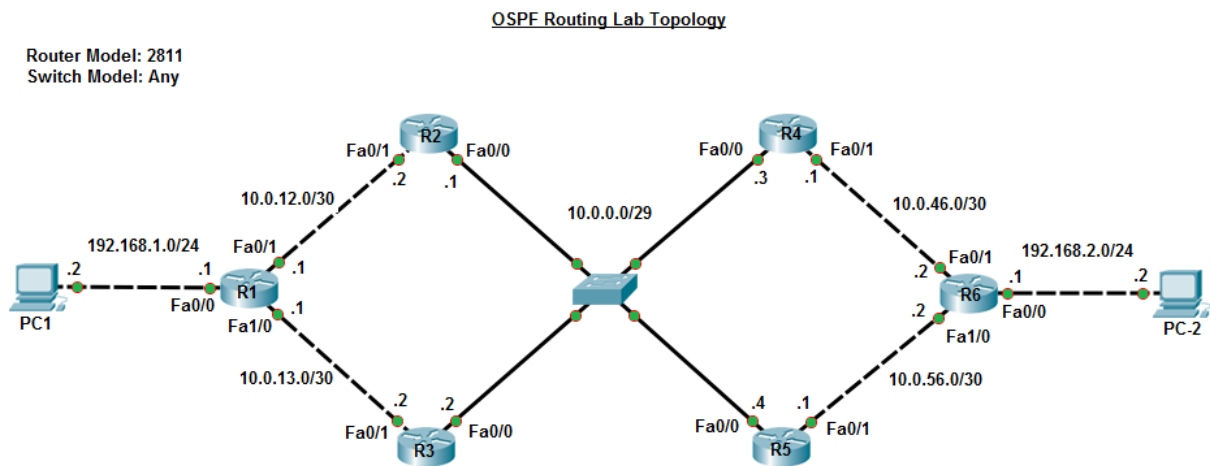


OSPF LAB
(For Practice)

LAB Topology



LAB Instruction

- Task-1 : Configuring IP Addresses on Routers and PCs
- Task-2 : Configuring OSPF on all Routers (Process ID: 1, Area ID: 0)
- Task-3 : Verifying OSPF Neighbor Relationship
- Task-4 : Verifying Routing Table
- Task-5 : Verifying Connectivity between PC-1 and PC-2
- Task-6 : Configuring OSPF Passive Interfaces

=====
Configurations are given below.....

Task-1 : Configuring IP Addresses on Routers and PCs

R1

==

Router>enable

Router#configure terminal

Router(config)#line console 0

Router(config-line)#logging synchronous

Router(config-line)#exec-timeout 0

```
Router(config-line)#exit  
Router(config)#hostname R1
```

```
R1(config)#interface fastEthernet 0/0  
R1(config-if)#ip address 192.168.1.1 255.255.255.0  
R1(config-if)#no shutdown  
R1(config-if)#description LAN  
R1(config-if)#exit
```

```
R1(config)#interface fastEthernet 0/1  
R1(config-if)#ip address 10.0.12.1 255.255.255.252  
R1(config-if)#no shutdown  
R1(config-if)#description R2  
R1(config-if)#exit
```

```
R1(config)#interface fastEthernet 1/0  
R1(config-if)#ip address 10.0.13.1 255.255.255.252  
R1(config-if)#no shutdown  
R1(config-if)#description R3  
R1(config-if)#exit  
R1(config)#exit
```

```
R1#write
```

```
R2
```

```
==
```

```
Router>enable  
Router#configure terminal
```

```
Router(config)#line console 0  
Router(config-line)#logging synchronous  
Router(config-line)#exec-timeout 0  
Router(config-line)#exit
```

```
Router(config)#hostname R2
```

```
R2(config)#interface fastEthernet 0/0  
R2(config-if)#ip address 10.0.0.1 255.255.255.248  
R2(config-if)#no shutdown  
R2(config-if)#description SWITCH  
R2(config-if)#exit
```

```
R2(config)#interface fastEthernet 0/1  
R2(config-if)#ip address 10.0.12.2 255.255.255.252  
R2(config-if)#no shutdown
```

```
R2(config-if)#description R1  
R2(config-if)#exit  
R2(config)#exit
```

```
R2#write
```

