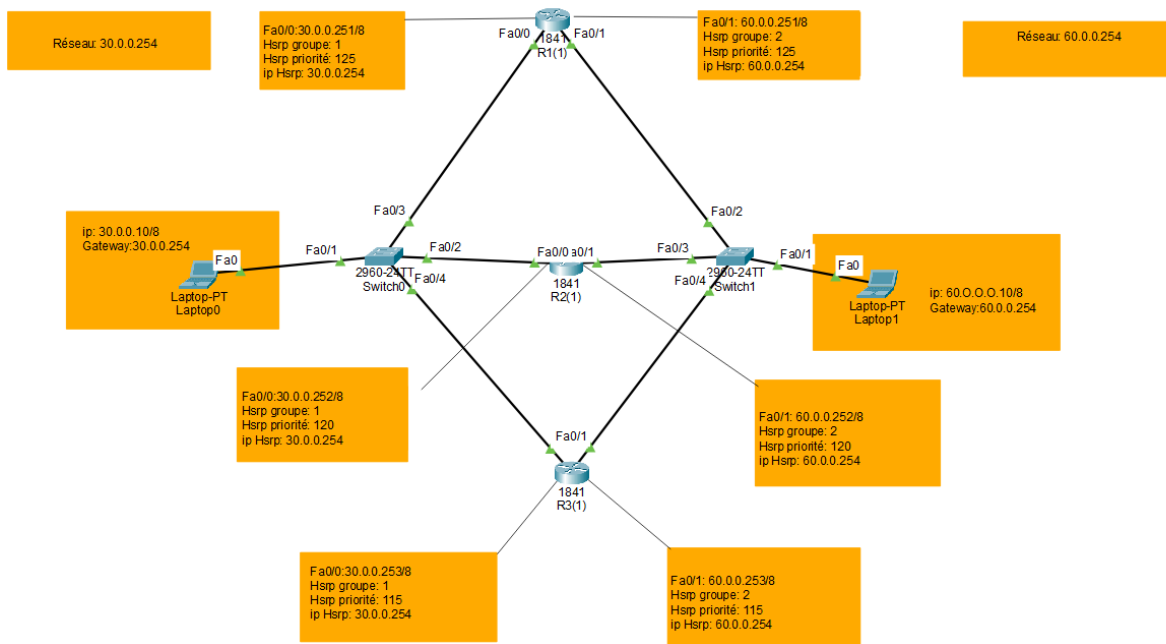


La Mise en Place d'une Infrastructure de Sécurité Réseau

Contexte :

L'entreprise INGETIS Solutions, spécialisée dans les services informatiques et l'hébergement de données critiques, fait face à des problèmes de disponibilité sur son infrastructure réseau. L'absence de redondance entraîne des interruptions de service en cas de panne du routeur principal, impactant directement l'accès aux applications métiers et aux services cloud. La connectivité repose sur un unique point d'accès Internet, créant un risque de congestion et de ralentissement du réseau. Cette situation fragilise la continuité des activités et la qualité des services proposés aux clients.

Schéma Réseau :



Réalisation :

I-Configuration des routeurs

1) Routeur 1

Nous allons configurer le routeur 1 comme notre routeur prioritaire. On commence par faire une petite configuration générale du routeur :

```
Router#enable
Router#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#no ip domain-lookup
Router(config)#hostname R1
```

Ensuite nous configurons notre interface FastEthernet 0/0 :

```
R1(config)#interface fa0/0
R1(config-if)#ip address 30.0.0.251 255.0.0.0
R1(config-if)#no sh

R1(config-if)#
%LINK-5-CHANGED: Interface FastEthernet0/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to up
```

Ensuite nous configurons notre interface FastEthernet 0/1 :

```
R1(config-if)#interface fa0/1
R1(config-if)#ip address 60.0.0.251 255.0.0.0
R1(config-if)#no sh

R1(config-if)#
%LINK-5-CHANGED: Interface FastEthernet0/1, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed state to up
```

Puis nous activons le HSRP sur nos interfaces :

```
l(config)#interface fastEthernet 0/0
l(config-if)#standby
l(config-if)#standby 1 ip 30.0.0.254
l(config-if)#standby 1 ip 30.0.0.254
l(config-if)#standby 1 priority 130
l(config-if)#standby 1 prior
HSRP-6-STATECHANGE: FastEthernet0/0 Grp 1 state Speak -> Standby

HSRP-6-STATECHANGE: FastEthernet0/0 Grp 1 state Standby -> Active
Incomplete command.
l(config-if)#standby 1 priority 125
l(config-if)#standby 1 preempt
l(config-if)#standby 1 track fastethernet 0/1
l(config-if)#
```

Le fait ici d'avoir deux réponse standby et active veut dire que le protocole HSRP a été activé et que ce routeur est considéré comme principal

Quelques petites explications :

- standby 1 ==> Déclare le groupe HSRP.
- standby 1 IP 30.0.0.254 ==> Déclare l'adresse IP du routeur virtuel.
- standby 1 priorité 125 ==> Déclare la priorité du routeur.
- standby 1 preempt ==> Permet d'augmenter la rapidité d'élection.
- standby 1 track FastEthernet==> permet de suivre l'état d'une interface FastEthernet dans un groupe HSRP afin de réduire la priorité du routeur et basculer vers un secours en cas de panne et il faut la mettre à chaque configuration d'interfaces.

