



USER MANUAL
MIGRATING DESKTOP

WP3.1

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1. INTRODUCTION

Migrating Desktop is an advanced user-friendly environment that serves as uniform grid working environment independent on specific grid infrastructure. Java based GUI is designed especially for mobile users and is independent on platform (MS Windows, Linux, Solaris). It is a complex environment that integrates many tools and allows working with many grids transparently and simultaneously. The main functionality concerns interactive grid application support, local and grid file management, security assurance, authorisation of access to resources and applications, and single sign-on technology based on X509 certificates.

1.1. ABBREVIATIONS AND ACRONYMS

API	Application Programming Interface
APS	Application Portal Server
CA	Certificate Authority
CoG	Commodity Grid Toolkit
CS	Console Shadow
GUI-C	Graphic User Interface Container
HEP	High Energy Physics
HTTP	HyperText Transport Protocol
HTTP-S	HTTP Server
HTTPS	HyperText Transfer Protocol Secure
JDL	Job Description Language
JNI	Java Native Interface
JS	Job Shadow
JSP	Java Server Pages
JSS / JSS's	Job Submission Services
JSS-Client	Job Submission Services-Client
JSS-Server	Job Submission Services-Server
L&B	Logging and Bookkeeping
LB	Logging and Bookkeeping
LDAP	Lightweight Directory Access Protocol
LRMS	Local Resource Management System
MD	Migrating Desktop
MPI	Message Passing Interface
PDA	Personal Digital Assistant
RA	Roaming Access
RAS	Roaming Access Server
SA	Scheduling Agent
SM	Session Manager

SOAP	Single Object Access Protocol
SOM	Self Organising Map
SSL	Secure Sockets Layer
SVG	Scalable Vector Graphic
TBD	To Be Defined
VO	Virtual Organisation
WB	Web Browser
WMS	Work Management System
WSDL	Web Services Description Language
XML	Extended Mark-up Language

1.2. REFERENCES AND SOURCE CODE

Installation packages:

<http://gridportal.fzk.de/distribution/crossgrid/autobuilt/i386-rh7.3-gcc3.2.2/wp3/RPMS/>

Source codes:

<http://gridportal.fzk.de/distribution/crossgrid/autobuilt/i386-rh7.3-gcc3.2.2/wp3/SRPMS/>

JavaDoc documentation:

2. PRODUCT USAGE

Please refer to the appropriate documents for in-depth technical description of the product:

Kupczyk, M., Lichwala, R., Meyer, N., Palak, B., Plociennik, M., Wolniewicz, P., Roaming Access and Portals: Software Requirements Specification, EU-CrossGrid Project, http://www.eu-rossgrid.org/Deliverables/M3pdf/SRS_TASK_3-1.pdf

2.1. RUNNING THE PRODUCT

2.1.1. Operating Requirements

The Migrating Desktop requires access to the Roaming Access Server (RAS). RAS is a part of CrossGrid software publicly available under the CROSSGRID license. For detailed installation and maintenance instruction see the RAS Installation Guide [http://www.eu-crossgrid.org/installation_guides/CG3.1-v3.0-PSNC-MigratingDesktop_RASInstallationGuide.doc].

2.1.1.1. Local hardware requirements

Any computing system ready to launch java runtime environment.

Optimal requirements:

Minimum Memory: 256MB RAM

Processor – any (e.g. Intel P4 2GHz or equivalent in performance).

2.1.1.2. Local software requirements

Currently, there are two ways of launching MD: web browser and Java Web Start.

- Java-enabled web browser (for example Netscape Navigator, Internet Explorer etc. with the Java plugin version 1.4.2 or newer). Under web browser use the proper address of the Migrating Desktop web page (e.g.: <http://<RAS-host>/crossgrid>). Be aware of keeping the Java Plugin cache (JAR cache) disabled!

or:

- Java Web Start (JWS 1.4.2 or newer). Run MD from this location: <http://<RAS-host>/crossgrid/JWS/MigratingDesktop.jnlp>

Note!

Please contact RAS administrator for its address, or ask CrossGrid CA issuer for access information.

Note!

It has been affirmed, that running MD from Java Web Start is much faster than using Web Browser launcher. The remarkable of JWS advantage is the caching entire applications on a local workstation.

2.1.1.3. Grid infrastructure requirements

For proper working with grid environment (default: CrossGrid), RAS should invoke services from middleware developed and/or tested within confines of the CrossGrid testbed.

Network bandwidth requirement for MD: min. 2Mbs

2.1.2. Step-by-Step User Setup

The user should do the following simple steps in order to start his work with the Migrating Desktop application:

Currently, there are two ways of launching MD: web browser and Java Web Start.

- Java-enabled web browser (for example Netscape Navigator, Internet Explorer etc. with the Java plugin version 1.4.2 or newer). Under web browser use the proper address of the Migrating Desktop web page (currently: <http://<RAS-host>/crossgrid>). Be aware of keeping the Java Plugin cache (JAR cache) disabled!
- Java Web Start (JWS 1.4.2 or newer). Run MD from this location: <http://<RAS-host>/crossgrid/JWS/MigratingDesktop.jnlp>

Problems (*) encountered during loading MD under SUN JWS 1.4.2:

- If you see "Security Warning" - use START button;
- - If you see next warning similar to "failed to verify certificate" do not use CLOSE button - use window upper right "x" button;

* Remark: JWS has a problem, not MD.

Note!

It has been affirmed, that running MD from Java Web Start is much faster than using Web Browser launcher. The remarkable of JWS advantage is the caching entire applications on a local workstation.

Open the firewalls for 8443 port.

For transferring of files - open the pool of port: 13000-17000, 2811 in both directions between your local workstation and remote SE(s).

Valid credentials. Creating of user's certificate from the local CrossGrid enable machine

```
>globus-cert-request  
and folow the instructions.
```

To sign certificates for users contact your country CA: [Certification Authorities used for CrossGrid Testbed Sites](#). Please ensure the proper CA for your country!

For interactivity: the VNC server contains a small Web server. It uses HTTP connections on ports: listening: 5800 and communication: 5802, 5901, 5801 too.

After that the main page of the Migrating Desktop including the main Java Applet will be loaded and applet will be initialised.

User Login Dialog collect data about localization of user certificates, RAS hostname and its Port (see Fig. 2-1).

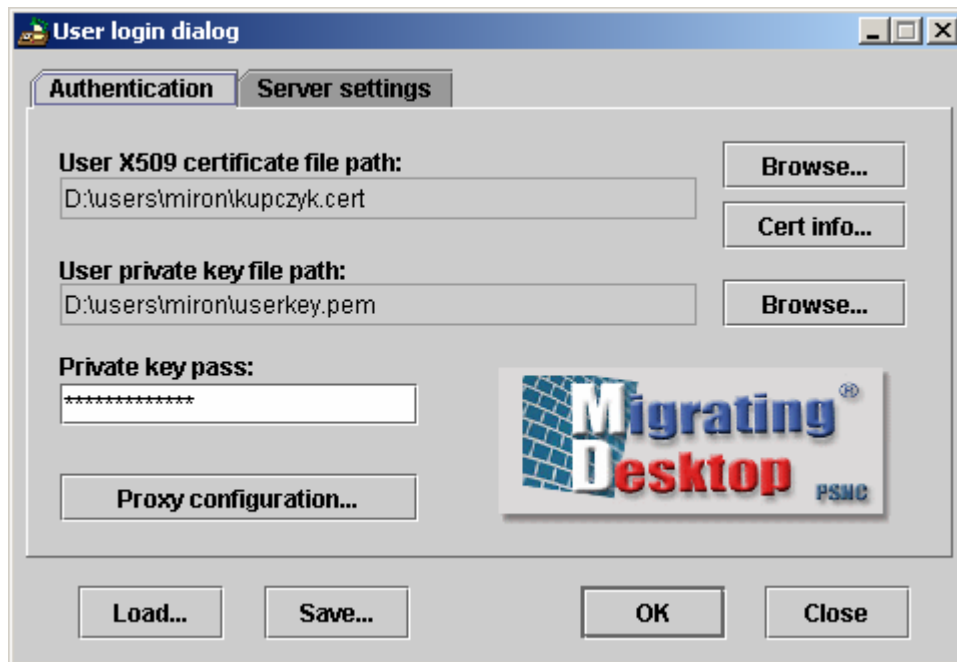


Fig. 2-1 User Login Dialog

After successful authentication the request for granting permissions will occur (always in case of first time logging), see Fig. 2-2. MD is implemented in java and every external applet invoked within MD must be signed and trusted by end-user. In particular external applications, downloaded on-demand must be equipped with valid certificate which is accepted by crossgrid community and user.

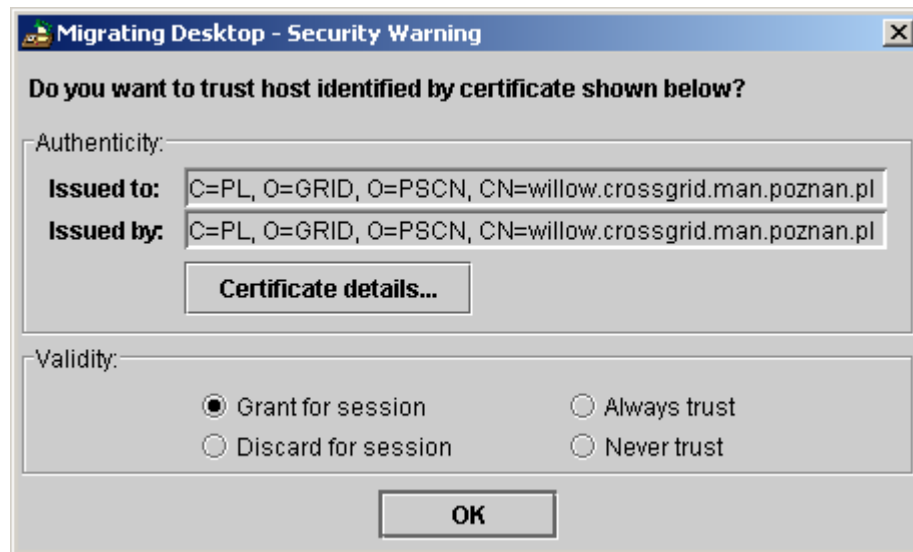


Fig. 2-2 Trust management

Now desktop is started and the process of application initialization has begun. In a few seconds the splash screen of the Migrating Desktop will appear. It has a status bar containing some messages, which will inform the user about the progress of the application initialization.


If the user worked with the Migrating Desktop before, his personal settings of the graphic user interface will be restored. In the other case a default user profile will be created by the application and the main empty Desktop will appear.

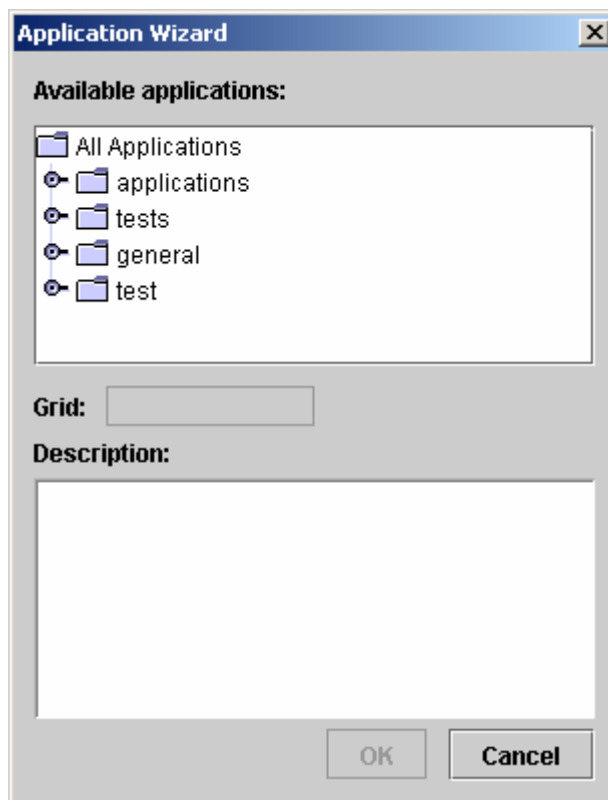
2.2. BASIC OPERATION

The first test.

