**Net 1060 Introduction to Networks Lab: # 10.3.4**

**Name: Andrew Koenig**

**Follow the instructions down below for the lab itself. For this lab, all answers need to be in blue font. For the questions right below, answer in complete sentences. Ensure you paste the screen shot of your score page at the bottom of the document. Even if this does not let you see your grade, still take a screen shot of the score page showing congratulations “your name” you have completed the exercise is pasted at the bottom of this document. You will then need to upload both this word document and your packet tracer file to the assignments link within Netacad. Let the instructor know if you have any questions.**

***Lab Analysis Report***

1. Using complete sentences summarize work you completed during the lab.

I configured routers and verified their connections

2. Using complete sentences describe what you learned from the lab. Hint; look at the lab objectives listed at the top of the lab section.

I learned how to properly configure routers and test their connections

***Problems Encountered***

1. Using complete sentences describe any problem(s) experienced during lab.

No problems

2. Using complete sentences describe how you solved your problem(s).

No problems

3. Using complete sentences explain if you needed any assistance with the lab; then list what you learned from that assistance. No problems

Packet Tracer - Connect a Router to a LAN

# Addressing Table

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Device | Interface | IP Address | Subnet Mask | Default Gateway |
| R1 | G0/0 | 192.168.10.1 | 255.255.255.0 | N/A |
| R1 | G0/1 | 192.168.11.1 | 255.255.255.0 | N/A |
| R1 | S0/0/0 (DCE) | 209.165.200.225 | 255.255.255.252 | N/A |
| R2 | G0/0 | 10.1.1.1 | 255.255.255.0 | N/A |
| R2 | G0/1 | 10.1.2.1 | 255.255.255.0 | N/A |
| R2 | S0/0/0 | 209.165.200.226 | 255.255.255.252 | N/A |
| PC1 | NIC | 192.168.10.10 | 255.255.255.0 | 192.168.10.1 |
| PC2 | NIC | 192.168.11.10 | 255.255.255.0 | 192.168.11.1 |
| PC3 | NIC | 10.1.1.10 | 255.255.255.0 | 10.1.1.1 |
| PC4 | NIC | 10.1.2.10 | 255.255.255.0 | 10.1.2.1 |

# Objectives

Part 1: Display Router Information

Part 2: Configure Router Interfaces

Part 3: Verify the Configuration

# Background

In this activity, you will use various **show** commands to display the current state of the router. You will then use the Addressing Table to configure router Ethernet interfaces. Finally, you will use commands to verify and test your configurations.

**Note**: The routers in this activity are partially configured. Some of the configurations are not covered in this course but they are provided to assist you in using verification commands.

## Display Router Information

### Display interface information on R1.

**Note**: Click a device and then click the **CLI** tab to access the command line directly. The console password is **cisco**. The privileged EXEC password is **class**.

#### Questions:

* + 1. Which command displays the statistics for all interfaces configured on a router?

Type your Show interfaces here.

* + 1. Which command displays the information about the Serial 0/0/0 interface only?

Type your show interface serial 0/0/0answers here.

* + 1. Enter the command to display the statistics for the Serial 0/0/0 interface on R1 and answer the following questions:
       1. What is the IP address configured on **R1**? 209.165.200.255/30

Type your answers here.

* + - 1. What is the bandwidth on the Serial 0/0/0 interface?

Type your1544 Kbits answers here.

* + 1. Enter the command to display the statistics for the GigabitEthernet 0/0 interface and answer the following questions:
       1. What is the IP address on **R1**?

Type your There isn’t one configuredanswers here.

* + - 1. What is the MAC address of the GigabitEthernet 0/0 interface?

Type 000d.bd6c.7d01 answers.

* + - 1. What is the bandwidth (BW) of the GigabitEthernet 0/0 interface?

Type 1000000 Kbits answers here.

