

# Laboratorios

274 - 275

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# Objetivos Lab 274

- Crear una instancia de Aurora
- Conectarse a una instancia de Amazon Elastic Compute Cloud (Amazon EC2)
- Configurar la instancia de Amazon EC2 para conectarse a Aurora
- Consultar la instancia de Aurora

# Tarea 1: Crear una instancia de Aurora

En los primeros pasos de la creación, seleccionamos la instancia de Aurora DB compatible con MySQL

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)  


Completamos la configuración:  
Crearemos un identificador de  
cluster, un usuario y una  
contraseña maestra.

Engine Version

Aurora MySQL 3.05.2 (compatible with MySQL 8.0.32) - default for major version 8.0

⚠ Parallel query is off by default. To enable it, use a DB instance parameter group with the aurora\_parallel\_query parameter enabled. [Learn more](#)

**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.

Seleccionamos la versión del motor y la plantilla de testeo.

**Settings**

DB cluster identifier [Info](#)  
Enter a name for your DB cluster. The name must be unique across all DB clusters owned by your AWS account in the current AWS Region.

The DB cluster identifier is case-insensitive, but is stored as all lowercase (as in "mydbcluster"). 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.  
  
1 to 32 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 create a password that you manage.

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

Master password [Info](#)  
  
Minimum constraints: At least 8 printable ASCII characters. Can't contain any of the following symbols: / " @

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](#)

Include previous generation classes

Serverless v2

Memory optimized classes (includes r classes)

Burstable classes (includes t classes)

db.t3.medium

2 vCPUs 4 GiB RAM Network: 2.085 Mbps

No vamos a replicarla  
en múltiples AZ

Seleccionamos  
burstable classes y  
elegimos la  
db.t3.medium

## Availability & durability

Multi-AZ deployment [Info](#)

Create an Aurora Replica or Reader node in a different AZ (recommended for scaled availability)

Creates an Aurora Replica for fast failover and high availability.

Don't create an Aurora Replica

# Completamos los datos de conectividad.

**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 cluster.

LabVPC (vpc-07a513a99bff5381e)  
2 Subnets, 2 Availability Zones

Only VPCs with a corresponding DB subnet group are listed.

**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 cluster can use in the VPC that you selected.

dbsubnetgroup  
2 Subnets, 2 Availability Zones

**Public access** [Info](#)

Yes  
RDS assigns a public IP address to the cluster. Amazon EC2 instances and other resources outside of the VPC can connect to your cluster. Resources inside the VPC can also connect to the cluster. Choose one or more VPC security groups that specify which resources can connect to the cluster.

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

**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

DBSecurityGroup X

**Availability Zone** [Info](#)

No preference

**RDS Proxy**  
RDS Proxy is a fully managed, highly available database proxy that improves application scalability, resiliency, and security.

Create an RDS Proxy [Info](#)  
RDS automatically creates an IAM role and a Secrets Manager secret for the proxy. RDS Proxy has additional costs. For more information, see [Amazon RDS Proxy pricing](#).

**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 24, 2061

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

## Monitoring

### Enable Enhanced Monitoring

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

Dejamos esto desabilitado

Colocamos el nombre de "world"

### ▼ Additional configuration

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

#### Database options

Initial database name [Info](#)

world

If you do not specify a database name, Amazon RDS does not create a database.

## Maintenance

Auto minor version upgrade [Info](#)

Enable auto minor version upgrade

Enabling auto minor version upgrade will automatically upgrade to new minor versions as they are released. The automatic upgrades occur during the maintenance window for the database.

Maintenance window [Info](#)

Select the period you want pending modifications or maintenance applied to the database by Amazon RDS.

- Choose a window
- No preference

Deshabilitamos la actualización de versiones menores automática



Creamos la BD con todas las configuraciones anteriores.



## Databases (2)

Group resources



Modify

Actions ▾

Restore from S3

[Create database](#)

Filter by databases

< 1 > ⚙

DB identifier	Status	Role	Engine	Region & AZ
aurora	Available	Regional cluster	Aurora MySQL	us-west-2
aurora-instance-1	Creating	Writer instance	Aurora MySQL	us-west-2b

# Tarea 2: Configurar la instancia de Linux de Amazon EC2 para conectarse a Aurora

- Nos conectaremos a la instancia EC2 de Linux Amazon a través de SSH (en Linux) o PuTTY (en Windows).
  - Descargaremos MariaDB.

```
sh-4.2$ sudo yum install mariadb -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           Arch      Version       Repository      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
  Verifying  : 1:mariadb-5.5.68-1.amzn2.0.1.x86_64
                                         1/1
                                         1/1

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

Complete!
```

