

MINI - PROJECT

Configuring and Connecting to Serverless
MySQL Database with Amazon Aurora



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**CONFIGURE AND CONNECT TO SERVERLESS
MYSQL DATABASE WITH AMAZON AURORA
SERVERLESS**

Create an AWS Account: Sign up for AWS and access the AWS Management Console.

Navigate to Amazon RDS: Go to the Amazon RDS service in the AWS Management Console.

Launch a New DB Cluster: Click on "Create database" and select Amazon Aurora as the engine.

Choose Serverless: Select the serverless option for your Aurora cluster configuration.

Configure Cluster Settings: Set cluster identifier, master username, password, and other settings.

Set Capacity Settings: Define minimum and maximum Aurora Capacity Units (ACUs) for scaling.

Configure Security: Define security group settings to control network access to your Aurora cluster.

Create the Cluster: Review your configuration and create the Aurora serverless DB cluster.

Connect to the Database: Retrieve the endpoint from the AWS Management Console and configure your applications to use it.

Monitor and Scale: Monitor performance metrics using Amazon CloudWatch and adjust capacity settings as needed to optimize performance and costs.

	Tips for Configuration	<ul style="list-style-type: none">- Use AWS Console for IAM roles and security groups.- Automate tasks with AWS CLI.- Implement security best practices with IAM and Secrets Manager.
	Benefits	<ul style="list-style-type: none">- Scalability with auto-scaling based on workload.- Cost efficiency with pay-as-you-go pricing.- High availability with multi-AZ replication.
	Problems Solved	<ul style="list-style-type: none">- Resource management and operational complexity.- Cost management by scaling based on demand.- Simplified database maintenance tasks.
	Examples	<ul style="list-style-type: none">- E-commerce platforms handling seasonal traffic.- Content management systems for scalable content storage.- Development/testing environments with on-demand databases.

RDS | us-east-1 Cloud Computing Sel... 6) AWS project Config Home - Canva Untitled design - Pre... Configure and Conn... Configure and Conn... - X

us-east-1.console.aws.amazon.com/rds/home?region=us-east-1#launch-dbinstance:

Gmail YouTube Maps New Tab Resume Editor Jay bhavani_1008 ... Wix Logo Maker aws s3 - Presentation All Bookmarks

aws Services Search [Alt+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 

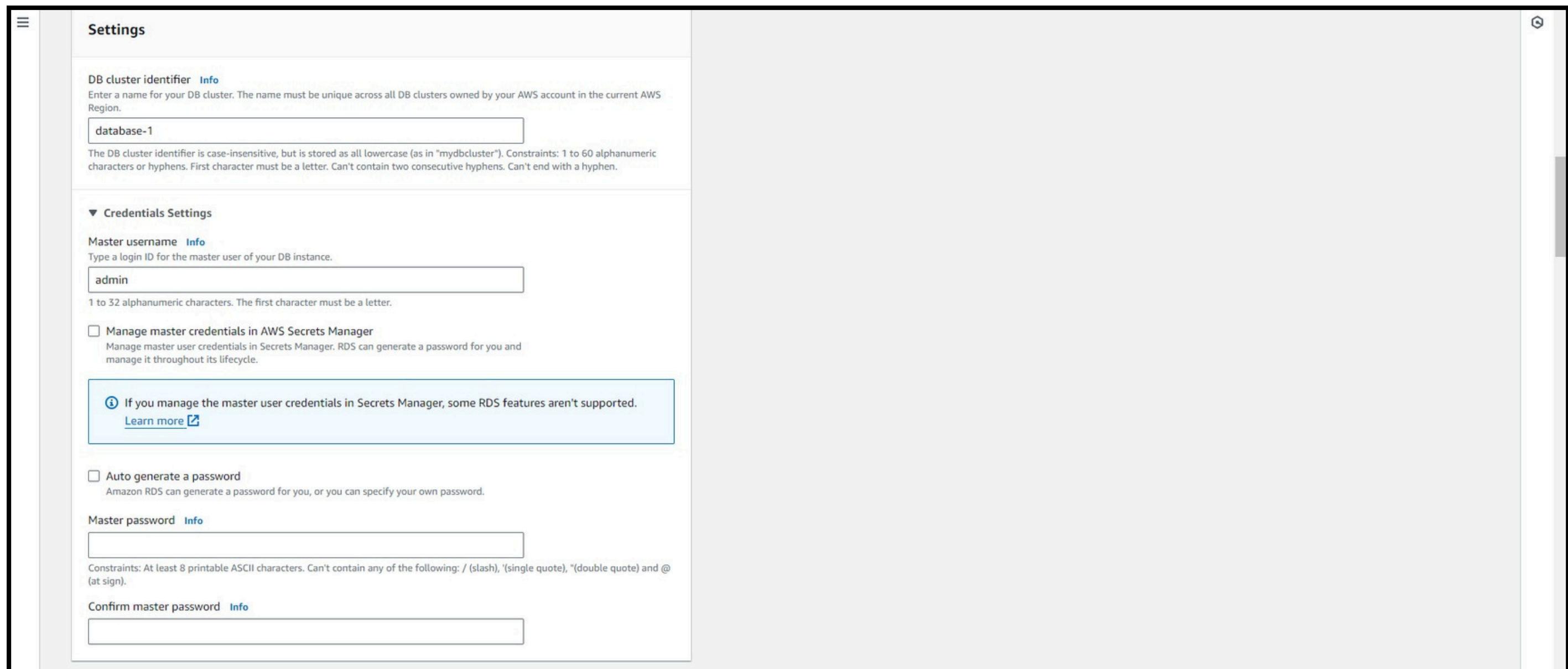
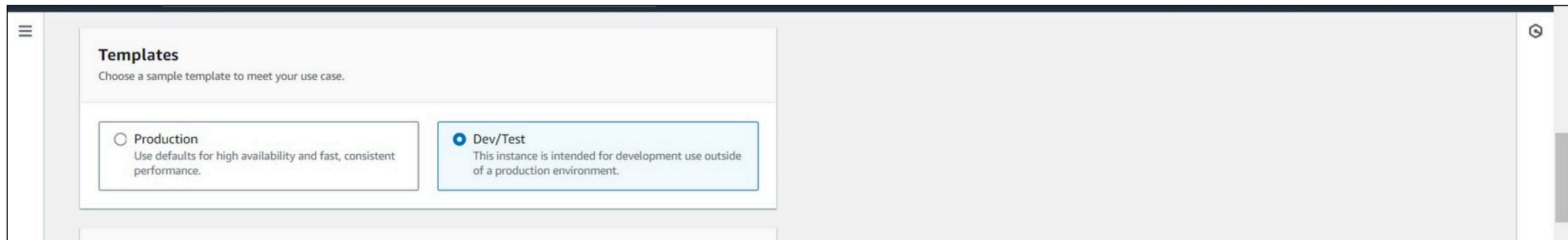
MariaDB 

