

# **Enterprise Standards and Best Practices for IT Infrastructure**

**Lab 01 ,02 and 03-Lab Report**

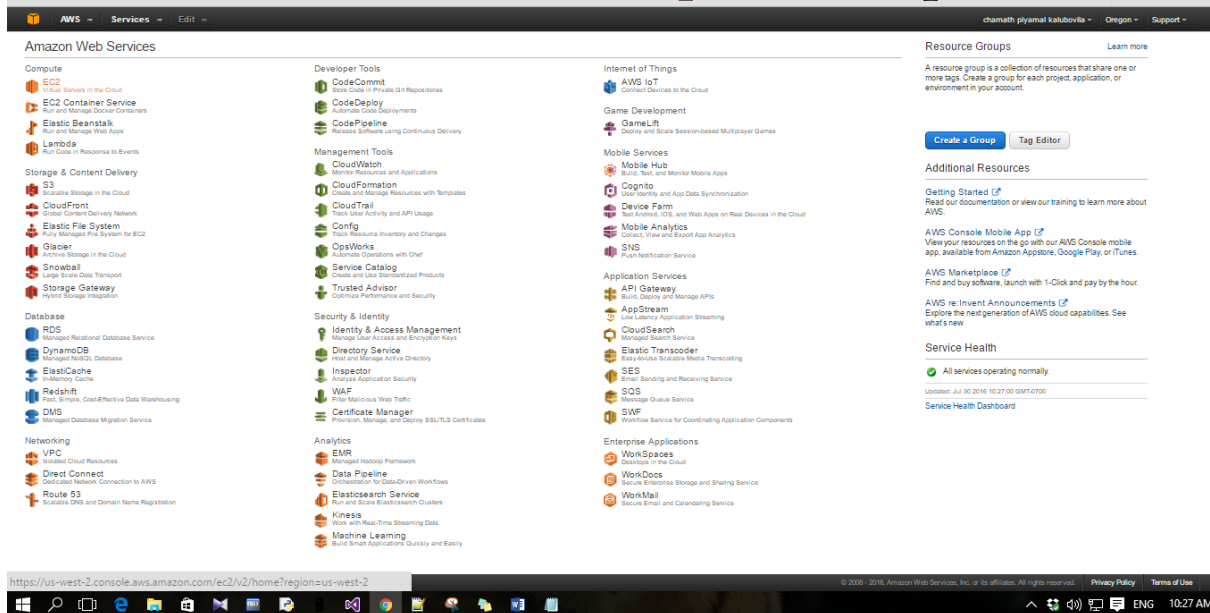
**K.D.C.Piyamal –IT12080090**

**Software Requirements Specification**

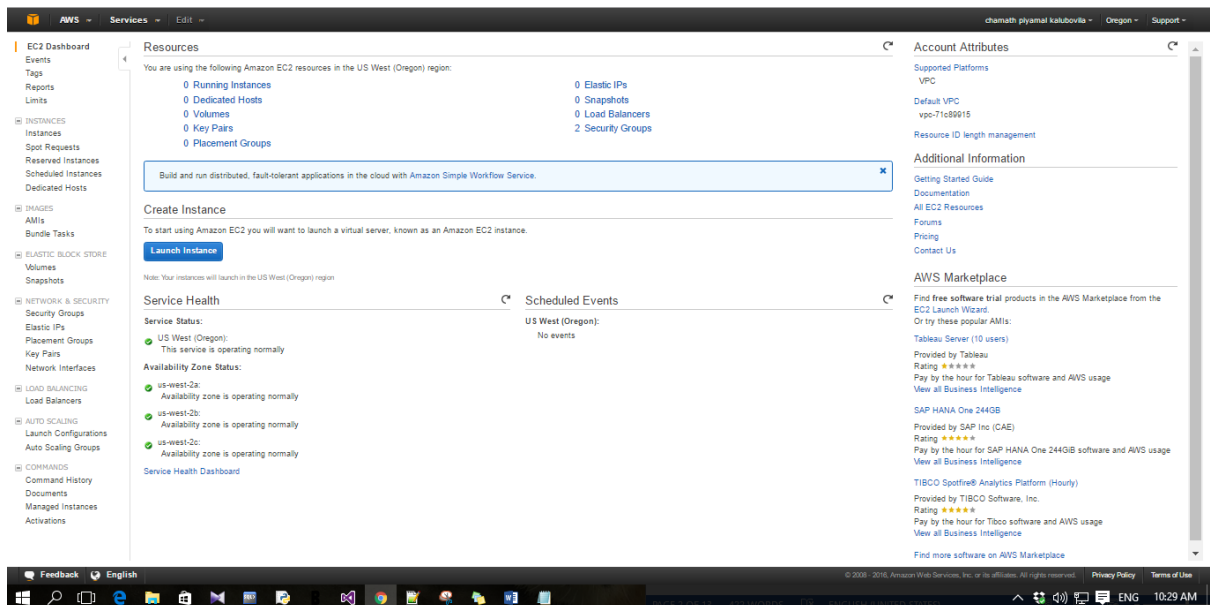
**Sri Lanka Institute of Information Technology  
B.Sc. Special (Honors) Degree in Information Technology  
Specialized in Information Technology**

# Creating an Amazon EBS-Backed Windows AMI

**Step 01:** Select EC2 web service (virtual server in cloud) from Amazon web servers.



**Step 02:** Select Launch Instance under Create Instance in main interface.



## Step 03: Choose an Amazon Machine image (AMI).(Select Microsoft windows Server 2012 R2 Base)

The screenshot shows the AWS Management Console interface for Step 1: Choose an Amazon Machine Image (AMI). The console is in the 'chamath piyamal kalubovila' account in the 'Oregon' region. The navigation bar shows the following steps: 1. Choose AMI, 2. Choose Instance Type, 3. Configure Instance, 4. Add Storage, 5. Tag Instance, 6. Configure Security Group, 7. Review.

The main content area displays a list of AMIs. The 'Microsoft Windows Server 2012 R2 Base' AMI (ami-26e72546) is selected. The AMI details show it is a 64-bit architecture, 64-bit architecture, and 64-bit architecture. The AMI is labeled 'Free for eligible'.

Below the AMI list, there is a section titled 'Are you launching a database instance? Try Amazon RDS.' which includes a link to 'Launch a database using RDS'.

The bottom of the console shows the Windows taskbar with the Start button, search bar, and various application icons. The system clock shows 10:33 AM on 10/31/2016.

## Step 04: Choose an Instance type.

The screenshot shows the AWS Management Console interface for Step 2: Choose an Instance Type. The console is in the 'chamath piyamal kalubovila' account in the 'Oregon' region. The navigation bar shows the following steps: 1. Choose AMI, 2. Choose Instance Type, 3. Configure Instance, 4. Add Storage, 5. Tag Instance, 6. Configure Security Group, 7. Review.

The main content area displays a list of instance types. The 't2.micro' instance type is selected. The instance type details show it is a 64-bit architecture, 64-bit architecture, and 64-bit architecture. The instance type is labeled 'Free for eligible'.

Below the instance type list, there is a section titled 'Are you launching a database instance? Try Amazon RDS.' which includes a link to 'Launch a database using RDS'.

The bottom of the console shows the Windows taskbar with the Start button, search bar, and various application icons. The system clock shows 10:34 AM on 10/31/2016.

## Step 05: Review Instance Launch.

**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** [Edit AMI](#)  
Microsoft Windows Server 2012 R2 Base - ami-26e72546  
Microsoft Windows 2012 R2 Standard edition with 64-bit architecture. [English]  
Root Device Type: x86 Virtualization type: hvm

**Instance Type** [Edit instance type](#)  

Instance Type	ECUs	vCPUs	Memory (GiB)	Instance Storage (GiB)	EBS-Optimized Available	Network Performance
t2.micro	Variable	1	1	EBS only	-	Low to Moderate

**Security Groups** [Edit security groups](#)  

Type	Protocol	Port Range	Source
RDP	TCP	3389	0.0.0.0/0

**Instance Details** [Edit instance details](#)  
**Storage** [Edit storage](#)  
**Tags** [Edit tags](#)

[Cancel](#) [Previous](#) [Launch](#)

**Step 06:** After launch there is popup box which is to select an existing key pair or create new key pair. Select new key pair and download the key pair. After downloading the key pair click Launch Instance.

