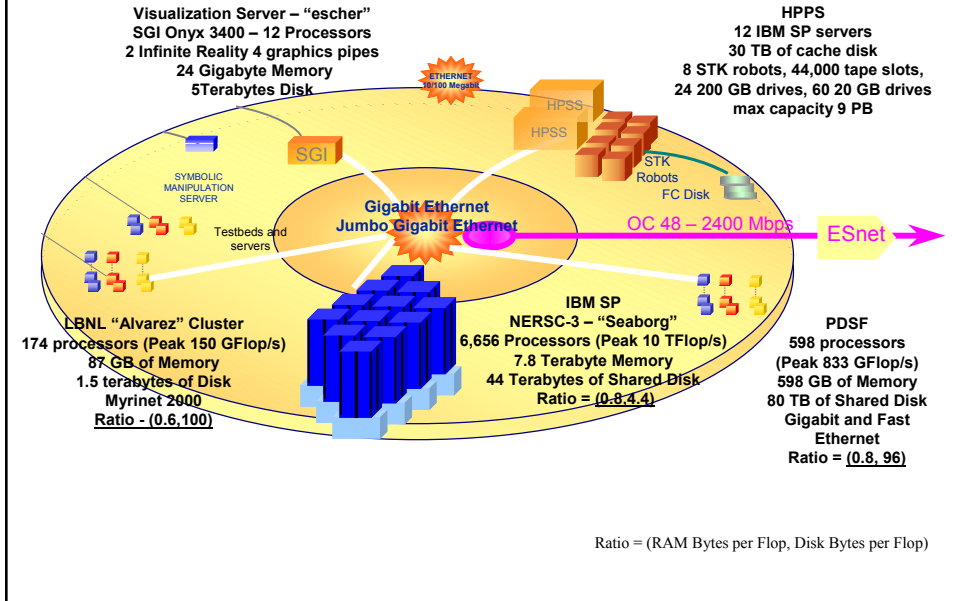
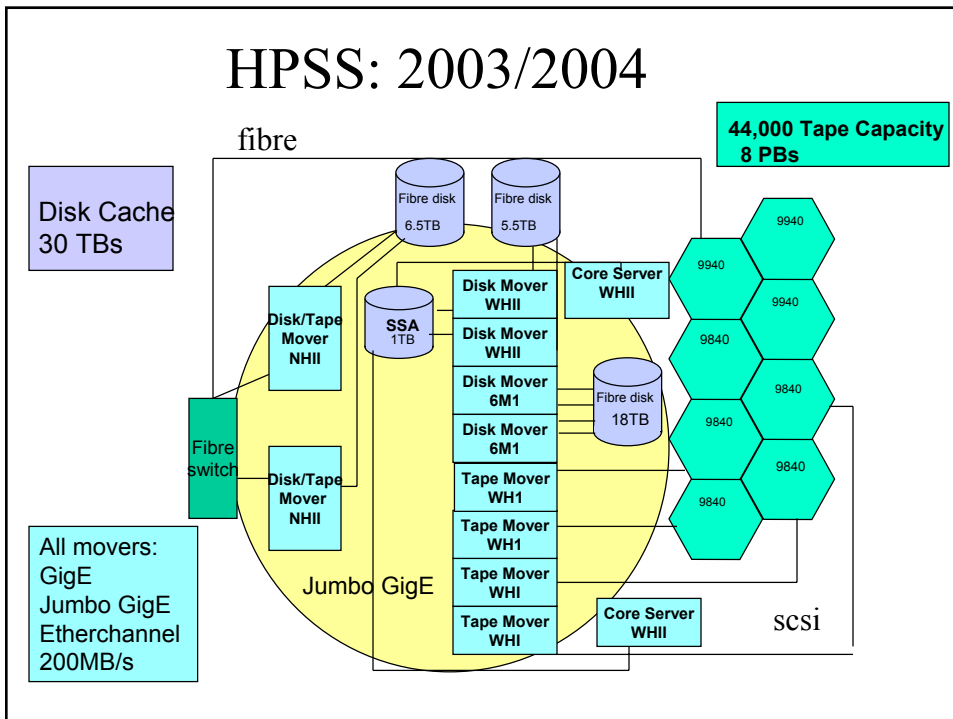


