HACETTEPE UNIVERSITY DEPARTMENT OF

COMPUTER ENGINEERING

BBM 453 LAB EXPERIMENT

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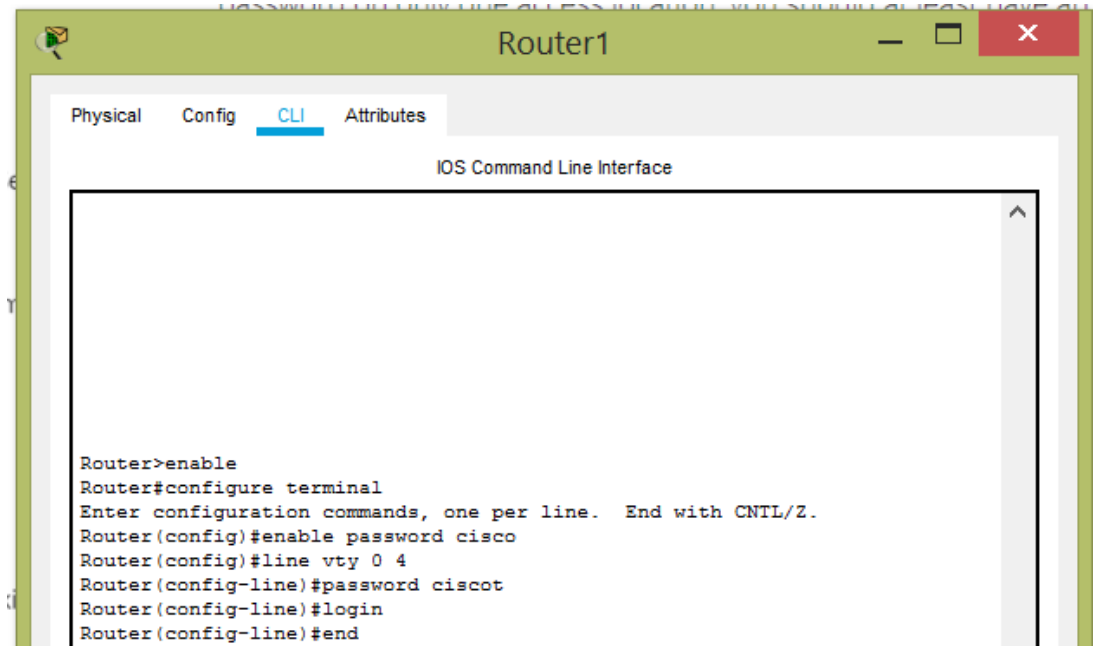
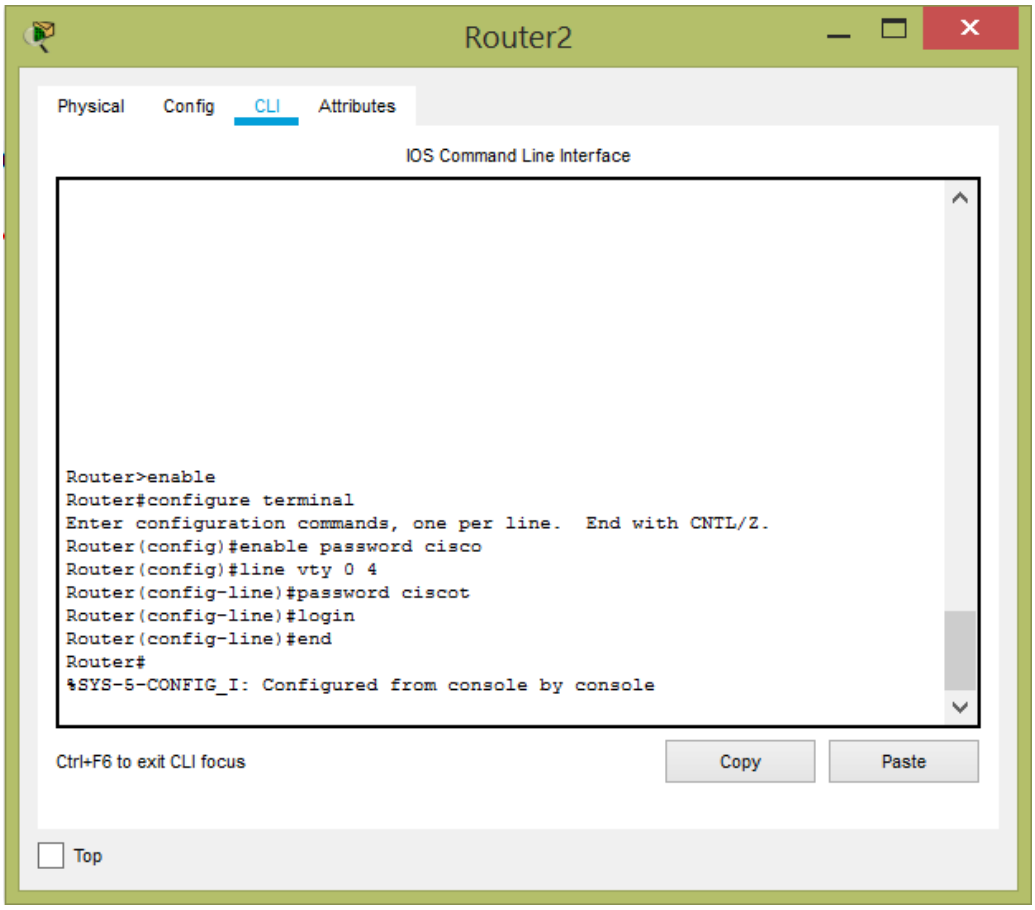
Group No: 4

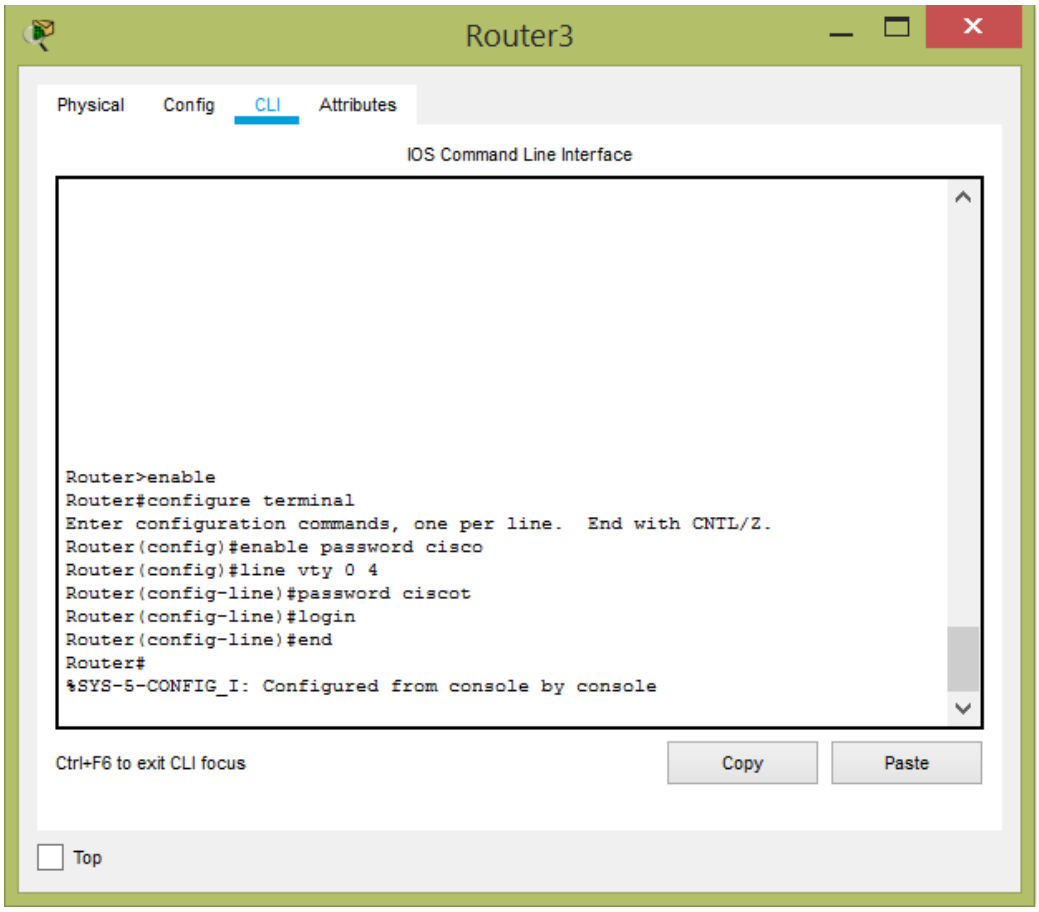
1. **Your aim is to configure NAT on your router and translate your PC's IP address in your group to a single IP from your subnet. After translation process, you will be able to test your address translation with pinging to new IP addresses and using show commands. Another way to test your configuration is to connect remotely to another group's router and running show user command to see logged in users on that router.**

