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Notes about Installation and Configuration of a CREAM Computing Element - EMI-2 - SL6 (external Torque, external Argus, MPI enabled)

- 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 EMI-2 **CREAM CE** service based on EMI middleware, in **no cluster mode**, with **TORQUE** as batch system installed on a different host, using an **external ARGUS server** for the users authorization and with MPI enabled.

CREAM	CLUSTER MODE	ARGUS	MPI	TORQUE	WNODES
EMI-2 SL6	no	external server	enabled	external server	TODO

References

1. About IGI - Italian Grid infrastructure
 1. About IGI Release
 2. IGI Official Installation and Configuration guide
2. EMI-2 Release
 1. CREAM
 2. CREAM TORQUE module
3. Yaim Guide
 1. site-info.def yaim variables
 2. CREAM yaim variables
 3. TORQUE Yaim variables
4. Troubleshooting Guide for Operational Errors on EGI Sites
5. Grid Administration FAQs page

Service installation

O.S. and Repos

- Starts from a fresh installation of Scientific Linux 6.x (x86_64).

```
# cat /etc/redhat-release
Scientific Linux release 6.2 (Carbon)
```

- Install the additional repositories: EPEL, Certification Authority, EMI-2

```
# yum install yum-priorities yum-protectbase epel-release
# rpm -ivh http://emisoft.web.cern.ch/emisoft/dist/EMI/2/sl6/x86_64/base/emi-release-2.0.0-1.sl6.
# cd /etc/yum.repos.d/
# wget http://repo-pd.italiangrid.it/mrepo/repos/egi-trustanchors.repo
```

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

```
# getenforce
Disabled
```

yum install

```
# yum clean all

# yum install ca-policy-egi-core emi-cream-ce emi-torque-utils glite-mpi
```

Service configuration

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

```
# cp -vr /opt/glite/yaim/examples/siteinfo .
```

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
```

vo.d directory

Create the directory `siteinfo/vo.d` and fill it with a file for each supported VO. You can download them from [HERE](#) and here an example for some VOs. Information about the several VOs are available at the [CENTRAL OPERATIONS PORTAL](#) .

```
# cat /root/siteinfo/vo.d/comput-er.it
SW_DIR=$VO_SW_DIR/computer
DEFAULT_SE=$SE_HOST
STORAGE_DIR=$CLASSIC_STORAGE_DIR/computer
VOMS_SERVERS="'vomss://voms2.cnaf.infn.it:8443/voms/comput-er.it?/comput-er.it'"
VOMSES="'comput-er.it voms2.cnaf.infn.it 15007 /C=IT/O=INFN/OU=Host/L=CNAF/CN=voms2.cnaf.infn.it'"
VOMS_CA_DN="'/C=IT/O=INFN/CN=INFN CA' '/C=IT/O=INFN/CN=INFN CA'"

# cat /root/siteinfo/vo.d/dteam
SW_DIR=$VO_SW_DIR/dteam
DEFAULT_SE=$SE_HOST
STORAGE_DIR=$CLASSIC_STORAGE_DIR/dteam
VOMS_SERVERS='vomss://voms.hellasgrid.gr:8443/voms/dteam?/dteam/'
VOMSES="'dteam lcg-voms.cern.ch 15004 /DC=ch/DC=cern/OU=computers/CN=lcg-voms.cern.ch dteam 24' '"
VOMS_CA_DN="'/DC=ch/DC=cern/CN=CERN Trusted Certification Authority' '/DC=ch/DC=cern/CN=CERN Trus

# cat /root/siteinfo/vo.d/gridit
SW_DIR=$VO_SW_DIR/gridit
DEFAULT_SE=$SE_HOST
STORAGE_DIR=$CLASSIC_STORAGE_DIR/gridit
VOMS_SERVERS="'vomss://voms.cnaf.infn.it:8443/voms/gridit?/gridit' 'vomss://voms-01.pd.infn.it:8443/voms/gridit?/gridit'"
VOMSES="'gridit voms.cnaf.infn.it 15008 /C=IT/O=INFN/OU=Host/L=CNAF/CN=voms.cnaf.infn.it gridit'"
VOMS_CA_DN="'/C=IT/O=INFN/CN=INFN CA' '/C=IT/O=INFN/CN=INFN CA'"

# cat /root/siteinfo/vo.d/igi.italiangrid.it
SW_DIR=$VO_SW_DIR/igi
DEFAULT_SE=$SE_HOST
STORAGE_DIR=$CLASSIC_STORAGE_DIR/igi
VOMS_SERVERS="'vomss://vomsmania.cnaf.infn.it:8443/voms/igi.italiangrid.it?/igi.italiangrid.it'"
VOMSES="'igi.italiangrid.it vomsmania.cnaf.infn.it 15003 /C=IT/O=INFN/OU=Host/L=CNAF/CN=vomsmania.cnaf.infn.it'"
VOMS_CA_DN="'/C=IT/O=INFN/CN=INFN CA' '/C=IT/O=INFN/CN=INFN CA'"

# cat /root/siteinfo/vo.d/infngrid
SW_DIR=$VO_SW_DIR/infngrid
DEFAULT_SE=$SE_HOST
STORAGE_DIR=$CLASSIC_STORAGE_DIR/infngrid
VOMS_SERVERS="'vomss://voms.cnaf.infn.it:8443/voms/infngrid?/infngrid' 'vomss://voms-01.pd.infn.it:8443/voms/infngrid?/infngrid'"
```

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```
VOMSSES="'infngrid voms.cnaf.infn.it 15000 /C=IT/O=INFN/OU=Host/L=CNAF/CN=voms.cnaf.infn.it infngrid
VOMS_CA_DN="'/C=IT/O=INFN/CN=INFN CA' '/C=IT/O=INFN/CN=INFN CA'"

# cat /root/siteinfo/vo.d/ops
SW_DIR=$VO_SW_DIR/ops
DEFAULT_SE=$SE_HOST
STORAGE_DIR=$CLASSIC_STORAGE_DIR/ops
VOMS_SERVERS="voms://voms.cern.ch:8443/voms/ops?/ops/"
VOMSSES="'ops lcg-voms.cern.ch 15009 /DC=ch/DC=cern/OU=computers/CN=lcg-voms.cern.ch ops 24' 'ops
VOMS_CA_DN="'/DC=ch/DC=cern/CN=CERN Trusted Certification Authority' '/DC=ch/DC=cern/CN=CERN Trus
```

users and groups

You can download them from [HERE](#) .

