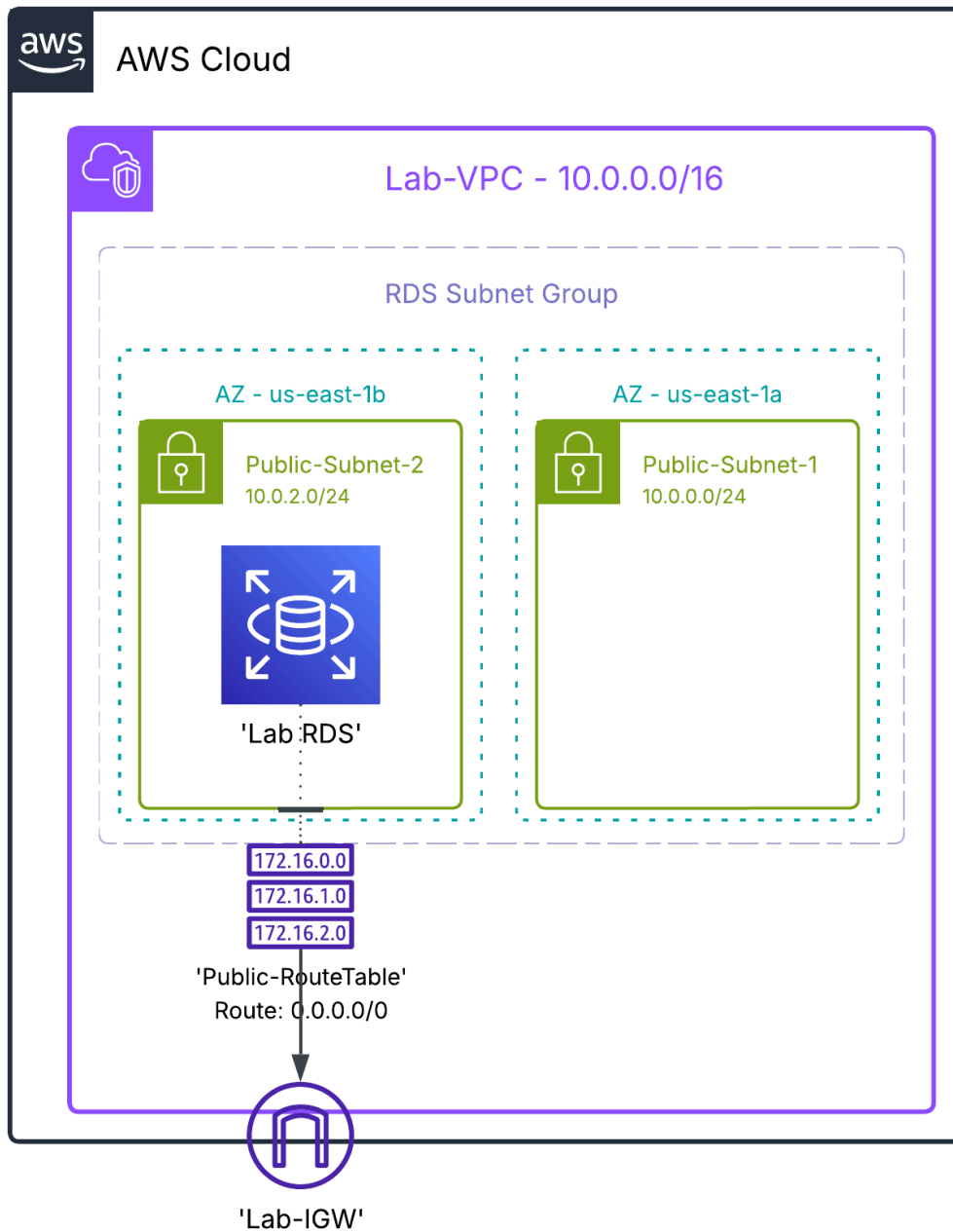
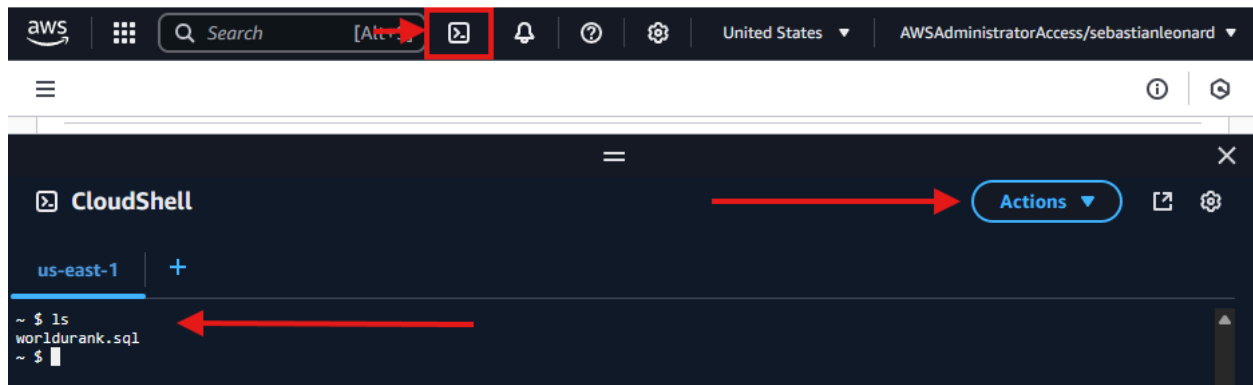


Guía Laboratorio de Migración de Datos AWS DMS

Nota Inicial: La VPC con RDS se levanta automáticamente desde el template de CloudFormation. Se proporcionará a los alumnos un enlace a un S3 donde se encuentra el archivo worldurank.sql. Este script SQL deberá ser descargado y luego subido al entorno de CloudShell en la consola de AWS.



1. Instalación de sqlcmd en CloudShell



(recuerda subir el archivo .sql al CloudShell y verificas con `$ ls` que tenemos el archivo dentro)

En la consola de AWS, arriba a la derecha habrá un logo de código, damos click y se abre el CloudShell. En el desplegable 'Actions' elegimos la opción "Upload File" y elegimos el archivo worldrank.sql que descargamos previamente.