### Display a summary list of the interfaces on R1.

#### Questions:

* + 1. Which command displays a brief summary of the current interfaces, interface status, and the IP addresses assigned to them? Show ip interface brief

Type your answers here.

* + 1. Enter the command on each router and answer the following questions:
       1. How many serial interfaces are there on **R1** and **R2**?

Type Both have 2 answers here.

* + - 1. How many Ethernet interfaces are there on **R1** and **R2**?

Type R1 has 6 and R2 has 2 answers here.

* + - 1. Are all the Ethernet interfaces on **R1** the same? If no, explain the difference(s).

No, 2 of them are gigabit which supports a much faster speed over normal ethernet. your answers here.

### Display the routing table on R1.

#### Questions:

* + 1. What command displays the contents of the routing table?

Type your Show ip route here.

* + 1. Enter the command on **R1** and answer the following questions:
       1. How many connected routes are there (uses the **C** code)?

Type 1 answers here.

* + - 1. Which route is listed?

Type 209.165.200.244/30 answers here.

* + - 1. How does a router handle a packet destined for a network that is not listed in the routing table?

Type If it’s not listed then the packet will be droppedyour answers here.

## Configure Router Interfaces

### Configure the GigabitEthernet 0/0 interface on R1.

* + 1. Enter the following commands to address and activate the GigabitEthernet 0/0 interface on **R1**:

Open configuration window

R1(config)# **interface gigabitethernet 0/0**

R1(config-if)# **ip address 192.168.10.1 255.255.255.0**

R1(config-if)# **no shutdown**

%LINK-5-CHANGED: Interface GigabitEthernet0/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0, changed state to up

* + 1. It is good practice to configure a description for each interface to help document the network. Configure an interface description that indicates the device to which it is connected.

R1(config-if)# **description LAN connection to S1**

* + 1. **R1** should now be able to ping PC1.

R1(config-if)# **end**

%SYS-5-CONFIG\_I: Configured from console by console

R1# **ping 192.168.10.10**

Type escape sequence to abort.

Sending 5, 100-byte ICMP Echos to 192.168.10.10, timeout is 2 seconds:

.!!!!

Success rate is 80 percent (4/5), round-trip min/avg/max = 0/2/8 ms

### Configure the remaining Gigabit Ethernet Interfaces on R1 and R2.

* + 1. Use the information in the Addressing Table to finish the interface configurations for **R1** and **R2**. For each interface, do the following:
       1. Enter the IP address and activate the interface.
       2. Configure an appropriate description.
    2. Verify interface configurations.

### Back up the configurations to NVRAM.

#### Question:

Save the configuration files on both routers to NVRAM. What command did you use?

Type your copy run start here.

Close configuration window

## Verify the Configuration

### Use verification commands to check your interface configurations.

* + 1. Use the **show ip interface brief** command on both **R1** and **R2** to quickly verify that the interfaces are configured with the correct IP address and are active.

#### Questions:

How many interfaces on **R1** and **R2** are configured with IP addresses and in the “up” and “up” state?

Type 3 on each answers here.

What part of the interface configuration is NOT displayed in the command output? The subnet mask

Type your answers here.

What commands can you use to verify this part of the configuration?

Type show run – show interfaces – show ip protocols answers here.

* + 1. Use the **show ip route** command on both **R1** and **R2** to view the current routing tables and answer the following questions:

#### Questions:

* + - 1. How many connected routes (uses the **C** code) do you see on each router?

Type 3 on each answers here.

* + - 1. How many OSPF routes (uses the **O** code) do you see on each router?

Type 2 on each answers here.

* + - 1. If the router knows all the routes in the network, then the number of connected routes and dynamically learned routes (OSPF) should equal the total number of LANs and WANs. How many LANs and WANs are in the topology?

Type 5 answers here.

* + - 1. Does this number match the number of C and O routes shown in the routing table?

Type your answers Yes.

