LDAS Hardware Update

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LDAS Hardware Update

- Archive system up and running (16 nodes)--last full system.
  - Gateway server (Sun V880: 4x750 MHz/8 GB)
  - Database server (Sun V880)
  - Dataconditioning server (Intel SMP: 2x2.2 GHz/2 GB)
  - Beowulf server (Intel UP): 1x1.2 GHz/1 GB)
- Full size Development and Test LDAS systems running at Caltech.
- Beowulf upgrades at LHO (64 nodes), LLO (48), and MIT (32).
- Large IDE disk cache for full S1 data at Caltech.
- All servers upgraded to Gigabit Ethernet.
- Shared SAN filesystem (QFS) operational as data interface between LDAS and CDAS for E7 and S1.
- 5 dual-Xeon systems setup for parallel software development and testing at Caltech by each programmer.

LDAS S1 Configuration

"Increase computational capacity over E7 and investigate advanced storage configurations but delay full compute farm deployment until S2+."

	SAN (TB)	IDE (TB)	CPU (GHz)	Tape (TB)
LHO	10	2	139	2
LLO	5	2	107	2
MIT	1	2	45	
CIT	3	18	34	90
DEV	1	2	25	2
TEST	1		8	
BOX(x5)		0.1	5	

Remaining LDAS Construction

- Purchase selected HSM (SAM-QFS).
  - ~12 STK9940B Fibre Channel tape drives.
  - L700 tape library at each observatory.
- Grow SAN at Observatories to allow high-speed access to raw frames from DMT and GC machines.
  - 1 64-port 2Gbit/s switch per location (GA …).
  - Upgrade DB and HSM metadata disk to (1GB ECC cache).
- Install full-scale Beowulf clusters in time for S2+.
  - Gigabit Ethernet for Servers.
  - Fast Ethernet for Nodes.
  - ~100(LLO)+200(LHO)+300(CIT) single proc P4/K7 with 512/1024 MB.

Beowulf procurement plan

- LDAS will select a few exact hardware configurations for testing of performance and reliability.
  - » Motherboard, CPU, memory, disk, power supply, case, …
- A downselection to Intel P4 and AMD K7 has been made for processor type.
- Requests for quotations from both large national and small local companies will be made for the selected hardware configuration.
- As with the other LDAS procurements the delay of purchasing until “just in time” has provided several times the capacity for the same or lower cost.

Post-construction LDAS hardware

- Grow IDE RAID to hold S2 data at Archive center.
  - S1 13 TB ($4/GB)
  - S2 47 TB (x1.7 expected from internal frame compression)
  - Per annum 270 TB
    - Disk may be cheap enough to hold all of this on-line.
- Upgrade key servers (Linux to 64-bit)
  - DataconditioningAPI servers to 4x2GHz/16GB
  - HSM servers to 8x1GHz/16GB
  - Beowulf server to 2x2GHz/4GB
  - Database server may need to be upgraded to meet higher than expected event rates.
    - E7 and S1 ran at 5Hz average rates but 50Hz may be needed.