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Cloud Conference 2013

Technical Conferences

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HYBRID CLOUD WITH AWS AND EUCALYPTUS

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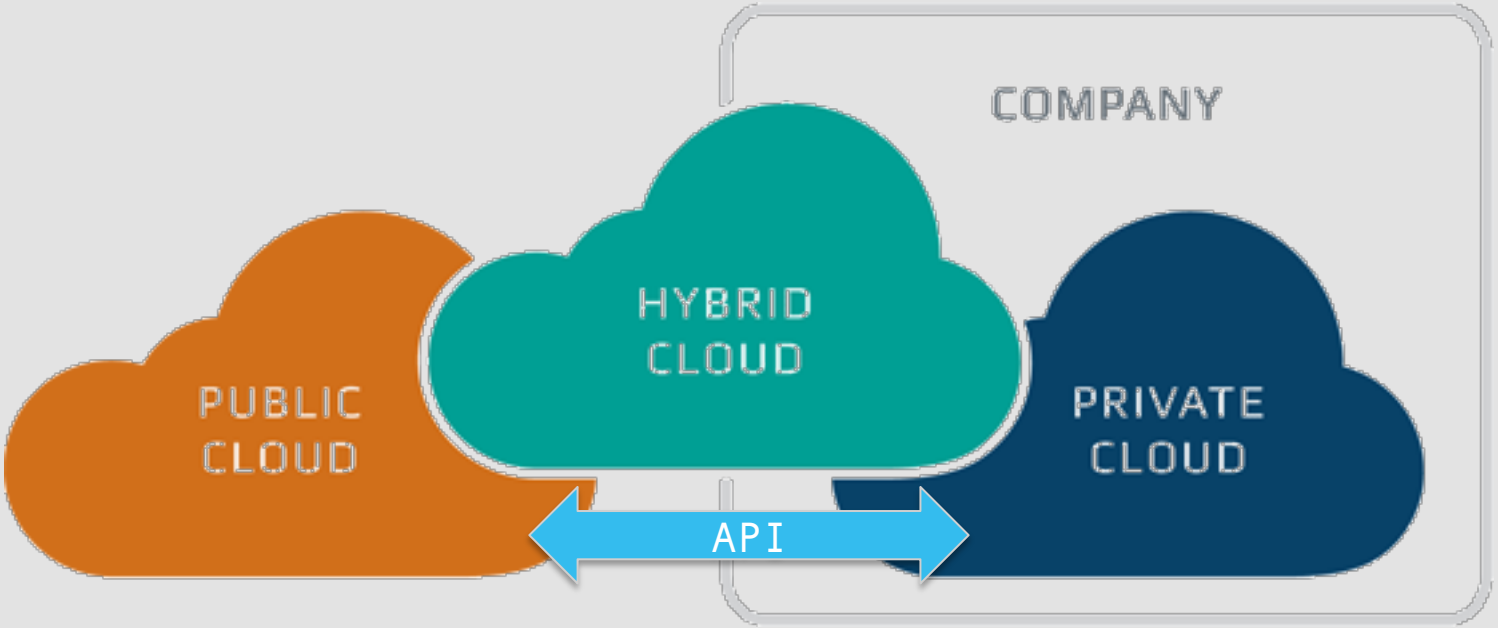
Agenda

- Hybrid Cloud
- Amazon Web Services Public Cloud
- Eucalyptus Private Cloud
- Hybrid Cloud: AWS and Eucalyptus
- Eucalyptus Hybrid Cloud Use Cases

Hybridization

In genetics, hybridization is the process by which two different species are crossed in order to combine the characteristics of both

