

# DCCN ISE- NAT

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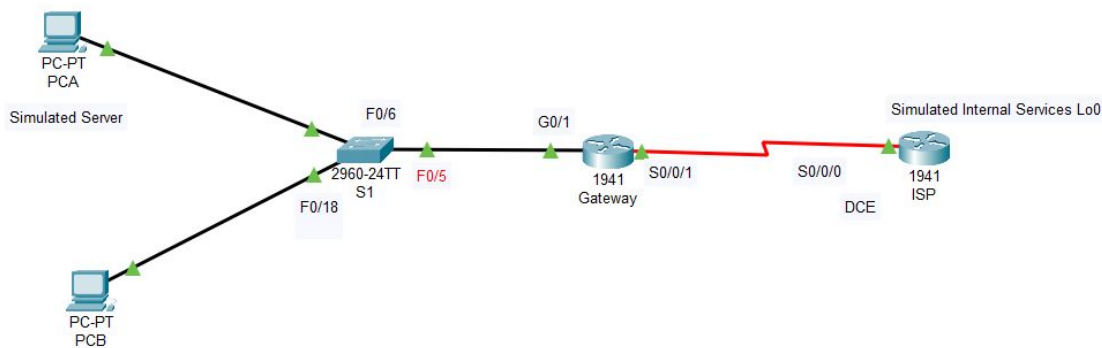
**Shivangi Kochrekar(2018130020)**

**Rishita Mote(2018130029)**

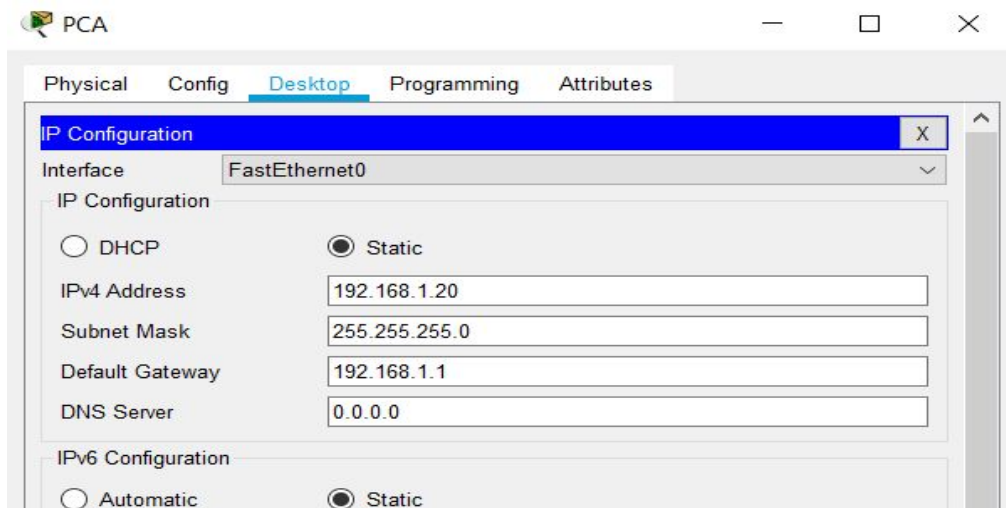
**Batch B (TE COMPS)**

**TASK 1:** To set up the topology and verify end to end configuration.

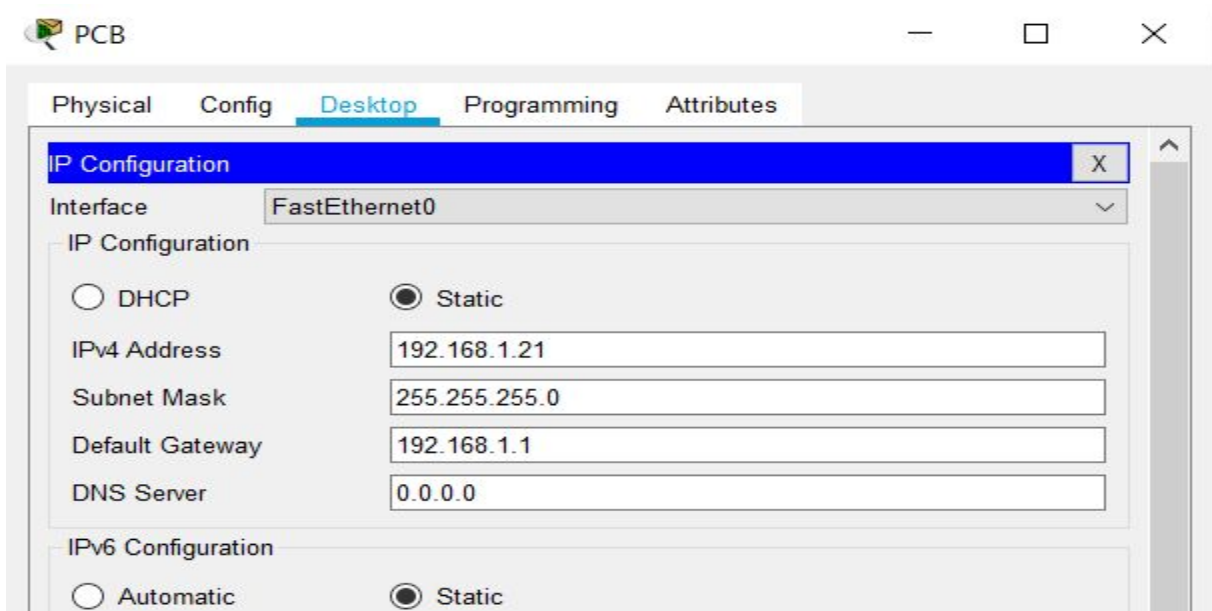
Complete Network:



## PC-A Configuration:



## PC-B Configuration:



The image shows a software window titled "PCB" with a standard Windows interface (minimize, maximize, close buttons). It has four tabs: "Physical", "Config", "Desktop" (which is selected), and "Programming", followed by an "Attributes" button. The "Desktop" tab contains a sub-window titled "IP Configuration" with a close button. Inside this sub-window, the "Interface" dropdown is set to "FastEthernet0". Under "IP Configuration", the "Static" radio button is selected. The fields for "IPv4 Address", "Subnet Mask", "Default Gateway", and "DNS Server" are filled with "192.168.1.21", "255.255.255.0", "192.168.1.1", and "0.0.0.0" respectively. Under "IPv6 Configuration", the "Static" radio button is also selected.

