LAB 6 OSPF

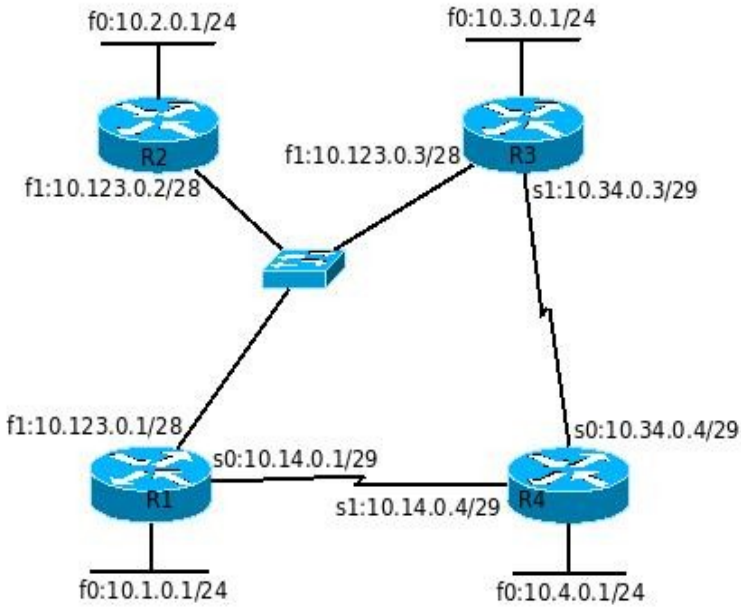
Reference commands:

```
wr er
reload
 no ip domain-lookup
  logg sync
  do sh ip route
copy run start
  do sh ip int br
  exec-timeout ?
  clock rate 64000
  ip ospf cost
  ip ospf pri <n>
  band <k>
  ip ospf hello 3
  ip ospf dead 10
  auto-cost ref 1000
 router ospf 1
  router-id x.x.x.x
  net x.x.x.x y.y.y.y area 0
  default-information originate
clear ip ospf process
sh ip ospf nei
sh ip ospf int
sh ip prot
```

f0==f0/0
f1==f0/1
s0==s0/0/0
s1==s0/0/1

Loopback0
R1:1.1.1.1/26
R2:2.2.2.2/26
R3:3.3.3.3/26
R4:4.4.4.4/26

PC LAN2
10.x.0.10/24



1. **Connect** serial cables as shown in the picture. **Connect** all fa0/0 into a switch, port 1,3,5,7, respectively; connect PC lab network port to the same switch, port 2,4,6,8, respectively. (port 1 - 2 for R1 and PC1, port 3 - 4 for R2 and PC2, port 5 - 6 for R3 and PC3, and port 7 - 8 for R4 and PC4) **Connect** fa0/1 of R1, R2, and R3 into another switch, as shown in the picture. Turn on routers, **`erase startup-config`** and **`reload`**.
2. On each router, configure the following:
   2-1 host name as shown and privileged password as cisco (**`enable secret cisco`**)
   2-2 interface address as shown in the diagram (LAN, WAN and Loopback)
   2-3 disable auto DNS request (**`no ip domain-lookup`**)
   2-4 telnet password cisco (**`pass cisco`** ; **`login`**)
   2-5 logging message synchronization on console and telnet session (**`logg sync`**)
   2-6 console session no time out; telnet session time out 20 minutes
   `show ip int br` and **`show cdp nei`** to check your result.
3. On all routers, configure OSPF and add all interfaces into the routing protocol database.
   `router ospf 1`
   `  net x.x.x.x y.y.y.y area 0`
   where, x.x.x.x is the network of the interface and y.y.y.y is its wildcard mask.
   Use **`show ip route`** to check the result.
   At this point, you should be able to ping everywhere from all interfaces.

4. On R4, add a static route **`ip route 0.0.0.0 0.0.0.0 lo0`** and
   `router ospf 1`
   `  default-information originate`
   On R1, R2 and R3, enter **`show ip route`** to check the result.
5. Use **`sh ip prot`**, **`sh ip ospf`**, or **`sh ip ospf int`** to check your router-id, write it down. Use

fa0/0 ip address as your router ID. Use **`clear ip ospf process`** to implement the change.
Check your router-id again after the change.

6. **`show ip ospf nei`**, find the DR:_____ BDR:_____
   At this point, please ask the proctor to disable your OSPF connection on the second switch, except R4.
   Remove router-id command and remove loopback 0 interface from your configuration.
   (**`no router-id`** ; **`no int lo0`**)
   On R1 fa0/1, enter **`ip ospf pri 255`**;
   on R2 fa0/1, enter **`ip ospf pri 0`**;
   on R3 fa0/1, enter **`ip ospf pri 10`**.
   On the interfaces where you have neighbors, change the hello interval to **3** seconds and dead interval to **10** seconds. (**`ip ospf hello 3`** ; **`ip ofpf dead 10`**)
   Ask the proctor to enable the connection on the second switch.
7. Use **`show ip ospf int`** and **`sh ip ospf nei`** to check the results (priority, time intervals, etc.)

   What is your router's router-id?_____

   What is the default route of your router?_____ why?_____

   DR:_____ BDR:_____

8. On R1 s/0/0, change the bandwidth to 768Kbps. (**`int s0/0/0`** ; **`band 768`**)
   Check R2's routing table.
   On R3 s0/0/1, change the cost to 390. (**`int s0/0/1`** ; **`ip ospf cost 390`**)
   Check R2's routing table.
9. On R1 s0/0/0 and R3 s0/0/1, change the reference bandwidth to 1Gbps.
   `int s0/0/0` or **`ints0/0/1`**
   `auto-cost ref 1000`
   `do sh run`
   Check R2's routing table.

10. Save your configuration to NVRAM and tftp server. (**`ping`** to check connectivity before **`tftp`**)
11. **`debug ip ospf adj`** and **`debug ip ospf events`**
    Change interface status/info and implement the change to see the result.

Note: You might need to save your configuration and reload the router to make the change effective.

12. **`wr er`** and **`reload`**
    to make the routers ready for next skill test.