Aeolus

www.aeolusproject.org

An open source community-based cloud management software

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What is it?

- Not a Hypervisor or a Cloud
- It is a set of tools and applications that is used to build a portable cloud infrastructure
- Works with Amazon EC2, RHEV, VMWare vSphere, and more under development



Some Use Cases

- Compute Farm
 - Increase throughput by offloading work to a public cloud
- Seasonality and Cost Savings
 - Quickly bring up resources when needed
 - Pay for resources only when used



An Abstraction Layer

- Don't need to know each cloud provider's API
- Aeolus provides a way to
 - Create images that can be deployed to multiple cloud providers
 - Manage VMs across multiple cloud providers



Unlocks your cloud environment from any particular cloud vendor



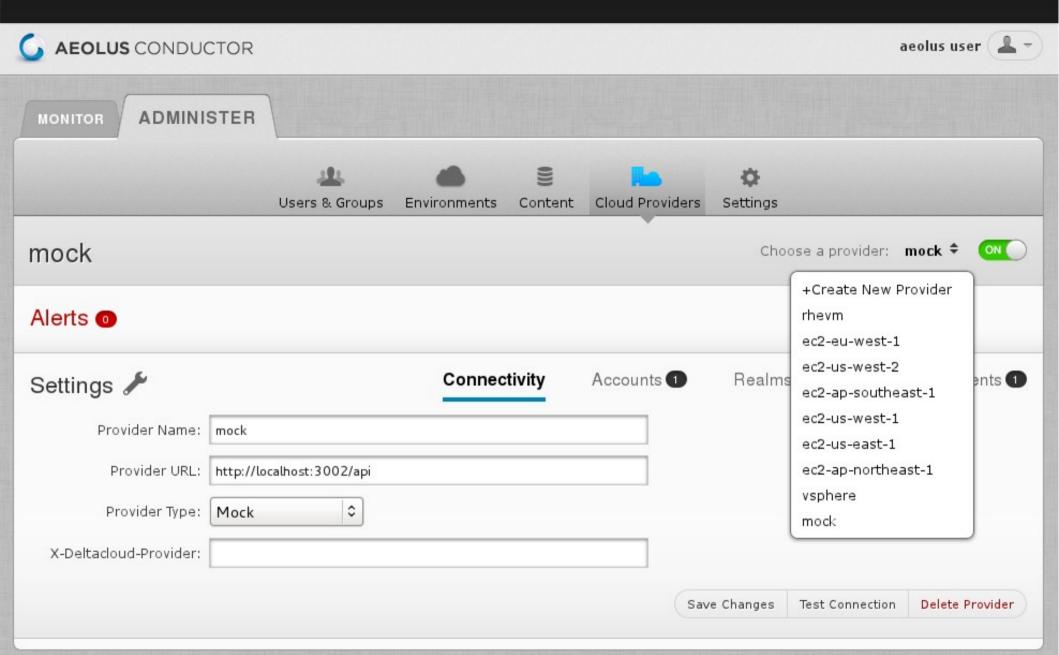
Installation

- For Fedora, add aeolus repo to yum
- Install "aeolus-all" meta-package
- Run aeolus-configure. It uses puppet to configure the server and to bring up services and applications.











