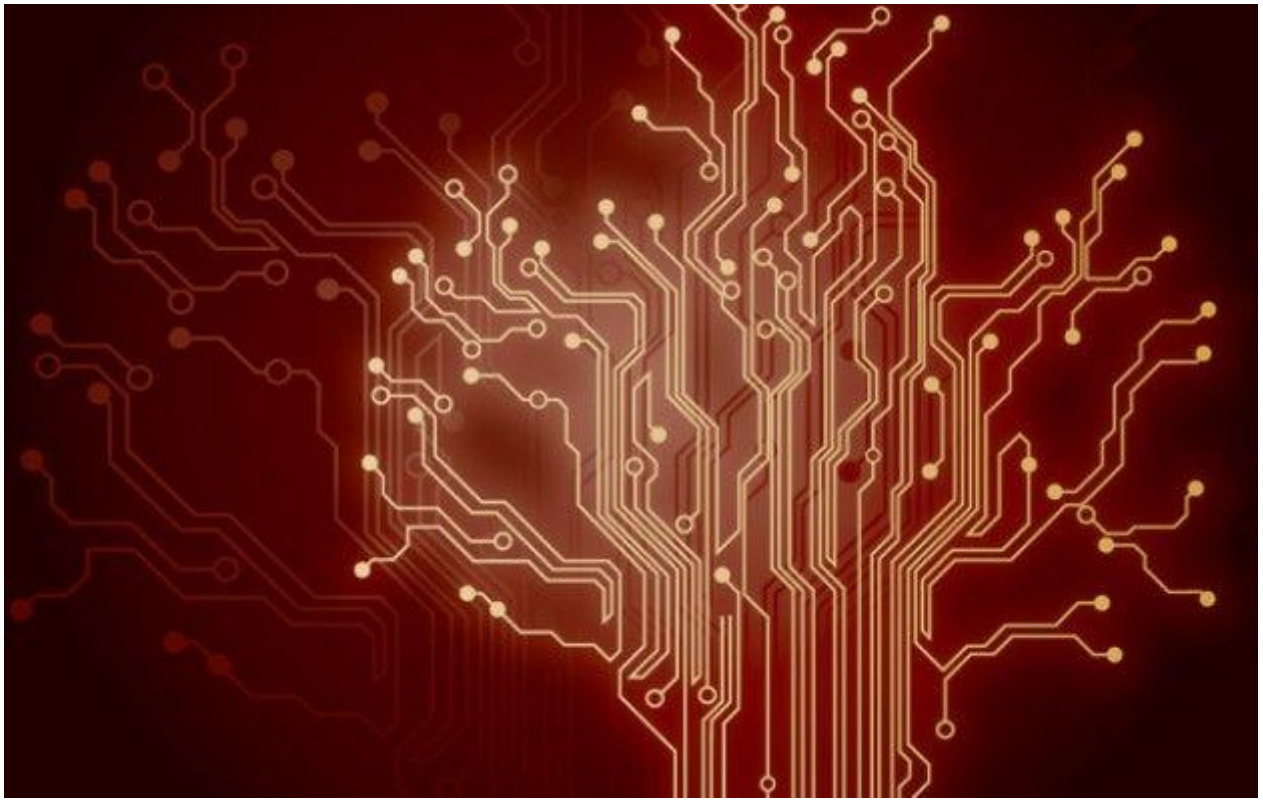
NETWORK LAB REPORT

CO6 : Use Cisco Packet Tracer software to do the following experiments.



Atanu Ghosh

BCSE-III (2019-2023) 5th sem, Section: A-1,

Roll: **001910501005**, Date: 05/11/2021

ASSIGNMENT-6

Use Cisco Packet Tracer software to do the following experiments

OVERVIEW

Cisco Packet Tracer is one of the most useful visual simulation programs for networking certifications. With this tool, students are able to experiment with network behaviour. As such, they're able to ask a wide range of questions and explore different scenarios for better results. Since Cisco Packet Tracer is an important part of the Networking Academy, it provides students with an extensive learning experience. Additionally, it offers several visualizations, simulation, assessment, collaboration, and authoring capabilities to facilitate hassle-free learning and teaching of complex IT concepts.

GOALS

Install the Cisco Packet Tracer in the local machine and simulate the different network configurations as given in the questions.

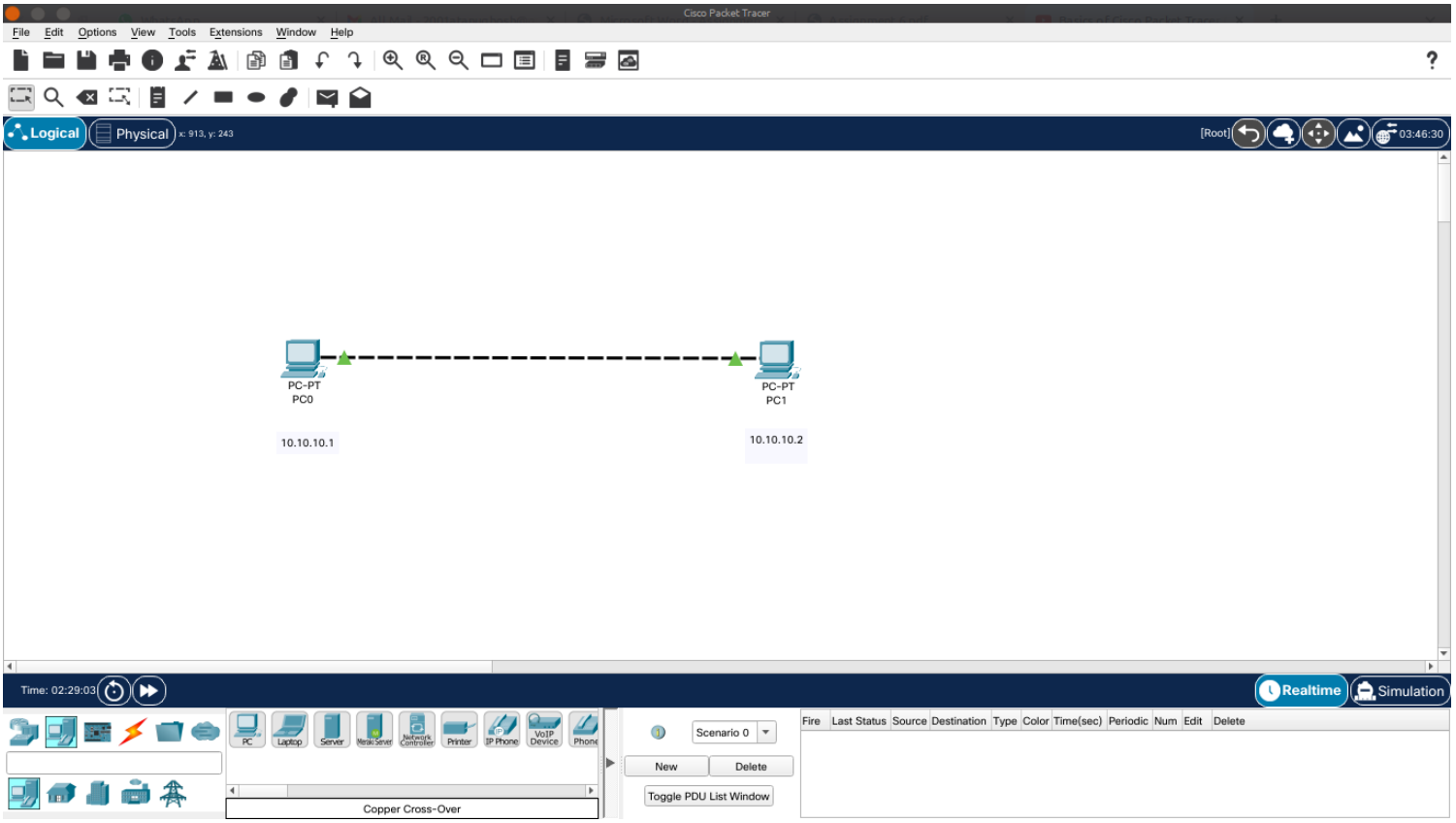
Specifications:

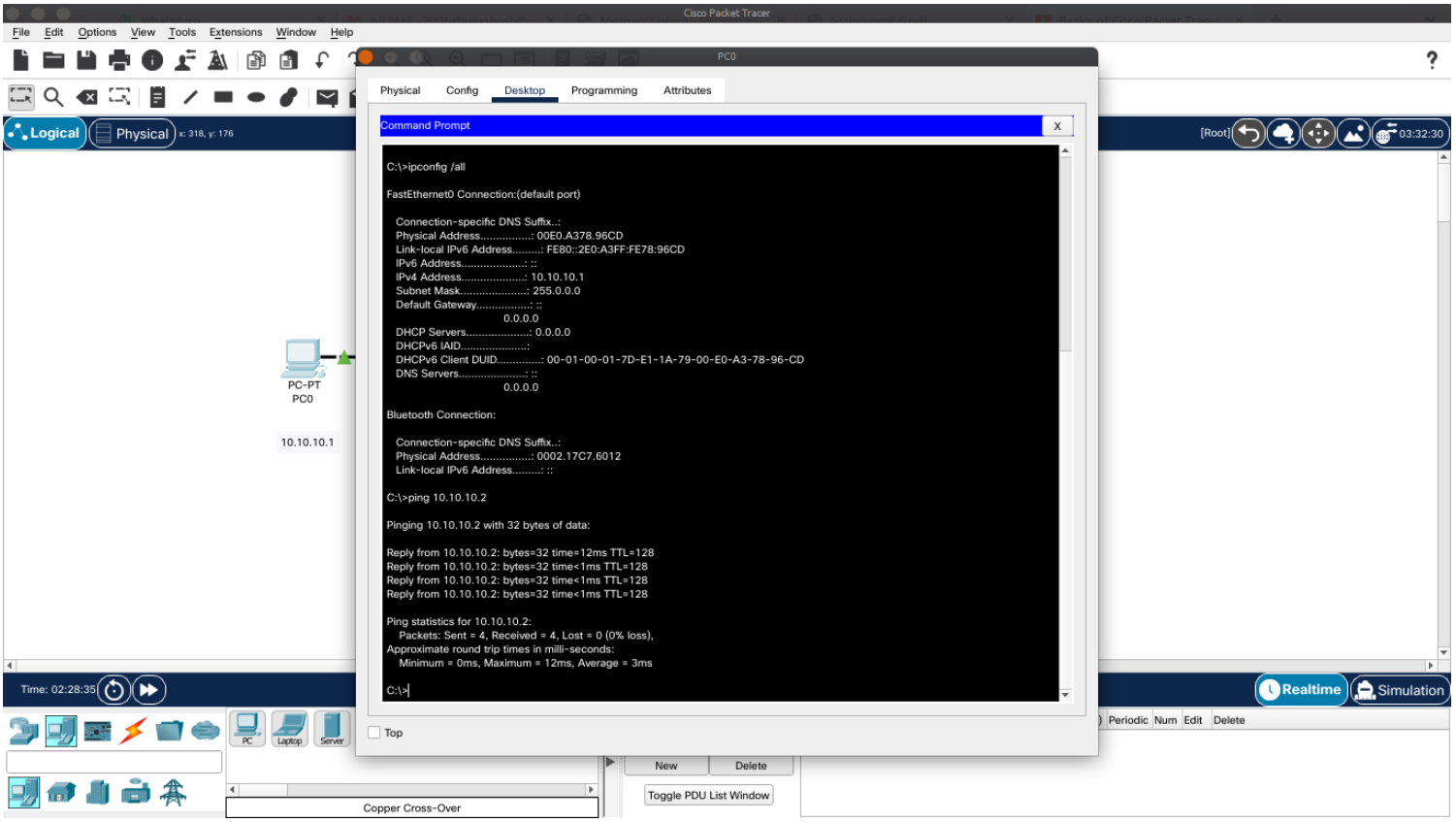
1. **OS :** Linux
2. **Distro :** Ubuntu 20.04 LTS
3. **Version :** PacketTracer 8.0.1

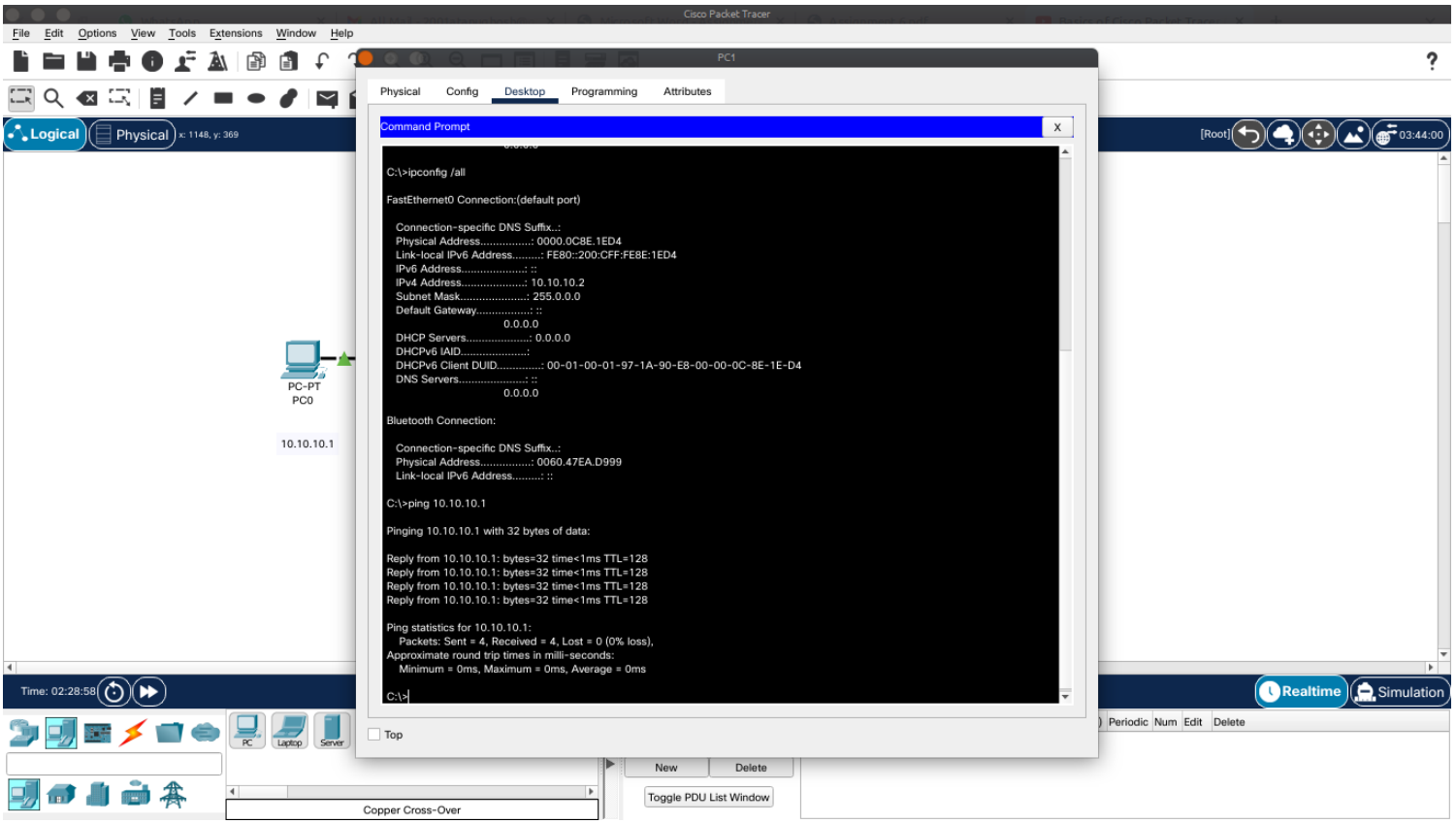
Questions and Solutions:

Q1. Connect two hosts back-to-back with a cross over cable. Assign IP addresses, and see whether they are able to ping each other.

Two hosts were made and connected with a crossover cable. The IP addresses assigned to them were 10.10.10.1 and 10.10.10.2. The following results were obtained.

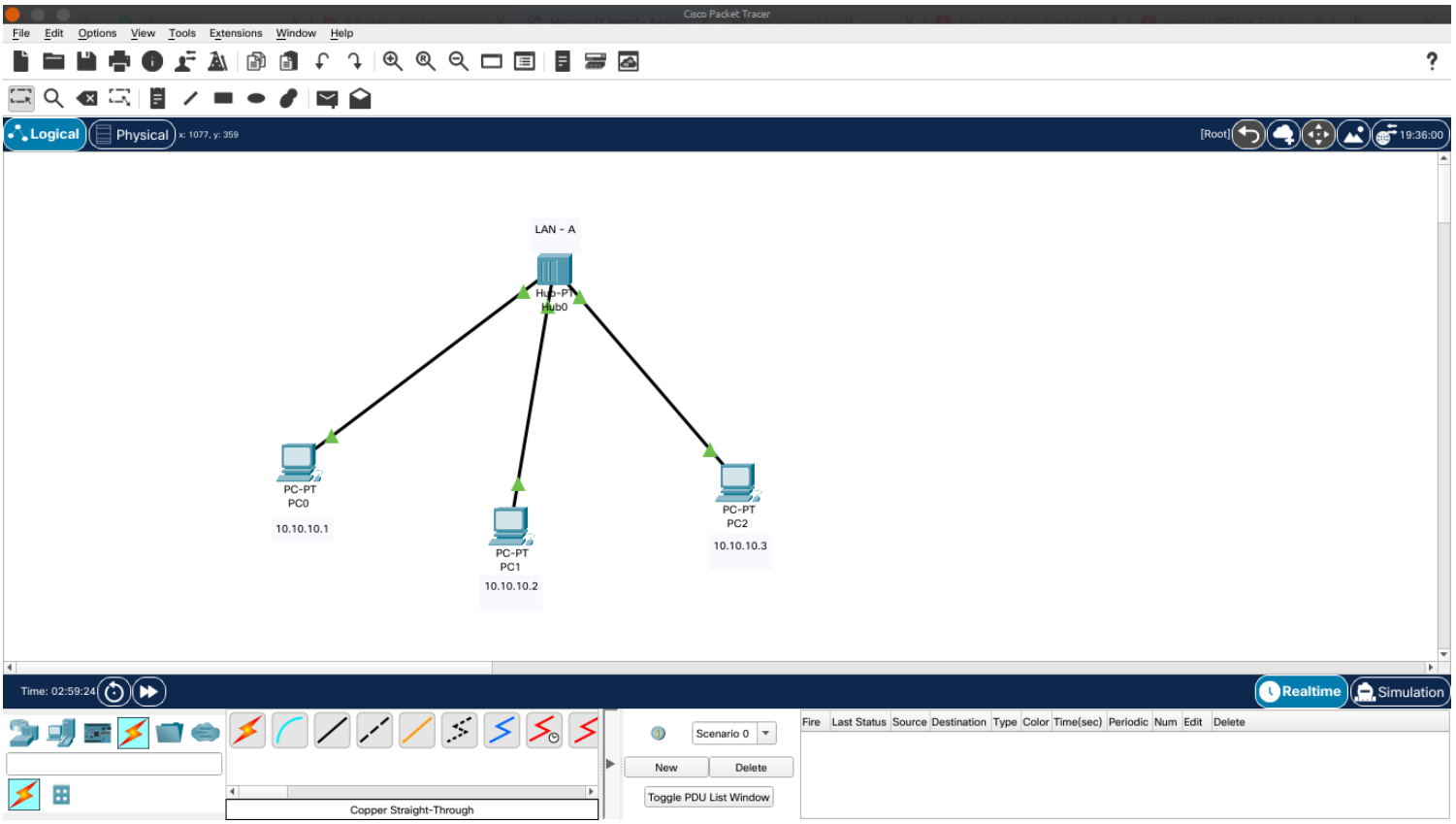


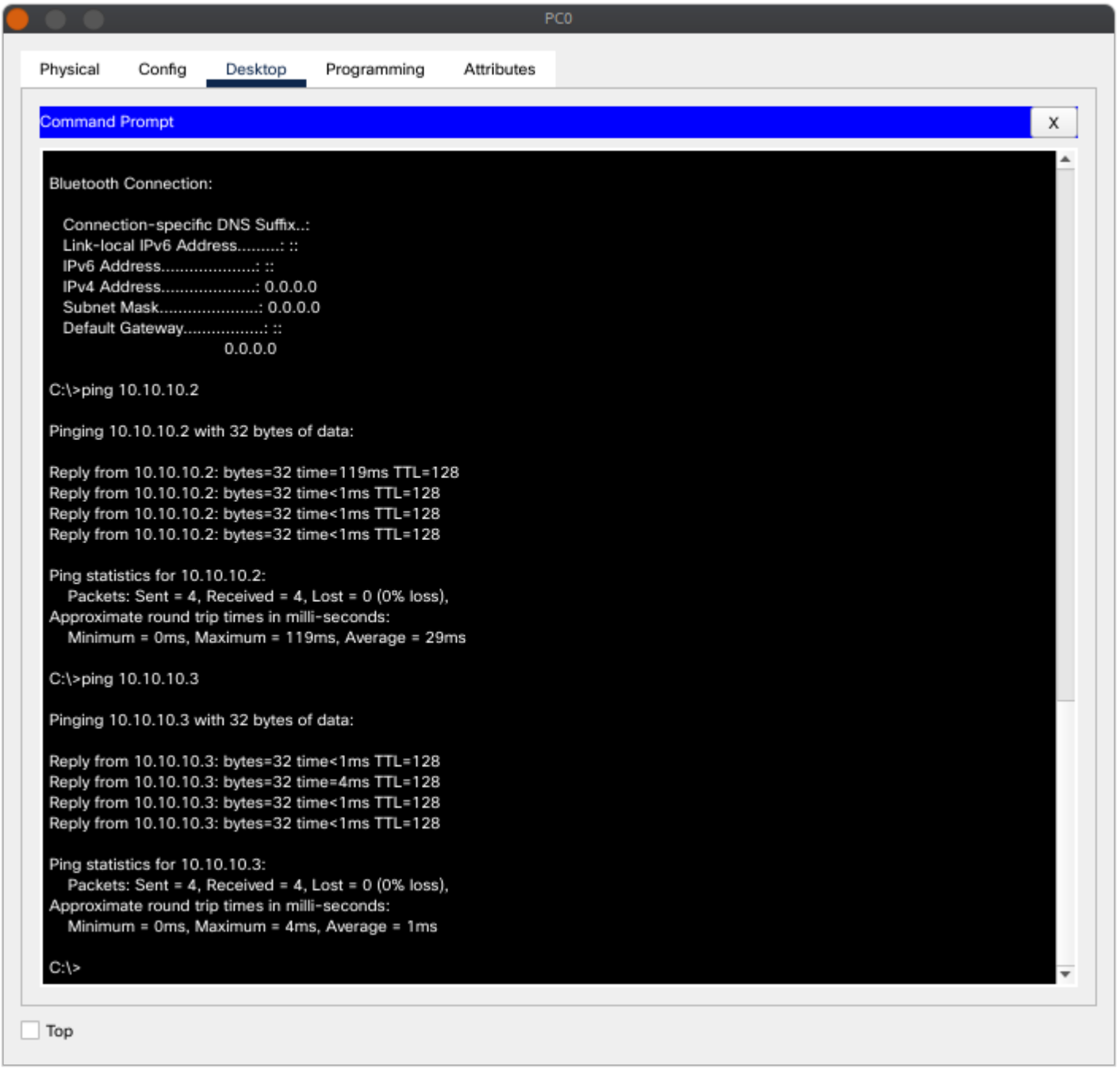

Cisco Packet Tracer
File Edit Options View Tools Extensions Window Help
Logical
Physical
PC0
Physical Config Desktop Programming Attributes
Command Prompt
C:\>ipconfig /all
FastEthernet0 Connection:(default port)
Connection-specific DNS Suffix..:
Physical Address.....: 00E0.A378.96CD
Link-local IPv6 Address.....: FE80::2E0:A3FF:FE78:96CD
IPv6 Address.....: ::
IPv4 Address.....: 10.10.10.1
Subnet Mask.....: 255.0.0.0
Default Gateway.....: ::
0.0.0.0
DHCP Servers.....: 0.0.0.0
DHCPv6 IAID.....:
DHCPv6 Client DUID.....: 00-01-00-01-7D-E1-1A-79-00-E0-A3-78-96-CD
DNS Servers.....: ::
0.0.0.0
Bluetooth Connection:
Connection-specific DNS Suffix..:
Physical Address.....: 0002.17C7.6012
Link-local IPv6 Address.....: ::
C:\>ping 10.10.10.2
Pinging 10.10.10.2 with 32 bytes of data:
Reply from 10.10.10.2: bytes=32 time=12ms TTL=128
Reply from 10.10.10.2: bytes=32 time<1ms TTL=128
Reply from 10.10.10.2: bytes=32 time<1ms TTL=128
Reply from 10.10.10.2: bytes=32 time<1ms TTL=128
Ping statistics for 10.10.10.2:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 0ms, Maximum = 12ms, Average = 3ms
C:\>
Top
PC-PT
PC0
10.10.10.1
Copper Cross-Over
New
Delete
Toggle PDU List Window
Realtime
Simulation

