
*** EMI Test Report ***

- Component: ARC Infosys
- Savannah task: <https://savannah.cern.ch/task/?18670>
- ETICS Configuration Name: emi-nordugrid-arc_R_1_0_0_b1, emi-nordugrid-arc-doc_R_1_0_0_b3
- VCS Tag: 1.0.0b3
- EMI Major Release: EMI-1 RC1
- Platform: SL5/64bit
- Author: Marek Kocan
- Date: --

*** 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

Detailed Testing Report

1. Deployment tests

1.1. Clean Installation

- Resource used:

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

- YUM Testing Repo file contents:

*Etics repo:

```
[etics-rc1]
name=ETICS RC1
baseurl=http://emisoft.web.cern.ch/emisoft/dist/EMI/1/RC1/sl5/
x86_64
enabled=1
protect=1
```

* Epel repo:

```
[epel]
name=Extra Packages for Enterprise Linux 5 - $basearch
#baseurl=http://download.fedoraproject.org/pub/epel/5/$basearc
h
mirrorlist=http://mirrors.fedoraproject.org/mirrorlist?repo=ep
el-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-aris nordugrid-arc-egiis nordugrid-arc-ldap-
monitor
```

- YUM log:

Installed:

```
nordugrid-arc-aris.x86_64 0:1.0.0b3-1.el5
nordugrid-arc-egiis.x86_64 0:1.0.0b3-1.el5
nordugrid-arc-ldap-monitor.x86_64 0:1.0.0b3-1.el5
```

Dependency Installed:

```
PyXML.x86_64 0:0.8.4-4.el5_4.2
SOAPpy.noarch 0:0.11.6-5.el5
bdii.noarch 0:5.2.0-1
glibmm24.x86_64 0:2.12.10-1.el5
glue-schema.noarch 0:2.0.6-1
libsigc++20.x86_64 0:2.0.18-1.el5
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-arex.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-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-URI.noarch 0:1.35-3
perl-XML-Parser.x86_64 0:2.34-6.1.2.2.1
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.el5
python-zope-interface.x86_64 0:3.0.1-11.el5
xmlsec1.x86_64 0:1.2.9-8.1.1
xmlsec1-openssl.x86_64 0:1.2.9-8.1.1

```

Complete!

Result: PASSED

- Configuration log:

1.2. Upgrade Installation

This test was not performed during this testing cycle.

2. Static Code Analysis

The Static Code Analysis results were produced for entire ARC code. 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 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. 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%

Results of unit test code coverage for entire ARC code can be found at <http://hep.nbi.dk/~waanane/nordugrid/20781/>

4 Regression tests

The verification of critical and blocker resolved bugs:

R1

* ARC1 infosys does not start

- Scenario description:

Install EM11 RC1 and try to start the a-rex-grid-infosys daemon

- Expected result:

The daemon is started successfully and the Infosys can be queried using ldapsearch command with proper parameters

* Bugzilla No. 2179 (http://bugzilla.nordugrid.org/cgi-bin/bugzilla/show_bug.cgi?id=2179)

* Result: **PASSED**

5 Functionality tests

F1: ARIS

Description of the test:

Configure and distcleanstart the ARC CE and its Infosys. Submit a simple job to ARC CE, wait 120 seconds and query the local Infosys using the ldapsearch command with proper parameters. Repeat the submission and query every five times.

Testbed:

ARC CE and its Infosys deployed on resource described in 1.1, ldapsearch command on external machine

Expected result:

After each query the produced output shall contain information about additional job being submitted to that ARC CE (after first query there shall be one job recorded, after second, there shall be two, etc.).

Result: **PASSED**

F2: EGIIS

F2.1: registering ARC CE to EGIIS

Description of the test:

Configure and start the EGIIS. Configure the ARC CE's Infosys so that it registers to the running EGIIS. Query the EGIIS using ldapsearch command with proper parameters.

Testbed:

EGIIS deployed on resource described in 1.1, ARC CEs taken from EMI Testbed, ldapsearch command on external machine

Expected result:

The output produced by ldapsearch shall contain the information about registered ARC CE.

Result: **PASSED**

F2.2: de-registering ARC CE from EGIIS

Description of the test:

Configure and start the EGIIS. Configure the ARC CE's Infosys so that it registers to the running EGIIS. Query the EGIIS using ldapsearch command with proper parameters to check if the ARC CE is registered. Stop the ARC CE's Infosys and query the EGIIS using ldapsearch command with proper parameters

Testbed:

EGIIS deployed on resource described in 1.1, ARC CEs taken from EMI Testbed, ldapsearch command on external machine

Expected result:

The output produced by ldapsearch shall not contain any information about previously running ARC CE.

Result: **PASSED**

F3: Ldap Grid Monitor

F3.1: Check registered ARC CE to EGIIS using Grid Monitor

Description of the test:

Configure and start the EGIIS. Configure the ARC CE's Infosys so that it registers to the running EGIIS. Query the EGIIS using ldapsearch command with proper parameters to check if the ARC CE is registered. Configure and start the Grid Monitor and check the details about registered CEs.

