Packet Tracer - Determining the DR and BDR

Topology

Lo0
192.168.31.22/32

RB   192.168.1.2/24

Lo0
192.168.31.11/32

Lo0
192.168.31.33/32

RA   192.168.1.1/24   S1   192.168.1.3/24   RC
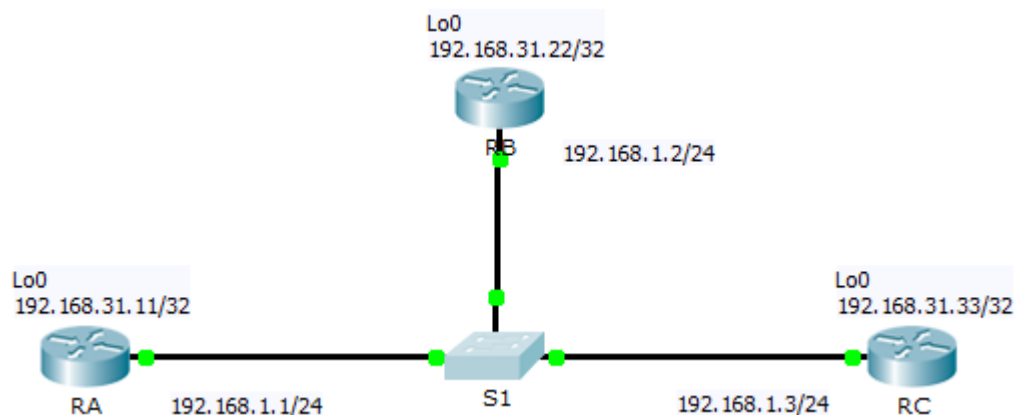
Addressing Table

Device	Interface	IP Address	Subnet Mask
RA	G0/0	192.168.1.1	255.255.255.0
	Lo0	192.168.31.11	255.255.255.255
RB	G0/0	192.168.1.2	255.255.255.0
	Lo0	192.168.31.22	255.255.255.255
RC	G0/0	192.168.1.3	255.255.255.0
	Lo0	192.168.31.33	255.255.255.255

Objectives

Part 1: Examine DR and BDR Changing Roles

Part 2: Modify OSPF Priority and Force Elections

Scenario

In this activity, you will examine DR and BDR roles and watch the roles change when there is a change in the network. You will then modify the priority to control the roles and force a new election. Finally, you will verify routers are filling the desired roles.

Part 1: Examine DR and BDR Changing Roles

Step 1:   Wait until the amber link lights turn green.

When you first open the file in Packet Tracer, you may notice that the link lights for the switch are amber. These link lights will stay amber for 50 seconds while the switch makes sure that one of the routers is not another switch. Alternatively, you can click **Fast Forward Time** to bypass this process.

Step 2: Verify the current OSPF neighbor states.

a. Use the appropriate command on each router to examine the current DR and BDR.

b. Which router is the DR?

c. Which router is the BDR?

Step 3: Turn on IP OSPF adjacency debugging.

a. You can monitor the DR and BDR election process with a **debug** command. On **RA** and **RB**, enter the following command.

```
RA# debug ip ospf adj
RB# debug ip ospf adj
```

Step 4: Disable the Gigabit Ethernet 0/0 interface on RC.

a. Disable the link between **RC** and the switch to cause roles to change.

b. Wait about 30 seconds for the dead timers to expire on **RA** and **RB**. According to the debug output, which router was elected DR and which router was elected BDR?

Step 5: Restore the Gigabit Ethernet 0/0 interface on RC.

a. Re-enable the link between **RC** and the switch.

b. Wait for the new DR/BDR elections to occur. Did DR and BDR roles change? Why or why not?

Step 6: Disable the Gigabit Ethernet 0/0 interface on RB.

a. Disable the link between **RB** and the switch to cause roles to change.

b. Wait about 30 seconds for the holddown timers to expire on **RA** and **RC**. According to the debug output on **RA**, which router was elected DR and which router was elected BDR?

Step 7: Restore the Gigabit Ethernet 0/0 interface on RB.

a. Re-enable the link between **RB** and the switch.

b. Wait for the new DR/BDR elections to occur. Did DR and BDR roles change? Why or why not?

Step 8: Turn off Debugging.

Enter the command **undebug all** on **RA** and **RB** to disable debugging.

Part 2: Modify OSPF Priority and Force Elections

Step 1: Configure OSPF priorities on each router.

To change the DR and BDR, configure the Gigabit Ethernet 0/0 port of each router with the following OSPF interface priorities:

- **RA**: 200
- **RB**: 100
- **RC**: 1 (This is the default priority)

Step 2: Force an election by reloading the switch.

Note: The command **clear ip ospf process** can also be used on the routers to reset the OSPF process.

Step 3: Verify DR and BDR elections were successful.

a. Wait long enough for OSPF to converge and for the DR/BDR election to occur. This should take a few minutes. You can click **Fast Forward Time** to speed up the process.

b. According to output from an appropriate command, which router is now DR and which router is now BDR?

Suggested Scoring Rubric

Activity Section	Question Location	Possible Points	Earned Points
Part 1: Examine DR and BDR Changing Roles	Step 2b	10	
	Step 2c	10	
	Step 4b	10	
	Step 5b	10	
	Step 6b	10	
	Step 7b	10	
Part 1 Total		**60**	
Part 2: Modify OSPF Priority and Force Elections	Step 3b	10	
Part 2 Total		**10**	
Packet Tracer Score		**30**	
Total Score		**100**	