default gw 10.0.0.1
- f. Conecte cada PC al Switch 1.
- g. Conecte el R1 GE0-1 al S1 puerto 24
- h. Conecte el R2 GE0-1 al S2 puerto 24
- i. Conecte el R1 GE0-0 al R2 GE0-0
- j. Agregue un servidor
 - i. Ip 192.168.1.10 / 24 default gw 192.168.1.1

La configuración de NAT requiere 3 pasos

1. Definir el mapeo de IP
2. Definir el interfaz local - interna
3. Definir el interfaz global – externa

Ahora configure cada IP para hacer el mapeo de NAT

Para el R1

```
Router>en
Router#conf term
Router(config)#ip nat inside source static 10.0.0.10 50.0.0.10
Router(config)#ip nat inside source static 10.0.0.20 50.0.0.20
Router(config)#ip nat inside source static 10.0.0.30 50.0.0.30
```

El Segundo paso es definir que interfaz GE0-1 esta conectada a la red local

```
Router>en
Router#conf term
Router(config)#interface gigabitEthernet 0/1
Router(config-if)#ip nat inside
Router(config-if)# exit
```

El tercer paso es definir el interfaz global GE0-0

```
Router(config)#interface gigabitEthernet 0/0
Router(config-if)#ip nat outside
Router(config-if)# exit
```

Defina las rutas estaticas

```
Router (config)#ip route 200.0.0.0 255.255.255.0 100.0.0.2
```

Para el Router 2

```
Router>en
Router#conf term
Router(config)#ip nat inside source static 192.168.1.10 200.0.0.10
Router(config)#interface gigabitEthernet 0/0
Router(config-if)#ip nat outside
Router(config-if)#exit
```

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

```
Router(config)#ip route 50.0.0.0 255.0.0.0 100.0.0.1
```

Ahora realice pruebas de comunicación y documente el resultado

Realice ping desde la PC A hacia la ip 200.0.0.10

```
C:\>ping 200.0.0.10

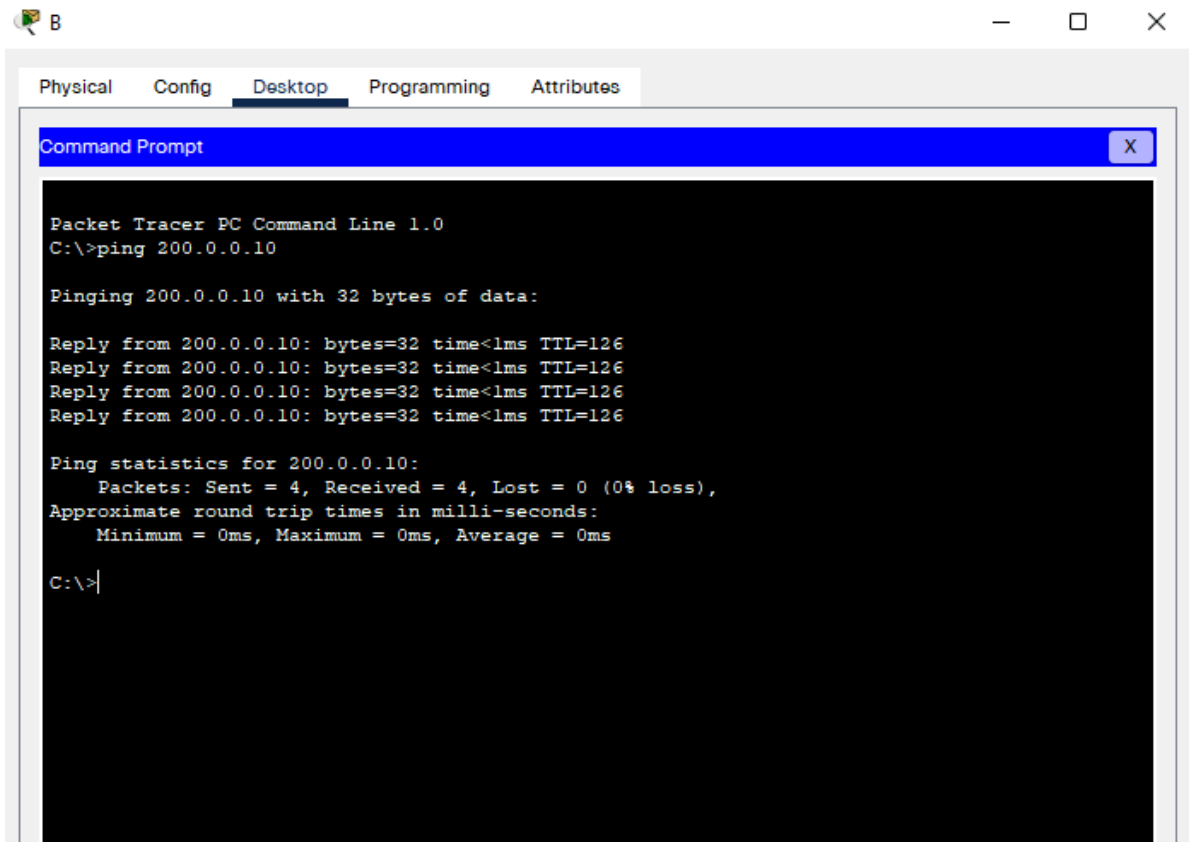
Pinging 200.0.0.10 with 32 bytes of data:

Reply from 200.0.0.10: bytes=32 time<1ms TTL=126
Reply from 200.0.0.10: bytes=32 time<1ms TTL=126
Reply from 200.0.0.10: bytes=32 time<1ms TTL=126
Reply from 200.0.0.10: bytes=32 time<1ms TTL=126

Ping statistics for 200.0.0.10:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>
```

