

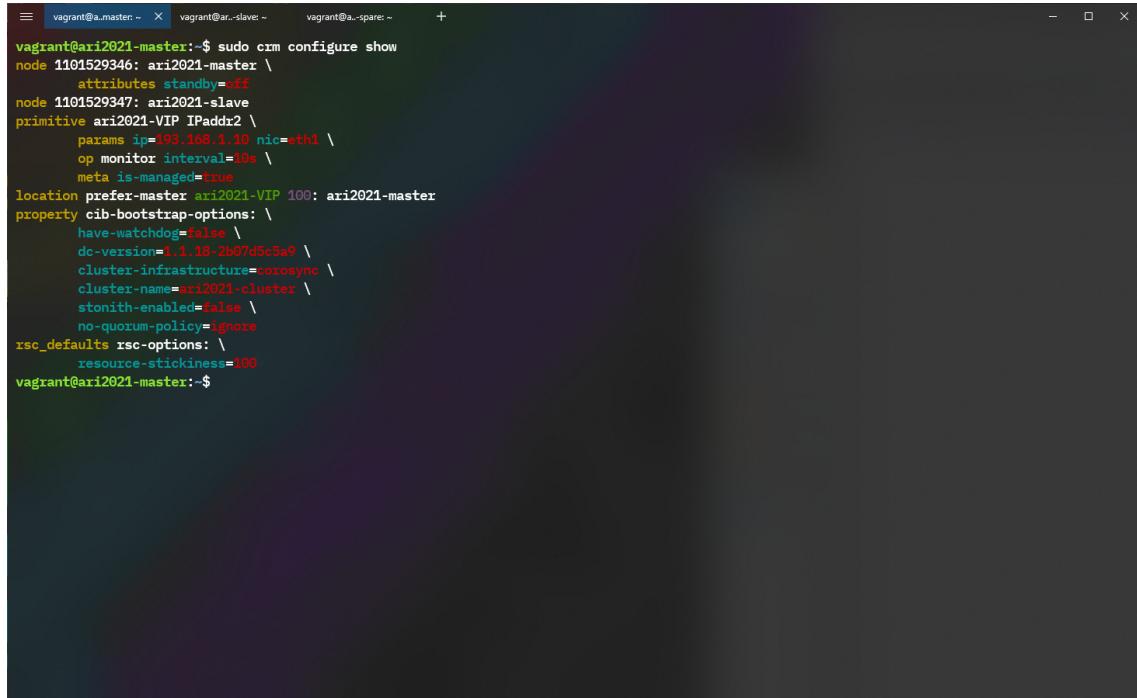
MEMORIA EII – PRÁCTICA I

Alonso Rodríguez Iglesias – EII 2020/21 – Práctica 1

JUSTIFICACIÓN DE LA PRIMERA PARTE

Se adjuntan capturas de la ejecución (en orden) de los siguientes comandos:

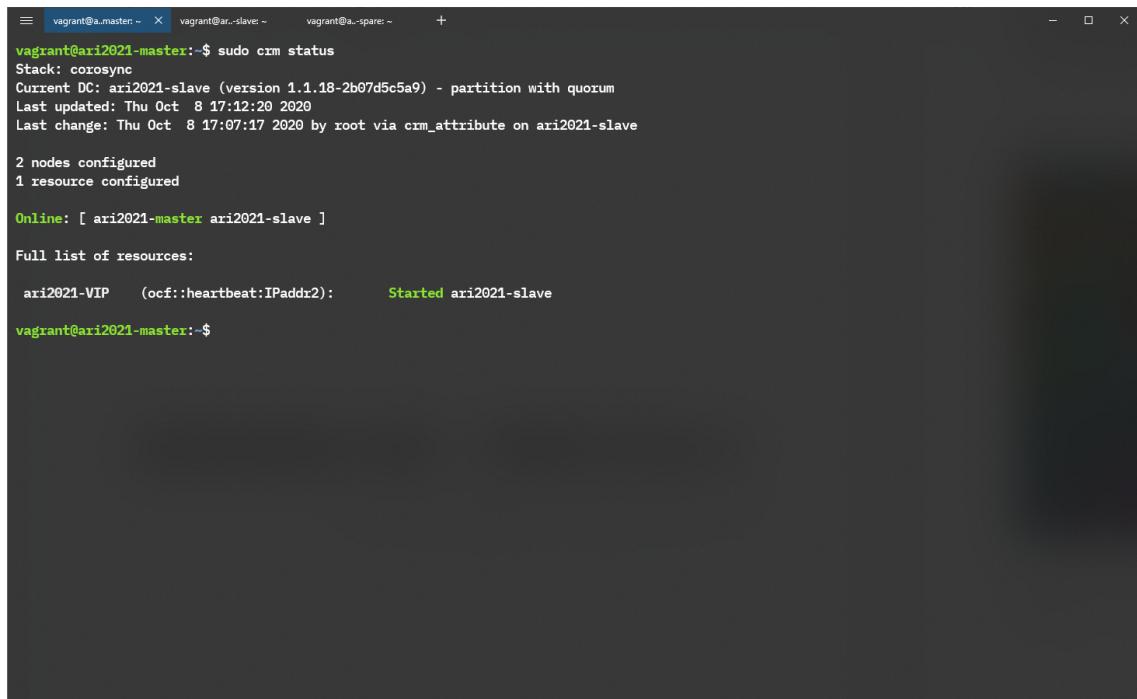
sudo crm configure show



```
vagrant@ari2021-master:~ $ sudo crm configure show
node 1101529346: ari2021-master \
    attributes standby=off
node 1101529347: ari2021-slave
primitive ari2021-VIP IPaddr2 \
    params ip=193.168.1.10 nic=eth1 \
    op monitor interval=10s \
    meta is-managed=true
location prefer-master ari2021-VIP 100: ari2021-master
property cib-bootstrap-options: \
    have-watchdog=false \
    dc-version=1.1.18-2b07d5c5a9 \
    cluster-infrastructure=corosync \
    cluster-name=ari2021-cluster \
    stonith-enabled=false \
    no-quorum-policy=ignore
rsc_defaults rsc-options: \
    resource-stickiness=100
vagrant@ari2021-master:~$
```

(Mostramos la configuración actual del cluster)

sudo crm status



```
vagrant@ari2021-master:~ $ sudo crm status
Stack: corosync
Current DC: ari2021-slave (version 1.1.18-2b07d5c5a9) - partition with quorum
Last updated: Thu Oct  8 17:12:20 2020
Last change: Thu Oct  8 17:07:17 2020 by root via cmm_attribute on ari2021-slave

2 nodes configured
1 resource configured

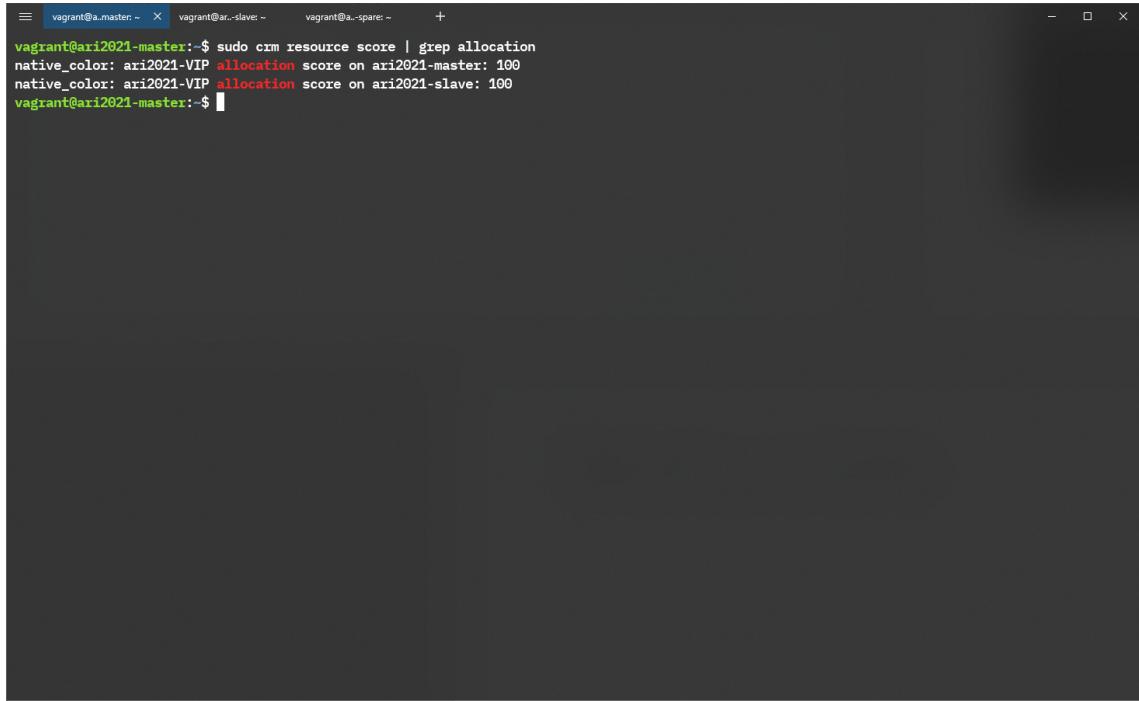
Online: [ ari2021-master ari2021-slave ]

Full list of resources:

ari2021-VIP (ocf::heartbeat:IPaddr2):     Started ari2021-slave

vagrant@ari2021-master:~$
```