NERSC System Architecture

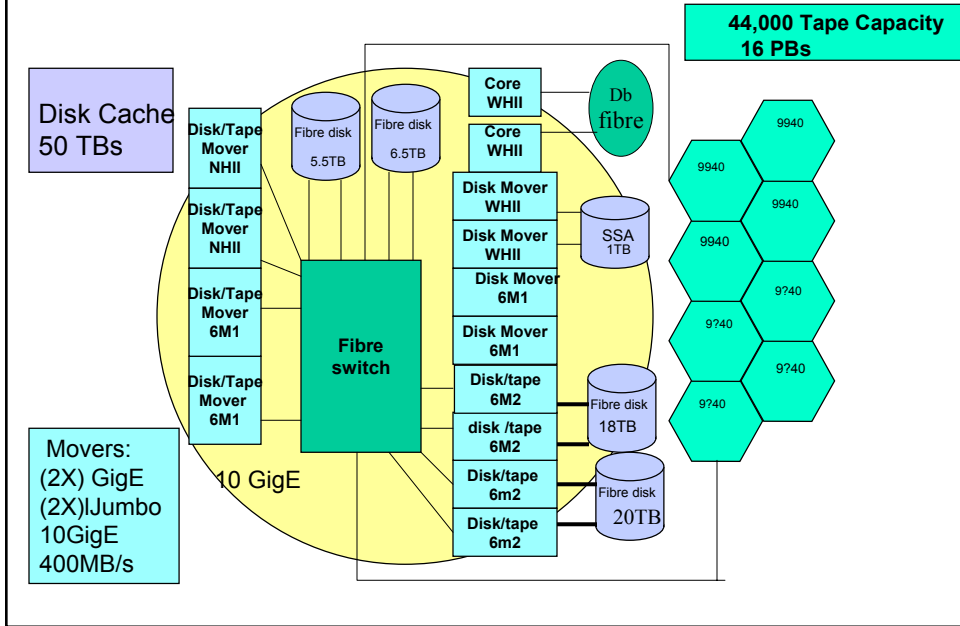
April 2004



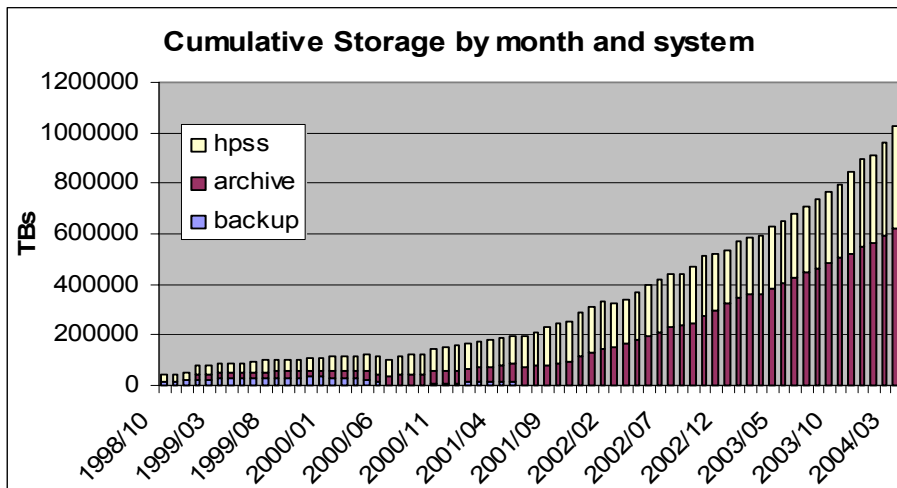
HPSS: 2003/2004



HPSS: 2004/2005



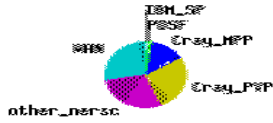
Bytes in Storage



Yearly I/O transfers to storage

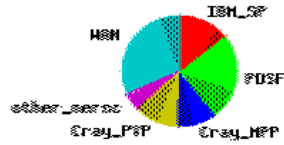
Network Traffic to Storage For 1999 (145.7 TB)

write read



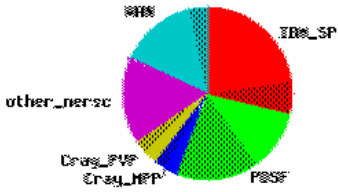
Network Traffic to Storage For 2001 (302.7 TB)

