



PMES Dashboard User Manual

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Introduction

This document describes the different functionalities of the PMES Dashboard. Principally, the dashboard enables the management of applications, jobs, storage and users in the PMES. An application defines a piece of software that can be run in the underlying infrastructure, a job is an execution of that piece of software, and a storage defines a remote storage (e.g. FTP server) that jobs can use to retrieve input data and upload results.

The typical usage workflow of the dashboard will consist in the following three steps:

- Add a remote storage
- Create an application
- Run a job

These three steps are described in detail in the following sections.

Storage Management

To enable jobs to retrieve input data and upload output data to a remote location, the first step is to define a storage. For that means, in the main view of the dashboard, go to **Edit** → **Storage**, as shown in Figure 1. This will open a new window listing the current available storages. To add a new one, type a valid URL (e.g. ftp://bscgrid20.bsc.es) in the upper text box and hit the green button in its right (+). The credentials to access the storage will be requested when needed. To remove an existing storage from the list, hit the red button in its right (x).

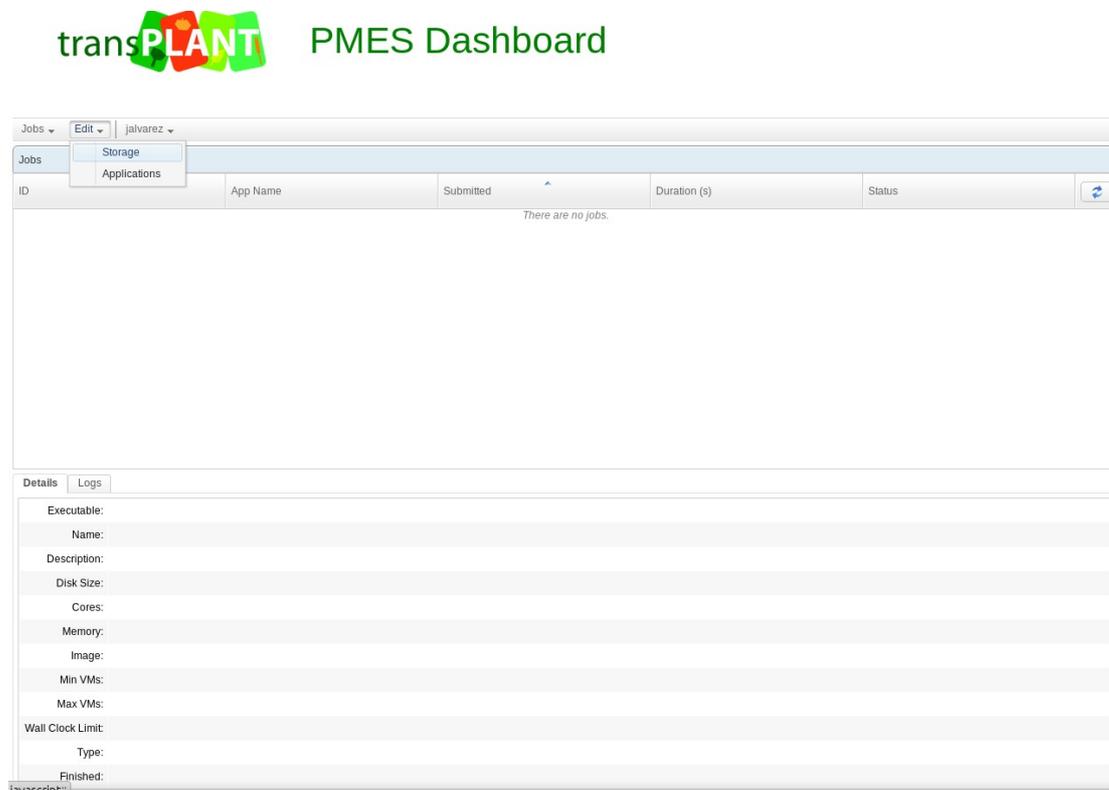


Figure 1 – Main view of the dashboard

Applications Management

The PMES enables the execution of two kinds of applications: COMPSs¹ and non-COMPSs. On one hand, a COMPSs application defines an application written and compiled using COMPSs programming model, usually packaged in a JAR file, which will be executed in parallel using COMPSs runtime. On the other hand, a non-COMPSs application just defines the execution of a command in a virtual machine (e.g. blastall).

To manage the applications, go to **Edit** → **Applications** in the main view of the dashboard (shown in Figure 1). This will open a new window listing all the available ones. To create a new one, hit the green button (+) on the upper right corner of the list. This will open another window for the introduction of the application's characteristics. This last dialog is depicted in Figure 2.

Name	Default value	Prefix	Optional

Figure 2 – Create a new application

The information that has to be provided to create a new application is the following:

- **Name:** The name of the application.
- **Image:** The name of the image that has to be used to create virtual machines when executing the application. If the infrastructure provider does not inform about the available images, this value will have to be entered manually.
- **Location and Path (Optional):** Only if the application consists of a package that has to be deployed in the virtual machines before its execution (useful for COMPSs applications). Location specifies the URL of the remote storage where the package resides, and Path the relative path to the package in that storage. For example: Location = ftp://bscgrid20.bsc.es and Path = /app_repository/gene_detection.tar.gz will deploy the package in

1 <http://www.bsc.es/compss>

ftp://bscgrid20.bsc.es/app_repository/gene_detection.tar.gz after the virtual machines are created.

