



LHC COMPUTING GRID

LCG USER INTERFACE MANUAL INSTALLATION AND CONFIGURATION

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Abstract: LCG User Interface Manual Installation Guide



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ABSTRACT

Manual steps for the installation and configuration of a LCG UI Node based on a standard (non CERN-like) Red Hat 7.3 installation

Link to this document:

This document is available on the *Grid Deployment* web site

<http://www.cern.ch/grid-deployment/gis/release-docs/UI-index.html>

There you need to select the version tag before downloading the corresponding version of the guide. Other documents labeled with "cvs:", in the *References*, are maintained in txt version into the LCG cvs repository.

They can be downloaded via web by browsing the LCG Deployment home page

<http://www.cern.ch/grid-deployment/>

following then the **CVS Deployment** link on the left side of the page.



1. PREREQUISITES FOR INSTALLATION

In order to install the UI software you need:

- a working Linux Redhat7.3 on the User Interface (This procedure has been tested on a basic RH7.3 and should not differ for more or less equivalent versions of RH. Should it be so please contact us)
- root account on UI machine
- references to software packages to be installed (see below)



2. USER INTERFACE SOFTWARE INSTALLATION

In order to have a running UI the following software must be installed

- UI package
- Other software which a group may rely on

Two different methods are supported for UI software installation

- Centrally managed UI installation using the Debian *apt-get* tool
- Manual UI installation using the Red Hat *rpm* tool.

The first method is simple and straightforward. Node-specific meta-packages define and hide the list of rpms to be installed. Dependencies among rpms, in particular, are easily managed by the *apt-get* tool. This may help if on your site you are running a customized version of Red Hat and you prefer not to solve dependencies manually.

On the other side, the installation using *apt-get* gives to site administrators poor control on installation and on the way the dependencies are solved.

The second method gives full control to site administrators for the installation, because it is based on an explicitly declared set of rpms to be installed on top of Red Hat 7.3

On the other hand, the installation procedure is slower and needs each unmanaged dependency to be manually solved.

2.1. UI INSTALLATION USING *apt-get*

in order to install your User Interface using *apt-get* please refer to the following document:

<http://www.cern.ch/grid-deployment/gis/aptDB/>

2.2. UI INSTALLATION USING *rpm*

All the tools needed for LCG releases are available on the *Grid Deployment* web site

<http://www.cern.ch/grid-deployment/gis/release-docs/UI-index.html>

You can start browsing by selecting the relevant version tag.

Once selected your tag, you will be moved to a page where you can find:

UI.pdf: this guide

UI_manual_install_rpm: plain full list of those rpms needed to install the UI software on top of a plain RH7.3 installation, whose dependencies are already dealt with.



UI_manual_install_forced_rpm: plain full list of those rpms needed to install the UI software on top of a plain RH7.3 installation, and whose dependencies are NOT dealt with, therefore requiring a forced installation. If this list is not present or void it means that no rpm needs to be forced

UI_manual_install_wget: a shell script which downloads, from the LCG mirror site at CERN, the rpms included into the list *UI_manual_install_rpm*

UI_manual_install_extra_rpm: a short list of rpms which RH7.3 does not install by default, but which have been turned out to be required in order to have the SE software installed. This list is provided just for reference, since the rpms from this list are already included into the list *UI_manual_install_rpm*

If any file of the mentioned list is not in the repository it means that it is not applicable within the installation of the current tag. So each further reference to it in this guide can be simply ignored.

All the above mentioned files are grouped in the archive file **UI.tools.tar.gz**. So they can be easily downloaded and used on target machines.

The provided *UI_manual_install_rpm* includes:

- all the packages which are needed in order to have a production User Interface.
- all the general purpose objects (i.e. shared libraries or common applications) which the UI installation needs in order to run and which are not included in the standard operative system. The composition of this group of rpms may vary depending on what is considered "basic OS" at each site, and so it cannot be easily defined in a static way. Given the previous considerations, this part of the provided list may be not exhaustive.

A possible way to use the provided tools is described in the next sections

Download rpms from the repository in a local directory

- log in as *root* into the node to be installed and copy there the file **UI.tools.tar.gz**.
- extract the archived files.

```
> gunzip UI.tools.tar.gz
> tar xvf UI.tools.tar
```

- give execution permissions and run the script *UI_manual_install_wget*, which will then fetch all the rpms required into the subdirectories *UI_INSTALL* and *UI_INSTALL_FORCED*

```
> cd UI_tools
> chmod u+x UI_manual_install_wget
> ./UI_manual_install_wget
```



Install the downloaded rpms

- In the directory **UI_INSTALL**, where the rpms listed in *UI_manual_install_rpm* have been downloaded, run the command

```
> rpm -Uvh "*.rpm"
```

- In the directory **UI_INSTALL_FORCED** where the rpms listed in *UI_manual_install_forced_rpm* have been downloaded, run the command

```
> rpm -Uvh --nodeps "*.rpm"
```

Due to possible missing rpms this operation might yield some missing dependencies which have to be analyzed and solved by adding/removing rpms to/from the *UI_manual_install_rpm* list.

