

# Integration Program

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# High Level Phase 5 Milestones

- FDR1, FDR2 and CCRC08 exercises
  - Timely replication of AODs
  - Analysis queues validated
  - Facility support for Jamborees
- Throughput benchmarks of sustained 200 MB/s T1-T2
- SRM v2.2 functionality at all SE's
- WLCG
  - Accounting statistics
  - RSV-SAM
- OSG 1.0
- ATLAS infrastructure
  - DQ2 1.0 site services
  - LFC
  - Release distribution via DQ2+Pacballs

# Integration Program

- The program of of deliverables aimed towards integrating Tier1, Tier2 & [Tier3] fabric resources, ATLAS software and services, grid middleware, and operational components
- Four “phases completed to date. Current Phase 5 (FY08Q3)

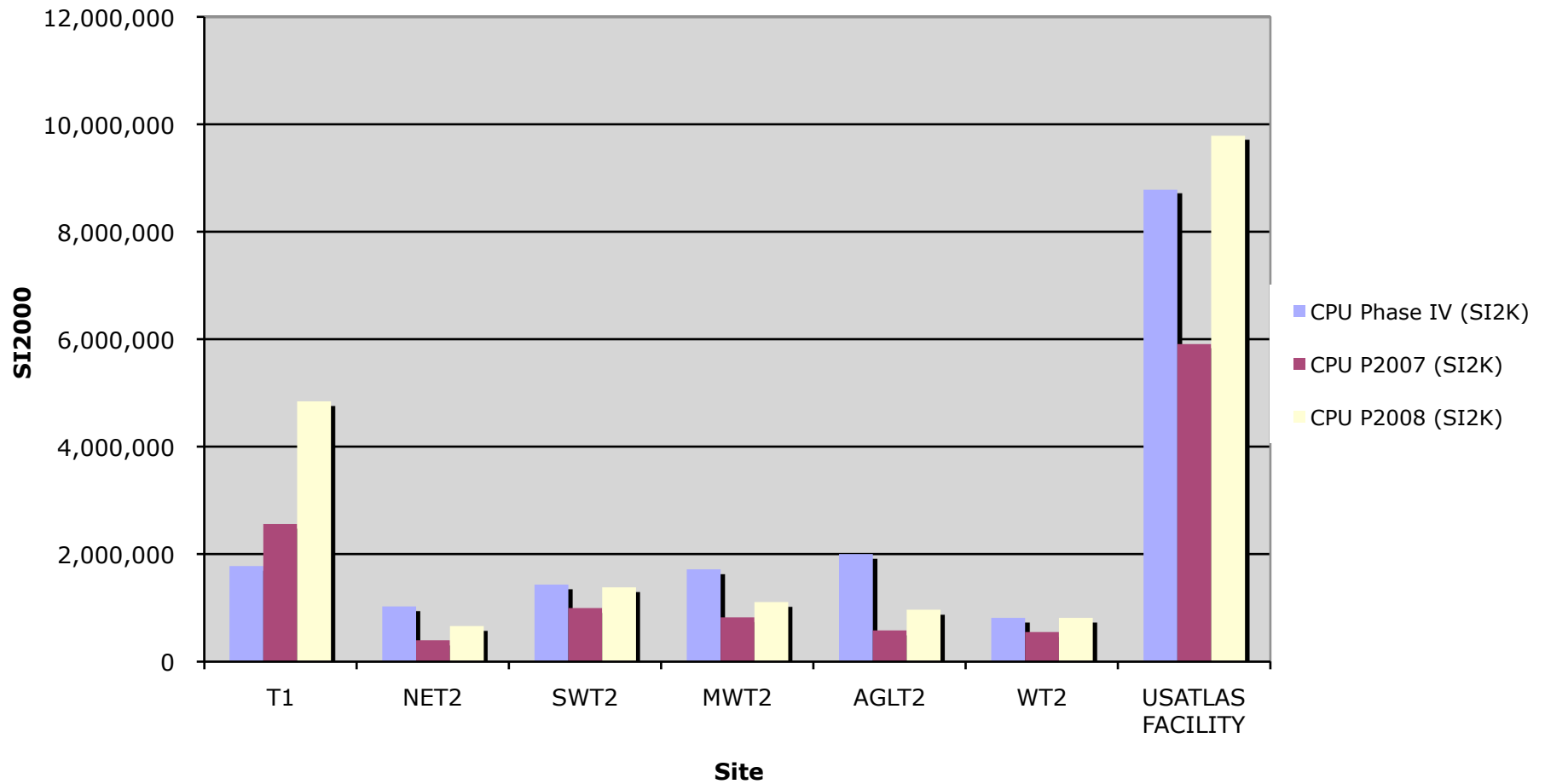
## Phase 5 (April 1 - June 30, 2008 - FY08Q3)

