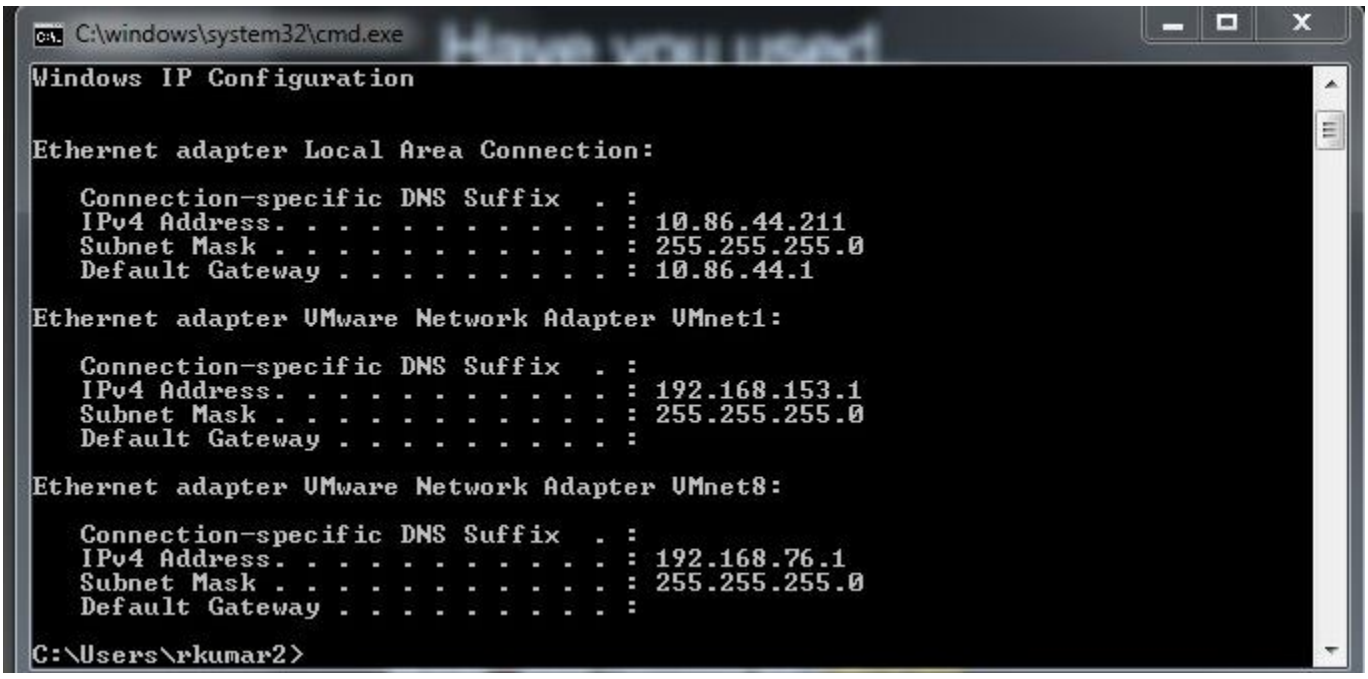
CS447 Lab Assignment 4
Cisco Router & Switch Configuration

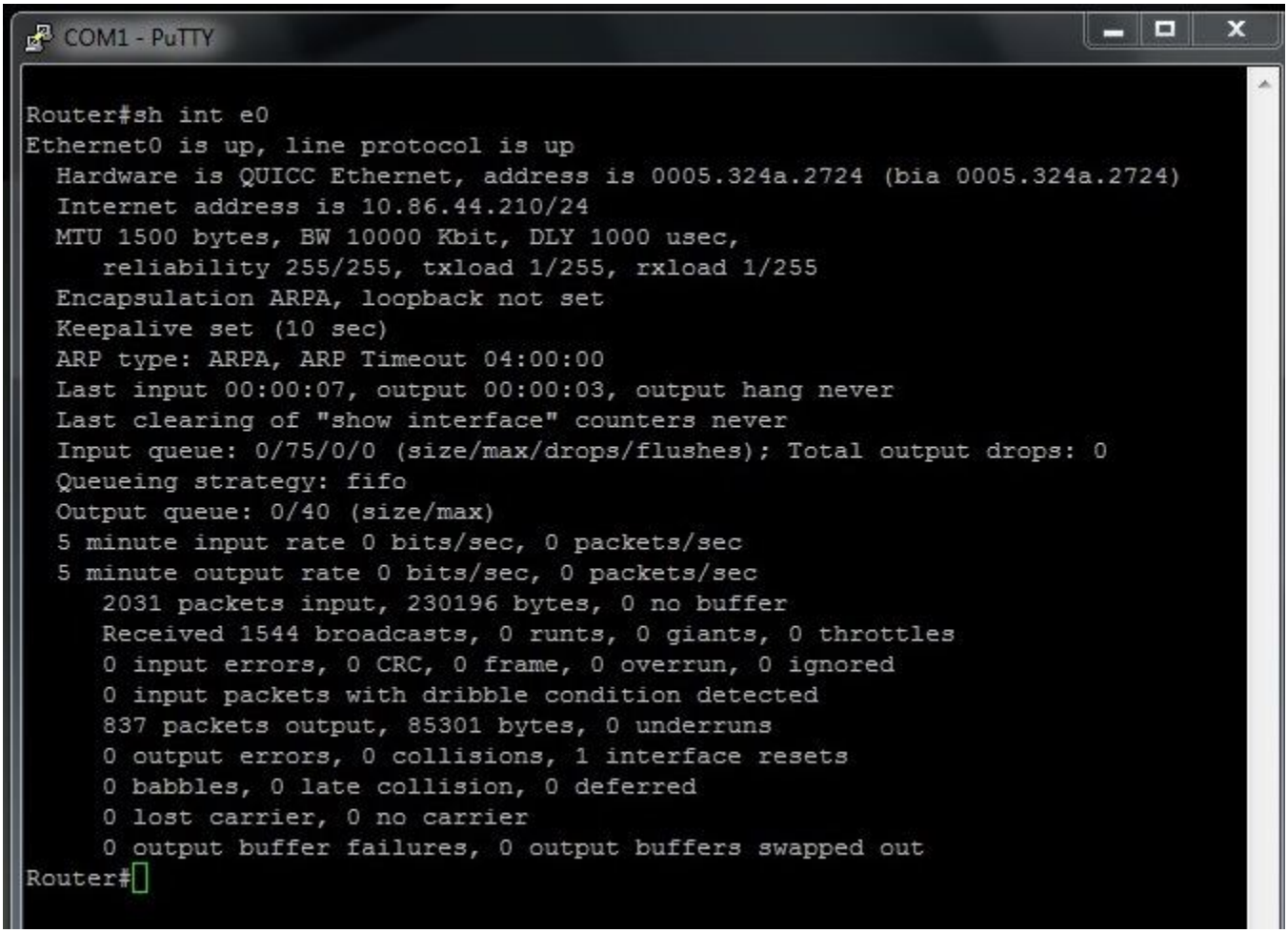
Rajnish Kumar [304470392]
Manan Patel [304373828]
Gaurav Prajapati [304470132]

