→ **Convenciones:**

```
# En todos los nodos como 'sudo su'.
[root@srv1 ~]# Solo en servidor 'srv1'→ como 'sudo su'.
[root@srv2 ~]# Solo en servidor 'srv2'→ como 'sudo su'.
```

→ Configuración 'Vagrant' inicial como ejemplo, no obstante utilizaré una configuración mas amplia y compleja para poder desplegar datos/servicios en entornos de trabajo diferenciados para un adecuado despliegue y en producción → Utilizaré KVM-quemu. Que sirva de referencia.

```
$ cat <<FIN > Vagrantfile
Vagrant.configure(2) do |config|
        config.vm.define "srv1" do |srv|
                srv.vm.box = "centos/8"
                srv.vm.hostname = "srv1.enermol.lan"
                srv.vm.network "private_network", ip: "192.168.10.151",
                  virtualbox_intnet: "intnet"
                srv.vm.network "private_network", ip: "192.168.10.161",
                  virtualbox__intnet: "intnet2"
                srv.vm.network "forwarded_port", guest: 2224, host: 2224
        end
        config.vm.define "srv2" do |srv|
                srv.vm.box = "centos/8"
                srv.vm.hostname = "srv2.enermol.lan"
                srv.vm.network "private_network", ip: "192.168.10.152",
                  virtualbox_intnet: "intnet"
                srv.vm.network "private_network", ip: "192.168.10.162",
                  virtualbox__intnet: "intnet2"
        end
end
FIN
```

```
# lsblk
NAME        MAJ:MIN RM  SIZE RO TYPE MOUNTPOINT
sda           8:0    0   40G  0 disk
├─sda1        8:1    0    1G  0 part /boot
└─sda2        8:2    0   39G  0 part
  ├─cl-root 253:0    0   36G  0 lvm  /
  └─cl-swap 253:1    0  3,1G  0 lvm  [SWAP]
sdb           8:16   0   40G  0 disk
```

```
# df -hT
S.ficheros          Tipo     Tamaño Usados  Disp Uso% Montado en
devtmpfs            devtmpfs   1,4G      0  1,4G   0% /dev
tmpfs               tmpfs      1,4G    38M  1,4G   3% /dev/shm
tmpfs               tmpfs      1,4G   8,6M  1,4G   1% /run
tmpfs               tmpfs      1,4G      0  1,4G   0% /sys/fs/cgroup
/dev/mapper/cl-root xfs         36G   2,8G   34G   8% /
/dev/sda1           ext4       976M   190M  720M  21% /boot
tmpfs               tmpfs      284M      0  284M   0% /run/user/0
```

```
# cat <<FIN > /etc/hosts
#127.0.0.1  srv1  srv1
#127.0.0.1   localhost localhost.localdomain localhost4 localhost4.localdomain4
#::1         localhost localhost.localdomain localhost6 localhost6.localdomain6
```

```
192.168.10.150 pgsql-vip.enermol.lan      pgsql-vip
192.168.10.160 pgsql-alt-vip.enermol.lan  pgsql-alt-vip

192.168.10.151 srv1.enermol.lan           srv1
192.168.10.152 srv2.enermol.lan           srv2

192.168.10.161 srv1-alt.enermol.lan       srv1-alt
192.168.10.162 srv2-alt.enermol.lan       srv2-alt

192.168.10.13  ilo-srv1.enermol.lan       ilo-srv1
192.168.10.14  ilo-srv2.enermol.lan       ilo-srv2
FIN

# vim /etc/ssh/sshd_config
…
PermitRootLogin yes
PasswordAuthentication yes
…

# systemctl restart sshd.service

# ssh-keygen

# systemctl status firewalld.service
● firewalld.service - firewalld - dynamic firewall daemon
   Loaded: loaded (/usr/lib/systemd/system/firewalld.service; enabled; vendor
preset: enabled)
   Active: active (running) since Tue 2020-03-24 11:37:28 CET; 3h 52min ago
     Docs: man:firewalld(1)
 Main PID: 942 (firewalld)
    Tasks: 3 (limit: 17950)
   Memory: 41.4M
   CGroup: /system.slice/firewalld.service
           └─942 /usr/libexec/platform-python -s /usr/sbin/firewalld --nofork –
            nopid

mar 24 11:37:16 srv1.enermol.lan systemd[1]: Starting firewalld - dynamic
firewall daemon...
mar 24 11:37:28 srv1.enermol.lan systemd[1]: Started firewalld - dynamic
firewall daemon.

[root@srv1 ~]# ssh-copy-id -i .ssh/id_rsa.pub srv2
[root@srv2 ~]# ssh-copy-id -i .ssh/id_rsa.pub srv1

# systemctl enable --now firewalld.service
```

→ **Sincronización Horaria.**

```
# firewall-cmd --permanent --add-service=ntp
# firewall-cmd --permanent --add-port=123/udp
# firewall-cmd --reload

# systemctl enable --now  chronyd.service chrony-wait.service
#
# systemctl restart chronyd.service chrony-wait.service
# chronyc tracking
# chronyc sources
# timedatectl set-timezone Europe/Madrid
```

```
# chronyc sourcestats
```

https://access.redhat.com/documentation/en-us/red_hat_enterprise_linux/7/html/system_administrators_guide/sect-using_chrony

http://proyectoa.com/configurar-actualizacion-automatica-de-hora-y-fecha-en-equipo-linux-centos-7-con-ntp/

→ **Instalación de Pacemaker.**

```
# dnf install epel-release-8-8.el8.noarch -y
# firewall-cmd  --permanent --add-service=high-availability
# firewall-cmd  --reload
# firewall-cmd --list-services
cockpit dhcpv6-client high-availability ntp ssh

# dnf --enablerepo=HighAvailability -y install pacemaker pcs -y

# systemctl enable --now pcsd.service

# passwd hacluster

[root@srv1 ~]# pcs host auth srv1.enermol.lan srv2.enermol.lan -u hacluster
Password:
srv2.enermol.lan: Authorized
srv1.enermol.lan: Authorized

[root@srv1 ~]# pcs cluster setup cluster-odoo srv1.enermol.lan srv2.enermol.lan
No addresses specified for host 'srv1.enermol.lan', using 'srv1.enermol.lan'
No addresses specified for host 'srv2.enermol.lan', using 'srv2.enermol.lan'
Destroying cluster on hosts: 'srv1.enermol.lan', 'srv2.enermol.lan'...
srv1.enermol.lan: Successfully destroyed cluster
srv2.enermol.lan: Successfully destroyed cluster
Requesting remove 'pcsd settings' from 'srv1.enermol.lan', 'srv2.enermol.lan'
srv1.enermol.lan: successful removal of the file 'pcsd settings'
srv2.enermol.lan: successful removal of the file 'pcsd settings'
Sending 'corosync authkey', 'pacemaker authkey' to 'srv1.enermol.lan',
'srv2.enermol.lan'
srv1.enermol.lan: successful distribution of the file 'corosync authkey'
srv1.enermol.lan: successful distribution of the file 'pacemaker authkey'
srv2.enermol.lan: successful distribution of the file 'corosync authkey'
srv2.enermol.lan: successful distribution of the file 'pacemaker authkey'
Sending 'corosync.conf' to 'srv1.enermol.lan', 'srv2.enermol.lan'
srv2.enermol.lan: successful distribution of the file 'corosync.conf'
srv1.enermol.lan: successful distribution of the file 'corosync.conf'
Cluster has been successfully set up.

# vim /etc/corosync/corosync.conf

totem {
    version: 2
    cluster_name: cluster-odoo
    transport: knet
    crypto_cipher: aes256
    crypto_hash: sha256
}

nodelist {
```

```
    node {
        ring0_addr: srv1.enermol.lan
        name: srv1.enermol.lan
        nodeid: 1
    }

    node {
        ring0_addr: srv2.enermol.lan
        name: srv2.enermol.lan
        nodeid: 2
    }
}

quorum {
    provider: corosync_votequorum
    two_node: 1
}

logging {
    to_logfile: yes
    logfile: /var/log/cluster/corosync.log
    to_syslog: yes
    timestamp: on
}
```

