

# **Computer Networks**

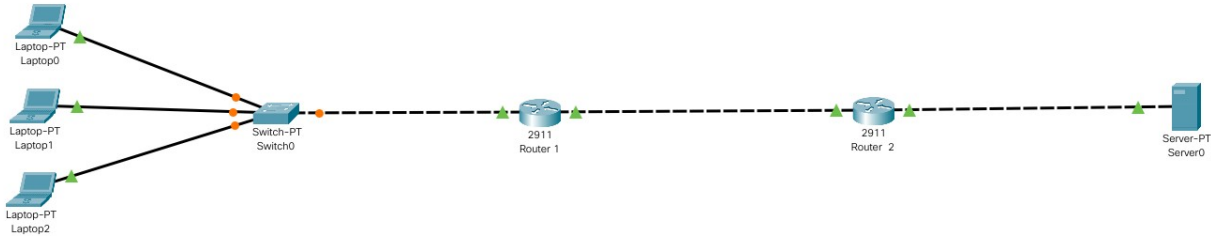
## **Lab 13**

**Hamza Shahid**  
**20P-0117**  
**BSSE-5A**

# Task:

## Topology:

The network is like this.



## Steps:

First assign IP to all the PC and laptops and also assign Default gateway.

**Laptop0**

Physical Config **Desktop** Programming Attributes

IP Configuration X

Interface: FastEthernet0

IP Configuration

☐ DHCP ☒ Static

IPv4 Address: 10.0.0.10

Subnet Mask: 255.0.0.0

Default Gateway: 10.0.0.1

DNS Server: 0.0.0.0

IPv6 Configuration

☐ Automatic ☒ Static

IPv6 Address: /

Link Local Address: FE80::201:42FF:FE7B:64DC

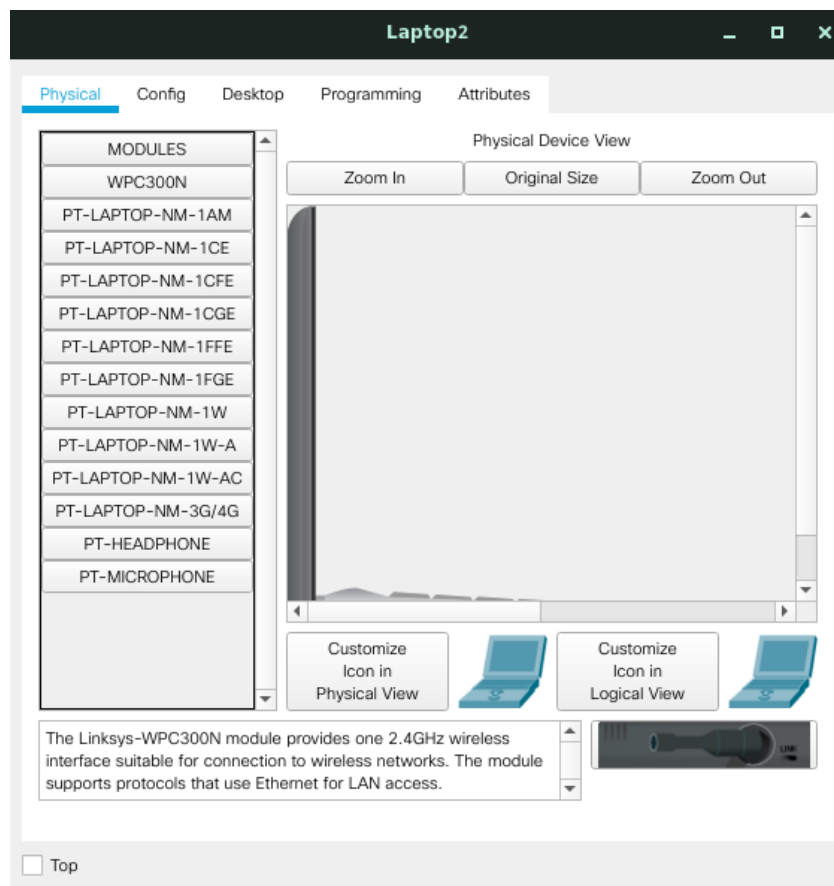
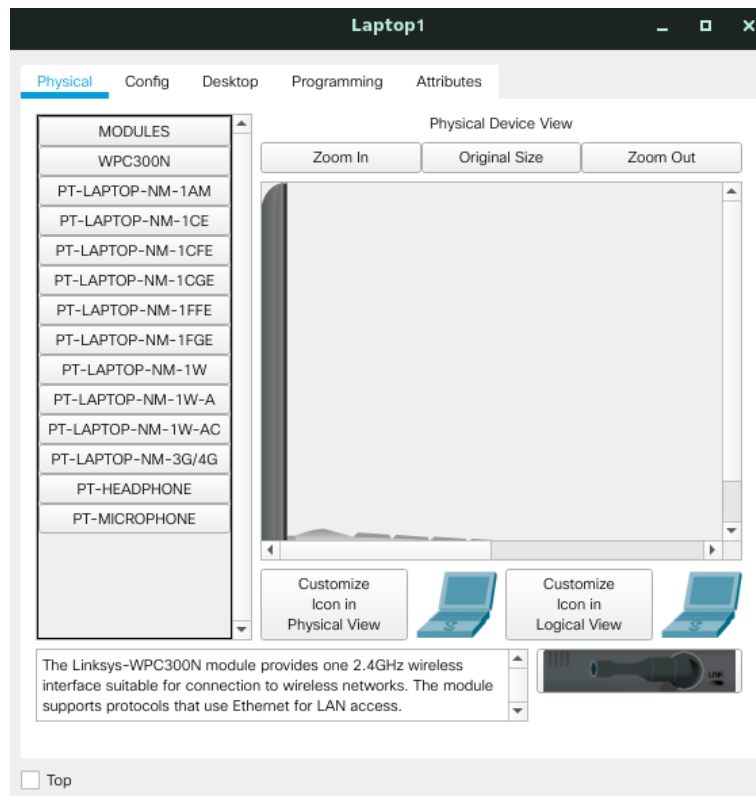
Default Gateway:

DNS Server:

802.1X

☐ Use 802.1X Security

☐ Top



Now do configuration of server.

The screenshot shows the 'Server0' configuration window with the 'Desktop' tab selected. The 'IP Configuration' section is expanded, showing 'Static' as the selected option. The IPv4 Address is set to 192.168.1.10, Subnet Mask to 255.255.255.0, Default Gateway to 192.168.1.1, and DNS Server to 0.0.0.0. The 'IPv6 Configuration' section is also expanded, showing 'Static' as the selected option. The IPv6 Address is set to FE80::260:3EFF:FEAD:E799, Link Local Address to FE80::260:3EFF:FEAD:E799, Default Gateway to, and DNS Server to. The '802.1X' section is expanded, showing 'Use 802.1X Security' as unchecked and 'Authentication' set to MD5. A 'Top' button is located at the bottom left.

Now, do configuration of router connections by assigning IPs.

The screenshot shows the 'Router 1' configuration window with the 'Config' tab selected. The 'GigabitEthernet0/0' interface is selected in the left sidebar. The 'Port Status' is set to 'On'. The 'Bandwidth' is set to '100 Mbps' and 'Duplex' is set to 'Full Duplex'. The 'MAC Address' is set to 0000.0C76.9D01. The 'IP Configuration' section is expanded, showing 'IPv4 Address' set to 10.0.0.1 and 'Subnet Mask' set to 255.0.0.0. The 'Tx Ring Limit' is set to 10. The 'Equivalent IOS Commands' section at the bottom shows the following commands: Router(config)#interface GigabitEthernet0/2, Router(config-if)#, Router(config-if)#exit, Router(config)#interface GigabitEthernet0/1, Router(config-if)#, Router(config-if)#exit, Router(config)#interface GigabitEthernet0/0, and Router(config-if)#. A 'Top' button is located at the bottom left.

