

Quality Criteria Verification Executive Summary For QCV, Stage Rollout, DMSU and EGI internal

Name of the component	StoRM		
Release	1.8.0	RT Ticket	3180
Software Provider	EMI		
Release Contact	Name:	E-Mail	
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Validator	Name:	E-Mail	
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V. Hours Worked	7		
Component status	ACCEPT	Date	28 November 2011
Verification start date	28 November 2011	Verification end date	28 November 2011

Criteria	Accepted (Y/N/NA)	Tested (TP/VLD)	Comments
Generic QC			
GENERIC_DOC_1 (Functional Description)	Y	VLD	http://storm.forge.cnaf.infn.it/_media/documentation/storm-servicedescription.pdf?id=documentation incomplete, some server components are not yet described
GENERIC_DOC_2 (Release Notes)	Y	VLD	http://www.eu-emi.eu/emi-1-kebnekaise-updates/-/asset_publisher/lr6g/content/update-9-03-11-2011
GENERIC_DOC_5 (API Documentation)	Y	VLD	http://www.gridforum.org/documents/GFD.129.pdf
GENERIC_DOC_6 (Administrator Documentatio	Y	VLD	http://storm.forge.cnaf.infn.it/_media/documentation/storm-sysadminguide.pdf?id=documentation
GENERIC_DOC_7 (Service Reference Card)	Y	VLD	https://twiki.cern.ch/twiki/bin/view/EMI/StoRMPTServiceReferenceCard
GENERIC_DOC_8 (Software License)	Y	VLD	Apache 2.0
GENERIC_DOC_9 (Release changes testing)	Y	VLD	
GENERIC_DIST_1 (Source Code Availability)	Y	TP	
GENERIC_DIST_2 (Source Distribution)	Y	TP	
GENERIC_DIST_3 (Binary Distribution)	Y	VLD	
GENERIC_SERVICE_1 (Service control and sta	Y	VLD	/etc/init.d/storm-* start stop status
GENERIC_SERVICE_2 (Log Files)	Y	VLD	/var/log/storm/*
GENERIC_SERVICE_3 (Service Reliability)	Y	VLD	
GENERIC_SERVICE_4 (Service Robustness)	Y	VLD	
GENERIC_SERVICE_4 (Automatic Configuratio	Y	VLD	yaim configuration
GENERIC_SEC_1 (World Writable Files)	Y	VLD	find / -perm -o=w -type f -print
GENERIC_SEC_2 (Directory Traversal Attacks testing)			
GENERIC_MISC_2 (Bug Tracking System)	Y	VLD	https://storm.cnaf.infn.it:8443/redmine/
Security Capabilities QC			
AUTHN_IFACE_1 (X.509 Certificate support)	Y	VLD	
AUTHN_IFACE_2 (SAML authentication)			
AUTHN_DELEG_1 (Delegation Interface)			
AUTHZ_PCYDEF_3 (Ban User/OAN)			
AUTHZ_PCYDEF_4 (Allowed users definition)	Y	VLD	
AUTHZ_PEP_1 (Policy Enforcement)	NA	VLD	
AUTHZ_PEP_2 (User Mapping)	NA	VLD	
Information Capabilities QC			
INFOMODEL_SCHEMA_1 (GlueSchema Suppo	Y	VLD	
INFODISC_IFACE_1 (Information Discovery Inte	Y	VLD	
Storage Capabilities QC			
FILEACC_API_1 (POSIX Read file access)	Y	VLD	
FILEACC_API_2 (POSIX Write file access)			
FILETRANS_API_1 (GridFTP File Access)	Y	VLD	
FILETRANS_API_2 (HTTPS File Access)	Y	VLD	https service configuration and testing OK
FILETRANS_API_3 (WebDAV File Access)			
STORAGE_API_1 (SRM API Support)	Y	TP	
STORAGE_API_2 (LCG-UTILS test)	Y	VLD	
STORAGE_DEVICE_1 (Information retrieval)	Y	VLD	
STORAGE_DEVICE_2 (Fine grained authorizat	Y	VLD	
STORAGE_DEVICE_3 (Space reservations)	Y	VLD	
STORAGE_DEVICE_4 (Checksum)	Y	VLD	
STORAGE_SERVICE_1 (Error Messages)	Y	VLD	
Operations Capabilities QC			
MON_PROBE_GENERIC_2 (Service Probe)			
MON_PROBE_STORAGE_1 (SRM Probes)			

