CS 524 Intro to Cloud computing

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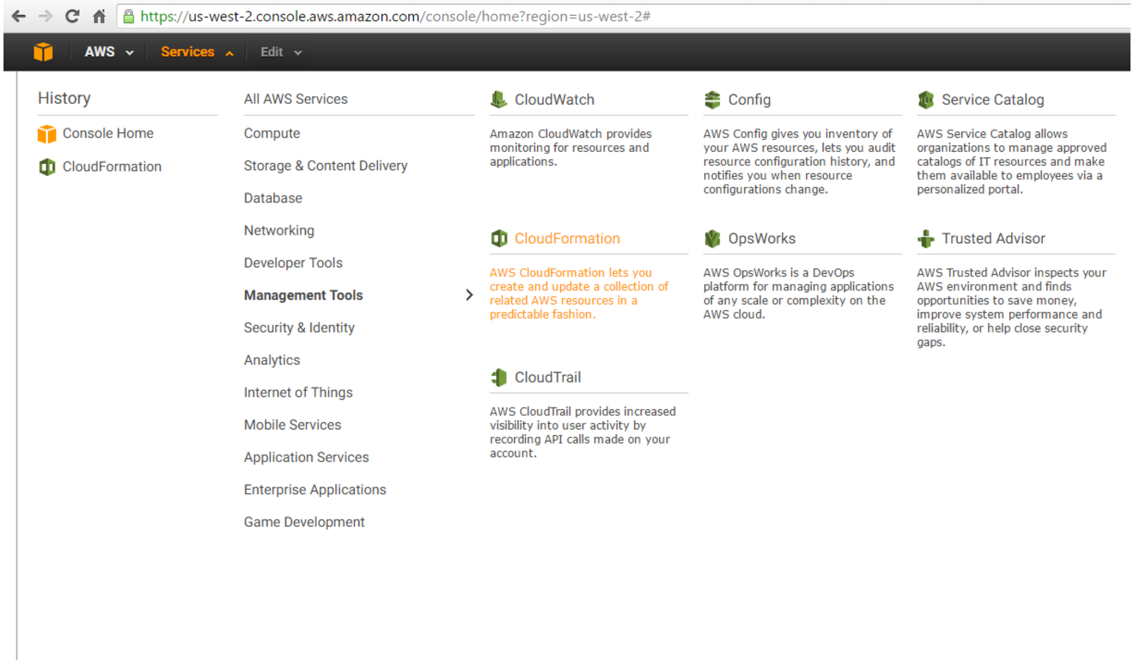
Lab Assignment 3

In the wake of signing into AWS, Click on CloudFormation administration from Management apparatuses alternative:



Amazon CloudWatch provides monitoring for resources and applications.

AWS Config gives you inventory of your AWS resources, lets you audit resource configuration history, and notifies you when resource configurations change.

AWS Service Catalog allows organizations to manage approved catalogs of IT resources and make them available to employees via a personalized portal.

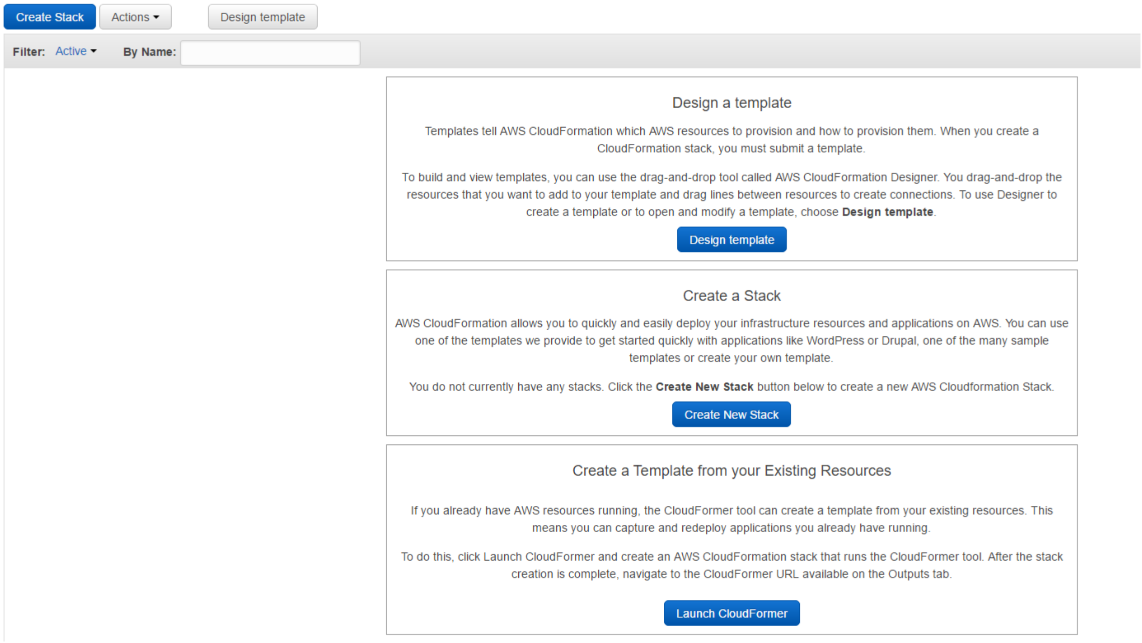
AWS CloudFormation lets you create and update a collection of related AWS resources in a predictable fashion.

AWS OpsWorks is a DevOps platform for managing applications of any scale or complexity on the AWS cloud.

AWS Trusted Advisor inspects your AWS environment and finds opportunities to save money, improve system performance and reliability, or help close security gaps.

AWS CloudTrail provides increased visibility into user activity by recording API calls made on your account.

Click on Create a new Stack



Design a template

Templates tell AWS CloudFormation which AWS resources to provision and how to provision them. When you create a CloudFormation stack, you must submit a template.

To build and view templates, you can use the drag-and-drop tool called AWS CloudFormation Designer. You drag-and-drop the resources that you want to add to your template and drag lines between resources to create connections. To use Designer to create a template or to open and modify a template, choose **Design template**.

Create a Stack

AWS CloudFormation allows you to quickly and easily deploy your infrastructure resources and applications on AWS. You can use one of the templates we provide to get started quickly with applications like WordPress or Drupal, one of the many sample templates or create your own template.

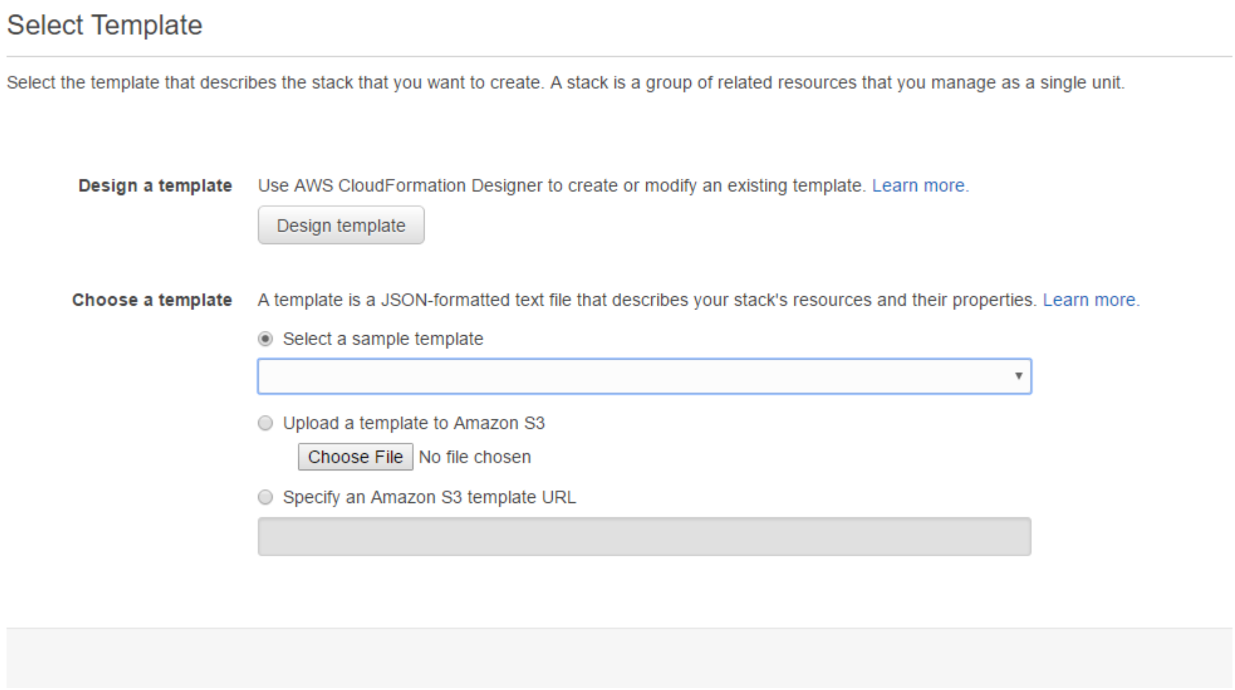
You do not currently have any stacks. Click the **Create New Stack** button below to create a new AWS Cloudformation Stack.

Create a Template from your Existing Resources

If you already have AWS resources running, the CloudFormer tool can create a template from your existing resources. This means you can capture and redeploy applications you already have running.

To do this, click Launch CloudFormer and create an AWS CloudFormation stack that runs the CloudFormer tool. After the stack creation is complete, navigate to the CloudFormer URL available on the Outputs tab.

Select a sample template WordPress blog so that we can customize website.



Select Template

Select the template that describes the stack that you want to create. A stack is a group of related resources that you manage as a single unit.

Design a template Use AWS CloudFormation Designer to create or modify an existing template. Learn more.

Choose a template A template is a JSON-formatted text file that describes your stack's resources and their properties. Learn more.

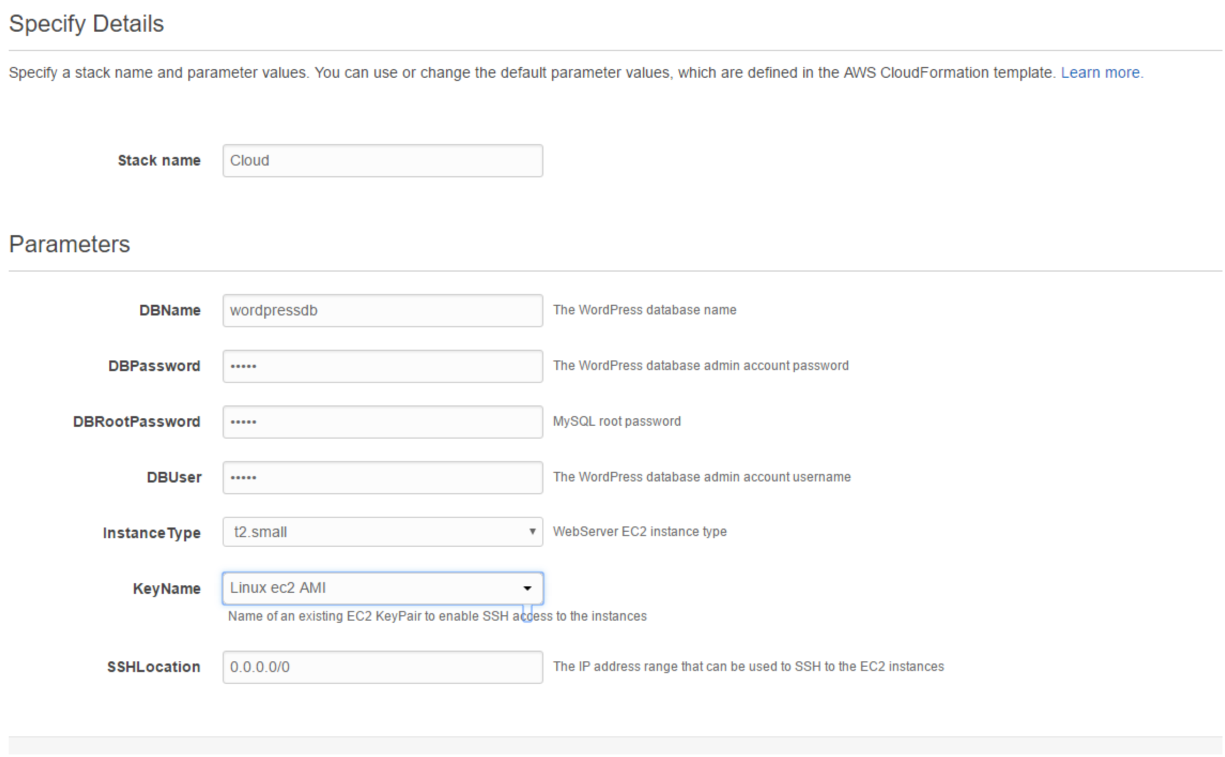
● Select a sample template

○ Upload a template to Amazon S3

No file chosen

○ Specify an Amazon S3 template URL

Fill necessary details such as Username, password, Key-pair etc.



