# SRM 2.2: status of the implementations and GSSD



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# Tests executed

- S2 test suite testing availability of endpoints, basic functionality, use cases and boundary conditions, interoperability, exhaustive and stress tests.
  - **Availability**: Ping and full put cycle (putting and retrieving a file)
  - **Basic**: basic functionality checking only return codes and passing all basic input parameters
  - **Usecases**: testing boundary conditions, exceptions, real use cases extracted from the middleware clients and experiment applications.
  - **Interoperability**: servers acting as clients, cross copy operations
  - **Exhaustive**: Checking for long strings, strange characters in input arguments, missing mandatory or optional arguments. Output parsed.
  - **Stress**: Parallel tests for stressing the systems, multiple requests, concurrent colliding requests, space exhaustion, etc.
- S2 tests cron job running 5 times per day

- In parallel, manual tests from GFAL/lcg-utils,FTS, DPM test suite.

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# Testing Plan

- Plan for 1Q of 2007 :

  - Phase 1: From 16 Dec 2006 until end of January 2007:
    - Availability and Basic tests
    - Collect and analyze results, update page with status of endpoints: https://twiki.cern.ch/twiki/bin/view/SRMDev/ImplementationsProblems
    - Plot results per implementation: number of failures/number of tests executed for all SRM MoU methods.
    - Report results to WLCG MB.

  - Phase 2: From beginning until end of February 2007:
    - Perform tests on use-cases (GFAL/lcg-utils/FTS/experiment specific), boundary conditions and open issues in the spec that have been agreed on.
    - Plot results as for phase 1 and report to WLCG MB.

  - Phase 3: From 1 March until "satisfaction" :
    - Add more SRM 2.2 endpoints (some T1s ?)
    - Stress testing
    - Plot results as for phase 2 and report to WLCG MB.

- This plan has been discussed during the WLCG workshop. The developers have agreed to work on this as a matter of priority.

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# Testing Plan

- Plan for 1Q of 2007 :

  - Phase 3: From 1 March until "satisfaction" :
    - Add more SRM 2.2 endpoints (some T1s ?)
    - Stress testing
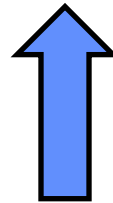    - Plot results as for phase 2 and report to WLCG MB.

*Test design in progress.*
*Starting from lessons learned.*
*We will activate stress testing this coming week.*

# Tests executed

srmCopy needed now
only for dCache!

Copy and
ChangeSpaceForFiles
MoU SRM
methods needed
by the end of 2007.
Expected by
the end of summer