**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** [Edit AMI](#)  
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Root Device Type: x86 Virtualization type: hvm

**Instance Type** [Edit instance type](#)  

Instance Type	ECUs	vCPUs	Memory (GiB)	Instance Storage
t2.micro	Variable	1	1	EBS only

**Security Groups** [Edit security groups](#)  

Type	Protocol
RDP	TCP

**Instance Details** [Edit instance details  
\*\*Storage\*\* \[Edit storage\]\(#\)  
\*\*Tags\*\* \[Edit tags\]\(#\)](#)

**Select an existing key pair or create a new key pair**  
A key pair consists of a public key that AWS stores, and a private key file that you store. Together, they allow you to connect to your instance securely. For Windows AMIs, the private key file is required to obtain the password used to log into your instance. For Linux AMIs, the private key file allows you to securely SSH into your instance.  
Note: The selected key pair will be added to the set of keys authorized for this instance. Learn more about removing existing key pairs from a public AMI.  
Create a new key pair  
Key pair name  
  
[Download Key Pair](#)  
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.  
[Cancel](#) [Launch Instances](#)

[Cancel](#) [Previous](#) [Launch](#)

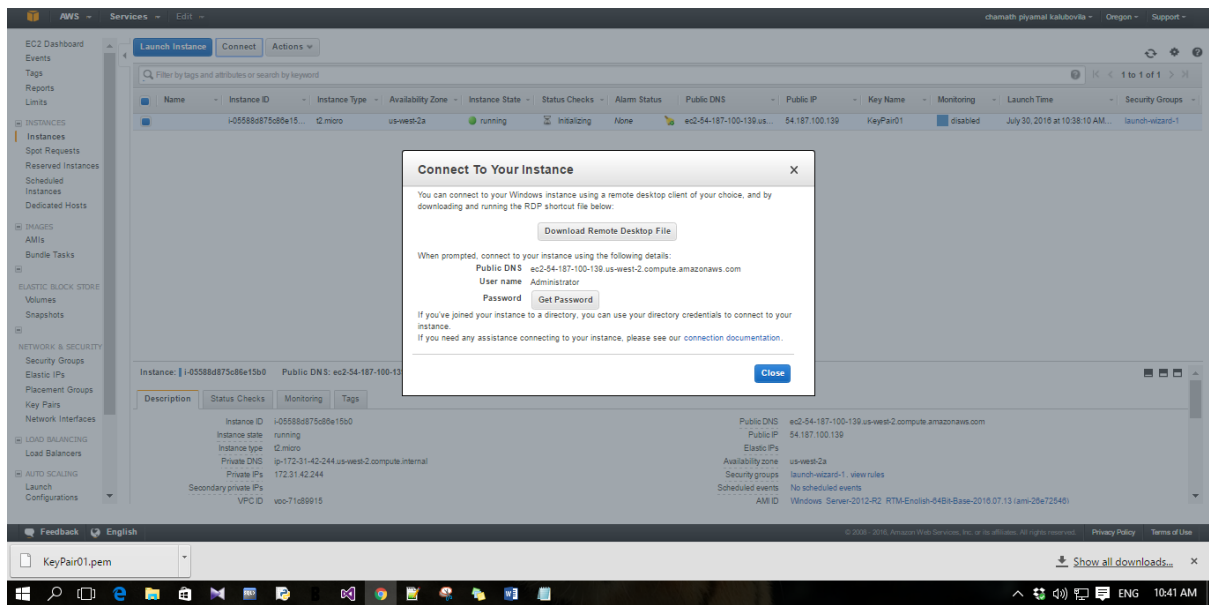
## Step 07: View instance after launching.

The screenshot shows the 'Launch Status' page in the AWS Management Console. At the top, there's a navigation bar with 'AWS', 'Services', and 'Edit'. The user's name 'chanath piyamal kalubovila' and region 'Oregon' are visible. The main content area has a green banner stating 'Your instances are now launching' with a 'View launch log' link. Below it is a blue banner for 'Get notified of estimated charges'. A section titled 'How to connect to your instances' provides instructions and links to resources like the Amazon EC2 User Guide. At the bottom right, there is a 'View Instances' button.

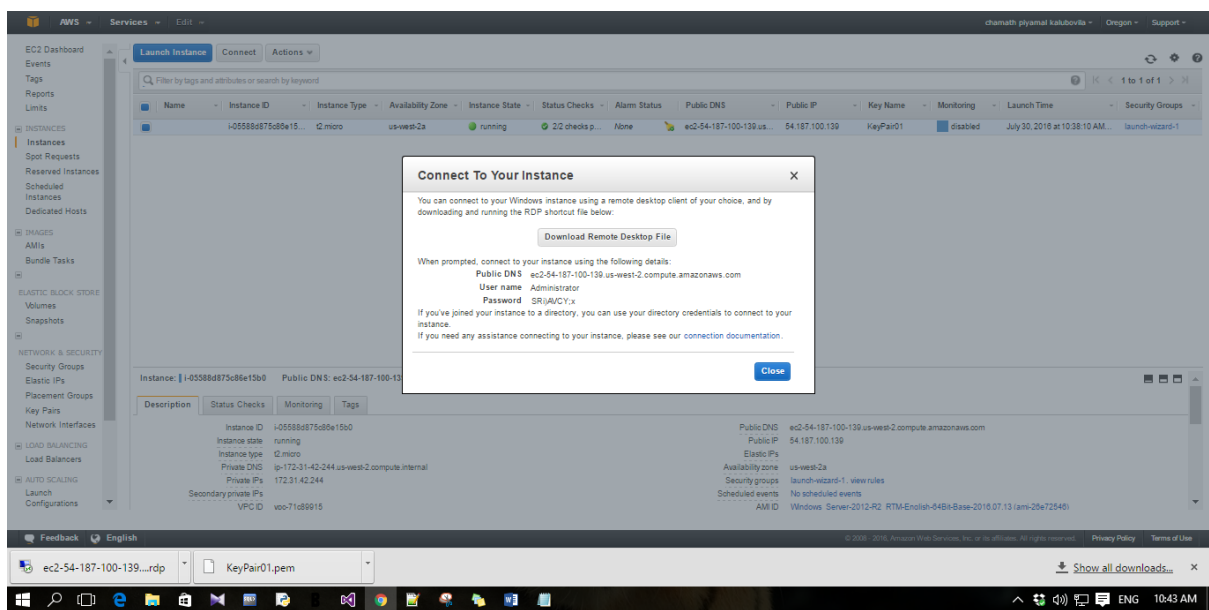
## Step 08: Select the created instance and then connect.

The screenshot shows the 'Instances' page in the AWS Management Console. The left sidebar contains navigation links for EC2 Dashboard, INSTANCES, IMAGES, ELASTIC BLOCK STORE, and NETWORK & SECURITY. The main area displays a table of instances. The instance 'i-05588d875c86e15b0' is selected, and its details are expanded. The details show the instance is in the 'running' state, located in the 'us-west-2' region. It has a public IP of '54.187.100.139' and a private IP of '172.31.42.244'. The 'Description' tab is active, showing the instance's configuration, including the AMI 'Windows\_Server-2012-R2\_RTM-English-64Bit-Base-2016.07.13 (ami-28e7254b)'.

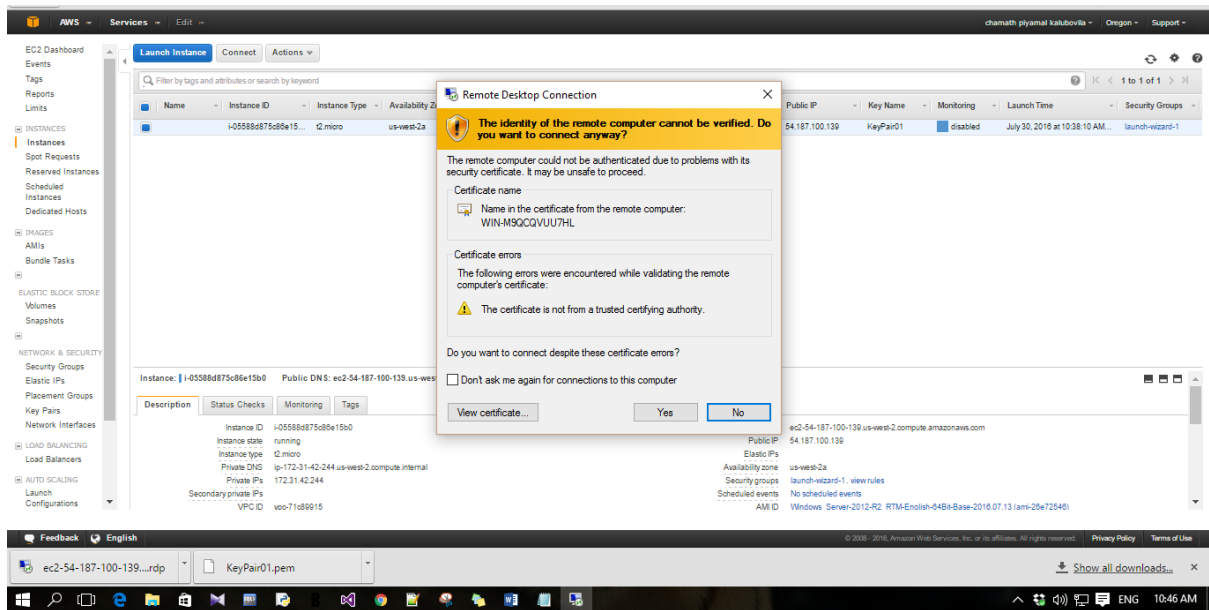
## Step 09: Get a password from Connect to Your Instance window.



