



**RUNNING
GRID COMMANDLINE APPLICATIONS
USING
MIGRATING DESKTOP**

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Abstract: This document describes the procedure of running grid command line application using MD plug-in using.



Document Log

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Introduction

The Migrating Desktop is an advanced user-friendly environment that serves as a uniform grid working environment independent of any specific grid infrastructure. Java based GUI is designed especially for mobile users and is independent of any platform (MS Windows, Linux, Solaris). It is a complex environment that integrates many tools and allows working with many grids transparently and simultaneously.

This short document shows how user can using Migrating Desktop prepare and submit any application that can be run on the grid environment using gLite UI command line.

1. NLP grid application

Application input files:

- *main.sh* – application executable (script listed below);
- *input.txt* – NLP application input parameters;
- *swipl.tgz* –;
- *nlp.tgz* –
- *style-box.css*–

```
NLP script:
#!/bin/sh -x

export LANG=en_US.UTF-8

tar -Pxf `pwd`/swipl.tgz
tar -Pxf `pwd`/nlp.tgz

/usr/bin/time -v /tmp/swipl/lib/pl-*/bin/i686-linux/pl -tty -s 'grid-run.pl' -t
'halt(1)'

# Clean up after ourselves.
rm -rf /tmp/swipl
```

Application output files:

- *stdout* – application standard output;
- *stderr* – application standard error;
- *output.html* – redirected application output;
- *style-box.css* – other output file;

The JDL file describing the application is listed below:

```
NLP JDL:
Executable = "/bin/sh";
Arguments = "main.sh";
StdOutput = "stdout";
StdError = "stderr";
InputSandbox = {"main.sh", "input.txt", "swipl.tgz", "nlp.tgz", "style-box.css"};
OutputSandbox = {"stdout", "stderr", "output.html", "style-box.css"};
```



2. Logging to the Migrating Desktop

Currently, there are two ways of launching MD: a web browser and Java Web Start. However, due to the performance reasons, it is suggested to run Migrating Desktop using Sun Java Web Start mechanisms.

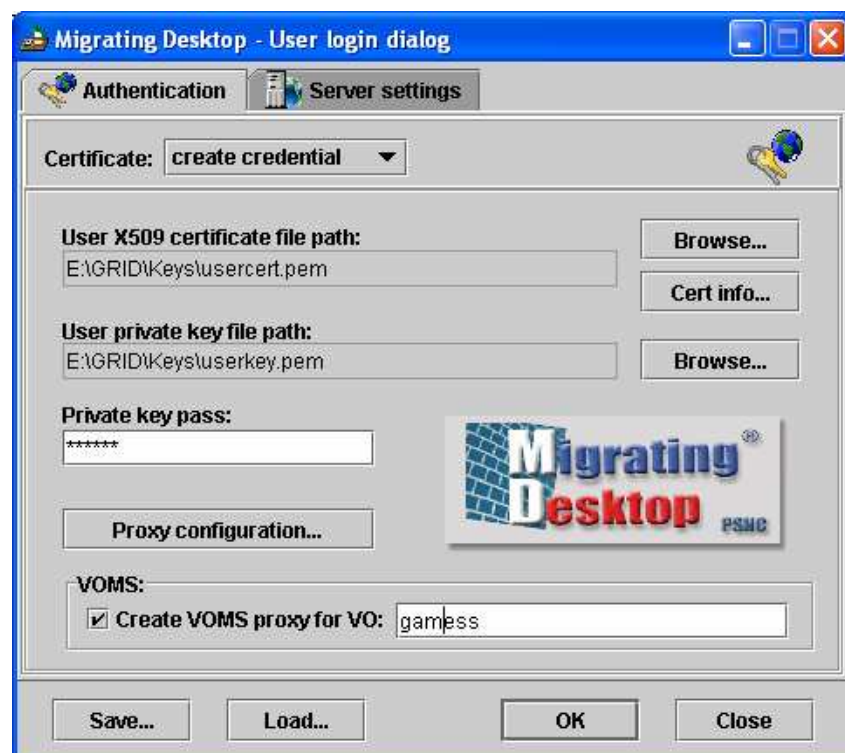
The user should do the following steps in order to start his work with the Migrating Desktop application:

- a) Run MD by typing in any browser: *http://<RAS-host>/md/JWS/MigratingDesktop.jnlp*
(e.g. *http://cedrus.man.poznan.pl/md/JWS/MigratingDesktop.jnlp*)



If you see this warning message: "Failed to verify certificate" **do not use the CLOSE** button - use the window upper right "x" button !

- b) The User Login Dialog that collects data about the localization of user certificates, and location of RAS server will be shown.



- c) Choose localization of user certificate
- d) Choose localization of user key
- e) Specify password to private key
- f) Select option VOMS proxy
- g) Write name of Virtual Organisation



While running NLP application specify VO: *"balticgrid"*

h) Choose server settings



- i) Specify host address, for example: `cedrus.man.poznan.pl`
- j) Specify port : default is 8443

It is possible to save the settings, so next time all these settings will be chosen as default. Remember that saving the password is always insecure, so before saving leave the password field empty.