**Summary of S2 SRM v2.2 basic test - Monday 5 March 2007 12:39pm CET**

| SRM function | CERN CASTOR | | FNAL DCACHE | | CERN DPM | | LBNL DRM | | STORM | |
|---|---|---|---|---|---|---|---|---|---|---|
| **WLCG MoU SRM v2.2 methods** | | | | | | | | | | |
| Ping | StdOut | Log | StdOut | Log | StdOut | Log | StdOut | Log | StdOut | Log |
| PrepareToPut | StdOut | Log | StdOut | Log | StdOut | Log | StdOut | Log | StdOut | Log |
| StatusOfPutRequest | StdOut | Log | StdOut | Log | StdOut | Log | StdOut | Log | StdOut | Log |
| PutDone | StdOut | Log | StdOut | Log | StdOut | Log | StdOut | Log | StdOut | Log |
| PrepareToGet | StdOut | Log | StdOut | Log | StdOut | Log | StdOut | Log | StdOut | Log |
| StatusOfGetRequest | StdOut | Log | StdOut | Log | StdOut | Log | StdOut | Log | StdOut | Log |
| BringOnline | StdOut | Log | StdOut | Log | StdOut | Log | StdOut | Log | StdOut | Log |
| StatusOfBringOnlineRequest | StdOut | Log | StdOut | Log | StdOut | Log | StdOut | Log | StdOut | Log |
| AbortRequest | StdOut | Log | StdOut | Log | StdOut | Log | StdOut | Log | StdOut | Log |
| AbortFiles | StdOut | Log | StdOut | Log | StdOut | Log | StdOut | Log | StdOut | Log |
| ReleaseFiles | StdOut | Log | StdOut | Log | StdOut | Log | StdOut | Log | StdOut | Log |
| GetRequestSummary | StdOut | Log | StdOut | Log | StdOut | Log | StdOut | Log | StdOut | Log |
| GetRequestTokens | StdOut | Log | StdOut | Log | StdOut | Log | StdOut | Log | StdOut | Log |
| GetTransferProtocols | StdOut | Log | StdOut | Log | StdOut | Log | StdOut | Log | StdOut | Log |
| Ls | StdOut | Log | StdOut | Log | StdOut | Log | StdOut | Log | StdOut | Log |
| Mkdir | StdOut | Log | StdOut | Log | StdOut | Log | StdOut | Log | StdOut | Log |
| Rmdir | StdOut | Log | StdOut | Log | StdOut | Log | StdOut | Log | StdOut | Log |
| Rm | StdOut | Log | StdOut | Log | StdOut | Log | StdOut | Log | StdOut | Log |
| Mv | StdOut | Log | StdOut | Log | StdOut | Log | StdOut | Log | StdOut | Log |
| ReserveSpace | StdOut | Log | StdOut | Log | StdOut | Log | StdOut | Log | StdOut | Log |
| StatusOfReserveSpaceRequest | StdOut | Log | StdOut | Log | StdOut | Log | StdOut | Log | StdOut | Log |
| ReleaseSpace | StdOut | Log | StdOut | Log | StdOut | Log | StdOut | Log | StdOut | Log |
| GetSpaceTokens | StdOut | Log | StdOut | Log | StdOut | Log | StdOut | Log | StdOut | Log |
| GetSpaceMetaData | StdOut | Log | StdOut | Log | StdOut | Log | StdOut | Log | StdOut | Log |
| ExtendFileLifeTime | StdOut | Log | StdOut | Log | StdOut | Log | StdOut | Log | StdOut | Log |