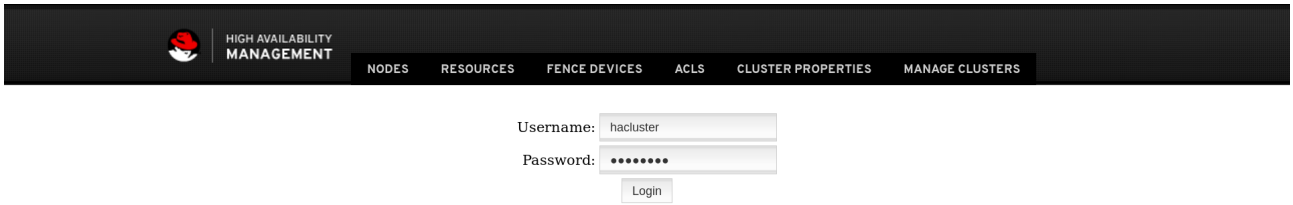
```
[root@srv1 ~]# corosync-keygen
Corosync Cluster Engine Authentication key generator.
Gathering 1024 bits for key from /dev/random.
Press keys on your keyboard to generate entropy.
Press keys on your keyboard to generate entropy (bits = 920).
Press keys on your keyboard to generate entropy (bits = 1000).
Writing corosync key to /etc/corosync/authkey.

[root@srv1 ~]# scp /etc/corosync/authkey srv2:/etc/corosync/

[root@srv1 ~]# pcs cluster start --all
srv2.enermol.lan: Starting Cluster...
srv1.enermol.lan: Starting Cluster...

[root@srv1 ~]# pcs cluster enable --all
srv1.enermol.lan: Cluster Enabled
srv2.enermol.lan: Cluster Enabled

[root@srv1 ~]# pcs status
Cluster name: cluster-odoo

WARNINGS:
No stonith devices and stonith-enabled is not false

Stack: corosync
Current DC: srv1.enermol.lan (version 2.0.2-3.el8_1.2-744a30d655) - partition
with quorum
Last updated: Sun Mar 22 10:06:59 2020
Last change: Sun Mar 22 10:05:41 2020 by hacluster via crmd on srv1.enermol.lan

2 nodes configured
0 resources configured
```

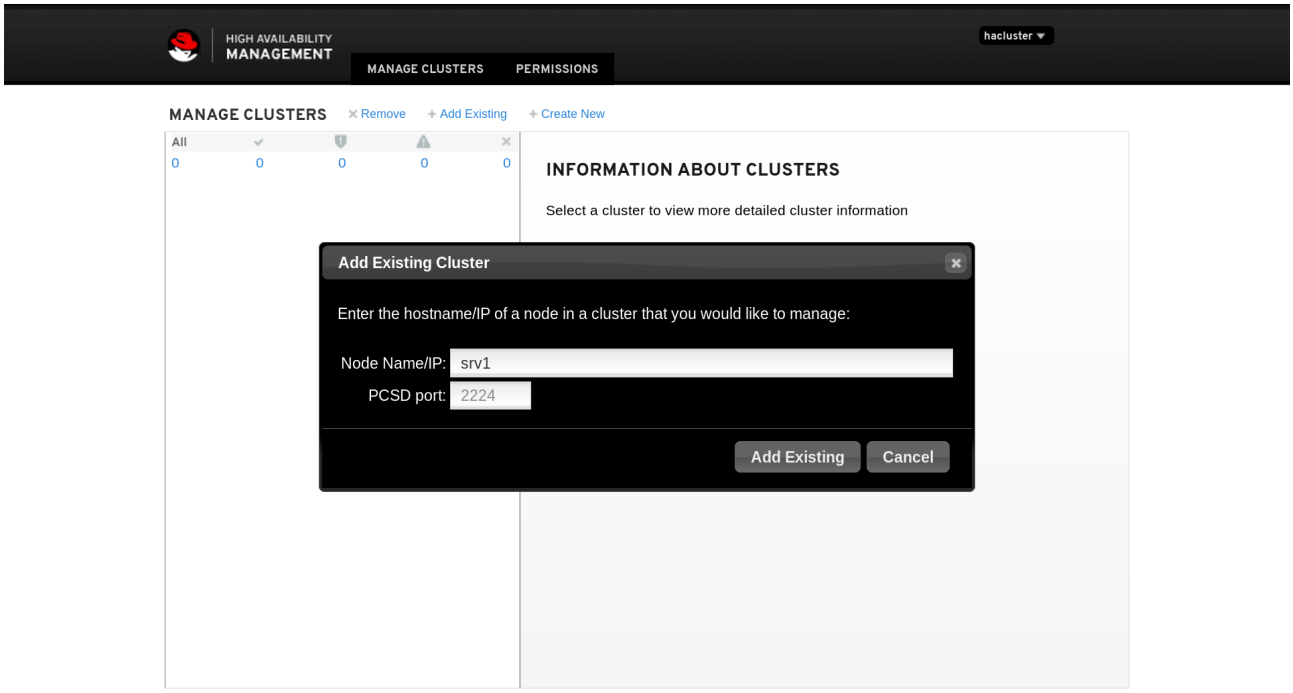
```
Online: [ srv1.enermol.lan srv2.enermol.lan ]

No resources


Daemon Status:
  corosync: active/enabled
  pacemaker: active/enabled
  pcsd: active/enabled

[root@srv1 ~]# corosync-cfgtool -s
Printing link status.
Local node ID 1
LINK ID 0
      addr  = 192.168.10.151
      status:
            nodeid  1:  link enabled:1    link connected:1
            nodeid  2:  link enabled:1    link connected:1

[root@srv2 ~]# corosync-cfgtool -s
Printing link status.
Local node ID 2
LINK ID 0
      addr  = 192.168.10.152
      status:
            nodeid  1:  link enabled:1    link connected:1
            nodeid  2:  link enabled:1    link connected:1

[root@srv1 ~]# corosync-cmapctl | grep members
runtime.members.1.config_version (u64) = 0
runtime.members.1.ip (str) = r(0) ip(192.168.10.151)
runtime.members.1.join_count (u32) = 1
runtime.members.1.status (str) = joined
runtime.members.2.config_version (u64) = 0
runtime.members.2.ip (str) = r(0) ip(192.168.10.152)
runtime.members.2.join_count (u32) = 1
runtime.members.2.status (str) = joined

[root@srv1 ~]# journalctl| grep error
Mar 22 09:03:50 srv1.enermol.lan dracut[6694]: lrwxrwxrwx   1 root     root
22 Jan  3 18:12 usr/lib64/libgpg-error.so.0 -> libgpg-error.so.0.24.2
Mar 22 09:03:50 srv1.enermol.lan dracut[6694]: -rwxr-xr-x   1 root     root
145984 May 11  2019 usr/lib64/libgpg-error.so.0.24.2
Mar 22 10:05:41 srv1.enermol.lan pacemaker-schedulerd[5686]: error: Resource
start-up disabled since no STONITH resources have been defined
Mar 22 10:05:41 srv1.enermol.lan pacemaker-schedulerd[5686]: error: Either
configure some or disable STONITH with the stonith-enabled option
Mar 22 10:05:41 srv1.enermol.lan pacemaker-schedulerd[5686]: error: NOTE:
Clusters with shared data need STONITH to ensure data integrity
Mar 22 10:05:41 srv1.enermol.lan pacemaker-schedulerd[5686]: notice:
Configuration errors found during scheduler processing,  please run "crm_verify
-L" to identify issues

[root@srv1 ~]# crm_verify -L -V
(unpack_resources)      error: Resource start-up disabled since no STONITH
resources have been defined
(unpack_resources)      error: Either configure some or disable STONITH with the
stonith-enabled option
```

