

**EGI Training for AEGIS Site Administrators  
Institute of Physics Belgrade**

## **Hands-On Session: CREAM CE and site BDII Installation and Configuration**

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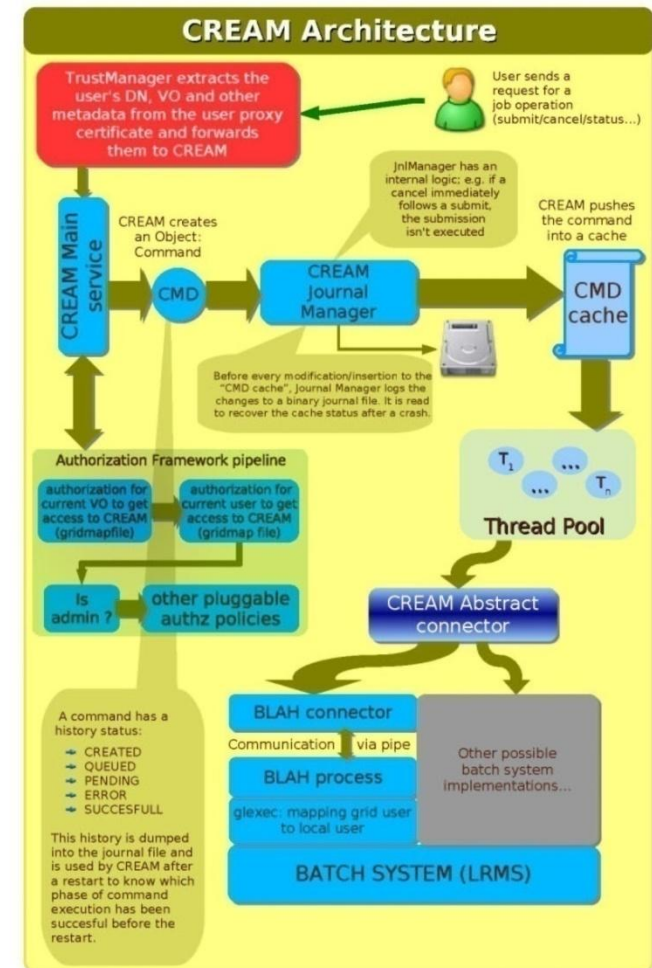
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- The **CREAM** (Computing Resource Execution And Management) Service is a simple, lightweight service that implements all the operations at the Computing Element (CE) level
- It has Webservice-based interface
- Implemented as an extension of the Java-Axis servlet (running inside the Apache Tomcat container)



\*Image obtained from CREAM CE Homepage:  
<http://grid.pd.infn.it/cream/>

- The OS version of gLite Middleware version 3.2 is Scientific Linux 5 (SL)
- Install all packages and then remove unnecessary or start with a minimum installation and then add needed packages
- It is recommended to use SCL RPM repository service  
# rpm -Uvh [http://rpm.scl.rs/scl/sl5/x86\\_64/RPMS.scl/scl-yum-conf-55-1.noarch.rpm](http://rpm.scl.rs/scl/sl5/x86_64/RPMS.scl/scl-yum-conf-55-1.noarch.rpm)
- Repo files are available at <http://rpm.scl.rs/yum.conf/>
- Generic Installation and Configuration Guide for gLite 3.2
  - [https://twiki.cern.ch/twiki/bin/view/LCG/GenericInstallGuide320#Scientific\\_Linux\\_5](https://twiki.cern.ch/twiki/bin/view/LCG/GenericInstallGuide320#Scientific_Linux_5)

- Adjust services/daemons started at the boot time
- Default runlevel should be to 3 in `/etc/inittab`
- Disable yum auto-update
- You should disable SELINUX by replacing “SELINUX=enforcing” with line “SELINUX=disabled” in the file `/etc/selinux/config`
- Configure NTP service
  - Example of configuration file `/etc/ntp.conf` can be found on <http://www.aegis.rs/grid/ntp.conf>
  - Check drift file `/var/lib/ntp/drift`
  - `# chkconfig ntpd on`
- Java provided with OS installation should be fine

- Beside OS and DAG packages, SCL RPM Repository service should also be used for middleware packages
- Configuration files for the majority of repos can be found at <http://rpm.scl.rs/yum.conf/>
- For CREAM CE and site BDII node we will fetch following repos:
  - CA certificates: egi-trustanchors.repo
  - cream-CE: scl-glite-CREAM
  - Torque\_server: scl-glite-TORQUE\_server
  - Torque\_utils: scl-glite-TORQUE\_utils
  - gLite-BDII: scl-glite-BDII