# Tests executed

**Availability**

Summary of S2 SRM v2.2 availability test -
Monday 5 March 2007 03:04pm CET

| CERN CASTOR | FNAL DCACHE | CERN DPM | LBNL DRM | STORM |
|---|---|---|---|---|
| UP | UP | UP | UP | UP |

**Interoperability/ Cross Copy**

Summary of S2 SRM v2.2 cross test - Monday 5 March 2007 08:15pm CET

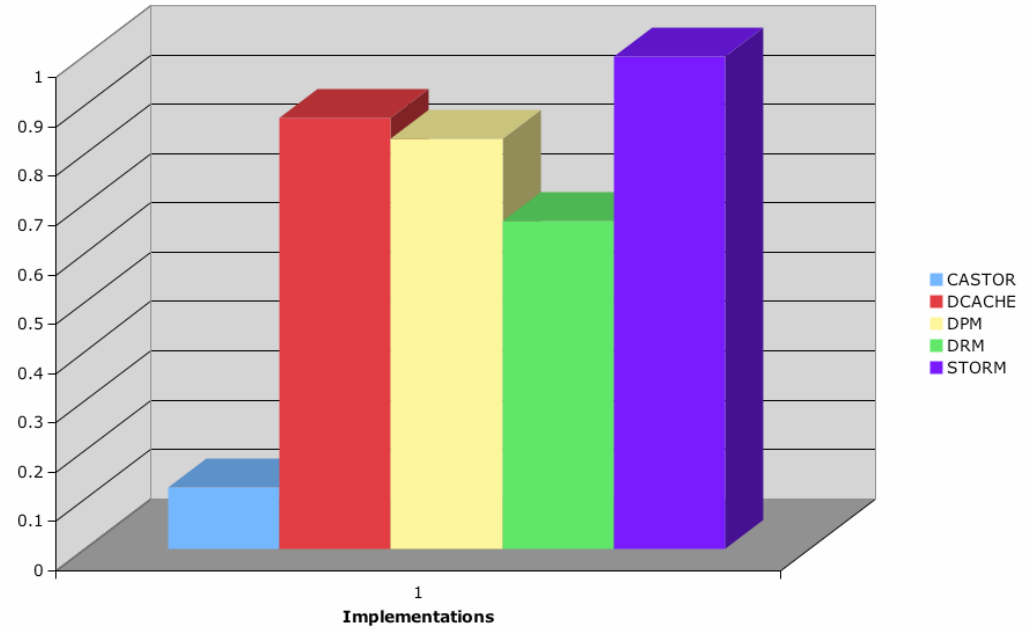| SRM function | CERN CASTOR | FNAL DCACHE | CERN DPM | LBNL DRM | STORM |
|---|---|---|---|---|---|
| **Copy Tests in PUSH mode** | | | | | |
| CopyToCERNCASTOR | StdOut Log | StdOut Log | StdOut Log | StdOut Log | StdOut Log |
| CopyToFNALDCACHE | StdOut | StdOut Log | StdOut Log | StdOut Log | StdOut Log |
| CopyToCERNDPM | StdOut | StdOut Log | StdOut Log | StdOut Log | StdOut Log |
| CopyToLBNLDRM | StdOut | StdOut Log | StdOut Log | StdOut Log | StdOut Log |
| CopyToSTORM | StdOut | StdOut Log | StdOut Log | StdOut Log | StdOut Log |
| **Copy Tests in PULL mode** | | | | | |
| CopyFromCERNCASTOR | StdOut | StdOut Log | StdOut Log | StdOut Log | StdOut Log |
| CopyFromFNALDCACHE | StdOut Log | StdOut Log | StdOut Log | StdOut Log | StdOut Log |
| CopyFromCERNDPM | StdOut Log | StdOut Log | StdOut Log | StdOut Log | StdOut Log |
| CopyFromLBNLDRM | StdOut Log | StdOut Log | StdOut Log | StdOut Log | StdOut Log |
| CopyFromSTORM | StdOut Log | StdOut Log | StdOut Log | StdOut Log | StdOut Log |