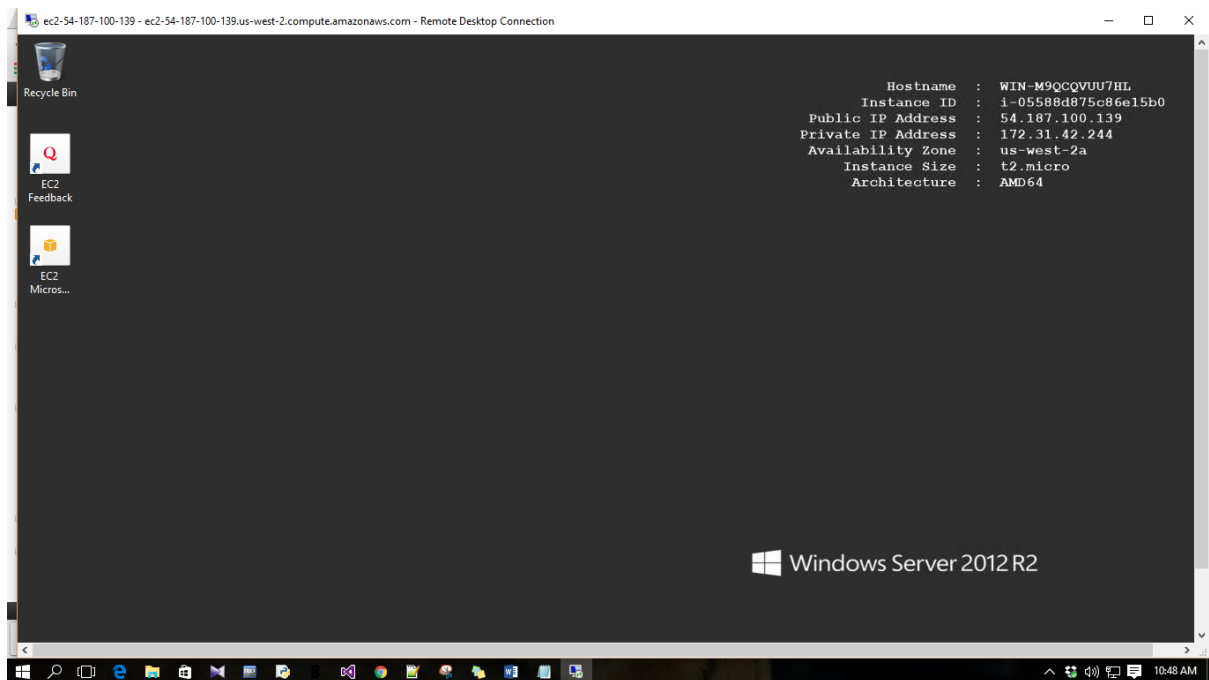
## Step 10: Decrypt the password. Note down the user name and the decrypted password.



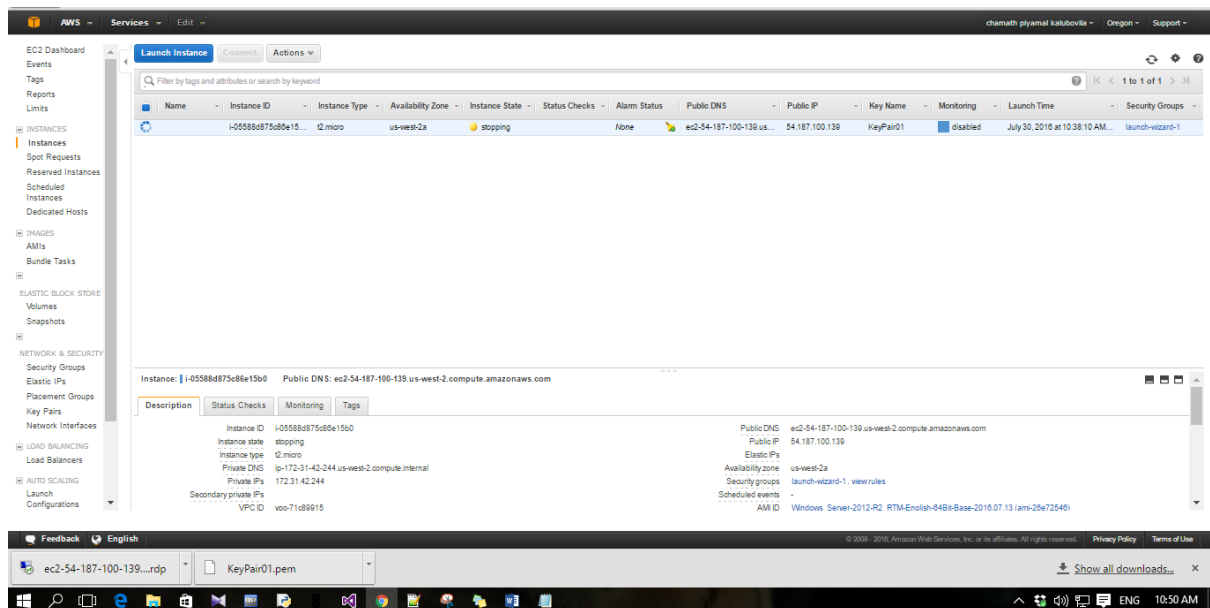
**Step 11:** Open Remote Desktop Connection. Provide the public IP of the launched instance. After enter password and Connect to the created instance.



**Step 12:** Log in to Windows Server 2012 R2 using the given user name and the decrypted password.

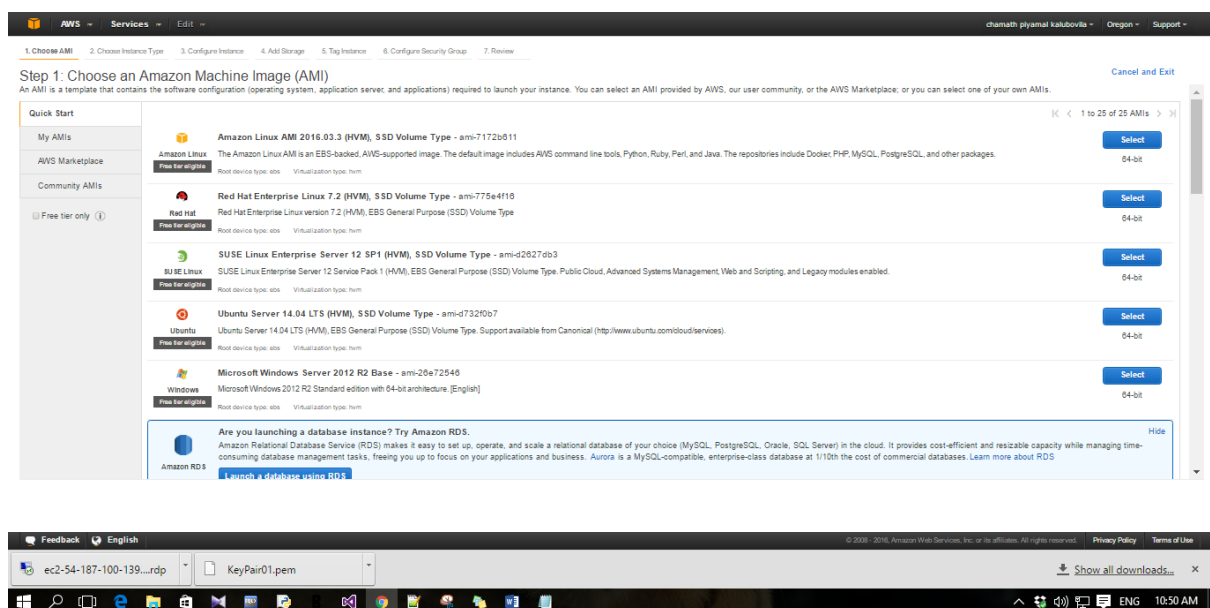


**Step 13:** Right click on the created server instance and terminate it from the instance state. (Right click on instance -> Instance State -> Stop)



## Creating an Amazon EBS-Backed Linux AMI

**Step 01:** Choose an Amazon Machine Image (AMI). Select Amazon Linux AMI 2016.03.3 (HVM), SSD Volume Type





## Step 02: Choose an Instance Type. Then review and launch

The screenshot shows the AWS Management Console interface for the 'Choose an Instance Type' step. The top navigation bar includes the AWS logo, 'Services', and 'Edit'. The breadcrumb trail shows: 1. Choose AMI, 2. Choose Instance Type, 3. Configure Instance, 4. Add Storage, 5. Tag Instance, 6. Configure Security Group, 7. Review. The main heading is 'Step 2: Choose an Instance Type'. Below it, a description states: 'Amazon EC2 provides a wide selection of instance types optimized to fit different use cases. Instances are virtual servers that can run applications. They have varying combinations of CPU, memory, storage, and networking capacity, and give you the flexibility to choose the appropriate mix of resources for your applications. Learn more about instance types and how they can meet your computing needs.' The 'Filter by:' section shows 'All instance types', 'Current generation', and 'Show/Hide Columns'. The 'Currently selected:' section shows 't2.micro (Variable ECUs, 1 vCPUs, 2.5 GHz, Intel Xeon Family, 1 GiB memory, EBS only)'. A table lists various instance types with columns for Family, Type, vCPUs, Memory (GiB), Instance Storage (GiB), EBS-Optimized Available, and Network Performance. The 't2.micro' instance type is highlighted. At the bottom, there are buttons for 'Cancel', 'Previous', 'Review and Launch', and 'Next: Configure Instance Details'.

