Disk Management - Deel 2

Troubleshooting tools and UUIDS

Troubleshooting tools

- lsof (list open files)
  - geeft een overzicht van alle open files

```
student@ubserv:~$ tail -f /var/log/syslog &
[1] 1789
```

```
student@ubserv:~$ jobs
[1]+  Running                 tail -f /var/log/syslog &
```

```
student@ubserv:~$ sudo lsof | grep -E COMMAND\|tail.*student
COMMAND    PID TID     USER   FD    TYPE    DEVICE SIZE/OFF    NODE NAME
tail      1789        student  cwd    DIR       8,1     4096  655364 /home/student
tail      1789        student  rtd    DIR       8,1     4096       2 /
tail      1789        student  txt    REG       8,1    64320  917890 /usr/bin/tail
tail      1789        student  mem    REG       8,1  2919792  923329 /usr/lib/locale/locale-archive
tail      1789        student  mem    REG       8,1  1845024  402137 /lib/x86_64-linux-gnu/libc-2.19.so
tail      1789        student  mem    REG       8,1   149120  402138 /lib/x86_64-linux-gnu/ld-2.19.so
tail      1789        student   0u    CHR       4,1      0t0    5875 /dev/tty1
tail      1789        student   1u    CHR       4,1      0t0    5875 /dev/tty1
tail      1789        student   2u    CHR       4,1      0t0    5875 /dev/tty1
tail      1789        student   3r    REG       8,1  3436757  527824 /var/log/syslog
tail      1789        student   4r   0000       0,9        0    5816 anon_inode
```

cwd=current working directory   rtd=root directory   txt=text/binary   mem=memory mapped file   r=read   w=write   u=update (r+w)
DIR=directory   REG=regular file   CHR=character special file   xxxx=unknown type

Troubleshooting tools

- fuser (filesystem user)

  - wie is met welke commando's aan het werken op een bepaald mountpoint

```
student@ubserv:~$ tail -f /var/log/syslog &
[1] 1789
```

```
student@ubserv:~$ jobs
[1]+  Running                 tail -f /var/log/syslog &
```

```
student@ubserv:~$ ps
 PID TTY          TIME CMD
1648 tty1     00:00:00 bash
1789 tty1     00:00:00 tail
1940 tty1     00:00:00 ps
```

```
student@ubserv:~$ fuser -v -m /
              USER        PID ACCESS COMMAND
/:            root     kernel mount /
              student      1648 .rce. bash
              student      1789 frce. tail
```

-m: om het volledig
    mountpoint / te bekijken

c: current dir
e: executable
f: open file
F: open file for writing
r: root dir
m: mapped file or shared library

Troubleshooting tools

- fuser (filesystem user)

  - om te achterhalen wie een bepaald bestand heeft geopend en met welk commando

```
student@ubserv:~$ tail -f /var/log/syslog &
[1] 1789
```

```
student@ubserv:~$ jobs
[1]+  Running                 tail -f /var/log/syslog &
```

```
student@ubserv:~$ ps
  PID TTY          TIME CMD
 1648 tty1     00:00:00 bash
 1789 tty1     00:00:00 tail
 1940 tty1     00:00:00 ps
```

```
student@ubserv:~$ fuser -v /var/log/syslog
                     USER        PID ACCESS COMMAND
/var/log/syslog:     student    1789 f.... tail
```

f=open file   c=current dir   e=executable being run   r=root dir

Troubleshooting tools

- iostat (io statistics)

