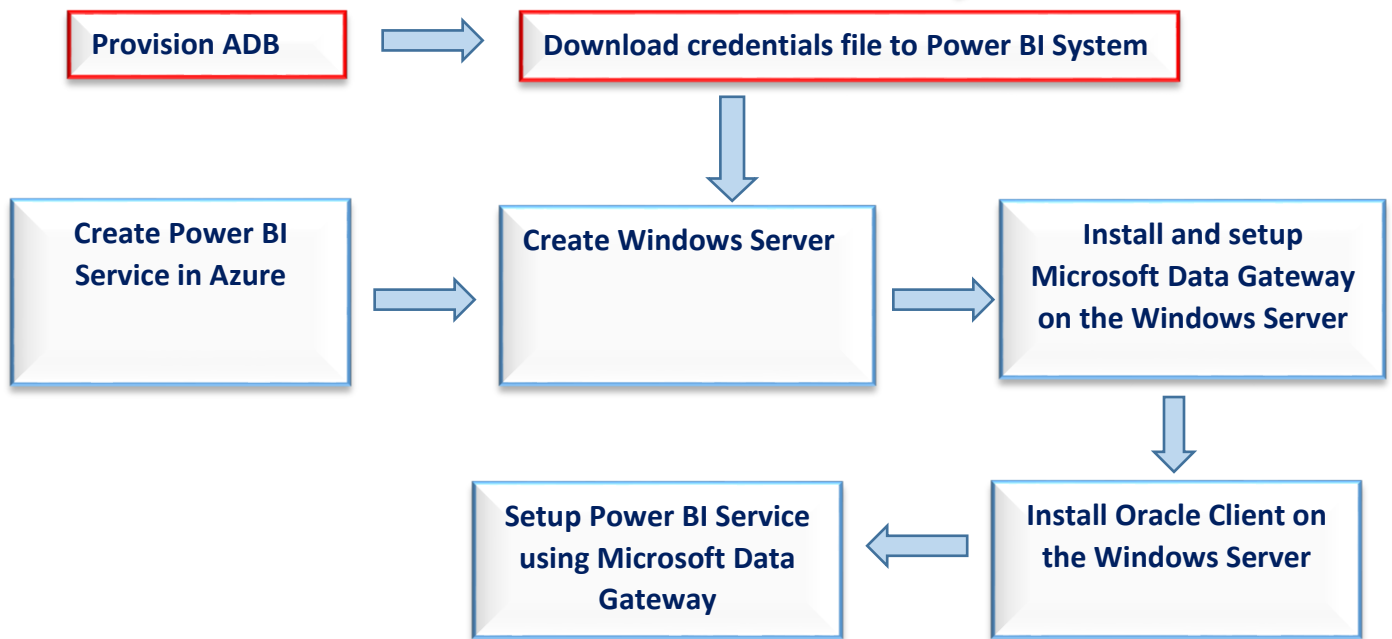# Connecting Microsoft Power BI Service to Oracle Autonomous Database using Microsoft Gateway

Pedro Torres

This step by step tutorial guides how to configure Microsoft Power BI cloud service (BI) connectivity to Oracle Autonomous Database (ADB) using Microsoft Gateway.

Architecture Diagram

Power BI service to connect to Oracle ADB using Microsoft Gateway

```
Provision ADB  ──►  Download credentials file to Power BI System
                                       │
                                       ▼
Create Power BI  ──►  Create Windows Server  ──►  Install and setup
Service in Azure                                  Microsoft Data Gateway
                                                  on the Windows Server
                                                         │
                                                         ▼
Setup Power BI Service  ◄──  Install Oracle Client on
using Microsoft Data          the Windows Server
Gateway
```

Pre-requisites

This document assumes that an ADB, such as Autonomous Data Warehouse (ADW) or Autonomous Transaction Processing (ATP), or Autonomous JSON Database (AJD) was provisioned and Power BI service is enabled and a Windows machine (local, in Azure, or OCI) have Data Gateway installed. The Windows machine is used to develop the Power BI app with Power BI Desktop. The app is then be deployed to the Power BI service.
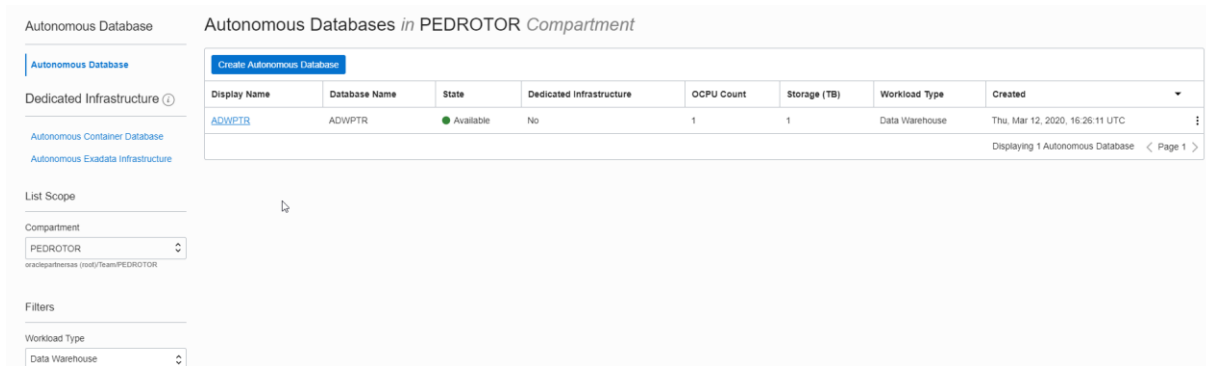
*Note: Please check here for the Oracle documentation to provision ADW.

