OSG Site Monitoring

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OSG Sites Meeting

In 10 minutes…

- How does monitoring work in the OSG?
- What information services does the OSG CE provide?
- What monitoring-like tools are available?
- Plus a bonus slide!

Resource and Service Validation (RSV)

- RSV is a grid monitoring systems for the OSG.

- It covers primarily "grid-related" functionality; supplements, not replaces, a site monitor such as Nagios.

- Powered by Condor-Cron, periodically runs tests against an OSG CE or SE.

  - Perhaps is most powerful

RSV Web page

- RSV provides a simple local webpage of the latest results and some historical ones.

RSV Details

- RSV additionally sends its results using the same transport as Gratia up to the GOC.
  - These results help power the MyOSG pages
- RSV, in its simplest form, runs on just the OSG CE.
  - However, for large sites, it's easier to run a central RSV host testing all your CEs.
  - The Nebraska RSV instance monitors 6 CEs and 5 SRM endpoints; maybe the largest deploy?

OSG Info Services

- The point of information services is to provide site topology and status information from the site to "the world".
  - On the compute element: GIP, CEMon
  - Centrally at the GOC or FNAL: IG/ReSS, BDII
  - User tools: ldapsearch, OSG-MM, Pegasus, storage discovery tools.

The "Big Picture"
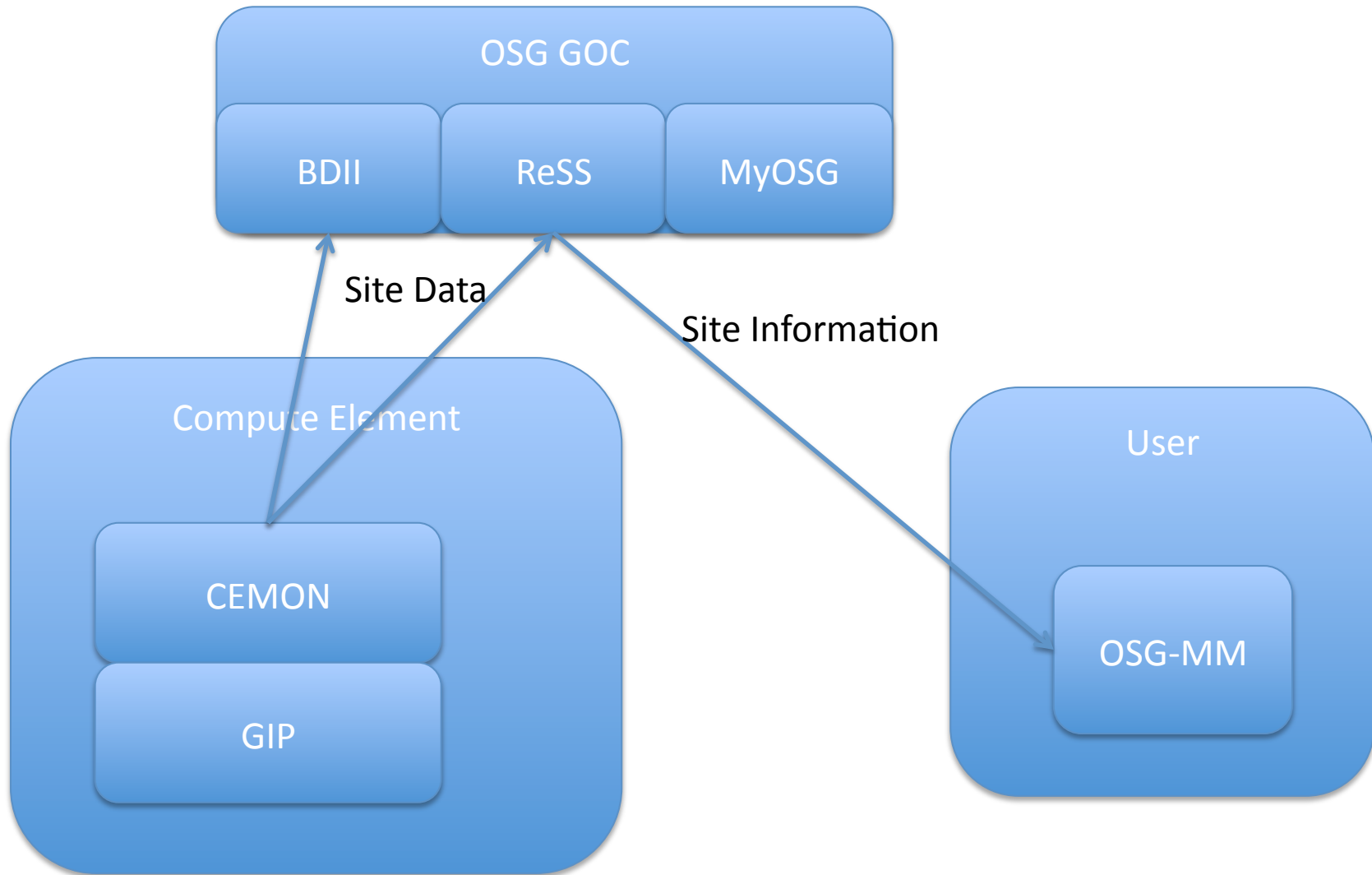
GLUE Schema

- The GLUE schema is the heart of the OSG Information Services.

  - It is a schema that defines the way to describe your cluster.

  - This "description" can be written in several ways – XML and LDAP are most popular.

  - A schema is important; goal is to unambiguously describe a grid site independent of what technology the site is using.