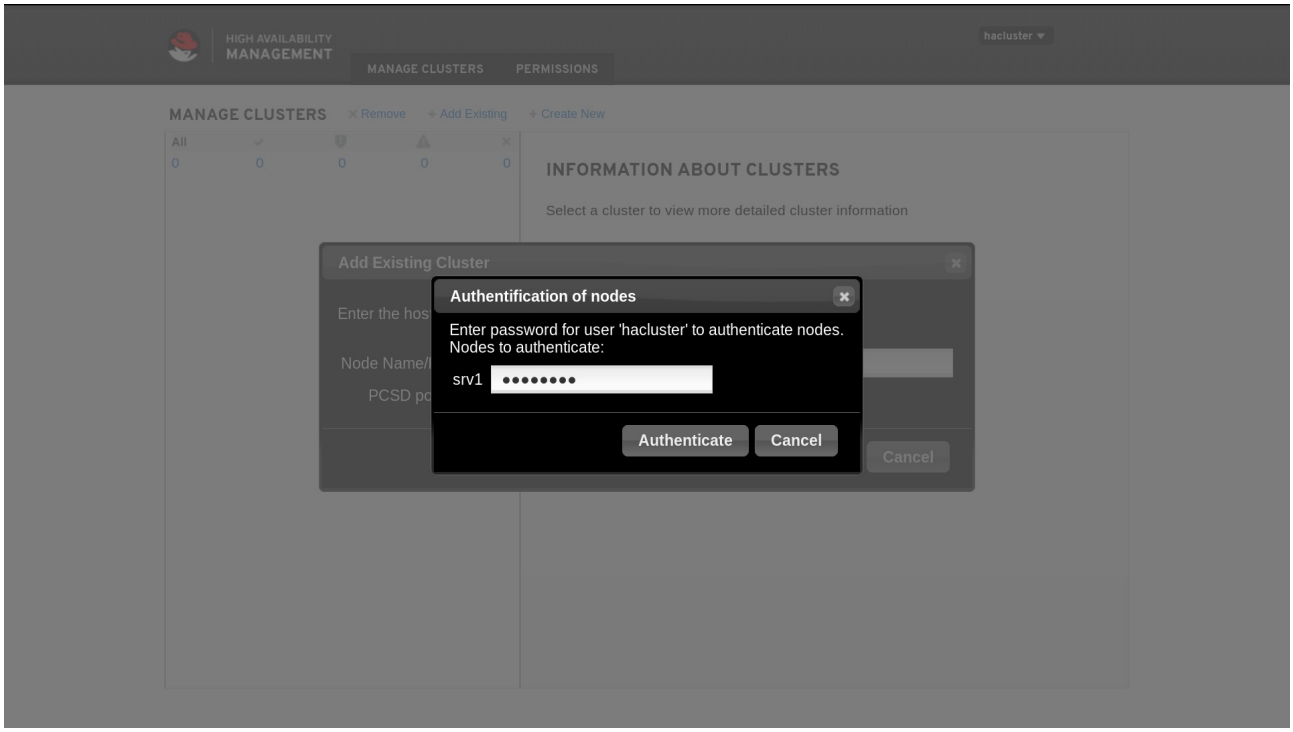
```
(unpack_resources)      error: NOTE: Clusters with shared data need STONITH to
ensure data integrity
Errors found during check: config not valid

[root@srv1 ~]#  pcs status corosync

Membership information
----------------------
    Nodeid      Votes Name
         1          1 srv1.enermol.lan (local)
         2          1 srv2.enermol.lan

[root@srv2 ~]# pcs status corosync

Membership information
----------------------
    Nodeid      Votes Name
         1          1 srv1.enermol.lan
         2          1 srv2.enermol.lan (local)

[root@srv1 ~]# pcs property set stonith-enabled=false
[root@srv1 ~]# crm_verify -L -V

[root@srv1 ~]# corosync-quorumtool
Quorum information
------------------
Date:             Thu Oct 18 18:16:56 2018
Quorum provider:  corosync_votequorum
Nodes:            2
Node ID:          1
Ring ID:          1/20
Quorate:          Yes

Votequorum information
----------------------
Expected votes:   2
Highest expected: 2
Total votes:      2
Quorum:           1
Flags:            2Node Quorate WaitForAll

Membership information
----------------------
    Nodeid      Votes Name
         1          1 srv1 (local)
         2          1 srv2

[root@srv1 ~]# pcs quorum status
Quorum information
------------------
Date:             Sun Mar 22 10:19:21 2020
Quorum provider:  corosync_votequorum
Nodes:            2
Node ID:          1
Ring ID:          1/8
Quorate:          Yes

Votequorum information
```

