

# CD CCF DMS - Upper Storage

A 15 minute summary of current and FY05 tasks  
(post-meeting version)

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# Organization

- ▶ Personnel transitions and changes to storage project organization are being worked out... basic idea is:
- ▶ CCF DMS = Upper-Storage + Lower-Storage + Admin
- ▶ Subtlety: SRM funding requires it be a distinct WBS item but treated here as a part of Upper-Storage.
- ▶ Talk Outline:
  - SRM – Universal Storage Element Interface
  - Dcache – Major Storage System: Cache+virtual f/s
  - Other major categories – less to discuss IMHO
    - ➔ PNFS – Namespace for Enstore, dCache, catalog
    - ➔ “Compare” – Learn about caches, file systems
    - ➔ WAN – WAN/Grid Layer 5 transport issues

# SRM

- ♦ SRM = Storage Resource Manager
- ♦ The universal GRID interface to any Storage Element.
- ♦ FNAL CCF is leading developer of SRM-dCache, now adapting that work for re-use with other storage sys.
  
- ♦ Major dev: Space Reservation, Request Scheduler, Parameterizing the storage system (interface re-use)
- ♦ Minor dev: Other SRM v2.1 features, experience-based
- ♦ Collaborate/consult: GGF, SamGrid, NeST, [everyone]
- ♦ Track/Learn: WAN
- ♦ Support: Day-to-day (support, installs), LCG
  
- ♦ Largest stake-holder is CMS. SamGrid may-be soon. Other GRID-oriented efforts depend on this work too.

# dCache

- ▶ dCache = Tape Library Rate Adapter, Data Cache, Virtualized File Storage System, and ...
- ▶ FNAL CCF is in collaboration with DESY to maintain, develop dCache. Now some core dCache development.
- ▶ Major dev: Tapeless Data Path, Resilient (tapeless) dCache, Core dev for operation at ever larger scales.
- ▶ Minor dev: VOAuth, Monitoring, palliatives, ....
- ▶ Collaborate/consult: DESY, CMS, CDF, [everyone]
- ▶ Support: Day-to-day (support, installs), CMS-UCSD
- ▶ Stake-holders: CDF, D0, CMS (T1, T2), LQCD, OSG, Minos, some STKEN users. CDF has “largest” system. CMS plans/has variety of dCaches, applications.

# PNFS, Compare, WAN

- ▶ PNFS: Namespace for Enstore, dCache. Has grown to become almost a File Catalog. Some tasks:
  - 64 bit PNFS (to support large underlying DBs)
  - Postgresql migration (reliability, performance)
  - Scaling: how to best accomplish
  - Internal hiding: leverage DB experience thoroughly
  - Support: day-to-day, installs, scaling consultation
- ▶ “Compare”: Learn about other caching engines and file systems that may be advantageous in various storage niches. Incomplete list: Lustre, PVFS/PVFS2, GPFS, ...
- ▶ WAN: Investigation of WAN/GRID Layer 5 Transport Issues. Storage components need to keep up as high rate networks “of the future” go into production soon.

# CCF DMS Upper-Storage Early Draft FY05 WBS

- DMS-US (Upper-Storage)
  - DMS-US-SRM
    - DMS-US-SRM-SPACERES [0.25]
    - DMS-US-SRM-REQUESTSCHED [0.10]
    - DMS-US-SRM-PARAMSTORAGESYSTEM [0.10] Dache and a file system
    - DMS-US-SRM-SAMCACHE [0.10]
    - DMS-US-SRM-NEST[0.10]
    - DMS-US-SRM-GGF [0.10]
    - DMS-US-SRM-WSRF [0.10]
    - DMS-US-SRM-D2D [0.3]
    - DMS-US-SRM-LCG-SUPPORT [0.3]
    - DMS-US-SRM-SMALL [0.3]
    - DMS-US-SRM-V21 [0.6]
    - DMS-US-SRM-WAN [0.2] Features to support advanced WAN/GRID integration
  - DMS-US-DCA (dCache)
    - DMS-US-DCA-D2D [0.3]
    - DMS-US-DCA-TAPELESSDATA
      - DMS-US-DCA-TAPELESSDATA-CDF [0.1]
      - DMS-US-DCA-TAPELESSDATA-CMS [0.1]
      - DMS-US-DCA-TAPELESSDATA-D0 [0.5] \*\*requires test stand and fallback\*\*
    - DMS-US-DCA-SCRATCH
      - DMS-US-DCA-SCRATCH-DEVEL [0.35]
      - DMS-US-DCA-SCRATCH-CDFUCSD [0.1]
      - DMS-US-DCA-SCRATCH-CMSHOTDOG [0.1]
    - DMS-US-DCA-CORE
      - DMS-US-DCA-CORE-PRESTAGER [0.1]
    - DMS-US-DCA-SMALL
      - DMS-US-DCA-SMALL-VOAUTH [0.1] "VO Authorization module"
      - DMS-US-DCA-SMALL-GRIDFTP [0.1] "primarily NIO mover"
      - DMS-US-DCA-SMALL-DISKCORRUPTION [0.1]
      - DMS-US-DCA-SMALL-FNALMONITORING [0.1]
      - DMS-US-DCA-SMALL-PALLIATIVE [0.4] "Unanticipated projects to sustain operations"
      - DMS-US-DCA-SMALL-DCAP [0.1]
      - DMS-US-DCA-SMALL-OTHER [0.2] "feature extentions"
    - DMS-US-DCA-COLLABORATION [0.2] Organize and participate in the dcache collaboration.
  - DMS-US-PNFS [0.1] 64 bit PNFS, postgresql, scaling, internal hiding.
  - DMS-US-COMPARE[0.2 + others] Gain knowledge about other caching engines/file systems.
  - DMS-US-WAN[0.1] Investigation of WAN/GRID layer 5 file transport

# Closing

- ▶ We are still adjusting to personnel transitions...
- ▶ 15 minutes is too little to present a break-down of tasks, stake-holders, staffing, impact, and so on.
- ▶ We foresee a rapid expansion in SRM demand. Already interest in seeing v2.1 features developed as soon as possible as well as more support/consulting requests.
- ▶ CMS is helping with staffing in CCF DMS, so the impact of their ramping up is taken into account AFAIK.
- ▶ Data Movement & Storage must keep investing in the future while maintaining existing services. Storage demands will increase. We need to see if manageable, economical solutions are “in the pipeline” now.