



DIRAC Managing Resources and Services

DIRAC Project

- ▶ **Installing a slave**
- ▶ **How to add computing resources**
 - ▶ Adding gLite CEs
 - ▶ Adding Cream CEs
 - ▶ Adding Local Clusters
- ▶ **How to add data resources**
 - ▶ gLite Storage Element
 - ▶ Dirac Storage Element
- ▶ **How to add file catalogs**
 - ▶ Dirac File Catalog (DFC)
 - ▶ LCG File Catalog (LFC)
- ▶ **How to add other Virtual Organization**



Installing a Slave Configuration Server

- ▶ DIRAC services and agents can be installed in distributed environments, for example:
 - ▶ ccdirc01 -> Security
 - ▶ ccdirc02 -> WMS
 - ▶ ccdirc03 -> DMS
 - ▶ ccdirc04 -> DIRAC SE
 - ▶ ccdirc05 -> DIRAC Web Portal

- ▶ Minimal services must be installed in all the servers are:
 - ▶ **Configuration/Server**: to have a local copy of the configuration file and balance the service.
 - ▶ **Framework/SystemAdministrator**: to be able to connect remotely in the machine.



Installing a Slave Configuration Server

- ▶ **Changes in the install configuration file:**

 - # Flag to set up the Configuration Server as Master

 - ConfigurationMaster = no

 - # Configuration Server URL

 - ConfigurationServer = dips://ccdirac01.in2p3.fr:9135/Configuration/Server

- ▶ **Follow the server installation steps, declaring services and agents as usual, and finally execute the `install_site.sh` script.**



Resources in DIRAC

- ▶ DIRAC Resources refers to distributed storage, computing resources, file catalogs and any resource available at remote sites, beyond the control of any central administration.
- ▶ That means than DIRAC can incorporate:
 - ▶ Grid Resources.
 - ▶ Local Resources: conventional clusters or file servers.
 - ▶ Cloud Resources.

Today



Resources Configuration File

A screenshot of the DIRAC configuration management web interface. The interface has a light blue header with "Jobs" and "Views" dropdown menus on the left and "Selected setup: Dir" on the right. The main content area shows a tree view of configuration folders. The "Resources" folder is expanded, showing sub-folders: JSAGA, FileCatalogs, Sites (which is further expanded to show LCG, BOINC, and STL), StorageElements, StorageElementGroups, and Operations. On the left side of the interface, there are several menu items: "ion as text", "guration", "ctions", "nfiguration data", "es with server", and "ration". At the bottom, there is a breadcrumb trail "uration > Manage remote configuration" and a user/session string "vhamar@ dirac_admin (/O=GRID-FR/C=FR/O=CNRS/OU=CPPM/CN=)".

- ▶ In DIRAC the convention for sites names consist of 3 strings:
 - ▶ Grid site name, expressed in uppercase, for example: **LCG**, **EELA**
 - ▶ Institution acronym in uppercase, for example: **CPPM**
 - ▶ Country: country where the site is located, expressed in lowercase, for example **fr**
- ▶ Site name example:

LCG.CPPM.fr



Sites Configuration File

Jobs ▾ Views ▾ Selected setup: Dir

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- Sites
 - LCG
 - LCG.ACAD.bg
 - LCG.VICTORIA.ca
 - LCG.BEIJING.cn
 - LCG.FRAUNHOFER.de
 - LCG.UNICAN.es
 - LCG.BRGM.fr
 - LCG.CGG.fr
 - LCG.CPPM.fr
 - LCG.DATAGRID.fr
 - LCG.GRIF.fr
 - LCG.IBCP.fr
 - LCG.IN2P3.fr
 - LCG.IPNL.fr
 - LCG.IPGP.fr
 - LCG.IPSL-IPGP.fr
 - LCG.IRES.fr
 - LCG.LAPP.fr
 - LCG.LILLE.fr
 - LCG.MSFG.fr
 - LCG.LPSC.fr
 - LCG.M3PEC.fr

ration > Manage remote configuration vhamar@ dirac_admin (/O=GRID-FR/C=FR/O=CNRS/OU=CPPM/CN=)



Adding a site

- ▶ To add a site can be done using command line or using DIRAC web portal.
- ▶ By command line:
 - ▶ Create a proxy in the DIRAC client using `dirac_admin` as group.
 - ▶ Execute:

```
dirac-admin-add-site [option|cfgfile] ... DIRACSiteName GridSiteName CE  
[CE] ...
```

- ▶ For example:

```
$ dirac-admin-add-site LCG.CPPM.fr IN2P3-CPPM marce01.in2p3.fr  
marcream01.in2p3.fr
```



