This work is co-funded by the EC EMI project under the FP7 Collaborative Projects Grant Agreement Nr. INFSO-RI-261611.
# Table of Contents

Generic Installation & Configuration for EMI 3.................................................................1

**Installing the Operating System**........................................................................................2
   Scientific Linux 5 & 6 .............................................................................................................2
   Debian 6 ................................................................................................................................2
   Node synchronization, NTP installation and configuration .....................................................2
   Cron and logrotate ..................................................................................................................3

Host Certificates....................................................................................................................4

**Installing the Middleware**................................................................................................5
   Repositories ..........................................................................................................................5
      The Certification Authority repository .............................................................................5
      The EPEL repository .........................................................................................................5
      The middleware (EMI) repositories ..................................................................................5
         Giving EMI repositories precedence over EPEL ...............................................................6
      Configuring the use of EMI 3 repositories .......................................................................6
   Important note on automatic updates ..................................................................................7
   Installations .........................................................................................................................7

**Configuring the Middleware**............................................................................................10
   Using the YAIM configuration tool ......................................................................................10
   Configuration information ................................................................................................10
      The LSF batch system .......................................................................................................12
      The CREAM for LSF .......................................................................................................12
      The WN for LSF .............................................................................................................12
      Note on site-BDII for LSF ..............................................................................................12
      The Torque/PBS batch system .......................................................................................13
      TORQUE Server ..............................................................................................................13
      The WN for Torque/PBS .................................................................................................13
   The UI ................................................................................................................................13

Changelog................................................................................................................................14
Generic Installation & Configuration for EMI 3

This document is addressed to Site Administrators responsible for middleware installation and configuration. It is a generic guide to manual installation and configuration for EMI products.

The list of supported products and services can be found in the EMI 3 web pages:

- EMI 3 (Monte Bianco) products list

When installing a particular product please also have a look at the specific release page to get specific installation & configuration information.
Installing the Operating System

All EMI 3 components are fully supported on the **SL5/x86_64** & **SL6/x86_64** platforms with EPEL as repository for external components.

Full platform support means the component is distributed from the EMI repository using certified source and binary packages according to the format specification of the platform. A subset of services, mainly clients and libraries part of the User Interface, is also available for Debian 6 64bit

**Scientific Linux 5 & 6**

For more information on Scientific Linux please check: [http://www.scientificlinux.org](http://www.scientificlinux.org)

All the information to install this operating system can be found at [https://www.scientificlinux.org/download](https://www.scientificlinux.org/download)

Example of **sl5.repo** file:

```
[core]
name=SL 5 base
baseurl=http://linuxsoft.cern.ch/scientific/5x/$basearch/SL
    http://ftp.scientificlinux.org/linux/scientific/5x/$basearch/SL
    http://ftp1.scientificlinux.org/linux/scientific/5x/$basearch/SL
    http://ftp2.scientificlinux.org/linux/scientific/5x/$basearch/SL
protect=0
```

Example of **sl6.repo** file:

```
[core]
name=SL 6 base
baseurl=http://linuxsoft.cern.ch/scientific/6x/$basearch/SL
    http://ftp.scientificlinux.org/linux/scientific/6x/$basearch/SL
protect=0
```

**Debian 6**

For more information on Debian please check [http://www.debian.org/](http://www.debian.org/).

All the information to install this operating system can be found at [http://www.debian.org/releases/stable/installmanual](http://www.debian.org/releases/stable/installmanual)

Example of **deb.list** file:

```
deb http://ftp.it.debian.org/debian/ squeeze main contrib non-free
deb-src http://ftp.it.debian.org/debian/ squeeze main contrib non-free

deb http://security.debian.org/ squeeze/updates main contrib
deb-src http://security.debian.org/ squeeze/updates main contrib
```

**Node synchronization, NTP installation and configuration**

A general requirement is that the nodes are synchronized. This requirement may be fulfilled in several ways. If your nodes run under AFS they are most likely already synchronized. Otherwise, you can use the NTP protocol with a time server.
Instructions and examples for a NTP client configuration are provided in this section. If you are not planning to use a time server on your machine you can just skip this section.

Use the latest ntp version available for your system. If you are using APT, an apt-get install ntp will do the work.

