European DataGrid Distribution of Globus v2.0-alpha

Step-by-step installation and configuration

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Summary

- EDG Globus v2.0
  - What's new in the Globus v2.0 alpha (EDG Distribution)
  - Installing with rpm and wget
  - Configuration via the /etc/globus.conf file
  - Requesting certificates
  - Setting up one or more gatekeepers
  - Testing your installation
- Known Bugs
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What's new in Globus v2.0-alpha (EDG Dist.)

- Structure of the packaging has changed. Now everything goes under the /opt/globus directory (as default).
- Configuration files are stored in /etc (e.g. /etc/globus.conf or /etc/grid-security/certificates).
- The deploy operation is no more needed.
- As soon as we 'tune' the EDG packaging the whole Globus Toolkit configuration should require a very small number of manual changes (hopefully none).
- The only file responsible for the whole Globus configuration is and will remain /etc/globus.conf, 'replacing' the old globus-gatekeeper.conf, etc...

First Step: Obtaining the EDG Software

- The Package Repository at http://datagrid.in2p3.fr/pkgs/raw/ provides access to the packaged Globus, DataGrid and required external software. All software is packaged as source and binary RPMs. A central CVS repository, intended mainly for developers, maintains the sources of the DataGrid code.
- All the pkges are also accessible directly via a web interface (http://marianne.in2p3.fr/datagrid/testbed1/repositories/pkg-repository.html).
- The installation procedure we will describe here assumes that you don't have any previous version of Globus installed on your machine(s). If so be careful because the EDG RPMs will (re)create the /opt/globus dir, scratching everything (including valid certificates).

Second Step: Installing with rpm and wget

- For installing Globus v2.0 you'll need root privileges during the whole installation process. Said that the whole process shouldn't take more than a few commands:

```
# mkdir $YOUR_DOWNLOAD_DIR
# cd $YOUR_DOWNLOAD_DIR
# wget -nd -r http://datagrid.in2p3.fr/distribution/config/globus2.html
# rpm -ivh globus_*.i386.rpm
```

- At this stage all the code RPMs are installed on your host. You just need to download and install the configuration RPMs:

```
# wget -nd -r http://datagrid.in2p3.fr/distribution/config/globus2.html
# mkdir /etc/grid-security
# rpm -ivh *edgconfig*.rpm
```

- At the end of the process remember to re-login in order to make the changes in your environment current.

Third Step: The globus.conf configuration file

- Within the EDG distribution of Globus v2.0-alpha the globus.conf is responsible for the whole package configuration. A 'template' copy of this file will be put into /etc by the configuration RPMs:

```
GLOBUS_LOCATION=/opt/globus
GLOBUS_GATEKEEPER_HOST="grid2.ca.infn.it"
GLOBUS_GATEKEEPER_SUBJECT="/C=IT/O=INFN/OU=gatekeeper/L=CA/CN=grid2.ca.infn.it
  /Email=daniele.mura@ca.infn.it"
GLOBUS_HOST_DN="hn=grid2.ca.infn.it, dc=ca, dc=infn, dc=it, o=Grid"
GLOBUS_ORG_DN="dc=ca, dc=infn, dc=it, o=Grid"
GATEKEEPER_PORT=2119
X509_CERT_DIR=/etc/grid-security/certificates
X509_GATEKEEPER_CERT=/opt/globus/etc/globus-gatekeeper.cert
X509_GATEKEEPER_KEY=/opt/globus/etc/globus-gatekeeper.key
GRIDMAP=/etc/grid-security/grid-mapfile
GLOBUS_JOBMANAGERS=fork
```

- Lines in blue are the minimum set that had to be modified to values appropriate for your site. In the present release of the RPMs the first two are automatically set, the others have been removed.

Fourth Step: Installing the CAs

- The EDG software supports many Certification Authorities from the various partners involved in the project (for a complete list look at http://marianne.in2p3.fr/datagrid/ca/ca-table-ca.html).
- Every CA has its own signing policy files and some provide a script for generating host certificates.
- In order to make sure your machine is a fully operating Testbed 1 resource all the CAs must be enabled. This is done by simply installing the CAs RPMS with the usual command:

```
# wget -r -q -nd http://datagrid.in2p3.fr/distribution/config/security.html
# rpm -ivh ca_*.noarch.rpm
```

- WARNING: Note that, for security reasons, the Globus CA isn't supported in the DataGrid Testbed 1, so its certificates won't work.

