LCG Monitoring and Accounting

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LCG Workshop
Nov 2nd-5th 2004

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Monitoring the Grid is a Challenge

Number of participating sites is growing every day:

August 2003 => 12 sites ;

October 2004 => 83 sites ; 8000 CPUs; 96 PB Disk

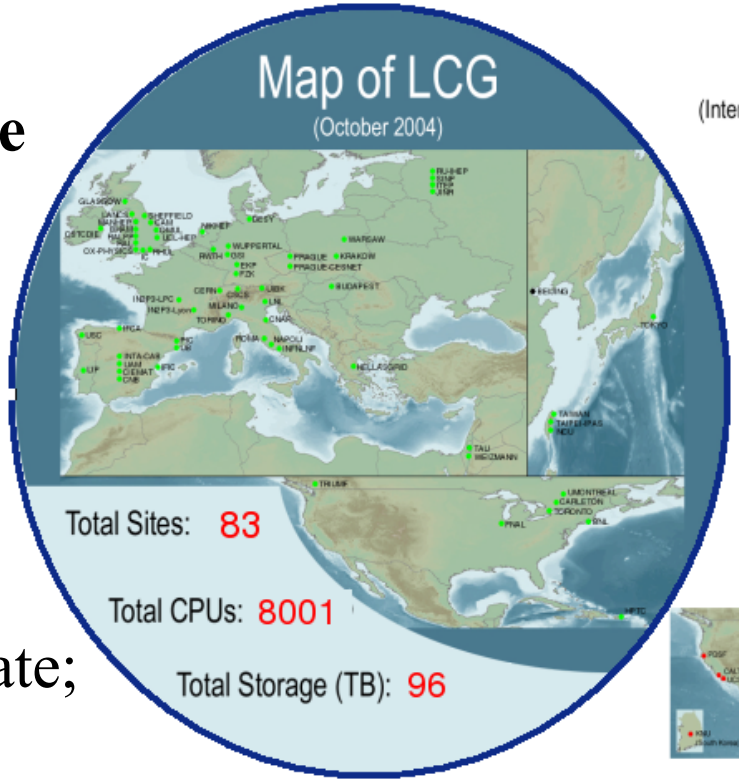
Grid Operations Centre

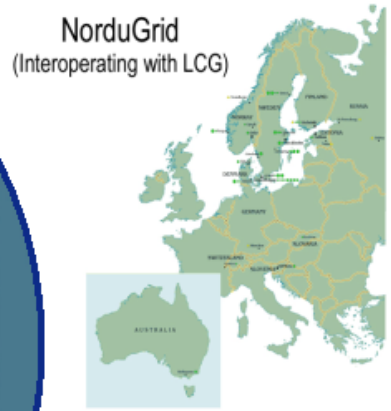
Monitor the operational status of sites;

Fault detection

Problem Management

Identify problems; escalate; track;





Introduction

- Look at the existing monitoring tools that are being used in LCG Grid Operations Centre
  - GPPMON
  - GRIDICE
  - GSTAT
  - CERTIFICATION TESTING
  - REAL TIME GRID MONITOR
  - Job Accounting
- There has been a coordinated effort to develop, deploy and integrate a variety of monitoring tools from CERN, CCLRC (UK), GridPP, INFN-Grid (Italy) and Taiwan.

Monitoring Challenges

- We have only fragmentary information about the services that sites are running.
- We don't know what RBs/SEs/Sites the VOs are using for data challenges.
- We don't know what the core services are and who is running them.
- We don't have a toolkit to test specific core services.
- We have to concentrate on functional behaviour of services e.g. If an RB sends your job to a CE, then we must assume the RB is working fine. Is this the only test of a RB?
- Not all the tests that we perform are effective at finding problems.
- We must develop tests which simulate the life cycle of real applications in a Grid environment.
- …and lots more (see earlier talks)

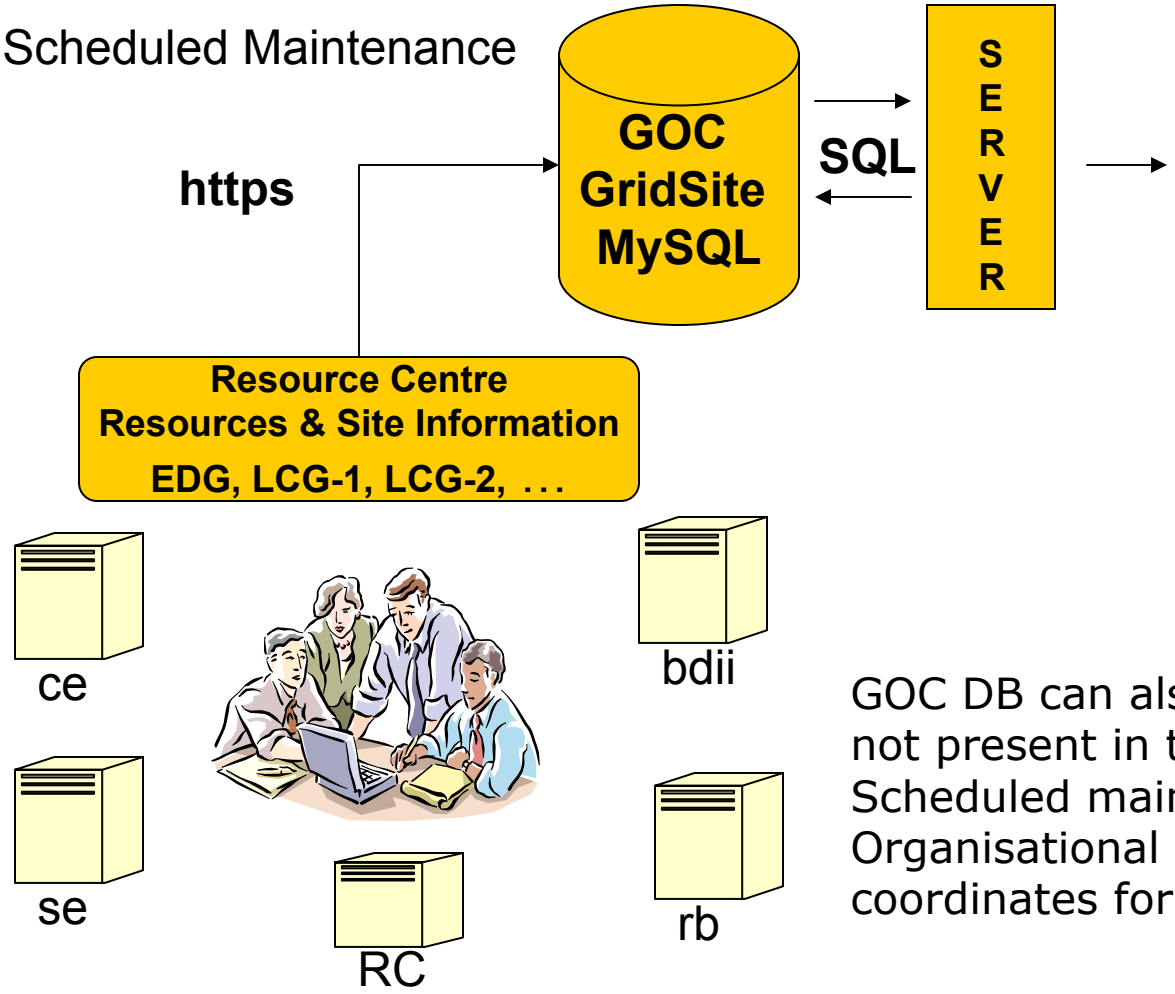
GOC Configuration Database

Secure Database Management via HTTPS / X.509

Store a Subset of the Grid Information system

People, Contact Information, Resources

Scheduled Maintenance



Monitoring Services

- Operations Maps
- Configure other Tools
- Organisation Structures
- Secure services
  - Site News
  - Self Certification
  - Accounting

GOC DB can also contain information that is not present in the IS such as: Scheduled maintenance; News; Organisational Structures; Geographic coordinates for maps.

Operations Map – Job Submission Tests

GPPMON

Displays the results of tests against sites.

Test: Job Submission

Job is a simple test of the grid middleware components e.g. Gatekeeper service, RB service, and the Information System via JDL requirements.

This kind of test deals with the functional behaviour core grid services – do simple jobs run. They are lightweight tests which run hourly. However, they have certain limitations e.g. Dteam VO; WN reach (specialised monitoring queues).

