





**A Practical Guide to Configuring**

**AWS**

(Amazon Web Services)

**Cloud Platform**

**Lab Manual**



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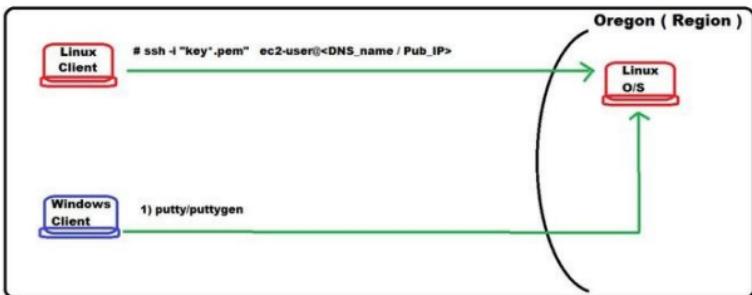
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## Lab 1: To Launch Amazon Linux EC2 instance

### OBJECTIVE

To Launch Amazon Linux instance and to connect from linux and windows client PC.

### TOPOLOGY



**Note :** This lab helps to launch your first instance quickly, so it doesn't cover all possible options.

### PRE-REQUISITES

User should have AWS account, or IAM user with EC2fullaccess

### TASK :

Launch Amazon Linux instance

Select Region

Select Amazon Machine Image (AMI)

Create key pair

Connect to Amazon Linux instance from linux client PC using ssh.

Connect to Amazon linux instance from Windows client PC using putty/puttygen

Start/stop/terminate instance

## 1. To Launch Amazon Linux instance in default VPC

Open the Amazon EC2 console

Select **Compute**

Click on **EC2 service**

The screenshot shows the AWS Management Console with the 'Services' tab selected. In the left sidebar, under 'Compute', 'EC2' is highlighted. The main content area displays various AWS services categorized into groups: Compute, Developer Tools, Analytics, Application Services, Storage, Management Tools, Artificial Intelligence, Messaging, Database, and Business Productivity. A search bar at the top right allows users to find specific services by name or feature.

Select the Region, " US West (Oregon) "

**Note:** Select the region which is nearest to your Geographical Location.

This screenshot shows the same AWS Management Console interface as above, but with the 'Region' dropdown menu open. The 'US West (Oregon)' region is selected, highlighted with a yellow background. Other regions listed include US East (N. Virginia), US East (Ohio), US West (N. California), Canada (Central), EU (Ireland), EU (Frankfurt), EU (London), Asia Pacific (Singapore), Asia Pacific (Sydney), Asia Pacific (Seoul), Asia Pacific (Tokyo), Asia Pacific (Mumbai), South America (Sao Paulo), and Asia Pacific (Wellington). A 'Tag Editor' button is also visible on the right side of the menu.

To check **Service Health**

Drag down and check **Service Status&Availability Zone Status**:

The screenshot shows the AWS EC2 Dashboard. On the left, there's a sidebar with links like EC2 Dashboard, Events, Tags, Reports, Limits, Instances, Images, and Elastic Block Store. The main area is titled "Service Health". It shows "Service Status: US West (Oregon): This service is operating normally". Below that is "Availability Zone Status:" with three entries: "us-west-2a:", "us-west-2b:", and "us-west-2c:", each indicating "Availability zone is operating normally". To the right, there's a section for "Scheduled Events" with the message "No events". At the bottom of the main area, it says "Service Health Dashboard".

From the "EC2 Dashboard" panel

Select Instance

Click on "Launch Instance" button

The screenshot shows the AWS EC2 Dashboard with the "Instances" link selected in the sidebar. The main area has a "Launch Instance" button at the top. Below it is a search bar and a table listing two instances: "linuxvma" and "linuxvmb". The table columns include Name, Instance ID, Instance Type, Availability Zone, Instance State, Status Checks, and Alarm. Both instances are currently in a "shutting down" state. At the bottom, there are tabs for Description, Status Checks, Monitoring, and Tags, along with some instance-specific buttons.

On “Choose an Amazon Machine Image (AMI)” page

Select “Quick start”

Select “Amazon Linux AMI” and click **select** button

[Notice that this AMI is marked “Free tier eligible.”]

The screenshot shows the AWS Quick Start interface for choosing an Amazon Machine Image (AMI). The top navigation bar includes 'Services', 'Resource Groups', and tabs for 'student', 'Oregon', and 'Support'. Below the navigation is a progress bar with steps 1 through 7. Step 1 is highlighted: 'Step 1: Choose an Amazon Machine Image (AMI)'. A sub-instruction says: '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.' On the left, a sidebar lists 'My AMIs', 'AWS Marketplace', and 'Community AMIs'. Under 'Free tier only' (which is selected), two AMIs are listed: 'Amazon Linux' and 'Red Hat Enterprise Linux 7.3 (HVM)'. The 'Amazon Linux' entry is highlighted with a yellow icon and includes a detailed description: 'The Amazon Linux AMI is an EBS-backed, AWS-supported image. The default image includes AWS command line tools, Python, Ruby, Perl, and Java. The repositories include Docker, PHP, MySQL, PostgreSQL, and other packages.' It also specifies 'Root device type: ebs' and 'Virtualization type: hvm'. To the right of the description are 'Select' and '64-bit' buttons. Below the AMI list is a footer with links for 'Feedback', 'English', '© 2008 - 2017, Amazon Internet Services Private Ltd. or its affiliates. All rights reserved.', 'Privacy Policy', and 'Terms of Use'.

On “Choose an Instance Type” page

Select type “t2.micro”, eligible for the free tier.

Click on “Next: Configure Instance Details” button

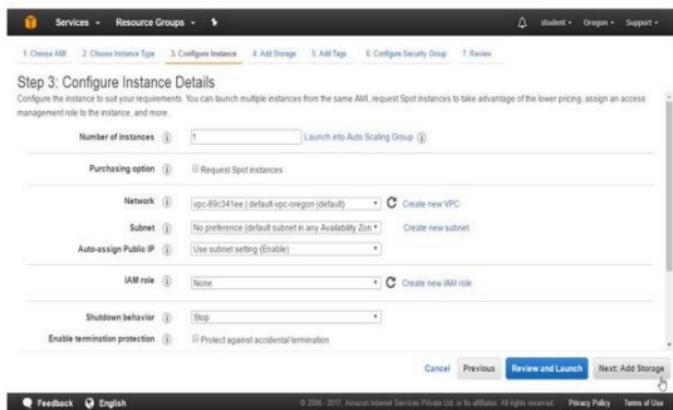
The screenshot shows the AWS CloudFormation console interface. At the top, there's a navigation bar with links for Services, Resource Groups, and various account and support options. Below the navigation is a breadcrumb trail: 1. Choose AMI, 2. Choose Instance Type, 3. Configure Instance, 4. Add Storage, 5. Add Tags, 6. Configure Security Group, and 7. Review. A prominent heading "Step 2: Choose an Instance Type" is displayed, followed by a descriptive paragraph about Amazon EC2 instance types. Below this is a search bar labeled "Filter by: All instance types" and a dropdown set to "Current generation". A table lists available instance types, with the "t2.micro" row highlighted in green. The table columns include Family, Type, vCPUs, Memory (GB), Instance Storage (GB), EBS-Optimized Available, Network Performance, and IPv6 Support. The "t2.micro" row has a note: "Eligible for the free tier". At the bottom of the table is a note: "For more information, see the AWS Free Tier documentation." Below the table are buttons for "Cancel", "Previous", "Review and Launch", and "Next: Configure Instance Details" (which is highlighted in blue).

Family	Type	vCPUs	Memory (GB)	Instance Storage (GB)	EBS-Optimized Available	Network Performance	IPv6 Support
General purpose	t2.nano	1	0.5	EBS only	-	Low to Moderate	Yes
<b>General purpose</b>	<b>t2.micro</b> <small>(Eligible for the free tier)</small>	<b>1</b>	<b>1</b>	<b>EBS only</b>	<b>-</b>	<b>Low to Moderate</b>	<b>Yes</b>
General purpose	t2.small	1	2	EBS only	-	Low to Moderate	Yes
Compute optimized	m4.small	8	x	Amazon EBS	-	Medium to High	No

On "Configure Instance Details" , page

Leave all values as default

Click on "Next: Add storage" button



Number of Instances: 1

Purchasing option: Request Spot instances

Network: vpc-0fc341ee (default: vpc-oregon (default))

Subnet: No preference (default subnet in any Availability Zone)

Auto-assign Public IP: Use subnet setting (Enable)

IAM role: None

Shutdown behavior: Stop

Enable termination protection: Protect against accidental termination

Buttons: Cancel, Previous, Review and Launch, Next: Add Storage

**On “Add Storage”, page**

Leave all values as default

Click on “**Next: Tag Instance**” button

The screenshot shows the 'Step 4: Add Storage' page of the AWS EC2 instance creation wizard. The top navigation bar includes 'Services', 'Resource Groups', and tabs for '1 Choose AMI', '2 Choose Instance Type', '3 Configure Instance', '4 Add Storage' (which is highlighted in yellow), '5 Add Tags', '6 Configure Security Group', and '7 Review'. Below the tabs, the heading 'Step 4: Add Storage' is displayed, followed by a note about launching with storage device settings. A table lists a single volume entry:

Volume Type	Device	Snapshot	Size (GiB)	Volume Type	IOPS	Throughput (MB/s)	Delete on Termination	Encrypted
Root	/dev/xvda	snap-0ce9775735518cbdd	8	General Purpose (SSD)	100 / 3000	N/A	<input checked="" type="checkbox"/>	Not Encrypted

Below the table is a button labeled 'Add New Volume'. A callout box provides information about free tier usage: 'Free tier eligible customers can get up to 30 GB of EBS General Purpose (SSD) or Magnetic storage. Learn more about free usage tier eligibility and limits.' At the bottom of the page are buttons for 'Cancel', 'Previous', 'Review and Launch' (which is highlighted in blue), and 'Next: Add Tags'.

On "Add Tags" page

Provide following values

Key → Name

Value → linuxvm

Click on "Next: Configure Security Group" button

The screenshot shows the AWS EC2 instance creation wizard at Step 5: Add Tags. The interface includes a navigation bar with 'Services', 'Resource Groups', and account information ('student', 'Oregon', 'Support'). Below the bar are steps 1 through 7: Choose All, Choose Instance Type, Configure Instance, Add Storage, Add Tags (highlighted in yellow), Configure Security Group, and Review. A sub-section titled 'Step 5: Add Tags' provides instructions about tags and their application. The main form has columns for Key, Value, Instances, and Volumes. A row shows 'Name' with the value 'linuxvm'. A link 'Add another tag' is visible. At the bottom, buttons for 'Cancel', 'Previous', 'Review and Launch' (highlighted in blue), and 'Next: Configure Security Group' are present, along with footer links for Feedback, English, Privacy Policy, and Terms of Use.

On "Configure Security Group" page

Select → Create a new security group

Leave all values as default.

**Note:** By default for linux instance **port 22** i.e ssh is used.

Click "Review and Launch" button



On "Review Instance Launch", page

Leave all values as default.

Verify the summary, then drag down

The screenshot shows the AWS Management Console interface for launching an EC2 instance. The top navigation bar includes 'Services', 'Resource Groups', and tabs for '1. Choose AMI', '2. Choose Instance Type', '3. Configure Instance', '4. Add Storage', '5. Add Tags', '6. Configure Security Group', and '7. Review'. The '7. Review' tab is active. A yellow warning box at the top states: 'Improve your instances' security. Your security group, launch-wizard-1, is open to the world.' It advises updating security group rules to allow access from known IP addresses and opening additional ports. Below this, the 'AMI Details' section shows 'Amazon Linux AMI 2017.03.0 (HVM)', 'SSD Volume Type - ami-4836aa428', and a note that it's an EBS-backed, AWS-supported image with various repositories and root device type /dev/sda1. The 'Instance Type' section lists 'Instance Type', 'ECUs', 'vCPUs', 'Memory (GB)', 'Instance Storage (GB)', 'EBSS Optimized Available', and 'Network Performance'. A 'Launch' button is visible. At the bottom, there are 'Feedback' and 'English' links, along with copyright information: '© 2006 - 2017 Amazon Internet Services Private Ltd. or its affiliates. All rights reserved. Privacy Policy Terms of Use'.

Verify the summary

Click on **Launch** button

This screenshot shows the same 'Step 7: Review Instance Launch' page as the previous one, but with the 'Launch' button highlighted in blue. The rest of the interface is identical, including the security group configuration, instance details, and overall layout.

On "Select an existing key pair or create a new key pair", box

Select "Create a new key pair"

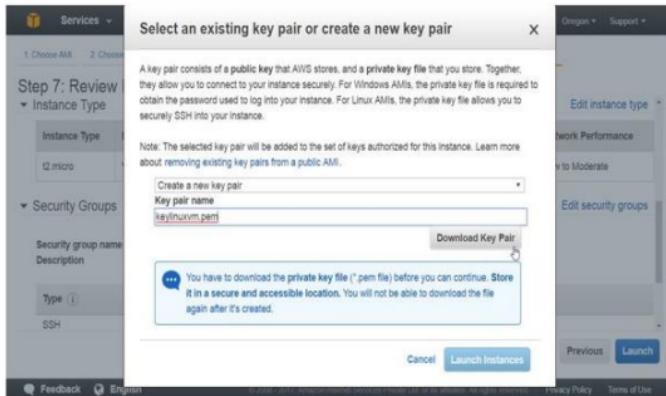
Enter Key pair name → keylinuxvm.pem

Click on "Download Key Pair"

**Note:** Store it in a secure and accessible location.

You will not be able to download the file again after it's created.

Click on "Launch an instance"



On **Launch Status** page, go to right bottom corner

Click on “**View instances**” button

The screenshot shows the AWS Launch Status page. At the top, there's a navigation bar with icons for Services, Resource Groups, and a user dropdown for student, Oregon, and Support. Below the navigation is a section titled "Launch Status" with a sub-section "Instances will start immediately and continue to accrue until you stop or terminate your instances." It includes a link to "View Instances" to monitor instance status. A list of helpful resources follows:

- ▼ Here are some helpful resources to get you started
  - How to connect to your Linux instance
    - Amazon EC2: User Guide
  - Learn about AWS Free Usage Tier
    - Amazon EC2: Discussion Forum

Below this, there's a note: "While your instances are launching you can also" followed by three links: "Create status check alarms to be notified when these instances fail status checks. (Additional charges may apply)", "Create and attach additional EBS volumes (Additional charges may apply)", and "Manage security groups". At the bottom right is a blue "View Instances" button.

Feedback English 6 2008 © 2008, Amazon Internet Services Private Ltd. or its affiliates. All rights reserved. Privacy Policy Terms of Use

On EC2 Dashboard panel

Click on Instances,

Select instances

Check instance status → running

The screenshot shows the AWS EC2 Dashboard. In the left sidebar, under the 'Instances' section, there is a single entry for an instance named 'linuxvm'. The instance details show it is an 'i2.micro' type, located in 'us-west-2b', and its status is 'running'. A green circle with a white dot is drawn around the 'running' status indicator in the 'Status' column.

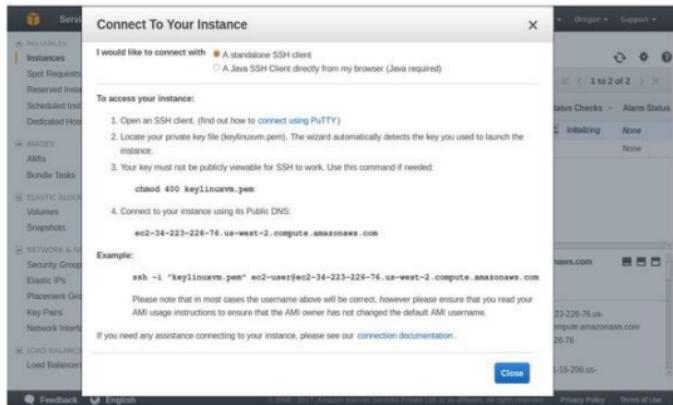
To check instance details like

Description, Status check, Monitoring, Tags

The screenshot shows the AWS EC2 Dashboard with an instance named 'linuxvm' selected. A modal window displays detailed information about the instance. The 'Description' tab is currently active, showing the instance ID and public DNS. Below the tabs, the instance's state is listed as 'running'. The 'Status Checks', 'Monitoring', and 'Tags' tabs are highlighted with a red oval. At the bottom of the modal, there are sections for 'Public DNS (IPv4)', 'IPv4 Public IP', 'IPv6 IPs', and 'Private DNS'.

## 1a ) To connect to “Amazon linux instance” from linux client operating system.

On “Connect To Your Instance” page see the guide lines to connect to linux instance.



Login to linux client PC, Open the terminal and run following commands.

First go to the folder where your private key file \*.pem is stored.

eg : keylinuxvm.pem

```
# ls
```

```
# ll
```

```
# chmod 400 keylinuxvm.pem
```

```
# ssh -i "keylinuxvm.pem" ec2-user@ec2-54-191-200-74.us-west-2.compute.amazonaws.com
```

The screenshot shows a terminal window with the following session:

```
ec2-user@ip-172-31-16-206: ~
$ ls -l keylinuxvm.pem
-rw-----. 1 shalikh shalikh 1692 Jun  8 12:30 keylinuxvm.pem
$ chmod 400 keylinuxvm.pem
$ ls -l keylinuxvm.pem
-r----- 1 shalikh shalikh 1692 Jun  8 12:30 keylinuxvm.pem
$ 
$ ssh -i "keylinuxvm.pem" ec2-user@ec2-34-223-226-76.us-west-2.compute.amazonaws.com
The authenticity of host 'ec2-34-223-226-76.us-west-2.compute.amazonaws.com (34.223.226.76)' can't be established.
ECDSA key fingerprint is 90:9a:db:17:4b:f1:c5:6b:a2:38:98:8b:93:30:ca:82.
Are you sure you want to continue connecting (yes/no)? yes
Warning: Permanently added 'ec2-34-223-226-76.us-west-2.compute.amazonaws.com,34.223.226.76' (ECDSA) to the
list of known hosts.
[ec2-user@ip-172-31-16-206 ~]$
```

**Note : ec2-user** is the default user for this instance

To know current user in linux

```
$ whoami
```

To switch to root user in linux

```
$ sudo su
```

Verify ( root user )

```
# whoami
```

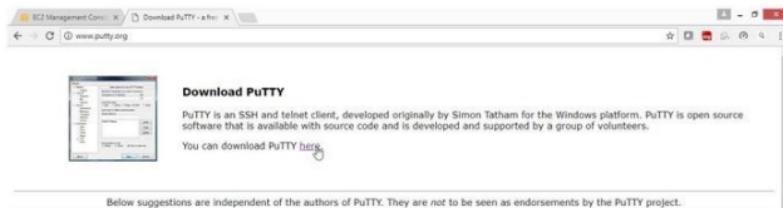
To logout

```
# exit
```

```
[ec2-user@ip-172-31-17-217 ~]$ whoami  
ec2-user  
[ec2-user@ip-172-31-17-217 ~]$ sudo su  
[root@ip-172-31-17-217 ec2-user]#  
[root@ip-172-31-17-217 ec2-user]# whoami  
root  
[root@ip-172-31-17-217 ec2-user]# exit
```

## **1b ) To connect to “Amazon linux instance” from Windows Client Operating System.**

**Downloadputty.exe and puttygen.exe from [putty.org](http://www.putty.org) website**



The screenshot shows a web browser window with the URL [www.putty.org](http://www.putty.org). The page title is "Download PuTTY". It features a small screenshot of the PuTTY software interface. Below the title, there is a brief description of what PuTTY is and a link to download it. A note at the bottom states: "Below suggestions are independent of the authors of PuTTY. They are not to be seen as endorsements by the PuTTY project."

### **Bitvise SSH Client**



Bitvise SSH Client is an SSH and SFTP client for Windows. It is developed and supported professionally by Bitvise. The SSH Client is robust, easy to install, easy to use, and supports all features supported by PuTTY, as well as the following:

- graphical SFTP file transfer;
- single-click Remote Desktop tunneling;
- auto-reconnecting capability;
- dynamic port forwarding through an integrated proxy;
- an FTP-to-SFTP protocol bridge.

Bitvise SSH Client is **free to use**. You can [download it here](#).



The screenshot shows a web browser window with the URL [www.charkgreenend.org.uk/~sgtatham/putty/download.html](http://www.charkgreenend.org.uk/~sgtatham/putty/download.html). The page title is "Bitvise SSH Server".

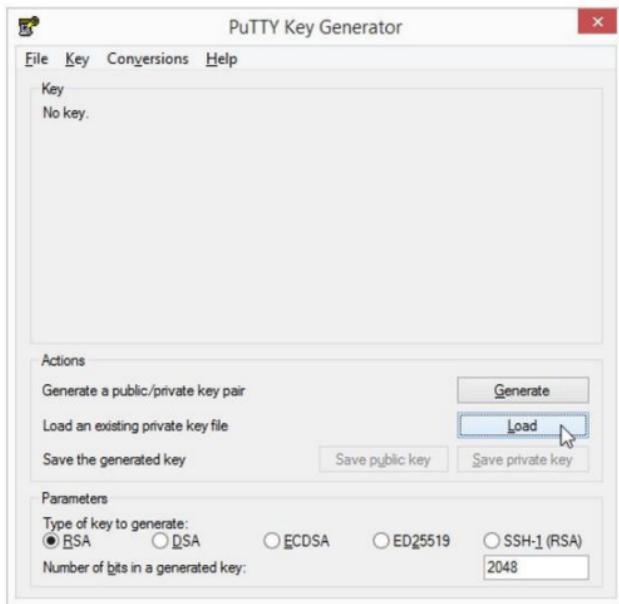
Note: Because putty cannot understand .pem file format, so use puttygen.exe to converting \*.pem file into \*.ppk format

Click on puttygen.exe file in windows operating system

Click on Run



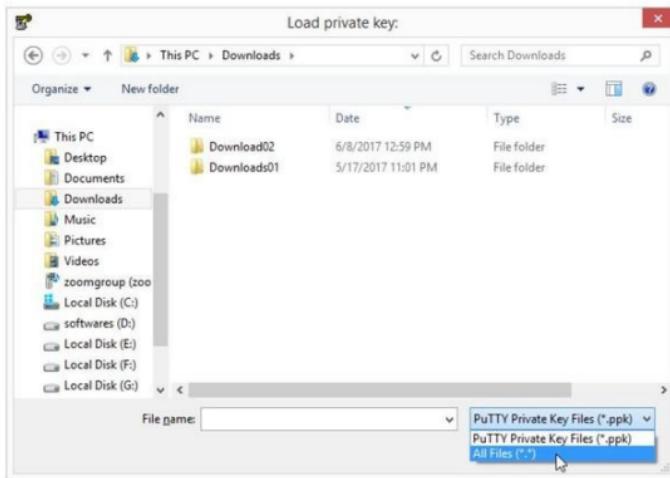
Click on Load button



**Note:** By default, PuTTYgen displays only files with the extension .ppk

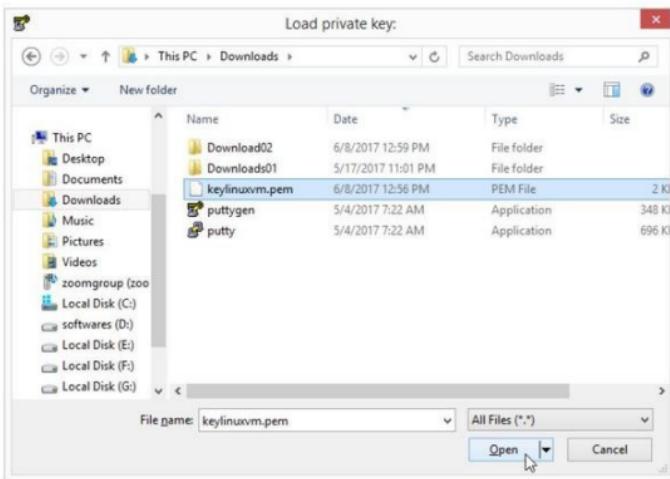
So to locate your .pem file

On file names Select →All files (\*.\*)

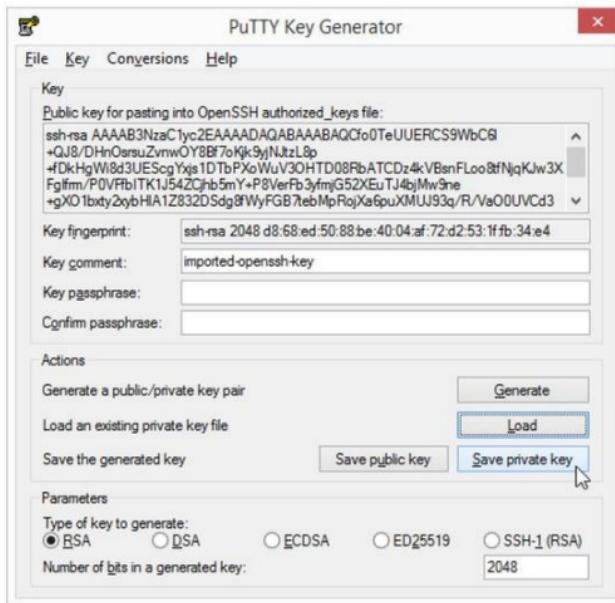


Locate keylinuxvm.pem in your folder

Click on open

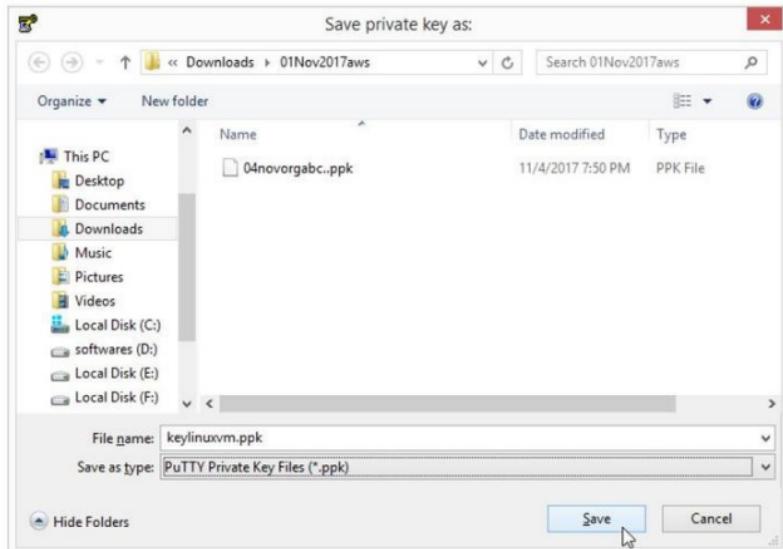


Click on "Save private key" button



Save the file → keylinuxvm.ppk

Click on Save button



To connect to linux instance Run putty.exe from windows operating system.

**Run putty.exe**

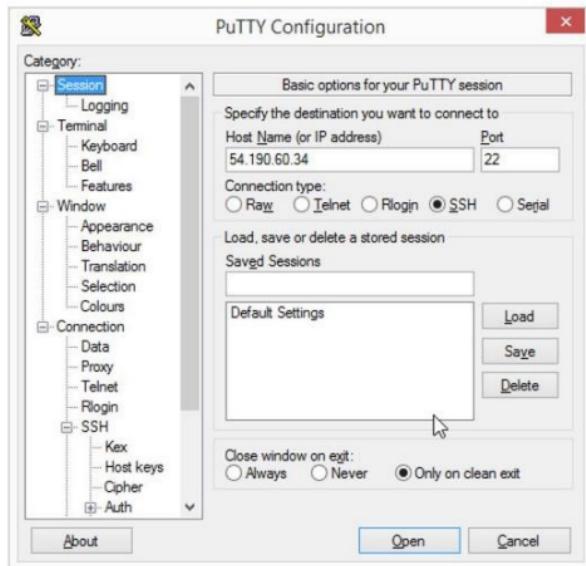
**Click on Run**



On Category page provide following values

Host Name (or IP address) → Provide public IP or DNS name of the instance

Port → 22

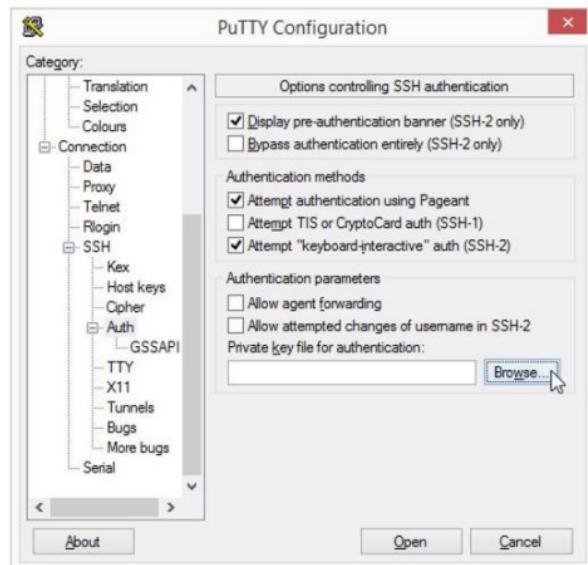


Under Connection expand

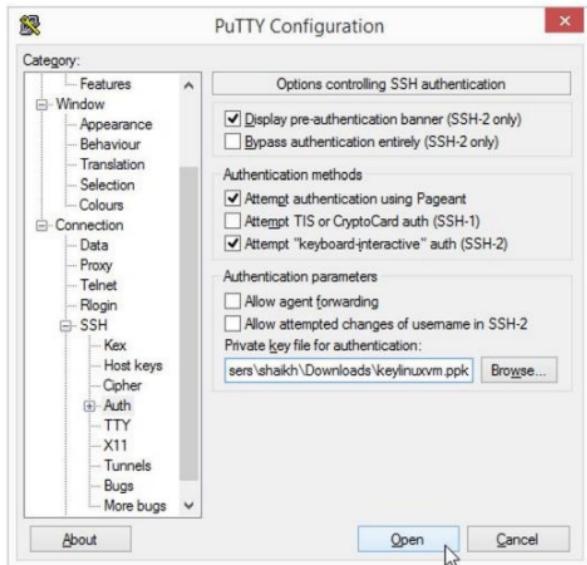
Click on SSH → Auth

Select Browse button

Provide the path of \*.ppk file



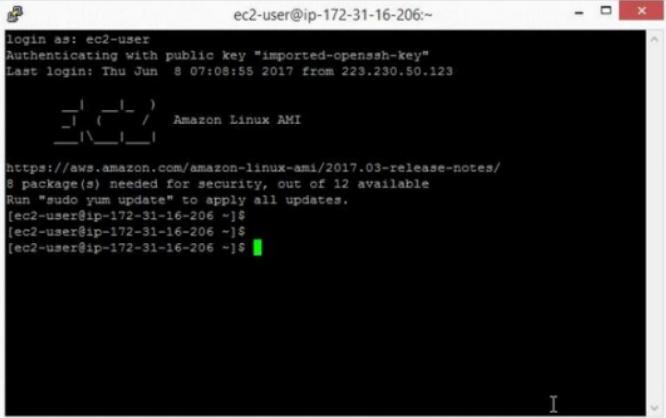
Click on Open button



## Verify

Putty login screen is for linux

Provide user name **ec2-user**



The screenshot shows a Windows-style terminal window titled "Putty". The title bar displays "ec2-user@ip-172-31-16-206:~". The terminal content is as follows:

```
login as: ec2-user
Authenticating with public key "imported-openssh-key"
Last login: Thu Jun  8 07:08:55 2017 from 223.230.50.123
[ec2-user@ip-172-31-16-206 ~]$ _|_(_|_) / Amazon Linux AMI
[ec2-user@ip-172-31-16-206 ~]$ https://aws.amazon.com/amazon-linux-ami/2017.03-release-notes/
[ec2-user@ip-172-31-16-206 ~]$ 8 package(s) needed for security, out of 12 available
[ec2-user@ip-172-31-16-206 ~]$ Run "sudo yum update" to apply all updates.
[ec2-user@ip-172-31-16-206 ~]$ [ec2-user@ip-172-31-16-206 ~]$ [ec2-user@ip-172-31-16-206 ~]$
```

Now you had logged in as ec2-user in Amazon Data Center Linux Machine.

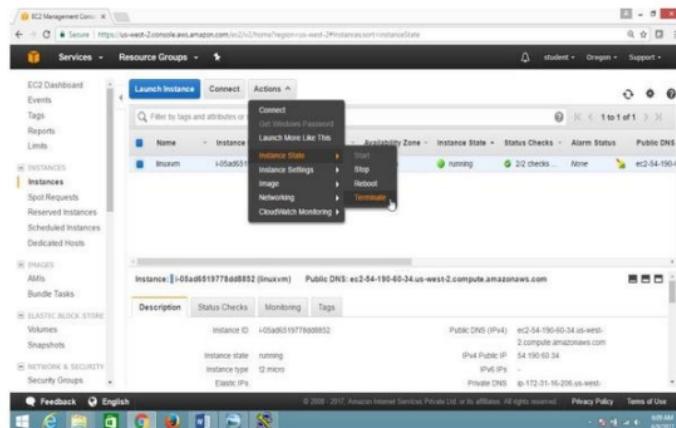
### To start/stop/terminate instance

On Ec2 Dashboard

Select the Instance

Drop down on Action button

Select Instance state to Start/Stop/Reboot//Terminate the instances.



Note:

If you are not going to use the instance, terminate the instance,

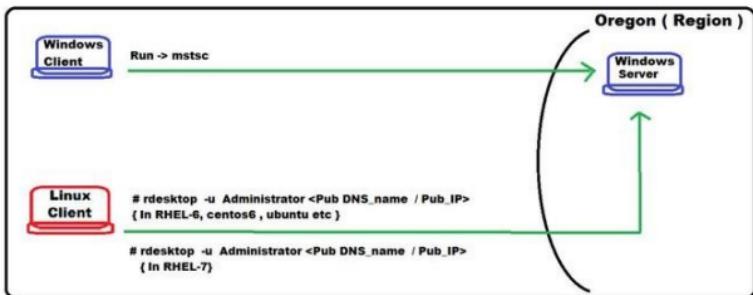
Otherwise it will be charged if the limit is over after free tier usage.

## Lab 2: To Launch Windows EC2 instance in AWS

### OBJECTIVE

To Launch Windows instance and to connect from windows and linux client PC.

### TOPOLOGY



**Note :** This lab helps to launch your first Windows instance quickly, so it doesn't cover all possible options.

### PRE-REQUISITES

User should have AWS account, or IAM user with EC2fullaccess

### TASK :

- To Launch Windows instance
- Select Region
- Select Amazon Machine Image (AMI)
- Create key pair
- Connect from Windows operating system
- Connect from Linux Operating system
- Start/stop/terminate instance

## 1. To Launch Windows instance in default VPC

Open the Amazon EC2 console

Select **Compute**

Click on **EC2 service**

The screenshot shows the AWS Management Console with the 'Services' tab selected. In the search bar, 'EC2' is typed. Below the search bar, the 'Compute' section is highlighted with a yellow box. Other sections like 'Storage', 'Management Tools', and 'Analytics' are also visible but not highlighted.

Select the Region, "US West (Oregon)"

Note: Select the region which is nearest to your Geographical Location.

The screenshot shows the AWS EC2 Dashboard. The left sidebar has 'Instances' expanded, showing 'Instances', 'Spot Requests', 'Reserved Instances', 'Scheduled Instances', and 'Dedicated Hosts'. The main area displays resource counts: 1 Running Instances, 0 Dedicated Hosts, 1 Volumes, 2 Key Pairs, 0 Elastic IPs, 0 Snapshots, 0 Load Balancers, and 4 Security Groups. A callout box points to the 'Just need a simple virtual private server? Get everything you need to jumpstart your project - compute, storage, and networking - for a low, predictable price. Try Amazon Lightsail for free.' message. On the right, a 'Regions' dropdown menu is open, showing options like US East (N. Virginia), US East (Ohio), US West (N. California), **US West (Oregon)**, Canada (Central), EU (Ireland), EU (Frankfurt), EU (London), Asia Pacific (Singapore), Asia Pacific (Sydney), Asia Pacific (Seoul), Asia Pacific (Tokyo), Asia Pacific (Mumbai), South America (São Paulo), and a 'More Regions...' link. The 'US West (Oregon)' option is highlighted with a yellow box.

## To check Service Health

Drag down and check Service Status&Availability Zone Status:

The screenshot shows the AWS EC2 Dashboard. On the left, there's a sidebar with navigation links like EC2 Dashboard, Instances, and Images. The main area has two tabs: 'Service Health' and 'Scheduled Events'. Under 'Service Health', it says 'Service Status: US West (Oregon)' and 'This service is operating normally'. Under 'Availability Zone Status', it lists three zones: 'us-west-2a', 'us-west-2b', and 'us-west-2c', all marked as 'Availability zone is operating normally'. To the right, there's a sidebar for 'Barracuda NextGen Firewall F-Series - PAYG' with details like 'Provided by Barracuda Networks, Inc.', 'Rating: \*\*\*\*\*', and pricing information. At the bottom, there are links for 'Feedback', 'English', 'Privacy Policy', and 'Terms of Use'.

## From the "EC2 Dashboard" panel

Select Instance

Click on "Launch Instance" button

This screenshot is similar to the previous one but focuses on the 'Instances' section. It shows a table with one row for an 'linuxvm' instance. The 'Actions' column contains a 'Launch Instance' button, which is highlighted with a yellow box. The table includes columns for Name, Instance ID, Instance Type, Availability Zone, Instance State, Status Checks, and Alarm S. Below the table, there are tabs for Description, Status Checks, Monitoring, and Tags. At the bottom, there are links for 'Feedback', 'English', 'Privacy Policy', and 'Terms of Use'.

## On “Choose an Amazon Machine Image (AMI)” page

Select “Quick start”

Step 1: Choose an Amazon Machine Image (AMI)

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

1 to 31 of 31 AMIs

Select “Microsoft Windows Server AMI” and click **Select** button

[Notice that this AMI is marked “Free tier eligible.”]

Click on **Select** button

Step 1: Choose an Amazon Machine Image (AMI)

Microsoft Windows Server 2012 with SQL Server Standard - ami-dd91f4bd

Microsoft Windows Server 2012 Standard edition, 64-bit architecture, Microsoft SQL Server 2012 Standard edition [English]

Root device type: ebs Virtualization type: hvm

Select 64-bit

Microsoft Windows Server 2008 R2 Base - ami-0381e463

Microsoft Windows 2008 R2 SP1 Datacenter edition, 64-bit architecture, [English]

Root device type: ebs Virtualization type: hvm

Select 64-bit

Microsoft Windows Server 2008 R2 with SQL Server Express and IIS - ami-3483e654

Microsoft Windows Server 2008 R2 SP1 Datacenter edition, 64-bit architecture, Microsoft

Select 64-bit

Feedback English

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On “Choose an Instance Type” page

Select type “t2.micro”, eligible for the free tier.

Click on “Next: Configure Instance Details” button

The screenshot shows the AWS CloudFormation console with the "Step 2: Choose an Instance Type" step selected. A table lists available instance types based on the filter "All Instance types" and "Current generation". The "t2.micro" row is highlighted with a blue selection bar and has a green "Free tier eligible" badge next to it. The table columns include Family, Type, vCPUs, Memory (GiB), Instance Storage (GiB), EBS-Optimized Available, Network Performance, and IPv6 Support. The "t2.micro" row has values: General purpose, t2.nano, 1, 0.5, EBS only, -, Low to Moderate, Yes. Other rows show t2.small, t2.medium, and t2.large with similar details. At the bottom, there are "Cancel", "Previous", "Review and Launch" (which is highlighted in blue), and "Next: Configure Instance Details" buttons.

On “Configure Instance Details”, page

Leave all values as default

Click on “Next : Add storage” button

The screenshot shows the AWS CloudFormation console with the "Step 3: Configure Instance Details" step selected. The page allows configuring the instance to suit requirements like launching multiple instances or requesting Spot instances. It also lets users set up networking with options for VPC, subnet, and auto-assigning public IP. Domain join directory is another configuration option. At the bottom, there are "Cancel", "Previous", "Review and Launch" (highlighted in blue), and "Next: Add Storage" buttons.

On “Add Storage”, page

Leave all values as default

Click on “Next: Tag Instance” button

The screenshot shows the 'Add Storage' step of the AWS EC2 instance creation wizard. The top navigation bar includes 'Services', 'Resource Groups', and tabs for 'Choose AMI', 'Choose Instance Type', 'Configure Instance', 'Add Storage' (which is selected), 'Add Tags', 'Configure Security Group', and 'Review'. The main area is titled 'Step 4: Add Storage' with the sub-instruction: 'Your instance will be launched with the following storage device settings. You can attach additional EBS volumes and instance store volumes to your instance, or edit the settings of the root volume. You can also attach additional EBS volumes after launching an instance, but not instance store volumes. Learn more about storage options in Amazon EC2.' A table lists a single volume configuration:

Volume Type	Device	Snapshot	Size (GiB)	Volume Type	IOPS	Throughput (MB/s)	Delete on Termination	Encrypted
Root	/dev/sda1	SNAP-05c5aa21237b4e6c8	30	General Purpose (SSD)	100 / 3000	N/A	No	Not Encrypted

Below the table is a note: 'Free tier eligible customers can get up to 30 GB of EBS General Purpose (SSD) or Magnetic storage. Learn more about free usage tier eligibility and limits.' At the bottom are 'Cancel', 'Previous', 'Review and Launch' (which is highlighted in blue), and 'Next: Add Tags'.

On "Add Tags" page

Provide following values

Key → Name

Value → winserver

Click on "Next: Configure Security Group" button

The screenshot shows the AWS Step 5: Add Tags configuration page. At the top, there are tabs for 1. Choose AMI, 2. Choose Instance Type, 3. Configure Instance, 4. Add Storage, 5. Add Tags (which is highlighted in orange), 6. Configure Security Group, and 7. Review. Below the tabs, the heading "Step 5: Add Tags" is displayed, followed by a note: "A tag consists of a case-sensitive key-value pair. For example, you could define a tag with key = Name and value = Webserver. A copy of a tag can be applied to volumes, instances or both. Tags will be applied to all instances and volumes. Learn more about tagging your Amazon EC2 resources." There is a table with two columns: "Key" and "Value". The "Key" column has a placeholder "(127 characters maximum)". The "Value" column has a placeholder "(255 characters maximum)" and contains the value "winserver". Below the table, there is a button labeled "Add another tag" with the note "(Up to 50 tags maximum)". At the bottom of the page, there are buttons for "Cancel", "Previous", "Review and Launch" (which is highlighted in blue), and "Next: Configure Security Group". The "Review and Launch" button has a mouse cursor hovering over it. The footer of the page includes links for "Feedback", "English", "© 2008-2017 Amazon Internet Services Private Ltd. or its affiliates. All rights reserved.", "Privacy Policy", and "Terms of Use".

On “Configure Security Group” page

Select → Create a new security group

Leave all values as default.

**Note:** By default for linux instance **port 3389** i.e RDP is used.

Click “Review and Launch” button

Step 6: Configure Security Group

A security group is a set of firewall rules that control the traffic for your instance. On this page, you can add rules to allow specific traffic to reach your instance. For example, if you want to set up a web server and allow Internet traffic to reach your instance, add rules that allow unrestricted access to the HTTP and HTTPS ports. You can create a new security group or select from an existing one below. Learn more about Amazon EC2 security groups.

Assign a security group:  Create a new security group  Select an existing security group

Security group name:

Description:

Type	Protocol	Port Range	Source
RDP	TCP	3389	Custom 0.0.0.0

Add Rule

Cancel Previous Review and Launch

On "Review Instance Launch", page

Leave all values as default.

Verify the summary, then drag down

Step 7: Review Instance Launch

Please review your instance launch details. You can go back to edit changes for each section. Click Launch to assign a key pair to your instance and complete the launch process.

**AMI Details**

Microsoft Windows Server 2008 R2 Base - ami-0381e463

Microsoft Windows 2008 R2 SP1 Datacenter edition, 64-bit architecture [English]

Root Device Type: ebs | Administration type: None

**Feedback** **English**

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Verify the summary

Click on **Launch** button

Step 7: Review Instance Launch

Security Groups

Type	Protocol	Port Range	Source
RDP	TCP	3389	0.0.0.0/0

Instance Details

Storage

Tags

**Feedback** **English**

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

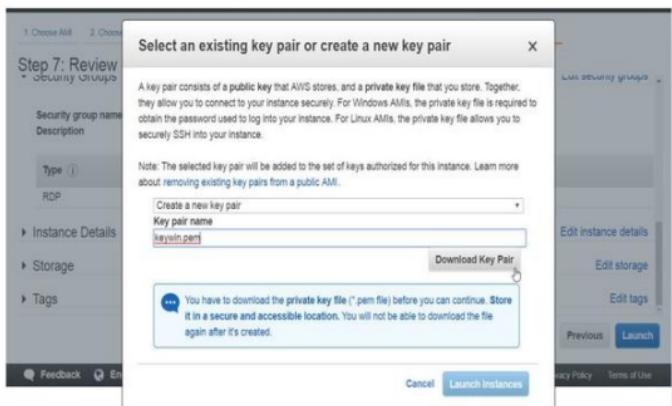
Select "Create a new key pair"

Enter Key pair name → keywin.pem

Click on "Download Key Pair"

**Note:** Store it in a secure and accessible location.

You will not be able to download the file again after it's created.



Click on “Launch an instance”

The screenshot shows the AWS Step 7: Review screen. On the left, there's a sidebar with 'Step 7: Review' and a 'Security Groups' section. Below it are sections for 'Instance Details' and 'Storage'. At the bottom are 'Feedback' and 'English' buttons. A central modal window titled 'Select an existing key pair or create a new key pair' is open. It contains a note about key pairs, a dropdown for 'Type', a text input for 'Key pair name' containing 'keywin.pem', a 'Download Key Pair' button, and a message box stating 'You have to download the private key file (.pem file) before you can continue. Store it in a secure and accessible location. You will not be able to download the file again after it's created.' At the bottom of the modal are 'Cancel' and 'Launch Instances' buttons.

On Launch Status page, go to right bottom corner

Click “View instances” button

The screenshot shows the AWS Launch Status page. At the top, there are navigation links for 'Services', 'Resource Groups', and user information ('student', 'Oregon', 'Support'). Below that is a 'Launch Status' section with a note about instance start times and a link to 'View Instances'. Under 'Helpful Resources', there are links to 'Amazon EC2: User Guide' and 'Amazon EC2: Discussion Forum'. A section for launching instances follows, with a note about status checks and EBS volumes, and links for 'Manage security groups' and 'View instances'. At the bottom are 'Feedback' and 'English' buttons, and legal links for 'Privacy Policy' and 'Terms of Use'.

On EC2 Dashboard panel

Click on Instances

Select instances

Check instance state → pending

The screenshot shows the AWS EC2 Dashboard. On the left, there's a sidebar with navigation links: EC2 Dashboard, Events, Tags, Reports, Limits, Instances (which is selected), Spot Requests, Reserved Instances, Scheduled Instances, Dedicated Hosts, Images, AMIs, Bundle Tasks, and Elastic Block Store. The main area has a title bar with 'Launch Instance', 'Actions', and a search bar. Below that is a table with columns: Name, Instance ID, Instance Type, Availability Zone, Instance State, Status Checks, and Alarm. There are two rows: 'wmserver' (Instance ID: i-0afe73ff953579363, Instance Type: t2.micro, Availability Zone: us-west-2b, State: pending) and 'linuxvm' (Instance ID: i-05ad6519778dd8862, Instance Type: t2.micro, Availability Zone: us-west-2b, State: running). A yellow circle with a question mark icon highlights the 'pending' state of the wmserver instance. A green circle with a checkmark icon highlights the 'running' state of the linuxvm instance. At the bottom, there are buttons for 'Select an Instance above' and icons for 'Feedback', 'English', and links to 'Privacy Policy' and 'Terms of Use'.

Name	Instance ID	Instance Type	Availability Zone	Instance State	Status Checks	Alarm
wmserver	i-0afe73ff953579363	t2.micro	us-west-2b	pending	Initializing	None
linuxvm	i-05ad6519778dd8862	t2.micro	us-west-2b	running	2/2 checks ...	None

Once instance starts state is →running

The screenshot shows the AWS EC2 Instances page. On the left, there's a sidebar with links like EC2 Dashboard, Events, Tags, Reports, Limits, Instances, Spot Requests, Reserved Instances, Scheduled Instances, Dedicated Hosts, Images, AMIs, Bundle Tasks, and Elastic Block Store. The 'Instances' link is highlighted. The main area has a search bar at the top. Below it, a table lists two instances:

Name	Instance ID	Instance Type	Availability Zone	Instance State	Status Checks	Alarm
linuxvm	i-05ad6519778dd8852	t2.micro	us-west-2b	running	2/2 checks ...	None
winserver	i-0afe73f953579363	t2.micro	us-west-2b	running	2/2 checks ...	None

Below the table, it says "Instance: i-0afe73f953579363 (winserver) Public DNS: ec2-54-214-137-73.us-west-2.compute.amazonaws.com". There are tabs for Description, Status Checks, Monitoring, and Tags, with Status Checks being the active tab. At the bottom, it shows Instance ID, Public DNS (IPv4), and IPv4 Public IP.

To check instance details like

Description, Status check, Monitoring, Tags

This screenshot is identical to the one above, showing the same two instances and their details. However, the 'Status Checks' tab is now highlighted with a red oval, indicating it's the active tab for viewing instance status information.

2 a) To connect to “Windows instance” from Windows client operating system.

Open Ec2 Dashboard Console

Go to instance

Select the instance you want to connect

Click Connect button

The screenshot shows the AWS EC2 Instances page. On the left, there's a sidebar with navigation links like Services, Resource Groups, Events, Tags, Reports, Limits, Instances, Spot Requests, Reserved Instances, Scheduled Instances, Dedicated Hosts, Images, AMIs, Bundle Tasks, and Elastic Block Store. The Instances link is currently selected. The main area displays two instances:

Name	Instance ID	Instance Type	Availability Zone	Instance State	Status Checks	Alarm
linuxvm	i-05a08519778d88852	t2.micro	us-west-2b	running	2/2 checks ...	None
winserver	i-0a6e73f953579363	t2.micro	us-west-2b	running	2/2 checks ...	None

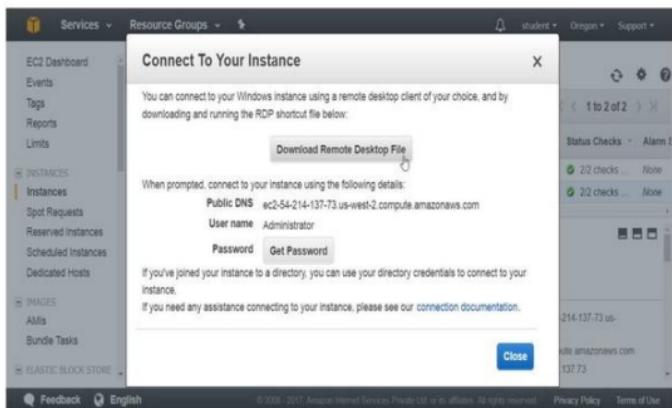
Below the instances, there's a section for the selected instance (winserver):

Description	Status Checks	Monitoring	Tags
Instance ID: i-0a6e73f953579363	Public DNS (IPv4): ec2-54-214-137-73.us-west-2.compute.amazonaws.com	ec2-54-214-137-73.us-west-2.compute.amazonaws.com	IPv4 Public IP: 54.214.137.73
Instance state: running			

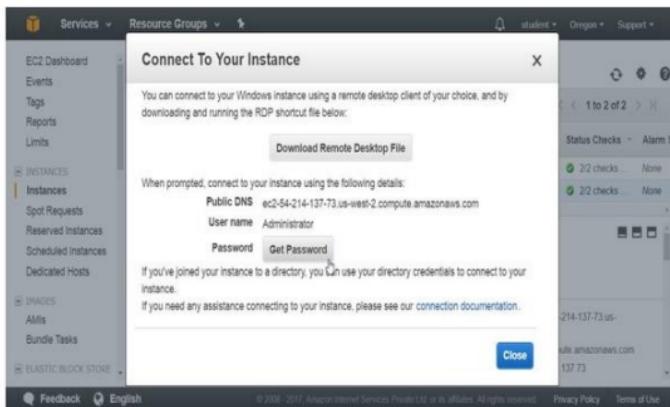
At the bottom of the page, there are links for Feedback, English, Privacy Policy, and Terms of Use.

On “Connect To Your Instance” page, see the guide lines to connect to Windows instance.

Click on “Download Remote Desktop file” button



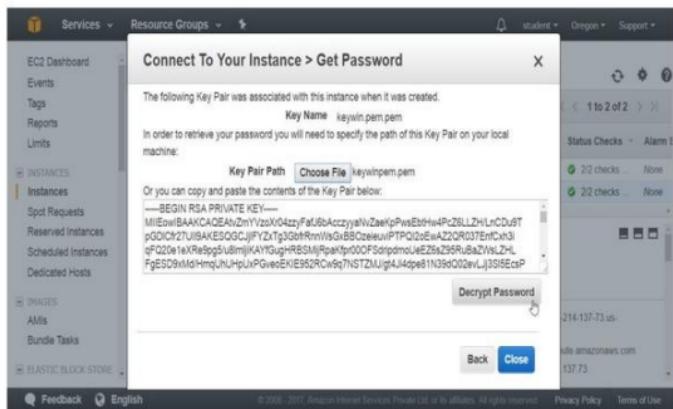
Click on “Get Password” button



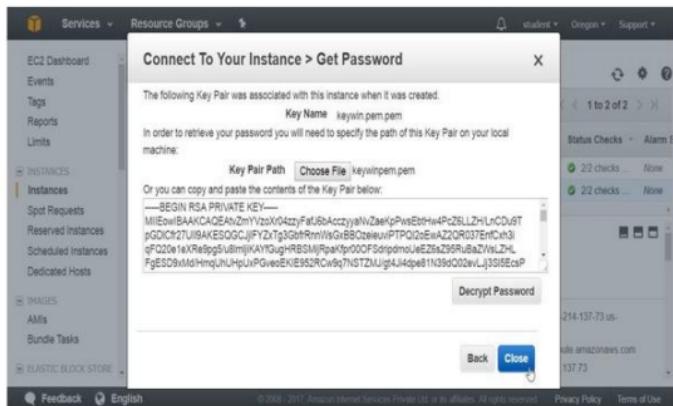
Click on "Choose file" button

Provide the path of key file

Click on "Decrypt Password" button



Click on Close button



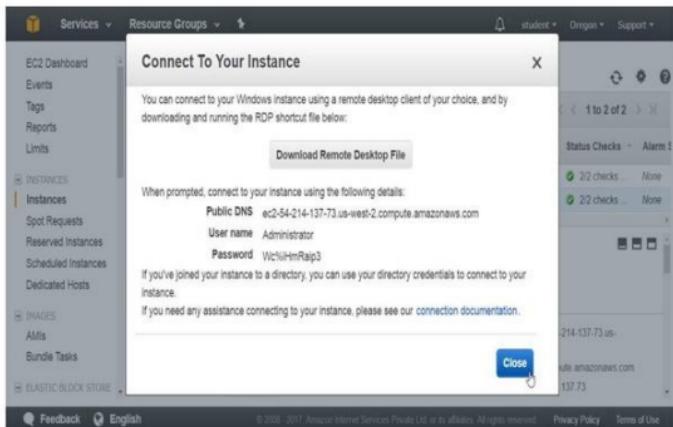
**Copy your instance Detail in Notepad**

Public DNS      ec2-54-213-234-57.us-west-2.compute.amazonaws.com

User name      Administrator

Password      \*\*\*\*\*

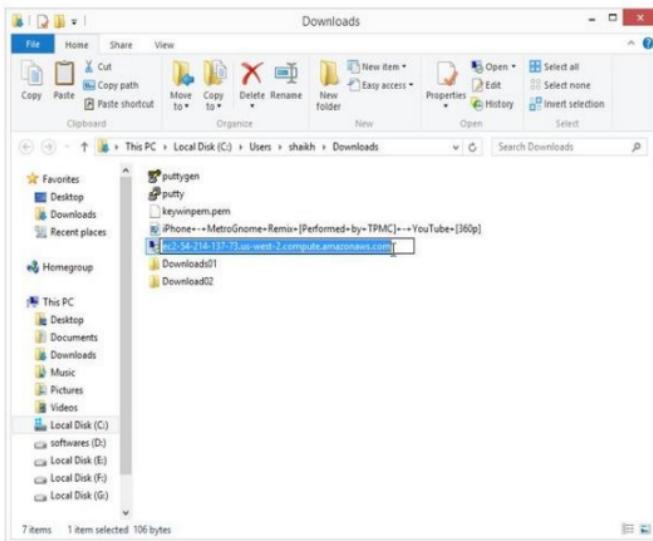
Click on **Close** button.



3) Now you can login to Amazon Windows instance

Double click on downloaded RDP file

Provide username as Administrator and give Password.



Click on connect

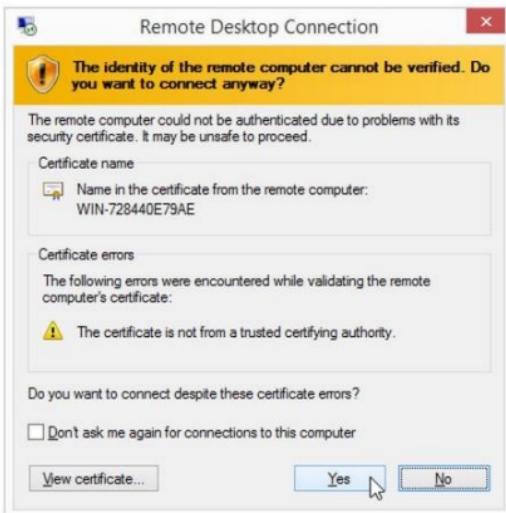


Provide username Administrator and Password

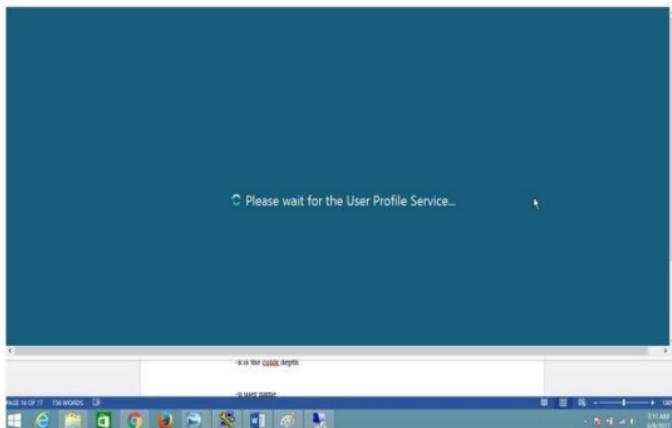
Click on OK



Click on Yes button



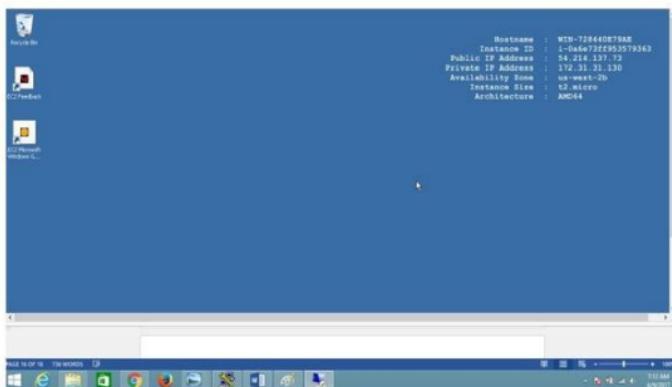
Wait for a movement



## Verify

Successfully Logged in to windows instance

Check Public and Private IP of Windows instance



2b) To connect to your Windows instance using Linux client operating system.

Login to Linux client operating system

Open linux terminal

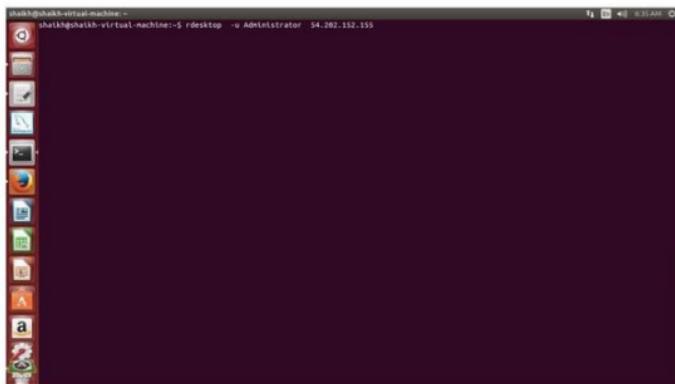
**Note: rdesktop or xfreerdp { RHEL-6,7 } package should be installed**

\$ rdesktop -u Administrator <Pub\_DNS\_name / Public\_IP>

or

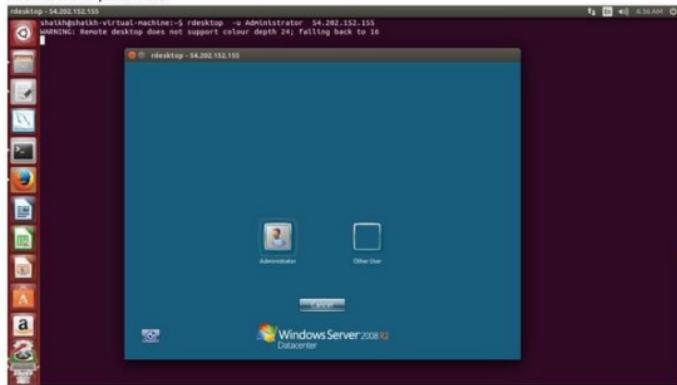
\$ xfreerdp -u Administrator <Pub\_DNS\_name / Public\_IP> { in RHEL 6,7 }

-u → user name



Click on Administrator

Provide the password



Verify:

Once Logged in Windows Desktop is available



Note:

If you are not going to use the instance, terminate the instance

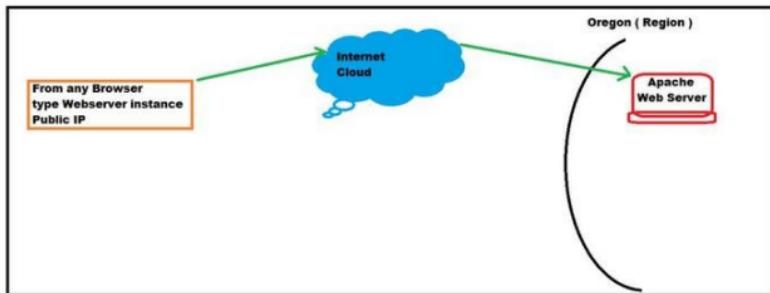
Otherwise it will be charged if the limit is over after free tier usage.

## Lab 3: To Configure Webserver on Amazon Linux instance with Elastic IP

### OBJECTIVE

To configure Webserver and to verify using Elastic public IP

### TOPOLOGY



### PRE-REQUISITES

User should have AWS account, or IAM user with EC2fullaccess

### TASK :

- Launch linux instance in AWS
- Switch to root user
- Configure Apache Webserver
- Enable HTTP port in security Group
- Open the browser and provide public IP or DNS\_name of Webserver
- Assign an Elastic IP
- Releasing an Elastic IP

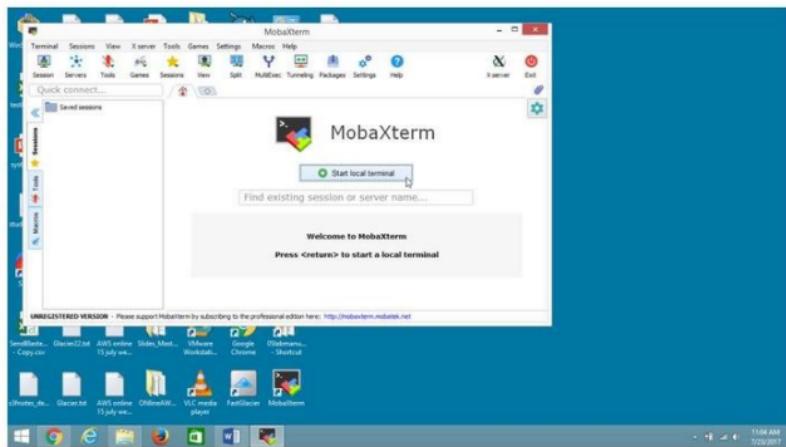
**1) Launch Amazon linux instance and login to your instance**

Refer to **Lab [ How to configure amazon linux instance ]**

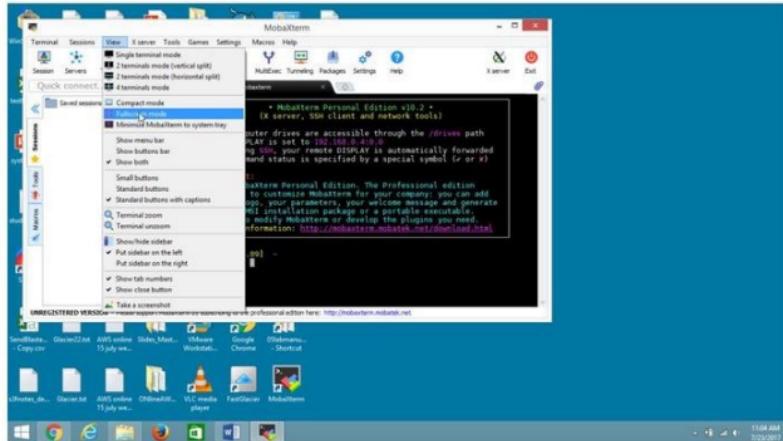
**2) Connect to linux instance from windows using MobaXterm**

Open **MobaXterm**

Click on **Start local terminal**



## Go to Full Screen mode



Navigate to the folder where key\*.pem file is stored

Eg : cd e:/awskeys

A screenshot of a terminal window titled '[shashik\_pc\_main] ~ cd e:/awskeys'. The window contains the help text for MobaTerm Personal Edition v10.2. The command 'cd e:/awskeys' is typed at the prompt, and the terminal is awaiting the user's input.

