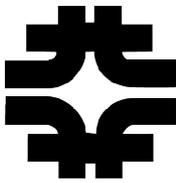


# Data Movement & Storage - Upper Storage

Rob Kennedy

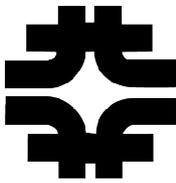
31 May 2005

GDM Meeting



# DMS-Upper Storage Drivers & Scope

- Driver 1: Maintain FNAL dCache Services
  - FNAL dCache support. Test/upgrade software. Coordinate w/exp'ts.
- Driver 2: Collaboration: dCache (+LCG), GGF, OSG, Vanderbilt, ...
  - dCache Collaboration: represent FNAL, improve process, LCG support
  - GGF: SRM interface specification beyond v2.1.
  - Postgresql expertise: leverage for performance, reliability (PNFS,SRM)
- Driver 3: Develop SRM-dCache to meet the requirements of US-CMS T1
  - Develop and help support variants of Resilient and Classic dCache for use at US-CMS Tier-1 site (FNAL) and 5-7+ US-CMS Tier-2 sites.
  - Develop/configure dCache to accommodate common Tier-2 networking configs
  - SRM-dCache: Interoperable storage interface. API V2.1 Implementation
  - SRM/gridftp v2: Robust and performant data transfers (T0-T1-T1-T2)
- Driver 4: Prepare/integrate SRM-dCache as a Storage Element on the OSG
  - US-CMS T1/T2 context to test (done). Release client tools, then service.
  - MIS, explicit space reservation, deployment model, proof of interoperability.
- Driver 5: Expand FNAL dCache Svcs: Minos, CDF Raw, CDF SamFarm, FermiGrid



# Drivers and Milestones 1

- Driver 1: Maintain FNAL dCache Services on-going
  - Improve processes, admin tools, monitoring, ... Summer 2005?
  - As time permits, move more FNAL dCache admin effort to IA. There is a pay-off here, and we are making progress, but always something higher priority comes up. Perhaps we should just set a goal date, work backwards with a task list and schedule, and get this transition formally completed.
  -
- Driver 2: dCache (+LCG), GGF, OSG, Vanderbilt, ... on-going
  - SRM v3 API, prove FNAL SRM on other storage, ... (no timescale set)
  - *Vanderbilt applying FNAL SRM to IBP storage service (S. Pathek)*
  - *SRM V3 API not making timely progress IMHO, but this is being communicated... and we cannot add effort to help it along.*
    - We are encouraging criticisms and overlooked use-cases to be defined on paper so that they can be addressed in V3 ASAP.



## Drivers and Milestones 2

- Driver 3: Develop SRM-dCache to meet the requirements of US-CMS T1
  - Develop Resilient dCache, Hybrid Resilient/Classic dCache: **DONE.**
  - SRM-dCache robustness: CERN-FNAL Service Challenges 1,2. **DONE.**
  - SRM-dCache robustness: CERN-FNAL Service Challenge 3. **July 2005.**
    - ***US-CMS-T1 plans, in writing? Managing difference with CERN?***
  - US-CMS integration: – Tier-2 setup help and consult. **4-5/7 DONE.**
  - US-CMS integration: – Tier-2 Resilient dCache setup. **4/7 Almost done.**
    - Much work done by Jon Bakken. We are helping.
  - SRM-dCache: Implicit space reservation. Proto released. **Almost done.**
  - SRM-dCache: Most V2.1 API implementation. **July 2005.**
    - ***Progress slower than planned. Srm-ls “soon”.***
  - SRM-dCache: Explicit space reservation. **Fall 2005.**
    - ***Reservations for jobs, for global long-term VO accounting, both?***



## Drivers and Milestones 3

- Driver 4: Prepare/integrate SRM-dCache as SE on OSG
  - Prove SRM-dCache in US-CMS T1/T2 context. **DONE.**
  - Deploy SRM client V1.1 tools to ITB (not to prod) **early June 2005.**
  - Deploy SRM client V2.1 tools to ITB, production **August 2005.**
  - Demo SRM-dCache service to SRM client tool testers **on-going.**
  - Deploy SRM-dCache service to ITB **interpretation w.r.t. US-CMS-T2?**
  - Deploy SRM-dCache service to ITB/OSG Prod **Fall+ 2005?**
  - Issues:
    - MIS schema – To GRIS,GIIS works, but schema define/support?
    - **Explicit space reservation – Difficult. Many error cases to treat.**
    - Deployment– to OSG cache as RPM(s) with pacman jacket(s). Client tools may pushed into VDT, but worth our staff-time to do?
    - Interoperability with ALL participating SRMs – **Yes, but on-going.**



# Drivers and Milestones 4

- Driver 5: Expand FNAL dCache Services: Minos, CDF Raw, and other...
  - FNDCA: admin node expansion, use of network aliases *June 2005*.
    - Provides system framework for future expansions and configurations without affecting clients (once aliases are used).
    - In particular, expanded framework allows configuration choices to protect Minos DAQ against high user analysis/back-up loads.
  - FNDCA: **impact of FermiGrid? Expectations of SRM-dCache?**
  - CDF Raw dCache: we do not know of the schedule for this.
  - CDF SamFarm dCache: timing unexpected for us, but deserves some of our staff-time to help insure timely success
    - Working with CDF/Run2 to improve communication after a few parallel, redundant requests raised concern.



# Effort Profile And Risks

- Budgeted Effort: Lower than WBS estimates we showed to experiments
- Actual Effort: now 6.5 FTEs (2.0 CMS), + modest outside effort.
  - Staff/Posted/Needed/Outsource = 48/18/93/3 (Dec 2004 driver matrix)
  - ~2 FTE shortfall – outside effort, reduce/move support, and prioritize.
  - dCache admin interface complex. Work with IA to transition some.
  - Streamline activities with defined, automated dev/build/test processes.
  - Seek common solutions (gridftp), but must continue investigations.
- Risks: Expanding/ill-defined customer requirements; Evolving environment.
  - SRM-dCache and/or dCache-FTP support explosion, especially off-site.
  - FNAL dCache system expansions and support on-site. (need IA help)
  - US-CMS T2 mission creep – additional consult/support outside WBS
  - CMS Data Handling – translate known MB/sec into FileOpens/hour.
  - Explicit space reservation – schedule risk (very hard), deliver piece-wise?
  - SRM V3 API – schedule risk (outside parties driving this)