Should you prefer to do an upgrade of the UI software already installed at your site instead of a new installation, the necessary steps are listed in the upgrade procedure usually reported in the last section of the UI installation guide.

This procedure, when available, refers to changes occurring between the current version and the previous one. This also means that the procedure is not applicable if the software at your site is more than two tags old.

2.3. INSTALLING THE CERTIFICATION AUTHORITY RPMS

As the list and structure of Certification Authorities (CA) accepted by the LCG project can change independently of the middleware releases, the rpm list related to the CAs certificates and URLs has been decoupled from the standard LCG release procedure. You should consult the page

<http://markusw.home.cern.ch/markusw/lcg2CAList.html>

in order to ascertain what the version number of the latest set of CA rpms is. At time of writing it is 1.6, so the full set of rpms can be downloaded with the following command;

```
> wget -ll -nd -r http://grid-deployment.web.cern.ch/grid-deployment/download/RpmDir/security/index_r1.6.html
```

These rpms should then be installed in the usual way;

```
> rpm -Uvh *.rpm
```

Changes and updates to these settings will be announced on the LCG-Rollout mailing list.



3. NTP CLIENT INSTALLATION & CONFIGURATION

A general requirement for the LCG nodes is that they should be synchronized. This requirement may be fulfilled in several ways. If your nodes run under AFS most likely they are already synchronized. Otherwise, you can use the NTP protocol with a time server.

Instructions and examples for a NTP client configuration are provided in this section. If you are not planning to use a time server on your machine you can just skip it.

3.1. NTP SOFTWARE INSTALLATION

In order to install the NTP client, you need the following rpms to be installed:

- ntp
- libcap
- libcap-devel

The following versions of the above said rpms have been proven to work on our OS configuration (the list includes the corresponding links to download sites):

- ntp-4.1.1-1
<http://grid-deployment.web.cern.ch/grid-deployment/download/RpmDir/release/ntp-4.1.1-1.i386.rpm>
- libcap-devel-1.10-8
<http://grid-deployment.web.cern.ch/grid-deployment/download/RpmDir/release/libcap-devel-1.10-8.i386.rpm>
- libcap-1.10-8
<http://grid-deployment.web.cern.ch/grid-deployment/download/RpmDir/release/libcap-1.10-8.i386.rpm>

A complete example of NTP rpms download and installation has been provided in 3.3..

3.2. NTP CONFIGURATION

- Configure the file `/etc/ntp.conf` by adding the lines dealing with your time server configuration such as, for instance:

```
restrict <time_server_IP_address> mask 255.255.255.255 nomodify notrap noquery
server <time_server_name>
```

Additional time servers can be added for better performance results. For each server, the hostname and IP address are required. Then, for each time-server you are using, add a couple of lines similar to the ones shown above into the file `/etc/ntp.conf`.

- Edit the file `/etc/ntp/step-tickers` adding a list of your time server(s) hostname(s), as in the following example:



```
137.138.16.69
137.138.17.69
```

- If you are running a kernel firewall, you will have to allow inbound communication on the NTP port. If you are using ipchains, you can do this by adding the following to */etc/sysconfig/ipchains*

```
-A input -s <NTP-serverIP-1> -d 0/0 123 -p udp -j ACCEPT
-A input -s <NTP-serverIP-2> -d 0/0 123 -p udp -j ACCEPT
```

Remember that ipchains rules are parsed in order, so ensure that there are no matching REJECT lines preceding those that you add. You can then reload the firewall

```
> /etc/init.d/ipchains restart
```

- Activate the ntpd service with the following commands:

```
> ntpdate <your ntp server name>
> service ntpd start
> chkconfig ntpd on
```

A complete example of NTP configuration has been provided in 3.3.

3.3. EXAMPLE OF NTP CLIENT INSTALLATION AND CONFIGURATION

This section reports a complete example of NTP server configuration done in the CERN context.

- install NTP

```
> wget http://grid-deployment.web.cern.ch/grid-deployment/download/RpmDir/release/ntp-4.1.1-1.i386.rpm
> wget http://grid-deployment.web.cern.ch/grid-deployment/download/RpmDir/release/libcap-devel-1.10-8.i386.rpm
> wget http://grid-deployment.web.cern.ch/grid-deployment/download/RpmDir/release/libcap-1.10-8.i386.rpm
> rpm -ivh libcap-1.10-8.i386.rpm libcap-devel-1.10-8.i386.rpm ntp-4.1.1-1.i386.rpm
```

- Configure the file */etc/ntp.conf*:

the lines

```
restrict 137.138.16.69 mask 255.255.255.255 nomodify notrap noquery
server 137.138.16.69
restrict 137.138.17.69 mask 255.255.255.255 nomodify notrap noquery
server 137.138.17.69
```

have been added to the file */etc/ntp.conf*



- Edit the file */etc/ntp/step-tickers*:

the lines

```
137.138.16.69
137.138.17.69
```

have been added to the file */etc/ntp/step-tickers*

- Edit */etc/sysconfig/ipchains* adding

```
-A input -s 137.138.16.69 -d 0/0 123 -p udp -j ACCEPT
-A input -s 137.138.17.69 -d 0/0 123 -p udp -j ACCEPT
```

then reload the firewall

```
> /etc/init.d/ipchains restart
```

- Activate the ntpd server

```
> ntpdate ip-time-1.cern.ch
> service ntpd start
> chkconfig ntpd on
```