Nos conectaremos a la base de datos  
utilizando el punto de enlace de clúster  
provisto por Amazon

```
sh-4.2$ mysql -u admin --password='admin123' -h aurora.cluster-cj0wiwou6auy.us-west-2.rds.amazonaws.com
Welcome to the MariaDB monitor.  Commands end with ; or \g.
Your MySQL connection id is 114
Server version: 8.0.32 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.
```

# Tarea 3: Crear una tabla e insertar y hacer consulta de registros

- Para visualizar todas las bases de datos usamos el comando siguiente
- Tenemos que cambiar a la base de datos



```
MySQL [(none)]> SHOW DATABASES;  
+-----+  
| Database |  
+-----+  
| information_schema |  
| mysql |  
| performance_schema |  
| sys |  
| world |  
+-----+  
5 rows in set (0.00 sec)
```



```
MySQL [(none)]> USE world;  
Database changed
```

# Creamos la tabla “country”

```
MySQL [world]> CREATE TABLE `country` (
-> `Code` CHAR(3) NOT NULL DEFAULT '',
-> `Name` CHAR(52) NOT NULL DEFAULT '',
-> `Continent` enum('Asia','Europe','North America','Africa','Oceania','Antarctica','South America') NOT NULL DEFAULT 'Asia',
-> `Region` CHAR(26) NOT NULL DEFAULT '',
-> `SurfaceArea` FLOAT(10,2) NOT NULL DEFAULT '0.00',
-> `IndepYear` SMALLINT(6) DEFAULT NULL,
-> `Population` INT(11) NOT NULL DEFAULT '0',
-> `LifeExpectancy` FLOAT(3,1) DEFAULT NULL,
-> `GNP` FLOAT(10,2) DEFAULT NULL,
-> `GNIPOld` FLOAT(10,2) DEFAULT NULL,
-> `LocalName` CHAR(45) NOT NULL DEFAULT '',
-> `GovernmentForm` CHAR(45) NOT NULL DEFAULT '',
-> `Capital` INT(11) DEFAULT NULL,
-> `Code2` CHAR(2) NOT NULL DEFAULT '',
-> PRIMARY KEY (`Code`)
-> );
Query OK, 0 rows affected, 7 warnings (0.03 sec)
```

# Insertamos datos en la tabla de “country”

```
MySQL [world]> INSERT INTO `country` VALUES ('GAB','Gabon','Africa','Central Africa',267668.00,1960  
,1226000,50.1,5493.00,5279.00,'Le Gabon','Republic',902,'GA');  
Query OK, 1 row affected (0.01 sec)  
  
MySQL [world]>  
MySQL [world]> INSERT INTO `country` VALUES ('IRL','Ireland','Europe','British Islands',70273.00,19  
21,3775100,76.8,75921.00,73132.00,'Ireland/Éire','Republic',1447,'IE');  
Query OK, 1 row affected (0.01 sec)  
  
MySQL [world]>  
MySQL [world]> INSERT INTO `country` VALUES ('THA','Thailand','Asia','Southeast Asia',513115.00,135  
0,61399000,68.6,116416.00,153907.00,'Prathet Thai','Constitutional Monarchy',3320,'TH');  
Query OK, 1 row affected (0.00 sec)  
  
MySQL [world]>  
MySQL [world]> INSERT INTO `country` VALUES ('CRI','Costa Rica','North America','Central America',5  
1100.00,1821,4023000,75.8,10226.00,9757.00,'Costa Rica','Republic',584,'CR');  
Query OK, 1 row affected (0.00 sec)  
  
MySQL [world]>  
MySQL [world]> INSERT INTO `country` VALUES ('AUS','Australia','Oceania','Australia and New Zealand  
,7741220.00,1901,18886000,79.8,351182.00,392911.00,'Australia','Constitutional Monarchy, Federatio  
n',135,'AU');  
Query OK, 1 row affected (0.00 sec)
```

Para consultar en la tabla, usamos el siguiente comando SELECT

```
MySQL [world]> SELECT * FROM country WHERE GNP > 35000 and Population > 10000000;
+-----+-----+-----+-----+-----+-----+-----+
| Code | Name      | Continent | Region           | SurfaceArea | IndepYear | Population | Capi
| LifeExpectancy | GNP       | GNPOld    | LocalName        | GovernmentForm
tal | Code2 |
+-----+-----+-----+-----+-----+-----+-----+
| AUS | Australia | Oceania   | Australia and New Zealand | 7741220.00 | 1901 | 18886000 |
| 79.8 | 351182.00 | 392911.00 | Australia          | Constitutional Monarchy, Federation |
| 135 | AU         |
| THA | Thailand   | Asia       | Southeast Asia     | 513115.00 | 1350 | 61399000 |
| 68.6 | 116416.00 | 153907.00 | Prathet Thai       | Constitutional Monarchy
| 320 | TH         |
+-----+-----+-----+-----+-----+-----+
2 rows in set (0.00 sec)
```

