

School of Computer Science, Engineering and Applications (SCSEA)

B. Tech TY (CCSA)

Subject: Cloud Architecture And Protocol

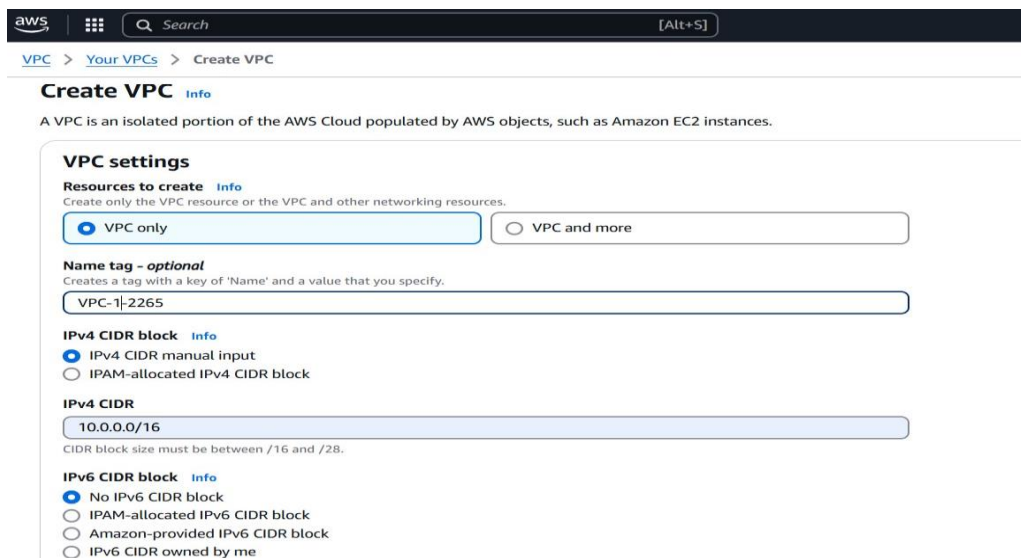
Name of the Student: Sahil S. Mandawgade

PRN: 20220802265

Title of Practical: 5. Deploying a Scalable AWS Architecture: VPC Peering, EC2, and RDS Connectivity.

Step 1: Create a VPC and connect Internet Gateway to it.

- Go to AWS console and search for VPC.
- Create VPC by selecting 'VPC Only' with valid name as 'VPC-1-2265'.
- Set IPv4 CIDR range as '10.0.0.0/16'.



aws [Search] [Alt+S]

VPC > Your VPCs > Create VPC

Create VPC [info](#)

A VPC is an isolated portion of the AWS Cloud populated by AWS objects, such as Amazon EC2 instances.

VPC settings

Resources to create [info](#)
Create only the VPC resource or the VPC and other networking resources.

☒ VPC only ☐ VPC and more

Name tag - optional
Creates a tag with a key of 'Name' and a value that you specify.

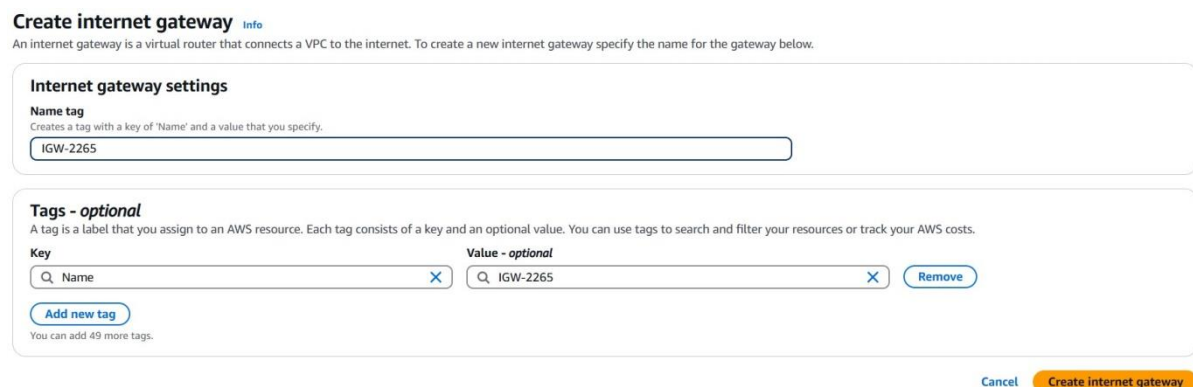
VPC-1-2265

IPv4 CIDR block [info](#)
☒ IPv4 CIDR manual input
☐ IPAM-allocated IPv4 CIDR block

IPv4 CIDR
10.0.0.0/16
CIDR block size must be between /16 and /28.