Estando en el ambiente, será necesario instalar sqlcmd. Sigue estos pasos:

1.1. Añadir el repositorio de Microsoft

```
sudo curl https://packages.microsoft.com/config/rhel/7/prod.repo | sudo tee
/etc/yum.repos.d/msprod.repo
```

1.2. Instalar las herramientas y el driver ODBC

```
sudo yum install -y mssql-tools msodbcsql17
```

si te pide aceptar license terms, escribe 'yes' en el input.

1.3. Hacer que el comando sqlcmd sea permanente para futuras sesiones

```
echo 'export PATH="$PATH:/opt/mssql-tools/bin"' >> ~/.bashrc
```

1.4. Aplicar la configuración a la sesión actual

```
source ~/.bashrc
```

1.5. Verificar la instalación (opcional)

```
sqlcmd -?
```

Output esperado:

```
~ $ sqlcmd -?
```

Microsoft (R) SQL Server Command Line Tool Version 17.10.0001.1 Linux Copyright (C) 2017 Microsoft...

2. Creación de la Base de Datos en RDS

Una vez instalado sqlcmd, ejecuta el siguiente comando para crear una base de datos dentro de la instancia RDS:

```
sqlcmd -S RDS_ENDPOINT -U admin -P "#LabDBase3!" -Q "CREATE DATABASE UniversityDB;"
```

IMPORTANTE: Reemplaza RDS_ENDPOINT por el endpoint de la RDS del laboratorio.

3. Ejecución del Script SQL

Usa el siguiente comando para ejecutar el script worldurank.sql dentro de la base de datos recién creada:

```
sqlcmd -S RDS_ENDPOINT -U admin -P "#LabDBase3!" -d UniversityDB -i worldurank.sql
```

Si el output es algo como "(500 rows affected)" y mensajes similares, significa que funcionó correctamente.

4. Verificación de la Importación de Datos

Para comprobar que los datos se importaron correctamente, consulta las primeras 5 filas de la tabla:

```
sqlcmd -S RDS_ENDPOINT -U admin -P "#LabDBase3!" -d UniversityDB -Q "SELECT TOP 5 * FROM UniversityScores;"
```

El output debería mostrar todas las columnas del archivo worldurank.sql. (no importa si no se visualiza como tabla)

```
sqlcmd -S RDS_ENDPOINT -U admin -P "#LabDBase3!" -d UniversityDB -Q "SELECT TOP 5 * FROM UniversityScores;"
name
scores_research scores_citations scores_industry_income scores_international_outlook record_type scores_teaching
member_level location
stats_number_students stats_student_staff_ratio stats_pc_intl_students stats_female_male_ratio subjects_offered
unaccredited
overall_score
closed
University of Oxford 100.0 99.0 98.700000000000003 97.5 master_account 96.599999999999999
9994 0 United Kingdom 21758 10.9 42.0 0.9687843172549022 Geography,Chemistry,Chemical Engineering,Biological Sciences,General Engineering,Computer Science
,Art, Performing Arts & Design,Communication & Media Studies,Electrical & Electronic Engineering,Law,Economics & Econometrics,Geology, Environmental, Earth & H
98.5
Stanford University 99.0 97.799999999999997 99.599999999999994 100.0 87.0 private 98.599999999999999
9994 0 United States 14517 6.48000000000000084 23.0 0.8867924528381887 Computer Science,Communication & Media Studies,Electrical & Electronic Engineering,Mathematics &
Statistics,Education,Medicine & Dentistry,Civil Engineering,Politics & International Studies (incl Development Studies),History, Philosophy & Theology,Veterina
98
Massachusetts Institute of Technology 99.0 96.200000000000003 99.700000000000003 100.0 93.799999999999997 private 98.599999999999999
9994 0 United States 11805 0.0 33.0 0.69491525423728817 Architecture,Economics & Econometrics,Archaeology,Biological Sciences,Languages, Literature & Li
guistics,Mechanical & Aerospace Engineering,Psychology,Politics & International Studies (incl Development Studies),History, Philosophy & Theology,Mathematics &
98
```

5. Preparación para la Instancia DMS

Una vez verificado que la RDS tiene la base de datos con los datos insertados, proseguimos con el laboratorio. (Ya puedes cerrar el CloudShell)

6. Creación de Recursos Previos a DMS

Antes de iniciar con la creación de la instancia DMS, es necesario crear:

1. Un **Security Group** para permitir las conexiones a los diferentes puntos de migración.
2. Un **Subnet Group** de replicación para configurar la instancia DMS.

6.1. Creación del Security Group

En la AWS Management Console:

1. Ve a **EC2**.
2. En el panel de navegación, selecciona **Network & Security > Security Groups**.
3. Haz clic en **Create security group**.

Configuración del Security Group:

- **VPC:** Selecciona la Lab-VPC.
 - **Inbound rules:**
 - Regla 1 (por defecto):
 - **Type:** All traffic
 - **Source:** 0.0.0.0/0
 - Regla 2:
 - **Type:** RDP (Protocolo TCP, Puerto 3389 se autocompletarán)
 - **Source:** 0.0.0.0/0
 - **Outbound rules:**
 - Regla 1:
 - **Type:** All traffic
 - **Source:** 0.0.0.0/0
- Finalmente, crea el Grupo de Seguridad.

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](#)

Name cannot be edited after creation.

Description [Info](#)

VPC [Info](#)

Inbound rules [Info](#)

Type	Protocol	Port range	Source	Description - optional	
All traffic	All	All	Anywh... 0.0.0.0/0		Delete
RDP	TCP	3389	Anywh... 0.0.0.0/0		Delete

Add rule

Outbound rules [Info](#)

Type [Info](#) Protocol [Info](#) Port range [Info](#) Destination [Info](#) Description - optional [Info](#)

All traffic All All Custom

7. Configuración en DMS (Database Migration Service)

Busca **DMS** dentro de la AWS Management Console.

