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## Introduction

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► Le failover, ou basculement est un mode de fonctionnement de secours qui consiste à basculer automatiquement sur une base de données, un serveur ou un réseau placé en attente si le système principal tombe en panne ou est arrêté le temps d'une maintenance. Le failover est une fonction extrêmement importante sur les systèmes critiques qui doivent rester accessibles à chaque instant. La fonctionnalité de failover redirige de manière transparente toutes les requêtes au système injoignable vers le système de secours, lequel imite l'environnement du système initial.

**Source** : <https://fr.barracuda.com/glossary/failover> [<https://fr.barracuda.com/glossary/failover>]

## I. Failover

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► Modification du fichier **/etc/dhcp/dhcpd.conf** (côté serveur dhcp secondaire) :

```
1      GNU nano 5.4
2      # Sample configuration file for ISC dhcpd
3      #
4      failover peer "GSB" {
5      #Déclaration du serveur comme primaire
6          primary;
7          address 10.31.240.67;
8          #Port d'écoute du primaire
9          port 647;
10         #Adresse du secondaire
11         peer address 10.31.240.68;
12         #Port d'écoute du serveur secondaire
13         peer port 847;
14         #temps de reponse en secondaire
15         max-response-delay 60;
16
17         max-unacked-updates 10;
18         #Max client lead time
19         mclt 3;
20         #Répartition de charge
21         split 128;
22
23         load balance max seconds 3;
24     }
25
26
27
28
29     # option definitions common to all supported networks...
30     option domain-name "gsb.org";
31     option domain-name-servers ns1.example.org, ns2.example.org;
32
33     default-lease-time 86400;
34     max-lease-time 604400;
35
36     authoritative;
```

```

37
38 # The ddns-updates-style parameter controls whether or not the server will
39 # attempt to do a DNS update when a lease is confirmed. We default to the
40 # behavior of the version 2 packages ('none', since DHCP v2 didn't
41 # have support for DDNS.)
42 #ddns-update-style none;
43 #Reseau a gérer
44
45 #passerelle par défaut
46 #option routers 10.31.240.1;

```

► Modification du fichier **/etc/dhcp/dhcpd.conf** (côté serveur dhcp principal) :

```

1  # Sample configuration file for ISC dhcpd
2  #
3  failover peer "GSB" {
4  #Déclaration du serveur comme primaire
5      secondary;
6      address 10.31.240.68;
7      #Port d'écoute du primaire
8      port 647;
9      #Adresse du secondaire
10     peer address 10.31.240.67;
11     #Port d'écoute du serveur secondaire
12     peer port 847;
13     #temps de reponse en secondaire
14     max-response-delay 60;
15
16     max-unacked-updates 10;
17     #Max client lead time
18
19     #Répartition de charge
20
21
22     load balance max seconds 3;
23
24 }
25
26
27
28 # option definitions common to all supported networks...
29 option domain-name "gsb.org";
30 option domain-name-servers ns1.example.org, ns2.example.org;
31
32 default-lease-time 86400;
33 max-lease-time 604400;
34
35 #authoritative;
36
37 subnet 10.31.240.0 netmask 255.255.255.128 {
38     pool {
39         failover peer "GSB";
40         range 10.31.240.69 10.31.240.104;
41     }
42 }
43
44 option routers 10.31.240.126;
45 #option broadcast-address 10.31.240.127

```

► Nous avons eu quelques erreurs en ce qui concerne le failover lors de son redémarrage "**systemctl restart isc-dhcp-server**" :

### 1 - nano /etc/default/isc-dhcp-server

► Commenter la dernière ligne "ipv6" afin de garder seulement l'ipv4.

### 2 - rm /var/run/dhcpd.pid

► Cette commande supprime les fichiers temporaires.

► Test des logs du **Peer** :

```
root@srv-dhcp2:~# cat /var/log/isc-dhcpd.log
Sep 30 18:19:26 srv-dhcp2 dhcpd[4269]: Internet Systems Consortium DHCP Server 4.4.1
Sep 30 18:19:26 srv-dhcp2 dhcpd[4269]: Copyright 2004-2018 Internet Systems Consortium.
Sep 30 18:19:26 srv-dhcp2 dhcpd[4269]: All rights reserved.
Sep 30 18:19:26 srv-dhcp2 dhcpd[4269]: For info, please visit https://www.isc.org/software/dhcp/
Sep 30 18:19:26 srv-dhcp2 dhcpd[4275]: Internet Systems Consortium DHCP Server 4.4.1
Sep 30 18:19:26 srv-dhcp2 dhcpd[4275]: Copyright 2004-2018 Internet Systems Consortium.
Sep 30 18:19:26 srv-dhcp2 dhcpd[4275]: All rights reserved.
Sep 30 18:19:26 srv-dhcp2 dhcpd[4275]: For info, please visit https://www.isc.org/software/dhcp/
Sep 30 18:19:26 srv-dhcp2 dhcpd[4275]: Wrote 0 deleted host decls to leases file.
Sep 30 18:19:26 srv-dhcp2 dhcpd[4275]: Wrote 0 new dynamic host decls to leases file.
Sep 30 18:19:26 srv-dhcp2 dhcpd[4275]: Wrote 0 leases to leases file.
Sep 30 18:19:26 srv-dhcp2 dhcpd[4275]: failover peer GSB: I move from recover to startup
Sep 30 18:19:26 srv-dhcp2 dhcpd[4275]: Server starting service.
Sep 30 18:19:41 srv-dhcp2 dhcpd[4275]: failover peer GSB: I move from startup to recover
Sep 30 18:20:54 srv-dhcp2 dhcpd[4275]: DHCPREQUEST for 10.31.240.69 from 52:54:00:cb:ab:fe via
enp1s0: not responding (recovering)
Sep 30 18:20:56 srv-dhcp2 dhcpd[4275]: failover peer GSB: address not available
Sep 30 18:22:26 srv-dhcp2 dhcpd[4275]: failover peer GSB: address not available
Sep 30 18:23:56 srv-dhcp2 dhcpd[4275]: failover peer GSB: address not available
Sep 30 18:24:57 srv-dhcp2 dhcpd[4275]: DHCPREQUEST for 10.31.240.70 from 52:54:00:93:d3:31 via
enp1s0: not responding (recovering)
Sep 30 18:25:26 srv-dhcp2 dhcpd[4275]: failover peer GSB: address not available
root@srv-dhcp2:~#
```