Summary of Quality Criteria verification:

	Generic Quality Criteria Total (Critical/Non critical)			
	Passed	Not passed	Not Applicable	Total
TP	2			2
VLD	15			15
	Specific Quality Criteria			
TP	1			1
VLD	11		2	13

Summary:

Validator comments:

- Fresh install: srm02.ncg.ingrid.pt
 CPU Count 2 CPUs
 CPU Speed 2300 MHz
 Memory Total 4050988 KB
 Swap Space Total 2096472 KB

- pre-conditions

- host certificates, and CAs installed
- lustre FS mounted: production FS
- jdk-1.6.0_26-fcs.x86_64
- repos: SL5, EPEL, CAs

- Installation OK

```
[root@srm02 yum.repos.d]# yum install emi-storm-backend-mp emi-storm-frontend-mp
```

- Configuration

```
[root@srm02 ~]# /opt/glite/yaim/bin/yaim -c -s /opt/ncg/yaim-site-cfg/siteinfo/siteinfo.def -n se_storm_backend -n se_storm_frontend
INFO: YAIM terminated succesfully.
```

```
root@srm02 ~]# /etc/init.d/mysqld status
mysqld (pid 7310) is running...
```

```
[root@srm02 ~]# /etc/init.d/storm-backend-server status
storm-backend-server (pid 8249 8251 8252) is running [ OK ]
```

```
[root@srm02 ~]# /etc/init.d/storm-frontend-server status
storm-frontend-server (pid 9564) is running...
```

```
[root@srm02 ~]# /etc/init.d/bdii status
BDII Running [ OK ]
```

After rebooting the system

```
[root@srm02 ~]# /etc/init.d/bdii status
BDII Running [ OK ]
```

```
[root@srm02 ~]# /etc/init.d/storm-backend-server status
storm-backend-server (pid 2027 2029 2030) is running [ OK ]
[root@srm02 ~]# /etc/init.d/storm-frontend-server status
storm-frontend-server (pid 2087) is running...
```

Checks:

- yaim-storm version is correct

```
[root@srm02 ~]# cat /opt/glite/yaim/etc/versions/yaim-storm
yaim-storm 4.1.7-1.s15
```

- StoRM backend rpm creates a symbolic link for mysql-connector-java

```
[root@srm02 ~]# ll /usr/share/java/storm-backend-server/mysql-connector-java-5.1.12.jar
lrwxrwxrwx 1 root root 47 Oct 18 16:15 /usr/share/java/storm-backend-server/mysql-connector-java-5.1.12.jar -> /usr/share/java/mysql-connector-java-5.1.12.jar
```

- StoRM backend init script sets the maximum number of open file descriptors in the start function

```
[root@srm02 2104]# cat /proc/2104/limits |grep files
Max open files      4096          4096          files
```

- StoRM gridhttps plugin does not remove link to its jar into the StoRM backend jars folder

Links stand in the storm-be jardir:

```
httpClient.jar -> /usr/share/java/storm-gridhttps-plugin/httpclient-4.1.jar
httpcore.jar -> /usr/share/java/storm-gridhttps-plugin/httpcore-4.1.jar
storm-gridhttps-plugin.jar -> /usr/share/java/storm-gridhttps-plugin/storm-gridhttps-plugin.jar
```

- StoRM frontend init scripts sets the LD_LIBRARY_PATH to load new path for xmlrpc-c libraries in the start function

```
cat /proc/2169/environ
...LD_LIBRARY_PATH=/usr/lib64/storm
```

lsol|grep storm

```
...
storm-fro 2169 storm mem REG 253,1 41728 1901875
/usr/lib64/storm/libxmlrpc_client.so.3.25
storm-fro 2169 storm mem REG 253,1 56816 1900766
/usr/lib64/storm/libxmlrpc_xmlparse.so.3.25
storm-fro 2169 storm mem REG 253,1 89768 1900754
/usr/lib64/storm/libxmlrpc.so.3.25
storm-fro 2169 storm mem REG 253,1 16584 1900764
/usr/lib64/storm/libxmlrpc_util.so.3.25
```

```
storm-fro 2169 storm mem REG 253,1 107736 1900768
/usr/lib64/storm/libxmlrpc_xmltok.so.3.25
```

...

