SRM 2.2: status of the implementations and GSSD



19th March 2007

Flavia Donno



SRM 2.2 specifications

- Main issues with the SRM 2.2 specifications have been solved.
 - Last critical points discussed during the Data Management phone conference of the 9th of March 2007. Already included in test suite families.
 - Some implementations do not comply with the specifications because of the internal design of the back-end MSS.
 - SRM 2.2 clients developers are aware of the differences in the implementations. They will adapt the clients so that internal differences will not be exposed to end-users.
 - A list of "unspecified" behaviours is being compiled and will be published and presented to experiments, so to prevent possible problems derived by direct usage of the SRM interface (if any).
- Other non-critical issues postponed to SRM version 3.
- Documentation is publicly available:
 - https://twiki.cern.ch/twiki/bin/view/SRMDev



- 52 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
 - <u>Usecases</u>: 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.
 - <u>Stress</u>: Parallel tests for stressing the systems, multiple requests, concurrent colliding requests, space exhaustion, etc.
- 52 tests cron job running 5 times per day
- In parallel, manual tests from GFAL/lcg-utils,FTS, DPM test suite.



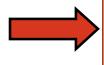
Testing Plan

Plan for 1Q of 2007 :

- Phase 1: From 16 Dec 2006 until end of January 2007:
 - Availability and Basic tests
 - Gollect 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.



Started or March 15, 2007

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

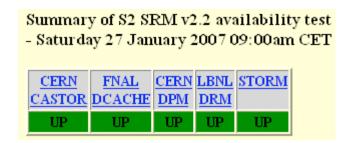


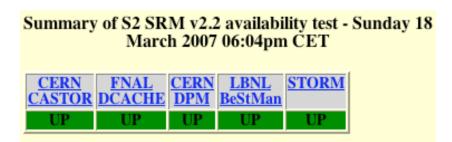
SFM function	CERN CASTOR	FRAL DCACHE	DPM DPM	LBNL DRM	STORM		
WLCG-MoU SEM v2.2 methods							
Ping	Billion Lang	Billion La p	Stillier Lay	Stillfur Lay	Sillion La		
Prepare To Put	MOrley	Miller Lay	Miller Lay	Sillio Lag	Hillion La		
Status Of Put Request	MOrley	Miller Lay	Miller Lay	Sillio Lag	Hillion La		
PutDone	MDw Lay	Miller Lay	Millor Lay	Stiller Lay	Hiller La		
Prepare To Get	MDw Lay	Miller Lay	Millor Lay	Stiller Lay	Hiller La		
Status Of Get Request	MOrley	Miller Lay	Miller Lay	Sillio Lag	Hillion La		
BringOnline	MDw Lay	Stiller Lay	Stiller Lay	Stiller Lay	Miller La		
Status Of Bring On line Request	SilOu Lag	Still of Lay	Stiller Lay	Stiller Lay	Miller La		
AbortRequest	Still of Lag	Stiller Lay	Millor Lay	Stiller Lay	Hiller La		
Abort Files	Still of Lag	Miller Lay	Millor Lay	Stiller Lay	Hiller La		
ReseaseFiles	NOW Lag	Miller Lay	Miller Lay	Sillio La p	Hillion La		
GetRequestSummary	MOrley	Miller Lay	Miller Lay	SHEET Lang	Hillion La		
Get Request Tokens	Million Lang	Stiller Lay	Miller Lay	Sid Clay Lang	Billion La		
GetTransferProtocols	MOrley	Miller Lay	Miller Lay	Sillio La p	Hillion La		
Li	MOrley	Miller Lay	Miller Lay	Miller Lan	Hillion La		
Modir	MOrley	Miller Lay	Miller Lay	Sillio La p	Million La		
Rmdir	MOrley	Miller Lay	Miller Lay	Sillio La p	Million La		
Rin	MOrley	Miller Lay	Miller Lay	Sillio La p	Hillion La		
Mv	MON Lag	Miller Lay	Miller Lay	Sillio La p	Hillion La		
ReserveSpace	MOrley	Miller Lay	Miller Lay	Miller Lay	Million La		
Status Of ReserveSpaceRequest	Miller	Miller Lay	Miller Lay	Silliu Lag	Million La		
Releaselipace	MON Lag	Stiller Lag	Still or Lay	Still or Lay	Million La		
GetSpaceTokens	Stiller Lay	Stiller Lag	Still or Lay	Still or Lay	Million La		
GetäpaceMetaData	Miller Lan	Stiller Lag	Still or Lay	Stiller Lay	Still Dat La		
Extend File Life Time	MOnt Lag	Stilling Lang	Still or Lay	Stiller Lay	Still Dat La		
WLC G-MoU SEM v2.2 methods needed by end of 2007							
Сору	Stilling	Still or Lay	Still or Lag	Billiot Lag	Millur La		
Status Of CopyRequest	SHOw	Stiller Lay	Silicot La g	Stiller Lay	Miller La		
ChangeSpaceForFiles	SHOw	Salther Lang	Stilled Lay	Miller Lan	SalCher La		
Status Of ChangeSpaceForFiles Request		4.400	A-100 - 1	B-1200 - 2			

