

A Web Portal for the scientific communities

<https://portal.italiangrid.it>

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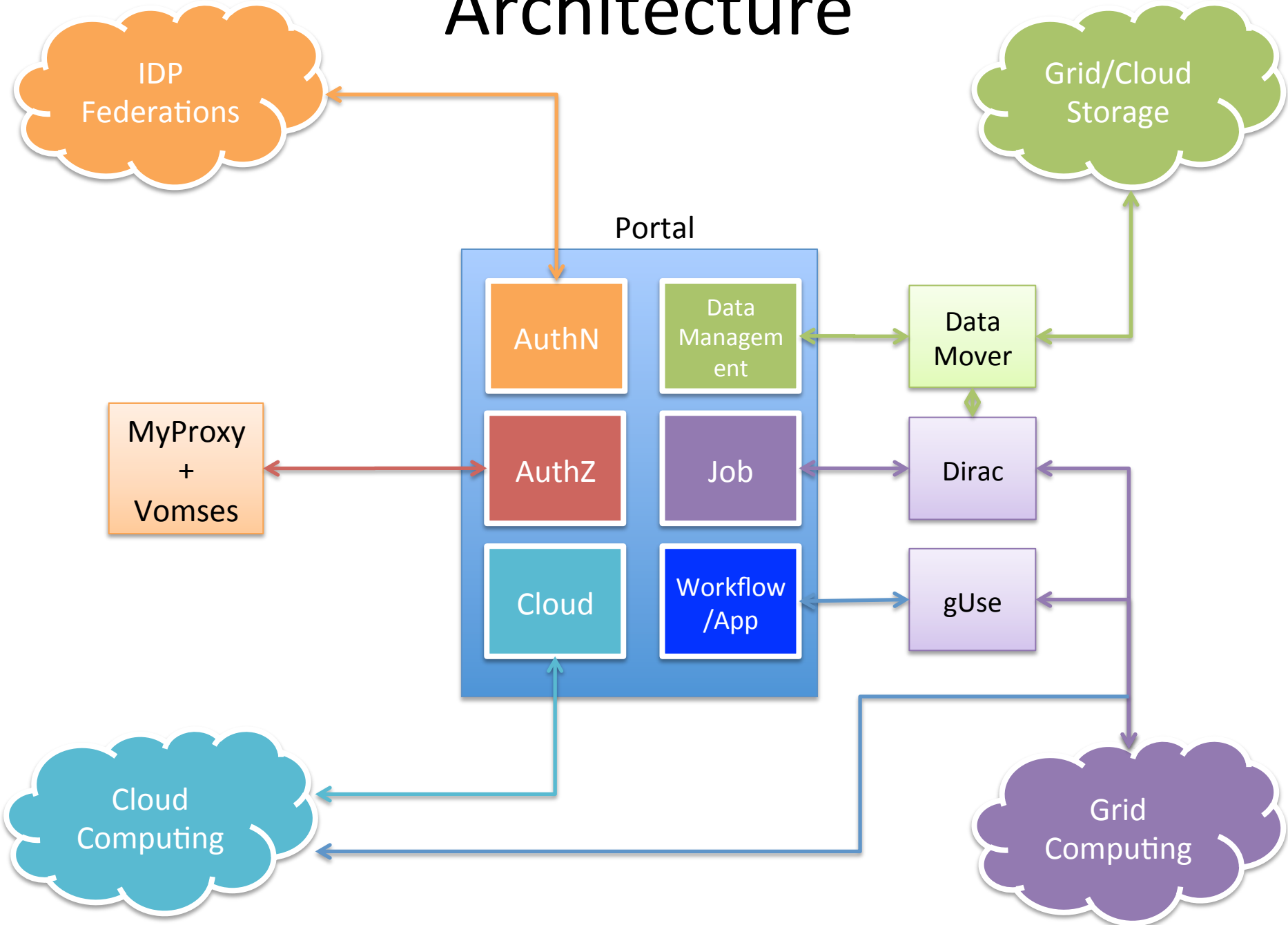
INFN-CNAF

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Introduction

- It's a **service** that aims to make easy the **Grid** and **Cloud** resources usage, for **computing** and **storage** purposes
- It's available for users who has a valid **X.509** certificate and belongs to a **VO**
- Authentication based on **Identity Federation** (IDEM and eduGAIN supported)
 - Portal provides also an IDP for the users with certificate but without an organization's IDP
- Utilized by several communities (**multi VO** $\approx$ 20)

