

ISE 2 Lab

16/10/2020

Kunal Nalawde 2018130031 Task 1

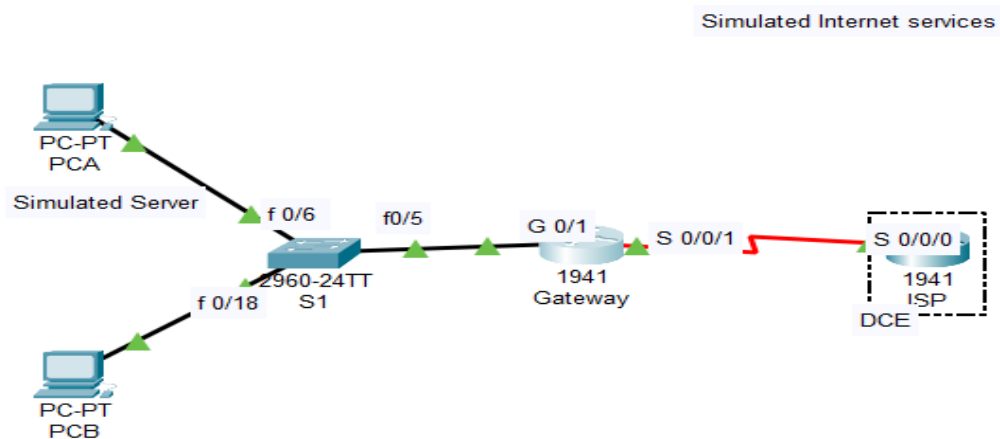
Chirag Rana 2018130043 Task 2

Prerak Parekh 2018130035 Task 3

Task 1

Configurations

Step 1:



Step 2:

The screenshot shows a window titled "PCA" with a standard Windows-style title bar (minimize, maximize, close buttons). The window has a tabbed interface with four tabs: "Physical", "Config", "Desktop" (which is selected and highlighted in blue), and "Programming". Below the tabs, there is a list of configuration items, with "IP Configuration" selected and highlighted in blue. To the right of this list is a small "X" button. Below the "IP Configuration" list item, the "Interface" is set to "FastEthernet0". The "IP Configuration" section contains two radio buttons: "DHCP" (unselected) and "Static" (selected). Below these are five text input fields: "IP Address" (172.168.1.20), "Subnet Mask" (255.255.255.0), "Default Gateway" (172.168.1.1), and "DNS Server" (0.0.0.0). The "IPv6 Configuration" section follows, with three radio buttons: "DHCP" (unselected), "Auto Config" (unselected), and "Static" (selected). Below these are four text input fields: "IPv6 Address" (empty), "Link Local Address" (FE80::201:42FF:FE21:26E5), "IPv6 Gateway" (empty), and "IPv6 DNS Server" (empty). The "802.1X" section is at the bottom, with a checkbox "Use 802.1X Security" (unchecked) and a dropdown menu "Authentication" set to "MD5". At the very bottom of the window is a checkbox labeled "Top" which is unchecked.

PCA

Physical Config **Desktop** Programming Attributes

IP Configuration X

Interface FastEthernet0

IP Configuration

☐ DHCP ☒ Static

IP Address 172.168.1.20

Subnet Mask 255.255.255.0

Default Gateway 172.168.1.1

DNS Server 0.0.0.0

IPv6 Configuration

☐ DHCP ☐ Auto Config ☒ Static

IPv6 Address /

Link Local Address FE80::201:42FF:FE21:26E5

IPv6 Gateway

IPv6 DNS Server

802.1X

☐ Use 802.1X Security

Authentication MD5

☐ Top

PC-A configurations

PCB

Physical Config **Desktop** Programming Attributes

IP Configuration X

Interface FastEthernet0

IP Configuration

☐ DHCP ☒ Static

IP Address 172.168.1.21

Subnet Mask 255.255.255.0

Default Gateway 172.168.1.1

DNS Server 0.0.0.0

IPv6 Configuration

☐ DHCP ☐ Auto Config ☒ Static

IPv6 Address /

Link Local Address FE80::204:9AFF:FEB1:C31B

IPv6 Gateway

IPv6 DNS Server

802.1X

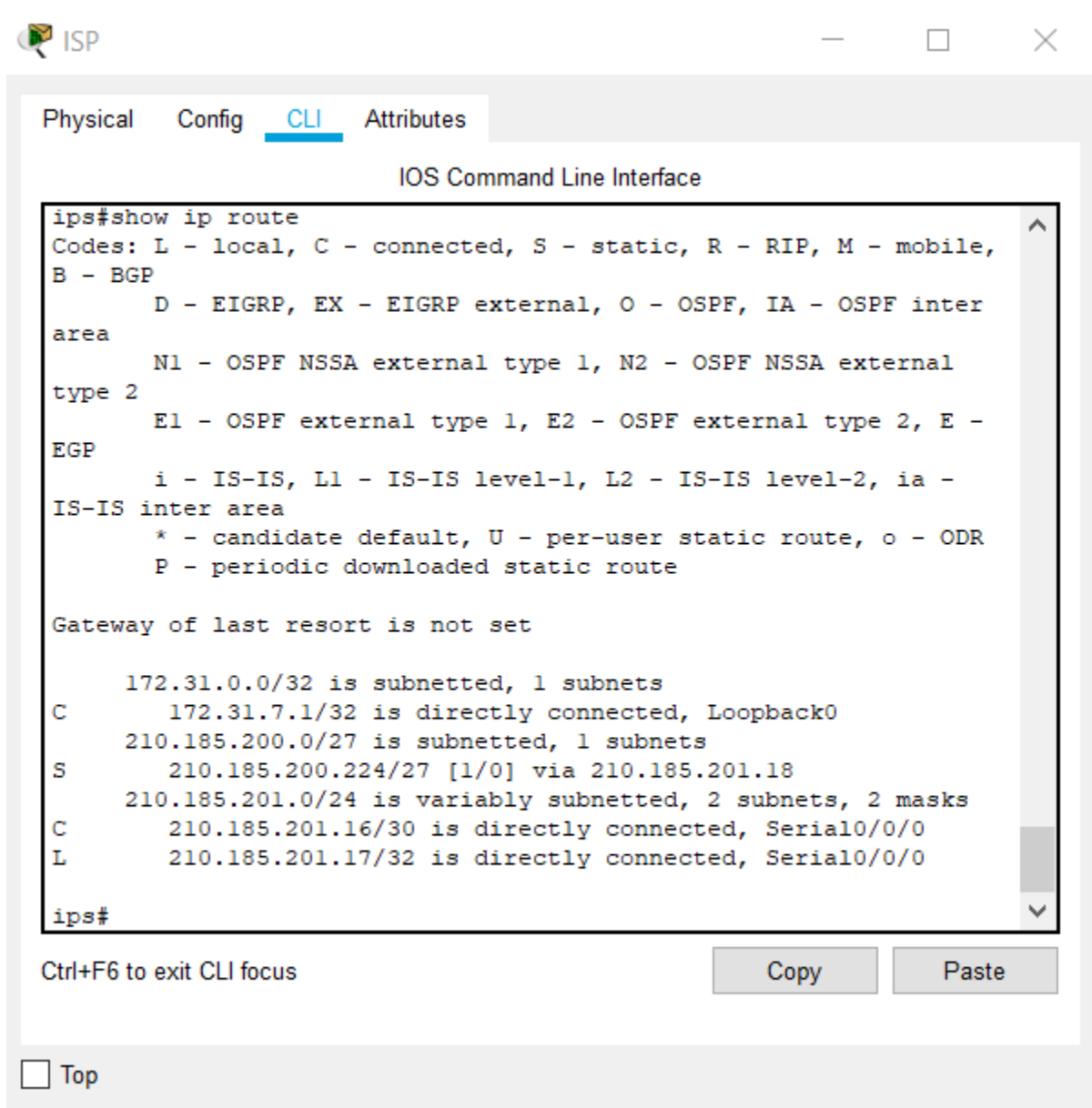
☐ Use 802.1X Security

Authentication MD5

☐ Top

PC-B configurations

Step 3-7:



