UDAL 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 UDAL developed by CrossGrid WP 3 task 3.4. The tests were performed by Mario David on the behalf of the CrossGrid task 4.4 testbed verification and quality control. Platform for automatic component managment containing estimators for data access costs.

Delivery Slip

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1. CONTEXT

Test and validation of the package “UDAL” developed by CrossGrid WP 3 task 3.4. The package contains services for data access estimation.

1.1. TEST REQUEST

The package test request was assigned by Jorge Gomes (jorge@lip.pt) to Mario David (david@lip.pt) on 21 June 2004. The test requester was Lukasz Dutka (dutka@agh.edu.pl). The request was submitted properly by a request form through the test and validation web form, and was assigned the Request ID 108721738978.0172034240426.

The software URL provided in the “Test Request” was correct containing the several packages of the UDAL System. The version is 1.2.1.

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.

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:

Storage Element – se02.lip.pt
User Interface – ui02.lip.pt

Also used several SE's from the CG1.9.3 Crossgrid Testbed.

2. TEST AND VALIDATION

2.1. SOFTWARE INSTALLATION

The testbed running the Crossgrid tag 1.9.3 based on LCG2 was used. This version already contains the package cg-wp3.4-unidal-1.2.1.RH7.3-1.0 in the Storage Element RPM list and cg-wp3.4-unidalclient-1.2.1.RH7.3-1.0 in the User Interface RPM list.

The software installs under /opt/cg.

The software does not depend on any other package although the EDG Replica Manager (EDG-RM), Replica Optimization (ROS) and Network Cost Estimation (NCS) modules from EDG 2.0 should be present for proper exploitation of the modules under test, as stated in the Instalation and User Manual [1].

Although requiring EDG-RM, ROS and NCS in [1], the specific packages and versions to be installed are not mentioned.

The rpm is instaling the deamon cg-unidal by creating the /opt/cg/etc/init.d directory, which is a link to the /etc/init.d directory.

Note however that the cg-dirtree RPM should be installed prior to all cg packages, specially if they contain deamons to be installed in the /opt/cg/etc/init.d, it has been verified that installing the cg-unidal package prior to cg-dirtree, the last package did not create correctly the link between /opt/cg/etc/init.d and /etc/init.d.

2.2. ADDITIONAL TESTBED MODIFICATIONS

No additional modifications to the testbed were performed apriori, although during the first tests the stelStor.conf file was modified in order to reflect the characteristics of the LIP SE:

```
# This is sample configuration file for StorageConfiguration class
# This file is divided on two sections.
# First one begins with StorageTypeExpression and contains data
# for StorageTypeExpression objects.
# Second one with ProtocolExpression and contains data for
# ProtocolExpression objects.
  @RegularExpression    ^(gsiftp://$HOSTNAME$/)(.+)$
    storageType     HDD
    storageVendor   ST340016A
    connectionType  GSI-FTP
    rawPath         gsiftp://se02.lip.pt/flatfiles/SE00/
    absolutePath
    sufix
    login           gridUser
    password        mielizna
```

No reference is given in the documentation if and how this configuration file has to be modified. A mail from the developer stated that this file could be left unchaged. This should not be so, since this configuration file will be used to give information about the SE.

2.3. TEST DEVELOPMENTS

The following script (stress.pl) was used to put a high load in terms of read/write access to disk on the SE:

```
#!/usr/bin/perl -w
print "One Perl out of the sea! \n";
my $bs = 1048576;
my $n_blocks = 1000;
my $filesTest = "tst";
my $file_size = $bs * $n_blocks;
my $number_files = 20;
for( $i = 0 ; $i <= $number_files ; $i++){
    $script_write = "write";
    $filesTest = "tst";
    $out_write ="out_write_1GB_bs1MB";
    $script_write .= "$i";
    $script_write .= ".sh";
    $out_write .= "$i";
    $out_write .= ".txt";
    $filesTest .= "$i";
    print "$i $script_write $filesTest\n";
    open (FILE,">$script_write");
   print FILE ("time dd bs=$bs if=/dev/zero of=/root/stress/$filesTest
count=$n_blocks");
    close(FILE);
    $change_owner = `chmod +x /root/stress/$script_write`;
 $exec_write = `/root/stress/$script_write >> $out_write 2>> $out_write &`;
}
```

