



CD FY08 Tactical Plan Status

FY08 Tactical Plan Status Report for Storage Service Administration

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FY08 Tactical Plan for Storage Services Administration

- *Relevant Strategic Plan(s)*
 - FY08-09 Strategic Plan for Data Storage and Caching
 - Strategic Plan for Scientific Facilities (2007-2009)
- *Tactical Plan Leader:* Stan Naymola
- *Organizational Unit home:* Scientific Facilities
- *Tactical Plan Goals*
 - Provide long-term custodial protection for data in permanent storage. Maintain the integrity and accessibility of long term storage as technologies evolve.
 - Operate the Fermilab Mass Storage enstore and dCache services providing 24x7 production level application, OS, application and hardware support.
 - Plan, evaluate, procure, install, and commission equipment and applications to meet the evolving needs of the Fermilab Mass Storage stakeholders and to keep pace with technology
 - Maintain agility in storage technology and suppliers in order to sustain long-term archival storage and access (including disk cache), and to provide the most reliable, best value storage solutions
 - Maintain compliance of the Fermilab Mass Storage System Minor Application to its security plan and comply with general computing enclave's baselines.

Activities Summary: FTEs

| Personnel Usage (FTEs) | | | | | | | |
|------------------------|---------------------------------------|------------|---------|------------------|----------------|----------------|------------------------------------|
| Tactical Plan | Level 1 Activity | Allocation | | Actual YTD | | | |
| | | FTE-yrs | FTE-mos | FTE-yrs (Ave/mo) | FTE-mos (7 mo) | % consumed YTD | % consumed sans other contributors |
| Administration | daily tasks | 3.35 | 40.2 | 3.83 | 26.82 | 66.72 | 66.72 |
| | enstore upgrades & installs | 0.2 | 2.4 | 0.13 | 0.89 | 37.08 | 6.25 |
| | dCache upgrades and installs | 0.1 | 1.2 | 0.00 | 0 | 0.00 | |
| | Media Migration | 0.1 | 1.2 | 0.07 | 0.5 | 41.67 | 41.67 |
| | Needfile Upgrades and Installs | 0.05 | 0.6 | 0.07 | 0.5 | 83.33 | 0.00 |
| | Project Management | 0.22 | 2.64 | 0.07 | 0.5 | 18.94 | 18.94 |
| | projects /procurement & commissioning | 0.25 | 3 | 0.20 | 1.43 | 47.67 | 43.33 |
| | projects/ sde | 0.55 | 6.6 | 1.02 | 7.14 | 108.18 | 103.48 |
| | projects / monitoring | 0.05 | 0.6 | 0.00 | 0 | 0.00 | |
| | workflow improvements | 0.2 | 2.4 | 0.26 | 1.83 | 76.25 | 76.25 |
| | Project leadership | 0.22 | 2.64 | 0.00 | 0 | 0.00 | 0.00 |
| | | 5.29 | 63.48 | 5.66 | 39.61 | 62.40 | 59.75 |

Project Activity: Projects

Projects for operation

Original Goals Related to this Activity

1. Procure and commission storage resources
 - Ongoing, libraries, drives, infrastructure machines, file servers
2. Improve the maintainability of the mass storage services
 - SDE, cfengine deployed
3. Investigate new technologies
 - Storage-evaluation, vendor visits

Adjusted Goals Related to this Activity

- 1.-3. *Same*

Key Metrics

- Improved operation downtimes
- resource monitoring
- stakeholder assessments.

Project Activity: Projects

- Key Milestones (blue new)
 1. Commission LTO-4 technology (100TB written/300 read) end CY07Q4. **Completed**
 2. Install new migration infrastructure hardware. **First 3 migration servers installed**
 3. **Establish ITIL service procedures. Start of incident management with bugzilla reporting system, near agreement on good portion of Release Management policy & procedure.**
 4. **Provide infrastructure for deployment of OS/storage system apps. Deployed cfengine, cobbler & zabbix**
 5. Provide additional public dCache Storage and replace EOSL dCache resources. Q3-Q4. **Will soon be placing equipment orders**
 6. Maintain and support remote operations via console and management subsystem. **GCC is near complete (Urish). FCC systems need same.**
 7. Operational third SL8500 located at FCC CY07Q4 - **Nearly Completed**
 8. Start migration of CDF 9940B. **This will not start until FY09**
 9. **Start migration of sken and d0 9940A. These need to be complete by 9940A EOSL date of June 2009. Just started.**
 10. Web based raid monitoring is use by SSA Q2. **Not started. Still using email/walkthrus**
 11. Start and complete migration of D0 LTO1 and LTO2 by FY08Q4. **This may not complete this FY**
 12. Single federated enstore Q4 - **Not started**
 13. Install movers and tape drives for SL8500 as needed. **Behind schedule**

Service Activity: Operations

Provide 24x7 operations support for the Fermilab Mass Storage Systems

Original Goals Related to this Activity

1. Operate stken, d0en and cdfen.
2. Provide custodial protection, integrity, and accessibility through migration, duplication, and dispersal
3. Decommission AML
4. Provide more routine dCache support

Adjusted Goals Related to this Activity

- 1.-4. Same
 - Ongoing

Key Metrics

- Operational statistics
- weekly operations meetings
- stakeholder assessments.

