



gLite technical aspects and installation

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- **Introduction about Grid computing**
- **Introduction to Manual Installation & Configuration**
- **References**



Grid Systems & Applications aim to:

- **Integrate**
- **Virtualise**
- **Manage**

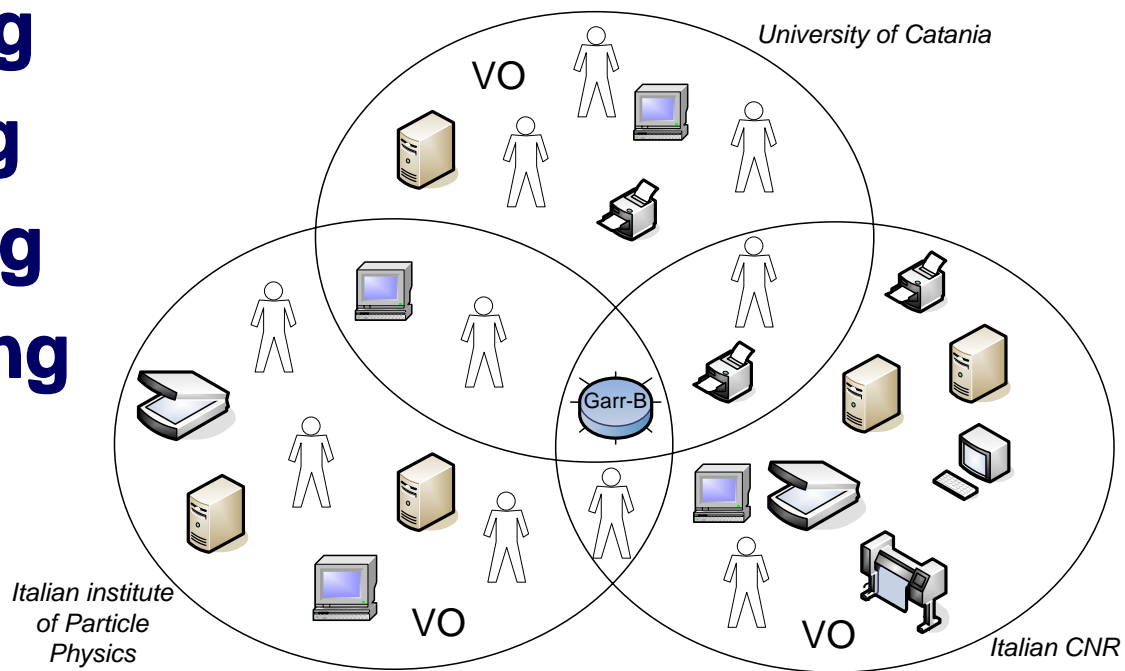


RESOURCEs and SERVICEs across different VOs.

- **VO** – Individuals and/or Institutions having direct access to resources.