Now the desktop is starting. 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 has already worked with the Migrating Desktop before, his/her 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.

3. Preparing job files

The job input and output files have to be located on any GridFTP server or in user Virtual Directory. Virtual Directory is a abstract, user-friendly representation of grid data, based mainly on LFC mechanisms. Each user has his/her own virtual directory which contains links to the files stored somewhere in the grid, grouped within logical subdirectories.

3.1 Configuring Virtual Directory

At first, the user has to choose one of Storage Elements, that will be used for physically storing files located in Virtual Directory:

- a) Choose "Default SE settings" from MD menu bar.
- b) Select one of the SEs available in user VO (e.g. `grid2.mif.vu.it`)



- c) Configure parameters of the connection to the selected SE. The suggested option for “Connection mode” is “*passive*”, and for “Connection type” is “*tunneled*”. Setting this option means that data transfer between user workstation and Virtual Directory will be tunneled via RAS, so there should be no problems with firewalls.

Default Storage Element settings

Preferred Storage Element parameters

URL: gsiftp://kriit.eenet.ee:2811/store/SE//balticgrid

Host: gsiftp://kriit.eenet.ee:2811/store/SE//balticgrid

Port: gsiftp://storage.mt.ut.ee:2811/store/SE//balticgrid

Path: gsiftp://atomas.itpa.it:2811/vol2/storage//balticgrid

gsiftp://puduris.latnet.lv:2811/sumthin/SE//balticgrid

gsiftp://scientific.ibt.it:2811/mnt/grid-data/balticgrid

gsiftp://fwe01.ifj.edu.pl:2811/home/flatfiles/SE00//balticgrid

gsiftp://grid2.mif.vu.lt:2811/storage//balticgrid

gsiftp://jupiter.hep.kbfi.ee:2811/zeus/storage//pnfs/hep.kbfi.ee/balticg

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

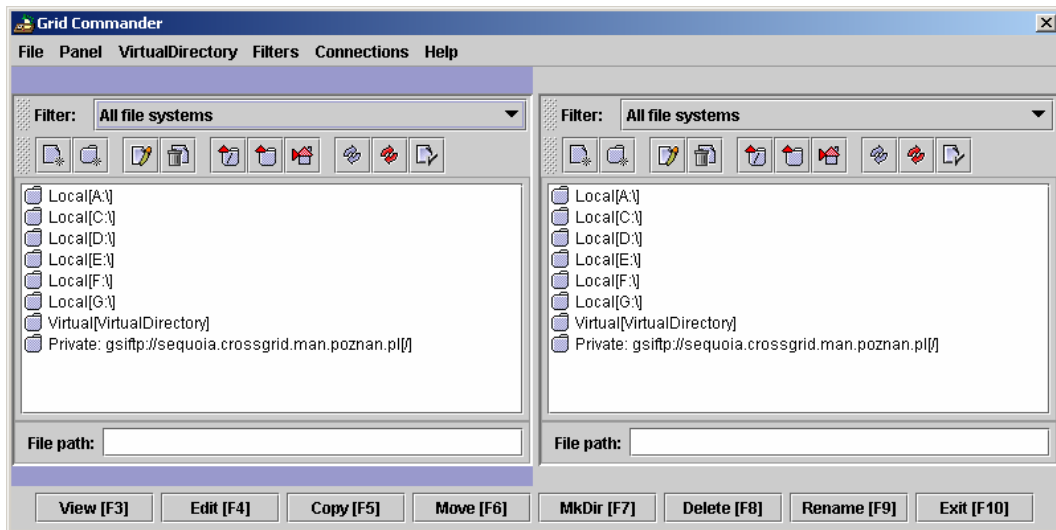
3.2 Copying input files

If application input files are stored on local user workstation, they have to be copied to the Virtual Directory using Grid Commander - a two-panel application similar to the Midnight or Total Commander tools.

- Open Grid Commander from main MD menu (Tools → Grid Commander) or from toolbar.
- explore *Virtual Directory* filesystem
- Create new directory (just to keep application files in one place - this step is optional)
- Select application input file on the opposite panel. Copy this file to Virtual Directory.
- Repeat previous step for all application input files;



NLP input files are: “*main.sh*”, “*input.txt*”, “*swipl.tgz*”, “*nlp.tgz*”, “*style-box.css*”. All these files should be copied.