Hybrid cloud



Hybrid Cloud: survey

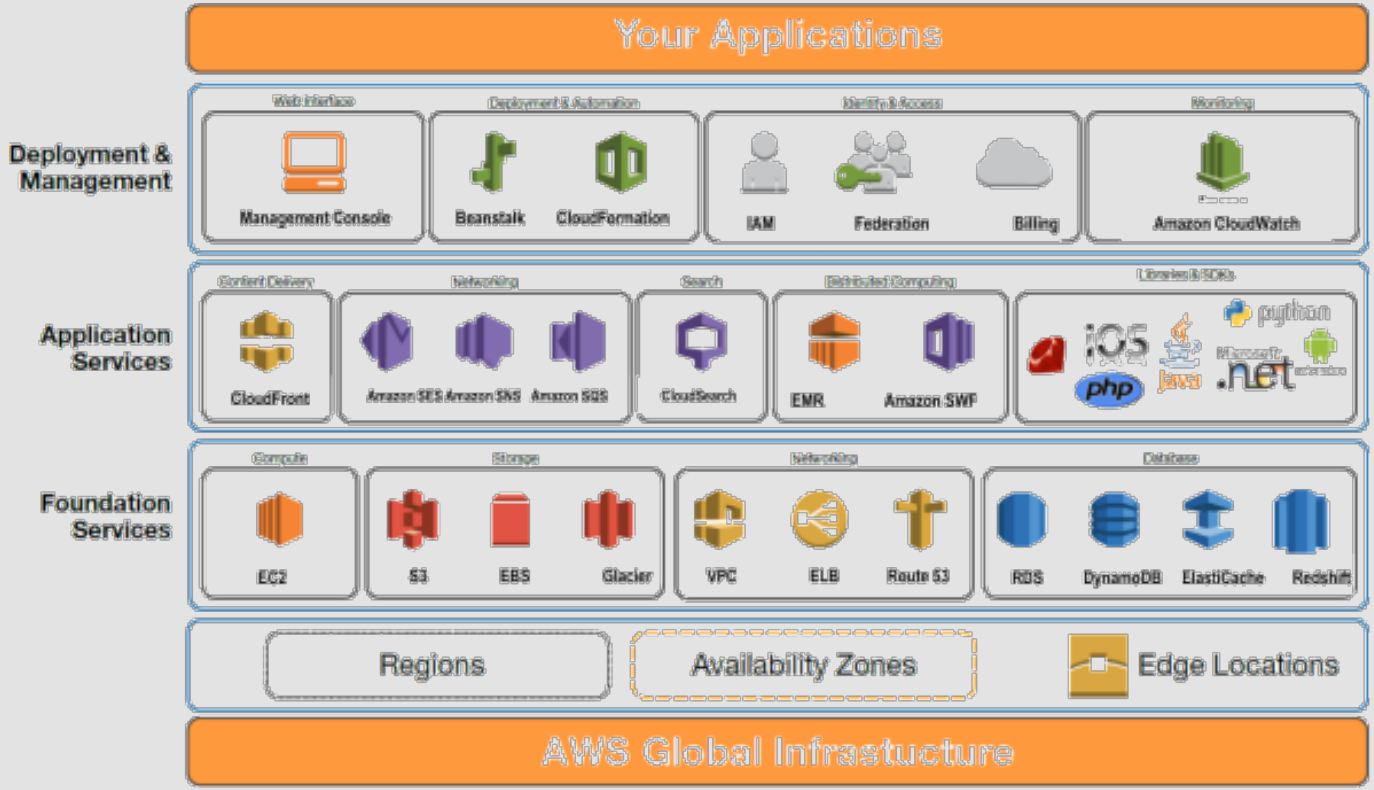
- 60% of IT decision-makers see hybrid cloud as the culmination of their cloud journey
- Top reasons for using hybrid cloud instead of a public cloud only
  - Better security (52%)
  - More control (42%)
  - Better performance or reliability (37%)

http://www.vansonbourne.com/

PUBLIC CLOUD

Amazon Web Services

Amazon Web Services



Amazon Web Services

- Amazon Elastic Compute Cloud (EC2)
- Amazon Elastic Block Storage (EBS)
- Amazon Machine Image (AMI)
- Amazon Simple Storage Service (S3)
- Amazon Identity and Access Management (IAM)
- Auto Scaling
- Elastic Load Balancing
- Amazon CloudWatch
- AWS Direct Connect