IPv6 CIDR block [info](#)
☒ No IPv6 CIDR block
☐ IPAM-allocated IPv6 CIDR block
☐ Amazon-provided IPv6 CIDR block
☐ IPv6 CIDR owned by me

- Go to Internet Gateway.
- Create an Internet Gateway.



Create internet gateway [info](#)

An internet gateway is a virtual router that connects a VPC to the internet. To create a new internet gateway specify the name for the gateway below.

Internet gateway settings

Name tag
Creates a tag with a key of 'Name' and a value that you specify.

IGW-2265

Tags - optional

A tag is a label that you assign to an AWS resource. Each tag consists of a key and an optional value. You can use tags to search and filter your resources or track your AWS costs.

Key **Value - optional**

Q Name X Q IGW-2265 X Remove

Add new tag

You can add 49 more tags.

Cancel Create internet gateway

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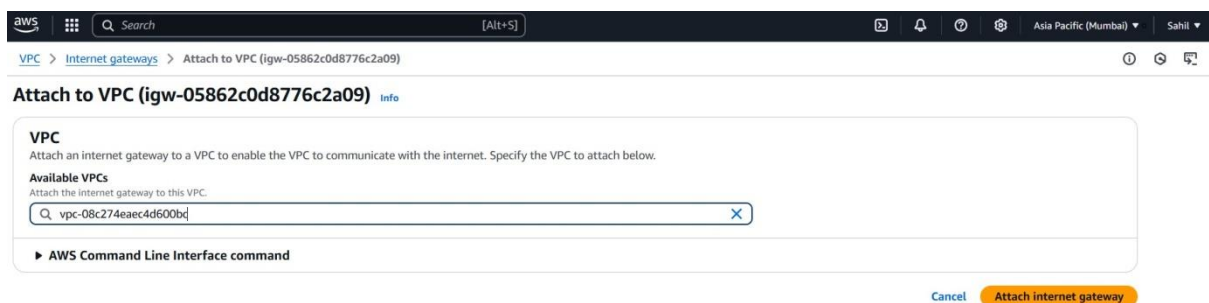
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- Attach the IGW to the VPC.



The screenshot shows the AWS Management Console interface. The breadcrumb trail is 'VPC > Internet gateways > Attach to VPC (igw-05862c0d8776c2a09)'. The main heading is 'Attach to VPC (igw-05862c0d8776c2a09)'. Below this, there's a section for 'VPC' with instructions to attach an internet gateway. Under 'Available VPCs', a search box contains 'vpc-08c274eac4d600b'. At the bottom right, there are 'Cancel' and 'Attach internet gateway' buttons.

Step 2: Create a Public Subnet and Route Table.

- Create a Subnet with name 'PubSub-2265'.
- Select Availability Zone as 'No preference', then enter IPV4 subnet CIDR block as "10.0.1.0/24"
- Click on "Create subnet".

Subnet settings

Specify the CIDR blocks and Availability Zone for the subnet.

Subnet 1 of 1

Subnet name

Create a tag with a key of 'Name' and a value that you specify.

PubSub-2265

The name can be up to 256 characters long.

Availability Zone

Choose the zone in which your subnet will reside, or let Amazon choose one for you.

No preference

IPv4 VPC CIDR block

Choose the VPC's IPv4 CIDR block for the subnet. The subnet's IPv4 CIDR must lie within this block.

10.0.0.0/16

IPv4 subnet CIDR block

10.0.1.0/24

256 IPs

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- Create a Public Route Table with name 'PubRT-2265' and select the VPC we created i.e. 'VPC-1-2265'.

Create route table [Info](#)

A route table specifies how packets are forwarded between the subnets within your VPC, the internet, and your VPN connection.

Route table settings

Name - optional

Create a tag with a key of 'Name' and a value that you specify.

PubRT-2265

VPC

The VPC to use for this route table.

vpc-0b4edde8409bd3e1a (VPC-1-2265)

Tags

A tag is a label that you assign to an AWS resource. Each tag consists of a key and an optional value. You can use tags to search and filter your resources or track your AWS costs.

Key

Q Name

Value - optional

Q PubRT-2265

Remove

Add new tag

You can add 49 more tags.

Cancel

Create route table

- Associate the Public Subnet to the Route Table.
- Add a Route with Destination as '0.0.0.0/0' and Target as 'Internet Gateway' and select the internet gateway we created i.e. 'IGW-2265'.

Edit routes

Destination	Target	Status	Propagated
10.0.0.0/16	local	Active	No
Q 0.0.0.0/0	Internet Gateway	Active	No
	igw-0f530efa784ea19c8		

Add route

Cancel

Preview

Save changes

Step 3: Create another VPC for Private Instance.

- Create VPC by selecting 'VPC Only' with valid name as 'VPC-2-2265'.
- Set IPv4 CIDR range as '12.0.0.0/16'.

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Create VPC [Info](#)

A VPC is an isolated portion of the AWS Cloud populated by AWS objects, such as Amazon EC2 instances.

