PSI Site Report

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Remote Access to PSI (I)

- **SSH Gateway (active since Jan 2007)**
  - User has to login to the PSI SSH Gateway first
  - Firewall (Port 22) will be opened for user's IP address, as long as the SSH Gateway session is opened
- **NX Client to access Linux PCs**
  - Fully graphical login session tunneled over SSH
  - Works on slow connection (good data compression)
  - As a proxy, NX also tunnels Remote Desktop Protocol (for Windows Terminal Server sessions)
  - NX is developed by NoMachine, we use FreeNX Server
  - NX Client available for Linux, Win, MacOS
  - However, in case user's home directory is on AFS suspending a session is not possible

Remote Access to PSI (II)

- **Microsoft ISA Server**
  - Used for external Webmail Login
  - Not yet working with Evolution as Exchange client
  - Test phase Outlook Mobile Access (OMA), MS Active Sync, RPC over HTTP(S) for Outlook Clients
- **VPN Client**
  - Cisco VPN client
  - Available for Linux, Win and MacOS

Linux

- **Customized Kickstart Installation**
  - Same framework for Desktop, Cluster and Server installation
  - Kickstart file is modular. Customization scripts are used
  - Desktop configuration done by cfengine
- **Scientific Linux PSI (SLP)**
  - **SLP5** release planned for 1st June 2007
  - **SLP3** (based on SL305) support extended until 2008-08
- **High Availability (HA) Systems**
  - Cluster Software: Heartbeat 2.0.7 or Redhat Cluster Suite from SL4
  - Loadbalancer: Piranha from SL4
  - Used for Web, NFS, Samba and Oracle Servers

Scientific Linux Live CD

Features

- Runs from CD/DVD, USB key or as Diskless Client (over NFS)
- Hardware auto detection
- Runs with SL standard kernel (UP and SMP)
- Read/write file system (Union FS), modifications are kept in memory
- Available as Mini-CD, CD and DVD, for 32bit and 64bit
- Scripts available to build own LiveCD, see http://linux.web.psi.ch/livecd

Scientific Linux 5 Live CD/DVD

- Aufs (another union file system) replacement for Unionfs
- Stability improved (no kernel panics so far)
- Live system can be installed on local hard disk
- Pre-release available
- Additional Software: NTFS Read/write support (ntfs-3g), ...
- Live CD uses Gnome as desktop

Virtualization

- **VMware Player**
  - Included in SLP4
  - We provide pre-configured Windows and Linux guest images for our user
- **VMware Server 1.0.2**
  - Good experience with stability
  - Virtual systems can be on AFS
    (needs AFS client version 1.4.4 and large AFS cache > 4 GB)
  - For the moment only test and build systems are running under VMware. Planned are VMware servers hosting productive systems that are not "mission critical".
- **Xen**
  - Maybe with SL5?

High Performance Computing

Horizon Cluster

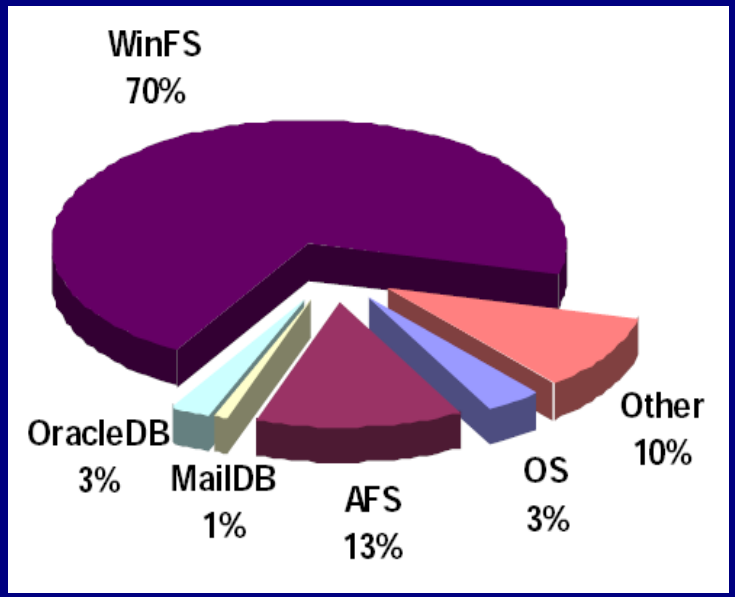
- Cray XT3 system, proprietary OS
- Lustre as global file system
- Hosted by the Swiss National Supercomputing Center (CSCS)
- Upgrade to 1664 dual CPUs (PSI share is 15%)

PSI Linux Clusters

- Hardware: Sun Fire X4100/X4200
- Remote management with IPMI-2
- GPFS as global file system
- Sun Grid Engine as batch system
- Ganglia for monitoring
- Running SL44, mostly 64 bit
- In total more than 300 cores

Backup

- **EMC NetWorker (formerly Legato NetWorker)**
  - 110 Backup Clients (mainly Servers)
  - Backup over LAN
  - LTO3 Tape Library
- **Status**
  - Increase of backed up data: 70-80% per year
  - Increase of backed up mail data: 400% per year
  - About 15 TB backed up data



- **Planned: partly backup to disk**
  - Hopefully faster restore (particularly incremental restore)

SLS Beamlines: New IT Infrastructure

- **Network**
  - Beamlines are individually protected by firewalls and cannot interfere with each other
  - Scalable network performance in order to provide enough bandwidth (Gbit Network) for the newest pixel detector generation
- **Pilatus detectors** (http://pilatus.web.psi.ch/pilatus.htm)
  - 60-100 MB/s (compressed data rate from detector), 300 MB/s (data online processing) plus 340 MB/s (off-line processing)
  - Total requirement: > 700 MB/s
  - GPFS on 16 RAID6 Luns with 96 SATA Disk, 8 FC controllers (each 4 Gbit/s), 8 compute nodes: Should provide more than 1GB/s
  - Open problems:
    - Interface to detector still uses NFS (bottleneck)
    - Users would like to take 800-900 GB/day back "home"

Thank you for your attention