Specify Details

Specify a stack name and parameter values. You can use or change the default parameter values, which are defined in the AWS CloudFormation template. Learn more.

Stack name Cloud

Parameters

DBName wordpressdb — The WordPress database name

DBPassword ••••• — The WordPress database admin account password

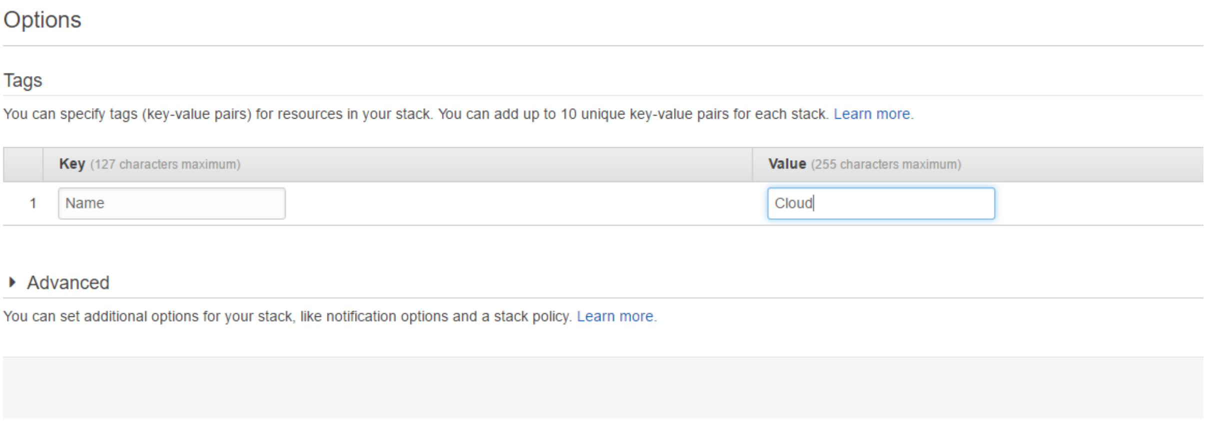
DBRootPassword ••••• — MySQL root password

DBUser ••••• — The WordPress database admin account username

InstanceType t2.small — WebServer EC2 instance type

KeyName Linux ec2 AMI — Name of an existing EC2 KeyPair to enable SSH access to the instances

SSHLocation 0.0.0.0/0 — The IP address range that can be used to SSH to the EC2 instances



Options

Tags

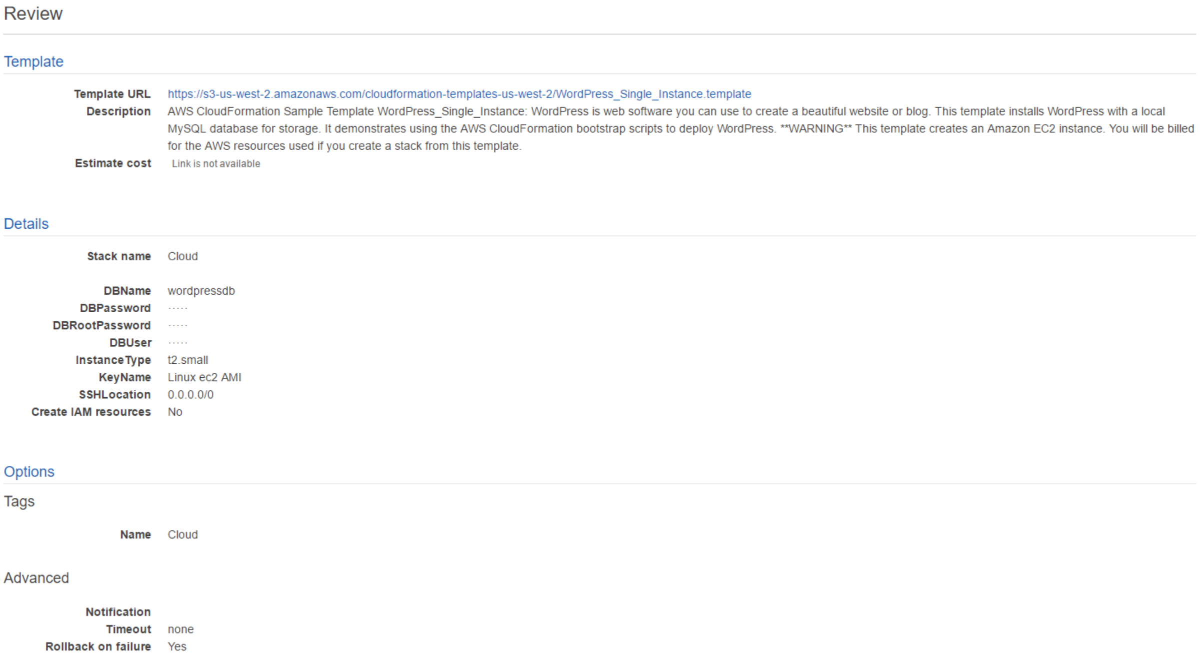
You can specify tags (key-value pairs) for resources in your stack. You can add up to 10 unique key-value pairs for each stack. Learn more.

	Key (127 characters maximum)	Value (255 characters maximum)
1	Name	Cloud

▸ Advanced

You can set additional options for your stack, like notification options and a stack policy. Learn more.

After reviewing all details click on create



Review

Template

Template URL	https://s3-us-west-2.amazonaws.com/cloudformation-templates-us-west-2/WordPress_Single_Instance.template
Description	AWS CloudFormation Sample Template WordPress_Single_Instance: WordPress is web software you can use to create a beautiful website or blog. This template installs WordPress with a local MySQL database for storage. It demonstrates using the AWS CloudFormation bootstrap scripts to deploy WordPress. **WARNING** This template creates an Amazon EC2 instance. You will be billed for the AWS resources used if you create a stack from this template.
Estimate cost	Link is not available

Details

Stack name	Cloud
DBName	wordpressdb
DBPassword	·····
DBRootPassword	·····
DBUser	·····
InstanceType	t2.small
KeyName	Linux ec2 AMI
SSHLocation	0.0.0.0/0
Create IAM resources	No

Options

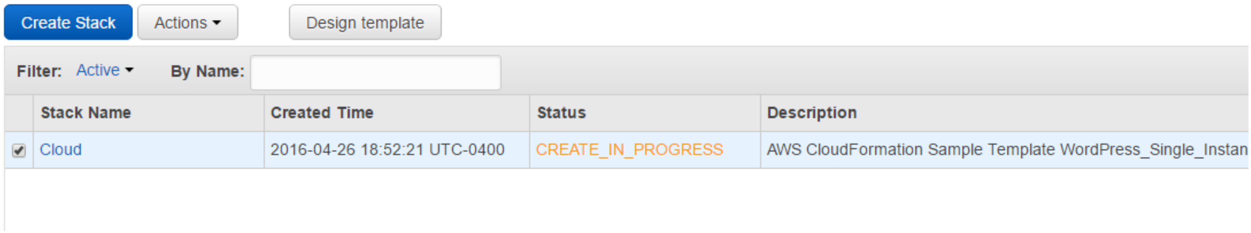
Tags

Name	Cloud

Advanced

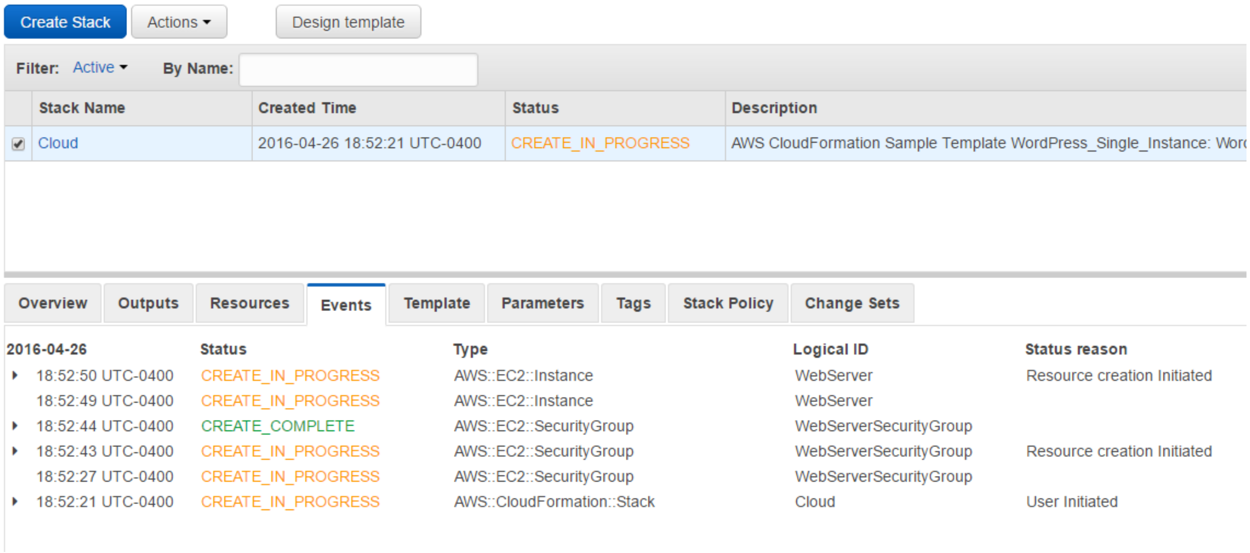
Notification	
Timeout	none
Rollback on failure	Yes

Presently you will see new stack being made and status will CREATE_IN_PROGRESS, refresh it until its status is CREATE_COMPLETE, at times your change will be roll-upheld and that is because of disappointment of creation of stack.



Filter: Active ▾ By Name:

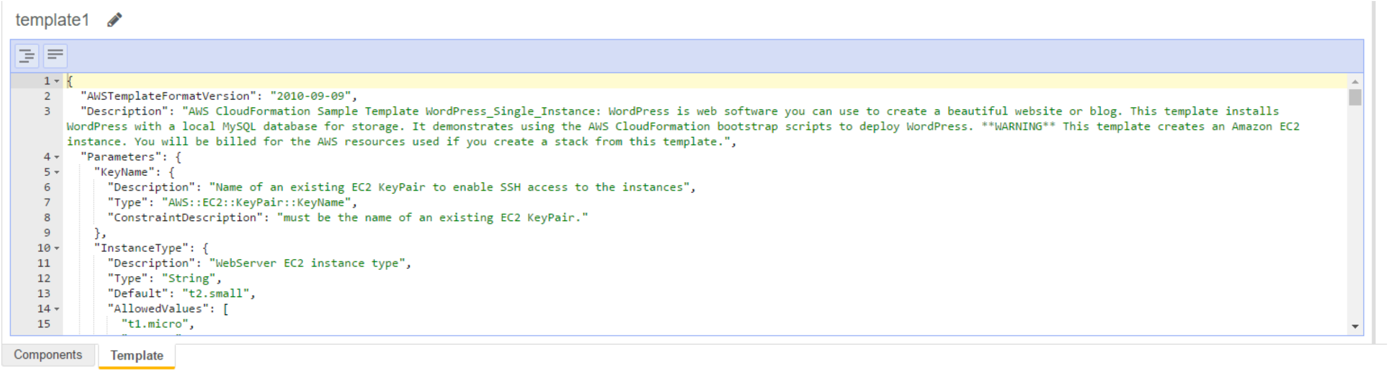
	Stack Name	Created Time	Status	Description
☑	Cloud	2016-04-26 18:52:21 UTC-0400	CREATE_IN_PROGRESS	AWS CloudFormation Sample Template WordPress_Single_Instan



	Stack Name	Created Time	Status	Description
☑	Cloud	2016-04-26 18:52:21 UTC-0400	CREATE_IN_PROGRESS	AWS CloudFormation Sample Template WordPress_Single_Instance: Wor

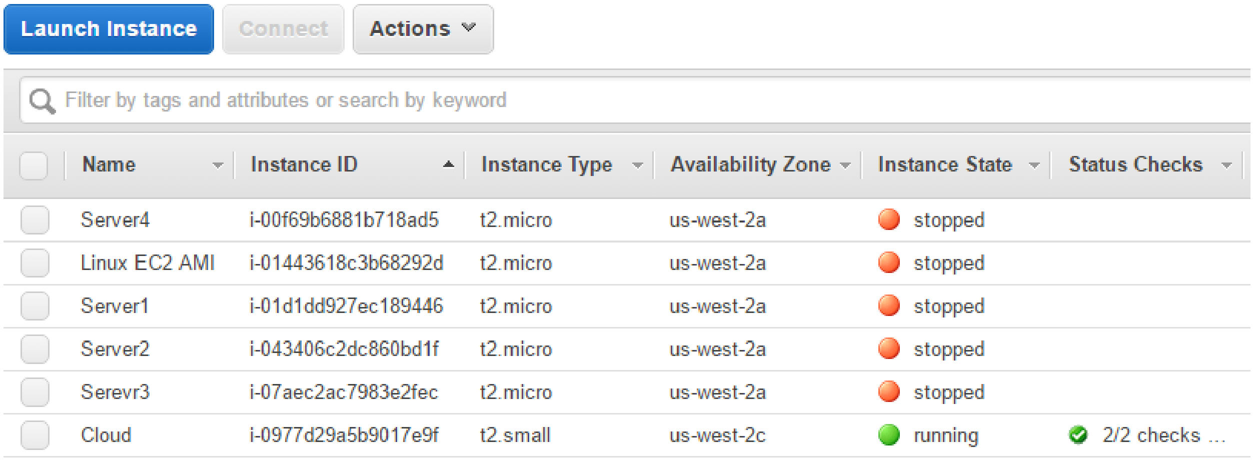
2016-04-26	Status	Type	Logical ID	Status reason
18:52:50 UTC-0400	CREATE_IN_PROGRESS	AWS::EC2::Instance	WebServer	Resource creation Initiated
18:52:49 UTC-0400	CREATE_IN_PROGRESS	AWS::EC2::Instance	WebServer	
18:52:44 UTC-0400	CREATE_COMPLETE	AWS::EC2::SecurityGroup	WebServerSecurityGroup	
18:52:43 UTC-0400	CREATE_IN_PROGRESS	AWS::EC2::SecurityGroup	WebServerSecurityGroup	Resource creation Initiated
18:52:27 UTC-0400	CREATE_IN_PROGRESS	AWS::EC2::SecurityGroup	WebServerSecurityGroup	
18:52:21 UTC-0400	CREATE_IN_PROGRESS	AWS::CloudFormation::Stack	Cloud	User Initiated

We can view generated template’s script below.



