

CREAM CE Tutorial



Installation

Configuration

Troubleshooting

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Goal of the tutorial



- Installation of a EMI-2 CREAM CE with Torque and a worker node
- 2 AMD Opteron (x86_64) machines with SL5
- Installed components on the CE
 - CREAM service (tomcat container)
 - BLAH services (Bupdater, BNotifier)
 - Resource BDII
 - Torque services (main service, MAUI, munge)
 - Other services (Mysql, LB locallogger, Globus GridFTP)
- Installed components on the WN
 - Torque services (mom service, munge)

- Software repositories (yum, apt)
- Metapackages
- YAIM configuration

Basic OS repositories



- Disable DAG repository if available on the system
set `enabled=0` in `/etc/yum.repos.d/dag.repo`
- Install EPEL repositories:

```
rpm -Uvh
```

```
http://dl.fedoraproject.org/pub/epel/5/x86\_64/epel-release-5-4.noarch.rpm
```

Certification Authorities

- Install EGI trustanchor repository

```
wget http://repository.egi.eu/sw/production/cas/1/current/repo-files/EGI-trustanchors.repo -O /etc/yum.repos.d/EGI-trustanchors.repo
```

- Install the CA metapackage

```
yum install ca-policy-egi-core
```

- Install CRL fetch daemon (optional)

```
yum install fetch-crl
```

```
service fetch-crl-cron start
```

```
chkconfig fetch-crl-cron on
```

- Reference

```
https://wiki.egi.eu/wiki/EGI\_IGTF\_Release
```

Components installation



- Install EMI-2 repositories:

```
rpm --import http://emisoft.web.cern.ch/emisoft/dist/EMI/2/RPM-GPG-KEY-emi
```

```
rpm -Uvh http://emisoft.web.cern.ch/emisoft/dist/EMI/2/s15/x86_64/base\  
/emi-release-2.0.0-1.s15.noarch.rpm
```

- Install CREAM metapackage

```
yum install emi-cream-ce xml-commons-apis
```

- Install Torque metapackages

- On the CREAM node

```
yum install emi-torque-server emi-torque-utils
```

- On the worker node

```
yum install emi-wn emi-torque-client emi-torque-utils
```

Batch system specific setup

For Torque: munge configuration

- Create the key on the CREAM node

```
/usr/sbin/create-munge-key
```

- Copy the key from the CE into the Wns

- Check the permissions for the key

```
-r----- 1 munge munge 1024 Jan 03 09:57 munge.key
```

- Startup the services on the CE and on the WN

```
service munge start
```

```
chkconfig munge on
```

Security specific setup



- Host certificate and private key

```
/etc/grid-security/hostcert.pem
```

```
/etc/grid-security/hostcert.pem
```

- Check the permissions

```
chmod 600 /etc/grid-security/hostcert.pem
```

```
chmod 400 /etc/grid-security/hostkey.pem
```


YAIM (1)

- YAIM configuration files

site-info.def

groups.conf

users.conf

wn-list.conf

vo.d^{*}

services^{*}

- Same files for CREAM and WN configuration
- Examples in `/opt/glite/yaim/examples`
(<http://devel12.cnaf.infn.it:7444/pub/emi/yaim-config.tar.gz>)
- Deploy files in a local workarea (`/root/yaim-config`)

- `site-info.def`

is the main configuration file needed to execute the `yaim` command. It contains the list of variables common to multiple node types in form of key-value pairs.

Comments and information available at:

https://twiki.cern.ch/twiki/bin/view/LCG/Site-info_configuration_variables#site_info_def

- `services /glite-creamce`

contains `cream-ce` node type specific variables

- `users.conf`

defines the pool account user mapping, i.e. the UNIX users to be created on the service nodes that need them (mainly CE and WNs)

File format (fields must not have any white space):

```
UID:LOGIN:GID1[,GID2,...]:GROUP1[,GROUP2,...]:VO:FLAG:
```

- `groups.conf`

defines the VOMS group mapping, i.e. the user categories that must be accepted by the grid services provided by a site. It indicates for each category to which kind of local accounts the user should be mapped, where applicable.

File format (fields must not have any white space):

```
"VOMS_FQAN":GROUP:GID:FLAG:[VO]
```

- `wn-list.conf`

defines the list of WN hostnames (FQDN) in the site.

