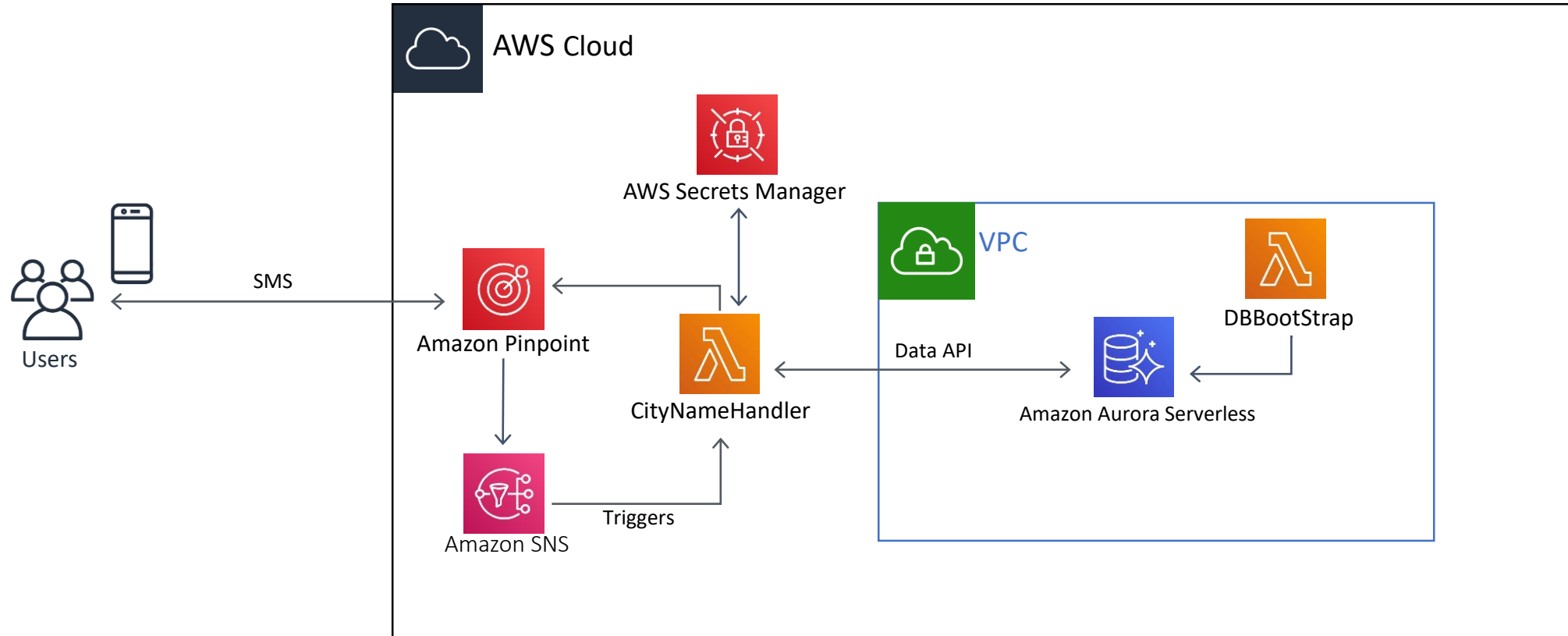


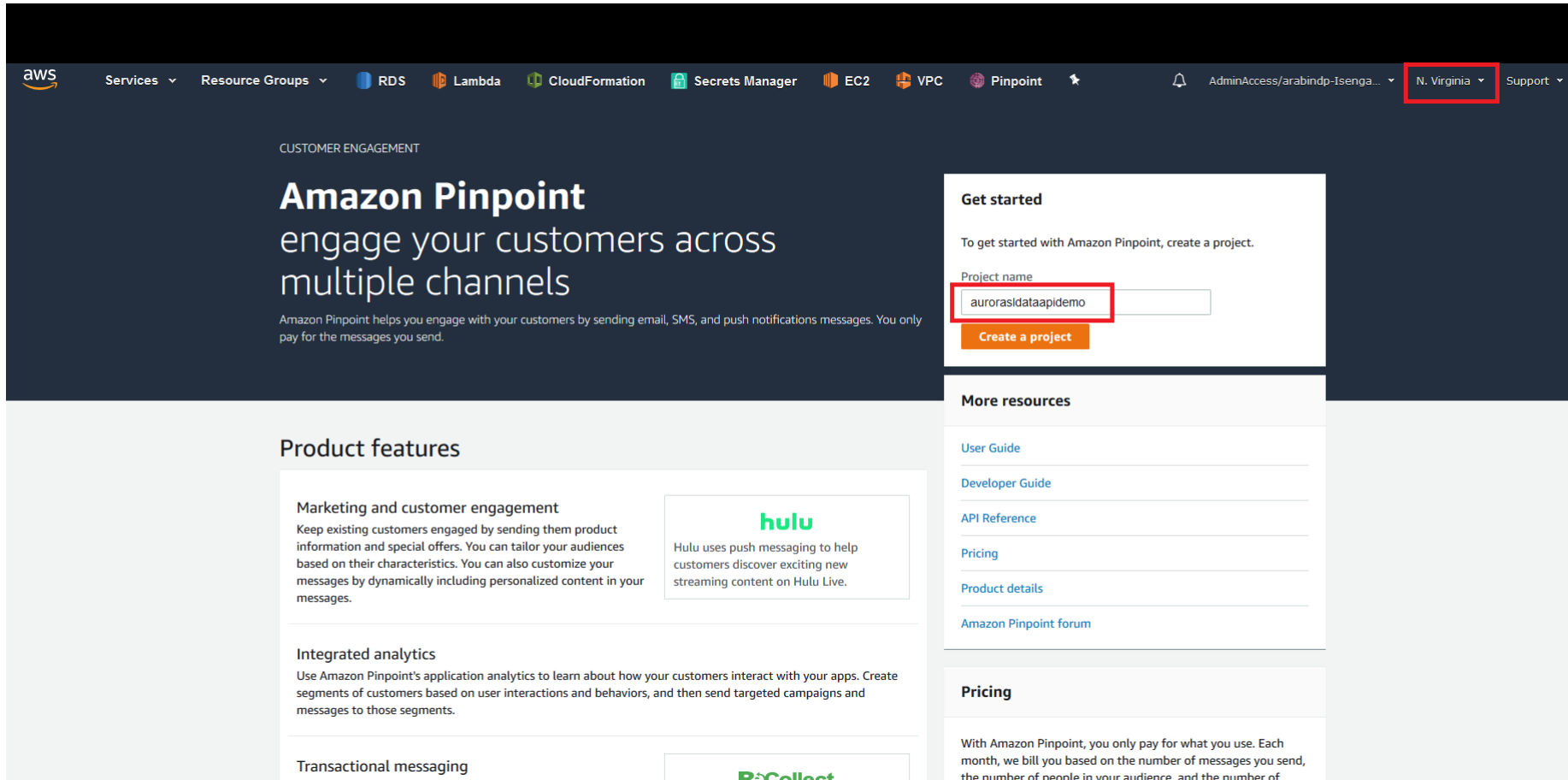
Demo

Using Amazon Aurora Serverless Data API to build an application

How it works...



Create Amazon Pinpoint Project



The screenshot shows the Amazon Pinpoint console interface. At the top, the AWS logo is on the left, and a navigation bar contains links to Services, Resource Groups, and various AWS services including RDS, Lambda, CloudFormation, Secrets Manager, EC2, VPC, and Pinpoint. On the right of the navigation bar, there is a user profile dropdown showing 'AdminAccess/arabindp-Isenga...' and a region dropdown set to 'N. Virginia'. Below the navigation bar, the main header reads 'CUSTOMER ENGAGEMENT' followed by 'Amazon Pinpoint' and the tagline 'engage your customers across multiple channels'. A brief description states: 'Amazon Pinpoint helps you engage with your customers by sending email, SMS, and push notifications messages. You only pay for the messages you send.'

The 'Get started' section on the right contains the instruction: 'To get started with Amazon Pinpoint, create a project.' Below this is a 'Project name' label and an input field containing the text 'aurorasdataapidemo'. The input field is highlighted with a red rectangular box. Below the input field is an orange button labeled 'Create a project'.

The 'More resources' section below 'Get started' lists several links: 'User Guide', 'Developer Guide', 'API Reference', 'Pricing', 'Product details', and 'Amazon Pinpoint forum'.