The following script (manydaes.pl) was used to test multiple queries of file access cost using the cg-daes-client tool:

```
#!/usr/bin/perl -w
print "One Perl out of the sea! \n";
my $storage = "se02.lip.pt";
my @list_files = ("f678mb","f637mb","f524mb","f419mb",
             "f335mb","f302mb","f262mb","f210mb","f168mb","f126mb",
             "f113mb","f84mb","f47mb","f43mb","f11mb","f9mb","f8mb",
             "f6mb","f3mb","f2mb","f1mb","f600kb","f400kb","f152kb",
             "f78kb","f40kb","f23kb","f15kb","f2kb","f300b","f50b");
my @size_files = (677511168,637501440,524288000,
             419430400,335544320,301957120,262144000,209715200,
             167772160,125829120,113213440,83886080,46617480,
             43851037,10570910,9139838,8024655,5692447,3183863,
             1909561,1026087,613905,396984,152280,78487,38664,
             22584,14670,1889,297,51);
for ($ji = 0 ; $ji <= 1 ; $ji++){
    foreach $files(@list_files){
      @cost_all = `cg-daes-client -a $storage -p 18001 getSEC $storage
srm://$storage/flatfiles/SE00/cg/$files &`;
      @estF_all = `cg-daes-client -a $storage -p 18001 estDAF
srm://$storage/flatfiles/SE00/cg/$files &`;
      print ("@cost_all   @estF_all");
    }
}
```

2.4. USABILITY

The software is easy to install. The configuration of the software is undocumented, and at least one file has to be modified as stated in the previous section.

The software is quite difficult to understand and use due to the lack of a proper User Manual.

There are situations where the client command line tools do not produce the correct output, these issues will be described in detail later.

The interactive response speed is quite acceptable.

2.5. FUNCTIONALITY

The several tests performed are described bellow.

2.5.1. Unit tests

The unit tests consisted in the correct startup and stop of the deamons.

The package cg-wp3.4-unidal-1.2.1.RH7.3-1.0 contains a deamon which can be used to start/stop/restart the three services:

```
[root@se02 init.d]# ./cg-unidal start
Starting STEL daemon. See stel.std for stdout messages.
Starting CEXS daemon. See cexs.std for stdout messages.
Starting  DAES daemon. See daes.std for stdout messages.

Please wait
Currenet content of stel.std
Socket binding succesful 4
Binding port=18002 host=autodetect

Currenet content of cexs.std
Socket binding succesful 5
Binding port=18000 host=autodetect

Currenet content of daes.std
Socket binding succesful 4
Binding port=18001 host=autodetect
```

The deamon does not have the “status” option.

The “stop” method is not apropriate, since what it does is to “kill -9” the “cexs”, “daes” and “stel” executables.

```
less /opt/cg/etc/init.d/cg-unidal
cg_stop() {
  killall -9 daes
  killall -9 stel
  killall -9 cexs
}
```

After “stopping” the cg-unidal, the *.pid and *.std files remain in the directory:

```
[root@se02 init.d]# ll /opt/cg/var/log/
total 724
-rw-r--r--    1 root     root            5 Jun 24 10:49 cexs.pid
-rw-r--r--    1 root     root           62 Jun 24 10:49 cexs.std
-rw-r--r--    1 root     root       355327 Jun 24 11:15 cexs_expert.log
-rw-r--r--    1 root     root       166485 Jun 24 11:43 cexs_kernel.log
-rw-r--r--    1 root     root        38211 Jun 24 11:15 daes.log
-rw-r--r--    1 root     root            5 Jun 24 10:49 daes.pid
-rw-r--r--    1 root     root           62 Jun 24 10:49 daes.std
-rw-r--r--    1 root     root       136625 Jun 24 11:15 stel.log
-rw-r--r--    1 root     root            5 Jun 24 10:49 stel.pid
-rw-r--r--    1 root     root           62 Jun 24 10:49 stel.std
```

2.5.2. System tests

Systems tests consists in executing the three following commands either from the UI or from the SE: cg-stel-client, cg-daes-client and cg-cexs-client.

CG-STEL-CLIENT TEST

The first one (cg-stel-client) gives information about the Storage Element. This information is statically "published" through the deamon cg-stel and configured in the file stelStor.conf, on the SE.

There was no information in the Instalation/User manual about how to configure the cg-stel, and the default stelStor.conf file distributed in the RPM contains information from the "Developers" tests which are not apropriate for general use.

A template configuration file should be instead distributed with comments about the modifications to be performed, and properly referenced in the Instalation manual.