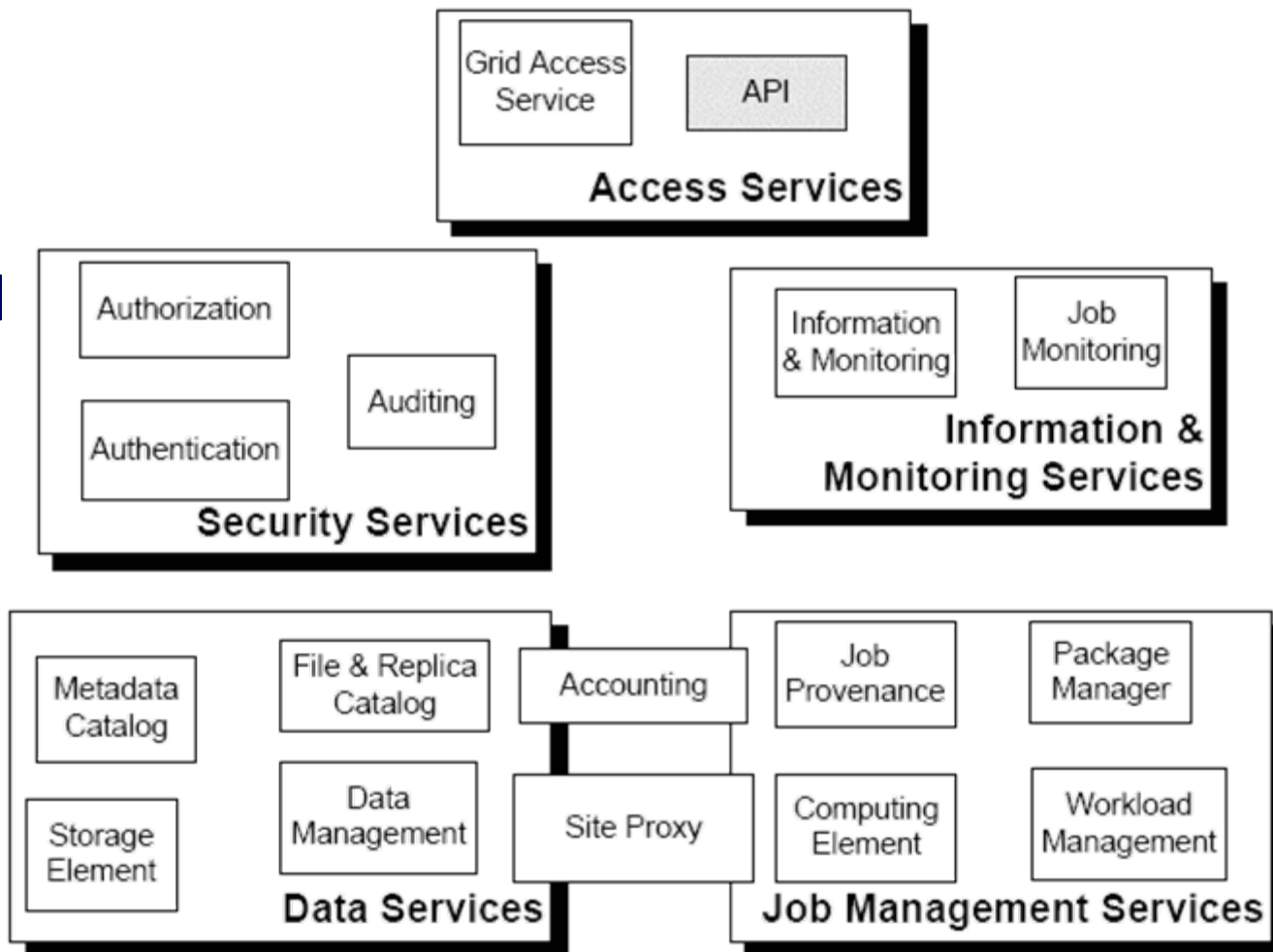
- **Accessing**
- **Allocating**
- **Monitoring**
- **Accounting**



- **Grid Middleware - Layer between services and physical resources**



4 High level services
+ CLI & API





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The gLite 3.0 middleware installation is based on the Debian *apt-get* tool and on a set of shell scripts provided with the YAIM method.

Operating System Installation

Java Installation

Node Synchronization

YAIM Installation

Site Configuration File

Middleware Installation

Certification Authorities

Host Certificates

Middleware Configuration



The current version of the gLite Middleware runs on *Scientific Linux 3 (SL3)*.

All the needed information about this distribution can be retrieved in this link <http://www.scientificlinux.org>

The images (iso) to create the CD(s) and DVD(s) with this distribution can be found in these locations:

<ftp://ftp.scientificlinux.org/linux/scientific/30x/iso/>

<http://linuxsoft.cern.ch/cern/slc306/iso/>



- You should install java sdk 1.4.2 on your system before installing the middleware.
 - Download it from SUN java web site (1.4.2 is required - <http://java.sun.com/j2se/1.4.2/download.html>).

W A R N I N G

You should absolutely install the J2SDK 1.4.2 rpm package (if you do not install it in RPM format you'll not be able to install the middleware)

- Set in your `site-info.def` (YAIM configuration file) the variable **JAVA_LOCATION** to your java installation directory.



