Amazon-ELB (Elastic Load Balancing)

2015

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Learning object

1. Configuring Security Groups (P6-P7)
2. Launching EC2 instances.

   Connecting to EC2 instances. (P8-P15)
3. Create an ELB for HTTP traffic.

   Configure health checks.

   Understand ELB properties. (P16-P19)

What service to use ?

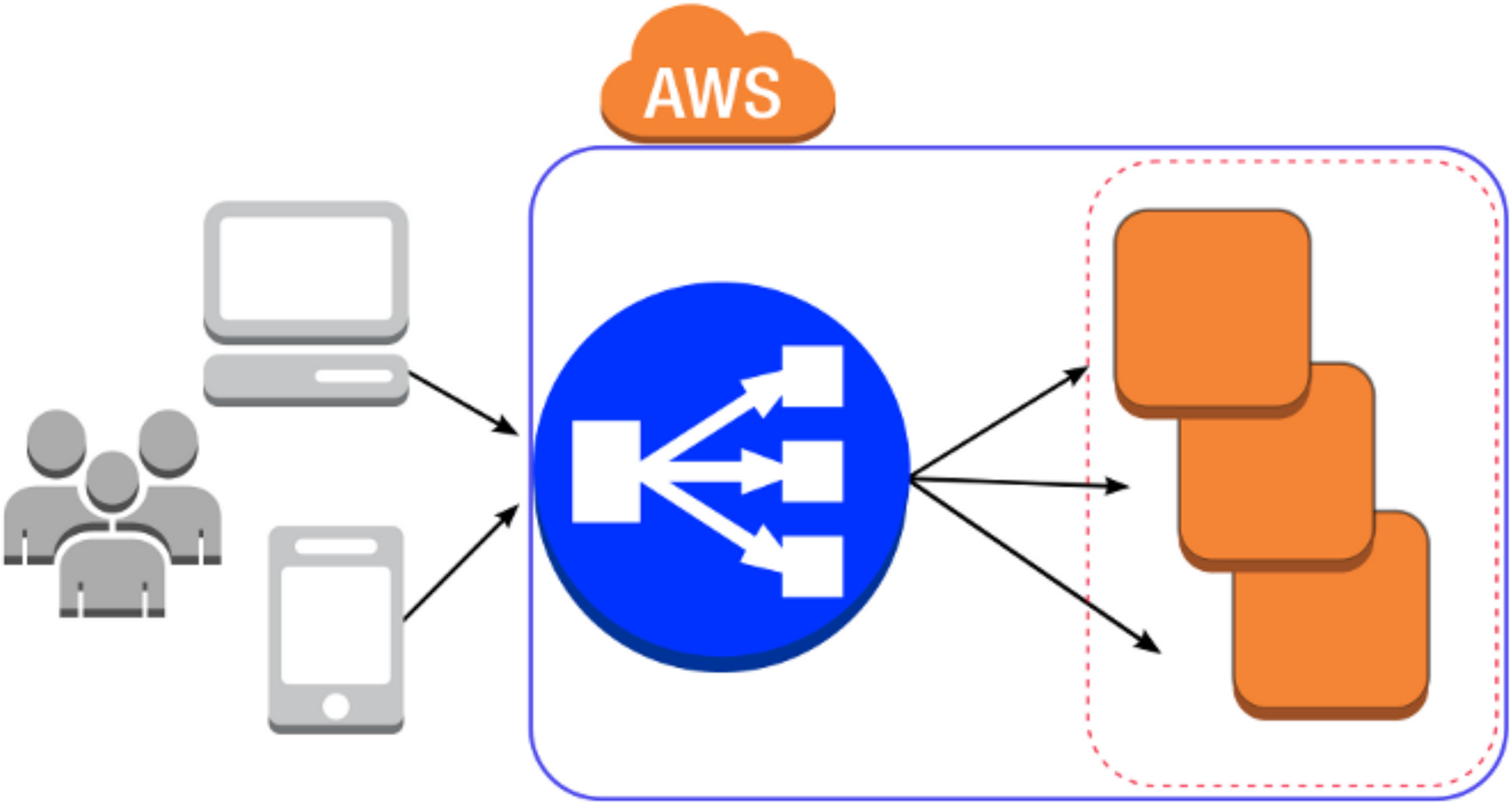
- Amazon Elastic Compute Cloud (Amazon EC2)
- Amazon Machine Image (AMI)
- Elastic Load Balancing (ELB)-

can automatically distributes incoming application traffic across multiple Amazon EC2 instances,