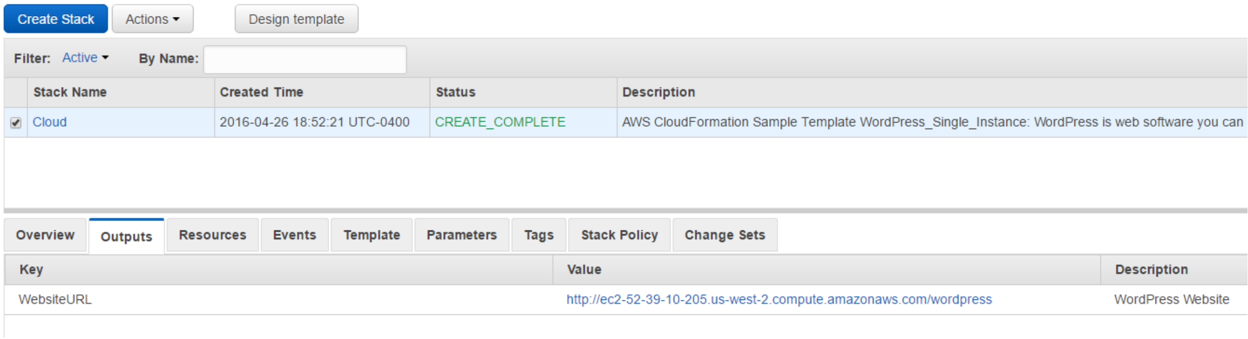
```
{
  "AWSTemplateFormatVersion": "2010-09-09",
  "Description": "AWS CloudFormation Sample Template WordPress_Single_Instance: WordPress is web software you can use to create a beautiful website or blog. This template installs
WordPress with a local MySQL database for storage. It demonstrates using the AWS CloudFormation bootstrap scripts to deploy WordPress. **WARNING** This template creates an Amazon EC2
instance. You will be billed for the AWS resources used if you create a stack from this template.",
  "Parameters": {
    "KeyName": {
      "Description": "Name of an existing EC2 KeyPair to enable SSH access to the instances",
      "Type": "AWS::EC2::KeyPair::KeyName",
      "ConstraintDescription": "must be the name of an existing EC2 KeyPair."
    },
    "InstanceType": {
      "Description": "WebServer EC2 instance type",
      "Type": "String",
      "Default": "t2.small",
      "AllowedValues": [
        "t1.micro",
```

Beneath depiction demonstrates that instance made because of progress deploy of Stack. Which implies at whatever point we will create a stack utilizing AWS cloud development an instance will be made in the same locale after its status indicates CREATE_COMPLETE.



□	Name	Instance ID	Instance Type	Availability Zone	Instance State	Status Checks
□	Server4	i-00f69b6881b718ad5	t2.micro	us-west-2a	● stopped	
□	Linux EC2 AMI	i-01443618c3b68292d	t2.micro	us-west-2a	● stopped	
□	Server1	i-01d1dd927ec189446	t2.micro	us-west-2a	● stopped	
□	Server2	i-043406c2dc860bd1f	t2.micro	us-west-2a	● stopped	
□	Serevr3	i-07aec2ac7983e2fec	t2.micro	us-west-2a	● stopped	
□	Cloud	i-0977d29a5b9017e9f	t2.small	us-west-2c	● running	✓ 2/2 checks ...

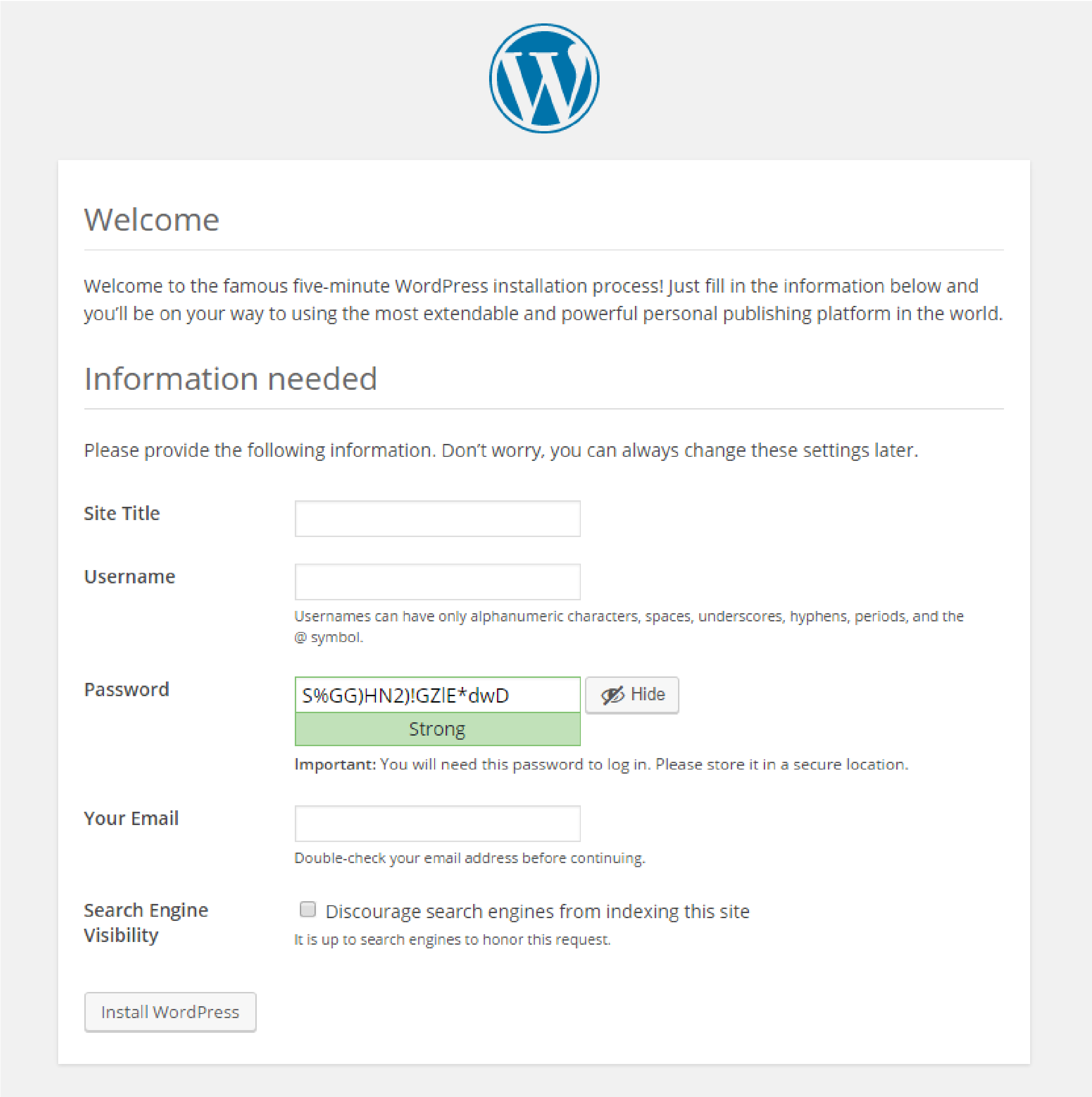
When status will be CREATE_COMPLETE click on outputs which will give you link to open WordPress site and there you can customize your own website.



	Stack Name	Created Time	Status	Description
☑	Cloud	2016-04-26 18:52:21 UTC-0400	CREATE_COMPLETE	AWS CloudFormation Sample Template WordPress_Single_Instance: WordPress is web software you can

Key	Value	Description
WebsiteURL	http://ec2-52-39-10-205.us-west-2.compute.amazonaws.com/wordpress	WordPress Website

After clicking on web URL we will get below, enter required details



Welcome

Welcome to the famous five-minute WordPress installation process! Just fill in the information below and you'll be on your way to using the most extendable and powerful personal publishing platform in the world.

Information needed

Please provide the following information. Don't worry, you can always change these settings later.

Site Title

Username

Usernames can have only alphanumeric characters, spaces, underscores, hyphens, periods, and the @ symbol.

Password: S%GG)HN2)!GZlE*dwD Hide

Strong

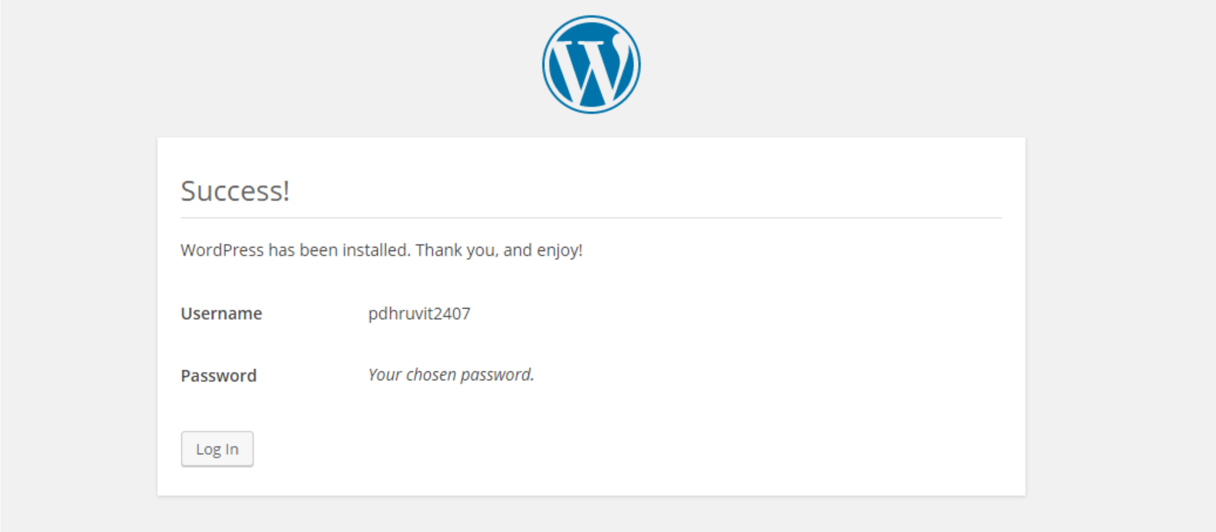
Important: You will need this password to log in. Please store it in a secure location.

Your Email

Double-check your email address before continuing.

Search Engine Visibility: □ Discourage search engines from indexing this site

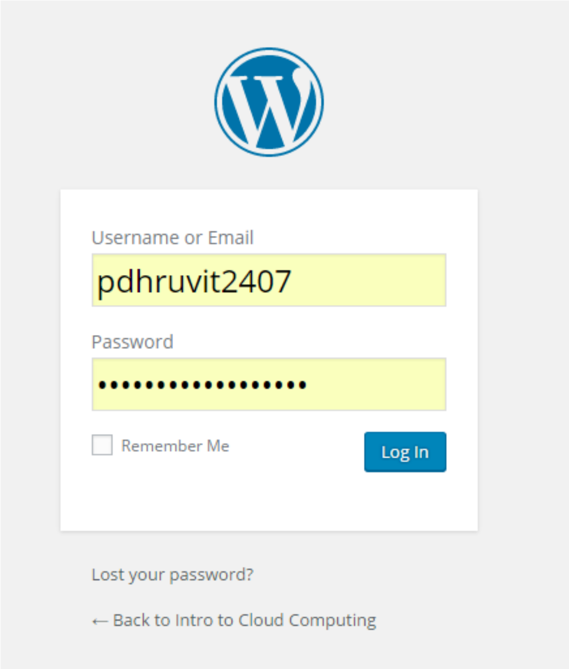
It is up to search engines to honor this request.



