

## **Monitoring use case:** The Data Storage System Upgrade

- **Description:**  
Fermilab is the Tier 1 Regional Center for CMS experiment. It will store peta-bytes of data using disk and tape storage systems. The performance of the storage system varies. The site administrators need to monitor the utilization of storage systems, and provide to the management whether more storage space is needed, or the system needs to be upgraded.
- **Contact:**  
Yujun Wu (yujun@fnal.gov)
- **Performance events/sensors required:**  
CPU, memory, OS configuration, available free storage, used storage, overall throughput, response time, failure rate, connection numbers and frequency.
- **How the performance information will be used:**
  1. Provide information for management to decide whether to upgrade the system.
  2. Performance data will also be used for the selection of the products to buy. If one product is much better than others, we may buy more from this vendor.
- **Access needed:**  
summary statistics, streaming of data and historical information
- **Size of data to be gathered**  
Individual statistics will be small; archived log file will be large after years of monitoring
- **Frequency data will be updated**  
Depending on the different storage systems. The log information for tape may have an upper limit of 30 minutes; for disk, every 2-5 minutes.
- **Frequency data will be accessed**  
TBD. The frequency will be decided by the usage of the log information.
- **Overhead constraints**  
Daemons with a low overhead may need to be running periodically on the file servers.
- **Duration of the logging:**  
TBD. The log information should be taken daily, and continuously for several years.
- **Platforms:**  
Requirement: Linux and Solaris, Disk Storage System, Tape Storage System (Enstore)