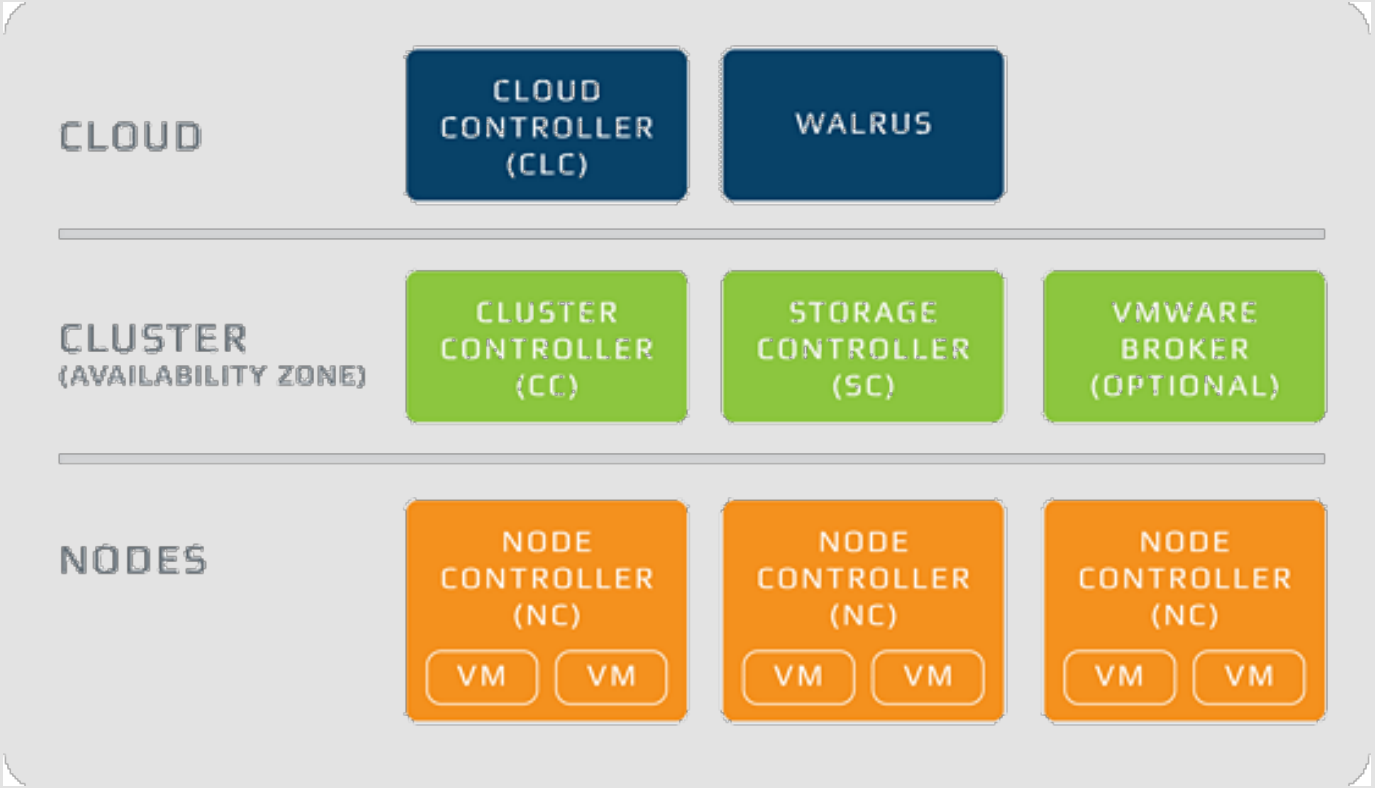
PRIVATE CLOUD

Eucalyptus software

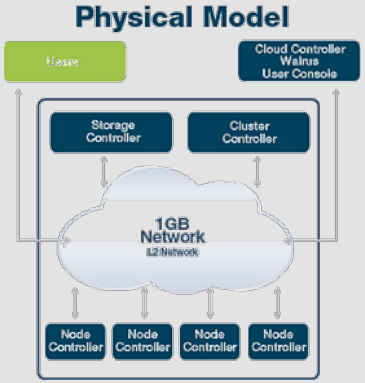
Eucalyptus software

- Eucalyptus is **open source** software for building AWS compatible private and hybrid clouds
  - GPLv3 code available on https://github.com/eucalyptus
- Through a partnership with Amazon Web Services, Eucalyptus maintains the API compatibility
- Supports the same services you use with AWS, including: EC2, EBS, S3, IAM, Auto Scaling, Elastic Load Balancing, and CloudWatch