Hostnames have to be Fully Qualified Domain Names (FQDN)

- `vo.d`

contains a file name per VO whose name has to be the lower-cased version of the VO name. The matching file should contain the definitions for that VO. In case the VO is also defined in `site-info.def`, the `vo.d` file will overwrite the variables which are defined there.

Component configuration



- On the CE node

```
/opt/glite/yaim/bin/yaim -c -s yaim-config/site-info.def -n  
creamCE -n TORQUE_server -n TORQUE_utils
```

- On the WN

```
/opt/glite/yaim/bin/yaim -c -s yaim-config/site-info.def -n  
WN -n TORQUE_utils -n TORQUE_client
```

Troubleshooting - services



Check the status of the services on the CREAM node

- (WS container) service tomcat5 status
- (BLAH parser) service glite-ce-blah-parser status
- (Resource BDII) service bdii status
- (DB) service mysqld status
- (Local logger) service glite-lb-locallogger status
- (Globus gridftp) service globus-gridftp status
- (Torque server) service pbs_server status
- (Maui scheduler) service maui status
- (Munge daemon) service munge status

Troubleshooting - config. Files (1)



- CREAM service: `/etc/glite-ce-cream/cream-config.xml`
- BLAH: `/etc/blah.config`
- BLAH (old parser): `/etc/blparser.conf`
- Glexec+gJAF:
`/etc/glexec.conf`
`/etc/lcas/lcas-glexec.db`
`/etc/lcmaps/lcmaps-glexec.db`

- GridFTP + Glexec

`/etc/lcas/lcas.db`

`/etc/lcmaps/lcmaps.db`

- GridFTP + Argus:

`/etc/grid-security/gsi-pep-callout.conf`

Troubleshooting - Log files (1)



- Tomcat: `/var/log/tomcat5/catalina.out`
- Trustmanager: `/var/log/tomcat5/trustmanager.log`
- BLAH (new parser):
`/var/log/cream/glite-ce-bnotifier.log`
`/var/log/cream/glite-ce-bupdater.log`
- BLAH (old parser):
`/var/log/cream/glite-<lrms>parser.log`

Troubleshooting - Log files (2)

- GridFTP:

`/var/log/globus-gridftp.log`

`/var/log/gridftp-session.log`

- Glexec (default solution): `/var/log/messages`

- CREAM: `/var/log/cream/glite-ce-cream.log`

- Log config. file: `/etc/glite-ce-cream/log4j.properties`

<http://logging.apache.org/log4j/1.2/manual.html>

- Example: changing verbosity level

replace `log4j.logger.org.glite=info, fileout`

with `log4j.logger.org.glite=debug, fileout`

STRONG RECOMMENDATION:

Disable any automatic update procedure

Several update requires YAIM to be run

Automatic update can lead to unstable configuration of the services

http://forge.cnaif.infn.it/frs/download.php/101/disable_yum.sh

Troubleshooting - simple tests (1)



- Check nodes status with `lsr/bin/pbsnodes`
- Try to submit a simple job with `qsub` as a pool account user on the CE
- Delegate a proxy:

```
glite-ce-delegate-proxy -e vm04.ct.infn.it myid
```

Troubleshooting - simple tests (2)



- Submit a simple job:

```
glite-ce-job-submit -D myid -r vm04.ct.infn.it:8443 /cream-pbs-creamcert1
tests b-vm04.jdl
```

where the jdl contains:

```
[executable="/bin/cp";arguments="grid-mapfile out-`date +%s`N`-`whoami`.txt";
inputsandbox={"gsiftp://vm04.ct.infn.it/etc/grid-security/grid-mapfile"};
outputsandbox={"out*.txt"};
outputsandboxbasedesuri="gsiftp://vm04.ct.infn.it/tmp";
epilogue="/bin/sleep";
epiloguearguments="30";]
```

- Check the firewall configuration

Ports required:

https://wiki.italiangrid.it/wiki/bin/view/CREAM/ServiceReferenceCardEMI2#Open_ports

- Check the connection between CE and WN

try a simple `/usr/bin/ssh` from WN and CE as a pool account user

- CREAM site

<http://wiki.italiangrid.org/CREAM>

- Main reference guide

<http://wiki.italiangrid.org/twiki/bin/view/CREAM/SystemAdministratorGuideForEM12>