- StoRM backend namespace.xml shows Online Size in byte for each Storage Area, when STORM_<SA>_ONLINE_SIZE is specified in GB

from yaim site-info.def

```
STORM_IBERIBERGRIDDISK_ONLINE_SIZE=1000
```

```
STORM_OPSIBERGRIDDISK_ONLINE_SIZE=100
```

```
[root@srm02 ~]# cat /etc/storm/backend-server/namespace.xml|grep TotalOnlineSize
```

..

```
<TotalOnlineSize unit="Byte" limited-size="true">1073741824000</TotalOnlineSize>
```

```
<TotalOnlineSize unit="Byte" limited-size="true">107374182400</TotalOnlineSize>
```

Absolutely correct

GLUE2:

```
GLUE2StorageShareCapacityTotalSize: 100
```

```
GLUE2StorageShareCapacityID: srm02.ncg.ingrid.pt/opsibergriddisk/capacity
```

```
GLUE2StorageShareCapacityTotalSize: 1000
```

```
GLUE2StorageShareCapacityID: srm02.ncg.ingrid.pt/iberibergriddisk/capacity
```

Glue1.3:

```
GlueSAName: Reserved space for ops.vo.ibergrid.eu VO
```

```
GlueSAStateAvailableSpace: 99999925 ----- 99999999 ~ 100 000 000
bytes OK in base 10
```

```
GlueSAStateUsedSpace: 74 -----
```

```
GlueSAFreeOnlineSize: 99
```

```
GlueSAUsedOnlineSize: 0
```

```
GlueSATotalOnlineSize: 100
```

```
GlueSACapability: InstalledOnlineCapacity=100
```

Overall both the Glue 1.3 and 2, seem in very good shape and nice

- srmPing returns StoRM backend age correctly:

OK

```
[david@ui01 ~]$ clientSRM Ping -v -e httpg://srm02.ncg.ingrid.pt:8443
```

```
=====
Sending Ping request to: httpg://srm02.ncg.ingrid.pt:8443
=====
```

Request status:

```
statusCode="SRM_SUCCESS"(0)
```

```
explanation="SRM server successfully contacted"
```

=====

SRM Response:

```
versionInfo="v2.2"
otherInfo (size=3)
  [0] key="backend_type"
  [0] value="StoRM"
  [1] key="backend_version"
  [1] value="<FE:1.7.2-2><BE:1.7.3-1>"
  [2] key="backend_os_distribution"
  [2] value="Scientific Linux SL release 5.7 (Boron)"
=====
```

- StoRM Frontend log does not contain debug information at INFO level

- yaim returns error if you do not set at least one of STORM_<SA>_ONLINE_SIZE

I have commented

```
#STORM_DTEAMDISK_ONLINE_SIZE=300
and run yaim
```

```
DEBUG: config_storm_namespace: Create header
DEBUG: config_storm_namespace: Create SA DTEAMDISK filesystem
DEBUG: config_storm_namespace: Create SA DTEAMDISK space-token-
description (DTEAM_DISK)
ERROR: config_storm_namespace: Missing online size!
ERROR: Please set: STORM_DTEAMDISK_ONLINE_SIZE in GB
ERROR: Configuration error !
ERROR: Configuration error !
```

check OK

- yaim returns error if you set to zero at least one of STORM_<SA>_ONLINE_SIZE

I have set

```
STORM_DTEAMDISK_ONLINE_SIZE=0
and run yaim
```

```
INFO: config_storm_namespace: Creating /etc/storm/backend-server/namespace.xml
...
DEBUG: config_storm_namespace: Removing old backup files
DEBUG: config_storm_namespace: Create header
DEBUG: config_storm_namespace: Create SA DTEAMDISK filesystem
DEBUG: config_storm_namespace: Create SA DTEAMDISK space-token-
description (DTEAM_DISK)
ERROR: config_storm_namespace: Wrong online size!
ERROR: Please set: STORM_DTEAMDISK_ONLINE_SIZE > 0 GB
ERROR: Configuration error !
```

check OK

----- Further checks

- stat: the correct reporting of the total/used/free capacity and capacity for each VO is correct

http://gstat-prod.cern.ch/gstat/site/NCG-INGRID-PT/treeview/bdii_site/sbdii01.ncg.ingrid.pt/