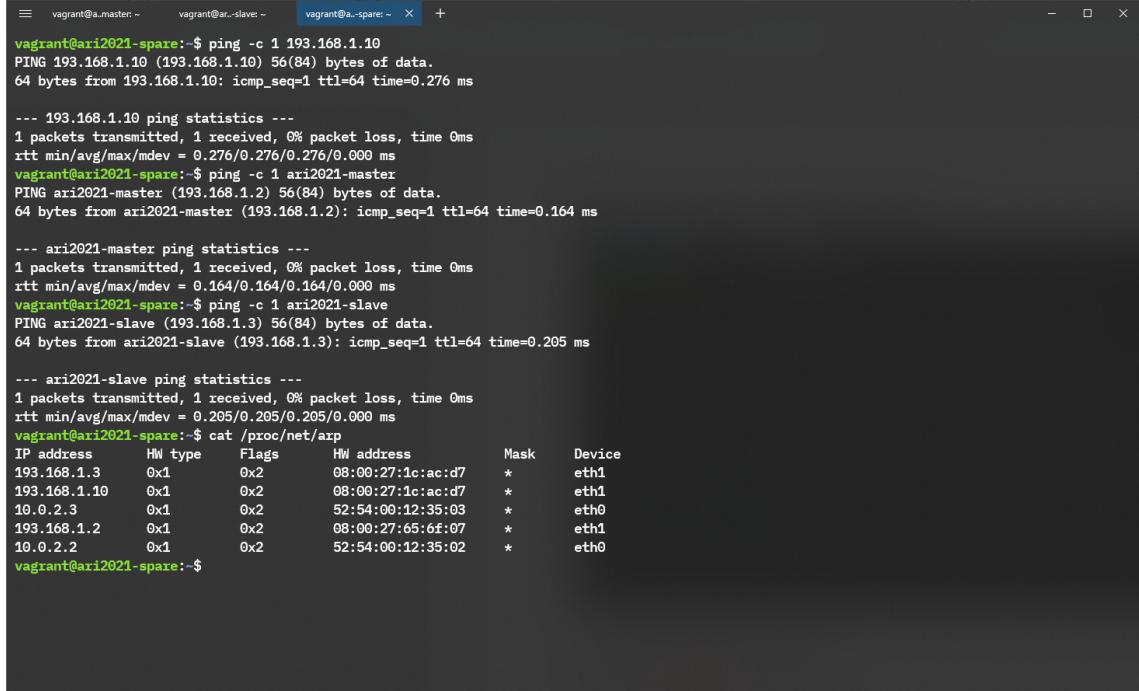
```
sudo crm resource score | grep allocation
```



```
vagrant@ari2021-master:~$ sudo crm resource score | grep allocation
native_color: ari2021-VIP allocation score on ari2021-master: 100
native_color: ari2021-VIP allocation score on ari2021-slave: 100
vagrant@ari2021-master:~$
```

(Vemos que tenemos 100 de allocation en cada nodo, 100 de preferencia en master, y 100 de adherencia en slave)

```
spare$ {comprobación del arp}
```



```
vagrant@ari2021-spares:~$ ping -c 1 193.168.1.10
PING 193.168.1.10 (193.168.1.10) 56(84) bytes of data.
64 bytes from 193.168.1.10: icmp_seq=1 ttl=64 time=0.276 ms

--- 193.168.1.10 ping statistics ---
1 packets transmitted, 1 received, 0% packet loss, time 0ms
rtt min/avg/max/mdev = 0.276/0.276/0.276/0.000 ms
vagrant@ari2021-spares:~$ ping -c 1 ari2021-master
PING ari2021-master (193.168.1.2) 56(84) bytes of data.
64 bytes from ari2021-master (193.168.1.2): icmp_seq=1 ttl=64 time=0.164 ms

--- ari2021-master ping statistics ---
1 packets transmitted, 1 received, 0% packet loss, time 0ms
rtt min/avg/max/mdev = 0.164/0.164/0.164/0.000 ms
vagrant@ari2021-spares:~$ ping -c 1 ari2021-slave
PING ari2021-slave (193.168.1.3) 56(84) bytes of data.
64 bytes from ari2021-slave (193.168.1.3): icmp_seq=1 ttl=64 time=0.205 ms

--- ari2021-slave ping statistics ---
1 packets transmitted, 1 received, 0% packet loss, time 0ms
rtt min/avg/max/mdev = 0.205/0.205/0.205/0.000 ms
vagrant@ari2021-spares:~$ cat /proc/net/arp
IP address      HW type      Flags      HW address          Mask      Device
193.168.1.3    0x1         0x2        08:00:27:1c:ac:d7  *         eth1
193.168.1.10   0x1         0x2        08:00:27:1c:ac:d7  *         eth1
10.0.2.3       0x1         0x2        52:54:00:42:35:03  *         eth0
193.168.1.2    0x1         0x2        08:00:27:65:6f:07  *         eth1
10.0.2.2       0x1         0x2        52:54:00:12:35:02  *         eth0
vagrant@ari2021-spares:~$
```

(la MAC de 193.168.1.10 es la del slave, ya que como en el último punto de la práctica configuramos la stickiness a 100, nunca llegó a cambiarse a master)

```
sudo crm node standby ari2021-master [...]
```

```
vagrant@ari2021-slave:~$ sudo crm node standby ari2021-master
vagrant@ari2021-slave:~$ sudo crm status
Stack: corosync
Current DC: ari2021-slave (version 1.1.18-2b07d5c5a9) - partition with quorum
Last updated: Thu Oct  8 17:17:23 2020
Last change: Thu Oct  8 17:16:17 2020 by root via crm_attribute on ari2021-slave

2 nodes configured
1 resource configured

Node ari2021-master: standby
Online: [ ari2021-slave ]

Full list of resources:

ari2021-VIP    (ocf::heartbeat:IPAddr2):     Started ari2021-slave

vagrant@ari2021-slave:~$ ssh vagrant@ari2021-spares ping -c 1 193.168.1.10
vagrant@ari2021-spares's password:
PING 193.168.1.10 (193.168.1.10) 56(84) bytes of data.
64 bytes from 193.168.1.10: icmp_seq=1 ttl=64 time=0.117 ms

--- 193.168.1.10 ping statistics ---
1 packets transmitted, 1 received, 0% packet loss, time 0ms
rtt min/avg/max/mdev = 0.117/0.117/0.117/0.000 ms
vagrant@ari2021-slave:~$ ssh vagrant@ari2021-spares cat /proc/net/arp
vagrant@ari2021-spares's password:
IP address      HW type      Flags      HW address          Mask      Device
193.168.1.3    0x1          0x2        08:00:27:1c:ac:d7  *        eth1
193.168.1.10   0x1          0x2        08:00:27:1c:ac:d7  *        eth1
10.0.2.3       0x1          0x2        52:54:00:12:35:03  *        eth0
193.168.1.2    0x1          0x2        08:00:27:65:6f:07  *        eth1
10.0.2.2       0x1          0x2        52:54:00:12:35:02  *        eth0
vagrant@ari2021-slave:~$
```

(la MAC de 193.168.1.10 sigue siendo la del slave, porque solo hemos puesto master en standby)

```
sudo crm node online ari2021-master [...]
```

```
vagrant@ari2021-slave:~$ sudo crm node online ari2021-master
vagrant@ari2021-slave:~$ sudo crm status
Stack: corosync
Current DC: ari2021-slave (version 1.1.18-2b07d5c5a9) - partition with quorum
Last updated: Thu Oct  8 17:19:38 2020
Last change: Thu Oct  8 17:19:34 2020 by root via crm_attribute on ari2021-slave

2 nodes configured
1 resource configured

Online: [ ari2021-master ari2021-slave ]

Full list of resources:

ari2021-VIP    (ocf::heartbeat:IPAddr2):     Started ari2021-slave

vagrant@ari2021-slave:~$ sudo crm resource score | grep allocation
native_color: ari2021-VIP allocation score on ari2021-master: 100
native_color: ari2021-VIP allocation score on ari2021-slave: 100
vagrant@ari2021-slave:~$ ssh vagrant@ari2021-spares ping -c 1 193.168.1.10
vagrant@ari2021-spares's password:
PING 193.168.1.10 (193.168.1.10) 56(84) bytes of data.
64 bytes from 193.168.1.10: icmp_seq=1 ttl=64 time=0.157 ms

--- 193.168.1.10 ping statistics ---
1 packets transmitted, 1 received, 0% packet loss, time 0ms
rtt min/avg/max/mdev = 0.157/0.157/0.157/0.000 ms
vagrant@ari2021-slave:~$ ssh vagrant@ari2021-spares cat /proc/net/arp
vagrant@ari2021-spares's password:
IP address      HW type      Flags      HW address          Mask      Device
193.168.1.3    0x1          0x2        08:00:27:1c:ac:d7  *        eth1
193.168.1.10   0x1          0x2        08:00:27:1c:ac:d7  *        eth1
10.0.2.3       0x1          0x2        52:54:00:12:35:03  *        eth0
193.168.1.2    0x1          0x2        08:00:27:65:6f:07  *        eth1
10.0.2.2       0x1          0x2        52:54:00:12:35:02  *        eth0
```