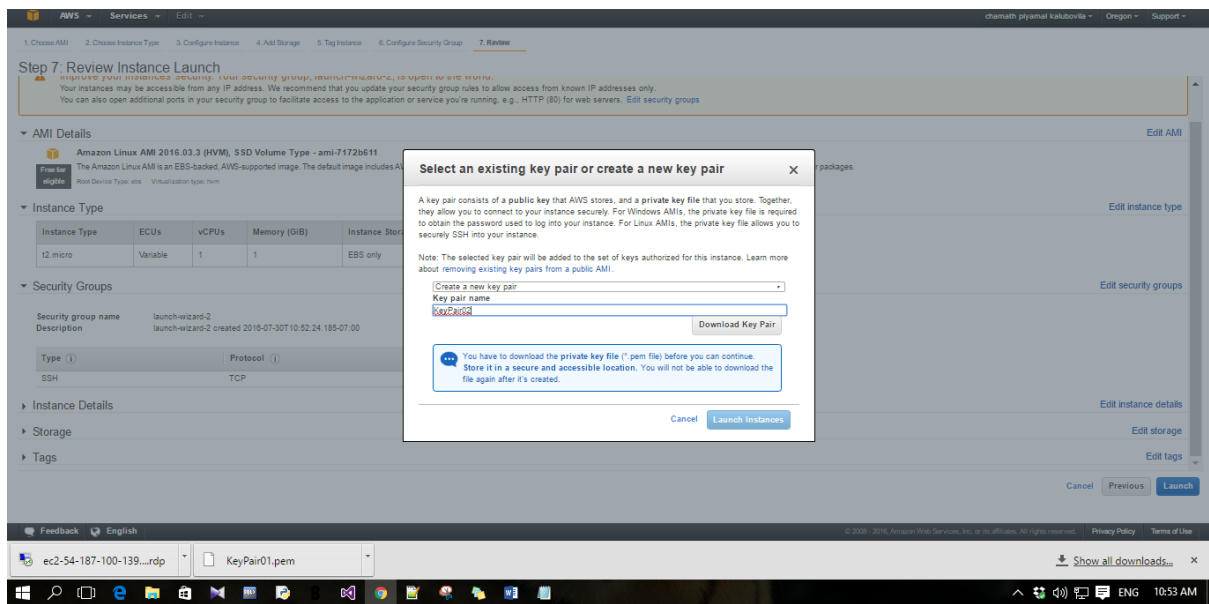
Family	Type	vCPUs	Memory (GiB)	Instance Storage (GiB)	EBS-Optimized Available	Network Performance
General purpose	t2.nano	1	0.5	EBS only	-	Low to Moderate
General purpose	t2.micro	1	1	EBS only	-	Low to Moderate
General purpose	t2.small	1	2	EBS only	-	Low to Moderate
General purpose	t2.medium	2	4	EBS only	-	Low to Moderate
General purpose	t2.large	2	8	EBS only	-	Low to Moderate
General purpose	m4.large	2	8	EBS only	Yes	Moderate
General purpose	m4.xlarge	4	16	EBS only	Yes	High
General purpose	m4.2xlarge	8	32	EBS only	Yes	High
General purpose	m4.4xlarge	16	64	EBS only	Yes	High
General purpose	m4.10xlarge	40	100	EBS only	Yes	10 Gbps
General purpose	m3.medium	1	3.75	1 x 4 (SSD)	-	Moderate

## Step 03: Review Instance Launch.

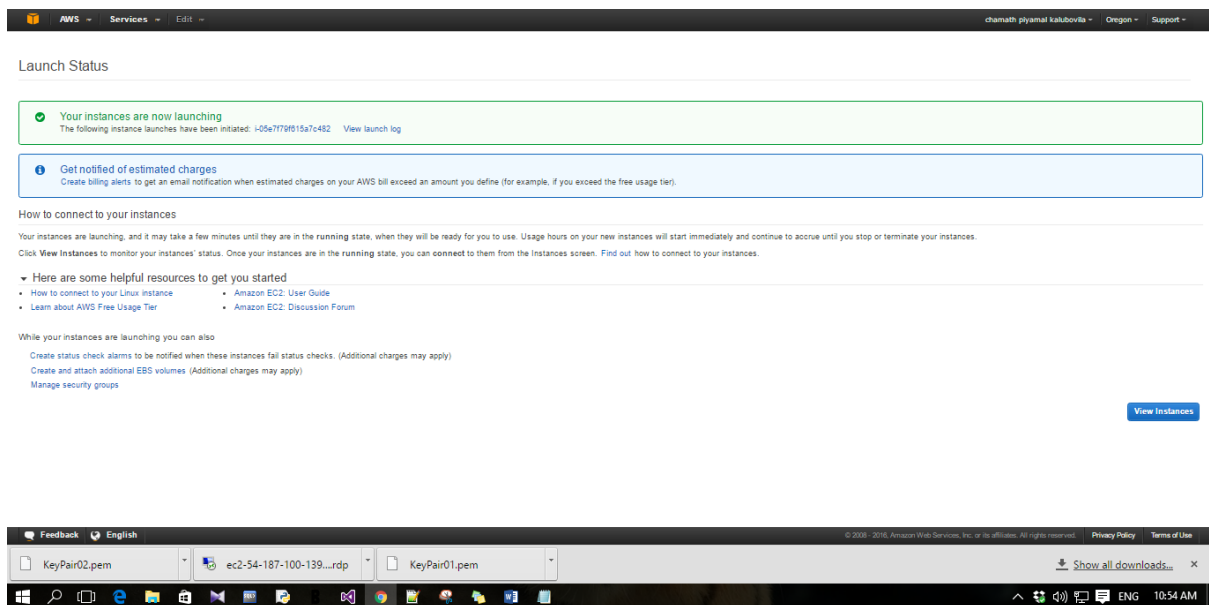
The screenshot shows the AWS Management Console interface for the 'Review Instance Launch' step. The top navigation bar includes the AWS logo, 'Services', and 'Edit'. The breadcrumb trail shows: 1. Choose AMI, 2. Choose Instance Type, 3. Configure Instance, 4. Add Storage, 5. Tag Instance, 6. Configure Security Group, 7. Review. The main heading is 'Step 7: Review Instance Launch'. Below it, a description states: '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.' A warning message is displayed: 'Improve your instances' security. Your security group, launch-wizard-2, 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'. The 'AMI Details' section shows 'Amazon Linux AMI 2016.03.3 (HVM), SSD Volume Type - ami-7172b611'. The 'Instance Type' section shows a table with columns for Instance Type, ECUs, vCPUs, Memory (GiB), Instance Storage (GiB), EBS-Optimized Available, and Network Performance. The 'Security Groups' section shows a table with columns for Type, Protocol, Port Range, and Source. The 'Instance Details' section is partially visible. At the bottom, there are buttons for 'Cancel', 'Previous', 'Launch', and 'Next: Configure Instance Details'.

Instance Type	ECUs	vCPUs	Memory (GiB)	Instance Storage (GiB)	EBS-Optimized Available	Network Performance
t2.micro	Variable	1	1	EBS only	-	Low to Moderate

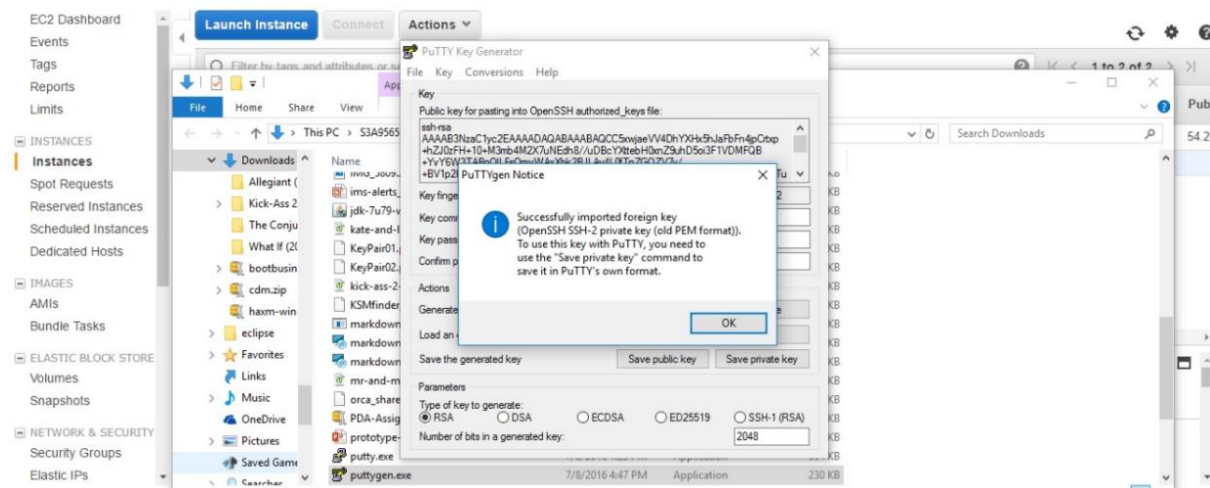
## Step 04: Choose create a new key pair to download a new key pair. Then give a key pair name. Then select Launch Instance.



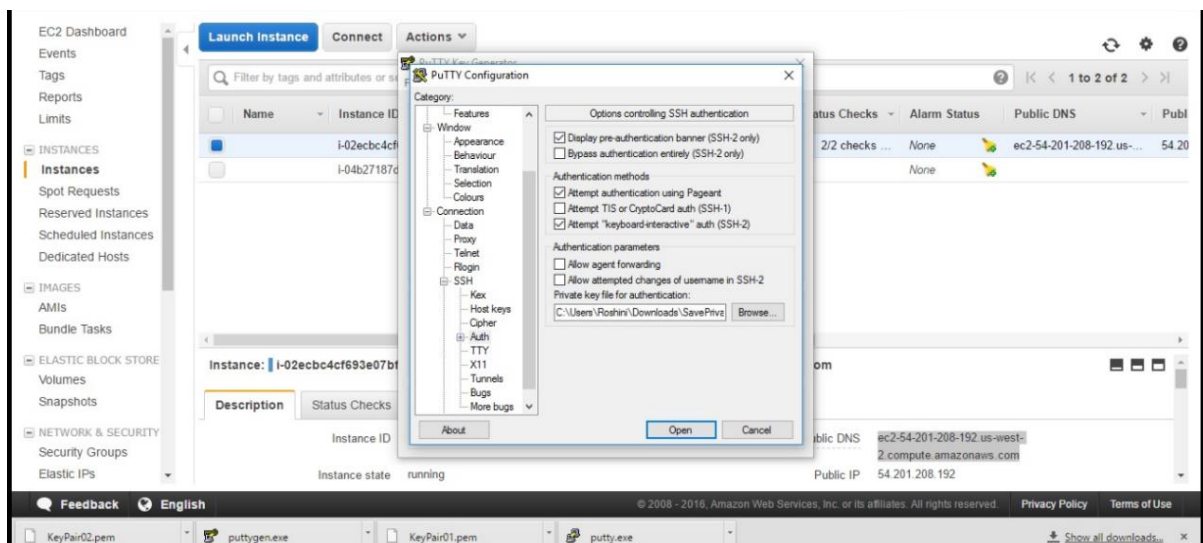
## Step 05: View Instances after launching.



