

INFORMATION SECURITY MANAGEMENT LAB DA-5 STATIC NAT

BY:

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AIM: To implement static NAT for the given scenario and to configure the network address translation through CLI and to check how incoming and outgoing communication is done using Cisco packet tracer.

PROBLEM STATEMENT:

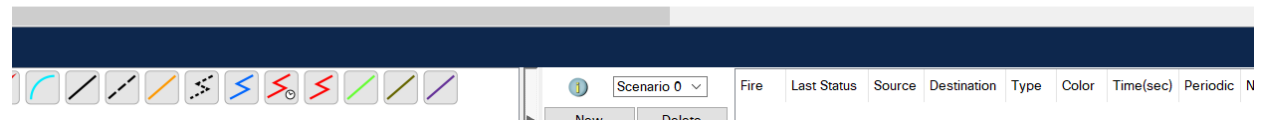
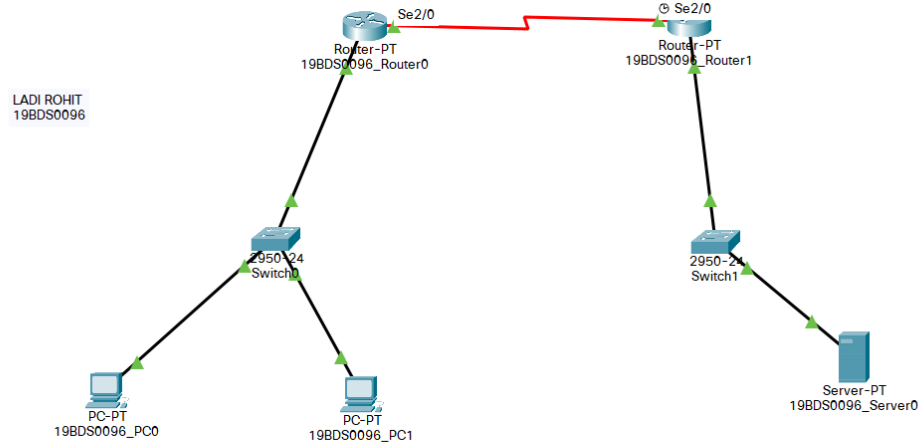
Implement static NAT for the given scenario and check the communication for incoming and outgoing packets in the network.

\\Desktop\CISCO\ISM_LAB5.pkt

Extensions Window Help



y: 379



CONFIGURATION OF ROUTERS:

19BDS0096_Router0

Physical Config CLI Attributes

GLOBAL

- Settings
- Algorithm Settings
- ROUTING**
- Static
- RIP
- INTERFACE**
- FastEthernet0/0
- FastEthernet1/0
- Serial2/0
- Serial3/0
- FastEthernet4/0
- FastEthernet5/0

FastEthernet0/0

Port Status ☒ On

Bandwidth ☐ 100 Mbps ☐ 10 Mbps ☒ Auto

Duplex ☐ Half Duplex ☒ Full Duplex ☒ Auto

MAC Address 00D0.BA33.6070

IP Configuration

IPv4 Address 10.0.0.1

Subnet Mask 255.0.0.0

Tx Ring Limit 10

Equivalent IOS Commands

```
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#router rip
Router(config-router)#
Router(config-router)#end
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#interface FastEthernet0/0
Router(config-if)#
%SYS-5-CONFIG_I: Configured from console by console
```

☐ Top

19BDS0096_Router0

Physical **Config** CLI Attributes

GLOBAL
Settings
Algorithm Settings
ROUTING
Static
RIP
INTERFACE
FastEthernet0/0
FastEthernet1/0
Serial2/0
Serial3/0
FastEthernet4/0
FastEthernet5/0

Serial2/0

Port Status ☒ On
Duplex ☐ Full Duplex
Clock Rate

IP Configuration
IPv4 Address
Subnet Mask

Tx Ring Limit

Equivalent IOS Commands

```

Router(config-router)#end
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#interface FastEthernet0/0
Router(config-if)#
%SYS-5-CONFIG_I: Configured from console by console

Router(config-if)#exit
Router(config)#interface Serial2/0
Router(config-if)#

```

☐ Top

19BDS0096_Router1

Physical **Config** CLI Attributes

GLOBAL
Settings
Algorithm Settings
ROUTING
Static
RIP
INTERFACE
FastEthernet0/0
FastEthernet1/0
Serial2/0
Serial3/0
FastEthernet4/0
FastEthernet5/0

