



UCSB CS 189
Capstone Project Course
5 Jan 2011

Dr. Steven Fitzgerald, VP., Technical Services

About Us: Eucalyptus Systems



- Pre-revenue company with products
 - Eucalyptus 1.5, 1.6, 2.0, 2.0.1 (Nov'10)
 - Eucalyptus Enterprise Edition 2.x, (Aug'10)
- Incorporated: January, 2009
- About 40 employees
- Offices in Goleta, Palo Alto, & China
- Funded by Venture Capital
- And most importantly,
 - Began as a HPC research project at UCSB
 - Progenitor: Prof. Richard Wolski
 - 6 of the 7 founders affiliated with UCSB

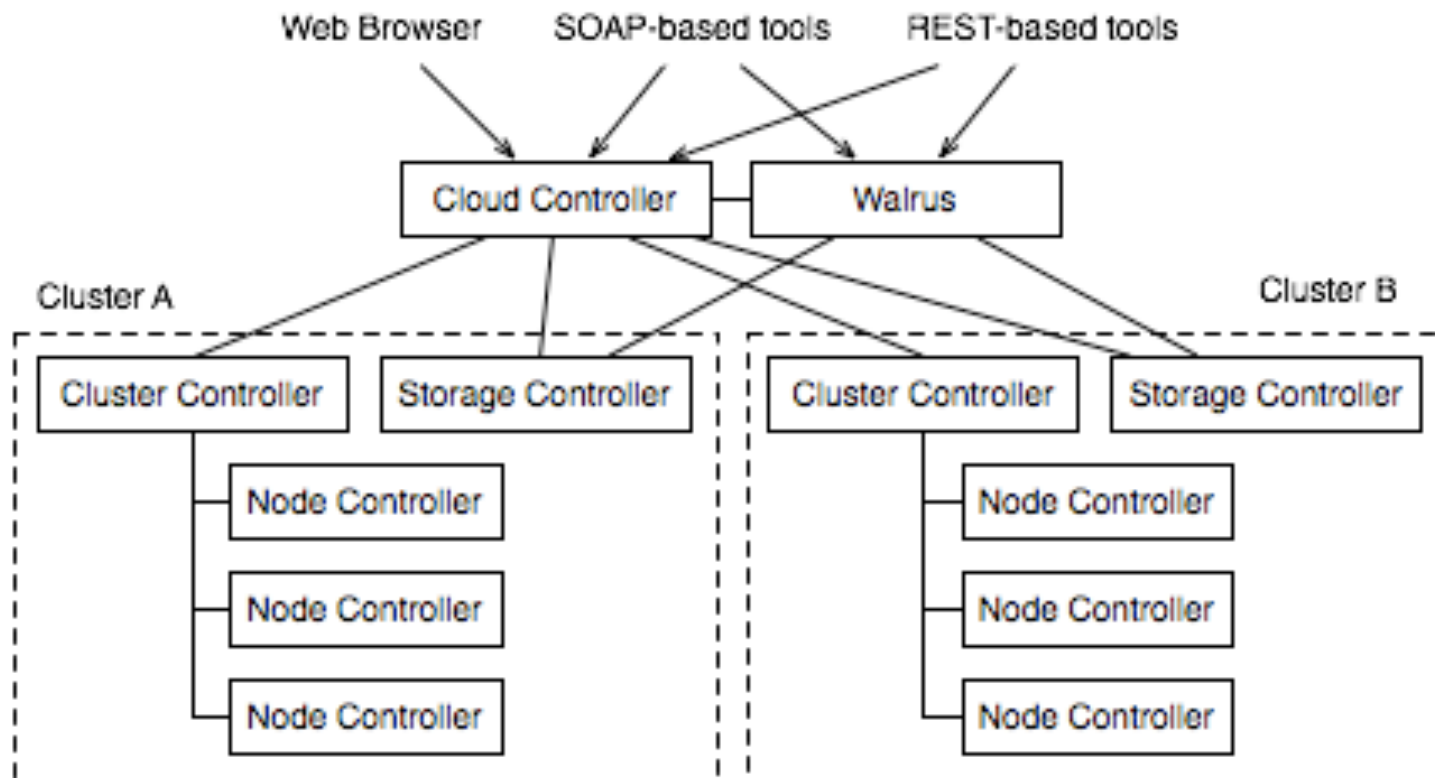
- What is Cloud Computing?
 - depends on who is using the term!
- Layers of Cloud Computing:
 - SaaS: Software as a Service
 - PaaS: Platform as a Service
 - IaaS: Infrastructure as a Service
- IaaS:
 - Data-center space, servers, network equipment, etc. is outsourced (abstracted)
 - Example:
 - Amazon's (Elastic Computing Cloud) EC2

What is Eucalyptus?



- Open-Source Software using the Open Core model
 - implements on-premise and hybrid clouds
 - compatible with the AWS API
-
- A user can control/manage their own OS and associated applications without dealing with the hardware layer
 - A user's OS is isolated from other OSes and the infrastructure.

Eucalyptus Architecture



What we are looking for?



- UCSB has deep roots within Cloud Computing
- Eucalyptus has deep roots within UCSB
- We want to continue and strengthen our ongoing relationship with UCSB
- We want to foster and promote your creative ideas
- Here is a sample project for your consideration:

- Given:
 - A University Lab environment where either:
 - Computers are not maintained (free for all?)
 - Computers are maintained (locked down?)
 - and where access to remote storage is either
 - Access to data is not managed (only local data?)
 - Access to data is managed (where is my data?)
 - Issues:
 - Do I have enough flexibility?
 - How do I get secure access to my data?

Wants and Objectives

- User Wants:
 - Control over OS (root) and secure access to data, regardless of their physical location
 - Utilize the provided hardware to its full advantage
 - University Wants:
 - No security holes, reduced maintenance cost, etc.
-

- Objective:
 - Uncouple your desktop OS from the hardware
 - Move your desktop OS into the Cloud
 - Make my current hardware part of the cloud
 - Define the minimal HW/SW configuration to bootstrap the local hardware (Desktop Virtualization / Bare Metal Provisioning?)

Possible Approach

- Treat the provided desktop hardware as a empty “thin client”
- Generalized steps:
 - Plug in USB drive
 - Manual reboot the desktop from the USB
 - Pull down the appropriate image
 - Provide menu system to select OS and mode
 - Either
 - Setup desktop as local hardware for your OS cloud
 - Pull down your desktop image
 - Automatically connect to your desktop in the cloud

- Our Website
 - <http://www.eucalyptus.com>
 - <http://open.eucalyptus.com>
 - 18K community members
- Eucalyptus Community Cloud
 - <http://open.eucalyptus.com/CommunityCloud>
 - <http://ecc.eucalyptus.com>
 - 2K registered users
- Amazon links:
 - <http://aws.amazon.com/ec2/>
 - <http://aws.amazon.com/s3/>



Thank you!

Steven Fitzgerald
steve@eucalyptus.com