The use of the default stelStor.conf file gives the following results:

```
[david@ui02 udal]$ cg-stel-client -a se02.lip.pt -p 18002 getT
gsiftp://se02.lip.pt/flatfiles/SE00
Type of storage is
Physical name is

[david@ui02 udal]$ cg-stel-client -a se02.lip.pt -p 18002 getT
srm://se02.lip.pt/flatfiles/atlas/kl
Type of storage is HSM
Physical name is /flatfiles/atlas/kl
```

It either gives no answer, or it can give a wrong answer as is the second case where the "Storage type" was modified to a "dummy" value. Also the "physical name" in the second case does not exist, so that the query should give an error saying that the file does not exist or the URL is invalid.

After modifying the stelStor.conf file according to that shown in section 2.2, the following results were obtained.

```
[david@ui02 udal]$ cg-stel-client -a se02.lip.pt -p 18002 getC
gsiftp://se02.lip.pt/flatfiles/cg
Connection to storage for file gsiftp://se02.lip.pt/flatfiles/cg is
GSI-FTP
[david@ui02 udal]$ cg-stel-client -a se02.lip.pt -p 18002 getT
gsiftp://se02.lip.pt/flatfiles/cg
Type of storage is HDD
Physical name is gsiftp://se02.lip.pt/flatfiles/SE00/flatfiles/cg
[david@ui02 udal]$ cg-stel-client -a se02.lip.pt -p 18002 getS
gsiftp://se02.lip.pt/flatfiles/cg
Storage vendor is ST340016A
```

Although it is stated in the command line help that a given port is used if not specified through the “-p” option, if this option is not used the following error occurs, issued from the UI or SE:

```
[david@ui02 udal]$ cg-stel-client -a se02.lip.pt getC
gsiftp://se02.lip.pt/flatfiles/cg
STELClient: Connection to stel failed.
```

The same error occurs with the other command line client tools, cg-cexs-client and cg-daes-client.

At the moment the tests were performed, the following SE's were responding to the UDAL tools:
se02.lip.pt
cmsse.fuw.edu.pl
sequoia.crossgrid.man.poznan.pl
se001.grid.ucy.ac.cy
grid04.physics.auth.gr

Connection to stel failed, sometimes after a long time:
aosegrid.uab.es
flood-vo.ui.sav.sk
xgridse.icm.edu.pl
cagnode47.cs.tcd.ie
cg03.ific.uv.es

CG-CEXS-CLIENT TEST

The cg-cexs-client command line tool allows the interaction with the Component Expert estimation tools.

The operation “getAllComponents4Type” shows all registered components of a given type which are registered:

```
[david@ui02 udal]$ cg-cexs-client -a grid04.physics.auth.gr -p
18000 getAC Read
file:///opt/cg/sbin/CEAComponents/Read/ReadFTPComponent/libCERead-
FTP
file:///opt/cg/sbin/CEAComponents/Read/ReadLFSComponent/lib-
CEReadLFS
[david@ui02 udal]$ cg-cexs-client -a se02.lip.pt -p 18000 getAC Es-
timate
file:///opt/cg/sbin/CEAComponents/Estimate/Estimate6/ceec
file:///opt/cg/sbin/CEAComponents/Estimate/Estimate9/ceec
```

The registration and unregistration of CEX components has to be done in the SE's. The following session shows a sucessful registration/unregistration of such CEXS component.

```
[root@se02 cg]# cg-cexs-client -a se02.lip.pt -p 18000 regC
file:////opt/cg/sbin/CEAComponents/Estimate/Estimate4/ceec
New component registered succesfully!

[david@ui02 udal]$ cg-cexs-client -a se02.lip.pt -p 18000 getAC Estimate
file:////opt/cg/sbin/CEAComponents/Estimate/Estimate6/ceec
file:////opt/cg/sbin/CEAComponents/Estimate/Estimate9/ceec
file:////opt/cg/sbin/CEAComponents/Estimate/Estimate4/ceec

file:////opt/cg/sbin/CEAComponents/Estimate/Estimate6/ceec
file:////opt/cg/sbin/CEAComponents/Estimate/Estimate9/ceec
file:////opt/cg/sbin/CEAComponents/Read/ReadFTPComponent/libCEReadFTP
file:////opt/cg/sbin/CEAComponents/Read/ReadLFSComponent/libCEReadLFS
file:////opt/cg/sbin/CEAComponents/Estimate/Estimate4/ceec

[root@se02 cg]# cg-cexs-client -a se02.lip.pt -p 18000 unregC
file:////opt/cg/sbin/CEAComponents/Estimate/Estimate4/ceec
Component unregistered succesfully!

[david@ui02 udal]$ cg-cexs-client -a se02.lip.pt -p 18000 getAC Estimate
file:////opt/cg/sbin/CEAComponents/Estimate/Estimate6/ceec
file:////opt/cg/sbin/CEAComponents/Estimate/Estimate9/ceec

[root@se02 cg]# less /opt/cg/etc/compsCont.conf
file:////opt/cg/sbin/CEAComponents/Estimate/Estimate6/ceec
file:////opt/cg/sbin/CEAComponents/Estimate/Estimate9/ceec
file:////opt/cg/sbin/CEAComponents/Read/ReadFTPComponent/libCEReadFTP
file:////opt/cg/sbin/CEAComponents/Read/ReadLFSComponent/libCEReadLFS
```