Fifth Step: Requesting your certificates

- If your local CA provides a script to request host certificates you will have to download and install your specific CA RPM, choosing it from: http://datagrid.in2p3.fr/distribution/datagrid/security/RPMS/local/ and issuing:

```
# rpm -ivh ca_*-local-*.noarch.rpm
```

- The following steps can vary a lot from CA to CA. Specific step-by-step instructions for you CA can be found at: http://marianne.in2p3.fr/datagrid/ca/ca-table-ca.html

Sixth Step: Activating the Gatekeeper

- To activate the Gatekeeper and insert needed symbolic links into the startup/shutdown directories you just need to issue:

  # chkconfig globus-gatekeeper on

  # /etc/rc.d/init.d/globus-gatekeeper start

- Testing the Gatekeeper functionality is now very easy:

  # /etc/rc.d/init.d/globus-gatekeeper test

- You will get something like this:

```
Starting globus-gatekeeper:
Testing gatekeeper
Local user id (uid)       : root
Home directory            : /opt/globus
Libexec directory         : /opt/globus/libexec
Gatekeeper subject name   : "/O=Grid/O=CERN/OU=cern.ch/CN=host/testbed013.cern.ch
"
Gatekeeper test complete : Success!

Gatekeeper shutting down!
```

Step Seven: Configuring the jobmanager(s)

- FORK: Is configured by the template /etc/globus.conf file.
- PBS:
  - Download and install PBS following the instructions you can find at: http://www.openpbs.org/download.html
  - Introduce/modify into your globus.conf file the following lines:

```
GLOBUS_JOBMANAGERS="fork pbs"

GLOBUS_GRAM_JOB_MANAGER_QSUB=/usr/local/OpenPBS_2_3_12/bin
GLOBUS_GRAM_JOB_MANAGER_QDEL=/usr/local/OpenPBS_2_3_12/bin
GLOBUS_GRAM_JOB_MANAGER_QSTAT=/usr/local/OpenPBS_2_3_12/bin
GLOBUS_GRAM_JOB_MANAGER_MPIRUN=/usr/local/OpenPBS_2_3_12/bin
```

- LSF, CONDOR: Have been tested, too. Refer to EDG documentation for details

Testing your Globus 2 Installation

- To start testing the functionality of your installaton you have to edit /etc/grid-security/grid-mapfile to insert, at least, your own user certificate subject. Like this:

```
"/C=IT/O=INFN/L=Torino/CN=Stefano Barale/Email=stefano.barale@to.infn.it" barale
```

- Then you will put the personal certificate into ~$HOME/.globus/

- Now you can perform a simple 'Hello word' job submission to test the local fork jobmanager:

```
[barale@testbed013 barale]$ globus-job-run testbed013.cern.ch /bin/ls
Desktop
gram_job_mgr_9587.log
newfile.test
spit.tar.gz
[barale@testbed013 barale]$
```

Testing your Globus 2 Installation

Next step is testing remote job-submission:

- Ask a 'friendly' site to add you to the grid-mapfile of another host. For this test we used two different hosts:
  - the Testbed 0 (quantum grid) hosts qgrid0X.to.infn.it with fork as jobmanager
  - the Turin Alice farm front-end host alifarm01.to.infn.it with the PBS jobmanager
- Create a proxy certificate with:

```
[barale@testbed013 barale]$ grid-proxy-init
```

- Test remote Gatekeeper Authentication:

```
[barale@testbed013 barale]$ globusrun -a -r qgrid01.to.infn.it

GRAM Authentication test successful
[barale@testbed013 barale]$
```

Testing your Globus 2 Installation

- Test remote job-submission with the fork jobmanager:

```
Your identity: /C=IT/O=INFN/L=Torino/CN=Stefano Barale/Email=stefano.barale@to.i
nfn.it
Enter GRID pass phrase for this identity:
Creating proxy ................................ Done
Your proxy is valid until Mon Oct 29 14:02:09 2001
[barale@testbed013 barale]$ globus-job-run qgrid02.to.infn.it /bin/ls
Desktop
[barale@testbed013 barale]$
```

- Test remote job-submission with PBS:

```
[barale@testbed013 barale]$ globus-job-run alifarm01.to.infn.it/jobmanager-pbs /
bin/hostname
mom_set_limits: entered
aliclient01
[barale@testbed013 barale]$
```

Known Bugs

- GSIFTP and globus-url-copy: seem not to work properly. We experienced many 'hangs' as well as incomplete file transfers when working with files bigger than 20,000 MB, between a wide variety of hosts and versions of Globus. We are investigating the problem and will publish any useful information as soon as we get more feedback from the Globus Team.
- GRAM Reporter with Globus RPMs: requires some tuning. You could experience some problems with PBS. It will be in place for the next release of EDG RPMs.

Getting Support – Providing Feedback

- On Globus v2.0-alpha issues.
  - Refer to the official Globus Toolkit 2.0 page at http://www.globus.org/gt2/
  - Subscribe to the Globus 2 mailing list sending the message "subscribe gt2" to <majordomo@globus.org> from the mail address you want to use for receiving and sending messages to the list.
- On EDG software.
  - The contents of this slide presentation is just a small subset of the IT Installation Guide (draft). The Guide will evolve rapidly as soon as the WPs code is released and extensive test are performed with it. You will find the most recent version of the Guide (in various formats) at: http://marianne.in2p3.fr/datagrid/documentation/
  - In case of problems, questions or suggestions, you can contact the Integration Team for support at

    <hep-proj-grid-integration-team@cern.ch>