Installing Eucalyptus
Past, Present, and Future
Eucalyptus Overview

- Most widely deployed software platform for on-premise IaaS clouds
- 25,000+ cloud starts as of mid 2011
- AWS-compatible, enterprise-deployed
- Broad partner community fueled by AWS ecosystem
- Open Source (GPL and BSD)
A Few of Our Customers
Deep Partner Ecosystem

Over 150 Registered Partners
Leverage AWS Partner Ecosystem
Eucalyptus IaaS Cloud

On-premise and Hybrid Cloud Infrastructure-as-a-Service

Self-service Resource Configuration
Self-service Resource Provisioning
Dynamic Resource Management
Resource Chargeback and Reporting

IaaS Web Services

Virtual Cloud Resources

Virtual and Physical Resource Administration
Compute
Network
Storage
Identity

Virtual Resource System
Physical Resource Management

Server, Networking, Storage IT Infrastructure

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Eucalyptus IaaS (Cont'd)

Eucalyptus IaaS Software Supporting:

- RHEL, CentOS, Fedora, Debian, Ubuntu, SUSE
- KVM, Xen, VMware ESX, ESXi
- NetApp, Dell Equallogic

Software and Support Subscription

Customer Technical Support
Eucalyptus IaaS: Compute

Features
- On-demand Elastic Compute Services
- Virtual Instance Configurations
  - CPU, Memory, Network
- Instance-based Elastic Block Storage
  - Block-accessed, Network Storage Volumes

Benefits:
- Fast and efficient
- Uses existing infrastructure
- Ready for automation
Eucalyptus IaaS: Networking

Features:
- On-demand Elastic IP
- Designed to Act as an Overlay
- Multiple Networking Modes for Assigning Addresses to VMs

Benefits:
- Control existing datacenter resources
- Conforms to datacenter connectivity topology
- Uses existing infrastructure
Eucalyptus IaaS: Storage

Features:
- On-demand, Highly Scalable and Secure Bucket Based Object Store
- Put/Get Objects
- Configurable for DAS, NAS, SAN
- Highly Reliable, Elastic Block Storage

Architecture:
- iSCSI is "universal" transport for block-attached storage
- Integrated with VM, IAM and credentials management
- Internal image caching architecture configurable for local storage architecture
Eucalyptus 3 Features

● High Availability
  ○ Peered front ends
  ○ Hot spare backend components
● Enhanced Resource Access Control
  ○ IAM
  ○ LDAP integration
● Boot from EBS
● New GUI
Every technical employee must install eucalyptus using our documentation.
  - Early on, it was to see if the documentation was correct
  - Now, we look for any ways to improve the docs
Manual Installation

- The process requires a lot of decisions
- Many manual steps
- Amazingly underwhelming
Why is this Important?

- Eucalyptus is a fundamentally complicated piece of software
- We need to fit into many different IT environments
- Many things affect choices you make during installation
Decisions to be Made

● Linux Distro
  ○ CentOS, Ubuntu, Fedora, OpenSUSE, Debian, RHEL?
● Hypervisor
  ○ XEN, KVM (VMWare ESXi)?
● Network Mode
  ○ Static, System, Managed, Managed-novlan?
● Component Topology?
  ○ Cram it all on one box? Not advised!
● HA or not HA? (that is another question)
● SAN storage?
● Single or multi-cluster?
More Admin-ey Decisions

- What NTP server to use?
  - Can you use pool.ntp.org or do you run your own?
- Do you have DHCP on your network?
  - probably "yes", so configure it to not conflict with ours
- Multiple NICs? (and therefore, you might use private subnets)
- Do you have root access via ssh?
- Do your machines support hardware virtualization?
- Is your network VLAN-clean?
- Need block of assignable public IPs
- Need private subnet that doesn't overlap with others.
Deployment Configurations

Simpler single cluster configurations

Normally used for POC or small deployments
Multi-cluster Configurations

Some, but not all large scale installations use multi-cluster

Network isolation a factor in choosing private subnets vs flat network

Most network modes route instance traffic through cluster controller, which does scale really well!
The Install Process

● Prep Machines
  ○ Install OS
  ○ setup network
    ■ vlans
    ■ bridge
  ○ configure hypervisor on NCs
  ○ disable selinux
  ○ adding loop devices

● Installing Software
  ○ configure repo(s)
  ○ run install (yum, apt)
Installation Contd

● Configuration
  ○ hypervisor
  ○ network mode
  ○ public address block
  ○ private subnet

● What HA?
  ○ configure DRBD
  ○ additional hardware
  ○ arbitrators

● Registration
  ○ register components
  ○ get credentials
  ○ GO!
Simplifying

- We realize that a lot of people want a way to evaluate our software
- Removing a lot of those questions we talked about before makes this a whole lot easier
- Enter: FastStart
FastStart

- 1 Operating System
- 1 Hypervisor
- 1 Networking Mode
- 1 fast install!
Walkthrough

- Minimal CentOS install
- Install Node Controller with 1 yes/no question
- Install Front End by telling it about your network environment
- Cloud is validated
- Guest image is installed
- < 30 minutes!
Demonstration

- FastStart video is here: http://vimeo.com/25163094
Adoption

- over 1000 downloads from our web site
- over 500 USB sticks handed out at events
- Partnership with RightScale: free version of myCloud
- internal use by Sales Engineers
Puppet

- It's not just for installs
- Continuous Configuration Management
- Modules for each Eucalyptus component
  - https://github.com/puppetlabs/puppetlabs-eucalyptus
- Map components to physical nodes based on your topology
- Puppet handles
  - configuring dependencies
  - installing packages
  - key sync
  - component registration
Silvereye

- It's the name of a bird, but it's really a play on "Silver Iodide" which is used to seed clouds.
- This is an effort to build a generalized installer.
- Bare-metal provisioning
- Initial install / ongoing cloud maintenance
- The basic notion is 1 machine gets installed from media, the rest installed over the network.
State of Silvereye

● Early stages
  ○ Bootable CD to install each node

● There are many things we could leverage
  ○ Cobbler
  ○ Crowbar
  ○ Puppet
  ○ Chef
Challenges

● Multiple Distro support
● Varied network and component topologies
● Conflicts with in-house services
  ○ dhcp
  ○ pxe
  ○ config mgmt
● Provide an exceptional UX
Next Steps

● Need to base CD installer on Eucalyptus 3 devel code
● Going beyond CD installer with network provisioning
● Design a configuration wizard for initial setup
  ○ Give choice of common configuration settings for POC
  ○ Allow user to go full custom
● Meetings are being held in IRC (freenode #eucalyptus-meeting) Join in!
Links

- eucalyptus.com - corporate site
- projects.eucalyptus.com - community projects
- github.com/eucalyptus - source
- launchpad.net/eucalyptus - more source

IRC - freenode.net
#eucalyptus
#eucalyptus-meeting
Thank you.

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