Architecture



Grid Computing - **Job**

- Type supported: Normal, Parametric, MPI (work in progress)
- Service used: Dirac - **pilot job concept**
- Monitoring of the job execution
- Template definition and sharing
- Executable and input data provided by the user

JDL

Job Name
Parametric_Test_Fluka

Executable
fluka2lfc-portal.sh or [Upload your executable](#)

Arguments
%s silicon2 /alex/silicon2

VO
gridit (Default) ▼

Standard Output
StdOut_Fluka_%s ✖

Standard Error
StdErr_Fluka_%s ✖

Parameters
5 ✖
Help: Parameters can be a list or a number. [More](#)

Parameter Start
1 ✖

Parameter Step
1 ✖

☐ Save As Template

Add or Remove fields

✖ Standard Output
+ Standard Error
+ Output Sandbox
+ Input Sandbox

PARAMETRIC

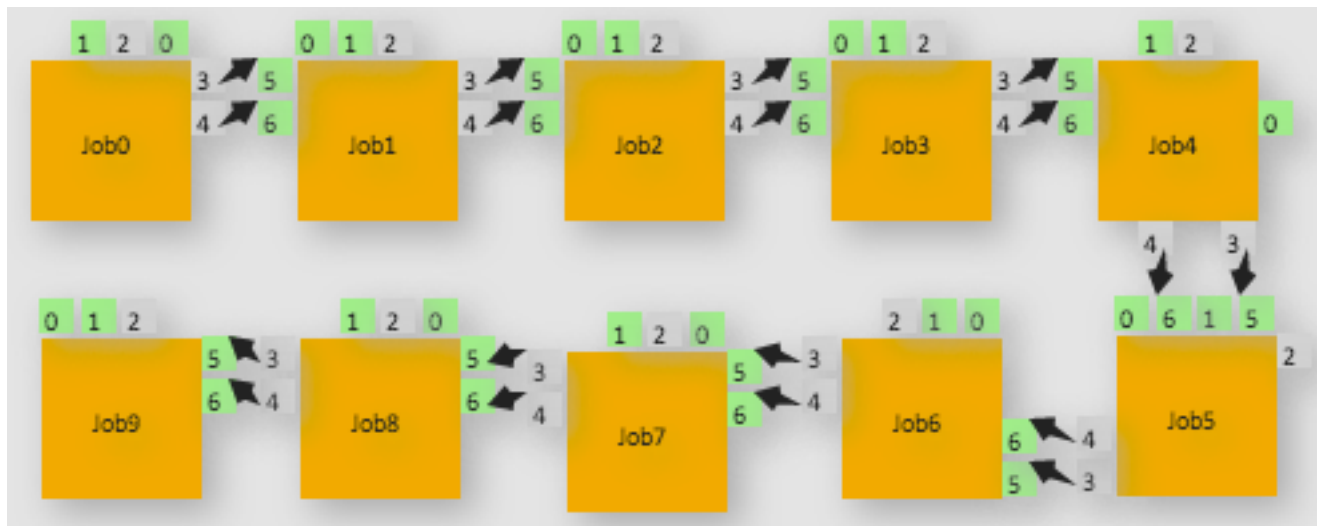
✖ Parameters
✖ Parameter Start
✖ Parameter Step

REQUIREMENTS

+ Requirements
+ Sites

Grid Computing – **Workflow**

- Type supported: Normal, parametric, MPI
- Service used: gUSE
- Monitoring – Template – Executable (as job)
- Useful for **complex job**



Grid Computing - **Specific applications**

- Pre-Importing of application in Grid
- **Minimal Interface ad hoc** for each application
- Service used: Dirac and gUSE used depending on the requirements
- Executable (and maybe also input data) preloaded
- Retrieving of **standard error & output at runtime**
- Useful for **long job** → job divided in more steps with a mechanism of automatic **stop & restart**

The screenshot displays the IQI Grid Portal interface. At the top, there are logos for IQP, IQI grid portal, INFN (Istituto Nazionale di Fisica Nucleare), and SPES (exotic beams for science). Below the logos is a navigation bar with links: Home, Fiuka, Storage, My Data, Calendar, and Wiki. A message reads "Hi DIEGO, your active VO: **gridit**" with a "Get Credentials" button. The main section is titled "NEW JOB" and contains a form for submitting a job. The form includes fields for "Insert APDL:" (containing "APDL_caso4"), "Insert input:" (containing "input1.tar"), "Outputs file name:" (containing "TestAbort"), and "CPU Number:" (set to 2). There are buttons for "Scegli file", "Upload", "Set Outputs", and "Set CPUNumber". A "Submit" button is also present. To the right of the form is a large red box labeled "RUNNING". Below the red box are buttons for "Show Details" and "Download Partial". A "Refresh" button is located in the top right corner of the form area. The job ID is displayed as "ANSYS ID: 12-11-2013 10:52:30".

