The Penn State LIGO Data Analysis Center

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Overview

- "Greenfield" Tier 2 Center
  - » Served by LIGO Tier 1 Center
  - » On-par with LHO, LLO, MIT, UWM
  - » Serves: LIGO
- Goal: "Full service" Analysis & Development LIGO Data Analysis Center
  - » Applications
    - – Analysis, detector characterization, Monte Carlo, simulations
  - » Software systems support
    - – LDAS, DMT, other tools (e.g., matlab, standalone C, C++, analysis tools)
- Configuration: "Clone" LIGO Lab facility
  - » Minimize resources, including sweat equity, spent adapting analysis tools to local customizations
  - » Maximize inter-site operability, resources available for supporting LIGO analysis activities
- Status
  - » Small (12 node) pathfinder system purchased to evaluate networking options & gain experience with LDAS configuration, operations
  - » Approaching decision point on h/w for DMT support

Resources

- Goal: “Clone” LIGO Lab facility
  - » Minimize resources, sweat equity, spent local customizations
  - » Maximize inter-site operability, resources available to support LIGO/LSC analysis activities
- H/W
  - » iVDGL: 400K$ h/w over 3 yrs
    - – Proposal budget; iVDGL Project Directorate re-visiting allocations, focus
  - » PSU matching: +150K$
- Personnel
  - » iVDGL-funded (4 yrs)
    - – 1 Postdoc: hired (1 Nov start)
    - – 50% Sysadmin: center support (searching)
  - » PSU-funded to establish Center
    - – (Partnership with HPC group)
    - – 0.1 FTE Director, HPC group
    - – 0.4 FTE Sr Rsrch Prgmr
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    - – 1 FTE (CS/EE) graduate student (globus/iVDGL focus)
    - – 0.2 FTE web administrative support

Reality: iVDGL funding insufficient for full clone

- Trade:
  - » Compatibility vs.cycles & storage vs. admin FTE cost within budget envelope
- LDAS: developed, supported on sparc/solaris & intel/linux
  - » Sun vs. Intel for ldas s/w production (esp. database, diskcache API)
  - » Single vs. dual processor nodes for ldas beowulf
- DMT: open issue
  - » Developed on sparc/solaris, runs on intel/linux, future platform support TBD
- Pathfinder system for trade-study
  - » Intel (procured)
    - – Goal: evaluate networking, smp options; with LDAS configuration, operations
      - Network options: GigE v. fast ethernet
      - Node options: up v. smp
    - – Configuration: 8 single processor , 4 dual processor nodes
  - » Sun (not procured)
    - – DMT support?

Reality: iVDGL funding insufficient for Center support

- Large scale computing for production analysis requires dedicated, professional support
- What is required to support center mission?
  - » 1 FTE h/w systems administration
    - – 70 nodes, 30 TB storage (6 mo RDS)
  - » 1 FTE s/w system administration
    - – Maintain & support ldas, dmt, database, other s/w systems & upgrades
    - – Liaison with other tier 2, tier 1 centers (data exhange, database federation, etc.)
  - » 0.5-1 FTE at tier 1 center
    - – User support/help desk/liaison/development

Summary

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- Status
  - » Small (12 node) pathfinder system purchased to evaluate networking options & gain experience with LDAS configuration, operations
  - » Approaching decision point on h/w for DMT support
- Reality: iVDGL funding insufficient for Center support
  - » Required: 2 FTE IT professional at PSU, 0.5-1 FTE at tier 1 (LIGO/CIT)