(la MAC sigue sin cambiar aunque encendamos de nuevo master)

```
sudo crm node standby ari2021-slave [...]
```

```
vagrant@ari2021-master:~$ sudo crm node standby ari2021-slave
vagrant@ari2021-master:~$ sudo crm status
Stack: corosync
Current DC: ari2021-slave (version 1.1.18-2b07d5c5a9) - partition with quorum
Last updated: Thu Oct  8 17:23:50 2020
Last change: Thu Oct  8 17:22:55 2020 by root via crm_attribute on ari2021-master

2 nodes configured
1 resource configured

Node ari2021-slave: standby
Online: [ ari2021-master ]

Full list of resources:

ari2021-VIP    (ocf::heartbeat:IPaddr2):     Started ari2021-master

vagrant@ari2021-master:~$ ssh vagrant@ari2021-spare ping -c 1 193.168.1.10
vagrant@ari2021-spare's password:
PING 193.168.1.10 (193.168.1.10) 56(84) bytes of data.
64 bytes from 193.168.1.10: icmp_seq=1 ttl=64 time=0.172 ms

--- 193.168.1.10 ping statistics ---
1 packets transmitted, 1 received, 0% packet loss, time 0ms
rtt min/avg/max/mdev = 0.172/0.172/0.172/0.000 ms
vagrant@ari2021-master:~$ ssh vagrant@ari2021-spare cat /proc/net/arp
vagrant@ari2021-spare's password:
IP address      HW type      Flags      HW address          Mask      Device
193.168.1.3    0x1          0x2        08:00:27:1c:ac:d7  *        eth1
193.168.1.10   0x1          0x2        08:00:27:65:6f:07  *        eth1
10.0.2.3       0x1          0x2        52:54:00:12:35:03  *        eth0
193.168.1.2    0x1          0x2        08:00:27:65:6f:07  *        eth1
10.0.2.2       0x1          0x2        52:54:00:12:35:02  *        eth0
vagrant@ari2021-master:~$
```

(ahora sí, coinciden las MAC de master y de la IP virtual, ya que al apagar el slave, no ha tenido otra que mover la IP al master)

```
sudo crm node online ari2021-slave [...]
```

```
vagrant@ari2021-master:~$ sudo crm node online ari2021-slave
vagrant@ari2021-master:~$ sudo crm status
Stack: corosync
Current DC: ari2021-slave (version 1.1.18-2b07d5c5a9) - partition with quorum
Last updated: Thu Oct  8 17:26:14 2020
Last change: Thu Oct  8 17:26:13 2020 by root via crm_attribute on ari2021-master

2 nodes configured
1 resource configured

Online: [ ari2021-master ari2021-slave ]

Full list of resources:

ari2021-VIP    (ocf::heartbeat:IPaddr2):     Started ari2021-master

vagrant@ari2021-master:~$ ssh vagrant@ari2021-spare ping -c 1 193.168.1.10
vagrant@ari2021-spare's password:
PING 193.168.1.10 (193.168.1.10) 56(84) bytes of data.
64 bytes from 193.168.1.10: icmp_seq=1 ttl=64 time=0.146 ms

--- 193.168.1.10 ping statistics ---
1 packets transmitted, 1 received, 0% packet loss, time 0ms
rtt min/avg/max/mdev = 0.146/0.146/0.146/0.000 ms
vagrant@ari2021-master:~$ ssh vagrant@ari2021-spare cat /proc/net/arp
vagrant@ari2021-spare's password:
IP address      HW type      Flags      HW address          Mask      Device
193.168.1.3    0x1          0x2        08:00:27:1c:ac:d7  *        eth1
193.168.1.10   0x1          0x2        08:00:27:65:6f:07  *        eth1
10.0.2.3       0x1          0x2        52:54:00:12:35:03  *        eth0
193.168.1.2    0x1          0x2        08:00:27:65:6f:07  *        eth1
10.0.2.2       0x1          0x2        52:54:00:12:35:02  *        eth0
vagrant@ari2021-master:~$ sudo crm resource score | grep allocation
native_color: ari2021-VIP allocation score on ari2021-master: 200
native_color: ari2021-VIP allocation score on ari2021-slave: 0
vagrant@ari2021-master:~$
```

(encendemos el slave, pero de nuevo, la MAC no cambia debido a la stickiness, es decir, que la IP virtual queda apuntando al master, hasta que le ocurra algo a éste)

Algo que es interesante mencionar aquí es ver cómo **ari2021-master** tiene ahora un score de 200 de allocation, esto es porque, de por sí, con el comando:

```
sudocrm configure location prefer-master ari2021-VIP 100: ari2021-master
```

configuramos una preferencia de 100 al master, y además, tiene los 100 de stickiness de la IP virtual. Esto es porque **allocation = preference + adherence**.

JUSTIFICACIÓN DE LA SEGUNDA PARTE

Los comandos ejecutados han sido los siguientes (tras la eliminación del recurso antiguo):

```
master$ sudo crm configure primitive ari2021-VIP1 ocf:heartbeat:IPaddr2 \
    params ip="193.168.1.10" nic="eth1" \
    op monitor interval="10s" \
    meta is-managed="true"

slave$ sudo crm configure primitive ari2021-VIP2 ocf:heartbeat:IPaddr2 \
    params ip="193.168.1.11" nic="eth1" \
    op monitor interval="10s" \
    meta is-managed="true"

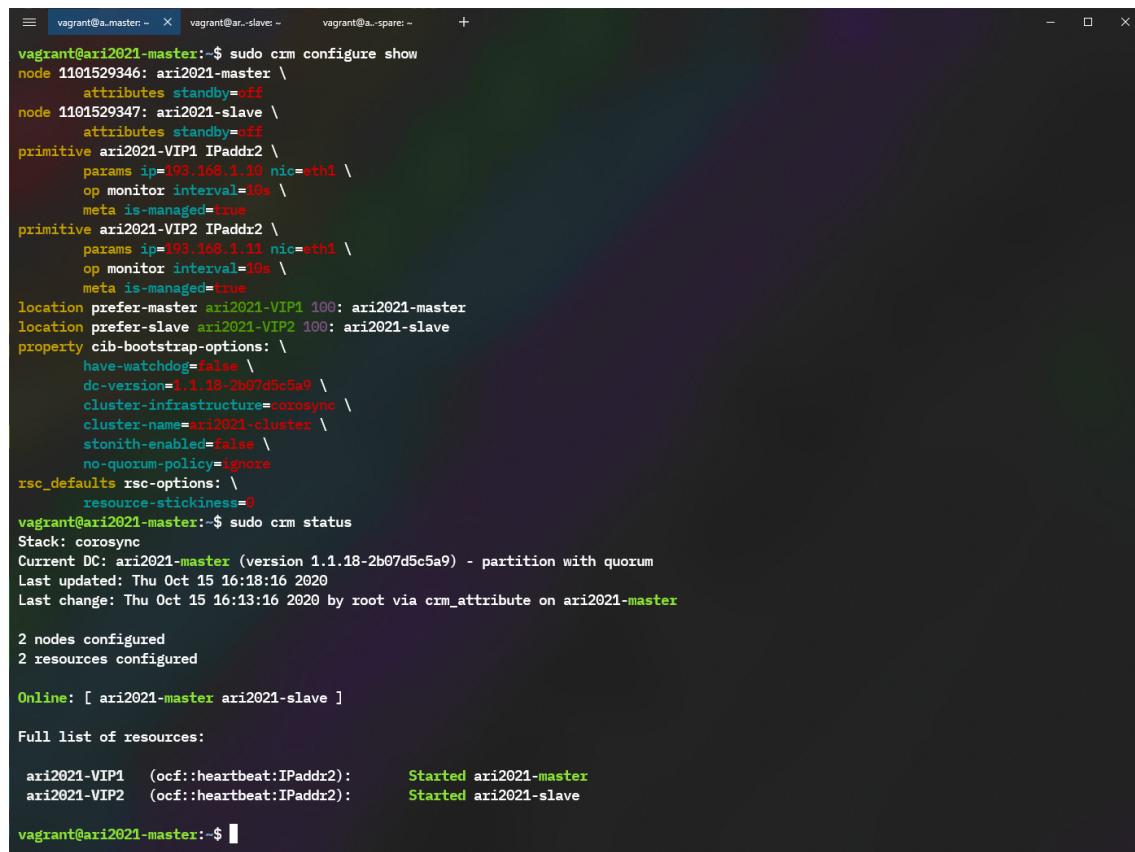
master$ sudo crm configure location prefer-master ari2021-VIP1 100: ari2021-master

master$ sudo crm configure location prefer-slave ari2021-VIP2 100: ari2021-slave

master$ sudo crm configure rsc_defaults resource-stickiness=0
```