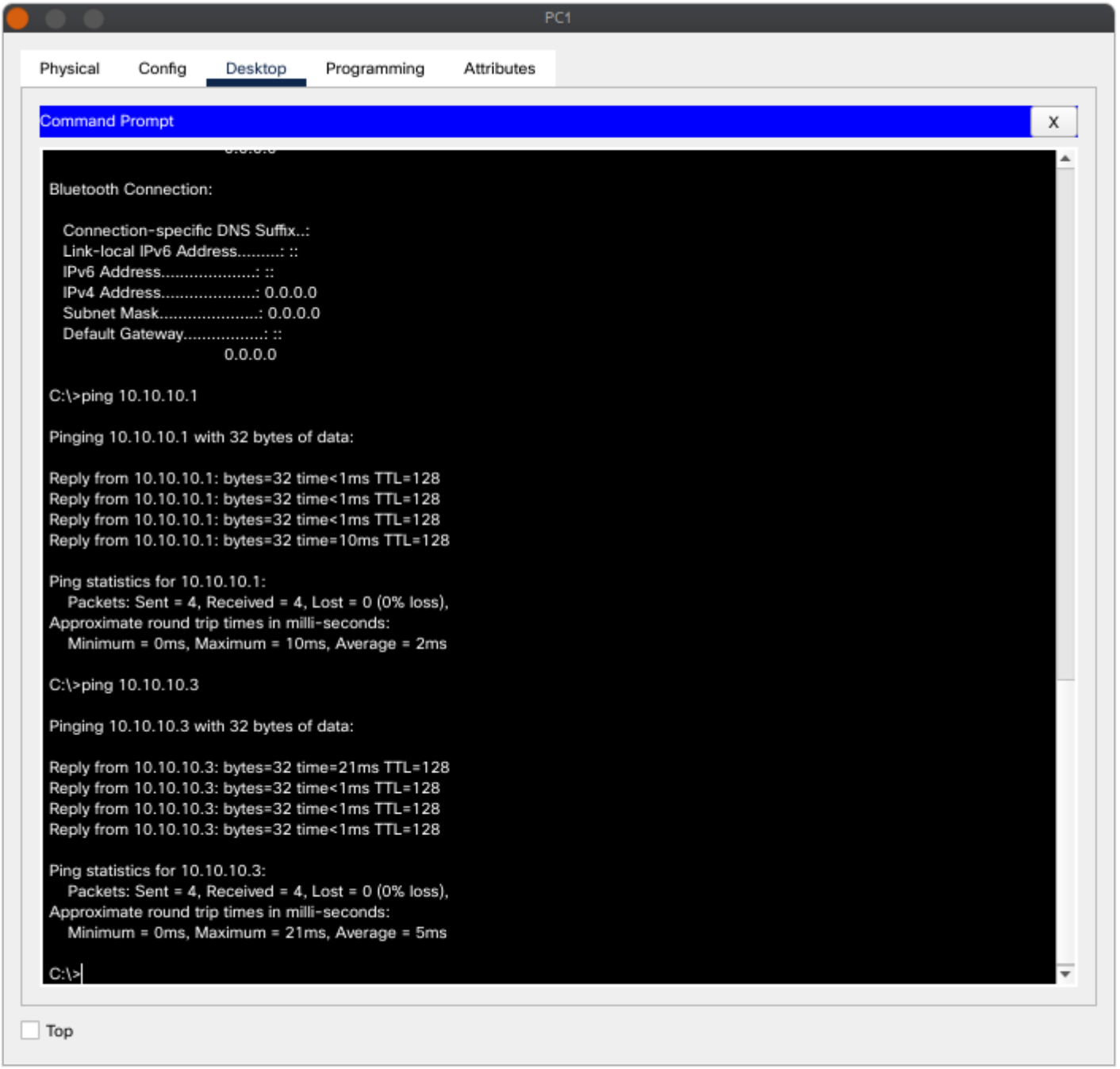

Cisco Packet Tracer
File Edit Options View Tools Extensions Window Help
Logical
Physical
PC1
Physical Config Desktop Programming Attributes
Command Prompt
C:\>ipconfig /all
FastEthernet0 Connection:(default port)
Connection-specific DNS Suffix..:
Physical Address.....: 0000.0C8E.1ED4
Link-local IPv6 Address.....: FE80::200:CFF:FE8E:1ED4
IPv6 Address.....: ::
IPv4 Address.....: 10.10.10.2
Subnet Mask.....: 255.0.0.0
Default Gateway.....: ::
0.0.0.0
DHCP Servers.....: 0.0.0.0
DHCPv6 IAID.....:
DHCPv6 Client DUID.....: 00-01-00-01-97-1A-90-E8-00-00-0C-8E-1E-D4
DNS Servers.....: ::
0.0.0.0
Bluetooth Connection:
Connection-specific DNS Suffix..:
Physical Address.....: 0060.47EA.D999
Link-local IPv6 Address.....: ::
C:\>ping 10.10.10.1
Pinging 10.10.10.1 with 32 bytes of data:
Reply from 10.10.10.1: bytes=32 time<1ms TTL=128
Reply from 10.10.10.1: bytes=32 time<1ms TTL=128
Reply from 10.10.10.1: bytes=32 time<1ms TTL=128
Reply from 10.10.10.1: bytes=32 time<1ms TTL=128
Ping statistics for 10.10.10.1:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 0ms, Maximum = 0ms, Average = 0ms
C:\>
Top
PC-PT
PC0
10.10.10.1
Copper Cross-Over
New
Delete
Toggle PDU List Window
Realtime
Simulation

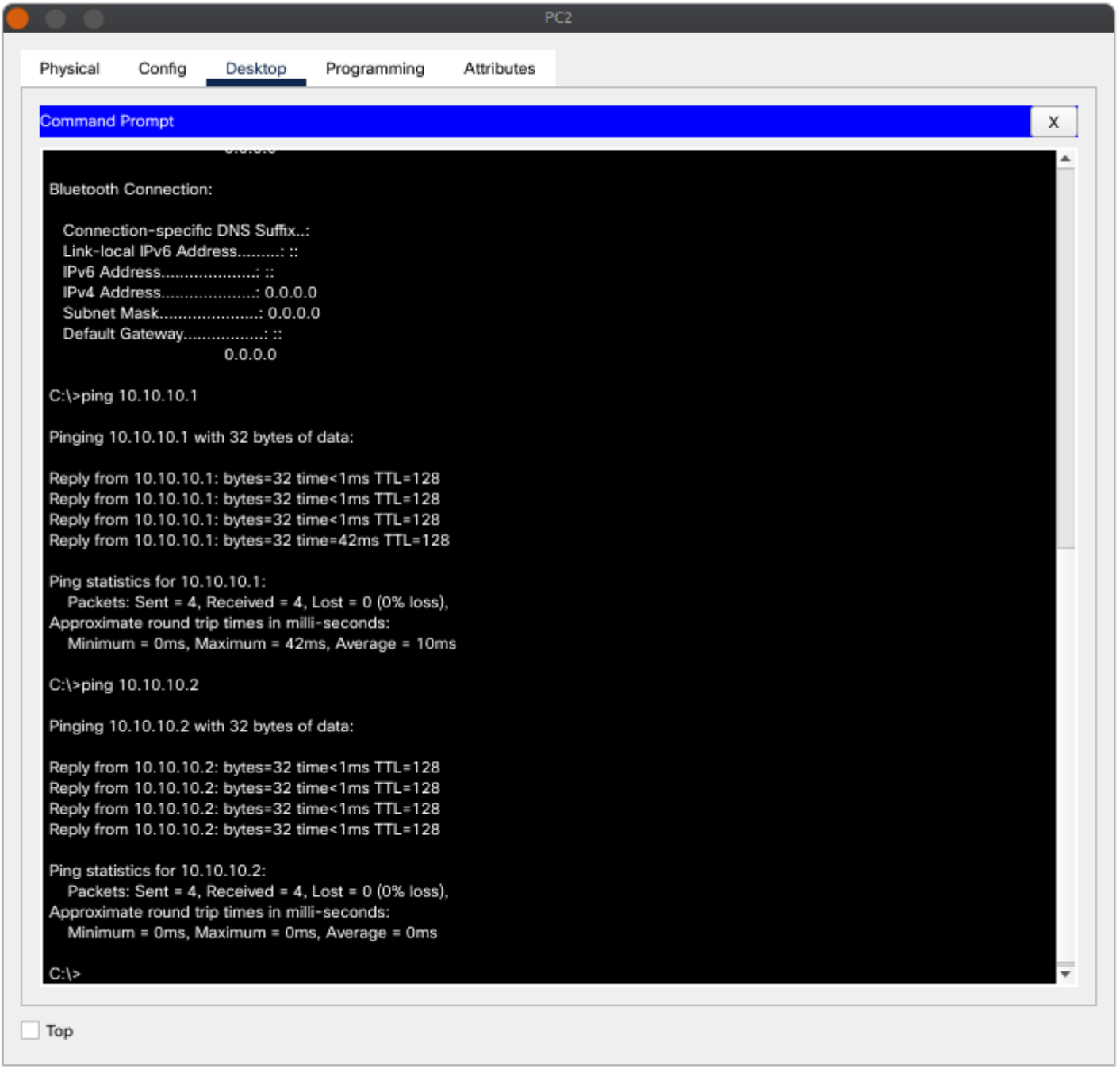
Q2. Create a LAN (named LAN-A) with 3 hosts using a hub. Ping each pair of nodes.

LAN-A was created using a hub and three hosts were connected to it using a straight-through cable. After activating the connection lines, the following results were obtained.



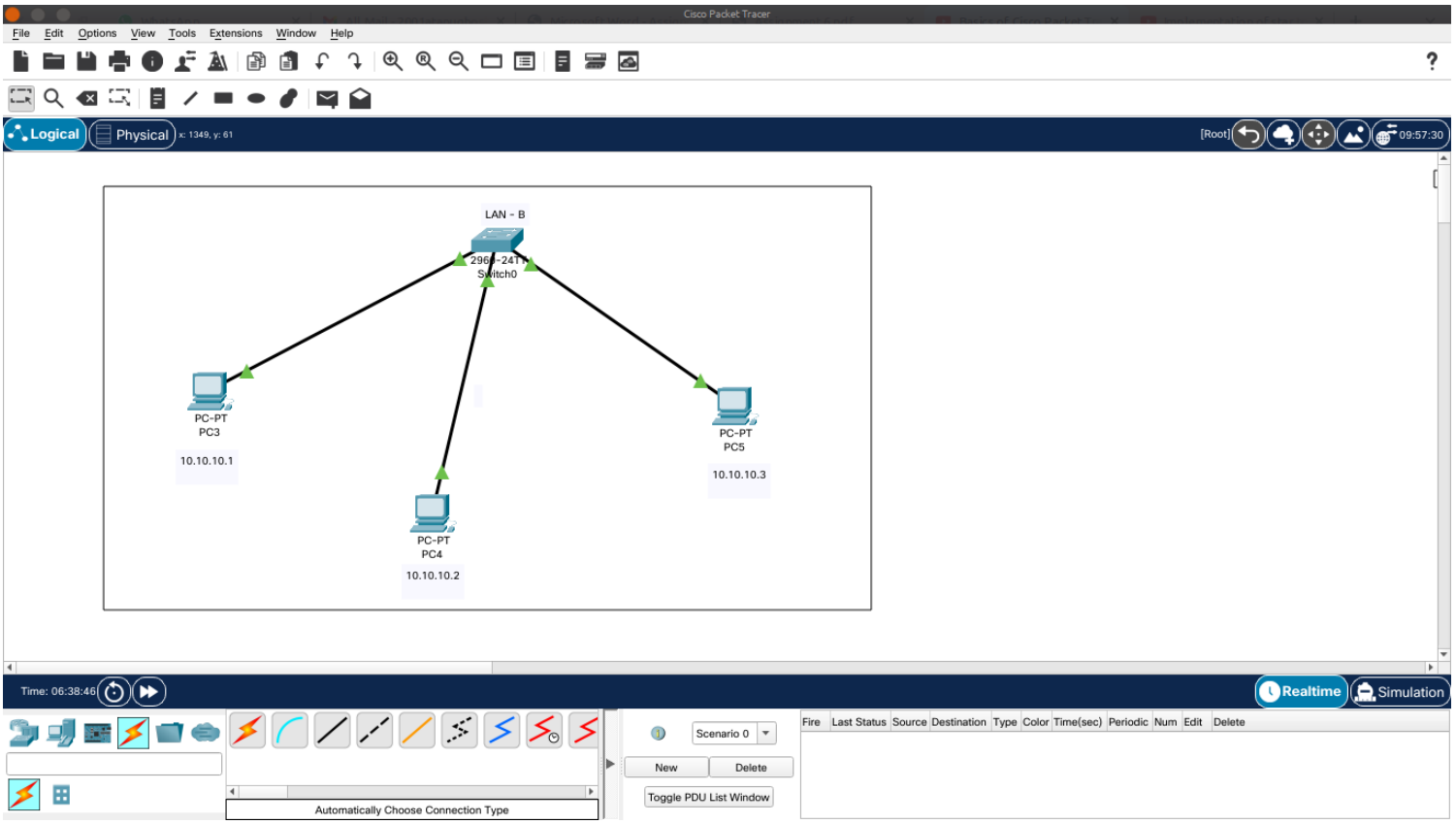

PC0
Physical
Config
Desktop
Programming
Attributes
Command Prompt
X
Bluetooth Connection:
Connection-specific DNS Suffix..:
Link-local IPv6 Address.....: ::
IPv6 Address.....: ::
IPv4 Address.....: 0.0.0.0
Subnet Mask.....: 0.0.0.0
Default Gateway.....: ::
0.0.0.0
C:\>ping 10.10.10.2
Pinging 10.10.10.2 with 32 bytes of data:
Reply from 10.10.10.2: bytes=32 time=119ms TTL=128
Reply from 10.10.10.2: bytes=32 time<1ms TTL=128
Reply from 10.10.10.2: bytes=32 time<1ms TTL=128
Reply from 10.10.10.2: bytes=32 time<1ms TTL=128
Ping statistics for 10.10.10.2:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 0ms, Maximum = 119ms, Average = 29ms
C:\>ping 10.10.10.3
Pinging 10.10.10.3 with 32 bytes of data:
Reply from 10.10.10.3: bytes=32 time<1ms TTL=128
Reply from 10.10.10.3: bytes=32 time=4ms TTL=128
Reply from 10.10.10.3: bytes=32 time<1ms TTL=128
Reply from 10.10.10.3: bytes=32 time<1ms TTL=128
Ping statistics for 10.10.10.3:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 0ms, Maximum = 4ms, Average = 1ms
C:\>
Top


PC1
Physical
Config
Desktop
Programming
Attributes
Command Prompt
X
Bluetooth Connection:
Connection-specific DNS Suffix..:
Link-local IPv6 Address.....: ::
IPv6 Address.....: ::
IPv4 Address.....: 0.0.0.0
Subnet Mask.....: 0.0.0.0
Default Gateway.....: ::
0.0.0.0
C:\>ping 10.10.10.1
Pinging 10.10.10.1 with 32 bytes of data:
Reply from 10.10.10.1: bytes=32 time<1ms TTL=128
Reply from 10.10.10.1: bytes=32 time<1ms TTL=128
Reply from 10.10.10.1: bytes=32 time<1ms TTL=128
Reply from 10.10.10.1: bytes=32 time=10ms TTL=128
Ping statistics for 10.10.10.1:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 0ms, Maximum = 10ms, Average = 2ms
C:\>ping 10.10.10.3
Pinging 10.10.10.3 with 32 bytes of data:
Reply from 10.10.10.3: bytes=32 time=21ms TTL=128
Reply from 10.10.10.3: bytes=32 time<1ms TTL=128
Reply from 10.10.10.3: bytes=32 time<1ms TTL=128
Reply from 10.10.10.3: bytes=32 time<1ms TTL=128
Ping statistics for 10.10.10.3:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 0ms, Maximum = 21ms, Average = 5ms
C:\>
Top

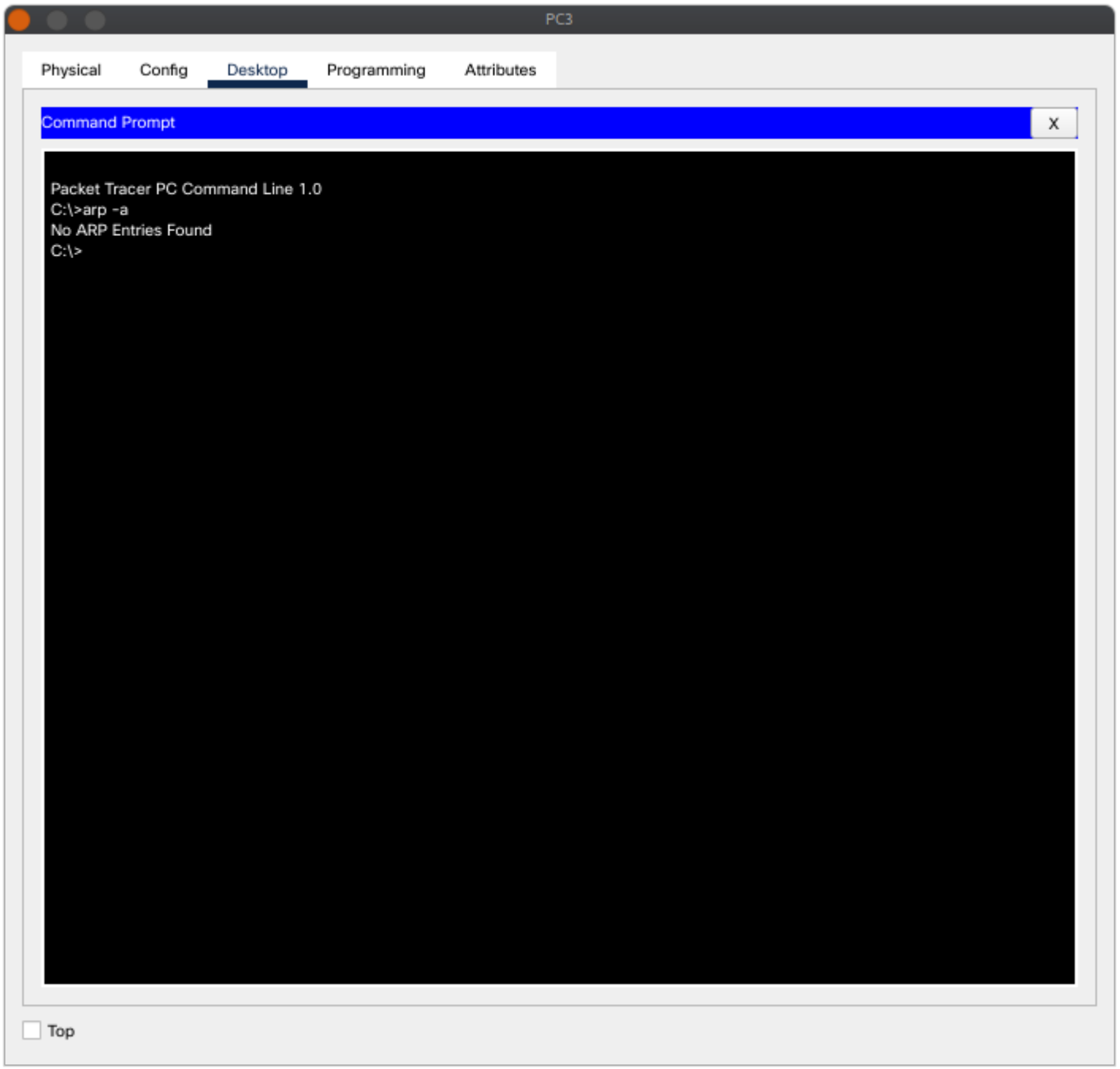

PC2
Physical
Config
Desktop
Programming
Attributes
Command Prompt
X
Bluetooth Connection:
Connection-specific DNS Suffix..:
Link-local IPv6 Address.....: ::
IPv6 Address.....: ::
IPv4 Address.....: 0.0.0.0
Subnet Mask.....: 0.0.0.0
Default Gateway.....: ::
0.0.0.0
C:\>ping 10.10.10.1
Pinging 10.10.10.1 with 32 bytes of data:
Reply from 10.10.10.1: bytes=32 time<1ms TTL=128
Reply from 10.10.10.1: bytes=32 time<1ms TTL=128
Reply from 10.10.10.1: bytes=32 time<1ms TTL=128
Reply from 10.10.10.1: bytes=32 time=42ms TTL=128
Ping statistics for 10.10.10.1:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 0ms, Maximum = 42ms, Average = 10ms
C:\>ping 10.10.10.2
Pinging 10.10.10.2 with 32 bytes of data:
Reply from 10.10.10.2: bytes=32 time<1ms TTL=128
Reply from 10.10.10.2: bytes=32 time<1ms TTL=128
Reply from 10.10.10.2: bytes=32 time<1ms TTL=128
Reply from 10.10.10.2: bytes=32 time<1ms TTL=128
Ping statistics for 10.10.10.2:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 0ms, Maximum = 0ms, Average = 0ms
C:\>
Top

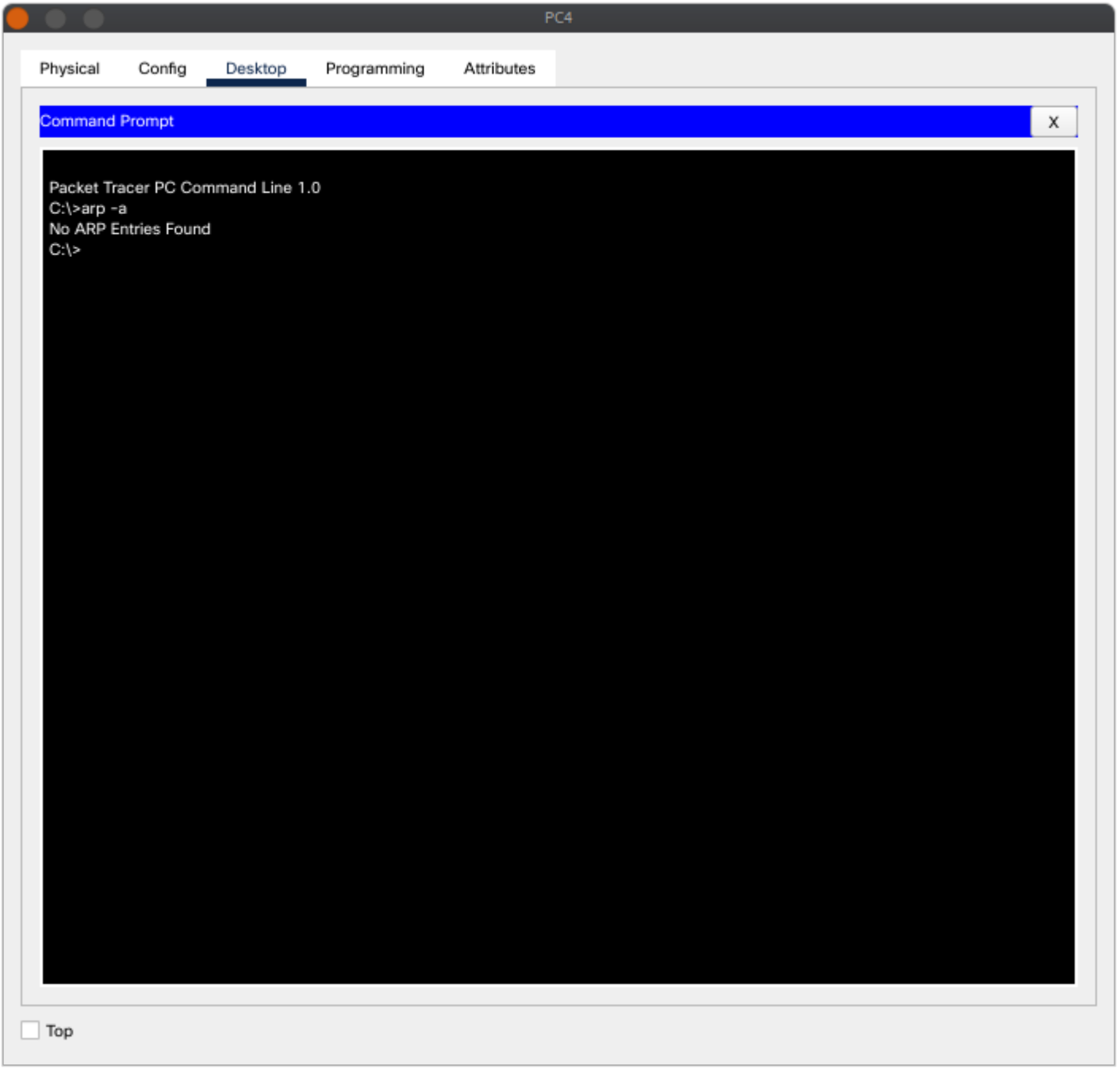
Q3. Create a LAN (named LAN-B) with 3 hosts using a switch. Record contents of the ARP Table of end hosts and the MAC Forwarding Table of the switch. Ping each pair of nodes. Now record the contents of the ARP Table of end hosts and the MAC Forwarding Table of the switch again.

