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FlyingGrid : from volunteer computing to volunteer cloud

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Desktop grid (DG) is a well known technology aggregating volunteer computing resources donated by individuals to dynamically construct a virtual cluster. A lot of efforts are done these last years to extend and interconnect desktop grids to other distributed computing resources, especially focusing on so called "service grids"middleware such as "gLite", "ARC"and "Unicore".
In the former "EDGeS"european project (http://edges-grid.eu/), work has been done on standardizing and securing desktop grids to propose, since 2010, a new platform exposing an uniformed view of resources aggregated from DG run by Boinc (http://boinc.berkeley.edu/) or XtremWeb-HEP (http://www.xtremweb-hep.org/), and resources aggregated from EGEE (http://www.eu-egee.org/).
Today, the current "EDGI"european project (http://edgi-project.eu/) extends the EDGeS platform by integrating "ARC"and "Unicore"middleware. This project also includes cloud related research topics. In this paper we present our first results on integrating cloud technology into desktop grid. This work has two goals. First goal is to permit to desktop grid users to deploy and use their own virtual machines over a set of volunteer resources aggregated over DG. Second goal is to continue to propose a standardized view to the user who would wish to submit jobs as well as virtual machines

Summary

This paper first introduces standardization efforts done in EDGeS and EDGI. Cloud and virtualization over DG are then presented. We present our solution over XtremWeb-HEP and standardization effort to transparently submit jobs to both grid and cloud, as well a to transparently submit virtual machines to both grid and cloud. Finally we present some use cases where our platform is used by ATLAS and SuperNemo users.

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