



Enabling Grids for E-science

Grid Monitoring in LCG/EGEE Focus on the GridICE tool

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www.eu-egee.org



- **Overview of EGEE/LCG monitoring tools**
 - SFT – Site Functional Tests
 - GStat
 - GridView
 - GridICE
- **GridICE**
 - Architecture
 - Different viewpoints
 - Web interface

- **Resources observability is necessary for the Grid utilization**
- **Grid resources availability is subject to failures**

Monitor the regularity of performance of a Grid site

- **Approach:**
 - Active monitoring approach based on the periodical submission of jobs to the observed services
 - The result of the service requests are sent to a central server for reporting and providing a summary view
- **Target:**
 - Grid operators
 - Site administrators

<u>St.</u>	<u>Region</u>	<u>Site Name</u>	<u>Site CE</u>	VO dteam													
				<u>St.</u>	<u>js</u>	<u>ver</u>	<u>wn</u>	<u>ca</u>	<u>rgma</u>	<u>bi</u>	<u>csn</u>	<u>rm</u>	<u>votag</u>	<u>swdir</u>	<u>rg</u>		
OK	SouthEasternEurope	AEGIS01-PHY-SCL	ce.phy.bg.ac.yu	OK	O	2	7	0	I	O	O	O	O	O	O	O	O
OK	CERN	ALBERTA-LCG2	lcgce01.nic.ualberta.ca	OK	O	2	6	0	I	O	X	O	O	O	O	O	O
OK	France	AUVERGRID	obsauvergridce01.univ-bpclermont.fr	OK	O	2	6	0	I	O	O	O	O	O	W	O	O
JS	NorthernEurope	BEgrid-KULeuven	kg-ce01.cc.kuleuven.ac.be	JS	X	2	6	0	I	W	O	O	O	O	O	O	O
OK	NorthernEurope	BEgrid-UGent	gridce.atlantis.ugent.be	OK	O	2	6	0	I	W	O	O	O	O	W	O	O
CT	NorthernEurope	BEgrid-ULB-VUB	gridce.ihe.ac.be	CT	O	2	6	0	I	W	O	O	O	X	O	O	O
CT	CERN	BEIJING-CNIC-LCG2-IA64	ce-lcg.sdg.ac.cn	CT	O	2	6	0	I	W	X	O	O	X	W	O	O
CT	CERN	BEIJING-LCG2	lcg002.ihep.ac.cn	CT	O	2	6	0	I	O	X	O	O	X	O	O	O
OK	NorthernEurope	BelGrid-UCL	ingrid.cism.ucl.ac.be	OK	O	2	6	0	I	O	X	O	O	O	W	O	O
OK	SouthEasternEurope	BG-INSRNE	ce1.inrne.bas.bg	OK	O	2	7	0	I	O	O	O	O	O	O	O	O
OK	SouthEasternEurope	BG01-IPP	ce001.grid.bas.bg	OK	O	2	7	0	I	O	O	O	O	O	O	O	O
OK	SouthEasternEurope	BG02-IM	ce001.imbm.bas.bg	OK	O	2	7	0	I	O	O	O	O	O	O	O	O
OK	SouthEasternEurope	BG04-ACAD	ce01.grid.acad.bg	OK	O	2	7	0	I	O	O	O	O	O	O	O	O
OK	SouthEasternEurope	BG05-SUGrid	ce001.grid.uni-sofia.bg	OK	O	2	7	0	I	O	O	O	O	O	W	O	O
OK	UKI	BHAM-LCG2	epgce1.ph.bham.ac.uk	OK	O	2	7	0	I	O	O	O	O	O	O	O	O

Monitoring information from the EGEE Grid Information Service

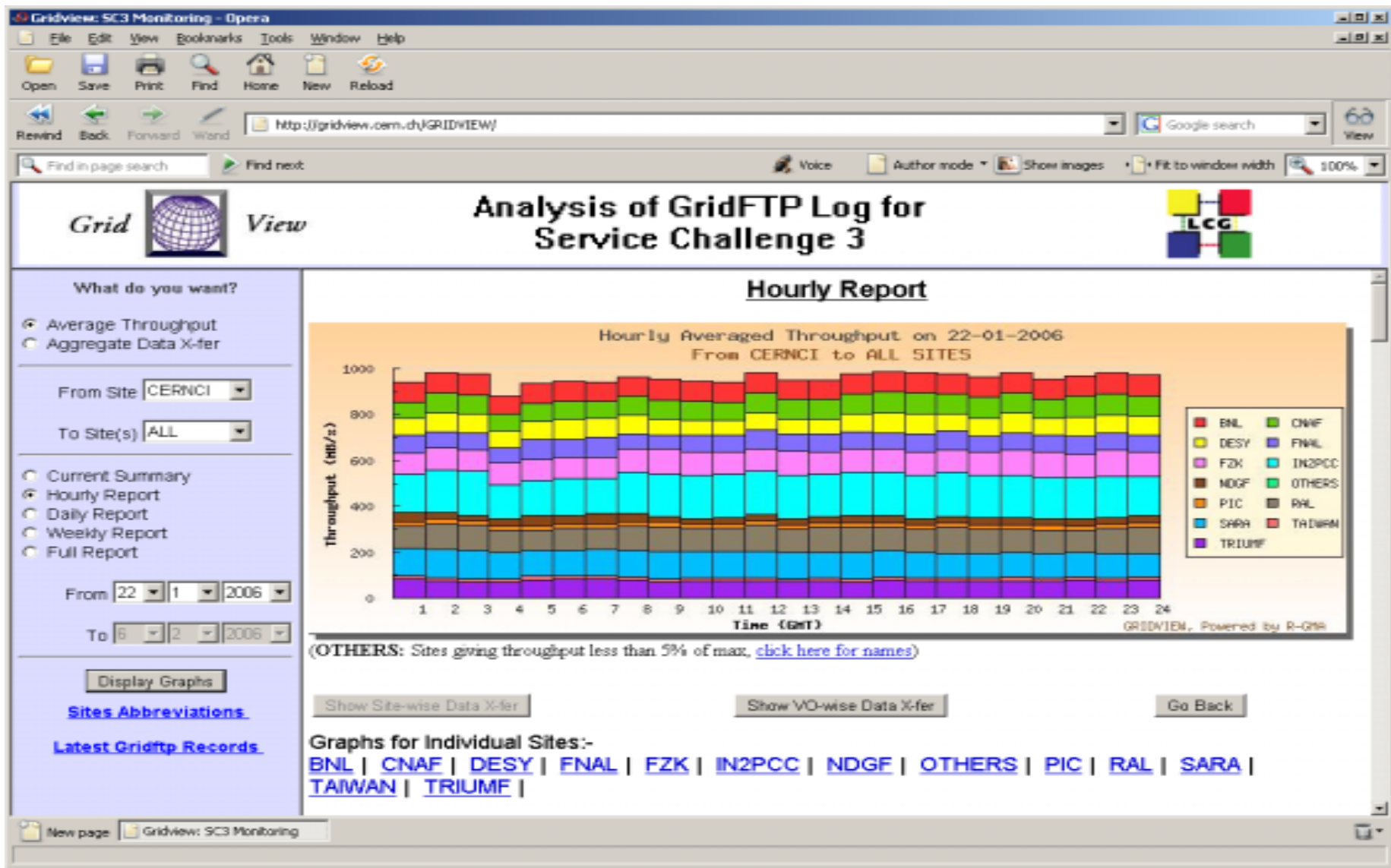
- **Approach:**
 - Periodic LDAP query
 - Data stored in Round-Robin Databases (RRD) on a central server
 - Web interface with tabular view and chart section
- **Target:**
 - Grid operators
 - Site administrators

