

# Oracle Database on Oracle RDS AWS

- How to migrate the On-prem Oracle to AWS RDS (Oracle LogMiner)
- Pros x Cons of using DMS tool (According to my experience)

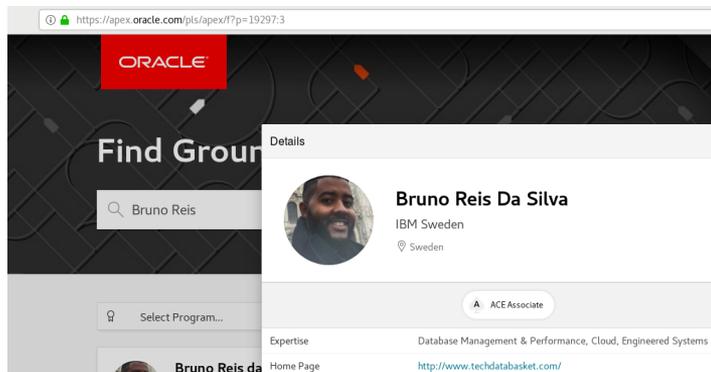


"Opinions expressed are solely my own and do not express the views or opinions of my employer."



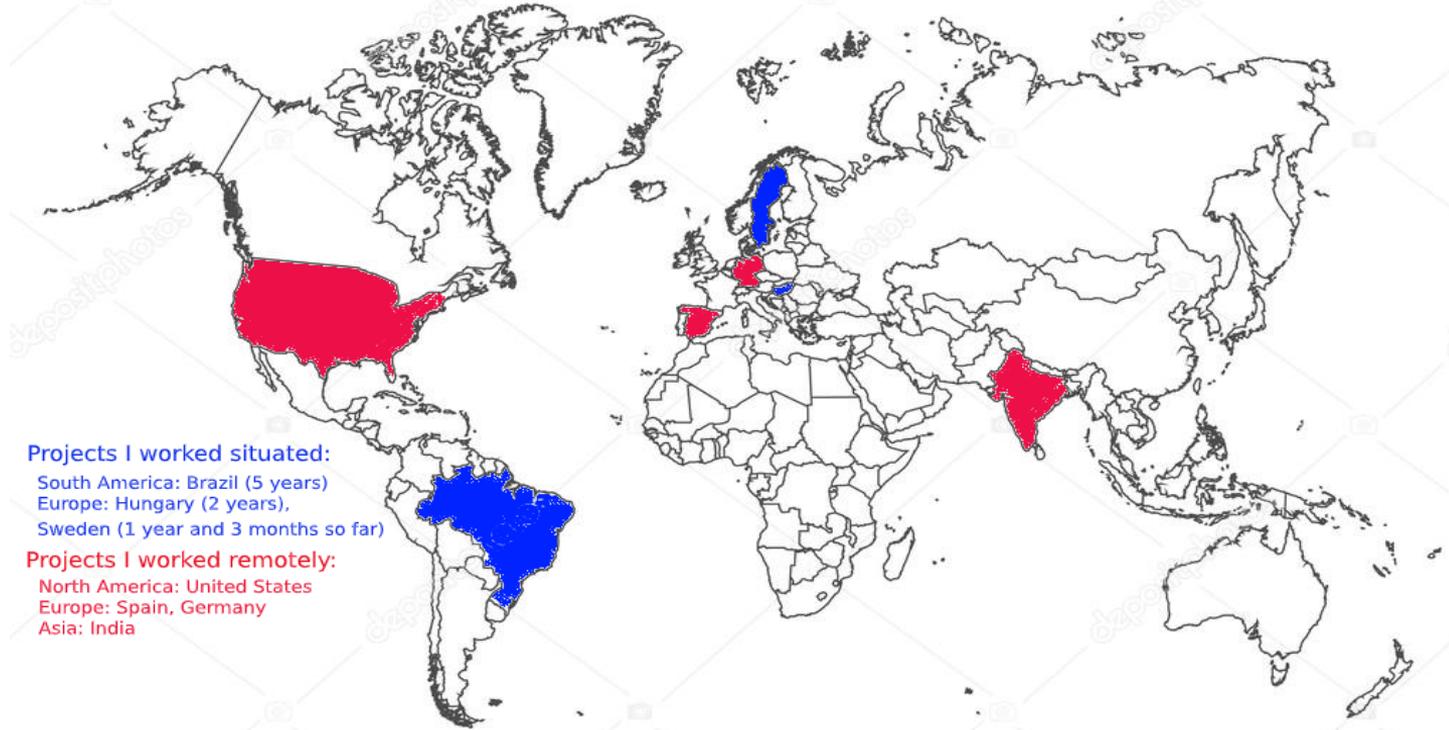
# Bruno Reis Da Silva

- Afro-Brazilian
- Outside the coding world, loves to travel (28 countries so far), learn languages, cultures and working out.
- IBM employee since June 2011 : Senior Oracle DBA & Database Cloud Support Engineer
  - IBM Brazil – 5 years  | IBM Hungary / Europe – 2 years 
  - IBM Sweden / Europe – 1 year – onward 
- Computer Scientist and 1st Oracle Ace Associate of Hungary (October 2017, 24 years old).
- Master's candidate in the universities in Sweden
- Twitter :  [www.twitter.com/brunorsdba](https://www.twitter.com/brunorsdba)
- Blog :  [www.techdatabasket.com](http://www.techdatabasket.com)
- E-mail :  [brunorsreis@gmail.com](mailto:brunorsreis@gmail.com)
- Oracle , IBM, OpenGroup Certified.
- Collaborator of LUXOUG and member of SWEOUG.



**ORACLE**  
ACE Associate

# Bruno Reis Da Silva



## Projects I worked situated:

South America: Brazil (5 years)  
Europe: Hungary (2 years),  
Sweden (1 year and 3 months so far)

## Projects I worked remotely:

North America: United States  
Europe: Spain, Germany  
Asia: India

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## Issue #19/2020



Our first issue of 2020 dives into the history of AskTOM. Connor McDonald reflects on its inception and how his personal journey intertwines with it. Meanwhile, Jim Czuprynski reveals his super-power: Autonomous DB and ML. Enjoy these and many more stories!

[Download Issue 19/2020](#)

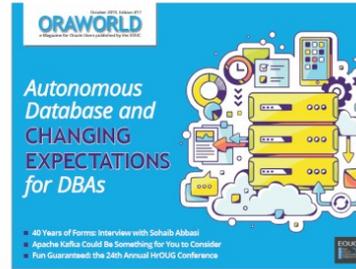
## Issue #18/2019



Issue 18 takes a look at Self-Service Integration with author Arturo Viveros answering the questions What?, Why? and How? The last issue of the year also marks the starts of a new series on APEX by Carsten Czarski. Of course, you can expect many more stories from the Oracle world.

[Download Issue 18/2019](#)

## Issue #17/2019



In this issue we look at how Autonomous Database will change the work for DBAs. Also, concluding our 40 Years of Forms feature, we bring you an insightful interview with Sohaib Abbasi, the former Senior Vice President of Oracle's Tools and Education divisions.

[Download Issue 17/2019](#)

## Issue #16/2019



Issue #16 celebrates 40 years of Oracle Forms. We look at the history of the famous software tool including an interview with its developer Bill Friend. Also, we conclude

## Issue #15/2019



The focus of issue #15 is on games: We have an interview with gamification expert Dr. Mathias Fuchs who examines the phenomenon from a cultural and political perspective.

## Issue #14/2019



Issue #14 highlights ways to generate the perfect user experience. You will dive deep into such diverse topics as digitalization for seniors, the importance of data clustering,



Gen 2 Cloud Autonomous Infrastructure: Larry Ellison at Oracle OpenWorld 2019 : <https://www.youtube.com/watch?v=lIgGrDQb2OQ>

”For those who attended the Oracle Open World 2019 in San Francisco, California in the USA (if you didn’t check out my compilation video about the event : <https://www.youtube.com/watch?v=8bOLbXOJHmAh> ) and have had the experience to also attend the KeyNotes probably would prefer to migrate their Oracle database On-Prem to Oracle Cloud Ed2 instead of AWS Amazon EC2 or RDS “

# As an Oracle evangelist, why would you talk about AWS RDS?

- "Have you ever installed an Oracle DB in Windows server? "
- Knowledge is power. More you know, more you can talk and compare.
- Oracle RDS AWS is still an Oracle database engine.
- The future is Multicloud.



# Migration types / task types :

Migrating data only replication until start time of the task:

- Full load (migrating existing data)

There are two types of ongoing replication tasks:

- Full load plus CDC (migrating existing data and replicate ongoing changes)
- CDC only (replicate data changes only)

# Move an Oracle database from on-prem to Oracle RDS AWS? Difference between EC2 and RDS.

- Move your Oracle database On-Prem to Amazon AWS.
- EC2: You manage the database at AWS by yourself.
  - IaaS(Infrastructure as a Service)
- RDS (RELATIONAL DATABASE SERVICE) : Database as a Service (DBaaS) that automatically configures and maintains your databases in the AWS cloud. The user has limited power over specific configurations .

