



MODIFIED RB TEST REPORT

SOFTWARE TEST AND VALIDATION REPORT

WP4 TASK4 - Verification and Quality Control

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Abstract: This report describes the validation performed on the package (modified) Resource Broker/Scheduling Agent developed by CrossGrid WP 3 task 3.2. The tests were performed by Mario David on the behalf of the CrossGrid task 4.4 testbed verification and quality control. Modified Scheduling Agent based on the EDG Resource Broker for mpich-g2 and interactive jobs.



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1. CONTEXT

Test and validation of the package “modified Resource Broker” developed by CrossGrid WP 3 task 3.2. The package has a modified Scheduling Agent in order to cope with mpich-p4, mpich-g2 and interactive jobs.

1.1. TEST REQUEST

The package test request was assigned by Jorge Gomes (jorge@lip.pt) to Mario David (david@lip.pt) on 24 June 2004. The test requester was Alvaro Fernandez (alvaro.fernandez@ific.uv.es) from IFIC Valencia. The request was submitted properly by a request form through the test and validation web form, and was assigned the Request ID 108807305654.737407814628.

The software URL provided in the “Test Request” was correct containing the several packages of the Workload Management System. The version is 2.1.15.2.2 is based on the WMS distributed by EDG version 2.1.15.

The URL for Installation and User Manuals were correctly given in the Test Request, the URL containing the Development Manual and Software Design documentation were correctly given.

The URL containing source code and JDL files for the testing given in the Test Request was correct.

1.2. TEST TEAM

The tests were performed by task 4.4 members from LIP Lisbon:

- Mario David (david@lip.pt)
- Jorge Gomes (jorge@lip.pt)

1.3. RESOURCES INVOLVED

The following nodes located at LIP Lisbon were involved in the tests:

Resource Broker – rb02.lip.pt

User Interface – ui01.lip.pt

Additionally all the CE's registered in the Information Index (ii01.lip.pt) were used to run the jobs. This is part of the Crossgrid testbed with version tag 1.9.1 based on LCG2.0.0.

2. TEST AND VALIDATION

2.1. SOFTWARE INSTALLATION

A small testbed comprising a RB and a UI running CG-1.9.1 based on LCG-2.0.0 version under the usual RH7.3 operating system, was used.

Both the RB and UI were first installed with the official CG-1.9.1 release and job-submission tests were performed to check that the RB was running properly.

The following RPM lists were created to substitute the corresponding lists from LCG for the UI and the RB:

```
/*
  Logging-server-CG-rpm.h
  =====
  Customized list for Logging and Bookkeeping server.
*/
cg-wp3.2-lbserver_gcc3_2_2-2.1.15.2.2-1/i486
```

```
/*
  Broker-server-CG-rpm.h
  =====
  Customized list for resource broker servers.
*/
cg-wp3.2-bypass_gcc3_2_2-2.5.3-23/i486
cg-wp3.2-services-common_gcc3_2_2-2.1.15.2.2-1/i486
cg-wp3.2-common-api_gcc3_2_2-2.1.15.2.2-1/i486
cg-wp3.2-config_gcc3_2_2-2.1.15.2.2-1/i486
cg-wp3.2-interactive_gcc3_2_2-2.1.15.2.2-1/i486
cg-wp3.2-proxyrenewal_gcc3_2_2-2.1.15.2.2-1/i486
cg-wp3.2-wm_gcc3_2_2-2.1.15.2.2-1/i486
cg-wp3.2-globus-gridftp_gcc3_2_2-1.5-23/i486
/* Dependencies. */
classads-jar-1.1-2
cog-jar-1.1-1
/* externals */
/* boost-doc-1.29.1-vh6/i486 */
boost-g3-1.29.1-vh6/i486
/* boost-g3-debug-1.29.1-vh6/i486 */
classads-g3-0.9.4-vh8/i486
```

```
/*
  Logging-client-CG-rpm.h
  =====
  Customized list for Logging and Bookkeeping client.
*/
#ifdef LOCALLOGGER
cg-wp3.2-locallogger_gcc3_2_2-2.1.15.2-1/i486
#endif
cg-wp3.2-logging-api-c_gcc3_2_2-2.1.15.2.2-1/i486
cg-wp3.2-logging-api-cpp_gcc3_2_2-2.1.15.2.2-1/i486
cg-wp3.2-logging-api-sh_gcc3_2_2-2.1.15.2.2-1/i486
/* Dependencies. */
ares-devel-1.1.1-2

/*
  Broker-client-CG-rpm.h
  =====
  Customized list for resource broker clients.
*/
/* Include the logger client. */
#include "Logging-client-CG-rpm.h"
cg-wp3.2-bypass_gcc3_2_2-2.5.3-23/i486
cg-wp3.2-chkpt-api_gcc3_2_2-2.1.15.2.2-1/i486
cg-wp3.2-common-api-java-interface_gcc3_2_2-2.1.15.2.2-1/i486
cg-wp3.2-common-api-java_gcc3_2_2-2.1.15.2.2-1/i486
cg-wp3.2-common-api_gcc3_2_2-2.1.15.2.2-1/i486
cg-wp3.2-config_gcc3_2_2-2.1.15.2.2-1/i486
cg-wp3.2-services-common_gcc3_2_2-2.1.15.2.2-1/i486
cg-wp3.2-ui-api-cpp_gcc3_2_2-2.1.15.2.2-1/i486
cg-wp3.2-ui-api-java-interface_gcc3_2_2-2.1.15.2.2-1/i486
cg-wp3.2-ui-api-java_gcc3_2_2-2.1.15.2.2-1/i486
cg-wp3.2-ui-cli_gcc3_2_2-2.1.15.2.2-2/i486
cg-wp3.2-ui-config_gcc3_2_2-2.1.15.2.2-1/i486
cg-wp3.2-ui-gui_gcc3_2_2-2.1.15.2.2-1/i486
/* Dependencies. */
classads-jar-1.1-2
cog-jar-1.1-1
tkinter2-2.2.2-11.7.3
+expat-1.95.2-2
boost-g3-1.29.1-vh6/i486
classads-g3-0.9.4-vh8/i486
```

