

# StoRM: an SRM front–end to GPFS filesystem

History and current status of the EGRID–INFN collaboration on StoRM, an SRM front–end to GPFS filesystem.

The EGRID project was born to supply a national grid infrastructure to the economics and financial research communities in Italy, for their big computing and data management needs. Since data comes principally from stock exchanges, there are usually very strict legally binding disclosure policies which researchers must abide by. Currently the EDG/LCG middleware on top of which EGRID is built provides very limited security as far as file access goes, whereas for finance/economics it is POSIX–like ACL access that is more pertinent.

SRM –Storage Resource Manager– is a protocol which attempts to standardize grid access to Mass Storage Systems, MSS. These devices store data according to access patterns: all data reside in tape libraries or similar, but the most frequently accessed ones are also present in disk cache areas for fast retrieving. MSSs, then, have the necessary logic to handle the cache area and file requests.

StoRM is an implementation of the SRM protocol which instead of having an MSS as data store, it has a filesystem on disk. So in this context SRM is used as a general data access protocol from the grid.

StoRM goes several steps further than generalising grid data access. It is specifically designed to allow direct file system access to the files under its supervision: if StoRM is installed in a computing farm and it presides over the storage, then any job submitted to that computing farm that needs to read or write a file, will do so through the filesystem after a short interaction with StoRM itself. Of course, the underlying filesystem must be distributed over the farm, and it must be performant: parallel filesystems such as GPFS or Lustre must be employed.

StoRM is also designed to coexist with the farm's local user base, which continues to manage the files as usual, through the filesystem.

Because of its nature as an implementation that generalises data access from the grid, StoRM offers the possibility to introduce the security mechanisms needed for economic applications but lacking in present day views of the grid. Indeed, StoRM is designed to grant POSIX–like ACL access to files, thereby fully satisfying the data security needs of the economics and financial sectors.

Indeed, EGRID welcomed this opportunity when first contacted by StoRM's originators at INFN. EGRID was working on its own on the data security issues and had already stretched the current limits of the technology to the maximum, for the first release of the national Italian facility.

StoRM is the result of a tri–partite collaboration between INFN–CNAF (Bologna), INFN–CERN, and EGRID–ICTP. The project is headed by Prof. Antonia Ghiselli of CNAF, under the auspices of the general director of CNAF and deputy director of INFN, Prof. Mirco Mazzucato. INFN–CERN participates with Dr. Flavia Donno and Dr. Heinz Stockinger; CNAF is present with Dr. Riccardo Zappi and Eng. Luca Magnoni; EGRID's participation consists in Dr. Riccardo Murri, Dr. Alessio Terpin, and Eng. Ezio Corso.