

# DPM and SRM-less operation

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# DPM status

- Infosys numbers
- 73PBs in total, provided to Grid computing
- ~160 instances. We lost a tail of tiny sites and got also new deployments
- The overall storage capacity continued to grow
- Several sites larger than 2 PB, 20 sites larger than 1PB. The largest so far is 6.5PB
- SRM-less operation is one of the themes of the work of this year. We are about to release DPM 1.9 **which will make SRM optional**

# SRM-less operation

- In the context of SRM-less operation, particular emphasis has been given to space reporting
- The other question is about adoption, or incremental deployment
  - When can we say that a DPM site is ready for SRM-less operation ?
  - What shall the sysadmins do to claim that ?

# SRM-less operation

- The last release of DPM (1.9.0) addresses the SRM-less space reporting in the context of making optional the legacy DPM software stack
- DPM 1.9 has a new core Disk Operations Management Engine (DOME) which can substitute all the legacy components or coexist with them
- DPM 1.9 can be setup in two flavors (and switched from one to the other)
  - "1.9 legacy flavour" (dormant dome) - gives used space reporting, does not permit disabling SRM
  - "1.9 dome flavour" - gives used/free reporting, permits and does not require SRM-less operation
- DPM 1.9 is totally backward compatible and does NOT force sysadmins to drop stuff. This will be their decision, when they think it's time to
- **Space reporting will have its full potential when the new engine is used (dome flavour)**

# SRM-less operation

- Among the new features, DPM 1.9 gives:
  - Quota functionalities
  - A convenient shell + python interface for sysadmins
  - Space reporting on WebDAV following the guidelines of the RFCs mentioned in the HTTP task force
- We will discuss these items in detail at the DPM workshop
  - <https://indico.cern.ch/event/559673/>
- We expect to see the first sites adopting it in the SRM-less flavor next year

# Spacetokens -> Quotatokens

- A good old spacetoken now can be associated to a directory path
  - Writes into that path will put files into the pool pointed to by the spacetoken
  - Writes into that path will use the spacetoken size as a quota
- Hence, a quotatoken is the evolution of a spacetoken, which can now be associated to a directory path
- This kept the backwards compatibility, no need to re-enter the same config information, the old spacetokens remain and get promoted
- To migrate, just associate spacetokens to directories, e.g.
  - ATLASCRATCH(pool1, 100TB)  
→/dpm/<site>/home/atlas/atlasscratch
  - And from this point on all the writes to /atlasscratch will populate pool1, pointed to by ATLASCRATCH with a quota of 100TB

# Directory-based space accounting

- The 'size' field of a dir is the sum of all the items it contains (subdirs **\*within the same quotatoken\*** included)
- Used/free space are reported consistently, via either HTTP or SRM, for puts and deletes performed through any frontend ( SRM, DAV, GSIFTP, XROOTD)
- Non-SRM puts to a part of the namespace associated with a quotatoken will be equivalent to an SRM put to ***that path + that token.***

# Querying a DPM for used/free space: dmlite-shell

- The command `quotatokenget <dir>` gives quota information on a **directory**, including its used/free space, e.g.:

```
$quotatokenget /dpm/cern.ch/home/dteam
***** The Quota Token associated to your folder *****
Token Name:      TEST_TOKEN
Token Path:      /dpm/cern.ch/home/dteam
Token Pool:      pool01
Token Total Space: 93.13GB
Pool Total Space: 186.86GB
Path Used Space:  22.98GB
Path Free Space:  70.15GB
Groups:
  ID:    0      Name: root
  ID:   104     Name: dteam
```



# Querying a DPM for used/free space: WebDAV

- Using curl or Davix we can query for the properties of a **directory**.
- **The properties to query are the standard ones (RFC4331)**

```
$davix-http -P grid -X PROPFIND --header 'Depth: 0' --header 'Content-Type:
text/xml; charset=UTF-8' "https://domehead-trunk.cern.ch/dpm/cern.ch/home/dteam"
--data '<?xml version="1.0" ?><D:propfind xmlns:D="DAV:"><D:prop><D:quota-used-
bytes/><D:quota-available-bytes/></D:prop></D:propfind>'
```

```
<?xml version="1.0" encoding="utf-8"?>
<D:multistatus xmlns:D="DAV:" xmlns:ns0="DAV:">
<D:response xmlns:lp1="DAV:" xmlns:lp2="http://apache.org/dav/props/"
xmlns:lp3="LCGDM:">
<D:href>/dpm/cern.ch/home/dteam/</D:href>
<D:propstat>
<D:prop>
<b><lp1:quota-used-bytes>24677181319</lp1:quota-used-bytes>
<lp1:quota-available-bytes>75322818681</lp1:quota-available-bytes>
</D:prop>
<D:status>HTTP/1.1 200 OK</D:status>
</D:propstat>
</D:response>
</D:multistatus>
```