



Use AWS DMS to migrate data to AWS or Azure PostgreSQL databases

As outlined in [Migration tools](#), the *AWS Schema Conversion Tool* (SCT), and the *AWS Database Migration Service* (DMS) are tools you will find useful when migrating your database to *either* Cloud used by BNZ (Azure, or AWS).

We used SCT to convert our **database structure** in the [convert database objects with SCT example](#). The example *Target* database was on Azure, but you can adapt that procedure by choosing an AWS hosted Relational Database System (RDS) instead, such as the one we will be using below.

In this example, we will use DMS to migrate the **data** from our on-premises database, to an AWS RDS. So, our **Source** DB2 LUW database is on an on-premises Windows Server. Our **Target** database is an AWS PostgreSQL database.

You can adapt this procedure to migrate your particular database' data to PostgreSQL AWS databases. The differences are merely the choice of a different *Target* database



[DMS](#) is used inside your AWS portal. You will need an AWS login and account to use it.

Pre-requisites

IAM Roles

The following [IAM roles](#) are required for DMS to function when you launch DMS Service Catalog item.

- dms-vpc-role

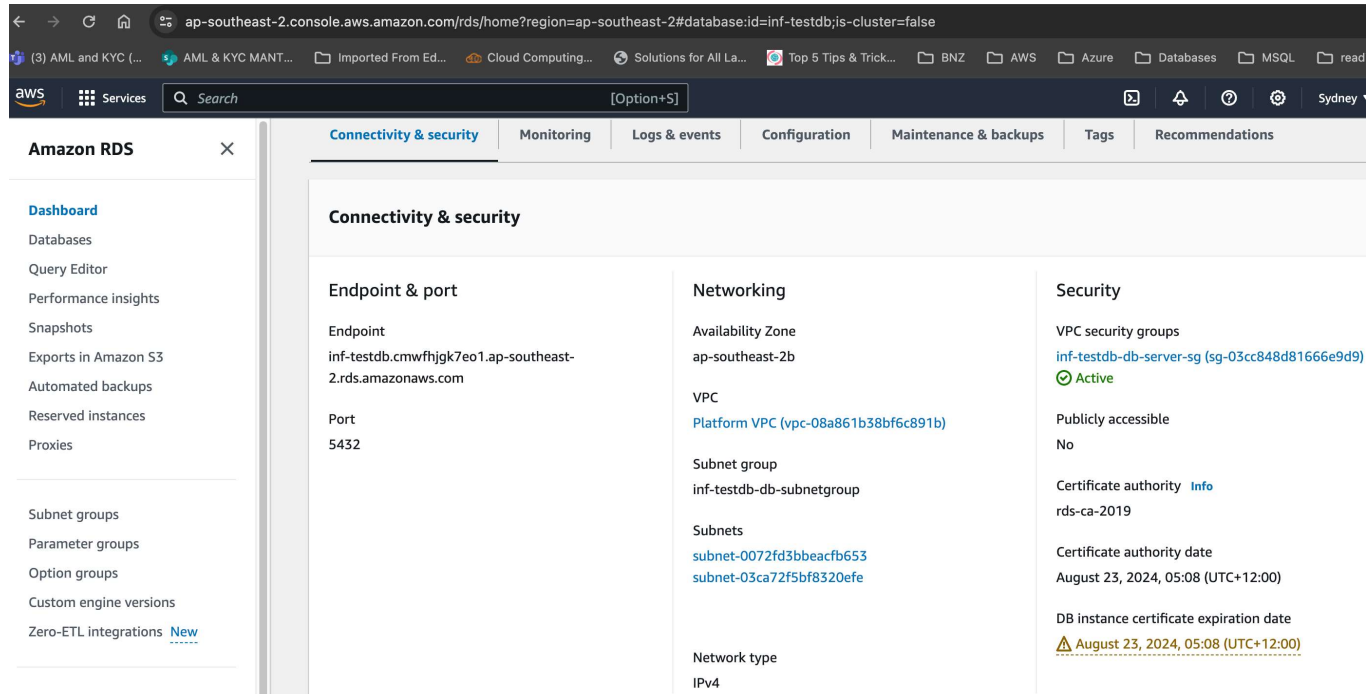
- Service: dms.ap-southeast-2.amazonaws.com
- Permissions:
 - BNZ-Account-Policy
 - BNZ-CMK-Usage-RDS
- Permissions boundary
 - BNZ-Account-Policy
- dms-cloudwatch-logs-role
 - Service: dms.ap-southeast-2.amazonaws.com
 - Permissions:
 - BNZ-Account-Policy
 - BNZ-CMK-Usage-RDS
 - Permissions boundary
 - BNZ-Account-Policy

You may create these via AWS Console or your approved pipelines.