Testbed:

Ldap Grid Monitor deployed on resource described in 1.1, ARC CEs taken from EMI Testbed, ldapsearch command on external machine

Expected result:

The Grid Monitor shall include correct information about ARC CE registered to EGIIS. The information shall be identical with output produced by ldapsearch command

Result: **PASSED**

F3.2: Check de-registered ARC CE from EGIIS using Grid Monitor

Description of the test:

Configure and start the EGIIS. Configure the ARC CE's Infosys so that it registers to the running EGIIS. Query the EGIIS using ldapsearch command with proper parameters to check if the ARC CE is registered. Check the details of Grid Monitor to make sure the ARC CE is listed there properly. Stop the ARC CE's Infosys and check the Grid Monitor again.

Testbed:

Ldap Grid Monitor deployed on resource described in 1.1, ARC CEs taken from EMI Testbed, ldapsearch command on external machine

Expected result:

No information about ARC CE shall be found in Grid Monitor

Result: **PASSED**

6 Performance tests

P1: ARIS service reliability

Description of the test:

After fresh restart of ARC CE and its local infosys we submit 100 simple jobs to that CE. After the jobs are finished we measure the time to query the Infosys using ldapsearch command and record memory usage of running infosys. Then we repeat following cycle:

- all job results retrieval
- submit 10 simple jobs sequentially (divided by 1 minute pause)
- all jobs status retrieval
- wait 20 seconds
- all job results retrieval

This cycle will be repeated over three days. After third day we measure time to query the Infosys using ldapsearch command and record memory usage of running infosys.

Testbed:

ARC CE and its Infosys deployed on resource described in 1.1, ldapsearch/arcsb/arcstat/arcget commands on external machine

Expected result:

The times at the beginning and at the end shall not significantly differ and the memory usage of running Infosys at the end shall not be higher than 2xINITIAL_ECHO_SERVICE_MEMORY_USAGE.

Result: **PASSED**

P2: ARIS load test

Description of the test:

After fresh restart of ARC CE and its local infosys we submit 100 simple jobs to that CE. After the jobs are finished we submit 1000 concurrent queries to the Infosys using ldapsearch command (using & so the command executions can run on background). After the queries are finished we submit a single ldapsearch query to the Infosys.

Testbed:

ARC CE and its Infosys deployed on resource described in 1.1, ldapsearch/arcsb commands on external machine

Expected result:

The single ldapsearch query shall return information about 100 finished jobs.

Result: **PASSED**

P3: EGIIS service reliability

Description of the test:

After fresh restart of EGIIS we register two ARC CEs to it. Submit 100 simple jobs over the EGIIS service (as a source for arcsub the index and not cluster will be used). After the jobs are finished we measure the time to query the EGIIS using ldapsearch command and record memory usage of running EGIIS. Then we repeat following cycle:

- all job results retrieval
- submit 10 simple jobs sequentially (divided by 1 minute pause) over the EGIIS service
- all jobs status retrieval
- wait 20 seconds
- all job results retrieval

This cycle will be repeated over three days. After third day we measure time to query the EGIIS using ldapsearch command and record memory usage of running EGIIS.

Testbed:

EGIIS deployed on resource described in 1.1, ARC CEs taken from EMI Testbed, ldapsearch/arcsub/arcstat/arcget commands on external machine

Expected result:

The times at the beginning and at the end shall not significantly differ and the memory usage of running EGIIS at the end shall not be higher than 2xINITIAL_ECHO_SERVICE_MEMORY_USAGE.

Result: **PASSED**

P4: EGIIS load test

Description of the test:

After fresh restart of EGIIS we register two ARC CEs to it. Submit 100 simple jobs over the EGIIS service (as a source for arcsub the index and not cluster will be used). After the jobs are finished we submit 1000 concurrent queries to the EGIIS using ldapsearch command (using & so the command executions can run on background). After the queries are finished we submit a single ldapsearch query to the EGIIS.

Testbed:

EGIIS deployed on resource described in 1.1, ARC CEs taken from EMI Testbed, ldapsearch/arcsub commands on external machine

Expected result:

The single ldapsearch query shall return information about two CEs and 100 finished jobs.

Result: **PASSED**

7 Scalability tests

This test was not performed during this testing cycle.

S1: ARIS scalability test

Description of the test:

After fresh distcleanstart of ARC CE and its local infosys we submit 1 simple job to that CE. After the job is finished we measure the time to query the Infosys using ldapsearch command and record memory usage of running Infosys (stdout redirected to file). Then we repeat following cycle:

- submit 50 simple jobs sequentially
- wait until jobs are finished
- measure the time to query the Infosys using ldapsearch command

Repeat this cycle until there are 1000 finished jobs in the cluster Testbed:

ARC CE and its Infosys deployed on resource described in 1.1, ldapsearch/arcsb/arcstat commands on external machine

Expected result:

The last recorded time shall not be more than five times the first recorded time.

Result: **PASSED**

8 Standard Compliance/Conformance tests

This test was not performed during this testing cycle.