PCB

Physical Config **Desktop** Programming Attributes

IP Configuration X

Interface FastEthernet0

IP Configuration

☐ DHCP ☒ Static

IPv4 Address 192.168.1.21

Subnet Mask 255.255.255.0

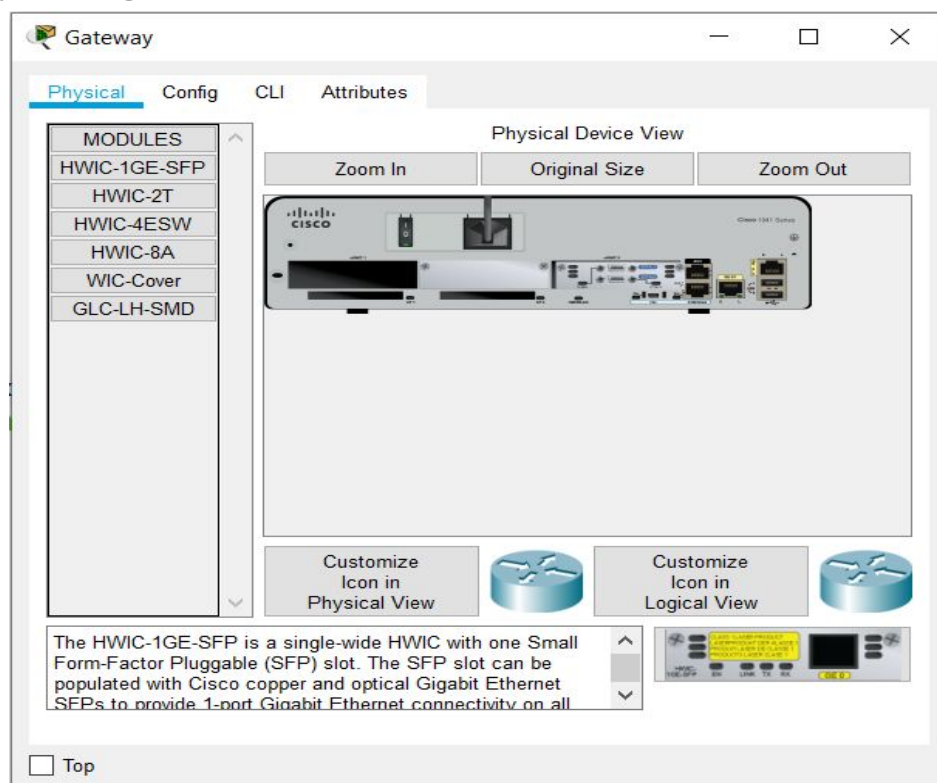
Default Gateway 192.168.1.1

DNS Server 0.0.0.0

IPv6 Configuration

☐ Automatic ☒ Static

## Gateway configuration:



## ISP configuration:

ISP

Physical Config CLI Attributes

Physical Device View

Zoom In Original Size Zoom Out

MODULES

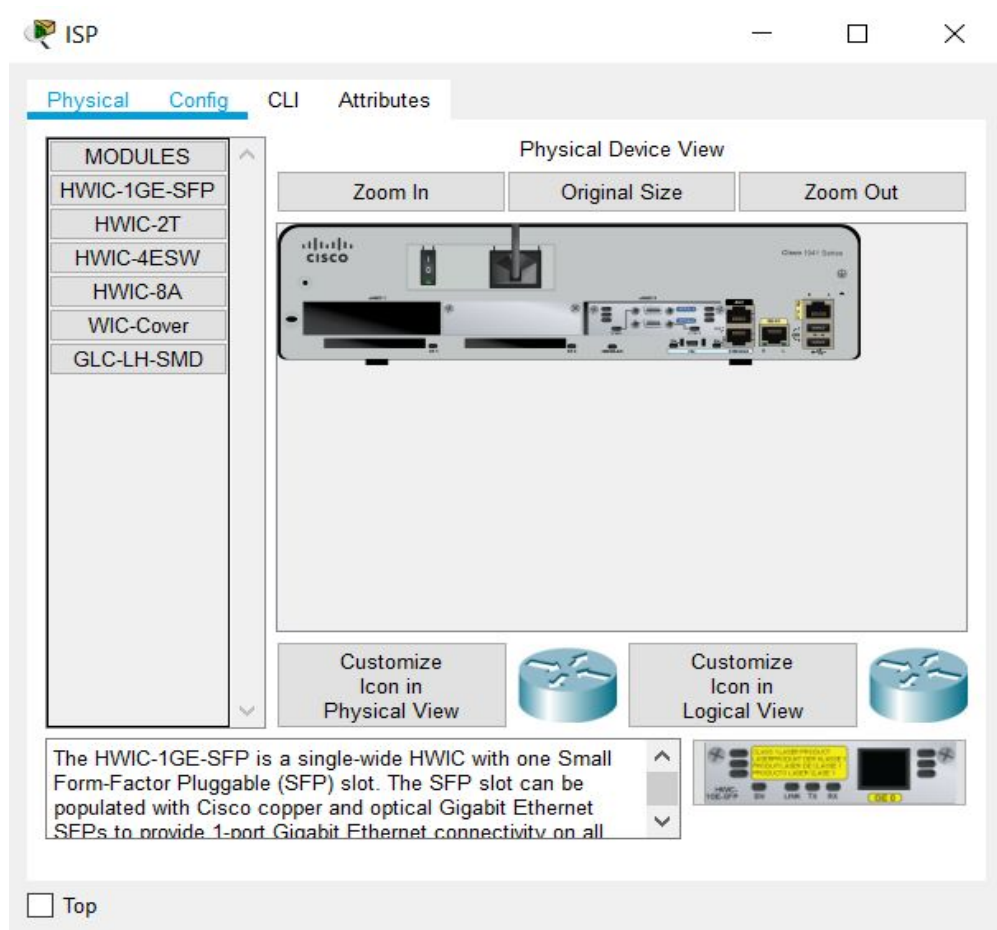
- HWIC-1GE-SFP
- HWIC-2T
- HWIC-4ESW
- HWIC-8A
- WIC-Cover
- GLC-LH-SMD

Customize Icon in Physical View

Customize Icon in Logical View

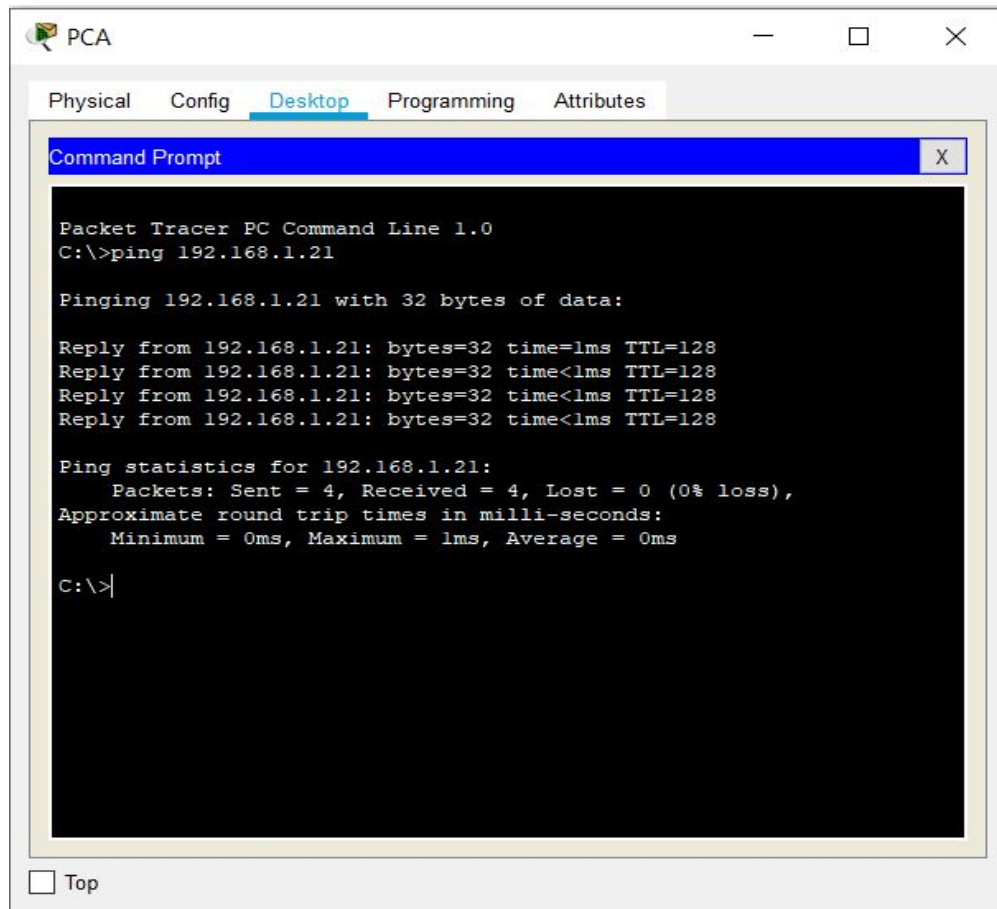
The HWIC-1GE-SFP is a single-wide HWIC with one Small Form-Factor Pluggable (SFP) slot. The SFP slot can be populated with Cisco copper and optical Gigabit Ethernet SFPs to provide 1-port Gigabit Ethernet connectivity on all

Top



## Verify Connectivity:

a) Ping from PC-A to gateway G0/1 and PC-B:



The screenshot shows the Packet Tracer interface for PC-A. The 'Desktop' tab is selected, and a 'Command Prompt' window is open. The command prompt displays the output of a ping command to 192.168.1.21. The output shows four successful replies with 32 bytes of data, a time of 1ms, and a TTL of 128. The ping statistics indicate that all four packets were sent and received, with 0% loss. The approximate round trip times are 0ms, 1ms, and 0ms.

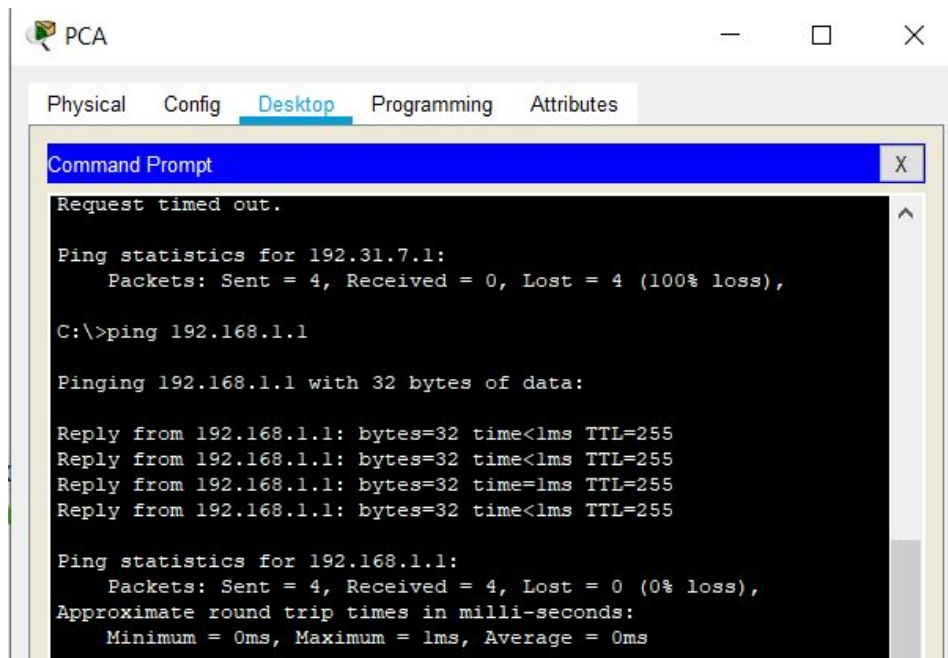
```
Packet Tracer PC Command Line 1.0
C:\>ping 192.168.1.21

Pinging 192.168.1.21 with 32 bytes of data:

Reply from 192.168.1.21: bytes=32 time=1ms TTL=128
Reply from 192.168.1.21: bytes=32 time<1ms TTL=128
Reply from 192.168.1.21: bytes=32 time<1ms TTL=128
Reply from 192.168.1.21: bytes=32 time<1ms TTL=128

Ping statistics for 192.168.1.21:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 1ms, Average = 0ms

C:\>
```