GLUE Example

Real-Life GLUE

dn: GlueCEUniqueID=cit-gatekeeper.ultralight.org:2119/jobmanager-condor-cms_production,mds-vo-name=CIT_CMS_T2,mds-vo-name=local,o=grid
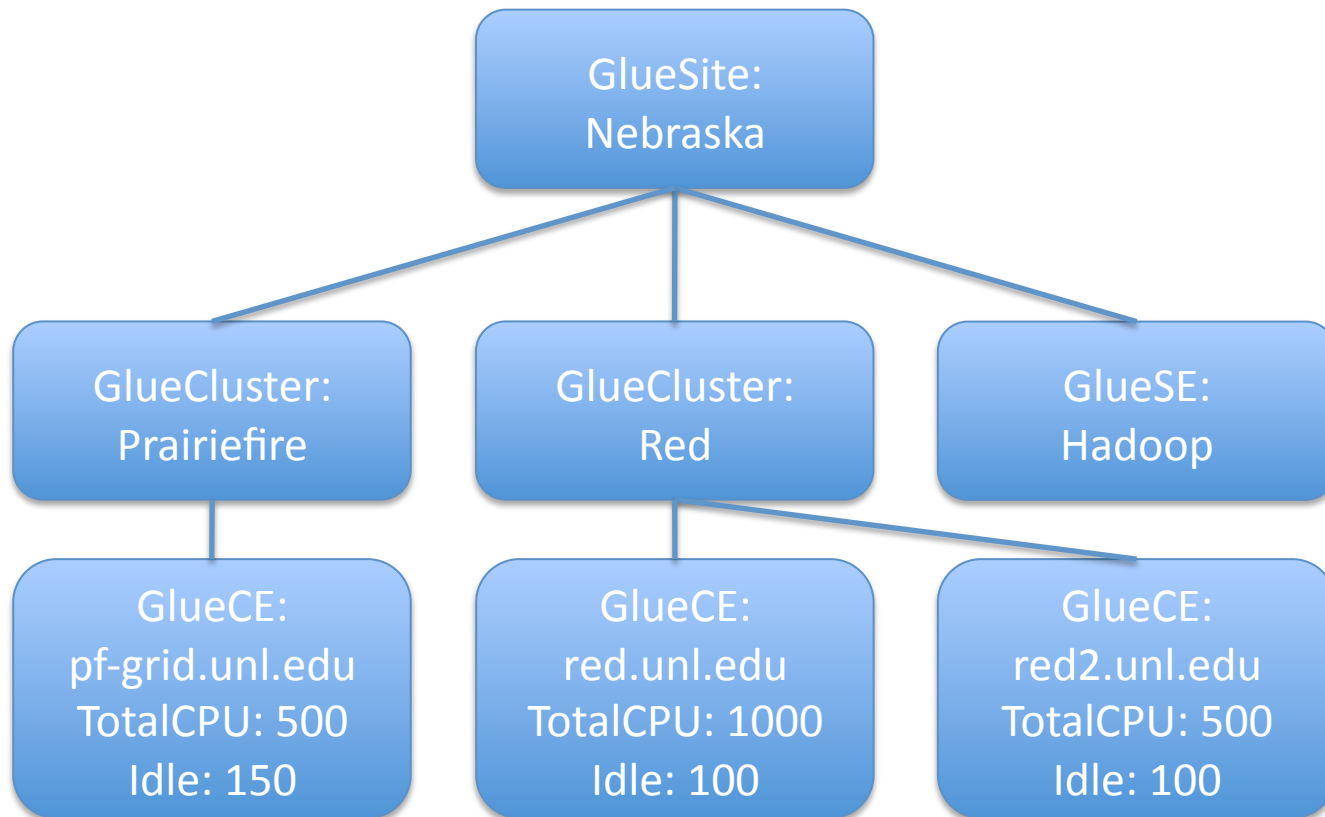objectClass: GlueCE
objectClass: GlueCEAccessControlBase
objectClass: GlueCEInfo
objectClass: GlueCEPolicy
objectClass: GlueCEState
objectClass: GlueCETop
objectClass: GlueInformationService
objectClass: GlueKey
objectClass: GlueSchemaVersion
GlueCEInfoDataDir: /raid2/osg-data
GlueCEPolicyMaxObtainableCPUTime: 1440
GlueCEStateRunningJobs: 140
GlueSchemaVersionMajor: 1
GlueCEInfoTotalCPUs: 350
GlueCEStateFreeJobSlots: 2
GlueCEPolicyMaxWaitingJobs: 99999
GlueCEStateWorstResponseTime: 261651
GlueCEPolicyMaxTotalJobs: 99999
GlueCEPolicyMaxObtainableWallClockTime: 1440
GlueCEStateTotalJobs: 567
GlueCEStateStatus: Production
GlueForeignKey: GlueClusterUniqueID=caltech-cms-t2
GlueCECapability: CPUScalingReferenceSI00=2000
GlueCEAccessControlBaseRule: VO:cms
GlueCEInfoLRMSType: condor
GlueCEPolicyMaxRunningJobs: 2000
GlueCEPolicyAssignedJobSlots: 350
GlueCEInfoApplicationDir: /raid1/osg-app
GlueCEPolicyPreemption: 0
