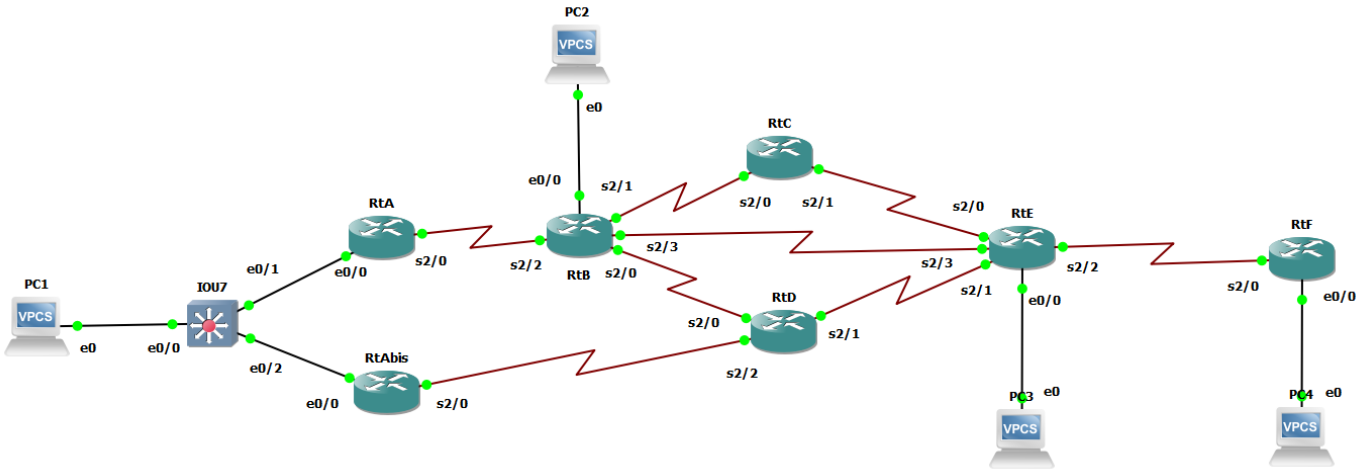
Objectif

Présentation de la configuration du protocole de routage dynamique OSPF et de la haute disponnibilité avec HSRP.

Configuration d'OSPF

Topologie du Réseau :



Déclaration des réseau directement connecté au routeur :

RtB

```
router ospf 1
 passive-interface Ethernet0/0
 network 20.2.2.0 0.0.0.3 area 0
 network 20.4.4.0 0.0.0.3 area 0
 network 20.5.5.0 0.0.0.3 area 0
 network 20.6.6.0 0.0.0.3 area 0
 network 172.11.0.0 0.0.0.255 area 0
```

Changement de la bande passante de l'interface connecté au routeur RtB :

```
RtE#sh ip route | include 172.11.0.0
      172.11.0.0/24 is subnetted, 1 subnets
O        172.11.0.0 [110/74] via 20.2.2.2, 00:03:34, Serial2/3
RtE#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
RtE(config)#int s2/3
RtE(config-if)#bandwidth 64
RtE(config-if)#end
```

La passerelle se change automatiquement :

```
RtE#sh ip route | include 172.11.0.0
      172.11.0.0/24 is subnetted, 1 subnets
O        172.11.0.0 [110/74] via 20.2.2.2, 00:03:51, Serial2/3
RtE#
```

Traceroute après changement de la bande passante entre les routeur RtB et RtE :

- Passage par le routeur RtC

```
Srv-E> trace 172.11.0.1
trace to 172.11.0.1, 8 hops max, press Ctrl+C to stop
 1   172.12.0.254   0.251 ms  0.148 ms  0.097 ms
 2   20.1.1.2   9.137 ms  9.137 ms  9.120 ms
 3   20.5.5.2   18.083 ms  18.148 ms  18.143 ms
 4   *172.11.0.1   18.082 ms (ICMP type:3, code:3, Destination port unreachable)

Srv-E> ping 172.11.0.1
84 bytes from 172.11.0.1 icmp_seq=1 ttl=61 time=18.085 ms
84 bytes from 172.11.0.1 icmp_seq=2 ttl=61 time=16.851 ms
^C
Srv-E>
```

Traceroute avant changement de la bande passante entre les routeur RtB et RtE

```
Srv-E> trace 172.11.0.1
trace to 172.11.0.1, 8 hops max, press Ctrl+C to stop
 1   172.12.0.254   0.226 ms  0.151 ms  0.116 ms
 2   20.2.2.2   13.602 ms  13.628 ms  13.099 ms
 3   *172.11.0.1   13.703 ms (ICMP type:3, code:3, Destination port unreachable)

Srv-E> ping 172.11.0.1
84 bytes from 172.11.0.1 icmp_seq=1 ttl=61 time=12.105 ms
84 bytes from 172.11.0.1 icmp_seq=2 ttl=61 time=13.693 ms
84 bytes from 172.11.0.1 icmp_seq=3 ttl=61 time=14.103 ms
^C
Srv-E>
```

Configuration de HSRP

Hsrp est configuré sur les 2 routeurs avec l'ip virtuel 192.168.0.250 :

