



Sandia National Laboratories HPSS

HUF 2013 Site Presentation

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Agenda

- **End-User Access to HPSS**
- **Fair Share User Access (N/A)**
- **Health Monitor of HPSS**
- **Current Hardware**
- **Migration Management to New Tape Technology**
- **Metrics Measurement Description**
- **Most interesting challenge**
- **Future Changes and Plans**



End-User Access to HPSS

- **HPSS User Access is through our Data Transfer Clusters**
- **Data Transfer Tools**
 - **HSI/HTAR/PFTP/Transfer Agent (TA)/Filezilla (Windows solution)**
- **Platforms**
 - **Capability & Capacity Clusters**



Health Monitors

- **Alarms and Events monitored hourly**
- **Storage □ Tek Tape Analytics software for SL8500**
- **DB2 Database backups completion email daily**
- **File System usage for logs, archive logs, mirror logs, DB2 tablespace warnings, DB2 backup file system, all HPSS file systems**
- **WAN performance testing inter lab(LANL,SNL,LLNL)**



Current Hardware

- **2 RedHat Linux Core servers(32bit)**
 - **RHEL 5.5**
 - **4 QC 2.13GHz 16GB memory**
- **4 Disk Movers**
 - **RHEL 5.5**
 - **IBM X3650, 2 DC 3.0GHz, 6GB memory**
 - **Qlogic 2460**
 - **Chelsio S310 LR**



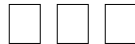
Current Hdwe Cont'd

- **20 Tape Movers**
 - RH 5.5 Client (64)
 - Dell R610 4 QC 2.93GHz, 6GB memory (32bit HPSS)
 - Qlogic 2460?
 - Chelsio S310 LR
- **2 Oracle SL8500**
 - 4 Expansions (6500 cells)
- **10 Titanium 10K A Tape drives**
- **10 Titanium 10K C Tape drives**
- **1 T200E Spectra tape library**
- **1 T50E Spectra tape library**



Migration to new Technologies

- Migrated data on T10k A tapes to T10k C tapes
- ☐ Dual tape copy COS
 - T10k A, repurpose
- Disk cache – IS5500(128TB)
- LTO5(Spectra)





Metrics used to Measure System

- **Monthly accounting of user usage**
- **DB2 checks and re-orgs**
- **StorageTek tape analytics**
- **SL8500 capacity monitored**



Challenges in the Past Year

- **DB2 performance – DB2 hanging with no errors being flagged in db2diag.log – Problem solved by excluding system accounts from LDAP.**
- **Spectra Logic T200E integration into HPSS – Available devices both tape drives and volumes were not being properly enumerated, not able to get volume information from library**
Necessary change to HPSS code to accommodate this library.



Compute Platform Connectivity Transfer

- **Tri-lab Discom WAN Performance**
 - Network Monitoring (e.g., Iperf)
- **Partnered with LANL/LLNL to install and tune data transfer tools**
- **Increased storage requirements**



Future

- **8Gb FC Disk Cache**
 - Shifting away from direct to tape transfers
- **Repurpose T10K A drives**
- **StorageTek SL3000 tape Library**
- **Investigation of RAIT, SAN3p**
- **Virtualization**
- **SNL partnering with GEL on Data Transfer Tools.**
Suggestions for exascale data transfer environment – srmcree@sandia.gov



Questions



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- **Dedicated transfer cluster**
 - Joint project with cluster admins
 - **Shared site global file systems**
 - **Tuned HPSS/LAN/WAN performance**
 - **Data Transfer tools in one location**