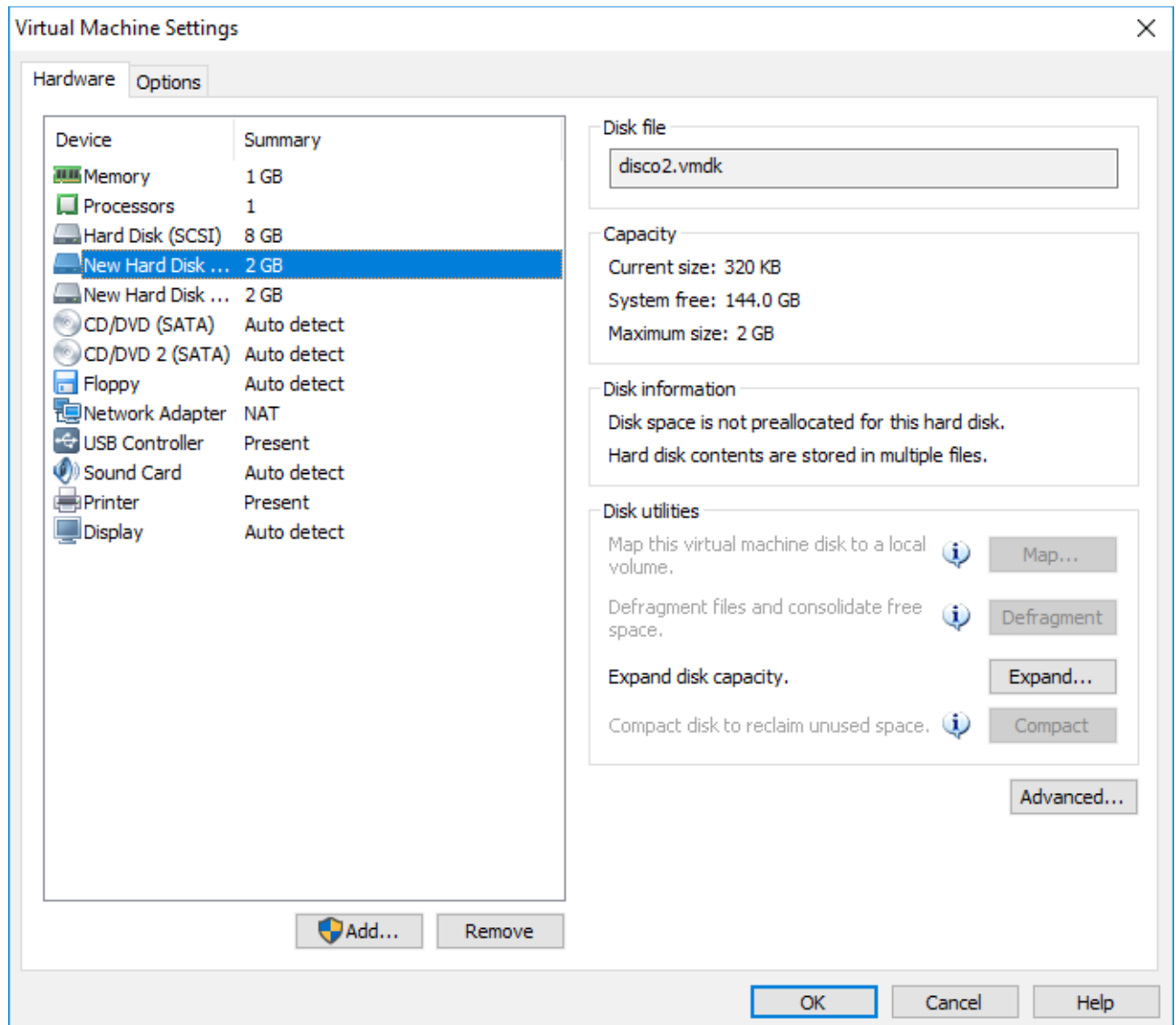


Práctica 6

Con la máquina apagada añadimos dos discos del mismo tipo y capacidad:



Ahora instalamos el software necesario para configurar el RAID con:

```
sudo apt-get install mdadm
```

una vez instalado vemos la configuración de los discos con:

```
sudo fdisk -l
```

```
maquina-1 - VMware Workstation 12 Player (Non-commercial use only)
Player
sandra@ubuntu:~$ sudo fdisk -l
Disk /dev/sdb: 2 GiB, 2147483648 bytes, 4194304 sectors
Units: sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes

Disk /dev/sda: 8 GiB, 8589934592 bytes, 16777216 sectors
Units: sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes
Disklabel type: dos
Disk identifier: 0x298a01a8

Device      Boot      Start        End    Sectors   Size Id Type
/dev/sda1   *          2048    14680063   14678016    7G 83 Linux
/dev/sda2             14682110  16775167   2093058  1022M  5 Extended
/dev/sda5             14682112  16775167   2093056  1022M  82 Linux swap / Solaris

Disk /dev/sdc: 2 GiB, 2147483648 bytes, 4194304 sectors
Units: sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes

sandra@ubuntu:~$
```

Para crear el RAID1 indicamos el número de dispositivos a usar (2), y el nombre de estos con:

```
sudo mdadm -C /dev/md0 --level=raid1 --raid-devices=2 /dev/sdb
/dev/sdc
```

Con esto tendremos creado nuestro RAID1 con el nombre md0. Para darle formato usamos:

```
sudo mkfs /dev/md0
```

Y pasamos a crear el directorio donde lo montaremos y a montarlo con:

```
sudo mkdir /dat
```

```
sudo mount /dev/md0 /dat
```

```
maquina-1 - VMware Workstation 12 Player (Non-commercial use only)
Player
sandra@ubuntu:~$ sudo mdadm -C /dev/md0 --level=raid1 --raid-devices=2 /dev/sdb /dev/sdc
mdadm: Note: this array has metadata at the start and
may not be suitable as a boot device. If you plan to
store '/boot' on this device please ensure that
your boot-loader understands md/v1.x metadata, or use
--metadata=0.90
Continue creating array? yes
mdadm: Defaulting to version 1.2 metadata
mdadm: array /dev/md0 started.
sandra@ubuntu:~$ sudo mkfs /dev/md0
mke2fs 1.42.13 (17-May-2015)
Creating filesystem with 523776 4k blocks and 131072 inodes
Filesystem UUID: 7293a865-9984-447b-bf51-4f8a12ce0e8f
Superblock backups stored on blocks:
    32768, 98304, 163840, 229376, 294912

Allocating group tables: done
Writing inode tables: done
Writing superblocks and filesystem accounting information: done

sandra@ubuntu:~$ sudo mkdir /dat
sandra@ubuntu:~$ sudo mount /dev/md0 /dat
sandra@ubuntu:~$
```

Para comprobar que se ha montado correctamente usamos:

sudo mount

y para comprobar el estado del RAID ejecutamos:

sudo mdadm --detail /dev/md0

```
maquina-1 - VMware Workstation 12 Player (Non-commercial use only)
Player
sandra@ubuntu:~$ sudo mdadm --detail /dev/md0
/dev/md0:
    Version : 1.2
  Creation Time : Sun Sep  3 08:12:05 2017
    Raid Level : raid1
    Array Size : 2095104 (2046.34 MiB 2145.39 MB)
  Used Dev Size : 2095104 (2046.34 MiB 2145.39 MB)
    Raid Devices : 2
  Total Devices : 2
 Persistence : Superblock is persistent

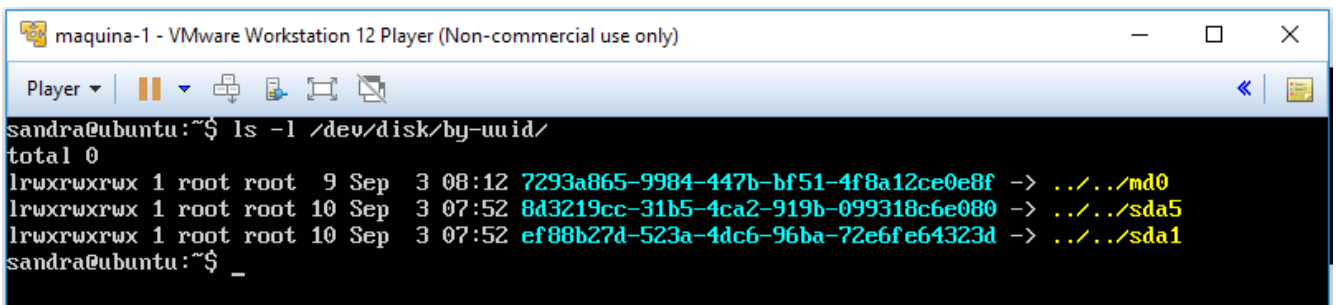
 Update Time : Sun Sep  3 08:13:31 2017
   State : clean
Active Devices : 2
Working Devices : 2
Failed Devices : 0
Spare Devices : 0

    Name : ubuntu:0 (local to host ubuntu)
   UUID : 98aefc48:f2feac6f:162a4dcc:eb882b51
  Events : 17

   Number Major Minor RaidDevice State
    0         8     16        0     active sync  /dev/sdb
    1         8     32        1     active sync  /dev/sdc
sandra@ubuntu:~$ _
```