AEGIS01-PHY-SCL OK	ALBERTA-LCG2 CT	AUVERGRID	BEgrid-KULeuven OK
BEIJING-CNIC-LCG2-IA64 CT	BEIJING-LCG2 CT	BelGrid-UCL OK	BG-INSRNE
BG04-ACAD OK	BG05-SUGrid OK	BHAM-LCG2 OK	BIFI OK
BUDAPEST OK	CARLETONU-LCG2 SD	CAVENDISH-LCG2 OK	CERN-CIC CT
CGG-LCG2 OK	CIEMAT-LCG2 CT	CNB-LCG2 OK	cnDIASie SD

	No	Site Reports	GIS Host	bnode	cernse	gperf	sanity	serv	version	totalCPU	freeCPU
csTCDie											
Durham											
giAITie	1	AEGIS01-PHY-SCL	ce.phy.bg.ac.yu	ok	ok	ok	ok	ok	LCG-2 7 0	100	11
giNUIMie	2	ALBERTA-LCG2	lcgce01.nic.ualberta.ca	.	.	ok	ok	ok	LCG-2 6 0	48	39
GR-02-UoM	3	AUVERGRID	obsauvergridce01.univ-bpclermont.fr	.	.	ok	ok	ok	LCG-2 6 0	54	54
HEPHY-UIBK	4	BEgrid-KULeuven	kg-ce01.cc.kuleuven.ac.be	.	.	ok	ok	ok	LCG-2 6 0	36	35
HPTC-LCG2ia6	5	BEgrid-UGent	gridce.atlantis.ugent.be	.	.	ok	ok	ok	LCG-2 6 0	80	40
IISAS-Bratislava	6	BEgrid-ULB-VUB	gridce.ihe.ac.be	.	.	ok	ok	ok	LCG-2 6 0	107	107
INDIACMS-TIF	7	BEIJING-CNIC-LCG2-IA64	ce-lcg.sdg.ac.cn	ok	ok	ok	ok	ok	LCG-2 6 0	32	31
INFN-CNAF	8	BEIJING-LCG2	lcg002.ihep.ac.cn	ok	ok	ok	ok	ok	LCG-2 6 0	16	10
INFN-NAPOLI	9	BelGrid-UCL	ingrid.cism.ucl.ac.be	.	.	ok	ok	ok	LCG-2 6 0	12	12
INFN-ROMA1-C	10	BG-INSRNE	ce1.inrne.bas.bg	.	.	ok	ok	ok	LCG-2 7 0	23	18
	11	BG01-IPP	ce001.grid.bas.bg	ok	ok	ok	ok	ok	LCG-2 7 0	11	1
	12	BG02-IM	ce001.imbm.bas.bg	.	.	ok	ok	ok	LCG-2 7 0	6	6
	13	BG04-ACAD	ce01.grid.acad.bg	.	.	ok	ok	ok	LCG-2 7 0	10	8
	14	BG05-SUGrid	ce001.grid.uni-sofia.bg	.	.	info	ok	ok	LCG-2 7 0	6	6
	15	BHAM-LCG2	epgce1.ph.bham.ac.uk	.	.	ok	ok	ok	LCG-2 7 0	28	3
	16	BIFI	ce-egEE.bifi.unizar.es	ok	ok	ok	ok	ok	LCG-2 6 0	10	6
	17	BNL-LCG2	lcg-ce01.usatlas.bnl.gov	.	.	.	error	errorna			

Visualization system for viewing monitoring information

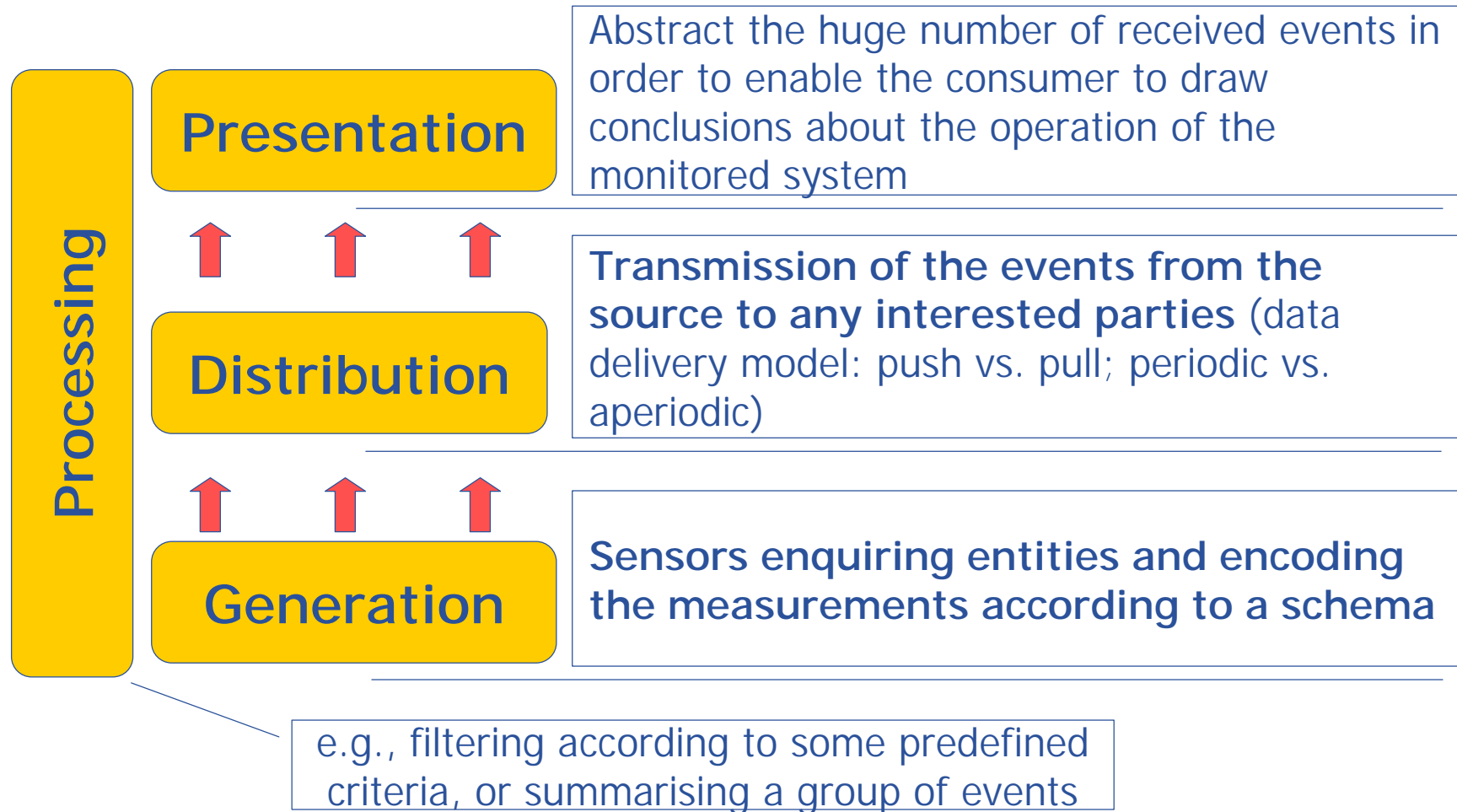
- **Approach:**
 - Collects monitoring information from different sources, e.g.:
 - GridFTP monitor
 - SFT
 - RB Logs
 - Archival of monitoring information in a central Oracle database at CERN
 - Visualization of summary data through Web interface
- **Target:**
 - Grid operators
 - Site administrators
 - VO managers