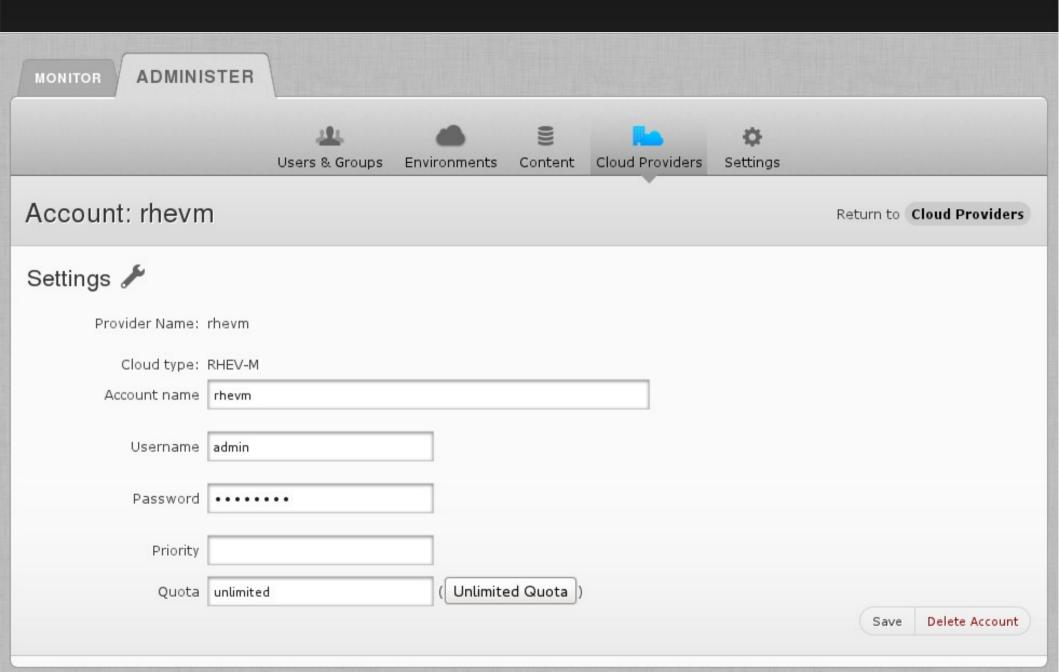
New	Prov	/ider	Acco	unt
4044	1 10 1	1001	, ,,,,,,,	MILL

Return to Cloud Providers

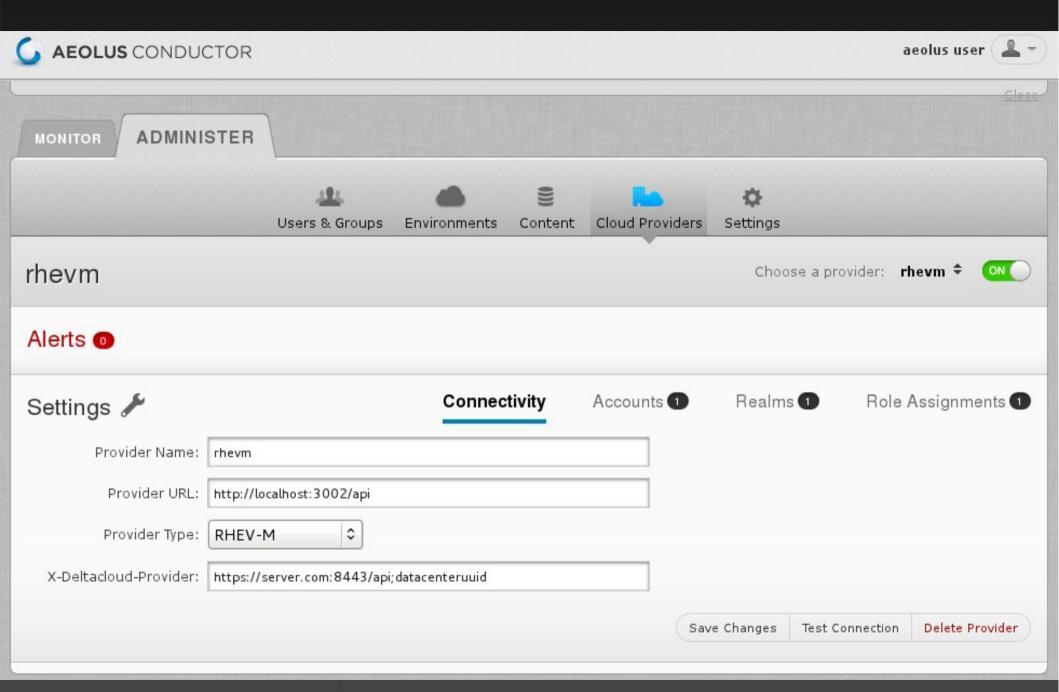
Provider Name:	ec2-us-east-1	
Cloud type:	Amazon EC2	
Account name		
Access key		
Secret access key		
Account number		
Key		Browse
Certificate		Browse
Priority		
Quota	unlimited	(Unlimited Quota)



