OSG Services at Tier2 Centers

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Introduction

- Tier2 centers in the US are vital components of the OSG and WLCG computing facility
  - They provide Tier2 resources to US ATLAS and US CMS according to their respective computing models
  - They additionally provide resources to VO's outside the LHC community and may "federate" with other infrastructures
  - They participate in the OSG Integration Testbed (ITB) leading the new releases of the OSG infrastructure
  - Manpower at the Tier2 centers actively provide feedback and effort in many OSG activities (deployment, documentation, monitoring, information services, interoperability, etc.)
  - Additionally manpower is used to support data and job management services for ATLAS and CMS
  - Finally, additional leveraged resources are obtained from non-LHC program funds in many cases (University, other programs)

OSG Service Stack

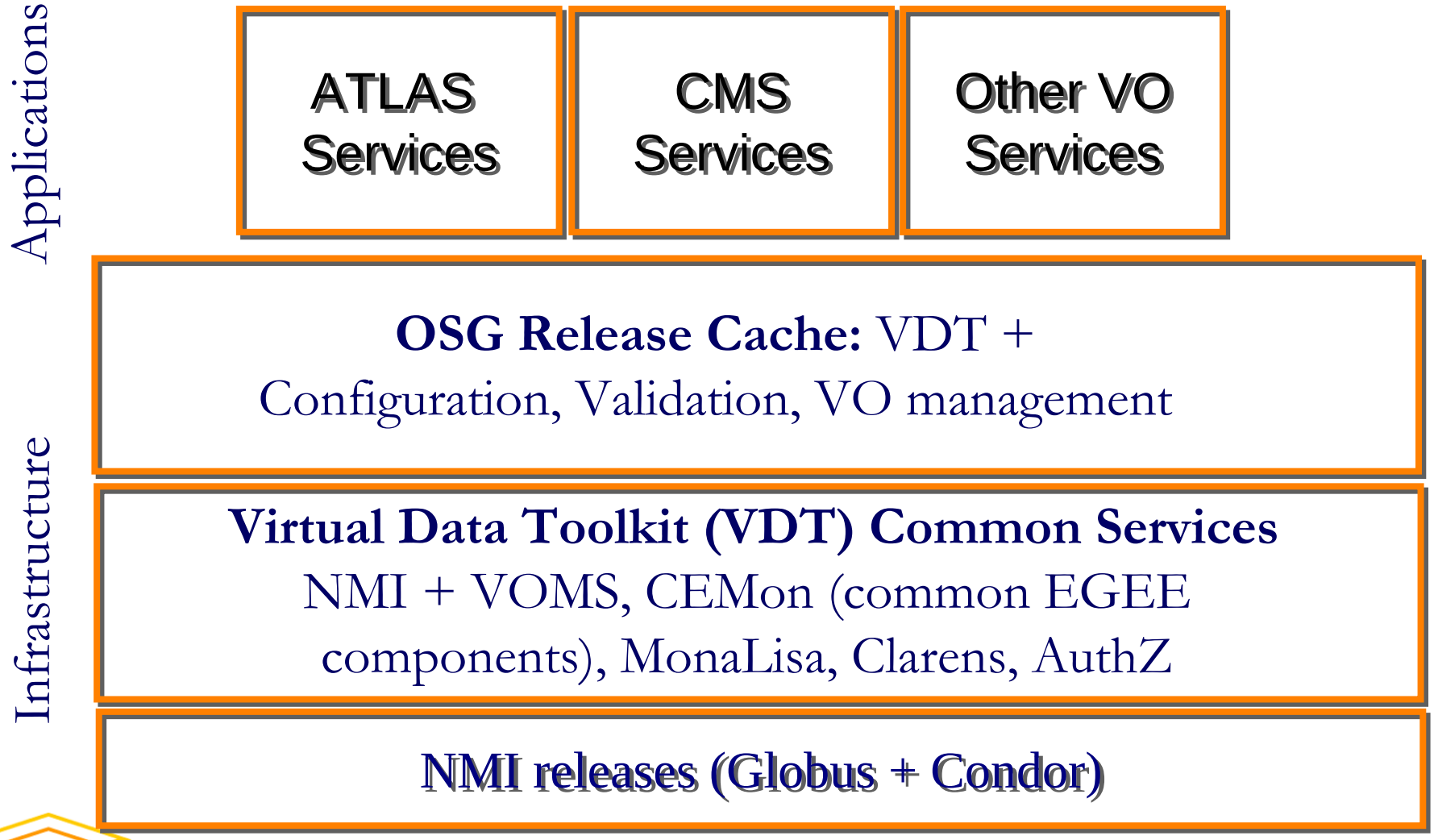


Fig. from R. Pordes

OSG Service Overview

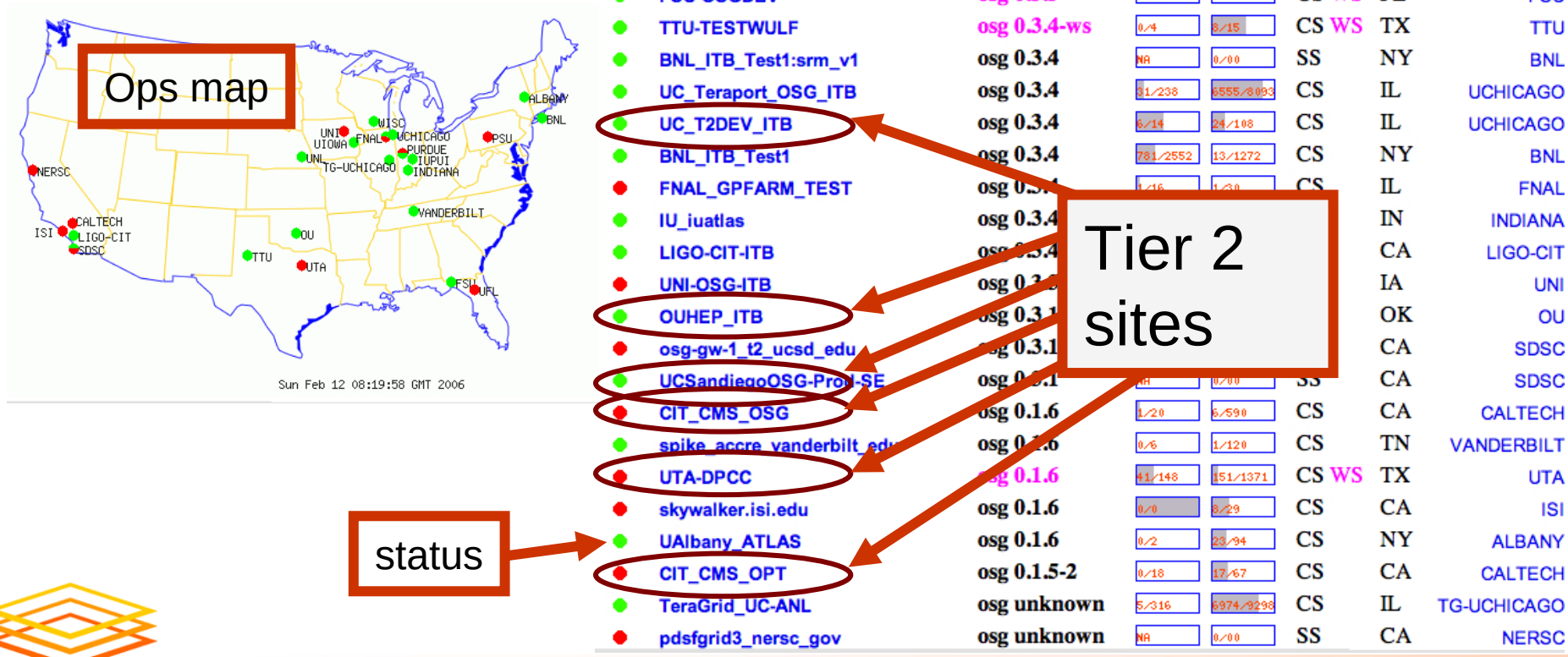
- Compute elements
  - GRAM, GridFTP, information services (GIP), monitoring, worker node client tools (eg. srmcp)
- Storage elements
  - SRM-drm, SRM-dCache (provided by VOs), v1.1
- Site level services
  - GUMS - for privilege (authorization) mappings
- VO level services
  - VOMS and user role assignments
- VO edge services
  - Semi-persistent services & agents as needed by applications
- Multi-VO, common services
  - Monitoring repositories, Catalogs, BDII index services, etc