<u>WBS</u>	<u>Deliverable</u>	<u>Description</u>	<u>Major Milestones</u>	<u>Status</u>	<u>Resource</u>
1	P5	Integration Phase 5: deployment, validation	June 30		Tier1 + Tier2 centers
1.1	<a href="#">ATLAS releases</a>	ATLAS releases via Panda in full production			all
1.2	<a href="#">DQ2 site services</a>	DQ2 upgrades	periodic		all
1.3	<a href="#">OSG services</a>	Validation for OSG 1.0	June 15		all
1.4	<a href="#">Storage services</a>	SRM v2.2 + space tokens		on-going	all
1.5	<a href="#">Monitoring services</a>	RSV-SAM, RSV-Nagios			all
1.6	<a href="#">Load tests</a>	Read/Write performance targets reached	weekly	on-going	all
1.7	<a href="#">File Catalogs</a>	FTS integration & migration			BNL
1.8	<a href="#">Accounting</a>	Accounting validation for WLCG	monthly		all
1.9	<a href="#">Site certification Table</a>	Site certification and benchmarks registered	June 30	done	all
1.10	<a href="#">Summary Report?</a>	Summary report	June 30	done	all

# Facility CPU Deployment

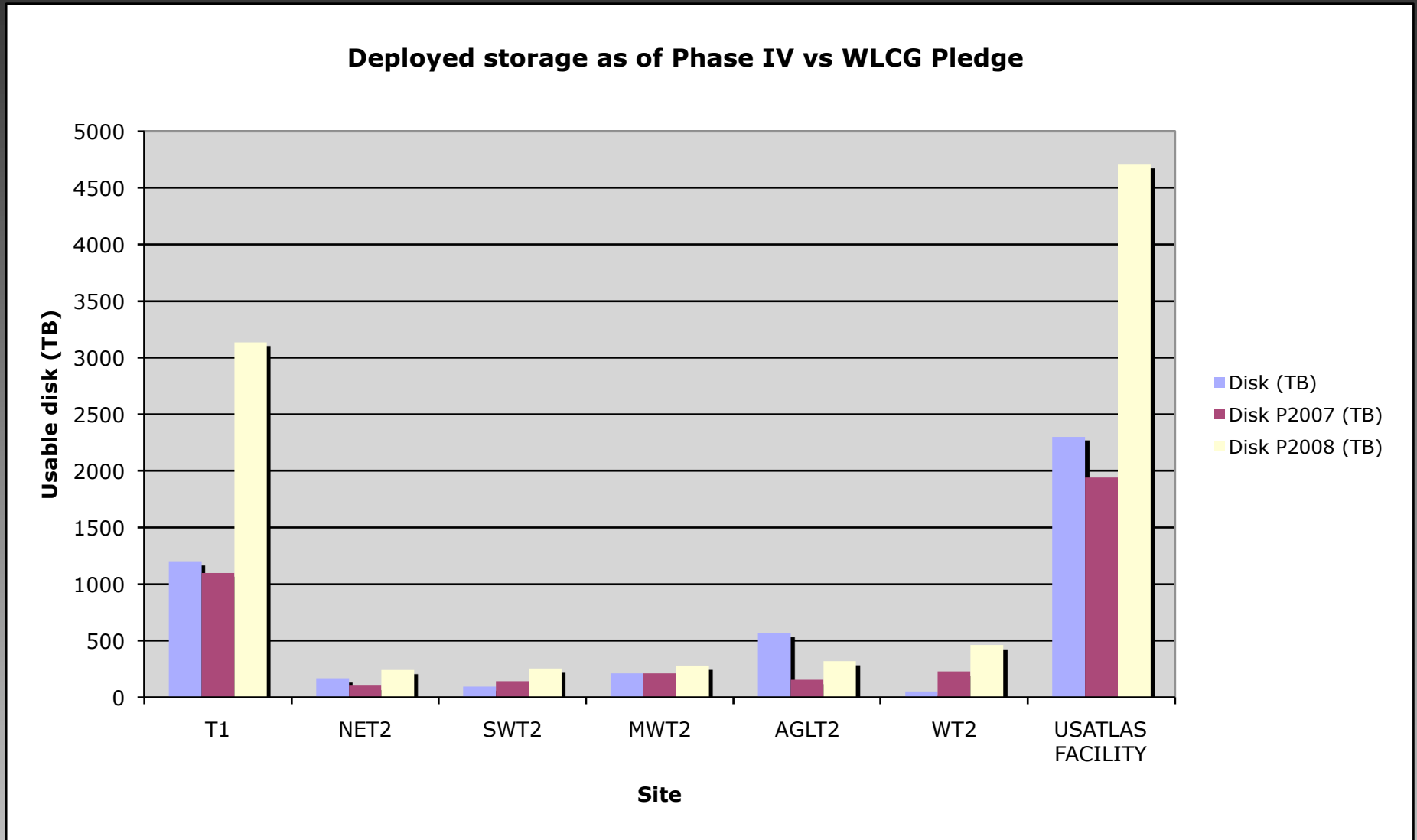
4/30/08

### Deployed CPU as of Phase IV vs WLCG Pledge



# Facility Storage Deployment

4/30/08



