Rutherford Appleton Laboratory Database Services

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Database Services Manager

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Tier1 Overview

- Large Computing and Storage Resource
- Able to commit to and deliver high quality of service
- Providing high quality technical support
- Contributing to collaborative services/core infrastructure
- Fulfil specific role within main experiment production
- ALL Relevant for production Database Service!

Tier1

- Rutherford Appleton Lab hosts the UK LCG Tier1 facility
  - Funded via GridPP project from PPARC
  - Supports LCG and UK Particle Physics users
  - Virtual Organisations:
    - LCG: Atlas, CMS, LHCb, (Alice), dteam
    - Babar
    - CDF, D0, H1, Zeus
    - Bio, Pheno
  - Experiments:
    - Minos, Mice, SNO, UKQCD
    - Theory

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Tier1 Hardware

- ~950 CPUs in batch service
  - 1.4GHz, 2.66GHz, 2.8GHz (HT off)
  - New procurement
    - Aiming for 1500+ SPECint2000/CPU
    - Systems for testing as part of evaluation of tender
    - First delivery late '05/early '06, second delivery in April/May '06
- ~40 systems for services (FEs, RB, CE, LCG servers, loggers etc)
- 60+ disk servers
  - Mostly SCSI attached IDE or SATA ~220TB
  - New procurement: probably PCI/SATA solution

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Tier1 Hardware

- Current Robot: 3000TB (1.2PB max), PP 200+TB (110TB Babar)
- Castor 1 system trials
  - Many CERN-specifics
- HSM (Hierarchical Storage Manager)
  - 500TB, DMF (Data Management Facility)
    - Real file system
    - Data migrates to tape after inactivity
    - Not intended for PP data
  - Due November 2005

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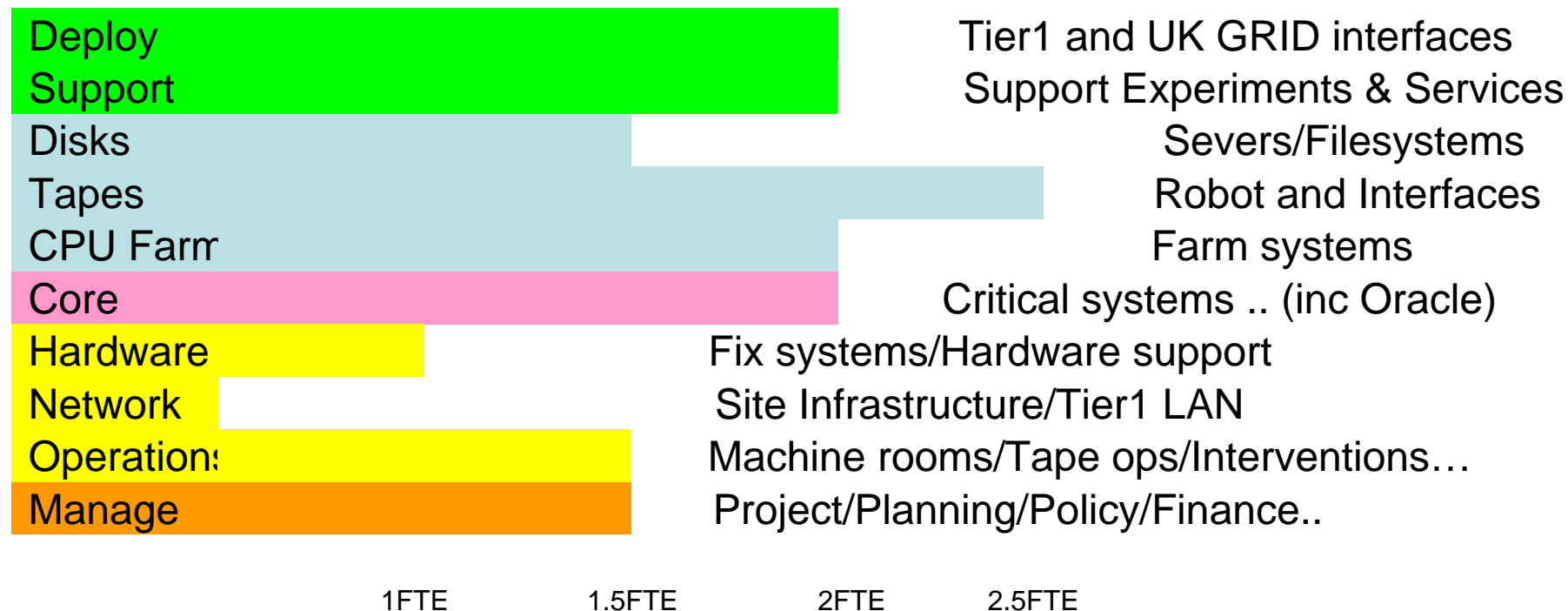
Tier1 Hardware

