Information System testing for LCG-1

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Task to do:

A test suite has to be developed to allow for extensive stress testing of the information system via rapid submission of very large number of user jobs, placing many enquiries in a very short time.

Current situation:

We have to use MDS for current LCG-1 release. R-GMA is not ready for deployment now. R-GMA may be used in the future. Hence, our goal is to develop the test suite for both information systems, R-GMA and MDS.

Information System testing for LCG-1

What is the problem?

- developers have unit testing suites for both MDS and R-GMA
- however, these are usable only by developers themselves
- we need a test suite executable in user environment under production conditions

Goal

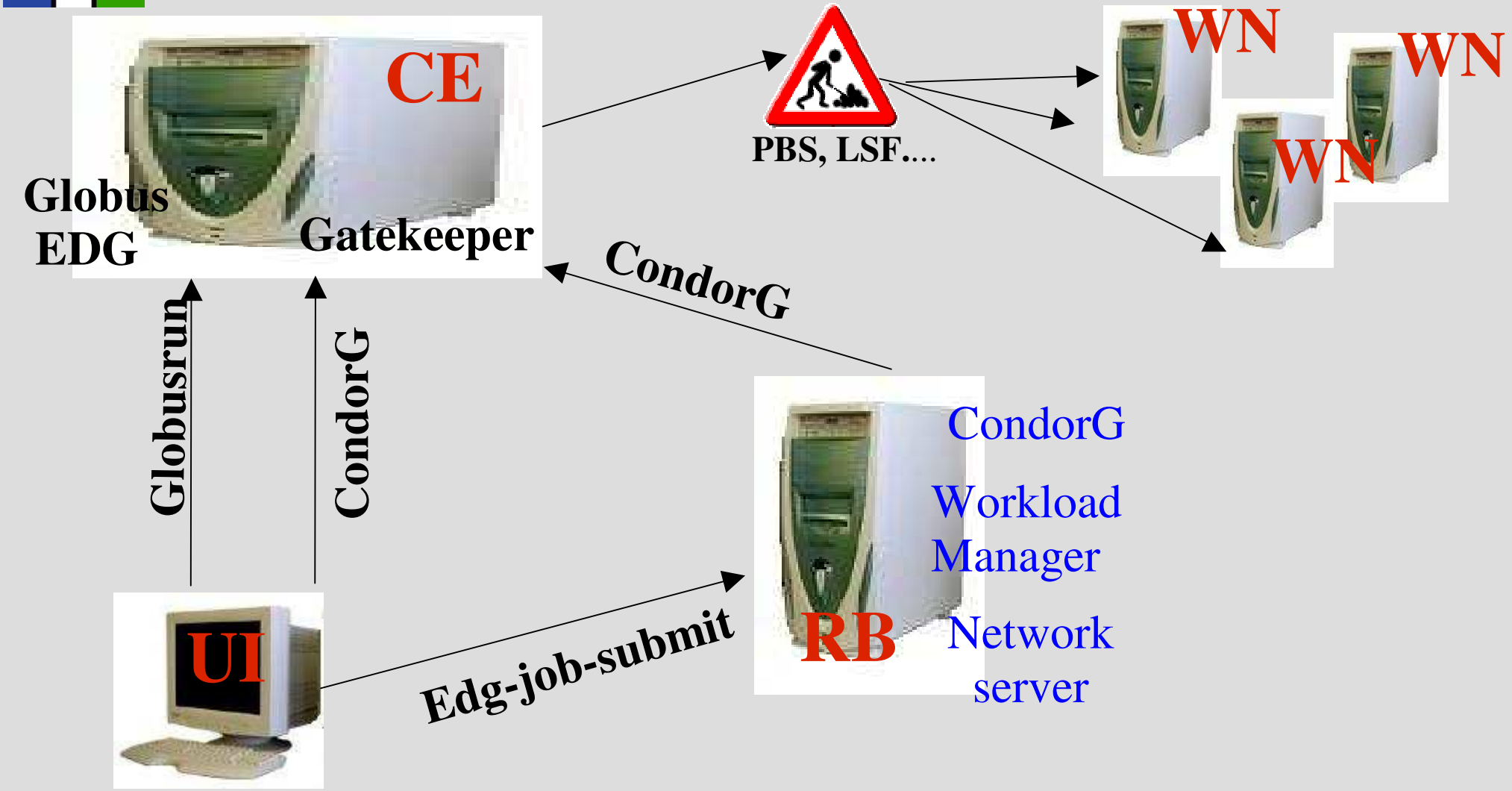
- to check the accuracy of the different types of MDS or R-GMA data during the job enquiry.
- to allow choosing different InfoProvider : top MDS, CE or MON
- write the test suite in Perl