The screenshot shows a window titled "ISP" with a tabbed interface. The "CLI" tab is selected, displaying the "IOS Command Line Interface". The command "ips#show ip route" has been entered, and the output is shown. The output includes a legend for route codes (L, C, S, R, M, B, D, N1, N2, E1, E2, E, i, L1, L2, ia, *, U, o, P) and a list of routes. The routes are: 172.31.0.0/32 (subnetted), 172.31.7.1/32 (directly connected, Loopback0), 210.185.200.0/27 (subnetted), 210.185.200.224/27 (via 210.185.201.18), 210.185.201.0/24 (variably subnetted), 210.185.201.16/30 (directly connected, Serial0/0/0), and 210.185.201.17/32 (directly connected, Serial0/0/0). The prompt "ips#" is shown at the bottom of the CLI window. Below the CLI window, there is a "Ctrl+F6 to exit CLI focus" message and "Copy" and "Paste" buttons. At the bottom of the window, there is a "Top" button.

```
ips#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

    172.31.0.0/32 is subnetted, 1 subnets
C       172.31.7.1/32 is directly connected, Loopback0
    210.185.200.0/27 is subnetted, 1 subnets
S       210.185.200.224/27 [1/0] via 210.185.201.18
    210.185.201.0/24 is variably subnetted, 2 subnets, 2 masks
C       210.185.201.16/30 is directly connected, Serial0/0/0
L       210.185.201.17/32 is directly connected, Serial0/0/0

ips#
```

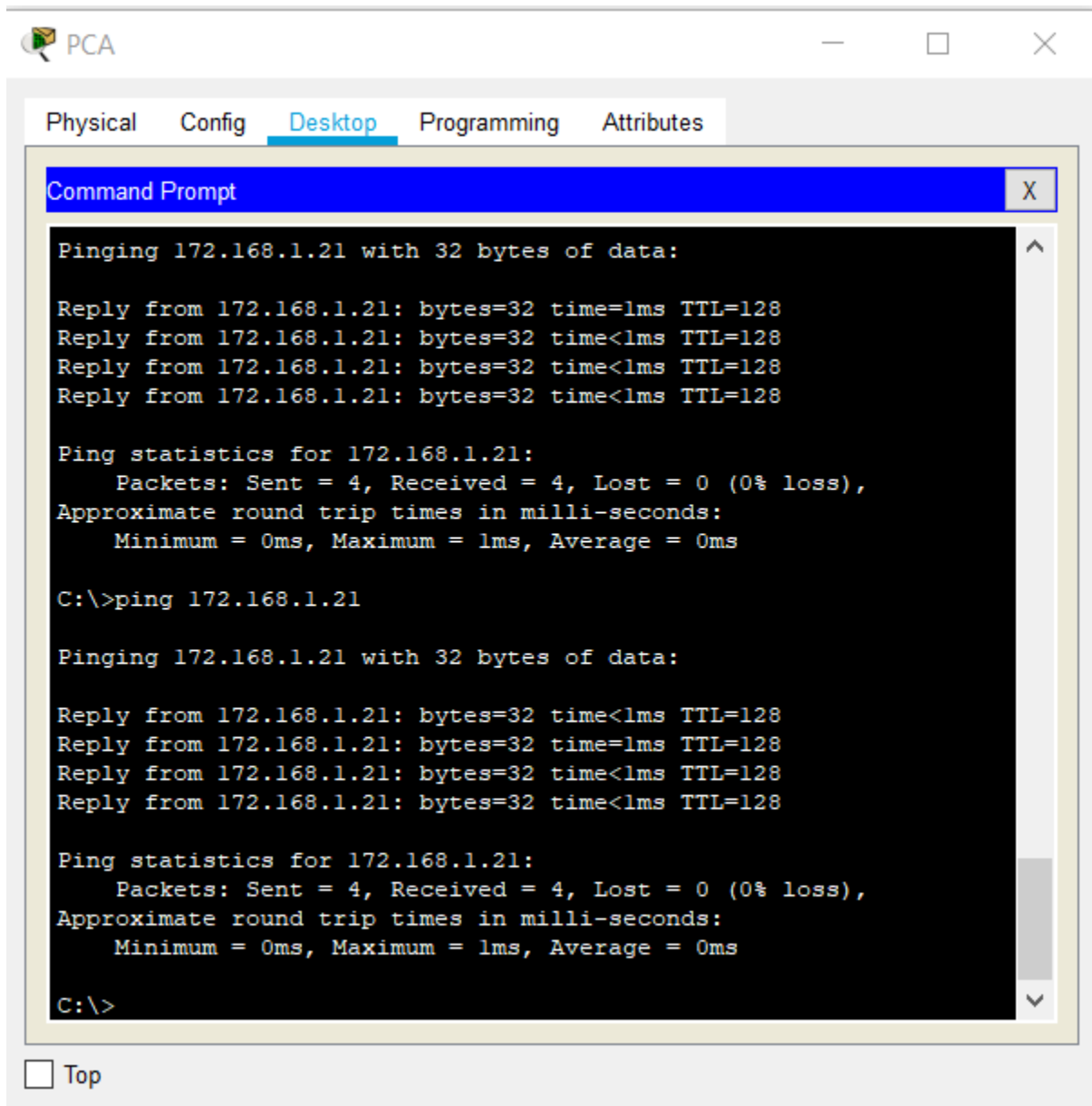
Ctrl+F6 to exit CLI focus

Copy Paste

☐ Top

Showing all the routes

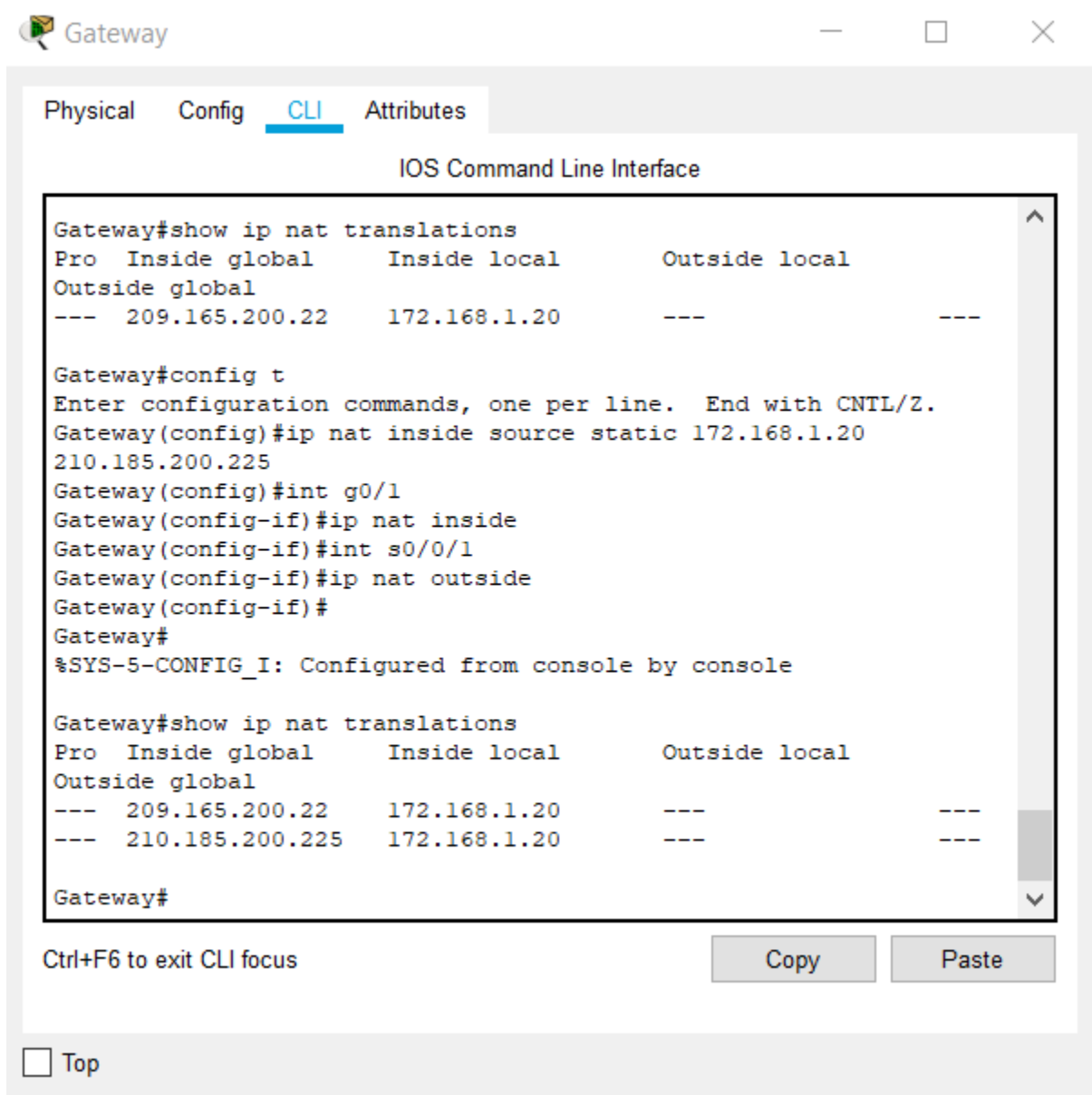
Step 8:



Pinging from PCA to PCB

Task 2

Step 1-3a:



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

```
Gateway#show ip nat translations
Pro  Inside global      Inside local      Outside local
Outside global
---  209.165.200.22      172.168.1.20      ---              ---

Gateway#config t
Enter configuration commands, one per line.  End with CNTL/Z.
Gateway(config)#ip nat inside source static 172.168.1.20
210.185.200.225
Gateway(config)#int g0/1
Gateway(config-if)#ip nat inside
Gateway(config-if)#int s0/0/1
Gateway(config-if)#ip nat outside
Gateway(config-if)#
Gateway#
%SYS-5-CONFIG_I: Configured from console by console

Gateway#show ip nat translations
Pro  Inside global      Inside local      Outside local
Outside global
---  209.165.200.22      172.168.1.20      ---              ---
---  210.185.200.225   172.168.1.20      ---              ---

Gateway#
```

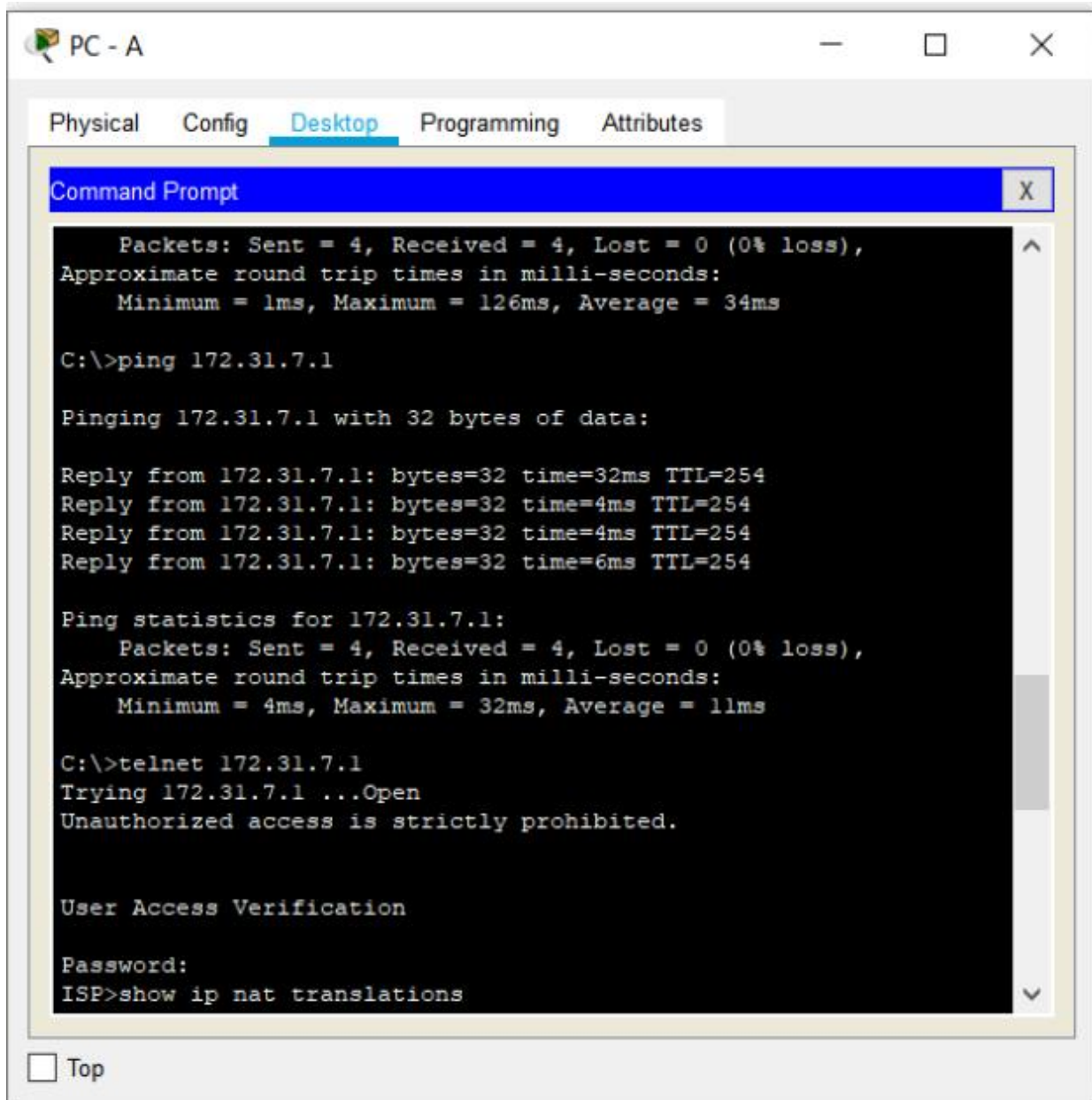
Below the terminal output, there is a message "Ctrl+F6 to exit CLI focus" and two buttons: "Copy" and "Paste". At the bottom left, there is a checkbox labeled "Top".

So for 210.185.200.225 = 172.168.1.20

The inside global ip address is assigned by ISP

The inside local ip address is assigned by administrator

Step 3b:



The screenshot shows a window titled "PC - A" with tabs for "Physical", "Config", "Desktop", "Programming", and "Attributes". The "Desktop" tab is active, displaying a "Command Prompt" window. The Command Prompt shows the results of a ping command to 172.31.7.1 and a telnet attempt to the same IP. The ping command shows 0% loss and round trip times ranging from 4ms to 32ms. The telnet attempt fails with the message "Unauthorized access is strictly prohibited." and prompts for a password. Below the Command Prompt, there is a "Top" button.

```
PC - A
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 = 126ms, Average = 34ms

C:\>ping 172.31.7.1

Pinging 172.31.7.1 with 32 bytes of data:

Reply from 172.31.7.1: bytes=32 time=32ms TTL=254
Reply from 172.31.7.1: bytes=32 time=4ms TTL=254
Reply from 172.31.7.1: bytes=32 time=4ms TTL=254
Reply from 172.31.7.1: bytes=32 time=6ms TTL=254

Ping statistics for 172.31.7.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 4ms, Maximum = 32ms, Average = 11ms

C:\>telnet 172.31.7.1
Trying 172.31.7.1 ...Open
Unauthorized access is strictly prohibited.

User Access Verification

Password:
ISP>show ip nat translations

Top
```

Gateway

Physical Config CLI Attributes

IOS Command Line Interface

Enter configuration commands, one per line. End with CTRL/Z.

```
Gateway(config)#ip nat inside source static 172.168.1.20 210.185.200.225
Gateway(config)#int g0/1
Gateway(config-if)#ip nat inside
Gateway(config-if)#int s0/0/1
Gateway(config-if)#ip nat outside
Gateway(config-if)#
Gateway#
%SYS-5-CONFIG_I: Configured from console by console

Gateway#show ip nat translations
Pro Inside global      Inside local      Outside local      Outside global
--- 209.165.200.22      172.168.1.20      ---                ---
--- 210.185.200.225    172.168.1.20      ---                ---

Gateway#show ip nat translations
Pro Inside global      Inside local      Outside local      Outside global
icmp 210.185.200.225:17 172.168.1.20:17   172.31.7.1:17     172.31.7.1:17
icmp 210.185.200.225:18 172.168.1.20:18   172.31.7.1:18     172.31.7.1:18
icmp 210.185.200.225:19 172.168.1.20:19   172.31.7.1:19     172.31.7.1:19
icmp 210.185.200.225:20 172.168.1.20:20   172.31.7.1:20     172.31.7.1:20
--- 209.165.200.22      172.168.1.20      ---                ---
--- 210.185.200.225    172.168.1.20      ---                ---

Gateway#
```