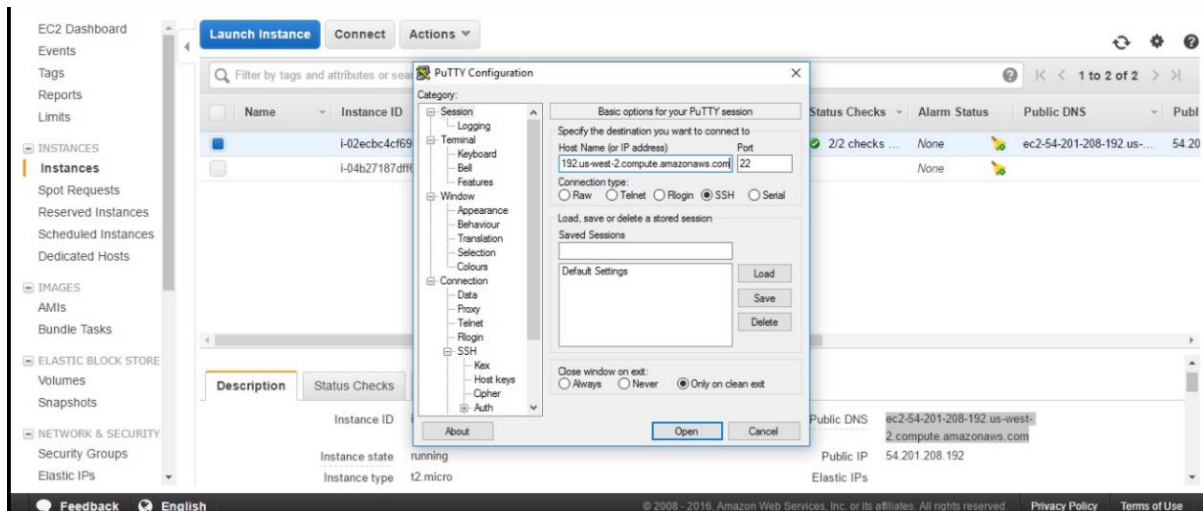
## Step 06: Open PUTTY Key Generator. Then browse and load the downloaded key pair file and save it as a private key.



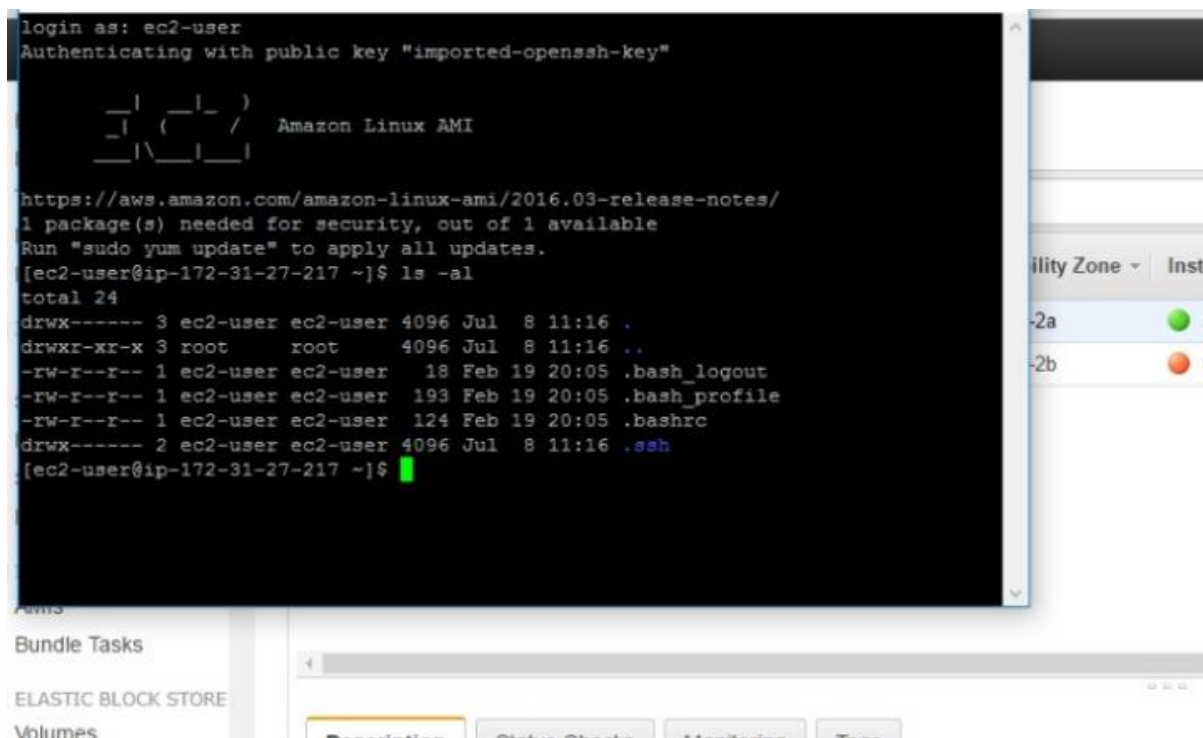
Step 07: Open PUTTY Configuration. Go to Connection category for SSH authentication. (Connection -> SSH -> Auth) Then under authentication parameters browse saved private key and open.



Step 8: Go back to Session category in PUTTY Configuration. Copy the Public DNS of created instance and paste it under Host Name. Set Connection type to SSH and open.



Step 9: Log in to Linux by giving user name in the kernel. (ec2-user). Type some Linux commands to check. (ls -al)



Step 10: Terminate or stop the instance from instance state.(Right click on instance -> Instance State -> Terminate/ Stop).

EC2 Dashboard

Events

Tags

Reports

Limits

INSTANCES

Instances

Spot Requests

Reserved Instances

Scheduled Instances

Dedicated Hosts

IMAGES

AMIs

Bundle Tasks

ELASTIC BLOCK STORE

Volumes

Snapshots

NETWORK & SECURITY

Security Groups

Elastic IPs

Launch Instance

Connect

Actions

Filter by tags and attributes or search by keyword

<<

<

1 to 2 of 2

>

>>

<input type="checkbox"/>	Name	Instance ID	Instance Type	Availability Zone	Instance State	Status Checks	Alarm Status	Public DNS	Publ
<input checked="" type="checkbox"/>		i-02ecbc4cf693e07bf	t2.micro	us-west-2a	stopped		None		
<input type="checkbox"/>		i-04b27187dff6bab99	t2.micro	us-west-2b	terminated		None		

Description

Status Checks

Monitoring

Tags

Instance ID

Instance state

Instance type

Private DNS

Public DNS

Public IP

Elastic IPs

Availability zone

us-west-2a

Feedback

English

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KeyPair02.pem

puttygen.exe

KeyPair01.pem

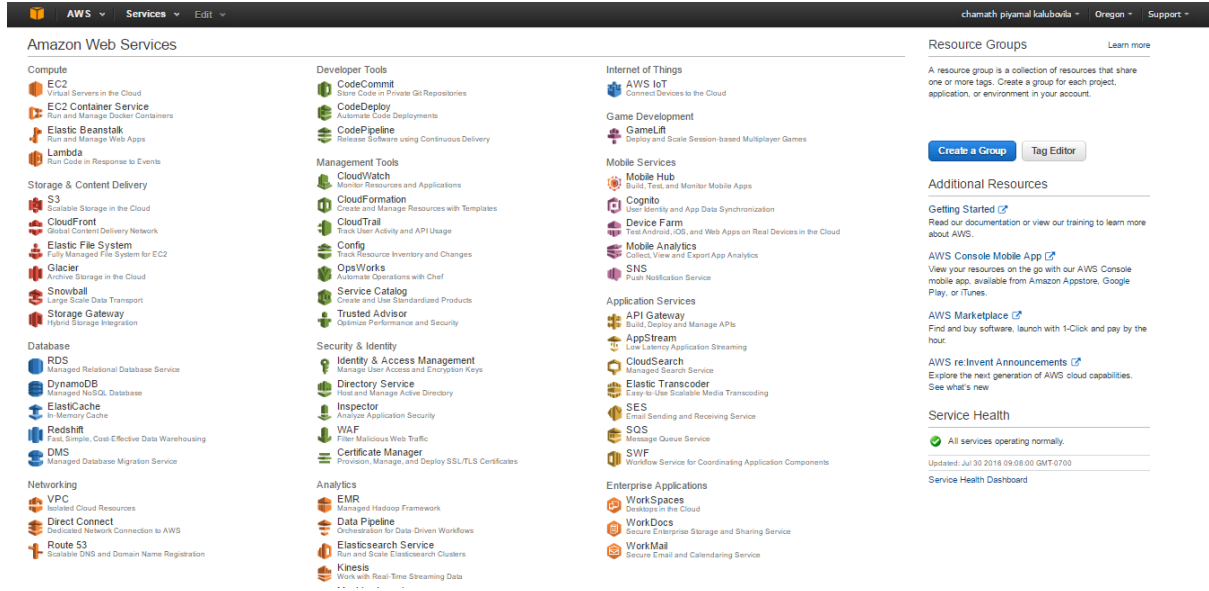
putty.exe

Show all downloads

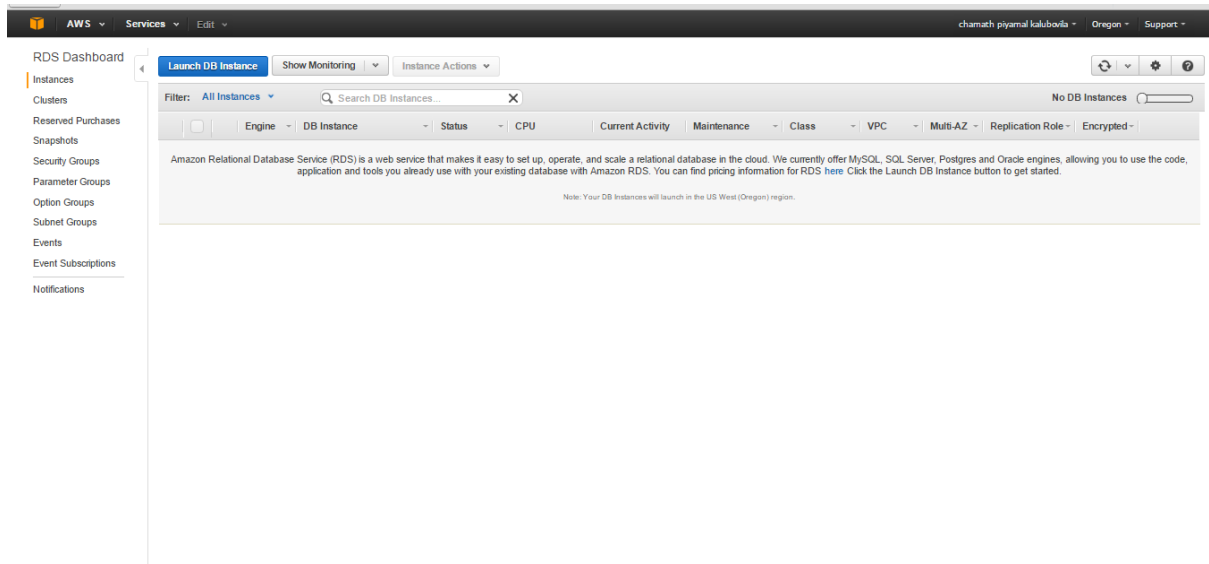
End of Lab 01 and Lab 02

# Lab 03 - Creating an Amazon RDS Database)

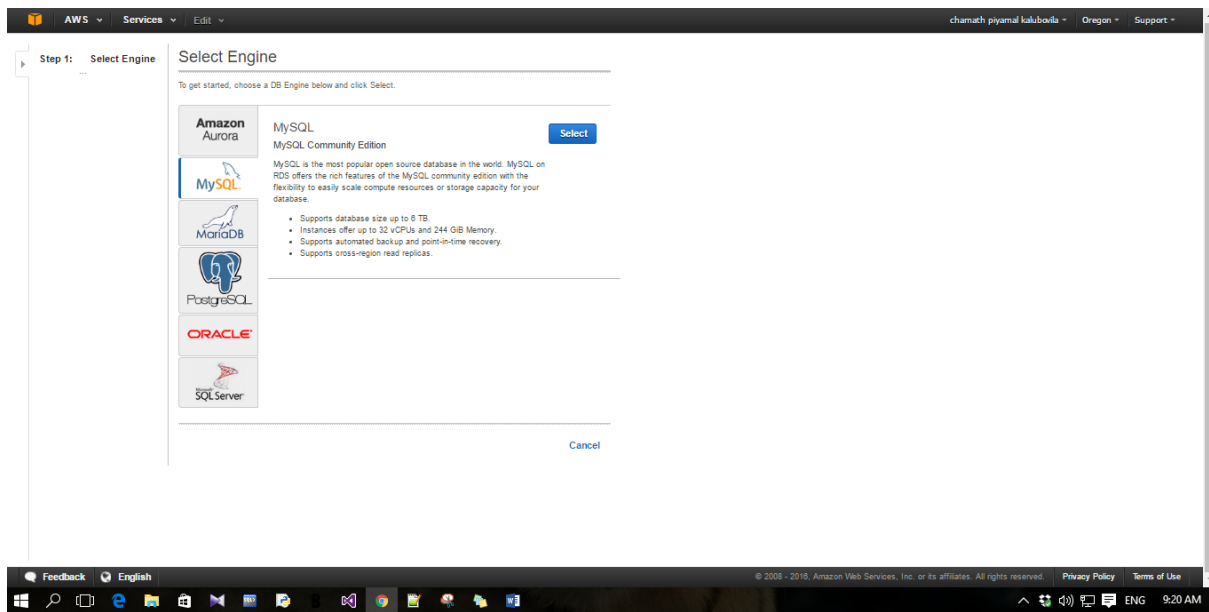
## Step 01: Select RDS from Amazon Web Services. (Services -> RDS)



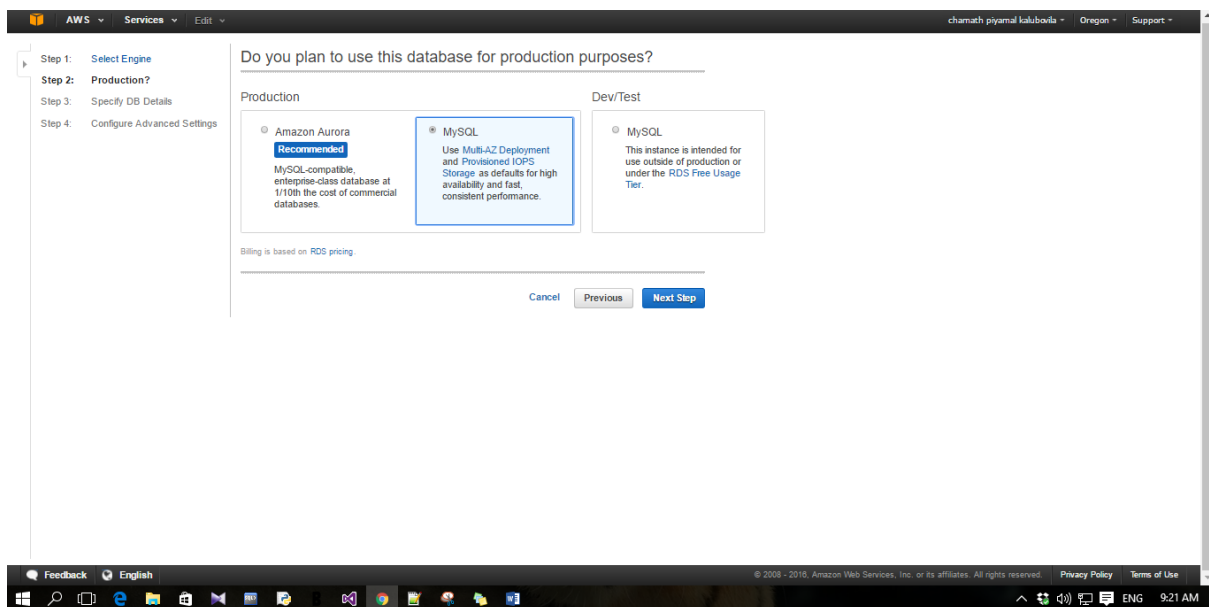
## Step 02: Choose Instances from RDS Dashboard. Select Launch DB Instance.



### Step 03: Choose MySQL from ‘Select Engine’ tab.



### Step 04: Select MySQL under ‘Production’ category. Then proceed to next step.



## **Step 05:** Specify the DB details. (Instance Specifications and Settings)

- License Model: general-public-license
- DB Engine Version: 5.6.19a
- DB Instance Class: db.t2.micro – 1 vCPU, 1 GiB RAM
- Multi-AZ Deployment: No
- Storage Type: General Purpose (SSD)
- Allocated Storage: 15 GB

Provide a DB instance identifier, a master username and a master password.

The screenshot shows the 'Specify DB Details' page in the AWS Management Console. The left sidebar indicates the current step is 'Specify DB Details'. The main content area is divided into 'Instance Specifications' and 'Settings'.

**Instance Specifications:**

- DB Engine: mysql
- License Model: general-public-license
- DB Engine Version: 5.6.19a
- DB Instance Class: db.m5.xlarge — 4 vCPU, 15 GB RAM
- Multi-AZ Deployment: Yes
- Storage Type: General Purpose (SSD)
- Allocated Storage: 15 GB

**Settings:**

- DB Instance Identifier: newinstance
- Master Username: newinstance
- Master Password: (masked)
- Confirm Password: (masked)

Below the settings, there are buttons for 'Cancel', 'Previous', and 'Next Step'. A warning message states: '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.'

## **Step 06:** Give a database name in 'Configure Advanced Settings' tab. (Database Options)

Choose 'No' in Enable Enhanced Monitoring. (Monitoring)

Click 'Launch DB Instance'.

The screenshot shows the 'Configure Advanced Settings' page in the AWS Management Console. The left sidebar indicates the current step is 'Configure Advanced Settings'. The main content area is divided into 'Network & Security', 'Database Options', 'Backup', and 'Monitoring'.

