

**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.

**\$ cat <<FIN > Vagrantfile**

```
Vagrant.configure(2) do |config|
  config.vm.define "srv1" do |srv|
    srv.vm.box = "centos/7"
    srv.vm.hostname = "srv1"
    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/7"
    srv.vm.hostname = "srv2"
    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
```

**# 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 pgsq1-vip
192.168.10.160 pgsq1-alt-vip
```

```
192.168.10.151 srv1
192.168.10.152 srv2
```

```
192.168.10.161 srv1-alt
192.168.10.162 srv2-alt
```

**FIN**

**# vim /etc/ssh/sshd\_config**

```
...
PermitRootLogin yes
PasswordAuthentication yes
...
```

**# systemctl restart sshd.service**

**# ssh-keygen**

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

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

```
# vim /etc/selinux/config
...
SELINUX=permissive
...
# setenforce 0

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

[https://access.redhat.com/documentation/en-us/red\\_hat\\_enterprise\\_linux/7/html/system\\_administrators\\_guide/sect-using\\_chrony](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 Pacemaker.

```
# firewall-cmd --permanent --add-service=high-availability
# firewall-cmd --reload
# firewall-cmd --list-services
ssh dhcpv6-client high-availability

# yum install pacemaker pcs psmisc policy-coreutils-python rng-tools -y

# systemctl enable --now pcsd.service

# passwd hacluster
```

```
[root@srv1 ~]# pcs cluster auth srv1 srv2 -u hacluster
Password:
srv2: Authorized
srv1: Authorized
```

```
[root@srv1 ~]# pcs cluster setup --name cluster-odoo srv1,srv1-alt srv2,srv2-alt
Destroying cluster on nodes: srv1, srv2...
srv1: Stopping Cluster (pacemaker)...
srv2: Stopping Cluster (pacemaker)...
srv1: Successfully destroyed cluster
srv2: Successfully destroyed cluster
```

```
Sending 'pacemaker_remote authkey' to 'srv1', 'srv2'
srv1: successful distribution of the file 'pacemaker_remote authkey'
srv2: successful distribution of the file 'pacemaker_remote authkey'
Sending cluster config files to the nodes...
```



```
srv1: Succeeded
srv2: Succeeded
```

Synchronizing pcsd certificates on nodes srv1, srv2...

```
srv2: Success
```

```
srv1: Success
```

Restarting pcsd on the nodes in order to reload the certificates...

```
srv2: Success
```

```
srv1: Success
```

```
[root@srv1 ~]# vim /etc/corosync/corosync.conf
```

```
totem {
    version: 2
    cluster_name: cluster-odoo
#    secauth: off
    crypto_cipher: aes256
    crypto_hash: sha512
    transport: udpu
}

nodelist {
    node {
        ring0_addr: srv1
        nodeid: 1
    }

    node {
        ring0_addr: srv2
        nodeid: 2
    }
}

quorum {
    provider: corosync_votequorum
    two_node: 1
}

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

```
[root@srv1 ~]# rsync -av /etc/corosync/corosync.conf srv2:/etc/corosync/
# yum install rng-tools -y
# systemctl enable --now rngd.service
```

```
[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
```

```
srv1: Starting Cluster...
```

```
srv2: Starting Cluster..
```

```
[root@srv1 ~]# pcs status
```

```
Cluster name: cluster-odoo
```

```
WARNING: no stonith devices and stonith-enabled is not false
```

```
Stack: corosync
```

```
Current DC: srv2 (version 1.1.18-11.el7_5.3-2b07d5c5a9) - partition with quorum
```