# EC2

Migrating Oracle database to EC2:

- RMAN backup restore

Platform  
Version

- Golden gate

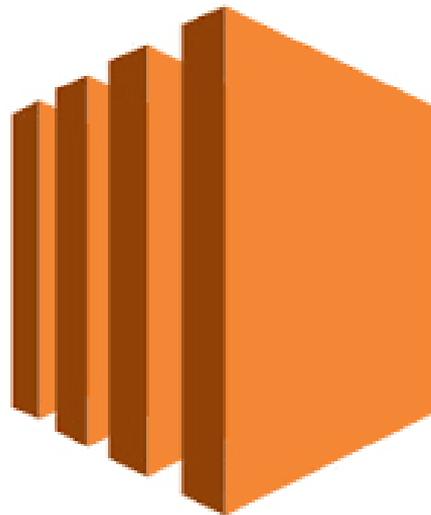
EC2 Instance for Golden Gate  
Zero Downtime  
Cost

- Database Migration Service

Most cost effective  
Zero Downtime (almost)

- Data Guard

Zero Downtime



Amazon EC2

# RDS

Migrating Oracle to RDS:

- Data Pump:

Cross Platform  
Cross version

- Golden Gate (additional licences)

EC2 instance for replicat process  
Zero Downtime  
Cost

- Database Migration Service (most cost effective)

Most cost effective  
Zero Downtime (almost)



# EC2 and RDS:

Impact on some Oracle options:

- Oracle Rac is not supported in RDS. (RAC: ACTIVE X ACTIVE, RDS: ACTIVE X PASSIVE)
- ASM supported both EC2 and RDS.
- Multitenant is not supported in RDS just EC2.
- Data Guard is supported in RDS (Amazon RDS for Oracle Now Supports In-region Read Replicas with Active Data Guard for Read Scalability and Availability since March 2019) and EC2.

Also on some application:

- PeopleSoft: support EC2 and RDS;
- Siebel: support EC2 and RDS;
- JD Edwards: support EC2 and RDS;
- ISV Applications : support EC2 and RDS
- E-BUSINESS SUITE: Application that need to access the file system which is not provided by RDS so just EC2 is supported.



# Amazon's recommendation? DMS

- Data Pump:
  - Several hours to export and import
  - Unavailability



- Golden Gate (additional licences)
  - Cost



- Database Migration Service (most cost effective)
  - Most cost effective
  - Zero Downtime

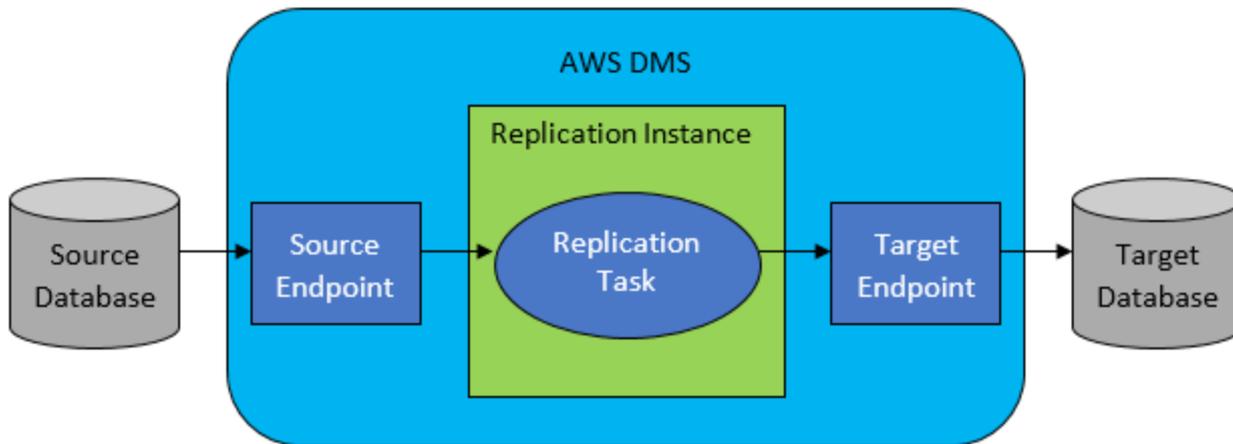


# AWS DMS

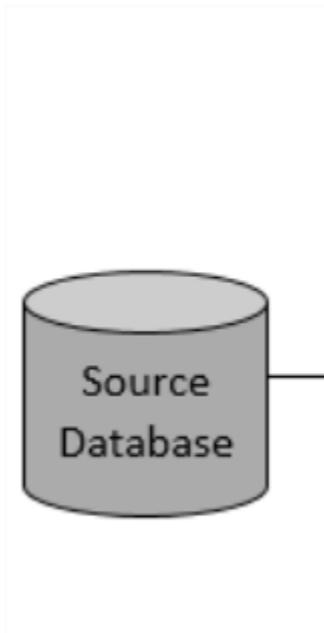
“Migrates the database on AWS cloud with virtually no downtime. The only prerequisite is that the source or target database is on AWS. AWS DMS is a web service that enables migrating the data you use most from open-source and commercial databases such as Oracle, PostgreSQL, Microsoft SQL Server, Amazon Redshift, Amazon Aurora, MariaDB, MySQL, MongoDB, and SAP ASE to AWS. AWS DMS supports homogenous database engine migrations and heterogeneous migrations, where you can convert database engines or versions using the AWS Schema Conversion Tool.”

Three Main Components:

1. Replication Instances
2. Endpoints
3. Replication Tasks



# How to configure your Oracle On-Prem To be migrated to AWS RDS Oracle?



# How to configure your Oracle On-Prem To be migrated to AWS RDS Oracle?

Scripts in <https://github.com/brunorsreis/migonpremoracletoawsrds>

- 1 - Create an user to be used to connect to the Source database. Eg: **MIGUERSOURCE**;
- 2 - Enable Supplemental logging in all tables; (script\_01.sql)
- 3 - Minimal Supplemental Logging (database level); (script\_02.sql)
- 4 - Give all the permissions to the user that it will be connected to this source database as Endpoint in the DMS tool; (script\_03.sql)
- 5 - Grant to user for the DMS to be able to validate BLOB data types in the DMS tool; (script\_04.sql)
- 6 - Give a grant of SELECT on all tables to be migrated to the user **MIGUSERSOURCE**; (script\_05.sql)

# How to configure your Oracle On-Prem To be migrated to AWS RDS Oracle?

Scripts in <https://github.com/brunorsreis/migonpremoracletoawsrds>

- 7 - Grant DBA: This other grant is just my personal choice. As I want that the user has full permission and to avoid any other permission problem I would give the DBA grant and revoke it once the migration is done; (script\_06.sql)**
- 8 - For the capture and apply changes (CDC) you also need execute on DBMS\_LOGMNR and select on V\_V\$LOGMNR\_LOGS, V\_\$LOGMNR\_CONTENTS to the user of the migration; (script\_07.sql)**
- 9 - LOGMINING /\* For Oracle 12c and higher. \*/; (script\_08.sql)**
- 10 - Determine the maximum LOB column of the migrated tables; (script\_09.sql)**
- 11 - Configure a backup routine of your archives On-Prem that must be able to keep the archives time enough to be shipped to the AWS RDS Oracle instance ; (24 hours is usually enough - Amazon's recommendation)**

# How to configure your Oracle On-Prem To be migrated to AWS RDS Oracle?



**- Note: DMS will only push Table DDL and PK , all other additional objects may be created either before the CDC part , for instance indexes, or after the whole operation.**