- Avec Rta en mode active
- Et RtaBis en mode passif

```
RtA#sh standby brief
                     P indicates configured to preempt.
                     |
Interface   Grp  Pri P State   Active          Standby         Virtual IP
Et0/0       1    250 P Active  local           192.168.0.253   192.168.0.250
RtA#
```

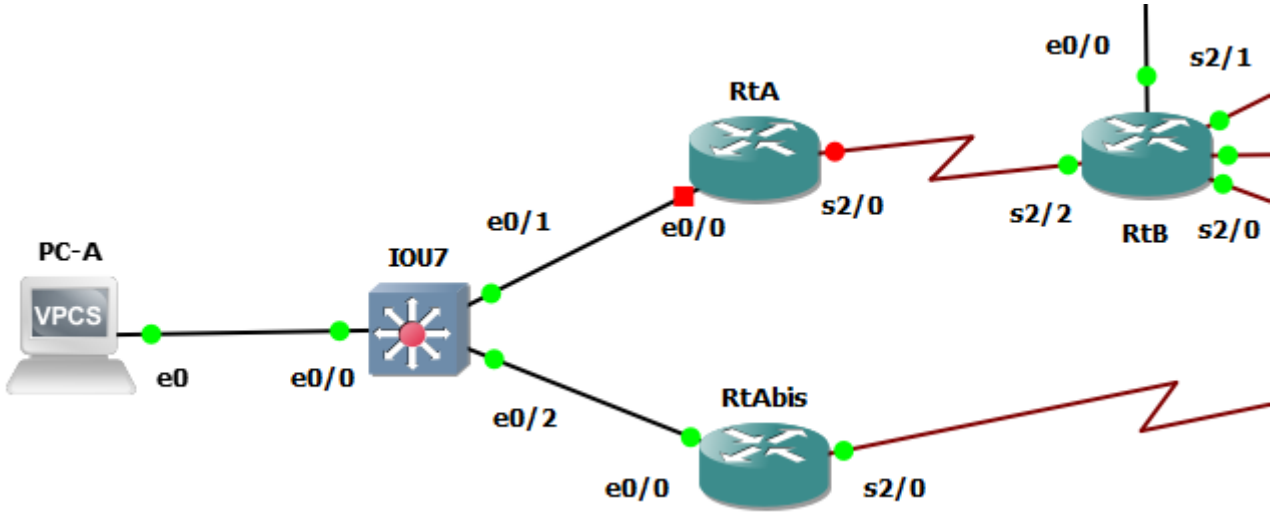
```
RtAbis#sh standby brief
                     P indicates configured to preempt.
                     |
Interface   Grp  Pri P State   Active          Standby         Virtual IP
Et0/0       1    100   Standby 192.168.0.254   local           192.168.0.250
RtAbis#
```

Les paquet passe par le routeur RtA avec l'ip 192.168.0.254 :

```
PC-A> trace 172.12.0.1
trace to 172.12.0.1, 8 hops max, press Ctrl+C to stop
 1   192.168.0.254   1.266 ms  0.393 ms  0.305 ms
 2   20.6.6.1    9.251 ms  9.389 ms  9.271 ms
 3   20.2.2.1    18.390 ms  18.594 ms  18.408 ms
 4   *172.12.0.1   19.387 ms (ICMP type:3, code:3, Destination port unreachable)

PC-A> ping 172.12.0.1
84 bytes from 172.12.0.1 icmp_seq=1 ttl=61 time=18.344 ms
84 bytes from 172.12.0.1 icmp_seq=2 ttl=61 time=18.315 ms
84 bytes from 172.12.0.1 icmp_seq=3 ttl=61 time=18.469 ms
84 bytes from 172.12.0.1 icmp_seq=4 ttl=61 time=18.347 ms
84 bytes from 172.12.0.1 icmp_seq=5 ttl=61 time=18.072 ms
```

Simulation de panne en éteignant le routeur RtA :



Le routeur RtAbis passe alors en mode actif :

```
RtAbis#cop r s
*Sep 11 05:18:49.984: %HSRP-5-STATECHANGE: Ethernet0/0 Grp 1 state Standby -> Ac
tive
RtAbis#sh standby brief
                     P indicates configured to preempt.
                     |
Interface   Grp  Pri P State   Active          Standby         Virtual IP
Et0/0       1    100   Active  local           unknown         192.168.0.250
RtAbis#
```

