

DiCloud Project Status Report

November 5, 2010 – March 17, 2011

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I. Major accomplishments

The third quarter of the DiCloud project includes the following major accomplishments:

- Improvements of Orca handlers for EC2, S3 and EBS resources, as well as the proxy aggregate manager for Amazon resources.
- New users of the DiCloud web portal to manage AWS resources including CS677 class at UMass Amherst.
- Demos at GEC9 and GEC10 integrating data from Vise and CASA projects in an experiment using Amazon resources for storage and computation.

The rest of this document describes in detail the major accomplishments above.

I.A. Milestones Achieved

We achieved the following milestones in the 4th quarter of Spiral 2 and for the beginning of Spiral 3.

- **November 5, 2010 (deadline S3.a):** GEC 9 demo (mentioned in last report but did not have a deadline id assigned yet).
- **Documentation and Code Release (deadline S3.b, released early):**
 - Code release including the AWS accounting service, updated Orca handlers for EC2, S3 and EBS, as well as the DiCloud Web Portal. User guide documentation as well as software design and administration documentation provided.
 - Expose through the web portal the capability to lease EBS volumes and EC2 servers independently, and bind them to EC2 servers as needed. See user guide documentation on how to use.
- **December 1, 2010 (deadline S3.c):** Discussions with Gush Project PI Jeannie Albrecht on a plan for Gush integration with ViSE, and Orca.
- **March 15, 2011 (deadline S3.d):** GEC 10 demo showing EC2 and S3 resource allocation, Amazon Web Services accounting capabilities, and Web portal reporting. The demo showcased execution of radar workflows and forecasting algorithms, developed by CASA scientists, on GENI and cloud networks that also include computing and sensing resources reserved on-demand.

I.B. Milestones in Progress

- Code release (deadline S3.e) including Amazon AMIs ready to use for GENI experimenters.

II. Deliverables Made

Deliverable S3.a, S3.b, S3.c and S3.d have all been made available on time or early through the DiCloud wiki.

The software releases including AWS accounting service, Orca handlers, DiCloud Web Portal, DiCloud server and console software are all available on the DiCloud wiki for download.

The user guide, design and administrator documentations are also available on the DiCloud wiki for download.

III. Description of Work Performed During Last Quarter

III.A. Activities and Findings

The primary work during the quarter has been the improvement of Orca handlers and proxy aggregate manager to manage EC2, S3 and EBS resources. We demonstrated the different functionalities at GEC9 and GEC10 with demos involving weather data from ViSE and CASA projects and resources from EC2 and S3.

The resources are available to users through the DiCloud Web portal and we have experimented with new users including the CS677 class at UMass Amherst.

We have also been actively consulting with the GUSH project as they have been integrating use of the new GENI AM API and Omni client. Omni-integration should enable integration with Orca, which is DiCloud's current control framework. DiCloud's software sits beneath Orca's internal event handlers, as well as the GENI AM API. Thus, our plan to integrate GUSH with DiCloud is through an Omni-enabled Orca service manager.

III.B. Project Participants

The primary PI is Michael Zink. Co-PIs are Prashant Shenoy, and Jim Kurose. Research Staff is David Irwin and Emmanuel Cecchet.

III.C. Publications (individual and organizational)

No publications this quarter

III.D. Outreach Activities

Michael Zink co-chaired the first DFG/GENI doctoral consortium, held March 13-15 in conjunction with the 10th GENI Engineering Conference in San Juan, Puerto Rico. The consortium was jointly organized by the Deutsche Forschungsgemeinschaft (DFG) and the National Science Foundation (NSF).

The DiCloud technology has been used by more than 50 students to manage AWS resources for the CS677 (Distributed Operating Systems) class at UMass Amherst.

III.E. Collaborations

We collaborated with other Cluster D projects during the quarter. First, we provided feedback and participated to discussions on the mailing. Second, we worked with the CASA and ViSE projects to prepare the GEC9 and GEC10 demo. We are actively consulting with the GUSH PI on Omni and Orca integration with DiCloud.