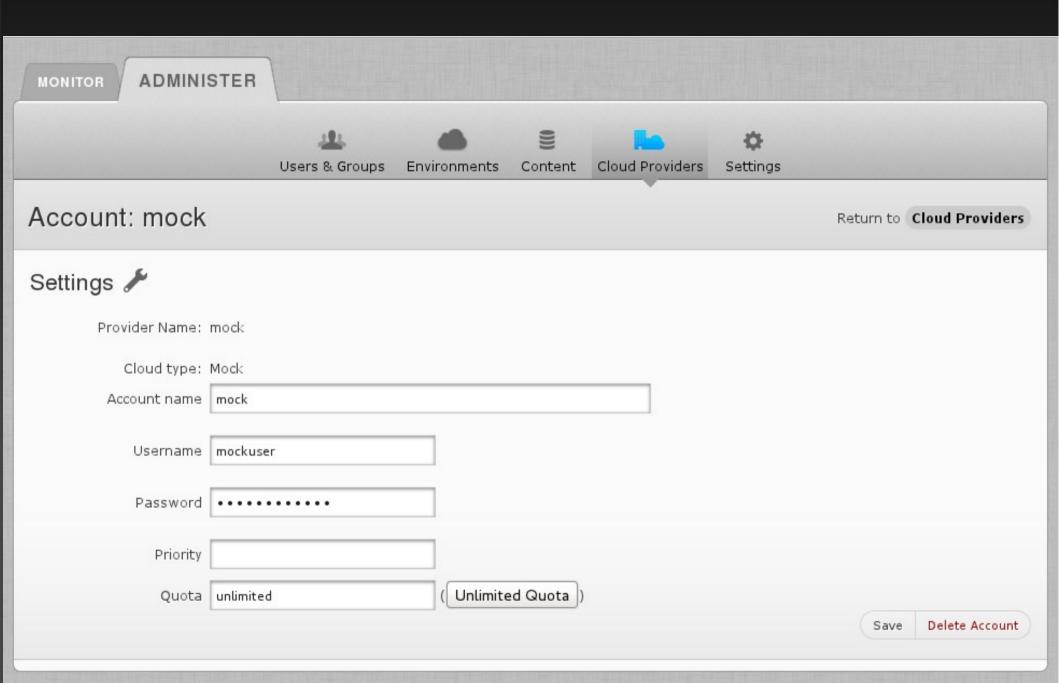
Save













Images Can Be Built For

- Red Hat Enterprise Linux
- Fedora
- OpenSuse
- Debian

- Ubuntu
- Windows
- ScientificLinux
- and more

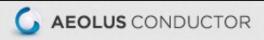
http://aeolusproject.org/oz.html



Template

```
<template>
 <name>tmpl1</name>
 <description>foo</description>
 <05>
  <name>Fedora</name>
  <version>15</version>
  <arch>x86 64</arch>
  <install type="url">
   <url>http://download.fedoraproject.org/pub/fedora/linux/releases/15/Fedora/x86_64/os/</url>
  </install>
  <rootpw>changeme</rootpw>
 </ns>
 <packages>
 <package name='aeolus-all'/>
 </packages>
 <repositories>
  <repository name="custom">
   <url>http://repos.fedorapeople.org/repos/aeolus/conductor/testing/fedora-15/x86 64/</url>
   <signed>false</signed>
  </repository>
 </repositories>
</template>
```