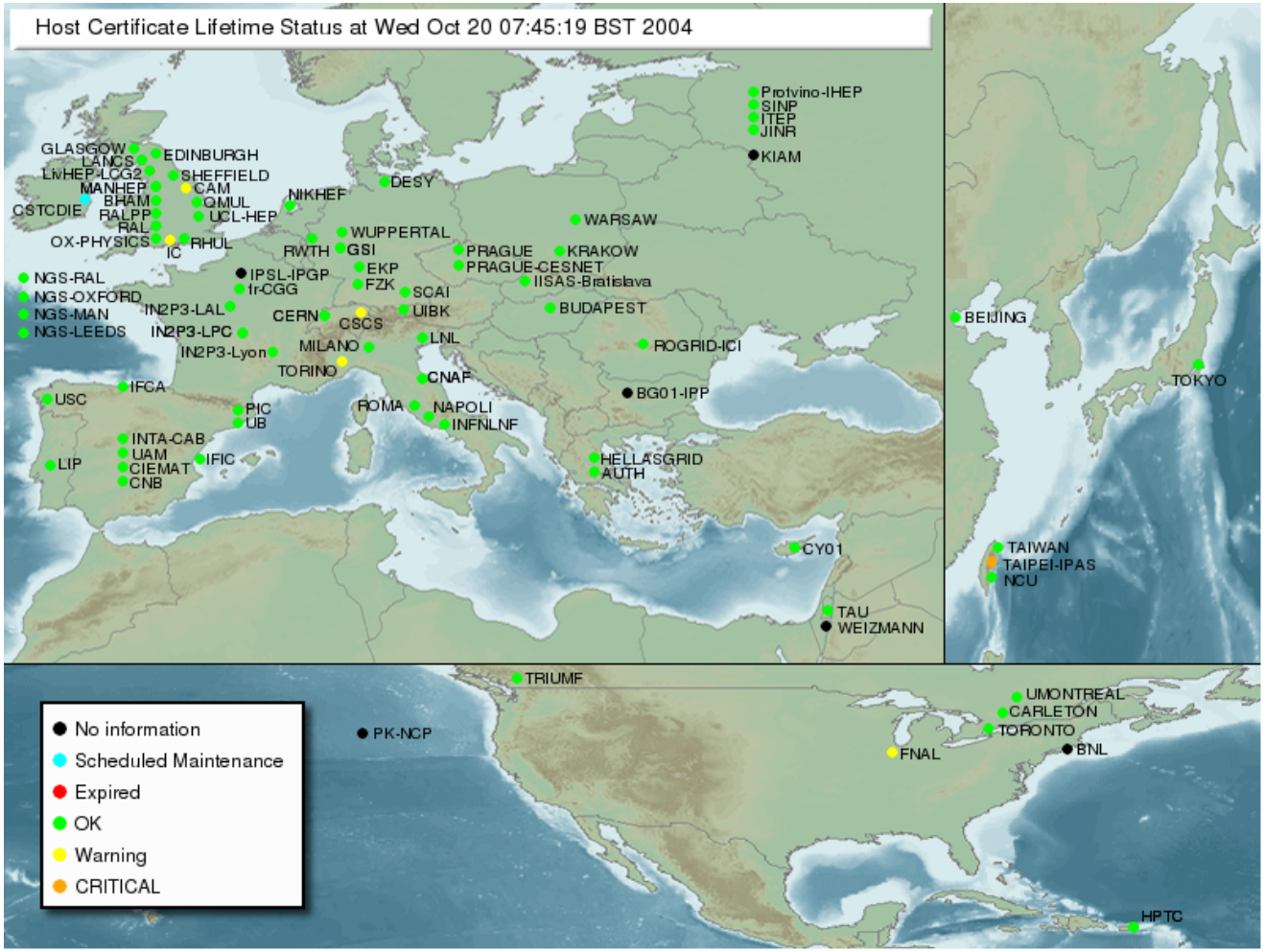
Operations Map – Certificate Lifetime

GPPMON

Displays the results of tests against sites.

Test:Certificate Lifetime

Many grid services require a valid certificate for security.

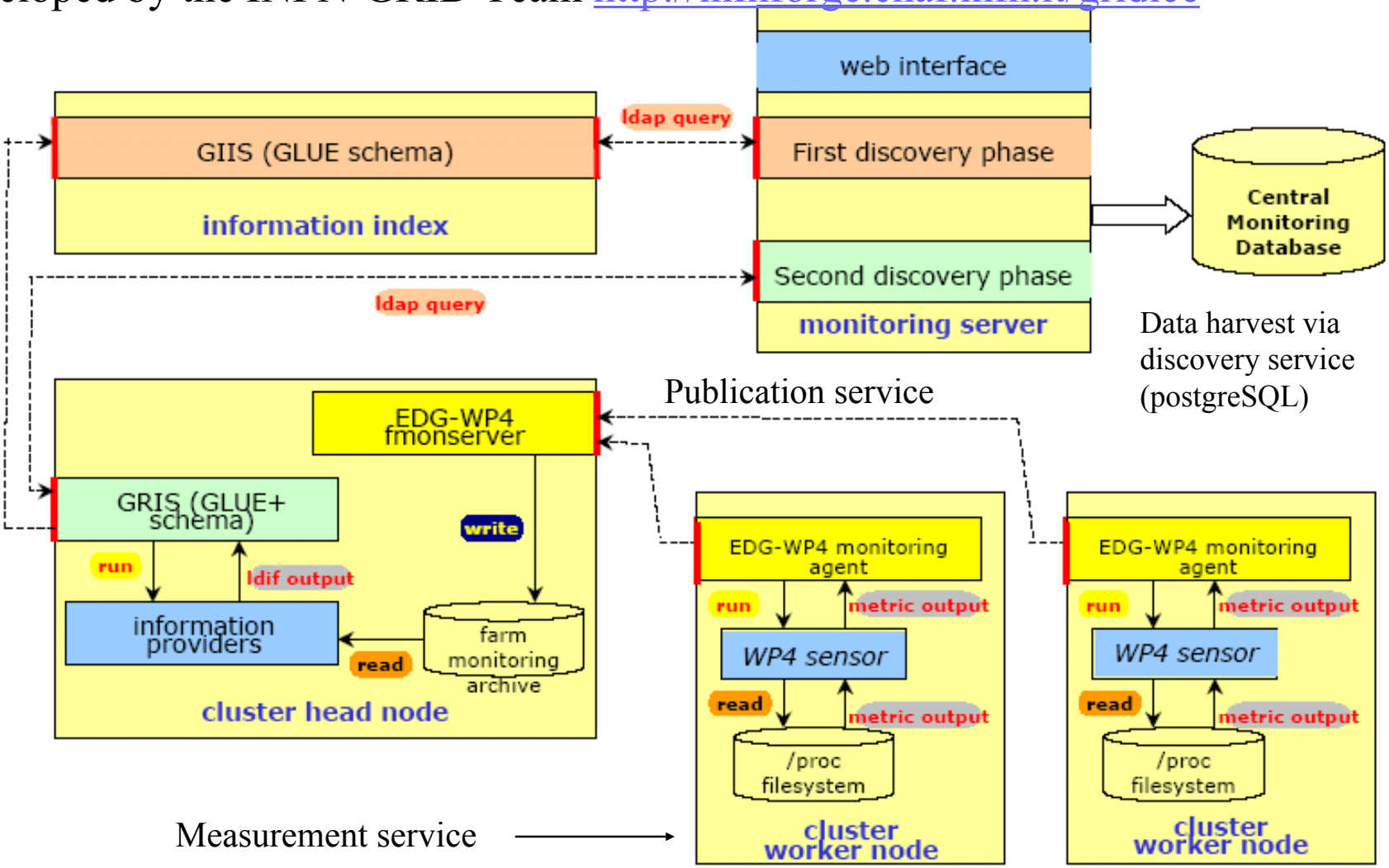


By probing the host certificates on CEs and SEs at sites with a simple SSL client service, we can identify certificates which are due to expire and send an early warning to them. A predictive tool!

GRIDICE – Architecture

A different kind of monitoring tool – processes / low level metrics / grid metrics