- A general requirement for the gLite nodes is that they are synchronized.
- Configure the file `/etc/ntp.conf` by adding the lines dealing with your time server configuration such as, for instance:

```
# Prohibit general access to this service.  
restrict default ignore  
restrict 193.206.144.10 mask 255.255.255.255  
nomodify notrap noquery
```

```
server 127.127.1.0 # local clock  
fudge 127.127.1.0 stratum 10  
server ntp-1.infn.it
```



- **Edit the file `/etc/ntp/step-tickers` adding a list of your time server(s) hostname(s)**

```
cat /etc/ntp/step-tickers  
193.206.144.10
```

- **If you are using iptables, you can add the following entry**

```
-A INPUT -s <NTP-serverIP-1> -p udp --dport  
123 -j ACCEPT
```

- **You've to restart the firewall :**
`/etc/init.d/iptables restart`

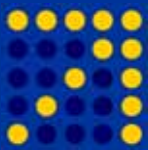


- **Activate the ntpd service with the following commands:**

```
# ntpdate <your ntp server name>  
# service ntpd start  
# chkconfig ntpd on
```

- **You can check ntpd status by running the following command :**

```
# ntpq -p
```



- In order to work with the yaim installation and configuration tool, it must be installed on the target node.
- In order to download yaim..
 - find the latest version at <http://www.cern.ch/grid-deployment/gis/yaim/>
 - Download it using
 - `wget http://www.cern.ch/grid-deployment/gis/yaim/glite-yaim-x.x.x-x.noarch.rpm`
 - Install using
 - `rpm -ivh glite-yaim-x.x.x-x.noarch.rpm`



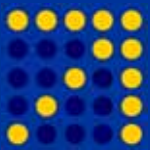
- **Copy the yaim configuration template file into the root dir:**

```
cp /opt/glite/yaim/examples/site-info.def  
  /root/site-info.def
```

this file contains all the relevant information in order to install and configure each target node.

The Site Configuration File is composed by a set of statements like this: `variable=value`

Comment characters “#” can be used within the file.



WARNING: The Site Configuration File is sourced by the configuration scripts. Therefore there must be no spaces around the equal sign.

Example of wrong configuration → `SITE_NAME = my-site`

Example of **CORRECT** configuration → `SITE_NAME=my-site`

A simple syntax test to make is to run the command:

`source site-info.def` and check that no error messages are produced.



- **CA_REPOSITORY :**
 - APT repository with Certification Authorities (use the one in the example).
- **CE_BATCH_SYS :**
 - Implementation of site batch system. Available values are ``torque'', ``lsf'', ``pbs'', ``condor'' etc.
- **CE_CPU_MODEL:**
 - Model of the CPU used by the WN (WN specification). This parameter is a string whose domain is not defined yet in the GLUE Schema. The value used for Pentium III is "PIII".
- **CE_CPU_SPEED :**
 - Clock frequency in Mhz (WN specification).
- **CE_CPU_VENDOR :**
 - Vendor of the CPU. used by the WN (WN specification). This parameter is a string whose domain is not defined yet in the GLUE Schema. The value used for Intel is ``intel".
- **CE_HOST :**
 - Computing Element Hostname.
- **CE_INBOUNDIP :**
 - TRUE if inbound connectivity is enabled at your site, FALSE otherwise (WN specification).



- **JAVA_LOCATION :**
 - Path to Java VM installation. It can be used in order to run a different version of java installed locally.
- **GLOBUS_TCP_PORT_RANGE :**
 - Port range for Globus IO.
- **PX_HOST :**
 - PX hostname.
- **RB_HOST :**
 - Resource Broker Hostname.
- **REG_HOST :**
 - RGMA Registry hostname.
- **MON_HOST :**
 - MON Box Hostname.
- **WMS_HOST :**
 - Hostname of the gLite WMS/LB server.
- **VOS :**
 - List of supported VOs.