**UseCase**

Summary of S2 SRM v2.2 use-case test - Monday 5 March 2007 05:27pm CET

| SRM test | CERN CASTOR | FNAL DCACHE | CERN DPM | LBNL DRM | STORM |
|---|---|---|---|---|---|
| ExtendFileLifeTime | StdOut Log | StdOut Log | StdOut Log | StdOut Log | StdOut Log |
| FileNames01 | StdOut Log | StdOut Log | StdOut Log | StdOut Log | StdOut Log |
| GetRemoved01 | StdOut Log | StdOut Log | StdOut Log | StdOut Log | StdOut Log |
| GetStatusPartialEx | StdOut Log | StdOut Log | StdOut Log | StdOut Log | StdOut Log |
| GetStatusPartialNe | StdOut Log | StdOut Log | StdOut Log | StdOut Log | StdOut Log |
| LsDirCountOffset | StdOut Log | StdOut Log | StdOut Log | StdOut Log | StdOut Log |
| LsDirDetail | StdOut Log | StdOut Log | StdOut Log | StdOut Log | StdOut Log |
| LsDirFull | StdOut Log | StdOut Log | StdOut Log | StdOut Log | StdOut Log |
| LsFullDetail | StdOut Log | StdOut Log | StdOut Log | StdOut Log | StdOut Log |
| LsNonExistent | StdOut Log | StdOut Log | StdOut Log | StdOut Log | StdOut Log |
| LsTopDir | StdOut Log | StdOut Log | StdOut Log | StdOut Log | StdOut Log |
| Mkdir00 | StdOut Log | StdOut Log | StdOut Log | StdOut Log | StdOut Log |
| MvBeingPut | StdOut Log | StdOut Log | StdOut Log | StdOut Log | StdOut Log |
| MvDirBeingPutInto | StdOut Log | StdOut Log | StdOut Log | StdOut Log | StdOut Log |
| MvDir | StdOut Log | StdOut Log | StdOut Log | StdOut Log | StdOut Log |
| MvIntoDir | StdOut Log | StdOut Log | StdOut Log | StdOut Log | StdOut Log |
| MvSameFile | StdOut Log | StdOut Log | StdOut Log | StdOut Log | StdOut Log |
| OverwritePin | StdOut Log | StdOut Log | StdOut Log | StdOut Log | StdOut Log |
| Pin01 | StdOut Log | StdOut Log | StdOut Log | StdOut Log | StdOut Log |
| Pin02 | StdOut Log | StdOut Log | StdOut Log | StdOut Log | StdOut Log |
| Pin03 | StdOut Log | StdOut Log | StdOut Log | StdOut Log | StdOut Log |
| PrepareToPutNEVER | StdOut Log | StdOut Log | StdOut Log | StdOut Log | StdOut Log |
| PutGet01 | StdOut Log | StdOut Log | StdOut Log | StdOut Log | StdOut Log |
| PutNearline | StdOut Log | StdOut Log | StdOut Log | StdOut Log | StdOut Log |
| PutNoOverwrite | StdOut Log | StdOut Log | StdOut Log | StdOut Log | StdOut Log |
| PutOverwrite | StdOut Log | StdOut Log | StdOut Log | StdOut Log | StdOut Log |
| PutRemoved01 | StdOut Log | StdOut Log | StdOut Log | StdOut Log | StdOut Log |
| PutRemoved02 | StdOut Log | StdOut Log | StdOut Log | StdOut Log | StdOut Log |