Developed by the INFN-GRID Team http://infnforge.cnaf.infn.it/gridice



GRIDICE – Global View

Different Views of the data: Site / VO / Geographic

GRIDICE is monitoring GOC

GridICE the eyes of the Grid

Resource Usage CPU#, Load, Storage, Job Info

GridICE is a product of INFN GRID DataTAG

Site view | VO view | Geo view | Gris view | Help | about

List of Sites

Select **Site** and/or **Role** Show

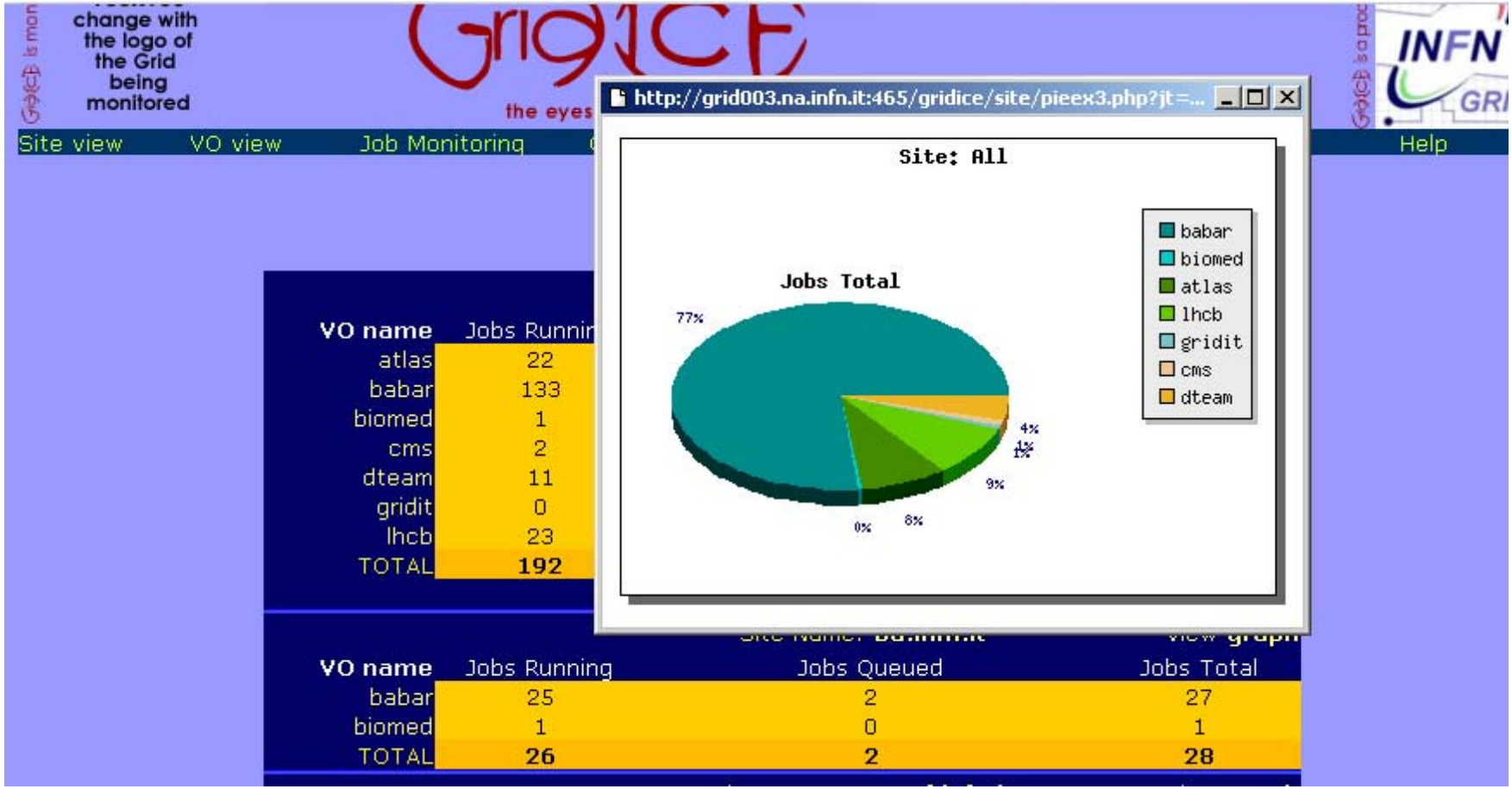
	Computing Resources								Storage Resources		
Site	Slot#	SlotFree	SlotLoad	RunJob	WaitJob	Power	CPU#	CPULoad	Available	Total	%
cern.ch	408	180	55%	0	0	-	-	-	67.5 Gb	69.1 Gb	2%
cnaf.infn.it	-	-	-	-	-	-	-	-	-	-	-
cr.cnaf.infn.it	2154	1086	49%	253	0	762647	387	51%	868.0 Gb	999.7 Gb	13%
fnal.gov	12	12	0%	0	0	-	-	-	-	-	-
fzk.de	-	-	-	-	-	-	-	-	-	-	-
gridka.de	-	-	-	-	-	-	-	-	-	-	-
gridpp.rl.ac.uk	438	273	37%	55	0	-	-	-	59.8 Gb	69.0 Gb	13%
grid.sinica.edu.tw	294	294	0%	0	0	-	-	-	-	-	-
hep.ph.ic.ac.uk	126	126	0%	0	0	-	-	-	9.2 Gb	16.8 Gb	45%
ifae.es	480	480	0%	0	0	433978	160	0%	5.6 Tb	22.4 Tb	25%
nikhef.nl	500	230	54%	137	13	-	-	-	1.4 Tb	1.7 Tb	20%
triumf.ca	4490	30	99%	0	0	-	-	-	729.1 Gb	731.1 Gb	0%
TOTAL	8902	2711	33%	445	13	1196625	547	26%	8.6 Tb	25.9 Tb	17%

Generated: Mon, 22 Mar 2004 15:50:30 +0000 GridICE Homepage

service. Problems are flagged

GridIce Job Monitoring

- Recently deployed version 1.6.3 on to LCG which features job monitoring: Queued, Running, Finished organised in different ways (site, Vo etc)
- XML views of data



GRIDICE – Expert View

Node →

Processes →

GRIDICE is monitoring GOC

GRIDICE the eyes of the Grid

GRIDICE is a product of INFN GRID DataTAG

Site view | VO view | Geo view | Gris view | Help | about

Select **Site** and/or **Role** Show Full View

gridpp.rl.ac.uk

lcgrb02.gridpp.rl.ac.uk RB UpTime: 1-2:11 Reg.OpenFiles.: 3141 Socket: TCP(29) UDP(17) FS NA PA Full

broker

Process		Instances			CPU		Memory		Time	
Process Name	Status	Inst#	First	Last	1Max	All	1Max	Avg	1Max	All
condorg-scheduler	S	1	1-3:15	1-3:15	0	0	0	0	0-0:0	0-0:0
condor-master	S	1	1-3:15	1-3:15	0	0	0	0	0-0:0	0-0:0
fmon-agent	S	1	1-3:16	1-3:16	0	0	0	0	0-0:0	0-0:0
ftp-server	S	1	1-2:16	1-2:16	0	0	0	0	0-0:0	0-0:0
job-controller	S	1	1-3:15	1-3:15	0	0	0	0	0-0:2	0-0:2
local-logger	S	1	1-2:1	1-2:1	0	0	0	0	0-0:0	0-0:0
local-logger-interlog	S	6	1-4:1	0-3:11	0	0	0	0	0-0:3	0-0:3
logging-and-bookkeeping	S	11	1-2:55	0-0:7	0	0	0	0	0-0:0	0-0:0
log-monitor	S	1	1-3:11	1-3:11	0	0	1	1	0-0:2	0-0:2
network-server	S	21	1-3:13	1-3:13	0	0	1	1	0-0:3	0-0:4
proxy-renewal	S	4	1-3:16	1-3:14	0	0	0	0	0-0:0	0-0:0
workload-manager	S	4	1-3:16	1-3:16	0	0	1	1	0-0:4	0-0:8

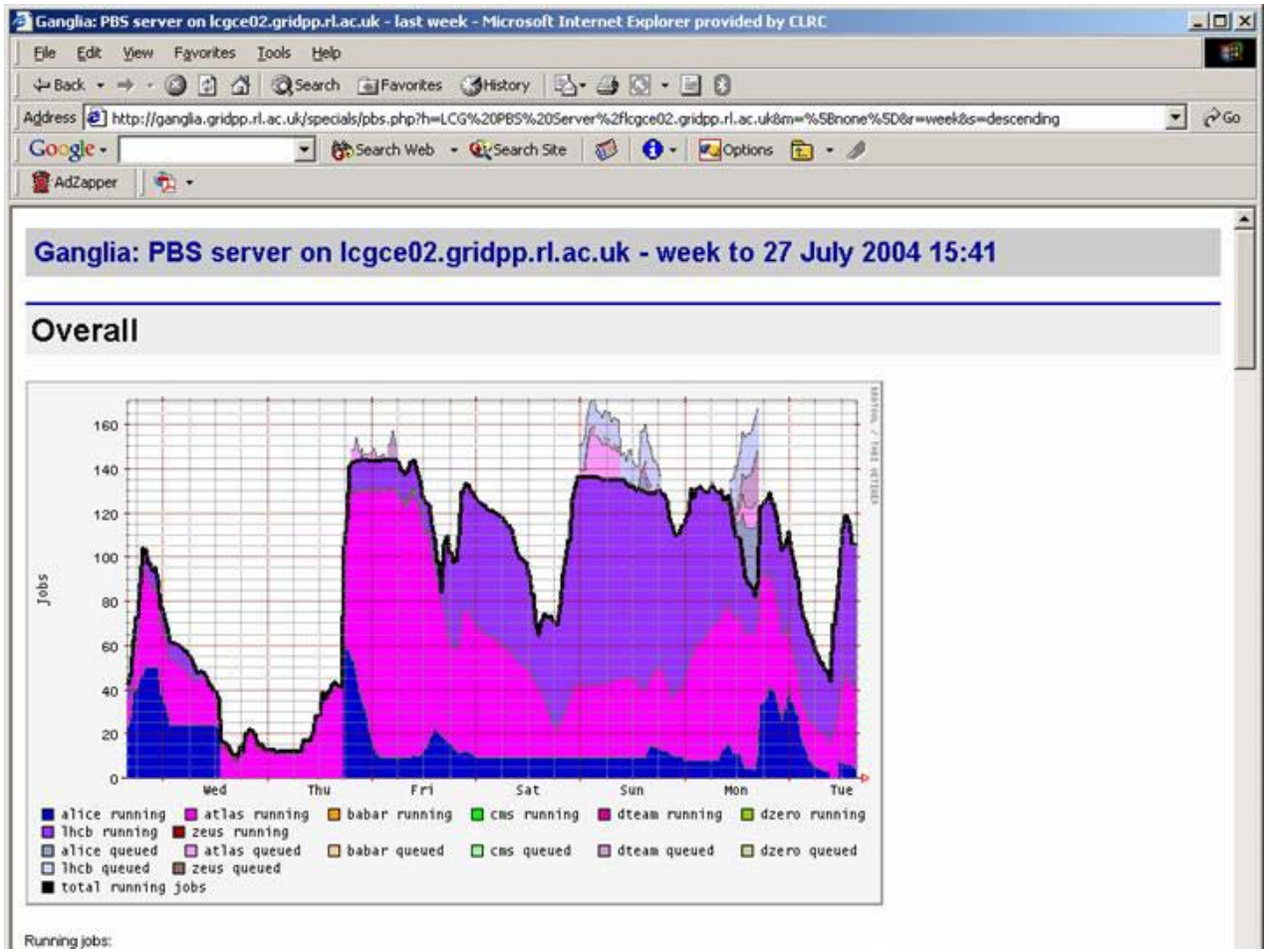
lcgce02.gridpp.rl.ac.uk CE UpTime: 7-22:3 Reg.OpenFiles.: 2822 Socket: TCP(38) UDP(18) FS NA PA Full

lcgse01.gridpp.rl.ac.uk SE UpTime: 7-22:34 Reg.OpenFiles.: 1287 Socket: TCP(16) UDP(19) FS NA PA Full

Display shows the processes belonging to the Broker service. Problems are flagged

Ganglia Monitoring

- http://gridpp.ac.uk/ganglia
- Can use Ganglia to monitor a cluster



Scalable distributed monitoring system for clusters and grids using RRD for storage and visualisation.

