

### 3) To Configure Auto Scaling

On the EC2 Dashboard panel

Select "AUTO SCALING"

The screenshot shows the AWS Management Console EC2 Dashboard. The left sidebar has several service links: Load Balancing, Auto Scaling (which is highlighted with a red box), Launch Configurations, Auto Scaling Groups, Systems Manager (with sub-links Run Command, State Manager, Automations, Patch Compliance, Patch Baselines), and Shared Resources (with sub-links Managed Instances, Activations). The main content area is titled 'Resources' and displays resource counts: 0 Running Instances, 0 Dedicated Hosts, 1 Volumes, 2 Key Pairs, 0 Elastic IPs, 1 Snapshots, 0 Load Balancers, and 11 Security Groups. A callout box highlights the 'Auto Scaling' link in the sidebar. On the right side, there's an 'Account Attributes' section with links for Supported Platforms (VPC), Default VPC (vpc-88c34fe), and Resource ID length management. Below that is an 'Additional Information' section with links for Getting Started Guide, Documentation, All EC2 Resources, Forums, Pricing, and Contact Us. At the bottom of the main content area is a 'Launch Instance' button. The browser address bar shows the URL https://us-west-2.console.aws.amazon.com/ec2/v2/home?region=us-west-2#.

Click on "Launch Configuration"

The screenshot shows the AWS EC2 Management Console. The left navigation bar has several sections: Volumes, Snapshots, NETWORK & SECURITY (Security Groups, Elastic IPs, Placement Groups, Key Pairs, Network Interfaces), LOAD BALANCING (Load Balancers, Target Groups), AUTO SCALING (Launch Configurations, Auto Scaling Groups), and SYSTEMS MANAGER. The 'Launch Configurations' link under the 'LAUNCH' section is highlighted with a yellow box. The main content area is titled 'Welcome to Auto Scaling' and contains a brief introduction, a 'Create Auto Scaling group' button, and three sections: 'Benefits of Auto Scaling' (Reusable Instance Templates, Automated Provisioning, Adjustable Capacity). On the right, there's an 'Additional Information' sidebar with links to Getting Started Guide, Documentation, All EC2 Resources, Forums, Pricing, and Contact Us.

Click on "Create Auto Scaling Group" button

This screenshot is identical to the one above, showing the 'Create Auto Scaling group' button highlighted with a yellow box. The rest of the interface, including the navigation bar and the main content area with its three benefit sections, remains the same.

Click on “Create launch configuration” button

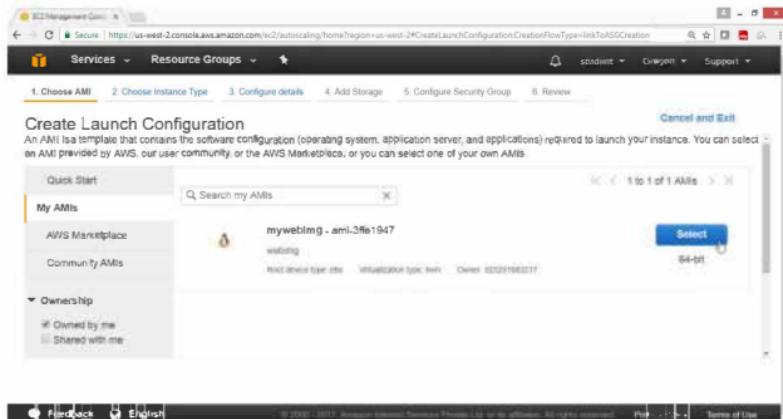
The screenshot shows the 'Create Auto Scaling Group' wizard. Step 1: Create launch configuration. It includes an icon of a person and a gear, followed by an equals sign and three orange squares, each containing a gear. The text says: 'To create an Auto Scaling group, you will first need to choose a template that your Auto Scaling group will use when it launches instances for you, called a launch configuration. Choose a launch configuration or create a new one, and then apply it to your group.' Below this, another note says: 'Later, if you want to use a different template, you can create another launch configuration and apply it to this group, even if you already have instances running in it. Using this method, you can update the software that your group uses when it launches new instances.' At the bottom right are 'Cancel' and 'Create launch configuration' buttons.

Click on “My AMI”

The screenshot shows the 'Create Launch Configuration' wizard, Step 1: Choose AMI. It lists several options: 'My AMIs' (selected), 'AWS Marketplace', 'Community AMIs', and 'Free tier only'. On the right, two AMI options are shown: 'Amazon Linux AMI 2017.03.1 (HVM), SSD Volume Type - ami-8df1e514' and 'Red Hat Enterprise Linux 7.3 (HVM), SSD Volume Type - ami-b55a51cc'. Each option has a 'Select' button to its right. At the bottom are 'Feedback', 'English', and 'Terms of Use' buttons.

Select the AMI which was created with Webserver.

Click on Select button



EC2 Management Console Secure https://us-west-2.console.aws.amazon.com/ec2/autoscaling/home?region=us-west-2#CreateLaunchConfigurationCreationFlowType=linkToASGCreation student Oregon Support

Services Resource Groups

1. Choose AMI 2. Choose Instance Type 3. Configure details 4. Add Storage 5. Configure Security Group 6. Review

Create Launch Configuration

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  Cancel and Exit

My AMIs

AWS Marketplace  mywebimg - ami.3ff61947

Community AMIs  webimg

Next instance type: t2.micro Virtualization type: HVM Owner: 025291683211

Select 

Ownership

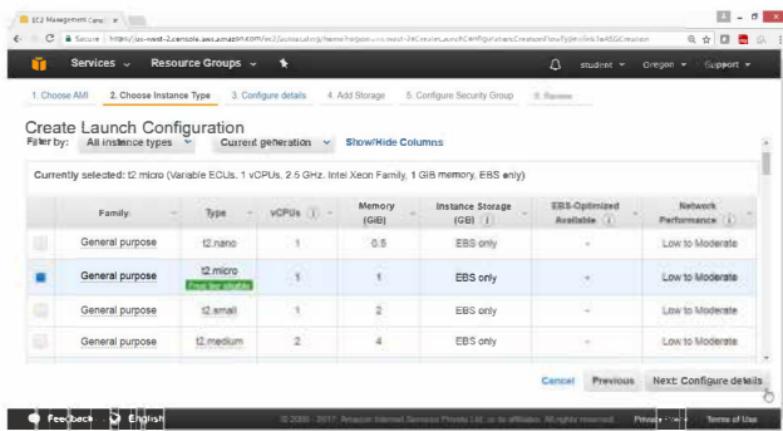
Owned by me Shared with me

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Choose instance Type,

General purpose, t2.micro free tier

Click on Next : Configuration Details



EC2 Management Console Secure https://us-west-2.console.aws.amazon.com/ec2/autoscaling/home?region=us-west-2#CreateLaunchConfigurationCreationFlowType=linkToASGCreation student Oregon Support

Services Resource Groups

1. Choose AMI 2. Choose Instance Type 3. Configure details 4. Add Storage 5. Configure Security Group 6. Review

Create Launch Configuration

Filter by: All instance types Current generation Show/Hide Columns

Currently selected: t2.micro (Variable ECUs, 1 vCPUs, 2.5 GHz, Intel Xeon Family, 1 GB memory, EBS only)

Family	Type	vCPUs	Memory (GiB)	Instance Storage (GB)	EBS-Optimized Available	Network Performance
General purpose	t2.nano	1	0.5	EBS only	-	Low to Moderate
<b>General purpose</b>	<b>t2.micro</b>	<b>1</b>	<b>1</b>	<b>EBS only</b>	<b>-</b>	<b>Low to Moderate</b>
General purpose	t2.small	1	2	EBS only	-	Low to Moderate
General purpose	t2.medium	2	4	EBS only	-	Low to Moderate

Cancel Previous Next: Configuration Details

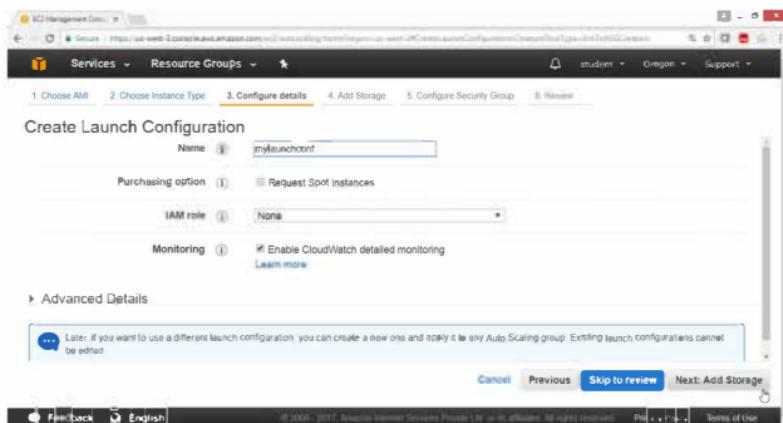
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**On Create launch Configuration page**

Name → mylaunchconf

Monitoring → Enable check box

Click on **Next : Add storage** button



By default linux takes 8 GB EBS volume

Leave all values as default

Click on “ Next: Configure Security Group” button

The screenshot shows the AWS Management Console interface for creating a launch configuration. The top navigation bar includes 'Services', 'Resource Groups', and tabs for 'student', 'Oregon', and 'Support'. The main content area is titled 'Create Launch Configuration' and shows the progress through six steps: 1. Choose AMI, 2. Choose Instance Type, 3. Configure details, 4. Add Storage (which is currently selected), 5. Configure Security Group, and 6. Review.

In the 'Add Storage' step, there is a table for defining storage volumes. A single row is present for the 'Root' volume:

Volume Type	Device	Snapshot	Size (GiB)	Volume Type	IOPS	Throughput	Delete on Termination	Encrypted
Root	/dev/xvda	snad-050a9f2d57197ba09	8	General Purpose	100 / 2000	N/A	No	No

Below the table, there is a note: "Free tier eligible customers can get up to 30 GB of EBS storage. Learn more about free usage tier eligibility and usage restrictions." At the bottom of the page, there are buttons for 'Cancel', 'Previous', 'Skip to review' (highlighted in blue), and 'Next: Configure Security Group'.

On Create Launch Configuration page

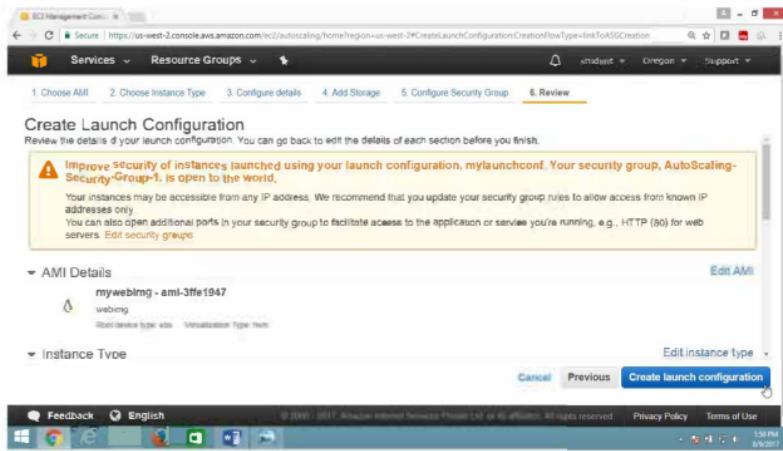
Select “Create a new security Group”

Click on Review

The screenshot shows the AWS EC2 Management Console with the URL <https://us-west-2.console.aws.amazon.com/ec2/autoscaling/home?region=us-west-2>CreateLaunchConfigurationCreationFlowType=LinkToASGCreation>. The page is titled "Create Launch Configuration". Step 5, "Configure Security Group", is highlighted. The "Assign a security group:" section shows the "Create a new security group" radio button is selected. The "Security group name:" field contains "AutoScaling-Security-Group-1". The "Description:" field contains "AutoScaling-Security-Group-1 (2017-08-09 13:47:40 +05:30)". Below this, a table lists a single rule: Type: SSH, Protocol: TCP, Port Range: 22, Source: Anywhere. At the bottom right, there are "Cancel", "Previous", and a blue "Review" button.

Check the summary

Click on “Create launch configuraton” button



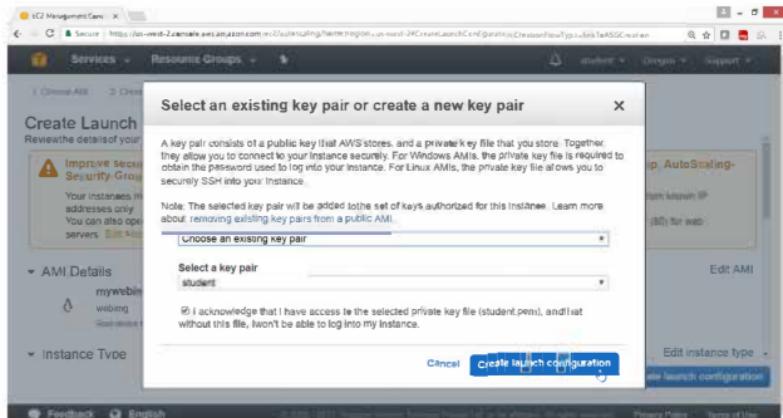
On "Select an existing key pair or create a new key pair" page

Select "Choose an existing key pair"

Select a key pair → student

Select Acknowledge check box

Click on "Create launch Configuration" button



On "Create Auto Scaling Group" page, give values as

Launch Congiration → mylaunchconf

Group name → myautoscalegrp

For Network → select default

1. Configure Auto Scaling group details    2. Configure scaling policies    3. Configure Notifications    4. Configure Tags    5. Review    Cancel and Exit

Create Auto Scaling Group

Launch Configuration: mylaunchconf

Group name: myautoscalegrp

Group size: Start with 1 instances

Network: vpc-8fc341ee (172.31.0.0/16) | default-vpc-creation (d)

Subnet: subnet-150d141c (172.31.1.0/24) | Default in us-west-2a    Create new subnet

Public IP address:

Advanced Details

Cancel    Next: Configure scaling policies

Select ALL subnet one by one

Click on “Next Configure scaling policies” button

Create Auto Scaling Group

Launch Configuration: mylaunchconf

Group name: myautoscalinggrp

Group size: Start with 1 Instances

Network:

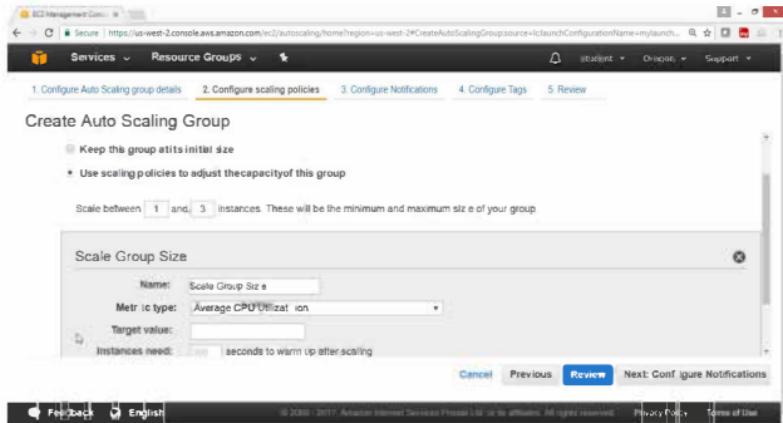
Subnet:  Create new VPC

subnet(1920141|172.31.0.0/20) | Default in us-west-2c  
subnet(1260e5a|172.31.32.0/20) | Default in us-west-2b  
subnet(6cbe3dec|172.31.15.0/20) | Default in us-west-2b

On "Create Auto Scaling Group" page

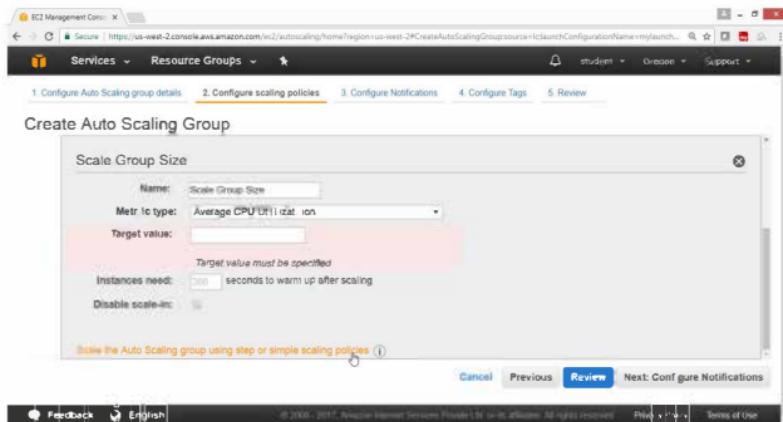
Select "Use scaling policies to adjust the capacity of this group"

Scale between [ ] and [ ] instances.



Drag Down

Click on "Scale the Auto Scaling group using step or simple scaling policies"



Select Increase Group Size

Click on "Add new alarm"

Services ▾ Resource Groups ▾

1. Configure Auto Scaling group details 2. Configure scaling policies 3. Configure Notifications 4. Configure Tags 5. Review

### Create Auto Scaling Group

**Increase Group Size**

Name: Increase Group Size  
Execute policy when: No alarm selected [Add new alarm](#)

Take the action: Add 0 instances [Add step](#)

Instances need: 600 seconds to warm up after each step.

Create a simple scaling policy [\(i\)](#)

**Decrease Group Size**

Name: Decrease Group Size

[Cancel](#) [Previous](#) [Review](#) [Next: Configure Notifications](#)

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Click on "create topic"

You can use CloudWatch alarms to be notified automatically whenever metric data reaches a level you define.

To edit an alarm, first choose whom to notify and then define when the notification should be sent.

Send a notification to: No SNS topics found... [create topic](#)

Whenever: Average of CPU Utilization

Is: >= Percent

For at least: 5 consecutive period(s) of 5 Minutes

Name of alarm: awssec2.myautoscalegrp-High-CPU-Utilization

CPU Utilization Percent

8:00 04:00 09:00 08:00

awssec2.myautoscalegrp

[Cancel](#) [Create Alarm](#)

On "Create Alarm" box, give values as

Send a notification to → Cpuutilizationabc

With this recipients → [skmarhaan999@gmail.com](mailto:skmarhaan999@gmail.com)

Whenever Average of CPU Utilization

is  $\geq$  → 30

Remaining value leave default

Click on "Create Alarm" button

**Create Alarm**

You can use CloudWatch alarms to be notified automatically whenever metric data reaches a level you define. To edit an alarm, first choose whom to notify and then define when the notification should be sent.

Send a notification to: Cpuutilizationabc [cancel](#)

With these recipients: [skmarhaan999@gmail.com](mailto:skmarhaan999@gmail.com)

Whenever: Average of CPU Utilization

Is:  $\geq$  30 Percent

For at least: 1 consecutive period(s) of 5 Minutes

Name of alarm: awsec2-myautoscalegrp-High-CPU-Utilization

CPU Utilization Percent

8/9  
04:00 08:00  
myautoscalegrp

[Cancel](#) [Create Alarm](#)

For Take the action → Add 1

Drag down and give Decrease policy parameters

Create Auto Scaling Group

Scale between 1 and 3 instances. These will be the minimum and maximum size of your group.

Increase Group Size

Name: Increase Group Size

Execute policy when: awsed2-myautoscalegrp-High-CPUUtilization Edit Remove  
breaches the alarm threshold: CPUUtilization >= 30 for 300 seconds  
for the metric dimensions AutoScalingGroupName = myautoscalegrp

Take the action: Add 1 instances when 30 <= CPUUtilization < +infinity

Add step: Add step 1

Instances need: 1 seconds to warm up after each step

Cancel Previous Review Next: Configure Notifications

In Decrease Group wizard

Click on "Add new alarm"

Create Auto Scaling Group

Decrease Group Size

Name: Decrease Group Size

Execute policy when: No alarm selected • Add new alarm

Take the action: Remove 0 instances

Add step

Create a simple scaling policy ⓘ

Scale the Auto Scaling group using a target tracking scaling policy ⓘ

Cancel Previous Review Next: Configure Notifications

Select the topic "**Cpuutilizationabc**"

Whenever Average of CPU utilization is select "**<=**"

**Create Alarm**

You can use CloudWatch alarms to be notified automatically whenever metric data reaches a level you define.

To edit an alarm, first choose whom to notify and then define when the notification should be sent.

Send a notification to: **Cpuutilizationabc (skmarhaan999@gmail.com)** • create topic

Whenever: **Average** • of **CPU Utilization**

Is: **<=**  Percent

For at least: **1 consecutive period(s) of 5 Minutes**

Name of alarm: **awssec2-myautoscalegrp-High-CPU-Utilization**

**CPU Utilization Percent**

Cancel **Create Alarm**

Give the value → 20

Click on "**Create Alarm**" button

**Create Alarm**

You can use CloudWatch alarms to be notified automatically whenever metric data reaches a level you define.

To edit an alarm, first choose whom to notify and then define when the notification should be sent.

Send a notification to: **Cpuutilizationabc (skmarhaan999@gmail.com)** • create topic

Whenever: **Average** • of **CPU Utilization**

Is: **<=**  Percent

For at least: **1 consecutive period(s) of 5 Minutes**

Name of alarm: **awssec2-myautoscalegrp-High-CPU-Utilization**

**CPU Utilization Percent**

Cancel **Create Alarm**

Check the summary

Click on "Next: Configure Notificaion"

The screenshot shows the AWS Management Console with the URL [https://us-west-2.console.aws.amazon.com/ec2 autoscaling/home?region=us-west-2>CreateAutoScalingGroup\[source=LaunchConfigurationName=mylaunchconf...\].htm](https://us-west-2.console.aws.amazon.com/ec2 autoscaling/home?region=us-west-2>CreateAutoScalingGroup[source=LaunchConfigurationName=mylaunchconf...].htm). The page title is "Create Auto Scaling Group". The navigation bar includes "Services", "Resource Groups", "student", "Oregon", and "Support". Below the navigation is a progress bar with steps 1 through 5: "1. Configure Auto Scaling group details", "2. Configure scaling policies" (which is highlighted in blue), "3. Configure Notifications", "4. Configure Tags", and "5. Review". The main content area is titled "Create Auto Scaling Group" and contains a "Decrease Group Size" policy configuration. The policy name is "Decrease Group Size" and it triggers when "aws.ec2:myautoscalegrp:High-CPU-Utilization" reaches the alarm threshold. It specifies "Remove instances" when "CPUUtilization >= 20 for 300 seconds" for the metric dimension "AutoScalingGroupName = myautoscalegrp". Below this, there is a link to "Create a simple scaling policy". At the bottom of the policy configuration are "Cancel", "Previous", "Review" (which is highlighted in blue), and "Next: Configure Notifications" buttons. The footer includes links for "Feedback", "English", "© 2006 - 2017 Amazon Internet Services Private Ltd. or its affiliates. All rights reserved.", "Privacy Policy", and "Terms of Use".

Click on "Add notification" button

The screenshot shows the AWS Management Console with the same URL as the previous screenshot. The page title is "Create Auto Scaling Group". The navigation bar and progress bar are identical. The main content area is titled "Create Auto Scaling Group" and contains a section for "Configure your Auto Scaling group to send notifications to a specified endpoint, such as an email address, whenever a specified event takes place, including: successful launch of an instance, failed instance launch, instance termination, and failed instance termination." Below this, a note states: "If you created a new topic, check your email for a confirmation message and click the included link to confirm your subscription. Notifications can only be sent to confirmed addresses." At the bottom of this section is a "Add notification" button. The footer is identical to the previous screenshot.

Check the following output

Click on "Next: Configure tags"

The screenshot shows the AWS Management Console with the URL [https://us-west-2.console.aws.amazon.com/ec2/autoscaling/home?region=us-west-2>CreateAutoScalingGroup\[source=IaunchConfigurationName=mylaunchconf&group=autoScalingGroup1&step=4\]](https://us-west-2.console.aws.amazon.com/ec2/autoscaling/home?region=us-west-2>CreateAutoScalingGroup[source=IaunchConfigurationName=mylaunchconf&group=autoScalingGroup1&step=4]). The page title is "Create Auto Scaling Group". The navigation bar includes "Services", "Resource Groups", and tabs for "1. Configure Auto Scaling group details", "2. Configure scaling policies", "3. Configure Notifications", "4. Configure Tags", and "5. Review". The "Configure Notifications" section is active, showing a recipient email address "Cpuval#rafaelcnabc@gmail.com" and a "create topic" button. Below it, under "Whenever instances:", there are checkboxes for "launch", "terminate", "fail to launch", and "fail to terminate", all of which are checked. A "Add notification" button is present. At the bottom, there are "Cancel", "Previous", "Review", and "Next: Configure Tags" buttons. The status bar at the bottom of the browser window shows "AWS 2009 © 2017 All rights reserved. Please [Log in | Log off]. All rights reserved." and "Page 1 of 1".

For tag key → Name

For tag Value → WebAutoscale

Click on **Review** button

Create Auto Scaling Group

A tag consists of a case sensitive key-value pair that you can use to identify your group. For example, you could define a tag with Key = Environment and Value = Production. You can optionally choose to apply these tags to instances in the group when they launch. Learn more.

