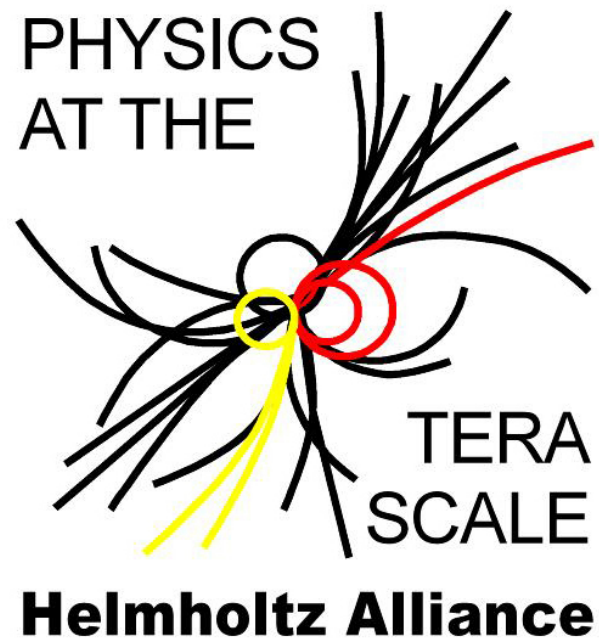


National Analysis Facility.

- NAF: Status and Outlook



[Andreas Haupt](#), [Volker Gülzow](#), [Yves Kemp](#)
6th Workshop Helmholtz Alliance "Physics at
the Terascale"
DESY 4.12.2012

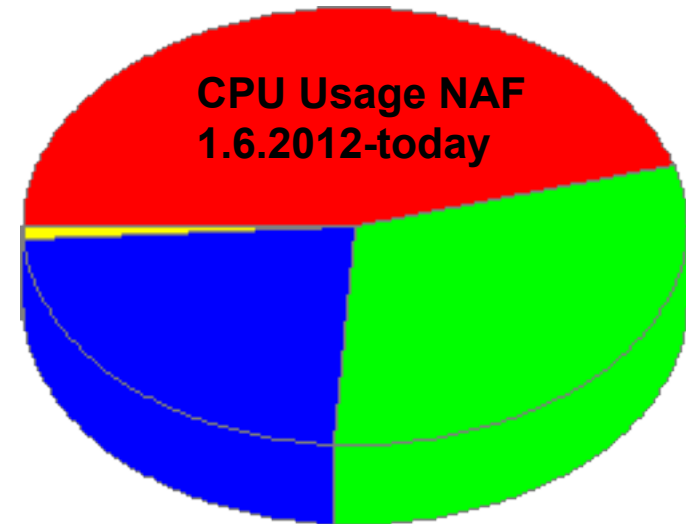
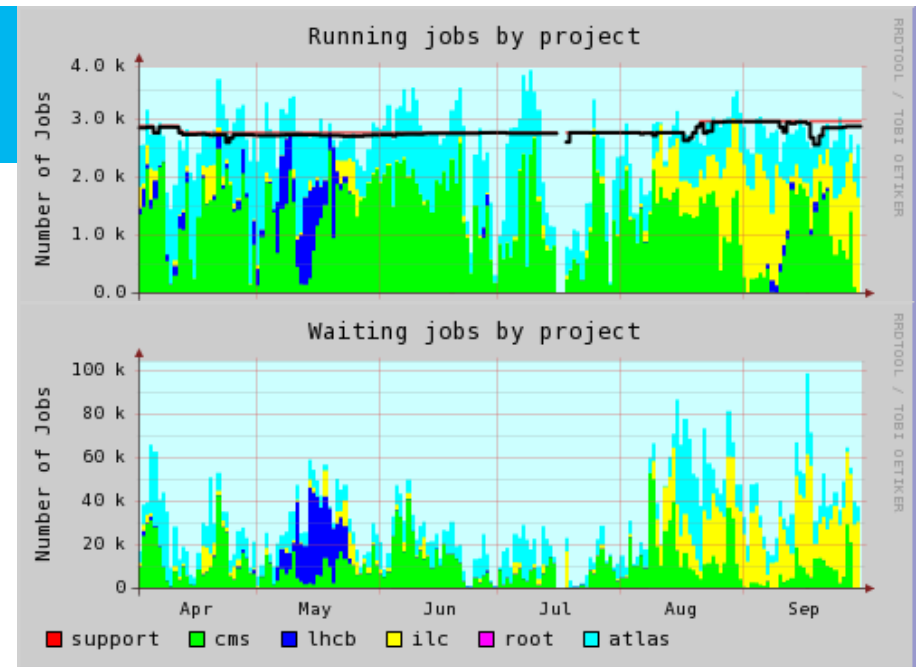
NAF CPU usage