Puis :

```
R1(config)#interface Fa
R1(config)#interface FastEthernet 0/1
R1(config-if)#standby 2 ip 60.0.0.254
A.B.C.D
R1(config-if)#standby 2 ip 60.0.0.254
R1(config-if)#standby 2 priority 125
R1(config-if)#standby 2 preempt
R1(config-if)#standby 2 trac
%HSRP-6-STATECHANGE: FastEthernet0/1 Grp 2 state Speak -> Standby

%HSRP-6-STATECHANGE: FastEthernet0/1 Grp 2 state Stanstandby 2 priority 125
R1(config-if)#
R1(config-if)#standby 2 track fastethernet 0/0
R1(config-if)#
```

- standby 2 IP 60.0.0.254 ==> Déclare l'adresse IP du routeur virtuel.
- standby 2 priorité 125 ==> Déclare la priorité du routeur.
- standby 2 preempt ==> Permet d'augmenter la rapidité d'élection.

2) **Routeur 2**

Nous allons configurer notre routeur 2 comme routeur de secours.

On commence par faire une petite configuration générale du routeur :

```
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#ip domain-lookup
Router(config)#hostname R2
```

Ensuite nous configurons notre interface FastEthernet 0/0 :

```
R2(config)#interface fa 0/0
R2(config-if)#ip address 30.0.0.252 255.0.0.0
R2(config-if)#no sh

R2(config-if)#
%LINK-5-CHANGED: Interface FastEthernet0/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to up
```

Ensuite nous configurons notre interface FastEthernet 0/1 :

```
R2(config-if)#interface fa 0/1
R2(config-if)#ip address 60.0.0.252 255.0.0.0
R2(config-if)#no sh

R2(config-if)#
%LINK-5-CHANGED: Interface FastEthernet0/1, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed state to up
```

Puis nous activons le HSRP sur nos interfaces :

```

R2(config)#in
R2(config)#interface fa
R2(config)#interface fastEthernet 0/0
R2(config-if)#standby
R2(config-if)#standby 1 ip 30.0.0.254
R2(config-if)#standby 1 priority 120
R2(config-if)#standby 1 pre
%HSRP-6-STATECHANGE: FastEthernet0/0 Grp 1 state Speak -> Standby
R2(config-if)#standby 1 preempt
R2(config-if)#standby 1 track fastethernet 0/1
R2(config-if)#

```

On remarque ici il y'a que le standby ce qui veut dire que le protocole a juste été activé

Puis :

```

R2(config)#in
R2(config)#interface fa
R2(config)#interface fastEthernet 0/1
R2(config-if)#standby 2 ip 60.0.0.254
R2(config-if)#standby 2 priority
% Incomplete command.
R2(config-if)#standby 2 priority 120
R2(config-if)#standby 2 pri
%HSRP-6-STATECHANGE: FastEthernet0/1 Grp 2 state Speastandby 2 priorit
% Incomplete command.
R2(config-if)#standby 2 preempt
R2(config-if)#standby 2 track fastethernet 0/0

```

3) Routeur 3

Nous allons configurer notre routeur 3 comme notre deuxième routeur de secours.

On commence par faire une petite configuration générale du routeur :

```

Router#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#ip domain-lookup
Router(config)#ostname R3
^
% Invalid input detected at '^' marker.

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

```

Ensuite nous configurons notre interface FastEthernet 0/0 :

```

R3(config)#interface fa 0/0
R3(config-if)#ip address 30.0.0.253 255.0.0.0
R3(config-if)#no sh

R3(config-if)#
%LINK-5-CHANGED: Interface FastEthernet0/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to up

```

Ensuite nous configurons notre interface FastEthernet 0/1 :

```

R3(config)#interface fa0/1
R3(config-if)#ip address 60.0.0.253 255.0.0.0
R3(config-if)#no sh