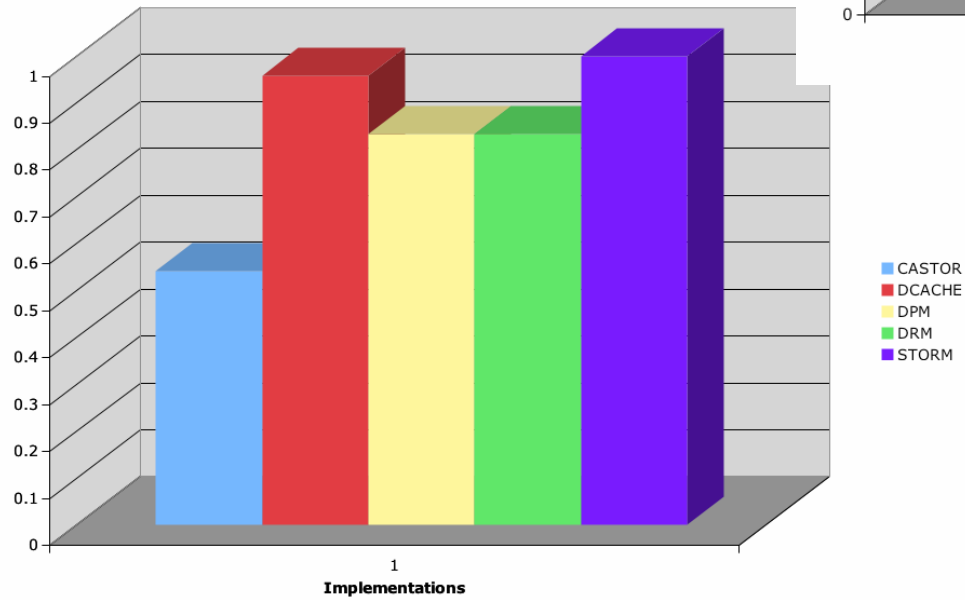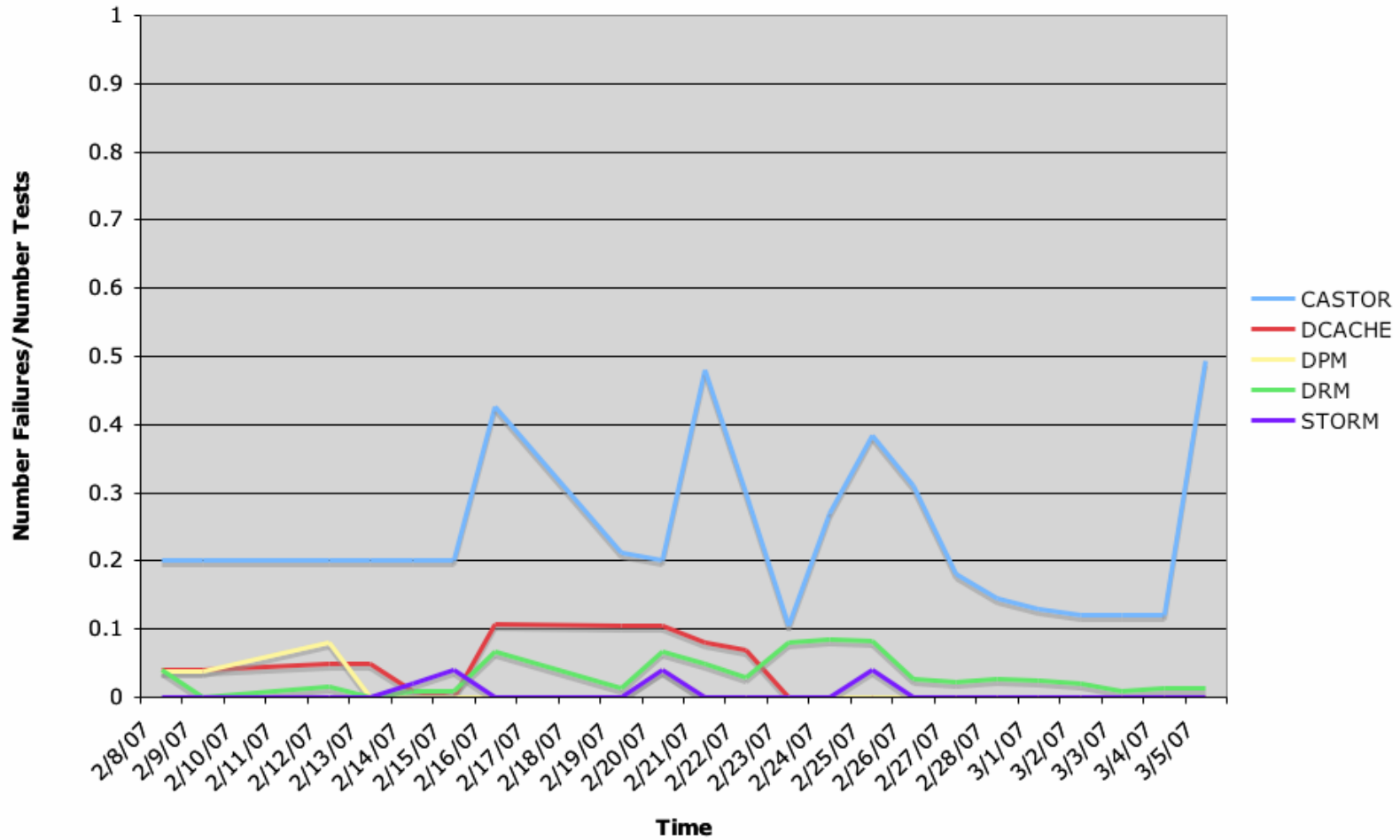# Test results