# Site Certification

Site	Update for User data deletion Hiro/Charles	DQ2 upgrade Hiro	Monitoring Fred	Load tests Jay/Shawn	WLCG accounting Shawn/Rob	OSG 1.0 Rob	ATLAS Releases Xin	LFC John	Space Tokens
AGLT2		✓	✓	✓	✓				✓
BNL_ATLAS_1 / BNLPANDA(DQ2)		✓							
BNL_ATLAS_2 / BNLDISK(DQ2)		✓							
BU_ATLAS_Tier2		✓							✓
BU_ATLAS_Tier2o		✓							✓
MWT2_IU	✓	✓							
MWT2_UC	✓	✓							✓
OU_OCHEP_SWT2		⚠							
OU_OSCER_ATLAS		⚠							
SLACXRD	✓	✓			✓				✓
UC_ATLAS_MWT2	✓	✓							⚠
UTA_DPCC		⚠							
UTA_SWT2		✓							
UTA_CPB		⚠							

# Data Deletion

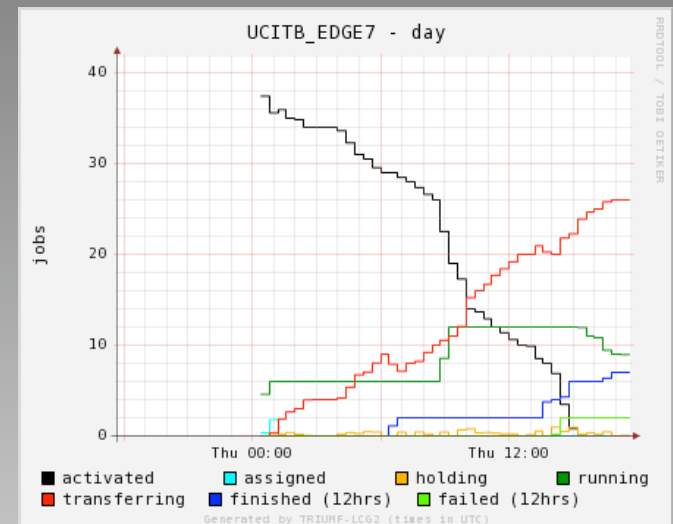
- Goal is to enable users to cleanup datasets produced through job submission to the analysis queues
- Charles and Hiro have provided a modification to the lrc code that supports this:
  - <http://repo.mwt2.org/viewvc/lrc-adler32>
- Have also provided a tool for users:

```
Usage: lrc_delete_dataset_site.py [-x] [-v] [-n] dataset
      site
--xrootd, -x: delete xrootd files only
--verbose, -v: verbose mode
--no-delete, -n: no-op mode (no deletion done)
```