Summary of S2 SRM v2.2 basic test - Sunday 18 March 2007 08:13								
SRM function	CERN CASTOR	FNAL DCACHE	CERN DPM	LBNL BeStMan	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			
WLCG MoU SRM v2.2 methods needed by end of 2007								
Сору	StdOut Log	StdOut Log	StdOut Log		StdOut Log			
StatusOfCopyRequest	StdOut Log	StdOut Log	StdOut Log	StdOut Log	StdOut Log			
ChangeSpaceForFiles	StdOut Log	StdOut Log	StdOut Log	StdOut Log	StdOut Log			
StatusOfChangeSpaceForFilesRequest	StdOut Log	StdOut Log	StdOut Log	StdOut Log	StdOut Log			



Availability





Interoperability/ Cross Copy

Summary of S2 SRM v2.2 cross test - Saturday 27 January 2007 09:00am CET

SRM function	CERN CASTOR	FNAL DCACHE	CERN DPM	LBNL DRM	STORM		
Copy Tests in PUSH mode							
CopyToFNALDCACHE	StdOut Log	StdOut Log	StdOut Log	StdOut Log	StdOut Log		
CopyToCERNDPM	StdOut Log	StdOut Log	StdOut Log	StdOut Log	StdOut Log		
CopyToLBNLDRM	StdOut Log	StdOut Log	StdOut Log	StdOut Log	StdOut Log		
CopyToSTORM	StdOut Log	StdOut Log	StdOut Log	StdOut Log	StdOut Log		
Copy Tests in PULL mode							
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		

Summary of S2 SRM v2.2 cross test - Monday 19 March 2007 07:00am CET

In these tests the srmCopy function is exercised. This function should be implemented by all available Storage System by the end of the 3Q of 2007. dCache is required to implement this function as of now. Therefore, it is OK to have red columns for all SRM endpoints except for dCache. However, it is not OK to have red rows since this means that a file cannot be copied between SRMs with simple get and put operations.

SRM function	CERN CASTOR not needed	FNAL DCACHE	CERN DPM not needed	LBNL BeStMan	STORM		
	Copy Tests	s in PUSH n	node				
CopyToCERNCASTOR	StdOut Log	StdOut Log	StdOut Log	StdOut Log	StdOut Log		
CopyToFNALDCACHE	StdOut Log	StdOut Log	StdOut Log	StdOut Log	StdOut Log		
CopyToCERNDPM	StdOut Log	StdOut Log	StdOut Log	StdOut Log	StdOut Lo		
CopyToLBNLDRM	StdOut Log	StdOut Log	StdOut Log	StdOut Log	StdOut Lo		
CopyToSTORM	StdOut Log	StdOut Log	StdOut Log	StdOut Log	StdOut Log		
Copy Tests in PULL mode							
CopyFromCERNCASTOR	StdOut Log	StdOut Log	StdOut Log	StdOut Log	StdOut Lo		
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		