```

Puis nous activons le HSRP sur nos interfaces :

```

R3(config)#interface fa
R3(config)#interface fastEthernet 0/0
R3(config-if)#standby
R3(config-if)#standby 1 ip 30.0.0.254
R3(config-if)#standby 1 priority 115
R3(config-if)#standby 1 preempt
R3(config-if)#standby 1 traack fastethernet 0/1
      ^
% Invalid input detected at '^' marker.

R3(config-if)#standby 1 track fastethernet 0/1
R3(config-if)#

%HSRP-6-STATECHANGE: FastEthernet0/0 Grp 1 state Speak -> Standby

```

Puis :

```

R3(config-if)#standby 1 track fastethernet 0/1
R3(config-if)#exit
R3(config)#in
R3(config)#interface fa
R3(config)#interface fastEthernet 0/1
R3(config-if)#standby 2 ip 60.0.0.254
R3(config-if)#standby 2 priority 115
R3(config-if)#standby 2 preempt
R3(config-if)#standby 2 track fastethernet0/0
R3(config-if)#

```

II) Tests de fonctionnements

Avant d'étudier les pannes, nous observons le statut du HSRP sur nos routeurs.

Show standby

Sur R1 :

```

R1>en
R1#show standby
FastEthernet0/0 - Group 1
  State is Active
    5 state changes, last state change 00:00:19
  Virtual IP address is 30.0.0.254
  Active virtual MAC address is 0000.0C07.AC01
    Local virtual MAC address is 0000.0C07.AC01 (v1 default)
  Hello time 3 sec, hold time 10 sec
    Next hello sent in 1.38 secs
  Preemption enabled
  Active router is local
  Standby router is 30.0.0.252, priority 120 (expires in 7 sec)
  Priority 130 (configured 130)
  Group name is hsrp-Fa0/0-1 (default)
FastEthernet0/1 - Group 2
  State is Active
    5 state changes, last state change 00:00:19
  Virtual IP address is 60.0.0.254
  Active virtual MAC address is 0000.0C07.AC02
    Local virtual MAC address is 0000.0C07.AC02 (v1 default)
  Hello time 3 sec, hold time 10 sec
    Next hello sent in 1.194 secs
  Preemption enabled
  Active router is local
  Standby router is 60.0.0.252
  Priority 130 (configured 130)
  Group name is hsrp-Fa0/1-2 (default)

```

– R1 est bien notre routeur prioritaire

Sur R2 :

```

R2>en
R2#show standby
FastEthernet0/0 - Group 1
  State is Standby
    8 state changes, last state change 00:00:40
  Virtual IP address is 30.0.0.254
  Active virtual MAC address is 0000.0C07.AC01
    Local virtual MAC address is 0000.0C07.AC01 (v1 default)
  Hello time 3 sec, hold time 10 sec
    Next hello sent in 0.935 secs
  Preemption enabled
  Active router is 30.0.0.251, priority 130 (expires in 7 sec)
    MAC address is 0000.0C07.AC01
  Standby router is local
  Priority 120 (configured 120)
  Group name is hsrp-Fa0/0-1 (default)
FastEthernet0/1 - Group 2
  State is Standby
    7 state changes, last state change 00:00:42
  Virtual IP address is 60.0.0.254
  Active virtual MAC address is 0000.0C07.AC02
    Local virtual MAC address is 0000.0C07.AC02 (v1 default)
  Hello time 3 sec, hold time 10 sec
    Next hello sent in 0.772 secs
  Preemption disabled
  Active router is 60.0.0.251
  Standby router is local
  Priority 120 (configured 120)
  Group name is hsrp-Fa0/1-2 (default)
R2#

```

– R2 est en Standby prêt à prendre le routage si R1 a un problème.

