



# HLRmon: new functionalities

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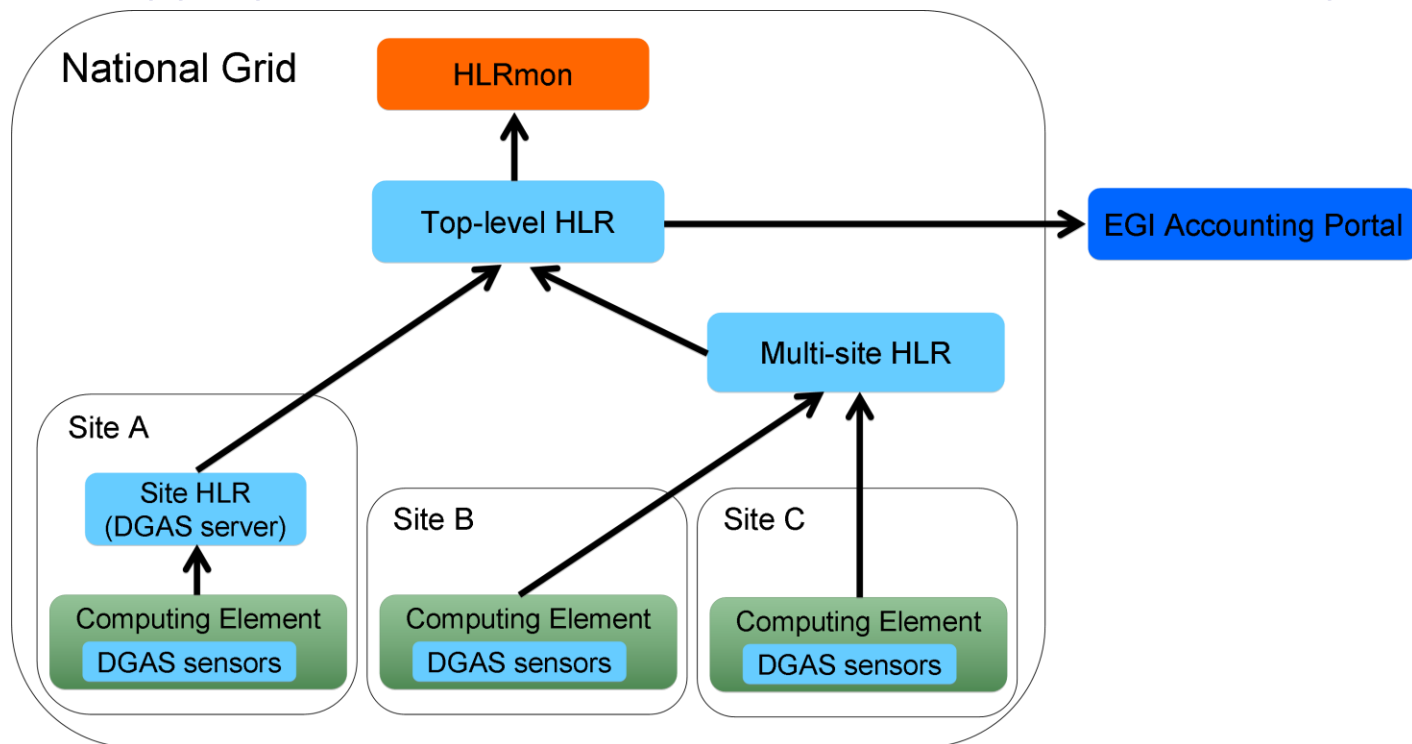
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- Accounting layout in IGI
- Motivation for HLRmon
- Classic portal
- New functionalities
- WLGC views
- Storage accounting

# Accounting layout in IGI

- DGAS sensors collect accounting information at site level
- Site data are sent to site or multi-site HLRs (Home Location Register)
- A top level HLR receives accounting data from all the Grid HLRs
- HLRmon retrieves data from the top level HLR and presents them through a web interface. Aggregated data are also sent to the EGI Accounting Portal



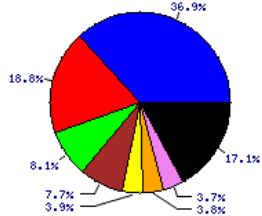
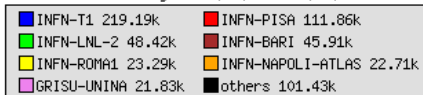
# Motivation for HLRmon

- HLRmon meets the following requirements:
  - Having a dedicated portal for DGAS, customizable for the Italian Grid needs
  - Reporting on data aggregated according different fields, e.g.:
    - VOMS groups and roles (requirement from VOs)
    - Certification Authority and Registration Authority (requirement from IGI)
    - Grid user (session with access restricted to authorized users)
  - Offering specific views for WLCG (requirement from INFN-Grid referees)
  - Being deployable for other Grid infrastructures (requirement from other Grid projects/NGIs)

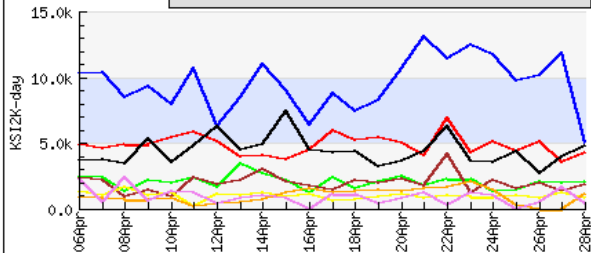
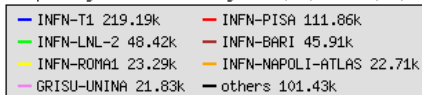
# Classic portal 1/2

- CPU accounting data aggregated by fields not covered by privacy
  - Public section, visible by everyone
  - <https://dgas.cnaf.infn.it/hlrmon/report/charts.php>
- Different sets of charts
  - CPU and Wall Clock Time, expressed in time (days) and normalized on the mean power capacity of the site (KiloSpecInt2000)
  - Number of executed jobs
  - Job efficiency in terms of (CPU Time / Wall Time) ratio
- Different keys of data aggregation and selection
  - Site
  - Virtual Organization
  - VOMS group and role
  - Certification Authority and Registration Authority
  - Job type (Grid or local)
- CPU accounting data aggregated per Grid user
  - Restricted access section, visible only by registered and authorized users
  - <https://dgas.cnaf.infn.it/hlrmon/report/ranking.php>

KSI2K-day CPT per Site [unit: KSI2K-day] 2011/04/06-2011/04/28

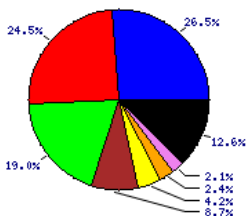
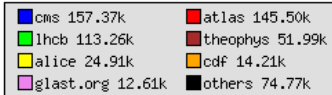


KSI2K-day CPT per site per day [unit: KSI2K-day] 2011/04/06-2011/04/28

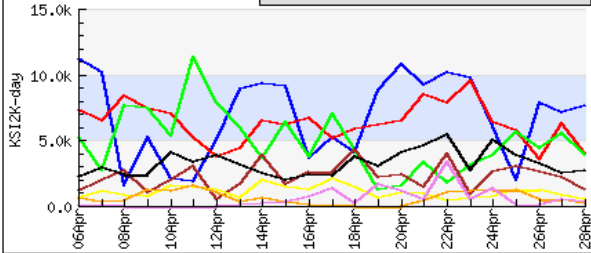
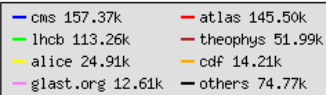


Normalized CPU time expressed in KSI2K-day per site and per site per day

KSI2K-day CPT per VO [unit: KSI2K-day] 2011/04/06-2011/04/28

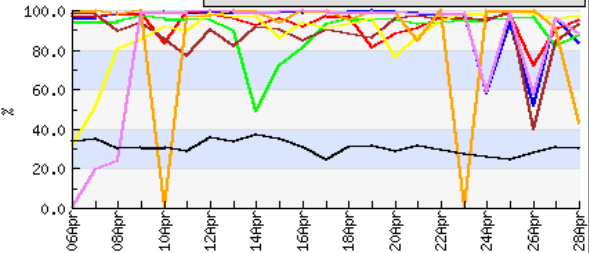
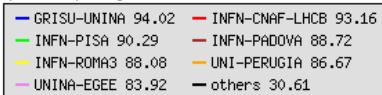


