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The INFN CNAF Tier1 GEMSS Mass Storage System and Database facility activity

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The consolidation of Mass Storage services at the INFN CNAF Tier1 Storage department that has occurred during the last 5 years resulted in a reliable, high performance and moderately easy-to-manage facility that can provide virtually all the storage archive, backup and database software services to several different use-cases. At present the INFN CNAF Tier1 GEMSS Mass Storage System installation, based upon an integration between the IBM GPFS parallel filesystem and the Tivoli Storage Manager (TSM) tape management software, is one of the biggest and most dependable hierarchical storage sites in Europe. It provides storage resources for about 12% of entirely LHC data, as well as for other non-LHC experiments, which could access the data using the standard SRM Grid services provided by the Storage Resource Manager (StoRM) software or, alternatively, with access methods based on Xrootd and Http/Webdav, in particular for specific user cases currently under development. Besides these services, an Oracle Database facility is in production, running databases for storing and accessing relational data objects and for providing database services to the currently active use-cases, with a proven effective level of redundancy and availability. This installation takes advantage of several Oracle technologies, like Real Application Cluster (RAC), Automatic Storage Manager and the Enterprise Manager central management tools, making it possible to investigate recent use-cases, together with the other technologies available on the Oracle Database for performance optimization, ease of management and downtime reduction.

The objective of the present work is an illustration of the state-of-the-art of the INFN CNAF Tier1 Storage department software services and a site report of the success stories, results obtained occurred during the last period of activity and some brief descriptions of future projects. Particular attention is paid to the description of the administration, monitoring and problem-tracking tools that play primary roles in managing the whole framework in a complete, and relatively easy to learn, mode.

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