



**HELMHOLTZ  
ZENTRUM BERLIN**  
für Materialien und Energie

# **Workshop on Virtualization Technologies**

## **Sat October 10 2009**

### **Summary**

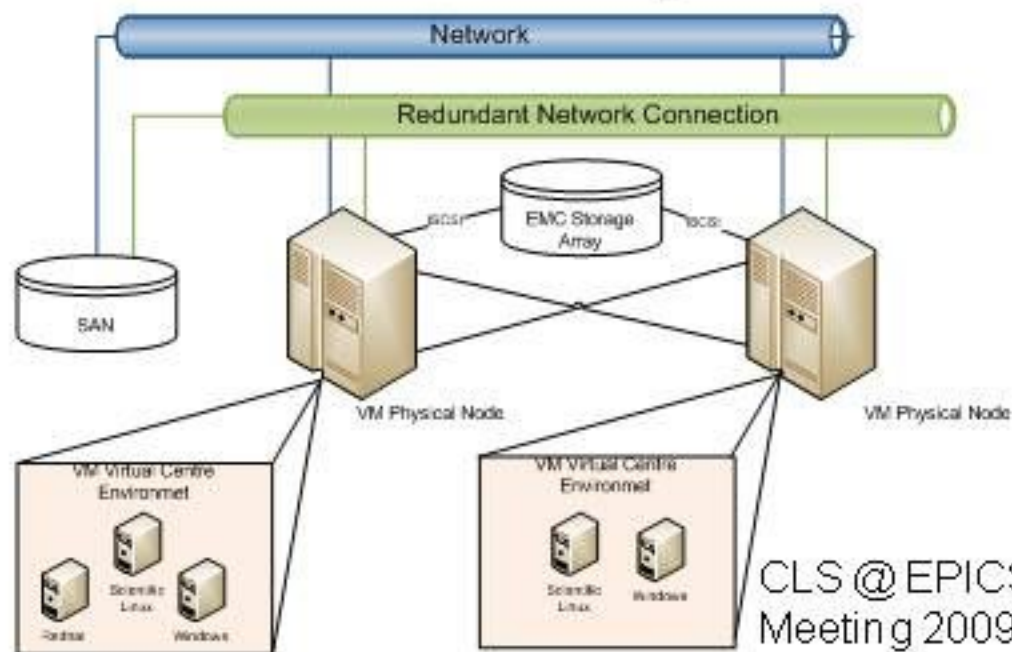
## Scope of the Workshop:

Virtualization is a method involving x86 processor-based hardware and operating systems where a "guest" or "virtual" OS runs as a process on a "host" or "physical" system.

Wikipedia

**THIS** Powerful Hardware provides:

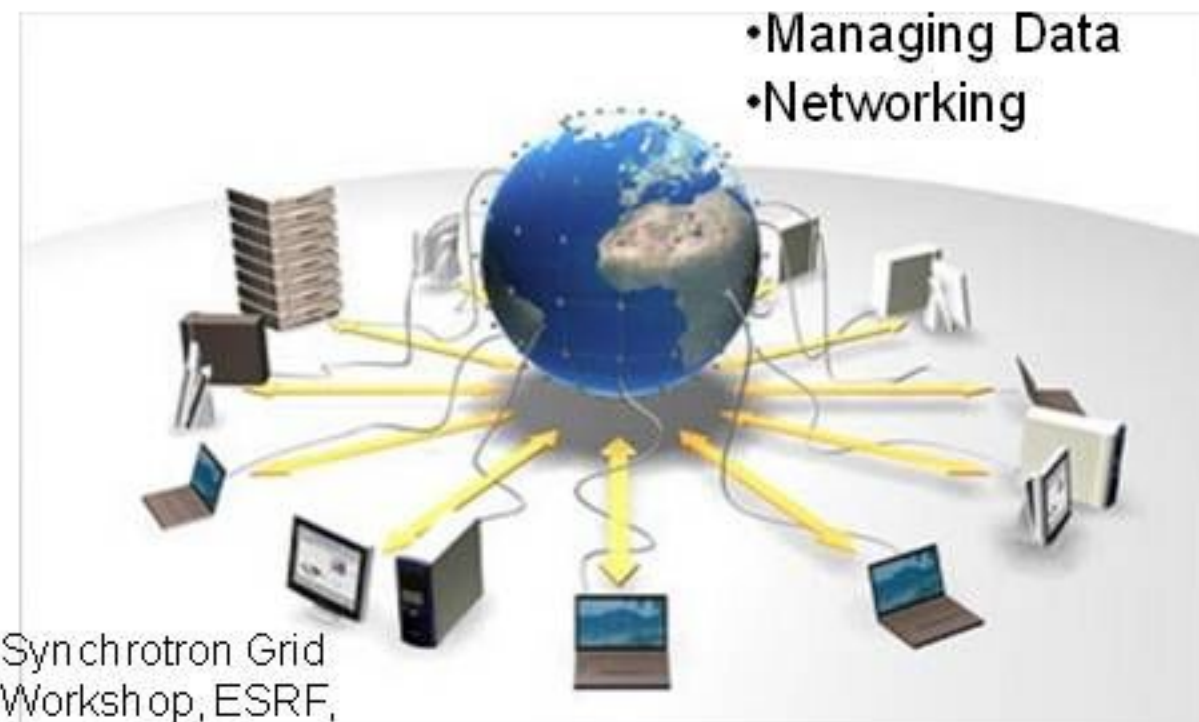
- Sharable CPU Power
- Sharable Memory
- Ample Disk Space
- Flexible Networking



**NOT THIS:** Grid provides:

No Cloud Computing

- Security
- Managing Sites
- Submitting Jobs
- Managing Data
- Networking



Synchrotron Grid Workshop, ESRF, Dec 8-9 2008

## Agenda

Status / Overview: What Virtualization Setup/Scope is Used at:

- Spring8
- PSI (SLS, HIPA, PROSCAN)
- Canadian Lightsource
- DELTA
- HZB (BESSY, MLS)
- CERN



Special Topics:



- Application Life Cycle
- Maintainability
- Migration
- High Availability



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### 09:00->15:00 Status / Overview / Applications of Virtualization Technologies



09:00 Beamline computing resource management at Spring8 (30') (  Slides  ) Aki Yamashita

09:30 VmWare Server Systems at PSI (30') (  Slides  ) Damir Anicic

10:00 Migrating Control Servers and Applications to VM at CLS (30') (  Slides  ) Glen Wright



10:30 Coffee Break

11:00 First Experience with Virtualization Technologies at DELTA (30') (  Slides  ) Detlev Schirmer (DELTA)

11:30 Wide variety of VM-Technology applications at BESSY (30') (  Slides  ) Roland Müller



12:00 General Discussion Time (45')

12:45 Lunch

14:00 Snapshots: Configuration Management for Software and Firmware at PSI (30') (  Slides  ) Trivan Pal (PSI)

14:30 Virtualization in CERN (30') (  Slides  ) Pierre Charrue

### 15:00->16:30 Special Topic: High Availability provided by Virtualization Technology

15:00 Xen based architecture applied to servers and thin clients in SPring-8 (30') (  Slides  ) Masahiko Kodera

15:30 VMware infrastructure applied to SoftIOCs and OPC-Servers at BESSY (30') (  Slides  ) Dennis Engel

## Mature Products Available: Xen, VMware, KVM ...

Effective Resource Handling:

50 VM WS -> 4 Xen Servers (Spring8 BL)

80 VM -> 2 ESXi Blades (SLS BL)

100 WinXP -> 4 ESXi Blades (CERN Eclipse Developers)

Shared Resources:

Common Memory Pages (ESXi)

Common System Disk C:\ (VMware View Composer)

Bottom Line:

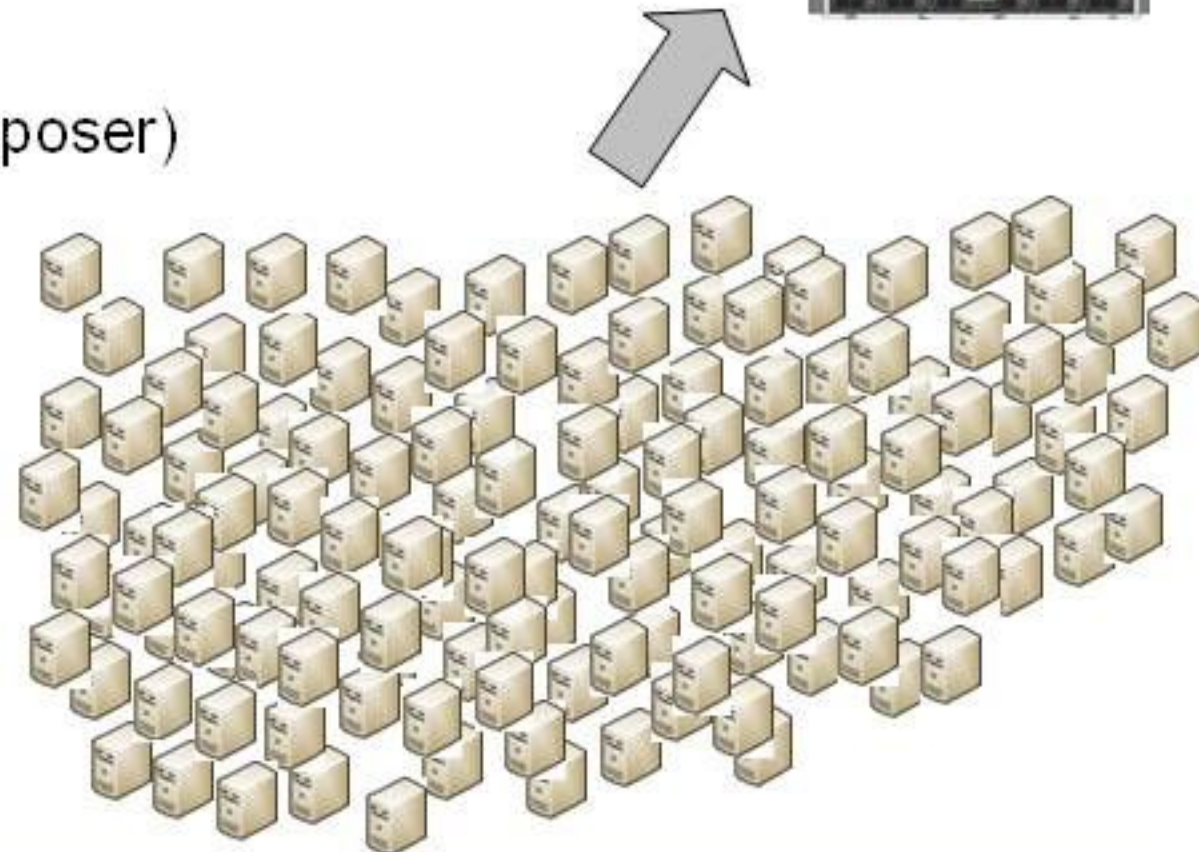
Management Advantages Essential

Rack <-> Distributed Units

Typical Performance Penalties

Marginal

HW Cost Advantages less Important



## Issues Worked At / Interesting Details

Central Common Storage:

NetApp, iSCSI, NBD (network block device), SAN, HP Lefthand

Enabling Configurations:

Naming -> Automated VM Client Generation (PXE, DELTA)

Improved Developers Environment:

- Flexibility, Fast Test Cycles

- Dry Run Capability (Protect Production System)

- Lightweight Desktop Variants Available

High Availability

- Automated Migration on Failure

Longevity of Applications

- Problems Mitigated: VM Rely on Hypervisor, Obsolete Hardware Disappears

Hardware Details:

Capacitor UPS for VM-Servers, Kiosk Mode Thin Clients

Interdepartment Knowledge Exchange

IT Division, Network People