- rnagios: the node is passing the SAM/Nagios ops tests

<https://rnagios.ibergrid.cesga.es/nagios/>

I have changed the mysql conf to include

```
[root@srm01 ~]# cat /etc/my.cnf
[mysqld]
datadir=/var/lib/mysql
socket=/var/lib/mysql/mysql.sock
user=mysql
old_passwords=1
max_connections=2000
wait_timeout=86800
innodb_lock_wait_timeout=500
innodb_buffer_pool_size=512M
```

[david@ui01 ~]\$ lcg-cr -v -d srm02.ncg.ingrid.pt -l lfn:/grid/dteam/mdavid/maneco333
-s DTEAM_DISK file:/home/ingrid/csys/david/rm02.ncg
Using grid catalog type: lfc
Using grid catalog : prod-lfc-shared-central.cern.ch
Checksum type: None
SE type: SRMv2
Destination SURL : srm://srm02.ncg.ingrid.pt/dteam/generated/2011-10-20/file566405a6-188b-4e5b-a8ae-dcd812aeea84
Source SRM Request Token: 04d0d3c2-ccce-4186-a920-1b2cbccab521
Source URL: file:/home/ingrid/csys/david/rm02.ncg
File size: 61438567
VO name: dteam
Destination specified: srm02.ncg.ingrid.pt
Destination URL for copy:
gsiftp://gftp02.ncg.ingrid.pt:2811//lustre/ncg.ingrid.pt/data3/dteam/generated/2011-10-20/file566405a6-188b-4e5b-a8ae-dcd812aeea84
streams: 1
54525952 bytes 4317.51 KB/sec avg 7447.27 KB/sec inst
Transfer took 13500 ms
Using grid catalog type: lfc
Using grid catalog : prod-lfc-shared-central.cern.ch
Site URL to be registered: srm://srm02.ncg.ingrid.pt/dteam/generated/2011-10-20/file566405a6-188b-4e5b-a8ae-dcd812aeea84
File size: 61438567
Using LFN: lfn:/grid/dteam/mdavid/maneco333

Using GUID: guid:4552138e-754e-4daa-89f6-77f1f8eb8e87
Registering LFN: /grid/dteam/mdavid/maneco333 (4552138e-754e-4daa-89f6-77f1f8eb8e87)
Registering SURL: srm://srm02.ncg.ingrid.pt/dteam/generated/2011-10-20/file566405a6-188b-4e5b-a8ae-dcd812aeea84 (4552138e-754e-4daa-89f6-77f1f8eb8e87)
guid:4552138e-754e-4daa-89f6-77f1f8eb8e87

Installation

```
[root@srm02 ~]# yum install emi-storm-globus-gridftp-mp
```

```
/opt/glite/yaim/bin/yaim -c -d 6 -s /opt/ncg/yaim-site-cfg/siteinfo/site-info.def -n se_storm_backend -n se_storm_frontend -n se_storm_gridftp
```

Deamon status

```
[root@srm02 NCG-yaim]# /etc/init.d/bdii status  
BDII Running [ OK ]  
[root@srm02 NCG-yaim]# /etc/init.d/storm-backend-server status  
storm-backend-server (pid 9667 9669 9670 14257 14259 14260)[ OK ]ing  
[root@srm02 NCG-yaim]# /etc/init.d/storm-frontend-server status  
storm-frontend-server (pid 10924) is running...  
[root@srm02 NCG-yaim]# /etc/init.d/storm-globus-gridftp status  
globus-gridftp-server (pid 11084) is running...
```