Key	Value	Tag New Instances
Name	WebAutoscale	<input checked="" type="checkbox"/>

Add tag 49 remaining

Cancel Previous Review

Check the summary

Drag down

Create Auto Scaling Group

Please review your Auto Scaling group details. You can go back to edit changes for each section. Click Create Auto Scaling group to complete the creation of an Auto Scaling group.

Auto Scaling Group Details

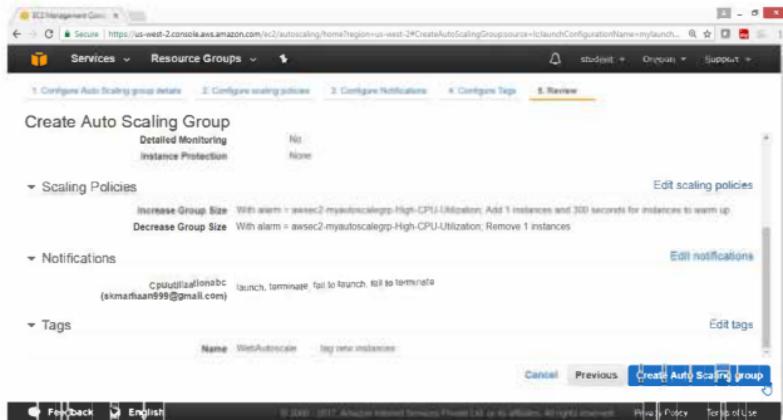
Group name	mpautoscaling	Edit details
Group size	1	
Minimum Group Size	1	
Maximum Group Size	3	
Subnet(s)	subnet-18d0f1f1, subnet-1380e5a, subnet-804e3fe	
Health Check Grace Period	300	
Detailed Monitoring	No	
Instance Protection	None	

Scaling Policies

Cancel Previous Create Auto Scaling Group

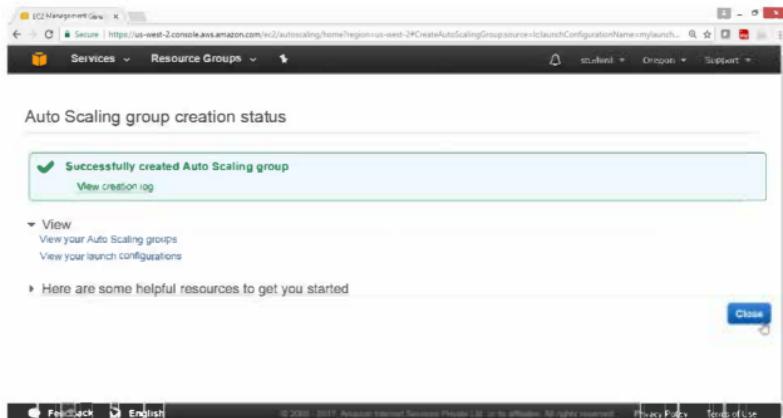
Drag down

Click on “Create Auto Scaling group” button



Successfully created

Click on Close button



## Verification

Now go to EC2 Dash Board

Click on Instances

Observer that WebAutoscale instance got launched

The screenshot shows the AWS EC2 Management Console. On the left, there's a sidebar with navigation links: EC2 Dashboard, Events, Tags, Reports, Limits, Instances (selected), Spot Requests, Reserved Instances, Scheduled Instances, Dedicated Hosts, Images, AMIs, Bundle Tasks, Elastic Block Store, and Volumes. The main content area has tabs: Launch Instance, Connect, and Actions. A search bar at the top says "Filter by tags and attributes or search by keyword". Below it is a table with columns: Name, Instance ID, Instance Type, Availability Zone, Instance State, Status Checks, and Alarm. There are two rows:

Name	Instance ID	Instance Type	Availability Zone	Instance State	Status Checks	Alarm
Insaneweb	i-0e42235290367123e	t2.micro	us-west-2a	stopped	None	
WebAutoscale	i-0a7aaafe87044125e	t2.micro	us-west-2c	running	2/2 checks	None

Below the table, a message says "Select an Instance above". At the bottom, there are links for Feedback and English.

Now login to Web Autoscale instance

This screenshot is similar to the previous one, showing the EC2 Management Console with the Instances page selected. The 'WebAutoscale' instance is now selected, indicated by a blue outline. In the details pane below, the Public DNS is listed as "ec2-54-244-159-247.us-west-2.compute.amazonaws.com". The status bar at the bottom of the details pane shows "2/2 checks". The rest of the interface is identical to the first screenshot.

Run the following command to increase the load

```
# yum install stress  
# stress --cpu --timeout 1000
```

## Verification

After 15 minutes 3 instance got loaded automatically

The screenshot shows the AWS EC2 Management Console. On the left, there's a sidebar with navigation links for Services (EC2 Dashboard, Events, Tags, Reports, Limits), Instances (Instances, Spot Requests, Reserved Instances, Scheduled Instances, Dedicated Hosts), Images (AMIs, Bundle Tasks), and Elastic Block Store (Volumes). The main area is titled 'Instances' and shows a table of running instances. The table has columns: Name, Instance ID, Instance Type, Availability Zone, Instance State, Status Checks, and Alarm. There are four rows:

Name	Instance ID	Instance Type	Availability Zone	Instance State	Status Checks	Alarm
linusmedia	i-0e422359c036712de	t2.micro	us-west-2a	stopped	0/2 checks	None
WebAutoScale	i-045e529a50fcd3a75	t2.micro	us-west-2a	running	0/2 checks	None
WebAutoScale	i-07a7a8d07044129e	t2.micro	us-west-2b	running	0/2 checks	None
WebAutoScale	i-0d7b603b094adcf7c	t2.micro	us-west-2b	running	0/2 checks	None

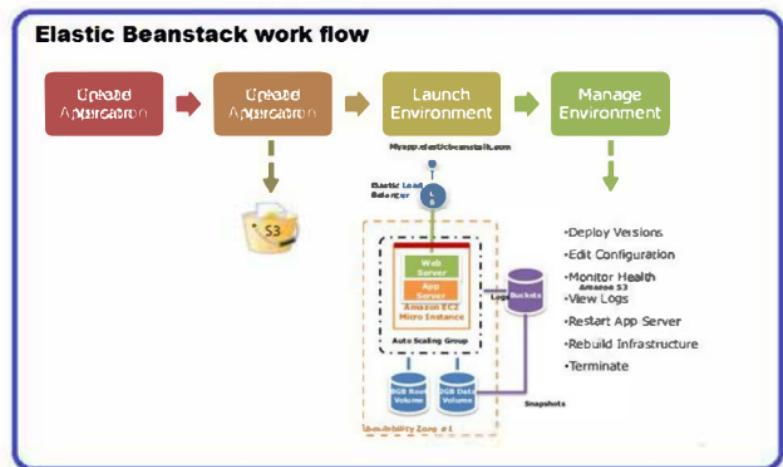
An 'Actions' dropdown menu is open over the first row ('linusmedia'). The menu items are: Stop, Start, Reboot, Terminate, Detach Volume, Attach Volume, Create Image, and View Details.

## Lab 14: To Configure an Elastic Beanstalk with Tomcat Application

### OBJECTIVE

To configure Elastic Beanstalk in AWS

### TOPOLOGY



### PRE-REQUISITES

User should have AWS account, or IAM user with AWSElasticBeanstalkFullAccess

### TASK :

Create Elastic Beanstalk Tomcat Application

Deploy java war files

Open Browser and check your web application

## Practical Steps

### 1) To create Elastic Beanstalk Application

Open AWS Console

Select Compute service

Click on "Elastic BeanStalk"

The screenshot shows the AWS Management Console interface. The top navigation bar includes a search bar, a user dropdown (student), and links for Oregon and Support. Below the navigation is a 'Services' dropdown and a 'Resource Groups' button. The main content area is titled 'Amazon Web Services' and lists several service categories:

- Compute**: Includes EC2, Container Service, Lightsail, and Elastic Beanstalk.
- Developer Tools**: Includes CodeStar, CodeCommit, CodeBuild, CodeDeploy, CodePipeline, and X-Ray.
- Internet of Things**: Includes AWS IoT and AWS Greengrass.
- Contact Center**: Includes Amazon Connect.
- Game Development**: Includes Amazon GameLift.
- Mobile Services**: Includes Mobile Hub, Cognito, Device Farm, and Mobile Analytics.
- Management Tools**: Includes CloudWatch, CloudFormation, CloudTrail, Config, and CloudWatch Metrics.
- Additional Resources**: Includes Getting Started, AWS Console Mobile App, and AWS Marketplace.

A 'Resource Groups' section on the right provides information about resource groups and includes buttons for 'Create a Group' and 'Tag Editor'. A 'Learn more' link is also present. The URL in the browser is <https://us-west-2.console.aws.amazon.com/console/home?region=us-west-2>.

"Welcome to Amazon Elastic Beanstalk" page opens

Click on "Get started" button

The screenshot shows the AWS Elastic Beanstalk console interface. At the top, there's a navigation bar with tabs for Services, Resource Groups, and a search bar. A dropdown menu shows 'student' and 'Region'. On the right, there are links for 'Create New Application' and other account-related options. Below the navigation, a large banner says 'Welcome to AWS Elastic Beanstalk'. It features a summary card with metrics: 53.6, 148K, 65%, 354KB, and 12KB. To the right of the card, there's explanatory text about deploying existing web applications. Below this, another section discusses launching a sample application with a 'Get started' button. At the bottom, a footer bar says 'Get Started in Three Easy Steps'.

On "Create a Web app", page, provide values

Application Name → Tomcatapp

Environment Name → Tomcatenv

Drag down

The screenshot shows the 'Create a web app' page in the AWS Elastic Beanstalk console. At the top, there's a navigation bar with 'Services', 'Resource Groups', and 'Elastic Beanstalk'. On the right, there are buttons for 'Create New Application' and other account information. The main section is titled 'Create a web app' with a sub-section 'Application information'. It shows an application name 'Tomcatapp' and a note about character limits. Below that is 'Environment information' with an environment name 'Tomcatenv' and a domain 'us-west-2.elasticbeanstalk.com'. A note says 'Leave blank for a temporary value.'

In Platform box select **Tomcat**

Drag down

Base configuration

Platform — Choose a platform —

- Choose a platform -
- Preconfigured
  - Node.js
  - PHP
  - Python
  - Ruby
  - Tomcat**
- Unspecified
  - .NET (Windows/IIS)
  - Java
  - Go
  - Packer
- Preconfigured – Docker
  - GlassFish
  - Go
  - Python
  - Generic
  - Docker
  - Multi-container Docker

We're moving to a new design for AWS Elastic Beanstalk. Let us know what you think! You can switch back to the previous version while we finalize the design.

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Select **Upload your code**

Base configuration

Platform Tomcat

Application code  Sample application  
Get started right away with sample code

Upload your code  
Upload a source bundle from your computer or copy one from Amazon S3.

**Upload** ZIP or WAR

Cancel Configure more options... Create application

We're moving to a new design for AWS Elastic Beanstalk. Let us know what you think! You can switch back to the previous version while we finalize the design.

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Upload calendar.war file

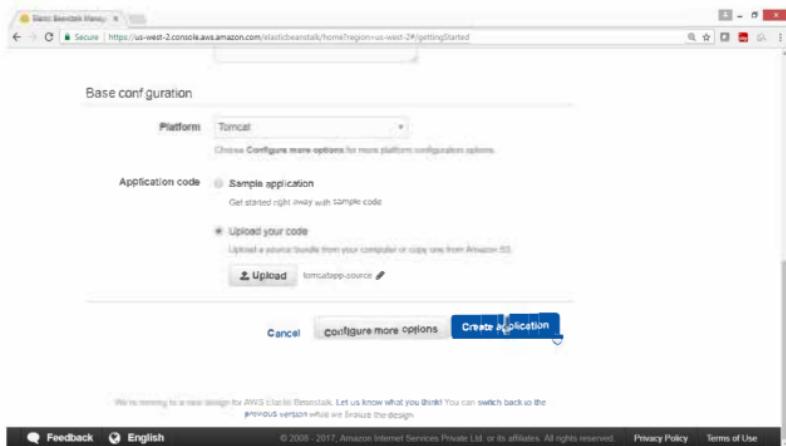
Click on **Upload** button

Leave remaining fields as defaults

The screenshot shows the AWS Elastic Beanstalk console interface. On the left, there's a sidebar with 'Recent' and '����' (Next) buttons. The main area has a dark header bar with 'Elastic Beanstalk' and a search bar. Below the header, there's a 'Base configuration' section for a 'Tomcat' application. It includes fields for 'Platform' (Tomcat), 'Application code' (with 'Sample application' selected), and a 'Source code origin' section where a local file named 'calendar.war' is chosen. To the right, a modal window titled 'Upload your code' is open, prompting to 'Upload a source bundle from your computer or copy/paste from Amazon S3'. It shows the 'Source code origin' set to 'Local file' with the file 'calendar.war' selected. A 'Version label' field contains 'tomcatapp-source'. At the bottom of the modal are 'Cancel' and 'Upload' buttons.

Verify that file is uploaded, beside Upload button

Click "Create Application" button



Base configuration

Platform: Tomcat

Application code: Sample application

Get started right away with sample code

Upload your code

Upload a source bundle from your computer or copy one from Amazon S3.

**Upload** tomcatapp-source.zip

**Create application**

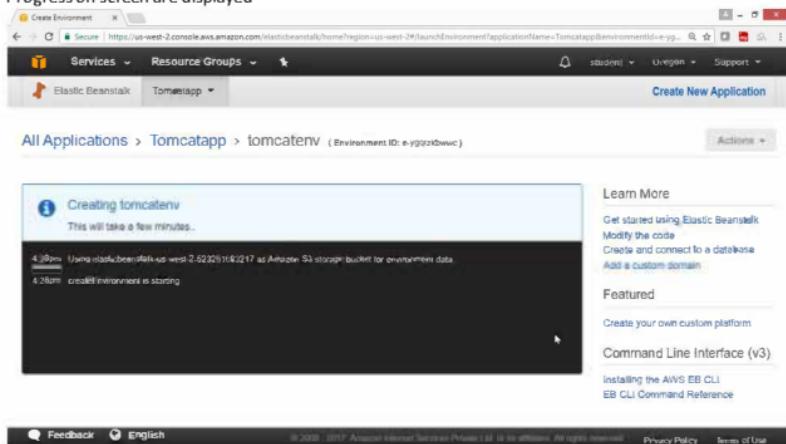
We're moving to a new design for AWS Elastic Beanstalk. Let us know what you think! You can switch back to the previous version while we finalize the design.

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### Verification :

Tomcat application at background is getting created,

Progress on screen are displayed



Creating tomcatenv

This will take a few minutes...

4.8m Using elasticbeanstalk-us-west-2-523011882217 as Amazon S3 storage bucket for environment data

4.8m createEnvironment is starting

Actions Create New Application

Learn More

Get started using Elastic Beanstalk

Modify the code

Create and connect to a database

Add a custom domain

Featured

Create your own custom platform

Command Line Interface (v3)

Installing the AWS EB CLI

EB CLI Command Reference

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## Verify

The screenshot shows a browser window with the URL <https://us-west-2.elasticbeanstalk.com/>. The page displays a progress message: "Creating tomcatenv.. This will take a few minutes..". A log section shows the following entries:

- 4:29pm Waiting for EC2 instances to launch. This may take a few minutes.
- 4:28pm Created EIP: 34.213.99.251
- 4:28pm Environment health has transitioned to Pending. Initialization in progress (running for 29 seconds). There are no instances.
- 4:28pm Created security group named: awseb-e-yqqzkbwc-stack-AWSEBSecurityGroup-INRF9H19B86AF
- 4:28pm Using elasticbeanstalk-us-west-2-523251683217 as Amazon S3 storage bucket for environment data.
- 4:28pm createEnvironment is starting.

On the right side, there are "Learn More" and "Featured" sections with links to "Get started using Elastic Beanstalk", "Modify the code", "Create and connect to a database", "Add a custom domain", "Featured", and "Create your own custom platform". Below that is a "Command Line Interface (v3)" link and a note about "Installing the AWS EB CLI".

Note : This will take few minutes to start.

Wait until Tomcat Dashboard is displayed on the screen

Click on the URL link

The screenshot shows the AWS Elastic Beanstalk console at the URL <https://us-west-2.console.aws.amazon.com/elasticbeanstalk/home?region=us-west-2#/environment/dashboard?applicationName=Tomcatapp&environmentId=e-yqqzkbwc>. The top navigation bar shows "Services" and "Resource Groups". The main menu includes "Elastic Beanstalk" and "Tomcatapp". A "Create New Application" button is visible.

The dashboard for the "Tomcatapp" environment shows the following details:

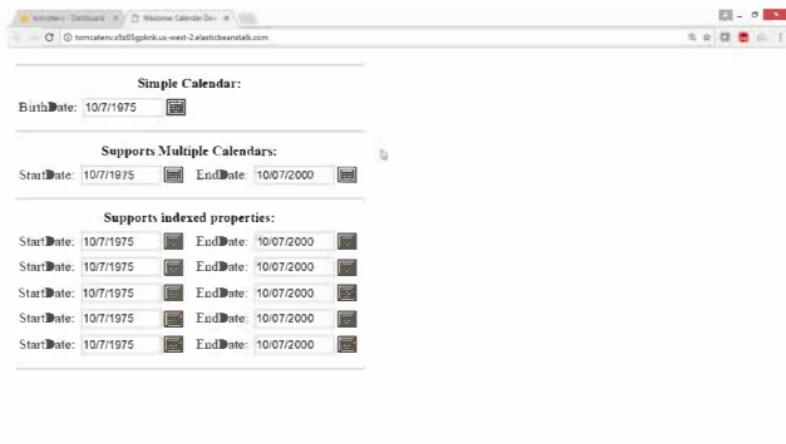
- All Applications > Tomcatapp > tomcatenv** (EnvironmentID: e-yqqzkbwc, URL: <https://tomcatenv.us-west-2.elasticbeanstalk.com/>)
- Dashboard** (selected)
- Overview**
- Configuration**
- Logs**
- Health**: Status is **Ok**, with a green checkmark icon. A "Causes" button is present.
- Running Version**: tomcatapp-source
- Upload and Deploy** button
- Configuration** section: 84bit Amazon Linux 2017.03, v2.6.2 running Tomcat 8 Java 8

## Verification

Open any Browser

Click on URL link

Website is open

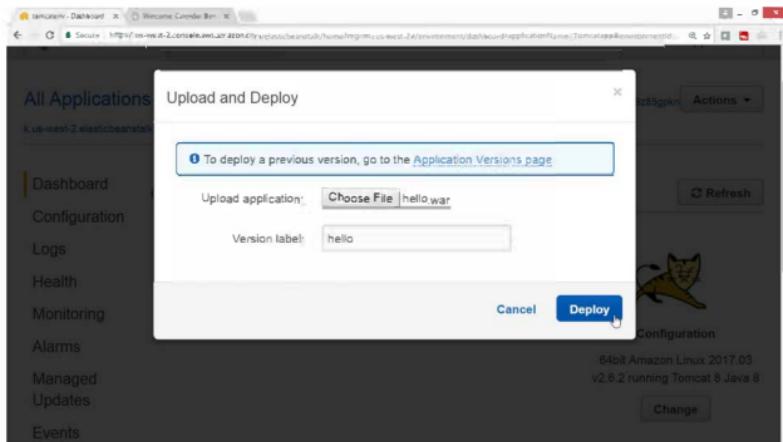


To Deploy another war file for eg hello.war

Go to Upload application

Choose file provide **hello.war** file name

Click **Deploy** button



Click on URL

The screenshot shows the AWS Lambda console interface. At the top, there's a header bar with tabs for 'Dashboard' and 'Actions'. Below the header, the URL is displayed as <https://us-west-2.console.aws.amazon.com/lambda/functions/tomcatenv?region=us-west-2&environment=tomcatapp&environmentId=e-ygqrzbowc>. The main content area is titled 'All Applications > Tomcatapp > tomcatev' with an environment ID of e-ygqrzbowc and URL tomcatev.us-west-2.amazonaws.com. On the left, a sidebar lists navigation options: Dashboard, Configuration, Logs, Health, Monitoring, Alarms, Managed Updates, and Events. The 'Configuration' tab is selected. In the center, there's a 'Health' section with a green circle containing a checkmark, labeled 'Ok' and 'Causes'. To its right is a 'Running Version' section showing 'hello' and a 'Upload and Deploy' button. Further right is a cartoon cat icon and a 'Configuration' section with text: '64bit Amazon Linux 2017.03 v2.6.2 running Tomcat 8 Java 8' and a 'Change' button. A 'Refresh' button is located at the top right of the main content area.

Verify the website

The screenshot shows a web browser window with the title 'tomcatev - Dashboard' and the URL 'Hello Index'. The page content is 'Hello Index'. Below the content, there's a message: 'Try the [servlet](#)'.

#### 4) To Remove Elastic Bean stack

Select Action button

Click Delete application button

The screenshot shows the AWS Elastic Beanstalk console with the URL <https://us-west-2.console.aws.amazon.com/elasticbeanstalk/home?region=us-west-2#applications>. The 'Services' tab is selected, and the 'Elastic Beanstalk' service is chosen. On the left, there's a 'Learn More' sidebar with links like 'Get started using Elastic Beanstalk', 'Modify the code', 'Create and connect to a database', and 'Add a custom domain'. Below that is a 'Featured' section with 'Create your own custom platform' and a 'Command Line Interface (v3)' link. The main area is titled 'All Applications' and shows a single application named 'Tomcatapp'. A context menu is open over the 'Tomcatapp' entry, with the 'Actions' dropdown showing options: 'Create environment', 'Delete application' (which is highlighted in blue), 'View application versions', 'View saved configurations', and 'Restore terminated environment'. The 'Tomcatapp' entry itself has a green background and contains details: 'Environment tier: Web Server', 'Platform: 64bit Amazon Linux 2017.03 v2.6.2 running Tomcat 8 Java 8', 'Running versions: hello', 'Last modified: 2017-07-27 16:40:51 UTC+0530', and 'URL: tomcatapp.s9z85gpknx.us-west-2.elasticbeanst...

The screenshot shows the AWS Elastic Beanstalk console with the same URL as the previous screenshot. A modal dialog box is centered on the screen with the title 'Delete Application'. The message inside the dialog is 'Are you sure you want to delete the application: Tomcatapp?'. At the bottom right of the dialog are two buttons: 'Cancel' and a red 'Delete' button. In the background, the 'All Applications' list is visible, showing the 'Tomcatapp' entry with its details: 'Environment tier: Web Server', 'Platform: 64bit Amazon Linux 2017.03 v2.6.2 running Tomcat 8 Java 8', 'Running versions: hello', 'Last modified: 2017-07-27 16:40:51 UTC+0530', and 'URL: tomcatapp.s9z85gpknx.us-west-2.elasticbeanst...

Application will now get terminated

The screenshot shows the AWS Elastic Beanstalk console. In the top navigation bar, 'Services' and 'Resource Groups' are selected. A search bar at the top right contains the URL 'https://us-west-2.console.aws.amazon.com/elasticbeanstalk/home?region=us-west-2#applications'. Below the navigation, there are tabs for 'Elastic Beanstalk' and 'Tomcatapp'. On the left, a sidebar titled 'Learn More' includes links for 'Get started using Elastic Beanstalk', 'Modify the code', 'Create and connect to a database', and 'Add a custom domain'. Under 'Featured', it says 'Create your own custom platform' and 'Command Line Interface (v3)'. The main content area is titled 'All Applications' and shows a single application named 'Tomcatapp'. A box highlights the application status: 'tomecatenv (Terminated)'. Below this, detailed information is provided: Environment tier: Web Server; Platform: 64bit Amazon Linux 2017.03 v2.6.2 running Tomcat 8 Java 8; Running versions: hello; Last modified: 2017-07-27 16:48:14 UTC+0530; URL: tomcatenv.s9z5gpkn.us-west-2.elasticbean...

## Verification

After termination following screen will come

The screenshot shows the AWS Elastic Beanstalk console. The top navigation bar and sidebar are identical to the previous screenshot. The main content area displays the 'Welcome to AWS Elastic Beanstalk' message. To the left, a smaller window shows a summary of application metrics: 53.6 (Request Processing Time), 148K (User Requests), 65% (Throughput), 354KB (Data Transferred), and 12KB (Memory Utilization). Below this, two line graphs show trends over time for Request Processing Time and User Requests.

Welcome to AWS Elastic Beanstalk

With Elastic Beanstalk, you can deploy, monitor, and scale an application quickly and easily. Let us do the heavy lifting so you can focus on your business.

To deploy your existing web application, create an application source bundle and then create a new application. If you're using Git and would prefer to use it with our command line tool, please see Getting Started with the EB CLI.

To deploy a sample application, click Get started, choose a name, select a platform and

### 3) To delete Elastic Beanstalk bucket policy is created in S3 bucket

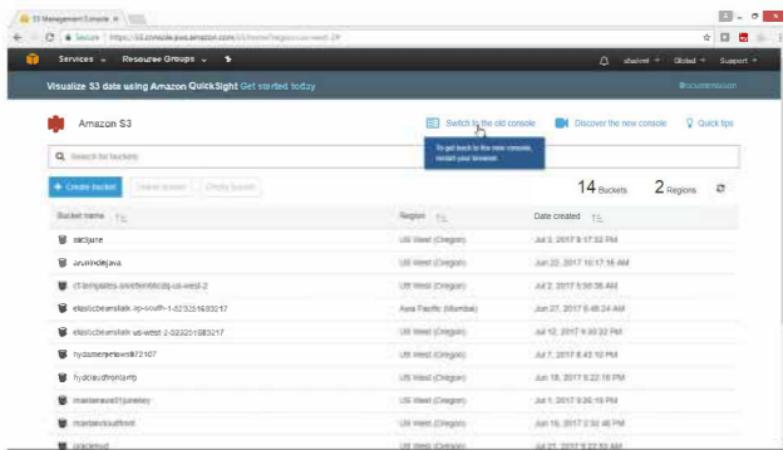
Note: S3 bucket created by Elastic Beanstalk is not deleted automatically.