OSG Process

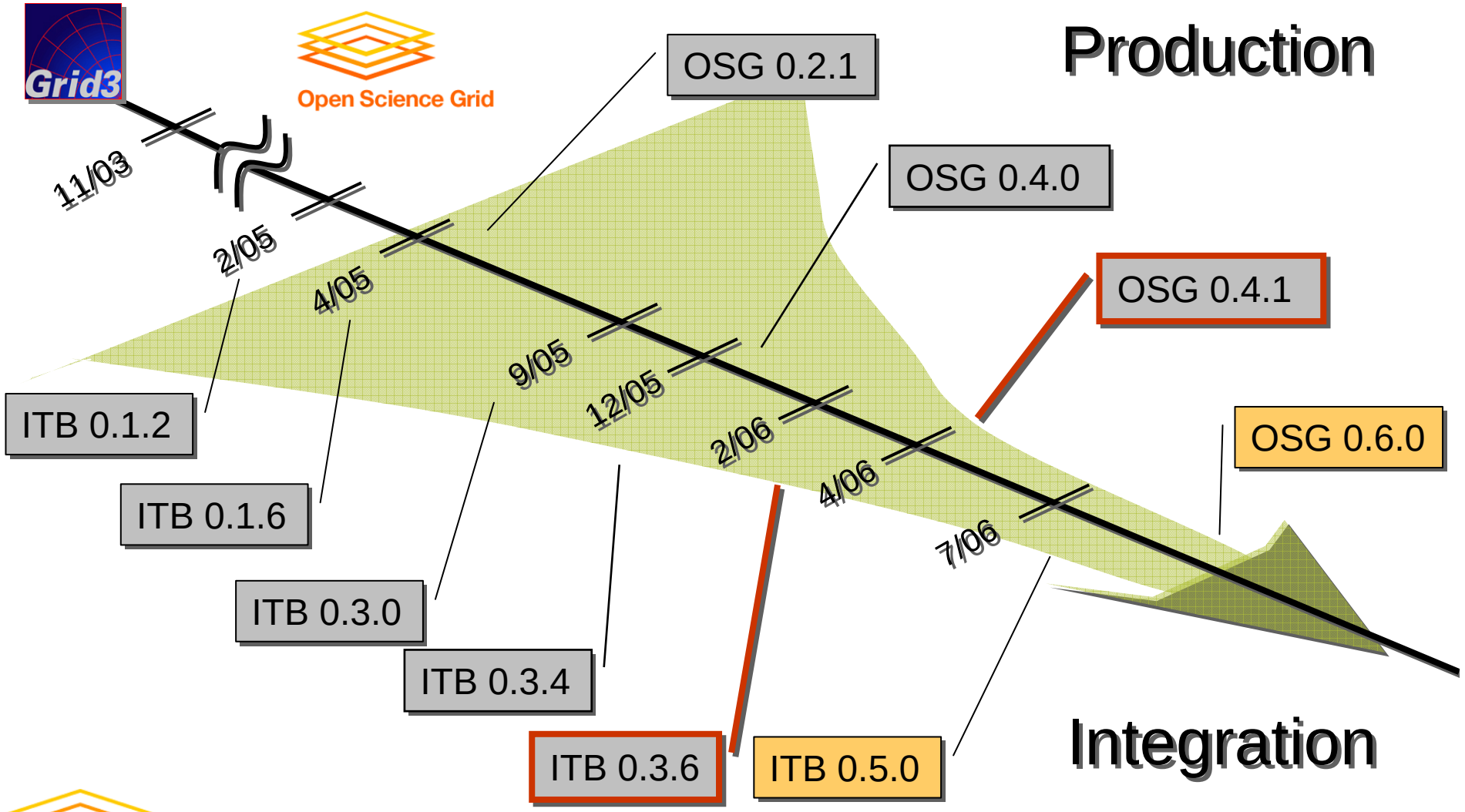
- Applications⇒Integration⇒Provision⇒Deploy
- Integration Testbed (15-20) Production (50+) sites