Se adjuntan capturas de la ejecución (en orden) de los siguientes comandos:

sudo crm configure show && sudo crm status



```
vagrant@ari2021-master:~$ sudo crm configure show
node 1101529346: ari2021-master \
    attributes standby=off
node 1101529347: ari2021-slave \
    attributes standby=off
primitive ari2021-VIP1 IPaddr2 \
    params ip="193.168.1.10" nic="eth1" \
    op monitor interval="10s" \
    meta is-managed=true
primitive ari2021-VIP2 IPaddr2 \
    params ip="193.168.1.11" nic="eth1" \
    op monitor interval="10s" \
    meta is-managed=true
location prefer-master ari2021-VIP1 100: ari2021-master
location prefer-slave ari2021-VIP2 100: ari2021-slave
property cib-bootstrap-options: \
    have-watchdog=false \
    dc-version="1.1.18-2b07d5c5a9" \
    cluster-infrastructure="corosync" \
    cluster-name="ari2021-cluster" \
    stonith-enabled=false \
    no-quorum-policy="ignore"
rsc_defaults rsc-options: \
    resource-stickiness=0
vagrant@ari2021-master:~$ sudo crm status
Stack: corosync
Current DC: ari2021-master (version 1.1.18-2b07d5c5a9) - partition with quorum
Last updated: Thu Oct 15 16:18:16 2020
Last change: Thu Oct 15 16:13:16 2020 by root via cib_attribute on ari2021-master

2 nodes configured
2 resources configured

Online: [ ari2021-master ari2021-slave ]

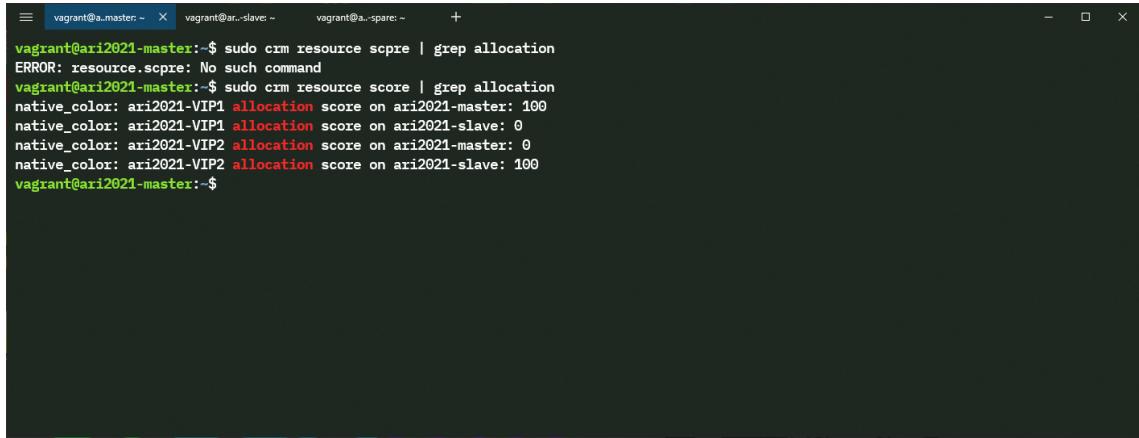
Full list of resources:

ari2021-VIP1    (ocf:heartbeat:IPaddr2):     Started ari2021-master
ari2021-VIP2    (ocf:heartbeat:IPaddr2):     Started ari2021-slave

vagrant@ari2021-master:~$
```

(Mostramos la configuración actual del cluster así como su estado)

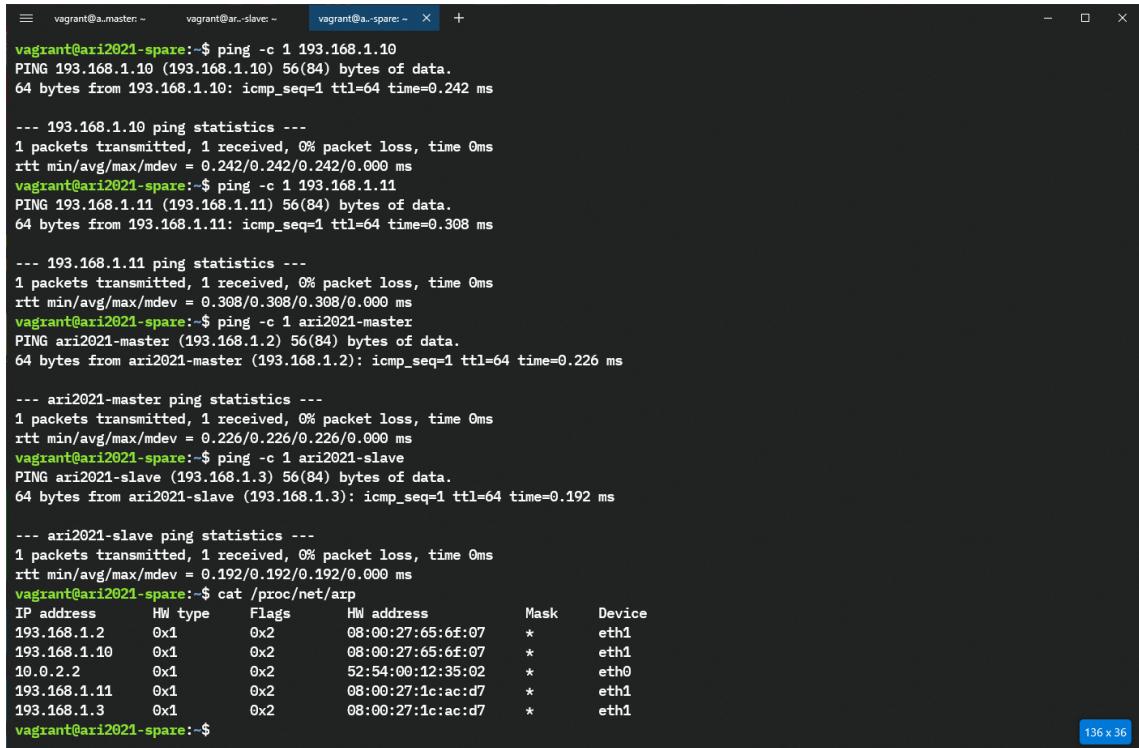
```
sudo crm resource score | grep allocation
```



```
vagrant@ari2021-master:~$ sudo crm resource score | grep allocation
ERROR: resource.scpre: No such command
vagrant@ari2021-master:~$ sudo crm resource score | grep allocation
native_color: ari2021-VIP1 allocation score on ari2021-master: 100
native_color: ari2021-VIP1 allocation score on ari2021-slave: 0
native_color: ari2021-VIP2 allocation score on ari2021-master: 0
native_color: ari2021-VIP2 allocation score on ari2021-slave: 100
vagrant@ari2021-master:~$
```

(Afectivamente, la allocation está a 100 en cada nodo, por el que tiene preferencia cada VIP, ya que la adherence está en 0)

```
ping -c 1 193.168.1.10 &&
ping -c 1 193.168.1.11 &&
ping -c 1 ari2021-master &&
ping -c 1 ari2021-slave &&
cat /proc/net/arp
```



```
vagrant@ari2021-spares:~$ ping -c 1 193.168.1.10
PING 193.168.1.10 (193.168.1.10) 56(84) bytes of data.
64 bytes from 193.168.1.10: icmp_seq=1 ttl=64 time=0.242 ms

--- 193.168.1.10 ping statistics ---
1 packets transmitted, 1 received, 0% packet loss, time 0ms
rtt min/avg/max/mdev = 0.242/0.242/0.242/0.000 ms
vagrant@ari2021-spares:~$ ping -c 1 193.168.1.11
PING 193.168.1.11 (193.168.1.11) 56(84) bytes of data.
64 bytes from 193.168.1.11: icmp_seq=1 ttl=64 time=0.308 ms

--- 193.168.1.11 ping statistics ---
1 packets transmitted, 1 received, 0% packet loss, time 0ms
rtt min/avg/max/mdev = 0.308/0.308/0.308/0.000 ms
vagrant@ari2021-spares:~$ ping -c 1 ari2021-master
PING ari2021-master (193.168.1.2) 56(84) bytes of data.
64 bytes from ari2021-master (193.168.1.2): icmp_seq=1 ttl=64 time=0.226 ms

--- ari2021-master ping statistics ---
1 packets transmitted, 1 received, 0% packet loss, time 0ms
rtt min/avg/max/mdev = 0.226/0.226/0.226/0.000 ms
vagrant@ari2021-spares:~$ ping -c 1 ari2021-slave
PING ari2021-slave (193.168.1.3) 56(84) bytes of data.
64 bytes from ari2021-slave (193.168.1.3): icmp_seq=1 ttl=64 time=0.192 ms

--- ari2021-slave ping statistics ---
1 packets transmitted, 1 received, 0% packet loss, time 0ms
rtt min/avg/max/mdev = 0.192/0.192/0.192/0.000 ms
vagrant@ari2021-spares:~$ cat /proc/net/arp
IP address      Hw type      Flags      Hw address          Mask      Device
193.168.1.2      0x1        0x2        08:00:27:65:6f:07    *       eth1
193.168.1.10     0x1        0x2        08:00:27:65:6f:07    *       eth1
10.0.2.2         0x1        0x2        52:54:00:12:35:02    *       eth0
193.168.1.11     0x1        0x2        08:00:27:1c:ac:d7    *       eth1
193.168.1.3      0x1        0x2        08:00:27:1c:ac:d7    *       eth1
vagrant@ari2021-spares:~$
```