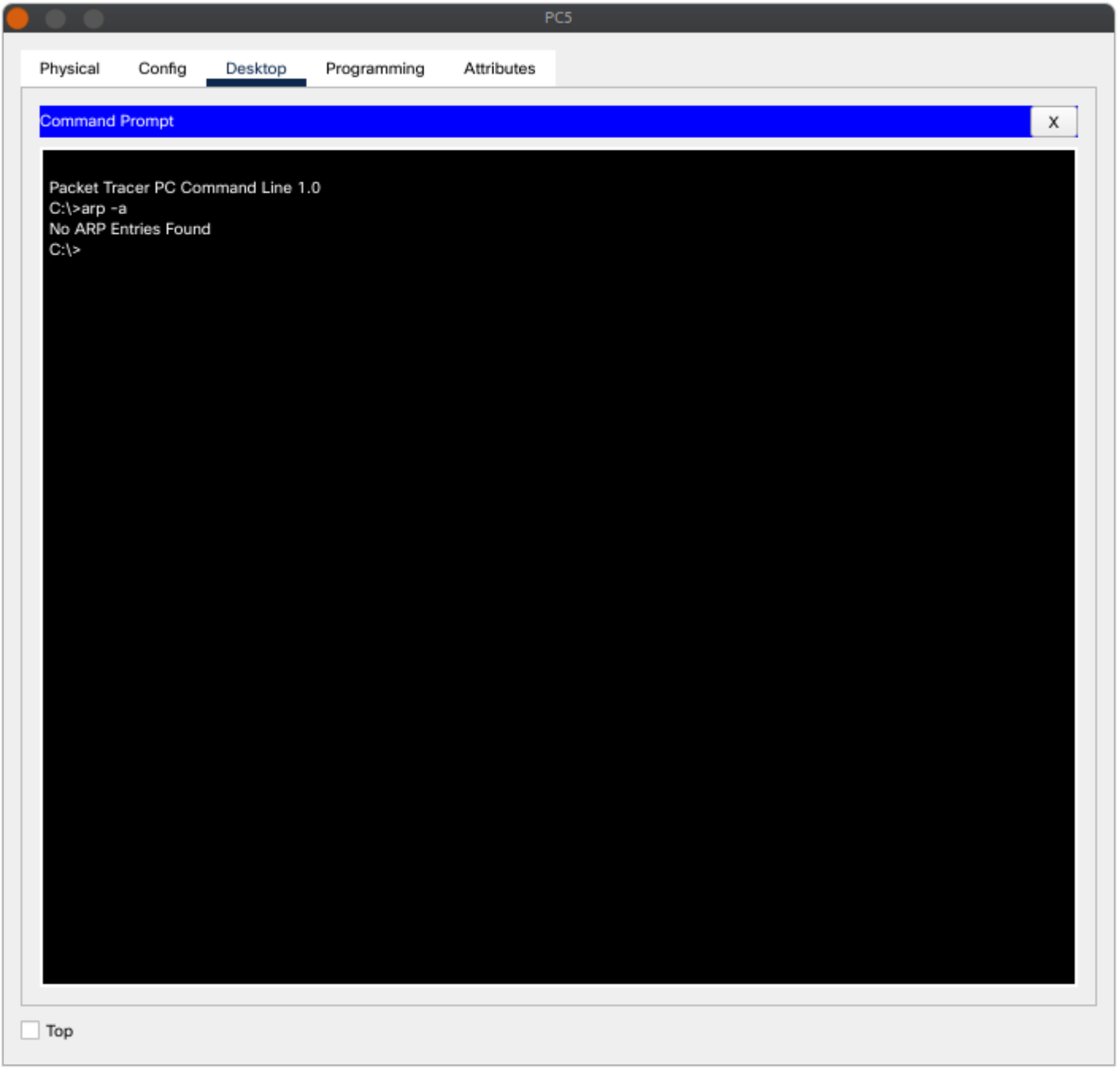
LAN-B was created using a switch (Cisco 2960) and three hosts were connected to it. After activating the connections, the following results were obtained.

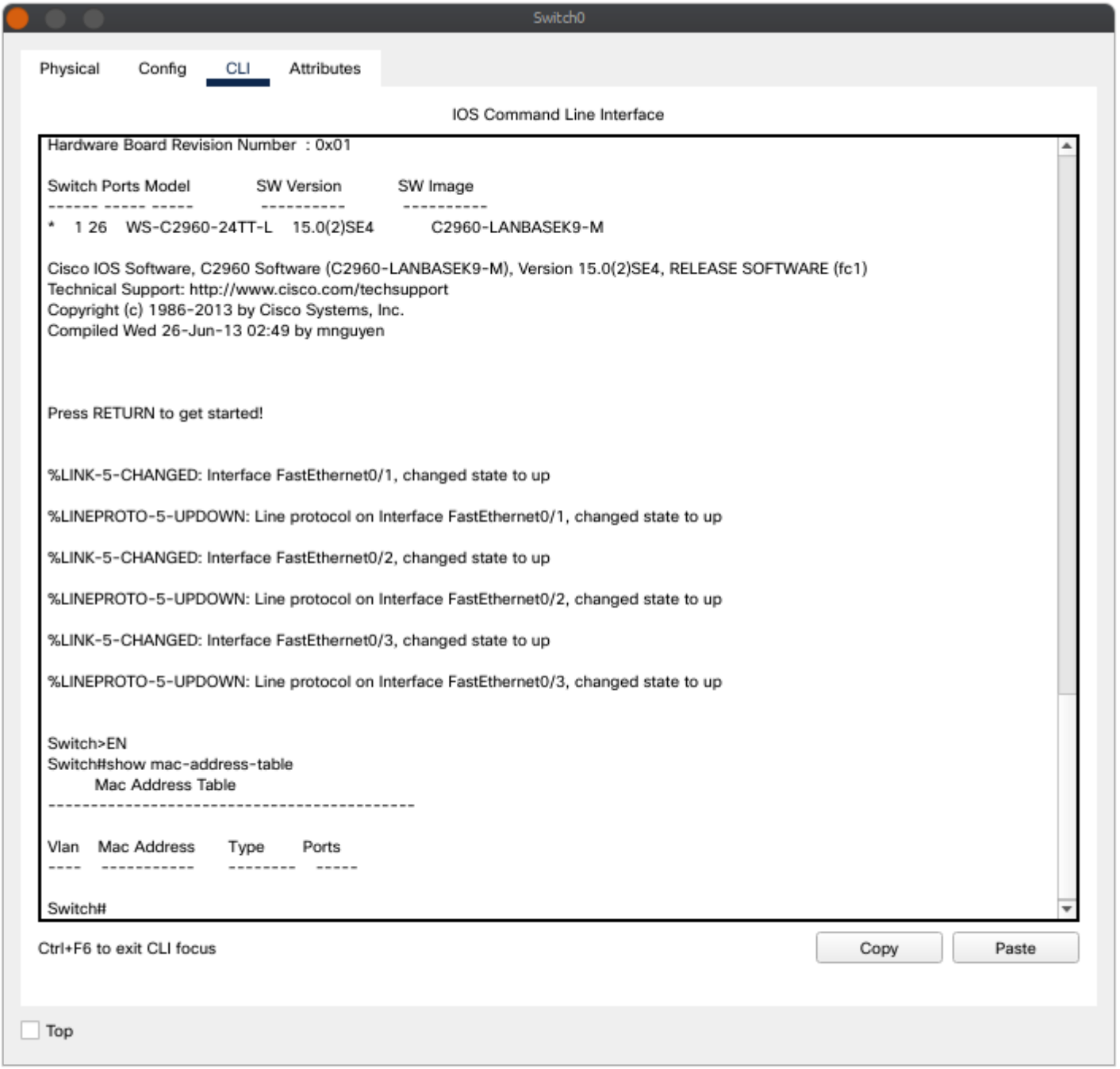


Initially, before doing any ping:

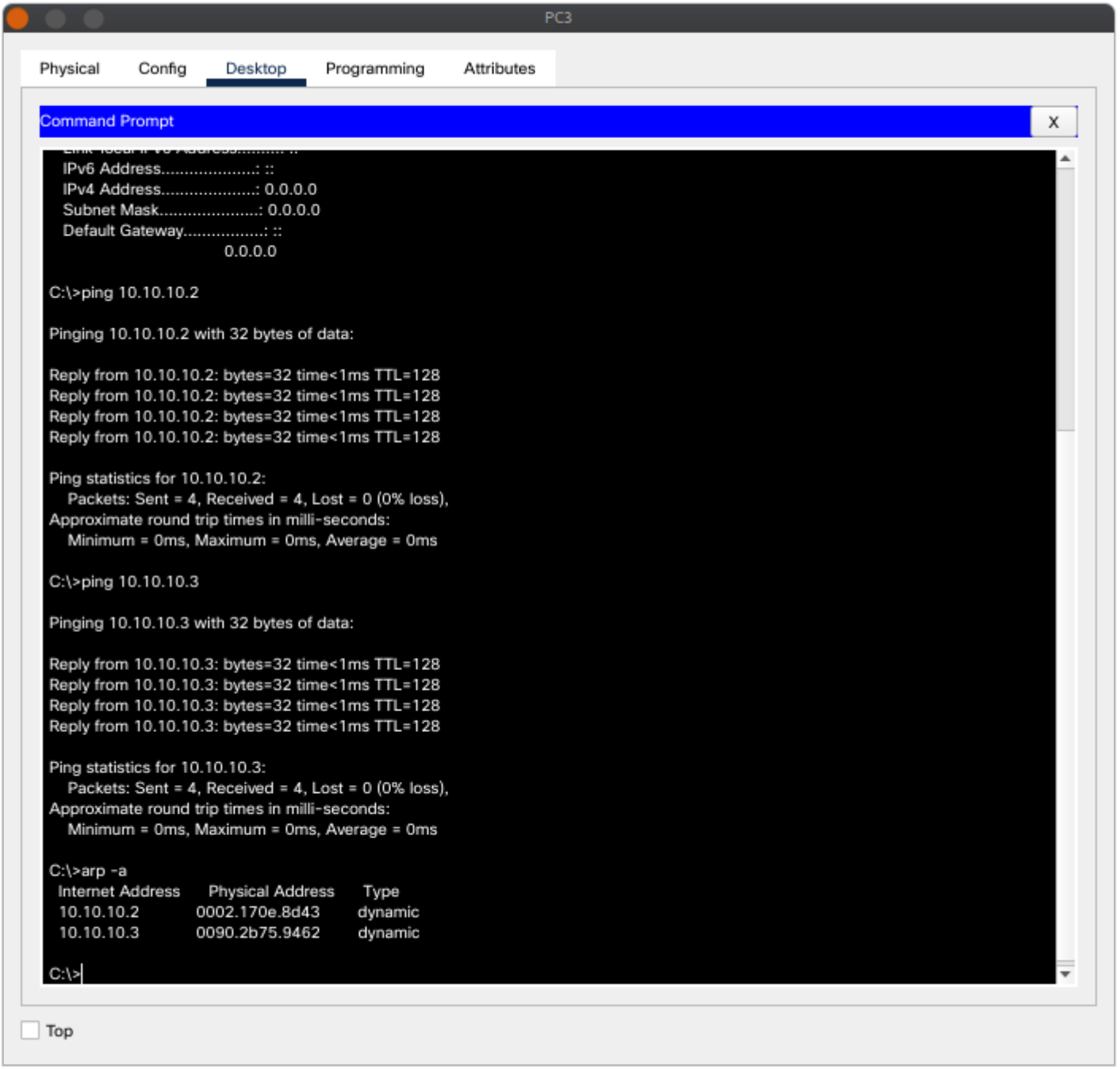


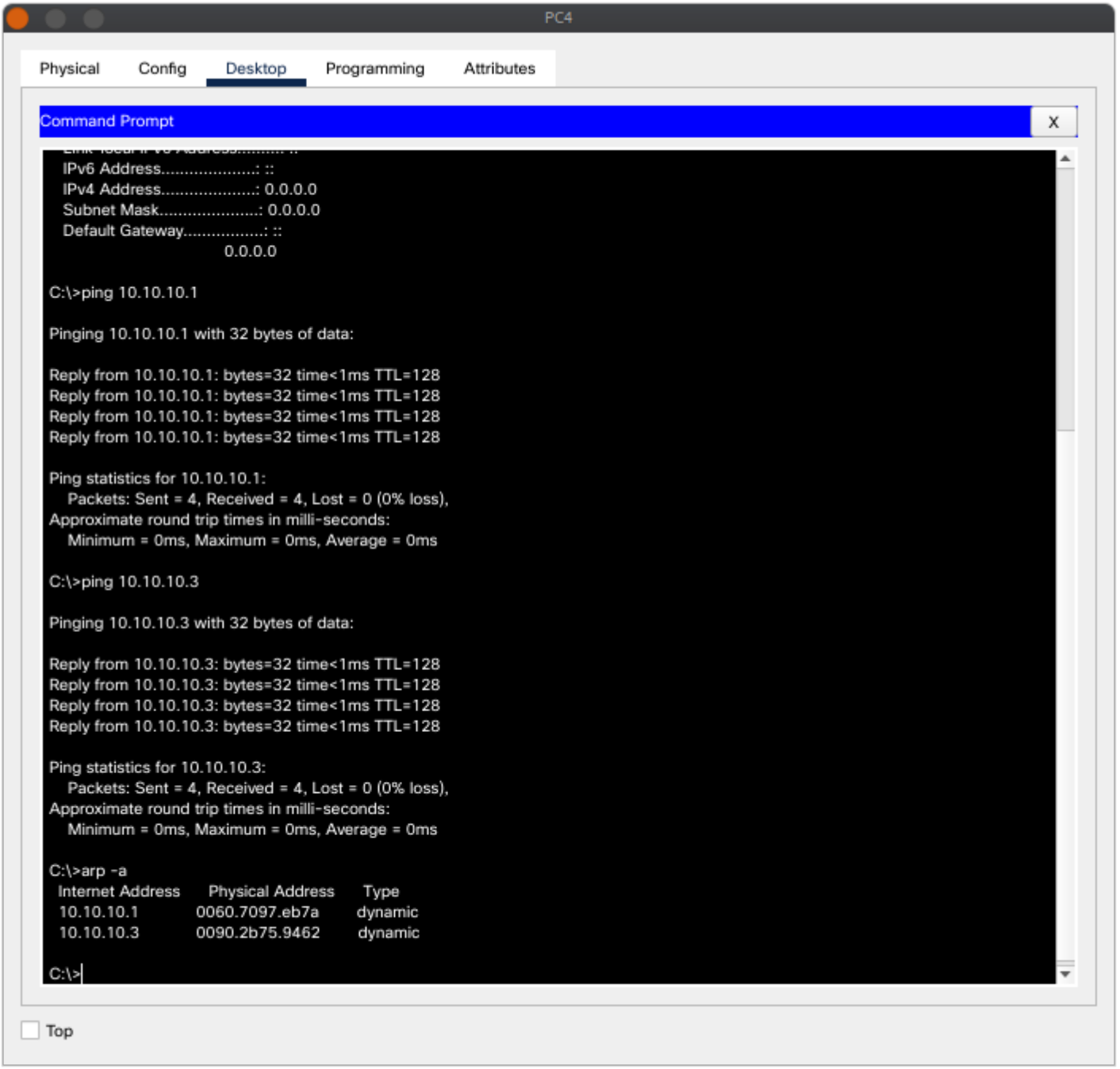

PC4
Physical
Config
Desktop
Programming
Attributes
Command Prompt
X
Packet Tracer PC Command Line 1.0
C:\>arp -a
No ARP Entries Found
C:\>
Top

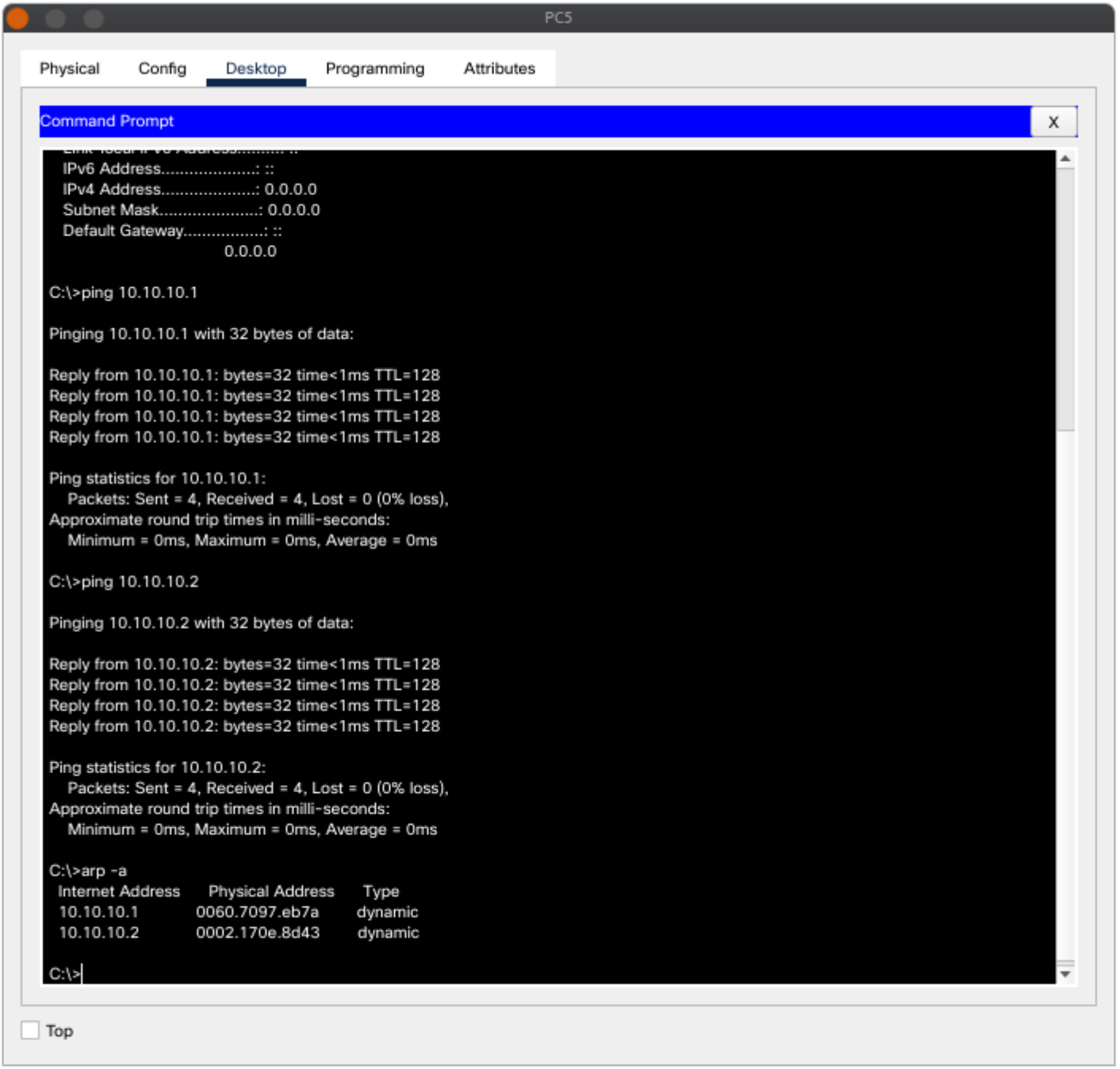

PC5
Physical
Config
Desktop
Programming
Attributes
Command Prompt
X
Packet Tracer PC Command Line 1.0
C:\>arp -a
No ARP Entries Found
C:\>
Top