Adding a site

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- Sites
 - LCG
 - LCG.ACAD.bg
 - LCG.VICTORIA.ca
 - LCG.BEIJING.cn
 - LCG.FRAUNHOFER.de
 - LCG.UNICAN.es
 - LCG.BRGM.fr
 - LCG.CGG.fr
 - LCG.CPPM.fr
 - Name = IN2P3-CPPM
 - CE = marce01.in2p3.fr, marcream01.in2p3.fr
 - SE = CPPM-disk
 - Coordinates = 5.441:43.231
 - Mail = gridadmin@cppm.in2p3.fr
 - CEs
 - marce01.in2p3.fr
 - marcream01.in2p3.fr
 - LCG.DATAGRID.fr
 - LCG.GRIF.fr
 - LCG.IBCP.fr
 - LCG.IN2P3.fr
 - LCG.IPNL.fr

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Adding a site gLite CE attributes

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- LCG.BRGM.fr
- LCG.CGG.fr
- LCG.CPPM.fr
 - Name = IN2P3-CPPM
 - CE = marce01.in2p3.fr, marcream01.in2p3.fr
 - SE = CPPM-disk
 - Coordinates = 5.441:43.231
 - Mail = gridadmin@cppm.in2p3.fr
 - CEs
 - marce01.in2p3.fr
 - wnTmpDir = /tmp
 - architecture = x86_64
 - OS = ScientificSL_Boron_5.3
 - SI00 = 2130
 - Pilot = True
 - CEType = LCG
 - Queues
 - jobmanager-pbs-formation
 - jobmanager-pbs-biomed
 - marcream01.in2p3.fr
 - LCG.DATAGRID.fr
 - LCG.GRIF.fr
 - LCG.IBCP.fr

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Adding a site gLite CE attributes

The screenshot displays the DIRAC web interface for managing remote configurations. The main area shows a tree view of site configurations. The selected site is LCG.CPPM.fr, which is expanded to show its attributes:

- Name = IN2P3-CPPM
- CE = marce01.in2p3.fr, marcream01.in2p3.fr
- SE = CPPM-disk
- Coordinates = 5.441:43.231
- Mail = gridadmin@cppm.in2p3.fr

The 'CEs' folder is expanded to show the configuration for marce01.in2p3.fr:

- wnTmpDir = /tmp
- architecture = x86_64
- OS = ScientificSL_Boron_5.3
- SI00 = 2130
- Pilot = True
- CEType = LCG

The 'Queues' folder is expanded to show the configuration for jobmanager-pbs-formation:

- maxCPUtime = 2880
- SI00 = 2130

Other visible configurations include LCG.BRGM.fr, LCG.CGG.fr, LCG.DATAGRID.fr, and marcream01.in2p3.fr.

The interface includes a left sidebar with navigation options like 'Jobs', 'Views', 'on as text', 'uration', 'ctions', 'figuration data', and 's with server', and a status bar at the bottom showing the user 'vhamar@ dirac_admin' and the path '/O=GRID-FR/C=FR/O=CNRS/OU=CPPM/CN'.



Adding a site CREAM CE attributes

The screenshot shows the DIRAC configuration tool interface. The main window displays a tree view of configuration data for the LCG.CPPM.fr site. The tree structure is as follows:

- LCG.CPPM.fr
 - Name = IN2P3-CPPM
 - CE = marce01.in2p3.fr, marcream01.in2p3.fr
 - SE = CPPM-disk
 - Coordinates = 5.441:43.231
 - Mail = gridadmin@cppm.in2p3.fr
 - CEs
 - marce01.in2p3.fr
 - marcream01.in2p3.fr
 - wnTmpDir = /tmp
 - architecture = x86_64
 - OS = ScientificSL_Boron_5.5
 - SI00 = 3125
 - Pilot = True
 - CEType = CREAM
 - SubmissionMode = Direct
 - Queues
 - cream-pbs-formation
 - maxCPUTime = 2880
 - SI00 = 2130
 - MaxTotalJobs = 50
 - MaxWaitingJobs = 10
 - OutputURL = gsiftp://localhost

The status bar at the bottom indicates the user is logged in as vhamar@dirac_admin and the current path is /O=GRID-FR/C=FR/O=CNRS/OU=CPPM/CN=...