The only difference with respect to the list provided in the test request was the rpm `cg-wp3.2-ui-cli_gcc3_2_2-2.1.15.2.2-2`, the one initially installed had some missing files which was corrected in this last version.

After substitution of these files in the UI and RB rpm lists and doing a `updaterpms` in both machines, the `edg-wl` packages were uninstalled and these new packages installed without problems. There was no need to uninstall “manually” the `edg-wl` packages first. A clean upgrade was achieved.

This makes an easy deployment of the modified UI in the rest of CrossGrid Testbed.

The software installs under `/opt/edg`, because the files are mostly the same as the ones distributed by EDG, except the executables corresponding to the Scheduling Agent in the RB and the `edg-job-*` executables in the UI, which had their code modified.

The dependencies are the same as the ones of the WMS distributed by EDG, and are all mentioned in the Installation Manual.

2.2. ADDITIONAL TESTBED MODIFICATIONS

For the RB configuration there is a manual change in the file:
`/opt/edg/etc/edg_wl.conf`

In the section corresponding to the JobControler (JC), one has to add the following:

```
G2LauncherLogDir = "${EDG_WL_TMP}/jobcontrol/g2launcher";  
CheckinTimeout = 700;
```

The issue to be solved is that this file is configured through the “`wlconfig`” LCFGng component and this component has to be modified for CG purposes. For the time being the `edg_wl.conf` will be manually modified and care has to be taken when rebooting or restarting the LCFGng components which will overwrite this file.

The Condor-G configuration file has to be modified also:
`/opt/condor/etc/condor.conf`

Namelly, one has to set:
`ENABLE_GRID_MONITOR = FALSE`

This was done through LCFGng by adding the following line into the `rb02` profile:

```
condorconfig.enable_grid_monitor    FALSE
```

2.3. TEST DEVELOPMENTS

The following JDL was used for the `mpich-p4` tests:

```
JobType           = "mpich";
NodeNumber        = 2;
VirtualOrganisation = "cg";
Executable        = "test_mpi";
StdOutput         = "test_mpi.out";
StdError          = "test_mpi.err";
InputSandbox      = {"test_mpi"};
OutputSandbox     = {"test_mpi.out", "test_mpi.err"};
```

The test_mpi executable is a simple program to numerically calculate the value of PI. With this JDL we can change to a larger number of CPU's. One can also submit any number of such jobs.

For the mpich-g2 job submission tests, the same program was used but compiled with mpich-g2 . The following JDL was used:

```
JobType           = "mpich-g2";
NodeNumber        = 2;
VirtualOrganisation = "cg";
Executable        = "cpi";
StdOutput         = "job.out";
StdError          = "job.err";
InputSandbox      = {"cpi"};
OutputSandbox     = {"job.out", "job.err"};
Rank              = other.GlueCEStateFreeCPUs;
Requirements      =
other.GlueCEUniqueID == "cg01.ific.uv.es:2119/jobmanager-pbs-long" ||
other.GlueCEUniqueID == "ce100.fzk.de:2119/jobmanager-pbs-long" ||
other.GlueCEUniqueID == "aocegrid.uab.es:2119/jobmanager-pbs-long" ;
```

Also here, a larger number of CPU's can be specified in order to test mpich-g2 between sites.

For interactive jobs, the source code and JDL files were obtained from the FZK CVS repository. Three types of program were available, one for "simple" interactive jobs, one for interactive mpich-p4 and one for interactive mpich-g2 jobs.

2.4. USABILITY

The software is easy to install and configure once a Resource Broker is previously up and running with the EDG/LCG middleware. This is the most difficult part.

The knowledge of how to operate a RB is essential to the understanding of the Crossgrid modified RB software.

