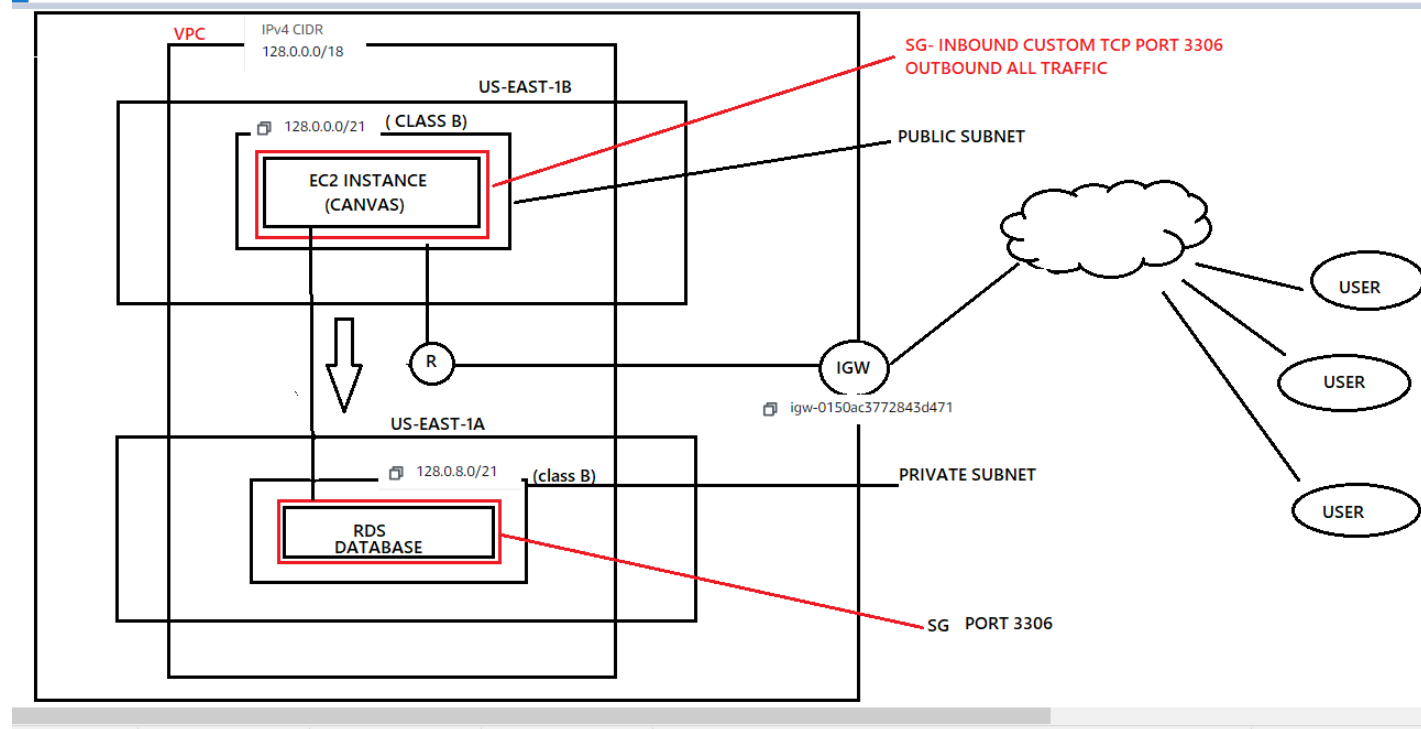


NAME-VICKY SHARMA

PRATICAL- RDS

AIM- CONCEPT OF RDS (RELATIONAL DATABASE SERVICE)

ARCHITECTURE:-



STEPS -1

CREATE AN 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.

my-vpc-01

IPv4 CIDR block [Info](#)

☒ IPv4 CIDR manual input

☐ IPAM-allocated IPv4 CIDR block

IPv4 CIDR

10.0.0.0/24

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

IPv6 CIDR block [Info](#)