- **GridICE:**
 - a distributed monitoring tool for Grid systems
 - started in late 2002 (EU-DataTAG project)
 - is evolving in the context of EU-EGEE
 - fully integrated with the LCG-2.x Middleware
 - Metering and publishing of data can be configured via LCG standard installation mechanisms
 - Self-configurable collection and presentation
 - *just give the URL of the root Grid Information Service (GIS)*
 - Installed servers are monitoring Grid resources in the scope of:

EGEE	EGEE-SWE	RDIG	EGEE-SEE	Grid.it
GILDA	CMS	EUMedGrid		EUChinaGRID
	ATLAS	EELA		BeGrid
	BalticGrid			

The Four Main Phases of Monitoring



- In GridICE, available measurements are defined by the GLUE Schema 1.2 + extensions
 - Extensions:
 - available
 - *fabric-level information*
 - *job monitoring*
 - *summary info for computing resources*
 - *network connectivity from a Grid viewpoint [4]*
 - on-going work
 - *WMS, file transfer, file access (open + I/O per file/dataset)*
 - Scheduled on a periodic fashion

- **Distribution of events:**
 - Hierarchical model.
 - **Intra-site:** by means of the local monitoring service
 - *default choice, LEMON (<http://www.cern.ch/lemon>).*
 - **Inter-site:** by offering data through the Grid Information Service.
 - **Final Consumer:** depending on the client application.
 - Mixed data delivery model.
 - **Intra-site:** depending on the local monitoring service (push for lemon).
 - **Inter-site:** depending on the GIS (current choice, MDS 2.x, pull).
 - **Final consumer:**
 - *pull (browser/application)*
 - *push (publish/subscribe notification)*

- **Data stored in a RDBMS used to build aggregated statistics**
- **Data retrieved from the RDBMS are encoded in XML files**
- **XSL to XHTML transformations to publish aggregated data in a Web context**

- **Location bar**
- **Menu with a 2-level hierarchy**
- **Context-aware tabbed views**
- **Possibility of sorting rows by any column attribute**
- **Common background colour for rows showing the same value for the sorting attribute**
- **Monitoring data available as XML document**
- **Help pages**

We focus on the following categories of users:

- **VO manager**
 - *actual set of resources accessible to VO members*
- **Grid operator**
 - *all resources under responsibility of a Grid Operator Center*
- **Site administrator**
 - *site resources offered to a Grid*

- Visualization of the actual resources available to its members.
- Evaluation of the resources available to its members.
- Running of the resources available to its members.

What are the CE/SE available to my users?

How many jobs submitted by my users are running or queued?

What is the overall Grid utilization by users of my VO?

- **Detection and prediction of fault sites to the distributed resources.**
- **Coordination of the Grid middlewares.**
- **Investigation for statistical purpose.**

How many sites compose the managed Grid?
 How many resources are available?
 Is the Grid Information Service working properly?

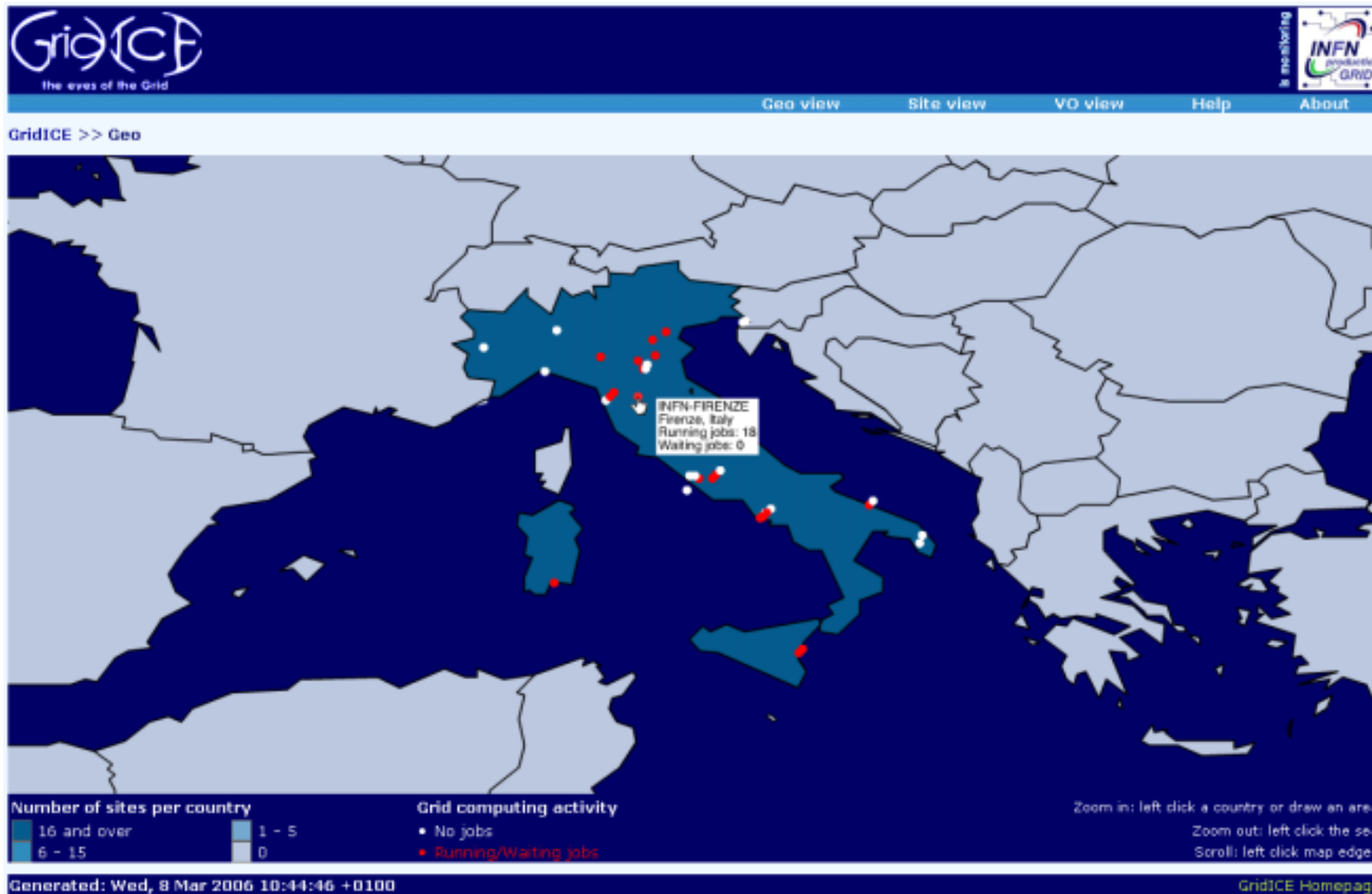
- **Detection of fault situations related to resources.**


