

CSC387 Lab 03 – Multi Area OSPF

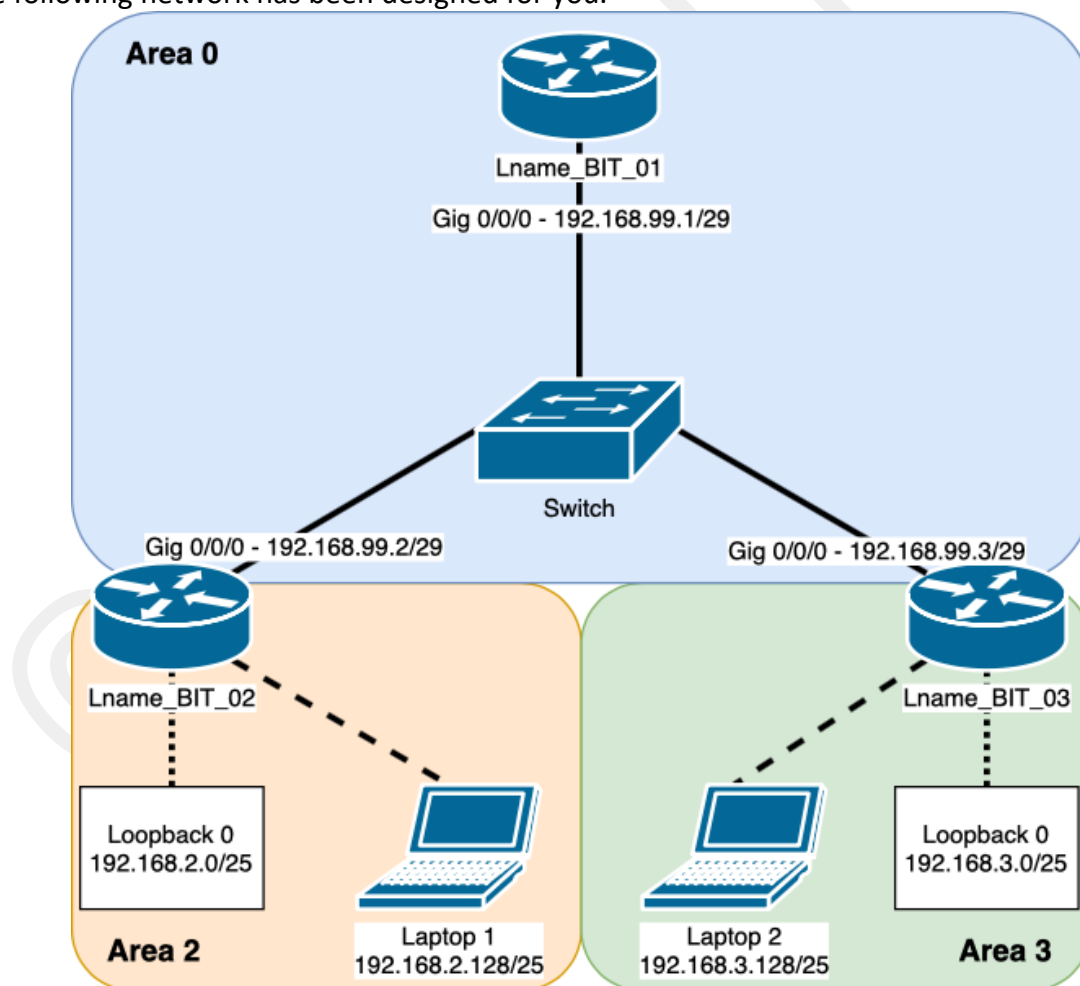
Instructions

After we had you set up RIPv2 last time we found that RIPv2 is for the old school network admins. We need to reconfigure the network to use all OSPF. But we still need it segmented into a couple different areas. It's very similar to what you just configured as far as OSPF, but there's just a little more to do.

The following should be completed on Packet Tracer. Please take a screen shot of each of the Verification Steps (below) and submit in a labeled single word document using the screenshot guide in the class content on D2L. Make sure your device names are visible in the screen shot! Don't forget to save your Packet Tracer file.

Network Diagram

The following network has been designed for you.



Configuration Tasks

1. Set the hostnames of the devices to match the diagram above.

2. Turn off IP domain lookups. Also set your console lines to have synchronous logging so your typing doesn't get messed up by status messages 😊.
3. Configure the routers and laptops to use the IP addresses in the given diagram.
 - a. There are loopback adapters in the diagram. Those of course don't need cables but configure them to have an IP address in the subnet shown. We'll eventually advertise these into OSPF for more practice.
4. If it isn't already configured, turn on CDP for each of the routers (**cdp run**). This will help you determine if everything is set up and cabled correctly.

Verification Step 1

5. The laptops both need to get their IP addresses from DHCP, configure it accordingly on the BIT_01 and BIT_02 routers.
6. Configure all routers to participate in OSPF.
 - a. Pay special attention to which areas the interfaces live in, this will be a multi-area setup.
 - b. You can choose any Process ID for the routers.
 - c. Remember, OSPF does not do auto-summary by default, so you will need to calculate the wildcard mask for each network.
 - d. For this lab, don't forget to advertise the loopback adapters into OSPF. Keep in mind this is not something you would typically need to do, but the point is to practice advertising networks into OSPF.

Verification Step 2

7. Since we are operating in different areas, the election of a DR/BDR isn't quite as critical with the number of routers that we have. Good practice anyhow. Set the router IDs of the three routers with the following guidelines:
 - a. Router BIT_01: **201.201.201.201/32**
 - b. Router BIT_02: **200.200.200.200**
 - c. Router BIT_03: **100.100.100.100**

Note: you may need to do a **clear ip ospf process** for the new RID to be shown.

Verification Step 3

Verification Step 4

Verification Step 5

Verification Steps

1. From router BIT_01, when you run the **show neighbors command**, you should see both routers BIT_02 and BIT_03 listed in the output.
2. On router BIT_03 run a **show ip route** and look at the routing table. You will see networks that belong to router BIT_02 (**192.168.2.0/25** and **192.168.2.128/25**).
3. From router BIT_03, run a **show ip ospf neighbor** and you should see the other routers in the output. Neighbor ID column will show the router IDs that you set. BIT_01 Should be a DR and BIT_02 will be a BDR.
4. On router BIT_01, turn on OSPF debugging (**debug ip ospf packet**) and look for a hello packet. Remember, in a point-to-point network, these will happen every 10 seconds or so.
5. Once everything is configured, you should be able to ping from Laptop 1 to BIT_03's loopback adapter.

What to Turn In

Go through each of the verification steps and take a screenshot. Please try to show each step in a single, clear screenshot to cut down the number of images. Also, paste all screenshots into a single Word/PDF document. Do not upload them to D2L as individual images – I won't grade them.