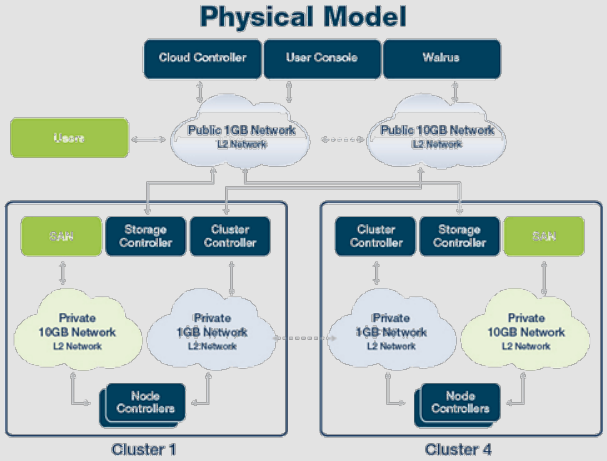
Eucalyptus: components



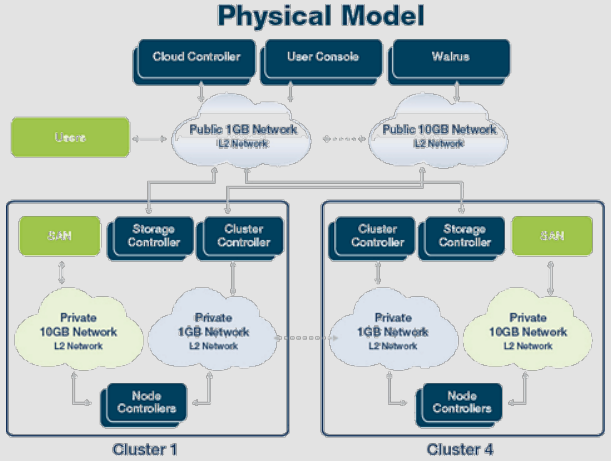
Eucalyptus: reference architecture



Test
1 Cloud Controller/Walrus
1 Cluster Controller
1 Storage Controller
1-16 Node Controller



Web Services
1 Cloud Controller
1 Walrus
1 Cluster Controller for each cluster
1 Storage Controller for each cluster
1-16 Node Controller for each cluster




```
/usr/sbin/euca_conf --register-<components>
```

Web Services HA
2 Cloud Controller
2 Walrus
2 Cluster Controller for each cluster
2 Storage Controller for each cluster
1-32 Node Controller for each cluster

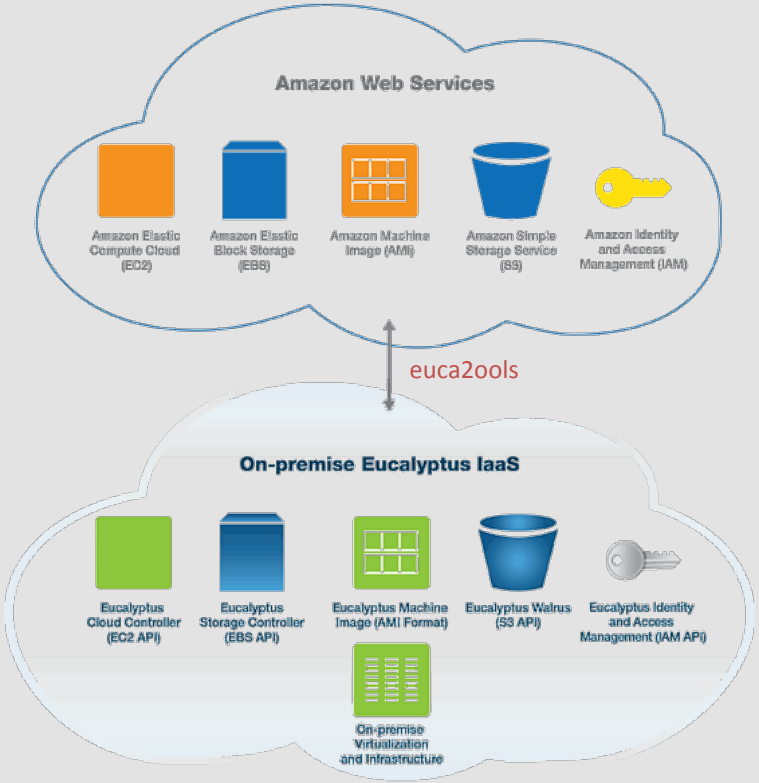
HYBRID CLOUD

AWS and Eucalyptus

AWS and Eucalyptus

AWS API
Cloud on their hardware

EUCALYPTUS API
Cloud on your hardware



euca2ools

- Euca2ools is the Eucalyptus command line interface for interacting with web services
  - This set of tools was written in Python.
- Most Euca2ools commands are compatible with Amazon's web services
- Install from EPEL: yum install euca2ools
- Repository: https://github.com/eucalyptus/euca2ools

euca2ools and ec2tools

Run instances

```
ec2-run-instances ami-1a2b3c4d -k my-key-pair --availability-zone eu-west-1a -g sg-123
euca-run-instances emi-15A1386E -k my-key-pair -availability-zone eu-cluster-1a -g sg-123
```

Bundle instances

```
ec2-bundle-instance  i-12345678 -b mybucket -p lnxami -o EXAMPLEKEY -w EXAMPLESECKEY
euca-bundle-instance i-E7AC420A -b mybucket -p lnxami -o EXAMPLEKEY -w EXAMPLESECKEY
```