Information System testing for LCG-1

The algorithm

- obtain all information tuples (a row of the database tables) from Glue Schema
- if the tuple is full, prepare the job for submission
  the tuple is included in job description file as the Condor ClassAd expression
- generate automatically jdl, rsl or sub files (whichever is required)
- submit the job via:
  - RB (edg-job-submit)
  - directly to the CE via Globus GRAM
    (globusrun and condorG commands: Gilbert Grosdidier' idea).
- send optionally many jobs sequentially or in parallel (stress test)

Information System testing for LCG-1



The schema of the job submission via RB and directly to the CE via Globus GRAM

Information System testing for LCG-1

Usage

JobInfo.pl [-help| -h]

JobInfo.pl [-rb|-gr|-cg] [-MDS|-RGMA] [-t time] [-seq jobs |-par jobs]
[-host info] [-CE ce] [-size size] [-dir dirname]

Where:

-rb - jobs submission (edg-job-submit) through Resource Broker

-gr - Checking direct jobs submission to CE (without RB) by globusrun commands.

-cg - Checking the direct submission of jobs to CE by CondorG commands. (The client part of CondorG software must be installed on the UI under this user name)

-MDS or -RGMA - The type of the information system (default MDS)

-t time - The time interval (seconds) between jobs (default 5)

-seq jobs - How many jobs are running sequentially

-par jobs - How many jobs are running or parallel
Only one can be given. If none is given, one job will be run.

-host info - Top MDS or other grid information provider hostname

-CE ce - CE host name

-size size - The size of input file (in Mb) - up to 2Gb.

-dir dirname - directory for the log files (default: JobInfo)

E.g: **./JobInfo.pl -rb -MDS -t 5 -par 3 -host lxshare0242 -CE lxshare0290 -size 8**

Information System testing for LCG-1

Source of the test suite is in:

http://datagrid.in2p3.fr/cgi-bin/cvsweb.cgi/edg-tests/tests/Stress/Info

The example of tuples:

GlueCEInfoLRMSType: pbs
GlueCEInfoLRMSVersion: OpenPBS_2.4
GlueCEInfoTotalCPUs: 4
GlueCEStateEstimatedResponseTime: 0
GlueCEStateFreeCPUs: 4
GlueCEStateRunningJobs: 0
GlueCEStateStatus: Production
GlueCEStateTotalJobs: 0
GlueCEStateWaitingJobs: 0
GlueCEStateWorstResponseTime: 0
GlueCEPolicyMaxCPUTime: 172800
GlueCEPolicyMaxRunningJobs: 99999
GlueCEPolicyMaxTotalJobs: 999999
GlueCEPolicyMaxWallClockTime: 69120

Information System testing for LCG-1

The example of jdl file

```
Executable= 'data.pl';
Arguments= 'none';
StdOutput=  'std.out';
StdError=    'std.err';
InputSandbox= “{'data.pl','data.dat'};
OutputSandbox={'std.out','std.err'};
Requirements=
        other.GlueCEInfoLRMSversion==”OpenPBS_2.4”;
```

The data.pl file

```
#!/usr/bin/perl
print "xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx\n";
print "Now the checksum and the size of data file are testing\n";
print `cksum "data.dat"`;
print "xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx\n";
```

Information System testing for LCG-1

The example of rsl file (for globusrun)

```
 &(executable= "/bin/echo")
   (arguments= "Result string is: Hello, globusrun!")
   (stdout= x-gass-cache://$(GLOBUS_GRAM_JOB_CONTACT)stdout
anExtraTag)
   (stderr= x-gass-cache://$(GLOBUS_GRAM_JOB_CONTACT)stderr
anExtraTag) (maxCpuTime=10)
```