VPC settings

Resources to create [Info](#)

Create only the VPC resource or the VPC and other networking resources.

☒ VPC only

☐ VPC and more

Name tag - optional

Creates a tag with a key of 'Name' and a value that you specify.

VPC-2-2265

IPv4 CIDR block [Info](#)

☒ IPv4 CIDR manual input

☐ IPAM-allocated IPv4 CIDR block

IPv4 CIDR

12.0.0.0/16

CIDR block size must be between /16 and /28.

IPv6 CIDR block [Info](#)

☒ No IPv6 CIDR block

☐ IPAM-allocated IPv6 CIDR block

☐ Amazon-provided IPv6 CIDR block

☐ IPv6 CIDR owned by me

Step 4: Create TWO Private Subnets for the Private Instance VPC and a Route Table.

- Create a Subnet with name 'PvtSub-1-2265' and another with name 'PvtSub-2-2265'.
- Select Different Availability Zones for 1st Subnet and 2nd Subnet as 'ap-south-1a' and 'ap-south-1b' respectively.
- Enter IPV4 subnet CIDR block as "12.0.1.0/24" and "12.0.2.0/24" respectively.
- Click on "Create subnet".

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Subnet settings

Specify the CIDR blocks and Availability Zone for the subnet.

Subnet 1 of 1

Subnet name

Create a tag with a key of 'Name' and a value that you specify.

PvtSub-1-2265

The name can be up to 256 characters long.

Availability Zone [Info](#)

Choose the zone in which your subnet will reside, or let Amazon choose one for you.

Asia Pacific (Mumbai) / ap-south-1a

IPv4 VPC CIDR block [Info](#)

Choose the VPC's IPv4 CIDR block for the subnet. The subnet's IPv4 CIDR must lie within this block.

12.0.0.0/16

IPv4 subnet CIDR block

12.0.1.0/24

256 IPs

Subnet settings

Specify the CIDR blocks and Availability Zone for the subnet.

Subnet 1 of 1

Subnet name

Create a tag with a key of 'Name' and a value that you specify.

PvtSub-2-2265

The name can be up to 256 characters long.

Availability Zone [Info](#)

Choose the zone in which your subnet will reside, or let Amazon choose one for you.

Asia Pacific (Mumbai) / ap-south-1b

IPv4 VPC CIDR block [Info](#)

Choose the VPC's IPv4 CIDR block for the subnet. The subnet's IPv4 CIDR must lie within this block.

12.0.0.0/16

IPv4 subnet CIDR block

12.0.2.0/24

256 IPs

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- Create a Private Route Table with name 'PvtRT-2265' and select the VPC we created for Private Instance i.e. 'VPC-2-2265'.
- Click on Create route table.

Create route table [Info](#)

A route table specifies how packets are forwarded between the subnets within your VPC, the internet, and your VPN connection.

Route table settings

Name - optional

Create a tag with a key of 'Name' and a value that you specify.

PvtRT-2265

VPC

The VPC to use for this route table.

vpc-021319b87bacd6bb3 (VPC-2-2265)

Tags

A tag is a label that you assign to an AWS resource. Each tag consists of a key and an optional value. You can use tags to search and filter your resources or track your AWS costs.

Key

Q Name



Value - optional

Q PvtRT-2265



Remove

Add new tag

You can add 49 more tags.

Cancel

Create route table

- Associate both the Private Subnets to the Private Route Table.



VPC > Route tables > rtb-08f0754c42eb3b6b4 > Edit subnet associations

Edit subnet associations

Change which subnets are associated with this route table.

Available subnets (2/2)

Q Filter subnet associations

<input checked="" type="checkbox"/>	Name	Subnet ID	IPv4 CIDR	IPv6 CIDR	Route table ID
<input checked="" type="checkbox"/>	PvtSub-2-2265	subnet-0cf0be1b05f8d8eff	12.0.2.0/24	-	Main (rtb-0f2600a139fda4e5e)
<input checked="" type="checkbox"/>	PvtSub-1-2265	subnet-03374629d0192e254	12.0.1.0/24	-	Main (rtb-0f2600a139fda4e5e)

Selected subnets

subnet-0cf0be1b05f8d8eff / PvtSub-2-2265

subnet-03374629d0192e254 / PvtSub-1-2265

Cancel

Save associations

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Step 5: Create TWO Security Groups; 1 for Public VPC and another 1 for Private VPC.

- Create a Security Group for Public VPC 'VPC-1-2265'.
- Name it as 'VPC1-BastionHost-SG-2265'.
- Select VPC – 'VPC-1-2265'.
- Set Inbound Rules – 'SSH, HTTP, HTTPS, MySQL/Aurora' with Source as 'Anywhere IPv4' for all rules.