- You can check ntpd's status by running the following command

```
> ntpq -p
```



4. LCG COMMON CONFIGURATION

4.1. CONFIGURE DYNAMIC LINKER RUN-TIME BINDINGS

- If not already present, append the following lines to the file */etc/ld.so.conf*

```
/opt/gcc-3.2.2/lib
/opt/globus/lib
/opt/edg/lib
/usr/local/lib
/opt/lcg/lib
/opt/d-cache-client/dcap
```

- Run the command:

```
> /sbin/ldconfig -v
```

(It produces a huge amount of output)

4.2. CREATE TOP-LEVEL EDG CONFIGURATION FILE

This file is parsed by EDG daemons to locate the EDG root directory and various other global properties.

Create and edit the file */etc/sysconfig/edg* as follows:

```
# Root directory for EDG software. (mandatory)
# Usual value: /opt/edg
EDG_LOCATION=/opt/edg

# Directory for machine-specific files.
# Usual value: $EDG_LOCATION/var

EDG_LOCATION_VAR=/opt/edg/var

# World writable directory for temporary files. (mandatory)
# Usual value: /tmp
EDG_TMP=/tmp
```

4.3. CREATE TOP-LEVEL LCG CONFIGURATION FILE

Create and edit the file */etc/sysconfig/lcg* as follows:



```
# Usual value: /opt/lcg
LCG_LOCATION=/opt/lcg

# Directory for machine-specific files.
# Usual value: $LCG_LOCATION/var
LCG_LOCATION_VAR=/opt/lcg/var

# World writable directory for temporary files. (mandatory)
# Usual value: /tmp
LCG_TMP=/tmp
```

4.4. LCGENV.SH

Create and edit the files */etc/profile.d/lcgen.sh* and */etc/profile.d/lcgen.csh* as follows:

Layout of *lcgen.sh*

```
#!/bin/sh
export LCG_GFAL_INFOSYS=<info-provider hostname>:2170
export MYPROXY_SERVER="<proxy-server hostname>"
export PATH="${PATH}:/opt/d-cache-client/bin"
export LD_LIBRARY_PATH="${LD_LIBRARY_PATH}:/opt/d-cache-client/dcap"

export SRM_PATH=/opt/d-cache-client/srm
```

Layout of *lcgen.csh*

```
#!/bin/csh
setenv LCG_GFAL_INFOSYS <info-provider hostname>:2170
setenv MYPROXY_SERVER "<proxy-server hostname>"
setenv PATH "${PATH}:/opt/d-cache-client/bin"
setenv LD_LIBRARY_PATH "${LD_LIBRARY_PATH}:/opt/d-cache-client/dcap"

setenv SRM_PATH /opt/d-cache-client/srm
```

NOTE: <info-provider hostname> is the hostname (comprehensive of domain name) of the MDS information server. It should be a BDII node. If your site owns a BDII use its hostname. Else, if you have a reference site, ask them for indications. Otherwise, send a message to the *LCG-ROLLOUT@cclrclsv.RL.AC.UK* mailing list.

The same considerations are valid also for <proxy-server hostname>, hostname of the authentication proxy.

- Give the files execution permissions



```
> chmod a+x /etc/profile.d/lcgenenv.sh
> chmod a+x /etc/profile.d/lcgenenv.csh
```

4.5. CREATE TOP-LEVEL GLOBUS CONFIGURATION FILE

Create and edit the file */etc/sysconfig/globus* as follows:

```
GLOBUS_LOCATION=/opt/globus
GLOBUS_CONFIG=/etc/globus.conf
GLOBUS_TCP_PORT_RANGE="20000 25000"
```

4.6. CREATE GLOBUS CONFIGURATION FILE

Create and edit the file */etc/globus.conf* as follows:

```
[common]
GLOBUS_LOCATION=/opt/globus
globus_flavor_name=gcc32dbg

[mds]

[gridftp]

[gatekeeper]
default_jobmanager=fork
job_manager_path=$GLOBUS_LOCATION/libexec

jobmanagers="fork "

[gatekeeper/fork]
type=fork
job_manager=globus-job-manager
```

4.7. LAUNCH GLOBUS INITIALIZATION SCRIPT

```
> /opt/globus/sbin/globus-initialization.sh
```

This Globus script is meant to be launched on the whole series of LCG nodes, as a general configuration step. So that it may perform some configuration actions which are not specifically related to a UI. Because of this it can yield warning messages as well as some error ones. An example of warning messages to be considered normal in a UI configuration has been produced in Appendix 1. Since the script produces a huge output it is advisable to re-direct it to a log file, e.g.



```
> /opt/globus/sbin/globus-initialization.sh > globus-init.log 2>&1
```



5. REPLICATOR MANAGER CONFIGURATION

The *edg-replicator-manager-config* RPM installs the *edg-replicator-manager-configure* script into the */opt/edg/sbin* directory. This script can be used to automatically generate the default configuration file.