**Login to linux instance by typing the following command**

```
ssh -i "keyorg123.pem" ec2-user@ec2-54-186-150-140.us-west-2.compute.amazonaws.com
```

## Switch to root user

Type “sudo su”

```
[ec2-user@ip-172-31-10-246 ~]$ sudo su  
[root@ip-172-31-10-246 ec2-user]#
```

Configure Apache Webserver run following commands as shown in the screen

```
[root@ip-172-31-10-246 ec2-user]# yum install httpd -y
[root@ip-172-31-10-246 ec2-user]# chkconfig httpd on
[root@ip-172-31-10-246 ec2-user]# service httpd restart
[root@ip-172-31-10-246 ec2-user]# vi /var/www/html/index.html
```

### To use vi editor

Go to insert mode by typing 'i' and add following code in index.html file

Note: [esc+shift+colon →:wq! (to save and quit in Vi editor)]

### 3) Create an inbound Rule to Allow http traffic on port 80.

Open the AWS console

On the **EC2 Dashboard** panel

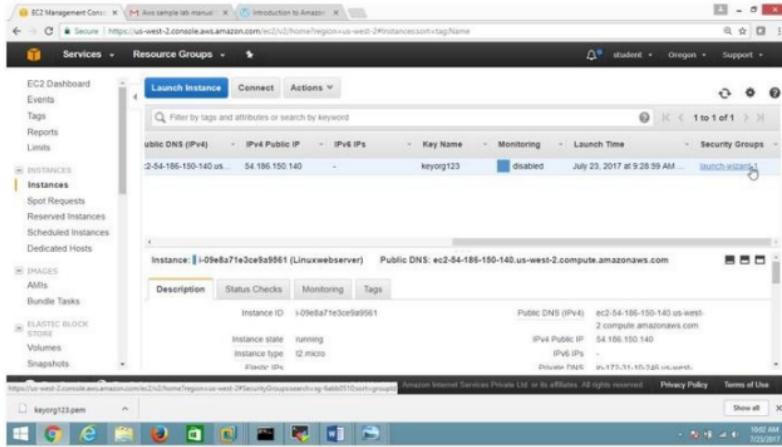
Select the linux instance

The screenshot shows the AWS EC2 Management Console interface. On the left, the navigation pane includes links for Services, Resource Groups, EC2 Dashboard, Events, Tags, Reports, Limits, Instances (selected), Spot Requests, Reserved Instances, Scheduled Instances, Dedicated Hosts, Images, AMIs, Bundle Tasks, and Elastic Block Store. The main content area displays a table of instances. One instance, named "Linuxwebserver...", is selected, showing its details. The instance ID is i-09e8a71e3ce9a9561, it's a t2.micro instance type in the us-west-2c availability zone, and it's currently running. The public DNS is ec2-54-188-150-140.us-west-2.compute.amazonaws.com. Below the table, a detailed view for the selected instance is shown, including its instance ID, state, type, and flavor. It also lists its public and private IP addresses and their respective ranges. At the bottom of the page, there are links for Feedback, English, and a footer with copyright information and links for Privacy Policy and Terms of Use.

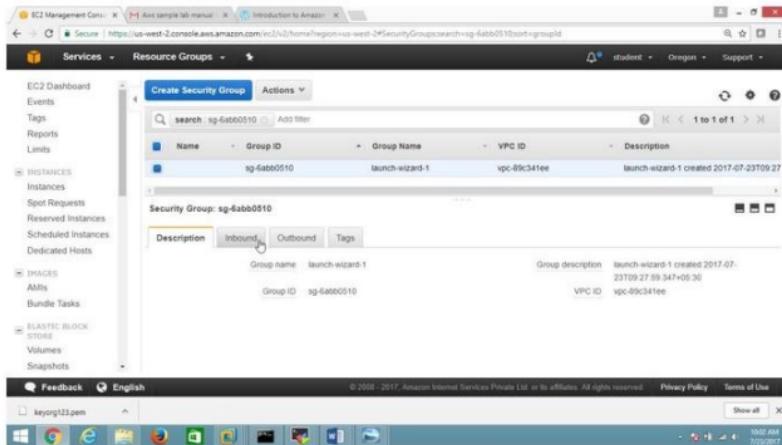
Go to the right end

## Select Security Groups

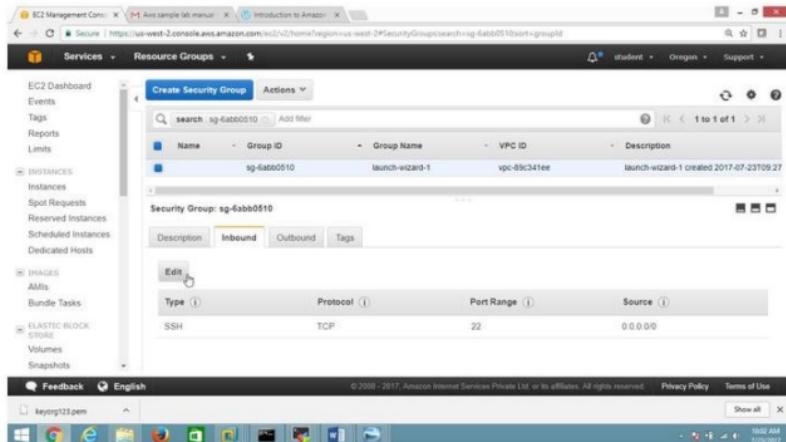
**Click on launch-wizard-1**



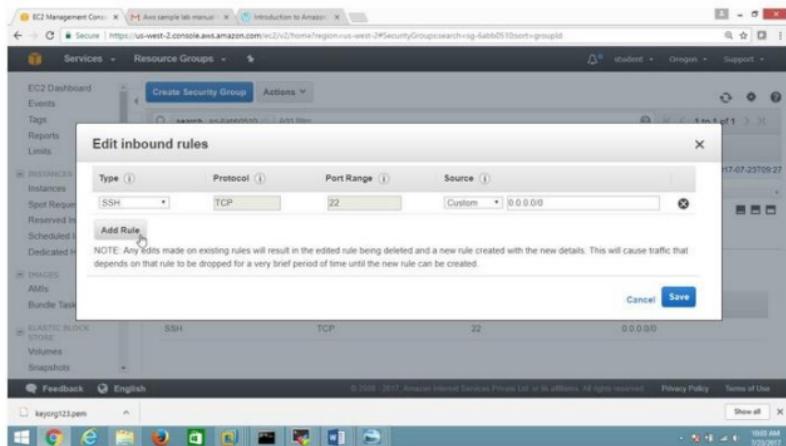
**Click on Inbound button**



### Click on Edit button



### Click on Add Rule button

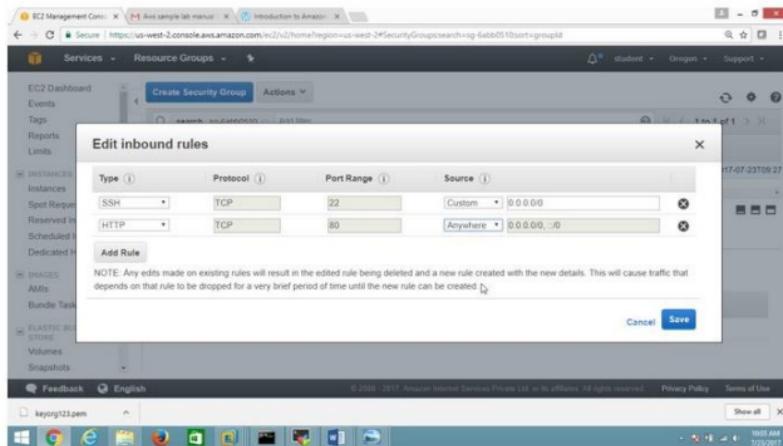


## Add HTTP Rule

Under **Type** column select **HTTP**

Under **Source** column select **Anywhere**

Click Save button



**4) Open Browser and provide Webserver instance DNS\_name or Public IP**

EC2 Management Console | AWS Sample Lab Manual | Introduction to Amazon | <https://us-west-2.console.aws.amazon.com/ec2/home?region=us-west-2#instances?sort=tag.Name>

Services | Resource Groups | [Launch Instance](#) | Connect | Actions

EC2 Dashboard | Events | Tags | Limits | Instances | Instances | Spot Requests | Reserved Instances | Scheduled Instances | Dedicated Hosts | Images | AMIs | Bundle Tasks | Elastic Block Store | Volumes | Snapshots | Feedback | English | [Show all](#)

Filter by tags and attributes or search by keyword

Name	Instance ID	Instance Type	Availability Zone	Instance State	Status Checks	Alarm Status	Public DNS
Linuxwebserver	i-09e8a71e3ce9a9561	t2.micro	us-west-2c	running	2/2 checks ...	None	ec2-54-186-150-140.compute.amazonaws.com

Instance: i-09e8a71e3ce9a9561 (Linuxwebserver) | Public DNS: ec2-54-186-150-140.compute.amazonaws.com

Description | Status Checks | Monitoring | Tags

Instance ID: i-09e8a71e3ce9a9561 | Public DNS (IPv4): ec2-54-186-150-140.us-west-2.compute.amazonaws.com  
Instance state: running | Instance type: t2.micro | Fixable Errors: 0  
IPv4 Public IP: 54.186.150.140 | IPv6 IP: | Describable IP: In: 177.11.10.288.0000

Show all | Privacy Policy | Terms of Use

Feedback | English | [Show all](#)

keyring123.pem

10:21 AM 10/19/2017

**Verify**

Website is running

34.186.150.140 | 54.186.150.140

Welcome to Apache Webserver in AWS instance

10:21 AM 10/19/2017

## Lab 4: To Assign Elastic IP address

### Elastic IP

**Note:** Since public IP given by AWS is not permanent, if the instance is stopped or started again, existing public IP is released by the instance, in this case users across internet again cannot visit the same website, so to have permanent Public IP, assign Elastic IP,

**Note:** If your instance is terminated or not in use, and **Elastice IP** is not released then in this case it will be charged, so be careful if you are using and running under free tier usage.

Best practise is launch an instance assign Elastic IP, and before terminating release Elastic IP then terminate the instances.

## To assigning Elastic IP to an instance

Open AWS console

On the **EC2 Dashboard** panel

Select "**Network Security**"

Click on **Elastic IP**

The screenshot shows the AWS EC2 Management Console interface. On the left, there is a navigation sidebar with the following categories:

- Services: Network & Security, Elastic IP (selected), Placement Groups, Key Pairs, Network Interfaces, Load Balancing, Auto Scaling.
- Systems Manager Services.

The main content area has tabs: Launch Instance, Connect, Actions. A search bar at the top says "Filter by tags and attributes or search by keyword". Below it is a table with one row:

Name	Instance ID	Instance Type	Availability Zone	Instance State	Status Checks
Linuxwebs...	i-09e8a71e3ce9a9561	t2.micro	us-west-2c	running	2/2 checks

Below the table, the instance details are shown: Instance: i-09e8a71e3ce9a9561 (Linuxwebserver) and Public DNS: ec2-54-186-150-140.us-west-2.compute.amazonaws.com. There are tabs for Description, Status Checks, Monitoring, and Tags. At the bottom of the page, there is a footer with links to Privacy Policy and Terms of Use, and a timestamp: 11:08 AM 7/25/2017.

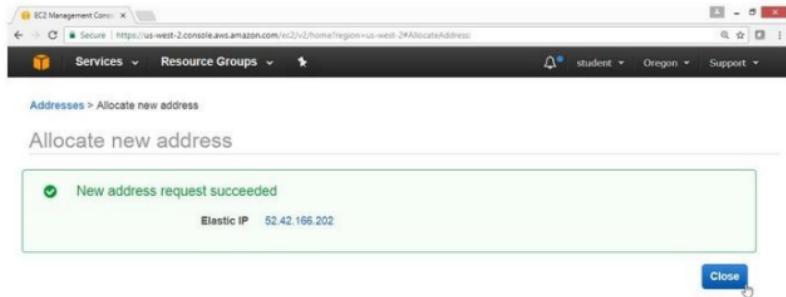
Click on Allocate new address button

The screenshot shows the AWS EC2 Management Console interface. The top navigation bar includes 'Services', 'Resource Groups', and 'Actions'. On the left, a sidebar lists various services under 'Networking & Security': Network & Security, Security Groups, Elastic IPs (which is currently selected), Placement Groups, Key Pairs, and Network Interfaces. Under 'Load Balancing', it lists Load Balancers and Target Groups. Under 'Auto Scaling', it lists Launch Configurations and Auto Scaling Groups. At the bottom of the sidebar is a section for 'Systems Manager Services'. The main content area has a search bar with the placeholder 'Filter by attributes or search by keyword'. Below it, a message says 'You do not have any Addresses in this region' and 'Click the Create Address button to create your first Address'. A prominent blue button at the bottom is labeled 'Allocate new address'.

Click **Allocate** button

The screenshot shows a modal dialog box titled 'Allocate new address'. The title bar includes 'Addresses > Allocate new address'. The main content area contains the text 'Allocate a new Elastic IP address by selecting the scope in which it will be used'. Below this is a single input field with the label '\* Required'. To the right of the input field are two buttons: 'Cancel' and a larger blue 'Allocate' button. The background of the dialog is white, and the overall design is clean and modern.

Click on Close button



Open your Browser and provide your instance DNS name or Elastic Public Ip

Verify website is running with elastic IP.



## To releasing Elastic IP

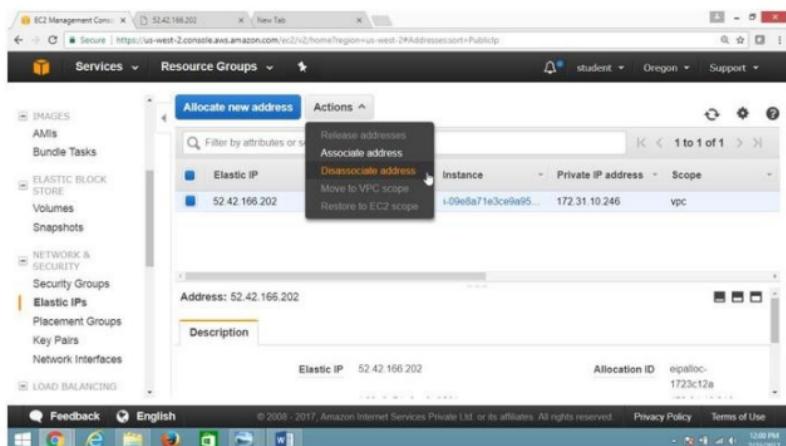
Open the console **EC2 Dashboard**

Expand "Network Security"

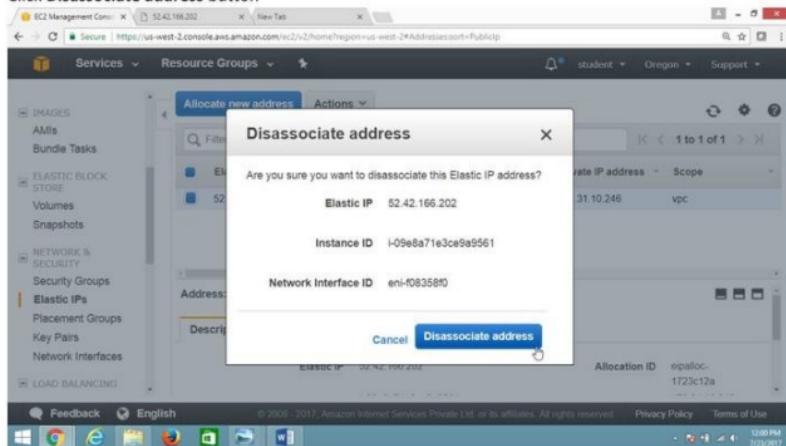
Select **Elastic IP**

Click **Action** button

Select **Disassociate Address**

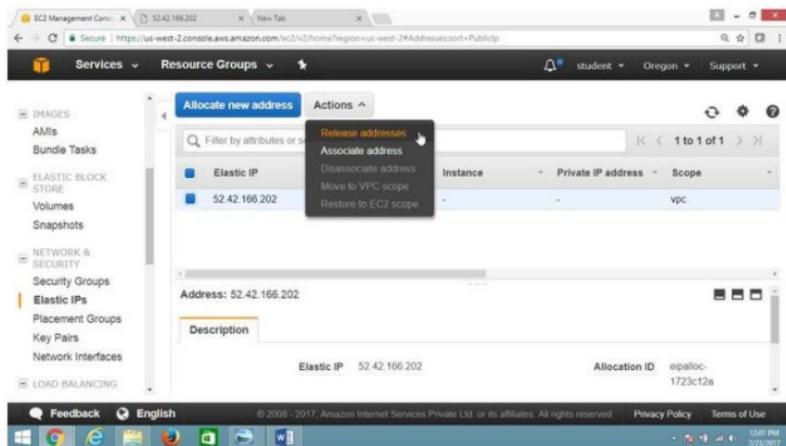


**Click Disassociate address button**

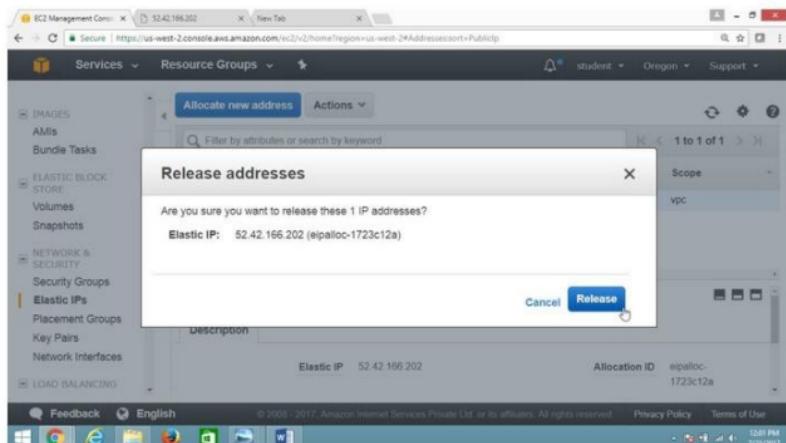


**Click Action button**

**Select Release Addresses**



**Click Release button**



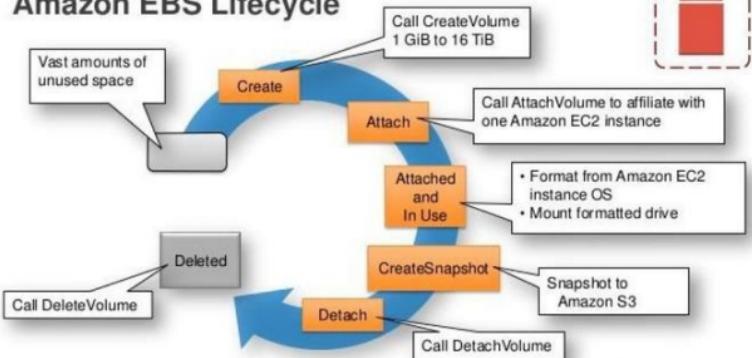
## Lab 5: To Manage Elastic Block Store (EBS)

### OBJECTIVE

To configure and use AWS EBS service

### TOPOLOGY

### Amazon EBS Lifecycle



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Amazon  
AWS Certified Solutions Architect

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### PRE-REQUISITES

User should have AWS account, or IAM user with EC2fullaccess

User should have basic knowledge of managing partitions in Windows or Linux

### To Configure EBS With following task:

Create EBS Volume

Attaching and Detaching EBS volume.

Expanding the size of EBS volume.

Taking the snapshot of EBS volume.

## 1. To create an EBS volume

Open the Amazon console

Select **Compute**, choose **EC2** service

On the **EC2 Dashboard** panel

Choose "**ELASTIC BLOCK STORE**" click on **Volumes**

The screenshot shows the AWS EC2 Dashboard. On the left sidebar, under the "ELASTIC BLOCK STORE" section, the "Volumes" option is highlighted with a yellow circle. The main content area displays the following information:

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

A callout box highlights the "Volumes" section with the text: "Just need a simple virtual private server? Get everything you need to jumpstart your project - compute, storage, and networking - for a low, predictable price. Try Amazon Lightsail for free."

Below the resources, there's a "Create Instance" section with a "Launch Instance" button. A note below it says: "To start using Amazon EC2 you will want to launch a virtual server, known as an Amazon EC2 instance." Another note at the bottom states: "Note: Your instances will launch in the US West (Oregon) region".

On the right side, there are sections for "Account Attributes" (listing Supported Platforms, VPC, Default VPC, and Resource ID length management), "Additional Information" (listing Getting Started Guide, Documentation, All EC2 Resources, Forums, Pricing, and Contact Us), and "AWS Marketplace" (listing Find free software trial products in the AWS Marketplace from the EC2 Launch Wizard). The URL in the address bar is <https://us-west-2.console.aws.amazon.com/ec2/home?region=us-west-2&volumes>.

Click on **Create Volumes** button

The screenshot shows the AWS EBS Management Console interface. On the left, there is a navigation sidebar with sections like 'Scheduled Instances', 'Dedicated Hosts', 'Images', 'AMIs', 'Bundle Tasks', 'Elastic Block Store' (which is expanded), 'Volumes' (which is selected and highlighted in orange), and 'Snapshots'. The main content area has a heading 'Create Volume' and a sub-heading 'Actions'. Below this is a search bar with the placeholder 'Filter by tags and attributes or search by keyword'. A message says 'You do not have any EBS volumes in this region.' followed by 'Click the Create Volume button to create your first volume.' A large blue button labeled 'Create Volume' is centered. At the bottom, there is a section titled 'Select a volume above' with three small icons. The footer contains links for 'Feedback', 'English (US)', and copyright information from 2008-2017.

In the Create Volume dialog box,

Volume Type → General Purpose SSD (GP2)

Size (GiB) → 2 GiB

IOPS → 100 / 3000

Throughput (MB/s) → Not Applicable

Availability Zone → us-west-2a (as per your requirement)

Leave remaining as defaults.

Click on **Create Volume** button

The screenshot shows the 'Create Volume' dialog box on the AWS Management Console. The 'Volume Type' is set to 'General Purpose SSD (GP2)'. The 'Size (GiB)' is set to '2' (Min: 1 GiB, Max: 16384 GiB). The 'IOPS' setting is '300 / 3000' (Baseline of 3 IOPS per GiB with a minimum of 100 IOPS, burstable to 3000 IOPS). The 'Availability Zone' is 'us-west-2a'. The 'Throughput (MB/s)' is 'Not applicable'. The 'Snapshot ID' dropdown is set to 'Select a snapshot'. The 'Encryption' checkbox is checked with the label 'Encrypt this volume'. Below the form, there is a 'Tags' section with a note 'Add tags to your volume' and a 'Required' note. At the bottom right, there are 'Cancel' and 'Create Volume' buttons, with 'Create Volume' being highlighted.

Verify Volume successfully created

Click **Close** button

The screenshot shows a browser window with the URL <https://us-west-2.console.aws.amazon.com/ec2/home?region=us-west-2&CreateVolumeId=vol-0d040895c111aceec>. The page title is "Creating an Amazon EBS Volume". The main content area displays a green success message: "Volume created successfully" with a checkmark icon. Below it, the Volume ID is listed as "Volume ID: vol-0d040895c111aceec". At the bottom right of the message box is a blue "Close" button. The AWS navigation bar at the top includes "Services", "Resource Groups", and user information "student" and "Oregon". The footer contains links for "Feedback", "English (US)", "Privacy Policy", and "Terms of Use".

## To Monitoring the State of Your Volumes

Select Volume check state → available

The screenshot shows a browser window with the same URL as the previous screenshot. The page title is "Creating an Amazon EBS Volume". The main content area now displays a table of volumes. One row is highlighted in blue, showing the following details:

Name	Volume ID	Size	Type	IOPS	Snapshot	Created	Availability Zone	State	Alarm Status
vol-08ba15bd2df3cbcc	vol-08ba15bd2df3cbcc	2 GiB	gp2	100 / 3000		November 10, 2017	us-west-2a	available	None

The "State" column for this volume shows "available". The AWS navigation bar and footer are visible at the top and bottom of the page respectively.

In the Name column give name for your volume → 2gb2a

The screenshot shows the AWS EC2 Management Console with the 'Create Volume' tab selected. On the left, the navigation menu includes 'EC2 Dashboard', 'Events', 'Tags', 'Reports', 'Limits', 'INSTANCES', 'Instances', 'Spot Requests', 'Reserved Instances', 'Scheduled Instances', 'Dedicated Hosts', 'IMAGES', 'AMIs', 'Bundle Tasks', and 'ELASTIC BLOCK STORE'. Under 'Volumes', there is a table listing existing volumes:

Name	Volume ID	Size	Volume Type	IOPS	Snapshot	Created	Availability Zone	Actions
Winvm1	vol-0b2680a	30 GB	gp2	100 / 3000	Map-04e2c21...	November 10, 2017	us-west-2a	<span style="color: green;">Green</span>
<b>2gb2a</b>		2 GB	gp2	100 / 3000		November 10, 2017	us-west-2a	<span style="color: blue;">Blue</span>

Below the table, a modal window titled 'Volumes' shows the details for the newly created volume: 'vol-0bba155bd2df3cbcc'. The tabs at the bottom of the modal are 'Description', 'Status Change', 'Monitoring', and 'Tags'. The 'Tags' tab is currently selected.

## 2) To Attaching and Detaching EBS volume in Windows instance

On the **EC2 Dashboard** panel

Choose "**ELASTIC BLOCK STORE**" click on **Volume**

Note : The volume which you want to attach to an instance should be in same Availability zone.

Drop Down **Action** button,

Select **Attach Volume**.

The screenshot shows the AWS EC2 Management Console interface. On the left, there's a navigation sidebar with links like Spot Requests, Reserved Instances, Scheduled Instances, Dedicated Hosts, IMAGES, AMIs, Bundle Tasks, ELASTIC BLOCK STORE (with Volumes selected), Snapshots, and NETWORK & SECURITY (with Security Groups, Elastic IPs, Placement Groups, Key Pairs, and Network Interfaces). The main content area has tabs for Description, Status Checks, Monitoring, and Tags. A modal window is open over the table, showing the Actions dropdown with "Attach Volume" highlighted. The table lists three volumes: gp2, 100 / 3000, snap-0a2a00d... (Created: November 10, 2017, Availability Zone: us-west-2a); gp2, 100 / 3000, snap-04e0c21... (Created: November 10, 2017, Availability Zone: us-west-2a); and 2gt2a, 100 / 3000, snap-04e0c21... (Created: November 10, 2017, Availability Zone: us-west-2a). At the bottom of the modal, there are buttons for Description, Status Checks, Monitoring, and Tags.

Select instance → Winvm1

The screenshot shows the AWS EC2 Management Console with the 'Create Volume' tab selected. A modal dialog box titled 'Attach Volume' is open. Inside the dialog, a volume is selected ('vol-08ba155bd2df3ccbc (2gb2a) in us-west-2a') and an instance is chosen ('i-0515c73516b0a071 (Winvm1) (running)'). The 'Device' field contains '/dev/sda1'. Below the dialog, the main EC2 interface shows a list of volumes, including 'vol-08ba155bd2df3ccbc (2gb2a)'.

Click on Attach

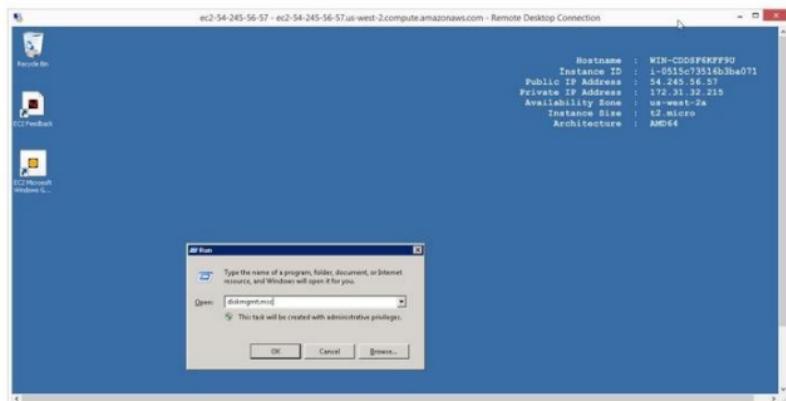
This screenshot is identical to the previous one, showing the 'Attach Volume' dialog with the same parameters: volume 'vol-08ba155bd2df3ccbc (2gb2a)', instance 'i-0515c73516b0a071 (Winvm1) (running)', and device '/dev/sda1'. The 'Attach' button is visible at the bottom right of the dialog.

Verify the Availability of new volume

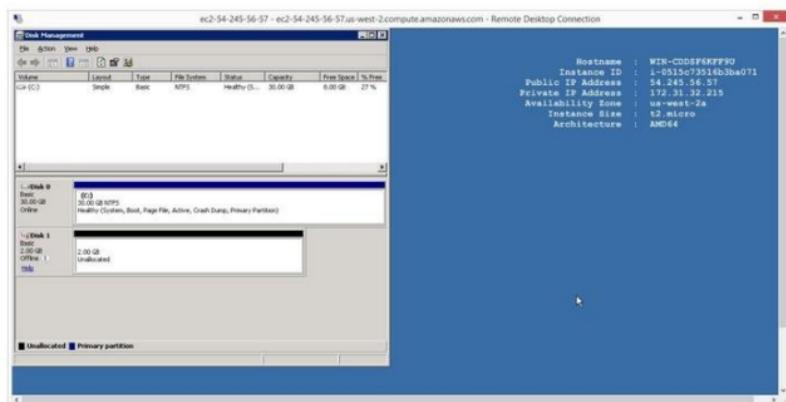
### 3. To check availability of new drive login to your Windows instance.

Login to windows instance

Run → diskmgmt.msc

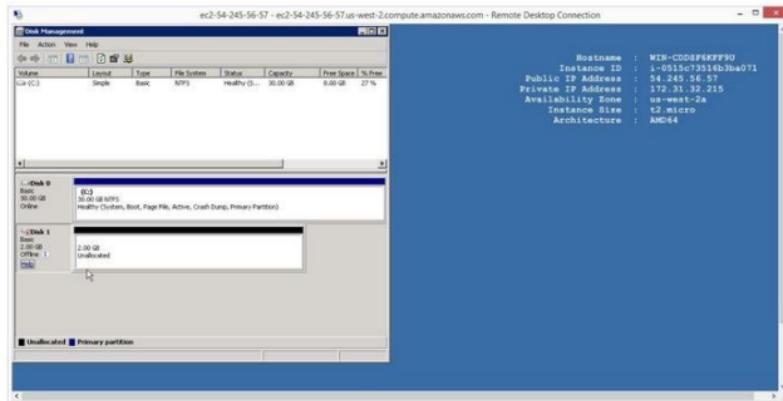


Verifies that 2 GB volume available as unallocated space

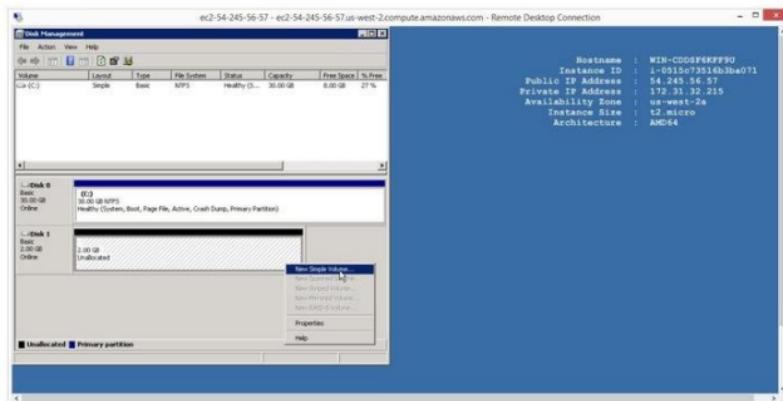


New disk is offline,

So turn it to online by right clicking and select online

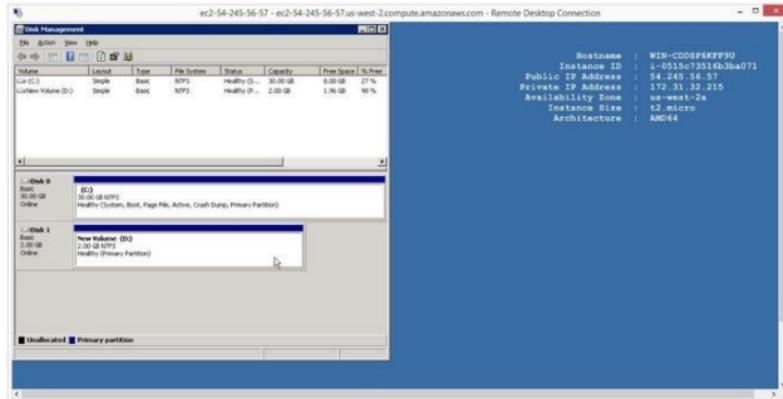


Format the unallocated disk



## Verify

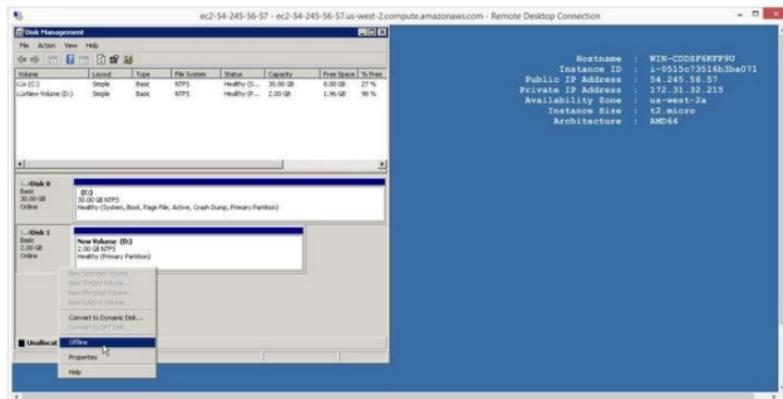
New Volume to 2GB is available to use



## 4. To Detach the volume

In Windows Select Disk 1

Right click select offline



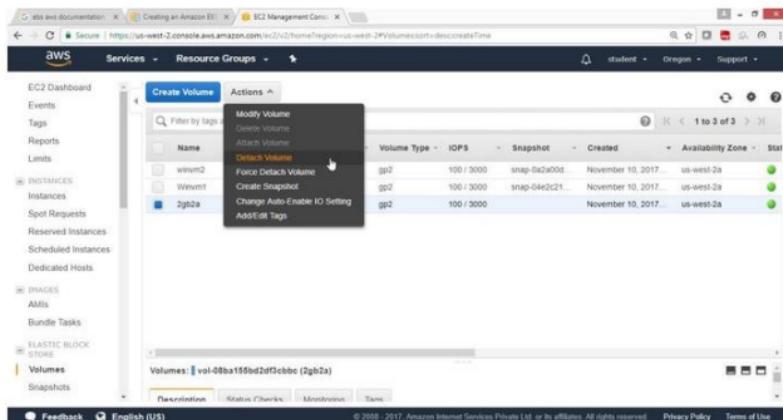
On the EC2 Dashboard panel

Choose "ELASTIC BLOCK STORE" click on Volumes

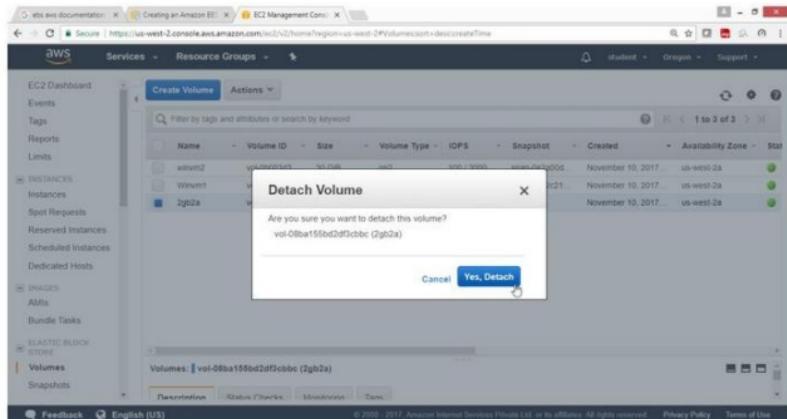
Select volume to be detached under Name column.

Drop Down Action button

Select "Detach Volume"



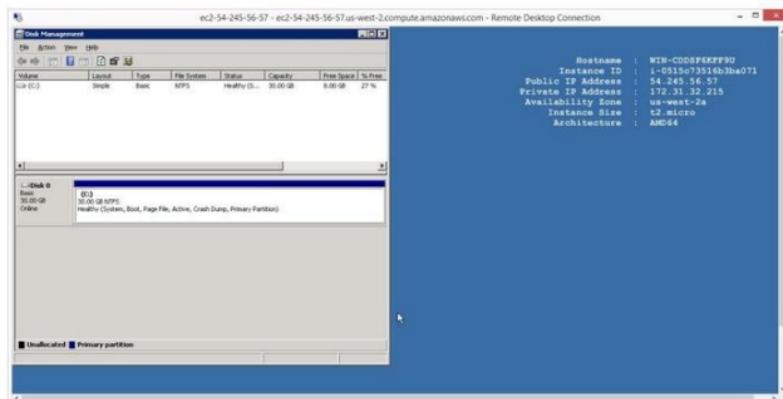
Click on "Yes, Detach" button



## Verification

Login to windows instance

Check that D: drive is removed

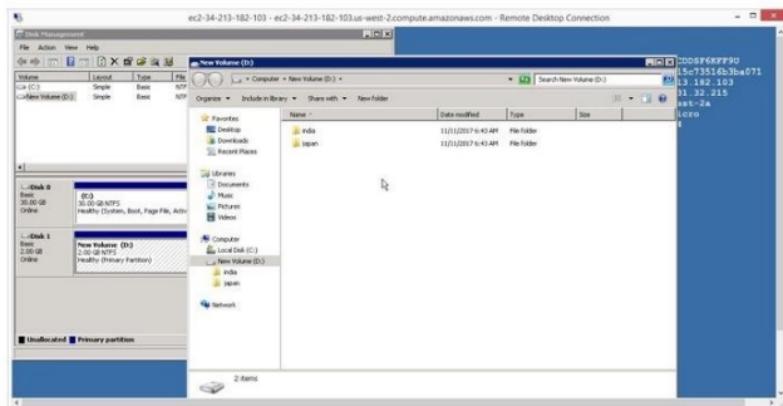


## 5. To Create Snapshot and Restore EBS volume.

### To create a snapshot

In the current D drive two folders are available

No create a snapshot of this volume



On the **EC2 Dashboard** panel

Click on “**ELASTIC BLOCK STORE**”, choose Volumes.

Drop down **Action** button select Create snapshot

The screenshot shows the AWS EC2 Management Console. On the left, the navigation pane is visible with sections like Scheduled Instances, Dedicated Hosts, IMAGES, AMIs, Bundle Tasks, ELASTIC BLOCK STORE (with Volumes selected), Snapshots, NETWORK & SECURITY, Security Groups, Elastic IPs, Placement Groups, Key Pairs, Network Interfaces, and Feedback. The main area shows a table of volumes:

Volume Type	IOPS	Snapshot	Created
gp2	100 / 3000	snap-0a2a00d...	November 10, 2017...
gp2	100 / 3000	snap-04e2c21...	November 10, 2017...
gp2	100 / 3000		November 10, 2017...

A context menu is open over the third volume (gp2). The menu items are: Modify Volume, Delete Volume, Attach Volume, Detach Volume, Force Detach Volume, Create Snapshot (which is highlighted with a cursor), and Change Auto-Enable IO Setting. Below the menu, there is a "Add/Edit Tags" button.

Provide snapshot details

Click **Create** button

The screenshot shows the "Create Snapshot" dialog box. It contains the following fields:

- Volume:** vol-08ba155bd2df3cbcc (2gb2a)
- Name:** snapvol1
- Description:** snapvol1\_des
- Encrypted:** No

At the bottom right of the dialog are two buttons: **Cancel** and **Create**.

Verify that snapshot is created.

Scheduled Instances  
Dedicated Hosts  
IMAGES  
AMIs  
Bundle Tasks  
ELASTIC BLOCK STORE  
Volumes  
Snapshots  
NETWORK & SECURITY  
Security Groups  
Elastic IPs  
Placement Groups  
Key Pairs  
Network Interfaces

Create Snapshot Actions

Owned By Me Filter by tags and attributes or search by keyword

Name	Snapshot ID	Size	Description	Status
snapvol1	snap-0ff48c354563cba0	2 GB	snapvol1_des	Completed

Snapshot: snap-0ff48c354563cba0 ( snapvol1 )

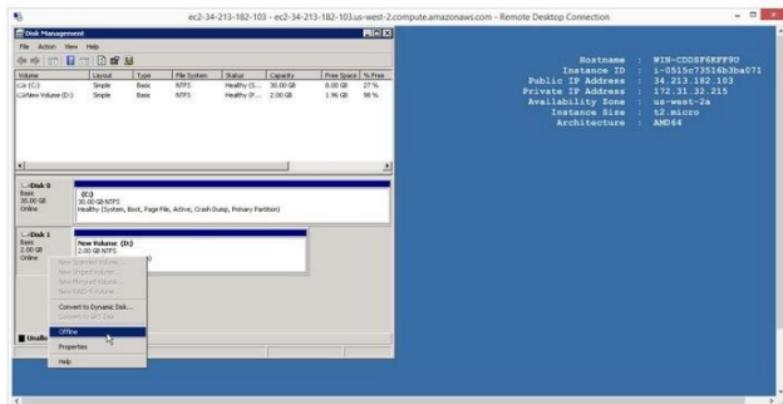
Description Permissions Tags

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

## 6) To Delete the volume.

First select the disk 1 from Disk Management

Right click select offline



On the EC2 Dashboard panel

Expand “**ELASTIC BLOCK STORE**”,choose Volumes.

Select volume to be detached under the Name column.

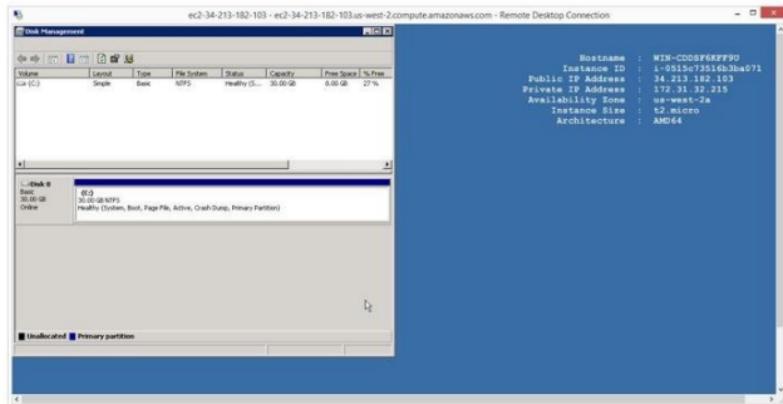
Drop Down Action button, Select “**Delete Volume**”

The screenshot shows the AWS EC2 Management Console interface. On the left, the navigation pane is visible with various services like Scheduled Instances, Dedicated Hosts, and the expanded **ELASTIC BLOCK STORE** section, which includes **Volumes** and **Snapshots**. In the main content area, a table lists three volumes: gp2, gp2, and gp2. The first volume, labeled "gp2", has its row highlighted. A context menu is open over this row, with the "Actions" option expanded. The "Delete Volume" option is clearly visible and highlighted with a cursor. Other options in the Actions menu include Attach Volume, Detach Volume, Force Detach Volume, Create Snapshot, Change Auto-Enable IO Setting, and Add/Edit Tags. At the bottom of the screenshot, there are tabs for Description, Status Checks, Monitoring, and Tags, along with links for Feedback, English (US), Privacy Policy, and Terms of Use.

Volume Type	IOPS	Snapshot	Created
gp2	100 / 3000	snap-0a2a00d...	November 10, 2017...
gp2	100 / 3000	snap-04e2c21...	November 10, 2017...
gp2	100 / 3000		November 10, 2017...

Verify from windows instance open disk Management tool

Now D drive is detached



Now delete the volume

A screenshot of the AWS Management Console. The left sidebar shows 'Services' and 'Resource Groups'. Under 'ELASTIC BLOCK STORE', 'Volumes' is selected. In the main area, a table lists volumes: 'gp2' (100 / 3000), 'gp2' (100 / 3000), and 'gp2' (100 / 3000). A context menu is open over the third volume, labeled '2gb2a'. The menu options are: 'Modify Volume' (highlighted with a cursor), 'Attach Volume', 'Detach Volume', 'Create Snapshot', 'Change Auto-Enable IO Setting', and 'Add/Edit Tags'. At the bottom of the page, there is a 'Feedback' link, language selection for 'English (US)', and a footer with copyright information: '© 2006 - 2017, Amazon Internet Services Private Ltd. or its affiliates. All rights reserved.' and links to 'Privacy Policy' and 'Terms of Use'.

## Verify volume is deleted.

The screenshot shows the AWS Management Console interface for the EC2 service. The left sidebar navigation bar includes options like Scheduled Instances, Dedicated Hosts, Images, AMIs, Bundle Tasks, and Elastic Block Store. Under the Elastic Block Store section, the 'Volumes' option is selected, highlighted with a yellow bar. The main content area displays a table titled 'Create Volume' with the heading 'Actions' and a search bar. The table has columns for Name, Volume ID, Size, Volume Type, IOPS, Snapshot, and Created. Two rows are present:

Name	Volume ID	Size	Volume Type	IOPS	Snapshot	Created
winvm2	vol-0b0003d3...	30 GB	gp2	100 / 3000	snap-0a2a00d...	November 10, 2017...
Winvm1	vol-0b2680a...	30 GB	gp2	100 / 3000	snap-04e2c21...	November 10, 2017...

Below the table, a message says 'Select a volume above' with three small icons. At the bottom of the page, there are links for Feedback, English (US), and footer links for Privacy Policy and Terms of Use.

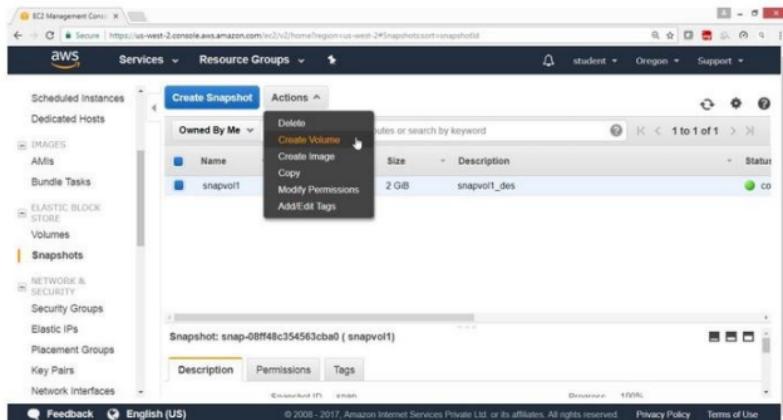
## 7. To Restore the volume.

From the console **EC2 Dashboard**

Expand “**ELASTIC BLOCK STORE**”, choose Snapshots

Select the snapshot

Drop Down Action button, Select **Create Volume**



Accept the defaults values in wizard

Note: Check the right availability zone.

The screenshot shows the 'Create Volume' wizard on the AWS Management Console. The volume is being created from a snapshot named 'snap-08ff48c354563cba0'. The volume type is set to 'General Purpose SSD (GP2)'. The size is 2 GiB, and the IOPS are set to 100 / 3000. The availability zone is 'us-west-2a'. The throughput is listed as 'Not applicable'. The encryption is set to 'Not Encrypted'. A note indicates a baseline of 3 IOPS per GiB with a minimum of 100 IOPS, burstable to 3000 IOPS. There are tabs for 'Tags' and 'Add tags to your volume'. At the bottom, there is a note that 'Tags are required' and a 'Create Volume' button.

Snapshot ID: snap-08ff48c354563cba0 (snapvol1)

Volume Type: General Purpose SSD (GP2)

Size (GiB): 2 (Min: 1 GiB, Max: 16384 GiB)

IOPS: 100 / 3000 (Baseline of 3 IOPS per GiB with a minimum of 100 IOPS, burstable to 3000 IOPS)

Availability Zone\*: us-west-2a

Throughput (MB/s): Not applicable.

Encryption: Not Encrypted

Tags: Add tags to your volume

\* Required

Create Volume

Verify Volume is created

The screenshot shows the 'Volumes' section of the AWS Management Console. On the left, there is a sidebar with links for Scheduled Instances, Dedicated Hosts, Images (AMIs), Bundle Tasks, Elastic Block Store (selected), Volumes (selected), Snapshots, Network & Security (Security Groups, Elastic IPs, Placement Groups, Key Pairs, Network Interfaces), and Feedback. The main area displays a table of volumes. The table has columns for Name, Volume ID, Size, Volume Type, IOPS, Snapshot, and Created. Three volumes are listed: 'wimvm1' (vol-0b2980a...), 'wimvm2' (vol-0b003d3...), and 'vol-0cd5da3c...'. The 'Created' column shows dates from November 11, 2017, to November 10, 2017. Below the table, there is a search bar with the placeholder 'Filter by tags and attributes or search by keyword' and a 'Volumes' dropdown menu containing 'vol-0cd5da3c73f3a3881'. At the bottom, there are tabs for 'Description', 'Status Checks', 'Monitoring', and 'Tags'. The footer includes links for Feedback, English (US), Privacy Policy, and Terms of Use.

Name	Volume ID	Size	Volume Type	IOPS	Snapshot	Created
wimvm1	vol-0b2980a...	30 GiB	gp2	100 / 3000	snap-0a2a00d...	November 10, 2017...
wimvm2	vol-0b003d3...	30 GiB	gp2	100 / 3000	snap-08ff48c3...	November 11, 2017...
vol-0cd5da3c...						

## 7) To expanding the size of EBS volume.

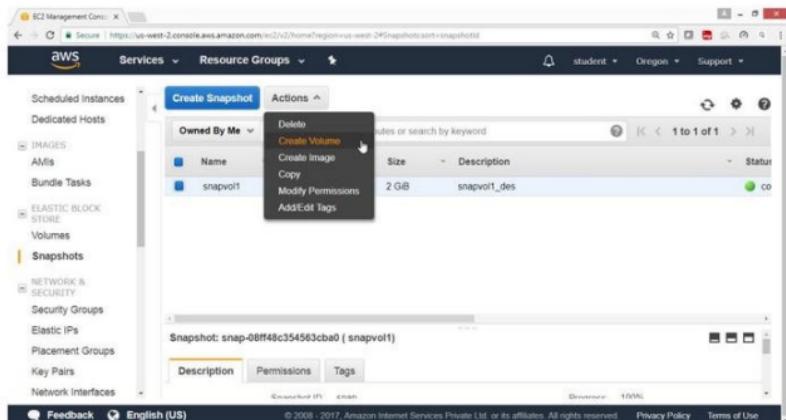
To expand EBS volume first take **snapshot**, now select the snapshot

On the **EC2 Dashboard** panel

Expand “**ELASTIC BLOCK STORE**”, choose **Snapshots**

Drop Down **Action** button

Select **Create Volume**



Give the required size → 4 GB

Check the right Availability Zone

click **Create Volume** button

The screenshot shows the 'Create Volume' step in the AWS Management Console. The configuration is as follows:

- Snapshot ID:** snap-08ff4fc354563cba0 (snapvol1)
- Volume Type:** General Purpose SSD (GP2)
- Size (GiB):** 4 (Min: 1 GiB, Max: 16384 GiB)
- IOPS:** 100 / 3000 (Baseline of 3 IOPS per GiB with a minimum of 100 IOPS, burstable to 3000 IOPS)
- Availability Zone\***: us-west-2a
- Throughput (MB/s):** Not applicable
- Encryption:** Not Encrypted

At the bottom, there is a 'Tags' section with a link to 'Add tags to your volume'. A note says '\* Required'. On the right, there are 'Cancel' and 'Create Volume' buttons.

Verify that 4 GB is created

The screenshot shows the 'EC2 Management Console' interface with the 'Volumes' section selected. The table lists the following volumes:

Name	Volume ID	Size	Volume Type	IOPS	Snapshot	Created
vol-034d700...	4 GiB	gp2	100 / 3000	snap-08ff4fc3...	November 11, 2017...	
vol-0c05da3c...	2 GiB	gp2	100 / 3000	snap-08ff4fc3...	November 11, 2017...	
wimvm2	30 GiB	gp2	100 / 3000	snap-02a9e00d...	November 10, 2017...	
Wimvm1	30 GiB	gp2	100 / 3000	snap-04e2c21...	November 10, 2017...	

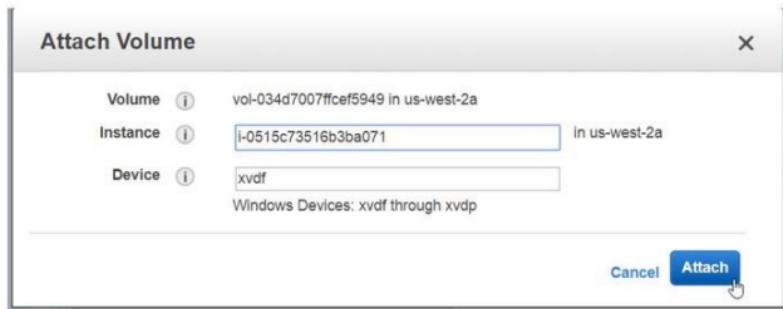
Now attach this expanded volume to your instance.

The screenshot shows the AWS Management Console interface for the EC2 service. On the left, there's a navigation pane with various options like Scheduled Instances, Dedicated Hosts, Images, AMIs, Bundle Tasks, Elastic Block Store, Volumes (which is selected), and Snapshots. The main area displays a list of volumes. A context menu is open over a volume named 'winvm2'. The menu has options: Modify Volume, Delete Volume, Attach Volume (which is highlighted with a cursor), Detach Volume, Force Detach Volume, Create Snapshot, Change Auto-Enable IO Setting, and Add/Edit Tags. Below the menu, the volume list shows five entries, all of which are gp2 type volumes with 100 IOPS and created on November 11, 2017, or November 10, 2017. At the bottom of the page, there are links for Feedback, English (US), and a copyright notice from 2008.

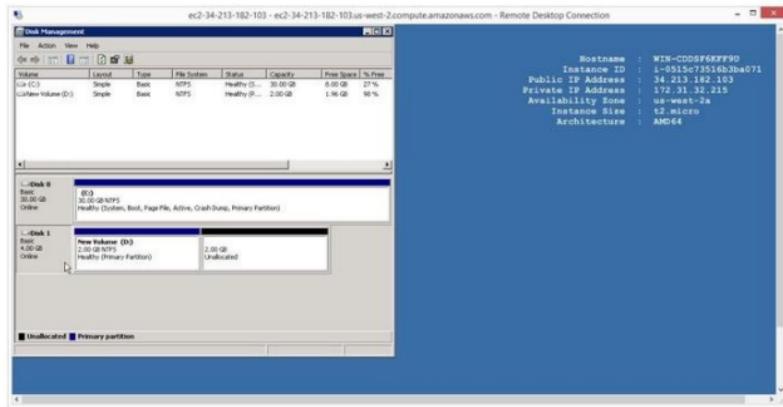
Select instance

This screenshot shows the 'Attach Volume' dialog box. It has fields for 'Volume' (set to vol-034d7007ffcef5949 in us-west-2a), 'Instance' (a search bar containing 'Search Instance ID or Name tag' with 'in us-west-2a' appended), and 'Device' (a dropdown menu showing two running instances: 'i-0515c73516b3ba071 (winvm1) (running)' and 'i-04bd24ef0affeed12 (winvm2) (running)'). At the bottom right are 'Cancel' and 'Attach' buttons, with 'Attach' being highlighted.

Click Attach button

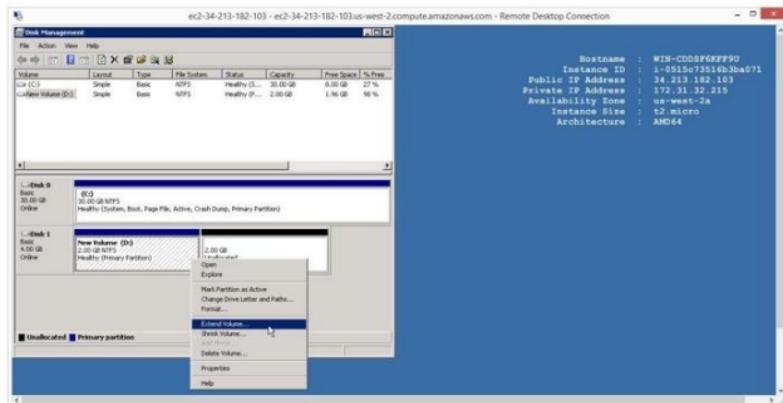


Verify 4 GB drive is available

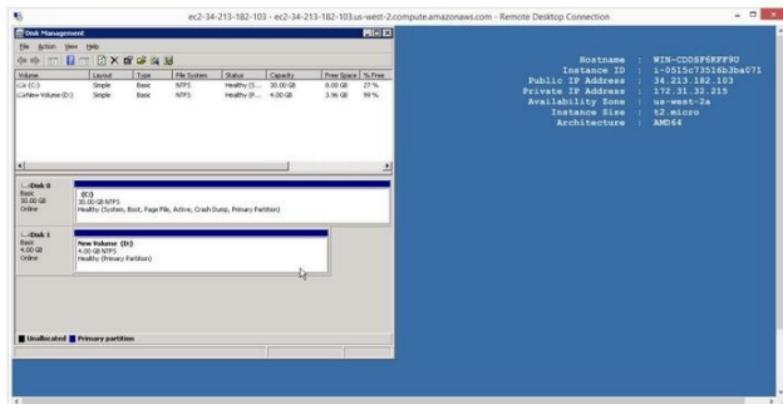


Now with respect to Windows operating system

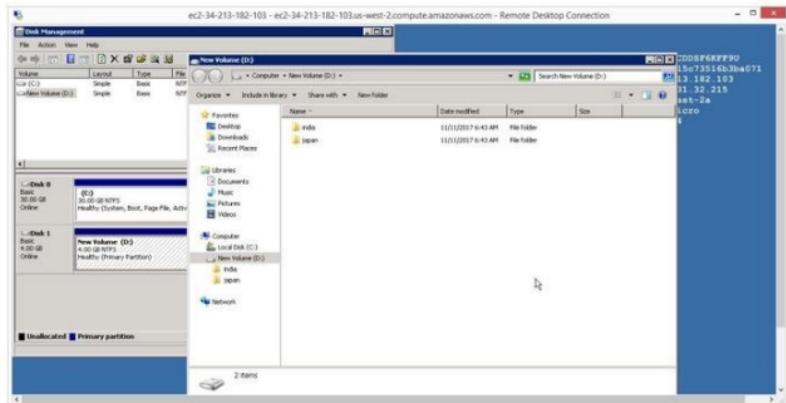
Right click on D drive extend your volume to your desired size



Verified that 4 GB volume available

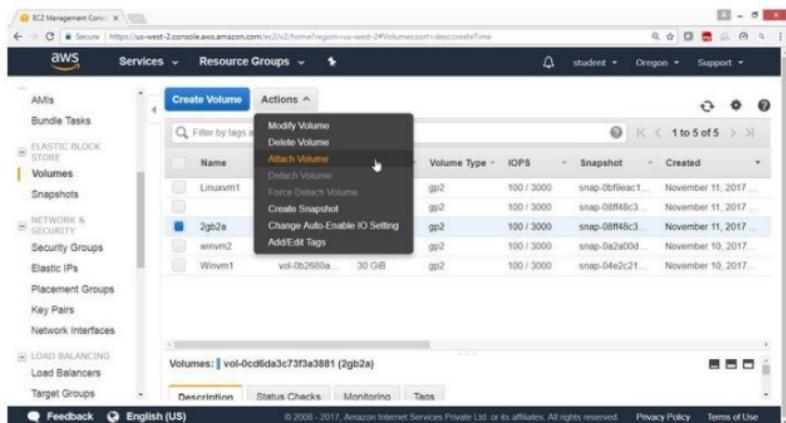


Verified that D drive contains two folders that was there in 2B drive earlier.



Similarly check volume in linux instance

From Action select Attach volume



## Select Linux instance

The screenshot shows the AWS EC2 Management Console. On the left, there's a sidebar with navigation links like AMIs, Bundle Tasks, ELASTIC BLOCK STORE, Volumes, Snapshots, NETWORK & SECURITY, Security Groups, Elastic IPs, Placement Groups, Key Pairs, Network Interfaces, LOAD BALANCING, Load Balancers, Target Groups, and Feedback. The main area has tabs for Services, Resource Groups, and Actions. A search bar at the top says "Filter by tags and attributes or search by keyword". Below it, a table lists volumes with columns for Created, Volume ID, Instance ID, Device, and Status. One volume is selected: "vol-0cd8da3c73f3a3881 (2gb2a) in us-west-2a". A modal window titled "Attach Volume" is open, showing the "Volume" dropdown set to "vol-0cd8da3c73f3a3881 (2gb2a) in us-west-2a", the "Instance" dropdown set to "Search instance ID or Name tag in us-west-2a", and the "Device" dropdown containing three entries: "i-0515c73516b3ba071 (Winvm1) (running)", "i-04bd24ef0affed12 (Winvm2) (running)", and "i-0fbfc948e9e9e0d9 (Linuxvm1) (running)". There are "Cancel" and "Attach" buttons at the bottom right of the modal.

Now connect to Linux instance

The terminal window shows the following session:

```
[2017-11-11 12:58:46] /drives/e/awskeskeys
[shaikh.pc_mas] > ssh -i "studentaws.pem" ec2-user@ec2-54-244-106-102.us-west-2.compute.amazonaws.com
X11 forwarding request failed on channel 0
Last login: Sat Nov 11 07:28:43 2017 from 49.206.203.114
[ec2-user@ip-172-31-40-234 ~]$ su
[root@ip-172-31-40-234 ec2-user]# 
```

The terminal also displays the Amazon Linux AMI logo and a link to the release notes: <https://aws.amazon.com/amazon-linux-ami/2017.09-release-notes/>

To verify

Switch to root user and run fdisk -l

\$ sudo su

To check list of drives and partitions

# fdisk -l

```
[ec2-user@ip-172-31-40-234 ~]$ sudo su
[root@ip-172-31-40-234 ec2-user]# fdisk -l
WARNING: fdisk GPT support is currently new, and therefore in an experimental phase.
Use at your own discretion.

Disk /dev/xvda: 8589 MB, 8589934592 bytes, 16777216 sectors
Units = sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes
Disk label type: gpt

#      Start      End  Size Type Name
1       4096    16777182   8G Linux filesystem Linux
128     2048        4095   1M BIOS boot parti BIOS Boot Partition

Disk /dev/xvdf: 2147 MB, 2147483648 bytes, 4194304 sectors
Units = sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes
Disk label type: dos
Disk identifier: 0xb9c39eba
```

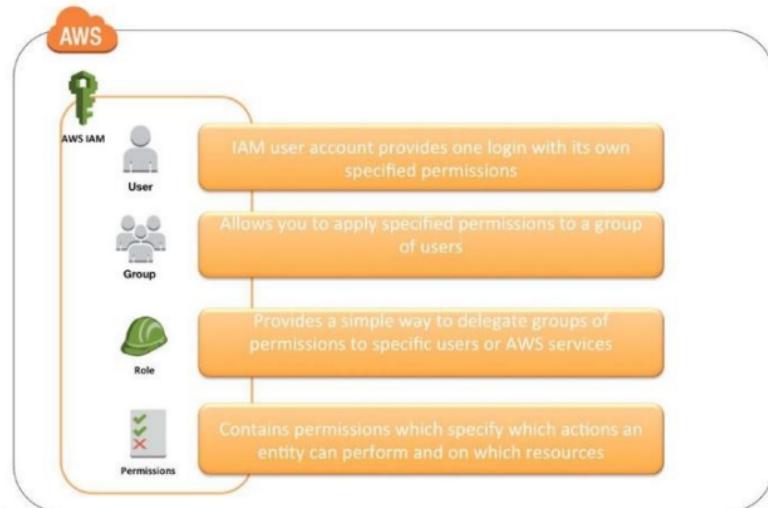
## Lab 6: To Manage IAM Users, Groups and Policies

### OBJECTIVE

To configure and use AWS IAM Service.

### TOPOLOGY

AWS IAM Identities



### PRE-REQUISITES

User should have AWS root account

### To configure IAM with following task.

Create IAM users, assign password, and change password policy.

Create IAM groups.

Add users to a group.

Add policies to Groups and Users.

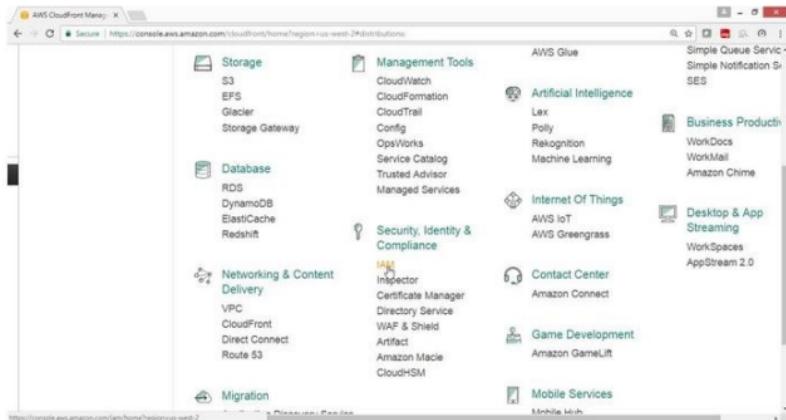
Create your own policies.

Users Login to sign-in page.

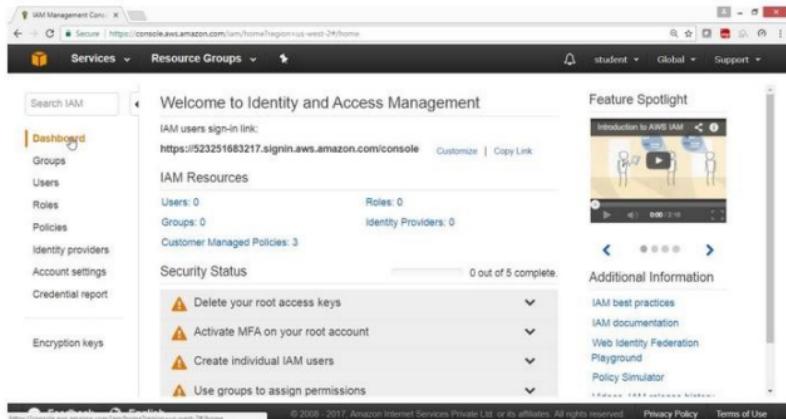
Deleting users and groups.

**1) To create user, assign password, change password policy.**  
Open AWS console select **Security, Identity & Compliance**

**Click on IAM service**



IAM Dashboard panel available



## 2) To Manage Groups and applying policies

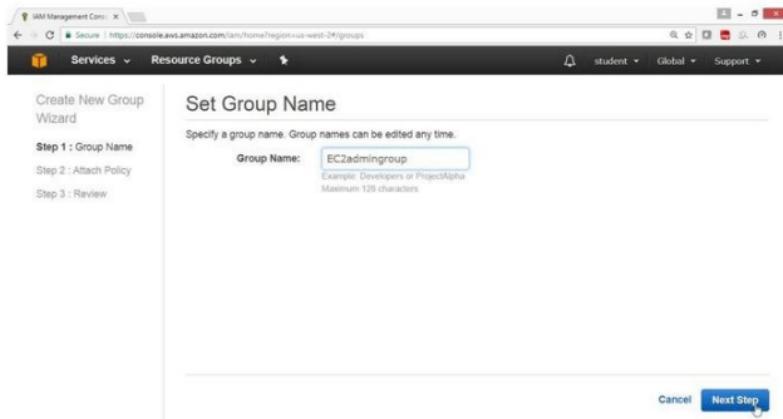
From IAM dashboard, select **Groups**

Click on **Create New Group** button

The screenshot shows the AWS IAM Groups page. On the left, there's a sidebar with links: Dashboard, Groups (which is selected and highlighted in orange), Users, Roles, Policies, Identity providers, Account settings, Credential report, and Encryption keys. The main content area has a header with 'Create New Group' and 'Group Actions'. Below that is a search bar labeled 'Filter'. A table follows, with columns: Group Name, Users, Inline Policy, and Creation Time. The table shows a single row with the message 'No records found.' At the bottom of the page, there are footer links for Feedback, English, Privacy Policy, and Terms of Use.