(Hacemos ping para poblar la ARP caché, y comprobamos que la MAC de -master se corresponde a la VIP1, así como la de -slave a la VIP2)

```
sudocrm node standby ari2021-master &&
sudocrm status &&
sudocrm resource score | grep allocation
```

```
vagrant@ari2021-master:~$ sudocrm node standby ari2021-master
vagrant@ari2021-master:~$ sudocrm status
Stack: corosync
Current DC: ari2021-master (version 1.1.18-2b07d5c5a9) - partition with quorum
Last updated: Thu Oct 15 16:26:12 2020
Last change: Thu Oct 15 16:26:05 2020 by root via cmm_attribute on ari2021-master

2 nodes configured
2 resources configured

Node ari2021-master: standby
Online: [ ari2021-slave ]

Full list of resources:

ari2021-VIP1 (ocf::heartbeat:IPAddr2): Started ari2021-slave
ari2021-VIP2 (ocf::heartbeat:IPAddr2): Started ari2021-slave

vagrant@ari2021-master:~$ sudocrm resource score | grep allocation
native_color: ari2021-VIP1 allocation score on ari2021-master: 100
native_color: ari2021-VIP1 allocation score on ari2021-slave: 0
native_color: ari2021-VIP2 allocation score on ari2021-master: 0
native_color: ari2021-VIP2 allocation score on ari2021-slave: 100
vagrant@ari2021-master:~$
```

(Ponemos -master en standby y vemos qué ocurre con la VIP1)

```
ping -c 1 193.168.1.10 &&
ping -c 1 193.168.1.11 &&
cat /proc/net/arp
```

```
vagrant@ari2021-spare:~$ ping -c 1 193.168.1.10
PING 193.168.1.10 (193.168.1.10) 56(84) bytes of data.
64 bytes from 193.168.1.10: icmp_seq=1 ttl=64 time=0.247 ms

--- 193.168.1.10 ping statistics ---
1 packets transmitted, 1 received, 0% packet loss, time 0ms
rtt min/avg/max/mdev = 0.247/0.247/0.247/0.000 ms
vagrant@ari2021-spare:~$ ping -c 1 193.168.1.11
PING 193.168.1.11 (193.168.1.11) 56(84) bytes of data.
64 bytes from 193.168.1.11: icmp_seq=1 ttl=64 time=0.204 ms

--- 193.168.1.11 ping statistics ---
1 packets transmitted, 1 received, 0% packet loss, time 0ms
rtt min/avg/max/mdev = 0.204/0.204/0.204/0.000 ms
vagrant@ari2021-spare:~$ cat /proc/net/arp
IP address      HW type      Flags      HW address          Mask       Device
193.168.1.2      0x1        0x2        08:00:27:65:6f:07  *         eth1
193.168.1.10     0x1        0x2        08:00:27:1c:ac:d7  *         eth1
10.0.2.2         0x1        0x2        52:54:00:12:35:02  *         eth0
193.168.1.11     0x1        0x2        08:00:27:1c:ac:d7  *         eth1
193.168.1.3      0x1        0x2        08:00:27:1c:ac:d7  *         eth1
vagrant@ari2021-spare:~$
```

(Podemos comprobar que se ha migrado a -slave)

```

sudocrm node online ari2021-master &&
sudocrm status &&
sudocrm resource score | grep allocation

```

```

vagrant@ari2021-master:~$ sudocrm node online ari2021-master &&
> sudocrm status &&
> sudocrm resource score | grep allocation
Stack: corosync
Current DC: ari2021-master (version 1.1.18-2b07d5c5a9) - partition with quorum
Last updated: Thu Oct 15 16:32:01 2020
Last change: Thu Oct 15 16:32:01 2020 by root via crm_attribute on ari2021-master

2 nodes configured
2 resources configured

Online: [ ari2021-master ari2021-slave ]

Full list of resources:

ari2021-VIP1  (ocf::heartbeat:IPaddr2):      Started ari2021-master
ari2021-VIP2  (ocf::heartbeat:IPaddr2):      Started ari2021-slave

native_color: ari2021-VIP1 allocation score on ari2021-master: 100
native_color: ari2021-VIP1 allocation score on ari2021-slave: 0
native_color: ari2021-VIP2 allocation score on ari2021-master: 0
native_color: ari2021-VIP2 allocation score on ari2021-slave: 100
vagrant@ari2021-master:~$ 

```

136 x 23

(Ponemos -master de vuelta online y vemos qué ocurre con la VIP1)

```
ping [...] && cat /proc/net/arp
```

```

vagrant@ari2021-spares:~$ ping -c 1 193.168.1.10
PING 193.168.1.10 (193.168.1.10) 56(84) bytes of data.
64 bytes from 193.168.1.10: icmp_seq=1 ttl=64 time=0.192 ms

--- 193.168.1.10 ping statistics ---
1 packets transmitted, 1 received, 0% packet loss, time 0ms
rtt min/avg/max/mdev = 0.192/0.192/0.192/0.000 ms
vagrant@ari2021-spares:~$ ping -c 1 193.168.1.11
PING 193.168.1.11 (193.168.1.11) 56(84) bytes of data.
64 bytes from 193.168.1.11: icmp_seq=1 ttl=64 time=0.200 ms

--- 193.168.1.11 ping statistics ---
1 packets transmitted, 1 received, 0% packet loss, time 0ms
rtt min/avg/max/mdev = 0.200/0.200/0.200/0.000 ms
vagrant@ari2021-spares:~$ cat /proc/net/arp
IP address      HW type      Flags      HW address          Mask      Device
193.168.1.2      0x2        0x2        08:00:27:6f:07    *       eth1
193.168.1.10     0x1        0x2        08:00:27:6f:07    *       eth1
10.0.2.2         0x1        0x2        52:54:00:12:35:02  *       eth0
193.168.1.11     0x1        0x2        08:00:27:1c:ac:d7  *       eth1
193.168.1.3      0x1        0x2        08:00:27:1c:ac:d7  *       eth1
vagrant@ari2021-spares:~$ 

```

(Podemos comprobar que ha vuelto a -master)

```
sudo crm node standby ari2021-slave &&
sudo crm status &&
sudo crm resource score | grep allocation
```

```
vagrant@ari2021-master:~$ sudo crm node standby ari2021-slave && sudo crm status && sudo crm resource score | grep allocation
Stack: corosync
Current DC: ari2021-master (version 1.1.18-2b07d5c5e9) - partition with quorum
Last updated: Thu Oct 15 16:36:16 2020
Last change: Thu Oct 15 16:34:19 2020 by root via crm_attribute on ari2021-master

2 nodes configured
2 resources configured

Node ari2021-slave: standby
Online: [ ari2021-master ]

Full list of resources:

ari2021-VIP1    (ocf::heartbeat:IPaddr2):      Started ari2021-master
ari2021-VIP2    (ocf::heartbeat:IPaddr2):      Started ari2021-master

native_color: ari2021-VIP1 allocation score on ari2021-master: 100
native_color: ari2021-VIP1 allocation score on ari2021-slave: 0
native_color: ari2021-VIP2 allocation score on ari2021-master: 0
native_color: ari2021-VIP2 allocation score on ari2021-slave: 100
vagrant@ari2021-master:~$
```

(Ponemos -slave en standby y vemos qué ocurre con la VIP2)

```
ping [...] && cat /proc/net/arp
```

```
vagrant@ari2021-spare:~$ ping -c 1 193.168.1.10
PING 193.168.1.10 (193.168.1.10) 56(84) bytes of data.
64 bytes from 193.168.1.10: icmp_seq=1 ttl=64 time=0.239 ms

--- 193.168.1.10 ping statistics ---
1 packets transmitted, 1 received, 0% packet loss, time 0ms
rtt min/avg/max/mdev = 0.239/0.239/0.239/0.000 ms
vagrant@ari2021-spare:~$ ping -c 1 193.168.1.11
PING 193.168.1.11 (193.168.1.11) 56(84) bytes of data.
64 bytes from 193.168.1.11: icmp_seq=1 ttl=64 time=0.185 ms

--- 193.168.1.11 ping statistics ---
1 packets transmitted, 1 received, 0% packet loss, time 0ms
rtt min/avg/max/mdev = 0.185/0.185/0.185/0.000 ms
vagrant@ari2021-spare:~$ cat /proc/net/arp
IP address      HW type      Flags      HW address          Mask      Device
193.168.1.2      0x2        0x2        08:00:27:65:6f:07  *        eth1
193.168.1.10     0x1        0x2        08:00:27:65:6f:07  *        eth1
10.0.2.2         0x1        0x2        52:54:00:12:35:02  *        eth0
193.168.1.11     0x1        0x2        08:00:27:65:6f:07  *        eth1
193.168.1.3      0x1        0x2        08:00:27:1c:ac:d7  *        eth1
vagrant@ari2021-spare:~$
```

(Podemos comprobar que se ha migrado a -master)

```

sudocrm node online ari2021-slave &&
sudocrm status &&
sudocrm resource score | grep allocation