KSI2K-day CPT per VO per day [unit: KSI2K-day] 2011/04/06-2011/04/28

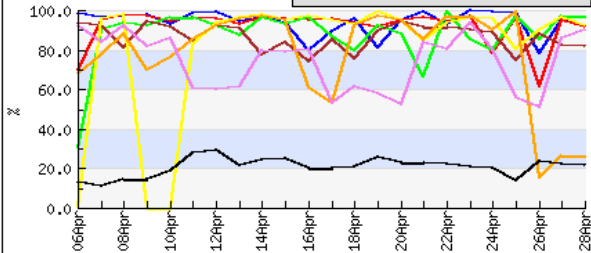
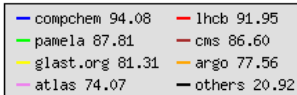


Normalized CPU time expressed in KSI2K-day per VO and per VO per day

CPU efficiency (CPT/WCT) perSite perDay [unit: %] 2011/04/06-2011/04/28



CPU efficiency per VO per day [unit: %] 2011/04/06-2011/04/28



CPU efficiency (CPT/WCT) per site per day and per VO per day

# VO / groups / roles menu

Select first level HLR  
ALL

Select sites  
All, None

- AREA-BO
- CIRMMMP
- CNR-ILC-PISA
- CNR-PROD-PISA
- ESA-ESRIN
- GILDA-INFN-CATANIA
- GILDA-PADOVA

Select VOs

- afs
- alice
- ams
- argo
- astro.vo.eu-egee.org
- atlas
- auger

Select VOMS groups

Select VOMS roles

Select CAs

- Cern
- Infn
- OTHER

Chart set: Jobs

Jobs per Site [unit: Jobs number] 2011/03/19-2011/04/19

Site	Jobs number
INFN-T1	1.52M
INFN-PISA	1.43M
INFN-ROMA1-CMS	0.68M
INFN-LNL-2	0.63M
INFN-BARI	0.48M
INFN-NAPOLI-ARGO	0.31M
INFN-TRIESTE	0.21M
others	2.49M