Router 1

PhysicalConfigCLIAttributes

GLOBAL

Settings

Algorithm Settings

ROUTING

Static

RIP

SWITCHING

VLAN Database

INTERFACE

GigabitEthernet0/0

GigabitEthernet0/1

GigabitEthernet0/2

GigabitEthernet0/1

Port Status

☒ On

Bandwidth

☒ 1000 Mbps☐ 100 Mbps☐ 10 Mbps

☒ Auto

Duplex

☐ Half Duplex☒ Full Duplex

☒ Auto

MAC Address

0000.0C76.9D02

IP Configuration

IPv4 Address

100.0.0.1

Subnet Mask

255.0.0.0

Tx Ring Limit

10

Equivalent IOS Commands

Router(config)#interface GigabitEthernet0/1

Router(config-if)#

Router(config-if)#exit

Router(config)#interface GigabitEthernet0/2

Router(config-if)#

Router(config-if)#exit

Router(config)#interface GigabitEthernet0/1

Router(config-if)#

☐ Top

Router 2

PhysicalConfigCLIAttributes

GLOBAL

Settings

Algorithm Settings

ROUTING

Static

RIP

SWITCHING

VLAN Database

INTERFACE

GigabitEthernet0/0

GigabitEthernet0/1

GigabitEthernet0/2

GigabitEthernet0/0

Port Status

☒ On

Bandwidth

☒ 1000 Mbps☐ 100 Mbps☐ 10 Mbps

☒ Auto

Duplex

☐ Half Duplex☒ Full Duplex

☒ Auto

MAC Address

0004.9AA5.6501

IP Configuration

IPv4 Address

100.0.0.2

Subnet Mask

255.0.0.0

Tx Ring Limit

10

Equivalent IOS Commands

Router#

Router#configure terminal

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

Router(config)#interface GigabitEthernet0/0

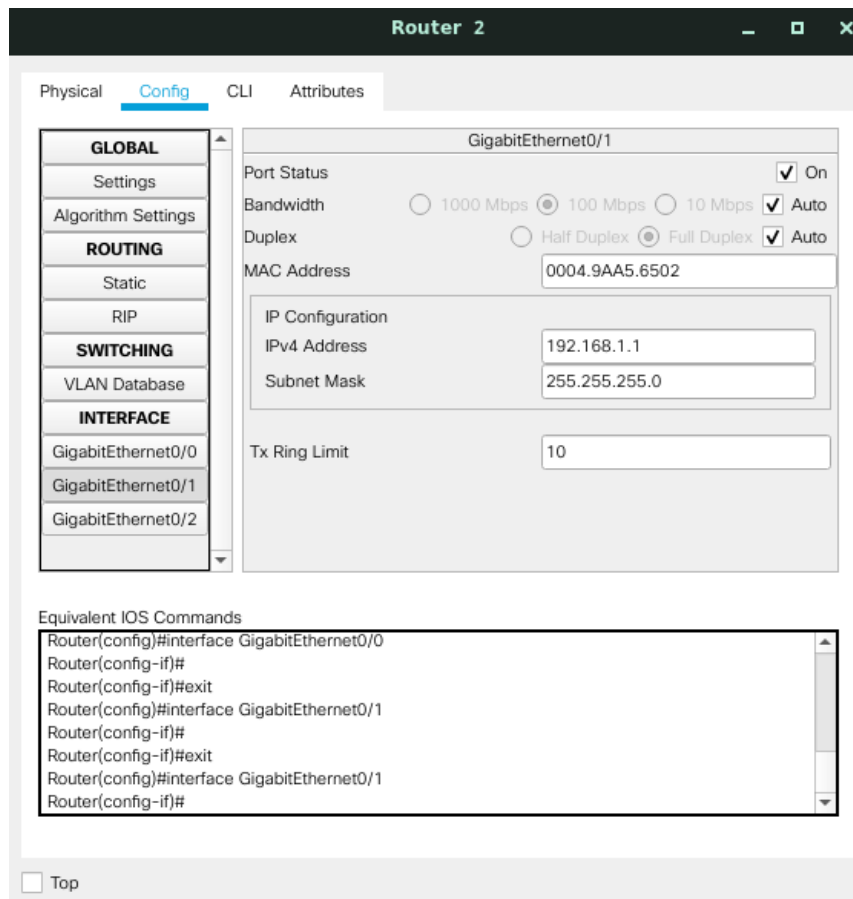
Router(config-if)#

Router(config-if)#exit

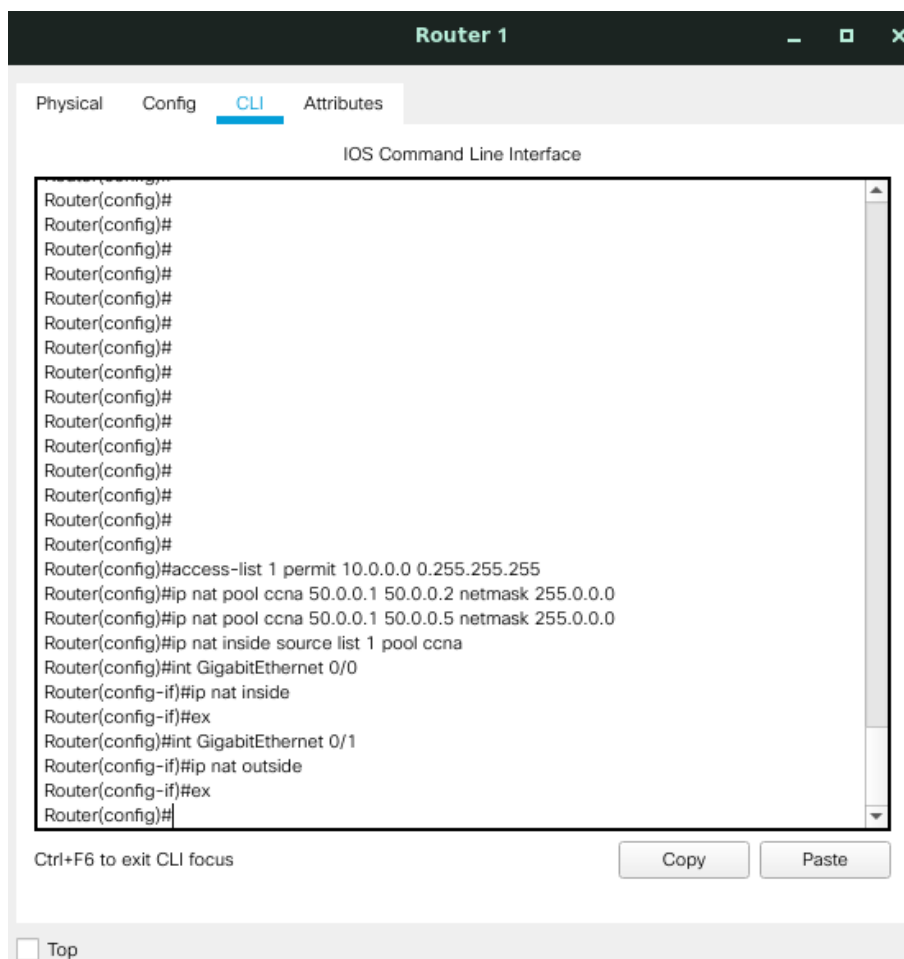
Router(config)#interface GigabitEthernet0/0