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

IPv4 CIDR block [Info](#)

☒ IPv4 CIDR manual input

☐ IPAM-allocated IPv4 CIDR block

IPv4 CIDR

128.0.0.0/16

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

You successfully created vpc-03873b02f12bc1bec / VPC

VPC > Your VPCs > vpc-03873b02f12bc1bec

vpc-03873b02f12bc1bec / VPC

Actions

Details Info

VPC ID vpc-03873b02f12bc1bec	State Available	DNS hostnames Disabled	DNS resolution Enabled
Tenancy Default	DHCP option set dopt-0ba4c0aac11e2f1f9	Main route table rtb-03d5a655d371b415a	Main network ACL acl-0365535b3b97f1de5
Default VPC No	IPv4 CIDR 128.0.0.0/16	IPv6 pool -	IPv6 CIDR (Network border group) -
Network Address Usage metrics Disabled	Route 53 Resolver DNS Firewall rule groups -	Owner ID 905418179079	

Resource map Info

Resource map CIDRs Flow logs Tags Integrations

STEP-2NOW CREATE TWO SUBNET OF CLASS B AND TWO ROUTE TABLE AND ATTACH WITH THEM

You have successfully created 1 subnet: subnet-032925f704432c2f1

Subnets (1) [Info](#)

Subnet ID : subnet-032925f704432c2f1

Clear filters

< 1 > ⚙

<input type="checkbox"/>	Name	Subnet ID	State	VPC	IPv4 CIDR
<input type="checkbox"/>	PUBLIC SUBNET	subnet-032925f704432c2f1	Available	vpc-03873b02f12bc1bec VPC	128.0.0.0/25

Subnet name

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

PUBLIC SUBNETTTT

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.

US East (N. Virginia) / us-east-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.

128.0.0.0/18

IPv4 subnet CIDR block

128.0.0.0/21

2,048 IPs

< > ^ v

Tags - optional

Remove

Add new subnet

Cancel

Create subnet

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

PRIAVTE SUBNEET

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.

US East (N. Virginia) / us-east-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.

128.0.0.0/18

IPv4 subnet CIDR block

128.0.8.0/21

2,048 IPs

< > ^ v

▼ **Tags - optional**

Key

Value - optional

Q Name



Q

PRIAVTE SUBNEET



Remove

Route table settings

Name - optional

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

PUBLIC ROUTE

VPC

The VPC to use for this route table.

vpc-0a0964d8d09b2745c (MYVPC)

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

Value - optional

Q Name



Q

PUBLIC ROUTE



Remove

Add new tag

You can add 49 more tags.

Cancel

Create route table

Available subnets (1/2)

Filter subnet associations

< 1 >

	Name	Subnet ID	IPv4 CIDR	IPv6 CIDR	Route table ID
<input checked="" type="checkbox"/>	PUBLIC SUBNETTT	subnet-0a3e5fb4d5a0ad7e7	128.0.0.0/21	-	Main (rtb-0e4818ccb270ce2e5)
<input type="checkbox"/>	PRIAVTE SUBNEET	subnet-01e625d9f57f95640	128.0.8.0/21	-	Main (rtb-0e4818ccb270ce2e5)

Selected subnets

subnet-0a3e5fb4d5a0ad7e7 / PUBLIC SUBNETTT X

CancelSave associations

Route table settings

Name - optional

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

PRIVATE ROUTE

VPC

The VPC to use for this route table.

vpc-0a0964d8d09b2745c (MYVPC)

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

Value - optional

Q NameX

Q PRIVATE ROUTEX

Remove

Add new tag

You can add 49 more tags.

CancelCreate route table

Edit subnet associations

Change which subnets are associated with this route table.

