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Interoperating Cloud-based Virtual Farms

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The present work aims at optimizing the use of computing resources available at the grid Italian Tier-2 sites of the ALICE experiment at CERN LHC by making them accessible to interactive distributed analysis, thanks to modern solutions based on cloud computing. The scalability and elasticity of the computing resources via dynamic (“on-demand”) provisioning is essentially limited by the size of the computing site, reaching the theoretical optimum only in the asymptotic case of infinite resources. The main challenge of the project is to overcome this limitation by federating different sites through a distributed cloud facility. Storage capacities of the participating sites are seen as a single federated storage area, preventing from the need of mirroring data across them: high data access efficiency is guaranteed by location-aware analysis software and storage interfaces, in a transparent way from an end-user perspective. Moreover, the interactive analysis on the federated cloud reduces the execution time with respect to grid batch jobs. The tests of the investigated solutions for both cloud computing and distributed storage on wide area network will be presented.

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