Applications

- **ANSYS** -- Engineering simulation software
- **FLUKA** -- Physics MonteCarlo simulation package
- **BLAST** -- Alignment search tool for genome sequences
- **NEMO** -- Oceanographic modelling
- **NAMD** -- Molecular Dynamics simulations
- **GAUSSIAN** -- Electronic structure modelling
- **DMRG** -- Electronic structure modelling
- **Quantum ESPRESSO** -- Electronic structure calculations and materials modelling
- **VENUS** -- Chemical Dynamics simulations
- **CRYSTAL** -- Solid state electronic structure calculations

Data Management

- Interfaced with **LFC** and **Dirac Catalog** (work in progress)
 - LFC level: rename, browse, move, share
 - SE level: replicate, delete
- LFC dismissing → Dirac Catalog with **Metadata**
- We are going to interface with **Pandora**

The screenshot displays a web-based data management interface. At the top, there is a navigation bar with tabs: Welcome, Job, Workflow, Storage (selected), My Data, and Help. Below the navigation bar, a message reads "Hi Alessandro, your active VO: **gridit**" with a "Get Credentials" button. A search bar is located on the right side of the interface.

The main content area shows a file list under the path ">grid>gridit>spes_project>fluka>alex>silicon2". The file list includes:

- silicon2.tar (All VO, 701 Kb, 2013/10/02 16:26)
- silicon2_1_out_101513-095023-1381823423.tgz (All VO, 3.34 Kb, 2013/10/15 09:51)
- silicon2_1_out_101513-103145-1381825905.tgz (All VO, 3.34 Kb, 2013/10/15 10:32)
- silicon2_1_out_101513-111425-1381828465.tgz (All VO, 3.34 Kb, 2013/10/15 11:15)
- silicon2_1_out_101513-112121-1381828881.tgz (All VO, 3.35 Kb, 2013/10/15 11:22)
- silicon2_1_out_101513-113652-1381829812.tgz (All VO, 3.34 Kb, 2013/10/15 11:37)
- silicon2_1_out_101513-114944-1381830584.tgz (All VO, 3.51 Kb, 2013/10/15 11:50)

A context menu is open over the selected file "silicon2_1_out_101513-095023-1381823423.tgz", showing options: Rename, Delete, Move, More Info, Share, Replicate, and Download. The "More Info" option is highlighted.

On the right side, the "File Info" panel for the selected file shows:

- Name: silicon2_1_out_101513-095023-1381823423.tgz
- Size: 3.34 Kb
- Last Modif.: 2013/10/15 09:51

A "More Info on selected Item" link is also visible.

Data Management

- **Upload**

- Files from PC to Grid via web
- **Resumable** upload – useful in case of big file
- **Destination choice** and **Automatic retry** in case of failure

The screenshot displays a web-based file upload interface. At the top, there is a green button labeled '+ Add files...', a red dropdown menu currently set to 'Random destination', and a blue button labeled 'Start upload'. To the right of these controls is a green progress bar. Below the controls, the upload speed and time are shown: '83.81 Mbit/s | 00:00:00 | 64.10 % | 10.60 MB / 16.54 MB'. The main area contains a table of files being uploaded:

jQuery_Tutorial.zip	1.27 GB		Transfer OK
demo-nemo2.screenflow	0.20 KB		Transfer failed view details
Single_Signon_Kerberos_LDAP.pdf	2.53 MB		Transfer OK
Poster Duck R2B completo1.pptx	6.41 MB		
jira-cli-2.4.0-distribution.zip	3.78 MB		
Manual and Developer Tutorial for Application Specific Module of gUSE.doc	6.35 MB		

Data Management

- **Download**

- Of files/dirs from Grid to **PC** or **remote server** (FTP, SFTP, webDAV)
- Notification by **mail** in case of remote transfer with transfer report