write read



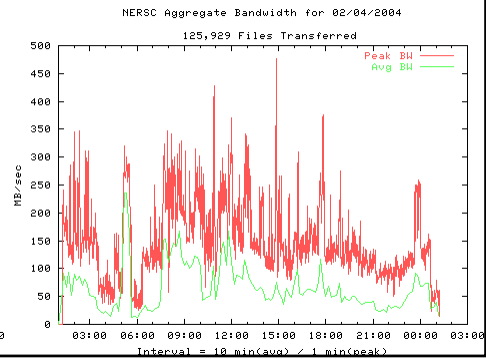
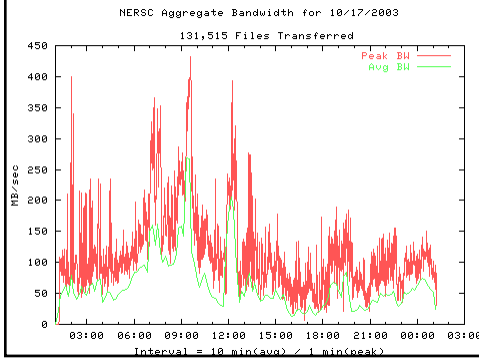
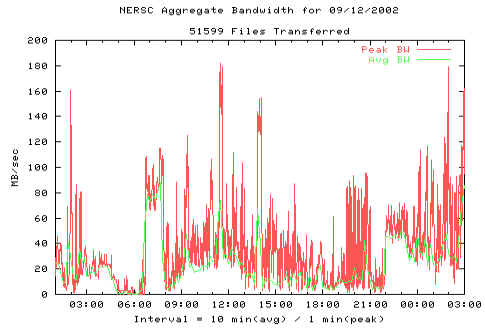
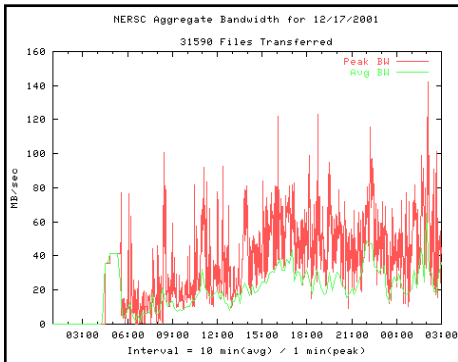
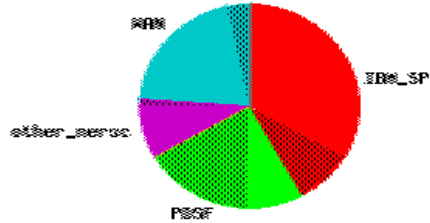
Network Traffic to Storage For 2002 (689.8 TB)

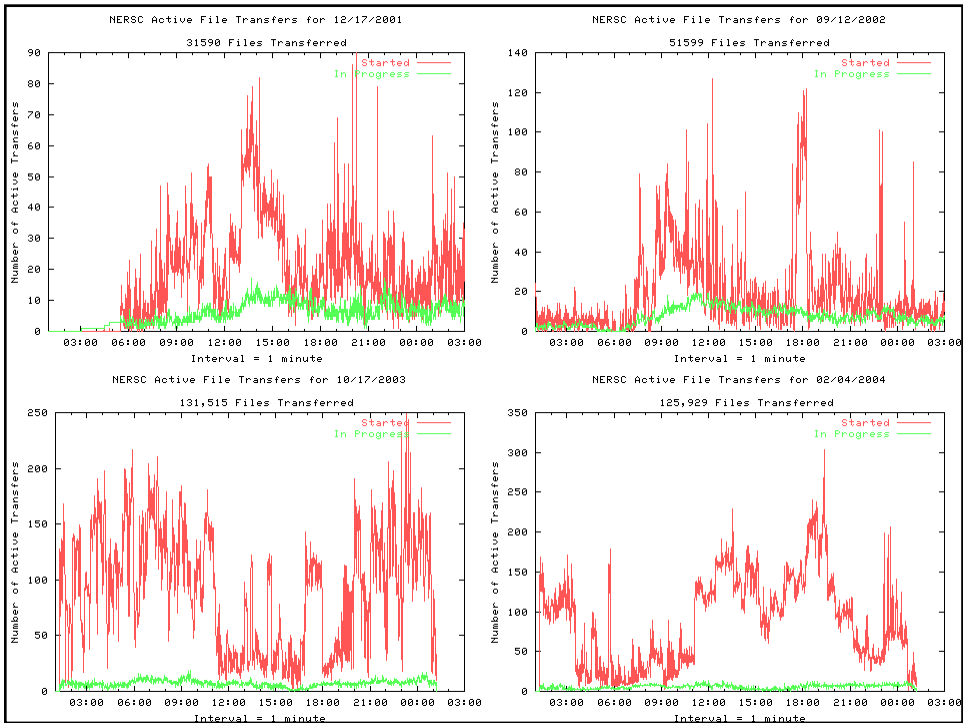
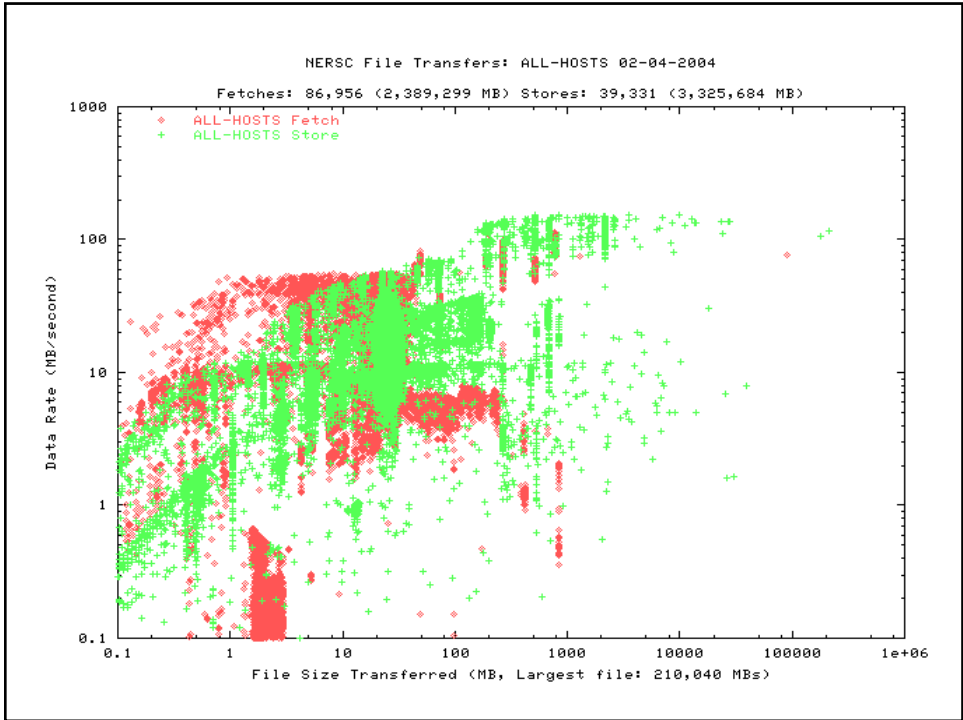
write read



