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WnoDeS –a Grid/Cloud Integration Framework

WNoDeS is a software framework developed at INFN CNAF to integrate Grid and Cloud provisioning. It is deployed on the INFN Tier-1 (CNAF) and Tier-2 (LNL and Bari) production infrastructures. WNoDeS is a solution to virtualize computing resources and to make them available through local and Grid access interfaces in case batch jobs are submitted, through a Virtual Interactive Pools to support the local instantiation of customized resources, and through the OGF OCCI standard or a Cloud Web portal to support users requiring generic virtualized computing resources. The WNoDeS key advantages are: the use of a common pool of resources due to the unnecessary to dedicate resources to user interfaces, Grid computing, Cloud computing and local users; the reuse of 10 years of worldwide development, expertise and resources brought by Grid computing in the key areas of Authentication, Authorization, Accounting, Information System, Brokering, Data transfer; the flexibility and scalability of the service due to the use of a standard batch system for resource provisioning and policing. WNoDeS adopts a distributed FS to share virtual images. To avoid the issue that any CPU core may become a distributed FS client, FUSE-based and GPFS-to-NFS export solutions have been investigated. Recently, WNoDeS has been modified to exploit open source software: now WNoDeS could support Cloud Services by also using the specific features of Torque and Maui. Moreover, the image distribution using Lustre as shared FS has been tested. Those changes will allow small farms to adopt WNoDES without using proprietary software. Furthermore, to optimize the use of computing resources WNoDeS is considering to adopt the same resource for virtual and real jobs. IGI, through a solution based on the WNoDeS framework, plans to offer an integrated computing infrastructure providing Grid computing services, Cloud computing services and interconnection of cloud computing resource centers for the Italian and research community.

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