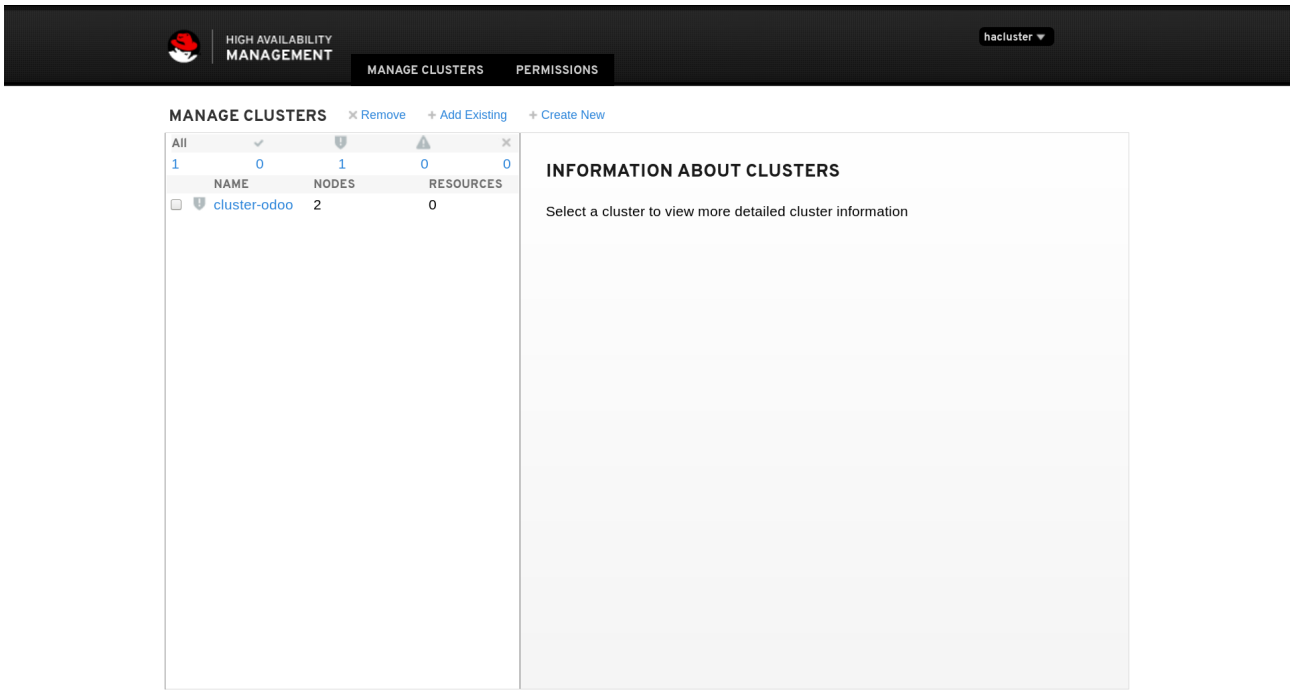
```
----------------------
Expected votes:   2
Highest expected: 2
Total votes:      2
Quorum:           1
Flags:            2Node Quorate WaitForAll

Membership information
----------------------
    Nodeid      Votes    Qdevice Name
         1          1         NR srv1.enermol.lan (local)
         2          1         NR srv2.enermol.lan
```

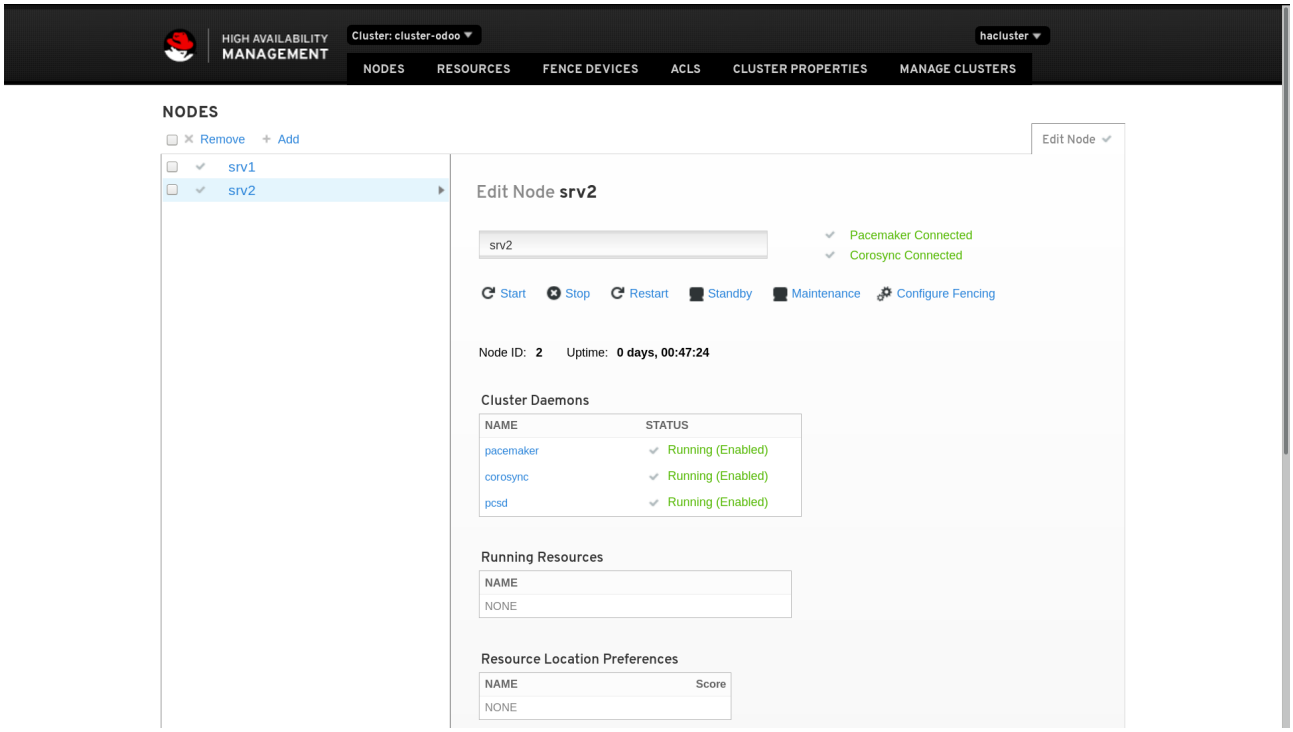
https://192.168.10.151:2224
https://192.168.10.152:2224




HIGH AVAILABILITY
MANAGEMENT
hacluster
MANAGE CLUSTERS
PERMISSIONS
MANAGE CLUSTERS
Remove
Add Existing
Create New
All
0 0 0 0 0
INFORMATION ABOUT CLUSTERS
Select a cluster to view more detailed cluster information
Add Existing Cluster
Enter the hostname/IP of a node in a cluster that you would like to manage:
Node Name/IP: srv1
PCSD port: 2224
Add Existing
Cancel


HIGH AVAILABILITY
MANAGEMENT
hacluster
MANAGE CLUSTERS
PERMISSIONS
MANAGE CLUSTERS
Remove
Add Existing
Create New
INFORMATION ABOUT CLUSTERS
Select a cluster to view more detailed cluster information
Add Existing Cluster
Authentification of nodes
Enter password for user 'hacluster' to authenticate nodes.
Nodes to authenticate:
srv1
Authenticate
Cancel


HIGH AVAILABILITY
MANAGEMENT
hacluster
MANAGE CLUSTERS
PERMISSIONS
MANAGE CLUSTERS
Remove
Add Existing
Create New
All
1
0
1
0
0
NAME
NODES
RESOURCES
cluster-odoo
2
0
INFORMATION ABOUT CLUSTERS
Select a cluster to view more detailed cluster information