The screenshot shows the Packet Tracer interface for PC-A. The 'Desktop' tab is selected, and a 'Command Prompt' window is open. The command prompt displays the output of two ping commands. The first command is a ping to 192.31.7.1, which results in a 'Request timed out.' and 'Ping statistics for 192.31.7.1: Packets: Sent = 4, Received = 0, Lost = 4 (100% loss)'. The second command is a ping to 192.168.1.1, which results in four successful replies with 32 bytes of data, a time of 1ms, and a TTL of 255. The ping statistics indicate that all four packets were sent and received, with 0% loss. The approximate round trip times are 0ms, 1ms, and 0ms.

```
Request timed out.

Ping statistics for 192.31.7.1:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),

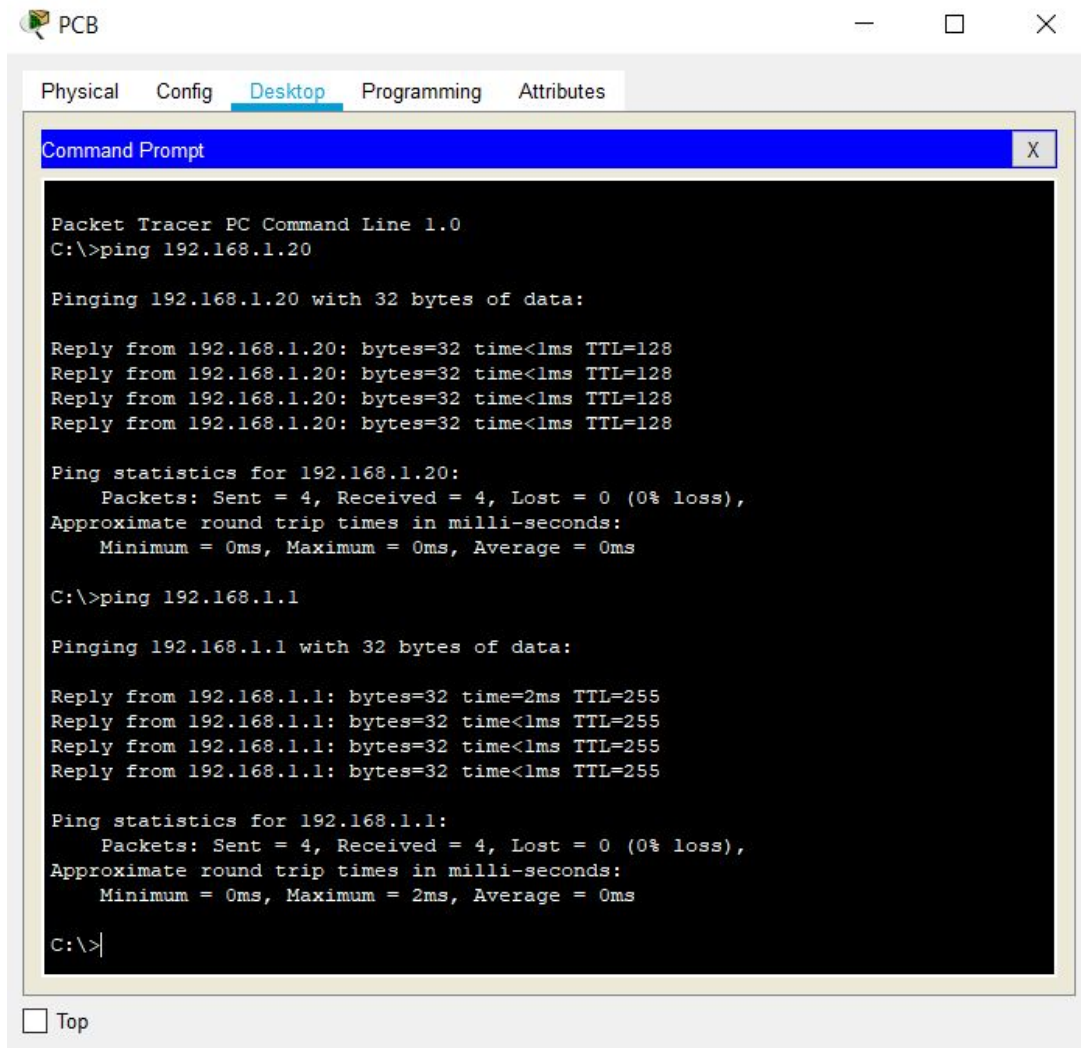
C:\>ping 192.168.1.1

Pinging 192.168.1.1 with 32 bytes of data:

Reply from 192.168.1.1: bytes=32 time<1ms TTL=255
Reply from 192.168.1.1: bytes=32 time<1ms TTL=255
Reply from 192.168.1.1: bytes=32 time=1ms TTL=255
Reply from 192.168.1.1: bytes=32 time<1ms TTL=255

Ping statistics for 192.168.1.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 1ms, Average = 0ms
```

b) Ping from PC-B to gateway G0/1 and PC-A:



PCB

Physical Config **Desktop** Programming Attributes

Command Prompt

```
Packet Tracer PC Command Line 1.0
C:\>ping 192.168.1.20

Pinging 192.168.1.20 with 32 bytes of data:

Reply from 192.168.1.20: bytes=32 time<1ms TTL=128
Reply from 192.168.1.20: bytes=32 time<1ms TTL=128
Reply from 192.168.1.20: bytes=32 time<1ms TTL=128
Reply from 192.168.1.20: bytes=32 time<1ms TTL=128

Ping statistics for 192.168.1.20:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>ping 192.168.1.1

Pinging 192.168.1.1 with 32 bytes of data:

Reply from 192.168.1.1: bytes=32 time=2ms TTL=255
Reply from 192.168.1.1: bytes=32 time<1ms TTL=255
Reply from 192.168.1.1: bytes=32 time<1ms TTL=255
Reply from 192.168.1.1: bytes=32 time<1ms TTL=255

Ping statistics for 192.168.1.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 2ms, Average = 0ms

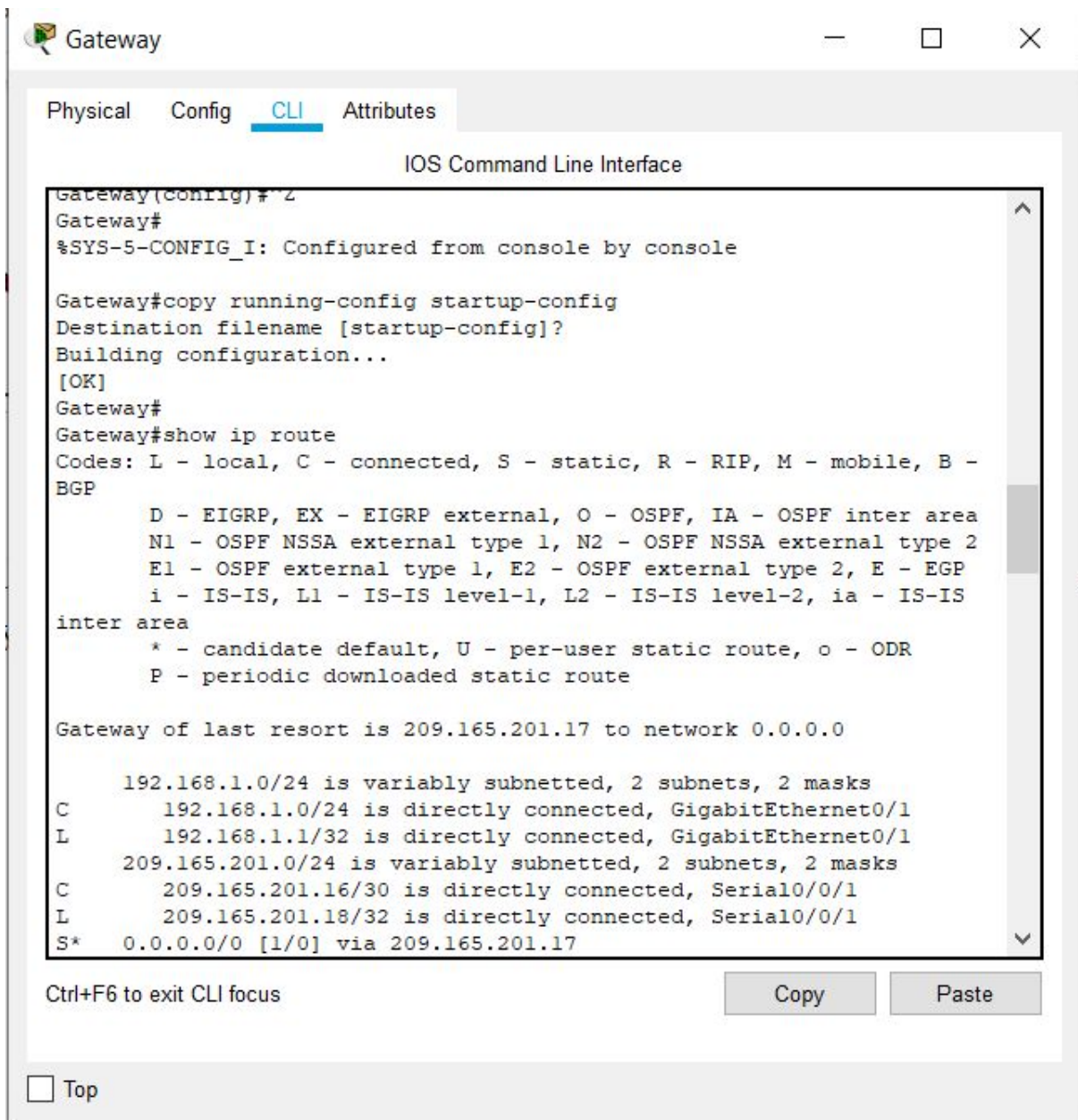
C:\>
```

☐ Top

All the pings are successfully completed.

Routing tables on both routers to verify static route in routing table:

Gateway routing table:



The screenshot shows a window titled "Gateway" with tabs for "Physical", "Config", "CLI", and "Attributes". The "CLI" tab is active, displaying the "IOS Command Line Interface". The command prompt is "Gateway(Config)#". The user has entered the command "show ip route", and the output is displayed. The output shows the routing table for the Gateway router, including the default route (0.0.0.0/0) via 209.165.201.17. The window also includes a "Copy" button, a "Paste" button, and a "Top" button.

```
Gateway(Config)#  
Gateway#  
%SYS-5-CONFIG_I: Configured from console by console  
  
Gateway#copy running-config startup-config  
Destination filename [startup-config]?  
Building configuration...  
[OK]  
Gateway#  
Gateway#show ip route  
Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B -  
BGP  
        D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area  
        N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2  
        E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP  
        i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS  
inter area  
        * - candidate default, U - per-user static route, o - ODR  
        P - periodic downloaded static route  
  
Gateway of last resort is 209.165.201.17 to network 0.0.0.0  
  
      192.168.1.0/24 is variably subnetted, 2 subnets, 2 masks  
C       192.168.1.0/24 is directly connected, GigabitEthernet0/1  
L       192.168.1.1/32 is directly connected, GigabitEthernet0/1  
      209.165.201.0/24 is variably subnetted, 2 subnets, 2 masks  
C       209.165.201.16/30 is directly connected, Serial0/0/1  
L       209.165.201.18/32 is directly connected, Serial0/0/1  
S*    0.0.0.0/0 [1/0] via 209.165.201.17
```