Adding a site SSTorque CE Attributes

The screenshot displays the DIRAC configuration tool interface. The left sidebar shows a tree view of sites, with 'LCG.CC.fr' selected. The main pane shows the configuration details for this site:

- Name = IN2P3-CC
- CE = ccage.in2p3.fr
- Mail = gridadmin@cppm.in2p3.fr
- CEs
 - ccage.in2p3.fr
 - CEType = SGE
 - SubmissionMode = direct
 - SSHUser =
 - SSHPassword =
 - SSHHost = ccage.in2p3.fr
 - wnTmpDir = /tmp
 - architecture = x86_64
 - OS = ScientificSL_Boron_5.3
 - SI00 = 2130
 - Pilot = True
- Queues
- Coordinates = grid.admin@cc.in2p3.fr

The status bar at the bottom indicates the user is 'vhamar@dirac_admin' and the path is '/O=GRID-FR/C=FR/O=CNRS/OU=CPPM'.

- ▶ Use CE2CS Agent to maintain gLite resources available updated.
- ▶ One agent must be configured by each VO supported in the system.
- ▶ This agent will sent an e-mail each time a new site is found.



CE2CSAgent

A screenshot of a web-based configuration management interface for DIRAC. The interface has a light blue header with a "Views" dropdown menu and a "Selected setup" label. On the left side, there is a sidebar with several sections: "text on", "s", "ation data", and "server". The main content area displays a hierarchical tree structure of configuration folders. The tree starts with "None Configuration" at the top, followed by "DIRAC", "Registry", and "Systems". Under "Systems", there are sub-folders for "Accounting", "Configuration", "Production", "Services", and "URLs". The "Production" folder is expanded to show a sub-folder "Agents", which contains several sub-folders: "CE2CSAgent", "CE2CSAgentAstro", "CE2CSAgentBlomed", "CE2CSAgentESR", "CE2CSAgentGlast", "CE2CSAgentMSFG", "CE2CSAgentSuperB", and "CE2CSAgentFranAsia". Below the "Agents" folder are "Databases", "DataManagement", "Framework", "RequestManagement", and "WorkloadManagement". At the bottom of the tree are "Website", "Resources", and "Operations". The bottom status bar shows the text "> Manage remote configuration" on the left and "vhamar@ dirac_admin (/O=GRID-FR/C=FR/O=CNRS/OU=CPPM)" on the right.



CE2CSAgent



Allowing sites

- ▶ After a site is added, to be active must be allowed.
- ▶ `dirac-admin-allow-site` command add the site to the mask for the current setup.

`dirac-admin-allow-site [option|cfgfile] ... Site Comment`

- ▶ For example:

`dirac-admin-allow-site LCG.IN2P3.fr 'France'`

- ▶ To remove a site from active mask for current setup the following command can be used:

```
dirac-admin-ban-site [option|cfgfile] ... Site Comment
```

For example:

```
$ dirac-admin-ban-site LCG.IN2P3.fr 'Pilot installation problems'
```

- ▶ `dirac-admin-get-banned-sites.py (<options>|<cfgFile>)*`
- ▶ Example:
- ▶ `$dirac-admin-get-banned-sites.py LCG.IN2P3.fr` Site not present in logging table

- ▶ `dirac-admin-site-mask-logging [option|cfgfile] ... Site ...`
- ▶ Arguments:
- ▶ Site: Name of the Site
- ▶ Example:
- ▶ `$ dirac-admin-site-mask-logging LCG.IN2P3.fr Site Mask
Logging Info for LCG.IN2P3.fr Active 2010-12-08 21:28:16
(atsareg) ""`



-
- ▶ **dirac-admin-site-info**
 - ▶ Print Configuration information for a given Site
 - ▶ Usage:
 - ▶ `dirac-admin-site-info [option|cfgfile] ... Site ...`
 - ▶ Arguments:
 - ▶ Site: Name of the Site
 - ▶ Example:
 - ▶ `$ dirac-admin-site-info LCG.IN2P3.fr {'CE': 'cclcgceli01.in2p3.fr, cclcgceli03.in2p3.fr, sbgcel.in2p3.fr, clrlcgce01.in2p3.fr, clrlcgce02.in2p3.fr, clrlcgce03.in2p3.fr, grid10.lal.in2p3.fr, polgrid1.in2p3.fr', 'Coordinates': '4.8655:45.7825', 'Mail': 'grid.admin@cc.in2p3.fr', 'MoUTierLevel': '1', 'Name': 'IN2P3-CC', 'SE': 'IN2P3-disk, DIRAC-USER'}`



Adding Storage Elements

DIRAC SE attributes

The screenshot displays the DIRAC configuration interface. The main pane shows a tree view of resources. Under 'StorageElements', the 'DIRAC-USER' folder is expanded, showing the following configuration attributes:

- DefaultProtocols = file, root, rfiio, gsiftp
- ProductionSandboxSE
- DIRAC-USER
 - BackendType = DISET
 - AccessProtocol.1
 - Host = dirac.in2p3.fr
 - Port = 9148
 - ProtocolName = DIP
 - Protocol = dips
 - Path = /DataManagement/StorageElement
 - Access = remote
 - SpaceToken =
 - WSUrl =
- CPPM-disk
- IBCP-disk
- IN2P3-disk
- IPSL-IPGP-disk
- IRES-disk

The bottom status bar shows the user 'vhamar@ dirac_admin' and the path '(/O=GRID-FR/C=FR/O=CNRS/OU=CPPM/C'.