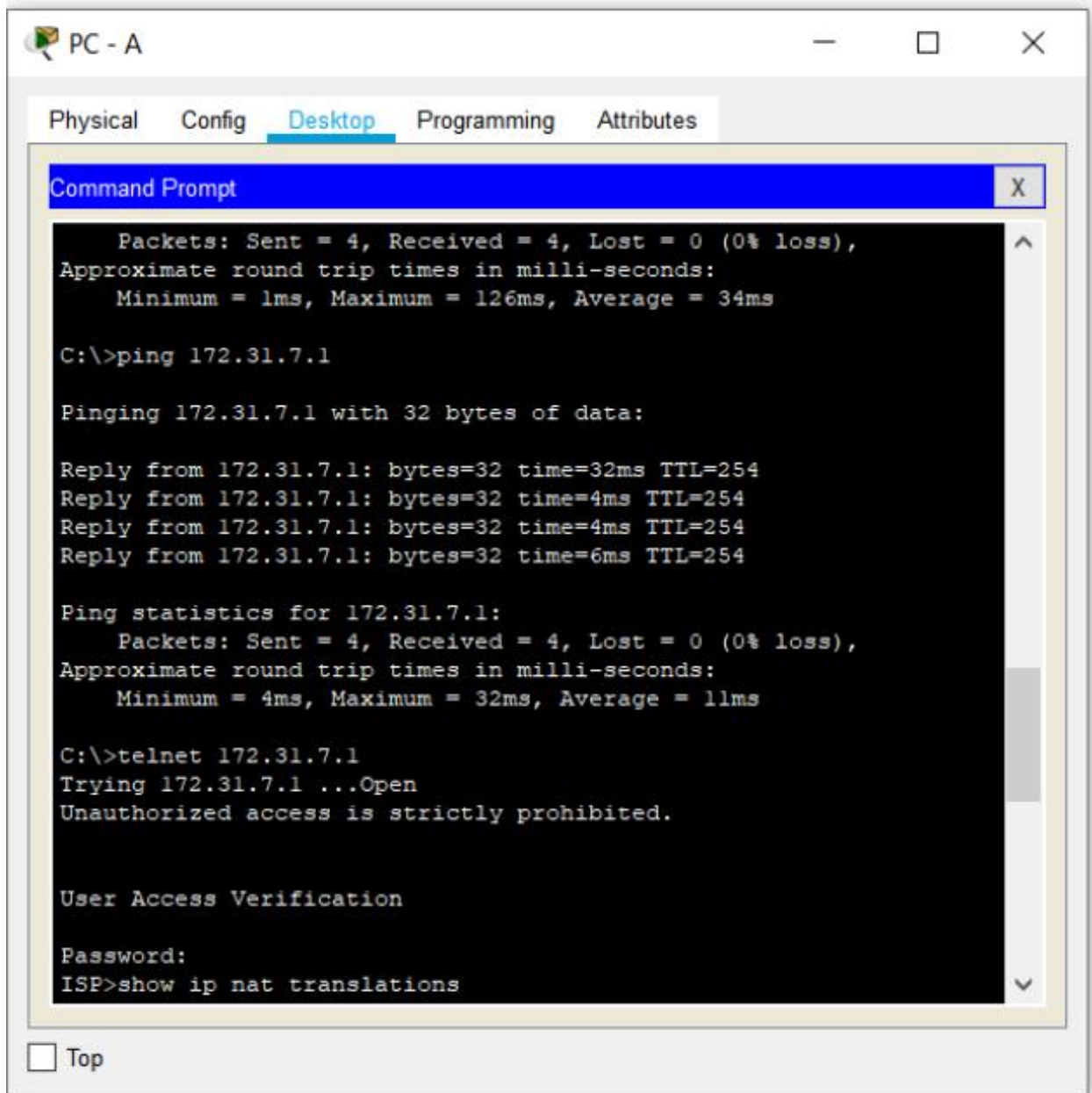
Ctrl+F6 to exit CLI focus

Copy Paste

☐ Top

We see that ICMP packet is sent with port numbers 17, 18, 19, 20.

Step 3c:



Gateway

Physical

Config

CLI

Attributes

IOS Command Line Interface

```

Gateway(config-if)#
Gateway#
%SYS-5-CONFIG_I: Configured from console by console

Gateway#show ip nat translations
Pro  Inside global      Inside local      Outside local      Outside global
---  209.165.200.22       172.168.1.20      ---                ---
---  210.185.200.225     172.168.1.20      ---                ---

Gateway#show ip nat translations
Pro  Inside global      Inside local      Outside local      Outside global
icmp 210.185.200.225:17 172.168.1.20:17   172.31.7.1:17     172.31.7.1:17
icmp 210.185.200.225:18 172.168.1.20:18   172.31.7.1:18     172.31.7.1:18
icmp 210.185.200.225:19 172.168.1.20:19   172.31.7.1:19     172.31.7.1:19
icmp 210.185.200.225:20 172.168.1.20:20   172.31.7.1:20     172.31.7.1:20
---  209.165.200.22       172.168.1.20      ---                ---
---  210.185.200.225     172.168.1.20      ---                ---

Gateway#show ip nat translations
Pro  Inside global      Inside local      Outside local      Outside global
---  209.165.200.22       172.168.1.20      ---                ---
---  210.185.200.225     172.168.1.20      ---                ---
tcp  210.185.200.225:1025 172.168.1.20:1025 172.31.7.1:23     172.31.7.1:23

Gateway#

```

Ctrl+F6 to exit CLI focus

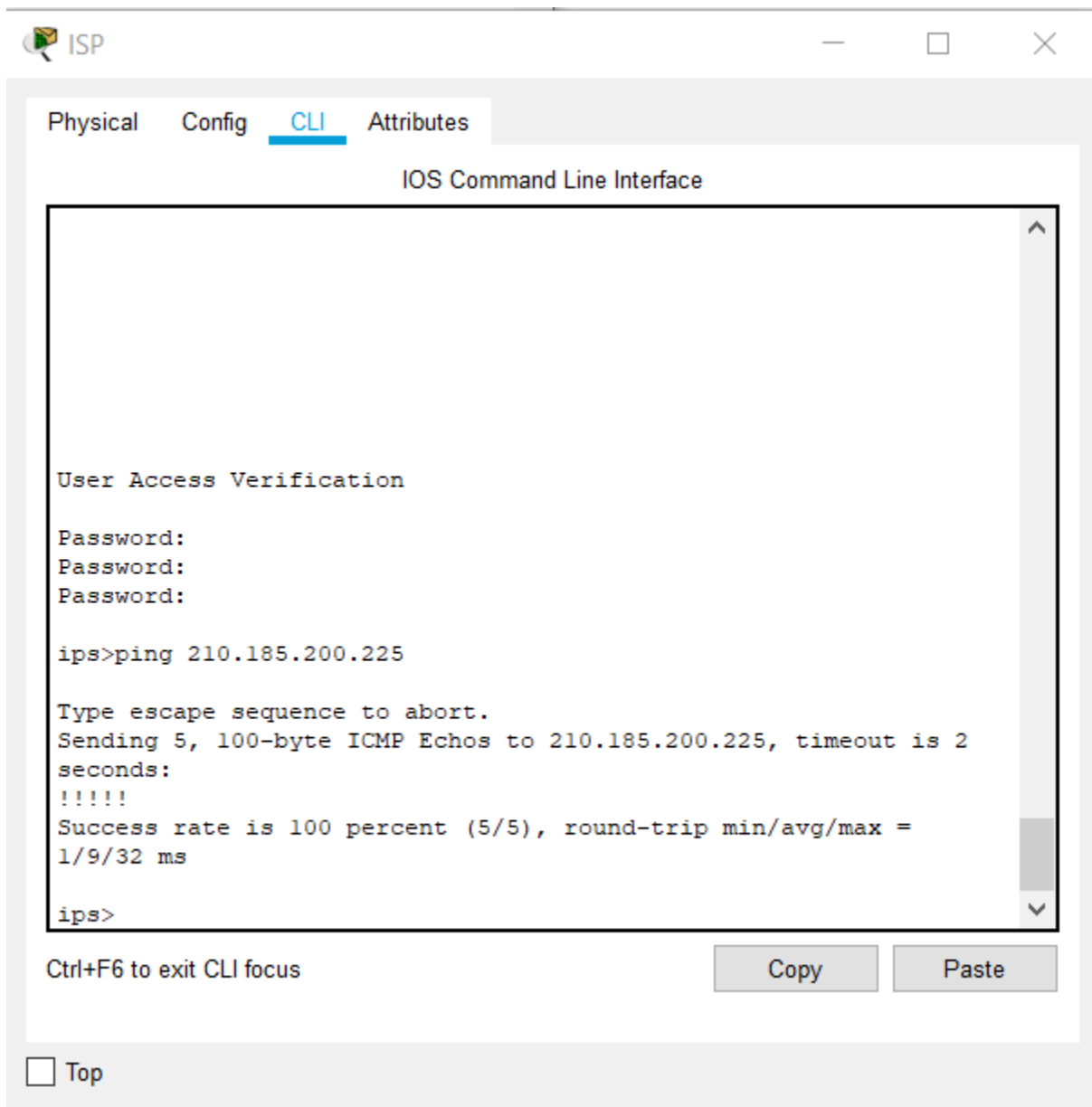
Copy

Paste

☐ Top

Tcp protocol is used for sending the packet port number is 1025 with outside local 23 port numbers.