Before running the script, the file

```
/opt/edg/etc/edg-replicator-manager/edg-replicator-manager.conf.values
```

should be manually edited and, on its basis, the script

```
/opt/edg/sbin/edg-replicator-manager-configure
```

will automatically write the local configuration parameters in the *edg-replicator-manager.conf* file. So two steps have to be done:

5.1. EDIT THE LOCAL CONFIGURATION FILE

The file

```
/opt/edg/etc/edg-replicator-manager/edg-replicator-manager.conf.values
```

as above said, should be manually edited. However since it is also created by the *edg-replicator-manager-config* rpm, the name of the file should be changed (e.g. *edg-replicator-manager.conf.values.local*) so that it does not get overwritten by possible upgrades of the rpm.

The template of *edg-replicator-manager.conf.values* follows

```
@EDG.LOCATION@|<path>|location of edg middleware
@LOCALDOMAIN@|<domainname>|the local domain
@DEFAULT.SE@|< SE hostname>|the host of the close SE
@DEFAULT.CE@|< CE hostname>|the host of the close CE
@RLS.MODE@|<LrcOnly OR WithRli>|The mode the RLS should be run in. LrcOnly or WithRli
@INFOSERVICE@|<info-provider hostname>|The info provider to use. It can be Stub, MDS or RGMA
@STUBFILE@|<filepath>|The properties file for the static file 'info service'
@MDS.HOST@|<hostname-top-giis>|The host of the MDS info provider
@MDS.PORT@|<portnumber>|The port of the MDS info provider
@ROS.FAILURE@|false|Fail if no ROS is available
@CONF.GCC@|<_gcc3_2_2 OR empty>|The gcc suffix as used on the build box (empty for 2.95, _gcc3_2_2 for 3.2.)
@IGNORE.PREFIX@|true|If true, the lfn and guid prefix will not be passed to the catalogs
@GRIDFTP.DCAU@|false|Does GridFTP use Data Channel Authentication (DCAU)
@GRIDFTP.STREAMS.SMALL@|1|The default number of stream to use for a small file
@GRIDFTP.STREAMS.BIG@|3|The default number of stream to use for a big file
@GRIDFTP.FILESIZESIZE.THRESHOLD@|100|The Threshold (in MB) above which a file to transfer is considered "big"
```

where the various parameters have the following meaning:

EDG.LOCATION: location of edg middleware, normally set to */opt/edg*, it must anyway match with previous definition in 4.2

LOCALDOMAIN: your domain name (site-dependent)

DEFAULT.SE: (site-dependent)

DEFAULT.CE: (site-dependent)



RLS.MODE: Replica Catalog type: The implementation of the replica catalog interface. Available values are:

LrcOnly: a single LRC per VO

WithRli: a full RLS deployed

INFOSERVICE: The implementation of the Information service interface. Available are:

Stub: a local configuration file specified by STUBFILE is used instead of an information service

RGMA: RGMA is contacted for all information service requests

MDS: MDS.HOST is contacted on MDS.PORT for all information service requests (this is the correct choice for lcg2)

STUBFILE: used if INFOSERVICE is set to *Stub*

MDS.HOST: (site-dependent) value used if INFOSERVICE is set to *MDS*. It should be a BDII node. If your site owns a BDII use its hostname. Else, if you have a reference site, ask them for indications. Otherwise, send a message to the "LCG-ROLLOUT@cclrlsv.RL.AC.UK" mailing list

MDS.PORT: used if INFOSERVICE is set to *MDS* (see above)

ROS.FAILURE: Failure if ROS is NOT available. This may be set to 'false' if you want the replica manager not to complain if ROS is unavailable (this is the correct choice for lcg2)

CONE.GCC: It is the gcc suffix to be concatenated to the name of the JNI library interfacing to gridFTP in the native implementation of gridFTP. This dynamic library will be loaded from the classpath. Available values are:

empty: for 2.95

_gcc3_2_2: for 3.2 (this is the correct choice for lcg2)

IGNORE.PREFIX: This flag, if set to 'true', allows the use of the new RLS, which ignores the prefixes. It should always be set to 'true'

GRIDFTP.DCAU: flag to indicate whether GridFTP uses Data Channel Authentication (DCAU) or not. In current implementation should be set to 'false'

GRIDFTP.STREAMS.SMALL: Default number of streams to use for the transfer of a 'small' file

GRIDFTP.STREAMS.BIG: Default number of streams to use for the transfer of a 'big' file

GRIDFTP.FILESIZE.THRESHOLD: The Threshold (given in MB) above which a file to transfer is considered to be "big"