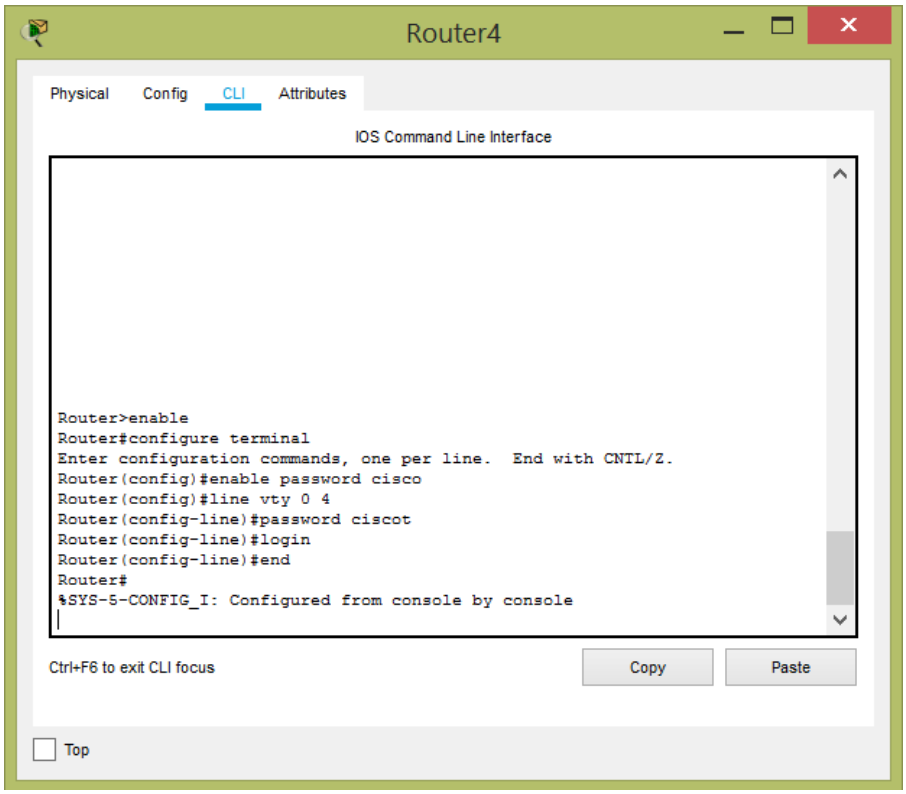
2. **You are going to use telnet for remote connection. To be able to use telnet, you have to configure necessary password steps for security restrictions. For example try to telnet (from your PC) to another group's Router (IP address of Serial interface), and understand why you are not able connect to the Router.**

3. **You have to set enable password and telnet password for remote connection.**

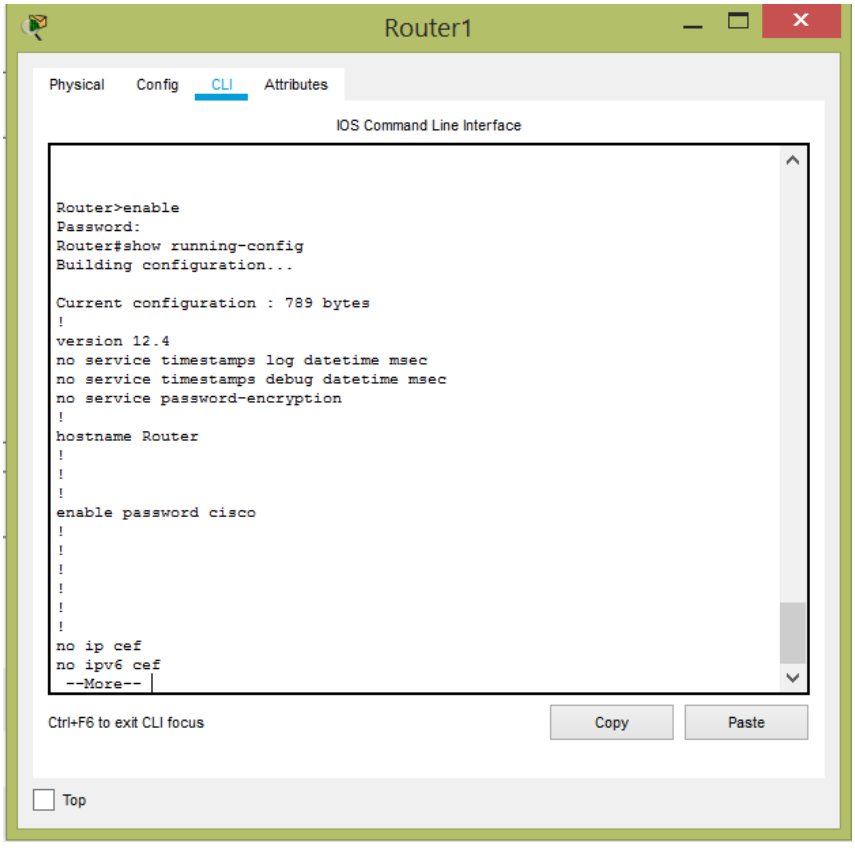


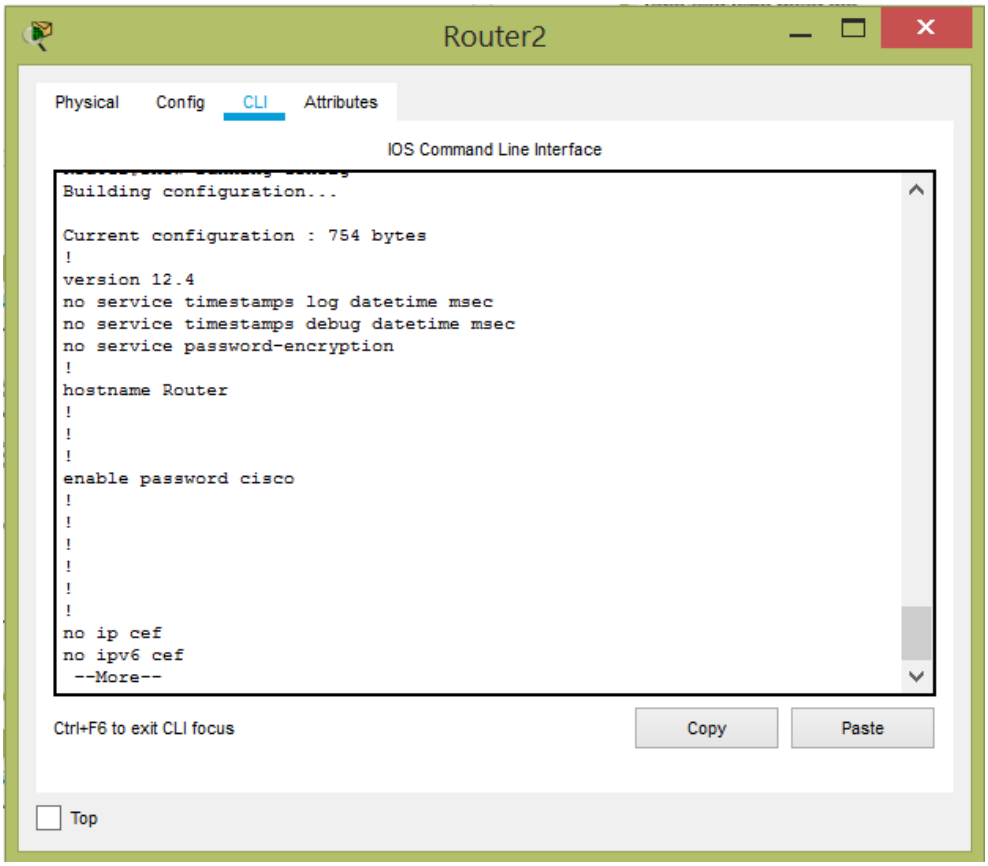

Router2
Physical
Config
CLI
Attributes
IOS Command Line Interface
Router>enable
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#enable password cisco
Router(config)#line vty 0 4
Router(config-line)#password ciscot
Router(config-line)#login
Router(config-line)#end
Router#
%SYS-5-CONFIG_I: Configured from console by console
Ctrl+F6 to exit CLI focus
Copy
Paste
Top