aeolus user



ADMINISTER MONITOR

Users & Groups

Environments







Cloud Providers Settings

Pool Families

Images

Pool Families

New Pool Family

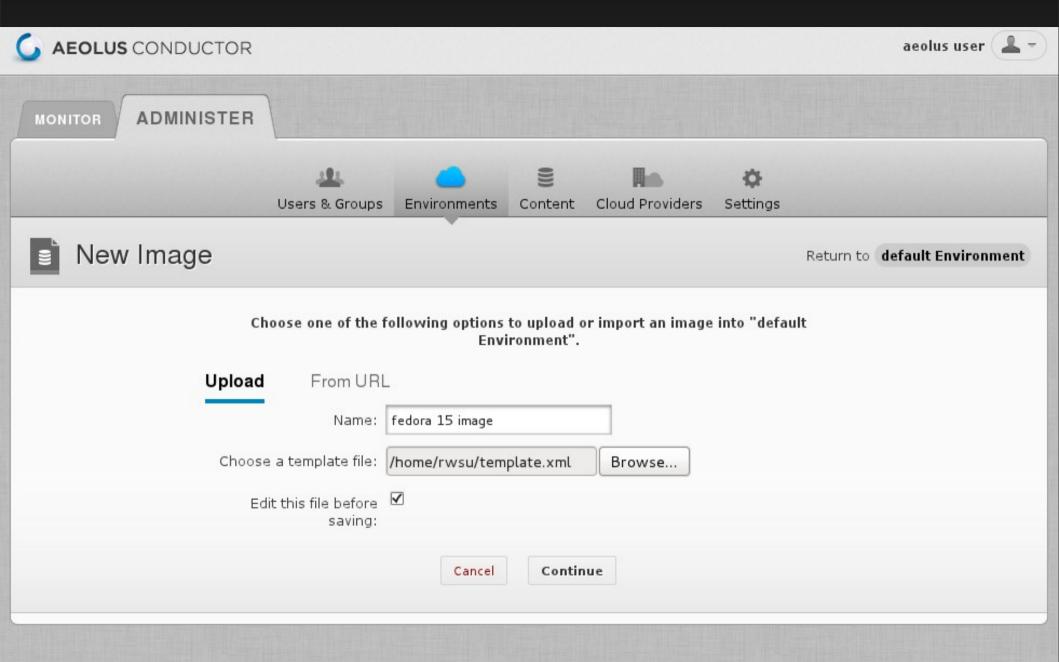
default									New Pool	New Image
Pool Name	Deployments	Total Inst.	Pending Inst.	Failed Inst.	Quota Used	Active Inst.	Available Inst.	Enabled	Catalog	
Default	2	2	1	0	0%	2	œ	Yes	Finance	Edit
Performance Eng	0	0	0	0	0%	0	œ	Yes	Performance Testing	Edit

Aeolus

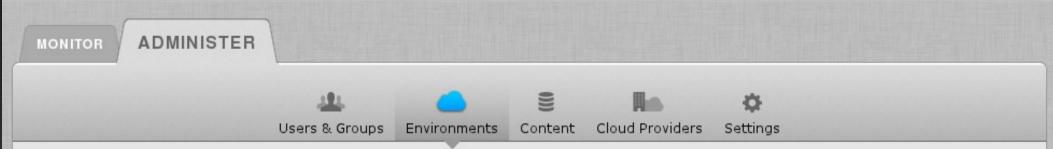
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fedora 15 image

Return to default Environment

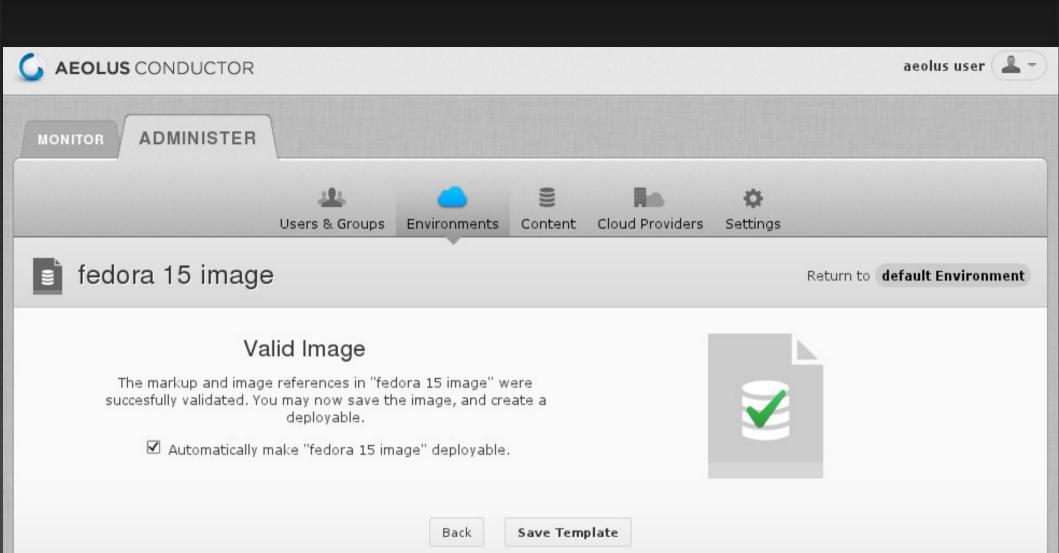
Edit

```
<?xml version="1.0"?>
<template>
   <name>fedora 15 image</name>
   <description>foo</description>
   <0S>
     <name>Fedora</name>
     <arch>x86 64</arch>
     <version>15</version>
     <install type="url">
       <url>http://download.fedoraproject.org/pub/fedora/linux/releases/15/Fedora/x86 64/os/</url>
     </install>
     <rootpw>changeme</rootpw>
   </05>
   <packages>
    <package name="aeolus-all"/>
   </packages>
   <repositories>
     <repository name="custom">
       <url>http://repos.fedorapeople.org/repos/aeolus/conductor/testing/fedora-15/x86_64/</url>
```

