**Point-to-Point Single-Area OSPFv2 Configuration and static routing**

**Diagram

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**Addressing Table**

Table

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**Objectives  
Part 1: Configure Router IDs.  
Part 2: Configure Networks for OSPF Routing.  
Part 3: Configure Passive Interfaces.  
Part 4: Verify OSPF configuration.  
Part 5: Configure floating static routes  
Part 6: Disable OSPF Routing**

**Background**In this activity, you will activate OSPF routing using network statements and wildcard masks, configuring OSPF routing on interfaces, and by using network statements quad-zero masks. In addition, you will configure explicit router IDs and passive interfaces.

**Instructions**

**Part 1: Configure router IDs.**

1. Start the OSPF routing process on all three routers. Use process ID **10**.  
   *Open configuration window  
   Router(config)#* ***router ospf*** *process-id*
2. Use the router-id command to set the OSPF IDs of the three routers as follows

* R1: **1.1.1.1**
* R2: **2.2.2.2**
* R3: **3.3.3.3**

Use the following command: *Router(config-router)#* ***router-id*** *rid*

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*Close configuration window***Part 2: Configure Networks for OSPF Routing  
Step 1: Configure networks for OSPF routing using network commands and wildcard masks.**

Questions:  
How many statements are required to configure OSPF to route all the networks attached to router R1?  
***Type your answers here.***The LAN attached to router R1 has a /24 mask. What is the equivalent of this mask in dotted decimal  
representation?

**255.255.255.0**  
***Type your answers here.***Subtract the dotted decimal subnet mask from 255.255.255.255. What is the result?

0.0.0.255  
***Type your answers here.***What is the dotted decimal equivalent of the /30 subnet mask?

255.255.255.252  
***Type your answers here.***Subtract the dotted decimal representation of the /30 mask from 255.255.255.255. What is the result?

0.0.0.3

1. Configure the routing process on R1 with the network statements and wildcard masks that are required to activate OSPF routing for all the attached networks. The network statement values should be the network or subnet addresses of the configured networks.  
   *Open configuration window  
   Router(config-router)#* ***network*** *network-address wildcard-mask* ***area*** *area-id*

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1. Verify that OSPF has been configured properly by the displaying the running configuration. If you find an error, delete the network statement using the **no** command and reconfigure it.

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**Step 2: Configure networks for OSPF routing using interface IP addresses and quadzero masks.**

On router R2, configure OSPF using network commands with the IP addresses of the interfaces and quadzero masks. The syntax of the network command is the same as was used above.

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**Step 3: Configure OSPF routing on router interfaces**

On router R3, configure the required interfaces with OSPF.  
Question:  
Which interfaces on R3 should be configured with OSPF?

G0/0/0, S0/1/0, S0/1/1  
***Type your answers here.***Configure each interface using the command syntax shown below:  
 *Router(config-if)#* ***ip ospf*** *process-id* ***area*** *area-id*

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**Part 3: Configure Passive Interfaces**

OSPF will send its protocol traffic out of all interfaces that are participating in the OSPF process. On links that are not configured to other networks, such as LANs, this unnecessary traffic consumes resources. The passive-interface command will prevent the OSPF process from sending unnecessary routing protocol traffic out LAN interfaces.  
Question:  
Which interfaces on R1, R2, and R3 are a LAN interfaces?

G0/0/0 on all three routers  
***Type your answers here.***Configure the OSPF process on each of the three routers with the **passive-interface** command.  
*Open configuration window  
       Router(config-router)#* ***passive-interface*** *interface*

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*Close configuration window***Part 4: Verify OSPF Configuration**

Use **show** commands to verify the network and passive interface configuration of the OSPF process on each router.

**Part 5: Configure floating static routes**

As a form of backup solution to the routing process on the router it is possible to configure static routes that will only be used when the OSPF process fails.

Configure static routes with a higher Administrative Distance value than used by OSPF for all the LAN networks in the topology.   
As a consequence of the higher AD value the static routes will not be loaded in to the routing table until the routes learned through OSPF are no longer active.

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Consult the routing table and notice that the newly created static routes are not added to the routing table.

**Part 6: Shutdown the OSPF process**

To illustrate the function of the floating static routes shutdown the OSPF process gradually on every router. Again consult the routing table and verify the existence of the static routes.

The OSPF process can be stopped and started by using the shutdown and no shutdown command under the OSPF process.

*R1(config)#****router ospf 10****R1(config-router)#shutdown*

Is there any impact on the performance of the network?

**Note:** Packet Tracer 7.3.1 and earlier versions do not support the shutdown command of the OSPF process. Instead you can remove OSPF.

On R1 remove OSPF from R1:  
*R1(config)# no router ospf 10*

Check the routing table on R2 and R3. The OSPF learned route should no longer be in the routing table and instead a static route for the network should be present.

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