

Numéro de groupe : 10

Partie 1 : Configuration entre deux routeurs

Lister les interfaces pour pouvoir par la suite les configurer :

```
show int summary
```

Pour entrer en mode configuration :

```
enable  
config t
```

Routeur Ra

On configure chaque interface selon le schéma :

- Liaison inter-routeur (Ethernet 0) :

```
interface Ethernet0  
ip address 10.10.0.1 255.255.255.0  
no shutdown
```

- Loopback 0 (Lo0) :

```
interface Loopback0  
ip address 10.10.1.1 255.255.255.0  
no shutdown
```

- Loopback 1 (Lo1) :

```
interface Loopback1  
ip address 10.10.2.1 255.255.255.0  
no shutdown
```

Aperçu après configuration : `show ip int brief`

```

10-Ra#show ip int brief
Interface                IP-Address      OK? Method Status      Protocol
Ethernet0                10.10.0.1      YES manual  up          up
Ethernet1                unassigned     YES unset   administratively down down
Loopback0                10.10.1.1      YES manual  up          up
Loopback1                10.10.2.1      YES manual  up          up
Serial0                  unassigned     YES unset   administratively down down
Serial1                  unassigned     YES unset   administratively down down

```

Routeur Rb

On configure chaque interface selon le schéma :

- Liaison inter-routeur (Ethernet 0) :

```

interface Ethernet0
ip address 10.10.0.2 255.255.255.0
no shutdown

```

- Loopback 0 (Lo0) :

```

interface Loopback0
ip address 10.10.3.2 255.255.255.0
no shutdown

```

- Loopback 1 (Lo1) :

```

interface Loopback1
ip address 10.10.4.2 255.255.255.0
no shutdown

```

Aperçu après configuration : show ip int brief

```

1-Rb#show ip int brief
Interface                IP-Address      OK? Method Status      Protocol
FastEthernet0/0         10.10.0.2      YES manual  up          up
FastEthernet0/1         unassigned     YES unset   administratively down down
Serial0/2/0             10.0.6.2       YES manual  down        down
Serial0/2/1             10.0.7.2       YES manual  down        down
Loopback0               10.10.3.2      YES manual  up          up
Loopback1               10.10.4.2      YES manual  up          up

```

Test de la connectivité entre les routeurs

Le routeur Cisco 2500 ne dispose pas de port ethernet directement intégré. Il faut utiliser un adaptateur avec un cable ethernet **droit**.



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- Ping du Routeur A vers le Routeur B
- Ping du Routeur B vers le Routeur A

```
l-Rb#ping 10.10.0.1  
  
Type escape sequence to abort.  
Sending 5, 100-byte ICMP Echos to 10.10.0.1, timeout is 2 seconds:  
!!!!  
Success rate is 100 percent (5/5), round-trip min/avg/max = 1/2/4 ms
```

Partie 2 : Mise en place de l'OSPF

Entrée en mode configuration :

```
config t
```

Routeur A

Entrée en mode configuration de l'OSPF :

```
routeur ospf 1
```

Ajout des réseaux locaux à la table OSPF du routeur :

```
network 10.10.1.0 0.0.0.255 area 10
network 10.10.2.0 0.0.0.255 area 10
exit
exit
```

Routeur B

Entrée en mode configuration de l'OSPF :

```
routeur ospf 1
```

Ajout des réseaux locaux à la table OSPF du routeur :

```
network 10.10.3.0 0.0.0.255 area 10
network 10.10.4.0 0.0.0.255 area 10
exit
exit
```

Vérification de la propagation des tables OSPF du routeur B

```
l-Rb#show ip ospf neighbor

Neighbor ID      Pri   State           Dead Time   Address      Interface
10.10.2.1        1    FULL/BDR        00:00:32   10.10.0.1   FastEthernet0/0

l-Rb#show ip route
Codes: C - connected, S - static, 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
       i - IS-IS, su - IS-IS summary, 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

    10.0.0.0/8 is variably subnetted, 5 subnets, 2 masks
O       10.10.1.1/32 [110/11] via 10.10.0.1, 00:03:20, FastEthernet0/0
C       10.10.0.0/24 is directly connected, FastEthernet0/0
C       10.10.3.0/24 is directly connected, Loopback0
O       10.10.2.1/32 [110/11] via 10.10.0.1, 00:03:20, FastEthernet0/0
C       10.10.4.0/24 is directly connected, Loopback1
```

**Réseaux
locaux du
routeur A**

On observe que les réseaux locaux du routeur A sont bien propagé au routeur B via le routeur A.

Partie 3 : Chainage des routeurs entre les groupes

On relie les routeurs entre eux avec un routeur supplémentaire intermédiaire.

A cause d'une pénurie de câble Serial, la connexion entre le routeur C et B est assurée par un câble Ethernet.