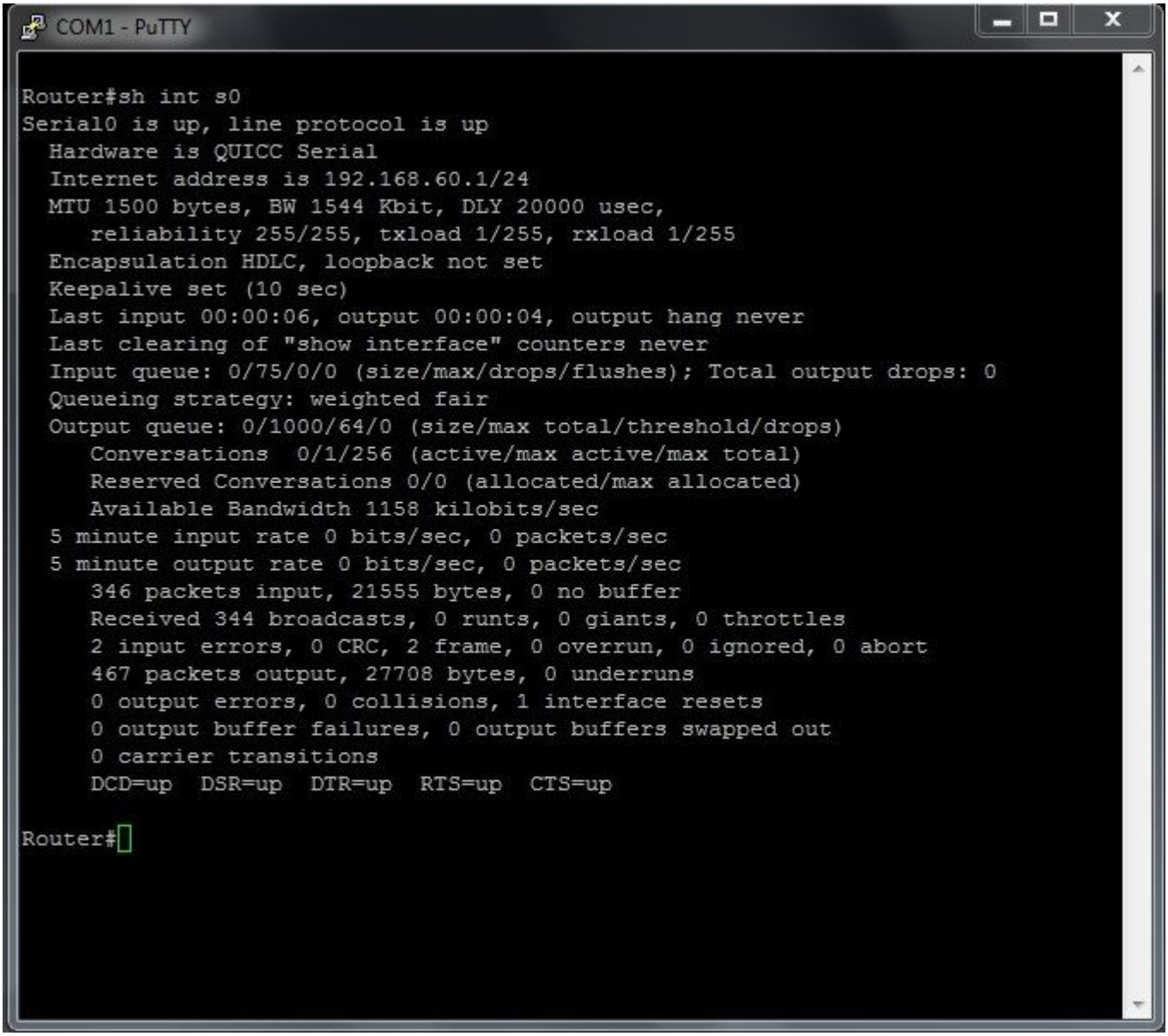
Date: 08/13/2015 Group# 11

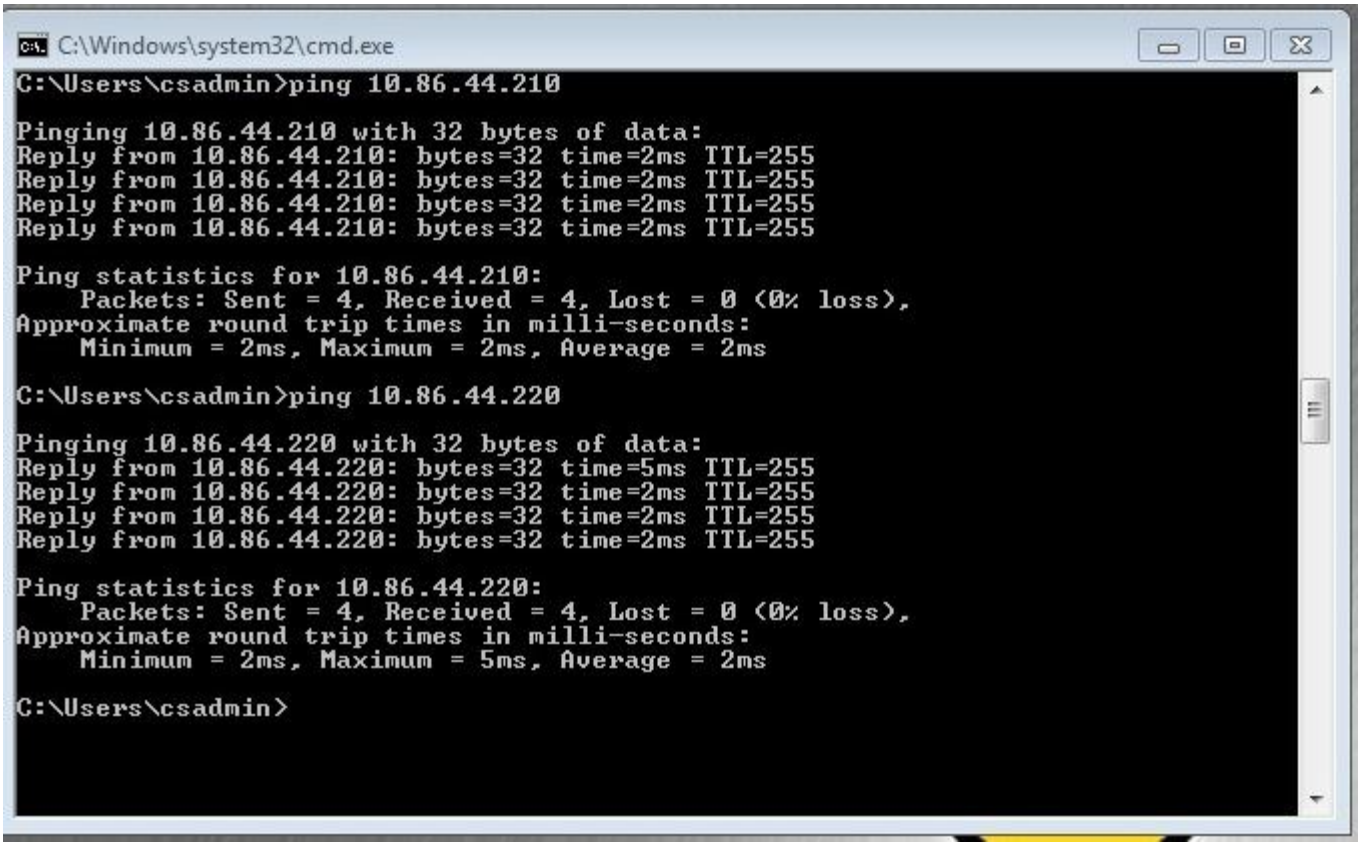
Connect your router to the network as shown in the network topology drawing. Connect a rollover cable from the console port of the Cisco 1600 (or 2500) router to a 9-pin serial port on a computer. Download Putty or Teraterm communication software from Internet onto your computer and configure the terminal emulation software to 9600 bps, 8 data bits, no parity, and 1 stop bit. From the software program, verify that you can connect to the router console prompt and get into enable mode. Reset the router to its factory default state by executing "**erase startup-config**" and "**reload**" commands. If you are not able to log into the router, see step-by-step instructions for resetting the password at http://www.calstatela.edu/faculty/egean/cs447/cisco1600-passwd-reset.htm . Configure the Ethernet interface on the router with IP address specified in network topology drawing. Your router's default gateway address and default route should be set to 10.86.44.1. Change the hostname of your router to RouterXY (where XY is your group number). Change the default router gateway of your computer's virtual operating system from 10.86.44.1 to the IP address of the Ethernet interface of your Cisco 1600 (or 2500) router. From a command prompt on your computer, verify that you can ping the Cisco 1600 (or 2500) router's Ethernet interface and have connectivity to the Internet.

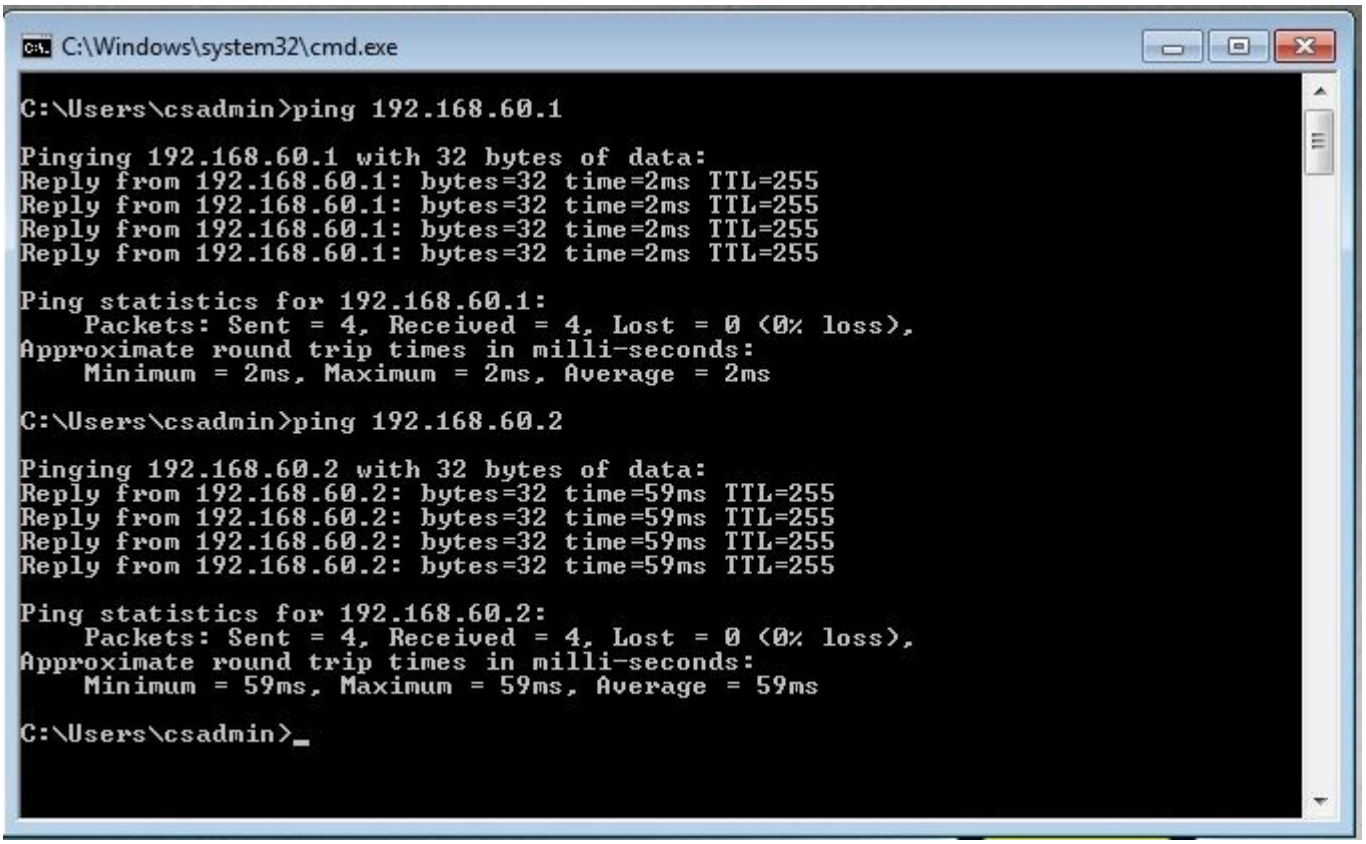
1. Simulate a wide-area-network connection by connecting the WAN ports of two Cisco routers together via two V.35 serial cables (or one crossover serial cable). DCE side needs clock rate set. Configure the IP address of the WAN serial port (s0) with IP address specified in network topology drawing. Netmask should be 255.255.255.0. From a command prompt on your computer, verify that you can ping your own WAN interface (192.168.x.x) on your Cisco 1600 (or 2500) router. Verify that you can ping other endpoint (192.168.x.y on neighbor's s0) of your WAN connection. Submit a screen capture of the output of a successful traceroute command from your computer's command prompt to the other WAN endpoint (192.168.x.y) of your router's WAN connection.

