

Update on the Dynamic Federation

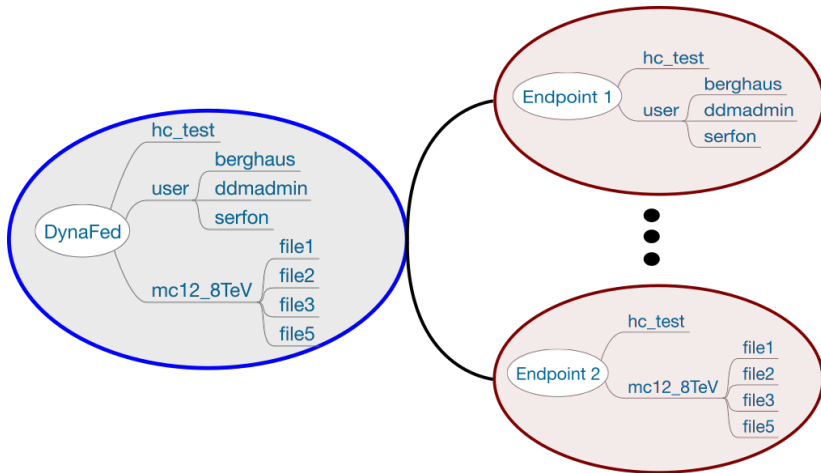
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Technical Coordination Board

Review: What does DynaFed do?

- Aggregates storage and metadata farms on-the-fly
- Exposes standard protocols that support redirections and WAN data access
- Creates (the illusion of) a unique namespace from a set of distinct storage or metadata endpoints
- read and write support

DynaFed Namespace



ATLAS Projects with DynaFed

- UVic in Victoria: Rolf Seuster & Marcus Ebert
- UVic at CERN: Frank Berghaus
- At RAL: Alastair Dewhurst
- Italy in Frascati, Napoli and Roma: Alessandro De Salvo

With lots of help from ADC (Ale and Ivan) and DDM (Mario and Cedric)!

Status of DynaFed at CERN

- Endpoint:
`https://dynafed-dev.cern.ch/atlas/scratchdisk/`
- Panda Queue: CERN-EXTENSION_MCORE
- DDM Endpoint: CERN-EXTENSION_SCRATCHDISK
- Setup:
 - DynaFed running on CC7 on CERN OpenStack
 - Linked to CephS3 at CERN
- Authentication:
 - Using X.509 with VOMS extensions
 - Federation forwards signed URLs to authenticated users (signatures last 1h)
- Jobs write to DynaFed
- Rucio replication has errors with protocol mismatches

Status of DynaFed at RAL

- Endpoint: <https://dynafed.stfc.ac.uk/gridpp/>
- DDM Endpoint: RAL-AZURE_DATADISK,
RAL-AZURE_SCRATCHDISK
- Setup:
 - Single VM but easily scalable
 - Linked to S3 Gateway at RAL
- Authentication:
 - Using X.509 and python plugin with gridmap - to allow in browser identification
 - Federation forwards signed URLs to authenticated users (signatures last 1h)
- Adding support for gsiftp - work in progress
- Introduction by Alastair:
<https://indico.cern.ch/event/602119/>

Status of DynaFed in Italy

- Endpoint: <https://atlas-dynafed.roma1.infn.it/infn/>
- DDM Endpoint: RAL-AZURE_DATADISK,
RAL-AZURE_SCRATCHDISK
- Setup:
 - Frascati, Napoli and Roma DPM production storages
 - S3/WebDav test storage area in Roma (160TB)
- Testing Plans:
 - Complete the endpoint commissioning and attach it to a new Panda Site
 - Test the performance and scalability of the DynaFed setup with real jobs
 - Compare the performance of the same analysis, at different concurrency levels

Status of DynaFed at UVic

- Endpoint: `https://dynafed.heprc.uvic.ca/fed/`
- Setup:
 - DynaFed running on SL6 VM
 - Compute Canada S3 storage
- Developing integration with Belle-II/DIRAC
- Will add UVic DynaFed to IAAS Panda Queue using CERN example as graft

Problem: Directories/Collections

WebDAV RFC 8.7.2 PUT for Collections

When the PUT operation creates a new non-collection resource all ancestors MUST already exist. If all ancestors do not exist, the method MUST fail with a 409 (Conflict) status code. For example, if resource `/a/b/c/d.html` is to be created and `/a/b/c/` does not exist, then the request must fail.

- Default Rucio HTTP(S) behaviour: make all parent directory before putting file

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- In object stores directories/collections do not exist
- MKCOL not implemented in federation

Solution: Directories/Collections

- Rucio: Resolve DynaFed and WebDAV standard behaviour:
 - Flag HTTP resources that do not implement full WebDAV standard
 - Until flag supported in Rucio and AGIS relying on **hack in Rucio**
- DynaFed: Create union of WebDAV standard and object store behaviour in DynaFed: LCGDM-2373
- *Note:* Avoid combining writable WebDAV and object stores in a DynaFed for now

Problem: Moving Data to DynaFed

- DynaFed is HTTP only (no gsiftp)
- Protocol mismatch when trying to copy input datasets for AFT/PFT to DynaFed
- Alastair is implementing gsiftp support at RAL
- 70% of DDMEndpoints support HTTP/DAV why is this a problem?