Tier2 Centers in the ITB

- As reported in GridCat status catalog



OSG Release Timeline



Production Use Cases ⇒ Tier2

- ATLAS
  - Panda pilot scheduling system accesses local batch queue via Condor-G and GRAM
  - OSG priviledge infrastructure for role-based authorization
  - Panda system requires local DQ2 site level services
  - ATLAS releases (installed in common application area)
  - OSG monitors report into Panda monitoring framework
- CMS
  - Condor-G interface via GRAM
  - CMS applications and LCG client tools in common area
  - GIP+BDII for interoperability with LCG

Analysis Use Cases ⇒ Tier2

- ATLAS
  - Panda, DQ2, and OSG infrastructure starting to be used to handle user analysis jobs via ‘analysis pilots’
  - Development work underway to support a multi-tasking pilot
  - Priorities can be set within Panda task queue, requiring no changes to the existing site-level authorization
- CMS
  - CRAB system requires local PhEDEx service and persistent agents for data management
  - Existing OSG privilege infrastructure used for authorization
  - Submission via LCG RB, requires CE information providers
- Storage
  - In both cases, site-level storage services are provided by the VO (SRM dCache)

Calibration Use Cases ⇒ Tier2

- ATLAS
  - No direct experience yet at Tier2 centers, expect to learn from upcoming calibration service challenges
  - Calibration datasets will require standard DDM infrastructure
  - Local access to MySQL databases; Frontier (Squid cache) services may be needed
- CMS
  - Also will be utilizing Frontier/Squid caches for calibration and alignment data
- Future releases of OSG
  - Will provide Squid by default, available for use for calibration databases as well as experiment software releases

Current OSG Release Description

- VDT 1.3.10 based core infrastructure
- Privilege infrastructure
  - VOMS service
  - PRIMA gatekeeper callout for extended role-based proxy
  - GUMS site account/DN management
- GT4 GridFTP
- GT4 Pre-Web Services and Web Services GRAM
- Information services: GridCat Catalog, MDS + Generic Information Providers (LCG)
- MonALISA, Core-MIS and ACDC monitoring tools

VDT 1.3.10 Server Content

CA Certificates v13 (includes IGTF 1.1 CAs)

EDG CRL Update 1.2.5

EDG Make Gridmap 2.1.0

Fault Tolerant Shell (ftsh) 2.0.12

Generic Information Provider 1.0.15 (Iowa 15-Feb-2006)

Globus Toolkit, pre web-services, client 4.0.1

Globus Toolkit, pre web-services, server 4.0.1

Globus Toolkit, web-services, client 4.0.1

Globus Toolkit, web-services, server 4.0.1

GLUE Schema 1.2 draft 7

GPT 3.2

Java SDK 1.4.2_10

KX509 20031111

Logrotate 3.7

MonALISA 1.4.12

MyProxy 3.4

MySQL 4.1.11

PPDG Cert Scripts 1.7

PRIMA Authorization Module 0.3

RLS, client 3.0.041021

UberFTP 1.18

Virtual Data System 1.4.4

Several in common with WLCG/EGEE

Service Deployment process

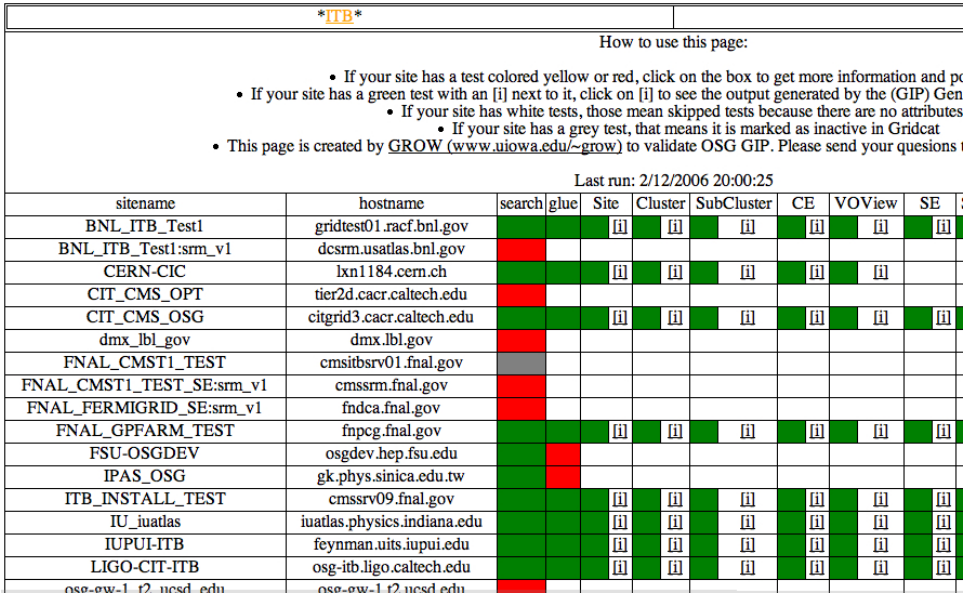
- VDT distributed via Pacman cache as CE server, client, VO management software packages
- OSG configuration and deployment cache used by Tier2 sites:
  - OSG CE-Server
  - OSG WorkerNode-Client
- GUMS server - and VO accounts, authorizations (file permissions, batch priorities, etc)
- SRM-dCache deploymed separately -- site, system specific
- “CE Storage” (transient job directories) and application install areas configured
- “VO boxes” and services deployed independently

Privilege Authorization Services

- Site level services to support fine-grained, role-based access to Tier2 resources:
  - GUMS - Grid User Management System - maps user proxy to local accounts based on role and group
  - Site admins grant access rights and privileges based on accounts
  - PRIMA callout from GRAM gatekeeper - assigns account based on GUMS mapping and submits to local scheduler
  - Roles at Tier2s (eg: usatlas1=production; usatlas2=software; usatlas3=users)
- Receives updates on mappings from VOMS
- Reverse map created periodically for accounting purposes (Monalisa presently)
- More work needed to integrate app framework priorities with site-level infrastructure and accounting services (DN, Group -based fair share mechanisms)

Information Services

- GIP (Generic Information Provider)
  - An information service that aggregates static and dynamic resource information
  - Produces information for use with LDAP-based Grid information systems
  - Glue 1.2 schema
- GIP use cases
  - LCG-OSG interoperability
  - GridCat cross checks
- Site level BDII service
  - Scalability
  - Query by LCG RB



ITB

How to use this page:

- If your site has a test colored yellow or red, click on the box to get more information and pc
- If your site has a green test with an [i] next to it, click on [i] to see the output generated by the (GIP) Gen
- If your site has white tests, those mean skipped tests because there are no attributes
- If your site has a grey test, that means it is marked as inactive in Gridcat
- This page is created by GROW (www.uiowa.edu/~grow) to validate OSG GIP. Please send your quesions