It could be charged after free usage limits are over, so manually delete the beanstalk bucket

From console select "Storage"

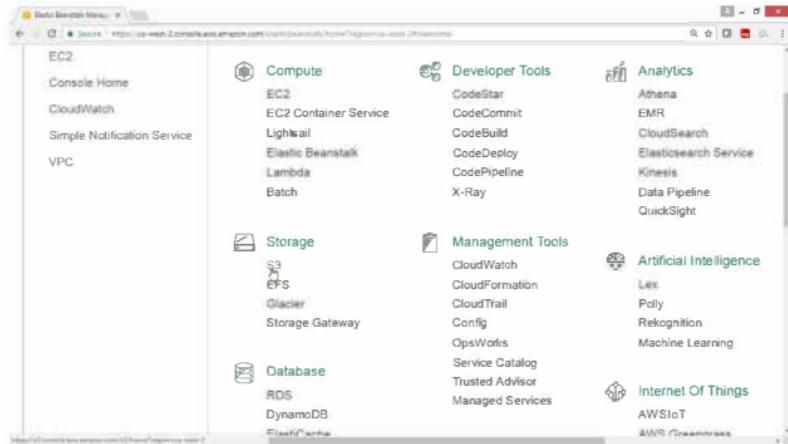
Select S3

Click on "Switch to old console"



The screenshot shows the AWS S3 Management Console interface. At the top, there's a header with the AWS logo, a search bar, and navigation links for Services, Resource Groups, and Documentation. A prominent button labeled "Switch to the old console" is visible. Below the header, the main content area displays a list of 14 buckets. Each bucket entry includes the name, location (Region), and date created. The buckets listed are:

Bucket name	Region	Date created
mcjane	US West (Oregon)	Jul 2, 2017 8:17:53 PM
avmndejava	US West (Oregon)	Jun 22, 2017 10:17:16 AM
(1)arnmpates-saventinelus-west-2	US West (Oregon)	Jul 2, 2017 9:06:36 AM
elasticbeanstalk-ap-south-1-02321633217	Australia Pacific (Sydney)	Jun 27, 2017 8:48:24 AM
elasticbeanstalk-us-west-2-02321633217	US West (Oregon)	Jul 12, 2017 9:30:22 PM
hydaemergence@72107	US West (Oregon)	Jul 7, 2017 8:43:10 PM
hydolech97049	US West (Oregon)	Jun 18, 2017 9:22:16 PM
mastercloudpantry	US West (Oregon)	Jul 1, 2017 9:26:19 PM
mastercloudtest	US West (Oregon)	Jun 16, 2017 7:32:46 PM
upacted	US West (Oregon)	Jul 25, 2017 9:27:53 AM



Select elastic Beanstalk Bucket, Click Properties

### Select Permissions

This screenshot shows the AWS S3 Management Console. At the top, it says "All Buckets (14)". Below is a list of buckets:

- elastiserv
- elastiservdata
- elastiservelasticbeanstalk-ap-northeast-2
- elastiservkarman-ap-northeast-1-523251683217
- elastiservkarman-ap-northeast-1-523251683217
- elastiservkarman-12-523251683217
- elastiservkarman72107
- hydradev01temp
- masternode01temp
- westarc01swiftemp
- westarc01temp
- westarc01temp
- westarc01temp
- westarc01temp
- www.masternode01.com

The "Properties" tab is highlighted. At the bottom, there are links for Feedback, English, and a footer with copyright information and links to Privacy Policy and Terms of Use.

Click "Edit bucket policy"

The screenshot shows the AWS S3 Management Console. On the left, there's a sidebar titled 'Create Bucket' and 'Actions'. Below it is a list of 'All Buckets (14)'. One bucket is expanded, showing its name, location (Oregon), creation date (Wed Jul 21 2016), and owner (student). A 'Permissions' section is visible with a 'Edit Permissions' link. At the bottom of this section are buttons for 'Add more permissions', 'Edit bucket policy', 'Add CORS Configuration', and 'Save' (which is highlighted in blue).

In Bucket Policy Editor wizard,

Click Delete to remove policy, click OK

This screenshot shows the 'Bucket Policy Editor' dialog for the same bucket. It contains a JSON policy document. In the bottom right corner of the dialog, there are three buttons: 'Save', 'Delete' (which is highlighted in yellow), and 'Close'. Below the dialog, a message says 'Delete using access policies. Learn more.' and 'Delete' (with a magnifying glass icon) and 'View Permissions' buttons.

Click on Save button

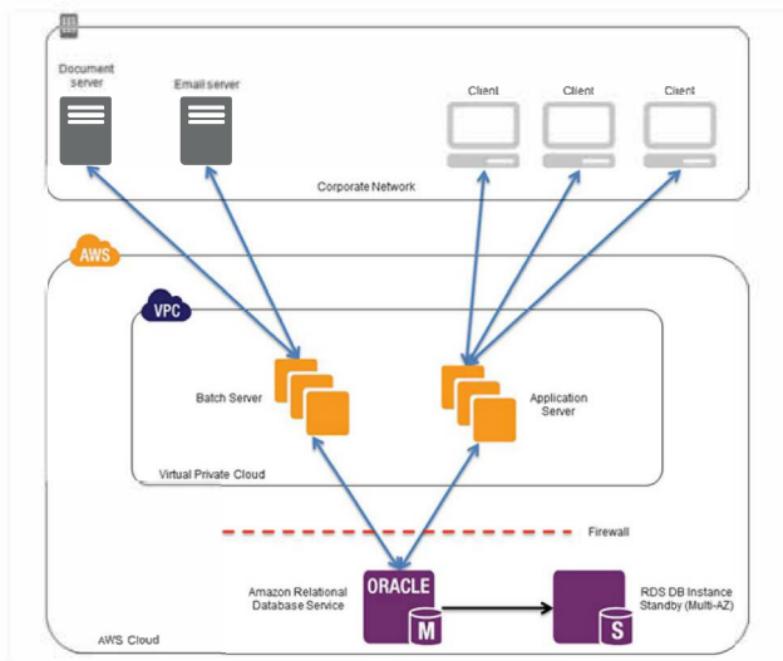
The screenshot shows the AWS S3 Management Console. On the left, there's a sidebar titled 'Services' with 'Resource Groups' and a 'Create Bucket' button. Below it is a list of 'All Buckets' (14), including 'elasticbeanstalk-us-west-2-523251683217'. The main area is titled 'Bucket: elasticbeanstalk-us-west-2-523251683217'. It displays the bucket's name, region (Oregon), creation date (Wed Jul 12 21:30:22 GMT+03:30 2017), and owner (student). A 'Permissions' section allows editing of access policies. At the bottom right of this section is a blue 'Save' button. Other tabs like 'Static Website Hosting' and 'Logging' are also visible.

## Lab 15: To Configure an Amazon Relational Database Service

### OBJECTIVE

To configure Amazon Relation Database service

### TOPOLOGY



### PRE-REQUISITES

User should have AWS account, or IAM user with `AmazonRDSFullAccess`

## **Task**

Create Amazon Relational Database Service

Verify connection from mysql client command line tool

Verify Connection using MySQL Workbench client application

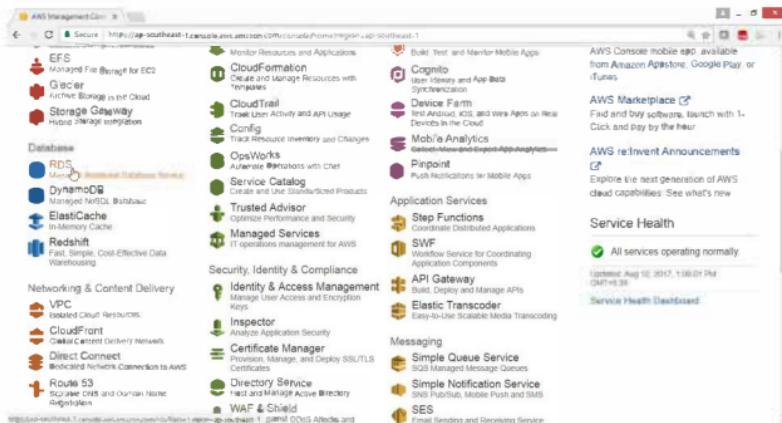
## Practical Steps

### To create Amazon Relational Database Service

From the AWS console

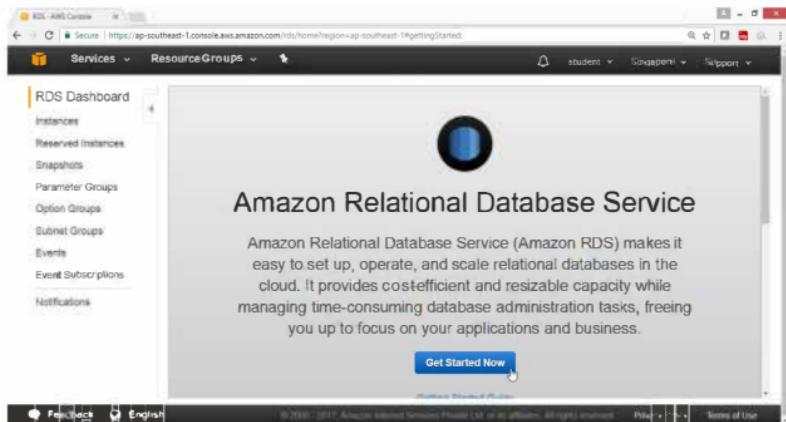
Select Database

Click on RDS service



In “RDS Dashboard”, wizard

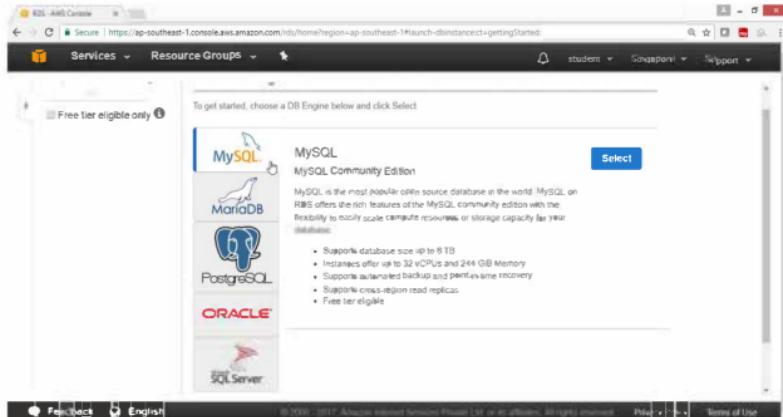
Click “Get Started Now”, button



In Select Engine, wizard

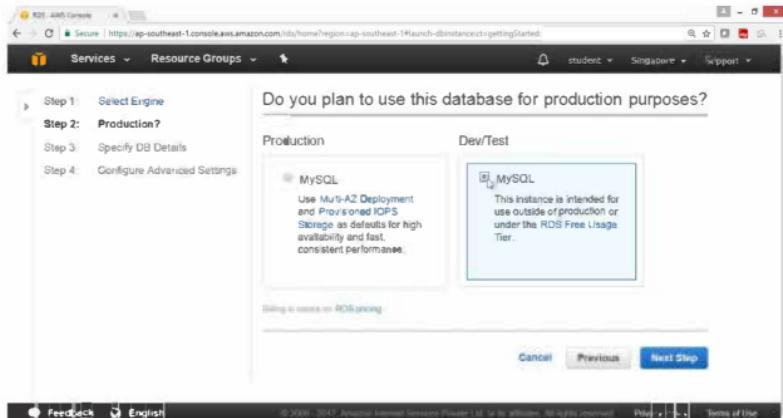
Click on MySQL

Click on Select button



In Production wizard

select Dev/Test, Choose MySQL



In **Specify DB Details**, wizard provide following values

### Instance Specifications

- For DB Engine → mysql  
For License Model → general-public-license  
For DB Engine Version → 5.6.27 [ leave default ]  
For DB Instance Class → db.t2.micro  
For Multi-AZ Deployment → No  
For Storage Type → General Purpose SSD  
For Allocated Storage → 5 GB

The screenshot shows the 'Specify DB Details' step of the AWS RDS instance creation wizard. The left sidebar lists steps: Step 1: Select Engine, Step 2: Production?, Step 3: Specify DB Details (highlighted in blue), Step 4: Configure Advanced Settings. The main content area has a 'Free Tier' section describing the tier's benefits and a checkbox to show options for the tier. Below it is the 'Instance Specifications' section where the user has selected 'mysql' for DB Engine, 'general-public-license' for License Model, and 'MySQL 5.6.35' for DB Engine Version. A tooltip for the version number states: 'Version number of the database engine to be used for this instance.' At the bottom of the specifications section, there is a link to 'Review the Known Issues/Limitations' about potential compatibility issues with specific database versions. The footer includes standard AWS links like Feedback, English, and Terms of Use.

408 - AWS Console

Secure | https://ap-southeast-1.console.aws.amazon.com/rds/home?region=ap-southeast-1#LaunchDBInstanceGettingStarted

Services Resource Groups

Billing estimate is based on on-demand usage as described in Amazon RDS Pricing. Estimate does not include costs for backup storage, I/Os (if applicable), or data transfer.

Estimate your monthly costs for the DB Instance using the AWS Simple Monthly Calculator.

DB Instance	18.88 USD
Storage	0.08 USD
Total	19.87 USD

Review the Known Issues/Limitations to learn about potential compatibility issues with specific database versions.

DB Engine: mysql  
License Model: general-public-license  
DB Engine Version: MySQL, 5.6.35

DB Instance Class: db.t2.micro — 1 vCPU, 1 GB RAM  
Multi-AZ Deployment: No  
Storage Type: General Purpose (SSD)  
Allocated Storage\*: 5 GB

**⚠ Provisioning less than 100 GB of General Purpose (SSD) storage for high throughput workloads could result in higher latencies upon exhaustion of the initial General Purpose (SSD) IO credit balance. Click here for more details.**

- General Purpose (S) storage is suitable for broadrange of data workloads. Provides baseline of 3 IOPS and ability to burst 1,000 IOPS.
- Provisioned IOPS (P) storage is suitable for I/O-intensive database workloads. Provides flexibility to provision ranging from 1,000 to 30,000 IOPS.

Feedback English

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## Under Settings

For Allocated Storage\* → 5 GB

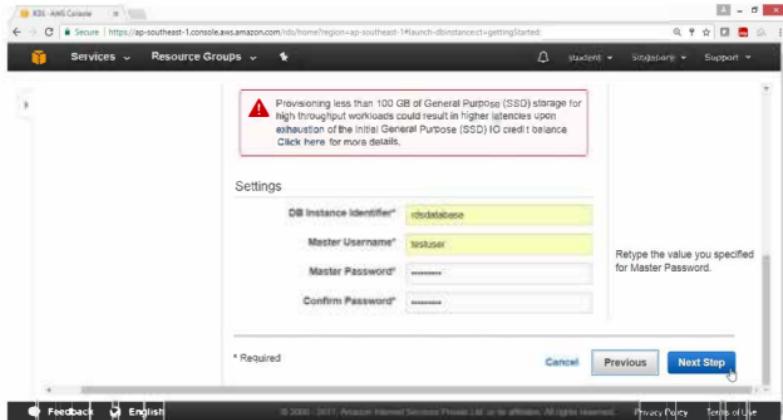
For DB Instance Identifier → rdsdatabase

For Master Username → testuser

For Master Password\* → \*\*\*\*\*

For Confirm Password\* → \*\*\*\*\*

Click on **Next** button.

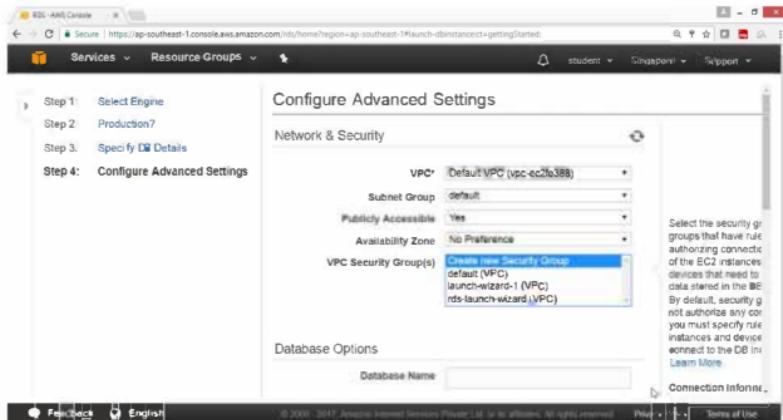


In **Configure Advanced Settings**, wizard

Under **Network & Security**

Provide following values

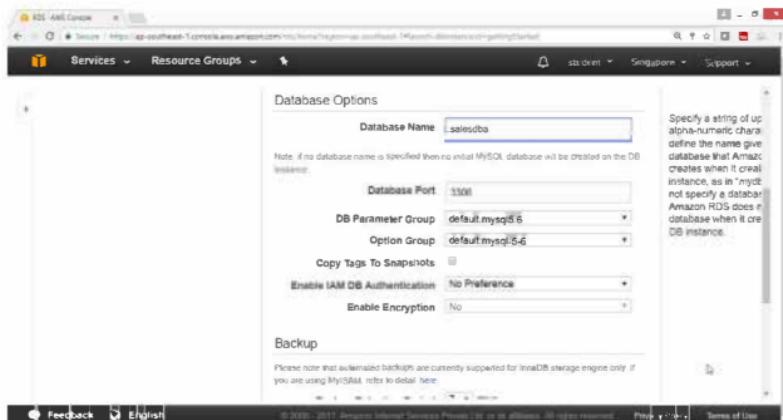
VPC*	→ Default VPC
Subnet Group	→ default
Publicly Accessible	→ Yes
Availability Zone	→ No Preference
VPC Security Group(s)	→ <u>Create new Security Group</u>



## Under Database Options

Provide following Values

Database Name	→ salesdba
Database Port	→ 3306
DB Parameter Group	→ default.mysql5.6
Option Group	→ default.mysql5.6
Copy Tags To Snapshots	→ leave blank
Enable IAM DB Authentication	→ No Preference
Enable Encryption	→ No



## Provider Following Values

### Under Backup

- Backup Retention Period → 7 days  
Backup Window → No Preference

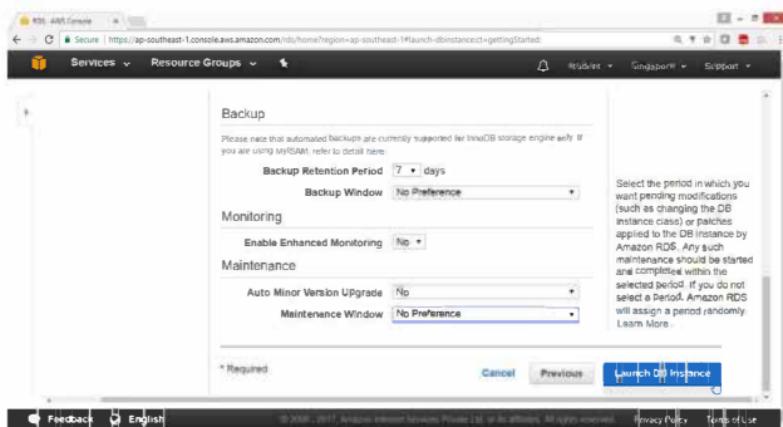
### Under Monitoring

- Enable Enhanced Monitoring → No

### Under Maintenance

- Auto Minor Version Upgrade → No  
Maintenance Window → No Preference

### Click on Launch DB Instance



Your DB Instance is being created.

Click on **View Your DB Instances** button

The screenshot shows the AWS RDS console with a success message: "Your DB instance is being created." A note below it says: "Note: Your instance may take a few minutes to launch." To the right, there's a section titled "Connecting to your DB Instance" with a link "Learn about connecting to your DB instance". At the bottom right, there's a blue button labeled "View Your DB Instances".

Under status column

Verify creating

The screenshot shows the AWS RDS Dashboard. In the center, there's a table with one row. The columns are: Engine, DB instance, Status, CPU, Current Activity, Maintenance, Class, and VPC. The data in the table is: MySQL, idatabase, creating, None, db.t2.micro, and vpc-ec2fe. The "Status" column is highlighted in yellow, indicating the instance is currently in the process of being created.

## Select MySQL Engine

The screenshot shows the AWS RDS Dashboard. On the left sidebar, under 'Instances', there is a link to 'Launch DB Instance'. The main content area displays a table for 'DB Instances'. One row is highlighted with a blue background, showing the following details:

Engine	DB Instance	Status	CPU	Current Activity	Maintenance	Class	VPC
MySQL	rdsdatabase	creating				None	db.t2.micro vpc-e2

The 'Status' column shows 'creating'. Below the table, it says 'Endpoint: Not available yet'. The 'Monitoring' section shows CPU and Memory metrics with 'No Data'.

## Under status column

### Verify backing-up

The screenshot shows the AWS RDS Dashboard. The 'Instances' section on the left sidebar has a link to 'Launch DB Instance'. The main content area displays a table for 'DB Instances'. One row is highlighted with a blue background, showing the following details:

Engine	DB Instance	Status	CPU	Current Activity	Maintenance	Class	VPC
MySQL	rdsdatabase	backing-up				None	db.t2.micro vpc-e2

The 'Status' column shows 'backing-up'. Below the table, it says 'Endpoint: rdsdatabase.cat4jymmlar.ap-southeast-1.rds.amazonaws.com:3306 (authorized)'. The 'Monitoring' section shows CPU and Memory metrics with 'No Data'.

Under status column

### Verify available

The screenshot shows the AWS RDS Dashboard. On the left, there's a sidebar with options like Instances, Reserved instances, Snapshots, Parameter Groups, Option Groups, Subnet Groups, Events, Event Subscriptions, and Notifications. The main area has tabs for Launch DB Instances, Show Monitoring, and Instance Actions. A search bar is at the top right. Below it, a table lists one DB instance:

Engine	DB Instance	Status	CPU	Current Activity	Maintenance	Class
MySQL	rdsdatabase	available	1.33%	0 Connections	None	db.t2.micro

Below the table, the Endpoint is listed as rdsdatabase.cat4jymkiaz.east-sea... with a status of authorized. Under the Monitoring tab, CPU usage is shown at 1.42% and Memory usage is at 543 MB.

