DMS

AWS DATABASE MIGRATION SERVICES

Let's migrate the databases to run in Mysql using the AWS Database Migration Service tool.

AWS Database Migration Service helps you migrate databases to AWS quickly and securely. The source database remains fully operational during the migration, minimizing downtime to applications that rely on the database. The AWS Database Migration Service can migrate your data to and from most widely used commercial and open-source databases.

In this simulation we will do a homogeneous migration of tables in RDS Mysql database from us-west-1 to us-west-2.

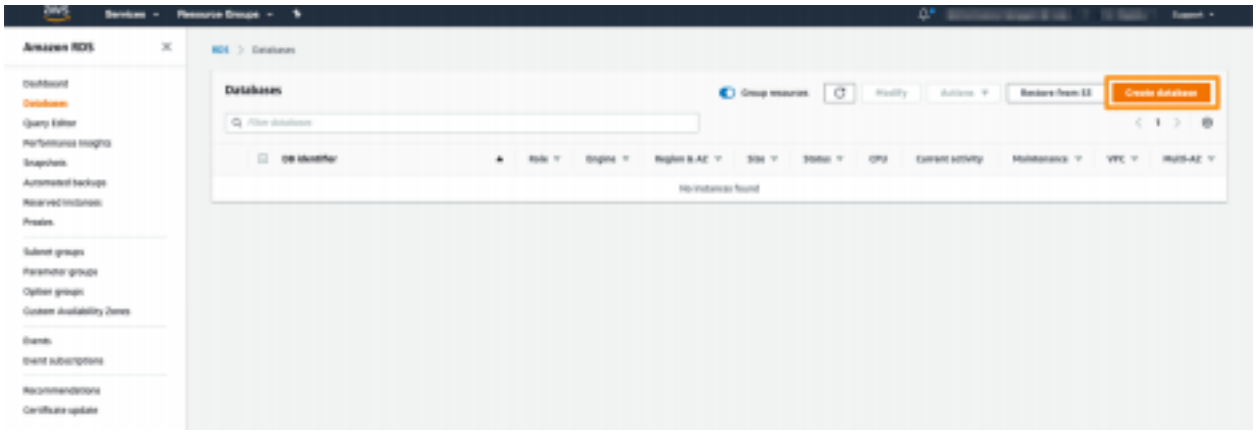
Pre-requisites

- Install Mysql workbench: https://dev.mysql.com/downloads/file/?id=504530
- Use the VPC Launch Wizard to create a VPC with a 2 publicSubnets in each region. Use a naming convention that reflects the source and target regions
- Create security groups in both regions that allow all TCPaccess to the public.

CREATE THE SOURCE AND TARGET RDS MYSQL DB IN PUBLIC SUBNETS OF BOTH REGIONS

MySQL database

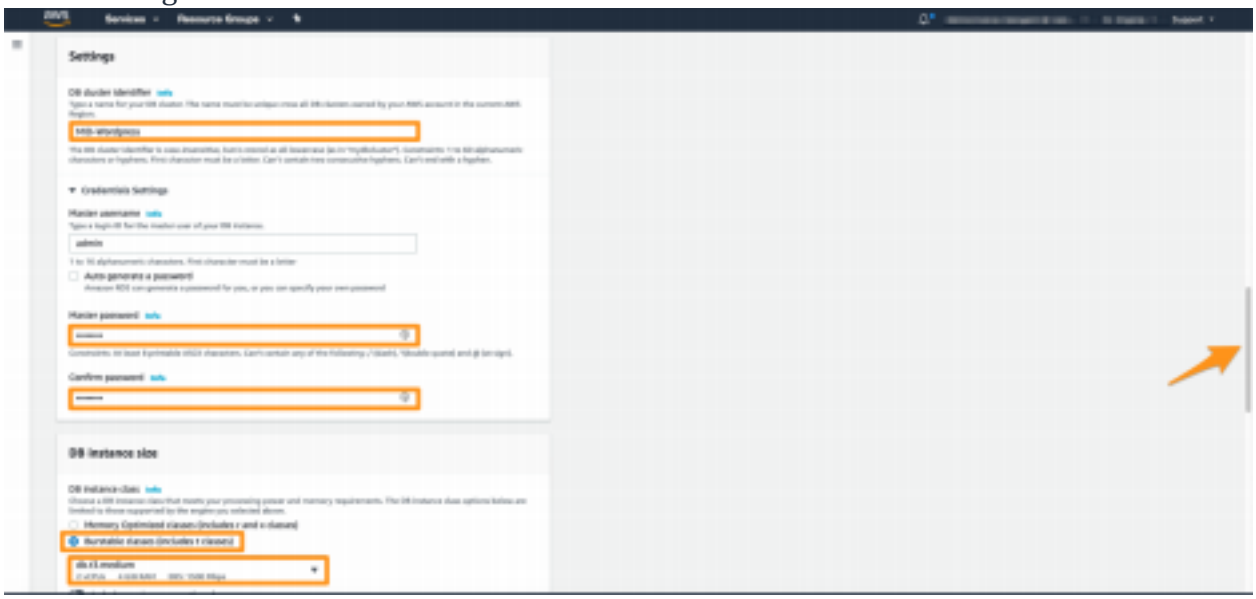
1. Open AWS Console
2. In the AWS Console, Navigate to Services > Database, RDS
3. In the RDS screen, click on **Databases**, then click on **Create Database**.