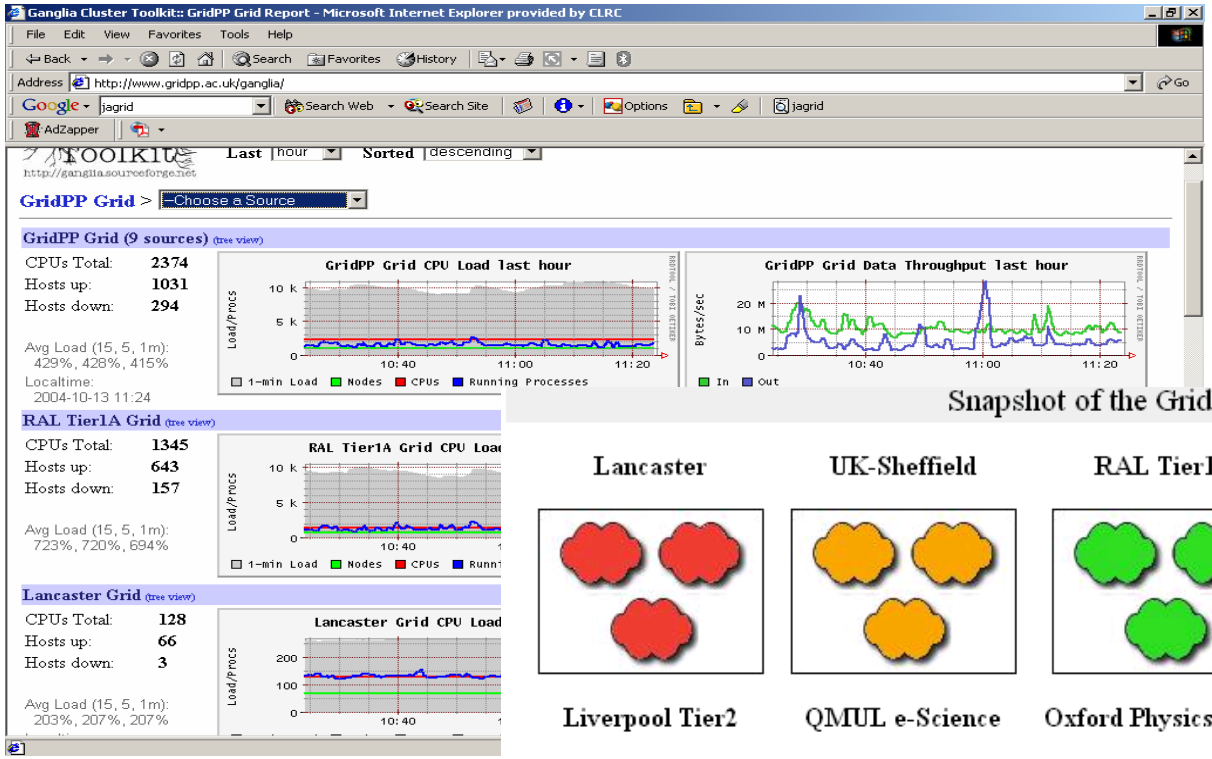
RAL Tier-1 Centre

LCG PBS Server displays Job status for each VO

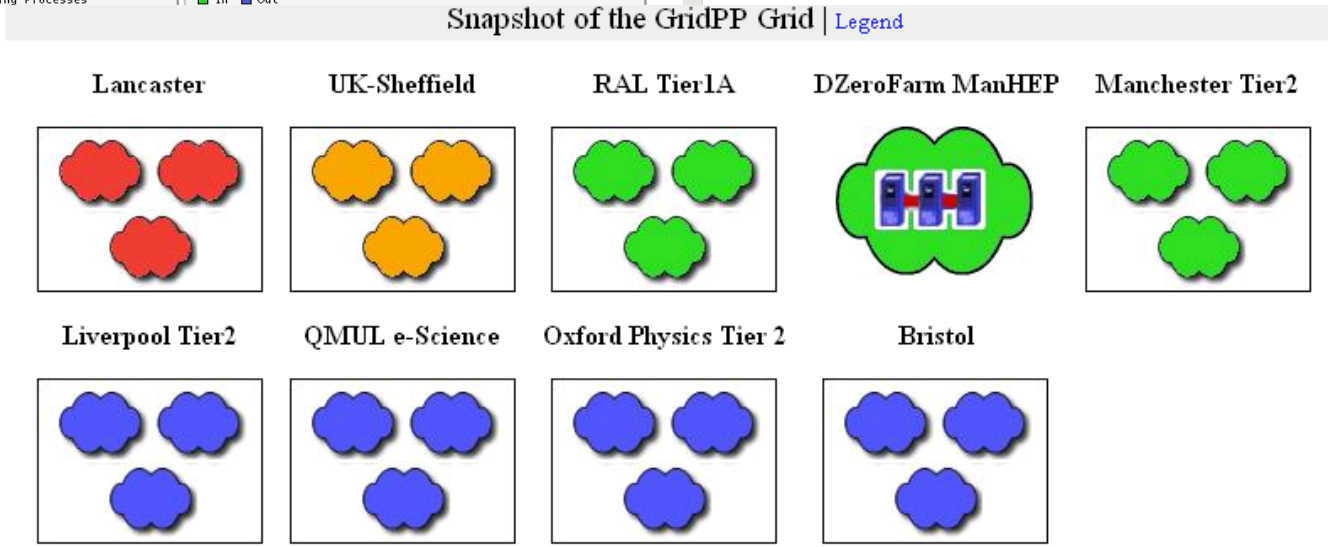
Get a lot for little effort

Federating Cluster Information

- Can also use Ganglia to monitor clusters of clusters



Ganglia/R-GMA integration through Ranglia.



GIIS Monitor

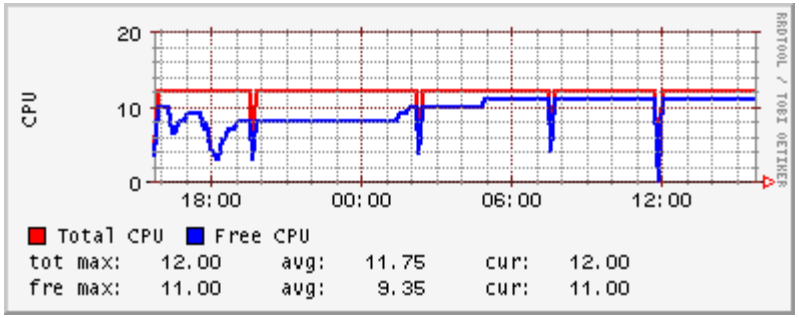
- Developed by MinTsai (GOC Taipei)
- Tool to display and check information published by the site GIIS (sanity checks, fault detection)
- http://goc.grid.sinica.edu.tw/gstat/