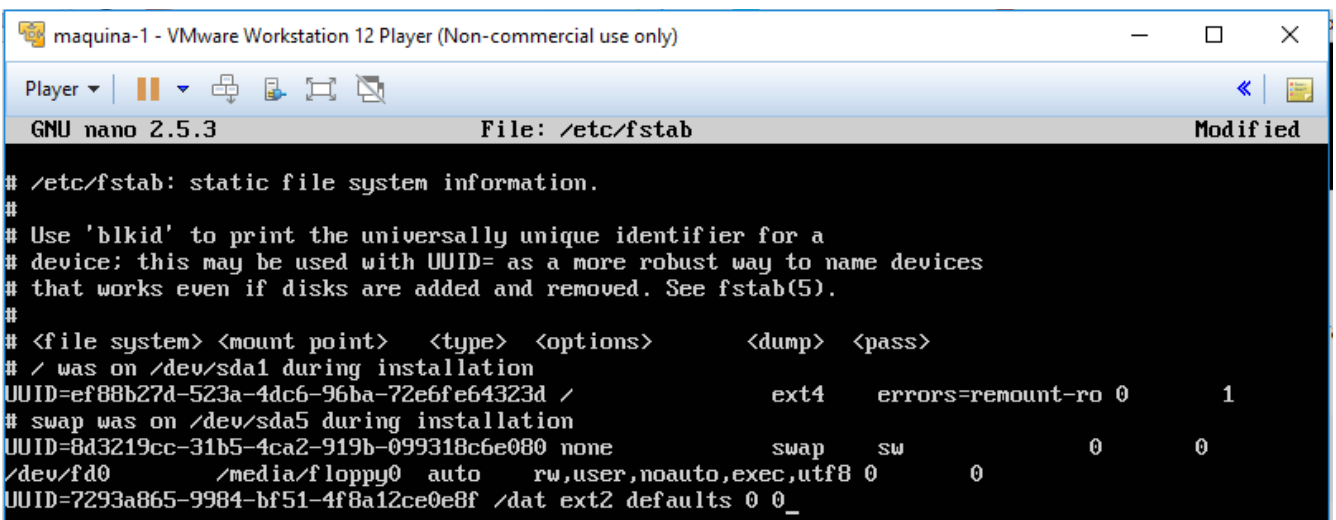
Para finalizar el proceso configuramos el sistema para que monte el RAID al arrancar el sistema. Para ello editamos el archivo `/etc/fstab` añadiendo el UUID del RAID:

Obtenemos el UUID:



```
maquina-1 - VMware Workstation 12 Player (Non-commercial use only)
Player
sandra@ubuntu:~$ ls -l /dev/disk/by-uuid/
total 0
lrwxrwxrwx 1 root root 9 Sep 3 08:12 7293a865-9984-447b-bf51-4f8a12ce0e8f -> ../../md0
lrwxrwxrwx 1 root root 10 Sep 3 07:52 8d3219cc-31b5-4ca2-919b-099318c6e080 -> ../../sda5
lrwxrwxrwx 1 root root 10 Sep 3 07:52 ef88b27d-523a-4dc6-96ba-72e6fe64323d -> ../../sda1
sandra@ubuntu:~$ _
```