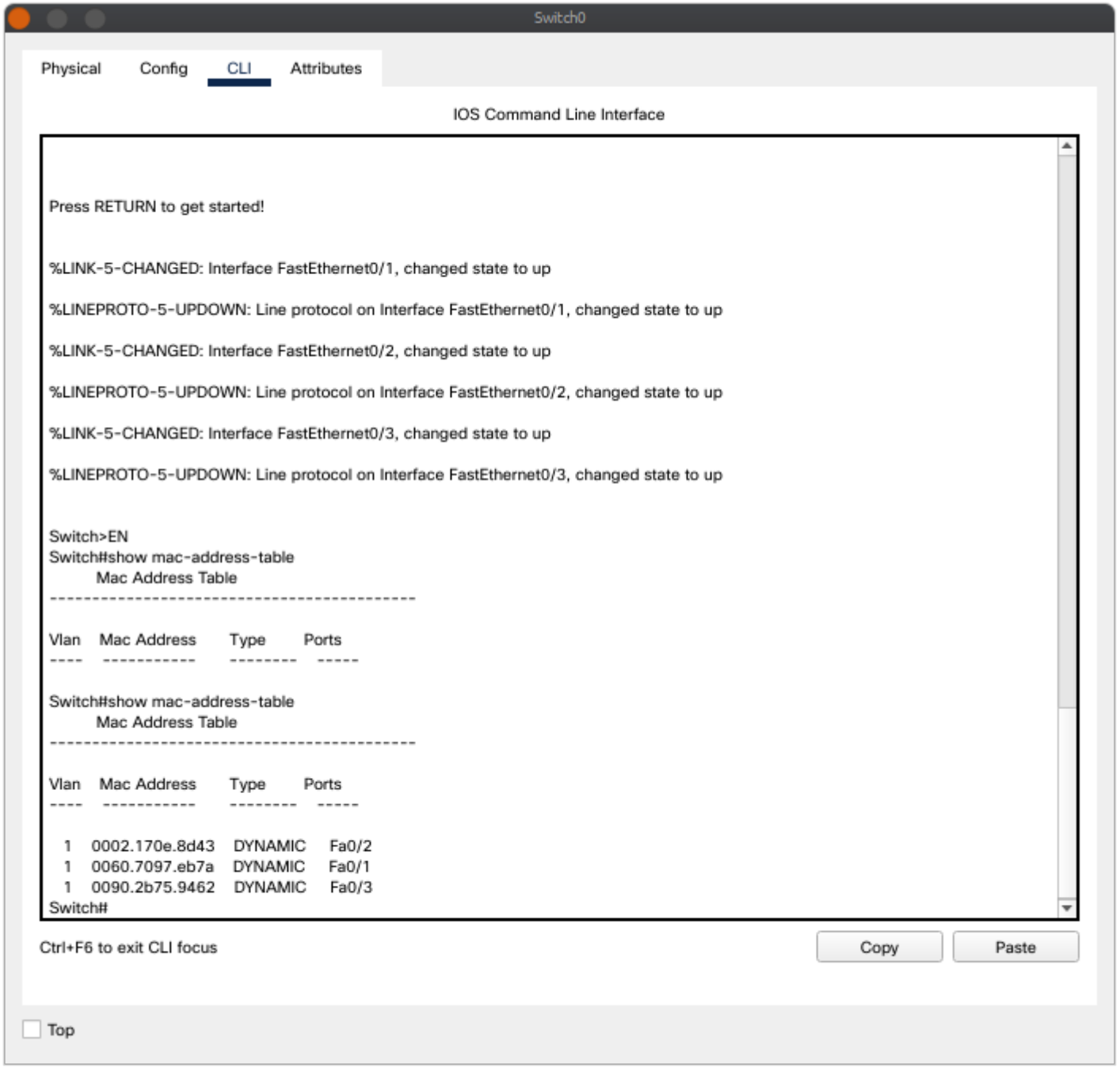

Switch0
Physical
Config
CLI
Attributes
IOS Command Line Interface
Hardware Board Revision Number : 0x01
Switch Ports Model SW Version SW Image
------ ----- ----- ---------- ----------
* 1 26 WS-C2960-24TT-L 15.0(2)SE4 C2960-LANBASEK9-M
Cisco IOS Software, C2960 Software (C2960-LANBASEK9-M), Version 15.0(2)SE4, RELEASE SOFTWARE (fc1)
Technical Support: http://www.cisco.com/techsupport
Copyright (c) 1986-2013 by Cisco Systems, Inc.
Compiled Wed 26-Jun-13 02:49 by mnguyen
Press RETURN to get started!
%LINK-5-CHANGED: Interface FastEthernet0/1, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed state to up
%LINK-5-CHANGED: Interface FastEthernet0/2, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/2, changed state to up
%LINK-5-CHANGED: Interface FastEthernet0/3, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/3, changed state to up
Switch>EN
Switch#show mac-address-table
Mac Address Table
Vlan Mac Address Type Ports
---- ----------- -------- -----
Switch#
Ctrl+F6 to exit CLI focus
Copy
Paste
Top

After pinging each possible pair of nodes, the following were obtained:



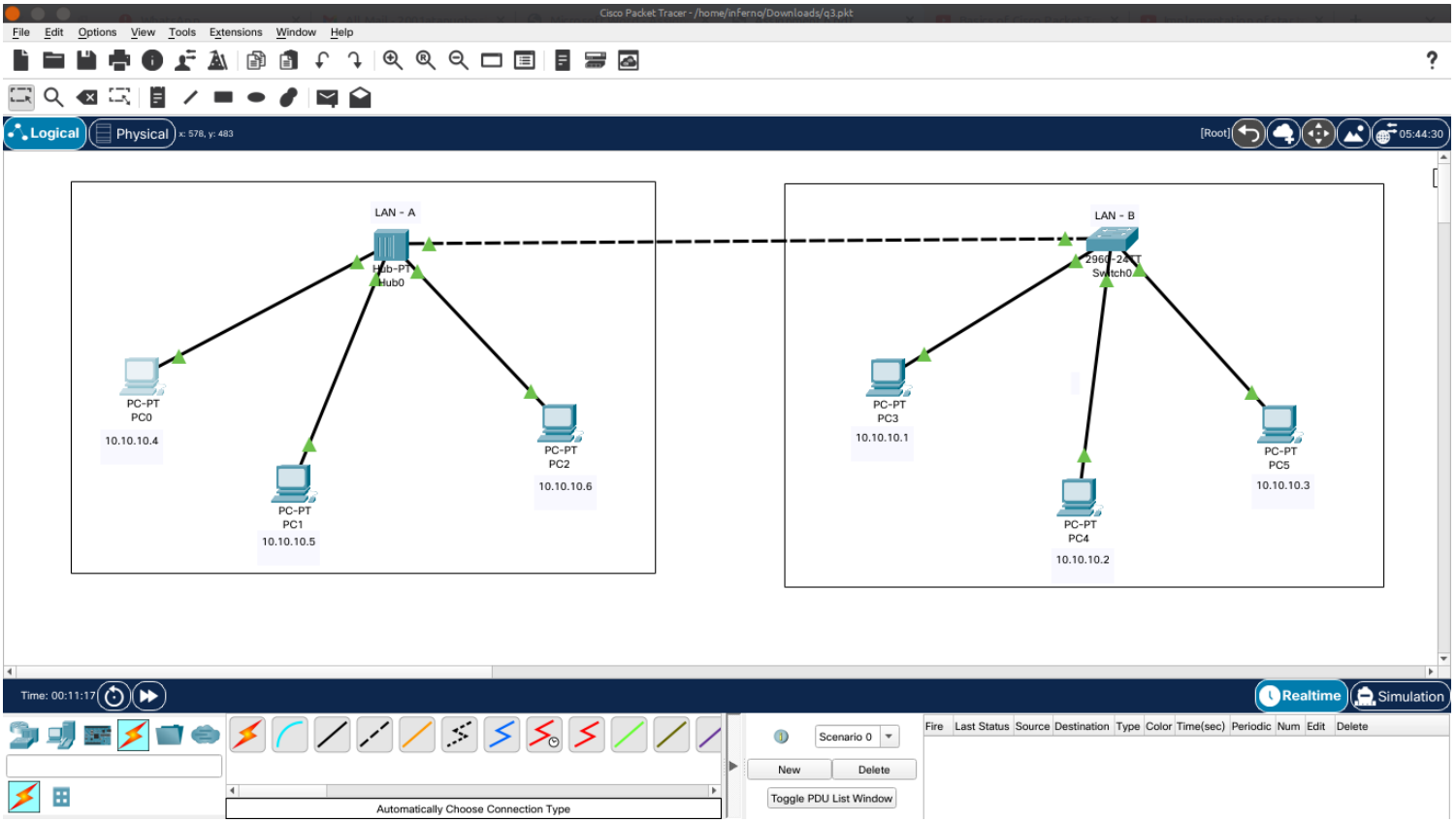

PC4
Physical
Config
Desktop
Programming
Attributes
Command Prompt
X
IPv6 Address.....: ::
IPv4 Address.....: 0.0.0.0
Subnet Mask.....: 0.0.0.0
Default Gateway.....: ::
0.0.0.0
C:\>ping 10.10.10.1
Pinging 10.10.10.1 with 32 bytes of data:
Reply from 10.10.10.1: bytes=32 time<1ms TTL=128
Reply from 10.10.10.1: bytes=32 time<1ms TTL=128
Reply from 10.10.10.1: bytes=32 time<1ms TTL=128
Reply from 10.10.10.1: bytes=32 time<1ms TTL=128
Ping statistics for 10.10.10.1:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 0ms, Maximum = 0ms, Average = 0ms
C:\>ping 10.10.10.3
Pinging 10.10.10.3 with 32 bytes of data:
Reply from 10.10.10.3: bytes=32 time<1ms TTL=128
Reply from 10.10.10.3: bytes=32 time<1ms TTL=128
Reply from 10.10.10.3: bytes=32 time<1ms TTL=128
Reply from 10.10.10.3: bytes=32 time<1ms TTL=128
Ping statistics for 10.10.10.3:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 0ms, Maximum = 0ms, Average = 0ms
C:\>arp -a
Internet Address Physical Address Type
10.10.10.1 0060.7097.eb7a dynamic
10.10.10.3 0090.2b75.9462 dynamic
C:\>
Top


PC5
Physical
Config
Desktop
Programming
Attributes
Command Prompt
X
IPv6 Address.....: ::
IPv4 Address.....: 0.0.0.0
Subnet Mask.....: 0.0.0.0
Default Gateway.....: ::
0.0.0.0
C:\>ping 10.10.10.1
Pinging 10.10.10.1 with 32 bytes of data:
Reply from 10.10.10.1: bytes=32 time<1ms TTL=128
Reply from 10.10.10.1: bytes=32 time<1ms TTL=128
Reply from 10.10.10.1: bytes=32 time<1ms TTL=128
Reply from 10.10.10.1: bytes=32 time<1ms TTL=128
Ping statistics for 10.10.10.1:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 0ms, Maximum = 0ms, Average = 0ms
C:\>ping 10.10.10.2
Pinging 10.10.10.2 with 32 bytes of data:
Reply from 10.10.10.2: bytes=32 time<1ms TTL=128
Reply from 10.10.10.2: bytes=32 time<1ms TTL=128
Reply from 10.10.10.2: bytes=32 time<1ms TTL=128
Reply from 10.10.10.2: bytes=32 time<1ms TTL=128
Ping statistics for 10.10.10.2:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 0ms, Maximum = 0ms, Average = 0ms
C:\>arp -a
Internet Address Physical Address Type
10.10.10.1 0060.7097.eb7a dynamic
10.10.10.2 0002.170e.8d43 dynamic
C:\>
Top

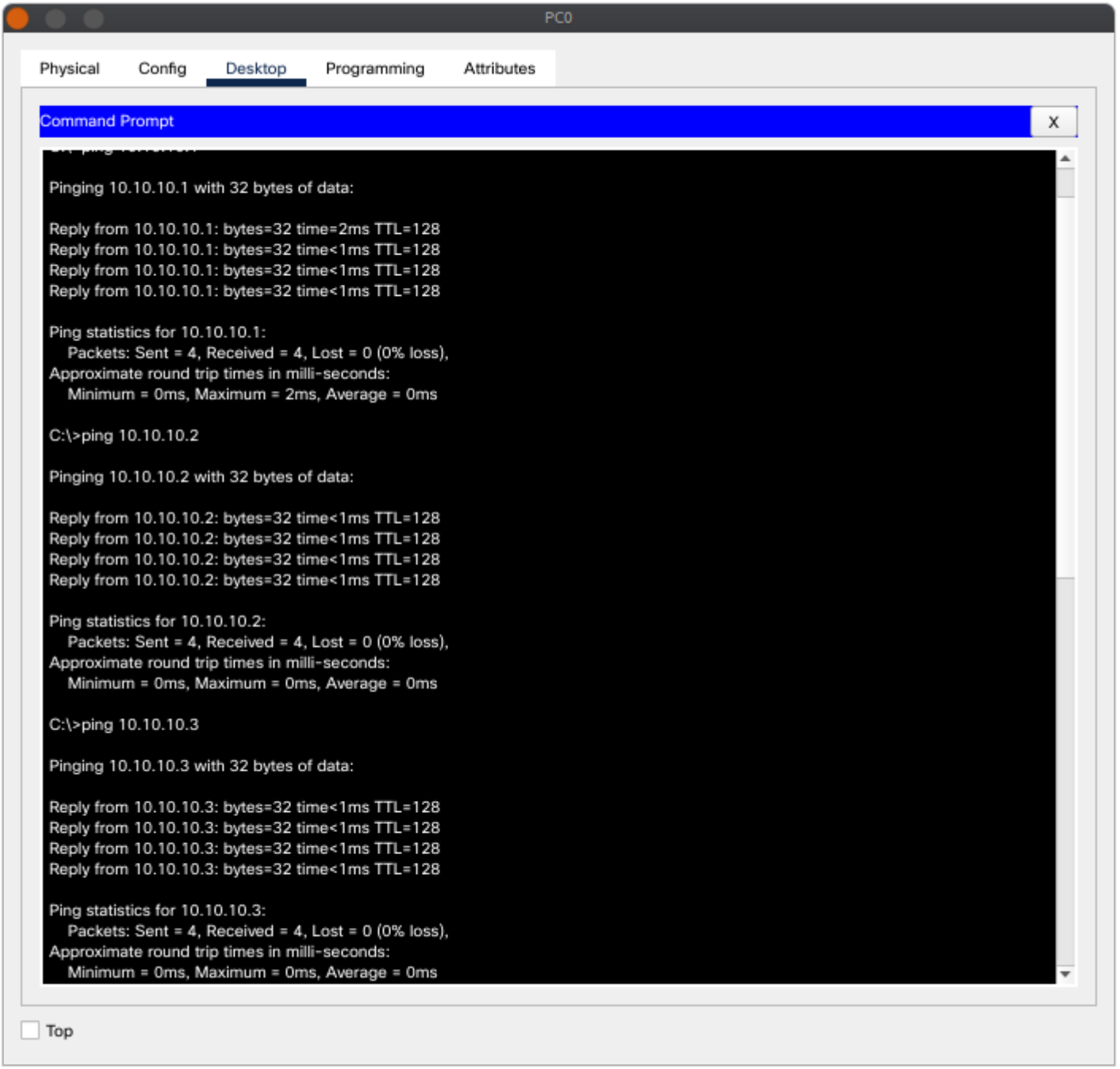

Switch0
Physical
Config
CLI
Attributes
IOS Command Line Interface
Press RETURN to get started!
%LINK-5-CHANGED: Interface FastEthernet0/1, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed state to up
%LINK-5-CHANGED: Interface FastEthernet0/2, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/2, changed state to up
%LINK-5-CHANGED: Interface FastEthernet0/3, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/3, changed state to up
Switch>EN
Switch#show mac-address-table
Mac Address Table
Vlan Mac Address Type Ports
Switch#show mac-address-table
Mac Address Table
Vlan Mac Address Type Ports
1 0002.170e.8d43 DYNAMIC Fa0/2
1 0060.7097.eb7a DYNAMIC Fa0/1
1 0090.2b75.9462 DYNAMIC Fa0/3
Switch#
Ctrl+F6 to exit CLI focus
Copy
Paste
Top

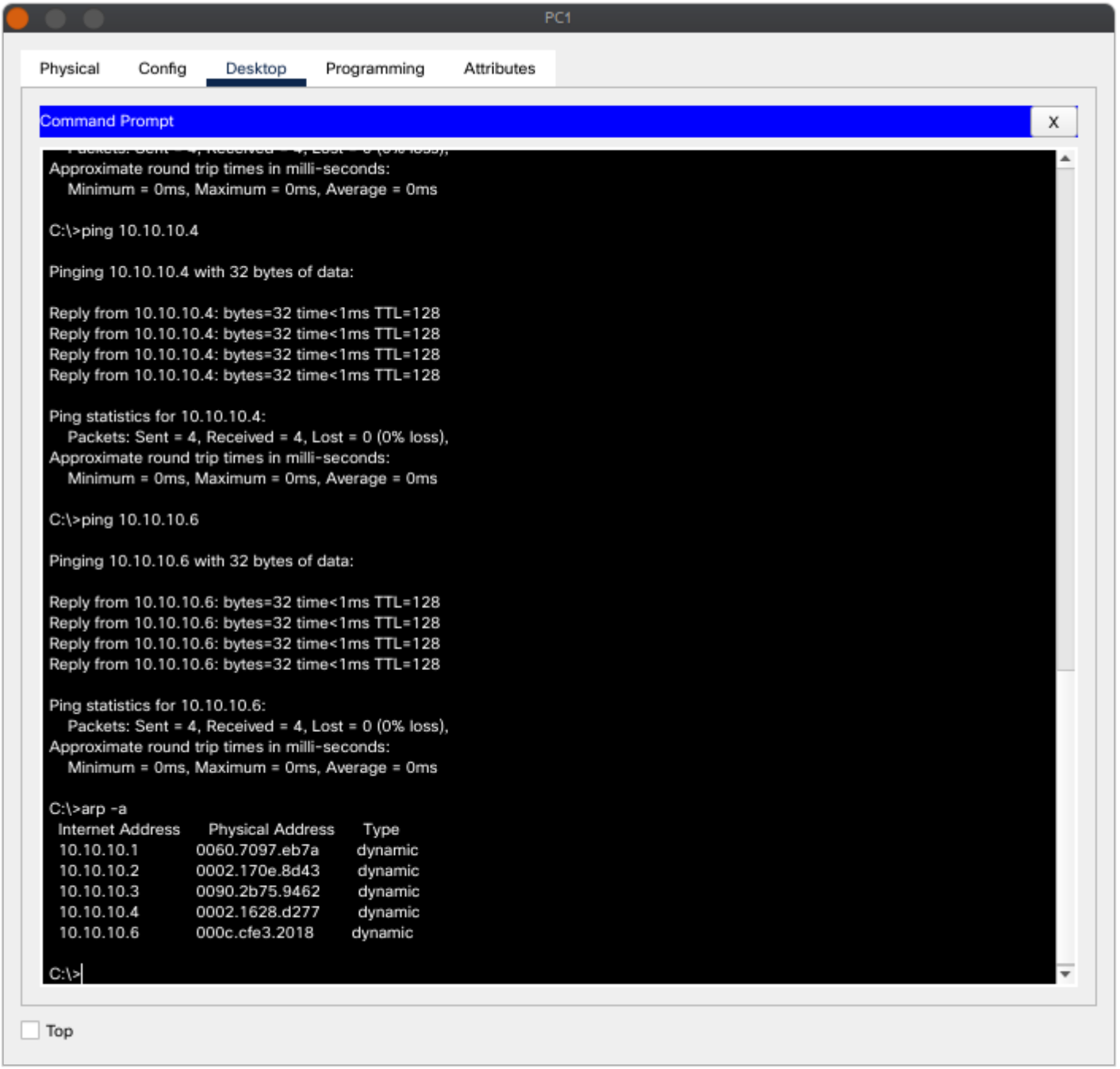
Q4. Connect LAN-A and LAN-B by connecting the hub and switch using a cross-over cable. Ping between each pair of hosts of LAN-A and LAN-B. Now record the contents of the ARP Table of end hosts and the MAC Forwarding Table of the switch again.

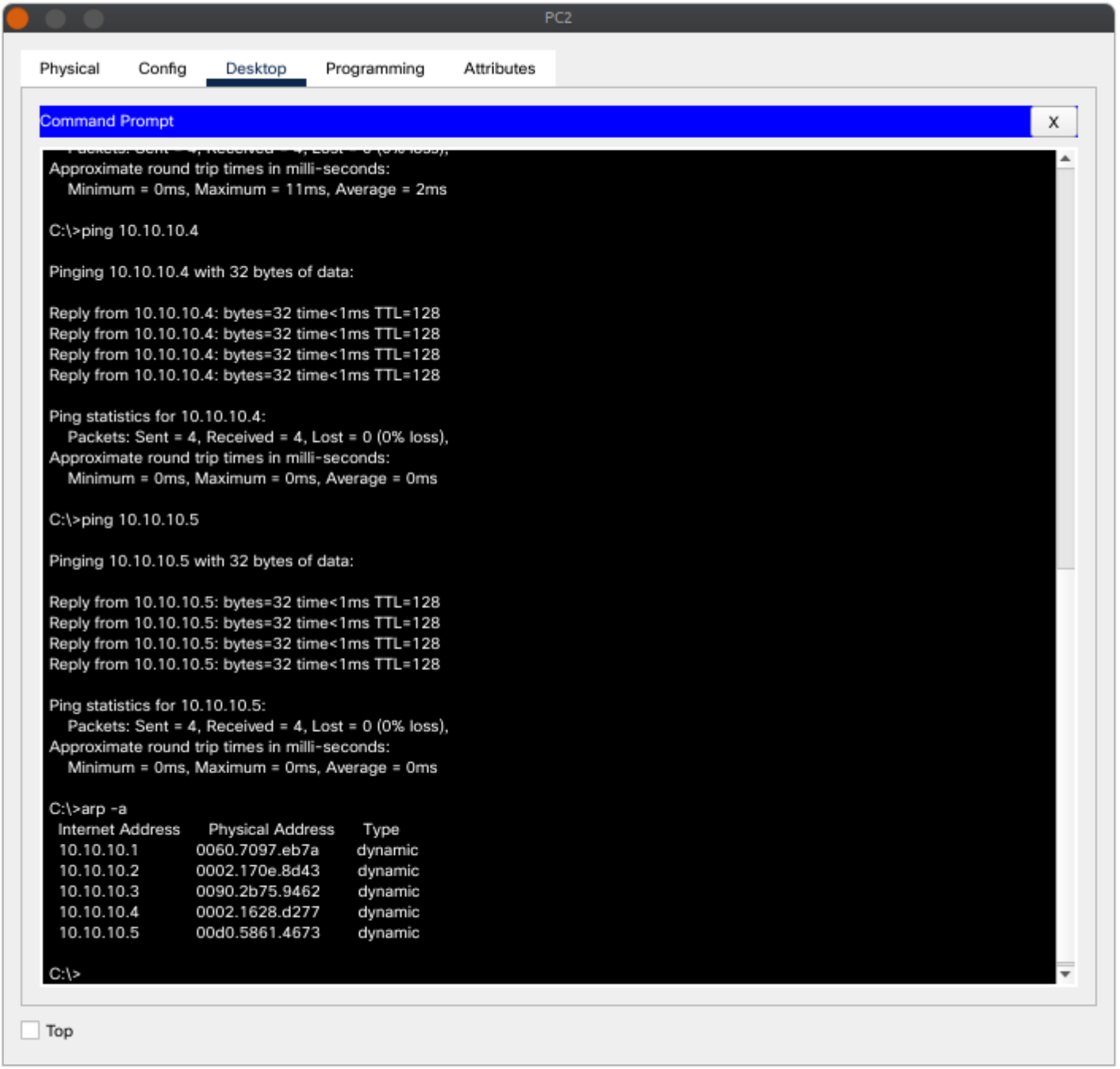
LAN-A and LAB-B are connected by using a crossover cable. After that, each possible pair of nodes is pinged again. The following results were obtained.