PostgreSQL 

Oracle 

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create a RDS database with correct configurations



Select the correct template and enter accurate database credentials.

The screenshot shows the 'Cluster storage configuration - new' screen. At the top, it says 'Choose the storage configuration for the Aurora DB cluster that best fits your application's price predictability and price performance needs.' Below this, under 'Configuration options', there are two choices:

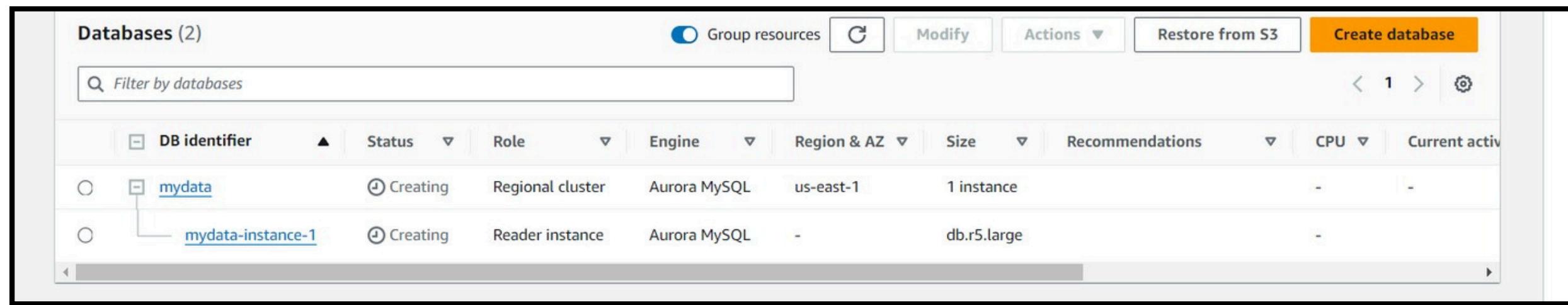
- Aurora Standard**
 - Cost-effective pricing for many applications with moderate I/O usage (I/O costs <25% of total database costs).
 - Pay-per-request I/O charges apply. DB instance and storage prices don't include I/O usage.
- Aurora I/O-Optimized**
 - Predictable pricing for all applications. Improved price performance for I/O-intensive applications (I/O costs >25% of total database costs).
 - No additional charges for read/write I/O operations. DB instance and storage prices include I/O usage.