**Click [here](#) to download
an example of
Site Configuration File
(site-info.def)**



- In order to install the target node with the desired middleware packages run the command:

```
/opt/glite/yaim/scripts/install_node  
<site-configuration-file>  
<meta-package>  
[ <meta-package>... ]
```

Usage example(s):

```
/opt/glite/yaim/scripts/install_node site-  
info.def lcg-CE
```

```
/opt/glite/yaim/scripts/install_node site-  
info.def RB BDII
```



Metapackage(s) available for SL3

<i>Node Type</i>	<i>Node Type</i>	<i>Node Description</i>
gLite WMS and LB	WMSLB	Combined WMS LB node
glite CE	gliteCE	The gLite Computing Element
FTS	FTS	gLite File Transfer Server
FTA	FTA	gLite File Transfer Agent
BDII	BDII	A top level BDII
Computing Element (middleware only)	CE	It does not configure any LRMS
Computing Element (with Torque) *	CE_torque	It configures also the 'Torque' LRMS client and server (see 12.6 for details)
LCG File Catalog server *	LFC_mysql	Set up a mysql based LFC server
MON-Box	MON	RGMA-based monitoring system collector server
e2emonit	E2EMONIT	RGMA-based monitoring system collector server
Proxy	PX	Proxy Server
Resource Broker	RB	Resource Broker
Classic Storage Element	SE_classic	Storage Element on local disk
Disk Pool Manager (mysql) *	SE_dpm_mysql	Storage Element with SRM interface and mysql backend
Disk Pool Manager disk *	SE_dpm_disk	Disk server for SE_dpm
dCache Storage Element	SE_dcache	Storage Element interfaced with dCache
Re-locatable distribution *	TAR_UI or TAR_WN	It can be used to set up a Worker Node or a UI (see 12.9 for details)
User Interface	UI	User Interface
VO agent box	VOBOX	Machine to run VO agents
Worker Node (middleware only)	WN	It does not configure any LRMS
Worker Node (with Torque client)	WN_torque	It configures also the 'Torque' LRMS client



- The installation of the up-to-date version of the Certification Authorities (CA) is automatically done by the Middleware Installation
- Anyway, as the list and structure of Certification Authorities (CA) accepted by the LCG project can change independently of the middleware releases you can simply run on the node the command:

apt-get update && apt-get -y install lcg-CA

in order to keep the CA(s) up-to-date on your node.



- All nodes except UI, WN and BDII require the host certificate files before you start their installation.
 - Contact your national Certification Authority (CA) to understand how to obtain a host certificate if you do not have one already.
 - Instruction to obtain a CA list can be found in <http://grid-deployment.web.cern.ch/grid-deployment/lcg2CAlist.html>
- Once you have obtained a valid certificate
 - *hostcert.pem* (containing the machine public key)
 - *hostkey.pem* (containing the machine private key)

place the two files in the target node into the directory `/etc/grid-security` with the right permissions:

- `chmod 644 hostcert.pem`
- `chmod 400 hostkey.pem`



- The general procedure to *configure* the middleware packages, that have been installed so far, is to run the command:

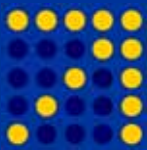
```
/opt/glite/yaim/scripts/configure_node  
<site-configuration-file>  
<node-type>  
[ <node-type> ... ]
```

Usage example(s):

```
/opt/glite/yaim/scripts/configure_node  
site-info.def  
WN_torque
```



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- **No automatic firewall configuration is provided by this version of the configuration scripts.**
- **A complete list of which port(s) have to be opened for each service node is maintained in this location**

http://jra1mw.cvs.cern.ch:8180/cgi-bin/jra1mw.cgi/org.glite.site-info.ports/doc/?only_with_tag=HEAD



- **For any help contact your ROC**

<http://egee-sa1.web.cern.ch/egee-sa1/ROC-support.htm>



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- **gLite Middleware**

http://glite.web.cern.ch/glite/packages/R3.0/R20060502/doc/release_notes.html

- **gLite Documentation**

<http://glite.web.cern.ch/glite/documentation/>

- **Generic Installation and Configuration**

<http://grid-deployment.web.cern.ch/grid-deployment/documentation/LCG2-Manual-Install/>

