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StoRM: grid middleware for disk resource management

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Within a Grid the possibility of managing storage space is fundamental, in particular, before and during application execution. On the other hand, the increasing availability of highly performant computing resources raises the need for fast and efficient I/O operations and drives the development of parallel distributed file systems able to satisfy these needs granting access to distributed storage.
The demand of POSIX compliant access to storage and the need to have a uniform interface for both Grid integrated and pure vanilla applications stimulate developers to investigate the possibility to integrate already existing filesystems into a Grid infrastructure, allowing users to take advantage of storage resources without being forced to change their applications.
This paper describes the design and implementation of StoRM, a storage resource manager (SRM) for disk only. Through StoRM an application can reserve and manage space on disk storage systems. It can then access the space either in a Grid environment or locally in a transparent way via classic POSIX calls.
The StoRM architecture is based on a pluggable model in order to easily add new functionalities. The StoRM implementation uses now filesystems such as GPFS or LUSTRE. The StoRM prototype includes space reservation functionalities that complement SRM space reservation to allow applications to directly access/use the managed space trough POSIX calls. Moreover, StoRM includes quota management and a space guard. StoRM will serve as policy enforcement point (PEP) for the Grid Policy Management System over disk resources. The experimental results obtained are promising.

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