HIGH AVAILABILITY
MANAGEMENT
Cluster: cluster-odoo
hacluster
NODES
RESOURCES
FENCE DEVICES
ACLS
CLUSTER PROPERTIES
MANAGE CLUSTERS
NODES
Remove
Add
Edit Node
srv1
srv2
Edit Node srv2
srv2
Pacemaker Connected
Corosync Connected
Start
Stop
Restart
Standby
Maintenance
Configure Fencing
Node ID: 2
Uptime: 0 days, 00:47:24
Cluster Daemons
NAME
STATUS
pacemaker
Running (Enabled)
corosync
Running (Enabled)
pcsd
Running (Enabled)
Running Resources
NAME
NONE
Resource Location Preferences
NAME
Score
NONE

```
# netstat -lntp
Active Internet connections (only servers)
Proto Recv-Q Send-Q Local Address           Foreign Address         State
PID/Program name
tcp        0      0 0.0.0.0:5355            0.0.0.0:*               LISTEN
1382/systemd-resolv
tcp        0      0 0.0.0.0:111             0.0.0.0:*               LISTEN
1/systemd
tcp        0      0 0.0.0.0:2224            0.0.0.0:*               LISTEN
4131/platform-pytho
tcp        0      0 0.0.0.0:22              0.0.0.0:*               LISTEN
969/sshd
tcp6       0      0 :::5355                 :::*                    LISTEN
1382/systemd-resolv
tcp6       0      0 :::111                  :::*                    LISTEN
1/systemd
tcp6       0      0 :::2224                 :::*                    LISTEN
4131/platform-pytho
tcp6       0      0 :::22                   :::*                    LISTEN
969/sshd

# ss -nltp
State              Recv-Q              Send-Q
Local Address:Port                       Peer Address:Port
LISTEN             0                   128
0.0.0.0:5355                           0.0.0.0:*                  users:
(("systemd-resolve",pid=1382,fd=13))
LISTEN             0                   128
0.0.0.0:111                            0.0.0.0:*                  users:
(("systemd",pid=1,fd=28))
LISTEN             0                   128
0.0.0.0:2224                           0.0.0.0:*                  users:
(("pcsd",pid=4131,fd=6))
LISTEN             0                   128
0.0.0.0:22                             0.0.0.0:*                  users:
(("sshd",pid=969,fd=5))
LISTEN             0                   128
[::]:5355                              [::]:*                   users:
(("systemd-resolve",pid=1382,fd=15))
LISTEN             0                   128
[::]:111                               [::]:*                   users:
(("systemd",pid=1,fd=30))
LISTEN             0                   128
[::]:2224                              [::]:*                   users:
(("pcsd",pid=4131,fd=7))
LISTEN             0                   128
[::]:22                                [::]:*                   users:
(("sshd",pid=969,fd=7))

# firewall-cmd --list-services
cockpit dhcpv6-client high-availability ntp ssh
```