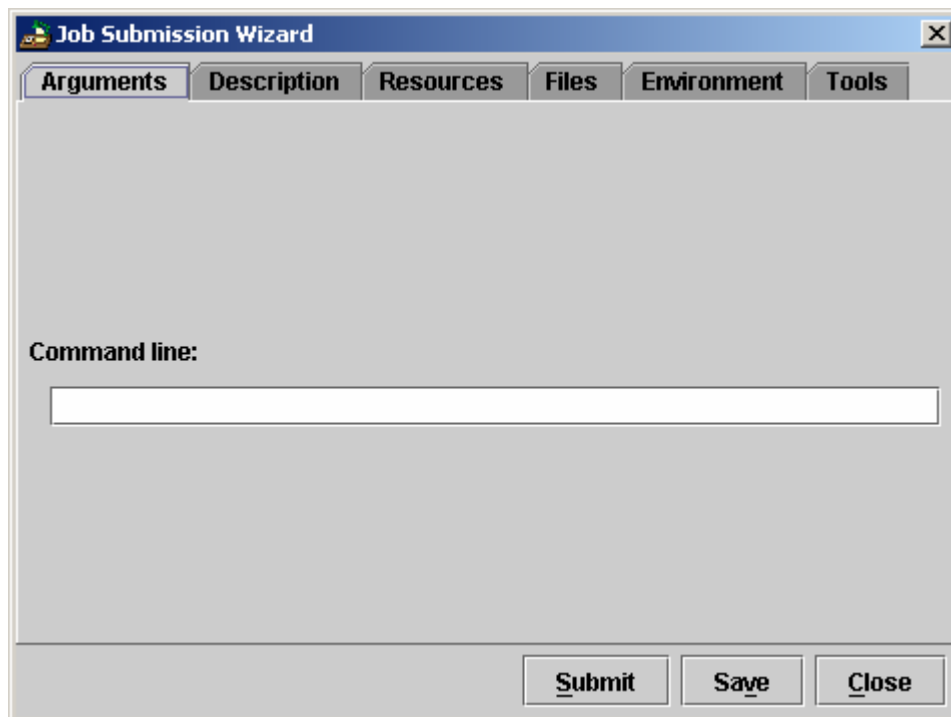
Simple batch job submission (like '/bin/ps' command).

Open Migrating Desktop and invoke a Job Wizard with commandline application.

- Choose , or invoke from the main menu: Tools->Job Wizard. The dialog similar to this one occurs:

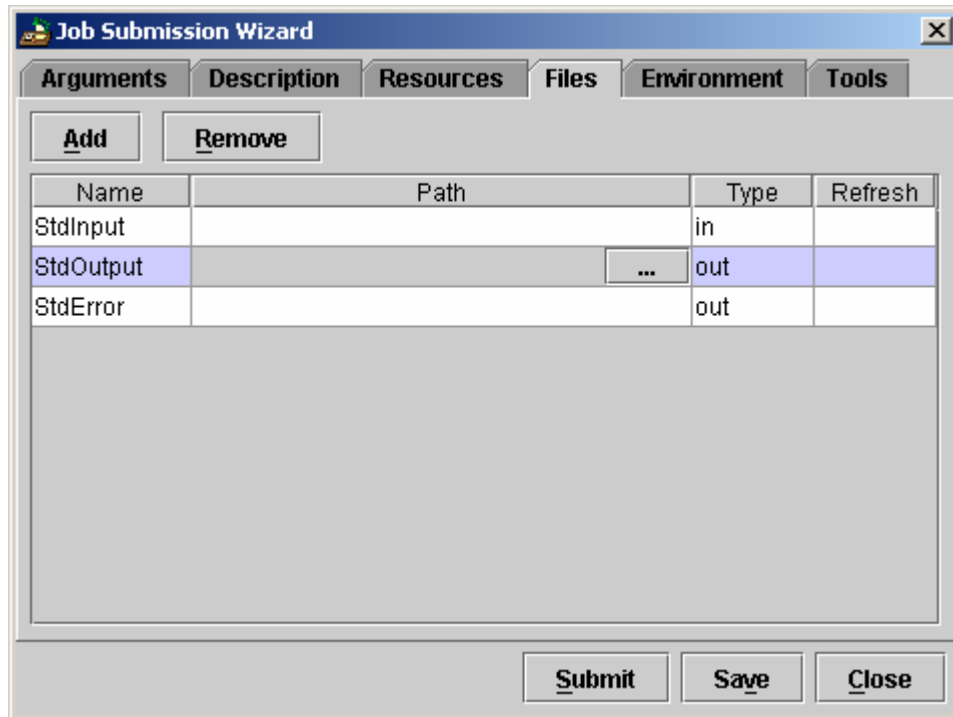


- Choose general->Crossgrid Commandline. The Job Submission Wizard occurs:

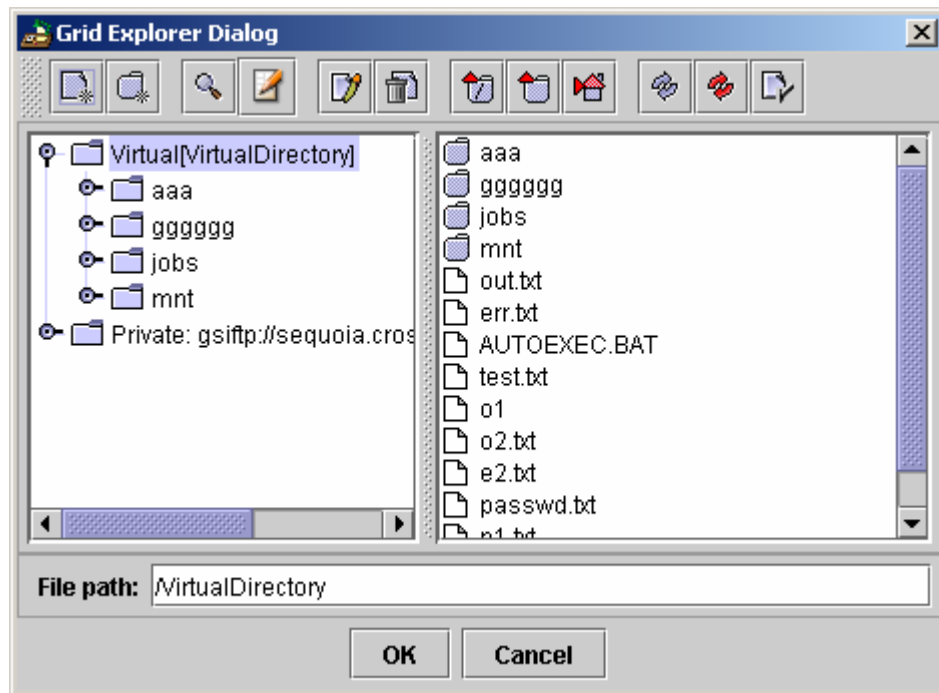


- In "Arguments" specify the unix command, e.g. `ps -ef`

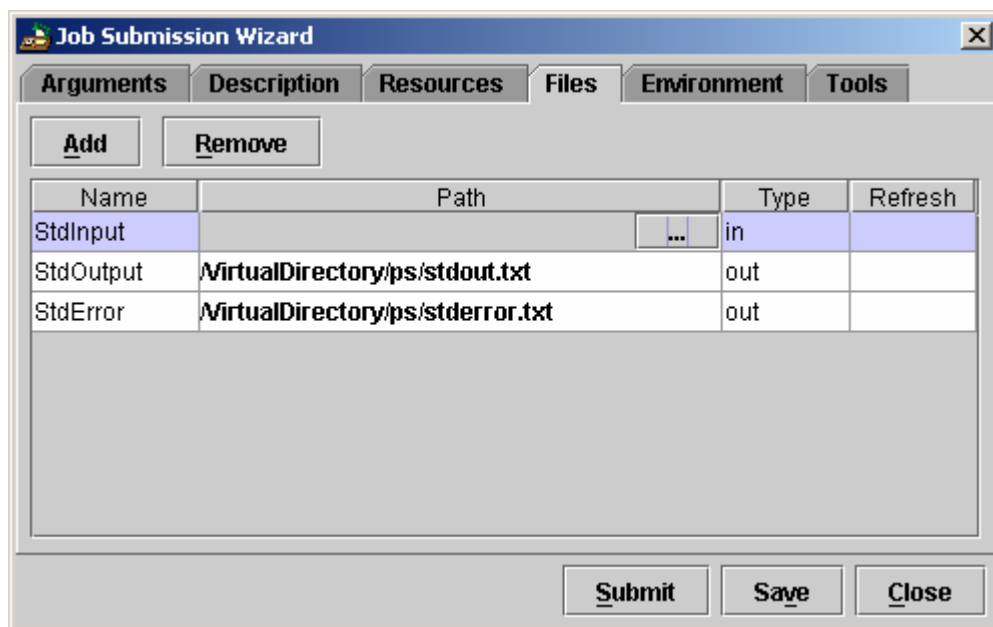
- In “Description” give a description of your job. Leave Executable path empty. This is a kind of unix shell environment.
- For the ps command, you don’t need to fill in the Resources fields. However, ensure that you have got selected ‘normal’ type of job.
- Choose Files for setting up the files:



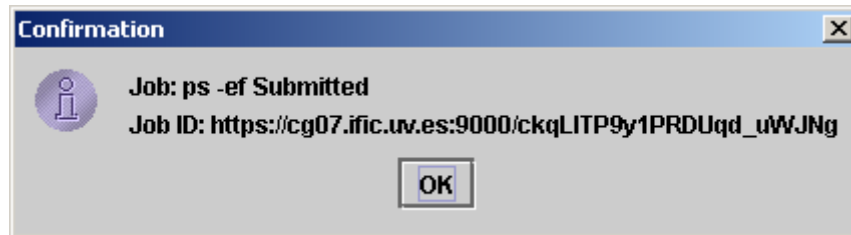
In this dialog box you must specify the logical names for standard unix streams: output and error. If you do not define them, the computational results become lost. Click on the three dots. The Grid Explorer will occur (similar to this one):



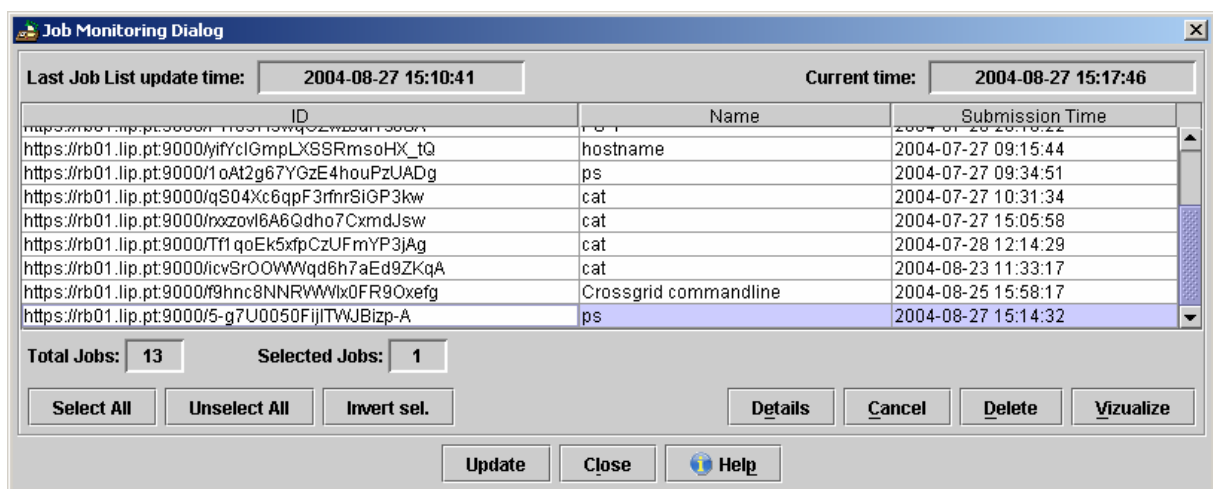
At the beginning, you have no additional filesystem mounted to the file tree. Virtual Directory is your grid home directory. Create a new folder and give a new filenames for stdout and stderr streams in it. These are only logical names stored in a repository. After execution of job, they will suppose to be filled with data. Stdout at least. These files are type “out”, no refresh rate is needed.