4. In **Choose a database creation method** select **Standard**
    a. **Create**
    b.
    c. We are using Dev/Test selection on this exercise because there are no active users running the application. For a production environment prefer the Production template.

5.

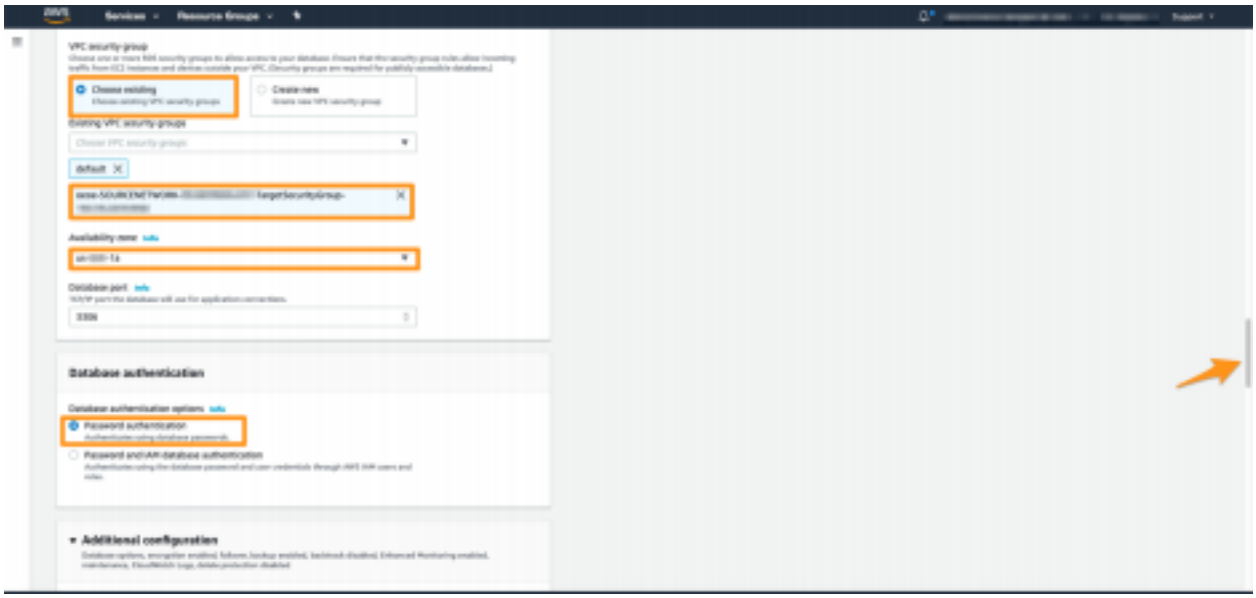
6. 6. In **Settings** use the following settings:
    a. ○ DB cluster identifier: **JJTECH-source (**user targetDB when creating the targetDB)
    b. ○ Master username: **admin**
    c. ○ Master password: jjtech2021$
    d. ○ After, in **DB Instance size** select **Burstable classes**, so change the size to **db.t3.medium**