Below this, the 'Instance configuration' section is shown. It says 'The DB instance configuration options below are limited to those supported by the engine that you selected above.' Under 'DB instance class', there are filter options: 'Hide filters' (selected), 'Include previous generation classes' (selected), and three categories:

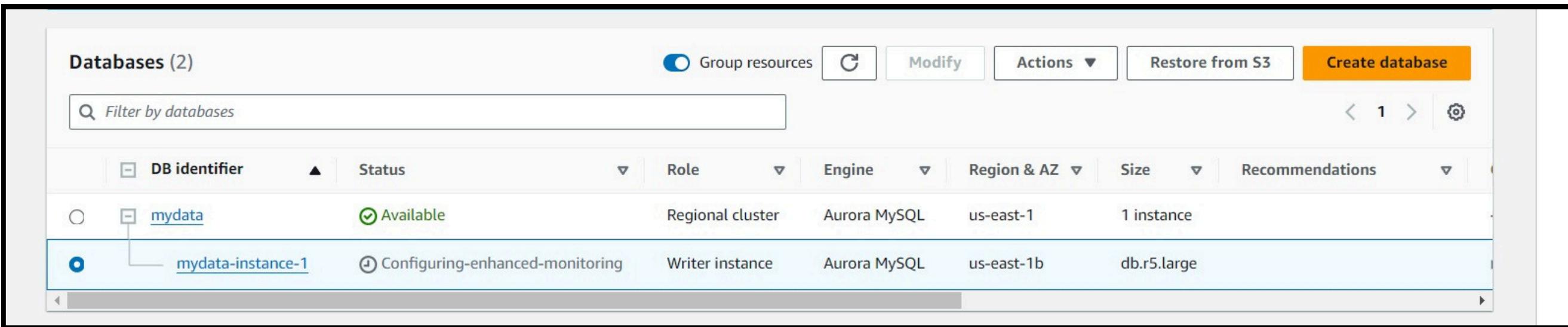
- Serverless v2
- Memory optimized classes (includes r classes)
- Burstable classes (includes t classes)

A dropdown menu shows 'db.r5.large' with details: '2 vCPUs 16 GiB RAM Network: 4,750 Mbps'. A small downward arrow icon is at the bottom right of the dropdown.

Select the correct configurations. and create the database

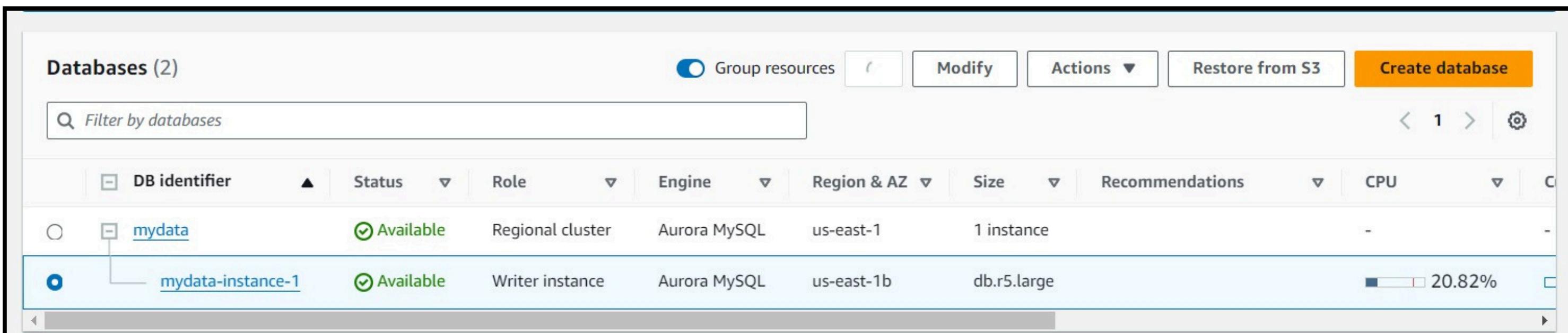
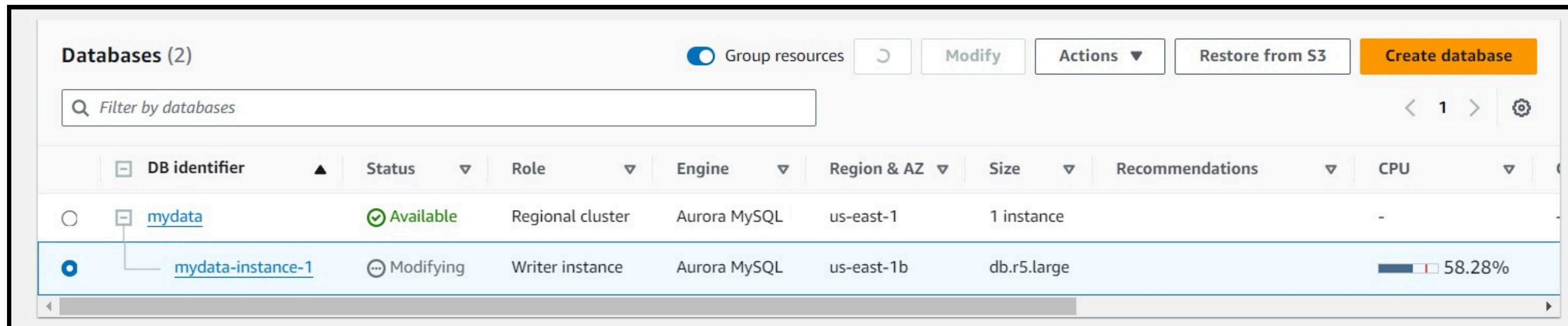