Give Group Name → EC2admingroup

Click on **Next Step** button



In Filter type → EC2f

Select check box for **AmazonEC2FullAccess**

Click on **Next Step** button

The screenshot shows the 'Attach Policy' step of the 'Create New Group Wizard'. A filter is applied to show policies of type 'Ec2f'. The 'AmazonEC2FullAccess' policy is selected and attached to the group. The 'Next Step' button is highlighted.

Policy Name	Attached Entities	Creation Time	Edited Time
AmazonEC2FullAccess	0	2015-02-07 00:10 UTC...	2015-02-07 00:10 ...
AmazonEC2FullAccess...	0	2017-06-17 16:33 UTC...	2017-06-17 16:33 ...

Click on **Create Group**

The screenshot shows the 'Review' step of the 'Create New Group Wizard'. It displays the group name 'EC2admingroup' and the attached policy 'arn:aws:iam::aws:policy/AmazonEC2FullAccess'. The 'Create Group' button is highlighted.

## Verify

Group EC2admingrp got created with AmazonEC2FullAccess policy

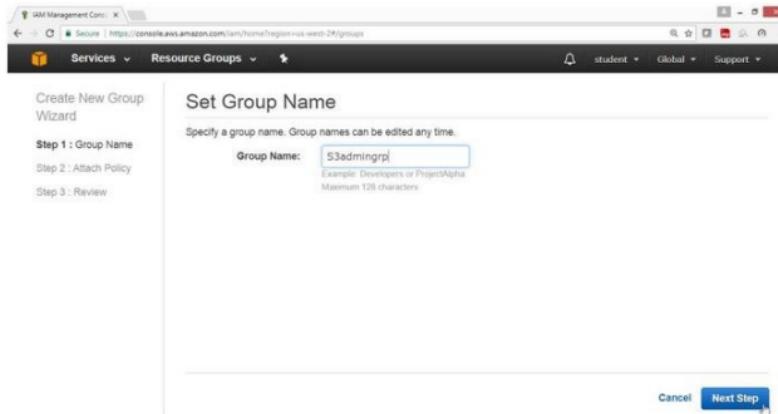
The screenshot shows the AWS IAM Management Console. On the left, there's a sidebar with options like Dashboard, Groups, Users, Roles, Policies, Identity providers, Account settings, Credential report, and Encryption keys. The main area is titled 'Resource Groups' and shows a group named 'EC2admingrp'. It displays the creation time as '2017-08-15 15:35 UTC+0530'. Below this, under the 'Permissions' tab, there's a section for 'Managed Policies' which lists 'AmazonEC2FullAccess' with actions 'Show Policy', 'Detach Policy', and 'Simulate Policy'. There's also a section for 'Inline Policies'.

Now again create Another Group

Click on **Create Group** button

The screenshot shows the 'Create New Group' interface in the AWS IAM Management Console. The sidebar on the left is identical to the previous screenshot. The main area has a 'Create New Group' button highlighted in blue. Below it, there's a table with one result: 'EC2admingroup' (Group Name), '0' (Users), 'AmazonEC2FullAccess' (Inline Policy), and '2017-08-15 15:35 UTC+0530' (Creation Time).

## To create a group With S3FullAccess



Create New Group Wizard

Step 1 : Group Name

Step 2 : Attach Policy

Step 3 : Review

Set Group Name

Specify a group name. Group names can be edited any time.

Group Name:

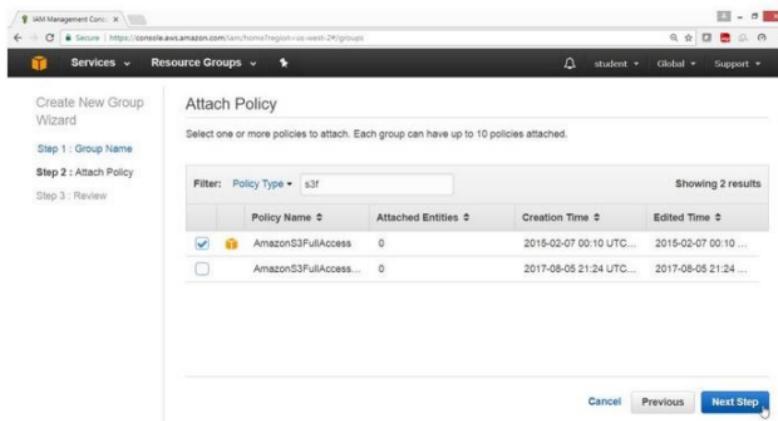
Example: Developers or ProjectAlpha  
Maximum 128 characters.

Cancel Next Step

In Filter type → S3f

Select check box for **AmazonS3FullAcess**

Click on **Next Step** button



Create New Group Wizard

Step 1 : Group Name

Step 2 : Attach Policy

Step 3 : Review

Attach Policy

Select one or more policies to attach. Each group can have up to 10 policies attached.

Policy Name	Attached Entities	Creation Time	Edited Time
<input checked="" type="checkbox"/> AmazonS3FullAccess	0	2015-02-07 00:10 UTC...	2015-02-07 00:10 ...
<input type="checkbox"/> AmazonS3FullAccess...	0	2017-06-05 21:24 UTC...	2017-06-05 21:24 ...

Showing 2 results

Filter: Policy Type ▾ s3f

Cancel Previous Next Step

Click on Create Group button

Create New Group Wizard

Step 1 : Group Name

Step 2 : Attach Policy

Step 3 : Review

**Review**

Review the following information, then click **Create Group** to proceed.

Group Name	S3admingrp	Edit Group Name
Policies	arn:aws:iam::aws:policy/AmazonS3FullAccess	Edit Policies

**Create Group**

Verify EC2admingroup & S3admingrp groups got created

Search IAM

**Create New Group** Group Actions

Group Name	Users	Inline Policy	Creation Time
EC2admingroup	0		2017-08-15 15:35 UTC+0530
S3admingrp	0		2017-08-15 15:42 UTC+0530

Feedback English

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## Verify S3 policy is attached

The screenshot shows the AWS IAM Groups page. The left sidebar has a 'Groups' section selected. The main content area shows a 'Creation Time' of 2017-08-15 15:42 UTC+0530. Below it, the 'Permissions' tab is selected. The 'Managed Policies' section displays a single policy named 'AmazonS3FullAccess' with actions for 'Show Policy', 'Detach Policy', and 'Simulate Policy'. There is also an 'Inline Policies' section which is currently collapsed.

Policy Name	Actions
AmazonS3FullAccess	Show Policy   Detach Policy   Simulate Policy

Create user tom and join to EC2admingroup

Create user john and join to S3admingroup

Create a user sai add Ec2fullaccess and S3fullacces Policy

From IAM dashboard

### Select Users

Click on **ADD Users** button

The screenshot shows the AWS IAM Management Console interface. The left sidebar has navigation links: Dashboard, Groups, **Users**, Roles, Policies, Identity providers, Account settings, and Credential report. The main content area has two buttons: 'Add user' (highlighted with a blue border) and 'Delete user'. Below these buttons is a search bar with placeholder text 'Find users by username or access key'. A table follows, with the first row showing headers: 'User name' (with a dropdown arrow), 'Groups', 'Access key age', 'Password age', and 'Last activity'. A note at the bottom of the table says 'There are no IAM users. [Learn more](#)'. At the bottom of the page, there are links for 'Privacy Policy' and 'Terms of Use', along with the URL 'https://console.aws.amazon.com/iam/home?region=us-west-2#usersNew'.

### **Scenario 1)**

Create user tom and join to EC2admingroup

For User name → tom

For Access type → AWS Management Console access

Drag down

The screenshot shows the AWS IAM 'Add user' wizard. At the top, there are navigation links: Services, Resource Groups, student, Global, Support, and a bell icon. Below the header, a progress bar indicates four steps: 1. Details (highlighted in blue), 2. Permissions, 3. Review, and 4. Complete. The main section is titled 'Set user details'. It contains a text input field for 'User name\*' with 'tom' typed in, and a radio button group for 'Access type\*' with 'AWS Management Console access' selected. A note below says, 'You can add multiple users at once with the same access type and permissions. Learn more'. Another note below says, 'Select AWS access type. Select how these users will access AWS. Access keys and autogenerated passwords are provided in the last step. Learn more'. 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'.

For Console password → \*\*\*\*\*

Click on Next Permissions button

The screenshot shows the 'AWS Management Console' interface for creating a new IAM user. The 'Next: Permissions' step is selected. Under 'Console password', 'Custom password' is chosen with a value of '\*\*\*\*\*'. A checkbox for 'Require password reset' is checked, with a note stating: 'User must create a new password at next sign-in. Users automatically get the IAMUserChangePassword policy to allow them to change their own password.' At the bottom right, there are 'Cancel', 'Previous', and 'Next: Permissions' buttons.

Under Group column

Select EC2admingroup

Click on Next Review

The screenshot shows the 'AWS Management Console' interface for creating a new IAM user. The 'Next: Review' step is selected. Under the 'Group' column, 'EC2admingroup' is selected. In the 'Attached policies' section, 'AmazonEC2FullAccess' and 'AmazonS3FullAccess' are listed. At the bottom right, there are 'Cancel', 'Previous', and 'Next: Review' buttons, with 'Next: Review' being highlighted.

## Verify users detail

Click on **Create user** button

Review your choices. After you create the user, you can view and download the autogenerated password and access key.

User details

User name	tom
AWS access type	AWS Management Console access - with a password
Console password type	Custom
Require password reset	No

Permissions summary

The user shown above will be added to the following groups:

Type	Name
Group	EC2AdminGroup

**Create user**

## Down the .csv file

**Success**

You successfully created the users shown below. You can view and download user security credentials. You can also email users instructions for signing in to the AWS Management Console. This is the last time these credentials will be available to download. However, you can create new credentials at any time.

Users with AWS Management Console access can sign-in at: <https://S23251683217.sigin.aws.amazon.com/console>

**Download .CSV**

User	Email login instructions
tom	<a href="#">Send email</a>

**Details**    **Permissions**    **Review**    **Complete**

**Close**

Click on close button

The screenshot shows the AWS IAM Management Console interface. At the top, there's a navigation bar with tabs like 'Services' and 'Resource Groups'. Below the navigation bar, there are four buttons: 'Details', 'Permissions', 'Review', and 'Complete'. A success message box is prominently displayed, stating: 'Success: You successfully created the users shown below. You can view and download user security credentials. You can also email users instructions for signing in to the AWS Management Console. This is the last time these credentials will be available to download. However, you can create new credentials at any time.' It also mentions that users with AWS Management Console access can sign-in at a specific URL. Below this message, there's a table with one row, 'User', containing the name 'tom'. To the right of the table, there are buttons for 'Email login instructions' and 'Send email'. In the bottom right corner of the message box, there is a 'Close' button with a cursor hovering over it. At the very bottom of the page, there are links for 'Feedback', 'English', and copyright information: '© 2018 - 2017 Amazon Internet Services Private Limited or its affiliates. All rights reserved. Privacy Policy Terms of Use'.

## Scenario 2)

Create user john and join to S3admingroup

Select user

Click on Add user button

The screenshot shows the AWS IAM Management Console interface. On the left, there's a navigation sidebar with links like Dashboard, Groups, Users (which is selected), Roles, Policies, Identity providers, Account settings, and Credential report. The main area is titled 'Users' and shows a table with one row. The table columns are: User name, Groups, Access key age, Password age, Last activity, and MFA. The single row contains: John, EC2admingroup, None, Today, None, and Not enabled. There are 'Add user' and 'Delete user' buttons at the top of the table. A search bar at the top says 'Find users by username or access key'. The URL in the browser is https://console.aws.amazon.com/iам/home?region=us-west-2&service=users.

User name	Groups	Access key age	Password age	Last activity	MFA
John	EC2admingroup	None	Today	None	Not enabled

- For user name → john
- For Access type → AWS Management Console access
- For console password → \*\*\*\*\*

Drag down

User name\*

Add another user

Select AWS access type

Select how these users will access AWS. Access keys and autogenerated passwords are provided in the last step. Learn more

Access type\*  Programmatic access  
Enables an access key ID and secret access key for the AWS API, CLI, SDK, and other development tools.

AWS Management Console access  
Enables a password that allows users to sign-in to the AWS Management Console.

Console password\*  Autogenerated password  
 Custom password  
\*\*\*\*\*

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Click on Next Permission button

AWS Management Console access  
Enables a password that allows users to sign-in to the AWS Management Console.

Console password\*  Autogenerated password  
 Custom password  
\*\*\*\*\*

Show password

Require password reset  User must create a new password at next sign-in  
Users automatically get the IAMUserChangePassword policy to allow them to change their own password.

\* Required Cancel **Next: Permissions**

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Select S3admingrp

Click on **Next Review** button

The screenshot shows the IAM Management Console with the URL <https://console.aws.amazon.com/iam/home?region=us-west-2#/users?new?step=permissions&login&userNames=john&passwordType=manual&groups=S3admingrp>. The 'Attached policies' section lists the S3admingrp group with the AmazonS3FullAccess policy attached.

Verify user details

Click on **Create user** button

The screenshot shows the IAM Management Console with the URL <https://console.aws.amazon.com/iam/home?region=us-west-2#/users?new?step=review&login&userNames=john&passwordType=manual&groups=S3admingrp>. The 'User details' section shows a user named 'john' with AWS access type set to 'AWS Management Console access - with a password'. The 'Console password type' is 'Custom', and 'Require password reset' is set to 'No'. The 'Permissions summary' section shows the user will be added to the 'S3admingrp' group. The 'Create user' button is highlighted at the bottom right.

**Download .csv file**

**Click on Close button**

Screenshot of the AWS IAM Management Console showing the 'Add user' wizard step 4: Complete. A success message indicates a user was created. A 'Download .csv' button is highlighted with a red box.

**Add user**

1 Details    2 Permissions    3 Review    4 Complete

**Success**  
You successfully created the users shown below. You can view and download user security credentials. You can also email users instructions for signing in to the AWS Management Console. This is the last time these credentials will be available to download. However, you can create new credentials at any time.

Users with AWS Management Console access can sign-in at: <https://S23251683217.signin.aws.amazon.com/console>

**User**

User	Email login instructions
john	<a href="#">Send email</a>

**Download .csv**

**Feedback** **English**

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### Scenario 3)

Add a user individual user sai without joining to any group

Attach EC2FullAccess and S3FullAccess policy

Select User

Click on Add user button

The screenshot shows the AWS IAM Management Console. On the left, there is a navigation sidebar with options like Dashboard, Groups, Roles, Policies, Identity providers, Account settings, and Credential report. The 'Users' option is selected and highlighted in orange. At the top right, there are buttons for 'student', 'Global', and 'Support'. In the center, there is a search bar with placeholder text 'Find users by username or access key'. Below the search bar is a table titled 'Showing 2 results'. The table has columns: 'User name', 'Groups', 'Access key age', 'Password age', 'Last activity', and 'MFA'. Two users are listed: 'john' (S3admin group) and 'tom' (EC2admin group). Both users have 'None' in all other columns. At the bottom of the page, there is a footer with links to 'Privacy Policy' and 'Terms of Use'.

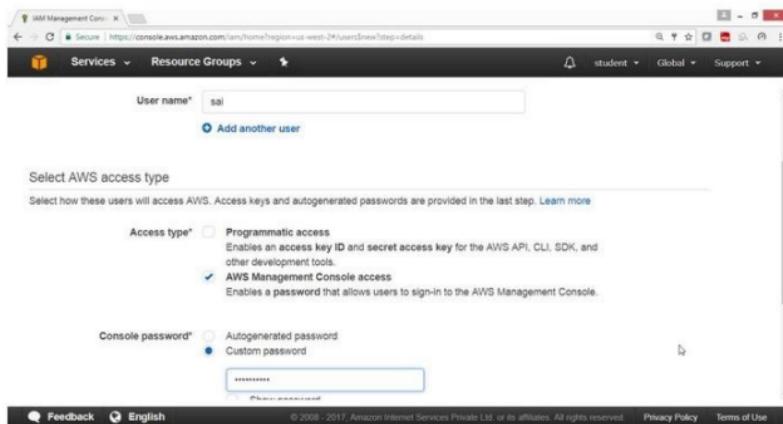
User name	Groups	Access key age	Password age	Last activity	MFA
john	S3admin group	None	Today	None	Not enabled
tom	EC2admin group	None	Today	None	Not enabled

For User name → sai

For Access type → AWS Management Console access

For Console password → \*\*\*\*\*

#### Drag Down



User name\* sai

Add another user

Select AWS access type

Select how these users will access AWS. Access keys and autogenerated passwords are provided in the last step. Learn more

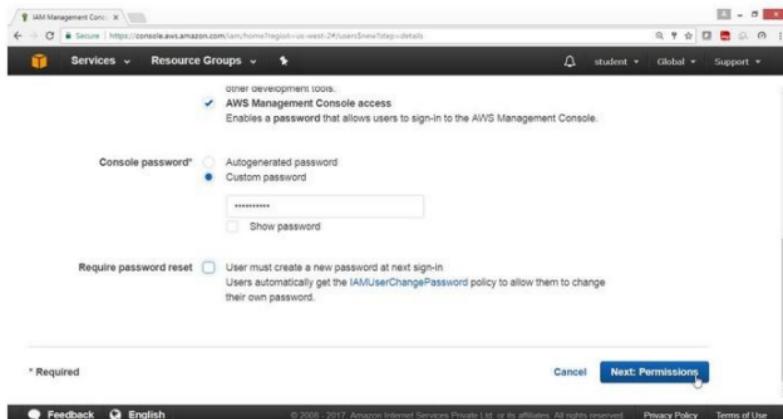
Access type\*  Programmatic access  
Enables an access key ID and secret access key for the AWS API, CLI, SDK, and other development tools.

AWS Management Console access  
Enables a password that allows users to sign-in to the AWS Management Console.

Console password\*  Autogenerated password  
 Custom password  
\*\*\*\*\*

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#### Click on Next permission button



other development tools.

AWS Management Console access  
Enables a password that allows users to sign-in to the AWS Management Console.

Console password\*  Autogenerated password  
 Custom password  
\*\*\*\*\*

Show password

Require password reset  User must create a new password at next sign-in  
Users automatically get the IAMUserChangePassword policy to allow them to change their own password.

\* Required Cancel **Next: Permissions**

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Click on Attach existing policies directly box

Add user

1 Details    2 Permissions    3 Review    4 Complete

Set permissions for sai

Add user to group

Copy permissions from existing user

Attach existing policies directly

Add user to an existing group or create a new one. Using groups is a best-practice way to manage user's permissions by job functions. Learn more

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In Filter type search for ec2

Select AmazonEC2FullAccess check box

existing user directly

Attach one or more existing policies directly to the user or create a new policy. Learn more

Create policy Refresh

Filter: Policy type Q ec2 Showing 2 results

Policy name	Type	Attachments	Description
<input checked="" type="checkbox"/>  AmazonEC2FullAccess	AWS managed	1	Provides full access to Amazon EC2 via the AWS Man...
<input type="checkbox"/>  AmazonEC2FullAcc...	Customer managed	0	Provides full access to Amazon EC2 via the AWS Man...

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In Filter type search for s3f

Select AmazonS3FullAccess check box

Click on **Next Review** button

The screenshot shows the AWS IAM Management Console. In the center, a table lists two policies: 'AmazonS3FullAccess' (AWS managed) and 'AmazonS3FullAccess-20170...' (Customer managed). The 'AmazonS3FullAccess' row has a checked checkbox next to it. At the bottom of the page, there are navigation buttons: 'Cancel', 'Previous', and 'Next: Review'. The 'Next: Review' button is highlighted with a blue border.

Verify users detail

Click on Create user button

The screenshot shows the 'Create user' wizard in the AWS IAM Management Console. The first step, 'User details', is completed with the following information:

- User name: s3f
- AWS access type: AWS Management Console access - with a password
- Console password type: Custom
- Require password reset: No

Below this, the 'Permissions summary' section shows that the user will be attached to two managed policies:

- AmazonEC2FullAccess
- AmazonS3FullAccess

At the bottom of the screen, there are 'Cancel', 'Previous', and 'Create user' buttons. The 'Create user' button is highlighted with a blue border.

**Download .csv file**

**Click on Close button**

The screenshot shows the AWS IAM Management Console with the URL <https://console.aws.amazon.com/iam/home?region=us-west-2#user&new?step=final&logInUserNames=sai&passwordType=manual&permissions...>. The page title is "IAM Management Con..." and the sub-header is "Services > Resource Groups". The main heading is "Add user" with a progress bar showing four steps: 1. Details (highlighted), 2. Permissions, 3. Review, and 4. Complete (highlighted).  
**Success:**  
You successfully created the users shown below. You can view and download user security credentials. You can also email users instructions for signing in to the AWS Management Console. This is the last time these credentials will be available to download. However, you can create new credentials at any time.  
Users with AWS Management Console access can sign-in at: <https://523251683217.signin.aws.amazon.com/console>  
**Download .csv** (highlighted)  

User	Email login instructions
sai	Send email

  
**Feedback** **English**   
© 2018 - 2017 Amazon Internet Services Private Ltd. or its affiliates. All rights reserved. [Privacy Policy](#) [Terms of Use](#)  
**Close**

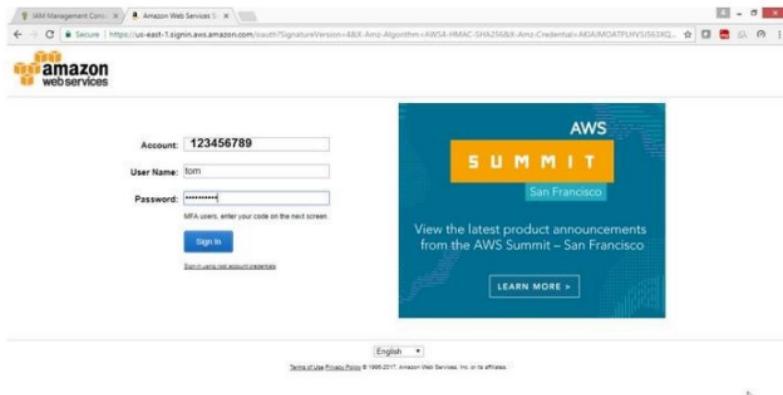
To verify whether users can access particular Service

Login as tom user

Provide the following url in Browser

<https://123456789.signin.aws.amazon.com/console>

Click on Sign in button



User tom is not having S3 access

Click on S3 verify the access

The screenshot shows the AWS Management Console with the 'Services' tab selected. The left sidebar lists services: IAM, CloudFront, VPC, and EC2. The main area is divided into several sections: Compute (EC2, EC2 Container Service, Lightsail, Elastic Beanstalk, Lambda, Batch), Storage (EFS, Glacier), Developer Tools (CodeStar, CodeCommit, CodeBuild, CodeDeploy, CodePipeline, X-Ray), Management Tools (CloudWatch, CloudFormation, CloudTrail), Analytics (Athena, EMR, CloudSearch, Elasticsearch Service, Kinesis, Data Pipeline, QuickSight), and Artificial Intelligence (AWS Glue, Lex). A search bar at the top right says 'Find a service by name or feature (for example, EC2, S3 or VM, storage)'.

## Verification

Error Access Denied

The screenshot shows the AWS S3 Management Console. At the top, it says 'Identify optimal storage classes with S3 Analytics - Storage Class Analysis. Learn More ». Below that, there's a 'Create Bucket' button. The main area has a red error message box containing the text 'Error' and 'Access Denied'. Navigation tabs at the bottom include 'Buckets', 'Regions', and 'Logs'.

## Now select EC2 service

The screenshot shows the AWS Management Console homepage. On the left, there's a sidebar with links for History, S3, IAM, CloudFront, VPC, and EC2. The main area has a search bar at the top with placeholder text "Find a service by name or feature (for example, EC2, S3 or VM, storage)". Below the search bar is a grid of service icons and names. The services are grouped into categories: Compute (EC2 Container Service, Lightsail, Elastic Beanstalk, Lambda, Batch), Developer Tools (CodeStar, CodeCommit, CodeBuild, CodeDeploy, CodePipeline, X-Ray), Analytics (Athena, EMR, CloudSearch, Elasticsearch Service, Kinesis, Data Pipeline, QuickSight, AWS Glue), Application Service (Step Functions, SWF, API Gateway, Elastic Transcoder), Storage (S3, EFS, Glacier, Storage Gateway), Management Tools (CloudWatch, CloudFormation, CloudTrail, Config, OpsWorks, Service Catalog, Trusted Advisor, Managed Services), Artificial Intelligence (Lex, Polly, Rekognition, Machine Learning), Messaging (Simple Queue Service, Simple Notification Service, SES), Business Productivity (WorkDocs, WorkMail, Amazon Chime), Internet Of Things (AWS IoT), and Desktop & App (Amazon Device Farm). At the bottom left, the URL is https://us-west-2.console.aws.amazon.com/ec2/v2/home?region=us-west-2.

## Verification

User tom can access EC2 service.

The screenshot shows the EC2 Management Console. On the left, there's a sidebar with links for Services (selected), Resource Groups, and a Feedback button. Under Services, there are sections for EC2 Dashboard (Events, Tags, Reports, Limits), INSTANCES (Instances, Spot Requests, Reserved Instances, Scheduled Instances, Dedicated Hosts), IMAGES (AMIs), and a Feedback button. The main area is titled "Resources" and displays a summary of Amazon EC2 resources in the US West (Oregon) region: 1 Running Instances, 0 Dedicated Hosts, 1 Volumes, 3 Key Pairs, 0 Elastic IPs, 1 Snapshots, 0 Load Balancers, 6 Security Groups. To the right, there's a "Account Attributes" panel showing Supported Platforms (VPC), Default VPC (vpc-89c341ee), and Resource ID length management. At the bottom, there's a "Create Instance" section with a link to the Getting Started Guide and Documentation, and a "Privacy Policy" and "Terms of Use" link. The URL is https://us-west-2.console.aws.amazon.com/ec2/v2/GetStarted.html.

Similarly check for user john

To Delete users and groups

From IAM dashboard, select **Users**

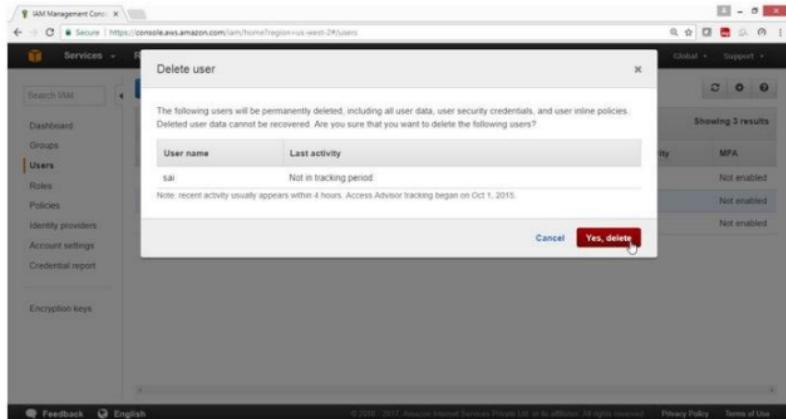
Select the users, drop down **Action** button

Click on **Delete Users** button

The screenshot shows the AWS IAM Management Console. On the left, there's a sidebar with navigation links: Dashboard, Groups, Users (which is selected and highlighted in orange), Roles, Policies, Identity providers, Account settings, and Encryption keys. The main area has a search bar at the top labeled 'Find users by username or access key'. Below it is a table titled 'Showing 3 results' with columns: User name, Groups, Access key age, Password age, Last activity, and MFA. There are three rows: 'john' (Groups: S3admingrp, Status: None), 'sai' (Groups: None, Status: None), and 'tom' (Groups: EC2admingroup, Status: None). At the bottom of the table, there's a red 'Delete user' button. The URL in the browser is https://console.aws.amazon.com/iam/home?region=ap-south-1&tab=Users.

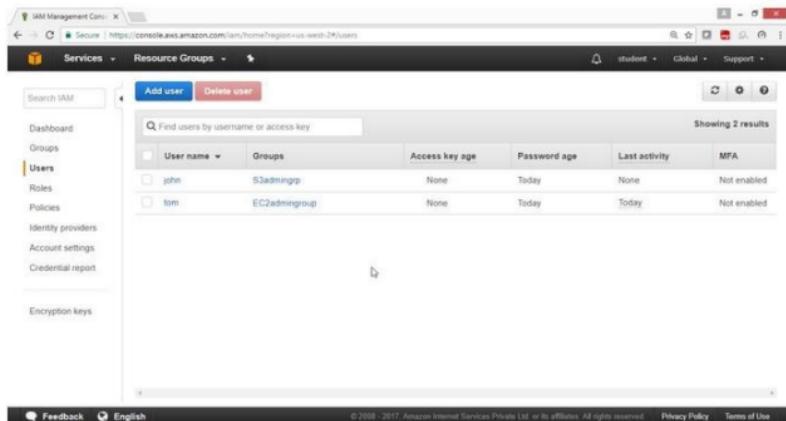
User name	Groups	Access key age	Password age	Last activity	MFA
john	S3admingrp	None	Today	None	Not enabled
sai	None	None	Today	None	Not enabled
tom	EC2admingroup	None	Today	Today	Not enabled

Click on Yes, delete button



## Verification

User sai is deleted



## To Deleting Groups

From IAM Dashboard

Select the Groups

Drop down Group Action button

Select Delete Group

Screenshot of the AWS IAM Management Console showing the Resource Groups page. A context menu is open over a selected group named 'S3admingrp'. The menu options are 'Add Users to Group', 'Delete Group' (which is highlighted with a cursor), 'Edit Group Name', and 'Remove Users from Group'. The main table lists two groups: 'EC2admingrp' and 'S3admingrp'. The 'S3admingrp' row has a checkbox next to it. The table includes columns for 'Group Name', 'Edit Group Name' (with a pencil icon), 'Inline Policy', and 'Creation Time'. The 'Creation Time' column shows values like '2017-08-15 15:35 UTC+0530' and '2017-08-15 15:42 UTC+0530'. The left sidebar shows navigation links for Services (Dashboard, Groups, Users, Roles, Policies, Identity providers, Account settings, Credential report) and Encryption keys. The bottom of the screen shows standard AWS footer links: Feedback, English, © 2018-2019 Amazon Web Services Private Limited or its affiliates. All rights reserved., Privacy Policy, and Terms of Use.

**Click Yes, Delete button**

The screenshot shows the AWS IAM Groups page. A modal dialog box is open, prompting the user to confirm the deletion of a group named 'S3admingrp'. The dialog contains the message: 'All users and permissions belonging to the following groups will be removed from the group first. Are you sure you want to delete the following groups?' followed by a list: '+ S3admingrp'. At the bottom of the dialog are two buttons: 'Cancel' and 'Yes, Delete'.

## Verification

**Group is deleted**

The screenshot shows the AWS IAM Groups page after the group 'S3admingrp' has been deleted. The table now lists a single group, 'EC2admingroup', which was previously listed in the 'Delete Group' dialog. The table columns are 'Group Name', 'Users', 'Inline Policy', and 'Creation Time'.

Group Name	Users	Inline Policy	Creation Time
EC2admingroup	1		2017-08-15 15:35 UTC+0530

## To Create Multifactor Authentication

Install Google authenticator in your Android Mobile

On the **IAM Dashboard** panel

Click on Users

Click on the user tom

The screenshot shows the AWS IAM Management Console interface. The left sidebar menu is visible with options like Dashboard, Groups, Users (which is selected and highlighted in orange), Roles, Policies, Identity providers, Account settings, and Credential report. The main content area displays a table titled "Find users by username or access key". The table has columns: User name, Groups, Access key age, and Password age. There are two entries: one for "john" (Groups: S3admingrp, Access key age: None, Password age: Today) and one for "tom" (Groups: EC2admingroup, Access key age: None, Password age: Today). The "tom" entry is currently selected, indicated by a blue border around the row.

User name	Groups	Access key age	Password age
john	S3admingrp	None	Today
tom	EC2admingroup	None	Today

Click on Security credentials

The screenshot shows the AWS IAM Management Console. On the left, there's a sidebar with links: Dashboard, Groups, Users (which is selected and highlighted in orange), Roles, Policies, Identity providers, Account settings, and Credential report. The main area is titled 'Summary' for the user 'tom'. It displays the User ARN (arn:aws:iam:::user/tom), Path (/), and Creation time (2017-08-15 22:09 UTC+0530). Below this, there are tabs for Permissions, Groups (1), Security credentials (which is highlighted with a yellow box), and Access Advisor. Under the Security credentials tab, there's a button 'Add permissions' and a message 'Attached policies: 1'. At the bottom, there are dropdowns for 'Policy name' and 'Policy type'.

Click on pen sign for "Assigned MFS device"

The screenshot shows the AWS IAM Management Console under the 'Security credentials' tab for the user 'tom'. It lists various credentials: Console password (Enabled, Manage password), Console login link (https://signin.aws.amazon.com/console), Last login (2017-08-15 22:50 UTC+0530), Assigned MFA device (No, with a blue edit/pencil icon), and Signing certificates (None). The 'Assigned MFA device' row specifically has a blue edit/pencil icon next to the 'No' value.

Select → “A virtual MFA device”

Click on **Next Step** button



Click on **Next Step** button



Bar code will be created

Scan this bar code from your mobile Google Authenticator application.

Now type 6 digit bar code in Authentication code 1

Once the bar code changes

Retype 6 digit bar code in Authentication code 2



Click on Finish



Now login as tom user

A screenshot of the AWS sign-in page. The URL is https://us-west-2.signin.aws.amazon.com/. The page shows the AWS logo and fields for "Account" (123456789), "User Name" (tom), and "Password". Below the password field is a note: "MFA users, enter your code on the next screen." A "Sign In" button is present. To the right of the sign-in form is a promotional banner for the "AWS SUMMIT San Francisco". The banner features the AWS logo, the word "SUMMIT", and the location "San Francisco". It also includes the text "View the latest product announcements from the AWS Summit – San Francisco" and a "LEARN MORE >" button. At the bottom of the page, there is a link to "Terms of Use" and "Privacy Policy".

Amazon Web Services | AWS Management Con...

Secure | https://us-west-2.signin.aws.amazon.com/.auth?SignatureVersion=4&X-Amz-Algorithm=AWS4-HMAC-SHA256&X-Amz-Credential=AKIAJMDATPLHVS/5EJX...

Amazon Web Services

Account: 123456789

User Name: tom

Password:

MFA users, enter your code on the next screen.

Sign In

Sign In Using AWS Single Sign-On

AWS SUMMIT

San Francisco

View the latest product announcements from the AWS Summit – San Francisco

LEARN MORE >

English ▾

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<https://us-west-2.signin.aws.amazon.com/.auth?SignatureVersion=4&X-Amz-Algorithm=AWS4-HMAC-SHA256&X-Amz-Credential=AKIAJMDATPLHVS/5EJX...>

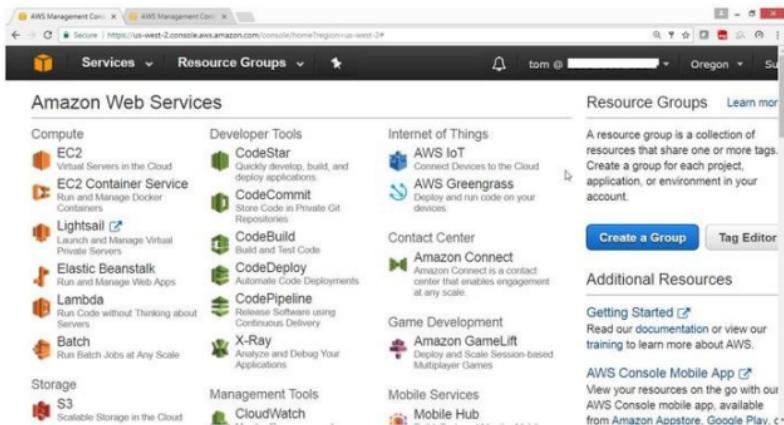
Once the user types the MFA 6 digit code

Click on submit



A screenshot of the AWS Multi-factor Authentication (MFA) sign-in page. At the top, it says "Multi-factor Authentication" and "Please enter an MFA code to complete sign-in." Below that is a text input field labeled "MFA Code:" containing "132432". Underneath the input field are two buttons: "Submit" (highlighted in blue) and "Cancel". At the bottom of the page, there is a link to "AWS Terms of Service" and a note about the session being valid until 2017-08-13T17:34:49Z.

Verify user had successfully logged in.



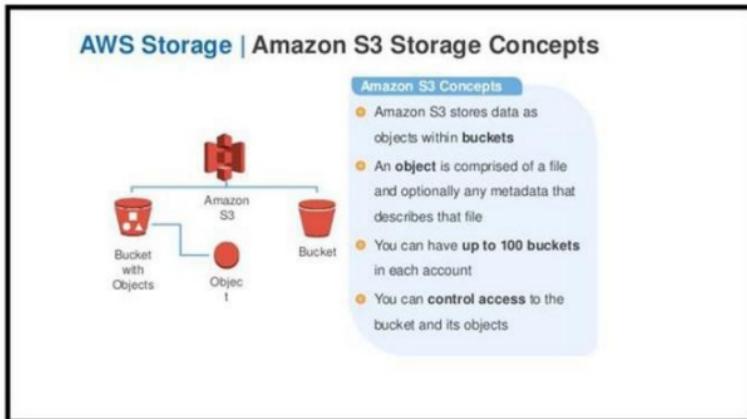
A screenshot of the AWS Management Console homepage. The top navigation bar shows "AWS Management Console" and the URL "https://us-west-2.console.aws.amazon.com/console/home?region=us-west-2". The main menu includes "Services" and "Resource Groups". On the left, there's a sidebar with links like EC2, Lambda, and S3. The main content area displays various AWS services: Developer Tools (CodeStar, CodeCommit, CodeBuild, CodeDeploy, CodePipeline, X-Ray), Internet of Things (AWS IoT, AWS Greengrass), Contact Center (Amazon Connect), Game Development (Amazon GameLift), and Mobile Services (Mobile Hub). A "Resource Groups" section is also visible. At the bottom right, there are "Create a Group" and "Tag Editor" buttons.

## Lab 7: To Configure Amazon Simple Storage Service (Amazon S3)

### OBJECTIVE

To configure and use AWS S3 service

### TOPOLOGY



### PRE-REQUISITES

User should have AWS account, or IAM user with AmazonS3FullAccess

**To Configure S3 with following task:**

Sign Up for Amazon S3

Create a Bucket

Add an Object to a Bucket

Add an folder to Bucket

View an Object

Move an Object

Delete an Object and Bucket

To empty a bucket

To delete a bucket

Hosting a Static Website on Amazon S3

AWS user to control S3

## 1. To create S3 bucket for storing objects that is files and folders

Open AWS console

Select “**Storage**” service

Click on **S3**

The screenshot shows the AWS Management Console Services page. On the left, there's a sidebar with 'History' and links to various AWS services like DynamoDB, RDS, EC2, CloudWatch, and Simple Notification Service. The 'Storage' section is expanded, showing 'S3' as the primary service and 'Glacier' and 'Storage Gateway' as secondary options. The main content area has a search bar at the top and several groups 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), Application Services (Step Functions, SWF, API Gateway, Elastic Transcoder), Messaging (Simple Queue Service, Simple Notification Service, SES), Management Tools (CloudWatch, CloudFormation, CloudTrail, Config, OpsWorks, Service Catalog, Trusted Advisor), Artificial Intelligence (Lex, Polly, Rekognition, Machine Learning), Business Productivity (WorkDocs, WorkMail, Amazon Chime), and Internet of Things.

On Amazon S3 page

Click on **Create Bucket**

The screenshot shows the S3 Management Console. At the top, there's a header with the AWS logo, 'Amazon S3', and links for 'Switch to the old console', 'Discover the new console', and 'Quick tips'. Below the header is a search bar labeled 'Search for buckets'. Underneath is a button bar with '+ Create bucket', 'Delete bucket', and 'Empty bucket'. The main area displays a table of existing buckets. The table has columns for 'Bucket name', 'Region', and 'Date created'. There are four buckets listed: 'alitjune' (US West (Oregon)), 'elasticbeanstalk-us-west-2-523351983217' (US West (Oregon)), 'erikanthhyd' (US West (Oregon)), and 'www.cfameerpet.com' (Asia Pacific (Singapore)).

Bucket name	Region	Date created
alitjune	US West (Oregon)	Jul 3, 2017 8:17:52 PM
elasticbeanstalk-us-west-2-523351983217	US West (Oregon)	Jul 12, 2017 9:30:22 PM
erikanthhyd	US West (Oregon)	Apr 13, 2017 5:46:10 PM
www.cfameerpet.com	Asia Pacific (Singapore)	Aug 11, 2017 8:34:03 PM

**On “Create Bucket - Select a Bucket Name and Region” box**

Provide following values

Bucket Name → saleshydbucket

Region → Oregon

Note: A bucket name in region must contain only lower case characters and should be unique in entire Amazon bucket names from all the region.

Create a Bucket - Select a Bucket Name and Region

A bucket is a container for objects stored in Amazon S3. When creating a bucket, you can choose a Region to optimize for latency, minimize costs, or address regulatory requirements. For more information regarding bucket naming conventions, please visit the Amazon S3 documentation.

Bucket Name: saleshydbucket1

Region: Oregon

[Set Up Logging >](#) [Create](#) [Cancel](#)

Verify that bucket is created.

The screenshot shows the AWS Management Console with the S3 service selected. In the left sidebar, under 'All Buckets (4)', the bucket 'saleshydbucket1' is highlighted. On the right, a detailed view of this bucket is shown with the following information:

- Bucket:** saleshydbucket1
- Region:** Oregon
- Creation Date:** Tue Aug 15 08:00:06 GMT+530 2017
- Owner:** skmvai@99

Below the main details, there are several navigation links:

- Permissions
- Static Website Hosting
- Logging
- Events
- Versioning

## To upload files of any type

Right click in empty space, select **Upload**

Note: 5 GB can be uploaded

It will be charged if crossed free tier usage.

Click on Created bucket

The screenshot shows the AWS S3 Management Console interface. In the top navigation bar, there are tabs for 'Services', 'Resource Groups', and other account details like 'student', 'Global', and 'Support'. Below the navigation, there are buttons for 'Create Bucket', 'Actions', 'Switch to new console', and 'None', 'Properties', 'Transfers' tabs.

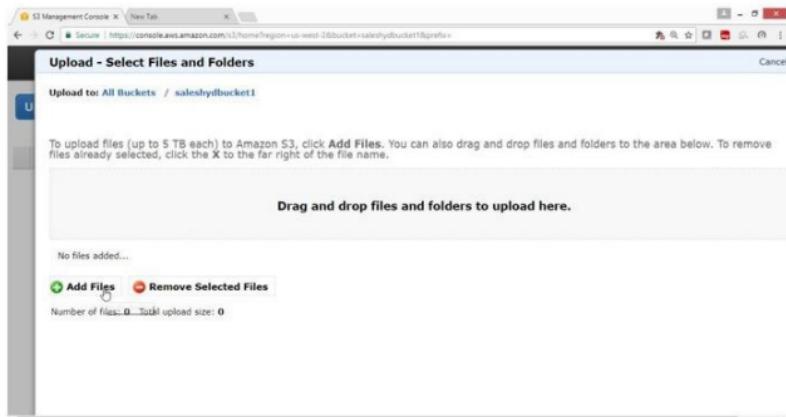
In the main area, there's a section titled 'All Buckets (4)' with a 'Name' column. The buckets listed are: 'cloudtrialhari', 'ctrilabc', 'saleshydbucket1' (which is highlighted with a blue selection bar), and 'srikanthhyd'. To the right of this list is a detailed view for the selected bucket:

**Bucket: saleshydbucket1**

**Bucket:** saleshydbucket1  
**Region:** Oregon  
**Creation Date:** Tue Aug 15 08:00:06 GMT+530 2017  
**Owner:** skmvali@99

Below this summary, there are several expandable sections: 'Permissions', 'Static Website Hosting', 'Logging', 'Events', and 'Versioning'.

Click on Add files

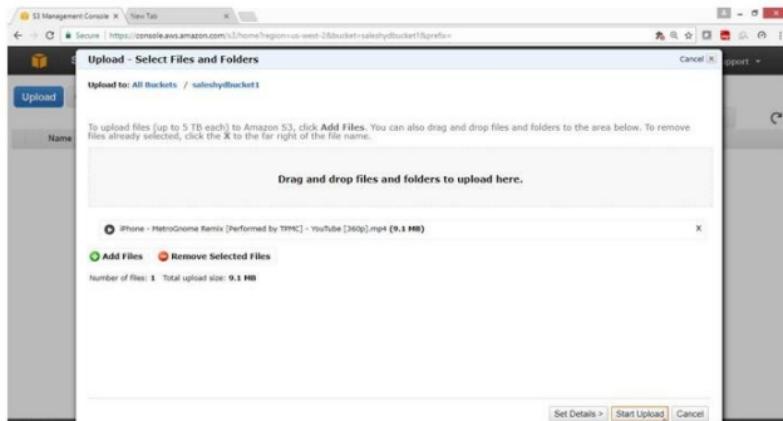


In the upload Wizard

Click on **Add files**

Select some txt, pdf, video files

Click "start upload" button



Verify that the file got uploaded.

S3 Management Console

Services Resource Groups

Upload Create Folder Actions

Search by prefix

Name	Storage Class	Size	Last Modified
iPhone - MetroGnome Remix [Perf...	Standard	9.1 MB	Tue Aug

Switch to new console

None Properties Transfers

Transfers

Automatically clear finished transfers

Select the file, Click on Properties on Right Panel,

## Click on the link

S3 Management Console | New Tab

Services Resource Groups

Upload Create Folder Actions

Search by prefix

Switch to new console

None Properties Transfers

Name	Storage Class	Size	Last Modified
iPhone - MetroGnome Remix [Perf...	Standard	9.1 MB	Tue Aug

Object: iPhone - MetroGnome Remix [P... x

**Bucket:** saleshydbucket1  
**Name:** iPhone - MetroGnome Remix [Performed by TPMC] - YouTube [360p].mp4  
**Link:** <https://s3-us-west-2.amazonaws.com/saleshydbucket1/iPhone+MetroGnome+Remix+by+TPMC+performed+by+YouTube+360p.mp4>

**Size:** 9.1 MB  
**Last Modified:** Tue Aug 15 06:04:56 GMT+530 2017  
**Owner:** skmval999  
**ETag:** fdd35eb6978424115be1291c92017a9  
**Expires Date:** None  
**Expiration Rule:** None

Details  
Permissions  
Metadata  
Tags

## Verification : Cannot access due to lack of permission

This XML file does not appear to have any style information associated with it. The document tree is shown below.

```
<Error>
  <Code>AccessDenied</Code>
  <Message>Access Denied</Message>
  <RequestId>572AAA1F3766B385</RequestId>
  <HostId>
    1Pz8EcQnstvOUSxIwM54p6Yj2pJtz7zHwT1QYmZPwjg/7dw+UT/t/F0xXr9VrUTdBlajlyEqbQ=
  </HostId>
</Error>
```

To allow users to Download, or view give permission

### Select, Permission tag

Object: iPhone - MetroGnome Remix [P ...]

Name	Storage Class	Size	Last Modified
iPhone - MetroGnome Remix [Perf...	Standard	9.1 MB	Tue Aug

Bucket: saleshybucket1  
Name: [https://s3-us-west-2.amazonaws.com/saleshybucket1/Iphone+-+MetroGnome+Remix+\[Perf...\].mp4](https://s3-us-west-2.amazonaws.com/saleshybucket1/Iphone+-+MetroGnome+Remix+[Perf...].mp4)  
Link: [https://s3-us-west-2.amazonaws.com/saleshybucket1/Iphone+-+MetroGnome+Remix+\[Perf...\].mp4?Expires=15301788&Signature=6d036eb6978424115be1291c92017a9&AWSAccessKeyId=572AAA1F3766B385](https://s3-us-west-2.amazonaws.com/saleshybucket1/Iphone+-+MetroGnome+Remix+[Perf...].mp4?Expires=15301788&Signature=6d036eb6978424115be1291c92017a9&AWSAccessKeyId=572AAA1F3766B385)  
Size: 9530788  
Last Modified: Tue Aug 15 08:04:56 GMT+530 2017  
Owner: student  
ETag: 6d036eb6978424115be1291c92017a9  
Expiration Rule: None  
Expiration Date: N/A

Details  
Permissions  
Metadata  
Tags

Click on Plus Radio button for Add more permissions

Drop down Grantee Button

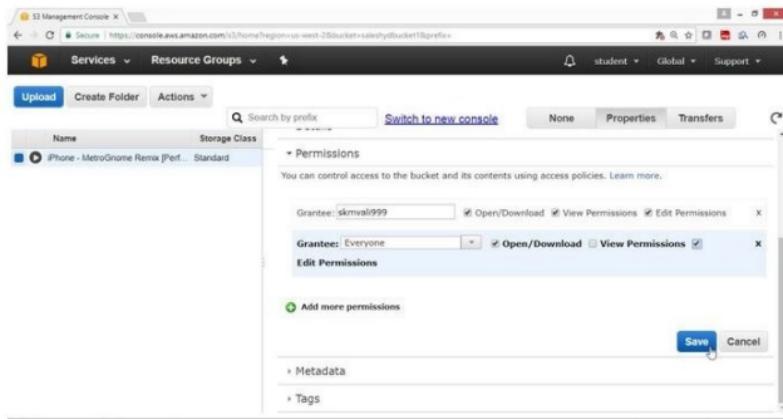
Select **Everyone** to make it public

Enable the check box to **Open/Download**

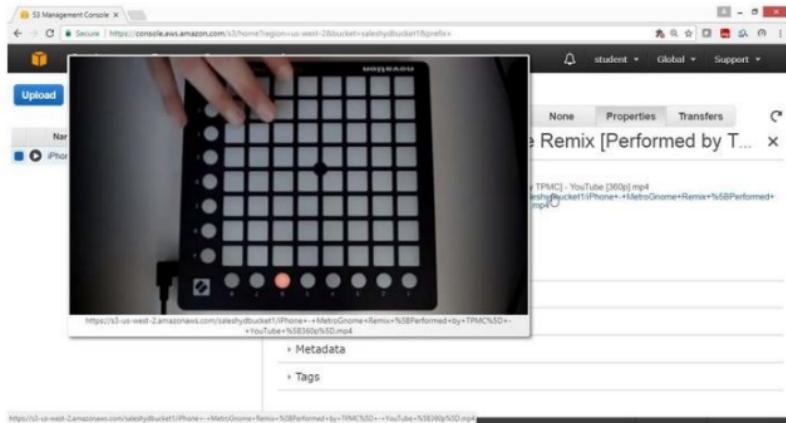
Enable the check box to **View Permission**

Enable the check box the **Edit View Permission**

Click on **Save** button



Verify file is accessible.

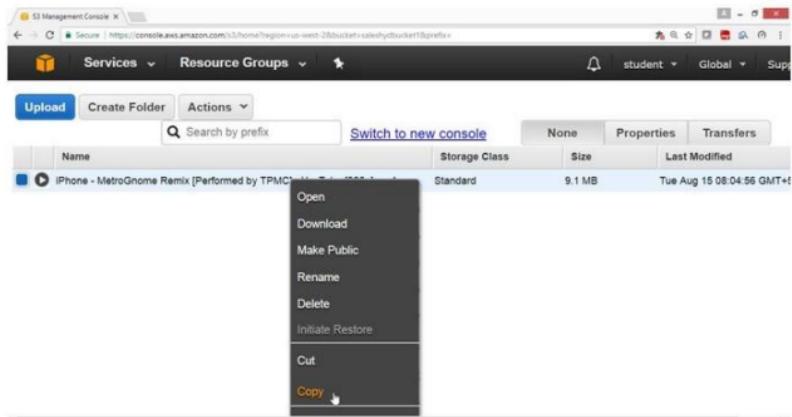


The screenshot shows the AWS S3 Management Console. A file named "TPMC - MetroGnome Remix [Performed by TPMC] - YouTube [300p].mp4" is selected. The file is a video of a person playing a grid-based electronic instrument. The file's URL is displayed as <https://s3-us-west-2.amazonaws.com/salesphybucket1/iPhone%20-%20MetroGnome%20Remix%20%28Performed%20by%20TPMC%29%20-%20YouTube%20%28300p%29.mp4>.

## 2) To copy or move files from one bucket to another.

Select the file from Bucket or Folder, right click,

now select copy/cut



The screenshot shows the AWS S3 Management Console with a context menu open over a file named "iPhone - MetroGnome Remix [Performed by TPMC] - YouTube [300p].mp4". The "Copy" option is highlighted in the menu.

2.2 Select the Bucket or Folder, where you want to paste.

Click on the Bucket → finshydbucket1

The screenshot shows the AWS S3 Management Console interface. At the top, there's a navigation bar with tabs for 'Services' and 'Resource Groups'. Below the navigation bar, a button for 'Create Bucket' is visible. A dropdown menu labeled 'Actions' is open, showing options like 'Switch to new console', 'None', and 'Properties'. The main area is titled 'All Buckets (5)' and contains a table with columns for 'Name', 'Storage Class', 'Size', and 'Last modified'. The bucket 'finshydbucket1' is highlighted with a blue selection bar. Other buckets listed are 'cloudtrialhari', 'ctrilabc', 'saleshydbucket1', and 'srikanthhyd'. The URL in the browser address bar is <https://console.aws.amazon.com/s3/home?region=us-west-2&bucket=finshydbucket1&prefix>.

Click on Paste

The screenshot shows the AWS S3 Management Console interface again. The 'Actions' dropdown menu is open, and the 'Paste' option is highlighted with a mouse cursor. The main area displays the message 'The bucket 'finshydbucket1' is empty'. The URL in the browser address bar is the same as the previous screenshot: <https://console.aws.amazon.com/s3/home?region=us-west-2&bucket=finshydbucket1&prefix>.

Verify that the file is copied in another bucket i.e finshydbucket1

The screenshot shows the AWS S3 Management Console interface. The left sidebar shows 'All Buckets / finshydbucket1'. The main area lists a single file: 'iPhone - MetroGnome Remix [Performed by TP...]' with a size of 9.1 MB and last modified on Aug 15 09:23:54 GMT+530 2017. A context menu is open over this file, with the 'Delete' option highlighted.

### 3) To delete a file from a bucket

Right click on it, select Delete

The screenshot shows the AWS S3 Management Console interface. The left sidebar shows 'All Buckets / finshydbucket1'. The main area lists a single file: 'iPhone - MetroGnome Remix [Performed by TP...]' with a size of 0.64 MB and last modified on Aug 15 09:23:54 GMT+530 2017. A context menu is open over this file, with the 'Delete' option highlighted.

## To Delete a bucket

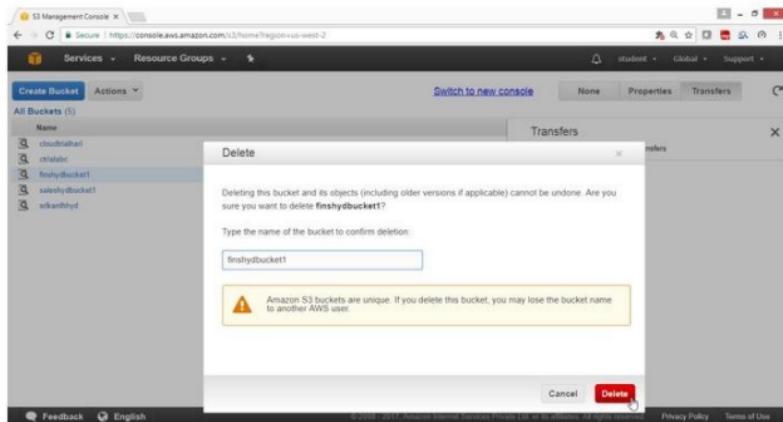
Select the bucket, right click select **Delete Bucket**

The screenshot shows the AWS S3 Management Console interface. At the top, there's a navigation bar with tabs for 'Services' and 'Resource Groups'. Below the navigation bar, a main content area displays a list of buckets under the heading 'All Buckets (5)'. The buckets listed are: cloudtrialhari, ctrialabc, finshydbucket1, saleshydbucket1, and srikanthydbucket1. To the right of the bucket list, there's a sidebar titled 'Transfers' with an option to 'Automatically clear finished transfers'. A context menu is open over the 'srikanthydbucket1' bucket, listing options: 'Create Bucket...', 'Delete Bucket' (which is highlighted with a yellow arrow), 'Empty Bucket', 'Paste Into', and 'Properties'.

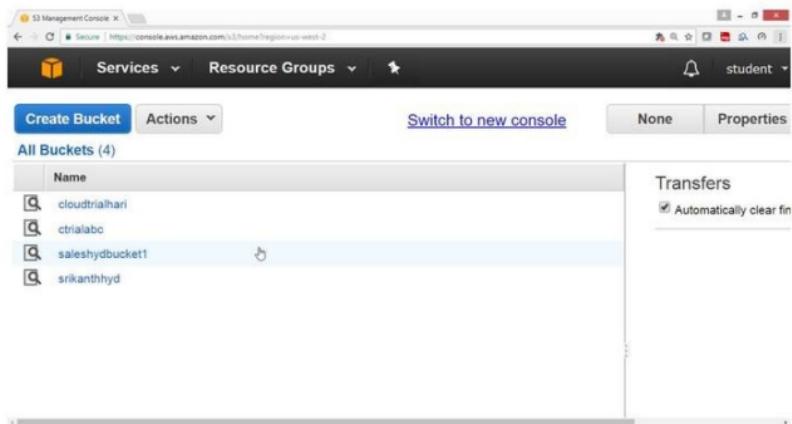
## To Delete Bucket

Provide exact bucket name

Click on **Delete** button



Verify that the bucket **finshydbucket1** is deleted



#### 4) To Host a Static Website using Amazon s3 Bucket

To Host a Static Website using Amazon s3 Bucket

Open AWS console

Select **Storage**

Click on **S3** service

Click on “**Create Bucket**”

The screenshot shows the AWS S3 Management Console interface. At the top, there's a navigation bar with tabs for 'Services' and 'Resource Groups'. On the right side of the header, there's a user profile section labeled 'student'. Below the header, there are two main buttons: 'Create Bucket' and 'Actions'. To the right of these buttons is a link 'Switch to new console'. Further to the right are 'None' and 'Properties' buttons. The main content area is titled 'All Buckets (4)' and contains a table with a single column labeled 'Name'. The table lists four buckets: 'cloudtrialhari', 'ctrialabc', 'saleshydbucket1', and 'srikanthhyd'. To the right of the table, there's a sidebar titled 'Transfers' with a checkbox for 'Automatically clear fin'. A vertical scrollbar is visible on the right side of the main content area.

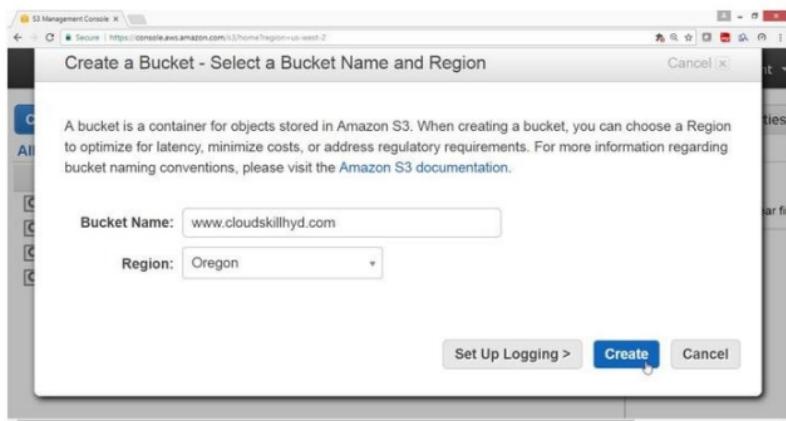
On "Create a Bucket - Select a Bucket Name and Region" page

Provide following values for

Bucket Name → www.cloudskillhyd.com

Region → Oregon

Click on **Create** button



## Verify Bucket got created

The screenshot shows the AWS S3 Management Console with the URL <https://console.aws.amazon.com/s3/home?region=us-west-2>. The page title is "S3 Management Console". The top navigation bar includes "Services", "Resource Groups", a user icon for "student", and tabs for "None" and "Properties". Below the navigation is a "Create Bucket" button and an "Actions" dropdown. A link to "Switch to new console" is also present. The main content area is titled "All Buckets (4)" and lists the following buckets:

Name
cloudtrialhari
ctrilabc
saleshydbucket1
srikanthyd
www.cloudskillhyd.com

To the right of the bucket list is a "Transfers" section with a checkbox for "Automatically clear finished transfers".

Upload all website contents in this bucket.

The screenshot shows the AWS S3 Management Console with the URL <https://console.aws.amazon.com/s3/bucket/www.cloudskillhyd.com?prefix=www>. The page title is "S3 Management Console". The top navigation bar includes "Services", "Resource Groups", a user icon for "student", and tabs for "Global" and "Support". Below the navigation is an "Upload" button, a "Create Folder" button, an "Actions" dropdown, and a search bar. A link to "Switch to new console" is also present. The main content area is titled "All Buckets / www.cloudskillhyd.com" and lists the contents of the bucket:

Name	Storage Class	Size	Last Modified
404.html	Standard	6 KB	Tue Aug 15 00:46:32 GMT+530 2017
about-us.html	Standard	5.8 kB	Tue Aug 15 00:46:33 GMT+530 2017
article.html	Standard	5.3 kB	Tue Aug 15 00:46:34 GMT+530 2017
articles.html	Standard	4.8 kB	Tue Aug 15 00:46:34 GMT+530 2017
contact-us.html	Standard	4.7 kB	Tue Aug 15 00:46:35 GMT+530 2017
css	—	—	—
images	—	—	—
index.html	Standard	6 kB	Tue Aug 15 00:46:36 GMT+530 2017
js	—	—	—
sitemap.html	Standard	4.8 kB	Tue Aug 15 00:46:37 GMT+530 2017

To the right of the file list is a "Transfers" section with a checkbox for "Automatically clear finished transfers".

Select the bucket and click on properties button

The screenshot shows the AWS S3 Management Console. In the top navigation bar, 'Services' and 'Resource Groups' are visible. On the left, there's a 'Create Bucket' button and an 'Actions' dropdown. In the center, a list of buckets is shown under 'All Buckets (4)'. The bucket 'www.cloudskillhyd.com' is highlighted with a blue selection bar at the bottom. To the right of the bucket list, there are three tabs: 'None', 'Properties' (which is currently selected), and 'Transfers'. Under the 'Properties' tab, there's a section titled 'Transfers' with a checkbox for 'Automatically clear finished transfers'.

On the **Properties** panel

Click **Static Website Hosting**

Drag Down

This screenshot continues from the previous one, focusing on the 'Properties' tab. The 'Static Website Hosting' section is expanded, showing the following details:

- Bucket:** www.cloudskillhyd.com
- Region:** Oregon
- Creation Date:** Tue Aug 15 08:44:43 GMT+530 2017
- Owner:** srujan@999

Below this, the 'Permissions' section is collapsed. The 'Static Website Hosting' section is expanded, containing the following text and endpoint information:

You can host your static website entirely on Amazon S3. Once you enable your bucket static website hosting, all your content is accessible to web browsers via the Amazon S3 website endpoint for your bucket.

**Endpoint:** [www.cloudskillhyd.com.s3-website-us-west-2.amazonaws.com](http://www.cloudskillhyd.com.s3-website-us-west-2.amazonaws.com)

Each bucket serves a website namespace (e.g., "www.example.com"). Requests for your host name (e.g., "example.com" or "www.example.com") can be routed to the contents of your bucket. You can also redirect requests to another host name (e.g., redirect

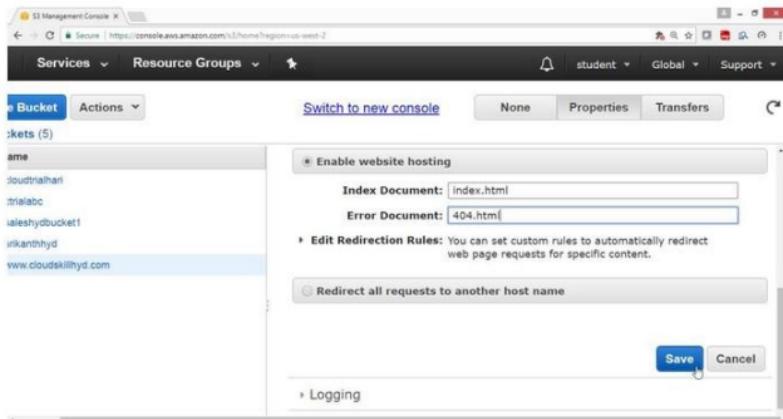
Select the **Enable website hosting**

Provide following values for

Index Document box → index.html

Error Document box → 404.html

Click on **Save** button



Note down the Endpoint.

The screenshot shows the AWS S3 console with the 'Website Hosting' tab selected. On the left, a list of buckets includes 'cloudnatnhan', 'cratalbc', 'saleshydbucket1', 'srikanthyd', and 'www.cloudkillyd.com'. The 'www.cloudkillyd.com' bucket is currently selected. The main pane displays the 'Endpoint' as `www.cloudkillyd.com.v3website.us-west-2.amazonaws.com`. A detailed description explains that each endpoint serves a website namespace and can be redirected to another host name. Below this, there are two options: 'Do not enable website hosting' (radio button) and 'Enable website hosting' (checkbox, which is checked). Under 'Enable website hosting', fields for 'Index Document' (set to 'index.html') and 'Error Documents' (set to '404.htm') are shown. A link to 'Edit Redirection Rules' is also present. At the bottom right are 'Save' and 'Cancel' buttons, and a 'Logging' section is visible at the very bottom.

2. To add a bucket policy that makes your bucket content publicly available

In the Bucket Properties, click on **Permission**

Click on **Add Bucket Policy**.

The screenshot shows the AWS S3 console. On the left, there's a sidebar with 'Create Bucket' and 'Actions' dropdown. Below it, a list of buckets: 'cloudtrialhari', 'ctrialabc', 'saleshydbucket1', 'srikanthhyd', and 'www.cloudskillhyd.com'. The last one is selected. The main area shows the properties for 'Bucket: www.cloudskillhyd.com'. It lists the bucket name, region (Oregon), creation date (Tue Aug 15 08:44:43 GMT+530 2017), and owner (skmvali999). A 'Permissions' section is expanded, showing a grantee of 'skmvali999' with checkboxes for 'List' and 'Upload/Delete' both checked. There are also 'View Permissions' and 'Edit Permissions' links. At the bottom, there are buttons for 'Add more permissions', 'Add bucket policy' (which is highlighted in blue), and 'Add CORS Configuration'. A 'Save' button is on the right.

Copy the following bucket policy, and then paste it in the Bucket Policy Editor.

---

---

```
{  
    "Version": "2012-10-17",  
    "Statement": [  
        {  
            "Sid": "PublicReadForGetBucketObjects",  
            "Effect": "Allow",  
            "Principal": "*",  
            "Action": ["s3:GetObject"],  
            "Resource": ["arn:aws:s3:::cloudskillhyd.com/*"  
        }  
    ]  
}
```

---

---

Click on **Save** button



## Verify your website

Click on Endpoint Under Static Website Hosting

Endpoint: [www.cloudskillhyd.com.s3-website-us-west-2.amazonaws.com](https://www.cloudskillhyd.com.s3-website-us-west-2.amazonaws.com)

The screenshot shows the AWS S3 Management Console. In the left sidebar, under 'All Buckets (5)', the 'www.cloudskillhyd.com' bucket is selected. On the right, under 'Static Website Hosting', the 'Enable website hosting' option is checked. The 'Index Document' field is set to 'index.html' and the 'Error Document' field is set to '404.html'. At the bottom of the configuration pane, there is a link: 'Endpoints: https://www.cloudskillhyd.com.s3-website-us-west-2.amazonaws.com'.