- **Control how the Grid**

Is there any service down?

What is the percentage of the used storage space?

Is the Grid Information Service working properly?






Use Case 1

Grid operator - Site administrator

Summary info of available resources by admin site



Site	1	3	0	0	14%	3	-	-	-	-	13.8 GB	18.3 GB	24%
ENEA-INFO	1	3	0	0	0%	8	12K	6	6	0%	389.1 GB	845.1 GB	54%
ESAF-Trieste	1	4	0	0	0%	8	30K	7	14	0%	349.9 GB	558.7 GB	37%
INFN-BARI	1	4	116	512	94%	42	378K	36	72	58%	1.9 TB	6.3 TB	71%
INFN-BOLOGNA	1	6	4	9	54%	7	102K	5	18	56%	31 GB	71.3 GB	56%
INFN-BOLOGNA-CMS	1	2	0	0	11%	7	45K	5	10	10%	1.1 TB	1.7 TB	35%
INFN-CAGLIARI	1	6	20	216	100%	14	92K	11	22	90%	910.4 GB	938.1 GB	3%
INFN-CATANIA	1	5	57	0	28%	94	1M	89	250	27%	2.6 TB	3.5 TB	25%
INFN-CNAF	1	8	0	0	88%	27	44K	5	9	70%	862 GB	1.7 TB	54%
INFN-FERRARA	1	4	8	271	22%	17	160K	13	36	29%	982.5 GB	1006 GB	2%

GridICE >> Site::ALL >> Site::INFN-CNAF

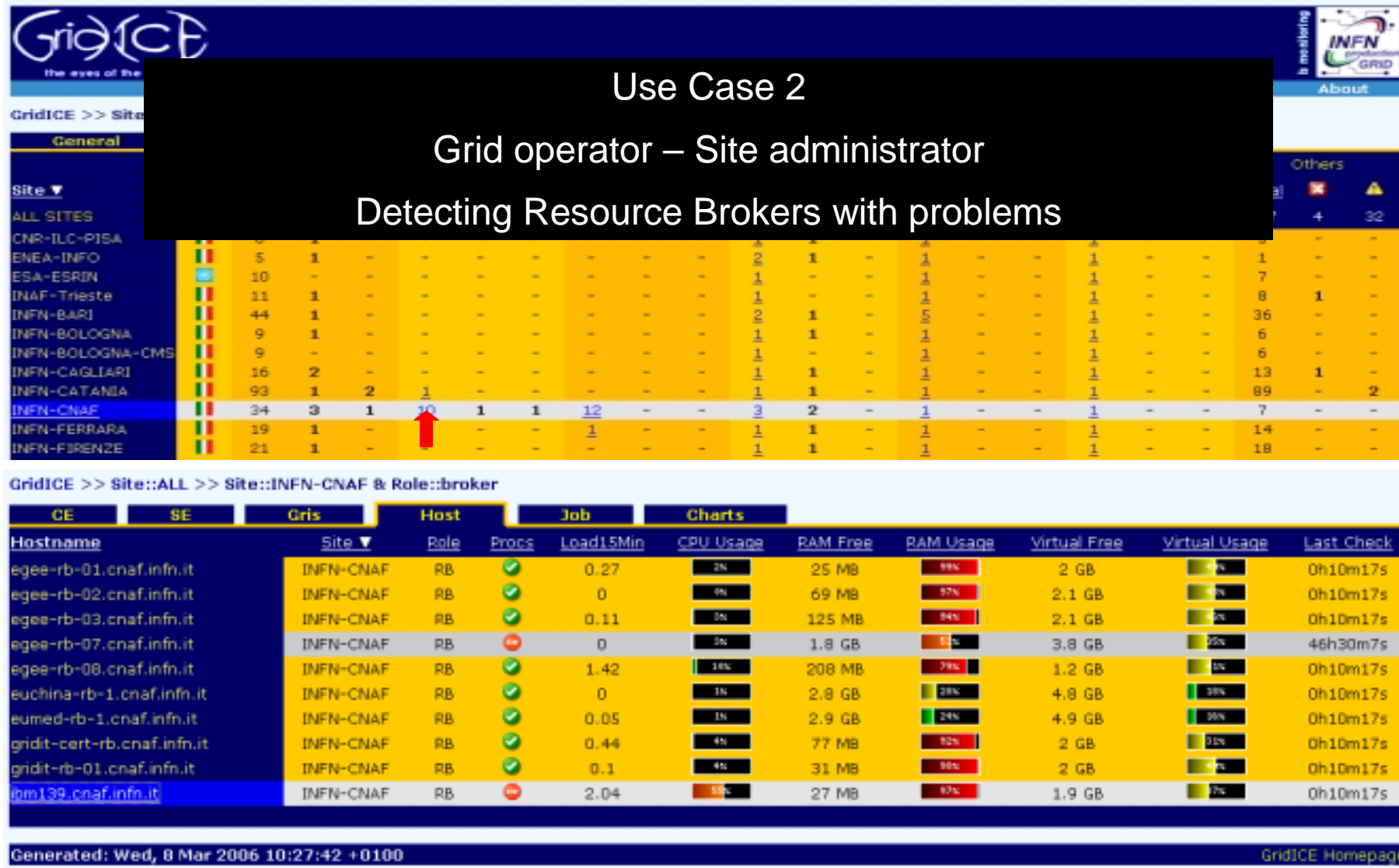
CE	SE	Grids	Host	Job	Charts
Computing Element ID					
gridit-ce-001.cnaf.infn.it:2119/jobmanager-lcgpbs-atlas_high01				Run Jobs	Wait Jobs
gridit-ce-001.cnaf.infn.it:2119/jobmanager-lcgpbs-atlas_high02				Free Slots	Total Slots
gridit-ce-001.cnaf.infn.it:2119/jobmanager-lcgpbs-atlas_low01				Max Run	ERT
gridit-ce-001.cnaf.infn.it:2119/jobmanager-lcgpbs-atlas_low02					
gridit-ce-001.cnaf.infn.it:2119/jobmanager-lcgpbs-cert					
gridit-ce-001.cnaf.infn.it:2119/jobmanager-lcgpbs-egee					
gridit-ce-001.cnaf.infn.it:2119/jobmanager-lcgpbs-gridit					
gridit-ce-001.cnaf.infn.it:2119/jobmanager-lcgpbs-lcg					