Available subnets (1/2)

Filter subnet associations

< 1 >

	Name	Subnet ID	IPv4 CIDR	IPv6 CIDR	Route table ID
<input type="checkbox"/>	PUBLIC SUBNETTT	subnet-0a3e5fb4d5a0ad7e7	128.0.0.0/21	-	rtb-089e8e3871c0ed233 / PUBLIC RO...
<input checked="" type="checkbox"/>	PRIAVTE SUBNEET	subnet-01e625d9f57f95640	128.0.8.0/21	-	Main (rtb-0e4818ccb270ce2e5)

Selected subnets

subnet-01e625d9f57f95640 / PRIAVTE SUBNEET X

CancelSave associations

STEP 3- ATTACH INTERNET GATEWAY TO PUBLIC SUBNET

EC2 VPC S3 AWS Auto Scaling Simple Queue Service Simple Notification Service Key Management Service CloudTrail Amazon EventBridge RDS

VPC > Route tables > rtb-089e8e3871c0ed233 > Edit routes

Edit routes

Destination	Target	Status	Propagated
128.0.0.0/18	local	Active	No
0.0.0.0/0	Internet Gateway	-	No
	igw-0e664707485ab5c11		

Add route

Cancel Preview **Save changes**

STEP4- CREATE TWO INSTANCE WHICH IS EC2 INSRTANCE AND RDS DATABASE

EC2 > Instances > Launch an instance

Launch an instance

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

Name

CANVAS EC2 INSTANCE

Add additional tags

Application and OS Images (Amazon Machine Image)

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

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

Summary

Number of instances

1

Software Image (AMI)

Amazon Linux 2023 AMI 2023.3.2...read more
ami-0d7a109bf30624c99

Virtual server type (instance type)

t2.micro

Firewall (security group)

New security group

Storage (volumes)

1 volume(s) - 8 GiB

Free tier to your first launch

Cancel

Launch instance

Review commands

VPC - required

vpc-0a0964d8d09b2745c (MYVPC)
128.0.0.0/18

Subnet

subnet-0a3e5fb4d5a0ad7e7
VPC: vpc-0a0964d8d09b2745c Owner: 905418179079
Availability Zone: us-east-1a IP addresses available: 2043 CIDR: 128.0.0.0/21

PUBLIC SUBNETTT

Create new subnet

Auto-assign public IP

Enable

Firewall (security groups)

Create security group

Select existing security group

Security group name - required

launch-wizard-24

This security group will be added to all network interfaces. The name can't be edited after the security group is created. Max length is 255 characters. Valid characters: a-z, A-Z, 0-9, spaces, and ._-:/()#,@[]+=&{}!\$*

Security group rule 1 (TCP, 22, 0.0.0.0/0)

Remove

Type

Info

ssh

Protocol

Info

TCP

Port range

Info

22

Source type

Info

Anywhere

Source

Info

Q Add CIDR, prefix list or security

0.0.0.0/0

Description - optional

Info

e.g. SSH for admin desktop

Security group rule 2 (TCP, 80, 0.0.0.0/0)

Remove

Type

Info

HTTP

Protocol

Info

TCP

Port range

Info

80

Source type

Info

Anywhere

Source

Info

Q Add CIDR, prefix list or security

0.0.0.0/0

Description - optional

Info

e.g. SSH for admin desktop

▼ Summary

Number of instances

Info

1

Software Image (AMI)

Amazon Linux 2023 AMI 2023.3.2...read more

ami-0d7a109bf30624c99

Virtual server type (instance type)

t2.micro

Firewall (security group)

New security group

Storage (volumes)

1 volume(s) - 8 GiB

Cancel

Launch instance

Review commands

EC2 > Instances > Launch an instance

Success

Successfully initiated launch of Instance (i-084b032bb23a03c15)

Launch log

Next Steps

Q What would you like to do next with this instance, for example "create alarm" or "create backup"

< 1 2 3 4 5 6 >

Create billing and free tier usage alerts

Connect to your instance

Connect an RDS database

Create EBS snapshot policy

STEP-5

NOW CREATE RDS DATABASE

Services

RDS

Search results for 'RDS'

Services (12)

Features (37)

Resources **New**

Documentation (19,923)

Knowledge Articles (347)