Success!

WordPress has been installed. Thank you, and enjoy!

Username	pdhruvit2407
Password	*Your chosen password.*

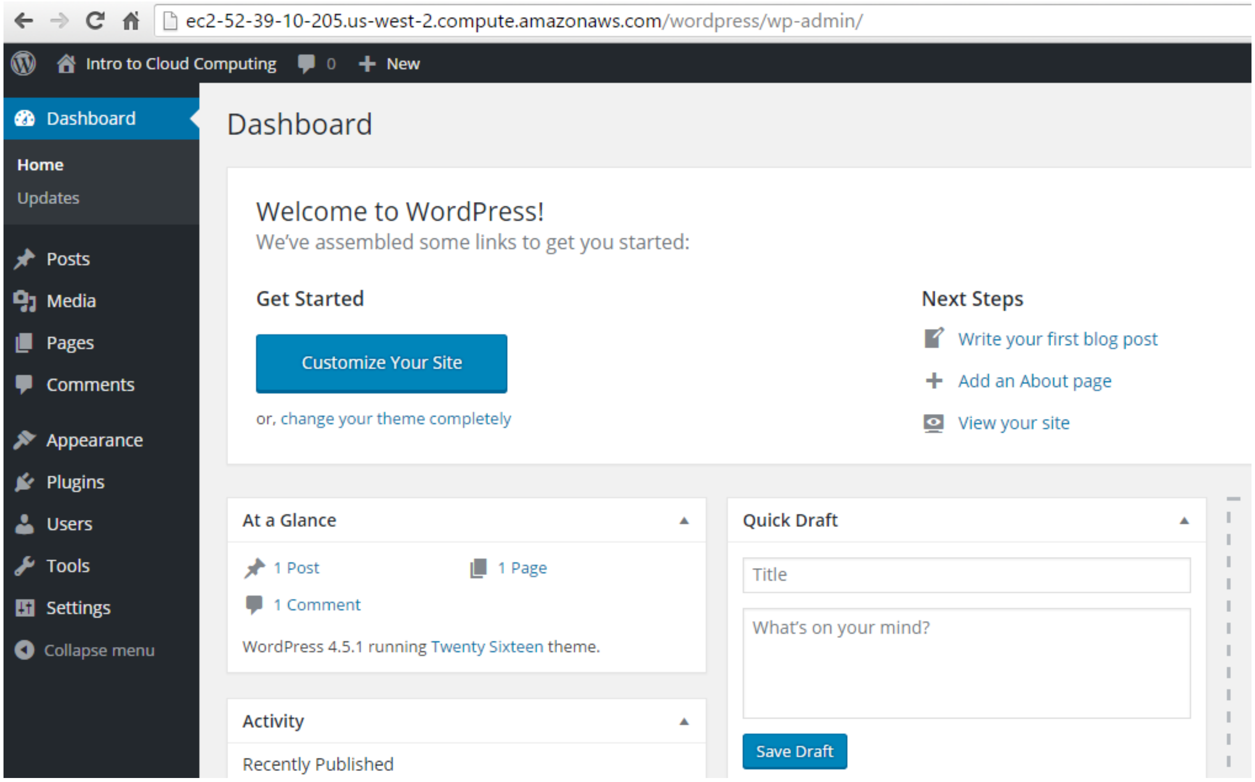


Username or Email: pdhruvit2407

Password: •••••••••••••••••

□ Remember Me

After login you will see on underneath Dashboard of WordPress with name which you will use as your new site name. In my case its "Introduction to Cloud Computing".



ec2-52-39-10-205.us-west-2.compute.amazonaws.com/wordpress/wp-admin/

Dashboard

Welcome to WordPress!

We've assembled some links to get you started:

Get Started

Customize Your Site

or, change your theme completely

Next Steps

Write your first blog post

Add an About page

View your site

At a Glance

1 Post

1 Page

1 Comment

WordPress 4.5.1 running Twenty Sixteen theme.

Activity

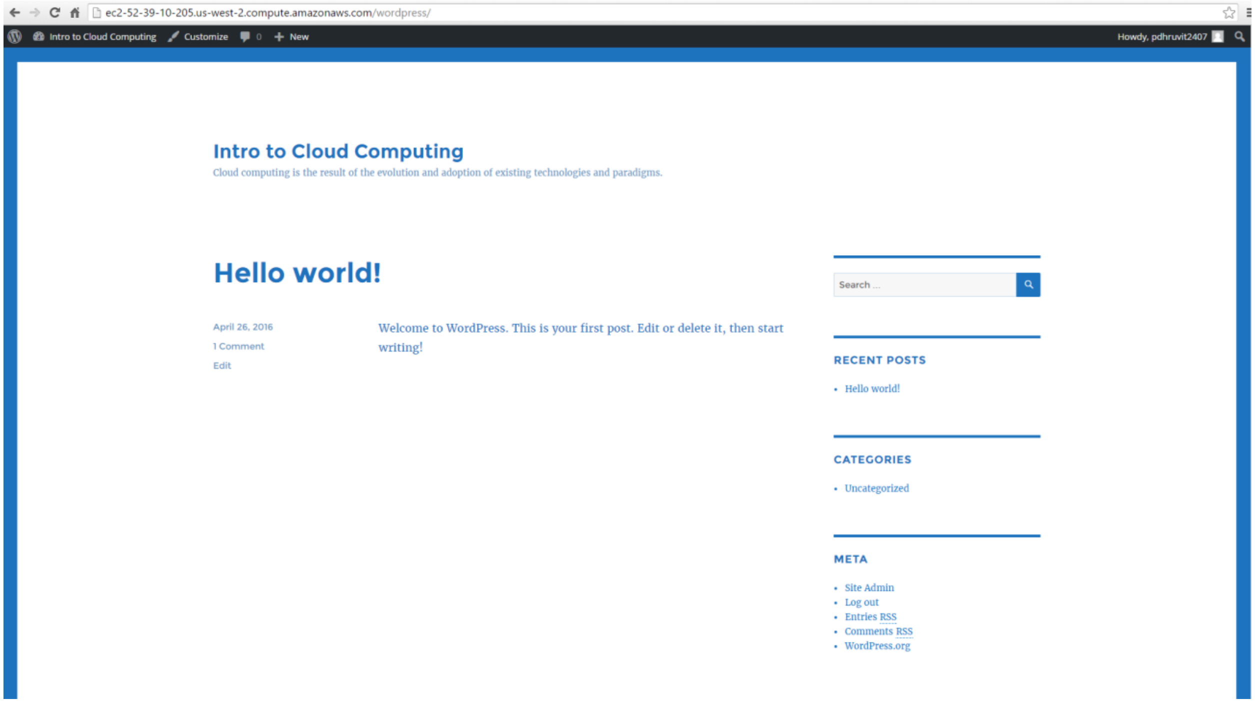
Recently Published

Quick Draft

Title

What's on your mind?

Save Draft



ec2-52-39-10-205.us-west-2.compute.amazonaws.com/wordpress/

Intro to Cloud Computing

Cloud computing is the result of the evolution and adoption of existing technologies and paradigms.

Hello world!

April 26, 2016

1 Comment

Edit

Welcome to WordPress. This is your first post. Edit or delete it, then start writing!

Search ...

RECENT POSTS

- Hello world!

CATEGORIES

- Uncategorized

META

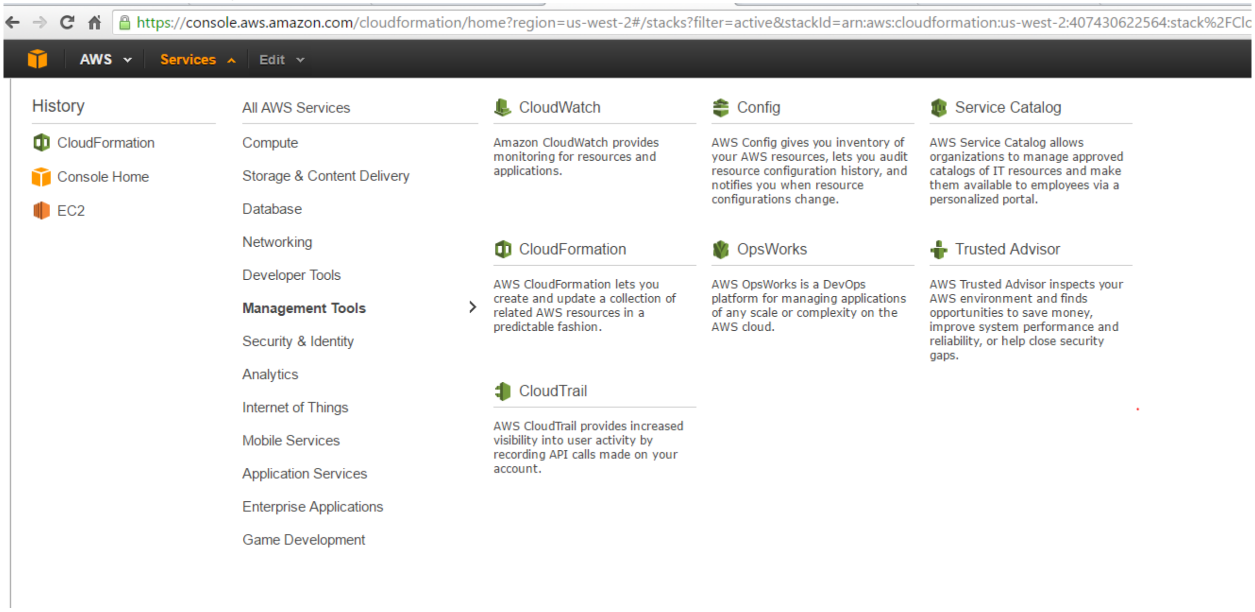
- Site Admin
- Log out
- Entries RSS
- Comments RSS
- WordPress.org

Extra task for 20 marks using OpsWorks:

I utilized the chef service (that is accessible in OpsWorks) keeping in mind the end goal to host **"Intro to cloud computing"** custom website through php instance. Chef expert is an application that is utilized for automation of server.

Below is the detailed steps which will "Intro to Cloud Computing" link website to php server through an instance.

- Click on OpsWorks



Amazon CloudWatch provides monitoring for resources and applications.

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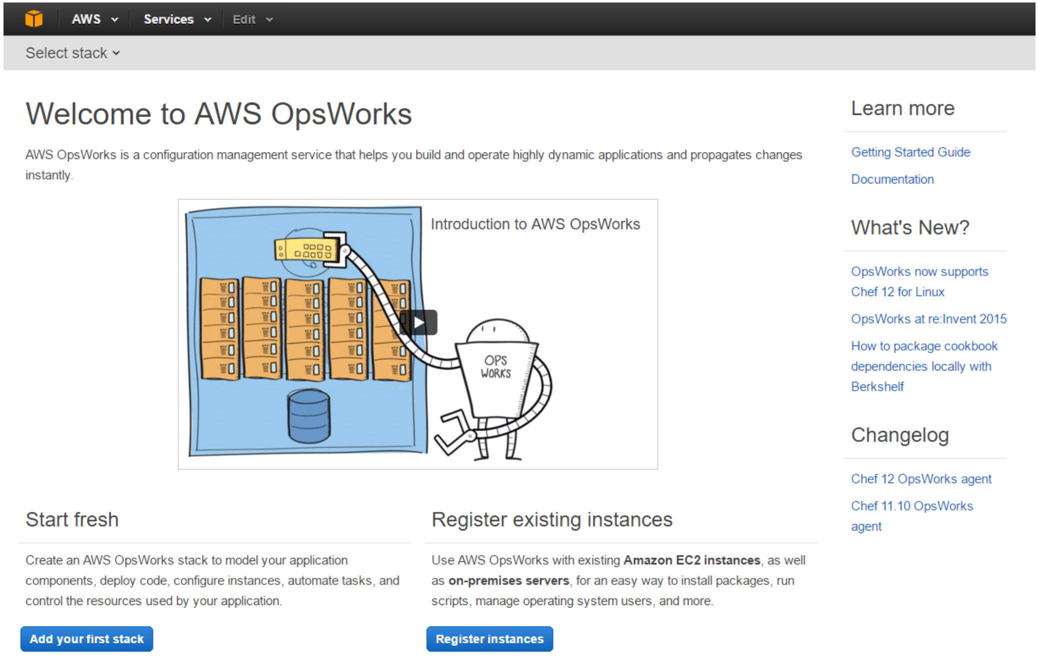
AWS CloudTrail provides increased visibility into user activity by recording API calls made on your account.

- Click on add your first stack to create a stack.


AWS
Services
Edit
Select stack
Introduction to AWS OpsWorks
OPS WORKS
Learn more
Getting Started Guide
Documentation
What's New?
OpsWorks now supports Chef 12 for Linux
OpsWorks at re:Invent 2015
How to package cookbook dependencies locally with Berkshelf
Changelog
Chef 12 OpsWorks agent
Chef 11.10 OpsWorks agent
Add your first stack
Register instances

Welcome to AWS OpsWorks

AWS OpsWorks is a configuration management service that helps you build and operate highly dynamic applications and propagates changes instantly.

