

LIA

Week 3: Amazon EC2

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19 February 2013
Submission Date: 26 February 2013

Abstract

This lab will introduce you to the Amazon Cloud and EC2 in particular. You will learn about the billing model, authentication, VM instantiation, and load balancing.

NOTE Using cloud services costs money. You're kindly asked to use small AMIs and to make sure that you terminate running VM instances once you are done with the lab.

1 Access

Log on to Amazon Web Services using the credentials you've received via email. The login URL is <https://uva-sne-lia.signin.aws.amazon.com/console>

- Once logged in, take a look at the services provided by AWS. Feel free to explore!
- Create a keypair and download the *pem* file to a directory. Make sure you **chmod** it to 400. You will use the keypair to connect to your instances.

2 Adding Instances

Make sure you are working in the EU-West region.

- What is the difference between EBS and instance-store for VMs?
- Launch two instances of an Ubuntu 12.04 LAMP server (**ami-d67a74a2**).
- Use **ssh** to connect to both instances and change the web page to display the following, where *#* is a unique single digit id number for each instance.

This page is served by instance number <i>#</i> .

- Test each web server instance using the DNS reference provided by Amazon.
 - Measure the response time for each instance.

3 Load Balancing

Create a load balancer containing both LAMP servers.

→ Test the load balancing server using the DNS reference provided by Amazon.

→ Which server is responding? And when?

→ Measure the response time.

Now generate a continuous load (of work) on the most responsive of the instances.

→ How does this influence the load balancer?

→ Measure the response time both on the load balancer as well as on the separate web servers.

→ Draw a conclusion from the results.

Now add a Basic Microsoft Windows Server 2008 instance, and set up an IIS web server to serve the same page as the Ubuntu servers (you can change the #, for instance)

→ What are the advantages/disadvantages of a mixed setup?

→ Re-test the load balancing server using the DNS reference provided by Amazon.

→ Which server is responding? And when?

→ Measure the response time.

4 Security

→ Create a Security Group for your web servers with reasonable inbound traffic rules. For example, you might want to limit certain traffic to sources from the OS3 network only. Explain your reasons.

5 Termination

Now terminate all your instances and your load balancer.

For the Amazon Cloud:

→ How much money did it cost? Explain in detail.

→ Give an estimate of the costs if the services are used for a year.

6 Virtual Data Center

A sysadmin argues that she can move ALL the storage, network, server (web, application, database), and security services of her company to the Amazon cloud.

- Do you think this is feasible with the current AWS services?
- Briefly explain how you would use each AWS service to implement the sysadmin's plan.