Fonctionnement d’OSPF (TP10)

a. Paquet Hello

▪ Activons OSPF sur R1.

```
R1(config)#int f0/0
R1(config-if)#router ospf 1
OSPF process 1 cannot start. There must be at least one "up" IP interface
R1(config-router)#network 19.16.2.0 0.0.0.7 area 0
R1(config-router)#network 192.168.10.0 0.0.0.255 area 0
R1(config-router)#passive-interface f0/0
R1(config-router)#
```

b. Intervalles des paquets Hello

c. Découverte des voisins

```
R2(config)#int f0/0
R2(config-if)#router ospf 1
OSPF process 1 cannot start. There must be at least one "up" IP interface
R2(config-router)#network 19.16.2.0 0.0.0.7 area 0
R2(config-router)#network 192.168.20.0 0.0.0.255 area 0
R2(config-router)#passive-interface f0/0
R2(config-router)#
```

```
R3(config)#int f0/0
R3(config-if)#router ospf 1
OSPF process 1 cannot start. There must be at least one "up" IP interface
R3(config-router)#network 19.16.2.0 0.0.0.7 area 0
R3(config-router)#network 192.168.30.0 0.0.0.255 area 0
R3(config-router)#passive-interface f0/0
R3(config-router)#
```

d. Élection du DR et du BDR

e. Synchronisation des bases de données OSPF

f. Examen des paramètres OSPF par défaut

▪ Mise en place de la priorité du routeur R3 à 0 sur son interface f0/1 :

```
R3#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
R3(config)#int f0/1
R3(config-if)#ip ospf priority 0
R3(config-if)#
```

▪ Regardons plus en détail les informations du protocole OSPF :

```
R1#sh ip protocols

Routing Protocol is "ospf 1"
  Outgoing update filter list for all interfaces is not set
  Incoming update filter list for all interfaces is not set
  Router ID 192.168.10.254
  Number of areas in this router is 1. 1 normal 0 stub 0 nssa
  Maximum path: 4
  Routing for Networks:
    19.16.2.0 0.0.0.7 area 0
    192.168.10.0 0.0.0.255 area 0
  Passive Interface(s):
    FastEthernet0/0
  Routing Information Sources:
    Gateway         Distance      Last Update
    0.0.0.0              110      00:28:43
    192.168.10.254       110      00:01:52
    192.168.20.254       110      00:01:52
    192.168.30.254       110      00:01:12
  Distance: (default is 110)
```

g. Coût OSPF

h. Modification de la bande passante de référence et du coût des interfaces

i. Vérification des paramètres de protocole OSPF

▪ Visualisation du coût d'une interface en utilisant la commande suivante :

```
R1#sh ip ospf int f0/1

FastEthernet0/1 is up, line protocol is up
  Internet address is 19.16.2.1/29, Area 0
  Process ID 1, Router ID 192.168.10.254, Network Type BROADCAST, Cost: 1
  Transmit Delay is 1 sec, State DR, Priority 1
  Designated Router (ID) 192.168.10.254, Interface address 19.16.2.1
  Backup Designated Router (ID) 192.168.20.254, Interface address 19.16.2.2
  Timer intervals configured, Hello 10, Dead 40, Wait 40, Retransmit 5
    Hello due in 00:00:01
  Index 1/1, flood queue length 0
  Next 0x0(0)/0x0(0)
  Last flood scan length is 1, maximum is 1
  Last flood scan time is 0 msec, maximum is 0 msec
  Neighbor Count is 2, Adjacent neighbor count is 2
    Adjacent with neighbor 192.168.20.254  (Backup Designated Router)
    Adjacent with neighbor 192.168.30.254
  Suppress hello for 0 neighbor(s)
```

▪ Visualisation de la table de routage de R1. Elle reprend bien les routes apprises par OSPF.

```
R1#sh ip route
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
       * - candidate default, U - per-user static route, o - ODR
       P - periodic downloaded static route

Gateway of last resort is not set

     19.0.0.0/29 is subnetted, 1 subnets
C       19.16.2.0 is directly connected, FastEthernet0/1
C    192.168.10.0/24 is directly connected, FastEthernet0/0
O    192.168.20.0/24 [110/2] via 19.16.2.2, 00:04:19, FastEthernet0/1
O    192.168.30.0/24 [110/2] via 19.16.2.3, 00:03:36, FastEthernet0/1

R1#
```

▪ Détail de la route pour 192.168.30.0/24 :

```
R1#sh ip route 192.168.30.0
Routing entry for 192.168.30.0/24
Known via "ospf 1", distance 110, metric 2, type intra area
  Last update from 19.16.2.3 on FastEthernet0/1, 00:04:20 ago
  Routing Descriptor Blocks:
  * 19.16.2.3, from 19.16.2.3, 00:04:20 ago, via FastEthernet0/1
      Route metric is 2, traffic share count is 1

R1#
```

▪ Affichage des contiguïtés établies :

sur R1 :

```
R1#sh ip ospf neighbor


Neighbor ID     Pri   State           Dead Time   Address         Interface
19.16.2.2         1   FULL/DR         00:00:39    19.16.2.2       FastEthernet0/1
19.16.2.3         0   FULL/DROTHER    00:00:39    19.16.2.3       FastEthernet0/1
R1#
```

sur R2 :

```
R2#sh ip ospf neighbor


Neighbor ID     Pri   State           Dead Time   Address         Interface
19.16.2.3         0   FULL/DROTHER    00:00:32    19.16.2.3       FastEthernet0/1
19.16.2.1         1   FULL/BDR        00:00:32    19.16.2.1       FastEthernet0/1
R2#
```

sur R3 :

```
R3#sh ip ospf neighbor


Neighbor ID     Pri   State           Dead Time   Address         Interface
19.16.2.2         1   FULL/DR         00:00:31    19.16.2.2       FastEthernet0/1
19.16.2.1         1   FULL/BDR        00:00:31    19.16.2.1       FastEthernet0/1
R3#
```