```
Last updated: Fri Nov 23 11:20:40 2018
```

```
Last change: Fri Nov 23 11:16:46 2018 by hacluster via crmd on srv2
```

```
2 nodes configured
```

```
0 resources configured
```

```
Online: [ srv1 srv2 ]
```

```
No resources
```

```
Daemon Status:
```

```
corosync: active/enabled
```

```
pacemaker: active/enabled
```

```
pcsd: active/enabled
```

```
[root@srv1 ~]# corosync-cfgtool -s
```

```
Printing ring status.
```

```
Local node ID 1
```

```
RING ID 0
```

```
id = 192.168.10.151
```

```
status = ring 0 active with no faults
```

```
[root@srv2 ~]# corosync-cfgtool -s
```

```
Printing ring status.
```

```
Local node ID 2
```

```
RING ID 0
```

```
id = 192.168.10.152
```

```
status = ring 0 active with no faults
```

```
[root@srv1 ~]# corosync-cmapctl | grep members
```

```
runtime.totem.pg.mrp.srp.members.1.config_version (u64) = 0
```

```
runtime.totem.pg.mrp.srp.members.1.ip (str) = r(0) ip(192.168.10.151)
```

```
runtime.totem.pg.mrp.srp.members.1.join_count (u32) = 1
```

```
runtime.totem.pg.mrp.srp.members.1.status (str) = joined
```

```
runtime.totem.pg.mrp.srp.members.2.config_version (u64) = 0
```

```
runtime.totem.pg.mrp.srp.members.2.ip (str) = r(0) ip(192.168.10.152)
```

```
runtime.totem.pg.mrp.srp.members.2.join_count (u32) = 1
```

```
runtime.totem.pg.mrp.srp.members.2.status (str) = joined
```

```
[root@srv1 ~]# journalctl | grep error
```

```
Oct 18 17:54:51 srv1 pengine[5141]: error: Resource start-up disabled since  
no STONITH resources have been defined
```

```
Oct 18 17:54:51 srv1 pengine[5141]: error: Either configure some or disable  
STONITH with the stonith-enabled option
```

```
Oct 18 17:54:51 srv1 pengine[5141]: error: NOTE: Clusters with shared data  
need STONITH to ensure data integrity
```

```
[root@srv1 ~]# crm_verify -L -V
error: unpack_resources: Resource start-up disabled since no STONITH
resources have been defined
error: unpack_resources: Either configure some or disable STONITH with the
stonith-enabled option
error: unpack_resources: NOTE: Clusters with shared data need STONITH to
ensure data integrity
Errors found during check: config not valid
```

```
[root@srv1 ~]# pcs property set stonith-enabled=false
[root@srv1 ~]# pcs property set no-quorum-policy=ignore
```

```
[root@srv1 ~]# pcs cluster stop --all
srv2: Stopping Cluster (pacemaker)...
srv1: Stopping Cluster (pacemaker)...
srv1: Stopping Cluster (corosync)...
srv2: Stopping Cluster (corosync)...
```

<sup>1</sup> Nota.

```
[root@srv1 ~]# pcs quorum update wait_for_all=1
Checking corosync is not running on nodes...
srv2: corosync is not running
srv1: corosync is not running
Sending updated corosync.conf to nodes...
srv1: Succeeded
srv2: Succeeded
```

```
[root@srv1 ~]# pcs quorum
Options:
  wait_for_all: 1
[root@srv1 ~]# pcs cluster start --all
srv2: Starting Cluster...
srv1: Starting Cluster...
```

```
[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)
```

<sup>1</sup> Para un cluster de 2 nodos recomendable un valor para **wait\_for\_all=0**. Es suficiente un **expected votes** de valor **1**.



2 1 srv2