- Will provide a package solution that bundles with other useful client tools

# OSG 1.0

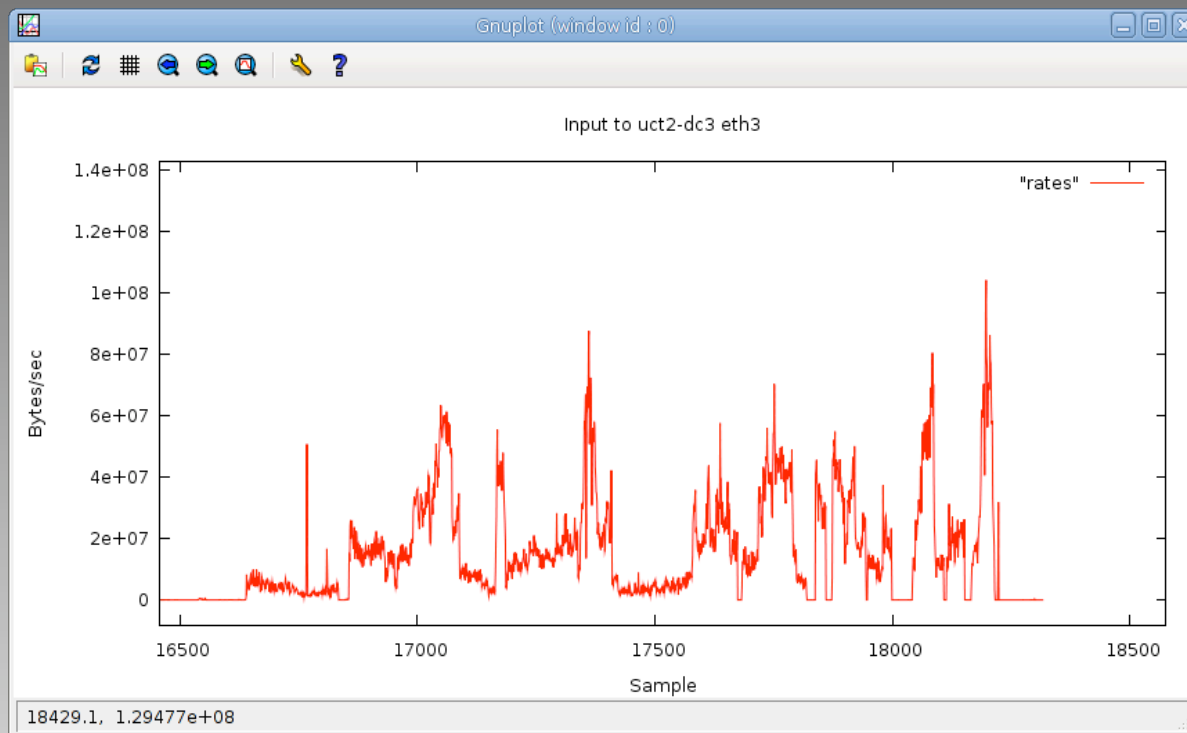
- Complete validation of RSV --> WLCG SAM service availability monitoring
- Deploy ITB 0.9 on Integration Testbed
  - (ATLAS sites OU, BNL, UC)
- RSV-SE probe testing
- Worker-node client which includes lcg-utils
- RSV -> site-level Nagios
- Validation of Panda on ITB
  - <https://twiki.grid.iu.edu/twiki/bin/view/Integration/ITB090/ATLASComments>
  - 40 complete production jobs
  - Failures have been looping failures
  - (recent failures past weekend were a problem with the SE)
- OSG 1.0 to be released by OSG June 2
- Deploy on Facility by June 15





# (Network++) Throughput

- Throughput activity led by Shawn w/ load testing + monitoring by Jay
- Augment with E2E monitoring tools
- On some sites explore DCN
- CCRC exercises indicate challenges ahead (not just network but also storage)




# Facility Monitoring

- Validate that all sites are properly reporting RSV data to SAM for basic availability of compute elements
  - Target: May 1
- Re-validate all sites are reporting accounting data correctly to Gratia and to the WLCG portal
  - Target: May 1
  - Update via Configure-osg w/ subcluster information
- Review Nagios monitoring alarms for the Facility and adjust policy as appropriate:
  - Target: May 1
- Deploy RSV probes for storage elements: June 1
- Validate reporting of RSV probes for storage elements into SAM: June 15

# Storage

- Next major procurements will be to expand storage capacity in the facility
- Each T2 site will be expanding ~100 TB
- Tier1 1PB (and WT2 110 TB) deployment of SunFire x4500 AGLT2: Dell 2950+MD1000 shelves
- Issues: filesystem, local performance, SRM r/w performance, cost/capacity, cf R.Petkus (SLAC workshop)
- Will hear more in this workshop

4/30/08



Site	CPU Phase IV (SI2K)	CPU P2007 (SI2K)	CPU P2008 (SI2K)	Disk (TB)	Disk P2007 (TB)	Disk P2008 (TB)
T1	1,780,820	2560000	4844000	1200	1100	3136
NET2	1,031,068	394000	665000	170	103	244
SWT2	1,437,648	998000	1386000	97	143	256
MWT2	1,716,952	826000	1112000	212	213	282
AGLT2	2,003,088	581000	965000	570	155	322
WT2	819,458	550000	820000	51	228	462
<b>USATLAS FACILITY</b>	<b>8,789,034</b>	<b>5909000</b>	<b>9792000</b>	<b>2300</b>	<b>1942</b>	<b>4702</b>

# Analysis at Tier2

- Now have established analysis queues at each Tier2
- Basic functionality exists for pathena-based submissions
- Have performed well for FDR1 analysis at all sites
- Still many issues remain
  - Validation of new job types
  - Building library of (validated) analysis templates to separate “site problems” from “user problems”
  - Skimming service with TAG (local or database)
  - Yet to scale to large numbers of analysis jobs
  - Yet to demonstrate I/O intensive job scaling
  - Yet to demonstrate user data deletion
  - Getting data quickly to sites
  - Uploading analysis output to Tier1 for custodial storage
  - Implementing USERDISK and GROUPODISK tokens everywhere

# Tier3

- The Tier3 whitepaper sets general guidelines regarding basic definitions and scope leaving technical details unspecified
- Many scenarios for Tier3, still under active discussion in various forums
- Within the US ATLAS Facility, idea is to integrate Tier3 resources as appropriate and help define Tier3 environments which take full advantage of the services and infrastructure of the Tier1 and Tier2 centers
- Examples
  - Integrate w/ full Panda + DDM (U Wisc)
  - Attach to a Tier2 SE & run Panda (UTD [swt2], UIUC [mwt2])
  - PROOF based facilities (BNL, UW)
  - Private (non-grid) clusters
- Major issues:
  - Data management (access to ATLAS datasets)
  - Backing up user datasets
  - Cost of configuration and operations

# Coordination

- The Facility group meets weekly to receive feedback and issues from the production and DDM operations teams
  - Discuss deployment and integration issues of new software and services
  - Discuss developments in throughput optimization and other performance issues
  - Discuss site and Facility-wide technical problems in all layers of the infrastructure
- Facility workshops such as Tier2/Tier3 to bring sites together to share detailed experiences and problems, assess and review capabilities, and progress towards overall readiness
- Quarterly reporting of progress to the Facility project