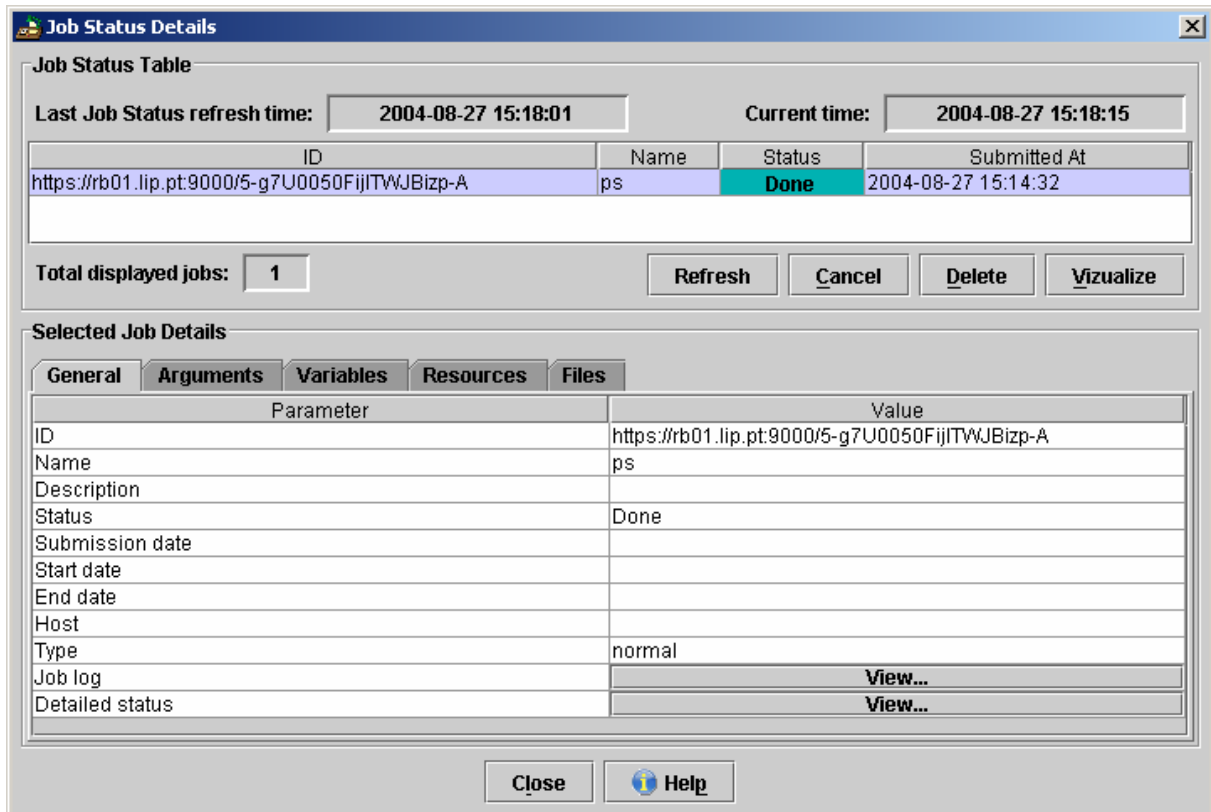
- Leave Environment and Tools as they are, press Save button. Now you have a job icon on the desktop, it allows you to resubmit it with new parameters on demand. Submit button launch the action. If job is successfully submitted, the confirmation similar to that will occur:



- From main menu, choose Tools->Job Monitor, press Refresh all, and observe the status of your job. If you have many job submitted, please refer to the proper Job ID or Name.



- How to obtain a result? Press Details button. You will see a dialog:



Go to Files tab, and choose StdOutput item, then press Visualize button. The proper visualiser will be launched automatically. In this case, text viewer. You can also refer to the Grid Commander, and do some well-known file operation on the output file.

2.3. ADVANCED FEATURES

Submitting and running the Interactive grid application:

For the testing purposes try to run simple calculator in the on-line environment.

Launch: Tools -> Job Wizard -> general -> interactive command line

In Arguments -> Command line write:

```
/usr/bin/bc
```

In Resources -> type -> Job Type choose “interactive” from the listbox. Then enable radio button “MD interactive plug-in”.

Press Submit button.

Launch: Tools -> Job Monitor

Go to Details. If the status of the job is “running” press the Vizualize button. The dumb terminal emulator will occur. Now you can work with (unix) bc calculator.

3. INTERFACE REFERENCE GUIDE

The Migrating Desktop GUI offers a set of functionalities typical for “windows” based applications. It is represented by the main Desktop with its menu and toolbar (see Fig. 3-1). Inside this desktop the user can create new windows and then new icons inside the windows. Icons support simple “cut-copy-paste” and “drag & drop” mechanisms, which are helpful in managing them between the desktop windows.

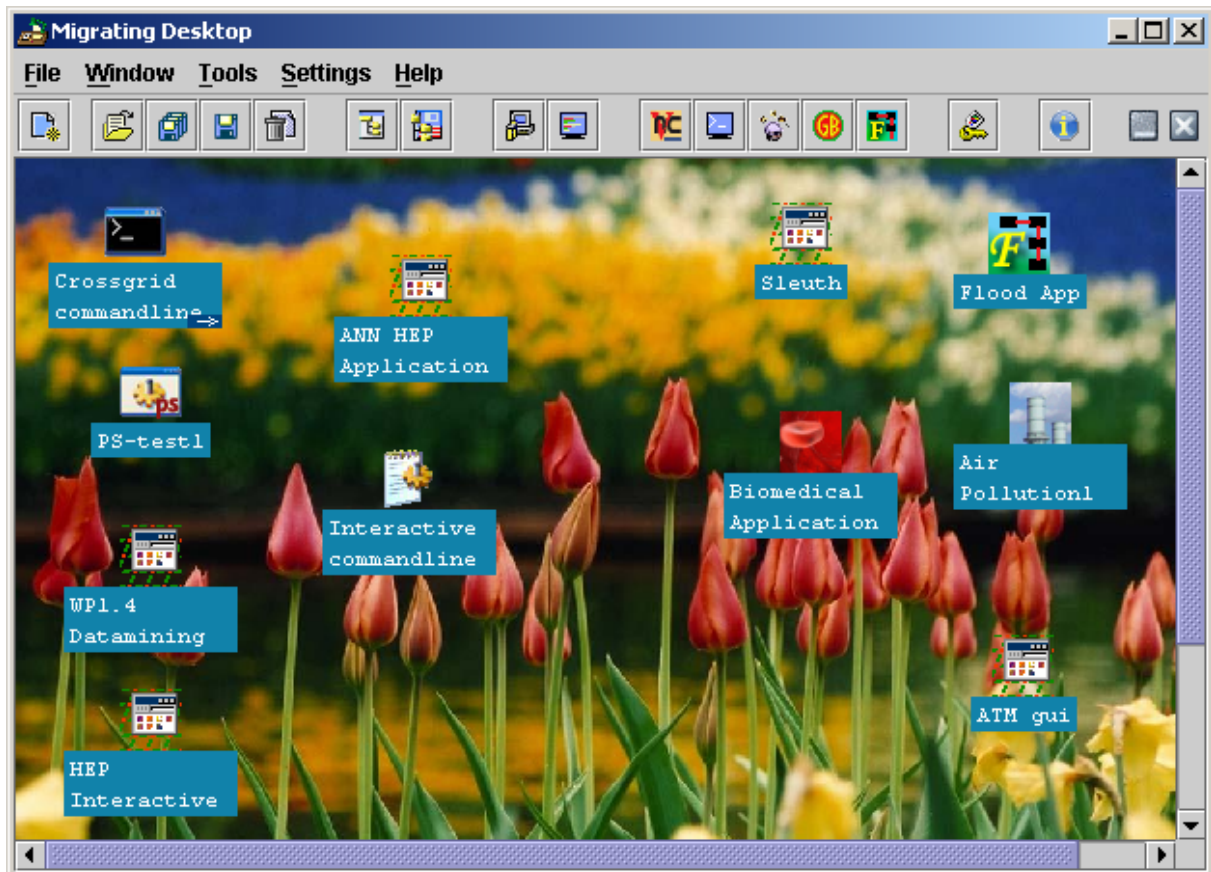


Fig. 3-1 Migrating Desktop GUI

3.1. MAIN DESKTOP

The Grid Desktop is the main workspace for each user working with the Migrating Desktop. Initially it is created as an empty window with its main menu and toolbar. The background of this window contains a logo of the CrossGrid and it cannot be changed.

After the user finishes his first session with the Migrating Desktop, all his GUI settings such as position and state of the windows, position of the icons inside each window etc. will be saved in his profile and will be automatically restored when the user starts the Migrating Desktop once again.

3.1.1. Main Menu

The main menu of the Migrating Desktop allows the user to do the following operations:

- To create a new Grid Window (see Fig. 3-2) – also available from the Desktop popup menu;
- To switch between the opened Grid Windows;
- To exit the Migrating Desktop application;
- To set Storage Element and user home directory;
- To launch grid application or specific grid tool;
- To monitor SSL connections;
- To monitor jar loading.

Menu Tools contains a set of useful procedures for working with Migrating Desktop.

When the user chooses the menu option to create a new window – a new and initially empty Grid Window is created with the default background image.



Fig. 3-2 Desktop Main Menu

3.1.2. Toolbar Buttons

The main window of the Grid Desktop contains a set of toolbar buttons (see Fig. 3-3) that allow the user to have easy access to the main functionality of the Migrating Desktop. The user can call the following functions through this toolbar:

- Creating a new Grid Window;
- Saving current user profile;
- Loading previously saved user profile;
- Manager of stored / hidden profiles;
- Grid explorer;
- Grid commander;
- Job Wizard;
- Job Monitoring

CrossGrid specific tools:

- VNC Viewer;
- SSH Console;
- PPC Viewer;
- GridBench;
- Flood Workflow Manager;

- Security Manager (it manages the credentials owned by MD user);
- Help



Fig. 3-3 Migrating Desktop toolbar

3.1.3. Desktop Windows

The Grid Desktop Window is the basic user workspace during his session with the Grid environment. One Grid Window represents one user profile – mainly containing a set of icons relating with local (stored in the local file system) and remote (stored in the user virtual home directory in the Grid) data files and application. Moreover, that user profile contains all GUI parameters such as the position and size of the window, state of the window, background image, or position of the icons.

The user can work with many Grid Windows simultaneously. He can move the icons between the windows and he can switch between such workspaces. If the user work is focused on the one Grid window, he can maximize it and minimize the other ones to have a better view of the icons in this workspace.

Each Grid Desktop has its own popup menu (see Fig. 3-4) that allows the user to:

- Arrange the icons in this Grid Window;
- Create a new icon of the Job Wizard for CrossGrid application;
- Create a new icon as a kind of shortcut of the remote file;
- Create a new icon as a kind of shortcut of the local file;
- Create a new icon as a kind of shortcut to the local application;
- Paste an icon previously stored into memory;
- Remove the selected icon from the Grid Window;
- Rename the selected icon;
- Open the Grid Window Properties dialog.