Installation and Setup Steps

1. Download the corresponding Oracle ADB credentials zip file to the Windows machine. You will later deploy them and the app to the Power BI service. These credential files will be used to connect Power BI service to ADB.
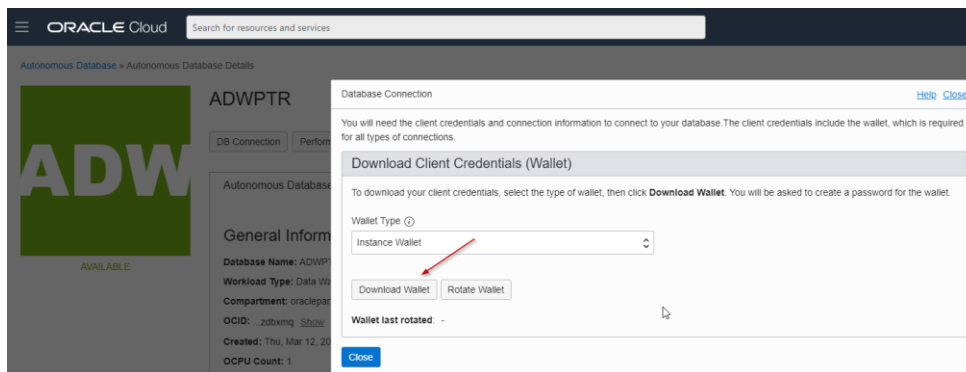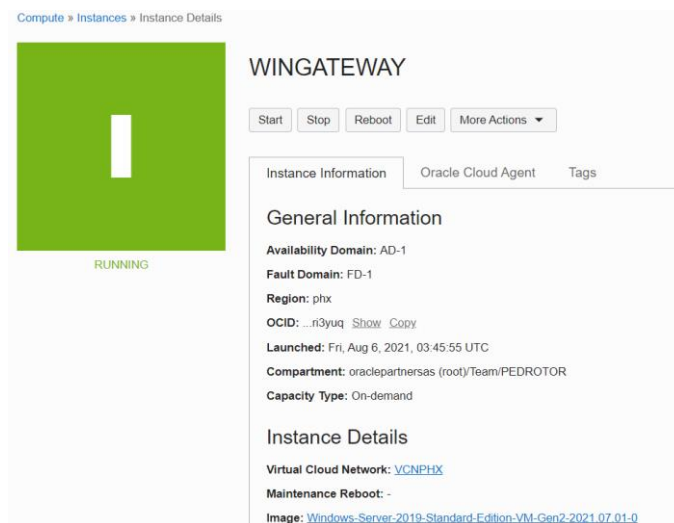

*Note: Also check Downloading Client Credentials (Wallets).

