

FermiCloud - A Cloud Computing Infrastructure for Science at Fermilab

Tuesday, 18 September 2012 11:00 (30 minutes)

Description of the work

FermiCloud is a Cloud Computing Infrastructure as a Service (IaaS) deployment at Fermilab using the OpenNebula framework. The specific goals of the FermiCloud project are direct and indirect support for science at Fermilab together with collaboration and support for compatible cloud computing infrastructures.

The FermiCloud project has:

- Developed x.509 authentication plugins and contributed them to the OpenNebula project. These x.509 plugins are generally available in V3.2 of OpenNebula.
- Developed extensions to the Gratia accounting framework to support Cloud accounting.
- Demonstrated MPI performance using virtualised resources that are equivalent to “bare metal” MPI performance.

The FermiCloud project is in the process of:

- Deploying a robust, multi-user, distributed and replicated SAN to assure fault tolerant operations.
- Developing the necessary monitoring frameworks to assure continued operations.

Link for further information

<http://www-fermicloud.fnal.gov>

Wider impact of this work

The FermiCloud project has demonstrated operations at the forefront of delivering cloud computing capabilities to support physics research:

- By starting small, developing a list of requirements, building on existing Grid knowledge and infrastructure to address those requirements, FermiCloud has managed to deliver an Infrastructure as a Service cloud computing capability that supports science at Fermilab.
- The Open Science Grid software team is using FermiCloud resources to support their RPM “refactoring”.

Printable Summary

FermiCloud is the project to deploy an Infrastructure as a Service (IaaS) Cloud Computing capability in support of the Fermilab Scientific Program. FermiGrid currently totals 23 systems that can host as many as 384 virtual machine units. The work to improve the applicability and robustness of FermiCloud, together with specific accomplishments with respect to direct and indirect support of science achieved by the collaboration of personnel from Fermilab and the Korean Institute of Science and Technology Information (KISTI) using open source cloud computing frameworks will be presented.

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Session Classification: Providing cloud services

Track Classification: Virtualised Resources: challenges and opportunities (Michel Drescher: track leader)