StoRM No Copy In pull mode

Use Cases

Summary of S2 SRM v2.2 use-case test - Saturday 27 January 2007 09:00am CET

SRM test	CERN CASTOR	FNAL DCACHE	CERN DPM	LBNL DRM	STORM
GetRemoved01	StdOut Log	StdOut Log	StdOut Log	StdOut Log	StdOut Lo
LsFullDetail	StdOut Log	StdOut Log	StdOut Log	StdOut Log	StdOut Lo
LsNonExistent	StdOut Log	StdOut Log	StdOut Log	StdOut Log	StdOut Lo
Pin01	StdOut Log	StdOut Log	StdOut Log	StdOut Log	StdOut Lo
Pin02	StdOut Log	StdOut Log	StdOut Log	StdOut Log	StdOut Lo
Pin03	StdOut Log	StdOut Log	StdOut Log	StdOut Log	StdOut Lo
Pin04	StdOut Log	StdOut Log	StdOut Log	StdOut Log	StdOut Lo
Prepare ToPutNEVER	<u>StdOut</u>	StdOut Log	StdOut Log	StdOut Log	StdOut Lo
PutGet01	<u>StdOut</u>	StdOut Log	StdOut Log	StdOut Log	StdOut Lo
PutNearline	<u>StdOut</u>	StdOut Log	StdOut Log	StdOut Log	StdOut Lo
PutNoOverwrite	StdOut Log	StdOut Log	StdOut Log	StdOut Log	StdOut Lo
PutOverwrite	StdOut Log	StdOut Log	StdOut Log	StdOut Log	StdOut Lo
PutRemoved01	StdOut Log	StdOut Log	StdOut Log	StdOut Log	StdOut Lo
ReleaseFiles	<u>StdOut</u>	StdOut Log	StdOut Log	StdOut Log	StdOut Lo
ReserveSpace	<u>StdOut</u>	StdOut Log	StdOut Log	StdOut Log	StdOut Lo
Rmdir01	StdOut Log	StdOut Log	StdOut Log	StdOut Log	StdOut Lo
Space00	StdOut Log	StdOut Log	StdOut Log	StdOut Log	StdOut Lo
Space01	StdOut Log	StdOut Log	StdOut Log	StdOut Log	StdOut Lo
Space02	<u>StdOut</u>	<u>StdOut</u>	StdOut Log	StdOut Log	StdOut Lo
TokenSensCase	StdOut Log	StdOut Log	StdOut Log	StdOut Log	StdOut Lo