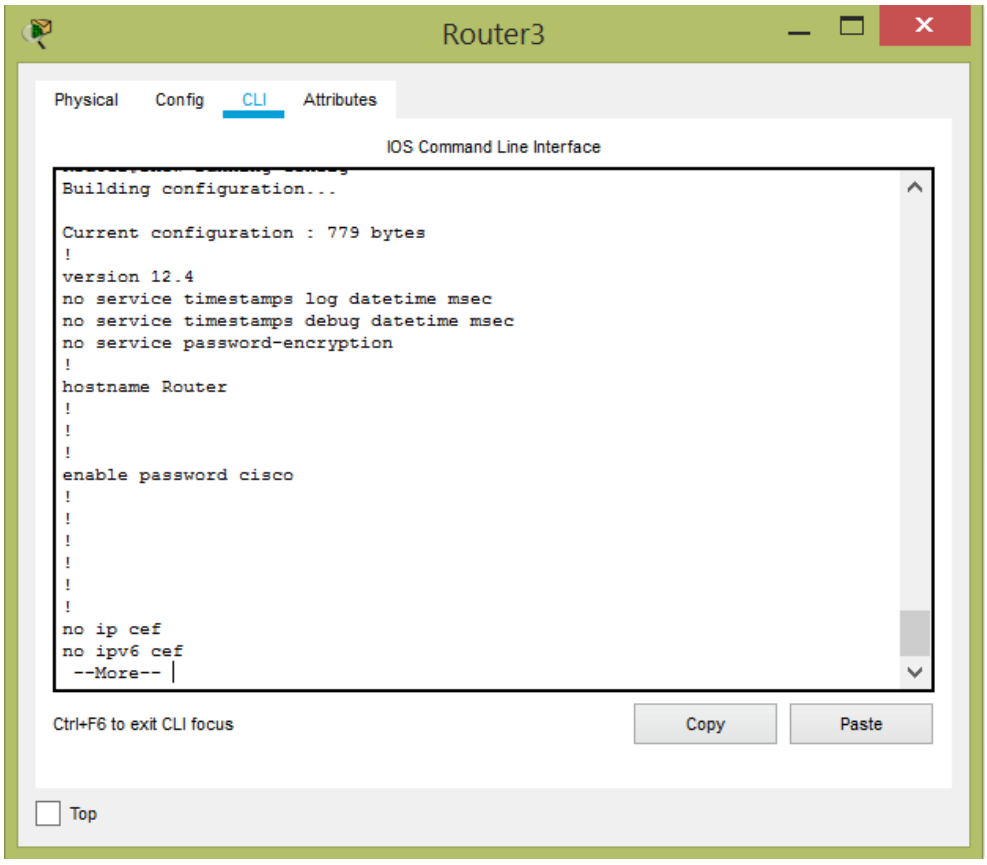

Router3
Physical
Config
CLI
Attributes
IOS Command Line Interface
Router>enable
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#enable password cisco
Router(config)#line vty 0 4
Router(config-line)#password ciscot
Router(config-line)#login
Router(config-line)#end
Router#
%SYS-5-CONFIG_I: Configured from console by console
Ctrl+F6 to exit CLI focus
Copy
Paste
Top

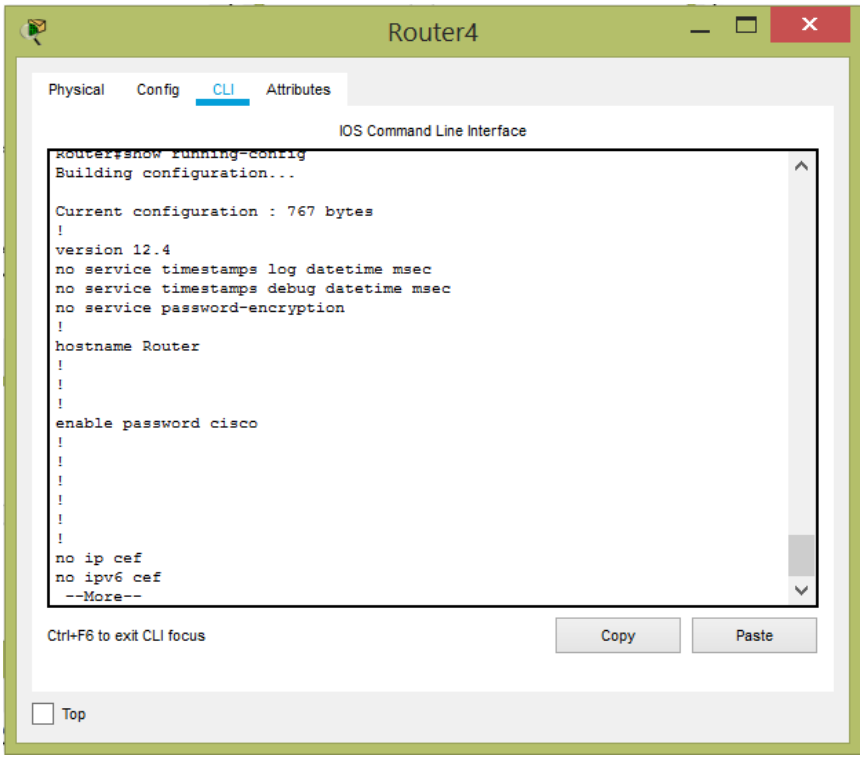


4. **Display your configuration changes on running-config and try logout from Router using disable command and then enable again.**