- Configure the file /etc/ntp.conf by adding the lines dealing with your time server configuration such as, for instance:

```
restrict <time_server_IP_address> mask 255.255.255.255 nomodify notrap noquery
server <time_server_name>
```

Additional time servers can be added for better performance results. For each server, the hostname and IP address are required. Then, for each time-server you are using, add a couple of lines similar to the ones shown above into the file /etc/ntp.conf.

- Edit the file /etc/ntp/step-tickers adding a list of your time server(s) hostname(s), as in the following example:

```
137.138.16.69
137.138.17.69
```

- If you are running a kernel firewall, you will have to allow inbound communication on the NTP port. If you are using iptables, you can add the following to /etc/sysconfig/iptables

```
-A INPUT -s NTP-serverIP-1 -p udp --dport 123 -j ACCEPT
-A INPUT -s NTP-serverIP-2 -p udp --dport 123 -j ACCEPT
```

Remember that, in the provided examples, rules are parsed in order, so ensure that there are no matching REJECT lines preceding those that you add. You can then reload 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's status by running the following command

```
# ntpq -p
```

**Cron and logrotate**

Many middleware components rely on the presence of cron (including support for /etc/cron.* directories) and logrotate. You should make sure these utils are available on your system.
Host Certificates

All nodes except UI, WN and BDII require the host certificate/key files to be installed. Contact your Certification Authority (CA) to understand how to obtain a host certificate if you do not have one already.

Once you have obtained a valid certificate:

- *hostcert.pem* - containing the machine public key
- *hostkey.pem* - containing the machine private key

make sure to place the two files in the target node into the `/etc/grid-security` directory and check the access right for `hostkey.pem` is only readable by root and that the public key, `hostcert.pem`, is readable by everybody.
Installing the Middleware

For SL5 & SL6 the YUM package manager is considered the to be the default installation tool. For Debian, apt is used.

Repositories

For a successful installation, you will need to configure your package manager to reference a number of repositories (in addition to your OS):

The Certification Authority repository

All the details on how to install the CAs can be found in EGI IGTF release pages (https://wiki.egi.eu/wiki/EGI_IGTF_Release). It contains information about how to configure YUM & APT managers for downloading and installing the trust anchors ("Certification Authorities" or "CAs") that all sites should install.

NOTE: BDII site and top services do not need, for the moment, the installation of the CAs.

The EPEL repository

If not present by default on your nodes, you should enable the EPEL repository (https://fedoraproject.org/wiki/EPEL)

EPEL has an 'epel-release' package that includes gpg keys for package signing and repository information. Installing the latest version of epel-release package available on EPEL5 and EPEL6 repositories like:

- http://download.fedoraproject.org/pub/epel/5/x86_64/,

or


should allow you to use normal tools, such as yum, to install packages and their dependencies. By default the stable EPEL repo is enabled.

Example of epel.repo file:

```bash
[extras]
name=epel
mirrorlist=http://mirrors.fedoraproject.org/mirrorlist?repo=epel-5&arch=$basearch
protect=0

or

[extras]
name=epel
mirrorlist=http://mirrors.fedoraproject.org/mirrorlist?repo=epel-6&arch=$basearch
protect=0
```

The middleware (EMI) repositories

All EMI products are distributed from a single repository (http://emisoft.web.cern.ch/emisoft) having the following structure:
• EMI-production (stable), EMI/{1,2,3}:
  ♦ stable and signed, well tested software components, recommended to be installed on production-sites;
• deployment/{1,2,3}:
  ♦ signed packages that will become part of the next stable distribution; passed the certification and validation phase and are available for technical-previews
• testing/{1,2,3}:
  ♦ unsigned packages that will become part of the next stable distribution; in the certification stage, available for technical preview

The packages are signed with the EMI gpg key, that can be downloaded from http://emisoft.web.cern.ch/emisoft/dist/EMI/3/RPM-GPG-KEY-emi. Please import the key BEFORE starting!

The fingerprint of the key is:

<table>
<thead>
<tr>
<th>Type</th>
<th>Fingerprint</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>pub</td>
<td>1024D/DF9E12EF</td>
<td>2011-05-04</td>
</tr>
</tbody>
</table>

uid Doina Cristina Aiftimiei (EMI Release Manager) <aiftim@pd.infn.it>
sub 2048g/C1E57858 2011-05-04

• for SL5/SL6 save the key under /etc/pki/rpm-gpg/

  # rpm --import http://emisoft.web.cern.ch/emisoft/dist/EMI/3/RPM-GPG-KEY-emi

• for Debian:

  # wget -q -O - http://emisoft.web.cern.ch/emisoft/dist/EMI/3/RPM-GPG-KEY-emi | sudo apt-key add -

**Giving EMI repositories precedence over EPEL**

It is strongly recommended that EMI repositories take precedence over EPEL when installing and upgrading packages.