Sur R3 :

```

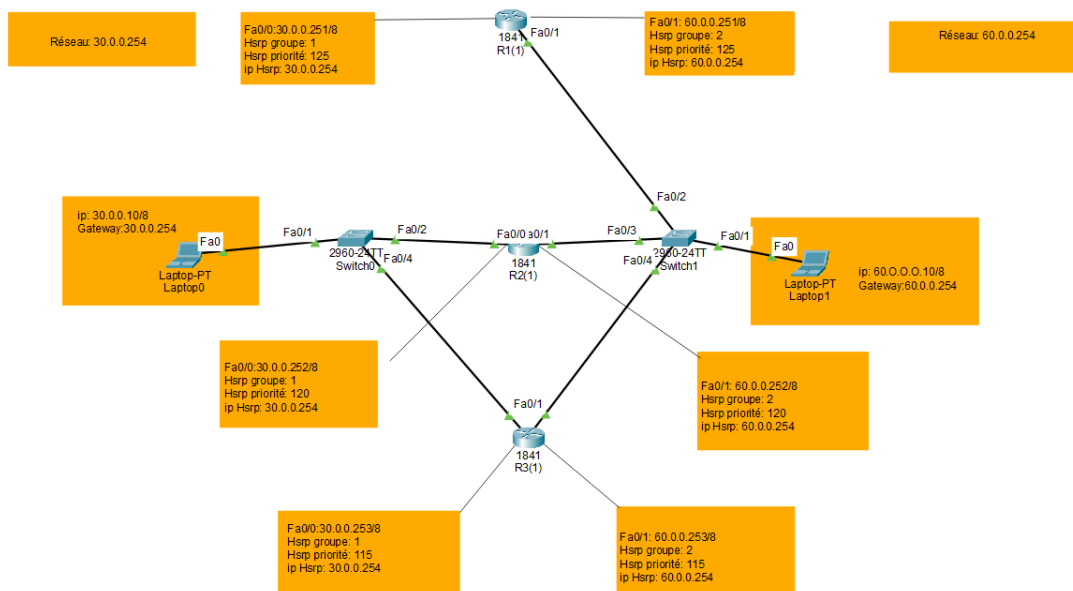
R3#show standby
FastEthernet0/0 - Group 1
  State is Listen
    1 state changes, last state change 00:02:35
  Virtual IP address is 30.0.0.254
  Active virtual MAC address is 0000.0C07.AC01
    Local virtual MAC address is 0000.0C07.AC01 (v1 default)
  Hello time 3 sec, hold time 10 sec
    Next hello sent in 1.180 secs
  Preemption enabled
  Active router is 30.0.0.251
  Standby router is unknown
  Priority 110 (configured 110)
  Group name is hsrp-Fa0/0-1 (default)
FastEthernet0/1 - Group 2
  State is Listen
    1 state changes, last state change 00:03:36
  Virtual IP address is 60.0.0.254
  Active virtual MAC address is 0000.0C07.AC02
    Local virtual MAC address is 0000.0C07.AC02 (v1 default)
  Hello time 3 sec, hold time 10 sec
    Next hello sent in 1.180 secs
  Preemption enabled
  Active router is 60.0.0.251
  Standby router is unknown
  Priority 110 (configured 110)
  Group name is hsrp-Fa0/1-2 (default)
R3#

```

– R3 est en mode "Listen", il écoute le réseau en attendant que R1 et R2 tombe.

1) Panne 1

Comme le schéma ci-dessous nous l'indique, le câble connecté sur fa0/0 de R1 a un problème.



Nous étudions maintenant le statut du HSRP sur les trois routeurs pour savoir comment ils ont géré le problème : show standby

Sur R1 :

```

R1#show standby
FastEthernet0/0 - Group 1
  State is Init (interface down)
  Virtual IP address is 30.0.0.254
  Active virtual MAC address is 0000.0C07.AC01
    Local virtual MAC address is 0000.0C07.AC01 (v1 default)
  Hello time 3 sec, hold time 10 sec
    Next hello sent in 1.180 secs
  Preemption enabled
  Active router is unknown
  Standby router is unknown
  Priority 130 (configured 130)
  Group name is hsrp-Fa0/0-1 (default)
FastEthernet0/1 - Group 2
  State is Active
    11 state changes, last state change 00:02:26
  Virtual IP address is 60.0.0.254
  Active virtual MAC address is 0000.0C07.AC02
    Local virtual MAC address is 0000.0C07.AC02 (v1 default)
  Hello time 3 sec, hold time 10 sec
    Next hello sent in 0.89 secs
  Preemption enabled
  Active router is local
  Standby router is 60.0.0.252, priority 120 (expires in 6 sec)
  Priority 130 (configured 130)
  Group name is hsrp-Fa0/1-2 (default)
R1#

```

- On peut observer que le groupe 1 a bien détecté l'interface comme éteinte.
- On observe aussi que le groupe 2 est passé en mode "Active" car fa0/1 est active.

Sur R2 :

```

R2#show standby
FastEthernet0/0 - Group 1
  State is Active
    18 state changes, last state change 00:04:48
  Virtual IP address is 30.0.0.254
  Active virtual MAC address is 0000.0C07.AC01
    Local virtual MAC address is 0000.0C07.AC01 (v1 default)
  Hello time 3 sec, hold time 10 sec
    Next hello sent in 1.339 secs
  Preemption enabled
  Active router is local
  Standby router is 30.0.0.253, priority 110 (expires in 7 sec)
  Priority 120 (configured 120)
  Group name is hsrp-Fa0/0-1 (default)
FastEthernet0/1 - Group 2
  State is Standby
    16 state changes, last state change 00:03:11
  Virtual IP address is 60.0.0.254
  Active virtual MAC address is 0000.0C07.AC02
    Local virtual MAC address is 0000.0C07.AC02 (v1 default)
  Hello time 3 sec, hold time 10 sec
    Next hello sent in 1.392 secs
  Preemption disabled
  Active router is 60.0.0.251, priority 130 (expires in 9 sec)
    MAC address is 0000.0C07.AC02
  Standby router is local
  Priority 120 (configured 120)
  Group name is hsrp-Fa0/1-2 (default)
R2#