7.1. Creación del Subnet Group en DMS

1. En la página de DMS, ve a **Subnet groups**.
2. Haz clic en **Create subnet group**.
3. **Name:** dms-subnetgroup
4. **VPC:** Elige la Lab-VPC.
5. **Add Subnets:** Selecciona las 2 subnets de la Lab-VPC.
6. Agrega etiquetas (altamente recomendable) y haz clic en **Create**.

dms-subnet-group [Info](#) [Actions](#)

Details

ARN arn:aws:dms:us-east-1:947858755413:subgrp:dms-subnet-group

Description subnet group dms

Status Complete

VPC vpc-0c142e93815d0b18e

Subnets (2)

Name	Status	Availability Zone
subnet-0e91961d0d18bcefb	Active	us-east-1a
subnet-05af5e5e888ec2754	Active	us-east-1b

7.2. Creación de la Instancia de Replicación DMS

1. En la página de DMS, selecciona **Replication instances** y luego **Create replication instance**.
2. **Name y Description:** Especifica un nombre y descripción.

Create replication instance [Info](#)

Settings

Name
The name must be unique among all of your replication instances in the current AWS region.

dms-labtest

Replication instance name must not start with a numeric value

Descriptive Amazon Resource Name (ARN) - optional
A friendly name to override the default DMS ARN. You cannot modify it after creation.

Description - optional
Replication instance DMS lab.

The description must only have unicode letters, digits, whitespace, or one of these symbols: _/+=@. 1000 maximum character.

3. **Instance class:** Elige la clase de instancia adecuada.
4. **Engine version:** Selecciona la versión **3.5.3** (para evitar errores con los motores de BD)

Instance configuration [Info](#)

Instance class [Info](#)

dms.t3.medium
2 vCPUs 4 GiB Memory

☒ Include previous-generation instance classes

Engine version

Choose an AWS DMS version to run on your replication instance. For more details, see the [AWS DMS release notes](#). For information about DMS version support, see [AWS DMS support lifecycle policy](#).

3.5.3

☒ Include Beta DMS versions

High Availability [Info](#)

The Multi-AZ option deploys a primary replication instance in one Availability Zone (AZ) and a standby in another AZ. The Single-AZ option deploys a single replication instance in one AZ. Billing is based on DMS pricing.

Dev or test workload (Single-AZ)

5. **VPC:** Elige Lab-VPC.

6. **Publicly accessible:** Habilita esta opción.

Connectivity and security [Info](#)

Network type - new [Info](#)

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

☒ **IPv4**
Replication instance with an IPv4 network type that supports IPv4 addressing.

☐ **Dual-stack mode**
Replication instance with a dual network type that supports both IPv4 and IPv6 addressing.

Virtual private cloud (VPC) for IPv4 [Info](#)

Choose the VPC where you want your replication instances to run. It includes VPCs in IPv4 and dual-stack mode.

Lab-VPC (vpc-0c142e93815d0b18e)

[Create a new VPC](#)

Replication subnet group

Choose a subnet group for your replication instance. The subnet group defines the IP ranges and subnets that your replication instance can use within the VPC you have chosen.

dms-subnet-group

☒ **Publicly accessible**

If you choose this option, AWS DMS will assign a public IP address to your replication instance, and you'll be able to connect to databases outside of your VPC.

7. **High Availability:** Si es obligatorio, selecciona Dev or Test Single AZ.

8. **Replication subnet group:** Selecciona el grupo de subredes creado (dms-subnetgroup).

9. **Availability zone:** No preference, si es obligatorio elige cualquiera.

10. **VPC security group(s):** Selecciona el Security Group creado anteriormente y quita el default.

Advanced settings

Availability zone

Choose an availability zone (AZ) where you want your replication instance to run. The default is "No preference", meaning that AWS DMS will determine which AZ to use.

No Preference

VPC security groups

Choose one or more security groups for your replication instances. The security groups specify inbound and outbound rules to control network access to your instance.

Choose VPC to select associated VPC security group

dms-sg
dms security group

default
default VPC security group

11. Indica una etiqueta (altamente recomendable) y crea la instancia DMS.

8. Creación de Endpoints en DMS

8.1. Endpoint 1: Origen (SQL Server en RDS)

1. En DMS, ve a **Endpoints** y haz clic en **Create endpoint**.
2. **Endpoint type:** Selecciona Source endpoint.
3. **Endpoint identifier:** lab-ep1 (o el nombre que prefieras).
4. **Source engine:** Microsoft SQL Server.

5. Marca la casilla **Select RDS DB Instance** y elige tu instancia RDS.

Create endpoint [Info](#)

Endpoint type [Info](#)

☒ **Source endpoint**
A source endpoint allows AWS DMS to read data from a database (on-premises or in the cloud), or from other data source such as Amazon S3.

☐ **Target endpoint**
A target endpoint allows AWS DMS to write data to a database, or to other data stores such as Amazon DynamoDB or Kinesis.

☒ **Select RDS DB instance**
Choose this option if the endpoint is an Amazon RDS DB instance. It provides a list of available RDS instances from the current region.

RDS Instance
Instances available only for current user and region

definitivetest-stibaquira-labrdinstance-jjq86vhiuxpk ▼

6. **Access to endpoint database:** Selecciona Provide access information manually.
- **Server name:** Debería llenarse automáticamente con el endpoint de la RDS. Si no, ingrésalo manualmente.
 - **Port:** 1433
 - **User name:** admin
 - **Password:** #LabDBase3!
 - **Database name:** UniversityDB

Endpoint configuration

Endpoint identifier [Info](#)
A label for the endpoint to help you identify it.

definitivetest-stibaquira-labrdinstance-jjq86vhiuxpk

Descriptive Amazon Resource Name (ARN) - optional
A friendly name to override the default DMS ARN. You cannot modify it after creation.

Friendly-ARN-name

Source engine
The type of database engine this endpoint is connected to. [Learn more](#)

Microsoft SQL Server ▼

Access to endpoint database [Info](#)

☐ **AWS Secrets Manager**
Use secrets defined in AWS Secrets Manager to secretly provide your credentials.