```
[root@srv1 ~]# pcs quorum status
```

Quorum information

```
-----  
Date: Thu Oct 18 18:18:50 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
```

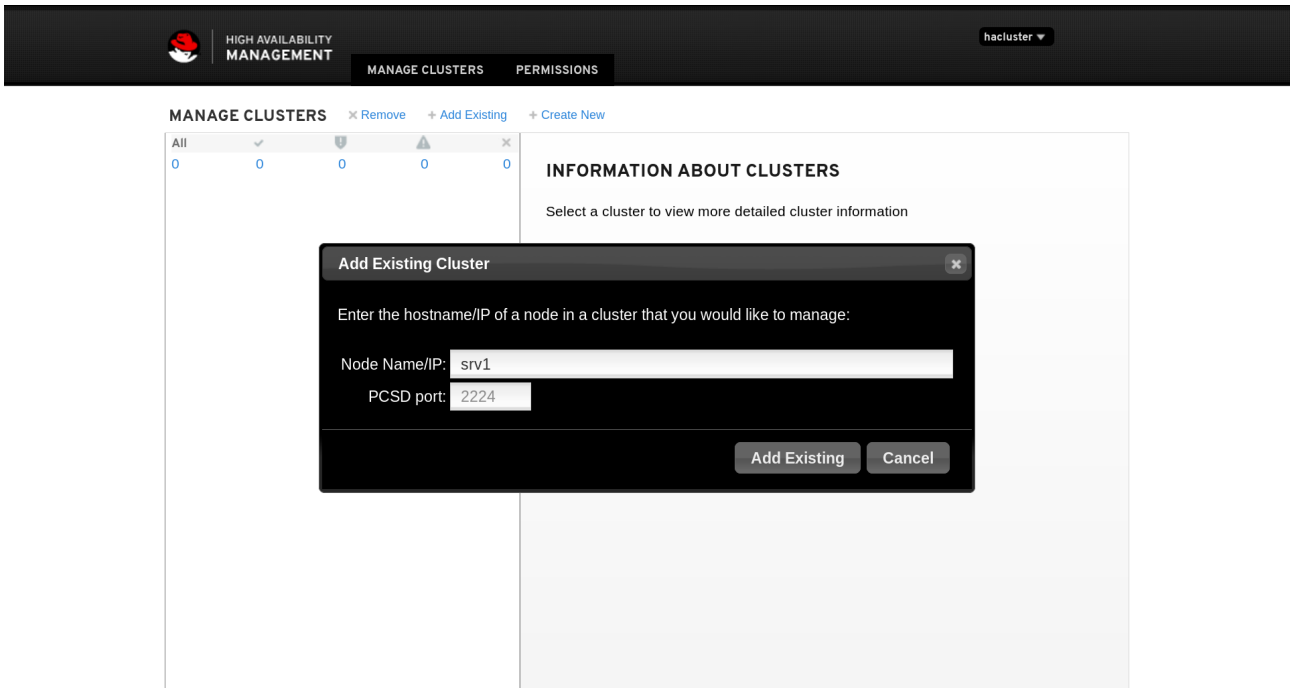
Membership information