Adding Storage Elements gLite SE attributes

Jobs ▾ Views ▾ Selected setup: Dir

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- Resources
 - JSAGA
 - FileCatalogs
 - Sites
 - StorageElements
 - DefaultProtocols = file, root, rfiio, gsiftp
 - ProductionSandboxSE
 - DIRAC-USER
 - CPPM-disk
 - BackendType = dpm
 - AccessProtocol.1
 - Host = marsedpm.in2p3.fr
 - Port = 8446
 - ProtocolName = SRM2
 - Protocol = srm
 - Path = /dpm/in2p3.fr/home/
 - Access = remote
 - SpaceToken =
 - WSUrl = /srm/managerv2?SFN=
 - IBCP-disk
 - IN2P3-disk
 - IPSL-IPGP-disk
 - IRES-disk

uration > Manage remote configuration vhamar@ dirac_admin ▾ (/O=GRID-FR/C=FR/O=CNRS/OU=CPPM/CN=)

-
- ▶ Enable using one or more Storage Elements
 - ▶ Usage:
 - ▶ `dirac-admin-allow-se SE1 [SE2 ...]`
 - ▶ Options:
 - ▶ `-r --AllowRead` :Allow only reading from the storage element
 - ▶ `-w --AllowWrite` :Allow only writing to the storage element
 - ▶ `-S: --Site=` :Allow all SEs associated to site
 - ▶ Example:
 - ▶ `$ dirac-admin-allow-se M3PEC-disk $`



-
- ▶ **dirac-admin-ban-se**
 - ▶ Ban one or more Storage Elements for usage
 - ▶ Usage:
 - ▶ `dirac-admin-ban-se SE1 [SE2 ...]`
 - ▶ Options:
 - ▶ `-r --BanRead` : Ban only reading from the storage element
 - ▶ `-w --BanWrite` : Ban writing to the storage element
 - ▶ `-S: --Site=` : Ban all SEs associate to site
 - ▶ Example:
 - ▶ `$ dirac-admin-ban-se M3PEC-disk`



Adding File Catalogs DIRAC FC attributes

A screenshot of the DIRAC configuration management interface. The main window displays a tree view of configuration folders. The 'FileCatalogs' folder is expanded, showing a 'FileCatalog' sub-folder with the following attributes:

- AccessType = Read-Write
- Status = Active
- CatalogType = FileCatalog
- CatalogURL = dips://ccdirac03.in2p3.fr:9197/DataManagement/FileCatalog

Other folders visible in the tree include 'None Configuration', 'DIRAC', 'Registry', 'Systems', 'Website', 'Resources', 'JSAGA', 'LcgFileCatalogCombined', 'Sites', 'StorageElements', 'StorageElementGroups', and 'Operations'. The interface includes a 'Views' dropdown at the top left and a 'Selected setup:' field at the top right. The bottom status bar shows the user 'vhamar@ dirac_admin' and the path '/O=GRID-FR/C=FR/O=CNRS/OU=CPPM'.



Adding File Catalogs LFC Attributes



Site Director

- ▶ The *SiteDirector* is usually serving one or several sites and can run as part of the central service installation or as an on-site component. At the initialization phase it gets description of the site's capacity and then runs in a loop performing the following operations:
- ▶ Check if there are tasks in the DIRAC TaskQueue eligible for running on the site;
- ▶ If there are tasks to run, check the site current occupancy in terms of numbers of already running or waiting pilot jobs;
- ▶ If there is a spare capacity on the site, submit a number of pilot jobs corresponding to the number of user jobs in the TaskQueue and the number of slots in the site computing cluster;
- ▶ Monitor the status of submitted pilot jobs, update the PilotAgentsDB accordingly;
- ▶ Retrieve the standard output/error of the pilot jobs.
- ▶ *SiteDirector* is submitting pilot jobs with credentials of a user entitled to run *generic* pilots for the given user community. The *generic* pilots are called so as they are capable of executing jobs on behalf of community users.



▶ Configuring Site Director

- ▶ The *SiteDirector* configuration is defined in the standard way as for any DIRAC agent. It belongs to the WorkloadManagement System and its configuration section is:

`/Systems/WorkloadManagement/<instance>/Agents/SiteDirector`



SubmitPools



Adding a new VO



What we have learnt?