The command `edg-job-status`, which can be used to monitor the evolution of a job, has reduced usability with respect to the WMS deployed by EDG. A mail from the developer Enol Fernandez states the following: "For MPICH-G2 the scheduled and ready status are not available, since the G2 launcher runs in the broker and doesn't need to wait for globus or pbs to run the job. This should be improved and we are already working on it."

The interactive response of the executables in the UI are quite acceptable, and depend more on the response from the RB and its interaction with the Information Index.

2.5. FUNCTIONALITY

The software functionality was tested through job submission to the RB, for `mpich-p4`, `mpich-g2` and interactive jobs. Interactive parallel programs were also tested using both the `p4` and `g2` devices.

Tested the daemons successful startup in the RB.

2.5.1. Unit tests

The unit tests consisted in the successful startup of the `edg-wl-*` daemons in the RB. This presented no problem.

2.5.2. System tests

Systems tests consists in job submission to the Resource Broker both for `mpich-p4` jobs and for `mpich-g2` ones. These tests are the same as the ones performed for the previous version of this software, see [2]. Tests also consisted in submission of simple interactive jobs and interactive `mpich-p4` and `mpich-g2` jobs.

Several `mpich-p4` jobs were submitted to the RB, with the requirement of 2 CPU's. A total of 11 jobs have all terminated successfully with output retrieval in the following CE's:

```
4 into cms.fuw.edu.pl
3 into cagnode45.cs.tcd.ie
2 into ce001.grid.ucy.ac.cy
1 into ce02.lip.pt
1 into grid01.physics.auth.gr
```

Test requiring 10 CPU's, ten jobs were submitted successfully with output retrieval:

```
8 into zeus24.cyf-kr.edu.pl
2 into grid01.physics.auth.gr
```

An example of one of the jobs output file is the following:

```
Process 5 on grid10.physics.auth.gr
Process 7 on grid08.physics.auth.gr
Process 2 on grid08.physics.auth.gr
Process 6 on grid09.physics.auth.gr
Process 1 on grid09.physics.auth.gr
Process 3 on grid07.physics.auth.gr
Process 8 on grid07.physics.auth.gr
Process 0 on grid10.physics.auth.gr
Process 9 on grid05.physics.auth.gr
Process 4 on grid05.physics.auth.gr
```

Mpich-g2 jobs requiring 2 CPU's have run successfully with job output retrieval in the following sites:

```
TCD - cagnode45.cs.tcd.ie
LIP - ce02.lip.pt
FUW - cms.fuw.edu.pl
UCY - ce001.grid.ucy.ac.cy
AUPh - grid01.physics.auth.gr
CYF - zeus24.cyf-kr.edu.pl
POZNAN - cedar.crossgrid.man.poznan.pl
ICM - xgrid.icm.edu.pl
```

Test requiring 8 CPU's to three sites, the edg-job-status is the following:

```
[david@ui01 mpi]$ edg-job-status -i jid
*****
BOOKKEEPING INFORMATION:

Status info for the Job : https://rb02.lip.pt:9000/J5Z6lbPnrFAogNsRpP8hnA
Current Status:          Running
Status Reason:           unavailable
Destination:             cagnode45.cs.tcd.ie:2119/jobmanager-pbs-long
                        cedar.crossgrid.man.poznan.pl:2119/jobmanager-pbs-cg
                        cms.fuw.edu.pl:2119/jobmanager-pbs-long
reached on:              Thu Jul  1 13:08:02 2004
*****
```

The three CE's in which the job is running is shown in the edg-job-status, solving an issue found in the previous version of the software.

The next test is the submission of a simple interactive job. The complete session is shown below:


```
[david@ui01 jdl]$ edg-job-submit -o jid simple_interactive.jdl
Selected Virtual Organisation name (from JDL): cg
Connecting to host rb02.lip.pt, port 7772
Logging to host rb02.lip.pt, port 9002
===== edg-job-submit Success =====
The job has been successfully submitted to the Network Server.
Use edg-job-status command to check job current status. Your job identifier (edg_jobId) is:
- https://rb02.lip.pt:9000/9qaKfjMEzzgUk_WpcqNwXA
---
The Interactive Session Listener has been successfully launched
with the following parameters:

Host:                193.136.90.56
Port:                24500
The edg_jobId has been saved in the following file:
/home/csys/david/edgtest/inter/tests/interactive-tests/simple/jdl/jid
=====
*****
Interactive Job console started for https://rb02.lip.pt:9000/9qaK-
fjMEzzgUk_WpcqNwXA
Please press ^C to exit from the session
=====
[david@ui01 jdl]$ edg-job-status -i jid
*****
BOOKKEEPING INFORMATION:
Status info for the Job : https://rb02.lip.pt:9000/9qaKfjMEzzgUk_WpcqNwXA
Current Status:      Scheduled
Status Reason:      Job successfully submitted to Globus
Destination:      cgnode00.di.uoa.gr:2119/jobmanager-pbs-long
reached on:      Mon Jul  5 13:51:08 2004
*****
```

The job was submitted to the CE shown above but, no prompt has been returned from the program after more than 30 minutes. If a given CE has problems, although it shows free CPU's available, the interactive job can end in such CE without the user ever know if there is some problem.