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Use Case 2

Grid operator – Site administrator


Detecting Resource Brokers with problems




GridICE >> Site::ALL >> Site::INFN-CNAF & Role::broker

CE	SE	Grid	Host	Job	Charts					
Hostname	Site	Role	Procs	Load15Min	CPU Usage	RAM Free	RAM Usage	Virtual Free	Virtual Usage	Last Check
egee-rb-01.cnaf.infn.it	INFN-CNAF	RB	✓	0.27	2%	25 MB	99%	2 GB	9%	0h10m17s
egee-rb-02.cnaf.infn.it	INFN-CNAF	RB	✓	0	6%	69 MB	97%	2.1 GB	5%	0h10m17s
egee-rb-03.cnaf.infn.it	INFN-CNAF	RB	✓	0.11	5%	125 MB	94%	2.1 GB	5%	0h10m17s
egee-rb-07.cnaf.infn.it	INFN-CNAF	RB	✗	0	5%	1.8 GB	91%	3.8 GB	35%	46h30m7s
egee-rb-08.cnaf.infn.it	INFN-CNAF	RB	✓	1.42	16%	208 MB	79%	1.2 GB	1%	0h10m17s
euchina-rb-1.cnaf.infn.it	INFN-CNAF	RB	✓	0	1%	2.8 GB	28%	4.8 GB	98%	0h10m17s
eumed-rb-1.cnaf.infn.it	INFN-CNAF	RB	✓	0.05	1%	2.9 GB	24%	4.9 GB	96%	0h10m17s
gridit-cert-rb.cnaf.infn.it	INFN-CNAF	RB	✓	0.44	4%	77 MB	92%	2 GB	31%	0h10m17s
gridit-rb-01.cnaf.infn.it	INFN-CNAF	RB	✓	0.1	4%	31 MB	98%	2 GB	9%	0h10m17s
im139.cnaf.infn.it	INFN-CNAF	RB	✗	2.04	65%	27 MB	97%	1.9 GB	7%	0h10m17s

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Geo view
Site view
VO view
Help
About

GridICE >> Site::ALL >> Site::INFN-CNAF >> Host::ibm139.cnaf.infn.it

Processes	Role	Proc Name	Status	Inst#	First	Last	CPU1Max	CPUAll	Mem1Max	MemAvg	Time1Max	TimeAll
	broker	network-server	S	1	11-04:52	11-04:52	0	0	1	1	0-00:03	0-00:03
	broker	workload-manager	S	1	11-06:45	11-06:45	8	8	10	10	0-22:34	0-22:34
	broker	proxy-renewal	S	2	18-18:38	18-18:38	59	59	0	0	11-01:01	11-01:02
	broker	wmproxy	✖	0	0-00:00	0-00:00	0	0	0	0	0-00:00	0-00:00
	broker	log-monitor	S	1	18-16:01	18-16:01	0	0	1	1	0-01:26	0-01:26
	broker	lb-proxy	✖	0	0-00:00	0-00:00	0	0	0	0	0-00:00	0-00:00
	broker	local-logger	S	1	11-06:55	11-06:55	0	0	0	0	0-00:00	0-00:00
	broker	lb-notif	S	1	18-16:00	18-16:00	0	0	0	0	0-00:00	0-00:00
	broker	local-logger-interlog	S	1	11-06:55	11-06:55	0	0	0	0	0-00:11	0-00:11
	broker	job-controller	S	1	18-15:58	18-15:58	0	0	0	0	0-00:49	0-00:49
	broker	lb-mysql	S	11	18-16:02	11-04:49	0	0	1	1	0-00:06	0-00:12
	broker	fmon-agent	S	1	18-16:00	18-16:00	0	0	0	0	0-00:01	0-00:01
	broker	ftp-server	S	1	18-16:01	18-16:01	0	0	0	0	0-00:00	0-00:00
	broker	condor-master	S	1	18-15:58	18-15:58	0	0	0	0	0-00:37	0-00:37
	broker	logging-and-bookkeeping	S	10	18-18:40	8-17:26	0	0	1	1	0-00:05	0-00:12
	broker	condorg-scheduler	S	1	11-06:53	11-06:53	2	2	3	3	0-05:19	0-05:19

File System Info	Name	Root	Type	Size	AvSpace	ReadOnly	ExtentName	ReadRate	WriteRate	InodeTotal	InodeFree
	/	/	ext3	34.62 GB	17.2 GB	f	/dev/hdc3	0	226	4.6M	3.7M
	/boot	/boot	ext3	96 MB	81 MB	f	/dev/hdc1	0	0	25.6K	25.5K

Network Adapter Data	Name	Txrate	Fxrate	IP Address	MTU	Outbound IP	Inbound IP
	eth0	521	1094	131.154.100.109	1500	t	f

GridICE  the eyes of the Grid  is enabling GRID










Geo view Site view VO view Help About

GridICE >> Site::ALL

General		Site	SE	KO
Site ▼			4	-
ALL SITES				
CNR-ILC-PIS				
ENEA-INFO				
ESA-ESRIN				
INAF-Trieste				
INFN-BARI				
INFN-BOLOGNA				
INFN-BOLOGNA-CMS				
INFN-CAGLIARI				
INFN-CATANIA				
INFN-CNAF				
INFN-FERRARA				
INFN-FIRENZE				
INFN-FRASCATI				