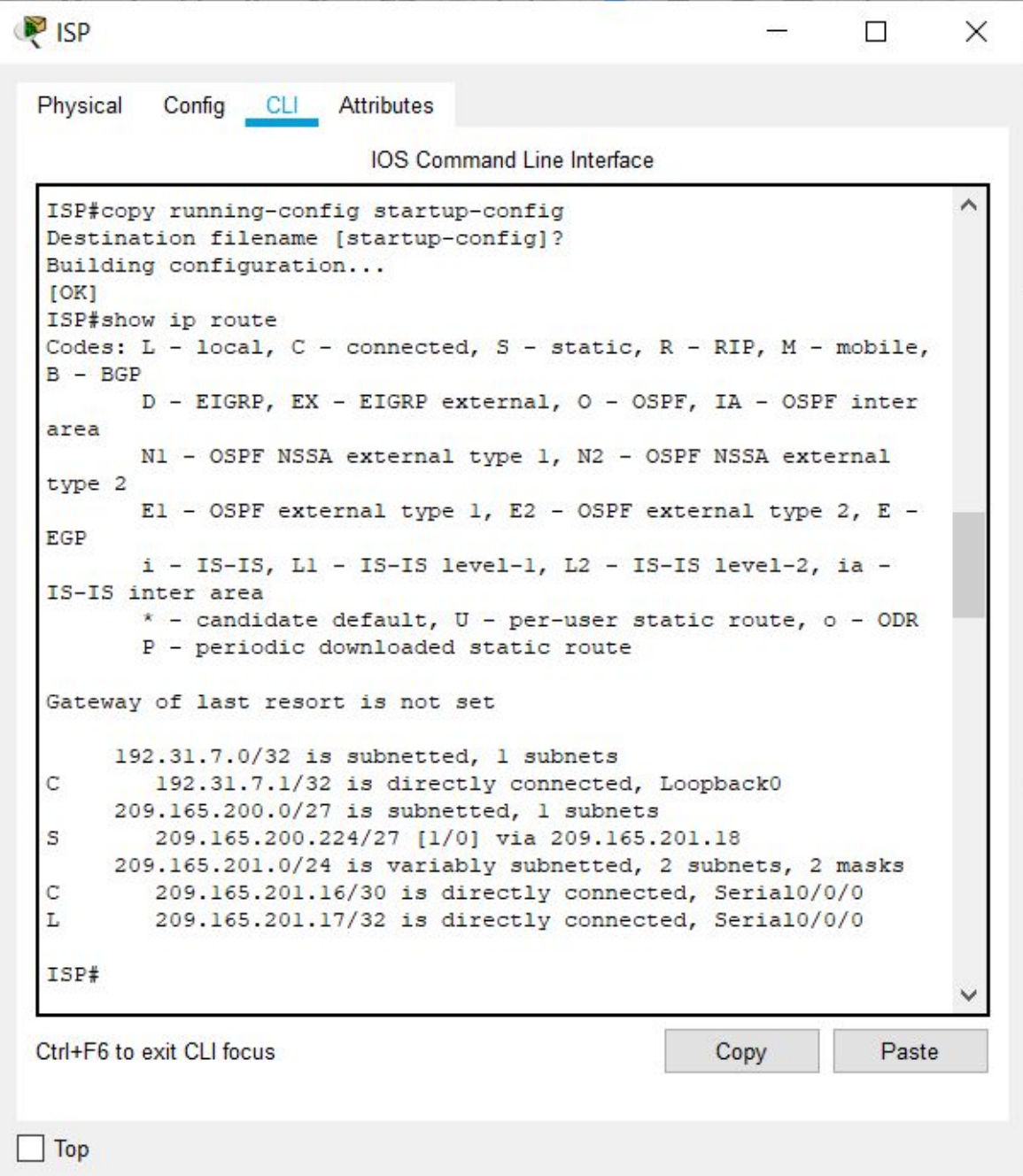
Ctrl+F6 to exit CLI focus

Copy Paste

☐ Top



ISP routing table:



The screenshot shows a window titled "ISP" with a tabbed interface. The "CLI" tab is selected, displaying the "IOS Command Line Interface". The terminal output shows the following commands and results:

```
ISP#copy running-config startup-config
Destination filename [startup-config]?
Building configuration...
[OK]
ISP#show ip route
Codes: L - local, C - connected, S - static, R - RIP, M - mobile,
B - BGP
      D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter
area
      N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external
type 2
      E1 - OSPF external type 1, E2 - OSPF external type 2, E -
EGP
      i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia -
IS-IS inter area
      * - candidate default, U - per-user static route, o - ODR
      P - periodic downloaded static route

Gateway of last resort is not set

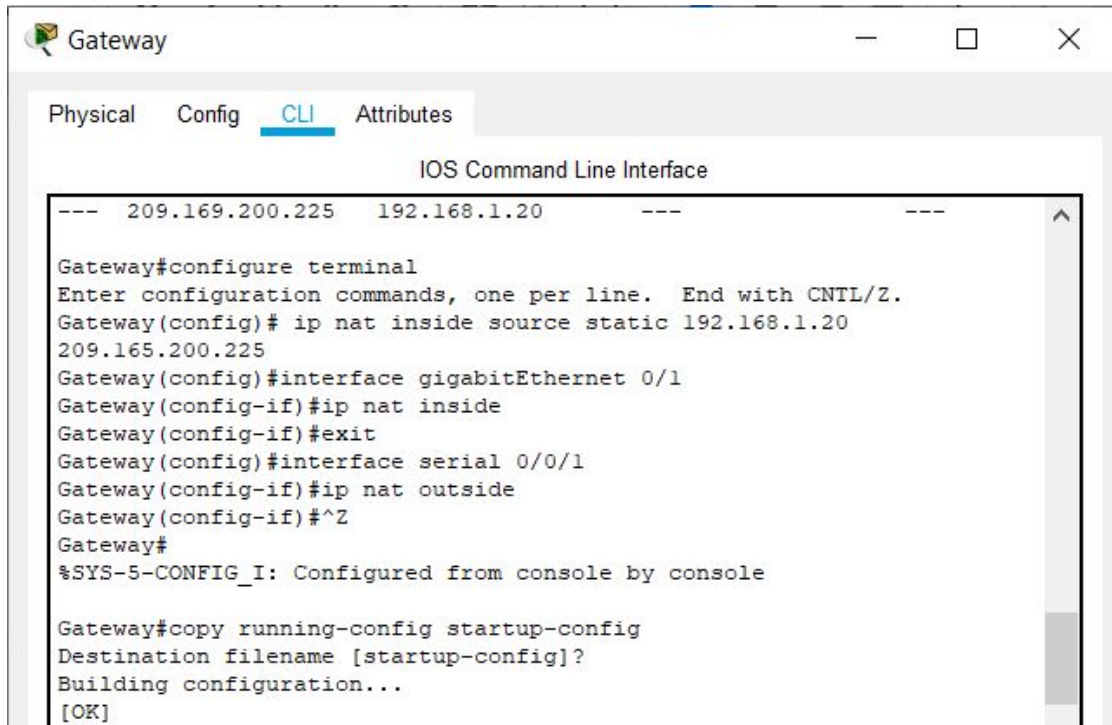
      192.31.7.0/32 is subnetted, 1 subnets
C      192.31.7.1/32 is directly connected, Loopback0
      209.165.200.0/27 is subnetted, 1 subnets
S      209.165.200.224/27 [1/0] via 209.165.201.18
      209.165.201.0/24 is variably subnetted, 2 subnets, 2 masks
C      209.165.201.16/30 is directly connected, Serial0/0/0
L      209.165.201.17/32 is directly connected, Serial0/0/0

ISP#
```

Below the terminal output, there is a text label "Ctrl+F6 to exit CLI focus" and two buttons: "Copy" and "Paste". At the bottom left, there is a checkbox labeled "Top".

## TASK 2 :

Step 1: Configure a static mapping and specify the interfaces.




```
Gateway
Physical Config CLI Attributes
IOS Command Line Interface
--- 209.169.200.225 192.168.1.20 ---
Gateway#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Gateway(config)# ip nat inside source static 192.168.1.20
209.165.200.225
Gateway(config)#interface gigabitEthernet 0/1
Gateway(config-if)#ip nat inside
Gateway(config-if)#exit
Gateway(config)#interface serial 0/0/1
Gateway(config-if)#ip nat outside
Gateway(config-if)#^Z
Gateway#
%SYS-5-CONFIG_I: Configured from console by console

Gateway#copy running-config startup-config
Destination filename [startup-config]?
Building configuration...
[OK]
```

Step 3: Test the configuration.

What is the configuration of the inside local host address?

192.168.1.20 → 209.165.200.225



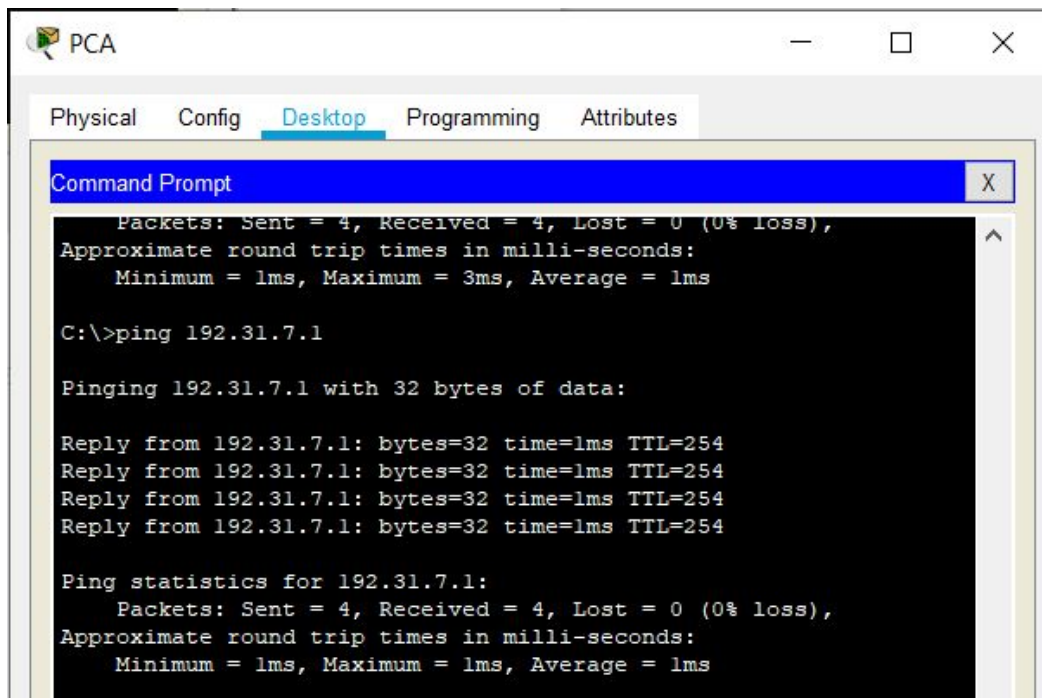
```
Gateway
Physical Config CLI Attributes
IOS Command Line Interface

Gateway#copy running-config startup-config
Destination filename [startup-config]?
Building configuration...
[OK]

Gateway#show ip nat translations
Pro Inside global      Inside local      Outside local      Outside
global
--- 209.165.200.225    192.168.1.20      ---                ---
--- 209.169.200.225    192.168.1.20      ---                ---
```



