Raid

Table des matières

L'utilitaire et les devices sont nommés par MD en réfétrence à Meta Device.

1 Installation

```
# modprobe raid1

KERNEL:
  Device Drivers
  * Multi device support (RAID and LVM)
  M   Raid Support
  M   ... RAID-1 (mirroring) mode

# apt-get install mdadm
```

2 Informations

2.1 Enumération des méta-devices

```
$ cat /proc/mdstat

Personalities : [raid1] [raid0]
md6 : active raid1 sdd1[0] sde1[1]
      4393844564 blocks super 1.0 [2/2] [UU]

md2 : active raid0 sdb3[1] sda3[0]
      8192512 blocks 256k chunks

md3 : active raid1 sdb5[1] sda5[0]
      56114944 blocks [2/2] [UU]

md0 : active raid1 sdc1[2](S) sdb1[1] sda1[0]
      104320 blocks [2/2] [UU]

md5 : active raid1 sdg1[0]
```

```
      1318663296 blocks [2/1] [U_]
```

Les `U` nous donnent un rapide apperçu du bon fonctionnement des disques en Raid1.

2.2 Identification des méta-devices

```
# mdadm --detail /dev/md6

/dev/md6:
        Version : 01.00.03
  Creation Time : Tue Sep 16 09:16:10 2008
     Raid Level : raid1
     Array Size : 4393844564 (4190.30 GiB 4499.30 GB)
  Used Dev Size : 8787689128
   Raid Devices : 2
  Total Devices : 2
Preferred Minor : 6
    Persistence : Superblock is persistent

    Update Time : Mon Oct  6 17:37:38 2008
          State : clean
 Active Devices : 2
Working Devices : 2
 Failed Devices : 0
  Spare Devices : 0

           Name : 6
           UUID : c0997472:a1b5725c:7adcf733:faa95824
         Events : 2

    Number   Major   Minor   RaidDevice State
       0       8       49        0      active sync   /dev/sdd1
       1       8       65        1      active sync   /dev/sde1
```

Il s'agit du `UUID` que l'on retrouve également dans le fichier */etc/mdadm.conf*. Cf `$man mdadm.conf`.

```
DEVICE partitions containers
MAILADDR root
ARRAY /dev/md0 level=raid1 num-devices=2 devices=/dev/sda9,/dev/sdb1
```

2.3 Identification des composants

```
# mdadm --examine /dev/sdd1

/dev/sdd1:
          Magic : a92b4efc
        Version : 1.0
    Feature Map : 0x0
     Array UUID : c0997472:a1b5725c:7adcf733:faa95824
           Name : 6
  Creation Time : Tue Sep 16 09:16:10 2008
     Raid Level : raid1
   Raid Devices : 2

 Avail Dev Size : 8787689256 (4190.30 GiB 4499.30 GB)
```

```
     Array Size : 8787689128 (4190.30 GiB 4499.30 GB)
  Used Dev Size : 8787689128 (4190.30 GiB 4499.30 GB)
   Super Offset : 8787689384 sectors
          State : clean
    Device UUID : 21b2d04b:ff7bdedd:03de1d87:84431ec4

    Update Time : Mon Oct  6 17:43:55 2008
       Checksum : fa6581ad - correct
         Events : 2


    Array Slot : 0 (0, 1)
   Array State : Uu
```

L'identifiant `Array UUID` permet de retouver le tableau auquel participe ce disque.

3 Création d'un méta-devices

```
# mdadm --create /dev/md0 --level=1 --raid-devices=2 --run /dev/sda9 /dev/sdb1
# cat /proc/mdstat
...
# mke2fs -j /dev/md0
```

4 Assemblage de 2 disques Raid

Là je ne comprends pas tout... (à priori pas besoin)

```
# mdadm --assemble /dev/md0 /dev/sda9 /dev/sdb1
```