☒ **Provide access information manually**
Manually enter server name, port, and other required parameters. For Oracle as endpoint, you might also need to specify Oracle ASM user credentials in Endpoint settings.

☐ **Kerberos authentication**
Allow authorized users to access to your source database using Kerberos authentication.

Server name
The name of the data server for the data provider.

definitivetest-stibaquira-labrdinstance-jjq86vhiuxpk.ck5w0y8801lj.us-eas

Port
The port the database runs on for this endpoint.

1433

User name [Info](#) **Password** [Info](#)

admin *****

Secure Socket Layer (SSL) mode [Info](#)
The type of Secure Socket Layer enforcement

none ▼

Database name

UniversityDB

7. **Test endpoint connection:**
- Selecciona tu instancia de replicación DMS.
 - Haz clic en **Run test**. Verifica que la conexión sea exitosa.
8. Crea el endpoint.

9. Creación de Roles de IAM para AWS Redshift

1. Ve al servicio **IAM** en la AWS Management Console.
2. En el panel de navegación, selecciona **Roles** y haz clic en **Create role**.
3. **Select trusted entity**: Elige AWS service.
4. **Use case**: Selecciona Redshift.
5. **Use case for Redshift**: Selecciona Redshift - Customizable y haz clic en **Next**.

Select trusted entity [Info](#)

Trusted entity type

☒ **AWS service**
Allow AWS services like EC2, Lambda, or others to perform actions in this account.

☐ **AWS account**
Allow entities in other AWS accounts belonging to you or a 3rd party to perform actions in this account.

☐ **Web identity**
Allow users federated by the specified external web identity provider to assume this role to perform actions in this account.

☐ **SAML 2.0 federation**
Allow users federated with SAML 2.0 from a corporate directory to perform actions in this account.

☐ **Custom trust policy**
Create a custom trust policy to enable others to perform actions in this account.

Use case
Allow an AWS service like EC2, Lambda, or others to perform actions in this account.

Service or use case

Redshift

Choose a use case for the specified service.

Use case

☒ **Redshift - Customizable**
Allows Redshift clusters to call AWS services on your behalf.

☐ **Redshift**
Allows Redshift clusters to call AWS services on your behalf.

☐ **Redshift - Scheduler**
Allow Redshift Scheduler to call Redshift on your behalf.

6. **Add permissions**: Busca y selecciona las políticas AmazonS3ReadOnlyAccess, AmazonDMSRedshiftS3Role, AmazonDMSVPCManagementRole, AmazonS3FullAccess, AWSMigrationHubDMSAccess. Haz clic en **Next**.

Step 2: Add permissions [Edit](#)

Permissions policy summary

Policy name	Type	Attached as
AmazonDMSRedshiftS3Role	AWS managed	Permissions policy
AmazonDMSVPCManagementRole	AWS managed	Permissions policy
AmazonS3FullAccess	AWS managed	Permissions policy
AmazonS3ReadOnlyAccess	AWS managed	Permissions policy
AWSMigrationHubDMSAccess	AWS managed	Permissions policy

7. Role details:

- **Role name**: myRedshiftRole
- **Description**: Deja la descripción automática o modifícala.

Name, review, and create

Role details

Role name
Enter a meaningful name to identify this role.

myRedshiftRole

Maximum 64 characters. Use alphanumeric and '+', '@', '_' characters.

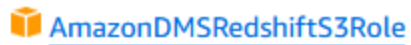
Description
Add a short explanation for this role.

Allows Redshift clusters to call AWS services on your behalf.

Maximum 1000 characters. Use letters (A-Z and a-z), numbers (0-9), tabs, new lines, or any of the following characters: _+@-./[]!#\$%^&*~'

8. Añade etiquetas (altamente recomendado) y haz clic en **Create role**.
9. Repite el mismo proceso pero con el servicio de DMS, te quedarás con el siguiente Rol

IAM: *AmazonDMSRedshiftS3Role*

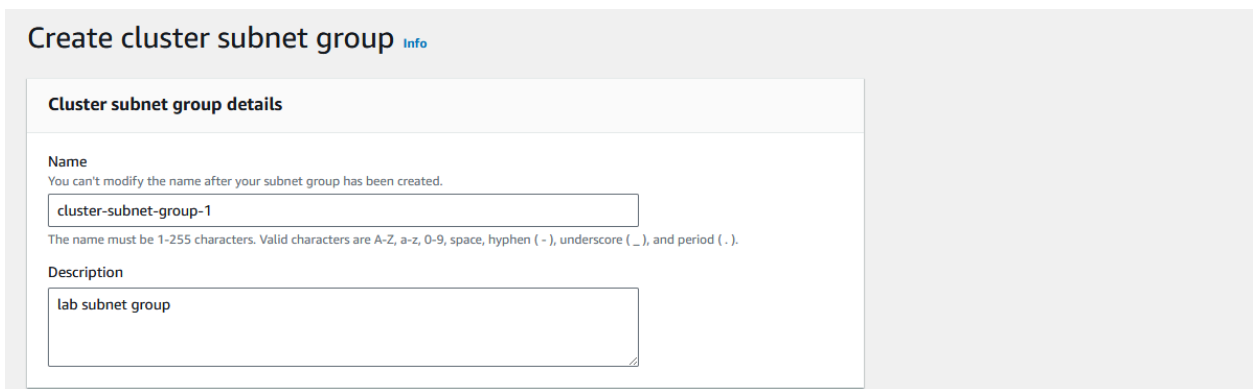


10. Configuración de AWS Redshift

Busca **Redshift** en la AWS Management Console.

10.1. Creación del Cluster Subnet Group en Redshift

1. En el menú de la izquierda de Redshift, bajo **Configurations**, selecciona **Subnet groups**.
2. Haz clic en **Create cluster subnet group**.
3. **Name:** Deja el nombre por defecto o especifica uno (ej: redshift-lab-subnetgroup).
4. **Description:** lab subnet group.