```

```

vagrant@ari2021-master:~$ sudocrm node online ari2021-slave &&
> sudocrm status &&
> sudocrm resource score | grep allocation
Stack: corosync
Current DC: ari2021-master (version 1.1.18-2b07d5c5a9) - partition with quorum
Last updated: Thu Oct 15 16:38:47 2020
Last change: Thu Oct 15 16:38:46 2020 by root via crm_attribute on ari2021-master

2 nodes configured
2 resources configured

Online: [ ari2021-master ari2021-slave ]

Full list of resources:

ari2021-VIP1    (ocf::heartbeat:IPaddr2):      Started ari2021-master
ari2021-VIP2    (ocf::heartbeat:IPaddr2):      Started ari2021-slave

native_color: ari2021-VIP1 allocation score on ari2021-master: 100
native_color: ari2021-VIP1 allocation score on ari2021-slave: 0
native_color: ari2021-VIP2 allocation score on ari2021-master: 0
native_color: ari2021-VIP2 allocation score on ari2021-slave: 100
vagrant@ari2021-master:~$

```

(Ponemos -slave de vuelta online y vemos qué ocurre con la VIP2)

```

ping [...] && cat /proc/net/arp

```

```

vagrant@ari2021-spare:~$ ping -c 1 193.168.1.10
PING 193.168.1.10 (193.168.1.10) 56(84) bytes of data.
64 bytes from 193.168.1.10: icmp_seq=1 ttl=64 time=0.225 ms

--- 193.168.1.10 ping statistics ---
1 packets transmitted, 1 received, 0% packet loss, time 0ms
rtt min/avg/max/mdev = 0.225/0.225/0.225/0.000 ms
vagrant@ari2021-spare:~$ ping -c 1 193.168.1.11
PING 193.168.1.11 (193.168.1.11) 56(84) bytes of data.
64 bytes from 193.168.1.11: icmp_seq=1 ttl=64 time=0.247 ms

--- 193.168.1.11 ping statistics ---
1 packets transmitted, 1 received, 0% packet loss, time 0ms
rtt min/avg/max/mdev = 0.247/0.247/0.247/0.000 ms
vagrant@ari2021-spare:~$ cat /proc/net/arp
IP address      HW type      Flags      HW address          Mask      Device
193.168.1.2      0x2        0x2        08:00:27:65:6f:07  *        eth1
193.168.1.10     0x1        0x2        08:00:27:65:6f:07  *        eth1
10.0.2.2         0x1        0x2        52:54:00:12:35:02  *        eth0
193.168.1.11     0x1        0x2        08:00:27:1c:ac:d7  *        eth1
193.168.1.3      0x1        0x2        08:00:27:1c:ac:d7  *        eth1
vagrant@ari2021-spare:~$

```

(Podemos comprobar que ha vuelto a -slave)

Podemos ver que el cluster se comporta como deseamos. El comportamiento es tan poco sorprendente que he sido bastante escueto con las descripciones, porque básicamente hemos hecho lo mismo cuatro veces. En algunas partes no me requería que ejecutase algunos comandos, como:

```
sudo crm resource score | grep allocation  
cat /proc/net/arp
```

pero como es información que tampoco sobra, y que además nos ayuda a comprender qué está pasando, por si no estuviese lo suficientemente claro, opté por ponerlo todo junto.

JUSTIFICACIÓN DE LA TERCERA PARTE

Los comandos ejecutados han sido los siguientes (tras haber ejecutado previamente los de la segunda parte):

```
master$ sudo ccm configure location prefer-master2spare ari2021-VIP1 40: ari2021-spare
master$ sudo ccm configure location prefer-slave2spare ari2021-VIP2 40: ari2021-spare
master$ sudo ccm configure rsc_defaults resource-stickiness=50
```

Se adjuntan capturas de la ejecución (en orden) de los siguientes comandos:

```
sudo ccm configure show &&
sudo ccm status &&
sudo ccm resource score | grep allocation
```

```
vagrant@ari2021-master:~$ sudo ccm configure show
node 1101529346: ari2021-master \
    attributes standby=off
node 1101529347: ari2021-slave \
    attributes standby=off
node 1101529348: ari2021-spare \
    attributes standby=off
primitive ari2021-VIP1 IPaddr2 \
    params ip=193.168.1.10 nic=eth1 \
    op monitor interval=10s \
    meta is-managed=true
primitive ari2021-VIP2 IPaddr2 \
    params ip=193.168.1.11 nic=eth1 \
    op monitor interval=10s \
    meta is-managed=true
location prefer-master ari2021-VIP1 100: ari2021-master
location prefer-master2spare ari2021-VIP1 40: ari2021-spare
location prefer-slave ari2021-VIP2 100: ari2021-slave
location prefer-slave2spare ari2021-VIP2 40: ari2021-spare
property cib-bootstrap-options: \
    have-watchdog=false \
    dc-version=1.1.18-2b07d5c5a9 \
    cluster-infrastructure=corosync \
    cluster-name=ari2021-cluster \
    stonith-enabled=false \
    no-quorum-policy=ignore
rsc_defaults rsc-options: \
    resource-stickiness=50
vagrant@ari2021-master:~$ sudo ccm status
Stack: corosync
Current DC: ari2021-master (version 1.1.18-2b07d5c5a9) - partition with quorum
Last updated: Thu Oct 15 17:54:53 2020
Last change: Thu Oct 15 17:54:26 2020 by root via ccm_attribute on ari2021-master

3 nodes configured
2 resources configured

Online: [ ari2021-master ari2021-slave ari2021-spare ]

Full list of resources:

ari2021-VIP1  (ocf::heartbeat:IPaddr2):      Started ari2021-master
ari2021-VIP2  (ocf::heartbeat:IPaddr2):      Started ari2021-slave

vagrant@ari2021-master:~$ sudo ccm resource score | grep allocation
native_color: ari2021-VIP1 allocation score on ari2021-master: 150
native_color: ari2021-VIP1 allocation score on ari2021-slave: 0
native_color: ari2021-VIP1 allocation score on ari2021-spare: 40
native_color: ari2021-VIP2 allocation score on ari2021-master: 0
native_color: ari2021-VIP2 allocation score on ari2021-slave: 150
native_color: ari2021-VIP2 allocation score on ari2021-spare: 40
vagrant@ari2021-master:~$
```

(Simplemente miramos la configuración)

```
ping [...] && cat /proc/net/arp
```

vagrant@ari2021-spare:~\$ ping -c 1 193.168.1.10
PING 193.168.1.10 (193.168.1.10) 56(84) bytes of data.
64 bytes from 193.168.1.10: icmp_seq=1 ttl=64 time=0.204 ms

--- 193.168.1.10 ping statistics ---
1 packets transmitted, 1 received, 0% packet loss, time 0ms
rtt min/avg/max/mdev = 0.204/0.204/0.204/0.000 ms
vagrant@ari2021-spare:~\$ ping -c 1 193.168.1.11
PING 193.168.1.11 (193.168.1.11) 56(84) bytes of data.
64 bytes from 193.168.1.11: icmp_seq=1 ttl=64 time=0.224 ms

--- 193.168.1.11 ping statistics ---
1 packets transmitted, 1 received, 0% packet loss, time 0ms
rtt min/avg/max/mdev = 0.224/0.224/0.224/0.000 ms
vagrant@ari2021-spare:~\$ cat /proc/net/arp
IP address HW type Flags HW address Mask Device
193.168.1.2 0x1 0x2 08:00:27:65:6f:07 * eth1
193.168.1.10 0x1 0x2 08:00:27:65:6f:07 * eth1
10.0.2.2 0x1 0x2 52:54:00:12:35:02 * eth0
193.168.1.11 0x1 0x2 08:00:27:1c:ac:d7 * eth1
193.168.1.3 0x1 0x2 08:00:27:1c:ac:d7 * eth1
vagrant@ari2021-spare:~\$

(Vemos que cada VIP está en su nodo favorito)

```
sudo crm node standby ari2021-master  
sudo crm status  
sudo crm resource score | grep allocation
```

vagrant@ari2021-master:~\$ sudo crm node standby ari2021-master
vagrant@ari2021-master:~\$ sudo crm status
Stack: corosync
Current DC: ari2021-master (version 1.1.18-2b07d5c5a9) - partition with quorum
Last updated: Thu Oct 15 17:56:02 2020
Last change: Thu Oct 15 17:55:56 2020 by root via cmm_attribute on ari2021-master

3 nodes configured
2 resources configured

Node ari2021-master: **standby**
Online: [ari2021-slave ari2021-spare]

Full list of resources:

ari2021-VIP1 (ocf::heartbeat:IPaddr2): Started ari2021-spare
ari2021-VIP2 (ocf::heartbeat:IPaddr2): Started ari2021-slave

vagrant@ari2021-master:~\$ sudo crm resource score | grep allocation
native_color: ari2021-VIP1 allocation score on ari2021-master: 100
native_color: ari2021-VIP1 allocation score on ari2021-slave: 0
native_color: ari2021-VIP1 allocation score on ari2021-spare: 90
native_color: ari2021-VIP2 allocation score on ari2021-master: 0
native_color: ari2021-VIP2 allocation score on ari2021-slave: 150
native_color: ari2021-VIP2 allocation score on ari2021-spare: 40
vagrant@ari2021-master:~\$

(Al apagar el master, se va al spare)

```

sudo crm node online ari2021-master
sudo crm status
sudo crm resource score | grep allocation

