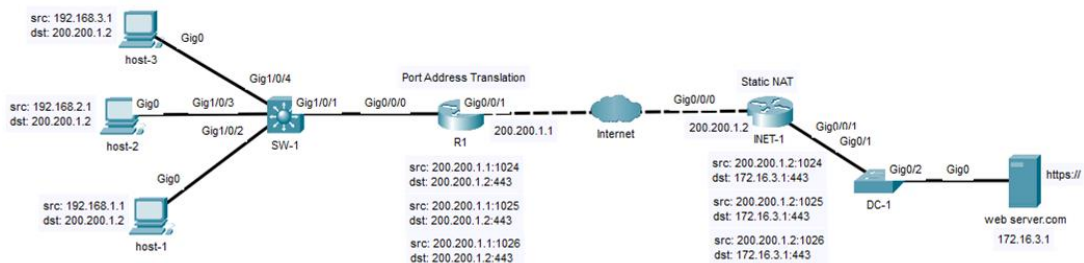


Network Address Translation

Lab Summary

Configure port address translation (NAT overload) based on a public IP address from an ISP. Permit all internal hosts assigned to 192.168.0.0/24 subnets access to the internet. Configure static NAT on a data center router that will permit access to a private web server.

Figure 1 Lab Topology



Lab Configuration

Start Packet Tracer File: **network address translation.pkt**

Click on *R1* icon and select *CLI* folder.

Step 1: Enter global configuration mode.

```
R1 > enable
R1# configure terminal
```

Step 2: Assign the inside NAT interface on R1.

```
R1(config)# interface Gi0/0/0
R1(config)# ip address 192.168.4.2 255.255.255.0
R1(config-if)# ip nat inside
R1(config-if)# no shutdown
R1(config-if)# exit
```

Step 3: Assign the outside NAT interface on R1.

```
R1(config)# interface Gi0/0/1
R1(config-if)# ip address 200.200.1.1 255.255.255.252
R1(config-if)# ip nat outside
R1(config-if)# no shutdown
R1(config-if)# exit
```

Step 4: Configure ACL 100 to permit internet access for hosts assigned to private IP addressing from 192.168.0.0/16 subnets.

```
R1(config)# access-list 100 permit ip 192.168.0.0 0.0.255.255 any
```

Step 5: Enable port address translation (overload) and assign ACL 100.

```
R1(config)# ip nat inside source list 100 interface Gi0/0/1 overload
```

Step 6: Configure a static route to SW-1 for routing traffic from the internet to all host subnets.

```
R1(config)# ip route 192.168.0.0 255.255.0.0 192.168.4.1
```

```
R1(config)# end
```

```
R1# copy running-config startup-config
```

Click on *INET-1* icon and select *CLI* folder.

Step 7: Enter global configuration mode.

```
INET-1 > enable
```

```
INET-1# configure terminal
```

Step 8: Assign the inside NAT interface on INET-1.

```
INET-1(config)# interface Gi0/0/1
```

```
INET-1(config-if)# ip address 172.16.3.254 255.255.255.0
```

```
INET-1(config-if)# ip nat inside
```

```
INET-1(config-if)# no shutdown
```

```
INET-1(config-if)# exit
```

Step 9: Assign the outside NAT interface on INET-1.

```
INET-1(config)# interface Gi0/0/0
```

```
INET-1(config-if)# ip address 200.200.1.2 255.255.255.252
```

```
INET-1(config-if)# ip nat outside
```

```
INET-1(config-if)# no shutdown
```

```
INET-1(config-if)# exit
```

Step 10: Configure static NAT between outside global address (200.200.1.2) and inside local address of the web server (172.16.3.1) with port 443.

```
INET-1(config)# ip nat inside source static tcp 172.16.3.1 443  
200.200.1.2 443
```

```
INET-1(config)# end
```

```
INET-1# copy running-config startup-config
```

Step 11: Verify Lab

Confirm the configuration on R1 is correct and ping web server to verify port address translation is working correctly. The translation table lists the inside host IP address (192.168.1.1) and translated to public IP address 200.200.1.1/30 on R1.

R1# show running-config

host-1: c:\> **ping 200.200.1.2**

host-2: c:\> **ping 200.200.1.2**

host-3: c:\> **ping 200.200.1.2**

R1# show ip nat translations

Pro	Inside global	Inside local	Outside local	Outside global
icmp	200.200.1.1:1024	192.168.3.1:13	200.200.1.2:13	200.200.1.2:1024
icmp	200.200.1.1:1025	192.168.3.1:14	200.200.1.2:14	200.200.1.2:1025
icmp	200.200.1.1:1026	192.168.3.1:15	200.200.1.2:15	200.200.1.2:1026
icmp	200.200.1.1:1027	192.168.3.1:16	200.200.1.2:16	200.200.1.2:1027
icmp	200.200.1.1:13	192.168.2.1:13	200.200.1.2:13	200.200.1.2:13
icmp	200.200.1.1:14	192.168.2.1:14	200.200.1.2:14	200.200.1.2:14
icmp	200.200.1.1:15	192.168.2.1:15	200.200.1.2:15	200.200.1.2:15
icmp	200.200.1.1:16	192.168.2.1:16	200.200.1.2:16	200.200.1.2:16
icmp	200.200.1.1:17	192.168.1.1:17	200.200.1.2:17	200.200.1.2:17
icmp	200.200.1.1:18	192.168.1.1:18	200.200.1.2:18	200.200.1.2:18
icmp	200.200.1.1:19	192.168.1.1:19	200.200.1.2:19	200.200.1.2:19
icmp	200.200.1.1:20	192.168.1.1:20	200.200.1.2:20	200.200.1.2:20

Start a web browser session on each host to verify static address translation is working correctly on INET-1. The translation table lists the outside public interface of INET-1 translated to private IP address of web server.

host-1: **https://200.200.1.2**

host-2: **https://200.200.1.2**

host-3: **https://200.200.1.2**

INET-1# show ip nat translations

Pro	Inside global	Inside local	Outside local	Outside global
tcp	200.200.1.2:443	172.16.3.1:443	---	---

Lab Notes

The port address translation table on R1 lists host IP address (inside local) and public IP address 200.200.1.1 (inside global). Dynamic (ephemeral) port numbers are assigned to public and private host addresses. That enables multiple internet sessions based on that public interface. All hosts connect to the web server via public outside address since private addressing is not routable across the internet. The static translation table on INET-1 is a single static entry. This provides mapping between inside global address (200.200.1.2) and inside local address of web server (172.16.3.1). The destination application port TCP 443 (https) is also included. This static translation is bidirectional between source and destination.