# Objetivos Lab 275

- Crear una tabla de Amazon DynamoDB
- Ingresar datos en una tabla de Amazon DynamoDB
- Consultar una tabla de Amazon DynamoDB
- Eliminar una tabla de Amazon DynamoDB

# Tarea 4: Crear una nueva tabla

- Creamos una nueva tabla con los siguientes datos.
- Esta tabla se utilizará para llevar datos de los artistas y sus canciones.

**Table details** Info

DynamoDB is a schemaless database that requires only a table name and a primary key when you create the table.

**Table name**  
This will be used to identify your table.  
 Between 3 and 255 characters, containing only letters, numbers, underscores (\_), hyphens (-), and periods (.).

**Partition key**  
The partition key is part of the table's primary key. It is a hash value that is used to retrieve items from your table and allocate data across hosts for scalability and availability.  
 1 to 255 characters and case sensitive. String ▾

**Sort key - optional**  
You can use a sort key as the second part of a table's primary key. The sort key allows you to sort or search among all items sharing the same partition key.  
 1 to 255 characters and case sensitive. String ▾

# Tarea 5: Agregar datos

- En esta tarea, agregará datos a la tabla Music.
- En esta tarea, agregará datos a la tabla Music Al insertar elementos en DynamoDB, solo se requiere la clave de partición y la clave de ordenación, si se utiliza.
- La tabla no necesita un esquema. Esto significa que se pueden agregar atributos a un elemento que pueden ser diferentes a aquellos de otros elementos.

Acá agregamos un elemento con dos atributos adicionales.



Attributes

Attribute name	Value	Type
Artist - Partition key	Pink Floyd	String
Song - Sort key	Money	String
Album	The Dark Side of the Moon	String
Year	1973	Number

Attributes

Attribute name	Value	Type
Artist - Partition key	John Lennon	String
Song - Sort key	Imagine	String
Album	Imagine	String
Year	1971	Number
Genre	Soft rock	String

Acá agregamos otro elemento pero con tres atributos adicionales.



Otro elemento con un nuevo atributo que no hemos agregado en ningún otro elemento.

Create item

Form JSON view

You can add, remove, or edit the attributes of an item. You can nest attributes inside other attributes up to 32 levels deep. [Learn more](#)

Attributes  View DynamoDB JSON

```
1 {  
2   "Artist": {  
3     "S": "Psy"  
4   },  
5   "Song": {  
6     "S": "Gaangnam Style"  
7   },  
8   "Album": {  
9     "S": "Psy 6 (Six Rules), Part 1"  
10  },  
11  "Year": {  
12    "N": "2011"  
13  },  
14  "LengthSeconds": {  
15    "N": "219"  
16  }  
17 }
```

Attributes		
<input checked="" type="checkbox"/> Attribute name	Value	Type
Artist - Partition key	Psy	String
Song - Sort key	Gaangnam Style	String
Album	Psy 6 (Six Rules), Part 1	String
Year	2011	Number
LengthSeconds	219	Number

Nuevo elemento, visto en JSON, ahora con el atributo genre como atributo adicional aún no visto.

# Tarea 6: Modificar un elemento existente

- Existe un error en el elemento de Psy - Gangnam Style de la tabla de Music: la fecha es erronea.
- Cambiaremos la fecha a 2012.

Attributes

Add new attribute ▾

Attribute name	Value	Type	
Artist - Partition key	Psy	String	
Song - Sort key	Gaangnam Style	String	
Album	Psy 6 (Six Rules), Part 1	String	Remove
LengthSeconds	219	Number	Remove
Year	2012	Number	Remove

Cancel Save Save and close

# Tarea 7: Consultar la tabla

- Hay dos formas de consultar una tabla de DynamoDB: consulta y análisis.
- Una operación de consulta busca elementos basados en la clave primaria y, de forma opcional, en la clave de ordenación. Está completamente indexada, por lo que funciona muy rápido.

▼ Scan or query items

Scan

Query

Select a table or index

Table - Music

Select attribute projection

All attributes

Artist (Partition key)

Psy

Song (Sort key)

Equal to ▾ Gangnam Style  Sort descending

▼ Filters

Add a filter to get started.