Service Activity: Operations

Milestones

1. Provide 7x24 on call pager rotation **Ongoing.**
2. Train turned-over and new staff. **Ongoing**
3. Make all automated tape libraries operation by Q3. **FCC SL8500 is just coming online**
4. Maintain and support department infrastructure computers. **All operational.**
5. Maintain and support OSG storage test-stand at best effort level. **Ongoing.**
6. Maintain and support Needfile service and hardware. **Idle.**
7. SDE enstore operational on stken, d0en and cdfen. **D0en and cdfen done. Stken in June 2008.**
8. Establish geographically separate distribution or duplication of data according to plans. **Libraries established at FCC and GCC. Not enough drives at each location to start distribution**
9. Establish tape migration platforms and start migrations to LTO-3, LTO-4. Duplicating MINOS and MiniBoone data to geographically separate copies during migration. **3 platforms established. Migration from LTO-2 started. Other media not yet started and resolving performance problems. Will not be able to migrate all LTO-2 this FY.**
10. Upgrade all OS to SLF 4.x by end of CY07. **Stken servers still at 3.x**
11. Transition PNFS scans to SSA group. **Not done.**
12. Transition routine dCache support to SSA administrators. **Not done (lost hire)**

Tactical Plan Issues and Risks



- *Resolution of Past Action Items*
 - Provide for additional administrator effort (see below)
- *Issues and Risks (+ impact of FY08 DOE/FNAL budget)*
 - Loss of experienced staff when ramping up to very high demand will lead to degradation in the quality of service provided.
 - Loss of hire in DMD for dCache support.
 - Long turn around times (> 3 months) in acquisition and deployment of storage hardware is risking data taking.
 - Balancing & acquiring resources to distribute data to two sites adds some inefficiency and is difficult to plan.
 - Delays in deploying a performant migration platform runs the risk of not being able to migrate legacy media before equipment EOSL. Must already migrate > 2 PB/yr 2009-2010.

Tactical Plan Status Summary



- *Status Summary*
 - Have acquired and deployed 30,000 slots in new library
 - Commissioned LTO-4 technology
 - Established infrastructure for deploying Storage Application systems (cfengine, cobbler, zabbix) and used to update mover plant
 - Deployed SDE on 2 of 3 systems. Some problems persist.
 - All systems should be up to SLF 4.x by the end of June.
 - Have fallen behind on acquiring the drives & movers.
 - Planning for data distribution between FCC and GCC and acquisition of hardware needed at both these locations.
 - Operational capacity and movement resource growth while losing experienced staff is putting operational QOS in jeopardy.

Storage M&S

| Operating and Equipment M&S for Storage | | | Operations M&S | | | | Equipment M&S | | | |
|--|------------------|----------------------------|------------------------------|--------|-----------------------------|-----------------------------|------------------------------|---------|-----------------------------|--|
| | | FY Obligation Budget | YTD Obligations + RIPS | %Spent | Current FY08 Forecast | FY Obligation Summary | YTD Obligations + RIPS | % Spent | Current FY08 Forecast | |
| D0-RUN2 | D0-RN2-TAPES-OP | 300 | 175 | 58 | | | | | | |
| | D0-RN2-ROBOTICS | | | | | 306 | 255 | 83 | | |
| CDF-RUN2 | CDF-RN2-TAPES | 154 | 0 | 0 | | | | | | |
| | CDF-RN2-ROBOTICS | | | | | 496 | 246 | 50 | | |
| TAPES | TAPES-MINOS-OP | 8 | 0 | 0 | | | | | | |
| | TAPES-OTHER-OP | 198 | 0 | 0 | | | | | | |
| DATA-MOV-STORE | DMS-ADM | 411 | 404 | 98 | | | | | | |
| USCMS-T1 | EQT1-CS-R | | | | | 74 | 0 | 0 | | |
| Total | | 1071 | 579 | 54 | | 876 | 501 | 57 | | |
| Travel | Lower Storage | 4.1 | 0 | 0 | | | | | | |
| | Upper Storage | 11.8 | 15.2 | 129 | | | | | | |
| Total | | 15.9 | 15.2 | 96 | | | | | | |
| Robotic equipment to spend | = | 375 | | | | | | | | |
| Operating to spend (sans D0 and CDF tape budget) = | | | 213 | | | | | | | |
| Will use remaining equipment and operating monies for tape drives, public dcache upgrades, infratstructure (test-stands, migration stations) | | | | | | | | | | |