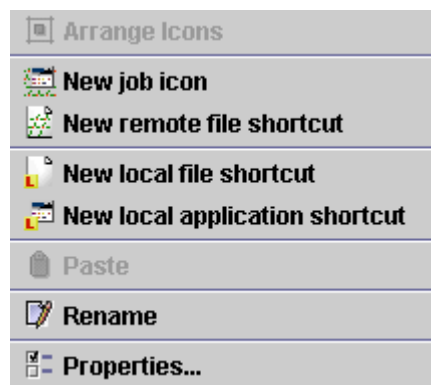


Fig. 3-4 Grid Window popup menu

3.1.4. Creating Grid Windows

The user can create a new Grid Window (workspace) by choosing “New Grid Window” option from the main menu of the Desktop or by pressing an adequate button of the toolbar. A new window is created with the initial position and size and with a default background image. Such Window could be treated as a separate environment for other grid infrastructure at a given time, however we do not

encompass the usage of multi-grid work to only one window. There is a possibility of working with many resource infrastructures using icon paradigm with associated action.

3.1.5. Window Icons

The popup menu of the Grid window allows the user to create four types of icons:

- Job Wizard icon (option from pup-up menu “New Job Wizard”);
- Remote file shortcut icon (option “New remote file shortcut”);
- Local file shortcut icon (option “New local file shortcut”);
- Local application icon (option “New local application shortcut”);

The user can use the Job Wizard to start a specialized grid application by preparing and submitting the job parameters. This is a short-cut for application parameters and its description. The Job Wizard tool is described in section 3.3.

Remote and local file shortcut icons can be used by the user to have easy access to the data files (documents, input files for applications etc.) from his desktop. The user can distinguish the local file icon from the remote one by the letter “L” which appears at the right bottom corner of the icon image (see Fig. 3-5).



Fig. 3-5 Icons for the remote and local files

The local application shortcut icon can be used to make a link to some application that is installed on the local operating system where the user works. Such icons are dependent on the configuration of the operating system, but can be very useful as they are an element of the integration of the local environment and the Grid environment available from the Migrating Desktop. Double click on such icon will launch the application installed locally.

3.1.6. Window Properties Dialog

The user can change the Grid window properties by choosing the “Properties” option from the popup menu. An adequate properties dialog with two tabs will appear.

The “Description” tab (see Fig. 3-6) allows the user to change the window’s name (displaying as a window title) and description, which can be useful in recognizing a proper one during hidden windows management (see section 3.1.7.)

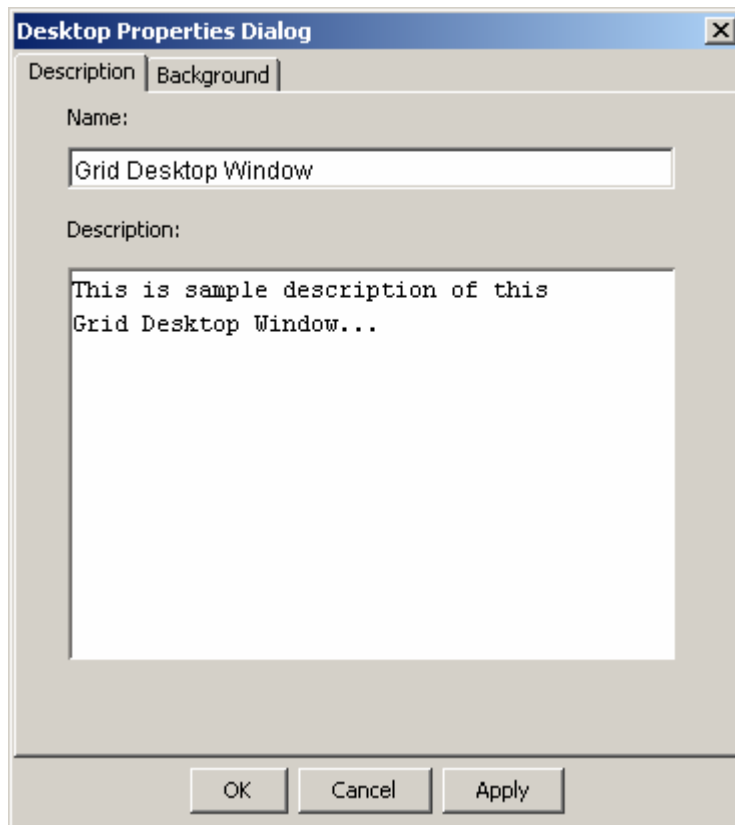


Fig. 3-6 Description tab of the properties dialog

The “Background” tab (see Fig. 3-7) allows the user to change the window background image, which can be chosen from a list of available pictures.

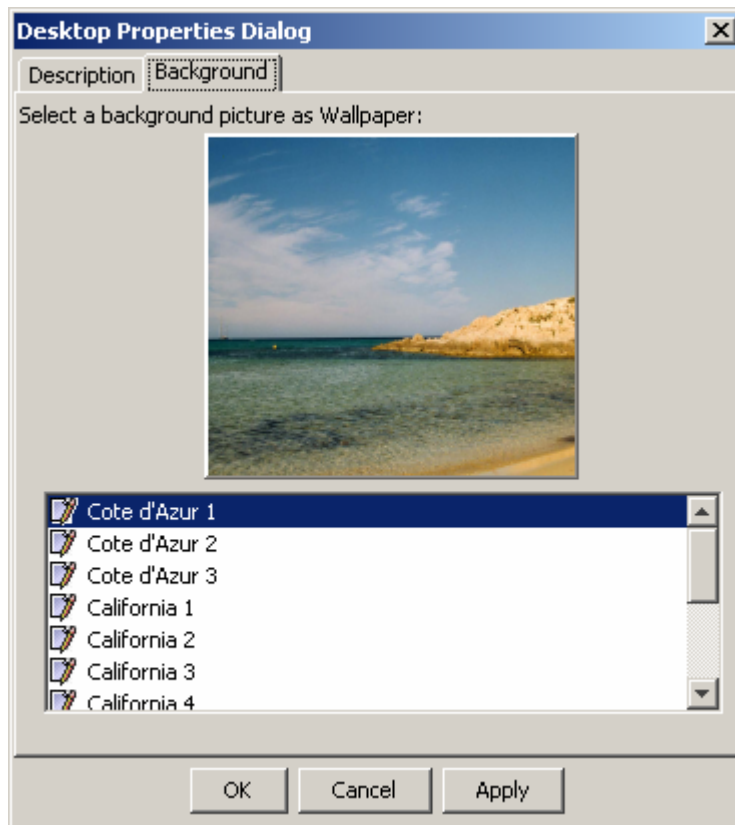


Fig. 3-7 Background tab of the properties dialog

3.1.7. Managing Hidden Windows

When the user tries to close the given Grid window, the system allows him to permanently remove its profile or to make this window hidden. The second choice will allow the user to restore the window profile in the future by choosing “Managing hidden windows” option of the Migrating Desktop. The hidden window profiles are not removed from the user profiles database but such windows are not visible on the desktop.

The “Hidden windows manager” (see Fig. 3-8) allows the user to load (restore) or permanently remove the window profile selected from the list of the available hidden windows. Window description helps to choose the proper one to load or remove.

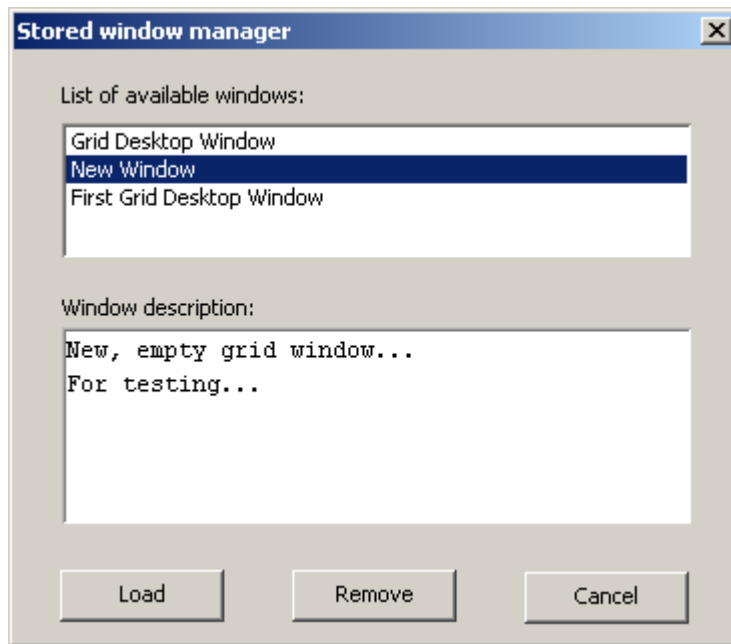


Fig. 3-8 Hidden windows manager

3.2. FILE TRANSFER

Each user of the CrossGrid environment has his own virtual Home Directory, where he can store files during his work with grid resources and applications. The Migrating Desktop supports the User Virtual Directory Browser that is similar to the local one, GridFTP connections, FTP connections and Private Storage access.

The user can do the following operations relating to files:

- Saving (uploading) a local file into his file space (Virtual Directory, Private Storage, remote FTP, GridFTP)
- Getting (downloading) a remote file from the remote storage services and storing it on the local file system;
- Creating links to the local files;
- Creating links to the remote files stored in the User Virtual Directory;

MD delivers two kinds of directory browsers: Grid Explorer and Grid Commander (see Fig. 3-9), which is more enhanced version of such tool. It is similar in looking and functionality to well-known directory managers (like UNIX: mc, MS Windows: Total Commander, Far, etc.)

Choosing icon “start Grid Commander” from main window toolbar, the user-friendly tool for file management will start.

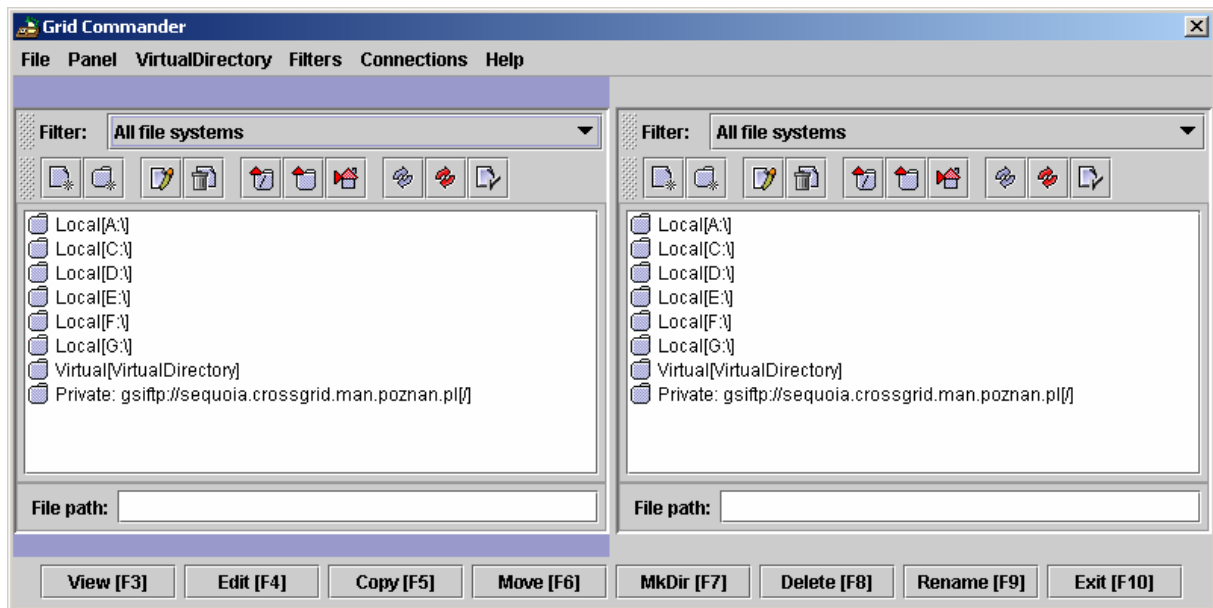


Fig. 3-9 Grid Commander main window

Grid Commander is used for transferring files between local and remote localisation, remote-remote as well. Remote – grid localisation is a physical Private Storage and Storage Element, FTP, GridFTP, and user Virtual Directory. Logically, the set of files and directories is represented as a hierarchical tree of directories containing files (filenames visible). Forth processing of transfer, hidden mechanism of filename-localisation is performed, but the user is unconscious of this operation. Basic operations (View, Edit, Copy, Move, MakeDir, Delete, Rename) are available for local and remote resources both.