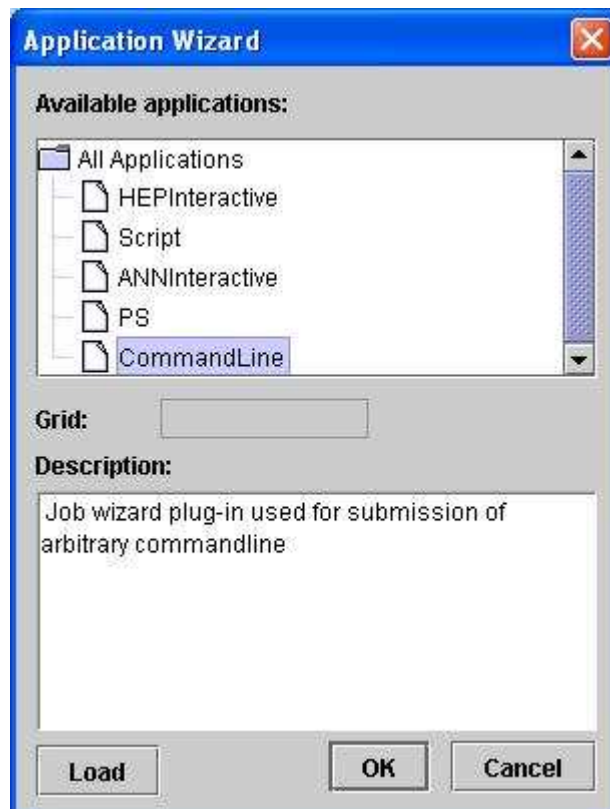


4. Running an application

4.1 Choosing application

Migrating Desktop plug-in used for submitting grid applications using gLite UI command-line can be selected from Application Chooser.

- a) Open “Application Wizard” from toolbar



- b) Choose applications, “CommandLine”



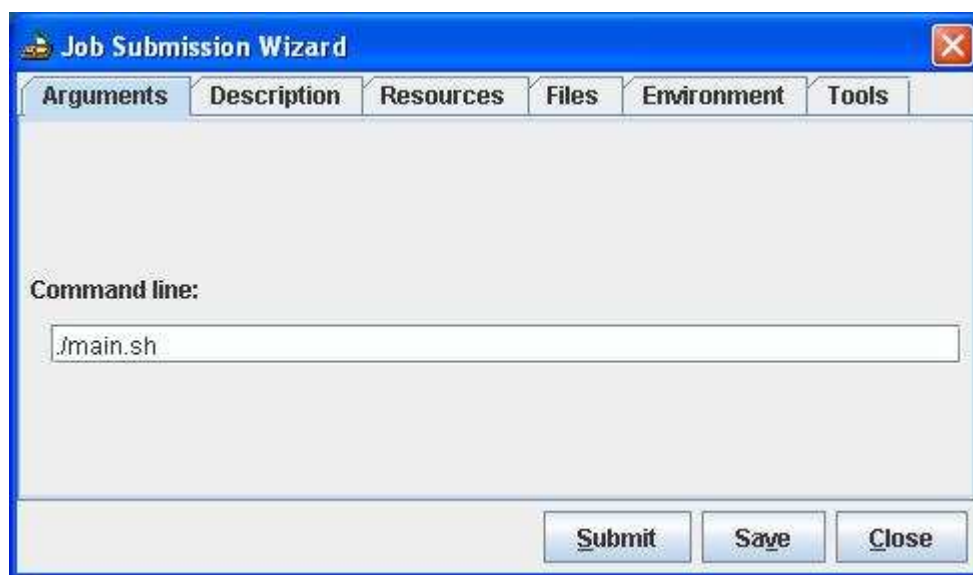
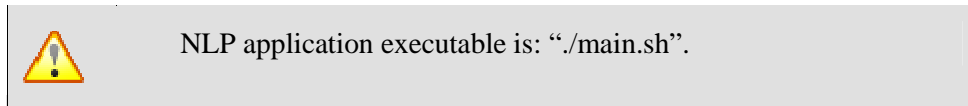
- c) Press Ok. Job Submission Wizard will appear.