```
-----  
Nodeid Votes Qdevice Name  
1 1 NR srv1 (local)  
2 1 NR srv2
```

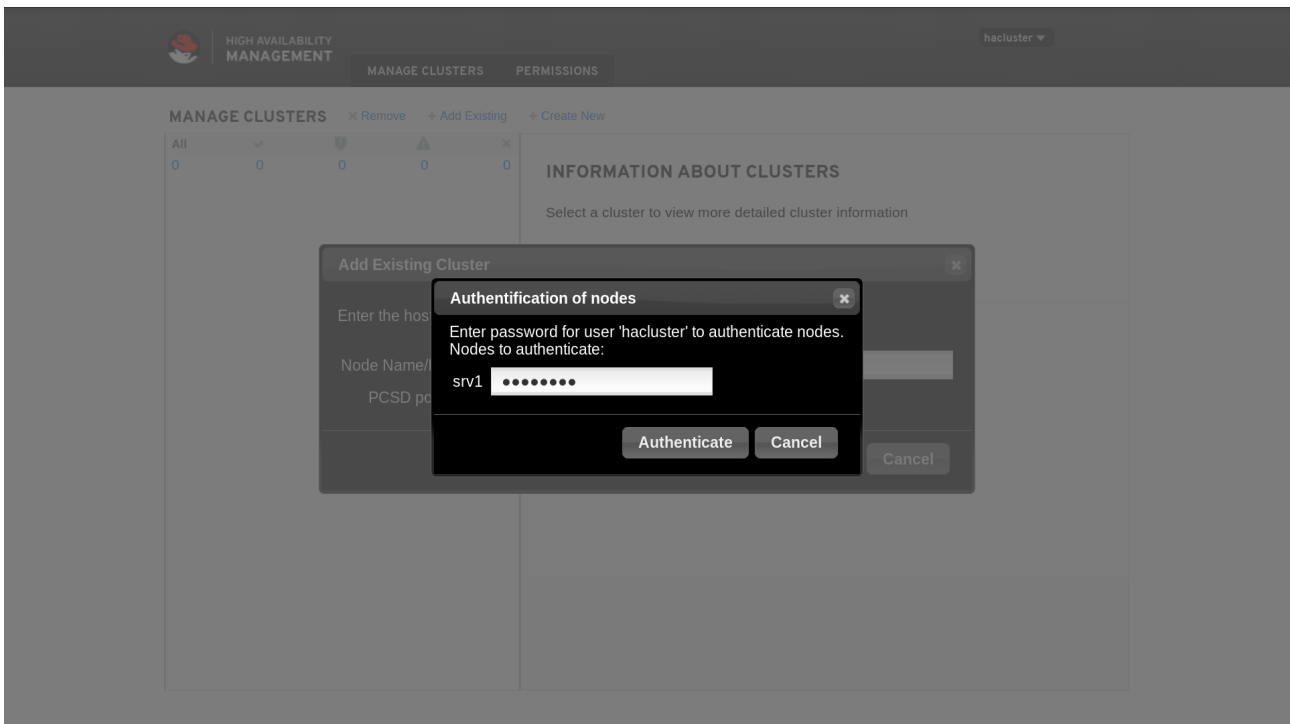
```
# pcs cluster enable
```

<https://192.168.10.151:2224>

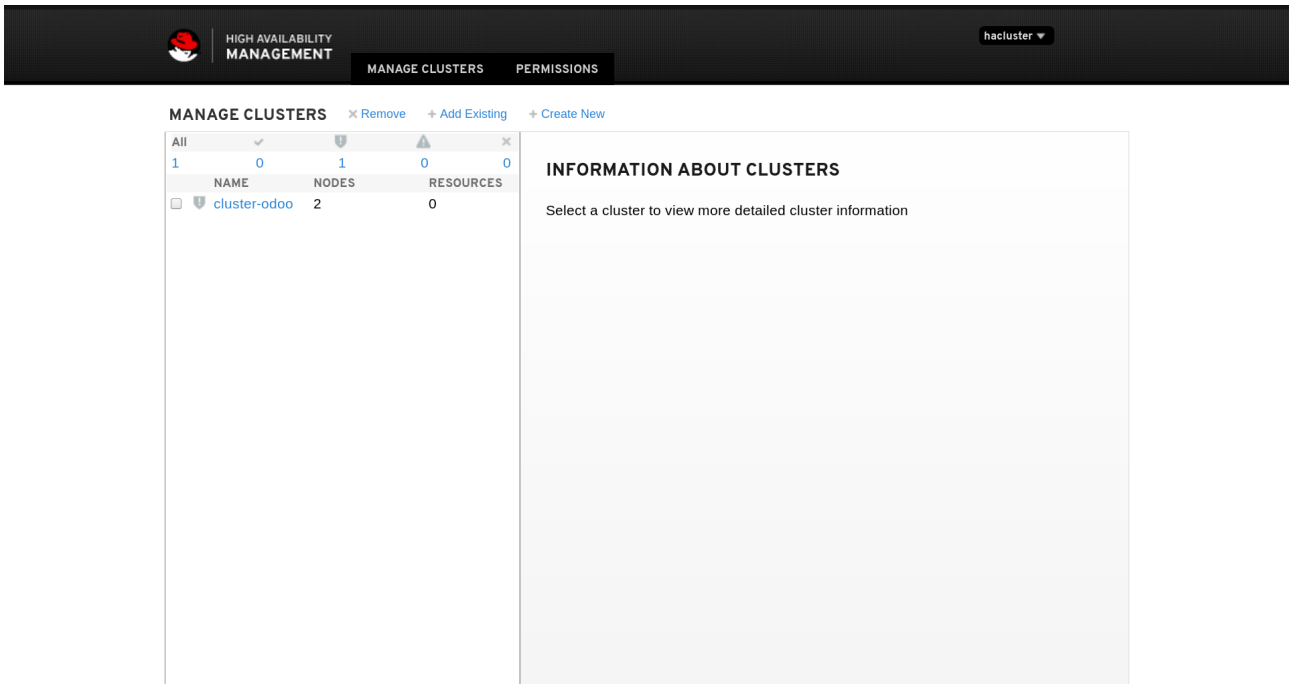
Username:   
Password:



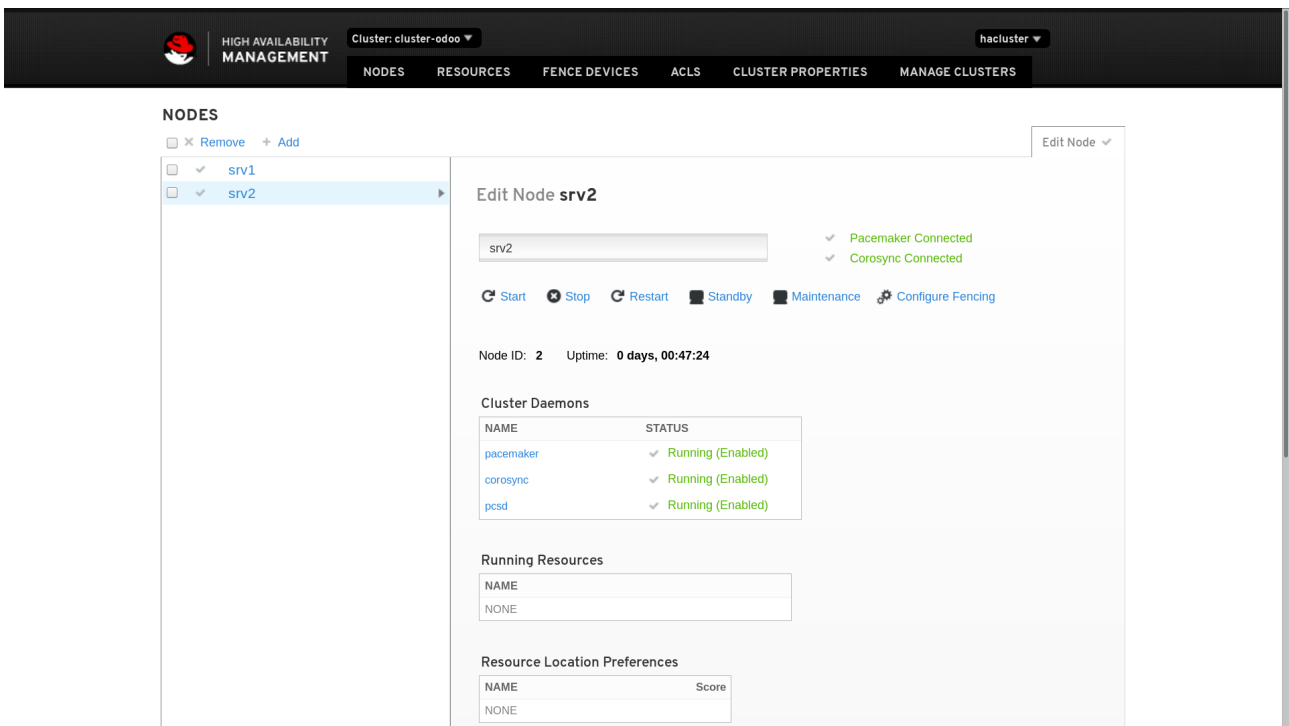
The screenshot shows the 'HIGH AVAILABILITY MANAGEMENT' interface. The top navigation bar includes 'MANAGE CLUSTERS' and 'PERMISSIONS'. The main content area is titled 'MANAGE CLUSTERS' and contains a table with columns for cluster status and a section titled 'INFORMATION ABOUT CLUSTERS'. A modal dialog box titled 'Add Existing Cluster' is open, prompting the user to enter the hostname/IP of a node. The 'Node Name/IP:' field contains 'srv1' and the 'PCSD port:' field contains '2224'. The dialog has 'Add Existing' and 'Cancel' buttons.



This screenshot shows the same interface as above, but with an additional modal dialog box titled 'Authentication of nodes' overlaid on the 'Add Existing Cluster' dialog. The 'Authentication of nodes' dialog prompts the user to enter a password for the user 'hacluster' to authenticate nodes. The 'Nodes to authenticate:' field contains 'srv1' and a password field with masked characters. The dialog has 'Authenticate' and 'Cancel' buttons.