The 'Pricing' section at the bottom right states: 'With Amazon Pinpoint, you only pay for what you use. Each month, we bill you based on the number of messages you send, the number of people in your audience, and the number of'.

The 'Product features' section on the left is divided into three parts. The first part, 'Marketing and customer engagement', describes sending product information and special offers, with a Hulu logo and text: 'Hulu uses push messaging to help customers discover exciting new streaming content on Hulu Live.' The second part, 'Integrated analytics', describes using application analytics to learn about customer interactions. The third part, 'Transactional messaging', is partially visible at the bottom with a ReCollect logo.

Configure SMS and Voice

The screenshot shows the AWS Pinpoint console interface. At the top, there's a navigation bar with the AWS logo and various service links like Services, Resource Groups, RDS, Lambda, CloudFormation, Secrets Manager, EC2, VPC, and Pinpoint. Below this is a green banner stating "You've created aurasdatapidemo. Now add features to your project." The main content area is titled "Configure features" and includes a sub-header "Choose a feature to add to your project. You can add more features later." The features are organized into two sections: "Project features" and "Application analytics". Under "Project features", there are three cards: "Email", "SMS and voice", and "Push notifications". The "SMS and voice" card is highlighted with a red rectangular box. Each card has a "Configure" button. Under "Application analytics", there are two cards: "Mobile app analytics" and "Web app analytics", each with a "Configure" button. At the bottom right, there is a "Skip this step" button.

aws Services Resource Groups RDS Lambda CloudFormation Secrets Manager EC2 VPC Pinpoint AdminAccess/arabindp-Isenga... N. Virginia Support

Pinpoint > All projects > aurasdatapidemo > Configure features

Configure features

Choose a feature to add to your project. You can add more features later.

Project features

Messaging channels and response metrics

Email
Send personalized email messages to your customers. [Info](#)

Configure

SMS and voice
Send SMS text messages from shared or reserved phone numbers. [Info](#)

Configure

Push notifications
Send push notifications to users of your mobile apps. [Info](#)

Configure

Application analytics

Mobile app analytics
Track usage metrics for mobile applications. [Info](#)

Configure

Web app analytics
Track usage metrics for web-based applications. [Info](#)

Configure

Skip this step

Configure SMS and Voice

Set up SMS

General settings

☒ Enable the SMS channel for this project

▼ Account-level settings

The settings in this section apply to all SMS messages that you send from your AWS account, including messages that you send using other AWS services.

Default message type

The type of messages you plan to send from this project. [Info](#)

☒ Transactional
Time-sensitive content, such as one-time passcodes.

☐ Promotional
Non-critical content, such as marketing messages.

Account spending limit

The maximum amount of money, in USD, that you want to spend sending SMS messages each month. The limit for accounts in the sandbox is 1 (\$1.00). [Info](#)

1

The spend limit that you specify can't include decimals. The minimum value is 0, and the maximum value is 1.

(Optional) Default sender ID

The identity that appears on recipients' devices when they receive this message. Support varies by country or region. [Info](#)

Enter a valid sender ID

Your sender ID can contain up to 11 alphanumeric characters. It has to contain at least one letter, and it can't consist only of numbers. Some countries and regions may have additional restrictions.

► Advanced configurations - optional

Cancel

Save changes

Request Long Code

Pinpoint

All projects

asldataapidemo

Analytics

Segments

Campaigns

Test messaging

Notifications

Settings

General settings

Email

SMS and voice

Push notifications

Mobile app analytics

Web app analytics

Event stream

Deliverability dashboard

Pinpoint > All projects > asldataapidemo > Settings > SMS and voice

SMS and voice

SMS settings

Channel status

Enabled

Default message type

Transactional

Account spending limit

Not specified

Request a spending limit increase

(Optional) Default sender ID

Not specified

Request a sender ID

Edit

Number settings (0)

Remove long code

Request short codes

Request long codes

Search

< 1 >

Number

Type

Registered keyword

SMS

Voice

Created Date

You have no dedicated short codes registered.

Request long codes

Request Long Code

Pinpoint > All projects > asldataapidemo > Settings > SMS and voice > Request long codes

Request long codes

Long code specifications

Use this form to request a long code. A *long code* is a standard telephone number that contains up to 15 digits, depending on the country or region that it's based in.