## Client Side

Go to linux box

Run mysql client command to connect to RDS database

Syt: \$ mysql -u <username> -h <End\_point\_of\_RDS\_Instance> -p <password>

```
shaikh@shaikh-virtual-machine:~$ mysql -u testuser -h rdsdatabase.clkyahad3ggx.ap-south-1.rds.amazonaws.com -p
Enter password:
Welcome to the MySQL monitor. Commands end with ; or \g.
Your MySQL connection id is 31
Server version: 5.6.35-log MySQL Community Server (GPL)

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Oracle is a registered trademark of Oracle Corporation and/or its
affiliates. Other names may be trademarks of their respective
owners.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

mysql> |
```

To see the list of databases;

```
mysql> show databases;
+-----+
| Database      |
+-----+
| information_schema |
| innodb        |
| mysql          |
| performance_schema |
| salesdb       |
| sys           |
+-----+
6 rows in set (0.02 sec)

mysql> █
```

Use the database

Create table

Insert values in tables

```
mysql>
mysql> use salesdb;
Database changed
mysql>
mysql> create table tutorials_tbl(tutorial_id INT NOT NULL AUTO_INCREMENT,tutorial_title V
CHAR(100) NOT NULL,tutorial_author VARCHAR(40) NOT NULL,submission_date DATE,PRIMARY KEY
( tutorial_id ));
Query OK, 0 rows affected (0.04 sec)  |

mysql>
mysql> INSERT INTO tutorials_tbl(tutorial_title, tutorial_author, submission_date) VALUES(
"Learn PHP", "John Poul", NOW());
Query OK, 1 row affected, 1 warning (0.02 sec)

mysql>
mysql> INSERT INTO tutorials_tbl(tutorial_title, tutorial_author, submission_date) VALUES(
"Learn MySQL", "Abdul S", NOW());
Query OK, 1 row affected, 1 warning (0.03 sec)

mysql>
mysql> INSERT INTO tutorials_tbl(tutorial_title, tutorial_author, submission_date) VALUES(
"JAVA Tutorial", "Sanjay", '2007-05-06');
Query OK, 1 row affected (0.02 sec)

mysql>
mysql>
mysql>
mysql>
mysql>
mysql> █
```

To see the structure of table;

```
mysql> show databases;
+-----+
| Database |
+-----+
| information_schema |
| innodb |
| mysql |
| performance_schema |
| salesdb |
| sys |
+-----+
6 rows in set (0.02 sec)

mysql> use salesdb;
Reading table information for completion of table and column names
You can turn off this feature to get a quicker startup with -A

Database changed
mysql> desc tutorials_tbl;
+-----+-----+-----+-----+-----+
| Field | Type | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+
| tutorial_id | int(11) | NO | PRI | NULL | auto_increment |
| tutorial_title | varchar(100) | NO | | NULL | |
| tutorial_author | varchar(40) | NO | | NULL | |
| submission_date | date | YES | | NULL | |
+-----+-----+-----+-----+-----+
4 rows in set (0.02 sec)

mysql> █
```

To see records in the tables;

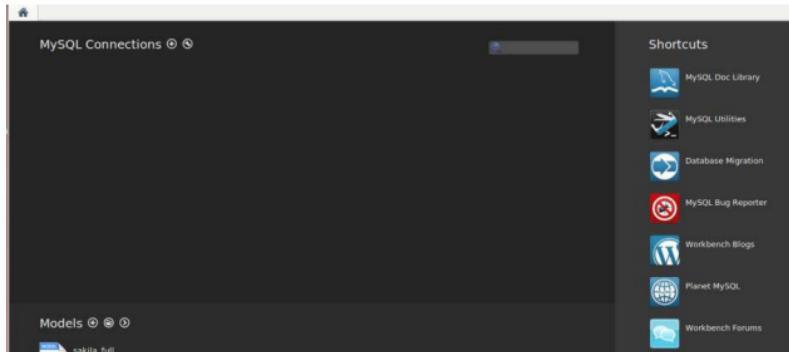
```
mysql> select * from tutorials_tbl;
+-----+-----+-----+-----+
| tutorial_id | tutorial_title | tutorial_author | submission_date |
+-----+-----+-----+-----+
| 1 | Learn PHP | John Poul | 2017-08-12 |
| 2 | Learn MySQL | Abdul S | 2017-08-12 |
| 3 | JAVA Tutorial | Sanjay | 2007-05-06 |
+-----+-----+-----+-----+
3 rows in set (0.02 sec)

mysql> █
```

**2. To access RDS database through MYSQL WorkBenchclient application**

**Open MySQL WorkBench client Application, provide following details**

**On MySQL Connection Tag, click plus radio button**



Provide the following values for

Connection Name: → testcon1

Connection Method: → Standard (TCP/IP)

Parameters

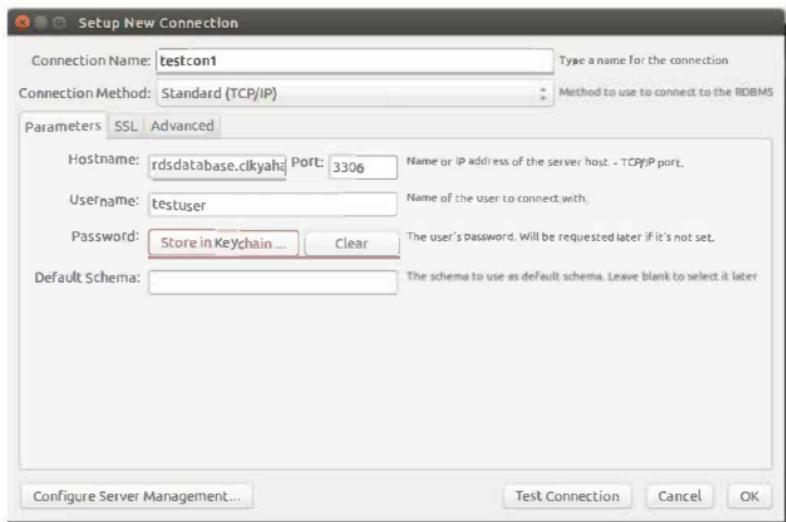
Hostname → copy RDS url

(<rdsdatabase.clkyahad3ggx.ap-south-1.rds.amazonaws.com>)

Port → 3306

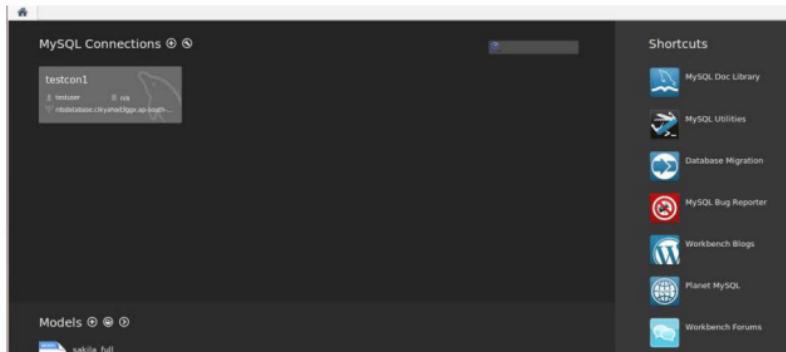
Username → testuser

Password → \*\*\*\*\*

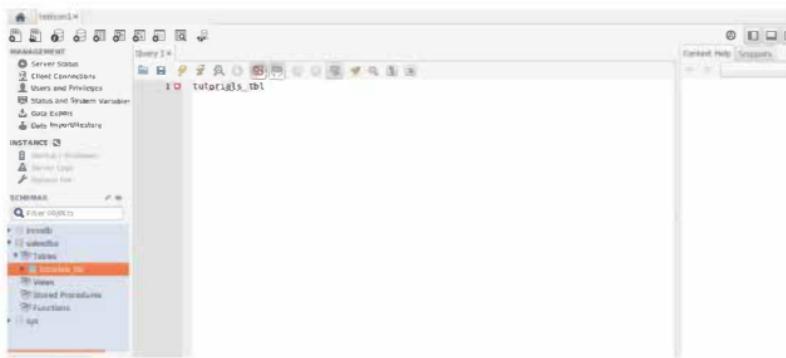


## Verify

Connection is getting established.



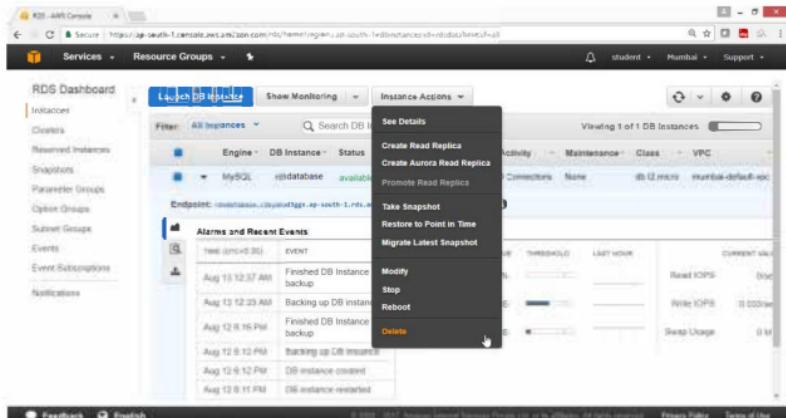
So we can see that tables are listed in Mysql clients.



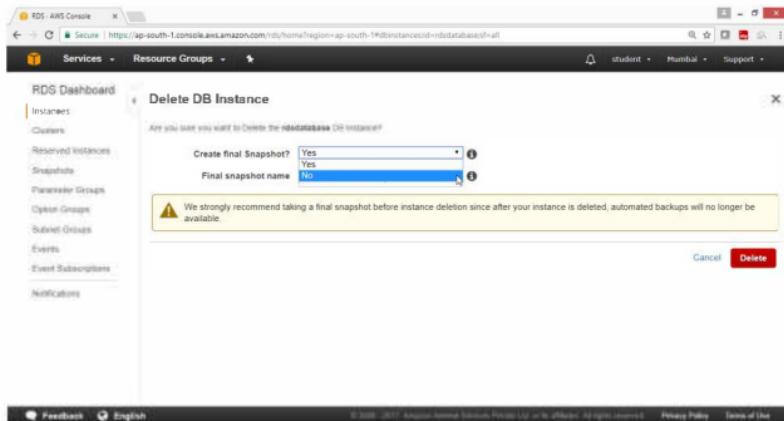
### 3. To Delete the RDS instance

3.1 Open RDS Dashboard , select instance

drop down Instance **Action button**, select **Delete**

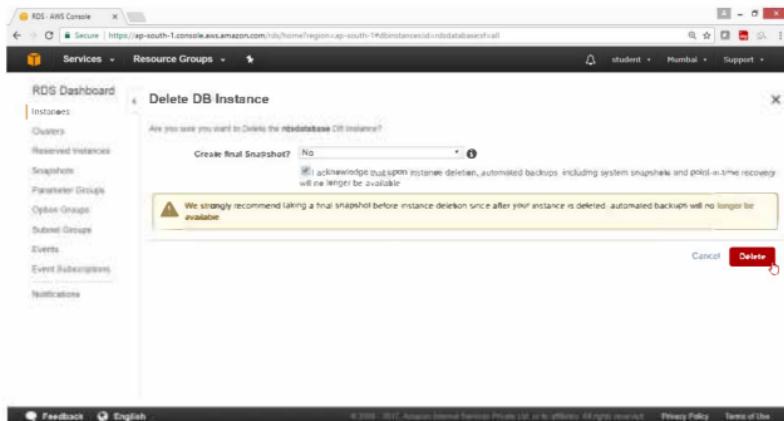


For Create final snapshot → No



Select acknowledge check box

Click on Delete button



## Verify

In status column → deleting

The screenshot shows the AWS RDS Dashboard. On the left, there's a sidebar with links like Instances, Clusters, Reserved Instances, Snapshots, Parameter Groups, Option Groups, Subnet Groups, Events, Event Subscriptions, and Notifications. The main area has tabs for 'Watch DB Instance' (selected), 'Show Monitoring', and 'Instance Actions'. A search bar says 'Search DB Instances'. A filter dropdown shows 'All Instances', 'Engine: MySQL', 'Status: deleting', and 'Current Activity: 0 connections'. Below this, it says 'Viewing 1 of 1 DB Instances'. The instance details show 'ndpoint: rdsdatabase.us-east-1.rds.amazonaws.com [authorized]'. There are two sections: 'Alarms and Recent Events' and 'Monitoring'. The 'Alarms and Recent Events' section lists several events with timestamps from Aug 13, such as 'Finished DB instance backup', 'Backing up DB instance', 'Finished DB instance toolkit', 'Backing up DB instance', 'DB instance created', and 'DB instance restored'. The 'Monitoring' section shows CPU usage at 0.91%, Memory usage at 0.68 MB, Storage usage at 4.530 MB, and Swap Usage at 0 MB.

## Delete Confirmed

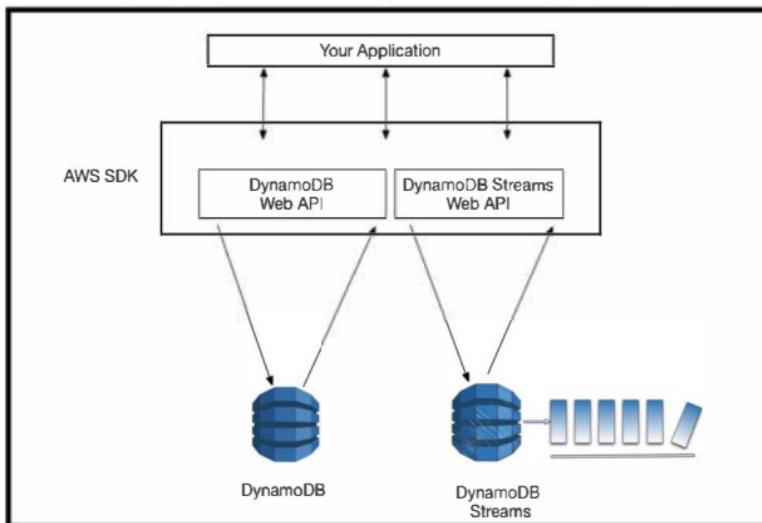
This screenshot is identical to the previous one, showing the AWS RDS Dashboard. The instance 'rdsdatabase' is now listed as 'deleted' in the status column. The rest of the interface, including the monitoring data and event history, remains the same.

## Lab 16: To Configure Amazon DynamoDB

### OBJECTIVE

To configure a table create records in Amazon DynamoDB

### TOPOLOGY



### PRE-REQUISITES

User should have AWS account, or IAM user with `AmazonDynamoDBFullAccess`

**TASK**

Create DynamoDB table

Provide Provisioned Read/write capacity

Add the values to a table

Scan the table

Query table

Delete the table

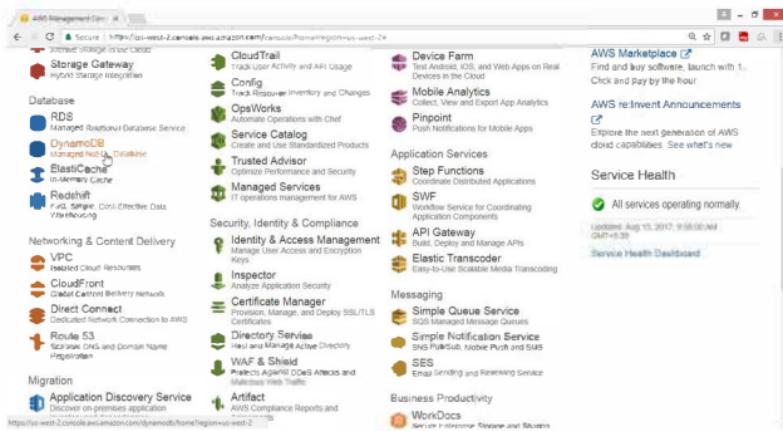
## 1) To Create an Amazon DynamoDB table

### To Create Table

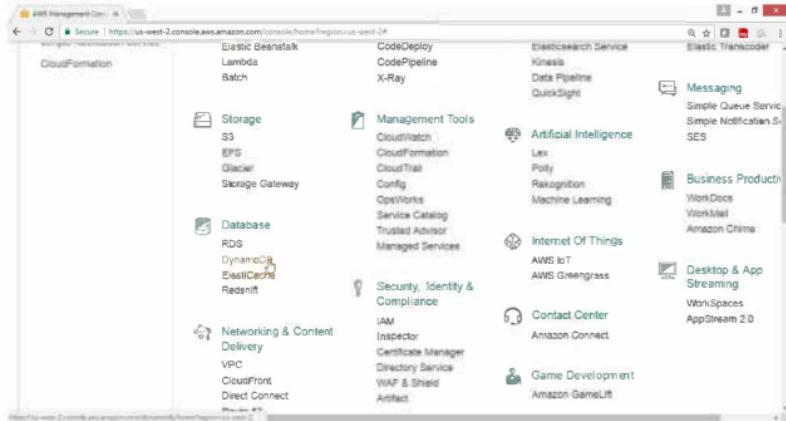
Open AWS console

Select services Database

Click on **DynamoDB**

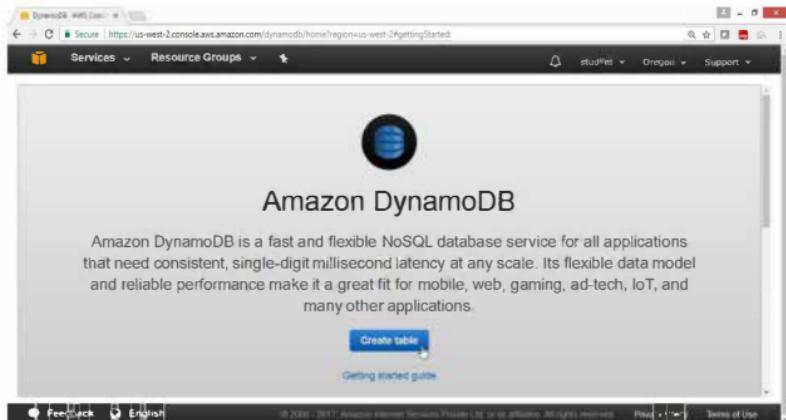


OR



### From DynamoDB Dashboard

Click on **Create table** button



On “Create DynamoDB table” wizard

Provide following value

Table name\* → Salestable

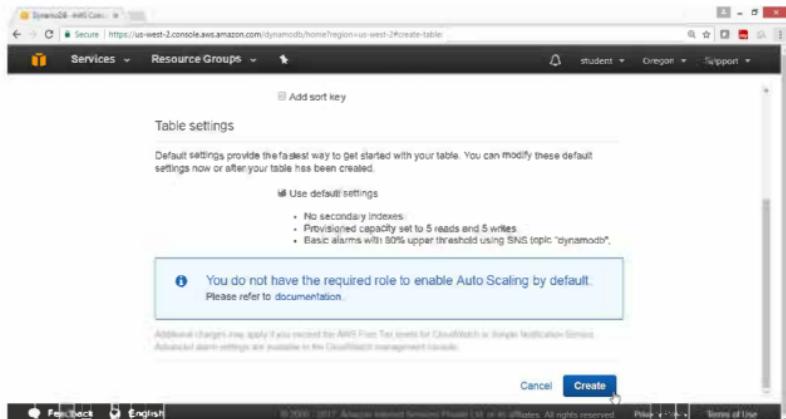
Partition Key → itemno, Select String

The screenshot shows the 'Create DynamoDB table' wizard interface. At the top, it says 'DynamoDB is a schema-less database that only requires a table name and primary key. The table's primary key is made up of one or two attributes that uniquely identify items, partition the data, and sort data within each partition.' Below this, there are fields for 'Table name\*' (set to 'Salestable') and 'Primary key\*'. Under 'Primary key\*', there is a dropdown menu set to 'String' and a text input field containing 'itemno'. There is also a link 'Add sort key'. Below these fields, there is a section titled 'Table settings' with a note: 'Default settings provide the easiest way to get started with your table. You can modify these default settings now or after your table has been created.' A radio button 'Use default settings' is selected, and a list item 'No secondary indexes.' is shown. At the bottom of the page, there are links for 'Feedback', 'English', and 'AWS Support'.

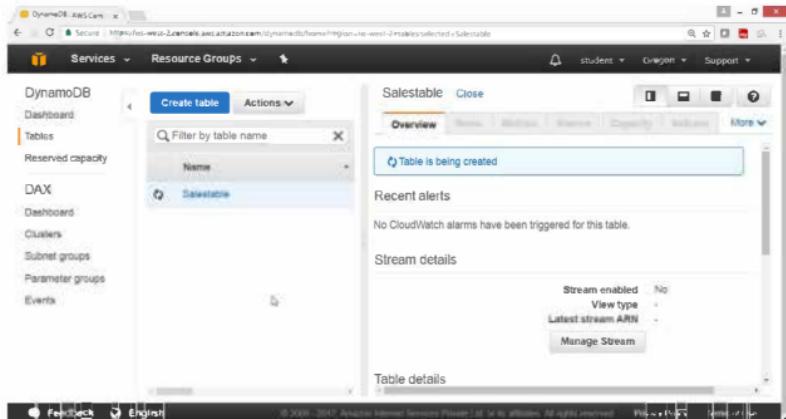
Under Table settings

Select "Use default settings" check box

click on **Create** button



## Creating



## Verification

Salestable is created

The screenshot shows the AWS DynamoDB console interface. On the left, the navigation pane lists various services like Dashboard, Tables, Reserved capacity, DAX, Clusters, Subnet groups, Parameter groups, and Events. A 'Create table' button is visible. The main area is titled 'Salestable' and shows the 'Overview' tab selected. It displays basic information such as 'Recent alerts' (No CloudWatch alarms have been triggered), 'Stream details' (Stream enabled: No, View type: -, Latest stream ARN: -), and 'Table details' (Table name: Salestable). The URL in the browser bar is https://us-west-2.console.aws.amazon.com/dynamodb/home?region=us-west-2&TablesSelected=Salestable.

## Select Capacity

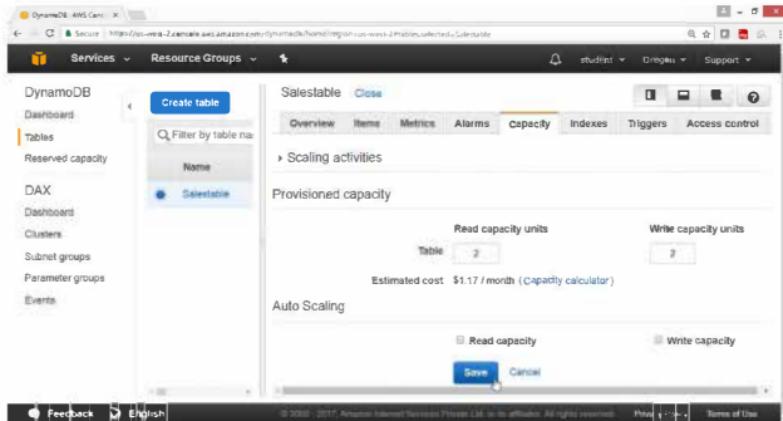
Under “**Provisioned capacity**”

Provide the following values

Read Capacity → 2

Write Capacity units → 2

Click on **Save** button



## Select item

Click on **Create item**

The screenshot shows the AWS DynamoDB console interface. On the left, the navigation menu includes 'Services' (selected), 'Resource Groups', 'DynamoDB' (selected), 'Dashboard', 'Tables' (highlighted in yellow), 'Reserved capacity', 'DAX', 'Dashboard', 'Clusters', 'Subnet groups', 'Parameter groups', and 'Events'. Under 'Tables', there is a 'Create table' button and a search bar. A table named 'Salestable' is selected, indicated by a blue dot next to its name. The main panel shows the 'Salestable' table details with tabs for 'Overview', 'Items' (selected), 'Metrics', 'Alarms', 'Capacity', 'Indexes', 'Triggers', and 'Access control'. Below this, a 'Create item' button is highlighted in blue. The 'Items' tab shows a scan operation: 'Scan: [Table] Salestable: :Itemno ^'. The results section is empty, showing 'Viewing 0 to 0 items'. A note at the bottom states: 'An item consists of one or more attributes. Each attribute consists of a name, a data type, and a value. When you read or write an item, the only attributes that are required are those that make up the primary key.' with a 'More info' link.

**To add, append, insert values in the table**

Open DynamoDB Dashboard, select Tables

Select the tables from tables list

check status, by clicking on

- Overview
- Items
- Metrics
- Alarms
- Capacity
- Indexes
- Triggers
- Access control

Select Items, add tables field

Click on "Create Items"

On "Create Items" page

Click on Tree

Click on plus radio button

Provide

itemno String 1

Click on plus radio button

## Create item

X

Tree ▾

\* Item {i}

itemno String :

Cancel

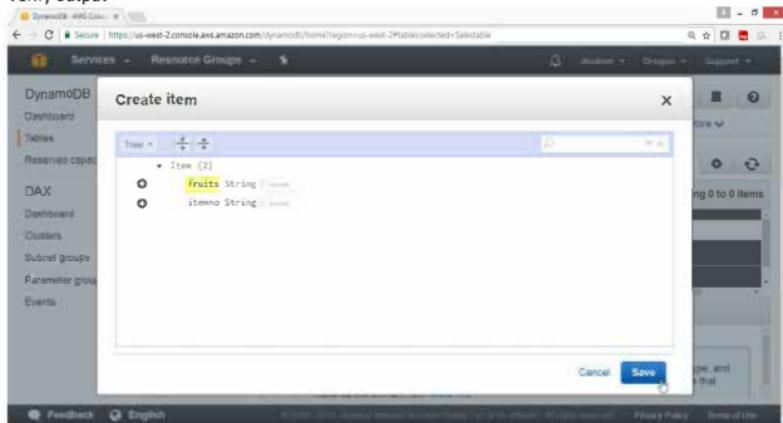
Save

Select insert, select string

ItemName      String      fruits



Verify output

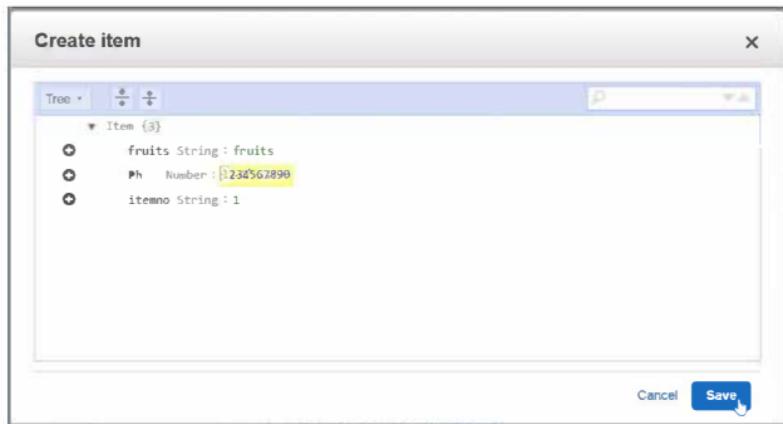


Click on plus radio button

select insert, select number

Ph → 123456789

click on **Save**



To View all entered data

select Scan , click start search

The screenshot shows the AWS DynamoDB console interface. On the left, the navigation pane includes 'Services' (selected), 'Resource Groups', 'DynamoDB' (selected), 'Tables', 'Reserved capacity', 'DAX', 'Clusters', 'Subnet groups', 'Parameter groups', and 'Events'. A 'Create table' button is visible. On the right, the 'Saleable' table details are shown under the 'Items' tab. The 'Actions' dropdown menu is open, with 'Scan' selected. Below it, there's a search bar with '[Table] Saleable: Itemno' and a 'Start search' button. The table data shows one item: Itemno: 1, Pn: 1234567890, and fruits.