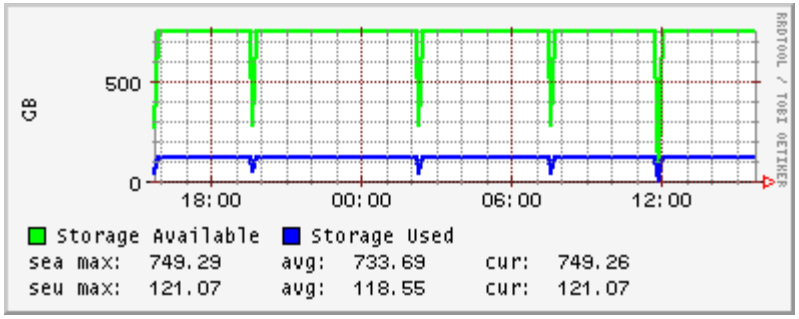
GIIS Monitor 15:43:32 10/21/04 GMT

home table service regional help

CAVENDISH-LCG2 ok	CERN-LCG2 ir	CIEMAT-LCG2 ok	CNAF-LCG2 ww	CYFRONET-LCG2 ok	FNAL-LCG2 na
IC-LCG2 ok	IFCA-LCG2 ok	IFIC-LCG2 nn	INFN-LNL-LCG ok	INFN-MILANO-LCG2 ok	INFN-TORINO-LCG2 ok
nikhef.nl ok	PIC-LCG2 ok	RAL-LCG2 ww	Taiwan-LCG2 ww	Taiwan-NCU-LCG2 ok	Uni-Wuppertal ok
USC-LCG2 ok	alberta-lcg2 ww	BEIJING-IHEP-LCG2 ok	BG01-IPP ww	BHAM-LCG2 ok	BitLab-LCG2 ir
BNL ww	BUDAPEST ok	CARLETONU-LCG2 ww	CCIN2P3-LCG2 ok	CGG-LCG2 nn	CNB-LCG2 ok
CSCS-LCG2 ok	CY01-LCG2 ok	DESYPRO nn	ekplcg2 ok	FZK-LCG2 nn	GSI-LCG2 ir
HEPHY-UIBK ok	HG-01-GRNET ok	HPTC-LCG2 ok	IN2P3-LPC ir	INFN-FRASCATI nn	INFN-NAPOLI-ATLAS nn
INFN-ROMA1 ok	INTA-CAB ok	IPSL-IPGP-LCG2 ok	ITEP ok	JINR-LCG2 ok	LAL-LCG2 nn
Lancs-LCG2 ok	LIP-LCG2 nn	LivHEP-LCG2 ok	ManHEP-LCG2 ok	NCP-Lcg2 nn	OXFORD-01-LCG2 ok
Prague-CESNET ok	Prague-LCG2 ok	QMUL-eScience ok	RALPP-LCG ok	RHUL-LCG2 ok	ru-Moscow-KIAM-LCG2 ww
ru-Moscow-SINP-LCG2 ok	RU-Protvino-IHEP ok	RWTH-LCG2 ww	SARA-LCG2 ok	ScotGRID-Edinburgh ww	scotgrid-gla nn
SHEFFIELD-LCG2 ir	Taiwan-IPAS-LCG2 ok	TAU-LCG2 ww	tifrlcg2 na	Tokyo-LCG2 ok	TORONTO-LCG2 nn
TRIUMF-GC -CG2 ir	TRIUMF-LCG2 ok	UAM-LCG2 ok	UB-LCG2 nn	UCL-CCC ok	UCL-HEP ok
Umontreal-LCG2 nn	WARSAW-LCG2 ok	WEIZMANN-LCG2 ww	(new)GR-01-AUTH ok		

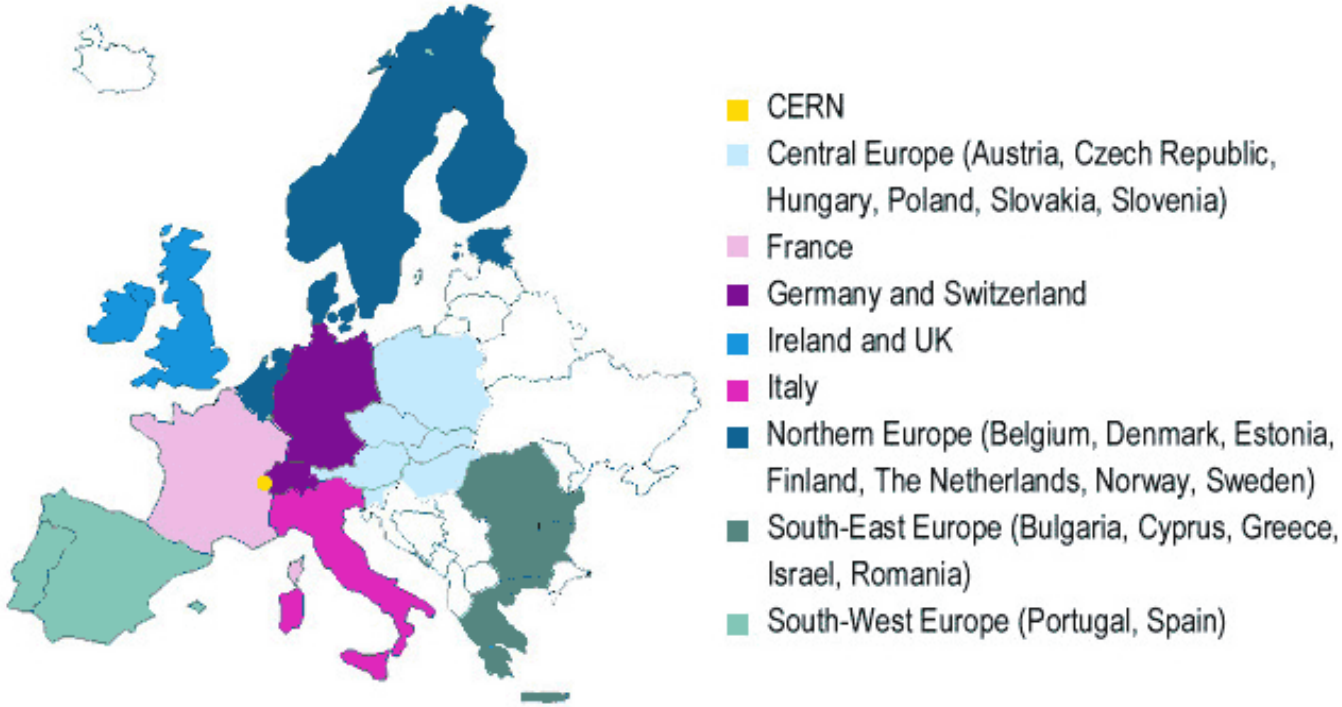
	sites	countries	totalCPU	freeCPU	runJob	waitJob	seAvail TB	seUsed TB	maxCPU	avgCPU
Total	82	26	7849	4073	2301	2305	96910.62	95024.78	16404	7975





Regional Monitoring

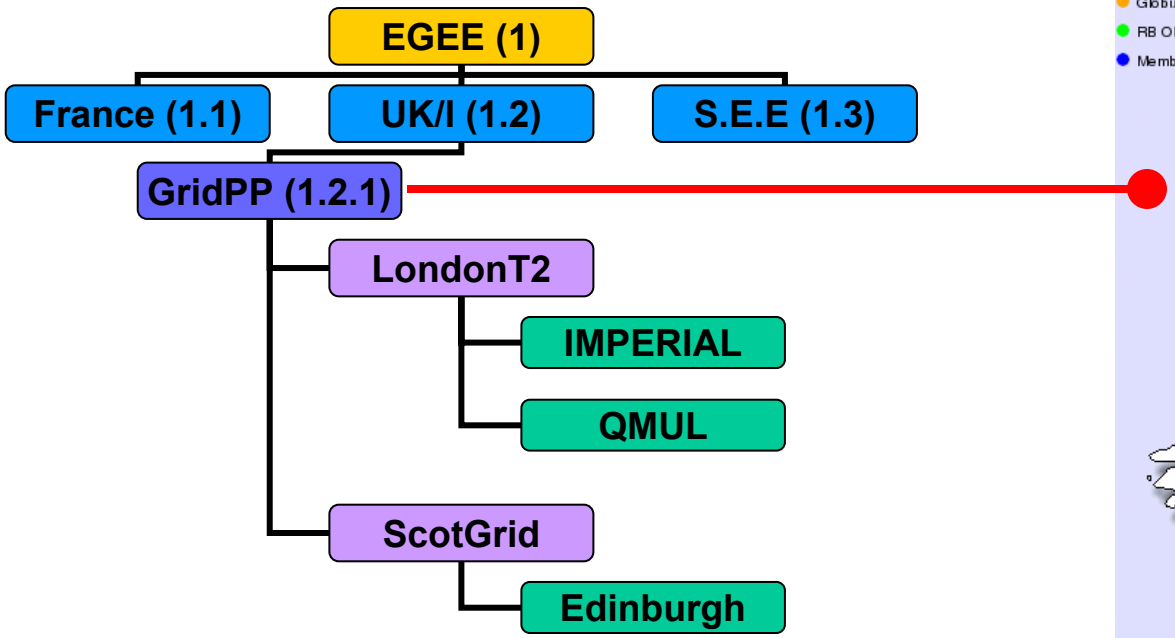
USA

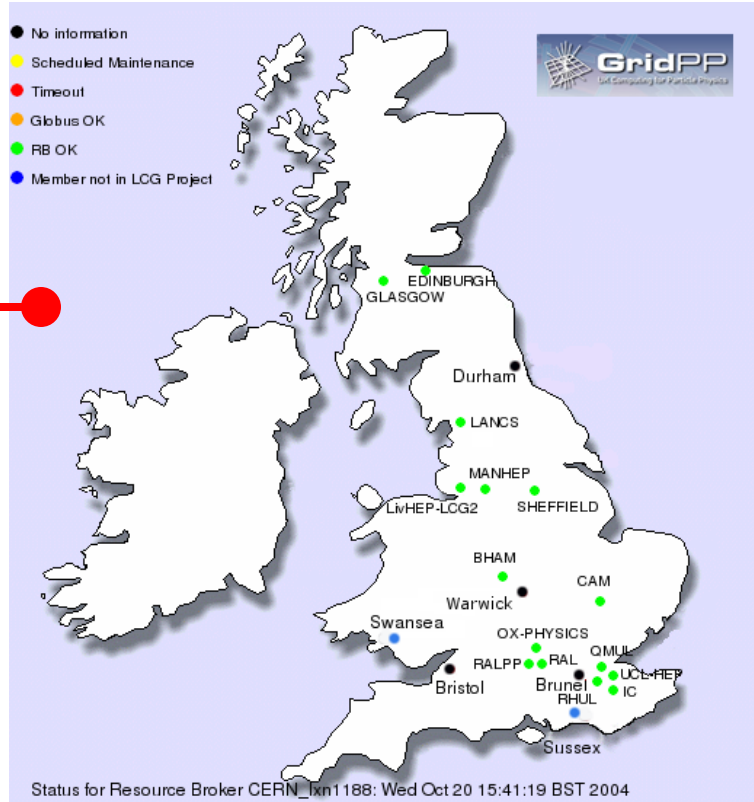


- EGEE is made up of regions.
- Each region contains many computing centres.
- Regional Operational Centres is a focus for operations.