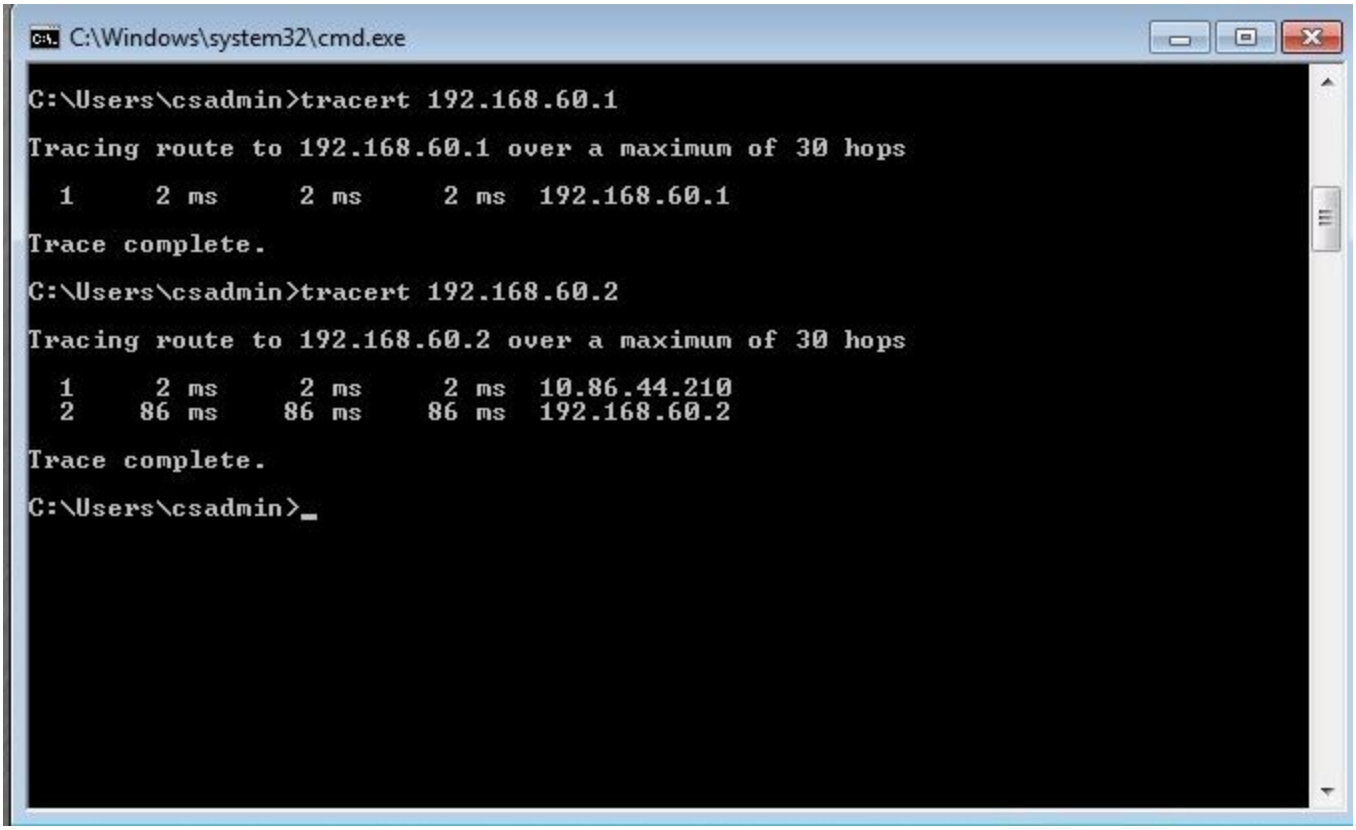



COM1 - PuTTY
Router#sh int e0
Ethernet0 is up, line protocol is up
Hardware is QUICC Ethernet, address is 0005.324a.2724 (bia 0005.324a.2724)
Internet address is 10.86.44.210/24
MTU 1500 bytes, BW 10000 Kbit, DLY 1000 usec,
reliability 255/255, txload 1/255, rxload 1/255
Encapsulation ARPA, loopback not set
Keepalive set (10 sec)
ARP type: ARPA, ARP Timeout 04:00:00
Last input 00:00:07, output 00:00:03, output hang never
Last clearing of "show interface" counters never
Input queue: 0/75/0/0 (size/max/drops/flushes); Total output drops: 0
Queueing strategy: fifo
Output queue: 0/40 (size/max)
5 minute input rate 0 bits/sec, 0 packets/sec
5 minute output rate 0 bits/sec, 0 packets/sec
2031 packets input, 230196 bytes, 0 no buffer
Received 1544 broadcasts, 0 runts, 0 giants, 0 throttles
0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored
0 input packets with dribble condition detected
837 packets output, 85301 bytes, 0 underruns
0 output errors, 0 collisions, 1 interface resets
0 babbles, 0 late collision, 0 deferred
0 lost carrier, 0 no carrier
0 output buffer failures, 0 output buffers swapped out
Router#


COM1 - PuTTY
Router#sh int s0
Serial0 is up, line protocol is up
Hardware is QUICC Serial
Internet address is 192.168.60.1/24
MTU 1500 bytes, BW 1544 Kbit, DLY 20000 usec,
reliability 255/255, txload 1/255, rxload 1/255
Encapsulation HDLC, loopback not set
Keepalive set (10 sec)
Last input 00:00:06, output 00:00:04, output hang never
Last clearing of "show interface" counters never
Input queue: 0/75/0/0 (size/max/drops/flushes); Total output drops: 0
Queueing strategy: weighted fair
Output queue: 0/1000/64/0 (size/max total/threshold/drops)
Conversations 0/1/256 (active/max active/max total)
Reserved Conversations 0/0 (allocated/max allocated)
Available Bandwidth 1158 kilobits/sec
5 minute input rate 0 bits/sec, 0 packets/sec
5 minute output rate 0 bits/sec, 0 packets/sec
346 packets input, 21555 bytes, 0 no buffer
Received 344 broadcasts, 0 runts, 0 giants, 0 throttles
2 input errors, 0 CRC, 2 frame, 0 overrun, 0 ignored, 0 abort
467 packets output, 27708 bytes, 0 underruns
0 output errors, 0 collisions, 1 interface resets
0 output buffer failures, 0 output buffers swapped out
0 carrier transitions
DCD=up DSR=up DTR=up RTS=up CTS=up
Router#


C:\Windows\system32\cmd.exe
C:\Users\csadmin>ping 10.86.44.210
Pinging 10.86.44.210 with 32 bytes of data:
Reply from 10.86.44.210: bytes=32 time=2ms TTL=255
Reply from 10.86.44.210: bytes=32 time=2ms TTL=255
Reply from 10.86.44.210: bytes=32 time=2ms TTL=255
Reply from 10.86.44.210: bytes=32 time=2ms TTL=255
Ping statistics for 10.86.44.210:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 2ms, Maximum = 2ms, Average = 2ms
C:\Users\csadmin>ping 10.86.44.220
Pinging 10.86.44.220 with 32 bytes of data:
Reply from 10.86.44.220: bytes=32 time=5ms TTL=255
Reply from 10.86.44.220: bytes=32 time=2ms TTL=255
Reply from 10.86.44.220: bytes=32 time=2ms TTL=255
Reply from 10.86.44.220: bytes=32 time=2ms TTL=255
Ping statistics for 10.86.44.220:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 2ms, Maximum = 5ms, Average = 2ms
C:\Users\csadmin>

