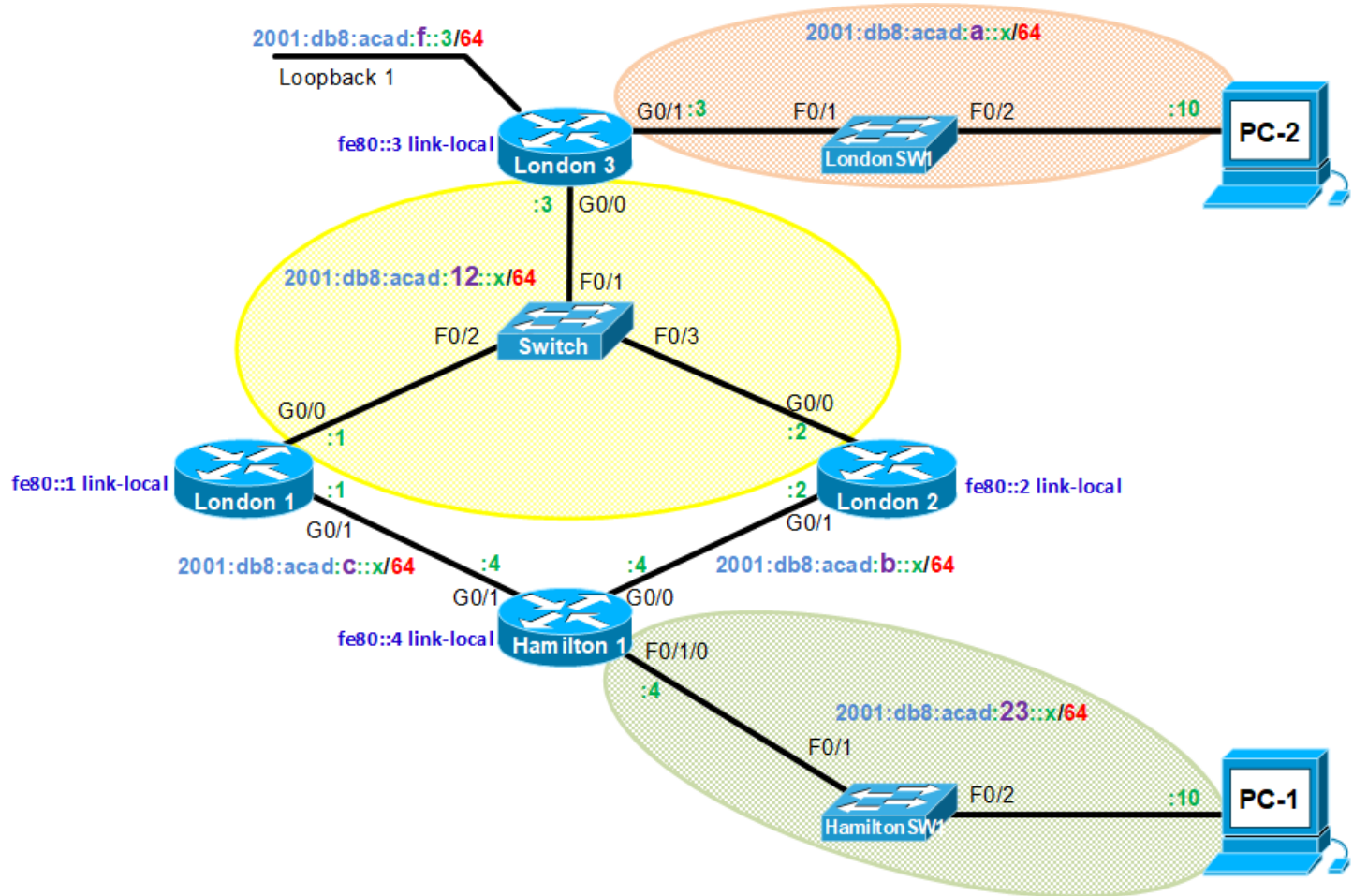


INFO-6047: Lab 08 – Dynamic Routing IPv6

Topology



I have annotated this topology so that you hopefully can see the relationship of the “**BIG, LONG**” IPv6 addresses to the interfaces in the topology.

