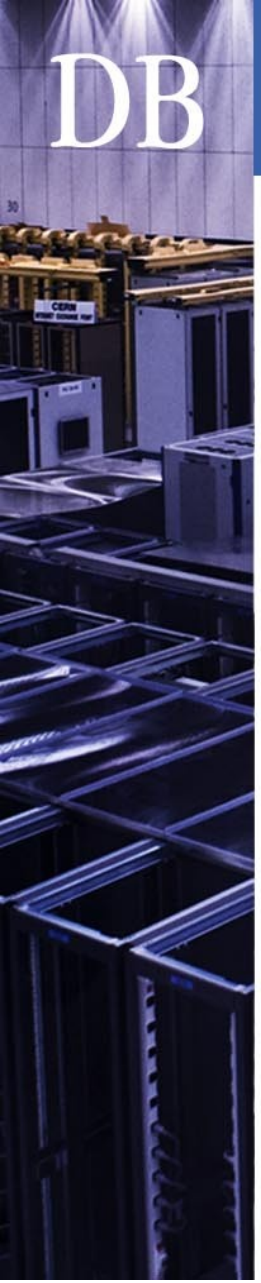

Backup validation, recovery scenarios, disaster recovery

Distributed Database Operations Workshop

November 17th, 2010

Przemyslaw Radowiecki

CERN IT-DB

CERN IT Department
CH-1211 Geneva 23
Switzerland
www.cern.ch/it

Database SERVICES

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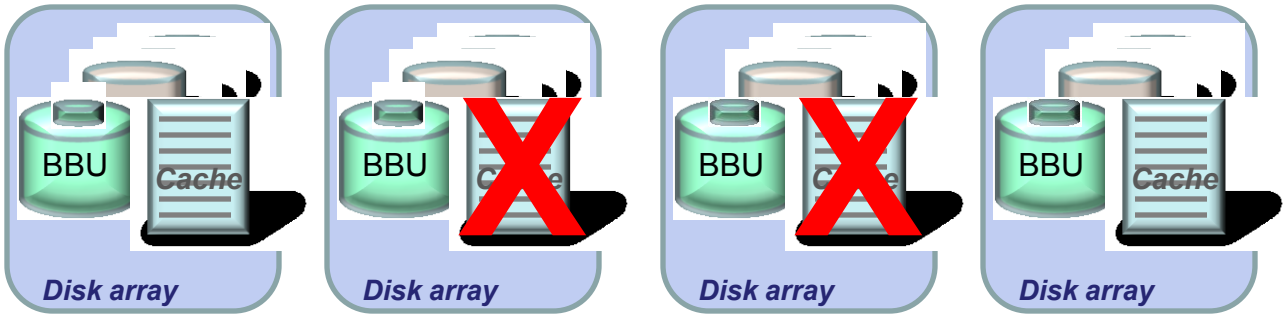
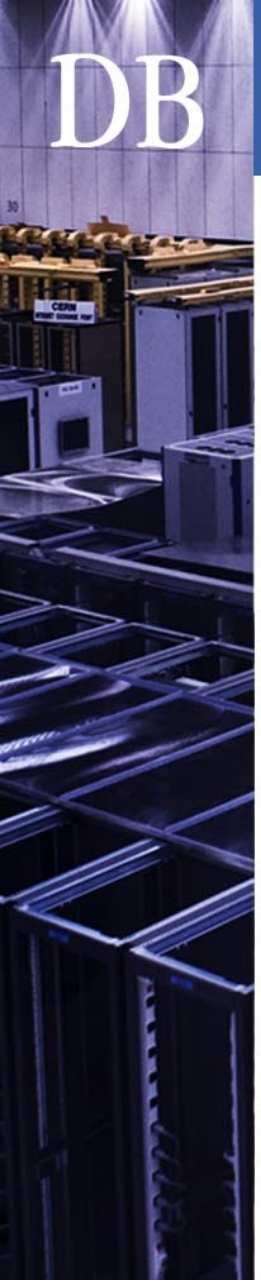
One disaster story

- Power cut in a pit



- Two disk arrays without BBU (Battery Backup Unit)
- Data in cash lost



When the power came back...