- > Resources are well utilized, many queued jobs
 - Additional resources purchased, being deployed

- > Resources that are purchased from “NAF” are added to the fairshare in the ratio 4/2/1/1 – ATLAS/CMS/LHCB/ILC

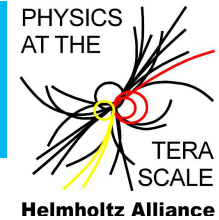
- > Resources bought by a group are added 100% to the respective experiments’ fairshare
 - UniHH CMS group has purchased substantial parts
 - DESY ATLAS group has purchased some resources
 - LHCB has purchases some resources in Zeuthen
 - ... Fairshare acts only at the level of the experiment – everyone profits from a purchase!

- > **Used resources reflect +/- fairshare for ATLAS & CMS**



■ cms:46%	■ atlas:30%
■ ilc:23%	■ lhcb:1%
■ support:0%	

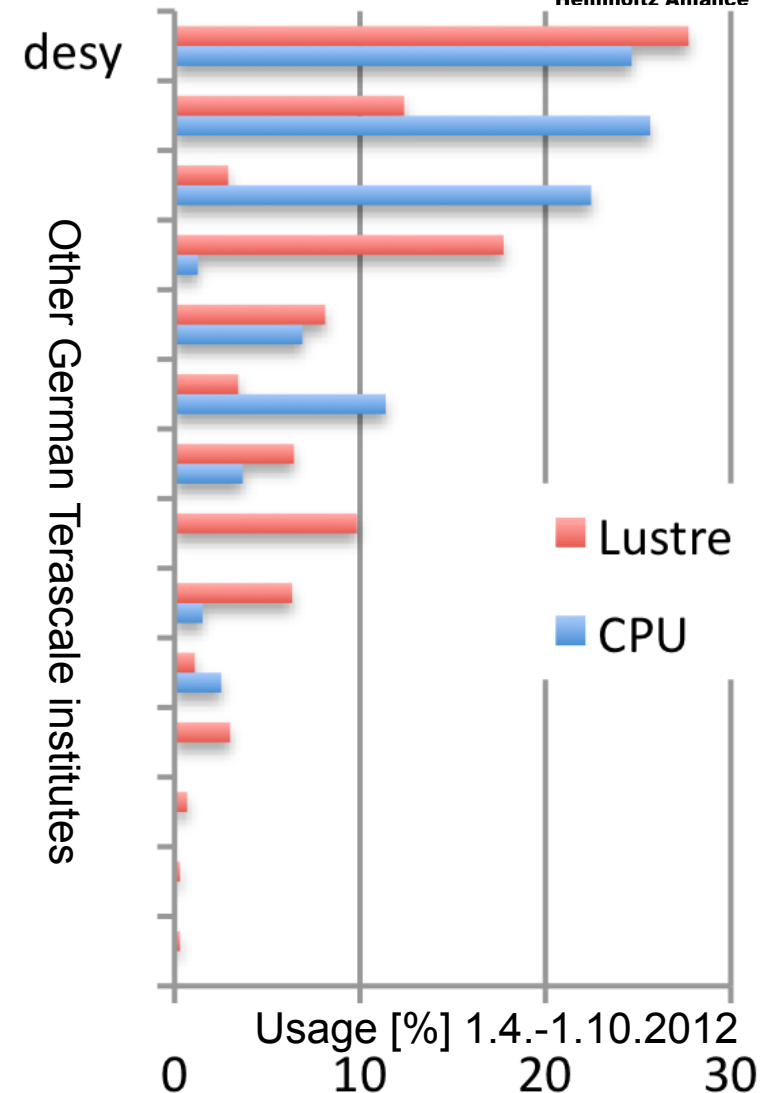
The National Analysis Facility



> Usage by external institutes and groups

- DESY strong user groups – but no dominating!
- NAF: infrastructure for LHC analysis to every physicists from a German institute.
- Other institutes can contribute in HW resources – e.g. Uni-HH / CMS contributions
- Many institutes use the NAF either as a daily workhorse, or in peak times, e.g. during PhD analyses

> NAF clearly a national facility!