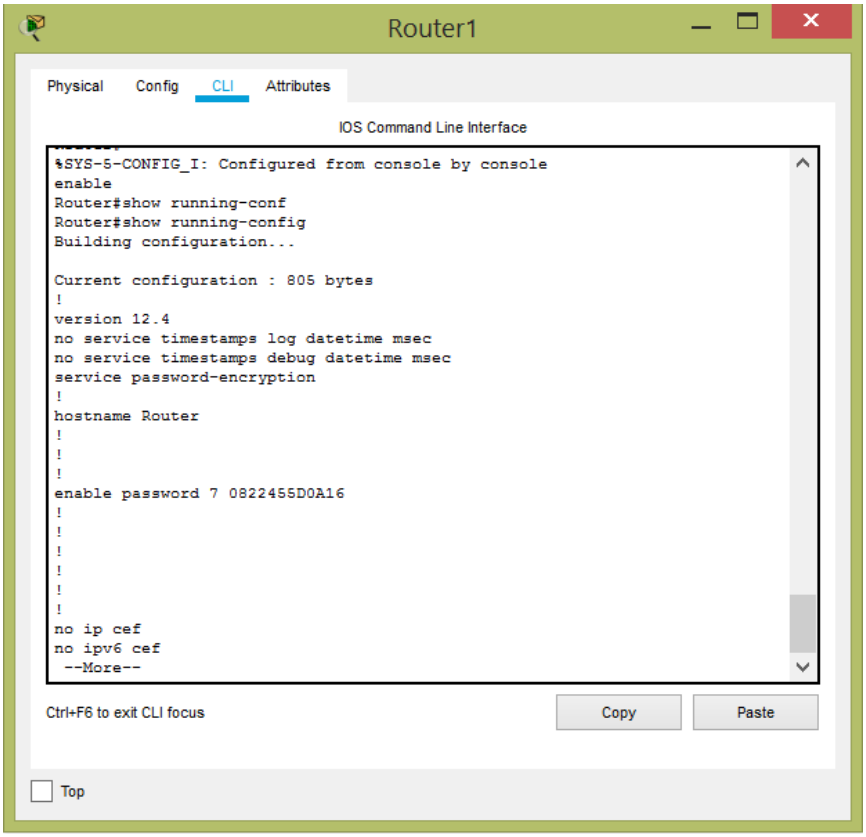


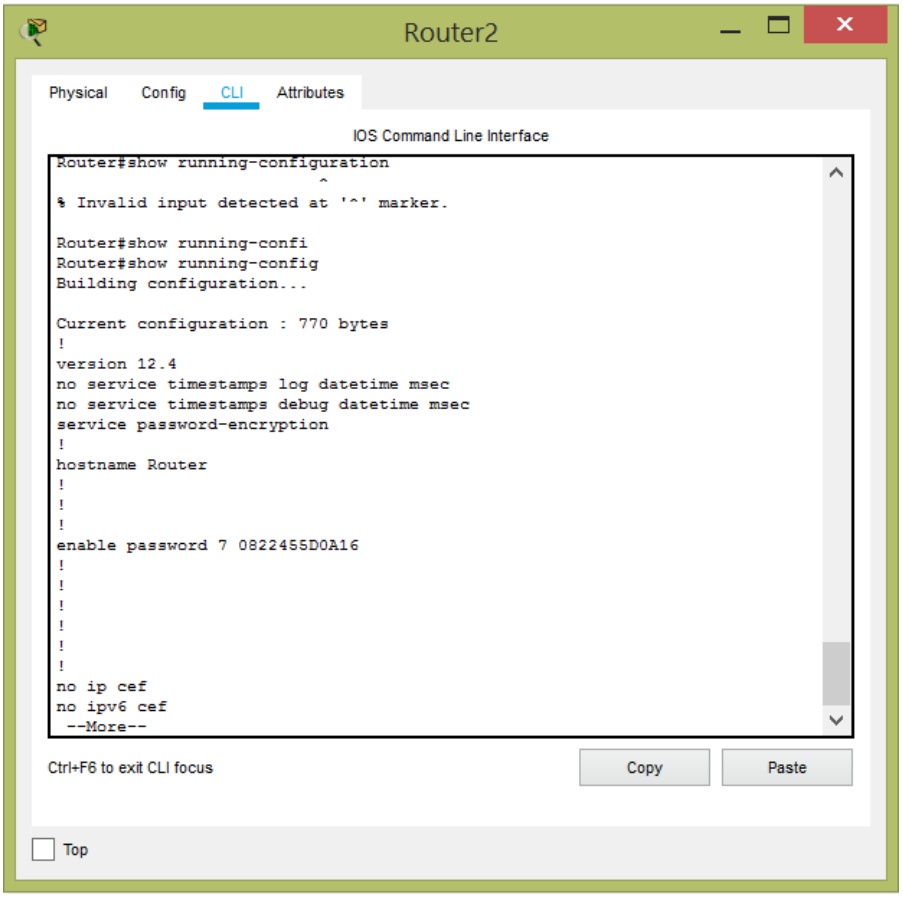

Router2
Physical
Config
CLI
Attributes
IOS Command Line Interface
Building configuration...
Current configuration : 754 bytes
!
version 12.4
no service timestamps log datetime msec
no service timestamps debug datetime msec
no service password-encryption
!
hostname Router
!
!
!
enable password cisco
!
!
!
!
!
!
no ip cef
no ipv6 cef
--More--
Ctrl+F6 to exit CLI focus
Copy
Paste
Top

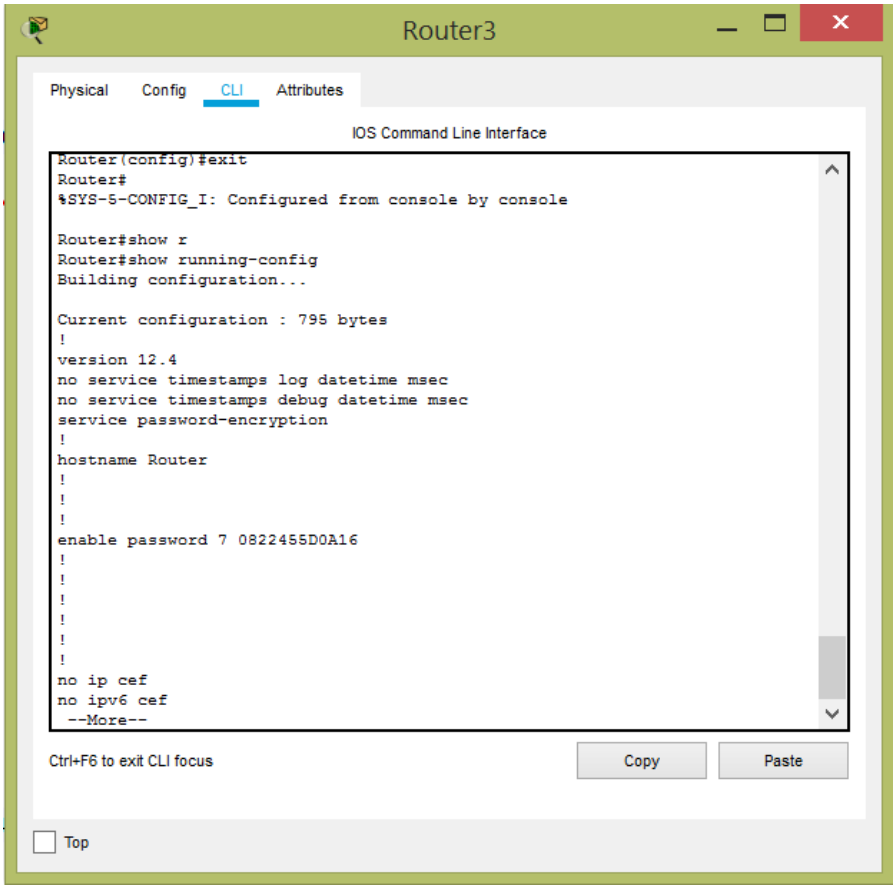

Router3
Physical
Config
CLI
Attributes
IOS Command Line Interface
Building configuration...
Current configuration : 779 bytes
!
version 12.4
no service timestamps log datetime msec
no service timestamps debug datetime msec
no service password-encryption
!
hostname Router
!
!
!
enable password cisco
!
!
!
!
!
!
no ip cef
no ipv6 cef
--More--
Ctrl+F6 to exit CLI focus
Copy
Paste
Top

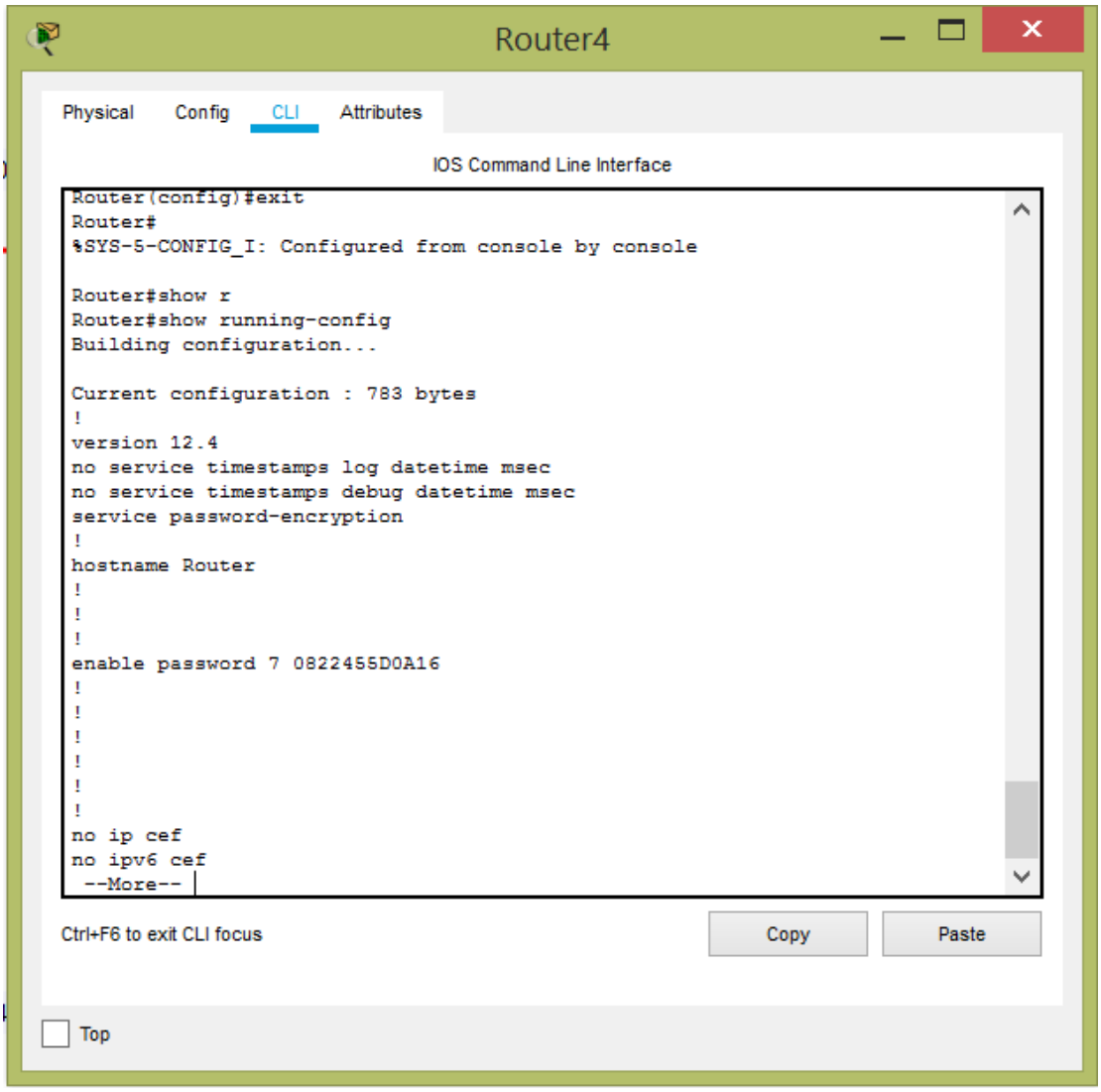


5. **You should observe that all text passwords can be easily seen in config file. That is also a security bug. You should use encryption service for encrypting password texts.**