# How to configure your ORACLE to receive data from an Oracle On-Prem?

**" Services -> Amazon RDS -> Create Database"**



# How to configure your Oracle On-Prem To be migrated to AWS RDS Oracle?

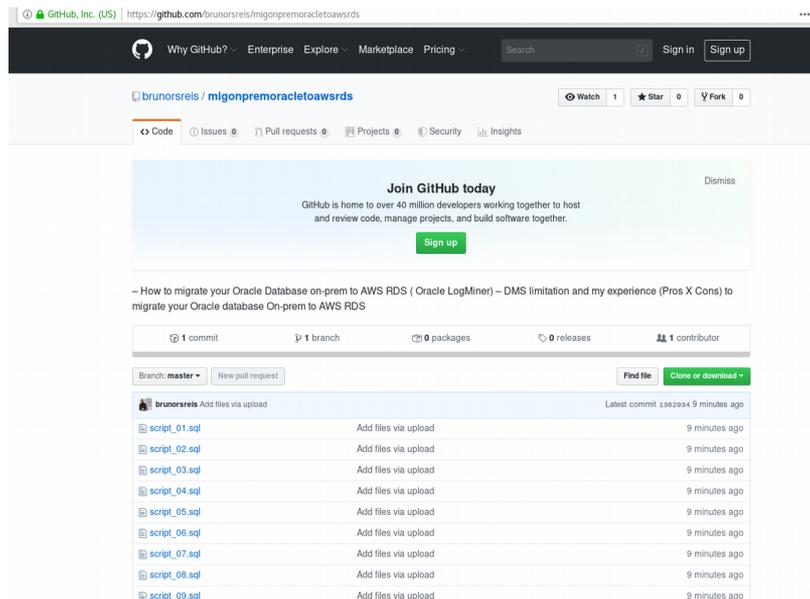
- 1 - User to connect to the Target Endpoint probably will be the user owner of the AWS RDS instance.**
- 2 - Get DDL Tablespaces from the Source database and create in your target database ; (script\_10.sql)**
- 3 - Extract the DDL of the profiles and create it in your target database ; (script\_11.sql)**
- 4 - Extract the DDL of the users and create it in your target database ; (script\_12.sql)**
- 5 - List and extract the DDL of the tables from the Source and create it in your Target database ; (script\_13.sql)**
- 6 - Get all the grants from the source (script\_14.sql)**
- 7 - Amazon's recommendation to create your tablespace as Bigfile tablespaces in the target; (script\_15.sql)**

# How to configure your Oracle On-Prem To be migrated to AWS RDS Oracle?

- 8 - For full-load and CDC-enabled task, Amazon recommends that you drop primary key indexes, secondary indexes, referential integrity constraints, and data manipulation language (DML) triggers before the start of the task and create them once the full load phase has completed. (ORA-02266: unique/primary keys in table referenced by enabled foreign keys ); (script\_16.sql)**
- 9 - If you are running FULL LOAD and CDC right away, I would suggest you create the index in the target after the FULL LOAD to speed up the CDC process; (script\_17.sql)**

# How to configure your Oracle On-Prem to be migrated to AWS RDS Oracle?

Scripts in <https://github.com/brunorsreis/migonpremoracletoawsrds>



The screenshot shows the GitHub repository page for 'brunorsreis/migonpremoracletoawsrds'. The repository has 1 commit, 1 branch, 0 packages, 0 releases, and 1 contributor. The main content area displays a list of files under the 'script' directory, including 'script\_01.sql' through 'script\_09.sql', each with a timestamp of '9 minutes ago'.

File Name	Action	Time
script_01.sql	Add files via upload	9 minutes ago
script_02.sql	Add files via upload	9 minutes ago
script_03.sql	Add files via upload	9 minutes ago
script_04.sql	Add files via upload	9 minutes ago
script_05.sql	Add files via upload	9 minutes ago
script_06.sql	Add files via upload	9 minutes ago
script_07.sql	Add files via upload	9 minutes ago
script_08.sql	Add files via upload	9 minutes ago
script_09.sql	Add files via upload	9 minutes ago

# How to configure your Oracle On-Prem to be migrated to AWS RDS Oracle?

— To connect to your Target database you must have a configured network between the source and the target :

**Source database:**

```
"sqlplus 'user_name@(DESCRIPTION=(ADDRESS=(PROTOCOL=TCP)(HOST=dns_name)(PORT=port))(CONNECT_DATA=(SID=database_name)))' "  
techdatabaskethost> sqlplus 'techdataowner@(DESCRIPTION=(ADDRESS=(PROTOCOL=TCP)(HOST=xxxxx.xxxxxx.xx-region-1.rds.amazonaws.com)(PORT=1533))(CONNECT_DATA=(SID=techtarget)))'
```

# How to configure your Oracle On-Prem to be migrated to AWS RDS Oracle?

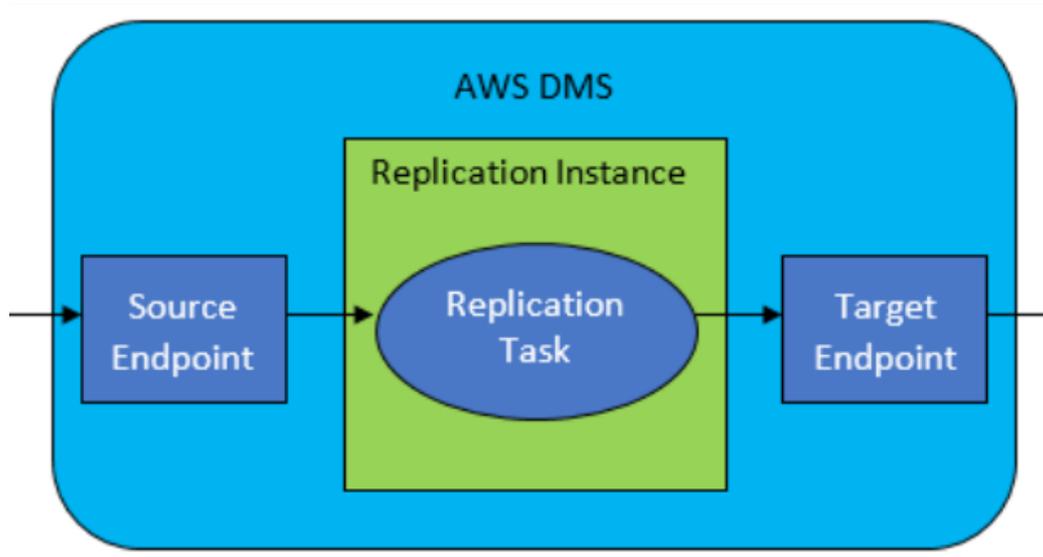
— To connect to your Target database you must have a configured network between the source and the target :

## Target:

```
1 SQL*Plus: Release 12.1.0.2.0 Production on Mon Oct 28 09:58:46 2019
2
3 Copyright (c) 1982, 2014, Oracle. All rights reserved.
4
5 Enter password:
6
7 Connected to:
8 Oracle Database 12c Standard Edition Release 12.1.0.2.0 - 64bit Production
```



# How to create a task at DMS and start your migration?

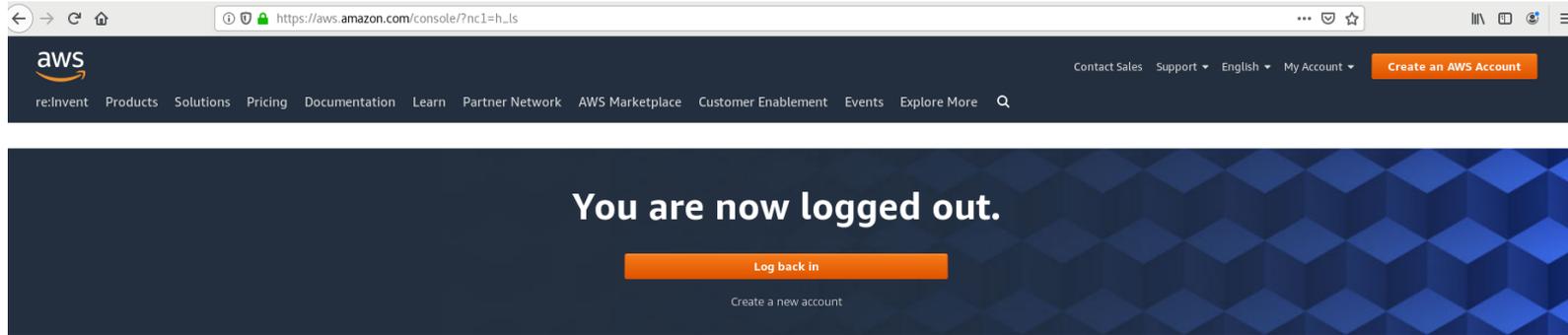


# How to create a task at DMS and start your migration?

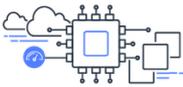
— The first thing to do to be able to create a task at DMS services is to have a DMS replication instance:

Go through the AWS console : [https://aws.amazon.com/console/?nc1=h\\_ls](https://aws.amazon.com/console/?nc1=h_ls)

# How to create a task at DMS and start your migration?



## Explore more from AWS



**EC2**  
Secure and resizable compute capacity in the cloud. Launch applications when needed without upfront commitments.  
[Learn more >>](#)



**S3**  
Object storage built to store and retrieve any amount of data from anywhere.  
[Learn more >>](#)



**Amazon Aurora**  
High performance relational database built for the cloud, MySQL and PostgreSQL compatible with performance of commercial-grade databases.  
[Learn more >>](#)



**Lambda**  
Run code without thinking about servers. Pay only for the compute time you consume.  
[Learn more >>](#)

# How to create a task at DMS and start your migration?

— The first thing to be able to create a task at DMS services is to have a DMS replication instance:

Steps “Services” -> “AWS DMS” -> “Replication instance” -> button “Create replication instance”

# How to create a task at DMS and start your migration?

The screenshot shows the AWS Management Console interface for creating a DMS replication instance. The top navigation bar includes the AWS logo, 'Services', 'Resource Groups', and user information. The left sidebar shows the 'AWS DMS' console with a navigation menu including 'Dashboard', 'Conversion & migration', 'Resource management', and 'What's new'. The main content area is titled 'Create replication instance' and contains a 'Replication instance configuration' form with the following fields:

- Name:** A text input field with a placeholder 'Type a unique name for your replication instance'. A note below states: 'The name must be unique among all of your replication instances in the current AWS region. Replication instance name must not start with a numeric value.'
- Description:** A text input field with a placeholder 'Type a short description for your replication instance'. A note below states: 'The description must only have unicode letters, digits, whitespace, or one of these symbols: \_-/+=@. 1000 maximum character.'
- Instance class:** A dropdown menu currently showing 'dms.t2.medium'. A note below states: 'Choose an appropriate instance class for your replication needs. Each instance class provides differing levels of compute, network and memory capacity.'
- Billing:** A note stating 'Billing is based on DMS pricing' with a link icon.
- Engine version:** A dropdown menu currently showing '3.1.4'. A note below states: 'Choose an AWS DMS version to run on your replication instance.'
- Allocated storage (GB):** A text input field containing the value '50'. A note below states: 'Choose the amount of storage space you want for your replication instance. AWS DMS uses this storage for log files and cached transactions while replication tasks are in progress.'

# How to create a task at DMS and start your migration?

The screenshot displays the AWS DMS console interface. On the left is a navigation sidebar with the following items: Dashboard, Conversion & migration (expanded), Database migration tasks, Resource management (expanded), Replication instances (highlighted in orange), Endpoints, Certificates, Subnet groups, Events, Event subscriptions, What's new, and Notifications. The main content area is titled 'AWS DMS' and contains the following configuration sections:

- VPC**: Choose an Amazon Virtual Private Cloud (VPC) where your replication instance should run. A dropdown menu labeled 'Choose a VPC' is present.
- Multi AZ**: An unchecked checkbox. Description: 'If you choose this option, AWS DMS will perform a multi-AZ deployment, with a primary instance in one availability zone (AZ) and a standby instance in another AZ. This configuration provides a highly available, fault-tolerant replication environment. Billing is based on [DMS pricing](#).' A link icon is next to the pricing text.
- Publicly accessible**: A checked checkbox. Description: '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 Amazon VPC.'
- Advanced security and network configuration** (expanded):
  - 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 Amazon VPC you've chosen. A dropdown menu is shown.
  - 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. A dropdown menu labeled 'No Preference' is shown.

# How to create a task at DMS and start your migration?

The screenshot shows the AWS DMS console interface. On the left is a navigation sidebar with the following items: Dashboard, Conversion & migration (expanded), Database migration tasks, Resource management (expanded), Replication instances (highlighted in orange), Endpoints, Certificates, Subnet groups, Events, and Event subscriptions. Below these are 'What's new' and 'Notifications'. The main content area is titled 'Advanced security and network configuration' and contains three sections:

- Replication subnet group:** A dropdown menu with a downward arrow. The text above it says: "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 Amazon VPC you've chosen."
- Availability zone:** A dropdown menu showing "No Preference" with a downward arrow. The text above it says: "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."
- VPC security group(s):** A dropdown menu showing "Use default" with a downward arrow. The text above it says: "Choose one or more security groups for your replication instances. The security group(s) specify inbound and outbound rules to control network access to your replication instance."

At the bottom of the configuration section, there is a field for "KMS master key" with a link to "Info" and a dropdown menu showing "(Default) aws/dms" with a downward arrow.

# How to create a task at DMS and start your migration?

- ▼ Conversion & migration
  - Database migration tasks
- ▼ Resource management
  - Replication instances
  - Endpoints
  - Certificates
  - Subnet groups
  - Events
  - Event subscriptions
- What's new
- Notifications

### ▼ Maintenance

Maintenance window (UTC) [Info](#)

Start day

Friday ▼

Start time

(Hour) (Minute)

07 ▼ 22 ▼

Duration (hours)

0.5 ▼

**Minor version automatic upgrade**

Choose whether you want AWS DMS to apply minor engine version upgrades to your replication instance, whenever these upgrades are available. See [AWS DMS Maintenance](#)

Yes

No

Cancel Create

# How to create a task at DMS and start your migration?

— After created you will see your replication instance as below (in this case I have created 2 DMS instances used in different migrations):

DMS > Replication instances

Replication instances (2)

Find replication instance

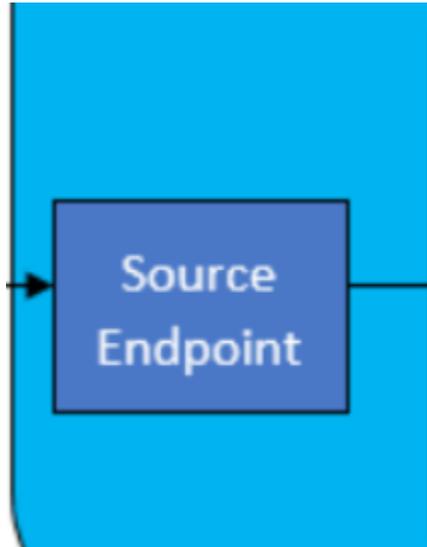
Actions Create replication instance

Name	Class	Status	Engine version	Availability zone	VPC	Public	Public IP address	Private IP address	Multi AZ	Created
Name1	dms.r4.large	Available	3.3.0	us-east-1a	vpc-	No	IP1		No	10/28/2019, 4:22:08 PM
Name2	dms.r4.4xlarge	Available	3.1.4	us-east-1a	vpc-	No	iP2		No	11/11/2019, 4:52:51 PM

# How to create a task at DMS and start your migration?

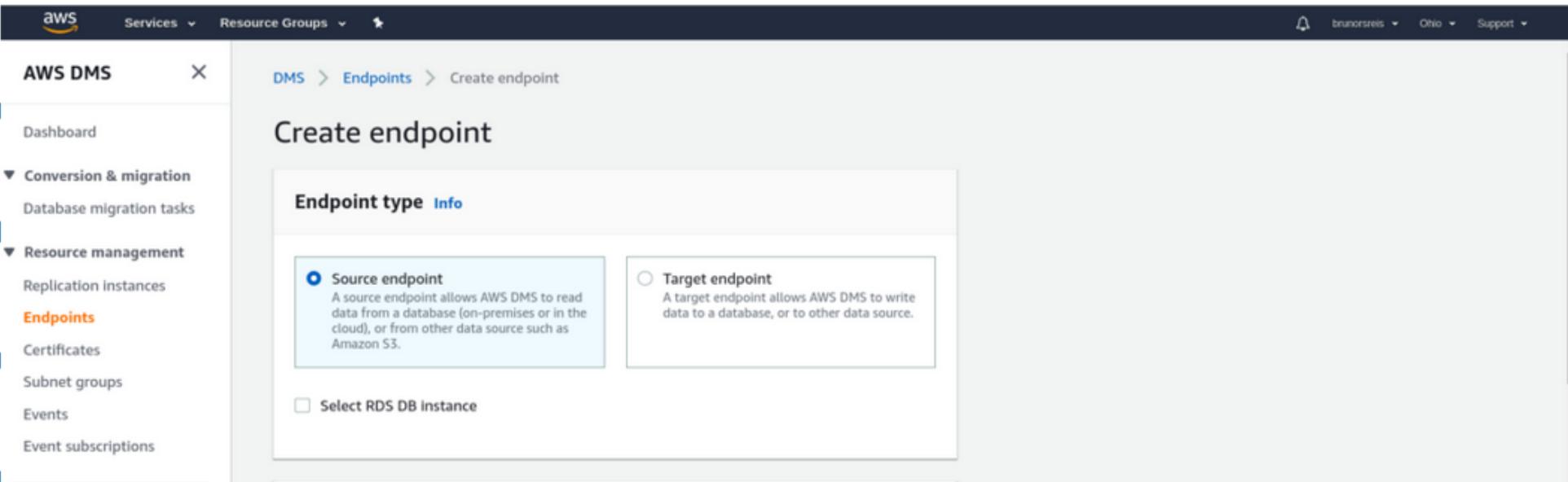
## – Source Endpoint:

Then to create the 2 endpoints you have to go through these steps “Services” -> “AWS DMS” -> “Resource management” -> Endpoints-> button “Create endpoint”.



