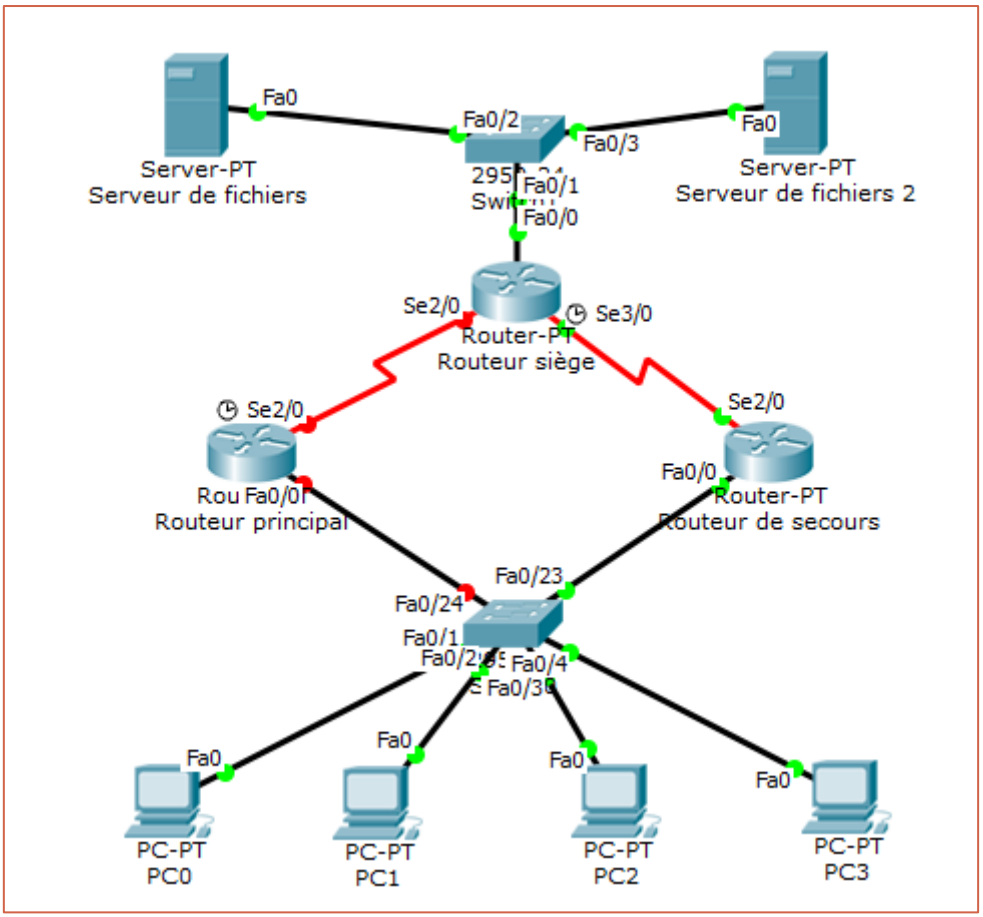
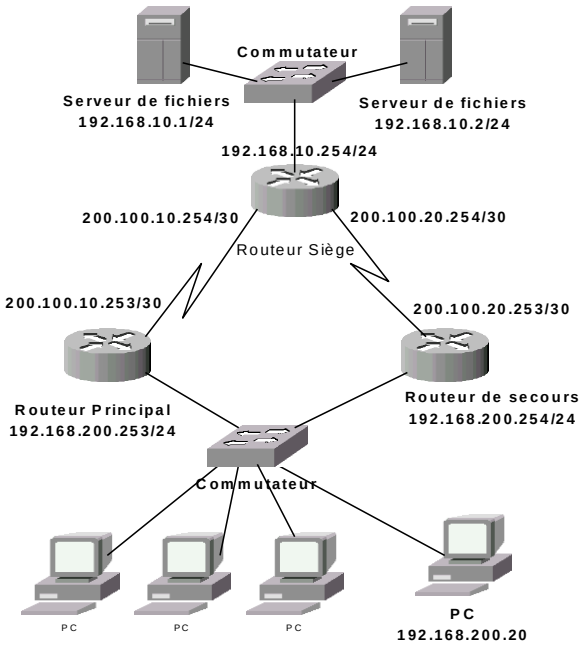
HSRP (HOST STANDY ROUTER PROTOCOL)