Databases (2)									
<input type="checkbox"/> Group resources <input type="button" value="C"/> <input type="button" value="Modify"/> Actions <input type="button" value="Restore from S3"/> <input type="button" value="Create database"/>									
<input type="text"/> Filter by databases									
DB identifier	Status	Role	Engine	Region & AZ	Size	Recommendations	CPU	Current activ	
mydata	Creating	Regional cluster	Aurora MySQL	us-east-1	1 instance	-	-	-	
mydata-instance-1	Creating	Reader instance	Aurora MySQL	-	db.r5.large	-	-	-	



Databases (2)									
<input type="checkbox"/> Group resources <input type="button" value="C"/> <input type="button" value="Modify"/> Actions <input type="button" value="Restore from S3"/> <input type="button" value="Create database"/>									
<input type="text"/> Filter by databases									
DB identifier	Status	Role	Engine	Region & AZ	Size	Recommendations	CPU	Current activ	
mydata	Available	Regional cluster	Aurora MySQL	us-east-1	1 instance	-	-	-	
mydata-instance-1	Configuring-enhanced-monitoring	Writer instance	Aurora MySQL	us-east-1b	db.r5.large	-	-	-	

Check the status of the cluster and db instance



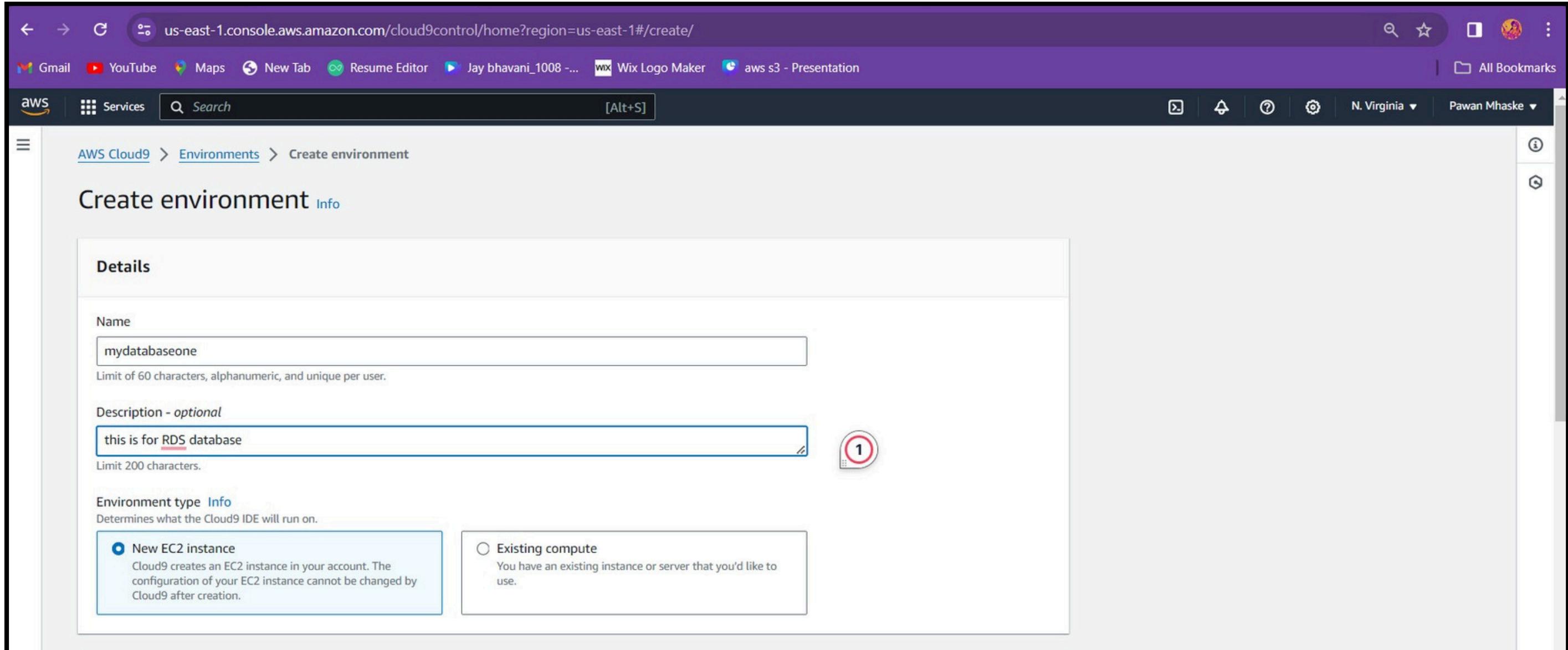
Check the status of the cluster and db instance if it is available then go to the Cloud9 desktop