# How to create a task at DMS and start your migration?

## — Source Endpoint:



The screenshot shows the AWS DMS console interface. The top navigation bar includes the AWS logo, 'Services', 'Resource Groups', and user information. The left sidebar lists navigation options: Dashboard, Conversion & migration (Database migration tasks), Resource management (Replication instances, Endpoints, Certificates, Subnet groups, Events, Event subscriptions). The main content area is titled 'Create endpoint' and shows the 'Endpoint type' section with two radio button options: 'Source endpoint' (selected) and 'Target endpoint'. Below these options is a checkbox for 'Select RDS DB instance'.

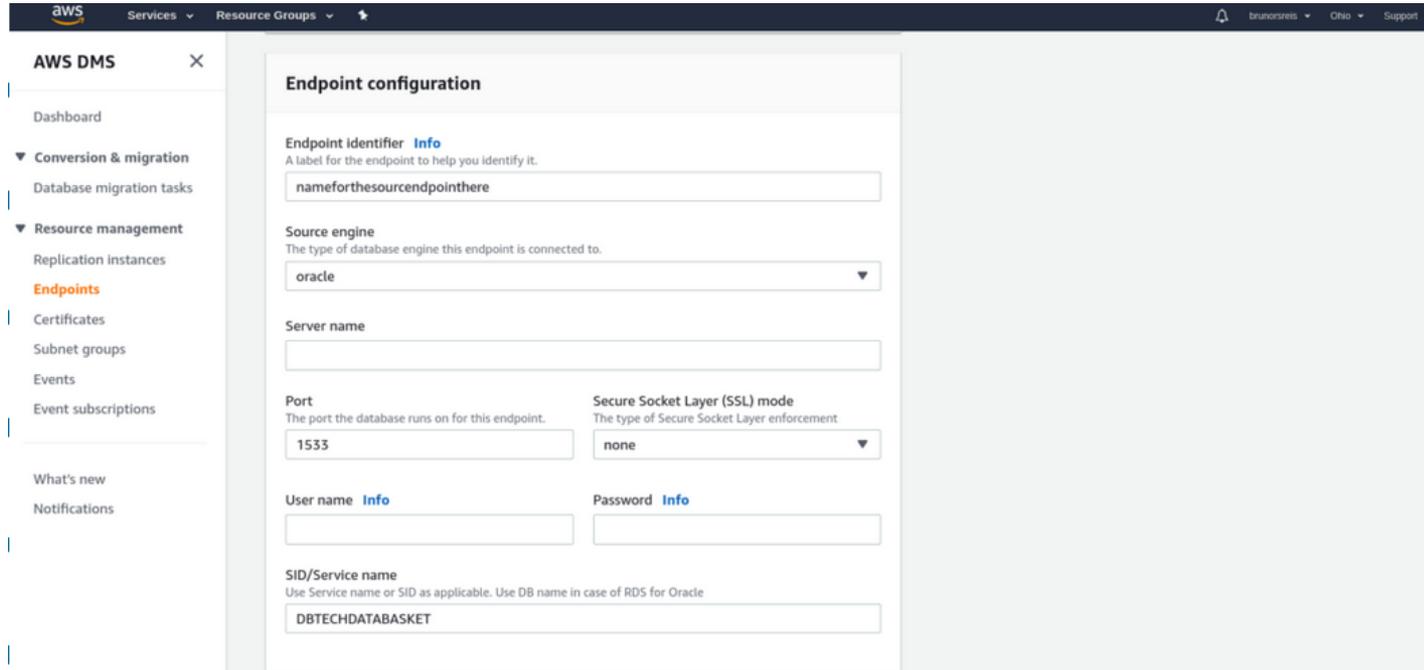
**Endpoint type** [Info](#)

- 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 source.

**Select RDS DB instance**

# How to create a task at DMS and start your migration?

## — Source Endpoint:

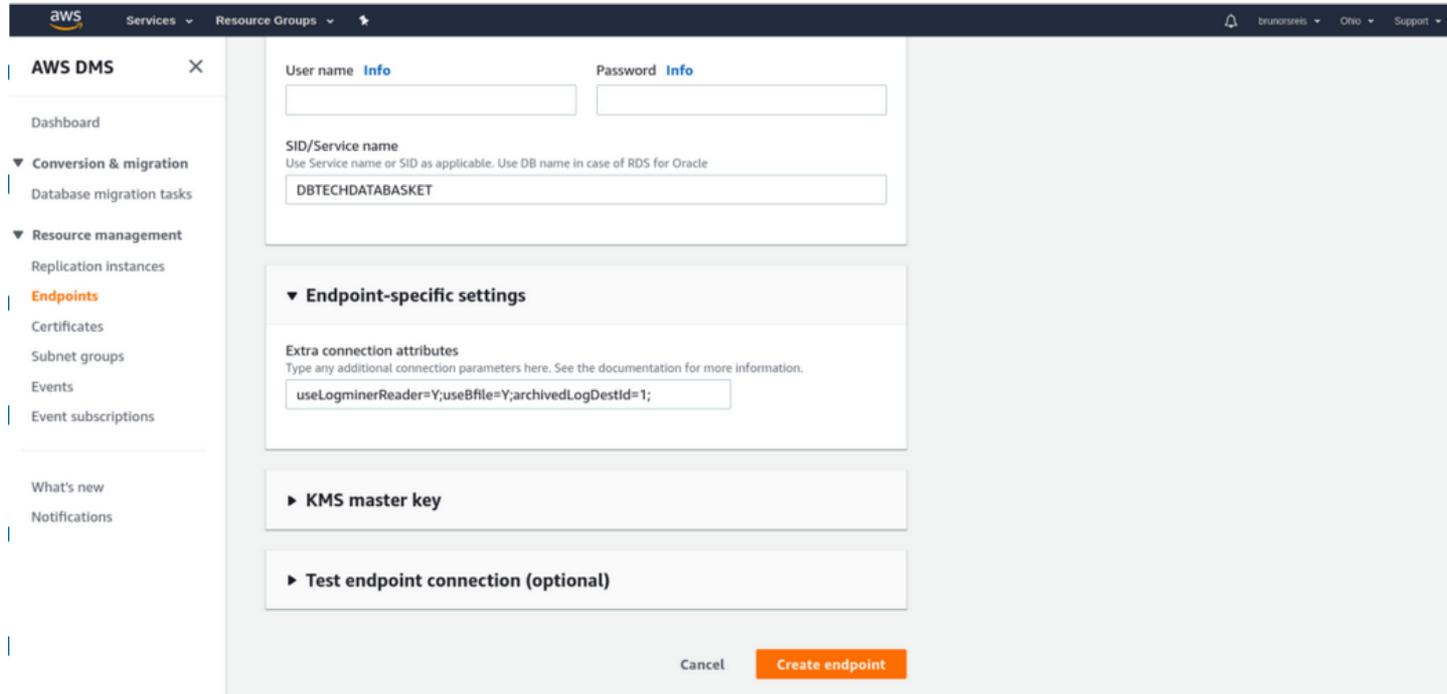


The screenshot displays the AWS DMS console interface. On the left, a navigation sidebar lists various DMS components, with 'Endpoints' highlighted in orange. The main content area is titled 'Endpoint configuration' and contains the following fields:

- Endpoint Identifier** (Info): A text input field containing 'nameforthesourcendpointhere'. Below it, a note states: 'A label for the endpoint to help you identify it.'
- Source engine**: A dropdown menu with 'oracle' selected. Below it, a note states: 'The type of database engine this endpoint is connected to.'
- Server name**: An empty text input field.
- Port**: A text input field containing '1533'. Below it, a note states: 'The port the database runs on for this endpoint.'
- Secure Socket Layer (SSL) mode**: A dropdown menu with 'none' selected. Below it, a note states: 'The type of Secure Socket Layer enforcement.'
- User name** (Info): An empty text input field.
- Password** (Info): An empty text input field.
- SID/Service name**: A text input field containing 'DBTECHDATABASKET'. Below it, a note states: 'Use Service name or SID as applicable. Use DB name in case of RDS for Oracle.'

# How to create a task at DMS and start your migration?

## — Source Endpoint:



The screenshot shows the AWS DMS console interface for creating a source endpoint. The left sidebar contains navigation options: Dashboard, Conversion & migration (Database migration tasks), Resource management (Replication instances, Endpoints, Certificates, Subnet groups, Events, Event subscriptions), What's new, and Notifications. The main content area is titled 'AWS DMS' and contains the following fields and sections:

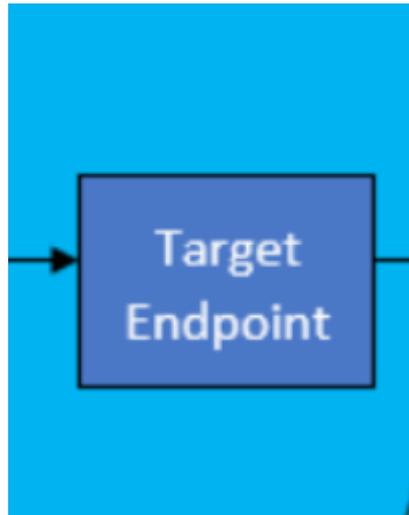
- User name:** A text input field with an 'Info' link.
- Password:** A text input field with an 'Info' link.
- SID/Service name:** A text input field with the value 'DBTECHDATABASKET' and a note: 'Use Service name or SID as applicable. Use DB name in case of RDS for Oracle.'
- Endpoint-specific settings:**
  - Extra connection attributes:** A text input field with the value 'useLogminerReader=Y;useBfile=Y;archivedLogDestId=1;'. A note above it says: 'Type any additional connection parameters here. See the documentation for more information.'
- KMS master key:** A section with a right-pointing arrow.
- Test endpoint connection (optional):** A section with a right-pointing arrow.