The files /opt/cg/etc/compsCont.conf contains at each moment the registered components.

A component which was registered by default, unregistration was not possible:

```
[root@se02 cg]# cg-cexs-client -a se02.lip.pt -p 18000 unregC
file:////opt/cg/sbin/CEAComponents/Estimate/Estimate6/ceec
CEXSClient: A problem occured while trying to unregister component. Prob-
ably this component is not registered in CEXS container
```

There is no reference why such component cannot be unregistered.

The following session was performed in the UI:

```
[david@ui02 udal]$ cg-cexs-client -a se02.lip.pt -p 18000 regC
gridftp://se02.lip.p//opt/cg/sbin/CEAComponents/Estimate/Estimate4/ceec
New component registered succesfully!

[david@ui02 udal]$ cg-cexs-client -a se02.lip.pt -p 18000 getAC Estimate
file:////opt/cg/sbin/CEAComponents/Estimate/Estimate6/ceec
file:////opt/cg/sbin/CEAComponents/Estimate/Estimate9/ceec
file:////opt/cg/sbin/CEAComponents/Estimate/Estimate6/ceec
gridftp://se02.lip.p//opt/cg/sbin/CEAComponents/Estimate/Estimate4/ceec
[root@se02 cg]# less /opt/cg/etc/compsCont.conf
......
gridftp://se02.lip.p//opt/cg/sbin/CEAComponents/Estimate/Estimate4/ceec
```

A wrong `gridftp://se02.lip.p//opt/cg/sbin/CEAComponents/Estimate/Estimate4/ceec` URL "was allowed" to be registered, and it appears in the compsCont.conf file.

That URL was nevertheless unregistered sucessfully:

```
[david@ui02 udal]$ cg-cexs-client -a se02.lip.pt -p 18000 unregC
gridftp://se02.lip.p//opt/cg/sbin/CEAComponents/Estimate/Estimate4/ceec
Component unregistered succesfully!
```

The next test consisted in the registration of the RemoteEstimation component:

```
[root@se02 cg]# cg-cexs-client -a se02.lip.pt -p 18000 regC
file:////opt/cg/sbin/CEAComponents/RemoteEstimate/RemoteEstimateC1/cerc
```

After more than 20 minutes the prompt had not returned, and a ^C was issued. Nonetheless the process continued to run:

```
root 12180 0.0 0.3 2032 692 pts/0 S 11:41 0:00 /
opt/cg/sbin/CEAComponents/RemoteEstimate/RemoteEstimateC1/cerc --get-com-
ponent-specialization
```

CG-DAES-CLIENT TEST

The usage of this command line client tool given in the Installation/User manual [1] is incorrect:

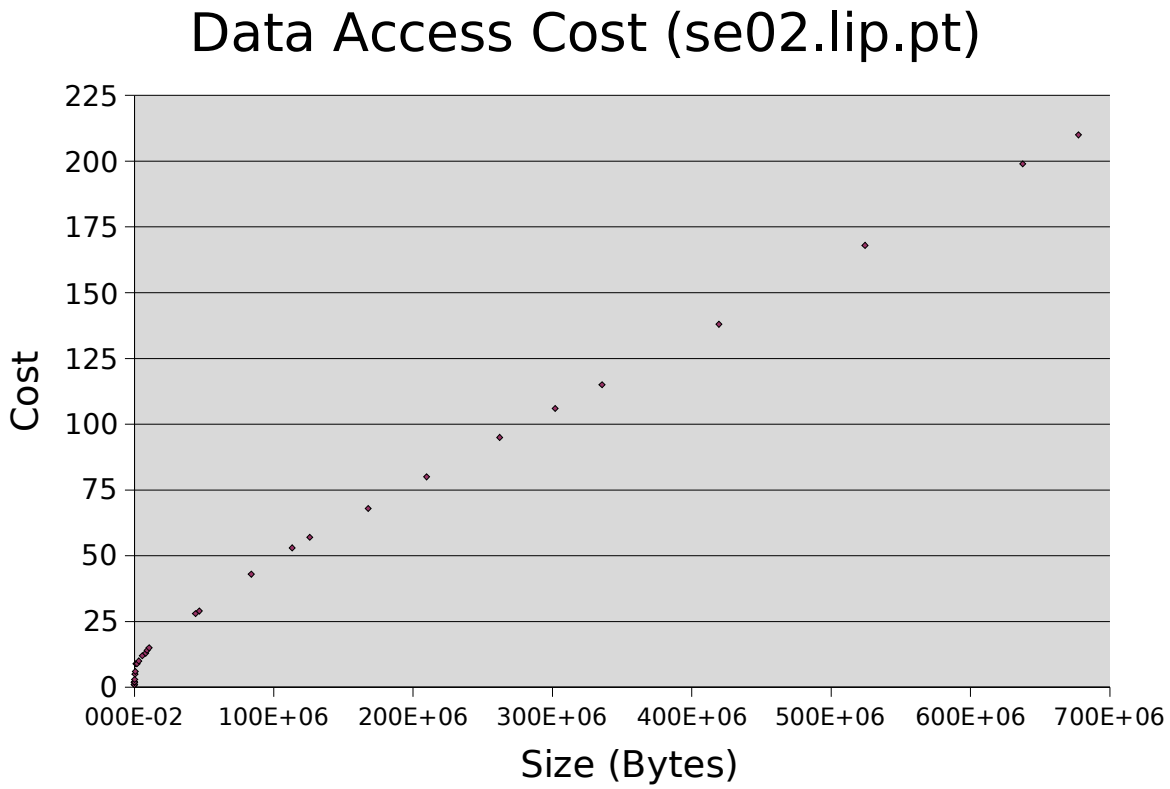
```
[david@ui02 david]$ cg-daes-client -a se02.lip.pt -p 18002 getSEC
srm:://se02.lip.pt/flatfiles/SE00/cg/f50b
DAESClient::getSECosts : Trying to pass empty pfns vector as 2nd argument
```

The correct usage is given in the "help" of the command line client tool:

```
USAGE: cg-daes-client [options] command command_options
Options:
   -h, --help                 display this help end exit
   -a, --address address      host address, default: localhost
   -p, --port    port         DAES port, default: 18001
Commands:
   estimateDataAccessBandwidth, estDAB file
   estimateDataAccessFactors, estDAF file
   estimateDataAccessLatency, estDAL file
   getSECosts, getSEC SEId file1 [file2 ...]
```

So that the SEId has to be given has part of the command.

The next figure shows the Access Cost as a function of file size in the range between 50 bytes to 670 Mbytes.



A very high correlation factor of 0.9985 is observed between both variables for files sizes higher than 1MByte. The access cost is thus directly proportional to the file size.

Tests were not possible in other storage systems like HSM, diskXtender and Castor since they are not available in the present CrossGrid testbed. This was a major drawback in the present tests.

2.5.3. Stress tests

Two types of stress tests were performed:

1. Multiple queries through the cg-daes-client to a given SE.
2. Measurement of file access when the SE is under a high load in terms of read/write access to the disk.

In the first test, the scipt manydaes.pl was executed, issuing 1000 times 31 times 2 (= 62 000) cg-daes-client command. The return of the access cost factors was verified in all cases, thus with 100% success rate.

In the second test, a time execution measurement to read a 678MB file with a block size of 1MB was performed, without any significant read/write disk access load:

```
time dd bs=1048576 if=/flatfiles/SE00/cg/f678mb of=/dev/null
646+1 records in
646+1 records out

real    0m15.948s
user    0m0.010s
sys     0m2.140s
```

The “real time” used in this process was about 16 seconds.

The script “stress.pl” was executed in order to put a very high load in the read/write disk access. Twenty files of 1GB size were being writen to disk in blocks of 1MB. During this process the previous command was also executed with the following results:

```
time dd bs=1048576 if=/flatfiles/SE00/cg/f678mb of=/dev/null
646+1 records in
646+1 records out

real    21m14.953s
user    0m0.000s
sys     0m2.550s
```

In this case, the read process of the file took more than 20 minutes.

