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## **StoRM, a flexible Storage Resource Manager solution**

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StoRM is a high performance and flexible SRM solution for general disk based storage resources that bring in Grid the advantages of high performance storage systems based on cluster file system, such as GPFS from IBM and Lustre from SUN. StoRM can be used in small data centre with low rates of storage management requests and, at the same time, it is capable to grow in terms of storage and workload managed to fulfil requirements from large-scale production sites. The latest version of StoRM satisfies the wish list built with the desiderata of current and future users.

### **Conclusions and Future Work**

StoRM project will be part of EMI, and so it will be supported as a software solution in the European grid middleware. Moreover, a special focus will be placed in ensuring the fulfillment of any new requirements coming from the many users who are using, or will adopt, StoRM as a solution.

### **Impact**

Being able to use the file protocol allows to use the now increasingly popular cluster file systems like GPFS and Lustre. The jobs can directly access the files needed without having to transfer them to the local disk space. The advantage in terms of performance and network load is very great. StoRM's architecture also allows a simple scaling model, as it is possible to add Front-End components if needed, making StoRM usable even in large centers such as the Tier-1. One of the last feature is developed to support hierarchical storage solution when they are configured as GPFS and TSM. This is the solution adopted by the Italian Tier-1.

### **Keywords**

SRM, Storage Element

### **URL for further information**

<http://storm.forge.cnaf.infn.it>

### **Detailed analysis**

StoRM is a storage resource manager implementing the SRM interface version 2.2. It is designed to work on generic disk based storage systems separating the data management layer from the underlying storage systems. StoRM provides a flexible, configurable, scalable and high performance SRM solution. It supports standard Grid access protocols as well as direct access (native POSIX I/O call, that is "file://" protocol) on data fostering the integration of non Grid aware application providing local access on shared storage. Another important characteristic of StoRM is that it doesn't use a database to store the namespace, as done by other implementations as dCache and DPM, but uses an algorithm working only in memory. The physical location of a requested data is computed without querying any database service but evaluating a configuration file,

an XML schema that describes the storage namespace and input parameters as the logical identifier and SRM attributes. Indeed, StoRM relies on the underlying file system structure to identify the physical data position. For this reason we consider StoRM a solution which is efficient and reliable.

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**Session Classification:** Data Management

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