On ajoute ensuite les IP sur chaque port du routeur C.

```
config t
interface Serial 0/1/0
ip address 10.0.8.1 255.255.255.0
no shutdown
interface GigabitEthernet0/0/0
ip address 10.0.7.1 255.255.255.0
no shutdown
exit
exit
```

On ajoute ensuite chaque réseau précédemment déclaré dans sa table OSPF.

```
config t
router ospf 1
network 10.0.7.0 0.0.0.255 area 0
network 10.0.8.0 0.0.0.155 area 0
exit
exit
```

On peut enfin observer les tables OSPF des autres routeurs s'ajouter au fur et à mesure que les autres groupes ajoutent les leurs.

Sur le routeur C :

```
show ip route
```

```

Router#show ip route
Codes: L - local, C - connected, S - static, 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
i - IS-IS, su - IS-IS summary, 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, H - NHRP, l - LISP
a - application route
+ - replicated route, % - next hop override, p - overrides from Pfr

Gateway of last resort is not set

10.0.0.0/8 is variably subnetted, 53 subnets, 2 masks
O 10.0.0.0/24 [110/3317] via 10.0.7.2, 00:14:02, GigabitEthernet0/0/0
O 10.0.1.0/24 [110/2536] via 10.0.7.2, 00:14:02, GigabitEthernet0/0/0
O 10.0.2.0/24 [110/2472] via 10.0.7.2, 00:14:02, GigabitEthernet0/0/0
O 10.0.3.0/24 [110/1691] via 10.0.7.2, 00:14:02, GigabitEthernet0/0/0
O 10.0.4.0/24 [110/1627] via 10.0.7.2, 00:14:02, GigabitEthernet0/0/0
O 10.0.5.0/24 [110/846] via 10.0.7.2, 00:14:02, GigabitEthernet0/0/0
O 10.0.6.0/24 [110/782] via 10.0.7.2, 00:14:02, GigabitEthernet0/0/0
C 10.0.7.0/24 is directly connected, GigabitEthernet0/0/0
L 10.0.7.1/32 is directly connected, GigabitEthernet0/0/0
C 10.0.8.0/24 is directly connected, Serial0/1/0
L 10.0.8.1/32 is directly connected, Serial0/1/0
O 10.0.9.0/24 [110/1643] via 10.0.8.2, 00:14:43, Serial0/1/0
O 10.0.10.0/24 [110/1707] via 10.0.8.2, 00:14:43, Serial0/1/0
O 10.0.11.0/24 [110/2488] via 10.0.8.2, 00:14:43, Serial0/1/0
O 10.0.12.0/24 [110/2552] via 10.0.8.2, 00:14:43, Serial0/1/0
O 10.0.13.0/24 [110/3333] via 10.0.8.2, 00:14:43, Serial0/1/0
O 10.0.14.0/24 [110/4162] via 10.0.7.2, 00:14:02, GigabitEthernet0/0/0
O 10.0.15.0/24 [110/3381] via 10.0.7.2, 00:14:02, GigabitEthernet0/0/0
O IA 10.1.0.0/24 [110/1717] via 10.0.8.2, 00:14:43, Serial0/1/0
O IA 10.1.1.1/32 [110/1718] via 10.0.8.2, 00:14:43, Serial0/1/0
