Introduction to Cloud Computing (CS 524)

(Lab Assignment 3)

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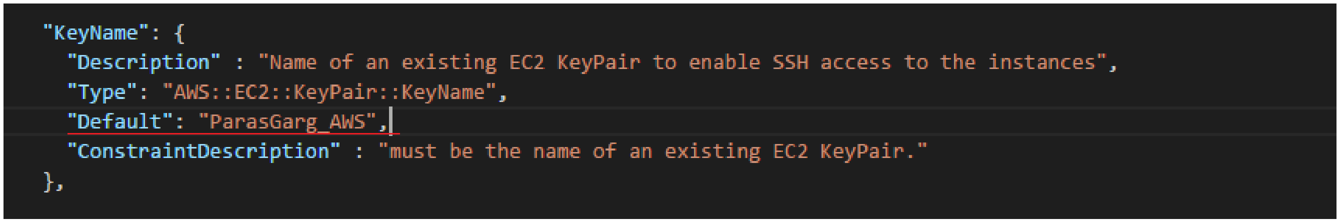
Course Section: **CS 524-A**

Step for JSON Template setup for Amazon Cloud Formation

- Amazon have some template samples available on its website, to check them we can visit the link below: http://docs.aws.amazon.com/AWSCloudFormation/latest/UserGuide/sample-templates-services-us-west-2.html#w1ab2c21c45c15c15

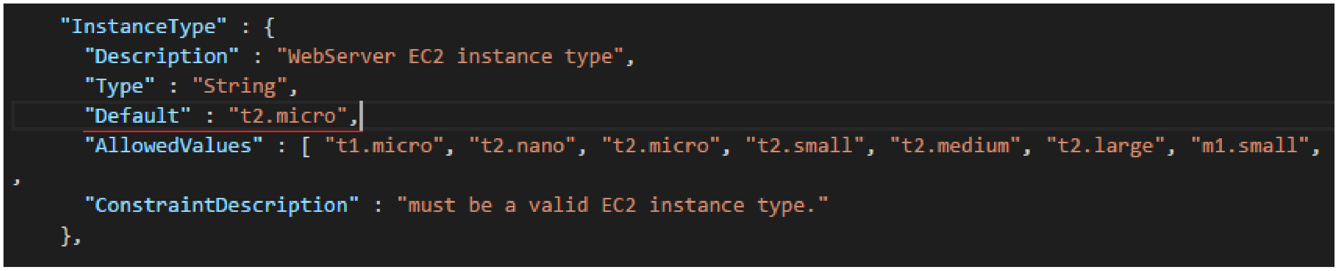
- I am using a free template having name Amazon EC2 instance in a security group https://s3-us-west-2.amazonaws.com/cloudformation-templates-us-west-2/EC2InstanceWithSecurityGroupSample.template

- In a template, I am making my key (which I used in my previous labs) as default key.



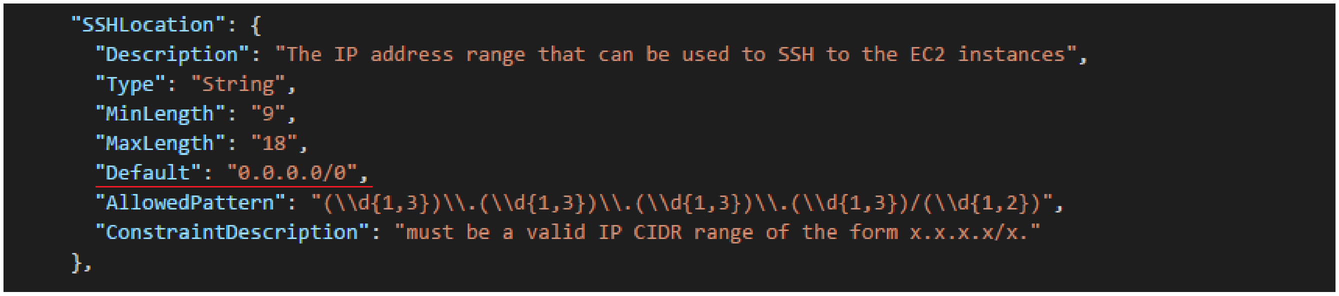
```
  "KeyName": {
    "Description" : "Name of an existing EC2 KeyPair to enable SSH access to the instances",
    "Type": "AWS::EC2::KeyPair::KeyName",
    "Default": "ParasGarg_AWS",
    "ConstraintDescription" : "must be the name of an existing EC2 KeyPair."
  },
```

- Changing Instance Type to t2.mircro, as it is free.



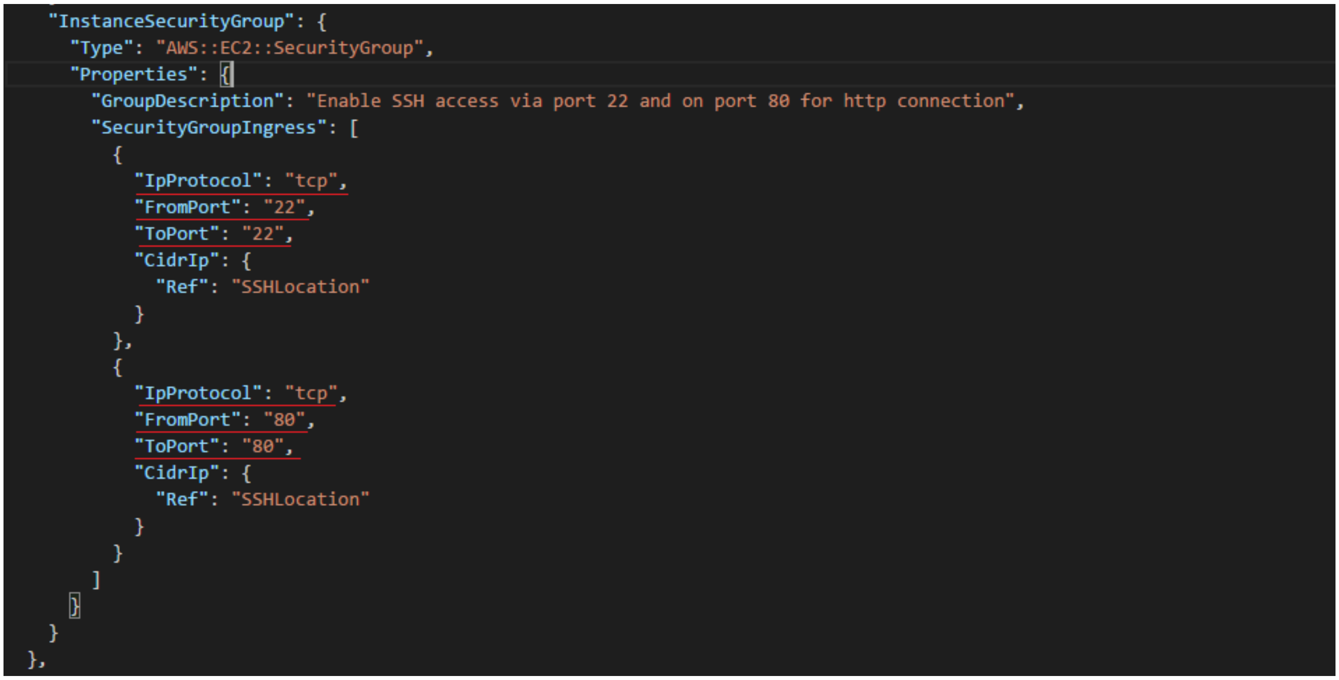
```
    "InstanceType" : {
      "Description" : "WebServer EC2 instance type",
      "Type" : "String",
      "Default" : "t2.micro",
      "AllowedValues" : [ "t1.micro", "t2.nano", "t2.micro", "t2.small", "t2.medium", "t2.large", "m1.small",
,
      "ConstraintDescription" : "must be a valid EC2 instance type."
    },
```

- Not changing CIDR rule, so it connect from any outside IP



```
    "SSHLocation": {
      "Description": "The IP address range that can be used to SSH to the EC2 instances",
      "Type": "String",
      "MinLength": "9",
      "MaxLength": "18",
      "Default": "0.0.0.0/0",
      "AllowedPattern": "(\\d{1,3})\\.(\\d{1,3})\\.(\\d{1,3})\\.(\\d{1,3})/(\\d{1,2})",
      "ConstraintDescription": "must be a valid IP CIDR range of the form x.x.x.x/x."
    },
```

- Changing Security Group document, by adding setting for port 80 for http connection

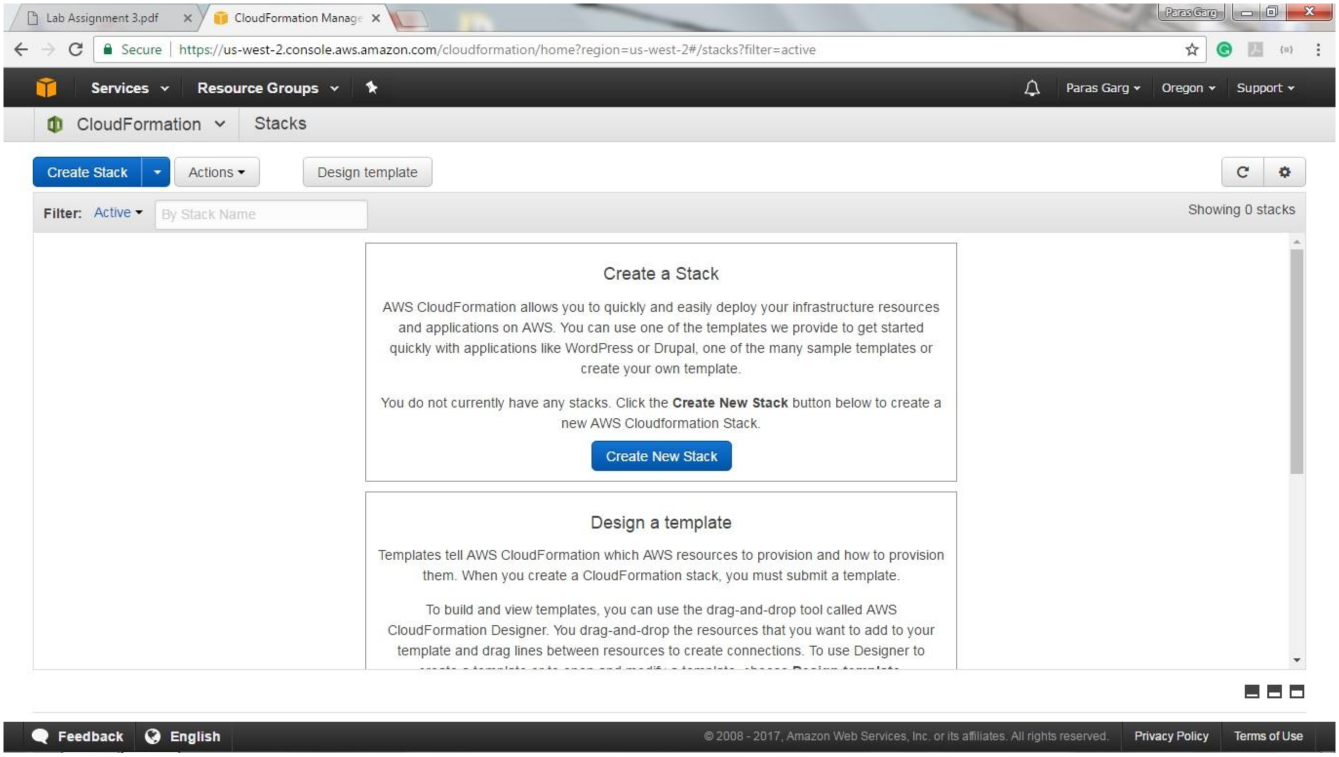


```
  "InstanceSecurityGroup": {
    "Type": "AWS::EC2::SecurityGroup",
    "Properties": {
      "GroupDescription": "Enable SSH access via port 22 and on port 80 for http connection",
      "SecurityGroupIngress": [
        {
          "IpProtocol": "tcp",
          "FromPort": "22",
          "ToPort": "22",
          "CidrIp": {
            "Ref": "SSHLocation"
          }
        },
        {
          "IpProtocol": "tcp",
          "FromPort": "80",
          "ToPort": "80",
          "CidrIp": {
            "Ref": "SSHLocation"
          }
        }
      ]
    }
  }
},
```

- Saving the JSON file in local directory (filename: CloudLab3-Template.json)

Step for Creating a Stack by Amazon Cloud Formation (Using AWS Panel)

- Click on **Create New** Stack button after login to AWS account then select CloudFormation service in the AWS dashboard.



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.

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

Feedback
English
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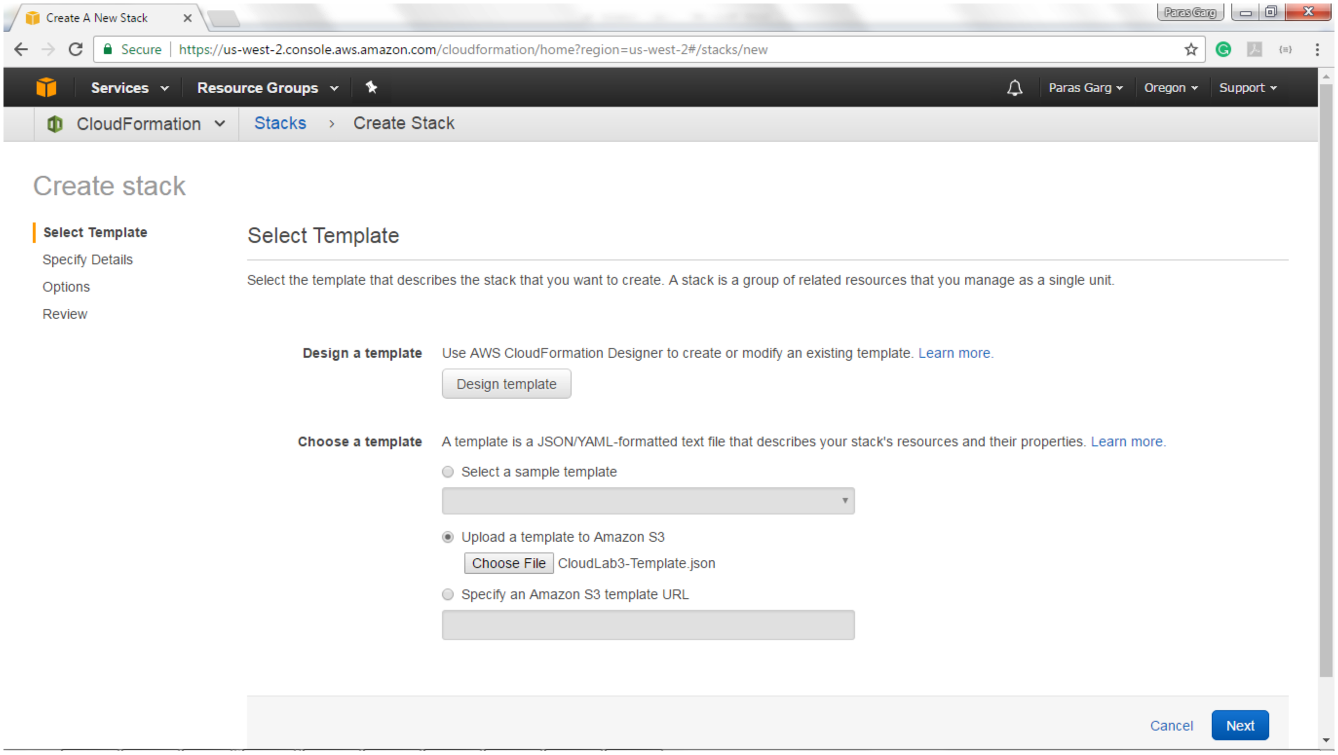
- Now, selecting a recently created template from the local directory and click on next.


Create A New Stack
Secure | https://us-west-2.console.aws.amazon.com/cloudformation/home?region=us-west-2#/stacks/new
Services
Resource Groups
Paras Garg
Oregon
Support
CloudFormation
Stacks
Create Stack

Create stack

Select Template
Specify Details
Options
Review

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.

Design template

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

○ Select a sample template

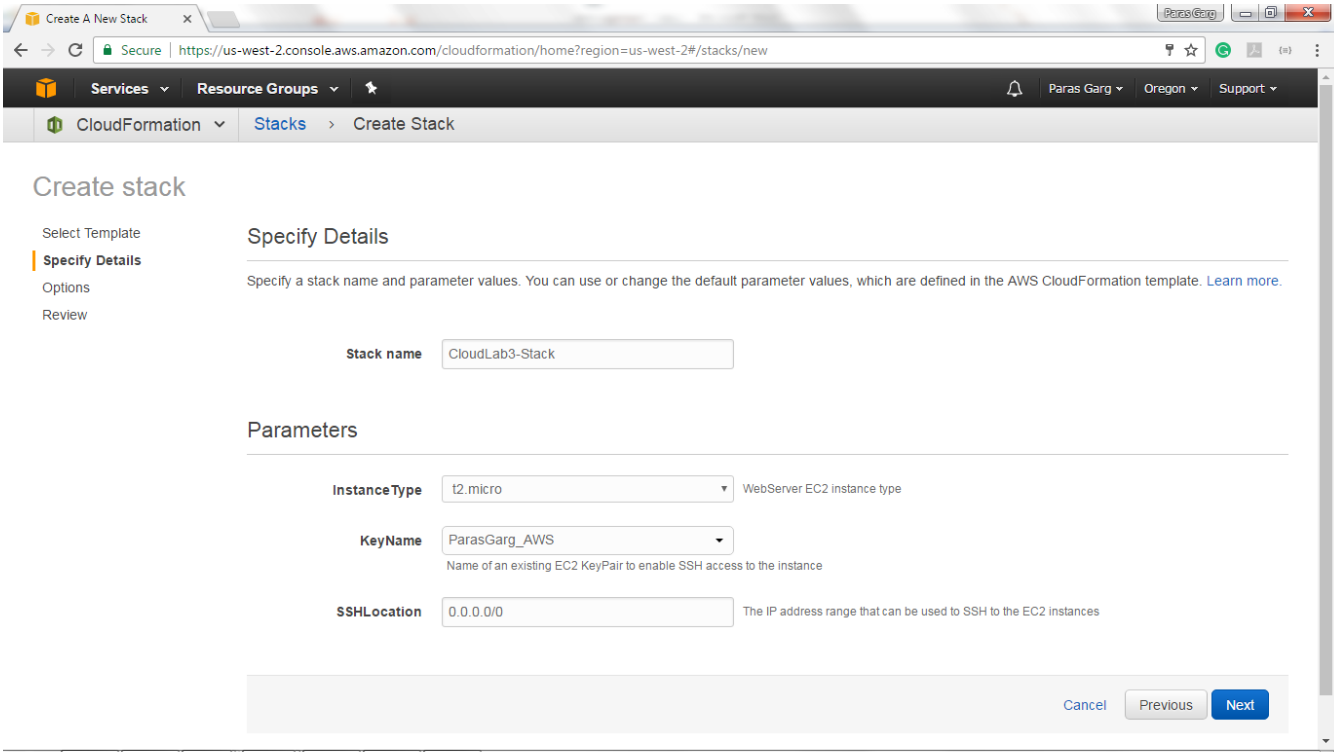
● Upload a template to Amazon S3

Choose File CloudLab3-Template.json

○ Specify an Amazon S3 template URL

Cancel Next

- In this step, we have to specify details after selecting template. Click next to proceed.


Create A New Stack
Secure | https://us-west-2.console.aws.amazon.com/cloudformation/home?region=us-west-2#/stacks/new
Services
Resource Groups
Paras Garg
Oregon
Support
CloudFormation
Stacks
Create Stack

Create stack

Select Template
Specify Details
Options
Review

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 CloudLab3-Stack

Parameters

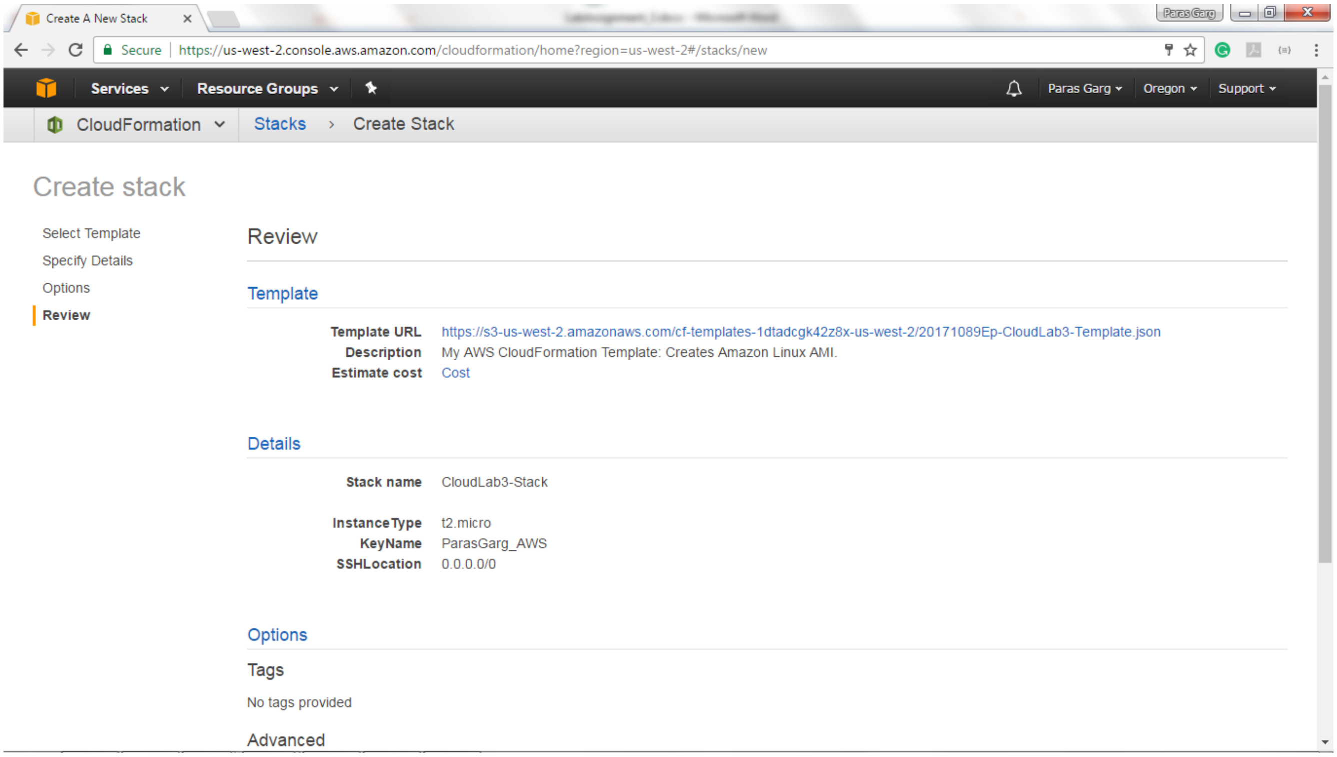
InstanceType t2.micro WebServer EC2 instance type

KeyName ParasGarg_AWS
Name of an existing EC2 KeyPair to enable SSH access to the instance

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

Cancel Previous Next

- After not making any changes in Option menu, we came to Review menu to review the details of created stack. And finally clicking to **Create** button to create a stack.



Create stack

- Select Template
- Specify Details
- Options
- **Review**

Review

Template

Template URL	https://s3-us-west-2.amazonaws.com/cf-templates-1dtadcgk42z8x-us-west-2/20171089Ep-CloudLab3-Template.json
Description	My AWS CloudFormation Template: Creates Amazon Linux AMI.
Estimate cost	Cost

Details

Stack name	CloudLab3-Stack
InstanceType	t2.micro
KeyName	ParasGarg_AWS
SSHLocation	0.0.0.0/0

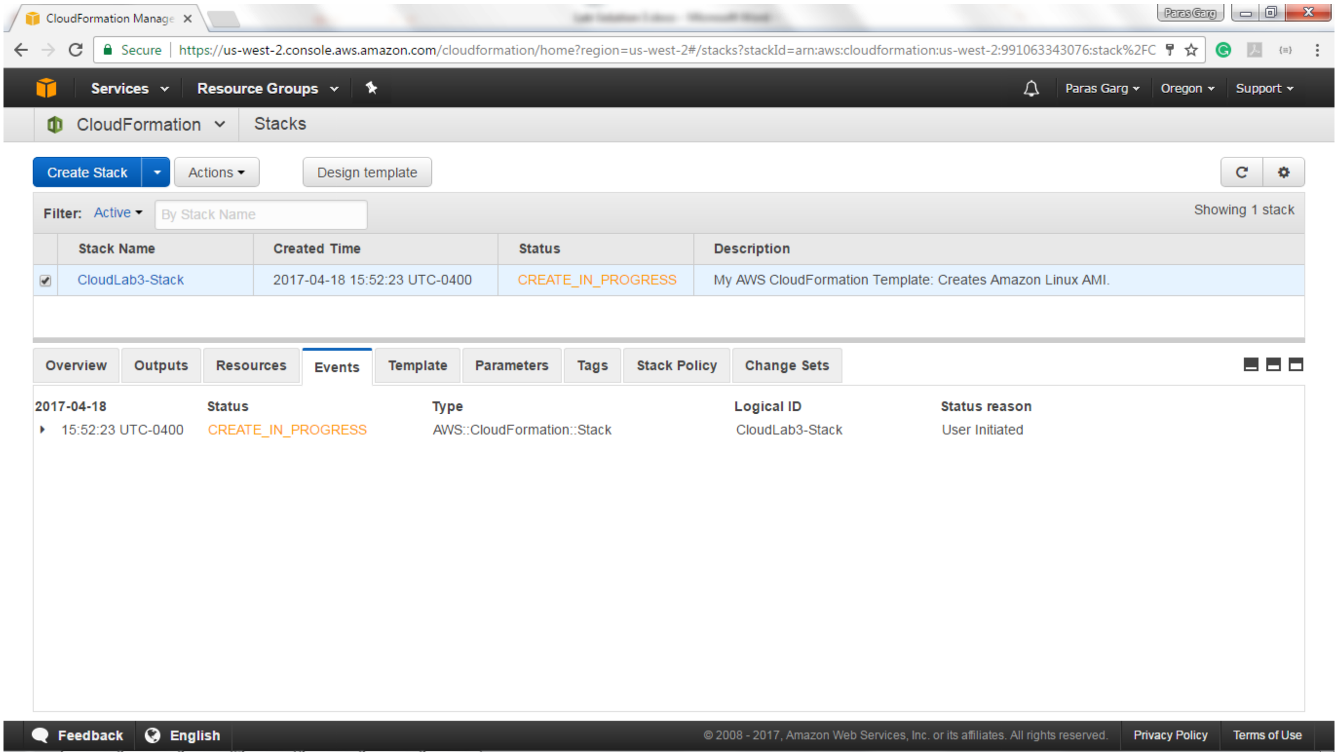
Options

Tags

No tags provided

Advanced

- Now here, in this page, we can check that the stack creation is in process. And all stack events are under process. Current status is "CREATE_IN_PROGRESS"



	Stack Name	Created Time	Status	Description
☑	CloudLab3-Stack	2017-04-18 15:52:23 UTC-0400	CREATE_IN_PROGRESS	My AWS CloudFormation Template: Creates Amazon Linux AMI.

2017-04-18	Status	Type	Logical ID	Status reason
15:52:23 UTC-0400	CREATE_IN_PROGRESS	AWS::CloudFormation::Stack	CloudLab3-Stack	User Initiated

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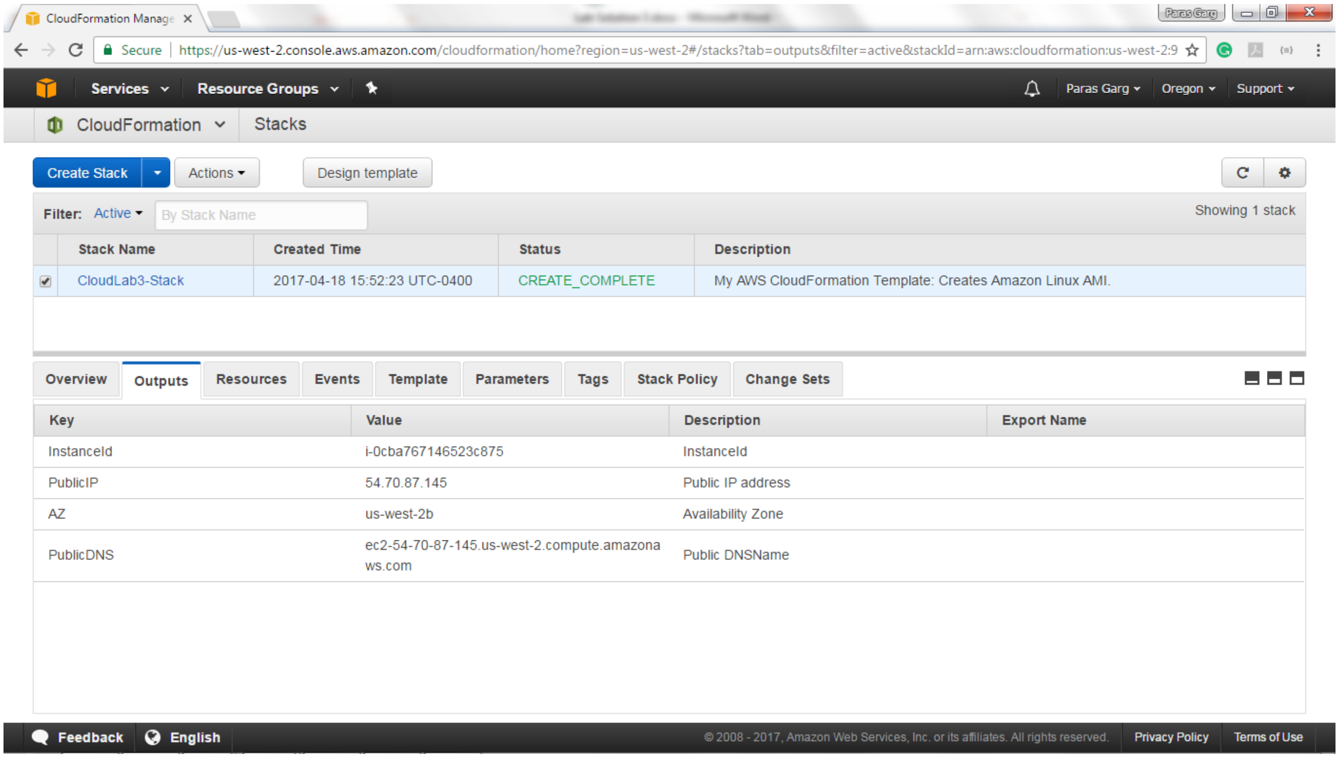
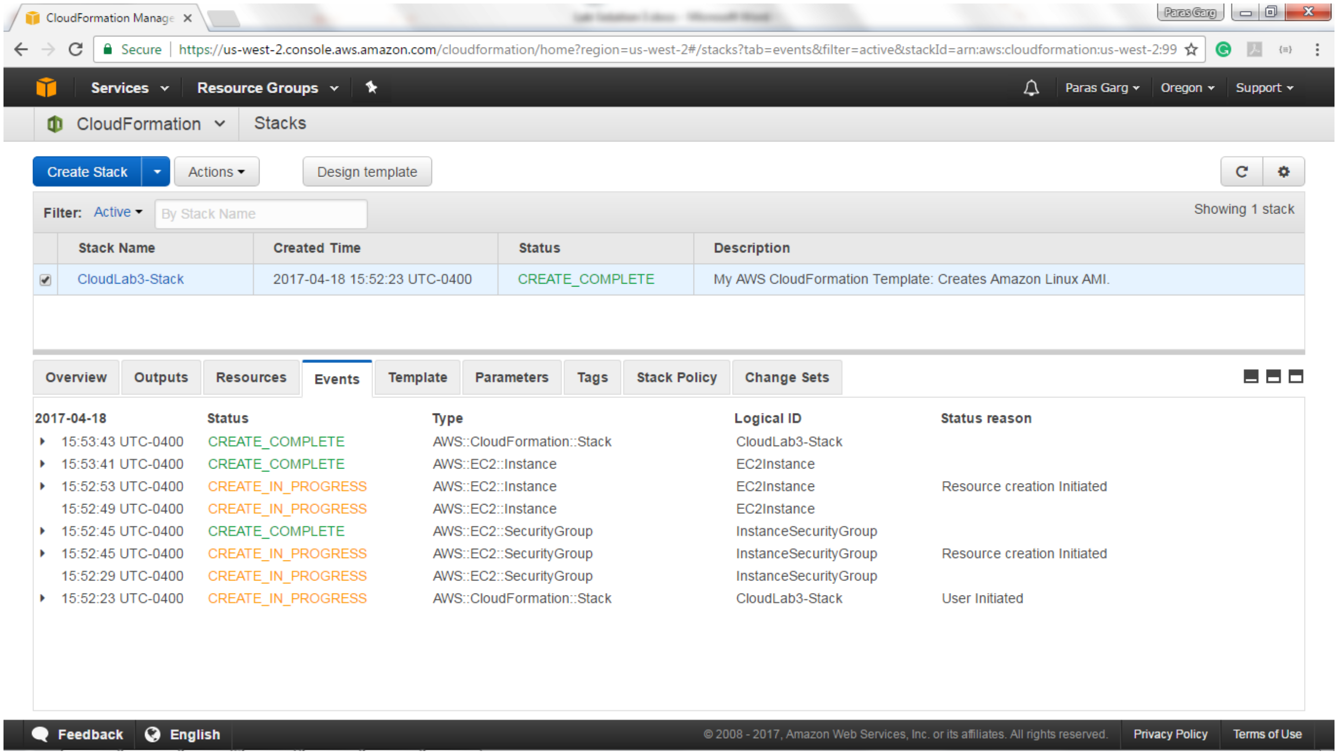
- After the creation of stack successfully, the status changes to "CREATE_COMPLETE". And we can check the instance created during the creation of stack.



	Stack Name	Created Time	Status	Description
☑	CloudLab3-Stack	2017-04-18 15:52:23 UTC-0400	CREATE_COMPLETE	My AWS CloudFormation Template: Creates Amazon Linux AMI.

Key	Value	Description	Export Name
InstanceId	i-0cba767146523c875	InstanceId	
PublicIP	54.70.87.145	Public IP address	
AZ	us-west-2b	Availability Zone	
PublicDNS	ec2-54-70-87-145.us-west-2.compute.amazonaws.com	Public DNSName	

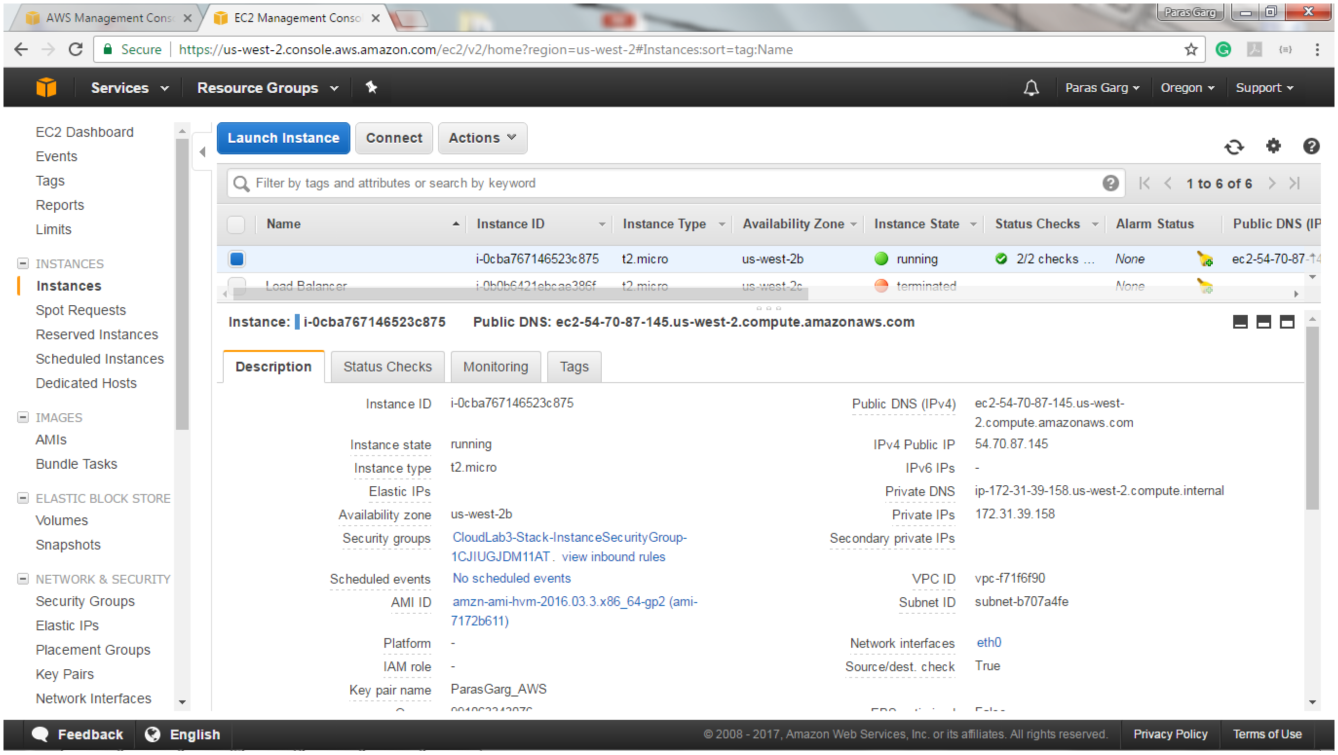
- After stack status changes to "CREATE_COMPLETE". We can check all the other events created and their status.



	Stack Name	Created Time	Status	Description
☑	CloudLab3-Stack	2017-04-18 15:52:23 UTC-0400	CREATE_COMPLETE	My AWS CloudFormation Template: Creates Amazon Linux AMI.

2017-04-18	Status	Type	Logical ID	Status reason
▸ 15:53:43 UTC-0400	CREATE_COMPLETE	AWS::CloudFormation::Stack	CloudLab3-Stack	
▸ 15:53:41 UTC-0400	CREATE_COMPLETE	AWS::EC2::Instance	EC2Instance	
▸ 15:52:53 UTC-0400	CREATE_IN_PROGRESS	AWS::EC2::Instance	EC2Instance	Resource creation Initiated
15:52:49 UTC-0400	CREATE_IN_PROGRESS	AWS::EC2::Instance	EC2Instance	
▸ 15:52:45 UTC-0400	CREATE_COMPLETE	AWS::EC2::SecurityGroup	InstanceSecurityGroup	
▸ 15:52:45 UTC-0400	CREATE_IN_PROGRESS	AWS::EC2::SecurityGroup	InstanceSecurityGroup	Resource creation Initiated
15:52:29 UTC-0400	CREATE_IN_PROGRESS	AWS::EC2::SecurityGroup	InstanceSecurityGroup	
▸ 15:52:23 UTC-0400	CREATE_IN_PROGRESS	AWS::CloudFormation::Stack	CloudLab3-Stack	User Initiated

- To verify the instance, we logged in to EC2 service and found new running instance under instances menu.



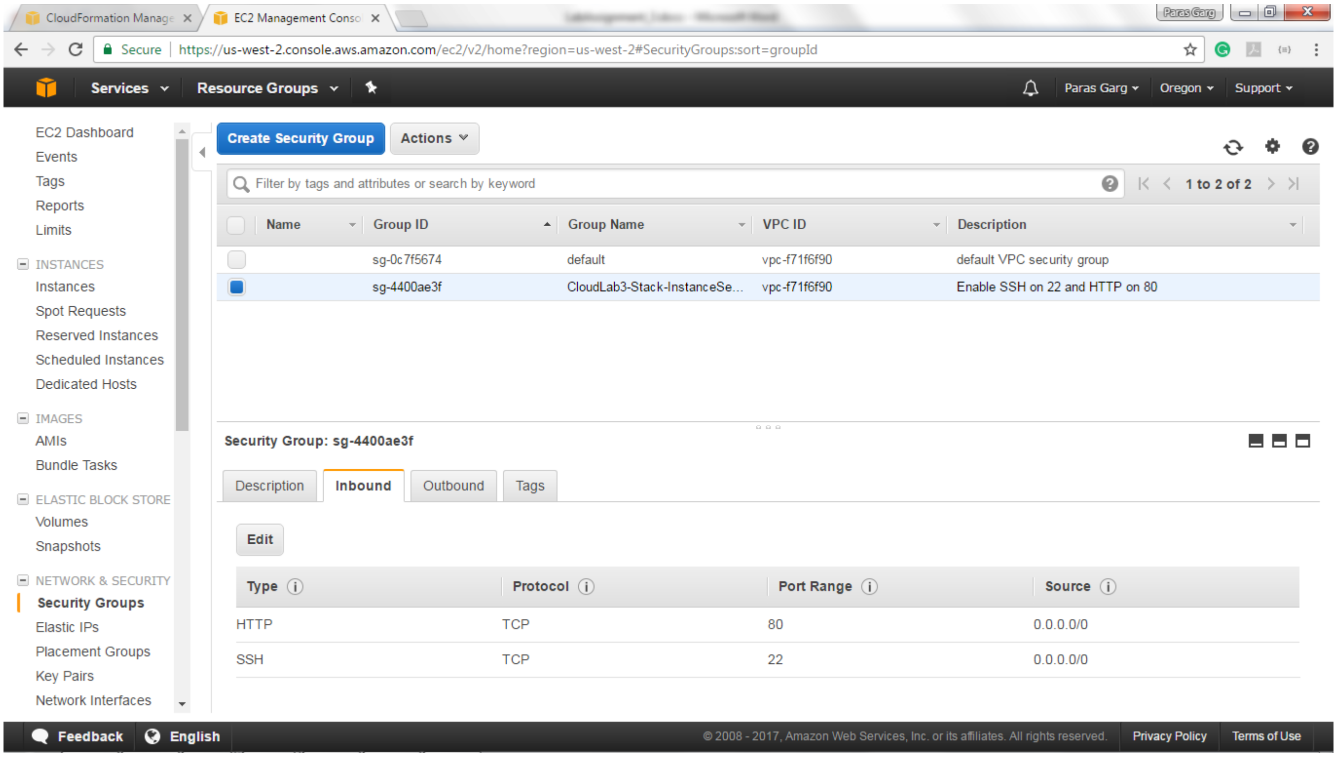
https://us-west-2.console.aws.amazon.com/ec2/v2/home?region=us-west-2#Instances:sort=tag:Name

	Name	Instance ID	Instance Type	Availability Zone	Instance State	Status Checks	Alarm Status	Public DNS (IP
☑		i-0cba767146523c875	t2.micro	us-west-2b	running	2/2 checks ...	None	ec2-54-70-87-1
□	Load Balancer	i-0b0b6421ebcae386f	t2.micro	us-west-2c	terminated		None	

Instance: i-0cba767146523c875 Public DNS: ec2-54-70-87-145.us-west-2.compute.amazonaws.com

Instance ID	i-0cba767146523c875	Public DNS (IPv4)	ec2-54-70-87-145.us-west-2.compute.amazonaws.com
Instance state	running	IPv4 Public IP	54.70.87.145
Instance type	t2.micro	IPv6 IPs	-
Elastic IPs		Private DNS	ip-172-31-39-158.us-west-2.compute.internal
Availability zone	us-west-2b	Private IPs	172.31.39.158
Security groups	CloudLab3-Stack-InstanceSecurityGroup-1CJIUGJDM11AT. view inbound rules	Secondary private IPs	
Scheduled events	No scheduled events	VPC ID	vpc-f71f6f90
AMI ID	amzn-ami-hvm-2016.03.3.x86_64-gp2 (ami-7172b611)	Subnet ID	subnet-b707a4fe
Platform	-	Network interfaces	eth0
IAM role	-	Source/dest. check	True
Key pair name	ParasGarg_AWS		

- Now, we can also verify security group that has been created during stack creation under security group menu in EC2 service.



https://us-west-2.console.aws.amazon.com/ec2/v2/home?region=us-west-2#SecurityGroups:sort=groupId

	Name	Group ID	Group Name	VPC ID	Description
□		sg-0c7f5674	default	vpc-f71f6f90	default VPC security group
☑		sg-4400ae3f	CloudLab3-Stack-InstanceSe...	vpc-f71f6f90	Enable SSH on 22 and HTTP on 80

Security Group: sg-4400ae3f

Inbound

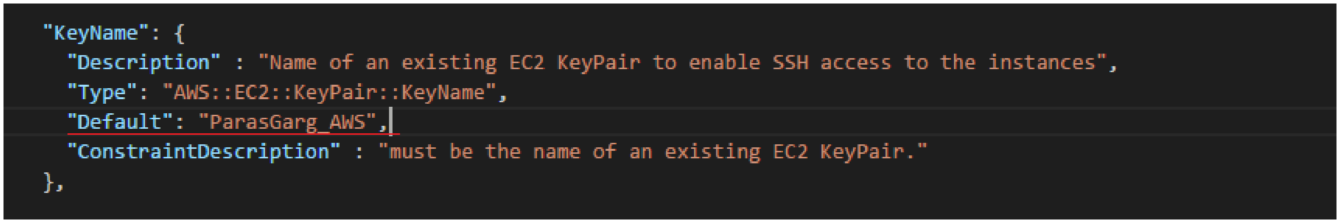
Type	Protocol	Port Range	Source
HTTP	TCP	80	0.0.0.0/0
SSH	TCP	22	0.0.0.0/0

Step for JSON Template setup for a Load Balancer on Amazon Cloud Formation

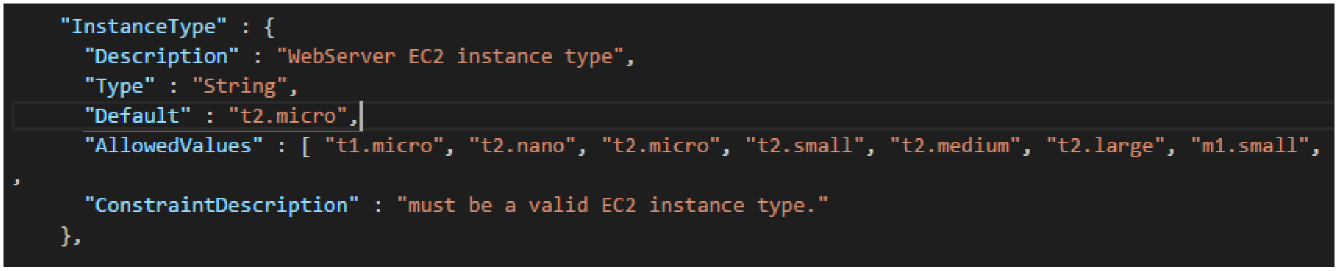
- Amazon have some template samples available on its website, to check them we can visit the link below: http://docs.aws.amazon.com/AWSCloudFormation/latest/UserGuide/sample-templates-services-us-west-2.html#w1ab2c21c45c15c15

- I am using a free template having name Load Balanced Auto Scaling group https://s3.amazonaws.com/cloudformation-templates-us-east-1/AutoScalingKeepAtNSample.template

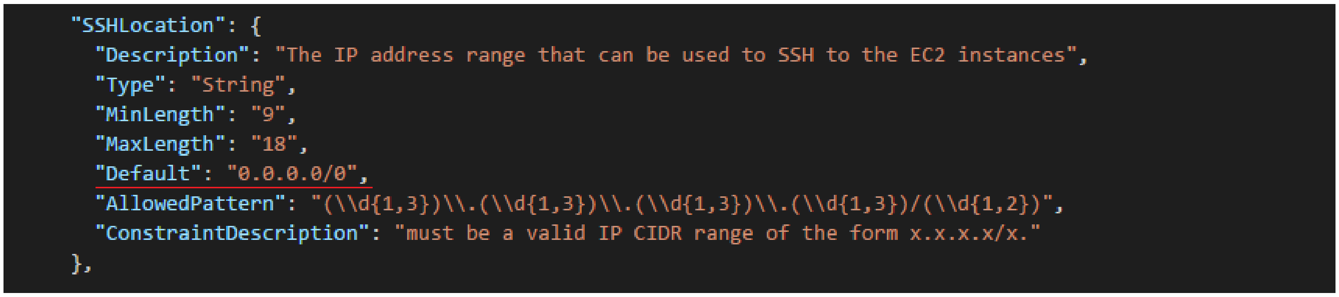
- In this template, I am changing the key default value, instance type default value and CIDR rule, as I did before for this lab in previous steps.



```
  "KeyName": {
    "Description" : "Name of an existing EC2 KeyPair to enable SSH access to the instances",
    "Type": "AWS::EC2::KeyPair::KeyName",
    "Default": "ParasGarg_AWS",
    "ConstraintDescription" : "must be the name of an existing EC2 KeyPair."
  },
```

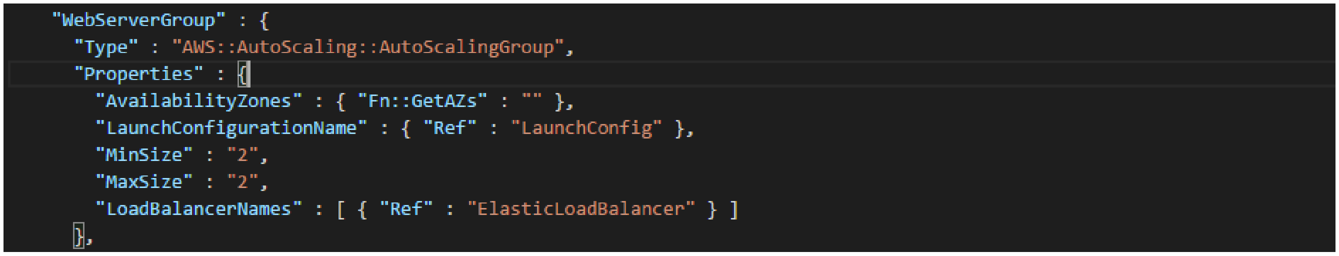


```
    "InstanceType" : {
      "Description" : "WebServer EC2 instance type",
      "Type" : "String",
      "Default" : "t2.micro",
      "AllowedValues" : [ "t1.micro", "t2.nano", "t2.micro", "t2.small", "t2.medium", "t2.large", "m1.small",
,
      "ConstraintDescription" : "must be a valid EC2 instance type."
    },
```



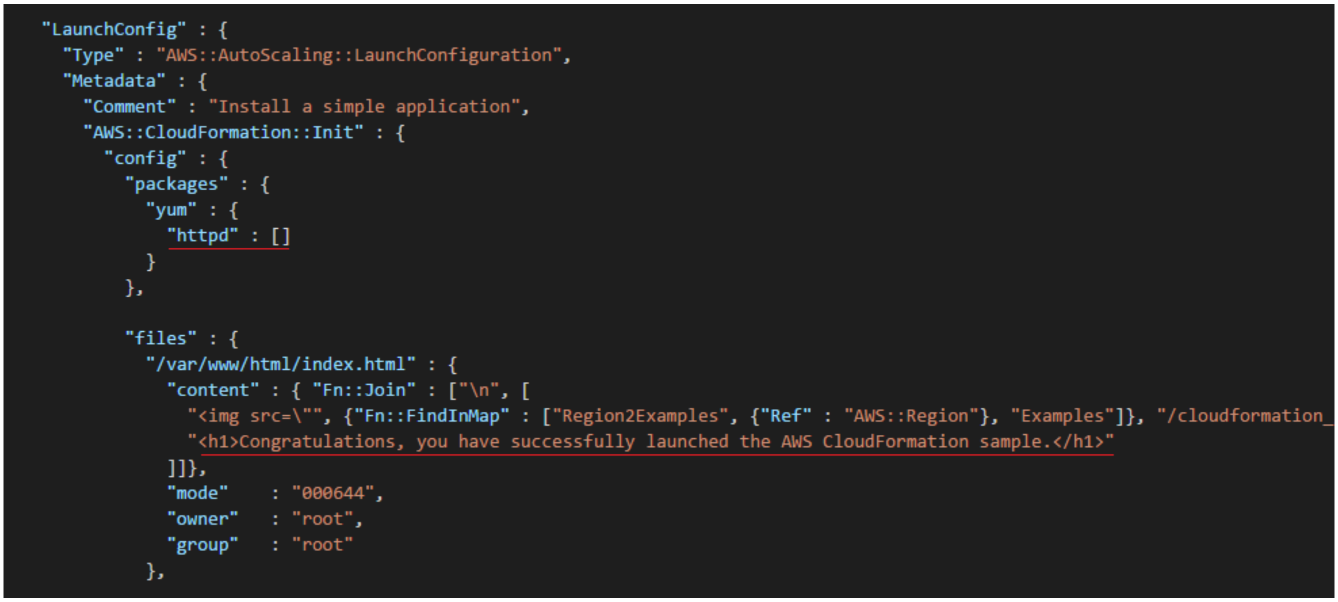
```
     "SSHLocation": {
       "Description": "The IP address range that can be used to SSH to the EC2 instances",
       "Type": "String",
       "MinLength": "9",
       "MaxLength": "18",
       "Default": "0.0.0.0/0",
       "AllowedPattern": "(\\d{1,3})\\.(\\d{1,3})\\.(\\d{1,3})\\.(\\d{1,3})/(\\d{1,2})",
       "ConstraintDescription": "must be a valid IP CIDR range of the form x.x.x.x/x."
     },
```

- Now creating 2 instances by keeping minSize and maxSize value as 2 in Auto Scaling. After completing using value 2, I will change it to 4 for four instances and check version controlling.



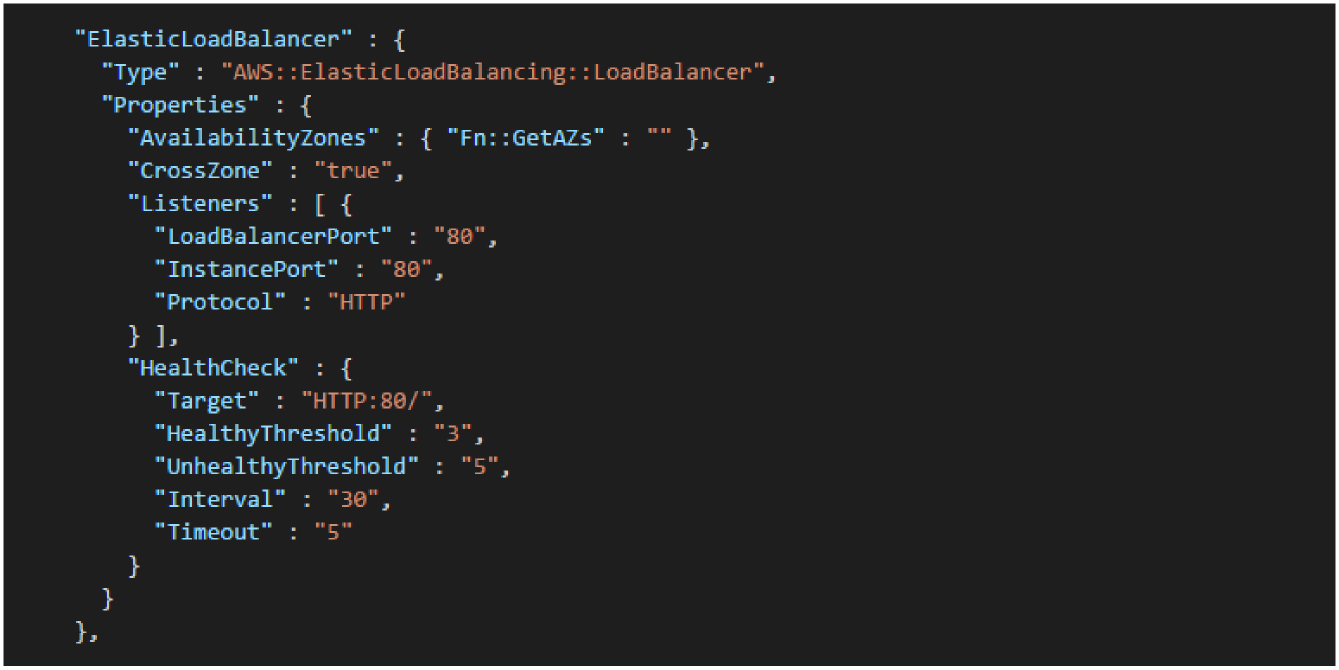
```
    "WebServerGroup" : {
      "Type" : "AWS::AutoScaling::AutoScalingGroup",
      "Properties" : {
        "AvailabilityZones" : { "Fn::GetAZs" : "" },
        "LaunchConfigurationName" : { "Ref" : "LaunchConfig" },
        "MinSize" : "2",
        "MaxSize" : "2",
        "LoadBalancerNames" : [ { "Ref" : "ElasticLoadBalancer" } ]
      },
```

- In LaunchConfig, we can check **httpd** for http server and format of **index.html** file in files document.



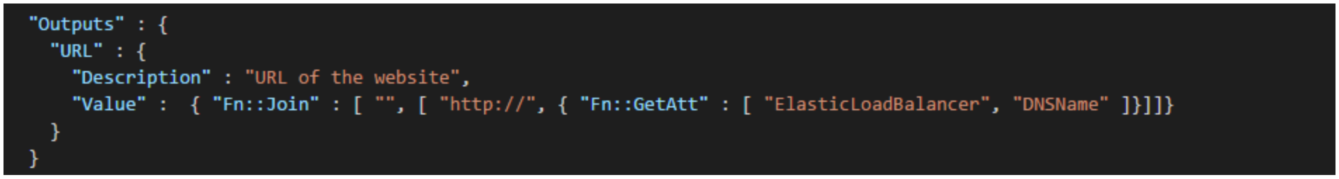
```
"LaunchConfig" : {
  "Type" : "AWS::AutoScaling::LaunchConfiguration",
  "Metadata" : {
    "Comment" : "Install a simple application",
    "AWS::CloudFormation::Init" : {
      "config" : {
        "packages" : {
          "yum" : {
            "httpd" : []
          }
        },

        "files" : {
          "/var/www/html/index.html" : {
            "content" : { "Fn::Join" : ["\n", [
              "<img src=\"", {"Fn::FindInMap" : ["Region2Examples", {"Ref" : "AWS::Region"}, "Examples"]}, "/cloudformation_
              "<h1>Congratulations, you have successfully launched the AWS CloudFormation sample.</h1>"
            ]]},
            "mode"    : "000644",
            "owner"   : "root",
            "group"   : "root"
          },
```

- Port setting for Load Balancer



```
"ElasticLoadBalancer" : {
  "Type" : "AWS::ElasticLoadBalancing::LoadBalancer",
  "Properties" : {
    "AvailabilityZones" : { "Fn::GetAZs" : "" },
    "CrossZone" : "true",
    "Listeners" : [ {
      "LoadBalancerPort" : "80",
      "InstancePort" : "80",
      "Protocol" : "HTTP"
    } ],
    "HealthCheck" : {
      "Target" : "HTTP:80/",
      "HealthyThreshold" : "3",
      "UnhealthyThreshold" : "5",
      "Interval" : "30",
      "Timeout" : "5"
    }
  }
},
```

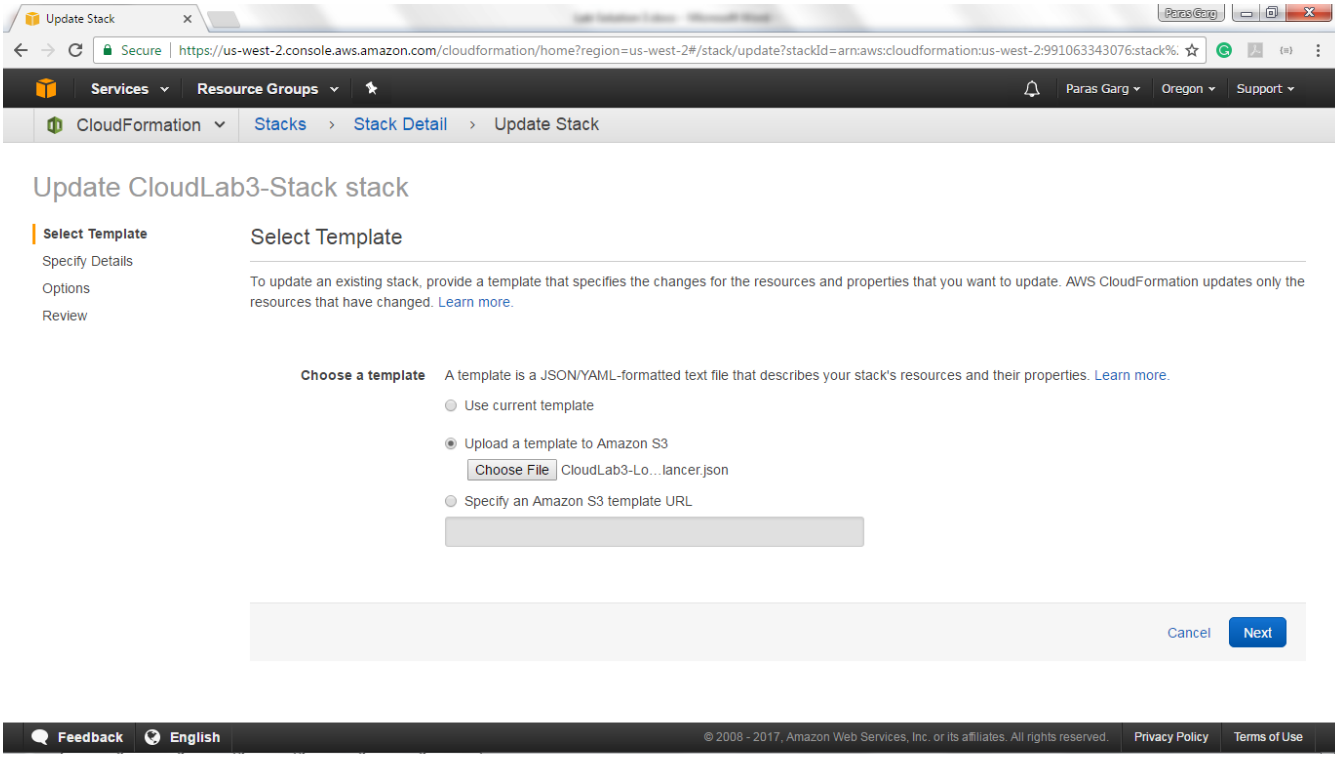
- Output shows the URL of the Load Balancer



```
"Outputs" : {
  "URL" : {
    "Description" : "URL of the website",
    "Value" :  { "Fn::Join" : [ "", [ "http://", { "Fn::GetAtt" : [ "ElasticLoadBalancer", "DNSName" ]}]]}
  }
}
```

Step for Updating a Stack by Amazon Cloud Formation (Using AWS Panel)

- Select the created stack and click action then update stack for updating load balancer. Then, select Load Balancer template to update. Click next.



https://us-west-2.console.aws.amazon.com/cloudformation/home?region=us-west-2#/stack/update?stackId=arn:aws:cloudformation:us-west-2:991063343076:stack%.

CloudFormation › Stacks › Stack Detail › Update Stack

Update CloudLab3-Stack stack

Select Template
Specify Details
Options
Review

Select Template

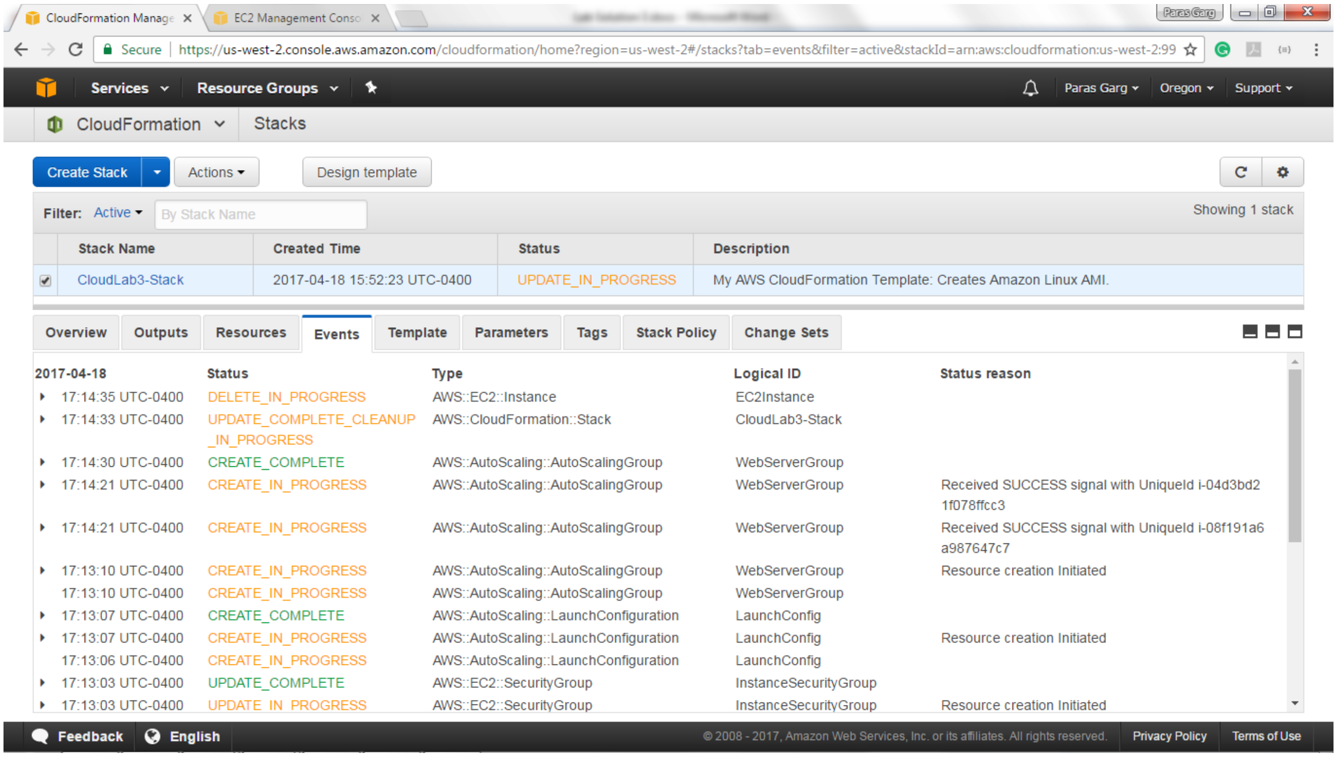
To update an existing stack, provide a template that specifies the changes for the resources and properties that you want to update. AWS CloudFormation updates only the resources that have changed. Learn more.

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

○ Use current template
● Upload a template to Amazon S3
Choose File CloudLab3-Lo…lancer.json
○ Specify an Amazon S3 template URL

Cancel Next

- After performing same steps, that we did while configuring template for stack creating. We will get "UPDATE_IN_PROGRESS" on current stack and can check all events running under.



https://us-west-2.console.aws.amazon.com/cloudformation/home?region=us-west-2#/stacks?tab=events&filter=active&stackId=arn:aws:cloudformation:us-west-2:99

CloudFormation › Stacks

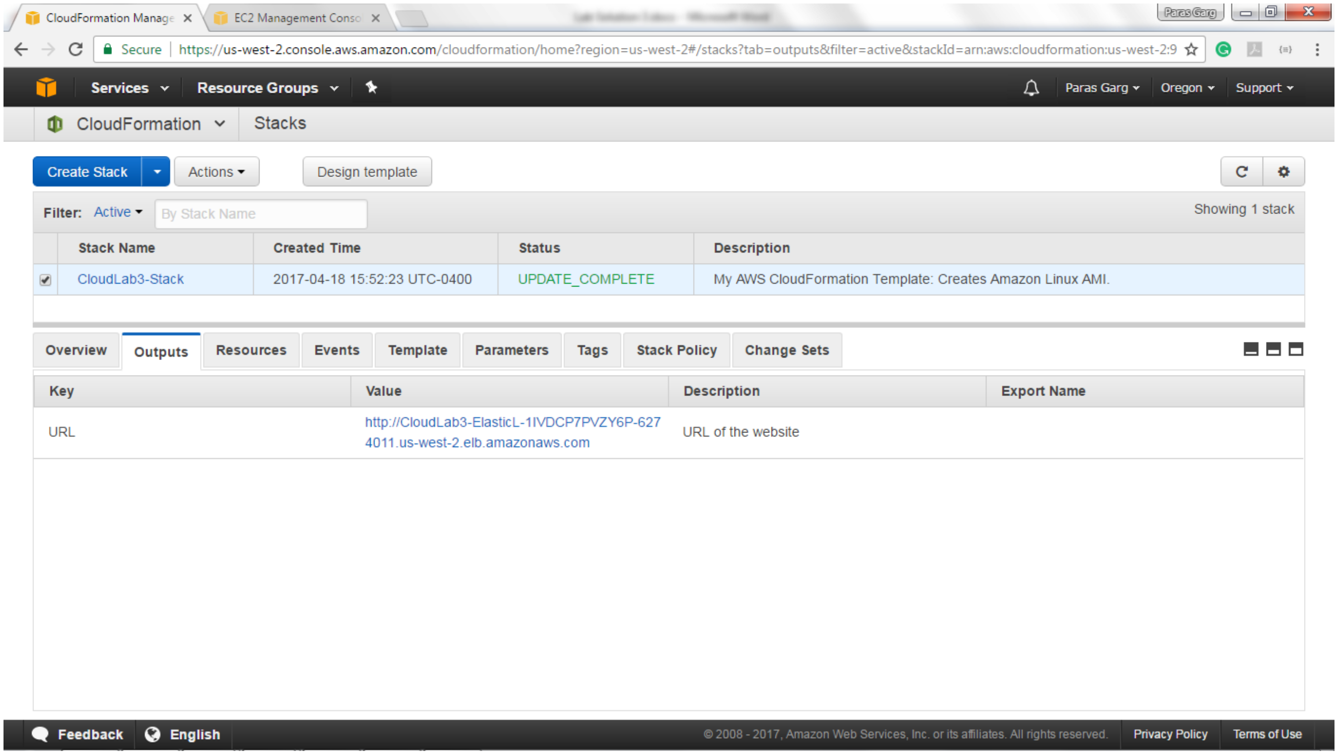
Filter: Active — By Stack Name — Showing 1 stack

	Stack Name	Created Time	Status	Description
☑	CloudLab3-Stack	2017-04-18 15:52:23 UTC-0400	UPDATE_IN_PROGRESS	My AWS CloudFormation Template: Creates Amazon Linux AMI.

Events

2017-04-18	Status	Type	Logical ID	Status reason
17:14:35 UTC-0400	DELETE_IN_PROGRESS	AWS::EC2::Instance	EC2Instance	
17:14:33 UTC-0400	UPDATE_COMPLETE_CLEANUP_IN_PROGRESS	AWS::CloudFormation::Stack	CloudLab3-Stack	
17:14:30 UTC-0400	CREATE_COMPLETE	AWS::AutoScaling::AutoScalingGroup	WebServerGroup	
17:14:21 UTC-0400	CREATE_IN_PROGRESS	AWS::AutoScaling::AutoScalingGroup	WebServerGroup	Received SUCCESS signal with UniqueId i-04d3bd21f078ffcc3
17:14:21 UTC-0400	CREATE_IN_PROGRESS	AWS::AutoScaling::AutoScalingGroup	WebServerGroup	Received SUCCESS signal with UniqueId i-08f191a6a987647c7
17:13:10 UTC-0400	CREATE_IN_PROGRESS	AWS::AutoScaling::AutoScalingGroup	WebServerGroup	Resource creation Initiated
17:13:10 UTC-0400	CREATE_IN_PROGRESS	AWS::AutoScaling::AutoScalingGroup	WebServerGroup	
17:13:07 UTC-0400	CREATE_COMPLETE	AWS::AutoScaling::LaunchConfiguration	LaunchConfig	
17:13:07 UTC-0400	CREATE_IN_PROGRESS	AWS::AutoScaling::LaunchConfiguration	LaunchConfig	Resource creation Initiated
17:13:06 UTC-0400	CREATE_IN_PROGRESS	AWS::AutoScaling::LaunchConfiguration	LaunchConfig	
17:13:03 UTC-0400	UPDATE_COMPLETE	AWS::EC2::SecurityGroup	InstanceSecurityGroup	
17:13:03 UTC-0400	UPDATE_IN_PROGRESS	AWS::EC2::SecurityGroup	InstanceSecurityGroup	Resource creation Initiated

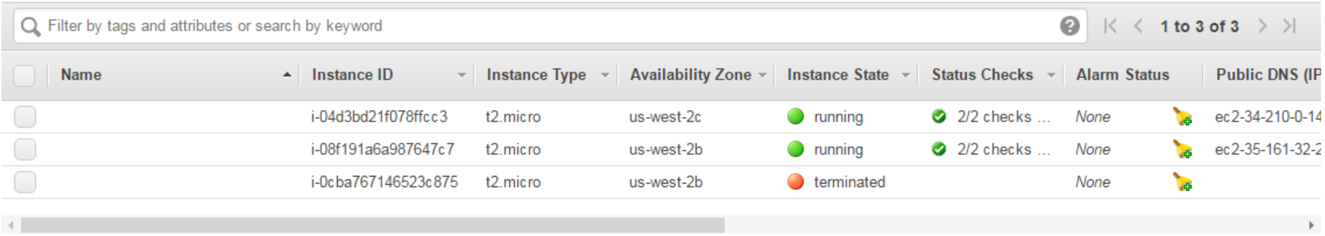
- After status change to "UPDATE_COMPLETE". We can check the output of the Load Balancer.



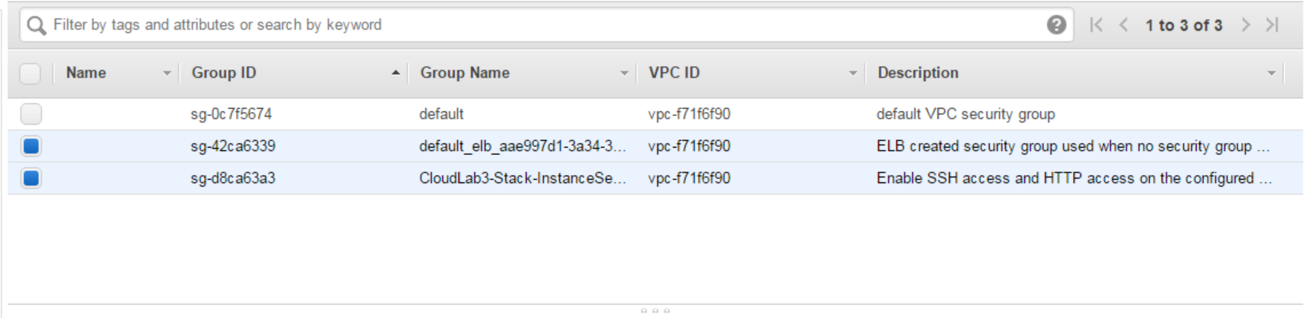
	Stack Name	Created Time	Status	Description
☑	CloudLab3-Stack	2017-04-18 15:52:23 UTC-0400	UPDATE_COMPLETE	My AWS CloudFormation Template: Creates Amazon Linux AMI.

Key	Value	Description	Export Name
URL	http://CloudLab3-ElasticL-1IVDCP7PVZY6P-627 4011.us-west-2.elb.amazonaws.com	URL of the website	

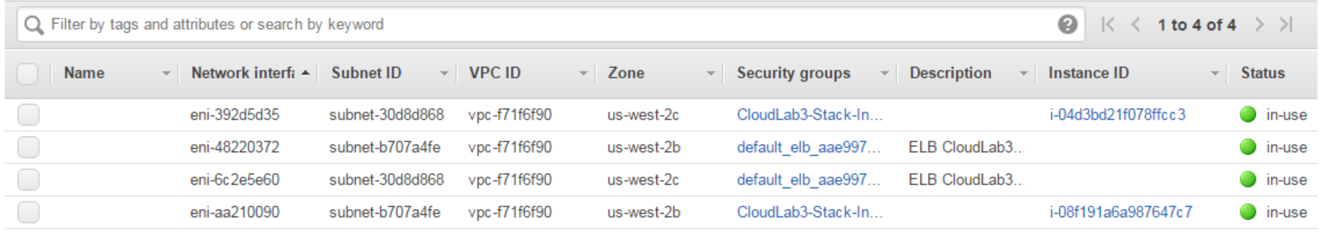
- Now we can verify that, instances, security group, and network interfaces (respectively) have been created successfully



	Name	Instance ID	Instance Type	Availability Zone	Instance State	Status Checks	Alarm Status	Public DNS (IP
□		i-04d3bd21f078ffcc3	t2.micro	us-west-2c	● running	✓ 2/2 checks ...	None	ec2-34-210-0-14
□		i-08f191a6a987647c7	t2.micro	us-west-2b	● running	✓ 2/2 checks ...	None	ec2-35-161-32-2
□		i-0cba767146523c875	t2.micro	us-west-2b	● terminated		None	

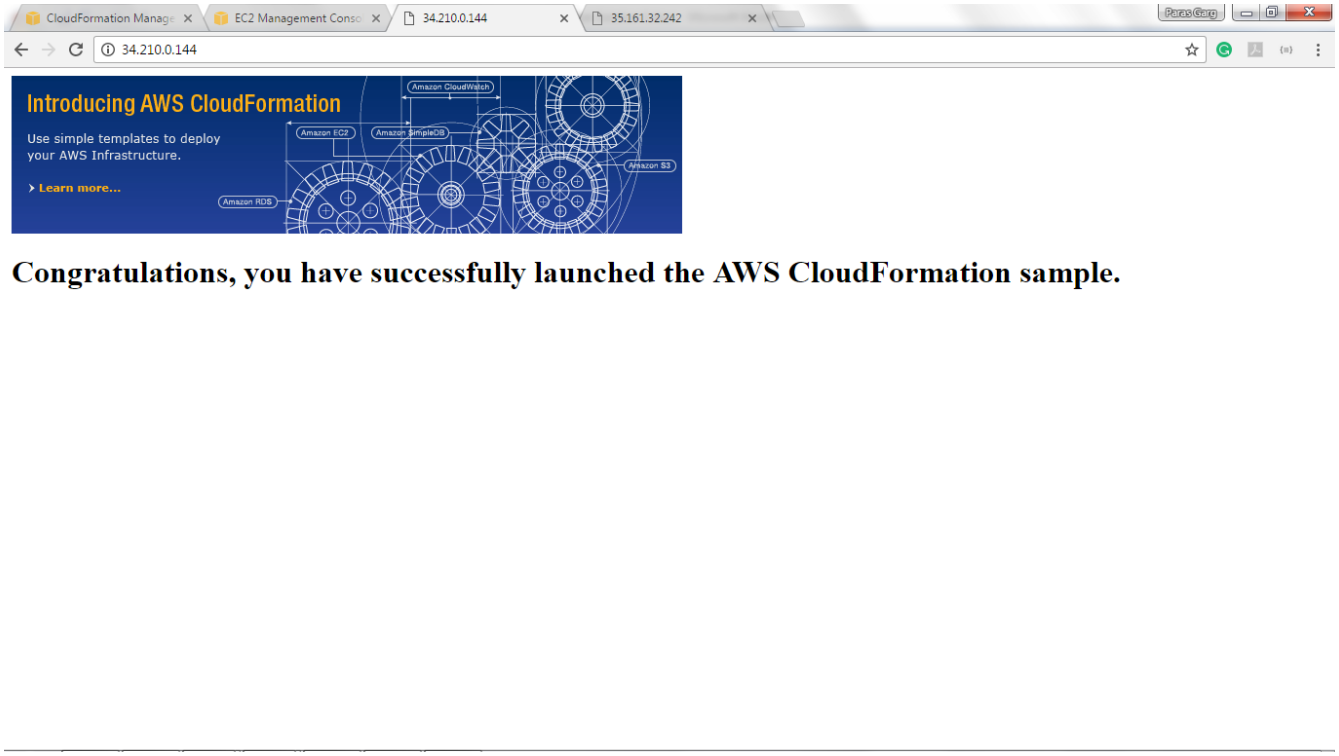


	Name	Group ID	Group Name	VPC ID	Description
□		sg-0c7f5674	default	vpc-f71f6f90	default VPC security group
■		sg-42ca6339	default_elb_aae997d1-3a34-3...	vpc-f71f6f90	ELB created security group used when no security group ...
■		sg-d8ca63a3	CloudLab3-Stack-InstanceSe...	vpc-f71f6f90	Enable SSH access and HTTP access on the configured ...



	Name	Network interfa	Subnet ID	VPC ID	Zone	Security groups	Description	Instance ID	Status
□		eni-392d5d35	subnet-30d8d868	vpc-f71f6f90	us-west-2c	CloudLab3-Stack-In...		i-04d3bd21f078ffcc3	● in-use
□		eni-48220372	subnet-b707a4fe	vpc-f71f6f90	us-west-2b	default_elb_aae997...	ELB CloudLab3..		● in-use
□		eni-6c2e5e60	subnet-30d8d868	vpc-f71f6f90	us-west-2c	default_elb_aae997...	ELB CloudLab3..		● in-use
□		eni-aa210090	subnet-b707a4fe	vpc-f71f6f90	us-west-2b	CloudLab3-Stack-In...		i-08f191a6a987647c7	● in-use

- After successful update of stack, we can check that the instances are running on the servers.
    - Server 1 (have IP 34.210.0.144)



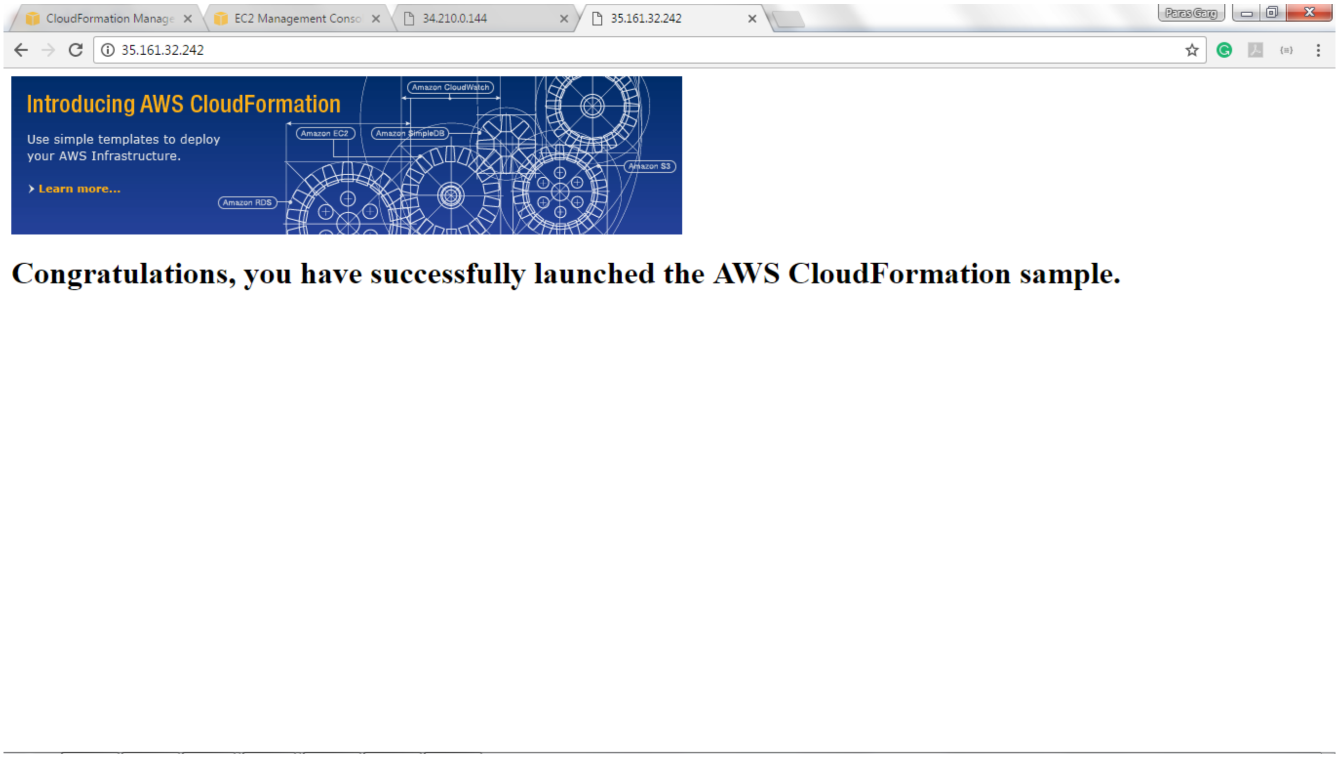
Introducing AWS CloudFormation

Use simple templates to deploy your AWS Infrastructure.

› Learn more...

Congratulations, you have successfully launched the AWS CloudFormation sample.

- Server 2 (have IP 35.161.32.242)



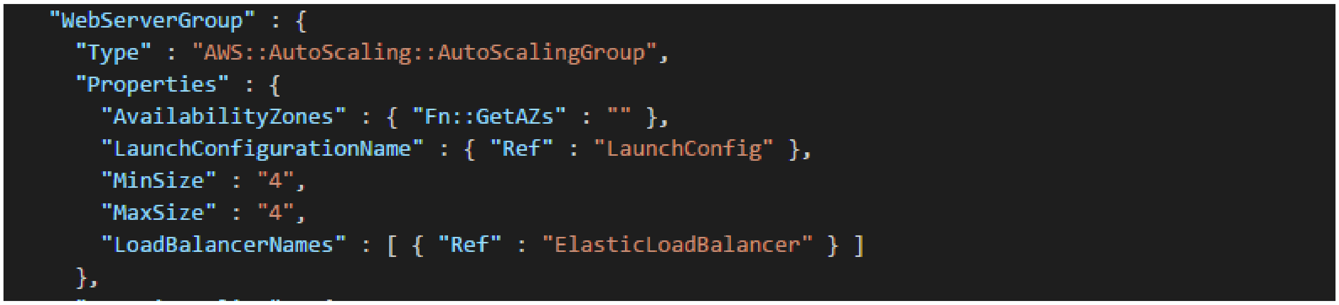
Introducing AWS CloudFormation

Use simple templates to deploy your AWS Infrastructure.

› Learn more...

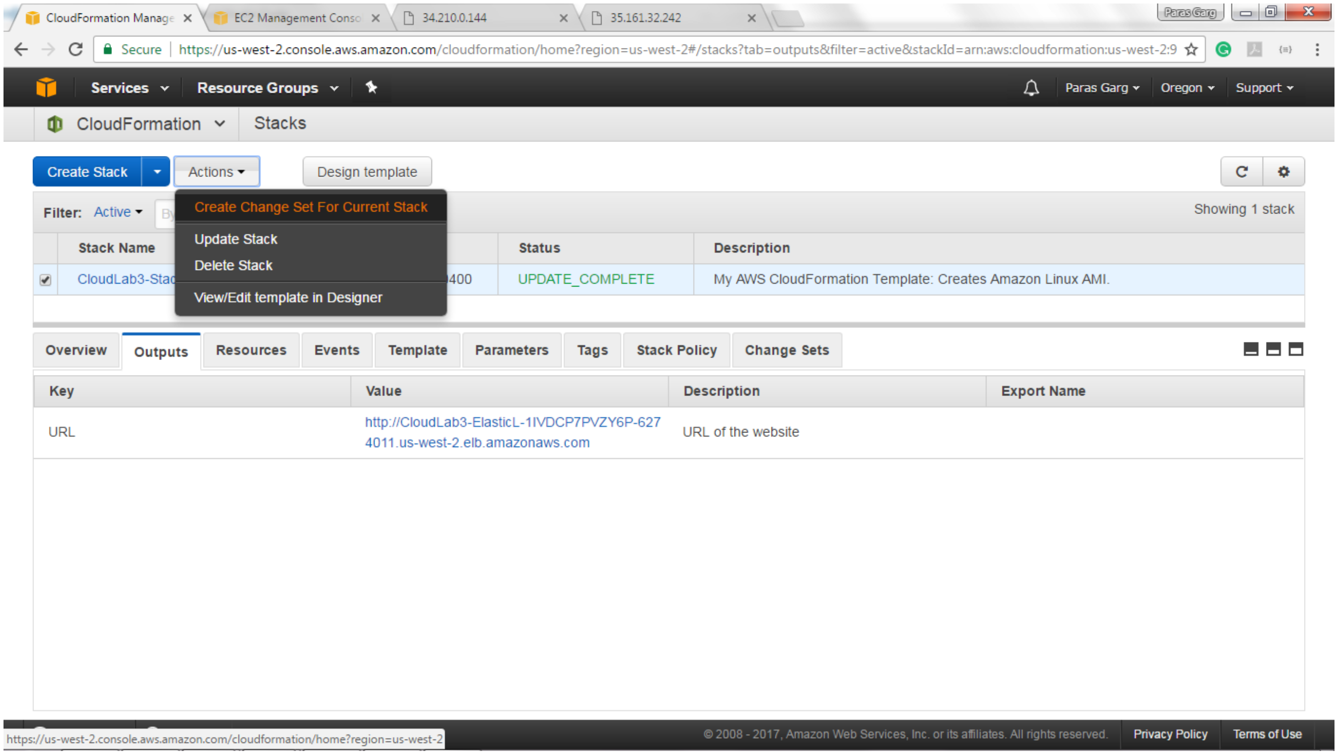
Congratulations, you have successfully launched the AWS CloudFormation sample.

- Now, after successful execution of servers on instances. I will change the minSize and maxSize value to 4 from 2 in Auto Scaling (as mentioned before)



```
  "WebServerGroup" : {
    "Type" : "AWS::AutoScaling::AutoScalingGroup",
    "Properties" : {
      "AvailabilityZones" : { "Fn::GetAZs" : "" },
      "LaunchConfigurationName" : { "Ref" : "LaunchConfig" },
      "MinSize" : "4",
      "MaxSize" : "4",
      "LoadBalancerNames" : [ { "Ref" : "ElasticLoadBalancer" } ]
    },
```

- After changing the Auto Scaling min and max values. We will Create Change Set for Current Stack



CloudFormation Manage
EC2 Management Conso
34.210.0.144
35.161.32.242
Paras Garg
Secure
https://us-west-2.console.aws.amazon.com/cloudformation/home?region=us-west-2#/stacks?tab=outputs&filter=active&stackId=arn:aws:cloudformation:us-west-2:9
Services
Resource Groups
Paras Garg
Oregon
Support
CloudFormation
Stacks
Create Stack
Actions
Design template
Create Change Set For Current Stack
Update Stack
Delete Stack
View/Edit template in Designer
Filter: Active
Showing 1 stack
Overview
Outputs
Resources
Events
Template
Parameters
Tags
Stack Policy
Change Sets
https://us-west-2.console.aws.amazon.com/cloudformation/home?region=us-west-2
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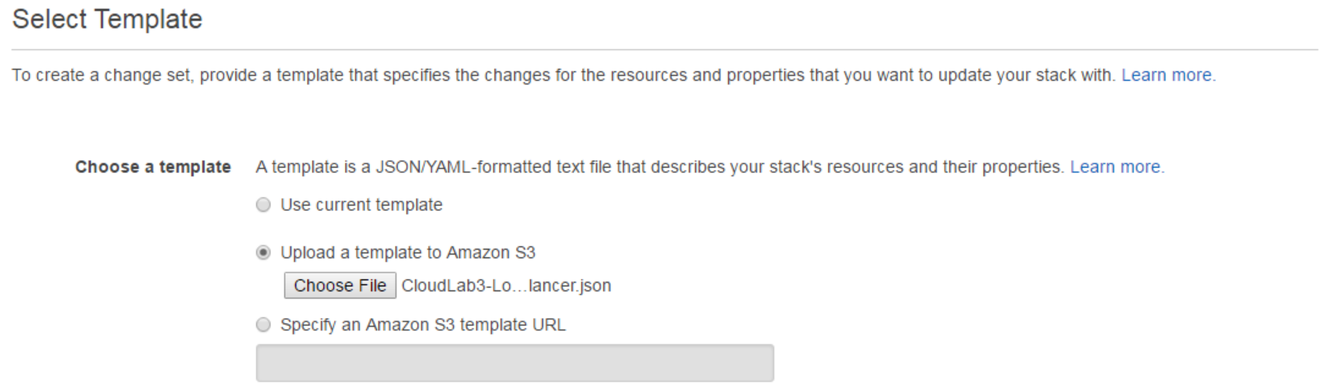
Privacy Policy
Terms of Use

Stack Name		Status	Description
CloudLab3-Stac	400	UPDATE_COMPLETE	My AWS CloudFormation Template: Creates Amazon Linux AMI.

Key	Value	Description	Export Name
URL	http://CloudLab3-ElasticL-1IVDCP7PVZY6P-627 4011.us-west-2.elb.amazonaws.com	URL of the website	

- While creating change set, we will provide the updated JSON template for Auto Scaling. Then, click next.



Select Template

To create a change set, provide a template that specifies the changes for the resources and properties that you want to update your stack with. Learn more.

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

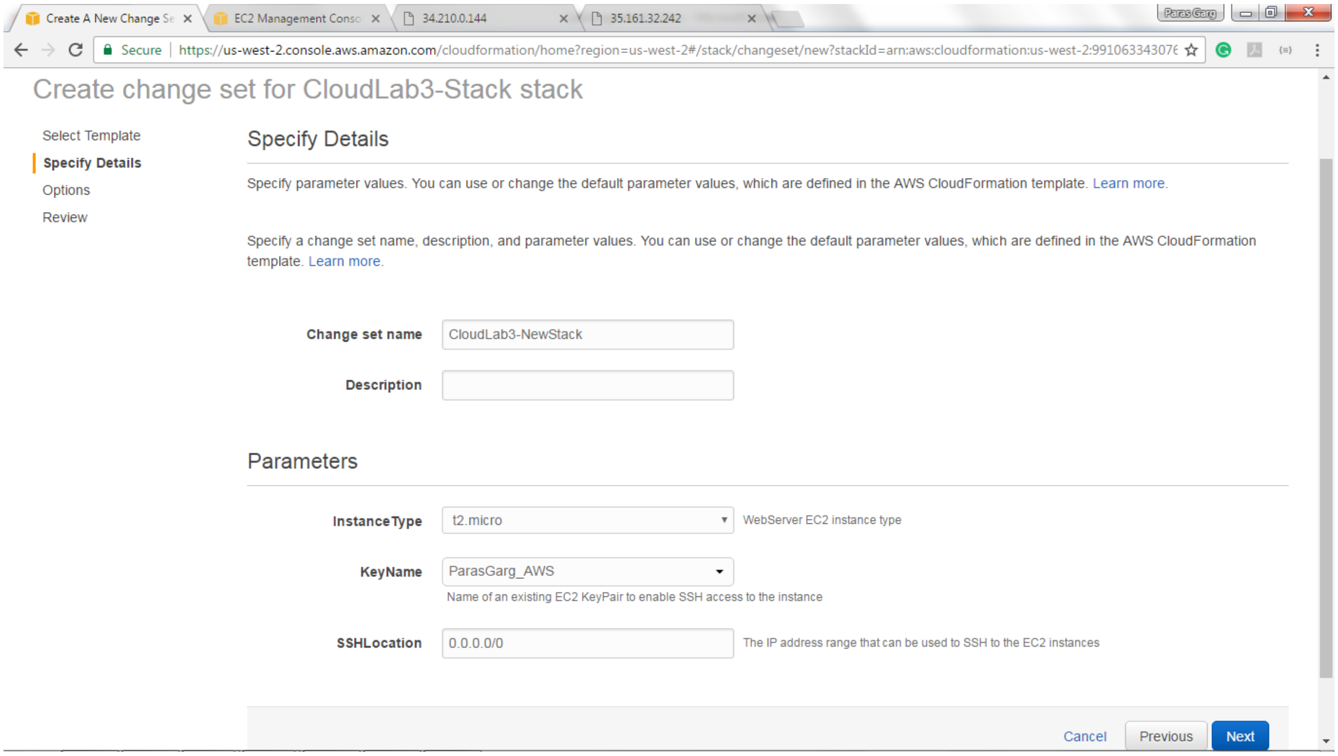
○ Use current template

● Upload a template to Amazon S3

Choose File CloudLab3-Lo...lancer.json

○ Specify an Amazon S3 template URL

- Now changing the specification details for change set for current stack. Then, click next and follow the same step what we did while creating and updating stack template (as previous steps).


Create A New Change Se
EC2 Management Conso
34.210.0.144
35.161.32.242
Paras Garg
Secure
https://us-west-2.console.aws.amazon.com/cloudformation/home?region=us-west-2#/stack/changeset/new?stackId=arn:aws:cloudformation:us-west-2:99106334307€

Create change set for CloudLab3-Stack stack

Select Template
Specify Details
Options
Review

Specify Details

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

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

Change set name: CloudLab3-NewStack

Description:

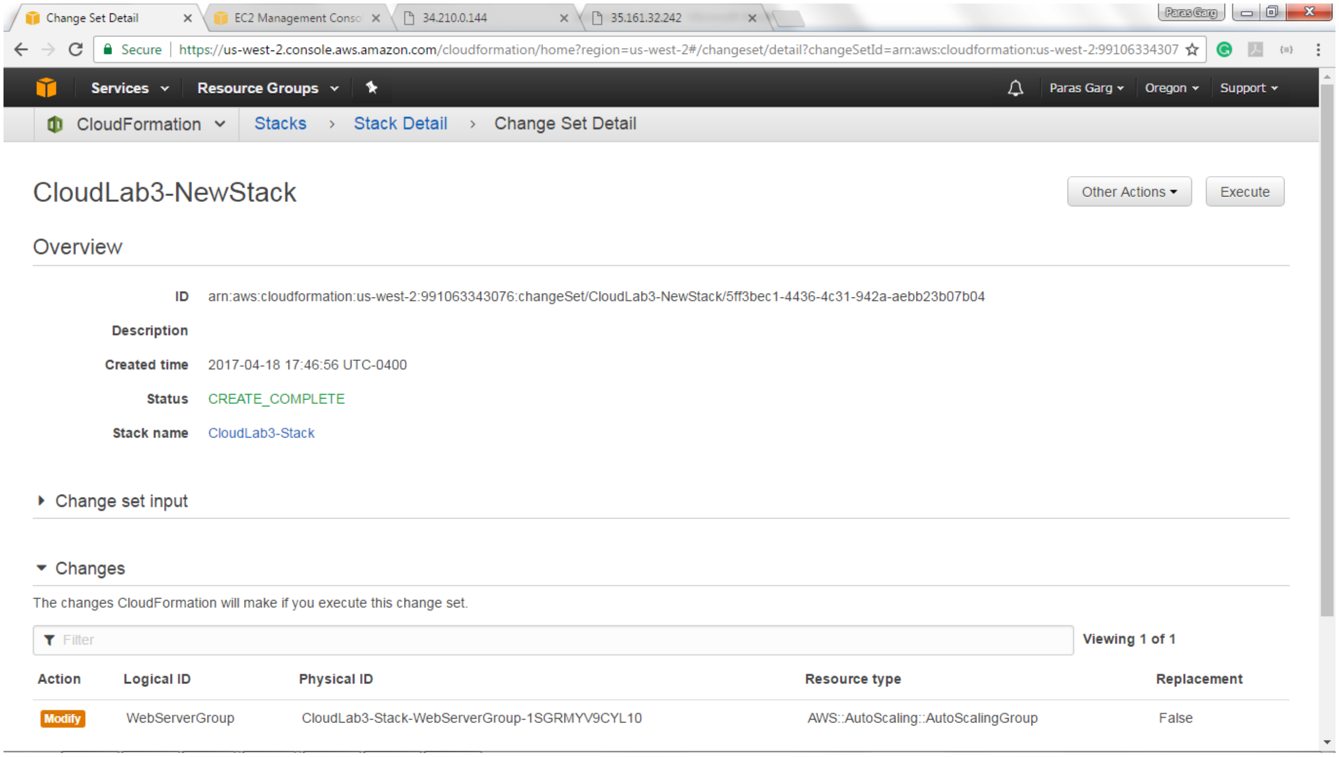
Parameters

InstanceType: t2.micro — WebServer EC2 instance type

KeyName: ParasGarg_AWS — Name of an existing EC2 KeyPair to enable SSH access to the instance

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

- Now, check the overview of updated stack details, and notice the WebServerGroup has been modified instead of replacing. Then, click on Execute.



CloudLab3-NewStack

Overview

ID: arn:aws:cloudformation:us-west-2:991063343076:changeSet/CloudLab3-NewStack/5ff3bec1-4436-4c31-942a-aebb23b07b04

Description:

Created time: 2017-04-18 17:46:56 UTC-0400

Status: CREATE_COMPLETE

Stack name: CloudLab3-Stack

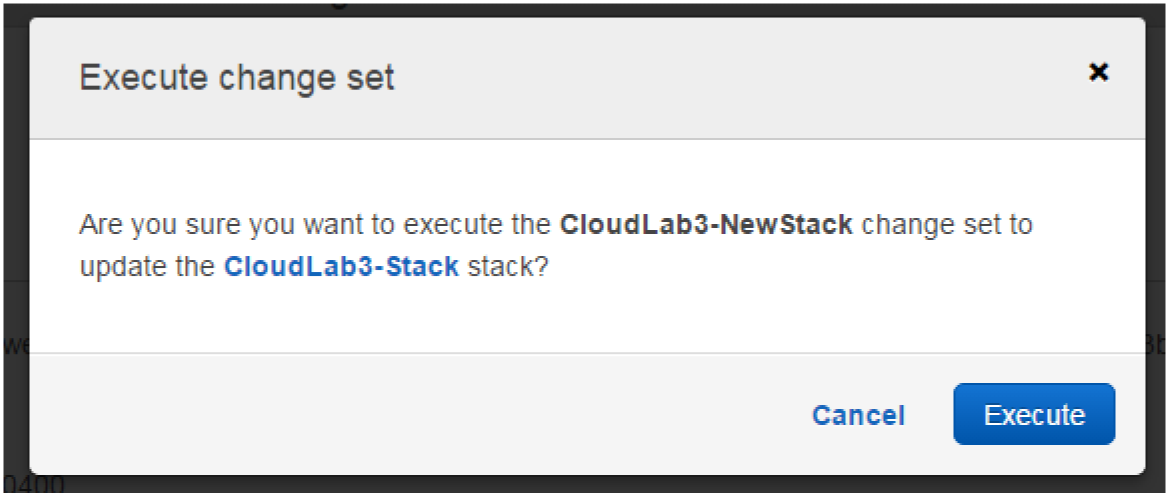
▸ Change set input

▾ Changes

The changes CloudFormation will make if you execute this change set.

Action	Logical ID	Physical ID	Resource type	Replacement
Modify	WebServerGroup	CloudLab3-Stack-WebServerGroup-1SGRMYV9CYL10	AWS::AutoScaling::AutoScalingGroup	False

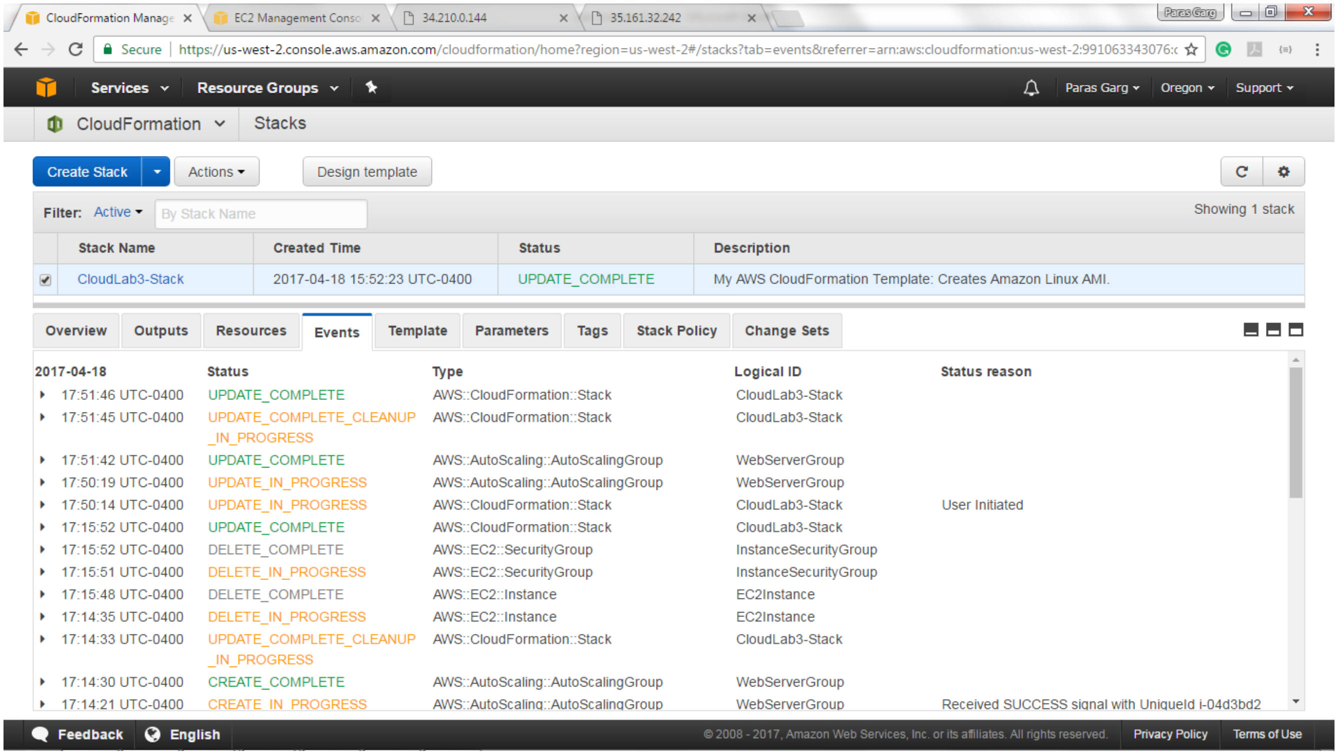
- Now, after clicking execute button, it will ask for confirmation. Click Execute.



Execute change set

Are you sure you want to execute the **CloudLab3-NewStack** change set to update the **CloudLab3-Stack** stack?

- After it, we can check that all the events on the current stack has been updated and will get "UPDATE_COMPLETE" status.



	Stack Name	Created Time	Status	Description
☑	CloudLab3-Stack	2017-04-18 15:52:23 UTC-0400	UPDATE_COMPLETE	My AWS CloudFormation Template: Creates Amazon Linux AMI.

2017-04-18	Status	Type	Logical ID	Status reason
17:51:46 UTC-0400	UPDATE_COMPLETE	AWS::CloudFormation::Stack	CloudLab3-Stack	
17:51:45 UTC-0400	UPDATE_COMPLETE_CLEANUP_IN_PROGRESS	AWS::CloudFormation::Stack	CloudLab3-Stack	
17:51:42 UTC-0400	UPDATE_COMPLETE	AWS::AutoScaling::AutoScalingGroup	WebServerGroup	
17:50:19 UTC-0400	UPDATE_IN_PROGRESS	AWS::AutoScaling::AutoScalingGroup	WebServerGroup	
17:50:14 UTC-0400	UPDATE_IN_PROGRESS	AWS::CloudFormation::Stack	CloudLab3-Stack	User Initiated
17:15:52 UTC-0400	UPDATE_COMPLETE	AWS::CloudFormation::Stack	CloudLab3-Stack	
17:15:52 UTC-0400	DELETE_COMPLETE	AWS::EC2::SecurityGroup	InstanceSecurityGroup	
17:15:51 UTC-0400	DELETE_IN_PROGRESS	AWS::EC2::SecurityGroup	InstanceSecurityGroup	
17:15:48 UTC-0400	DELETE_COMPLETE	AWS::EC2::Instance	EC2Instance	
17:14:35 UTC-0400	DELETE_IN_PROGRESS	AWS::EC2::Instance	EC2Instance	
17:14:33 UTC-0400	UPDATE_COMPLETE_CLEANUP_IN_PROGRESS	AWS::CloudFormation::Stack	CloudLab3-Stack	
17:14:30 UTC-0400	CREATE_COMPLETE	AWS::AutoScaling::AutoScalingGroup	WebServerGroup	
17:14:21 UTC-0400	CREATE_IN_PROGRESS	AWS::AutoScaling::AutoScalingGroup	WebServerGroup	Received SUCCESS signal with UniqueId i-04d3bd2

Feedback
English
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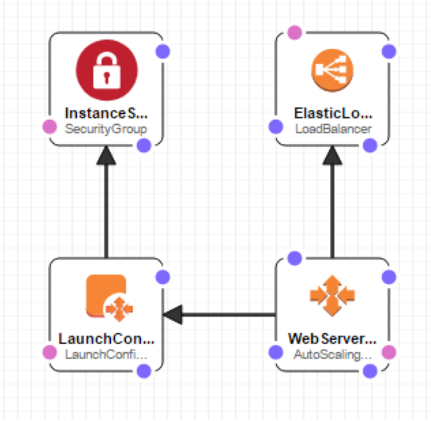
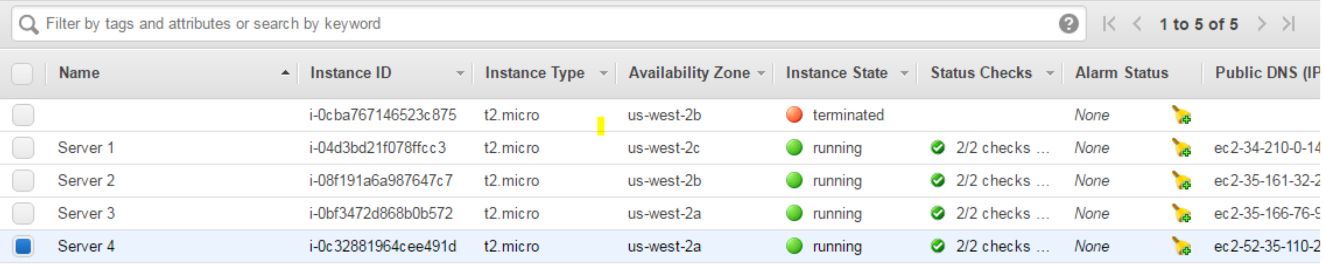
Terms of Use

- We can also check the template in the designer and can manually modify.

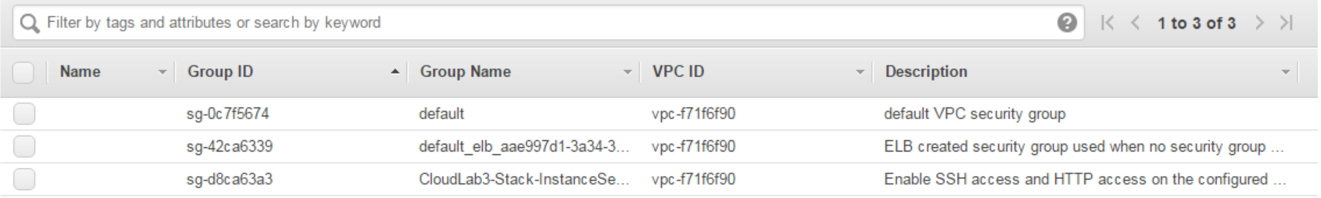


- Now we can verify that, instances, security group, and network interfaces (respectively) have been created successfully



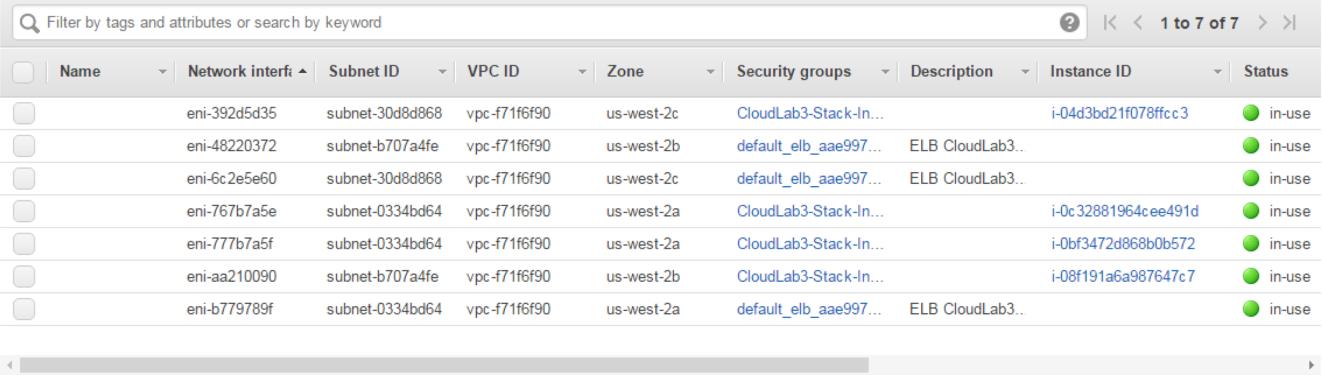
Filter by tags and attributes or search by keyword | 1 to 5 of 5

□	Name	Instance ID	Instance Type	Availability Zone	Instance State	Status Checks	Alarm Status	Public DNS (IP
□		i-0cba767146523c875	t2.micro	us-west-2b	● terminated		*None*	
□	Server 1	i-04d3bd21f078ffcc3	t2.micro	us-west-2c	● running	✓ 2/2 checks ...	*None*	ec2-34-210-0-14
□	Server 2	i-08f191a6a987647c7	t2.micro	us-west-2b	● running	✓ 2/2 checks ...	*None*	ec2-35-161-32-2
□	Server 3	i-0bf3472d868b0b572	t2.micro	us-west-2a	● running	✓ 2/2 checks ...	*None*	ec2-35-166-76-9
☑	Server 4	i-0c32881964cee491d	t2.micro	us-west-2a	● running	✓ 2/2 checks ...	*None*	ec2-52-35-110-2



Filter by tags and attributes or search by keyword | 1 to 3 of 3

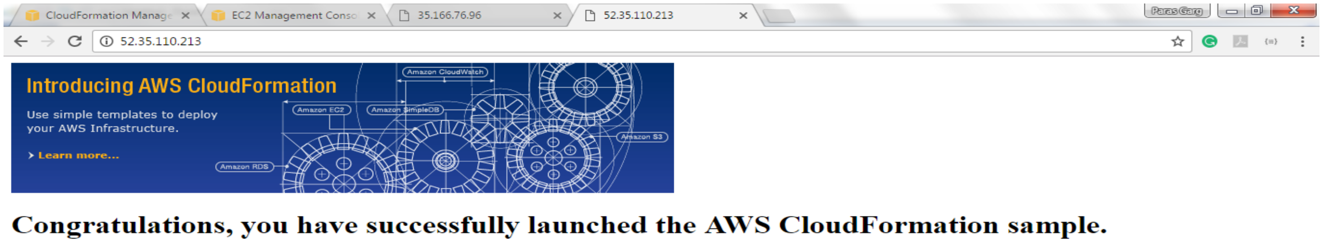
□	Name	Group ID	Group Name	VPC ID	Description
□		sg-0c7f5674	default	vpc-f71f6f90	default VPC security group
□		sg-42ca6339	default_elb_aae997d1-3a34-3...	vpc-f71f6f90	ELB created security group used when no security group ...
□		sg-d8ca63a3	CloudLab3-Stack-InstanceSe...	vpc-f71f6f90	Enable SSH access and HTTP access on the configured ...