Last run: 2/12/2006 20:00:25

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BNL_ITB_Test1	gridtest01.racf.bnl.gov			[i]	[i]	[i]	[i]	[i]	[i]
BNL_ITB_Test1:srm_v1	dcsrm.usatlas.bnl.gov								
CERN-CIC	lxn1184.cern.ch			[i]	[i]	[i]	[i]	[i]	
CIT_CMS_OPT	tier2d.cacr.caltech.edu								
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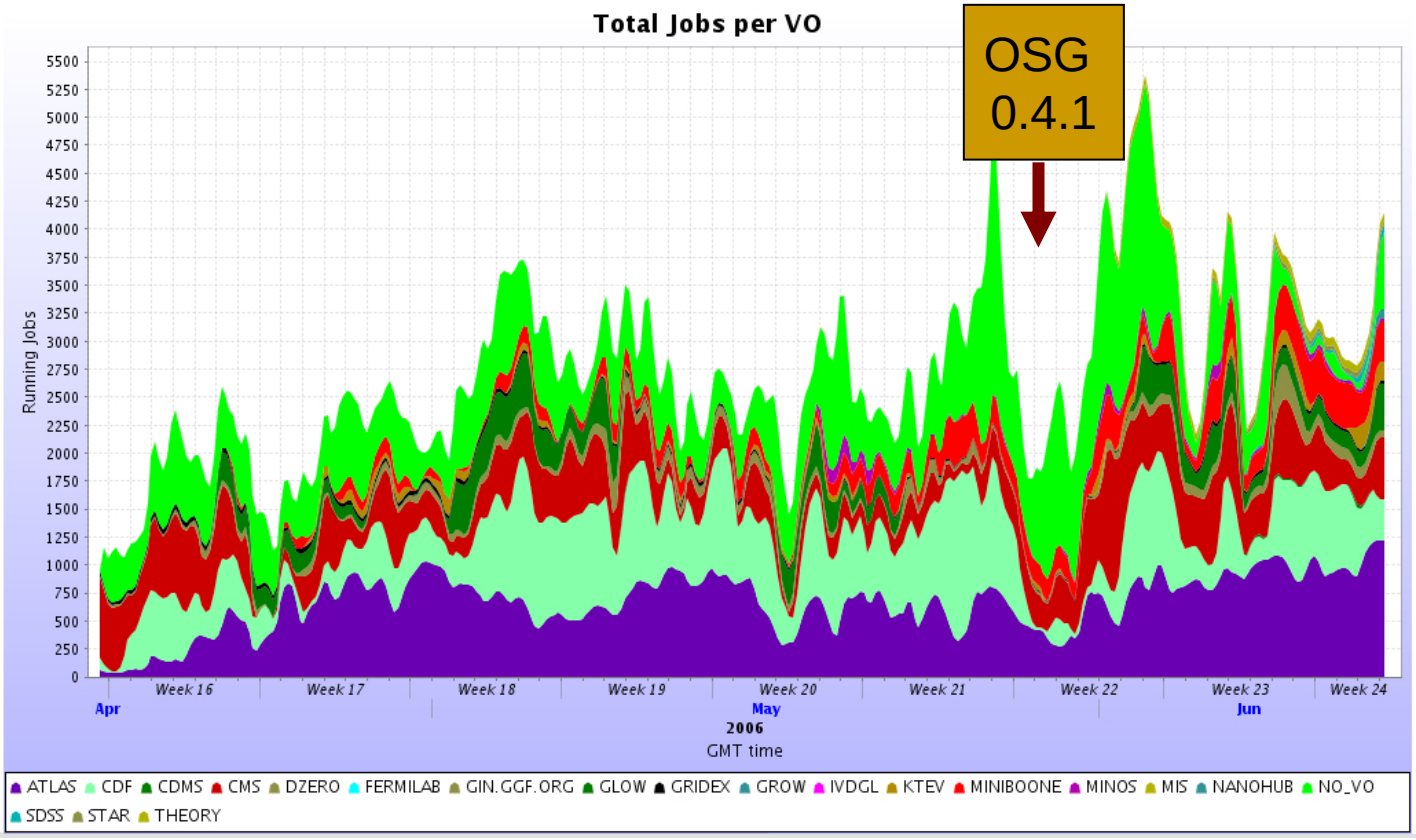
Monitoring and Accounting

- Monalisa, site level accounting servcies (native tools), site verify checks & report, GridExerciser



Conclusions

- Tier2 centers provide vital services and resources for the OSG (and WLCG) computing facilties
- Tier2 manpower used to support VO specific services -- eg. VO boxes for data management
- Tier2 direct participation in OSG release testing and validation of services
- OSG site-level services for security and authorization, site verfication and validation, monitoring & information used heavily by ATLAS and CMS
- Expect OSG services provided to evolve (next talk) so managing incremental upgrades will be key