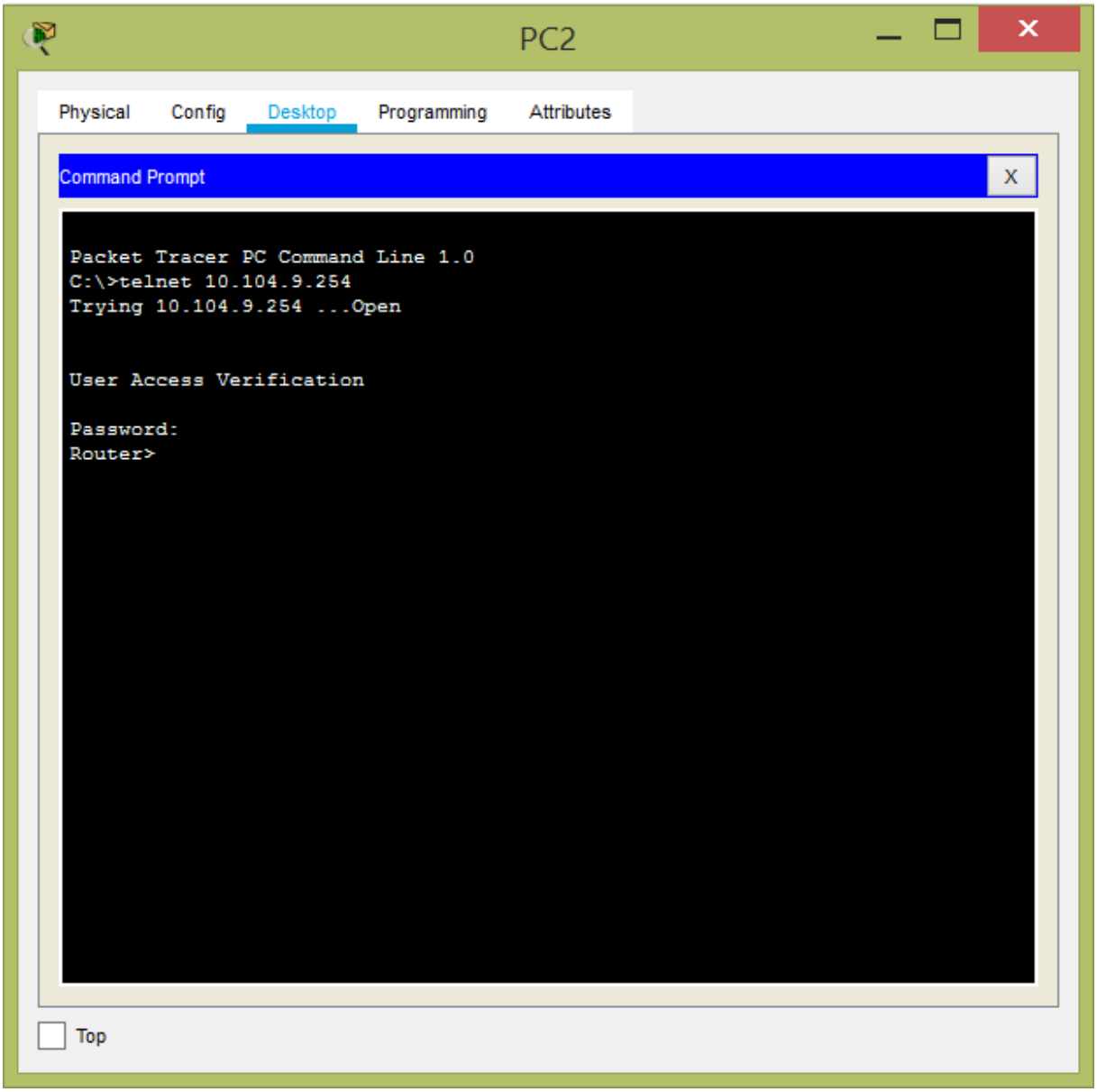

Router2
Physical
Config
CLI
Attributes
IOS Command Line Interface
Router#show running-configuration
^
% Invalid input detected at '^' marker.
Router#show running-confi
Router#show running-config
Building configuration...
Current configuration : 770 bytes
!
version 12.4
no service timestamps log datetime msec
no service timestamps debug datetime msec
service password-encryption
!
hostname Router
!
!
!
enable password 7 0822455D0A16
!
!
!
!
!
!
no ip cef
no ipv6 cef
--More--
Ctrl+F6 to exit CLI focus
Copy
Paste
Top


Router3
Physical
Config
CLI
Attributes
IOS Command Line Interface
Router(config)#exit
Router#
%SYS-5-CONFIG_I: Configured from console by console
Router#show r
Router#show running-config
Building configuration...
Current configuration : 795 bytes
!
version 12.4
no service timestamps log datetime msec
no service timestamps debug datetime msec
service password-encryption
!
hostname Router
!
!
!
enable password 7 0822455D0A16
!
!
!
!
!
!
no ip cef
no ipv6 cef
--More--
Ctrl+F6 to exit CLI focus
Copy
Paste
Top

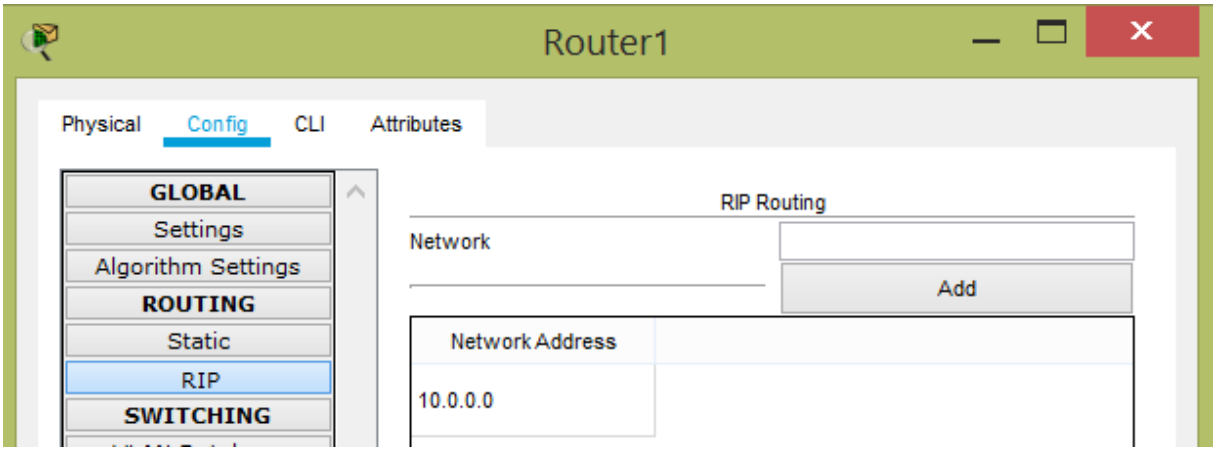

Router4
Physical
Config
CLI
Attributes
IOS Command Line Interface
Router(config)#exit
Router#
%SYS-5-CONFIG_I: Configured from console by console
Router#show r
Router#show running-config
Building configuration...
Current configuration : 783 bytes
!
version 12.4
no service timestamps log datetime msec
no service timestamps debug datetime msec
service password-encryption
!
hostname Router
!
!
!
enable password 7 0822455D0A16
!
!
!
!
!
!
no ip cef
no ipv6 cef
--More--
Ctrl+F6 to exit CLI focus
Copy
Paste
Top

