



# **Database Migration Workshop**

## Environment Configuration

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**July 2019**

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## Overview

AWS Database Migration Service (DMS) helps you migrate databases to AWS easily and securely. The source database remains fully operational during the migration, minimizing downtime to applications that rely on the database. AWS DMS can migrate your data to and from most widely used commercial and open-source databases. The service supports homogenous migrations such as Oracle Server to Oracle Server or PostgreSQL to Aurora PostgreSQL, as well as heterogeneous migrations between different database platforms, such as SQL Server to Amazon Aurora or Oracle to PostgreSQL. AWS DMS can also be used for continuous data replication with high-availability.

AWS Schema Conversion Tool (SCT) helps you convert your commercial database and data warehouse schemas to open-source engines or AWS-native services such as Amazon Aurora and Redshift. In addition, it can move your table DDL, views, and stored procedure DML to a different platform. The tool generates an assessment report which lists the objects that can be automatically converted and recommends manual changes were needed.

This document walks you through the configuration needed to create the required lab environments for the Database Migration Service Workshop. Similarly, after you have completed the workshop, you can refer to this document for cleaning up the lab environment.

## Getting Started

1. Go to <https://console.aws.amazon.com/> and login to **AWS Management Console** using your credentials.
2. Click on the drop-down menu on the top right corner of the screen, and select one of the 12 supported regions for this lab:

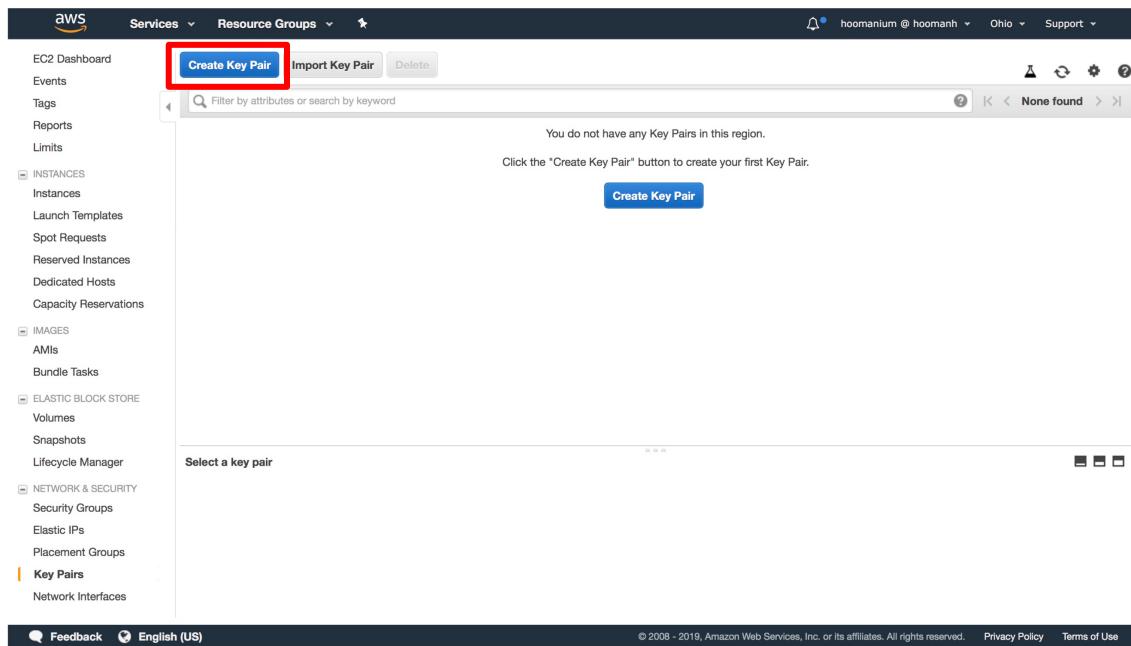
Region Name	Region
US East (N. Virginia)	us-east-1
US East (Ohio)	us-east-2
US West (Oregon)	us-west-2
EU (Frankfurt)	eu-central-1
EU (Ireland)	eu-west-1
EU (London)	eu-west-2
EU (Paris)	eu-west-3
Asia Pacific (Mumbai)	ap-south-1
Asia Pacific (Tokyo)	ap-northeast-1
Asia Pacific (Seoul)	ap-northeast-2
Asia Pacific (Singapore)	ap-southeast-1
Asia Pacific (Sydney)	ap-southeast-2