In both cases, with and without load, the result from the CEX estimator was the same:

```
[david@ui02 udal]$ cg-daes-client -a se02.lip.pt -p 18001 getSEC
se02.lip.pt srm://se02.lip.pt/flatfiles/SE00/cg/f678mb
Cost for srm://se02.lip.pt/flatfiles/SE00/cg/f678mb is 210
```

This issue has been discussed with the developer and his answer follows:

“The published in that version estimators are the simplified ones. Since, There is missing element needed to provide accurate estimation modified gridftp server. The modified gridftp reports detailed information about current access to the storage devices. In result we can use those values in the estimations. So the current HDD estimators are very simply but they are used for testing entire infrastructure which is quite complex internally. The better estimator will be published later. “

The developer should have made clear in the test request a more detailed information about the stress tests to be performed. The test rquest mentions in “Features to be tested” “Big load”, this was misinteperted by the tester, and has lead to a significant amount of time preparing the second stress test mentioned above, trying to test a feature which is not yet present in the current version of the software.

2.6. COMPATIBILITY

The software is compliant and compatible with the present version of the middleware which is installed in the CrossGrid testbed.

2.7. SECURITY AND NETWORKING

The port numbers used by the software are:
18000 – CEXS Component Expert server: Outbound
18001 – DAES Data Access Estimators server: Outbound
18002 – STEL Storage Element server: Outbound

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

2.8. PREVIOUSLY REPORTED ISSUES

The present version of the package is the first to be tested.

3. ISSUES FOUND

3.1. ISSUES FOUND IN THE SOFTWARE

3.1.1. Issue 001, bugtracker #457

(Severity: high **Priority:** immediate**)**
The cg-dirtree RPM should be installed prior to all cg packages, specially if they contain deamons to be installed in the /opt/cg/etc/init.d, it has been verified that installing the cg-unidal package prior to cg-dirtree, the last package did not create correctly the link between /opt/cg/etc/init.d and /etc/init.d.

3.1.2. Issue 002, bugtracker #458

(Severity: high **Priority:** immediate**)**
The deamon cg-unidal does not have the “status” option implemented.
The cg-unidal “stop” method is not clean, it “kill -9” the “cexs”, “daes” and “stel” executables, leaving the PID and STD files in the /opt/cg/var/log directory.

3.1.3. Issue 003, bugtracker #459

(Severity: high **Priority:** immediate**)**
The cg-stel returns wrong or no information if the its not properly configured through the stelStor.conf file.

3.1.4. Issue 004, bugtracker #460

(Severity: medium **Priority:** immediate**)**
There were cases when the error “`STELClient: Connection to stel failed.`” occurred after a very long time. i.e., not immediatelly after issuing the command.

3.1.5. Issue 005, bugtracker #461

(Severity: medium **Priority:** immediate**)**
Although it is stated in the command line help that a given port is used if not specified through the “-p” option, if this option is not used the following error occurs:

```
[david@ui02 udal]$ cg-stel-client -a se02.lip.pt getC
gsiftp://se02.lip.pt/flatfiles/cg
STELClient: Connection to stel failed.
```

The same error occurs for the cg-daes-client and cg-cexs-client commands.

3.1.6. Issue 006, bugtracker #462

(Severity: medium **Priority:** imediate**)**

A component which was registered by default, unregistration was not possible:

```
[root@se02 cg]# cg-cexs-client -a se02.lip.pt -p 18000 unregC
file:////opt/cg/sbin/CEAComponents/Estimate/Estimate6/ceec
CEXSClient: A problem occured while trying to unregister component. Prob-
ably this component is not registered in CEXS container
```

3.1.7. Issue 007, bugtracker #463

(Severity: high **Priority:** imediate**)**

A wrong `gridftp://se02.lip.p//opt/cg/sbin/CEAComponents/Estimate/Estimate4/ceec` URL "was allowed" to be registered, and it appears in the compsCont.conf file.