5 Exemple de dépanage

```
$ cat /proc/mdstat

Personalities : [raid1]
md0 : active raid1 sda14[0] sdb8[1]
      97659008 blocks [2/2] [UU]

unused devices: <none>


# mdadm --detail /dev/md0
/dev/md0:
        Version : 0.90
  Creation Time : Thu Jul  3 17:30:08 2008
     Raid Level : raid1
     Array Size : 97659008 (93.13 GiB 100.00 GB)
  Used Dev Size : 97659008 (93.13 GiB 100.00 GB)
   Raid Devices : 2
  Total Devices : 2
Preferred Minor : 0
    Persistence : Superblock is persistent

    Update Time : Sat Sep  5 19:58:58 2009
```

```
          State : clean
 Active Devices : 2
Working Devices : 2
 Failed Devices : 0
  Spare Devices : 0

           UUID : 2c1b5075:68a897c4:ad6c6860:42e1fd6e (local to host narval)
         Events : 0.12426

    Number   Major   Minor   RaidDevice State
       0       8       14        0      active sync   /dev/sda14
       1       8       24        1      active sync   /dev/sdb8

# mdadm --examine /dev/sda14
/dev/sda14:
          Magic : a92b4efc
        Version : 0.90.00
           UUID : 2c1b5075:68a897c4:ad6c6860:42e1fd6e (local to host narval)
  Creation Time : Thu Jul  3 17:30:08 2008
     Raid Level : raid1
  Used Dev Size : 97659008 (93.13 GiB 100.00 GB)
     Array Size : 97659008 (93.13 GiB 100.00 GB)
   Raid Devices : 2
  Total Devices : 2
Preferred Minor : 0

    Update Time : Sat Sep  5 20:00:27 2009
          State : clean
 Active Devices : 2
Working Devices : 2
 Failed Devices : 0
  Spare Devices : 0
       Checksum : c71fbf18 - correct
         Events : 12426


      Number   Major   Minor   RaidDevice State
this     0       8       14        0      active sync   /dev/sda14

   0     0       8       14        0      active sync   /dev/sda14
   1     1       8       24        1      active sync   /dev/sdb8


# mdadm --examine /dev/sdb8
/dev/sdb8:
          Magic : a92b4efc
        Version : 0.90.00
           UUID : 2c1b5075:68a897c4:ad6c6860:42e1fd6e (local to host narval)
  Creation Time : Thu Jul  3 17:30:08 2008
     Raid Level : raid1
  Used Dev Size : 97659008 (93.13 GiB 100.00 GB)
     Array Size : 97659008 (93.13 GiB 100.00 GB)
   Raid Devices : 2
  Total Devices : 2
```

```
Preferred Minor : 0

    Update Time : Sat Sep  5 20:01:19 2009
          State : clean
 Active Devices : 2
Working Devices : 2
 Failed Devices : 0
  Spare Devices : 0
       Checksum : c71fbf58 - correct
         Events : 12426


      Number   Major   Minor   RaidDevice State
this     1       8       24        1      active sync   /dev/sdb8

   0     0       8       14        0      active sync   /dev/sda14
   1     1       8       24        1      active sync   /dev/sdb8
```