4.2 Defining a job

- a) In Job Submission Wizard choose arguments tab

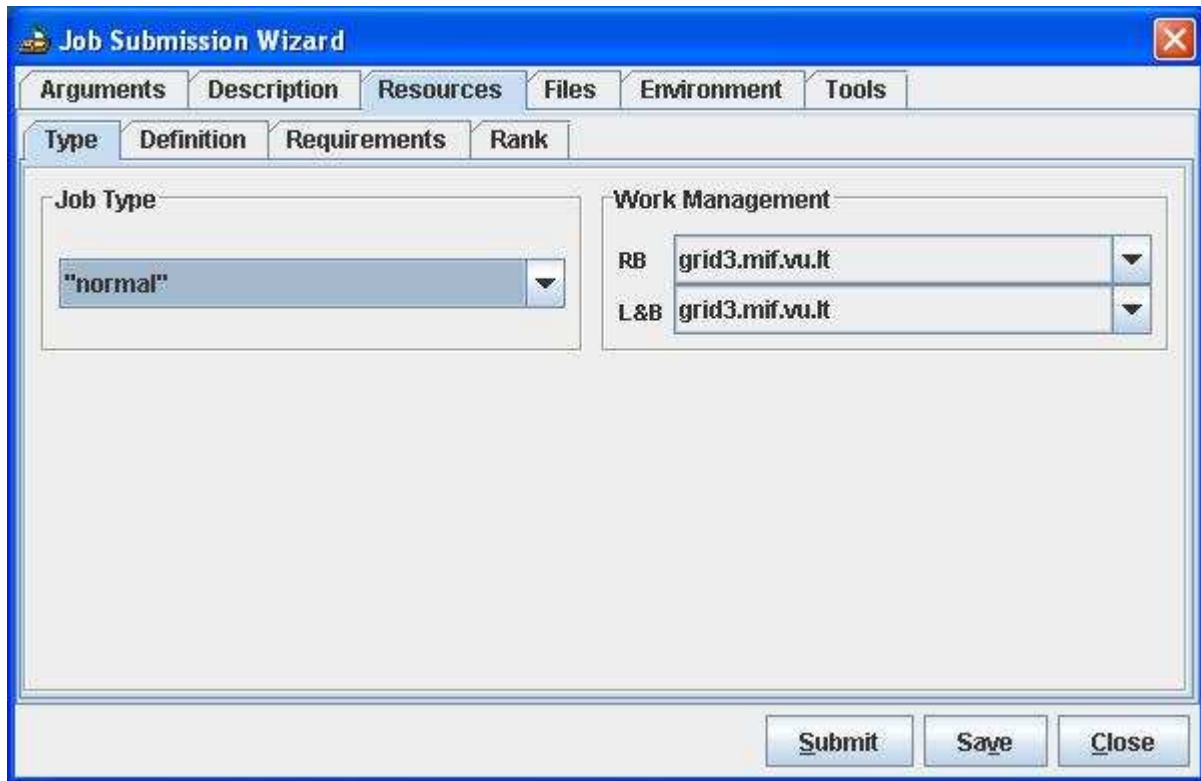
In edit box please type command (the same as it would be submitted through gLite UI commandline) – (e.g. for GAMESS submission:

“\$VO_GAMESS_SW_DIR/GAMESS-sockets-Jun272005R5/rungms bandVU1.inp >& bandVU1.log”)



There is a common set of job requirements that can be specified in the same way for a different kind of applications. There are several tabs in the JobSubmission Dialog for specifying different types of parameters.

- Choose tab “Resource”,
- Choose type of job – for NLP application select “normal”
- Choose Resource Broker server and Logging&Bookkeeping server (e.g.: *grid3.mif.vu.lt*)