Cancel

Save and Continue





Aeolus

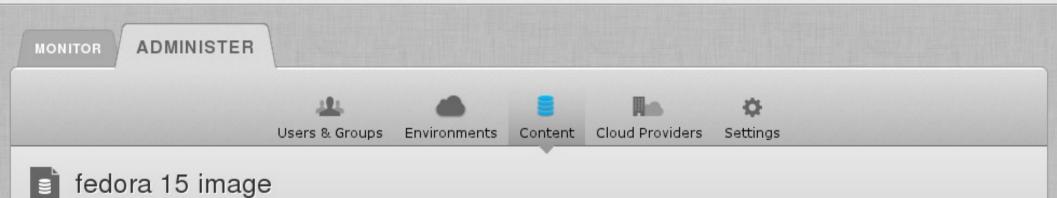
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Create Deployable

Creating a deployable from the "fedora 15 image" component outline will allow it to be built and launched. Simply choose a catalog in which to store the deployable, and define a default cloud resource profile.

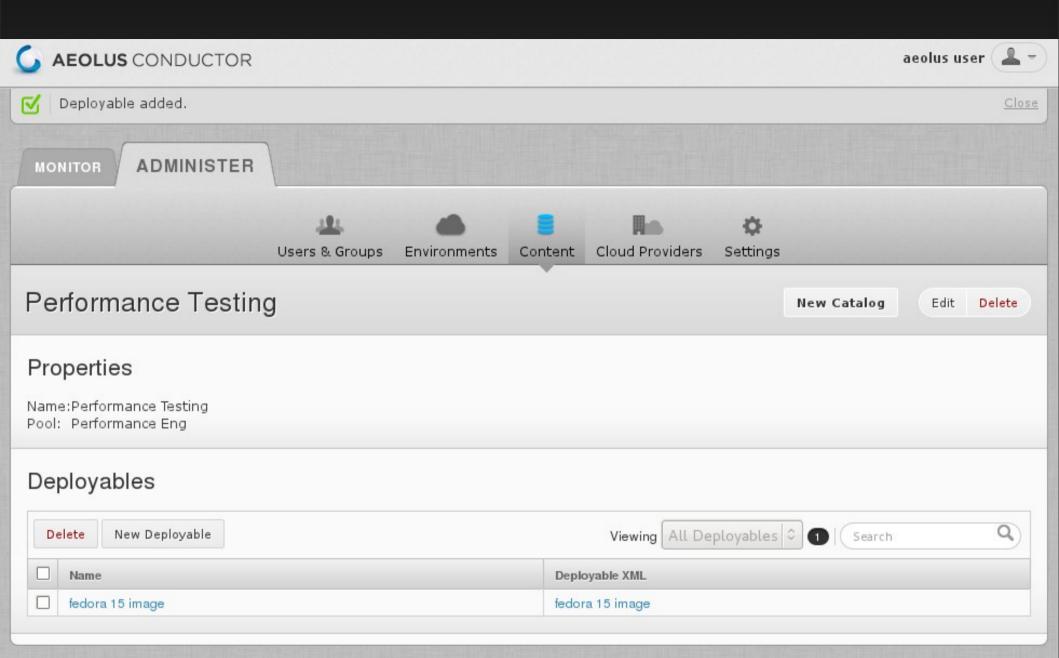
Name	fedora 15 image			
Default Hardware Profile	hwp1 \$			
Catalog:	Performance Testing			
		Cancel	Save	