Search results for 'RDS'

Services

See all 12 results

RDS ★
Managed Relational Database Service

Database Migration Service ☆

Amazon RDS

Dashboard

Databases

Query Editor

Performance insights

Snapshots

Exports in Amazon S3

Automated backups

Reserved instances

Proxies

Databases (0)

Group resources

Modify

Actions

Restore from S3

Create database

Filter by databases

DB identifier

Status

Role

Engine

Region & AZ

Size

Recommendations

CPU

Current act

EC2

VPC

S3

AWS Auto Scaling

Simple Queue Service

Simple Notification Service

Key Management S

Choose a database creation method [Info](#)

☒ 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



☒ MariaDB



view the engine versions that support the following database features.

▼ Hide filters

- ☒ Show 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

MariaDB 10.11.6 ▼

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](#)

Settings

DB instance identifier [Info](#)

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.

database-1

The DB instance identifier is case-insensitive, but is stored as all lowercase (as in "mydbinstance"). Constraints: 1 to 60 alphanumeric characters or hyphens. First character must be a letter. Can't contain two consecutive hyphens. Can't end with a hyphen.

▼ 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.

- ☐ Manage master credentials in AWS Secrets Manager
Manage master user credentials in Secrets Manager. RDS can generate a password for you and manage it throughout its lifecycle.

[i](#) If you manage the master user credentials in Secrets Manager, some RDS features aren't supported. [Learn more](#) [↗](#)

Master password [Info](#)

Constraints: At least 8 printable ASCII characters. Can't contain any of the following: / (slash), ' (single quote), " (double quote) and @ (at sign).

Confirm master password [Info](#)

Instance configuration

The DB instance configuration options below are limited to those supported by the engine that you selected above.

DB instance class [Info](#)

▼ Hide filters

- ☐ Show instance classes that support Amazon RDS Optimized Writes [Info](#)
Amazon RDS Optimized Writes improves write throughput by up to 2x at no additional cost.
- ☐ Include previous generation classes
- ☐ Standard classes (includes m classes)
- ☐ Memory optimized classes (includes r and x classes)
- ☒ Burstable classes (includes t classes)

- ☐ Memory optimized classes (includes r and x classes)
- ☒ Burstable classes (includes t classes)

db.t3.micro
2 vCPUs 1 GiB RAM Network: 2,085 Mbps ▼

Storage

Storage type [Info](#)

Provisioned IOPS SSD (io2) storage volumes are now available.

General Purpose SSD (gp2)
Baseline performance determined by volume size ▼

Allocated storage [Info](#)

20 GiB

The minimum value is 20 GiB and the maximum value is 6,144 GiB

ⓘ After you modify the storage for a DB instance, the status of the DB instance will be in storage-optimization. Your instance will remain available as the storage-optimization operation completes.
[Learn more](#) [↗](#)

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.

EC2 instance [Info](#)

Choose the EC2 instance to add as the compute resource for this database. A VPC security group is added to this EC2 instance. A VPC security group is also added to the database with an inbound rule that allows the EC2 instance to access the database.

i-084b032bb23a03c15
CANVAS EC2 INSTANCE



Some VPC settings can't be changed when a compute resource is added

Adding an EC2 compute resource automatically selects the VPC, DB subnet group, and public access settings for this database. To allow the EC2 instance to access the database, a VPC security group `rds-ec2-X` is added to the database and another called `ec2-rds-X` to the EC2 instance. You can remove the new security group for the database only by removing the compute resource.

- 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.

- ☒ **Choose existing**
Choose existing DB subnet group

- ☐ **Automatic setup**
RDS creates a new subnet group for you or reuses an existing subnet group

Existing DB subnet groups

rds-ec2-db-subnet-group-1
5 Subnets, 5 Availability Zones

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 more VPC security groups that specify which resources can connect to the database.
- ☒ **No**
RDS doesn't assign a public IP address to the database. Only Amazon EC2 instances and other resources inside the VPC can connect to your database. Choose one or more VPC security groups that specify which resources can connect to the database.