5. **VPC:** Elige la Lab-VPC.
6. **Subnets:** Haz clic en **Add all the subnets for this VPC**.
7. Selecciona las subredes deseadas.
8. Crea el grupo de subredes.

Add subnets

VPC
Choose the VPC that contains the subnets that you want to include in your cluster subnet group.

vpc-0c142e93815d0b18e ▼

Add all the subnets for this VPC

Availability Zone
Choose an Availability Zone ▼

Subnet
▼

Add subnet

Subnets in this cluster subnet group (2)

Remove all

Availability Zone	Subnet ID	CIDR block	Action
us-east-1a	subnet-0e91961d0d...	10.0.0.0/24	<div>Remove</div>
us-east-1b	subnet-05af5e5e888...	10.0.2.0/24	<div>Remove</div>

10.2. Creación del Cluster de Redshift

- En la página de Redshift, haz clic en **Create cluster**.
- Cluster configuration:**
 - Cluster identifier:** lab-cluster.
- Nodes:**
 - Elige la opción **I'll choose**
 - Node type:** dc2.large
 - Number of nodes:** 1

Cluster configuration

Cluster identifier
This is the unique key that identifies a cluster.

lab-cluster

The identifier must be from 1-63 characters. Valid characters are a-z (lowercase only) and - (hyphen).

Choose the size of the cluster

☒ I'll choose
☐ Help me choose

Node type [Info](#)
Choose a node type that meets your CPU, RAM, storage capacity, and drive type requirements.

dc2.large ▼

Number of nodes
Enter the number of nodes that you need.

1

Range (1-32)

- Load sample data:** Marca esta opción.

Sample data [Info](#)

☒ Load sample data

Load sample data to your Redshift cluster to start using the query editor to query data.

Tickit (28 MB)

Tickit is the sample data set that uses a sample database called TICKIT. Tickit contains individual sample data files: two fact tables and five dimensions.

5. Database configurations:

- **Admin user name:** awsuser
- **Admin user password:** Selecciona Manually add the admin password (o "Manual password") y pon la contraseña: #LabDBase3!

Database configurations

Admin user name
Enter a login ID for the admin user of your DB instance.

The name must be 1-128 alphanumeric characters, and it can't be a [reserved word](#).

Admin password
Select an option to manage your admin password.

☐ **Manage admin credentials in AWS Secrets Manager** [Info](#)
AWS manages a KMS key that encrypts your data.

☐ **Generate a password**
Amazon Redshift generates an admin password.

☒ **Manually add the admin password**
Manually enter the admin password.

Admin user password

Must be 8-64 characters long. Must contain at least one uppercase letter, one lowercase letter and one number. Can be any printable ASCII character except "/", "", or "@".
☒ Show password

6. Network and security:

- **Virtual private cloud (VPC):** Elige Lab-VPC.
- **VPC security groups:** Elige el security group para Redshift (si no aparece crealo, ó deja el default).
- **Cluster subnet group:** Elige el grupo de subredes de cluster que creaste antes.
- **Publicly accessible:** Activa esta opción (Turn on).

▼ **Network and security** [Info](#)

Virtual private cloud (VPC)
This VPC defines the virtual networking environment for this cluster.

Lab-VPC
vpc-0c142e93815d0b18e

❗ You can't change the VPC associated with this cluster after the cluster has been created. [Learn more about getting started cluster in vpc](#)

VPC security groups
This VPC security group defines which subnets and IP ranges the cluster can use in the VPC. For more information, see [Learn more about Redshift clusters security groups](#)

Choose one or more security groups

default
sg-0a61d736e5704f14a

Cluster subnet group [Info](#)
Choose the Amazon Redshift subnet group to launch the cluster in.

cluster-subnet-group-1 [Create new subnet group](#) [Refresh](#)

Availability Zone
Specify the Availability Zone to create the cluster in. Otherwise, Amazon Redshift chooses an Availability Zone for you.

No preference

Enhanced VPC routing
Enabling this option routes network traffic between your cluster and data repositories through a VPC, instead of through the internet. [Learn more about getting started cluster in vpc](#)

☒ Turn off
☐ Turn on

Publicly accessible
☒ Turn on Publicly accessible
Allow instances and devices outside the VPC to connect to your database through the instance endpoint.

7. Cluster Permissions:

En esta parte bajas a donde sale **Associated IAM roles**, y seleccionas en Actions la opción para asociar los roles de IAM que hemos creado para nuestro Cluster.

Cluster permissions

❗ Create an IAM role as the default for this cluster that has the [AmazonRedshiftAllCommandsFullAccess](#) policy attached. This policy includes permissions to run SQL commands to COPY, UNLOAD, and query Redshift. The policy also grants permissions to run SELECT statements for related services, such as Amazon S3, Amazon CloudWatch logs, Amazon SageMaker, and AWS Glue.

Associated IAM roles (0) [Info](#)
Create, associate, or remove an IAM role. You can associate up to 50 IAM roles. You can also choose an IAM role and set it as the default for this cluster.

Find associated iam roles

Set default ▼ [Actions](#) [Associate IAM roles](#)

Associate IAM roles
Create IAM role
Remove IAM roles

	IAM roles ?	Status	Role type
--	-----------------------------	--------	-----------

Associate IAM roles

IAM roles (2/4)

Choose from existing IAM roles. You can associate up to 50 IAM roles with this cluster.