VO: atlas

- /atlas
- /atlas/au
- /atlas/de
- /atlas/it
- /atlas/phys-sm
- /atlas/ru

VOMS group: /atlas/it

- /atlas/it/Role=NULL
- /atlas/it/Role=pilot

VOMS group: /atlas/phys-sm

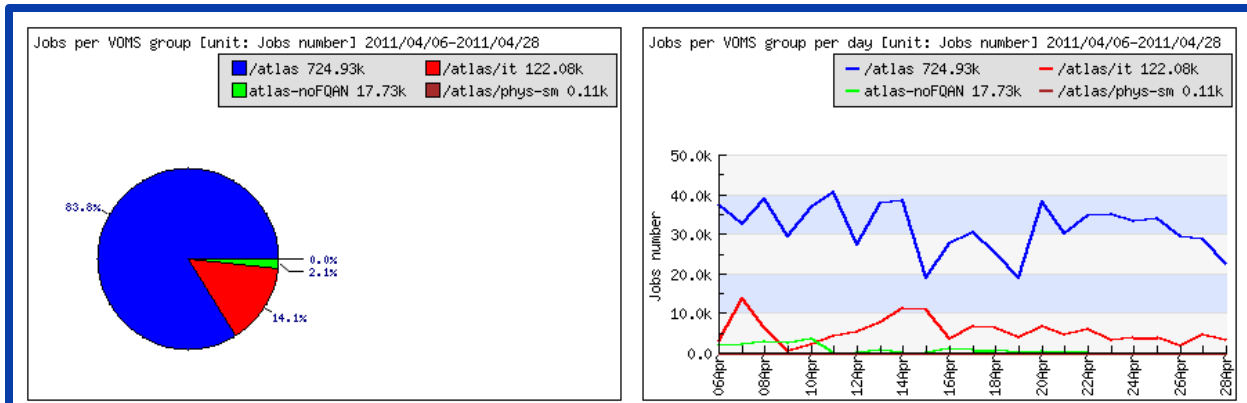
- /atlas/phys-sm/Role=production

VOMS group: /atlas/ru

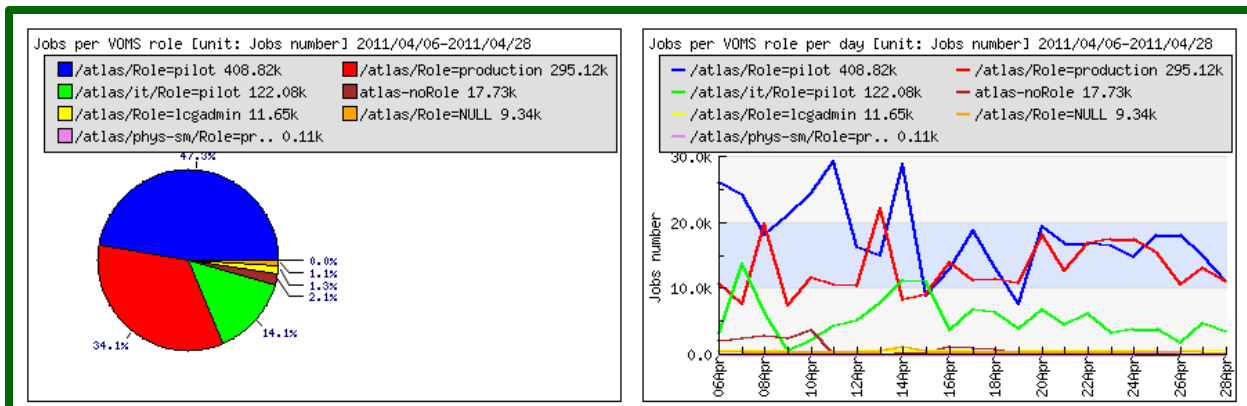
**VO**  
Complete list of VOs with at least 1 job into the HLRmon DB

**VOMS groups**  
For each VO, the VOMS groups with at least 1 job are listed

**VOMS roles**  
For each VOMS group, the VOMS roles with at least 1 job are listed



Job number per VOMS group  
Job number per VOMS group per day



Job number per VOMS role  
Job number per VOMS role per day



# CA / RA menu

Select VOMS groups ▶

Select VOMS roles ▶

Select CAs

All, None

Cern

Infn

OTHER

Hide "others" label

**CA**  
 The CA list depends on the HLRmon server configuration.

Select CA subgroups ▶

Select job type

Grid

local

Select time range

Date From (yyyy/mm/dd)

2011/03/19

Date To (yyyy/mm/dd)

