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An effective XML based name mapping mechanism within StoRM

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In a Grid environment the naming capability allows users to refer to specific data resources in a physical storage system using a high level logical identifier. This logical identifier is typically organized in a file system like structure, a hierarchical tree of names. Storage Resource Manager (SRM) services map the logical identifier to the physical location of data evaluating a set of parameters as the desired quality of services and the VOMS attributes specified in the requests.

StoRM is a SRM service developed by INFN and ICTP-EGRID to manage file and space on standard POSIX and high performing parallel and cluster file systems.

An upcoming requirement in the Grid data scenario is the orthogonality of the logical name and the physical location of data, in order to refer, with the same identifier, to different copies of data archived in various storage areas with different quality of service.

The mapping mechanism proposed in StoRM is based on a XML document that represents the different storage components managed by the service, the storage areas defined by the site administrator, the quality of service they provide and the Virtual Organization that want to use the storage area.

An appropriate directory tree is realized in each storage component reflecting the XML namespace schema.

In this scenario StoRM is able to identify the physical location of a requested data evaluating the logical identifier and the specified attributes following the XML schema, without querying any database service.

This paper presents the namespace schema defined, the mapping mechanism and the technical details of the StoRM implementation.

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