Regional Monitoring Maps

- http://goc.grid-support.ac.uk/roc_map/map.php
- Provide ROCs with a package to monitor the resources in the region
  - Tailored Monitoring
  - GUIs to create organisations and populate them with sites
- Hierarchical view of Resources
  - Example UK Particle Physics GridPP
  - Materialised Path encoding





Site Certification Service

- In terms of middleware, the installation and configuration of a site is quite a complicated procedure.
  - When there is a new release, sites don't upgrade at the same time
  - Some upgrades don't always go smoothly
  - Unexpected things happen (who turned of the power?)
  - Day-to-day problems; robustness of service under load?
- Its necessary to actively hunt for problems
- Site certification testing is by CERN deployment team on a daily basis. First step toward providing this service involves running a series of replica manager tests which register files onto the grid, move them around, delete them; and 3rd party copies from remote SE.
- Unlike the simple job submission tests implemented in GPPMON, these tests are more heavy weight and attempt simulate the life cycle of real applications.

Certification Test Results

TestZone tests report

Last tests results http://lcg-testzone-reports.web.cern.ch/lcg-testzone-reports/cgi-bin/listreports.cgi

Colors definition

Job list match failed	#ffcc39
Replica Management failed	#cc3cff
OK	#99ff99
Test job still waiting for execution	#ffff33
Job Submission failed (Job Manager)	#cc3c00
Wrong LCG version (too old)	#c0c0c0

Site Name	Site CE	Test date	Version	Software Version	CA RPMs Version	Broker info	R-GMA client	CMS test	BDII LDAP (RM)	Priority info	CopyAndReg. WN -> defaultSE	Copy defaultSE -> WN	Replicate defaultSE to customgrid	3rd Party Rep. customgrid to defaultSE	3rd Party cp customgrid to WN	Delete Replica from defaultSE	GFAL infosys	lcg-cr -> defaultSE	lcg-cr -> defaultSE WN
alberta-lcg2	lcgce01.ucalgary.ca	2004-10-21 07:05:31	LCG-2_0_0	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
BEIJING-IHEP-LCG2	lcg002.ihep.ac.cn	2004-10-21 07:05:31	LCG-2_2_0	n/a	0.23-1	OK	n/a	OK	ldap://lcg007.ihep.ac.cn:2170	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK
BG01-IPP	ce001.grid.bas.bg	2004-10-21 07:05:31	FAILED	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
BHAM-LCG2	epcf36.ph.bham.ac.uk	2004-10-21 07:05:31	LCG-2_2_0	LCG-2_2_0	0.22-1	OK	FAILED	OK	ldap://rnal189.cern.ch:2170	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK
BnLab-LCG2	dgc-grid-35.brunel.ac.uk	2004-10-20 07:05:31	LCG-2_2_0	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
BNL	atlas-grid04.usatlas.bnl.gov	2004-10-21 07:05:31	FAILED	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
BUDAPEST	grid109.kfki.hu	2004-10-21 07:05:31	LCG-2_2_0	LCG-2_2_0	0.22-1	OK	FAILED	OK	ldap://rnal189.cern.ch:2170	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK
CARLETONU-LCG2	lcg02.physics.carleton.ca	2004-10-21 07:05:31	LCG-2_0_0beta	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
CAVENDISH-LCG2	farm012.hep.phy.cam.ac.uk	2004-10-21 07:05:31	LCG-2_1_1	LCG-2_1_x	0.22-1	OK	n/a	OK	ldap://rnal178.cern.ch:2170	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK
CCIN2P3-LCG2	cclcgce01.in2p3.fr	2004-10-21 07:05:31	LCG-2_2_0	LCG-2_2_0	0.22-1	OK	OK	OK	ldap://rnal178.cern.ch:2170	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK
CERN-LCG2	rnal184.cern.ch	2004-10-21 15:48:33	LCG-2_2_0	LCG-2_2_0	n/a	OK	n/a	OK	ldap://rnal178.cern.ch:2170	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK
CERN-LCG2	rnal181.cern.ch	2004-10-21 07:05:31	LCG-2_2_0	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
CGG-LCG2	cel.egee.fr.cgg.com	2004-10-21 15:05:27	LCG-2_2_0	LCG-2_2_0	n/a	OK	n/a	OK	ldap://cel.private.egee.fr.cgg.com:2135	FAILED	FAILED	FAILED	FAILED	FAILED	FAILED	FAILED	OK	OK	OK
CIEMAT-LCG2	lcg02.ciemat.es	2004-10-21 07:05:31	LCG-2_2_0	LCG-2_2_0	0.23-1	OK	FAILED	OK	ldap://rnal178.cern.ch:2170	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK
CNAF-LCG2	wn-04-07-01-a.cr.cnaf.infn.it	2004-10-21 07:05:31	LCG-2_2_0	LCG-2_2_0	0.22-1	OK	FAILED	OK	ldap://wn-04-07-04-a.cr.cnaf.infn.it:2170	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK
CNAF-LCG2	wn-04-07-02-a.cr.cnaf.infn.it	2004-10-21 07:05:31	FAILED	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
CNB-LCG2	mallarme.cnb.uam.es	2004-10-21 07:05:31	LCG-2_2_0	LCG-2_2_0	0.22-1	OK	FAILED	OK	ldap://rnal189.cern.ch:2170	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK
CSCS-LCG2	compute-0-10.cscs.ch	2004-10-21 07:05:31	LCG-2_2_0	LCG-2_2_0	0.22-1	OK	FAILED	OK	ldap://rnal178.cern.ch:2170	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK
CY01-LCG2	ce101.grid.ucy.ac.cy	2004-10-21 07:05:31	LCG-2_2_0	LCG-2_2_0	0.22-1	OK	FAILED	OK	ldap://rnal189.cern.ch:2170	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK
CYFRONET-LCG2	swn02.cyfronet.pl	2004-10-21 07:05:31	LCG-2_2_0	LCG-2_2_0	0.22-1	OK	FAILED	OK	ldap://rnal178.cern.ch:2170	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK
DESY-PRO	grid-ce.desy.de	2004-10-21 07:05:31	LCG-2_2_0	LCG-2_2_0	0.22-1	OK	FAILED	OK	ldap://grid-rb.desy.de:2170	OK	FAILED	FAILED	FAILED	FAILED	FAILED	FAILED	OK	FAILED	FAILED
elpis-lcg2	elpis-lcg.ce.gr/jobmanager-lcgpbs-dte	2004-10-21 07:05:31	LCG-2_2_0	LCG-2_2_0	0.22-1	OK	OK	OK	ldap://rnal178.cern.ch:2170	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK
FNAL-USCMS	cmsrsv14.fnal.gov	2004-10-20 07:05:31	LCG-2_2_0	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
FNAL-USCMS	hotdogt4.fnal.gov	2004-10-21 07:05:31	LCG-2_2_0	LCG-2_2_0	0.22-1	OK	FAILED	OK	ldap://hotdogt7.fnal.gov:2170	FAILED	FAILED	FAILED	FAILED	FAILED	FAILED	FAILED	FAILED	FAILED	FAILED
FZK-LCG2	grilbej01.fzk.de	2004-10-21 07:05:31	LCG-2_2_0	LCG-2_2_0	n/a	OK	FAILED	OK	ldap://rnal178.cern.ch:2170	OK	OK	OK	OK	FAILED	OK	OK	OK	FAILED	FAILED
GR-01-AUTH	node001.grid.auth.gr	2004-10-21 07:05:31	LCG-2_2_0	LCG-2_2_0	0.22-1	OK	FAILED	OK	ldap://rnal189.cern.ch:2170	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK

Syndication of Monitoring Information

RSS

GOC generates RSS feeds which clients can pull using an RSS aggregator.

How can we integrate feeds and ticketing systems?

RssReader 1.0.88

File Edit View Go

Get Add Group Edit Clear Delete Type: All Date filter: All Key

Replica Manager Test Status: lcgce02.gridpp.rl.ac.uk (1)

R	!	Headlines	Received dates	Published dates	Author
		Result: One or more tests have failed | TestD...	01/08/2004 19:33		
		Result: One or more tests have failed | TestD...	01/08/2004 18:23		
		Result: One or more tests have failed | TestD...	01/08/2004 17:13		
		Result: One or more tests have failed | TestD...	30/07/2004 20:43		
		Result: All tests completed successfully | Tes...	31/07/2004 11:29		
		Result: One or more tests have failed | TestD...	31/07/2004 20:45		
		Result: All tests completed successf...	**01/08/2004 13:37**		

Address:

Replica Manager Test Status: lcgce02.gridpp.rl.ac.uk all headlines

Result: One or more tests have failed | TestDate: 2004-08-01_16.30.00 | Build: Sun Aug 1 17:30:41 UTC 2004

Test	Status	Output
PrintInfo	OK	RM-pi
CopyAndRegister	OK	RM-cr
Copy	OK	RM-cp
Replicate	FAILED	RM-rep
3rd Party Replicate	OK	RM-rep3
3rd PARTY Copy	OK	RM-cp3
Delete Replicas	OK	RM-del

Aggregator RSSReader (Windows Client)