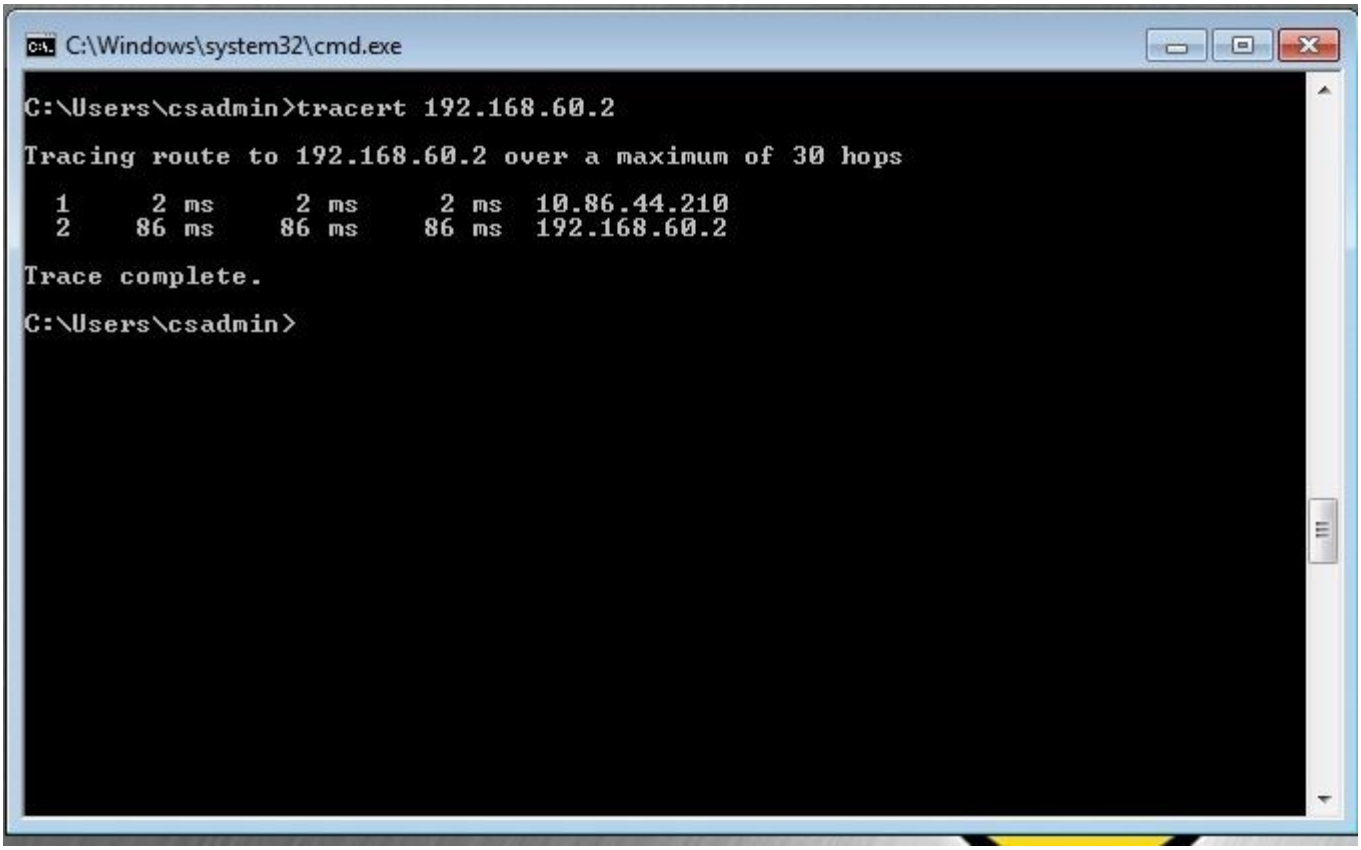

C:\Windows\system32\cmd.exe
C:\Users\csadmin>ping 192.168.60.1
Pinging 192.168.60.1 with 32 bytes of data:
Reply from 192.168.60.1: bytes=32 time=2ms TTL=255
Reply from 192.168.60.1: bytes=32 time=2ms TTL=255
Reply from 192.168.60.1: bytes=32 time=2ms TTL=255
Reply from 192.168.60.1: bytes=32 time=2ms TTL=255
Ping statistics for 192.168.60.1:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 2ms, Maximum = 2ms, Average = 2ms
C:\Users\csadmin>ping 192.168.60.2
Pinging 192.168.60.2 with 32 bytes of data:
Reply from 192.168.60.2: bytes=32 time=59ms TTL=255
Reply from 192.168.60.2: bytes=32 time=59ms TTL=255
Reply from 192.168.60.2: bytes=32 time=59ms TTL=255
Reply from 192.168.60.2: bytes=32 time=59ms TTL=255
Ping statistics for 192.168.60.2:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 59ms, Maximum = 59ms, Average = 59ms
C:\Users\csadmin>_


C:\Windows\system32\cmd.exe
C:\Users\csadmin>tracert 192.168.60.1
Tracing route to 192.168.60.1 over a maximum of 30 hops
1 2 ms 2 ms 2 ms 192.168.60.1
Trace complete.
C:\Users\csadmin>tracert 192.168.60.2
Tracing route to 192.168.60.2 over a maximum of 30 hops
1 2 ms 2 ms 2 ms 10.86.44.210
2 86 ms 86 ms 86 ms 192.168.60.2
Trace complete.
C:\Users\csadmin>

2. Turn on RIP version 2 so that your router will learn how to reach other indirectly connected networks in the lab.

   a. Submit a screenshot of your router's routing table. It should contain RIP routes advertised by five other networks (192.168.x.0) in the lab. Work with your fellow classmates if needed.

b. From your computer's command prompt, do a traceroute to the serial WAN interface of another group's router whose network was learned by your router via RIP version 2. Submit a screenshot of the result of the traceroute.



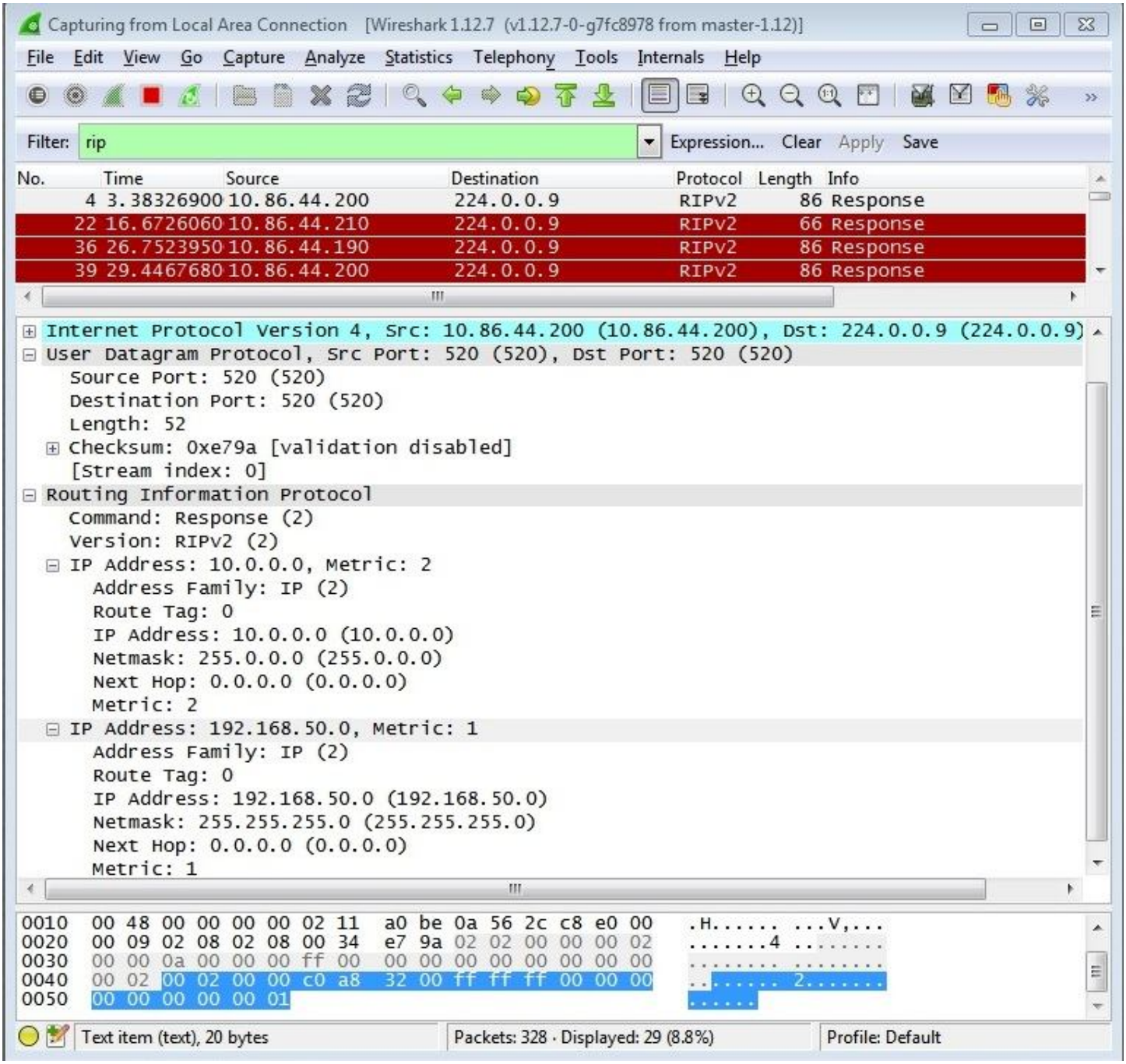
3. From your computer, capture and decode RIP version 2 packets advertised by your router.

   a. What UDP port number is used by RIP advertisement packets?

   Ans: **520**

   b. Print out a screenshot from Ethereal or Wireshark packet analyzer that shows the decoded network routes being advertised by your router. You will need to expand and drill down into the packet decodes to see this information.