Apolus

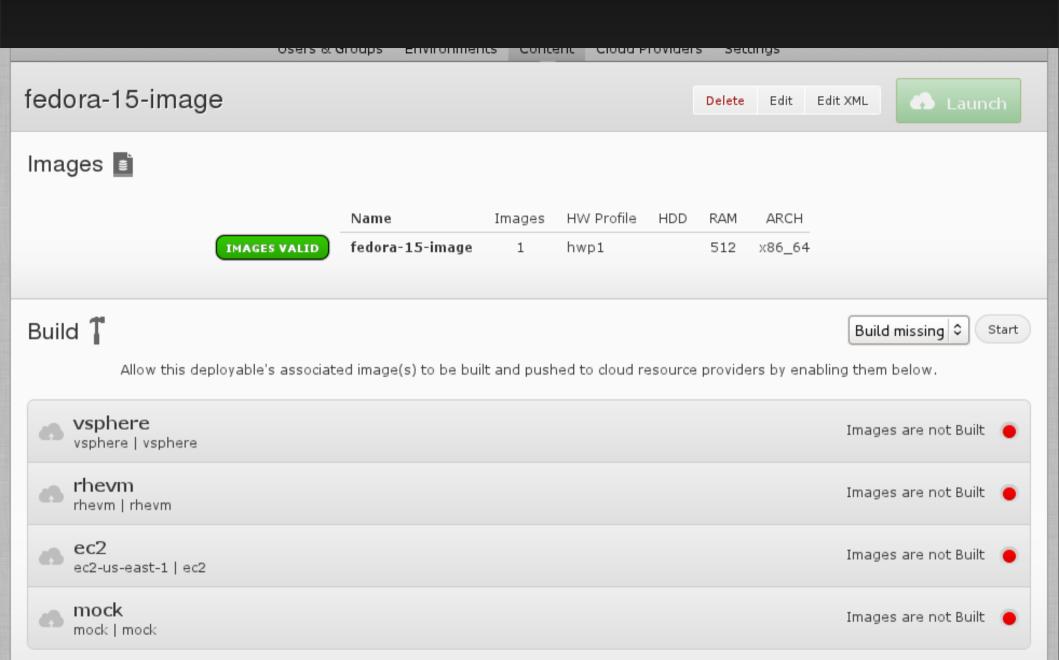
Niedzimer Termenfilles Su

Converget @ 2011 Red Hat Inc. All Dights Reserved

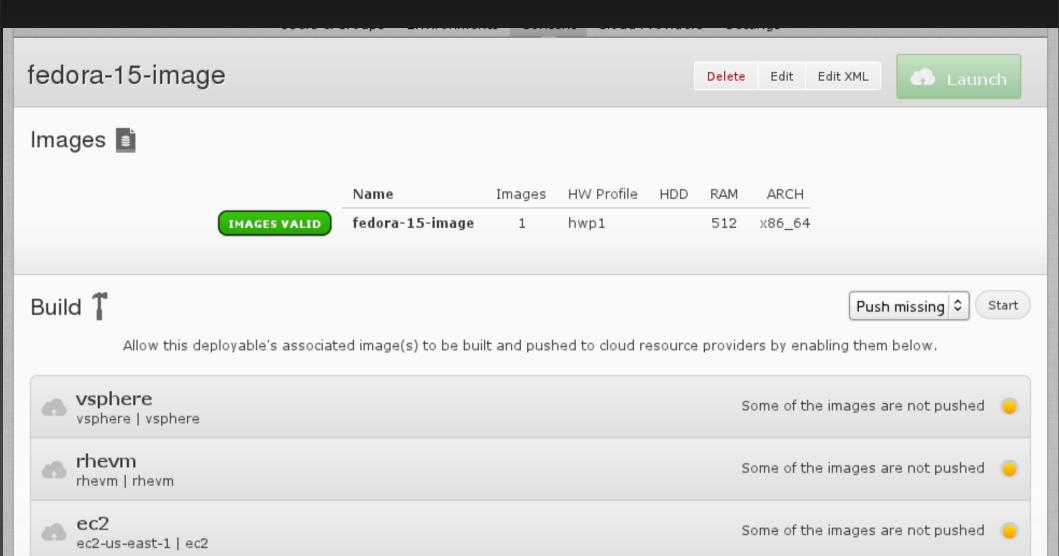














Some of the images are not pushed

mock

mock | mock







ADMINISTER

« Return to Performance Testing | Fedora 15 Image



New Deployment to Performance eng Pool

Cancel

Deployment Details

Deployment Name (uniquely identifies your deployment)

