
*** EMI Test Report ***

- Component: **ARC CE**
- Savannah task: <https://savannah.cern.ch/task/?18573>
- ETICS Configuration Name: emi-nordugrid-arc_R_1_0_0_b3
- VCS Tag: 1.0.0b3
- EMI Major Release: EMI-1 RC1
- Platform: SL5/64bit
- Author: Marek Kocan
- Date: 18.3.2011

*** Summary ***

1. Deployment tests:
 - 1.1. Clean Installation - PASS
 - 1.2. Upgrade Installation - NA
2. Static Code Analysis - YES
3. Unit Tests Execution - YES
4. Regression tests - PASS
5. Functionality tests - PASS
6. Performance tests - PASS
7. Scalability tests - NA
8. Standard compliance/conformance test - NA

REMARKS:

- During this test cycle Deployment upgrade, Standard conformance and Scalability tests were not performed
- 12 out of the 12 performed functionality tests passed and a single performance test failed.

Detailed Testing Report

Hardware Resource used:

Hostname: pgs03.grid.upjs.sk
CPU: AMD Athlon 64 Processor 3500+
Memory: 1GB
Hard Drive: 70GB
Network: 100 Mb/s
Machine type: physical machine

1. Deployment tests

1.1. Clean Installation

- YUM Testing Repo file contents:

*Etics repo:

```
[etics-rc1]
name=ETICS RC1
baseurl=http://emisoft.web.cern.ch/emisoft/dist/EMI/1/RC1/s15/x86_64
enabled=0
protect=1
```

* Epel repo:

```
[epel]
name=Extra Packages for Enterprise Linux 5 - $basearch
#baseurl=http://download.fedoraproject.org/pub/epel/5/$base
arch
mirrorlist=http://mirrors.fedoraproject.org/mirrorlist?repo
=epel-5&arch=$basearch
failovermethod=priority
enabled=1
gpgcheck=1
gpgkey=file:///etc/pki/rpm-gpg/RPM-GPG-KEY-EPEL
```

- YUM Install command:

```
yum install nordugrid-arc-arex nordugrid-arc-janitor nordugrid-arc-
gridmap-utils
```

- YUM log:

Installed:

```
nordugrid-arc-arex.x86_64 0:1.0.0b3-1.e15
nordugrid-arc-gridmap-utils.x86_64 0:1.0.0b3-1.e15
nordugrid-arc-janitor.x86_64 0:1.0.0b3-1.e15
```

Dependency Installed:

```
PyXML.x86_64 0:0.8.4-4.e15_4.2
SOAPpy.noarch 0:0.11.6-5.e15
bdii.noarch 0:5.2.0-1
glibmm24.x86_64 0:2.12.10-1.e15
glue-schema.noarch 0:2.0.6-1
libsigc++20.x86_64 0:2.0.18-1.e15
```

libtool-ltdl.x86_64 0:1.5.22-7.el5_4
libxslt.x86_64 0:1.1.17-2.el5_2.2
nordugrid-arc.x86_64 0:1.0.0b3-1.el5
nordugrid-arc-aris.x86_64 0:1.0.0b3-1.el5
nordugrid-arc-hed.x86_64 0:1.0.0b3-1.el5
nordugrid-arc-plugins-needed.x86_64 0:1.0.0b3-1.el5
openldap-clients.x86_64 0:2.3.43-12.el5_6.7
openldap-servers.x86_64 0:2.3.43-12.el5_6.7
perl-Compress-Zlib.x86_64 0:1.42-1.fc6
perl-Convert-ASN1.noarch 0:0.20-1.1
perl-Crypt-SSLeay.x86_64 0:0.51-11.el5
perl-Digest-SHA1.x86_64 0:2.11-1.2.1
perl-HTML-Parser.x86_64 0:3.55-1.fc6
perl-HTML-Tagset.noarch 0:3.10-2.1.1
perl-IO-Socket-SSL.noarch 0:1.01-1.fc6
perl-LDAP.noarch 1:0.33-3.fc6
perl-Net-SSLeay.x86_64 0:1.30-4.fc6
perl-URI.noarch 0:1.35-3
perl-XML-DOM.noarch 0:1.44-2.el5
perl-XML-Namespacesupport.noarch 0:1.09-1.2.1
perl-XML-Parser.x86_64 0:2.34-6.1.2.2.1
perl-XML-RegExp.noarch 0:0.03-2.el5
perl-XML-SAX.noarch 0:0.14-8
perl-XML-Simple.noarch 0:2.14-4.fc6
perl-libwww-perl.noarch 0:5.805-1.1.1
pyOpenSSL.x86_64 0:0.6-1.p24.7.2.2
python-fpconst.noarch 0:0.7.3-3.el5.1
python-twisted-core.x86_64 0:2.5.0-4.el5

```
python-twisted-web.x86_64 0:0.7.0-1.e15
python-zope-interface.x86_64 0:3.0.1-11.e15
xmlsec1.x86_64 0:1.2.9-8.1.1
xmlsec1-openssl.x86_64 0:1.2.9-8.1.1
```

Result: PASSED

1.2. Upgrade Installation

The test was not performed during this testing cycle.