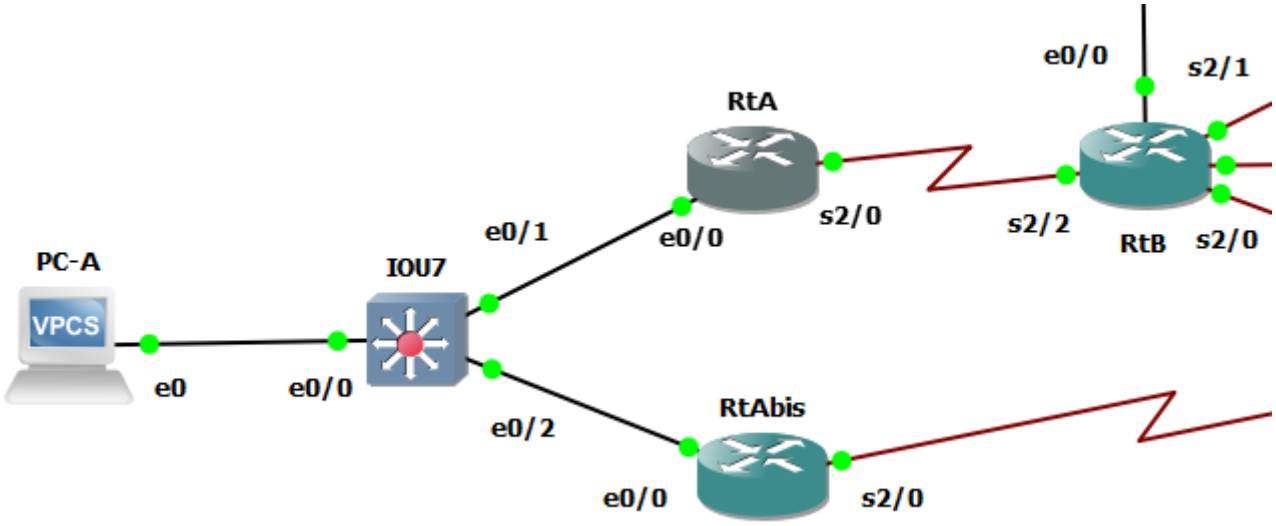
Les paquets passe maintenant sur le routeur de secour RtAbis :

```
PC-A> trace 172.12.0.1
trace to 172.12.0.1, 8 hops max, press Ctrl+C to stop
 1   192.168.0.253   1.463 ms  0.319 ms  0.235 ms
 2   20.7.7.1    8.747 ms  9.316 ms  9.335 ms
 3   20.3.3.1    18.353 ms  18.249 ms  18.487 ms
 4   *172.12.0.1   16.505 ms (ICMP type:3, code:3, Destination port unreachable)

PC-A> ping 172.12.0.1
84 bytes from 172.12.0.1 icmp_seq=1 ttl=61 time=18.203 ms
84 bytes from 172.12.0.1 icmp_seq=2 ttl=61 time=18.345 ms
84 bytes from 172.12.0.1 icmp_seq=3 ttl=61 time=18.275 ms
84 bytes from 172.12.0.1 icmp_seq=4 ttl=61 time=14.782 ms
84 bytes from 172.12.0.1 icmp_seq=5 ttl=61 time=18.254 ms

PC-A>
```

Reprise après panne du routeur Rta :



Le routeur RtAbis passe maintenant en mode passif et le routeur RtA reprend le relais :

```
RtAbis#
*Sep 11 05:23:58.643: %HSRP-5-STATECHANGE: Ethernet0/0 Grp 1 state Active -> Speak
RtAbis#
*Sep 11 05:24:09.728: %HSRP-5-STATECHANGE: Ethernet0/0 Grp 1 state Speak -> Standby
RtAbis#sh standby brief
                     P indicates configured to preempt.
                     |
Interface   Grp  Pri P State   Active          Standby         Virtual IP
Et0/0       1    100   Standby 192.168.0.254   local           192.168.0.250
RtAbis#
```

```
RtA#sh standby brief
                     P indicates configured to preempt.
                     |
Interface   Grp  Pri P State   Active          Standby         Virtual IP
Et0/0       1    250 P Active  local           192.168.0.253   192.168.0.250
RtA#
```

Légère interruption de service lorsque le routeur principal tombe en panne :

```
84 bytes from 172.11.0.1 icmp_seq=25 ttl=62 time=9.437 ms
84 bytes from 172.11.0.1 icmp_seq=26 ttl=62 time=9.736 ms
84 bytes from 172.11.0.1 icmp_seq=27 ttl=62 time=9.297 ms
84 bytes from 172.11.0.1 icmp_seq=28 ttl=62 time=9.207 ms
84 bytes from 172.11.0.1 icmp_seq=29 ttl=62 time=9.227 ms
84 bytes from 172.11.0.1 icmp_seq=30 ttl=62 time=9.360 ms
172.11.0.1 icmp_seq=31 timeout
172.11.0.1 icmp_seq=32 timeout
172.11.0.1 icmp_seq=33 timeout
172.11.0.1 icmp_seq=34 timeout
172.11.0.1 icmp_seq=35 timeout
84 bytes from 172.11.0.1 icmp_seq=36 ttl=61 time=18.206 ms
84 bytes from 172.11.0.1 icmp_seq=37 ttl=61 time=18.218 ms
84 bytes from 172.11.0.1 icmp_seq=38 ttl=61 time=18.305 ms
84 bytes from 172.11.0.1 icmp_seq=39 ttl=61 time=18.194 ms
84 bytes from 172.11.0.1 icmp_seq=40 ttl=61 time=18.247 ms
84 bytes from 172.11.0.1 icmp_seq=41 ttl=61 time=18.156 ms
```