Hunting For Hardware
Changes in Data Centres

Computing Facilities
Planning and Procurement

Miguel Santos
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Hardware Failures

• CERN Data Centre:
  – ~10K servers, ~15K CPU, ~55K DIMMs, ~60K HDD, ~17K NICs

• To answer questions:
  – For how long should we burn-in servers?
  – Is there a systematic problem?
  – When should we stop running old servers?

• Hardware Failures
  – Actually, replacements
  – HDD MTTF 320,000 hrs (not 1.2 Mhrs)
  – What about annualized failure rate (AFR)?
    • By disk age? By server purchase order (server vintage)?
To know more we needed...

- Not only to know what we have and track when it changes...
- … but also to track all components, their age, and to keep a detailed record of all the changes (serial, model, firmware, revision)
- We started storing the data on a couchdb instance
Hardware Inventory

CERN IT Computing Facilities

- CouchDB cluster
- JSON doc via REST
- SERIAL
- BMC
- ATA
- NETWORK
- NIC
- RAM
- CPU
- BIOS

Server

Server
HDD example

Disk population at the end of December 2011

Disk replacements during December 2011