R3

```
==
```

```
Router>enable
```

```
Router#configure terminal
```

```
Router(config)#line console 0  
Router(config-line)#logging synchronous  
Router(config-line)#exec-timeout 0  
Router(config-line)#exit
```

```
Router(config)#hostname R3
```

```
R3(config)#interface fastEthernet 0/0  
R3(config-if)#ip address 10.0.0.2 255.255.255.248  
R3(config-if)#no shutdown  
R3(config-if)#description SWITCH  
R3(config-if)#exit
```

```
R3(config)#interface fastEthernet 0/1  
R3(config-if)#ip address 10.0.13.2 255.255.255.252  
R3(config-if)#no shutdown  
R3(config-if)#description R1  
R3(config-if)#exit  
R3(config)#exit
```

```
R3#write
```

R4

```
==
```

```
Router>enable
```

```
Router#configure terminal
```

```
Router(config)#line console 0  
Router(config-line)#logging synchronous  
Router(config-line)#exec-timeout 0  
Router(config-line)#exit
```

```
Router(config)#hostname R4
```

```
R4(config)#interface fastEthernet 0/0
R4(config-if)#ip address 10.0.0.3 255.255.255.248
R4(config-if)#no shutdown
R4(config-if)#description SWITCH
R4(config-if)#exit
```

```
R4(config)#interface fastEthernet 0/1
R4(config-if)#ip address 10.0.46.1 255.255.255.252
R4(config-if)#no shutdown
R4(config-if)#description R6
R4(config-if)#exit
R4(config)#exit
```

```
R4#write
```

R5

```
==
```

```
Router>enable
```

```
Router#configure terminal
```

```
Router(config)#line console 0
Router(config-line)#logging synchronous
Router(config-line)#exec-timeout 0
Router(config-line)#exit
```

```
Router(config)#hostname R5
```

```
R5(config)#interface fastEthernet 0/0
R5(config-if)#ip address 10.0.0.4 255.255.255.248
R5(config-if)#no shutdown
R5(config-if)#description SWITCH
R5(config-if)#exit
```

```
R5(config)#interface fastEthernet 0/1
R5(config-if)#ip address 10.0.56.1 255.255.255.252
R5(config-if)#no shutdown
R5(config-if)#description R6
R5(config-if)#exit
R5(config)#exit
```

```
R5#write
```

R6

==

Router>enable

Router#configure terminal

Router(config)#line console 0

Router(config-line)#logging synchronous

Router(config-line)#exec-timeout 0

Router(config-line)#exit

Router(config)#hostname R6

R6(config)#interface fastEthernet 0/0

R6(config-if)#ip address 192.168.2.1 255.255.255.0

R6(config-if)#no shutdown

R6(config-if)#description LAN

R6(config-if)#exit

R6(config)#interface fastEthernet 0/1

R6(config-if)#ip address 10.0.46.2 255.255.255.252

R6(config-if)#no shutdown

R6(config-if)#description R4

R6(config-if)#exit

R6(config)#interface fastEthernet 1/0

R6(config-if)#ip address 10.0.56.2 255.255.255.252

R6(config-if)#no shutdown

R6(config-if)#description R5

R6(config-if)#exit

R6(config)#exit

R6#write

PC1

===

IP : 192.168.1.2

Mask : 255.255.255.0

GW : 192.168.1.1

PC2

===

IP : 192.168.2.2

Mask : 255.255.255.0

GW : 192.168.2.1

Task-2 : Configuring OSPF on all Routers (Process ID: 1, Area ID: 0)