Munge

Copy the key `/etc/munge/munge.key` from the Torque server to every host of your cluster, adjust the permissions and start the service

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

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

# chkconfig munge on
# /etc/init.d/munge restart
```

site-info.def

KISS: Keep it simple, stupid! For your convenience there is an explanation of each yaim variable. For more details look [HERE](#) .

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.

```
# cat site-info.def
CE_HOST=cream-01.cnaf.infn.it
SITE_NAME=IGI-BOLOGNA

BATCH_SERVER=batch.cnaf.infn.it
BATCH_LOG_DIR=/var/torque

#BDII_HOST=egee-bdii.cnaf.infn.it

CE_BATCH_SYS=torque
JOB_MANAGER=pbs
BATCH_VERSION=torque-2.5.7
#CE_DATADIR=

CE_INBOUNDIP=FALSE
CE_OUTBOUNDIP=TRUE
CE_OS="ScientificSL"
CE_OS_RELEASE=6.2
CE_OS_VERSION="Carbon"

CE_RUNTIMEENV="IGI-BOLOGNA"

CE_PHYSCPU=8
CE_LOGCPU=16
```

vo.d directory

```
CE_MINPHYSMEM=16000
CE_MINVIRTMEM=32000
CE_SMP_SIZE=8
CE_CPU_MODEL=Xeon
CE_CPU_SPEED=2493
CE_CPU_VENDOR=intel
CE_CAPABILITY="CPUScalingReferenceSI00=1039 glxec"
CE_OTHERDESCR="Cores=1,Benchmark=4.156-HEP-SPEC06"
CE_SF00=951
CE_SI00=1039
CE_OS_ARCH=x86_64

CREAM_PEPC_RESOURCEID="http://cnaf.infn.it/cremino"

USERS_CONF=/root/siteinfo/ig-users.conf
GROUPS_CONF=/root/siteinfo/ig-users.conf

VOS="comput-er.it dteam igi.italiangrid.it infngrid ops gridit"
QUEUES="cert prod"
CERT_GROUP_ENABLE="dteam infngrid ops /dteam/ROLE=lcgadmin /dteam/ROLE=production /ops/ROLE=lcgadmin"
PROD_GROUP_ENABLE="comput-er.it gridit igi.italiangrid.it /comput-er.it/ROLE=SoftwareManager /gridit/ROLE=SoftwareManager"
VO_SW_DIR=/opt/exp_soft

WN_LIST="/root/siteinfo/wn-list.conf"
MUNGE_KEY_FILE=/etc/munge/munge.key
CONFIG_MAUI="no"

MYSQL_PASSWORD=*****
APEL_DB_PASSWORD=not_used
APEL_MYSQL_HOST=not_used
SE_LIST="darkstorm.cnaf.infn.it"
SE_MOUNT_INFO_LIST="none"
```

WN list

Set in this file the WNs list, for example:

```
# less /root/siteinfo/wn-list.conf
wn05.cnaf.infn.it
wn06.cnaf.infn.it
```

services/glite-mpi_ce

```
# cp /opt/glite/yaim/examples/siteinfo/services/glite-mpi_ce /root/siteinfo/services/

# cat services/glite-mpi_ce
# Setup configuration variables that are common to both the CE and WN

if [ -r ${config_dir}/services/glite-mpi ]; then
    source ${config_dir}/services/glite-mpi
fi

# The MPI CE config function can create a submit filter for
# Torque to ensure that CPU allocation is performed correctly.
# Change this variable to "yes" to have YAIM create this filter.
# Warning: if you have an existing torque.cfg it will be modified.
MPI_SUBMIT_FILTER=${MPI_SUBMIT_FILTER:-"yes"}
```

services/glite-creamce

```
# cat /root/siteinfo/services/glite-creamce
#
# YAIM creamCE specific variables
```

site-info.def

```
#
#
# CE-monitor host (by default CE-monitor is installed on the same machine as
# cream-CE)
CEMON_HOST=$CE_HOST
#
# CREAM database user
CREAM_DB_USER=*****
CREAM_DB_PASSWORD=*****
#
# Machine hosting the BLAH blparser.
# In this machine batch system logs must be accessible.
BLPARSER_HOST=$CE_HOST
#
# Value to be published as GlueCEStateStatus instead of Production
#CREAM_CE_STATE=Special
```

services/dgas_sensors (not available yet)

TODO

yaim check

Verify to have set all the yaim variables by launching:

```
# /opt/glite/yaim/bin/yaim -v -s /root/siteinfo/site-info.def -n creamCE -n TORQUE_utils
```

yaim config

```
# /opt/glite/yaim/bin/yaim -c -s /root/siteinfo/site-info.def -n creamCE -n TORQUE_utils
```

Service 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

Revisions

Date	Comment	By
2012-05-25	First draft	Paolo Veronesi

-- PaoloVeronesi - 2012-05-25

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