Use Case 3
Grid operator – Site administrator
Detecting GRIS's status

GridICE >> Site::ALL >> Site::INFN-CNAF

CE	SE	Gris	Host	Job	Charts						
Hostname			Site ▼	Domain	Middleware	Type	LastCheck	Conn	Since	Entries	Scheduling
grid007g.cnaf.infn.it			INFN-CNAF	cnaf.infn.it	LCG-2_7_0	EX	0h17m13s		2006-02-23 06:57	468	0
grid007g.cnaf.infn.it			INFN-CNAF	cnaf.infn.it	LCG-2_7_0	SE	0h19m31s		2006-02-13 10:15	31	0
gridit-ce-001.cnaf.infn.it			INFN-CNAF	cnaf.infn.it	LCG-2_7_0	SB	0h2m6s		2006-02-24 02:42	208	0
gridit-ce-001.cnaf.infn.it			INFN-CNAF	cnaf.infn.it	LCG-2_7_0	CE	0h0m15s		2006-03-05 08:50	92	0

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[GridICE Homepage](#)

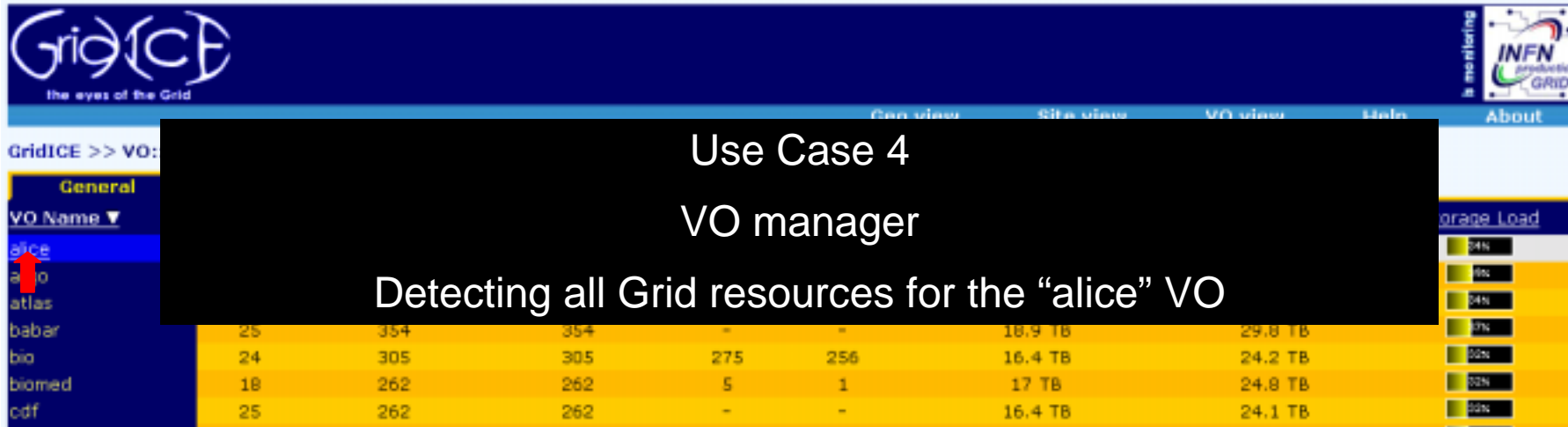



Geo view
Site view
VO view
Help
About

GridICE >> Site::ALL >> Site::INFN-CNAF >> GRIS::grid007g.cnaf.infn.it:EX

General Info	URI	Type	Contact
	ldap://grid007g.cnaf.infn.it:2136/mds-vo-name=local,o=grid	EX	mailto: sitemanager [AT] cnaf [DOT] infn [DOT] it

History Status Details	Run Date	ConnectionCode	Duration (sec)	TotalEntries
	2006-03-08 10:17	✓	5	468
	2006-03-08 09:57	✓	11	468
	2006-03-08 09:37	✓	46	442
	2006-03-08 09:17	✓	10	399
	2006-03-08 08:57	✓	4	360
	2006-03-08 08:37	✓	4	360
	2006-03-08 08:17	✓	7	360
	2006-03-08 07:57	✓	4	360
	2006-03-08 07:37	✓	4	360
	2006-03-08 07:17	✓	5	360
	2006-03-08 06:57	✓	5	361
	2006-03-08 06:37	✓	5	361
	2006-03-08 06:17	✓	4	361
	2006-03-08 05:57	✓	4	361
	2006-03-08 05:37	✓	37	361
	2006-03-08 05:17	✓	4	361
	2006-03-08 04:57	✓	4	362
	2006-03-08 04:37	✓	6	361
	2006-03-08 04:17	✓	5	361
	2006-03-08 03:57	✓	4	361



GridICE >> VO:

General

VO Name ▼

- alice
- alio
- atlas
- babar
- bio
- biomed
- cdf

VO Name	CPUs	RAM	Storage	Free Slots	Total Slots	Max Run	ERT
alice	25	354	354	-	-	18.9 TB	29.8 TB
alio	24	305	305	275	256	16.4 TB	24.2 TB
atlas	18	262	262	5	1	17 TB	24.8 TB
babar	25	262	262	-	-	16.4 TB	24.1 TB