From PC-A, ping the Lo0 interface (172.31.7.1 ) on ISP:



```
PCA
Physical Config Desktop Programming Attributes

Command Prompt
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
  Minimum = 1ms, Maximum = 3ms, Average = 1ms

C:\>ping 192.31.7.1

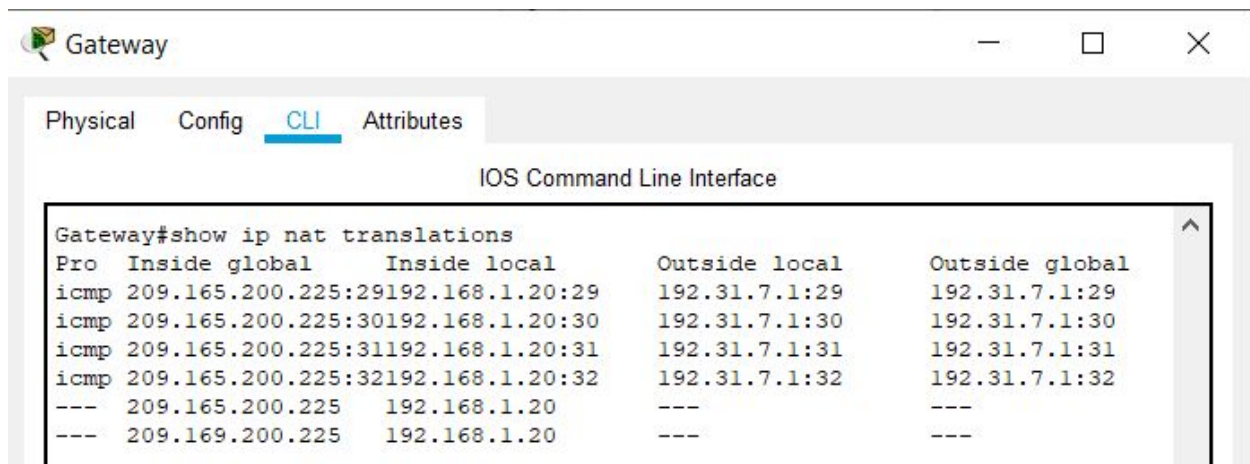
Pinging 192.31.7.1 with 32 bytes of data:

Reply from 192.31.7.1: bytes=32 time=1ms TTL=254
Reply from 192.31.7.1: bytes=32 time=1ms TTL=254
Reply from 192.31.7.1: bytes=32 time=1ms TTL=254
Reply from 192.31.7.1: bytes=32 time=1ms TTL=254

Ping statistics for 192.31.7.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 1ms, Maximum = 1ms, Average = 1ms
```

A NAT entry was added to the table with ICMP listed as the protocol when PC-A sent an ICMP request (ping) to 192.31.7.1 on ISP.

What port number was used in this ICMP exchange? 5,6,7,8



```
Gateway
Physical Config CLI Attributes

IOS Command Line Interface

Gateway#show ip nat translations
Pro  Inside global      Inside local      Outside local      Outside global
icmp 209.165.200.225:29 192.168.1.20:29 192.31.7.1:29 192.31.7.1:29
icmp 209.165.200.225:30 192.168.1.20:30 192.31.7.1:30 192.31.7.1:30
icmp 209.165.200.225:31 192.168.1.20:31 192.31.7.1:31 192.31.7.1:31
icmp 209.165.200.225:32 192.168.1.20:32 192.31.7.1:32 192.31.7.1:32
--- 209.165.200.225 192.168.1.20 --- ---
--- 209.169.200.225 192.168.1.20 --- ---
```

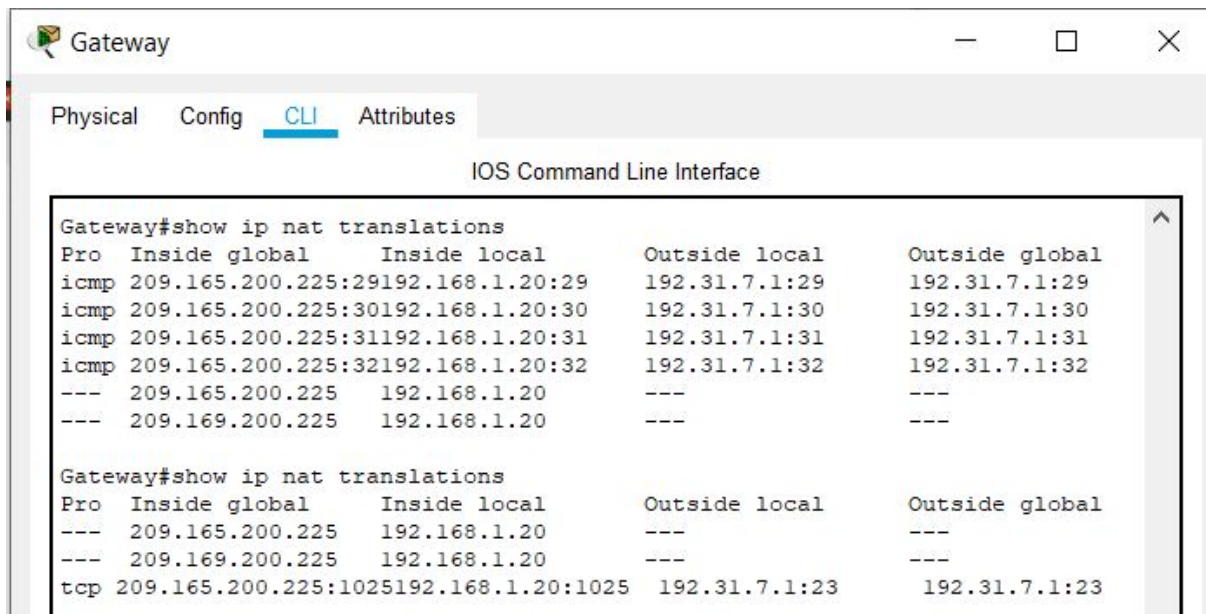
C] From PC-A, telnet to the ISP Lo0 interface and display the NAT table.

What was the protocol used in this translation? tcp

What are the port numbers used?

Inside global / local: 1026

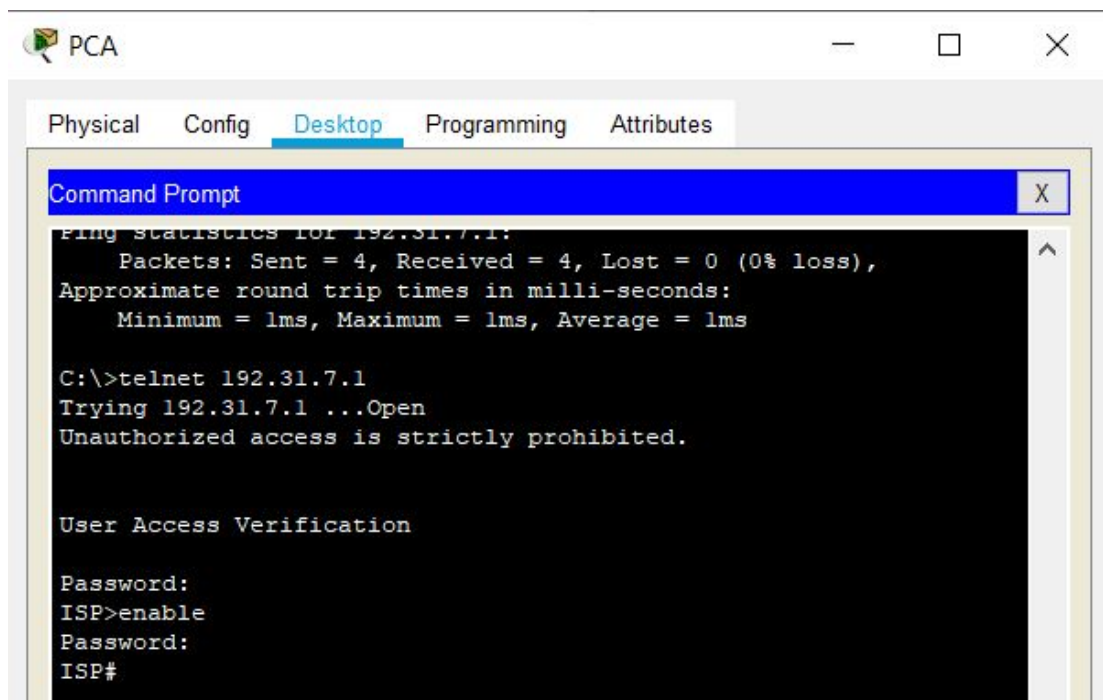
Outside global / local:23



The image shows a 'Gateway' window with the 'CLI' tab selected. The title bar includes 'Gateway', a minimize button, a maximize button, and a close button. The main content area is titled 'IOS Command Line Interface'. It displays two screenshots of the 'show ip nat translations' command output. The first screenshot shows four ICMP translations from 209.165.200.225 to 192.168.1.20 with various ports. The second screenshot shows the same four ICMP translations plus one TCP translation from 209.165.200.225 to 192.168.1.20 on port 1025, with an outside global address of 192.31.7.1:23.

```
Gateway#show ip nat translations
Pro Inside global      Inside local      Outside local      Outside global
icmp 209.165.200.225:29 192.168.1.20:29   192.31.7.1:29     192.31.7.1:29
icmp 209.165.200.225:30 192.168.1.20:30   192.31.7.1:30     192.31.7.1:30
icmp 209.165.200.225:31 192.168.1.20:31   192.31.7.1:31     192.31.7.1:31
icmp 209.165.200.225:32 192.168.1.20:32   192.31.7.1:32     192.31.7.1:32
--- 209.165.200.225     192.168.1.20     ---               ---
--- 209.169.200.225     192.168.1.20     ---               ---

Gateway#show ip nat translations
Pro Inside global      Inside local      Outside local      Outside global
--- 209.165.200.225     192.168.1.20     ---               ---
--- 209.169.200.225     192.168.1.20     ---               ---
tcp 209.165.200.225:1025 192.168.1.20:1025 192.31.7.1:23     192.31.7.1:23
```



The image shows a 'PCA' window with the 'Desktop' tab selected. The title bar includes 'PCA', a minimize button, a maximize button, and a close button. The main content area is titled 'Command Prompt'. It displays the output of a ping command to 192.31.7.1, showing 4 packets sent and received with 0% loss and 1ms round trip times. Below this, it shows the output of a telnet command to 192.31.7.1, which results in 'Unauthorized access is strictly prohibited.' and a 'User Access Verification' prompt. The user enters 'enable' as the password, and the prompt changes to 'ISP#'.