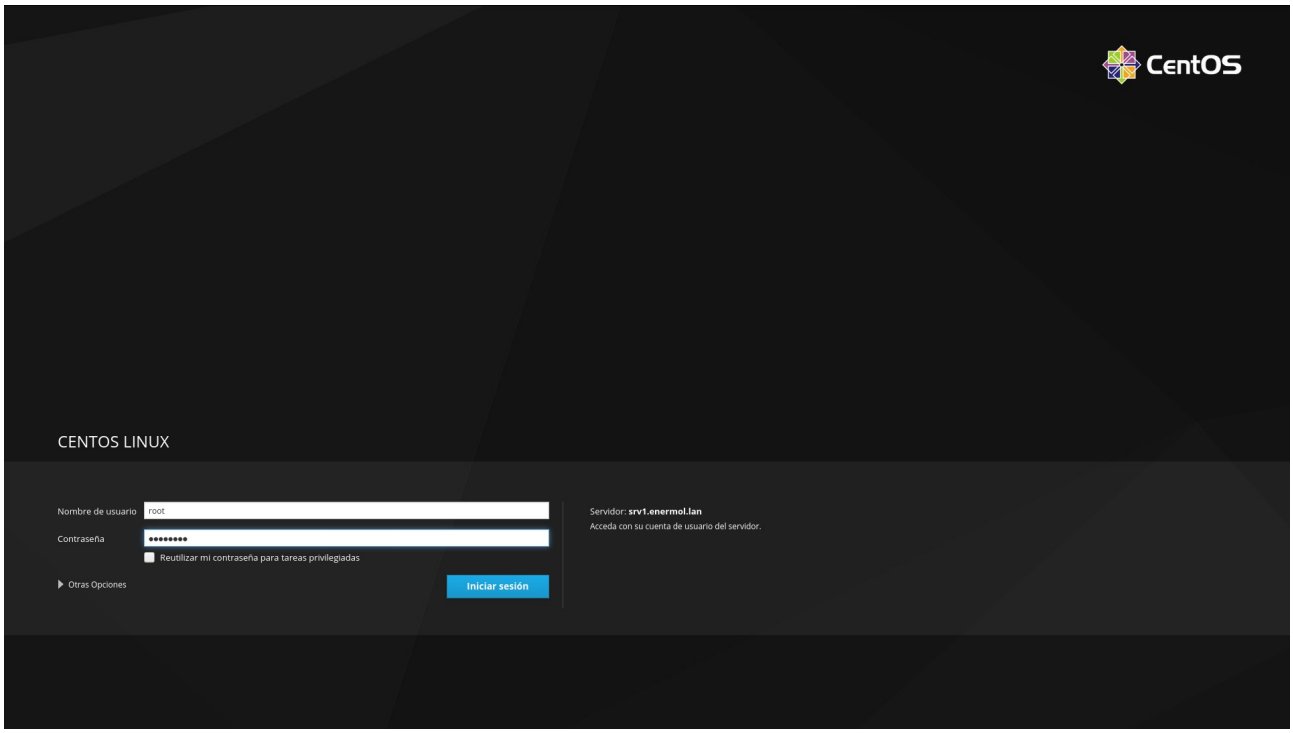
→ **Instalación de cockpit.**

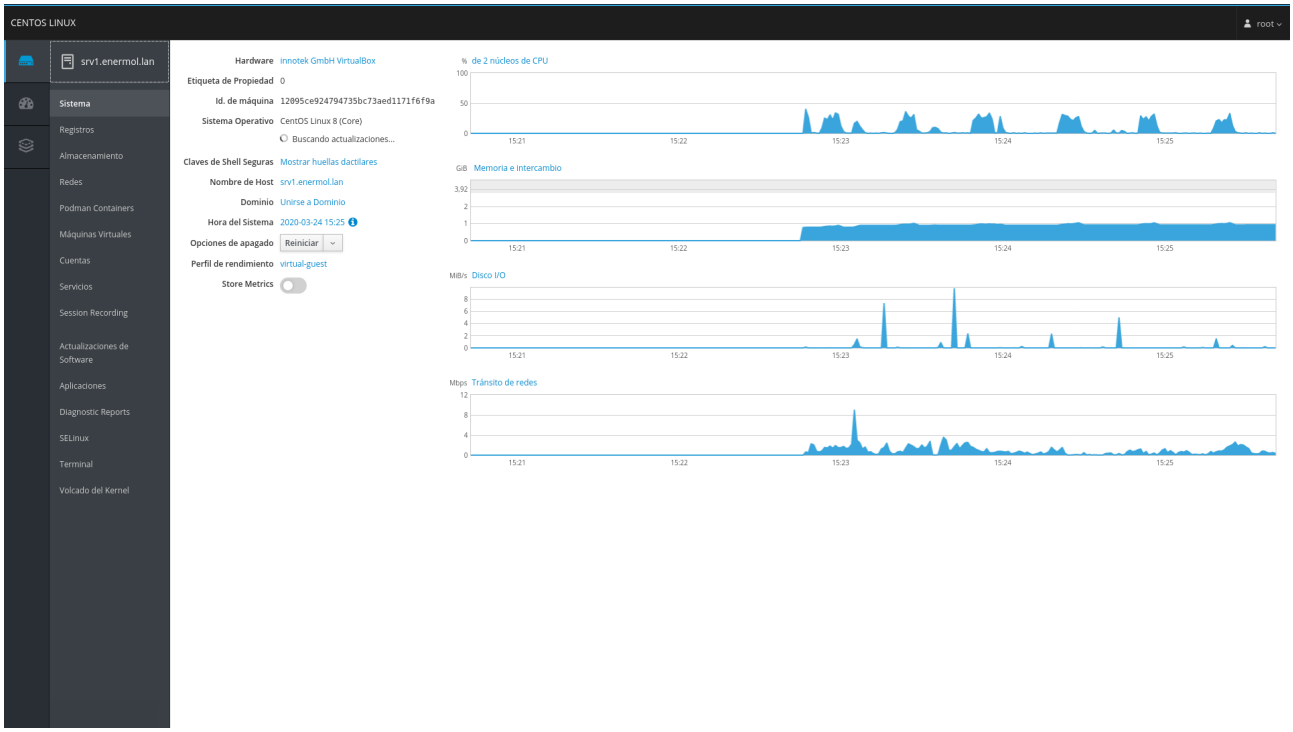
```
# firewall-cmd --permanent --add-port=9090/tcp
success
# firewall-cmd --reload
```

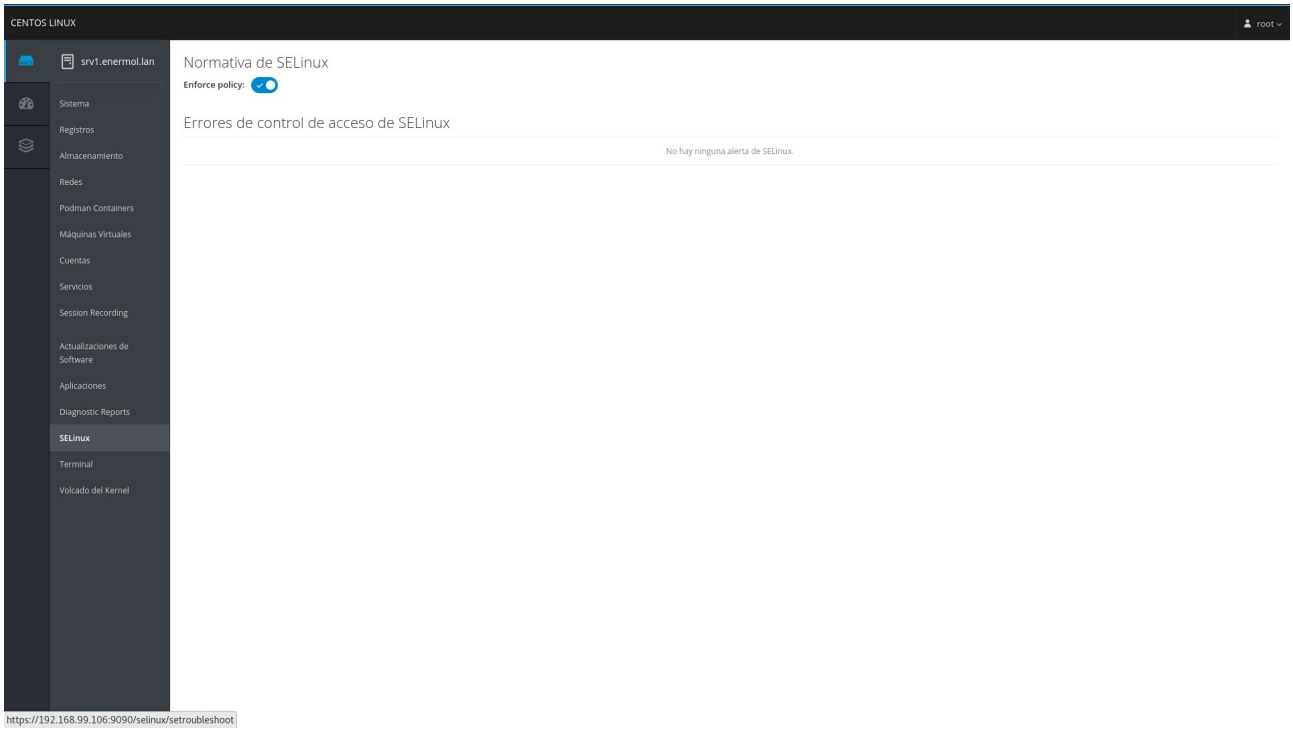
```
success
# firewall-cmd --list-ports
123/udp 9090/tcp

# firewall-cmd --list-services
cockpit dhcpv6-client high-availability ntp ssh

# dnf install cockpit* -y

# systemctl enable cockpit.socket --now
Created symlink /etc/systemd/system/sockets.target.wants/cockpit.socket →
/usr/lib/systemd/system/cockpit.socket.

# systemctl status cockpit.socket
● cockpit.socket - Cockpit Web Service Socket
   Loaded: loaded (/usr/lib/systemd/system/cockpit.socket; enabled; vendor
preset: disabled)
   Active: inactive (dead)
     Docs: man:cockpit-ws(8)
   Listen: [::]:9090 (Stream)

# netstat -nltp
Active Internet connections (only servers)
Proto Recv-Q Send-Q Local Address           Foreign Address         State
PID/Program name
tcp        0      0 0.0.0.0:5355            0.0.0.0:*               LISTEN
1382/systemd-resolv
tcp        0      0 0.0.0.0:111             0.0.0.0:*               LISTEN
1/systemd
tcp        0      0 0.0.0.0:2224            0.0.0.0:*               LISTEN
4131/platform-pytho
tcp        0      0 0.0.0.0:22              0.0.0.0:*               LISTEN
969/sshd
tcp6       0      0 :::5355                 :::*                    LISTEN
1382/systemd-resolv
tcp6       0      0 :::111                  :::*                    LISTEN
1/systemd
tcp6       0      0 :::2224                 :::*                    LISTEN
4131/platform-pytho
tcp6       0      0 :::22                   :::*                    LISTEN
969/sshd
tcp6       0      0 :::9090                 :::*                    LISTEN
1/systemd

# systemctl status firewalld.service
● firewalld.service - firewalld - dynamic firewall daemon
   Loaded: loaded (/usr/lib/systemd/system/firewalld.service; enabled; vendor
preset: enabled)
   Active: active (running) since Tue 2020-03-24 11:37:28 CET; 3h 52min ago
     Docs: man:firewalld(1)
 Main PID: 942 (firewalld)
    Tasks: 3 (limit: 17950)
   Memory: 41.4M
   CGroup: /system.slice/firewalld.service
           └─942 /usr/libexec/platform-python -s /usr/sbin/firewalld --nofork --
nopid

mar 24 11:37:16 srv1.enermol.lan systemd[1]: Starting firewalld - dynamic
```

```
firewall daemon...
mar 24 11:37:28 srv1.enermol.lan systemd[1]: Started firewalld - dynamic
firewall daemon.
mar 24 14:11:08 srv1.enermol.lan firewalld[942]: WARNING: ALREADY_ENABLED:
cockpit
```