Create autoscaling group

```
as-create-auto-scaling-group MyASG --launch-configuration MyLC --availability-zones us-east-1a --min-size 2 --max-size 6
euscale-create-auto-scaling-group MyASG --launch-configuration MyLC --availability-zone eu-cluster-1a --min-size 2 --max-size 6
```

euca2ools: hybrid configuration

```
[user aws-user]
key-id=YOUR-KEY-ID
secret-key=YOUR-SECRET-KEY
[user euca-user]
key-id=YOUR-KEY-ID
secret-key=YOUR-SECRET-KEY
[region eu-west-1]
ec2-url = https://ec2.eu-west-1.amazonaws.com/
s3-url = https://s3.amazonaws.com/
user = aws-user
[region eu-cluster-1a]
ec2-url = https://euca.interact.it:8773/services/Eucalyptus/
s3-url = https://euca.interact.it:8773/services/Walrus/
user = euca-user
[global]
default-region = eu-west-1
```

euca2ools: AMI to EMI (1/2)

1. Bundle the running AWS instance

```
ec2-bundle-vol -d /mnt –u 1234-5678-9101 -k
myaws.pem -c myawscert.pem -r x86_64 -s 2048
```

2. Upload bundle to S3

```
ec2-upload-bundle -b myawsbucket -m /mnt/
manifest.xml -a AKIEXAMPLE -s SECAKIEXAMPLE
```

3. Download bundle from S3 to local:

```
euca-download-bundle –b myawsbucket -d /tmp/aws-
image/ --region us-east-1
```

euca2ools: AMI to EMI (2/2)

4. Upload the bundled instance to Walrus.

```
euca-upload-bundle -b mywalrusbucket -m /tmp/aws-image/manifest.xml --region eu-cluster-1a
```

5. Register the new image on eucalyptus

```
euca-register -a x86_64 -d 'Lximage' -n 'MyImage' -b mywalrusbucket/manifest.xml --region eu-cluster-1a
```

6. Run the instance from EMI

```
euca-run-instance emi-i-XXXXXXXX --region eu-cluster-1a
```

euca2ools: EMI to AMI (1/2)

1. Run an instance from the image you chose.
   ```
   euca-run-instance emi-XXXXXXXX --region eu-cluster-1a
   ```
2. SSH into the instance clean configuration and install euca2ools
3. Bundle the running eucalyptus instance
   ```
   euca-bundle-vol -d /mnt -p myeucaimage -s 2048 --arch x86_64 -o AKIEXAMPLE -w SECAKEYEXAMPLE --region eu-cluster-1a
   ```

euca2ools: EMI to AMI (2/2)

4. Upload the bundled instance to S3.

```
euca-upload-bundle -b myawsbucket -m /mnt/
manifest.xml --region eu-west-1
```

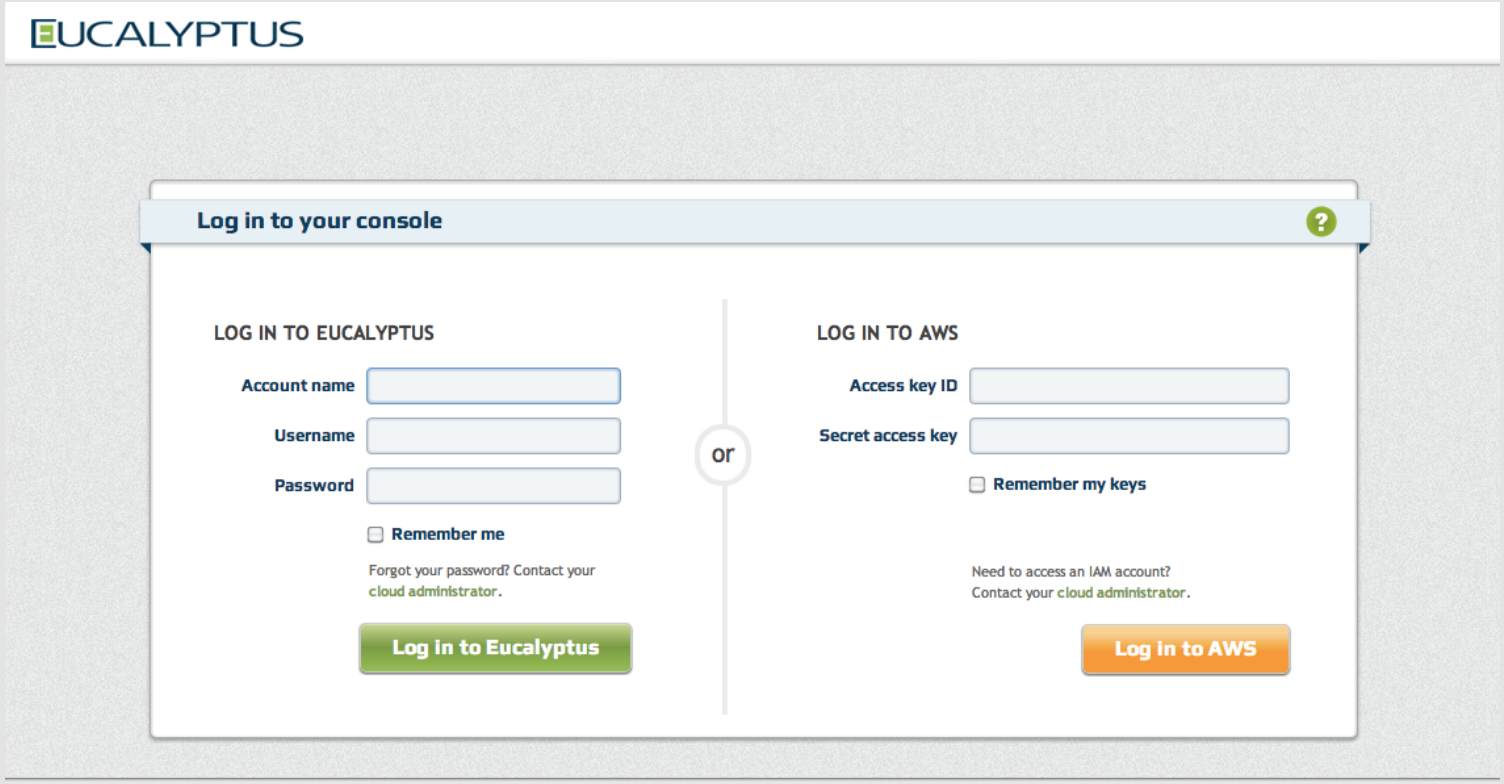
5. Register the new instance

```
euca-register -a x86_64 -d 'LnxImage' -n 'MyImage'
-b myawsbucket/manifest.xml --region eu-west-1
```