  - Geeft IO-statistieken weergegeven op specifieke tijdsintervallen

-p ALL=geef per partitie voor alle partities
10=om te 10 seconden updates tonen
3=Toon drie maal de statistieken

```
student@ubserv:~$ iostat -p ALL 10 3
Linux 3.13.0-32-generic (ubserv)        10/08/2014      _x86_64_

avg-cpu:  %user   %nice %system %iowait  %steal   %idle
           0.18    0.00    0.79    0.02    0.00   99.01

Device:            tps    kB_read/s    kB_wrtn/s    kB_read    kB_wrtn
ram0              0.00         0.00         0.00          0          0
ram1              0.00         0.00         0.00          0          0
ram2              0.00         0.00         0.00          0          0
ram3              0.00         0.00         0.00          0          0
ram4              0.00         0.00         0.00          0          0
ram5              0.00         0.00         0.00          0          0
ram6              0.00         0.00         0.00          0          0
ram7              0.00         0.00         0.00          0          0
ram8              0.00         0.00         0.00          0          0
ram9              0.00         0.00         0.00          0          0
ram10             0.00         0.00         0.00          0          0
ram11             0.00         0.00         0.00          0          0
ram12             0.00         0.00         0.00          0          0
ram13             0.00         0.00         0.00          0          0
ram14             0.00         0.00         0.00          0          0
ram15             0.00         0.00         0.00          0          0
loop0             0.00         0.00         0.00          0          0
loop1             0.00         0.00         0.00          0          0
loop2             0.00         0.00         0.00          0          0
loop3             0.00         0.00         0.00          0          0
loop4             0.00         0.00         0.00          0          0
loop5             0.00         0.00         0.00          0          0
loop6             0.00         0.00         0.00          0          0
loop7             0.00         0.00         0.00          0          0
fd0               0.00         0.00         0.00          0          0
scd0              0.00         0.00         0.00          0          0
sda               0.68        19.88         9.87     223927     111188
sda1              0.64        19.72         9.87     222105     111188
sda2              0.00         0.00         0.00          2          0
sda5              0.02         0.10         0.00       1096
```

Troubleshooting tools

- iotop (io top usage info)

  - Geeft continue IO-statistieken met de hoogste bovenaan

student@ubserv:~$ sudo iotop -o

```
Total DISK READ :      0.00 B/s | Total DISK WRITE :      0.00 B/s
Actual DISK READ:      0.00 B/s | Actual DISK WRITE:      0.00 B/s
  TID  PRIO  USER        DISK READ  DISK WRITE  SWAPIN      IO>    COMMAND
```

-o = enkel de processen laten zien die IO gebruiken

Troubleshooting tools

- vmstat (Virtual Memory Statistics)
  - Geeft statistieken over het gebruik van RAM en swapfile

```
student@ubserv:~$ vmstat -SM 5 3
procs -----------memory---------- ---swap-- -----io---- -system-- ------cpu-----
 r  b   swpd   free   buff  cache   si   so    bi    bo   in   cs us sy id wa st
 0  0      0    531     61    210    0    0    20    13   40   89  0  1 99  0  0
 0  0      0    531     61    210    0    0     0     0   38   80  0  1 99  0  0
 0  0      0    531     61    210    0    0     0     2   38   81  0  1 99  0  0
```

SM=in MB   5=om de vijf seconden   3=drie maal

free -h

UUIDS

- UUID
  - Universally Unique Identifier
  - om objecten uniek aan te duiden
  - 128bit

Achterhalen van UUIDS

- tune2fs

Achterhalen van UUIDS

- blkid

```
student@ubserv:~$ sudo blkid
/dev/sda1: UUID="e5cdef95-7817-444b-b517-28b4b027c423" TYPE="ext4"
/dev/sda5: UUID="26f9a596-9727-48ed-b24a-820df9d028b8" TYPE="swap"
```

- ls -l

```
student@ubserv:~$ ls -l /dev/disk/by-uuid/
total 0
lrwxrwxrwx 1 root root 10 Oct  8 18:19 26f9a596-9727-48ed-b24a-820df9d028b8 -> ../../sda5
lrwxrwxrwx 1 root root 10 Oct  8 18:19 e5cdef95-7817-444b-b517-28b4b027c423 -> ../../sda1
```