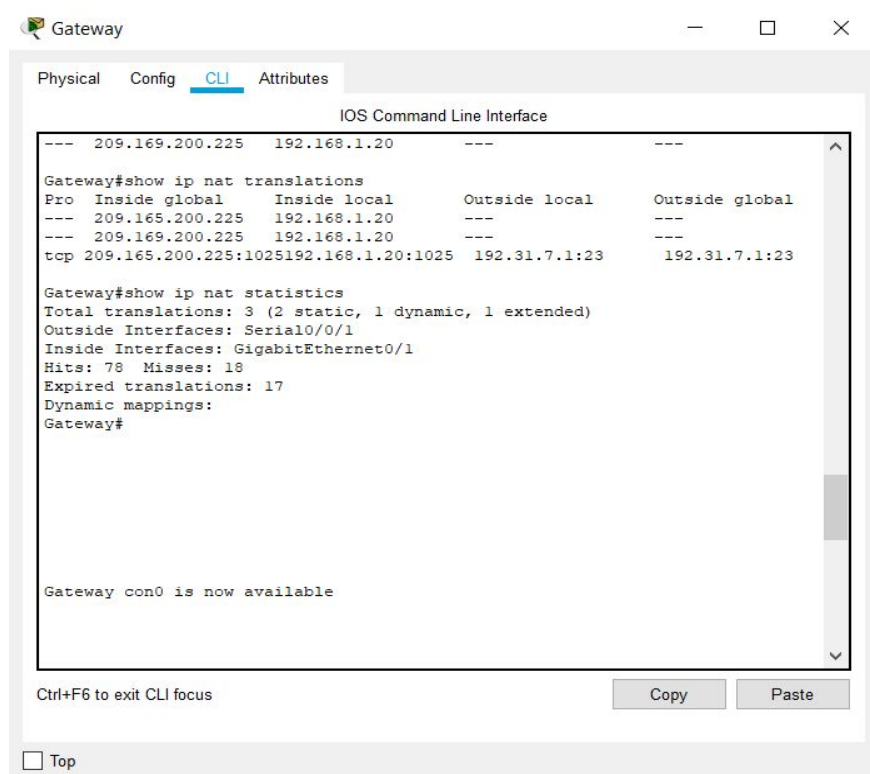
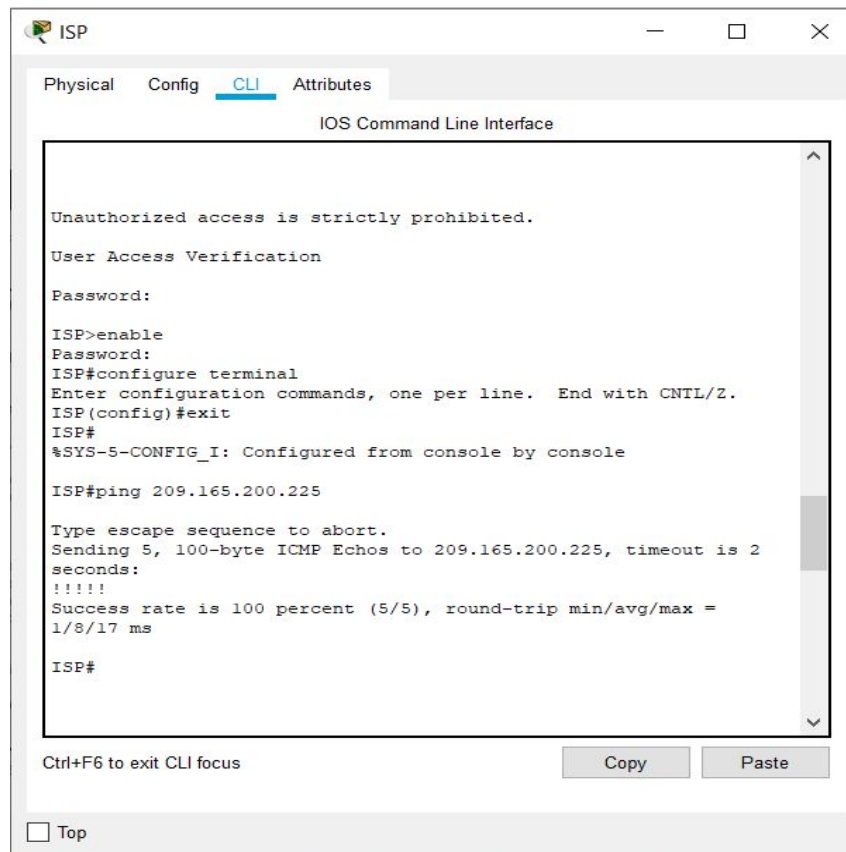
```
Command Prompt
Ping statistics for 192.31.7.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 1ms, Maximum = 1ms, Average = 1ms

C:\>telnet 192.31.7.1
Trying 192.31.7.1 ...Open
Unauthorized access is strictly prohibited.

User Access Verification

Password:
ISP>enable
Password:
ISP#
```

**Because static NAT was configured for PC-A, verify that pinging from ISP to PC-A**



## TASK 3

### Step 1: Clear NATs.



The screenshot shows the GATEWAY CLI interface with the 'CLI' tab selected. The command history shows the user entering 'clear ip nat translation \*' and 'clear ip nat statistics'. The second command is rejected with an error message: '% Invalid input detected at '^' marker.' The user then enters 'exit'.

```
GATEWAY
Physical Config CLI Attributes
IOS Command Line Interface
Gateway#
Gateway#
Gateway#
Gateway#
Gateway#
Gateway#
Gateway#
Gateway#
Gateway#
Gateway#
Gateway#
Gateway#
Gateway#
Gateway#
Gateway#
Gateway#
Gateway#
Gateway#
Gateway#clear ip nat translation *
Gateway#clear ip nat statistics
      ^
% Invalid input detected at '^' marker.
Gateway#exit
```



The screenshot shows the GATEWAY CLI interface with the 'CLI' tab selected. The command history shows the user entering 'show ip nat translations' and 'show ip nat statistics'. The output of the first command is a table showing the NAT translation table. The output of the second command shows the NAT statistics.

```
GATEWAY
Physical Config CLI Attributes
IOS Command Line Interface

Unauthorized access is strictly prohibited.
User Access Verification
Password:
Password:

Gateway>show ip nat translations
Pro Inside global   Inside local   Outside local   Outside global
--- 209.165.200.225  192.168.1.20   ---             ---

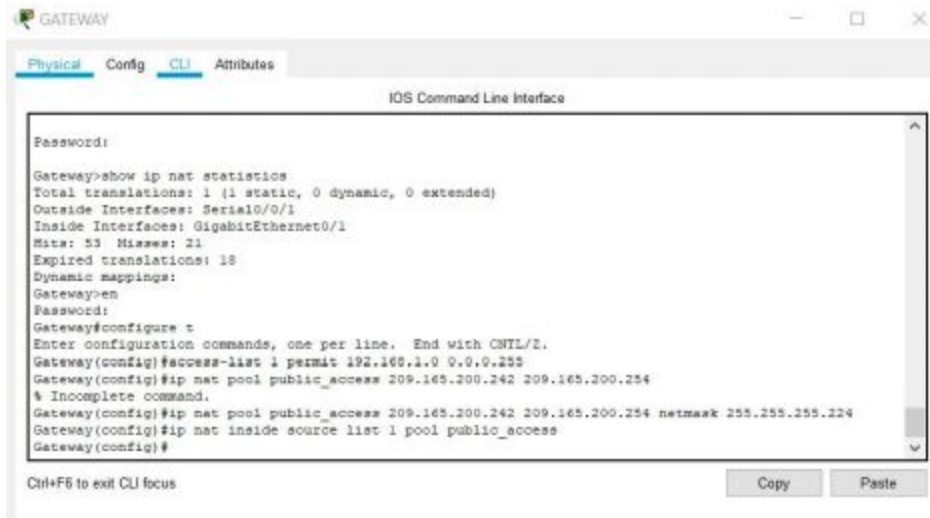
Gateway>show ip nat statistics
Total translations: 1 (1 static, 0 dynamic, 0 extended)
Outside Interfaces: Serial0/0/1
Inside Interfaces: GigabitEthernet0/1
Hits: 53 Misses: 21
Expired translations: 18
Dynamic mappings:
Gateway>
```