I have set the following additional yaim variables:

```
STORM_INFO_HTTPS_SUPPORT=true  
STORM_GRIDHTTPS_ENABLED=true  
STORM_GRIDHTTPS_PLUGIN_CLASSNAME=it.grid.storm.https.HTTPSPluginInterfaceStub  
STORM_GRIDHTTPS_SERVER_HOST=localhost  
STORM_GRIDHTTPS_SERVER_PORT=8380  
STORM_GRIDHTTPS_HTTPS_SERVER_PORT=8880  
STORM_GRIDHTTPS_SERVER_USER_UID=200  
STORM_GRIDHTTPS_SERVER_GROUP_UID=200
```

Note the

```
STORM_GRIDHTTPS_SERVER_USER_UID  
STORM_GRIDHTTPS_SERVER_GROUP_UID
```

Are not optional as is said in the storm1.8 sysadmin manual

FILE with results: storm1.8.0-fresh-yaim-conf-update-result-gridhttps.txt

On yaim I got again:

```
INFO: Starting Tomcat  
Starting tomcat5: /usr/bin/rebuild-jar-repository: error: Could not find xml-commons-apis Java extension for this JVM  
/usr/bin/rebuild-jar-repository: error: Some detected jars were not found for this jvm
```

[OK]

```
[david@ui01 ~]$ clientSRM ptp -v -e http://srm02.ncg.ingrid.pt:8443 -s  
srm://srm02.ncg.ingrid.pt/dteam/tareco3 -T -P https -
```

```
p=====
```

Sending PtP request to: http://srm02.ncg.ingrid.pt:8443

```
=====
```

Polling request status:

Current status: SRM_REQUEST_QUEUED (Ctrl+c to stop polling).

Current status: SRM_REQUEST_INPROGRESS (Ctrl+c to stop polling).

```
=====
```

Request status:

statusCode="SRM_SUCCESS"(0)

explanation="All chunks successfully handled!"

```
=====
```

SRM Response:

requestToken="44cb81fa-410e-42b1-b382-79c24a429f36"

arrayOfFileStatuses (size=1)

[0] SURL="srm://srm02.ncg.ingrid.pt/dteam/tareco3"

[0] status: statusCode="SRM_SPACE_AVAILABLE"(24)

explanation="srmPrepareToPut successfully handled!"

[0] estimatedWaitTime=-1

[0] TURL="https://srm02.ncg.ingrid.pt:8443/storageArea/dteam/tareco3"

```
=====
```

```
[david@ui01 ~]$ curl -v --cert /tmp/x509up_u522 --capath /etc/grid-security/certificates  
-T /home/ingrid/csys/david/voms02.info.new
```

```
https://srm02.ncg.ingrid.pt:8380/storageArea/dteam/tareco3
```

```
* About to connect() to srm02.ncg.ingrid.pt port 8380
```

```
* Trying 193.136.75.153... connected
```

```
* Connected to srm02.ncg.ingrid.pt (193.136.75.153) port 8380
```

```
* successfully set certificate verify locations:
```

```
* CAfile: /etc/pki/tls/certs/ca-bundle.crt
```

```
CApath: /etc/grid-security/certificates
```

```
* SSLv2, Client hello (1):
```

```
SSLv3, TLS handshake, Server hello (2):
```

```
SSLv3, TLS handshake, CERT (11):
```

```
SSLv3, TLS handshake, Server key exchange (12):
```

```
SSLv3, TLS handshake, Request CERT (13):
```

```
SSLv3, TLS handshake, Server finished (14):
```

```
SSLv3, TLS handshake, CERT (11):
```

```
SSLv3, TLS handshake, Client key exchange (16):
```

```
SSLv3, TLS handshake, CERT verify (15):
```

```
SSLv3, TLS change cipher, Client hello (1):
```

```
SSLv3, TLS handshake, Finished (20):
```

```
SSLv3, TLS change cipher, Client hello (1):
```

```
SSLv3, TLS handshake, Finished (20):
```

```
SSL connection using EDH-RSA-DES-CBC3-SHA
```

```
* Server certificate:
```

```
* subject: /C=PT/O=LIPCA/O=LIP/OU=Lisboa/CN=srm02.ncg.ingrid.pt
```

```
* start date: 2011-10-11 13:39:46 GMT
```



```
*      expire date: 2012-10-10 13:39:46 GMT
*      subjectAltName: srm02.ncg.ingrid.pt matched
*      issuer: /C=PT/O=LIPCA/CN=LIP Certification Authority
* SSL certificate verify ok.
> PUT /storageArea/dteam/tareco3 HTTP/1.1
> User-Agent: curl/7.15.5 (x86_64-redhat-linux-gnu) libcurl/7.15.5 OpenSSL/0.9.8b
zlib/1.2.3 libidn/0.6.5
> Host: srm02.ncg.ingrid.pt:8380
> Accept: */*
> Content-Length: 116967
> Expect: 100-continue
>
< HTTP/1.1 100 Continue
< HTTP/1.1 204 No Content
< Server: Apache-Coyote/1.1
< Date: Tue, 25 Oct 2011 16:01:04 GMT
* Connection #0 to host srm02.ncg.ingrid.pt left intact
* Closing connection #0
* SSLv3, TLS alert, Client hello (1):
[david@ui01 ~]$ clientSRM pd -e httpg://srm02.ncg.ingrid.pt:8443 -s
srm://srm02.ncg.ingrid.pt/dteam/tareco3 -t 44cb81fa-410e-42b1-b382-
79c24a429f36=====
```

