

# Facilities Integration Program Update

Rob Gardner

11-10-09






US ATLAS Tier 2 / Tier 3 Workshop at UTA









































































# Summary

- Phase 11: Oct 1 - Dec 31, 2009
  - FY10Q1
  - LHC restart
- Phase 11 tasks
- Tier 3 Integration tasks

# Phase 11 by Site

- Upgrades to LFC server, equipment procurements, Squid (commissioning), OSG 1.2, SL5, Throughput

**Notation:**  completed  work is in progress  not applicable  defer to next phase  table to be updated

Site	DQ2 update	Fabric upgrades	SquidTier2	LFC 1.7	OSG 1.2	NetMon	SL5	KitBenchmark
TIER1								
AGLT2								
MWT2_IU								
MWT2_UC								
NET2_BU								
NET2_HU								
SWT2_CPB								
SWT2_OU								
WT2								

# Fabric Updates

- Increments to storage and processing in the facility

## FabricUpgradeP11

- ↓ [Introduction](#)
- ↓ [Site procurements](#)
  - ↓ [Tier 1](#)
  - ↓ [AGLT2](#)
  - ↓ [MWT2](#)
  - ↓ [NET2](#)
  - ↓ [SWT2](#)
  - ↓ [WT2](#)
- ↓ [References](#)

### Introduction

Deployment (procurement, installation, testing, integration) of storage and compute server upgrades at each site during this phase of the [IntegrationProgram](#).

- [FabricUpgradeP10](#) - upgrades in previous phase
- [CapacitySummary](#) - installed capacities (totals) and WLCG MOU pledge comparisons
- Space requirements (to be updated): [SpaceManagement](#)

### Site procurements

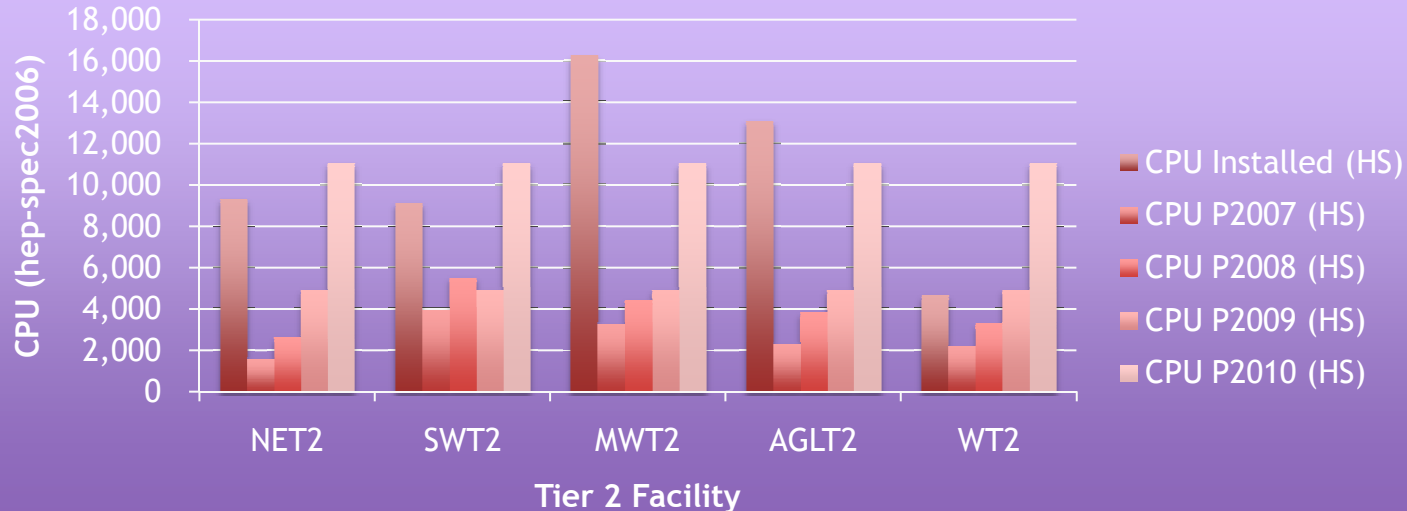
#### Tier 1

- 

#### AGLT2

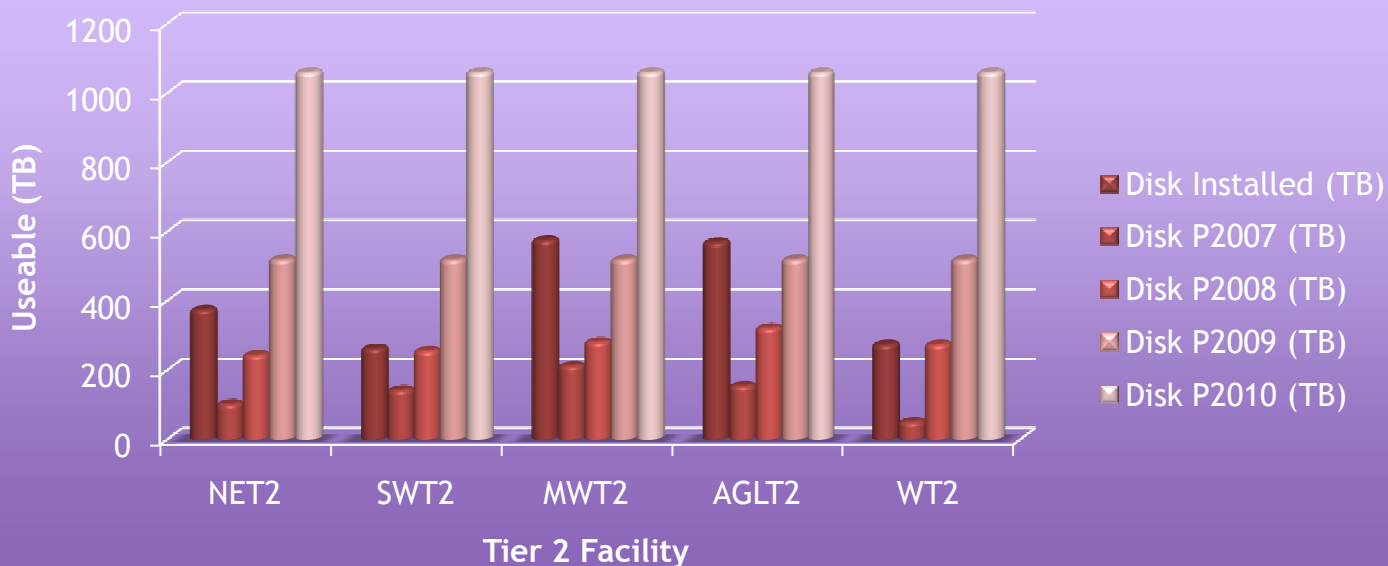
- Will procure ~ 8000 HEPSPEC06 and ~400TB of disk space. Purchase should be made before the end of September but equipment will not be installed.
- UM has bought 3 Dell M1000e blade chassis, 48 M610 2xE5520 24GB 2x146G 15K disks blades, 2 R710 storage headnodes and 18 MD1000 shelves 350TB in storage.
  - Sun and others quoted either disk or worker nodes as a possible alternative, but were not competitive
- MSU has bought 40 Dell R610 (1U) nodes with 2xE5520 24GB 2x146G 15K disks. Storage headnodes and disk shelves (perhaps 5-9 MD1000 w/2TB) but have not yet been ordered.

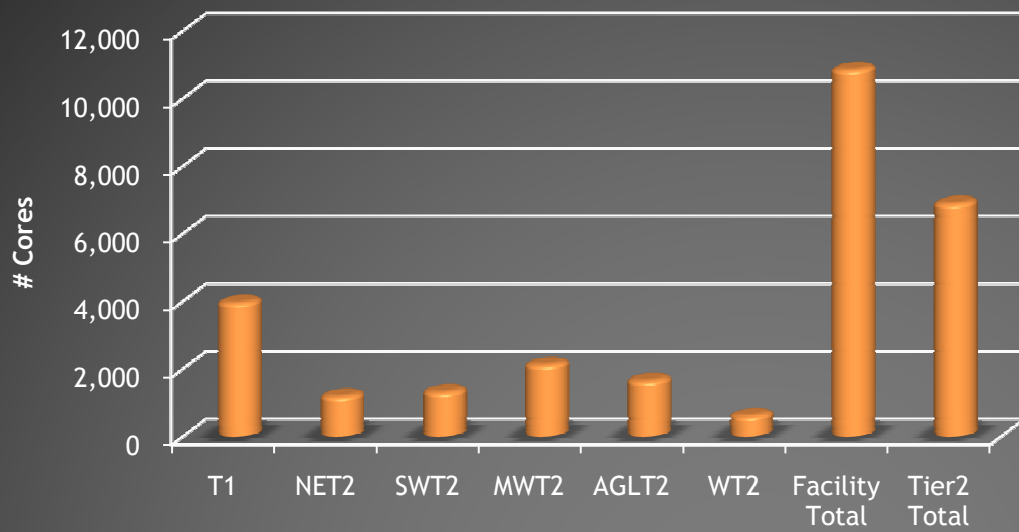
## Installed CPU vs WLCG Pledge Mid-2009



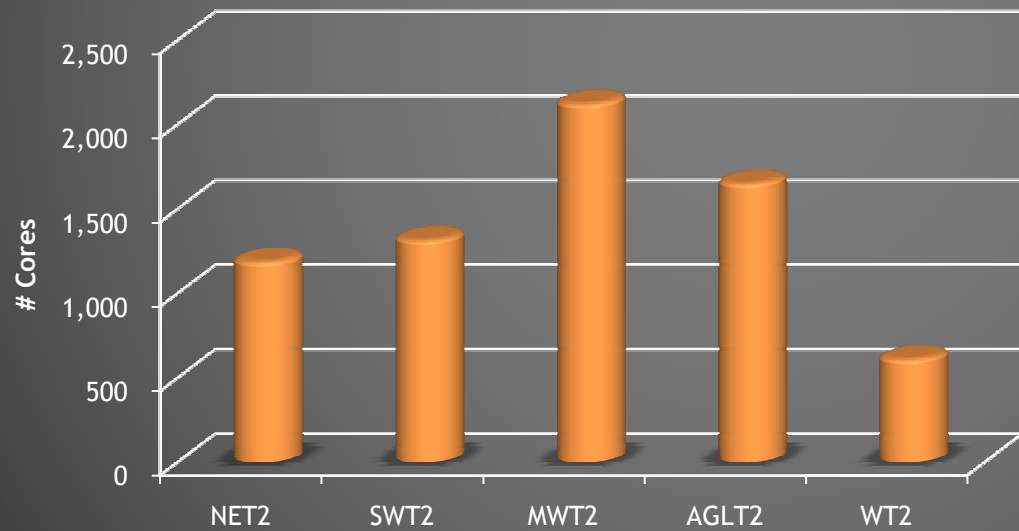
Tier 2  
capacities vs  
WLG pledge  
ending  
Phase 10

## Installed Disk vs WLCG Pledge Mid-2009





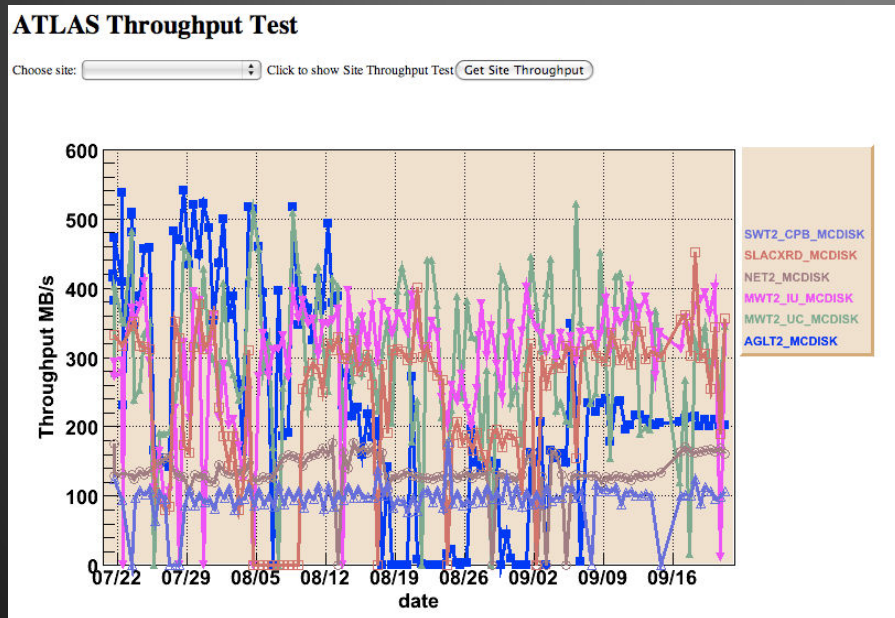
Ending  
Phase 10




<b>US ATLAS Facility</b>	<b>10,579</b>	<b>cores</b>	<b>84,345</b>	<b>HEP-SPEC06</b>
<b>TIER2 Centers</b>	<b>6,619</b>	<b>cores</b>	<b>49,943</b>	<b>HEP-SPEC06</b>

# Network Monitoring / Throughput

- Deployment and configuration of latest pS toolkit 3.1.1
- Re-establish throughput targets, 400 MB/s sustained & multi-site, etc



**pS-Performance Node For MWT2\_IU In Indianapolis, IN, US**



**User Tools**

- Services On This Node
- Global Set Of Services
- Java OWAMP Client
- Reverse Traceroute
- Reverse Ping
- PingER Web GUI

**Service Graphs**

- Throughput
- One-Way Latency
- Ping Latency
- SNMP Utilization
- Cacti Graphs

**Toolkit Administration**

Services Offered	Status
<b>Bandwidth Test Controller (BWCTL)</b> • <a href="http://iut2-net2.iu.edu:4823">tcp://iut2-net2.iu.edu:4823</a>	Running
<b>Lookup Service</b> • <a href="http://iut2-net2.iu.edu:8095/perfSONAR_PS/services/hLS">http://iut2-net2.iu.edu:8095/perfSONAR_PS/services/hLS</a>	Not Running
<b>Network Diagnostic Tester (NDT)</b> • <a href="http://iut2-net2.iu.edu:3001">tcp://iut2-net2.iu.edu:3001</a> • <a href="http://iut2-net2.iu.edu:7123">http://iut2-net2.iu.edu:7123</a>	Running
<b>Network Path and Application Diagnosis (NPAD)</b> • <a href="http://iut2-net2.iu.edu:8100">tcp://iut2-net2.iu.edu:8100</a> • <a href="http://iut2-net2.iu.edu:8200">http://iut2-net2.iu.edu:8200</a>	Running
<b>One-Way Ping Service (OWAMP)</b> • <a href="http://iut2-net2.iu.edu:861">tcp://iut2-net2.iu.edu:861</a>	Disabled
<b>perfSONAR-BUOY Regular Testing (Throughput)</b>	Not Running
<b>perfSONAR-BUOY Measurement Archive</b>	Running

# Tier 3 Integration

- The Tier 3 program is taking shape and has a broad scope of work focusing on bringing the ~20+ new Tier 3 centers online starting early next year, many from scratch
- There are a number of implied Facility integration issues to be addressed especially as regards to data access and transfers
- RWG, RY working on plan to define Tier 3 specific integration tasks - have first pass of deliverables



# Tier 3 Integration Tasks

- Tier 3 Network Connectivity Guide
  - Twiki guide for checking performance
  - Pointers to guides for tools and TCP buffer tuning
  - Guides to advanced tools (pS toolkit)
- Tier 3 Storage Element Install Guide
  - Twiki guide to SRM-based storage element install & validation - options (SRM vs GridFTP)
  - Investigation of GridFTP-only storage element
- Tier 3 Storage Authorization solution
  - Facility-wide Tier 3 GUMS
  - Gridmapfile solution

# Tier 3 Integration Tasks

- Tier 3 OSG Connectivity Guide
  - Resource registration (SE resources)
  - Tips for interaction, support responsibilities
  - Security
- Tier 3 Storage Functionality & Performance
  - Tiers of ATLAS + Subscription functionality & baseline performance
  - Monitor (voluntary)
- Validation of T3 output from Panda analysis done on T2
- T3 LFC consistency operations

# Other Tasks

- OSG
  - Complete deployments of OSG 1.2
  - Capacity reporting survey
- LFC
  - Upgrade Tier 2 catalogs to 1.7.2-4
  - Tier 3 LFC - SE consistency process
- Squid validation
- Kit Benchmark
  - Characterize analysis job performance



# What is the Integration Program?

- Phased program of work for the US ATLAS Facility
- Establishing a baseline set of deliverables that integrates fabric resources, ATLAS software and services, grid level services, operational components, and user tools
- Launched June 2007
  - Now in **Phase 11**
- Focus is primarily on US ATLAS Tier 1 and Tier 2 facilities with some participation from (Tier 2-like or Tier 2-satellite) Tier 3 sites
- <http://www.usatlas.bnl.gov/twiki/bin/view/Admins/IntegrationProgram.html>