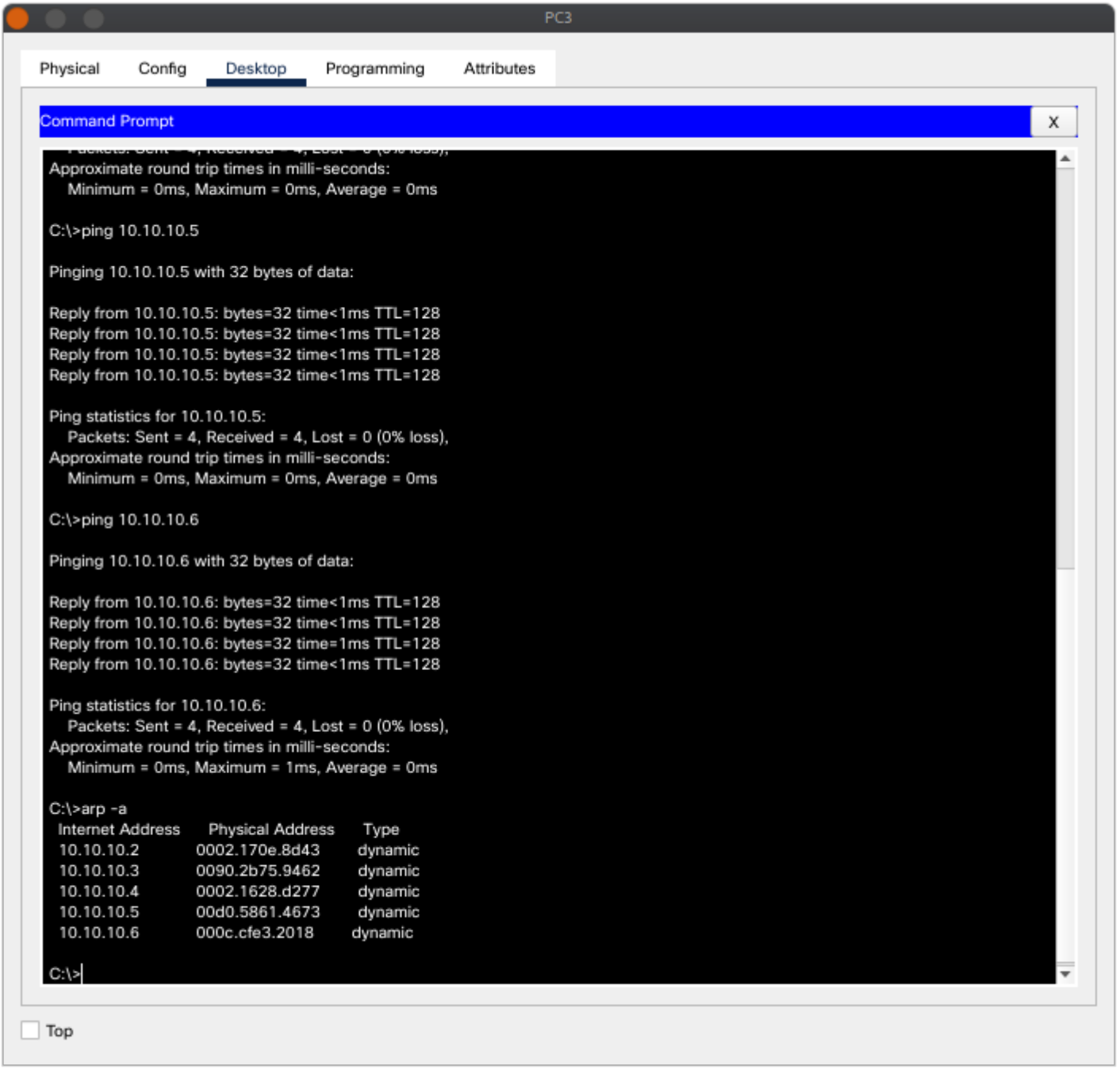


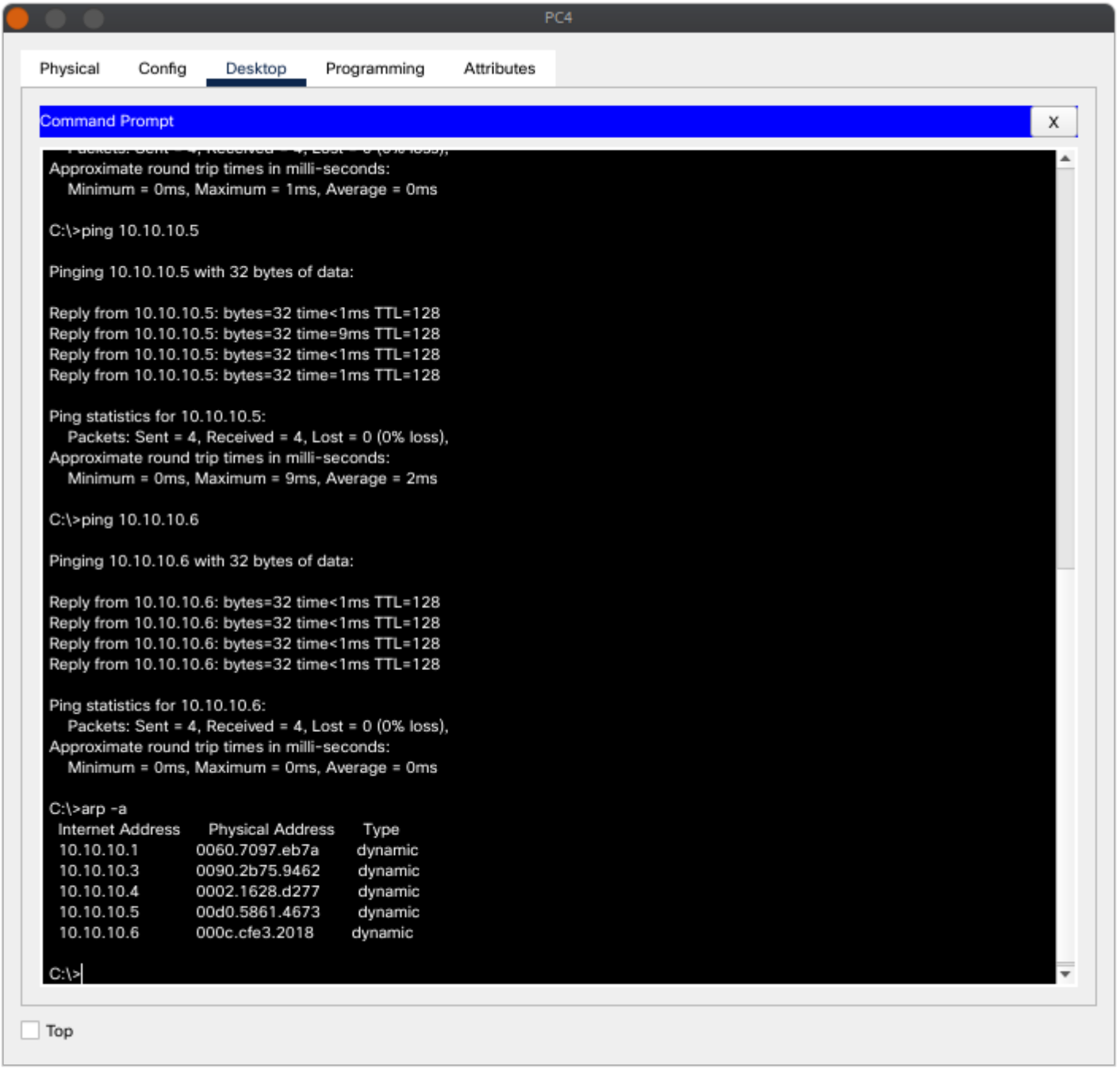
ARP tables of the end hosts of both LAN A and LAN B:

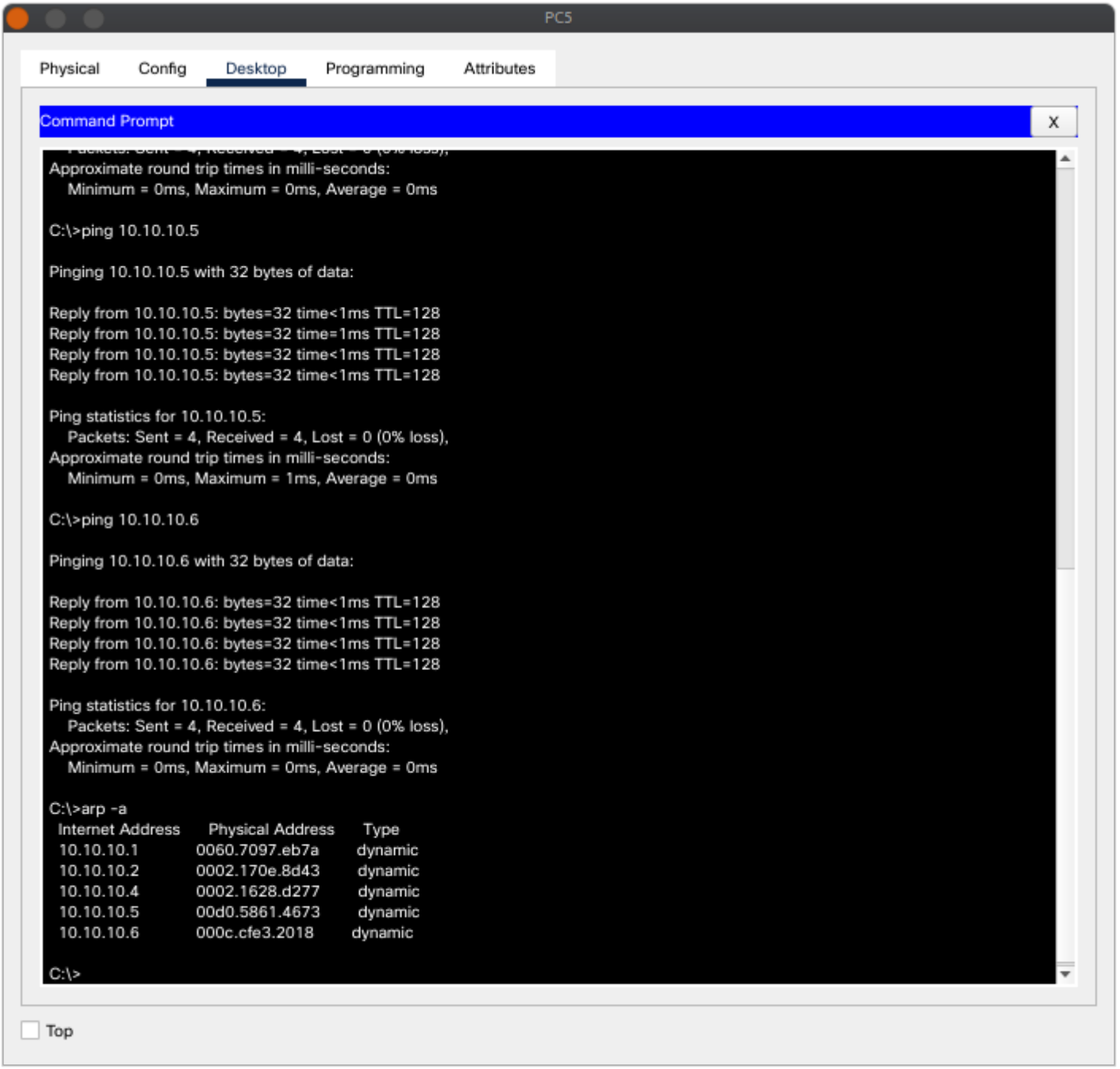



PC1
Physical
Config
Desktop
Programming
Attributes
Command Prompt
X
Approximate round trip times in milli-seconds:
Minimum = 0ms, Maximum = 0ms, Average = 0ms
C:\>ping 10.10.10.4
Pinging 10.10.10.4 with 32 bytes of data:
Reply from 10.10.10.4: bytes=32 time<1ms TTL=128
Reply from 10.10.10.4: bytes=32 time<1ms TTL=128
Reply from 10.10.10.4: bytes=32 time<1ms TTL=128
Reply from 10.10.10.4: bytes=32 time<1ms TTL=128
Ping statistics for 10.10.10.4:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 0ms, Maximum = 0ms, Average = 0ms
C:\>ping 10.10.10.6
Pinging 10.10.10.6 with 32 bytes of data:
Reply from 10.10.10.6: bytes=32 time<1ms TTL=128
Reply from 10.10.10.6: bytes=32 time<1ms TTL=128
Reply from 10.10.10.6: bytes=32 time<1ms TTL=128
Reply from 10.10.10.6: bytes=32 time<1ms TTL=128
Ping statistics for 10.10.10.6:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 0ms, Maximum = 0ms, Average = 0ms
C:\>arp -a
Internet Address Physical Address Type
10.10.10.1 0060.7097.eb7a dynamic
10.10.10.2 0002.170e.8d43 dynamic
10.10.10.3 0090.2b75.9462 dynamic
10.10.10.4 0002.1628.d277 dynamic
10.10.10.6 000c.cfe3.2018 dynamic
C:\>
Top


PC2
Physical
Config
Desktop
Programming
Attributes
Command Prompt
X
Approximate round trip times in milli-seconds:
Minimum = 0ms, Maximum = 11ms, Average = 2ms
C:\>ping 10.10.10.4
Pinging 10.10.10.4 with 32 bytes of data:
Reply from 10.10.10.4: bytes=32 time<1ms TTL=128
Reply from 10.10.10.4: bytes=32 time<1ms TTL=128
Reply from 10.10.10.4: bytes=32 time<1ms TTL=128
Reply from 10.10.10.4: bytes=32 time<1ms TTL=128
Ping statistics for 10.10.10.4:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 0ms, Maximum = 0ms, Average = 0ms
C:\>ping 10.10.10.5
Pinging 10.10.10.5 with 32 bytes of data:
Reply from 10.10.10.5: bytes=32 time<1ms TTL=128
Reply from 10.10.10.5: bytes=32 time<1ms TTL=128
Reply from 10.10.10.5: bytes=32 time<1ms TTL=128
Reply from 10.10.10.5: bytes=32 time<1ms TTL=128
Ping statistics for 10.10.10.5:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 0ms, Maximum = 0ms, Average = 0ms
C:\>arp -a
Internet Address Physical Address Type
10.10.10.1 0060.7097.eb7a dynamic
10.10.10.2 0002.170e.8d43 dynamic
10.10.10.3 0090.2b75.9462 dynamic
10.10.10.4 0002.1628.d277 dynamic
10.10.10.5 00d0.5861.4673 dynamic
C:\>
Top

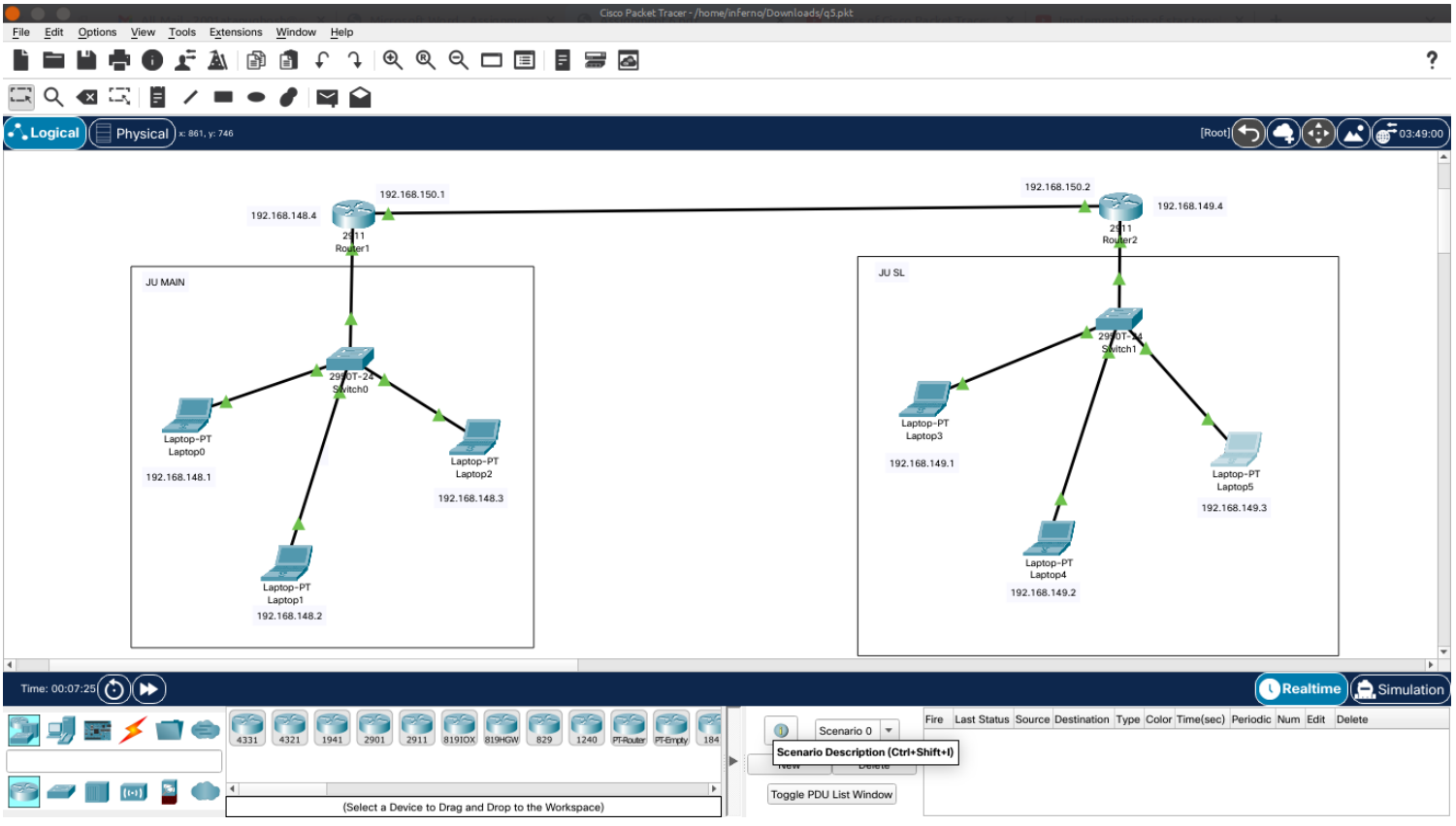

PC3
Physical
Config
Desktop
Programming
Attributes
Command Prompt
X
Approximate round trip times in milli-seconds:
Minimum = 0ms, Maximum = 0ms, Average = 0ms
C:\>ping 10.10.10.5
Pinging 10.10.10.5 with 32 bytes of data:
Reply from 10.10.10.5: bytes=32 time<1ms TTL=128
Reply from 10.10.10.5: bytes=32 time<1ms TTL=128
Reply from 10.10.10.5: bytes=32 time<1ms TTL=128
Reply from 10.10.10.5: bytes=32 time<1ms TTL=128
Ping statistics for 10.10.10.5:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 0ms, Maximum = 0ms, Average = 0ms
C:\>ping 10.10.10.6
Pinging 10.10.10.6 with 32 bytes of data:
Reply from 10.10.10.6: bytes=32 time<1ms TTL=128
Reply from 10.10.10.6: bytes=32 time<1ms TTL=128
Reply from 10.10.10.6: bytes=32 time=1ms TTL=128
Reply from 10.10.10.6: bytes=32 time<1ms TTL=128
Ping statistics for 10.10.10.6:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 0ms, Maximum = 1ms, Average = 0ms
C:\>arp -a
Internet Address Physical Address Type
10.10.10.2 0002.170e.8d43 dynamic
10.10.10.3 0090.2b75.9462 dynamic
10.10.10.4 0002.1628.d277 dynamic
10.10.10.5 00d0.5861.4673 dynamic
10.10.10.6 000c.cfe3.2018 dynamic
C:\>
Top


PC4
Physical
Config
Desktop
Programming
Attributes
Command Prompt
X
Approximate round trip times in milli-seconds:
Minimum = 0ms, Maximum = 1ms, Average = 0ms
C:\>ping 10.10.10.5
Pinging 10.10.10.5 with 32 bytes of data:
Reply from 10.10.10.5: bytes=32 time<1ms TTL=128
Reply from 10.10.10.5: bytes=32 time=9ms TTL=128
Reply from 10.10.10.5: bytes=32 time<1ms TTL=128
Reply from 10.10.10.5: bytes=32 time=1ms TTL=128
Ping statistics for 10.10.10.5:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 0ms, Maximum = 9ms, Average = 2ms
C:\>ping 10.10.10.6
Pinging 10.10.10.6 with 32 bytes of data:
Reply from 10.10.10.6: bytes=32 time<1ms TTL=128
Reply from 10.10.10.6: bytes=32 time<1ms TTL=128
Reply from 10.10.10.6: bytes=32 time<1ms TTL=128
Reply from 10.10.10.6: bytes=32 time<1ms TTL=128
Ping statistics for 10.10.10.6:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 0ms, Maximum = 0ms, Average = 0ms
C:\>arp -a
Internet Address Physical Address Type
10.10.10.1 0060.7097.eb7a dynamic
10.10.10.3 0090.2b75.9462 dynamic
10.10.10.4 0002.1628.d277 dynamic
10.10.10.5 00d0.5861.4673 dynamic
10.10.10.6 000c.cfe3.2018 dynamic
C:\>
Top

