

DRBD 3

DRBD 3

 DRBD 3

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DRBD 3

 Single-primary mode : : 4

 Dual-primary mode : : 4

 4

DRBD 5

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 CentOS 5

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DRBD 6

 global 7

 common 7

 resource 7

 8

 initial device synchronization : 8

 Using truck based replication : 8

 4 9

 12

 12

DRBD 12

DRBD

: <https://docs.linbit.com/docs/users-guide-9.0/>

DRBD

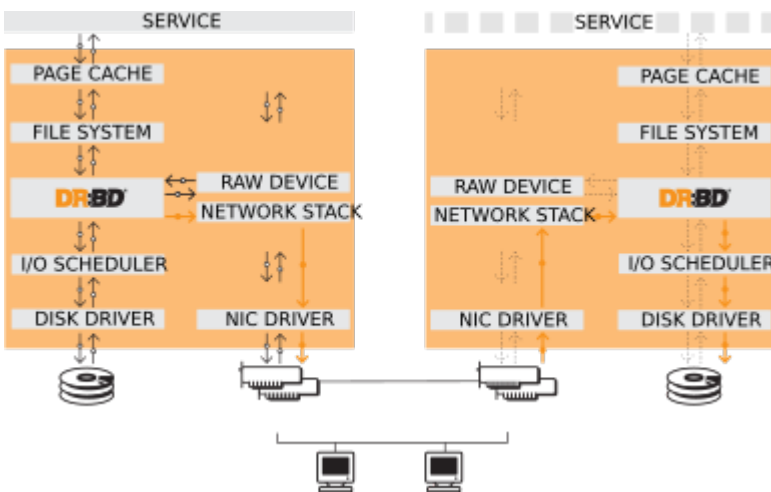
DRBD

DRBD (, ,) . DRBD .

- 가 가
- 가 가
- () 가

DRBD Linux , DRBD 가 DRBD DRBD I/O 가 가

DRBD Linux 가 가 가 . DRBD DRBD가 DRBD ext3 XFS 가




DRBD

Single-primary mode :

(ext3, ext4, XFS)
DRBD 가 (가)

Dual-primary mode :

가 가
GFS OCFS2가
DRBD 가
DRBD (: 가

 DRBD-9.0 (가). DRBD-9.1
2 가

DRBD 3 가 3 가

A : Async

TCP 가 (failover)가
가 DRBD A 가
DRBD

B : Semi-Async

() 가 (failover)

가 가 가

가

C : Sync

가

(가)가 가

DRBD

가

C

가

DRBD

SLES 가

(HAE)

DRBD가

가

SLES

DRBD

YaST2

```
# yast -i drbd
```

```
# zypper install drbd
```

CentOS

CentOS

5

DRBD 8 가

DRBD 9

EPEL, ELRepo

DRBD

yum(

가

).

```
# yum install drbd kmod-drbd
```

Ubuntu LTS

LINBIT

<https://launchpad.net/~linbit/+archive/ubuntu/linbit-drbd9-stack>

PPA

PPA

가

```
# apt-get install drbd-utils python-drbdmanage drbd-dkms
```

DRBD

- DRBD

```
global {
    usage-count yes;
}
common {
    net {
        protocol C;
    }
}
```

- DRBD

```
resource r0 {
    on alice {
        device    /dev/drbd1;
        disk      /dev/sda7;
        address   10.1.1.31:7789;
        meta-disk internal;
    }
    on bob {
        device    /dev/drbd1;
        disk      /dev/sda7;
        address   10.1.1.32:7789;
        meta-disk internal;
    }
}
```

- DRBD

```
resource r0 {
    volume 0 {
        device    /dev/drbd1;
        disk      /dev/sda7;
        meta-disk internal;
    }
    volume 1 {
        device    /dev/drbd2;
        disk      /dev/sda8;
        meta-disk internal;
    }
}
```

```

on alice {
  address 10.1.1.31:7789;
}
on bob {
  address 10.1.1.32:7789;
}
}

```

global

/etc/drbd.d/global_common.conf

가

usage-count

DRBD

DRBD

DRBD

HTTP

usage-count no;

usage-count ask; DRBD

DRBD

(<http://usage.drbd.org>).

common

/etc/drbd.d/global_common.conf

common

common net { protocol C; }

resource

가

resource

/etc/drbd.d/<resource>.res

가 *.res

DRBD

/etc/drbd.conf

on host

(

common

(

) DRBD

)

resource

```

resource r0 {

```

```
device /dev/drbd1;
disk /dev/sda7;
meta-disk internal;
on alice {
    address 10.1.1.31:7789;
}
on bob {
    address 10.1.1.32:7789;
}
}
```

initial device synchronization :

가

```
# drbdadm primary --force <resource>
```

Using truck based replication :

가

```
# drbdadm new-current-uuid --clear-bitmap <resource>/<volume>
```

```
# drbdsetup new-current-uuid --clear-bitmap <minor>
```

dd RAID1 1 . (file-copy .)