Step 3d:



Pinging ISP to PC-A

Step 3e:

The screenshot shows a window titled "Gateway" with tabs for "Physical", "Config", "CLI" (selected), and "Attributes". The main area is titled "IOS Command Line Interface" and displays the following text:


```
Outside global
--- 209.165.200.22      172.168.1.20      ---
--- 210.185.200.225    172.168.1.20      ---
tcp 210.185.200.225:1025172.168.1.20:1025  172.31.7.1:23
172.31.7.1:23

Gateway#show ip nat translations
Pro Inside global      Inside local      Outside local
Outside global
icmp 210.185.200.225:1 172.168.1.20:1    210.185.201.17:1
210.185.201.17:1
icmp 210.185.200.225:2 172.168.1.20:2    210.185.201.17:2
210.185.201.17:2
icmp 210.185.200.225:3 172.168.1.20:3    210.185.201.17:3
210.185.201.17:3
icmp 210.185.200.225:4 172.168.1.20:4    210.185.201.17:4
210.185.201.17:4
icmp 210.185.200.225:5 172.168.1.20:5    210.185.201.17:5
210.185.201.17:5
--- 209.165.200.22      172.168.1.20      ---
--- 210.185.200.225    172.168.1.20      ---
tcp 210.185.200.225:1025172.168.1.20:1025  172.31.7.1:23
172.31.7.1:23

Gateway#
```

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

Step 3f:

 Gateway — □ ×

Physical Config CLI Attributes

IOS Command Line Interface

```
Pro  Inside global      Inside local      Outside local
Outside global
icmp 210.185.200.225:1 172.168.1.20:1    210.185.201.17:1
210.185.201.17:1
icmp 210.185.200.225:2 172.168.1.20:2    210.185.201.17:2
210.185.201.17:2
icmp 210.185.200.225:3 172.168.1.20:3    210.185.201.17:3
210.185.201.17:3
icmp 210.185.200.225:4 172.168.1.20:4    210.185.201.17:4
210.185.201.17:4
icmp 210.185.200.225:5 172.168.1.20:5    210.185.201.17:5
210.185.201.17:5
--- 209.165.200.22      172.168.1.20      ---
--- 210.185.200.225     172.168.1.20      ---
tcp 210.185.200.225:1025 172.168.1.20:1025 172.31.7.1:23
172.31.7.1:23

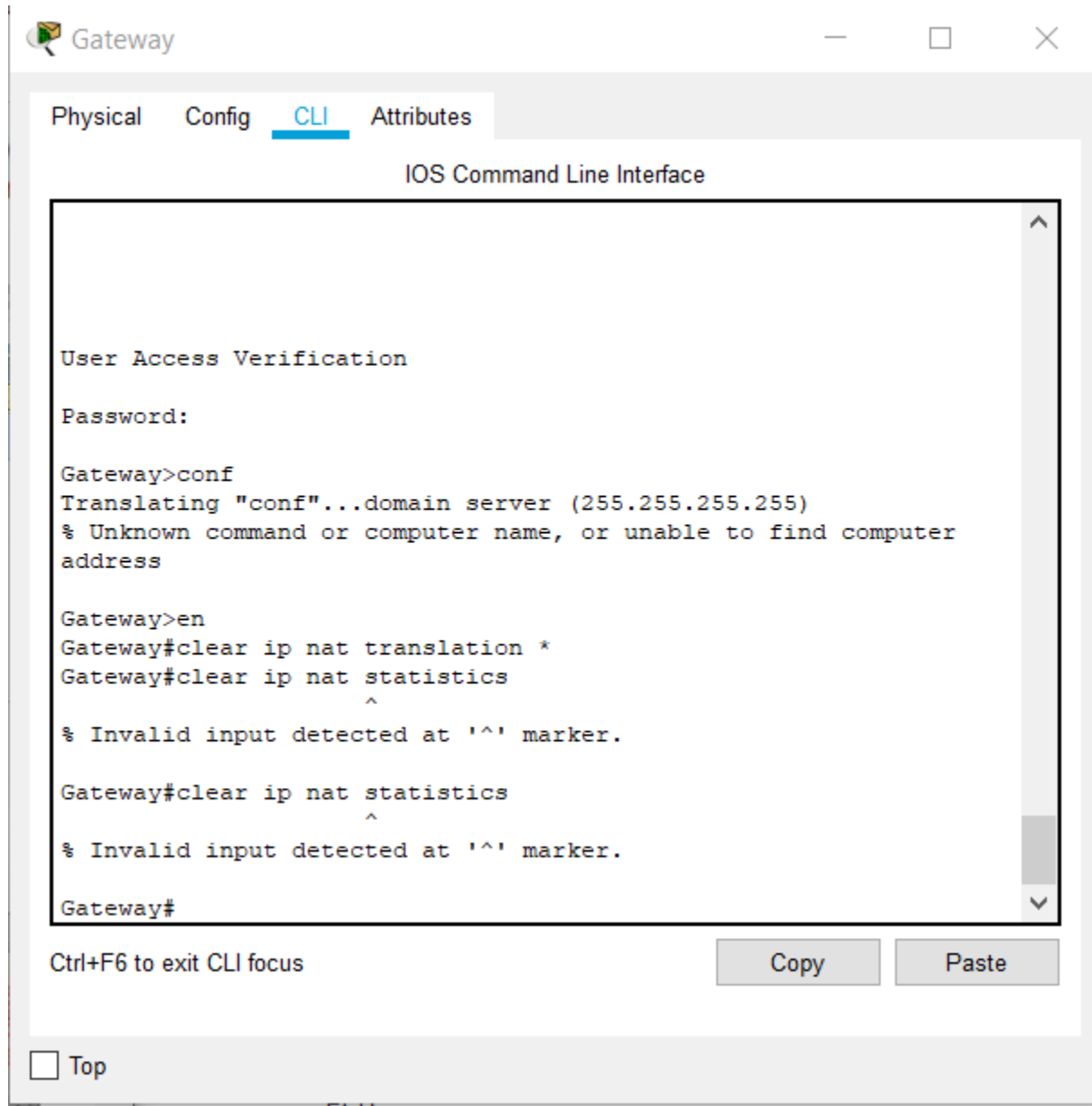
Gateway#show ip nat statistics
Total translations: 3 (2 static, 1 dynamic, 1 extended)
Outside Interfaces: Serial0/0/1
Inside Interfaces: GigabitEthernet0/1
Hits: 94 Misses: 22
Expired translations: 21
Dynamic mappings:
Gateway#
```

Ctrl+F6 to exit CLI focus Copy Paste


☐ Top

Task 3

Step 1:



Step 2:

 Gateway

Physical

Config

CLI

Attributes

IOS Command Line Interface

```
% Invalid input detected at '^' marker.

Gateway#clear ip nat statistics
      ^
% Invalid input detected at '^' marker.

Gateway#conf 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)#show ip nat statistics
      ^
% Invalid input detected at '^' marker.

Gateway(config)#
Gateway#
%SYS-5-CONFIG_I: Configured from console by console

Gateway#show ip nat statistics
Total translations: 2 (2 static, 0 dynamic, 0 extended)
Outside Interfaces: Serial0/0/1
Inside Interfaces: GigabitEthernet0/1
Hits: 99 Misses: 26
Expired translations: 21
Dynamic mappings:
Gateway#
```

Ctrl+F6 to exit CLI focus

Copy

Paste

☐ Top

Providing the access_list name

Step 3:

Gateway

Physical Config CLI Attributes

IOS Command Line Interface

```
icmp 210.185.200.242:18172.168.1.21:18 172.31.7.1:18 172.31.7.1:18
icmp 210.185.200.242:19172.168.1.21:19 172.31.7.1:19 172.31.7.1:19
icmp 210.185.200.242:20172.168.1.21:20 172.31.7.1:20 172.31.7.1:20
--- 209.165.200.22 172.168.1.20 --- ---
--- 210.185.200.225 172.168.1.20 --- ---

Gateway#show ip nat translations
Pro Inside global Inside local Outside local Outside global
--- 209.165.200.22 172.168.1.20 --- ---
--- 210.185.200.225 172.168.1.20 --- ---
tcp 210.185.200.242:1026172.168.1.21:1026 172.31.7.1:80 172.31.7.1:80

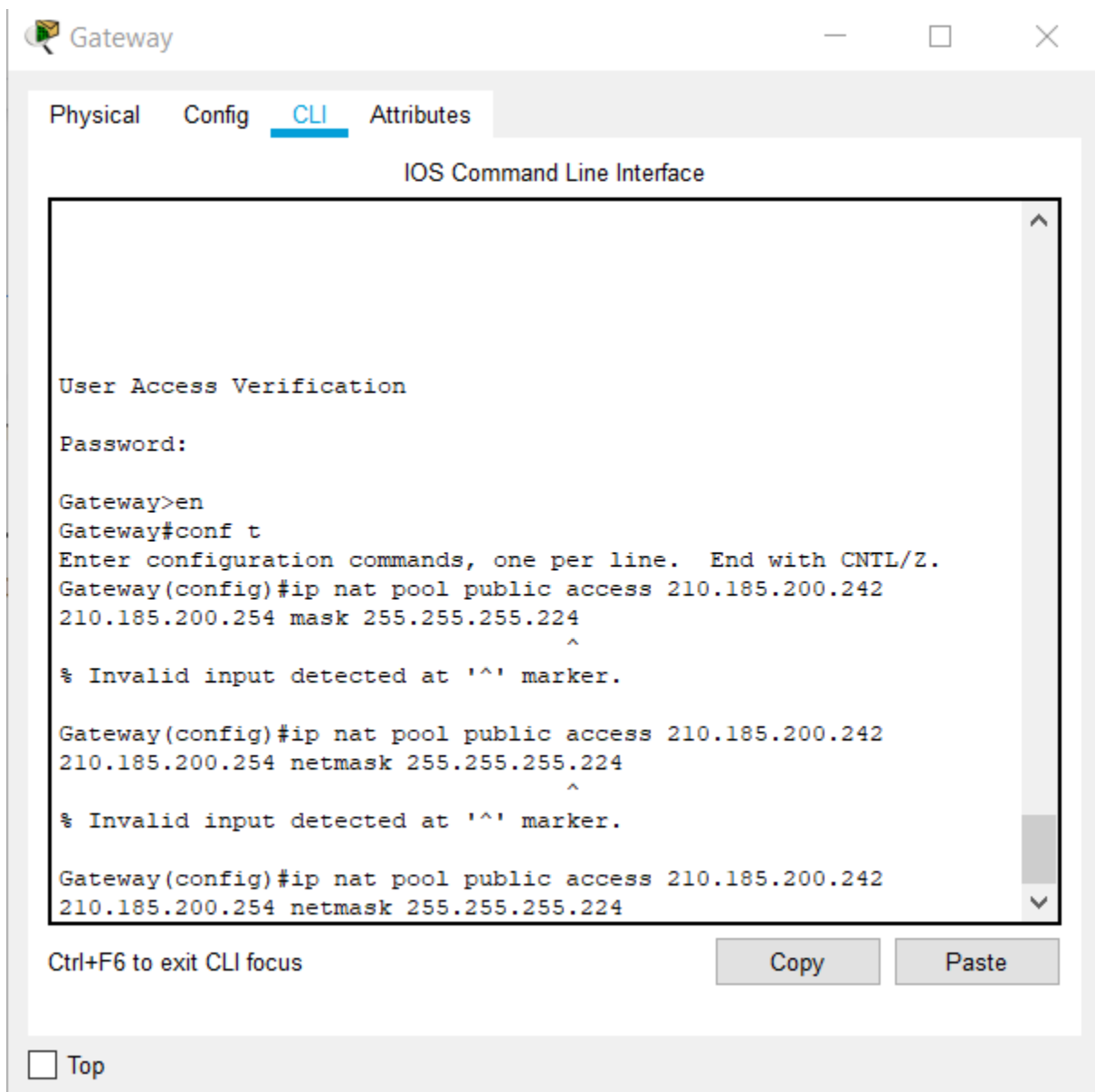
Gateway#show ip nat statistics
Total translations: 2 (2 static, 0 dynamic, 0 extended)
Outside Interfaces: Serial0/0/1
Inside Interfaces: GigabitEthernet0/1
Hits: 113 Misses: 48
Expired translations: 39
Dynamic mappings:
-- Inside Source
access-list 1 pool public_access refCount 0
 pool public_access: netmask 255.255.255.224
   start 210.185.200.242 end 210.185.200.254
   type generic, total addresses 13 , allocated 0 (0%), misses 0
Gateway#
```

Ctrl+F6 to exit CLI focus

Copy Paste

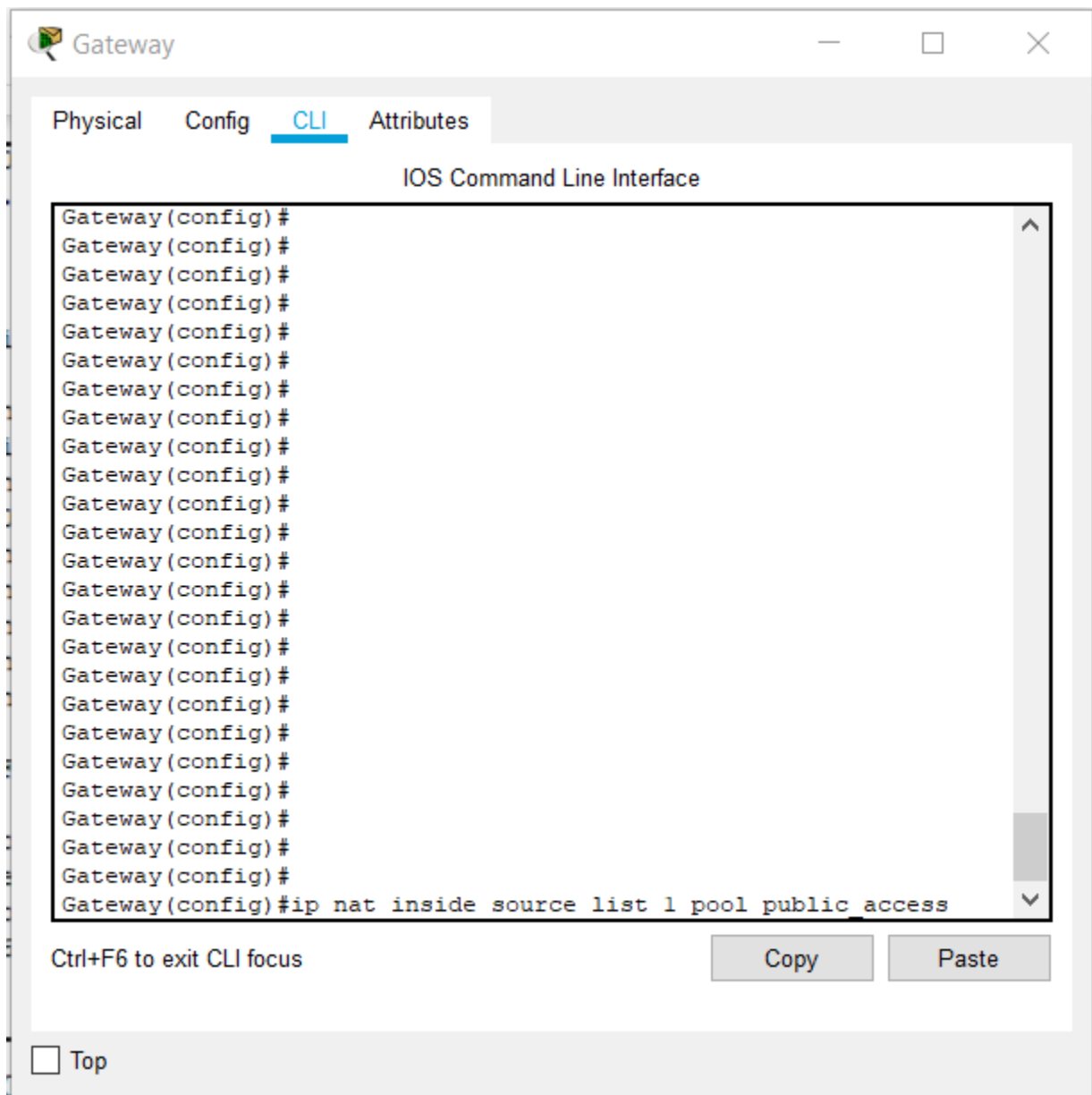
☐ Top

Step 4:



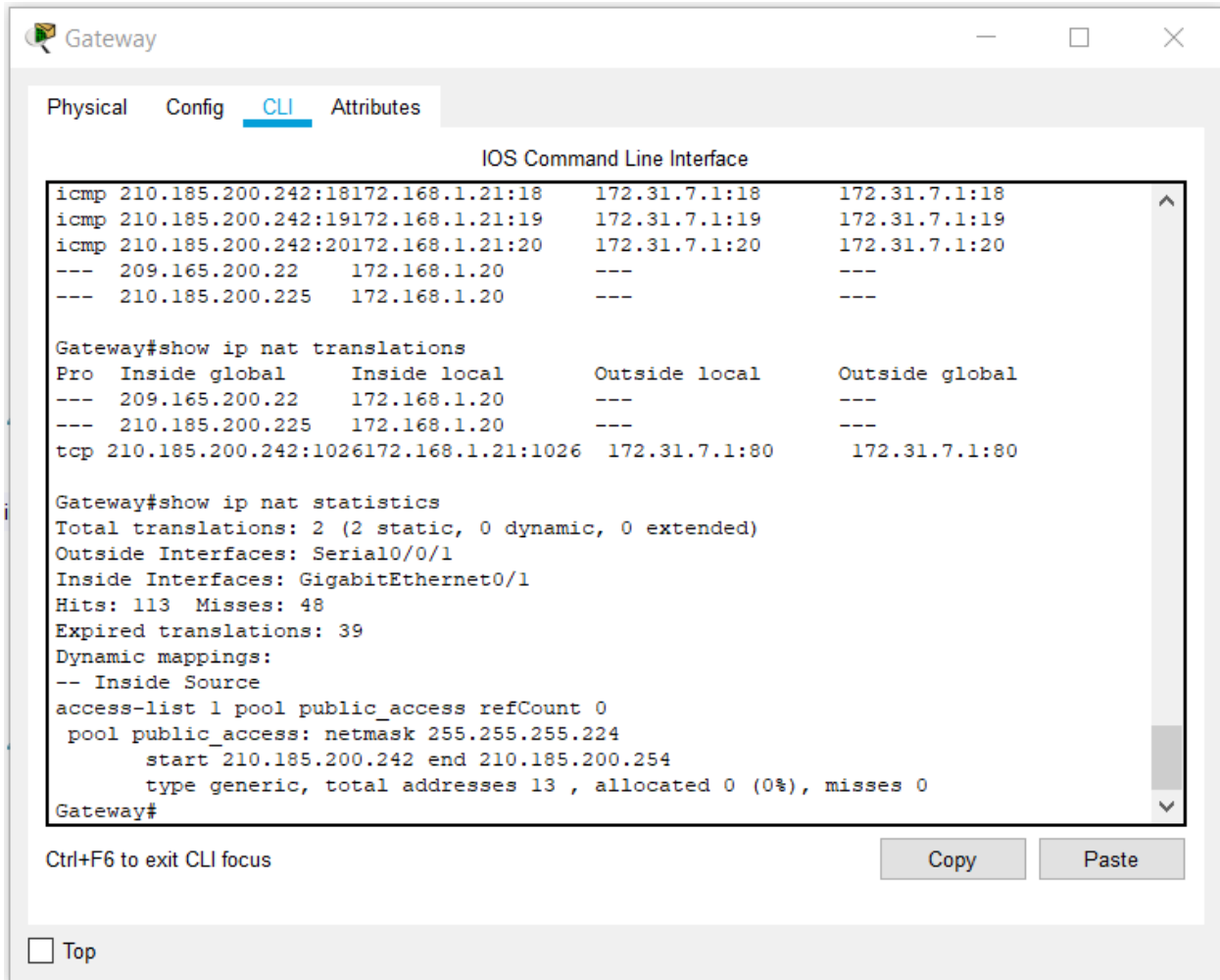
Providing the pool of IP address.

Step 5:



Connecting the public_access pool and the source list

Step 6a:



The screenshot shows a window titled "Gateway" with tabs for Physical, Config, CLI (selected), and Attributes. The CLI tab displays the "IOS Command Line Interface" with the following output:

```
icmp 210.185.200.242:18172.168.1.21:18 172.31.7.1:18 172.31.7.1:18
icmp 210.185.200.242:19172.168.1.21:19 172.31.7.1:19 172.31.7.1:19
icmp 210.185.200.242:20172.168.1.21:20 172.31.7.1:20 172.31.7.1:20
--- 209.165.200.22 172.168.1.20 --- ---
--- 210.185.200.225 172.168.1.20 --- ---

Gateway#show ip nat translations
Pro Inside global Inside local Outside local Outside global
--- 209.165.200.22 172.168.1.20 --- ---
--- 210.185.200.225 172.168.1.20 --- ---
tcp 210.185.200.242:1026172.168.1.21:1026 172.31.7.1:80 172.31.7.1:80


Gateway#show ip nat statistics
Total translations: 2 (2 static, 0 dynamic, 0 extended)
Outside Interfaces: Serial0/0/1
Inside Interfaces: GigabitEthernet0/1
Hits: 113 Misses: 48
Expired translations: 39
Dynamic mappings:
-- Inside Source
access-list 1 pool public_access refCount 0
 pool public_access: netmask 255.255.255.224
   start 210.185.200.242 end 210.185.200.254
   type generic, total addresses 13 , allocated 0 (0%), misses 0
Gateway#
```

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

172.168.1.21 = 210.185.200.225

The port number was 1025

Step 6c:

 Gateway — □ ×

Physical Config CLI Attributes

IOS Command Line Interface

```
%SYS-5-CONFIG_I: Configured from console by console

Gateway#clear ip nat translations
      ^
% Invalid input detected at '^' marker.

Gateway#clear ip nat translation *
Gateway#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
Gateway(config)#show ip nat translations
      ^
% Invalid input detected at '^' marker.

Gateway(config)#
Gateway#
%SYS-5-CONFIG_I: Configured from console by console

Gateway#show ip nat translations
Pro  Inside global      Inside local      Outside local      Outside global
icmp 210.185.200.243:25 172.168.1.21:25   172.31.7.1:25      172.31.7.1:25
icmp 210.185.200.243:26 172.168.1.21:26   172.31.7.1:26      172.31.7.1:26
icmp 210.185.200.243:27 172.168.1.21:27   172.31.7.1:27      172.31.7.1:27
icmp 210.185.200.243:28 172.168.1.21:28   172.31.7.1:28      172.31.7.1:28

Gateway#
```


Ctrl+F6 to exit CLI focus

Copy Paste

☐ Top

Translation table from B using ICMP port number 25, 26, 27, 28 outside also same i.e. 25, 26, 27, 28

Step 6d:

 Gateway

Physical

Config

CLI

Attributes

IOS Command Line Interface

```
Gateway#show ip nat translations
Pro  Inside global      Inside local      Outside local      Outside global
icmp 210.185.200.243:25 172.168.1.21:25   172.31.7.1:25      172.31.7.1:25
icmp 210.185.200.243:26 172.168.1.21:26   172.31.7.1:26      172.31.7.1:26
icmp 210.185.200.243:27 172.168.1.21:27   172.31.7.1:27      172.31.7.1:27
icmp 210.185.200.243:28 172.168.1.21:28   172.31.7.1:28      172.31.7.1:28

Gateway#ip nat statistics
^
% Invalid input detected at '^' marker.

Gateway#show ip nat statistics
Total translations: 0 (0 static, 0 dynamic, 0 extended)
Outside Interfaces: Serial0/0/1
Inside Interfaces: GigabitEthernet0/1
Hits: 121 Misses: 60
Expired translations: 51
Dynamic mappings:
-- Inside Source
access-list 1 pool public_access refCount 0
 pool public_access: netmask 255.255.255.224
   start 210.185.200.242 end 210.185.200.254
   type generic, total addresses 13 , allocated 0 (0%), misses 0
Gateway#
```

Ctrl+F6 to exit CLI focus

Copy

Paste

☐ Top

Step 7a-7b:

Gateway

Physical

Config

CLI

Attributes

IOS Command Line Interface

```
ip nat outside
!
interface Vlan1
  no ip address
  shutdown
!
ip nat pool public_access 210.185.200.242 210.185.200.254 netmask 255.255.255.224
ip nat inside source list 1 pool public_access
ip nat inside source static 172.168.1.20 209.165.200.22
ip classless
ip route 0.0.0.0 0.0.0.0 210.185.201.17
!
ip flow-export version 9
!
!
access-list 1 permit 192.168.1.0 0.0.0.255
access-list 1 permit 0.0.0.21 255.255.255.0
access-list 1 permit 172.168.1.0 0.0.0.255
!

Gateway#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
Gateway(config)#ip nat inside source static 172.168.1.20 209.165.200.22
Gateway(config)#no ip nat inside source static 172.168.1.20 209.165.200.22
Gateway(config)#
```