2011/04/19

SEARCH

RESET

All close

CA: Cern

All Cern subgroups

CA: Infn Define grouping

ARCEM

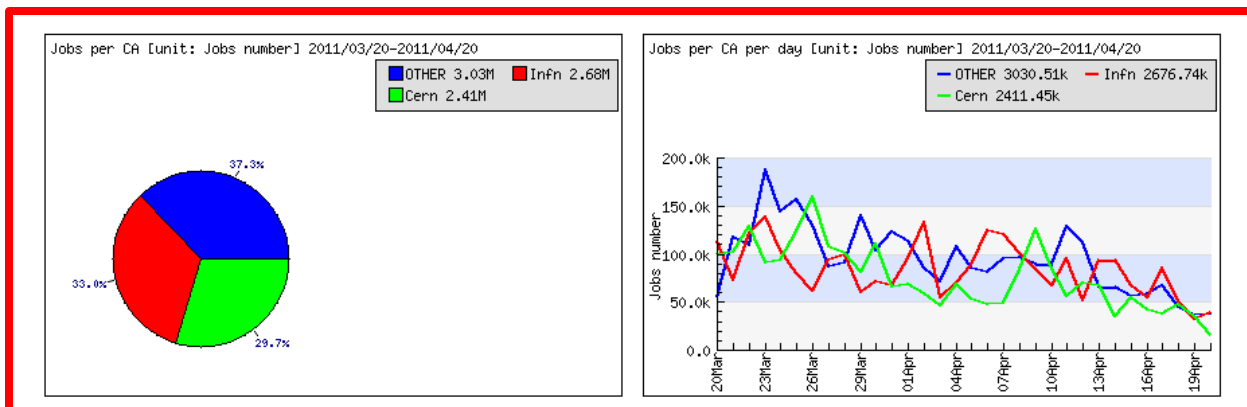
Bari

BES UNIBO

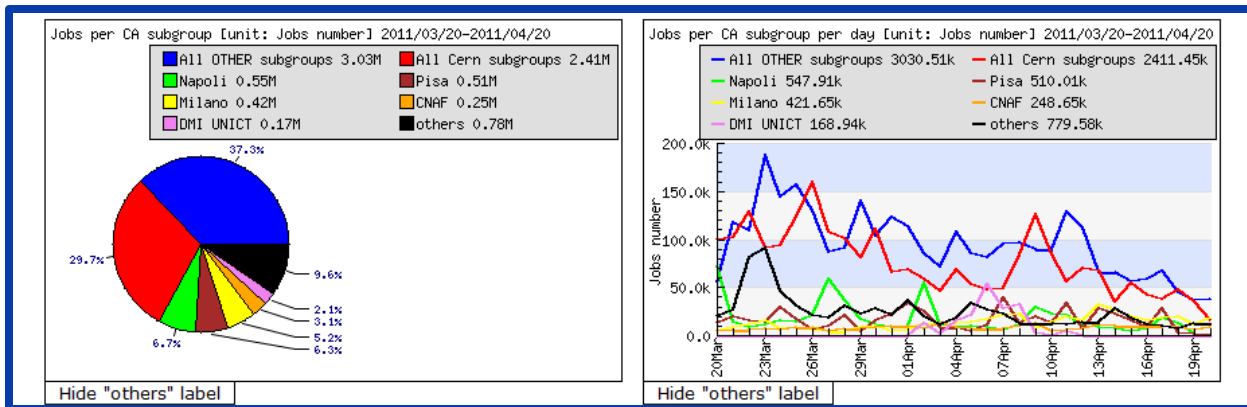
Hide "others" label

**RA**  
 The IGI HLRmon server is configured to aggregate data per RA (only for the INFN CA), on the basis of the *L=* field of the DN.  
 By clicking on *Define grouping* is possible to group 2 or more RAs so that the corresponding data are considered as an unique group into the generated plots.

# CA / RA charts



Job number per CA  
Job number per CA per day



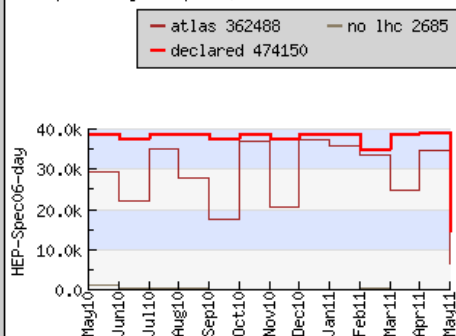
Job number per RA  
Job number per RA per day

# WLGC views 1/2

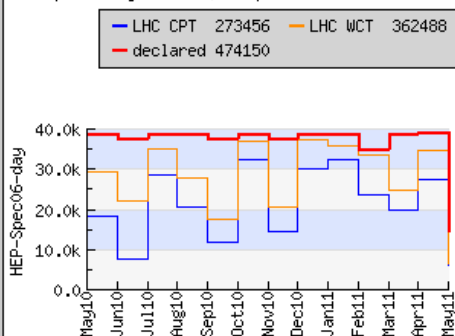
- Two years ago INFN-Grid referees expressed the need of a simple way to:
  - Analyze usage of CPU and storage resources at the INFN Tier1 and Tier2 by the LHC experiments
  - Visualize accounting data grouped by site and by VO
  - Compare the resource usage with amount of overall pledged resources
  - Know the job efficiency level at the different sites
- To this aim a customized version of HLRmon portal was developed
  - <https://dgas.cnaf.infn.it/hlrmon>