Realice ping desde la PC B hacia la ip 200.0.0.10



Realice ping desde la PC C hacia la ip 200.0.0.10

```
Physical  Config  Desktop  Programming  Attributes

Command Prompt

Packet Tracer PC Command Line 1.0
C:\>ping 200.0.0.10

Pinging 200.0.0.10 with 32 bytes of data:

Reply from 200.0.0.10: bytes=32 time<1ms TTL=126
Reply from 200.0.0.10: bytes=32 time=1ms TTL=126
Reply from 200.0.0.10: bytes=32 time<1ms TTL=126
Reply from 200.0.0.10: bytes=32 time<1ms TTL=126

Ping statistics for 200.0.0.10:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 1ms, Average = 0ms

C:\>
```

Realice ping desde la PC A hacia la ip 192.168.1.10

```
Invalid Command.

C:\>
C:\>
C:\>ping 192.168.1.10

Pinging 192.168.1.10 with 32 bytes of data:

Reply from 10.0.0.1: Destination host unreachable.
Reply from 10.0.0.1: Destination host unreachable.
Reply from 10.0.0.1: Destination host unreachable.
Reply from 10.0.0.1: Destination host unreachable.

Ping statistics for 192.168.1.10:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),

C:\>
```

Realice ping desde la PC B hacia la ip 192.168.1.10

```
Invalid Command.

C:\>
C:\>
C:\>ping 192.168.1.10

Pinging 192.168.1.10 with 32 bytes of data:

Reply from 10.0.0.1: Destination host unreachable.
Reply from 10.0.0.1: Destination host unreachable.
Reply from 10.0.0.1: Destination host unreachable.
Reply from 10.0.0.1: Destination host unreachable.


Ping statistics for 192.168.1.10:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),

C:\>
```

Realice ping desde la PC C hacia la ip 192.168.1.10

```
Invalid Command.  
  
C:\>  
C:\>  
C:\>ping 192.168.1.10  
  
Pinging 192.168.1.10 with 32 bytes of data:  
  
Reply from 10.0.0.1: Destination host unreachable.  
Reply from 10.0.0.1: Destination host unreachable.  
Reply from 10.0.0.1: Destination host unreachable.  
Reply from 10.0.0.1: Destination host unreachable.  
  
Ping statistics for 192.168.1.10:  
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),  
  
C:\>
```