On the other hand two jobs sent one after the other to the same CE, gave the following result:

```
*****
BOOKKEEPING INFORMATION:

Status info for the Job : https://rb02.lip.pt:9000/VVnlq96GjVuiR9GLMevk8g
Current Status:      Done (Success)
Exit code:          0
Status Reason:      Job terminated successfully
Destination:        grid01.physics.auth.gr:2119/jobmanager-pbs-long
reached on:         Mon Jul  5 15:02:05 2004
*****
*****
BOOKKEEPING INFORMATION:

Status info for the Job : https://rb02.lip.pt:9000/eC_I6StoE16tx6Yvd_hpDA
Current Status:      Aborted
Status Reason:      Job RetryCount (0) hit
Destination:        grid01.physics.auth.gr:2119/jobmanager-pbs-long
reached on:         Mon Jul  5 15:03:23 2004
*****
*****
```

The first has terminated successfully, but not the second one. In the interactive shell, this second job has hang out, not returning the program prompt. A second similar test to the CE at LIP results in the same behaviour. In a third such test to the CE at TCD both jobs were successfully executed. So that this behaviour is not reproducible.

The next test is the submission of an interactive mpich-p4 job. This was performed by sending the job requiring 2 CPU's into the CE at UCY, and after, requiring 8 CPU's into the CE at AUTH. The two sessions are shown bellow:

The following issue was noticed while testing the software. The CE at ICM has a total of 4 dual CPU's, as seen below, there are 4 running jobs and 2 waiting:

```
GlueCEInfoTotalCPUs: 8
GlueCEStateEstimatedResponseTime: 100447
GlueCEStateFreeCPUs: 4
GlueCEStateRunningJobs: 4
GlueCEStateStatus: Production
GlueCEStateTotalJobs: 6
GlueCEStateWaitingJobs: 2
```

The information of the number of running jobs and waiting jobs published by the Information Index, was checked against the following:

```
[david@ui01 jdl]$ globus-job-run xgrid.icm.edu.pl /usr/bin/qstat -a
xgrid.icm.edu.pl:
```

Job ID	Username	Queue	Jobname	SessID	NDS	TSK	Req'd Memory	Req'd Time	Elap S	Time
78.xgrid.icm.ed	cg003	long	STDIN	8023	1	--	--	12:00	R	00:00
79.xgrid.icm.ed	cg003	long	STDIN	6795	1	--	--	12:00	R	00:00
80.xgrid.icm.ed	cg003	long	STDIN	1353	1	--	--	12:00	R	00:00
81.xgrid.icm.ed	cg003	long	STDIN	9865	1	--	--	12:00	R	00:00
82.xgrid.icm.ed	cg003	long	STDIN	--	1	--	--	12:00	Q	--
83.xgrid.icm.ed	cg003	long	STDIN	--	1	--	--	12:00	Q	--

On the other hand when a edg-job-list-match is performed for a mpich-g2 job, the result is the following:

```
*****
                        GROUPS OF CE IDs LIST
The following groups of CE(s) matching your job requirements have been
found:
                                *Groups with 1 CEs*
                                *TotalCPUs*
*FreeCPUs*
[Rank=0]
xgrid.icm.edu.pl:2119/jobmanager-pbs-infinite                8                4
```

Which means that the 2 waiting jobs are not taken into account by the matchmaking, although that information is available in the Information Index.

To test a previous issue (see [2] issue009), a job was submitted requiring 300 CPU's and the result is the following:

```
*****
BOOKKEEPING INFORMATION:

Status          info          for          the          Job          :
https://rb02.lip.pt:9000/cQmx2bDsxKKyN1_qGAYkWA
Current Status:  Aborted
Status Reason:  Cannot plan: BrokerHelper: No available CEs
for MPICH-G2 job
reached on:     Tue Jul 6 15:09:50 2004
*****
```

So that this issue is solved in this version.

2.5.3. Stress tests

Stress tests were not performed.

2.6. COMPATIBILITY

The software is the WMS distributed by EDG and modified by CrossGrid to accept MPICH and interactive jobs, so the edg-wl-* rpm packages have to be substituted by the ones tested here. The software is compliant and compatible with the other components of the distribution, both EDG/LCG and CG software.

The software is not compatible with the previous version which was tested because the WMS version distributed by EDG/LCG (2.1.15) is not compatible with the previous tested version (2.0.18).

2.7. SECURITY AND NETWORKING

The port numbers used by the software for the (modified) Resource Broker are the same as the ones used in the EDG RB, specifically:

9000, 9001: Logging and Boockeping

9002: Local logger

7772: Network Server

All network and security related issues seems to conform with the Crossgrid documents.

