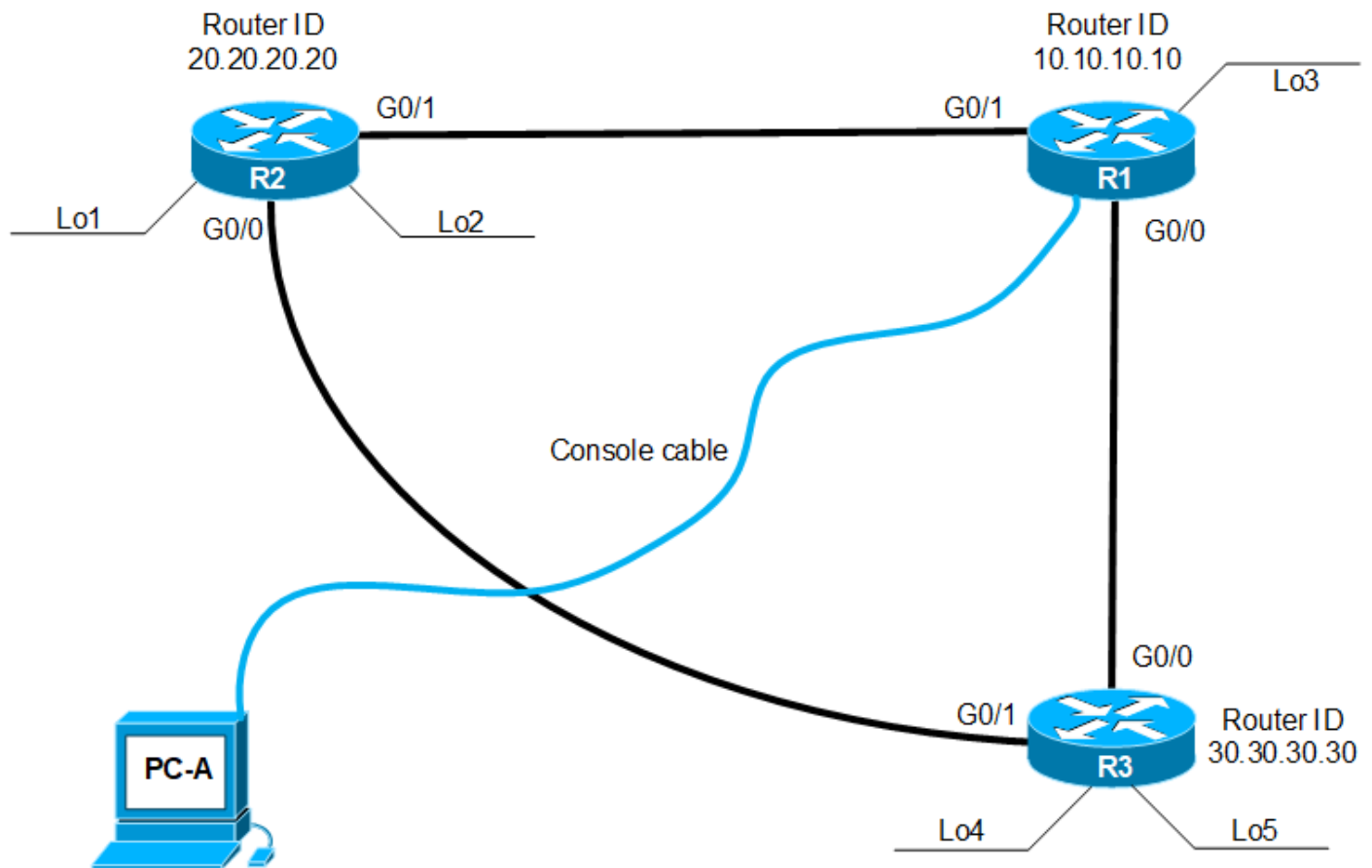


INFO-6047: Lab 09 – OSPF Routing IPv6

Topology



Note:

- 1) The routers in the topology above are **2901s**
- 2) For the On-Line students, you will have to build the lab in Packet Tracer.
- 3) You must complete the IPv4 part of this lab first then do the IPv6 on top of the IPv4 lab for this lab to work

INFO-6047: Lab 09 – OSPF Routing IPv6

IPv6 Addressing Table

Device Name	Interface	IPv4 Address / Mask	Default Gateway
R1	G0/0	2001:db8:acad:102::5/64	
	G0/1	2001:db8:acad:101::1/64	
	F0/0/0	Trunk	
	Lo3	2001:db8:acad:3::1/64	
	VLAN 30		
	VLAN 99		
R2	G0/0	2001:db8:acad:103::9/64	
	G0/1	2001:db8:acad:101::2/64	
	Lo1	2001:db8:acad:1::1/64	
	Lo2	2001:db8:acad:2::1/64	
R3	G0/0	2001:db8:acad:102::6/64	
	G0/1	2001:db8:acad:103::10/64	
	Lo4	2001:db8:acad:4::1/64	
	Lo5	2001:db8:acad:5::1/64	
SW-1	F0/10	Trunk	
	F0/24	Vlan 30	
	VLAN 30		
	VLAN 99		
PC-A		2001:db8:acad:30::10/64	2001:db8:acad:30::254/64

INFO-6047: Lab 09 – OSPF Routing IPv6

Initial Setup

Complete the IPv4 version of this lab before attempting this lab.:

Setup the Network

- a) Remove the bits and peace's from the topology that are not needed for this lab. (2960 switch)
- b) Remove anything from R1 that is not needed, (vlan 30, vlan 99, and disable the G0/0/0 port.)
- c) Enable IPv6 routing on all 3 routers
- d) Assign the IPv6 addressing to the interfaces as laid out in the "[IPv6 Address table](#)".
 - a. You should from router 1 be able to ping router 2 and 3 but **NOT** the loopback addresses.
- e) For each router assign the router ID as layout in the "[Topology](#)"
 - a. **R1(config)# ipv6 router ospf 10**
 - b. **R1(config-rtr)# router-id 10.10.10.10**
 - c. **R1(config-rtr)# exit**
- f) On each router for each interface in use, assign the interface to the correct ospf AS and area
 - a. **R1(config)# inter g0/0**
 - b. **R1(config-if)# ipv6 ospf 10 area 51**
- g) From each router you should:
 - a. Be able to ping the other routers
 - b. Be able to ping the loopback addresses
- h) Take a copy of the routing table on all three routers.
 - a. **"show ipv6 route"**
- i) Now please add the following entries into each router: (this should look familiar)
 - a.

<u>Router 1 (R1)</u>	<u>Router 2 (R2)</u>	<u>Router3 (R3)</u>
interface g0/1	interface g0/1	interface g0/1
ipv6 ospf cost 128	ipv6 ospf cost 128	ipv6 ospf cost 64
exit	inter g0/0	exit
	ip ospf cost 64	
	exit	
 - b. This will simulate, slow connections between the routers.
Now check the routing table on R1, do you see the difference.
If not, you may need to run the command **"clear ip ospf process"** this will cause an immediate rebuild of the OSPF database. (connections don't normally change speeds so OSPF may take awhile to see the change, the **"clear ip ospf process"** will force a rebuild of the database).
- j) Now do you see any differences? Take a copy of all three IPv6 routing tables and compare then to the ones you captured in section "h)" above, see if you can find what has changed.

Check out some of the other commands:

Show ipv6 OSPF neighbor
Show ipv6 OSPF database
Show ipv6 OSPF database router
Show ipv6 OSPF database network

How do they differ from router to router?

Try the equivalent IPv4 commands, see the differences? can you see that there are 2 OSPF protocols running one for IPv4 and One for IPv6...