2. Create Power BI Service in Azure
    https://powerbi.microsoft.com/en-us/landing/signin/
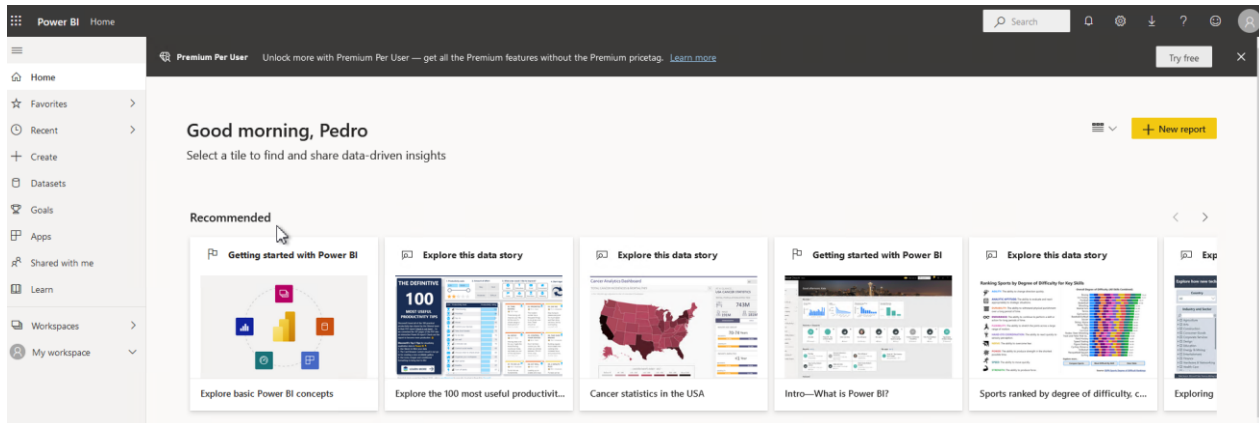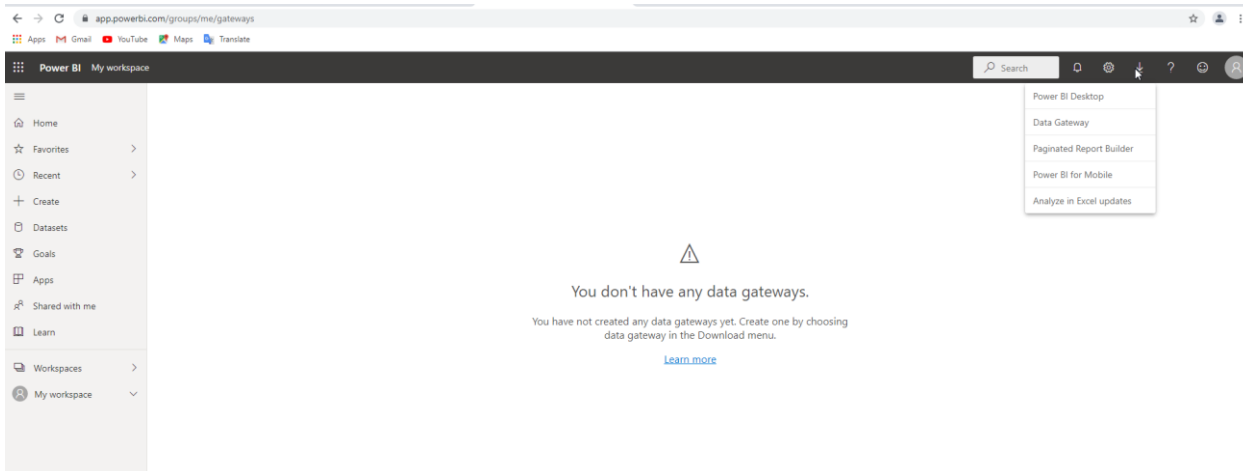

3. Create the Windows instance (In this case, it was created in Oracle Cloud Infrastructure (OCI), but you can create it on-premises too.)

4. Install Microsoft Data Gateway on the Windows server:
    -   Connect to the Power BI Service
    -   Select Data Gateway
    -   Download the software to install
    -   Install in the Windows Server

app.powerbi.com/groups/me/gateways

Apps   Gmail   YouTube   Maps   Translate

Power BI   My workspace

Search

Home
Favorites
Recent
Create
Datasets
Goals
Apps
Shared with me
Learn

Workspaces
My workspace

Power BI Desktop
Data Gateway
Paginated Report Builder
Power BI for Mobile
Analyze in Excel updates

⚠

You don't have any data gateways.

You have not created any data gateways yet. Create one by choosing
data gateway in the Download menu.

Learn more

? ✕

☁ **On-premises data gateway installation**

Getting ready to install the on-premises data gateway.

Please review minimum requirements for installing the On-premises data gateway. Not meeting these requirements may result in performance bottlenecks.

Install to

C:\Program Files\On-premises data gateway   ...

☑ I accept the terms of use and privacy statement .

? ✕

☁ **On-premises data gateway**

Almost done.

Installation was successful!

Email address to use with this gateway:

pedro.p.torres@oracle.com

Next, you need to sign in to register your gateway.

Sign in   Cancel

On-premises data gateway

? ✕

You are signed in as pedro.p.torres@oracle.com and are ready to register the gateway.

⦿ Register a new gateway on this computer.

○ Migrate, restore, or takeover an existing gateway.
  • Move a gateway to a new computer
  • Recover a damaged gateway
  • Take ownership of a gateway
  The old gateway will be disconnected.

[Next] [Cancel]

5. Register the Data Gateway

On-premises data gateway

? ✕

You are signed in as pedro.p.torres@oracle.com and are ready to register the gateway.

New on-premises data gateway name

gateway

☐ Add to an existing gateway cluster   Learn more

Recovery key (8 character minimum)

••••••••••••••••

ⓘ This key is needed to restore the gateway and can't be changed. Record it in a safe place.