To add values in the created fields

Select the Table row, click Action button

select Duplicate

This screenshot is identical to the previous one, showing the AWS DynamoDB console with the 'Saleable' table. The 'Actions' dropdown is open with 'Scan' selected, and the 'Start search' button is highlighted. The table data shows two items: Itemno: 1, Pn: 1234567890, and fruits; and Itemno: 2, Pn: 1234567890, and fruits.

Now modify the values of the field

New row will be created

Click on save



Verify

Itemno	Ph	fruits
2	1234567890	Mango
1	1234567890	fruits

## To Delete the table permanently for DynamoDb

From the AWS console

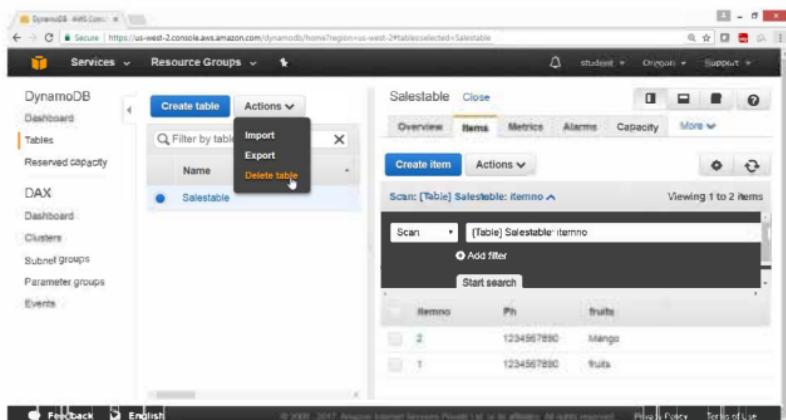
Select services Database

Choose DynamoDB

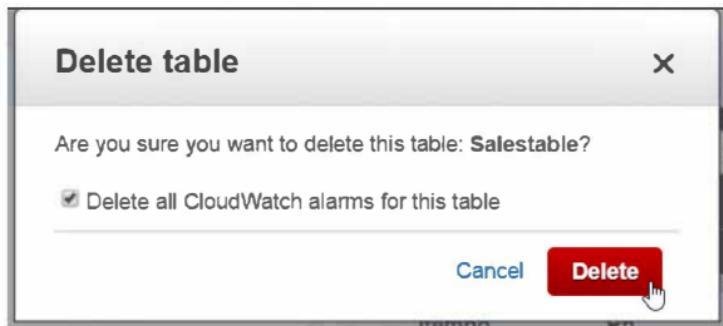
Under Tables, select the table for the list

click on Action button

Select "Delete Table"



Click on **Delete** button



Verify Table is deleted.

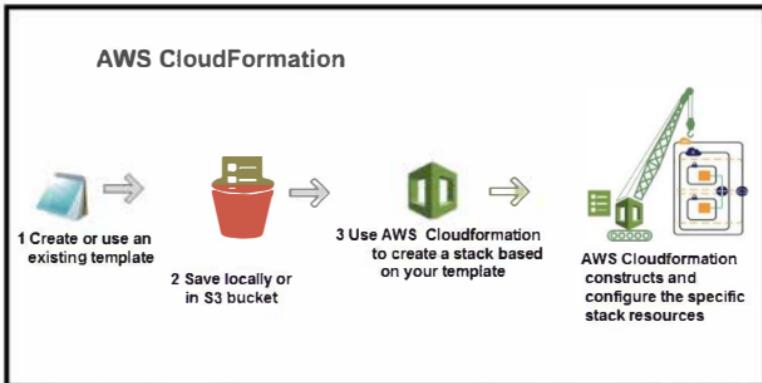
The screenshot shows the AWS DynamoDB service dashboard. On the left, there's a sidebar with options like "DynamoDB", "Tables", "Reserved capacity", "DAX", and "Events". The main area is titled "Selected table" and shows a table named "Salestable". A tooltip or callout box is overlaid on the "Salestable" table, containing the following text:  
DynamoDB is a fully managed NoSQL database service that provides fast and predictable performance with seamless scalability.  
DynamoDB allows you to create a database table that can store and retrieve any amount of data, and serve any level of request traffic.  
More info  
The "Actions" button above the table is highlighted with a blue box.

## Lab 17: To Configure Amazon CloudFormation

### OBJECTIVE

To configure AWS CloudFormation

### Topology



### PRE-REQUISITES

User should have AWS account, or IAM user with CloudFormationfullaccess

### TASK

Creating EC2 instance using CloudFormation

Deleting all resources from CloudFormation

### Practical Steps

## 1) To Launch Amazon EC2 instance in a security group using CloudFormation

Open AWS Console

Click on Services

In Management Tools services

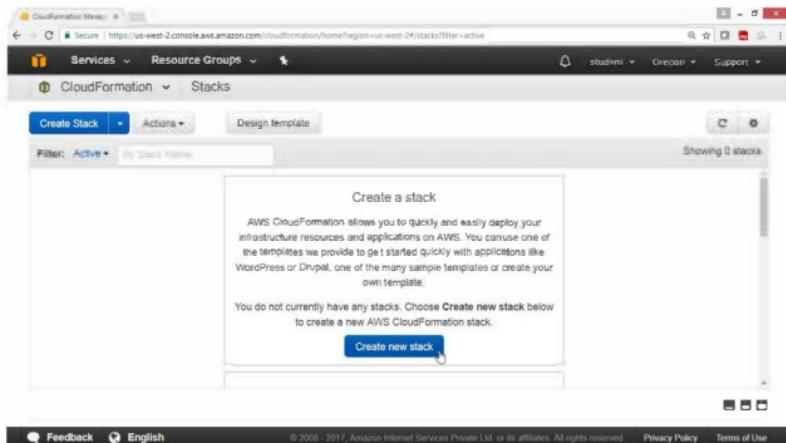
Click on CloudFormation service

The screenshot shows the AWS Management Console with the URL <https://console.aws.amazon.com/cloudformation/home?region=us-east-1>. The top navigation bar includes 'student', 'Gregoire', and 'Support'. The main menu on the left lists services under 'Amazon Web Services' such as Compute (EC2, Lambda, Batch), Storage (S3, EFS, Glacier, Storage Gateway), and Management Tools (CloudWatch, CloudFormation, CloudTrail, Config). The 'CloudFormation' service is selected and highlighted with a yellow box. The right side of the screen displays the 'CloudFormation' service details, including sections for 'Create a New Stack', 'Edit Stack', 'Logs', and 'Outputs'. A 'Resource Groups' sidebar on the right provides information about resource groups and links to 'Create a Group' and 'Tag Editor'.

## 2) To create a new stack

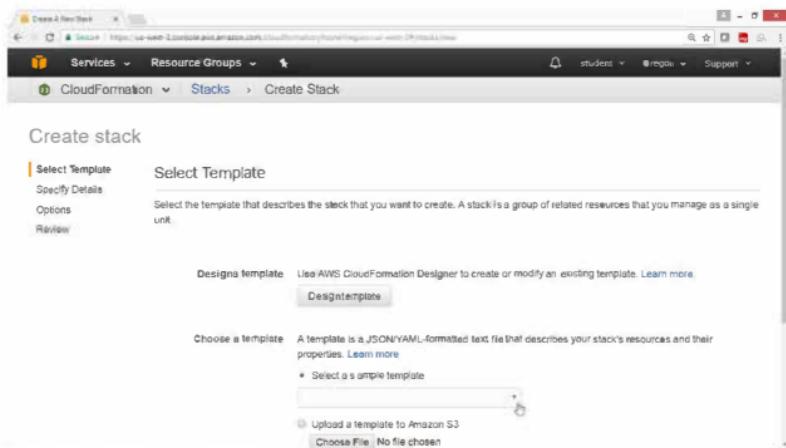
On “Create Stack”, page

Click on “Create New Stack” button



Under “Choose a template”

Select “Select a sample template”

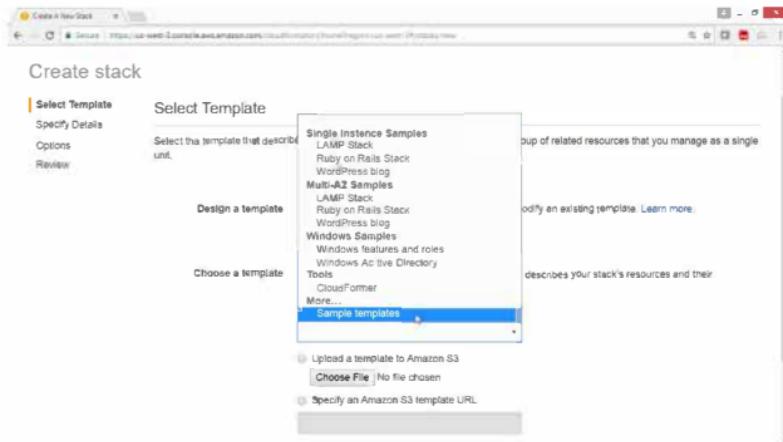


**On Create stack page**

Select the “**Sample template**”

In the Drop Down box

Choose “**Sample templates**” option



On "AWS CloudFormation Templates" page

Click on "sample templates"

The screenshot shows the AWS CloudFormation Templates page. At the top, there's a navigation bar with links for 'Create A New Stack', 'AWS CloudFormation Tr...', 'Products', 'Solutions', 'More', 'English', 'My Account', and a 'Sign In to the Console' button. The main title is 'AWS CloudFormation Templates'. Below it, a sub-section title 'Templates & Snippets by AWS Service' lists three items: 'Browse sample templates by AWS service.', 'Browse template snippets by AWS service.', and 'Refer to our developer documentation for more examples and references.' To the right, under 'Reference Implementations', it says 'AWS Quick Start offers AWS CloudFormation templates and detailed deployment guides for popular IT workloads such as Microsoft Windows Server and SAP HANA.' Further down, 'Application Frameworks' is listed with a note about demonstrating how to use AWS CloudFormation to provision popular frameworks like LAMP and Ruby on Rails. On the far right, 'Sample Solutions' is mentioned with a note that AWS does not support or maintain the applications in these examples. The URL in the browser is https://aws.amazon.com/cloudformation/aws-cloudformation-templates/.

## Under Topics

Select Amazon EC2

The screenshot shows the AWS CloudFormation User Guide for API Version 2010-05-15. The left sidebar has a 'Documentation - This Guide' dropdown and a 'Search' field. Under 'Topics', there are several sections: 'What is AWS CloudFormation?', 'Setting Up', 'Getting Started', 'Best Practices', 'Continuous Delivery', 'Working with Stacks', 'Working with Templates', and 'Working with AWS CloudFormation Stacks'. The 'Amazon EC2' section is expanded, showing its sub-topics: Auto Scaling, AWS Config, Amazon DynamoDB, AWS Lambda, Amazon ElastiCache, AWS elastic Beanstalk, Elastic Load Balancing, AWS Identity and Access Management, AWS OpsWorks, Amazon Relational Database Service, Amazon Redshift, Amazon Route 53, Amazon Simple Storage Service, and Amazon Simple Queue Service. At the bottom, there are links for 'Terms of Use | © 2017, Amazon Web Services, Inc. or its affiliates. All rights reserved.', 'Did this page help you? Yes | No | Feedback', and a footer note: 'https://aws.amazon.com/AWSCloudFormation/UserGuide/service-archives.html#version-2010-05-15.html#2013'.

Select "Amazon EC2 instance in a security group",

Click on "Launch stack"

Template Name	Description	View	View in Designer	Launch
Amazon EC2 instance in a security group	Creates an Amazon EC2 instance in an Amazon EC2 security group.	View	View in Designer	<b>Launch Stack</b>
Amazon EC2 instance with an Elastic IP address	Creates an Amazon EC2 instance and associates an Elastic IP address with the instance.	View	View in Designer	<b>Launch Stack</b>
Amazon EC2 instance with an ephemeral drive	Creates an Amazon EC2 instance with an ephemeral drive by using a block device mapping.	View	View in Designer	<b>Launch Stack</b>

### Amazon ElastiCache

Template Name	Description	View	View in Designer	Launch
ElastiCache	Create a new ElastiCache cache cluster with this template.	View	View in Designer	<b>Launch Stack</b>

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In option “Specify an Amazon S3 template URL”

Verify template is loaded in S3

Click on **Next** button

The screenshot shows the AWS CloudFormation 'Create a New Stack' wizard, Step 2: Set Template Source. The URL 'https://s3-us-west-2.amazonaws.com/cloudform...' is entered in the 'Specify an Amazon S3 template URL' field. The 'Next' button is highlighted in blue.

On Specific Details page

Key Name → "key\*.pem"

Click on Next button

Stack name: EC2SecurityGroupSample

Parameters

InstanceType	t2.micro	WebServer EC2 instance type
KeyName	25july2017maorg	Name of an existing EC2 KeyPair to enable SSH access to the instance
SSHLocation	0.0.0.0	The IP address range that can be used to SSH to the EC2 instances

Cancel Previous Next

Under Options Tag, provide values for

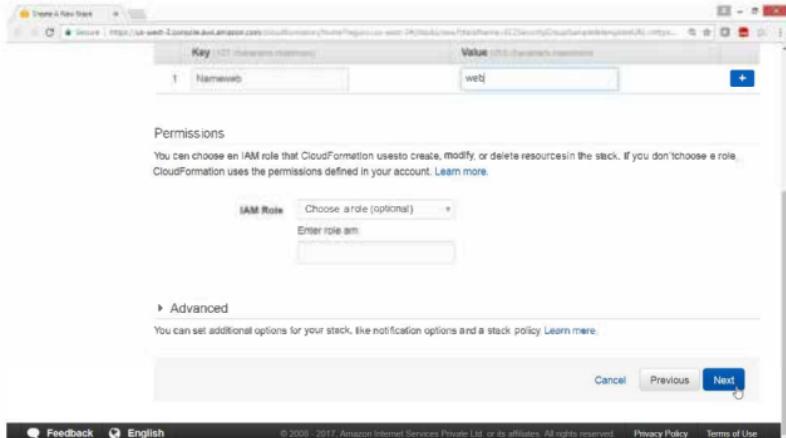
Key → Nameweb

Value → Web

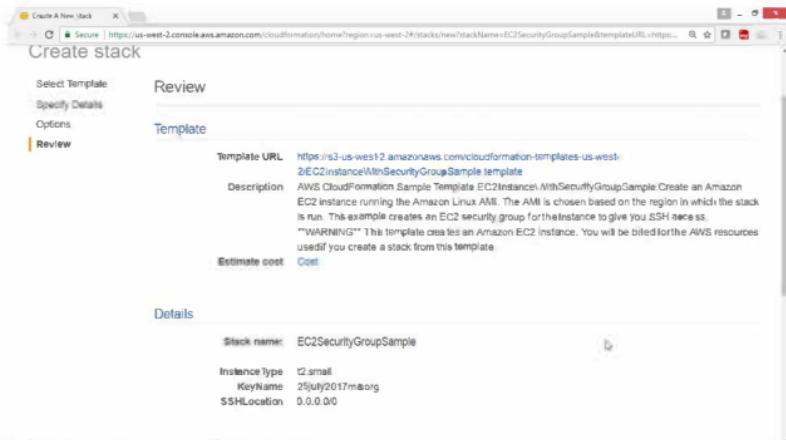
Drag Down

The screenshot shows the AWS CloudFormation 'Create stack' wizard at the 'Options' step. On the left, there's a vertical navigation bar with tabs: 'Select Template', 'Specify Details', 'options' (which is selected), and 'Review'. The main area has a title 'Create stack' and a sub-section 'Options'. Under 'Options', there's a 'Tags' section with a note: 'You can specify tags (key-value pairs) for resources in your stack. You can add up to 50 unique key-value pairs for each stack.' Below this is a table with two rows. The first row has 'Key' set to 'Nameweb' and 'Value' set to 'Web'. A blue '+' button is to the right of the table. Below the table is a 'Permissions' section with a note: 'You can choose an IAM role that CloudFormation uses to create, modify, or delete resources in the stack. If you don't choose a role, CloudFormation uses the permissions defined in your account.' There's also an 'IAM Role' dropdown set to 'Choose a role (optional)' and a text input field for 'Enter role arn'.

**Click on Next**



**Review , check the summary**



Click Create button

The screenshot shows the 'Create A New Stack' wizard. The stack name is 'EC2SecurityGroupSample'. Configuration details include:

- Instance type: t2.small
- Keyname: 25July2017msorg
- SSHLocation: 0.0.0.0

Options and Tags sections are present. Under Advanced, there are notification and timeout settings, and a 'Rollback on failure: Yes' option. At the bottom right are 'Cancel', 'Previous', and 'Create' buttons.

Check the status

Cloudformation is in progress state.

The screenshot shows the 'CloudFormation Home' page with the 'Stacks' tab selected. A modal window titled 'Introducing StackSets' provides information about StackSets. The main table lists the 'EC2SecurityGroupSample' stack, which is currently in the 'CREATE\_IN\_PROGRESS' state.

Stack Name	Created Time	Status	Description
EC2SecurityGroupSample	2017-07-27 19:10:47 UTC+0550	CREATE_IN_PROGRESS	AWS CloudFormation Sample Template EC2Instan

## Verify

Status is Create\_Complete

The screenshot shows the AWS CloudFormation console interface. At the top, there is a header bar with the URL <https://us-west-2.console.aws.amazon.com/cloudformation/home?region=us-west-2#stacks?tab=events&filter=active>. Below the header, a message states: "AWS StackSets is a container for a set of AWS CloudFormation stacks and allows you to create stacks across multiple AWS Accounts and AWS Regions. Open the StackSets console to get started." The main content area displays a table of stacks. The table has columns: Stack Name, Created Time, Status, and Description. There is one row visible in the table:

Stack Name	Created Time	Status	Description
EC2SecurityGroupSample	2017-07-27 19:10:47 UTC+0550	CREATE_COMPLETE	AWS CloudFormation Sample Template EC2Insten

At the bottom of the page, there are links for Feedback, English, and footer text: © 2006 - 2017, Amazon Internet Services Private Ltd. or its affiliates. All rights reserved. Privacy Policy Terms of Use.

Go to EC2 service

Check the instances

An instance with the Name "web" is launched

The screenshot shows the AWS Management Console interface for the EC2 service. The left sidebar has 'Instances' selected under 'Compute'. The main content area displays a table of running instances:

Name	Instance ID	Instance Type	Availability Zone	Instance State	Status Checks	Alarm
web	i-0668c160a0f3da141	t2.micro	us-west-2c	running	2/2 checks	None
web1	i-081e4415fc90525	t2.micro	us-west-2a	staged	0/0 checks	OK

Below the table, a detailed view for the 'web' instance is shown:

Instance: i-0668c160a0f3da141 (web)    Public DNS: ec2-34-212-227-98.us-west-2.compute.amazonaws.com

Description	Status Checks	Monitoring	Tags
Instance ID: i-0668c160a0f3da141	Public DNS (IPv4): ec2-34-212-227-98.us-west-2.compute.amazonaws.com	IPv4 Public IP: 34.212.227.98	
Instance state: running			

At the bottom, there are links for Feedback, English, Privacy Policy, and Terms of Use.

### 3) To remove the Instances created by CloudFormation

From AWS console

Select services **Management tools**

Select **CloudFormation**

Select the Stack Name check box

Introducing StackSets  
AWS StackSet is a container for a set of AWS CloudFormation stacks and allows you to create stacks across multiple AWS Accounts and AWS Regions. Open the [StackSets](#) console to get started.

Stack Name	Created Time	Status	Description
EC2SecurityGroupSample	2017-07-27 19:10:47 UTC+0550	CREATE_COMPLETE	AWS CloudFormation Sample Template EC2Inaten

Overview   Outputs   Resources   Events   Template   Parameters   Tags   Stack Policy   Change Sets

Stack name: EC2SecurityGroupSample

Click on **Actions** button

Select "Delete stack"

The screenshot shows the AWS CloudFormation Manager interface. At the top, there's a navigation bar with tabs like 'Create Stack', 'Actions', and 'Design template'. Below it, a search bar and a filter dropdown set to 'Active' are visible. A table lists a single stack: 'EC2SecurityGroupSample' with ID 'arn:aws:cloudformation:us-west-2:stack/EC2SecurityGroupSample/31f376a0-72d1-11e7-a2e6-503f20f2ad1e'. The status is 'CREATE\_COMPLETE' and the description is 'AWS CloudFormation Sample Template EC2Instan...'. A context menu is open over this stack, with the 'Delete Stack' option highlighted.

Click on "Yes, Delete"

This screenshot shows the same AWS CloudFormation Manager interface after selecting 'Delete Stack'. A modal dialog box titled 'Delete Stack' is centered on the screen. It contains a message asking if the user is sure they want to delete the stack 'EC2SecurityGroupSample'. Below the message, it states that deleting a stack deletes all stack resources. At the bottom of the dialog are two buttons: 'Cancel' and 'Yes, Delete'. The 'Yes, Delete' button is highlighted with a red border. The background of the main interface shows the same stack details as the previous screenshot.

## Verify

Deletion is in progress

The screenshot shows the AWS CloudFormation console with the URL <https://us-west-2.console.aws.amazon.com/cloudformation/home?region=us-west-2#stacks>. The page displays a table of stacks. One stack, 'EC2SecurityGroupSample', is listed with the status 'DELETE\_IN\_PROGRESS'. The table columns include Stack Name, Created Time, Status, and Description. The 'Status' column for the sample stack is highlighted in yellow.

Stack Name	Created Time	Status	Description
EC2SecurityGroupSample	2017-07-27 19:10:47 UTC-0550	DELETE_IN_PROGRESS	AWS CloudFormation Sample Template EC2instan

## Verification

After deletion again starting screen of CloudFormation is displayed

The screenshot shows the AWS CloudFormation console with the URL <https://us-west-2.console.aws.amazon.com/cloudformation/home?region=us-west-2#stacks>. The page displays a 'Create a stack' wizard. It includes a descriptive text about AWS CloudFormation, a note that no stacks are currently present, and a 'Create new stack' button.

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. Choose Create new stack below to create a new AWS CloudFormation stack.

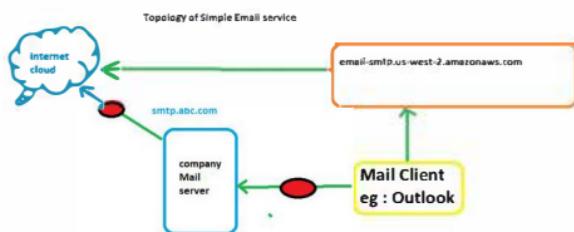
Create new stack

## Lab 18: To Configure Amazon Simple E-Mail Service (SES)

### Objective

TO configure and use Simple Email Service (SES)

### Topology



### PRE-REQUISITES

User should have AWS account, or IAM user with AmazonSESFullAccess

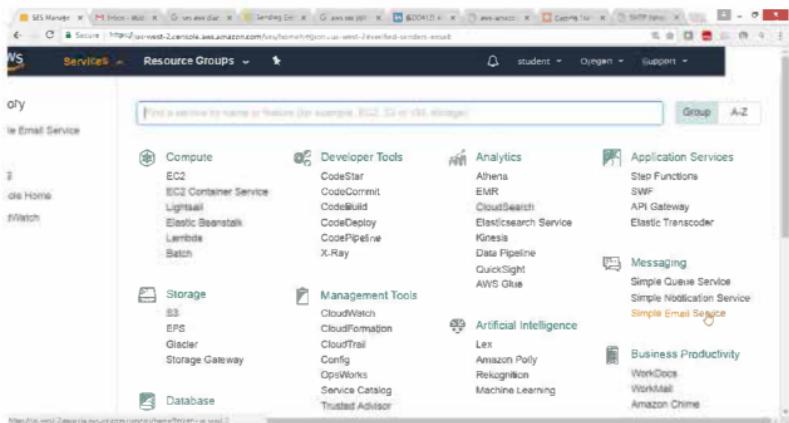
### To Configure SES with following task:

- Provide valid Mail Account
- Verify Email Address
- Configure SMTP settings
- Download the credentials, keep at safe place
- Configure Mail client for eg Outlook

## To use Amazon Simple E-Mail Service SES

### 1. Create SES account

From the AWS console select service “Messaging”, choose SES service



From SES Home,panel

select "Email Addresses"

The screenshot shows the AWS Simple Email Service (SES) home page. The left sidebar has a navigation menu with options like Identity Management, Domains, Email Addresses (which is highlighted in orange), Email Sending, etc. The main content area features the SES logo and a brief introduction: "Amazon Simple Email Service enables you to send and receive email using a reliable and scalable email platform." Below the text are three icons: two people with a plus sign, a computer monitor with an envelope, and a gear. At the bottom of the page, there are links for Feedback, English (US), and Terms of Use.

Select "Verify a New Email Address" button

The screenshot shows the "Verify a New Email Address" dialog box overlaid on the SES home page. The dialog has a search bar labeled "Search email addresses" and a dropdown menu "All identities". Below the search bar, it says "Email Address Identities" and "Status". A message at the top of the dialog states: "You have not verified any email addresses. To verify an email address, click the Verify a New Email Address button above." The background of the dialog is white, while the rest of the page is dark grey.