Filter by tags and attributes or search by keyword | 1 to 7 of 7

□	Name	Network interfa	Subnet ID	VPC ID	Zone	Security groups	Description	Instance ID	Status
□		eni-392d5d35	subnet-30d8d868	vpc-f71f6f90	us-west-2c	CloudLab3-Stack-In...		i-04d3bd21f078ffcc3	● in-use
□		eni-48220372	subnet-b707a4fe	vpc-f71f6f90	us-west-2b	default_elb_aae997...	ELB CloudLab3..		● in-use
□		eni-6c2e5e60	subnet-30d8d868	vpc-f71f6f90	us-west-2c	default_elb_aae997...	ELB CloudLab3..		● in-use
□		eni-767b7a5e	subnet-0334bd64	vpc-f71f6f90	us-west-2a	CloudLab3-Stack-In...		i-0c32881964cee491d	● in-use
□		eni-777b7a5f	subnet-0334bd64	vpc-f71f6f90	us-west-2a	CloudLab3-Stack-In...		i-0bf3472d868b0b572	● in-use
□		eni-aa210090	subnet-b707a4fe	vpc-f71f6f90	us-west-2b	CloudLab3-Stack-In...		i-08f191a6a987647c7	● in-use
□		eni-b779789f	subnet-0334bd64	vpc-f71f6f90	us-west-2a	default_elb_aae997...	ELB CloudLab3..		● in-use

- After successful update of stack, we can check that the instances are running on the servers.
  - Server 1 (http://34.210.0.144/),
  - Server 2 (http://35.161.32.242/),
  - Server 3, (http://35.166.76.96/), and
  - Server 4 (http://52.35.110.213/) (same page will appear in all)

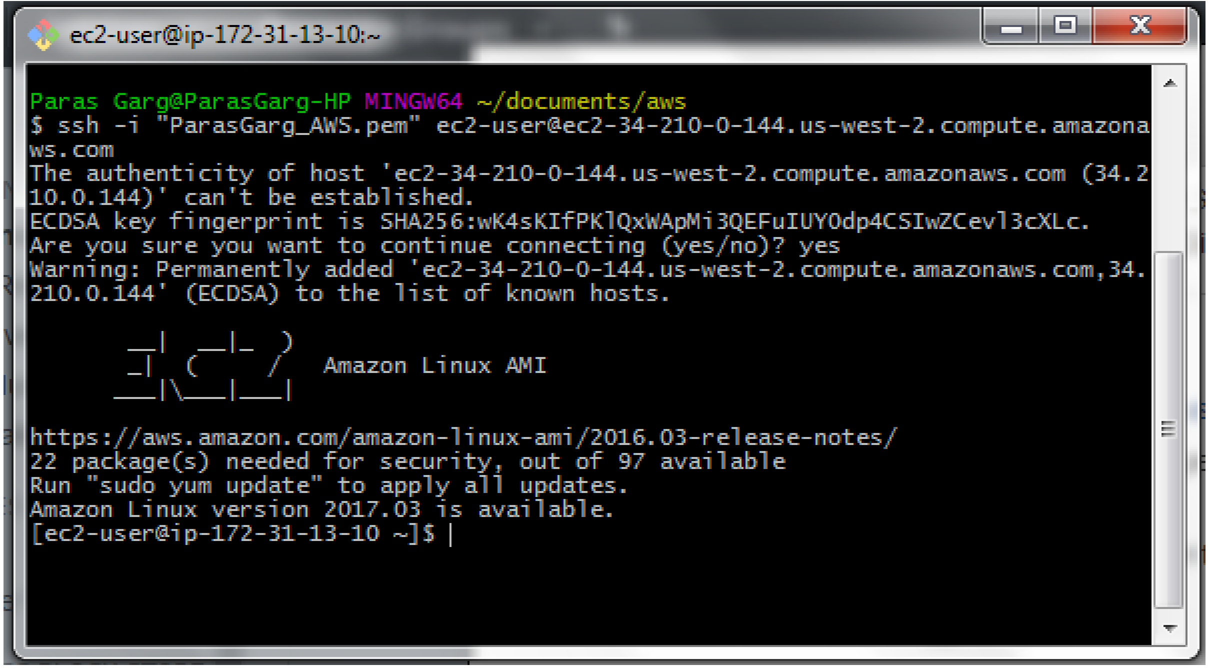


Congratulations, you have successfully launched the AWS CloudFormation sample.

Steps to change Servers index.html file on Amazon EC2 instance

- Access the AWS Instance using command line by executing following command

```
ssh -i "ParasGarg_AWS.pem" ec2-user@ec2-34-210-0-144.us-west-2.compute.amazonaws.com
```



```
Paras Garg@ParasGarg-HP MINGW64 ~/documents/aws
$ ssh -i "ParasGarg_AWS.pem" ec2-user@ec2-34-210-0-144.us-west-2.compute.amazona
ws.com
The authenticity of host 'ec2-34-210-0-144.us-west-2.compute.amazonaws.com (34.2
10.0.144)' can't be established.
ECDSA key fingerprint is SHA256:wK4sKIfPKlQxWApMi3QEFuIUYOdp4CSIwZCevl3cXLc.
Are you sure you want to continue connecting (yes/no)? yes
Warning: Permanently added 'ec2-34-210-0-144.us-west-2.compute.amazonaws.com,34.
210.0.144' (ECDSA) to the list of known hosts.

       __|  __|_  )
       _|  (     /   Amazon Linux AMI
      ___|\___|___|

https://aws.amazon.com/amazon-linux-ami/2016.03-release-notes/
22 package(s) needed for security, out of 97 available
Run "sudo yum update" to apply all updates.
Amazon Linux version 2017.03 is available.
[ec2-user@ip-172-31-13-10 ~]$ |
```

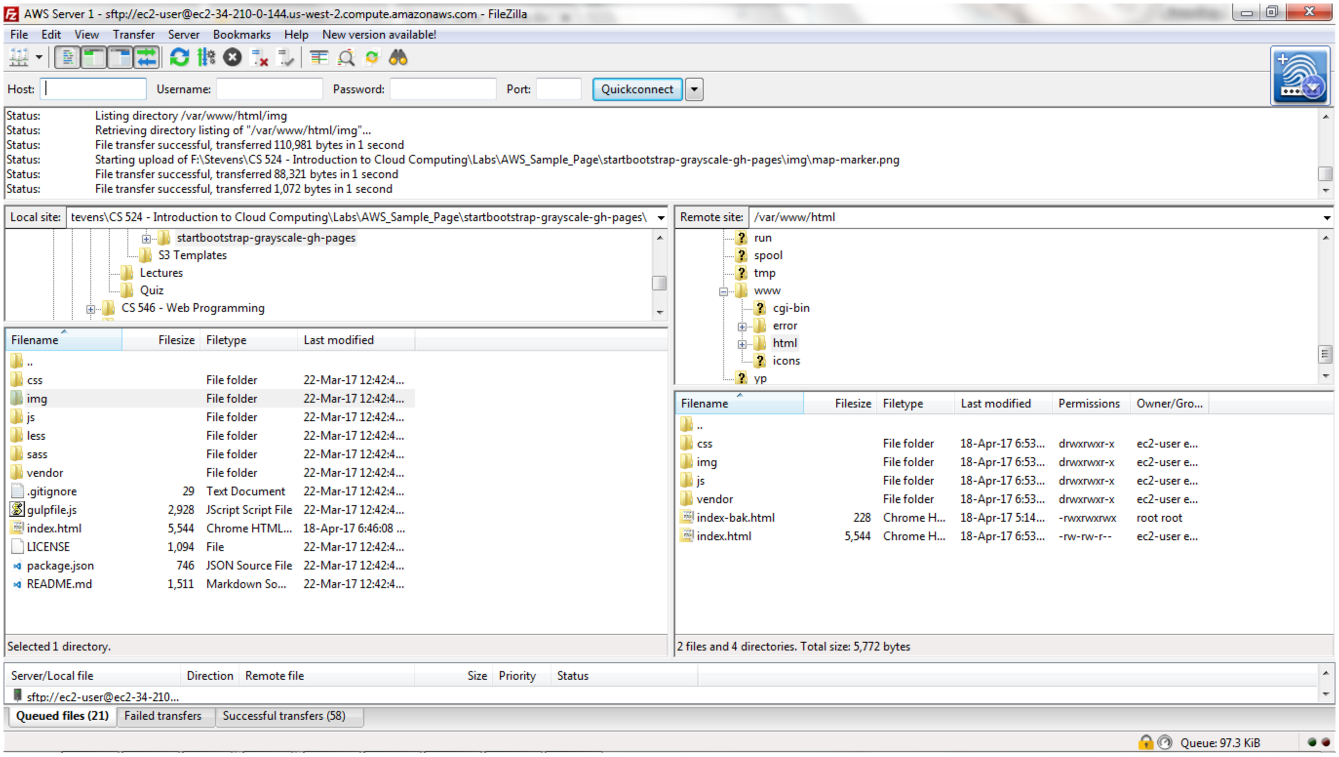
- Visit the index.html file location by executing following command.

```
cd /var/www/
```

- Change the directory permission to allow ftp upload at the location.

```
sudo chmod -R 777 html
cd html
```

- Now access the AWS directory using Firezilla a famous FTP uploader.



```
Status:         Listing directory /var/www/html/img
Status:         Retrieving directory listing of "/var/www/html/img"...
Status:         File transfer successful, transferred 110,981 bytes in 1 second
Status:         Starting upload of F:\Stevens\CS 524 - Introduction to Cloud Computing\Labs\AWS_Sample_Page\startbootstrap-grayscale-gh-pages\img\map-marker.png
Status:         File transfer successful, transferred 88,321 bytes in 1 second
Status:         File transfer successful, transferred 1,072 bytes in 1 second
```

Local site: tevens\CS 524 - Introduction to Cloud Computing\Labs\AWS_Sample_Page\startbootstrap-grayscale-gh-pages\

```
startbootstrap-grayscale-gh-pages
S3 Templates
Lectures
Quiz
CS 546 - Web Programming
```

Filename	Filesize	Filetype	Last modified
..			
css		File folder	22-Mar-17 12:42:4...
img		File folder	22-Mar-17 12:42:4...
js		File folder	22-Mar-17 12:42:4...
less		File folder	22-Mar-17 12:42:4...
sass		File folder	22-Mar-17 12:42:4...
vendor		File folder	22-Mar-17 12:42:4...
.gitignore	29	Text Document	22-Mar-17 12:42:4...
gulpfile.js	2,928	JScript Script File	22-Mar-17 12:42:4...
index.html	5,544	Chrome HTML...	18-Apr-17 6:46:08 ...
LICENSE	1,094	File	22-Mar-17 12:42:4...
package.json	746	JSON Source File	22-Mar-17 12:42:4...
README.md	1,511	Markdown So...	22-Mar-17 12:42:4...

Selected 1 directory.

Remote site: /var/www/html

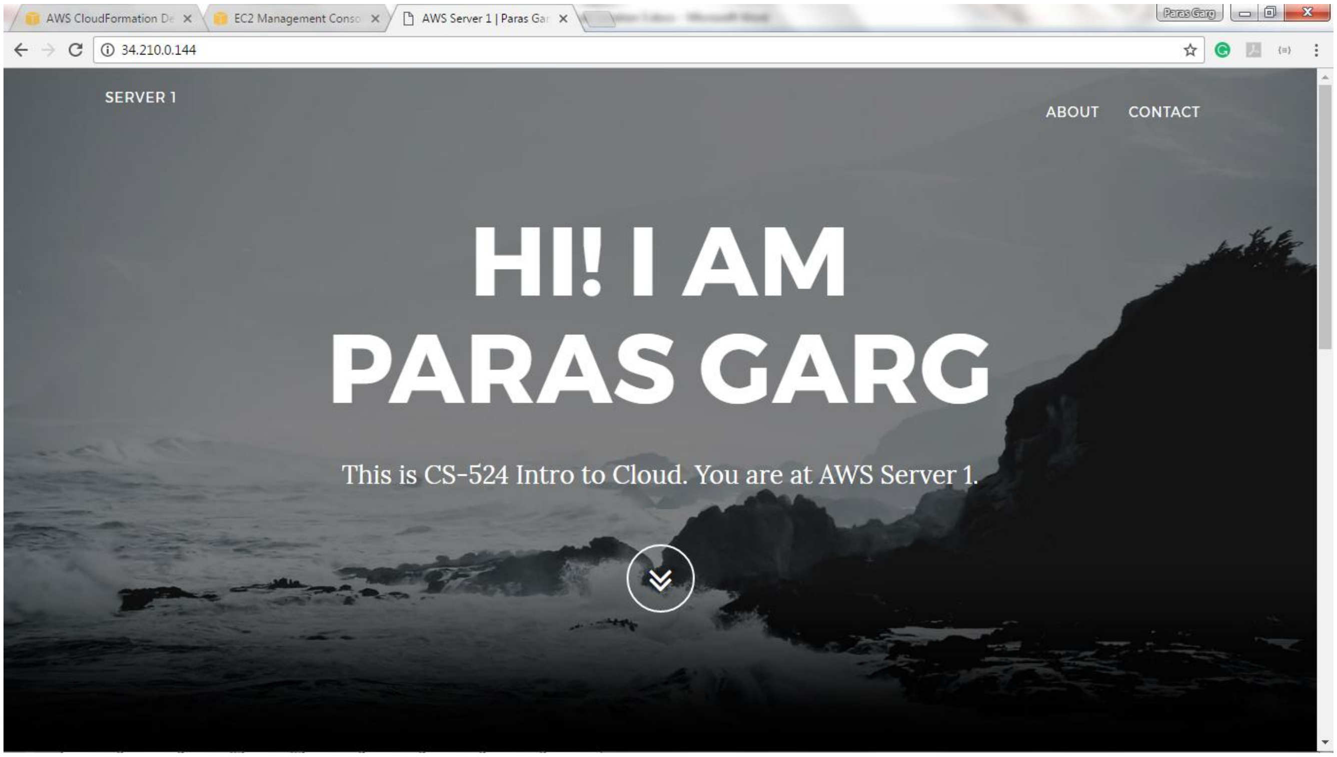
```
run
spool
tmp
www
    cgi-bin
    error
    html
    icons
yp
```

Filename	Filesize	Filetype	Last modified	Permissions	Owner/Gro...
..					
css		File folder	18-Apr-17 6:53...	drwxrwxr-x	ec2-user e...
img		File folder	18-Apr-17 6:53...	drwxrwxr-x	ec2-user e...
js		File folder	18-Apr-17 6:53...	drwxrwxr-x	ec2-user e...
vendor		File folder	18-Apr-17 6:53...	drwxrwxr-x	ec2-user e...
index-bak.html	228	Chrome H...	18-Apr-17 5:14...	-rwxrwxrwx	root root
index.html	5,544	Chrome H...	18-Apr-17 6:53...	-rw-rw-r--	ec2-user e...

2 files and 4 directories. Total size: 5,772 bytes

Server/Local file	Direction	Remote file	Size	Priority	Status
sftp://ec2-user@ec2-34-210...					

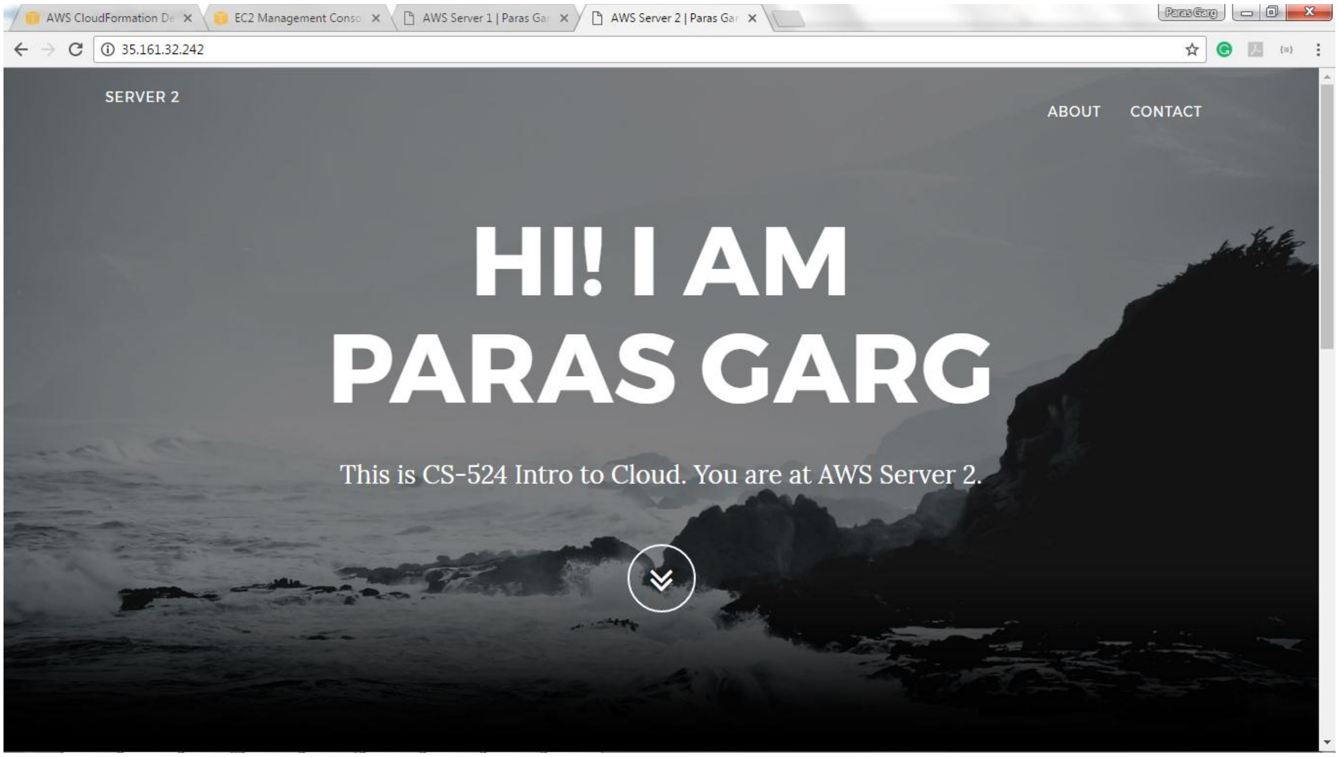
- Note, on left we have our local directory and on right we have uploaded a web design template using Firezilla. Now, Running Server 1 to check the web server design



HI! I AM PARAS GARG

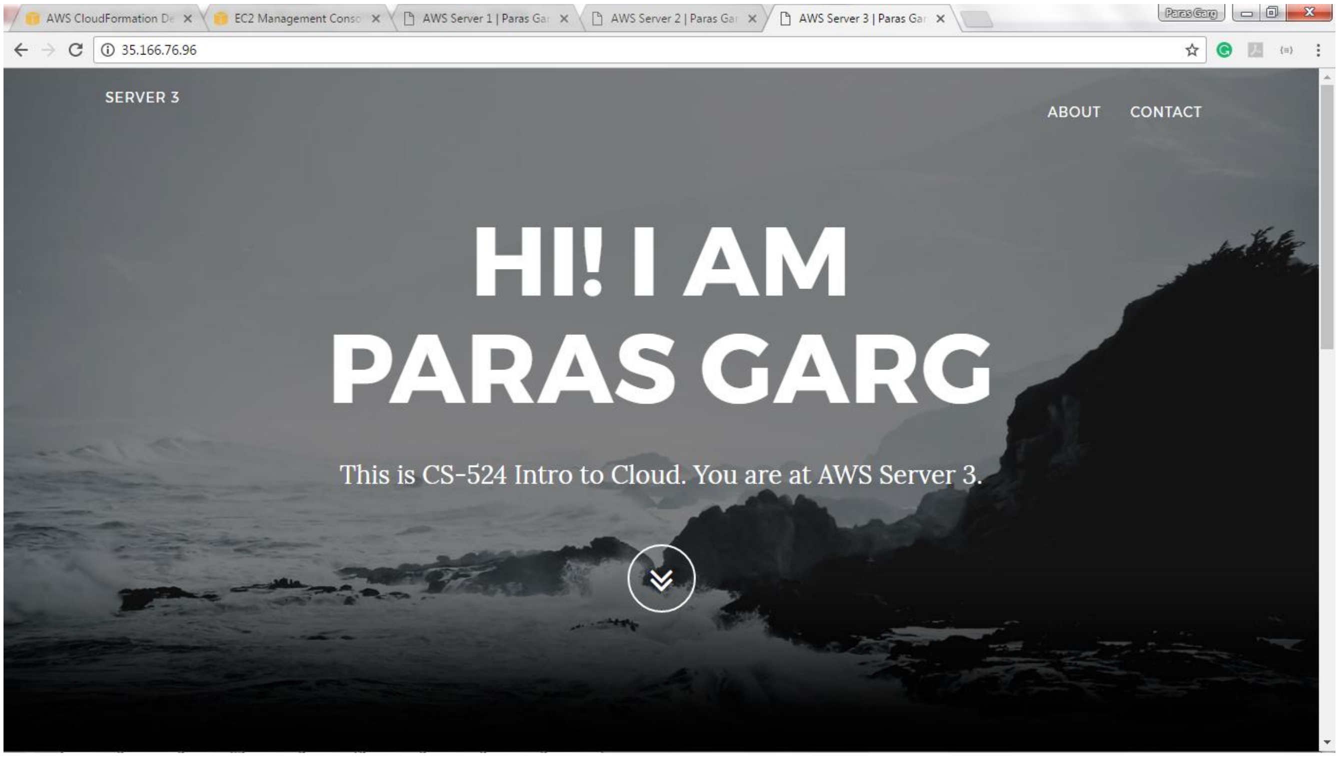
This is CS-524 Intro to Cloud. You are at AWS Server 1.