GlueCEStateFreeCPUs: 2
GlueCEInfoGRAMVersion: 2.0
GlueCEImplementationName: Globus
GlueSchemaVersionMinor: 3
GlueCEStateEstimatedResponseTime: 40992
GlueCEHostingCluster: cit-gatekeeper.ultralight.org
GlueCEInfoHostName: cit-gatekeeper.ultralight.org
GlueCEInfoDefaultSE: cit-se.ultralight.org
GlueCEImplementationVersion: 4.0.6
GlueCEInfoLRMSVersion: 7.2.0 Dec 19 2008 BuildID: 121001 $

- These abstract ideas are often represented using LDAP. Here's part of an example GlueCE; you'll see why it's not user-friendly.

Condor ClassAds

- Instead of having a hierarchy of LDIF stanzas to analyze, CEMon creates one stanza per combo

GlueSite: Nebraska

GlueCluster: Prairiefire

GlueCluster: Red

GlueCE: pf-grid.unl.edu
TotalCPU: 500
Idle: 150

GlueCE: red.unl.edu
TotalCPU: 1000
Idle: 100

GlueCE: red2.unl.edu
TotalCPU: 500
Idle: 100

becomes

GlueSite: Nebraska
GlueCluster: Red
GlueCE: red.unl.edu

GlueSite: Nebraska
GlueCluster: Red
GlueCE: red2.unl.edu

GlueSite: Nebraska
GlueCluster: Prairiefire
GlueCE: pf-grid.unl.edu

CEMon

- CEMon runs the GIP; the GIP generates the GLUE information from interacting with the CE/SE.