The screenshot shows the AWS Management Console interface. At the top, there's a navigation bar with the AWS logo, 'Services' dropdown, 'Resource Groups' dropdown, a user icon (hoomanum @ hoomanh), a red box highlighting the 'N. Virginia' dropdown menu, and a 'Support' dropdown. Below the navigation bar, the title 'AWS Management Console' is displayed. On the left, there's a sidebar titled 'AWS services' with sections for 'Find Services' (containing a search bar) and 'Recently visited services' (listing CloudFormation, Database Migration Service, RDS, EC2, and S3). Another section, 'All services', lists various AWS services like Compute, Management & Governance, Security, Identity, & Compliance, and others. To the right of the sidebar, there are three main content boxes: 'Access resources on the go' (describing the AWS Console Mobile App), 'Explore AWS' (with a 'Amazon RDS' section), and 'Open Distro for Elasticsearch' (describing its features). The bottom right of the page also has a 'Visit AWS around the world at a Summit' section.

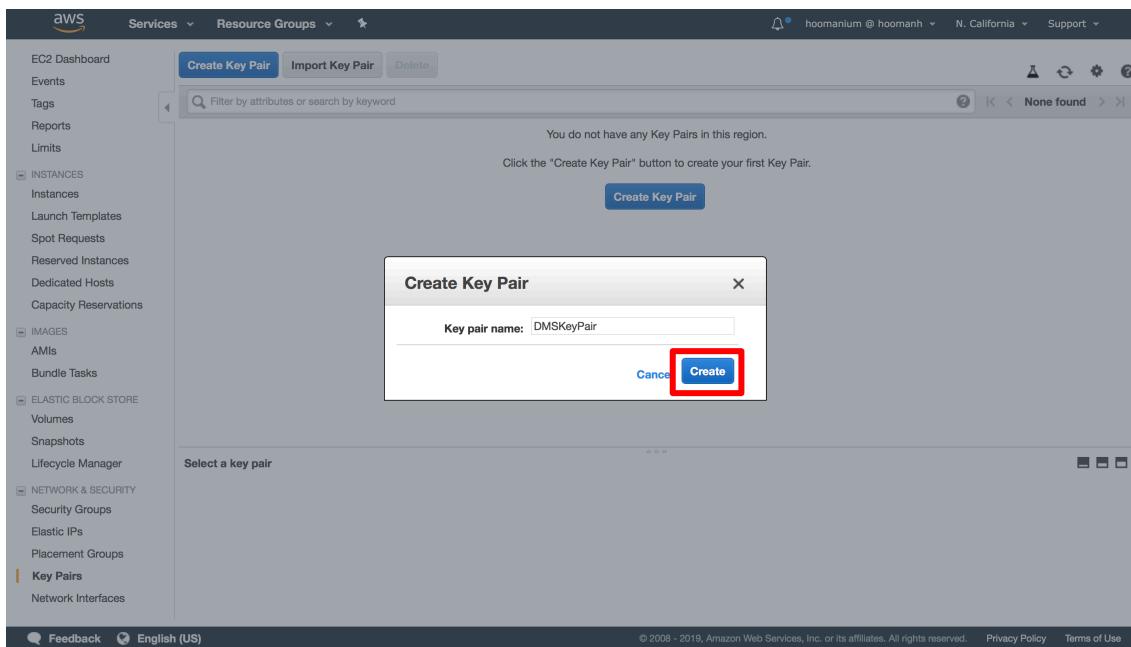
## Generate Key Pair

In this step, you will generate an EC2 key pair for use in the Database Migration Workshop labs.

3. Go to <http://amzn.to/2kcoMQp>. Ensure you are in the same region as you chose in the previous step. Then, click on the **Create Key Pair** button.



