Status and outlook for testing in the LCG certification testbed

Andreas Unterkircher

CERN Grid Deployment

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What we have now

- **The so called “Gilbert framework” (edg-tests)**
  - about 30 tests for testing EDG and LCG components.
  - Contains stress tests as well as functional tests.
  - Is being run on a daily bases on the certification testbed.
  - Comes with a “framework” for submission and presentation of tests.
  - Cannot be easily extended and lacks some functionality. Presentation as flat html.
  - Written in Perl.

What we need

1. **More tests for new components (mainly gLite).**
2. **A framework that allows to integrate new tests and also continue to run the old LCG tests.**
   - Submission of tests
   - Presenting and archiving of results

Framework: test submission needs

- Typical workflow is “semi automatic”: tests are executed overnight, in case of failure we log in to the affected nodes and investigate/fix there.
- Regular overnight tests but also tests to be launched immediately for quick investigation.
- We’d like to be able to execute tests on conditions (e.g. submit test B only if test A succeeded). Different layers of tests (see later).
- Distributed testbed.

Framework: test presentation needs

- We want to compare test results over time. Thus a database backend is needed.
- View test results on the web.
- Have the possibility to go down from a high level view to more detailed results. Tests could be grouped together. E.g. tests affecting the CE,… or tests affecting some functionality (VOMS,…). The groups overlap.
- Timing results.
- Results linked to a graphical representation of the testbed would be nice.

Which framework to use

- **ETICS test framework was investigated but is not (yet) suitable for use with the certification testbed. We will reconsider in time.**
- **We started to look at SAM (follow up to SFT) and hope to have a prototype soon.**

Whatever we choose, in the meantime we have to continue testing in our daily certification work.

Writing tests

Minimal guidelines as the framework is not yet fixed:

- A test is a script executed on the UI. Any other case ?
- Scripting language: Shell, Perl, Python
- For every test make sure that it belongs to one of the layers defined later, don’t mix them. Don’t put too many things in one test, write several instead.
- A user should be able to execute a test completely on the command line.
- Test script must be publicly accessible (CVS) and documented.
- The test script should be independent of a framework.

Writing tests

Integration into framework:

- **How is the result of a test being treated ?**
- **Is there a general schema that captures all possible tests ?**

For the time being:

- **Provide return value (0 = OK).**
- **Std output should give detailed information.**
- **Be prepared for changes.**
- **Focus on the test itself not on the output format.**

Test integration work

Proposed workflow for the next few months:

- **GD group at CERN tries to integrate tests into SAM (has also a database backend).**
- **ETICS will also try to integrate tests.**
- **This should also give us a clearer idea on how to process the test results.**
- **Your ideas are most welcome !**

Using tests

- We provide the module org.glite.testscripts.ctb in the gLite CVS repository: http://glite.cvs.cern.ch/cgi-bin/glite.cgi/org.glite.testsuites.ctb/ Each subdirectory corresponds to a test area.
- Or you provide your own CVS repository.
- Tests will be checked out and used.
- We need a platform so that developers can communicate missing tests, modifications,…

Non interactive test categories

- **Layer 1 – service ping tests:** Basic test if service is up and running.
- **Layer 2 – service functionality tests:** Test the fully supported functionality of a service. This includes also service interface tests.
- **Layer 3 – system tests:** Test a complete system that traverses multiple services.
- **Layer 4 – stress tests:** Stress test services and systems (including long running jobs to check for resource leaks).
- **Layer 5 – performance tests**
- **Layer 6 – interoperability tests** (might be interactive)

Interactive test categories

1. **Deployment, installation and localization**
   - At sites with special network setups, fabric management, batch systems,…
2. **Security**
3. **Interoperability**

Tests needed

- **Detailed information about existing tests: https://twiki.cern.ch/twiki/bin/view/LCG/LCGgliteTestInventory**
- **Detailed information about missing tests: https://twiki.cern.ch/twiki/bin/view/LCG/LCGgliteTestMissing**

Tests needed

1. WMS
2. VOMS
3. R-GMA
4. FTS
5. LFC, DPM
6. Information System
7. Proxy Renewal
8. LB
9. AMGA
10. Blah
11. APEL
12. DGAS
13. Hydra
14. Batch systems (LFS, Condor)
15. dCache
16. edg-tests

1. Complete functionality of commands
2. Sensible error messages
3. Stress tests
4. Robustness of services against reboots or restarts
5. Behavior under error conditions
6. Interoperability tests (OSG, ARC, UNICORE, NAREGI)
7. Tests verifying user guides
8. TAR UI/WN
9. Performance tests (catalogs)
10. gLite CE

Who's writing tests

Test	Person	Comment
edg-tests	Gilbert Grosdidier (will resign), Domenico Vicinanza (currently CERN)	Can now be submitted as single tests without framework
WMS	Hui-Min Lin (currently CERN), Mario Reale (CERN), Alvaro Fernandez (CSIC)	Several scripts by Lin are available (different layers). Mario's tests similar to edg-tests. Alvaro has tests for the c++ api.
VOMS	Maria Allandes Pradillo (CERN)	
R-GMA	TCD	
FTS	Radoslava Goranova (currently CERN), Gergely Debrezceni (CERN)	

Who's writing tests

Test	Person	Comment
DPM/LFC	Sophie Lemaitre (CERN), Jean-Philippe Baud (CERN), Gibert Grosdidier (will resign)	
Information System	Laura Perini (INFN)	
Proxy Renewal	Goes to Security (PNSC)	
AMGA	Birger Koblitz (CERN), Viktor Pose (CERN)	
LB	Othmane Bouhali, Shkelzen Rugovac (University of Bruxelles), Ales Krenek	
BLAH	Laura Perini (INFN), also covered by batch system tests	
APEL	Laura Perini (INFN), Dave Kant, also covered by batch system tests	
DGAS	Laura Perini (INFN)	

Who's writing tests

Test	Person	Comment
HYDRA	Akos Frohner (CERN)	
Batch systems: LFS	Marc Rodrigues (PIC), Carlos Borregos (PIC) + …	
Batch Systems: Sun Grid Engine	IMPERIAL	
Batch systems: Condor	Kai Neuffer (PIC) + collaborators	
Interoperability: OSG	Laurence Field (CERN)	
Interoperability: ARC	Denmark	
Interoperability: UNICORE	FZJ	
Interoperability: NAREGI	Laurence Field (CERN)	
TAR UI/WN	Andreas Unterkircher (CERN)	

Who's writing tests

Test	Person	Comment
Performance tests on catalogs		
Tests verifying user guides	Ioannis (GRNET)	
dCache	Owen Synge (RAL,DESY), Greig Cowan	
Sensible error messages		
Security	Jaroslav Sajko, Tomasz Nowocien, Blazej Miga (PSNC)	
Deployment, installation and localization		
Robustness of services against reboots and restarts		
gLite CE	Laura Perini (INFN)	

Hardware resources

CERN	
PSNC	
TCD	
IMPERIAL	
INFN	
UKBH	
UCY	
GRNET	8 PowerEdge SC1425, 5 Pentium III
CSIC	
PIC	
CESGA	
FZJ	
Univ. Cyprus	36 WNs, 6 other nodes

Discussion