**Note**: If your answer is “no”, then you are missing a required configuration. Review the steps in Part 2.

### Test end-to-end connectivity across the network.

You should now be able to ping from any PC to any other PC on the network. In addition, you should be able to ping the active interfaces on the routers. For example, the following tests should be successful:

* From the command line on PC1, ping PC4.
* From the command line on R2, ping PC2.

**Note**: For simplicity in this activity, the switches are not configured. You will not be able to ping them.

Graphical user interface, text

Description automatically generated

R1#show run

R1#show running-config

Building configuration...

Current configuration : 1439 bytes

!

version 15.1

no service timestamps log datetime msec

no service timestamps debug datetime msec

service password-encryption

!

hostname R1

!

!

!

enable secret 5 $1$mERr$9cTjUIEqNGurQiFU.ZeCi1

!

!

!

!

!

!

ip cef

no ipv6 cef

!

!

!

!

license udi pid CISCO1941/K9 sn FTX15240P9D

!

!

!

!

!

!

!

!

!

!

!

spanning-tree mode pvst

!

!

!

!

!

!

interface GigabitEthernet0/0

description LAN connection to S1

ip address 192.168.10.1 255.255.255.0

duplex auto

speed auto

!

interface GigabitEthernet0/1

description Unused connection

ip address 192.168.11.1 255.255.255.0

duplex auto

speed auto

!

interface Serial0/0/0

ip address 209.165.200.225 255.255.255.252

clock rate 64000

!

interface Serial0/0/1

no ip address

clock rate 2000000

shutdown

!

interface FastEthernet0/1/0

switchport mode access

switchport nonegotiate

shutdown

!

interface FastEthernet0/1/1

switchport mode access

switchport nonegotiate

shutdown

!

interface FastEthernet0/1/2

switchport mode access

switchport nonegotiate

shutdown

!

interface FastEthernet0/1/3

switchport mode access

switchport nonegotiate

shutdown

!

interface Vlan1

no ip address

shutdown

!

router ospf 10

log-adjacency-changes

network 192.168.10.0 0.0.0.255 area 0

network 192.168.11.0 0.0.0.255 area 0

network 209.165.200.224 0.0.0.3 area 0

!

ip classless

!

ip flow-export version 9

!

!

!

!

!

!

!

line con 0

password 7 0822455D0A16

login

!

line aux 0

!

line vty 0 4

login

!

!

!

End

R2#show run

R2#show running-config

Building configuration...

Current configuration : 1121 bytes

!

version 15.1

no service timestamps log datetime msec

no service timestamps debug datetime msec

service password-encryption

!

hostname R2

!

!

!

enable secret 5 $1$mERr$9cTjUIEqNGurQiFU.ZeCi1

!

!

!

!

!

!

ip cef

no ipv6 cef

!

!

!

!

license udi pid CISCO1941/K9 sn FTX1524E7C4

!

!

!

!

!

!

!

!

!

!

!

spanning-tree mode pvst

!

!

!

!

!

!

interface GigabitEthernet0/0

description Interface g00

ip address 10.1.1.1 255.255.255.0

duplex auto

speed auto

!

interface GigabitEthernet0/1

description Another interface bro

ip address 10.1.2.1 255.255.255.0

duplex auto

speed auto

!

interface Serial0/0/0

ip address 209.165.200.226 255.255.255.252

!

interface Serial0/0/1

no ip address

clock rate 2000000

shutdown

!

interface Vlan1

no ip address

shutdown

!

router eigrp 1

network 10.0.0.0

network 209.165.200.0

!

router ospf 10

log-adjacency-changes

network 10.1.1.0 0.0.0.255 area 0

network 10.1.2.0 0.0.0.255 area 0

network 209.165.200.224 0.0.0.3 area 0

!

ip classless

!

ip flow-export version 9

!

!

!

no cdp run

!

!

!

!

!

line con 0

password 7 0822455D0A16

login

!

line aux 0

!

line vty 0 4

login

!

!

!

end

End of document