

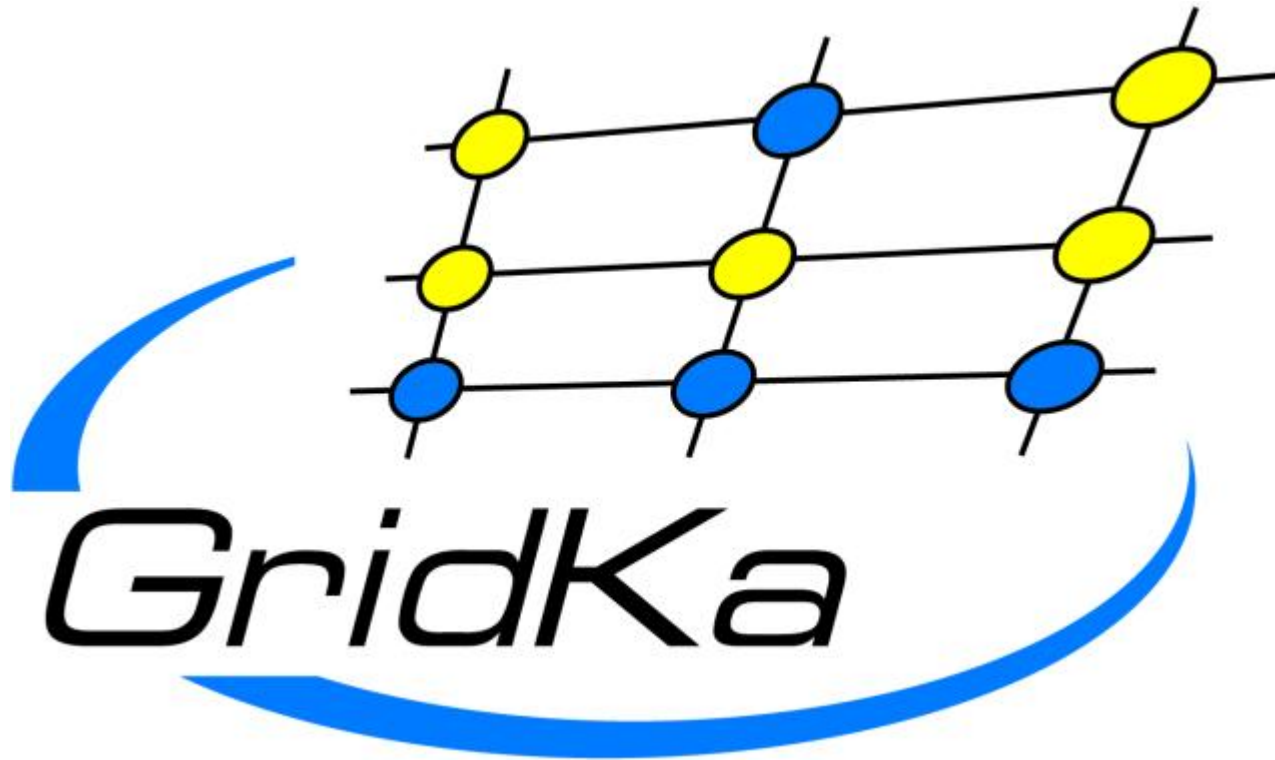
KIT Site Report

HEPiX Spring 2014

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STEINBUCH CENTRE FOR COMPUTING – SCC





GridKa Batch System

- GridKa cluster:
 - Dimensions:
 - **140 kHS06**
 - 610 worker nodes
 - 9,510 (physical) cores
 - 15,160 logical (hyperthreaded) cores
 - **12,800 job slots**
 - **1.5...2.5 million jobs per month**
 - Batch system:
Univa Grid Engine (since mid 2012)
 - Robust
 - Performant
 - Very few issues (e.g. black hole nodes)