Availability [period 8/2/2007-5/3/2007]

CASTOR
DCACHE
DPM
DRM
STORM

Implementations

Ping [period 8/2/2007 - 5/3/2007]

CASTOR
DCACHE
DPM
DRM
STORM

Implementations

# Test results



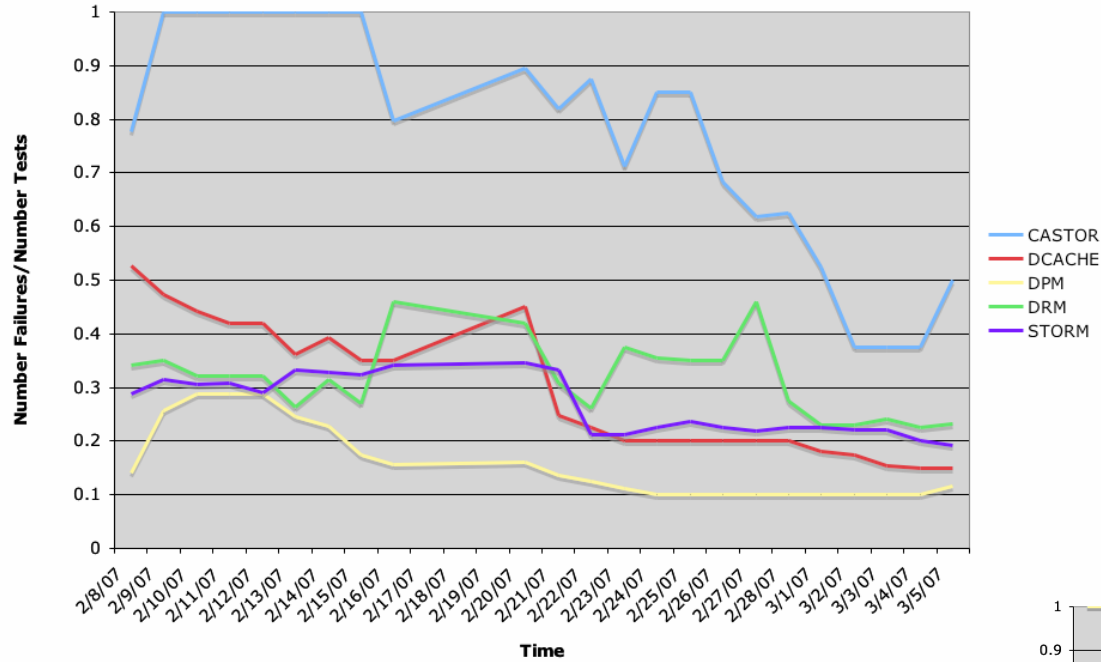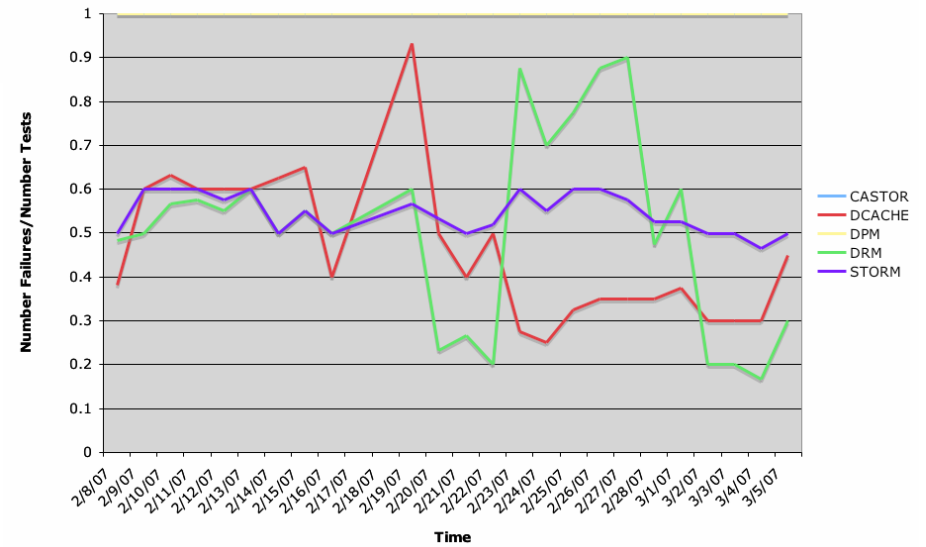Basic Tests [period 8/2/2007 - 5/3/2007]