Verify the website which is coming from S3 Bucket

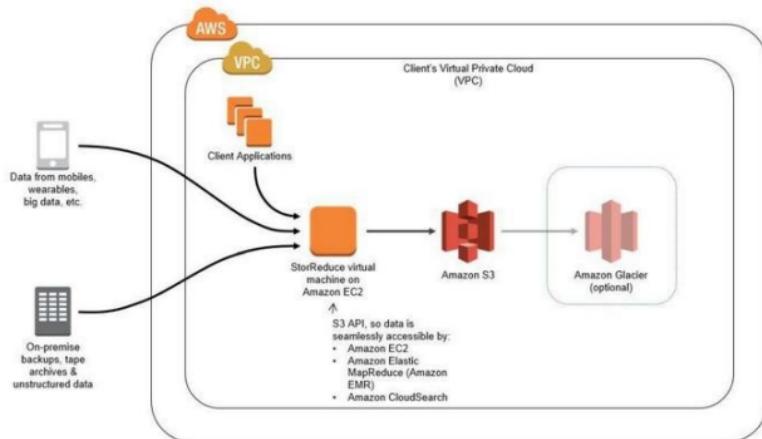
The screenshot displays the 'Car Club' website template. The header features a purple navigation bar with links for HOME, ABOUT, ARTICLES, CONTACTS, SITE MAP, Help, and FAQ. Below the header is a large banner image of a purple sports car. The main content area includes a 'Latest News' section with two items and a 'Welcome to Our Club' section. The news items are: '10.08.2010 Sed ut perspiciatis unde omnis iste natus error sit voluptate.' and '03.08.2010 Neque porro quisquam est, qui dolorem ipsum quia dolor sit amet,'. The welcome section contains a brief description of the template and a list of bullet points. At the bottom, there is a note about the website template being delivered in two packages with PSD source files included.

## Lab 8: To configure Amazon Glacier

### OBJECTIVE

To configure and use AWS Glacier Service.

### TOPOLOGY



### PRE-REQUISITES

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

**To configure Glacier with following task.**

Transfer files from S3 to Glacier

**Note:** Amazon does not allows files to be directly loaded on Glacier

use s3 or third party tools to archive or restore.

### **1.Using s3 bucket & s3 lifecycle permission to archive in glacier**

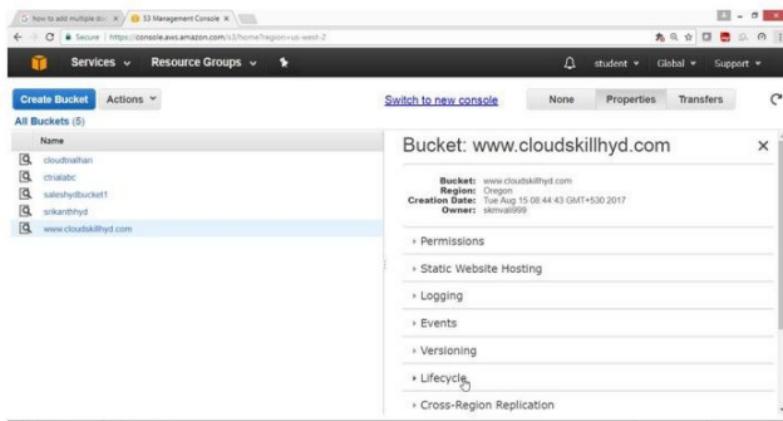
Select S3 bucket

[ refer s3 topics how to create bucket and upload files ]

Select the bucket,

Go to properties

Click on **Lifecycle**



Click on Add rule

The screenshot shows the AWS S3 Management Console with a list of buckets on the left. A context menu is open over the bucket 'www.cloudskillhyd.com', with the option 'Add rule' highlighted. The right side of the screen displays the 'Add rule' dialog. The dialog header says 'None Properties Transfers'. It contains a note about lifecycle rules applying to objects after a specified time period. Below this, it states 'Versioning is not currently enabled on this bucket.' A list of lifecycle rule options is shown: Cross-Region Replication, Tags, Requester Pays, Transfer Acceleration, and Storage Management. At the bottom right are 'Save' and 'Cancel' buttons.

### Under Lifecycle Rules

select Choose Rule Target

Apply the Rule to → Whole Bucket

The screenshot shows the 'Lifecycle Rules' configuration dialog. On the left, there are three steps: Step 1: Choose Rule Target, Step 2: Configure Rule, and Step 3: Review and Name. Step 1 is currently selected. On the right, under 'Apply the Rule to:', there is a radio button for 'Whole Bucket: www.cloudskillhyd.com' which is selected, and another for 'A Prefix: e.g. MyFolder/ or MyObject'. At the bottom right are 'Cancel' and 'Configure Rule >' buttons.

Select check box **Archive to the Glacier Storage Class** → 7

Select the check box **Permanently Delete** → 372

click on **Review**

How to add multiple ... 53 Management Console

Services Resource Groups

Lifecycle Rules

Step 1: Choose Rule Target

Step 2: **Configure Rule**

Step 3: Review and Name

Transition to Standard - Infrequent Access Storage Class  
Days after the object's creation date

Standard - Infrequent Access has a 30-day minimum retention period and a 120KB minimum object size. Lifecycle policy will not transition objects that are less than 120KB. Refer here to learn more about Standard - Infrequent Access

Archive to the Glacier Storage Class  
7 Days after the object's creation date

This rule could reduce your storage costs. Refer here to learn more about Glacier pricing. Note that objects archived to the Glacier Storage Class are not immediately accessible.

Permanently Delete  
372 Days after the object's creation date

EXAMPLE:

August 15, 2017 (Day 0) → Object Uploaded → Day 7 → Rule Archive to Glacier → August 22, 2017 (Day 372) → Rule Expire → Object Deleted

Action on Incomplete Multipart Uploads

Cancel < Set Target **Review >**

Provide Rule Name → Testbackup

click on “Create and Activate Rule” button

How to add multiple ... 53 Management Console

Services Resource Groups

Lifecycle Rules

Step 1: Choose Rule Target

Step 2: **Configure Rule**

Step 3: **Review and Name**

Rule Name:  (optional)

Rule Target  
This rule will apply to the whole bucket: [www.cloudskillhyd.com](http://www.cloudskillhyd.com)

Rule Configuration

Action on Objects

Archive to the Glacier Storage Class 7 days after the object's creation date.  
This rule could reduce your storage costs. Refer here to learn more about Glacier pricing. Note that objects archived to the Glacier Storage Class are not immediately accessible.

Permanently Delete 372 days after the object's creation date  
As versioning is not enabled, lifecycle delete rule will permanently delete the objects with no recovery.

Cancel < Configure Rule **Create and Activate Rule**

Click on Save button

The screenshot shows the AWS S3 Management Console with the 'Lifecycle' tab selected for the bucket 'www.cloudskilhyd.com'. The 'Enabled' dropdown is set to 'Testbackup' and the 'Rule Target' is 'Whole Bucket'. A green 'Add rule' button is visible. A blue 'Save' button is highlighted with a red circle, indicating it should be clicked.

Verify Storage Class is Standard

The screenshot shows the AWS S3 Management Console displaying a list of objects in a bucket. The objects listed are: 404.html, about-us.html, article.html, articles.html, contact-us.html, css, images, index.html, js, and sitemap.html. All objects have a 'Storage Class' listed as 'Standard'.

Name	Storage Class	Size	Last Modified
404.html	Standard	6 KB	Tue Aug 15 08:46:32 GMT+05:30 2015
about-us.html	Standard	5.8 KB	Tue Aug 15 08:46:33 GMT+05:30 2015
article.html	Standard	5.3 KB	Tue Aug 15 08:46:34 GMT+05:30 2015
articles.html	Standard	4.8 KB	Tue Aug 15 08:46:34 GMT+05:30 2015
contact-us.html	Standard	4.7 KB	Tue Aug 15 08:46:35 GMT+05:30 2015
css	--	--	--
images	--	--	--
index.html	Standard	6 KB	Tue Aug 15 08:46:36 GMT+05:30 2015
js	--	--	--
sitemap.html	Standard	4.8 KB	Tue Aug 15 08:46:37 GMT+05:30 2015

Verify Once the file goes to Glacier then Storage Class is Glacier

The screenshot shows the AWS S3 Management Console interface. At the top, there are tabs for 'Upload', 'Create Folder', 'Actions', 'Versions', 'Hide', and 'Show'. A search bar says 'Search by prefix' and a button says 'Switch to new console'. Below these are buttons for 'None', 'Properties', and 'Transfers'. The main area displays a table with two rows of data:

Name	Storage Class	Size	Last Modified
How I Lowered My Cholesterol From 266 to 151 Without Drugs - YouTube [360p...	Glacier	6.4 MB	Thu Apr 13 20:37:27 GMT+0
butter that lowers cholesterol natural way to lower cholesterol how to - YouTube ...	Glacier	10 MB	Thu Apr 13 20:36:58 GMT+0

To Restore go to the bucket select the file

Right click and select **Initiate Restore**

The screenshot shows the AWS S3 Management Console interface. A file named "How I Lowered My Cholesterol From 266 to 151 Without Drugs - YouTube (360p - Glacia..." is selected. A context menu is open over the file, with the "Initiate Restore" option highlighted. Other options in the menu include Open, Download, Make Public, Rename, Delete, Cut, and Copy.

Provide number of days → 1

Click on OK

The screenshot shows the "Initiate Restore" dialog box. It contains a text input field with "1 days" entered. Below the input field is a note: "You are charged a Glacier retrieval fee if you choose to restore more than 5% of your average monthly storage (pro-rated daily) in a month. Click here to learn more." At the bottom right are "OK" and "Cancel" buttons, with the "OK" button being highlighted.

Verify

File will get restored after 1 Day

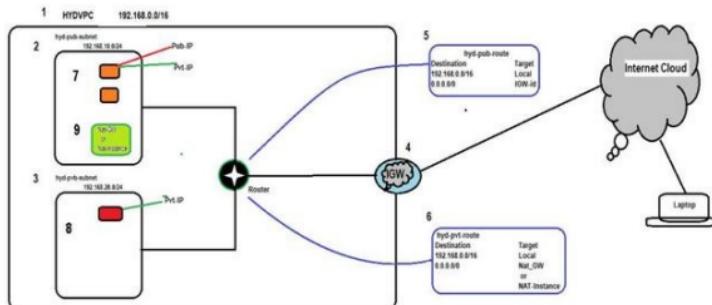
Storage class will become Standard.

## Lab 9: To Configure Amazon Virtual Private Cloud ( VPC )

### OBJECTIVE

To configure Amazon Virtual Private Cloud with public and private subnet

### TOPOLOGY



### PRE-REQUISITES

User should have AWS account, or IAM user with VPCfullaccess

## **TASK**

- Create your own VPC
- Create Public subnet
- Create Private subnet
- Create Internet Gateway
- Attach Internet Gateway to your VPC
- Create Public Routing Table, associate subnet and add routing rules
- Create Private Routing table, associate subnet and add routing rules
- Launch an instance in Public network
- Launch an instance in Private network
- Create Nat Gateway
- Connect to public instance and check internet connectivity
- Connect to private instance and check internet connectivity

Amazon Virtual Private Cloud (Amazon VPC) enables you to launch Amazon Web Services (AWS) resources into a virtual network that you've defined. This virtual network closely resembles a traditional network that you'd operate in your own data center, with the benefits of using the scalable infrastructure of AWS.

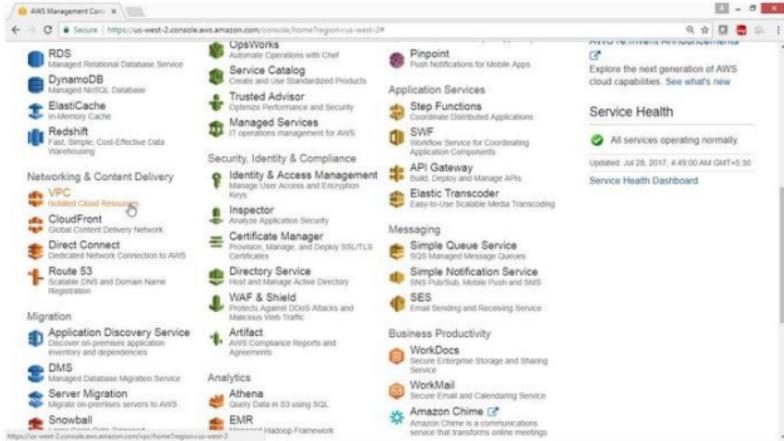
1) To create your own VPC

[Open AWS console](#)

## **Click on Services**

#### Select Networking and Content Delivery

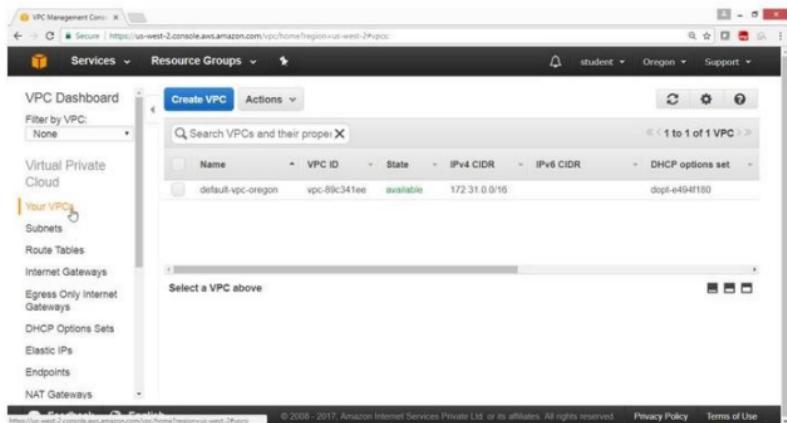
**Click on VPC**



On VPC Dashboard panel

Click on Your VPC

Click on Create VPC button



The screenshot shows the AWS VPC Management Console interface. On the left, there's a sidebar with options like 'Virtual Private Cloud', 'Your VPCs' (which is selected and highlighted in orange), 'Subnets', 'Route Tables', 'Internet Gateways', 'Egress Only Internet Gateways', 'DHCP Options Sets', 'Elastic IPs', 'Endpoints', and 'NAT Gateways'. The main area has a search bar at the top labeled 'Search VPCs and their properties'. Below it is a table with one row, showing details for a VPC named 'default-vpc-oregon'. The table columns include Name, VPC ID, State, IPv4 CIDR, IPv6 CIDR, and DHCP options set. The VPC ID is 'vpc-89c341ee', state is 'available', IPv4 CIDR is '172.31.0.0/16', and the DHCP options set is 'dhcp1-e494ff80'. At the bottom of the main area, there's a section titled 'Select a VPC above' with three small icons. The URL in the browser bar is 'https://us-west-2.console.aws.amazon.com/vpc/home?region=us-west-2#vpc'.

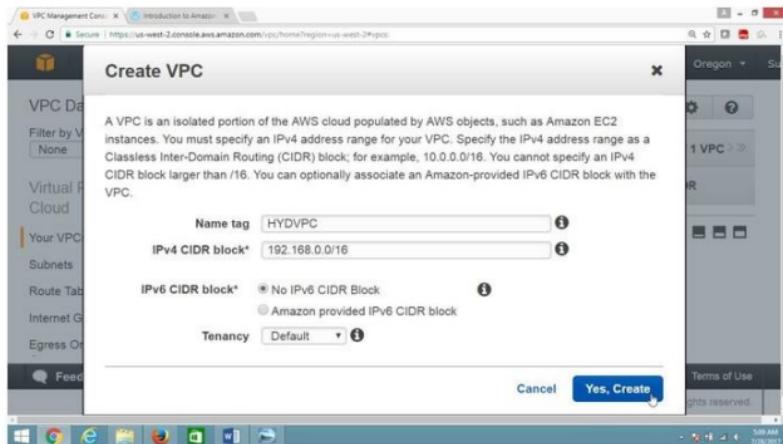
On “Create VPC”, page

For Name tag → HYDVPC

For IPv4 CIDR block → 192.168.0.0/16

Leave remaining field as default

Click on “Yes Create” button



## Verify

HYD VPC is created

VPC Dashboard

Filter by VPC: None

Virtual Private Cloud

Your VPCs

Subnets

Route Tables

Internet Gateways

Egress Only Internet Gateways

Feedback English

Actions

Search VPCs and their properties

Name	VPC ID	State	IPv4 CIDR	IPv6 CIDR
HYD VPC	vpc-7d934d1b	available	192.168.0.0/16	
default-vpc-oregon	vpc-89c341ee	available	172.31.0.0/16	

vpc-7d934d1b | HYD VPC

Summary Flow Logs Tags

VPC ID: vpc-7d934d1b Network ACL: acl-

Privacy Policy Terms of Use

2) To create public subnet

Click on Subnet

Click on Create Subnet button

VPC Dashboard

Filter by VPC: None

Virtual Private Cloud

Your VPCs

Subnets

Route Tables

Internet Gateways

Egress Only Internet Gateways

Feedback English

Services Resource Groups

Create Subnet Subnet Actions

Search Subnets and their properties

Name	Subnet ID	State	VPC
	subnet-19d0f141	available	vpc-89c341ee   default-vpc-oregon
	subnet-13f60e5a	available	vpc-89c341ee   default-vpc-oregon

Select a subnet above

Privacy Policy Terms of Use

**On Create Subnet, page**

**For Name tag → hyd-pub-subnet**

**For VPC → HYDVPC**

**For IPv4 CIDR block → 192.168.10.0/24**

**Click on Yes Create button**



## Verify

hyd-pub-subnet got created

The screenshot shows the AWS VPC Management Console interface. The left sidebar lists various VPC-related services like Virtual Private Cloud, Your VPCs, Subnets, Route Tables, Internet Gateways, Egress Only Internet Gateways, DHCP Options Sets, Elastic IPs, Endpoints, and NAT Gateways. The main content area displays a table of subnets. A search bar at the top says "Search Subnets and their pro: X". The table has columns: Name, Subnet ID, State, VPC, IPv4 CIDR, and Available. There are two entries: "hyd-pub-subnet" (subnet-b3bdbefb) and "subnet-19d0f141". Below the table, a specific subnet is selected: "subnet-b3bdbefb | hyd-pub-subnet". A navigation bar for this subnet includes tabs for Summary, Route Table, Network ACL, Flow Logs, and Tags. The summary tab is active. It shows the Subnet ID as "subnet-b3bdbefb | hyd-pub-", the Availability Zone as "us-west-2a", and other details.

### 3) To create private subnet

Click on **Subnet**

Click on **Create Subnet** button

This screenshot is identical to the previous one, showing the AWS VPC Management Console. The "Create Subnet" button in the top navigation bar is highlighted with a red circle. The rest of the interface, including the sidebar, subnet table, and the selected subnet details, remains the same.

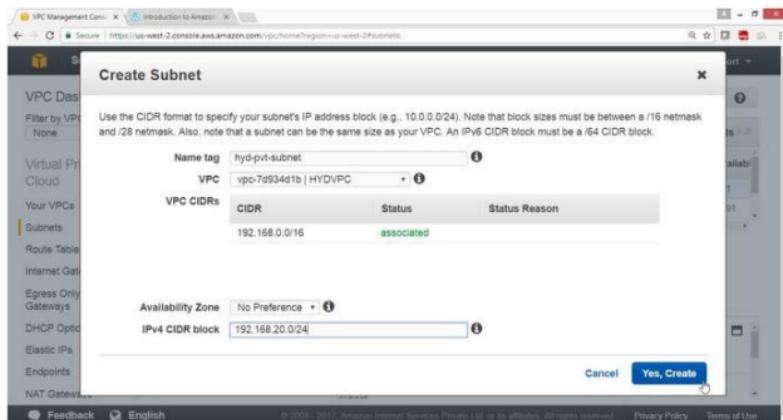
### On Create Subnet, page

For Name tag → hyd-pvt-subnet

For VPC → HYDVPC

For IPv4 CIDR block → 192.168.20.0/24

Click on Yes Create button



## Verify

hyd-pvt-subnet got created

The screenshot shows the AWS VPC Management Console. On the left, there's a sidebar with navigation links: VPC Dashboard, Virtual Private Cloud, Your VPCs, Subnets (which is selected), Route Tables, Internet Gateways, Egress Only Internet Gateways, DHCP Options Sets, Elastic IPs, Endpoints, and NAT Gateways. The main area displays a table of subnets. The table has columns: Name, Subnet ID, State, VPC, IPv4 CIDR, and Available. There are 5 subnets listed:

Name	Subnet ID	State	VPC	IPv4 CIDR	Available
hyd-pvt-subnet	subnet-6abcbf23	available	vpc-7d934d1b   HYDVPC	192.168.20.0/24	251
hyd-pub-subnet	subnet-b3bdfbfa	available	vpc-7d934d1b   HYDVPC	192.168.10.0/24	251
subnet-19d0f141		available	vpc-89c341ee   default-vpc-oregon	172.31.0.0/20	4091
subnet-1360e5a		available	vpc-89c341ee   default-vpc-oregon	172.31.32.0/20	4090
subnet-89e43bec		available	vpc-89c341ee   default-vpc-oregon	172.31.16.0/20	4091

Below the table, a specific subnet is selected: subnet-6abcbf23 | hyd-pvt-subnet. The interface shows tabs for Summary, Route Table, Network ACL, Flow Logs, and Tags. The Summary tab is active. At the bottom, it shows the Subnet ID: subnet-6abcbf23 | hyd-pvt-, Availability Zone: us-west-2a, and a Feedback link.

4) Create a Internet Gateway and attach to your VPC.

In VPC Dashboard panel

Click on Internet Gateway

The screenshot shows the AWS VPC Management Console. The sidebar now highlights the 'Internet Gateways' link under the 'Internet Gateways' section. The main area displays the same list of subnets as the previous screenshot. The table structure is identical, showing 5 subnets with their respective details. The interface below the table remains the same, showing the selected subnet and its details.

Click on **Create Internet Gateway** button

The screenshot shows the AWS VPC Management Console. On the left sidebar, under the 'Internet Gateways' section, the 'Create Internet Gateway' button is highlighted with a red box and a cursor. The main pane displays a table with one row of data:

Name	ID	State	VPC
igw-6ea7f10a	attached	vpc-89c34fee	default-vpc-oregon

Below the table, there is a message: "Select an Internet gateway above". At the bottom of the page, there are links for Feedback, English, Privacy Policy, and Terms of Use.

In **Create Internet Gateway**, box

For Name tag → HYDIGW

Click on "**Yes, Create**" button

The screenshot shows the 'Create Internet Gateway' dialog box. Inside the box, there is a description: "An Internet gateway is a virtual router that connects a VPC to the Internet." Below this, the 'Name tag' field contains the value 'HYDIGW'. At the bottom right of the dialog box, there are two buttons: 'Cancel' and 'Yes, Create'. The 'Yes, Create' button is highlighted with a red box and a cursor. The background of the dialog box has a light gray gradient.

## Verify

Internet gateway is created

VPC Management Cons... Introduction to Amazon... https://us-west-2.console.aws.amazon.com/vpc/home?region=us-west-2#igw:

Services Resource Groups

Create Internet Gateway Delete Attach to VPC Detach from VPC

Search Internet Gateways and ...

Name	ID	State	VPC
HYDIGW	igw-be27a9d9	detached	
	igw-6ea7f10a	attached	vpc-89c341ee   default-vpc-oregon

igw-be27a9d9 | HYDIGW

Summary Tags

ID: igw-be27a9d9 | HYDIGW Attached VPC ID:

Feedback English © 2006 - 2017, Amazon Internet Services Private Ltd. or its affiliates. All rights reserved. Privacy Policy Terms of Use

Select HYDIGW

Click "Attach to VPC"

VPC Management Cons... Introduction to Amazon... https://us-west-2.console.aws.amazon.com/vpc/home?region=us-west-2#igw:

Services Resource Groups

Create Internet Gateway Delete Attach to VPC Detach from VPC

Search Internet Gateways and ...

Name	ID	State	VPC
HYDIGW	igw-be27a9d9	detached	
	igw-6ea7f10a	attached	vpc-89c341ee   default-vpc-oregon

igw-be27a9d9 | HYDIGW

Summary Tags

ID: igw-be27a9d9 | HYDIGW Attached VPC ID:

Feedback English © 2006 - 2017, Amazon Internet Services Private Ltd. or its affiliates. All rights reserved. Privacy Policy Terms of Use

In "Attach to VPC" box

For VPC → HYDVPC

click on "Yes, Attach" button



## Verify

Internet gateway is connected to your VPC

The screenshot shows the AWS VPC Management Console. On the left, a sidebar lists various VPC components like Virtual Private Cloud, Your VPCs, Subnets, Route Tables, and Internet Gateways. The Internet Gateways section is currently selected. The main content area shows a table of Internet Gateways:

Name	ID	State	VPC
HYDIGW	igw-be27a9d9	attached	vpc-7d934d1b   HYDVPC
	igw-6ea7110a	attached	vpc-89c341ee   default-vpc-oregon

Below the table, a detailed view for the selected gateway (igw-be27a9d9 | HYDIGW) is shown. It includes tabs for "Summary" and "Tags", and displays the ID, Attached VPC ID, and other details.

## 5) Create Public Routing Table, associate subnet and add routing rules

### On VPC Dashboard panel

Click on Route Table

The screenshot shows the AWS VPC Management Console. In the left sidebar, under the 'Route Tables' section, there is a 'Create Internet Gateway' button. Below it, a table lists two Internet Gateways: 'HYDIGW' and another one. The table includes columns for Name, ID, State, and VPC. The HYDIGW row is selected. At the bottom of the table, there is a summary card for 'igw-be27af9d9 | HYDIGW' with fields for ID, Attached VPC ID, and Attached VPC Name.

Click on "Create route table" button

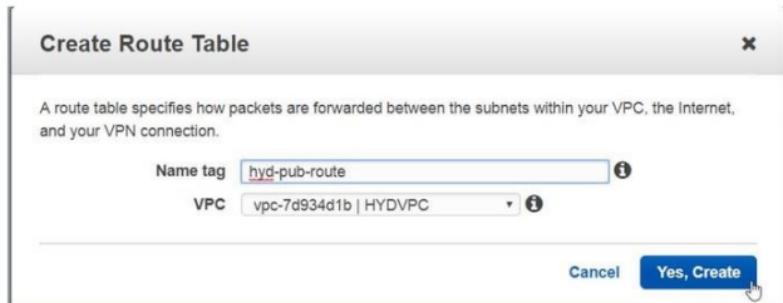
The screenshot shows the AWS VPC Management Console with the 'Create Route Table' button highlighted in the left sidebar. A modal dialog box is open, titled 'Create Route Table'. It contains a table with one row, 'rtb-1996c27e', which is associated with 0 Subnets and has Yes checked for Main. Below the table, there is a message: 'Select a route table above'.

On "Create Route Table" box

For Name tag → hyd-pub-route

For VPC → HYDVPC

Click on "Yes, Create" button



## Verify

hyd-pub-route table is created

The screenshot shows the AWS VPC Management Console with the 'Route Tables' tab selected. The main area displays a table of route tables:

Name	Route Table ID	Explicitly Associated	Main	VPC
hyd-pub-route	rtb-234b6445	0 Subnets	No	vpc-7d934d1b   HYDVPC
	rtb-1996c27e	0 Subnets	Yes	vpc-88c341ee   default-vpc-oregon
	rtb-847d52e2	0 Subnets	Yes	vpc-7d934d1b   HYDVPC

Below the table, a detailed view of the first route table (rtb-234b6445) is shown with tabs for Summary, Routes, Subnet Associations, Route Propagation, and Tags. The 'Summary' tab is selected, showing the Route Table ID as 'rtb-234b6445 | hyd-pub-route'.

Click on “Subnet Association” button

Name	Route Table ID	Explicitly Associated	Main	VPC
hyd-pub-route	rtb-234b6445	0 Subnets	No	vpc-7d934d1b   HYDVPC
	rtb-199b27e	0 Subnets	Yes	vpc-88c341ee   default-vpc-oregon
	rtb-847d52e2	0 Subnets	Yes	vpc-7d934d1b   HYDVPC

Click on Edit button

You do not have any subnet associations.  
The following subnets have not been explicitly associated with any route tables and are therefore associated with the main route table:

Select check box of hyd-pub-subnet → 192.168.10.0/24

VPC Dashboard

Services Resource Groups

Create Route Table Delete Route Table Set As Main Table

Search Route Tables and their X

1 to 3 of 3 Route Tables

Name	Route Table ID	Explicitly Associated	Main	VPC
hyd-pub-route	rtb-234b6445	0 Subnets	No	vpc-7d93461b   HYD-VPC

rtb-234b6445 | hyd-pub-route

Summary Routes Subnet Associations Route Propagation Tags

Associate Subnet IPv4 CIDR IPv6 CIDR Current Route Table

Save

Associate Subnet IPv4 CIDR IPv6 CIDR Current Route Table

subnet-b30dbfba | hyd-pub-subnet 192.168.10.0/24 - Main

subnet-6abcbf23 | hyd-pvt-subnet 192.168.20.0/24 - Main

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## Verify

hyd-pub-subnet is associated with routing table

VPC Dashboard

Services Resource Groups

Create Route Table Delete Route Table Set As Main Table

Search Route Tables and their X

1 to 3 of 3 Route Tables

Name	Route Table ID	Explicitly Associated	Main	VPC
rtb-1996c27e	rtb-1996c27e	0 Subnets	Yes	vpc-89c341ee   default-vpc-oregon
rtb-84fd52e2	rtb-84fd52e2	0 Subnets	Yes	vpc-7d93461b   HYD-VPC

rtb-234b6445 | hyd-pub-route

Summary Routes Subnet Associations Route Propagation Tags

Edit

Associate Subnet IPv4 CIDR IPv6 CIDR

subnet-b30dbfba | hyd-pub-subnet 192.168.10.0/24 -

The following subnets have not been explicitly associated with any route tables and are therefore associated with the main route table:

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Click on **Route** Button

Click on **Edit** button

The screenshot shows the AWS VPC Management Console. The left sidebar is collapsed. The main area displays a table of route tables. One row is selected, showing details for route table 'rtb-234b6445 | hyd-pub-route'. Below the table, there are tabs for 'Summary', 'Routes', 'Subnet Associations' (which is active), 'Route Propagation', and 'Tags'. A modal window is open over the table, containing the 'Edit' button, 'IPv4 CIDR' (192.168.0.0/24), and 'IPv6 CIDR' fields. A note at the bottom states: 'The following subnets have not been explicitly associated with any route tables and are therefore associated with the main route table: subnet-030dbfba | hyd-pub-subnet'.

Click on "Add another route" button

This screenshot is similar to the previous one, showing the 'Subnet Associations' tab for the same route table. However, the modal window now has a 'Save' button instead of 'Edit'. The 'Add another route' button is highlighted with a cursor. The table below shows a single route entry: 'Destination' 192.168.0.0/16, 'Target' local, 'Status' Active, and 'Propagated' No.

For Destination → 0.0.0.0/0

For Target → select HYDIGW

Click on **Save** button

The screenshot shows the AWS VPC Management Console with the 'Create Route Table' tab selected. A search bar at the top right shows '1 to 3 of 3 Route Tables'. On the left, a sidebar lists 'Virtual Private Cloud', 'Your VPCs', 'Subnets', 'Route Tables' (which is selected), 'Internet Gateways', 'Egress Only Internet Gateways', 'DHCP Options Sets', 'Elastic IPs', 'Endpoints', and 'NAT Gateways'. The main area displays a table with columns: Name, Route Table ID, Explicitly Associated, Main, and VPC. Two entries are listed: rtb-1998c27e (0 Subnets, Yes, vpc-89c341ee | default-vpc-oregon) and rtb-847d52e2 (0 Subnets, Yes, vpc-76934d1b | HYD/VPC). Below this is a 'Routes' tab with a table showing a single rule: Destination 192.168.0.0/16, Target local, Status Active, Propagated No. A dropdown menu next to the target field shows 'igw-be27a9d9 | HYDIGW'. At the bottom, there are 'Cancel' and 'Save' buttons, and a note 'View: All rules'.

## Verification

Public route is added through internet gateway

This screenshot is identical to the previous one, showing the 'Create Route Table' screen with the 'Routes' tab selected. The table shows the same rule: Destination 192.168.0.0/16, Target local, Status Active, Propagated No. The dropdown menu next to the target field now shows 'igw-be27a9d9' without the 'HYDIGW' suffix. The 'Save' button is highlighted in blue.

## Verify

Status column show Active

VPC Management Console | Introduction to Amazon VPC | https://us-west-2.console.aws.amazon.com/vpc/home?region=us-west-2#routeTables

Services Resource Groups

VPC Dashboard

Virtual Private Cloud

Your VPCs

Subnets

Route Tables

Internet Gateways

Egress Only Internet Gateways

DHCP Options Sets

Elastic IPs

Endpoints

NAT Gateways

Create Route Table Delete Route Table Set As Main Table

Search Route Tables and their routes

1 to 3 of 3 Route Tables

Name	Route Table ID	Explicitly Associated	Main	VPC
rtb-1996c27e	0 Subnets	Yes	vpc-89c341ee   default-vpc-oregon	

rtb-234b6445 | hyd-pub-route

Summary Routes Subnet Associations Route Propagation Tags

Edit View: All rules

Destination	Target	Status	Propagated
192.168.0.0/16	local	Active	No
0.0.0.0	gw-be37a9d9	Active	No

Feedback English

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**6) Create Private Routing Table, associate subnet and add routing rules**  
On VPC Dashboard panel

Select Route Tables

Click on "Create Route Table"

The screenshot shows the AWS VPC Management Console. On the left, there's a sidebar with options like Services, Resource Groups, and a search bar. Under 'Virtual Private Cloud', 'Route Tables' is selected. In the main area, there's a table titled 'Route Tables' with columns: Name, Route Table ID, Explicitly Associated, Main, and VPC. Three entries are listed: 'hyd-pvt-route' (rtb-234b6445), 'rtb-1998c27e', and 'rtb-847d52e2'. Below the table, a specific route table 'rtb-234b6445 | hyd-pvt-route' is selected, showing tabs for Summary, Routes, Subnet Associations, Route Propagation, and Tags. The 'Routes' tab is active, showing a single entry with 'Destination' as '0.0.0.0/0' and 'Target' as 'rtb-1998c27e'. At the bottom, there are buttons for Feedback, English, and links to Privacy Policy and Terms of Use.

On "Create Route Table" box

For Name tag → hyd-pvt-route

For VPC → HYDVPC

Click on "Yes, Create" button

A modal dialog box titled 'Create Route Table' is shown. It contains a descriptive text about route tables and two input fields: 'Name tag' (set to 'hyd-pvt-route') and 'VPC' (set to 'vpc-7d934d1b | HYDVPC'). At the bottom, there are 'Cancel' and 'Yes, Create' buttons, with a cursor pointing at the 'Yes, Create' button.

## Verify

hyd-pvt-route table is created

VPC Management Console Introduction to Amazon VPC https://us-west-2.console.aws.amazon.com/vpc/home?region=us-west-2#routeTables

Services Resource Groups

Create Route Table Delete Route Table Set As Main Table

Search Route Tables and their routes

1 to 4 of 4 Route Tables

Name	Route Table ID	Explicitly Associated	Main	VPC
hyd-pvt-route	rtb-ac446bca	0 Subnets	No	vpc-78934d1b   HYDVPC
hyd-pub-route	rtb-234b6445	1 Subnet	No	vpc-78934d1b   HYDVPC
rtb-199b27fe	rtb-199b27fe	0 Subnets	Yes	vpc-89c341ee   default-vpc-oregon
rtb-847d52e2	rtb-847d52e2	0 Subnets	Yes	vpc-78934d1b   HYDVPC

rtb-ac446bca | hyd-pvt-route

Summary Routes Subnet Associations Route Propagation Tags

Edit View: All rules

Destination	Target	Status	Propagated

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Click on Subnet Association button

VPC Management Console Introduction to Amazon VPC https://us-west-2.console.aws.amazon.com/vpc/home?region=us-west-2#routeTables

Services Resource Groups

Create Route Table Delete Route Table Set As Main Table

Search Route Tables and their routes

1 to 4 of 4 Route Tables

Name	Route Table ID	Explicitly Associated	Main	VPC
hyd-pvt-route	rtb-ac446bca	0 Subnets	No	vpc-78934d1b   HYDVPC
hyd-pub-route	rtb-234b6445	1 Subnet	No	vpc-78934d1b   HYDVPC
rtb-199b27fe	rtb-199b27fe	0 Subnets	Yes	vpc-89c341ee   default-vpc-oregon
rtb-847d52e2	rtb-847d52e2	0 Subnets	Yes	vpc-78934d1b   HYDVPC

rtb-ac446bca | hyd-pvt-route

Summary Routes Subnet Associations Route Propagation Tags

Edit View: All rules

Destination	Target	Status	Propagated

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Click on Edit button

VPC Management Console | Introduction to Amazon VPC | https://us-west-2.console.aws.amazon.com/vpc/home?region=us-west-2#routeTables

Services Resource Groups

VPC Dashboard

Filter by VPC: None

Virtual Private Cloud

Your VPCs

Subnets

Route Tables

Internet Gateways

Egress Only Internet Gateways

DHCP Options Sets

Elastic IPs

Endpoints

NAT Gateways

Feedback English

Create Route Table Delete Route Table Set As Main Table

Search Route Tables and their associations

Name	Routes Table ID	Explicitly Associated	Main	VPC
hyd-pvt-route	rtb-ac446bca	0 Subnets	No	vpc-7d934d1b   HYDVPC
hyd-pub-route	rtb-234b6445	1 Subnet	No	vpc-7d934d1b   HYDVPC
	rtb-199b27e	0 Subnets	Yes	vpc-89c34tee   default-vpc-oregon
	rtb-847d52e2	0 Subnets	Yes	vpc-7d934d1b   HYDVPC

rtb-ac446bca | hyd-pvt-route

Summary Routes Subnet Associations Route Propagation Tags

Edit Subnet IPv4 CIDR IPv6 CIDR

You do not have any subnet associations.

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Select check box hyd-pvt-subnet → 192.168.20.0/24

VPC Management Console | Introduction to Amazon VPC | https://us-west-2.console.aws.amazon.com/vpc/home?region=us-west-2#routeTables

Services Resource Groups

VPC Dashboard

Filter by VPC: None

Virtual Private Cloud

Your VPCs

Subnets

Route Tables

Internet Gateways

Egress Only Internet Gateways

DHCP Options Sets

Elastic IPs

Endpoints

NAT Gateways

Feedback English

Create Route Table Delete Route Table Set As Main Table

Search Route Tables and their associations

Name	Routes Table ID	Explicitly Associated	Main	VPC
hyd-pvt-route	rtb-ac446bca	0 Subnets	No	vpc-7d934d1b   HYDVPC
hyd-pub-route	rtb-234b6445	1 Subnet	No	vpc-7d934d1b   HYDVPC

rtb-ac446bca | hyd-pvt-route

Summary Routes Subnet Associations Route Propagation Tags

Cancel Save

Associate	Subnet	IPv4 CIDR	IPv6 CIDR	Current Route Table
<input type="checkbox"/>	subnet-b3bdbea   hyd-pvt-subnet	192.168.10.0/24	-	rtb-234b6445   hyd-pub-route
<input checked="" type="checkbox"/>	subnet-6abcbf23   hyd-pvt-subnet	192.168.20.0/24	-	Main

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Click on Save button

The screenshot shows the AWS VPC Management Console with the 'Route Tables' section selected. A modal dialog box is centered over the main content, displaying the message "Save Successful". The background table lists two route tables:

Name	Route Table ID	Explicitly Associated	Main	VPC
rtb-1998c27e	rtb-1998c27e	0 Subnets	Yes	vpc-89c341ee   default-vpc-oregon
hyd-pvt-route	rtb-ac446bca	1 Subnet	No	vpc-7d93461b   HYD-VPC

Below the table, a note states: "The following subnets have not been explicitly associated with any route tables and are therefore associated with the main route table: subnet-6abcbf23 | hyd-pvt-subnet 192.168.20.0/24".

## Verify

Hyd-pvt-subnet is associated with hyd-pvt-route table

The screenshot shows the AWS VPC Management Console with the 'Route Tables' section selected. A modal dialog box is centered over the main content, displaying the message "Save Successful". The background table lists two route tables:

Name	Route Table ID	Explicitly Associated	Main	VPC
rtb-1998c27e	rtb-1998c27e	0 Subnets	Yes	vpc-89c341ee   default-vpc-oregon
hyd-pvt-route	rtb-ac446bca	1 Subnet	No	vpc-7d93461b   HYD-VPC

Below the table, a note states: "The following subnets have not been explicitly associated with any route tables and are therefore associated with the main route table: subnet-6abcbf23 | hyd-pvt-subnet 192.168.20.0/24".

## Click on Route button

The screenshot shows the AWS VPC Management Console. On the left, there's a sidebar with navigation links like 'Virtual Private Cloud', 'Your VPCs', 'Subnets', 'Route Tables', and so on. The main area is titled 'Create Route Table' and shows a list of route tables. One route table, 'hyd-pvt-route', is selected. Below the list, there are tabs for 'Summary', 'Routes', 'Subnet Associations', 'Route Propagation', and 'Tags'. The 'Routes' tab is currently active. A blue box highlights this tab. Below the tabs, there's a table with columns 'Destination', 'Target', 'Status', and 'Propagated'. One row in the table shows '192.168.0.0/16' as the destination, 'local' as the target, 'Active' as the status, and 'No' as the propagated status.

Note: No need to add IGW in pvt route

This screenshot is identical to the one above, showing the AWS VPC Management Console. It displays the 'Routes' tab for the 'hyd-pvt-route' route table. The table below shows a single entry for the destination '192.168.0.0/16' with a target of 'local', both in an 'Active' state and not propagated.

## 7) To launch Windows instance in Public subnet

Open the AWS console

Click on Services

Click on Ec2 services

The screenshot shows the AWS Management Console with the URL <https://us-west-2.console.aws.amazon.com/>. The left sidebar has 'Services' selected under 'Compute'. The main area displays various AWS services in a grid:

Compute	Developer Tools	Analytics	Application Services
EC2 Container Service	CodeStar	Athena	Step Functions
Lightsail	CodeCommit	EMR	SWF
Elastic Beanstalk	CodeBuild	CloudSearch	API Gateway
Lambda	CodeDeploy	Elasticsearch Service	Elastic Transcoder
Batch	CodePipeline	Kinesis	
	X-Ray	Data Pipeline	
		QuickSight	

Storage	Management Tools	Artificial Intelligence	Messaging
S3	CloudWatch	Lex	Simple Queue Service
EFS	CloudFormation	Polly	Simple Notification S.
Glacier	CloudTrail	Rekognition	SES
Storage Gateway	Config	Machine Learning	
	OpsWorks		
	Service Catalog		
	Trusted Advisor		

Database			Business Productivity
			WorkDocs
			WorkMail
			Amazon Chime

At the bottom, there's a link to <https://us-west-2.console.aws.amazon.com/ec2/v2/home?region=us-west-2>.

The screenshot shows the EC2 Management Console with the URL <https://us-west-2.console.aws.amazon.com/ec2/v2/home?region=us-west-2>. The left sidebar has 'INSTANCES' selected under 'Compute'. The main area shows EC2 resources and provides a callout for launching instances:

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

0 Running Instances	0 Elastic IPs
0 Dedicated Hosts	0 Snapshots
0 Volumes	0 Load Balancers
0 Key Pairs	2 Security Groups
0 Placement Groups	

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

Create Instance

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

**Launch Instance**

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On the EC2 dashboard panel

Click on **instance**

Click on **Launch instance** button

The screenshot shows the AWS EC2 Management Console interface. On the left, there's a sidebar with navigation links: EC2 Dashboard, Events, Tags, Spot Requests, Reserved Instances, Scheduled Instances, Dedicated Hosts, IMAGES, AMIs, Bundle Tasks, and ELASTIC BLOCK STORE. The main area is titled "Instances" and shows a table of running instances. A modal window titled "Launch Instance" is overlaid on the page, with its "Actions" tab selected. The table below shows the following data:

Name	Instance ID	Instance Type	Availability Zone	Instance State	Status Checks	Alarm
vmcf	i-0188a9db204e9191c	t2.small	us-west-2c	terminated	None	
nodjs_server	i-0440e70618fb34472	t2.micro	us-west-2c	terminated	None	
web1	i-091a441f5fc00525	t2.micro	us-west-2a	terminated	None	

Below the table, a message says "Select an instance above". At the bottom of the page, there are links for Feedback, English, Privacy Policy, Terms of Use, and a timestamp of 4:38 AM (IST/2021).

Select AMI "Microsoft Windows Server 2012 Base - ami-a1c1ddd8"

Free tier eligible

Step 1: Choose an Amazon Machine Image (AMI)

Cancel and Exit

1. Choose AMI   2. Choose Instance Type   3. Configure Instance   4. Add Storage   5. Add Tags   6. Configure Security Group   7. Review

Root device type: ebs   Virtualization type: hvm

Windows   Free tier eligible

Microsoft Windows Server 2012 Base - ami-a1c1ddd8   Select   64-bit  
Microsoft Windows Server 2012 Standard edition with 64-bit architecture [English]

Root device type: ebs   Virtualization type: hvm

Windows

Microsoft Windows Server 2012 with SQL Server Express - ami-7ac8da03   Select   64-bit  
Microsoft Windows Server 2012 Standard edition, 64-bit architecture, Microsoft SQL Server 2012 Express [English]

Root device type: ebs   Virtualization type: hvm

Microsoft Windows Server 2012 with SQL Server Web - ami-f2c8da8b   Select

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On the "Choose an Instance Type" page

Select "General purpose t2.micro"

Click on "Next Configure Instance Details" button

Step 2: Choose an Instance Type

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 GiB memory, EBS only)

Family	Type	vCPUs	Memory (GiB)	Instance Storage (GB)	EBS-Optimized Available	Network Performance	IPv6 Support
General purpose	t2.nano	1	0.5	EBS only	-	Low to Moderate	Yes
General purpose	<b>t2.micro</b> <span style="background-color: #e0f2e0; border: 1px solid #4CAF50; color: inherit; padding: 2px;">Free tier eligible</span>	1	1	EBS only	-	Low to Moderate	Yes
General purpose	t2.small	1	2	EBS only	-	Low to Moderate	Yes
General purpose	t2.medium	2	4	EBS only	-	Low to Moderate	Yes

Cancel Previous Review and Launch Next: Configure Instance Details

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On the “Configuration Instance Details” page

For “Number of instances” → 1

For “Network” → HYDVPC

For “Subnet” → hyd-pub-subnet

For “Auto-assign Public IP” → Enable

Click on “Next: Add Storage” button

EC2 Management Console

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

Services Resource Groups

student Oregon Support

1. Choose AMI 2. Choose Instance Type 3. Configure Instance 4. Add Storage 5. Add Tags 6. Configure Security Group 7. Review

**Step 3: Configure Instance Details**

Configure the instance to suit your requirements. You can launch multiple instances from the same AMI, request Spot instances to take advantage of the lower pricing, assign an access management role to the instance, and more.

Number of instances: 1 Launch into Auto Scaling Group

Purchasing option: Request Spot Instances

Network: vpc-7d934d1b | HYDVPC Create new VPC

Subnet: subnet-b32dbfba | hyd-pub-subnet | us-west-2a Create new subnet  
251 IP Addresses available

Auto-assign Public IP: Enable

Domain join directory: None Create new directory

Cancel Previous Review and Launch Next: Add Storage

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On the “Add Storage” page  
Take default values  
Click on “Next: Add tags” button

Step 4: Add Storage

Your instance will be launched with the following storage device settings. You can attach additional EBS volumes and instance store volumes to your instance, or edit the settings of the root volume. You can also attach additional EBS volumes after launching an instance, but not instance store volumes. Learn more about storage options in Amazon EC2.

Volume Type	Device	Snapshot	Size (GB)	Volume Type	IOPS	Throughput (MB/s)	Delete on Termination	Encrypted
Root	/dev/sda1	snap-01e5be77f781e7266	30	General Purpose S*	100 / 3000	N/A	<input checked="" type="checkbox"/>	Not Encrypted

Add New Volume

Free tier eligible customers can get up to 30 GB of EBS General Purpose (SSD) or Magnetic storage. Learn more about free usage tier eligibility and terms of use.

Cancel Previous Review and Launch Next: Add Tags

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Click on “Add tag” button

Step 5: Add Tags

A tag consists of a case-sensitive key-value pair. For example, you could define a tag with key = Name and value = Webserver. A copy of a tag can be applied to volumes, instances or both. Tags will be applied to all instances and volumes. Learn more about tagging your Amazon EC2 resources.

Key	(127 characters maximum)	Value	(255 characters maximum)	Instances	Volumes
This resource currently has no tags					

Choose the Add tag button or click to add a Name tag.  
Make sure your IAM policy includes permissions to create tags.

Add Tag (Up to 50 tags maximum)

Cancel Previous Review and Launch Next: Configure Security Group

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For "Key" → Name

For Value → Winpubvm

Click on "Next: Configure Security Group"

The screenshot shows the AWS EC2 Management Console interface. At the top, there's a navigation bar with tabs: Services, Resource Groups, student, Oregon, Support, and a search bar. Below the navigation bar, a breadcrumb trail shows the current step: 1. Choose AMI, 2. Choose Instance Type, 3. Configure Instance, 4. Add Storage, 5. Add Tags (which is highlighted in blue), 6. Configure Security Group, and 7. Review.

**Step 5: Add Tags**

A tag consists of a case-sensitive key-value pair. For example, you could define a tag with key = Name and value = Webserver.

A copy of a tag can be applied to volumes, instances or both.

Tags will be applied to all instances and volumes. Learn more about tagging your Amazon EC2 resources.

The main form has two columns: Key and Value. The Key column contains "Name" and the Value column contains "Winpubvm". There are dropdown menus for Instances and Volumes, both currently set to "(1)". Below the main table is a button labeled "Add another tag" with the note "(Up to 50 tags maximum)".

At the bottom of the page, there are several buttons: Cancel, Previous, Review and Launch (which is highlighted in blue), and Next: Configure Security Group. There are also links for Feedback, English, Privacy Policy, and Terms of Use.

On the “Configure Security Group” page

Take Default Values

Click on “Review and Launch” button

Step 6: Configure Security Group

A security group is a set of firewall rules that control the traffic for your instance. On this page, you can add rules to allow specific traffic to reach your instance. For example, if you want to set up a web server and allow internet traffic to reach your instance, add rules that allow unrestricted access to the HTTP and HTTPS ports. You can create a new security group or select from an existing one below. Learn more about Amazon EC2 security groups.

Assign a security group:  Create a new security group  Select an existing security group

Security group name: launch-wizard-1

Description: launch-wizard-1 created 2017-07-31T05:02:04.626+05:30

Type	Protocol	Port Range	Source
RDP	TCP	3389	Custom 0.0.0.0/0

Add Rule

Cancel Previous Review and Launch

Click on “Launch” button

Step 7: Review Instance Launch

Please review your instance launch details. You can go back to edit changes for each section. Click Launch to assign a key pair to your instance and complete the launch process.

**⚠ Improve your instances' security. Your security group, launch-wizard-1, is open to the world.**

Your instances may be accessible from any IP address. We recommend that you update your security group rules to allow access from known IP addresses only.

You can also open additional ports in your security group to facilitate access to the application or service you're running, e.g., HTTP (80) for web servers. Edit security groups

AMI Details

Microsoft Windows Server 2012 Base - ami-a1c1ddd8

Free tier eligible

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

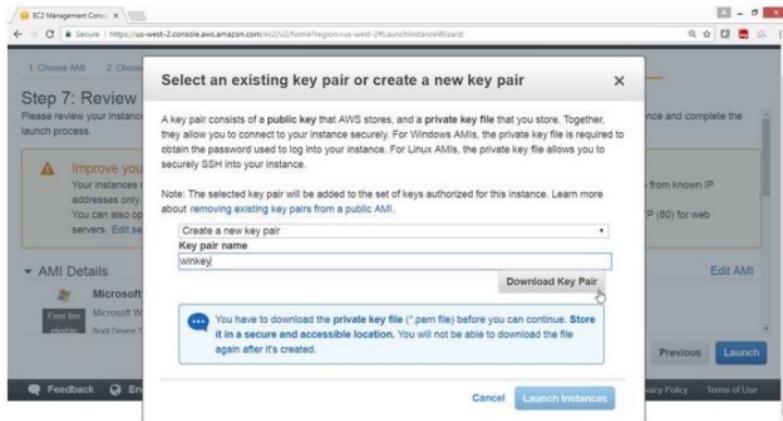
Root Device Type: ebs Virtualization Host: t2

Cancel Previous Launch

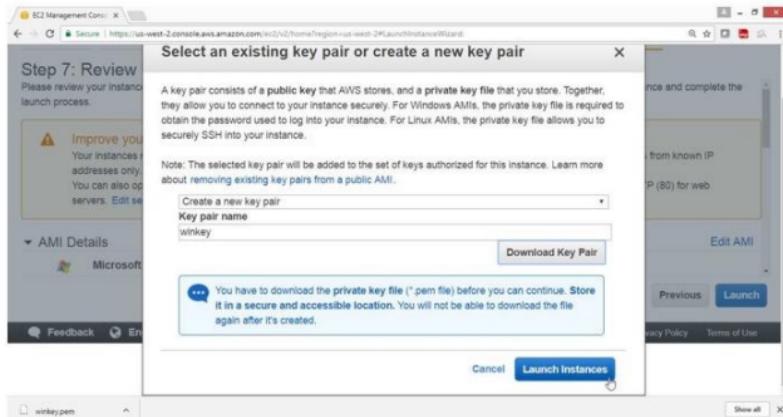
Select "Create a new key pair"

For "Key pair name" → winkey

Click on "Download Key Pair" button



Click on "Launch Instance" button



Check summary, Drag down

Click on “View Instance” button

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#launchInstanceWizard>. The browser title bar says "EC2 Management Console". The top navigation bar includes "Services", "Resource Groups", a user dropdown for "student", "Oregon", and "Support". Below the navigation is a section titled "Launch Status" with the sub-instruction "Click View Instances to monitor your instances' status. Once your instances are in the running state, you can connect to them from the Instances screen. Find out how to connect to your instances." A list of helpful resources follows, including links to the Amazon EC2 User Guide, Microsoft Windows Guide, and Discussion Forum. Below this, there are three buttons: "How to connect to your Windows Instance", "Learn about AWS Free Usage Tier", and "Amazon EC2: Discussion Forum". Further down, instructions for managing instance status checks, EBS volumes, and security groups are provided, along with a "View Instances" button. At the bottom, there are "Feedback", "English", and copyright information: "© 2006 - 2017, Amazon Internet Services Private Ltd. or its affiliates. All rights reserved. Privacy Policy Terms of Use".

Verify that instance is Running

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#instances>. The browser title bar says "EC2 Management Console". The top navigation bar includes "Services", "Resource Groups", a user dropdown for "student", "Oregon", and "Support". On the left, a sidebar menu shows "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 content area has tabs "Launch Instance", "Connect", and "Actions". A search bar at the top of the list table says "Filter by tags and attributes or search by keyword". The table lists one instance: "Winpubvm" (Instance ID: i-0cb26994e13174e85, Type: t2.micro, Zone: us-west-2a, State: running). Below the table, a detailed view for "Instance: i-0cb26994e13174e85 (Winpubvm)" shows "Public IP: 54.202.132.130" and tabs for "Description", "Status Checks", "Monitoring", and "Tags". At the bottom, there are "Feedback", "English", and copyright information: "© 2006 - 2017, Amazon Internet Services Private Ltd. or its affiliates. All rights reserved. Privacy Policy Terms of Use".

## 8) To Launch Windows instance in Private Subnet under HYDVPC VPC

Open the AWS console

Click on Services

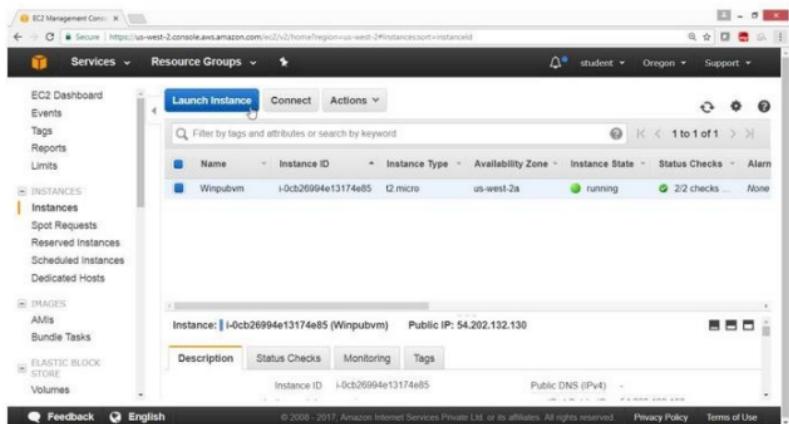
Click on Ec2 services

The screenshot shows the AWS Management Console Services page. At the top, there's a navigation bar with tabs for 'AWS Management Console' (selected), 'Secure', 'https://us-west-2.console.aws.amazon.com/console/home?region=us-west-2', 'student', 'Oregon', and 'Support'. Below the navigation bar, there are two main sections: 'Services' and 'Resource Groups'. Under 'Services', there are several categories: History, EC2 (selected), VPC, Compute (with sub-options: EC2 Container Service, Lambda, Batch, Lightsail, Elastic Beanstalk), Storage (with sub-options: S3, EFS, Glacier, Storage Gateway), Database, Developer Tools (with sub-options: CodeStar, CodeCommit, CodeBuild, CodeDeploy, CodePipeline, X-Ray), Management Tools (with sub-options: CloudWatch, CloudFormation, CloudTrail, Config, OpsWorks, Service Catalog, Trusted Advisor), Analytics (with sub-options: Athena, EMR, CloudSearch, Elasticsearch Service, Kinesis, Data Pipeline, Quicksight), Artificial Intelligence (with sub-options: Lex, Polly, Rekognition, Machine Learning), Application Service (with sub-options: Step Functions, SWF, API Gateway, Elastic Transcoder), Messaging (with sub-options: Simple Queue Service, Simple Notification Service, SES), and Business Productivity (with sub-options: WorkDocs, WorkMail, Amazon Chime). A search bar at the top right says 'Find a service by name or feature (example, EC2, S3 or VM, storage)'. At the bottom, there's a URL 'https://us-west-2.console.aws.amazon.com/ec2/v2/home?region=us-west-2'.

On the EC2 Dashboard panel

Click on **Instance**

Click on “Launch instance” button



The screenshot shows the AWS EC2 Management Console interface. On the left, there's a sidebar with navigation links: EC2 Dashboard, Events, Tags, Reports, Limits, INSTANCES (with sub-links: Instances, Spot Requests, Reserved Instances, Scheduled Instances, Dedicated Hosts), IMAGES (with sub-links: AMIs, Bundle Tasks), and ELASTIC BLOCK STORE (with sub-links: Volumes). The main content area is titled "Instances" and shows a table of running instances. One instance is selected: "Winpubvm" (Instance ID: i-0cb26994e13174e85, Type: t2.micro, Zone: us-west-2a, State: running, Status Checks: 2/2 checks, Alarm: None). Below the table, there are tabs for Description, Status Checks, Monitoring, and Tags. At the bottom of the main content area, there are buttons for Launch Instance, Connect, Actions, and a search bar. The status bar at the bottom includes links for Feedback, English, and other AWS services.

On the “Choose an Amazon Machine Image ( AMI )” page

Select AMI “Microsoft Windows Server 2012 R2 Base - ami-a1c1ddd8”

Free tier eligible

The screenshot shows the AWS EC2 Management Console interface. At the top, there's a navigation bar with tabs like Services, Resource Groups, and a user dropdown for 'student'. Below the navigation is a breadcrumb trail: 1. Choose AMI, 2. Choose Instance Type, 3. Configure Instance, 4. Add Storage, 5. Add Tags, 6. Configure Security Group, 7. Review. A 'Cancel and Exit' button is also visible.

The main content area is titled "Step 1: Choose an Amazon Machine Image (AMI)". It lists several Windows AMIs:

- Microsoft Windows Server 2016 with SQL Server Standard - ami-39fae640**: Root device type: ebs, Virtualization type: hvm. A "Select" button is shown.
- Microsoft Windows 2016 Datacenter edition, Microsoft SQL Server 2016 Standard [English]**: 64-bit.
- Microsoft Windows Server 2012 R2 Base - ami-3dcbd744**: Root device type: ebs, Virtualization type: hvm. A "Select" button is shown.
- Microsoft Windows Server 2012 R2 Standard edition with 64-bit architecture [English]**: 64-bit.
- Microsoft Windows Server 2012 R2 with SQL Server Express - ami-3bc8d442**: Root device type: ebs, Virtualization type: hvm. A "Select" button is shown.

At the bottom of the page, there are links for Feedback, English, and footer text: © 2008 - 2017, Amazon Internet Services Private Ltd. or its affiliates. All rights reserved. Privacy Policy Terms of Use.

On the “Choose an Instance Type” page

Select “General purpose t2.micro”

Click on “Next Configure Instance Details” button

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#launchInstanceWizard>. The top navigation bar includes 'Services', 'Resource Groups', and user information ('student', 'Oregon', 'Support'). Below the navigation is a breadcrumb trail: '1. Choose AMI' (disabled), '2. Choose Instance Type' (highlighted in blue), '3. Configure Instance', '4. Add Storage', '5. Add Tags', '6. Configure Security Group', and '7. Review'. A dropdown menu 'Filter by:' is set to 'All instance types' and 'Current generation'. The main table header includes columns for Family, Type, vCPUs, Memory (GiB), Instance Storage (GB), EBS-Optimized Available, Network Performance, and IPv6 Support. The table data shows four rows: t2.nano (selected), t2.micro (selected), t2.small, and t2.medium. The 't2.micro' row has a green background and is labeled 'Free tier eligible'. At the bottom are buttons for 'Cancel', 'Previous', 'Review and Launch' (highlighted in blue), and 'Next: Configure Instance Details'.

Family	Type	vCPUs	Memory (GiB)	Instance Storage (GB)	EBS-Optimized Available	Network Performance	IPv6 Support
General purpose	t2.nano	1	0.5	EBS only	-	Low to Moderate	Yes
General purpose	<b>t2.micro</b> Free tier eligible	1	1	EBS only	-	Low to Moderate	Yes
General purpose	t2.small	1	2	EBS only	-	Low to Moderate	Yes
General purpose	t2.medium	2	4	EBS only	-	Low to Moderate	Yes

On the “Configuration Instance Details” page

For “Number of instances” → 1

For “Network” → HYDVPC

For “Subnet” → hyd-pvt-subnet

For “Auto-assign Public IP” → Disabled

Click on “Next: Add Storage” button

Step 3: Configure Instance Details

Configure the instance to suit your requirements. You can launch multiple instances from the same AMI, request Spot instances to take advantage of the lower pricing, assign an access management role to the instance, and more.

Number of instances: 1

Purchasing option: Request Spot Instances

Network: vpc-7d934d1b | HYDVPC

Subnet: subnet-5abcbf23 | hyd-pvt-subnet | us-west-2a | 251 IP Addresses available

Auto-assign Public IP: Disable

Domain join directory: None

Cancel Previous Review and Launch Next: Add Storage

On the “Add Storage” page

Take default values

Click on “Next: Add tags” button

Step 4: Add Storage

Your instance will be launched with the following storage device settings. You can attach additional EBS volumes and instance store volumes to your instance, or edit the settings of the root volume. You can also attach additional EBS volumes after launching an instance, but not instance store volumes. Learn more about storage options in Amazon EC2.

Volume Type	Device	Snapshot	Size (GiB)	Volume Type	IOPS	Throughput (MB/s)	Delete on Termination	Encrypted
Root	/dev/sda1	snap-08c5b0b7b19187ab	30	General Purpose S	100 / 3000	N/A	<input checked="" type="checkbox"/>	Not Encrypted

Add New Volume

Free tier eligible customers can get up to 30 GB of EBS General Purpose (SSD) or Magnetic storage. Learn more about free usage tier eligibility and

Cancel Previous Review and Launch Next: Add Tags

Click on “Add tag” button

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#launchInstanceWizard>. The page title is "Step 5: Add Tags". The navigation bar includes "Services", "Resource Groups", "student", "Oregon", "Support", and tabs for "1. Choose AMI", "2. Choose Instance Type", "3. Configure Instance", "4. Add Storage", "5. Add Tags", "6. Configure Security Group", and "7. Review".  
The main content area has sections for "Key" (127 characters maximum) and "Value" (255 characters maximum). Below these are buttons for "Instances" and "Volumes". A note says "This resource currently has no tags".  
A central message reads: "Choose the Add tag button or click to add a Name tag. Make sure your IAM policy includes permissions to create tags."  
At the bottom, there is an "Add Tag" button with the note "(Up to 50 tags maximum)", and a row of buttons: "Cancel", "Previous", "Review and Launch" (which is highlighted in blue), and "Next: Configure Security Group".  
Footer links include "Feedback", "English", "© 2006 - 2017 Amazon Internet Services Private Ltd. or its affiliates. All rights reserved.", "Privacy Policy", and "Terms of Use".

For “Key” → Name

For Value → Winpvttvm

Click on “Next: Configure Security Group” button

This screenshot is identical to the one above, but it shows a single tag named "Name" with the value "Winpvttvm" added to the "Value" field. The "Add another tag" button is still present below it.

## Take Default Values

Click on “Review and Launch” button

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#launchInstanceWizard>. The page is titled "Step 6: Configure Security Group". It displays a form for creating a new security group named "launch-wizard-2" with a description "launch-wizard-2 created 2017-07-31T08:27:45.080+05:30". The configuration includes an RDP port range (3389) and a TCP source (Custom, 0.0.0.0/0). At the bottom right, there are "Cancel", "Previous", and "Review and Launch" buttons. The "Review and Launch" button is highlighted.

Drag down

Click on “Launch” button

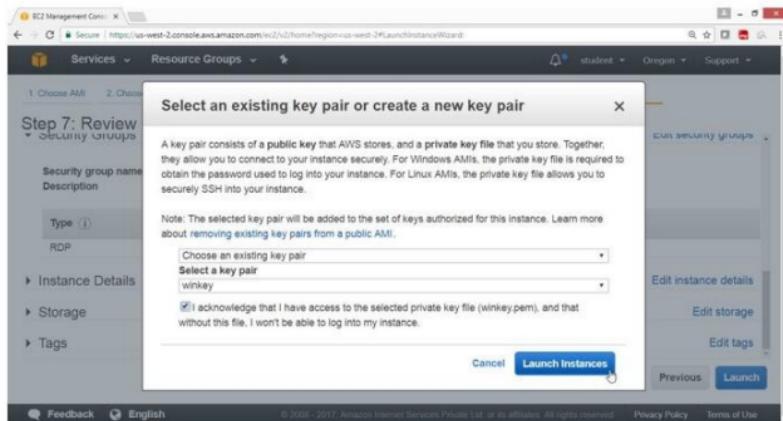
The screenshot shows the AWS EC2 Management Console with the URL <https://us-west-2.console.aws.amazon.com/ec2/v2/home?region=us-west-2#launchInstanceWizard>. The page is titled "Step 7: Review Instance Launch". It displays a summary of the instance launch details, including the security group "launch-wizard-1" and a warning about its accessibility. Below this, the "AMI Details" section shows "Microsoft Windows Server 2012 Base - ami-a1c1ddd8" as the selected AMI. At the bottom right, there are "Cancel", "Previous", and "Launch" buttons. The "Launch" button is highlighted.