Storage Load

04%

0%

04%

07%

05%

02%

05%

Use Case 4
VO manager
Detecting all Grid resources for the "alice" VO

GridICE >> VO::ALL >> VO::alice

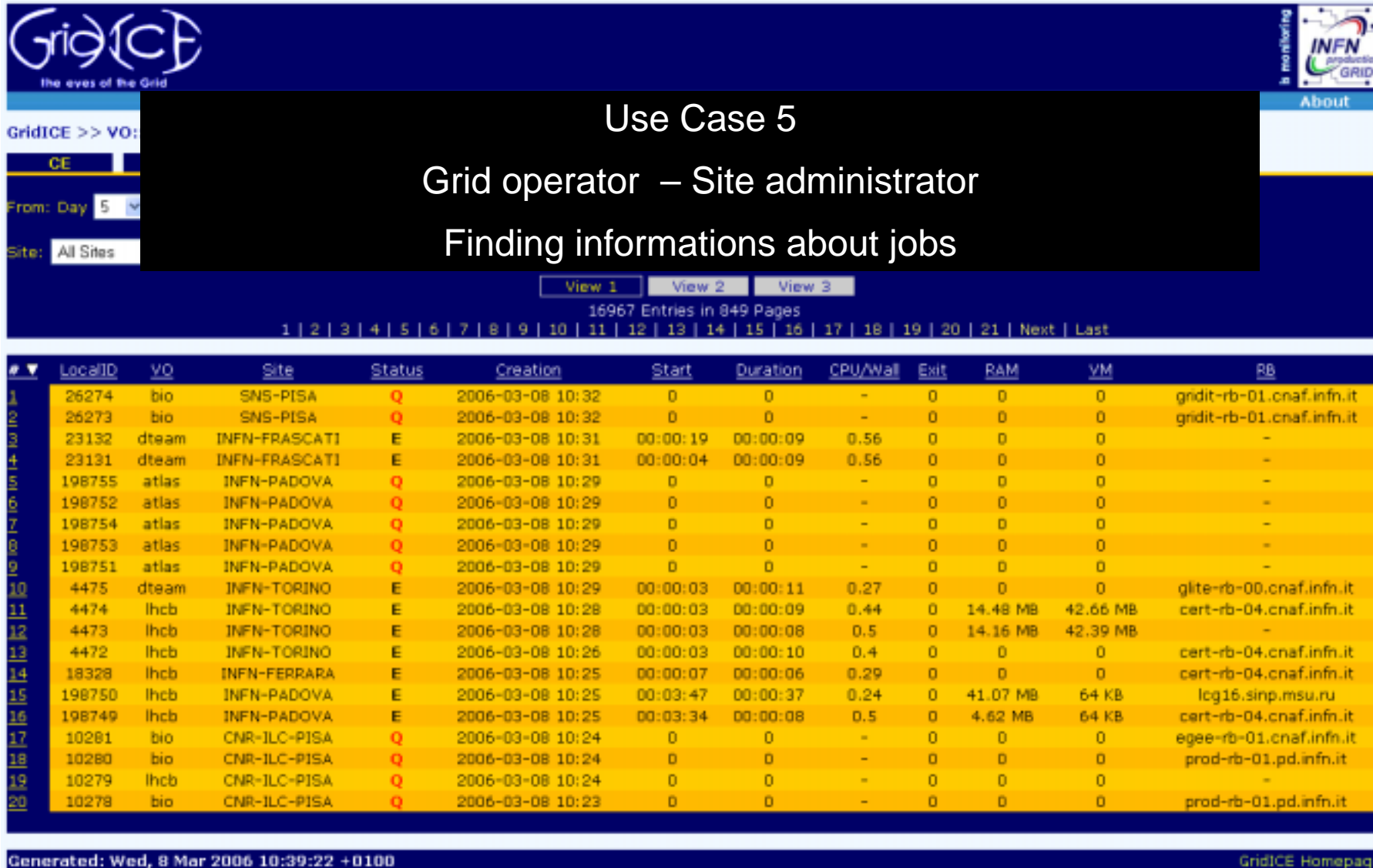
CE SE Job Charts

Computing Element ID	Site ▼	Free Slots	Total Slots	Max Run	ERT
gridce.ilc.cnr.it:2119/jobmanager-lcgpbs-alice	CNR-ILC-PISA	0	4	0	0-00:10
gridba2.ba.infn.it:2119/jobmanager-lcgpbs-infinite	INFN-BARI	0	0	0	24845-14:40
gridba2.ba.infn.it:2119/jobmanager-lcgpbs-long	INFN-BARI	0	0	0	24845-14:40
gridba2.ba.infn.it:2119/jobmanager-lcgpbs-short	INFN-BARI	0	0	0	24845-14:40
bogrid5.bo.infn.it:2119/jobmanager-lcgpbs-alice	INFN-BOLOGNA	3	8	7	0-00:00
grid002.ca.infn.it:2119/jobmanager-lcgpbs-alice	INFN-CAGLIARI	0	20	20	0-06:20
grid012.ct.infn.it:2119/jobmanager-lcglsf-alice	INFN-CATANIA	157	162	163	0-00:08
grid012.ct.infn.it:2119/jobmanager-lcglsf-infinite	INFN-CATANIA	158	170	163	0-01:00
grid012.ct.infn.it:2119/jobmanager-lcglsf-long	INFN-CATANIA	158	170	163	0-00:13
grid012.ct.infn.it:2119/jobmanager-lcglsf-short	INFN-CATANIA	158	170	163	0-00:00
gridt-ce-001.cnaf.infn.it:2119/jobmanager-lcgpbs-lcg	INFN-CNAF	1	8	0	0-00:00
grid0.fe.infn.it:2119/jobmanager-lcgpbs-lcg	INFN-FERRARA	28	36	0	0-00:00
grid001.fi.infn.it:2119/jobmanager-lcgpbs-alice	INFN-FIRENZE	39	64	0	0-00:00
t2-ce-02.inl.infn.it:2119/jobmanager-lcglsf-alice	INFN-LNL-2	118	138	100	0-00:50
grid-ce.lns.infn.it:2119/jobmanager-lcgpbs-infinite	INFN-LNS	0	8	0	5-23:57
grid-ce.lns.infn.it:2119/jobmanager-lcgpbs-long	INFN-LNS	0	8	0	2-02:59
grid-ce.lns.infn.it:2119/jobmanager-lcgpbs-short	INFN-LNS	0	8	0	0-02:22