You can use the long codes that you obtain by using this form to send voice messages. In some countries and regions, you can also use these long codes to send SMS messages.

If you want to obtain a long code to use for sending SMS messages, but your country or region isn't supported on this form, see [Requesting Dedicated Long Codes for SMS Messaging](#) in the *Amazon Pinpoint User Guide*.

Target country or region	Price per month	Quantity
<div>United States ▼</div>	\$1.00 USD	<div>1 ▼</div>
Default call type	SMS channel	Voice channel
<div><input checked="" type="radio"/> Transactional Critical or time-sensitive messages, such as password resets and transaction alerts</div> <div><input type="radio"/> Promotional Noncritical messages that promote your business or service</div>	<div>✓ Enabled</div>	<div>✓ Enabled</div>

Add a country or region

Subtotal (1 items): \$1.00 USD

Cancel **Request long codes**

Enable two-way SMS

Pinpoint > All projects > aurorasdatapidemo > Settings > SMS and voice

SMS and voice

SMS settings Edit

Channel status Not enabled	Default message type Info Transactional	Account spending limit Info Not specified Request a spending limit increase	(Optional) Default sender ID Info Not specified Request a sender ID
-------------------------------	--	---	---

Number settings (1) Remove long code Request short codes Request long codes

< 1 > ⚙

Number	Type	Registered keyword	SMS	Voice	Created Date
<input type="radio"/> +1 667-222-3143	Long code	keyword_708553717470	Enabled	Enabled	March 8th 2019, 09:27 AM, UTC

Endpoints

Developers: Define endpoints to contact
An endpoint is a destination that you can send messages to such as a user's mobile device, email address, or phone number. Before you can send email, you have to add endpoints to your project. You can add endpoints by using the API or an AWS SDK.

- ▶ Use AWS Pinpoint SDK
- ▶ Use AWS CLI
- ▶ Import a segment

Enable two-way SMS

Pinpoint

All projects

aurorasdatapidemo

Analytics

Segments

Campaigns

Test messaging

Notifications

Settings

General settings

Email

SMS and voice

Push notifications

Mobile app analytics

Web app analytics

Event stream

Deliverability dashboard

▼ Two-way SMS

☒ Enable two-way SMS

This feature allows you to receive and process messages. You can define keywords for messages that you want to receive and process outside of Amazon Pinpoint. When your number receives an SMS message that begins with one of these keywords, Amazon Pinpoint sends the message and related data to an Amazon SNS topic in your account. You can use Amazon SNS to publish the message to topic subscribers, or to AWS services for further processing.

Incoming message destination

Specify an Amazon SNS topic to publish HELP and STOP messages, as well as forwarding incoming SMS messages

☒ Create a new SNS topic

☐ Choose an existing SNS topic

aurorasdatapidemo

Two-way SMS keywords - *Optional*

You can set up Amazon Pinpoint to send responses when an incoming message contains certain words or phrases.

Add another keyword

Self-managed opt-outs - *Optional*

Enable this feature if you want manage opt-outs outside of Amazon Pinpoint. [Info](#)

☐ Enable self-managed opt-outs

Cancel

Save

Cloudformation Input parameters

Save the following details to pass as input parameters to AWS Cloudformation while launching the stack.

- Amazon Pinpoint Project ID
- Amazon Pinpoint Long Code
- Amazon Pinpoint Incoming message Destination SNS Topic ARN

Launch Cloudformation



Note: The “Launch Stack” button above will only work from a downloaded copy of the PDF file. It will not work if you click it directly from the browser version.

Source Code:

<https://github.com/aws-samples/aurora-and-database-migration-labs/blob/master/cftemplates/Aurora%20MySQL/AuroraServerlessDataAPIDemo.yml>

