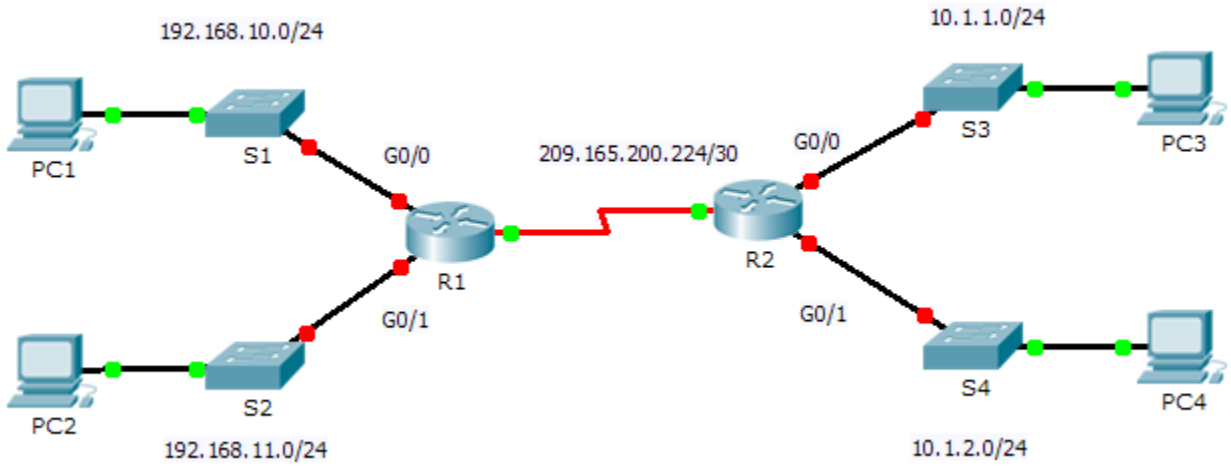
Packet Tracer - Connect a Router to a LAN

Topology



Addressing Table

Device	Interface	IP Address	Subnet Mask	Default Gateway
R1	G0/0	192.168.10.1	255.255.255.0	N/A
	G0/1	192.168.11.1	255.255.255.0	N/A
	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
	G0/1	10.1.2.1	255.255.255.0	N/A
	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 are provided to assist you in using verification commands.

Part 1: Display Router Information

Step 1: 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**.

a. Which command displays the statistics for all interfaces configured on a router? **Show interface**

b. Which command displays the information about the Serial 0/0/0 interface only? **Show interface serial 0/0/0**

c. 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**? **209.165.200.225**

   2) What is the bandwidth on the Serial 0/0/0 interface? **1544 kbits**

d. 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**? **Tidak ada IP address pada R1 karena menggunakan serial bukan Gigabitethernet**

   2) What is the MAC address of the GigabitEthernet 0/0 interface? **Tidak memiliki MAC address karena dalam kasus ini menggunakan router PT dimana tidak memiliki interface untuk Gigabitethernet**

   3) What is the bandwidth on the GigabitEthernet 0/0 interface? **Pada kasus ini tidak ada akan tetapi biasanya GigabitEthernet memiliki bandwidth sebesar 100000 kbits**

Step 2: Display a summary list of the interfaces on R1.

a. Which command displays a brief summary of the current interfaces, statuses, and IP addresses assigned to them?

   Show ip interface brief

b. Enter the command on each router and answer the following questions:

   1) How many serial interfaces are there on **R1** and **R2**? **Setiap router memiliki 2 serial interface**

   2) How many Ethernet interfaces are there on **R1** and **R2**? **Setiap router memiliki 4 fastethernet interface**

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

      Iya, karena semua ethernet pada router R1 memiliki interface fastethernet dimana memiliki kecepatan hingga 1000000 bits.

Step 3: Display the routing table on R1.

a. What command displays the content of the routing table? **Show ip route**

b. Enter the command on **R1** and answer the following questions:

1) How many connected routes are there (uses the C code)? **satu**

Which route is listed? **209.165.200.0/30**

2) How does a router handle a packet destined for a network that is not listed in the routing table?

Router hanya akan mengirimkan packet data kepada network yang terdaftar apabila network tersebut tidak terdaftar maka packet data tidak akan terkirim.

Part 2: Configure Router Interfaces

Step 1: Configure the GigabitEthernet 0/0 interface on R1.

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

```
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
```

b. It is good practice to configure a description for each interface to help document the network information. Configure an interface description indicating to which device it is connected.

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

c. **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
```

Step 2: Configure the remaining Gigabit Ethernet Interfaces on R1 and R2.

a. 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.

b. Verify interface configurations.

Step 3: Back up the configurations to NVRAM.

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

Copy run start

Part 3: Verify the Configuration

Step 1: Use verification commands to check your interface configurations.

a. 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 active.

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

Tiga setiap router

What part of the interface configuration is NOT displayed in the command output? **Subnet address**

What commands can you use to verify this part of the configuration? **show run, show interfaces, show ip protocols**

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

1) How many connected routes (uses the **C** code) do you see on each router? **3**

2) How many EIGRP routes (uses the **D** code) do you see on each router? **2**

3) If the router knows all the routes in the network, then the number of connected routes and dynamically learned routes (EIGRP) should equal the total number of LANs and WANs. How many LANs and WANs are in the topology? **5**

4) Does this number match the number of C and D routes shown in the routing table? **ya**

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

Step 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 should 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.

- PC1 → PC3, PC4