[Add filter](#)

[Run](#) [Reset](#)

Colocamos las opciones para realizar la búsqueda



Elemento que se retornó luego de la búsqueda

Items returned (1)

[Actions ▾](#) [Create item](#)

< 1 > | [Filter](#) [Reset](#)

	Artist (String)	Song (String)
<input type="checkbox"/>	Psy	Gangnam Style

# Tarea 8: Eliminar la tabla

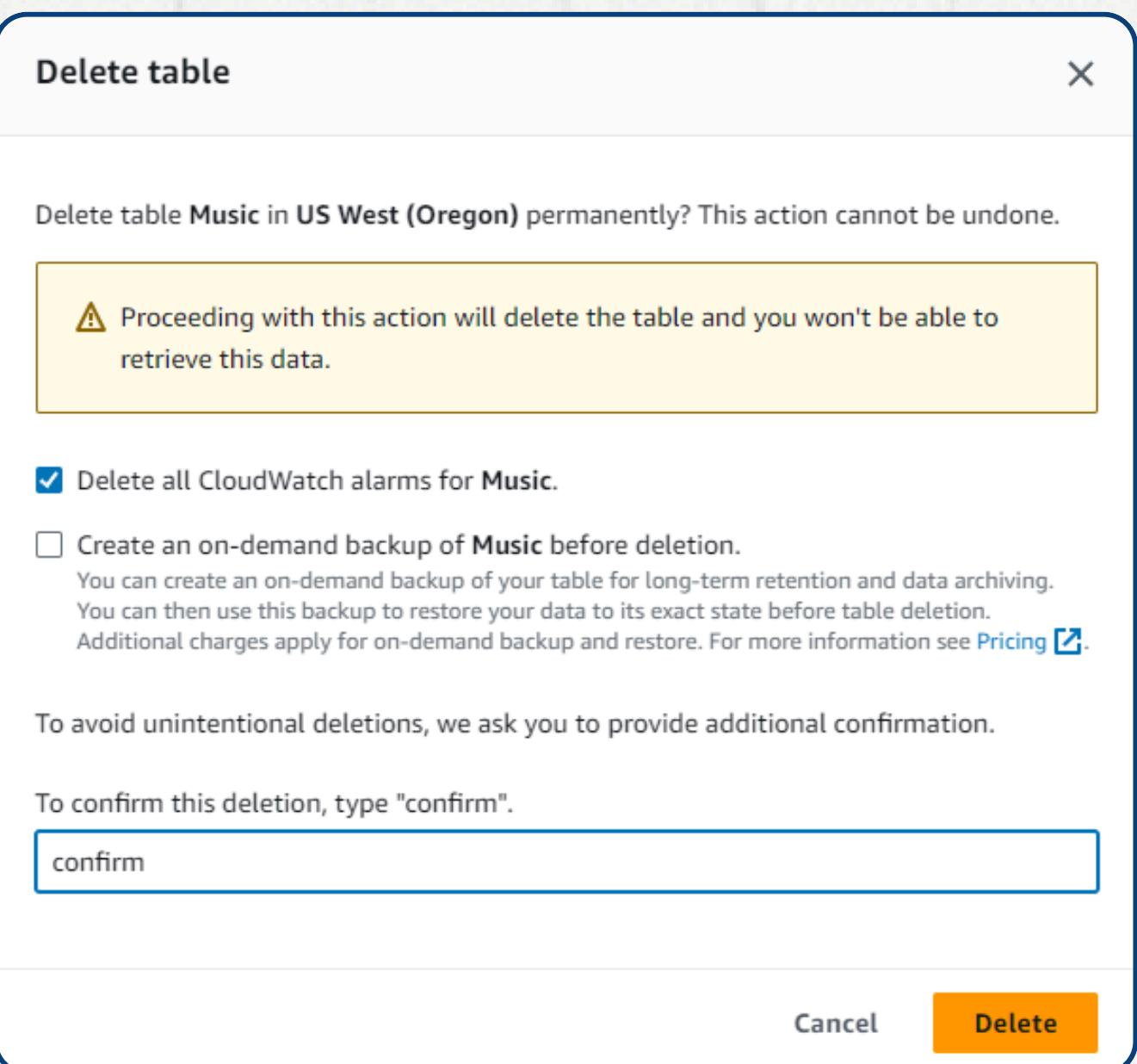
- En el apartado de tables, también podemos borrarlas simplemente pulsando “Delete”

Tables (0) [Info](#)

Find tables by table name Any tag key Any tag value

	Name	Status	Partition key	Sort key	Indexes	Deletion protection	Read capacity mode	Write capacity mode	Total size
You have no tables in this account in this AWS Region.									

[Create table](#)



**iMuchas  
gracias!**