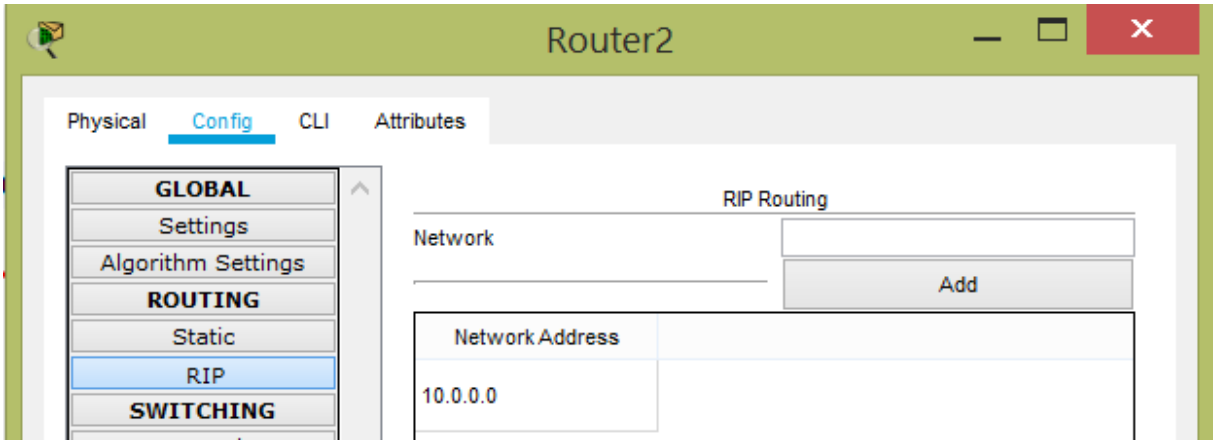
6. **Now you are ready to telnet (from your PC) to another remote Routers. Enter their telnet and enable passwords and login to their router. Use show user command to display logged-in connections on the router in this session. Observe your IP address of your client. The * shows your connection.**

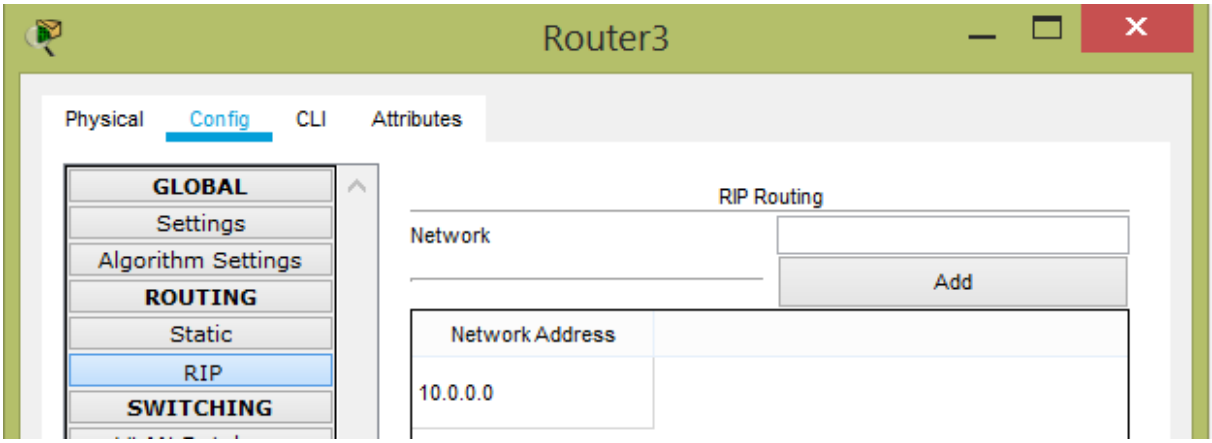
From Pc2 to router2

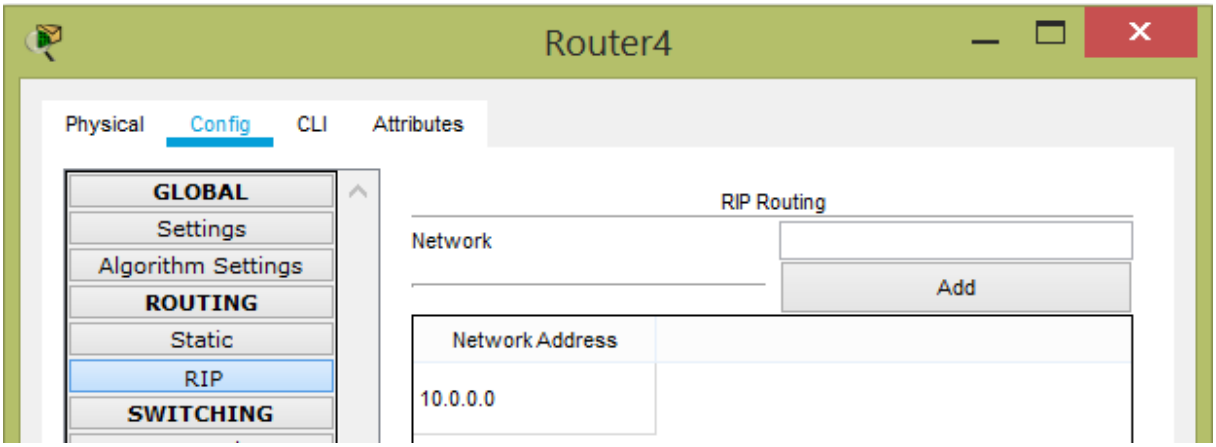


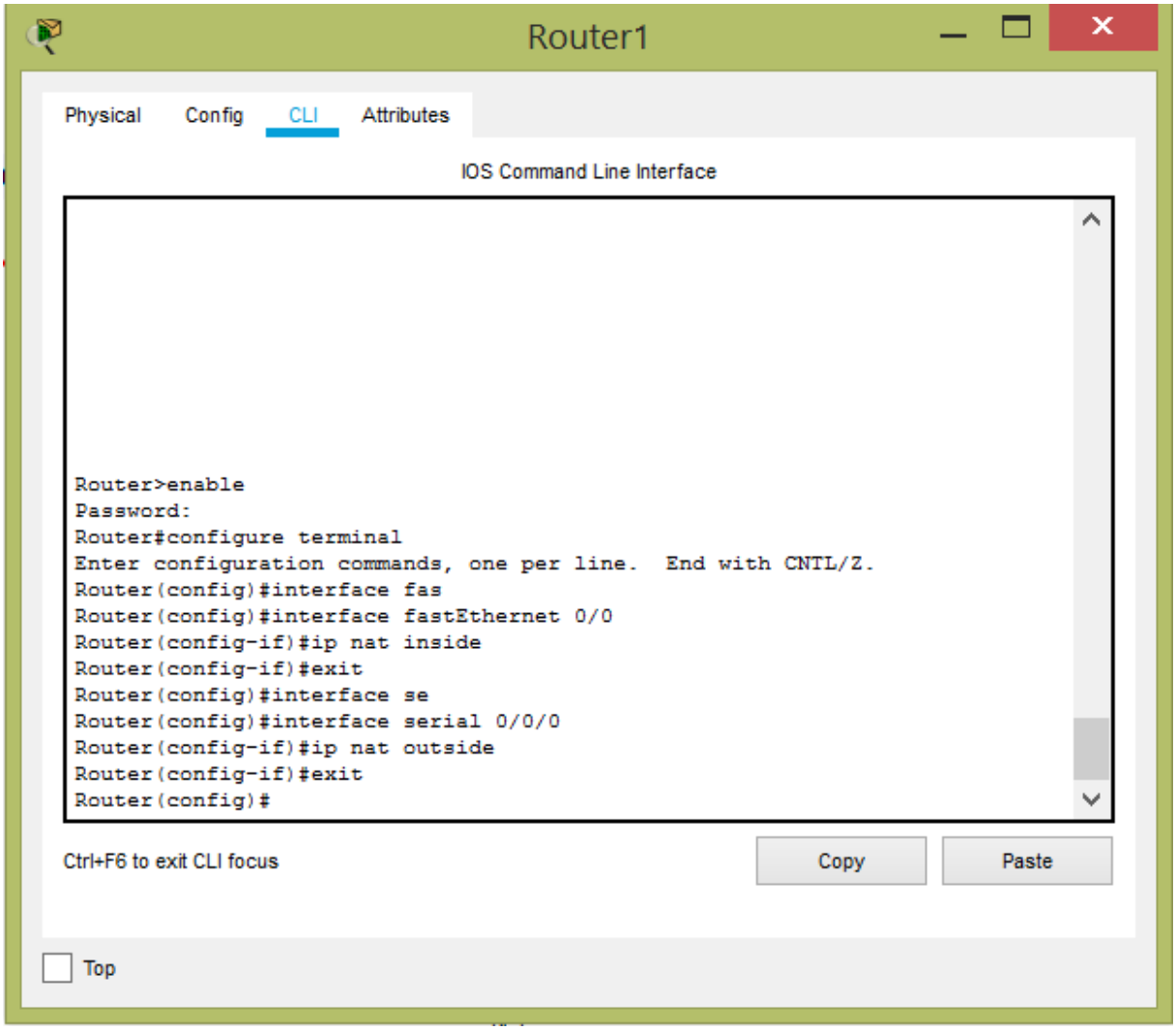
7. **If a router supports address translation (if it has an address translation software), then the connection interfaces to which the address translation is to be applied, must be specified and defined as inside or outside. This is done using the ip nat [inside | outside] command while in the sub-configuration mode.**

