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# Notes about Installation and Configuration of a CREAM Computing Element using an external Torque server as batch system and ARGUS as authorization method

- These notes are provided by site admins on a best effort base as a contribution to the IGI communities and **MUST not be considered as a substitute of the Official IGI documentation** .
- This document is addressed to site administrators responsible for middleware installation and configuration.
- The goal of this page is to provide some hints and examples on how to install and configure an IGI **CREAM CE** service based on EMI middleware, in **no cluster mode**, with **TORQUE** as batch system on a **different host** and using an **external ARGUS server** for the users authorization

## References

1. About IGI - Italian Grid infrastructure
2. About IGI Release
3. IGI Official Installation and Configuration guide
4. EMI CREAM System Administrator Guide
5. Yaim Guide
6. site-info.def yaim variables
7. CREAM yaim variables
8. TORQUE Yaim variables
9. CREAM v.1.13
10. CREAM TORQUE module v. 1.0.0-1
11. Troubleshooting Guide for Operational Errors on EGI Sites
12. Grid Administration FAQs page

## Service installation

O.S. and Repos  O.S. and Repos 

### O.S. and Repos

- Starts from a fresh installation of Scientific Linux 5.x (x86\_64).

```
# cat /etc/redhat-release
Scientific Linux SL release 5.7 (Boron)
```

\* Install the additional repositories: EPEL, Certification Authority, UMD

```
# yum install yum-priorities yum-protectbase
# cd /etc/yum/repos.d/
# rpm -ivh http://mirror.switch.ch/ftp/mirror/epel//5/x86_64/epel-release-5-4.noarch.rpm
# wget http://repo-pd.italiangrid.it/mrepo/repos/egi-trustanchors.repo
# rpm -ivh http://repo-pd.italiangrid.it/mrepo/EMI/1/sl5/x86_64/updates/emi-release-1.0.1-1.sl5.n
# wget http://repo-pd.italiangrid.it/mrepo/repos/igi/sl5/x86_64/igi-emi.repo
```

- Be sure that SELINUX is disabled (or permissive). Details on how to disable SELINUX are here :

```
# getenforce
Disabled
```

Notes about Installation and Configuration of a CREAM Computing Element using an external Torque server

- Check the repos list (sl-\*.repo are the repos of the O.S. and they should be present by default).

```
# ls /etc/yum.repos.d/
egi-trustanchors.repo
emil-third-party.repo emil-base.repo emil-updates.repo
igi-emi.repo
epel.repo epel-testing.repo
sl-contrib.repo sl-fastbugs.repo sl-security.repo sl-testing.repo sl-debuginfo.repo sl.repo sl-sr
```

**IMPORTANT:** remove the dag repository if present

**yum install** [▶](#) **yum install** [▼](#)

## yum install

```
# yum clean all
Loaded plugins: downloadonly, kernel-module, priorities, protect-packages, protectbase, security,
Cleaning up Everything

# yum install ca-policy-egi-core
# yum install xml-commons-apis
# yum install emi-cream-ce
# yum install emi-torque-utils
# yum install glite-dgas-common glite-dgas-hlr-clients glite-dgas-hlr-sensors glite-dgas-hlr-sens
# yum install nfs-utils
```

see here for details

## Service configuration

You have to copy the configuration files in another path, for example root, and set them properly (see later):

```
# cp -r /opt/glite/yaim/examples/siteinfo/* .
```

**vo.d directory** [▶](#) **vo.d directory** [▼](#)

## vo.d directory

Create the vo.d directory for the VO configuration file (you can decide if keep the VO information in the site.def or putting them in the vo.d directory)

```
# mkdir vo.d
```

here an example for some VOs.

Information about the several VOs are available at the [CENTRAL OPERATIONS PORTAL](#) .