RDS doesn't assign a public IP address to the database. Only Amazon EC2 instances and other resources inside the VPC can connect to your database. Choose one or more VPC security groups that specify which resources can connect to the database.


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

New VPC security group name

 Amazon RDS will add a new VPC security group *rds-ec2-3* to allow connectivity with your compute resource.

US-East-1a

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 that is automatically installed on all databases that you provision.

rds-ca-rsa2048-g1 (default)
Expiry: May 26, 2061

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

▼ Additional configuration

Database port [Info](#)

TCP/IP port that the database will use for application connections.

Database authentication

Database authentication options [Info](#)

Database authentication

Database authentication options [Info](#)

☒ Password authentication
Authenticates using database passwords.

☐ Password and IAM database authentication
Authenticates using the database password and user credentials through AWS IAM users and roles.

Monitoring

☒ Enable Enhanced Monitoring
Enabling Enhanced Monitoring metrics are useful when you want to see how different processes or threads use the CPU.

Granularity

60 seconds

Monitoring Role

default

Clicking "Create database" will authorize RDS to create the IAM role rds-monitoring-role

CloudShell

Feedback

© 2024, Amazon Web Services, Inc. or its aff

► Additional configuration

Database options, encryption turned on, backup turned on, backtrack turned off, maintenance, CloudWatch Logs, delete protection turned off.

Estimated Monthly costs

DB instance	12.41 USD
Storage	2.30 USD
Total	14.71 USD

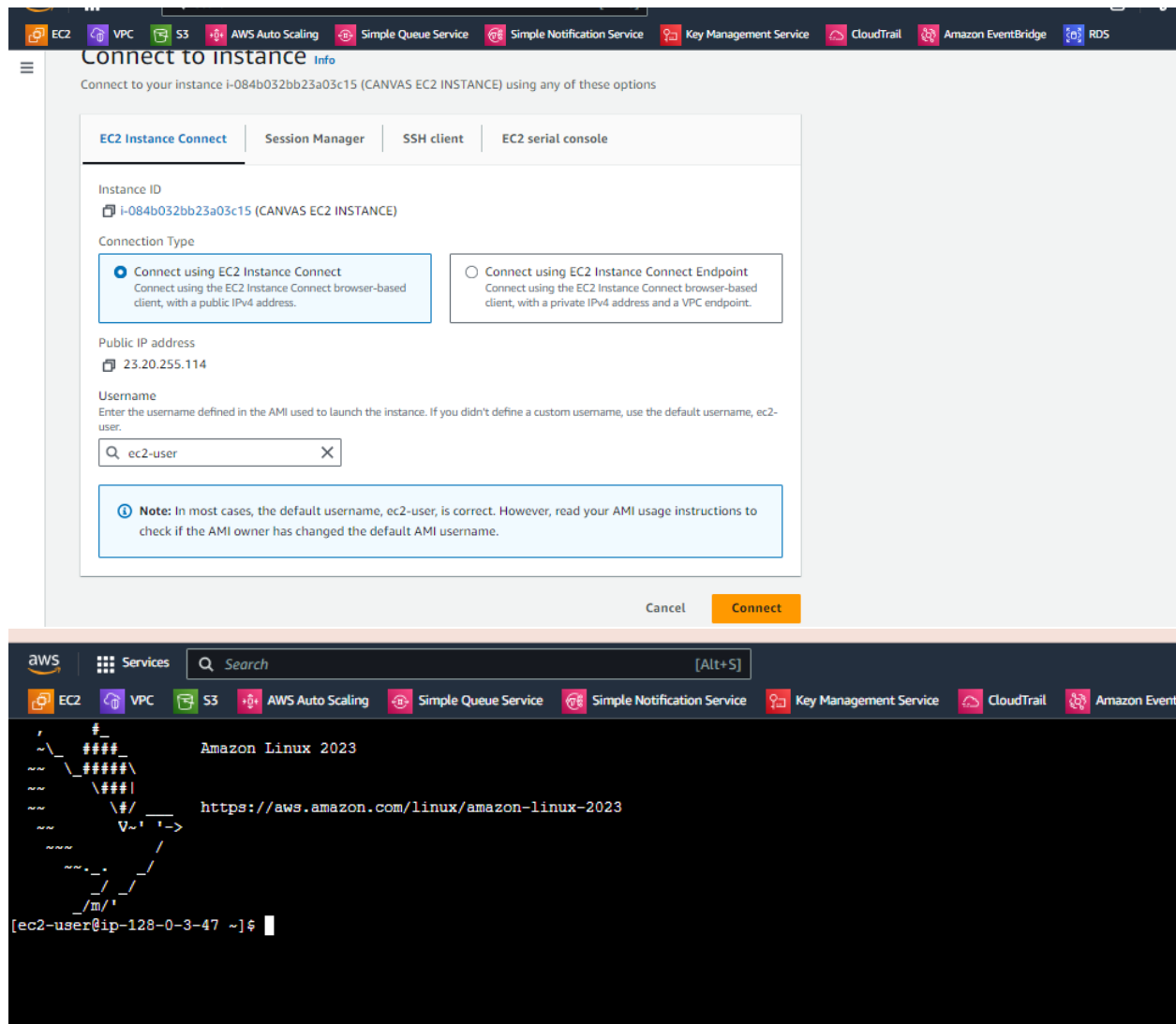
This billing estimate is based on on-demand usage as described in [Amazon RDS Pricing](#). Estimate does not include costs for backup storage, IOs (if applicable), or data transfer.