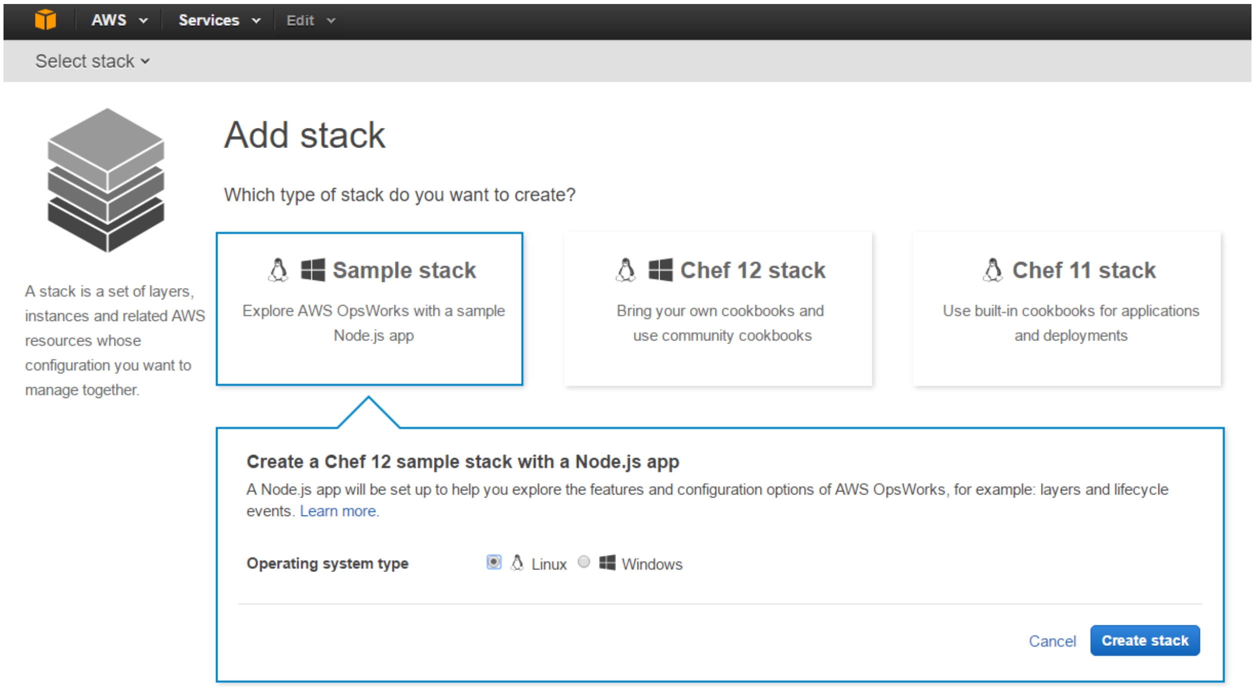
Start fresh

Create an AWS OpsWorks stack to model your application components, deploy code, configure instances, automate tasks, and control the resources used by your application.

Register existing instances

Use AWS OpsWorks with existing **Amazon EC2 instances**, as well as **on-premises servers**, for an easy way to install packages, run scripts, manage operating system users, and more.

- Click on Chef 11 stack and fill in below details to create a stack.



Add stack

Which type of stack do you want to create?

A stack is a set of layers, instances and related AWS resources whose configuration you want to manage together.

Sample stack
Explore AWS OpsWorks with a sample Node.js app

Chef 12 stack
Bring your own cookbooks and use community cookbooks

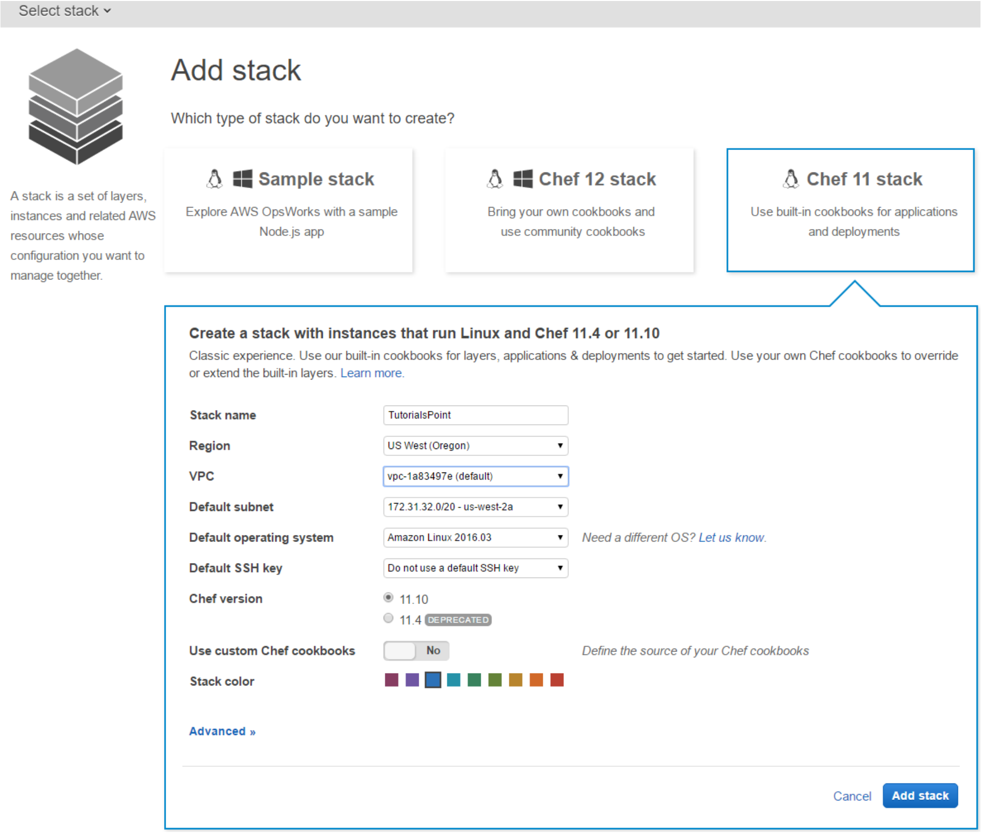
Chef 11 stack
Use built-in cookbooks for applications and deployments

Create a Chef 12 sample stack with a Node.js app

A Node.js app will be set up to help you explore the features and configuration options of AWS OpsWorks, for example: layers and lifecycle events. Learn more.

Operating system type ● Linux ○ Windows

- Give stack name ("TutorialsPoint") and click on create stack.



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Explore AWS OpsWorks with a sample Node.js app

Chef 12 stack
Bring your own cookbooks and use community cookbooks

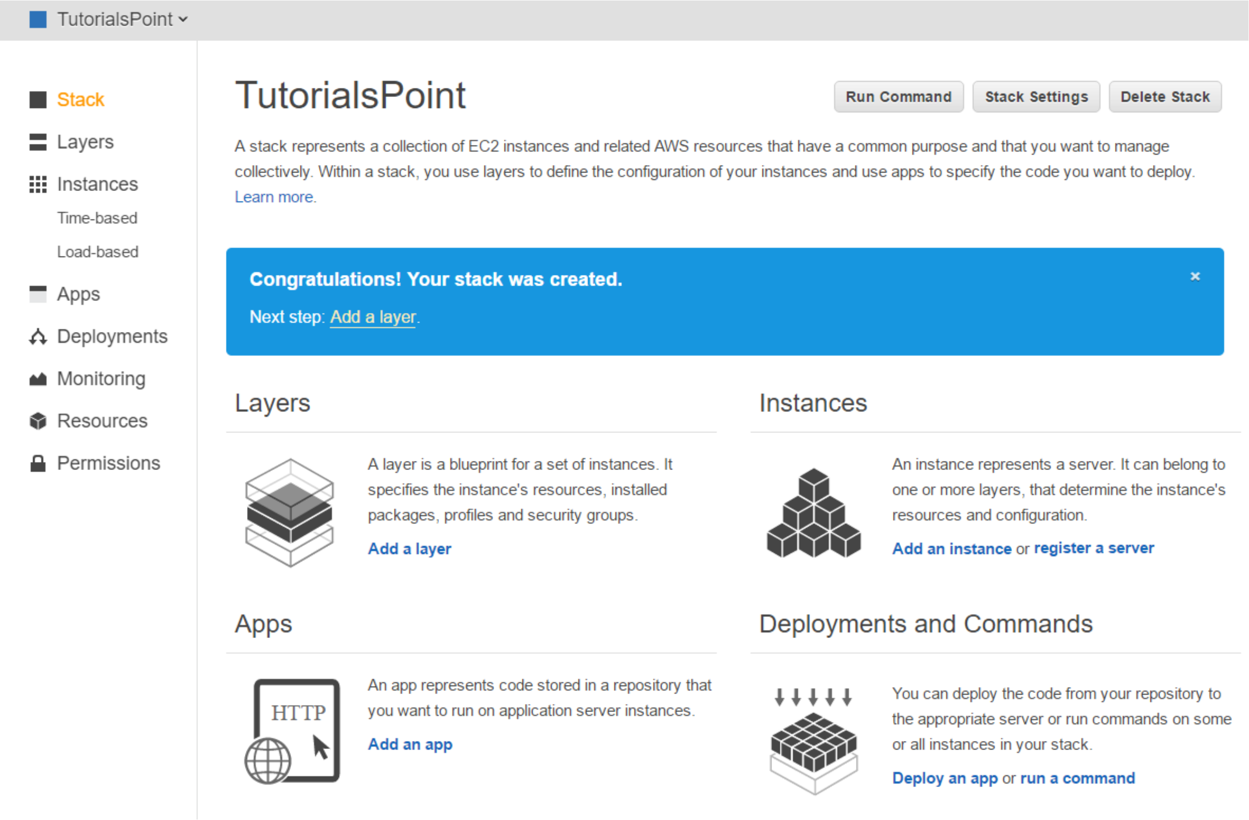
Chef 11 stack
Use built-in cookbooks for applications and deployments

Create a stack with instances that run Linux and Chef 11.4 or 11.10

Classic experience. Use our built-in cookbooks for layers, applications & deployments to get started. Use your own Chef cookbooks to override or extend the built-in layers. Learn more.

Stack name	TutorialsPoint	
Region	US West (Oregon)	
VPC	vpc-1a83497e (default)	
Default subnet	172.31.32.0/20 - us-west-2a	
Default operating system	Amazon Linux 2016.03	*Need a different OS? Let us know.*
Default SSH key	Do not use a default SSH key	
Chef version	● 11.10 ○ 11.4 DEPRECATED	
Use custom Chef cookbooks	No	*Define the source of your Chef cookbooks*
Stack color		

- Once you tap on create stack, you will see underneath screen which says stack is made with name you gave.



TutorialsPoint

A stack represents a collection of EC2 instances and related AWS resources that have a common purpose and that you want to manage collectively. Within a stack, you use layers to define the configuration of your instances and use apps to specify the code you want to deploy. Learn more.

Congratulations! Your stack was created.

Next step: Add a layer.

Layers

A layer is a blueprint for a set of instances. It specifies the instance's resources, installed packages, profiles and security groups.

Instances

An instance represents a server. It can belong to one or more layers, that determine the instance's resources and configuration.

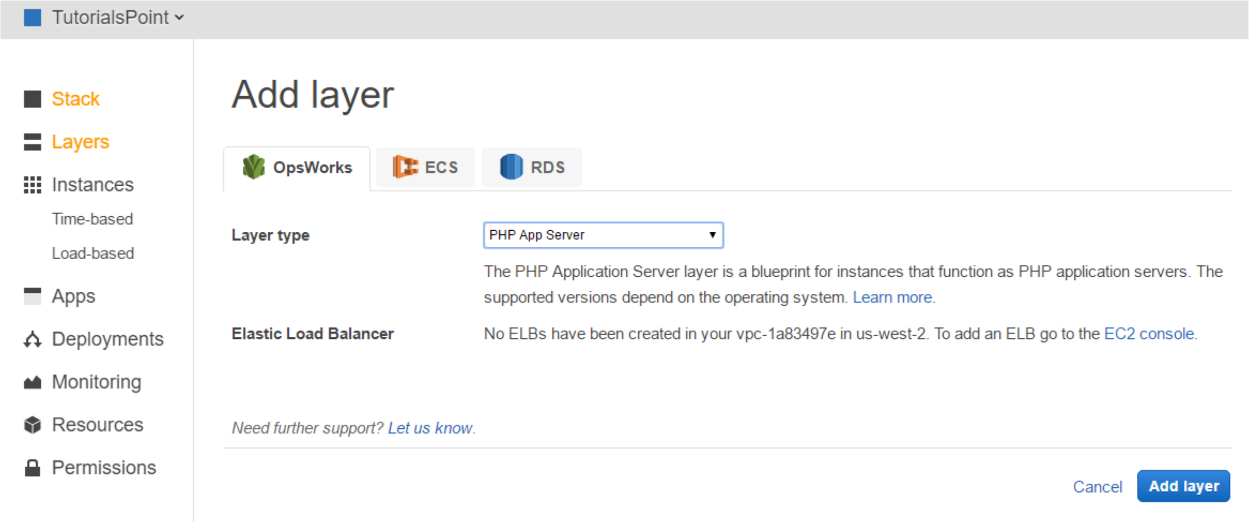
Apps

An app represents code stored in a repository that you want to run on application server instances.

