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Implementing SRM V2.2 Functionality in dCache

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The Storage Resource Manager (SRM) and WLCG collaborations recently defined version 2.2 of the SRM protocol, with the goal of satisfying the requirement of the LCH experiments. The dCache team has now finished the implementation of all SRM v2.2 elements required by the WLCG. The new functions include space reservation, more advanced data transfer, and new namespace and permission functions. Implementation of these features required an update of the dCache architecture and evolution of the services and core components of dCache Storage System.

Implementation of SRM Space Reservation led to new functionality in the Pool Manager and the development of the new Space Manager component of dCache, responsible for accounting, reservation and distribution of the storage space in dCache. SRM's "Bring Online" function required redevelopment of the Pin Manager service, responsible for staging files from the back-end tape storage system and keeping these files on disk for the duration of the Online state.

The new SRM concepts of AccessLatency and RetentionPolicy led to the definition of new dCache file attributes and new dCache pool code that implements these abstractions. SRM permission management functions led to the development of the Access Control List support in the new dCache namespace service, Chimera. I will discuss these new features and services in dCache, provide motivation for particular architectural decisions and describe their benefits to the Grid Storage Community.

Summary

SRM v2.2 concepts and functions have induced an evolution of the dCache architecture and services.

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