- Procurement for new robot underway
  - 3PB, ~10 tape drives

  - Expect to order end Oct 05

  - Delivery December 05

  - In service by March 06 (for SC4)

  - Castor system

  - New robot

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Tier1 in GRIDPP2

- GRIDPP2 (Sept 2004-2007)
  - "*From Prototype to Production*"
  - Close engagement in LCG project, preparing for LHC startup
  - Continue to provide Tier A centre for Babar Experiment
  - EGEE Resource and member of EGEE JRA1 Testbed
  - Ramp-up to a production quality GRID service
  - Gradually move to only GRID access
  - 2.3M Hardware budget
  - 16.5 staff

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Tier1 Staffing

Deploy	Tier1 and UK GRID interfaces
Support	Support Experiments & Services
Disks	Severs/Filesystems
Tapes	Robot and Interfaces
CPU Farm	Farm systems
Core	Critical systems .. (inc Oracle)
Hardware	Fix systems/Hardware support
Network	Site Infrastructure/Tier1 LAN
Operations	Machine rooms/Tape ops/Interventions…
Manage	Project/Planning/Policy/Finance..

1FTE   1.5FTE   2FTE   2.5FTE

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26 January 2006
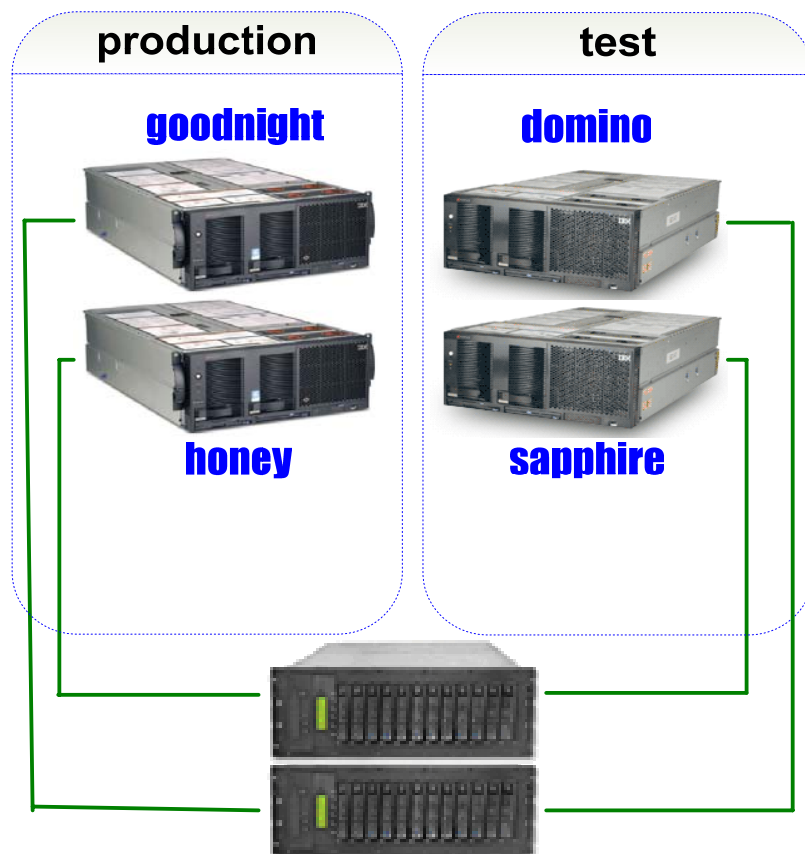
Database Services Structure