Deployments and Commands

You can deploy the code from your repository to the appropriate server or run commands on some or all instances in your stack.

- Click on Add Layer
- Select any layer type-here I have selected PHP App Server



Add layer

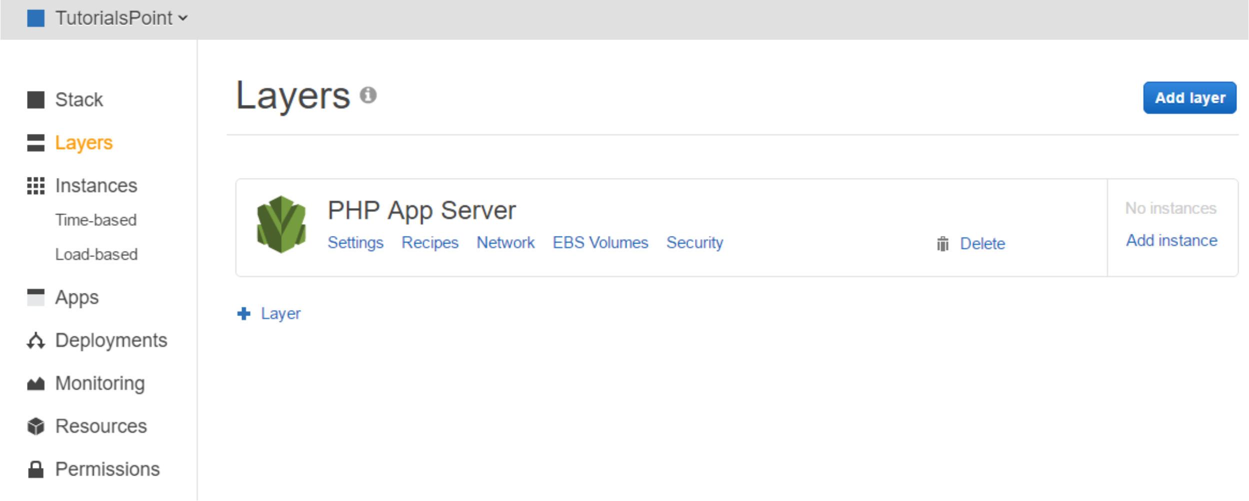
Layer type: PHP App Server

The PHP Application Server layer is a blueprint for instances that function as PHP application servers. The supported versions depend on the operating system. Learn more.

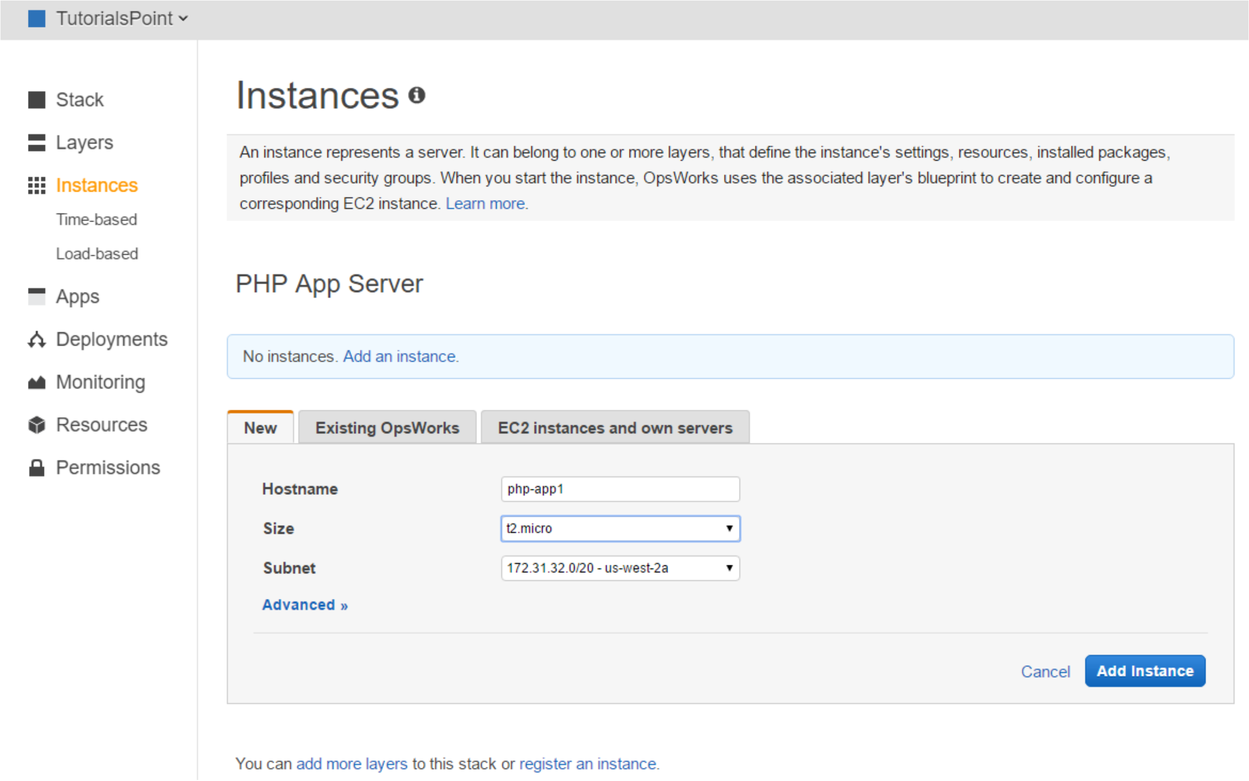
Elastic Load Balancer: No ELBs have been created in your vpc-1a83497e in us-west-2. To add an ELB go to the EC2 console.

Need further support? Let us know.

- Click on add layer and you will see below screen, now click on add instance.



- Input size of instance and click on add instance



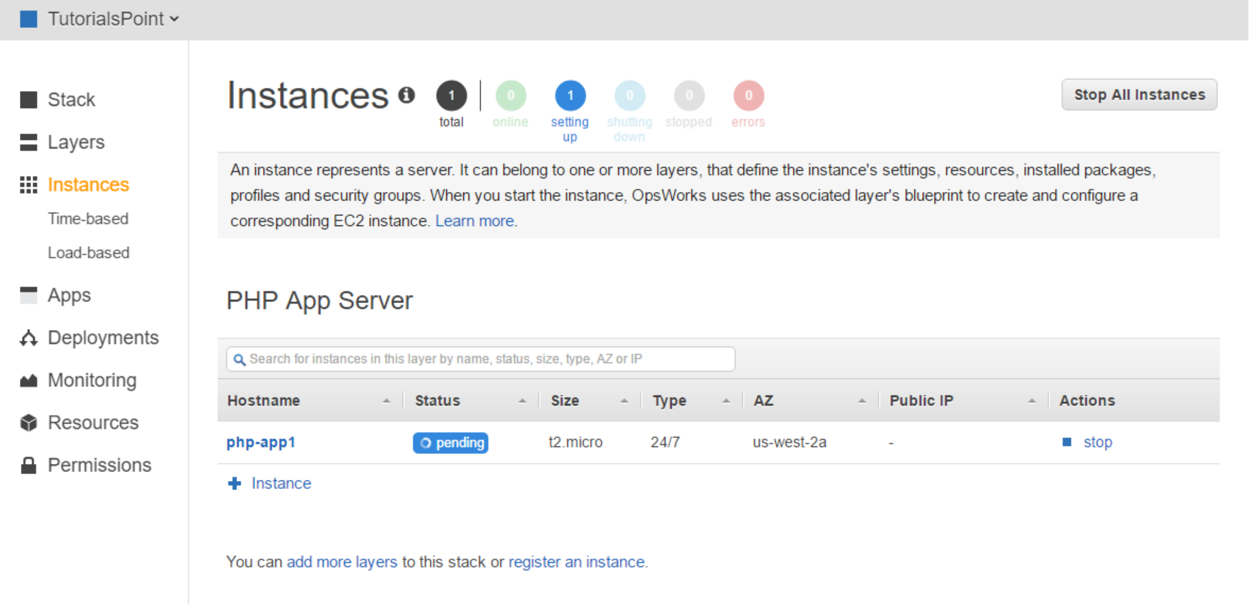
An instance represents a server. It can belong to one or more layers, that define the instance's settings, resources, installed packages, profiles and security groups. When you start the instance, OpsWorks uses the associated layer's blueprint to create and configure a corresponding EC2 instance. Learn more.

No instances. Add an instance.

Hostname	php-app1
Size	t2.micro
Subnet	172.31.32.0/20 - us-west-2a

You can add more layers to this stack or register an instance.

- Now an instance will be created and status will be change to online after sometimes.



Instances

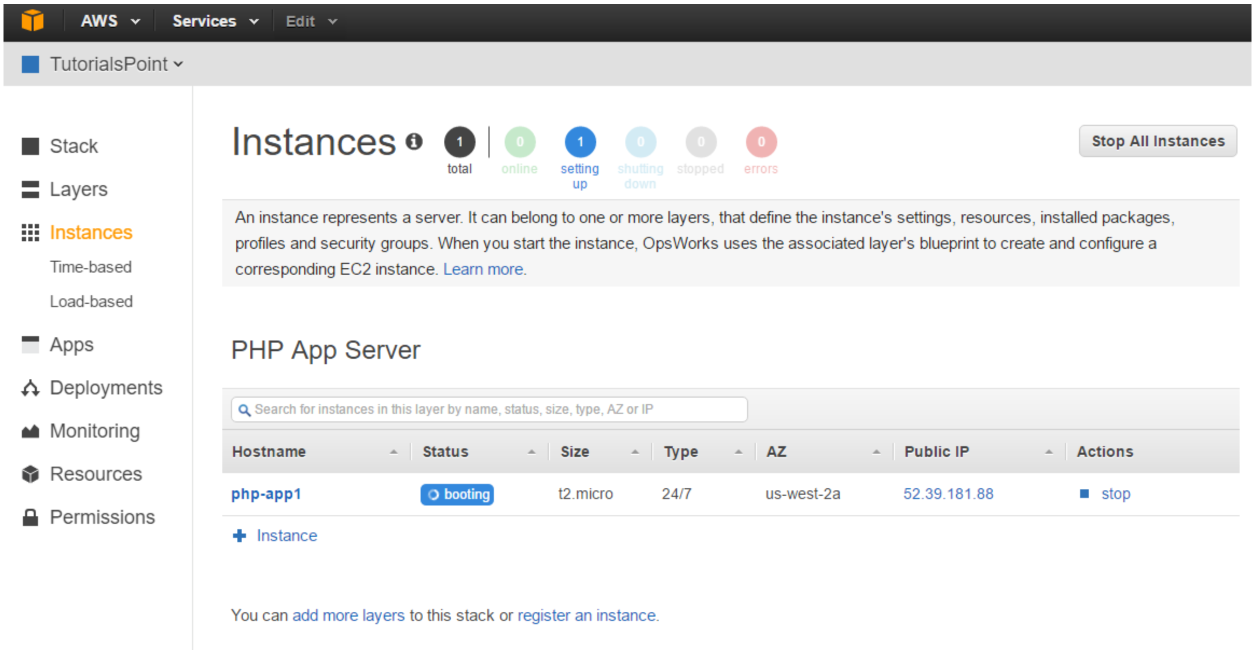
An instance represents a server. It can belong to one or more layers, that define the instance's settings, resources, installed packages, profiles and security groups. When you start the instance, OpsWorks uses the associated layer's blueprint to create and configure a corresponding EC2 instance. Learn more.

PHP App Server

Hostname	Status	Size	Type	AZ	Public IP	Actions
php-app1	pending	t2.micro	24/7	us-west-2a	-	stop

+ Instance

You can add more layers to this stack or register an instance.