FastEthernet0/0

Port Status ☒ On
Bandwidth ☐ 100 Mbps ☐ 10 Mbps ☒ Auto
Duplex ☐ Half Duplex ☒ Full Duplex ☒ Auto
MAC Address

IP Configuration
IPv4 Address
Subnet Mask

Tx Ring Limit

Equivalent IOS Commands

```

Router>enable
Router#
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#interface FastEthernet0/0
Router(config-if)#

```

☐ Top

19BDS0096_Router1

Physical **Config** CLI Attributes

GLOBAL

Settings

Algorithm Settings

ROUTING

Static

RIP

INTERFACE

FastEthernet0/0

FastEthernet1/0

Serial2/0

Serial3/0

FastEthernet4/0

FastEthernet5/0

Serial2/0

Port Status ☒ On

Duplex ☐ Full Duplex

Clock Rate 2000000

IP Configuration

IPv4 Address 20.0.0.2

Subnet Mask 255.0.0.0

Tx Ring Limit 10

Equivalent IOS Commands

```
Router(config-if)#
Router(config-if)#exit
Router(config)#interface FastEthernet1/0
Router(config-if)#
Router(config-if)#exit
Router(config)#interface Serial3/0
Router(config-if)#
Router(config-if)#exit
Router(config)#interface Serial2/0
Router(config-if)#
```

☐ Top

CONFIGURATION OF SERVER:

19BDS0096_Server0

Physical Config **Services** Desktop Programming Attributes

IP Configuration

IP Configuration

☐ DHCP ☒ Static

IPv4 Address 30.0.0.2

Subnet Mask 255.0.0.0

Default Gateway 30.0.0.1

DNS Server 0.0.0.0

IPv6 Configuration

☐ Automatic ☒ Static

IPv6 Address /

Link Local Address FE80::201:96FF:FED4:7B0D

Default Gateway

DNS Server

802.1X

☐ Use 802.1X Security

Authentication MD5

Username

Password

☐ Top

CONFIGURING OF STATIC NAT USING CLI:

Router0

Physical Config CLI Attributes

IOS Command Line Interface

```
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial2/0, changed state to up

Router(config-if)#exit
Router(config)#router rip
Router(config-router)#network 10.0.0.0
Router(config-router)#network 20.0.0.0
Router(config-router)#network 30.0.0.0
Router(config-router)#exit
Router(config)#exit
Router#
%SYS-5-CONFIG_I: Configured from console by console

Router#config t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#ip nat inside source static 10.0.0.2 50.0.0.2
Router(config)#ip nat inside source static 10.0.0.3 50.0.0.3
Router(config)#interface FastEthernet 0/0
Router(config-if)#ip nat inside
Router(config-if)#exit
Router(config)#interface Serial 2/0
Router(config-if)#ip nat outside
Router(config-if)#exit
Router(config)#
Router(config)#
Router(config)#
Router(config)#ip route 200.0.0.0 255.255.255.0 20.0.0.2
Router(config)#
Router(config)#
```