Security group name [Info](#)

VPC1-BastionHost-SG-2265

Name cannot be edited after creation.

Description [Info](#)

Allow SSH, HTTP, HTTPS and

VPC [Info](#)

vpc-0308a6f17578c2063

Inbound rules [Info](#)

Type Info	Protocol Info	Port range Info	Source Info	Description - optional Info		
SSH	TCP	22	Anywhere...	Q	<input type="text"/>	Delete
				0.0.0.0/0 X		
HTTP	TCP	80	Anywhere...	Q	<input type="text"/>	Delete
				0.0.0.0/0 X		
HTTPS	TCP	443	Anywhere...	Q	<input type="text"/>	Delete
				0.0.0.0/0 X		
MySQL/Aurora	TCP	3306	Anywhere...	Q	<input type="text"/>	Delete
				0.0.0.0/0 X		

- Create another Security Group for Private VPC 'VPC-2-2265'.
- Name it as 'VPC2-Private-SG-2265'.
- Select VPC – 'VPC-2-2265'.
- Set Inbound Rules – 'SSH and MySQL/Aurora' with Source for both as 'Custom – 10.0.0.0/16' which is CIDR of VPC1.

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Create security group [Info](#)

A security group acts as a virtual firewall for your instance to control inbound and outbound traffic. To create a new security group, complete the fields below.

Basic details

Security group name [Info](#)

VPC2-Private-SG-2265

Name cannot be edited after creation.

Description [Info](#)

Allow SSH and MySQL/Aurora

VPC [Info](#)

vpc-0574cd8a17cca9384 (VPC-2-2265)

Inbound rules [Info](#)

Type [Info](#)

Protocol [Info](#)

Port range [Info](#)

Source [Info](#)

Description - optional [Info](#)

SSH

TCP

22

Custom

Q 10.0.0.0/16

VPC1 CIDR

Delete

10.0.0.0/16

MySQL/Aurora

TCP

3306

Custom

Q 10.0.0.0/16

VPC1 CIDR

Delete

10.0.0.0/16

Step 6: Create a Peering Connection to connect two VPCs.

- Go to Peering connections in VPC Dashboard.
- Click on Create peering connection.
- Set name as 'VPC1-to-VPC2'.
- Select VPC ID (Requester) – 'VPC-1-2265' and Select VPC ID (Accepter) – 'VPC-2-2265'.



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Create peering connection

A VPC peering connection is a networking connection between two VPCs that enables you to route traffic between them privately. [Info](#)

Peering connection settings

Name - *optional*

Create a tag with a key of 'Name' and a value that you specify.

VPC1-to-VPC2

Select a local VPC to peer with

VPC ID (Requester)

vpc-0b4edde8409bd3e1a (VPC-1-2265)

VPC CIDRs for vpc-0b4edde8409bd3e1a (VPC-1-2265)

CIDR	Status	Status reason
10.0.0.0/16	✔ Associated	-

Select another VPC to peer with

Account

- ☒ My account
☐ Another account

Region

- ☒ This Region (ap-south-1)
☐ Another Region

VPC ID (Accepter)

vpc-021319b87bacd6bb3 (VPC-2-2265)

VPC CIDRs for vpc-021319b87bacd6bb3 (VPC-2-2265)

CIDR	Status	Status reason
12.0.0.0/16	✔ Associated	-

- Accept VPC peering connection request in 'Actions' – 'Accept request'.

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Accept VPC peering connection request [Info](#)



Are you sure you want to accept this VPC peering connection request? (pcx-0ce837bf39a21612a / VPC1-to-VPC2)


Requester VPC

vpc-0b4edde8409bd3e1a / VPC-1-2265

Accepter CIDRs

–

Requester owner ID

 908027405956
(This account)


Accepter VPC

vpc-021319b87bacd6bb3 / VPC-2-2265

Requester Region

Mumbai (ap-south-1)

Accepter owner ID

 908027405956
(This account)

Requester CIDRs

 10.0.0.0/16

Accepter Region

Mumbai (ap-south-1)

[Cancel](#)

[Accept request](#)

- Now, go to Public Route Table 'PubRT-2265' – Add route – Set Destination as '12.0.0.0/16' which is IPv4 CIDR of Private VPC.
- Select Target as Peering Connection and then select 'VPC1-to-VPC2' peering connection that we created earlier.

Edit routes

Destination	Target	Status	Propagated
10.0.0.0/16	local	Active	No
0.0.0.0/0	Internet Gateway	Active	No
12.0.0.0/16	Peering Connection	–	No

[Add route](#)

Use: "pcx-0ce837bf39a21612a"

[pcx-0ce837bf39a21612a \(VPC1-to-VPC2\)](#)

[Cancel](#) [Preview](#) [Save changes](#)

- Now, go to Private Route Table 'PvtRT-2265' – Add route – Set Destination as '10.0.0.0/16' which is IPv4 CIDR of Public VPC.
- Select Target as Peering Connection and then select 'VPC1-to-VPC2' peering connection that we created earlier.