Summary of S2 SRM v2.2 use-case test - Sunday 18 March 2007 08:36pm CET

PutOverwriteTransf	SRM test	LBNL BeStMan	SRM test	STORM
FileNames01 GetRemoved01 GetStatusPartialEx GetStatusPartialEx Sidont log	ExtendFileLifeTime	StdOut Lo	tendFileLifeTime	StdOut Log
FileNames01 GetRemoved01 GetStatusPartialEx GetStatusPartialNe LsDirCountOffset	FileNames00	StdOut Lo	eNames00	StdOut Log
GetStatusPartialEX GetStatusPartialPX GetStatusPartialPe LsDirCountOffset LsDirCountOffset LsDirDetail LsDirDetail LsNonExistent LsNonExistent LsNonExistent LsNonExistent LsNonExistent Stifon Los St	FileNames01	StdOut Lo	eNames01	StdOut Log
GetStatusPartialNe LsDirCountOffset LsDirCountOffset LsDirDetail LsDirDetail LsDirDetail LsPullDetail LsPullDetail LsPullDetail LsPullDetail LsPullDetail Stateman Stateman Stateman Stateman Stateman Stateman Lsp. Stateman Stateman Lsp. Stateman Stateman Lsp. Stateman	GetRemoved01	StdOut Lo	tRemoved01	StdOut Log
LabirCountOffset	GetStatusPartialEx	StdOut Lo	tStatusPartialEx	StdOut Log
LSDirDetail LSDirFull LSDirFull Sulomann Suloman	GetStatusPartialNe	StdOut Lo	tStatusPartialNe	StdOut Log
LaDirFull	LsDirCountOffset	StdOut Lo	DirCountOffset	StdOut Log
Lamber L	LsDirDetail	StdOut Lo	DirDetail	StdOut Log
L.NonExistent	LsDirFull	StdOut Lo	DirFull	StdOut Log
LaTopDir	LsFullDetail	StdOut Lo	FullDetail	StdOut Log
Mkdir00 MvBeingPut MvDirBeingPutInto1 MvDirBeingPutInto MvDir StiOut Los	LsNonExistent	StdOut Lo	NonExistent	StdOut Log
MyBeingPut MyDirBeingPutInto1 MyDirBeingPutInto MyDirBeingPutInto MyDirBeingPutInto MyDir MyIntoDir MyInto	LsTopDir	StdOut Lo	ГорDir	StdOut Log
MyDirBeingPutInto MyDirBeingPutInto MyDir MyDir MyIntoDir MyIntoDir MyIntoDir MySameFile StdOm Lon St	Mkdir00	StdOut Lo	dir00	StdOut Los
MyDir BeingPutInto MyDir MyDir MyIntoDir MySameFile StdOm Log	MvBeingPut	StdOut Lo	BeingPut	StdOut Los
MyDir MyDir MyIntoDir MySameFile OverwritePin StdOm Lon StdO	MvDirBeingPutInto1	StdOut Lo	DirBeingPutInto1	StdOut Log
MyIntoDir MySameFile OverwritePin Pin01 StdOm Log	MvDirBeingPutInto	StdOut Lo	DirBeingPutInto	StdOut Log
MySameFile OverwritePin Pin01 StiCom Lon Sti	MvDir	StdOut Lo	Dir	StdOut Los
MySameFile OverwritePin Pin01 SitiOnt Lon	MvIntoDir	StdOut Lo	IntoDir	StdOut Log
PinO1 PinO2 SIGORE DE SIGO	MvSameFile	StdOut Lo	SameFile	StdOut Log
PinO2 SIGORI LOS SIGORII LOS SIGORI LOS SIG	OverwritePin	StdOut Lo	erwritePin	StdOut Log
Pino3 SkiOut Los SkiO	Pin01	StdOut Lo	01	StdOut Log
PrepareToPutNEVER PutGet01 Suloming Stateming Suloming Su	Pin02	StdOut Lo	02	StdOut Log
PutGet01 PutGet0File1 PutGet0File StdOm1 on StdOm1 o	Pin03	StdOut Lo	03	StdOut Log
PutGet0File1 PutGet0File PutNearline PutNoOverwrite PutNoOverwrite PutNoOverwrite PutNoOverwrite PutNoOverwrite PutNoOverwrite PutNoOverwrite StdOm Los StdO	PrepareToPutNEVER	StdOut Lo	pareToPutNEVER	StdOut Log
PutGet0File PutNoOverwrite PutNoOverwrite PutNoOverwrite PutNoOverwrite PutNoOverwrite PutNoOverwrite PutNoOverwrite PutNoOverwrite PutNoOverwrite StiCout loss StiCout los StiC	PutGet01	StdOut Lo	tGet01	StdOut Log
PutNearline PutNoOverwrite PutNoOverwrite PutNoOverwrite PutNoOverwrite PutNoOverwrite PutNoOverwrite PutNoOverwrite PutNoOverwrite PutOverwrite StdOutLop S	PutGet0File1	StdOut Lo	tGet0File1	StdOut Log
PutNoOverwrite PutNoOverwrite PutNoOverwrite PutNoOverwrite PutNoOverwrite PutOverwrite StdOutLos	PutGet0File	StdOut Lo	tGet0File	StdOut Los
PutNoOverwriteTransf PutOverwrite PutOverwrite StdOutLos NtdOutLos StdOutLos StdOutLos NtdOutLos	PutNearline	StdOut Lo	tNearline	StdOut Log
PutOverwrite StdOut Log	PutNoOverwrite	StdOut Lo	tNoOverwrite	StdOut Log
PutOverwriteTransf PutRemoved01 StiCourLos S	PutNoOverwriteTransf	StdOut Lo	tNoOverwriteTransf	StdOut Log
PutRemoved01 StdOut Los StdOut Lo	PutOverwrite	StdOut Lo.	tOverwrite	StdOut Log
PutRemoved02 StdOm1 or StdOm1 to Std	PutOverwriteTransf	StdOut Lo	tOverwriteTransf	StdOut Log
PutRemoved03 SidOm Lor Sid	PutRemoved01	StdOut Lo	tRemoved01	StdOut Log
PutStatusPartialEx StdOut Log Std	PutRemoved02	StdOut Lo	tRemoved02	StdOut Log
PutStatusPartialNe StdOut_Log StdOut_Log StdOut_Log StdOut_Log	PutRemoved03	StdOut Lo	tRemoved03	StdOut Log
	PutStatusPartialEx	StdOut Lo	tStatusPartialEx	StdOut Log
	PutStatusPartialNe	StdOut Lo	tStatusPartialNe	StdOut Log
KeleaseFiles StdOut_Log StdOut_Log StdOut_Log StdOut_Log StdOut_Log	ReleaseFiles	StdOut Lo	leaseFiles	StdOut Log
ReserveSpace <u>StdOut_Log</u> <u>StdOut_Log</u> <u>StdOut_Log</u> <u>StdOut_Log</u> <u>StdOut_Log</u> <u>StdOut_Log</u>		StdOut Lo		StdOut Log
Rmdir01 StdOut Log StdOut Log StdOut Log StdOut Log StdOut Log		StdOut Lo		StdOut Los
		StdOut Lo		StdOut Log
RmdirBeingPutIntoTransf StdOut_Log StdOut_Log StdOut_Log StdOut_Log StdOut_Log		StdOut Lo		StdOut Los
Space00 StdOut Log StdOut Log StdOut Log StdOut Log StdOut Log	Space00	StdOut Lo	ace00	StdOut Los
Space01 StdOut Log StdOut Log StdOut Log StdOut Log StdOut Log	1	StdOut Lo		StdOut Log
Space02 StdOut Log StdOut Log StdOut Log StdOut Log StdOut Log	Space02	StdOut Lo	ace02	StdOut Log
Space03 StdOut_Log StdOut_Log StdOut_Log StdOut_Log StdOut_L	Space03	StdOut Lo	ace03	StdOut Log
TokenSensCase StdOutLog StdOutLog StdOutLog StdOutLog	ГokenSensCase	StdOut Lo	kenSensCase	StdOut Los