Use Case 5

Grid operator – Site administrator

Finding informations about jobs



GridICE >> VO: **CE**

From: Day 5

Site: All Sites

View 1 View 2 View 3

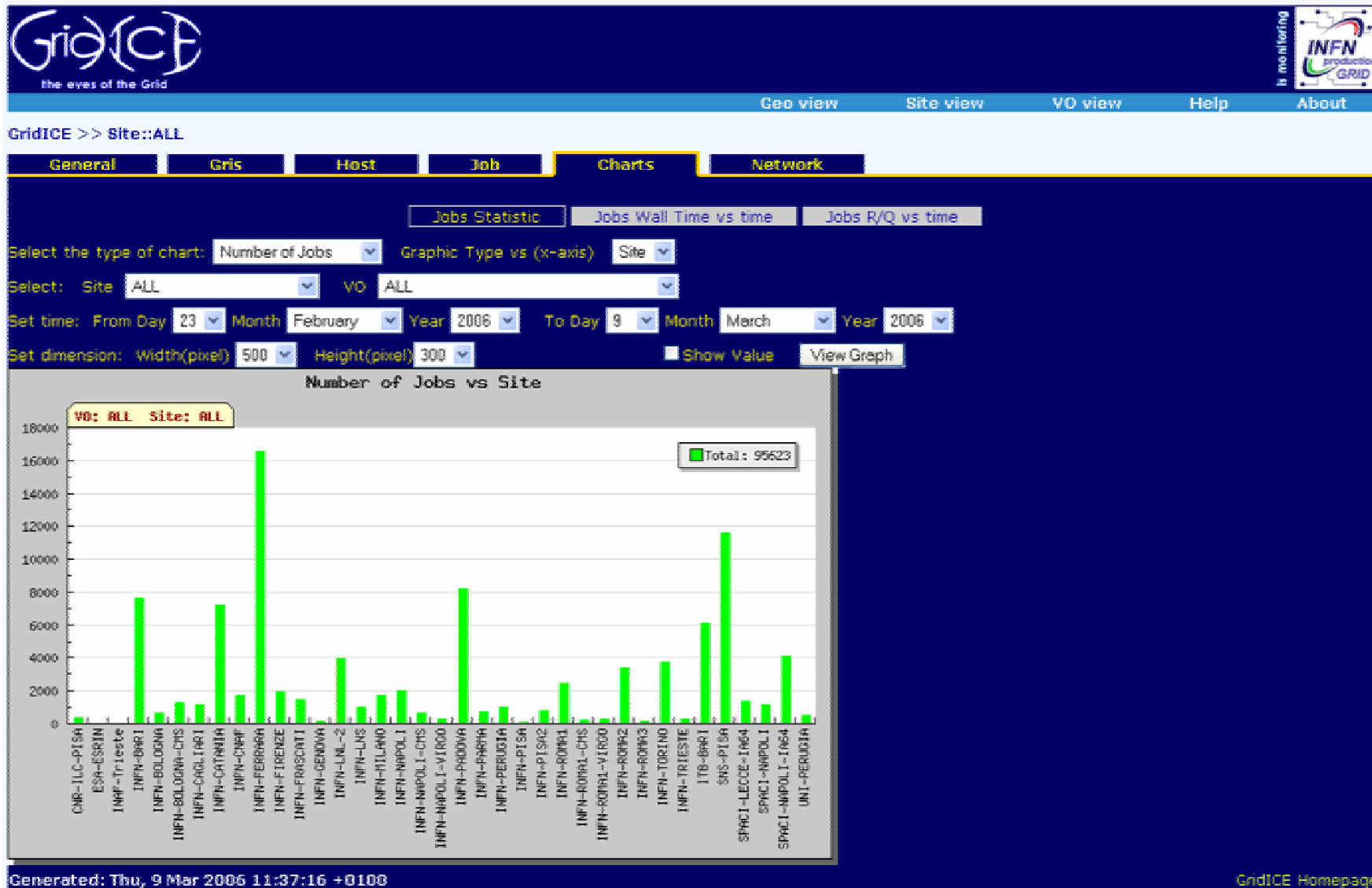
16967 Entries in 849 Pages

1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | Next | Last

#	LocalID	VO	Site	Status	Creation	Start	Duration	CPU/Wall	Exit	RAM	VM	RB
1	26274	bio	SNS-PISA	Q	2006-03-08 10:32	0	0	-	0	0	0	gridit-rb-01.cnaf.infn.it
2	26273	bio	SNS-PISA	Q	2006-03-08 10:32	0	0	-	0	0	0	gridit-rb-01.cnaf.infn.it
3	23132	dteam	INFN-FRASCATI	E	2006-03-08 10:31	00:00:19	00:00:09	0.56	0	0	0	-
4	23131	dteam	INFN-FRASCATI	E	2006-03-08 10:31	00:00:04	00:00:09	0.56	0	0	0	-
5	198755	atlas	INFN-PADOVA	Q	2006-03-08 10:29	0	0	-	0	0	0	-
6	198752	atlas	INFN-PADOVA	Q	2006-03-08 10:29	0	0	-	0	0	0	-
7	198754	atlas	INFN-PADOVA	Q	2006-03-08 10:29	0	0	-	0	0	0	-
8	198753	atlas	INFN-PADOVA	Q	2006-03-08 10:29	0	0	-	0	0	0	-
9	198751	atlas	INFN-PADOVA	Q	2006-03-08 10:29	0	0	-	0	0	0	-
10	4475	dteam	INFN-TORINO	E	2006-03-08 10:29	00:00:03	00:00:11	0.27	0	0	0	glite-rb-00.cnaf.infn.it
11	4474	lhcb	INFN-TORINO	E	2006-03-08 10:28	00:00:03	00:00:09	0.44	0	14.48 MB	42.66 MB	cert-rb-04.cnaf.infn.it
12	4473	lhcb	INFN-TORINO	E	2006-03-08 10:28	00:00:03	00:00:08	0.5	0	14.16 MB	42.39 MB	-
13	4472	lhcb	INFN-TORINO	E	2006-03-08 10:26	00:00:03	00:00:10	0.4	0	0	0	cert-rb-04.cnaf.infn.it
14	18328	lhcb	INFN-FERRARA	E	2006-03-08 10:25	00:00:07	00:00:06	0.29	0	0	0	cert-rb-04.cnaf.infn.it
15	198750	lhcb	INFN-PADOVA	E	2006-03-08 10:25	00:03:47	00:00:37	0.24	0	41.07 MB	64 KB	lcg16.sinp.msu.ru
16	198749	lhcb	INFN-PADOVA	E	2006-03-08 10:25	00:03:34	00:00:08	0.5	0	4.62 MB	64 KB	cert-rb-04.cnaf.infn.it
17	10281	bio	CNR-ILC-PISA	Q	2006-03-08 10:24	0	0	-	0	0	0	egee-rb-01.cnaf.infn.it
18	10280	bio	CNR-ILC-PISA	Q	2006-03-08 10:24	0	0	-	0	0	0	prod-rb-01.pd.infn.it
19	10279	lhcb	CNR-ILC-PISA	Q	2006-03-08 10:24	0	0	-	0	0	0	-
20	10278	bio	CNR-ILC-PISA	Q	2006-03-08 10:23	0	0	-	0	0	0	prod-rb-01.pd.infn.it

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GridICE Homepage



SFT: http://goc.grid.sinica.edu.tw/gocwiki/Site_Functional_Tests

GStat: <http://goc.grid.sinica.edu.tw/gstat/>

GridView: <http://gridview.cern.ch/GRIDVIEW/>

GridICE dissemination: <http://grid.infn.it/gridice>

GridICE Publications:

- [1] S. Andreozzi, N. De Bortoli, S. Fantinel, A. Ghiselli, G. L. Rubini, G. Tortone, M. C. Vistoli **GridICE: a monitoring service for Grid systems**, Future Generation Computer System 21 (2005) 559–571
- [2] C. Aiftimiei, S. Andreozzi, G. Cuscela, N. De Bortoli, G. Donvito, S. Fantinel, E. Fattibene, G. Misurelli, A. Pierro, G.L. Rubini, G.Tortone. **GridICE: Requirements, Architecture and Experience of a Monitoring Tool for Grid Systems**. In Proceedings of the International Conference on Computing in High Energy and Nuclear Physics (CHEP2006), Mumbai, India. 13-17 February 2006.
- [3] C. Aiftimiei, S. Andreozzi, G. Cuscela, N. De Bortoli, G. Donvito, S. Fantinel, E. Fattibene, G. Misurelli, A. Pierro, G.L. Rubini, G.Tortone. **Flexible notification service for Grid monitoring events**. In Proceedings of the International Conference on Computing in High Energy and Nuclear Physics (CHEP2006), Mumbai, India. 13-17 February 2006.
- [4] S. Andreozzi, A. Ciuffoletti, A. Ghiselli, C. Vistoli. **Monitoring the Connectivity of a Grid**. In Proceedings of the 2nd International Workshop on Middleware for Grid Computing (MGC 2004) in conjunction with the 5th ACM/IFIP/USENIX International Middleware Conference, Toronto, Canada, October 2004.