These IAM roles are to be created ONLY ONCE, no matter number of DMS provisioned products that you are intent to launch.

Step 1. Ensure you have already set up your environment and accesses

- Our example *target* database is our test AWS PostgreSQL database, inf-testdb



Step 2. The procedure create the DMS instance via AWS Service Catalog

The following table describes the various configuration options available to DMS consumers

Service Catalog item configurations

Configuration Option	Allowed Values	Default Value	Description
Provisioned product name	Alphanumeric string, space is not allowed	Auto generated	Name of the database migration service instance
Product version	Select the latest version		The version number the latest version

DMS Instance configurations

Configuration Option	Allowed Values	Default Value	Description
Replication Name	Alphanumeric string, space is not allowed		Name of the database migration service instance
Instance Class	Micro, Small, Medium, Large & XLarge		Size of the replication instance, recommended Small or Medium unless you have significant content in your source database to migrate.
Instance Class	Micro, Small, Medium, Large & XLarge		Size of the replication instance, recommended Small or Medium unless you have significant content in your source database to migrate.
High Availability	false or true		Unless you have a requirement for ongoing replication or long running replication, you may not need high availability here.

DMS Target Datasource configurations

Configuration Option	Allowed Values	Default Value	Description
Target Database	Alphanumeric string, space is not allowed		Please provide the database name for the target database.
Target Engine	DB2, Aurora, Aurora-PostgreSQL, DynamoDB, MySQL, Oracle, PostgreSQL and SQLServer		Please provide the database engine for the target database.

Configuration Option	Allowed Values	Default Value	Description
Target Host	BNZ's Private IP address, must be within RFC1918 range.		Please provide the database IP address for the target database. (Please note this must be an IP address, not the DNS)
Target Port	Valid target database port		Please provide the database port for the target database.
Source Schema	Valid schema name in the target database		Please provide the database name for the target database schema.
Target Username	Valid username in the target database		Please provide the database username for the target database.
Target Password	Valid password in the target database		Please provide the database password for the target database.

Step 3. Run migration task

<input type="checkbox"/>	Identifier	Status	Progress	Type	Source	Target	Replication instance
<input type="checkbox"/>	db2-luw-onprem-to-aws-postgresql	🕒 Ready	0%	Full load	db2lnfd	inf-testdb-test	db2-on-prem-to-aws
<input type="checkbox"/>	db2-luw-onprem-to-azure-postgresql	✅ Load complete	100%	Full load	db2lnfd	azdms	db2-on-prem-to-azure
<input type="checkbox"/>	db2-rds-schema-infoapp	✅ Load complete	100%	Full load	db2lnfd	inf-testdb-test	db2-to-pg

- Now run the task. You can tick it and run it from the database migration tasks list, or from within your Database migration task. In both cases, you click on the **Actions** button to expand it, then click on **Restart/Resume** to run it.

Method 1: run from the Database migration tasks list

Recommendations [New](#)

▼ Convert and migrate

Migration projects [New](#)

Instance profiles [New](#)

Data providers [New](#)

▼ Migrate data

Replication instances

Endpoints

Database migration tasks

Database migration tasks (1/10)

	Identifier	Status	Progress	Type	Source	Target	Repli	
<input checked="" type="checkbox"/>	db2-luw-onprem-to-aws-postgresql	Ready	0%	Full load	db2lnfd	inf-testdb-test	db2-	
<input type="checkbox"/>	db2-luw-onprem-to-azure-postgresql	Load complete	100%	Full load	db2lnfd	azdms	db2-	023 at
<input type="checkbox"/>	db2-rds-schema-infoapp	Load complete	100%	Full load	db2lnfd	inf-testdb-test	db2-to-pg	November 9, 2023 at
<input type="checkbox"/>	db2-to-azure-db-constraints	Load complete	100%	Full load	db2lnfd	azdms	db2-to-pg	November 10, 2023 i

Actions

Quick view and comp

Create premigration assessment

Modify

Move

Restart/Resume

Stop

Delete

Method 2: run from inside the open Database migration task

aws

Services

Search

[Option+S]