High Availability Management interface showing the 'MANAGE CLUSTERS' view. The interface includes a header with the Pacemaker logo and 'HIGH AVAILABILITY MANAGEMENT' text. Below the header are tabs for 'MANAGE CLUSTERS' and 'PERMISSIONS'. The main content area is split into two panels. The left panel, titled 'MANAGE CLUSTERS', contains a table with columns for 'NAME', 'NODES', and 'RESOURCES'. It lists one cluster named 'cluster-odoo' with 2 nodes and 0 resources. The right panel, titled 'INFORMATION ABOUT CLUSTERS', contains the text 'Select a cluster to view more detailed cluster information'.



High Availability Management interface showing the 'NODES' view for a specific cluster. The interface includes a header with the Pacemaker logo and 'HIGH AVAILABILITY MANAGEMENT' text. Below the header are tabs for 'NODES', 'RESOURCES', 'FENCE DEVICES', 'ACLS', 'CLUSTER PROPERTIES', and 'MANAGE CLUSTERS'. The main content area is split into two panels. The left panel, titled 'NODES', contains a list of nodes: 'srv1' and 'srv2'. The right panel, titled 'Edit Node srv2', contains a form for editing the node. It includes a text input field for the node name (set to 'srv2'), status indicators for 'Pacemaker Connected' and 'Corosync Connected', and buttons for 'Start', 'Stop', 'Restart', 'Standby', 'Maintenance', and 'Configure Fencing'. Below these are sections for 'Cluster Daemons', 'Running Resources', and 'Resource Location Preferences'.