For manual configuration:

• you must install the **yum-priorities** plugin and ensure that its configuration file, /etc/yum/pluginconf.d/priorities.conf

is as follows:

```
[main]
enabled = 1
check_obsoletes = 1
```

For automatic configuration:

• we strongly recommend the use of **emi-release** package. Please follow the instructions given bellow on what version of the package, how to get it and install according to your deployment scenario (upgrade or fresh installation)

**Configuring the use of EMI 3 repositories**

• EMI 3 production repositories are available at:
  ♦ http://emisoft.web.cern.ch/emisoft/dist/EMI/3/

  • YUM & APT configuration files are available at:
• update EMI repositories on a node with **EMI 1 middleware to EMI 3** (SL5/x86_64):
  ♦ remove first the emi-release package installed on your node:
    
    ```bash
    # rpm -e emi-release
    ```
  ♦ install the EMI 3 emi-release package:
    
    ```bash
    # yum localinstall emi-release-3.0.0-2.el5.noarch.rpm (*)
    ```

• update EMI repositories on a node with **EMI 2 middleware to EMI 3** (SL5/x86_64):
  
  ```bash
  # rpm -Uvh http://emisoft.web.cern.ch/emisoft/dist/EMI/3/repos/sl5-x86_64/base/emi-release-3.0.0-2.el5.noarch.rpm
  or
  # wget http://emisoft.web.cern.ch/emisoft/dist/EMI/3/repos/sl5-x86_64/base/emi-release-3.0.0-2.el5.noarch.rpm
  # yum localupdate emi-release-3.0.0-2.el5.noarch.rpm (*)
  ```

• install EMI 3 repositories on a fresh node, without EMI middleware:
  ♦ SL5/x86_64:
    
    ```bash
    # wget http://emisoft.web.cern.ch/emisoft/dist/EMI/3/repos/sl5-x86_64/base/emi-release-3.0.0-2.el5.noarch.rpm
    # yum localinstall emi-release-3.0.0-2.el5.noarch.rpm (*)
    ```
  ♦ SL6/x86_64:
    
    ```bash
    # yum localinstall emi-release-3.0.0-2.el6.noarch.rpm (*)
    ```
  ♦ Debian:
    
    ```bash
    # dpkg -i emi-release_3.0.0-2.deb6.1_all.deb
    ```

(*): please add the option "--nogpgcheck" if you didn't download first the key.

These packages will install required dependencies, the EMI public key and ensures the precedence of EMI repositories over EPEL and Debian.

**Important note on automatic updates**

Several site use auto update mechanism. Sometimes middleware updates require non-trivial configuration changes or a reconfiguration of the service. This could involve service restarts, new configuration files, etc, which makes it difficult to ensure that automatic updates will not break a service. Thus

**WE STRONGLY RECOMMEND NOT TO USE AUTOMATIC UPDATE PROCEDURE OF ANY KIND**

on the EMI middleware repositories (you can keep it turned on for the OS). You should read the update information provides by each service and do the upgrade manually when an update has been released!

**Installations**

You need to have enabled only the above repositories (Operating System, EPEL, Certification Authority, EMI).

Example of a general installation of a product / service:
• SL5/SL6:

# yum update
# yum install ca-policy-egi-core
# yum install <meta-package/package name>

• Debian6:

# apt-get update
# apt-get install ca-policy-egi-core
# apt-get install <meta-package/package name>

NOTE: it happened that on other operating systems than SL5/x86_64, as for example CentOS, for certain node-types you have to install first the jdk (SunJdk) package. Please refer to your Operating System documentation to learn how to do this.