- Application software filesystem
  - All WNs must have shared application software filesystem where VO SGMs (software grid managers) will install VO-specific software
  - If it's supposed to be located on CREAM CE itself, following (or similar) line must be appended to /etc/exports  
`/opt/exp_soft 147.91.84.0/255.255.255.0(rw,sync,no_root_squash)`
- – If you want to map application software filesystem from other node (usually SE), append this line to /etc/fstab:  
`se1.ipb.ac.rs:/storage6/exp_soft-ce64 /opt/exp_soft nfs hard,intr,nodev,nosuid,tcp,timeo=15 0 0`
- Do not forget to create /opt/exp\_soft directory!

- Shared /home filesystem:
  - In order to provide appropriate MPI support, entire /home must be shared among WNs
- Procedure is equal to procedure for app. soft. filesystem

- gLite software binaries, libraries and other are organized using meta-package paradigm
- In order to install necessary packages for CREAM CE/sBDII following steps should be perform:

## 1) Install CAs:

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

## 2) Install Cream CE:

- Due to a dependency problem within the Tomcat distribution in SL5 first install xml-commons-apis:

```
# yum install xml-commons-apis
```

- install the cream-CE metapackage:

```
# yum install glite-CREAM
```



- Install Torque (if the CREAM CE is a Torque Server):

```
# yum install glite-TORQUE_server glite-TORQUE_utils
```

- Install Torque (if the CREAM CE is not a Torque server):

```
# yum install glite-TORQUE_utils
```

### 3) Install Site BDII

```
# yum install glite-BDII
```

- Copy to /etc/grid-security your host certificate and key

```
# scp hostcert.pem root@<cream_CE>:/etc/grid-security/
```

```
# scp hostkey.pem root@<cream_CE>:/etc/grid-security
```

- On Cream CE host set the right permissions

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

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

- All grid services must be configured properly using YAIM tool. Official info available at <https://twiki.cern.ch/twiki/bin/view/LCG/YaimGuide400>
- Templates for input YAIM files can be taken from <https://viewvc.scl.rs/viewvc/yaim/trunk/?root=seegrid>
- Required input files are:
  - site-info.def
  - users.conf
  - wn-list.conf
  - groups.conf
  - directory vo.d with one file per VO
- YAIM config. files **must not be readable for users!**

- site-info.def
  - Main configuration input source
  - Contains proper paths to all other configuration files
- users.conf
  - Defines UNIX pool users for each Virtual Organization
  - Helpful script at <http://www.aegis.rs/grid/generate-pool-accounts-AEGIS-v4>
  - Example:  

```
./generate-pool-accounts-AEGIS-v4 seegrid 20000 seegrid 2000 200 10 10  
>> users.conf
```
- groups.conf
  - Defines groups per VO

- `wn-list.conf`
  - Simple list of FQDNs of available Worker Nodes
- `vo.d/`
  - Directory containing a file per each supported VO
- CREAM CE specific variables:  
[https://twiki.cern.ch/twiki/bin/view/LCG/Site-info\\_configuration\\_variables#cream\\_CE](https://twiki.cern.ch/twiki/bin/view/LCG/Site-info_configuration_variables#cream_CE)
- YAIM invocation command for CREAM CE/BDII\_site combination:

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

- In case that YAIM returns an error anywhere in the procedure, check data in `site-info.def` and other input files and restart YAIM

- Configuration using the old BLAH BIparsers
- There are two possible layouts:
  - The blparser host (BLPARSER\_HOST) is the CREAM CE host (CE\_HOST)
  - The blparser host (BLPARSER\_HOST) is different than the CREAM CE host
- First layout:
  - `BLPARSER_WITH_UPDATER_NOTIFIER=false`
  - `/opt/glite/yaim/bin/yaim -r -s <site-info.def> -n creamCE -f config_cream_blparser`
  - Then restart tomcat: `service tomcat5 restart`

- Second layout
  - Do the following on the bparser host:
    - Set the yum repositories (the same used in the CREAM CE)
    - Install the BLAH bparser and the yaim stuff:
      - yum install glite-ce-blahp glite-version
      - yum install glite-yaim-core
      - yum install glite-yaim-cream-ce
  - Edit site-info.def and add necessary variables
  - Configure:
    - `/opt/glite/yaim/bin/yaim -r -s <site-info.def> -n creamCE -f config_cream_bparser`
- Restart tomcat on the CREAM CE node
- Init script is `/opt/glite/etc/init.d/glite-ce-bparser`