The screenshot shows the AWS search interface with the query "cloud9". The left sidebar lists various categories: Services (49), Features (31), Resources (New), Documentation (14,859), Knowledge Articles (650), Marketplace (14), Blogs (6,524), Events (308), and Tutorials (28). The main search results for "Services" include Cloud9, Amazon CodeCatalyst, AWS Cloud Map, and Lightsail. The "Features" section includes Cloud WAN, Namespaces, and Workloads. On the right, the "Cloud9" service page is displayed, showing a summary bar with "Total costs per month" and a "Cost (USD)" chart. A "Create application" button is visible.

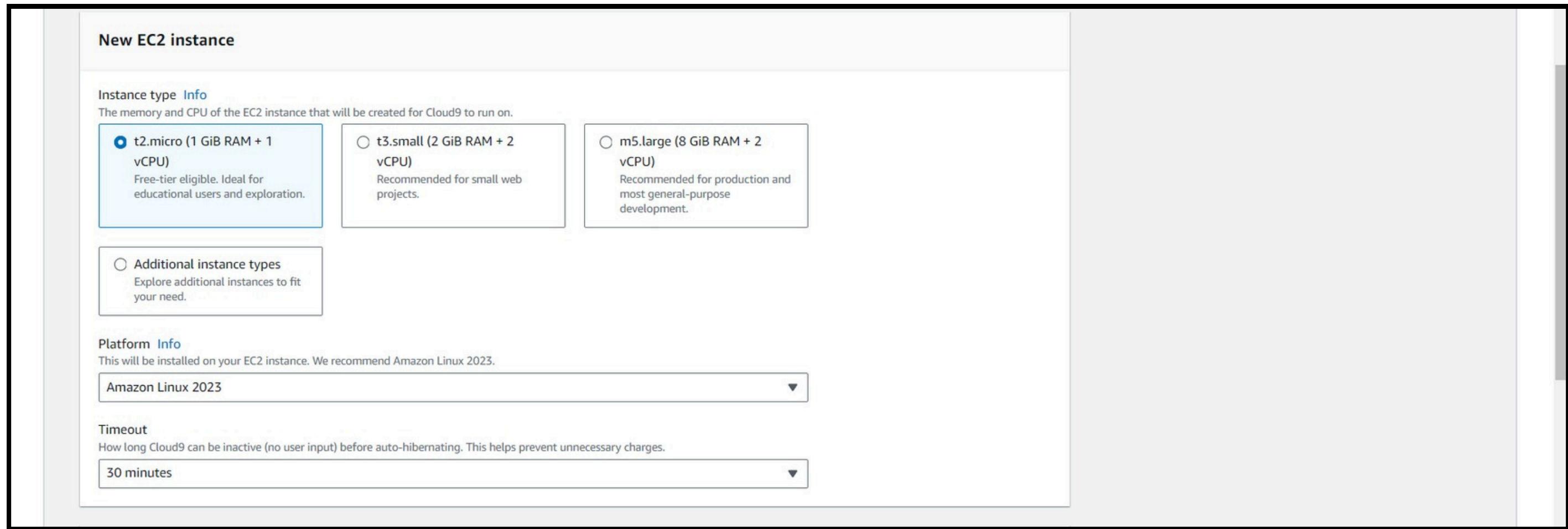
Enter into the Cloud9

The screenshot shows the AWS Cloud9 landing page within the AWS Management Console. The top navigation bar includes the AWS logo, a services menu, a search bar, and user information for 'Pawan Mhaske' in the N. Virginia region. The main content area features a heading 'AWS Cloud9' and a sub-heading 'A cloud IDE for writing, running, and debugging code'. Below this is a brief description of what AWS Cloud9 offers. To the right, there's a call-to-action box titled 'New AWS Cloud9 environment' with a 'Create environment' button. On the left, under 'How it works', there's a section about creating environments and another about using the dashboard. A 'Learn more' link is also present. On the right side, there are two sections: 'Getting started' with links to 'Before you start', 'Create an environment', 'Working with environments', 'Working with the IDE', and 'Working with AWS Lambda'; and 'More resources' which is currently empty. The bottom of the page includes a footer with the URL 'https://us-east-1.console.aws.amazon.com/cloud9control/home?region=us-east-1#create/' and copyright information for Amazon Web Services.