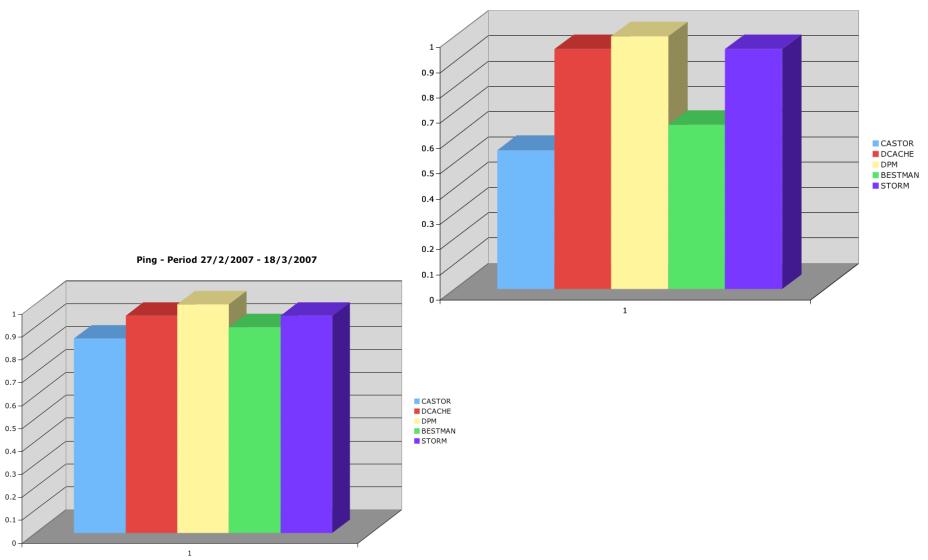
Critical Use Case Tests

- Filenames00: It checks that filenames that are 255 characters are supported. This is a requirement that comes from ATLAS. This feature is available at the moment in DPM, StoRM and soon in CASTOR.
- Put[No]Overwrite: It checks that the overwrite option in the Put operation works correctly. At the moment 2 implementations do not conform to the SRM spec:dCache and DPM for various valid reasons.
- <u>SURL existence/PutGetOFile</u>: dCache assumes that a SURL/file exists only after the transfer has been initiated. Others make the SURL available after a PrepareToPut operation. This should only partially affect clients. Experiments will be warned about this behaviour in case they use the SRM interface directly.
- Other minor issues:
 - <u>Get/PutStatusPartialEx/Ne</u>: It performs get operations on a set of existing and non-existing files. It expects SRM_PARTIAL_SUCCESS to be returned. BeStMan returns SRM_SUCCESS or SRM_FAILURE.
 - LsFullDetail: It checks that some details about the file are returned (size, file locality, permission, etc.) DPM fails this test since it does not yet return the file locality.
 - MvIntoDir: It moves a file into a new directory without specifying the destination filename. This operation is not allowed at the moment by DPM.
 - PinO1: It checks that a file handle is made unavailable after a put cycle is finished.
 dCache does not enforce this.
 - RmdirBeingPutInto: It checks what happens to the file if the directory containing the files is removed while the file is being created. All implementations behave correctly. DPM does not warn the user that the file is in use.