```
[root@srv1 ~]# pcs resource create pgsq1-vip ocf:heartbeat:IPaddr2 nic="eth1"
ip=192.168.10.150 cidr_netmask=24 op monitor interval=30s
[root@srv1 ~]# pcs resource create pgsq1-alt-vip ocf:heartbeat:IPaddr2
nic="eth2" ip=192.168.10.160 cidr_netmask=24 op monitor interval=30s
```

```
[root@srv1 ~]# pcs resource defaults resource-stickiness=100
Warning: Defaults do not apply to resources which override them with their own
defined values
[root@srv1 ~]# pcs resource defaults
resource-stickiness: 100
```

```
[root@srv1 ~]# pcs status
Cluster name: cluster-odoo
Stack: corosync
Current DC: srv1 (version 1.1.19-8.el7_6.1-c3c624ea3d) - partition with quorum
Last updated: Tue Dec 18 10:05:44 2018
Last change: Tue Dec 18 09:56:01 2018 by root via cibadmin on srv1
```

```
2 nodes configured
2 resources configured
```

```
Online: [ srv1 srv2 ]
```

```
Full list of resources:
```

```
pgsq1-vip (ocf::heartbeat:IPaddr2): Started srv1
pgsq1-alt-vip (ocf::heartbeat:IPaddr2): Started srv2
```

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

```
[root@srv1 ~]# pcs node standby srv1
[root@srv1 ~]# pcs resource
pgsq1-vip (ocf::heartbeat:IPaddr2): Started srv2
pgsq1-alt-vip (ocf::heartbeat:IPaddr2): Started srv2
[root@srv1 ~]# pcs node unstandby srv1
[root@srv1 ~]# pcs resource
pgsq1-vip (ocf::heartbeat:IPaddr2): Started srv2
pgsq1-alt-vip (ocf::heartbeat:IPaddr2): Started srv2
[root@srv1 ~]# pcs resource move pgsq1-vip srv1
[root@srv1 ~]# pcs resource move pgsq1-alt-vip srv1
[root@srv1 ~]# pcs resource
pgsq1-vip (ocf::heartbeat:IPaddr2): Started srv1
pgsq1-alt-vip (ocf::heartbeat:IPaddr2): Started srv1
```

**REFERENCIAS:**

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

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