SISR5

SOMMAIRE


Server-PT
Serveur de fichiers
Fa0
Fa0/2
Fa0/3
Server-PT
Serveur de fichiers 2
Fa0
Fa0/1
Fa0/0
Se2/0
Se3/0
Router-PT
Routeur siège
Se2/0
Se2/0
Router-PT
Routeur de secours
Fa0/0
Routeur principal
Fa0/23
Fa0/24
Fa0/1
Fa0/4
Fa0
Fa0
Fa0
Fa0
PC-PT
PC0
PC-PT
PC1
PC-PT
PC2
PC-PT
PC3


Commutateur
Serveur de fichiers
192.168.10.1/24
Serveur de fichiers
192.168.10.2/24
192.168.10.254/24
200.100.10.254/30
200.100.20.254/30
Routeur Siège
200.100.10.253/30
200.100.20.253/30
Routeur Principal
192.168.200.253/24
Routeur de secours
192.168.200.254/24
Commutateur
PC
PC
PC
PC
192.168.200.20

CONFIGURATION DU ROUTEUR PRINCIPAL

On affecte une adresse IP sur chaque interface du routeur.

Router(config)#int f0/0
Router(config-if)#ip address 192.168.200.253 255.255.255.0
Router(config-if)#no shut

Router(config)#int s2/0
Router(config-if)#ip address 200.100.10.253 255.255.255.252
Router(config-if)#no shut

Vérification des interfaces :

```
Router#sh ip int br
Interface              IP-Address      OK? Method Status                Protocol

FastEthernet0/0        192.168.200.253 YES manual up                    up

FastEthernet1/0        unassigned      YES unset  administratively down down

Serial2/0              200.100.10.253  YES manual down                  down

Serial3/0              unassigned      YES unset  administratively down down

FastEthernet4/0        unassigned      YES unset  administratively down down

FastEthernet5/0        unassigned      YES unset  administratively down down

Serial9/0              unassigned      YES unset  administratively down down
```

```
Router#sh ip int br
Interface              IP-Address      OK? Method Status                Protocol
FastEthernet0/0        192.168.200.253 YES manual up                    up
FastEthernet1/0        unassigned      YES unset  administratively down down
Serial2/0              200.100.10.253  YES manual up                    up
Serial3/0              unassigned      YES unset  administratively down down
FastEthernet4/0        unassigned      YES unset  administratively down down
FastEthernet5/0        unassigned      YES unset  administratively down down
Router#
```

CONFIGURATION DU ROUTEUR DE SECOURS

Router(config)#int f0/0
Router(config-if)#ip address 192.168.200.254 255.255.255.0
Router(config-if)#no shut

Router(config)#int s2/0
Router(config-if)#ip address 200.100.20.253 255.255.255.252
Router(config-if)#no shut

Vérification des interfaces :

```
Router#sh ip int br
Interface              IP-Address      OK? Method Status                Protocol

FastEthernet0/0        192.168.200.254 YES manual up                    up

FastEthernet1/0        unassigned      YES unset  administratively down down

Serial2/0              200.100.20.253  YES manual down                  down

Serial3/0              unassigned      YES unset  administratively down down

FastEthernet4/0        unassigned      YES unset  administratively down down

FastEthernet5/0        unassigned      YES unset  administratively down down

Serial9/0              unassigned      YES unset  administratively down down
```

```
Router#sh ip int br
Interface              IP-Address      OK? Method Status                Protocol
FastEthernet0/0        192.168.200.254 YES manual up                    up
FastEthernet1/0        unassigned      YES unset  administratively down down
Serial2/0              200.100.20.253  YES manual up                    up
Serial3/0              unassigned      YES unset  down                  down
FastEthernet4/0        unassigned      YES unset  down                  down
FastEthernet5/0        unassigned      YES unset  down                  down
```

CONFIGURATION DU ROUTEUR SIEGE

Router(config)#int f0/0
Router(config-if)#ip address 192.168.10.254 255.255.255.0
Router(config-if)#no shut
Router(config)#int s2/0
Router(config-if)#ip address 200.100.10.254 255.255.255.252
Router(config-if)#no shut
Router(config)#int s3/0
Router(config-if)#ip address 200.100.20.254 255.255.255.252
Router(config-if)#no shut