6. Run the instance from AMI

```
euca-run-instance ami-XXXXXXXX --region eu-west-1a
```

Eucalyptus Hybrid cloud



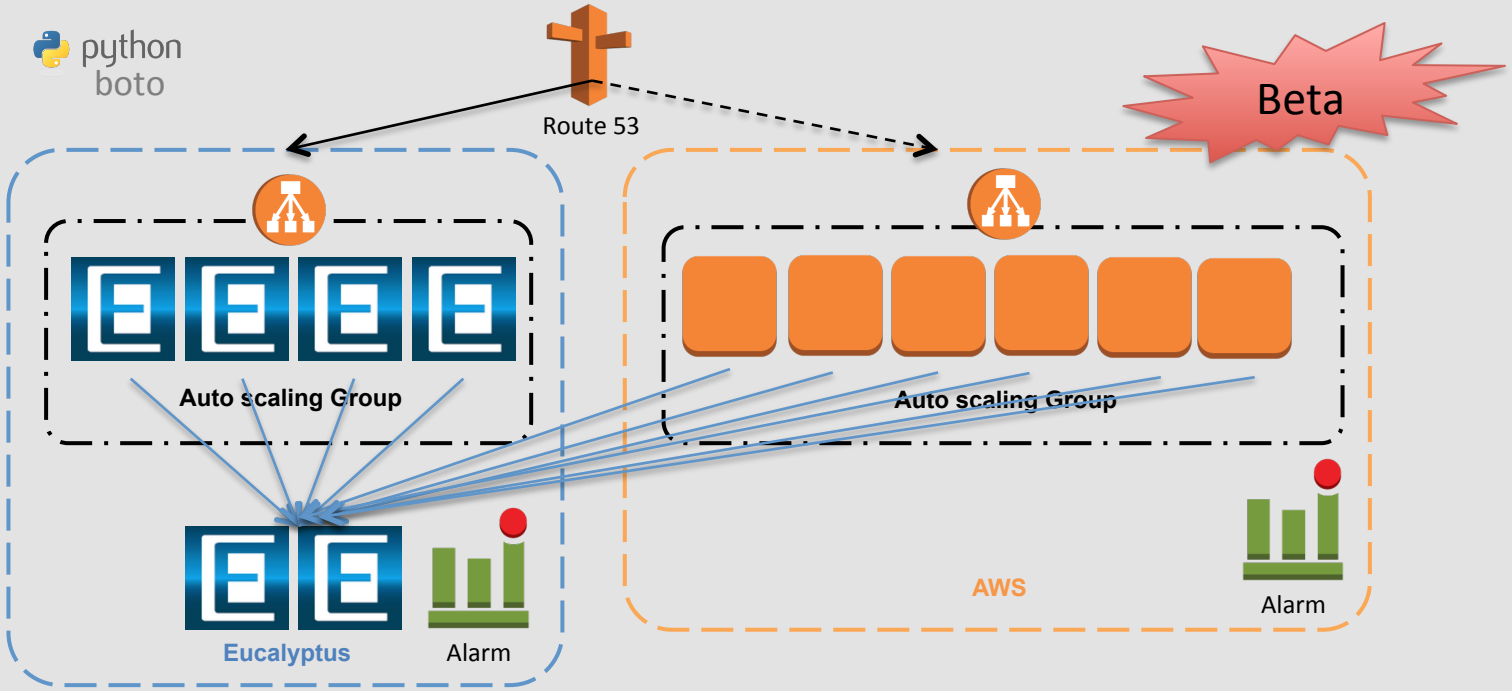
USE CASES

Cloudbursting, Disaster Recovery and Migration

Eucalyptus Hybrid cloud: use cases

- Use cases for using a Eucalyptus hybrid cloud:
  - **Cloud bursting:** in this use case, you would need to create additional resources for your cloud, using resources from another cloud.