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Edit routes

Destination	Target	Status	Propagated
12.0.0.0/16	local	Active	No
Q 10.0.0.0/16	Q local		
	Peering Connection	-	No
	Q pcx-0ce837bf39a21612a		
	Use: "pcx-0ce837bf39a21612a"		
	pcx-0ce837bf39a21612a (VPC1-to-VPC2)		

[Add route](#) [Cancel](#) [Preview](#) [Save changes](#)

- Now go to Public Subnet 'PubSub-2265' – Actions – Edit subnet settings and Enable auto-assign public IPv4 address.

Edit subnet settings [Info](#)

Subnet

Subnet ID
subnet-0383c2a50195195b5

Name
PubSub-2265

Auto-assign IP settings [Info](#)

Enable AWS to automatically assign a public IPv4 or IPv6 address to a new primary network interface for an instance in this subnet.

- ☒ **Enable auto-assign public IPv4 address** [Info](#)
- ☐ **Enable auto-assign customer-owned IPv4 address** [Info](#)
Option disabled because no customer owned pools found.

Step 7: Launch an EC2 Instance.

- Launch an EC2 instance and name it as 'VPC-1-BastionHost'.
- Select AMI – Amazon Linux 2 AMI (HVM).

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Launch an instance [Info](#)

Amazon EC2 allows you to create virtual machines, or instances, that run on the AWS Cloud. Quickly get started by following the simple steps below.

Name and tags [Info](#)

Name

VPC-1-BastionHost

[Add additional tags](#)


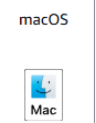

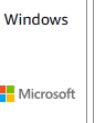



▼ Application and OS Images (Amazon Machine Image) [Info](#)


An AMI is a template that contains the software configuration (operating system, application server, and applications) required to launch your instance. Search or Browse for AMIs if you don't see what you are looking for below

Q Search our full catalog including 1000s of application and OS images

Recents

Quick Start

 <p>Amazon Linux</p>	 <p>macOS</p>	 <p>Ubuntu</p>	 <p>Windows</p>	 <p>Red Hat</p>	 <p>SUSE Linux</p>	 <p>Debian</p>
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[Browse more AMIs](#)
Including AMIs from AWS, Marketplace and the Community

Amazon Machine Image (AMI)

Amazon Linux 2 AMI (HVM) - Kernel 5.10, SSD Volume Type
ami-03b8adbf322415fd0 (64-bit (x86)) / ami-087856def6fa48ada (64-bit (Arm))
Virtualization: hvm ENA enabled: true Root device type: ebs

Free tier eligible

- Select Key Pair.
- Edit network settings; select VPC – 'VPC-1-2265'.
- Select Subnet – 'PubSub-2265'.
- Enable auto-assign public IP.
- Click on Select existing security group and select SG – 'VPC1-BastionHost-SG-2265'.
- Click on Launch instance.

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▼ **Network settings** [Info](#)

VPC - required [Info](#)

vpc-0b4edde8409bd3e1a (VPC-1-2265)
10.0.0.0/16

Subnet [Info](#)

subnet-0383c2a50195195b5 PubSub-2265
VPC: vpc-0b4edde8409bd3e1a Owner: 908027405956 Availability Zone: ap-south-1a
Zone type: Availability Zone IP addresses available: 59 CIDR: 10.0.1.0/26

Auto-assign public IP [Info](#)

Enable

Additional charges apply when outside of free tier allowance

Firewall (security groups) [Info](#)

A security group is a set of firewall rules that control the traffic for your instance. Add rules to allow specific traffic to reach your instance.

☐ Create security group ☒ Select existing security group

Common security groups [Info](#)

Select security groups

VPC1-BastionHost-SG-2265 sg-0b7df73b1f443c633 X
VPC: vpc-0308a6f17578c2063

Security groups that you add or remove here will be added to or removed from all your network interfaces.

[Compare security group rules](#)

Step 8: Create a RDS Database.

- Go to RDS Dashboard.
- Go to Databases – Create database.
- Select ‘database creation method’ as ‘Standard create’.
- Engine type – MySQL.
- Select “Free Tier” Option under Templates.

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Create database [Info](#)

Choose a database creation method

☒ **Standard create**

You set all of the configuration options, including ones for availability, security, backups, and maintenance.

☐ **Easy create**

Use recommended best-practice configurations. Some configuration options can be changed after the database is created.

Engine options

Engine type [Info](#)

☐ **Aurora (MySQL Compatible)**



☐ **Aurora (PostgreSQL Compatible)**



☒ **MySQL**



☐ **PostgreSQL**



Edition

☒ **MySQL Community**

Engine version [Info](#)

View the engine versions that support the following database features.