Router(config-if)#

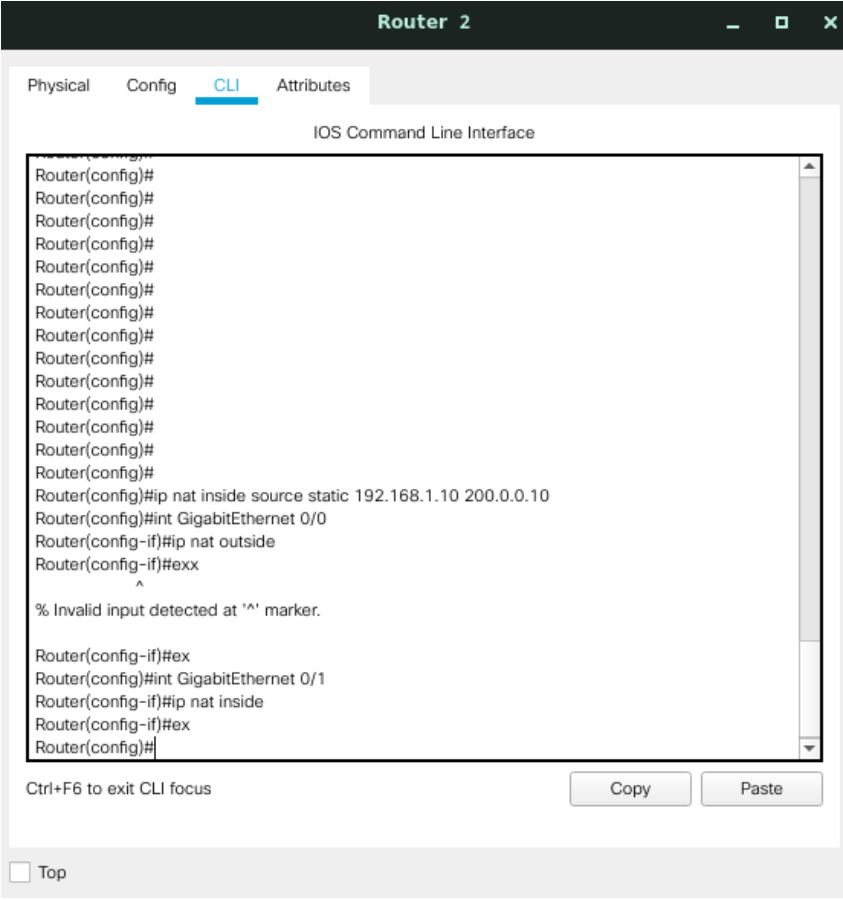
☐ Top



Now setup the **Dynamic NAT** addresses of router 1.



Now setup the **Static NAT** addresses of router 2.