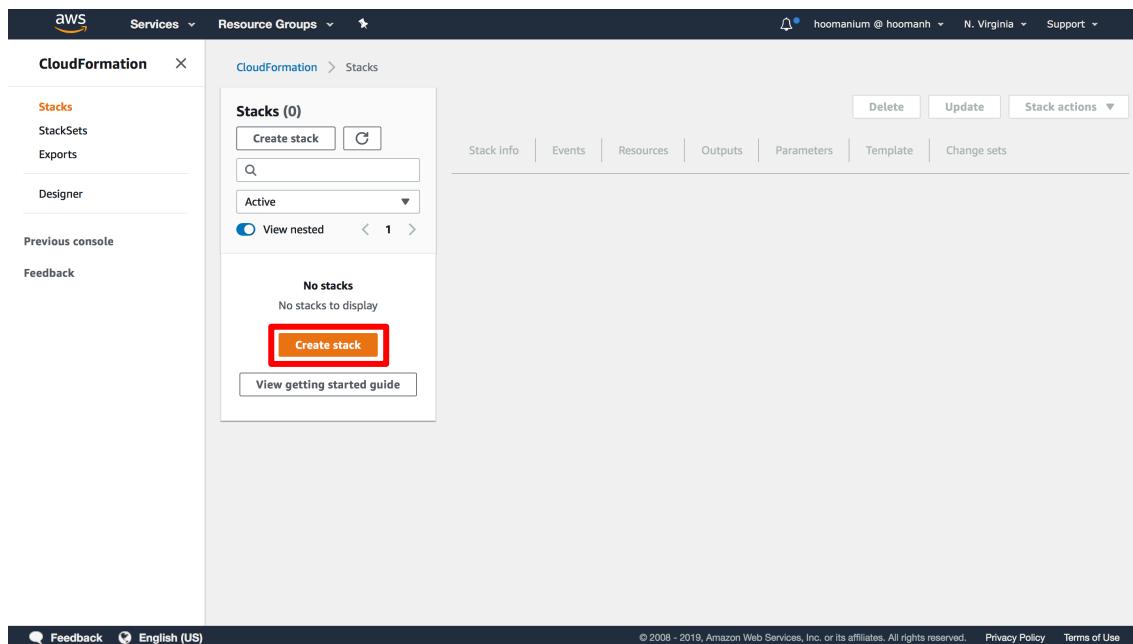
4. Name the key pair **DMSKeyPair**, and then click **Create**. At this point, your browser will download a file named **DMSKeyPair.pem**. Save this file. You will need it to complete the labs.



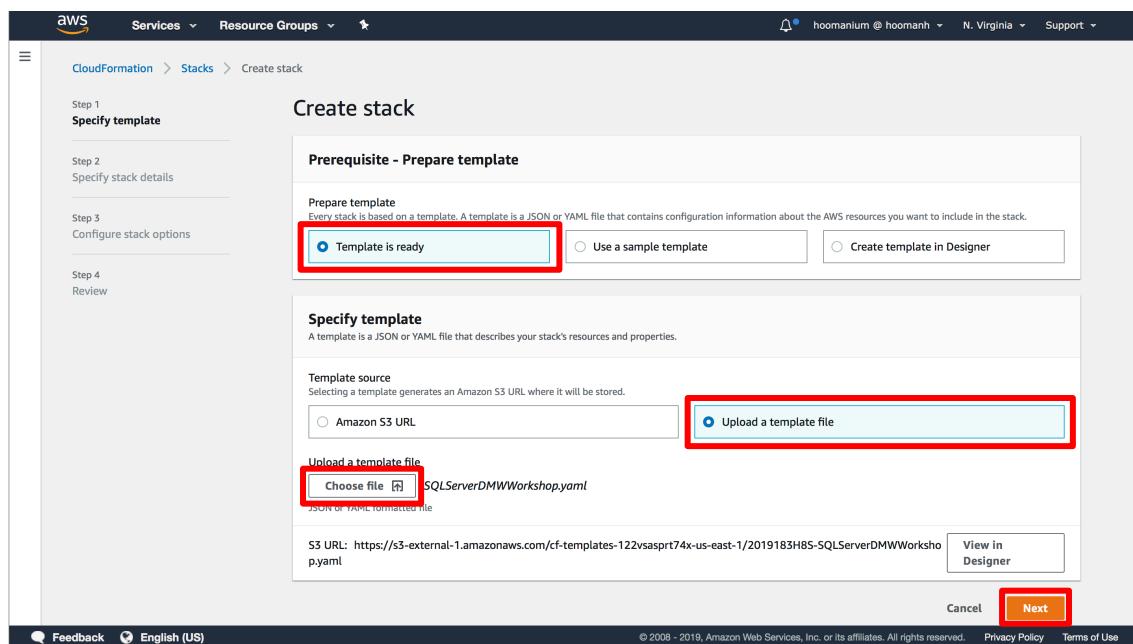
## Configure the Lab Environment

In this step, you will use a CloudFormation template to create the lab environment for the DMS Migration workshop.