Estimate your monthly costs for the DB Instance using the [AWS Simple Monthly Calculator](#).

Estimated monthly costs

The Amazon RDS Free Tier is available to you for 12 months. Each calendar month, the free tier will allow you to

Step6- now connect to ec2 instance



CMD- SUDO SU

YUM INSTALL MARIADB* -Y

```
[ec2-user@ip-128-0-3-47 ~]$ sudo su
[root@ip-128-0-3-47 ec2-user]# yum update
Last metadata expiration check: 0:16:08 ago on Thu Mar 14 11:52:16 2024.
Dependencies resolved.
Nothing to do.
Complete!
[root@ip-128-0-3-47 ec2-user]# yum install mariadb* -y
```

CMD-mysql -u admin -p -h (paste host id)

Endpoint

database-2.cbqawamoa5pu.us-east-1.rds.amazonaws.com

```
Complete!
[root@ip-128-0-3-47 ec2-user]# mysql -u admin -p -h database-2.cbqawamoa5pu.us-east-1.rds.amazonaws.com
Enter password:
Welcome to the MariaDB monitor.  Commands end with ; or \g.
Your MariaDB connection id is 13
Server version: 10.11.6-MariaDB managed by https://aws.amazon.com/rds/

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

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

MariaDB [(none)]> 
```

SUCCESSFULLY ENTER OUR MARIA DATABASE

NOW CREATE ONE DATABASE NAME AND LETS CHECK FURTHER

```
/home/ec2-user
[root@ip-128-0-3-47 ec2-user]# mysql -u admin -p -h database-2.cbqawamoa5pu.us-east-1.rds.amazonaws.com
Enter password:
Welcome to the MariaDB monitor.  Commands end with ; or \g.
Your MariaDB connection id is 21
Server version: 10.11.6-MariaDB managed by https://aws.amazon.com/rds/

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

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

MariaDB [(none)]> create database vicky;
Query OK, 1 row affected (0.001 sec)

MariaDB [(none)]>
```

```
MariaDB [(none)]> create database vicky;
Query OK, 1 row affected (0.001 sec)

MariaDB [(none)]> show databases;
+-----+
| Database |
+-----+
| information_schema |
| innodb |
| mysql |
| performance_schema |
| sys |
| vicky |
+-----+
6 rows in set (0.001 sec)

MariaDB [(none)]>
```