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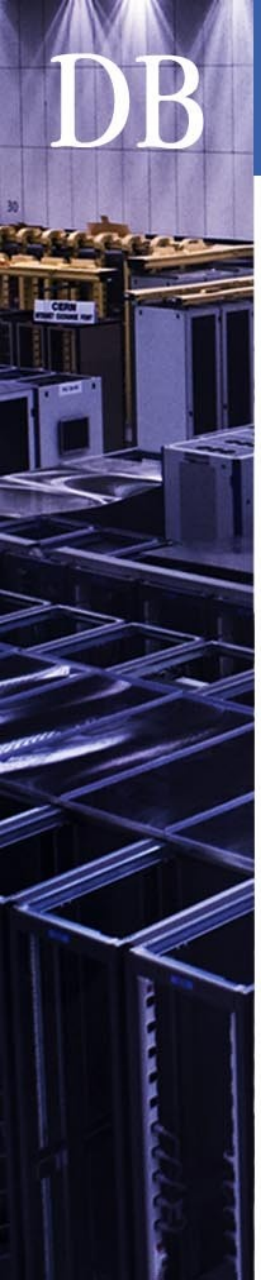
- LHCb online database does not start up
- Widespread corruption of metadata and production data diagnosed
  - All data stored on **ASM useless (both data and recovery disk groups)**
- Restore from backup decided
  - Restore estimated to take 8 hours
- Switch over to standby decided



Backup strategies comparison

- ☹ Backup on ASM
- 😐 Backup on separate file system (ext3)
  - Time to restore 8 h (compressed backup)
  - Loss of data up to 1 h before crash (archivelogs backup frequency)
- ☺ Switch over to standby
  - a couple of tens of seconds of data loss
  - 2 hours to startup (24h of archivelogs to apply, network configuration change, other minor issues)

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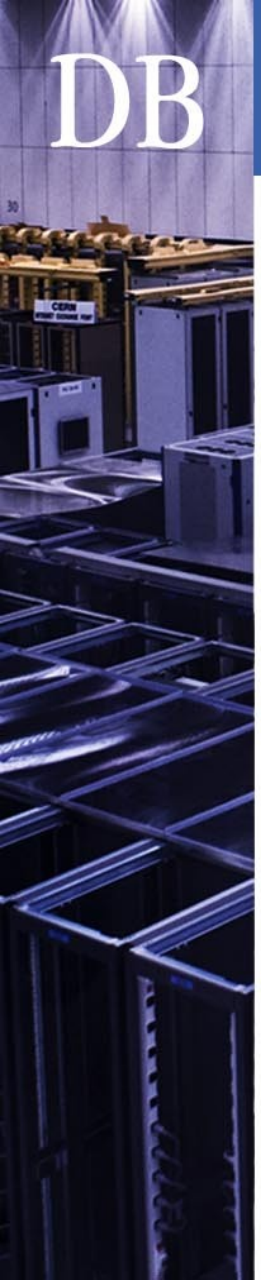
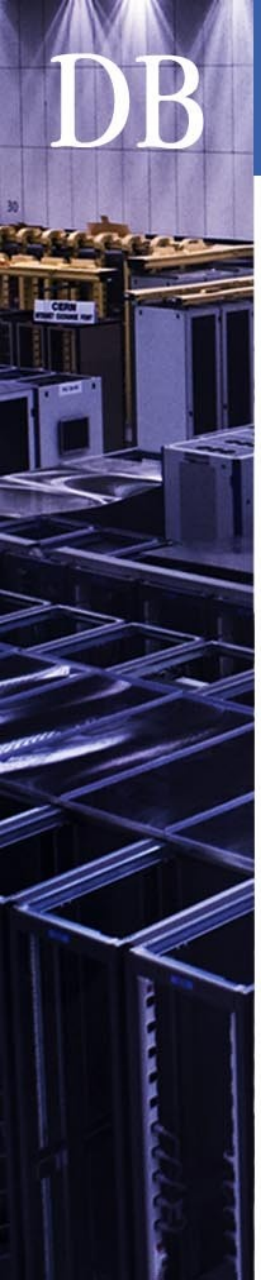


Physics databases backup strategy

- Incremental level 0
  - every 2 weeks
- Incremental cumulative level 1
  - every 3 days
- Incremental differential level 1
  - every day
- Archivelogs
  - every hour
- Rolling forward image copy
  - updated every day
  - 3 days behind production
- Standby databases
  - 24 hours behind production



Backup verification

- Backup operation result verification
- RMAN> report need backup days …
- RMAN> restore … validate
- Test recoveries on dedicated machine
- Test techniques and procedures not related to the database
  - e.g. depending on other organization units

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