Eucalyptus: Architecture, Usage and Lessons learned from large scale installations

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Abstract

The advent of the cloud paradigm for IaaS (Infrastructure as a Service), exemplified in the Amazon WebServices offering, has enabled infrastructure providers to offer greater flexibility to their users. For users, access to computational and storage resources can now be truly on demand, they can scale up or down at any time and thus achieve large savings, as the requirement to overprovision resources to support peak load is made obsolete.

However, most organisations still possess (and will need for the foreseeable future) private datacenters to support their day to day operations. These resources cannot and should not be thrown away, but made to work with the new paradigm, providing the flexibility of the Cloud for private iron as well as the ability to scale out.This would be of particular interest to small and medium sized businesses, as they could better manage and provision their resources, and cost-efficiently scale-out to other providers as needed.

Eucalyptus[1] is an open-source project that aims to fill this need. It provides access to private resources in a manner similar to state-of-the-art offerings such as Amazon WS using the same, by now ubiquitous, API. Users are given the ability to dynamically provision computational and storage resources over a private cloud, maximising the utilisation of available resources through virtualization, using a number of open-source hypervisors.

For this workshop, we will outline the architecture of Eucalyptus and its usage and demonstrate its capabilities by providing a guided demo of a test cloud installation, performed by CSLab and GRNET on resources provided by the Ministry of Education and Religious Affairs (ΥΠΕΠΘ). For this, we will demonstrate command line and GUI open-source tools that facilitate the day-to-day job of a user when requesting and deploying computational and storage resources, such as eucatools[2] and Elasticfox[3]. We will also discuss some lessons learned from installing Eucalyptus on existing infrastructure when aiming for maximum performance and robustness.

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[1]http://open.eucalyptus.com
[2]http://open.eucalyptus.com/wiki/Euca2oolsGuide
[3]http://sourceforge.net/projects/elasticfox/