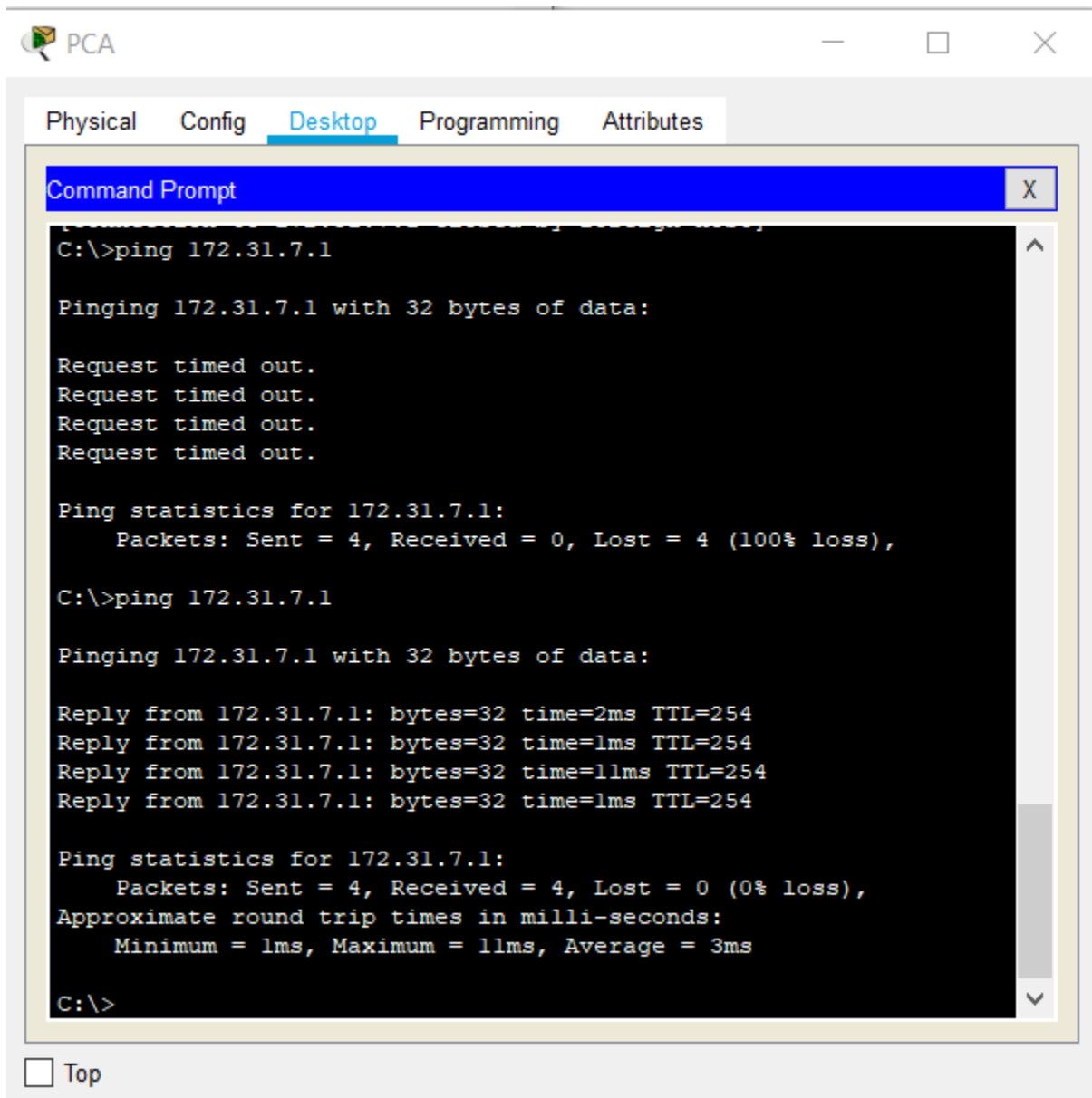
Ctrl+F6 to exit CLI focus

Copy

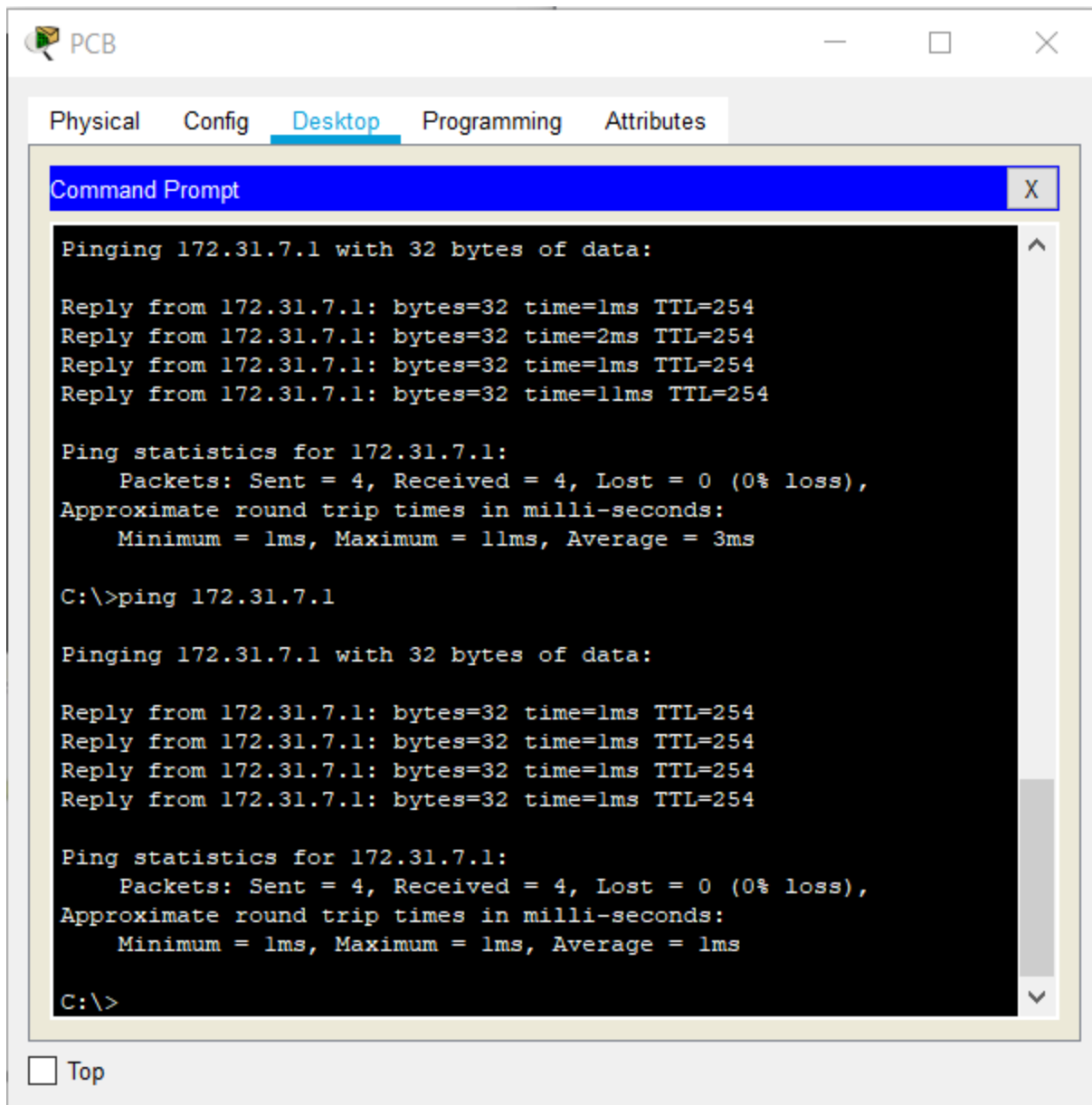
Paste

☐ Top

Step 7c:



Ping ISP from PC-A



Ping ISP from PC-B

Step 7d:

Gateway

Physical Config CLI Attributes

IOS Command Line Interface

```
Gateway#show ip nat translations
Pro  Inside global      Inside local      Outside local      Outside global
icmp 210.185.200.243:25 172.168.1.21:25   172.31.7.1:25     172.31.7.1:25
icmp 210.185.200.243:26 172.168.1.21:26   172.31.7.1:26     172.31.7.1:26
icmp 210.185.200.243:27 172.168.1.21:27   172.31.7.1:27     172.31.7.1:27
icmp 210.185.200.243:28 172.168.1.21:28   172.31.7.1:28     172.31.7.1:28

Gateway#ip nat statistics
^
% Invalid input detected at '^' marker.

Gateway#show ip nat statistics
Total translations: 0 (0 static, 0 dynamic, 0 extended)
Outside Interfaces: Serial0/0/1
Inside Interfaces: GigabitEthernet0/1
Hits: 121 Misses: 60
Expired translations: 51
Dynamic mappings:
-- Inside Source
access-list 1 pool public_access refCount 0
 pool public_access: netmask 255.255.255.224
   start 210.185.200.242 end 210.185.200.254
   type generic, total addresses 13 , allocated 0 (0%), misses 0
Gateway#
```

Ctrl+F6 to exit CLI focus

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Paste

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Nat table and the statistics.