Launch Cloudformation

The screenshot shows the AWS CloudFormation console interface. At the top, the navigation bar includes the AWS logo, a list of services (Services), and a breadcrumb trail: CloudFormation > Stacks > Create Stack. The region is set to N. Virginia. The main content area is titled 'Create stack' and contains a sidebar with steps: Select Template (active), Specify Details, Options, and Review. The 'Select Template' section has a heading 'Select Template' and a description: 'Select the template that describes the stack that you want to create. A stack is a group of related resources that you manage as a single unit.' There are two main options: 'Design a template' (with a 'Design template' button) and 'Choose a template'. Under 'Choose a template', there are three radio buttons: 'Select a sample template' (with a dropdown menu), 'Upload a template to Amazon S3' (with a 'Browse...' button and 'No file selected.' text), and 'Specify an Amazon S3 template URL' (which is selected). Below the selected option, a text input field contains the URL 'https://s3.amazonaws.com/awssrdsdataapidemo-us-east-1/cftemplate/AuroraServerlessDataAPIDemo.y' and a link 'View/Edit template in Designer'. At the bottom right, there are 'Cancel' and 'Next' buttons, with the 'Next' button highlighted by a red box.

aws Services Resource Groups RDS Lambda CloudFormation Secrets Manager EC2 VPC Pinpoint AdminAccess/arabindp-Isenga... N. Virginia Support

CloudFormation Stacks Create Stack

Create stack

- Select Template
- Specify Details
- Options
- Review

Select Template

Select the template that describes the stack that you want to create. A stack is a group of related resources that you manage as a single unit.

Design a template Use AWS CloudFormation Designer to create or modify an existing template. [Learn more.](#)

Design template

Choose a template A template is a JSON/YAML-formatted text file that describes your stack's resources and their properties. [Learn more.](#)

☐ Select a sample template

☐ Upload a template to Amazon S3

Browse... No file selected.

☒ Specify an Amazon S3 template URL

[View/Edit template in Designer](#)

Cancel Next

Launch Cloudformation

CloudFormation

Stacks

Create Stack

Create stack

Select Template

Specify Details

Options

Review

Specify Details

Specify a stack name and parameter values. You can use or change the default parameter values, which are defined in the AWS CloudFormation template. [Learn more.](#)

Stack name

slidataapidemo

Parameters

VPC Configuration

Aurora Serverless Configuration

Amazon PinPoint Configuration

VPC ClassB 2nd Octet

3

Specify the 2nd Octet of IPv4 CIDR block for the VPC (10.XXX.0.0/16) in the range [0-255]

Aurora Serverless Master UserName

master

Database master username

AmazonPinpointProjectID

97da41be84c7450aa62277c772f18db9

Specify the Amazon Pinpoint Project ID

AmazonPinpointLongCode

+16672223143

Specify the Amazon PinPoint Long Code in +1xxxxxxxx format

AmazonPinpointSNSArn

-east-1 [REDACTED] aurorasldataapidemo

Specify the Amazon Pinpoint Incoming Message Destination SNS Topic ARN

Cancel

Previous

Next

Launch Cloudformation

[Options](#)

Tags

No tags provided

Rollback Triggers

No monitoring time provided

No rollback triggers provided

Advanced

Notification	Disabled
Termination Protection	none
Timeout	Yes
Rollback on failure	

Capabilities

i The following resource(s) require capabilities: [AWS::IAM::Role]

This template contains Identity and Access Management (IAM) resources that might provide entities access to make changes to your AWS account. Check that you want to create each of these resources and that they have the minimum required permissions. [Learn more](#).

☒ I acknowledge that AWS CloudFormation might create IAM resources.

[Quick Create Stack](#) (Create stacks similar to this one, with most details auto-populated)

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

Should take about 4 minutes to complete...

Enable Data API for Aurora Serverless Cluster

The screenshot shows the AWS Management Console interface for Amazon RDS. The top navigation bar includes the AWS logo, a 'Services' dropdown, and links to various services like RDS, Lambda, CloudFormation, Secrets Manager, EC2, VPC, Pinpoint, and a user profile. The left sidebar lists navigation options for Amazon RDS, with 'Databases' selected. The main content area is titled 'Databases' and includes a search bar with the text 'slda'. Below the search bar is a table of database instances. The first instance, 'sldataapidemo-auroradbcluster-143tavqro1mx1', is highlighted. The 'Modify' button in the top right of the instance list is highlighted with a red box. Other buttons like 'Group resources', 'Actions', 'Restore from S3', and 'Create database' are also visible.