7. In **Availability & durability** select **Don't create a Standby instance**.
8. In **Connectivity** change the following settings:
    a. ○ Virtual Private Cloud (VPC) to **Your vpc you created if not using default**
    b. ○ Expand **Additional connectivity configuration**
        i. ▪ **Public accessible** select **Yes**

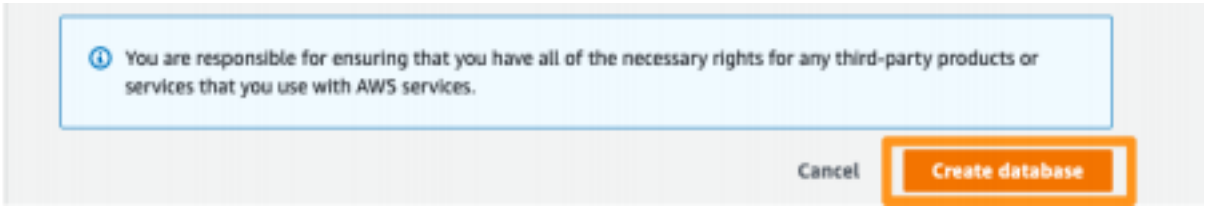
ii. ▪ **VPC security group**, select **Choose the security group created**. Keep **default**

iii. ▪ **Availability zone** select the one that ends with suffix **a**



9. In **Database authentication** select **Password authentication**
10. Expand **Additional configuration**
    - **Initial database name** set **JJtechSourcedb**

    Backup uncheck **Enable automated backups**
    - **Encryption** uncheck **Enable Encryption**
    - **Monitoring** uncheck **Enable Enhanced monitoring**
11. Click on **Create database**



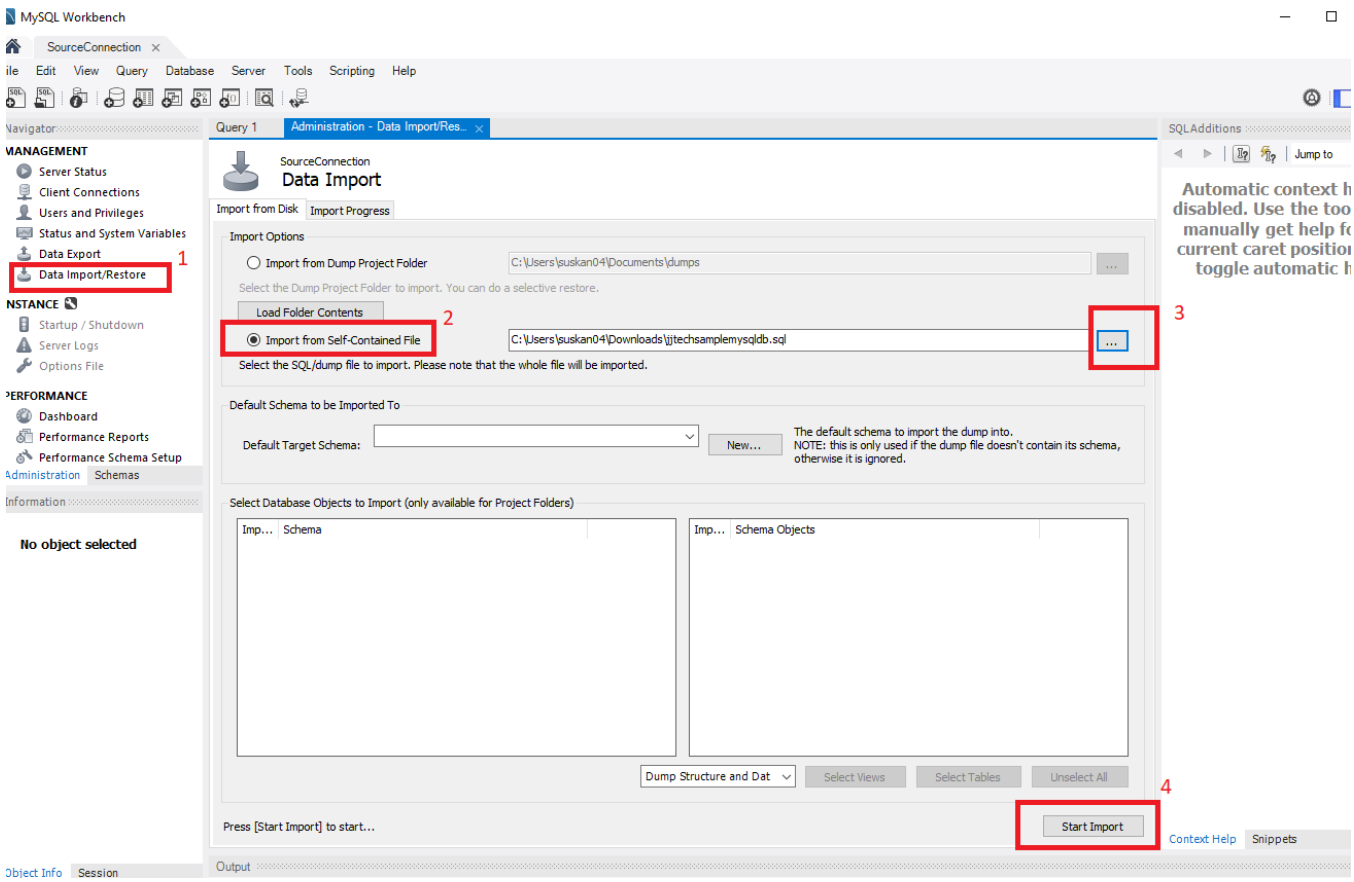
12. . Wait until the **Available** status:

CONNECT TO SOURCE DATABASE AND IMPORT TABLE

1. Download the table https://bit.ly/JJTechSampleMYSQLDB
2. Use My sql workbench to connect to source database
    a. Connection Name: Source DB Connection

b. Connection Method:Started (TCP/IP)
c. Hostname: Source database Endpoint
d. username: admin
e. Password-Storage Vault: jjtech2021$

3. Test the connection to make sure it is successful . Click on OK
4. Reopen connection and go to Data Import/Restore
5. Select import from Self-Contained File
6. Browse to the location of the file you downloaded in step 1 and click on start import.



DATABASE MIGRATION SERVICES (DMS) CONFIGURATION

On this section we will start utilizing AWS Database Migration Services, by:

1. Creating the replication network using Subnet groups
2. Create a DMS replication instance
3. Configuring endpoints for source and target database

4. Replicating databases using DMS replication tasks

CREATING REPLICATION SUBNET GROUPS

To be able to launch a DMS Replication instance, it is necessary to specify what subnet group in the VPC the Replication instance will run. A subnet is a range of IP addresses in your VPC in a given Availability Zone. These subnets can be distributed among the Availability Zones for the AWS Region where your VPC is located. DMS Replication instance requires at least two Availability Zones. The following step will demonstrate how to create the subnet group in 2 Availability Zones.

1. In the AWS Console, open Services, Migration & Transfer, Database Migration Service.
2. In the navigation pane, click **Subnet groups**, then select **Create Subnet group**.
3. On the Create Subnet group page, specify the following settings:
4. Subnet group configuration:
    i. ▪ Name: **jjtechDMSSubnetGrp**
    ii. ▪ Description: **jjtechDMSSubnetGrp**
    iii. ▪ VPC: **Use the VPC you created for the RDS instance**
    b. Add subnets:
    c. Select **2 public subnets in the VPC**
5. Click on **Create subnet group**

CREATE A REPLICATION INSTANCE

Your first task in migrating a database is to create a replication instance that has sufficient storage and processing power to perform the tasks you assign and migrate data from your source database to the target database. The required size of this instance varies depending on the amount of data you need to migrate and the tasks that you need the instance to perform.

1. In the AWS Console, open Services, Migration & Transfer, Database Migration Service.
2. In the navigation pane, click **Replication instances**, then select **Create Replication Instance**.
3. On the Create replication instance page, specify the following settings:
    a. Replication instance configuration
        - Name: **JJTECH-REPINST**
        - Description: **Migration Immersion Day - Rep Inst**

- Instance class: **dms.t3.medium**
- VPC: **default**
- Publicly accessible: **yes**

2. Advanced security and network configuration
   - Replication subnet group: **Rep-SubnetGroup**
   - Availability zone: the one that ends with **a**
   - VPC Security groups: select **default**

All other settings can be used as the default values.

