
HEPiX
October 2009

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Outline

Virtualization & Cloud Computing

Physical Infrastructure

Storage

Monitoring

Security

ITIL

HEPiX Conference URL:

- <http://indico.cern.ch/conferenceTimeTable.py?confId=61917>

Virtualization & Cloud Computing

Pretty much every site has some sort of virtualization infrastructure deployed.

- Xen, VMware, and KVM.
- Don't recall anyone mentioning Microsoft Hyper-V.

Many are also investigating cloud computing:

- CERN - "WNOD" = Worker Node On Demand.
- WN virtualization working group created - lead by Tony Cass (CERN)

The Magellan Project was discussed

Failover / Availability:

- No one else doing "FermiGrid-HA" type of deployment;
- They are relying on hypervisor based "live migration" or manually moving the VM from one host to another and rebooting the VM.

Physical Infrastructure

HEPiX 2007 – SLAC reported on their deployment of a SUN datacenter container.

HEPiX 2009 – CERN is going forward with a tender for “container” based infrastructure.

- Vendor will supply container(s);
- CERN will supply racks and systems;
- CERN will be buying ~2-3 containers this year, more in outyears;
- Containers will be located off the CERN site at a dedicated co-lo site;
- Both business and scientific computing will be hosted at the co-lo site;
- CERN will deploy dedicated high speed network between CERN site and co-lo;
- Privacy legislation will restrict the business “applications” that can be moved to the co-lo site.

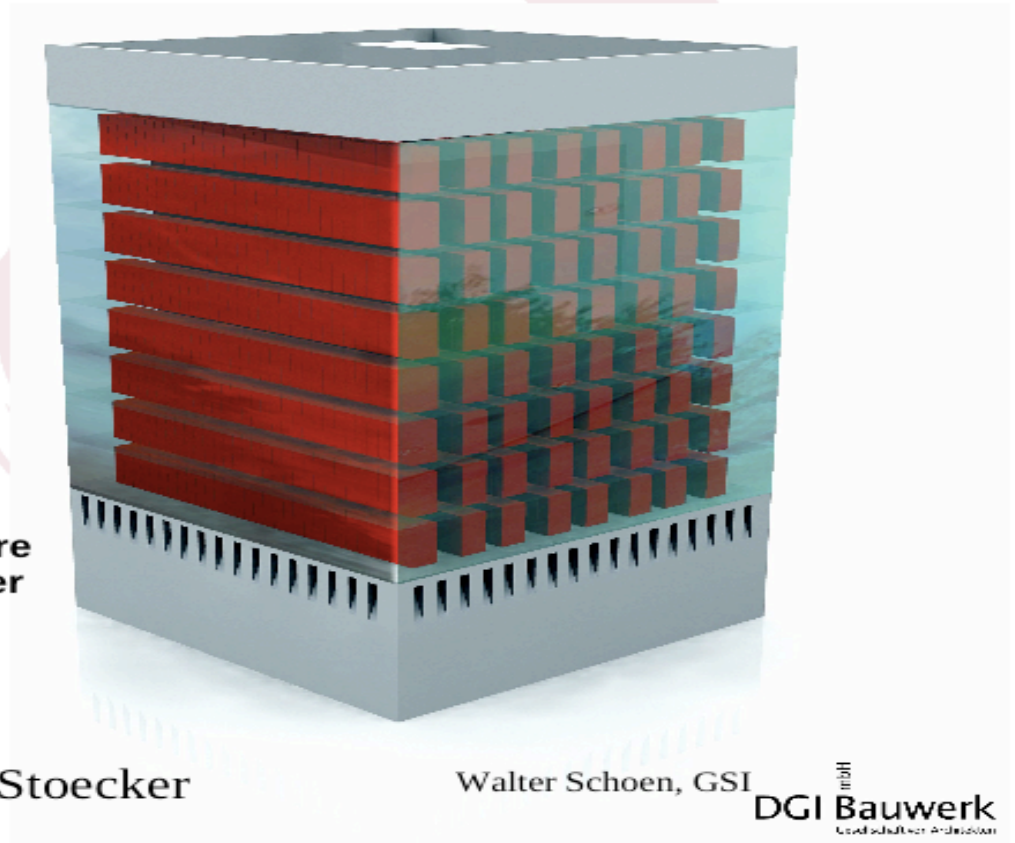
Several sites are also discovering the issues with deploying new infrastructure or running their existing infrastructure at high utilization.

- Water cooled racks;
- GSI is considering an innovative building design (next slide).

GSI High Capacity Datacentre Concept

Overall Building Planning

- minimal floor footprint
- space for 1000 19" racks
- planned cooling power 6MW (building supports more)
- Internal temperature 30°
- minimal construction cost
- fast to build
- Autonomous rack power mgnt.
- back door rack cooling
- smoke detection in every rack
- use of heat for building heating
- shortest cable lengths
- water pressure below 1bar avoiding risk of spills
- Use of any commercial 19" architecture
- Unmatched packing density and power density
- Construction cost 9M€



Concept: V.Lindenstruth/H.Stoecker

Walter Schoen, GSI

instit
DGI Bauwerk
Gesellschaft für Architektur

Storage

Lustre:

- A number of sites are running Lustre as a distributed file system.

Hadoop:

- A small (but growing) number of sites have HDFS deployed.

Monitoring

Nagios is the clear leader based on the number of sites using it as the basis of their monitoring.

Some sites have implemented a Nagios “tree” hierarchy to manage the information / alarm flow.

NERSC has integrated Nagios with Cacti to deliver a similar information flow without loss of alarms.

Security

Cyber security update - Sebastian Lopienski

Grid security update - David Kelsey

Web application security - Sebastian Lopienski

Security aspects of the WLCG infrastructure -
Maarten Litmaath

ITIL

Very nice presentation on ITIL by Karlsruhe Institute of Technology (KIT) / GridKa:

- <http://indico.cern.ch/getFile.py/access?contribId=43&sessionId=24&resId=1&materialId=slides&confId=61917>

CERN is also starting down the ITIL path.

Fin

Any questions?