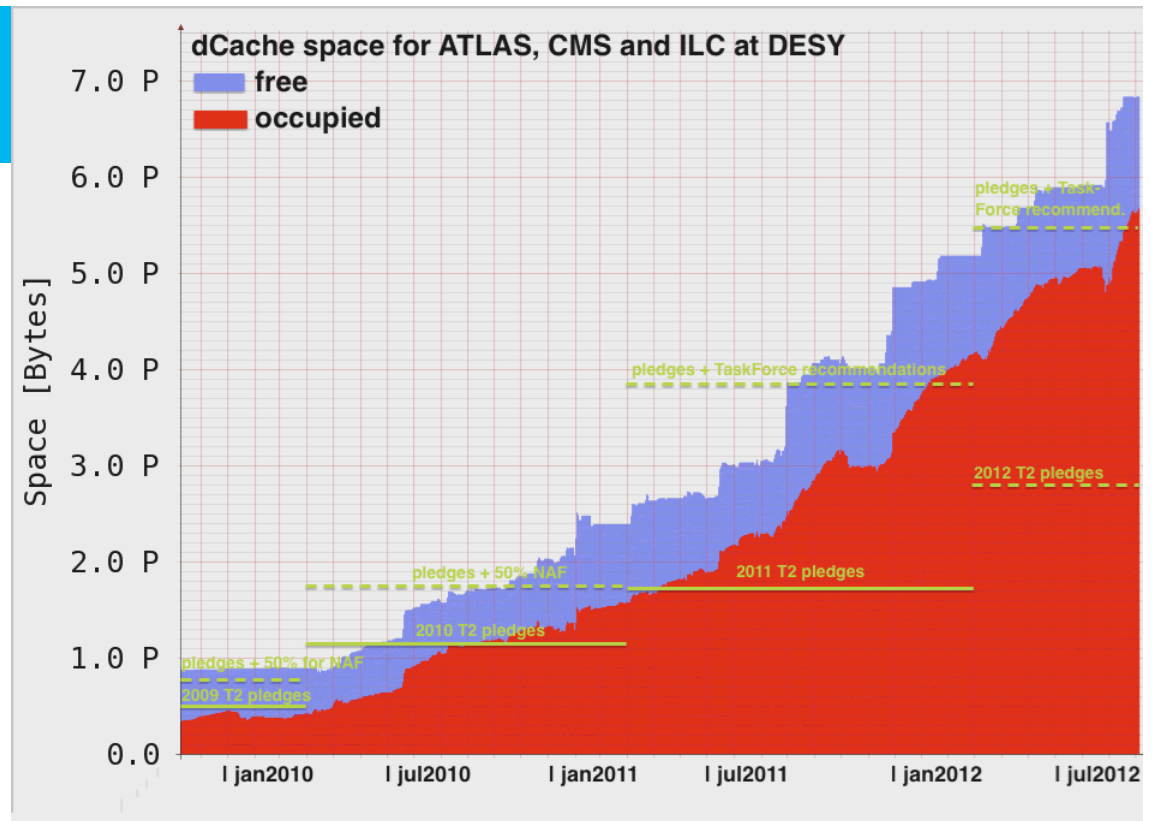
dCache space and usage

> dCache storage:

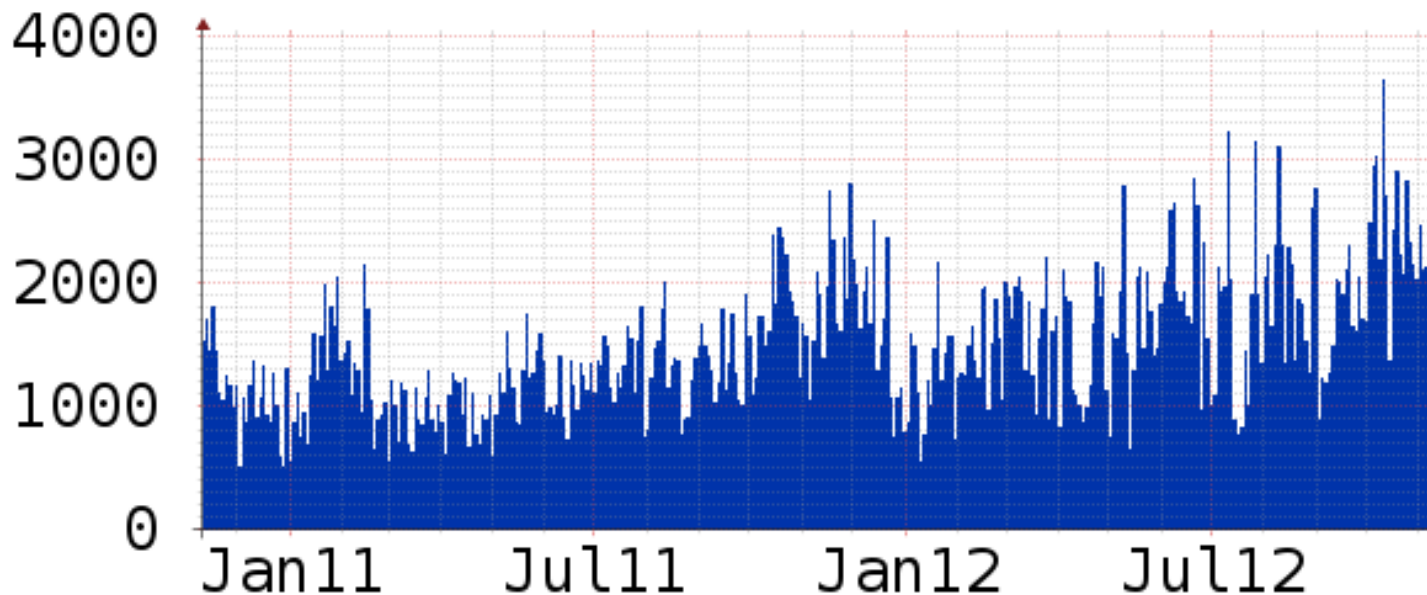
- Approaching 7 PB for LHC and ILC dCache storage
- Well utilized – both by Grid and NAF

> DESY dCache installations optimized for speed

- See peaks of >10GByte/s – making DESY one of the fastest Grid sites worldwide



Throughput MB/s



ROOTOOL / TOBI OETIKER

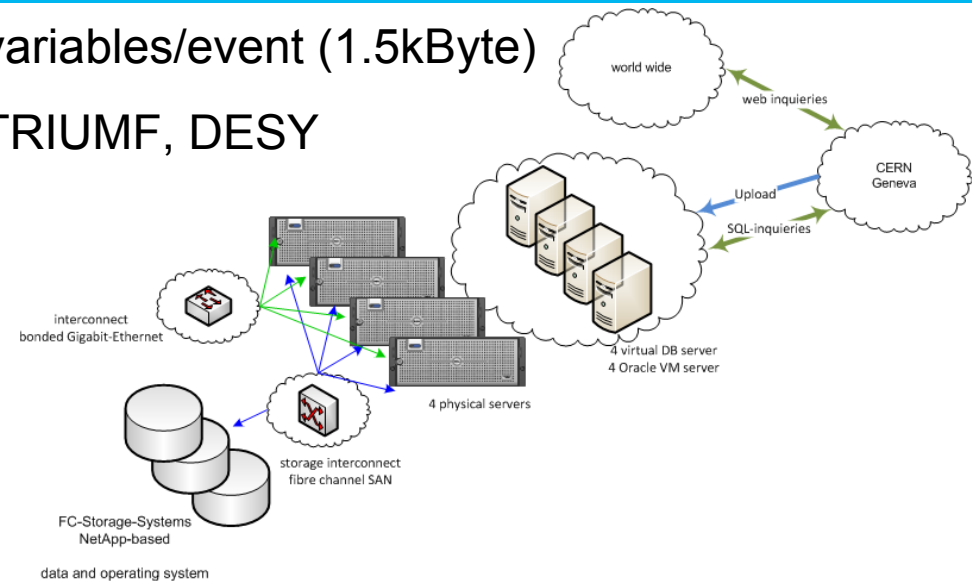


ATLAS TAG DB @ DESY

(slide Dirk Jahnke-Zumbusch)