Find iam roles

< 1 >

IAM roles

☒

myRedshiftRole

☒

DMSLabRole

Cancel

Associate IAM roles

Associated IAM roles (2) Info

Create, associate, or remove an IAM role. You can associa

Find associated iam roles

☐ IAM roles

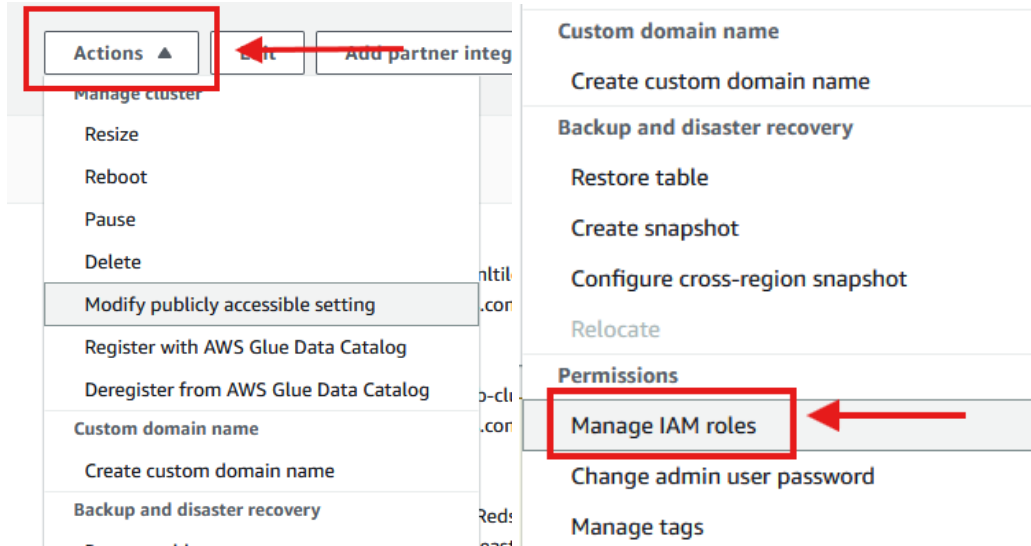
☐ DMSLabRole

☐ myRedshiftRole

8. Crea el cluster.

10.3. Asociación del Rol IAM al Cluster de Redshift (Si no lo asociaste antes de crearlo)

1. Una vez creado el cluster, selecciónalo en la lista.
2. Ve al menú desplegable **Actions**.
3. Selecciona **Manage IAM roles**.



4. Debería aparecer los roles myRedshiftRole y DMSLabRole que creaste. Seleccionalos.
5. Haz clic en **Associate IAM role**.

IMPORTANTE: Si en alguna fase del laboratorio hay algun error de network (específicamente en el endpoint target de DMS), deberás revisar el security group y verificar que este tenga la regla de entrada para Redshift, si no lo está, sigue estos pasos:

Regla de Security Group para Redshift:

Si el cluster de Redshift quedó conectado al security group default de la Lab-VPC, tendrás que añadirle una regla de entrada:

1. Ve al Security Group asignado al cluster.
2. Selecciona la pestaña **Inbound rules**.
3. Haz clic en **Edit inbound rules**.
4. Haz clic en **Add rule**.
5. Configura la regla:
 - **Type:** Redshift.
 - **Protocol:** TCP (automático).
 - **Port range:** 5439 (automático).
 - **Source:** 0.0.0.0/0.
6. Guarda las reglas.

Inbound rules (2)

Q Search

Name	Security group rule ID	IP version	Type	Protocol	Port range	Source	Description
-	sgr-0b4428d97660dd96a	-	All traffic	All	All	sg-0a61d736e5704f14a...	-
-	sgr-09bbc316eb7374bee	IPv4	Redshift	TCP	5439	0.0.0.0/0	-

11. Creación del Endpoint 2 en DMS: Destino (Redshift)

1. Vuelve a **DMS** en la AWS Management Console.
2. Ve a **Endpoints** y haz clic en **Create endpoint**.
3. **Endpoint type:** Selecciona Target endpoint.

Create endpoint [Info](#)

Endpoint type [Info](#)

☐ **Source endpoint**
 A source endpoint allows AWS DMS to read data from a database (on-premises or in the cloud), or from other data source such as Amazon S3.

☒ **Target endpoint**
 A target endpoint allows AWS DMS to write data to a database, or to other data stores such as Amazon DynamoDB or Kinesis.

☐ **Select RDS DB instance**
 Choose this option if the endpoint is an Amazon RDS DB instance. It provides a list of available RDS Instances from the current region.

4. **Endpoint identifier:** lab-ep2 (o el nombre que prefieras).
5. **Target engine:** Amazon Redshift.
6. Marca la casilla **Select Redshift cluster** y elige tu cluster lab-cluster.

Endpoint configuration

Endpoint identifier [Info](#)
 A label for the endpoint to help you identify it.

lab-ep2

Descriptive Amazon Resource Name (ARN) - optional
 A friendly name to override the default DMS ARN. You cannot modify it after creation.

Friendly-ARN-name

Target engine
 The type of database engine this endpoint is connected to. [Learn more](#)

Amazon Redshift

Access to endpoint database [Info](#)

☐ **AWS Secrets Manager**
 Use secrets defined in AWS Secrets Manager to secretly provide your credentials.

☒ **Provide access information manually**
 Manually enter server name, port, and other required parameters. For Oracle as endpoint, you might also need to specify Oracle ASM user credentials in Endpoint settings.

7. **Access to endpoint database:** Selecciona Provide access information manually.
 - **Server name:** Debería llenarse automáticamente con el endpoint del cluster de Redshift. Si no, ingrésalo manualmente.
 - **Port:** 5439
 - **User name:** awsuser
 - **Password:** #LabDBase3!
 - **Database name:** dev (esta es la base de datos por defecto que se crea en Redshift).

Server name
The name of the data server for the data provider.

lab-cluster.claqgnltile.us-east-1.redshift.amazonaws.com

Port
The port the database runs on for this endpoint.

5439

User name [Info](#) **Password** [Info](#)

awsuser

Secure Socket Layer (SSL) mode [Info](#)
The type of Secure Socket Layer enforcement

none ▼

Database name

dev

8. Test endpoint connection:

- Selecciona tu instancia de replicación DMS.
- Haz clic en **Run test**. Verifica que la conexión sea exitosa. (Si falla por error de red, verifica la regla del Security Group del cluster de Redshift).

▼ Test endpoint connection - optional

Choose the replication instance to test the network and database connectivity for migration.