3.1.8. Issue 008, bugtracker #464

(Severity: high **Priority:** imediate**)**

The registration of the RemoteEstimation component was unsucessful:

```
[root@se02 cg]# cg-cexs-client -a se02.lip.pt -p 18000 regC
file:////opt/cg/sbin/CEAComponents/RemoteEstimate/RemoteEstimateC1/cerc
```

After more than 20 minutes the prompt had not returned, and a ^C was issued. Nonetheless the process continued to run:

```
root 12180 0.0 0.3 2032 692 pts/0 S 11:41 0:00 /
opt/cg/sbin/CEAComponents/RemoteEstimate/RemoteEstimateC1/cerc --get-com-
ponent-specialization
```

3.1.9. Issue 009, bugtracker #465

(Severity: high **Priority:** imediate**)**

The result from the CEX estimator is the same either with or without disk acces load.

This issue has been discussed with the developer and his answer follows:

"The published in that version estimators are the simplified ones. Since, There is missing element needed to provide accurate estimation modified gridftp server. The modified gridftp reports detailed information about current access to the storage devices. In result we can use those values in the estimations. So the current HDD estimators are very simply but they are used for testing entire infrastructure which is quite complex internally. The better estimator will be published later. "

3.2. ISSUES FOUND IN THE DOCUMENTATION

Global documentation issue: The software is quite difficult to understand and use due to the lack of a proper Instalation and User Manual.

3.2.1. Issue 001, bugtracker #466

(Severity: medium **Priority:** immediate**)**

Although its stated in [1] that EDG-RM, ROS and NCS should be installed, its doesn't mention which of those packages and versions should be installed and if they need configuration. There is no reference to any other document from EDG.

3.2.2. Issue 002, bugtracker #467

(Severity: medium **Priority:** high**)**

There was no information in the Instalation/User manual about how to configure the cg-stel, and the default stelStor.conf file distributed in the RPM contains information from the “Developers” tests which are not apropriate for general use. This issue is related to issue number 3 in the software.

3.2.3. Issue 003, bugtracker #468

(Severity: medium **Priority:** high**)**
The registration and unregistration of CEX components has to be done in the SE's, is not stated anywhere in the documentation.

3.2.4. Issue 004, bugtracker #469

(Severity: medium **Priority:** high**)**
There is no reference why a component registered by default cannot be unregistered. Related with Software Issue 006.

3.2.5. Issue 005, bugtracker #470

(Severity: high **Priority:** high**)**

The usage of this command line client tool given in the Installation/User manual [1] is incorrect:

```
[david@ui02 david]$ cg-daes-client -a se02.lip.pt -p 18002 getSEC
srm:://se02.lip.pt/flatfiles/SE00/cg/f50b
DAESClient::getSECosts : Trying to pass empty pfns vector as 2nd argument
```

The correct usage is given in the “help” of the command line client tool.

3.2.6. Issue 006, bugtracker #471

(Severity: medium **Priority:** high**)**

There are no “man” pages for the executables and deamons. As an example:

```
[david@ui02 udal]$ cg-cexs-client -h getAC
USAGE: cg-cexs-client [options] command command_options
Options:
   -h, --help                  display this help end exit
   -a, --address address       host address, default: localhost
   -p, --port    port          CEXS port, default: 18000
Commands:
   refreshCache, refC
   loadNewRuleLibrary, loadNRL
   getAllComponents4Type, getAC component_type
   registerComponent, regC component_url
   unregisterComponent, unregC component_url
   getBestComponent4CallEnv, getBC name1 type1 value1 [name2 type2 value2
...] component_type
Usage expample:
   ./cg-cexs-client -p 19000 -a zeus09.cyf-kr.edu.pl refC
   ./cg-cexs-client -p 19001 loadNewRuleLibrary
   ./cg-cexs-client -a zeus09.cyf-kr.edu.pl getAC Read
   ./cg-cexs-client -p 19002 regC http://agh.edu.pl
   ./cg-cexs-client -p 19003 unregC http://agh.edu.pl
   ./cg-cexs-client -p 19004 getBC Comp string file://etc/ Read
```

In this case there is no documentation of the options which follow the command “`getBestComponent4CallEnv`” , i.e., what does it mean:

```
getBC name1 type1 value1 [name2 type2 value2 ...] component_type
```

4. RECOMMENDATION

The documentation: Installation and User Manual should be greatly improved. The “man pages” should be provided with the package.

The features to be tested should be made clear at least in the User Manual.

The developer should implement a “status” option and the “stop” action should be implemented properly in the cg-unidal deamon.

Regarding Issue009, when new estimators became available a new validation of the package should be performed.

Mostly all other issues are related with the client command line tools and its proper use.

The package validation result is: MAJOR ISSUES

The package is already deployed in the Crossgrid testbed. So the recommendation is that all the issues should be solved with high priority and a new version should be deployed as soon as possible.