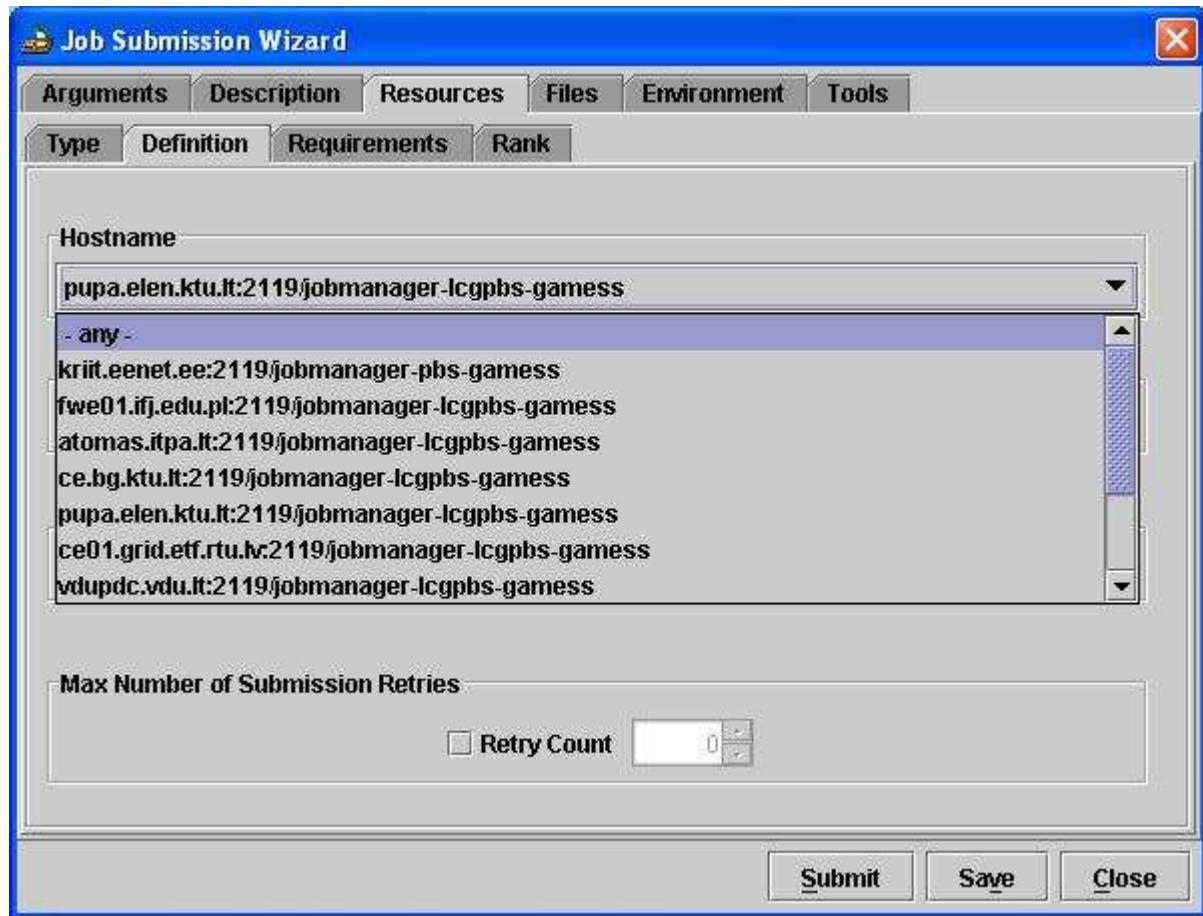


Remember to set Work Management parameters (RB and L&B) as it is the user who defines these parameters. These are required for the job submission.

- d) Change tab to “Definition”
- e) Select Computing Element hostname you want your job to run on (for NLP *pupa.elen.ktu.lt* can be chosen) or leave “any” if this decision should be taken by the Resource Broker.



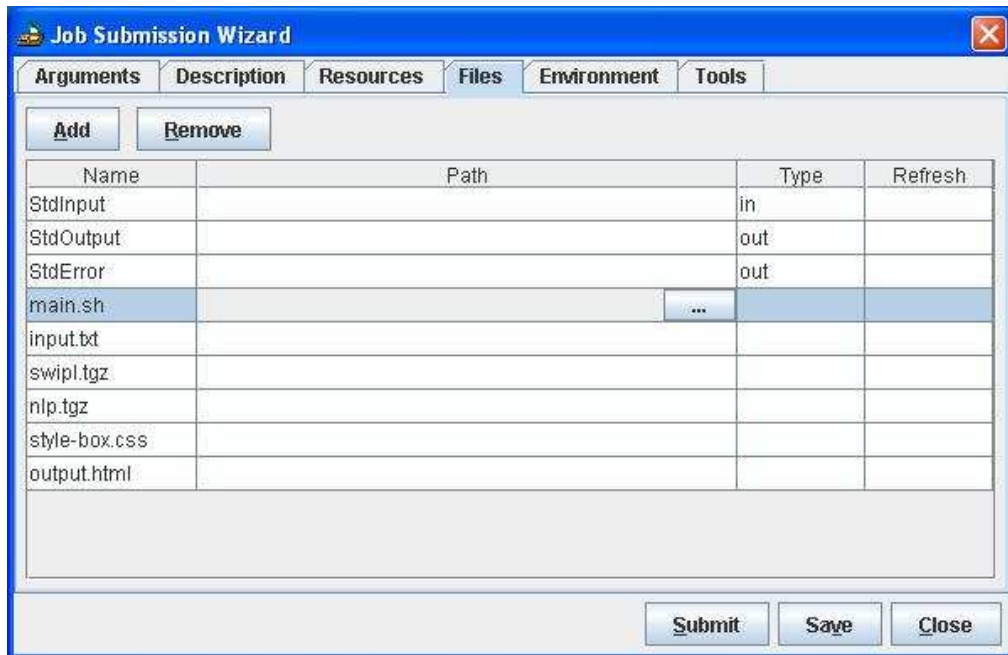
You can set your preferred CE or leave decision to RB.



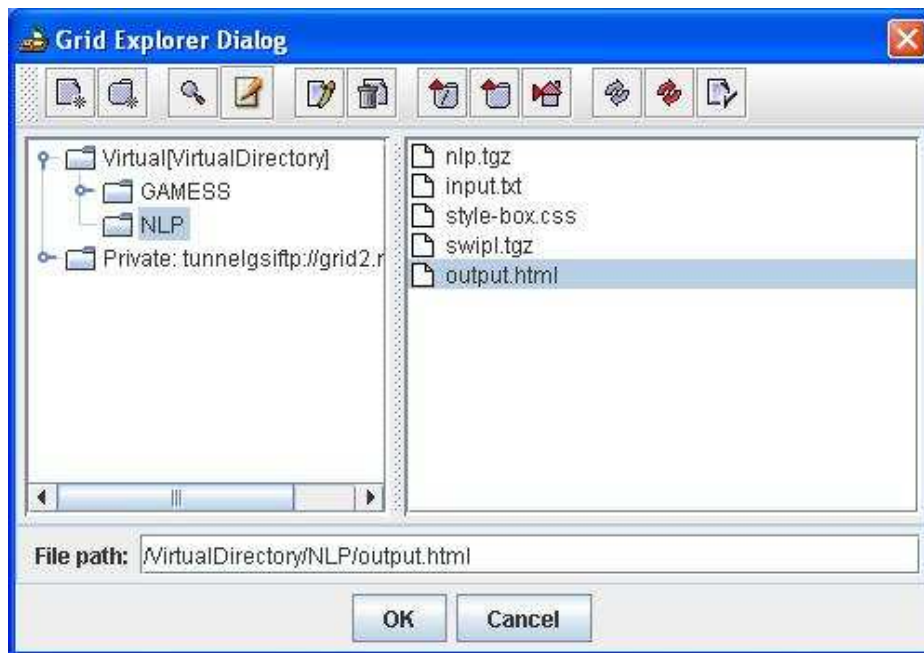
4.3 Specifying job files

Before submitting the application, the user has to define all job input and output files.