- file -s

```
student@ubserv:~$ sudo file -s /dev/sd* | grep -e swap -e ext
/dev/sda1: Linux rev 1.0 ext4 filesystem data, UUID=e5cdef95-7817-444b-b517-28b4b027c423 (needs journal recovery) (extents) (large files)
/dev/sda5: Linux/i386 swap file (new style), version 1 (4K pages), size 261631 pages, no label, UUID=26f9a596-9727-48ed-b24a-820df9d028b8
```

Werken met UUIDS

- /etc/fstab


```
student@ubserv:~$ sudo blkid
/dev/sda1: UUID="e5cdef95-7817-444b-b517-28b4b027c423" TYPE="ext4"
/dev/sda5: UUID="26f9a596-9727-48ed-b24a-820df9d028b8" TYPE="swap"
```

```
student@ubserv:~$ cat /etc/fstab
# /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=e5cdef95-7817-444b-b517-28b4b027c423 /               ext4    errors=remount-ro 0       1
# swap was on /dev/sda5 during installation
UUID=26f9a596-9727-48ed-b24a-820df9d028b8 none            swap    sw              0       0
/dev/fd0        /media/floppy0  auto    rw,user,noauto,exec,utf8 0       0
```

Werken met UUIDS

- /boot/grub/grub.cfg

```
student@ubserv:~$ sudo blkid
/dev/sda1: UUID="e5cdef95-7817-444b-b517-28b4b027c423" TYPE="ext4"
/dev/sda5: UUID="26f9a596-9727-48ed-b24a-820df9d028b8" TYPE="swap"
```

```
student@ubserv:~$ grep -i uuid /boot/grub/grub.cfg
  search --no-floppy --fs-uuid --set=root --hint-bios=hd0,msdos1 --hint-efi=hd0,msdos1 --hint-baremetal=ahci0,msdos1   e5cdef95-7817-444b-b517-
  search --no-floppy --fs-uuid --set=root e5cdef95-7817-444b-b517-28b4b027c423
        search --no-floppy --fs-uuid --set=root --hint-bios=hd0,msdos1 --hint-efi=hd0,msdos1 --hint-baremetal=ahci0,msdos1   e5cdef95-7817-44
        search --no-floppy --fs-uuid --set=root e5cdef95-7817-444b-b517-28b4b027c423
  linux   /boot/vmlinuz-3.13.0-32-generic root=UUID=e5cdef95-7817-444b-b517-28b4b027c423 ro  splash vga=868 $vt_handoff
            search --no-floppy --fs-uuid --set=root --hint-bios=hd0,msdos1 --hint-efi=hd0,msdos1 --hint-baremetal=ahci0,msdos1   e5cdef95
            search --no-floppy --fs-uuid --set=root e5cdef95-7817-444b-b517-28b4b027c423
        linux   /boot/vmlinuz-3.13.0-32-generic root=UUID=e5cdef95-7817-444b-b517-28b4b027c423 ro  splash vga=868 $vt_handoff
            search --no-floppy --fs-uuid --set=root --hint-bios=hd0,msdos1 --hint-efi=hd0,msdos1 --hint-baremetal=ahci0,msdos1   e5cdef95
            search --no-floppy --fs-uuid --set=root e5cdef95-7817-444b-b517-28b4b027c423
        linux   /boot/vmlinuz-3.13.0-32-generic root=UUID=e5cdef95-7817-444b-b517-28b4b027c423 ro recovery nomodeset
  search --no-floppy --fs-uuid --set=root --hint-bios=hd0,msdos1 --hint-efi=hd0,msdos1 --hint-baremetal=ahci0,msdos1   e5cdef95-7817-44
  search --no-floppy --fs-uuid --set=root e5cdef95-7817-444b-b517-28b4b027c423
  search --no-floppy --fs-uuid --set=root --hint-bios=hd0,msdos1 --hint-efi=hd0,msdos1 --hint-baremetal=ahci0,msdos1   e5cdef95-7817-44
  search --no-floppy --fs-uuid --set=root e5cdef95-7817-444b-b517-28b4b027c423
```