

**↳ 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'.
```

**→ Situación inicial → /etc/hosts :**

```
#127.0.0.1srv1srv1  
#127.0.0.1 localhost localhost.localdomain localhost4 localhost4.localdomain4  
#::1 localhost localhost.localdomain localhost6 localhost6.localdomain6  
  
192.168.10.150 pgsq1-vip.enermol.lan pgsq1-vip  
192.168.10.160 pgsq1-alt-vip.enermol.lan pgsq1-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  
  
192.168.10.159 ilo-srv1.enermol.lan ilo-srv1  
192.168.10.169 ilo-srv2.enermol.lan ilo-srv2
```

**→ Situación inicial → /dev/sdb :**

```
# lsblk  
NAME MAJ:MIN RM SIZE RO TYPE MOUNTPOINT  
sda 8:0 0 40G 0 disk  
└─sda1 8:1 0 40G 0 part /  
sdb 8:16 0 40G 0 disk
```

**→ Paqueteria previa.**

```
# yum install lvm2-lockd -y  
# yum install gcc gcc-c++ make automake autoconf help2man libxslt libxslt-devel  
flex rpm-build kernel-devel -y
```

**→ DRBD (Linbit).**

```
# rpm --import https://www.elrepo.org/RPM-GPG-KEY-elrepo.org  
# yum install https://www.elrepo.org/elrepo-release-7.0-3.el7.elrepo.noarch.rpm  
-y  
# yum update -y  
  
# yum install drbd90-utils kmod-drbd90.x86_64 policycoreutils-python -y  
  
# firewall-cmd --permanent --add-port=6996-7800/tcp  
# firewall-cmd --reload  
  
[root@srv1 ~]# firewall-cmd --permanent --add-rich-rule='rule family="ipv4"  
source address="192.168.10.161" port port="7789" protocol="tcp" accept'  
  
[root@srv2 ~]# firewall-cmd --permanent --add-rich-rule='rule family="ipv4"  
source address="192.168.10.151" port port="7789" protocol="tcp" accept'  
  
# firewall-cmd --reload  
  
# modprobe drbd  
# lsmod |grep drbd
```

```
drbd                541356  0
libcrc32c           12644   3 xfs,drbd,nf_nat,nf_contrack
```

```
# echo drbd > /etc/modules-load.d/drbd.conf
```

→ [DRBD → drbdmanage.](#)

```
# yum install wget pygobject2 -y
# wget http://www.linbit.com/downloads/drbdmanage/drbdmanage-0.99.18.tar.gz
# tar -xvzf drbdmanage-0.99.18.tar.gz -C /opt/
# cd /opt/drbdmanage-0.99.18/
# ./setup.py build
# ./setup.py install
# cd
# rm drbdmanage-0.99.18.tar.gz
```

```
# drbdmanage ping
pong → Respuesta OK.
```

→ [Creación de los Blocks Devices:](#)

(Crear partición de replica previamente con 'fdisk /dev/sdb' → /dev/sdb1 )

```
# pvcreate /dev/sdb1
# vgcreate drbdpool /dev/sdb1 1 Nota.
```

```
# systemctl start drbd.service // No debe ser 'enable' si lo administra el cluster → pacemaker //
```

```
# cat /etc/drbdmanaged.cfg
[LOCAL]
# Allowed options (with their default value)
# loglevel = INFO
# colors = yes
# utf8 = no
# extend-path = /sbin:/usr/sbin:/bin:/usr/bin
# drbdctrl-vg = drbdpool
# drbd-conf-path = /var/lib/drbd.d
# ctrl-volume-access-mode = # no default value, determined by server, can be
forced to "controlnode" or "satellite"
```

```
[root@srv1 ~]# drbdmanage init 192.168.10.151
```

You are going to initialize a new drbdmanage cluster.

CAUTION! Note that:

- \* Any previous drbdmanage cluster information may be removed
- \* Any remaining resources managed by a previous drbdmanage installation that still exist on this system will no longer be managed by drbdmanage

Confirm:

```
yes/no: yes
Empty drbdmanage control volume initialized on '/dev/drbd0'.
Empty drbdmanage control volume initialized on '/dev/drbd1'.
Waiting for server: .
Operation completed successfully
```

```
[root@srv1 ~]# lsblk
NAME                                MAJ:MIN RM SIZE RO TYPE MOUNTPOINT
```

**1** **Recomendable el nombre estandar → 'drbdpool'.**



```
sda                8:0    0 40G 0 disk
└─sda1             8:1    0 40G 0 part /
sdb                8:16   0 40G 0 disk
├─drbdpool-.drbdctrl_0 253:0  0  4M 0 lvm
│ └─drbd0          147:0  0  4M 0 disk
└─drbdpool-.drbdctrl_1 253:1  0  4M 0 lvm
  └─drbd1          147:1  0  4M 0 disk
```

```
[root@srv1 ~]# drbdmanage list-nodes
```

```
+-----+
| Name | Pool Size | Pool Free |                               | State |
+-----+-----+-----+-----+-----+
| srv1 |    40956 |    40956 |                               |   ok |
+-----+-----+-----+-----+-----+
```

```
[root@srv1 ~]# drbdmanage add-node srv2.enermol.lan 192.168.10.152
```

```
Operation completed successfully
Operation completed successfully
```

Executing join command using ssh.

IMPORTANT: The output you see comes from srv2

IMPORTANT: Your input is executed on srv2

You are going to join an existing drbdmanage cluster.

CAUTION! Note that:

- \* Any previous drbdmanage cluster information may be removed
- \* Any remaining resources managed by a previous drbdmanage installation that still exist on this system will no longer be managed by drbdmanage

Confirm:

yes/no: yes

Waiting for server to start up (can take up to 1 min)

Operation completed successfully

Give leader time to contact the new node

Operation completed successfully

Operation completed successfully

```
# drbdmanage list-nodes
```

```
+-----+
| Name | Pool Size | Pool Free |                               | State |
+-----+-----+-----+-----+-----+
| srv1 |    40956 |    40948 |                               |   ok |
| srv2 |    40956 |    40948 |                               |   ok |
+-----+-----+-----+-----+-----+
```

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

```
.drbdctrl role:Primary
volume:0 disk:UpToDate
volume:1 disk:UpToDate
srv2 role:Secondary
volume:0 peer-disk:UpToDate
volume:1 peer-disk:UpToDate
```

```
[root@srv1 ~]# drbdmanage add-resource pgsqL
```

```
[root@srv1 ~]# drbdmanage add-resource odoo
```

```
# drbdmanage list-resources
```

```
+-----+
```

| Name  | State |
|-------|-------|
| odoo  | ok    |
| pgsql | ok    |

```
[root@srv1 ~]# drbdmanage add-volume pgsql 15G
[root@srv1 ~]# drbdmanage add-volume odoo 15G
[root@srv1 ~]# drbdmanage list-volumes
```

| Name  | Vol ID | Size   | Minor | State |
|-------|--------|--------|-------|-------|
| odoo  | 0      | 15 GiB | 101   | ok    |
| pgsql | 0      | 15 GiB | 100   | ok    |

(Desplegamos los recursos en 2 nodos).

```
[root@srv1 ~]# drbdmanage deploy-resource pgsql 2
[root@srv1 ~]# drbdmanage deploy-resource odoo 2
# drbdmanage list-resources
```

| Name  | State |
|-------|-------|
| odoo  | ok    |
| pgsql | ok    |

```
[root@srv1 ~]# drbdadm status 2 Nota.
```

```
.drbdctrl role:Primary
volume:0 disk:UpToDate
volume:1 disk:UpToDate
srv2 role:Secondary
volume:0 peer-disk:UpToDate
volume:1 peer-disk:UpToDate
```

```
odoo role:Secondary
disk:UpToDate
srv2 role:Secondary
replication:SyncSource peer-disk:Inconsistent done:3.52
```

```
pgsql role:Secondary
disk:UpToDate
srv2 role:Secondary
replication:SyncSource peer-disk:Inconsistent done:5.72
```

```
[root@srv1 ~]# drbdadm status
.drbdctrl role:Primary
volume:0 disk:UpToDate
volume:1 disk:UpToDate
srv2 role:Secondary
volume:0 peer-disk:UpToDate
volume:1 peer-disk:UpToDate
```

```
odoo role:Secondary
disk:UpToDate
srv2 role:Secondary
peer-disk:UpToDate
```

**2 La sincronización se tomará su tiempo. Se paciente hasta conseguir la Consistencia de Datos.**

```
pgsql role:Secondary
disk:UpToDate
srv2 role:Secondary
peer-disk:UpToDate
```

# lsblk

```
NAME                                MAJ:MIN RM  SIZE RO  TYPE MOUNTPOINT
sda                                  8:0      0  40G  0  disk
├─sda1                               8:1      0  40G  0  part /
sdb                                  8:16     0  40G  0  disk
├─drbdpool-.drbdctrl_0              253:0     0   4M  0  lvm
│   └─drbd0                          147:0     0   4M  0  disk
├─drbdpool-.drbdctrl_1              253:1     0   4M  0  lvm
│   └─drbd1                          147:1     0   4M  0  disk
├─drbdpool-pgsql_00                 253:2     0  15G  0  lvm
│   └─drbd100                        147:100   0  15G  1  disk
└─drbdpool-odoo_00                  253:3     0  15G  0  lvm
    └─drbd101                        147:101   0  15G  1  disk
```

↳ Pool '100' → /dev/drbd100 => /pgsql/data/

```
[root@srv1 ~]# mkfs.xfs /dev/drbd100
[root@srv1 ~]# mkdir -p /pgsql/data
[root@srv2 ~]# mkdir -p /pgsql/data
```

```
[root@srv1 ~]# mount /dev/drbd100 /pgsql/data/
[root@srv1 ~]# drbdadm primary pgsql
[root@srv2 ~]# drbdadm secondary pgsql
```

↳ Pool '101' → /dev/drbd101 => /odoo/

```
[root@srv1 ~]# mkfs.xfs /dev/drbd101
[root@srv1 ~]# mkdir /odoo
[root@srv2 ~]# mkdir /odoo
```

```
[root@srv1 ~]# mount /dev/drbd101 /odoo
[root@srv1 ~]# drbdadm primary odoo
[root@srv2 ~]# drbdadm secondary odoo
```

[root@srv1 ~]# lsblk

```
NAME                                MAJ:MIN RM  SIZE RO  TYPE MOUNTPOINT
sda                                  8:0      0  40G  0  disk
├─sda1                               8:1      0  40G  0  part /
sdb                                  8:16     0  40G  0  disk
├─drbdpool-.drbdctrl_0              253:0     0   4M  0  lvm
│   └─drbd0                          147:0     0   4M  0  disk
├─drbdpool-.drbdctrl_1              253:1     0   4M  0  lvm
│   └─drbd1                          147:1     0   4M  0  disk
├─drbdpool-pgsql_00                 253:2     0  15G  0  lvm
│   └─drbd100                        147:100   0  15G  0  disk /pgsql/data
└─drbdpool-odoo_00                  253:3     0  15G  0  lvm
    └─drbd101                        147:101   0  15G  0  disk /odoo
```

```
[root@srv1 ~]# drbdmon
DRBD DrbdMon v9.6.0 | Node srv1.enermol.lan
```

```
◦RES: .drbdctrl
1
```

```
●Primary ◎ 0:
```

```
Page: 1
0 ◎ 1:
```



```
◦↗ srv2.enermol.lan
◦RES: odoo                ●Primary   ◎    0:    101
◦↗ srv2.enermol.lan
◦RES: postgres            ●Primary   ◎    0:    100
◦↗ srv2.enermol.lan
```

```
[root@srv2 ~]# drbdmon
```

```
DRBD DrbdMon v9.6.0 | Node srv2.enermol.lan
```

```
◦RES: .drbdctrl          Secondary ◎    0:    Page: 1
1                          0 ◎    1:
◦↗●srv1.enermol.lan
◦RES: odoo                Secondary ◎    0:    101
◦↗●srv1.enermol.lan
◦RES: postgres            Secondary ◎    0:    100
◦↗●srv1.enermol.lan
```

→ [drbdtop.](#)

[https://github.com/hdjr/install\\_drbdtop/blob/master/install\\_drbdtop.sh](https://github.com/hdjr/install_drbdtop/blob/master/install_drbdtop.sh)

```
# yum install git -y
# git clone https://github.com/hdjr/install\_drbdtop.git
# sh install_drbdtop/install_drbdtop.sh
...
go build -ldflags "-X main.Version=`git describe --tags --always --dirty`"
drbdtop is now installed. You can start it by running the drbdtop command.
You may have to logout and log back in to reload you PATH.

# logout
$ su -

# drbdtop
```

```
root@srv1:~
Archivo Editar Ver Buscar Terminal Ayuda
DRBDTOP v0.2.2 (kernel: v9.0.14; utils: v9.3.1; host: srv1)
● (LIVE UPDATING) Resource List
Name      | Role   | Disks | Peer Disks | Connections | Overall | Quorum
odoo       | Primary | ✓     | ✓           | ✓           | ✓       | ✓
pgsql     | Primary | ✓     | ✓           | ✓           | ✓       | ✓
.drbdctrl | Primary | ✓     | ✓           | ✓           | ✓       | ✓

q: QUIT | j/k: down/up | f: Toggle dangerous filter | <tab>: Toggle updates
```

```
root@srv2:~
Archivo Editar Ver Buscar Terminal Ayuda
DRBDTOP v0.2.2 (kernel: v9.0.14; utils: v9.3.1; host: srv2)
● (LIVE UPDATING) Resource List
Name      | Role   | Disks | Peer Disks | Connections | Overall | Quorum
odoo       | Secondary | ✓     | ✓           | ✓           | ✓       | ✓
pgsql     | Secondary | ✓     | ✓           | ✓           | ✓       | ✓
.drbdctrl | Secondary | ✓     | ✓           | ✓           | ✓       | ✓

q: QUIT | j/k: down/up | f: Toggle dangerous filter | <tab>: Toggle updates
```

→ [Split Brain:](#)

↘ [after-sb-0pri](#)

```
[root@srv1 ~]# drbdmanage net-options --after-sb-0pri discard-zero-changes --resource pgsql
```

```
[root@srv1 ~]# drbdmanage net-options --after-sb-0pri discard-zero-changes --resource odoo
```

↘ [after-sb-1pri](#)

```
[root@srv1 ~]# drbdmanage net-options --after-sb-1pri discard-secondary --resource pgsql
```

```
[root@srv1 ~]# drbdmanage net-options --after-sb-1pri discard-secondary --resource odoo
```

```
↘ after-sb-2pri
```

```
[root@srv1 ~]# drbdmanage net-options --after-sb-2pri disconnect --resource pgsql
```

```
[root@srv1 ~]# drbdmanage net-options --after-sb-2pri disconnect --resource odoo
```

```
↘ handlers notify's
```

```
[root@srv1 drbd]# drbdmanage handlers --split-brain notify-split-brain.sh --resource pgsql
```

```
[root@srv1 drbd]# drbdmanage handlers --split-brain notify-split-brain.sh --resource odoo
```

→ [Comprobación en ambos servidores:](#)

```
# cat /var/lib/drbd.d/drbdmanage_pgsql.res
```

```
# cat /var/lib/drbd.d/drbdmanage_odoo.res
```

```
...
```

```
net {
```

```
    after-sb-1pri discard-secondary;
```

```
    after-sb-2pri disconnect;
```

```
    after-sb-0pri discard-zero-changes;
```

```
...
```

```
handlers {
```

```
    split-brain notify-split-brain.sh;
```

```
...
```

→ [Procedimiento de sincronización en 3 pasos \(Split Brain\):](#)

Step 1: Start drbd manually on both nodes

Step 2: Define one node as **secondary** and discard data on this → **VÍCTIMA**

```
drbdadm secondary all
drbdadm disconnect all
drbdadm -- --discard-my-data connect all
```

Step 3: Define another node as **primary** and connect → **SUPERVIVIENTE**

```
drbdadm primary all
drbdadm disconnect all
drbdadm connect all
```



→ [Desmontaje de Stmas. De Ficheros → La administración será a cargo de Pacemaker.](#)

```
[root@srv1 ~]# umount /pgsql/data/
[root@srv1 ~]# umount /odoo/
# systemctl stop drbd.service // No debe ser 'enable' si lo administra el cluster → pacemaker //
```

→ [Ejemplo de Montaje Manual -NO pacemaker-:](#)

↳ [srv1](#)

```
[root@srv1 ~]# drbdadm up all
[root@srv1 ~]# drbdadm primary .drbdctrl
[root@srv1 ~]# drbdadm primary odoo
[root@srv1 ~]# drbdadm primary pgsql

[root@srv1 ~]# mount /dev/drbd100 /pgsql/data/
[root@srv1 ~]# mount /dev/drbd101 /odoo
```

```
[root@srv1 ~]# lsblk
NAME                                MAJ:MIN RM SIZE RO TYPE MOUNTPOINT
sda                                  8:0     0 40G  0 disk
├─sda1                               8:1     0 40G  0 part /
sdb                                  8:16    0 40G  0 disk
├─sdb1                               8:17    0 40G  0 part
│   └─drbdpool-.drbdctrl_0          253:0     0  4M  0 lvm
│       └─drbd0                    147:0     0  4M  0 disk
│   └─drbdpool-.drbdctrl_1          253:1     0  4M  0 lvm
│       └─drbd1                    147:1     0  4M  0 disk
│   └─drbdpool-pgsql_00             253:2     0 15G  0 lvm
│       └─drbd100                  147:100   0 15G  0 disk /pgsql/data
│   └─drbdpool-odoo_00              253:3     0 15G  0 lvm
│       └─drbd101                  147:101   0 15G  0 disk /odoo
```

```
[root@srv2 ~]# lsblk
NAME                                MAJ:MIN RM SIZE RO TYPE MOUNTPOINT
sda                                  8:0     0 40G  0 disk
├─sda1                               8:1     0 40G  0 part /
sdb                                  8:16    0 40G  0 disk
├─sdb1                               8:17    0 40G  0 part
│   └─drbdpool-.drbdctrl_0          253:0     0  4M  0 lvm
│       └─drbd0                    147:0     0  4M  1 disk
│   └─drbdpool-.drbdctrl_1          253:1     0  4M  0 lvm
│       └─drbd1                    147:1     0  4M  1 disk
│   └─drbdpool-pgsql_00             253:2     0 15G  0 lvm
│       └─drbd100                  147:100   0 15G  1 disk
│   └─drbdpool-odoo_00              253:3     0 15G  0 lvm
│       └─drbd101                  147:101   0 15G  1 disk
```

→ [Poblamos los montajes de 'srv1' :](#)

```
[root@srv1 ~]# touch /pgsql/data/desde-srv1
[root@srv1 ~]# touch /odoo/desde-srv1
```

↳ [srv2](#)

```
[root@srv2 ~]# drbdadm up all
```

→ Comprobamos la Replicación para 'srv2' :

↘ srv1

```
[root@srv1 ~]# umount /pgsql/data/
[root@srv1 ~]# umount /odoo/
[root@srv1 ~]# drbdadm down all
```

↘ srv2

```
[root@srv2 ~]# drbdadm down all

[root@srv2 ~]# drbdadm up all
[root@srv2 ~]# drbdadm primary .drbdctrl
[root@srv2 ~]# drbdadm primary pgsql
[root@srv2 ~]# drbdadm primary odoo
```

```
[root@srv2 ~]# mount /dev/drbd100 /pgsql/data
[root@srv2 ~]# mount /dev/drbd101 /odoo/
[root@srv2 ~]# lsblk
```

| NAME                  | MAJ:MIN | RM | SIZE | RO | TYPE | MOUNTPOINT  |
|-----------------------|---------|----|------|----|------|-------------|
| sda                   | 8:0     | 0  | 40G  | 0  | disk |             |
| └sda1                 | 8:1     | 0  | 40G  | 0  | part | /           |
| sdb                   | 8:16    | 0  | 40G  | 0  | disk |             |
| └sdb1                 | 8:17    | 0  | 40G  | 0  | part |             |
| ├drbdpool-.drbdctrl_0 | 253:0   | 0  | 4M   | 0  | lvm  |             |
| ├└drbd0               | 147:0   | 0  | 4M   | 0  | disk |             |
| ├drbdpool-.drbdctrl_1 | 253:1   | 0  | 4M   | 0  | lvm  |             |
| ├└drbd1               | 147:1   | 0  | 4M   | 0  | disk |             |
| ├drbdpool-pgsql_00    | 253:2   | 0  | 15G  | 0  | lvm  |             |
| ├└drbd100             | 147:100 | 0  | 15G  | 0  | disk | /pgsql/data |
| ├drbdpool-odoo_00     | 253:3   | 0  | 15G  | 0  | lvm  |             |
| ├└drbd101             | 147:101 | 0  | 15G  | 0  | disk | /odoo       |

```
[root@srv2 ~]# ls /odoo/
desde-srv1
[root@srv2 ~]# ls /pgsql/data/
desde-srv1
```

```
[root@srv2 ~]# drbdadm status
.drbdctrl role:Primary
volume:0 disk:UpToDate
volume:1 disk:UpToDate
srv1.enermol.lan role:Secondary
volume:0 peer-disk:UpToDate
volume:1 peer-disk:UpToDate
```

```
odoo role:Primary
disk:UpToDate
srv1.enermol.lan role:Secondary
peer-disk:UpToDate
```

```
pgsql role:Primary
disk:UpToDate
srv1.enermol.lan role:Secondary
peer-disk:UpToDate
```



↘ [srv1](#)

```
[root@srv1 ~]# drbdadm up all
```

```
[root@srv1 ~]# lsblk
```

| NAME                   | MAJ:MIN | RM | SIZE | RO | TYPE | MOUNTPOINT |
|------------------------|---------|----|------|----|------|------------|
| sda                    | 8:0     | 0  | 40G  | 0  | disk |            |
| └─sda1                 | 8:1     | 0  | 40G  | 0  | part | /          |
| sdb                    | 8:16    | 0  | 40G  | 0  | disk |            |
| └─sdb1                 | 8:17    | 0  | 40G  | 0  | part |            |
| ├─drbdpool-.drbdctrl_0 | 253:0   | 0  | 4M   | 0  | lvm  |            |
| ├─drbdpool-.drbdctrl_1 | 253:1   | 0  | 4M   | 0  | lvm  |            |
| ├─drbdpool-pgsql_00    | 253:2   | 0  | 15G  | 0  | lvm  |            |
| └─drbdpool-odoo_00     | 253:3   | 0  | 15G  | 0  | lvm  |            |

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

```
.drbdctrl role:Secondary
```

```
volume:0 disk:UpToDate
```

```
volume:1 disk:UpToDate
```

```
srv2.enermol.lan role:Primary
```

```
volume:0 peer-disk:UpToDate
```

```
volume:1 peer-disk:UpToDate
```

```
odoo role:Secondary
```

```
disk:UpToDate
```

```
srv2.enermol.lan role:Primary
```

```
peer-disk:UpToDate
```

```
pgsql role:Secondary
```

```
disk:UpToDate
```

```
srv2.enermol.lan role:Primary
```

```
peer-disk:UpToDate
```

**REFERENCIAS :**

[https://www.server-world.info/en/note?os=CentOS\\_7&p=drbd9&f=1](https://www.server-world.info/en/note?os=CentOS_7&p=drbd9&f=1)

[https://www.server-world.info/en/note?os=CentOS\\_7&p=drbd9&f=2](https://www.server-world.info/en/note?os=CentOS_7&p=drbd9&f=2)

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