

# Deployment and testing of XRootD Disk-Caching-On-The-Fly

Michael Böhler, Anton J. Gamel, Dirk Sammel, Markus Schumacher

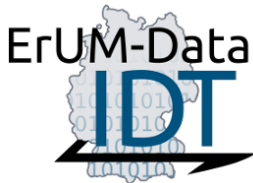
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ErUM-Data Collaboration Meeting

Albert-Ludwigs-Universität Freiburg



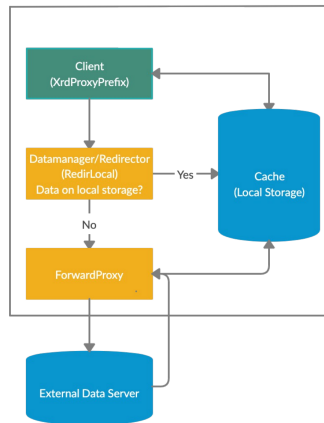
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- ▶ Goals:
  - ▶ Deploy disk caching infrastructure in Freiburg ATLAS environment
  - ▶ Provide functional tests for required components
  - ▶ Provide performance tests
    - ▶ XrootD disk-caching-on-the-fly (DCOTF) vs direct access
    - ▶ Different underlying file systems
- ▶ First step: look at sandbox example by GSI/Frankfurt  
<https://git.gsi.de/atay/xrootd-disk-caching-on-the-fly>

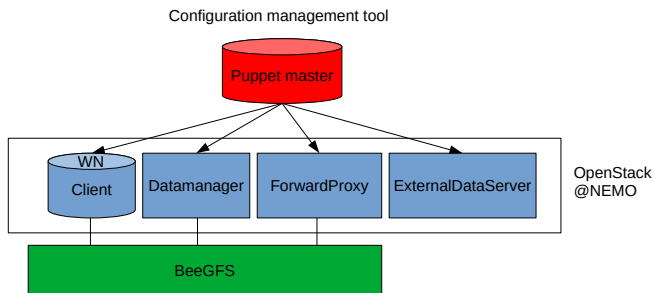
## GSI/Frankfurt setup → Reminder: architecture of DCOTF

- ▶ Client:
  - ▶ Requests data transfer
  - ▶ XrdProxyPrefix plugin: redirects request to Datamanager
- ▶ Datamanager:
  - ▶ RedirLocal plugin: checks if data exists locally in Cache directory
  - ▶ Yes: points client to address in Local Storage
  - ▶ No: redirects request to ForwardProxy
- ▶ ForwardProxy:
  - ▶ Connects to External Data Server
  - ▶ Returns data to client
  - ▶ Writes data to Cache directory
- ▶ GSI/Frankfurt group provides sandbox installation: Vagrant setup with 4 VMs



by Serhat Atay  
[link to slides](#)

- ▶ Implementation with OpenStack and Puppet
- ▶ 4 VMs running on NEMO cluster: Client, Datamanager, ForwardProxy, ExtDataServer
- ▶ Client: typical worker node + XrdProxyPrefix plugin
- ▶ Cache/Local Storage: currently BeeGFS
  - ▶ Mounted on Client, Datamanager and ForwardProxy



- ▶ Sandbox worked out of the box
- ▶ Ported the 4 roles to puppet
  - ▶ Deployment of roles to VMs
  - ▶ Caching of files from ExtDataServer VM works
- ▶ Caching of files from Freiburg dCache works

- ▶ Caching of files from external sites:
  - ▶ Client credentials (VOMS) are not forwarded to external site  
→ authentication fails
  - ▶ Plugin needed?
- ▶ Reading of cached files by a given user:
  - ▶ Files are written by user 'xrootd'
  - ▶ Default permissions are too strict (600)
  - ▶ Known issue: <https://github.com/xrootd/xrootd/issues/649>
  - ▶ Possible solution to be tested: [Multi-user plugin](#)
- ▶ Expiration of cached files? Lifetime mechanism?
  - ▶ Plans by GSI/Frankfurt

### Conclusion:

- ▶ Tested GSI/Frankfurt sandbox of XRootD Disk-Caching-On-The-Fly  
→ nice starting point
- ▶ Successful transfer of setup to our configuration management tool

### Outlook:

- ▶ Solve open issues
- ▶ Implement component tests
  - ▶ Check functionality of every component, like: is service running, is local storage available, ...
- ▶ Performance tests
  - ▶ Compare caching setup with direct access to external sites
  - ▶ Compare different options for local storage: BeeGFS, SSDs, ...
  - ▶ Test complete example user physics analysis (different samples, ...)