GridKa Batch System

- GridKa cluster:
 - Multicore job support
 - Dynamic scheduling, no cluster partitioning
 - "Max_reservation" setup to boost pending multicore jobs
 - Limits number of multicore jobs on take-off ramp, not the total number of running multicore jobs
 - Setting: 10...20
 - Submit flag "-R y" required to enter reservations
 - Current Cream release doesn't add this flag to qsub call
 - Workaround: running cron job
`"qalter -R y $list_of_pending_multicore_jobs"`
 - Degradation in cluster utilization of 0.5% (per 10 reservations)
 - No efficient backfilling because almost no pending jobs declaring the estimated run time
 - Wave-like job submission pattern by Atlas and CMS, number of running multicore jobs fluctuates between 0 and some 100

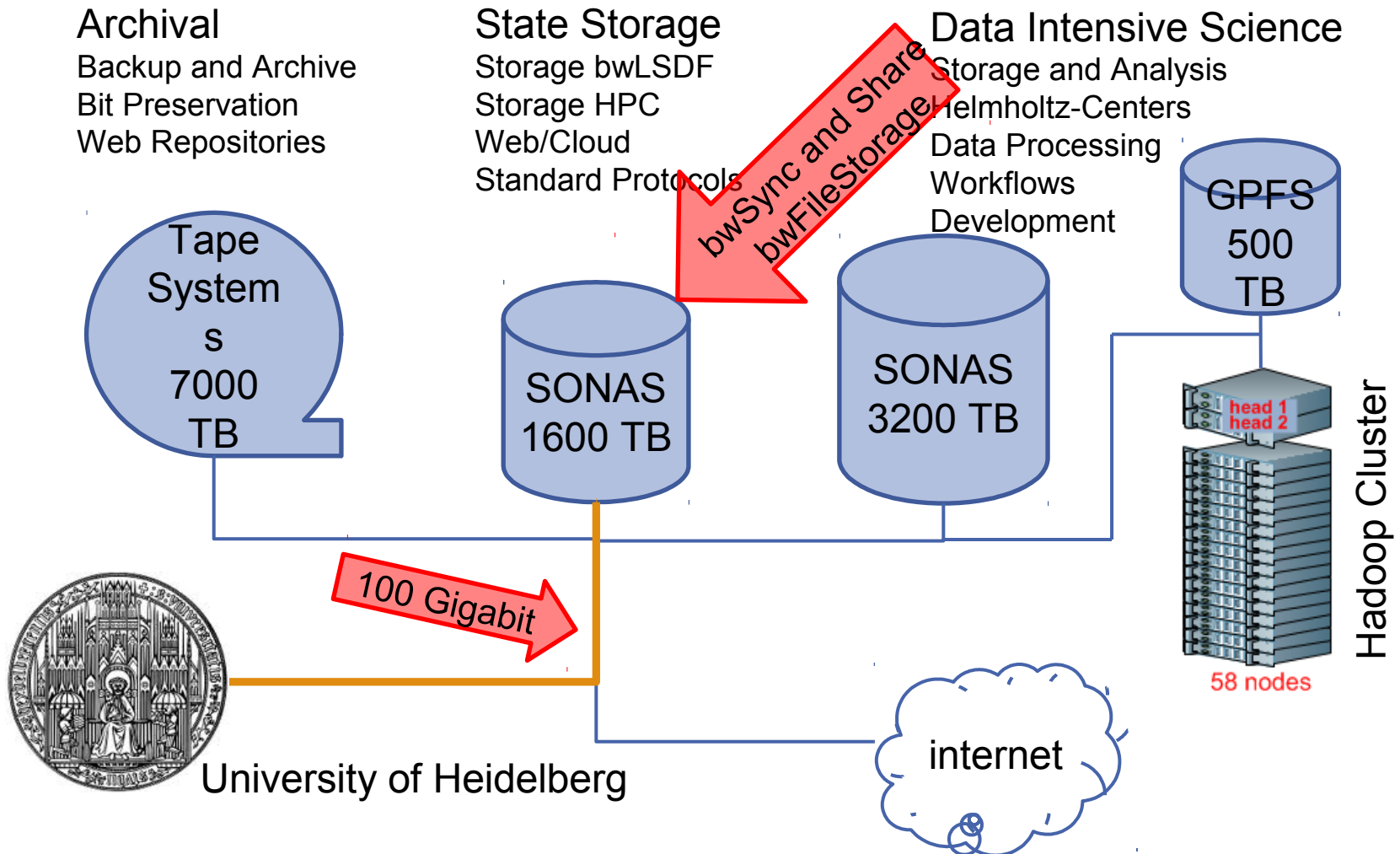
GridKa Firewall

- GridKa cluster:
 - Remote data access / federated storage
 - Remote data access gaining importance (Atlas FAX, CMS AAA, Alice)
 - Remote access by batch jobs can cause firewall congestions
 - Example: Alice
 - Monitoring of access pattern very important
 - Local monitoring of batch job network usage supplements experiment monitoring
 - → Talk by Eileen Kühn on Wednesday

Large Scale Data Facility



LSDF Storage Instances



Recent LSDF developments

- Archive infrastructure based on HPSS
 - Production start in Q3,2014
 - Various projects will use this for long time storage
 - i.e. GridKa, Federal, State, Helmholtz Association, KIT
- Extensive evaluation of CEPH
- Integration with state wide Shibboleth AAI
 - Users in Baden-Württemberg can use LSDF storage and archives using the registration of their home institute
- Added 2 PB disk storage in late 2013
- GridKa and LSDF are jointly using the tape infrastructure
 - 4 Libraries (IBM 3500 and STK 8500, LTO drives, T10K drives)
 - FW code of no longer available without vendor maintenance contract
 - This rules third party maintenance contracts: high costs

LSDF: bwSync&Share

- Dropbox-like data storage, but privacy aware