**Network & Security:**

- VPC: default-vpc (vpc-71c89915)
- Subnet Group: default
- Publicly Accessible: Yes
- Availability Zone: No Preference
- VPC Security Groups: Create new Security Group (default VPC)

**Database Options:**

- Database Name: newDatabase
- Database Port: 3306
- DB Parameter Group: default:mysql-5.6
- Option Group: default:mysql-5.6
- Copy Tags To Snapshots: (empty)
- Enable Encryption: No

**Backup:**

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

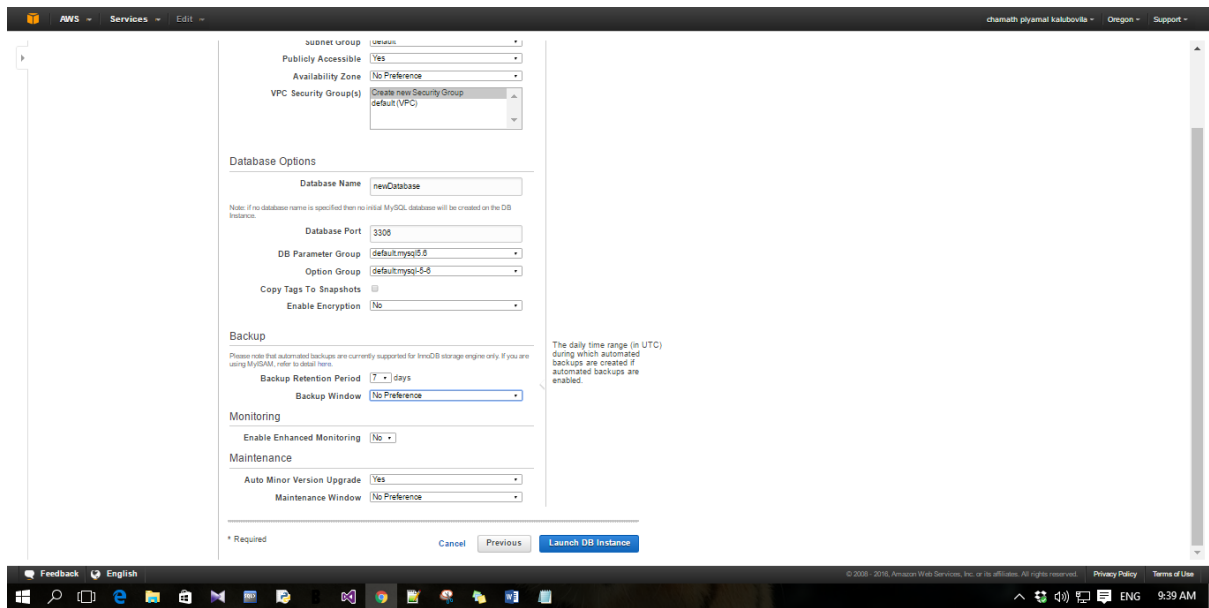
**Monitoring:**

- Enable Enhanced Monitoring: No

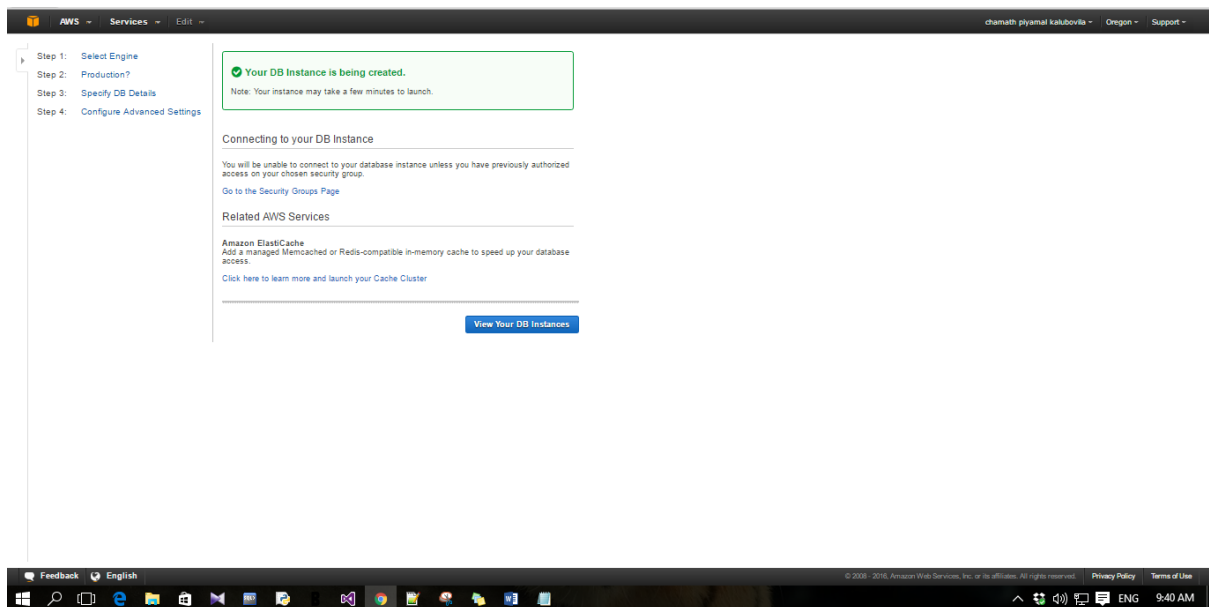
**Maintenance:**

At the bottom, there is a 'Launch DB Instance' button.



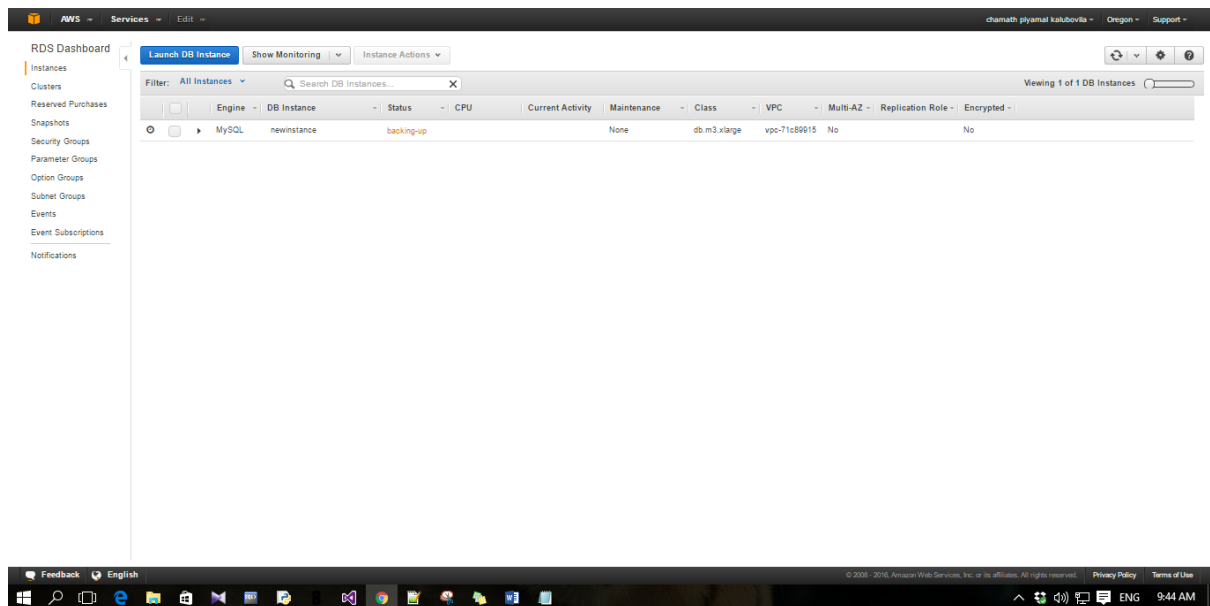
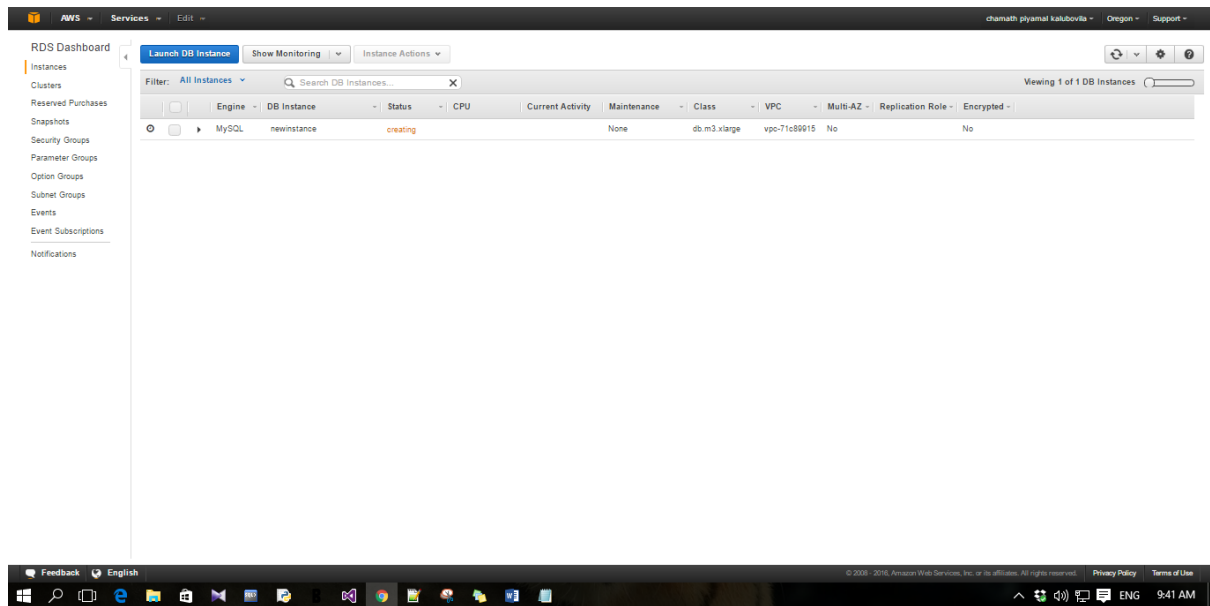