- Security Group

Amazon EC2 Key Pairs

- Use your .pem file


AWS

Security Groups

- In the left panel, under Network & Security, click Security Groups.
- Click Create Security Group.
- In the Create Security Group dialog box, enter the following information for the security group:

  a. Security group name: Web

  b. Description : http Access

Security Groups (continued…)

- Click Add Rule.
  a. In the Type drop-down list , click SSH to allow remote administration.
  b. In the Source drop-down list , click Anywhere.
- Click Add Rule again to create another rule.
  a. In the Type drop-down list , click HTTP to allow web traffic.
  b. In the Source drop-down list , click Anywhere.
- Click Create.

Step 1: Choose an Amazon Machine Image (AMI)

Cancel and Exit

An AMI is a template that contains the software configuration (operating system, application server, and applications) required to launch your instance. You can select an AMI provided by AWS, our user community, or the AWS Marketplace; or you can select one of your own AMIs.

Quick Start

My AMIs

AWS Marketplace

Community AMIs

Free tier only

1 to 22 of 22 AMIs

Amazon Linux AMI 2014.09.2 (HVM) - ami-146e2a7c

Amazon Linux — Free tier eligible

The Amazon Linux AMI is an EBS backed image. The default image includes AWS command line tools, Python, Ruby, Perl, and Java. The repositories include Apache HTTPD, Docker, PHP, MySQL, PostgreSQL, and other packages.

Root device type: ebs Virtualization type: hvm

Select 64-bit

Red Hat Enterprise Linux 6.6 (HVM), SSD Volume Type - ami-48400720

Red Hat — Free tier eligible

Red Hat Enterprise Linux version 6.6 (HVM), EBS General Purpose (SSD) Volume Type

Root device type: ebs Virtualization type: hvm

Select 64-bit

SUSE Linux Enterprise Server 12 (HVM), SSD Volume Type - ami-aeb532c6

SUSE Linux — Free tier eligible

SUSE Linux Enterprise Server 12 (HVM), EBS General Purpose (SSD) Volume Type. Public Cloud, Advanced Systems Management, Web and Scripting, and Legacy modules enabled.

Root device type: ebs Virtualization type: hvm

Select 64-bit

Ubuntu Server 14.04 LTS (HVM), SSD Volume Type - ami-9a562df2

Ubuntu — Free tier eligible

Ubuntu Server 14.04 LTS (HVM), EBS General Purpose (SSD) Volume Type. Support available from Canonical (http://www.ubuntu.com/cloud/services).

Root device type: ebs Virtualization type: hvm

Select 64-bit

Microsoft Windows Server 2012 R2 Base - ami-b27830da

Windows — Free tier eligible

Microsoft Windows 2012 R2 Standard edition with 64-bit architecture. [English]

Root device type: ebs Virtualization type: hvm

Select 64-bit

Are you launching a database instance? Try Amazon RDS. Hide

Amazon RDS

Amazon Relational Database Service (RDS) makes it easy to set up, operate, and scale a relational database of your choice (MySQL, PostgreSQL, Oracle, SQL Server) in the cloud. It provides cost-efficient and resizable capacity while managing time-consuming database management tasks, freeing you up to focus on your applications and business. Learn more.

Launch a database using RDS

Microsoft Windows Server 2012 R2 with SQL Server Express - ami-9a7931f2

Windows

Microsoft Windows Server 2012 R2 Standard edition, 64-bit architecture, Microsoft SQL Server 2014 Express edition. [English]

Select

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Feedback

Step 3: Configure Instance Details

Network	vpc-5f2c583a (172.31.0.0/16) (default)	Create new VPC
Subnet	subnet-25f36552(172.31.32.0/20) | Default in us-ea 4091 IP Addresses available	Create new subnet
Auto-assign Public IP	Use subnet setting (Enable)	
IAM role	None	Create new IAM role
Shutdown behavior	Stop	
Enable termination protection	Protect against accidental termination	
Monitoring	Enable CloudWatch detailed monitoring Additional charges apply.	
Tenancy	Shared tenancy (multi-tenant hardware) Additional charges will apply for dedicated tenancy.	