Network Traffic to Storage For 2003 (914.4 TB)

write read





Storage Projections

Year	TBs/day	Netspeed	Disk	Data	Cap
2001	1.5TB/day	17MB/sec	7.5TB	298TB	1.6PB
2002	4TB/day	80 MB/sec	20TB	530TB	3.1PB
2003	6TB/day	200MB/sec	30TB	1PB	4.3PB
2004	10TB/day	400MB/sec	50TB	1.6PB	8.8PB
2005	20TB/day	800MB/sec	?100TB	3.1PB	16.8PB

Problems

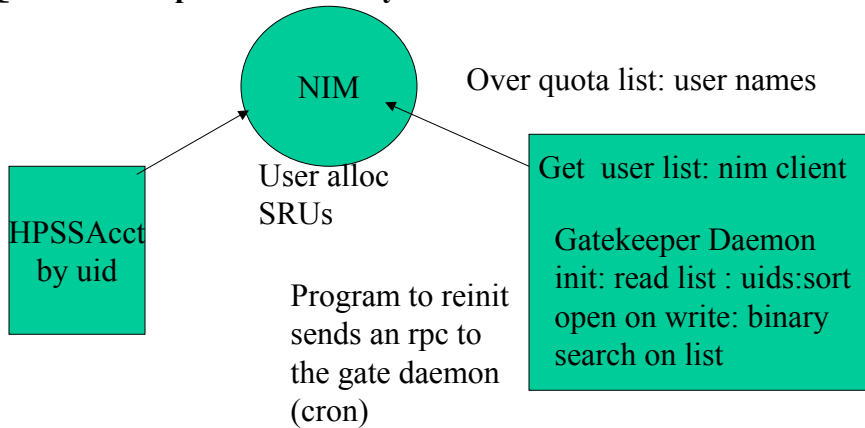
DDN 8000 Disk Array doesn't perform with IBM 6228 FC driver
commands are not queued. Implemented a 4 way stripe
to get performance.

9940B Cartridges: manufacturing defect: uneven media:
worked with imation scanned all 3000 carts, then repacked
and replaced the bad batches 130 cartridges 4 bad files

Security vulnerabilities fixed: (nessus internal testing)
We fixed buffer overflows in pftp, logc and logd
Applied IBM fix dced it cored with the scan

Unique site items

Quotas: Implemented this year



Grid/ANL testbed running HPSS 6.1

LSTape utilities (what's on tape added #tapesused/month)

NERSC Wish List

1. Aggregation of small files on disk and on tape one read brings a bunch online. Using Htar with collections
2. Secure remote management of storage systems with acceptable performance.
3. Integration of hpss with center wide filesystem solutions storage tank, luster, gpfs, etc. A DMF type of capability
4. Full grid integration with HPSS with performance
5. Mover affinity...choose mover closest to the requestor.
6. File lifetimes.