   Ans:



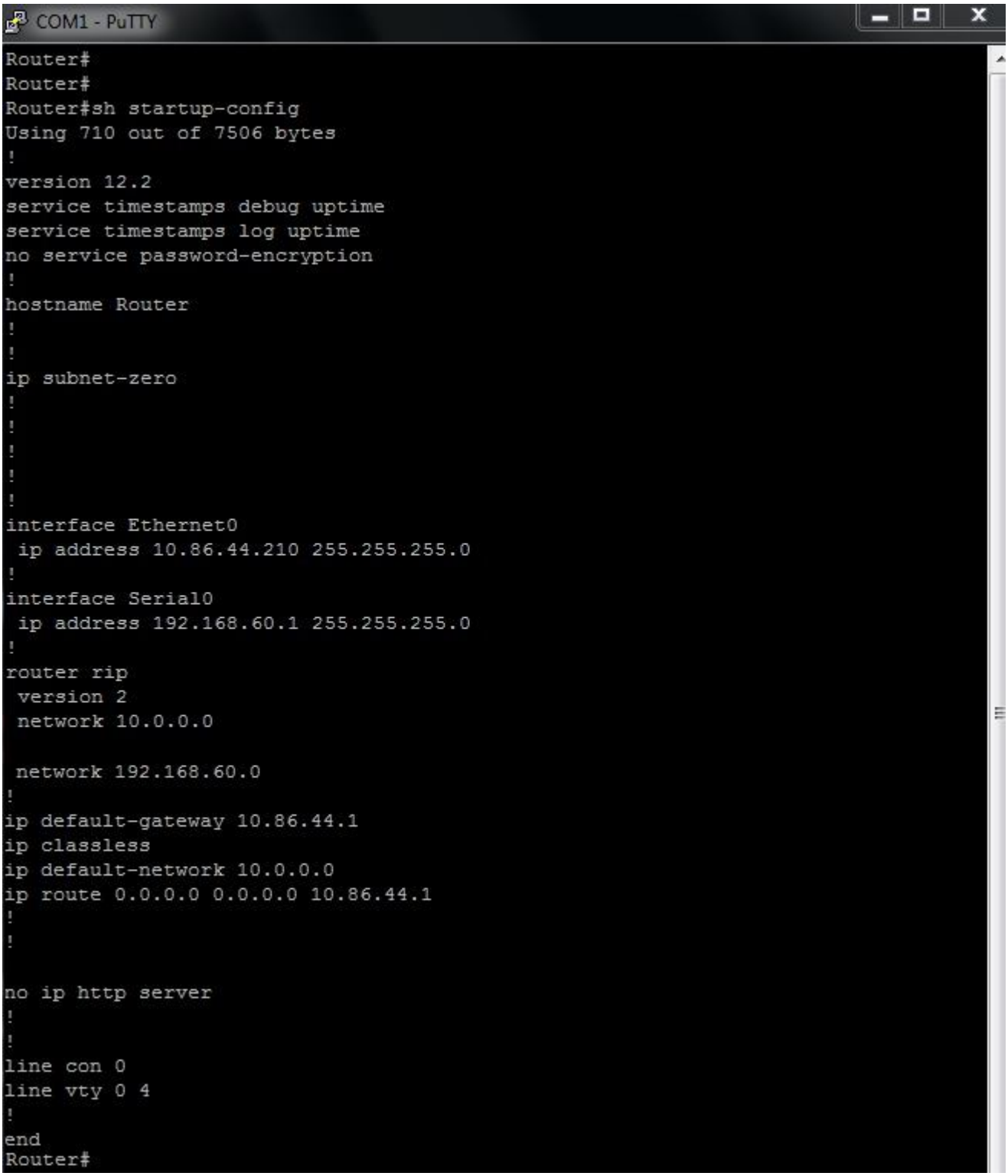
4. Save the router's current configuration from main memory to NVRAM.

   a. What Cisco command did you use to accomplish this?

   Ans: copy run start

   b. Print out a copy of this configuration file.

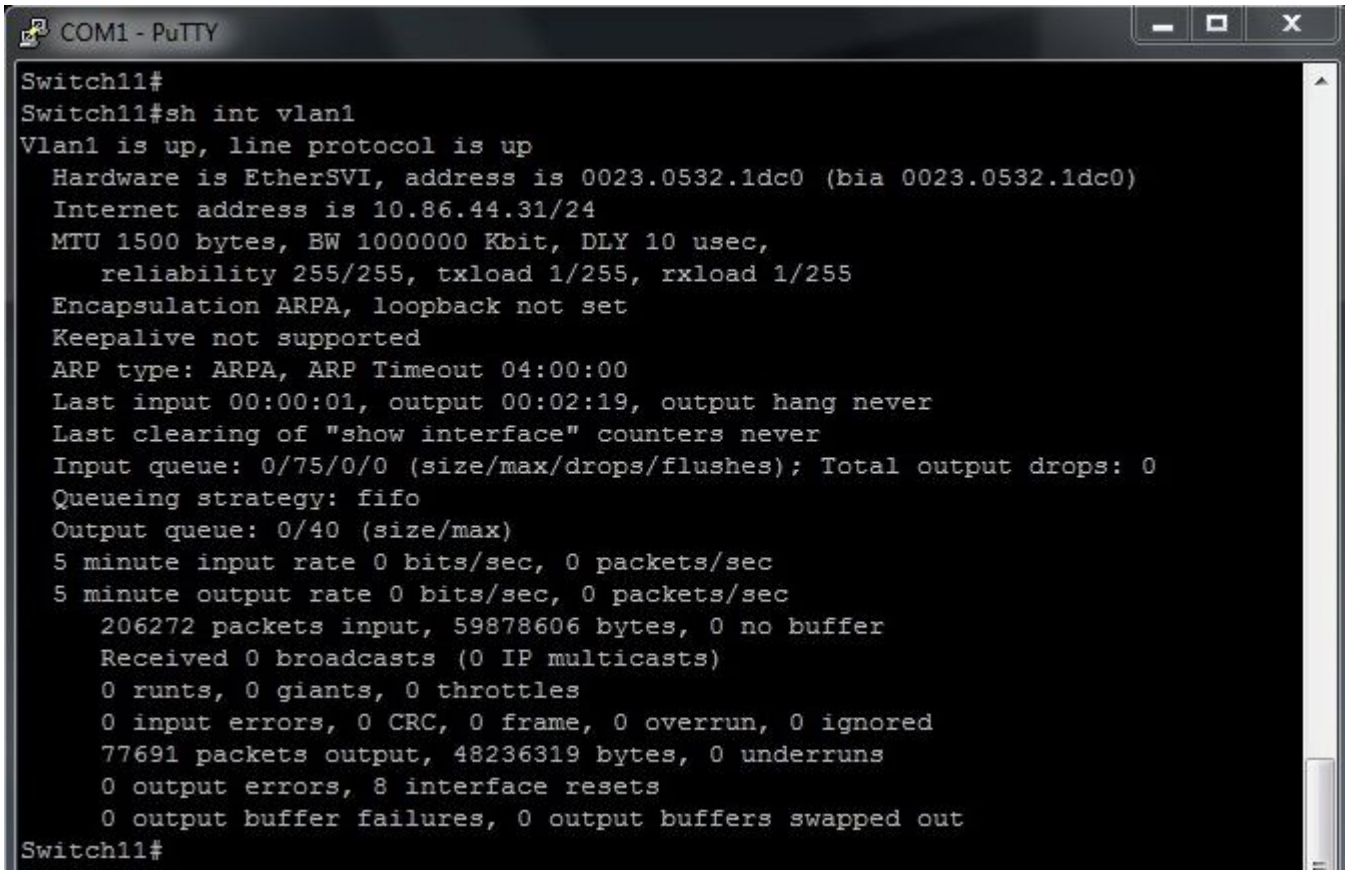
   Ans:

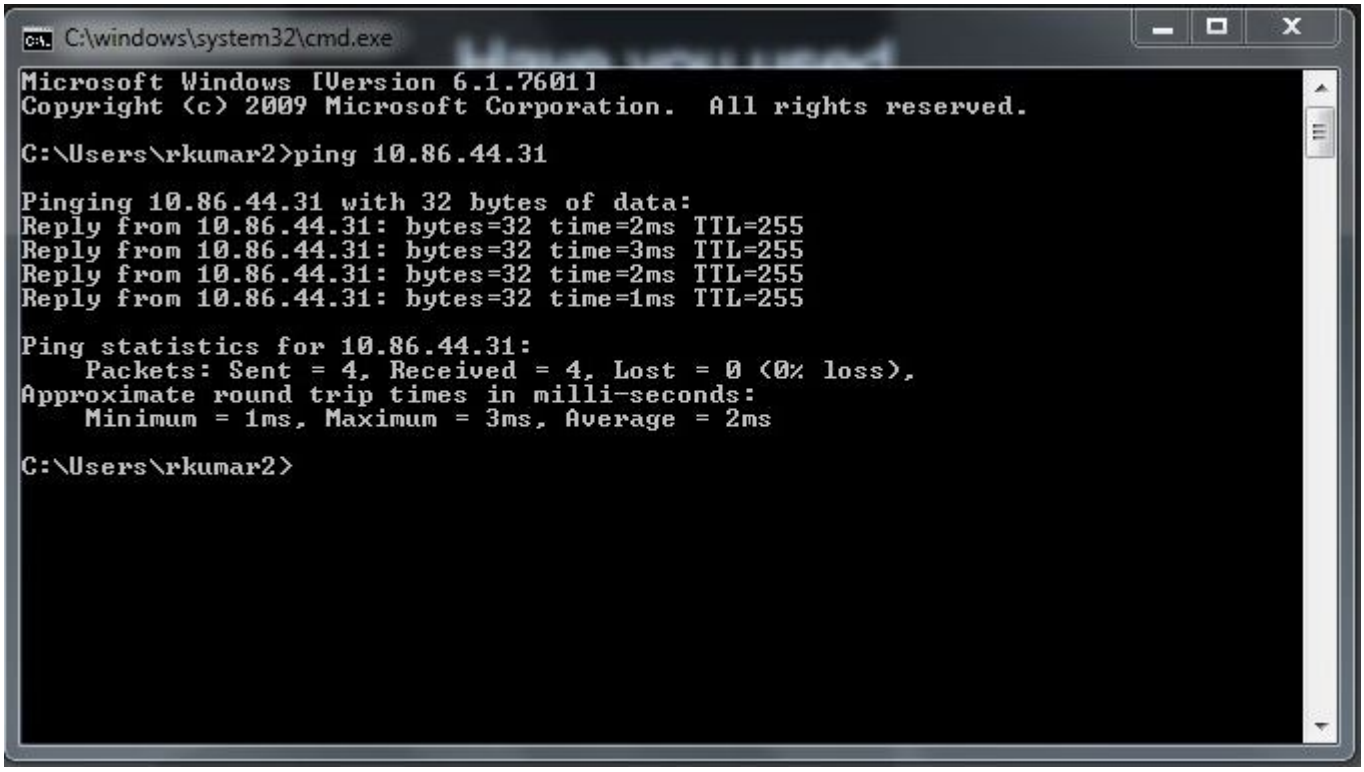


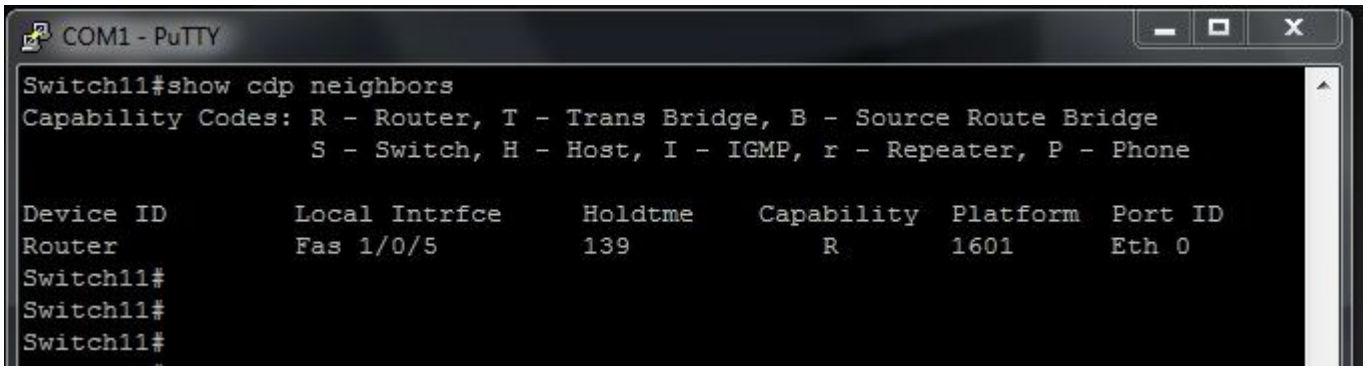
5. Connect your console cable from your computer's serial port to the console port of your Ethernet switch and configure its hostname to SwitchXY (where XY is your group number). Also configure the IP address of your switch to the value shown in the network topology drawing. Verify that you can ping the IP address of your switch from the command prompt of your computer.

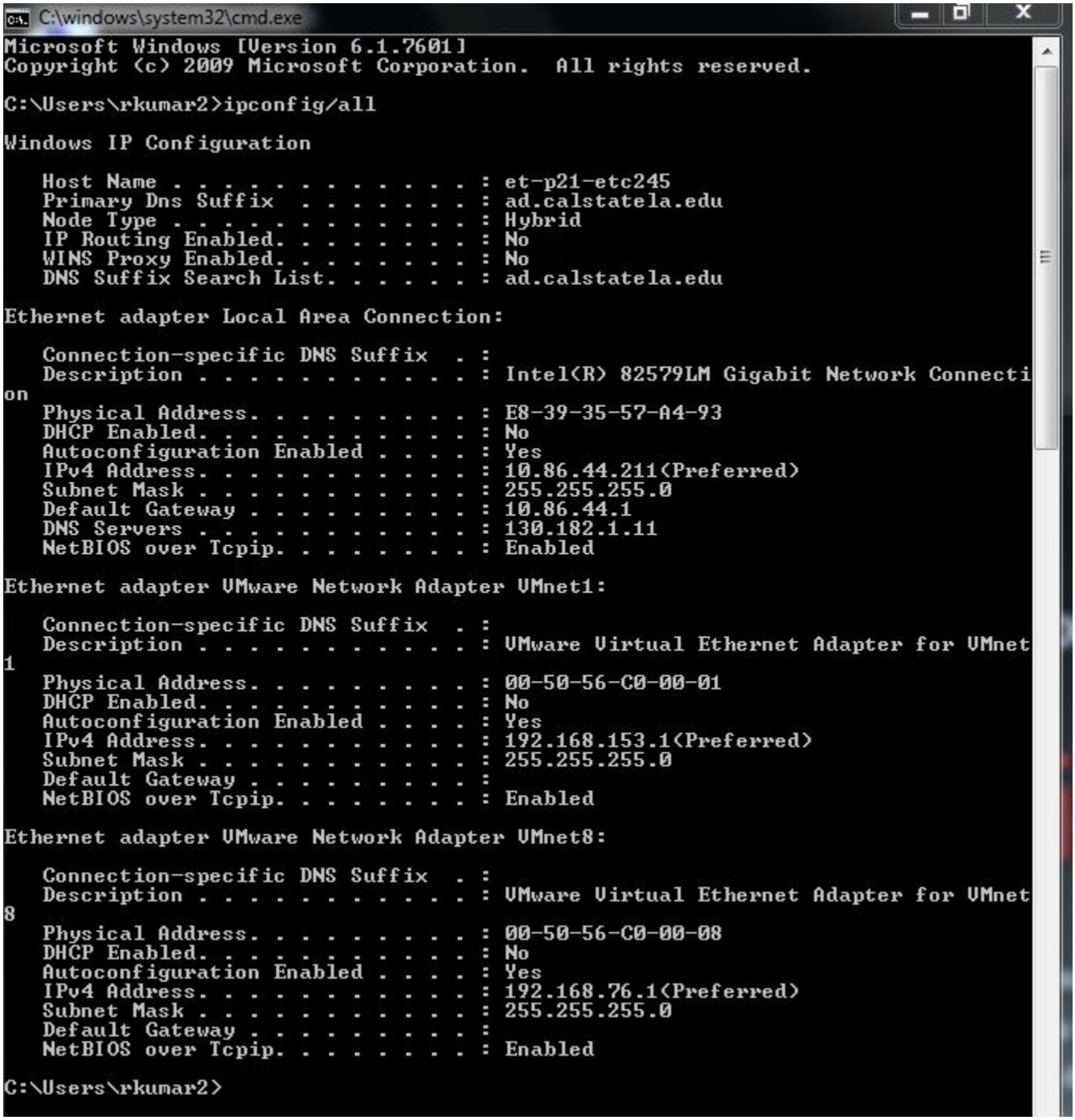
   a. submit a screenshot of output of "show cdp neighbors" and "show mac address-table" from your switch. Circle the mac address that belongs to your computer.

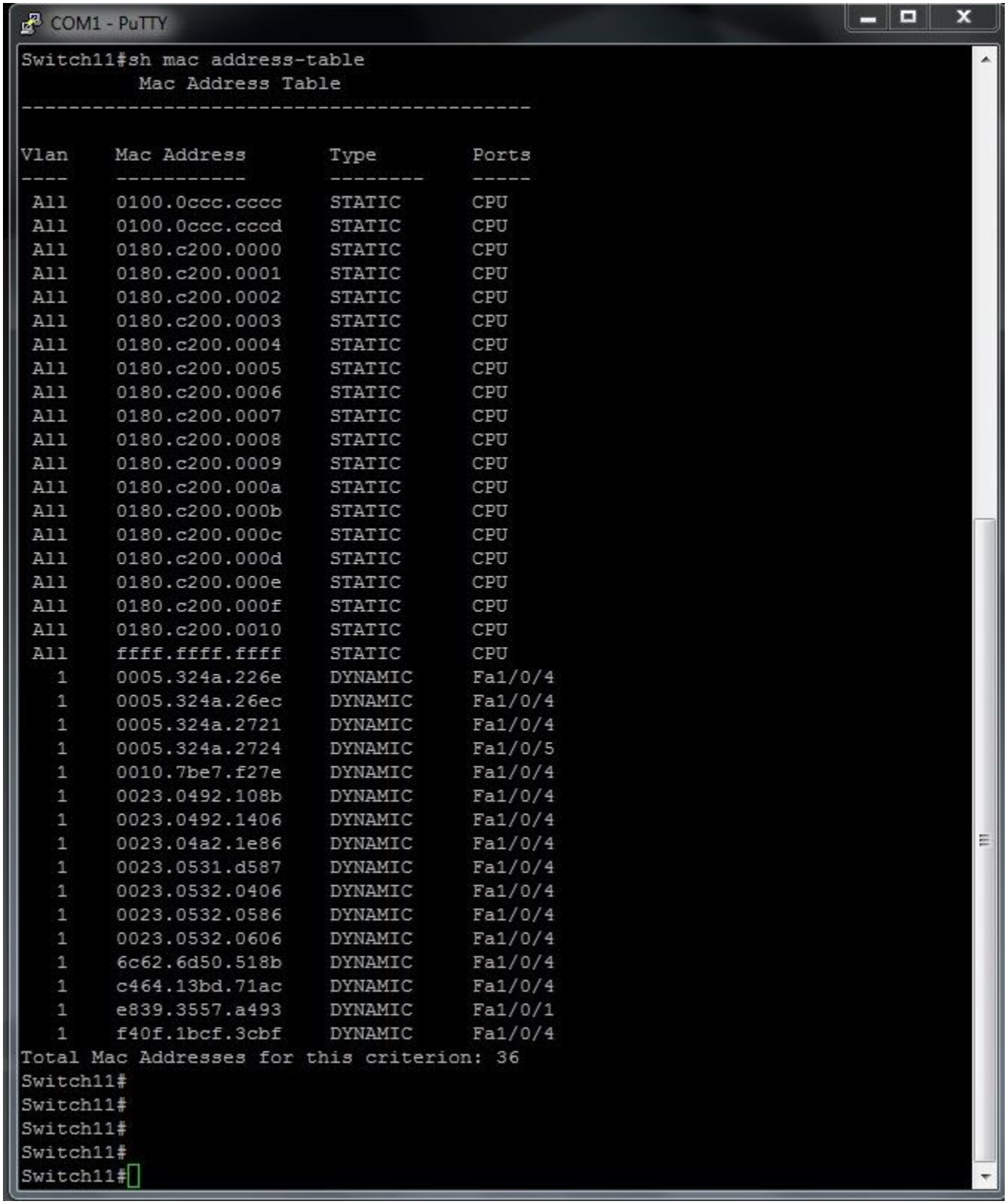
   Ans:




C:\windows\system32\cmd.exe
Microsoft Windows [Version 6.1.7601]
Copyright (c) 2009 Microsoft Corporation. All rights reserved.
C:\Users\rkumar2>ping 10.86.44.31
Pinging 10.86.44.31 with 32 bytes of data:
Reply from 10.86.44.31: bytes=32 time=2ms TTL=255
Reply from 10.86.44.31: bytes=32 time=3ms TTL=255
Reply from 10.86.44.31: bytes=32 time=2ms TTL=255
Reply from 10.86.44.31: bytes=32 time=1ms TTL=255
Ping statistics for 10.86.44.31:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 1ms, Maximum = 3ms, Average = 2ms
C:\Users\rkumar2>

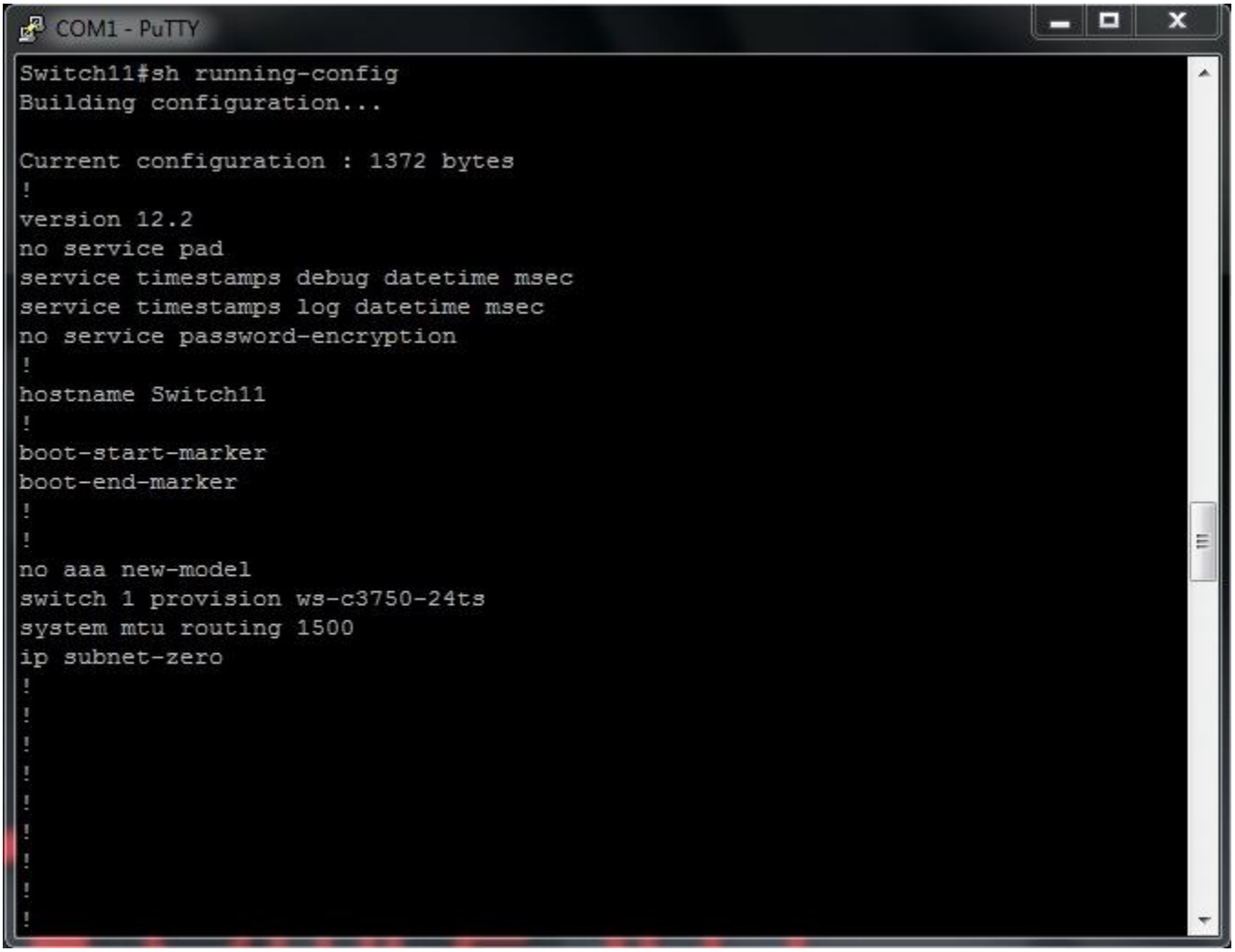

COM1 - PuTTY
Switch11#show cdp neighbors
Capability Codes: R - Router, T - Trans Bridge, B - Source Route Bridge
S - Switch, H - Host, I - IGMP, r - Repeater, P - Phone
Device ID Local Intrfce Holdtme Capability Platform Port ID
Router Fas 1/0/5 139 R 1601 Eth 0
Switch11#
Switch11#
Switch11#