In “Verify a New Email Address”, wizard provide email id

click “Verify This Email Address” button



**2. Now login to your companies mail account, to confirm your email address**

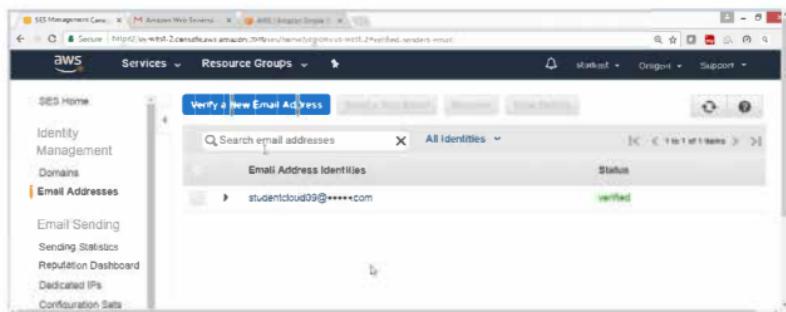
Click on “**confirm the address using this URL. This link expires 24 hours after your original verification request.**”

Go back to your Amazon Console, select **SES** service

Under SES home dashboard select “**Email Address**”

Check your email is **verified**

**Note:** If mail is not received check in spam box, you should have a valid email ID.



### 3. To configure SMTP settings

From SES Home panel

Select “**SMTP Setting**”

Click on “**Create My SMTP Credentials**” button

The screenshot shows the AWS SES Management Console interface. The left sidebar has a navigation menu with options like SES Home, Identity Management, Domains, Email Addresses, Email Sending, Sending Statistics, Reputation Dashboard, Dedicated IPs, Configuration Sets, and the **SMTP Settings** tab, which is currently selected. The main content area is titled "Using SMTP to Send Email with Amazon SES". It contains instructions about sending email through Amazon SES using SMTP, mentioning that you can use the same set of SMTP credentials for all regions. It also notes that the SMTP user name and password are different from your AWS access key ID and secret access key. A prominent blue button at the bottom of this section is labeled "Create My SMTP Credentials". Below this button, there is a note about the difference between AWS credentials and SMTP credentials.

You can send email through Amazon SES by using a variety of SMTP-enabled programming languages and software. To learn more about the Amazon SES SMTP Interface, [click here](#).

To send email using SMTP, you will need to know the following:

Server Name: `email-smtp.us-west-2.amazonaws.com`  
Port: `25, 465 or 587`  
Use Transport Layer Security (TLS): Yes  
Authentication: Your SMTP credentials - see below

To send email through Amazon SES using SMTP, you must create SMTP credentials. SMTP credentials are a username and password that you use when you connect to the Amazon SES SMTP endpoint. You can use the same set of SMTP credentials for all regions in which Amazon SES is available.

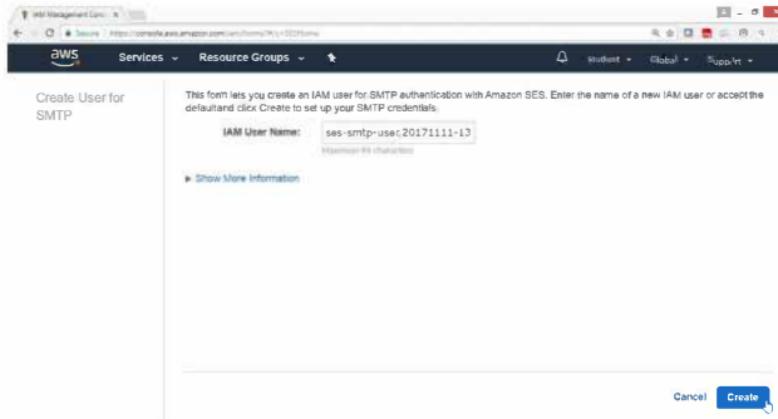
To obtain your SMTP credentials, click the button below. For more information about SMTP credentials, [click here](#).

**Create My SMTP Credentials**

Note: Your SMTP user name and password are not the same as your AWS access key ID and secret access key. Do not attempt to use your AWS credentials to authenticate yourself against the SMTP endpoint. For more information about credential types, [click here](#).

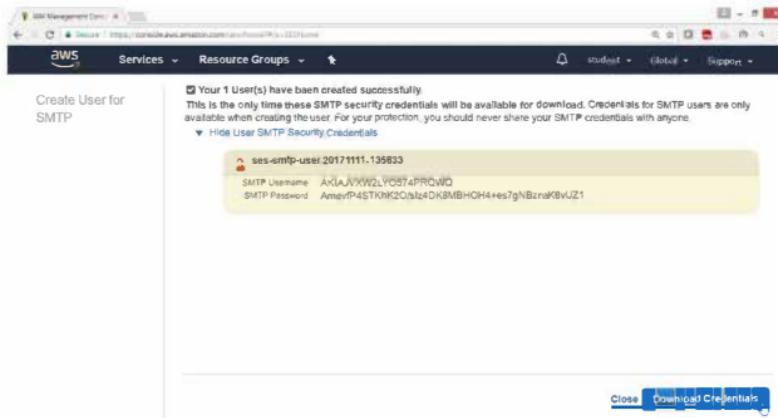
Default IAM user Name will be provided

Click Create button



User SMTP Security Credentials will be displayed

click "Download Credentials" keep at safe place



## Verify credentials

The screenshot shows the AWS Management Console with the URL <https://console.aws.amazon.com/>. The page displays a success message: "Your 1 User(s) have been created successfully". It also includes a note: "This is the only time these SMTP security credentials will be available for download. Credentials for SMTP users are only available when creating the user. For your protection, you should never share your SMTP credentials with anyone." Below this, there is a "Hide User SMTP Security Credentials" link. A yellow callout box highlights the "SMTP Username" field, which contains "AKAUV" and the "SMTP Password" field, which contains "AmavfP4".

## Open Outlook

The screenshot shows the Microsoft Outlook 2016 interface. The ribbon menu is visible at the top with tabs like FILE, HOME, MAIL, SEND/RECEIVE, PUBLISH, and VIEW. The main area shows the inbox for Saturday, November 11, 2017. The inbox contains three items: "Inbox" (1), "Outbox" (0), and "Deleted Items" (0). The ribbon also includes sections for Calendars, Tasks, and Messages.

**Click Add Account**



## Select Manual Setup

Add Account X

**Auto Account Setup**  
Manual setup of an account or connect to other server types.

**E-mail Account**

Your Name:   
Example: Ellen Adams

E-mail Address:   
Example: ellen@contoso.com

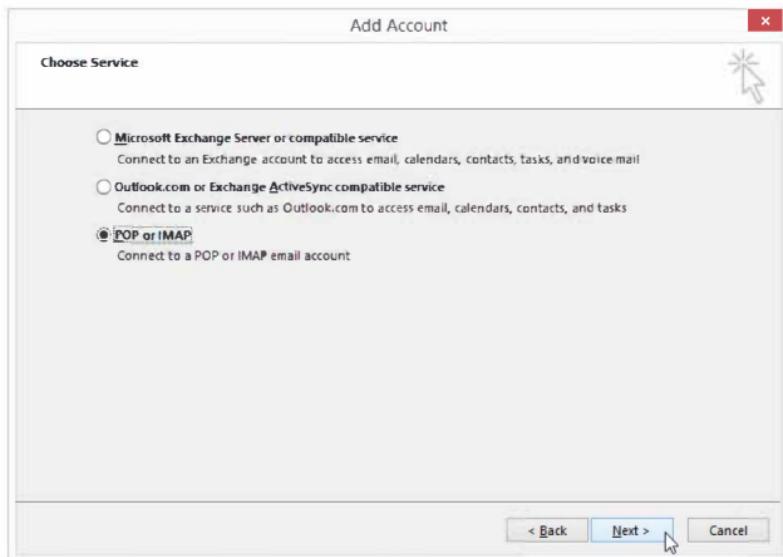
Password:

Retype Password:   
Type the password your internet service provider has given you.

**Manual setup or additional server types**

[< Back](#) [Next >](#) [Cancel](#)

Select POP or IMAP, click on next



Provide following details

Add Account X

**POP and IMAP Account Settings**  
Enter the mail server settings for your account.



**User Information**

Your Name: studentcloud09

Email Address: studentcloud09@\*\*\*.com

Mail to keep offline: All 

**Server Information**

Account Type: IMAP 

Incoming mail server: imap.\*\*\*.com

Outgoing mail server (SMTP): email-smtp.us-west-2.amazonaws.com

**Logon Information**

User Name: studentcloud09@\*\*\*.com

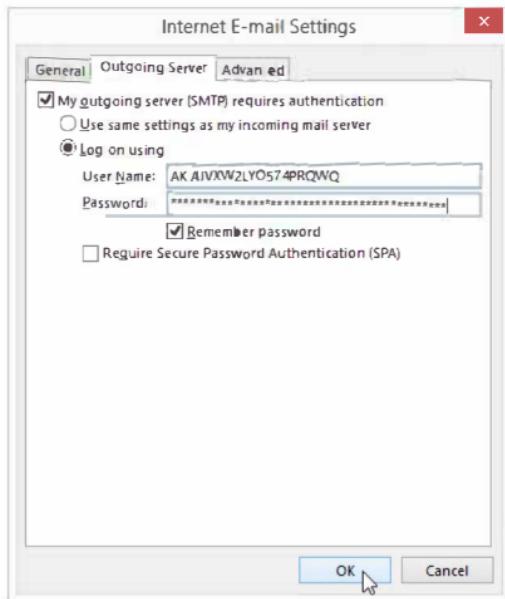
Password: 

Remember password

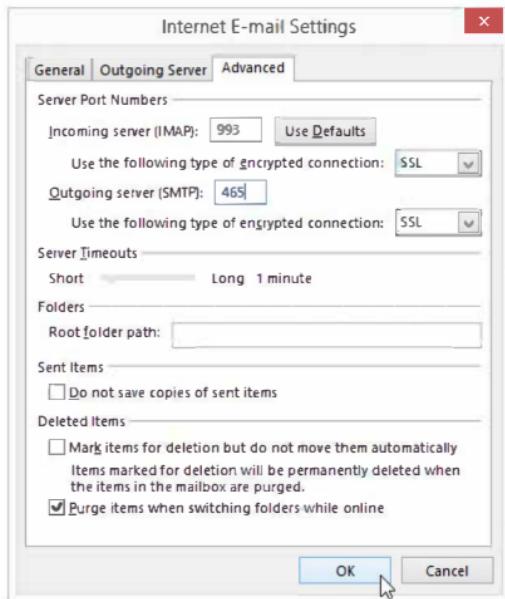
Require logon using Secure Password Authentication (SPA) More Settings ...

< Back Next > Cancel

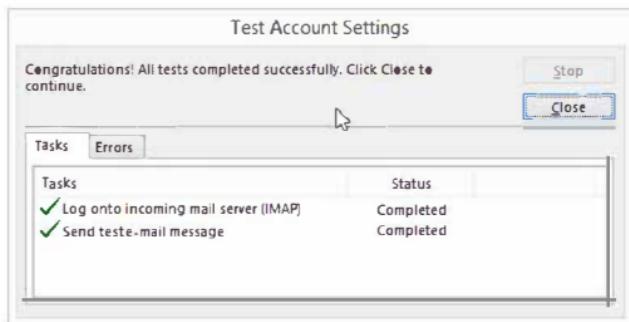
Provide following details in Outgoing Server



Provide following details in Advance



Verify successfully connected

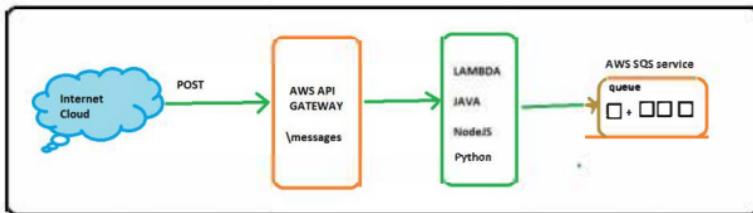


## Lab 19: To Configure Amazon Simple QUEUE Service SQS

### Objective

TO configure and use Simple Queue Service (SQS)

### SQS Topology



### PRE-REQUISITES

User should have AWS account, or IAM user with SQSfullaccess

### To Configure SQS with following task:

Create the Queue

Send the message

Pool the queue

View the message

Delete the message

## 1) To Configure Amazon Simple Queue Service SQS

From the AWS console select service **MessagingService**

Select Simple Queue service

The screenshot shows the AWS Management Console Services page. The search bar at the top contains the text "Simple Queue Service". On the left, there are several service categories: Compute (EC2, Lambda, Batch), Developer Tools (CodeStar, CodeCommit, CodeBuild, CodeDeploy, CodePipeline, X-Ray), Analytics (Athena, EMR, CloudSearch, Elasticsearch Service, Kinesis, Data Pipeline, QuickSight, AWS Glue), Application Services (Step Functions, SWF, API Gateway, Elastic Transcoder), Storage (S3, EPS, Glacier, Storage Gateway), Management Tools (CloudWatch, CloudFormation, CloudTrail, Config, OpsWorks, Service Catalog, Trusted Advisor), Artificial Intelligence (Lex, Amazon Polly, Rekognition, Machine Learning), and Messaging (Simple Queue Service, Simple Notification Service, Simple Email Service). The "Simple Queue Service" link is highlighted with a yellow box.

Click on **Get started on**

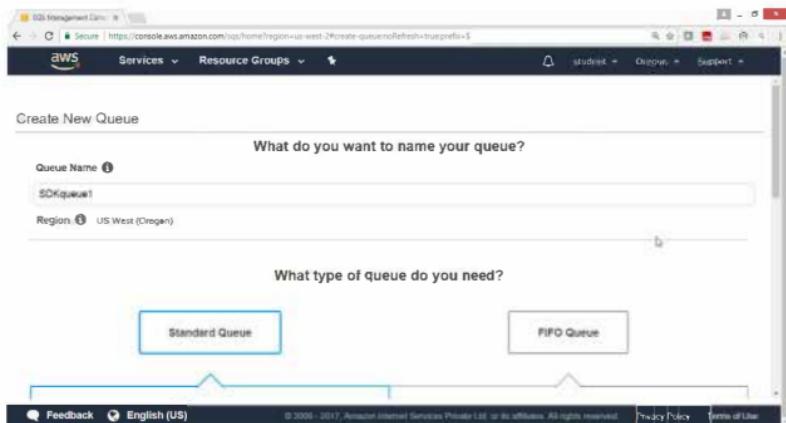
The screenshot shows the AWS Simple Queue Service (SQS) landing page. At the top center is a large yellow 3D cube icon. Below it, the text "Simple Queue Service" is displayed. A blue "Get Started Now" button is prominently featured. Below the button, the text "Amazon Simple Queue Service (SQS) is a reliable, scalable, fully-managed message queuing service." is shown. A "Learn more about AWS SQS" link is also present. At the bottom of the page are three decorative icons: a house-like structure with a plus sign, a bar chart, and a person with speech bubbles. The footer includes links for "Feedback", "English (US)", "2006-2017, Amazon Web Services Inc. or its affiliates. All rights reserved.", "Privacy", and "Terms of Use".

In "Create New Queue" wizard

Provide following values

Queue Name	=> SDKqueue1
Region	=> US West ( Oregon )

leave the remaining values as default



Click on "Quick-Create Queue" button

Send data between applications when the throughput is important, for example:

- Decouple live user requests from intensive background work, let users upload media while resizing or encoding it.
- Allocate tasks to multiple worker nodes: process a high number of credit card validation requests.
- Batch messages for future processing: schedule multiple entries to be added to a database.

Send data between applications when the order of events is important, for example:

- Ensure that user-entered commands are executed in the right order.
- Display the correct product price by sending price modifications in the right order.
- Prevent a student from enrolling in a course before registering for an account.

For more information, see the [Amazon SQS FAQs](#) and the [Amazon SQS Developer Guide](#).

To create a new queue, choose Quick-Create Queue. To configure your queue's parameters, choose Configure Queue.

Cancel    Configure Queue    **Next Step >**

### Verify Queue is Created

1 SQS Queue selected

Name	Queue Type	Content-Based Deduplication	Messages Available	Messages in Flight	Created
SQSqueue1	Standard	N/A	0	0	2017-11-12 18:42:48 GMT+05:30

**Details**    Permissions    Redrive Policy    Monitoring    Tags    Encryption

Name: SQSqueue1  
URL: <https://sqs.us-west-2.amazonaws.com/023251683217/SQStest1>  
ARN: arn:aws:sqs:us-west-2:523251683217:SQStest1  
Created: 2017-11-12 18:42:48 GMT+05:30  
Last Updated: 2017-11-12 18:42:48 GMT+05:30

Default Visibility Timeout: 90 seconds  
Message Retention Period: 4 days  
Maximum Message Size: 256 kB  
Receive Message Wait Time: 0 seconds  
Messages Available: 0

Permissions Policy: [View Details](#)

Select the Queue

Drop down “Queue Action” button

select “Send message”

The screenshot shows the AWS Management Console interface for the Simple Queue Service (SQS). At the top, there's a navigation bar with tabs like 'AWS Services', 'Resource Groups', and 'Support'. Below the navigation bar, a search bar and a user dropdown are visible. The main area is titled 'SQS Management Console' and shows a list of queues. One queue, 'SDKqueue1', is selected. A dropdown menu is open over this queue, with the option 'Send a Message' highlighted. Other options in the dropdown include 'View/Delete Messages', 'Configure Queue', 'Add a Permission', 'Purge Queue', 'Delete Queue', and 'Subscribe Queue to SNS Topic'. To the right of the queue list, there are filters for 'Name', 'ARN', and 'Created', along with counters for 'Messages Available', 'Messages in Flight', and 'Created'. Below the queue list, a summary section displays details for the selected queue: Name (SDKqueue1), URL (https://sqs.us-west-2.amazonaws.com/523251683217/SDKqueue1), ARN (arn:aws:sqs:us-west-2:523251683217:SDKqueue1), Created (2017-11-12 18:42:48 GMT+05:30), Last Updated (2017-11-12 18:42:48 GMT+05:30), and a Default Visibility Timeout of 30 seconds. It also shows a Message Retention Period of 4 days, a Maximum Message Size of 256 KB, and a Receive Message Wait Time of 0 seconds. The 'Messages Available (Visible)' counter is shown as 0. At the bottom of the page, there are links for 'Feedback', 'English (US)', and 'AWS Support', along with a copyright notice from 2017.

From "Send a Message to SDKqueue" Wizard

In Message Body type the Message

**Note:** Message size should not be more than 64K

click on "Send Message" then elect close



## 2) To View the message

Select the Queue

Drop down Queue Action button

Select the option “View/Delete Message”

The screenshot shows the AWS Management Console interface for an SQS queue named 'SDKqueue1'. In the top navigation bar, the 'Services' dropdown is open, and 'SQS' is selected. Below the navigation bar, there's a 'Queue Actions' dropdown menu. The 'View/Delete Messages' option is highlighted with a mouse cursor. The main content area displays the queue details, including its name, URL, ARN, creation date, and last update. It also shows the current number of messages available (0), the visibility timeout (30 seconds), and the message retention period (4 days). At the bottom of the page, there are links for feedback, language selection (English (US)), copyright information, and terms of use.

1 SQS Queue selected

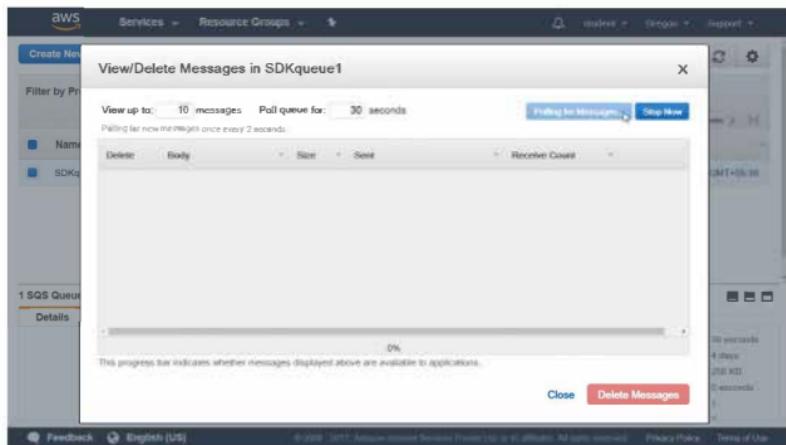
Details Permissions Redrive Policy Monitoring Tags Encryption

Name: SDKqueue1  
URL: https://sqs.us-west-2.amazonaws.com/523251683217/SDKqueue1  
ARN: arn:aws:sqs:us-west-2:523251683217:SDKqueue1  
Created: 2017-11-12 18:42:48 GMT+05:30  
Last Updated: 2017-11-12 18:42:48 GMT+05:30

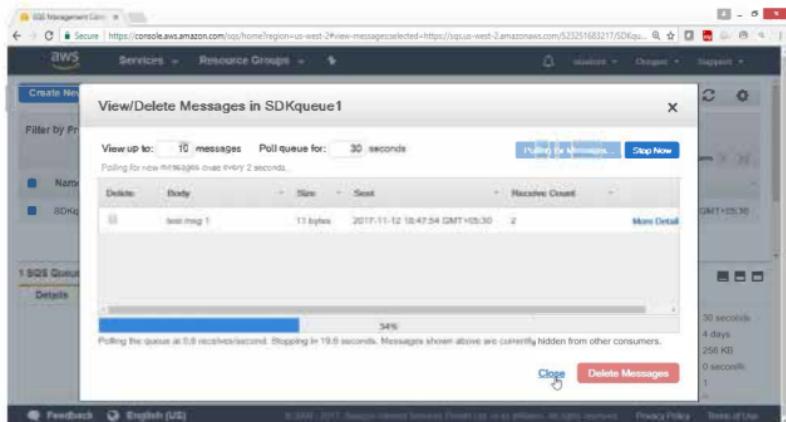
Default Visibility Timeout: 30 seconds  
Message Retention Period: 4 days  
Maximum Message Size: 256 KB  
Receive Message Wait Time: 0 seconds  
Messages Available (Visible): 0

Feedback English (US) © 2006–2017, Amazon Web Services, Inc. or its affiliates. All rights reserved. Page 1 / 4 Terms of Use

Click "Start Polling for Message"



Verify message is in the queue



### 3) To delete the message

Select the Queue

Drop Down Queue Action

Select "Delete Message"

The screenshot shows the AWS Management Console with the SQS service selected. A queue named 'SDKqueue1' is listed. A context menu is open over the queue, with the 'Queue Actions' option highlighted. The menu includes options like 'Send a Message', 'View/Delete Messages', 'Configure Queue', 'Add a Permission', 'Purge Queue', and 'Delete Queue'. Below the menu, the queue details are shown: Name: SDKqueue1, URL: https://sqs.us-west-2.amazonaws.com/523251683217/SDKqueue1, ARN: arn:aws:sqs:us-west-2:523251683217:SDKqueue1, Created: 2017-11-12 18:42:48 GMT+05:30, Last Updated: 2017-11-12 18:42:48 GMT+05:30. The queue has 1 message available. At the bottom, there are links for Feedback, English (US), and a footer with terms like 'Default Visibility Timeout: 30 seconds', 'Message Retention Period: 4 days', 'Maximum Message Size: 256 KB', 'Receive Message Wait Time: 0 seconds', and 'Messages Available (Visible): 1'.

Confirm

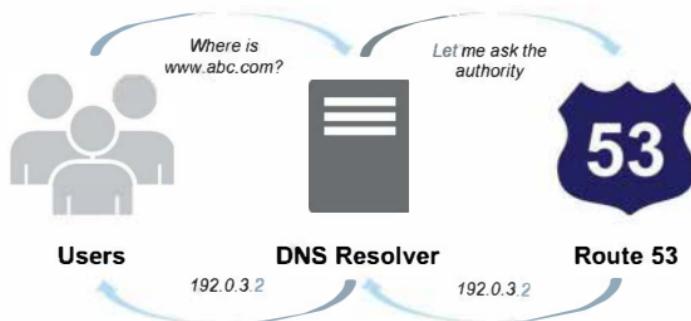
The screenshot shows a confirmation dialog box titled 'Delete Queues'. It asks, 'Are you sure you want to delete the following queue, and any messages left in it?'. A red bullet point lists 'SDKqueue1 - contains 1 message.'. At the bottom right are two buttons: 'Cancel' and a red-bordered 'Yes, Delete Queue' button with a cursor pointing to it. The footer of the dialog box includes a link to 'AWS Privacy Statement'.