Note!

The user can create files with the same name in one directory. The system does not check the correctness of the filenames.

Replication of files. This feature is available from Grid Commander tool. Choose a file in the Virtual Directory you want to have replicated. Right mouse-click invokes pop-up menu. Choose “Actions” and then Replicate file and Add alias if you want. As the internal mechanism of creating replicas make a decision, the file will be copied in a new localization, and information about the new replica can be observed in Extended File Properties (see Fig. 3-10 and Fig. 3-11).

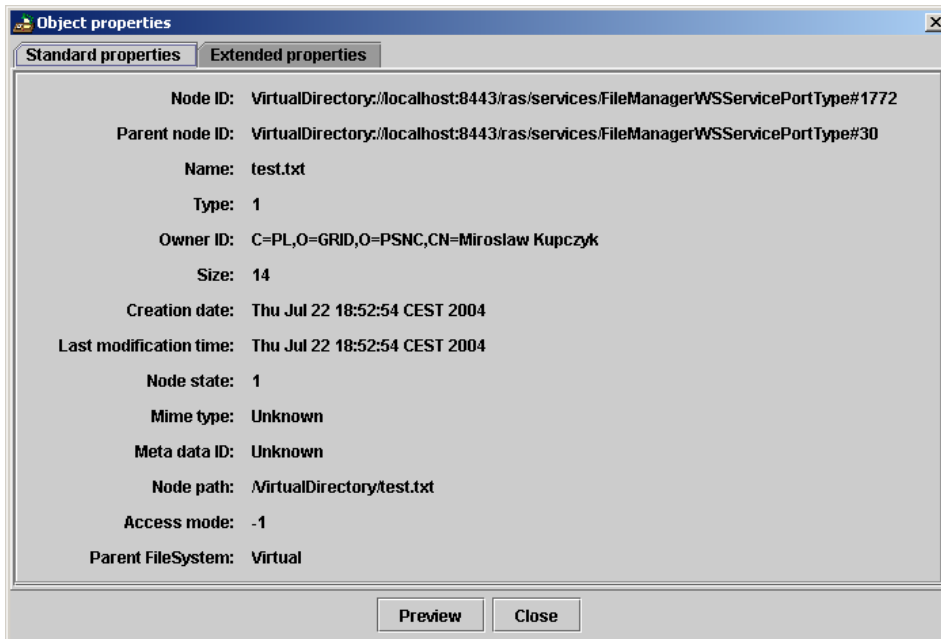


Fig. 3-10 File Properties

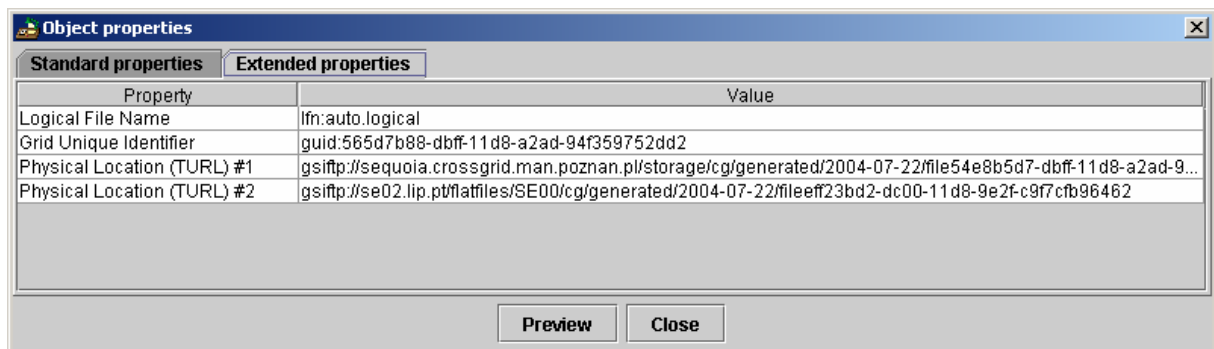


Fig. 3-11 Extended File Properties - example of replicated file information

Adding new Private Storage (Fig. 3-12) is made by option from GC main menu (Connections -> Private Storage Manager). The user should know the address of storage, the name can be chosen from the list box.

Default Storage Element settings

Preferred Storage Element parameters

URL: gsiftp://sequoia.crossgrid.man.poznan.pl:2811/storage/cg

Host: sequoia.crossgrid.man.poznan.pl

Port: 2811

Path: /storage/cg

Keep alive period [min]: 1

Transfer type: BINARY

Connection mode:

- passive
- active

Connection type:

- direct (requires open ports)
- tunneled (slow)

Data channel authentication: NONE

Data channel protection: CLEAR

Apply Cancel

Fig. 3-12 Private Storage management

3.3. JOB SUBMISSION

The main functionality of the Migrating Desktop is a possibility of submitting jobs into the Grid, which are executed on computing elements in the CrossGrid environment.

The user starts the Application Wizard (see Fig. 3-13) by choosing icon (Job Wizard), from pop-up menu (New Job Icon), or pressing Alt-w. This dialog allows the user to choose the application for execution – the application description helps to find a proper one.

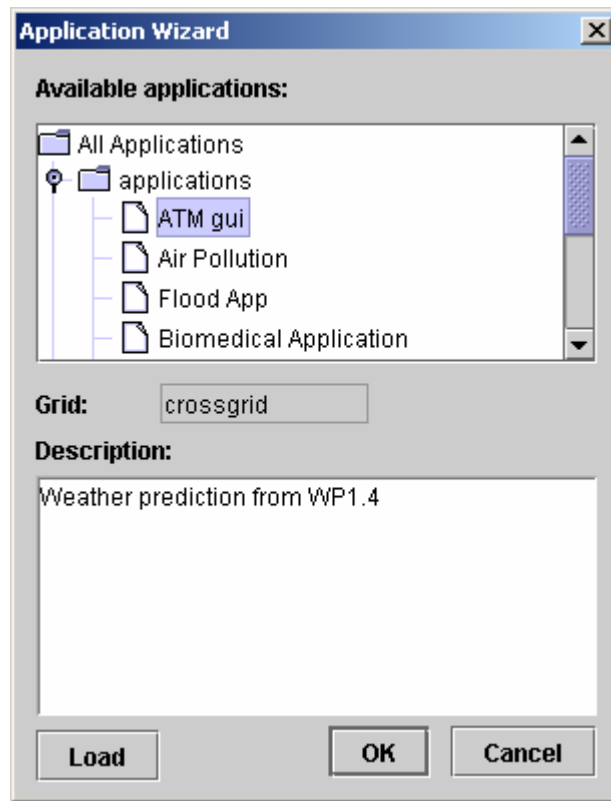


Fig. 3-13 Application Wizard

After the user chooses the Grid application, a Job Submission dialog appears. It should be used to define all the application parameters, which are required before the Grid application starts. This dialog contains the following tabs:

- Arguments
- Description
- Resources
- Files
- Environment
- Tools

The “Argument” tab of the Job Submission dialog (see Fig. 3-14) allows the user to define the arguments and parameters, which are directly sent to the application. This tab (its content and look) is unique for the application and can be different for different Grid applications. In most cases, application developers deliver the Argument tab. MD offers extra functionality for interpreting parameters and layout description. Every developer of application can prepare the layout of arguments and automatically deliver it to MD Job Wizard.

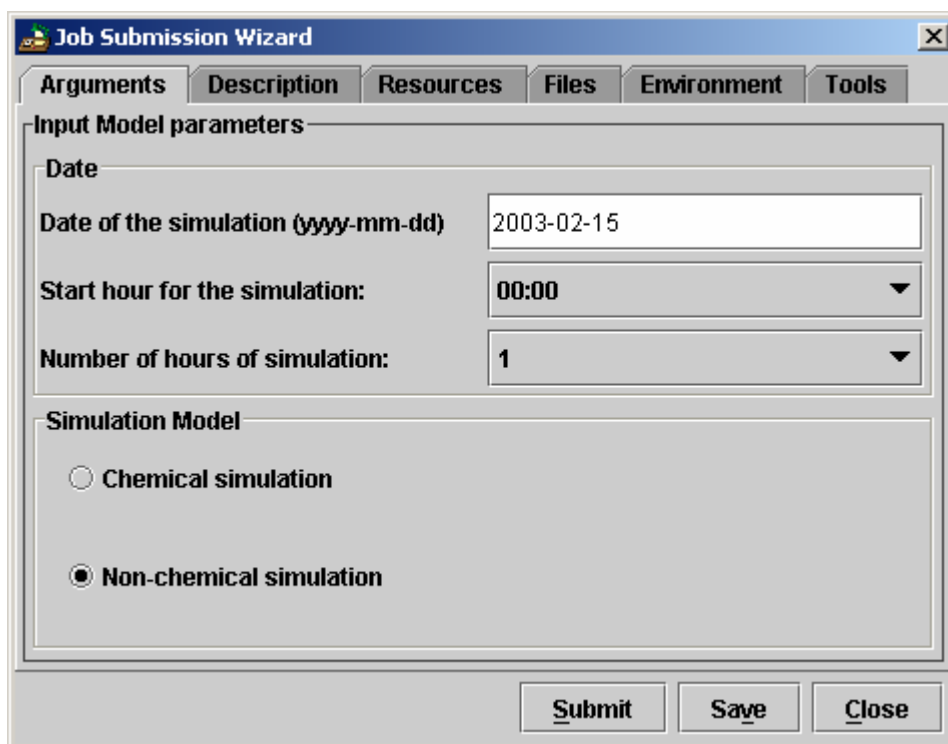


Fig. 3-14 Job Submission dialog - example of arguments tab

The “Description” tab of the Job Submission dialog (see Fig. 3-15) allows the user to define the name and description of the job that is sent to the application. Those parameters will help the user to find the status of the job execution in the Job Monitoring tool (see section 3.4).

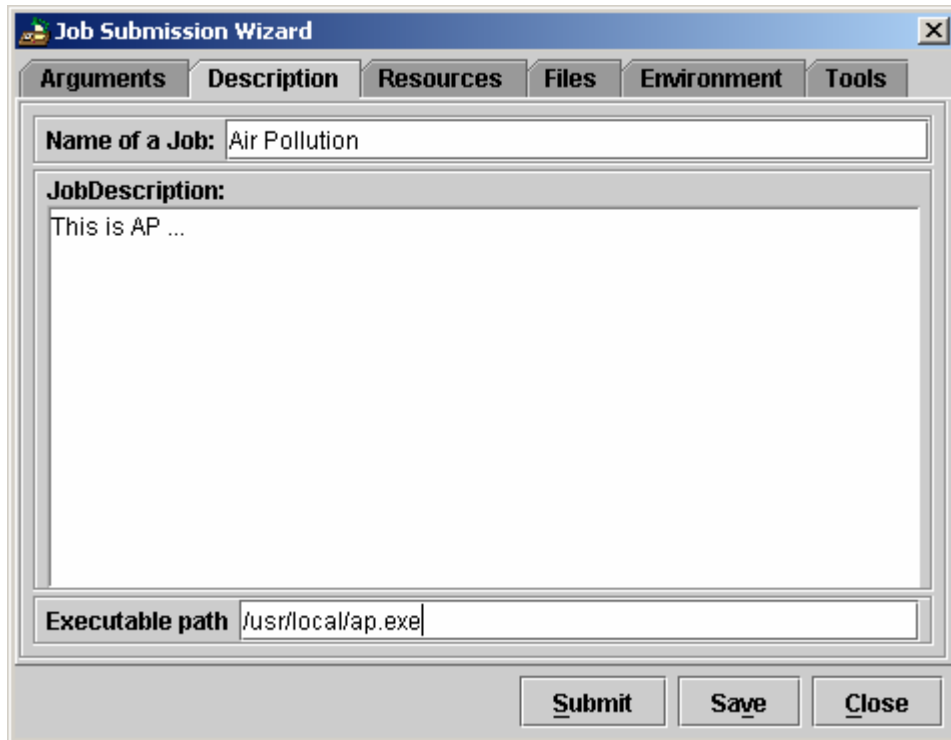


Fig. 3-15 Job Submission Dialog - description tab

The “Resources” tab of the Job Submission dialog (see Fig. 3-16) allows the user to define the limits on the resources, which are used during the execution of the job. The resource limitations are related with such things like CPU, system memory, operating system etc.