**users and groups configuration** [▶](#) **users and groups configuration** [▼](#)

## users and groups configuration

here an example on how to define pool accounts (ig-users.conf ) and groups (ig-groups.conf ) for several VOs

**wn-list.conf** [▶](#) **wn-list.conf** [▼](#)

## wn-list.conf

Set in this file the WNs list, for example:

```
# less wn-list.conf
wn01.cnaf.infn.it
wn02.cnaf.infn.it
wn03.cnaf.infn.it
wn04.cnaf.infn.it
```

[site-info.def](#) [site-info.def](#)

## site-info.def

**SUGGESTION:** you can use the same site-info.def used for the main CREAM computing element and for WNs, with just a few changes

```
CE_HOST=cremoso.$MY_DOMAIN
CE_PHYSCPU=0
CE_LOGCPU=0
BATCH_SERVER=cremino.cnaf.infn.it
```

For your convenience there is an explanation of each yaim variable. For more details look at [8, 9, 10]

[services/glite-creamce](#) [services/glite-creamce](#)

## services/glite-creamce

```
#
# YAIM creamCE specific variables
#

# LSF settings: path where lsf.conf is located
#BATCH_CONF_DIR=lsf_install_path/conf
#
# CE-monitor host (by default CE-monitor is installed on the same machine as
# cream-CE)
CEMON_HOST=$CE_HOST
#
# CREAM database user
CREAM_DB_USER=*****
#
CREAM_DB_PASSWORD=*****
# Machine hosting the BLAH blparser.
# In this machine batch system logs must be accessible.
#BLPARSER_HOST=set_to_fully_qualified_host_name_of_machine_hosting_blparser_server
BLPARSER_HOST=$CE_HOST
```

[services/dgas\\_sensors](#) [services/dgas\\_sensors](#)

## services/dgas\_sensors

```
#
# YAIM DGAS Sensors specific variables
#

#####
# DGAS configuration variables #
#####
# For any details about DGAS variables please refer to the guide:
# http://igrelease.forge.cnaf.infn.it/doku.php?id=doc:guides:dgas

# Reference Resource HLR for the site.
```

wn-list.conf

```

DGAS_HLR_RESOURCE="prod-hlr-01.pd.infn.it"

# Specify the type of job which the CE has to process.
# Set all on the main CE of the site, grid on the others.
# Default value: all
DGAS_JOBS_TO_PROCESS="grid"

# This parameter can be used to specify the list of VOs to publish.
# If the parameter is specified, the sensors (pushd) will forward
# to the Site HLR just records belonging to one of the specified VOs.
# Leave commented if you want to send records for ALL VOs
# Default value: parameter not specified
#DGAS_VO_TO_PROCESS="vo1;vo2;vo3..."

# Bound date on jobs backward processing.
# The backward processing does not consider jobs prior to that date.
# Default value: 2009-01-01.
#DGAS_IGNORE_JOBS_LOGGED_BEFORE="2011-11-01"

# Main CE of the site.
# ATTENTION: set this variable only in the case of site with a singleLRMS
# in which there are more than one CEs or local submission hosts (i.e. host
# from which you may submit jobs directly to the batch system).
# In this case, DGAS_USE_CE_HOSTNAME parameter must be set to the same value
# for all hosts sharing the lrms and this value can be arbitrary chosen among
# these submitting hostnames (you may choose the best one).
# Otherwise leave it commented.
# we have 2 CEs, cremino is the main one
DGAS_USE_CE_HOSTNAME="cremino.cnaf.infn.it"

# Path for the batch-system log files.
# * for torque/pbs:
# DGAS_ACCT_DIR=/var/torque/server_priv/accounting
# * for LSF:
# DGAS_ACCT_DIR=lsf_install_path/work/cluster_name/logdir
# * for SGE:
# DGAS_ACCT_DIR=/opt/sge/default/common/
DGAS_ACCT_DIR=/var/torque/server_priv/accounting

# Full path to the 'condor_history' command, used to gather DGAS usage records
# when Condor is used as a batch system. Otherwise leave it commented.
#DGAS_CONDOR_HISTORY_COMMAND=""

```

#### host certificate host certificate

```

----+++ host certificate
# ll /etc/grid-security/host*
-rw-r--r-- 1 root root 1440 Oct 18 09:31 /etc/grid-security/hostcert.pem
-r----- 1 root root 887 Oct 18 09:31 /etc/grid-security/hostkey.pem

```

#### authorization on the batch server authorization on the batch server

### authorization on the batch server

In order to allow the submission from the second CE, do the following actions on the "main CE / batch server":

- edit the files `/etc/hosts.equiv` and `/etc/ssh/shosts.equiv` adding the FQDN of the second CE
- define the parameter `authorized_users` in the pbs server:

```
# qmgr -c "set server authorized_users += *@cremoso.cnaf.infn.it"
```

#### munge configuration munge configuration

services/dgas\_sensors



- Assuming that the main CE /etc/ssh/ssh\_known\_hosts file contains the keys of all WNs perform a copy of it into the second CE:

```
# scp /etc/ssh/ssh_known_hosts cremoso:/etc/ssh/
```

## import from main CE ▾ import from main CE ▾ import from main CE

you have to import several things from the main CE / batch server: gridmapdir, torque path, and the software area and tags.