```

- On observe que R2 est bien passé actif. Au niveau du group 1, mais vu que le R1 fonctionne encore au niveau du groupe 2 du coup il est standby

Sur R3 :


```

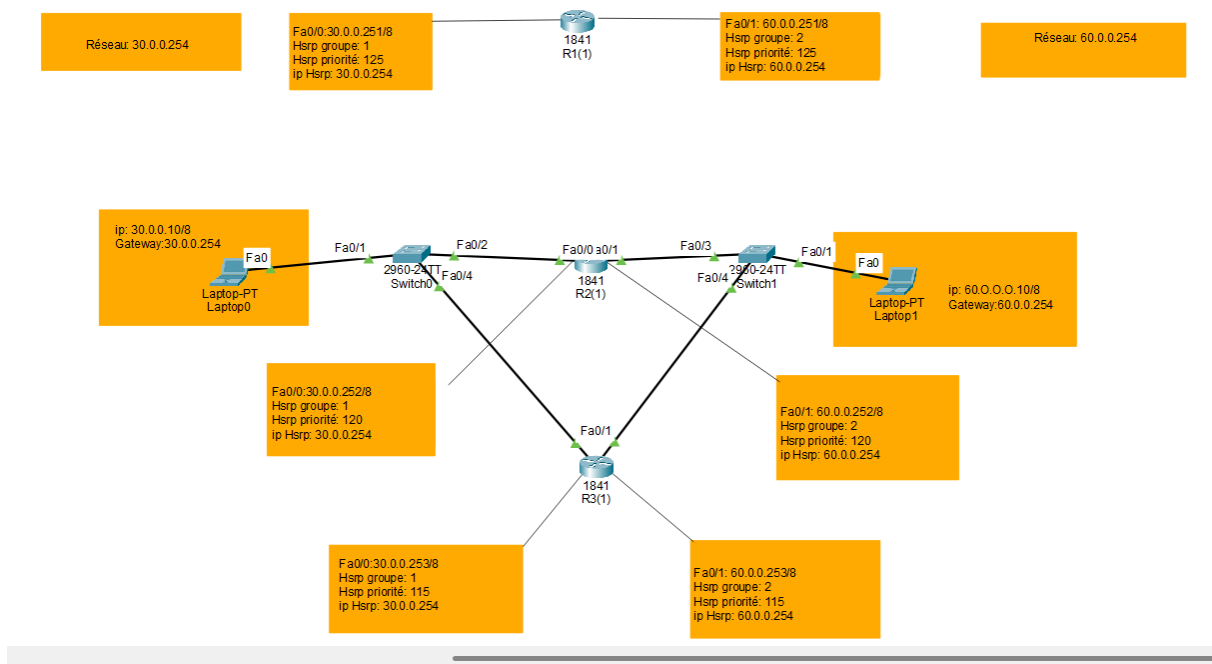
R3>en
R3#show standby
FastEthernet0/0 - Group 1
  State is Standby
    21 state changes, last state change 00:05:05
  Virtual IP address is 30.0.0.254
  Active virtual MAC address is 0000.0C07.AC01
    Local virtual MAC address is 0000.0C07.AC01 (v1 default)
  Hello time 3 sec, hold time 10 sec
    Next hello sent in 1.264 secs
  Preemption enabled
  Active router is 30.0.0.252, priority 120 (expires in 7 sec)
    MAC address is 0000.0C07.AC01
  Standby router is local
  Priority 110 (configured 110)
  Group name is hsrp-Fa0/0-1 (default)
FastEthernet0/1 - Group 2
  State is Listen
    16 state changes, last state change 00:03:10
  Virtual IP address is 60.0.0.254
  Active virtual MAC address is 0000.0C07.AC02
    Local virtual MAC address is 0000.0C07.AC02 (v1 default)
  Hello time 3 sec, hold time 10 sec
    Next hello sent in 3.56551e+15 secs
  Preemption enabled
  Active router is 60.0.0.251
  Standby router is unknown
  Priority 110 (configured 110)
  Group name is hsrp-Fa0/1-2 (default)
R3#

```

– On observe que R3 est en standby, prêt à s'activer si R2 tombe en panne. Au niveau du group 1

2) Panne 2

Comme le schéma ci-dessous nous l'indique, le câble connecté sur fa0/0 et fa0/1 de R1 a un problème.



