



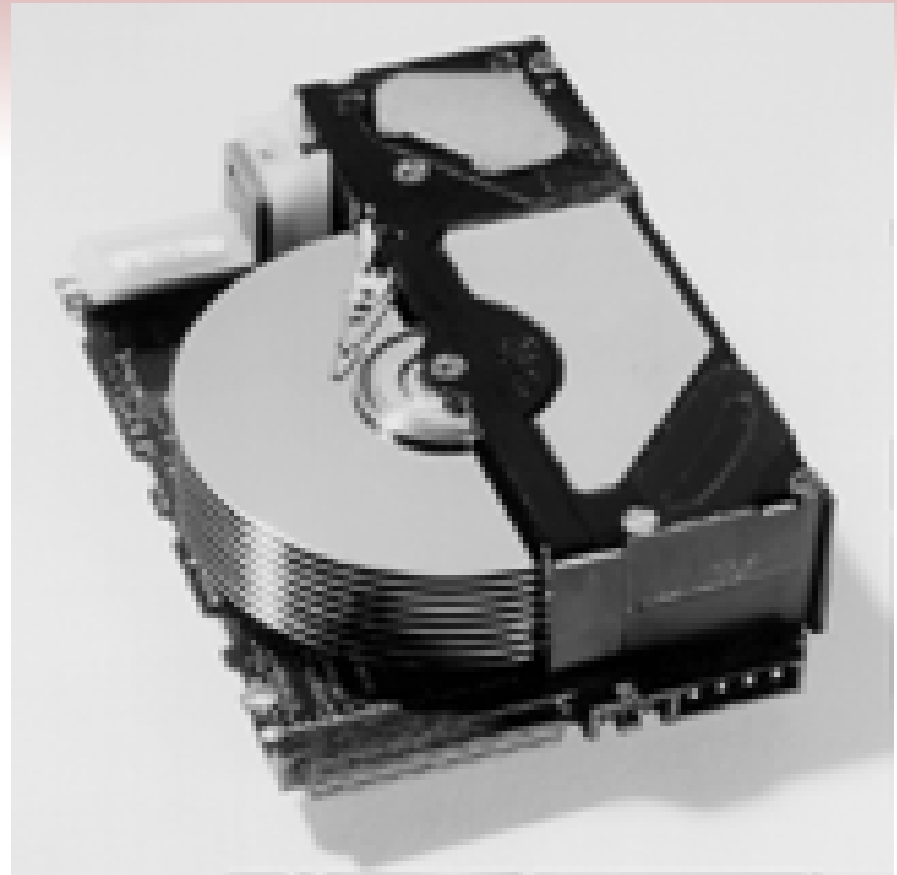
This is a RAID!



Ron Wellsted

Why is RAID useful?

- Capacity
- Performance
- Reliability



RAID Levels

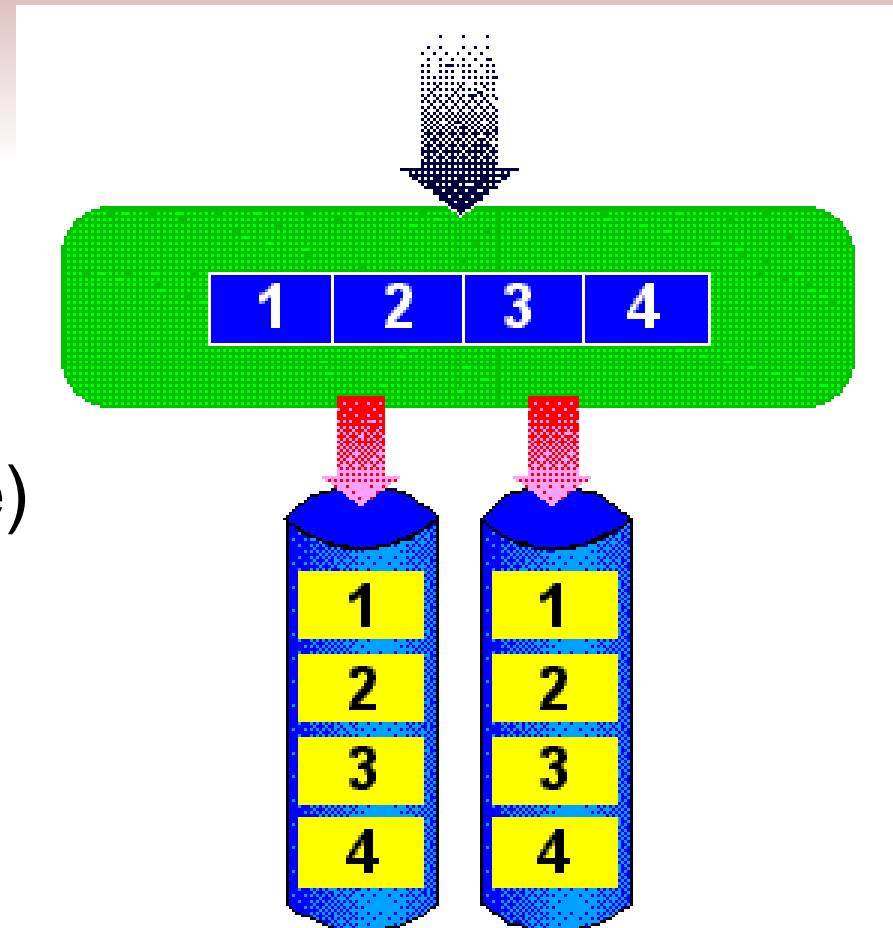
- Basic Levels
 - RAID 0
 - RAID 1
 - RAID 4
 - RAID 5
- Hybrid Levels
 - RAID 10
 - RAID 40
 - RAID 50