### On the main CE

First of all you have to export the proper directories from the main CE:

- edit the file /etc/exports adding the following lines:

```
/opt/exp_soft/ *.cnaf.infn.it (rw, sync, no_root_squash)
/etc/grid-security/gridmapdir cremoso.cnaf.infn.it (rw, sync, no_root_squash)
/var/torque/ cremoso.cnaf.infn.it (rw, sync, no_root_squash)
/opt/edg/var/info/ cremoso.cnaf.infn.it (rw, sync, no_root_squash)
```

- make active the modification by launching:

```
# exportfs -ra
```

### On the second CE

- Edit the file /etc/fstab by adding lines like the following:

```
cremino.cnaf.infn.it:/opt/exp_soft/ /opt/exp_soft/ nfs rw,defaults 0 0
cremino.cnaf.infn.it:/etc/grid-security/gridmapdir /etc/grid-security/gridmapdir nfs rw,defaults
cremino.cnaf.infn.it:/var/torque/ /var/torque/ nfs rw,defaults 0 0
cremino.cnaf.infn.it:/opt/edg/var/info/ /opt/edg/var/info/ nfs rw,defaults 0 0
```

Remember to create those directories if they don't exist yet

- check nfs and portmap status

```
# service nfs status
rpc.mountd is stopped
nfsd is stopped

# service portmap status
portmap is stopped

# service portmap start
Starting portmap: [ OK ]

# service nfs start
Starting NFS services: [ OK ]
Starting NFS daemon: [ OK ]
Starting NFS mountd: [ OK ]
Starting RPC idmapd: [ OK ]

# chkconfig nfs on
# chkconfig portmap on
```

- after any modification in /etc/fstab launch

```
mount -a
```

- verify the mount:

```
# df -h
Filesystem                Size      Used Avail Use% Mounted on
/dev/mapper/VolGroup00-LogVol100
                          16G       2.8G   12G   19% /
/dev/vda1                  99M        20M    75M   21% /boot
tmpfs                     1006M          0 1006M    0% /dev/shm
cremino.cnaf.infn.it:/opt/exp_soft/
                          65G       4.2G   57G    7% /opt/exp_soft
cremino.cnaf.infn.it:/etc/grid-security/gridmapdir
                          65G       4.2G   57G    7% /etc/grid-security/gridmapdir
cremino.cnaf.infn.it:/var/torque/
                          65G       4.2G   57G    7% /var/torque
cremino.cnaf.infn.it:/opt/edg/var/info/
                          65G       4.2G   57G    7% /opt/edg/var/info
```

[yaim check](#) ▾ [yaim check](#) ▾

## yaim check

Verify to have set all the yaim variables by launching:

```
# /opt/glite/yaim/bin/yaim -v -s site-info_cremoso.def -n creamCE -n TORQUE_utils -n DGAS_sensors
```

see details

[yaim config](#) ▾ [yaim config](#) ▾

## yaim config

```
# /opt/glite/yaim/bin/yaim -c -s site-info_cremoso.def -n creamCE -n TORQUE_utils -n DGAS_sensors
```

see details

## Service Checks

[checks](#) ▾ [checks](#) ▾

- After service installation to check if all were installed in a proper way, you could have a look to Service CREAM Reference Card
- You can also perform some checks after the installation and configuration of your CREAM

## TORQUE checks:

- check if the interaction with the batch server is properly working, launching some pbs commands, for example:

```
# qstat -q
```

```
# pbsnodes -a
```

## ssh checks

- ssh should work passwordless from WNs to CE when using a pool account



## Revisions

Date	Comment	By
2012-02-15	installation notes completed	Alessandro Paolini
2012-02-09	First draft	Alessandro Paolini

-- AlessandroPaolini - 2012-02-09

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