- CEMon sends the raw BDII to the GOC.
  - The destination CEMon at GOC feeds this into LDAP servers.

- CEMon sends the Condor ClassAds to FNAL.
  - This destination CEMon places them into a central Condor scheduler.

MyOSG

- MyOSG is an easy-to-use web interface to a lot of the OSG information.
  - It is the official record of OSG topology
  - It reports the results of RSV, the OSG's testing tool. This provides health information for sites.
- MyOSG *does* provide machine-readable information about CE/SE status.
- It *does not* provide machine-readable to submit to Globus or use a SE.
  - Yet, it is one of my favorite tools because it allows you to explore the various services easily.

Grid Columbia Workshop (20–3... ⊗ | Results of Query: Cumulative H... ⊗ | About MyOSG – MyOSG ⊗ | +

MyOSG
by Grid Operations Center

Home   Resource Group   Support Center   Virtual Organization   Status Map   Miscellaneous
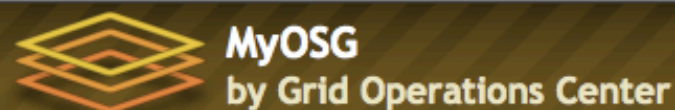
About MyOSG

MyOSG is designed with the primary goal of providing users, administrators, VO managers, and everyone else, a one-stop location for various pieces of OSG related information.

MyOSG allows you to quickly select and filter information you are looking for. Most pages also allow you to export the selected/filtered data in their preferred format HTML, Netvibes, Google, etc. and XML for programmatic interfaces.

Quick Links

Resource Summary
Current status summary from all production OSG resources (*ITB Resource Summary*).

Current RSV Status
Current RSV-based status for all production resources (*Current RSV Status for ITB resources*).

Gratia Accounting
Gratia Accounting based CPU usage information grouped by username for the last 30 days for all production resources (*Gratia Accounting graph for ITB resources*).

RSV Status History
Last 7 days worth of RSV-based status history for all production resources. You can click on any point (in time) on the graph to display the metric details at that time instant (*ITB RSV Status History*).

GIP Validation Results
Current GIP validation status for all production resources that provide the CE service (*GIP validation results for ITB resources*).

Status Map
"Status Map" shows the current overall *site* status on a Google Maps based world map (*Status Map for ITB sites*).
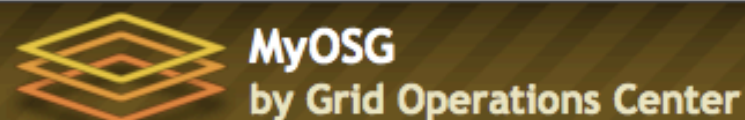
Externa

⊡ **OSG I**

virtual or

⊡ **GOC C**

⊡ **OSG T**

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MyOSG
by Grid Operations Center

Home   **Resource Group**   **Support Center**   **Virtual Organization**   **Status Map**   **Miscellaneous**

Resource Group Summary

AGLT2	OSG Production Resource Group

GIP Validation

✖ At least one test is failing
Validation Detail

AGLT2

Services

Compute Element
gate01.aglt2.org:2119

VOMS Server
gate01.aglt2.org:8443

RSV Status

🚧 This resource is currently under maintenance.