```
Packet Tracer PC Command Line 1.0
C:\>ping 10.1.1.10

Pinging 10.1.1.10 with 32 bytes of data:

Reply from 10.1.1.10: bytes=32 time=6ms TTL=126
Reply from 10.1.1.10: bytes=32 time=1ms TTL=126
Reply from 10.1.1.10: bytes=32 time=3ms TTL=126
Reply from 10.1.1.10: bytes=32 time=1ms TTL=126

Ping statistics for 10.1.1.10:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 1ms, Maximum = 6ms, Average = 2ms

C:\>ping 10.1.2.10

Pinging 10.1.2.10 with 32 bytes of data:

Request timed out.
Reply from 10.1.2.10: bytes=32 time=1ms TTL=126
Reply from 10.1.2.10: bytes=32 time=3ms TTL=126
Reply from 10.1.2.10: bytes=32 time=1ms TTL=126

Ping statistics for 10.1.2.10:
    Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
Approximate round trip times in milli-seconds:
    Minimum = 1ms, Maximum = 3ms, Average = 1ms

C:\>
```

- PC2 → PC3, PC4

```
Packet Tracer PC Command Line 1.0
C:\>ping 10.1.1.10

Pinging 10.1.1.10 with 32 bytes of data:

Reply from 10.1.1.10: bytes=32 time=3ms TTL=126
Reply from 10.1.1.10: bytes=32 time=1ms TTL=126
Reply from 10.1.1.10: bytes=32 time=1ms TTL=126
Reply from 10.1.1.10: bytes=32 time=1ms TTL=126

Ping statistics for 10.1.1.10:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 1ms, Maximum = 3ms, Average = 1ms

C:\>ping 10.1.2.10

Pinging 10.1.2.10 with 32 bytes of data:

Reply from 10.1.2.10: bytes=32 time=3ms TTL=126
Reply from 10.1.2.10: bytes=32 time=1ms TTL=126
Reply from 10.1.2.10: bytes=32 time=1ms TTL=126
Reply from 10.1.2.10: bytes=32 time=1ms TTL=126

Ping statistics for 10.1.2.10:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 1ms, Maximum = 3ms, Average = 1ms
```

- PC3 → PC1, PC2

```
Packet Tracer PC Command Line 1.0
C:\>ping 192.168.10.10

Pinging 192.168.10.10 with 32 bytes of data:

Reply from 192.168.10.10: bytes=32 time=2ms TTL=126
Reply from 192.168.10.10: bytes=32 time=1ms TTL=126
Reply from 192.168.10.10: bytes=32 time=1ms TTL=126
Reply from 192.168.10.10: bytes=32 time=2ms TTL=126

Ping statistics for 192.168.10.10:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 1ms, Maximum = 2ms, Average = 1ms

C:\>ping 192.168.11.10

Pinging 192.168.11.10 with 32 bytes of data:

Reply from 192.168.11.10: bytes=32 time=1ms TTL=126
Reply from 192.168.11.10: bytes=32 time=1ms TTL=126
Reply from 192.168.11.10: bytes=32 time=4ms TTL=126
Reply from 192.168.11.10: bytes=32 time=1ms TTL=126

Ping statistics for 192.168.11.10:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 1ms, Maximum = 4ms, Average = 1ms
```

- PC4 → PC1, PC2

```
Packet Tracer PC Command Line 1.0
C:\>ping 192.168.10.10

Pinging 192.168.10.10 with 32 bytes of data:

Reply from 192.168.10.10: bytes=32 time=3ms TTL=126
Reply from 192.168.10.10: bytes=32 time=1ms TTL=126
Reply from 192.168.10.10: bytes=32 time=1ms TTL=126
Reply from 192.168.10.10: bytes=32 time=1ms TTL=126

Ping statistics for 192.168.10.10:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 1ms, Maximum = 3ms, Average = 1ms

C:\>ping 192.168.11.10

Pinging 192.168.11.10 with 32 bytes of data:

Reply from 192.168.11.10: bytes=32 time=2ms TTL=126
Reply from 192.168.11.10: bytes=32 time=1ms TTL=126
Reply from 192.168.11.10: bytes=32 time=3ms TTL=126
Reply from 192.168.11.10: bytes=32 time=2ms TTL=126

Ping statistics for 192.168.11.10:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 1ms, Maximum = 3ms, Average = 2ms
```

- R1 → PC3

```
R1>en
R1#ping 10.1.1.10

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 10.1.1.10, timeout is 2 seconds:
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 1/2/4 ms
```

- R2 → PC2

```
R2>en
R2#ping 192.168.11.10

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 192.168.11.10, timeout is 2
seconds:
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 1/3/4 ms
```

Suggested Scoring Rubric

Activity Section	Question Location	Possible Points	Earned Points
Part 1: Display Router Information	Step 1a	2	
	Step 1b	2	
	Step 1c	4	
	Step 1d	6	
	Step 2a	2	
	Step 2b	6	
	Step 3a	2	
	Step 3b	6	
	Part 1 Total	**30**	
Part 2: Configure Router Interfaces	Step 3	2	
	Part 2 Total	**2**	
Part 3: Verify the Configuration	Step 1a	6	
	Step 1b	8	
	Part 3 Total	**14**	
	Packet Tracer Score	**54**	
	Total Score (with bonus)	**100**	