create environment in the Cloud9



Creating the environment with correct configurations



if you're creating cloud9 environment by default 1 ec2 instance is created

The screenshot shows the 'Network settings' section of the AWS Cloud9 configuration interface. It includes options for 'Connection' (AWS Systems Manager (SSM) selected, Secure Shell (SSH) available), 'VPC settings' (link to info), and 'Tags - optional' (link to info). A callout box highlights the creation of IAM resources: 'AWSServiceRoleForAWSCloud9', 'AWSCloud9SSMAccessRole', and 'AWSCloud9SSMInstanceProfile'. At the bottom are 'Cancel' and 'Create' buttons, and a footer with links to CloudShell, Feedback, and various AWS services.

Network settings [Info](#)

Connection
How your environment is accessed.

AWS Systems Manager (SSM)
Accesses environment via SSM without opening inbound ports (no ingress).

Secure Shell (SSH)
Accesses environment directly via SSH, opens inbound ports.

▶ **VPC settings** [Info](#)

▶ **Tags - optional** [Info](#)
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.

i The following IAM resources will be created in your account

- **AWSServiceRoleForAWSCloud9** - AWS Cloud9 creates a service-linked role for you. This allows AWS Cloud9 to call other AWS services on your behalf. You can delete the role from the AWS IAM console once you no longer have any AWS Cloud9 environments. [Learn more](#)
- **AWSCloud9SSMAccessRole** and **AWSCloud9SSMInstanceProfile** - A service role and an instance profile are automatically created if Cloud9 accesses its EC2 instance through AWS Systems Manager. If your environments no longer require EC2 instances that block incoming traffic, you can delete these roles using the AWS IAM console. [Learn more](#)

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

[CloudShell](#) [Feedback](#) © 2024, Amazon Web Services, Inc. or its affiliates. [Privacy](#) [Terms](#) [Cookie preferences](#)

review the configurations and create the environment

The screenshot shows the AWS Cloud9 interface. A blue header bar at the top indicates that a new environment is being created, with a note: "Creating mydatabaseone. This can take several minutes. While you wait, see Best practices for using AWS Cloud9". Below this, the main content area is titled "Environments" and shows a table with one row. The table columns are: Name, Cloud9 IDE, Environment type, Connection, Permission, and Owner ARN. The single row contains the values: "mydatabaseone", "Open", "EC2 instance", "AWS Systems Manager (SSM)", "Owner", and "arn:aws:iam::946872554143:root".

check the Cloud9 environment

The screenshot shows the AWS EC2 Instances page. The title bar says "Instances (1) Info". The main table displays one instance. The columns are: Name, Instance ID, Instance state, Instance type, Status check, Alarm status, Availability Zone, Public IPv4 DNS, and Public IPv4 The instance details are: Name: "aws-cloud9-m...", Instance ID: "i-0ffd75d3cffa0ca2b", Instance state: "Running" (green checkmark), Instance type: "t2.micro", Status check: "Initializing" (blue circle with exclamation), Alarm status: "View alarms +", Availability Zone: "us-east-1a", Public IPv4 DNS: "ec2-54-234-44-31.com...", and Public IPv4 IP: "54.234.44.31".

check the ec2 instance status

EC2 > Security Groups > sg-070cd314e95194483 - aws-cloud9-mydatabaseone-f5667d4a222b441fb5430028075f62dc-InstanceSecurityGroup-1U3XL92SARY3C > Edit inbound rules