Sydney

Lz-407796471231-AccountOwner/691478 @ cloud

AWS DMS

Dashboard

▼ Discover

Data collectors

Inventory

▼ Assess

Recommendations [New](#)

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Replication instances

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Database migration tasks

DMS > Database migration tasks > db2-luw-onprem-to-aws-postgresql

db2-luw-onprem-to-aws-postgresql

Summary

Status Ready

Type Full load

Source db2lnfd

Overview details

Table statistics

CloudWatch metrics

Mapping rules

Premigration assessments

Tags

Overview details

Basic configuration

Task ARN

am:aws:dms:ap-southeast-2:407796471231:task:BEJYH6UVIMGDPQYPQWGOSZ6ZATP3QM2TKBQSHOQ

Replication Instance

db2-on-prem-to-aws

Database migration task (DB2 to AWS PostgreSQL) is starting now:

	Identifier	Status	Progress	Type	Source	Target	Replication instance	Started
<input checked="" type="checkbox"/>	db2-luw-onprem-to-aws-postgresql	Starting	0%	Full load	db2lnfd	inf-testdb-test	db2-on-prem-to-aws	December 11, 2023 at 14:45:45 (UTC+13:00)

...and now running:

<input checked="" type="checkbox"/>	db2-luw-onprem-to-aws-postgresql	Running	89%	Full load	db2lnfd	inf-testdb-test	db2-on-prem-to-aws	December 11, 2023 at 14:45:45 (UTC+13:00)
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..and now load complete:

<input checked="" type="checkbox"/>	db2-luw-onprem-to-aws-postgresql	Load complete	100%	Full load	db2lnfd	inf-testdb-test	db2-on-prem-to-aws	December 11, 2023 at 14:45:45 (UTC+13:00)
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Check the run statistics are as expected:

- Click on the **Table statistics** tab to see what data was transferred. Scroll to the right to see the rows loaded, otherwise you see a whole lot of zeroes and wonder if anything actually happened.

▼ Assess

Recommendations [New](#)

▼ Convert and migrate

Migration projects [New](#)

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Database migration tasks

Serverless replications

Certificates

Subnet groups

Events

Event subscriptions

Overview details

Table statistics

CloudWatch metrics

Mapping rules

Premigration as

Table statistics (6)

Total rows include loaded source table rows from Inserts, Deletes, Updates, DDLs, and Full load rows.

<input type="checkbox"/>	Schema name ▼	Table ▼	Load state ▼	Elapsed load time
<input type="checkbox"/>	MRPOWN	MRT_UT_FUNDS_WRK	Table completed	1 s
<input type="checkbox"/>	MRPOWN	MRT_IP_RNGE_CNTRY_WRK	Table completed	2 s
<input type="checkbox"/>	MRPOWN	MRT_BANK_BRANCH_WRK	Table completed	1 s
<input type="checkbox"/>	MRPOWN	MRT_FX_INTEREST_DEP_WRK	Table completed	2 s
<input type="checkbox"/>	MRPOWN	MRT_FX_INTEREST_WRK	Table completed	3 s
<input type="checkbox"/>	MRPOWN	MRT_FL_FUNDS_WRK	Table completed	2 s

After scrolling to the right, here are the rows of data loaded:

Full load rows ▼	Total rows ▼
0	0
0	0
0	0
54	54
8	8
11	11

- Remember to click on Create task, to save your work

Cancel

Create task

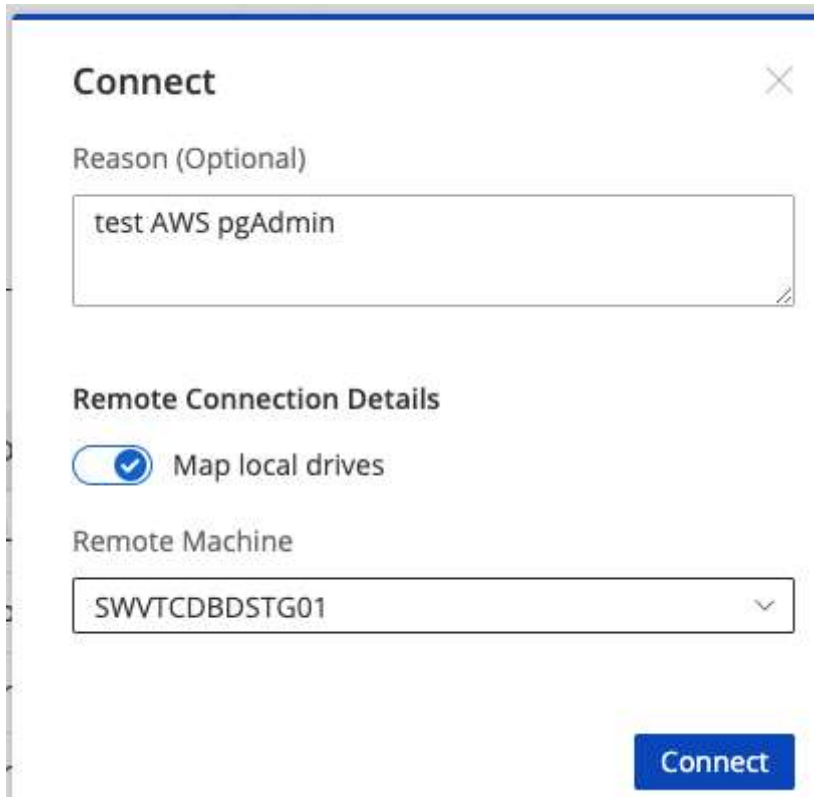
Step 5. Check the data on your *Target* database

You can carry out any further work on your *Target* database. Or, if you find errors or omissions following the migration, you can delete all or part of the migrated data, and modify your migration process. For

example, you can go back to your **DMS** Migration task and add more *transformation rules*. You may even want to go back to **SCT** (Schema Conversion Tool) again to carry out further changes to the Schema and tables.

- To administer our AWS PostgreSQL Db, we use pgadmin on the on-premises Windows Server, SWVTCDBDSTG01
- Open your admin Server from CyberArk, and then open pgAdmin (or your particular administration tool).

RDS Connection:



Connect [X]

Reason (Optional)

test AWS pgAdmin

Remote Connection Details

☒ Map local drives

Remote Machine

SWVTCDBDSTG01 [v]

Connect

- When the Remote Desktop opens, start pgAdmin from the Windows Start Menu
- Open your Database on the left Menu
- Check the data has come across

For a quick check, in the left hand menu, drill into your database, open your schema, select a

table, right-click, select **Count Rows**.



For more comprehensive checks you can run various SQL queries against your tables:

- In your admin tool, run your SQL to check the database has received the correct data

The screenshot shows a database query tool interface. At the top, there is a toolbar with icons for file operations, query execution, and settings. Below the toolbar, there are tabs for "Query" and "Query History". The "Query" tab is active, displaying a list of SQL queries. The first query is highlighted, showing a selection of data from several tables in the "mrpown" schema. Below the queries, there are tabs for "Data Output", "Messages", and "Notifications". The "Data Output" tab is active, displaying a table with 5 columns: "FLP_ID", "FLP_VALUE", "FLP_BUY", and "FLP_SELL". Each column has a data type and a precision/scale. The table contains 11 rows of data, with "FLP_ID" values ranging from 50 to 59. The "FLP_VALUE" column shows values like 3.0690, 1.1618, 1.8429, 3.0648, 1.4216, and 0.0000. The "FLP_BUY" and "FLP_SELL" columns show values like 3.0690, 1.1618, 1.8429, 3.0648, 1.4216, and 0.0000.

```

1 select * from mrpown.mrt_fx_interest_wrk
2 select * from mrpown.mrt_fl_funds_wrk
3 select * from mrt_bank_branch_wrk
4 --select * from mrpown.mrt_ip_rnge_cntry_wrk
5 --select * from mrpown.mrt_ut_funds_wrk
6 --select * from mrpown.mrt_fx_interest_dep_wrk
7

```

	FLP_ID [PK] numeric (2)	FLP_VALUE numeric (8,4)	FLP_BUY numeric (8,4)	FLP_SELL numeric (8,4)
1	50	3.0690	3.0690	3.0690
2	60	1.1618	1.1618	1.1618
3	55	1.8429	1.8429	1.8429
4	52	3.0648	3.0648	3.0648
5	51	1.4216	1.4216	1.4216
6	53	0.0000	0.0000	0.0000
7	54	0.0000	0.0000	0.0000
8	56	0.0000	0.0000	0.0000
9	57	0.0000	0.0000	0.0000
10	58	0.0000	0.0000	0.0000
11	59	0.0000	0.0000	0.0000

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