

Adding new applications to EGEE infrastructure

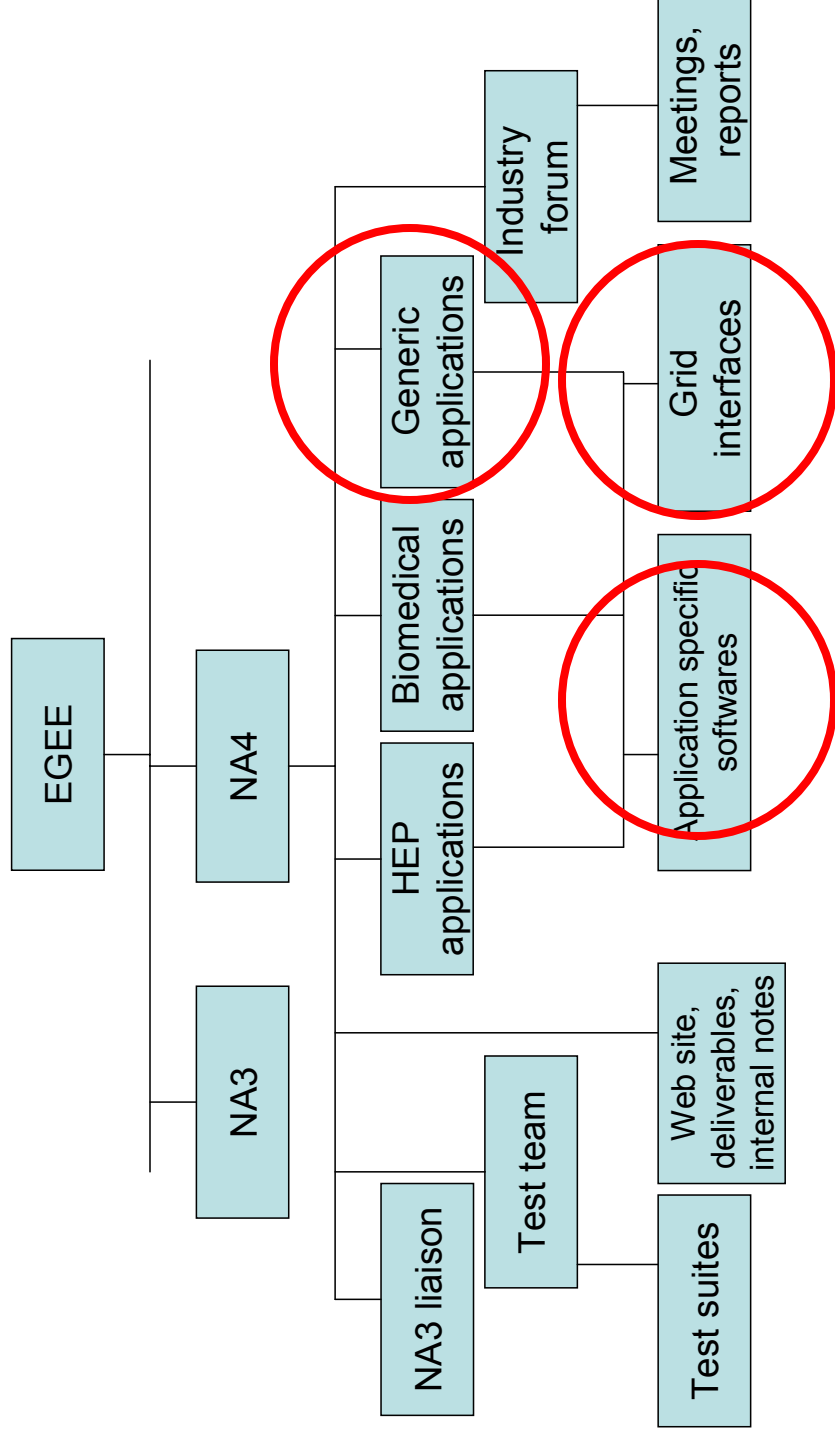
Roberto Barbera



EGEE is funded by the European Union under contract IST-2003-508833

- Overview of NA4 and Generic Applications
- The official procedure to join EGEE
- The GILDA dissemination testbed
- Summary and conclusions

NA4 Work Breakdown Structure



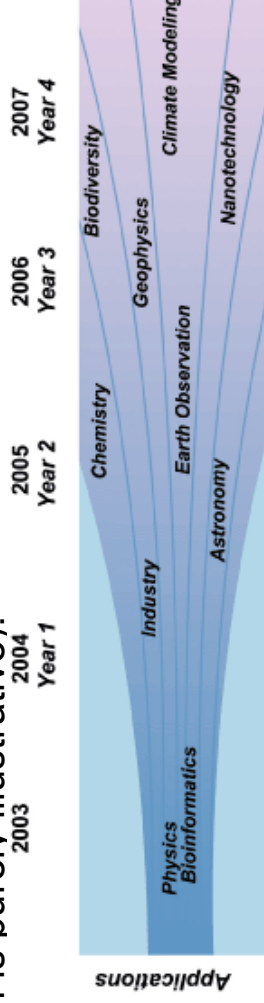
<http://alipc1.ct.infn.it/grid/egee/na4>

NA4 Generic Applications goals

Activity NA4 focuses on the identification and support of early-user and established applications for use on the EGEE infrastructure. It has the following objectives:

- **To identify through the dissemination partners and a well defined integration process a portfolio of early user applications from a broad range of application sectors from academia, industry and commerce.**
- **To support development and production use of all of these applications on the EGEE infrastructure and thereby establish a strong user base on which to build a broad EGEE user community.**
- **To initially focus on two well-defined application areas – Particle Physics and Life sciences.**

The expected outcome of the activity will be the establishment of a broad portfolio of applications across a wide range of sectors suited to execution on the EGEE infrastructure meeting the needs of a broad collection of user groups from many sectors across Europe as illustrated in Figure (note the timeline for the introduction of each application domain is purely illustrative).



The Gen. App. Selection process: the EGAAP (1/2)

1) The EGEE Generic Applications Advisory Panel (EGAAP)

Is in charge of facilitating the deployment of potential new applications on the EGEE infrastructure. It will advise the Application team in EGEE on the allocation of their resources to that effect. It will collect the necessary information about the application candidates, identify the needs to achieve this goal and make recommendations to that effect to:

- the NA4 management for allocation of the NA4 resources to the applications which need them
- the EGEE Project Execution Board where the technical consequences of this new deployment will be examined. In the case where the application impact is deemed very important for EGEE, the EGEE Project Management Board will be noticed.

2) Criteria used for recommendations

The EGEE Generic Applications Advisory Panel will use the following criteria to make its recommendations:

scientific interest of the proposed work, with particular emphasis on the grid added-value, added value for EGEE to have such an application running on its infrastructure

coordination of the corresponding community, grid-awareness of this community

minimum requirement that a small team followed the EGEE training, dedication of the community to this application, agreement to the various EGEE policies and especially the security and resources allocation policies.

3) EGAAP will hear regularly reports from the deployed applications on the EGEE infrastructure

The Gen. App. Selection process: the EGAAP (2/2)

4) In the case of industrial applications, the EGEE Generic Applications Advisory Panel can require input from the EGEE Industry Forum

5) Membership

The selection panel is formed of 8 nominated members in addition to ex-officio members. 2 members designated by the NA4 team leader from within the EGEE project and 5 members designated by the NA4 team leader from a list of nominees outside the EGEE project suggested by members of the EGEE Project Management Board. The chair is chosen among these 8 members by the NA4 team leader, in consultation with the EGEE management. The membership term is one year, renewable once.

The ex-officio members are:

- NA4 team leader
- NA4 generic applications coordinator
- NA4 Industry Forum coordinator
- EGEE technical director
- EGEE project manager

6) The EGAAP will meet at least twice a year.

The Generic Application questionnaire

- Questionnaire to get information from new communities interested in using the EGEE Infrastructure (<http://alipc1.ct.infn.it/grid/egee/na4/questionnaire/na4-genapp-questionnaire.doc>)
- Feed-backs received so far: (<http://alipc1.ct.infn.it/grid/egee/na4/questionnaire>):
 - Astrophysics
 - Earth Observation
 - Digital Libraries
 - Grid Search Engines
- Interest also from Computational Chemistry, Geophysics, and Civil Engineering communities

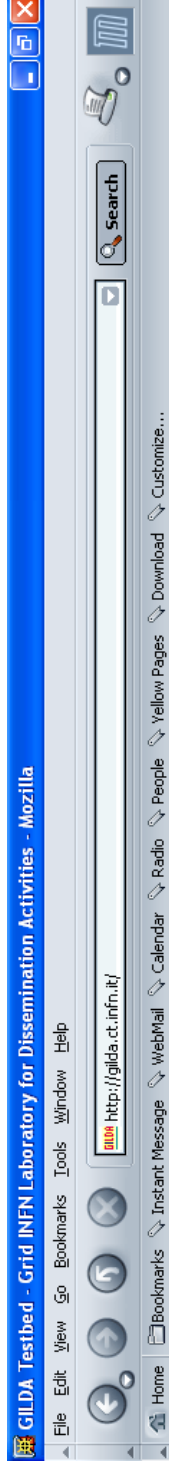
Overview of process

- Application nominates VO manager
- Find (CIC) to operate VO server
- VO is added to registration procedure
- Determine access policy:
 - Propose discussion (body) NA4 + ROC manager group
 - Which sites will accept to run app (funding, political constraints)
 - Need for a test VO?
- Modify site configs to allow the VO access
- Negotiate CICs to run VO-specific services:
 - VO server (see above)
 - RLS service if required
 - Resource Brokers (can be some general at CIC and others owned by apps), UIs – general at CIC/ROC – or on apps machines etc
 - Potentially (if needed) BDII to define apps view of resources
- Application software installation
 - Understand application environment, and how installed at sites
- Many of these issues can be negotiated by NA4/SA1 in a short discussion with the new apps community

Resource Allocation policy – from TA

- Each Resource Centre support many VOs - several application domains.
 - already true for many centres that participate in existing grid projects – EDG, LCG etc.
- Initially must stages balance between the resources contributed by the application domains and those that they consume.
 - many of those resources funded specifically for those application communities.
 - In first 6 months sufficient resources for initial set of VOs
- Resource allocation will be made at the VO level.
 - Establish inter-VO allocation guidelines;
 - Resource centres may have specific allocation policies that must be taken into account,
 - Expect some peer review within application domains to inform the allocation process.
- New resource centres required to satisfy some minimum requirements.
 - New VO's should bring a level of additional resources consistent with their requirements.
 - The project must demonstrate that on balance this level of commitment is less than that required for the user community to perform the same work outside the grid. The difference will come from the access to idle resources of other VOs and resource centres. This is the essence of a grid infrastructure.
- A site may have additional resources not initially available that may be included later once EGEE is shown to be stable.
 - This potential is significant.
- Requirement on middleware (JRA1 et al):
 - mechanisms for implementing and enforcing resource quotas, allocations and limits.
- The selection of new VOs and resources
 - Negotiated and administered by NA4.
 - Follow e-IRG policies

The GILDA home page (<http://gilda.ct.infn.it>)



- Grid tutorials
- Instructions for users
- Instructions for sites
- Useful links
- Usage Statistics

GILDA (Grid Infn L aboratory for D issemination A ctivities)

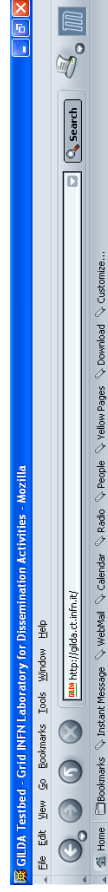
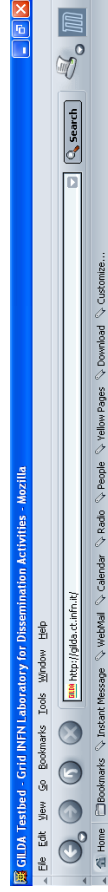
is a virtual laboratory to demonstrate/disseminate the strong capabilities of grid computing.

GILDA consists of the following elements:

- the [GILDA Testbed](#): a series of sites spread all over Italy where the last version of the [Grid.It](#) grid middle-ware is installed;
- the [GILDA Certification Authority](#): a fully functional Certification Authority which issues 14-days X.509 certificates to everybody wanting to experience grid computing on the GILDA Testbed;
- the [GILDA Virtual Organization](#): a Virtual Organization gathering all people wanting to experience grid computing on the GILDA Testbed;
- the [Grid Demonstrator](#): a customized version of the full GENIUS web portal, jointly developed by INFN and NICE , from where users belonging to the GILDA VO can submit a pre-defined set of applications to the GILDA Testbed;
- the [GENIUS web portal](#): the full GENIUS web portal, to be used only during grid tutorials;
- the [monitoring system](#): a versatile monitoring system completely based on [GridICE](#), the grid monitoring tool developed by INFN;
- the [GILDA mailing list](#): gilda@infn.it, also archived on the web [here](#).

GILDA is an activity of the [Italian Istituto Nazionale di Fisica Nucleare \(INFN\)](#) carried on in the context of both the [Italian INFN Grid](#) and European [EGEE](#) Projects.

The GILDA Testbed



- ▶ Grid tutorials
- ▶ Instructions for users
- ▶ Instructions for sites
- ▶ Useful links
- ▶ Usage Statistics



Grid services

This is a table of the general Grid Services nodes running.

SERVICE	HOST
Resource Broker (RB)	grid004.ct.infn.it
Information Index (BDII)	grid017.ct.infn.it
Top MDS	grid016.infn.it
LDAF (for GILDA VO's)	grid-vo.cnaf.infn.it:10369
GridICE	alfam7.ct.infn.it:50080
Replica Location Service (RLS)	grid008.ct.infn.it

- ▶ Grid tutorials
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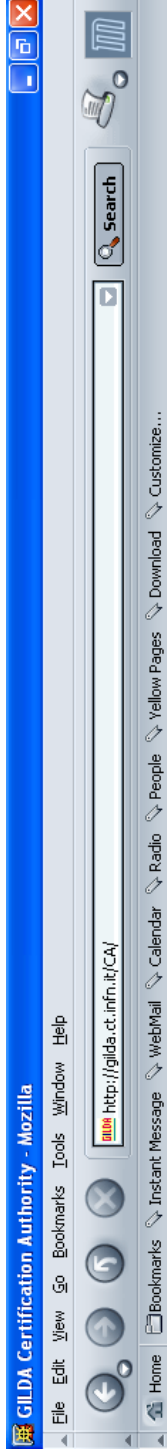


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The GILDA Certification Authority (1/3)



The GILDA Certification Authority

- General information
- GILDA CA certificate
- Request a personal certificate
- Check a personal certificate
- Certificate Revocation List

The **GILDA Certification Authority (GILDA CA)** issues temporary (two weeks) personal public key certificates (compliant with the X.509 standard) in order to access the GILDA Testbed.

Absolutely no identity check is going to be performed on the requester, so the personal certificates issued by the GILDA CA have absolutely no value on any real production Grid Infrastructure.

The **GILDA Certification Authority** is managed by:

Giuseppe Platania
INFN Catania
Via S. Sofia, 64
I-95123 Catania
ITALY

e-mail: gilda-ca@ct.infn.it
Tel: +39 095 378 5469
Fax: +39 095 378 5231

In order to inspect the GILDA CA certificate and/or save it in your web browser (necessary to validate your personal certificate) click on **GILDA CA certificate** in the left part of this page.

In order to request a certificate, click on **Request a personal certificate** in the left part of this page.

Please, note that Netscape Communicator (version 4 and above), Mozilla (version 1.0 and above), and Internet Explorer (version 5 and above) are the only presently supported web browsers. The use of any other web browsers could induce some visualization mismatches and/or server misbehaviours and is not currently suggested.

The GILDA Certification Authority (2/3)

Download the GILDA CA certificate - Mozilla

File Edit View Go Bookmarks Tools Window Help

Home Bookmarks Instant Message WebMail Calendar Radio People Yellow Pages Download Customize...

Search

https://gilda.ct.infn.it/CA/mgt/getCA.php

Request a personal certificate

Check a personal certificate

Certificate Revocation List

WARNING !

This web server is certified by the same Certification Authority you are going to download the root certificate of. Hence, you have no objective ways to check its reliability and trustability!

If you do not trust it and would like to check the correctness of the fingerprints, you can call the CA manager on the phone (Giuseppe Platania, +39 095 3 78 5469).

These are the fingerprints of the GILDA CA certificate:

B6:BA:BD:BC:72:53:05:93:78:A4:81:47:28:4E:3C:55 (MD5)
4F:10:40:A9:B5:75:59:01:A3:59:74:9E:E3:E2:8F:E2:C7:2C:93:DD (SHA1)

Instructions

For the automatic installation in your web browser, select the DER format and in the dialog form which will appear, select all the following functionalities:

- network sites
- e-mail users
- software developers

If no dialog form shows up, please **contact the GILDA CA manager**.

The PEM format must be selected only to visualize the GILDA CA certificate with your web browser (e.g., if you want to do "cut and paste").

Formato: DER

Download/Visualize certificate

The GILDA Certification Authority (3/3)

Request a personal certificate
Check a personal certificate
Certificate Revocation List

If you did not do it already, please download the GILDA CA certificate first.

In order to correctly generate a request it is mandatory to fill all fields in the form below. Please, double check the correctness of the e-mail address that you are going to provide since **no verification** will be performed by the server.

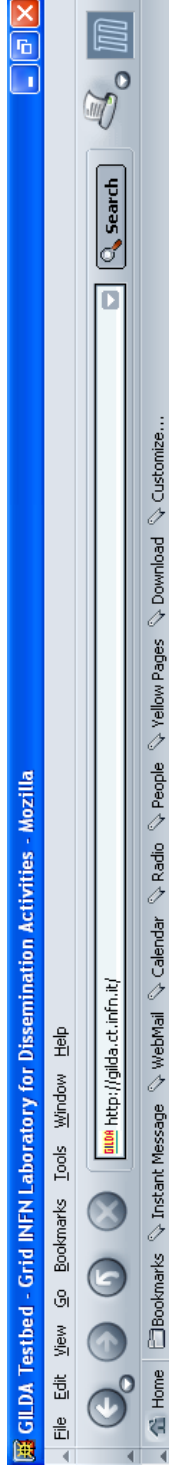
The password you are prompted about in the form below is the password of your personal account on the **GENIUS Portal** from where you will access the GILDA Testbed and it is **NOT** the passphrase of your personal certificate.

When the certificate will be signed by the GILDA CA manager you will be notified by e-mail with the instructions to download your GILDA CA personal certificate and access the GILDA Testbed.

Institute/University/Company:	<input type="text" value="INFN Catania"/>
First name and last name:	<input type="text" value="Roberto Barbera"/>
Account username (max 8 characters, only letters and digits are allowed, both lowercase and uppercase):	<input type="text" value="barbera"/>
Account password (only letters and digits are allowed, both lowercase and uppercase):	<input type="password" value="XXXXXXXXXX"/>
Confirm account password (only letters and digits are allowed, both lowercase and uppercase):	<input type="password" value="XXXXXXXXXX"/>
E-mail:	<input type="text" value="roberto.barbera@ct.infn.it"/>
KeySize:	<input type="text" value="2048 (High Grade)"/>

Submit the request Clear form

The GILDA monitoring system (1/3)



GRID INFN LABORATORY for DISSEMINATION ACTIVITIES

eGEE
Enabling Grids for E-science in Europe

HOME TESTBED CERTIFICATION AUTHORITY REGISTER to the GILDA VO DEMONSTRATOR GENIUS PORTAL MONITORING CONTACTS

- Grid tutorials
- Instructions for users
- Instructions for sites
- Useful links
- Usage Statistics

Grid tutorials
Instructions for users
Instructions for sites
Useful links
Usage Statistics

GridICE
the eyes of the Grid

VO view Geo view Grid view Help about

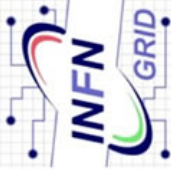


Select Site and/or Role Show

site	Computing Resources				Storage Resources						
	Slot#	SlotFree	SlotLoad	RunJob	WaitJob	Power	CPU#	CPULoad	Available	Total	%
ct.infn.it	48	0%	0	0	0	14418	18	0%	1.8 Tb	1.9 Tb	3%
pd.infn.it	12	0%	0	0	0	3984	4	0%	499.3 Gb	499.3 Gb	0%
TOTAL	60	0%	0	0	0	18402	22	0%	2.3 Tb	2.4 Tb	2%

Thu, 15 Apr 2004 22:18:13 +0200
GridICE Homepage

The GILDA monitoring system (2/3)



**GRID INFN LABORATORY for
DISSEMINATION ACTIVITIES**

HOME
TESTBED
CERTIFICATION AUTHORITY
REGISTER to the GILDA VO
DEMONSTRATOR
GENIUS PORTAL
MONITORING
CONTACTS

- Instructions for users
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Process Name	Status	Inst#	Instances First	Last	CPU 1Max	Memory Avg	Socket: TCP(4)	UDP(9)
condorg-scheduler	S	1	6-11:55	6-11:55	0	0	Socket: TCP(17)	UDP(13)
condor-master	S	1	6-11:55	6-11:55	0	0		
fmon-agent	S	1	22-6:18	22-6:18	0	0		
ftp-server	S	1	6-12:35	6-12:35	0	0		
job-controller	S	1	6-12:35	6-12:35	0	0		
local-logger	S	1	6-11:35	6-11:35	0	0		
logging-and-bookkeeping	S	5	6-11:55	6-11:54	0	0		
log-monitor	S	11	6-11:15	0-0:6	0	0		
network-server	S	1	6-11:55	6-11:55	0	0		
proxy-renewal	S	21	6-11:55	6-11:55	0	0		
rdxprof	S	2	6-11:54	6-11:54	0	0		
workload-manager	S	1	22-5:40	22-5:40	0	0		
workload-manager	S	4	6-11:55	6-11:55	0	0		
grid017.ct.infn.it	BD		UpTime: 38-7:30	Reg. OpenFiles.: 223			Socket: TCP(15)	UDP(20)
grid004.ct.infn.it	RB		UpTime: 22-4:33	Reg. OpenFiles.: 3499			Socket: TCP(15)	UDP(16)
grid010.ct.infn.it	CE		UpTime: 6-11:1	Reg. OpenFiles.: 623			Socket: TCP(5)	UDP(14)
grid009.ct.infn.it	SE		UpTime: 38-3:10	Reg. OpenFiles.: 1416			Socket: TCP(5)	UDP(14)
grid019.ct.infn.it	WN		UpTime: 3-18:1	Reg. OpenFiles.: 172			Socket: TCP(5)	UDP(14)
grid020.ct.infn.it	WN		UpTime: 6-10:1	Reg. OpenFiles.: 172			Socket: TCP(5)	UDP(14)
grid021.ct.infn.it	WN		UpTime: 6-7:31	Reg. OpenFiles.: 169			Socket: TCP(5)	UDP(14)
grid022.ct.infn.it	WN		UpTime: 6-5:1	Reg. OpenFiles.: 172			Socket: TCP(5)	UDP(14)
grid023.ct.infn.it	WN		UpTime: 6-7:31	Reg. OpenFiles.: 169			Socket: TCP(5)	UDP(14)

The GILDA monitoring system (3/3)

The screenshot displays the GILDA monitoring system interface. At the top, there is a navigation bar with links for "Virtual Organization: gilda", "browseable jobs graph", "history jobs graphs", and "switch to advanced mode". Below this, a graph shows the number of jobs in the queues where the gilda VO can run. The graph has a y-axis from 0 to 15 and an x-axis from 18:10 to 19:50. A legend indicates that red bars represent "Run" jobs and yellow bars represent "Wait" jobs. The graph shows a significant increase in "Run" jobs starting around 18:45, reaching a peak of approximately 14 jobs by 19:10. Below the graph, a table provides detailed statistics for the site "ct.infn.it".

Computing Element ID	run_jobs	wait_jobs	power	CPU #4
grid010.ct.infn.it;2119/jobmanager-lcgpbs-short	0	0	16	16
grid010.ct.infn.it;2119/jobmanager-lcgpbs-long	0	0	16	16
grid010.ct.infn.it;2119/jobmanager-lcgpbs-infinite	0	0	16	16
Storage Element ID - Storage Space ID	avail space	used space		
grid009.ct.infn.it - gilda:gilda	1.81 Tb	60.87 Gb		
Site: pd.infn.it	run_jobs	wait_jobs	free slots	total slots
Computing Element ID	power	CPU #4		
grid011.pd.infn.it;2119/jobmanager-lcgpbs-long	0	0	4	4
grid011.pd.infn.it;2119/jobmanager-lcgpbs-infinite	0	0	4	4
grid011.pd.infn.it;2119/jobmanager-lcgpbs-short	0	0	4	4
Storage Element ID - Storage Space ID	avail space	used space		
grid015.pd.infn.it - gilda:gilda	499.27 Gb	32.11 Mb		

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Summary and conclusions

- NA4 Generic Applications is a key activity in the process of getting new scientific and industrial communities interested and committed to use the continental grid infrastructure built by the EGEE Project.
- GENIUS is a well established tool which will be fundamental in the process of interfacing new applications with the EGEE middleware hiding its complex internals to non-experts users from new communities.
- GILDA is a complete suite of grid elements (test-bed, CA, VO, monitoring system, web portal) and applications fully dedicated to dissemination purposes. **This could also represent the ideal grid testbed where to start the porting of new generic applications.**
- GILDA is the dissemination tool which will be used by NA3 during courses and tutorials so the important aspect of induction of the grid paradigm to new communities is also covered.
- It is now important to have the first meeting of the EGAAP board and define the first Generic Applications to be interfaced.