5.1 Retrait d'une partition

```
# mdadm --manage /dev/md0 -f detached /dev/sda14
mdadm: set /dev/sda14 faulty in /dev/md0

# cat /proc/mdstat
Personalities : [raid1]
md0 : active raid1 sda14[2](F) sdb8[1]
      97659008 blocks [2/1] [_U]

unused devices: <none>


# mdadm --detail /dev/md0
/dev/md0:
        Version : 0.90
  Creation Time : Thu Jul  3 17:30:08 2008
     Raid Level : raid1
     Array Size : 97659008 (93.13 GiB 100.00 GB)
  Used Dev Size : 97659008 (93.13 GiB 100.00 GB)
   Raid Devices : 2
  Total Devices : 2
Preferred Minor : 0
    Persistence : Superblock is persistent

    Update Time : Sat Sep  5 20:13:33 2009
          State : clean, degraded
 Active Devices : 1
Working Devices : 1
 Failed Devices : 1
  Spare Devices : 0

           UUID : 2c1b5075:68a897c4:ad6c6860:42e1fd6e (local to host narval)
         Events : 0.12430

    Number   Major   Minor   RaidDevice State
```

```
       0       0        0        0      removed
       1       8       24        1      active sync   /dev/sdb8

       2       8       14        -      faulty spare   /dev/sda14


# mdadm --examine /dev/sda14
/dev/sda14:
          Magic : a92b4efc
        Version : 0.90.00
           UUID : 2c1b5075:68a897c4:ad6c6860:42e1fd6e (local to host narval)
  Creation Time : Thu Jul  3 17:30:08 2008
     Raid Level : raid1
  Used Dev Size : 97659008 (93.13 GiB 100.00 GB)
     Array Size : 97659008 (93.13 GiB 100.00 GB)
   Raid Devices : 2
  Total Devices : 2
Preferred Minor : 0

    Update Time : Sat Sep  5 20:06:29 2009
          State : clean
 Active Devices : 2
Working Devices : 2
 Failed Devices : 0
  Spare Devices : 0
       Checksum : c71fc082 - correct
         Events : 12426


      Number   Major   Minor   RaidDevice State
this     0       8       14        0      active sync   /dev/sda14

   0     0       8       14        0      active sync   /dev/sda14
   1     1       8       24        1      active sync   /dev/sdb8

# mdadm --manage /dev/md0 -r detached /dev/sda14
mdadm: hot removed /dev/sda14

# cat /proc/mdstat
Personalities : [raid1]
md0 : active raid1 sdb8[1]
      97659008 blocks [2/1] [_U]

unused devices: <none>


# mdadm --detail /dev/md0
/dev/md0:
        Version : 0.90
  Creation Time : Thu Jul  3 17:30:08 2008
     Raid Level : raid1
     Array Size : 97659008 (93.13 GiB 100.00 GB)
  Used Dev Size : 97659008 (93.13 GiB 100.00 GB)
   Raid Devices : 2
```

```
  Total Devices : 1
Preferred Minor : 0
    Persistence : Superblock is persistent

    Update Time : Sat Sep  5 20:16:38 2009
          State : clean, degraded
 Active Devices : 1
Working Devices : 1
 Failed Devices : 0
  Spare Devices : 0

           UUID : 2c1b5075:68a897c4:ad6c6860:42e1fd6e (local to host narval)
         Events : 0.12438

    Number   Major   Minor   RaidDevice State
       0       0        0        0      removed
       1       8       24        1      active sync   /dev/sdb8
```

5.2 Ajout d'une partition

```
# mdadm --manage /dev/md0 -a /dev/sda13
mdadm: added /dev/sda13

# watch cat /proc/mdstat
Personalities : [raid1]
md0 : active raid1 sda13[2] sdb8[1]
      97659008 blocks [2/1] [_U]
      [>....................]  recovery =  0.7% (690240/97659008) finish=30.4min speed=53095K/sec

unused devices: <none>

...
# cat /proc/mdstat
Personalities : [raid1]
md0 : active raid1 sda13[0] sdb8[1]
      97659008 blocks [2/2] [UU]

unused devices: <none>


# mdadm --detail /dev/md0
/dev/md0:
        Version : 0.90
  Creation Time : Thu Jul  3 17:30:08 2008
     Raid Level : raid1
     Array Size : 97659008 (93.13 GiB 100.00 GB)
  Used Dev Size : 97659008 (93.13 GiB 100.00 GB)
   Raid Devices : 2
  Total Devices : 2
Preferred Minor : 0
    Persistence : Superblock is persistent

    Update Time : Sun Sep  6 18:41:09 2009
          State : clean
```

```
  Active Devices : 2
 Working Devices : 2
  Failed Devices : 0
   Spare Devices : 0

            UUID : 2c1b5075:68a897c4:ad6c6860:42e1fd6e (local to host narval)
          Events : 0.12528

    Number   Major   Minor   RaidDevice State
       0       8       13        0      active sync   /dev/sda13
       1       8       24        1      active sync   /dev/sdb8
```