2.8. PREVIOUSLY REPORTED ISSUES

Referring to the test report of the first version of the software [2]:

- Issue001: A modified list of RPM's was already provided by the CG ITEAM, containing the list of modified packages. So that the tester considers this issue has been solved.

-
- Issue002: Manual modification of the /opt/edg/etc/edg_wl.conf file is still not solved through a modification of the wlconfig LCFGng component.
 - Issue003: The line: condorconfig.enable_grid_monitor FALSE was already added to the RB profile by the CG ITEAM. o that the tester considers this issue has been solved.
 - Issue004: This issue is still present. The answer from one of the developers, Enol Fernandez: "For MPICH-G2 the scheduled and ready status are not available, since the G2 launcher runs in the broker and doesn't need to wait for globus or pbs to run the job. This should be improved and we are already working on it... We need to turn off the grid monitor to make sure Condor doesn't kill some globus processes which are indispensable for G2 jobs to work."
 - Issue005: This issue has been solved in the present release.
 - Issue006: This issue has been solved in the present release.
 - Issue007: This issue is being addressed in the CG ITEAM.
 - Issue008: This issue has been solved in the present release.
 - Issue009: This issue has been solved in the present release.
 - Issue010: This issue is being addressed in the CG ITEAM. Comment from the bug #402: "Usually these cases happens when there are too much restrictions in the job, so can not find any compatible resource. Some test have been performed and has not been detected any bug, but test cases where the testers have detected the case need to be provided in order to double-check."
 - Issue011: This issue is being addressed in the CG ITEAM and WP3.2 developers. Comment from the bug #403: "The proceduce of the timeout is necessary to not having the instances of subjobs sitting forever in the queue in case of resources unavailable. this also prevents possible deadlocks. To provide guaranties of a job execution over others, we need priorities that will be investigated further (this would be a Feature Request)".

3. ISSUES FOUND

3.1. ISSUES FOUND IN THE SOFTWARE

Some of the following issues are not directly related with the software under test but have to be dealt with inside the ITEAM, so the tester has decided to report them here.

3.1.1. Issue 001 bugs #406 and #415

(Severity: medium Priority: immediate)

Bug tracker reference:

https://savannah.fzk.de/bugs/?func=detailitem&item_id=415

https://savannah.fzk.de/bugs/?func=detailitem&item_id=406

For the RB configuration there is a manual change in the file:

```
/opt/edg/etc/edg_wl.conf
```

In the section corresponding to the JobControler (JC), one has to add the following:

```
G2LauncherLogDir = "${EDG_WL_TMP}/jobcontrol/g2launcher";  
CheckinTimeout = 700;
```

The issue to be solved is that this file is configured through the "wlconfig" LCFGng component and this component has to be modified for CG purposes. For the time being the edg_wl.conf will be manually modified and care has to be taken when rebooting or restarting the LCFGng components which will overwrite this file.

3.1.2. Issue 002 bugs #399 and #416

(Severity: medium Priority: high)

Bug tracker reference:

https://savannah.fzk.de/bugs/index.php?func=detailitem&item_id=416

https://savannah.fzk.de/bugs/?func=detailitem&item_id=399

For dual CPU WN's or in cases where there is a mixture of single and dual CPU nodes, the grid-job-manager-pbs is not able to deal with mpich-g2 jobs. This is a known problem and is being dealt within the CG ITEAM.

3.1.3. Issue 003 bugs #417

(Severity: medium Priority: medium)

Bug tracker reference:

https://savannah.fzk.de/bugs/index.php?func=detailitem&item_id=417

reproducible. More extensive use of the testbed is needed to evaluate the the extent of this type of behaviour.

3.1.6. Issue 006 bugs #420

(Severity: medium Priority: high)

Bug tracker reference:

https://savannah.fzk.de/bugs/index.php?func=detailitem&item_id=420

In the case of mpich-g2 jobs. It was verified that a given CE had a total of 4 dual CPU's, in which were 4 jobs running and 2 jobs in waiting state.

The information of the number of running jobs and waiting jobs published by the Information Index was checked to be correct. But when a edg-job-list-match is performed for a mpich-g2 job, 4 free CPU's appear in the matchmaking for that CE. This means that the 2 waiting jobs are not taken into account by the matchmaking, although that information is available in the Information Index.

3.1.7. Issue 007 bugs #396

(Severity: medium Priority: medium)

Bug tracker reference:

https://savannah.fzk.de/bugs/?func=detailitem&item_id=396

The status provided by the edg-job-status has reduced information with respect to the WMS deployed by EDG.

This issue is still present although a solution is under development. The answer from one of the developers, Enol Fernandez: **“For MPICH-G2 the scheduled and ready status are not available, since the G2 launcher runs in the broker and doesn't need to wait for globus or pbs to run the job. This should be improved and we are already working on it.... We need to turn off the grid monitor to make sure Condor doesn't kill some globus processes which are indispensable for G2 jobs to work.”**

3.1.8. Issue 008 bugs #402

(Severity: medium Priority: high)

Bug tracker reference:

https://savannah.fzk.de/bugs/?func=detailitem&item_id=402

During the tests was several times observed the RB reporting that No Computing Elements matching the job submission were found while simultaneous queries to the BDII and to the GRIS at the CEs were showing available resources. This problem should be investigated further.