Vérification des interfaces :

```
Router#sh ip int br
Interface              IP-Address      OK? Method Status                Protocol

FastEthernet0/0        192.168.10.254  YES manual up                    up

FastEthernet1/0        unassigned      YES unset  administratively down down

Serial2/0              200.100.10.254  YES manual up                    up

Serial3/0              200.100.20.254  YES manual up                    up

FastEthernet4/0        unassigned      YES unset  administratively down down

FastEthernet5/0        unassigned      YES unset  administratively down down
```

```
Router#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#int f0/0
Router(config-if)#ip address 192.168.10.254 255.255.255.0
Router(config-if)#no shut
Router(config-if)#exit
Router(config)#int s2/0
Router(config-if)#ip address 200.100.10.254 255.255.255.252
Router(config-if)#no shut
Router(config-if)#exit
Router(config)#int s3/0
Router(config-if)#ip address 200.100.20.254 255.255.255.252
Router(config-if)#no shut
Router(config-if)#exit
Router(config)#exit
Router#
%SYS-5-CONFIG_I: Configured from console by console

Router#sh ip int br
Interface              IP-Address      OK? Method Status                Protocol
FastEthernet0/0        192.168.10.254  YES manual up                    up
FastEthernet1/0        unassigned      YES unset  up                    down
Serial2/0              200.100.10.254  YES manual up                    up
Serial3/0              200.100.20.254  YES manual up                    up
FastEthernet4/0        unassigned      YES unset  administratively down down
FastEthernet5/0        unassigned      YES unset  administratively down down
```

MISE EN PLACE DU ROUTAGE RIP V2

On met en place le routage RIP afin que les postes puissent communiquer entre eux, ici nous utilisons la version 2 du routage RIP, il suffit simplement de rentrer les réseaux adjacents à chaque routeur.

Sur le routeur siège :

Router(config)#router rip
Router(config-router)#version 2
Router(config-router)#network 192.168.10.0
Router(config-router)#network 200.100.10.0

Router(config-router)#network 200.100.20.0
Router(config-router)#exit

```
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#router rip
Router(config-router)#version 2
Router(config-router)#network 192.168.10.0
Router(config-router)#network 200.100.10.0
Router(config-router)#network 200.100.20.0
Router(config-router)#exit
Router(config)#exit
Router#
%SYS-5-CONFIG_I: Configured from console by console
```

```
Router#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

C    192.168.10.0/24 is directly connected, FastEthernet0/0
     200.100.10.0/30 is subnetted, 1 subnets
C       200.100.10.252 is directly connected, Serial2/0
     200.100.20.0/30 is subnetted, 1 subnets
C       200.100.20.252 is directly connected, Serial3/0
```

```
Router#
Router#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

C    192.168.10.0/24 is directly connected, FastEthernet0/0
     200.100.10.0/30 is subnetted, 1 subnets
C       200.100.10.252 is directly connected, Serial2/0
     200.100.20.0/30 is subnetted, 1 subnets
C       200.100.20.252 is directly connected, Serial3/0
```

Sur le routeur principal :

Router(config)#router rip
Router(config-router)#version 2
Router(config-router)#network 200.100.10.0
Router(config-router)#network 192.168.200.0
Router(config-router)#exit

```
Router>en
Router#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#router rip
Router(config-router)#version 2
Router(config-router)#network 200.100.10.0
Router(config-router)#network 192.168.200.0
Router(config-router)#exit
Router(config)#
```

```
Router#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

R    192.168.10.0/24 [120/1] via 200.100.10.254, 00:00:17, Serial2/0
C    192.168.200.0/24 is directly connected, FastEthernet0/0
     200.100.10.0/30 is subnetted, 1 subnets
C       200.100.10.252 is directly connected, Serial2/0
R    200.100.20.0/24 [120/1] via 200.100.10.254, 00:00:17, Serial2/0
```

```
Router#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

R    192.168.10.0/24 [120/1] via 200.100.10.254, 00:00:09, Serial2/0
C    192.168.200.0/24 is directly connected, FastEthernet0/0
     200.100.10.0/30 is subnetted, 1 subnets
C       200.100.10.252 is directly connected, Serial2/0
R    200.100.20.0/24 [120/1] via 200.100.10.254, 00:00:09, Serial2/0
```