Select "Choose an existing key pair"

For "Key pair name" → winkey

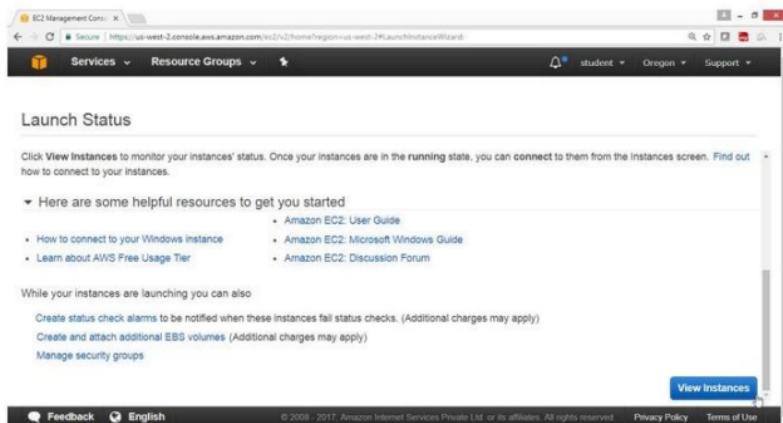
Select I acknowledge check box

Click on "Launch Instance" button



Check summary, Drag down

Click on "View Instance" button



## Verify that instance is Running

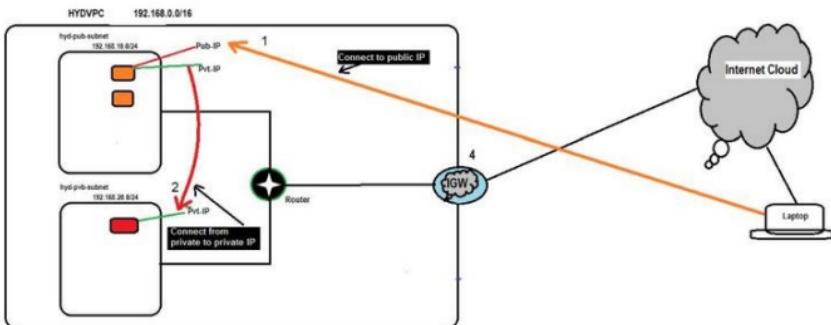
The screenshot shows the AWS EC2 Management Console interface. On the left, there's a sidebar with navigation links: Services, Resource Groups, Instances, Images, Elastic Block Store, and Feedback. The Instances link is currently selected. In the main content area, there's a table titled "Instances" with two rows. The first row is for "Winpubvm" (Instance ID: i-0cb26994e13174e85) and the second row is for "Wnpvtvm" (Instance ID: i-0e2251b25ee08fa4e). Both instances are listed as "running" in the "Instance State" column. Below the table, there's a detailed view for the "Wnpvtvm" instance, showing its Private IP (192.168.20.87), Instance ID (i-0e2251b25ee08fa4e), and Public DNS (IPv4) (not explicitly shown). The status bar at the bottom indicates the copyright year 2006-2017 and links for Privacy Policy and Terms of Use.

## Verification

Output shows that both instances in public & private subnet are running.

This screenshot is identical to the one above, showing the AWS EC2 Management Console. It displays the same two instances, "Winpubvm" and "Wnpvtvm", both running in the "us-west-2a" availability zone. The "Wnpvtvm" instance details show its Private IP (192.168.20.87), Instance ID (i-0e2251b25ee08fa4e), and Public DNS (IPv4) (not explicitly shown). The status bar at the bottom indicates the copyright year 2006-2017 and links for Privacy Policy and Terms of Use.

Now to connect an instance in private subnet first connect an instance in public network then from there connect to an instance in private subnet as shown in diagram



## 9) To Connect to Public subnet instance

First locate the public IP of a public instance

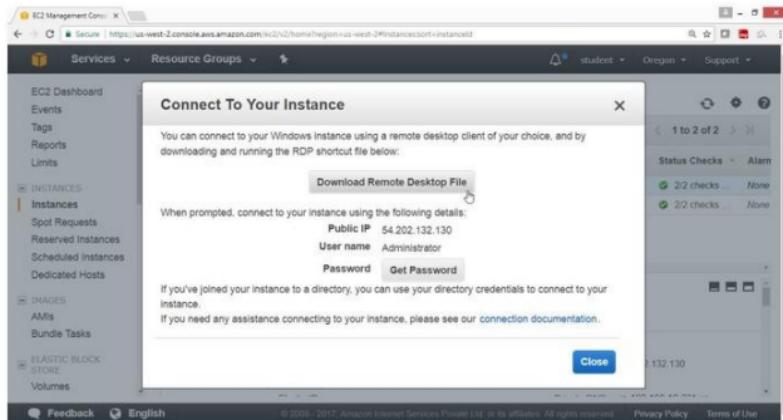
The screenshot shows the AWS EC2 Management Console interface. On the left, there's a sidebar with navigation links: EC2 Dashboard, Events, Tags, Reports, Limits, INSTANCES (with Instances, Spot Requests, Reserved Instances, Scheduled Instances, Dedicated Hosts), IMAGES (with AMIs, Bundle Tasks), and ELASTIC BLOCK STORE (with Volumes). The main content area has tabs: Launch Instance, Connect (which is active), 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. Two instances are listed: Winpubvm (running in us-west-2a) and Winpvvm (running in us-west-2a). The instance Winpubvm is selected. Below the table, a detailed view for "Instance: i-0cb26994e13174e85 (Winpubvm)" shows its Public IP as 54.202.132.130. This IP address is circled in red. Other details shown include Instance ID (i-0cb26994e13174e85), Instance state (running), and Instance type (t2.micro).

Click on “Connect” button

This screenshot is identical to the one above, showing the AWS EC2 Management Console. The Connect tab is now active. A cursor is hovering over the "Connect" button for the selected instance (Winpubvm). The rest of the interface and instance details are the same as the previous screenshot.

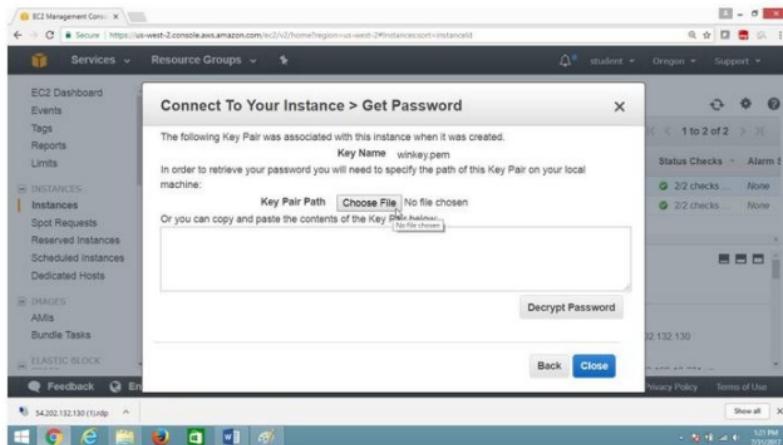
Click on "Download Remote Desktop file"

Click on "Get Password"



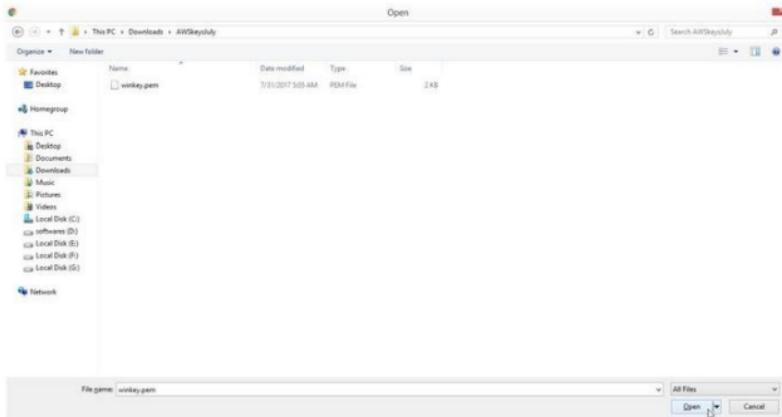
Provide the path of key file

Click on Choose file button

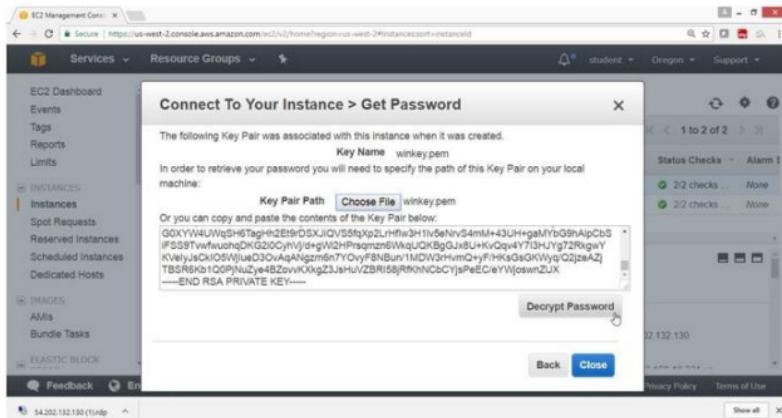


## Select the key file

**Click on Open button**



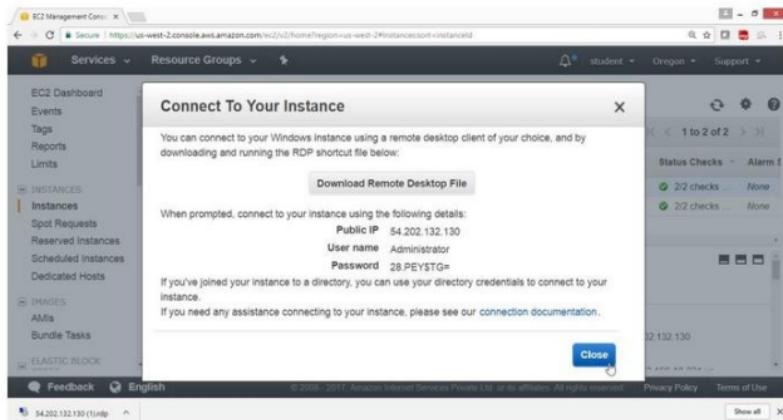
Now click on “Decrypt Password” button



## Verification

Password is generated copy in notepad

Click on **Close** button



Double Click on RDP file

Provide Windows Username → Administrator

Password → "28.PEY\$TG=", as shown above

The screenshot shows the AWS EC2 Management Console. On the left, there's a sidebar with options like Services, Resource Groups, Instances, Images, and Elastic Block. The Instances section is expanded, showing two instances: 'Winpubvm' and 'Winpvvm'. Both instances are listed as 'running' in the 'Instance State' column. Below the instances, there's a detailed view for 'Winpubvm' showing its instance ID (i-0cb26994e13174e85), state (running), and type (t2.micro). The public IP is listed as 54.202.132.130. At the bottom of the page, there's a toolbar with various icons.

Click on “Connect” button



Paste the password

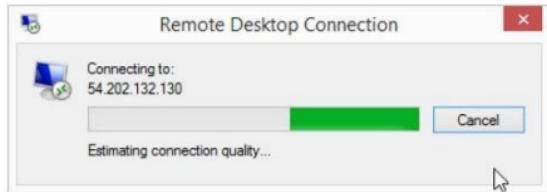
Click on **OK** button



Click on Yes button



Verify



## Verification

Now you are connected to Windows Public instance

On Windows Desktop public and private both IP's are displayed



## 10) To Connect to Private subnet instance

Go to Ec2 Dashboard

Select private instance

Get the private IP of the instance

The screenshot shows the AWS EC2 Management Console interface. On the left, there's a sidebar with navigation links like EC2 Dashboard, Events, Tags, Reports, Limits, Instances, Images, AMIs, and Elastic Block Store. The main area displays a table of running instances. The table has columns for Name, Instance ID, Instance Type, Availability Zone, Instance State, Status Checks, and Alarm. Two instances are shown: 'Winpubvm' and 'Winpvvm'. Both instances are in the 'us-west-2a' availability zone and are 'running'. Their status checks show 2/2 checks passing. The 'Winpvvm' row is selected, and its details are expanded below the table. These details include the elastic IP (192.168.20.87), private DNS (ip-192-168-20-87.us-west-2.compute.internal), private IP (192.168.20.87), secondary private IPs, VPC ID (vpc-7d934d1b), and Subnet ID (subnet-6abct023). A red circle highlights the private IP '192.168.20.87' for the 'Winpvvm' instance.

Click on Connect button

This screenshot is identical to the one above it, showing the AWS EC2 Management Console. The 'Connect' button in the top navigation bar is highlighted with a mouse cursor. The rest of the interface, including the sidebar, instance list, and detailed view for the 'Winpvvm' instance, remains the same.

To get the password

Click on “Get Password” button



Click on "Decrypt Password"

**Connect To Your Instance > Get Password**

The following Key Pair was associated with this instance when it was created.

**Key Name** winkey.pem

In order to retrieve your password you will need to specify the path of this Key Pair on your local machine:

**Key Pair Path**  No file chosen

Or you can copy and paste the contents of the Key Pair below:

```
-----BEGIN RSA PRIVATE KEY-----
MIIEowlBAAKCAQEAshLs36UXn01ILHgG/mv0QHxJMq6p3NPPFedList5gUUYge2z8j8QQf1sn2AKs
Ye9PBAwBxIwlhdUpy0GbIRuBS17CY0cTkdxJipuhTg2Ynkpxuq0BYKw3n9B3AMDmVbSyvrsenC
Lcg05A1sSSm0tTrBqUjqkoANQZa+uZO7xDEKQS3G6rTb6XTtcjOl5V/p4erJfMPneJYCdg7ul/Rm
TCdbD9m8h/ND5+nqajv80X3QSrOGyTddRf29/M1VRh1/FxdI7NV+qK6n3te/lmP2ZP4OIH6uiFuY
```

Verify

IP and password of private subnet instance is provided

**Connect To Your Instance**

You can connect to your Windows instance using a remote desktop client of your choice, and by downloading and running the RDP shortcut file below:

When prompted, connect to your instance using the following details:

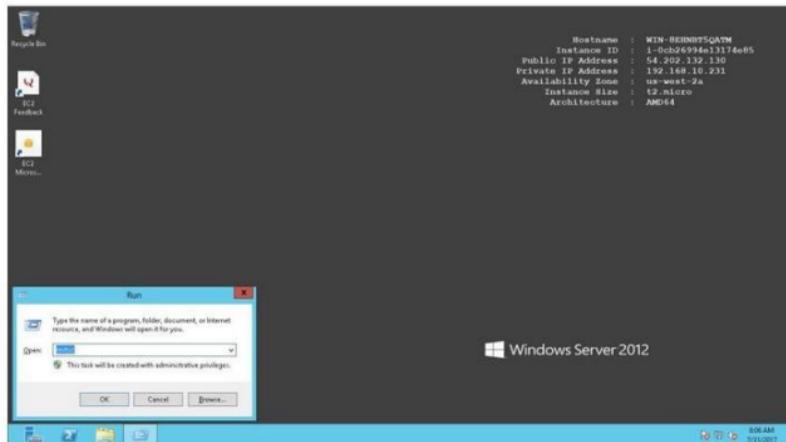
**Private IP** 192.168.20.87  
**User name** Administrator  
**Password** G-oV;n\$.%@!

If you've joined your instance to a directory, you can use your directory credentials to connect to your instance.

If you need any assistance connecting to your instance, please see our [connection documentation](#).

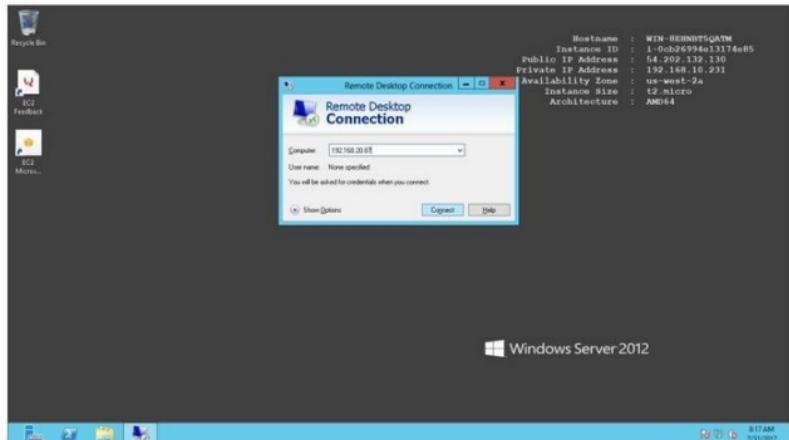
Now logging to public instance

Open Run and type mstsc to connect to window private instance

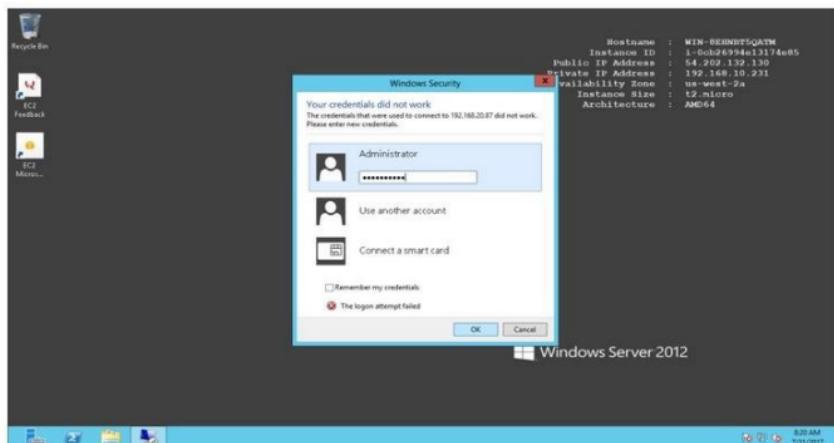


### Provide private instance

Private IP → 192.168.20.87  
Username → Adminsitritor  
Password → G-oV;n\$.@i



Now Provide Username & password



## Verification

Check private IP at Right top corner

Now you are connected to windows private instance.



## 11) To connect to linux instance in private subnet

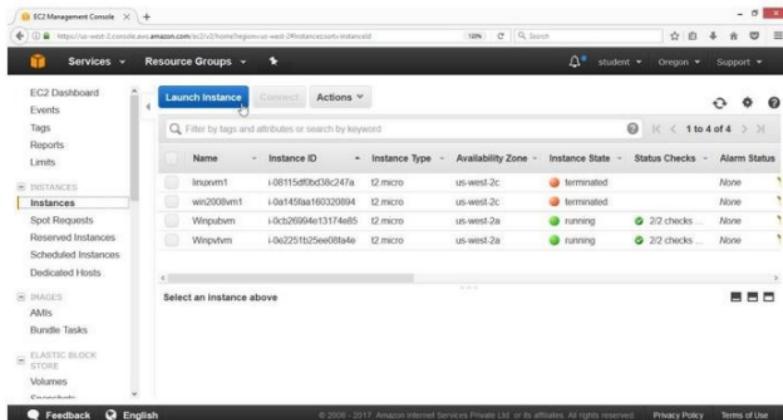
Launch linux instance in public subnet → hyd-pub-subnet

Open the AWS console

Click on Services

Click on Instance

Click on “Launch Instance” button



The screenshot shows the AWS Management Console interface for the EC2 service. On the left, there's a navigation sidebar with sections like EC2 Dashboard, Events, Tags, Reports, Limits, INSTANCES (with Instances selected), IMAGES (with AMIs selected), and ELASTIC BLOCK STORE (with Volumes selected). The main content area has a heading 'Launch instance' with three tabs: Launch instance, Connect, and Actions. Below this is a search bar and a table with columns: Name, Instance ID, Instance Type, Availability Zone, Instance State, Status Checks, and Alarm Status. There are four rows in the table representing different instances. At the bottom of the main content area, there's a message 'Select an instance above' and some icons. The bottom of the screen shows the AWS footer with links for Feedback, English, Privacy Policy, and Terms of Use.

Name	Instance ID	Instance Type	Availability Zone	Instance State	Status Checks	Alarm Status
insxom1	i-08115df0bd38c247a	t2.micro	us-west-2c	terminated	None	None
wis2008vm1	i-0a145faa160320894	t2.micro	us-west-2c	terminated	None	None
Wispubvm	i-0cb26994e1317465	t2.micro	us-west-2a	running	2/2 checks	None
Wispvfm	i-0e2251fb25ee08fa4e	t2.micro	us-west-2a	running	2/2 checks	None

On the “Choose an Amazon Machine Image (AMI)” page

Select AMI “Amazon Linux AMI 2017.03.1 (HVM), SSD Volume Type - ami-6df1e514

Click on **Select** button

Step 1: Choose an Amazon Machine Image (AMI)

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

1. Choose AMI   2. Choose Instance Type   3. Configure Instance   4. Add Storage   5. Add Tags   6. Configure Security Group   7. Review   Cancel and Exit

AMI Name	Description	Type	Architecture
<b>Amazon Linux AMI 2017.03.1 (HVM), SSD Volume Type - ami-6df1e514</b>	The Amazon Linux AMI is an EBS-backed, AWS-supported image. The default image includes AWS command line tools, Python, Ruby, Perl, and Java. The repositories include Docker, PHP, MySQL, PostgreSQL, and other packages.	Amazon Linux	64-bit
SUSE Linux Enterprise Server 12 SP2 (HVM), SSD Volume Type - ami-e4930084	SUSE Linux Enterprise Server 12 Service Pack 2 (HVM). FRS (General Purpose) (SSD).	SUSE Linux	64-bit

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On the “Choose an Instance Type” page

Select “General purpose”

Type →t2.micro

Click on “Next: Configure Instance Details”

The screenshot shows the AWS EC2 Management Console interface. The user is on Step 2: Choose an Instance Type. The table lists various instance types under the General purpose family. The t2.micro row is selected, indicated by a blue border and a green 'Free tier eligible' badge. The 'Review and Launch' button is highlighted in blue at the bottom right of the table.

Family	Type	vCPUs	Memory (GiB)	Instance Storage (GB)	EBS-Optimized Available	Network Performance	IPv6 Support
General purpose	t2.nano	1	0.5	EBS only	-	Low to Moderate	Yes
General purpose	<b>t2.micro</b> Free tier eligible	1	1	EBS only	-	Low to Moderate	Yes
General purpose	t2.small	1	2	EBS only	-	Low to Moderate	Yes
General purpose	t2.medium	2	4	EBS only	-	Low to Moderate	Yes
General purpose	t2.large	2	8	EBS only	-	Low to Moderate	Yes
General purpose	t2.xlarge	4	16	EBS only	-	Medium	No

Buttons at the bottom: Cancel, Previous, Review and Launch, Next: Configure Instance Details.

On the “Configure Instance Details” page

Number of instance → 1  
Network → HYDVPC  
Subnet → hyd-pub-subnet  
Auto-assign Public IP → Enable

The screenshot shows the AWS EC2 Management Console interface. The URL is https://us-west-2.console.aws.amazon.com/ec2/v2/home?region=us-west-2#launchInstanceWizard. The top navigation bar includes Services, Resource Groups, student, Oregon, Support, and a sign-in link. Below the navigation is a breadcrumb trail: 1. Choose AMI, 2. Choose Instance Type, 3. Configure Instance, 4. Add Storage, 5. Add Tags, 6. Configure Security Group, 7. Review.

**Step 3: Configure Instance Details**

Configure the instance to suit your requirements. You can launch multiple instances from the same AMI, request Spot instances to take advantage of the lower pricing, assign an access management role to the instance, and more.

Number of Instances: 1

Purchasing option:  Request Spot Instances

Network: vpc-7d934d1b | HYDVPC  Create new VPC

Subnet: subnet-b32dbefb | hyd-pub-subnet | us-west-2a  Create new subnet  
250 IP Addresses available

Auto-assign Public IP:  Enable

IAM role: None  Create new IAM role

Buttons at the bottom: Cancel, Previous, **Review and Launch**, Next: Add Storage

Footer: Feedback, English, © 2008 - 2017, Amazon Internet Services Private Ltd. or its affiliates. All rights reserved., Privacy Policy, Terms of Use

On the “Add Storage” page

Leave the values as default

Click on “Next: Add Tags” button

Step 4: Add Storage

Your instance will be launched with the following storage device settings. You can attach additional EBS volumes and instance store volumes to your instance, or edit the settings of the root volume. You can also attach additional EBS volumes after launching an instance, but not instance store volumes. Learn more about storage options in Amazon EC2.

Volume Type	Device	Snapshot	Size (GiB)	Volume Type	IOPS	Throughput (MB/s)	Delete on Termination	Encrypted
Root	/dev/xvda	snap-0e8e196a52ed7etc3	8	General Purpose SSD	100 / 3000	N/A	<input checked="" type="checkbox"/>	Not Encrypted

Add New Volume

Free tier eligible customers can get up to 30 GB of EBS General Purpose (SSD) or Magnetic storage. Learn more about free usage tier eligibility and terms and conditions.

Cancel Previous Review and Launch Next: Add Tags

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On the “Add Tags” page

Key → Name

Value → Linuxpubvbm

Click on “Next: Configure Security Group” button

The screenshot shows the AWS EC2 Management Console interface. At the top, there's a navigation bar with tabs: 1. Choose AMI, 2. Choose Instance Type, 3. Configure Instance, 4. Add Storage, 5. Add Tags (which is highlighted in yellow), 6. Configure Security Group, and 7. Review. Below the tabs, there's a section titled "Step 5: Add Tags". It contains a note: "A tag consists of a case-sensitive key-value pair. For example, you could define a tag with key = Name and value = Webserver." and "A copy of a tag can be applied to volumes, instances or both. Tags will be applied to all instances and volumes. Learn more about tagging your Amazon EC2 resources." There's a table with two columns: "Key" and "Value". In the "Key" column, there's a placeholder "(127 characters maximum)". In the "Value" column, there's a placeholder "(255 characters maximum)". Below the table, there are two buttons: "Instances" and "Volumes". Underneath the table, there's a dropdown menu labeled "Name" with the value "Linuxpubvbm". Below the dropdown, there's a button labeled "Add another tag" with the note "(Up to 50 tags maximum)". At the bottom of the screen, there are several buttons: "Cancel", "Previous", "Review and Launch" (which is highlighted in blue), and "Next: Configure Security Group". At the very bottom, there are links for "Feedback", "English", "© 2006 - 2011, Amazon Internet Services Private Ltd. or its affiliates. All rights reserved.", "Privacy Policy", and "Terms of Use".

## On the “Configure Security Group” page

Assign a security group → Create a new security group

Leave remaining values as default

Click on Review and Launch button

Step 6: Configure Security Group

A security group is a set of firewall rules that control the traffic for your instance. On this page, you can add rules to allow specific traffic to reach your instance. For example, if you want to set up a web server and allow internet traffic to reach your instance, add rules that allow unrestricted access to the HTTP and HTTPS ports. You can create a new security group or select from an existing one below. Learn more about Amazon EC2 security groups.

Assign a security group:  Create a new security group  
 Select an existing security group

Security group name: launch-wizard-5

Description: launch-wizard-5 created 2017-08-01T13:31:54.220+05:30

Type	Protocol	Port Range	Source
SSH	TCP	22	Anywhere (0.0.0.0/0)

Add Rule

Cancel Previous Review and Launch Feedback English

## On the “Review Instance Launch” page

Click on Launch button

Step 7: Review Instance Launch

Please review your instance launch details. You can go back to edit changes for each section. Click Launch to assign a key pair to your instance and complete the launch process.

**⚠ Improve your instances' security. Your security group, launch-wizard-5, is open to the world.**

Your instances may be accessible from any IP address. We recommend that you update your security group rules to allow access from known IP addresses only.

You can also open additional ports in your security group to facilitate access to the application or service you're running, e.g., HTTP (80) for web servers. Edit security groups

AMI Details

Amazon Linux AMI 2017.03.1 (HVM), SSD Volume Type - ami-6df1e514

Free tier available

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

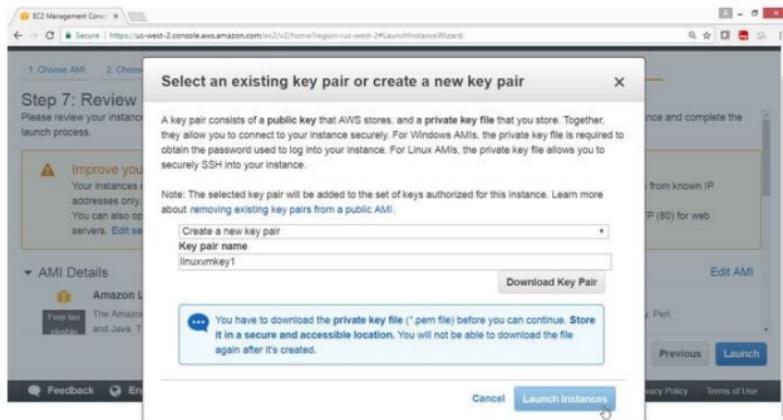
Cancel Previous Launch Feedback English

On the “Select an existing key pair or create a new key pair” page

Select **Create a new key pair**

Key pair name → linuxvmkey1

Click on “Launch Instance” button



## Check the summary

Click on View Instance button

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#launchInstanceWizard>. The browser title bar says "EC2 Management Console". The navigation bar includes "Services" and "Resource Groups". The top right has "student", "Oregon", and "Support". Below the navigation is a search bar with "linuxmkey1.pem".  
  
The main content area is titled "Launch Status". It contains a section "how to connect to your instances." followed by a list of helpful resources:

- How to connect to your Linux Instance
- Learn about AWS Free Usage Tier
- Amazon EC2 User Guide
- Amazon EC2 Discussion Forum

Below this, there's a note: "While your instances are launching you can also..." with links to "Create status check alarms to be notified when these instances fail status checks.", "Create and attach additional EBS volumes.", and "Manage security groups". A blue "View Instances" button is located on the right side of the page.  
  
At the bottom, there are "Feedback" and "English" buttons, a copyright notice "© 2008 - 2017, Amazon Internet Services Private Ltd, or its affiliates. All rights reserved.", and links to "Privacy Policy" and "Terms of Use". A "Show all" link is also present.

## Verification

Linux instance in public subnet is launched

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#instances>. The browser title bar says "EC2 Management Console". The navigation bar includes "Services" and "Resource Groups". The top right has "student", "Oregon", and "Support". Below the navigation is a search bar with "linuxmkey1.pem".  
  
The main content area is titled "Launch Instance" and shows a table of instances:

Name	Instance ID	Instance Type	Availability Zone	Instance State	Status Checks	Alarm
Linuxpubvm	i-0c53f560c48fd5fb0	t2.micro	us-west-2a	running	Initializing	None
linuxvm1	i-08115d0b036c247a	t2.micro	us-west-2c	terminated		None
Wimpubvm	i-0cb26994e13174e85	t2.micro	us-west-2a	running	2/2 checks	None

Below the table, it says "Instance: i-0c53f560c48fd5fb0 (Linuxpubvm) Public IP: 54.202.241.190". There are tabs for "Description", "Status Checks", "Monitoring", and "Tags".  
  
At the bottom, there are "Feedback" and "English" buttons, a copyright notice "© 2008 - 2017, Amazon Internet Services Private Ltd, or its affiliates. All rights reserved.", and links to "Privacy Policy" and "Terms of Use". A "Show all" link is also present.

## 12) To connect to linux instance in private subnet

Launch linux instance in private subnet → hyd-pvt-subnet

Open the AWS console

Click on Services

Click on Instance

Click on “Launch Instance” button

The screenshot shows the AWS EC2 Management Console interface. On the left, there's a sidebar with navigation links like EC2 Dashboard, Events, Tags, Reports, Limits, Instances, Spot Requests, Reserved Instances, Scheduled Instances, Dedicated Hosts, AMIs, Bundle Tasks, and Elastic Block. 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 is a table titled "Instances" with columns: Name, Instance ID, Instance Type, Availability Zone, Instance State, Status Checks, and Alarm. There are three entries: "Linuxpubvm" (running in us-west-2a), "linuxvm1" (terminated in us-west-2c), and "Wingpubvm" (running in us-west-2a). Below the table, it says "Instance: i-0c53f560c48fd5f80 (Linuxpubvm) Public IP: 54.202.241.190". At the bottom, there are tabs for Description, Status Checks, Monitoring, and Tags. Under the Description tab, details are shown: Instance ID (i-0c53f560c48fd5f80), Instance state (running), and Instance type (t2.micro). The status checks tab shows 2/2 checks. The monitoring tab has a link to CloudWatch Metrics. The tags tab has a link to CloudWatch Metrics.

On the “Choose an Amazon Machine Image (AMI)” page

Select AMI “Amazon Linux AMI 2017.03.1 (HVM), SSD Volume Type - ami-6df1e514

Click on **Select** button

The screenshot shows the AWS EC2 Management Console interface. At the top, there's a navigation bar with 'Services', 'Resource Groups', and other account details. Below it, a progress bar indicates '1. Choose AMI' is selected. The main content area is titled 'Step 1: Choose an Amazon Machine Image (AMI)'. It explains what an AMI is and provides filtering options like 'My AMIs', 'AWS Marketplace', 'Community AMIs', and 'Free tier only'. A list of AMIs is shown, with the first item, 'Amazon Linux AMI 2017.03.1 (HVM), SSD Volume Type - ami-6df1e514', highlighted. This item has a detailed description below it, mentioning it's an EBS-backed, AWS-supported image with Docker, PHP, MySQL, PostgreSQL, and other packages. To the right of the description are buttons for 'Select' (which is being clicked) and '64-bit'. Other AMIs listed include 'SUSE Linux Enterprise Server 12 SP2 (HVM), SSD Volume Type - ami...' and 'Ubuntu Server 16.04 LTS (HVM), SSD Volume Type - ami...'. At the bottom of the page, there are links for 'Feedback', 'English', 'Privacy Policy', 'Terms of Use', and a search bar.

On the “Choose an Instance Type” page

Select “General purpose”

Type →t2.micro

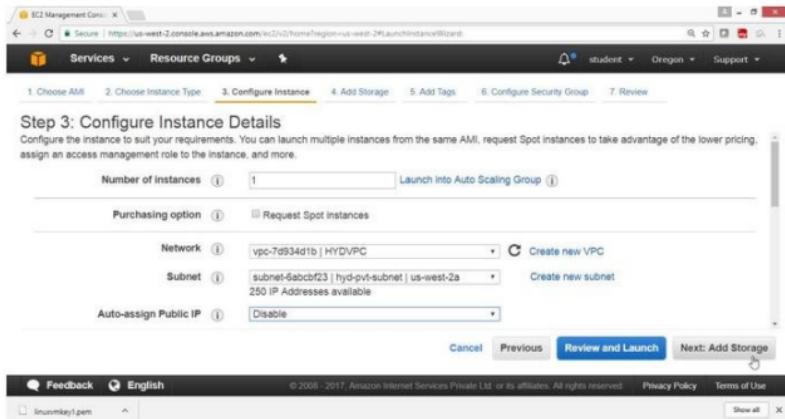
Click on “Next: Configure Security Group” button

The screenshot shows the AWS EC2 Management Console interface. The top navigation bar includes 'Services', 'Resource Groups', and tabs for 'Launch Instance Wizard' (highlighted), 'Create New', 'Launch', and 'Stop'. Below the tabs, a breadcrumb navigation shows '1. Choose AMI' through '7. Review'. The main content area is titled 'Step 2: Choose an Instance Type'. A table lists various instance types based on Family, Type, vCPUs, Memory (GiB), Instance Storage (GiB), EBS-Optimized Availability, Network Performance, and IPv6 Support. The 't2.micro' row is highlighted with a green background and has a red border around its 'Free tier eligible' status. The table columns are: Family, Type, vCPUs, Memory (GiB), Instance Storage (GiB), EBS-Optimized Available, Network Performance, and IPv6 Support. The 't2.micro' row also includes a 'Free tier eligible' label. At the bottom of the table are buttons for 'Cancel', 'Previous', 'Review and Launch' (highlighted in blue), and 'Next: Configure Instance Details'.

Family	Type	vCPUs	Memory (GiB)	Instance Storage (GiB)	EBS-Optimized Available	Network Performance	IPv6 Support
General purpose	t2.nano	1	0.5	EBS only	-	Low to Moderate	Yes
<input checked="" type="checkbox"/> General purpose	<b>t2.micro</b> Free tier eligible	1	1	EBS only	-	Low to Moderate	Yes
General purpose	t2.small	1	2	EBS only	-	Low to Moderate	Yes
General purpose	t2.medium	2	4	EBS only	-	Low to Moderate	Yes
General purpose	t2.large	2	8	SSD only	-	Low to Moderate	Yes

On the “Configure Instance Details” page

Number of instance → 1  
Network → HYDVPC  
Subnet → hyd-pvt-subnet  
Auto-assign Public IP → Disable



On the “Add Storage” page

Leave the values as default

Click on “Next: Add Tags” button

Step 4: Add Storage

Your instance will be launched with the following storage device settings. You can attach additional EBS volumes and instance store volumes to your instance, or edit the settings of the root volume. You can also attach additional EBS volumes after launching an instance, but not instance store volumes. Learn more about storage options in Amazon EC2.

Volume Type	Device	Snapshot	Size (GiB)	Volume Type	IOPS	Throughput (MB/s)	Delete on Termination	Encrypted
Root	/dev/xvda	snap_0e8e196a52ed7efc3	8	General Purpose S	100 / 3000	N/A	<input checked="" type="checkbox"/>	Not Encrypted

Add New Volume

Cancel Previous Review and Launch Next: Add Tags

Click on Add Tag

Step 5: Add Tags

A copy of a tag can be applied to volumes, instances or both.  
Tags will be applied to all instances and volumes. Learn more about tagging your Amazon EC2 resources.

Key	(127 characters maximum)	Value	(255 characters maximum)	Instances	Volumes
This resource currently has no tags					

Choose the Add tag button or click to add a Name tag.  
Make sure your IAM policy includes permissions to create tags.

Add Tag (Up to 50 tags maximum)

Cancel Previous Review and Launch Next: Configure Security Group

On the “Add Tags” page

Key → Name

Value → Linuxpvvm

Click on “Next: Configure Security Group” button

The screenshot shows the AWS EC2 Management Console interface for launching a new instance. The current step is "5. Add Tags". A single tag is being defined with the key "Name" and the value "Linuxpvvm". Below this, there is a link to "Add another tag". At the bottom of the screen, there are several buttons: "Cancel", "Previous", "Review and Launch" (which is highlighted in blue), and "Next: Configure Security Group".

## On the “Configure Security Group” page

Assign a security group → Create a new security group

Leave remaining values as default

Click on “Review and Launch” button

The screenshot shows the EC2 Management Console with the URL <https://us-west-2.console.aws.amazon.com/ec2/v2/home?region=us-west-2#launchInstanceWizard>. The page title is "Step 6: Configure Security Group". The navigation bar includes "Services", "Resource Groups", "student", "Oregon", "Support", and "Review". Below the title, it says: "A security group is a set of firewall rules that control the traffic for your instance. On this page, you can add rules to allow specific traffic to reach your instance. For example, if you want to set up a web server and allow internet traffic to reach your instance, add rules that allow unrestricted access to the HTTP and HTTPS ports. You can create a new security group or select from an existing one below. Learn more about Amazon EC2 security groups." A note at the bottom says "Assign a security group: \*Create a new security group" with a radio button selected. Below that is a dropdown menu with "Select an existing security group". The security group name is "launch-wizard-6" and the description is "launch-wizard-6 created 2017-08-01T13:51:38.571+05:30". A table shows an inbound rule: Type: SSH, Protocol: TCP, Port Range: 22, Source: Anywhere. At the bottom are "Cancel", "Previous", "Review and Launch" (which is highlighted in blue), and "Feedback" and "English" buttons.

## On the “Review Instance Launch” page

Click on Launch button

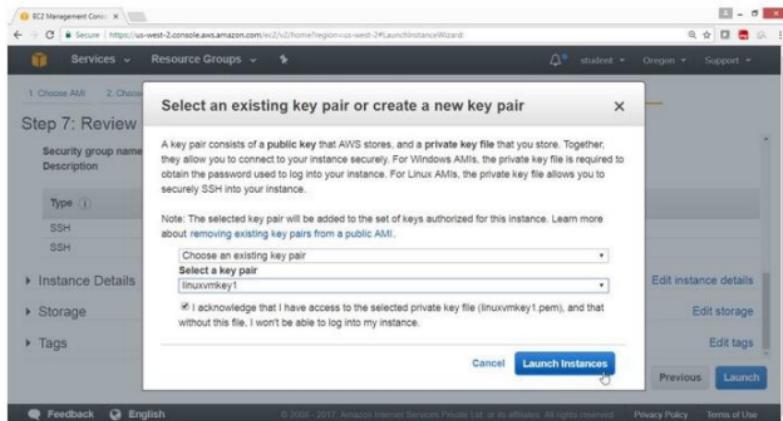
The screenshot shows the EC2 Management Console with the URL <https://us-west-2.console.aws.amazon.com/ec2/v2/home?region=us-west-2#launchInstanceWizard>. The page title is "Step 7: Review Instance Launch". The navigation bar includes "Services", "Resource Groups", "student", "Oregon", "Support", and "Review". Below the title, it says: "Security group name: launch-wizard-6" and "Description: launch-wizard-6 created 2017-08-01T13:51:38.571+05:30". A table shows the inbound rule: Type: SSH, Protocol: TCP, Port Range: 22, Source: 0.0.0.0/0. Below the table are sections for "Instance Details", "Storage", and "Tags", each with an "Edit" link. At the bottom are "Cancel", "Previous", "Launch" (which is highlighted in blue), and "Feedback" and "English" buttons.

On the “Select an existing key pair or create a new key pair” box

Select **Create a new key pair**

Key pair name → linuxvmkey1

Click on “Launch Instance” button



Check the summary

Click on View Instance button

The screenshot shows the EC2 Management Console with the URL <https://us-west-2.console.aws.amazon.com/ec2/home?region=us-west-2#LaunchInstanceWizard>. The page displays the 'Launch Status' section, which includes a note about starting instances immediately and continuing until stopped or terminated. It also provides links to 'View Instances' for monitoring and 'View Help' for resources. Below this, there's a list of helpful resources like connecting to a Linux instance, using the User Guide, and learning about the Free Usage Tier. A sidebar on the left lists services like EC2 Dashboard, Events, Tags, Reports, and Instances. At the bottom right, there's a 'View Instances' button.

## Verification

Linux instance in public subnet is launched

The screenshot shows the EC2 Management Console with the URL <https://us-west-2.console.aws.amazon.com/ec2/home?region=us-west-2#Instances>. The 'Instances' section is selected in the sidebar. A table lists four instances: 'Winpvrtm', 'Winpubvm', 'Linuxpvrtm' (which is highlighted), and 'Linuxpubvm'. The 'Linuxpvrtm' instance is in the 'Initializing' state with a Private IP of 192.168.20.101. Below the table, detailed information for the selected instance is shown, including its ID, state, and status checks. The bottom of the screen shows the usual navigation and footer links.

To connect to linux private instance

First copy the key to linux instance in public subnet

Now connect to linux instance in public

Then connect to linux instance in private

Open Mobaxterm

Coping \*.pem file to linux instance in public

Select public linux instance click on connect

Name	Instance ID	Instance Type	Availability Zone	Instance State	Status Checks	Alarm
Linuxpubvm	i-0c53f560c48fd5f80	t2.micro	us-west-2a	running	2/2 checks	None
Linusprivvm	i-0da6594c1079c242	t2.micro	us-west-2a	running	2/2 checks	None
Wimpubvm	i-0cb26994e13174e65	t2.micro	us-west-2a	running	2/2 checks	None
Wimpvprivm	i-0e2251b25ee08ta4e	t2.micro	us-west-2a	running	2/2 checks	None

## View the guide lines

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#instances+tagName>. The left sidebar shows navigation options like Services, Instances, Images, and Elastic Block Store. A modal window titled "Connect To Your Instance" is open. It asks "I would like to connect with" and has two radio buttons: "A standalone SSH client" (selected) and "A Java SSH Client directly from my browser (Java required)". Below this, it says "To access your instance:" with four numbered steps:

1. Open an SSH client. (Find out how to connect using PuTTY)
2. Locate your private key file (linuxvmkey1.pem). The wizard automatically detects the key you used to launch the instance.
3. Your key must not be publicly viewable for SSH to work. Use this command if needed:  
    `chmod 400 linuxvmkey1.pem`
4. Connect to your instance using its Public IP:  
    `54.202.241.199`

Below the steps, there's an "Example:" section with the command:

```
ssh -i "linuxvmkey1.pem" ec2-user@54.202.241.199
```

A note below the command says: "Please note that in most cases the username above will be correct, however please ensure that you read your AMI usage instructions to ensure that the AMI owner has not changed the default AMI username."

The right side of the screen shows status checks and alarms for the instance, with a public IP of 54.202.241.199.

Use the above public ip of linux instance in mobaxterm

Copy \*.pem file to pun linux instance using scp command

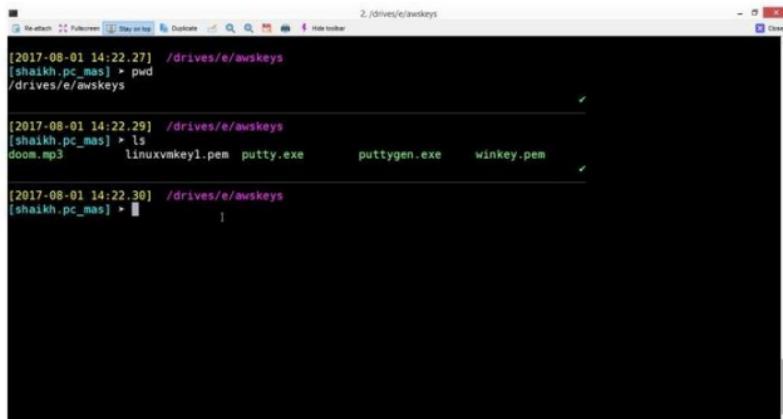
```
[2017-08-01 14:21.18] /drives/e/awskeys
[shaikh.pc_mas] > ls
doom.mp3      linuxvmkey1.pem  putty.exe      puttygen.exe  winkey.pem

[2017-08-01 14:21.20] /drives/e/awskeys
[shaikh.pc_mas] > scp -i "linuxvmkey1.pem" linuxvmkey1.pem ec2-user@54.202.241.199:/home/ec2-user
linuxvmkey1.pem                                         100% 1692     1.7KB/s   00:00

[2017-08-01 14:21.50] /drives/e/awskeys
[shaikh.pc_mas] >
```

## Verify

Use commands , pwd, ls to check \*.pem file

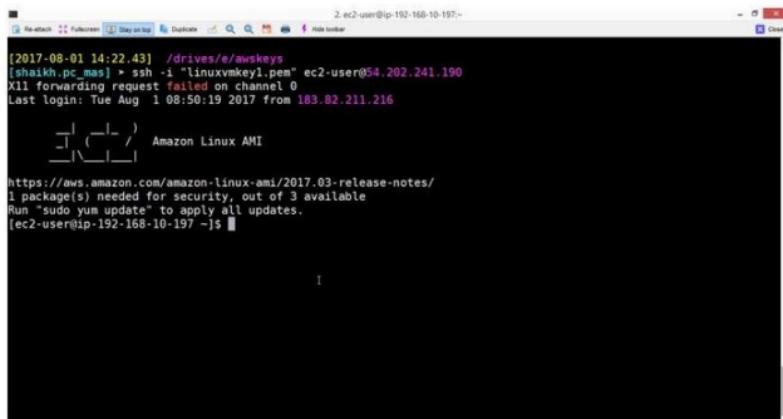


```
2 ./drives/e/awskeys
[2017-08-01 14:22:27] ./drives/e/awskeys
[shaikh.pc_mas] > pwd
./drives/e/awskeys

[2017-08-01 14:22:29] ./drives/e/awskeys
[shaikh.pc_mas] > ls
doot.mp3      linuxvmkey1.pem  putty.exe      puttygen.exe  winkey.pem

[2017-08-01 14:22:30] ./drives/e/awskeys
[shaikh.pc_mas] > [REDACTED]
```

Now connect to public instance using ssh command



```
2 ec2-user@ip-192-168-10-197:-
[2017-08-01 14:22:43] ./drives/e/awskeys
[shaikh.pc_mas] > ssh -i "linuxvmkey1.pem" ec2-user@54.202.241.190
X11 forwarding request failed on channel 0
Last login: Tue Aug  1 08:50:19 2017 from 183.82.211.216
[REDACTED]
[REDACTED] | (   )_/_ Amazon Linux AMI
[REDACTED] | \_\_| \_|
https://aws.amazon.com/amazon-linux-ami/2017.03-release-notes/
1 package(s) needed for security, out of 3 available
Run "sudo yum update" to apply all updates.
[ec2-user@ip-192-168-10-197 ~]$ [REDACTED]
```

## Select private instance and get private ip

EC2 Management Con... Secure | https://us-west-2.console.aws.amazon.com/ec2/v2/home?region=us-west-2#instances?sort=tag.Name

Services Resource Groups

student Oregon Support

EC2 Dashboard Events Tags Reports Limits

INSTANCES Instances Spot Requests Reserved Instances Scheduled Instances Dedicated Hosts

IMAGES AMIs Bundle Tasks

ELASTIC BLOCK STORE Volumes

Feedback English

Launch Instance Connect Actions

Filter by tags and attributes or search by keyword

Name	Instance ID	Instance Type	Availability Zone	Instance State	Status Checks	Alarm
Linuxpvtvm	i-0c53f560c4ffad5f80	t2.micro	us-west-2a	running	2/2 checks	None
<b>Linuxpvtvm</b>	<b>i-0da6594c71079c242</b>	<b>t2.micro</b>	<b>us-west-2a</b>	<b>running</b>	<b>2/2 checks</b>	<b>None</b>
Winpvtvm	i-0cb26904e13174e65	t2.micro	us-west-2a	running	2/2 checks	None
Winpvtvm	i-0e2251b25ee0ffaa4e	t2.micro	us-west-2a	running	2/2 checks	None

Instance: i-0da6594c71079c242 (Linuxpvtvm) Private IP: 192.168.20.101

Description Status Checks Monitoring Tags

Instance ID: i-0da6594c71079c242	Public DNS (IPv4):
Instance state: running	IPv4 Public IP:
Instance type: t2.micro	IPv6 (IPs):

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## View the details of private instance

EC2 Management Con... Secure | https://us-west-2.console.aws.amazon.com/ec2/v2/home?region=us-west-2#instances?sort=tag.Name

Tags Reports Limits

INSTANCES Instances Spot Requests Reserved Instances Scheduled Instances Dedicated Hosts

IMAGES AMIs Bundle Tasks

ELASTIC BLOCK STORE Volumes

Feedback English

To access your instance:

1. Open an SSH client. (Find out how to connect using Putty)
2. Locate your private key file (linuxvmkey1.pem). The wizard automatically detects the key you used to launch the instance.
3. Your key must not be publicly viewable for SSH to work. Use this command if needed:  
chmod 400 linuxvmkey1.pem
4. Connect to your instance using its Private IP:  
192.168.20.101

Example:

```
ssh -i "linuxvmkey1.pem" ec2-user@192.168.20.101
```

Please note that in most cases the username above will be correct, however please ensure that you read your AMI usage instructions to ensure that the AMI owner has not changed the default AMI username.

If you need any assistance connecting to your instance, please see our connection documentation.

Status Checks Alarm

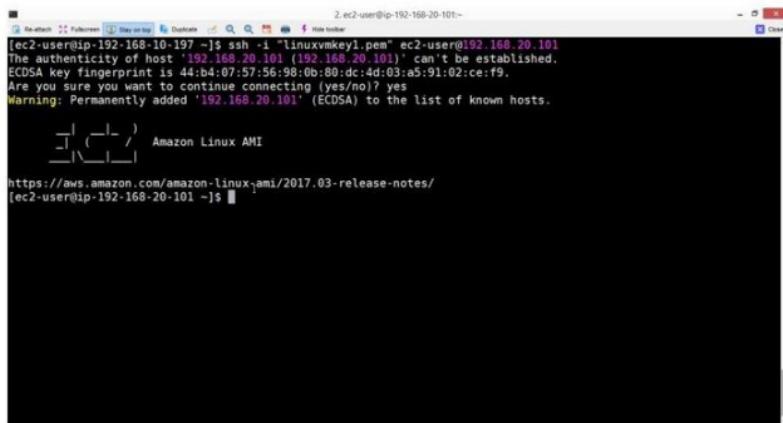
2/2 checks	None

Privacy Policy Terms of Use Close

## Verification

Run ssh command to login to private instance

Now you are connected to private instance in private subnet



The screenshot shows a terminal window titled "Terminal" with the following content:

```
[ec2-user@ip-192-168-10-197 ~]$ ssh -i "linuxvmkey1.pem" ec2-user@192.168.20.101
The authenticity of host '192.168.20.101 (192.168.20.101)' can't be established.
ECDSA key fingerprint is 44:b4:07:57:56:98:0b:80:dc:4d:03:a5:91:02:ce:f9.
Are you sure you want to continue connecting (yes/no)? yes
Warning: Permanently added '192.168.20.101' (ECDSA) to the list of known hosts.

[ec2-user@ip-192-168-20-101 ~]$
```

The terminal shows the user has successfully connected to the private instance using the provided ECDSA key. The prompt then changes to the instance's IP address.

## Lab 10: To Configure Amazon CloudWatch

### OBJECTIVE

To configure CloudWatch to monitor CPU Utilization

### TOPOLOGY



### PRE-REQUISITES

User should have AWS account, or IAM user with EC2fullaccess

### TASK :

Creating Alarm

Select Notification

Check mail to verify

### **1) To Configure Amazon CloudWatch Service**

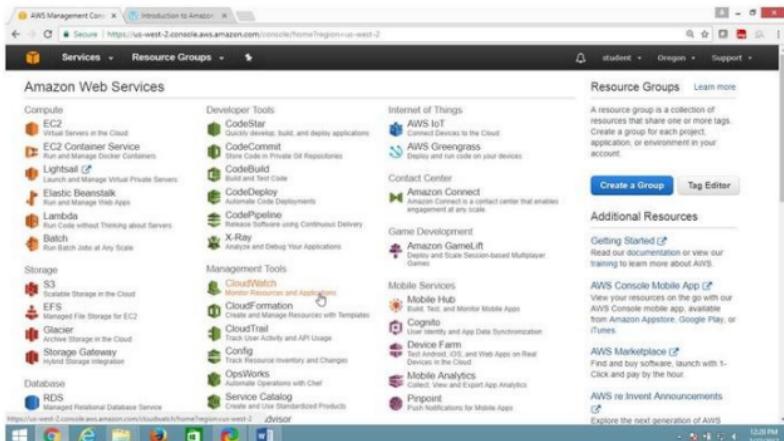
Launch a Amazon linux instance, then

## Open AWS Console

### **Click on Services**

### In the Management Tools section

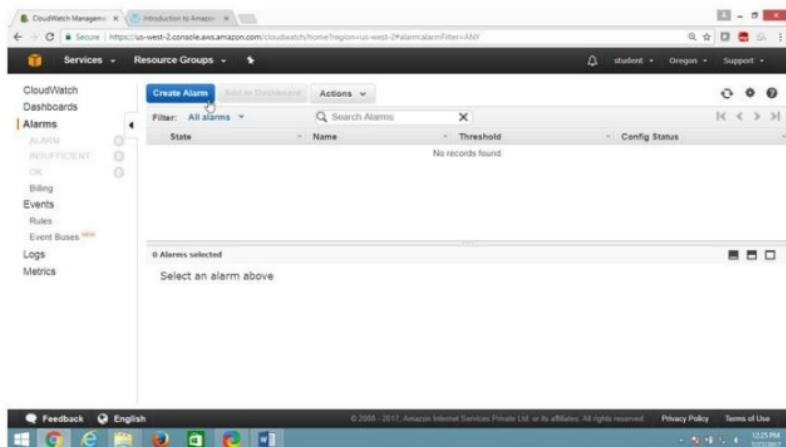
**Click on CloudWatch**



On "CloudWatch", panel

Select Alarms

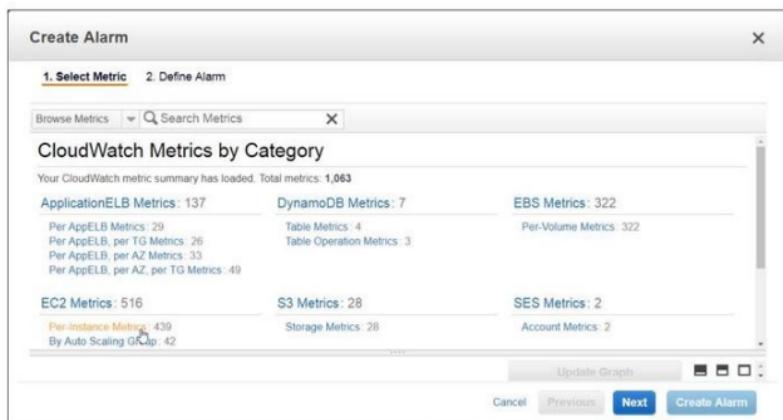
Click on "Create Alaram" button



In “Create Alarm” page

Select “EC2 Metrics”

Click on “Per-instance Metrics”



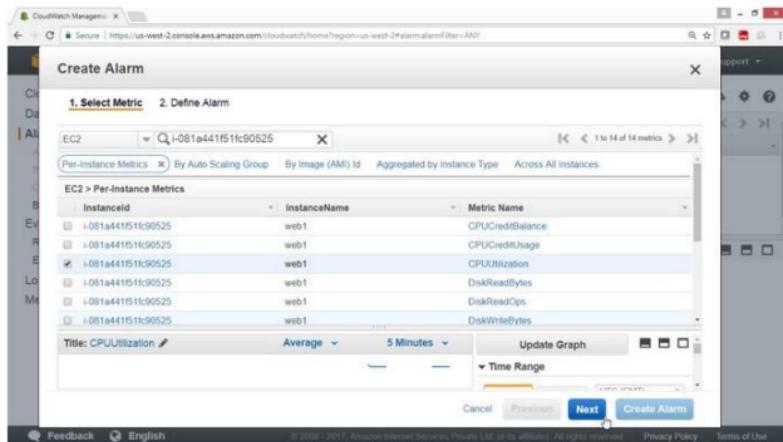
From "Create Alarm" page

Select "1. Select Metric"

In search box provide instance ID or Name

Under Metric Name, select CPUUtilization checkbox

Click on Next button



On Create Alarm page

Select “**2. Define Alarm**”

Under Alarm Threshold

**Name** → testcpuitilization

**Description**→ cputest

Under Whenever CPUUtilization

is  $\geq$  30

for 1 consecutive period(s)

Drag Down

The screenshot shows the AWS CloudWatch Metrics 'Create Alarm' interface. The 'Define Alarm' step is active. In the 'Alarm Threshold' section, the 'Name' is set to 'testcpuitilization' and the 'Description' is 'cputest1'. Under 'Whenever', 'CPUUtilization' is selected with the condition ' $\geq$  30' for '1 consecutive period(s)'. In the 'Additional settings' section, there is a note about providing additional configuration. To the right, the 'Alarm Preview' displays a line graph of CPUUtilization over time, showing a single sharp peak that crosses the threshold line, indicating a trigger event.

## Under Actions

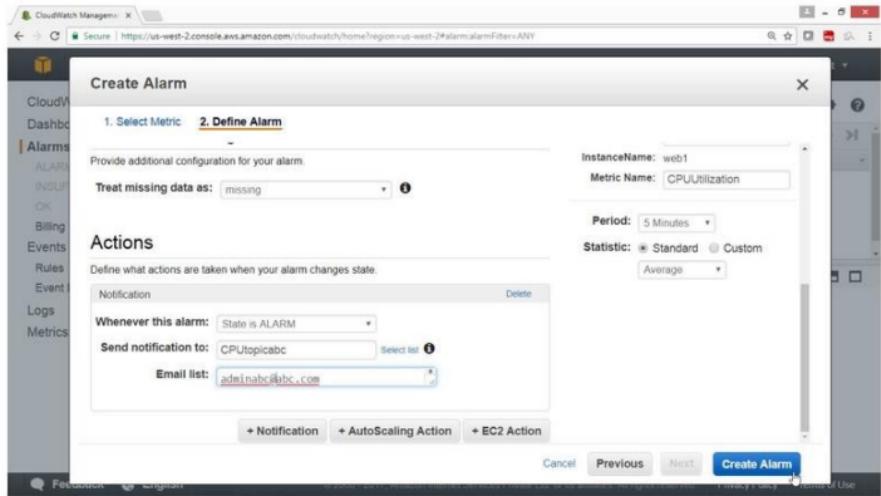
Whenever this alarm → State is Alaram

Send notification to → Click on New list

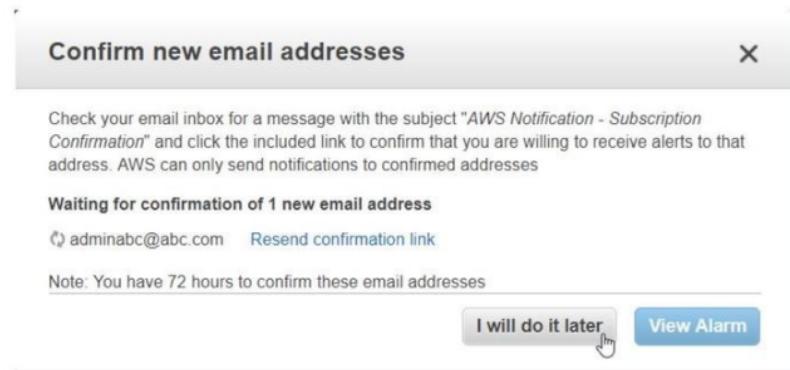
The screenshot shows the 'Create Alarm' wizard in the CloudWatch Metrics console. The current step is '2. Define Alarm'. In the 'Actions' section, under 'Whenever this alarm:', the dropdown is set to 'State is ALARM'. Below it, the 'Send notification to:' dropdown is expanded, showing the option 'Select a notification list' followed by a 'New list' button with a tooltip 'Enter list'. Other buttons in the row include '+ Notification', '+ AutoScaling Action', and '+ EC2 Action'. At the bottom of the actions section are 'Cancel', 'Previous', 'Next', and a large blue 'Create Alarm' button.

Send notification to → CPUpicabc  
Email → adminabc@abc.com

Click on "Create Alaram" button



Click on "I will do it Later" button.



Go to your Email account and check the Mail

Once mail is been checked

Config status → Pending confirmation

Verify the link from your Email

The screenshot shows the AWS CloudWatch Metrics console. On the left sidebar, under the 'Alarms' section, there is a link labeled 'Pending confirmation'. The main area displays a success message: 'Your alarm testcpuutilization has been saved.' Below this, a table lists the alarm details: State (OK), Name (testcpuutilization), Threshold (CPUUtilization >= 30 for 5 minutes), and Config Status (Pending confirmation). A note at the bottom says 'Select an alarm above'.

Open your email

The screenshot shows a Gmail inbox with 113 messages. The top navigation bar includes a search bar, a 'Compose' button, and a notifications icon. The inbox header shows tabs for Primary, Social, Promotions, and Subscriptions. An email from 'AWS Notifications' is visible in the inbox, with the subject 'AWS Notification - Subscript' and a timestamp of '1:26 pm'.

Click on "Confirm subscription"

=====

AWS Notification - Subscription Confirmation Inbox x  

 AWS Notifications no-reply@sns 1:26 PM (13 minutes ago)     

to me  

You have chosen to subscribe to the topic:  
**arn:aws:sns:us-west-2:523251683217:CPUtopicabc**

To confirm this subscription, click or visit the link below (If this was in error no action is necessary):  
[Confirm subscription](#)

Please do not reply directly to this email. If you wish to remove yourself from receiving all future SNS subscription confirmation requests please send an email to [sns-opt-out](#)

 AWS Notifications AWS Notification - Subscription Confirmation - You have chosen to subscribe to the topic: arn:aws:sns:us-west-2:523251683217:CPUtopicabc 1:26 pm

=====

Verified by this output

=====



=====

After confirmation from email Config status has become blank

The screenshot shows the CloudWatch Metrics Alarms page. The left sidebar lists metrics like CloudWatch, Dashboards, Alarms, and Metrics. The main area shows a table for an alarm named "testcpuutilization".

State	Name	Threshold	Config Status
OK	testcpuutilization	CPUUtilization >= 30 for 5 minutes	

A message at the top says "Your alarm testcpuutilization has been saved." Below the table, it says "0 Alarms selected" and "Select an alarm above".