▼ **Hide filters**

☒ **Show only versions that support the Multi-AZ DB cluster** [Info](#)

Create a Multi-AZ DB cluster with one primary DB instance and two readable standby DB instances. Multi-AZ DB clusters provide up to 2x faster transaction commit latency and automatic failover in typically under 35 seconds.

☒ **Show only versions that support the Amazon RDS Optimized Writes** [Info](#)

Amazon RDS Optimized Writes improves write throughput by up to 2x at no additional cost.

Engine version

MySQL 8.4.4

☐ **Enable RDS Extended Support** [Info](#)

Amazon RDS Extended Support is a paid offering [\[?\]](#). By selecting this option, you consent to being charged for this offering if you are running your database major version past the RDS end of standard support date for that version. Check the end of standard support date for your major version in the [RDS for MySQL documentation](#) [\[?\]](#).

Templates

Choose a sample template to meet your use case.

☐ **Production**

Use defaults for high availability and fast, consistent performance.

☐ **Dev/Test**

This instance is intended for development use outside of a production environment.

☒ **Free tier**

Use RDS Free Tier to develop new applications, test existing applications, or gain hands-on experience with Amazon RDS. [Info](#)

- Under Settings – Set DB instance identifier name as – ‘DB-2265’.
- Keep master name as ‘admin’.
- Under Credentials management – select ‘Self managed’.
- Set Master password and confirm it.
- Keep DB instance class as ‘db.t4g.micro’.
- Set 5 GiB storage.

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Settings

DB instance identifier [Info](#)

Type a name for your DB instance. The name must be unique across all DB instances owned by your AWS account in the current AWS Region.

DB-2265

The DB instance identifier is case-insensitive, but is stored as all lowercase (as in "mydbinstance"). Constraints: 1 to 63 alphanumeric characters or hyphens. First character must be a letter. Can't c

▼ Credentials Settings

Master username [Info](#)

Type a login ID for the master user of your DB instance.

admin

1 to 16 alphanumeric characters. The first character must be a letter.

Credentials management

You can use AWS Secrets Manager or manage your master user credentials.

☐ Managed in AWS Secrets Manager - *most secure*

RDS generates a password for you and manages it throughout its lifecycle using AWS Secrets Manager.

☒ Self managed

Create your own password or have RDS cre

☐ Auto generate password

Amazon RDS can generate a password for you, or you can specify your own password.

Master password [Info](#)

Password strength [Strong](#)

Minimum constraints: At least 8 printable ASCII characters. Can't contain any of the following symbols: / * " @

Confirm master password [Info](#)

- Under Connectivity – VPC – Select Private VPC – ‘VPC-2-2265’.
- Keep Public access as ‘No’.
- Select Security Group – ‘VPC2-Private-SG-2265’.
- Keep Availability Zone as ‘No preference’.
- Click on Create database.

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Connectivity [Info](#)

Compute resource

Choose whether to set up a connection to a compute resource for this database. Setting up a connection will automatically change connectivity settings so that the compute resource can connect to this database.

☒ Don't connect to an EC2 compute resource

Don't set up a connection to a compute resource for this database. You can manually set up a connection to a compute resource later.

☐ Connect to an EC2 compute resource

Set up a connection to an EC2 compute resource for this database.

Network type [Info](#)

To use dual-stack mode, make sure that you associate an IPv6 CIDR block with a subnet in the VPC you specify.

☒ IPv4

Your resources can communicate only over the IPv4 addressing protocol.

☐ Dual-stack mode

Your resources can communicate over IPv4, IPv6, or both.

Virtual private cloud (VPC) [Info](#)

Choose the VPC. The VPC defines the virtual networking environment for this DB instance.

VPC-2-2265 (vpc-021319b87bacd6bb3)

2 Subnets, 2 Availability Zones

Only VPCs with a corresponding DB subnet group are listed.

① After a database is created, you can't change its VPC.

DB subnet group [Info](#)

Choose the DB subnet group. The DB subnet group defines which subnets and IP ranges the DB instance can use in the VPC that you selected.

Create new DB Subnet Group

Public access [Info](#)

☐ Yes

RDS assigns a public IP address to the database. Amazon EC2 instances and other resources outside of the VPC can connect to your database. Resources inside the VPC can also connect to the database. Choose one or to the database.

☒ No

VPC security group (firewall) [Info](#)

Choose one or more VPC security groups to allow access to your database. Make sure that the security group rules allow the appropriate incoming traffic.

☒ Choose existing

Choose existing VPC security groups

☐ Create new

Create new VPC security group

Existing VPC security groups

Choose one or more options

VPC2-Private-SG-2265 X

Availability Zone [Info](#)

No preference

Certificate authority - optional [Info](#)

Using a server certificate provides an extra layer of security by validating that the connection is being made to an Amazon database. It does so by checking the server certificate.

rds-ca-rsa2048-g1 (default)

Expiry: May 20, 2061

If you don't select a certificate authority, RDS chooses one for you.

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Step 9: Connect to the EC2 Instance and execute SQL queries.

- Copy the SSH endpoint of instance 'VPC-1-BastionHost' and paste it in Command Prompt to connect to the instance.
- After connecting run the "sudo yum install mysql -y" command to get MySQL packages.

```
#_
#####
AL2 End of Life is 2026-06-30.

A newer version of Amazon Linux is available!

Amazon Linux 2023, GA and supported until 2028-03-15.
https://aws.amazon.com/linux/amazon-linux-2023/

[ec2-user@ip-10-0-1-44 ~]$ sudo yum install mysql -y
Loaded plugins: extras_suggestions, langpacks, priorities, update-motd
amzn2-core                               | 3.6 kB  00:00:00
Resolving Dependencies
--> Running transaction check
--> Package mariadb.x86_64 1:5.5.68-1.amzn2.0.1 will be installed
--> Finished Dependency Resolution

Dependencies Resolved

===== Package
sitory      Size
=====Installing:
mariadb     x86_64      1:5.5.68-1.amzn2.0.1      amzn2-core      8.8 M

Transaction Summary
=====Install 1 Package

Total download size: 8.8 M
Installed size: 49 M
Downloading packages:
mariadb-5.5.68-1.amzn2.0.1.x86_64.rpm      | 8.8 MB  00:00:00
Running transaction check
Running transaction test
Transaction test succeeded
Running transaction
  Installing : 1:mariadb-5.5.68-1.amzn2.0.1.x86_64      1/1
  Verifying   : 1:mariadb-5.5.68-1.amzn2.0.1.x86_64      1/1

Installed:
mariadb.x86_64 1:5.5.68-1.amzn2.0.1
```

- After successful installation, run the command – 'mysql -h db-2265.chykyuaeic73.ap-south-1.rds.amazonaws.com -u admin -p(password)'.
- Note: The underlined part is the Endpoint of the DB instance which was created earlier.
- Now run the command – 'show databases;' to see all the databases.
- Now run the command – 'select user from mysql.user;' to see users.

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```
[ec2-user@ip-10-0-1-26 ~]$ mysql -h db-2265.chykuyaeic73.ap-south-1.rds.amazonaws.com -u admin -p
Welcome to the MariaDB monitor.  Commands end with ; or \g.
Your MySQL connection id is 26
Server version: 8.0.40 Source distribution

Copyright (c) 2000, 2018, Oracle, MariaDB Corporation Ab and others.

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

MySQL [(none)]> show databases
-> ;
+-----+
| Database |
+-----+
| information_schema |
| mysql |
| performance_schema |
| sys |
+-----+
4 rows in set (0.00 sec)

MySQL [(none)]> select user from mysql.user;
+-----+
| user |
+-----+
| admin |
| rds_superuser_role |
| mysql.infoschema |
| mysql.session |
| mysql.sys |
| rdsadmin |
+-----+
6 rows in set (0.00 sec)

MySQL [(none)]>
```

- Now create 1 user named 'sahil' and grant the permission of 'insert' to this user. The command is – 'create user 'sahil'@'%' identified with mysql_native_password by "(Password)";'
- Check to see whether the user has been created or not.



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```
MySQL [(none)]> create user 'sahil'@'%' identified with mysql_native_password by "1006Sahil";
Query OK, 0 rows affected (0.02 sec)

MySQL [(none)]> select user from mysql.user;
+-----+
| user |
+-----+
| admin |
| rds_superuser_role |
| sahil |
| mysql.infoschema |
| mysql.session |
| mysql.sys |
| rdsadmin |
+-----+
7 rows in set (0.00 sec)
```

- To grant 'sahil' privilege of insert, run the command – 'grant insert on *.* to 'sahil'@'%' ;'.
- Check to see if the privilege has been given or not with command – 'show grants for 'sahil'@'%' ;'.

```
MySQL [(none)]> grant insert on *.* to 'sahil'@'%' ;
Query OK, 0 rows affected (0.00 sec)

MySQL [(none)]> show grants for 'sahil'@'%' ;
+-----+
| Grants for sahil@% |
+-----+
| GRANT INSERT ON *.* TO `sahil`@`%` |
+-----+
1 row in set (0.00 sec)

MySQL [(none)]>
```