A production example follows



```
@EDG.LOCATION@|/opt/edg|location of edg the directory
@LOCALDOMAIN@|cern.ch|the local domain
@DEFAULT.SE@|adc0033.cern.ch|the host of the close SE
@DEFAULT.CE@|adc0029.cern.ch|the host of the close CE
@INFOSERVICE@|MDS|The info provider to use. It can be Stub, MDS or RGMA
@RLS.MODE@|LrcOnly|The mode the RLS should be run in. LrcOnly or WithRli
@STUBFILE@||The properties file for the static file 'info service'
@MDS.HOST@|adc0031.cern.ch|The host of the MDS info provider
@MDS.PORT@|2170|The port of the MDS info provider
@ROS.FAILURE@|false|Fail if no ROS is available
@CONF.GCC@|_gcc3_2_2|The gcc suffix as used on the build box (empty for 2.95, _gcc3_2_2 for 3.2.)
@IGNORE.PREFIX@|true|If true, the lfn and guid prefix will not be passed to the catalogs
```

5.2. RUN THE CONFIGURATION SCRIPT

Run (the `--verbose` flag is optional)

```
> /opt/edg/sbin/edg-replica-manager-configure /opt/edg/etc/edg-replica-manager/edg-replica-manager.conf.values_local [--verbose]
```

You can, eventually, check that the file

/opt/edg/var/etc/edg-replica-manager/edg-replica-manager.conf

was modified accordingly by the script.



6. RGMA CLIENT INSTALLATION

In what follows the installation and configuration of a standard RGMA producer is described. The producer component takes care of publishing information following the general RGMA architecture and as such should be installed in all those machines which need to be monitored (RGMA can in principle be used as an information system as well, however for the purpose of this document this will not be considered).

6.1. RGMA CONFIGURATION

ld.so.conf

Add to the file */etc/ld.so.conf* the following lines

```
/opt/edg/lib
/opt/gcc-3.2.2/lib
```

Environmental Variables

Define the following environmental variables

```
> export RGMA_PROPS=/opt/edg/var/edg-rgma
> export EDG_LOCATION_VAR=/opt/edg/var
> export EDG_TMP=/tmp
> export EDG_LOCATION=/opt/edg
```

Also MAKE SURE that */opt/edg/bin* is in the *PATH*

File */etc/sysconfig/edg*

Create and edit the file

/etc/sysconfig/edg

as

```
# Root directory for EDG software. (mandatory)
# Usual value: /opt/edg
EDG_LOCATION=/opt/edg

# Directory for machine-specific files.
# Usual value: $EDG_LOCATION/var

EDG_LOCATION_VAR=/opt/edg/var
```



```
# World writable directory for temporary files. (mandatory)
# Usual value: /tmp
EDG_TMP=/tmp

# The directory containing trusted certificates and CRLs (CERTDIR).
# Usual value: /etc/grid-security/certificates

# Host certificate (X509_USER_CERT) for services which don't have their own.
# Usual value: /etc/grid-security/hostcert.pem

# Host key (X509_USER_KEY) for services which don't have their own.
# Usual value: /etc/grid-security/hostkey.pem

# Location of the grid mapfile (GRIDMAP).
# Usual value: /etc/grid-security/grid-mapfile

# Location of the grid map directory for pooled accounts (GRIDMAPDIR).
# Usual value: /etc/grid-security/gridmapdir
```

Directory edg-rgma

Create the directory (if it does not exist already)

```
/opt/edg/var/edg-rgma
```

```
> mkdir -p /opt/edg/var/edg-rgma
```

Notice that this step is also performed by *edg-rgma-config* (See 6.2.)

RGMA Default Values

Create and edit the file

```
/opt/edg/var/edg-rgma/rgma-defaults
```

```
RGMA_PROPS=/opt/edg/var/edg-rgma
CATALINA_HOME=/var/tomcat4
JUNIT_JAR=_undefined_
```



```
LOG4J_JAR=/usr/share/java/log4j.jar
MYSQL_JAR=/usr/share/java/mm.mysql-2.0.14.jar
NETLOGGER_JAR=/usr/share/java/netlogger.jar
PREVAYLER_JAR=/usr/share/java/prevayler.jar
EDG_TRUST_SERVER_JAR=/opt/edg/share/java/edg-java-security-trustmanager.jar
EDG_AUTHORIZ_SERVER_JAR=/opt/edg/share/java/edg-java-security-authorization.jar
EDG_TRUST_CLIENT_JAR=/opt/edg/share/java/edg-java-security-trustmanager-client.jar
BOUNCYCASTLE_JAR=/usr/share/java/bcprov-jdk14.jar
JAVACC_HOME=_undefined_
TEXDOCLET_JAR=_undefined_
INFO_JAR=/opt/edg/share/java/info.jar
SQLUTIL_JAR=/opt/edg/share/java/sqlutil.jar
rgma_c_API=_undefined_
RGMA_RPM_VERSION=3.4.31
GCC_VERSION=
SERLOC=<MON_NODE_NAME>
REGLOC=<REGISTRY_NODE_NAME>
SECURE=n
RegistryHosts="<REGISTRY_NODE_NAME>"
RGMA_ROOT=/opt
```

where <MON_NODE_NAME> is the MON BOX machine name and <REGISTRY_NODE_NAME> is the REGISTRY machine name, whose default value is *lgic01.gridpp.rl.ac.uk* in the current lcg version.