Instances

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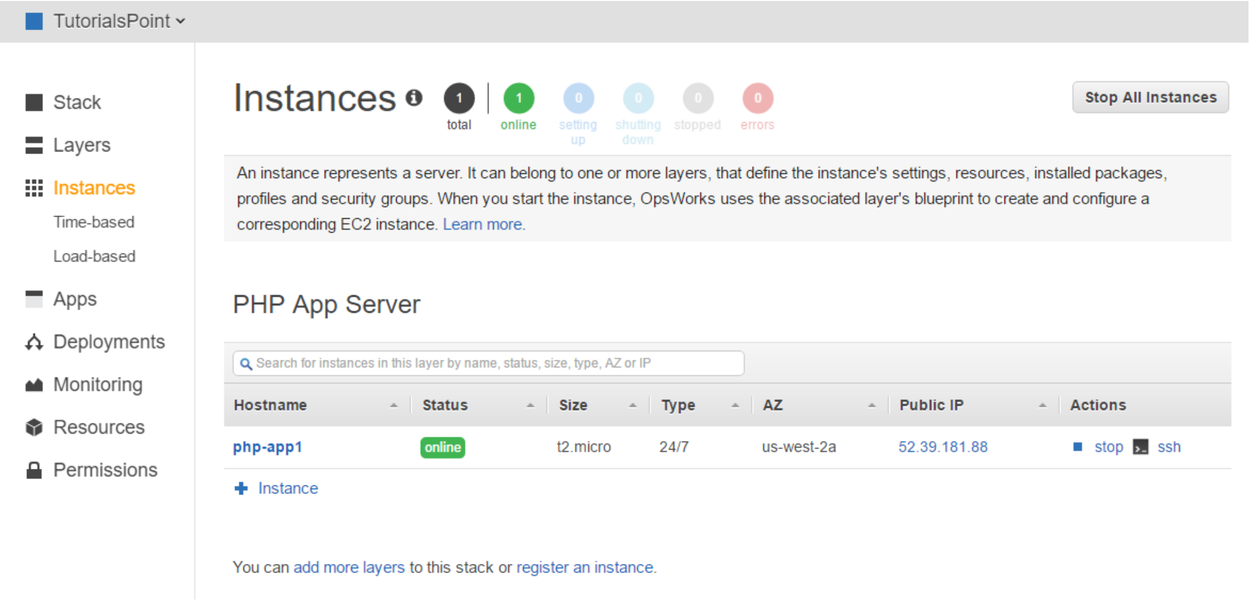
PHP App Server

Hostname	Status	Size	Type	AZ	Public IP	Actions
php-app1	booting	t2.micro	24/7	us-west-2a	52.39.181.88	stop

+ Instance

You can add more layers to this stack or register an instance.



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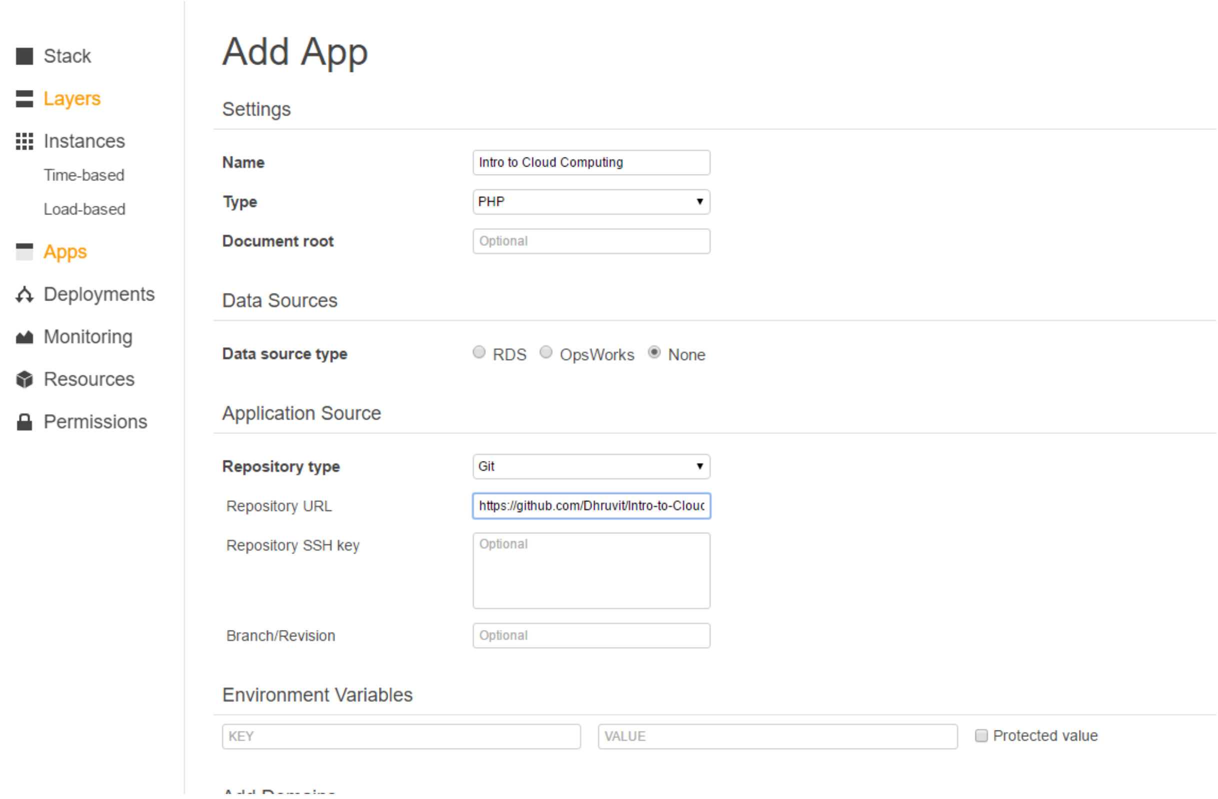
PHP App Server

Hostname	Status	Size	Type	AZ	Public IP	Actions
php-app1	online	t2.micro	24/7	us-west-2a	52.39.181.88	stop ssh

You can add more layers to this stack or register an instance.

- Now will add app which will be on php server and will connect the “Intro to Cloud Computing” github website. Input URL which you want to connect to Instance. Here I have chosen Repository type as “Git” and paste Git URL from my git repository.



Add App

Settings

Name	Intro to Cloud Computing
Type	PHP
Document root	Optional

Data Sources

Data source type ○ RDS ○ OpsWorks ● None

Application Source

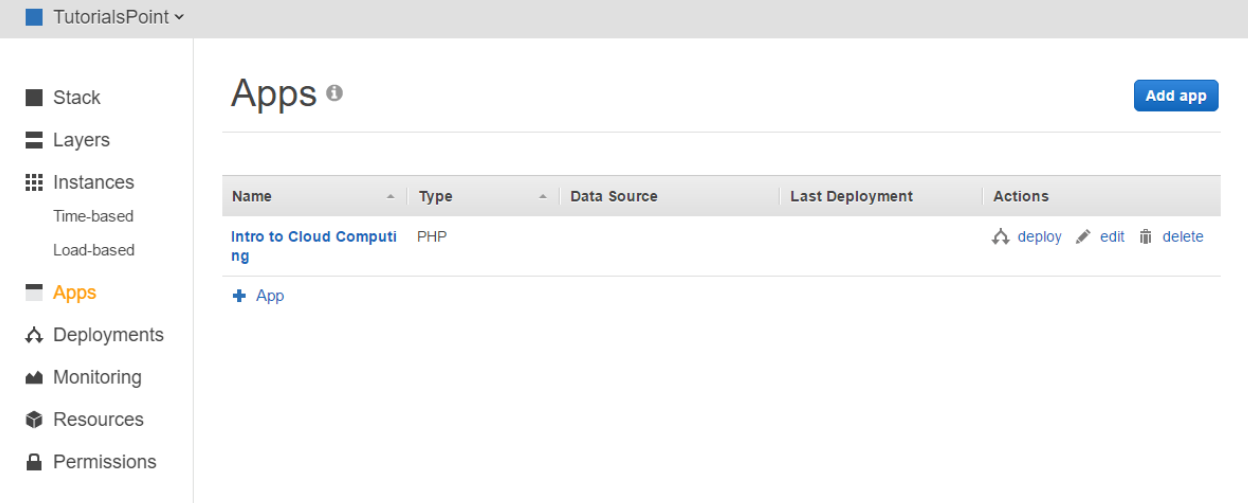
Repository type	Git
Repository URL	https://github.com/Dhruvit/Intro-to-Clouc
Repository SSH key	Optional
Branch/Revision	Optional

Environment Variables

KEY VALUE □ Protected value

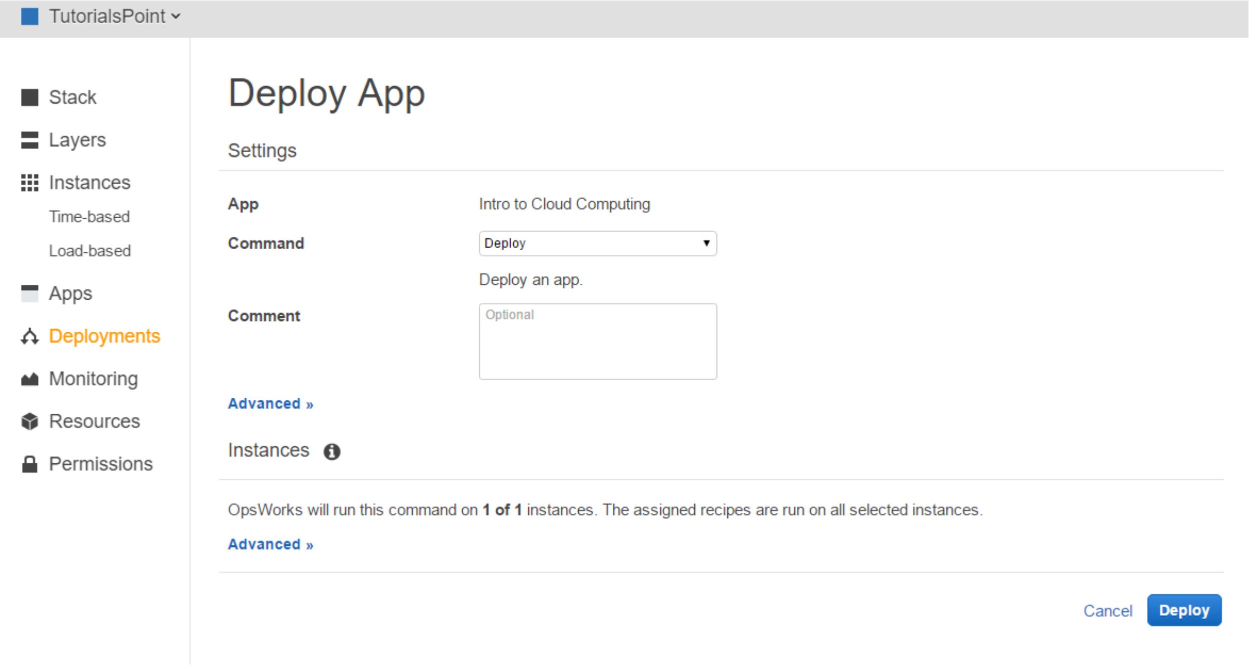
Add Domains

- Click on deploy



Apps

Name	Type	Data Source	Last Deployment	Actions
Intro to Cloud Computing	PHP			deploy edit delete



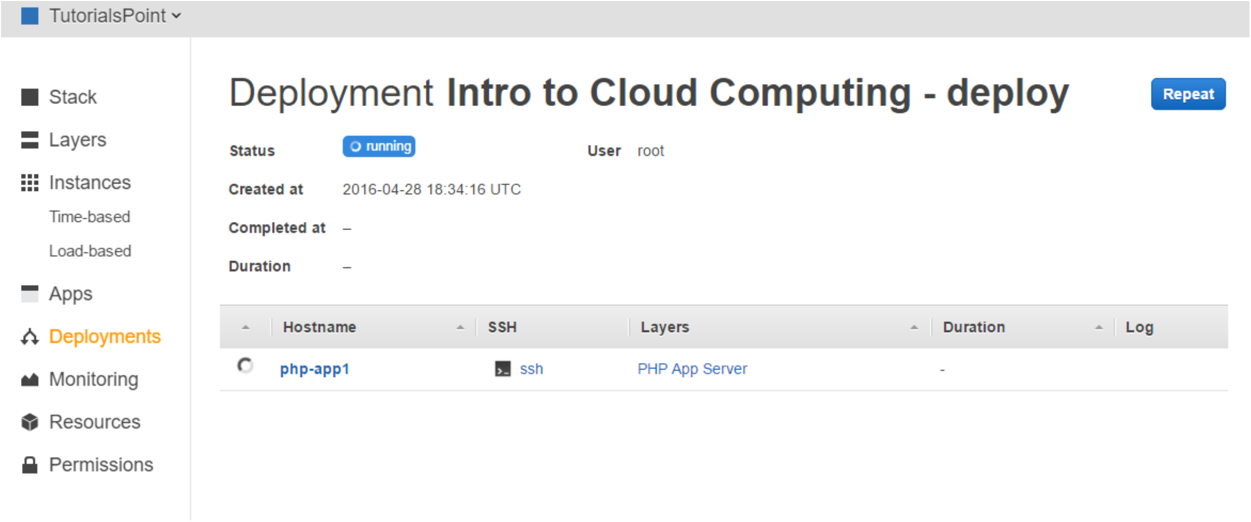
Deploy App

Settings

App	Intro to Cloud Computing
Command	Deploy Deploy an app.
Comment	Optional

Instances

OpsWorks will run this command on **1 of 1** instances. The assigned recipes are run on all selected instances.