Replication instance

A replication instance performs the database migration.

dms-labtest

Version: 3.5.3 VPC: vpc-0c142e93815d0b18e Public accessible: Yes ▼

Run test

Endpoint identifier	Replication instance	Status	Message
lab-ep2	dms-labtest	successful	

9. Crea el endpoint.

(si sale failed por network error, es por que el security group del cluster no tiene el inbound rule de Redshift:5439)

(en caso de no resolverse el error de conexión entre el endpoint y redshift, ve al cluster, luego a modify, y vuelve a poner la contraseña de awsuser. Si no, mira de nuevo en modify y ajusta el servername de forma que termine en ...amazonaws.com, y no en ...amazonaws.com:5439/dev)

12. Creación de la Tarea de Migración de Base de Datos en DMS

1. En la página de DMS, ve a la sección **Database migration tasks**.
2. Haz clic en el botón **Create task**.

12.1. Configuración de la Tarea

- **Task identifier:** lab-task (o el nombre que prefieras).
- **Replication instance:** Selecciona la instancia DMS ya creada.
- **Source database endpoint:** Elige tu endpoint de origen (lab-ep1 - RDS SQL Server).
- **Target database endpoint:** Elige tu endpoint de destino (lab-ep2 - Redshift).
- **Migration type:** Deja seleccionada la opción Migrate existing data (Migrar datos existentes).

The screenshot shows the 'Create database migration task' form in the AWS DMS console. The form is titled 'Create database migration task' with an 'Info' link. It contains several sections: 'Task configuration' with fields for 'Task identifier' (lab-task), 'Descriptive Amazon Resource Name (ARN) - optional' (Friendly-ARN-name), 'Replication instance' (dms-labtest - vpc-0c142e93815d0b18e), 'Source database endpoint' (lab-ep1), and 'Target database endpoint' (lab-ep2). At the bottom, there are three radio button options for 'Migration type': 'Migrate' (selected), 'Migrate and replicate', and 'Replicate'. Each option has a brief description of its function.

Create database migration task [Info](#)

Task configuration

Task identifier

lab-task

Descriptive Amazon Resource Name (ARN) - optional
A friendly name to override the default DMS ARN. You cannot modify it after creation.

Friendly-ARN-name

Replication instance

dms-labtest - vpc-0c142e93815d0b18e ▼

Source database endpoint

lab-ep1 ▼

Target database endpoint

lab-ep2 ▼

Migration type [Info](#)

☒ **Migrate**
Migrate data from source to target once

☐ **Migrate and replicate**
Migrate data from source to target once and continue to replicate changes

☐ **Replicate**
Migrate data from source to target from now, or at specified milestone

12.2. Mapeo de Tablas (Table Mappings)

1. Baja hasta la sección **Table mappings**.
2. Expande **Selection rules** y haz clic en **Add new selection rule**.
3. Configura la regla de selección:
 - **Schema:** Elige Enter a schema.
 - **Source name (Schema name):** dbo
 - **Table name:** Deja el predeterminado: % (para incluir todas las tablas del esquema dbo).
 - **Action:** Include.

Table mappings [Info](#)

Editing mode

☒ **Wizard**
You can enter only a subset of the available table mappings.

☐ **JSON editor**
You can enter all available table mappings directly in JSON format.

Specify at least one selection rule with an include action. After you do this, you can add one or more transformation rules.

▼ Selection rules

Choose the schema and/or tables you want to include with, or exclude from, your migration task.

Add new selection rule

▼ where **schema name** is like 'dbo' and **Source table name** is like '%', include

📄 ✕

Schema
Enter a schema

Source name
Use the % character as a wildcard
dbo

Source table name
Use the % character as a wildcard
%

Action
Choose "Include" to migrate your selected objects, or "Exclude" to ignore them during the migration.
Include

12.3. Evaluación Previa a la Migración (Premigration Assessment)





- Asegúrate de que la opción **Turn on premigration assessment** (o similar) **NO** esté activada, a menos que se indique lo contrario para el laboratorio.


12.4. Creación de la Tarea

- Finalmente, haz clic en **Create task**.

13. Monitoreo del Estado de la Tarea

Espera y monitorea los estados de la tarea de migración. Debería pasar por los siguientes estados:

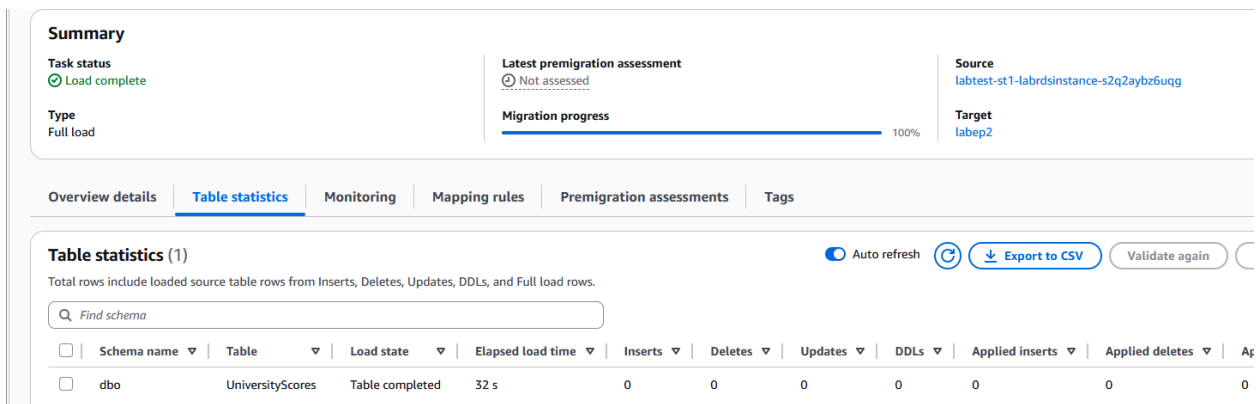
- Creating  **Creating**  **Created**
- Starting  **Starting**
- Running (o Full load in progress)  **Running**

- Finalmente, Load complete.  Load complete

14. Verificación de Tablas Migradas en la Tarea

Dentro de los detalles de la tarea de migración completada (en la pestaña **Table statistics** o similar), verifica que la tabla se haya migrado:

- Debería aparecer una tabla con:
 - Schema:** dbo
 - Table name:** UniversityScores (o el nombre de tu tabla)
 - Load state:** Table completed (o similar)
 - Se deberían mostrar estadísticas de las filas cargadas.