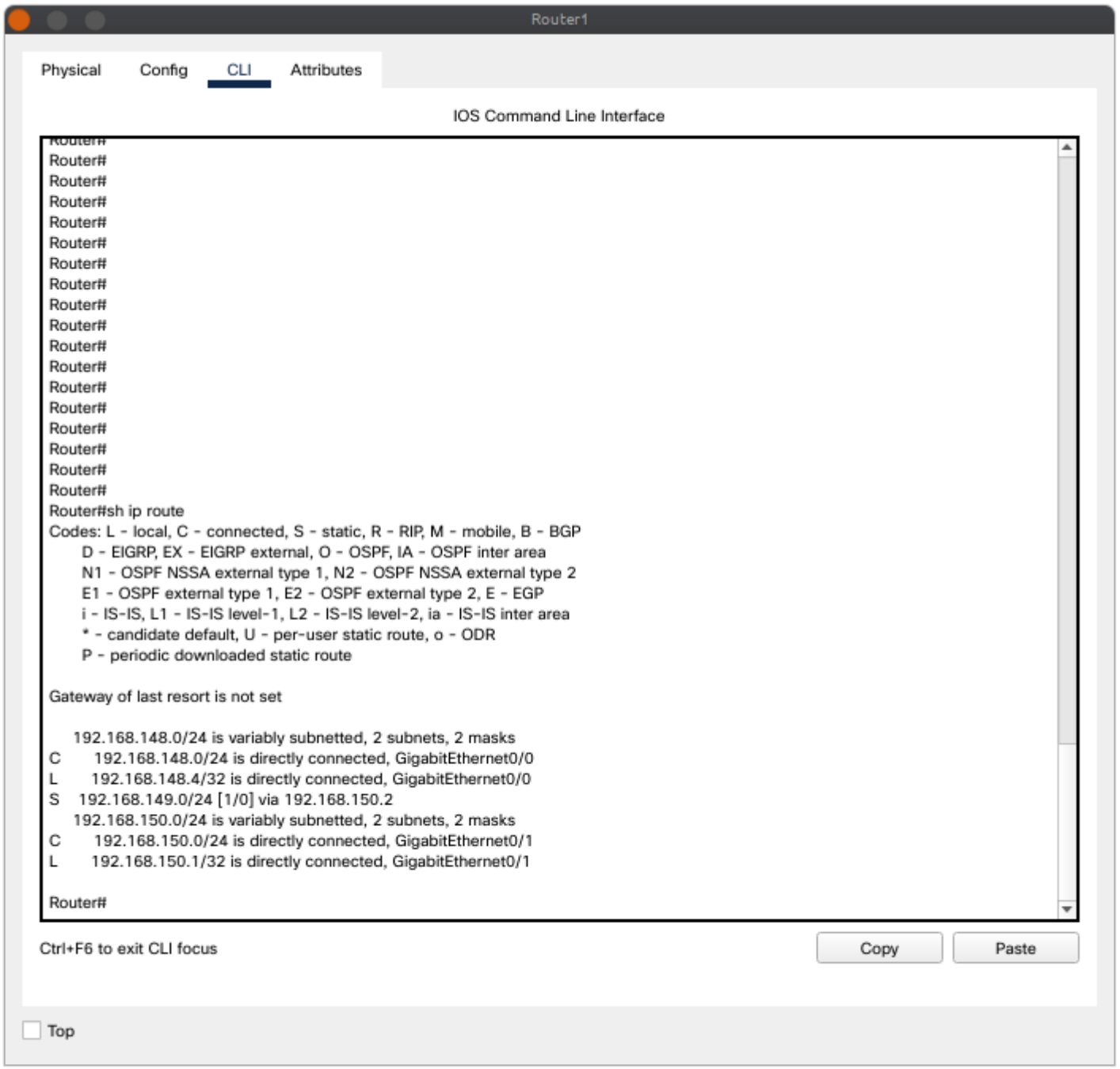

PC5
Physical
Config
Desktop
Programming
Attributes
Command Prompt
X
Approximate round trip times in milli-seconds:
Minimum = 0ms, Maximum = 0ms, Average = 0ms
C:\>ping 10.10.10.5
Pinging 10.10.10.5 with 32 bytes of data:
Reply from 10.10.10.5: bytes=32 time<1ms TTL=128
Reply from 10.10.10.5: bytes=32 time=1ms TTL=128
Reply from 10.10.10.5: bytes=32 time<1ms TTL=128
Reply from 10.10.10.5: bytes=32 time<1ms TTL=128
Ping statistics for 10.10.10.5:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 0ms, Maximum = 1ms, Average = 0ms
C:\>ping 10.10.10.6
Pinging 10.10.10.6 with 32 bytes of data:
Reply from 10.10.10.6: bytes=32 time<1ms TTL=128
Reply from 10.10.10.6: bytes=32 time<1ms TTL=128
Reply from 10.10.10.6: bytes=32 time<1ms TTL=128
Reply from 10.10.10.6: bytes=32 time<1ms TTL=128
Ping statistics for 10.10.10.6:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 0ms, Maximum = 0ms, Average = 0ms
C:\>arp -a
Internet Address Physical Address Type
10.10.10.1 0060.7097.eb7a dynamic
10.10.10.2 0002.170e.8d43 dynamic
10.10.10.4 0002.1628.d277 dynamic
10.10.10.5 00d0.5861.4673 dynamic
10.10.10.6 000c.cfe3.2018 dynamic
C:\>
Top

Q5. Create a LAN (named JU-Main) with three hosts connected via a layer-2 switch (Cisco 2950 switch PC-LAB1-Switch). Connect the switch to a router (Cisco 1818). Assign IP addresses to all the hosts and the router interface connected to this LAN from network 192.168.148.0/24. Configure default gateway of each hosts as the IP address of the interface of the router which is connected to the LAN. Create another LAN (named JU-SL) with three hosts connected via a layer-2 switch (Cisco 2950 switch PC-LAB2-Switch). Connect this switch to another router (Cisco 1818). Assign IP addresses to all the hosts and the router interface connected to this LAN from network 192.168.149.0/24. Configure default gateway of each hosts as the IP address of the interface of the router which is connected to the LAN. Connect the two routers through appropriate WAN interfaces. Assign IP addresses to the WAN interfaces from network 192.168.150.0/24. Add static route in both of the routers to route packets between two LANs.

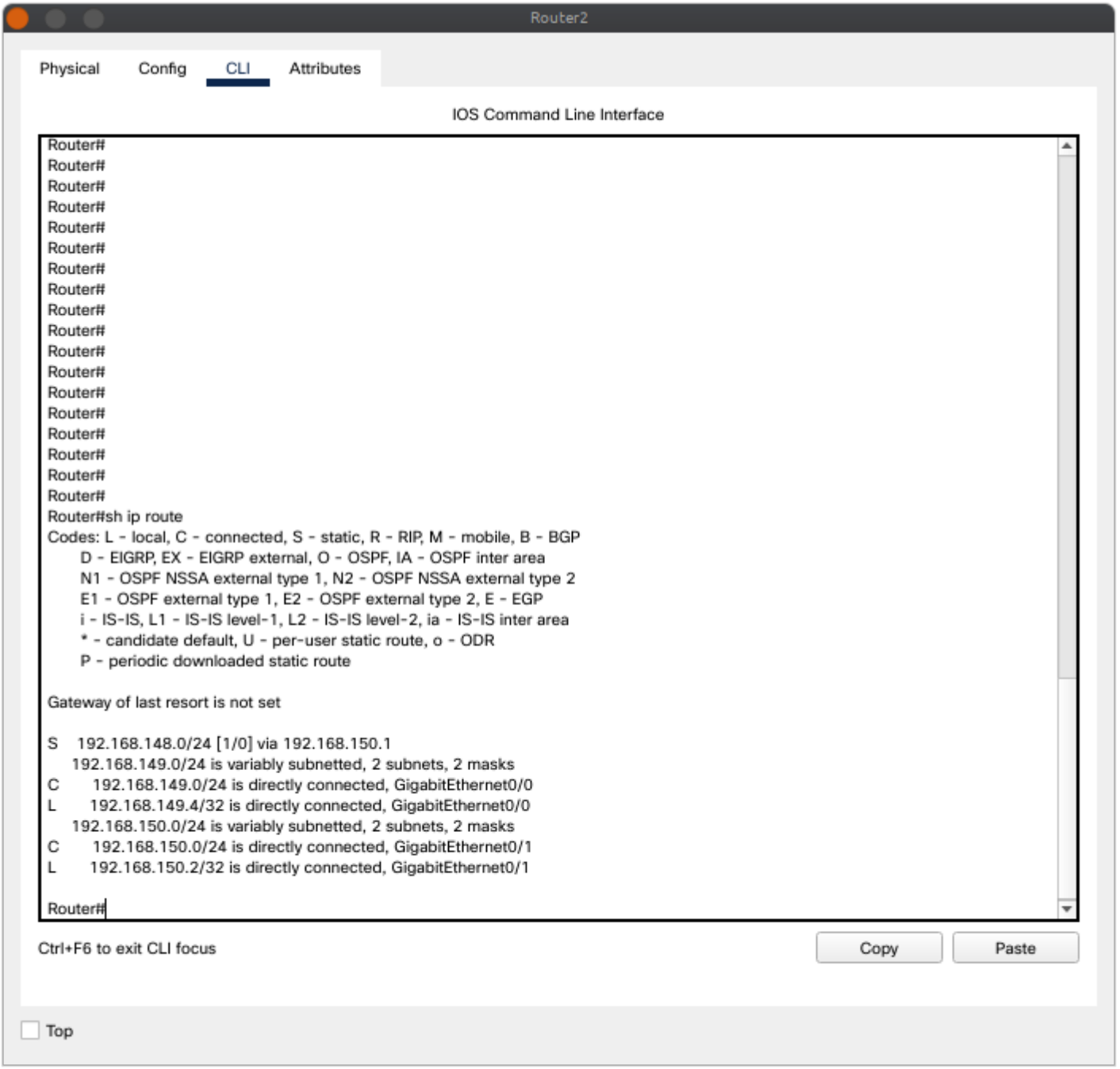
Two separate LANs were created using a switch and three hosts per LAN. Now, both the LANs are connected to one router each. The routers are further connected using a straight-through cable. The IP addresses were set according to the given question. Now, a static route is added between the two routers for communication. After that, ping requests were successfully made between the two different LANs.



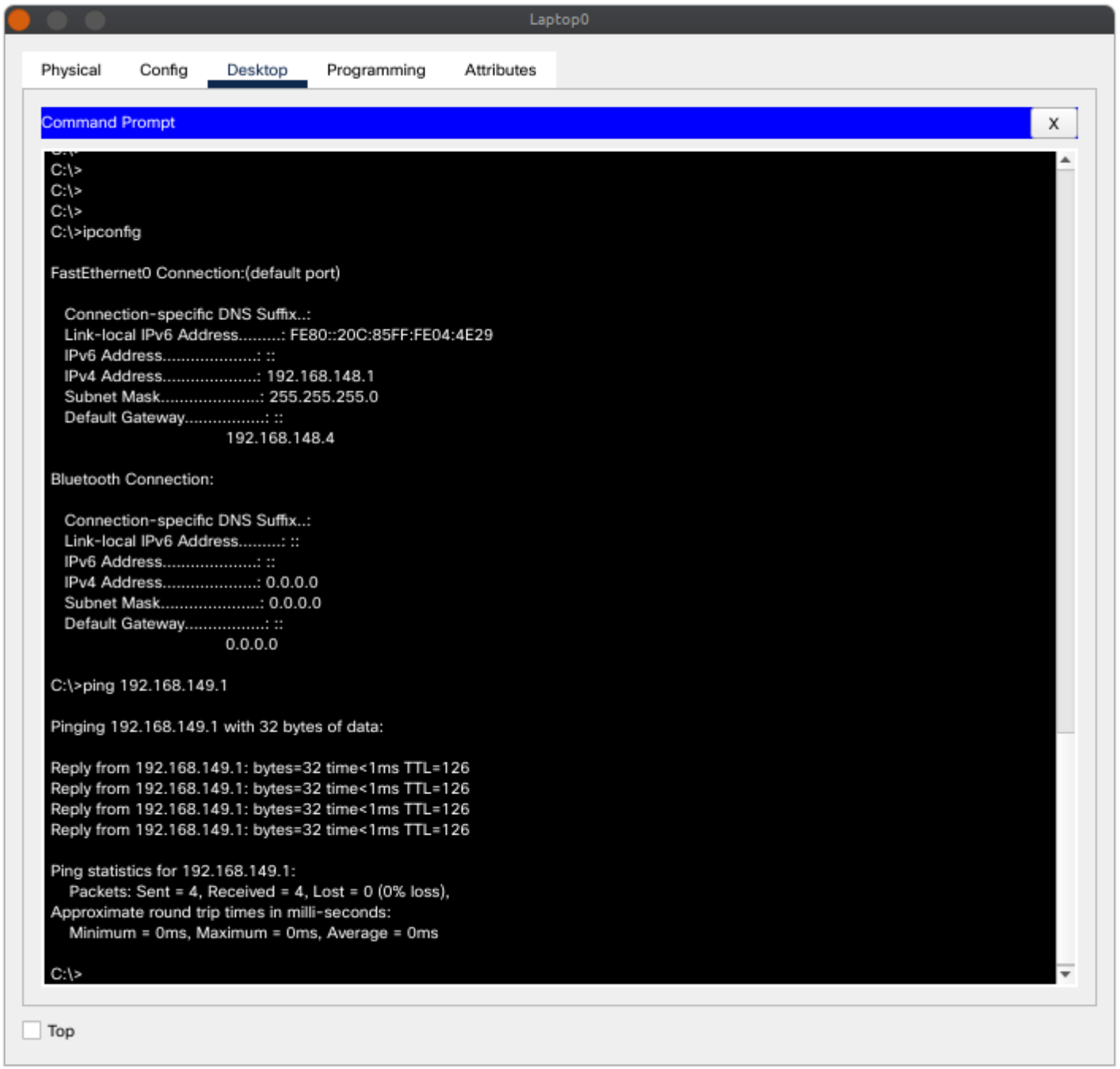
IP Route of router 1 (JU MAIN) :

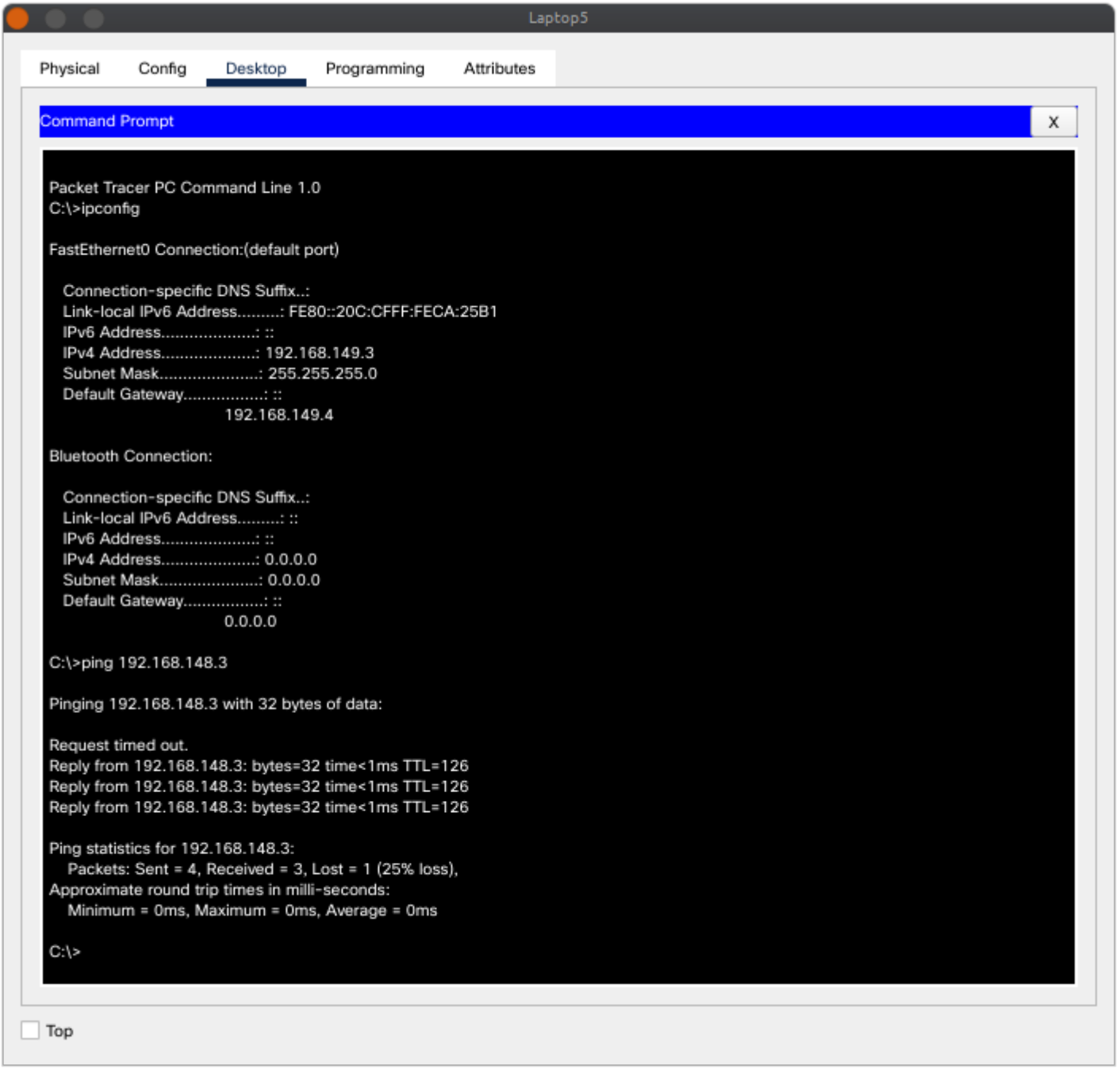


IP Route of router 2 (JU SL) :



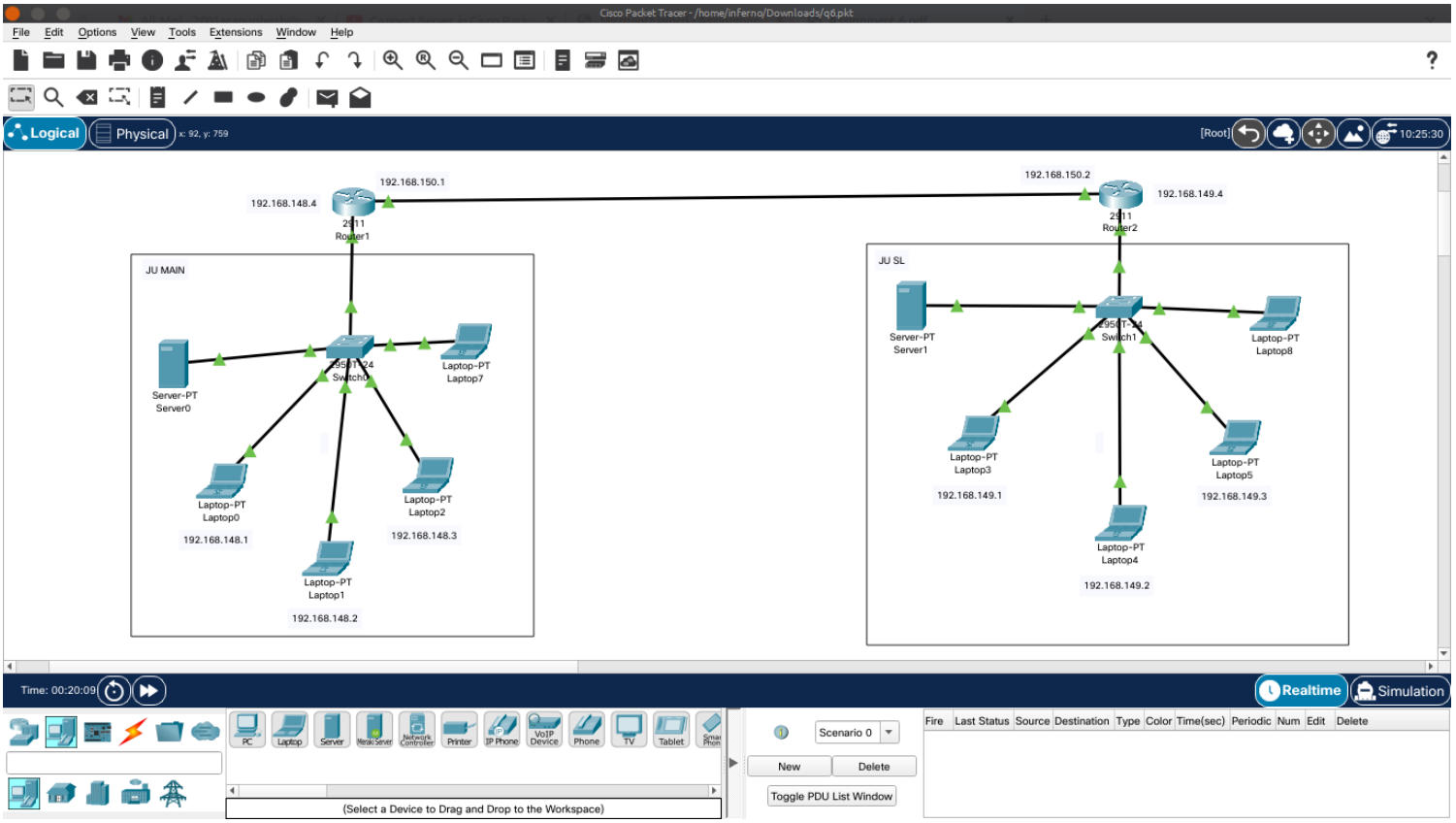
Samples of PING executed between the two LANs:




Laptop5
Physical
Config
Desktop
Programming
Attributes
Command Prompt
X
Packet Tracer PC Command Line 1.0
C:\>ipconfig
FastEthernet0 Connection:(default port)
Connection-specific DNS Suffix..:
Link-local IPv6 Address.....: FE80::20C:CFFF:FECA:25B1
IPv6 Address.....: ::
IPv4 Address.....: 192.168.149.3
Subnet Mask.....: 255.255.255.0
Default Gateway.....: ::
192.168.149.4
Bluetooth Connection:
Connection-specific DNS Suffix..:
Link-local IPv6 Address.....: ::
IPv6 Address.....: ::
IPv4 Address.....: 0.0.0.0
Subnet Mask.....: 0.0.0.0
Default Gateway.....: ::
0.0.0.0
C:\>ping 192.168.148.3
Pinging 192.168.148.3 with 32 bytes of data:
Request timed out.
Reply from 192.168.148.3: bytes=32 time<1ms TTL=126
Reply from 192.168.148.3: bytes=32 time<1ms TTL=126
Reply from 192.168.148.3: bytes=32 time<1ms TTL=126
Ping statistics for 192.168.148.3:
Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
Approximate round trip times in milli-seconds:
Minimum = 0ms, Maximum = 0ms, Average = 0ms
C:\>
Top

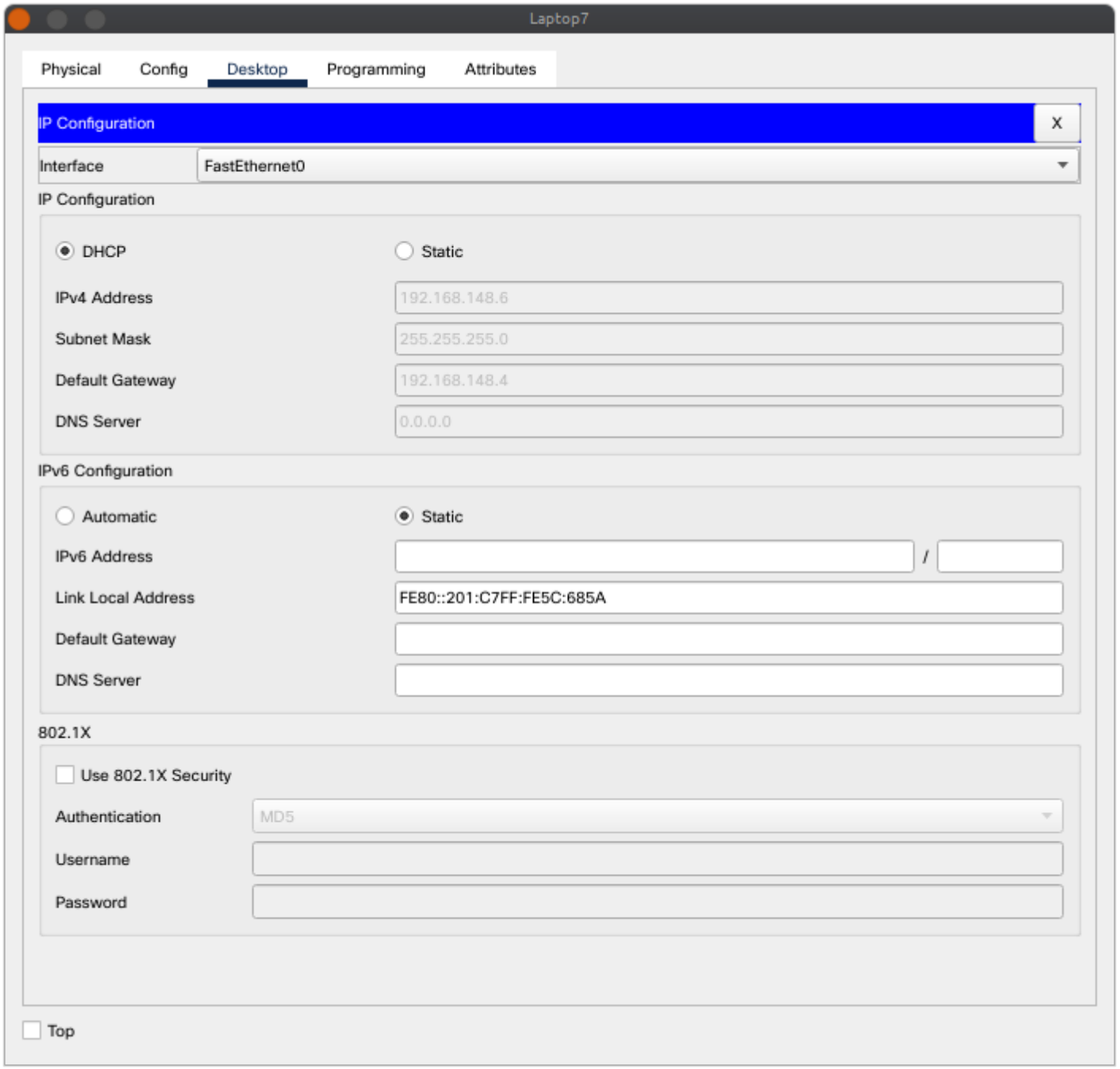
Q6. Add servers to the individual LANs (in problem 5) and configure them as a DHCP server. Configure the hosts in the individual LAN to obtain IP addresses and address of the default gateway via this DHCP server.