https://192.168.10.151:9090/
https://192.168.10.152:9090/








```
[root@srv1 ~]# ip a
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group
default qlen 1000
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
    inet 127.0.0.1/8 scope host lo
       valid_lft forever preferred_lft forever
```

```
    inet6 ::1/128 scope host
       valid_lft forever preferred_lft forever
2: enp0s3: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc fq_codel state UP
group default qlen 1000
    link/ether 08:00:27:bc:e1:4c brd ff:ff:ff:ff:ff:ff
    inet 192.168.99.106/24 brd 192.168.99.255 scope global dynamic noprefixroute
enp0s3
       valid_lft 346sec preferred_lft 346sec
    inet6 fe80::ba90:c77a:eebc:fbb6/64 scope link noprefixroute
       valid_lft forever preferred_lft forever
3: enp0s8: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc fq_codel state UP
group default qlen 1000
    link/ether 08:00:27:f8:1f:e7 brd ff:ff:ff:ff:ff:ff
    inet 192.168.10.151/24 brd 192.168.10.255 scope global noprefixroute enp0s8
       valid_lft forever preferred_lft forever
    inet6 fe80::e7ff:d218:38ad:c237/64 scope link noprefixroute
       valid_lft forever preferred_lft forever
4: enp0s9: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc fq_codel state UP
group default qlen 1000
    link/ether 08:00:27:2f:45:6f brd ff:ff:ff:ff:ff:ff
    inet 192.168.10.161/24 brd 192.168.10.255 scope global noprefixroute enp0s9
       valid_lft forever preferred_lft forever
    inet6 fe80::b5c0:7a48:7ab4:8c87/64 scope link noprefixroute
       valid_lft forever preferred_lft forever
5: enp0s10: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc fq_codel state UP
group default qlen 1000
    link/ether 08:00:27:39:01:3a brd ff:ff:ff:ff:ff:ff
    inet 10.0.5.15/24 brd 10.0.5.255 scope global dynamic noprefixroute enp0s10
       valid_lft 69674sec preferred_lft 69674sec
    inet6 fe80::5374:d5df:e304:7a25/64 scope link noprefixroute
       valid_lft forever preferred_lft forever
```

[root@srv1 ~]# pcs resource create pgsql-vip ocf:heartbeat:IPaddr2 nic="enp0s8" ip=192.168.10.150 cidr_netmask=24 op monitor interval=30s

(En realidad el interfaz 'enp0s8' no debería ser el candidato, puesto que ya esta ocupado en otra dirección. Habida cuenta que el modelo presentado se realiza de forma virtualizada y no se dispone de mas interfaces se utiliza el mismo para este propósito, pero teniendo en cuenta que el interfaz en 'modo real' debería ser independiente y único.)

[root@srv1 ~]# ip a

```
…
3: enp0s8: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc fq_codel state UP
group default qlen 1000
    link/ether 08:00:27:f8:1f:e7 brd ff:ff:ff:ff:ff:ff
    inet 192.168.10.151/24 brd 192.168.10.255 scope global noprefixroute enp0s8
       valid_lft forever preferred_lft forever
    inet 192.168.10.150/24 brd 192.168.10.255 scope global secondary enp0s8
       valid_lft forever preferred_lft forever
    inet6 fe80::e7ff:d218:38ad:c237/64 scope link noprefixroute
       valid_lft forever preferred_lft forever
…
```

```
[root@srv1 ~]# pcs status
Cluster name: cluster-odoo
Stack: corosync
```

```
Current DC: srv2.enermol.lan (version 2.0.2-3.el8_1.2-744a30d655) - partition
with quorum
Last updated: Tue Mar 24 16:20:52 2020
Last change: Tue Mar 24 16:18:26 2020 by root via cibadmin on srv1.enermol.lan

2 nodes configured
1 resource configured

Online: [ srv1.enermol.lan srv2.enermol.lan ]

Full list of resources:

 pgsql-vip  (ocf::heartbeat:IPaddr2):     Started srv1.enermol.lan

Daemon Status:
  corosync: active/enabled
  pacemaker: active/enabled
  pcsd: active/enabled
```

[root@srv1 ~]# pcs resource create pgsql-alt-vip ocf:heartbeat:IPaddr2 nic="enp0s9" ip=192.168.10.160 cidr_netmask=24 op monitor interval=30s

(En realidad y por la misma argumentación anterior el interfaz 'enp0s9' no debería ser el candidato, puesto que ya esta ocupado en otra dirección. Habida cuenta que el modelo presentado se realiza de forma virtualizada y no se dispone de mas interfaces se utiliza el mismo para este propósito, pero teniendo en cuenta que el interfaz en 'modo real' debería ser independiente y único.)

```
# pcs status
Cluster name: cluster-odoo
Stack: corosync
Current DC: srv1.enermol.lan (version 2.0.2-3.el8_1.2-744a30d655) - partition
with quorum
Last updated: Wed Mar 25 09:51:30 2020
Last change: Tue Mar 24 19:03:44 2020 by root via cibadmin on srv1.enermol.lan

2 nodes configured
2 resources configured

Online: [ srv1.enermol.lan srv2.enermol.lan ]

Full list of resources:

 pgsql-vip  (ocf::heartbeat:IPaddr2):     Started srv1.enermol.lan
 pgsql-alt-vip    (ocf::heartbeat:IPaddr2):     Started srv2.enermol.lan

Daemon Status:
  corosync: active/enabled
  pacemaker: active/enabled
  pcsd: active/enabled

# ping -c1 pgsql-vip
PING pgsql-vip.enermol.lan (192.168.10.150) 56(84) bytes of data.
64 bytes from pgsql-vip.enermol.lan (192.168.10.150): icmp_seq=1 ttl=64
time=0.069 ms

--- pgsql-vip.enermol.lan ping statistics ---
1 packets transmitted, 1 received, 0% packet loss, time 0ms
```

```
rtt min/avg/max/mdev = 0.069/0.069/0.069/0.000 ms

[root@srv1 ~]# ping -c1 pgsql-alt-vip
PING pgsql-alt-vip.enermol.lan (192.168.10.160) 56(84) bytes of data.
64 bytes from pgsql-alt-vip.enermol.lan (192.168.10.160): icmp_seq=1 ttl=64
time=0.765 ms

--- pgsql-alt-vip.enermol.lan ping statistics ---
1 packets transmitted, 1 received, 0% packet loss, time 0ms
rtt min/avg/max/mdev = 0.765/0.765/0.765/0.000 ms
```

