



ESCAPE

European Science Cluster of Astronomy &
Particle physics ESFRI research Infrastructures

Xcache @ CC-IN2P3

Paul Musset

WP2 fortnightly meeting 2020-06-03



Interest of Xcache at CC-IN2P3

- Data access to remote sites for different experiments/sciences
 - LSST
 - CTA
 - HL-LHC



XCache skill development

- XrootD documentation is not beginner friendly
 - Divided in different modules but no/few links between the different modules in the documentation
- Had also to learn how authentication works on the grid/lake



Test instance with certificate authN/Z (1)

- Presently the main authN/Z method
- 1 CentOS7 VM, Xrootd 4.11.3, cache on the VM ephemeral storage
- Combination mode



xrdcp root://xcache.in2p3.fr//dpm/in2p3.fr/home/escape/... . → DPM@LAPP

xrdcp root://xcache.in2p3.fr//root://dcache.in2p3.fr/... . → DCache@CC-IN2P3



Test instance with certificate authN/Z (2)

- XCache doesn't have proxy delegation
 - Register the server certificate on VOMS/IAM server
 - Cron job on the server do `voms-proxy-init`
 - Maybe interesting to have in future version
- Had to compile voms-xrd from git repo
 - But is now an officially supported package since XRootD 4.12 (not yet tested)

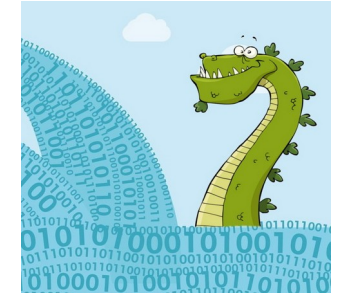


Test instance with token authN/Z

- Token : planned to supersede proxy authN
- 1 VM on CentOS7, XRootD 4.11.3, cache on VM ephemeral storage
- Direct mode : one origin configured and possible to access by the client
- Far more straightforward to install and configure
- 2 plugin to install (xrootd-scitokens, xrdcl-http)
- Don't have to register server to IAM
- Difficulty to get token as a user with OIDC:
 - Need to be sudo to install → no quick test on shared machine
 - Only available for a small number of OS



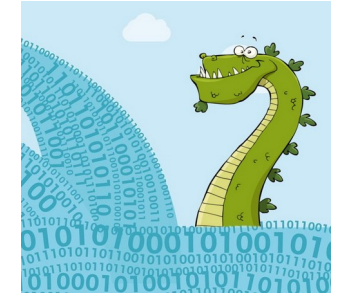
Test with remote site : NESSIE (1)



- Transfer of LSST data (10GB, 1k files) from Dcache@CC-IN2P3 to DPM@LAPP via ESCAPE's RUCIO instance (done by Bastien Gounon)
- Access to data in LAPP through an XCache via certificate at CC-IN2P3
- Tests:
 - For now through command line (xrdcp, xrdfs, curl).
 - Later through jobs also for CTA data (670GB, 2.3k files)



Test with remote site : NESSIE (2)



- If we want multiple origins, clients needs to know the complete url of the origins other than the default one

xrdcp root://xcache.in2p3.fr//dpm/in2p3.fr/home/escape/... .  DPM@LAPP

xrdcp root://xcache.in2p3.fr//root://dcache.in2p3.fr/... .  DCache@CC-IN2P3

- Need authorization synchronisation between XCache and origin server



Documentation

- Goal : Have a XCache documentation understandable without prior knowledge about XRootD or grid/lake technologies/terminologies
- Wrote documentation for a basic XCache standalone server either with token or certificate
- [Git Repository](#)
- Please comment or open a merge request...
- Maybe can be a base for the Cache WG



Dockerization

- Goal : Have an easy way to deploy XCache without too much knowledge
- First try without authentication, was quite easy to make
- Now working on token authorization
 - Doesn't need cron job.
 - Docker-compose for managing config, certificate, volumes as a test
- But I lack knowledge on Docker, like the good practices
- **Git Repository**



Next Steps for Xcache @ IN2P3

- Challenging and measuring the performances of the setup
- Monitoring
- Continue with documentation and dockerization
- Switch to hardware machines
- Separate data and metadata for better recoverability
- Dockerized OIDC-client



Contributions @ CC-IN2P3

- Adrien, Bastien, Fabio, Ghita

Acknowledgement

- Andrea, Diego, Riccardo
- IT-ST @ CERN: Michal, Mihai, Fabrizio