6.2. RGMA CONFIGURATION CREATION

Launch the following script to configure rgma

```
> /opt/edg/sbin/edg-rgma-config -q
```



7. WORKLOAD MANAGEMENT CONFIGURATION

7.1. VIRTUAL ORGANIZATION DEFINITION

For every supported Virtual Organization create in `/opt/edg/etc/` a configuration directory named as the VO itself:

```
> mkdir /opt/edg/etc/alice
> mkdir /opt/edg/etc/atlas
> mkdir /opt/edg/etc/cms
> mkdir /opt/edg/etc/lhcb
> mkdir /opt/edg/etc/dteam
```

7.2. EDG_WL_UI.CONF

For each VO, the file `/opt/edg/etc/<vo-name>/edg_wl_ui.conf` needs to be edited as shown below.

```
[
VirtualOrganisation = "<vo-name>";
NSAddresses = "<RB-hostname>:7772";
LBAddresses = "<RB-hostname>:9000";
## HLR location is optional. Uncomment and fill correctly for
## enabling accounting
#HLRLocation = "fake HLR Location"
## MyProxyServer is optional. Uncomment and fill correctly for
## enabling proxy renewal. This field should be set equal to
## MYPROXY_SERVER environment variable
MyProxyServer = "<hostname-MY-proxy-server>"
]
```

All the required placeholders should be filled in by inserting the VO name, Resource Broker and Proxy Server hostnames.

A production example follows:

```
[
VirtualOrganisation = "alice";
NSAddresses = "lxshare0219.cern.ch:7772";
LBAddresses = "lxshare0219.cern.ch:9000";
## HLR location is optional. Uncomment and fill correctly for
## enabling accounting
#HLRLocation = "fake HLR Location"
## MyProxyServer is optional. Uncomment and fill correctly for
## enabling proxy renewal. This field should be set equal to
```



```
## MYPROXY_SERVER environment variable
MyProxyServer = "adc0032.cern.ch"
]
```

7.3. EDG_WL_UI_CMD_VAR.CONF

WARNING: in the directory `/opt/edg/etc/` there is the template file `edg_wl_ui_cmd_var.conf.template` which is generated by the `edg-wl-ui-cli_gcc3.2.2-2.0.18-1` rpm.

Please IGNORE it.

The template of file `/opt/edg/etc/edg_wl_ui_cmd_var.conf` follows:

```
[
rank = - other.GlueCEStateEstimatedResponseTime;
requirements = other.GlueCEStateStatus == "Production";
RetryCount = 3;
ErrorStorage = "/tmp";
OutputStorage = "<job-output-dir>";
ListenerPort = 44000;
ListenerStorage = "/tmp";
LoggingTimeout = 30;
LoggingSyncTimeout = 30;
LoggingDestination = "<RB-hostname>:9002";
# Default NS logger level is set to 0 (null)
# max value is 6 (very ugly)
NSLoggerLevel = 0;
DefaultLogInfoLevel = 0;
DefaultStatusLevel = 0;
DefaultVo = "unspecified";
]
```

All the required placeholders should be filled in inserting the Resource Broker and Default VO hostname. Also the job output and error default directories can be configured by this file. The default value for the `<job-output-dir>` is `/tmp/jobOutput`.

A production example can found below.

NOTE: if `DefaultVo` is left to `"unspecified"`, most of the `edg` commands, such as `edg-job-submit`, will have to be launched with the option `-vo <VO-name>` (e.g. `edg-job-submit -vo <VO-name> hal-lowworld.jdl`)

A Default VO can be specified instead, but in this case a job submitted without `-vo` option by a member of a different VO will likely fail.

A production example of the file `/opt/edg/etc/edg_wl_ui_cmd_var.conf` follows:



```
[
requirements = other.GlueCEStateStatus == "Production" ;
rank = - other.GlueCEStateEstimatedResponseTime;
RetryCount = 3 ;
ErrorStorage= "/tmp" ;
OutputStorage="/tmp/jobOutput";
ListenerPort = 44000;
ListenerStorage = "/tmp" ;
LoggingTimeout = 30 ;
LoggingSyncTimeout = 30 ;
LoggingDestination = "lxshare0219.cern.ch:9002";
#Default NS logger level is set to 0 (null)
#max value is 6 (very ugly)
NSLoggerLevel = 0;
DefaultStatusLevel = 0 ;
DefaultLogInfoLevel = 0;
DefaultVo = "unspecified";
]
```