Nous étudions maintenant le statut du HSRP sur les trois routeurs pour savoir comment ils ont géré le problème : show standby

Sur R1 :

```
---
R1#show standby
FastEthernet0/0 - Group 1
  State is Init (interface down)
  Virtual IP address is 30.0.0.254
  Active virtual MAC address is 0000.0C07.AC01
    Local virtual MAC address is 0000.0C07.AC01 (v1 default)
  Hello time 3 sec, hold time 10 sec
    Next hello sent in 1.180 secs
  Preemption enabled
  Active router is unknown
  Standby router is unknown
  Priority 130 (configured 130)
  Group name is hsrp-Fa0/0-1 (default)
FastEthernet0/1 - Group 2
  State is Init (interface down)
  Virtual IP address is 60.0.0.254
  Active virtual MAC address is 0000.0C07.AC02
    Local virtual MAC address is 0000.0C07.AC02 (v1 default)
  Hello time 3 sec, hold time 10 sec
    Next hello sent in 1.180 secs
  Preemption enabled
  Active router is unknown
  Standby router is unknown
  Priority 130 (configured 130)
  Group name is hsrp-Fa0/1-2 (default)
R1#
```

– On peut observer que le groupe 1 et 2 sont bien désactivé

Sur R2 :

```
R2#show standby
FastEthernet0/0 - Group 1
  State is Active
    18 state changes, last state change 00:04:48
  Virtual IP address is 30.0.0.254
  Active virtual MAC address is 0000.0C07.AC01
    Local virtual MAC address is 0000.0C07.AC01 (v1 default)
  Hello time 3 sec, hold time 10 sec
    Next hello sent in 2.68 secs
  Preemption enabled
  Active router is local
  Standby router is 30.0.0.253, priority 110 (expires in 7 sec)
  Priority 120 (configured 120)
  Group name is hsrp-Fa0/0-1 (default)
FastEthernet0/1 - Group 2
  State is Active
    17 state changes, last state change 00:13:18
  Virtual IP address is 60.0.0.254
  Active virtual MAC address is 0000.0C07.AC02
    Local virtual MAC address is 0000.0C07.AC02 (v1 default)
  Hello time 3 sec, hold time 10 sec
    Next hello sent in 2.479 secs
  Preemption disabled
  Active router is local
  Standby router is 60.0.0.253, priority 110 (expires in 7 sec)
  Priority 120 (configured 120)
  Group name is hsrp-Fa0/1-2 (default)
R2#
```

– On peut observer que R2 a pris la place de R1

Sur R3 :

```

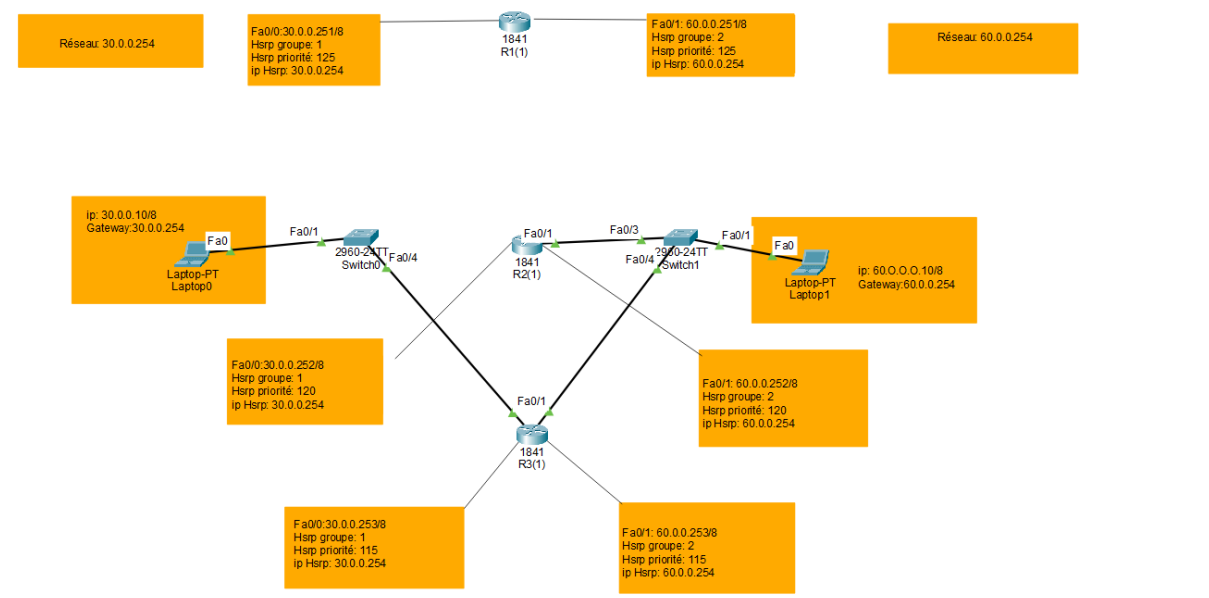
R3#show standby
FastEthernet0/0 - Group 1
  State is Standby
    21 state changes, last state change 00:05:05
  Virtual IP address is 30.0.0.254
  Active virtual MAC address is 0000.0C07.AC01
    Local virtual MAC address is 0000.0C07.AC01 (v1 default)
  Hello time 3 sec, hold time 10 sec
    Next hello sent in 1.302 secs
  Preemption enabled
  Active router is 30.0.0.252, priority 120 (expires in 6 sec)
    MAC address is 0000.0C07.AC01
  Standby router is local
  Priority 110 (configured 110)
  Group name is hsrp-Fa0/0-1 (default)
FastEthernet0/1 - Group 2
  State is Standby
    18 state changes, last state change 00:13:27
  Virtual IP address is 60.0.0.254
  Active virtual MAC address is 0000.0C07.AC02
    Local virtual MAC address is 0000.0C07.AC02 (v1 default)
  Hello time 3 sec, hold time 10 sec
    Next hello sent in 1.666 secs
  Preemption enabled
  Active router is 60.0.0.252, priority 120 (expires in 9 sec)
--More--