deploy1

Name available

Deployable

fedora-15-image ≎

Realm

ec2-us-east-1 0

Auto-select

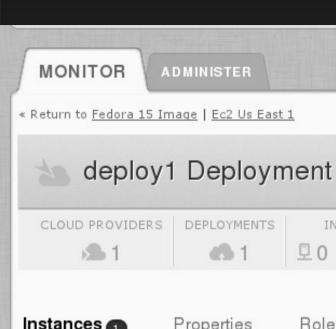
rhevm

vsphere

ec2-us-east-

mock





ALERTS UDATES

0

POOL QUOTA USED

○0% 1 of ∞

Instances 🐽

Properties

Role Assignments

INSTANCES

□0 ○1 □0



Delete

deploy1/fedora-15-image

(i) 9 minutes

IP ADDRESS: ec2-23-20-27-126.compute-

1.amazonaws.com

STATE: running

Download key

Stop

Restart



Deltacloud

- Cloud abstraction API
- REST based, language independent
- Supports most major infrastructure as a service clouds



Compute Driver Functionality

	Create new instances	Start stopped instances	Stop running instances	Reboot running instances	Destroy instances	List all/get details about hardware profiles	List all/get details about realms	List all/get details about images	List all/get details about instances
Amazon EC2	yes	no	yes	yes	yes	yes	yes	yes	yes
Eucalyptus	yes	no	yes	yes	yes	yes	yes	yes	yes
IBM SBC	yes	yes	yes	yes	yes	yes	yes	yes	yes
GoGrid	yes	no	yes	yes	yes	yes	yes	yes	yes
OpenNebula	yes	yes	yes	no	yes	yes	yes	yes	yes
Rackspace	yes	no	yes	yes	yes	yes	yes	yes	yes
RHEV-M	yes	yes	yes	yes	yes	yes	yes	yes	yes
RimuHosting	yes	yes	yes	yes	yes	yes	yes	yes	yes
Terremark	yes	yes	yes	yes	yes	yes	yes	yes	yes
vSphere	yes	yes	yes	yes	yes	yes	yes	yes	yes



HTTP client Deltacloud Deltacloud Provider Cloud Provider Cloud Provider Cloud Provider Providers on your local machine in your server room on your network a public Deltacloud instance

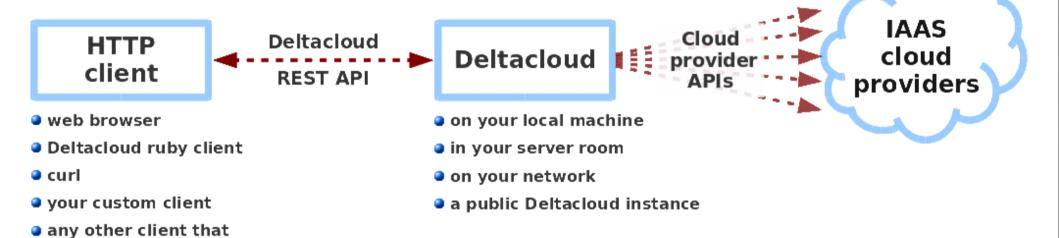


Deltacloud Resources

- Images
- Instances
- Realms
- Keys
- Storage_volume
- Storage_snapshot

- Bucket
- Blob
- Address
- Load balancer
- Firewall







can make HTTP requests

Composer

- Imagefactory
 - Builds images from a template
- Oz
- Automates installs
- Image Warehouse
 - Stores images locally and transfers them to providers



Imagefactory Builds

- Requires
 - name of the target cloud provider
 - template XML, a description of the image to be built
- Can build an image in two ways



Imagefactory

- Creates a raw image from scratch, using a boot image, runs the native installer
- Applies user customizations, remove and/or add software
- Uses Oz to automate the installation



Conversion

- Creates a final image that is compatible with target cloud provider
- Example
 - VMware stream-optimized format
 - qcow2 format for RHEV



Snapshot Builds

- Available with Amazon EC2
- Takes an existing JEOS in S3, makes a copy of it
- Boots it and modifies it until template is satisfied
- Saves time and bandwidth costs



Image Warehouse

- Stores images and their metadata
- Responsible for transmitting image to the cloud provider
- For Amazon EC2, bundled in S3, and registered in the correct region
- For RHEV, to the data center's storage domain



aeolus-image cli tool

- [~]# aeolus-image build --target ec2,vsphere,rhevm --template template.xml
- [~]# aeolus-image push --account acctname --image image_id
- [~]# aeolus-image status --targetimage target_image_id
- [~]# aeolus-image list --images,accounts,targets
- [~]# aeolus-image import --account my-ec2 --id ami_id
- [~]# aeolus-image delete --image image_id