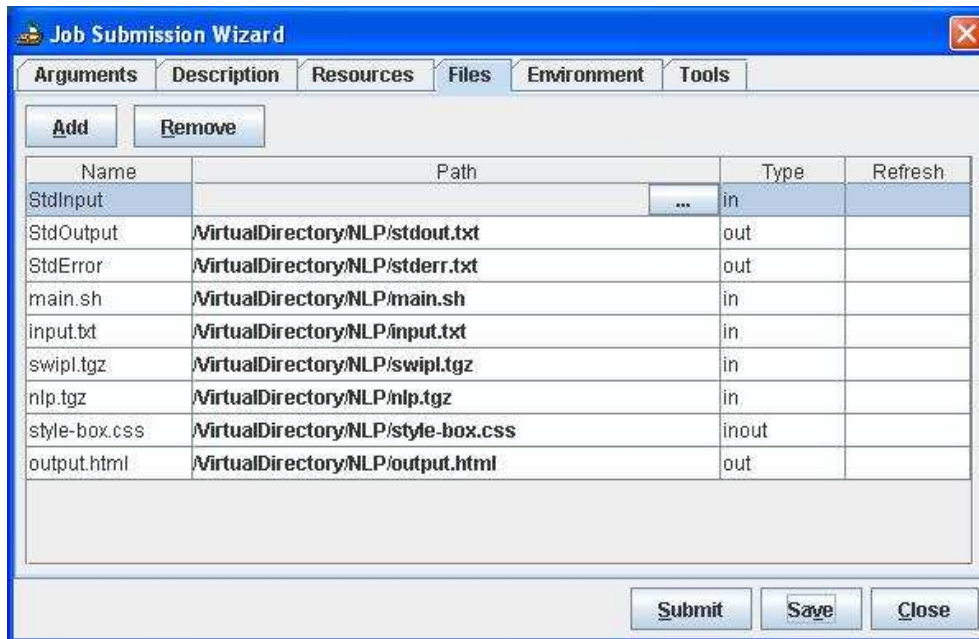
- a) choose "Files" tab
- b) add all application files using "Add" button;
- c) for every file specify its type ("IN", "OUT" or "INOUT");



d) Set input file by specifying it in GridExplorer



e) Set all output files (they have to be created previously using “Create new file” button from GridExplorer toolbar)



4.4 Submitting a job

- Submit the job by pressing “Submit” button
- Wait for job submission confirmation. It can take a few seconds and this time depends on Resource Broker response.



You can save defined job for future use.

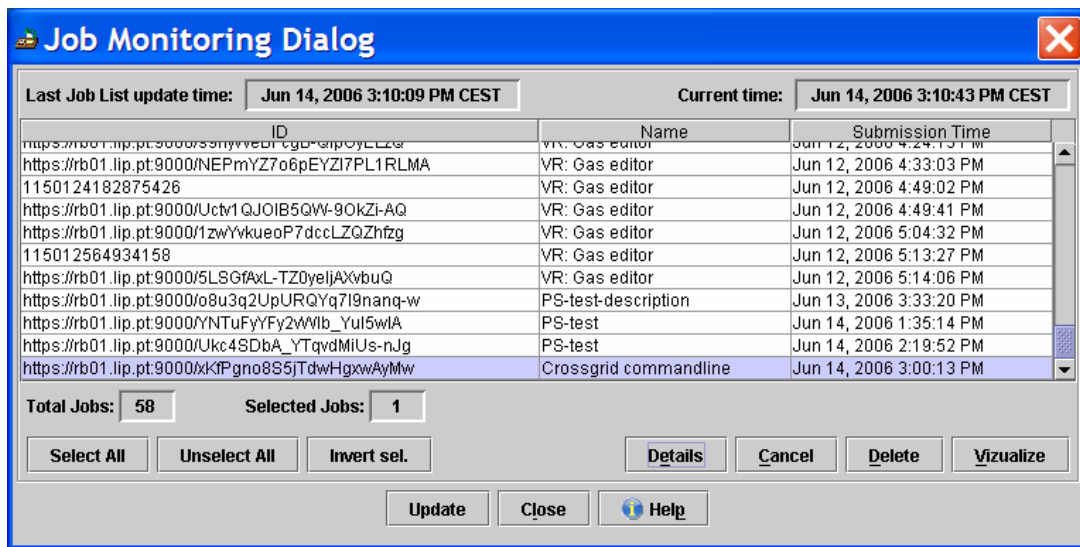
5. Monitoring job execution

In order to check the job status you have to choose the Job Monitoring dialog from the menu or toolbar. The Job Monitoring dialog is a tool for tracing the status, viewing details, logs and parameters