4. Click on **Create**

Now, wait for status "Available" in the Replication instance that you just created:

SPECIFY SOURCE AND TARGET ENDPOINTS

While your replication instance is being created, you can specify the source and target data store endpoints. The source and target data stores can be on an Amazon Elastic Compute Cloud (Amazon EC2) instance. Or they can be on an Amazon Relational Database Service (Amazon RDS) DB instance or an on-premises database. You create each endpoint separately.

1. On the console, choose **Endpoints** from the navigation pane and then choose **Create Endpoint**.
2. On the **Create endpoint** page, choose the **Source** endpoint type.
3. If your data store is an Amazon RDS DB instance, choose the **Select RDS DB instance** option.
4. In the **Endpoint configuration** section, enter a name for your endpoint for **Endpoint identifier**. For example, include the type of endpoint in the name, such as **oracle-source** or **PostgreSQL-target**.
5. For **Source engine**, choose the type of database engine you want this endpoint to connect.
6. For Access to endpoint database choose "provide access information manually"

7. Choose the **Test endpoint connection (optional)** tab. For **VPC**, choose the Amazon VPC security group that your replication instance was created in.
   a. If your source database is in a VPC, choose the VPC security group that provides access to the DB instance where the database resides.
8. For **Replication instance**, choose the name of the replication instance you previously entered on the **Create replication instance** page.
9. Choose **Run test**.

10. After you choose **Run test**, AWS DMS creates the endpoint with the details that you provided and connects to it. If the connection fails, edit the endpoint definition and test the connection again. You can also delete the endpoint manually.
11. After you have a successful test, choose **Create endpoint**.
12. Specify a target database endpoint using the AWS DMS console. To do this, repeat the steps preceding, but choose **Target endpoint** as your endpoint type.
13. When you're finished providing all information for your endpoints, AWS DMS creates your source and target endpoints for use during database migration.

CREATE AND MONITOR THE TASKS

In this step, you create a task to specify what schemas and tables to migrate. Your task also maps data using a target schema and creates new tables for the target database.

To create a migration task and start your database migration

1. In the console navigation pane, choose **Database migration tasks**, and then choose **Create task**. The **Create database migration task** page opens.
2. In the **Task configuration** section, specify the following task options:
3. **Task identifier** – Enter a unique name for the task.
4. **Replication instance** – Choose your replication instance to use**.**
5. **Source database endpoint** – Choose your source database endpoint to use.
6. **Target database endpoint** – Choose your target database endpoint to use.
7. **Migration type –** Choose **Migrate existing data** as the migration method that you want to use for this getting started exercise.
8. Choose the **Task settings** tab and select wizard
    - Expand the Advanced task settings: on the Create control table in target using schema enter **%**
    - leave everything else as default.
9. On **Table mappings**, select **Guided UI**. Expand **Selection rules** and click on **Add new selection rule**
    - Schema: **Enter a schema**
    - Schema name: **jjtechmodels**
    - Table name: **%**
    - Action: **Include**

1. Choose the **Migration task startup configuration** tab, and then
    a. choose **Automatically on create**.
2. Choose **Create task**.