7.4. CONFIGURATION FOR GRAPHICAL FRONT-ENDS

Edit the file `/opt/edg/etc/edg_wl_ui_gui_var.conf` as follows:

```
#
# Configuration file for edg-wl-ui-*.sh
# graphical frontends. Looks very like
# the 'edg-wl-ui-cmd.conf' in this
# same directory.
#
[
JDLEDefaultSchema = "Glue";
Glue = [
rank = - other.GlueCEStateEstimatedResponseTime;
rankMPI = other.GlueCEStateFreeCPUs;
requirements = other.GlueCEStateStatus == "Production"
];
EDG = [
rank = - other.EstimatedTraversalTime;
rankMPI = other.FreeCPUs;
requirements = true
];
RetryCount = 3;
```



```
ErrorStorage = "/tmp";
OutputStorage = "<job-output-dir>";
ListenerPort = 44000;
ListenerStorage = "/tmp";
LoggingTimeout = 30;
LoggingSyncTimeout = 30;
LoggingDestination = "<RB-hostname>:9002";
# Default NS logger level is set to 0 (null)
# max value is 6 (very ugly)
NSLoggerLevel = 0;
DefaultLogInfoLevel = 0;
DefaultStatusLevel = 0;
DefaultVo = "<VO-name>";
]
```

Replace the placeholders as recommended in 7.3..

7.5. PROFILE.D

Create the directory */opt/edg/var/etc/profile.d*

```
> mkdir -p /opt/edg/var/etc/profile.d
```

After this copy from the directory

- edg-wl-ui-gui-env.sh

into

/opt/edg/var/etc/profile.d

the following files:

- edg-wl-ui-env.csh - edg-wl-ui-env.sh - edg-wl-ui-gui-env.csh - edg-wl-ui-gui-env.sh

```
> cd /opt/edg/etc/profile.d
> cp  edg-wl-ui-env.csh \
      edg-wl-ui-env.sh  \
      edg-wl-ui-gui-env.csh \
      edg-wl-ui-gui-env.sh  /opt/edg/var/etc/profile.d/
```

7.6. JOBOUTPUT

- Create */tmp/jobOutput* and make it world-writeable

```
> mkdir /tmp/jobOutput
> chmod 777 /tmp/jobOutput
```



8. CRON TABLE CONFIGURATION

- Add the services to the crontab

```
> crontab -e
```

This will allow the editing of the crontable with the default editor, after which the following lines have to be added:

```
PATH=/sbin:/bin:/usr/sbin:/usr/bin
56 3,9,15,21 * * * /opt/edg/etc/cron/edg-fetch-crl-cron >> /var/log/edg-fetch-crl-cron.log 2>&1
```

If needed, an automatic rotation of the log file can be obtained editing the file

/etc/logrotate.d/edg-fetch

An example of configuration of the */etc/logrotate.d/edg-fetch* for a monthly log rotation follows:

```
> more /etc/logrotate.d/edg-fetch
```

```
/var/log/edg-fetch-crl-cron.log {
    compress
    monthly
    rotate 12
    missingok
    ifempty
    create
}
```



9. UPGRADE FROM THE PREVIOUS VERSION

This procedure is meant to help site administrators upgrade the node without starting an installation "from scratch", whenever possible.

The aim is to define those "delta" steps dealing both with installation and configuration phases. It is worthy of reminding that here "delta" refers to two contiguous software tags, the latter of which is the current one. Therefore, the procedure is not applicable to software versions more than two tags old.

WARNING: As a requirement for a successful upgrade, all the active servers which might be affected by the upgrade should be stopped.

The servers should be restarted once the installation and configuration described in the following sub paragraphs have been successfully done.

9.1. SOFTWARE INSTALLATION

The list "UI_manual_install_rpm", which has been described in 2., contains the latest version of the UI-related rpms to be installed. If the `rpm -i` command were launched as described in that section, a large number of conflicts would be issued because most of the packages would be reported to be already installed, some of which with the same version number, some others with an older one.

The easiest way to handle this situation is to download those rpms which should update the ones already installed on the node as well as any new ones.

The list of these rpms is contained in the file

UI_upgrade_rpm

whereas the list with the complete command lines for the download is contained in the file

UI_upgrade_wget

WARNING: This script will create a directory tree where the rpms are downloaded and needs to be launched once only.

After downloading the rpms, the first thing to do is to update the rpms within the directory *UI_UPGRADE*, by issuing the command

```
> rpm -U --oldpackage "*" .rpm"
```

A further list of rpms is provided, namely

UI_upgrade_forced_rpm

containing those new rpms whose dependencies are not dealt with, therefore requiring the installation to be "forced".

The same "wget" file

UI_upgrade_wget



takes also care to download the rpms of this final list in the directory

UI_UPGRADE_FORCED

The rpms listed in this directory should be installed with the command

```
> rpm -Uvh --force --nodeps "*.rpm"
```

Finally the list of rpms *UI_remove_rpm*

is provided which contains those packages which need to be removed; this is particularly likely to be necessary with CA-related rpms.