The “Resources” dialog contains sub-tabs. Tab “Job Type” choosing is required to force the running the job in parallel (MPI) or interactively (see Fig. 3-16).

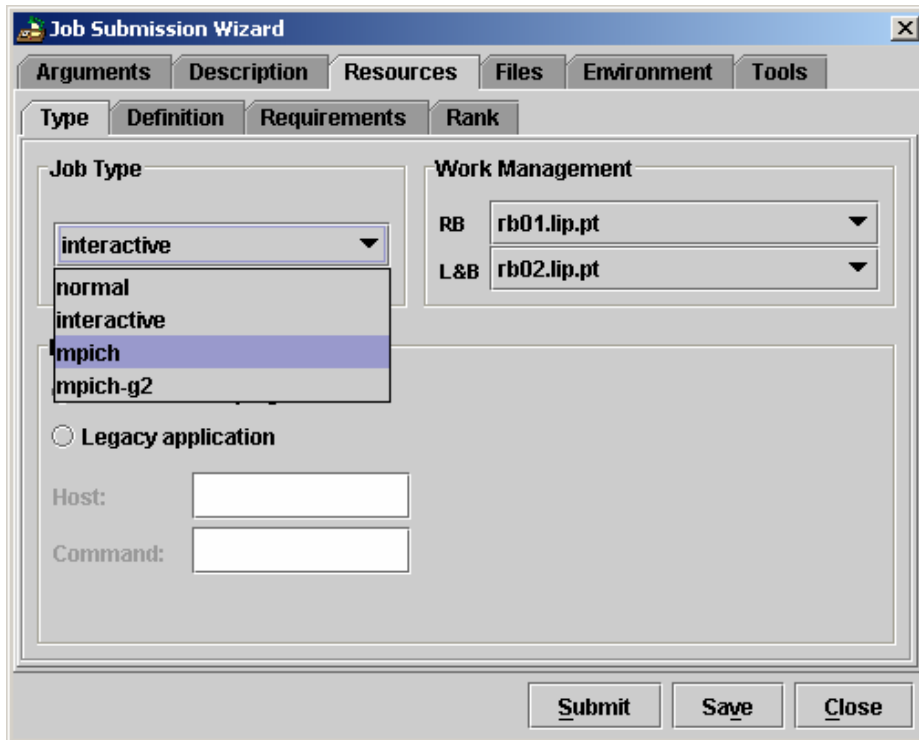


Fig. 3-16 Job Submission Dialog - resources tab

- Type 'normal' means: one processor application.
- Type 'interactive' distinguish between interactive MD plug-in and Legacy application. In the second case, the user perform a command on a remote machine via ssh protocol (hostname and command name is required).
- Type 'mpich' means the mpi environment not spanned between clusters.
- Type 'mpich-g2' means the mpi environment spanned across clusters using grid mpich extension.

The meaning of fields of the "Definition" sub-tab (see Fig. 3-17).

Hostname: -any- or chosen from the list of available execution hosts.

Application executable: path to the executable binaries (not obligatory in case of plugin application).

Application Software Runtime Environment: environment specific requirement (like: LCG1, LCG2, Atlas, etc,... in the future – the list-box will be available).

Max number of submission retries – the number of trials of job placement by the resource broker.

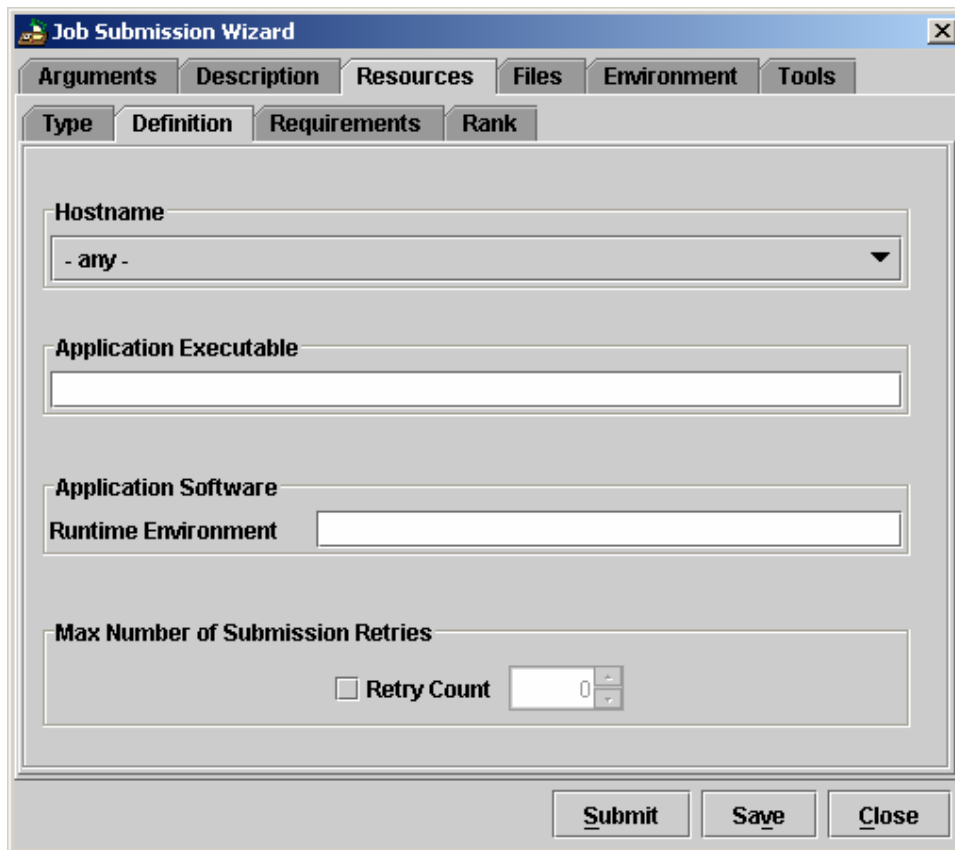


Fig. 3-17 Definition sub-tab.

Tab Resources->Requirements contains the following elements:

Remote Machine Type: Architecture, OS type, OS Version (use list-box).

Connectivity: requirements regarding open ports on firewalls, e.g. mpi job requires every-to-every communication, so in this case check both cases (Inbound, Outbound).

Remote Site Parameters: Min number of idle processors, max available processor time, min main memory available, min pending time in the queue.

Benchmark: requirements regarding performance of hardware;

Remote Site Job Manager: Local Resource Management System (e.g. PBS, LSF ...)

Storage Requirements: Min disk space available.

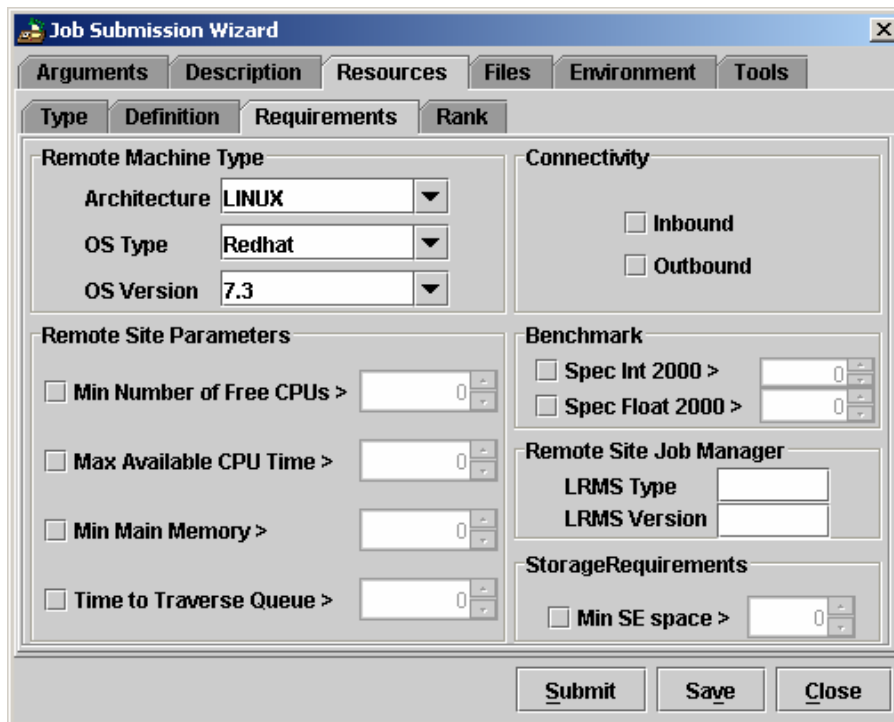


Fig. 3-18 Job Submission Wizard - Resource Requirements

Resources-> Rank is a new feature in the Job Submission Wizard. The user can choose the importance of criterion of job scheduling (Enable/Disable).

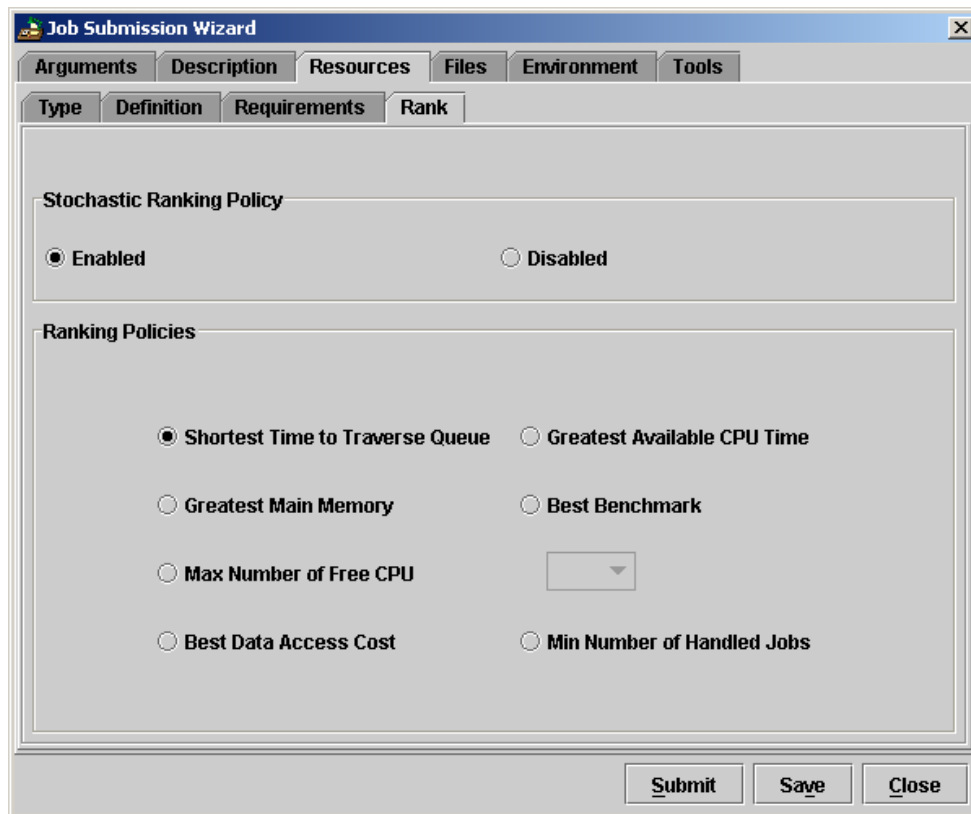


Fig. 3-19 Job Submission Wizard - Resources Rank

The “Files” tab of the Job Submission dialog (see Fig. 3-20) allows the user to define a set of files on which the Grid application operates. There can be a lot of such files and buttons “Add” and “Remove” help to manage them. There are three possible types of files: “in”, “out” and “in-out” files. This type defines if a given file is the input file, output file or combined. If you want to run your own application e.g. a.out, fill additional Name field with “a.out” and give appropriate path to that executable. The “Path” column of the table contains the “browse” button, which calls the Virtual Directory Browser to specify the location of the file in the Grid. If you want to have up-to-date version of current e.g. Output, you may specify number of second as a time period for refreshing the data on SE from WN. It is strictly connected with visualization tool, which shows the current progress of execution – semi-interactivity.