[root@srv1 ~]# pcs resource defaults migration-threshold=5
Warning: Defaults do not apply to resources which override them with their own defined values
[root@srv1 ~]# pcs resource defaults resource-stickiness=10
Warning: Defaults do not apply to resources which override them with their own defined values
[root@srv2 ~]# pcs resource defaults failure-timeout=60
Warning: Defaults do not apply to resources which override them with their own defined values

. `resource-stickiness`: adds a sticky score for the resource on its current node. It helps avoiding a resource move back and forth between nodes where it has the same score.

. `migration-threshold`: this controls how many time the cluster tries to recover a resource on the same node before moving it on another one.

. `failure-timeout` is measured since the most recent failure. That is, older failures do not individually time out and lower the fail count. Instead, all failures are timed out simultaneously (and the fail count is reset to 0) if there is no new failure for the timeout period.

```
[root@srv1 ~]# pcs resource defaults
resource-stickiness=100
migration-threshold=5

[root@srv1 ~]# pcs status
Cluster name: cluster-odoo
Stack: corosync
Current DC: srv2.enermol.lan (version 2.0.2-3.el8_1.2-744a30d655) - partition
with quorum
Last updated: Tue Mar 24 17:43:02 2020
Last change: Tue Mar 24 17:42:28 2020 by root via cibadmin on srv1.enermol.lan

2 nodes configured
2 resources configured

Online: [ srv1.enermol.lan srv2.enermol.lan ]

Full list of resources:

 pgsql-vip  (ocf::heartbeat:IPaddr2):     Started srv1.enermol.lan
 pgsql-alt-vip    (ocf::heartbeat:IPaddr2):     Started srv2.enermol.lan

Daemon Status:
  corosync: active/enabled
  pacemaker: active/enabled
  pcsd: active/enabled
```

→ Pruebas de HA cruzadas.

```
# pcs node standby srv{1,2}.enermol.lan
# pcs status
Cluster name: cluster-odoo
Stack: corosync
Current DC: srv2.enermol.lan (version 2.0.2-3.el8_1.2-744a30d655) - partition
with quorum
Last updated: Tue Mar 24 17:55:48 2020
Last change: Tue Mar 24 17:55:45 2020 by root via cibadmin on srv1.enermol.lan

2 nodes configured
2 resources configured

Node srv1.enermol.lan: standby
Node srv2.enermol.lan: standby

Full list of resources:

 pgsql-vip  (ocf::heartbeat:IPaddr2):     Stopped
 pgsql-alt-vip    (ocf::heartbeat:IPaddr2):     Stopped

Daemon Status:
  corosync: active/enabled
  pacemaker: active/enabled
  pcsd: active/enabled

[root@srv1 ~]# pcs resource
 pgsql-vip  (ocf::heartbeat:IPaddr2):     Stopped
 pgsql-alt-vip    (ocf::heartbeat:IPaddr2):     Stopped

[root@srv1 ~]# pcs node unstandby srv1.enermol.lan
[root@srv1 ~]# pcs resource
 pgsql-vip  (ocf::heartbeat:IPaddr2):     Started srv1.enermol.lan
 pgsql-alt-vip    (ocf::heartbeat:IPaddr2):     Started srv1.enermol.lan

[root@srv1 ~]# pcs node unstandby srv2.enermol.lan
[root@srv1 ~]# pcs status
Cluster name: cluster-odoo
Stack: corosync
Current DC: srv1.enermol.lan (version 2.0.2-3.el8_1.2-744a30d655) - partition
with quorum
Last updated: Wed Mar 25 10:04:36 2020
Last change: Wed Mar 25 10:04:30 2020 by root via cibadmin on srv1.enermol.lan

2 nodes configured
2 resources configured

Online: [ srv1.enermol.lan srv2.enermol.lan ]

Full list of resources:

 pgsql-vip  (ocf::heartbeat:IPaddr2):     Started srv1.enermol.lan
 pgsql-alt-vip    (ocf::heartbeat:IPaddr2):     Started srv1.enermol.lan

Daemon Status:
  corosync: active/enabled
  pacemaker: active/enabled
```

```
  pcsd: active/enabled

[root@srv1 ~]# pcs resource move pgsql-vip srv2.enermol.lan
[root@srv1 ~]# pcs resource move pgsql-alt-vip srv2.enermol.lan
[root@srv1 ~]# pcs resource
 pgsql-vip  (ocf::heartbeat:IPaddr2):     Started srv2.enermol.lan
 pgsql-alt-vip    (ocf::heartbeat:IPaddr2):     Started srv2.enermol.lan

[root@srv1 ~]# pcs constraint location pgsql-vip prefers srv1.enermol.lan
[root@srv1 ~]# pcs constraint location
Location Constraints:
  Resource: pgsql-vip
    Enabled on:
      Node: srv1.enermol.lan (score:INFINITY)
```

→ **Instalar pcp → Perfomance Co-Pilot.**

```
# dnf install pcp-zeroconf -y
# tree /var/log/pcp
/var/log/pcp
├── NOTICES
├── pmcd
│   ├── dm.log
│   ├── kvm.log
│   ├── kvm.log.prev
│   ├── linux.log
│   ├── linux.log.prev
│   ├── nfsclient.log
│   ├── pmcd.log
│   ├── proc.log
│   ├── proc.log.prev
│   ├── root.log
│   ├── root.log.prev
│   ├── xfs.log
│   └── xfs.log.prev
├── pmie
│   └── srv1.enermol.lan
│       └── pmie.log
├── pmlogger
│   ├── pmlogger_check.log
│   ├── pmlogger_check.log.prev
│   ├── pmlogger_daily-K.log
│   └── srv1.enermol.lan
│       ├── 20200805.05.31.0
│       ├── 20200805.05.31.index
│       ├── 20200805.05.31.meta
│       ├── Latest
│       └── pmlogger.log
└── pmproxy

[root@srv1 ~]# pcs cluster cib configuracion.xml

[root@srv1 ~]# pcs config backup configuración-clusterOdoo.txt
[root@srv1 ~]# ls configuración-clusterOdoo.txt.tar.bz2
configuración-clusterOdoo.txt.tar.bz2
```

REFERENCIAS:

https://www.systutorials.com/docs/linux/man/5-votequorum/

https://www.server-world.info/en/note?os=CentOS_8&p=pacemaker&f=1

https://access.redhat.com/documentation/en-us/red_hat_enterprise_linux/8/html-single/configuring_and_managing_high_availability_clusters/index