Distributed Replicated Block Device (DRBD)

ICD - Infraestruturas e Centros de Dados

2020/2021

The main goal of this guide is to understand how to use and configure DRBD in Linux systems.

For the exercises described next, the following tools must be installed,

- VirtualBox - `https://www.virtualbox.org`

while useful DRBD documentation is available at:

- DRBD - `https://www.linbit.com/drbd/`

Steps

VM Deployment and Configuration

1. Clone the VM template (centos 8) created at the Warmup exercise.
2. Add one disk to the new VM (1 GiB).
3. Launch the VM.
4. Change the name of the machine to *drbd1* with the *nmtui* tool.
5. Check that the disk (*e.g., /dev/sdb*) has been created successfully (use *fdisk -l*).

DRBD Configuration

1. Install DRBD packages

```
rpm --import https://www.elrepo.org/RPM-GPG-KEY-elrepo.org
yum install https://www.elrepo.org/elrepo-release-8.el8.elrepo.noarch.rpm
yum update
yum install drbd90-utils kmod-drbd90 drbd90-utils-sysvinit
```

2. Edit */etc/hosts* file and add the following lines:

```
10.0.0.3        drbd1
10.0.0.4        drbd2
```

3. Edit */etc/drbd.d/global_common.conf* file to include:

```
global {
    usage-count no;
}

common {
    net {
        protocol C;
    }
}
```

4. Create */etc/drbd.d/d1.res* file with the following information:

```
resource d1 {
    on drbd1 {
        device    /dev/drbd1;
        disk      /dev/sdb;
        address   10.0.0.3:7789;
        meta-disk internal;
    }
    on drbd2 {
        device    /dev/drbd1;
        disk      /dev/sdb;
        address   10.0.0.4:7789;
        meta-disk internal;
      }
}
```

5. Power-off the VM and clone it (Full clone with the *generate new MACC* option).

6. Launch VM2 (clone)

   change the ip to 10.0.0.4/24 (use *nmtui).*

   change the name to *drbd2*

7. Launch VM1 (drbd1).

DRBD Deployment

1. Initialise DRBD metadata disk resources in both VMs (*e.g., drbdadm create-md d1*).

2. Run DRBD daemon in both machines (*e.g., drbdadm up d1*).

   Run command *drbdadm status* to check the replicas synchronisation status.

3. In one of the VMs (*e.g., drbd1*), force it to be the primary replica (*drbdadm primary --force d1*).

   Run command *watch drbdadm status* to check the replicas synchronisation status.

   Run *fdisk -l* at both VMs and check that */dev/drbd1* device is only present at the primary replica.

Filesystem

1. At VM *drbd1* create a filesystem (*e.g., mkfs.xfs /dev/drbd1*).
2. Create a mount point for the filesystem (*e.g., mkdir /mnt/drbd*).
3. Mount the partition (*e.g., mount /dev/drbd1 /mnt/drbd*).
4. Copy the folder */etc* to the mount point folder.

Change Primary Node

1. umount the filesystem at VM *drbd1*.
2. Pass *drbd1* VM to be a secondary node and *drbd2* VM to be the primary node.

   Run *drbdadm secondary d1* at *drbd1*.

   Run *drbdadm primary d1* at *drbd2*.

   Run the command *watch drbdadm status* to check the replicas synchronisation status.

   Run *fdisk -l* at both VMs and check that */dev/drbd1* device is only present at the primary replica.

3. At *drbd2* VM, create a mount point and mount the filesystem (*e.g., mount /dev/drbd1 /mnt/drbd*)
4. Browse the content at the mount point.

Learning outcomes Experiment DRBD deployment and configuration. Assess how DRBD helps simplifying the management and fault-tolerance of storage resources. Revise DRBD configuration parameters and deployment/management commands.