5. Open the [CloudFormation console](#), and click on **Create Stack** in the left-hand corner.



6. Select **Template is ready**, and choose **Upload a template file** as the source template. Then, click on **Choose file** and upload the **DMSWorkshop.yaml**. Click **Next**.



7. Populate the form as with the values specified below, and then click **Next**

Parameters	
<b>Stack Name</b>	A unique identifier without spaces.
<b>LabType</b>	The Database Migration Workshop Lab that you want to complete.
<b>EC2ServerInstanceType</b>	An Amazon EC2 Instance type from the drop-down menu. Recommend using the default value.
<b>KeyName</b>	The KeyPair (DMSKeypair) that you created in the previous step.
<b>RDSInstanceType</b>	An Amazon RDS Instance type from the drop-down menu.
<b>VpcCIDR</b>	The VPC CIDR range in the form x.x.x.x/16. Defaults to 10.20.0.0/16
<b>Subnet1CIDR</b>	The Subnet CIDR range for subnet 1 in the form x.x.x.x/24. Defaults to 10.20.1.0/24
<b>Subnet2CIDR</b>	The Subnet CIDR range for subnet 2 in the form x.x.x.x/24. Defaults to 10.20.2.0/24
<b>Subnet3CIDR</b>	The Subnet CIDR range for subnet 3 in the form x.x.x.x/24. Defaults to 10.20.3.0/24

*Note: The resources that are created here will be prefixed with whatever value you specify in the Stack Name. Please specify a value that is unique to your account.*

Specify stack details

**Stack name**

Stack name  
hoomanh-SQLServer-to-MySQL

**Parameters**

Parameters are defined in your template and allow you to input custom values when you create or update a stack.

**Database Migration Workshop Lab Environment**

**LabType**  
Select your Database Migration lab:  
Microsoft SQL Server to Amazon Aurora (MySQL)

**Amazon EC2 Configuration**

**EC2ServerInstanceType**  
Amazon EC2 Instance Type  
m5a.2xlarge

**KeyName**  
Name of an existing EC2 KeyPair to enable RDP access to the instance  
DMS-Lab-Test-KP

**Target Amazon RDS Database Configuration**

**RDSInstanceType**  
Amazon RDS Aurora Instance Type  
db.i4.xlarge

**Network Configuration**

**VpcCIDR**  
Enter the VPC CIDR range in the form x.x.x.x/16  
10.20.0.0/16

**Subnet1CIDR**  
Enter the Subnet 1 CIDR range in the form x.x.x.x/22  
10.20.1.0/24

**Subnet2CIDR**  
Enter the Subnet 2 CIDR range in the form x.x.x.x/22  
10.20.2.0/24

**Subnet3CIDR**  
Enter the Subnet 3 CIDR range in the form x.x.x.x/22  
10.20.3.0/24

Cancel Previous **Next**

8. On the **Stack Options** page, accept all of the defaults and click **Next**.
9. On the **Review** page, click **Create stack**.     **\*\* Stack creation takes approximately 15 minutes \*\***

Review hoomanh-SQLServer-to-MySQL

Step 1: Specify template

Step 2: Specify stack details

Step 3: Configure stack options

Step 4: Review

Template

Template URL  
https://s3-external-1.amazonaws.com/cf-templates-18y6n3wko9n5-us-east-1/20191891fp-DMSWorkshop.yaml

Stack description  
Create resources for AWS Database Migration Service (DMS) and AWS Schema Conversion Tool (SCT) Lab

Estimate cost not available

Parameters (8)

Key	Value
EC2ServerInstanceType	m5a.2xlarge
KeyName	DMS-Lab-Test-KP
LabType	Microsoft SQL Server to Amazon Aurora (MySQL)
RDSInstanceType	db.r4.2xlarge
Subnet1CIDR	10.20.1.0/24
Subnet2CIDR	10.20.2.0/24
Subnet3CIDR	10.20.3.0/24
VpcCIDR	10.20.0.0/16

Cancel Previous Create change set **Create stack**

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10. At this point, you will be directed back to the CloudFormation console and will see a status of **CREATE\_IN\_PROGRESS**. Please wait here until the status changes to **COMPLETE**.