Desde el servidor hacia la ip 50.0.0.10

 Server0

Physical Config Services **Desktop** Programming Attributes

Command Prompt

```
Packet Tracer SERVER Command Line 1.0  
C:\>ping 50.0.0.10  
  
Pinging 50.0.0.10 with 32 bytes of data:  
  
Reply from 50.0.0.10: bytes=32 time<1ms TTL=126  
Reply from 50.0.0.10: bytes=32 time<1ms TTL=126  
Reply from 50.0.0.10: bytes=32 time<1ms TTL=126  
Reply from 50.0.0.10: bytes=32 time<1ms TTL=126  
  
Ping statistics for 50.0.0.10:  
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),  
    Approximate round trip times in milli-seconds:  
        Minimum = 0ms, Maximum = 1ms, Average = 0ms
```

Desde el servidor hacia la ip 50.0.0.20

```
C:\>ping 50.0.0.20  
  
Pinging 50.0.0.20 with 32 bytes of data:  
  
Reply from 50.0.0.20: bytes=32 time<1ms TTL=126  
Reply from 50.0.0.20: bytes=32 time<1ms TTL=126  
Reply from 50.0.0.20: bytes=32 time<1ms TTL=126  
Reply from 50.0.0.20: bytes=32 time<1ms TTL=126  
  
Ping statistics for 50.0.0.20:  
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),  
    Approximate round trip times in milli-seconds:  
        Minimum = 0ms, Maximum = 0ms, Average = 0ms  
  
C:\>
```

Desde el servidor hacia la ip 50.0.0.30

```
C:\>ping 50.0.0.30

Pinging 50.0.0.30 with 32 bytes of data:

Reply from 50.0.0.30: bytes=32 time<1ms TTL=126
Reply from 50.0.0.30: bytes=32 time<1ms TTL=126
Reply from 50.0.0.30: bytes=32 time<1ms TTL=126
Reply from 50.0.0.30: bytes=32 time<1ms TTL=126

Ping statistics for 50.0.0.30:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>|
```

Desde el servidor hacia la ip 10.0.0.10

Desde el servidor hacia la ip 10.0.0.20

Desde el servidor hacia la ip 10.0.0.30

Server0

Physical Config Services **Desktop** Programming Attributes

Command Prompt

```
C:\>ping 10.0.0.10

Pinging 10.0.0.10 with 32 bytes of data:

Reply from 192.168.1.1: Destination host unreachable.
Reply from 192.168.1.1: Destination host unreachable.
Reply from 192.168.1.1: Destination host unreachable.
Reply from 192.168.1.1: Destination host unreachable.

Ping statistics for 10.0.0.10:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),

C:\>ping 10.0.0.20

Pinging 10.0.0.20 with 32 bytes of data:

Reply from 192.168.1.1: Destination host unreachable.
Reply from 192.168.1.1: Destination host unreachable.
Request timed out.
Reply from 192.168.1.1: Destination host unreachable.

Ping statistics for 10.0.0.20:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),

C:\>ping 10.0.0.30

Pinging 10.0.0.30 with 32 bytes of data:

Reply from 192.168.1.1: Destination host unreachable.
Reply from 192.168.1.1: Destination host unreachable.
Request timed out.
Reply from 192.168.1.1: Destination host unreachable.

Ping statistics for 10.0.0.30:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
```

- a. Describa cual es el funcionamiento de NAT estático.
 - NAT estático se define cómo las direcciones IP en las cuales se pueden asociar todas las direcciones en un solo lugar para solamente una IP, esto se puede reflejar tanto en las redes privadas cómo en las públicas. Se realiza una correlación de direcciones IP de una red con una dirección IP que se desea hacer pública. La NAT dinámica cambia las direcciones IP de origen de una conexión a una dirección IP pública.
- b. Investigue cual es la principal diferencia del NAT dinámico.
 - NAT estático se define una IP para sustituir, NAT dinámico se tiene una lista de IP's al momento que se aplique el protocolo, se podrá signar más de alguna IP publica que se tenga en la lista de direcciones registradas.