Sur le routeur de secours :

Router(config)#router rip
Router(config-router)#version 2
Router(config-router)#network 200.100.20.0
Router(config-router)#network 192.168.200.0
Router(config-router)#exit

```
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

R    192.168.10.0/24 [120/1] via 200.100.20.254, 00:00:18, Serial2/0
C    192.168.200.0/24 is directly connected, FastEthernet0/0
R    200.100.10.0/24 is possibly down, routing via 200.100.20.254, Serial2/0
     200.100.20.0/24 is variably subnetted, 2 subnets, 2 masks
R       200.100.20.0/24 [120/3] via 200.100.20.254, 00:00:12, Serial2/0
C       200.100.20.252/30 is directly connected, Serial2/0
```

```
Router>
Router>en
Router#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#router rip
Router(config-router)#version 2
Router(config-router)#network 200.100.20.0
Router(config-router)#network 192.168.200.0
Router(config-router)#exit
Router(config)#exit
Router#
%SYS-5-CONFIG_I: Configured from console by console

Router#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

R    192.168.10.0/24 [120/1] via 200.100.20.254, 00:00:08, Serial2/0
C    192.168.200.0/24 is directly connected, FastEthernet0/0
R    200.100.10.0/24 is possibly down, routing via 200.100.20.254, Serial2/0
     200.100.20.0/24 is variably subnetted, 2 subnets, 2 masks
R       200.100.20.0/24 [120/3] via 200.100.20.254, 00:00:08, Serial2/0
C       200.100.20.252/30 is directly connected, Serial2/0

Router#
```

TEST DE LA CONNECTIVITE

Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num
	Successful	PC3	Serveur de fi...	ICMP		0.000	N	0
	Successful	PC3	Serveur de fi...	ICMP		0.000	N	1

Successful	PC3	Serveur de fichier 2	ICMP		0.000	N	16	(edit)	(delete)
Successful	PC3	Serveur de fichier	ICMP		0.000	N	17	(edit)	(delete)

MISE EN PLACE DU PROTOCOLE HSRP

Nous devons indiquer sur quelle interface du routeur nous mettons en place le protocole HSRP, puis nous affections à cette interface une adresse IP virtuelle.
Pour le routeur principal nous indiquons également que ce routeur passe en priorité.

Sur le routeur principal :

Router(config)#int f0/0
Router(config-if)#standby 100 ip 192.168.200.1
Router(config-if)#standby 100 preempt
Router(config-if)#end

Vérification :

```
sh standby f0/0
FastEthernet0/0 - Group 100 (version 2)
  State is Active
    6 state changes, last state change 00:24:21
  Virtual IP address is 192.168.200.1
  Active virtual MAC address is 0000.0C9F.F064
    Local virtual MAC address is 0000.0C9F.F064 (v2 default)
  Hello time 3 sec, hold time 10 sec
    Next hello sent in 1.932 secs
  Preemption enabled
  Active router is local
  Standby router is unknown
  Priority 100 (default 100)
  Group name is hsrp-Fa0/0-100 (default)
```

```
Router>en
Router#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#int f0/0
Router(config-if)#standby 100 ip 192.168.200.1
Router(config-if)#standby 100 preempt
Router(config-if)#end
Router#
%SYS-5-CONFIG_I: Configured from console by console

Router#
%HSRP-6-STATECHANGE: FastEthernet0/0 Grp 100 state Speak -> Standby

%HSRP-6-STATECHANGE: FastEthernet0/0 Grp 100 state Standby -> Active
sh standby f0/0
FastEthernet0/0 - Group 100
  State is Active
    4 state changes, last state change 00:43:35
  Virtual IP address is 192.168.200.1
  Active virtual MAC address is 0000.0C07.AC64
    Local virtual MAC address is 0000.0C07.AC64 (v1 default)
  Hello time 3 sec, hold time 10 sec
    Next hello sent in 1.108 secs
  Preemption enabled
  Active router is local
  Standby router is unknown
  Priority 100 (default 100)
  Group name is hsrp-Fa0/0-100 (default)
Router#
```

Sur le routeur de secours :

Ici nous remettons la même adresse IP virtuelle que sur le routeur principal et nous lui disons qu'il passe en priorité secondaire d'où le « 110 ».

