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Notes about Installation and Configuration of a stand alone Torque server

- 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 a stand alone **EMI TORQUE** server

References

1. About IGI - Italian Grid infrastructure
2. About IGI Release
3. IGI Official Installation and Configuration guide
4. Generic Installation & Configuration for EMI 1
5. Yaim Guide
6. site-info.def yaim variables
7. MPI yaim variables
8. WN yaim variables
9. TORQUE Yaim variables
10. EMI-WN v.1.0.0
11. gLite-MPI v.1.0.0
12. MPI-Start Installation and Configuration
13. Troubleshooting Guide for Operational Errors on EGI Sites
14. 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
emil-third-party.repo emil-base.repo emil-updates.repo
epel.repo epel-testing.repo igi-emi.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 emi-torque-server emi-torque-utils
# yum install yaim-addons
# 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
wn05.cnaf.infn.it
wn06.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]

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.e15
munge-0.5.8-8.e15
```

- 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_batch.def -n TORQUE_server -n TORQUE_utils
```

see details

yaim config ▢ **yaim config** ▾

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

see details

tomcat and ldap users ▢ **tomcat and ldap users** ▾

tomcat and ldap users

It is necessary to create tomcat and ldap users on the torque server, otherwise the computing elements will fail in connecting the server.

When those users doesn't exist on the server, on the CE you will see errors like the following

```
2012-04-24 15:37:29 lcg-info-dynamic-scheduler: LRMS backend command returned nonzero exit status
2012-04-24 15:37:29 lcg-info-dynamic-scheduler: Exiting without output, GIP will use static value
Can not obtain pbs version from host
[...]
```

instead, on the torque server:

```
04/24/2012 14:00:46;0080;PBS_Server;Req;req_reject;Reject reply code=15021(Invalid credential), a
04/24/2012 14:01:02;0080;PBS_Server;Req;req_reject;Reject reply code=15021(Invalid credential), a
```

Solution is to add tomcat and ldap users/groups to torque host and restart pbs_server - as they exists only on CreamCE host.

```
# echo 'tomcat:x:91:91:Tomcat:/usr/share/tomcat5:/bin/sh' >> /etc/passwd
# echo 'ldap:x:55:55:LDAP User:/var/lib/ldap:/bin/false' >> /etc/passwd
# echo 'tomcat:x:91:' >> /etc/group
# echo 'ldap:x:55:' >> /etc/group
```

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 ]
```

munge configuration

```
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 CE queues there is published:

```
GlueCEStateWaitingJobs: 444444
```

and in the log `/var/log/bdii/bdii-update.log` on CE you notice errors like the following:

```
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"
```

adding a second CE [▶](#) **adding a second CE** [▼](#)

adding a second CE

In order to allow the submission from a second CE, do the following actions on the **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 += *@cream-02.cnaf.infn.it"
```

Regarding the **ssh configuration**, have a look

NotesAboutInstallationAndConfigurationOfCREAMForTORQUE

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 maui.cfg files:

```
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
2012-05-31	installation notes completed	Alessandro Paolini
2012-05-25	First draft	Alessandro Paolini

```
-- AlessandroPaolini - 2012-05-25
```

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