The table below lists the available EMI’s meta-packages and packages:

<table>
<thead>
<tr>
<th>Node Type / Product Name</th>
<th>meta-package name</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>AMGA_postgresql</td>
<td>emi-amga-postgresql</td>
<td>-</td>
</tr>
<tr>
<td>APEL publisher</td>
<td>apel-ssm apel-lib apel-client</td>
<td>-</td>
</tr>
<tr>
<td>ARC-CE</td>
<td>nordugrid-arc-compute-element</td>
<td>-</td>
</tr>
<tr>
<td>ARC Clients</td>
<td>nordugrid-arc-client-tools</td>
<td>-</td>
</tr>
<tr>
<td>ARC gridftp</td>
<td>nordugrid-arc-gridftp</td>
<td>-</td>
</tr>
<tr>
<td>ARC InfoSys</td>
<td>nordugrid-arc-information-index</td>
<td>-</td>
</tr>
<tr>
<td>ARGUS</td>
<td>emi-argus</td>
<td>emi-argus</td>
</tr>
<tr>
<td>BDII_site</td>
<td>emi-bdii-site</td>
<td>-</td>
</tr>
<tr>
<td>BDII_top</td>
<td>emi-bdii-top</td>
<td>-</td>
</tr>
<tr>
<td>CLUSTER</td>
<td>emi-cluster</td>
<td>-</td>
</tr>
<tr>
<td>CREAM</td>
<td>emi-cream-ce</td>
<td>-</td>
</tr>
<tr>
<td>CREAM LSF module</td>
<td>emi-lsf-utils</td>
<td>-</td>
</tr>
<tr>
<td>CREAM TORQUE module</td>
<td>emi-torque-utils</td>
<td>-</td>
</tr>
<tr>
<td>dCache</td>
<td>dcache-server</td>
<td>-</td>
</tr>
<tr>
<td>Component</td>
<td>EMId</td>
<td>Notes</td>
</tr>
<tr>
<td>------------------------</td>
<td>-----------------------</td>
<td>----------------------------------------------------------------------</td>
</tr>
<tr>
<td>DPM mysql</td>
<td>emi-dpm_mysql</td>
<td></td>
</tr>
<tr>
<td>DPM disk</td>
<td>emi-dpm_disk</td>
<td></td>
</tr>
<tr>
<td>EMIR</td>
<td>server: emi-emir</td>
<td></td>
</tr>
<tr>
<td></td>
<td>client: emird</td>
<td></td>
</tr>
<tr>
<td>FTS oracle</td>
<td>emi-fts_oracle, emi-fta_oracle</td>
<td></td>
</tr>
<tr>
<td>GLEXEC_wn</td>
<td>glexec-wn</td>
<td></td>
</tr>
<tr>
<td></td>
<td>yaim is no longer installed with metapackage: install yaim-glexec-wn separately</td>
<td></td>
</tr>
<tr>
<td>LB</td>
<td>emi-lb</td>
<td></td>
</tr>
<tr>
<td>LFC mysql</td>
<td>emi-lfc_mysql</td>
<td></td>
</tr>
<tr>
<td>LFC oracle</td>
<td>emi-lfc_oracle</td>
<td></td>
</tr>
<tr>
<td>MPI_utils</td>
<td>emi-mpi</td>
<td></td>
</tr>
<tr>
<td>Nagios</td>
<td>emi-nagios</td>
<td></td>
</tr>
<tr>
<td>Pseudonimity</td>
<td>pseudonymity-server</td>
<td></td>
</tr>
<tr>
<td></td>
<td>pseudonymity-ui</td>