```

– On peut observer que R3 a pris du cout la place de R2

3) Panne 3

Comme le schéma ci-dessous nous l'indique, l'interface fa0/0 sur le routeur 2 vient de tomber en panne.



Nous étudions de nouveau le statut HSRP sur les trois routeurs : show standby

Sur R1 :

```

R1#show standby
FastEthernet0/0 - Group 1
  State is Init (interface down)
  Virtual IP address is 30.0.0.254
  Active virtual MAC address is 0000.0C07.AC01
    Local virtual MAC address is 0000.0C07.AC01 (v1 default)
  Hello time 3 sec, hold time 10 sec
    Next hello sent in 1.180 secs
  Preemption enabled
  Active router is unknown
  Standby router is unknown
  Priority 130 (configured 130)
  Group name is hsrp-Fa0/0-1 (default)
FastEthernet0/1 - Group 2
  State is Init (interface down)
  Virtual IP address is 60.0.0.254
  Active virtual MAC address is 0000.0C07.AC02
    Local virtual MAC address is 0000.0C07.AC02 (v1 default)
  Hello time 3 sec, hold time 10 sec
    Next hello sent in 1.180 secs
  Preemption enabled
  Active router is unknown
  Standby router is unknown
  Priority 130 (configured 130)
  Group name is hsrp-Fa0/1-2 (default)
R1#

```

– On peut observer que le groupe 1 et 2 restent bien désactivé

Sur R2 :

```

R2#show standby
FastEthernet0/0 - Group 1
  State is Init (interface down)
  Virtual IP address is 30.0.0.254
  Active virtual MAC address is 0000.0C07.AC01
    Local virtual MAC address is 0000.0C07.AC01 (v1 default)
  Hello time 3 sec, hold time 10 sec
    Next hello sent in 1.180 secs
  Preemption enabled
  Active router is unknown
  Standby router is unknown
  Priority 120 (configured 120)
  Group name is hsrp-Fa0/0-1 (default)
FastEthernet0/1 - Group 2
  State is Active
    20 state changes, last state change 00:34:00
  Virtual IP address is 60.0.0.254
  Active virtual MAC address is 0000.0C07.AC02
    Local virtual MAC address is 0000.0C07.AC02 (v1 default)
  Hello time 3 sec, hold time 10 sec
    Next hello sent in 1.008 secs
  Preemption disabled
  Active router is local
  Standby router is 60.0.0.253, priority 110 (expires in 7 sec)
  Priority 120 (configured 120)
  Group name is hsrp-Fa0/1-2 (default)
R2#

```

– On observe que l'interface du group 1 est en panne et qu'il reste que l'interface du groupe 2

Sur R3 :

```

R3#show standby
FastEthernet0/0 - Group 1
  State is Active
    28 state changes, last state change 00:38:52
  Virtual IP address is 30.0.0.254
  Active virtual MAC address is 0000.0C07.AC01
    Local virtual MAC address is 0000.0C07.AC01 (v1 default)
  Hello time 3 sec, hold time 10 sec
    Next hello sent in 2.461 secs
  Preemption enabled
  Active router is local
  Standby router is unknown, priority 120
  Priority 110 (configured 110)
  Group name is hsrp-Fa0/0-1 (default)
FastEthernet0/1 - Group 2
  State is Standby
    25 state changes, last state change 00:34:18
  Virtual IP address is 60.0.0.254
  Active virtual MAC address is 0000.0C07.AC02
    Local virtual MAC address is 0000.0C07.AC02 (v1 default)
  Hello time 3 sec, hold time 10 sec
    Next hello sent in 0.489 secs
  Preemption enabled
  Active router is 60.0.0.252, priority 120 (expires in 6 sec)
    MAC address is 0000.0C07.AC02
  Standby router is local
  Priority 110 (configured 110)
  Group name is hsrp-Fa0/1-2 (default)
R3#