=====
Sending PutDone request to: httpg://srm02.ncg.ingrid.pt:8443
=====

Request status:
statusCode="SRM_SUCCESS"(0)
explanation="All file requests are successfully completed"
=====

SRM Response:
arrayOfFileStatuses (size=1)
[0] SURL="srm://srm02.ncg.ingrid.pt/dteam/tareco3"
[0] status: statusCode="SRM_SUCCESS"(0)
explanation=""
=====

```
[david@ui01 ~]$
[david@ui01 ~]$
[david@ui01 ~]$ clientSRM Ls -l -v -e httpg://srm02.ncg.ingrid.pt:8443 -s
srm://srm02.ncg.ingrid.pt/dteam/tareco3=====
```

=====
Sending Ls request to: httpg://srm02.ncg.ingrid.pt:8443
=====

Request status:
statusCode="SRM_SUCCESS"(0)
explanation="All requests successfully completed"
=====

SRM Response:
details (size=1)
[0] path="/dteam/tareco3"
[0] size=116967

```
[0] lastModificationTime="2011-10-25T17:01:04"  
[0] fileStorageType=2  
[0] retentionPolicyInfo=(0,0)  
[0] fileLocality=0  
[0] type=File  
[0] lifetimeAssigned=-1  
[0] lifetimeLeft=-1  
[0] ownerPermission (userID="3030059",mode=RW-)  
[0] groupPermission (groupID="3030059",mode=RW-)  
[0] otherPermission=RW-  
[0] status: statusCode="SRM_SUCCESS"(0)  
      explanation="Successful request completion"
```

Also in the logs

```
[root@srm02 tomcat5]# cat trustmanager.log  
tomcat [http-8380-Processor25]: 2011-10-25T17:00:18.641+0100 INFO  
trustmanager.CRLFileTrustManager - Client CN=proxy, CN=Mario David,  
OU=Lisboa, O=LIP, O=LIPCA, C=PT accepted  
tomcat [http-8380-Processor24]: 2011-10-25T17:01:04.527+0100 INFO  
trustmanager.CRLFileTrustManager - Client CN=proxy, CN=Mario David,  
OU=Lisboa, O=LIP, O=LIPCA, C=PT accepted
```

storm-gridhttps-server.log

```
[http-8380-Processor24] 2011-10-25 17:01:04.577 filter.RequestFilter INFO - :  
Filtering request from host 193.136.75.225  
[http-8380-Processor24] 2011-10-25 17:01:04.667 filter.RequestFilter INFO - : User is  
authorized to access the requested resource
```

Not applicable Quality Criteria

Specific Functional Tests to be repeated in SR:

Test number	Description	Motivation

Specific Non-functional tests (Scalability, etc...) to be repeated in SR:

Test number	Description	Motivation

Comments for UMD QC definition (TSA2.2):

- Review criteria xxxx
- Add criteria xxxx

Comments for SR (TSA1.3):

Comments for DMSU (TSA2.5):

Comments for TP: