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Notes about Installation and Configuration of a CREAM Computing Element using Torque 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 subsitute 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 the **same 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
```

- 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
emi1-third-party.repo emi1-base.repo emi1-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-server 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: use the same site-info.def for CREAM and WNs: for this reason in this example file there are yaim variable used by CREAM, TORQUE or emi-WN.

It is also included the settings of some VOs

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.
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="all"

# 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
```

munge configuration **munge configuration**

munge configuration

IMPORTANT: The updated EPEL5 build of torque-2.5.7-1 as compared to previous versions enables munge as an inter node authentication method.

- verify that munge is correctly installed:

```
# rpm -qa | grep munge
munge-libs-0.5.8-8.el5
munge-0.5.8-8.el5
```

- On one host (for example the batch server) generate a key by launching:

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

```
# ls -ltr /etc/munge/
total 4
-r-------- 1 munge munge 1024 Jan 13 14:32 munge.key
```

- Copy the key, /etc/munge/munge.key to every host of your cluster, adjusting the permissions:

```
# chown munge:munge /etc/munge/munge.key
```

- Start the munge daemon on each node:

```
# service munge start
Starting MUNGE:                                            [  OK  ]

# chkconfig munge on
```

yaim check **yaim check**
Verify to have set all the yaim variables by launching:

```
# /opt/glite/yaim/bin/yaim -v -s site-info_cremino.def -n creamCE -n TORQUE_server -n TORQUE_util
```

see details

yaim config **yaim config**

```
# /opt/glite/yaim/bin/yaim -c -s site-info_cremino.def -n creamCE -n TORQUE_server -n TORQUE_util
```

see details

Software Area settings **Software Area settings**

Software Area settings

If the Software Area is hosted on your CE, you have to create it and export to the WNs in the site.def we set:

```
VO_SW_DIR=/opt/exp_soft
```

- directory creation

```
mkdir /opt/exp_soft/
```

- edit /etc/exports creating a line like the following:

```
/opt/exp_soft/ *.cnaf.infn.it(rw,sync,no_root_squash)
```

- 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/exports you can launch

```
# exportfs -ra
```

or simply restart nfs daemon

walltime workaround **walltime workaround**

walltime workaround

If on the queues there is published:

```
GlueCEStateWaitingJobs: 444444
```

and in the log /var/log/bdii/bdii-update.log you notice errors like the folllowing:

```
Traceback (most recent call last):
  File "/usr/libexec/lcg-info-dynamic-scheduler", line 435, in ?
    wrt = qwt * nwait
TypeError: unsupported operand type(s) for *: 'NoneType' and 'int'
```

probably the queues have no "resources_default.walltime" parameter configured.

So define it for each queue by launching, for example:

```
# qmgr -c "set queue prod resources_default.walltime = 01:00:00"
# qmgr -c "set queue cert resources_default.walltime = 01:00:00"
# qmgr -c "set queue cloudtf resources_default.walltime = 01:00:00"
```

Service Checks

checks **checks**

- After service installation to have a look 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 the pbs settings:

```
# qmgr -c 'p s'
```

- check the WNs state

```
# pbsnodes -a
```

maui settings **maui settings**

maui settings

In order to reserve a job slot for test jobs, you need to apply some settings in the maui configuration (/var/spool/maui/maui.cfg)

Suppose you have enabled the test VOs (ops, dteam and infngrid) on the "cert" queue and that you have 8 job slots available. Add the following lines in the `/var/spool/maui/maui.cfg` file:

```
CLASSWEIGHT 1
QOSWEIGHT 1

QOSCFG[normal] MAXJOB=7

CLASSCFG[prod] QDEF=normal
CLASSCFG[cert] PRIORITY=5000
```

After the modification restart maui.

In order to avoid that yaim overwrites this file during the host reconfiguration, set:

```
CONFIG_MAUI="no"
```

in your site.def (the first time you launch the yaim script, it has to be set to "yes"

Revisions

Date	Comment	By
2012-02-08	added walltime workaround	Alessandro Paolini
2012-02-02	modified software area settings	Alessandro Paolini
2012-01-25	installation notes completed	Alessandro Paolini
2012-01-16	First draft	Alessandro Paolini

-- AlessandroPaolini - 2012-02-08

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