- **Executable:** Name of the executable to run. In COMPSs applications, name of the main class (e.g. simple.Simple), in non-COMPSs applications, name of the command (e.g. /usr/bin/maker).
- **COMPSs:** If it is a COMPSs application or not.
- **Public:** If the application can be executed by other users.
- **Description (Optional):** A brief description of the application.
- **Wall Clock Time (Optional):** The default execution time of the application.
- **Disk Size (Optional):** The default disk size for the virtual machines when running the application.
- **Cores (Optional):** The default number of cores for the virtual machines when running the application.
- **Memory (Optional):** The default memory for the virtual machines when running the application.
- **Max VMs (Optional):** The maximum number of virtual machines to run the application. This is used only for COMPSs applications.
- **Min VMs (Optional):** The minimum number of virtual machines to run the application. This is used only for COMPSs applications.

Besides that information, each application also contains a list of arguments. To add a new one, hit the green button on top of the argument list (+). Each argument will be optional if specified or mandatory otherwise, and it is defined by a name, an optional default value and an optional prefix. When launching the application, a value for each argument will be requested and passed to the command line in the order they appear on the list. The way the actual command will be constructed is:

- For COMPSs applications: *runcompss executable [[prefix] [argument]]...*
- For non-COMPSs applications: *executable [[prefix] [argument]]...*

Once all the information is provided, hitting the *Save* button will add a new application to the system. Finally, applications can be edited by hitting the pencil button (✎) on their right in the applications list.

Job Management

Once an application has been created, it is possible to run jobs in the infrastructure. To do that, in the main view of the dashboard (Figure 1), go to **Jobs** → **New** and select the type of job. This action will show a job submission dialog like the one depicted in Figure 3. To create a new job, select the application to launch, insert the desired value for each argument, specify the necessary resources in the *Advanced* tab (if no defaults have been defined for the application), and hit the *Submit* button.

The screenshot shows a 'New Job' dialog box with the following details:

- Application:** Discrete
- Description:** Parameter sweep on protein dynamics simulations.
- Arguments:**
 - Debug : false
 - Binaries Dir : binary
 - Data Dir : data
 - Structures Dir : 1B6C
 - Tmp Dir : tmp
 - Scores Dir : scores

Figure 3 – Job submission dialog

In the case the input data of the job is located in an external location, the tab *Input Files* permits the definition of stage-ins, i.e. files or directories that need to be fetched before running the application. Figure 4 shows an example of two input files. In this case both are directories (represented by a "/" character at the end of their name). What the PMES will do is to copy the directory <http://bscgrid20.bsc.es/data> as a 'data' directory in the virtual machine running the job (and the same for the 1B6C directory). On the other hand, if some results need to be transferred to an external location after the job execution, the *Output Files* tab permits the definition of what is known as stage-outs. Figure 5 depicts an example in which, after running the application, the directory 'scores' will be copied to <http://bscgrid20.bsc.es/results> (the "/" character at the end of the file name indicates that it is a directory). In the case of stage-outs, the *Update* check-box indicates whether the file has to be transferred periodically during the execution or just at the end of it. As usual, to add stage-ins or stage-outs hit the green button on top of their list (+).

Storage	Source Path	Target Path	
ftp://bscgrid20.bsc.es	/data/	data/	
ftp://bscgrid20.bsc.es	/1B6C/	1B6C/	

Submit Cancel

Figure 4 – Input Files

Storage	Source Path	Target Path	Update	
ftp://bscgrid20.bsc.es	scores/	/results/	<input type="checkbox"/>	

Submit Cancel

Figure 5 – Output Files

Finally, in the tab *Logs* a remote directory can be specified to upload the different logs that the job generates. A remote storage has to be selected and then a path ending in “/” (to denote it is a directory) specified. Logs will be uploaded periodically, keeping their contents updated as the execution goes on.

Once the *Submit* button is hit, the new job will appear in the main view of the dashboard, as depicted in Figure 6. When selecting a job in the job list, its details and logs will be displayed in the panel below. Hitting the red button () on the right of each running job will cancel it, and hitting the blue arrows () on the right of each finished job will open a dialog to submit a new job with the same settings as the selected one.

Jobs Edit jalvarez

ID	App Name	Submitted	Duration (s)	Status	
211d6ca1-8bc2-4723-a00d-706b8e5ba9f7	Discrete	Thu Dec 05 12:58:47 CET 2013	0	PENDING	
785bec36-9abb-4a4e-961e-6b8e76d21d0	Discrete	Thu Dec 05 12:50:11 CET 2013	60	FAILED	

Details Logs

Executable: discrete.Discrete
Name: Discrete_785bec36-9abb-4a4e-961e-6b8e76d21d0
Description: Discrete
Disk Size: 2.0
Cores: 2
Memory: 2.0
Image: compss-1.1.2
Min VMs: 1
Max VMs: 4
Wall Clock Limit: 300
Type: COMPSsJob
Finished: Thu Dec 05 12:51:11 CET 2013

Figure 6 – Job details

User Management (admin)

Only the *admin* user can add and remove other users. To do that, go to **Edit** → **Users** in the main view of the dashboard.

Contextualization

It is possible to specify contextualization variables as key-value pairs that are passed to the infrastructure provider when creating new virtual machines. To do that, go to **{username}** → **Settings** in the main view of the dashboard, and then to the *Contextualization* tab.