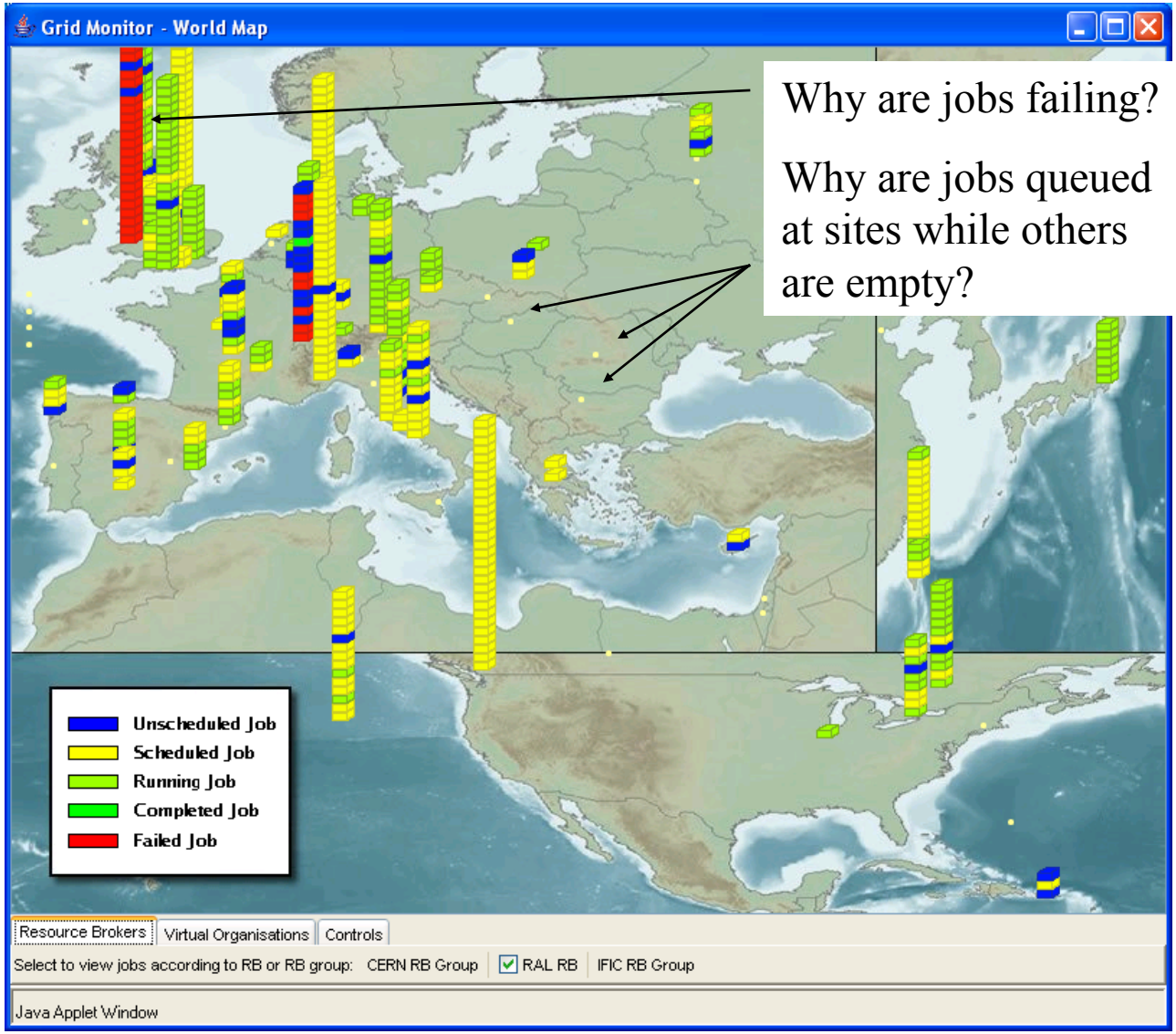
Done

Real Time Grid Monitor

http://www.hep.ph.ic.ac.uk/e-science/projects/demo/index.html

A Visualisation tool to track jobs currently running on the grid.

Applet queries the logging and bookkeeping service to get information about grid jobs.



Problems with existing tools

- Lots of monitoring tools have described – they have a few things in common:
  - all the information which they generate is hidden away or difficult to access
  - limited interfaces: the data can only be accessed in specific ways
- Therefore, its difficult to build "on-demand" services to allow communities "Players" to interact with the data.
- Examples include

a) Job Accounting service : to allow an Organisation to compare resources usage for each VO

b) Certification Testing service: Secure service to allow a site administrator to run the certification test suite against their site through a RB of their choice?

- The idea is for the services to collect information and put it into a common repository such as an RGMA Archiver. In this way, the information can be shared and accessible to all.

- Services (EGEE parlance: ROC and CIC services) munch the data and present it to the community.
- Example: GIIS is that its hard to drill down to the information you want e.g How much CPU in GridPP today? How much disk in the UKI ROC? The new paradigm solves this problem by allowing the data to be aggregated in different ways.

Monitoring Paradigm

A Better way to unify monitoring information.

GOC Services collect information and publish into an archiver.

ROC/CIC Services provide a means for the community to interact with this information on-demand. GOC provides services tailored to the requirements of the community.