# Test results

**Usecase Tests [period 8/2/2007 - 5/3/2007]**



**Interoperability Tests [period 2/8/2007 - 5/3/2007]**

# Tests executed: status of the implementations

- **DPM** version 1.6.3 available for production. SRM 2.2 features still not officially certified. Implementation stable. Usecase tests are OK. Copy not available but interoperability tests are OK. Few general issues to be solved.

- **DRM** and **StoRM**: Copy in PULL mode not available in StoRM. Stable implementations. Some Usecase tests still not passing and under investigation.

- **dCache**: Stable implementation. Copy is available and working with all implementations excluding CASTOR and DRM. Working on some Usecase tests.

- **CASTOR**: The implementation is still rather unstable. A lot of progress during the last 3 weeks. Main instability causes found by David Smith (race conditions, unintended mixing of threads and forks, etc.). Various problems found and fixed by S. De Witt and G. Lo Presti. Various use cases to be resolved.

# Issues identified

- **Few issues** still identified with the SRM 2.2 spec. Use Friday's Data Management phoneconf get agreement on proposed solutions.

- Most issues deal with order of operations and concurrency.

- Overwrite mode not supported by dCache at the moment.

- Get agreement for clean up procedures in case of aborted operations.

- Moving directories

- … And few others

# Status of SRM clients

- FTS
    - SRM client code has been unit-tested and integrated into FTS
    - Tested against DPM, dCache and StoRM. CASTOR and DRM test started.
    - Released to development testbed.
    - Experiments could do tests on the dedicated UI set up for this purpose.
    - New dCache endpoint setup at FNAL for stress test.

- GFAL/lcg-utils
    - New rpms available on test UI. No outstanding issues at the moment.
    - Still using old schema.

# GLUE Schema

- GLUE 1.3 available

  - http://glueschema.forge.cnaf.infn.it/Spec/V13

- Not everything originally proposed, only the important changes

- LDAP implementation done by Sergio Andreozzi. Available on the test UI.

- Information providers started by Laurence Field. Static Information Providers available on test UI for CASTOR, dCache, DPM, and STORM.

- Clients need to adapt to new schema.

# Grid Storage System Deployment (GSSD)

- **Working groups setup to work on specific issues:**
  - SRM v1 to v2 migration plan
  - Experiments input for Storage Classes, transfer rates, data flow patterns (input completed for LHCb and CMS, ATLAS coming)
  - Database entries conversion
  - Monitoring utilities
- SRM v1 to v2 plan
  - Some testing activity started with DPM and CASTOR. The sites that will participate in the testing activities and have committed to them are IN2P3, FZK, BNL, UK Tier-2s and RAL.
  - A draft report is being compiled
- Experiments input/Tier-1s input
  - LHCb input completed during last pre-GDB
  - Phone conf with CMS representatives. Very good progresses. We need to better refine the input received so far.
  - ATLAS will be next target.
  - Discussing with sites the implications of the input received.
- Monitoring utilities
  - A draft report has been compiled with the possibilities offered by DPM and dCache.
  - It will be circulated to the list and to the DPM/dCache developers for input/corrections.
  - M. Ciriello - INFN will proceed with a prototype monitoring tool that can be included in SAM/GridView. No further efforts will be requested to MSS/SRM developers.