In each LAN, a server was added and it was configured as a DHCP server. The default gateway was set to the IP of the router of that particular interface. The IP of the server is set as 192.168.148.5 in JU MAIN and 192.168.149.5 in JU SL. Now, when new hosts are added, IP address and gateway is provided via the DHCP server.



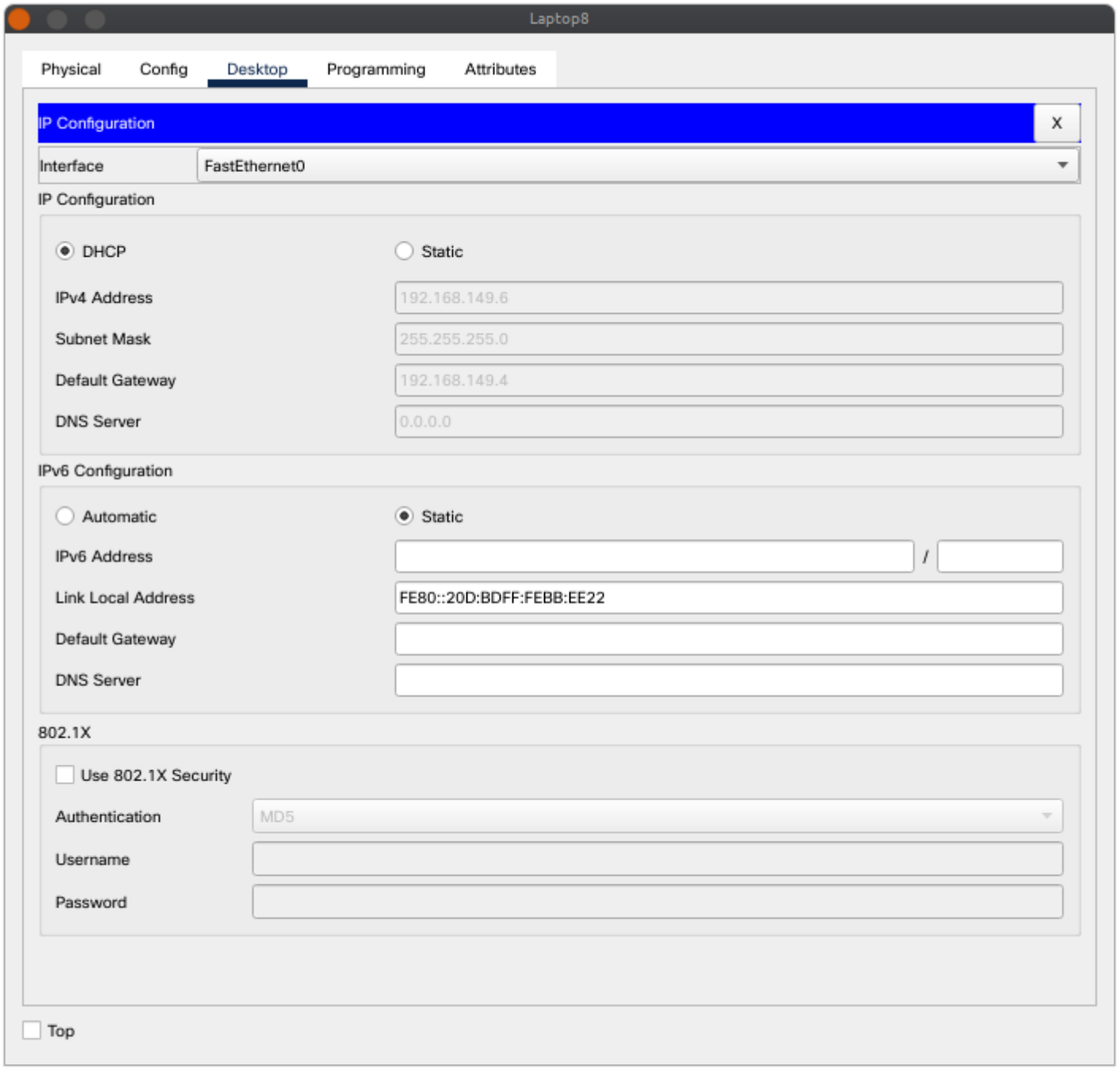
Now, when a new host is added in JU MAIN:

Assigned IP: 192.168.148.6
Gateway: 192.168.148.4

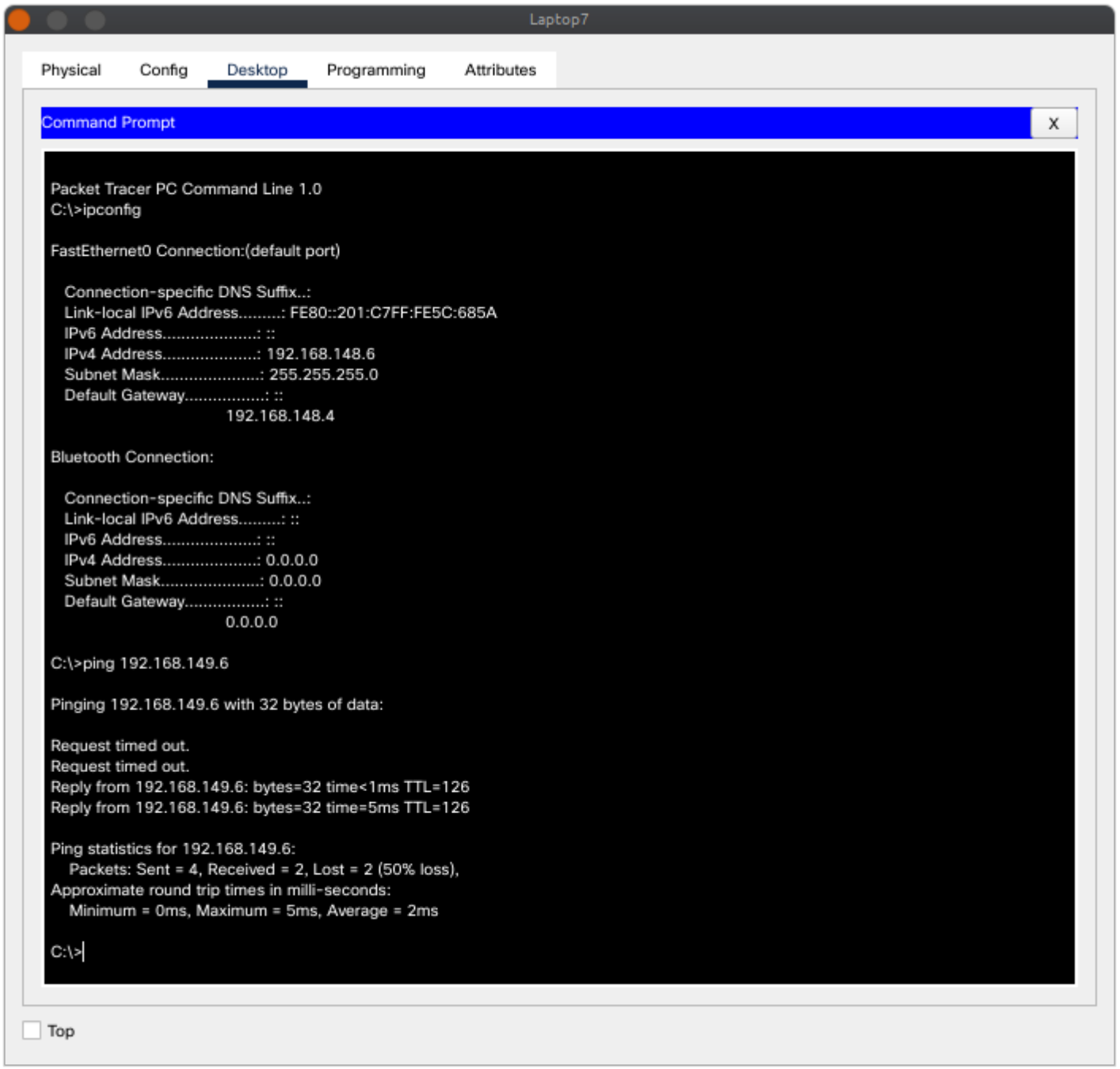


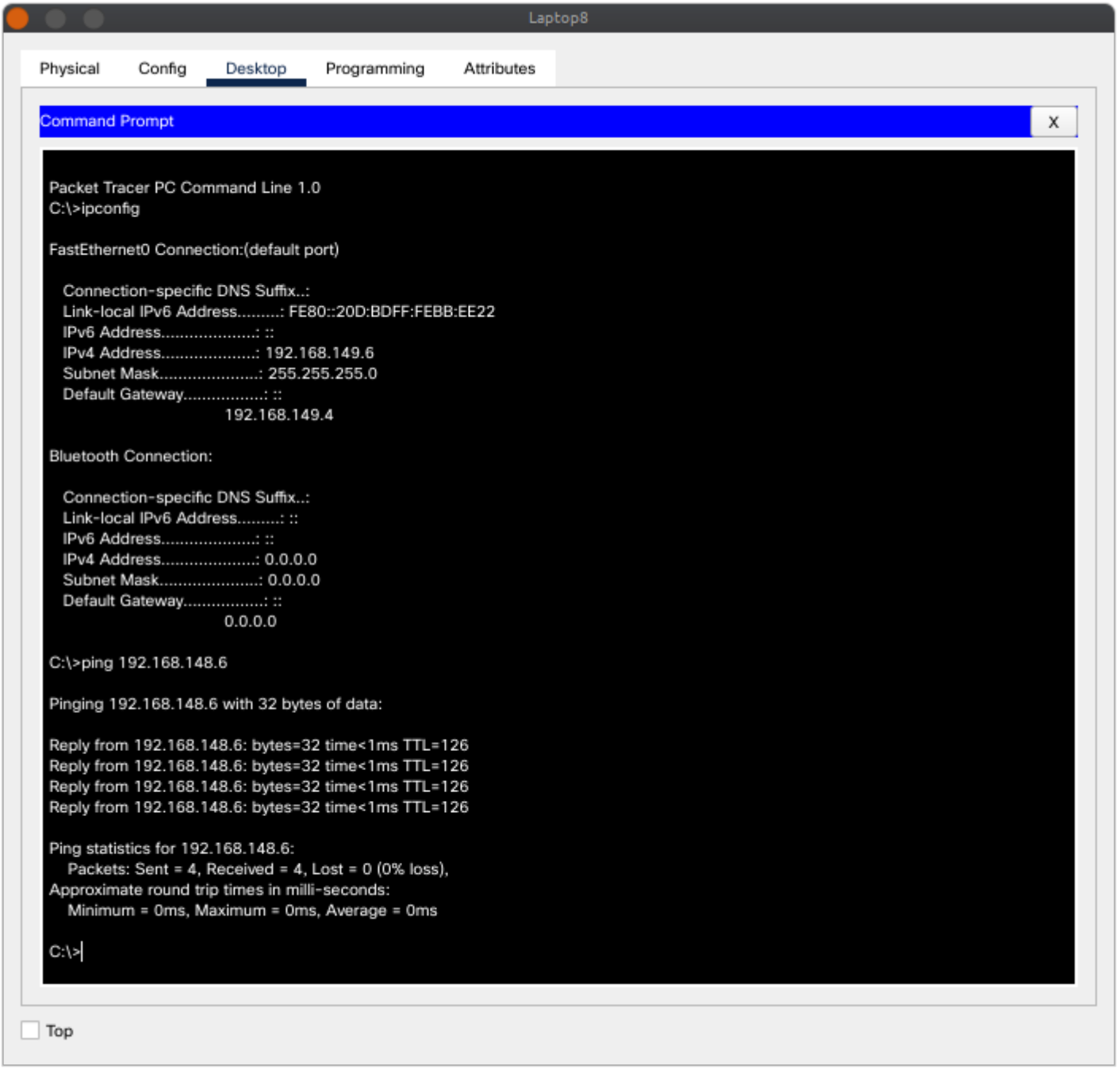
Now, a new host is added in JU SL:

Assigned IP : 192.168.149.6
Gateway: 192.168.149.4



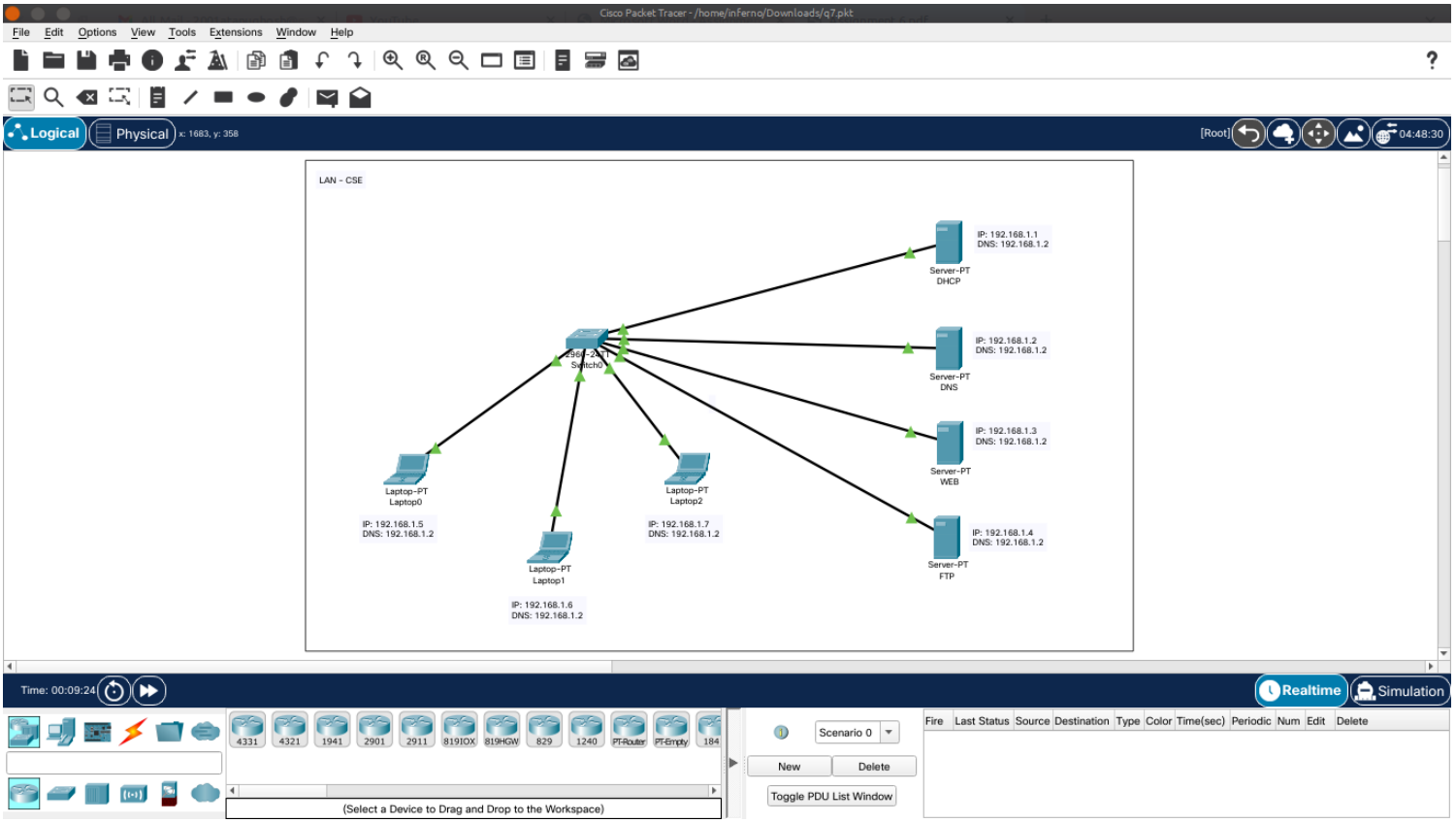
PING command was also successfully executed between the new hosts that were created via the DHCP server:



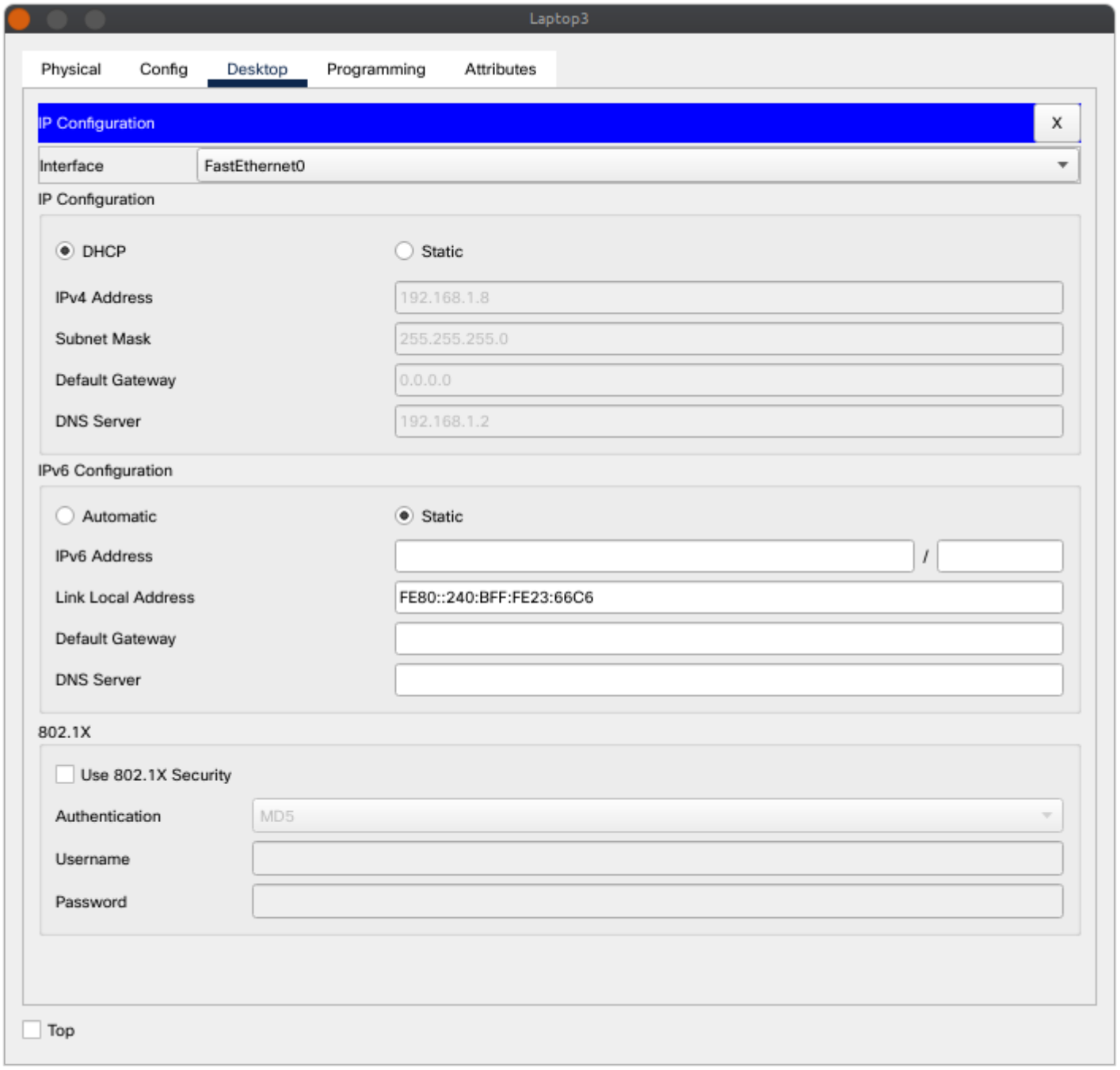

Laptop8
Physical
Config
Desktop
Programming
Attributes
Command Prompt
X
Packet Tracer PC Command Line 1.0
C:\>ipconfig
FastEthernet0 Connection:(default port)
Connection-specific DNS Suffix..:
Link-local IPv6 Address.....: FE80::20D:BDFF:FEBB:EE22
IPv6 Address.....: ::
IPv4 Address.....: 192.168.149.6
Subnet Mask.....: 255.255.255.0
Default Gateway.....: ::
192.168.149.4
Bluetooth Connection:
Connection-specific DNS Suffix..:
Link-local IPv6 Address.....: ::
IPv6 Address.....: ::
IPv4 Address.....: 0.0.0.0
Subnet Mask.....: 0.0.0.0
Default Gateway.....: ::
0.0.0.0
C:\>ping 192.168.148.6
Pinging 192.168.148.6 with 32 bytes of data:
Reply from 192.168.148.6: bytes=32 time<1ms TTL=126
Reply from 192.168.148.6: bytes=32 time<1ms TTL=126
Reply from 192.168.148.6: bytes=32 time<1ms TTL=126
Reply from 192.168.148.6: bytes=32 time<1ms TTL=126
Ping statistics for 192.168.148.6:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 0ms, Maximum = 0ms, Average = 0ms
C:\>
Top

Q7. Create a LAN (CSE) with three hosts connected via a layer-2 switch (Cisco 2950 switch CSE-Switch). Also add a web server and a ftp server to this LAN. The hosts dynamically get their IP addresses from a local DHCP server. Servers are assigned fixed IP addresses. Configure the individual hosts to use the local DNS server for name resolution. Add a Domain Name Server (DNS) to this LAN. Create appropriate records in the DNS server for the individual servers in the LAN. The domain name of the LAN is cse.myuniv.edu. Configure the individual hosts to use the local DNS server for name resolution.