Network interfaces

Device	Network Interface	Subnet	Primary IP	Secondary IP addresses
eth0	New network interfac	subnet-25f3655:	Auto-assign	Add IP

Add Device

Advanced Details

User data: As text / As file / Input is already base64 encoded

```
#!/bin/sh
yum -y install httpd
chkconfig httpd on
/etc/init.d/httpd start
```

Cancel | Previous | Review and Launch | Next: Add Storage

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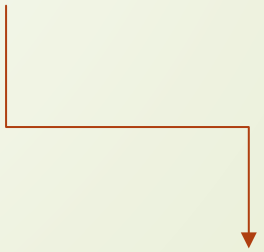
Launching a Web Server

- From the Services menu at the top of the screen, select EC2.
- Click Launch Instance.
- Locate the Amazon Linux AMI (the first item in the Quick Start list) and click Select.
- There are no modifications needed in the Choose an Instance Type panel. Click Next: Configure Instance Details.
- At the Configure Instance Details panel:

  a. Scroll down and expand the Advanced Details section.

  b. Enter the following text in the User data field.



Launching a Web Server (continued…)

```
#!/bin/sh
yum –y install httpd
chkconfig httpd on
/etc/init.d/httpd start
```

c. Next: Add Storage.

- There are no modifications needed in the Add Storage panel. Click Next: Tag Instance.
- At the Tag Instance panel, enter the Value: Web Server 1 for the Name key/value pair.
- Click Next: Configure Security Group.
- Choose the Select an existing security group option.
- Select the Web security group that you created.
- Click Review and launch

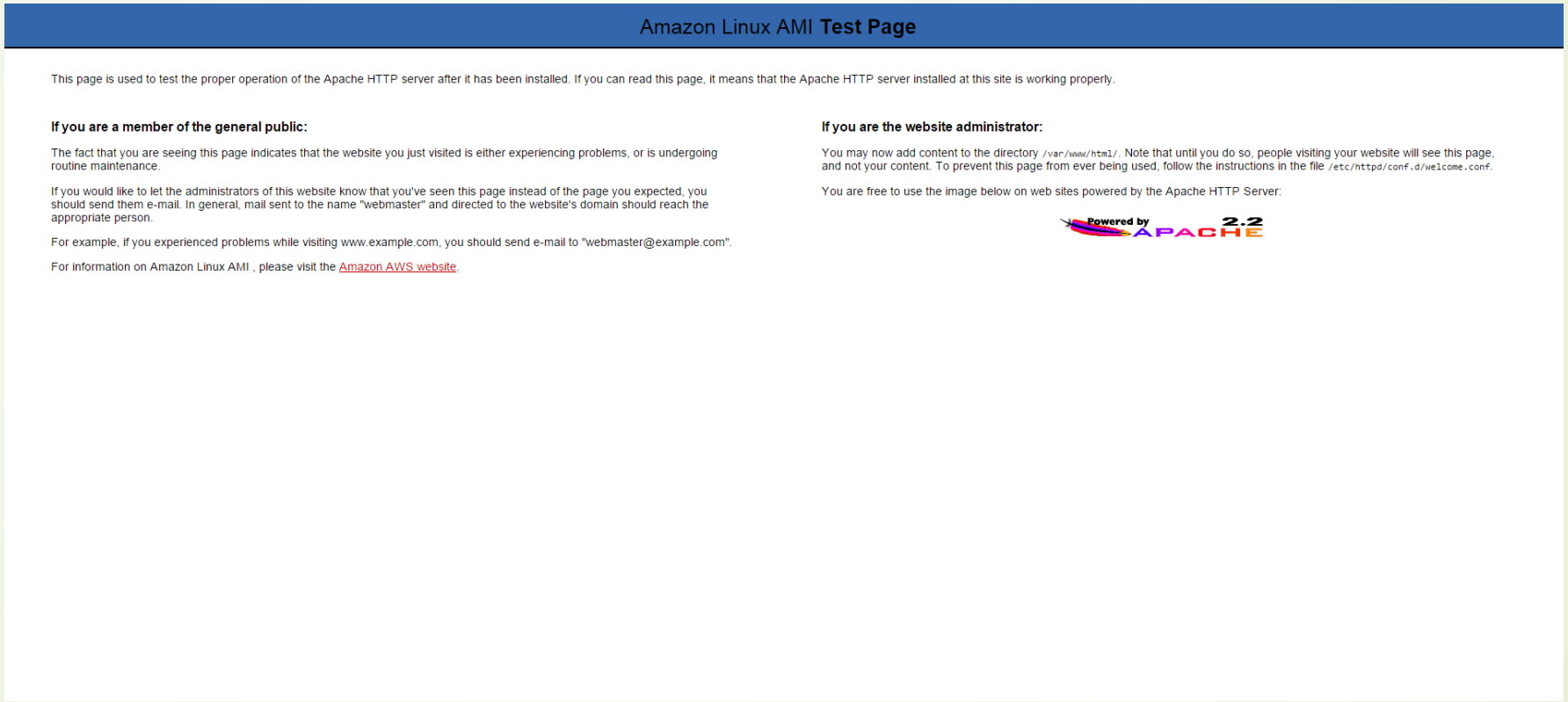
Launching a Web Server (continued…)

