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P-GRADE Portal tutorial

LOGIN TO THE P-GRADE PORTAL

1. Open the URL: https://grid-portal.cpc.wmin.ac.uk:8080/gridsphere/gridsphere
2. Login with your P-GRADE Portal account (truser01...10 / READ01...10)

IMPORT A WORKFLOW

In this exercise you will download and then import an example workflow into your P-GRADE Portal account. The workflow simulates traffic on a city road network. The result of the workflow is a JPG file that graphically presents the density of cars on the roads. Further information on the workflow can be found at http://portal.p-grade.hu/tutorials/induction/Traffic_simulation_workflow_description.htm

1. Download the archive file of the traffic simulation workflow onto your desktop computer. The archive file can be found at http://portal.p-grade.hu/tutorials/induction/workflows/Traffic-simulation-workflow.tar.gz
2. Go back to the portal and click on the **"Upload"** submenu of the **"Workflow"** tab
3. Select the previously downloaded archive file using the **"Browse"** button and click OK
4. Click on the **"Workflow manager"** submenu of the **"Workflow"** tab
5. Click on the **"Workflow editor"** button and open the previously imported workflow ("Open" item in the Workflow menu)
6. Map the jobs of the workflow onto the **"gilda_LCG_2_BROKER"** grid ("Workflow properties" item in the "Workflow" menu)
7. Save the workflow ("Save" or "Save as" in the "Workflow" menu)

DOWNLOAD A SHORT-TERM PROXY CREDENTIAL INTO THE PORTAL

1. Open on the **"Certificates"** tab
2. Click on the **"Download"** button
3. Submit the download form with the following values:

- **Hostname:** grid001.ct.infn.it
- **Port:** 7512
- **Login:**
- **Password:**
- **Lifetime:** 10
- **Description:** *optional*

4. If download is successful then set your proxy for the **"gilda_LCG_2_BROKER "** Grid

EXECUTE AND MONITOR THE TRAFFIC SIMULATION WORKFLOW

1. Go back to the Web interface of the portal and click on the **"Refresh"** button on the **"Workflow"** tab

2. Click on the **"Submit"** button of the workflow

3. Monitor the progress of the workflow from the Workflow Editor and using the "Workflow portlet" (Click on **"Details"** then on **"Visualize"**)

DEFINE A NEW WORKFLOW: MATRIX MULTIPLICATION

Note: The "Matrix operations" batch program will be used as the jobs of the workflow. Please read the description of this program at http://portal.p-grade.hu/tutorials/induction/Matrix_operations_program_description.htm and download the program with two sample input matrixes onto your desktop computer from http://portal.p-grade.hu/tutorials/induction/Matrix_operations_program_description.htm#download.

1. Open a new workflow (Workflow menu in the Editor) and define a new job with the following parameters:
   - **Name:** Multiplication
   - **Job type:** SEQ
   - **Job executable:** *local path of the previously downloaded matrix_operations file*
   - **Attributes:** M V
   - **Grid:** gilda_LCG_2_BROKER

2. Define a port for the job with the following parameters:
   - **Port Name:** 0
   - **Type:** In
   - **File type:** Local
   - **File:** *local path of the previously downloaded INPUT1 file*
   - **Internal File Name (case sensitive):** INPUT1

3. Define a second port to the job with the following parameters
   - **Port Name:** 1
   - **Type:** In
   - **File type:** Local
   - **File:** *local path of the previously downloaded INPUT2 file*
   - **Internal File Name (case sensitive):** INPUT2

4. Define a third port to the job with the following parameters:
   - **Port Name:** 2
   - **Type:** Out
   - **File type:** Local
   - **Internal File Name (case sensitive):** OUTPUT
   - **File storage type:** Permanent

5. Save your workflow as **Multiply**, go back to the browser, click **"Refresh"** then **"Submit"** on the "Workflow manager" panel.

6. Monitor the execution from the workflow editor and from the browser

7. After the workflow reached **finished** state download and unzip its result file.

DEFINE A MATRIX OPERATIONS WORKFLOW

In this exercise you should define a workflow which computes the following expression: **$AB[*, 0]^T * AB[*, 1]$**
(A and B represent the previously downloaded INPUT1 and INPUT2 matrixes)

Hint: The "Matrix operations" program reads and produces files in the same format. Add the matrix_operation program 4 times to the Multiply workflow as it is shown in the figure below.

The jobs should compute the following operations:

- **Multip: A*B** (command line parameter: **M**)
- **Column0: A*B[*, 0]** (command line parameters: **C 0**)
- **Column1: A*B[*, 1]** (command line parameters: **C 1**)
- **Transpose: $A*B[*, 0]^T$** (command line parameter: **T**)
- **Multip.2: $A*B[*, 0]^T * A*B[*, 1]$** (command line parameter: **M**)

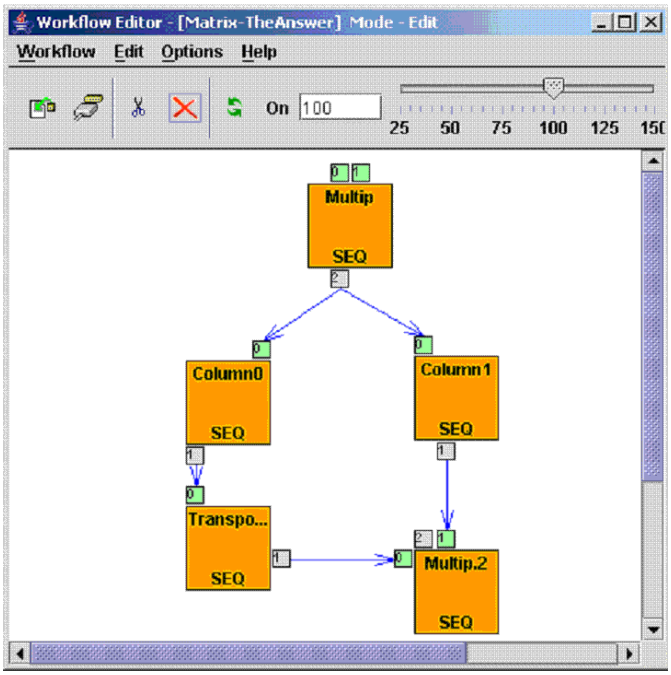

Figure 1: Matrix workflow to compute $AB[*, 0]^T * AB[*, 1]$