Amazon RDS ×

RDS > Databases

Databases

Group resources **Modify** Actions ▾ Restore from S3 Create database

Q slda X

DB identifier ▲	Role ▼	Engine ▼	Engine version ▼	Region & AZ ▼	Size ▼	Status ▼	CPU	Current activity	Ma
sldataapidemo-auroradbcluster-143tavqro1mx1	Serverless	Aurora MySQL	5.6.10a	us-east-1	0 capacity units	Available	4.52%		nor

Enable Data API for Aurora Serverless Cluster

Choose security groups ▼

sldataapidemo-AuroraServerlessSecurityGroup-1NI6LM7H86DCQ (sg-079e6892 28076795f) (vpc-038d2aef41256bba8) ✕

Web Service Data API - Beta

☒ Data API [Info](#)

Enable for a connectionless Web Service API for running SQL queries against this database. When the Data API is enabled, you can also query your database from inside the RDS console.

Additional configuration

Database options

DB cluster parameter group [Info](#)

default.aurora5.6 ▼

Backup

Backs up your DB cluster to a specific point of time by creating a new DB cluster in a certain time window. [Info](#)

Backup retention period [Info](#)

Select the number of days that Amazon RDS should retain automatic backups of this DB instance.

1 day ▼

Deletion protection

☐ Enable deletion protection

Protects the database from being deleted accidentally. While this option is enabled, you can't delete the database.

Cancel

Continue

Enable Data API for Aurora Serverless Cluster

RDS > Databases > Modify cluster

Modify DB cluster: sldataapidemo-auroradbcluster-143tavqro1mx1

Summary of modifications

You are about to submit the following modifications. Only values that will change are displayed. Carefully verify your changes and click Modify Cluster.


Attribute	Current value	New value
Enable data API	No	Yes

Scheduling of modifications

When to apply modifications

☐ Apply during the next scheduled maintenance window
Current maintenance window: tue:06:59-tue:07:29

☒ **Apply immediately**
The modifications in this request and any pending modifications will be asynchronously applied as soon as possible, regardless of the maintenance window setting for this database cluster.

 **Potential unexpected downtime**

If you choose to apply changes immediately, please note that any changes in the pending modifications queue are also applied. If any of the pending modifications require downtime, choosing this option can cause unexpected downtime.

Cancel Back **Modify cluster**

Survey

Where do you want to have the next
PSA offsite?

Send SMS with a ****Valid** "City Name"**
to
<Amazon Pinpoint Long Code>

Query Survey Results

RDS > Databases

Databases

×

☒ Group resources ↻ Modify Actions ▼ Restore from S3 Create database

<input type="checkbox"/>	DB identifier	Role	Engine	Engine version	Region & AZ	Size		CPU	Current activity	M...
<input checked="" type="radio"/>	sldataapidemo-auroradbcluster-143tavqro1mx1	Serverless	Aurora MySQL	5.6.10a	us-east-1	2 capacity units		<div><div></div></div> 12.29%		no

×

Connect to database

You need to choose a database and enter the database credentials to use the query editor. We will be storing your credentials and the connection in the AWS Secrets Manager service. [Learn more](#)

Database instance or cluster

sldataapidemo-auroradbcluster-143tavqro1mx1

Database username

Add new database credentials

Enter database username

master

Enter database password

••••••••

Enter the name of the database or schema (optional)

Enter the name for schemas collection

Enter database or schema name

Cancel

Connect to database

Query Survey Results

Connect to database

×

You need to choose a database and enter the database credentials to use the query editor. We will be storing your credentials and the connection in the AWS Secrets Manager service. [Learn more](#)

Database instance or cluster

sldataapidemo-auroradbcluster-143tavqro1mx1

Database username

Add new database credentials

Enter database username

master

Enter database password

••••••••••••••••

Enter the name of the database or schema (optional)
Enter the name for schemas collection

Enter database or schema name

Cancel

Connect to database

Query Survey Results

The query editor is in beta.

RDS > Editor: sldataapidemo-auroradbcluster-143tavqro1mx1

Editor

Recent

Saved queries

```
1 select * from information_schema.tables where table_schema='Demo';
2 # Press run and see the current database tables below
3
4 select City,count(*) from Demo.Cities group by City order by 2 desc;
```

Run

Save

Clear

Change database

Output

Result set 1 (2)

Rows returned (2)

Export to csv

< 1 > ⚙

City	count(*)
Hawaii	4
Seattle	1

Thank you!