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

Now login to Instance using mobaxterm

```
[2017-07-27 14:19.15] ~  
[shaikh.pc_mas] > cd e:awskeys
```

```
[2017-07-27 14:19.55] /drives/e/awskeys  
[shaikh.pc_mas] > ssh -i "25july2017masorg.pem" ec2-user@ec2-54-191-150-199.us-west-2.compute.amazonaws.com
```

Switch to root user and install stress command

```
[ec2-user@ip-172-31-40-129 ~]$ sudo su  
[root@ip-172-31-40-129 ec2-user]# yum install stress -y
```

Login to another terminal-2

Run top command

```
[root@ip-172-31-40-129 ec2-user]# top
```

Verify output

CPU status is 100% idle

```
top - 08:56:26 up 1:53, 2 users, load average: 0.00, 0.00, 0.00
Tasks: 94 total, 1 running, 93 sleeping, 0 stopped, 0 zombie
Cpu(s): 0.0 user, 0.0 sys, 0.0 idl, 100.0 id, 0.0 wa, 0.0 hi, 0.0 si, 0.0 st
Mem: 1017372K total, 166080K used, 851292K free, 9224K buffers
Swap: 0K total, 0K used, 0K free, 90380K cached
```

PID	USER	PR	NI	VIRT	RES	SHR	S	%CPU	%MEM	TIME+	COMMAND
1	root	20	0	19628	2420	2108	5	0.0	0.2	0:00:00	init
2	root	20	0	0	0	0	S	0.0	0.0	0:00:00	kthreadd
3	root	20	0	0	0	0	S	0.0	0.0	0:00:00	ksoftirqd/0
4	root	20	0	0	0	0	S	0.0	0.0	0:00:00	kwworker/0:0
5	root	0	-20	0	0	0	S	0.0	0.0	0:00:00	kwworker/0:0H
6	root	20	0	0	0	0	S	0.0	0.0	0:00:00	kwworker/u30:0
7	root	20	0	0	0	0	S	0.0	0.0	0:00:03	rcu_sched
8	root	20	0	0	0	0	S	0.0	0.0	0:00:00	rcu_bh
9	root	RT	0	0	0	0	S	0.0	0.0	0:00:00	migration/0
10	root	0	-20	0	0	0	S	0.0	0.0	0:00:00	lru-add-drain
11	root	20	0	0	0	0	S	0.0	0.0	0:00:00	cpuhp/0
12	root	20	0	0	0	0	S	0.0	0.0	0:00:00	kddevtmpfs
13	root	0	-20	0	0	0	S	0.0	0.0	0:00:00	netns
16	root	20	0	0	0	0	S	0.0	0.0	0:00:01	xenwatch
17	root	20	0	0	0	0	S	0.0	0.0	0:00:02	kwworker/u30:2
21	root	20	0	0	0	0	S	0.0	0.0	0:00:00	xenbus
139	root	20	0	0	0	0	S	0.0	0.0	0:00:00	khungtaskd
140	root	20	0	0	0	0	S	0.0	0.0	0:00:00	oom_reaper
141	root	0	-20	0	0	0	S	0.0	0.0	0:00:00	writelback
143	root	20	0	0	0	0	S	0.0	0.0	0:00:00	kcompactd0
144	root	25	5	0	0	0	S	0.0	0.0	0:00:00	ksmd
145	root	39	19	0	0	0	S	0.0	0.0	0:00:00	khugepaged
146	root	0	-20	0	0	0	S	0.0	0.0	0:00:00	crypto
147	root	0	-20	0	0	0	S	0.0	0.0	0:00:00	kintegrityd

Run this command in terminal -1 which will increase the load

```
# stress --cpu 40 --timeout 1000
```

```
[root@ip-172-31-40-129 ec2-user]# stress --cpu 40 --timeout 1000
stress: info: [3095] dispatching hogs: 40 cpu, 0 io, 0 vm, 0 hdd
```

Now check the status in another terminal-2 by running top command

```
# top
```

Verify the output

Cpu load is 100%

top - 09:07:11 up 2:04, 3 users, load average: 16.16, 6.55, 2.88										
Tasks: 144 total, 41 running, 103 sleeping, 0 stopped, 0 zombie										
CPU(s): 100.0%us, 0.0%sy, 0.0%ni, 0.0%id, 0.0%wa, 0.0%hi, 0.0%si, 0.0%st										
Mem: 101.572K total, 179324K used, 838048K free, 94660K buffers										
Swap: 0k total, 0k used, 0k free, 90760k cached										
PID	USER	PR	NI	VIRT	RES	SHR	S	%CPU	%MEM	TIME+ COMMAND
3143	root	20	0	7260	96	0	R	2.7	0.0	0:00.73 stress
3147	root	20	0	7260	96	0	R	2.7	0.0	0:00.73 stress
3179	root	20	0	7260	96	0	R	2.7	0.0	0:00.73 stress
3141	root	20	0	7260	96	0	R	2.3	0.0	0:00.72 stress
3142	root	20	0	7260	96	0	R	2.3	0.0	0:00.72 stress
3144	root	20	0	7260	96	0	R	2.3	0.0	0:00.72 stress
3145	root	20	0	7260	96	0	R	2.3	0.0	0:00.72 stress
3146	root	20	0	7260	96	0	R	2.3	0.0	0:00.72 stress
3148	root	20	0	7260	96	0	R	2.3	0.0	0:00.72 stress
3149	root	20	0	7260	96	0	R	2.3	0.0	0:00.72 stress
3150	root	20	0	7260	96	0	R	2.3	0.0	0:00.72 stress
3151	root	20	0	7260	96	0	R	2.3	0.0	0:00.72 stress
3152	root	20	0	7260	96	0	R	2.3	0.0	0:00.72 stress
3153	root	20	0	7260	96	0	R	2.3	0.0	0:00.72 stress
3154	root	20	0	7260	96	0	R	2.3	0.0	0:00.72 stress
3155	root	20	0	7260	96	0	R	2.3	0.0	0:00.72 stress
3156	root	20	0	7260	96	0	R	2.3	0.0	0:00.72 stress
3157	root	20	0	7260	96	0	R	2.3	0.0	0:00.72 stress
3158	root	20	0	7260	96	0	R	2.3	0.0	0:00.72 stress
3159	root	20	0	7260	96	0	R	2.3	0.0	0:00.72 stress
3160	root	20	0	7260	96	0	R	2.3	0.0	0:00.72 stress
3161	root	20	0	7260	96	0	R	2.3	0.0	0:00.72 stress
3162	root	20	0	7260	96	0	R	2.3	0.0	0:00.72 stress
3163	root	20	0	7260	96	0	R	2.3	0.0	0:00.72 stress

Go to CloudWatch service

Check the status

The screenshot shows the AWS CloudWatch Metrics service interface. On the left, a sidebar lists various CloudWatch services: Dashboards, Alarms, ALARM (highlighted), INSUFFICIENT, OK, Billing, Events, Rules, Event Buses (new), Logs, and Metrics. The main area displays the 'Alarm Summary' section, which states 'All your alarms are in OK state in US West (Oregon) region.' A button for 'Create Alarm' is visible. Below this is a chart titled 'testcpuutilization' showing CPU utilization over time. The chart shows a sharp spike from approximately 30% to 60% at 08:00 on July 27. The 'Service Health' section indicates that the 'Amazon CloudWatch Service' is operating normally.

After 5 minutes Alarm is generated

This screenshot is identical to the one above, showing the AWS CloudWatch Metrics service interface. The sidebar and main sections ('Alarm Summary' and 'Service Health') are the same, but the chart for 'testcpuutilization' now shows a more sustained increase in CPU utilization, starting from 08:00 on July 27 and reaching nearly 60% by 09:00.

Go to email and check mail

The screenshot shows a Gmail inbox with 113 messages in the inbox. The search bar at the top has a placeholder "Click here to enable desktop notifications for Gmail. Learn more Hide". Below the search bar are buttons for "Compose", "More", and "1-50 of 167". The inbox list includes two messages from "AWS Notifications": one titled "ALARM: 'testcpuutilization' in US West - Oregon" sent at 2:39 pm, and another titled "AWS Notification - Subscription Confirmation - You ht" sent at 2:02 pm. The inbox interface includes tabs for Primary, Social, Promotions, and a compose button.

Click on mail

Verify output

The screenshot shows an email from "AWS Notifications" (no-reply@sns.eu-west-2.amazonaws.com) received at 2:39 PM (2 minutes ago). The subject line is "ALARM: 'testcpuutilization' in US West - Oregon". The email body contains the following text:

You are receiving this email because your Amazon CloudWatch Alarm "testcpuutilization" in the US West - Oregon region has entered the ALARM state, because "Threshold Crossed: 1 datapoint [46.236000000000004 (27/07/17 09:04:00)] was greater than or equal to the threshold (30.0)." at "Thursday 27 July, 2017 09:09:58 UTC".

View this alarm in the AWS Management Console:

<https://console.aws.amazon.com/cloudwatch/home?region=us-west-2#s=Alarms&alarm=testcpuutilization>

Alarm Details:

- Name: testcpuutilization
- Description: cputest
- State Change: OK -> ALARM
- Reason for State Change: Threshold Crossed: 1 datapoint [46.236000000000004 (27/07/17 09:04:00)] was greater than or equal to the threshold (30.0).
- Timestamp: Thursday 27 July, 2017 09:09:58 UTC

↳ - Timestamp: Thursday 27 July, 2017 09:09:58 UTC  
- AWS Account: 523251683217

Threshold:

- The alarm is in the ALARM state when the metric is GreaterThanOrEqualToThreshold 30.0 for 300 seconds.

Monitored Metric:

- MetricNamespace: AWS/EC2  
- MetricName: CPUUtilization  
- Dimensions: [InstanceId = i-081a441f51fc90525]  
- Period: 300 seconds  
- Statistic: Average  
- Unit: not specified

State Change Actions:

- OK:
- ALARM: [arn:aws:sns:us-west-2:523251683217:CPUtopicabe]
- INSUFFICIENT\_DATA:

↳ State Change Actions:

- OK:
- ALARM: [arn:aws:sns:us-west-2:523251683217:CPUtopicabe]
- INSUFFICIENT\_DATA:

--

If you wish to stop receiving notifications from this topic, please click or visit the link below to unsubscribe:

[https://sns.us-west-2.amazonaws.com/unsubscribe.html?  
SubscriptionArn=arn:aws:sns:us-west-2:523251683217:  
CPUtopicabe:e8d238fb-8e77-46ec-8b2f-609f9ba26876&  
Endpoint=\\_adminabc@abc.com](https://sns.us-west-2.amazonaws.com/unsubscribe.html?SubscriptionArn=arn:aws:sns:us-west-2:523251683217:CPUtopicabe:e8d238fb-8e77-46ec-8b2f-609f9ba26876&Endpoint=_adminabc@abc.com)

Please do not reply directly to this email. If you have any questions or comments regarding this email, please contact us at  
<https://aws.amazon.com/support>

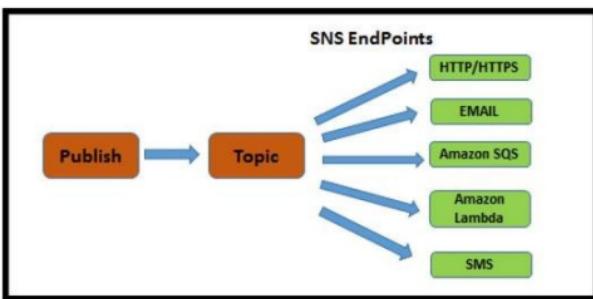
===== END OF OUTPUT =====

## Lab 11: To Configure Amazon Simple Notification Service ( SNS )

### OBJECTIVE

To configure Amazon Simple Service (SNS)

### TOPOLOGY



### PRE-REQUISITES

User should have AWS account, or IAM user with AmazonSNSFullAccess

### TASK :

Create a Topic

Subscribe your topic

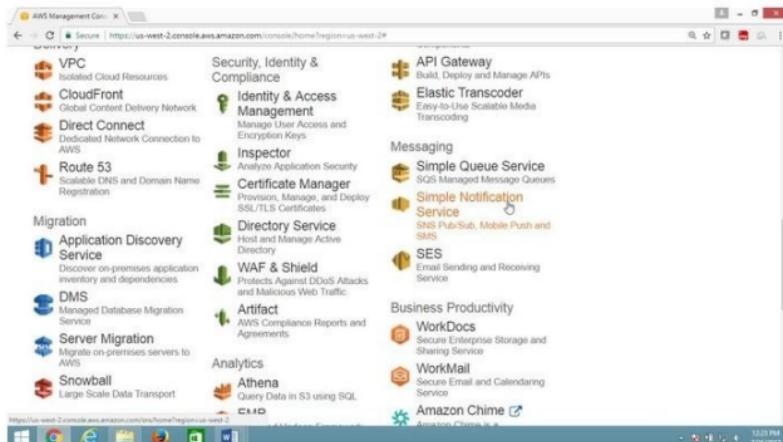
Veriy in your mail account

## 1) To configure Amazon Simple Notification Service ( SNS )

Open AWS console

Select "Messaging" service

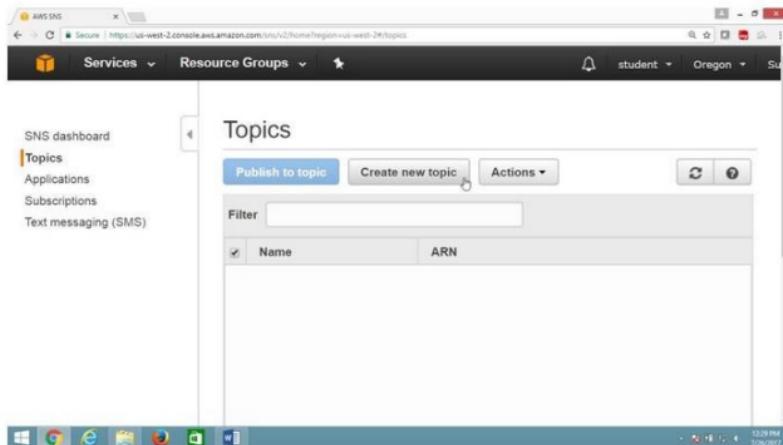
Click on "Simple Notification service"



From "SNS Dashboard" panel

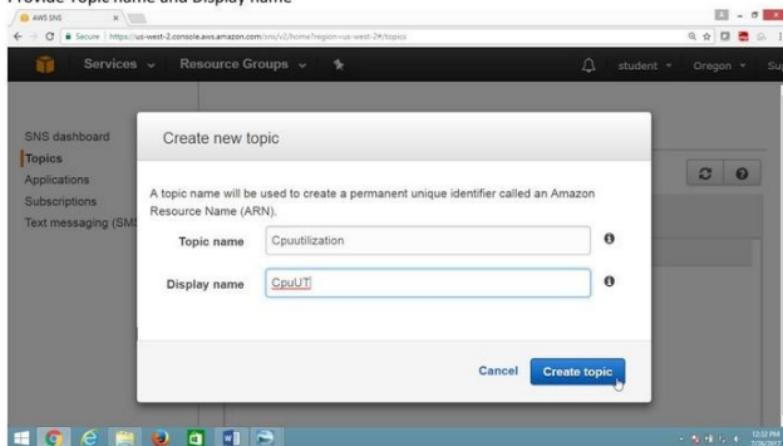
### Select Topic

Click on "Create new topic" button



In "Create new topic" box

Provide Topic name and Display name



## Click of ARN link

The screenshot shows the AWS SNS Topics page. On the left, there's a sidebar with links: SNS dashboard, Topics (which is selected), Applications, Subscriptions, and Text messaging (SMS). The main area has a heading 'Topics' with a sub-instruction: 'Help us improve the new Amazon SNS console by providing feedback.' Below this is an error message: 'Invalid token (Service: AmazonSNS, Status Code: 400, Error Code: InvalidParameter, Request ID: caca5cd7-55c2-5908-a444-3d25122ad9fc)'. A table lists one topic:

Name	ARN
CpuUtilization	arn:aws:sns:us-west-2:523251683217:CpuUtilization

The status bar at the bottom shows the URL: <https://us-west-2.console.aws.amazon.com/sns/v2/home?region=us-west-2#topics/arn:aws:sns:us-west-2:523251683217:CpuUtilization>.

## 2) To create Subscription

Click on “Createsubscription” button

The screenshot shows the 'topic details: CpuUtilization' page. The top navigation bar includes 'Publish to topic' and 'Other topic actions'. Under 'Topic ARN', it shows 'arn:aws:sns:us-west-2:523251683217:CpuUtilization'. The 'Region' is listed as 'us-west-2' and the 'Display name' is 'CpuUT'. The 'Subscriptions' section contains a 'Create subscription' button and other buttons for 'Request confirmations', 'Confirm subscription', and 'Other subscription actions'. A table lists one subscription:

Subscription ID	Protocol	Endpoint	Subscriber

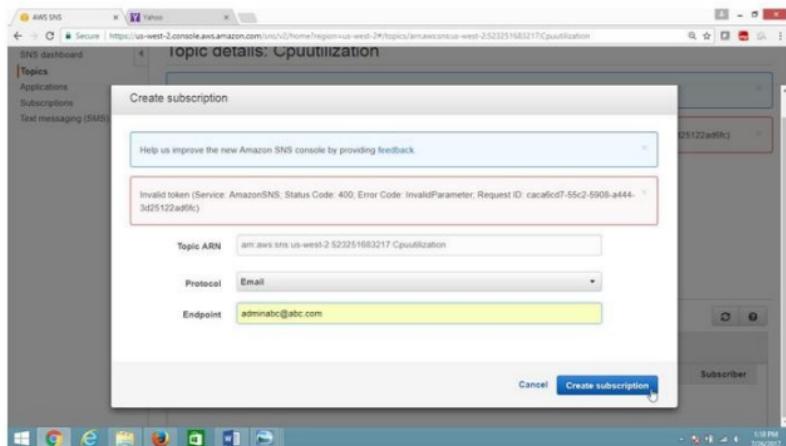
The status bar at the bottom shows the URL: <https://us-west-2.console.aws.amazon.com/sns/v2/home?region=us-west-2#topics/arn:aws:sns:us-west-2:523251683217:CpuUtilization>.

Provide values as

Protocol → EMAIL

Endpoint → [adminaws@abc.com](mailto:adminaws@abc.com)

Click "Create subscription" button



### 3) Verification

Now subscription is in pending state

The screenshot shows the AWS SNS console for the us-west-2 region. A single subscription named 'CpuUT' is listed under the 'PendingConfirmation' filter. The details are as follows:

Subscription ID	Protocol	Endpoint	Subscriber
PendingConfirmation	email	adminabc...	

Go to your mail account

Click on the mail

The screenshot shows the Gmail inbox with one unread email from 'CpuUT no-reply@sns.amazonaws.com'. The subject is 'AWS Notification - Subscription Confirmation'. The email body contains a confirmation link: <https://aws.amazon.com/sns/subscribe/us-west-2-523251683217/CpuUtilization>.

Click on "Confirm message"

The screenshot shows the contents of the AWS SNS subscription confirmation email. It includes the recipient information ('to me'), the topic name ('arn:aws:sns:us-west-2:523251683217:CpuUtilization'), and a 'Confirm subscription' button. Below the button, a note states: 'Please do not reply directly to this email. If you wish to remove yourself from receiving all future SNS subscription confirmation requests please send an email to [sns@amazon.com](mailto:sns@amazon.com)'.

Now subscription is verified

The screenshot shows the AWS SNS console interface. At the top, there are buttons for "Publish to topic" and "Other topic actions". Below this, detailed information about a topic is displayed:

Topic ARN	arn:aws:sns:us-west-2:523251683217:CpuUtilization
Topic owner	523251683217
Region	us-west-2
Display name	CpuUT

Below this section is a "Subscriptions" table with the following data:

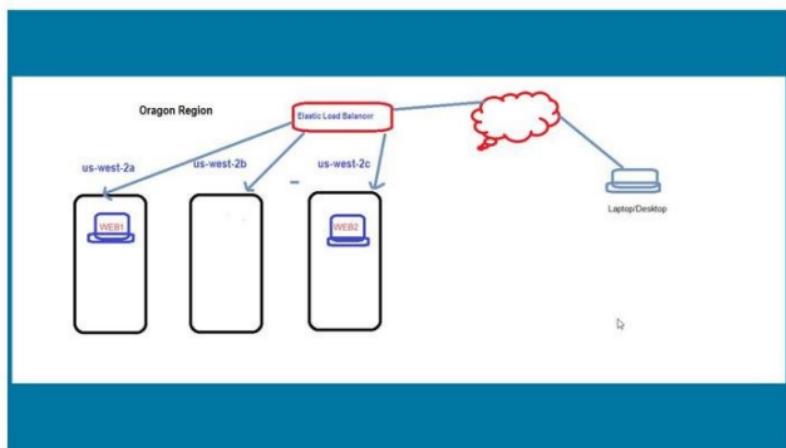
Subscription ID	Protocol	Enabled	SubscriptionArn
arn:aws:sns:us-west-2:523251683217:CpuUtilization:b5f880a3-4631-405e-b5e1-a37209c3...	email	Yes	arn:aws:sns:us-west-2:523251683217:CpuUtilization:b5f880a3-4631-405e-b5e1-a37209c3...

## Lab 12: To Configure Amazon Elastic Load Balancer

### OBJECTIVE

To configure Elastic load balancer in AWS

### TOPOLOGY



### PRE-REQUISITES

User should have AWS account, or IAM user with EC2fullaccess

### TASK :

Launch two instance in two separate Availability Zone.

Configure httpd (Apache) webserver in each instances.

Verify Webserver from browser.

Configure Elastic Load Balancer.

Verify Webserver through ELB

- 1) Launch two install with apache webserver in two separate Availability Zone,  
for example us-west-2a and us-west-2c**

Note

[ To configure webserver refer lab – webserver configuration ]

- 2) Check websites are running**

Open the browser

Provide public ip of both instances

Verify both website are running.

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

Name	Instance ID	Instance Type	Availability Zone	Instance State	Status Checks	Alarm
web1	i-081a441f51fc90525	t2.micro	us-west-2a	running	Initializing	None
web2	i-090dfbcc632605047	t2.micro	us-west-2c	running	Initializing	None

Below the table, the instance IDs i-081a441f51fc90525 (web1) and i-090dfbcc632605047 (web2) are listed. At the bottom, there are tabs for Description, Status Checks, Monitoring, and Tags, with Status Checks selected. The status bar at the bottom right shows the date and time as 12:45 PM 30/5/2017.

## Verify Public IP of both instance

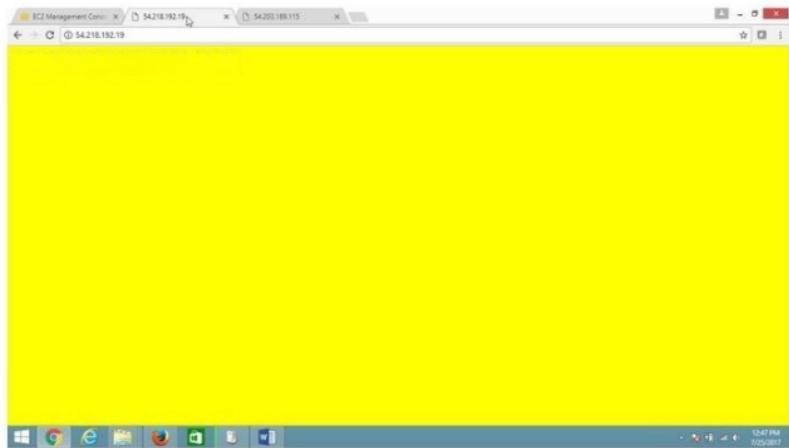
The screenshot shows the AWS EC2 Management Console interface. On the left, there's a sidebar with navigation links: EC2 Dashboard, Events, Tags, Reports, Limits, Instances (selected), Instances, Spot Requests, Reserved Instances, Scheduled Instances, Dedicated Hosts, Images, Elastic Block Store (selected), Volumes, Snapshots. At the top, there are tabs for Launch Instance, Connect, and Actions. Below these are filters for Instance State, Status Checks, Alarm Status, Public DNS (IPv4), IPv4 Public IP, and IPv6 IPs. A search bar is present above the table. The main area displays a table with two rows of instance data:

Instance State	Status Checks	Alarm Status	Public DNS (IPv4)	IPv4 Public IP	IPv6 IPs
running	2/2 checks	None	ec2-54-218-192-19.us-west-2.compute.amazonaws.com	54.218.192.19	-
running	2/2 checks	None	ec2-54-203-189-115.us-west-2.compute.amazonaws.com	54.203.189.115	-

Below the table, a message says "Instances: i-081a441f1fc90525 (web1), i-090dfbcc632605047 (web2)". There are tabs for Description, Status Checks, Monitoring, and Tags. Under Description, two URLs are listed: ec2-54-218-192-19.us-west-2.compute.amazonaws.com and ec2-54-203-189-115.us-west-2.compute.amazonaws.com. At the bottom of the page, there are links for Feedback, English, Privacy Policy, and Terms of Use.

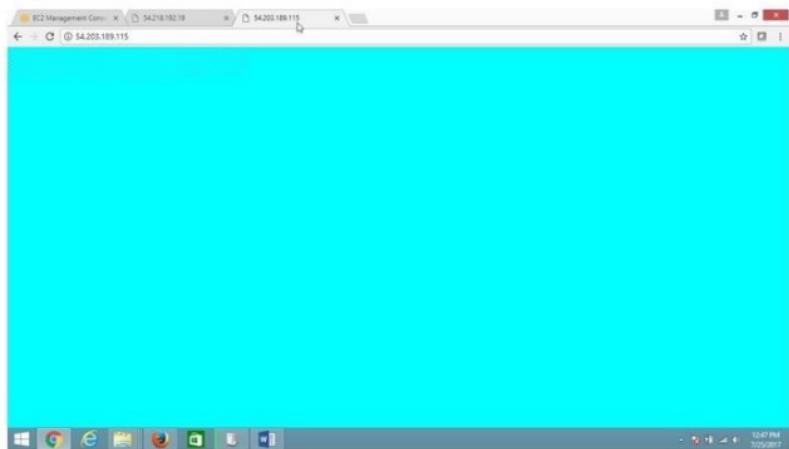
**Verify**

**Output of Webserver one**



**Verify**

**Output of Webserver two**



### **3) To Configure Elastic Load Balancer.**

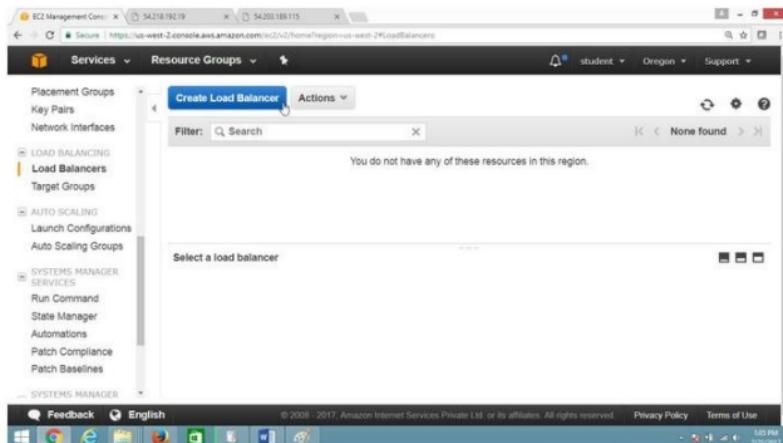
Open the AWS console

On **EC2 Dashboard** panel

Expanding “**LOAD BALANCING**”

Select **Load Balancer**,

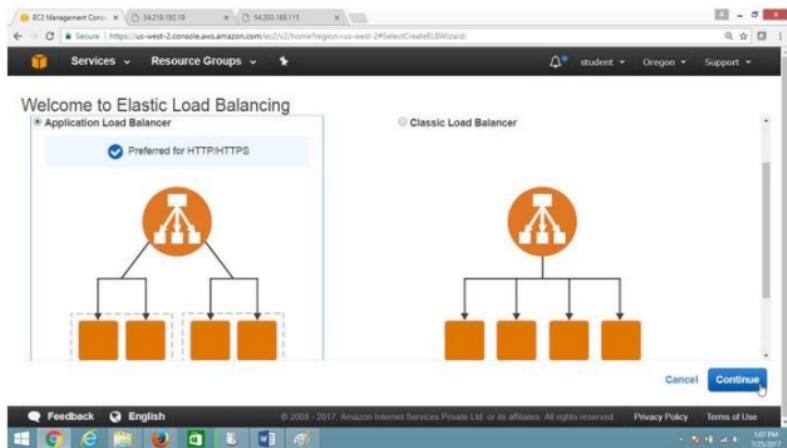
Click on “**Create Load Balancer**” button



On “Welcome to Elastic Load Balancing” page

Select “Application Load Balancer”,

Click Continue button



On "Configure Load Balancer" page

Provide

Name → ELBsales

Schema → Internet-facing

Drag down

The screenshot shows the AWS Management Console interface for creating a new load balancer. The top navigation bar includes 'Services', 'Resource Groups', and account information ('student', 'Oregon'). Below the navigation is a breadcrumb trail: '1. Configure Load Balancer' (highlighted), '2. Configure Security Settings', '3. Configure Security Groups', '4. Configure Routing', '5. Register Targets', and '6. Review'. The main content area is titled 'Step 1: Configure Load Balancer' under 'Basic Configuration'. It contains fields for 'Name' (set to 'ELBsales'), 'Scheme' (set to 'internet-facing'), and 'IP address type' (set to 'ipv4'). A note below the scheme selection states: 'To configure your load balancer, provide a name, select a scheme, specify one or more listeners, and select a network. The default configuration is an internet-facing load balancer in the selected network with a listener that receives HTTP traffic on port 80.' At the bottom of the configuration section, there is a link to 'Next: Configure Security Settings'. The bottom of the screen shows the Windows taskbar with various pinned icons and the system tray.

**Under Listeners, Provide**

Load Balancer Protocol →HTTP

Load Balancer Port as →80

Drag down

The screenshot shows the AWS Lambda console interface. At the top, there are three tabs: 'EC2 Management Console', '54.218.182.19', and '54.203.189.115'. Below the tabs, the navigation bar includes 'Services', 'Resource Groups', and user information ('student', 'Oregon', 'Support'). A progress bar at the top indicates 'Step 1: Configure Load Balancer' is active, followed by '2. Configure Security Settings', '3. Configure Security Groups', '4. Configure Routing', '5. Register Targets', and '6. Review'. The main content area is titled 'Step 1: Configure Load Balancer' and 'Listeners'. It explains that a listener is a process that checks for connection requests using the protocol and port you configured. A configuration panel shows 'Load Balancer Protocol' set to 'HTTP' and 'Load Balancer Port' set to '80'. There is also an 'Add listener' button. At the bottom of the page, there are links for 'Feedback', 'English', 'Privacy Policy', and 'Terms of Use', along with a copyright notice: '© 2008–2017, Amazon Internet Services Private Ltd. or its affiliates. All rights reserved.' The status bar at the bottom right shows '10:22 PM 11/29/2017'.

## Under Availability Zones

Select all zones

Click on “Next:Configure Security Settings” button

Step 1: Configure Load Balancer  
subnet per Availability Zone. You must specify subnets from at least two Availability Zones to increase the availability of your load balancer.

VPC	Subnet ID	Subnet IPv4 CIDR	Name
us-west-2a	subnet-13f60e5a	172.31.32.0/20	
us-west-2b	subnet-8b9e38ec	172.31.16.0/20	
us-west-2c	subnet-19d0f141	172.31.0.0/20	

Tags

Cancel Next: Configure Security Settings

Feedback English © 2008 - 2017, Amazon Internet Services Private Ltd. or its affiliates. All rights reserved. Privacy Policy Terms of Use 1.03 MB 20s/Sec

On “Configure Security Settings” page

Leave values as default.

Click “Next:Configure Security Groups” button

The screenshot shows a browser window for the AWS EC2 Management Console. The URL is <https://us-west-2.console.aws.amazon.com/ec2/v2/home?region=us-west-2#V2CreateLBWizard>. The page title is "Step 2: Configure Security Groups". The navigation bar includes "Services", "Resource Groups", and tabs for "Configure Load Balancer", "Configure Security Settings" (which is selected), "Configure Security Groups", "Configure Routing", "Register Targets", and "Review". A progress bar at the top shows steps 1 through 6. A callout box highlights a warning message: "⚠ Improve your load balancer's security. Your load balancer is not using any secure listener. If your traffic to the load balancer needs to be secure, use the HTTPS protocol for your front-end connection. You can go back to the first step to add/configure secure listeners under Basic Configuration section. You can also continue with current settings." At the bottom right of the main content area, there are "Cancel", "Previous", and "Next: Configure Security Groups" buttons. The status bar at the bottom of the browser shows "Feedback English © 2008 - 2017, Amazon Internet Services Private Ltd. or its affiliates. All rights reserved Privacy Policy Terms of Use 1.03 MB 10s/20s".

On "Configure Security Groups" page

Under Assign a security group

Select "Create a new security group"

click on Configure Routing button

The screenshot shows a browser window with three tabs open: 'EC2 Management Console', '54.218.192.19', and '54.203.188.115'. The main content area is titled 'Step 3: Configure Security Groups'. It displays a form for creating a new security group. The 'Assign a security group:' section has the radio button for 'Create a new security group' selected. Below it, the 'Security group name:' field contains 'load-balancer-wizard-2' and the 'Description:' field contains 'load-balancer-wizard-2 created on 2017-07-25T13:35:42.009+05:30'. A table row for a 'Custom TCP Rule' is shown, with 'Protocol' set to 'TCP', 'Port Range' set to '80', and 'Source' set to 'Custom 0.0.0.0/0, ::/0'. At the bottom right of the form, there are 'Cancel', 'Previous', and 'Next: Configure Routing' buttons. The status bar at the bottom of the browser window shows 'Feedback English © 2006 - 2017, Amazon Internet Services Private Ltd. or its affiliates. All rights reserved. Privacy Policy Terms of Use 10:38 AM 7/25/2017'.

ON "Configure Routing" page give following values

Name → Websales

Leave remaining values as default

click "Next: Register Targets" button

The screenshot shows the AWS Management Console interface for creating a new load balancer. The current step is "Configure Routing". The "Name" field is populated with "Websales". The "Protocol" is set to "HTTP" and the "Port" is "80". The "Path" field is empty. At the bottom of the form, there are three buttons: "Cancel", "Previous", and "Next: Register Targets". The "Next: Register Targets" button is highlighted with a mouse cursor.

## On Register Targets page, Drag down

Select the instance which you want to put under load balancer,

## Click on “Add to register” button, Drag down

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#V2CreateLBWizard>. The page title is "Step 5: Register Targets". Below it is a sub-section titled "Instances". A modal window is open, showing a table of registered instances:

Instance	Name	State	Security	Zone	Subnet ID	Subnet CIDR
i-081a4415fc90525	web1	running	launch-wizard-5	us-west-2a	subnet-13960e5a	172.31.32.0/20
i-090dfbcc03	web2	running	launch-wizard-6	us-west-2c	subnet-19d0f141	172.31.0.0/20

At the top of the modal, there is a button labeled "Add to registered" with a dropdown arrow, and a search bar with placeholder text "Search Instances". At the bottom of the modal are "Cancel", "Previous", and "Next: Review" buttons.

Verify that running instances are registered

## Click on “Next: Review” button

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#V2CreateLBWizard>. The page title is "Step 5: Register Targets". Below it is a sub-section titled "Registered targets". A modal window is open, showing a table of registered instances:

Instance	Name	Port	State	Security groups	Zone
i-081a4415fc90525	web1	80	running	launch-wizard-5	us-west-2a
i-090dfbcc03	web2	80	running	launch-wizard-6	us-west-2c

At the top of the modal, there is a "Remove" button and a "Instances" section. At the bottom of the modal are "Cancel", "Previous", and "Next: Review" buttons.

## Verify

Check the summary

Drag Down

The screenshot shows the AWS Management Console with the URL <https://us-west-2.console.aws.amazon.com/ec2/v2/home?region=us-west-2#V2CreateLBWizard>. The page is titled "Step 6: Review". It displays the configuration for a new load balancer, including:

- Load balancer:** Name: ELBSales, Scheme: Internet-facing, Listeners: Port 80 - Protocol: HTTP, IP address type: ipv4, VPC: vpc-89c341ee (default-vpc-oregon), Subnets: subnet-13f50e5a, subnet-809e38ec, subnet-19d0f141, Tags: None.
- Security settings:** Certificate name: None, Security policy name: None.

At the bottom right, there are "Cancel", "Previous", and a blue "Create" button.

Click on “Create” button

The screenshot shows the AWS Management Console with the URL <https://us-west-2.console.aws.amazon.com/ec2/v2/home?region=us-west-2#V2CreateLBWizard>. The page is titled "Step 6: Review". It displays the configuration for a new load balancer, identical to the previous screenshot. At the bottom right, the "Create" button is highlighted in blue.

## Verify

Load balancer successfully created.

The screenshot shows a browser window with three tabs: 'EC2 Management Console', '54.218.192.10', and '54.203.189.115'. The main content area displays a success message: 'Successfully created load balancer' with a note: 'Load balancer ELBSales was successfully created. Note: It might take a few minutes for your load balancer to be fully set up and ready to route traffic, and for the targets to complete the registration process and pass the initial health checks.' A 'Close' button is visible in the bottom right corner. At the bottom of the screen, there is a standard Windows taskbar with icons for Feedback, English, and various system status indicators.

#### 4) Verification

To verify Websites are coming through Load Balancer

Go to EC2 Dashboard panel

Expanding LOAD BALANCING

Select Load Balancer.

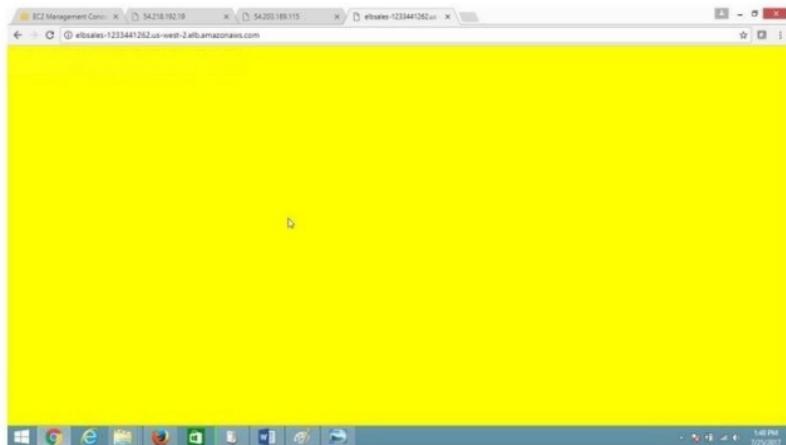
Copy Load Balancer DNS Name

The screenshot shows the AWS EC2 Management Console with the 'Load Balancers' section selected. A search filter for 'ELBs' is applied, and one load balancer, 'ELBsales', is listed. The load balancer details are as follows:

ARN:	arn:aws:elasticloadbalancing:us-west-2:523251683217:loadbalancer/app/ELBsales/0fbfa1234567890	Hosted zone:	Z1H1FL5HABSF5
DNS name:	ELBsales-123441262.us-west-2.elb.amazonaws.com (A Record)	VPC:	vpc-89c341ee
Scheme:	internet-facing	IP address:	IPv4
Type:	application	AWS WAF Web ACL:	
Availability	subnet-12345678 - us-west-2a,		

In browser type load balancer DNS name

Verify website by frequently refreshing browser ( press F5 )



On Each Refresh one by one , Webserver 1 and Webserver 2 will be displayed.



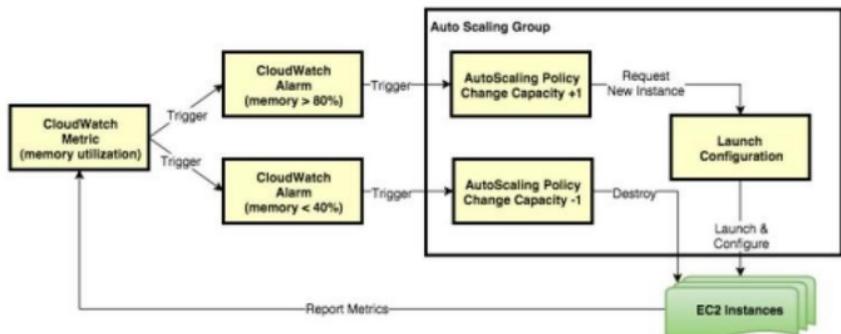
If you get this output, Congratulation your ELB configuration is successful.

## Lab 13: To Configure Auto Scaling With Load Balancer

### OBJECTIVE

To configure Auto Scaling in AWS

### TOPOLOGY



### PRE-REQUISITES

User should have AWS account, or IAM user with EC2fullaccess

### TASK

Launch Amazon linux instance

Configure web server

Stop the instance

Create AMI image of above instance

Configure Autoscaling launch configuration and autoscaling group

Configure Load balancer with Autoscaling

## Practical Steps

### 1) First launch Amazon linux Instance and configure webserver

### 2) Create AMI image

To create AMI from this instance

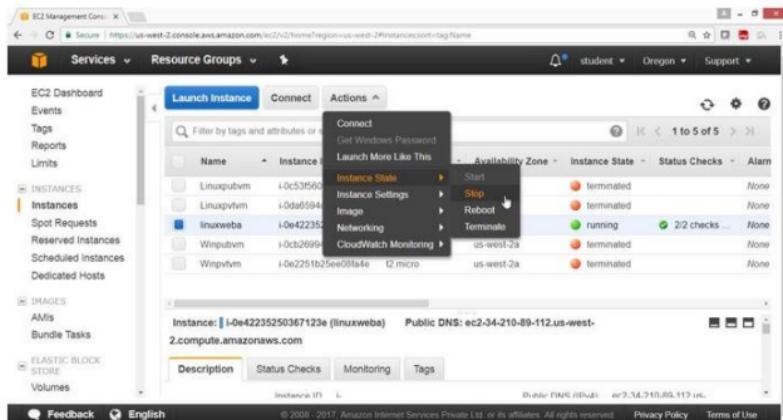
On “EC2 Dashboard” panel

Select the instance

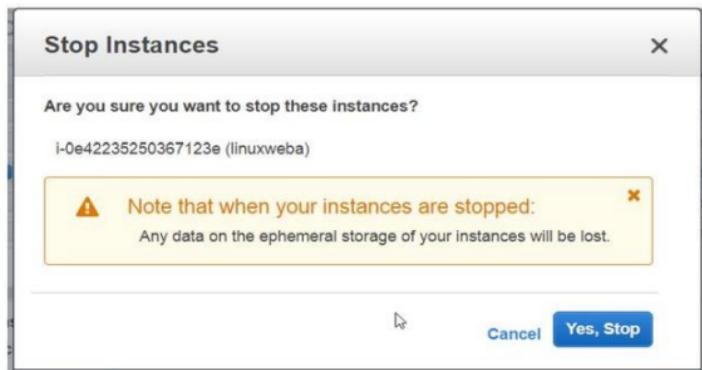
Click on **Action** button

Select Instance state

Click stop



Click on **Yes Stop** button

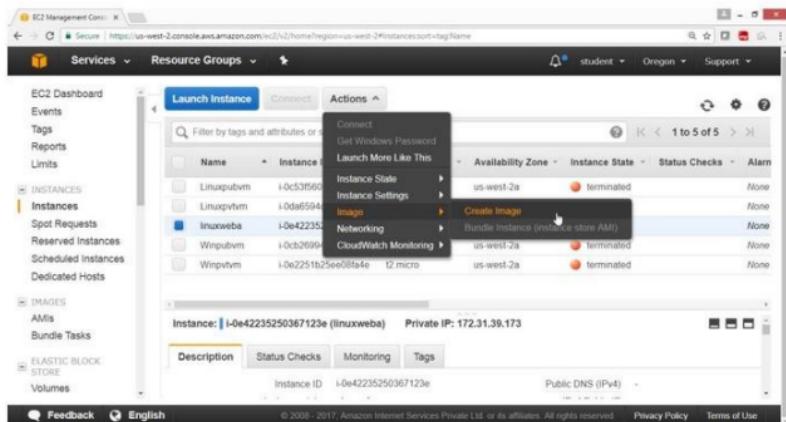


Select the stopped instance

Click on **Action** button

Select **image**

Click on **Create image** button

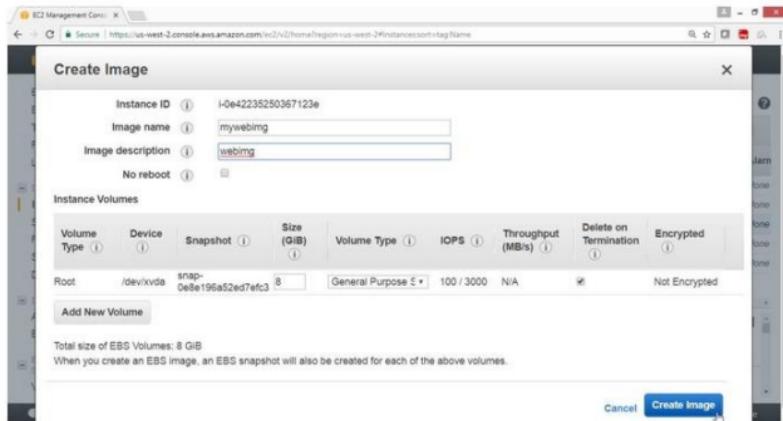


For Image name → mywebimg

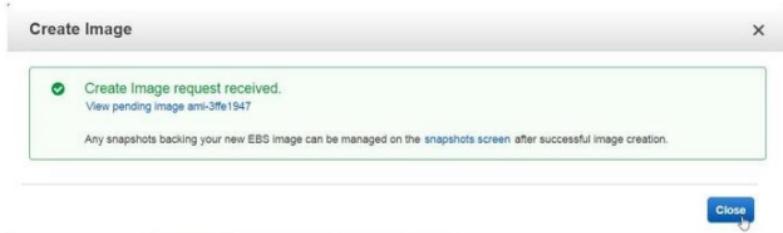
For Image description → webimg

Leave remaining default

Click on **Create image** button



Click on **Close** button



**Verify AMI is created**

On the **EC2 Dashboard** panel

Select **IMAGES**

Click on **AMIs**

Check the status is **available**

The screenshot shows the AWS EC2 Management Console interface. On the left, there's a sidebar with navigation links: EC2 Dashboard, Events, Tags, Reports, Limits, INSTANCES (with sub-links Instances, Spot Requests, Reserved Instances, Scheduled Instances, Dedicated Hosts), IMAGES (with sub-links AMIs, Bundle Tasks), and ELASTIC BLOCK STORE (with sub-links Volumes). The main content area has a title 'Launch Actions' and a search bar. Below it is a table with columns: Name, AMI Name, AMI ID, Source, Owner, Visibility, and Status. There is one row in the table:

Name	AMI Name	AMI ID	Source	Owner	Visibility	Status
	mywebimg	ami-3ffe1947	523251683217...	523251683217...	Private	available

Below the table, a modal window is open for the AMI 'mywebimg'. It has tabs for Details, Permissions, and Tags. The Details tab is selected. At the bottom right of the modal is a 'Edit' button.

### 3) To Configure Auto Scaling

On the EC2 Dashboard panel

Select "AUTO SCALING"

The screenshot shows the AWS EC2 Management Console interface. The left sidebar has a tree view with 'LOAD BALANCING' expanded, showing 'Load Balancers' and 'Target Groups'. The 'AUTO SCALING' node is selected and expanded, showing 'Launch Configuration' and 'Auto Scaling Groups'. Under 'SYSTEMS MANAGER SERVICES', 'Run Command' and 'Automation' are listed. Under 'SHARED RESOURCES', 'Managed Instances' and 'Activations' are listed. 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 Groups' section. To the right, 'Account Attributes' are listed: Supported Platforms (VPC), Default VPC (vpc-89c341ee), and Resource ID length management. Below this is an 'Additional Information' section with links to 'Getting Started Guide', 'Documentation', 'All EC2 Resources', 'Forums', 'Pricing', and 'Contact Us'. At the bottom, there's a 'Create Instance' section with a 'Launch Instance' button, and a footer with standard AWS links like Feedback, English, Privacy Policy, Terms of Use, and copyright information.

Click on “Launch Configuration”

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#LaunchConfigurations>. The left sidebar has 'Launch Configurations' selected under the 'AUTO SCALING' category. The main content area displays the 'Welcome to Auto Scaling' page, which includes a 'Create Auto Scaling group' button and sections on 'Benefits of Auto Scaling' with three icons: 'Reusable Instance Templates', 'Automated Provisioning', and 'Adjustable Capacity'. The right sidebar contains 'Additional Information' links such as 'Getting Started Guide', 'Documentation', and 'Contact Us'.

Click on “Create Auto Scaling Group” button

This screenshot is identical to the one above, showing the 'Welcome to Auto Scaling' page. However, the 'Create Auto Scaling group' button is highlighted with a yellow oval, indicating it is the target for the user's click action.

Click on “Create launch configuration” button

The screenshot shows the "Create Auto Scaling Group" wizard. Step 1: Create launch configuration. It features a diagram where a person icon and a gear icon merge into three stacked orange icons, each containing a gear. Below the diagram, the text reads: "First, define a template that your Auto Scaling group will use to launch instances. You can change this later." At the bottom right, there 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 AMI options under "Quick Start". The first item, "Amazon Linux AMI 2017.03.1 (HVM), SSD Volume Type - ami-6df1e514", is highlighted with a blue border and has a "Select" button to its right. Other items listed include "Red Hat Enterprise Linux 7.3 (HVM), SSD Volume Type - ami-b55a51cc" and "Ubuntu Server 16.04 LTS (HVM), SSD Volume Type - ami-0f3a2a2c". At the bottom, there are "Feedback", "English", and navigation links for the wizard steps.

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

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

My AMIs

AWS Marketplace

Community AMIs

Ownership

Owned by me

Shared with me

Search my AMIs: mywebimg - ami-3ffe1947

webring

Root device type: ebs Virtualization type: hvm Owner: 923251683217

Select

64-bit

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

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 GiB 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
<input checked="" type="checkbox"/> General purpose	<b>t2.micro</b> <small>Free tier eligible</small>	1	1	EBS only	-	Low to Moderate
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: Configure details

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**On Create launch Configuration page**

Name → mylaunchconf

Monitoring → Enable check box

Click on **Next : Add storage** button

The screenshot shows the 'Create Launch Configuration' page in the AWS Management Console. The 'Monitoring' section is highlighted, showing the 'Enable CloudWatch detailed monitoring' checkbox is checked. A tooltip message is displayed below the checkbox: 'Later, if you want to use a different launch configuration, you can create a new one and apply it to any Auto Scaling group. Existing launch configurations cannot be edited.' Navigation buttons at the bottom include 'Cancel', 'Previous', 'Skip to review' (which is highlighted in blue), and 'Next: Add Storage'.

By default linux takes 8 GB EBS volume

Leave all values as default

Click on “ Next: Configure Security Group” button

The screenshot shows the 'Create Launch Configuration' wizard at step 4, 'Add Storage'. It lists a single root volume configuration:

Volume Type	Device	Snapshot	Size (GiB)	Volume Type	IOPS	Throughput	Delete on Termination	Encrypted
Root	/dev/xvda	snap-090e9f2d57197bb89	8	General Purpose	100 / 3000	N/A	<input checked="" type="checkbox"/>	No

A 'Skip to review' button is visible at the bottom right of the form.

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](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 shows "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 "Review" buttons, with "Review" being the active button.

Check the summary

Click on “Create launch configuraton” button

The screenshot shows the 'Create Launch Configuration' step in the AWS EC2 wizard. A yellow warning box at the top right of the main content area states: "Improve security of Instances launched using your launch configuration, mylaunchconf. Your security group, AutoScaling-Security-Group-1, is open to the world." It includes a note that instances may be accessible from any IP address and suggests updating security group rules or opening additional ports. Below this, the 'AMI Details' section shows 'mywebimg - ami-3ffe1947' selected. The 'Instance Type' section shows 't2.micro'. At the bottom right of the main form, there are 'Cancel', 'Previous', and 'Create launch configuration' buttons. The 'Create launch configuration' button is highlighted with a blue border.

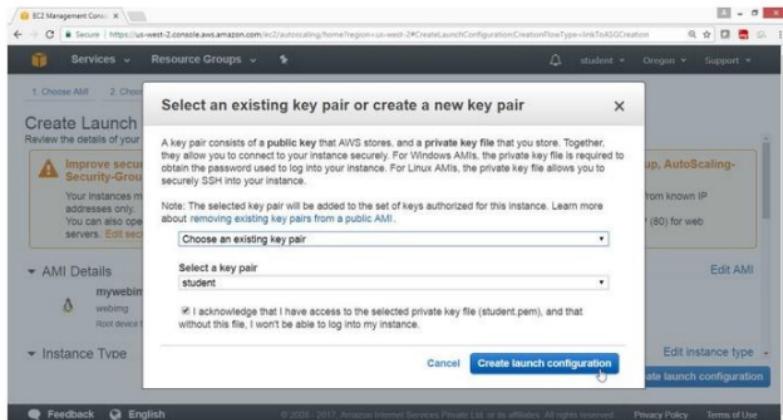
On "Select an existing key pair or create a new key pair" page

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

The screenshot shows the 'Create Auto Scaling Group' wizard on the AWS Management Console. The current step is 'Configure Auto Scaling group details'. The 'Launch Configuration' is set to 'mylaunchconf' and the 'Group name' is 'myautoscalegrp'. Under 'Group size', it says 'Start with 1 instances'. In the 'Network' section, the 'Subnet' dropdown is open, showing three options: 'subnet-19400141(172.31.0.0/20) | Default in us-west-2a', 'subnet-13f60e5a(172.31.32.0/20) | Default in us-west-2a', and 'subnet-5b0e38ec(172.31.16.0/20) | Default in us-west-2b'. A tooltip for the first subnet says 'Create new subnet a public IP address.' The 'Cancel' button is visible at the bottom left, and the 'Next: Configure scaling policies' button is at the bottom right.

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 vpc-89c341ee (172.31.0.0/16) | default-vpc-oregon (d... [Create new VPC](#)

Subnet

- subnet-19d0f141(172.31.0.0/20) | Default in us-west-2c [x](#)
- subnet-13960e5a(172.31.32.0/20) | Default in us-west-2a [x](#)
- subnet-8t9e38ec(172.31.16.0/20) | Default in us-west-2b [x](#)

Create new subnet

Cancel [Next: Configure scaling policies](#)

On “Create Auto Scaling Group” page

Select “Use scaling policies to adjust the capacity of this group”

Scale between [ ] and [ ] instances.

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

Scale Group Size

Name: Scale Group Size

Metric type: Average CPU Utilization

Target value: 300

Instances need: 300 seconds to warm up after scaling

Cancel Previous Review Next: Configure Notifications

Drag Down

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

Scale the Auto Scaling group using step or simple scaling policies ⓘ

Cancel Previous Review Next: Configure Notifications

Select Increase Group Size

Click on "Add new alarm"

Name: Increase Group Size  
Execute policy when: No alarm selected  Add new alarm

Take the action: Add 0 instances

Instances need: 300 seconds to warm up after each step

Create a simple scaling policy (i)

Name: Decrease Group Size

Cancel Previous Review Next: Configure Notifications

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: >= 80 Percent

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

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

CPU Utilization Percent

Time Period	Value
04.00	89
06.00	89
08.00	89

Cancel Create Alarm

On "Create Alarm" box, give values as

Send a notification to → Cpuutilizationabc

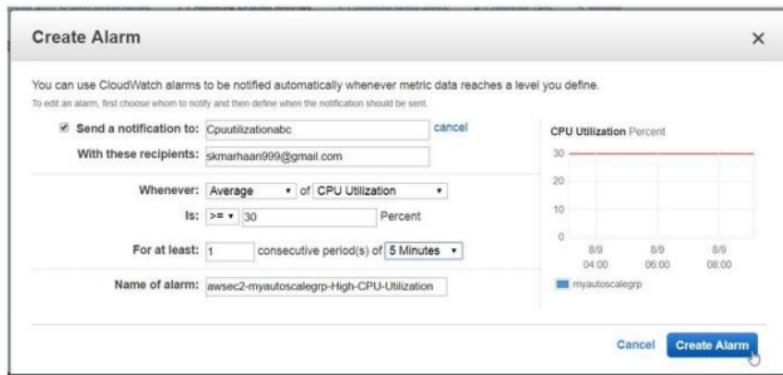
With this recipients → [skmarhaan999@gmail.com](mailto:skmarhaan999@gmail.com)

Whenever Average of CPU Utilization

is  $\geq$  → 30

Remaining value leave default

Click on "Create Alarm" button



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: awsec2-myscalegrp-high-CPU-Utilization Edit Remove  
breaches the alarm threshold: CPUUtilization >= 30 for 300 seconds  
for the metric dimensions AutoScalingGroupName = myscalegrp

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

Add step ⓘ

Instances need: **300** 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:  $\leq$  Percent

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

Name of alarm: awsec2-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:  $\leq$  20 Percent

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

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

CPU Utilization Percent

Cancel Create Alarm

Check the summary

Click on "Next: Configure Notificaion"

Name: Decrease Group Size

Execute policy when: awssec2-myautoscalegrp-High-CPUUtilization Edit Remove  
breaches the alarm threshold: CPUUtilization <= 20 for 300 seconds  
for the metric dimensions AutoScalingGroupName = myautoscalegrp

Take the action: Remove 1 instances when 20 >= CPUUtilization > -infinity  
Add step ⓘ

Create a simple scaling policy ⓘ

Cancel Previous Review Next: Configure Notifications

Click on "Add notification" button

Add notification

Cancel Previous Review Next: Configure Tags

Check the following output

Click on "Next: Configure tags"

The screenshot shows the AWS Management Console interface for creating an Auto Scaling group. The URL is https://us-west-2.console.aws.amazon.com/ec2/autoscaling/home?region=us-west-2#CreateAutoScalingGroup source=1&launchConfigurationName=myLaunchConfig. The top navigation bar includes Services, Resource Groups, student, Oregon, and Support.

The main content area is titled "Create Auto Scaling Group" and shows step 3: "Configure Notifications". It asks to "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 says: "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."

Under "Send a notification to:", the email address "CpuUtilizationabc (skmarhaan999@gmail.com)" is entered, with a "create topic" button next to it. A "X" icon is also present. The "Whenever instances:" section contains four checked checkboxes: "launch", "terminate", "fail to launch", and "fail to terminate".

A "Add notification" button is located below the notification settings. At the bottom of the page, there are buttons for "Cancel", "Previous", "Review", and "Next: Configure Tags". The "Review" button is highlighted in blue. The footer includes links for Feedback, English, and various legal notices: © 2006 - 2017, Amazon Internet Services Private Ltd. or its affiliates. All rights reserved., Privacy Policy, and Terms of Use.

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
Name	WebAutoscale

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	myautoscalegrp
Group size	1
Minimum Group Size	1
Maximum Group Size	3
Subnet(s)	subnet-19d0f141, subnet-1380e5a, subnet-8b9e38ec
Health Check Grace Period	300
Detailed Monitoring	No
Instance Protection	None

Scaling Policies

Edit scaling policies

Create Auto Scaling group

Cancel Previous

Drag down

Click on “Create Auto Scaling group” button

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/CreateAutoScalingGroupSource=1&launchConfigurationName=myLaunchConfig](https://us-west-2.console.aws.amazon.com/ec2/autoscaling/home?region=us-west-2>CreateAutoScalingGroupSource=1&launchConfigurationName=myLaunchConfig). The page is titled "Create Auto Scaling Group". Step 5, "Review", is selected. The configuration includes:

- Scaling Policies:** Increase Group Size (With alarm = awsec2-myautoscalegrp-High-CPU.Utilization, Add 1 instances and 300 seconds for instances to warm up) and Decrease Group Size (With alarm = awsec2-myautoscalegrp-High-CPU.Utilization, Remove 1 instances).
- Notifications:** CpuUtilizationabc (skmarhaan99@gmail.com) with events launch, terminate, fail to launch, fail to terminate.
- Tags:** Name: WebAutoscale, Tag new instances.

At the bottom right, the "Create Auto Scaling group" button is highlighted with a blue border.

Successfully created

Click on Close button

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>CreateAutoScalingGroupSource=1&launchConfigurationName=myLaunchConfig>. The page is titled "Auto Scaling group creation status". It displays a message: "Success! Successfully created Auto Scaling group" with a link to "View creation log". Below this, there are sections for "View" (View your Auto Scaling groups, View your launch configurations) and "Helpful resources" (Here are some helpful resources to get you started). At the bottom right, a "Close" button is highlighted with a blue border.

## Verification

Now go to EC2 Dash Board

Click on Instances

Observer that WebAutoscale instance got launched

The screenshot shows the AWS EC2 Management Console interface. On the left, there's a sidebar with navigation links for EC2 Dashboard, Events, Tags, Reports, Limits, Instances, Images, AMIs, and Elastic Block Store. The 'Instances' link is currently selected. The main content 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 is a table with columns: Name, Instance ID, Instance Type, Availability Zone, Instance State, Status Checks, and Alarm. There are two rows: one for 'Innoweba' (Instance ID: i-0e42235250367123e, Type: t2.micro, Zone: us-west-2a, State: stopped) and one for 'WebAutoscale' (Instance ID: i-0a7aaafe87044125e, Type: t2.micro, Zone: us-west-2c, State: running). The 'WebAutoscale' row is highlighted with a blue background. Below the table, a message says 'Select an Instance above'.

Now login to Web Autoscale instance

This screenshot is similar to the previous one, showing the EC2 Management Console. The 'Instances' link in the sidebar is selected. In the main content area, the 'WebAutoscale' instance is selected and highlighted with a blue border. At the top of the table row for 'WebAutoscale', it says 'Instance: i-0a7aaafe87044125e (WebAutoscale)' and 'Public DNS: ec2-54-244-159-247.us-west-2.compute.amazonaws.com'. Below the table, there are tabs for 'Description', 'Status Checks', 'Monitoring', and 'Tags'. Under the 'Description' tab, it shows 'Instance ID: i-0a7aaafe87044125e' and 'Public DNS (IPv4): ec2-54-244-159-247.us-west-2.compute.amazonaws.com'.

Run the following command to increase the load

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

## Verification

After 15 minutes 3 instance got loaded automatically

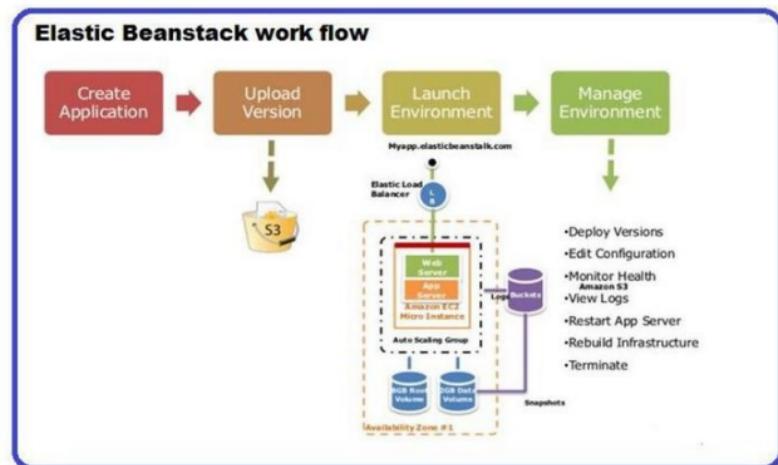
Name	Instance ID	Instance Type	Availability Zone	Instance State	Status Checks	Alarm
linuxweba	i-0e42235250367123e	t2.micro	us-west-2a	stopped	None	None
WebAutoscale	i-045e526a506cda75	t2.micro	us-west-2a	running	2/2 checks	None
WebAutoscale	i-097aaaef7044125e	t2.micro	us-west-2c	running	2/2 checks	None
WebAutoscale	i-0c07b9b3d034adc7c	t2.micro	us-west-2b	running	2/2 checks	None

## 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 with the URL <https://us-west-2.console.aws.amazon.com/console/home?region=us-west-2>. The Services menu is open, and the Compute section is selected. Under Compute, the following services are listed:

- EC2**: Virtual Servers in the Cloud
- EC2 Container Service**: Run and Manage Docker Containers
- Lightsail**: Launch and Manage Virtual Private Servers
- Elastic Beanstalk**: Run and Manage Web Apps
- Lambda**: Run Code without Thinking about Servers
- Batch**: Run Batch Jobs at Any Scale

Below the Compute section, other service categories are listed:

- Developer Tools**:
  - CodeStar**: Quickly develop, build, and deploy
  - CodeCommit**: Store Code in Private Git Repositories
  - CodeBuild**: Build and Test Code
  - CodeDeploy**: Automate Code Deployments
  - CodePipeline**: Release Software using Continuous Delivery
  - X-Ray**: Analyze and Debug Your Applications
- Internet of Things**:
  - AWS IoT**: Connect Devices to the Cloud
  - AWS Greengrass**: Deploy and run code on your devices
- Contact Center**:
  - Amazon Connect**: Amazon Connect is a contact center that enables engagement at any scale.
- Game Development**:
  - Amazon GameLift**: Deploy and Scale Session-based Multiplayer Games
- Mobile Services**:
  - Mobile Hub**: Build, Test, and Monitor Mobile Apps
  - Cognito**: User Identity and App Data Synchronization
  - Device Farm**: Test Android, iOS, and Web Apps on Real Devices in the Cloud
  - Mobile Analytics**: Collect, View and Export App Analytics
- Storage**:
  - S3**: Scalable Storage in the Cloud
  - EFS**: Managed File Storage for EC2
  - Glacier**: Archive Storage in the Cloud
  - Storage Gateway**: Hybrid Storage Integration
- Management Tools**:
  - CloudWatch**: Monitor Resources and Applications
  - CloudFormation**: Create and Manage Resources with Templates
  - CloudTrail**: Log User Activity and API Usage
  - Config**: Automate Resource Inventory and Changes

On the right side of the page, there is a sidebar titled "Resource Groups". It includes a "Create a Group" button and a "Tag Editor" button. Below that, under "Additional Resources", there are links to "Getting Started" (with a note about documentation), "AWS Console Mobile App" (with a note about the mobile app available on Appstore, Google Play, or iTunes), and "AWS Marketplace" (with a note about finding and buying software). At the bottom of the sidebar, there is a link to "AWS News & Announcements".

"Welcome to Amazon Elastic Beanstalk" page opens

Click on "Get started" button

The screenshot shows the AWS Elastic Beanstalk Management console. At the top, there's a navigation bar with tabs for Services, Resource Groups, and a search bar. A user profile is shown on the right. Below the navigation is a sub-header with the Elastic Beanstalk logo and a 'Create New Application' button.

The main content area is titled 'Welcome to AWS Elastic Beanstalk'. It features a large callout box with the text: '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.' Below this, another section says: '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.'

Further down, it says: 'By launching the sample application, you allow AWS Elastic Beanstalk to administer AWS resources and necessary permissions on your behalf. Learn more.'

A prominent blue 'Get started' button is located at the bottom of the main content area. At the very bottom of the page, a footer bar contains the text '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 'student' (dropdown). On the right, there are 'Oregon' and 'Support' links. Below the navigation is a 'Create New Application' button. The main section has a title 'Create a web app' with a globe icon. A sub-instruction says: 'Create a new application and environment with a sample application or your own code. By creating an environment, you allow AWS Elastic Beanstalk to manage AWS resources and permissions on your behalf.' It includes a 'Learn more' link. There are two main sections: 'Application information' and 'Environment information'. In 'Application information', the 'Application name' field is filled with 'Tomcatapp'. A note below it says 'Up to 100 Unicode characters, not including forward slash (/)'. In 'Environment information', the 'Environment name' field is filled with 'tomcatenv'. Below it, the 'Domain' field contains 'Leave blank for autogenerated value' and 'us-west-2.elasticbeanstalk.com'. There's also a small 'i' icon next to the environment name field.

Elastic Beanstalk Manager

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

Services Resource Groups

student Oregon Support

Create New Application

Elastic Beanstalk

## Create a web app

Create a new application and environment with a sample application or your own code. By creating an environment, you allow AWS Elastic Beanstalk to manage AWS resources and permissions on your behalf.

Learn more

### Application information

Application name

Up to 100 Unicode characters, not including forward slash (/)

### Environment information

Choose the name, subdomain, and description for your environment. These cannot be changed later.

Environment name

Domain  us-west-2.elasticbeanstalk.com

In Platform box select Tomcat

Drag down

The screenshot shows the 'Base configuration' section of the AWS Elastic Beanstalk console. The 'Platform' dropdown menu is open, displaying various options like 'Choose a platform', 'Preconfigured', and 'Tomcat'. The 'Tomcat' option is highlighted with a blue selection bar. Below the dropdown, there's a note about moving to a new design and links for feedback and terms of use.