At the bottom of the form, there are two buttons: 'Cancel' and 'Create endpoint'.

# How to create a task at DMS and start your migration?

## – Target Endpoint:

Then to create the 2 endpoints you have to go through these steps “Services” -> “AWS DMS” -> “Resource management” -> Endpoints-> button “Create endpoint”.



# How to create a task at DMS and start your migration?

## — Target Endpoint:

The screenshot displays the AWS Management Console interface for creating a DMS endpoint. The top navigation bar includes the AWS logo, 'Services', 'Resource Groups', and user information. The left sidebar shows the 'AWS DMS' navigation menu with options like 'Dashboard', 'Conversion & migration', and 'Resource management'. The main content area is titled 'Create endpoint' and shows the 'Endpoint type' section with two radio buttons: 'Source endpoint' and 'Target endpoint'. The 'Target endpoint' option is selected. Below this, there is a checked checkbox for 'Select RDS DB Instance' and a dropdown menu for 'RDS Instance'.

aws Services Resource Groups

brunorsreis Ohio Support

AWS DMS

Dashboard

Conversion & migration Database migration tasks

Resource management Replication instances Endpoints Certificates Subnet groups Events Event subscriptions

DMS > Endpoints > Create endpoint

### Create endpoint

**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.

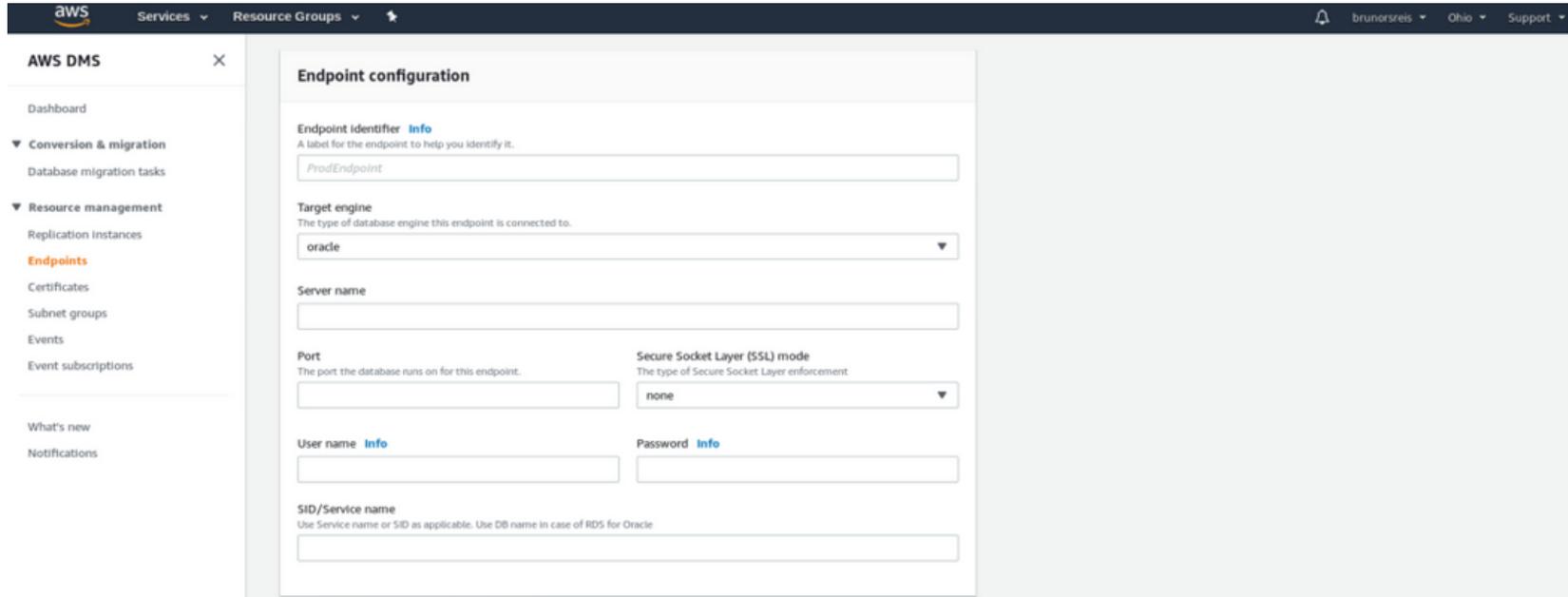
Target endpoint  
A target endpoint allows AWS DMS to write data to a database, or to other data source.

Select RDS DB Instance

RDS Instance  
Instances available only for current user and region

# How to create a task at DMS and start your migration?

## — Target Endpoint:



The screenshot displays the AWS DMS console interface. On the left is a navigation sidebar with the following items: Dashboard, Conversion & migration (with sub-item Database migration tasks), Resource management (with sub-items Replication instances, Endpoints, Certificates, Subnet groups, Events, and Event subscriptions), What's new, and Notifications. The main content area is titled 'Endpoint configuration' and contains the following fields:

- Endpoint identifier** [Info](#): A label for the endpoint to help you identify it. Input field contains 'ProdEndpoint'.
- Target engine**: The type of database engine this endpoint is connected to. Dropdown menu is set to 'oracle'.
- Server name**: Input field.
- Port**: The port the database runs on for this endpoint. Input field.
- Secure Socket Layer (SSL) mode**: The type of Secure Socket Layer enforcement. Dropdown menu is set to 'none'.
- User name** [Info](#): Input field.
- Password** [Info](#): Input field.
- SID/Service name**: Use Service name or SID as applicable. Use DB name in case of RDS for Oracle. Input field.

# How to create a task at DMS and start your migration?

## — Target Endpoint:

The screenshot shows the AWS DMS console interface. On the left is a navigation sidebar with options like Dashboard, Conversion & migration, Resource management, and What's new. The main content area is titled 'AWS DMS' and contains several sections: 'Endpoint-specific settings' with a text input for 'Extra connection attributes', 'KMS master key' with a dropdown arrow, and 'Test endpoint connection (optional)'. The 'Test endpoint connection' section includes a text box with instructions, a 'VPC' dropdown menu (currently showing 'vpc-11cb237a'), a 'Replication instance' dropdown menu (currently showing 'Choose a replication instance'), and a 'Run test' button. Below the button is a small note: 'After clicking "Run test", an endpoint will be created with the details provided and attempt to connect to the instance. If the connection fails, you can edit and test it again. Endpoints that aren't saved will be deleted.'

# How to create a task at DMS and start your migration?

## — Endpoints:

DMS > Endpoints

Endpoints (2)

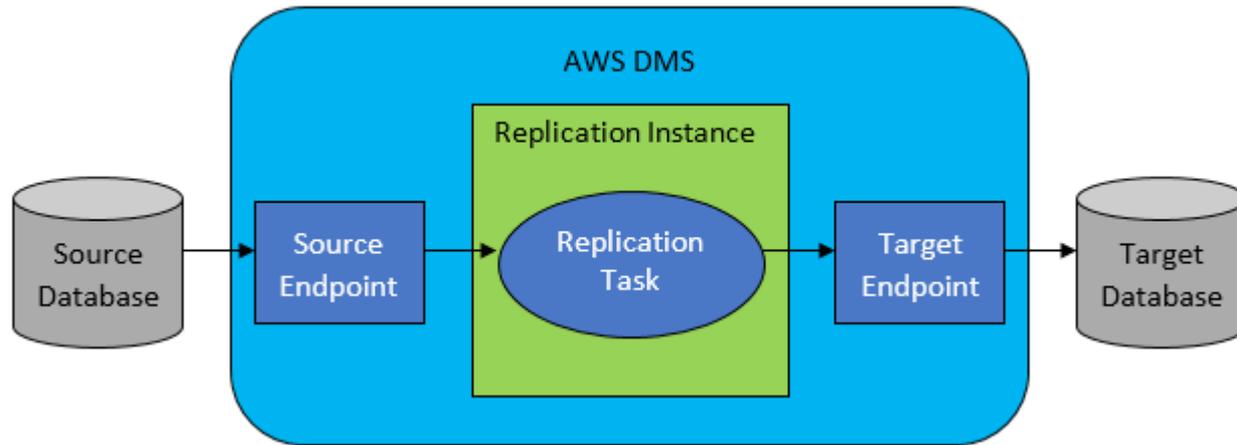
Find endpoint

Actions Create endpoint

<input type="checkbox"/>	Name	Type	Status	Engine	Server name	Port	Migration Hub Mapping	ARN
<input type="checkbox"/>	Nametarget	Target	Active	Oracle	ServerAmazonname	Portx		IDEndpointTarget
<input type="checkbox"/>	Namesource	Source	Active	Oracle	IPfromYourSource	Porty		IDEndpointSource

# How to create a task at DMS and start your migration?

- Now that we have both the Source and Target Endpoints, the replication instance and both target and source databases configured is time to create the DMS task.