Ctrl+F6 to exit CLI focus Copy

**Step 3: Verify that the NAT interface configurations are still valid.**

**Step 4: Define the pool of usable public IP addresses.**

**Step 5: Define the NAT from the inside source list to the outside pool.**

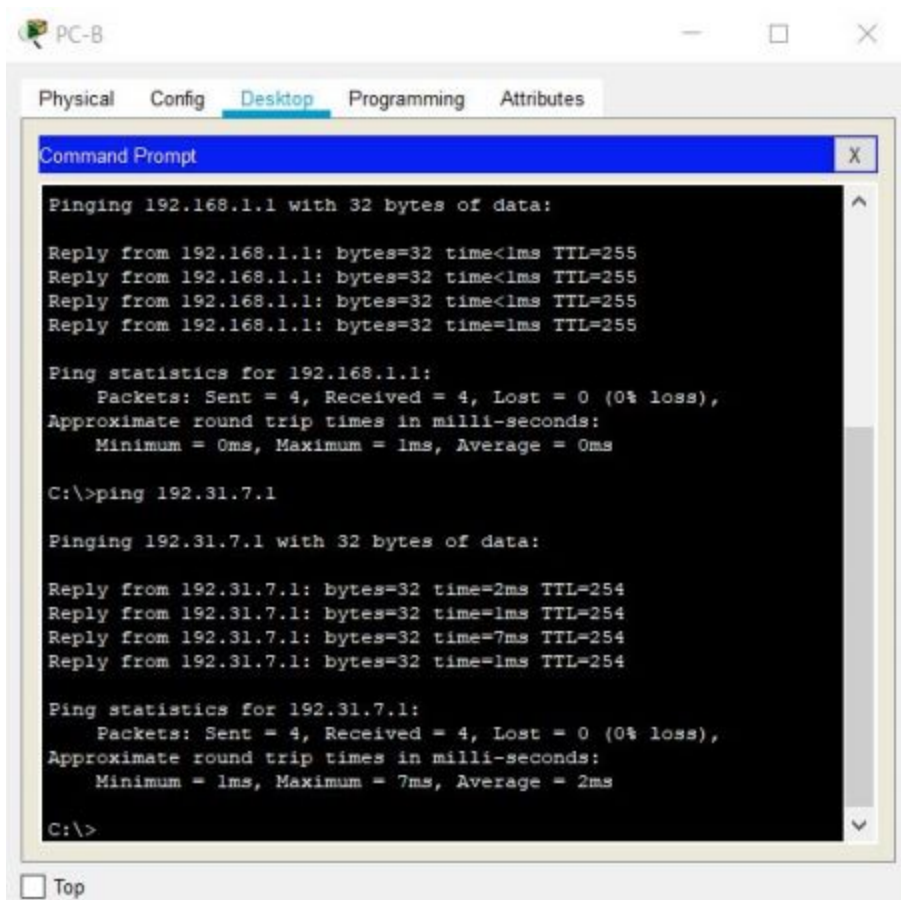


The screenshot shows the GATEWAY CLI interface with the following text:

```
Gateway>show ip nat statistics
Total translations: 1 (1 static, 0 dynamic, 0 extended)
Outside Interfaces: Serial0/0/1
Inside Interfaces: GigabitEthernet0/1
Hits: 53 Misses: 21
Expired translations: 18
Dynamic mappings:
Gateway>en
Password:
Gateway#configure t
Enter configuration commands, one per line. End with CNTL/Z.
Gateway(config)#access-list 1 permit 192.168.1.0 0.0.0.255
Gateway(config)#ip nat pool public_access 209.165.200.242 209.165.200.254
& Incomplete command.
Gateway(config)#ip nat pool public_access 209.165.200.242 209.165.200.254 netmask 255.255.255.224
Gateway(config)#ip nat inside source list 1 pool public_access
Gateway(config)#
```

Buttons for Copy and Paste are visible at the bottom right.

**Step 6 : Test configuration by pinging from PC-b to ISP loopback**



The screenshot shows the PC-B Desktop interface with a Command Prompt window open. The text in the Command Prompt is as follows:

```
Pinging 192.168.1.1 with 32 bytes of data:

Reply from 192.168.1.1: bytes=32 time<1ms TTL=255
Reply from 192.168.1.1: bytes=32 time<1ms TTL=255
Reply from 192.168.1.1: bytes=32 time<1ms TTL=255
Reply from 192.168.1.1: bytes=32 time=1ms TTL=255

Ping statistics for 192.168.1.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 1ms, Average = 0ms

C:\>ping 192.31.7.1

Pinging 192.31.7.1 with 32 bytes of data:

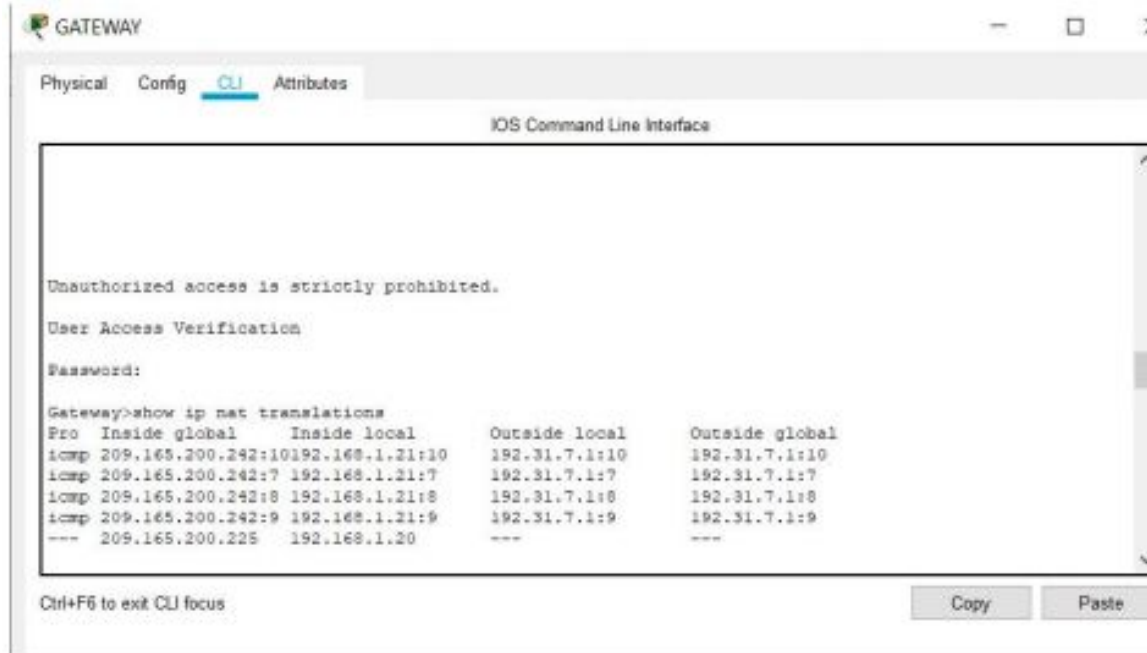
Reply from 192.31.7.1: bytes=32 time=2ms TTL=254
Reply from 192.31.7.1: bytes=32 time=1ms TTL=254
Reply from 192.31.7.1: bytes=32 time=7ms TTL=254
Reply from 192.31.7.1: bytes=32 time=1ms TTL=254

Ping statistics for 192.31.7.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 1ms, Maximum = 7ms, Average = 2ms

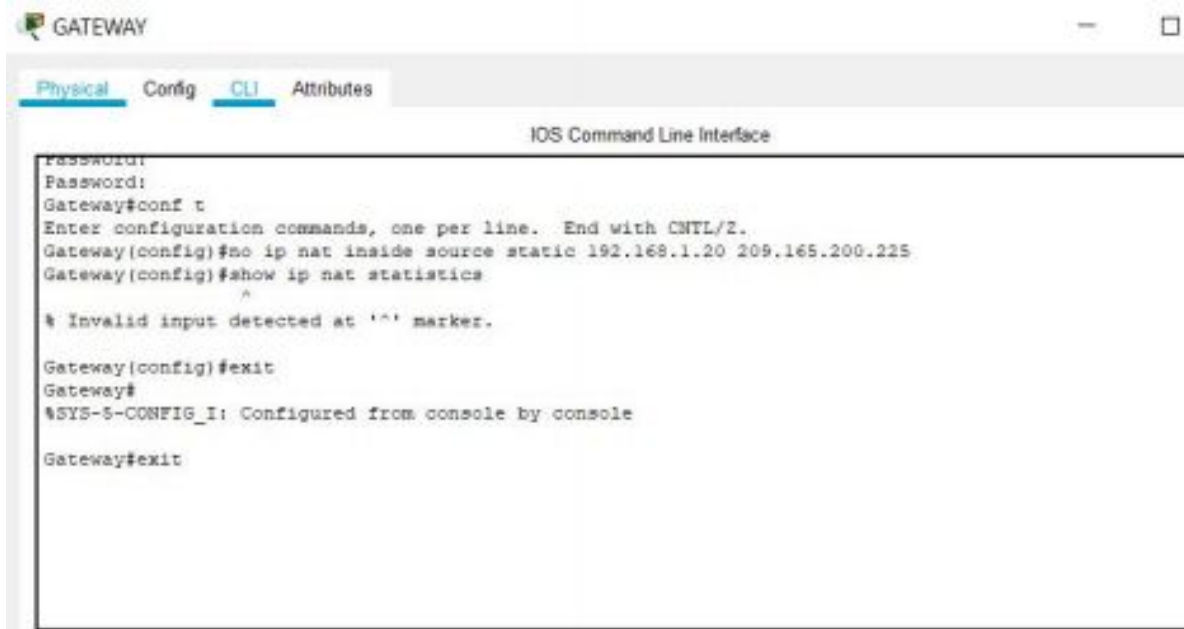
C:\>
```

A "Top" button is visible at the bottom left of the Command Prompt window.





## Step 7: Remove the static NAT entry.



Unauthorized access is strictly prohibited.

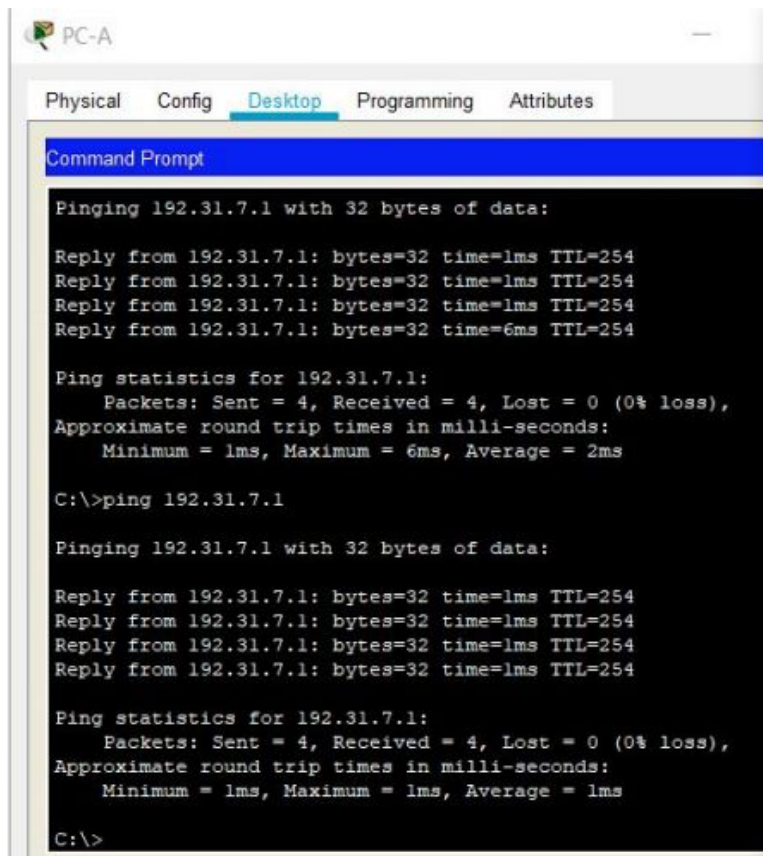
User Access Verification

Password:

```
Gateway>show ip nat statistics
Total translations: 0 (0 static, 0 dynamic, 0 extended)
Outside Interfaces: Serial0/0/1
Inside Interfaces: GigabitEthernet0/1
Hits: 61 Misses: 29
Expired translations: 26
Dynamic mappings:
-- Inside Source
access-list 1 pool public_access refCount 0
 pool public_access: netmask 255.255.255.224
   start 209.165.200.242 end 209.165.200.254
   type generic, total addresses 13 , allocated 0 (0%), misses 0
Gateway>
```