R1

==

```
R1#conf t
R1(config)#router ospf 1
R1(config-router)#network 192.168.1.0 0.0.0.255 area 0
R1(config-router)#network 10.0.12.0 0.0.0.3 area 0
R1(config-router)#network 10.0.13.0 0.0.0.3 area 0
R1(config-router)#exit
R1#write
```

R2

==

```
R2#conf t
R2(config)#router ospf 1
R2(config-router)#network 10.0.0.0 0.0.0.7 area 0
R2(config-router)#network 10.0.12.0 0.0.0.3 area 0
R2(config-router)#exit
R2#write
```

R3

==

```
R3#conf t
R3(config)#router ospf 1
R3(config-router)#network 10.0.0.0 0.0.0.7 area 0
R3(config-router)#network 10.0.13.0 0.0.0.3 area 0
R3(config-router)#exit
R3#write
```

R4

==

```
R4#conf t
R4(config)#router ospf 1
R4(config-router)#network 10.0.0.0 0.0.0.7 area 0
R4(config-router)#network 10.0.46.0 0.0.0.3 area 0
R4(config-router)#exit
R4#write
```

R5

==

```
R5#conf t
R5(config)#router ospf 1
R5(config-router)#network 10.0.0.0 0.0.0.7 area 0
R5(config-router)#network 10.0.56.0 0.0.0.3 area 0
```

```
R5(config-router)#exit
R5#write
```

R6

```
==
```

```
R6#conf t
R6(config)#router ospf 1
R6(config-router)#network 192.168.2.0 0.0.0.255 area 0
R6(config-router)#network 10.0.46.0 0.0.0.3 area 0
R6(config-router)#network 10.0.56.0 0.0.0.3 area 0
R6(config-router)#exit
R6#write
```

Task-3 : Verifying OSPF Neighbor Relationship

R1#show ip ospf neighbor

Neighbor ID	Pri	State	Dead Time	Address	Interface
10.0.13.2	1	FULL/BDR	00:00:38	10.0.13.2	FastEthernet1/0
10.0.12.2	1	FULL/BDR	00:00:37	10.0.12.2	FastEthernet0/1

R2#show ip ospf neighbor

Neighbor ID	Pri	State	Dead Time	Address	Interface
10.0.13.2	1	FULL/BDR	00:00:36	10.0.0.2	FastEthernet0/0
10.0.46.1	1	FULL/DROTHER	00:00:30	10.0.0.3	FastEthernet0/0
10.0.56.1	1	FULL/DROTHER	00:00:30	10.0.0.4	FastEthernet0/0
192.168.1.1	1	FULL/DR	00:00:32	10.0.12.1	FastEthernet0/1

R3#show ip ospf neighbor

Neighbor ID	Pri	State	Dead Time	Address	Interface
10.0.12.2	1	FULL/DR	00:00:30	10.0.0.1	FastEthernet0/0
10.0.46.1	1	FULL/DROTHER	00:00:34	10.0.0.3	FastEthernet0/0
10.0.56.1	1	FULL/DROTHER	00:00:34	10.0.0.4	FastEthernet0/0
192.168.1.1	1	FULL/DR	00:00:30	10.0.13.1	FastEthernet0/1

R4#show ip ospf neighbor

Neighbor ID	Pri	State	Dead Time	Address	Interface
192.168.2.1	1	FULL/BDR	00:00:31	10.0.46.2	FastEthernet0/1
10.0.13.2	1	FULL/BDR	00:00:35	10.0.0.2	FastEthernet0/0
10.0.12.2	1	FULL/DR	00:00:36	10.0.0.1	FastEthernet0/0
10.0.56.1	1	2WAY/DROTHER	00:00:39	10.0.0.4	FastEthernet0/0

R5#show ip ospf neighbor

Neighbor ID	Pri	State	Dead Time	Address	Interface
10.0.46.1	1	2WAY/DROTHER	00:00:37	10.0.0.3	FastEthernet0/0
10.0.13.2	1	FULL/BDR	00:00:33	10.0.0.2	FastEthernet0/0
10.0.12.2	1	FULL/DR	00:00:33	10.0.0.1	FastEthernet0/0
192.168.2.1	1	FULL/BDR	00:00:31	10.0.56.2	FastEthernet0/1