Test results



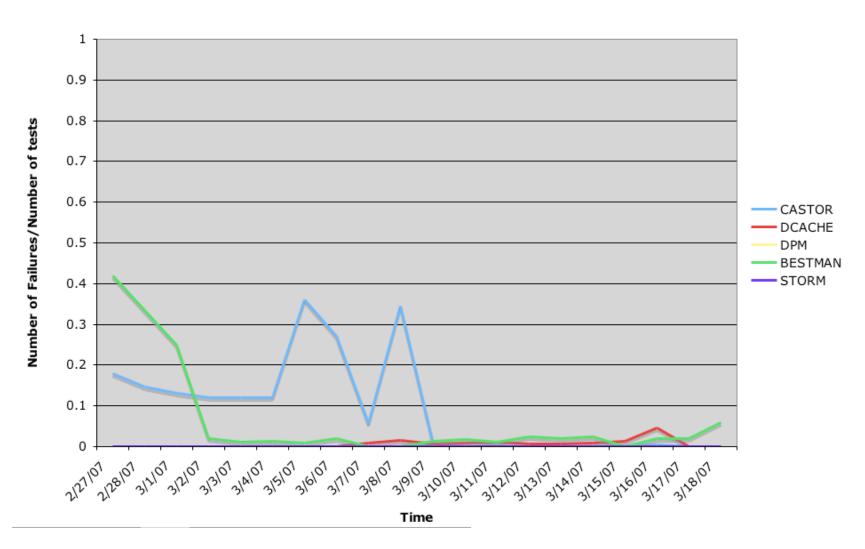
Availability - Period 27/2/2007 - 18/3/2007





Test results

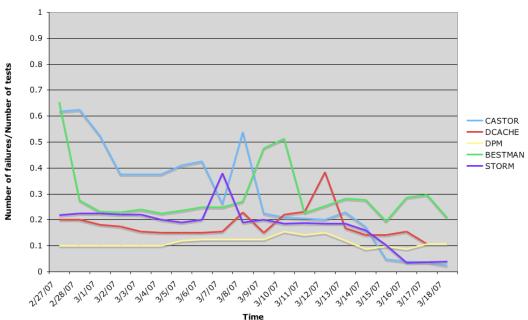
Basic Tests - Period 27/2/2007 - 18/3/2007



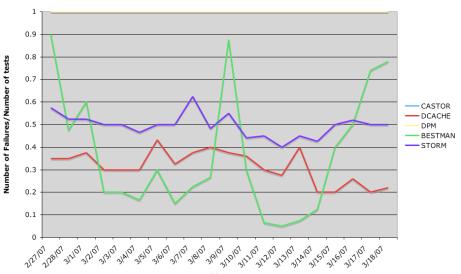
Test results



Use Cases Tests - Period 27/2/2007 - 18/3/2007



Interoperability tests - Period 27/2/2007 - 18/3/2007





Status of the implementations from SRM 2.2 perspective

- DPM version 1.6.3 available in production. SRM 2.2 features still not officially certified. Implementation stable. Use-case tests are OK. Copy not available but interoperability tests are OK. Few general issues to be solved.
- BestMan and StoRM: Copy in PULL mode not available in StoRM. Stable implementations. Recently some instability observed with BestMan. Some use-case tests still not passing and under investigation.
- dCache: Stable implementation. Copy is available and working with all implementations excluding DRM. Working on some use-case tests.
- CASTOR: The implementation has improved remarkably. A lot of progress during the last 3 weeks. Main instability causes found and fixed. Use-case tests OK. Copy not yet implemented but interoperability tests OK.



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 and being officially certified. No outstanding issues at the moment. ATLAS has started some tests.
- 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, STORM and BeStMan (all available endpoints).
- The new schema is compatible with the old one. Clients can adapt to new schema to exercise new features.





- 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 migration plan
 - Some testing activity started with DPM, CASTOR and dCache. The sites that will
 participate in the testing activities and have committed are FNAL, DESY, IN2P3,
 FZK, BNL, GRIF/LAL, UK Tier-2s, and RAL
 - A draft report has been published (https://twiki.cern.ch/twiki/bin/view/LCG/GSSDSubGroups)
- Experiments input/Tier-1s input
 - LHCb input completed during last pre-GDB
 - Phone conf with CMS representatives. Very good progress. 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. Coordination with other monitoring efforts for Storage Services.