가

```
# drbdadm new-current-uuid <resource>
```


-clear-bitmap

r0 0 2 1

V=r0/0
NODE_FROM=2
NODE_TO=1

```
drbdadm --force dump-md $V > /tmp/md_orig.txt
sed -e "s/node-id $NODE_FROM/node-id $NODE_TO/" \
    -e "s/^peer.$NODE_FROM. /peer-NEW /" \
    -e "s/^peer.$NODE_TO. /peer[$NODE_FROM] /" \
    -e "s/^peer-NEW /peer[$NODE_TO] /" \
    < /tmp/md_orig.txt > /tmp/md.txt
```

```
drbdmeta --force $(drbdadm sh-minor $V) v09 $(drbdadm sh-ll-dev $V) internal
restore-md /tmp/md.txt
```

drbdadm up <resource>

가

4

4

```
resource r0 {
  device      /dev/drbd0;
  disk        /dev/vg/r0;
  meta-disk   internal;

  on store1 {
    address   10.1.10.1:7100;
    node-id   1;
  }
  on store2 {
    address   10.1.10.2:7100;
    node-id   2;
  }
}
```

```
on store3 {
  address 10.1.10.3:7100;
  node-id 3;
}
on store4 {
  address 10.1.10.4:7100;
  node-id 4;
}

# All connections involving store1
connection {
  host store1 port 7012;
  host store2 port 7021;
}
connection {
  host store1 port 7013;
  host store3 port 7031;
}
connection {
  host store1 port 7014;
  host store4 port 7041;
}

# All remaining connections involving store2
connection {
  host store2 port 7023;
  host store3 port 7032;
}
connection {
  host store2 port 7024;
  host store4 port 7042;
}

# All remaining connections involving store3
connection {
  host store3 port 7034;
  host store4 port 7043;
}

# store4 already done.
}
```

4 가 Full-mesh

1-2, 1-3, 1-4, 2-3, 2-4, 3-4

```
resource r0 {
```

```

device      /dev/drbd0;
disk        /dev/vg/r0;
meta-disk   internal;

on store1 {
  address   10.1.10.1:7100;
  node-id   1;
}
on store2 {
  address   10.1.10.2:7100;
  node-id   2;
}
on store3 {
  address   10.1.10.3:7100;
  node-id   3;
}
on store4 {
  address   10.1.10.4:7100;
  node-id   4;
}

connection-mesh {
  hosts     store1 store2 store3 store4;
}
}

```

NIC가

IP

```

resource r0 {
  ...

  # store1 has crossover links like 10.99.1x.y
  connection {
    host store1 address 10.99.12.1 port 7012;
    host store2 address 10.99.12.2 port 7021;
  }
  connection {
    host store1 address 10.99.13.1 port 7013;
    host store3 address 10.99.13.3 port 7031;
  }
  connection {
    host store1 address 10.99.14.1 port 7014;
    host store4 address 10.99.14.4 port 7041;
  }

  # store2 has crossover links like 10.99.2x.y
  connection {
    host store2 address 10.99.23.2 port 7023;
    host store3 address 10.99.23.3 port 7032;
  }
}

```

```
}  
connection {  
    host store2 address 10.99.24.2 port 7024;  
    host store4 address 10.99.24.4 port 7042;  
}  
  
# store3 has crossover links like 10.99.3x.y  
connection {  
    host store3 address 10.99.34.3 port 7034;  
    host store4 address 10.99.34.4 port 7043;  
}  
}
```

(/etc/drbd.d/*.conf)

```
# drbdadm create-md <resource>
```

DRBD

DRBD

[drbd-overview](#)

```
nina# drbd-overview  
0:r0/0 Connected(*) Seco(*)/Prim(nina) UpTo(*)/Disk(nono)  
    /mnt ext3 1008M 18M 940M 2%  
1:r1/0 Connected(*) Secondary(*) UpTo(*)/Disk(nono)  
5:r2/0 Connected(*) Seco(*)/Prim(nini) UpTo(*)/Disk(nono)  
6:r2/1 Connected(*) Seco(*)/Prim(nini) UpTo(*)/Disk(nono)
```

- r0 0 nina() Primary ext3 /mnt
- nono (DRBD)
- UpToDate
- r1
- r2 nini

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