Ctrl+F6 to exit CLI focus

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Router1

Physical Config CLI Attributes

IOS Command Line Interface

```
Router(config)#interface FastEthernet0/0
Router(config-if)#ip address 30.0.0.1 255.0.0.0
Router(config-if)#ip address 30.0.0.1 255.0.0.0
Router(config-if)#no shutdown
Router(config-if)#
%LINK-5-CHANGED: Interface FastEthernet0/0, changed state to up

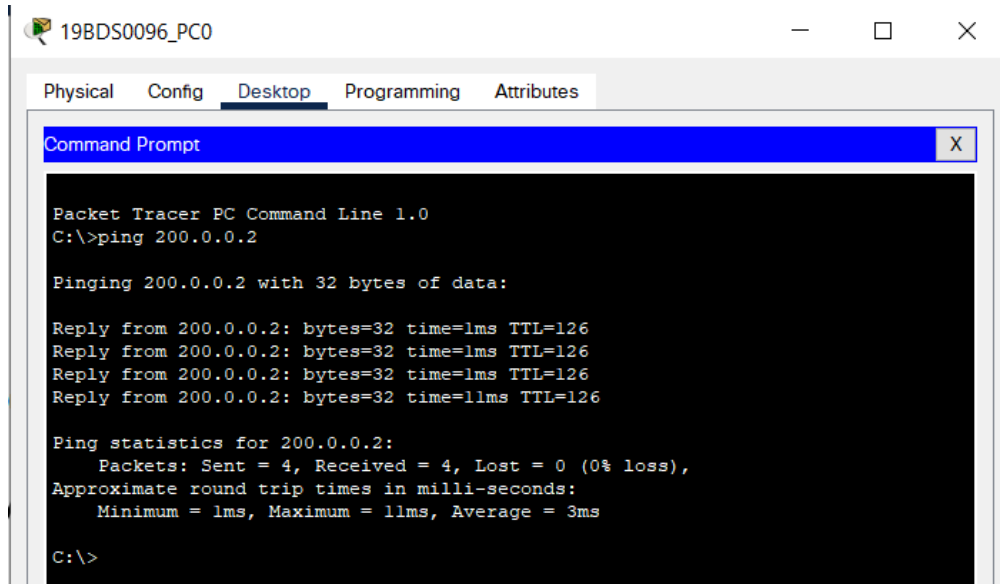
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to up

Router(config-if)#exit
Router(config)#router rip
Router(config-router)#network 10.0.0.0
Router(config-router)#network 20.0.0.0
Router(config-router)#network 30.0.0.0
Router(config-router)#exit
Router(config)#
Router(config)#
Router(config)#
Router(config)#ip nat inside source static 30.0.0.2 200.0.0.2
Router(config)#interface FastEthernet 0/0
Router(config-if)#ip nat inside
Router(config-if)#exit
Router(config)#interface Serial 2/0
Router(config-if)#ip nat outside
Router(config-if)#exit
Router(config)#
Router(config)#ip route 50.0.0.0 255.0.0.0 20.0.0.1
Router(config)#
Router(config)#
```

Ctrl+F6 to exit CLI focus

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PINGING SERVER(OUTSIDE) FROM PC0(INSIDE) AFTER CONFIGURING STATIC NAT:



19BDS0096_PC0

Physical Config Desktop Programming Attributes

Command Prompt

```
Packet Tracer PC Command Line 1.0
C:\>ping 200.0.0.2

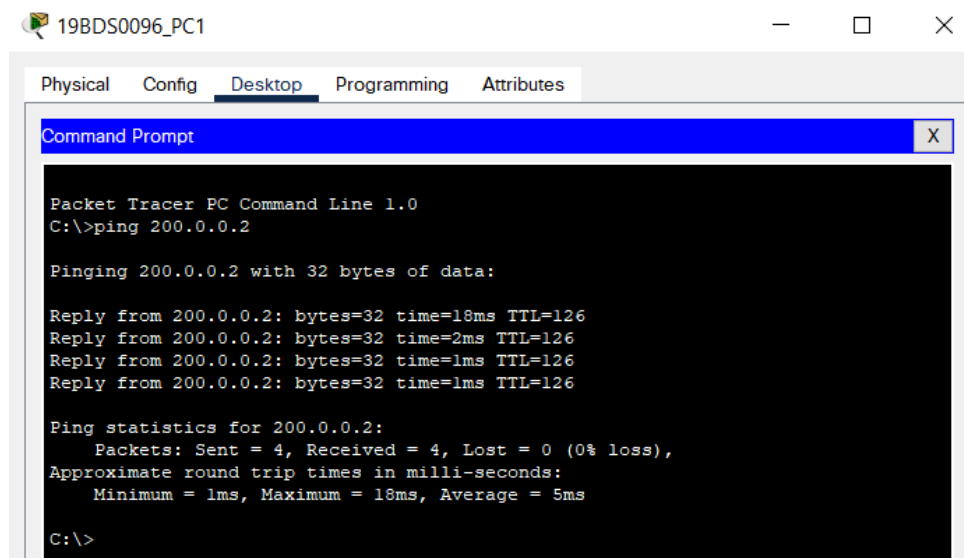
Pinging 200.0.0.2 with 32 bytes of data:

Reply from 200.0.0.2: bytes=32 time=1ms TTL=126
Reply from 200.0.0.2: bytes=32 time=1ms TTL=126
Reply from 200.0.0.2: bytes=32 time=1ms TTL=126
Reply from 200.0.0.2: bytes=32 time=11ms TTL=126

Ping statistics for 200.0.0.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 1ms, Maximum = 11ms, Average = 3ms

C:\>
```