O IA 10.1.2.1/32 [110/1718] via 10.0.8.2, 00:14:43, Serial0/1/0
O IA 10.1.3.2/32 [110/1708] via 10.0.8.2, 00:14:43, Serial0/1/0
O IA 10.1.4.2/32 [110/1708] via 10.0.8.2, 00:14:43, Serial0/1/0
O IA 10.2.0.0/24 [110/2546] via 10.0.7.2, 00:14:02, GigabitEthernet0/0/0
O IA 10.2.1.1/32 [110/2547] via 10.0.7.2, 00:14:02, GigabitEthernet0/0/0
O IA 10.2.2.1/32 [110/2547] via 10.0.7.2, 00:14:02, GigabitEthernet0/0/0
O IA 10.2.3.2/32 [110/2537] via 10.0.7.2, 00:14:02, GigabitEthernet0/0/0
O IA 10.2.4.2/32 [110/2537] via 10.0.7.2, 00:14:02, GigabitEthernet0/0/0
O IA 10.8.0.0/24 [110/856] via 10.0.7.2, 00:02:07, GigabitEthernet0/0/0
O IA 10.8.1.1/32 [110/857] via 10.0.7.2, 00:02:07, GigabitEthernet0/0/0
O IA 10.8.2.1/32 [110/857] via 10.0.7.2, 00:02:07, GigabitEthernet0/0/0
O IA 10.8.3.2/32 [110/847] via 10.0.7.2, 00:14:02, GigabitEthernet0/0/0
O IA 10.8.4.2/32 [110/847] via 10.0.7.2, 00:14:02, GigabitEthernet0/0/0
O IA 10.9.0.0/24 [110/1701] via 10.0.7.2, 00:14:02, GigabitEthernet0/0/0
O IA 10.9.1.1/32 [110/1702] via 10.0.7.2, 00:14:02, GigabitEthernet0/0/0
O IA 10.9.2.1/32 [110/1702] via 10.0.7.2, 00:14:02, GigabitEthernet0/0/0
O IA 10.9.3.2/32 [110/1692] via 10.0.7.2, 00:14:02, GigabitEthernet0/0/0
O IA 10.9.4.2/32 [110/1692] via 10.0.7.2, 00:14:02, GigabitEthernet0/0/0
O IA 10.10.0.0/24 [110/11] via 10.0.7.2, 00:14:02, GigabitEthernet0/0/0
O IA 10.10.1.1/32 [110/12] via 10.0.7.2, 00:02:02, GigabitEthernet0/0/0
O IA 10.10.2.1/32 [110/12] via 10.0.7.2, 00:01:45, GigabitEthernet0/0/0
O IA 10.10.3.2/32 [110/2] via 10.0.7.2, 00:14:02, GigabitEthernet0/0/0
O IA 10.10.4.2/32 [110/2] via 10.0.7.2, 00:14:02, GigabitEthernet0/0/0
O IA 10.12.0.0/24 [110/3391] via 10.0.7.2, 00:14:02, GigabitEthernet0/0/0
O IA 10.12.1.1/32 [110/3392] via 10.0.7.2, 00:14:02, GigabitEthernet0/0/0
O IA 10.12.2.1/32 [110/3392] via 10.0.7.2, 00:14:02, GigabitEthernet0/0/0
O IA 10.12.3.2/32 [110/3382] via 10.0.7.2, 00:14:02, GigabitEthernet0/0/0
O IA 10.12.4.2/32 [110/3382] via 10.0.7.2, 00:14:02, GigabitEthernet0/0/0
O IA 10.13.0.0/24 [110/2562] via 10.0.8.2, 00:14:43, Serial0/1/0
O IA 10.13.1.1/32 [110/2563] via 10.0.8.2, 00:14:43, Serial0/1/0
O IA 10.13.2.1/32 [110/2563] via 10.0.8.2, 00:14:43, Serial0/1/0
O IA 10.13.3.2/32 [110/2553] via 10.0.8.2, 00:14:43, Serial0/1/0
O IA 10.13.4.2/32 [110/2553] via 10.0.8.2, 00:14:43, Serial0/1/0
Router#