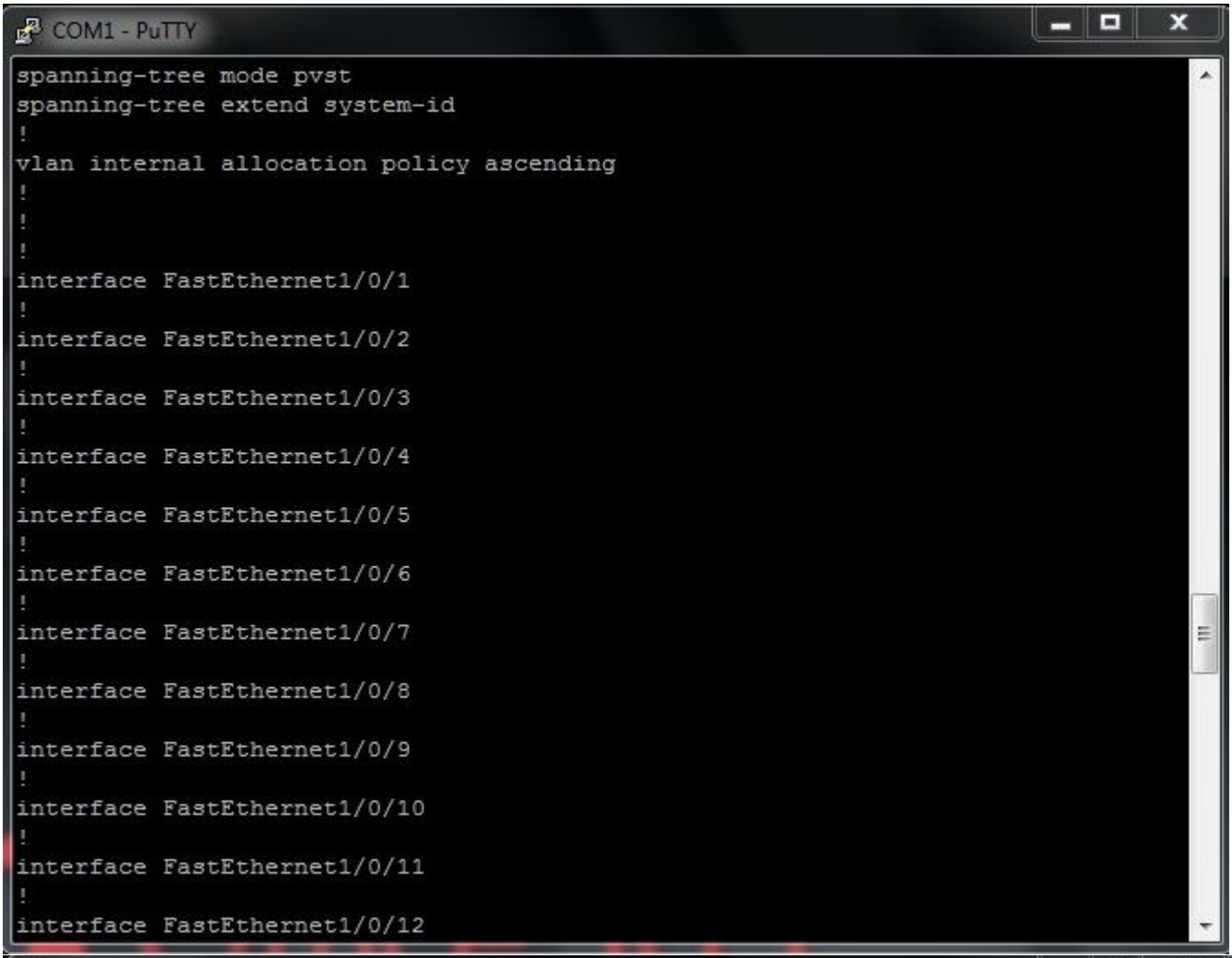

C:\windows\system32\cmd.exe
Microsoft Windows [Version 6.1.7601]
Copyright (c) 2009 Microsoft Corporation. All rights reserved.
C:\Users\rkumar2>ipconfig/all
Windows IP Configuration
Host Name . . . . . : et-p21-etc245
Primary Dns Suffix . . . . . : ad.calstatela.edu
Node Type . . . . . : Hybrid
IP Routing Enabled. . . . . : No
WINS Proxy Enabled. . . . . : No
DNS Suffix Search List. . . . . : ad.calstatela.edu
Ethernet adapter Local Area Connection:
Connection-specific DNS Suffix . :
Description . . . . . : Intel(R) 82579LM Gigabit Network Connecti
on
Physical Address. . . . . : E8-39-35-57-A4-93
DHCP Enabled. . . . . : No
Autoconfiguration Enabled . . . . : Yes
IPv4 Address. . . . . : 10.86.44.211(Preferred)
Subnet Mask . . . . . : 255.255.255.0
Default Gateway . . . . . : 10.86.44.1
DNS Servers . . . . . : 130.182.1.11
NetBIOS over Tcpip. . . . . : Enabled
Ethernet adapter VMware Network Adapter VMnet1:
Connection-specific DNS Suffix . :
Description . . . . . : VMware Virtual Ethernet Adapter for VMnet
1
Physical Address. . . . . : 00-50-56-C0-00-01
DHCP Enabled. . . . . : No
Autoconfiguration Enabled . . . . : Yes
IPv4 Address. . . . . : 192.168.153.1(Preferred)
Subnet Mask . . . . . : 255.255.255.0
Default Gateway . . . . . :
NetBIOS over Tcpip. . . . . : Enabled
Ethernet adapter VMware Network Adapter VMnet8:
Connection-specific DNS Suffix . :
Description . . . . . : VMware Virtual Ethernet Adapter for VMnet
8
Physical Address. . . . . : 00-50-56-C0-00-08
DHCP Enabled. . . . . : No
Autoconfiguration Enabled . . . . : Yes
IPv4 Address. . . . . : 192.168.76.1(Preferred)
Subnet Mask . . . . . : 255.255.255.0
Default Gateway . . . . . :
NetBIOS over Tcpip. . . . . : Enabled
C:\Users\rkumar2>

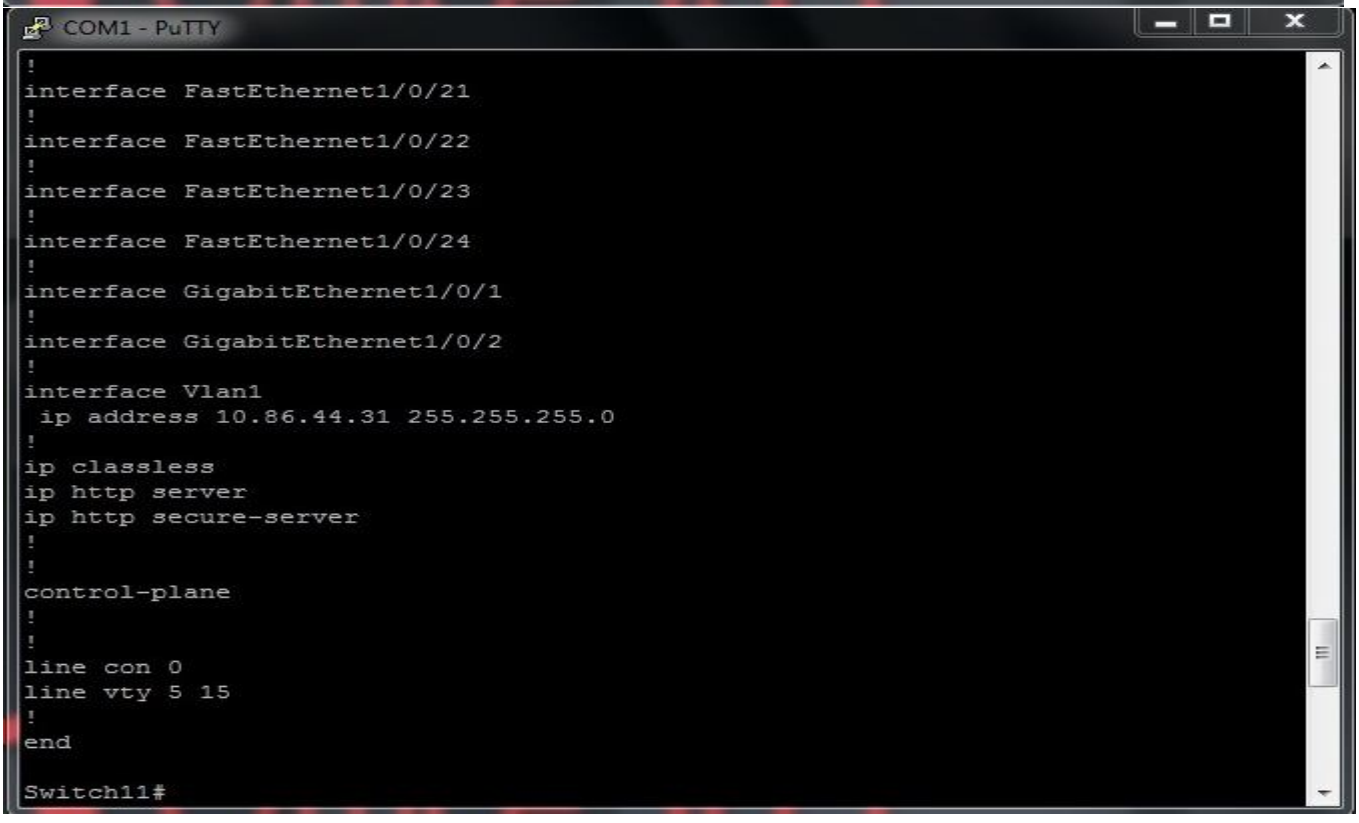

COM1 - PuTTY
Switch11#sh mac address-table
Mac Address Table
Vlan Mac Address Type Ports
All 0100.0ccc.cccc STATIC CPU
All 0100.0ccc.cccd STATIC CPU
All 0180.c200.0000 STATIC CPU
All 0180.c200.0001 STATIC CPU
All 0180.c200.0002 STATIC CPU
All 0180.c200.0003 STATIC CPU
All 0180.c200.0004 STATIC CPU
All 0180.c200.0005 STATIC CPU
All 0180.c200.0006 STATIC CPU
All 0180.c200.0007 STATIC CPU
All 0180.c200.0008 STATIC CPU
All 0180.c200.0009 STATIC CPU
All 0180.c200.000a STATIC CPU
All 0180.c200.000b STATIC CPU
All 0180.c200.000c STATIC CPU
All 0180.c200.000d STATIC CPU
All 0180.c200.000e STATIC CPU
All 0180.c200.000f STATIC CPU
All 0180.c200.0010 STATIC CPU
All ffff.ffff.ffff STATIC CPU
1 0005.324a.226e DYNAMIC Fa1/0/4
1 0005.324a.26ec DYNAMIC Fa1/0/4
1 0005.324a.2721 DYNAMIC Fa1/0/4
1 0005.324a.2724 DYNAMIC Fa1/0/5
1 0010.7be7.f27e DYNAMIC Fa1/0/4
1 0023.0492.108b DYNAMIC Fa1/0/4
1 0023.0492.1406 DYNAMIC Fa1/0/4
1 0023.04a2.1e86 DYNAMIC Fa1/0/4
1 0023.0531.d587 DYNAMIC Fa1/0/4
1 0023.0532.0406 DYNAMIC Fa1/0/4
1 0023.0532.0586 DYNAMIC Fa1/0/4
1 0023.0532.0606 DYNAMIC Fa1/0/4
1 6c62.6d50.518b DYNAMIC Fa1/0/4
1 c464.13bd.71ac DYNAMIC Fa1/0/4
1 e839.3557.a493 DYNAMIC Fa1/0/1
1 f40f.1bcf.3cbf DYNAMIC Fa1/0/4
Total Mac Addresses for this criterion: 36
Switch11#
Switch11#
Switch11#
Switch11#
Switch11#

b. Submit a copy of the configuration file of your Ethernet switch.

Ans:




COM1 - PuTTY
spanning-tree mode pvst
spanning-tree extend system-id
!
vlan internal allocation policy ascending
!
!
!
interface FastEthernet1/0/1
!
interface FastEthernet1/0/2
!
interface FastEthernet1/0/3
!
interface FastEthernet1/0/4
!
interface FastEthernet1/0/5
!
interface FastEthernet1/0/6
!
interface FastEthernet1/0/7
!
interface FastEthernet1/0/8
!
interface FastEthernet1/0/9
!
interface FastEthernet1/0/10
!
interface FastEthernet1/0/11
!
interface FastEthernet1/0/12


COM1 - PuTTY
!
interface FastEthernet1/0/21
!
interface FastEthernet1/0/22
!
interface FastEthernet1/0/23
!
interface FastEthernet1/0/24
!
interface GigabitEthernet1/0/1
!
interface GigabitEthernet1/0/2
!
interface Vlan1
 ip address 10.86.44.31 255.255.255.0
!
ip classless
ip http server
ip http secure-server
!
!
control-plane
!
!
line con 0
line vty 5 15
!
end
Switch11#