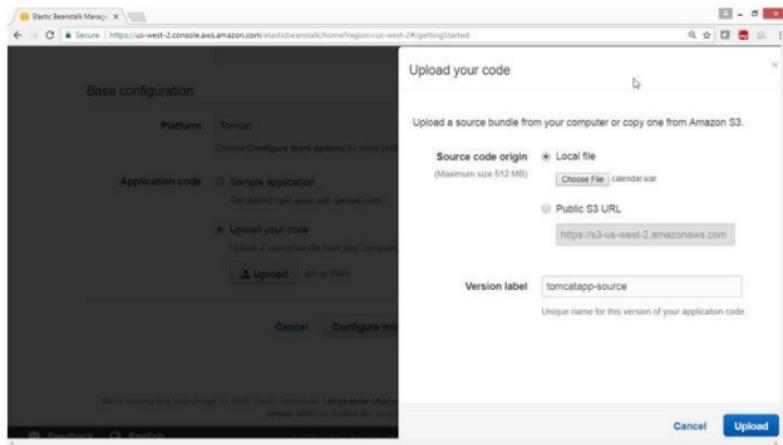
Select Upload your code

The screenshot shows the 'Base configuration' section again. In the 'Application code' section, the 'Upload your code' radio button is selected. A tooltip indicates that users can upload a source bundle or copy one from Amazon S3. The 'Upload' button is visible, along with 'Cancel', 'Configure more options', and 'Create application' buttons. A note at the bottom is about the transition to a new design.

Upload calendar.war file

Click on **Upload** button

Leave remaining fields as defaults



Verify that file is uploaded, beside **Upload** button

Click “**Create Application**” button

The screenshot shows the 'Base configuration' step of the 'Create Application' wizard. It includes fields for 'Platform' (set to 'Tomcat'), 'Application code' (radio buttons for 'Sample application' and 'Upload your code' (selected)), and a 'Upload' button with the file path 'tomcatapp-source'. At the bottom are 'Cancel', 'Configure more options', and a highlighted 'Create application' button.

### Verification :

Tomcat application at background is getting created,

Progress on screen are displayed

The screenshot shows the 'Create Environment' progress bar. It displays the message 'Creating tomatcatenv' and 'This will take a few minutes.' Below it, log entries show '4:28pm Using elasticbeanstalk-us-west-2-523251663217 as Amazon S3 storage bucket for environment data.' and '4:28pm createEnvironment is starting.' To the right, there are 'Learn More' and 'Featured' sections, and at the bottom, standard navigation links for 'Feedback', 'English', 'Privacy Policy', and 'Terms of Use'.

## Verify

Creating tomcatenv  
This will take a few minutes..

4:29pm Waiting for EC2 instances to launch. This may take a few minutes.  
4:29pm 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-ygqrzkbwvc-stack-AWSSEBSecurityGroup-1NRF9H19B86AF  
4:28pm Using elasticbeanstalk-us-west-2-523251683217 as Amazon S3 storage bucket for environment data.  
4:28pm createEnvironment is starting.

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

Note : This will take few minutes to start.

Wait until Tomcat Dashboard is displayed on the screen

Click on the URL link

All Applications > Tomcatapp > tomcatenv (Environment ID: e-ygqrzkbwvc, URL: tomcatenv.e9285gpk) Actions

K.us-west-2.elasticbeanstalk.com

Dashboard Overview Refresh

Configuration

Logs Health Running Version

Health: Ok Causes Running Version: tomcatapp-source

Upload and Deploy

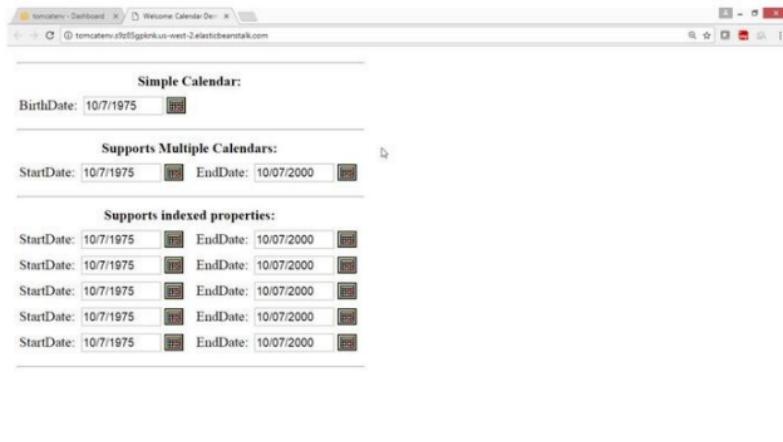
Logs: 8 messages Configuration: 64bit Amazon Linux 2017.03 v2.6.2 running Tomcat 8 Java 8

## Verification

Open any Browser

Click on URL link

Website is open

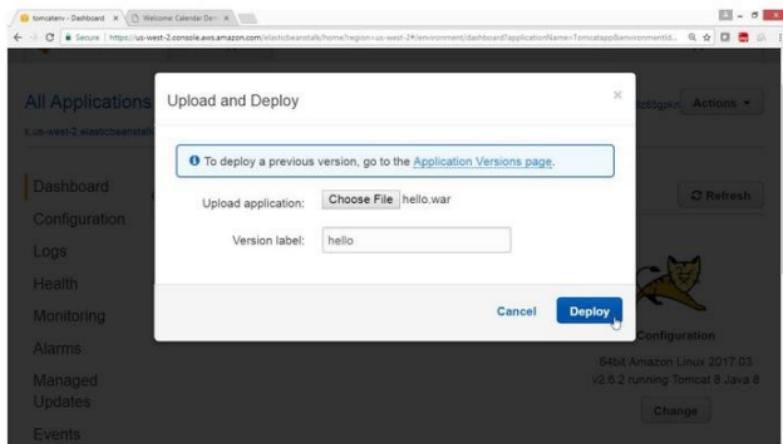


To Deploy another war file for eg hello.war

Go to Upload application

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

Click **Deploy** button



Click on URL

The screenshot shows the AWS Elastic Beanstalk console for the 'tomcatenv' application. The URL in the browser is <https://us-west-2.console.aws.amazon.com/elasticbeanstalk/home?region=us-west-2&environmentName=Tomcatapp&environmentId=e-ygqrzkbwrc>. The page title is 'tomcatenv - Dashboard'. The main content area is titled 'All Applications > Tomcatapp > tomcatenv' with an environment ID of 'e-ygqrzkbwrc' and URL 'tomcatenv.s9285gpk.us-west-2.elasticbeanstalk.com'. A 'Actions' dropdown menu is visible. On the left, a sidebar lists navigation options: Dashboard (selected), Configuration, Logs, Health, Monitoring, Alarms, Managed Updates, and Events. The 'Events' section shows one event: 'tomcatenv.s9285gpk.us-west-2.elasticbeanstalk.com'. The central 'Overview' section includes a large green circle with a white checkmark icon, labeled 'Health' with 'Ok' status and a 'Causes' button. It also shows the 'Running Version' as 'hello' with a 'Upload and Deploy' button. To the right is a cartoon cat icon and a 'Configuration' section showing '64bit Amazon Linux 2017.03 v2.6.2 running Tomcat 8 Java 8' with a 'Change' button.

Verify the website

The screenshot shows a web browser window with the URL <http://tomcatenv.s9285gpk.us-west-2.elasticbeanstalk.com>. The page title is 'Hello Index'. The content of the page is 'Hello Index'. Below the content, there is a note: '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 main area displays the 'All Applications' list, where 'Tomcatapp' is listed under the 'Environment tier: Web Server' and 'Platform: 64bit Amazon Linux 2017.03 v2.6.2 running Tomcat 8 Java 8'. A context menu is open over the 'Tomcatapp' row, with the 'Actions' dropdown expanded. The 'Delete application' option is highlighted with a blue background and white text.

The screenshot shows the AWS Elastic Beanstalk console with the same URL as the previous screenshot. A modal dialog box titled 'Delete Application' is displayed, asking 'Are you sure you want to delete the application: Tomcatapp?'. The 'Delete' button in the dialog is highlighted with a red background and white text. The background of the main application list is dimmed.

Application will now get terminated

The screenshot shows the AWS Elastic Beanstalk console. In the top navigation bar, 'Elastic Beanstalk App' is selected. The main content area is titled 'All Applications' and shows a single application named 'Tomcatapp'. A detailed view of this application is shown in a box, indicating it is 'terminated'. The box contains the following information:

- tomcatenv (Terminated)
- 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.s9z85gpknk.us-west-2.elasticbean...

A 'Actions' button is visible to the right of the application details.

## Verification

After termination following screen will come

The screenshot shows the AWS Elastic Beanstalk welcome page. The top navigation bar is identical to the previous screenshot. The main content area features a large heading 'Welcome to AWS Elastic Beanstalk' and a sub-section titled '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.' Below this, there is another section with the heading '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.' At the bottom, there is a link 'To deploy a sample application, click Get started, choose a name, select a platform and'. On the left side of the welcome page, there is a sidebar with links like 'Dashboard', 'Configuration', 'Logs', 'Monitoring', 'Metrics', and 'Events', and a 'Monitoring' section with two line graphs showing metrics over time.

### 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

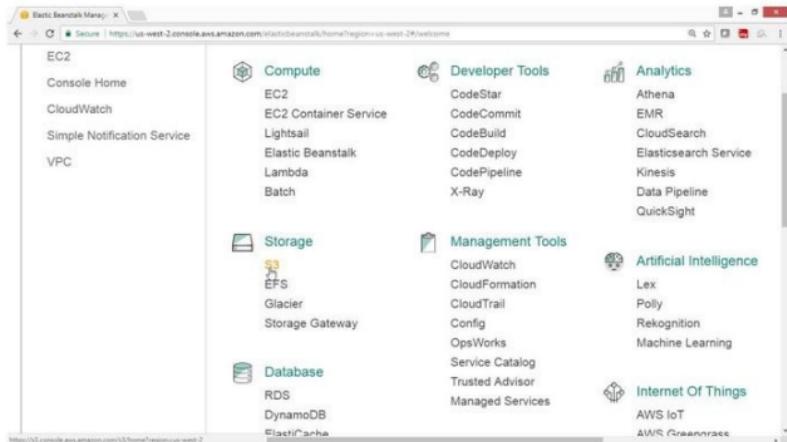
From console select "Storage"

Select S3

Click on "Switch to old console"

The screenshot shows the AWS S3 Management Console interface. At the top, there's a header bar with the AWS logo, user information (student), and links for Global and Support. Below the header, a navigation bar has 'Services' and 'Resource Groups' dropdowns. A banner at the top says 'Visualize S3 data using Amazon QuickSight Get started today.' and 'Documentation'. The main area is titled 'Amazon S3' and contains a search bar with placeholder 'Search for buckets'. Below the search bar are three buttons: '+ Create bucket', 'Delete bucket', and 'Empty bucket'. On the right side of the search bar, there are two buttons: 'Switch to the old console' (which has a tooltip 'To get back to the new console, restart your browser') and 'Discover the new console'. Below these buttons is a section for '14 Buckets' and '2 Regions'. A table lists 14 buckets:

Bucket name	Region	Date created
alt3june	US West (Oregon)	Jul 3, 2017 8:17:52 PM
anunidajava	US West (Oregon)	Jun 22, 2017 10:17:16 AM
cf-templates-srvitem6ncq-us-west-2	US West (Oregon)	Jul 2, 2017 5:50:36 AM
elasticbeanstalk-ap-south-1-523551683217	Asia Pacific (Mumbai)	Jun 27, 2017 8:48:24 AM
elasticbeanstalk-us-west-2-523251683217	US West (Oregon)	Jul 12, 2017 9:30:22 PM
hydamerpetas072107	US West (Oregon)	Jul 7, 2017 8:43:10 PM
hydcloudfrontamp	US West (Oregon)	Jun 16, 2017 8:22:18 PM
mastanav07jukekey	US West (Oregon)	Jul 1, 2017 9:26:19 PM
mastanavcloudfront	US West (Oregon)	Jun 16, 2017 2:32:48 PM
oracleutd	US West (Oregon)	Jul 21, 2017 9:21:53 AM



Select elastic Beanstalk Bucket, Click Properties

### Select Permissions

The screenshot shows the AWS S3 Management Console. In the top navigation bar, it says "Services" and "Resource Groups". Below that, there's a "Create Bucket" button and an "Actions" dropdown. The main area shows a list of buckets under "All Buckets (14)":

- alt3ome
- awsimageoptimizer
- ctemplates-smashinhdj-us-west-2
- elasticbeanstalk-ap-south-1-623251663217
- elasticbeanstalk-us-west-2-523251663217
- hydrameteow072107
- hydrameteorology
- mastanavif17neeky
- mastancloudfront
- oraclehyd
- ravibacca
- orkanthyd
- stationwhhyd.com
- www.mastakifers.com

The "Properties" tab is highlighted in the top right. At the bottom, there are "Feedback", "English", and copyright information from 2008-2017. The URL in the browser is https://console.aws.amazon.com/s3/home?region=us-west-2&switchingBucketToCloudConsole=true.

Click "Edit bucket policy"

The screenshot shows the AWS S3 Management Console. On the left, a sidebar lists 'All Buckets (14)'. On the right, the main panel displays the details for the bucket 'elasticbeanstalk-us-west-2-523251683217'. The 'Permissions' section shows a single grantee 'skmval999' with permissions 'List', 'Upload/Delete', and 'View Permissions'. Below this, there are buttons for 'Add more permissions', 'Edit bucket policy' (which is currently selected), and 'Add CORS Configuration'. At the bottom, there are 'Save' and 'Cancel' buttons.

In Bucket Policy Editor wizard,

Click Delete to remove policy, click OK

This screenshot shows the 'Bucket Policy Editor' dialog box over the main S3 console. The dialog box contains a JSON policy document with one statement granting full access to the bucket to the user 'skmval999'. The 'Delete' button at the bottom right of the dialog box is highlighted. The rest of the interface is identical to the previous screenshot, showing the list of buckets on the left and the bucket details on the right.

## Click on Save button

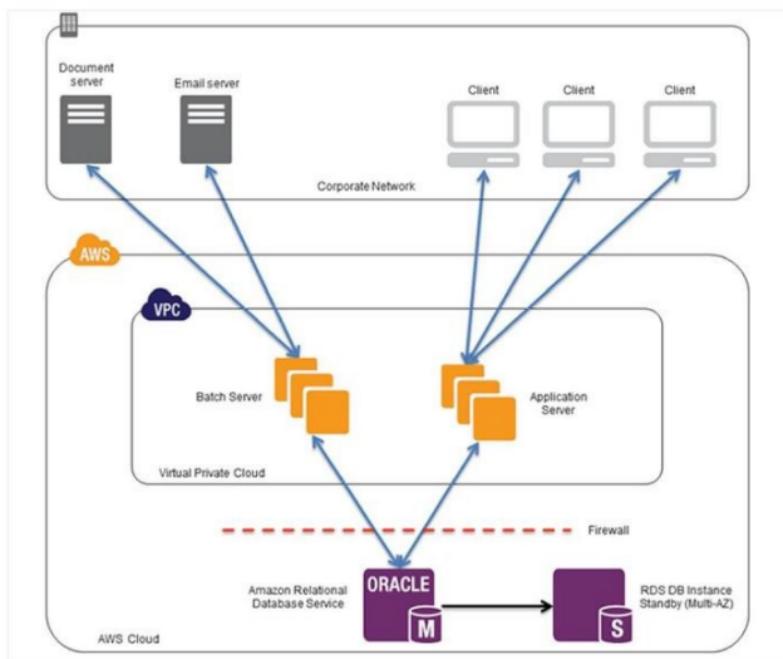
The screenshot shows the AWS S3 Management Console interface. On the left, there's a sidebar with 'Services' and 'Resource Groups' dropdowns, and a 'Create Bucket' button. Below it is a list of 'All Buckets (14)' with names like 'alt3june', 'arunindujais', 'ctemplates.ssefomhcdp.us-west-2', 'elasticbeanstalk-ap-south-1-523251683217', 'elasticbeanstalk-us-west-2-523251683217', 'hydamerpeton72107', 'hydcloudhrmg', 'mastanav0713meky', 'mastancloud99pt', 'oralehyd', 'renibavaa', 'srikanthyd', 'staticweb.hyd.com', and 'www.masukflairs.com'. The main content area is titled 'Bucket: elasticbeanstalk-us-west-2-523251683217'. It displays bucket details: Region: Oregon, Creation Date: Wed Jul 12 21:39:22 GMT+03 2017, Owner: skmval999. Under the 'Permissions' section, it says 'You can control access to the bucket and its contents using access policies. Learn more.' There's a 'Grantee' field with 'skmval999' and checkboxes for 'List', 'Upload/Delete', and 'View Permissions'. Below that are buttons for 'Add more permissions', 'Add bucket policy', and 'Add CORS Configuration'. At the bottom of the permissions section are buttons for 'Save' (highlighted with a mouse cursor) and 'Cancel'.

## 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

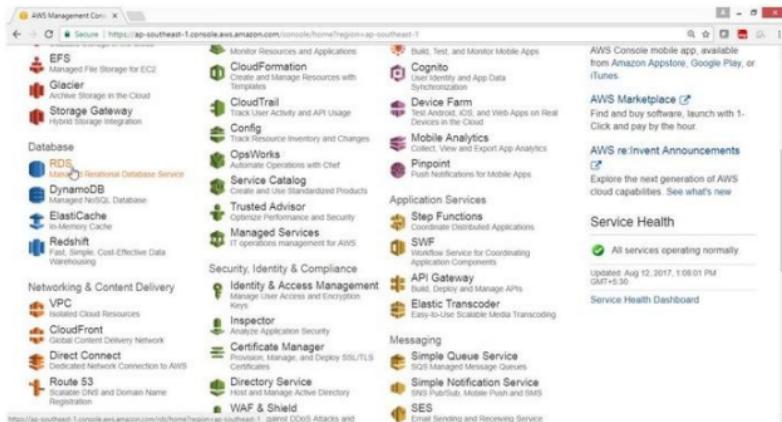
## Practical Steps

### To create Amazon Relational Database Service

From the AWS console

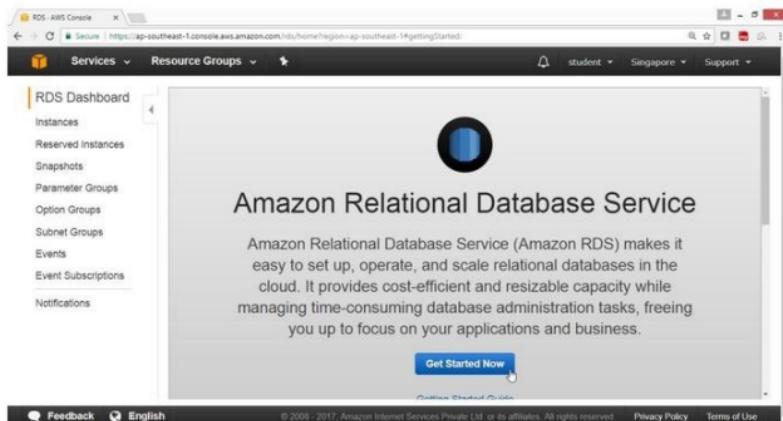
Select Database

Click on RDS service



In “RDS Dashboard”, wizard

Click “Get Started Now”, button



In Select Engine, wizard

Click on MySQL

Click on Select button

The screenshot shows the AWS RDS console with the URL <https://ap-southeast-1.console.aws.amazon.com/rds/home?region=ap-southeast-1#launch-databaseinstancegettingstarted>. The page title is "Select Engine". It displays a list of database engines: MySQL, MariaDB, PostgreSQL, Oracle, and SQL Server. The MySQL entry is highlighted with a blue border and has a "Select" button to its right. A note above the engines says, "To get started, choose a DB Engine below and click Select." Below the engines, there is a list of MySQL features: supports database size up to 6 TB, instances offer up to 32 vCPUs and 244 GB Memory, supports automated backup and point-in-time recovery, and supports cross-region read replicas. A note at the bottom left says "Free tier eligible". The top navigation bar includes "Services", "Resource Groups", "student", "Singapore", "Support", "Feedback", "English", and links for "Privacy Policy" and "Terms of Use".

In Production wizard

select Dev/Test, Choose MySQL

The screenshot shows the AWS RDS console with the URL <https://ap-southeast-1.console.aws.amazon.com/rds/home?region=ap-southeast-1#launch-databaseinstancegettingstarted>. The page title is "In Production". On the left, a sidebar lists steps: Step 1: Select Engine, Step 2: Production? (which is selected), Step 3: Specify DB Details, and Step 4: Configure Advanced Settings. The main content area is titled "Do you plan to use this database for production purposes?". It shows two options: "Production" and "Dev/Test". Under "Production", there is a radio button next to "MySQL" and a note: "Use Multi-AZ Deployment and Provisioned IOPS Storage as defaults for high availability and fast, consistent performance.". Under "Dev/Test", there is a radio button next to "MySQL" and a note: "This instance is intended for use outside of production or under the RDS Free Usage Tier.". At the bottom, it says "Billing is based on RDS pricing." and has "Cancel", "Previous", and "Next Step" buttons. The top navigation bar includes "Services", "Resource Groups", "student", "Singapore", "Support", "Feedback", "English", and links for "Privacy Policy" and "Terms of Use".

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 wizard. On the left, a sidebar lists steps: Step 1: Select Engine, Step 2: Production?, Step 3: Specify DB Details (which is active), and Step 4: Configure Advanced Settings. Below the sidebar, there's a note about the AWS Simple Monthly Calculator. The main panel is titled 'Specify DB Details' and has a 'Free Tier' section describing the tier's benefits. It includes a checkbox for 'Only show options that are eligible for RDS Free Tier'. The 'Instance Specifications' section contains fields for DB Engine (mysql), License Model (general-public-license), DB Engine Version (MySQL 5.6.35), and DB Instance Class (with a dropdown menu showing 'Select One'). A callout box points to the DB Engine Version field with the text 'Version number of the database engine to be used for this instance.' At the bottom, there are links for Feedback, English, and footer links for Privacy Policy and Terms of Use.

KDS - 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, IOPS (if applicable), or data transfer.

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

	DB Instance	Storage	Total
	18.98 USD	0.69 USD	19.67 USD

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

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

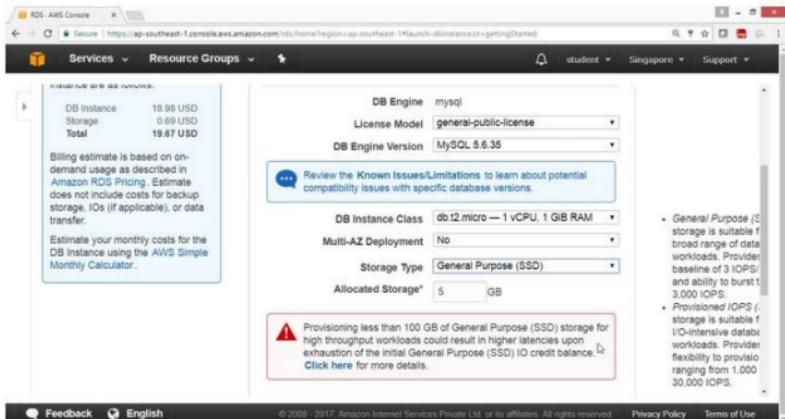
DB Instance Class db.t2.micro — 1 vCPU, 1 GiB RAM  
Multi-AZ Deployment No  
Storage Type General Purpose (SSD)  
Allocated Storage\* 5 GB

**⚠ 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 broad range of data workloads. Provides up to 3 IOPS and ability to burst to 3,000 IOPS.
- Provisioned (IOPS) 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

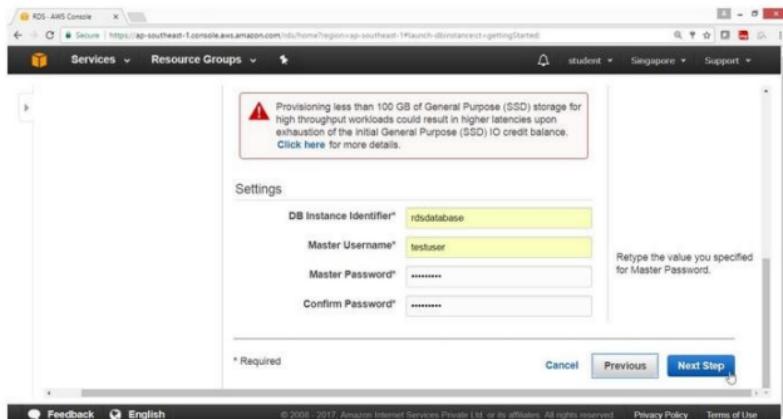
For DB Instance Identifier → rdsdatabase

For Master Username → testuser

For Master Password\* → \*\*\*\*\*

For Confirm Password\* → \*\*\*\*\*

Click on **Next** button.

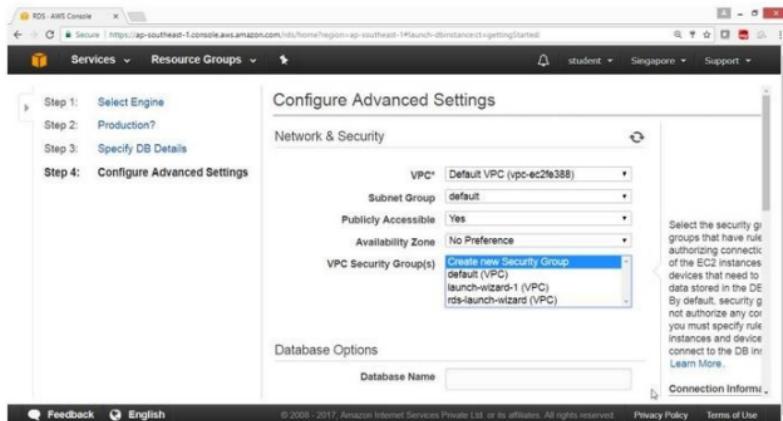


In Configure Advanced Settings, wizard

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

The screenshot shows the 'Database Options' configuration page in the AWS RDS console. The 'Database Name' field is set to 'salesdba'. Other fields include 'Database Port' (3306), 'DB Parameter Group' (default.mysql5.6), 'Option Group' (default.mysql-5-6), and 'Enable IAM DB Authentication' (No Preference). A note on the right side of the form states: 'Specify a string of up to 64 alpha-numeric characters to define the name of the database that Amazon RDS creates when it creates the instance, as in /mydb. Amazon RDS does not specify a database name when it creates the DB instance.' The bottom of the page includes standard AWS navigation links like Feedback, English, Privacy Policy, and Terms of Use.

## Provider Following Values

### Under Backup

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

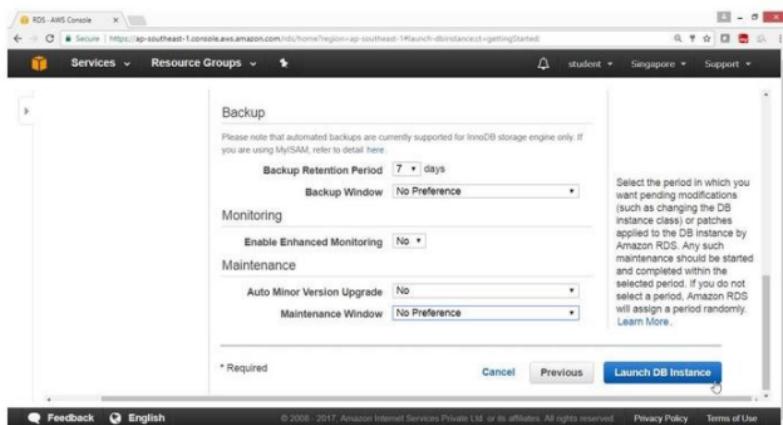
### Under Monitoring

- 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 interface. On the left, a vertical navigation bar lists steps: Step 1: Select Engine, Step 2: Production?, Step 3: Specify DB Details, and Step 4: Configure Advanced Settings. To the right, a large green box contains the message "Your DB Instance is being created." Below it, a note says "Note: Your instance may take a few minutes to launch." Further down, a section titled "Connecting to your DB Instance" includes a link "Learn about connecting to your DB instance". At the bottom right of this section is a blue button labeled "View Your DB Instances".

Under status column

Verify creating

The screenshot shows the AWS RDS Dashboard. On the left, a sidebar menu lists options: Instances, Reserved Instances, Snapshots, Parameter Groups, Option Groups, Subnet Groups, Events, Event Subscriptions, and Notifications. The main area displays a table of DB instances. The table has columns: Engine, DB Instance, Status, CPU, Current Activity, Maintenance, Class, and VPC. One row is visible, showing "MySQL" as the Engine, "rdsdatabase" as the DB Instance, "creating" as the Status, and "None" as the Current Activity. The table header includes a "Filter: All Instances" dropdown and a search bar "Search DB Instances...". A message at the top right says "Viewing 1 of 1 DB Instances".

## Select MySQL Engine

The screenshot shows the AWS RDS Dashboard. On the left sidebar, under 'Instances', there is a single entry for a MySQL database named 'rdsdatabase'. The main panel displays a table with one row. The 'Status' column shows 'creating'. Below the table, the 'Endpoint' status is listed as 'Not available yet'. The 'Monitoring' section shows CPU and Memory metrics with no data. The 'Alarms and Recent Events' section lists three events: 'DB Instance deleted' at Aug 11 10:07 PM, 'DB Instance shutdown' at Aug 11 10:03 PM, and 'Finished DB Instance backup' at Aug 11 9:05 PM.

Under status column

Verify backing-up

The screenshot shows the AWS RDS Dashboard. The MySQL instance 'rdsdatabase' is now in 'backing-up' status. The 'Monitoring' section shows CPU and Memory metrics with no data. The 'Alarms and Recent Events' section lists the same three events as before: 'DB Instance deleted' at Aug 11 10:07 PM, 'DB Instance shutdown' at Aug 11 10:03 PM, and 'Finished DB Instance backup' at Aug 11 9:05 PM. A green status bar at the bottom right indicates '(authorized)'.

Under status column

### Verify available

The screenshot shows the AWS RDS Dashboard. On the left, a sidebar lists options: Instances, Reserved Instances, Snapshots, Parameter Groups, Option Groups, Subnet Groups, Events, Event Subscriptions, and Notifications. The main area displays a table of DB instances. One instance is listed:

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 shown as `rdsdatabase.cat4jym1az.ap-southeast-1.rds.amazonaws.com:3306 (authorized)`. To the right, there are sections for "Alarm and Recent Events" and "Monitoring".

TIME (UTC+5:30)	EVENT
Aug 12 1:49 PM	Finished DB instance backup
Aug 12 1:45 PM	Backing up DB instance
Aug 12 1:44 PM	DB instance created

	CURRENT VALUE	THRESHOLD	LAST HOUR
CPU	1.42%	[progress bar]	[progress bar]
Memory	543 MB	[progress bar]	[progress bar]

## 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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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
ARCHAR(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;