Edit inbound rules Info

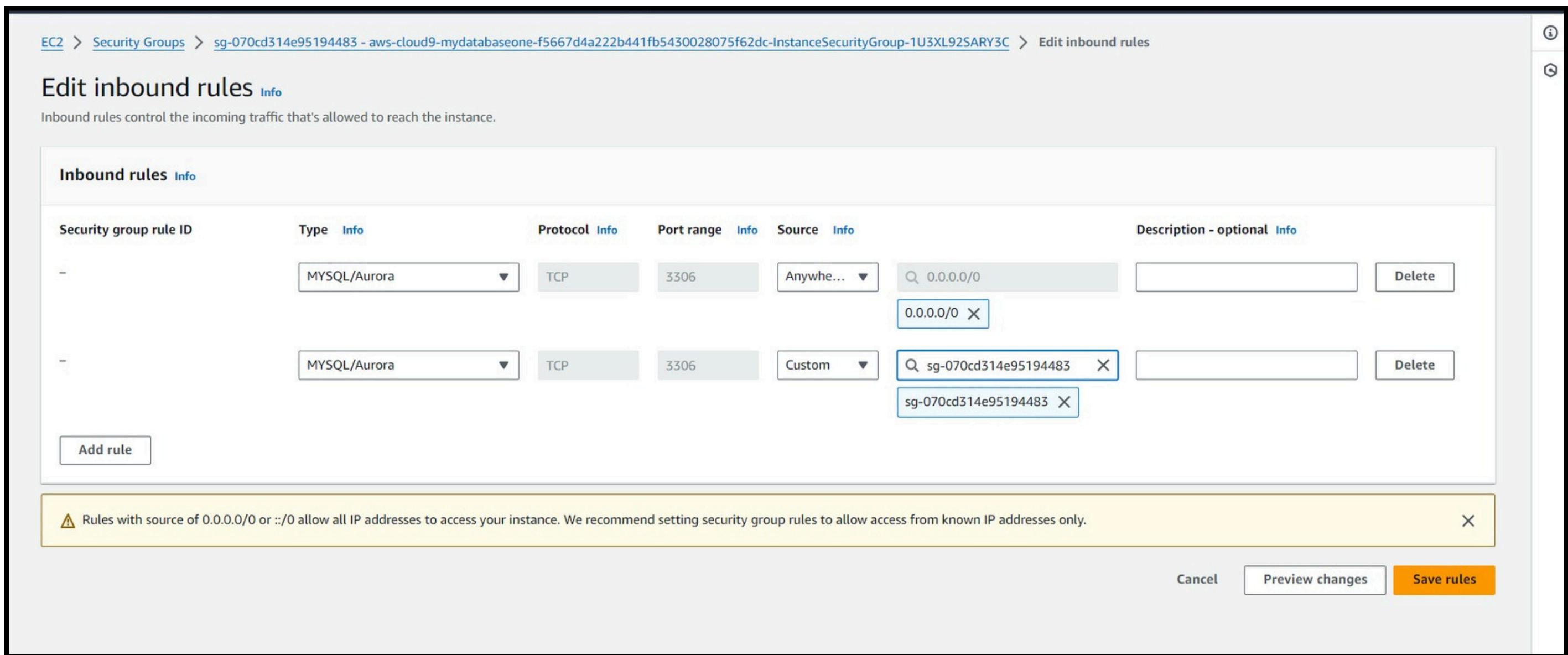
Inbound rules control the incoming traffic that's allowed to reach the instance.

Security group rule ID	Type <small>Info</small>	Protocol <small>Info</small>	Port range <small>Info</small>	Source <small>Info</small>	Description - optional <small>Info</small>
-	MySQL/Aurora	TCP	3306	Anywhere... ▾	0.0.0.0/0 Delete
-	MySQL/Aurora	TCP	3306	Custom ▾	sg-070cd314e95194483 sg-070cd314e95194483 X

Add rule

⚠ Rules with source of 0.0.0.0/0 or ::/0 allow all IP addresses to access your instance. We recommend setting security group rules to allow access from known IP addresses only.

Cancel Preview changes Save rules



edit the rule in the security group of database

EC2 > Security Groups > sg-0773cb051dd7f5976 - myvpc123 > Edit inbound rules

Edit inbound rules Info

Inbound rules control the incoming traffic that's allowed to reach the instance.

Security group rule ID	Type <small>Info</small>	Protocol <small>Info</small>	Port range <small>Info</small>	Source <small>Info</small>	Description - optional <small>Info</small>
sgr-01a3996eee37b9038	MySQL/Aurora	TCP	3306	Custom	<input type="text"/> 49.15.245.150/32 X
-	MySQL/Aurora	TCP	3306	Custom	<input type="text"/> sg-070cd314e95194483 X
<button>Add rule</button>					