<td></td>
</tr>
<tr>
<td>PX (MyProxy)</td>
<td>emi-px</td>
<td></td>
</tr>
<tr>
<td>STORM_backend</td>
<td>emi-storm-backend-mp</td>
<td></td>
</tr>
<tr>
<td>STORM_frontend</td>
<td>emi-storm-frontend-mp</td>
<td></td>
</tr>
<tr>
<td>STORM_checksum</td>
<td>emi-storm-checksum-mp</td>
<td></td>
</tr>
<tr>
<td>STORM_gridhttps</td>
<td>emi-storm-gridhttps-mp</td>
<td></td>
</tr>
<tr>
<td>STORM_globus_gridftp</td>
<td>emi-storm-globus-gridftp-mp</td>
<td></td>
</tr>
<tr>
<td>STORM_srm_client</td>
<td>emi-storm-srm-client-mp</td>
<td></td>
</tr>
<tr>
<td>TORQUE WN config</td>
<td>emi-torque-client</td>
<td></td>
</tr>
<tr>
<td>TORQUE server config</td>
<td>emi-torque-server</td>
<td></td>
</tr>
<tr>
<td>User Interface</td>
<td>emi-ui</td>
<td></td>
</tr>
<tr>
<td>UNICORE/X</td>
<td>unicore-unicorex6</td>
<td></td>
</tr>
<tr>
<td>UNICORE-UCC6</td>
<td>unicore-ucc6</td>
<td></td>
</tr>
<tr>
<td>UNICORE Gateway6</td>
<td>unicore-gateway6</td>
<td></td>
</tr>
<tr>
<td>UNICORE-HILA</td>
<td>unicore-hila-emi-es</td>
<td></td>
</tr>
<tr>
<td></td>
<td>unicore-hila-gridftp</td>
<td></td>
</tr>
<tr>
<td></td>
<td>unicore-hila-shell</td>
<td></td>
</tr>
<tr>
<td></td>
<td>unicore-hila-unicore6</td>
<td></td>
</tr>
<tr>
<td>UNICORE Registry6</td>
<td>unicore-registry6</td>
<td></td>
</tr>
<tr>
<td>UNICORE TSI6</td>
<td>unicore-tsi6</td>
<td></td>
</tr>
<tr>
<td>UNICORE XUUDB</td>
<td>unicore-xuudb</td>
<td></td>
</tr>
<tr>
<td>UNICORE UVOS</td>
<td>unicore-uvos-clc</td>
<td></td>
</tr>
<tr>
<td></td>
<td>unicore-uvos-server</td>
<td></td>
</tr>
<tr>
<td></td>
<td>unicore-uvos-webapp</td>
<td></td>
</tr>
<tr>
<td></td>
<td>unicore-uvos-webauth</td>
<td></td>
</tr>
<tr>
<td>VOMS_mysql</td>
<td>emi-voms-mysql</td>
<td></td>
</tr>
<tr>
<td>VOMS_oracle</td>
<td>emi-voms-oracle</td>
<td></td>
</tr>
<tr>
<td>WMS</td>
<td>emi-wms</td>
<td></td>
</tr>
<tr>
<td>WNODES</td>
<td>wnodes_bait</td>
<td></td>
</tr>
<tr>
<td></td>
<td>wnodes_hypervisor</td>
<td></td>
</tr>
<tr>
<td></td>
<td>wnodes_manager</td>
<td></td>
</tr>
<tr>
<td></td>
<td>wnodes_nameserver</td>
<td></td>
</tr>
<tr>
<td></td>
<td>wnodes_site_specific</td>
<td></td>
</tr>
<tr>
<td></td>
<td>wnodes_utils</td>
<td></td>
</tr>
<tr>
<td>Worker Node</td>
<td>emi-wn</td>
<td></td>
</tr>
</tbody>
</table>
Configuring the Middleware

Using the YAIM configuration tool

Some of EMI services can be configured using the YAIM tool. For a detailed description on how to configure the middleware with YAIM, please check the individual products/services guides and the YAIM Guide:

- old guide - https://twiki.cern.ch/twiki/bin/view/LCG/YaimGuide400
- new guide - WorkInProgress https://twiki.cern.ch/twiki/bin/view/EMI/EMIYaim

The YAIM-modules needed to configure a certain service/product are automatically installed with the middleware.

However, if you want to install YAIM packages separately, you can install them by running `yum install glite-yaim-<node-type>`. This will automatically install the YAIM module you are interested in together with yaim-core, which contains the core functions and utilities used by all the YAIM modules..

Configuration information

The table below lists the configuration instructions for some of EMI services:
<table>
<thead>
<tr>
<th>Module</th>
<th>YAIM configuration</th>
<th>More Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>FTS oracle</td>
<td><code>yaim config target &quot;emi_fts2&quot;, &quot;emi_fta2&quot;, &quot;emi_ftm2&quot;</code></td>
<td></td>
</tr>
<tr>
<td>GLEXEC_wn</td>
<td><code>yaim config target &quot;GLEXEC_wn&quot;</code></td>
<td></td>
</tr>
<tr>
<td></td>
<td><code>use yaim</code></td>
<td>The GLEXEC_wn should always be installed together with a WN.</td>
</tr>
<tr>
<td>LB</td>
<td><code>yaim config target &quot;LB&quot;</code></td>
<td></td>
</tr>
<tr>
<td>LFC mysql</td>
<td><code>yaim config target &quot;emi_lfc_mysql&quot;</code></td>
<td></td>
</tr>
<tr>
<td></td>
<td><code>use yaim</code></td>
<td></td>
</tr>
<tr>
<td></td>
<td><code>specific configuration</code></td>
<td></td>
</tr>
<tr>
<td>LFC oracle</td>
<td><code>yaim config target &quot;emi_lfc_oracle&quot;</code></td>
<td></td>
</tr>
<tr>
<td></td>
<td><code>use yaim</code></td>
<td></td>
</tr>
<tr>
<td></td>
<td><code>specific configuration</code></td>
<td></td>
</tr>
<tr>
<td>MPI_utils</td>
<td><code>for CE configuration see http://grid.ifca.es/wiki/Middleware/MpiStart/MpiUtils#CE_Configuration</code></td>
<td></td>
</tr>
<tr>
<td></td>
<td><code>for WN configuration see http://grid.ifca.es/wiki/Middleware/MpiStart/MpiUtils#WN_Configuration</code></td>
<td></td>
</tr>
<tr>
<td>PX (MyProxy)</td>
<td><code>yaim config target &quot;PX&quot;</code></td>
<td></td>
</tr>
<tr>
<td></td>
<td><code>use yaim</code></td>
<td></td>
</tr>
<tr>
<td>STORM_backend</td>
<td><code>yaim config target &quot;SE_storm_backend&quot;</code></td>
<td></td>
</tr>
<tr>
<td></td>
<td><code>use yaim</code></td>
<td></td>
</tr>
<tr>
<td>STORM_frontend</td>
<td><code>yaim config target &quot;SE_storm_frontend&quot;</code></td>
<td></td>
</tr>
<tr>
<td></td>
<td><code>use yaim</code></td>
<td></td>
</tr>
<tr>
<td>STORM_checksum</td>
<td><code>yaim config target &quot;SE_storm_checksum&quot;</code></td>
<td></td>
</tr>
<tr>
<td></td>
<td><code>use yaim</code></td>
<td></td>
</tr>
<tr>
<td>STORM_gridhttps</td>
<td><code>yaim config target &quot;SE_storm_gridhttps&quot;</code></td>
<td></td>
</tr>
<tr>
<td></td>
<td><code>use yaim</code></td>
<td></td>
</tr>
<tr>
<td>STORM_globus_gridftp</td>
<td><code>yaim config target &quot;SE_storm_globus_gridftp&quot;</code></td>
<td></td>
</tr>
<tr>
<td></td>
<td><code>use yaim</code></td>
<td></td>
</tr>
<tr>
<td>STORM_srm_client</td>
<td><code>yaim config target &quot;TORQUE_client&quot;</code></td>
<td></td>
</tr>
<tr>
<td></td>
<td><code>use yaim</code></td>
<td></td>
</tr>
<tr>
<td>TORQUE WN config</td>
<td><code>yaim config target &quot;TORQUE_server&quot;</code></td>
<td></td>
</tr>
<tr>
<td></td>
<td><code>use yaim</code></td>
<td></td>
</tr>
<tr>
<td>CREAM TORQUE module</td>
<td><code>yaim config target &quot;TORQUE_utils&quot;</code></td>
<td></td>
</tr>
<tr>
<td></td>
<td><code>use yaim</code></td>
<td></td>
</tr>
<tr>
<td>UI</td>
<td><code>yaim config target &quot;UI&quot;</code></td>
<td></td>
</tr>
<tr>
<td></td>
<td><code>see details below</code></td>
<td></td>
</tr>
<tr>
<td>UNICORE/X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>UNICORE-UCC</td>
<td></td>
<td></td>
</tr>
<tr>
<td>UNICORE Gateway</td>
<td></td>
<td></td>
</tr>
<tr>
<td>UNICORE-HILA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>UNICORE Registry</td>
<td></td>
<td></td>
</tr>
<tr>
<td>UNICORE TSI</td>
<td></td>
<td></td>
</tr>
<tr>
<td>UNICORE XUUDB</td>
<td></td>
<td></td>
</tr>
<tr>
<td>UNICORE UVOS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>VOMS_mysql</td>
<td><code>yaim config target &quot;VOMS_mysql&quot;</code></td>
<td></td>
</tr>
<tr>
<td></td>
<td><code>use yaim</code></td>
<td>more information</td>
</tr>
<tr>
<td>VOMS_oracle</td>
<td><code>yaim config target &quot;VOMS_oracle&quot;</code></td>
<td></td>
</tr>
<tr>
<td></td>
<td><code>use yaim</code></td>
<td>more information</td>
</tr>
<tr>
<td>WMS</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The LSF batch system

You have to make sure that the necessary packages for submitting jobs to your LSF batch system are installed on your CE. By default, the packages come as tar balls. At CERN they are converted into rpms so that they can be automatically rolled out and installed in a clean way (in this case using Quattor).

Since LSF is a commercial software it is not distributed together with the gLite middleware. Visit the Platform's LSF home page for further information. You'll also need to buy an appropriate number of license keys before you can use the product.

The documentation for LSF is available on Platform Manuals web page. You have to register in order to be able to access it.

The CREAM for LSF

- follow the CREAM Configuration Guide

The WN for LSF

Apart from the LSF specific configurations settings there is nothing special to do on the worker nodes. After installing:

```bash
# yum install emi-wn
# /opt/glite/yaim/bin/yaim -c -s site-info.def -n WN
```

just use the plain WN configuration target.

```bash
/opt/glite/yaim/bin/yaim -c -s site-info.def -n WN
```

Note on site-BDII for LSF

When you configure your site-BDII you have to populate the [vomap] section of the `/etc/lcg-info-dynamic-scheduler.conf` file yourself. This is because LSF's internal group mapping is hard to figure out from yaim, and to be on the safe side the site admin has to crosscheck. Yaim configures the lcg-info-dynamic-scheduler in order to use the LSF info provider plugin which comes with meaningful default values. If you would like to change it edit the `/etc/glite-info-dynamic-lsf.conf` file. After YAIM configuration you have to list the LSF group - VOMS FQAN - mappings in the [vomap] section of the `/etc/lcg-info-dynamic-scheduler.conf` file.

As an example you see here an extract from CERN's config file:

```
vomap :
  grid_ATLAS:atlas
  grid_ATLASSGM:/atlas/Role=lcgadmin
  grid_ATLASSPRD:/atlas/Role=production
  grid_ALICE:alice
  grid_ALICESSGM:/alice/Role=lcgadmin
  grid_ALICEPRD:/alice/Role=production
  grid_CMS:cms
```
grid_CMSSGM:/cms/Role=lcgadmin
grid_CMSPRD:/cms/Role=production
grid_LHCB:lhcb
grid_LHCBSGM:/lhcb/Role=lcgadmin
grid_LHCBPBD:/lhcb/Role=production
grid_GEAR:gear
grid_GEARSGM:/gear/Role=lcgadmin
grid_GEANT4:geant4
grid_GEANT4SGM:/geant4/Role=lcgadmin
grid_UNOSAT:unosat
grid_UNOSAT:unosat/Role=lcgadmin
grid_SIXT:sixt
grid_SIXTSGM:/sixt/Role=lcgadmin
grid_EELA:eela
grid_EELASGM:/eela/Role=lcgadmin
grid_DTEAM:dteam
grid_DTEAMSGM:/dteam/Role=lcgadmin
grid_DTEAMPRD:/dteam/Role=production
grid_OPS:ops
grid_OPSGSM:/ops/Role=lcgadmin
module_search_path : ../lrms:../ett

The Torque/PBS batch system

TORQUE Server

• if you want to have a dedicated node for the TORQUE server:
  
  # yum install emi-torque-server emi-torque-utils
  # /opt/glite/yaim/bin/yaim -c -s site-info.def -n TORQUE_server -n TORQUE_utils

• if you want to install configure the TORQUE server on the same node as the CREAM Computing Element:

  # yum install emi-cream-ce emi-torque-server emi-torque-utils
  # /opt/glite/yaim/bin/yaim -c -s site-info.def -n creamCE -n TORQUE_server -n TORQUE_utils

For more details see the "CREAM System Administrator Guide":
http://wiki.italiangrid.it/twiki/bin/view/CREAM/SystemAdministratorGuideForEMI3

The WN for Torque/PBS

# yum install emi-wn emi-torque-client
# /opt/glite/yaim/bin/yaim -c -s site-info.def -n WN -n TORQUE_client

The UI

# yum install emi-ui
# /opt/glite/yaim/bin/yaim -c -s site-info.def -n UI

Note on site-BDII for LSF
Changelog

- 12.05.2014 - v. 3.0.0-2 - corrected APEL publisher details

This topic: EMI > GenericInstallationConfigurationEMI3
Topic revision: r13 - 11 May 2014 - DoinaCristinaAiftimiei