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- To change to new user, login again with new username.

```
MySQL [(none)]> exit;
Bye
[ec2-user@ip-10-0-1-26 ~]$ mysql -h db-2265.chykuyaic73.ap-south-1.rds.amazonaws.com -u sahil -p
Welcome to the MariaDB monitor.  Commands end with ; or \g.
Your MySQL connection id is 32
Server version: 8.0.40 Source distribution

Copyright (c) 2000, 2018, Oracle, MariaDB Corporation Ab and others.

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

MySQL [(none)]> select current_user();
+-----+
| current_user() |
+-----+
| sahil@%        |
+-----+
1 row in set (0.00 sec)

MySQL [(none)]> _
```

- Now, as we are user 'sahil', try to run 'create database ccsa;' command.
- But, as the user 'sahil' has only 'insert' privilege, this user cannot create a database.

```
MySQL [(none)]> select current_user();
+-----+
| current_user() |
+-----+
| sahil@%        |
+-----+
1 row in set (0.00 sec)

MySQL [(none)]> create database ccsa;
ERROR 1044 (42000): Access denied for user 'sahil'@'%' to database 'ccsa'
MySQL [(none)]>
```

- Now, switch to admin and create another user named "arthur" & grant him the privilege of "create".
- Run 'create user 'arthur'@'%' identified with mysql_native_password by "(Password)";' command.
- Run the 'select user,host from mysql.user;' query to see if user is created.

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- To grant 'arthur' privilege of create, run the command – 'grant create on *.* to 'arthur'@'%'; '.
- Now, switch to Arthur and as 'arthur', try to create a database with command – 'create database ccsa; '.

As 'arthur' has create privilege, this user can create databases.

```
MySQL [(none)]> create user 'arthur'@'%' identified with mysql_native_password by ''
Query OK, 0 rows affected (0.00 sec)

MySQL [(none)]> select user,host from mysql.user;
+-----+-----+
| user          | host      |
+-----+-----+
| admin         | %         |
| arthur        | %         |
| rds_superuser_role | %         |
| sahil         | %         |
| mysql.infoschema | localhost |
| mysql.session  | localhost |
| mysql.sys     | localhost |
| rdsadmin      | localhost |
+-----+-----+
8 rows in set (0.00 sec)

MySQL [(none)]> grant create on *.* to 'arthur'@'%';
Query OK, 0 rows affected (0.00 sec)

MySQL [(none)]>
```

```
MySQL [(none)]> create database ccsa;
Query OK, 1 row affected (0.01 sec)

MySQL [(none)]> show databases;
+-----+
| Database |
+-----+
| ccsa     |
| information_schema |
| mysql    |
| performance_schema |
| sys      |
+-----+
5 rows in set (0.01 sec)
```

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- Now, switch to admin to create one more user named 'tommy' and grant him privilege of 'select'.
- Run 'create user 'tommy'@'%' identified with mysql_native_password by "(Password)"; ' command.
- To grant 'tommy' privilege of select, run the command – 'grant select on *.* to 'tommy'@'%' ;'.
- Now, switch to user 'tommy'.
- Now as 'tommy' user run " use ccса ; " command to go in created database.
- As 'tommy' has 'select' access, try to run " select * from ccса ; " to see if it works.

```
MySQL [(none)]> create user 'tommy'@'%' identified with mysql_native_password by "(Password)";
Query OK, 0 rows affected (0.00 sec)
```

```
MySQL [(none)]> grant select on *.* to 'tommy'@'%' ;
Query OK, 0 rows affected (0.00 sec)
```

```
MySQL [(none)]> exit;
Bye
```

```
[ec2-user@ip-10-0-1-26 ~]$ mysql -h db-2265.chykuyaic73.ap-south-1.rds.amazonaws.com -u tommy -p(Password)
Welcome to the MariaDB monitor.  Commands end with ; or \g.
Your MySQL connection id is 42
Server version: 8.0.40 Source distribution
```

```
Copyright (c) 2000, 2018, Oracle, MariaDB Corporation Ab and others.
```

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

```
MySQL [(none)]> use ccса;
Database changed
MySQL [ccса]> select * from ccса;
ERROR 1146 (42S02): Table 'ccса.ccса' doesn't exist
MySQL [ccса]> _
```

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- Run the “select user,host,insert_priv,create_priv,select_priv from mysql.user;” to see all the users we have created and what type of privileges they have.

```
MySQL [ccsa]> select user,host,insert_priv,create_priv,select_priv from mysql.user;
```

user	host	insert_priv	create_priv	select_priv
admin	%	N	N	N
arthur	%	N	Y	N
rds_superuser_role	%	Y	Y	Y
sahil	%	Y	N	N
tommy	%	N	N	Y
mysql.infoschema	localhost	N	N	Y
mysql.session	localhost	N	N	N
mysql.sys	localhost	N	N	N
rdsadmin	localhost	Y	Y	Y

```
9 rows in set (0.01 sec)

MySQL [ccsa]> _
```

Now start the deleting process:

1. Delete DB instance.
2. Delete EC2.
3. Delete peering connection.
4. Delete VPCs.