```

```

vagrant@ari2021-master:~$ sudo crm node online ari2021-master
vagrant@ari2021-master:~$ sudo crm status
Stack: corosync
Current DC: ari2021-master (version 1.1.18-2b07d5c5a9) - partition with quorum
Last updated: Thu Oct 15 17:57:21 2020
Last change: Thu Oct 15 17:57:14 2020 by root via crrm_attribute on ari2021-master

3 nodes configured
2 resources configured

Online: [ ari2021-master ari2021-slave ari2021-spare ]

Full list of resources:

ari2021-VIP1  (ocf::heartbeat:IPaddr2):     Started ari2021-master
ari2021-VIP2  (ocf::heartbeat:IPaddr2):     Started ari2021-slave

vagrant@ari2021-master:~$ sudo crm resource score | grep allocation
native_color: ari2021-VIP1 allocation score on ari2021-master: 150
native_color: ari2021-VIP1 allocation score on ari2021-slave: 0
native_color: ari2021-VIP1 allocation score on ari2021-spare: 40
native_color: ari2021-VIP2 allocation score on ari2021-slave: 150
native_color: ari2021-VIP2 allocation score on ari2021-spare: 40
vagrant@ari2021-master:~$

```

(Y al volver a encenderlo, por la stickiness y la preferencia que le hemos puesto, se vuelve al nodo master, como se espera)

```

sudo crm node standby ari2021-master
sudo crm node standby ari2021-spare
sudo crm status
sudo crm resource score | grep allocation

```

```

vagrant@ari2021-master:~$ sudo crm node standby ari2021-master
vagrant@ari2021-master:~$ sudo crm node standby ari2021-spare
vagrant@ari2021-master:~$ sudo crm status
Stack: corosync
Current DC: ari2021-master (version 1.1.18-2b07d5c5a9) - partition with quorum
Last updated: Thu Oct 15 17:58:13 2020
Last change: Thu Oct 15 17:58:11 2020 by root via crrm_attribute on ari2021-master

3 nodes configured
2 resources configured

Node ari2021-master: standby
Node ari2021-spare: standby
Online: [ ari2021-slave ]

Full list of resources:

ari2021-VIP1  (ocf::heartbeat:IPaddr2):     Started ari2021-slave
ari2021-VIP2  (ocf::heartbeat:IPaddr2):     Started ari2021-slave

vagrant@ari2021-master:~$ sudo crm resource score | grep allocation
native_color: ari2021-VIP1 allocation score on ari2021-master: 100
native_color: ari2021-VIP1 allocation score on ari2021-slave: 50
native_color: ari2021-VIP1 allocation score on ari2021-spare: 40
native_color: ari2021-VIP2 allocation score on ari2021-master: 0
native_color: ari2021-VIP2 allocation score on ari2021-slave: 150
native_color: ari2021-VIP2 allocation score on ari2021-spare: 40
vagrant@ari2021-master:~$

```

(Al apagar ambos nodos master y spare, la VIP se va al único que queda y de menor preferencia, que es el nodo slave)

```
sudo crm node online ari2021-spare
sudo crm status
sudo crm resource score | grep allocation
```

```
vagrant@ari2021-master:~$ sudo crm node online ari2021-spare
vagrant@ari2021-master:~$ sudo crm status
Stack: corosync
Current DC: ari2021-master (version 1.18-2b07d5c5a9) - partition with quorum
Last updated: Thu Oct 15 17:59:18 2020
Last change: Thu Oct 15 17:59:16 2020 by root via crrm_attribute on ari2021-master

3 nodes configured
2 resources configured

Node ari2021-master: standby
Online: [ ari2021-slave ari2021-spare ]

Full list of resources:

ari2021-VIP1  (ocf::heartbeat:IPaddr2):      Started ari2021-slave
ari2021-VIP2  (ocf::heartbeat:IPaddr2):      Started ari2021-slave

vagrant@ari2021-master:~$ sudo crm resource score | grep allocation
native_color: ari2021-VIP1 allocation score on ari2021-master: 100
native_color: ari2021-VIP1 allocation score on ari2021-slave: 50
native_color: ari2021-VIP1 allocation score on ari2021-spare: 40
native_color: ari2021-VIP2 allocation score on ari2021-master: 0
native_color: ari2021-VIP2 allocation score on ari2021-slave: 150
native_color: ari2021-VIP2 allocation score on ari2021-spare: 40
vagrant@ari2021-master:~$
```

(Pero, dada la preferencia en 40 del nodo spare, se le indica al sistema que no compensa mover el recurso de vuelta al spare, por lo que se mantiene en el slave)

```
sudo crm node online ari2021-master
sudo crm status
sudo crm resource score | grep allocation
```

```
vagrant@ari2021-master:~$ sudo crm node online ari2021-master
vagrant@ari2021-master:~$ sudo crm status
Stack: corosync
Current DC: ari2021-master (version 1.18-2b07d5c5a9) - partition with quorum
Last updated: Thu Oct 15 18:03:01 2020
Last change: Thu Oct 15 18:02:59 2020 by root via crrm_attribute on ari2021-master

3 nodes configured
2 resources configured

Online: [ ari2021-master ari2021-slave ari2021-spare ]

Full list of resources:

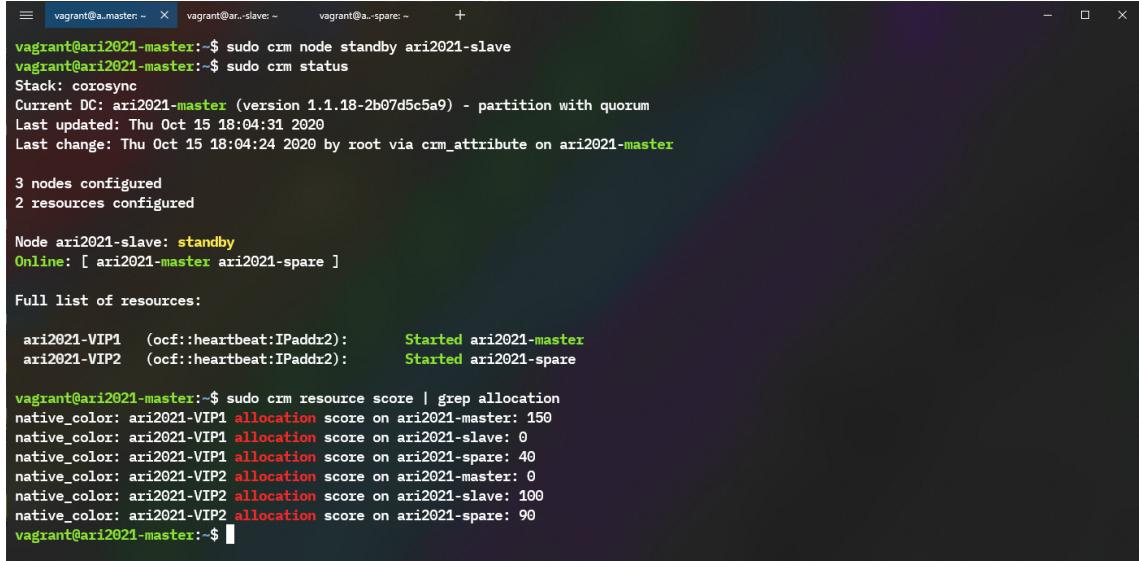
ari2021-VIP1  (ocf::heartbeat:IPaddr2):      Started ari2021-master
ari2021-VIP2  (ocf::heartbeat:IPaddr2):      Started ari2021-slave

vagrant@ari2021-master:~$ sudo crm resource score | grep allocation
native_color: ari2021-VIP1 allocation score on ari2021-master: 150
native_color: ari2021-VIP1 allocation score on ari2021-slave: 0
native_color: ari2021-VIP1 allocation score on ari2021-spare: 40
native_color: ari2021-VIP2 allocation score on ari2021-master: 0
native_color: ari2021-VIP2 allocation score on ari2021-slave: 150
native_color: ari2021-VIP2 allocation score on ari2021-spare: 40
vagrant@ari2021-master:~$
```

(Ahora que hemos encendido el master, ya sí compensa mover el recurso al nodo master, por lo que se mueve a la misma)