# How to create a task at DMS and start your migration?

- **AWS DMS -> Conversion & migration -> Database migration tasks -> Button “Create Task”.**

The screenshot displays the AWS DMS console interface. The left-hand navigation pane shows the 'AWS DMS' header and a list of menu items: 'Dashboard', 'Conversion & migration' (expanded), 'Database migration tasks' (highlighted), 'Resource management', 'Replication instances', 'Endpoints', 'Certificates', 'Subnet groups', 'Events', 'Event subscriptions', 'What's new', and 'Notifications'. The main content area is titled 'Create database migration task' and contains a 'Task configuration' section with the following fields:

- Task identifier:** A text input field with the placeholder text 'Type a unique identifier for the task'.
- Replication instance:** A dropdown menu with the placeholder text 'Choose a replication instance'.
- Source database endpoint:** A dropdown menu with the placeholder text 'Choose a source database endpoint'.
- Target database endpoint:** A dropdown menu with the placeholder text 'Choose a target database endpoint'.
- Migration type:** A dropdown menu with an 'Info' link. The options are: 'Migrate existing data' (highlighted), 'Migrate existing data and replicate ongoing changes', and 'Replicate data changes only'.

# How to create a task at DMS and start your migration?

- **AWS DMS -> Conversion & migration -> Database migration tasks -> Button “Create Task”.**

## Task settings

CDC stop mode [Info](#)

- Don't use custom CDC stop mode
- Specify server stop time
- Specify commit stop time
  
- Create recovery table on target DB

# How to create a task at DMS and start your migration?

- **AWS DMS -> Conversion & migration -> Database migration tasks -> Button “Create Task”.**

## Task settings

Target table preparation mode [Info](#)

- Do nothing
- Drop tables on target
- Truncate

# How to create a task at DMS and start your migration?

– **AWS DMS -> Conversion & migration -> Database migration tasks -> Button “Create Task”.**

Stop task after full load completes [Info](#)

- Don't stop
- Stop before applying cached changes
- Stop after applying cached changes

# How to create a task at DMS and start your migration?

— AWS DMS -> Conversion & migration -> Database migration tasks -> Button “Create Task”.

If you have XMLTYPE data type DMS has a limitation and it won't work with “Full LOB mode” and your task will fail with the following error “ORA-24318: call not allowed for scalar data types”.

Include LOB columns in replication [Info](#)

- Don't include LOB columns
- Full LOB mode
- Limited LOB mode

Maximum LOB size (KB) [Info](#)



# How to create a task at DMS and start your migration?

- **AWS DMS -> Conversion & migration -> Database migration tasks -> Button “Create Task”.**

▼ Table mappings

Editing mode

Guided UI  
Set up your table mapping rules using a step-by-step guided interface.

JSON editor [Learn more](#)   
Enter your table mapping rules directly, in JSON format.

# How to create a task at DMS and start your migration?

— **AWS DMS -> Conversion & migration -> Database migration tasks -> Button “Create Task”.**  
**JSON EDITOR: Example of migration the user BRUNORSTECH to other user with the same name in the Target database:**

```
1  {
2  "rules": [
3  {
4  "rule-type": "transformation",
5  "rule-id": "1",
6  "rule-name": "1",
7  "rule-target": "schema",
8  "object-locator": {
9  "schema-name": "BRUNORSTECH",
10 "table-name": "%"
11 },
12 "rule-action": "rename",
13 "value": "BRUNORSTECH",
14 "old-value": null
15 },
16 {
17 "rule-type": "selection",
18 "rule-id": "2",
19 "rule-name": "2",
20 "object-locator": {
21 "schema-name": "BRUNORSTECH",
22 "table-name": "%"
23 },
24 "rule-action": "include",
25 "filters": []
26 }
27 ]
28 }
```

# How to create a task at DMS and start your migration?

— **AWS DMS -> Conversion & migration -> Database migration tasks -> Button “Create Task”.**  
**Guided UI: Example of migration the user BRUNORSTECH to other user with the same name in the Target database:**

Editing mode

<input checked="" type="radio"/> <b>Guided UI</b> Set up your table mapping rules using a step-by-step guided interface.	<input type="radio"/> <b>JSON editor</b> <a href="#">Learn more</a>  Enter your table mapping rules 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.

# How to create a task at DMS and start your migration?

— **AWS DMS -> Conversion & migration -> Database migration tasks -> Button “Create Task”.**  
**Guided UI: Example of migration the user BRUNORSTECH to other user with the same name in the Target database:**

▼ Selection rules

Choose the schema and/or tables you want to include with, or exclude from, your migration task. [Info](#)

▼ where **schema name** is like 'SSS\_SCHEMA' and **table name** is like '%', include

Schema

Schema name  
Use the % character as a wildcard

Table name  
Use the % character as a wildcard

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

# How to create a task at DMS and start your migration?

— **AWS DMS -> Conversion & migration -> Database migration tasks -> Button “Create Task”.**  
**Guided UI: Example of migration the user BRUNORSTECH to other user with the same name in the Target database:**

▼ Transformation rules

You can use transformation rules to change or transform schema, table or column names of some or all of the selected objects. [Info](#)

▼ where **schema name** is like 'SSS\_SCHEMA' and **table name** is like '%', rename

Target

Schema

Schema name

Enter a schema

Schema name

Use the % character as a wildcard

BRUNORSTECH

Action

Rename to

# How to create a task at DMS and start your migration?

- **AWS DMS -> Conversion & migration -> Database migration tasks -> Button “Create Task”. Additionally you can create a control table in the “Advanced task settings”:**

▼ Advanced task settings

**Control table settings**

Create control table in target using schema [Info](#)

History timeslot (minutes) [Info](#)

Enable control table	Name in target	Enable
Apply exceptions	awsdms_apply_exceptions	<input checked="" type="checkbox"/>
Replication status	awsdms_status	<input type="checkbox"/>
Suspended tables	awsdms_suspended_tables	<input type="checkbox"/>
Replication history	awsdms_history	<input type="checkbox"/>

**Create control table in target using schema**

Specify the name of the schema on the target database where DMS can create its control tables. These can be deleted post replication.

# How to create a task at DMS and start your migration?

- **AWS DMS -> Conversion & migration -> Database migration tasks -> Button “Create Task”.**

**Full load tuning settings**

Maximum number of tables to load in parallel	Transaction consistency timeout (seconds)
<input type="text" value="8"/>	<input type="text" value="600"/>
Should be an integer range from 1 to 49	Should be an integer range from 0 to 2147483647

Commit rate during full load

Should be an integer range from 1 to 1000000000

Cancel **Create task**

# How to create a task at DMS and start your migration?

DMS > Database migration tasks

Database migration tasks (8)



Actions

Create

Find task

< 1 >

<input type="checkbox"/>	Name	Status	Source	Target	Type	Progress
<input type="checkbox"/>	NAMETASK01userBR01	<span>⊗ Failed</span>	SCREND	TGTEND	Full load, ongoing replication	12%
<input type="checkbox"/>	NAMETASK02userBR02	<span>⋯ Running</span>	SCREND	TGTEND	Full load, ongoing replication	92%
<input type="checkbox"/>	NAMETASK03userBR03	<span>✔ Load complete</span>	SCREND	TGTEND	Full load	100%
<input type="checkbox"/>	NAMETASK04userBR04	<span>⋯ Running with errors</span>	SCREND	TGTEND	Full load, ongoing replication	0%
<input type="checkbox"/>	NAMETASK05userBR05	<span>⋯ Load complete, replication ongoing</span>	SCREND	TGTEND	Full load, ongoing replication	100%
<input type="checkbox"/>	NAMETASK06userBR06	<span>⋯ Running with errors</span>	SCREND	TGTEND	Full load, ongoing replication	9%
<input type="checkbox"/>	NAMETASK07userBR07	<span>⊗ Failed</span>	SCREND	TGTEND	Ongoing replication	0%
<input type="checkbox"/>	NAMETASK08userBR08	<span>⊗ Error</span>	SCREND	TGTEND	Full load, ongoing replication	100%