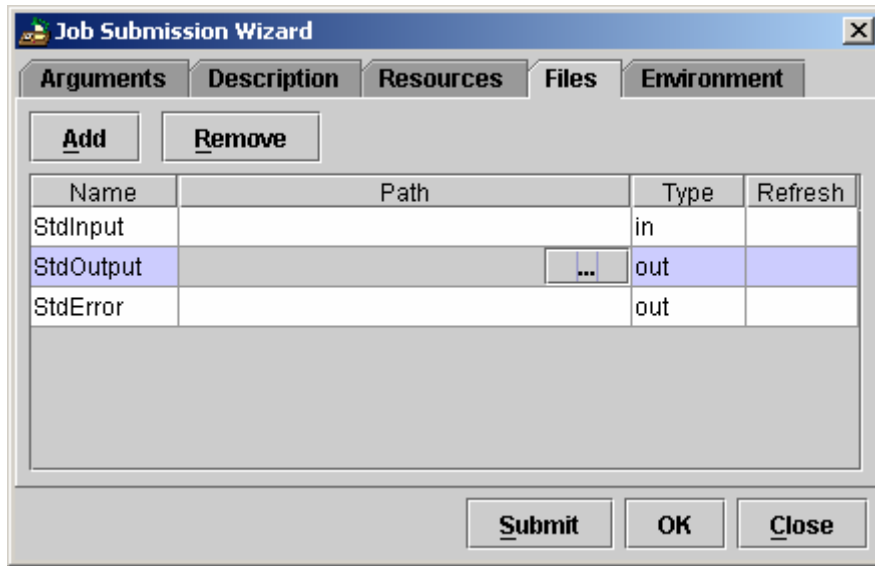


Fig. 3-20 Job Submission Dialog - files tab

To choose file helps you the Virtual Directory Browser (see Fig. 3-21). It is simplified version of Grid Commander, It consists of two panels: directory tree and content of desired directory. Before submitting any application, you have to create an empty file using this utility.

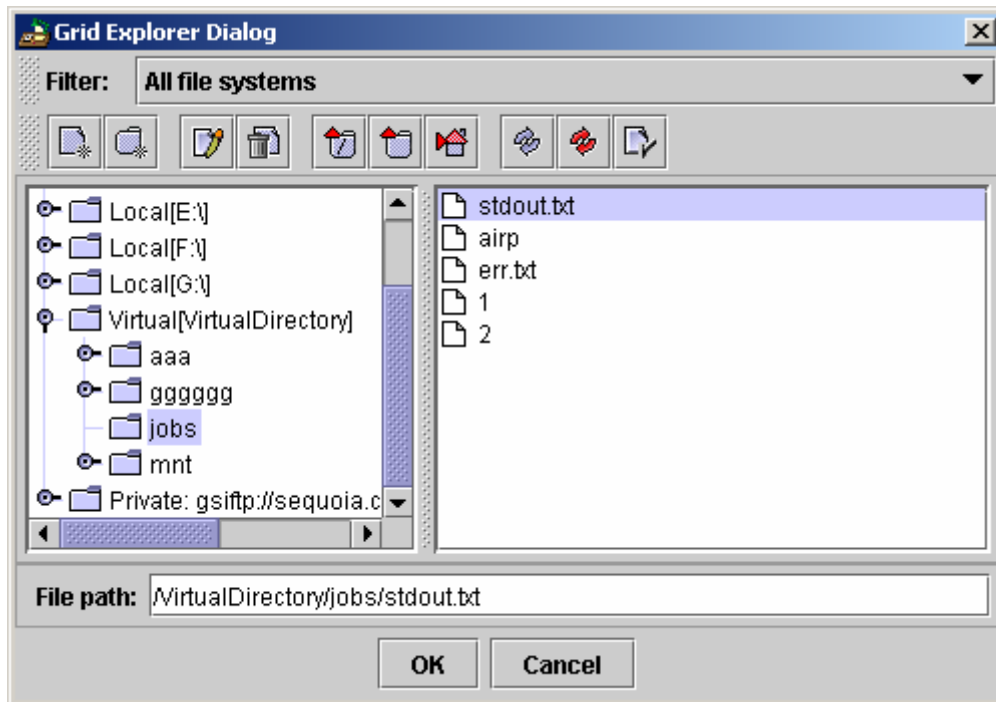


Fig. 3-21 Virtual Directory Browser

The “Environment” tab of the Job Submission dialog (see Fig. 3-22) allows the user to define a set of environment variable names and their values (strings), which are required for execution of the Grid application. There could be a lot of such variables and buttons “Add” and “Remove” help to manage them.

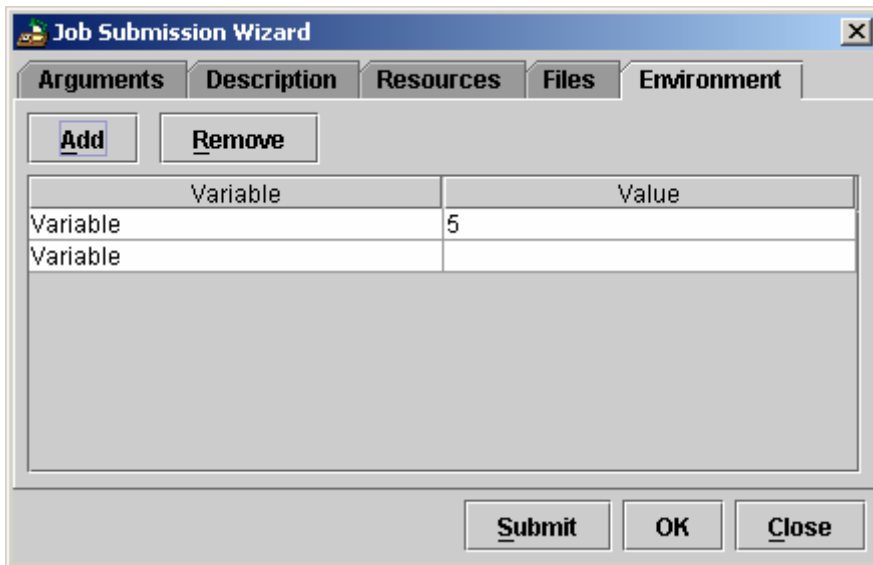
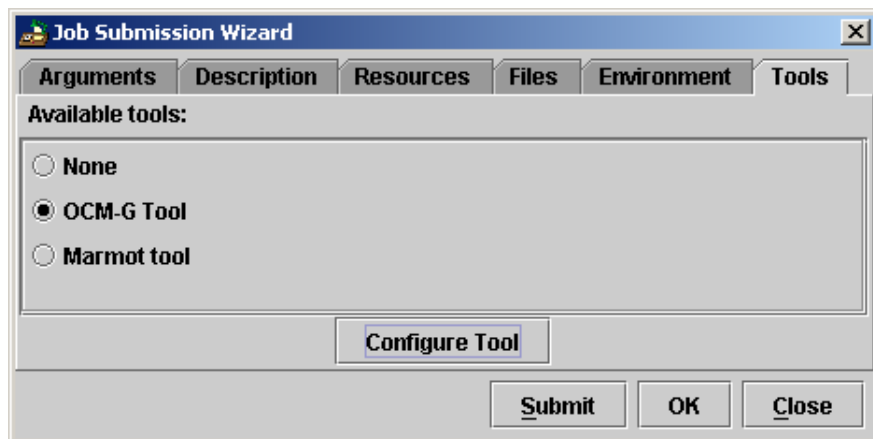


Fig. 3-22 Job Submission Dialog - environment tab



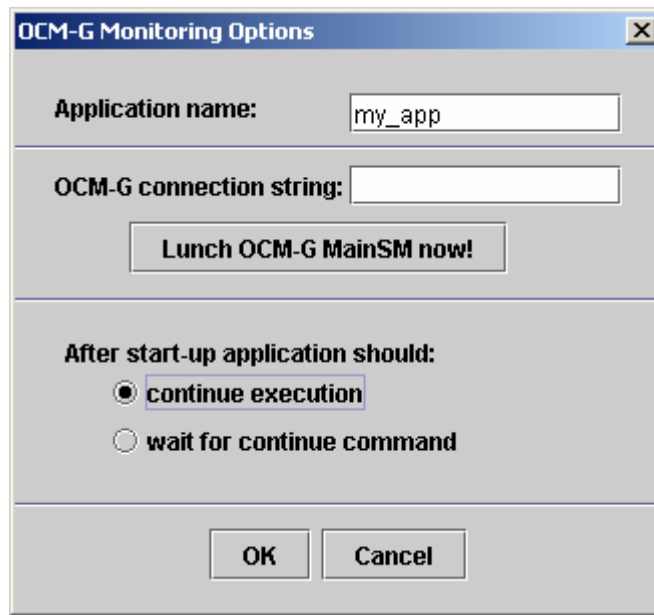


Fig. 3-23 Job Submission Dialog – Tools tab and OCMG configurator

The last tab “Tools” (Fig. 3-23) invokes a CrossGrid tool which could be associated with a running application launched using this Job Wizard. For details regarding usage of tool, please refer to the appropriate tool manual delivered by CrossGrid WP2 team.

After the user defines all job parameters, they submit them and all job information are sent to the job submission service. The execution of the job is started and the user can trace its status in the Job Monitoring tool (see next section).

3.4. JOB MONITORING

The Job Monitoring dialog (see Fig. 3-24) is a useful tool for tracing the status, viewing details, logs and parameters of the previously submitted jobs. This dialog contains all the information about the submitted job (its full description and status embedded in the jobs table) and provides the following simple functionality:

- Select All, Unselect All, Invert Selection – aggregating of jobs.
- Details – many interesting info (see next);
- Cancel – cancels the selected jobs (stops executing it but does not remove it);
- Delete – removes the selected jobs (stops and removes them from the computing element of the Grid);
- Visualize – launches visualization tool for particular application, may be delivered by application developers;
- Update – refresh the status of jobs belonging to the user;
- Close – close the Job Monitoring dialog;
- Help;

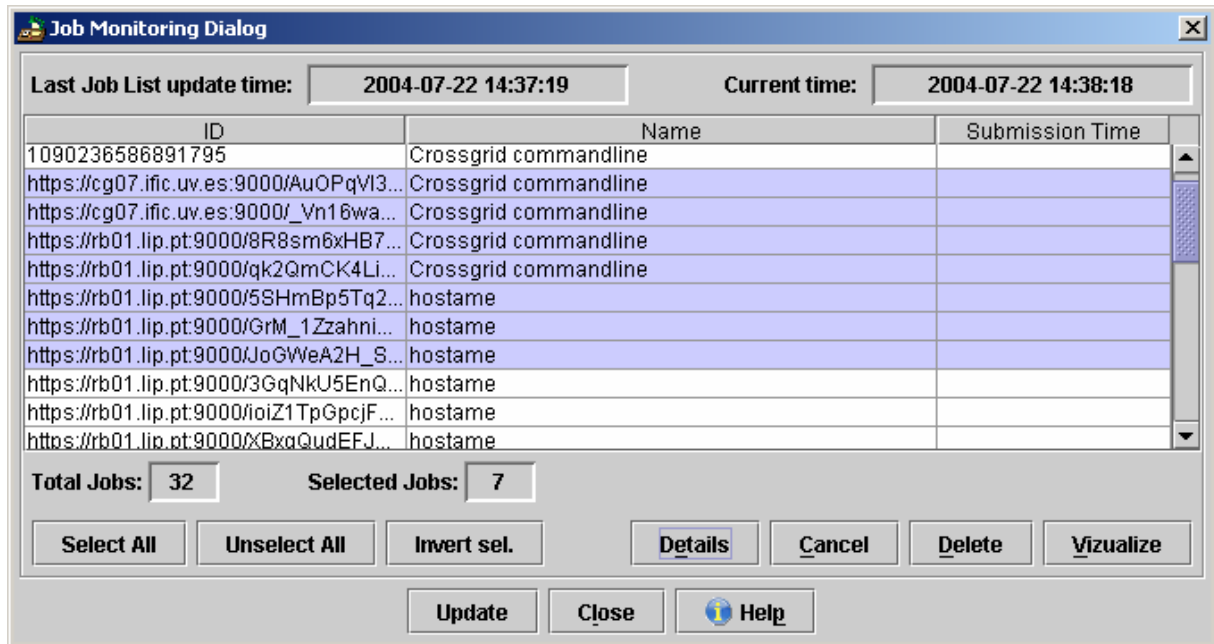


Fig. 3-24 Job Monitoring Dialog

Job Details dialog (see Fig. 3-25) is invoked from the Job Monitoring tool. It presents the parameters, description, and visualization of job output if it exists and supports the process of visualization. In general, it contains parameters of job, which were defined during the submission procedure. Additionally, the Job Log and Extended status log is also available. Logs contain data about all job phases, its status on internal processing of job placement by CrossGrid infrastructure.