y lo añadimos al archivo indicado:



```
maquina-1 - VMware Workstation 12 Player (Non-commercial use only)
Player
GNU nano 2.5.3 File: /etc/fstab Modified
# /etc/fstab: static file system information.
#
# Use 'blkid' to print the universally unique identifier for a
# device; this may be used with UUID= as a more robust way to name devices
# that works even if disks are added and removed. See fstab(5).
#
# <file system> <mount point> <type> <options> <dump> <pass>
# / was on /dev/sda1 during installation
UUID=ef88b27d-523a-4dc6-96ba-72e6fe64323d / ext4 errors=remount-ro 0 1
# swap was on /dev/sda5 during installation
UUID=8d3219cc-31b5-4ca2-919b-099318c6e080 none swap sw 0 0
/dev/fd0 /media/floppy0 auto rw,user,noauto,exec,utf8 0 0
UUID=7293a865-9984-bf51-4f8a12ce0e8f /dat ext2 defaults 0 0_
```

Para simular un fallo en uno de los discos usamos:

```
sudo mdadm --manage --set-faulty /dev/md0 /dev/sdb
```

y para retirarlo “en caliente” usamos:

```
sudo mdadm --manage --remove /dev/md0 /dev/sdb
```

Comprobamos el estado:

```
maquina-1 - VMware Workstation 12 Player (Non-commercial use only)
Player
sandra@ubuntu:~$ sudo mdadm --manage --set-faulty /dev/md0 /dev/sdb
mdadm: set /dev/sdb faulty in /dev/md0
sandra@ubuntu:~$ sudo mdadm --manage --remove /dev/md0 /dev/sdb
mdadm: hot removed /dev/sdb from /dev/md0
sandra@ubuntu:~$ sudo mdadm --detail /dev/md0
/dev/md0:
    Version : 1.2
  Creation Time : Sun Sep  3 08:12:05 2017
    Raid Level : raid1
    Array Size : 2095104 (2046.34 MiB 2145.39 MB)
  Used Dev Size : 2095104 (2046.34 MiB 2145.39 MB)
    Raid Devices : 2
    Total Devices : 1
 Persistence : Superblock is persistent

    Update Time : Sun Sep  3 08:31:47 2017
      State : clean, degraded
Active Devices : 1
Working Devices : 1
Failed Devices : 0
Spare Devices : 0

       Name : ubuntu:0 (local to host ubuntu)
      UUID : 98aefc48:f2feac6f:162a4dcc:eb882b51
     Events : 20

   Number Major Minor RaidDevice State
      0         0         0         0   removed
      1         8        32         1   active sync  /dev/sdc
sandra@ubuntu:~$ _
```

Para terminar volvemos a añadir el disco “en caliente” con:

```
sudo mdadm --manage --add /dev/md0 /dev/sdb
```

y comprobamos el estado:

```
maquina-1 - VMware Workstation 12 Player (Non-commercial use only)
Player
sandra@ubuntu:~$ sudo mdadm --manage --add /dev/md0 /dev/sdb
mdadm: added /dev/sdb
sandra@ubuntu:~$ sudo mdadm --detail /dev/md0
/dev/md0:
    Version : 1.2
  Creation Time : Sun Sep  3 08:12:05 2017
    Raid Level : raid1
    Array Size : 2095104 (2046.34 MiB 2145.39 MB)
  Used Dev Size : 2095104 (2046.34 MiB 2145.39 MB)
    Raid Devices : 2
    Total Devices : 2
 Persistence : Superblock is persistent

    Update Time : Sun Sep  3 08:33:43 2017
      State : clean, degraded, recovering
Active Devices : 1
Working Devices : 2
Failed Devices : 0
Spare Devices : 1

Rebuild Status : 38% complete

       Name : ubuntu:0 (local to host ubuntu)
      UUID : 98aefc48:f2feac6f:162a4dcc:eb882b51
     Events : 28

   Number Major Minor RaidDevice State
      2         8        16         0   spare rebuilding  /dev/sdb
      1         8        32         1   active sync      /dev/sdc
sandra@ubuntu:~$ _
```