Download

You are going to download **5 files** for a total size of **685.08 MB**

☐ On my PC

☒ On a remote Server

Protocol: SFTP

Server url* Es: server.example.it

Path Es: /home/user/folder/

Port if empty default protocol port is used

Username*

Password

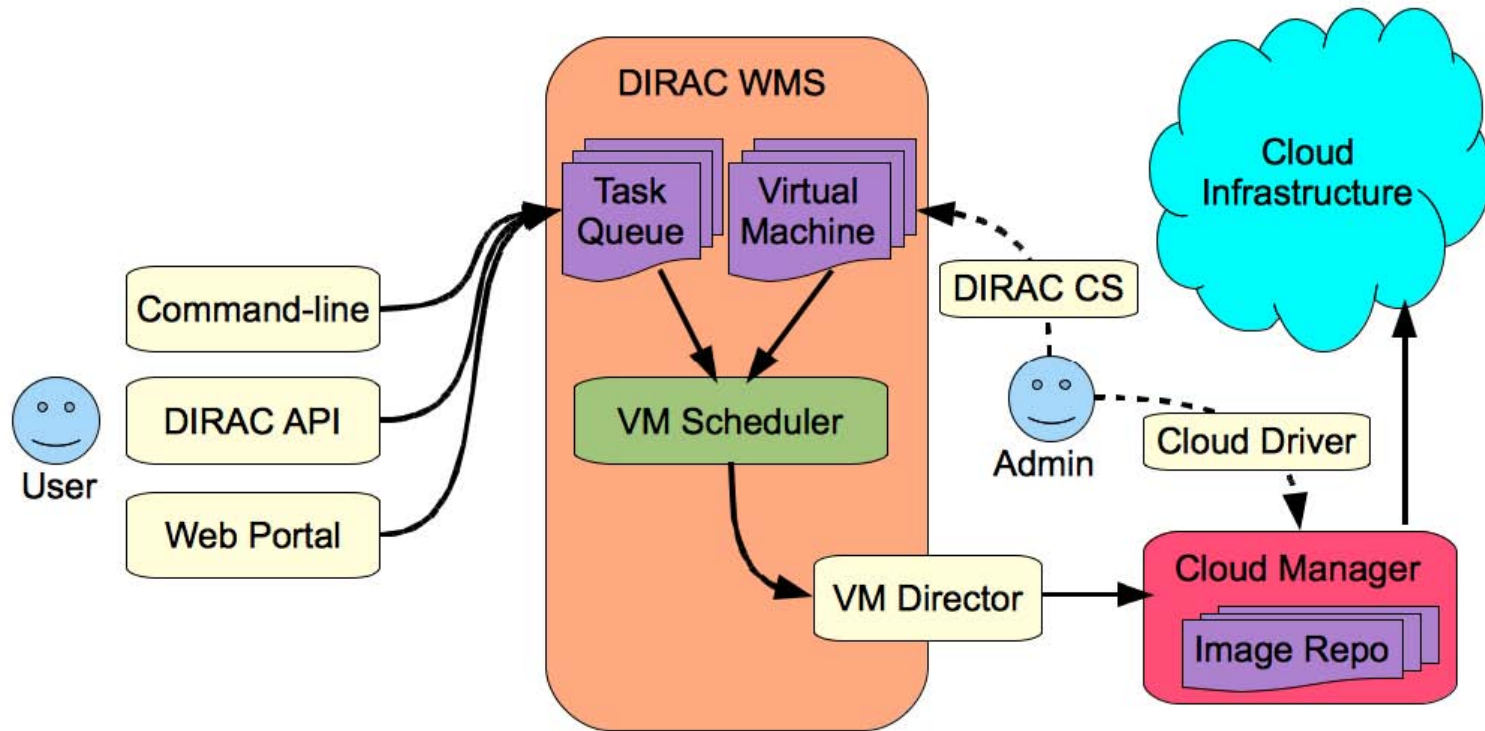
* Mandatory field

☒ ☐

Cloud

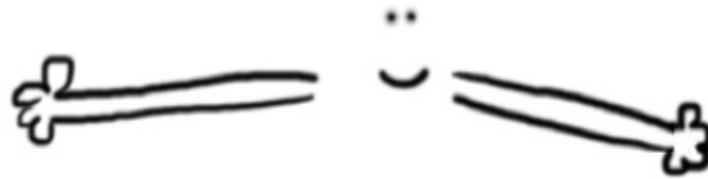
- Proof of concept for EGI Cloud Task Force
 - Not in production yet
 - Size choice: RAM, Disk, CPU
 - SSH keys management
 - Auto-creation
 - User upload
 - Web Terminal
- VM instantiation based on **OpenStack** solution
- No necessary X.509 or VO
- Interaction with Dirac

Dirac - VM



Virtual Machine Scheduler → This component gets the list of tasks to be executed from the central Task Queues, by matching the pending tasks to the capabilities of the defined images. If not enough VMs are available and the maximum VMs threshold is not reached, then it submits a new VM using the specific VM Director.

Questions?



Thanks

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