Note:

- 1) The router in the topology above are **2901s** and the switches are **2960s** (Layer 2 switches)
- 2) **Special NOTE:**
 - In-House Students:
 - Hamilton 1 router must have the **EHWIC-4ESG** (4 port L2 switch) module installed. (G0/0/0)
 - On-lines Students:
 - Hamilton 1 router must have the **HWIC-4ESW** (4 port L2 switch) module installed. (F0/0/0)
- 3) **Special NOTE:** In this Lab, we will modify and configure one of these 4 ports and make it act like a Layer 3 device
- 4) For the In-House students, you will be working in pairs this week.
 - a. You will not have enough equipment for everyone to work alone,
 - b. you will also not have enough cables to do the lab alone.
- 5) For the On-Line students, you will have to build the lab in Packet Tracer.
- 6) This lab is for you to have some fun with IPv6

IPv6 Addressing Table

Device Name	Interface	IPv6 Address / Prefix Length	Default Gateway
London1	G0/0	2001:db8:acad:12::1/64	N/A
		fe80::1 link-local	
	G0/1	2001:db8:acad:c::1/64	N/A
		fe80::1 link-local	
London2	G0/0	2001:db8:acad:12::2/64	N/A
		fe80::2 link-local	
	G0/1	2001:db8:acad:b::2/64	N/A
		fe80::2 link-local	
London3	G0/0	2001:db8:acad:12::3/64	N/A
		fe80::3 link-local	
	G0/1	2001:db8:acad:a::3/64	N/A
		fe80::3 link-local	
	Lo1	2001:db8:acad:f::3/64	
Hamilton1	G0/0	2001:db8:acad:b::4/64	N/A
		fe80::4 link-local	
	G0/1	2001:db8:acad:c::4/64	N/A
		fe80::4 link-local	
	Vlan 10	2001:db8:acad:23::4/64	N/A
		fe80::4 link-local	
PC-1		2001:db8:acad:23::10/64	FE80::4
PC-2		2001:db8:acad:a::10/64	FE80::3

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Initial Setup

Lab document “Lab 8- Dynamic Routing IPv4” must be completed, and all must work before you attempt to do this lab for IPv6.

We are not doing any IPv6 on the switches for this lab, yes, they will pass IPv6 information we are just not setting IPv6 addresses on the switches (all the switches in this lab are L2 devices and will not support IPv6 addresses).

Setup the network

- a) For all the network interfaces on the 4 routers add the IPv6 addresses and link local addresses
here is an example:

- a. `London3(config)# ipv6 unicast-routing`
- b. `London3(config)# interface g0/1`
- c. `London3 (config-if)# ipv6 address 2001:db8:acad:a::3/64`
- d. `London3 (config-if)# ipv6 address FE80::3 link-local`
- e. `London3 (config-if)# ipv6 rip ISM1 enable`
- f. `London3 (config-if)# no shutdown`
- g. `London3 (config-if)# exit`

Routers must have IPv6 enabled don't forget this command. Once per router you will be running IPv6 on.

A lot of the dynamic routing for IPv6, setup is not done in a sub-section of the configuration. Sum or all the commands are put into the interface sub command. Also, for rip IPv6 is associated with names... “ipv6 rip **ISM1** enable” This makes it possible for multiple RIP routing tables, for today we want to use only one, pick a name and use it on all interfaces in this lab.

- b) Repeat the appropriate parts above with the appropriate addressing (see [IPv6 Addressing Table](#)) for each interface on the 4 routers, there are a total of 10 interfaces you will need to add IPv6 information to.

- c) Add the appropriate information to the PCs 1 and 2.

- d) Do not remove any of the IPv4 configuration!

Believe it or not that is it because you are enabling IPv6 RIP routing on the interfaces as you did the configuration all should be working now.

as you should remember in the IPv4 version of this lab there was a **Summarized** and a **Not Summarized** version of RIP routing. It revealed two different routing tables, this convention does not exist in IPv6 everything is “Not-Summarized”

Now for some testing:

- a. Can you ping from PC-1 to PC-2 _____?
 - b. Can you ping from PC-2 to PC-1 _____?
- e) Try a traceroute from PC-1 to PC-2 and of course a traceroute from PC-2 to PC-1

Did the traceroutes work? _____

In the areas below copy the output of the traceroute commands. (**Do not** do a screen capture, copy the text and paste it in the areas provided).

- a. PC-1

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b. PC-2

f) Here are a few other commands you can try out to see what is happening with-in the IPv6 realm

- a. **Show ipv6 protocol**
- b. **Show ipv6 route**
- c. **Show ipv6 rip database**
- d. **Show ipv6 interface brief**
- e. **Sh cdp neighbors**

That's it for today.