2. Static Code Analysis

The Static Code Analysis results were produced for entire ARC code, therefore this section contains identical information for all the ARC components. Later the results will be split between components. The Static Code Analysis tools used were Sloccount and CCCC.

* Sloccount

cpp	136167 (74.26%)
perl	18590 (10.14%)
php	13007 (7.09%)
python	10545 (5.75%)
sh	4199 (2.29%)
ansic	798 (0.44%)
java	63 (0.03%)

The complete results of SLOC count for the entire ARC code can be found here:

http://testbed1.grid.upjs.sk/static_code_analysis/nordugrid-arc-1.0.0b3.sloccount

*** CCCC metrics**

Metric	Tag	Overall	Per Module
Number of modules	NOM	890	
Lines of Code	LOC	106028	119.133
McCabe's Cyclomatic Number	MVG	30720	34.517
Lines of Comment	COM	12674	14.240
LOC/COM	L_C	8.366	
MVG/COM	M_C	2.424	
Information Flow measure (inclusive)	IF4	618184	694.589
Information Flow measure (visible)	IF4v	618047	694.435
Information Flow measure (concrete)	IF4c	3341	3.754
Lines of Code rejected by parser	REJ	3197	

The complete results for CCCC for entire ARC code can be found at http://testbed1.grid.upjs.sk/static_code_analysis/nordugrid-arc-1.0.0b3.cccc/

3. Unit Tests

The Unit Tests coverage was evaluated for entire ARC code, therefore this section contains identical information for all the ARC components. Later the results will be split between components.

	Hit	Total	Coverage
Lines	9418	71822	13.1%
Functions	1495	10097	14.8%

Branches	5707	22457	25.4%
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Results of unit test code coverage for entire ARC code can be found at <http://hep.nbi.dk/~waanenen/nordugrid/20781/>

4. Regression tests

* **R1** Uploaders are hanging and using 100% CPU

(http://bugzilla.nordugrid.org/cgi-bin/bugzilla/show_bug.cgi?id=2236)

- **Testbed:**

ARC CE deployed on resource described above, arbsub command on external machine

- **Scenario description:**

Submit 10 jobs each staging out 10 files to Unixacl SE

- **Expected result:**

All staged out files shall be transferred and the uploader processes on ARC CE shall return to idle state

- Result: **PASSED**

* **R2** Downloader checksum mismatch between calculated checksum and source checksum (http://bugzilla.nordugrid.org/cgi-bin/bugzilla/show_bug.cgi?id=2234)

- **Testbed:**

ARC CE deployed on resource described above, arbsub/arccp commands on external machine

- **Scenario description:**

Upload file to Unixacl SE and then submit job staging in uploaded file

- **Expected result:**

The job shall end in FINISHED state (without any errors)

- Result: **PASSED**

5 Functionality tests

F1: job management with invalid input

F1.1: job status retrieval using not existing jobID

Description of the test:

Using arcls command with not existing jobID (manual test).

Testbed:

ARC CE deployed on resource described above, arcls ommands on external machine

Expected result:

The ARC CE shall return "ERROR: Failed to obtain stat from ftp" (when querying pre-WS ARC CE) or "ERROR: Failed listing files" (when querying WS-ARC CE) output

Result: **PASSED**

F2: job management with invalid credentials

F2.1: job submission using expired grid proxy certificate

Description of the test:

We try to submit a job using expired grid proxy certificate. (manual test)

Testbed:

ARC CE deployed on resource described, arcsub command on external machine

Expected result:

The ARC CE shall return "Failed authentication: an end-of-file was reached/globus_xio: An end of file occurred" (when querying Classic ARC CE) or "DEBUG: SSL error: 336151573 - SSL routines:SSL3_READ_BYTES:ssl3 alert certificate expired" (when querying WS-ARC CE) output

Result: **PASSED**

F2.2: job submission using expired voms proxy certificate

Description of the test:

We try to submit a job using expired voms proxy certificate.
(manual test)

Testbed:

ARC CE deployed on resource described above, arcsub command on external machine, VOMS service taken from EMI testbed

Expected result:

The ARC CE shall return "Failed authentication: an end-of-file was reached/globus_xio: An end of file occurred" (when querying Classic ARC CE) or "DEBUG: SSL error: 336151573 - SSL routines:SSL3_READ_BYTES:sslv3 alert certificate expired" (when querying WS-ARC CE) output

Result: **PASSED**

F2.3: job submission using grid proxy certificate of not authorized DN

Description of the test:

We try to submit a job using grid proxy certificate of not authorized DN (manual test).

Testbed:

ARC CE deployed on resource described above, arcsub command on external machine

Expected result:

The ARC CE shall return "VERBOSE: Connect: Failed authentication: 535 Not allowed" (when querying Classic ARC CE) or "Job submission aborted because no resource returned any information" (when querying WS-ARC CE) output

Result: **PASSED**

F2.4: job submission using voms proxy certificate of not authorized VO

Description of the test:

We try to submit a job using voms proxy certificate of not authorized VO (manual test).