RAID 0

- Stripes Data Across Drives
- Pros
 - Performance
 - Capacity
- Cons
 - No Redundancy

RAID 1

- Mirroring
- Pros
 - Redundancy
- Cons
 - Capacity
 - Performance (Write)

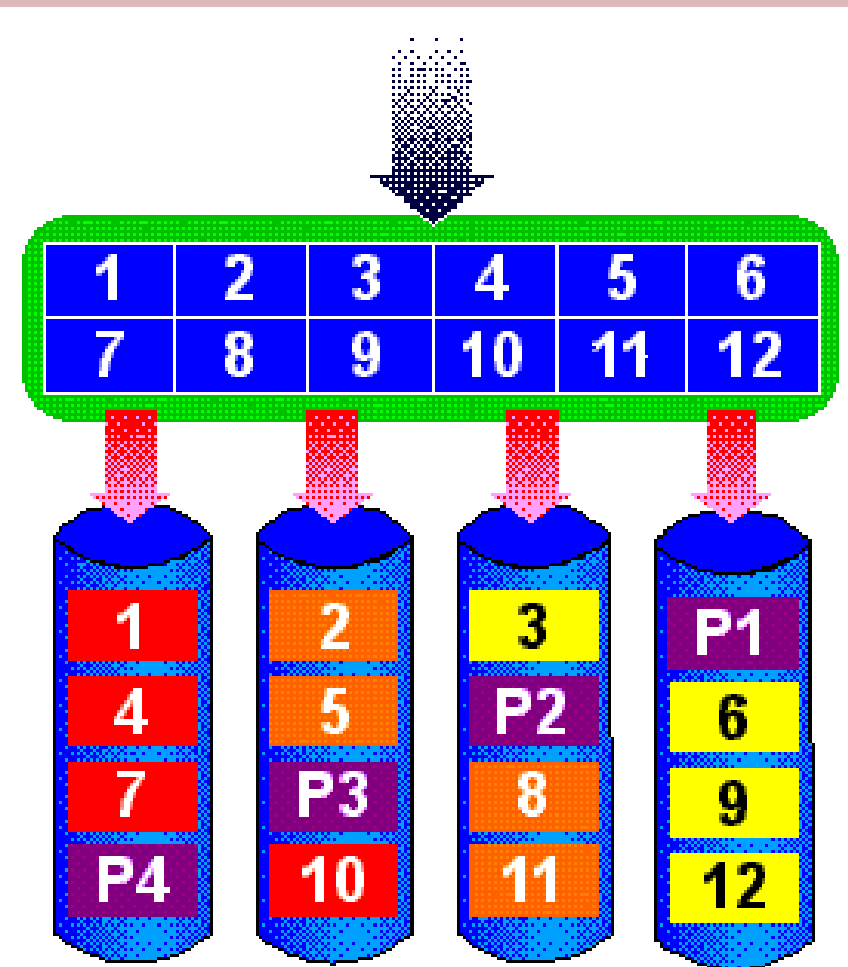


RAID 4

- Simple Fault Tolerance
 - $A + B = C$
- Pros
 - Redundancy
 - Capacity
- Cons
 - Performance

RAID 5

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- Pros
 - Redundancy
 - Capacity
- Cons
 - Performance



RAID 10

- RAID 1 + RAID 0
- Requires minimum of 4 disks
- Pros
 - Performance
 - Redundancy
- Cons
 - Capacity (Cost)

RAID 40

- RAID 4 + RAID 0
- Pros
 - Redundancy
 - Capacity
 - Performance
- Cons
 - Cost (requires 6 Disks minimum)

RAID 50

- RAID 5 + RAID 0
- Pros
 - Redundancy
 - Capacity
 - Performance
- Cons
 - Cost (requires 6 Disks minimum)

Hardware RAID

- Pros
 - Performance
- Cons
 - Special Hardware
 - Cost



Software RAID

- Pros
 - Cheap
 - No Special Hardware
- Cons
 - Performance

Linux Software RAID

- Kernel support
 - Raid 0
 - Raid 1
 - Raid 4
 - Raid 5
- /etc/raidtab
- Raidtools
- /proc/mdstat

Demonstration

ATTENTION

This room is fulfilled mit special elektronische equipment. Fingergrabbing and pressing the cnoeppkes from the computers is allowed for die experts only! So all the "lefthanders" stay away and do not disturben the brainstorming von here working intelligencies. Otherwise you will be out thrown and kicked anderswhere! Also: please keep still and only watchen astaunished the blinkenlights.

RAID 0

```
Raiddev /dev/md0
raid-level 0
persistent-superblock 1
chunk-size 4
nr-raid-disks 6
device /dev/sda1
    raid-disk 0
device /dev/sdb1
    raid-disk 1
device /dev/sdc1
    raid-disk 2
device /dev/sdd1
    raid-disk 3
device /dev/sde1
    raid-disk 4
device /dev/sdf1
    raid-disk 5
```

RAID 1

```
Raiddev /dev/md1
raid-level 1
persistent-superblock 1
chunk-size 4
nr-raid-disks 2
device /dev/sdb5
    raid-disk 0
device /dev/sdc5
    raid-disk 1
```


RAID 4

```
Raiddev /dev/md4
raid-level 4
persistent-superblock 1
chunk-size 4
nr-raid-disks 3
device /dev/sdd5
    raid-disk 0
device /dev/sde5
    raid-disk 1
device /dev/sdf5
    raid-disk 1
```

RAID 5

```
Raiddev /dev/md5
raid-level 5
persistent-superblock 1
chunk-size 4
nr-raid-disks 5
device /dev/sdb6
    raid-disk 0
device /dev/sdc6
    raid-disk 1
device /dev/sdd6
    raid-disk 2
device /dev/sde6
    raid-disk 3
device /dev/sdf6
    raid-disk 4
```