## INFN-FRASCATI

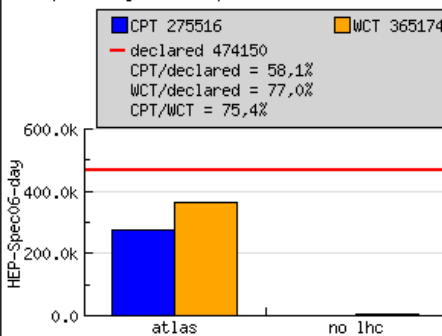
HEP-Spec06-day WCT per VO/month



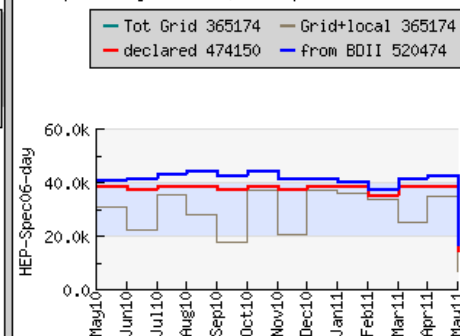
HEP-Spec06-day LHC CPT/WCT per month



HEP-Spec06-day CPT/WCT per VO



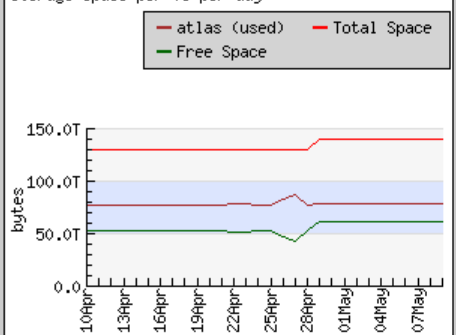
HEP-Spec06-day WCT Grid/local per month



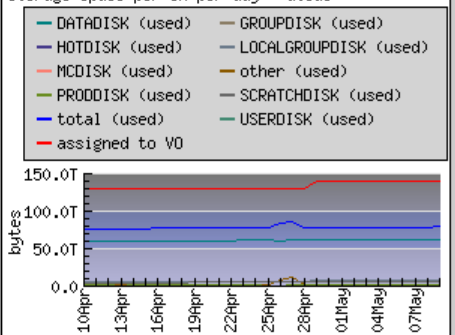
Normalized Wall Clock Time expressed in HepSpec06-day Last year

## INFN-FRASCATI

Storage space per VO per day



Storage space per SA per day - atlas



Storage space per VO and per Storage Area Last month

# Storage accounting approach

- Current approach for WLCG resources
  - Data taken by a simple script running daily on the sites and sent to HLRmon via email
  - Need for a more general approach
- New approach integrated in DGAS
  - Non standard schema has been used to generate records (no standard schema exists)
  - Records retrieved at sites are stored on the HLRs
    - Currently records are taken from the BDII
  - HLRmon is able to retrieve storage information directly from the desired HLR (no more emails)

# Storage accounting charts

- Each record on the HLR has a *timeDuration* calculated (in the current implementation) as the difference between two consecutive measurements
- HLRmon calculates the daily disk consumption in terms of space-per-hour as the integral of the used space over time
- Data will be aggregated per site, VO and Storage Area
- The work to generate charts is ongoing

- HLRmon
  - is developed to meet requirements from different kind of users
  - is successfully deployed as accounting portal for IGI and other Grid projects/NGIs
  - provides a complete section on CPU accounting reports
  - offers a fine granularity of data aggregation
  - includes customized WLCG views
  - is close to provide a complete storage accounting section
- Video tour  
*[http://www.italiangrid.org/grid\\_operations/tools/accounting\\_portal/HLRmon](http://www.italiangrid.org/grid_operations/tools/accounting_portal/HLRmon)*