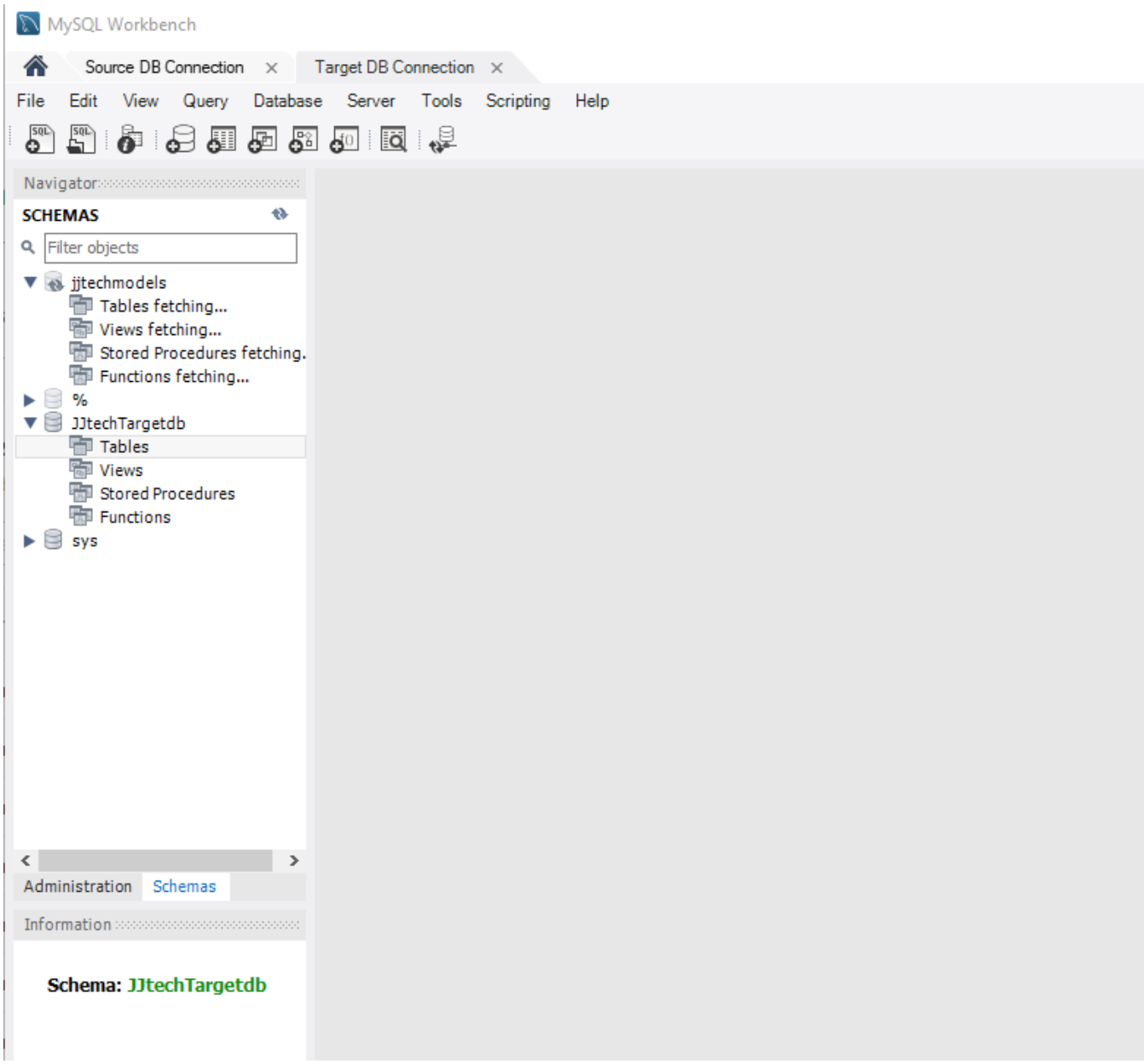
If you chose **Automatically on create**, your task begins immediately to migrate your data when you choose **Create task**. If you didn't, start your task from the **Database migration tasks** page. On that page, choose your task, and then choose **Start** for **Actions**.

MONITOR YOUR TASK

Now that your migration task is running, you can monitor the progress of your database migration while it happens until the status says load complete

To view migration task metrics

1. In the DMS console navigation pane, choose **Database migration tasks**. 2. Choose the name of the running task that you want to monitor.
2. Choose **Table statistics**.
3. Once the status says load complete. Connect to the target DB and ensure the tables have migrated (once you have connected to the Target DB, select Schemas, and the refresh, you should see jjtechmodel) see below screenshot

4. 
MySQL Workbench
Source DB Connection
Target DB Connection
File Edit View Query Database Server Tools Scripting Help
Navigator
SCHEMAS
Filter objects
jjtechmodels
Tables fetching...
Views fetching...
Stored Procedures fetching...
Functions fetching...
%
JJtechTargetdb
Tables
Views
Stored Procedures
Functions
sys
Administration
Schemas
Information
Schema: JJtechTargetdb