Deployment **Intro to Cloud Computing - deploy**

Status running **User** root

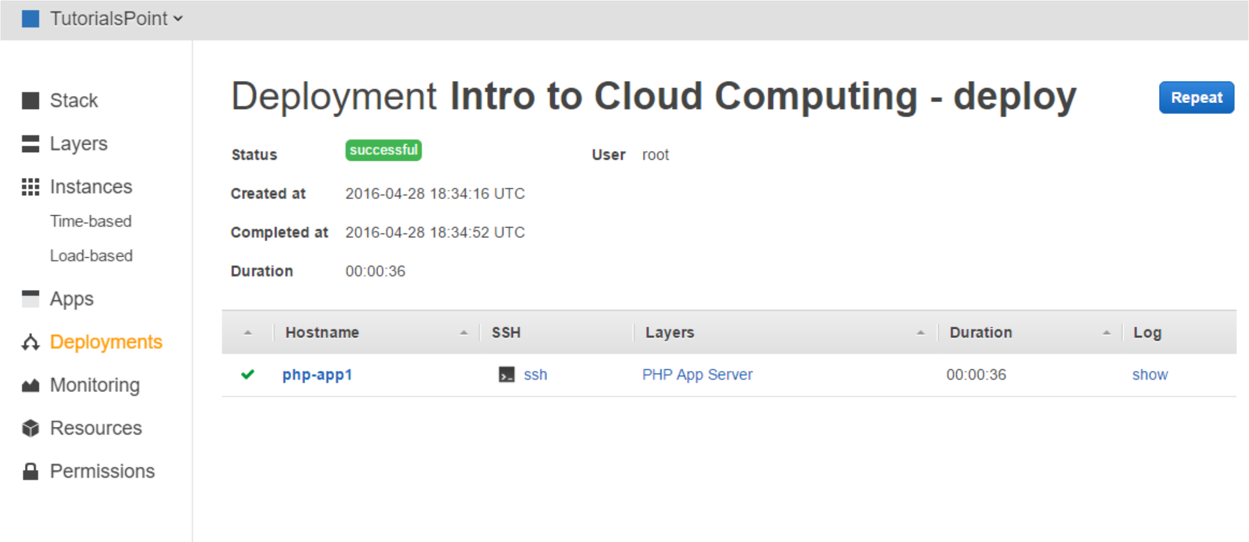
Created at 2016-04-28 18:34:16 UTC

Completed at –

Duration –

	Hostname	SSH	Layers	Duration	Log
	php-app1	ssh	PHP App Server	-	

- Now open automatically created instances and tap on “php-app 1” which will guide you specifically to our custom website.



Deployment **Intro to Cloud Computing - deploy**

Status successful **User** root

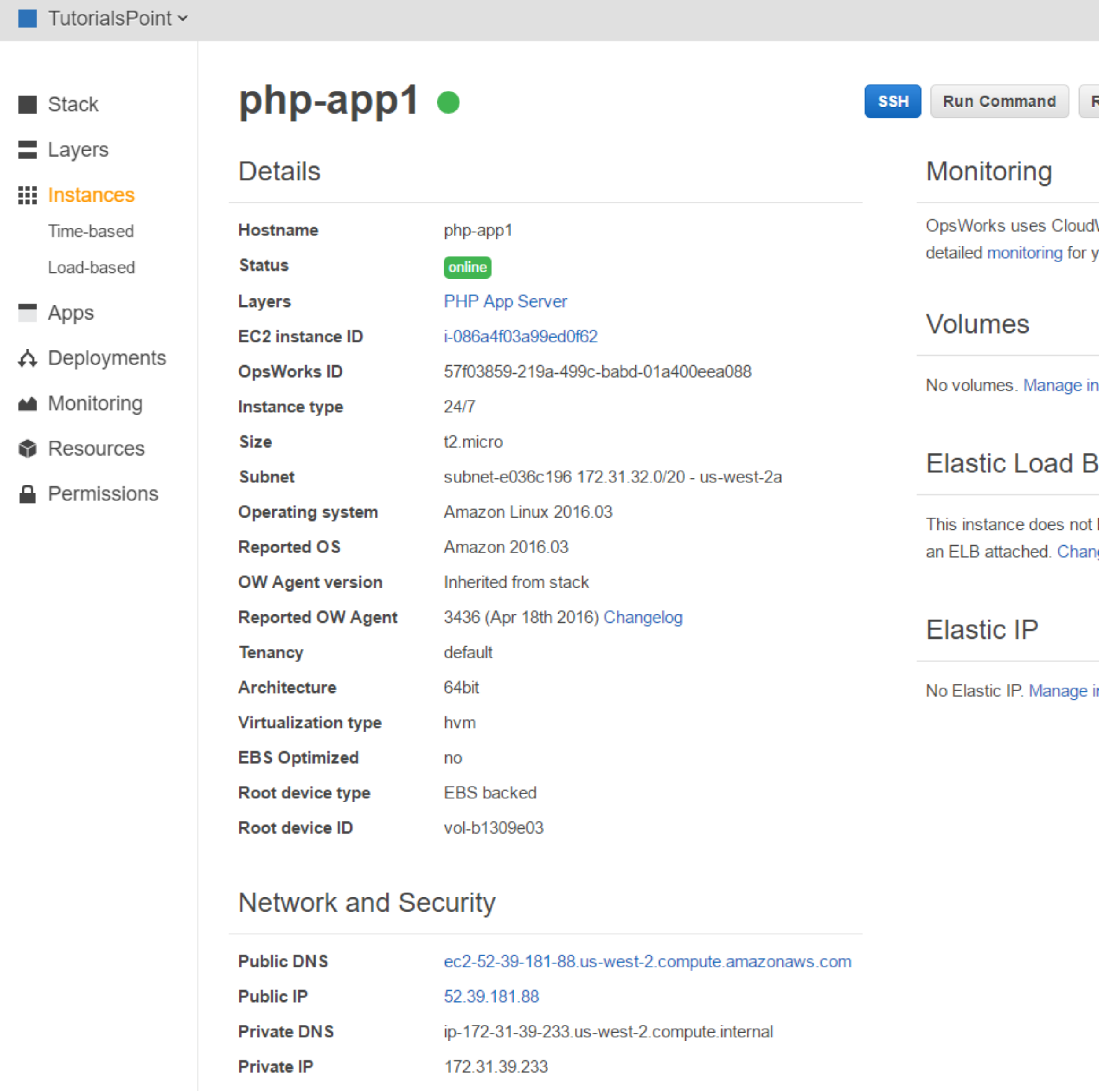
Created at 2016-04-28 18:34:16 UTC

Completed at 2016-04-28 18:34:52 UTC

Duration 00:00:36

	Hostname	SSH	Layers	Duration	Log
✓	php-app1	ssh	PHP App Server	00:00:36	show

- Click on public DNS to open our website.



php-app1 ●

Details

Hostname	php-app1
Status	online
Layers	PHP App Server
EC2 instance ID	i-086a4f03a99ed0f62
OpsWorks ID	57f03859-219a-499c-babd-01a400eea088
Instance type	24/7
Size	t2.micro
Subnet	subnet-e036c196 172.31.32.0/20 - us-west-2a
Operating system	Amazon Linux 2016.03
Reported OS	Amazon 2016.03
OW Agent version	Inherited from stack
Reported OW Agent	3436 (Apr 18th 2016) Changelog
Tenancy	default
Architecture	64bit
Virtualization type	hvm
EBS Optimized	no
Root device type	EBS backed
Root device ID	vol-b1309e03

Network and Security

Public DNS	ec2-52-39-181-88.us-west-2.compute.amazonaws.com
Public IP	52.39.181.88
Private DNS	ip-172-31-39-233.us-west-2.compute.internal
Private IP	172.31.39.233

Monitoring

OpsWorks uses CloudW
detailed monitoring for y

Volumes

No volumes. Manage in

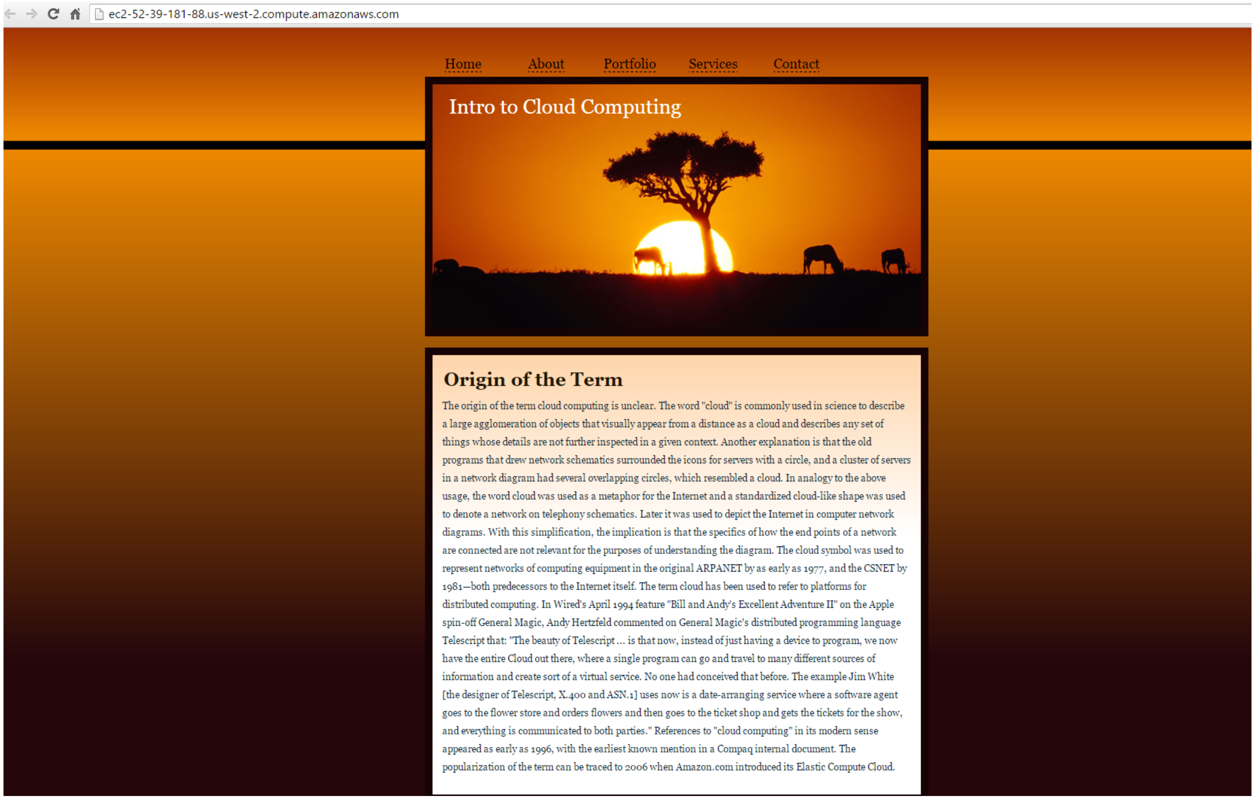
Elastic Load B

This instance does not
an ELB attached. Chan

Elastic IP

No Elastic IP. Manage i

- After clicking on Public DNS , “Intro to Cloud Computing” website will get open as we have mapped it to the instance created.



Intro to Cloud Computing

Origin of the Term

The origin of the term cloud computing is unclear. The word "cloud" is commonly used in science to describe a large agglomeration of objects that visually appear from a distance as a cloud and describes any set of things whose details are not further inspected in a given context. Another explanation is that the old programs that drew network schematics surrounded the icons for servers with a circle, and a cluster of servers in a network diagram had several overlapping circles, which resembled a cloud. In analogy to the above usage, the word cloud was used as a metaphor for the Internet and a standardized cloud-like shape was used to denote a network on telephony schematics. Later it was used to depict the Internet in computer network diagrams. With this simplification, the implication is that the specifics of how the end points of a network are connected are not relevant for the purposes of understanding the diagram. The cloud symbol was used to represent networks of computing equipment in the original ARPANET by as early as 1977, and the CSNET by 1981—both predecessors to the Internet itself. The term cloud has been used to refer to platforms for distributed computing. In Wired's April 1994 feature "Bill and Andy's Excellent Adventure II" on the Apple spin-off General Magic, Andy Hertzfeld commented on General Magic's distributed programming language Telescript that: "The beauty of Telescript ... is that now, instead of just having a device to program, we now have the entire Cloud out there, where a single program can go and travel to many different sources of information and create sort of a virtual service. No one had conceived that before. The example Jim White [the designer of Telescript, X.400 and ASN.1] uses now is a date-arranging service where a software agent goes to the flower store and orders flowers and then goes to the ticket shop and gets the tickets for the show, and everything is communicated to both parties." References to "cloud computing" in its modern sense appeared as early as 1996, with the earliest known mention in a Compaq internal document. The popularization of the term can be traced to 2006 when Amazon.com introduced its Elastic Compute Cloud.