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Ugr : a dynamic storage federation based on open protocols

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Impact

A dynamic storage federation based on open protocols open a complete set of new possibilities.

Ugr offers the possibilities to have an unique view of a set of distributed storage systems in a dynamic manner, without requiring a centralized index or a catalog of metadata, this approach allows to avoid the common problems of synchronisation between a meta-data catalog and the data repositories.

Furthermore, Ugr simplifies the data access from the client point of view, changing deeply the concept of "location" of a data and the notion of replica management. This improves directly the global resilience of the system, opens new possibilities in term of data placement, data migration or in a generic manner, opens new possibilities in terms of data management.

Summary

The convergence of the different distributed storage systems to open protocols like HTTP and Webdav offers new possibilities in terms of storage aggregation and storage federation.

The major Cloud storage systems and the different Grid storage systems, after the standardization effort of the European Middleware Initiative (EMI), can now be part of the same storage federation, providing an unique and consistent view to the final user.

We report here the work made on our high performance dynamic storage federation solution : The Uniform Generic Redirector (UGR).

Ugr offers the possibilities to have an unique view of a set of distributed storage systems in a dynamic and scalable manner, without requiring a centralized index or a catalog of metadata, thus it simplifies the data access, improves the global resilience and opens new possibilities in term of data placement, data migration or in a generic manner, opens new possibilities in terms of data management.

URL

https://svnweb.cern.ch/trac/lcgdm/wiki/Dynafeds

Description

Our solution of dynamic storage federation based on open protocols, The Uniform Generic Redirector (UGR), provides a new approach to federates loosely coupled storage systems. This report describes in details what UGR is able to federate and how UGR proceeds in order to federate a set of storage entities compatible with an open protocol (Http, Webdav, pNFS) without requiring a centralized index or a catalog of metadata.

We introduces the differents functionalities of UGR like the dynamic filename and path translation, the geo-localizer for the redirections or detection of the endpoint failures .

We presents also the new possibilities offered by our system and the state of the project. More informations are given about our demonstration infrastructure and we detail the results of our investigations concerning the performances of the Ugr solution as a service, and the peformance impact of a HTTP federation from the client point of view.

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