The example of sub file (for CondorG)

```
executable = /bin/hostname
globusscheduler = lxshare0290:2119/jobmanager-pbs
universe = globus
output = JobCondorG0.out
log = JobCondorG0.log
error= JobCondorG0.err
requirement= GlueCEHostingCluster == "lxshare0277.cern.ch"
queue
```

Information System testing for LCG-1

The part of log file (edg-job-submit)

```
==========================NEW JOB ======================
Executable    ="data.pl";
Arguments     = "none";
StdOutput     = "std.out";
StdError      = "std.err";
InputSandbox =  {"data.pl","data.dat"};
OutputSandbox = {"std.out","std.err"};
Requirements  =  other.GlueCEHostingCluster == "lxshare0277.cern.ch";
Now jdl file  is checking by Resource Broker...

Connecting to host lxshare0234.cern.ch, port 7772

**********************************************************************
                    COMPUTING ELEMENT IDs LIST
 The following CE(s) matching your job requirements have been found:

                *CEId*
 lxshare0277.cern.ch:2119/jobmanager-pbs-infinite
 lxshare0277.cern.ch:2119/jobmanager-pbs-long
 lxshare0277.cern.ch:2119/jobmanager-pbs-medium
 lxshare0277.cern.ch:2119/jobmanager-pbs-short
**********************************************************************

Now trying to submit our job.....

Connecting to host lxshare0234.cern.ch, port 7772
```

Information System testing for LCG-1

The part of log file (globusrun)

```
================== NEW JOB==================
GlueCEInfoTotalCPUs==”2”
Now trying to submit our job.....
globus_gram_client_callback_allow successful
GRAM Job submission successful
https://lxshare0290.cern.ch:20002/27207/1057931614/
GLOBUS_GRAM_PROTOCOL_JOB_STATE_ACTIVE
================== NEW JOB==================
GlueCEInfoLRMSType==”pbs”
Now trying to submit our job.....
globus_gram_client_callback_allow successful
GRAM Job submission successful
https://lxshare0290.cern.ch:20003/27251/1057931625/
GLOBUS_GRAM_PROTOCOL_JOB_STATE_ACTIVE
Checking the job status.....https://lxshare0290.cern.ch:20002/27207/1057931614/
DONE
The job https://lxshare0290.cern.ch:20002/27207/1057931614/ is finishing successfull
Checking the job status.....https://lxshare0290.cern.ch:20003/27251/1057931625/
DONE
The job https://lxshare0290.cern.ch:20003/27251/1057931625/ is finishing successfull
```

Information System testing for LCG-1

The part of log file (condorG command)

```
============== NEW JOB ================
GlueCEHostingCluster == "lxshare0277.cern.ch"
Now trying to submit our job.....
Submitting job(s).
Logging submit event(s).
1 job(s) submitted to cluster 384
============== NEW JOB ================
GlueCEName == "infinite"
Now trying to submit our job.....
Submitting job(s).
Logging submit event(s).
1 job(s) submitted to cluster 385.

Checking the job status.....384.
-- Submitter: lxshare0276.cern.ch : <137.138.145.63:32827> :
lxshare0276.cern.ch
 ID      OWNER           SUBMITTED     RUN_TIME ST PRI SIZE CMD
 384.0   lspitsky       7/11 21:25   0+00:00:02 R  0   0.0  hostname
-- Submitter: lxshare0276.cern.ch : <137.138.145.63:32827> :
lxshare0276.cern.ch
 ID      OWNER           SUBMITTED     RUN_TIME ST PRI SIZE CMD
 384.0   lspitsky       7/11 21:25   0+00:00:10 C  0   0.0  hostname
-- Submitter: lxshare0276.cern.ch : <137.138.145.63:32827> :
lxshare0276.cern.ch
 ID      OWNER           SUBMITTED     RUN_TIME ST PRI SIZE CMD
The job 384. is finishing successfull
Checking the job status.....385.
```

Information System testing for LCG-1

To be done

1. Presenting the test suite' results in a common LCG fashion (html results array)
2. For R-GMA the information can be obtained in two ways:
   - via the port directly (using LDAP query)
   - via the R-GMA API or CLI

   The comparison should be made for consistency

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