- Part of the Data Management Group in the e-Science Centre

- Structure
  - Database Services Manager
  - 3 DBA Staff Resource
  - 1 System Administration Staff Resources
  - More resources with Tier 1 Group collaboration
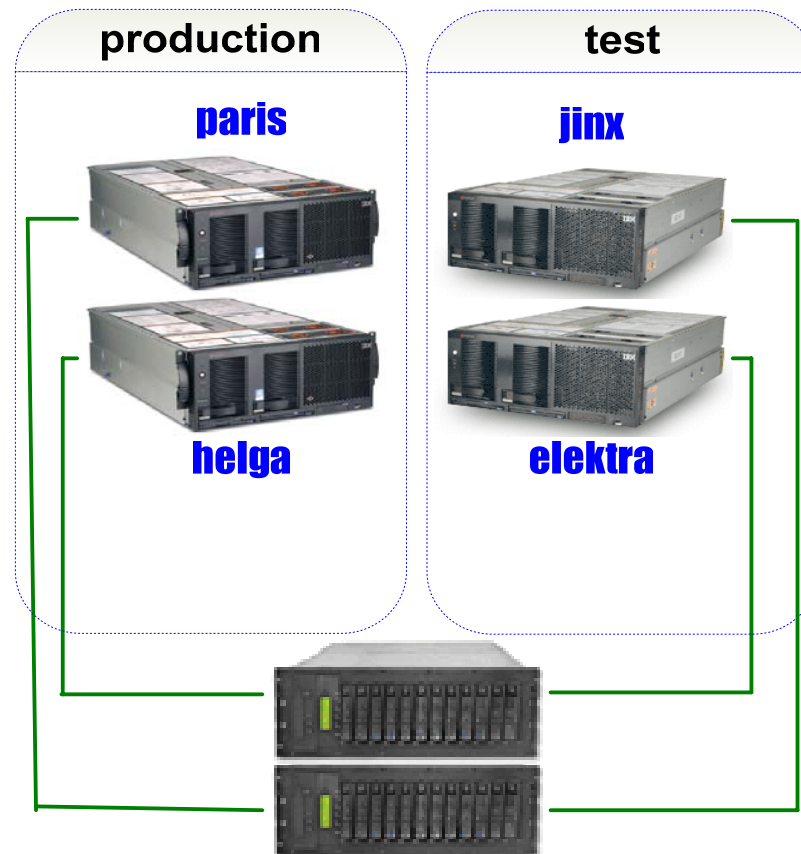
Database Services Set-up

- Running Oracle 9i Enterprise Server with Real Application Clusters and Oracle 10g

- Using RedHat Linux (RHEL 3.0 AS) with Oracle Cluster File System (OCFS)

- Oracle Data Guard

- RMAN

- Oracle Enterprise Manager (OEM)

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Database Services Hardware Structure

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Daresbury Laboratory

production	test	production	test
goodnight	domino	paris	jinx
honey	sapphire	helga	elektra

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Database Services Projects

- Storage Resource Broker
  - Diamond, ISIS
  - Other Resource Councils
  - Internal CCLRC Projects

- National Grid Service
  - Five node RAC Production Service
  - Data Guard to Manchester, UK
  - Storage Resource Broker

- 3D Project
- CASTOR
- Internal CCLRC Projects

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3D Status

- **Implementation earlier this year**

- **Still in test phase, using test machine**
  - 2 x 2.8GHz xeon processors
  - 2GB RAM
  - 120GB HDD
  - RedHat Enterprise Linux 3

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3D Status

- Oracle 10.1.0.4 (single instance) installed

- Back-ups being configured for RMAN

- Successful set-up of:
  - Oracle Streams (3D)
  - File Transfer Service (FTS)
  - Oracle Enterprise Manager (OEM)
  - COOL

Plans

- Continued Testing
- Hardware procurement:
  - Oracle RAC?
  - High Availability
  - Memory/Disk space
  - Budget or high spec

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Questions & Answers