5. REFERENCES

[1] Installation and User Manual:
http://zeus04.cyf-kr.edu.pl/down/CG3.4-v1.0-CYF-UserManual.doc

[2] Software requirements and design
http://zeus04.cyf-kr.edu.pl/down/CG3.4-D3.2-v2.0-CYF021-OptDataAccDesgRpt1.pdf

6. INTEGRATION/VALIDATION REQUEST

The test request can be found in:
http://www.lip.pt/computing/projects/crossgrid/task4/softvalidation/108721738978.0172034240426/request_form.html

Request id: 108721738978.0172034240426
Component name: UDAL
Version (CVS tag): 1.2.1
Request priority: 2

Package brief description:
Platform for automatic component maganement. The current version contains also a few estimators for data access costs.

Code: Source code in X# CVS ? (Y/N): Y
Autobuild generates RPMs ? (Y/N): Y
Software download URL:
https://gridportal.fzk.de/distribution/crossgrid/autobuilt/i386-rh7.3-gcc2.95.2/wp3/RPMS/

List of RPMs produced:
cg-wp3.4-unidal-1.2.1.RH7.3-1.0.i386.rpm
cg-wp3.4-unidalclient-1.2.1.RH7.3-1.0.i386.rpm

Changes: List of all bugs fixed by this release:
List of backwards compatibility issues (installation, configuration or run-time:

Documentation:

Installation manual URL:
http://zeus04.cyf-kr.edu.pl/down/CG3.4-v1.0-CYF-UserManual.doc

Users manual URL: http://zeus04.cyf-kr.edu.pl/down/CG3.4-v1.0-CYF-UserManual.doc

Development manual URL:
Software requirements URL: http://zeus04.cyf-kr.edu.pl/down/CG3.4-D3.2-v2.0-CYF021-OptDataAccDesgRpt1.pdf

Software design URL: http://zeus04.cyf-kr.edu.pl/down/CG3.4-D3.2-v2.0-CYF021-OptDataAccDesgRpt1.pdf

Files:
List of all configuration files (with full path):
/opt/cg/etc/cexs.conf
/opt/cg/etc/compsCont.conf
/opt/cg/etc/daes.conf
/opt/cg/etc/stel.conf
/opt/cg/etc/stelStor.conf

List of all log files (with full path):
/opt/cg/var/log/cexs_expert.log
/opt/cg/var/log/cexs_kernel.log
/opt/cg/var/log/cexs.pid
/opt/cg/var/log/cexs.std
/opt/cg/var/log/daes.log
/opt/cg/var/log/daes.pid
/opt/cg/var/log/daes.std
/opt/cg/var/log/stel.log
/opt/cg/var/log/stel.pid
/opt/cg/var/log/stel.std

List of LCFG configuration objects (and versions):
List of daemons provided:
cexs
daes
stel

List of init.d scripts and supported directives (start, stop, restart, etc.):
/opt/cg/etc/init.d/cg-unidal
Supported directives: start, stop, restart

Deployment:
Affected machine types (UI, WN, CE, SE, etc) and packages to be deployed on each:
cg-wp3.4-unidal-1.2.1.RH7.3-1.0.i386.rpm on SE
cg-wp3.4-unidalclient-1.2.1.RH7.3-1.0.i386.rpm on UI and SE

Component dependencies (required libraries, packages, etc.):
Nothing specific
Credentials (if any) used by the service:
List of service ports (inbound,outbound):
Who communicates with the service and from where: ROS

Range of temporary ports used by the service (inbound,outbound):
18001 outbound

Testing and Validation:
Unit tests that have been performed on the package:
Described in http://zeus04.cyf-kr.edu.pl/down/CG3.4-v1.0-CYF-UserManual.doc
Features to be tested:
- Starting
- Stoping
- Data access cost estimation for not existing files
- Data access cost estimation for existing files
- Unregistration of cecomponent
- Registration of cecomponent
- Big load

Features not to be tested:
Test programs download URL:
http://zeus04.cyf-kr.edu.pl/down/tests.zip

Other considerations:
Contacts:
Test requester:
Name: Lukasz Dutka
WP: 3
Partner: Cyfronet
Task: 4
E-mail dutka@agh.edu.pl

Developer/origin:
Name: Lukasz Dutka
Project: crossgrid
WP: 3
Partner: Cyfronet
Task: 4
E-mail: dutka@agh.edu.pl