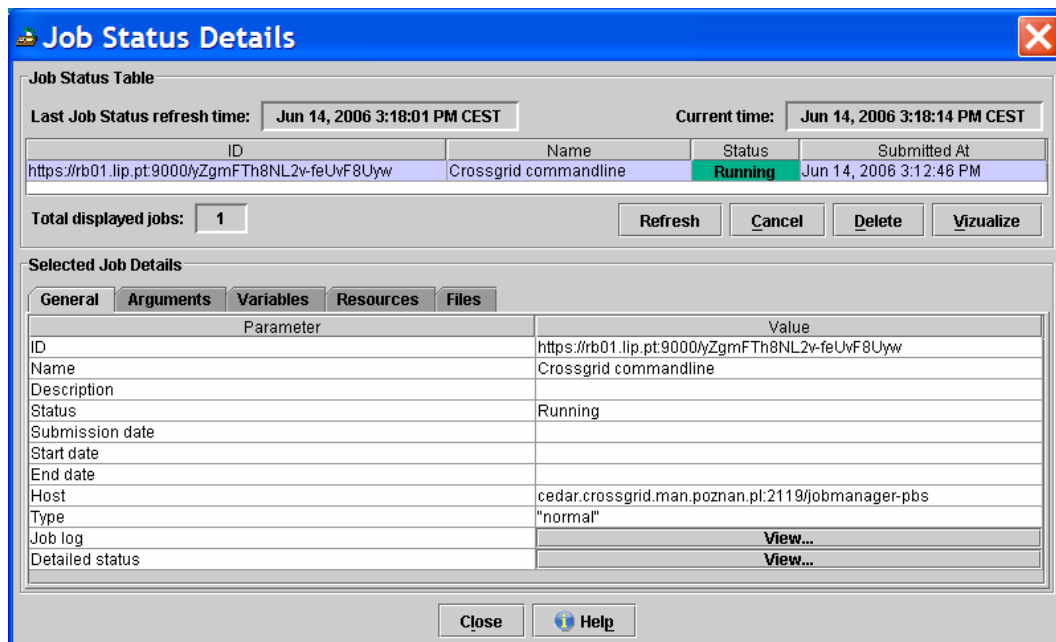


of the previously submitted jobs. This dialog contains all the information about the submitted job (its full description and status embedded in the jobs table)

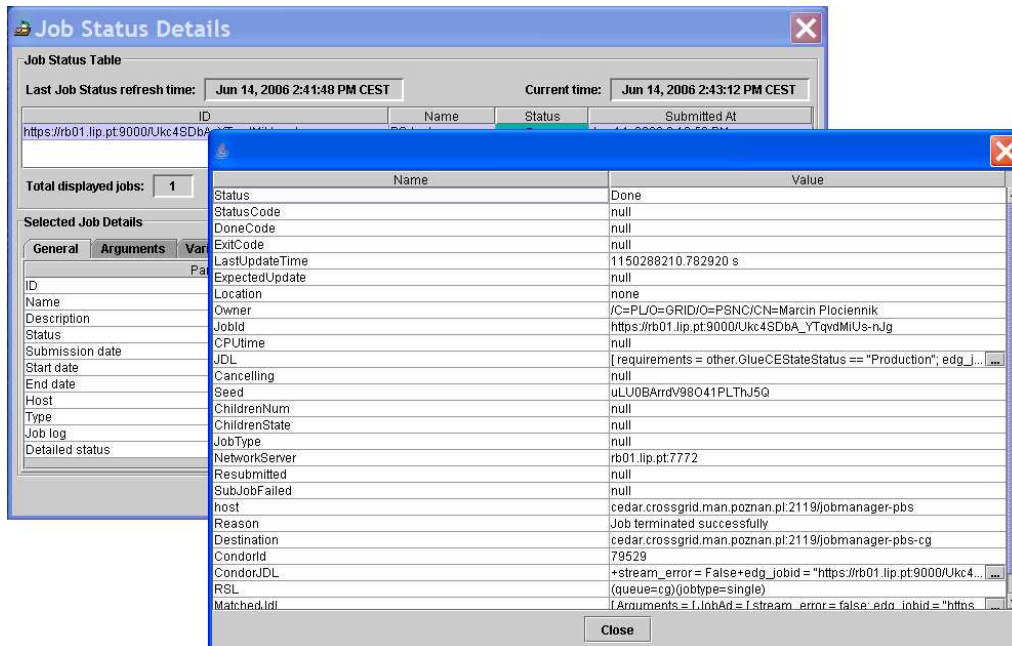
- Open Monitoring Dialog from toolbar
- Select your job (one or more) (recognized by id or by more user-friendly field "Name")



- Press "Details" button for checking status of the job and other detailed information like submission parameters, files, variables



- There is also a possibility to check extended details of running jobs basing on information that comes from Logging and Bookkeeping. Press detailed status "View..."



In order to check logs of the running job basing on information that comes from Logging and Bookkeeping. Press job log “View...”.

6. Visualisation of output

When the job has been terminated successfully and the job status in the monitoring Dialog is “done”, the user can check the output of the job.