  - **Migrating environments:** in this use case, you would need to export data (images, volumes, configuration, etc.) from stage to production environment
  - **Disaster recovery**: in this case your primary site is eucalyptus cloud and the secondary is on another cloud

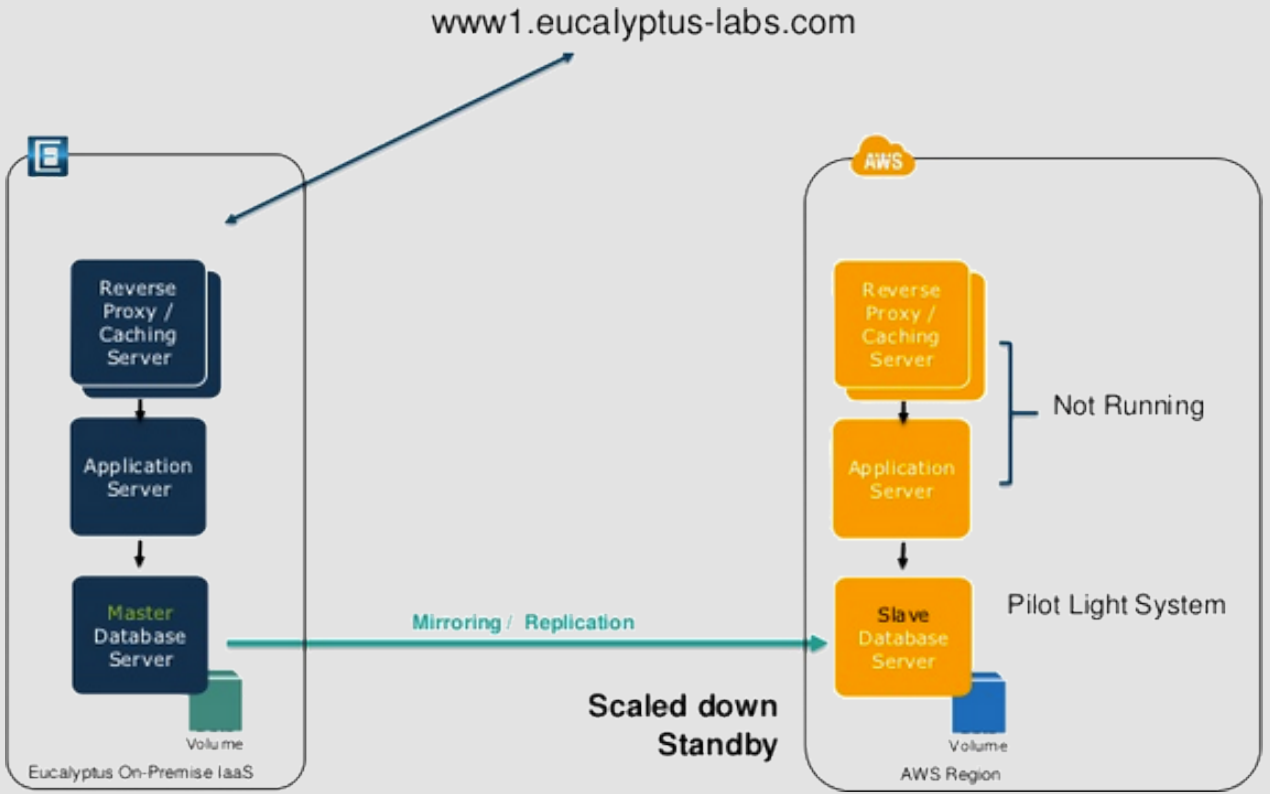
Cloudbursting: Interact Streaming Service