Router(config)#int f0/0
Router(config-if)#standby 100 ip 192.168.200.1
Router(config-if)#standby 100 priority 110
Router(config-if)#standby preempt
Router(config-if)#end

Vérification :

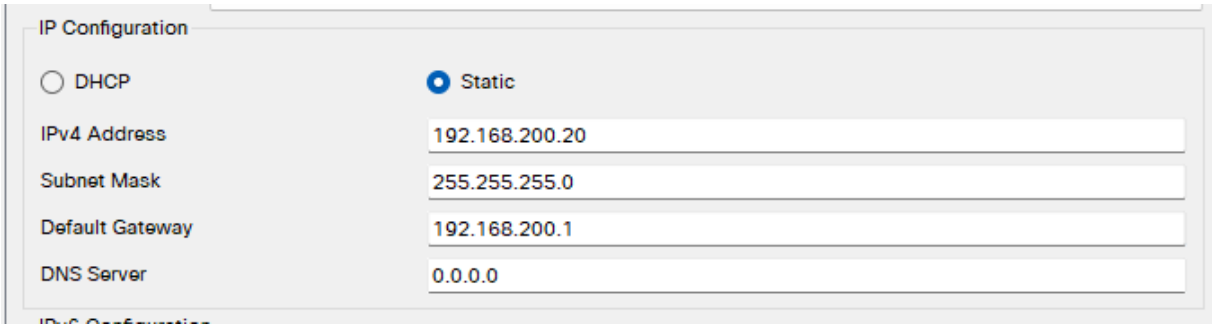
```
Router#sh standby f0/0
FastEthernet0/0 - Group 100 (version 2)
  State is Standby
    3 state changes, last state change 00:25:47
  Virtual IP address is 192.168.200.1
  Active virtual MAC address is 0000.0C9F.F064
    Local virtual MAC address is 0000.0C9F.F064 (v2 default)
  Hello time 3 sec, hold time 10 sec
    Next hello sent in 1.126 secs
  Preemption disabled
  Active router is 192.168.200.253
  Standby router is local
  Priority 110 (configured 110)
  Group name is hsrp-Fa0/0-100 (default)
```

```
Router>en
Router#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#int f0/0
Router(config-if)#standby 100 ip 192.168.200.1
Router(config-if)#standby 100 priority 110
Router(config-if)#standby preempt
Router(config-if)#en
%HSRP-6-STATECHANGE: FastEthernet0/0 Grp 100 state Speak -> Standby
d
Router#
%SYS-5-CONFIG_I: Configured from console by console

Router#sh standby f0/0
FastEthernet0/0 - Group 100
  State is Standby
    3 state changes, last state change 00:45:33
  Virtual IP address is 192.168.200.1
  Active virtual MAC address is 0000.0C07.AC64
    Local virtual MAC address is 0000.0C07.AC64 (v1 default)
  Hello time 3 sec, hold time 10 sec
    Next hello sent in 1.763 secs
  Preemption disabled
  Active router is 192.168.200.253
  Standby router is local
  Priority 110 (configured 110)
  Group name is hsrp-Fa0/0-100 (default)
Router#
```

MISE EN PANNE DU ROUTEUR PRINCIPAL

Changement de la passerelle du poste 192.168.200.20 en 192.168.200.1 (adresse IP virtuelle des deux routeurs). Car jusqu'à présent le poste avait la passerelle du routeur principal, c'est-à-dire 192.168.200.253.



On éteint le routeur principal pour voir si le routeur de secours prend le relais, puis on ping le serveur 192.168.10.1 à partir du poste 192.168.200.20.

```
Router#copy running-config startup-config
Destination filename [startup-config]?
Building configuration...
[OK]
Router#
```

Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num
	Successful	PC3	Serveur de fi...	ICMP		0.000	N	0

Successful	PC3	Serveur de fichier 2	ICMP		0.000	N	18	(edit)		(delete)
Successful	PC3	Serveur de fichier	ICMP		0.000	N	19	(edit)		(delete)