Ctrl+F6 to exit CLI focus

## Ping from both hosts



PC-A

Physical Config **Desktop** Programming Attributes

Command Prompt

```
Pinging 192.31.7.1 with 32 bytes of data:

Reply from 192.31.7.1: bytes=32 time=1ms TTL=254
Reply from 192.31.7.1: bytes=32 time=1ms TTL=254
Reply from 192.31.7.1: bytes=32 time=1ms TTL=254
Reply from 192.31.7.1: bytes=32 time=6ms TTL=254

Ping statistics for 192.31.7.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 1ms, Maximum = 6ms, Average = 2ms

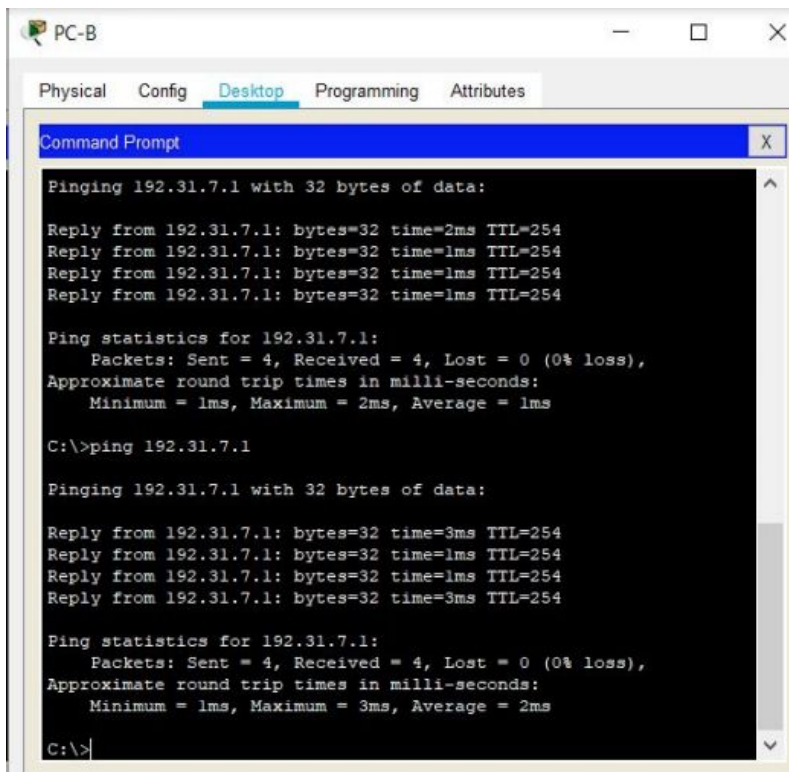
C:\>ping 192.31.7.1

Pinging 192.31.7.1 with 32 bytes of data:

Reply from 192.31.7.1: bytes=32 time=1ms TTL=254
Reply from 192.31.7.1: bytes=32 time=1ms TTL=254
Reply from 192.31.7.1: bytes=32 time=1ms TTL=254
Reply from 192.31.7.1: bytes=32 time=1ms TTL=254

Ping statistics for 192.31.7.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 1ms, Maximum = 1ms, Average = 1ms

C:\>
```



PC-B

Physical Config **Desktop** Programming Attributes

Command Prompt

```
Pinging 192.31.7.1 with 32 bytes of data:

Reply from 192.31.7.1: bytes=32 time=2ms TTL=254
Reply from 192.31.7.1: bytes=32 time=1ms TTL=254
Reply from 192.31.7.1: bytes=32 time=1ms TTL=254
Reply from 192.31.7.1: bytes=32 time=1ms TTL=254

Ping statistics for 192.31.7.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 1ms, Maximum = 2ms, Average = 1ms

C:\>ping 192.31.7.1

Pinging 192.31.7.1 with 32 bytes of data:

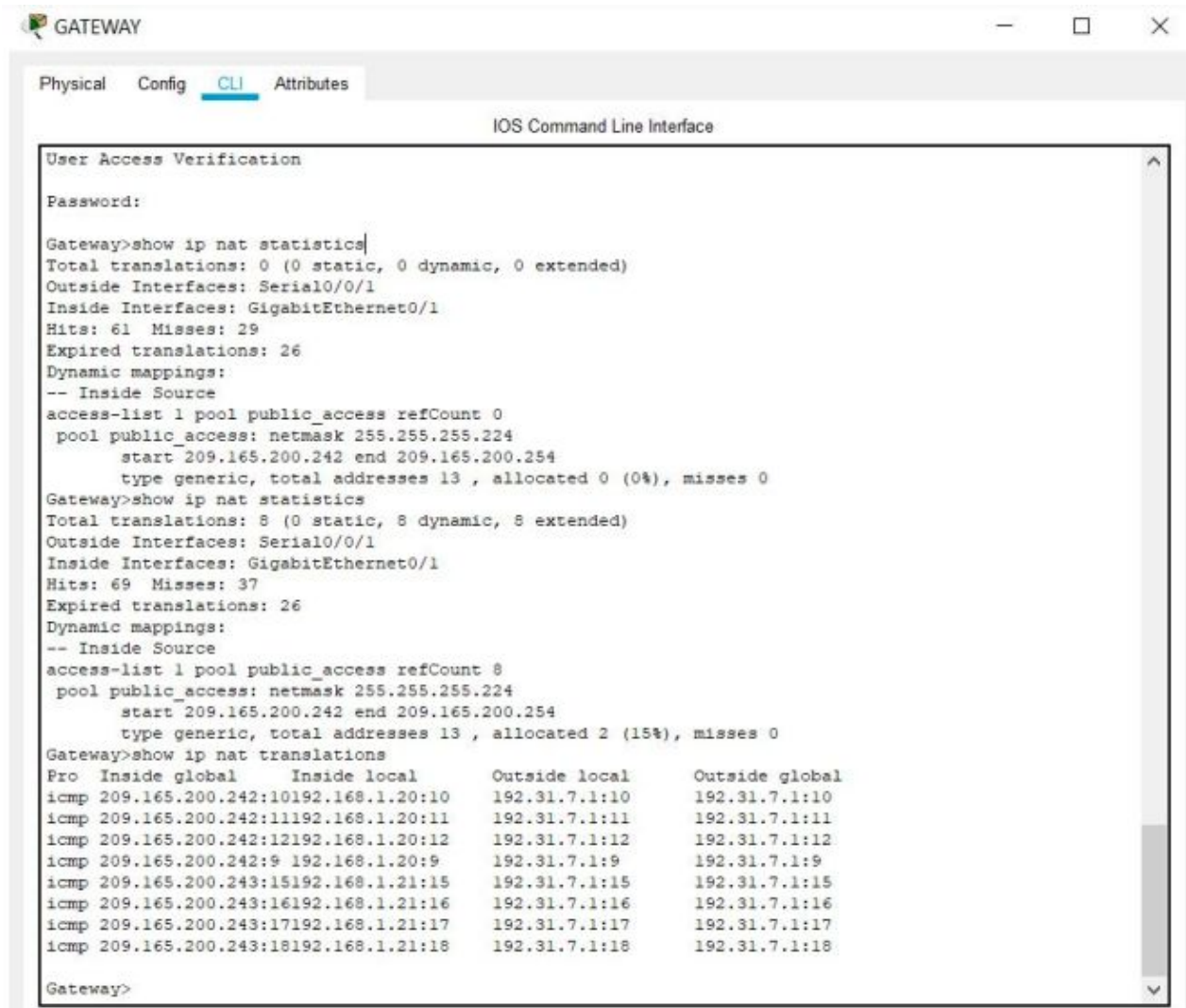
Reply from 192.31.7.1: bytes=32 time=3ms TTL=254
Reply from 192.31.7.1: bytes=32 time=1ms TTL=254
Reply from 192.31.7.1: bytes=32 time=1ms TTL=254
Reply from 192.31.7.1: bytes=32 time=3ms TTL=254

Ping statistics for 192.31.7.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 1ms, Maximum = 3ms, Average = 2ms

C:\>
```

## Show ip nat statistics

## And nat translations after pinging both hosts



The screenshot shows the GATEWAY CLI interface with the following content:

```
User Access Verification
Password:

Gateway>show ip nat statistics
Total translations: 0 (0 static, 0 dynamic, 0 extended)
Outside Interfaces: Serial0/0/1
Inside Interfaces: GigabitEthernet0/1
Hits: 61 Misses: 29
Expired translations: 26
Dynamic mappings:
-- Inside Source
access-list 1 pool public_access refCount 0
pool public_access: netmask 255.255.255.224
start 209.165.200.242 end 209.165.200.254
type generic, total addresses 13 , allocated 0 (0%), misses 0
Gateway>show ip nat statistics
Total translations: 8 (0 static, 8 dynamic, 8 extended)
Outside Interfaces: Serial0/0/1
Inside Interfaces: GigabitEthernet0/1
Hits: 69 Misses: 37
Expired translations: 26
Dynamic mappings:
-- Inside Source
access-list 1 pool public_access refCount 8
pool public_access: netmask 255.255.255.224
start 209.165.200.242 end 209.165.200.254
type generic, total addresses 13 , allocated 2 (15%), misses 0
Gateway>show ip nat translations
Pro Inside global      Inside local      Outside local      Outside global
icmp 209.165.200.242:10 192.168.1.20:10    192.31.7.1:10      192.31.7.1:10
icmp 209.165.200.242:11 192.168.1.20:11    192.31.7.1:11      192.31.7.1:11
icmp 209.165.200.242:12 192.168.1.20:12    192.31.7.1:12      192.31.7.1:12
icmp 209.165.200.242:9  192.168.1.20:9     192.31.7.1:9       192.31.7.1:9
icmp 209.165.200.243:15 192.168.1.21:15    192.31.7.1:15      192.31.7.1:15
icmp 209.165.200.243:16 192.168.1.21:16    192.31.7.1:16      192.31.7.1:16
icmp 209.165.200.243:17 192.168.1.21:17    192.31.7.1:17      192.31.7.1:17
icmp 209.165.200.243:18 192.168.1.21:18    192.31.7.1:18      192.31.7.1:18
Gateway>
```

### Before:

Total Translations: 0 ( 0 static, 0 dynamic, 0 extended)

### After:

Total Translations: 8 ( 0 static, 8 dynamic, 8 extended)

## CONCLUSION:

We successfully created topology and verified the end to end connectivity in CISCO Packet Tracer.