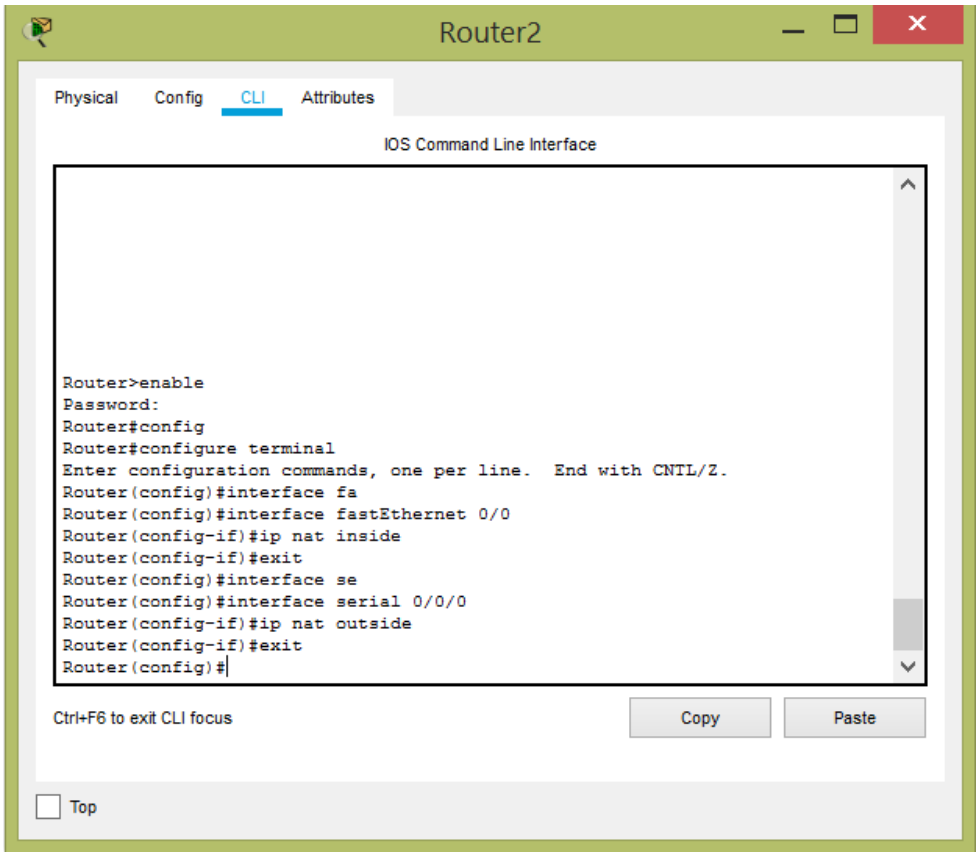


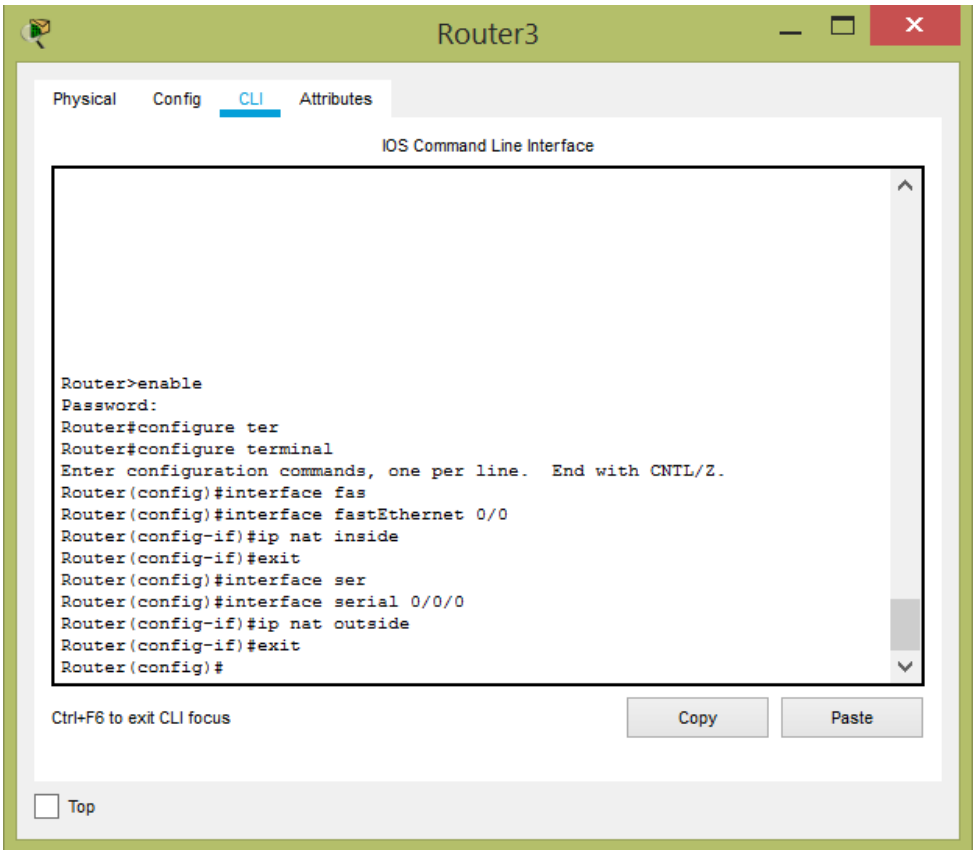


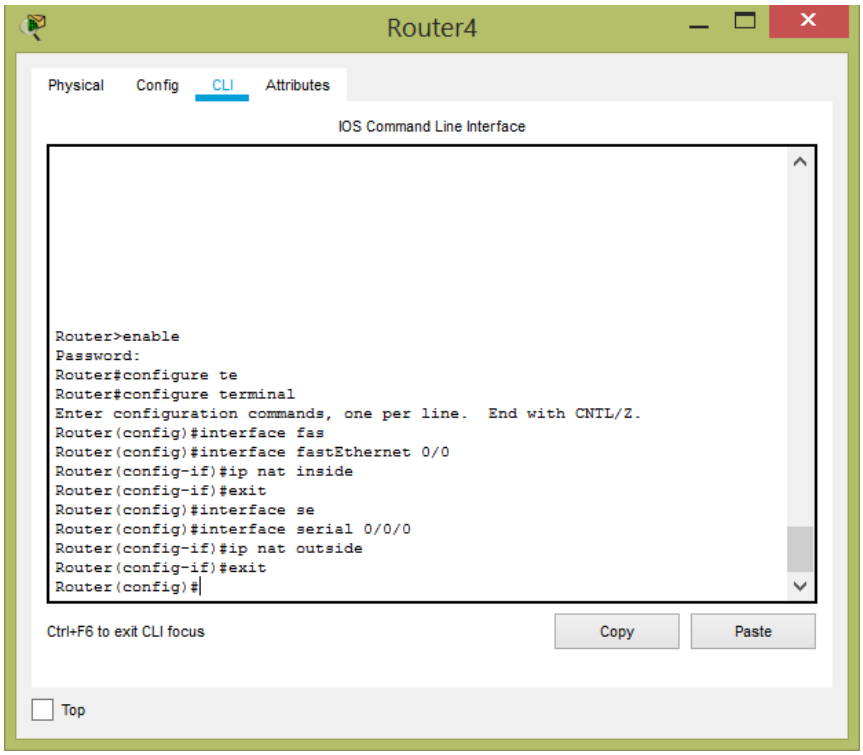



Router4
Physical
Config
CLI
Attributes
GLOBAL
Settings
Algorithm Settings
ROUTING
Static
RIP
SWITCHING
RIP Routing
Network
Add
Network Address
10.0.0.0