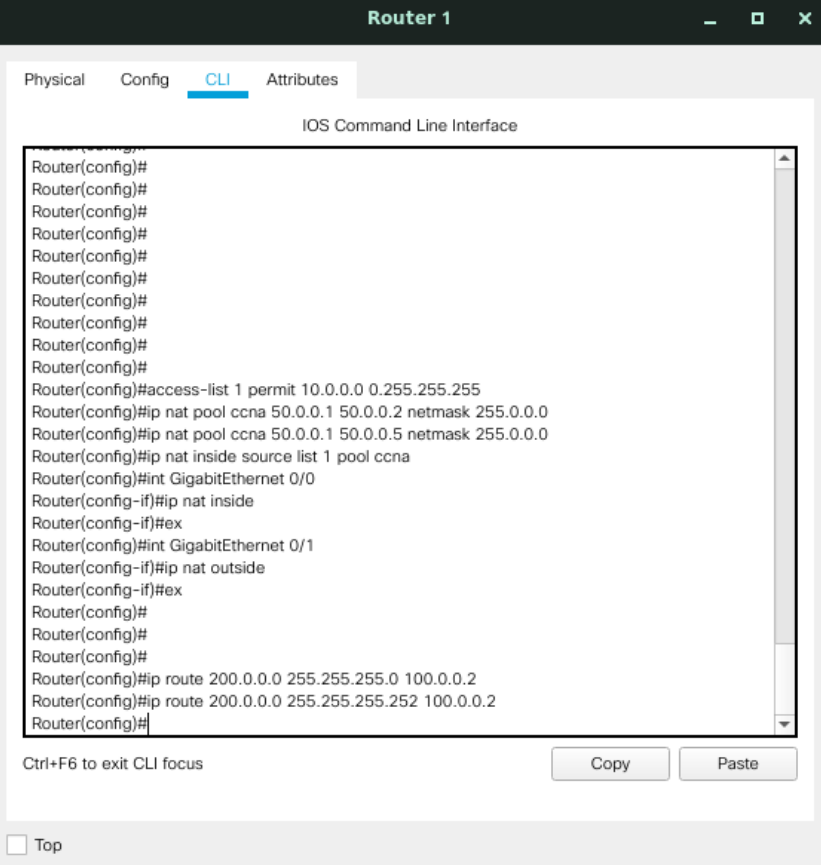


The screenshot shows the CLI window for Router 2. The window has tabs for Physical, Config, CLI (selected), and Attributes. The CLI interface shows the following commands and output:

```
Router(config)#
Router(config)#
Router(config)#
Router(config)#
Router(config)#
Router(config)#
Router(config)#
Router(config)#
Router(config)#
Router(config)#
Router(config)#
Router(config)#
Router(config)#
Router(config)#ip nat inside source static 192.168.1.10 200.0.0.10
Router(config)#int GigabitEthernet 0/0
Router(config-if)#ip nat outside
Router(config-if)#exx
^
% Invalid input detected at '^' marker.
Router(config-if)#ex
Router(config)#int GigabitEthernet 0/1
Router(config-if)#ip nat inside
Router(config-if)#ex
Router(config)#
```

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

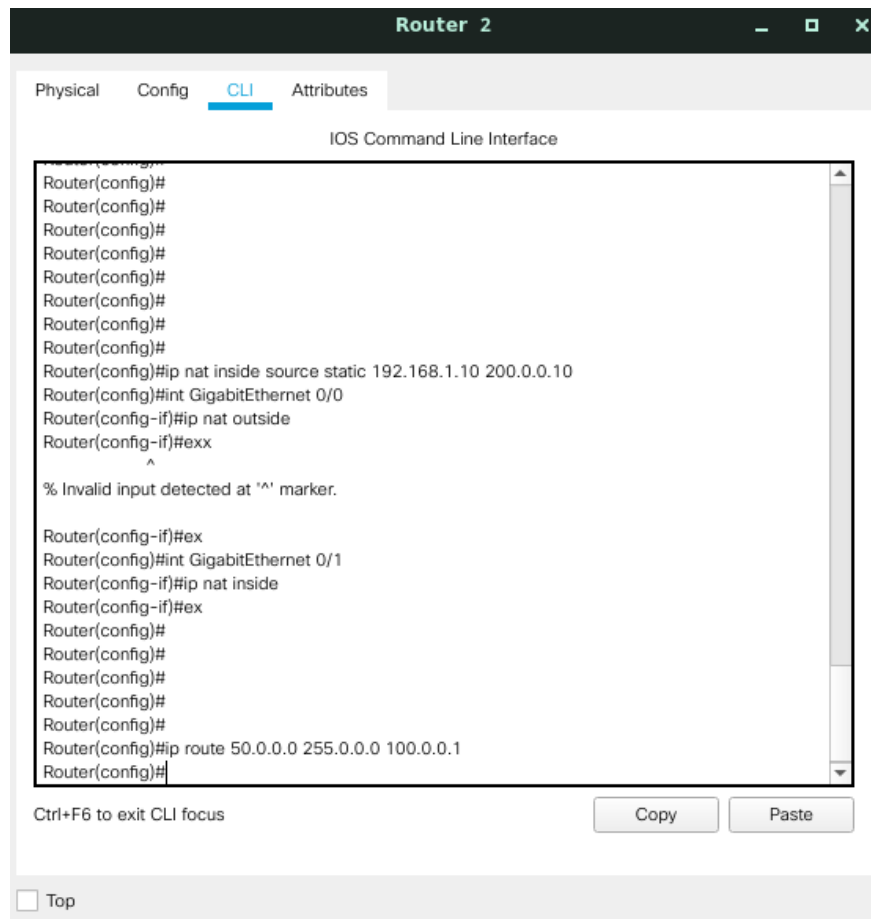
Now do configuration of route of routers.