 - Data are stored at LSDF – hence, the service is subject to German law
- On-premise solution based on PowerFolder
- Production start: 1 January 2014
- Available to 450.000 students and scientists in the state of Baden-Württemberg
- Federated user management:
 - Users can use their home institution credentials
 - Shibboleth authentication for the webinterface and the desktop clients
 - bwIDM (→ Talk by Andreas Petzold, HEPiX Fall 2013, Ann Arbor)
- Clients: Windows, Mac OS, Linux, iOS, Android; HTML



http://de.wikipedia.org/wiki/Datei:Locator_map_Baden-W%C3%BCrttemberg_in_Germany.svg

Announcement: GridKa School

- Annual summer school for advanced computing techniques
 - September 1-5, 2014, Karlsruhe
 - <http://gridka-school.scc.kit.edu/>



The poster for the 12th International GridKa School 2014 features a blue background with a grid pattern and various technical terms like 'BIG DATA', 'CLOUD COMPUTING', 'MODERN PROGRAMMING', 'OPEN SOURCE', 'SECURITY', 'AZUREBIG', and 'FASTFLOW'. It includes the KIT logo, the event title, dates (1. - 5. September), and a list of hands-on sessions. At the bottom, there are logos for various partners and sponsors.

12th International GridKa School 2014
www.kit.edu/gridka-school
 1. - 5. September

Parallel Hands-On Sessions

Large scale data management	Cloud services and applications
Storage technologies	Cloud installation and administration
Security and hacker protection	Configuration management
Multi-core computing	Effective programming
GPU computing	Mobile application development

Logos at the bottom: LSDMA, iCache, NGI-DE, inovex, esi, genia, dasy, cloudera, SWiNG, and others.

KIT - University of the State of Baden-Wuerttemberg and National Research Center of the Helmholtz Association
www.kit.edu

Job Advertisement



- We are looking for physicists or computer scientists interested in
 - Large scale storage systems
 - Large scale data analysis
 - IT security (Linux, Windows, network)
- Interested? \Rightarrow e-mail to: andreas.heiss@kit.edu

Questions, Comments?