```

– R3 est passé en mode actif pour le groupe 1 et en écoute pour le groupe 2

III-Rétablissement

L'interface fa0/0 du routeur 1 fonctionne de nouveau, après avoir attendu quelques secondes le temps du dialogue HSRP entre nos routeurs, nous refaisons une capture du statut HSRP.

Sur R1 :

```

R1#show standby
FastEthernet0/0 - Group 1
  State is Active
    23 state changes, last state change 00:46:59
  Virtual IP address is 30.0.0.254
  Active virtual MAC address is 0000.0C07.AC01
    Local virtual MAC address is 0000.0C07.AC01 (v1 default)
  Hello time 3 sec, hold time 10 sec
    Next hello sent in 0.182 secs
  Preemption enabled
  Active router is local
  Standby router is 30.0.0.252, priority 120 (expires in 7 sec)
  Priority 130 (configured 130)
  Group name is hsrp-Fa0/0-1 (default)
FastEthernet0/1 - Group 2
  State is Active
    22 state changes, last state change 00:47:05
  Virtual IP address is 60.0.0.254
  Active virtual MAC address is 0000.0C07.AC02
    Local virtual MAC address is 0000.0C07.AC02 (v1 default)
  Hello time 3 sec, hold time 10 sec
    Next hello sent in 2.224 secs
  Preemption enabled
  Active router is local
  Standby router is 60.0.0.252, priority 120 (expires in 7 sec)
  Priority 130 (configured 130)
  Group name is hsrp-Fa0/1-2 (default)
R1#

```

Sur le R2 :

```
R2#show standby
FastEthernet0/0 - Group 1
  State is Standby
    35 state changes, last state change 00:47:21
  Virtual IP address is 30.0.0.254
  Active virtual MAC address is 0000.0C07.AC01
    Local virtual MAC address is 0000.0C07.AC01 (v1 default)
  Hello time 3 sec, hold time 10 sec
    Next hello sent in 1.776 secs
  Preemption enabled
  Active router is 30.0.0.251, priority 130 (expires in 6 sec)
    MAC address is 0000.0C07.AC01
  Standby router is local
  Priority 120 (configured 120)
  Group name is hsrp-Fa0/0-1 (default)
FastEthernet0/1 - Group 2
  State is Standby
    22 state changes, last state change 00:47:27
  Virtual IP address is 60.0.0.254
  Active virtual MAC address is 0000.0C07.AC02
    Local virtual MAC address is 0000.0C07.AC02 (v1 default)
  Hello time 3 sec, hold time 10 sec
    Next hello sent in 0.639 secs
  Preemption disabled
  Active router is 60.0.0.251, priority 130 (expires in 8 sec)
    MAC address is 0000.0C07.AC02
  Standby router is local
  Priority 120 (configured 120)
  Group name is hsrp-Fa0/1-2 (default)
R2#
```

Nous remarquons ici que le routeur 2 est bien revenu en mode "Standby".

Sur R3 :

```
R3#show standby
FastEthernet0/0 - Group 1
  State is Listen
    30 state changes, last state change 00:47:13
  Virtual IP address is 30.0.0.254
  Active virtual MAC address is 0000.0C07.AC01
    Local virtual MAC address is 0000.0C07.AC01 (v1 default)
  Hello time 3 sec, hold time 10 sec
    Next hello sent in 0 secs
  Preemption enabled
  Active router is 30.0.0.251
  Standby router is unknown
  Priority 110 (configured 110)
  Group name is hsrp-Fa0/0-1 (default)
FastEthernet0/1 - Group 2
  State is Listen
    28 state changes, last state change 00:47:28
  Virtual IP address is 60.0.0.254
  Active virtual MAC address is 0000.0C07.AC02
    Local virtual MAC address is 0000.0C07.AC02 (v1 default)
  Hello time 3 sec, hold time 10 sec
    Next hello sent in 0 secs
  Preemption enabled
  Active router is 60.0.0.251
  Standby router is 60.0.0.253
  Priority 110 (configured 110)
  Group name is hsrp-Fa0/1-2 (default)
R3#
```

Nous pouvons observer que R1 a repris l'activité et que R3 est repassé en "Listen".