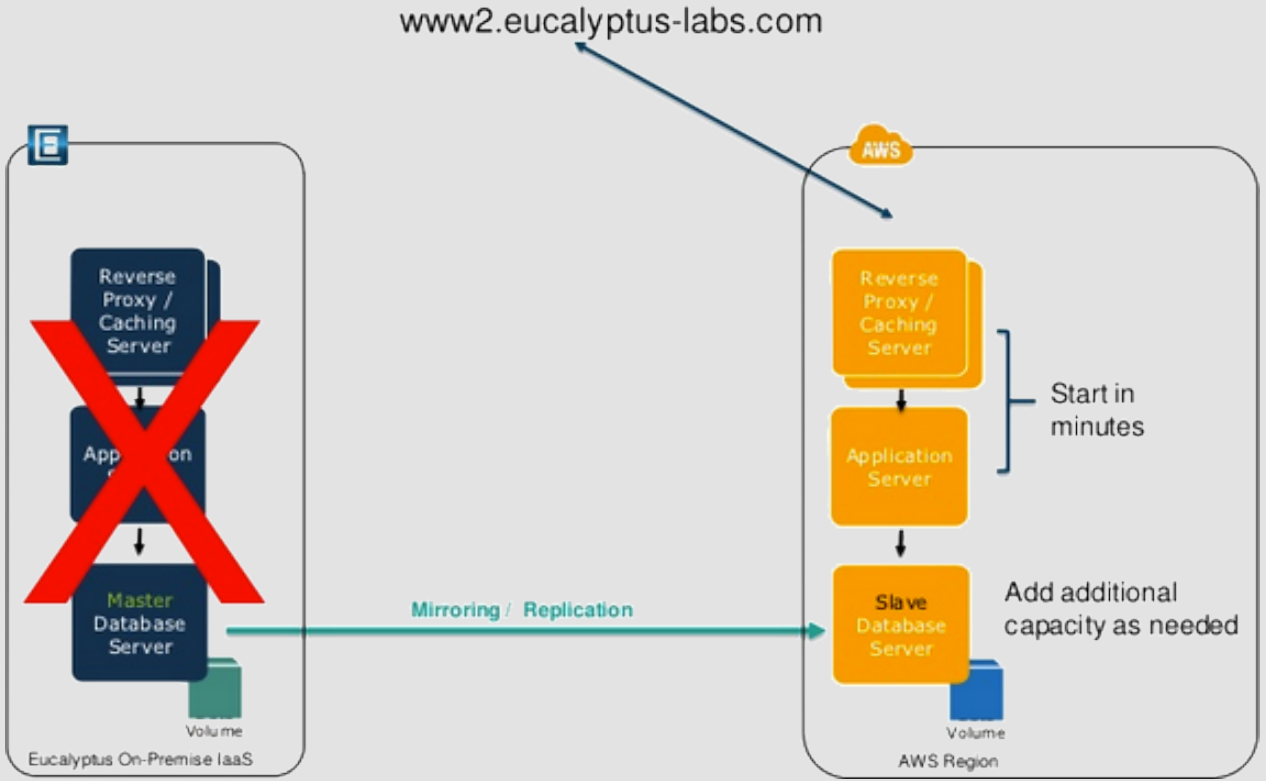
Migrating environments: Mosaik Solutions

- **Mosaik Solutions** is the global source for geospatial network intelligence
- The hybrid approach allows Mosaik to move workloads from Eucalyptus to AWS and vice versa
  - Migrate virtual servers between Eucalyptus and AWS
- AWS Cloudformation and Chef integration
  - Easily run applications and tools on-premise that have been developed for AWS and viceversa

Disaster recovery: pilot light use case



Disaster recovery: pilot light use case



QUESTIONS
&
ANSWERS

Links (1/2)

- Technical Conferences
  www.technicalconferences.it
- Cloud Conference
  www.cloudconference.it
- User Group
  www.meetup.com/AWSusergroupItaly
  www.meetup.com/Eucalyptus-Cloud-User-Group-Italy/

Links (2/2)

- Eucalyptus Guide
  http://www.eucalyptus.com/docs/eucalyptus/3.4/index.html
- Eucalyptus Community
  http://webchat.freenode.net/?channels=eucalyptus
- Datasheets and whitepaper
  http://www.eucalyptus.com/resources/datasheets
  http://www.eucalyptus.com/resources/whitepapers

Grazie.

Non dimenticare di riempire il modulo di feedback

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