## Lab 20: To Configure Amazon Route 53

### OBJECTIVE

To configure and use AWS Route53 service

### TOPOLOGY



### PRE-REQUISITES

User should have AWS account, or IAM user with AmazonRoute53FullAccess

By default AWS does not provides to Register Domain Name with AWS

You should have a registered domain name one with your ISP

### To Configure Route53 with following task:

To Transfer existing DNS service from your ISP to Amazon Route 53

Creating record set

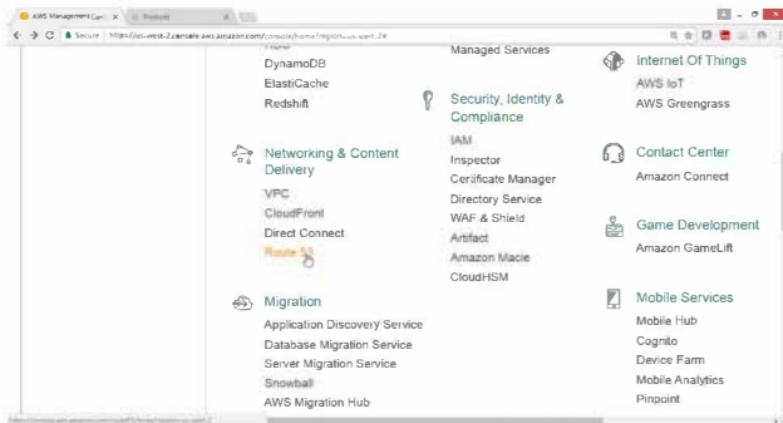
Creating CNAME record set

## **Step-1: Configuration of Route53 for your Domain Name**

Open AWS console

Select "**Networking & Content Delivery**"

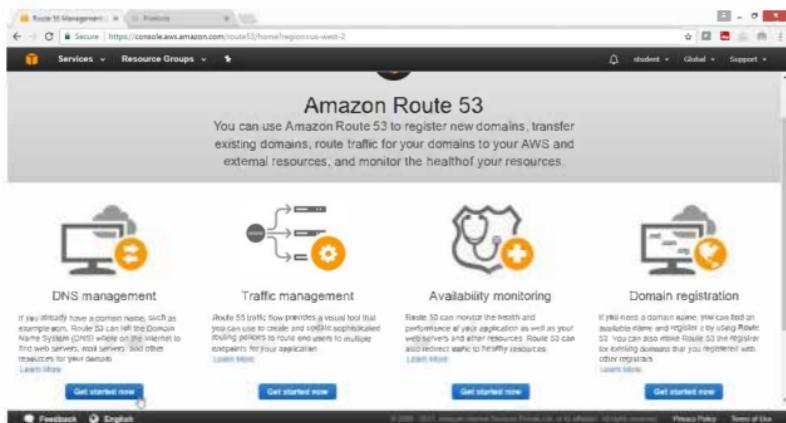
Click on **Route 53** services



Route53 DashBoard wizard opens

Under DNS management

Click on "Get started Now" button



Click on "Created Hosted Zone" button

The screenshot shows the AWS Route 53 Management console. The left sidebar has 'Hosted zones' selected. The main area has a large icon of a computer monitor with a gear. Below it, text explains what Route 53 does. A blue 'Create Hosted Zone' button is at the bottom. A cursor arrow points to this button.

Again Click on Create Hosted Zone button

The screenshot shows the same AWS Route 53 Management console interface. The 'Create Hosted Zone' button is highlighted with a blue box and a cursor arrow pointing to it.

Under "Created Hosted Zone", wizard

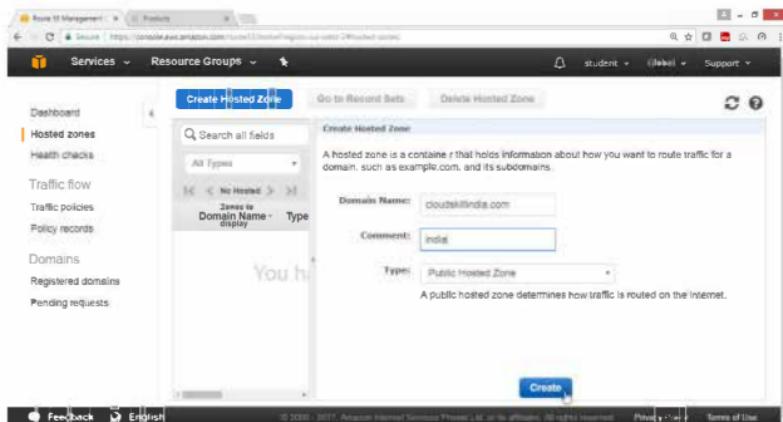
On right side panel provide following values

For Domain Name: → cloudskillindia.com

For Comment → india

For Type → Public Hosted Zone

Click on **Create** button



Now the list of AWS NS records will appear

Now add all AWS NS record to your local DNS NS record ( godaddy.com )

The screenshot shows the AWS Route 53 Management console. In the top navigation bar, the URL is https://console.aws.amazon.com/route53/home?region=us-west-2#resource-record-sets/Z3BZSDZM6NPV. The main interface displays a list of NS records for the domain 'cloudskillindia.com'. One record is selected, showing its details: Name = 'cloudskillindia.com.', Type = 'NS', Value = 'ns-140.awsdns-17.com., ns-1585.awsdns-03.co.uk., ns-726.awsdns-26.net., ns-1286.awsdns-32.org.'. To the right, a modal window titled 'Edit Record Set' is open, showing the same record details. The 'TTL (Seconds)' dropdown is set to '10000'. The 'Values' field contains the same four NS values. Below the modal, there is a 'Save Record Set' button.

**Step-2:** Now copy these DNS NS record in godaddy.com for cloudskillindia.com domain.

ns-140.awsdns-17.com

ns-1565.awsdns-03.co.uk

ns-726.awsdns-26.net

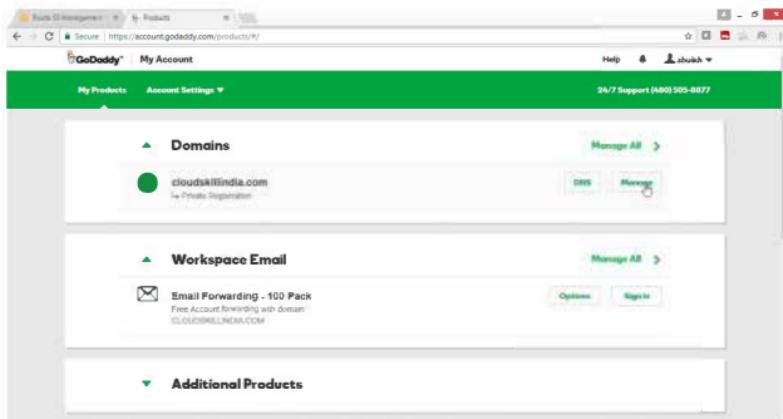
ns-1286.awsdns-32.org

Open the browser

Go to godaddy.com site

Login and select your domain name

Click on **Manage**



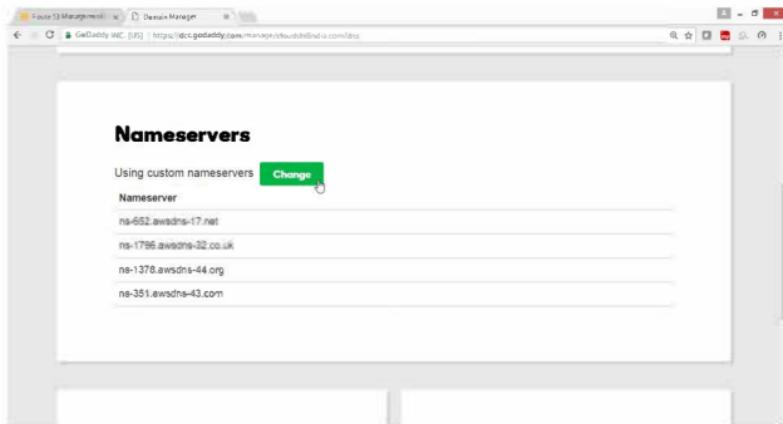
Drag Down

Click on **Manage DNS**

The screenshot shows a web browser window for GoDaddy's Domain Manager. The URL is https://dcx.godaddy.com/manage/CLOUDS01INDIA.COM/settings/tac:comya. The main content area is titled "Additional Settings". It includes a note about automatic renewal, a reminder that renewal will be canceled on 11/28/2017, and a "Turn Auto Renew On" button. There is also a note about locking the domain to prevent unauthorized changes. A "Domain lock" switch is set to "Off" with an "Edit" link. On the right side, there is a sidebar with links: "Manage DNS", "Transfer domain to another GoDaddy account", "Transfer domain away from GoDaddy", "Get authorization code", and "Delete domain". At the bottom of the page, there is a copyright notice: "Copyright © 1999 - 2017 GoDaddy Operating Company, LLC. All Rights Reserved." and a link to "godaddy.com".

Click on change

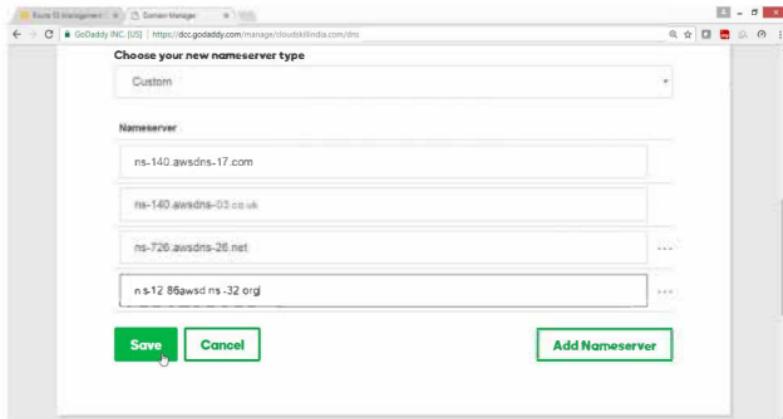
Add latest entries provided by Route53 NS records



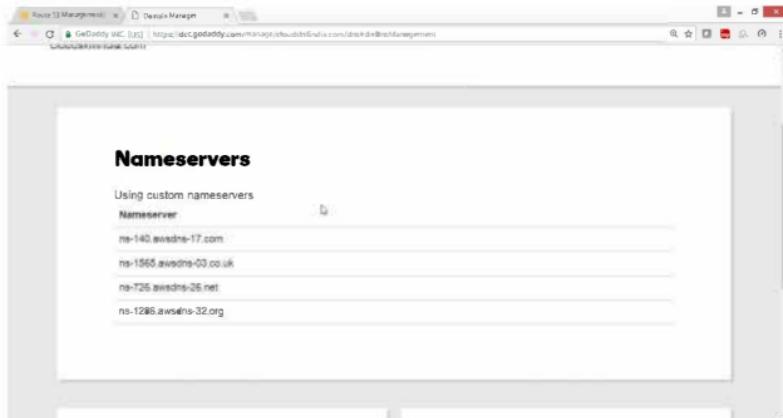
For Choose your new name server → Custom

Replace old NS records with latest NS records

Click on Save button



Verify New names got updated.



### Step-3. Launch an instance Configure it as a webserver.

Launch an Amazon linux Instance

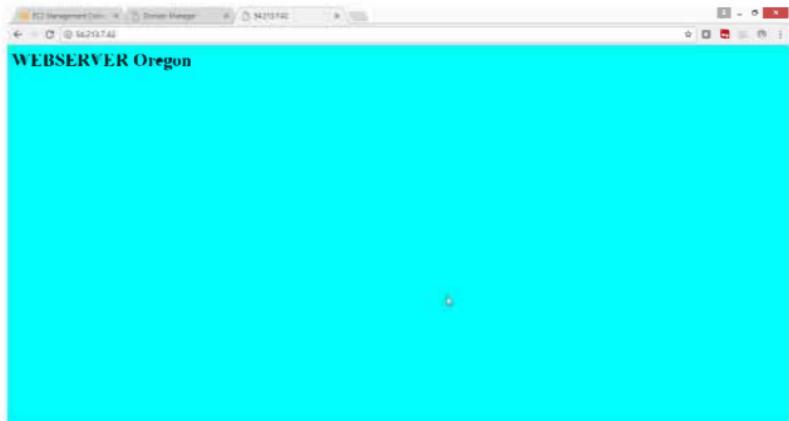
Configure it as a Web Server

Note: Repeat LAB Hosting webserver on linux.

Copy the public IP and type in Browser

The screenshot shows the AWS EC2 Management Console interface. On the left, there's a navigation sidebar with sections for Services (EC2 Dashboard, Events, Tags, Reports, Limits), Instances (Instances, Spot Requests, Reserved Instances, Scheduled Instances, Dedicated Hosts), Images (AMIs, Bundle Tasks), and Elastic Block Store (Volumes). The main area has tabs for Launch Instance, Connect, and Actions. A search bar at the top says "Filter by tags and attributes or search by keyword". Below it, a table lists an instance: "Instance: i-0986868cc14262f6 (linuxvm1)" with "Public DNS: ec2-54-213-7-42.us-west-2.compute.amazonaws.com". The table includes columns for Name, Instance ID, Instance Type, Availability Zone, Instance State, Status Checks, and Alarm. Below the table, there are tabs for Description, Status Checks, Monitoring, and Tags. Under the Status Checks tab, it shows "Instance ID: i-0986868cc14262f6", "Public DNS (IPv4): ec2-54-213-7-42.us-west-2.compute.amazonaws.com", "IPv4 Public IP: 54.213.7.42", and "Private DNS: ip-172-31-45-138.us-west-2.compute.internal". At the bottom, there are links for Feedback, English, and Terms of Use.

Verify Website is accessible



#### **Step-4: To add a A record and CNAME record in Route53**

From **Route 53 Dashboard**

Click on “**Hosted Zones**”

Select **Domain Name**

Click on “**coudskillindia.com**”

The screenshot shows the AWS Route 53 management console. In the top navigation bar, 'Domain Manager' is selected. Below it, the URL is https://console.aws.amazon.com/route53/home?region=us-west-2#hosted-zones. The main interface displays a 'Hosted zones' list with one item: 'coudskillindia.com'. On the right, the 'Hosted Zone Details' pane is open for this domain. It shows the following information:

- Domain Name:** coudskillindia.com.
- Type:** Public Hosted Zone
- Hosted Zone ID:** Z316ZDEZMRNPV
- Record Set Count:** 2
- Comment:** india
- Name Servers:**
  - ns-142.svcs.es.amazonaws.com
  - ns-155.svcs.es.amazonaws.com
  - ns-228.svcs.es.amazonaws.com
  - ns-226.svcs.es.amazonaws.com

A note at the bottom of the details pane states: "Before the Domain Name System will start to route queries for this domain to Route 53 name servers, you must update the name server records either with the current DNS service or with the registrar for the domain, as applicable. For more information, click the ? icon above."

Click on Create Record set button

The screenshot shows the AWS Route 53 Management Console. The left sidebar has 'Hosted zones' selected. The main area shows a 'Record Set Name' search bar and a 'Create Record Set' button. A tooltip says: 'To get started, click Create Record Set button or click an existing record set.' Below the search bar are two checkboxes: 'Aliases Only' and 'Weighted Only'. A table lists two record sets:

Name	Type	Value
cloudskillsindia.com	NS	ns-140.awsdns-17.com. ns-1665.awsdns-23.co.uk. ns-726.awsdns-26.net. ns-1291.awsdns-32.org.
cloudskillsindia.com	SOA	ns-140.awsdns-17.com. awsi...

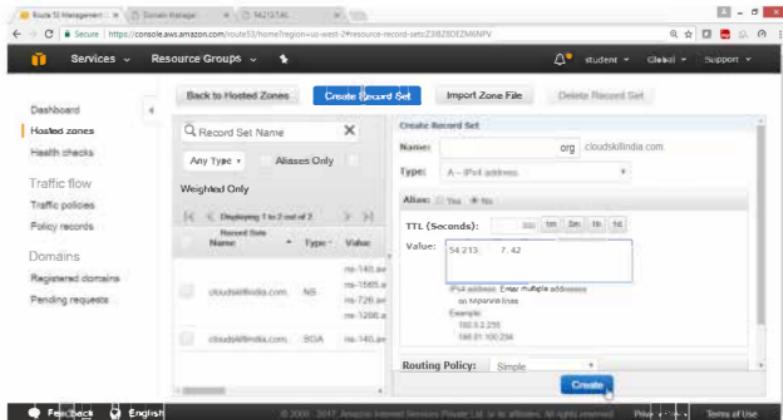
To add A record

On right side Under **Create Record set**

Provide following values

NAME	→ org.cloudskillindia.com
Type	→ A-Ipv4 address
Alias	→ No
Value	=> 54.213.7.42 [ Give your Instance Public IP ]

Click on “Create” button



## Verify the A record got created

The screenshot shows the AWS Route 53 Management console. In the left sidebar, under 'Hosted zones', 'CloudSkillIndia' is selected. On the main page, there's a table of existing records:

Name	Type	Value
cloudskillindia.com.	NS	ns-140.awsdns-17.com. ns-1895.awsdns-03.co.uk. ns-726.awsdns-26.net. ns-1298.awsdns-32.org.
cloudskillindia.com.	SOA	ns-140.awsdns-17.com.
arg.cloudskillindia.com.	A	54.213.7.42

To the right, a modal window titled 'Edit Record Set' is open for a new record:

- Name:** org.cloudskillindia.com
- Type:** A - IPv4 address
- Alias:** No
- TTL (Seconds):** 300
- Value:** 54.213.7.42

Below the modal, a note says: "The domain name that you want to resolve to instead of the value in the Value field." It includes examples: "www.example.com" and "www.example.jp.com".

## Create Alias record

The screenshot shows the AWS Route 53 Management console. In the left sidebar, under 'Hosted zones', 'CloudSkillIndia' is selected. On the main page, there's a table of existing records:

Name	Type	Value
cloudskillindia.com.	NS	ns-140.awsdns-17.com. ns-1895.awsdns-03.co.uk. ns-726.awsdns-26.net. ns-1298.awsdns-32.org.
cloudskillindia.com.	SOA	ns-140.awsdns-17.com.
org.cloudskillindia.com.	A	54.213.7.42

To the right, a modal window titled 'Create Record Set' is open for a new record:

- Name:** www.cloudskillindia.com
- Type:** CNAME - Canonical name
- Alias:** Yes
- TTL (Seconds):** 300
- Value:** org.cloudskillindia.com

Below the modal, a note says: "The domain name that you want to resolve to instead of the value in the Value field." It includes examples: "www.example.com" and "www.example.jp.com".

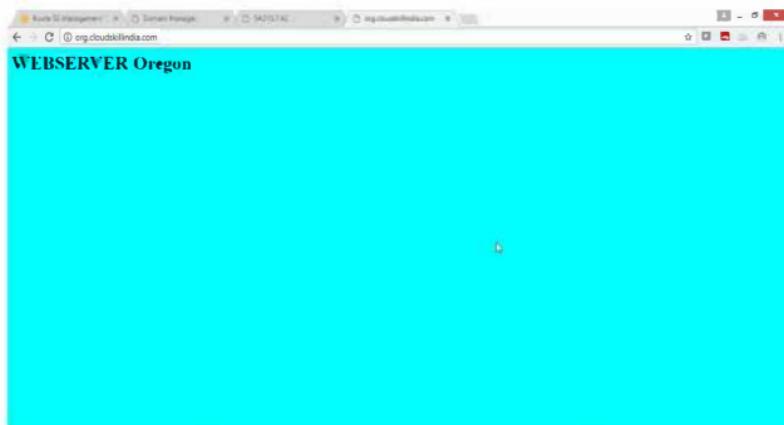
## Verify the CNAME record got created

The screenshot shows the AWS Route 53 Management console. In the left sidebar, under 'Hosted zones', 'CloudSkillIndia.com' is selected. On the right, a 'Create Record Set' dialog is open. The 'Record Set Name' is 'org.cloudskillindia.com.' and the 'Type' is 'CNAME'. The 'Aliases Only' radio button is selected. The table displays the following record sets:

Name	Type	Value
cloudskillindia.com.	NS	ns-140.awsdns-17.com ns-1505.awsdns-03.co.uk ns-720.awsdns-28.net ns-1286.awsdns-32.org
cloudskillindia.com.	SOA	ns-140.awsdns-17.com
org.cloudskillindia.com.	A	54.213.7.42
www.cloudskillindia.com.	CNAME	org.cloudskillindia.com.

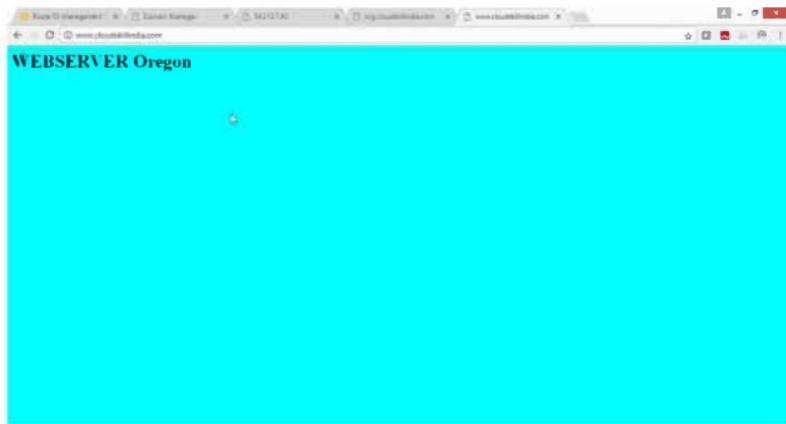
## Verification

Now access the website with A record → [org.cloudskillindia.com](http://org.cloudskillindia.com)



## Verification

Now access the website with CNAME record → [www.cloudskillindia.com](http://www.cloudskillindia.com)

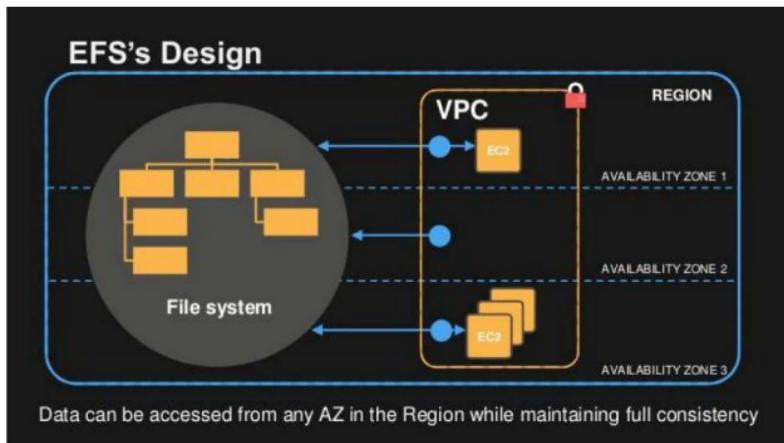


## Lab 21: To configure Amazon EFS Service

### OBJECTIVE

To configure and use AWS EFS Service.

### TOPOLOGY



### PRE-REQUISITES

User should have AWS account, or IAM user with `AmazonElasticFileSystemFullAccess` policy.

To configure EFS with following task.

Create a security group for EFS access

Create Your Amazon EFS File System

Launch Your EC2 Instance

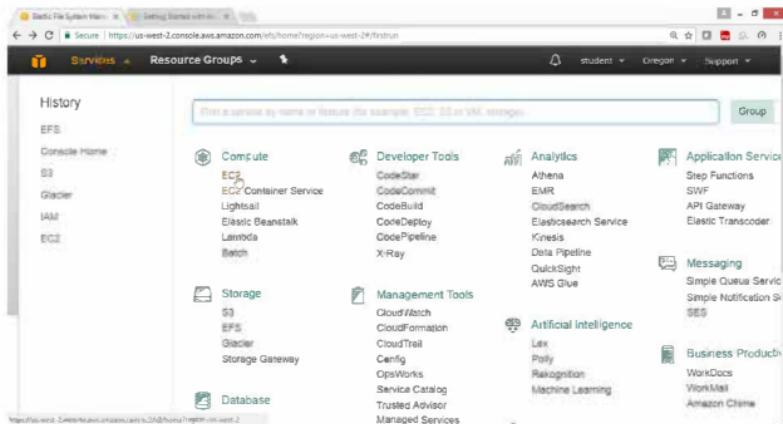
Create Your Amazon EFS File System

Mount the Amazon EFS File System in your linux launch instance

## 1) Create a security group for EFS access

Open AWS Console go for **Ec2 Service**

Click on **EC2**



Under EC2 Dashboard go for Network & Security

Select **Security Groups**

Click on **Create Security Group**

The screenshot shows the AWS EC2 Management Console with the URL <https://us-west-2.console.aws.amazon.com/ec2/v2/home?region=us-west-2#SecurityGroups:create+groupID>. The left sidebar is collapsed, and the main area displays the 'Create Security Group' interface. At the top, there are tabs for 'Create Security Group' and 'Actions'. Below this is a search bar with the placeholder 'Filter by tags and attributes or search by keyword'. A table lists four existing security groups:

Name	Group ID	Group Name	VPC ID	Description
sg-2150285d	launch-wizard-1	vpc-89c341ee	launch-wizard-	
sg-38265c42	launch-wizard-2	vpc-89c341ee	launch-wizard-	
sg-a2344d88	launch-wizard-3	vpc-89c341ee	launch-wizard-	
sg-5011e0a	default	vpc-89c341ee	default VPC -	

Below the table, a message says 'Select a security group above'. At the bottom of the interface, there are 'Feedback' and 'English' buttons.