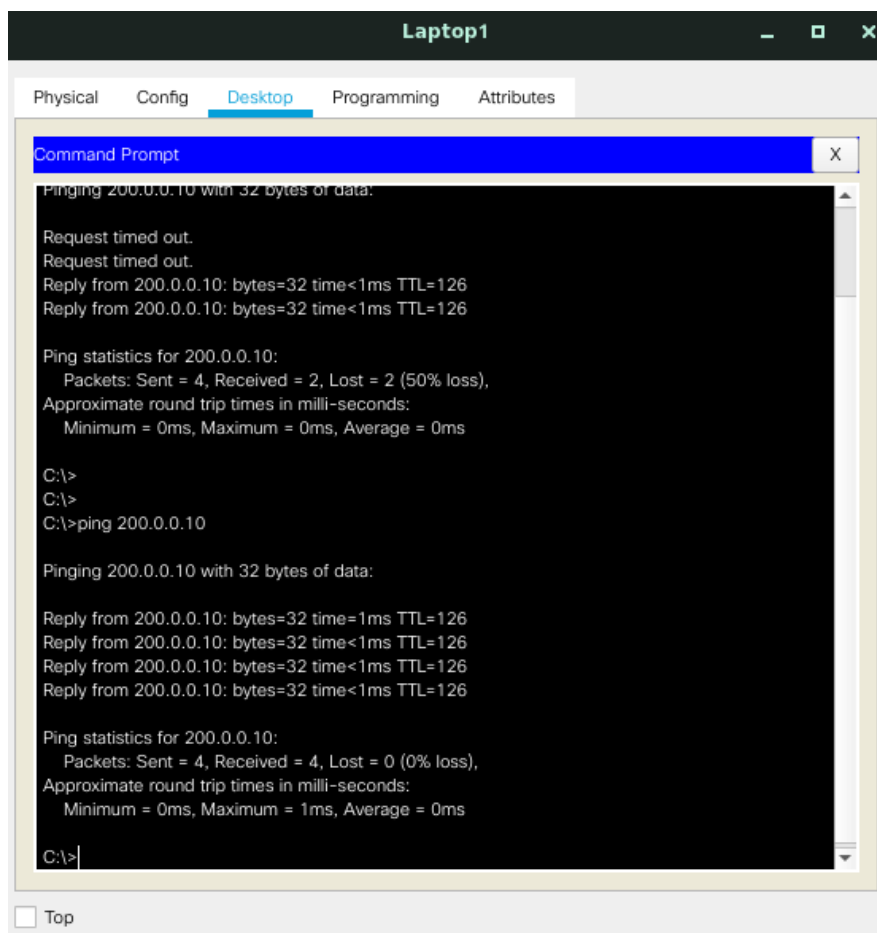
The screenshot shows the CLI window for Router 1. The window has tabs for Physical, Config, CLI (selected), and Attributes. The CLI interface shows the following commands and output:

```
Router(config)#
Router(config)#
Router(config)#
Router(config)#
Router(config)#
Router(config)#
Router(config)#
Router(config)#
Router(config)#
Router(config)#
Router(config)#access-list 1 permit 10.0.0.0 0.255.255.255
Router(config)#ip nat pool ccna 50.0.0.1 50.0.0.2 netmask 255.0.0.0
Router(config)#ip nat pool ccna 50.0.0.1 50.0.0.5 netmask 255.0.0.0
Router(config)#ip nat inside source list 1 pool ccna
Router(config)#int GigabitEthernet 0/0
Router(config-if)#ip nat inside
Router(config-if)#ex
Router(config)#int GigabitEthernet 0/1
Router(config-if)#ip nat outside
Router(config-if)#ex
Router(config)#
Router(config)#
Router(config)#ip route 200.0.0.0 255.255.255.0 100.0.0.2
Router(config)#ip route 200.0.0.0 255.255.255.252 100.0.0.2
Router(config)#
```

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



Now you can verify your NAT connection by pinging through PC or laptops.





And can also verify by URL through browser.