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► Pour savoir comment activer les logs. 

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```
std@srv-dhcp: ~  
GNU nano 5.4 /var/lib/dhcp/dhcpd.leases  
# The format of this file is documented in the dhcpd.leases(5) manual page.  
# This lease file was written by isc-dhcp-4.4.1  
  
# authoring-byte-order entry is generated, DO NOT DELETE  
authoring-byte-order little-endian;  
  
lease 10.31.240.70 {  
  starts 4 2021/09/30 16:16:10;  
  ends 4 2021/09/30 16:26:10;  
  cltt 4 2021/09/30 16:16:11;  
  binding state active;  
  next binding state free;  
  rewind binding state free;  
  hardware ethernet 52:54:00:93:d3:31;  
  uid "\377\000\223\3231\000\001\000\001(\345\251\317RT\000\223\3231";  
  client-hostname "debian";  
}  
lease 10.31.240.71 {  
  starts 4 2021/09/30 16:16:41;  
  ends 4 2021/09/30 16:26:41;  
  cltt 4 2021/09/30 16:16:42;  
  binding state active;  
  next binding state free;  
  rewind binding state free;  
  hardware ethernet 52:54:00:1f:5e:8d;  
  uid "\377\000\037^\215\000\001\000\001(\345\252>RT\000\037^\215";  
  client-hostname "dhcp1-relay-pub";  
}  
lease 10.31.240.69 {  
  starts 4 2021/09/30 16:20:55;  
  ends 4 2021/09/30 16:30:55;  
  cltt 4 2021/09/30 16:20:55;  
  binding state active;  
  next binding state free;  
  rewind binding state free;  
  hardware ethernet 52:54:00:cb:ab:fe;  
  uid "\377\000\313\253\376\000\001\000\001(\344\231RRT\000\313\253\376";  
  client-hostname "debian";  
}  
lease 10.31.240.70 {  
  starts 4 2021/09/30 16:24:57;  
  ends 4 2021/09/30 16:34:57;  
  cltt 4 2021/09/30 16:24:57;  
  binding state active;  
  next binding state free;  
  rewind binding state free;  
  hardware ethernet 52:54:00:93:d3:31;  
  uid "\377\000\223\3231\000\001\000\001(\345\251\317RT\000\223\3231";  
}
```

[ Lecture de 138 lignes ]

```
std@srv-dhcp2: ~  
GNU nano 5.4 /var/lib/dhcp/dhcpd.leases  
# The format of this file is documented in the dhcpd.leases(5) manual page.  
# This lease file was written by isc-dhcp-4.4.1  
  
# authoring-byte-order entry is generated, DO NOT DELETE  
authoring-byte-order little-endian;  
  
failover peer "GSB" state {  
    my state recover at 2 2021/09/28 14:46:13;  
    partner state unknown-state at 2 2021/09/28 14:46:13;  
    mclt 0;  
}  
  
failover peer "GSB" state {  
    my state recover at 2 2021/09/28 14:46:13;  
    partner state unknown-state at 2 2021/09/28 14:46:13;  
    mclt 0;  
}  
server-uid "\000\001\000\001(\345\3475RT\000\222\314\233";  
  
failover peer "GSB" state {  
    my state recover at 2 2021/09/28 14:46:13;  
    partner state unknown-state at 2 2021/09/28 14:46:13;  
    mclt 0;  
}
```

## Productions attendues

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- Configuration du serveur primaire (Master) DHCP sur le réseau privé,
- Configuration du serveur secondaire (Slave) DHCP sur le réseau privé,
- Mise en œuvre du Load Balancing et de la tolérance aux pannes (FailOver)
- Étude des journaux de logs DHCP pour vérifier leur bon fonctionnement
- Tests de la répartition de charge avec plusieurs clients
- Tests de « crash » en mode Chaos Monkey des serveurs à tour de rôle.

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