Maintenance Summary:
We are planning on being down for all services at AGLT2 on Thursday, 10/22, from 8am-4pm EDT while we migrate critical machines around in preparation for the imminent arrival of new equipment. During this time we will also: 1. bring up a new NFS file server for the home directories of all VO. 2. migrate to dCache version 1.9.5-3 from 1.9.4-3 3. re-address our IP space
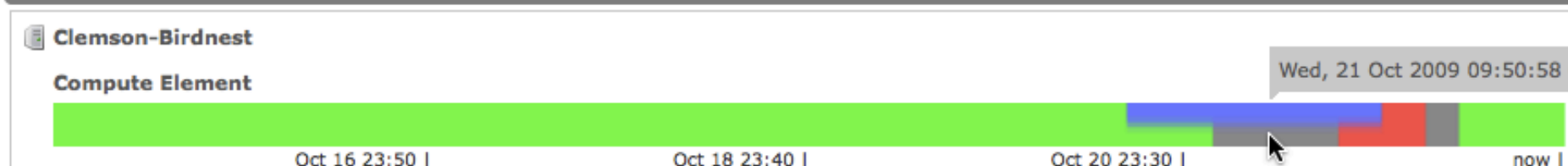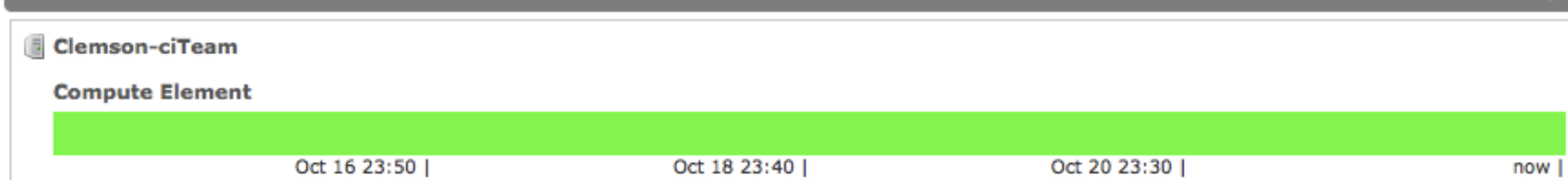
Internal status:

❓ service is in UNKNOWN status.
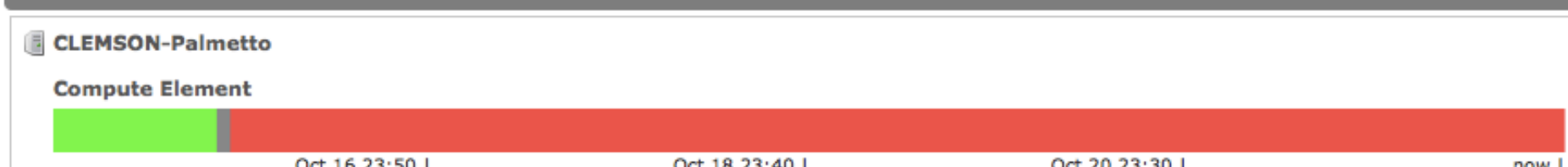**Status Detail** **Status History**

iu.edu | https://myosg.grid.iu.edu/rgstatushistory/index?datasource=statushistory&account_type=cumulative_hou

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Oct 16 23:50 | Oct 18 23:40 | Oct 20 23:30 | now |

CIT_CMS_T2B

Compute Element

Oct 16 23:50 | Oct 18 23:40 | Oct 20 23:30 | now |

Clemson-Birdnest   OSG Production Resource Group

Clemson-Birdnest

Compute Element

Wed, 21 Oct 2009 09:50:58 GMT

Oct 16 23:50 | Oct 18 23:40 | Oct 20 23:30 | now |

SRM V2 Storage Element

Oct 16 23:50 | Oct 18 23:40 | Oct 20 23:30 | now |

Clemson-ciTeam   OSG Production Resource Group

Clemson-ciTeam

Compute Element

Oct 16 23:50 | Oct 18 23:40 | Oct 20 23:30 | now |

CLEMSON-Palmetto   OSG Production Resource Group

CLEMSON-Palmetto

Compute Element

Oct 16 23:50 | Oct 18 23:40 | Oct 20 23:30 | now |

CNIC-CIGI-OSG   OSG Production Resource Group

Links

- OSG-MM: http://osgmm.sourceforge.net/

- MyOSG: https://myosg.grid.iu.edu/

- GLUE Working Group: http://forge.gridforum.org/sf/projects/glue-wg (all the technical details about GLUE)

- Questions about grid services? You can find us at osg-gip at opensciencegrid.org

Bonus!

- We do collect historical data from the information services.
  - It can be found here for engage: http://t2.unl.edu/gratia/monbysite?vo=engage
  - Working to integrate this data into MyOSG.
  - For Engage:

Count of Running Jobs by Facility
2880 Minutes from 2009-11-17 16:55 to 2009-11-19 16:55 UTC

Maximum: 3,681 , Minimum: 0.00 , Average: 2,969 , Current: 3,610