- You will receive a warning about improving your instance's security group. You can ignore this warning for the purposes of this lab.
- Click Launch. You are presented with the Select an existing key pair or create a new key pair dialog box.
- The Select a key pair drop-down choose your key.
- Check the acknowledgement box and click Launch Instances.
- Click View Instances (you might need to scroll down to see it).

Launching a Web Server (continued…)

- Wait until the web server shows 2/2 checks passed under the Status Checks column. You can click the refresh button at the top of the Management Console periodically to view the current status
- Click on the web server and copy its Public DNS from the details pane to your clipboard.
- Open a new tab in your web browser, paste the DNS address and hit Enter. You should see something similar to the following:

Launching a Web Server (continued…)



Launching a Web Server (continued…)

- If you successfully launch one instance ,try to launch another one.
- Select the instance you just launched ,click Action button.
- Click Launch More Like This.
- Click Launch button

Elastic Load Balancing Basics

- In the AWS Management Console, in the Services menu, click EC2.
- In the navigation pane, under Network & Security, click Load Balancers.
- Click Create Load Balancer.
- On the Define Load Balancer page:
  a. Load Balancer Name: ELB1
  b. Click Continue.

Elastic Load Balancing Basics (continued…)

- On the Configure Health Check page:
  a. Ping Protocol: TCP
  b. Health Check Interval: 6
  c. Healthy Threshold: 2
  d. Click Continue.
- On the Assign Security Groups page:
  a. Click Create a new Security Group.
  b. Security Group Name: HTTP Only
  c. In the Type drop-down list, click HTTP.
  d. Click Continue.

Elastic Load Balancing Basics (continued…)

- On the Add Instances to Load Balancer page:
  a. Select both instances.
  b. Click Continue.
- On the Add Tags page, click Continue.
- On the Review page, click Create.
- When the ELB is created, click Close.
- Confirm that your ELB is selected in the list.
- Click the Instances tab to view instance status.

Elastic Load Balancing Basics (continued…)

- Click the Description tab.
- Copy the DNS Name value to your Clipboard.
- Open a new tab in your web browser and paste the DNS name in the address bar.
- You should see an Test Page that is being served from one of your web servers.

Lab (1%)

- Since ELB will redirection request to the VMs , both of your VMs will be queried when you visit ELB webpage. As a result, you will see your VMs have same traffic at the same time
- Please using the following python code to demo if your ELB works or not.(1%)

```
import urllib2,cookielib
site="your ELB DNS"
hdr = {'User-Agent': 'Mozilla/5.0 (X11; Linux x86_64) AppleWebKit/537.11 (KHTML, like Gecko) Chrome/23.0.1271.64 Safari/537.11',
       'Accept': 'text/html,application/xhtml+xml,application/xml;q=0.9,*/*;q=0.8',
       'Accept-Charset': 'ISO-8859-1,utf-8;q=0.7,*;q=0.3',
       'Accept-Encoding': 'none',
       'Accept-Language': 'en-US,en;q=0.8',
       'Connection': 'keep-alive'}

req = urllib2.Request(site, headers=hdr)
for num in range(1,2000):
        try:
            page = urllib2.urlopen(req)
        except urllib2.HTTPError, e:
            print e.fp.read()
```