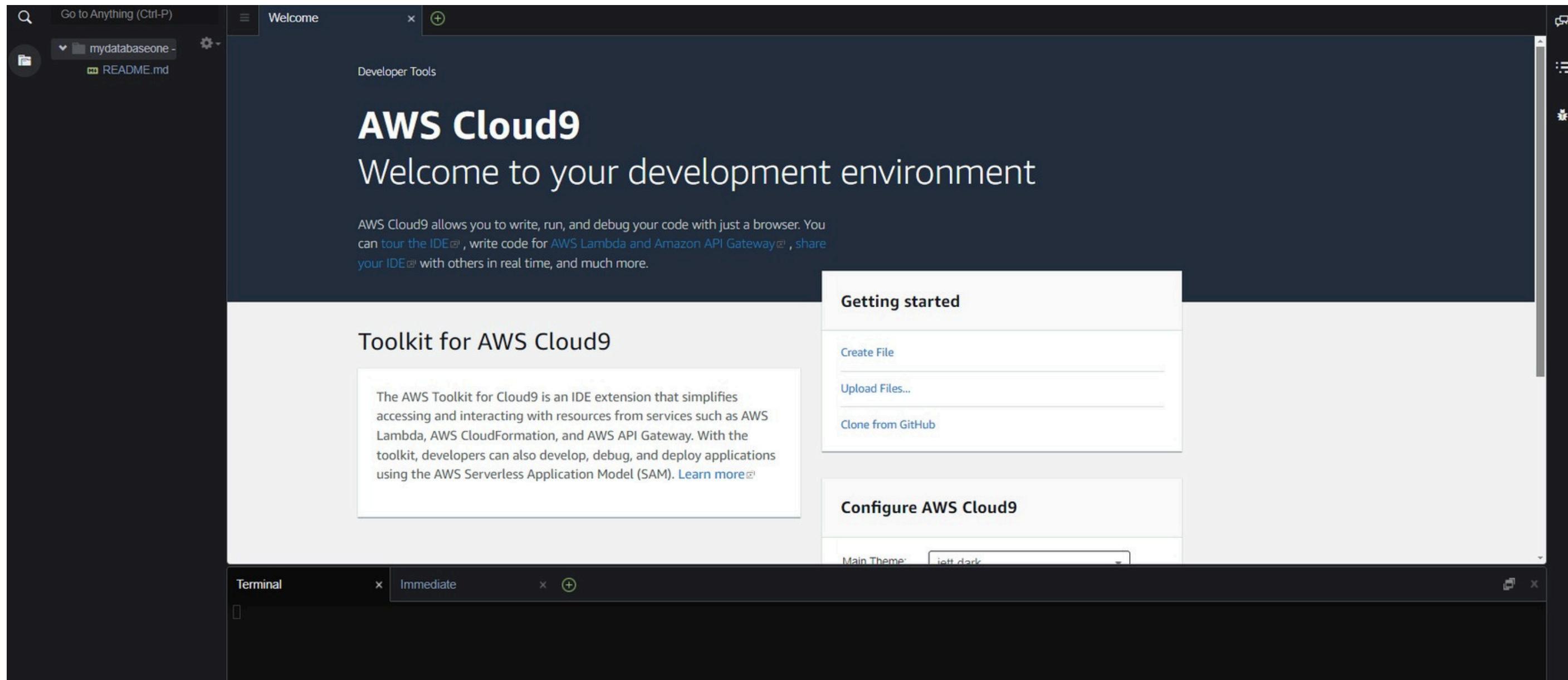
Add rule

Cancel Preview changes Save rules

edit the same rule in the VPC of your database

Environments (1)					
Delete View details Open in Cloud9 Create environment					
My environments <div style="float: right;"> ▼ ◀ 1 ▶ ⚙️ </div>					
Name	Cloud9 IDE	Environment type	Connection	Permission	Owner ARN
mydatabaseone	Open	EC2 instance	AWS Systems Manager (SSM)	Owner	arn:aws:iam::946872554143:root

Enter into the cloud9 IDE, which is shown below



The screenshot shows the AWS Cloud9 IDE interface. At the top, there's a navigation bar with File, Edit, Find, View, Go, Run, Tools, Window, Support, Preview, and Run buttons. On the far right are Share and Settings icons. The left sidebar has a 'Go to Anything (Ctrl-P)' search bar, a 'mydatabaseone' folder icon, and a README.md file icon. The main workspace title is 'Welcome'. Below it, the text 'Developer Tools' is visible. A large title 'AWS Cloud9' is centered at the top of the workspace. In the center, there's a terminal window titled 'mysql - "ip-172-31-18-16"' with an 'Immediate' tab. The terminal output is as follows:

```
ec2-user:~/environment $ mysql --user=admin --password -h mydata.cluster-c05pnqlhxp6e.us-east-1.rds.amazonaws.com
Enter password:
Welcome to the MariaDB monitor. Commands end with ; or \g.
Your MySQL connection id is 148
Server version: 8.0.28 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 (0.003 sec)

MySQL [(none)]> 
```

Result !!!

Thank You !