The rpm command to remove the listed rpms is

```
> rpm -e `cat UI_remove_rpm`
```

9.2. INSTALLING THE UP-TO-DATE CERTIFICATION AUTHORITY RPMS

As the list and structure of Certification Authorities (CA) accepted by the LCG project can change independently of the middleware releases, the rpm list related to the CAs certificates and URLs has been decoupled from the standard LCG release procedure. You should consult the page

<http://markusw.home.cern.ch/markusw/lcg2CAlist.html>

in order to ascertain what the version number of the latest set of CA rpms is. At time of writing it is 1.6, so the full set of rpms can be downloaded with the following command;

```
> wget -ll -nd -r http://grid-deployment.web.cern.ch/grid-deployment/download/RpmDir/security/index_r1.6.html
```

These rpms should then be installed in the usual way;

```
> rpm -Uvh *.rpm
```

Changes and updates to these settings will be announced on the LCG-Rollout mailing list.

9.3. UPGRADE CONFIGURATION

- Check section 6. for the RGMA client installation.
- Check section 7.4. for configuration of the graphical interface.



10. APPENDIX 1: EXAMPLE OF GLOBUS INITIALIZATION OUTPUT

The following output produced by the script *globus-initialization.sh* can be considered normal on a User Interface and it does not indicate any harmful issue:

```
creating globus-sh-tools-vars.sh
creating globus-script-initializer
creating Globus::Core::Paths
checking globus-hostname
Done

Creating...
/opt/globus/etc/grid-info.conf
Done

Creating...
/opt/globus/sbin/SXXgris
/opt/globus/libexec/grid-info-script-initializer
/opt/globus/libexec/grid-info-mds-core
/opt/globus/libexec/grid-info-common
/opt/globus/libexec/grid-info-cpu*
/opt/globus/libexec/grid-info-fs*
/opt/globus/libexec/grid-info-mem*
/opt/globus/libexec/grid-info-net*
/opt/globus/libexec/grid-info-platform*
/opt/globus/libexec/grid-info-os*
/opt/globus/etc/grid-info-resource-ldif.conf
/opt/globus/etc/grid-info-resource-register.conf
/opt/globus/etc/grid-info-resource.schema
/opt/globus/etc/grid.gridftpperf.schema
/opt/globus/etc/gridftp-resource.conf
/opt/globus/etc/gridftp-perf-info
/opt/globus/etc/grid-info-slapd.conf
/opt/globus/etc/grid-info-site-giis.conf
/opt/globus/etc/grid-info-site-policy.conf
/opt/globus/etc/grid-info-server-env.conf
/opt/globus/etc/grid-info-deployment-comments.conf
Done
Creating gatekeeper configuration file...
Done
Creating grid services directory...
Done
Creating state file directory.
Done
Reading gatekeeper configuration file...
Warning: Host cert file: /etc/grid-security/hostcert.pem not found. Re-run
setup-globus-gram-job-manager after installing host cert file.
Determining system information...
Creating job manager configuration file...
Done
Setting up fork gram reporter in MDS
-----
Done

Setting up pbs gram reporter in MDS
-----
configure: error: Cannot locate qstat
Error locating pbs commands, aborting!
loading cache /dev/null
checking for qstat... no
Setting up condor gram reporter in MDS
-----
configure: error: Cannot locate condor_q
Error locating condor commands, aborting!
loading cache /dev/null
checking for condor_q... no
Setting up lsf gram reporter in MDS
-----
configure: error: Cannot locate lsload
Error locating LSF commands, aborting!
loading cache /dev/null
checking for lsload... no
loading cache ./config.cache
checking for mpirun... /usr/bin/mpirun
updating cache ./config.cache
creating ./config.status
creating fork.pm
configure: error: Cannot locate qdel
Error locating PBS commands, aborting!
loading cache /dev/null
checking for mpirun... /usr/bin/mpirun
```



```
checking for qdel... no
configure: error: Cannot locate condor_submit
Error locating condor commands, aborting!
loading cache /dev/null
checking for condor_submit... no
configure: error: Cannot locate bsub
Error locating LSF commands, aborting!
loading cache /dev/null
checking for mpirun... /usr/bin/mpirun
checking for bsub... no
loading cache ./config.cache
creating ./config.status
creating grid-cert-request-config
creating grid-security-config
```



CHANGE HISTORY

Table 1: Change History

<i>version</i>	<i>date</i>	<i>description</i>
v1.0	19/Nov/03	First Release
v1.1	2/Dec/03	
v1.3	14/Jan/04	
v2.0	20/Jan/04	
v2.1	21/Jan/04	
v2.2	21/Jan/04	
v2.3	27/Jan/04	
v2.4	12/Feb/04	
v2.5	15/Feb/2004	
v2.6	24/2/2004	
v2.7	10/3/2004	
v2.8	01/Apr/2004	cvcs references changed
v2.9	08/Apr/2004	
v2.9.1	13/Apr/2004	A2.1 The rpm command to update changed
v2.10.0	3/Aug/04	2.,9.: rpms dealing with CAs no more included in rpm lists.
v2.10.1	5/Aug/04	6.: rgma client installation included 7.4.: paragraph added dealing with configuration of the graphical interface.
v2.10.2	10/Aug/04	6.: RGMA client configuration changed
v2.10.3	12/Aug/04	6.: configuration of file /opt/edg/var/edg-rgma/rgma-defaults changed