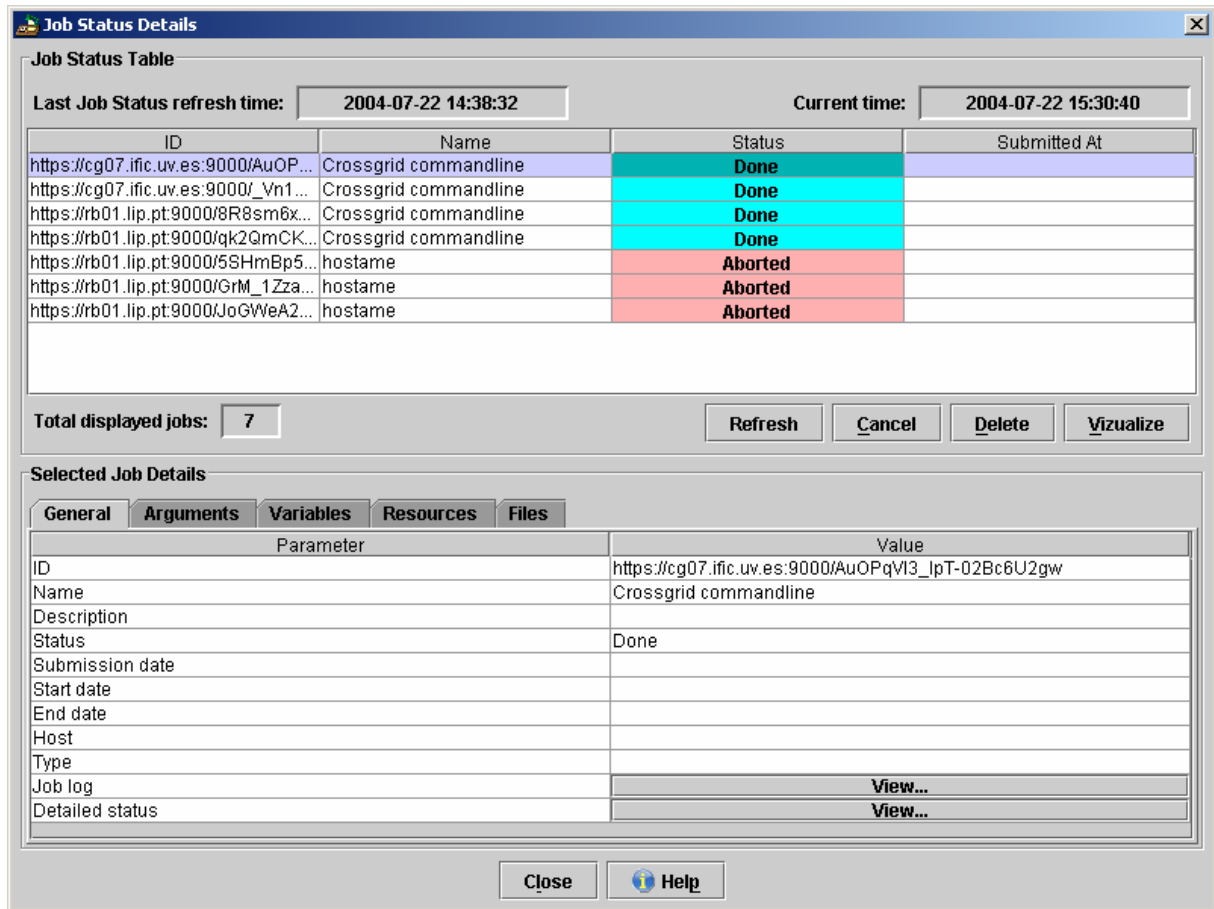


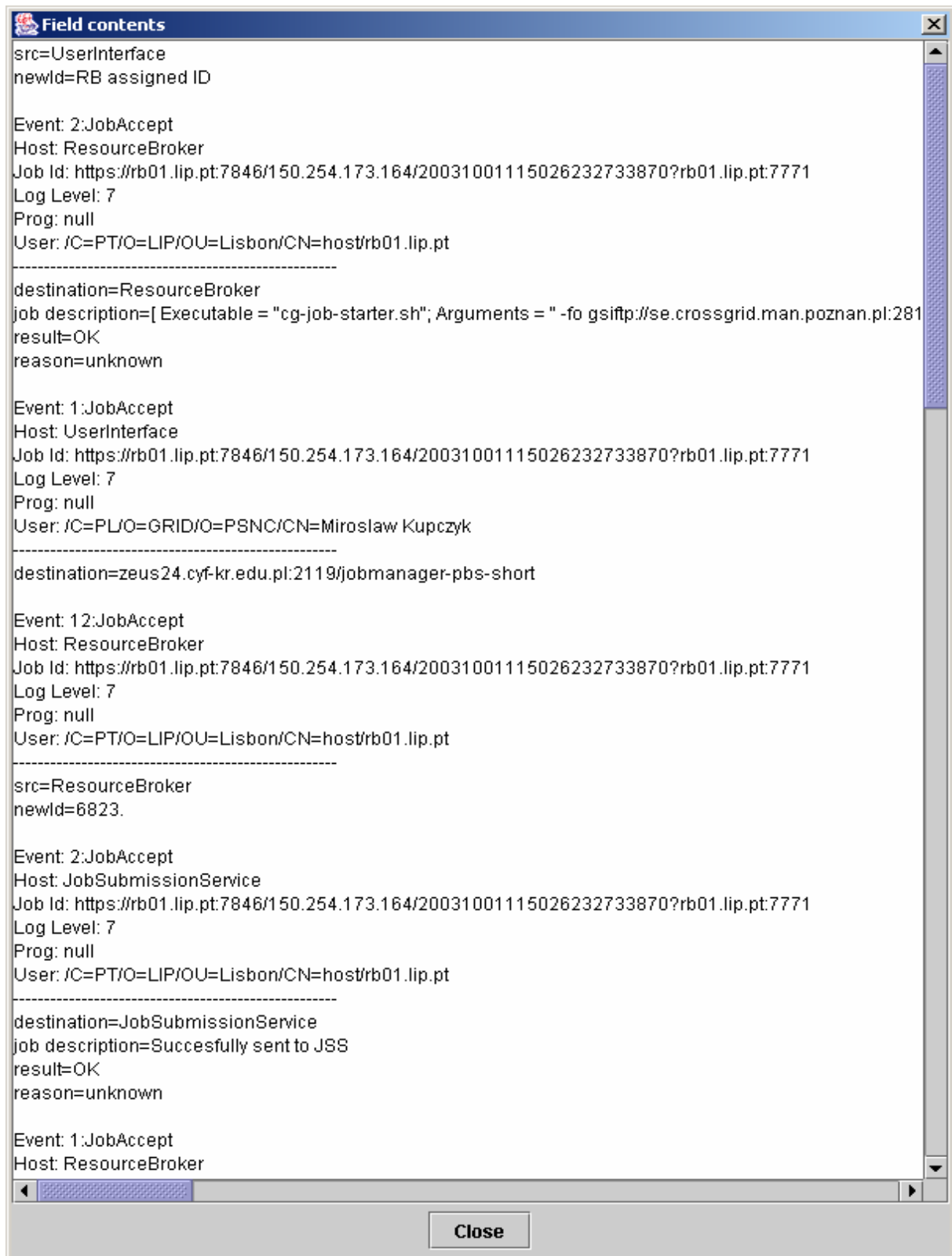
Fig. 3-25 Job Monitoring – Details dialog

The list of job states:

UNKNOWN
SUBMITTED
WAITING
READY
SCHEDULED
RUNNING
DONE
ABORTED
CANCELLED
FAILED
UNSET
NOTSUBMITTED

State “DONE” means that a job finished with success.

The excerpt of log of successfully scheduled and executed job (RB states) is presented on Fig. 3-26.

**Fig. 3-26 Excerpt of job log**

Excerpt of Logging&Bookkeeping log of job successfully scheduled and executed – status of job, many interesting information about its execution (see Fig. 3-27)

Name	Value
Status	Done
StatusCode	null
Reason	Job terminated successfully
DoneCode	null
ExitCode	null
LastUpdateTime	1091009917.446408 s
ExpectedUpdate	null
Location	none
Node	zeus24.cyf-kr.edu.pl
ExpectedFrom	
Destination	zeus24.cyf-kr.edu.pl:2119/jobmanager-pbs-long
Owner	/C=PL/O=GRID/O=PSNC/CN=Mirosław Kupczyk
GlobusId	
JobId	https://rb01.lip.pt:9000/Tf1qoEk5xfpCzUFmYP3jAg
CondorId	1613
LocalId	
CPUtime	null
JDL	[requirements = other.GlueCEStateStatus == "Production"; edg_jobid = "https://rb01.lip.pt:9... ..
CondorJDL	+stream_error = False+edg_jobid = "https://rb01.lip.pt:9000/Tf1qoEk5xfpCzUFmYP3jAg"Arg... ..
RSL	(queue=long)(jobtype=single)
Cancelling	null
CancelReason	
AcI	
Seed	uLU0BArrdV98O41PLThJ5Q
ChildrenNum	null
ChildrenState	null
JobType	null
MatchedJdl	[Arguments = [JobAd = [stream_error = false; edg_jobid = "https://rb01.lip.pt:9000/Tf1qoEk... ..
NetworkServer	rb01.lip.pt:7772
Resubmitted	null
SubJobFailed	null

Close

Fig. 3-27 Detailed status of job.

4. TROUBLESHOOTING Q&A

We would like to emphasize that MD plays an important role in the accessing the particular resources (application). Sometimes the launching of application is not possible due to many possible causes: network, application miss configuration, etc. Please check any encountered problem whenever it occurs to make a proper distinction between MD and non-MD problems.

Q: Where to submit any bugs encountered during working with MD?

A: Please report any encountered bugs to the bugzilla list:
<http://savannah.fzk.de/bugs/?func=additem&group=cg-wp3-1>

Q: Upon submission of a job, the scheduler returns an error stating that no suitable computing element could be found for execution.

A: Your job may require resources which are currently not available in the production testbed. Please revise your .jdl file to match the resources currently being offered (you may want to check <http://someaddress.net> for a list of currently available computing elements, along with their status).

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