- > TAGs: event level metadata w/ ~ 200 variables/event (1.5kByte)
- > TAG-databases @ CERN, BNL, PIC, TRIUMF, DESY
- > Oracle-based RDBMS

- mainly MC tag usage (09/10/12), also TAGs first and reprocessing 2010/2011 and commissioning
- DESY hosts some MC tags exclusively
- 4 node Real Application Cluster
- SAN-storage based on NetApp filers
Oracle Automated Storage Manager (ASM)
simplifies refreshing storage hardware
→ attach new storage && “DROP DISK”
== automated data movement
- underway:
transition Oracle 11.1.0.7 → 11.2.0.3
interconnect Ethernet → InfiniBand
- evaluation planned:
SSDs for IO-demanding index creation
during data load for temporary tablespaces
and caching



Type	GB
COMM	561
DATA	4118
MC	3198



Future of the NAF: NAF 2.0 - Why?

- > Technological evolution as well as changing user needs enforce a redesign of the NAF.
 - More graphical tools needed
 - More software, e.g. also commercial software needed
 - Mobile devices ask for better remote graphical capabilities
- > In 2007, the current NAF was set up as a separate system, jointly between the IT divisions in Hamburg and Zeuthen.
 - Right decision to get a fast start and deploy a large system
 - Some technical oversights: Latency problems, integration into DESY infrastructure, ...
 - ... but has made the NAF a non-mainstream infrastructure within IT
- > The world has changed since 2007: We cannot afford to maintain a separate system any longer
 - Affected by manpower changes in the Alliance
 - Technical and organizational decision to integrate the NAF further into already DESY infrastructures

And strengthen the non-DESY NAF usage and usability even more!



Future of the NAF: NAF 2.0 - What? _ 1

- > Everyone will get a “normal” DESY account
- > Will have access to a restricted set of “normal” DESY resources
 - The NAF 2.0 resources
 - Including several WGS
 - Including large batch system
 - Including \$LargeFileStore (e.g. Sonas)
 - Including dCache access
 - ...
- > Technical details:
 - Closer integration into respective site (HH or ZN)
 - No data should go over the WAN
 - This is enforced in case of \$LargeFileStore
 - Plain ssh+Password login – gsissh planned for later



Future of the NAF: NAF 2.0 - What? _ 2

- > Support: Better integrated into site support, so more people know the infrastructure
- > New developments
 - Ability to use DESY maintained software products
 - Graphical login (“NX”-like, using StarNet X-Win32/LIVE technology)
 - GridFTP access to Sonas planned
 - Support for new communities: BELLE
 - ...
- > The ATLAS case:
 - ATLAS is distributed over two sites, would lose a homogeneously looking system.
 - Decision: Expand resources at HH-site to offer full NAF capabilities at a single site (Storage, dCache & CPU)
 - Expansion will start in early 2013
 - Role of ZN-site will probably evolve to resource and support provider for local ATLAS group



Future of the NAF: NAF 2.0 - When?

- > NAF 2.0 has started!
- > “NAF Evolution” paper distributed end of September 2012 to experiments and Grid Project Board
- > Beginning October: First test users with already existing DESY accounts using first resources (WGS, Batch, some storage)
- > Beginning November: NAF Remote Desktop launched using StarNet X-Win32/Live technology
- > Plan: Beginning December starting with external users ... Volunteers?
 - Some preparation work still needs to be done, but can manually add a handful of users
- > Migration plan for Sonas still to be defined. Awaiting answer to technical call @IBM for Sonas migration.
 - Lustre migration plan easy: No migration, but decommissioning
- > Further continuation t.b.d. with users after experiences. Plan to switch “during 2013”



Summary and outlook

- > The NAF important resource for German LHC analysis (and ILC)
- > Broad acceptance at many institutes participating in the Terascale Alliance
- > Future of the NAF is secured: Clear DESY commitment!
- > Evolution of the NAF going on: NAF 2.0

