



NIKHEF site report

What's new at NIKHEF's infrastructure
and
Ramping up the LCG tier-1

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Servers & desktops

- Server systems:
 - Supermicro: SLC3, SLC4, MS Server 2003
 - high-end file service: EMC
 - low-end file service: Supermicro + Infortrend
 - compute server: quad Opteron (theory dep.)
- Desktop systems:
 - Dell Dimensions: SLC3, SLC4, MS XP
 - Apple Mac revival

Migrating file services

- Phasing out Solaris (NFS) and MS 2003 (CIFS) central file services for 'home' and 'project'
- Migration to EMC NS502 filer
- Integration of Unix and Windows home dirs
 - native NFS and CIFS access (no SAMBA)
 - different view on same file
- Advantages:
 - one home dir per user, one quota system (incl group), snapshots, dynamic volume management, etc.

Storage on demand

- SARA ⁽¹⁾ offers 'storage-on-demand'
 - iSCSI, NFS, CIFS services
 - high (FC) and normal (SATA) performance
 - implemented on EMC
 - connection: dedicated fibers (or OPN, or VLAN)
 - pilot project has just started
 - exploring data migration scenarios, replication and backup issues, etc
 - fixed price per TB/year for 3-years contract.

(1) SARA is our neighbor and 'partner for a broad range of expertise in ICT'.



Networking

- Upgrade NREN (SURFnet-6) connection:
 - 10 gigabit/sec bandwidth
 - OPN services
 - we are 'pilot user', good results!
- Wireless LAN Eduroam authentication
 - inter-institutional roaming
 - RADIUS-based infrastructure that uses 802.1X





Netherlands LHC/Tier-1

- Partners: NIKHEF, SARA, NCF
- Budget: BigGrid (the Dutch E-science Grid)
- Organization: to be discussed
- Network infrastructure present at campus:
 - NREN SURFnet-6 core
 - The Amsterdam Internet Exchange ams-ix
 - The optical internet exchange Netherlight





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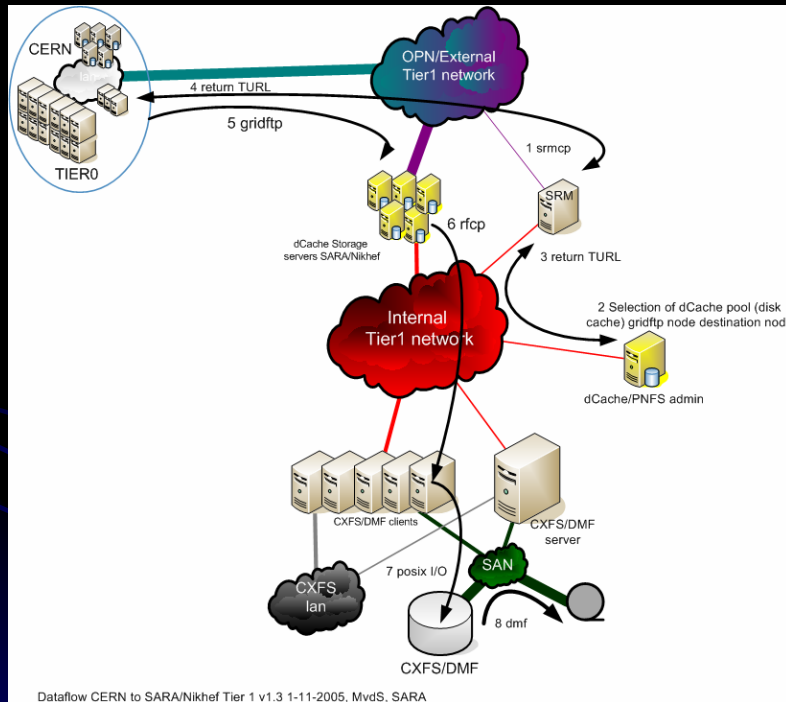
- Commitment share of total Tier-1 needs:
 - LHCb: 23%
 - ATLAS: 11,5%
 - ALICE: 5,75%
- Planned resources:

	2006	2007	2008	2009	2010
CPU's	200	1000	3000	5000	8000
Disk PB	0.2	1.1	2.5	3.8	6.1
Tape PB	0.1	0.7	1.8	3.5	5.7

reminder: update power & cooling infra



Netherlands LHC/Tier-1



- Service challenges
- VOBBox discussion
- Security infrastructure
- 3D database project



Current resources: clusters

- LCG2 production cluster
 - 66 nodes, dual AMD 1.6 GHz (home made, heat!)
 - 30 nodes, dual Xeon 2.8 GHz (Supermicro)
 - 32 nodes, dual Xeon 3.2 GHz (Dell)
- LISA – Dell ‘national’ cluster, partly available for LCG)
 - 625 nodes, dual Xeon 3.4 GHz
- Matrix – IBM cluster
 - 36 nodes, dual Xeon 3.0 GHz

In progress: purchase 100 dual Xeon nodes





Current resources: storage

- Mass storage system distributed on two locations
 - Amsterdam and Almere ('a booming city in the polder')
- Hardware:
 - Disk cache on 5 nodes, 2 TB/node
 - 2 StorageTek tape robots (STK 9310, STK SL8500)
 - Fibre Channel SAN
- Software:
 - SRM and dCache
 - CXFS and DMF (SGI) data migration to/from tape
- LCG storage now: 40 TB (permanent) + 20 TB (volatile)

In progress: purchase 24 TB durable storage



Thank you