R6#show ip ospf neighbor

Neighbor ID	Pri	State	Dead Time	Address	Interface
10.0.46.1	1	FULL/DR	00:00:33	10.0.46.1	FastEthernet0/1
10.0.56.1	1	FULL/DR	00:00:38	10.0.56.1	FastEthernet1/0

Task-4 : Verifying Routing Table

R1#show ip route ospf

10.0.0.0/8 is variably subnetted, 5 subnets, 2 masks

- O 10.0.0.0 [110/2] via 10.0.12.2, 00:21:45, FastEthernet0/1
[110/2] via 10.0.13.2, 00:21:45, FastEthernet1/0
- O 10.0.46.0 [110/3] via 10.0.12.2, 00:15:51, FastEthernet0/1
[110/3] via 10.0.13.2, 00:15:51, FastEthernet1/0
- O 10.0.56.0 [110/3] via 10.0.12.2, 00:14:44, FastEthernet0/1
[110/3] via 10.0.13.2, 00:14:44, FastEthernet1/0
- O 192.168.2.0 [110/4] via 10.0.12.2, 00:00:27, FastEthernet0/1
[110/4] via 10.0.13.2, 00:00:27, FastEthernet1/0**

R6#show ip route ospf

10.0.0.0/8 is variably subnetted, 5 subnets, 2 masks

- O 10.0.0.0 [110/2] via 10.0.46.1, 00:14:26, FastEthernet0/1
[110/2] via 10.0.56.1, 00:14:26, FastEthernet1/0
- O 10.0.12.0 [110/3] via 10.0.46.1, 00:14:26, FastEthernet0/1
[110/3] via 10.0.56.1, 00:14:26, FastEthernet1/0
- O 10.0.13.0 [110/3] via 10.0.46.1, 00:14:26, FastEthernet0/1
[110/3] via 10.0.56.1, 00:14:26, FastEthernet1/0
- O 192.168.1.0 [110/4] via 10.0.46.1, 00:14:26, FastEthernet0/1
[110/4] via 10.0.56.1, 00:14:26, FastEthernet1/0**

Task-5 : Verifying Connectivity between PC-1 and PC-2

PC-1

====

```
C:\>ping 192.168.2.2
```

Pinging 192.168.2.2 with 32 bytes of data:

```
Reply from 192.168.2.2: bytes=32 time=13ms TTL=124
```

```
Reply from 192.168.2.2: bytes=32 time=13ms TTL=124
```

```
Reply from 192.168.2.2: bytes=32 time=11ms TTL=124
```

```
Reply from 192.168.2.2: bytes=32 time=12ms TTL=124
```

Ping statistics for 192.168.2.2:

Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),

Approximate round trip times in milli-seconds:

Minimum = 11ms, Maximum = 13ms, Average = 12ms

```
C:\>tracert 192.168.2.2
```

Tracing route to 192.168.2.2 over a maximum of 30 hops:

1	0 ms	0 ms	0 ms	192.168.1.1
2	0 ms	0 ms	0 ms	10.0.12.2
3	10 ms	12 ms	0 ms	10.0.0.4
4	12 ms	10 ms	13 ms	10.0.56.2
5	13 ms	11 ms	11 ms	192.168.2.2

Trace complete.

Task-6 : Configuring OSPF Passive Interfaces

R1

==

```
R1#conf t
```

```
R1(config)#router ospf 1
```

```
R1(config-router)#passive-interface fastEthernet 0/0
```

```
R1(config-router)#exit
```

```
R1#write
```

R6

==

```
R6#conf t
```

```
R6(config)#router ospf 1
```

```
R6(config-router)#passive-interface fastEthernet 0/0
```

```
R6(config-router)#exit
```

```
R6#write
```