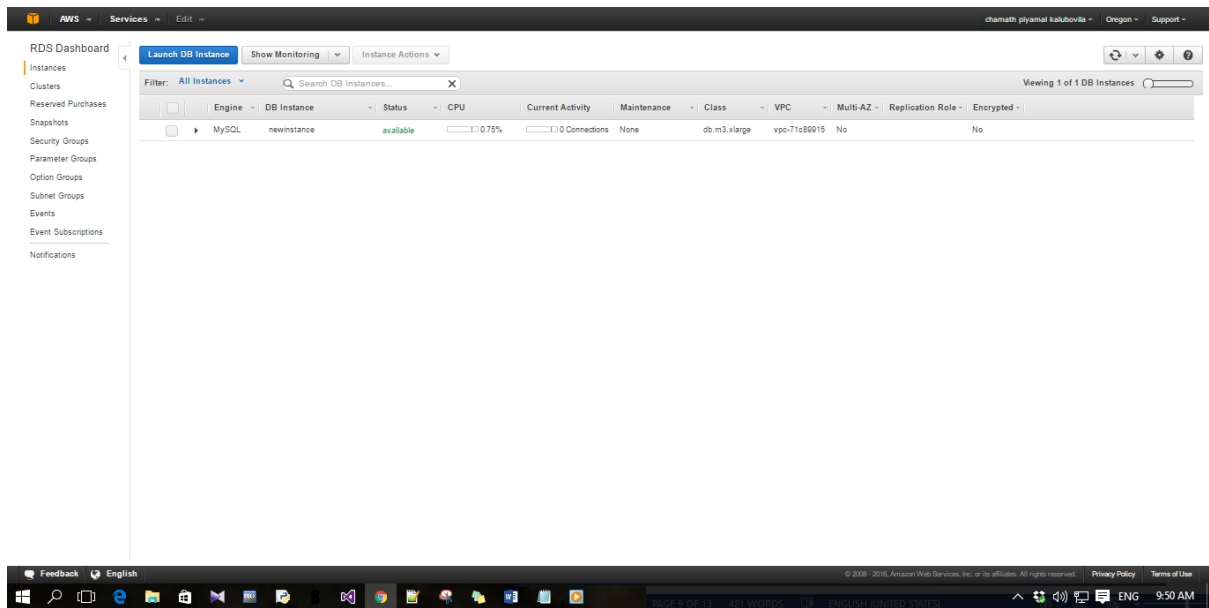
**Step 07:** Click ‘View Your DB Instances’ from next window.



**Step 08:** Wait until the instance status change to 'available' from 'creating'.

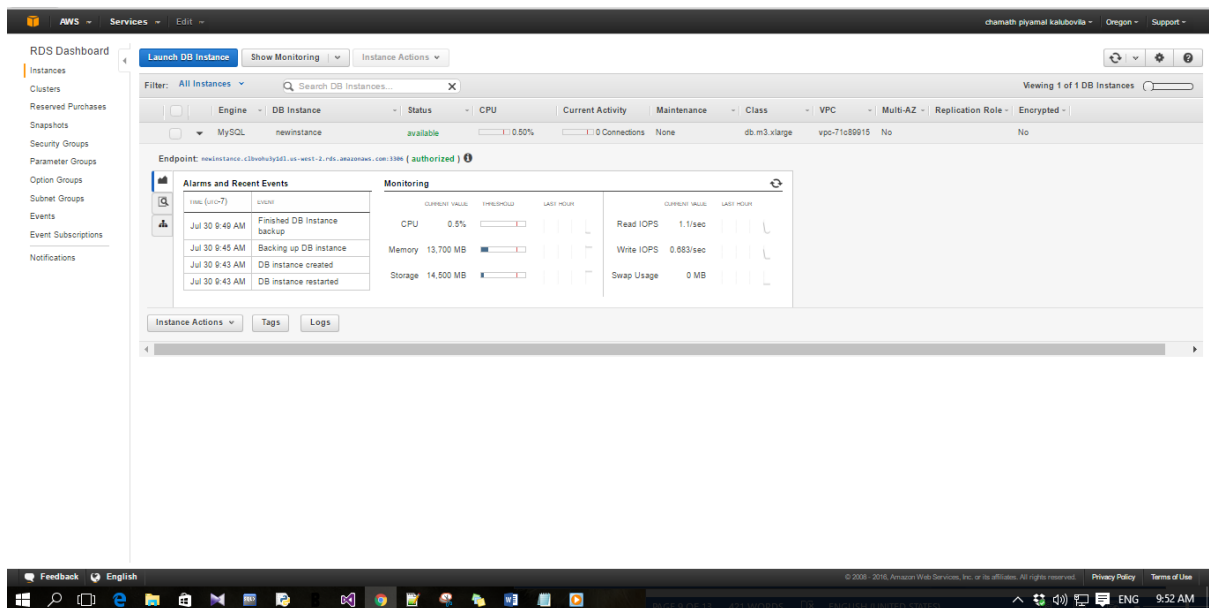
(creating -> backing-up -> available)





**Step 09:** Expand the instance to view Endpoint.

Copy the Endpoint without the port number.



**Step 10:** Open XAMPP Control Panel.

Start MySQL.

**Step 11:** Go to the Shell in XAMPP Control Panel.

Type the command. (mysql -h <endpoint> -P <portnumber> -u <instancename> -p)

Enter master password.

```
# mysql -h newinstance.csifkuqizhpu.us-west-2.rds.amazonaws.com -P 3306 -u newinstance -p
Enter password: *****
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 17
Server version: 5.6.19-log MySQL Community Server (GPL)

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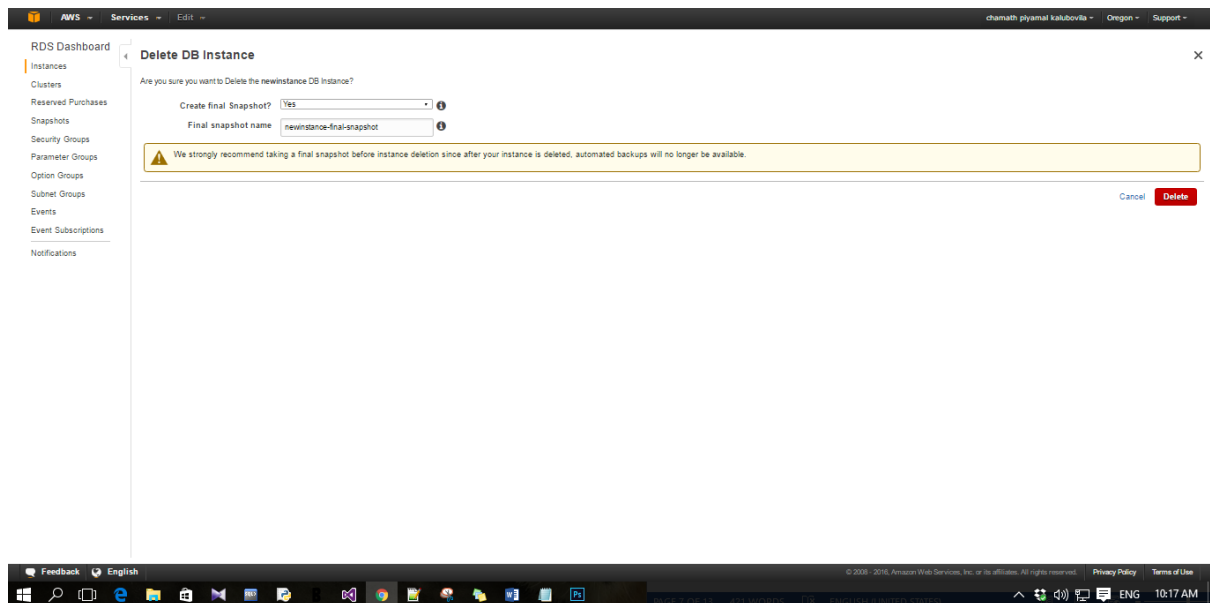
Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

mysql> _
```

**Step 12:** Delete the created DB instance. (Instance Actions -> Delete)

Choose 'No' in Create final Snapshot.

Confirm delete by clicking 'Delete'.



**RDS Dashboard**

Launch DB Instance Show Monitoring Instance Actions

Filter: All Instances Search DB Instances... Viewing 1 of 1 DB Instances

Engine DB Instance Status deleting CPU 0.38% Connections 0 Maintenance None Class db.m3.xlarge VPC vpc-71c80915 Multi-AZ No Replication Role No Encrypted No

Endpoint: newinstance.c1b0ahulyd2f.us-west-2.rds.amazonaws.com:3306 (authorized)

**Alarms and Recent Events**

Time (UTC-7)	Event
Jul 30 9:49 AM	Finished DB Instance backup
Jul 30 9:45 AM	Backing up DB instance
Jul 30 9:43 AM	DB instance created
Jul 30 9:43 AM	DB instance restarted

**Monitoring**

Metric	Current Value	Threshold	Last Hour
CPU	0.38%		
Memory	13,700 MB		
Storage	14,500 MB		
Read IOPS	0.55/sec		
Write IOPS			
Swap Usage	0 MB		

Instance Actions Tags Logs

Feedback English

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**RDS Dashboard**

Launch DB Instance Show Monitoring Instance Actions

Filter: All Instances Search DB Instances... No DB Instances

Engine DB Instance Status CPU Current Activity Maintenance Class VPC Multi-AZ Replication Role Encrypted

Amazon 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, SQL Server, 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 US West (Oregon) region.

Feedback English

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PAGE 7 OF 13 431 WORDS DB ENGLISH UNITED STATES