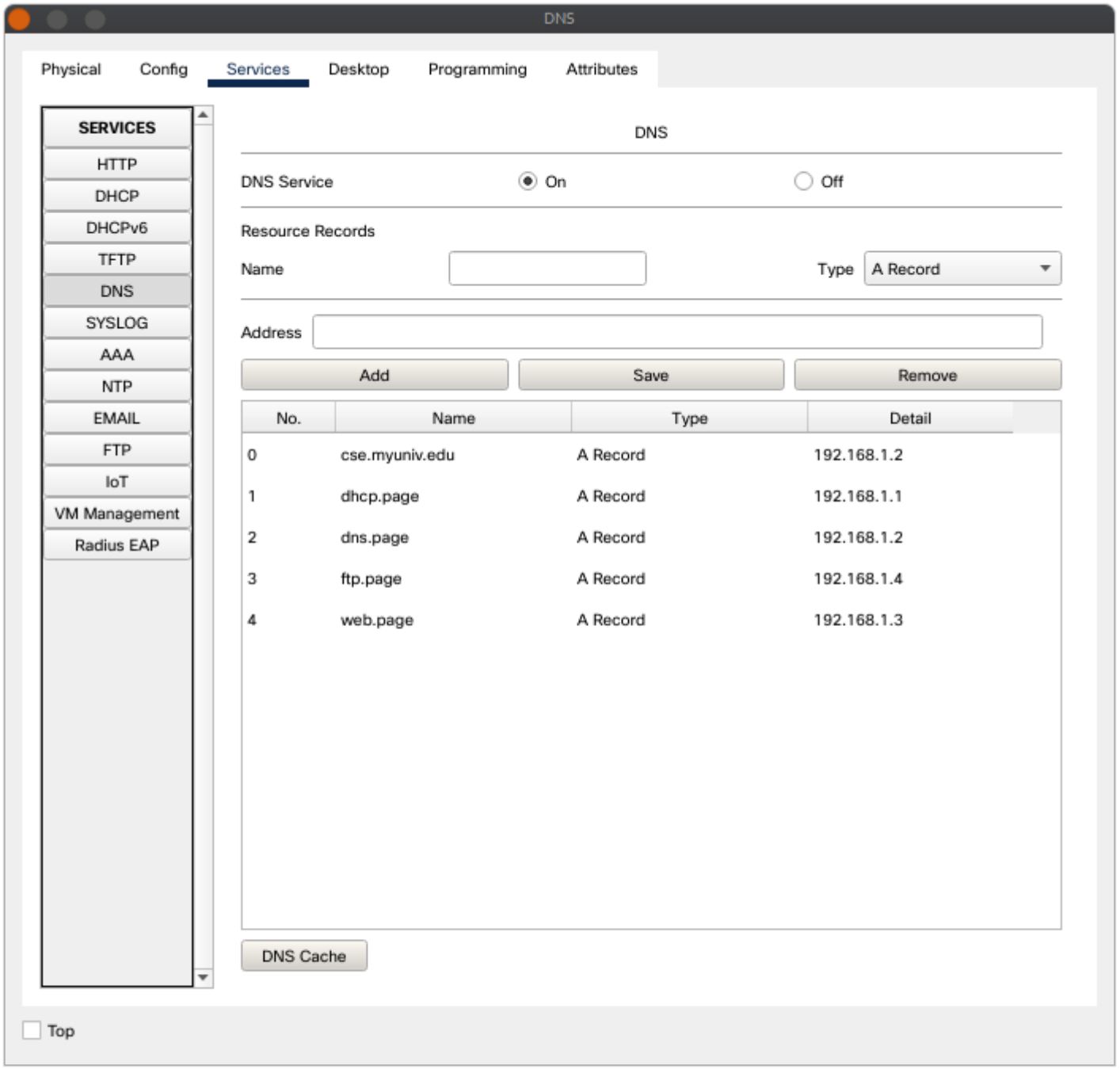
A LAN was created using a switch and three hosts. Four servers were also added to the switch as per the given question. One of them is the DHCP server which was configured so that the hosts added to the switch could generate their own IP address using the DHCP server. A WEB and an FTP server were also added. A DNS server was added and configured. Now, the following were obtained.



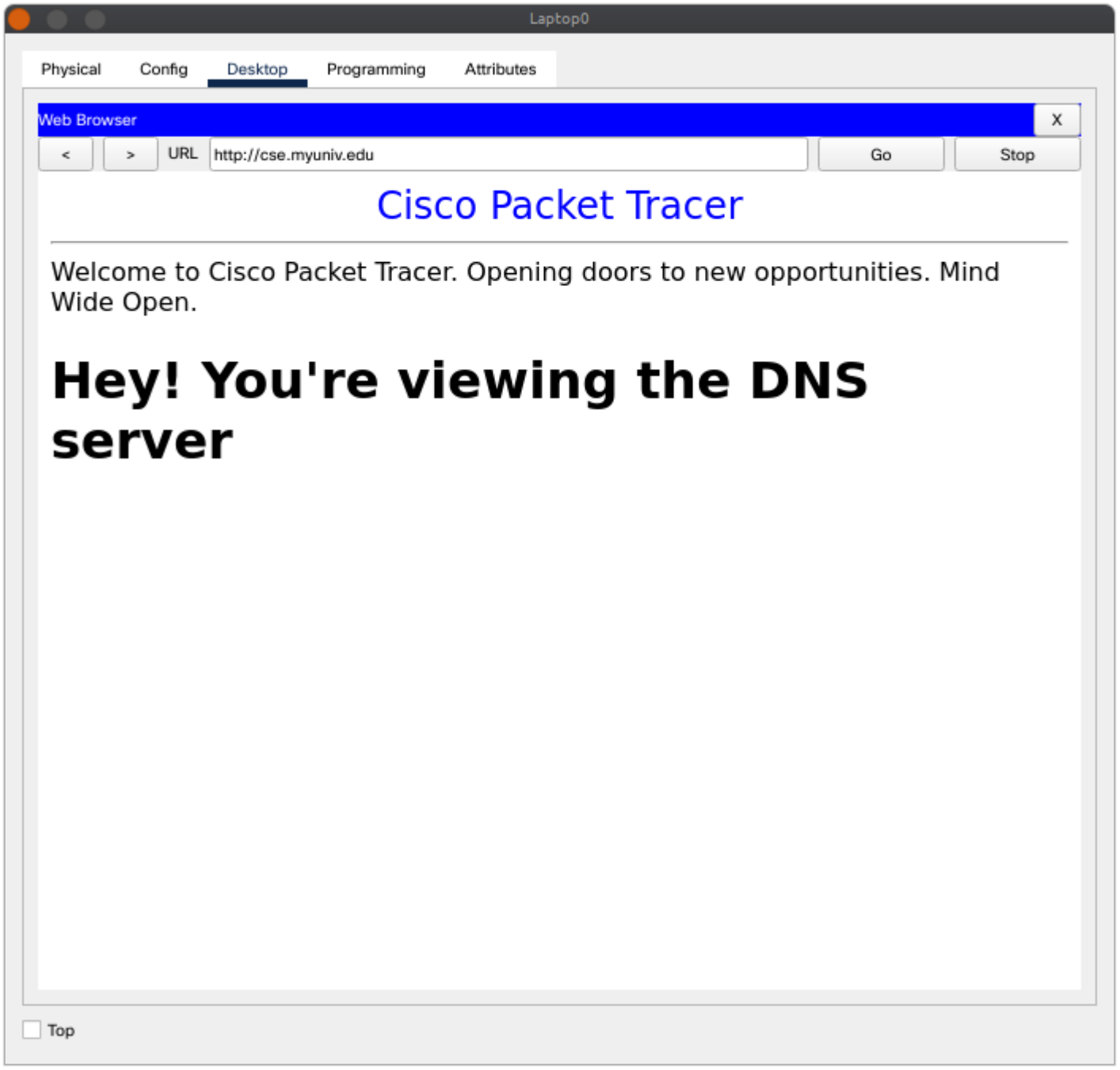
Dynamic IP address generation for a new host:

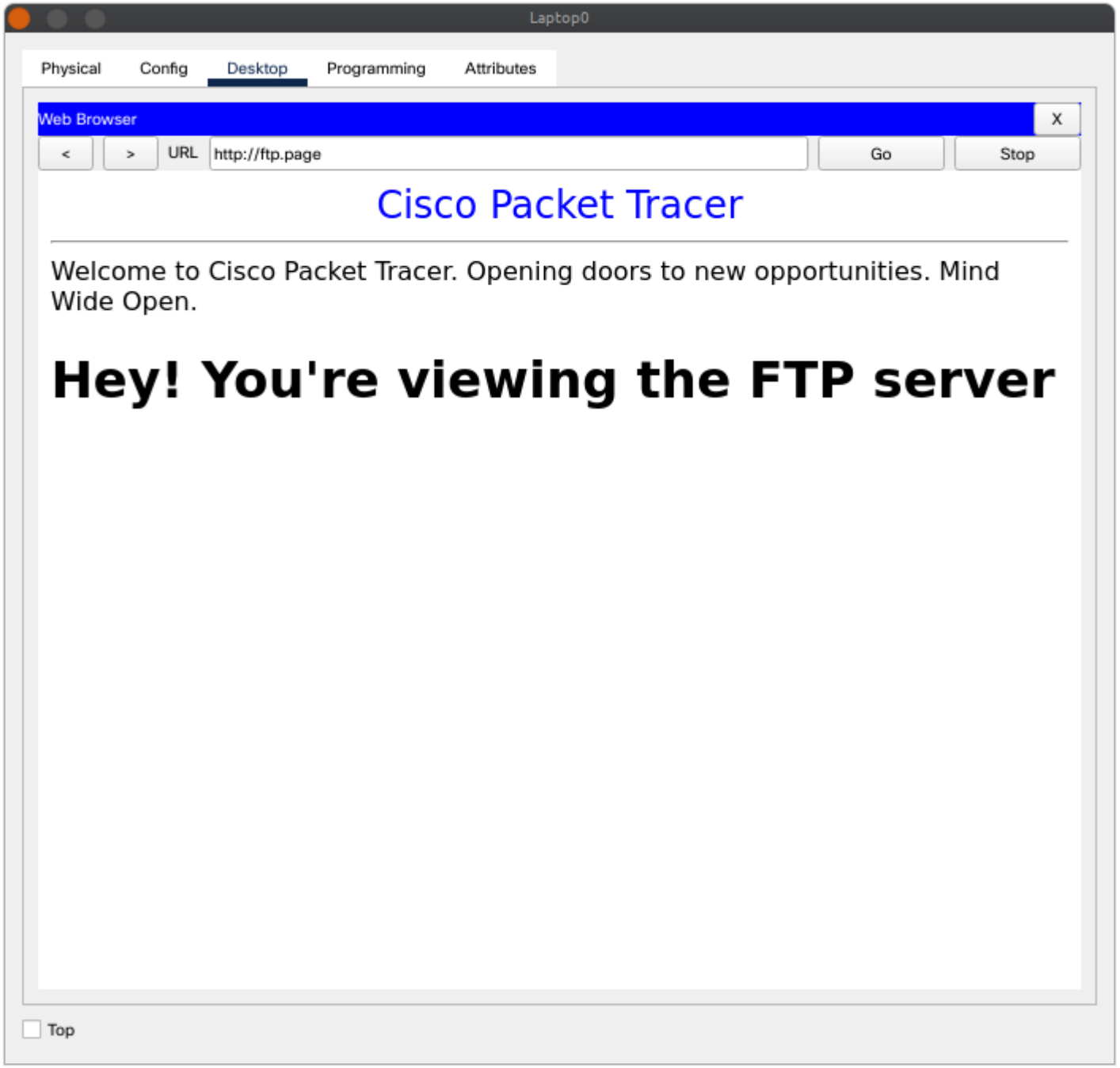


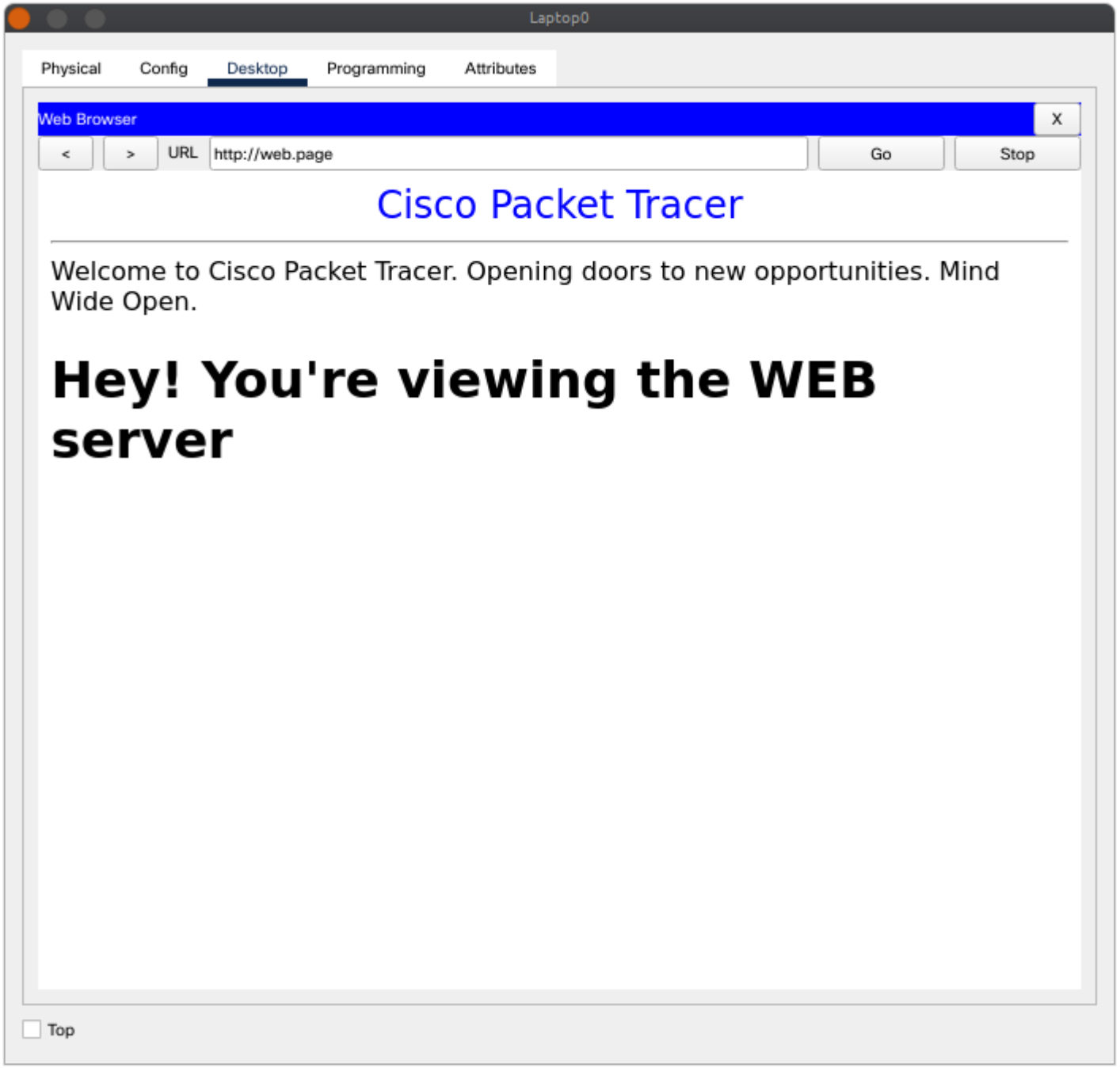
The DNS record table is made as follows:

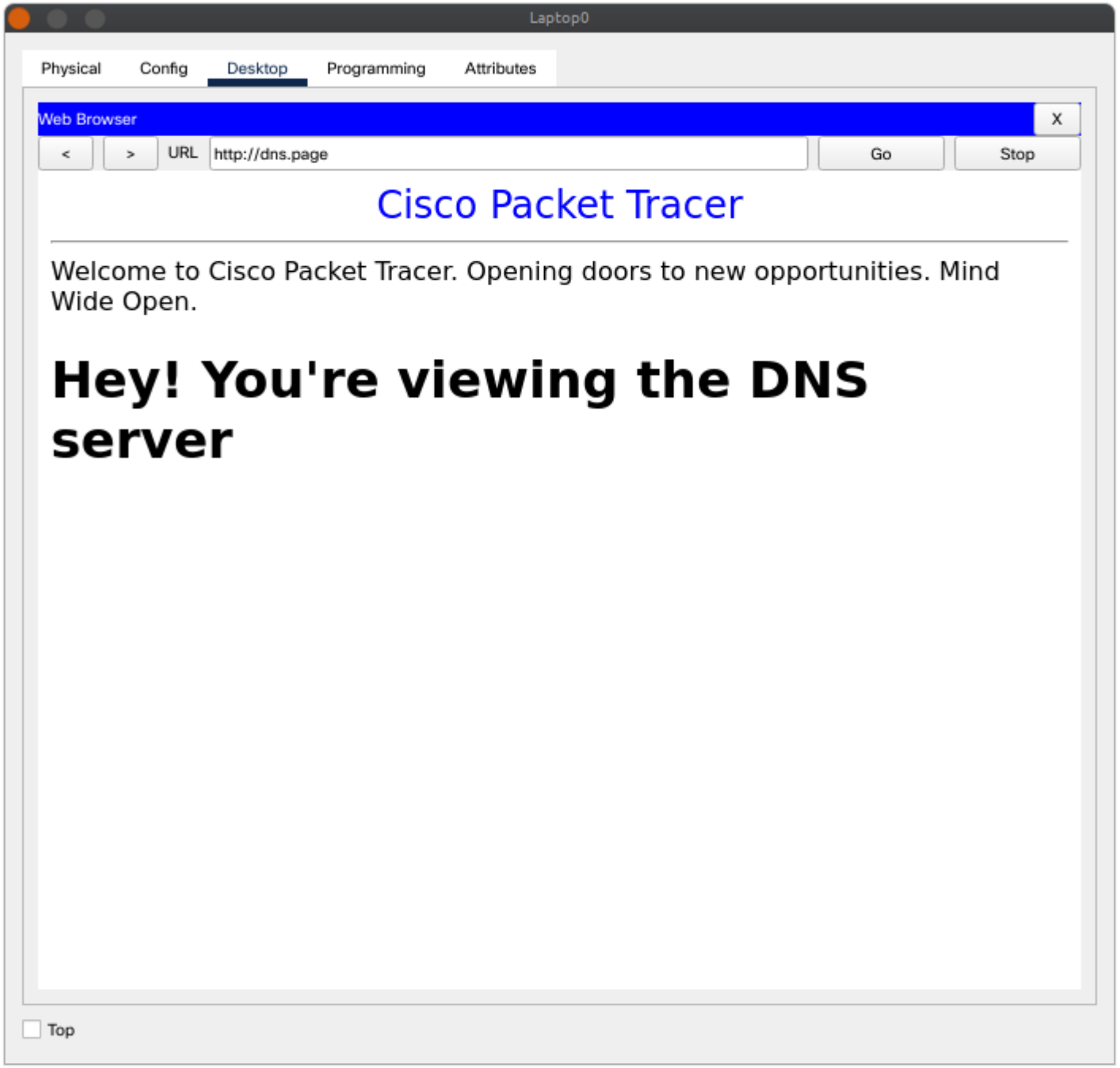


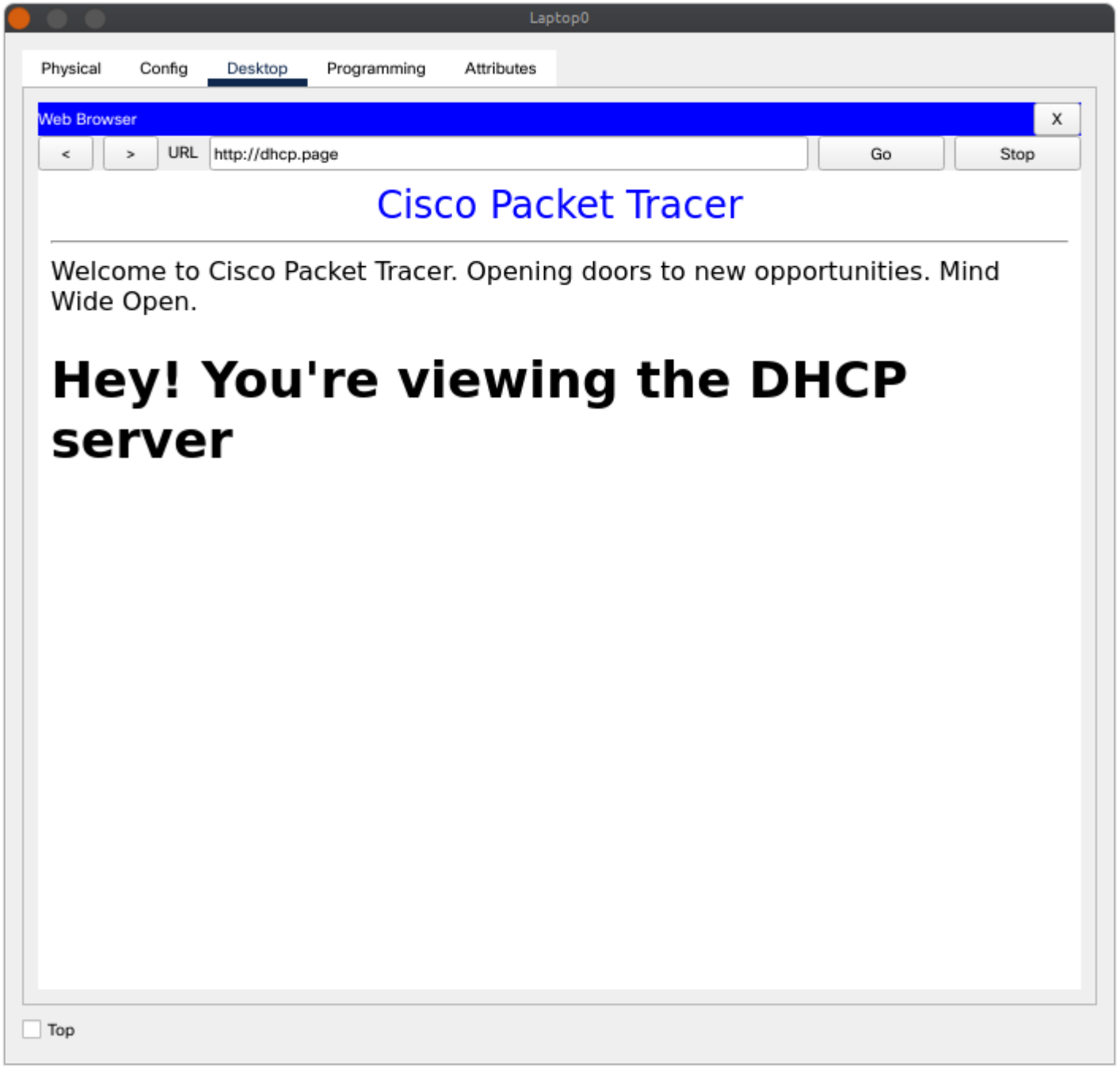
On using the web browser in a host computer connected to the LAN:




Laptop0
Physical
Config
Desktop
Programming
Attributes
Web Browser
X
<
>
URL
http://ftp.page
Go
Stop
Cisco Packet Tracer
Welcome to Cisco Packet Tracer. Opening doors to new opportunities. Mind Wide Open.
Hey! You're viewing the FTP server
Top


Laptop0
Physical
Config
Desktop
Programming
Attributes
Web Browser
X
<
>
URL
http://web.page
Go
Stop
Cisco Packet Tracer
Welcome to Cisco Packet Tracer. Opening doors to new opportunities. Mind Wide Open.
Hey! You're viewing the WEB server
Top


Laptop0
Physical
Config
Desktop
Programming
Attributes
Web Browser
X
<
>
URL
http://dns.page
Go
Stop
Cisco Packet Tracer
Welcome to Cisco Packet Tracer. Opening doors to new opportunities. Mind Wide Open.
Hey! You're viewing the DNS server
Top


Laptop0
Physical
Config
Desktop
Programming
Attributes
Web Browser
X
<
>
URL
http://dhcp.page
Go
Stop
Cisco Packet Tracer
Welcome to Cisco Packet Tracer. Opening doors to new opportunities. Mind Wide Open.
Hey! You're viewing the DHCP server
Top

COMMENTS

This was a very interesting and unique assignment. It led me to learn to use a new utility tool Cisco Packet Tracer. I had to explore a lot to perform the experiments and it was really a very exciting experience. Overall, I found this assignment very informative.