# DMS limitation and my experience (Pros X Cons) to migrate your Oracle database On-prem to AWS RDS

— **49282892: 2019-11-17T13:27:49:574556 [SOURCE\_CAPTURE ]D: Get archived REDO log with sequence 104086 for the first SCN in thread 1 (oracdc\_reader.c:304)**

```
techdatabasket>rman
Recovery Manager: Release 12.1.0.2.0 - Production on Mon Dec 2 07:44:48 2019
Copyright (c) 1982, 2014, Oracle and/or its affiliates. All rights reserved.

RMAN> connect target /
connected to target database: TECHDATABASKET (DBID=73732538271)

RMAN> connect catalog catalog <user>/<password>@<string>

RMAN> run
{
allocate channel ch1 type 'sbt_tape' PARS="SBT_LIBRARY=/opt/cvlt/simpana/Base64/libobk.so, BLKSIZE=1048576 ENV=(CV_mmsApiVsn=2,CV_channelPar=ch1,ThreadCommandLine= -cn techdb| -vm
InstanceTechDATAbasket001)";
restore archivelog from logseq=106471 until logseq=107235;
release channel ch1;
};
```

# DMS limitation and my experience (Pros X Cons) to migrate your Oracle database On-prem to AWS RDS

- **Enable constraint**



# DMS limitation and my experience (Pros X Cons) to migrate your Oracle database On-prem to AWS RDS



**“AWS DMS doesn’t support the Use direct path full load option for tables with INDEXTYPE CONTEXT. As a workaround, you can use array load. “**

- **DMS does not support XMLTYPE and some issues to migrate CLOB, BLOB tables when these tables don’t have a primary key.**
- **I found only a few posts and articles on how to migrate an Oracle On-Prem to AWS RDS**

# DMS limitation and my experience (Pros X Cons) to migrate your Oracle database On-prem to AWS RDS



- **Full knowledge of all database data types**
- **Many manual procedures**
- **You can't resize Smallfile datafiles**
- **Amazon's commands to check archive area, log files and so on.**

# DMS limitation and my experience (Pros X Cons) to migrate your Oracle database On-prem to AWS RDS



- Amazon's RDS database has the SYSDBA user removed, and has replaced it with their RDSADMIN user
- DMS will only push Table DDL and PK , all other additional objects may be created either before the CDC part , for instance indexes, or after the whole operation."
- Oracle Open World Keynote 2019: I was in San Francisco and I attended the Keynote this year and besides of my consideration above, Larry Elisson has done a lot more of comparison between running your Oracle Database at AWS or at Gen 2 Cloud Autonomous Infrastructure. Check out the video of the KeyNote: <https://www.youtube.com/watch?v=llgGrDQb2OQ>

# DMS limitation and my experience (Pros X Cons) to migrate your Oracle database On-prem to AWS RDS using DMS



- **Very good support from Amazon**
- **Amazon RDS Multi-AZ Deployments**
- **RDS is managed by AWS and it performs a lot of tasks that a DBA would perform in the daily-basis as Backup/Recovery, Multi-AZ in case of failures, Upgrades, Patching, both alerts and monitoring provided by CloudWatch and also maintenance in the hosts.**
- **You can use AWS Schema Conversion Tool**
- **IO Benchmarking**
- **Support to Open Source database as PostgreSQL and other databases as MySQL and SQL Server.**

# DMS limitation and my experience (Pros X Cons) to migrate your Oracle database On-prem to AWS RDS

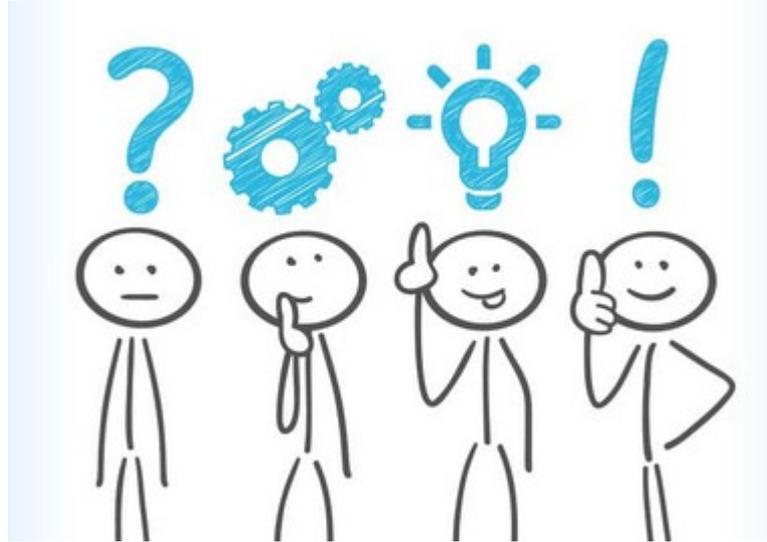


## — Will Amazon RDS for Oracle be supported?

**BYOL:** Under this model, you will continue to use your active Oracle support account and contact Oracle directly for Oracle Database specific service requests. If you have an active AWS Premium Support account, you can contact AWS Premium Support for Amazon RDS specific issues. Amazon Web Services and Oracle have multi-vendor support process for cases which require assistance from both organizations.

**License Included:** In this model, if you have an active AWS Premium Support account, you should contact AWS Premium Support for both Amazon RDS and Oracle Database specific service requests.

# QUESTIONS?



- Twitter :  [www.twitter.com/brunorsdba](https://www.twitter.com/brunorsdba)
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# References:

- **Common DBA Tasks for Oracle DB Instances**  
(<https://docs.aws.amazon.com/AmazonRDS/latest/UserGuide/Appendix.Oracle.CommonDBATasks.html>)
- **Creating and Sizing Tablespaces**  
(<https://docs.aws.amazon.com/AmazonRDS/latest/UserGuide/Appendix.Oracle.CommonDBATasks.Database.html#Appendix.Oracle.CommonDBATasks.CreatingTablespacesAndDatafiles>)
- **Connecting to a DB Instance Running the Oracle Database Engine**  
([https://docs.aws.amazon.com/AmazonRDS/latest/UserGuide/USER\\_ConnectToOracleInstance.html](https://docs.aws.amazon.com/AmazonRDS/latest/UserGuide/USER_ConnectToOracleInstance.html))
- **Using an Oracle Database as a Target for AWS Database Migration Service**  
([https://docs.aws.amazon.com/dms/latest/userguide/CHAP\\_Target.Oracle.html](https://docs.aws.amazon.com/dms/latest/userguide/CHAP_Target.Oracle.html))
- **Working with an AWS DMS Replication Instance**  
([https://docs.aws.amazon.com/dms/latest/userguide/CHAP\\_ReplicationInstance.html](https://docs.aws.amazon.com/dms/latest/userguide/CHAP_ReplicationInstance.html))
- **Working with AWS DMS Endpoints** ([https://docs.aws.amazon.com/dms/latest/userguide/CHAP\\_Endpoints.html](https://docs.aws.amazon.com/dms/latest/userguide/CHAP_Endpoints.html))
- **Working with AWS DMS Tasks**  
([https://docs.aws.amazon.com/dms/latest/userguide/CHAP\\_Tasks.html](https://docs.aws.amazon.com/dms/latest/userguide/CHAP_Tasks.html))
- **Creating a Task** ([https://docs.aws.amazon.com/dms/latest/userguide/CHAP\\_Tasks.Creating.html](https://docs.aws.amazon.com/dms/latest/userguide/CHAP_Tasks.Creating.html))
- **Using Table Mapping to Specify Task Settings**  
([https://docs.aws.amazon.com/dms/latest/userguide/CHAP\\_Tasks.CustomizingTasks.TableMapping.html](https://docs.aws.amazon.com/dms/latest/userguide/CHAP_Tasks.CustomizingTasks.TableMapping.html))
- **Using an Oracle Database as a Target for AWS Database Migration Service**  
([https://docs.aws.amazon.com/dms/latest/userguide/CHAP\\_Target.Oracle.html](https://docs.aws.amazon.com/dms/latest/userguide/CHAP_Target.Oracle.html))
- **Amazon RDS Multi-AZ Deployments** (<https://aws.amazon.com/rds/details/multi-az/>)

# References:

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([https://docs.aws.amazon.com/dms/latest/userguide/CHAP\\_BestPractices.html](https://docs.aws.amazon.com/dms/latest/userguide/CHAP_BestPractices.html))
- **Data Types for AWS Database Migration Service**  
([https://docs.aws.amazon.com/dms/latest/userguide/CHAP\\_Reference.DataTypes.html](https://docs.aws.amazon.com/dms/latest/userguide/CHAP_Reference.DataTypes.html))
- **Oracle FAQ** (<https://aws.amazon.com/oracle/faq/>)