- Now repeating the above web server design configuration steps for remaining three servers.
    - Server 1 (http://34.210.0.144/),
    - Server 2 (http://35.161.32.242/),
    - Server 3, (http://35.166.76.96/), and
    - Server 4 (http://52.35.110.213/)



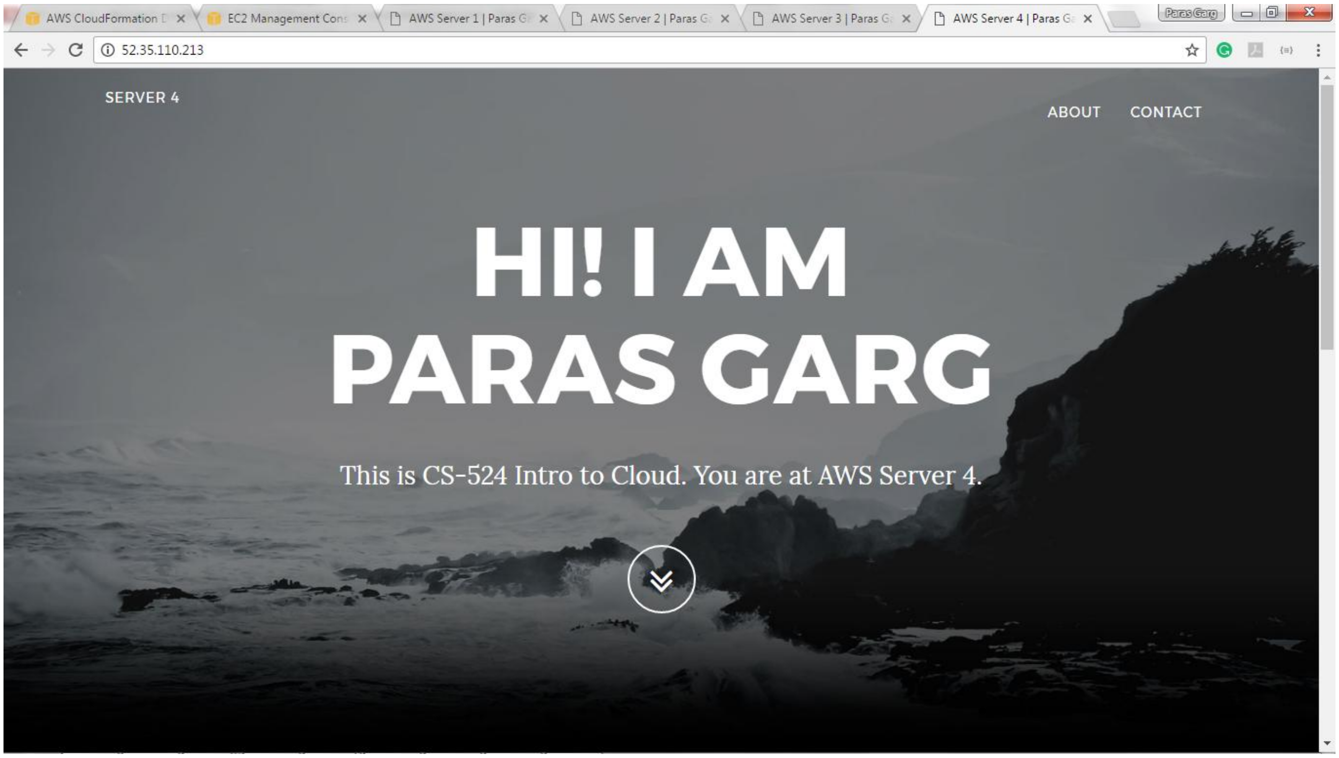
HI! I AM PARAS GARG

This is CS-524 Intro to Cloud. You are at AWS Server 2.



HI! I AM PARAS GARG

This is CS-524 Intro to Cloud. You are at AWS Server 3.

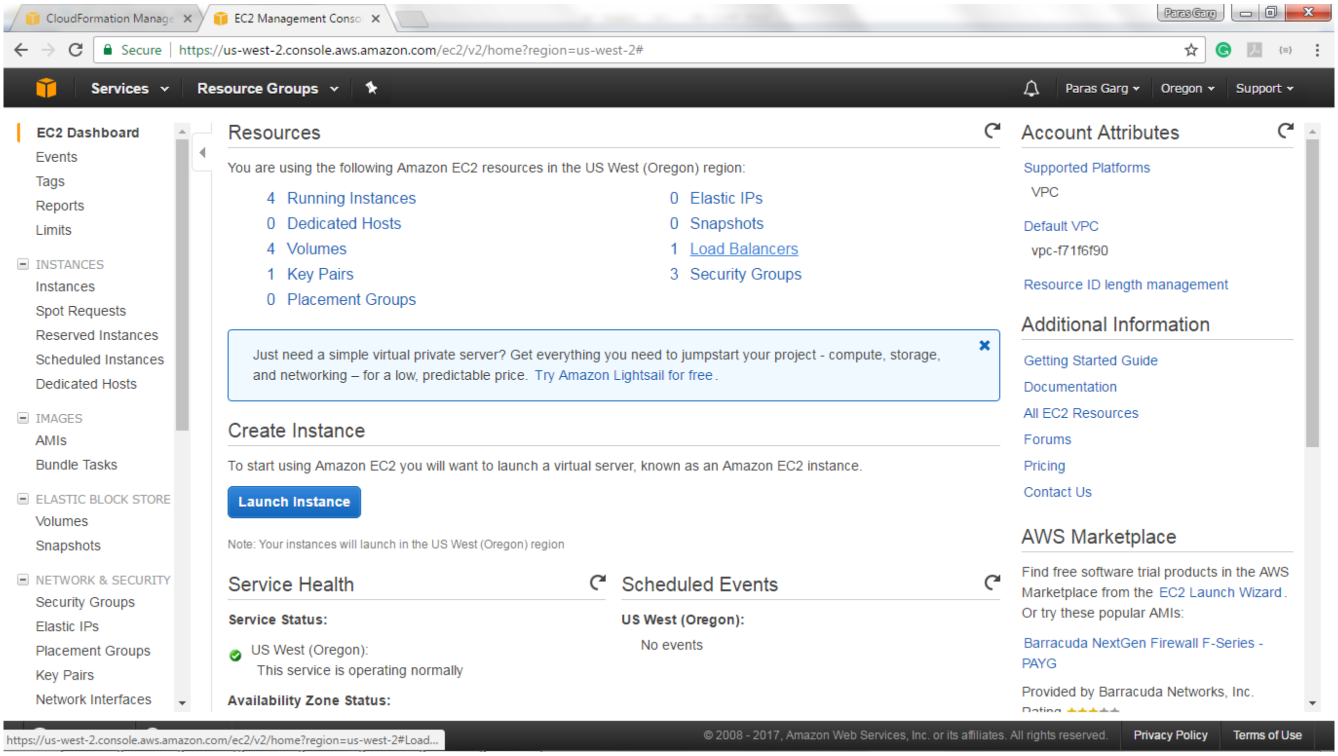


HI! I AM PARAS GARG

This is CS-524 Intro to Cloud. You are at AWS Server 4.

Steps to check working of Load Balancer

- Click on EC2 dashboard to find the Load Balancer and click on it.



CloudFormation Manage × | EC2 Management Conso ×

Secure | https://us-west-2.console.aws.amazon.com/ec2/v2/home?region=us-west-2#

Services | Resource Groups | Paras Garg | Oregon | Support

EC2 Dashboard
Events
Tags
Reports
Limits
INSTANCES
Instances
Spot Requests
Reserved Instances
Scheduled Instances
Dedicated Hosts
IMAGES
AMIs
Bundle Tasks
ELASTIC BLOCK STORE
Volumes
Snapshots
NETWORK & SECURITY
Security Groups
Elastic IPs
Placement Groups
Key Pairs
Network Interfaces

Resources

You are using the following Amazon EC2 resources in the US West (Oregon) region:

4 Running Instances	0 Elastic IPs
0 Dedicated Hosts	0 Snapshots
4 Volumes	1 Load Balancers
1 Key Pairs	3 Security Groups
0 Placement Groups	

Just need a simple virtual private server? Get everything you need to jumpstart your project - compute, storage, and networking – for a low, predictable price. Try Amazon Lightsail for free.

Create Instance

To start using Amazon EC2 you will want to launch a virtual server, known as an Amazon EC2 instance.

Launch Instance

Note: Your instances will launch in the US West (Oregon) region

Service Health

Service Status:

US West (Oregon):
This service is operating normally

Availability Zone Status:

Scheduled Events

US West (Oregon):

No events

Account Attributes

Supported Platforms
VPC

Default VPC
vpc-f71f6f90

Resource ID length management

Additional Information

Getting Started Guide
Documentation
All EC2 Resources
Forums
Pricing
Contact Us

AWS Marketplace

Find free software trial products in the AWS Marketplace from the EC2 Launch Wizard. Or try these popular AMIs:

Barracuda NextGen Firewall F-Series - PAYG

Provided by Barracuda Networks, Inc.
Rating ★★★★★

https://us-west-2.console.aws.amazon.com/ec2/v2/home?region=us-west-2#Load...

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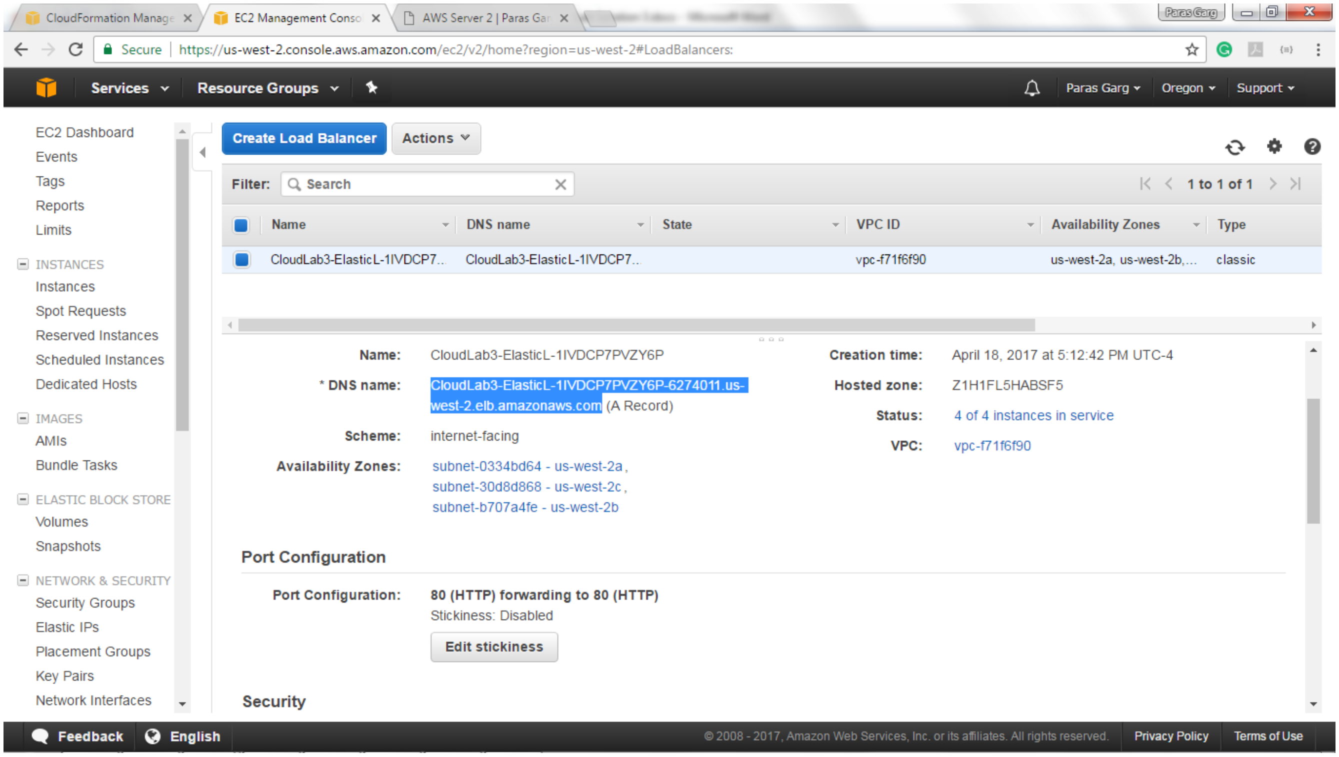
- After clicking Load Balancers, we will find a load balancer create while stack creation.



CloudFormation Manage × | EC2 Management Conso × | AWS Server 2 | Paras Gar ×

Secure | https://us-west-2.console.aws.amazon.com/ec2/v2/home?region=us-west-2#LoadBalancers:

Services | Resource Groups | Paras Garg | Oregon | Support

EC2 Dashboard
Events
Tags
Reports
Limits
INSTANCES
Instances
Spot Requests
Reserved Instances
Scheduled Instances
Dedicated Hosts
IMAGES
AMIs
Bundle Tasks
ELASTIC BLOCK STORE
Volumes
Snapshots
NETWORK & SECURITY
Security Groups
Elastic IPs
Placement Groups
Key Pairs
Network Interfaces

Create Load Balancer | Actions

Filter: Search | 1 to 1 of 1

Name	DNS name	State	VPC ID	Availability Zones	Type
CloudLab3-ElasticL-1IVDCP7...	CloudLab3-ElasticL-1IVDCP7...		vpc-f71f6f90	us-west-2a, us-west-2b,...	classic

Name: CloudLab3-ElasticL-1IVDCP7PVZY6P

* DNS name: CloudLab3-ElasticL-1IVDCP7PVZY6P-6274011.us-west-2.elb.amazonaws.com (A Record)

Scheme: internet-facing

Availability Zones: subnet-0334bd64 - us-west-2a, subnet-30d8d868 - us-west-2c, subnet-b707a4fe - us-west-2b

Creation time: April 18, 2017 at 5:12:42 PM UTC-4

Hosted zone: Z1H1FL5HABSF5

Status: 4 of 4 instances in service

VPC: vpc-f71f6f90

Port Configuration

Port Configuration: 80 (HTTP) forwarding to 80 (HTTP)
Stickiness: Disabled

Edit stickiness

Security

Feedback | English

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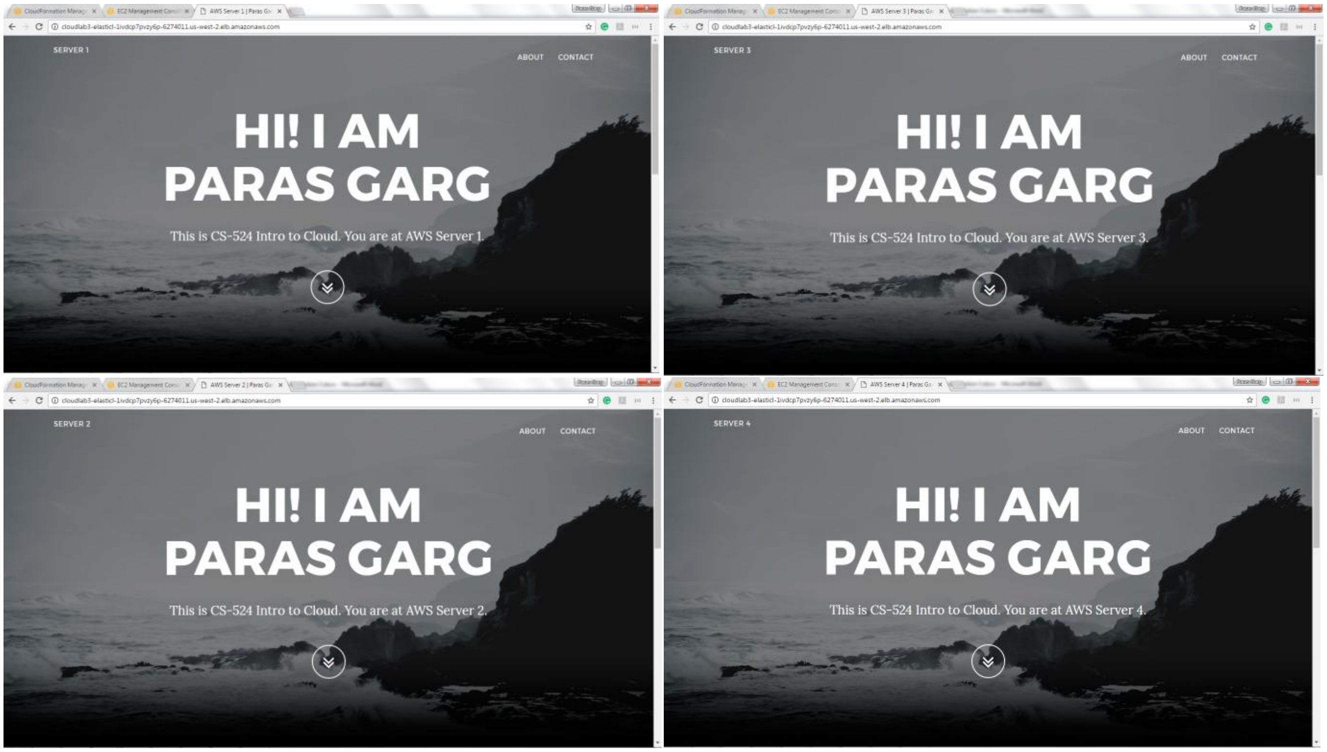
- Now visit the load balancer link (given below). And this load balancer automatically balances the load and redirect to any of the created servers by dividing the load at equal proportion.

  http://cloudlab3-elasticl-1ivdcp7pvzy6p-6274011.us-west-2.elb.amazonaws.com/


cloudlab3-elasticl-1ivdcp7pvzy6p-6274011.us-west-2.elb.amazonaws.com
SERVER 1
ABOUT
CONTACT
SERVER 3
SERVER 2
SERVER 4

HI! I AM PARAS GARG

This is CS-524 Intro to Cloud. You are at AWS Server 1.

HI! I AM PARAS GARG

This is CS-524 Intro to Cloud. You are at AWS Server 3.

HI! I AM PARAS GARG

This is CS-524 Intro to Cloud. You are at AWS Server 2.

HI! I AM PARAS GARG

This is CS-524 Intro to Cloud. You are at AWS Server 4.

(In my case Server 1 ran first, then Server 3, then Server 2 and in last Server 4)