



Storage: disk and tape technology

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Tapes: open questions

- Bandwidth of high-end drives made a jump, now faster than GigE
 - Will this happen again?
 - How to connect tape drives to the rest of the infrastructure?
- Commodity drives (e.g. LTO): Are they an alternative for big data centres?
- EUR/TB between disks and tapes getting ever closer
 - But respective merits are very different
 - What are the implications on HEP usage of tapes?
- How to control risks of data loss?
- Long-term future of tapes?
 - Tapes are a small market segment

Disks: open questions (1)

- Separation between commodity and enterprise markets
 - Some products cover the gap – will this continue?
- 3.5” vs 2.5”, SCSI vs SAS vs SATA, capacity vs performance
- Technology evolution unclear
 - Slow growth of bandwidth, EUR/GB, even GB...
- Storage model: not one size fits all
 - Cheap ‘storage in a box’ seems adequate for most streaming applications
 - (Smaller?) need for high performance, random access disk storage

Disks: open questions (2)

- Will RAID 6 take off?
 - Majority of commercial offerings of RAID controller still don't have it
 - But with current parameters we NEED it!
- Other controller improvements?
 - Real disk error handling, raid scrubbing, ...
- Interconnects: Will IB replace controller to server and server to backbone interface?
- Can alternative models help (e.g. object storage?)
- What is the 'best' ratio of boxes / capacity / spindles / CPU?