Under “Create Security Group” wizard

Give Following values

Security group name → NFSsecurity2

Description → NFSrule2

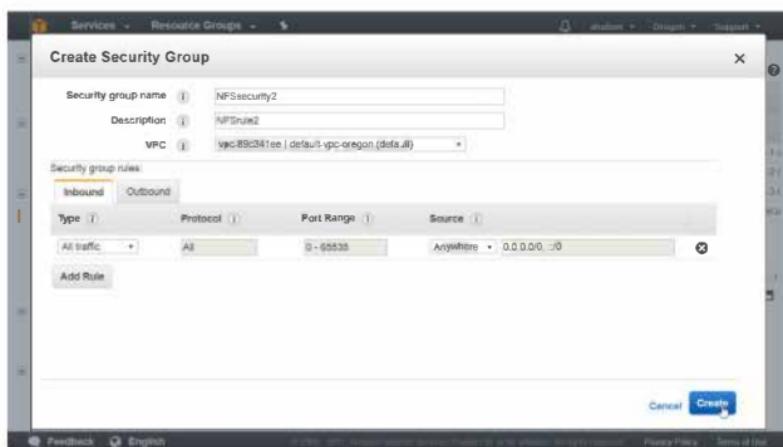
VPC → take default

Select Inbound

Type → All traffic

Source → Anywhere

Click on **Create** button



## 2) Create Your Amazon EFS File System

The screenshot shows the AWS Services dashboard. On the left, there's a sidebar with links like History, EFS, Console Home, S3, Glacier, IAM, and EC2. The main area is titled "Amazon Elastic File System (EFS)" and contains a list of services: Compute (EC2, Lambda, Batch), Developer Tools (CodeStar, CodeCommit, CodeBuild, CodeDeploy, CodePipeline, X-Ray), Analytics (Athena, EMR, CloudSearch, Elasticsearch Service, Kinesis, Data Pipeline, Quicksight, AWS Glue), Application Services (Step Functions, SWF, API Gateway, Elastic Transcoder), Storage (S3, EBS, Glacier, Storage Gateway), Management Tools (CloudWatch, CloudFormation, CloudTrail, Config, OpsWorks, Service Catalog, Trusted Advisor), Artificial Intelligence (Lex, Polly, Rekognition, Machine Learning), Messaging (Simple Queue Service, Simple Notification Service, SES), and Business Productivity (WorkDocs, WorkMail, Amazon Chime). A search bar at the top says "Filter by service or feature (for example: EC2, S3 or VM storage)".

Click on "Create file system" button

The screenshot shows the "Create file system" wizard, Step 1: Set file system parameters. It features a large central circle with a minus sign. Below it, the title "Amazon Elastic File System (EFS)" is displayed, followed by the text "Amazon EFS provides file storage for use with your EC2 instances." A prominent blue "Create file system" button is centered below the text. At the bottom, there's a link "Getting started guide".



## Select Default VPC

Step 1: Configure filesystem access

Step 2: Configure optional settings

Step 3: Review and create

Configure file system access

An Amazon EFS file system is accessed by EC2 instances running inside one of your VPCs. Instances connect to a file system by using a network interface called a mount target. Each mount target has an IP address, which we assign automatically or you can specify.

VPC	vpc-89c341ee - default...	?	
Availability Zone	Subnet	IP address	Security groups

## Remove all Security Groups

Create mount targets

Instances connect to a file system by using mount targets you create. We recommend creating a mount target in each of your VPC's Availability Zones so that EC2 instances across your VPC can access the file system.

Availability Zone	Subnet	IP address	Security groups
us-west-2a	subnet-12f6ce5a (default)	Automatic	sg-a341edb - default
us-west-2b	subnet-8b9e38ec (default)	Automatic	sg-a341edb - default
us-west-2c	subnet-19d0f141 (default)	Automatic	sg-a341edb - default

## Verify that all security groups go deleted

Create mount targets

Instances connect to a file system by using mount targets you create. We recommend creating a mount target in each of your VPC's Availability Zones so that EC2 Instances across your VPC can access the file system.

Availability Zone	Subnet	IP address	Security groups
us-west-2a	subnet-13f60e5a (default)	Automatic	[Select Security]
us-west-2b	subnet-8b9e38ec (default)	Automatic	[Select Security]
us-west-2c	subnet-19d0f141 (default)	Automatic	[Select Security]

Cancel Next Step

Feedback English

Now add NFSsecurity2 group in all A.Z

Create mount targets

Instances connect to a file system by using mount targets you create. We recommend creating a mount target in each of your VPC's Availability Zones so that EC2 Instances across your VPC can access the file system.

Availability Zone	Subnet	IP address	Security groups
us-west-2a	subnet-13f60e5a (default)	Automatic	[Select Security]
us-west-2b	subnet-8b9e38ec (default)	Automatic	[Select Security]
us-west-2c	subnet-19d0f141 (default)	Automatic	[Select Security]

Cancel

Feedback English

Verify that all Security Groups are added.

Click on **Next Step**

#### Create mount targets

Instances connect to a file system by using mount targets you create. We recommend creating a mount target in each of your VPC's Availability Zones so that EC2 Instances across your VPC can access the file system.

Availability Zone	Subnet	IP address	Security groups
us-west-2a	subnet-13f80e5a (default)	Automatic	sg-28652152 - NFSsecurity2
us-west-2b	subnet-8b9e38ec (default)	Automatic	sg-28652152 - NFSsecurity2
us-west-2c	subnet-19d01141 (default)	Automatic	sg-28652152 - NFSsecurity2

[Cancel](#)

[Next Step](#)

## Provide tags

Key → Name

Value → NFShyd1

## Drag Down

Step 3: Review and create

Add tags

You can add tags to describe your file system. A tag consists of a case-sensitive key-value pair. (For example, you can define a tag with key=Corporate Department and value=Sales and Marketing.) At a minimum, we recommend adding key = Name.

Key	Value	Remove
Name	NFShyd1	(remove)

Add more tags

Choose performance mode

We recommend General Purpose performance mode for most file systems. Max I/O performance mode is optimized for applications where tens, hundreds, or thousands of EC2 instances are accessing the file system — it scales to higher levels of aggregate throughput and operations per second with a tradeoff of slightly higher latencies for file operations.

General Purpose (default)

Max I/O

Select General Purpose

Click on **Next Step**

We recommend General Purpose performance mode for most file systems. Max I/O performance mode is optimized for applications like databases, or thousands of EC2 instances are accessing the file system in — it scales to higher levels of aggregate throughput and operations per second with a tradeoff of slightly higher latencies for file operations.

\* General Purpose (default)  
Max I/O

Enable encryption

If you enable encryption for your file system all data on your file system will be encrypted at rest. You can select a KMS key from your account to protect your file system, or you can provide the ARN of a key from a different account. Encryption can only be enabled during file system creation. [Learn more](#)

Enable encryption

Cancel Previous Next Step

NFSv4.1 filesystem got selected

Click on **Create File System**

VPC:

Zone	Subnet	IP address	Security groups
us-west-2a	subnet-13f0e5a (default)	Automatic	sg-28652152 - NFSsecurity2
us-west-2b	subnet-859e3ec (default)	Automatic	sg-28652152 - NFSsecurity2
us-west-2c	subnet-19d0141 (default)	Automatic	sg-28652152 - NFSsecurity2

Optional settings

Name: NFSv4.1  
Performance mode: General Purpose (default)  
Encrypted: No

Cancel Previous Create File System

## Verify

The screenshot shows the AWS Lambda console with the URL <https://us-west-2.console.aws.amazon.com/lambda/home?region=us-west-2#/functions/lambdafunction-19-Filesystems-12345678>. The page title is "Lambda Functions". The main content area is titled "File systems" and displays a success message: "Success! You have created a file system. You can mount your file system from an EC2 instance with an NFSv4.1 client installed. You can also mount your file system from an on-premises server over an AWS Direct Connect connection. Click here for EC2 mount instructions, and here for on-premises mount instructions." Below this message is a table with one row, showing the details of the newly created file system:

Name	File system ID	Uncompressed size	Number of mount targets	Creation date
NFSydl	fs-53f822fa	6.0 KB	3	2017-09-19T06:16:55Z

Below the table, there are sections for "Other details" (Owner ID: 53281683217, Life cycle state: Available) and "Tags" (Name: NFSydl). There is also a "Manage tags" button.

## Drag Down

Verify that Life cycle state is **Creating**, it takes few minutes.

The screenshot shows the AWS Lambda console with the same URL as the previous screenshot. The main content area is titled "File systems" and displays a table with three rows, showing the details of the file system and its mount targets:

VPC	Availability Zone	Subnet	IP address	Mount target ID	Network interface ID	Security groups	Life cycle state
vpc-#9c341ee - default vpc - oregon (default)	us-west-2c	subnet-19d0f141 (default)	172.31.7.82	fsmb-86a00721	eni-7adcc27a		Creating
	us-west-2a	subnet-13f60e5a (default)	172.31.40.86	fsmb-87a0072e	eni-e8d884d6		Creating
	us-west-2b	subnet-8b5e38ec (default)	172.31.27.220	fsmb-96a00731	eni-eeef553c1		Creating

At the bottom of the page, there are footer links for Feedback, English, Privacy Policy, and Terms of Use.

## Verify that Life cycle state is Available

The screenshot shows the AWS Storage File System Metrics interface. At the top, it displays the DNS name: fs-53fb227a.efs.us-west-2.amazonaws.com. Below this, there are two sections: "Amazon EC2 mount instructions" and "AWS Direct Connect mount instructions". Under "Mount targets", there is a table with the following data:

VPC	Availability Zone	Subnet	IP address	Mount target ID	Network interface ID	Security groups	Life cycle state
vpc-89c341ee-default-vpc-oregon (default)	us-west-2c	subnet-19c0f141 (default)	172.31.7.82	femi-8fa0072f	eni-7e7cc27a	sg-28652152 - NFSsecurity2	Available
	us-west-2a	subnet-13f60e5a (default)	172.31.40.86	femi-87a0072b	eni-69d88496	sg-28652152 - NFSsecurity2	Available
	us-west-2b	subnet-8b0e38ec (default)	172.31.27.220	femi-9fa00731	eni-vec553c1	sg-28652152 - NFSsecurity2	Available

### Step 3. Now launch linux instance & Mount the Amazon EFS File System.

Login to linux instance by using mobaxterm client

```
[2017-08-15 12:01:25] /drives/e/awskeys
[shaikh_pc_mas] > ssh -i "studentorg.pem" ec2-user@ec2-54-213-7-42.us-west-2.compute.amazonaws.com
```

Run the following commands

```
[ec2-user@ip-172-31-45-138 ~]$ sudo su
[root@ip-172-31-45-138 ec2-user]#
[root@ip-172-31-45-138 ec2-user]# yum install nfs-utils
[root@ip-172-31-45-138 ec2-user]#
[root@ip-172-31-45-138 ec2-user]# mkdir /opt/oracledata
[root@ip-172-31-45-138 ec2-user]# mount -t nfs4 fs-53f822fa.efs.us-west-2.amazonaws.com:/ /opt/oracledata
[root@ip-172-31-45-138 ec2-user]#
```

Verify is it mounted

Check the last line

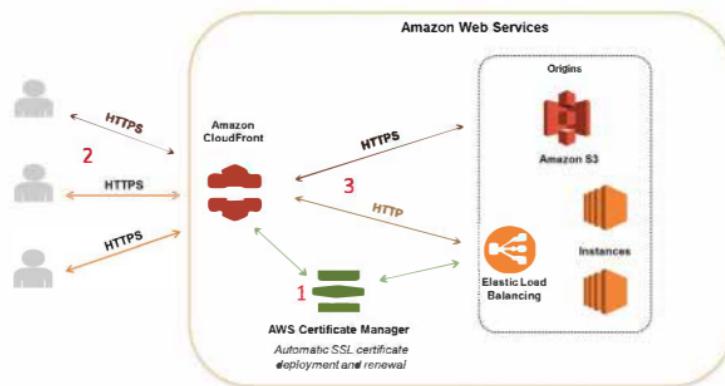
```
proc on /proc type proc (rw,relatime)
sysfs on /sys type sysfs (rw,relatime)
devtmpfs on /dev type devtmpfs (rw,relatime,size=499756k,nr_inodes=124939,mode=755)
devpts on /dev/pts type devpts (rw,relatime,gid=5,mode=620,ptmxmode=000)
tmpfs on /dev/shm type tmpfs (rw,relatime)
/dev/xvda1 on / type ext4 (rw,noatime,data=ordered)
devpts on /dev/pts type devpts (rw,relatime,gid=5,mode=620,ptmxmode=000)
none on /proc/sys/fs/binfmt_misc type binfmt_misc (rw,relatime)
fs-53f822fa.efs.us-west-2.amazonaws.com:/ on /opt/oracledata type nfs4 (rw,relatime,vers=4.0,rsize=1048576,wsize=1048576,namlen=255,hard,proto=tcp,timeo=600,retrans=2,sec=sys,clientaddr=172.31.45.138,local_lock=none,addr=172.31.40.66)
[root@ip-172-31-45-138 ec2-user]#
```

## Lab 22: To Configure Amazon CloudFront Service

### OBJECTIVE

To configure and use AWS CloudFront Service.

### TOPOLOGY



### PRE-REQUISITES

User should have AWS account, or IAM user with CloudfrontFullAccess policy.

### To configure Cloudfront with following task.

Configure a Website with Amazon S3 bucket by uploading your content

Create a CloudFront Web Distribution

Verify your site by providing cloudfront DNS link

**1) Configure a Website with Amazon S3 bucket by uploading your content**

Open AWS Console go for **S3** Service

Follow the lab steps of Website Hosting in S3

The screenshot shows the AWS CloudFront Manager interface. At the top, there's a navigation bar with tabs for 'CloudFront', 'Console Home', 'EC2', 'EFS', 'S3', and 'Glacier'. Below the navigation bar is a search bar containing the placeholder text 'Find a service by name or feature (for example, EC2, S3 or VM, storage)'. The main area is titled 'Services' and contains several categories of services:

- Compute:** EC2, EC2 Container Service, Lambda, Batch.
- Developer Tools:** CodeStar, CodeCommit, CodeBuild, CodeDeploy, CodePipeline, X-Ray.
- Analytics:** Athena, EMR, CloudSearch, Elasticsearch Service, Kinesis, Data Pipeline, QuickSight, AWS Glue.
- Storage:** S3, EFS, Glacier.
- Management Tools:** CloudWatch, CloudFormation, CloudTrail.
- Artificial Intelligence:** Lex.

## Check the S3 bucket content

The screenshot shows the AWS S3 Management Console interface. At the top, there's a navigation bar with tabs for 'Services' (selected), 'Resource Groups', and other account-related options. Below the navigation is a toolbar with 'Upload', 'Create Folder', and 'Actions' dropdown, along with search and filter buttons ('Search by prefix', 'None', 'Properties', 'Transfers').

The main area displays a table of objects in the 'Bucket: www.cloudskillhyd.com'. The columns are 'Name', 'Storage Class', and 'Size'. The objects listed are:

Name	Storage Class	Size
404.html	Standard	6 KB
about-us.html	Standard	5.8 KB
article.html	Standard	5.3 KB
articles.html	Standard	4.8 KB
contact-us.html	Standard	4.7 KB
css	-	-
images	-	-
Index.html	Standard	6 KB
js	-	-
sitemap.html	Standard	4.8 KB

To the right of the table, there's a summary section for the bucket:

**Bucket:** www.cloudskillhyd.com  
**Region:** Oregon  
**Creation Date:** Tue Aug 15 08:44:43 GMT+530 2017  
**Owner:** skmval999

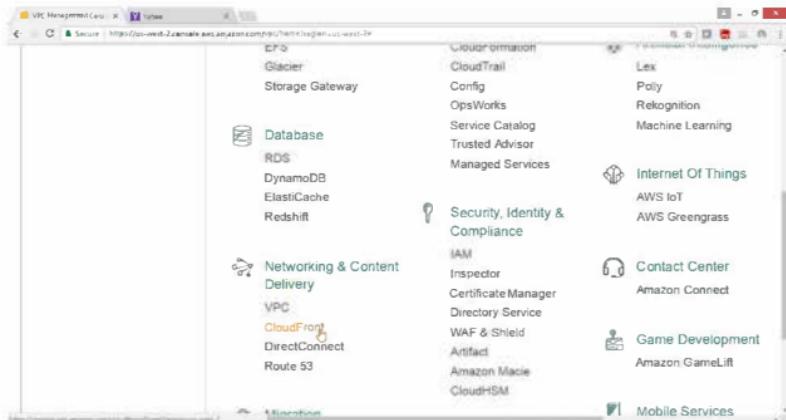
Below this, there are sections for 'Permissions' and 'Static Website Hosting'. Under 'Static Website Hosting', it says: 'You can host your static website entirely on Amazon S3. Once you enable your bucket for static website hosting, all your content is accessible to web browsers via the Amazon S3 website endpoint for your bucket.' and 'Endpoint: www.cloudskillhyd.com.s3-website-us-west-2.amazonaws.com'.

## Step-2. Create a CloudFront Web Distribution

Open AWS Console

Select Networking and Content Delivery

Click on **CloudFront** service



Click on **Create Distribution** button

The screenshot shows the AWS CloudFront Distributions page. On the left, there's a sidebar with links like 'Distributions', 'Reports & Analytics', 'Cache Statistics', 'Monitoring and Alarms', 'Popular Objects', 'Top References', 'Usage', 'Viewers', 'Private Content', 'How-to Guide', and 'Grant Access Identity'. The main area is titled 'CloudFront Distributions' and shows a table with one row. The row contains the 'Create Distribution' button, the distribution ID 'CDNTestDist', the domain name 'cdn-test-dist.cloudfront.net', and the origin 'www.cloudflare.com s3.amazonaws.com'. There are also tabs for 'Distribution Settings', 'Delete', 'Disable', and 'Enable'.

Under "Select a delivery method for your content" Wizard

Under Web

Click on **Get Started** button

The screenshot shows the 'Select a delivery method for your content' wizard. Step 1: Select delivery method is selected. Step 2: Create distribution is shown below it. The 'Web' delivery method is selected. A sub-section titled 'Create a web distribution if you want to:' lists the following points:

- Speed up distribution of static and dynamic content, for example, html, css, php, and graphics files
- Deliver media files using HTTP or HTTPS
- Handle user input, and submit data from web forms
- Use live streaming to stream an event in real time

Below this, a note says: 'You store your files in an origin - either an Amazon S3 bucket or a web server. After you create the distribution, you can add more origins to the distribution.' There are two 'Get Started' buttons: one for 'Web' and one for 'RTMP'.

**RTMP**

Create an RTMP distribution to speed up distribution of your streaming media files using Adobe Flash Media Server's RTMP protocol. An RTMP distribution allows an end user to begin playing a media file before the file has finished downloading from a CloudFront edge location. Note the following:

- To create an RTMP distribution, you must store the media files in an Amazon S3 bucket
- To use CloudFront live streaming, create a web distribution

## Under Create Distribution

For Origin Domain Name → Drop down → www.cloudskill.com.s3.amazonaws.com

The screenshot shows the 'Create Distribution' wizard at Step 2: Create distribution. In the 'Origin Settings' section, the 'Origin Domain Name' dropdown is expanded, showing a list of available origins including 'www.cloudskillhyd.com'. Other options like 'cloudskillhyd.s3.amazonaws.com' and 'cloudskillhyd.s3.amazonaws.com' are also listed. The 'Origin Path' field is empty, and the 'Origin ID' field contains 'S3-www.cloudskillhyd.com'. The 'Origin Custom Headers' section is collapsed. Below, the 'Default Cache Behavior Settings' section is visible, showing 'Path Pattern: Default (\*)' and 'Viewer Protocol Policy: \*HTTP and HTTPS'. The bottom of the page includes standard AWS navigation links for Feedback, English, Privacy Policy, and Terms of Use.

Verify Origin Domain Name got selected

This screenshot is identical to the one above, showing the 'Create Distribution' wizard at Step 2: Create distribution. The difference is that the 'Origin Domain Name' dropdown has been closed, and the selected value 'www.cloudskillhyd.com' is now displayed directly in the input field. The rest of the configuration, including the 'Origin Path', 'Origin ID', and 'Default Cache Behavior Settings', remains the same.

Drag Down

Go for **Distribution Settings**

For **Price Class**

Select **Edge location**

The screenshot shows the AWS CloudFront Distribution Settings page. At the top, there are tabs for 'Step 1: Select delivery method' and 'Step 2: Create distribution'. The 'Step 2: Create distribution' tab is active. The main section is titled 'Distribution Settings'. It includes fields for 'Price Class' (set to 'Use All Edge Locations (Best Performance)'), 'AWS WAF Web ACL' (set to 'None'), and 'Alternate Domain Names (CNAMEs)' (empty). Below these, there's an 'SSL Certificate' section with two options: 'Default CloudFront Certificate (\*.cloudfront.net)' (selected) and 'Custom SSL Certificate (example.com?)'. A note explains that choosing a custom certificate allows users to access your content via an alternate domain name like <https://www.example.com/>. It also mentions that ACM (AWS Certificate Manager) is available in the US East (Ohio) region or you can use a certificate stored in IAM. At the bottom of the page, there are links for 'Feedback', 'English', and 'Privacy Policy'.

## Price Class → Use only Canada and Europe

The screenshot shows the 'Distribution Settings' page in the AWS CloudFront console. The 'Price Class' dropdown is set to 'Use Only US, Canada and Europe'. Other settings like 'AWS WAF Web ACL' and 'Alternate Domain Names (CNAMEs)' are also visible.

Drag Down

## Click on Create Distribution

The screenshot shows the 'Create Distribution' step in the AWS CloudFront wizard. It includes fields for 'Default Root Object', 'Logging' (with 'On' selected), 'Bucket for Logs', 'Log Prefix', 'Cookie Logging' (with 'Off' selected), 'Enable IPv6' (with 'On' selected), 'Comments', and 'Distribution Status' (with 'Enabled' selected). At the bottom right are 'Cancel', 'Back', and 'Create Distribution' buttons.

## Verify the status

The screenshot shows the AWS CloudFront Distributions page. At the top, there are tabs for 'Create Distribution', 'Distribution Settings', 'Delete', 'Enable', and 'Disable'. Below this is a search bar with dropdowns for 'Viewing' (set to 'Any Delivery Method'), 'Any State' (set to 'All'), 'Delivery Method' (set to 'Web'), and 'ID' (set to 'd2v4j9kz2eh0l'). A table lists two distributions:

Delivery Method	ID	Domain Name	Comment	Origin
Web	d2v4j9kz2eh0l	d2v4j9kz2eh0l.cloudfront.net		www.cloudflare.com.s3.amazonaws.com
Web	d2v4j9kz2eh0l	d2v4j9kz2eh0l.cloudfront.net		www.cloudfront.net.s3.amazonaws.com

## Check column Status

Shows → In Progress

The screenshot shows the AWS CloudFront Distributions page. The 'Status' column header is highlighted in yellow. The table displays the same two distributions as the previous screenshot, but the 'Status' column now shows 'In Progress' instead of 'Enabled'.

Domain Name	Comment	Origin	CNAMEs	Status	State	Last Modified
d2v4j9kz2eh0l.cloudfront.net		www.cloudflare.com.s3.amazonaws.com		Deployed	Enabled	2017-08-12 11:4
d2v4j9kz2eh0l.cloudfront.net		www.cloudflare.net.s3.amazonaws.com		In Prog.	Enabled	2017-08-15 14:2

Wait for status to gen **Enable**

**Note :** It takes around 15 minutes

The screenshot shows the AWS CloudFront console with the 'Distributions' tab selected. The main area displays a table of two distributions:

Comment	Origin	CNAMEs	Status	Last Modified
front.net	www.cfameerpet.com.s3.amazonaws.com	-	Deployed Enabled	2017-08-12 11:42
front.net	www.cloudskilhyd.com.s3.amazonaws.com	-	Deployed Enabled	2017-08-15 14:22

On the left sidebar, under 'Reports & Analytics', the 'Cache Statistics' section is visible. At the bottom of the page, there are links for 'Feedback', 'English', and 'Terms of Use'.

Verify the Site with DNS name "d3hv6v1ag4tvcy.cloudfront.net"

The screenshot shows the AWS CloudFront console with the 'CloudFront Distributions' page. The table lists two distributions:

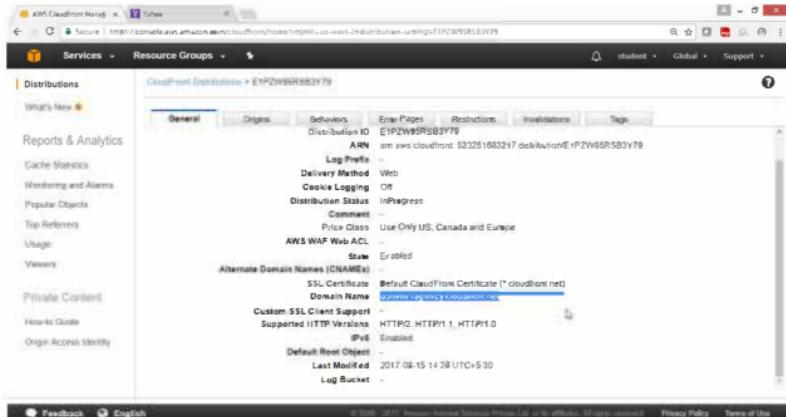
Delivery Method	ID	Domain Name	Comment	Origin
Web	E3MSIZACTQBS1OL	d2sxq5lo2ebu2.cloudfront.net	-	www.cfameerpet.com
Web	E1PZV95R5B31Y79	d3hv6v1ag4tvcy.cloudfront.net	-	www.cloudskilhyd.com

On the left sidebar, under 'Reports & Analytics', the 'Cache Statistics' section is visible. At the bottom of the page, there are links for 'Feedback', 'English', and 'Terms of Use'.

## Verify

Now Open the Browser and type

<http://d3hv6v1ag4tvcy.cloudfront.net/index.html>



This Website is coming from CloudFront Service