The screenshot shows the AWS CloudFormation console. On the left, the navigation pane has 'Stacks' selected, with 'Stack details' highlighted. A red box highlights the stack entry for 'hoomanh-DMSWorkshop'. The main panel shows the stack details for 'hoomanh-DMSWorkshop' with a timestamp of '2019-07-08 11:06:45 UTC-0700' and a status of 'CREATE\_IN\_PROGRESS'. Below this, the 'Events' section lists one event: '2019-07-08 11:06:45 UTC-0700' with a logical ID 'hoomanh-DMSWorkshop' and a status of 'CREATE\_IN\_PROGRESS' due to 'User Initiated'.

11. Once CloudFormation status changes to **CREATE\_COMPLETE**, go to the **Outputs** section.

12. Make a note of the **Output** values from the CloudFormation environment that you launched as you will need them for the remainder of the lab:

### ***Microsoft SQL Server to Amazon Aurora (MySQL) template output***

The screenshot shows the AWS CloudFormation console with the 'Outputs' tab selected. A red box highlights the 'Outputs' tab. The main panel shows the outputs for 'hoomanh-DMSWorkshop' with three entries: 'SourceEC2PrivateDNS' (ip-10-20-1-89.us-east-2.compute.internal), 'SourceEC2PublicDNS' (ec2-3-16-75-128.us-east-2.compute.amazonaws.com), and 'TargetAuroraMySQLEndpoint' (hoomanh-dmsworkshop-auroramysqlinstance.cwrrpgclh8dv.us-east-2.rds.amazonaws.com). A dashed red box encloses the table containing these output values.

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### **Microsoft SQL Server to Amazon RDS SQL Server template output**

The screenshot shows the AWS CloudFormation Outputs page for a stack named "hoomanh-SQLtoSQL". The "Outputs" tab is selected, highlighted with a red box. A dashed red box surrounds the table displaying the outputs.

Key	Value	Description
SourceEC2PrivateDNS	ip-10-10-1-153.us-east-2.compute.internal	Private DNS endpoint for the EC2 instance
SourceEC2PublicDNS	ec2-18-218-117-71.us-east-2.compute.amazonaws.com	Public DNS endpoint for the EC2 instance
TargetSQLServerEndpoint	hoomanh-sqltosql-sqlserverdb.cwrhpgch8dv.us-east-2.rds.amazonaws.com	Target MS SQL Server RDS Endpoint

### **Oracle to Amazon Aurora (PostgreSQL) template output**

The screenshot shows the AWS CloudFormation Outputs page for a stack named "hoomanh-Oracle-to-PostgreSQL". The "Outputs" tab is selected, highlighted with a red box. A dashed red box surrounds the table displaying the outputs.

Key	Value	Description
SourceEC2PrivateDNS	ip-10-20-1-129.us-east-2.compute.internal	Private DNS endpoint for the EC2 instance
SourceEC2PublicDNS	ec2-3-15-149-7.us-east-2.compute.amazonaws.com	Public DNS endpoint for the EC2 instance
SourceOracleEndpoint	hoomanh-oracle-to-postgresql-sourceoracledb.cwrhpgch8d.us-east-2.rds.amazonaws.com	Source Oracle RDS Endpoint
TargetAuroraPostgreSQLEndpoint	hoomanh-oracle-to-postgre-aurorapostgresqlcluster-1182b9w1http.cluster-cwrhpgch8dv.us-east-2.rds.amazonaws.com	Target Aurora (PostgreSQL) Data Endpoint

## Oracle to Amazon RDS Oracle template output

The screenshot shows the AWS CloudFormation console with the 'Outputs' tab selected. The table displays the following outputs:

Key	Value	Description
SourceEC2PrivateDNS	ip-10-20-1-56.us-east-2.compute.internal	Private DNS endpoint for the EC2 instance
SourceEC2PublicDNS	ec2-52-14-2-129.us-east-2.compute.amazonaws.com	Public DNS endpoint for the EC2 instance
SourceOracleEndpoint	hoomanh-oracle-to-oracle-sourceoracledb.cwrhpgch.8dv.us-east-2.rds.amazonaws.com	Source Oracle RDS Endpoint
TargetOracleEndpoint	hoomanh-oracle-to-oracle-targetoracledb.cwrhpgch.8dv.us-east-2.rds.amazonaws.com	Target Oracle RDS Instance Endpoint

## Conclusion

You have completed the configuration of your environment for the Database Migration Workshop labs. Please make sure that you take note of the output values and location of the DMSKeyPair.pem file generated during this setup. You will need these values in order to successfully complete the lab.

*Note: If you are missing any of the output values, please notify a lab assistant immediately for assistance.*