PINGING SERVER(OUTSIDE) FROM PC1(INSIDE) AFTER CONFIGURING STATIC NAT:



19BDS0096_PC1

Physical Config Desktop Programming Attributes

Command Prompt

```
Packet Tracer PC Command Line 1.0
C:\>ping 200.0.0.2

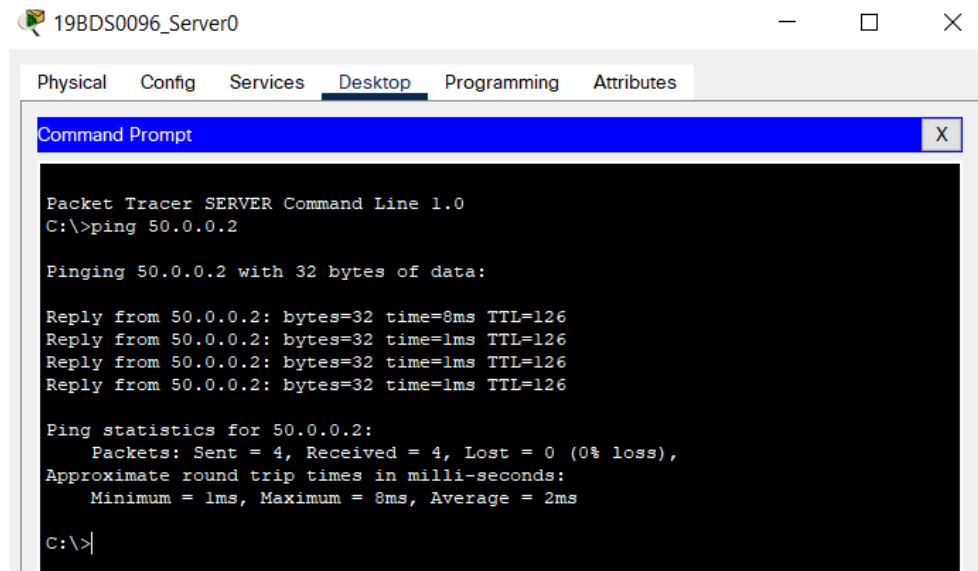
Pinging 200.0.0.2 with 32 bytes of data:

Reply from 200.0.0.2: bytes=32 time=18ms TTL=126
Reply from 200.0.0.2: bytes=32 time=2ms TTL=126
Reply from 200.0.0.2: bytes=32 time=1ms TTL=126
Reply from 200.0.0.2: bytes=32 time=1ms TTL=126

Ping statistics for 200.0.0.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 1ms, Maximum = 18ms, Average = 5ms

C:\>
```

PINGING PC0(INSIDE) FROM SERVER(OUTSIDE) AFTER CONFIGURING STATIC NAT:



```
19BDS0096_Server0
Physical Config Services Desktop Programming Attributes
Command Prompt X
Packet Tracer SERVER Command Line 1.0
C:\>ping 50.0.0.2

Pinging 50.0.0.2 with 32 bytes of data:

Reply from 50.0.0.2: bytes=32 time=8ms TTL=126
Reply from 50.0.0.2: bytes=32 time=1ms TTL=126
Reply from 50.0.0.2: bytes=32 time=1ms TTL=126
Reply from 50.0.0.2: bytes=32 time=1ms TTL=126

Ping statistics for 50.0.0.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 1ms, Maximum = 8ms, Average = 2ms

C:\>
```

PINGING PC1(INSIDE) FROM SERVER(OUTSIDE) AFTER CONFIGURING STATIC NAT:

```
C:\>ping 50.0.0.3

Pinging 50.0.0.3 with 32 bytes of data:

Reply from 50.0.0.3: bytes=32 time=1ms TTL=126
Reply from 50.0.0.3: bytes=32 time=10ms TTL=126
Reply from 50.0.0.3: bytes=32 time=2ms TTL=126
Reply from 50.0.0.3: bytes=32 time=10ms TTL=126

Ping statistics for 50.0.0.3:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 1ms, Maximum = 10ms, Average = 5ms

C:\>
```

RESULT:

Static NAT is implemented and configured successfully for the given scenario and data communication is checked using realtime simulation before and after configuring static NAT between all the devices(router,server and Pc's) and they are communicating successfully