```

Les routeurs C des différents groupes

Les réseaux locaux des différents groupes (bleu et vert)

```

Neighbor ID      Pri   State           Dead Time   Address      Interface
10.11.4.2        0     FULL/-          00:00:38   10.0.8.2    Serial0/1/0
10.10.4.2        1     FULL/DR         00:00:36   10.0.7.2    GigabitEthernet0/0/0

```

On peut également observer que la table du routeur A (situé le plus en retrait dans notre réseau) est bien mise à jour.

```
Router#show ip route
```

```
Codes: L - local, C - connected, S - static, 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
       i - IS-IS, su - IS-IS summary, 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, H - NHRP, l - LISP
       a - application route
       + - replicated route, % - next hop override, p - overrides from Pfr
```

```
Gateway of last resort is not set
```

```
10.0.0.0/8 is variably subnetted, 49 subnets, 2 masks
```

```
O      10.0.0.0/24 [110/3317] via 10.0.7.2, 00:05:42, GigabitEthernet0/0/0
O      10.0.1.0/24 [110/2536] via 10.0.7.2, 00:05:42, GigabitEthernet0/0/0
O      10.0.2.0/24 [110/2472] via 10.0.7.2, 00:05:42, GigabitEthernet0/0/0
O      10.0.3.0/24 [110/1691] via 10.0.7.2, 00:05:42, GigabitEthernet0/0/0
O      10.0.4.0/24 [110/1627] via 10.0.7.2, 00:05:42, GigabitEthernet0/0/0
O      10.0.5.0/24 [110/846] via 10.0.7.2, 00:05:42, GigabitEthernet0/0/0
O      10.0.6.0/24 [110/782] via 10.0.7.2, 00:05:42, GigabitEthernet0/0/0
C      10.0.7.0/24 is directly connected, GigabitEthernet0/0/0
L      10.0.7.1/32 is directly connected, GigabitEthernet0/0/0
C      10.0.8.0/24 is directly connected, Serial0/1/0
L      10.0.8.1/32 is directly connected, Serial0/1/0
O      10.0.9.0/24 [110/1643] via 10.0.8.2, 00:05:45, Serial0/1/0
O      10.0.10.0/24 [110/1707] via 10.0.8.2, 00:05:45, Serial0/1/0
O      10.0.11.0/24 [110/2488] via 10.0.8.2, 00:05:45, Serial0/1/0
O      10.0.12.0/24 [110/2552] via 10.0.8.2, 00:05:45, Serial0/1/0
O      10.0.13.0/24 [110/3333] via 10.0.8.2, 00:05:45, Serial0/1/0
O      10.0.14.0/24 [110/4162] via 10.0.7.2, 00:05:42, GigabitEthernet0/0/0
O      10.0.15.0/24 [110/3381] via 10.0.7.2, 00:05:42, GigabitEthernet0/0/0
O IA   10.1.0.0/24 [110/1717] via 10.0.8.2, 00:05:45, Serial0/1/0
O IA   10.1.1.1/32 [110/1718] via 10.0.8.2, 00:05:45, Serial0/1/0
O IA   10.1.2.1/32 [110/1718] via 10.0.8.2, 00:05:45, Serial0/1/0
O IA   10.1.3.2/32 [110/1708] via 10.0.8.2, 00:05:45, Serial0/1/0
O IA   10.1.4.2/32 [110/1708] via 10.0.8.2, 00:05:45, Serial0/1/0
O IA   10.2.0.0/24 [110/2546] via 10.0.7.2, 00:05:42, GigabitEthernet0/0/0
O IA   10.2.1.1/32 [110/2547] via 10.0.7.2, 00:05:42, GigabitEthernet0/0/0
O IA   10.2.2.1/32 [110/2547] via 10.0.7.2, 00:05:42, GigabitEthernet0/0/0
O IA   10.2.3.2/32 [110/2537] via 10.0.7.2, 00:05:42, GigabitEthernet0/0/0
O IA   10.2.4.2/32 [110/2537] via 10.0.7.2, 00:05:42, GigabitEthernet0/0/0
O IA   10.8.0.0/24 [110/856] via 10.0.7.2, 00:05:42, GigabitEthernet0/0/0
O IA   10.8.3.2/32 [110/847] via 10.0.7.2, 00:05:42, GigabitEthernet0/0/0
O IA   10.8.4.2/32 [110/847] via 10.0.7.2, 00:05:42, GigabitEthernet0/0/0
O IA   10.9.0.0/24 [110/1701] via 10.0.7.2, 00:05:42, GigabitEthernet0/0/0
O IA   10.9.1.1/32 [110/1702] via 10.0.7.2, 00:05:42, GigabitEthernet0/0/0
O IA   10.9.2.1/32 [110/1702] via 10.0.7.2, 00:05:42, GigabitEthernet0/0/0
O IA   10.9.3.2/32 [110/1692] via 10.0.7.2, 00:05:42, GigabitEthernet0/0/0
O IA   10.9.4.2/32 [110/1692] via 10.0.7.2, 00:05:42, GigabitEthernet0/0/0
O IA   10.10.0.0/24 [110/11] via 10.0.7.2, 00:05:42, GigabitEthernet0/0/0
O IA   10.10.3.2/32 [110/2] via 10.0.7.2, 00:05:42, GigabitEthernet0/0/0
```

```
O IA 10.10.4.2/32 [110/2] via 10.0.7.2, 00:05:42, GigabitEthernet0/0/0
O IA 10.12.0.0/24 [110/3391] via 10.0.7.2, 00:05:42, GigabitEthernet0/0/0
O IA 10.12.1.1/32 [110/3392] via 10.0.7.2, 00:05:42, GigabitEthernet0/0/0
O IA 10.12.2.1/32 [110/3392] via 10.0.7.2, 00:05:42, GigabitEthernet0/0/0
O IA 10.12.3.2/32 [110/3382] via 10.0.7.2, 00:05:42, GigabitEthernet0/0/0
O IA 10.12.4.2/32 [110/3382] via 10.0.7.2, 00:05:42, GigabitEthernet0/0/0
O IA 10.13.0.0/24 [110/2562] via 10.0.8.2, 00:05:45, Serial0/1/0
O IA 10.13.1.1/32 [110/2563] via 10.0.8.2, 00:05:45, Serial0/1/0
O IA 10.13.2.1/32 [110/2563] via 10.0.8.2, 00:05:45, Serial0/1/0
O IA 10.13.3.2/32 [110/2553] via 10.0.8.2, 00:05:45, Serial0/1/0
O IA 10.13.4.2/32 [110/2553] via 10.0.8.2, 00:05:45, Serial0/1/0
```

```
10-Ra#show ip ospf neighbor
```

Neighbor ID	Pri	State	Dead Time	Address	Interface
10.10.4.2	1	FULL/DR	00:00:33	10.10.0.2	Ethernet0

```
10-Ra#
```