Cloud Deployment Toolkit

1. Introduction

This document is a docuware for creation review and describes the Cloud Deployment Tookit (CDTK) project.

2. Aim

The CDTK is a proposed set of tools to allow developers to create and work with full clones of their production environments on cloud computing infrastructure. With CDTK, developers will be able to test code changes for functionality and performance and report on cloud computing resource usage and cost.

3. Background

Cloud computing is changing the Software Development Life-Cycle (SDLC) by allowing developers to rapidly provision systems and test new code on a fully functional clone of the target production environment. In order for the development process to use cloud effectively the environment provisioning and code deployment needs to be integrated in the IDE.

Cloud computing has three different Service Models as defined in the NIST Definition of Cloud Computing (http://csrc.nist.gov/groups/SNS/cloud-computing/). Infrastructure as a Service (IaaS) is the Service Model that allows server platforms to be provisioned. Cloud IaaS is an emerging technology with many different implementations. These differences lead to inefficiencies in the development process as teams need to learn to interact with each cloud functions without an abstraction to facilitate the deployment process across each IaaS cloud.

The Cloud Deployment Toolkit will provide this abstraction allowing developers to use the same workflow to provision resources across multiple providers. This will alleviate IT management concerns that applications will become locked in to a specific IaaS platform.

4. Scope

The objectives of the Cloud Deployment Tool kit (CDTK) are:

- Allow architects to define and share system specifications in an abstract format.
- Allow developers to easily manage, share, and clone IaaS cloud infrastructures.
- Allow developers to easily deploy code to IaaS cloud infrastructures.
- Provide reports on IaaS resource utilization for IT management.
- Allow developers to easily share reports on IaaS resource utilization.
- Provide integration with application server code deployment plugins.
- Provide integration with debugger plugins.
- Provide integration with testing and performance tool plugins.

5. Relationship with Other Eclipse Projects/ Components

g-Eclipse (http://www.geclipse.eu) is an existing Eclipse project that has its roots in grid computing. We believe the Cloud Deployment Toolkit (CDTK) is a similar but complementary approach to g-Eclipse. CDTK is focused on providing an abstraction to multiple IaaS platforms and a pluggable architecture for integration with other Eclipse tool projects.

A discussion with the g-Eclipse project team will continue in more detail at EclipseCon -- timing TBD -- for all interested parties to consider potential code re-use and project integration.

6. Third Party Libraries

CDTK will use the jclouds and Dasein Cloud API libraries for interface abstraction to cloud computing infrastructure.

7. Organization

7.1 Committers

- Mike Mayo, Rackspace Hosting - **proposed project lead**
- George Reese, enStratus
- Adrian Cole, jclouds
- Wade Minter, Rackspace Hosting
- Max Anderson, Red Hat
- Michael Neale, Red Hat
- Rob Stryker, Red Hat
- Roy Ganor, Zend
- Kenn Hussey, Cloudsmith
- Henrik Lindbert, Cloudsmith
- Thomas Hallgren, Cloudsmith

- Michal Rûžička, Cloudsmith

7.2 Mentors

- Gunnar Wagenknecht
- Chris Aniszczyk

7.3 Interested Parties

- Basil Hashem, Aptana
- Bret Piatt, Rackspace Hosting
- Bob McWhirter, Red Hat
- Andi Gutmans, Zend Technologies

8. Project Scheduling

- 2010-03 v0.1: Preview release for EclipseCon
- 2010-06 v0.2: Functional release with IaaS provisioning
- 2010-09 v0.3: Stable IaaS provisioning, functional IT management reporting
- 2011-01 v0.5: Stable IT management reporting
- 2011-03 v0.6: Functional framework for interaction with other plugins
- 2011-05 v0.8: Stable framework for interaction with other plugins
- 2011-09 v1.0: Stable complete plugin with support for a majority of IaaS cloud platforms

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