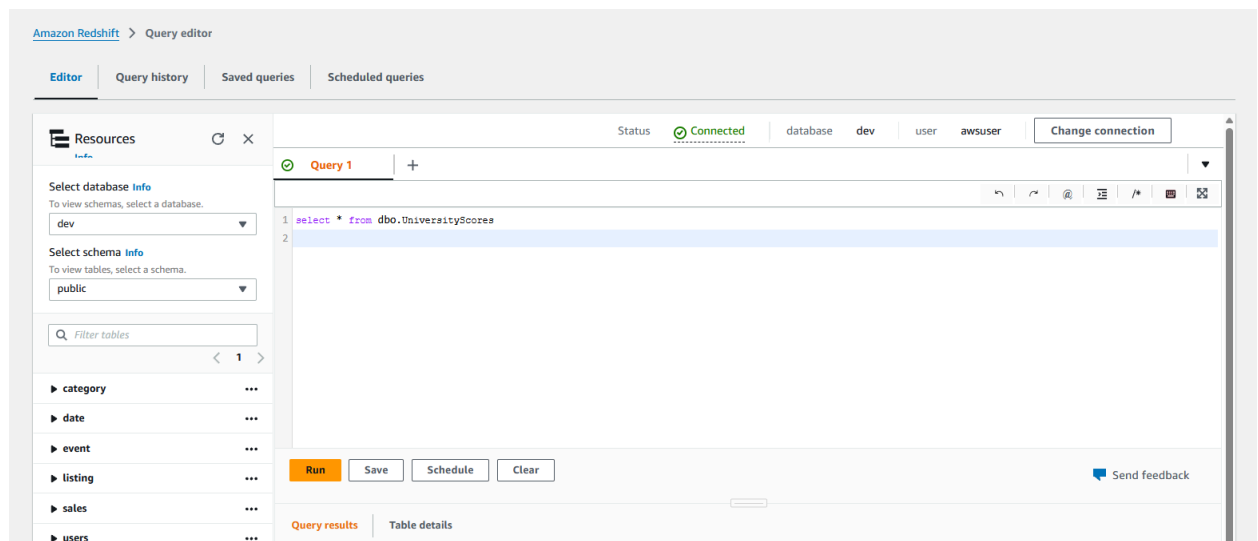


The screenshot shows the 'Table statistics' tab for a migration task. The 'Task status' is 'Load complete' with a green checkmark. The 'Type' is 'Full load'. The 'Latest premigration assessment' is 'Not assessed'. The 'Source' is 'labtest-st1-labrdinstance-s2q2aybz6uqg' and the 'Target' is 'labep2'. The 'Migration progress' bar is at 100%. Below the tabs, the 'Table statistics (1)' section shows a table with columns: Schema name, Table, Load state, Elapsed load time, Inserts, Deletes, Updates, DDLs, Applied inserts, Applied deletes, and Age. The table contains one row: dbo, UniversityScores, Table completed, 32 s, 0, 0, 0, 0, 0, 0, 0.

Schema name	Table	Load state	Elapsed load time	Inserts	Deletes	Updates	DDLs	Applied inserts	Applied deletes	Age
dbo	UniversityScores	Table completed	32 s	0	0	0	0	0	0	0

15. Validación de la Migración en AWS Redshift

- Ve al servicio **Redshift** en la AWS Management Console.
- Selecciona tu cluster (lab-cluster).
- Haz clic en **Query data** y luego elige **Query editor** (o la versión del editor de consultas disponible).



The screenshot shows the Amazon Redshift Query editor interface. The 'Resources' panel on the left shows the 'dev' database and 'public' schema. The main editor area shows a SQL query: 'select * from dbo.UniversityScores'. The 'Run' button is highlighted. The status bar at the bottom shows 'Query results' and 'Table details'.

- Si es la primera vez o necesitas configurar la conexión:

- Haz clic en **Create connection** (o configura la conexión existente).
 - **Authentication:** Temporary credentials o Database user name and password.
 - **Cluster:** Selecciona tu cluster lab-cluster.
 - **Database name:** dev.
 - **Database user:** awsuser.
 - (Ingresa la contraseña que asignamos en el lab).
 - Conéctate.
5. Ejecuta una consulta de prueba para visualizar que todas las columnas de la tabla se migraron:

```
SELECT * FROM dbo.UniversityScores LIMIT 10;
```

6. Ejecuta la consulta. Deberías ver los datos de la tabla UniversityScores.

name	scores_teaching	scores_research	scores_citations	scores_industry_income	scores_international_outlook	record_type	master_account
Middle Technical University	9.4	7.5	23.7	16.9	26.8	master_account	0
Bartin University	11.1	13	69.6	16.3	37.4	master_account	0

16. Notas Finales (por si hay dudas)

Dentro del cluster en Redshift se utilizó los siguientes roles:

El rol dms-access-for-endpoint:

Policy name	Type
AmazonDMSRedshiftS3Role	AWS managed

En myRedshiftRole:

Permissions policies (5) [Info](#)

You can attach up to 10 managed policies.

Filter by Type: All types

<input type="checkbox"/>	Policy name	Type	Attached entities
<input type="checkbox"/>	AmazonDMSRedshiftS3Role	AWS managed	2
<input type="checkbox"/>	AmazonDMSVPCManagementRole	AWS managed	2
<input type="checkbox"/>	AmazonS3FullAccess	AWS managed	1
<input type="checkbox"/>	AmazonS3ReadOnlyAccess	AWS managed	1
<input type="checkbox"/>	AWSMigrationHubDMSAccess	AWS managed	1

Recuerda que añadir etiquetas a cada recurso que levantes, hace parte de las buenas prácticas que recomienda AWS.

¡Felicidades!

Ha completado el laboratorio de migración de datos con AWS DMS.