Orchestrator

- Construct a multi-tier application that runs on multiple instances and have it self configure when it is deployed
- Example
 - Web application with MySQL as database, each on its own instance
 - Web application should start after the database is up



Deployment XML Recipe

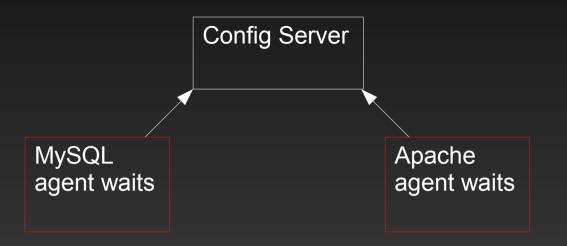
- MySQL
 - User Param: username, password
 - Runtime Param: dbup
- Apache
 - User Param: username, password
 - Dependency to MySQL username, password, and dbup



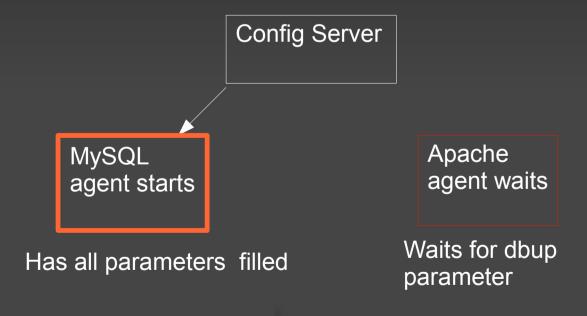
Audrey

- Configuration server placed in a cloud provider
- Audrey agent installed in the instance
- Conductor starts up instances and sends deployment information to the configuration server



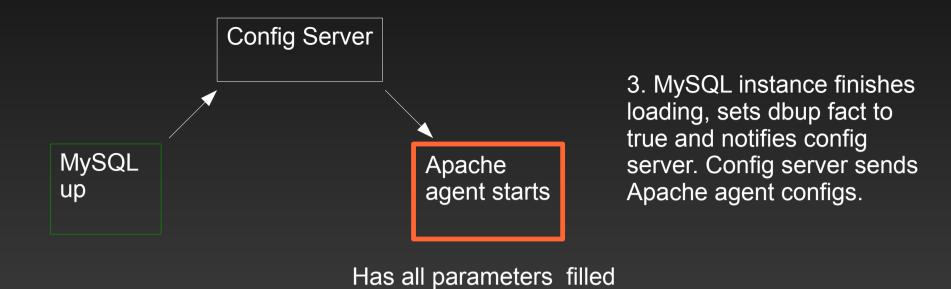


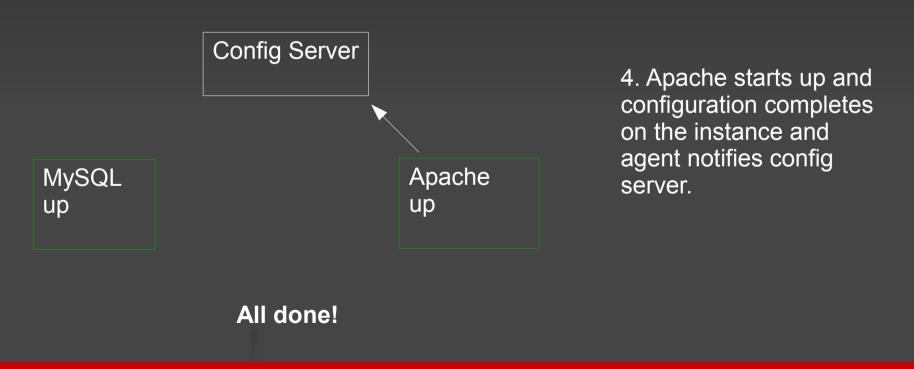
1. Instances boot and agents contact the config server



2. Config server sends MySQL Agent its parameter values









More info?

- www.aeolusproject.org
- source: https://github.com/aeolusproject
- aeolus-devel@lists.fedorahosted.org
- IRC

Network: Freenode (irc.freenode.net)

Channel: #aeolus