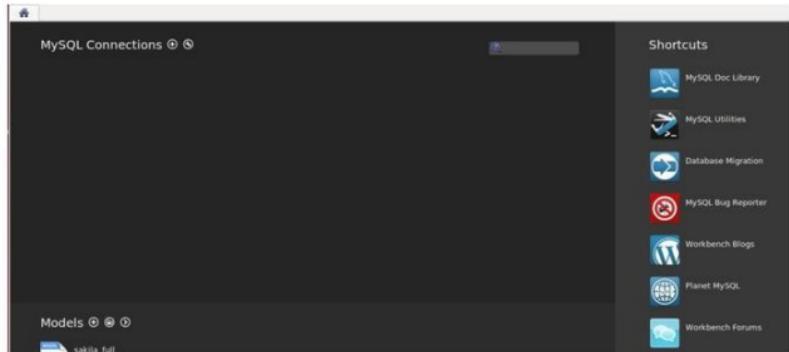
```
mysql> select * from tutorials_tbl;
+-----+-----+-----+-----+
| tutorial_id | tutorial_title | tutorial_author | submission_date |
+-----+-----+-----+-----+
| 1 | Learn PHP | John Poul | 2017-08-12 |
| 2 | Learn MySQL | Abdul S | 2017-08-12 |
| 3 | JAVA Tutorial | Sanjay | 2007-05-06 |
+-----+-----+-----+-----+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

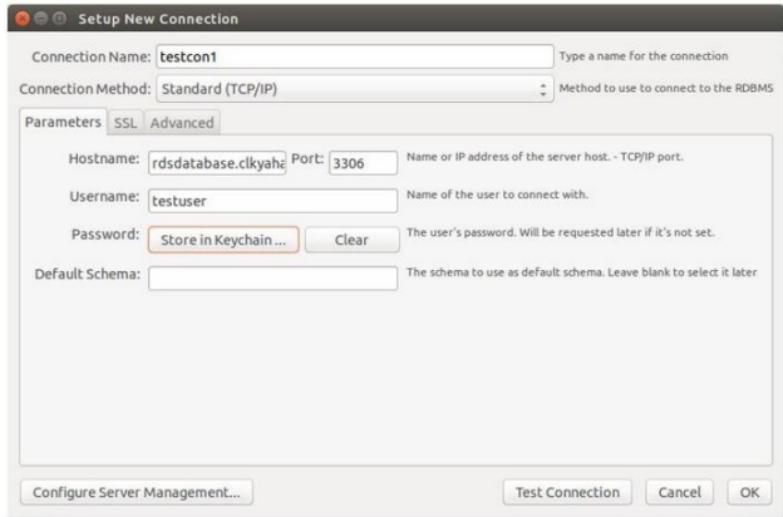
Hostname → copy RDS url

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

Port → 3306

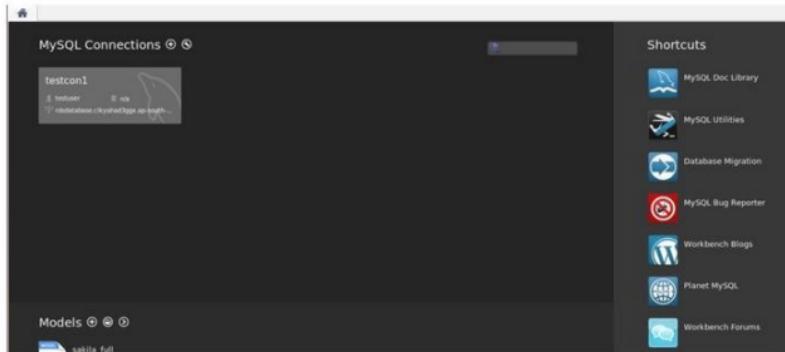
Username → testuser

Password → \*\*\*\*\*

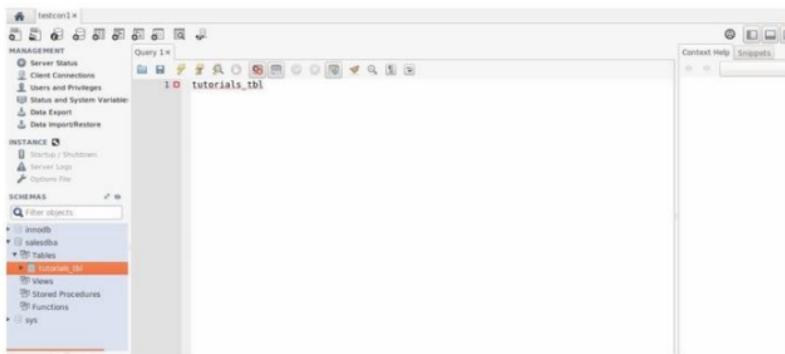


## Verify

Connection is getting established.



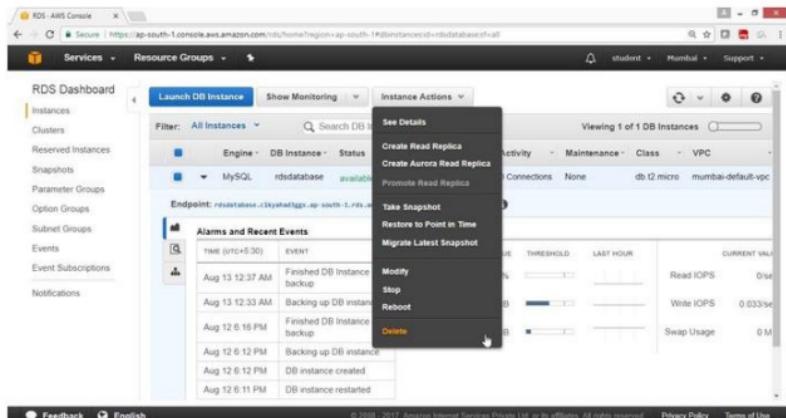
So we can see that tables are listed in Mysql clients.



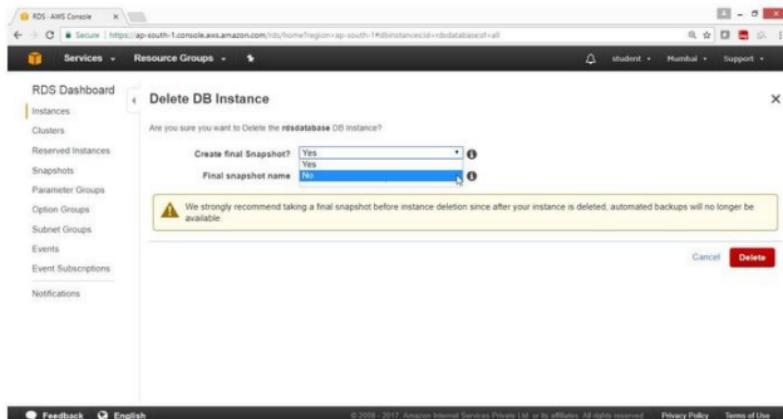
### 3. To Delete the RDS instance

3.1 Open RDS Dashboard , select instance

drop down Instance Action button, select Delete

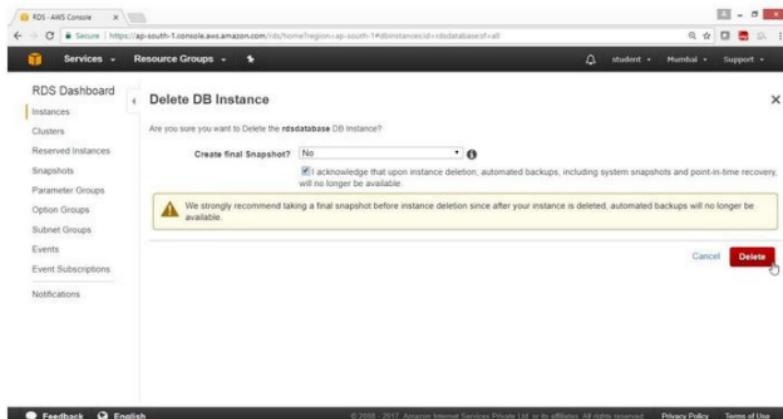


For Create final snapshot → No



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 for Instances, Clusters, Reserved Instances, Snapshots, Parameter Groups, Option Groups, Subnet Groups, Events, Event Subscriptions, and Notifications. The main area has tabs for Launch DB Instance, Show Monitoring, and Instance Actions. A search bar says 'Search DB Instances...'. A filter dropdown shows 'All Instances'. Below it, a table lists one database instance:

Engine	DB Instance	Status	CPU	Current Activity	Maintenance	Class	VPC	Multi-AZ
MySQL	rdsdatabase	deleting	1.00%	0 Connections	None	db.t2.micro	mumbai-default-vpc	No

Below the table, it says 'ndpoint: rdsdatabase.clyvhbzggr.ap-south-1.rds.amazonaws.com:3306 [authorized]'. There are two sections: 'Alarms and Recent Events' and 'Monitoring'. The 'Alarms and Recent Events' section shows recent events:

TIME (UTC+5:30)	EVENT
Aug 13 12:37 AM	Finished DB instance backup
Aug 13 12:33 AM	Backing up DB instance
Aug 12 6:16 PM	Finished DB instance backup
Aug 12 6:12 PM	Backing up DB instance
Aug 12 6:12 PM	DB instance created
Aug 12 6:11 PM	DB instance restarted

The 'Monitoring' section shows current values for CPU, Memory, Storage, Read IOPS, Write IOPS, and Swap Usage.

## Delete Confirmed

The screenshot shows the AWS RDS Dashboard. The sidebar and top navigation are identical to the previous screenshot. The main area now displays a confirmation message:

Relational Database Service (RDS) is a web service that makes it easy to set up, operate, and scale a relational database in the cloud. We currently offer MySQL, PostgreSQL and Oracle engines, allowing you to use the code, application and tools you already use with your existing database with Amazon RDS. You can find pricing information for RDS here. Click the Launch DB Instance button to get started.

Note: Your DB instances will launch in the Asia Pacific (Mumbai) region.

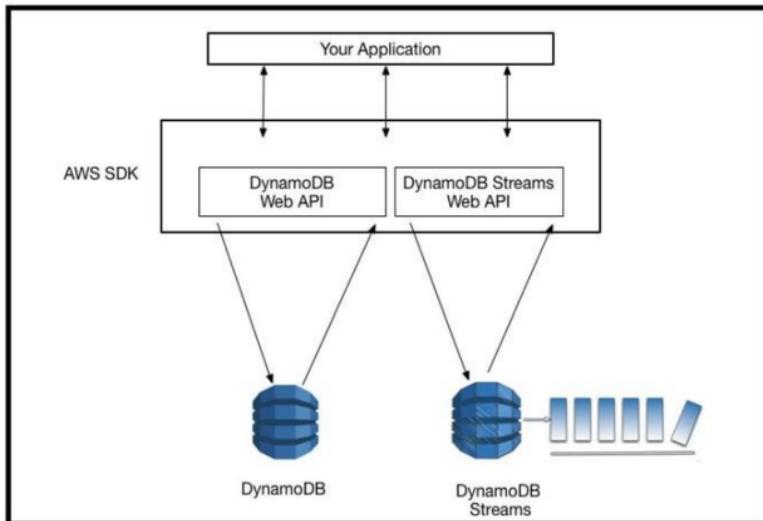
Below this message, there's a progress bar indicating the deletion process.

## 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

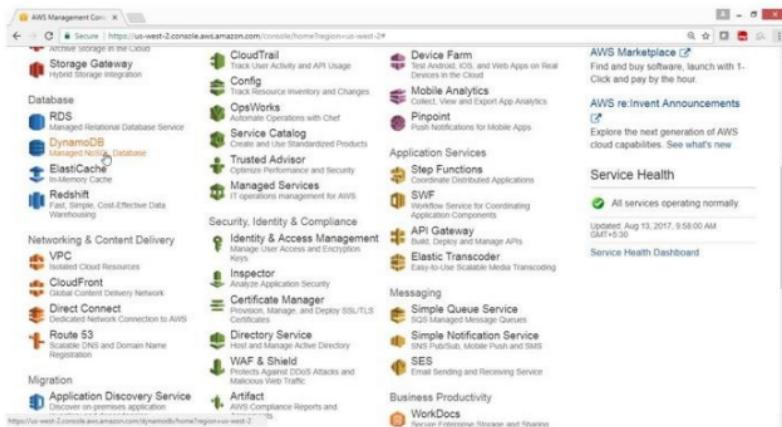
## 1) To Create an Amazon DynamoDB table

### To Create Table

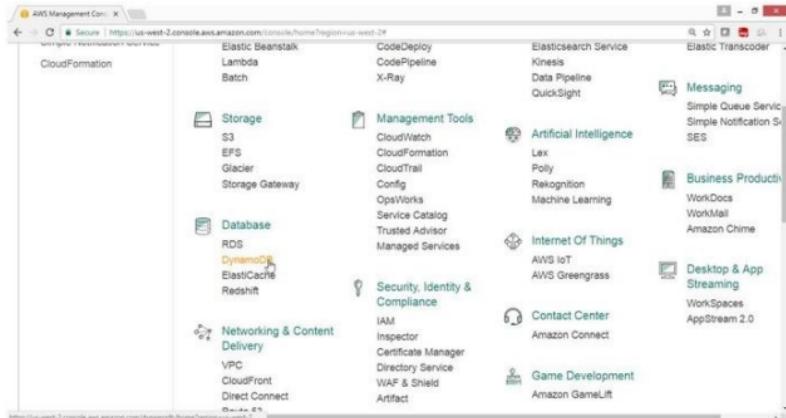
Open AWS console

Select services Database

Click on **DynamoDB**

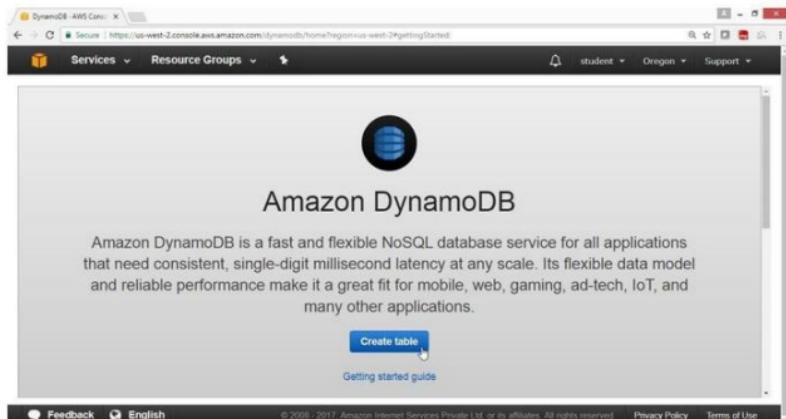


OR



## 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, there's a header bar with the AWS logo, 'Services', 'Resource Groups', and user information ('student', 'Oregon', 'Support'). Below the header is a 'Tutorial' button and a help icon. The main form has a title 'Create DynamoDB table'. It contains fields for 'Table name\*' (set to 'Salestable') and 'Primary key\*' (set to 'itemno' with type 'String'). There's also a checkbox for 'Add sort key' which is unchecked. Under 'Table settings', there's a note about default settings and a checkbox for 'Use default settings' which is checked. This checkbox has a sub-option 'No secondary indexes.' next to it. At the bottom of the form, there are 'Feedback' and 'English' buttons, and a copyright notice: '© 2006 - 2011, Amazon Internet Services Private Ltd. or its affiliates. All rights reserved.' followed by 'Privacy Policy' and 'Terms of Use'.

## Under Table settings

Select “**Use default settings**” check box

click on **Create** button

The screenshot shows the 'Table settings' step of the 'Create Table' wizard. It includes the following elements:

- A checkbox labeled "Use default settings" which is checked.
- A bulleted list of default settings:
  - No secondary indexes.
  - Provisioned capacity set to 5 reads and 5 writes.
  - Basic alarms with 80% upper threshold using SNS topic "dynamodb".
- A callout box stating: "You do not have the required role to enable Auto Scaling by default. Please refer to documentation."
- Links for "Additional charges may apply if you exceed the AWS Free Tier levels for CloudWatch or Simple Notification Service." and "Advanced alarm settings are available in the CloudWatch management console."
- Buttons for "Cancel" and "Create" (the latter being highlighted).

## Creating

The screenshot shows the 'Saleable' configuration step of the 'Create table' wizard. It includes the following elements:

- A sidebar with navigation links: DynamoDB, Dashboard, Tables, Reserved capacity, DAX, Dashboard, Clusters, Subnet groups, Parameter groups, Events.
- A search bar with placeholder "Filter by table name" and a dropdown menu showing "Name" and "Saleable".
- A main panel titled "Saleable" with tabs: Overview, Items, Metrics, Alarms, Capacity, Indexes, More.
- A message box stating "Table is being created".
- A section for "Recent alerts" with the message "No CloudWatch alarms have been triggered for this table.".
- A "Stream details" section with "Stream enabled: No", "View type: -", and "Latest stream ARN: -". A "Manage Stream" button is present.
- A "Table details" section.
- Footer links: Feedback, English, © 2008 - 2017, Privacy Policy, Terms of Use.

## Verification

Salestable is created

The screenshot shows the AWS DynamoDB console interface. On the left, the navigation pane lists 'Tables' (which is selected and highlighted in orange), 'Dashboard', 'Reserved capacity', 'DAX', 'Clusters', 'Subnet groups', 'Parameter groups', and 'Events'. In the center, a search bar at the top has 'Salestable' typed into it. Below the search bar, there's a dropdown menu set to 'Name' with 'Salestable' selected. The main content area is titled 'Salestable' and shows the 'Overview' tab selected. Under 'Stream details', it indicates 'Stream enabled: No', 'View type: -', and 'Latest stream ARN: -'. A 'Manage Stream' button is present. Below this, under 'Table details', a table shows one row with 'Table name: Salestable'. At the bottom of the page, there are links for 'Feedback', 'English', and copyright information: '© 2006 - 2017, Amazon Internet Services Private Ltd. or its affiliates. All rights reserved.' followed by 'Privacy Policy' and 'Terms of Use'.

## Select Capacity

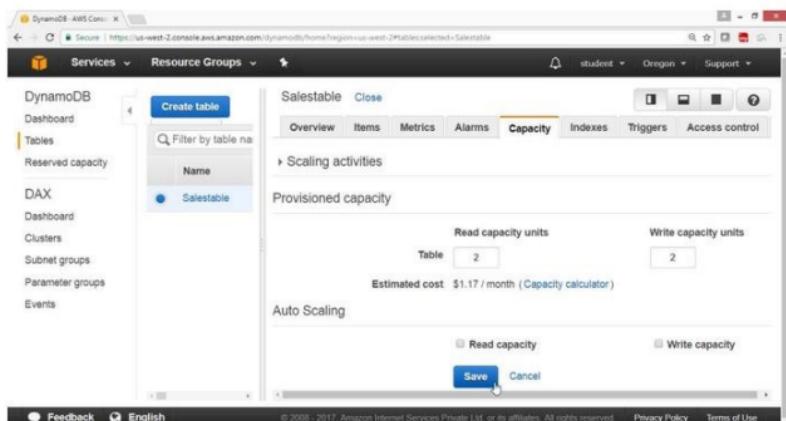
Under “**Provisioned capacity**”

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, there's a sidebar with options like 'DynamoDB', 'Tables', 'Reserved capacity', 'DAX', 'Clusters', 'Subnet groups', 'Parameter groups', and 'Events'. A 'Create table' button is also visible. The main area is titled 'Salestable' and has tabs for 'Overview', 'Items', 'Metrics', 'Alarms', 'Capacity', 'Indexes', 'Triggers', and 'Access control'. The 'Items' tab is selected. Below it, there's a search bar with 'Scan: [Table] Salestable: itemno ▾' and a note: 'Viewing 0 to 0 items'. A 'Create item' button is highlighted in blue. A modal window titled 'Salestable' is open, showing a form with a single field 'Name' containing 'Salestable'. At the bottom of the modal, there's a note: '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. More info'.

**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 ▾ ▾ A

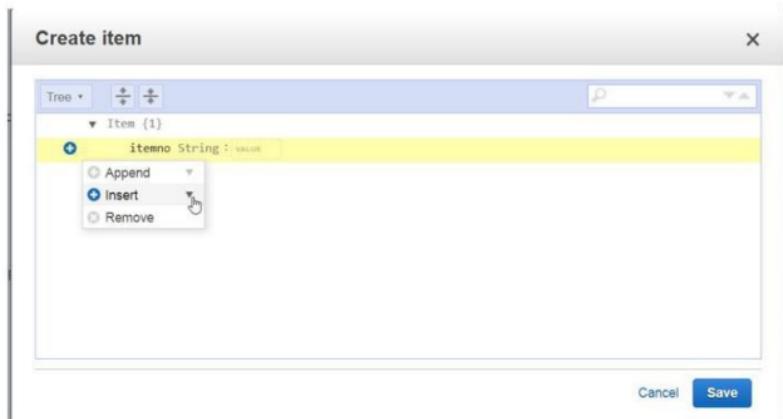
▼ Item {1}

itemno String : value

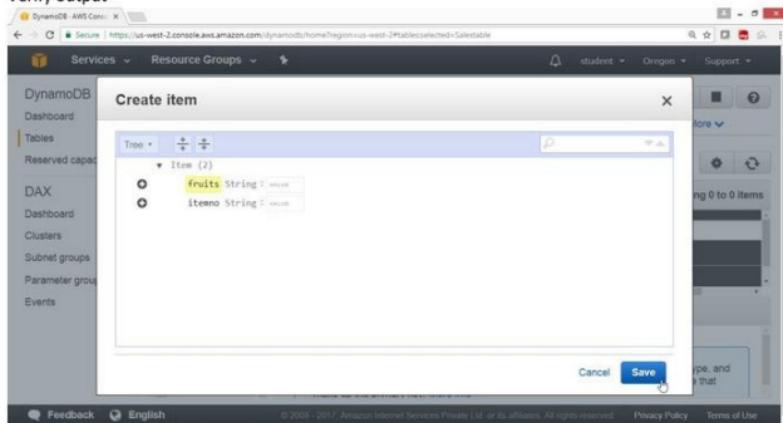
Cancel Save

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

DynamoDB - AWS Consol

Services Resource Groups

Salestable

Overview Items Metrics Alarms Capacity Indexes Triggers More

Scan: [Table] Salestable: itemno ▾ Viewing 1 to 1 items

Scan Add filter Start search

itemno	Ph	fruits
1	1234567890	fruits

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To add values in the created fields

Select the Table row, click Action button

select Duplicate

DynamoDB - AWS Consol

Services Resource Groups

Salestable

Overview Items Metrics Alarms Capacity Indexes Triggers More

Scan: [Table] Salestable: itemno ▾ Viewing 1 to 1 items

Create item Actions ▾

Duplicate Edit Delete Export to .csv Manage TTL

itemno	Ph	fruits
1	1234567890	fruits
2		

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Now modify the values of the field

New row will be created

Click on save



Verify

The screenshot shows the AWS DynamoDB console for the 'Saleable' table. The 'Items' tab is selected, showing two items:

Itemno	Ph	fruits
2	1234567890	Mango
1	1234567890	fruits

## To Delete the table permanently for DymonaDb

From the AWS console

Select services Database

Choose DynamoDB

Under **Tables**, select the table for the list

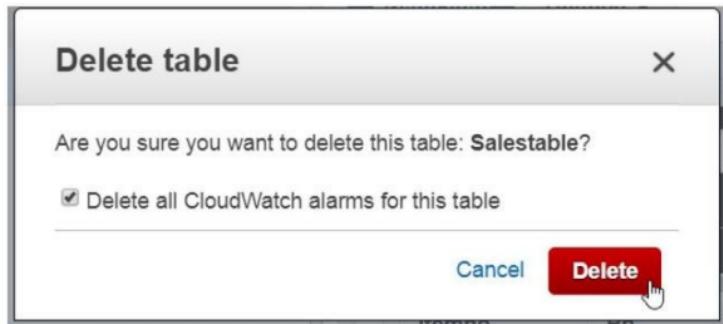
click on Action button

Select “Delete Table”

The screenshot shows the AWS DynamoDB console interface. On the left, the navigation pane is visible with 'Tables' selected under 'DynamoDB'. In the main area, a table named 'Salestable' is listed in the 'Items' section. A context menu is open over the table name, with the 'Delete table' option highlighted. The 'Actions' dropdown menu also has 'Delete table' listed. To the right, the 'Salestable' table details page is shown, displaying two items with item IDs 1 and 2. Item 1 has a 'Ph' value of 1234567890 and a 'fruits' value of 'fruits'. Item 2 has a 'Ph' value of 1234567890 and a 'fruits' value of 'Mango'.

itemno	Ph	fruits
2	1234567890	Mango
1	1234567890	fruits

Click on Delete button



Verify Table is deleted.

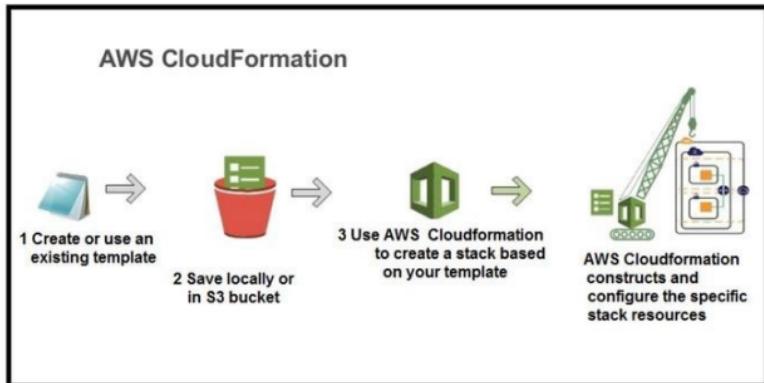
A screenshot of the AWS DynamoDB service dashboard. On the left, there's a sidebar with "Tables" selected. The main area shows a table named "Salestable" with a single row of data. A tooltip box is overlaid on the table, providing information about DynamoDB as a fully managed NoSQL database. At the bottom of the screen, there are navigation links for "Feedback", "English", and copyright information, along with links for "Privacy Policy" and "Terms of Use".

## 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

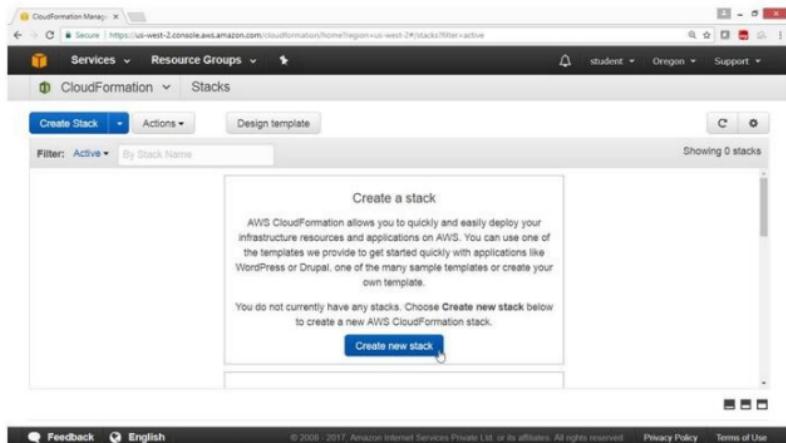
Click on CloudFormation service

The screenshot shows the AWS Management Console interface. The top navigation bar includes 'AWS Management Con...' and a search bar. Below the navigation bar, there are two main sections: 'Services' and 'Resource Groups'. Under 'Services', several categories are listed: Compute (EC2, EC2 Container Service, Lightsail, Lambda, Batch), Storage (S3, EFS, Glacier, Storage Gateway), Developer Tools (CodeStar, CodeCommit, CodeBuild, CodeDeploy, CodePipeline, X-Ray), Internet of Things (AWS IoT, AWS Greengrass), Contact Center (Amazon Connect), Game Development (Amazon GameLift), Mobile Services (Mobile Hub, Cognito, Device Farm, Mobile Analytics), and Additional Resources (Getting Started, AWS Console Mobile App, AWS Marketplace). On the right side, there is a 'Resource Groups' section with a 'Create a Group' button and a 'Tag Editor' button. A detailed description of Resource Groups is provided, stating they are collections of resources sharing one or more tags. At the bottom of the page, the URL is https://us-west-2.console.aws.amazon.com/cloudformation/home?region=us-west-2.

## 2) To create a new stack

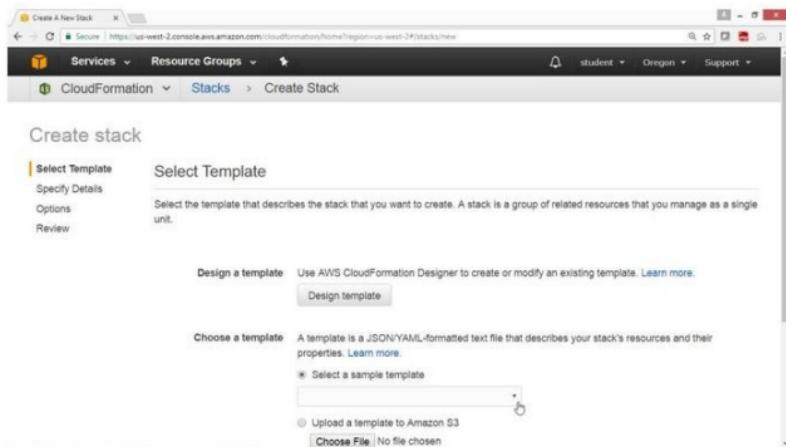
On “Create Stack”, page

Click on “Create New Stack” button



Under “Choose a template”

Select “Select a sample template”

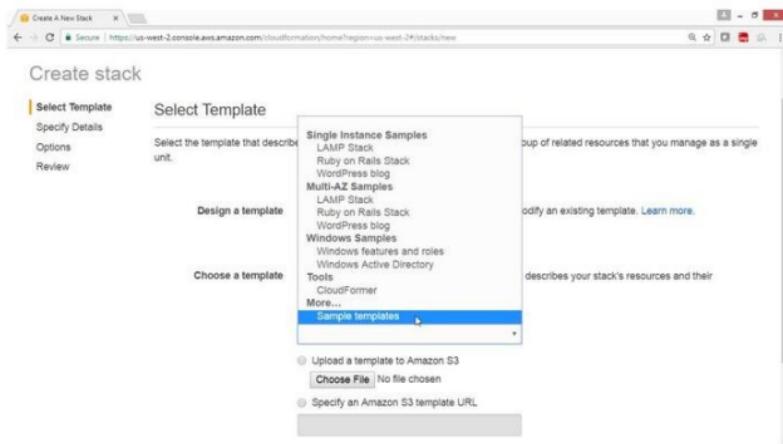


On Create stack page

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...', 'Menu', 'Amazon Web Services' logo, 'Products', 'Solutions', 'More', 'English', 'My Account', and 'Sign In to the Console'. Below the navigation, the title 'AWS CloudFormation Templates' is displayed in a large blue header. A descriptive paragraph explains that CloudFormation simplifies provisioning and management on AWS, allowing users to create templates for service or application architectures. It mentions 'stacks' where users can easily update or replicate the stacks as needed. A note below states that this collection of sample templates will help get started with CloudFormation and quickly build your own templates. There are two main sections: 'Templates & Snippets by AWS Service' and 'Reference Implementations'. The 'Templates & Snippets by AWS Service' section includes links to 'Browse sample templates by AWS service.' and 'Browse template snippets by AWS service.'. The 'Reference Implementations' section includes a link to 'Visit AWS Test Drive to try popular IT solutions from vendors such as Oracle and Microsoft, provisioned using AWS CloudFormation in a private sandbox environment.' At the bottom, there's a 'Sample Solutions' section with a note about common applications and a link to 'aws.amazon.com/cloudformation/samples'. The URL in the browser bar is 'docs.aws.amazon.com/AWSCloudFormation/latest/UserGuide/sample-templates-services-us-west-2.html'.

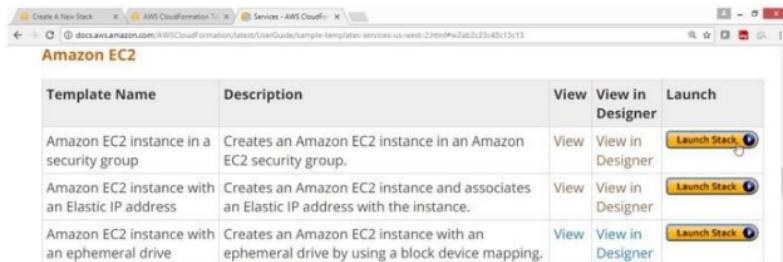
## Under Topics

Select Amazon EC2

The screenshot shows the AWS CloudFormation User Guide page. The top navigation bar is identical to the previous screenshot. On the left, there's a sidebar with a search bar and a list of topics under 'Topics': 'Documentation - This Guide', 'Search', 'What is AWS CloudFormation?', 'Setting Up', 'Getting Started', 'Best Practices', 'Continuous Delivery', 'Working with Stacks', 'Working with Templates', and 'Working with AWS CloudFormation StackSets'. The 'Amazon EC2' topic is highlighted with a red circle. The main content area has a heading 'AWS CloudFormation' with the subtext 'User Guide (API Version 2010-05-15)'. It contains a list of services: Auto Scaling, AWS Config, Amazon DynamoDB, Amazon EC2 (highlighted), 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', and 'Feedback'.

Select “Amazon EC2 instance in a security group”,

Click on “Launch stack”



The screenshot shows the AWS CloudFormation console with the URL <https://docs.aws.amazon.com/AWSCloudFormation/latest/UserGuide/sample-template-services-us-west-2.html#us-west-2amazonaws.com-cloudformation-templates-us-west-2EC2instanceInSecurityGroup>. The page displays a table of CloudFormation templates under the heading "Amazon EC2". The first row, "Amazon EC2 instance in a security group", is highlighted with a yellow background. Each row contains a "View" link, a "View in Designer" link, and a "Launch" button. The "Launch" button for the first row is highlighted with a yellow background and a blue border.

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**

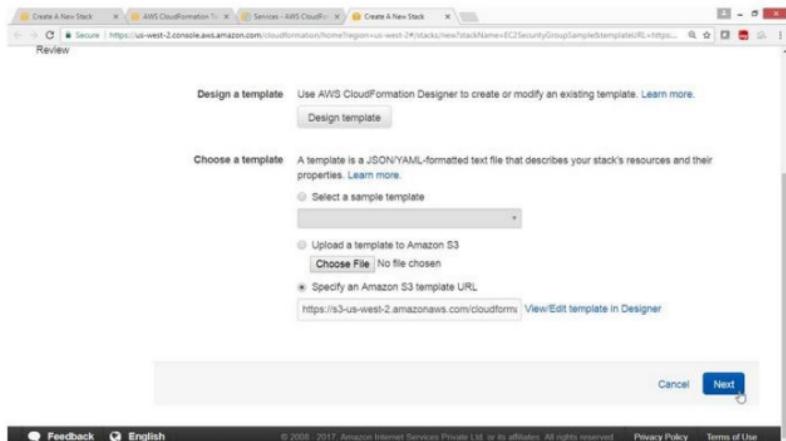
Template Name	Description	View	View in Designer	Launch
ElastiCache	Creates an ElastiCache cache cluster with the Memcached	View	View in Designer	<b>Launch Stack</b>

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In option “Specify an Amazon S3 template URL”

Verify template is loaded in S3

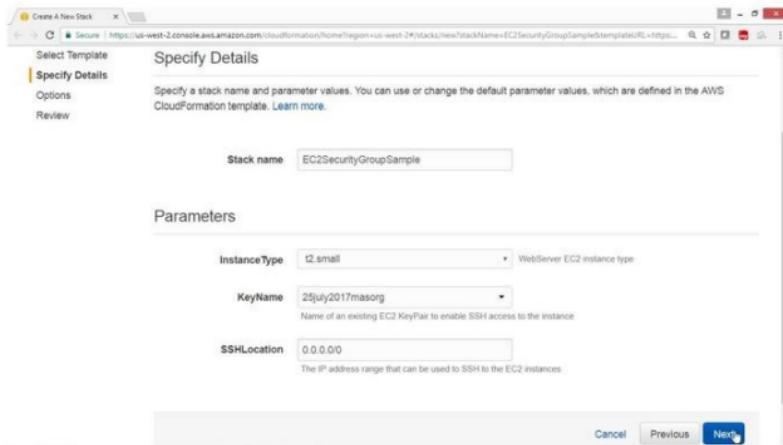
Click on **Next** button



On Specific Details page

Key Name → “key\*.pem”

Click on Next button



Under Options Tag, provide values for

Key → Nameweb

Value → Web

Drag Down

The screenshot shows the 'Create stack' wizard in the AWS CloudFormation console. The current step is 'Options'. On the left, there are tabs: 'Select Template', 'Specify Details', 'Options' (which is selected and highlighted in yellow), and 'Review'. The main area is titled 'Tags' with the sub-instruction: '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. Learn more.' Below this, there is a table with one row. The first column is 'Key' and the second is 'Value'. The key 'Nameweb' has a value of 'Web'. A blue '+' button is at the end of the row. At the bottom of the screen, there is a horizontal bar with three icons: a magnifying glass, a person icon, and a gear icon.

Key (127 characters maximum)	Value (255 characters maximum)
1 Nameweb	web

## Click on Next

Key (127 characters maximum)  
1 Nameweb  
Value (256 characters maximum)  
web

Permissions  
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. Learn more.

IAM Role Choose a role (optional)  
Enter role arn

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

Cancel Previous Next

## Review , check the summary

Select Template  
Specify Details  
Options  
Review

Review

Template URL https://s3-us-west-2.amazonaws.com/cloudformation-templates-us-west-2/EC2InstanceWithSecurityGroupSample.template  
Description AWS CloudFormation Sample Template EC2InstanceWithSecurityGroupSample: Create an Amazon EC2 instance running the Amazon Linux AMI. The AMI is chosen based on the region in which the stack is run. This example creates an EC2 security group for the instance to give you SSH access.  
WARNING: This template creates an Amazon EC2 instance. You will be billed for the AWS resources used if you create a stack from this template.  
Estimate cost Cost:

Details

Stack name: EC2SecurityGroupSample  
Instance Type: t2.small  
Key Name: 25july2017masorg  
SSH Location: 0.0.0.0

Click Create button

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

- InstanceType: t2.small
- KeyName: 25July2017masorg
- SSHLLocation: 0.0.0.0

Under Options, there is a 'Tags' section with 'Name' set to 'web' and 'Value' set to 'web'. Under Advanced, there is a 'Notification' section with 'Timeout' set to 'none' and 'Rollback on failure' set to 'Yes'. At the bottom right, there are 'Cancel', 'Previous', and 'Create' buttons.

Check the status

Cloudformation is in progress state.

The screenshot shows the 'CloudFormation Manager' interface. The stack 'EC2SecurityGroupSample' is listed with the following details:

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 a browser window titled "CloudFormation Manager" with the URL <https://us-west-2.console.aws.amazon.com/cloudformation/home?region=us-west-2#/stacks?tab=events&filter=active>. The page displays a table of stacks. A single row is visible, representing the "EC2SecurityGroupSample" stack. The table has columns for Stack Name, Created Time, Status, and Description. The Status column shows "CREATE\_COMPLETE". The Description column indicates it is a "AWS CloudFormation Sample Template EC2instan...". The browser interface includes standard navigation buttons (back, forward, search) and a toolbar with "Create Stack", "Actions", and "Design template" buttons.

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

Go to EC2 service

Check the instances

An instance with the Name "web" is launched

The screenshot shows the AWS EC2 Instances page. On the left, there's a sidebar with navigation links for EC2 Dashboard, Events, Tags, Request Limits, Instances (selected), Spot Requests, Reserved Instances, Scheduled Instances, Dedicated Hosts, Images, AMIs, and Bundle Tasks. Below that is the Elastic Block Store section with Volumes and Snapshots. The main content area has tabs for Launch Instance, Connect, and Actions. A search bar says "Filter by tags and attributes or search by keyword". A table lists instances: "web" (running) and "web1" (stopped). The table includes columns for Name, Instance ID, Instance Type, Availability Zone, Instance State, Status Checks, and Alarm. Below the table, a detailed view for instance "web" shows its Public DNS (ec2-34-212-227-98.us-west-2.compute.amazonaws.com), Instance ID (i-0668c160a0f3daf41), Public DNS (IPv4) (ec2-34-212-227-98.us-west-2.compute.amazonaws.com), Instance state (running), and IPv4 Public IP (34.212.227.98).

Name	Instance ID	Instance Type	Availability Zone	Instance State	Status Checks	Alarm
web	i-0668c160a0f3daf41	t2 small	us-west-2c	running	2/2 checks ...	None
web1	i-081a44151fc0525	t2 micro	us-west-2a	stopped	0/0 checks ...	OK

Instance: i-0668c160a0f3daf41 (web)    Public DNS: ec2-34-212-227-98.us-west-2.compute.amazonaws.com

Description    Status Checks    Monitoring    Tags

Instance ID: i-0668c160a0f3daf41    Public DNS (IPv4): ec2-34-212-227-98.us-west-2.compute.amazonaws.com  
Instance state: running    IPv4 Public IP: 34.212.227.98

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

From AWS console

Select services **Management tools**

Select **CloudFormation**

Select the Stack Name check box

The screenshot shows the AWS CloudFormation console interface. At the top, there's a navigation bar with 'Services' and 'Resource Groups'. Below it, a sub-navigation bar has 'CloudFormation' selected. A modal window titled 'Introducing StackSets' is open, explaining what a StackSet is. The main content area shows a table of stacks. The table has columns: Stack Name, Created Time, Status, and Description. One row is visible, showing 'EC2SecurityGroupSample' as the Stack Name, '2017-07-27 19:10:47 UTC+0550' as the Created Time, 'CREATE\_COMPLETE' as the Status, and 'AWS CloudFormation Sample Template EC2Instan...' as the Description. The 'Actions' button in the top right of the table header is highlighted with a mouse cursor. Below the table, there are tabs for Overview, Outputs, Resources, Events, Template, Parameters, Tags, Stack Policy, and Change Sets. The 'Overview' tab is selected. At the bottom of the table, it says 'Stack name: EC2SecurityGroupSample'.

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

Click on Actions button

Select "Delete stack"

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.

Create Stack Actions Design template

Filter: Active

Stack Name	Status	Description
EC2SecurityGroupSample	CREATE_COMPLETE	AWS CloudFormation Sample Template EC2Instan...

View/Edit template in Designer

Overview Outputs Resources Events Template Parameters Tags Stack Policy Change Sets

Stack name: EC2SecurityGroupSample  
Stack ID: arn:aws:cloudformation:us-west-2:523251683217:stack/EC2SecurityGroupSample/31f376a0-72d1-11e7-a2e6-503f20f2ad1e  
Status: CREATE\_COMPLETE  
Status reason:

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Click on "Yes, Delete"

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.

Delete Stack

Are you sure you want to delete this stack?  
EC2SecurityGroupSample  
Deleting a stack deletes all stack resources.

Cancel Yes, Delete Delete Stack

Showing 1 stack

Overview Outputs Resources Events Template Parameters Tags Stack Policy Change Sets

Stack name: EC2SecurityGroupSample  
Stack ID: arn:aws:cloudformation:us-west-2:523251683217:stack/EC2SecurityGroupSample/31f376a0-72d1-11e7-a2e6-503f20f2ad1e  
Status: CREATE\_COMPLETE  
Status reason:

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## 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&stackFilter=active&stackId=arn:aws:cloudformation:us-west-2:232325168...>. The page displays a table of stacks. One stack, named "EC2SecurityGroupSample", is listed with a status of "DELETE\_IN\_PROGRESS". A tooltip for "Introducing StackSets" is visible at the top left. The table has columns for Stack Name, Created Time, Status, and Description.

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

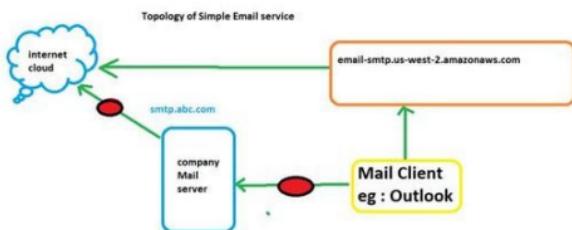
The screenshot shows the AWS CloudFormation console with the URL <https://us-west-2.console.aws.amazon.com/cloudformation/home?region=us-west-2&stackFilter=active>. The page displays a "Create a stack" dialog box. It contains instructions about AWS CloudFormation and a button labeled "Create new stack". Below the dialog, a message states "You do not currently have any stacks. Choose Create new stack below to create a new AWS CloudFormation stack." The bottom of the page includes standard AWS navigation links for Feedback, English, Privacy Policy, and Terms of Use.

## 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`

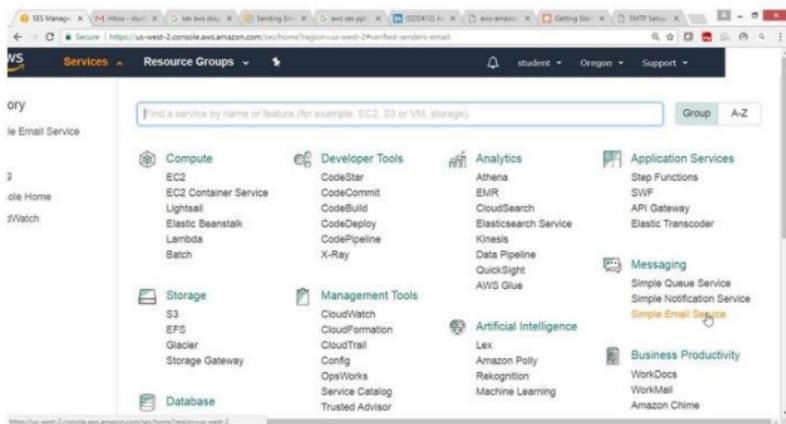
### To Configure SES with following task:

- 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"

SES Manager | [Inbox - draft](#) | [Send test email](#) | [Sending Email](#) | [aws ses pp](#) | [\(SDD41Q\) A...](#) | [aws-amazon](#) | [Getting Started](#) | [SMTP Setup](#)

AWS Services Resource Groups student Oregon Support

SES Home

Identity Management

Domains

Email Addresses

Email Sending

Sending Statistics

Reputation Dashboard

Dedicated IPs

Configuration Sets

SMTP Settings

Suppression List Removal

Cross-Account Notifications

Feedback English (US)

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Select "Verify a New Email Address" button

SES Manager | [Inbox - draft](#) | [Send test email](#) | [Sending Email](#) | [aws ses pp](#) | [\(SDD41Q\) A...](#) | [aws-amazon](#) | [Getting Started](#) | [SMTP Setup](#)

AWS Services Resource Groups student Oregon Support

SES Home

Identity Management

Domains

Email Addresses

Email Sending

Sending Statistics

Reputation Dashboard

Dedicated IPs

Configuration Sets

SMTP Settings

Suppression List Removal

Cross-Account Notifications

Feedback English (US)

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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.

The screenshot shows the AWS SES Management Console. The left sidebar has links for SES Home, Identity Management, Domains, Email Addresses (which is selected and highlighted in yellow), Email Sending, Sending Statistics, Reputation Dashboard, Dedicated IPs, and Configuration Sets. The main content area has a title "Verify a New Email Address" with buttons for "Send a Test Email", "Remove", and "View Details". Below this is a search bar and a dropdown menu set to "All identities". A table lists email addresses with their status. There is one item in the table:

Email Address Identities	Status
studentcloud09@*****.com	verified

### 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 top navigation bar includes links for SES Management Console, AWS Services, Resource Groups, student, Oregon, and Support. The main content area has a title "Using SMTP to Send Email with Amazon SES". It explains that you can send email through Amazon SES using a variety of SMTP-enabled programming languages and software. Below this, it says "To send email using SMTP, you will need to know the following:" and lists the following fields:

- 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.

Further down, it states: "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." It also notes: "To obtain your SMTP credentials, click the button below. For more information about SMTP credentials, click here." A blue button labeled "Create My SMTP Credentials" is visible. At the bottom of the page, there is a note: "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." The footer contains links for Feedback, English (US), Copyright notice (© 2008 - 2017, Amazon Internet Services Private Ltd. or its affiliates. All rights reserved.), Privacy Policy, and Terms of Use.

**Default IAM user Name** will be provided

Click **Create** button

This screenshot shows the AWS IAM Management Console. In the top navigation bar, 'Services' is selected. On the left, a sidebar titled 'Create User for SMTP' is visible. The main content area contains a form for creating an IAM user. The 'IAM User Name:' field is populated with 'ses-smtp-user.20171111-13'. A note below the field states: 'This form lets you create an IAM user for SMTP authentication with Amazon SES. Enter the name of a new IAM user or accept the default and click Create to set up your SMTP credentials.' At the bottom right of the form are 'Cancel' and 'Create' buttons, with the cursor hovering over the 'Create' button.

**User SMTP Security Credentials** will be displayed

click "**Download Credentials**" keep at safe place

This screenshot shows the AWS IAM Management Console after the user has clicked 'Create'. A success message is displayed: 'Your 1 User(s) have been created successfully.' Below this message, a note states: '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.' A 'Hide User SMTP Security Credentials' link is present. Below this, the user's details are shown: 'ses-smtp-user.20171111-135833'. Underneath, the 'SMTP Username' and 'SMTP Password' are listed. At the bottom right of the page are 'Close' and 'Download Credentials' buttons, with the cursor hovering over the 'Download Credentials' button.

## Verify credentials

The screenshot shows the AWS IAM Management Console. A message box displays: "Your 1 User(s) have been created successfully. 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 the message, a yellow box highlights the generated SMTP credentials: "ses-smtp-user.20171111-135833" with a key icon, "SMTP Username: AKIAJUV...-2WQ...", and "SMTP Password: AmeyvP4...". There is also a link "Hide User SMTP Security Credentials".

## Open Outlook

The screenshot shows the Microsoft Outlook 2016 interface. The ribbon tabs are HOME, SEND / RECEIVE, FOLDER, and VIEW. The main area shows the inbox for Saturday, November 11, 2017. The inbox contains three items: "Inbox" (0), "Drafts" (1), and "Outbox" (0). The left sidebar shows navigation options like All Folders, Home, Mail, Calendar, Tasks, and Notes.

**Click Add Account**



## Account Information

No account available. Add an e-mail account to enable additional features.

[+ Add Account](#)

**Account and Social Network Settings**  
Change settings for this account or set up more connections.  
» Connect to social networks.

**Mailbox Cleanup**  
Manage the size of your mailbox by emptying Deleted Items and archiving.

## 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

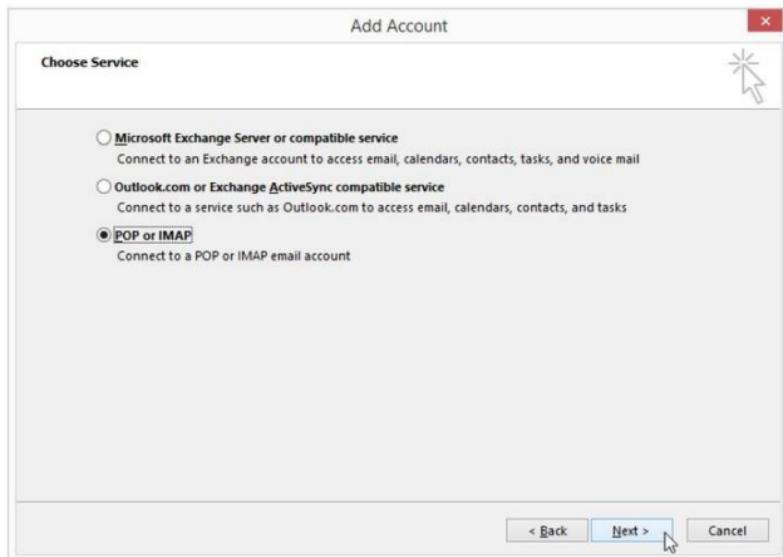
Password:

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 [Slider]

**Server Information**

Account Type: IMAP [Dropdown]

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

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

**Logon Information**

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

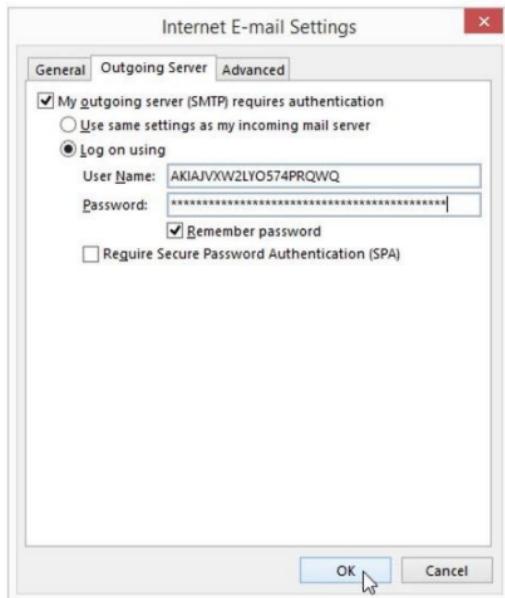
Password: \*\*\*\*\*

Remember password

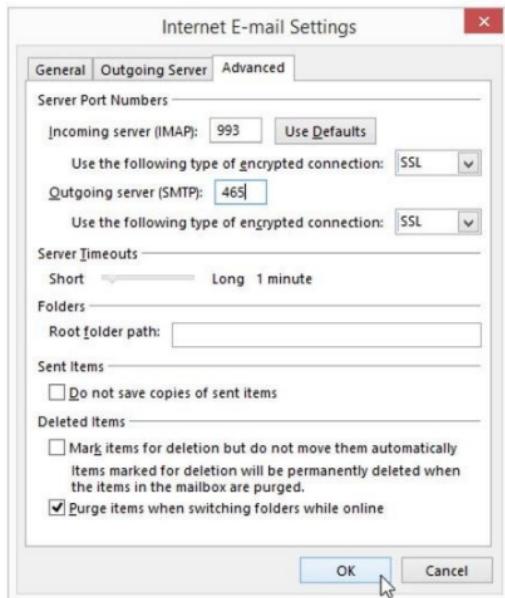
Require logon using Secure Password Authentication (SPA) More Settings ...

< Back Next > Cancel

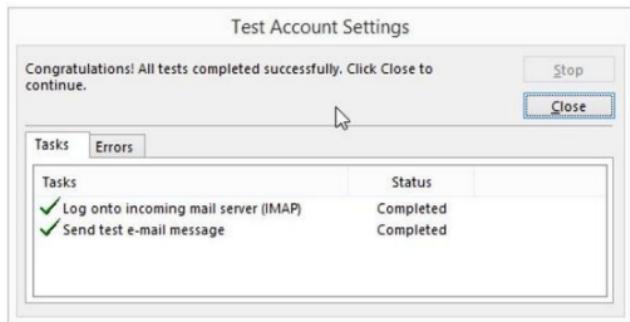
Provide following details in Outgoing Server



Provide following details in Advance



Verify successfully connected

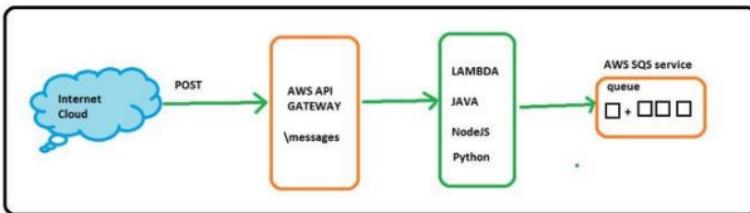


## Lab 19: To Configure Amazon Simple QUEUE Service SQS

### 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 **Messaging** service

Select Simple Queue service

The screenshot shows the AWS Management Console Services page. The 'Messaging' category is highlighted with a green box and a mouse cursor. Other categories like Compute, Storage, Database, Developer Tools, Analytics, Application Services, Management Tools, Artificial Intelligence, and Business Productivity are also visible.

Click on **Get started on**

The screenshot shows the AWS Simple Queue Service (SQS) landing page. It features a large yellow cube icon, the text "Simple Queue Service", and a "Get Started Now" button. Below the button is the text "Learn more about AWS SQS".



Feedback English (US)



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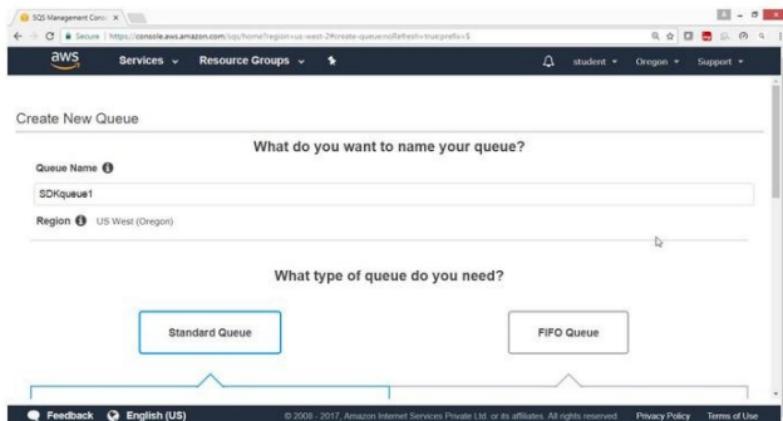
Privacy Policy Terms of Use

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

The screenshot shows the AWS SQS Management Console. In the top navigation bar, the 'Services' dropdown is open, and 'SQS' is selected. Below the navigation, there are two sections: one for sending data between applications and another for ensuring the order of events. Each section contains a bulleted list of use cases. At the bottom of the page, there is a note about Amazon SQS FAQs and the developer guide, followed by instructions to choose 'Quick-Create Queue' or 'Configure Queue'. A 'Quick-Create Queue' button is highlighted in blue.

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](#)    **Quick-Create Queue**

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### Verify Queue is Created

The screenshot shows the AWS SQS Management Console with the 'Queue Actions' tab selected. A table lists the created queue, 'SDKqueue1'. The 'Details' tab is selected for the queue, displaying its configuration: Standard queue type, N/A content-based deduplication, 0 messages available, 0 messages in flight, and a creation date of 2017-11-12 18:42:48 GMT+05:30. On the right side of the details tab, there are visibility and retention settings: Default Visibility Timeout (30 seconds), Message Retention Period (4 days), Maximum Message Size (256 KB), and Receive Message Wait Time (0 seconds). The 'Messages Available' section shows 0 messages visible. At the bottom of the details tab, there is a note about message lifetime.

1 SQS Queue selected

Name	Queue Type	Content-Based Deduplication	Messages Available	Messages in Flight	Created
SDKqueue1	Standard	N/A	0	0	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  
Messages in Flight / Last Modification: 0

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  
Messages in Flight / Last Modification: 0

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Select the Queue

Drop down “Queue Action” button

select “Send message”

The screenshot shows the AWS SQS Management Console interface. At the top, there's a navigation bar with 'Services', 'Resource Groups', and other account details. Below it, a search bar and a 'Create New Queue' button are visible. The main area displays a table of queues, with one queue named 'SDKqueue1' selected. A context menu is open over this queue, with 'Send a Message' highlighted. The table below shows metrics like 'Messages Available' (0), 'Messages in Flight' (0), and 'Created' (2017-11-12 18:42:48 GMT+05:30). At the bottom, there are links for 'Feedback', 'English (US)', and legal notices.

Name	Deduplication	Messages Available	Messages in Flight	Created
SDKqueue1		0	0	2017-11-12 18:42:48 GMT+05:30

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

More... in CloudWatch Metrics

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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

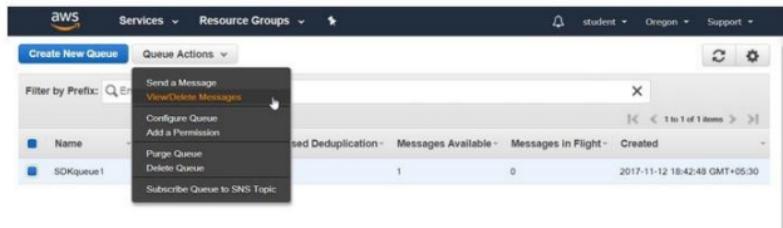


## 2) To View the message

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". The "Queue Actions" dropdown menu is open, with the "View/Delete Messages" option highlighted by a cursor. The main pane displays the queue details: 1 message available, 0 messages in flight, and a creation date of 2017-11-12 18:42:48 GMT+05:30.

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): 1

Messages in Flight (Not Available)

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Click "Start Polling for Message"

Screenshot of the AWS SQS Management Console showing the 'View/Delete Messages in SDKqueue1' interface. The interface includes a progress bar at the top indicating 'Polling for new messages once every 2 seconds.' Below the progress bar, there is a table header for 'Delete', 'Body', 'Size', 'Sent', and 'Receive Count'. A message row is present with the body 'test msg 1', size '11 bytes', sent time '2017-11-12 18:47:54 GMT+05:30', and receive count '2'. At the bottom right of the table area are 'Close' and 'Delete Messages' buttons.

Verify message is in the queue

Screenshot of the AWS SQS Management Console showing the 'View/Delete Messages in SDKqueue1' interface after polling. The progress bar at the top indicates 'Polling the queue at 0.6 receives/second. Stopping in 19.6 seconds. Messages shown above are currently hidden from other consumers.' The message table now shows the message 'test msg 1' with a 'More Detail' link. The progress bar at the bottom shows '34%' completion. At the bottom right of the table area are 'Close' and 'Delete Messages' buttons.

### 3) To delete the message

Select the Queue

Drop Down Queue Action

Select "Delete Message"

The screenshot shows the AWS SNS Management Console. In the top navigation bar, 'Services' is selected. Below it, 'Resource Groups' is shown. On the left, there's a sidebar with 'Create New Queue' and a 'Queue Actions' dropdown menu open. The dropdown menu contains options: 'Send a Message', 'View/Delete Messages', 'Configure Queue', 'Add a Permission', 'Purge Queue', 'Delete Queue', and 'Subscribe Queue to SNS Topic'. The 'Delete Queue' option is highlighted with a cursor. The main content area shows a table with one item: 'SDKqueue1'. The table has columns for 'Name', 'Last Updated', 'Messages Available', 'Messages in Flight', and 'Created'. The 'Last Updated' column shows '2017-11-12 18:42:48 GMT+05:30'. The 'Messages Available' column shows '1'. The 'Created' column shows '2017-11-12 18:42:48 GMT+05:30'. At the bottom of the page, there are tabs for 'Feedback', 'English (US)', and links to 'Privacy Policy' and 'Terms of Use'.

Confirm

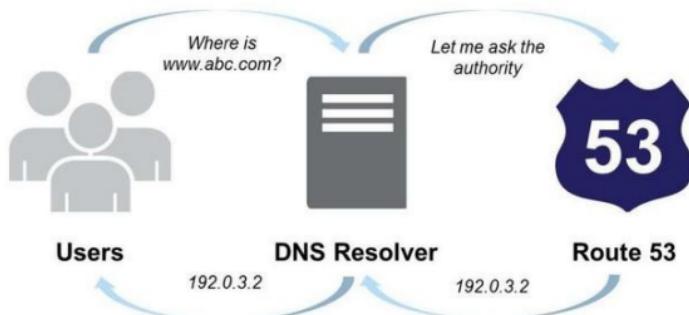
The screenshot shows a modal dialog box titled 'Delete Queues'. It asks the user if they are sure they want to delete the queue and any messages left in it. A red bullet point lists 'SDKqueue1 - contains 1 message.' At the bottom right of the dialog, there are two buttons: 'Cancel' and a red-bordered 'Yes, Delete Queue' button. The 'Yes, Delete Queue' button has a small circular icon with a checkmark next to it. The URL 'https://sns.us-west-2.amazonaws.com/523251683217/SDKqueue1' is visible at the bottom of the dialog.

## 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

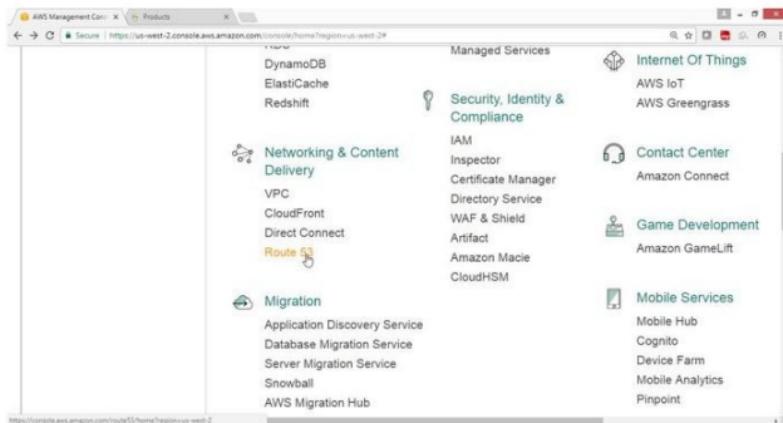
Creating CNAME record set

## 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

The screenshot shows the Amazon Route 53 Management console. At the top, there's a navigation bar with tabs for Services, Resource Groups, and a dropdown for student, Global, and Support. Below the navigation is the title "Amazon Route 53". A sub-header states: "You can use Amazon Route 53 to register new domains, transfer existing domains, route traffic for your domains to your AWS and external resources, and monitor the health of your resources." Below this are four service cards:

- DNS management**: Shows a computer monitor icon with a cloud and a double-headed arrow. Description: "If you already have a domain name, such as example.com, Route 53 can tell the Domain Name System (DNS) where on the Internet to find web servers, mail servers, and other resources for your domain." [Learn More](#) [Get started now](#)
- Traffic management**: Shows a network diagram with multiple paths from a central point to different destinations. Description: "Route 53 traffic flow provides a visual tool that you can use to create and update sophisticated routing policies to route end users to multiple endpoints for your application." [Learn More](#) [Get started now](#)
- Availability monitoring**: Shows a shield with a stethoscope and a plus sign. Description: "Route 53 can monitor the health and performance of your application as well as your web servers and other resources. Route 53 can also redirect traffic to healthy resources." [Learn More](#) [Get started now](#)
- Domain registration**: Shows a computer monitor icon with ".net" and ".org" suffixes. Description: "If you need a domain name, you can find an available name and register it by using Route 53. You can also make Route 53 the registrar for existing domains that you registered with other registrars." [Learn More](#) [Get started now](#)

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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 displays a brief introduction to Route 53 and a large 'Create Hosted Zone' button at the bottom. A mouse cursor is hovering over the 'Create Hosted Zone' button.

Again Click on Create Hosted Zone button

The screenshot shows the same AWS Route 53 Management console. The 'Hosted zones' section now displays a message: 'You have no hosted zones'. The 'Create Hosted Zone' button is no longer present in the main area.

Under “Created Hosted Zone”, wizard

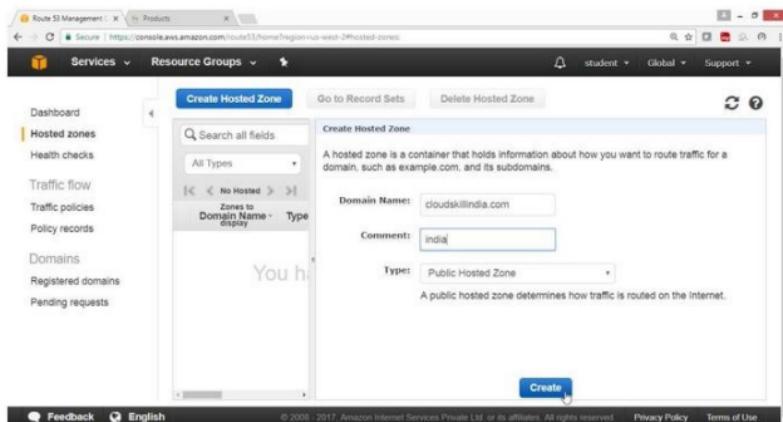
On right side panel provide following values

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. On the left, a sidebar lists services like Dashboard, Hosted zones, Health checks, Traffic flow, Traffic policies, Policy records, Domains, Registered domains, and Pending requests. The main area is titled "Edit Record Set" for the domain "cloudskillindia.com.". It shows a table with two entries:

Name	Type	Value
cloudskillindia.com.	NS	ns-140.awsdns-17.com. ns-1565.awsdns-03.co.uk. ns-726.awsdns-26.net. ns-1286.awsdns-32.org.
cloudskillindia.com.	SOA	ns-140.awsdns-17.com. awsdns-17.com. 172800 1m 3m 1h 1d

The "Value" column for the NS record contains four IP addresses. The "Value" column for the SOA record contains the same IP address followed by the FQDN "awsdns-17.com." and a TTL of "172800 tm sm th td". A "Save Record Set" button is at the bottom right.

**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

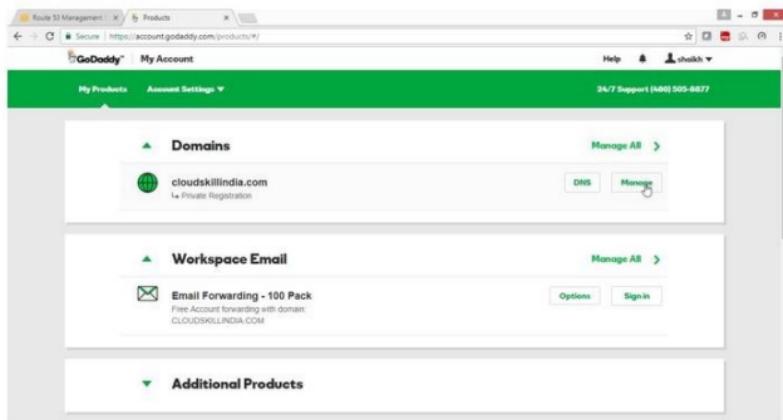
ns-1286.awsdns-32.org

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://dcc.godaddy.com/manage/CLOUDSKILLINDIA.COM/settings?atc=imya. The main content area is titled "Additional Settings". It includes a note about automatic renewal, a link to turn it off, and a lock setting. On the right, there are links for managing DNS, transferring the domain, getting an authorization code, and deleting the domain. At the bottom, there's a copyright notice and a link to privacy policy.

Route 53 Management | Domain Manager

GoDaddy, INC. [US] | https://dcc.godaddy.com/manage/CLOUDSKILLINDIA.COM/settings?atc=imya

### Additional Settings

Automatically renew your domain with your card on file so you never lose your domain.  
Domain will be canceled on 11/26/2017.

[Turn Auto Renew On](#)

Locking prevents unauthorized changes, including transfer to another registrar.

Domain lock: **Off** [Edit](#)

[Add Protected Registration](#)

[Manage DNS](#)

[Transfer domain to another GoDaddy account](#)

[Transfer domain away from GoDaddy](#)

[Get authorization code](#)

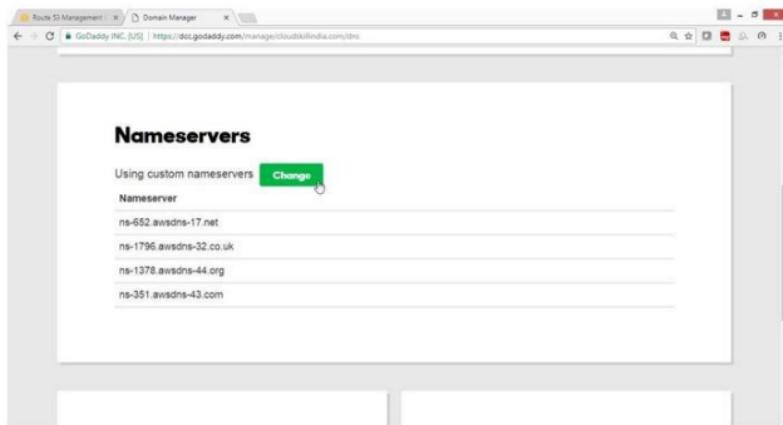
[Delete domain](#)

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<https://dcc.godaddy.com/manage/CLOUDSKILLINDIA.COM/settings>

Click on change

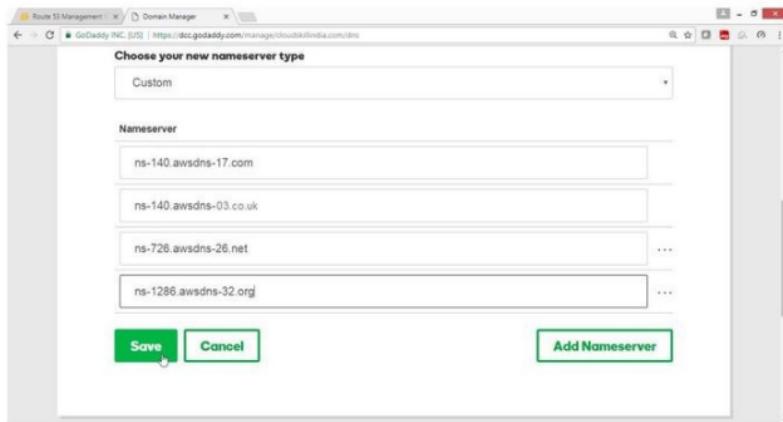
Add latest entries provided by Route53 NS records



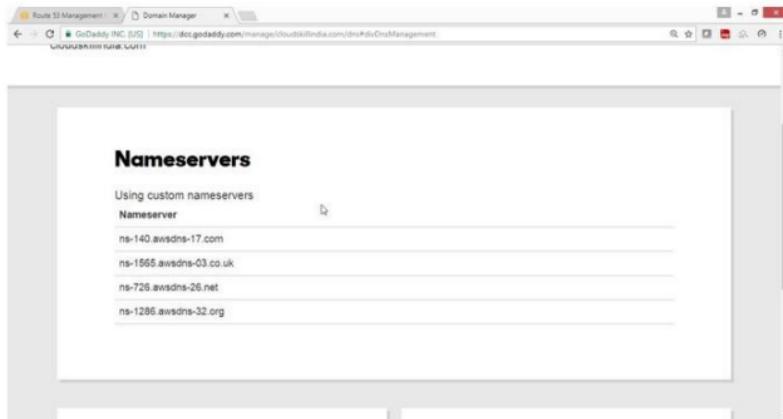
For Choose your new name server → Custom

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.

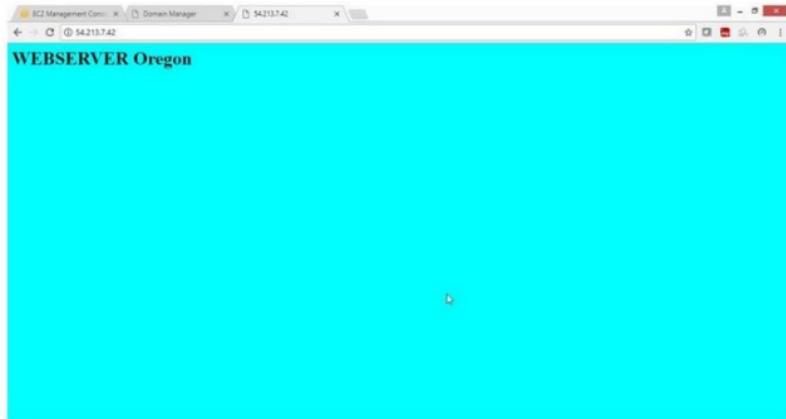
Copy the public IP and type in Browser

The screenshot shows the AWS EC2 Management Console interface. On the left, there's a 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 content 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 instances. One instance, "linuxvm1", is selected. The table columns include Name, Instance ID, Instance Type, Availability Zone, Instance State, Status Checks, and Alarm. The instance details are as follows:

Name	i-0986688cc14262f26	Instance ID	t2.micro	Availability Zone	us-west-2a	Instance State	running	Status Checks	2/2 checks	Alarm
Instance: i-0986688cc14262f26 (linuxvm1)			Public DNS: ec2-54-213-7-42.us-west-2.compute.amazonaws.com							
Description			Status Checks		Monitoring		Tags			
Instance ID: i-0986688cc14262f26			Public DNS (IPv4): ec2-54-213-7-42.us-west-2.compute.amazonaws.com		IPv4 Public IP: 54.213.7.42					
Instance state: running			IPv6 IPs: -		Private DNS: ip-172-31-45-138.us-west-2.compute.internal					
Instance type: t2.micro			Placement Group: vpc-us-west-2a		Placement ID: e7994446+100					
Elastic IPs: -										

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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 "cloudskillindia.com"

The screenshot shows the AWS Route 53 Management console. In the left sidebar, under 'Services', 'Resource Groups' is selected. Under 'Hosted zones', there is one entry: 'cloudskillindia.com'. The main content area shows a table with one row for 'cloudskillindia.com'. The 'Domain Name' column shows 'cloudskillindia.com', the 'Type' column shows 'Public', and the 'Record Set Count' column shows '2'. On the right, a 'Hosted Zone Details' panel is open, displaying the following information:

- Domain Name: cloudskillindia.com.
- Type: Public Hosted Zone
- Hosted Zone ID: Z3IBZ8DEZM6NPV
- Record Set Count: 2
- Comment: india
- Name Servers: ns-140.awsdns-17.com, ns-1595.awsdns-03.co.uk, ns-726.awsdns-26.net, ns-1296.awsdns-32.org

A note at the bottom of the details panel 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 Domain Manager interface. On the left, there's a sidebar with options like Dashboard, Hosted zones (which is selected), Health checks, Traffic flow, Traffic policies, Policy records, Domains, Registered domains, and Pending requests. The main area has tabs for Back to Hosted Zones, Create Record Set (which is highlighted with a yellow box), Import Zone File, and Delete Record Set. Below these tabs is a search bar labeled 'Record Set Name' and a dropdown menu for 'Any Type'. Underneath is a section titled 'Aliases Only' with a checkbox. A note says 'To get started, click Create Record Set button or click an existing record set.' There are two entries listed: one for 'ns-140.awsdns-17.com.' of type NS with values 'ns-1565.awsdns-03.co.uk.', 'ns-728.awsdns-26.net.', and 'ns-1286.awsdns-32.org.'; and another for 'cloudskillindia.com.' of type SOA with value 'ns-140.awsdns-17.com.'. At the bottom of the page are links for Feedback, English, Privacy Policy, and Terms of Use.

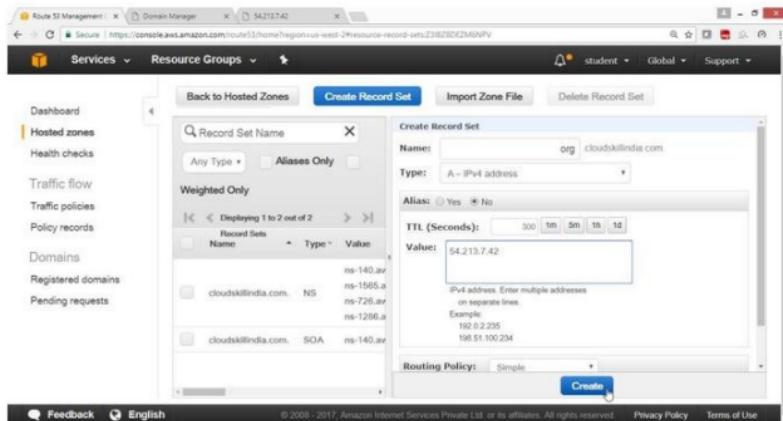
To add A record

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 Domain Manager interface. In the left sidebar, 'Hosted zones' is selected. On the right, under 'Edit Record Set', a new A record is being created for the domain 'org.cloudskillindia.com'. The record has the name 'org.cloudskillindia.com.' and the type 'A - IPv4 address'. The value is set to '54.213.7.42'. The TTL is set to 300 seconds. The 'Save Record Set' button is visible at the bottom.

## Create Alias record

The screenshot shows the AWS Route 53 Domain Manager interface. In the left sidebar, 'Hosted zones' is selected. On the right, under 'Create Record Set', a new CNAME record is being created for the domain 'www'. The record has the name 'www' and the type 'CNAME - Canonical name'. The value is set to 'org.cloudskillindia.com'. The 'Create' button is visible at the bottom.

## Verify the CNAME record got created

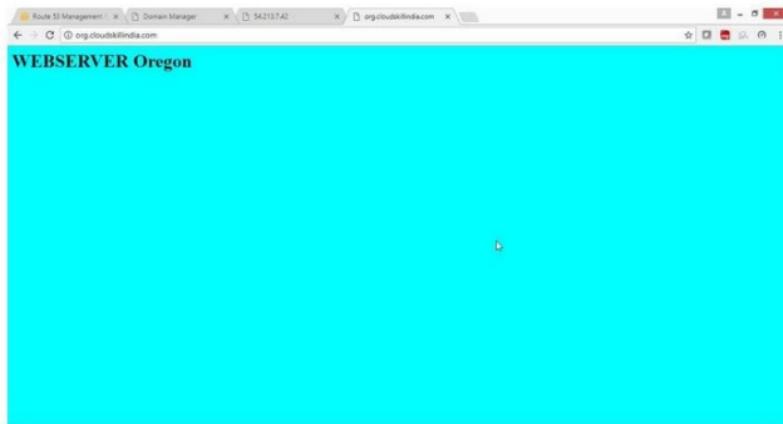
The screenshot shows the AWS Route 53 Domain Manager interface. On the left, a sidebar lists services like Dashboard, Hosted zones, Traffic flow, and Domains. The 'Hosted zones' option is selected. In the main area, there's a search bar labeled 'Record Set Name' and a dropdown menu set to 'Any Type'. Below this, a note says 'To get started, click Create Record Set button or click an existing record set.' A table displays four record sets:

Name	Type	Value
cloudskillindia.com.	NS	ns-140.awsdns-17.co ns-1565.awsdns-03.co ns-726.awsdns-26.net ns-1286.awsdns-32.or
cloudskillindia.com.	SOA	ns-140.awsdns-17.co
org.cloudskillindia.com.	A	54.213.7.42
www.cloudskillindia.com.	CNAME	org.cloudskillindia.com

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

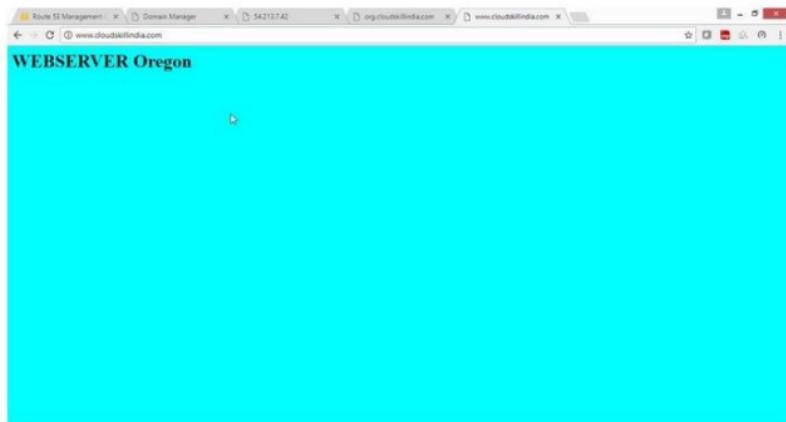
## Verification

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)

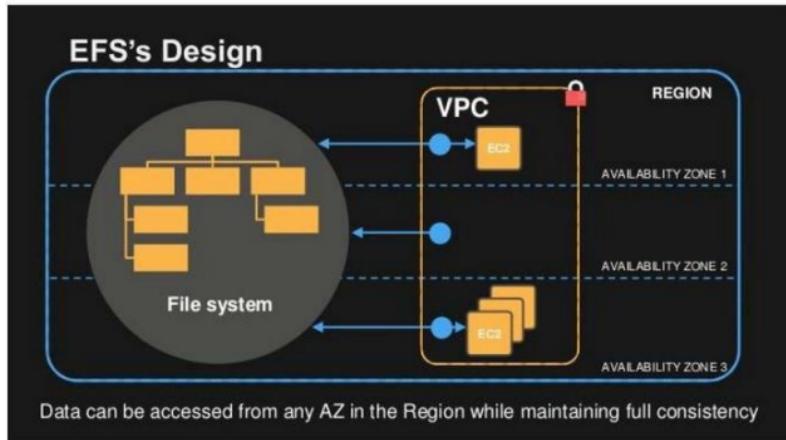


## Lab 21: To configure Amazon EFS Service

### 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**

The screenshot shows the AWS Cloud Services Catalog interface. On the left, there's a sidebar with links to History, EFS, Console Home, S3, Glacier, IAM, and EC2. The EC2 link is highlighted. The main area is titled "Find a service by name or feature (for example, EC2, S3 or VM, storage)." It lists various services under different categories:

- Compute:** EC2 Container Service, Lightsail, Elastic Beanstalk, Lambda, Batch.
- Storage:** S3, EFS, Glacier, Storage Gateway.
- Database:**
- Developer Tools:** CodeStar, CodeCommit, CodeBuild, CodeDeploy, CodePipeline, X-Ray.
- Management Tools:** CloudWatch, CloudFormation, CloudTrail, Config, OpsWorks, Service Catalog, Trusted Advisor, Managed Services.
- Analytics:** Athena, EMR, CloudSearch, Elasticsearch Service, Kinesis, Data Pipeline, QuickSight, AWS Glue.
- Artificial Intelligence:** Lex, Polly, Rekognition, Machine Learning.
- Application Service:** Step Functions, SWF, API Gateway, Elastic Transcoder.
- Messaging:** Simple Queue Service, Simple Notification Service, SES.
- Business Productivity:** WorkDocs, WorkMail, Amazon Chime.

The URL in the browser bar is <https://us-west-2.console.aws.amazon.com/ec2/home?region=us-west-2>.

Under EC2 Dashboard go for Network & Security

Select Security Groups

Click on Create Security Group

Name	Group ID	Group Name	VPC ID	Description
sg-275b206d	vpc-89c341ee	launch-wizard-1		launch-wizard-1
sg-38265c42	vpc-89c341ee	launch-wizard-2		launch-wizard-2
sg-a234465b	vpc-89c341ee	launch-wizard-3		launch-wizard-3
sg-a3affefb	vpc-89c341ee	default		default VPC

Under “Create Security Group” wizard

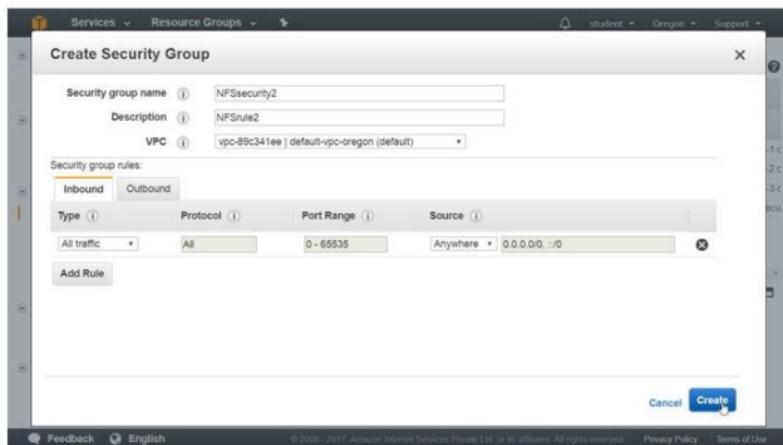
Give Following values

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 Management Console with the Services menu open. Under the Storage category, the EFS icon is highlighted. Other services listed include S3, Glacier, IAM, EC2, and various developer tools like CloudWatch, CloudFormation, and CloudTrail.

Click on "Create file system" button

The screenshot shows the Amazon EFS landing page. It features a large red 'Create file system' button. Below it, there's a brief description: "Amazon EFS provides file storage for use with your EC2 instances." At the bottom, there are three icons representing different features: a stack of files, a cloud with a double-headed arrow, and a person with a gear.

## Select Default VPC

Step 1: Configure file system 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- ⓘ

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-12f60e5a (default)	Automatic ⓘ	sg-a3a41edb - default ⓘ
us-west-2b	subnet-8b9e38ec (default)	Automatic ⓘ	sg-a3a41edb - default ⓘ
us-west-2c	subnet-19d0f141 (default)	Automatic ⓘ	sg-a3a41edb - default ⓘ

## 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-12f60e5a (default)	Automatic ⓘ	sg-a3a41edb - default ⓘ
us-west-2b	subnet-8b9e38ec (default)	Automatic ⓘ	sg-a3a41edb - default ⓘ
us-west-2c	subnet-19d0f141 (default)	Automatic ⓘ	sg-a3a41edb - default ⓘ

## Verify that all security groups go deleted

VPC vpc-89c341ee - default... ?

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 <span>?</span>
us-west-2a	subnet-13f50e5a (default)	Automatic	Select Security
us-west-2b	subnet-8b9e38ec (default)	Automatic	Select Security
us-west-2c	subnet-19d0f141 (default)	Automatic	

Cancel Next Step

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Now add NFSsecurity2 group in all A.Z

VPC vpc-89c341ee - default... ?

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 <span>?</span>
us-west-2a	subnet-13f50e5a (default)	Automatic	sg-275b205d-launch-wizard-1
us-west-2b	subnet-8b9e38ec (default)	Automatic	sg-28652152-NFSsecurity2
us-west-2c	subnet-19d0f141 (default)	Automatic	

Cancel

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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-13f60e5a (default)	Automatic	sg-28652152 - NFSSecurity2
us-west-2b	subnet-8b9e38ec (default)	Automatic	sg-28652152 - NFSSecurity2
us-west-2c	subnet-19d0f141 (default)	Automatic	sg-28652152 - NFSSecurity2

[Cancel](#)

[Next Step](#)

## Provide tags

Key → Name

Value → NFShyd1

## Drag Down

The screenshot shows the 'Step 3: Review and create' screen of the AWS EFS console. In the 'Add tags' section, there is one tag entry:

Key	Value	Remove
Name	NFShyd1	(remove icon)

Below this, the 'Choose performance mode' section displays the following options:

- General Purpose (default)
- Max I/O

Select General Purpose

Click on **Next Step**

We recommend **General Purpose (default)** 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

**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**

NFShyd1 filesystem got selected

Click on **Create File System**

VPC	Zone	Subnet	IP address	Security groups
vpc-89c341ee - default-vpc-oregon (default)	us-west-2a	subnet-13f60e5a (default)	Automatic	sg-28652152 - NFSsecurity2
	us-west-2b	subnet-8b9e38ec (default)	Automatic	sg-28652152 - NFSsecurity2
	us-west-2c	subnet-19dd1f41 (default)	Automatic	sg-28652152 - NFSsecurity2

**Optional settings**

Tags   
Performance mode  General Purpose (default)  
Encrypted  No

**Create File System**

## Verify

The screenshot shows the AWS EBS File System Manager interface. A success message box is displayed, stating: "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, a table lists the created file system: Name: NFShydr1, File system ID: fs-53f822fa, Metered size: 6.0 KB, Number of mount targets: 3, Creation date: 2017-08-15T06:16:55Z. Under "Other details", Owner ID is listed as 523251683217 and Life cycle state is Available. There is a "Tags" section with a single tag named "Name: NFShydr1".

## Drag Down

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

The screenshot shows the AWS EFS Mount Targets page. It displays the DNS name fs-53f822fa.efs.us-west-2.amazonaws.com. Below this, there are links for "Amazon EC2 mount instructions" and "AWS Direct Connect mount instructions". A table titled "Mount targets" lists three targets. The first target is associated with the VPC "vpc-89c341ee - default-vpc-oregon (default)" and has an IP address of 172.31.7.82. The second target is associated with the same VPC and has an IP address of 172.31.40.66. The third target is also associated with the same VPC and has an IP address of 172.31.27.220. All three targets are in a "Creating" state. The table columns are: VPC, Availability Zone, Subnet, IP address, Mount target ID, Network interface ID, Security groups, and Life cycle state.

## Verify that Life cycle state is Available

The screenshot shows the AWS EFS console with the URL <https://us-west-2.console.aws.amazon.com/efs/home?region=us-west-2&FileSystemId=fs-53f622fa>. The page displays the 'Mount targets' section for the file system 'fs-53f622fa'. The table lists three mount targets, all of which are in the 'Available' state. The columns include VPC, Availability Zone, Subnet, IP address, Mount target ID, Network interface ID, Security groups, and Life cycle state.

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-19d0f141 (default)	172.31.7.82	fsm-86a0072f	eni-7adcc27a	sg-28652152 - NFSecurity2	Available
	us-west-2a	subnet-13f0e5a (default)	172.31.40.66	fsm-87a0072a	eni-e8d884d6	sg-28652152 - NFSecurity2	Available
	us-west-2b	subnet-8b9e38ec (default)	172.31.27.220	fsm-98a00731	eni-eec553c1	sg-28652152 - NFSecurity2	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]# yum install nfs-utils  
[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

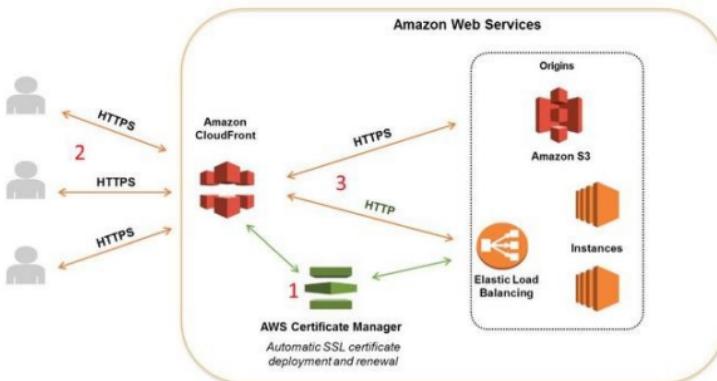
```
proc on /proc type proc (rw,relatime)  
sysfs on /sys type sysfs (rw,relatime)  
devtmpfs on /dev type devtmpfs (rw,relatime,size=499756k,nr_inodes=124939,mode=755)  
devpts on /dev/pts type devpts (rw,relatime,gid=5,mode=620,ptmxmode=000)  
tmpfs on /dev/shm type tmpfs (rw,relatime)  
/dev/xvda1 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 like 'AWS CloudFront Manager' (selected), 'AWS Lambda', 'AWS CloudFront', 'AWS CloudWatch Metrics', and 'AWS CloudWatch Metrics Insights'. Below the navigation bar is a search bar with the placeholder 'Find a service by name or feature (for example, EC2, S3 or VM, storage)'. The main area is titled 'Services' and contains a grid of service icons and names. The services listed are:

Compute	Developer Tools	Analytics
EC2	CodeStar	Athena
EC2 Container Service	CodeCommit	EMR
Lightsail	CodeBuild	CloudSearch
Elastic Beanstalk	CodeDeploy	Elasticsearch Service
Lambda	CodePipeline	Kinesis
Batch	X-Ray	Data Pipeline
		QuickSight
		AWS Glue

Storage	Management Tools	Artificial Intelligence
S3	CloudWatch	Lex
EFS	CloudFormation	
Glacier	CloudTrail	

On the left side, there's a sidebar titled 'History' with links to 'CloudFront', 'Console Home', 'EC2', 'EFS', 'S3', and 'Glacier'. The URL in the browser address bar is <https://us.console.aws.amazon.com/s3/home?region=us-west-2>.

## 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, Resource Groups, and Actions. Below the navigation bar is a search bar labeled "Search by prefix". To the right of the search bar are buttons for "None", "Properties", and "Transfers". A banner at the top right indicates the user is "student" with "Global" and "Support" options.

The main content area displays a table of objects in the "Bucket: www.cloudskillhyd.com". The table has columns for 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, detailed information about the bucket is shown:

**Bucket:** www.cloudskillhyd.com  
**Region:** Oregon  
**Creation Date:** Tue Aug 15 08:44:43 GMT+530 2017  
**Owner:** skmvai999

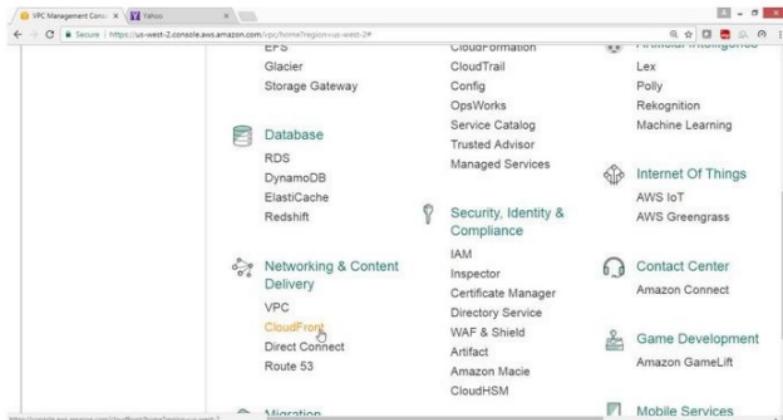
Below this, there are sections for "Permissions" and "Static Website Hosting". Under "Static Website Hosting", it says you can host your static website entirely on Amazon S3. It also provides the "Endpoint" for the bucket, which is [www.cloudskillhyd.com.s3-website-us-west-2.amazonaws.com](http://www.cloudskillhyd.com.s3-website-us-west-2.amazonaws.com).

## 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 Management Console. On the left, there's a sidebar with links like 'Distributions', 'Reports & Analytics', 'Cache Statistics', 'Monitoring and Alarms', etc. The main area is titled 'CloudFront Distributions'. At the top of this area is a blue 'Create Distribution' button. Below it is a search bar and a table with columns for 'Delivery Method', 'ID', 'Domain Name', 'Comment', and 'Origin'. One row in the table is visible, showing 'Web' as the delivery method, ID 'E3MBIZCTGBESOL', domain name 'd23xq5le2sebu2.cloudfront.net', and origin 'www.flameperpet.com s3.amazonaws.com'. The bottom of the screen shows standard AWS navigation and copyright information.

Under "Select a delivery method for your content" Wizard

Under Web

Click on **Get Started** button

This screenshot shows the 'Select a delivery method for your content' wizard. It's specifically for the 'Web' delivery method. The first section, 'Create a web distribution if you want to:', lists several options. 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.' At the bottom of this section is a large blue 'Get Started' button. The second section, 'RTMP', is partially visible below it. The bottom of the screen shows standard AWS navigation and copyright information.

## 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 open, displaying a list of available origins. The item 'www.cloudskillhyd.com.s3.amazonaws.com' is highlighted. Other options in the list include 'Amazon S3 Buckets', 'cloudfront-us-east-1.amazonaws.com', 'crttranslate.s3.amazonaws.com', 'saleshipsbucket1.s3.amazonaws.com', 'srikanthiyh.s3.amazonaws.com', 'www.cloudskillhyd.com.s3.amazonaws.com', and 'Elastic Load Balancers'. Below the dropdown, there are sections for 'Default Cache Behavior Settings' and 'Allowed HTTP Methods'.

Verify Origin Domain Name got selected

The screenshot shows the 'Create Distribution' wizard at Step 2: Create distribution. In the 'Origin Settings' section, the 'Origin Domain Name' field contains the value 'www.cloudskillhyd.com.s3.amazonaws.com'. The other fields in this section are empty. Below the dropdown, there are sections for 'Default Cache Behavior Settings' and 'Allowed HTTP Methods'.

Drag Down

Go for Distribution Settings

For Price Class

Select Edge location

The screenshot shows the AWS CloudFront Management console with the URL <https://console.aws.amazon.com/cloudfront/home?region=us-west-2&create-distribution>. The interface is in English. At the top, there are tabs for 'Services' and 'Resource Groups'. Below that, a sidebar shows 'Step 1: Select delivery method' and 'Step 2: Create distribution'. The main area 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'), 'Alternate Domain Names (CNAMEs)' (empty), and 'SSL Certificate' (set to 'Default CloudFront Certificate (\* cloudfront.net)'). A note below the SSL certificate field states: 'Choose this option if you want your users to use HTTPS or HTTP to access your content only via the CloudFront domain name (for example, https://111111111111.cloudfront.net/logo.jpg). Important: If you choose this option, CloudFront requires that browsers or devices support TLS 1.2 or later to access your content.' There are also options for 'Custom SSL Certificate (example.com)' and 'TLS 1.2 or later'.

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 include 'AWS WAF Web ACL' set to 'None', 'Alternate Domain Names (CNAMEs)' empty, and 'SSL Certificate' set to 'Default CloudFront Certificate (\* cloudfront.net)'. A note explains that this option allows users to access content via HTTPS or HTTP. A 'Custom SSL Certificate (example.com)' section is also present. At the bottom, there are buttons for 'Request or Import a Certificate with ACM' and 'Create Distribution'.

Drag Down

Click on Create Distribution

The screenshot shows the 'Create Distribution' page in the AWS CloudFront console. It includes fields for 'Default Root Object', 'Logging' (set to 'On'), 'Bucket for Logs', 'Log Prefix', 'Cookie Logging' (set to 'Off'), 'Enable IPv6' (checked), and a 'Comment' field. The 'Distribution State' is set to 'Enabled'. At the bottom right, there are 'Cancel', 'Back', and 'Create Distribution' buttons, with 'Create Distribution' being highlighted.

## Verify the status

The screenshot shows the AWS CloudFront console with the URL <https://console.aws.amazon.com/cloudfront/home?region=us-west-2#distributions>. The page displays a list of CloudFront distributions. One distribution, 'E1PZWW6RSBZYQ', has its status set to 'In Progress'.

Delivery Method	ID	Domain Name	Comment	Origin
Web	E3MBZACTGBE5OL	d2xsg5lo2sebu2.cloudfront.net	-	www.clameerpet.com s3.amazonaws.com
Web	E1PZWW6RSBZYQ	d3hv6v1agltvcy.cloudfront.net	-	www.cloudskillhyd.com s3.amazonaws.com

## Check column Status

Shows → In Progress

The screenshot shows the AWS CloudFront console with the URL <https://console.aws.amazon.com/cloudfront/home?region=us-west-2#distributions>. The page displays a list of CloudFront distributions. The 'Status' column indicates the status of each distribution.

Domain Name	Comment	Origin	CNAMEs	Status	State	Last Modified
d2xsg5lo2sebu2.cloudfront.net	-	www.clameerpet.com s3.amazonaws.com	-	Deployed	Enabled	2017-08-12 11:4
d3hv6v1agltvcy.cloudfront.net	-	www.cloudskillhyd.com 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 URL <https://console.aws.amazon.com/cloudfront/home?region=us-west-2#distributions>. The left sidebar includes links for Services, Resource Groups, Distributions, What's New, Reports & Analytics, Cache Statistics, Monitoring and Alarms, Popular Objects, Top Referrers, Usage, Viewers, Private Content, How-to Guide, and Origin Access Identity. The main content area displays a table of distributions:

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

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

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

The screenshot shows the AWS CloudFront console with the URL <https://console.aws.amazon.com/cloudfront/home?region=us-west-2#distributions>. The left sidebar includes links for Services, Resource Groups, Distributions, What's New, Reports & Analytics, Cache Statistics, Monitoring and Alarms, Popular Objects, Top Referrers, Usage, Viewers, Private Content, How-to Guide, and Origin Access Identity. The main content area displays the "CloudFront Distributions" page with a table:

CloudFront Distributions				
Create Distribution		Distribution Settings		Enable
Viewing	Any Delivery Method	Any State		
Delivery Method	ID	Domain Name	Comment	Origin
Web	E3MBZACTGBE50L	d2sxlq5i2sebu2.cloudfront.net	-	www.cfameerpet.com
Web	E1PZW95RSB3Y79	d3hv6v1ag4tvcy.cloudfront.net	-	www.cloudskillhyd.com

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

## Verify

Now Open the Browser and type

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

The screenshot shows the AWS CloudFront Management console. On the left, there's a sidebar with 'Services' selected under 'Resource Groups'. Below it are sections for 'Distributions', 'Reports & Analytics', 'Private Content', and 'How-to Guide'. The main content area is titled 'CloudFront Distributions > E1PZW95RSB3Y79'. It displays various configuration details for this specific distribution, such as ARN, Log Prefix, Delivery Method, Cookie Logging, Distribution Status, Price Class, AWS WAF Web ACL, Alternate Domain Names (CNAMEs), SSL Certificate, Domain Name, Custom SSL Client Support, Supported HTTP Versions, and Log Bucket. At the bottom, there are links for 'Feedback', 'English', and legal notices.

This Website is coming from CloudFront Service

The screenshot shows a website template named 'Car Club'. The header features a purple navigation bar with tabs for 'HOME', 'ABOUT', 'ARTICLES', 'CONTACTS', 'SITE MAP', 'Help', and 'FAQ'. Below the header is a large banner image of a purple sports car. The main content area includes a 'Latest News' section with two items and a 'Welcome to Our Club' section. The 'Latest News' items are dated 10.08.2010 and 03.08.2010. The 'Welcome to Our Club' section contains a brief welcome message and a note about the website template being optimized for 1024x768 screen resolution. At the bottom, there's a note about the website template being delivered in two packages with PSD source files included.