- Configuration using the new BLAH Bparser
  - The configuration of the new BLAH Bparser is done when configuring the CREAM CE
  - `BLPARSER_WITH_UPDATER_NOTIFIER=true`
- Init script of the new Bparser is `/opt/glite/etc/init.d/glite-ce-blahparser`
- Useful link:
  - <http://grid.pd.infn.it/cream/field.php?n=Main.CREAMAndBparserConfiguration>
- Check if the right path for PBS log files is set:
  - `GLITE_CE_BLPARSERPBS_SPOOLDIR=/var/spool/pbs/`  
in `/opt/glite/etc/blparser.conf` for old bparser
  - `pbs_spoolpath=/var/spool/pbs/`  
In `/opt/glite/etc/blah.config` for new blpapper

- Hostbased authentication among WNs needs to be established
- This is especially important if grid site supports MPI
- Helper script available in gLite can be found at `/opt/edg/sbin/edg-pbs-knownhosts`
- Script configuration can be adjusted in `/opt/edg/etc/edg-pbs-knownhosts.conf`
- Put all relevant FQDNs into `/etc/ssh/shosts.equiv`
- This is standard procedure for hostbased SSH
- Identical procedure applies to all WNs



- Edit your MAUI configuration(/var/spool/maui/maui.cfg):

```
QOSCFG[qossam] MAXPROC=2 PRIORITY=100000
```

```
GROUPCFG[ops] QDEF=qossam PRIORITY=100000
```

```
SRCFG[samreservation] STARTTIME=00:00:00 ENDTIME=24:00:00
```

```
SRCFG[samreservation] PERIOD=INFINITY
```

```
SRCFG[samreservation] TASKCOUNT=1 RESOURCES=PROCS:2
```

```
SRCFG[samreservation] GROUPLIST=ops
```

```
SRCFG[samreservation] QOSLIST=qossam
```

```
SRCFG[samreservation] HOSTLIST=wn01-demo.ipb.ac.rs
```

- If maui.cfg is modified, restart it:

```
/etc/init.d/maui restart
```

- Verify local batching system
  - \$qmgr -c "print server"
- Tune batch queues
  - Example: <http://www.aegis.rs/grid/tune-queues>
- Verify CREAM CE functionalities
  - CheckCreamConf script
    - <http://grid.pd.infn.it/cream/field.php?n=Main.CheckYourCREAMCEConfiguration>
  - Test following locations in browser (where a valid certificate must be installed):
    - `https://<hostname-of-cream-ce>:8443/ce-cream/services`
  - Try a gsiftp towards that CREAM CE:  
# `globus-url-copy gsiftp://<hostname-of-cream-ce>/etc/fstab` –

- Try the following command from a UI:
  - `glite-ce-allowed-submission <<hostname-of-cream-ce>>:8443`
  - It should report:
    - Job Submission to this CREAM CE is enabled
- Try a submission to that CE using the `glite-ce-job-submit` command, e.g.:
  - `$ cat test.jdl`  
[ executable="/bin/sleep";  
arguments="1"; ]
  - `$ glite-ce-job-submit -a -r cream-demo.ipb.ac.rs:8443/cream-pbs-ops test.jdl`  
<https://cream-demo.ipb.ac.rs:8443/CREAM336256203>
- Try a submission through the WMS

- LCG-CE to CREAM-CE
  - [https://wiki.egi.eu/wiki/FAQ: lcg-ce to cream-ce](https://wiki.egi.eu/wiki/FAQ:lcg-ce%20to%20cream-ce)
- CREAM CE Homepage
  - <http://grid.pd.infn.it/cream/>
- Installation and configuration of CREAM CE
  - <http://igrelease.forge.cnaf.infn.it/doku.php?id=doc:guides:devel:install-cream32>
- YAIM variables are relevant for the CREAM CE
  - [https://twiki.cern.ch/twiki/bin/view/LCG/Site-info configuration variables#cream CE](https://twiki.cern.ch/twiki/bin/view/LCG/Site-info%20configuration%20variables#cream%20CE)
- Tomcat configuration guidelines
  - <http://grid.pd.infn.it/cream/field.php?n=Main.TomcatConfigurationGuidelines>