Comment from one of the developers, Alvaro Fernandez: “Usually these cases happens when there are too much restrictions in the job, so can not find any compatible resource. Some test have been performed and has not been detec-

ted any bug, but test cases where the testers have detected the case need to be provided in order to double-check.”

3.1.9. Issue 009 bugs #403

(Severity: high Priority: high)

Bug tracker reference:

https://savannah.fzk.de/bugs/index.php?func=detailitem&item_id=403

If a single process instance gets queued at one site due to insufficient resources while some other instances enter in execution reaching the MPI barrier, the whole job will fail after a timeout. This is necessary to prevent the occupation of CPUs by processes that are just waiting at the MPI barrier by instances that are in a queue somewhere (or that have been lost) and for which it is not possible to know when they will be available. However this makes essential to prevent the queuing of MPI job instances, basically a way must be found to make sure that all instances of an mpich-g2 job reach execution and are not queued.

Comment from the bug #403: “The procedure of the timeout is necessary to not having the instances of subjobs sitting forever in the queue in case of resources unavailable. this also prevents possible deadlocks. To provide guaranties of a job execution over others, we need priorities that will be investigated further (this would be a Feature Request)”.

3.2. ISSUES FOUND IN THE DOCUMENTATION

No issues were found in the documentation.

4. RECOMMENDATION

1. The CrossGrid ITEAM should provide complete rpm lists of the WMS middleware in the next CG release, to substitute the corresponding list from LCG.
2. The variable of the CondorG configuration should be added to the LCFGng profile of the RB:
`condorconfig.enable_grid_monitor FALSE`
3. Possibility to reduce the time interval for the BDII update.
4. The CG ITEAM has to solve the `grid-job-manager-pbs` problem with dual CPU machines.

An overall recommendation is: "ISSUES FOUND".

The software can be deployed in the "Production Testbed" after implementation of the recommended actions for the CG ITEAM , namely items number 1, 2 and possibly 3.

5. REFERENCES

[1] Installation and User Manual:

["https://savannah.fzk.de/distribution/crossgrid/crossgrid/wp3/wp3_2-scheduling/docs/CG3.2-D3.3-v2.1-CSIC-installationguide.doc"](https://savannah.fzk.de/distribution/crossgrid/crossgrid/wp3/wp3_2-scheduling/docs/CG3.2-D3.3-v2.1-CSIC-installationguide.doc)

[2] Second test report of the (modified) Resource Broker:

["http://www.lip.pt/computing/projects/crossgrid/task4/softvalidation/10812536473.01482473305477/CG-4_4-REP-v1_0-LIP103-modified-RB_TestReport.pdf"](http://www.lip.pt/computing/projects/crossgrid/task4/softvalidation/10812536473.01482473305477/CG-4_4-REP-v1_0-LIP103-modified-RB_TestReport.pdf)

6. INTEGRATION/VALIDATION REQUEST

The test request can be found in:

http://www.lip.pt/computing/projects/crossgrid/task4/softvalidation/108807305654.737407814628/request_form.html

Request id: 108807305654.737407814628

Component name: (modified)Resource Broker/Scheduling Agen

Version (CVS tag): 2.1.15.2.2 (tag v2_2_0)

Request priority: 2

Package brief description: WP 3.2 Scheduling Agent (version 2.2) based on edg Resource Broker version 2.1.15

- Includes functionality for running mpich, and mpich-g2 jobs over normal and smp clusters.
- support for interactivity
- jss interface for RAS machine

Code:

Source code in X# CVS ? (Y/N): Y

Autobuild generates RPMs ? (Y/N): N

Software download URL: https://savannah.fzk.de/distribution/crossgrid/crossgrid/wp3/wp3_2-scheduling/

List of RPMs produced:

cg-wp3.2-bypass_gcc3_2_2-2.5.3-23.i486.rpm
cg-wp3.2-chkpt-api_gcc3_2_2-2.1.15.2.2-1.i486.rpm
cg-wp3.2-common-api-java-interface_gcc3_2_2-2.1.15.2.2-1.i486.rpm
cg-wp3.2-common-api-java_gcc3_2_2-2.1.15.2.2-1.i486.rpm
cg-wp3.2-common-api_gcc3_2_2-2.1.15.2.2-1.i486.rpm
cg-wp3.2-config_gcc3_2_2-2.1.15.2.2-1.i486.rpm
cg-wp3.2-dgas-hlr-ATMClient_gcc3_2_2-2.1.15.2.2-1.i486.rpm
cg-wp3.2-dgas-hlr-jobAuthClient_gcc3_2_2-2.1.15.2.2-1.i486.rpm
cg-wp3.2-dgas-hlr-server-admin_gcc3_2_2-2.1.15.2.2-1.i486.rpm
cg-wp3.2-dgas-hlr-server_gcc3_2_2-2.1.15.2.2-1.i486.rpm
cg-wp3.2-dgas-hlr-ui_gcc3_2_2-2.1.15.2.2-1.i486.rpm
cg-wp3.2-dgas-pa-server_gcc3_2_2-2.1.15.2.2-1.i486.rpm
cg-wp3.2-globus-gridftp_gcc3_2_2-1.5-23.i486.rpm
cg-wp3.2-interactive_gcc3_2_2-2.1.15.2.2-1.i486.rpm
cg-wp3.2-jss-cpp-srv_gcc3_2_2-2.1.15.2.2-1.i486.rpm
cg-wp3.2-lbserver-rgma_gcc3_2_2-2.1.15.2.2-1.i486.rpm
cg-wp3.2-lbserver_gcc3_2_2-2.1.15.2.2-1.i486.rpm
cg-wp3.2-locallogger_gcc3_2_2-2.1.15.2.2-1.i486.rpm

cg-wp3.2-logging-api-c_gcc3_2_2-2.1.15.2.2-1.i486.rpm
cg-wp3.2-logging-api-cpp_gcc3_2_2-2.1.15.2.2-1.i486.rpm
cg-wp3.2-logging-api-sh_gcc3_2_2-2.1.15.2.2-1.i486.rpm
cg-wp3.2-proxyrenewal_gcc3_2_2-2.1.15.2.2-1.i486.rpm
cg-wp3.2-services-common_gcc3_2_2-2.1.15.2.2-1.i486.rpm
cg-wp3.2-testsuite_gcc3_2_2-2.1.15.2.2-1.i486.rpm
cg-wp3.2-ui-api-cpp_gcc3_2_2-2.1.15.2.2-1.i486.rpm
cg-wp3.2-ui-api-java-interface_gcc3_2_2-2.1.15.2.2-1.i486.rpm
cg-wp3.2-ui-api-java_gcc3_2_2-2.1.15.2.2-1.i486.rpm
cg-wp3.2-ui-cli_gcc3_2_2-2.1.15.2.2-1.i486.rpm
cg-wp3.2-ui-config_gcc3_2_2-2.1.15.2.2-1.i486.rpm
cg-wp3.2-ui-gui_gcc3_2_2-2.1.15.2.2-1.i486.rpm
cg-wp3.2-wm_gcc3_2_2-2.1.15.2.2-1.i486.rpm

Changes:

List of all bugs fixed by this release:

(358, 359, 361, 362, 387, 389, 390, 393, 394, 395, 398, 400, 404, 405)

Look at <https://savannah.fzk.de/bugs/?group=cg-wp3-2>

List of backwards compatibility issues (installation, configuration or run-time:

can be installed over lcg-2 based testbed (follow installation guide)

Documentation:

Installation manual URL:

https://savannah.fzk.de/distribution/crossgrid/crossgrid/wp3/wp3_2-scheduling/docs/CG3.2-D3.3-v2.1-CSIC-installationguide.doc

Users manual URL:

https://savannah.fzk.de/distribution/crossgrid/crossgrid/wp3/wp3_2-scheduling/docs/CG3.2-D3.3-v2.1-CSIC-installationguide.doc

Development manual URL:

https://savannah.fzk.de/distribution/crossgrid/crossgrid/wp3/wp3_2-scheduling/docs/

Software requirements URL:

https://savannah.fzk.de/distribution/crossgrid/crossgrid/wp3/wp3_2-scheduling/docs/

Software design URL:

https://savannah.fzk.de/distribution/crossgrid/crossgrid/wp3/wp3_2-scheduling/docs/CG3.0-D3.5-v1.2-PSNC010-Proto2Status.pdf

List of all configuration files (with full path): various configuration files(follow installation guide)

List of all log files (with full path): usual edg ones, plus more defined by variables like G2LauncherLogDir (follow installation guide). For jss services job logs are created under /tmp

List of LCFG configuration objects (and versions): wlconfig modified and rpm lists provided by Iteam (currently until X# tag CG1_0_1)

List of daemons provided: follow installation guide

List of init.d scripts and supported directives (start, stop, restart, etc.): follow installation guide

Deployment:

Affected machine types (UI, WN, CE, SE, etc) and packages to be deployed on each:

Affected machines are UI, RB (and optionally JSS/RAS machine):