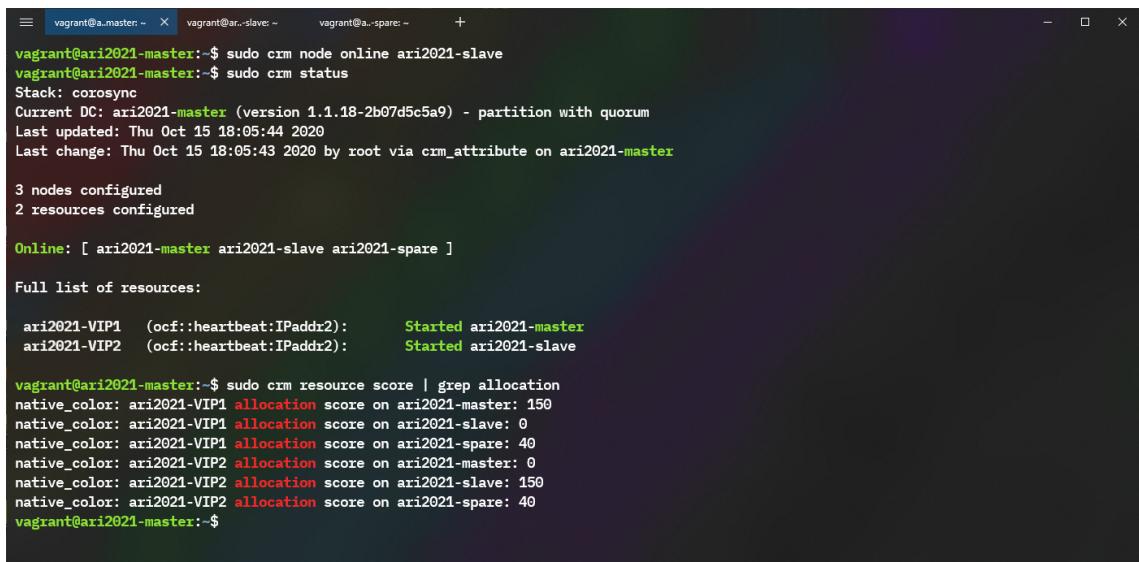
Aquí repetimos los pasos anteriores, pero con el slave, por lo que no se va a indicar nada en el pie de foto.

```
sudocrm node standby ari2021-slave  
sudocrm status  
sudocrm resource score | grep allocation
```



```
vagrant@ari2021-master:~$ sudocrm node standby ari2021-slave  
vagrant@ari2021-master:~$ sudocrm status  
Stack: corosync  
Current DC: ari2021-master (version 1.1.18-2b07d5c5a9) - partition with quorum  
Last updated: Thu Oct 15 18:04:31 2020  
Last change: Thu Oct 15 18:04:24 2020 by root via crm_attribute on ari2021-master  
  
3 nodes configured  
2 resources configured  
  
Node ari2021-slave: standby  
Online: [ ari2021-master ari2021-spare ]  
  
Full list of resources:  
  
ari2021-VIP1 (ocf::heartbeat:IPaddr2): Started ari2021-master  
ari2021-VIP2 (ocf::heartbeat:IPaddr2): Started ari2021-spare  
  
vagrant@ari2021-master:~$ sudocrm resource score | grep allocation  
native_color: ari2021-VIP1 allocation score on ari2021-master: 150  
native_color: ari2021-VIP1 allocation score on ari2021-slave: 0  
native_color: ari2021-VIP1 allocation score on ari2021-spare: 40  
native_color: ari2021-VIP2 allocation score on ari2021-master: 0  
native_color: ari2021-VIP2 allocation score on ari2021-slave: 100  
native_color: ari2021-VIP2 allocation score on ari2021-spare: 90  
vagrant@ari2021-master:~$
```

```
sudocrm node online ari2021-slave  
sudocrm status  
sudocrm resource score | grep allocation
```



```
vagrant@ari2021-master:~$ sudocrm node online ari2021-slave  
vagrant@ari2021-master:~$ sudocrm status  
Stack: corosync  
Current DC: ari2021-master (version 1.1.18-2b07d5c5a9) - partition with quorum  
Last updated: Thu Oct 15 18:05:44 2020  
Last change: Thu Oct 15 18:05:43 2020 by root via crm_attribute on ari2021-master  
  
3 nodes configured  
2 resources configured  
  
Online: [ ari2021-master ari2021-slave ari2021-spare ]  
  
Full list of resources:  
  
ari2021-VIP1 (ocf::heartbeat:IPaddr2): Started ari2021-master  
ari2021-VIP2 (ocf::heartbeat:IPaddr2): Started ari2021-slave  
  
vagrant@ari2021-master:~$ sudocrm resource score | grep allocation  
native_color: ari2021-VIP1 allocation score on ari2021-master: 150  
native_color: ari2021-VIP1 allocation score on ari2021-slave: 0  
native_color: ari2021-VIP1 allocation score on ari2021-spare: 40  
native_color: ari2021-VIP2 allocation score on ari2021-master: 0  
native_color: ari2021-VIP2 allocation score on ari2021-slave: 150  
native_color: ari2021-VIP2 allocation score on ari2021-spare: 40  
vagrant@ari2021-master:~$
```

```

sudocrm node standby ari2021-slave
sudocrm node standby ari2021-spare
sudocrm status
sudocrm resource score | grep allocation

```

```

vagrant@ari2021-master:~$ sudocrm node standby ari2021-slave
vagrant@ari2021-master:~$ sudocrm node standby ari2021-spare
vagrant@ari2021-master:~$ sudocrm status
Stack: corosync
Current DC: ari2021-master (version 1.1.18-2b07d5c5a9) - partition with quorum
Last updated: Thu Oct 15 18:07:15 2020
Last change: Thu Oct 15 18:06:46 2020 by root via crm_attribute on ari2021-master

3 nodes configured
2 resources configured

Node ari2021-slave: standby
Node ari2021-spare: standby
Online: [ ari2021-master ]

Full list of resources:

ari2021-VIP1 (ocf::heartbeat:IPaddr2): Started ari2021-master
ari2021-VIP2 (ocf::heartbeat:IPaddr2): Started ari2021-master

vagrant@ari2021-master:~$ sudocrm resource score | grep allocation
native_color: ari2021-VIP1 allocation score on ari2021-master: 150
native_color: ari2021-VIP1 allocation score on ari2021-slave: 0
native_color: ari2021-VIP1 allocation score on ari2021-spare: 40
native_color: ari2021-VIP2 allocation score on ari2021-master: 50
native_color: ari2021-VIP2 allocation score on ari2021-slave: 100
native_color: ari2021-VIP2 allocation score on ari2021-spare: 40
vagrant@ari2021-master:~$

```

```

sudocrm node online ari2021-spare
sudocrm status
sudocrm resource score | grep allocation

```

```

vagrant@ari2021-master:~$ sudocrm node online ari2021-spare
vagrant@ari2021-master:~$ sudocrm status
Stack: corosync
Current DC: ari2021-master (version 1.1.18-2b07d5c5a9) - partition with quorum
Last updated: Thu Oct 15 18:08:02 2020
Last change: Thu Oct 15 18:08:01 2020 by root via crm_attribute on ari2021-master

3 nodes configured
2 resources configured

Node ari2021-slave: standby
Online: [ ari2021-master ari2021-spare ]

Full list of resources:

ari2021-VIP1 (ocf::heartbeat:IPaddr2): Started ari2021-master
ari2021-VIP2 (ocf::heartbeat:IPaddr2): Started ari2021-master

vagrant@ari2021-master:~$ sudocrm resource score | grep allocation
native_color: ari2021-VIP1 allocation score on ari2021-master: 150
native_color: ari2021-VIP1 allocation score on ari2021-slave: 0
native_color: ari2021-VIP1 allocation score on ari2021-spare: 40
native_color: ari2021-VIP2 allocation score on ari2021-master: 50
native_color: ari2021-VIP2 allocation score on ari2021-slave: 100
native_color: ari2021-VIP2 allocation score on ari2021-spare: 40
vagrant@ari2021-master:~$

```

```
sudocrm node online ari2021-slave  
sudocrm status  
sudocrm resource score | grep allocation
```

```
vagrant@a-master:~ vagrant@ari-slave:~ vagrant@a-spare:~ +  
vagrant@ari2021-master:~$ sudocrm node online ari2021-slave  
vagrant@ari2021-master:~$ sudocrm status  
Stack: corosync  
Current DC: ari2021-master (version 1.1.18-2b07d5c5a9) - partition with quorum  
Last updated: Thu Oct 15 18:08:30 2020  
Last change: Thu Oct 15 18:08:29 2020 by root via cim_attribute on ari2021-master  
  
3 nodes configured  
2 resources configured  
  
Online: [ ari2021-master ari2021-slave ari2021-spare ]  
  
Full list of resources:  
  
ari2021-VIP1 (ocf::heartbeat:IPaddr2): Started ari2021-master  
ari2021-VIP2 (ocf::heartbeat:IPaddr2): Started ari2021-slave  
  
vagrant@ari2021-master:~$ sudocrm resource score | grep allocation  
native_color: ari2021-VIP1 allocation score on ari2021-master: 150  
native_color: ari2021-VIP1 allocation score on ari2021-slave: 0  
native_color: ari2021-VIP1 allocation score on ari2021-spare: 40  
native_color: ari2021-VIP2 allocation score on ari2021-master: 0  
native_color: ari2021-VIP2 allocation score on ari2021-slave: 150  
native_color: ari2021-VIP2 allocation score on ari2021-spare: 40  
vagrant@ari2021-master:~$
```

Podemos ver que el cluster (de nuevo) se comporta como deseamos.

Este sistema que acabamos de implementar es más útil cuanto más tiempo tarde la migración del sistema, ya que evitamos migraciones innecesarias entre el tercer y segundo nodo por orden de preferencia.

Poco que comentar la verdad. El cluster funciona bien, y creo que las salidas de los comandos son bastante autoexplicativas.

La preferencia de **prefer-master2spare** y **prefer-slave2spare** están puestas a **40** para que cuando **spare** vuelva a estar disponible, pero el nodo con más preferencia no, no se haga esa migración innecesaria comentada más arriba, ya que, **40<50**, y, con esos datos, el sistema estima acertadamente, que no es conveniente mover el sistema.

Alonso Rodriguez Iglesias. 15-Octubre-2020