FY08 Plan for **Data Movement & Storage/Lower Storage**
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Relevant Strategic Plans - Strategic Plan for Data Movement And Storage

Lower Storage Goals-

Provide feature development, integration and support of Tape based Multi Petabyte Mass Storage System, for Fermilab, High Energy Physics Experiments, and other collaborators in order to meet the expanding requirements of these collaborations.

Lower Storage Strategy-

Provide support, feature additions and modifications of Tape based Multiple Petabyte Mass Storage System Enstore for our stakeholders in a timely, efficient and highly reliable manner, at the required capacity and rate. Anticipate needs and provide for capacity, robustness, software features, maintainability, and high availability. Leverage development in Enstore towards being able to provide it as an rpm package for distribution and ease of installation.

Objectives for FY08

1. Provide developers support of existing production Enstore systems.
2. Provide Enstore feature additions and modifications required by strategic goals, operations.
3. Provide support of new tape technologies and OS upgrades.
4. Integrate existing Enstore systems into one for sharing storage libraries, movers and other resources. Reduce amount of equipment.
5. Provide Enstore packaging and installation support.
6. Establish multi-institutional Enstore Collaboration.

Activities

DATA MOVEMENT & STORAGE/Lower Storage/Daily Tasks – day to day SA and experiments support

- Activity Type: Ongoing
- Timescale: Continuous
- Milestones: N/A
- Metrics: Minimize unplanned and planned service outages

DATA MOVEMENT & STORAGE/Lower Storage/ Small Projects – small additions to the existing system, including monitoring, future projects, entv and others.

- Activity Type: Ongoing
- Timescale: Continuous
- Milestones: N/A
- Metrics: N/A

DATA MOVEMENT & STORAGE/Lower Storage/ENCP - Modifications, feature additions, new releases.

- Activity Type: Ongoing
- Timescale: Continuous
- Milestones: encp product cuts
- Metrics: testing using test procedures and scripts, deployment.

DATA MOVEMENT & STORAGE/Lower Storage/PNFS Scans – Support of Automated pnfs scans

- Activity Type: Ongoing
- Timescale: Continuous
- Milestones: N/A
- Metrics: Provide scan reports and fix problems

DATA MOVEMENT & STORAGE/Lower Storage/ Workflow support - Enstore operations workflow support and feature additions. Includes modifications of DB to contain necessary parameters for metrics.

- Activity Type: Ongoing
- Timescale: Continuous
- Milestones: N/A
- Metrics: N/A

DATA MOVEMENT & STORAGE/Lower Storage/ Distributed Tape Operations – All aspects of distributed tape operations including

- installation, configuration and relocation of enstore servers and OS services (Screwdriverless Enstore).

- development of tools to support operations in a distributed environment
- Activity Type: Ongoing
- Timescale: Continuous
- Milestones: N/A
- Metrics: functionality tests, deployment into production

DATA MOVEMENT & STORAGE/Lower Storage/ Packaging And Installation support – Enstore packaging and installation support on existing and new hardware. Better product support.

- Activity Type: Ongoing
- Timescale: Continuous
- Milestones:
  1. encp rpm
  2. Enstore packaged with all dependencies in a uniform way
     - enstore rpms, ftt rpms, and other as needed.
     - make necessary modifications for switching to commonly distributed python and swig
- Metrics: functionality tests, deployment into production

DATA MOVEMENT & STORAGE/Lower Storage/ Migration - Support and feature additions to automigration tools.

- Activity Type: Ongoing
- Timescale: Continuous
- Milestones: N/A
- Metrics: functionality tests, deployment into production

DATA MOVEMENT & STORAGE/Lower Storage/ Externally Deployable Enstore - packaging Enstore for external distribution. One of European CMS T-1 sites has decided to use Enstore as its tape storage system after its evaluation early in 2007. The collaboration between FNAL CD and PIC (University of Barcelona, Spain) has been set to provide all needs for external distribution and developers support of Enstore.

- Activity Type: Ongoing
- Timescale: Continuous
- Milestones: N/A
- Metrics: functionality tests, deployment into production

DATA MOVEMENT & STORAGE/Lower Storage/ New Library Support – support of new robotic libraries including code modifications and system commissioning

- Activity Type: Ongoing
- Timescale: Continuous
- Milestones: N/A
- Metrics: functionality tests, deployment into production

DATA MOVEMENT & STORAGE/Lower Storage/ New Technology Support – newer OS, 64 – bit processor architecture, new tape drives.

- Activity Type: Ongoing
- Timescale: Continuous
- Milestones: N/A
- Metrics: functionality tests, deployment into production

DATA MOVEMENT & STORAGE/Lower Storage/ Small Files – Participate in design of small files support in enstore along with dCache in collaboration with PIC (Barcelona, Spain)

- Activity Type: New
- Timescale: 0.1 FTE
- Milestones:
  1. December 2007 – end of design
  2. January 2008 – code testing
  3. February 2008 – deployment into production
- Metrics: functionality tests, deployment into production

DATA MOVEMENT & STORAGE/Lower Storage/ Documentation – modifications and additions to Enstore documents for all categories of users.

- Activity Type: Ongoing
- Timescale: Continuous
- Milestones: N/A
- Metrics: new releases

Priorities:

- Continuous Enstore operations support
- Packaging and installation
- Externally deployable Enstore
- Automated pnfs scans
- Migration support

- New library support
- New technology support
- All systems integration
- Small files

Change control: CD/CCF management review, review by major stakeholders.

Risk Assessment:

1. Not providing support is not an option. Enstore is a central mass storage system for needs of all Fermilab users and US CMS Tier 1 Site. Enstore is a mature system. There is a slight risk of not providing a required capacities and rates. Deploying a new hardware and improving a scalability of Enstore components allows to mitigate this risk.

2. Not providing Enstore feature additions and modifications required by strategic goals and operations may lead to reduced functionality of the system. Lack of manpower may aggravate this risk. Risk is low.

3. If support of new storage technologies and OS upgrades are not provided the systems parameters will degrade. Risk is low.

4. Not implementing integration of existing Enstore systems into one may lead to inefficient use of tape drive and libraries and also may require more funds for equipment for separate systems. Risk is low.

5. Enstore packaging and installation support is important for operations. Not implementing this activity may lead to increased administration load as well as support load on developers leading to lack of development time. Risk is moderate.

6. Externally deployable Enstore is critical for Enstore collaborations within and outside of USA. Risk is high.

7. Slowdown in tape mount / dismount operations may occur in SL8500 robotic library due to current mechanism of random selection of movers. In this case we may need to implement a tape – mover affinity feature. Risk is low.