

# The standards gap



Oliver Keeble

On behalf of the DPM team

*DPM Workshop, LAL*

- DPM comes from a time when there were fewer standard solutions for what we do
  - You can find “1990” copyright statements in the codebase
- A mature set of applications grew around it
- Then the standardisation effort arrived
- This means there are functionality gaps in the standards coverage

# What to do?

- Obsolete the functionality
  - Eg rfio
- Improve the implementation
  - E.g. gridftp redirection
- Find a new standard
  - E.g. DAV quotas
- Extend the standard implementation
  - E.g. adding 3<sup>rd</sup> party copy to HTTP
- Retain the non-standard solution
  - E.g. DPM management utils

- Can be classified in different ways
  - By orientation: End-user / administrator
  - By daemon/interface: dpns/dpm/srm
- The end-user oriented stuff should be standardised if possible
  - Existing APIs (eg dpns API) can be adapted to speak HTTP
- Admin-oriented less critical
  - But removal of non-standard components (rfio...) and use of standard utils (Nagios) helps here

- Take an up-to-date DPM with HTTP
- Turn off dpns
  - What happens?
- Turn off rfio
  - What happens?
- Turn off SRM
  - What happens?
- Turn off dpm
  - What happens?

# Table of used SRM functions from TEG (for disk systems)

	<i>Is this feature used by ...</i>				Tier	SRM function <sup>2</sup>
	<i>Atlas</i>	<i>CMS</i>	<i>LHCb</i>	<i>FTS only</i>		
<b>Transfer Management</b>						
Upload / download a complete file	Yes	Yes	Yes	No	All	srmPrepareToPut/Get//Put/GetDone
Manage transfers.	Yes	Yes	Yes	Yes	T1/2	srmAbort/Suspend/ResumeRequest
Balance over multiple transfer servers.	Yes	Yes	Yes	Yes	T1/2	srmPrepareToGet <sup>3</sup>
Manage third-party copy	Yes	Yes	Yes	Yes <sup>5</sup>	T1/2	
Negotiating a transport protocol	No	No	No			srmGetTransferProtocols
<b>Namespace Interaction</b>						
Querying information about a file (stat)	No	No	Yes <sup>1</sup>	Yes <sup>6</sup>	T1/2	srmLs
Upload data integrity information (chksums)	No	No	No	No	T1/2	
Check integrity information	Yes	Yes	Yes	Yes		srmLs
Creating/Deleting data and directories	Yes	Yes	Yes <sup>1</sup>	Yes <sup>1</sup>	All	srmMkdir srmRmdir srmRm srmMv
Changing ownership, perms and ACLs	No	No	No	No	-	srmSet/Check/GetPermission
<b>Storage Capacity Management</b>						
Query used capacity (like df)	Yes	No	Yes	No	T1/2	srmGetSpaceMetaData/Tokens
Create/remove reservations; assign characteristics	No	No	No	No	-	srmReserve/Update/ReleaseSpace
Targeting uploads to specific reservation	Yes	Yes	Yes	No	T1/2	srmPrepareToPut
Moving files between reservations	No	No	Yes	No	T1/2	srmChangeSpaceForFiles
<b>Server Identification</b>						
Test service availability and information	Yes	Yes	No	No		srmPing

[Slide stolen from Wahid]

- Get/set checksums
  - Can already get checksums
  - Could extend DAV implementation to write them
- Write to spacetoken
  - This is possible
    - *<...>?spacetoken=reservation*
- Query usage
  - Would need some implementation via namespace
  - RFC2518 “Quota and size properties for DAV”

- Access
  - HTTP, NFS
- NS Management
  - HTTP, NFS
- Replication (internal)
  - ??
- GridFTP (internal, w/o redirection)



- Some extras on top of HTTP have been necessary
  - Multi-stream transfers
    - *For efficient WAN transfers*
  - Delegation
    - *For 3<sup>rd</sup> party copy*
  - Advanced APIs
    - *For example, providing a more posix-like interface*
      - This is the application layer
      - Vanilla HTTP will still work

- SRM
  - Reserving and managing space tokens
    - *Actions available to VO*
  - The reality is that these are typically statically created by admins for VOs
- DPNS
  - ACL management
    - *RFC 3744 describes how this could be done with DAV*
    - *Should this be considered “user-facing”?*
  - User/Group mapping management
- DPM
  - Pool management
    - *Draining (rfio)*
  - File replication

- The new standard interfaces provide a rich functional set
  - But there are still gaps
- The gaps are not critical, and can be managed through
  - Classification
  - Adoption of other standards
  - Extensions
- The “SRM gap” is being actively investigated