The job output can be visualized in two ways:

- any contents of the output files can be viewed using file viewers. There are ready to use predefined plug-ins for the visualization of text files, graphical files (JPG, GIF, PNG, BMP), and SVG format. If visualization of some other formats is required it can be implemented as Migrating Desktop plug-ins;
- For more sophisticated forms of visualization (e.g. animations, maps built based on output files), special “visualisers” can be defined (i.e. Migrating Desktop visualization plug-in).



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Job Status Table

Last Job Status refresh time: Current time: 2007-02-06 13:37:53 CET

Name	D	Status	Submitted At
CommandLine	https://grid3.mif.vu.it:9000/Lf+Qe..	Done	2007-02-06 15:08:38

Total displayed jobs: 1

Selected Job Details

General Arguments Variables Resources **Files**

Name	Type	Refresh period
StdOutput	out	0
StdError	out	0
main.sh	in	0
input.txt	in	0
swipl.gz	in	0
nlp.gz	in	0
style-box.css	inout	0
output.html	out	0

Migrating Desktop - File Viewer - output.html

```
<?xml version="1.0" encoding="UTF-8"?>
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
<html xmlns="http://www.w3.org/1999/xhtml" xml:lang="en" lang="en">
<head>
<meta http-equiv="Content-Type" content="text/html; charset=UTF-8"/>
<title>Piemāra teikumu pārslēgšanas rezultāti</title>
<link rel="stylesheet" type="text/css" href="style-box.css" />
</head>
<body>
<div class="sample-odd"><p class="sentence">Teikums: 1. <span class="sentence">Ja oļeauguĻie kaut ko izlemj nav re mazāko ceĀbu pierādāct savu taisnā
</span></p>
<p class="parse-error">Pārslēgšanas izpilde laika limits 5 sekundes</p></div><hr class="sample-separator" />
<div class="sample-even"><p class="sentence">Teikums: 2. <span class="sentence">severācns un kisja zināda, ka Ātinktātī ravjāgas </span></p>
<p class="parse-error">Pārslēgšanas izpilde laika limits 5 sekundes</p></div><hr class="sample-separator" />
<div class="sample-odd"><p class="sentence">Teikums: 3. <span class="sentence">bĀnmiem Ādrius mādijas nav ko mekĀt</span></p>
<p class="parse-error">Pārslēgšanas izpilde laika limits 5 sekundes</p></div><hr class="sample-separator" />
<div class="sample-even"><p class="sentence">Teikums: 4. <span class="sentence">tas var būt tāstami </span></p>
<p class="parse-error">Pārslēgšanas izpilde laika limits 5 sekundes</p></div><hr class="sample-separator" />
</body>
</html>
```

Refresh period: s

- if the status of the job is done, select the job
- chose "Files" tab in job details dialog,
- select output file (e.g. *StdOutput*) and press "View" button
- file viewer will appear with content of the output file
- close the file viewer
- press "Visualize"
- application viewer should appear (for NLP web browser should be opened) – this functionality is not available yet!



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Piemēra teikumu parsēšanas rezultāti - Mozilla Firefox

file:///E:/temp/NLP/output.html

Teikums: 45. viņam nepiemīt bailes vai šaubas

1. variants

#papild, kam	darbības vārds	#teik_priekšm, kas			
vietniekvārds noīd. vīr. vsk. dat. pd0msd	patst. 1st. iz. vienk. tag. nepārej. nepab. 1.konj. 3.pers. vsk. dar.k. neg. vvnipiil3say	lietvārds sugas v. vīr. vsk. nom. 1.dekl. ncmsn1	lietvārds sugas v. siev. dsk. nom. 5.dekl. ncf pn5	sauklis sāk. vienk. ccs	lietvārds sugas v. siev. dsk. nom. 4.dekl. ncf pn4
viņam	nepiemīt	x_apvienojums	bailes	vai	šaubas
#person-third 5-1-0-1	#nepiemūt 2-12359-0-1	#disjunktija 1-100000-0-4	#bailes 1-10411-0-1	#conjunction 7-46-0-1	#šaubas 1-14734-0-1
#adresāts		#aģents			

2. variants

#papild, kam	darbības vārds	#teik_priekšm, kas			
vietniekvārds pers. 3.pers. vīr. vsk. dat. pp3msd	patst. 1st. iz. vienk. tag. nepārej. nepab. 1.konj. 3.pers. vsk. dar.k. neg. vvnipiil3say	lietvārds sugas v. vīr. vsk. nom. 1.dekl. ncmsn1	lietvārds sugas v. siev. dsk. nom. 5.dekl. ncf pn5	sauklis sāk. vienk. ccs	lietvārds sugas v. siev. dsk. nom. 4.dekl. ncf pn4
viņam	nepiemīt	x_apvienojums	bailes	vai	šaubas
#person-third 5-2-0-1	#nepiemūt 2-12359-0-1	#disjunktija 1-100000-0-4	#bailes 1-10411-0-1	#conjunction 7-46-0-1	#šaubas 1-14734-0-1
#adresāts		#aģents			

Done