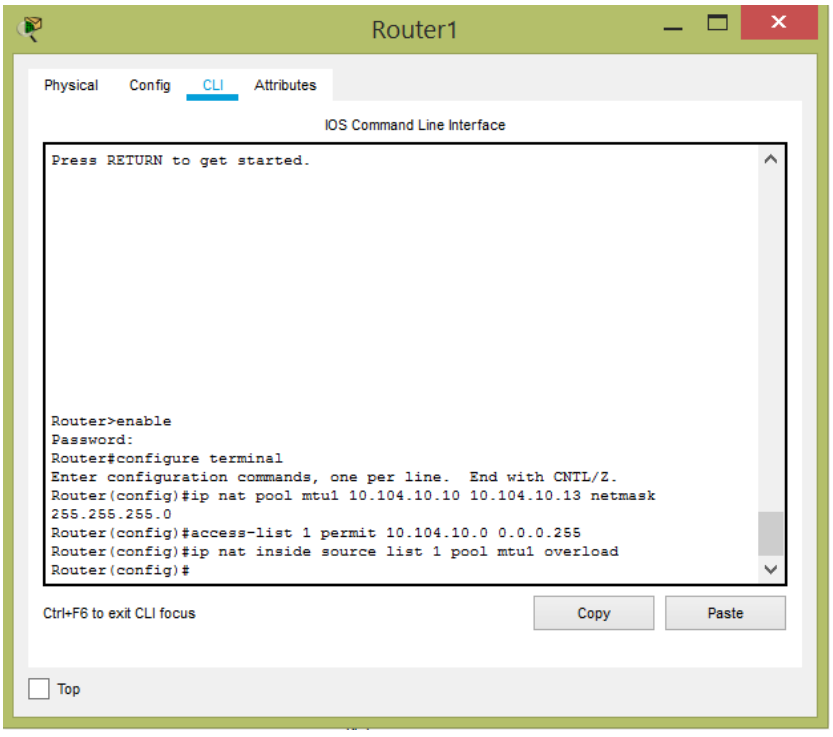

Router1
Physical
Config
CLI
Attributes
IOS Command Line Interface
Router>enable
Password:
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#interface fas
Router(config)#interface fastEthernet 0/0
Router(config-if)#ip nat inside
Router(config-if)#exit
Router(config)#interface se
Router(config)#interface serial 0/0/0
Router(config-if)#ip nat outside
Router(config-if)#exit
Router(config)#
Ctrl+F6 to exit CLI focus
Copy
Paste
Top

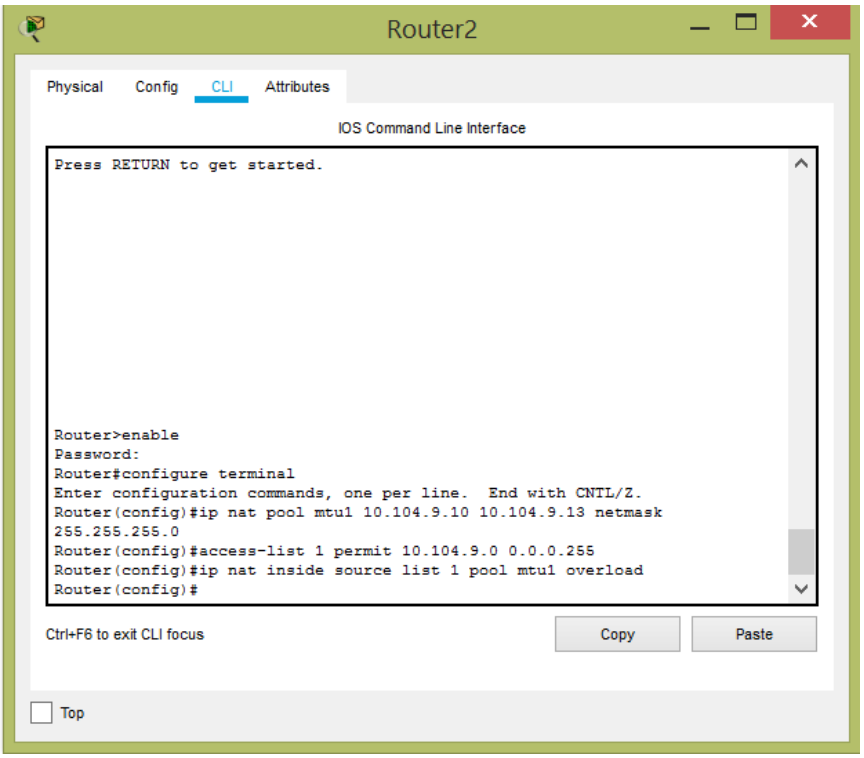

Router2
Physical
Config
CLI
Attributes
IOS Command Line Interface
Router>enable
Password:
Router#config
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#interface fa
Router(config)#interface fastEthernet 0/0
Router(config-if)#ip nat inside
Router(config-if)#exit
Router(config)#interface se
Router(config)#interface serial 0/0/0
Router(config-if)#ip nat outside
Router(config-if)#exit
Router(config)#
Ctrl+F6 to exit CLI focus
Copy
Paste
Top


Router3
Physical
Config
CLI
Attributes
IOS Command Line Interface
Router>enable
Password:
Router#configure ter
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#interface fas
Router(config)#interface fastEthernet 0/0
Router(config-if)#ip nat inside
Router(config-if)#exit
Router(config)#interface ser
Router(config)#interface serial 0/0/0
Router(config-if)#ip nat outside
Router(config-if)#exit
Router(config)#
Ctrl+F6 to exit CLI focus
Copy
Paste
Top

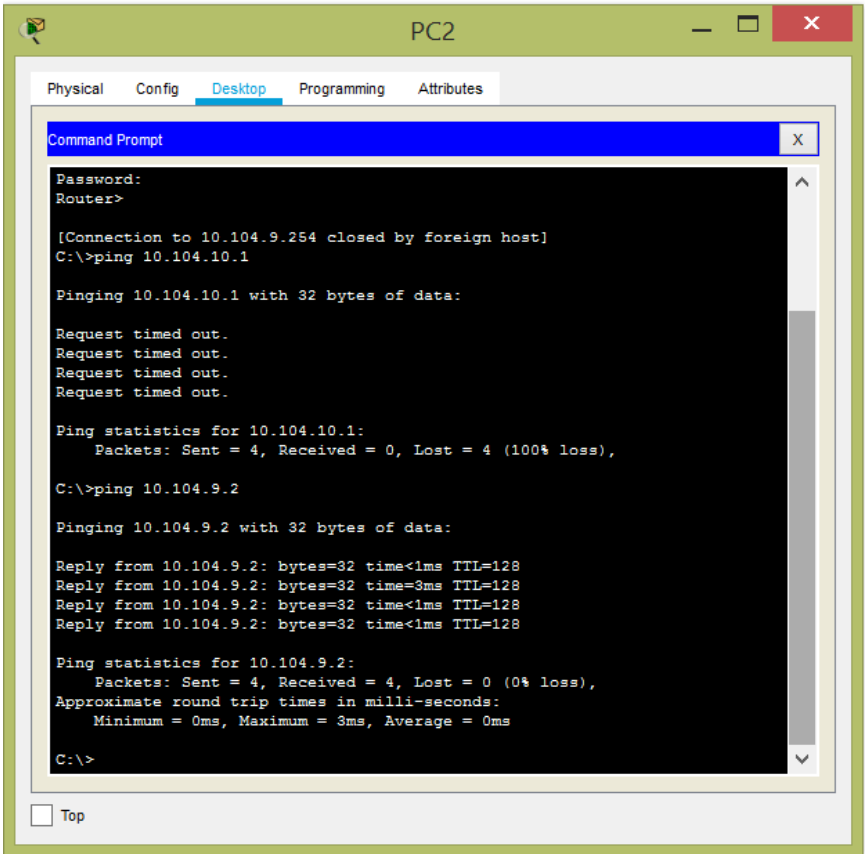


8. **You are going to configure dynamic overloading NAT. Commands are same as dynamic NAT configuration with overload command at the end. You should translate your client IP to another IP from your subnet (for example: 10.100.X.99) using dynamic overloading NAT commands:**





9. **After NAT configuration, try to ping other groups client IP addresses and translated IP addresses. Discuss the results.**



10. **Use show ip nat translation command to show translated IP addresses and port numbers. Discuss each column on the table (inside/outside, local/global). If you didn't see any output, you should successfully ping remote clients and also your PC should be pinged form outside.**
11. **Finally, connect to other remote Routers using telnet, and display connected users and observe your IP address.**