Communities

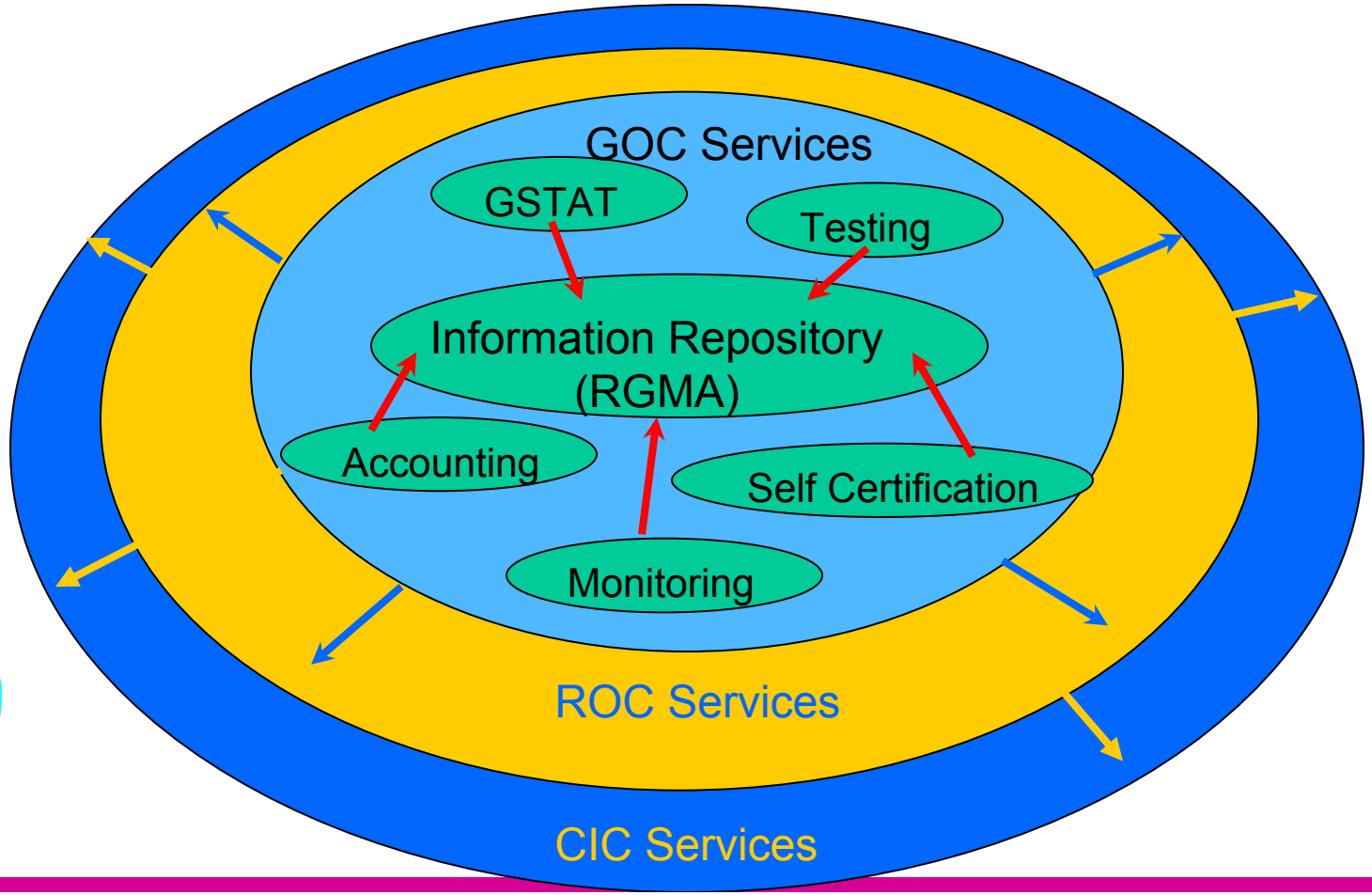
VOs

ROCs

EGEE

Sites

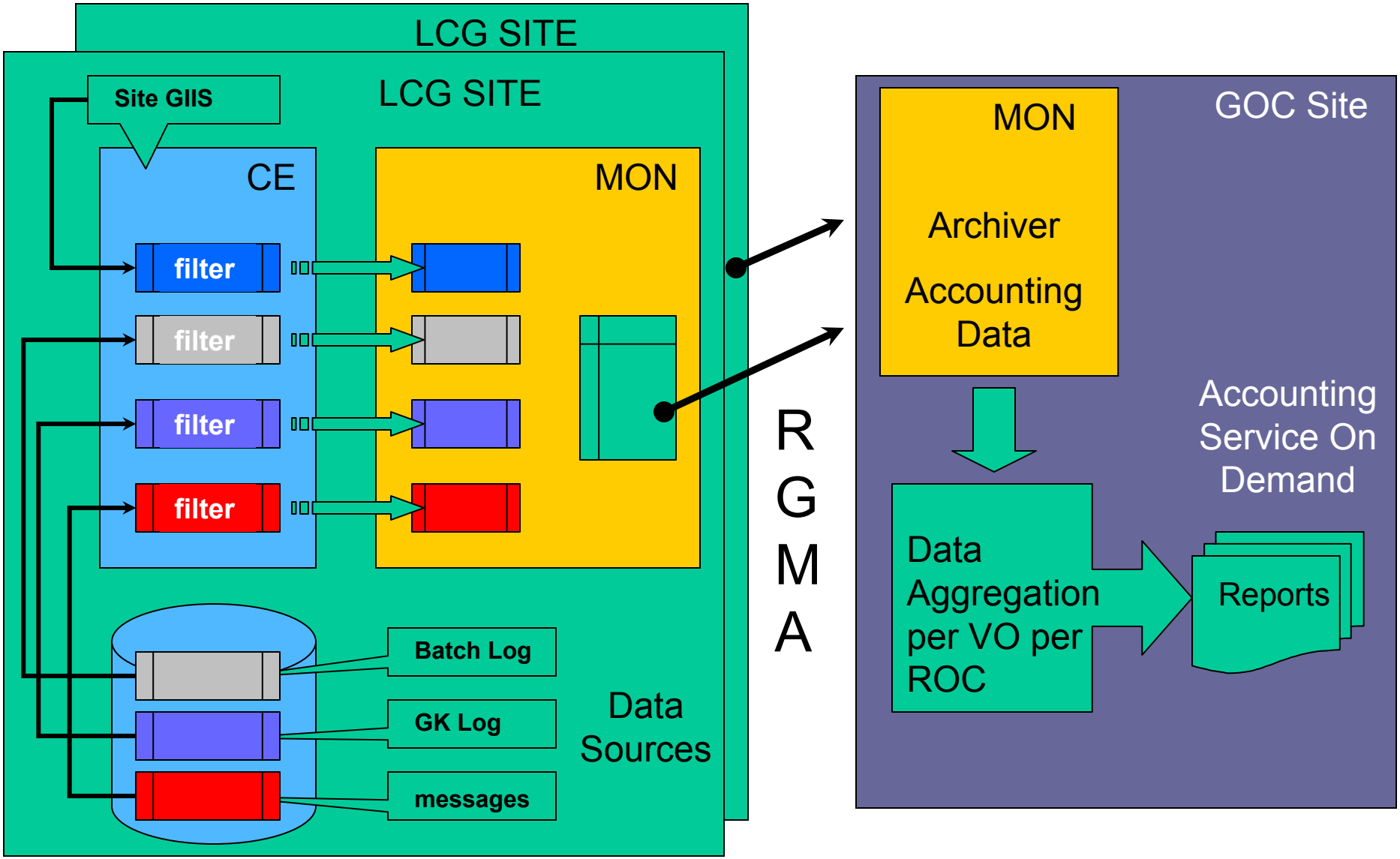
Organisations



GOC UseCase Job Accounting

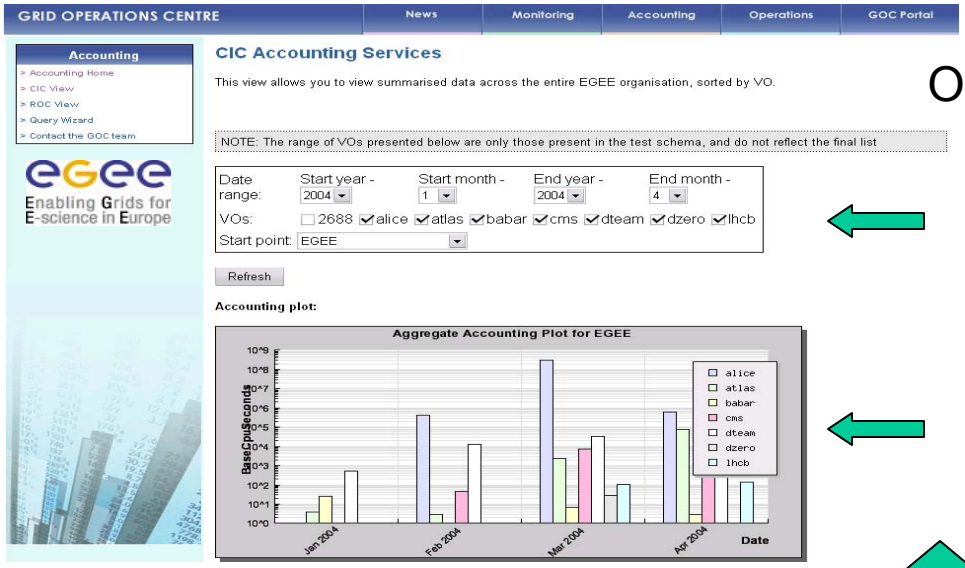
- An accounting package for LCG has been developed by the GOC at RAL
- There are two main parts
  - the accounting data-gathering infrastructure based on R-GMA which brings the data to a central point
  - a web portal to allow on-demand reports for a variety of players.

Accounting Flow Diagram



http://goc.grid-support.ac.uk/gridsite/accounting/index.html

GOC Accounting Services



On Demand Services to EGEE Community

Simple interface to customise views of data: VO, time frame and Region (default = EGEE)

BaseCpuSeconds Aggregated across EGEE

Each Region, per VO, per Month

Group / Site	VO	Jan 2004	Feb 2004	Mar 2004	Apr 2004
Italy	2688	0	0	14619	0
	alice	0	5040	220333463	0
	atlas	0	3	877	0
	babar	0	0	0	0
	cms	0	0	5776	0
	dteam	0	1560	9208	0
	dzero	0	0	0	0
	lhcb	0	0	47	0

Group / Site	VO	Jan 2004	Feb 2004	Mar 2004	Apr 2004
UK / Ireland	2688	0	0	0	0
	alice	0	410303	94319599	589065
	atlas	4	0	1408	76006
	babar	25	0	7	3
	cms	0	47	1341	1137
	dteam	522	11719	24667	26962
	dzero	0	0	28	0
	lhcb	0	0	64	141

Other Distributions

Normalised CPU

Jobs

Each Site, per VO, per Month

Group / Site	VO	Jan 2004	Feb 2004	Mar 2004	Apr 2004
CNAF	2688	0	0	14619	0
	alice	0	5040	220333463	0
	atlas	0	3	877	0
	babar	0	0	0	0
	cms	0	0	5776	0
	dteam	0	1560	9208	0
	dzero	0	0	0	0
	lhcb	0	0	47	0
Group / Site	**VO**	**Jan 2004**	**Feb 2004**	**Mar 2004**	**Apr 2004**
INFNLNF	2688	0	0	0	0
	alice	0	0	0	0
	atlas	0	0	0	0
	babar	0	0	0	0
	cms	0	0	0	0
	dteam	0	0	0	0
	dzero	0	0	0	0
	lhcb	0	0	0	0
Group / Site	**VO**	**Jan 2004**	**Feb 2004**	**Mar 2004**	**Apr 2004**
LEGNARO	2688	0	0	0	0
	alice	0	0	0	0
	atlas	0	0	0	0
	babar	0	0	0	0
	cms	0	0	0	0
	dteam	0	0	0	0
	dzero	0	0	0	0
	lhcb	0	0	0	0

Accounting Issues

1. A stable release of accounting package has been certified and tested at CERN; Should sites wait for the official release of press ahead independently?

2. Package supports PBS only; initial implementation for LSF.

   80 sites advertising 313 Job managers:

   - 300 PBS (91% of sites)
   - 3 CONDOR (KFKI, FNAL, TRIUMF)
   - 7 LSF (GSI, LNL, CERN).

3. Accounting requires the R-GMA infrastructure to be deployed at the site.

4. The VO associated with a user's DN is not available in the batch or gatekeeper logs. It will be assumed that the group ID used to execute user jobs, which is available, is the same as the VO name.

5. The global jobID assigned by the Resource Broker is not available in the batch or gatekeeper logs. This global jobID cannot therefore appear in the accounting reports. The RB Events Database contains this, but that is not accessible nor is it designed to be easily processed. [Andrea Guarise: JRA1 proposal]

Accounting Issues

6. Most sites keep GK/Batch logs but throw away message log files after 9 weeks due to default log rotation.

7. At present the logs provide no means of distinguishing sub-clusters of a CE which have nodes of differing processing power. Changes to the information logged by the batch system will be required before such heterogeneous sites can be accounted properly. At present it is believed all sites are homogeneous.

Future Plans

- Extend the ideas developed in the accounting service to the other tools.
- Example: Feeds
  - Regional Operations News feeds
  - (accounting, #cpu, disk, Piotrs Daily test results)

- Want to move toward a Service Orientated Architecture model and provide the community with a direct interface into the monitoring.

Summary

- Accounting Information gathering infrastructure has been developed
- It has been through the C&T cycle and should be deployed in the next release.
- A web portal for display of this information has been developed (work in progress)
- This is an EGEE deliverable (DSA1.3)
- The display infrastructure can be deployed for other monitoring information.
- Development towards on-demand services to provide the community with up-to-date information, aggregated at different levels.
- Development of Visualisation tools to enhance our understanding of the grid.

Summary

- Since August 2003, the LCG GOC has been working to understand the problems of running a large scale distributed grid.
- Setup a distributed GOC and deployed tools to help understand the issues.
- Development towards on-demand services to provide the community with up-to-date information, aggregated at different levels.
- Development of Visualisation tools to enhance our understanding of the grid.