Testbed:

ARC CE deployed on resource described above, arcsub command on external machine, KnowARC.eu VOMS service used

Expected result:

The ARC CE shall return "VERBOSE: Connect: Failed authentication: 535 Not allowed" (when querying Classic ARC CE) or "Job submission aborted because no resource returned any information" (when querying WS-ARC CE) output

Result: **PASSED**

F3: simple job

F3.1: simple JSDL job submission

Description of the test:

We try to submit a JSDL job to ARC CE using arcsub/ngsub command (manual test). JSDL job can be found at http://vls.grid.upjs.sk/testing/job_descriptions/get_hostname.html

Testbed:

ARC CE deployed on resource described above, arcsub/ngsub command on external machine

Expected result:

The job is successfully submitted

Result: **PASSED**

F3.2: simple XRSL job submission

Description of the test:

We try to submit an XRSL job to ARC CE using arcsub/ngsub command (manual test). XRSL job can be found at http://vls.grid.upjs.sk/testing/job_descriptions/get_hostname_xrsl.html

Testbed:

ARC CE deployed on resource described above, arcsub/ngsub command on external machine

Expected result:

The job is successfully submitted

Result: **PASSED**

F4: data stage-in job

F4.1: submission of a JSDL job uploading one file

Description of the test:

We try to submit a JSDL job with one input file to ARC CE using arctsub command(manual test).

Testbed:

ARC CE deployed on resource described above, arctsub command on external machine

Expected result:

The job is successfully submitted

Result: **PASSED**

F4.2: submission of a JSDL job staging in one file from Unixacl SE

Description of the test:

We try to submit a JSDL job with one input file (staged in from Unixacl SE) to ARC CE using arctsub command (manual test)

Testbed:

ARC CE deployed on resource described above, arctsub command on external machine, Unixacl SE taken from EMI testbed.

Expected result:

The job is successfully finished.

Result: **PASSED**

F4.3: caching of uploaded files

Description of the test:

We try to submit a JSDL job with one input file to ARC CE using arctsub command. After the job is successfully finished we submit the same job again (manual test).

Testbed:

ARC CE deployed on resource described above, arctsub command on external machine, Unixacl SE taken from EMI testbed.

Expected result:

The second job processing on ARC CE side is using cached file (cached when first job was submitted)

Result: **PASSED**

F5: data stage-out job

F5.1: submission of a JSDL job downloading one file

Description of the test:

We try to submit a JSDL job with one output file to ARC CE using arctsub command (manual test).

Testbed:

ARC CE deployed on resource described above, arctsub command on external machine, Unixacl SE taken from EMI testbed.

Expected result:

After successful finish of job the retrieved job output contains file described in JSDL job description

Result: **PASSED**

F5.2: submission of a JSDL job staging out one file to Unixacl SE

Description of the test:

We try to submit a JSDL job with one output file (staged out to Unixacl SE) to ARC CE using arctsub command (manual test).

Testbed:

ARC CE deployed on resource described in 1.1, arctsub command on external machine, Unixacl SE taken from EMI testbed.

Expected result:

The job is successfully finished.

Result: **PASSED**

6 Performance

P1: service reliability

Description of the test:

After fresh restart of ARC CE we measure time to submit a simple job. Then we repeat following job management cycle:

- submit five simple jobs simultaneously
- wait 2 minutes
- all jobs status retrieval
- submit five simple jobs sequentially (divided by 1 minute pause)
- all jobs status retrieval
- all job results retrieval

This cycle will be repeated over three days. After third day we measure time to submit a simple job to that ARC CE.

Testbed:

ARC CE deployed on resource described in 1.1, arcsub, arcstat, arcget commands on external machine

Expected result:

The times to submit a job at the beginning and at the end shall not significantly differ.

Result: **FAILED (Bug. No. 2298)**

P2: Load test

P2.1: load test 1

Description of the test:

After fresh restart of ARC CE we submit 1000 simple jobs synchronously. After synchronous job submission is finished, we submit one simple job.

Testbed:

ARC CE deployed on resource described above, arctsub command on external machine

Expected result:

The simple job submitted at last will end in FINISHED state.

Result: **Not performed for RC1**

P2.2: load test 2

Description of the test:

After fresh restart of ARC CE we do 1000 info queries synchronously. After synchronous queries are finished, we do single info query.

Testbed:

ARC CE deployed on resource described above, ldapsearch command on external machine

Expected result:

The single info query is retrieved successfully.

Result: **Not performed for RC1**

P3: job submission failure rate

Description of the test:

After fresh restart of ARC CE we submit 1000 simple jobs sequentially.

Testbed:

ARC CE deployed on resource described above, arctsub command on external machine

Expected result:

The submission ratio is 90% and all successfully submitted jobs end up in FINISHED state

Result: **Not performed for RC1**

7 Scalability tests

The test was not performed during this testing cycle.

8 Standard Compliance/Conformance tests

The test was not performed during this testing cycle.