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Cloud Federation over the World Wide Grid

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Description of the Work

Taking advantage of current WWG middleware architecture, the site level virtual infrastructure management and the marketplace of cloud services would be integrated. A pilot system serving as the proof of concept and test bed, together with e-Science applications is established.

By integration of HEPiX VMIC(Virtual Machine Image Catalog), Grid computing pilot job model and Virtual Ma

In the current test bed, the federated cloud had been serving as the backend for Grid Virtual Screening Se

Conclusions

The resource federation and service deployment is always the most concern for world wide e-Science computing, in particular, for Asia pacific. With Cloud federation, scientist can focus on their research, and computing serivce provider can focus on general virtual machine maintanance, without taking extra efforts to support various compuing models and applications.

Impact

The study demonstrated a provisioning model of both cloud federation and community cloud by leveraging the WWG. The proposed Cloud federation would be a good solution for scientific communities and users who only have limited resources but need large and long term computing power. Naturally, Cloud federation improves resource utilization and alleviate operation efforts by taking advantage of virtualisation, marketplace paradigm and the service-oriented model. The model could furthur interoperable and integrate with commercial cloud infrastructure toward a cost-effective e-Infrastructure.

Overview (For the conference guide)

e-Science is able to be realised by distributed resource sharing and collaboration over the world-wide grid (WWG), such as EGEE and EGI. With the advent of virtualisation and service-oriented system such as the Cloud, integration of WWG and cloud technology (World-Wide Cloud, WWC) could provide much better service granuality for variant user requirements, especially the scientific community.

Cloud federation, both to provide cloud services across sites and to support federated services among cloud service providers, is achieving not just resource level elasticity but also the service level reconfiguration and repurposing. With the institution or community based cloud federation model, the WWC could minimise the resource access barrier and shorten the time to finish jobs without scalability limitation.

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