*For the UI:

cg-wp3.2-bypass_gcc3_2_2-2.5.3-23.i486.rpm
cg-wp3.2-chkpt-api_gcc3_2_2-2.1.15.2.2-1.i486.rpm
cg-wp3.2-common-api-java-interface_gcc3_2_2-2.1.15.2.2-1.i486.rpm
cg-wp3.2-common-api-java_gcc3_2_2-2.1.15.2.2-1.i486.rpm
cg-wp3.2-common-api_gcc3_2_2-2.1.15.2.2-1.i486.rpm
cg-wp3.2-config_gcc3_2_2-2.1.15.2.2-1.i486.rpm
cg-wp3.2-logging-api-c_gcc3_2_2-2.1.15.2.2-1.i486.rpm
cg-wp3.2-logging-api-cpp_gcc3_2_2-2.1.15.2.2-1.i486.rpm
cg-wp3.2-logging-api-sh_gcc3_2_2-2.1.15.2.2-1.i486.rpm
cg-wp3.2-services-common_gcc3_2_2-2.1.15.2.2-1.i486.rpm
cg-wp3.2-ui-api-cpp_gcc3_2_2-2.1.15.2.2-1.i486.rpm
cg-wp3.2-ui-api-java-interface_gcc3_2_2-2.1.15.2.2-1.i486.rpm
cg-wp3.2-ui-api-java_gcc3_2_2-2.1.15.2.2-1.i486.rpm
cg-wp3.2-ui-cli_gcc3_2_2-2.1.15.2.2-1.i486.rpm
cg-wp3.2-ui-config_gcc3_2_2-2.1.15.2.2-1.i486.rpm
cg-wp3.2-ui-gui_gcc3_2_2-2.1.15.2.2-1.i486.rpm

*For the RB node:

cg-wp3.2-bypass_gcc3_2_2-2.5.3-23.i486.rpm
cg-wp3.2-common-api_gcc3_2_2-2.1.15.2.2-1.i486.rpm
cg-wp3.2-config_gcc3_2_2-2.1.15.2.2-1.i486.rpm
cg-wp3.2-globus-gridftp_gcc3_2_2-1.5-23.i486.rpm
cg-wp3.2-interactive_gcc3_2_2-2.1.15.2.2-1.i486.rpm
cg-wp3.2-logging-api-c_gcc3_2_2-2.1.15.2.2-1.i486.rpm
cg-wp3.2-logging-api-cpp_gcc3_2_2-2.1.15.2.2-1.i486.rpm
cg-wp3.2-logging-api-sh_gcc3_2_2-2.1.15.2.2-1.i486.rpm
cg-wp3.2-proxyrenewal_gcc3_2_2-2.1.15.2.2-1.i486.rpm

cg-wp3.2-services-common_gcc3_2_2-2.1.15.2.2-1.i486.rpm
cg-wp3.2-wm_gcc3_2_2-2.1.15.2.2-1.i486.rpm

additionally if the RB node works as LB node, upgrade with:

cg-wp3.2-lbserver_gcc3_2_2-2.1.15.2.2-1.i486.rpm
cg-wp3.2-locallogger_gcc3_2_2-2.1.15.2

*For the RAS/JSS node:

for this node all the UI packages are needed (look rpm list before), and some additional ones:

cg-wp3.2-interactive_gcc3_2_2-2.1.15.2.2-1.i486.rpm
cg-wp3.2-jss-cpp-srv_gcc3_2_2-2.1.15.2.2-1.i486.rp

Component dependencies (required libraries, packages, etc.): follow installation guide

Credentials (if any) used by the service: User credentials in UI (and optionally in JSS)

List of service ports (inbound,outbound): follow installation guide

Who communicates with the service and from where: UI, RAS

Range of temporary ports used by the service (inbound,outbound): follow installation guide

Testing and Validation:

Unit tests that have been performed on the package: follow installation guide & software design doc

Features to be tested:

- current functionality provided until now
- upgrades to be compatible with lcg-2 testbed
- mpich, and mpich-g2 interactive jobs
- optionally jss interface (will be tested by the RAS packages, in its own test request)

Features not to be tested: any edg original feature is backwards compatible as for version 2.1.15

Test programs download URL:

https://savannah.fzk.de/cgi-bin/viewcvs.cgi/crossgrid/crossgrid/wp3/wp3_2-scheduling/etc/tests/

Other considerations:

- test are provided in the installation manual and source code for tests in the cvs (binaries can be provided upon request for interactivity testings)
- jss interface will be tested indirectly in its own validation.

- bus have been solved, and some others have been not possible to detect (Look the document https://savannah.fzk.de/distribution/crossgrid/crossgrid/wp3/wp3_2-scheduling/docs/CG3.2-v1.0-SolvedIssues.pdf)

Some use cases and logs are required for the issues that have been not possible to reproduce

Contacts:

Test requester:

Name: Alvaro Fernandez WP: 3 Partner: IFIC-CSIC Task: 3.2 E-mail Alvaro.Fernandez@ific.uv.es

Developer/origin:

Name: Antonio Hervas, Enol Fernandez, Alvaro Fernández, Marco Sottilaro, Elisa Heymann, Miquel A.Senar

Project: crossgrid WP: 3 Partner: UAB, IFIC-CSIC, DATAMAT Task: 3.2 E-mail: gp_cg-wp3-2_discuss@gridportal.fzk.de