Confirm recovery key

••••••••••••••••

We'll use this region to connect the gateway to cloud services: West US Change Region

Provide relay details By default, Azure Relays are automatically provisioned

[Configure] [Cancel]

6. Download Oracle Client (19c is the best recommendation) on the Windows instance.
   https://www.oracle.com/database/technologies/oracle19c-windows-downloads.html

7. Install Oracle Client on the Windows instance.
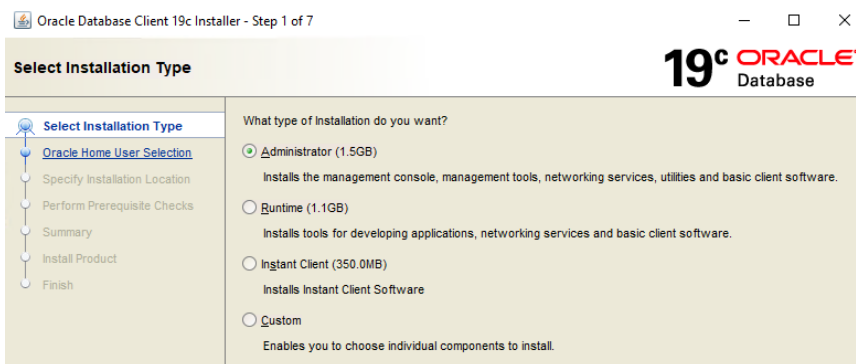
8. Open a Windows command prompt ***in administrator mode*.**
In the same command prompt **with administrator privileges,** navigate to the installation subdirectory, <installation directory>\ODP.NET\bin\4. Then, execute the following commands:

To configure unmanaged ODP.NET:

```
C:\app\client\opc\product\19.0.0\client_1\ODP.NET\bin\4>
```

C:\app\client\opc\product\19.0.0\client_1\ODP.NET\bin\4>OraProvCfg /action:gac /providerpath:"Oracle.DataAccess.dll"

C:\app\client\opc\product\19.0.0\client_1\ODP.NET\bin\4>OraProvCfg /action:config /product:odp /frameworkversion:v4.0.30319 /providerpath:"Oracle.DataAccess.dll"
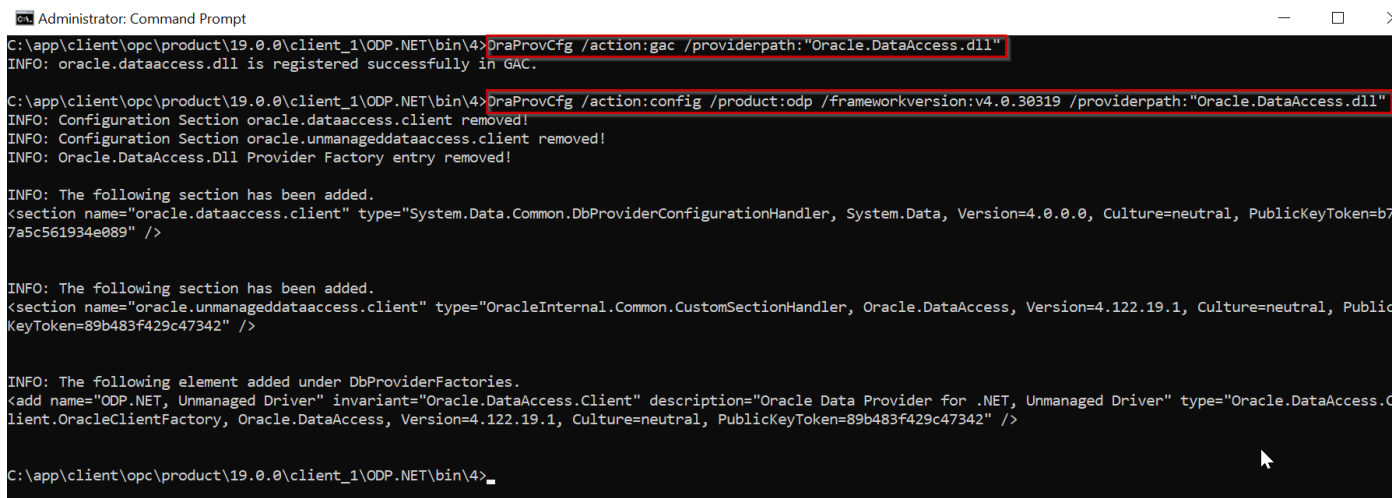
9. Edit the Windows environment variables by adding the path value of the 64-bit Oracle Client directory (e.g. C:\app\client\opc\product\19.0.0\client_1\ODP.NET)
In the Windows environment variables dialog, create the TNS_ADMIN variable. Set its value to the directory location where you will unzip the ADB wallet contents.
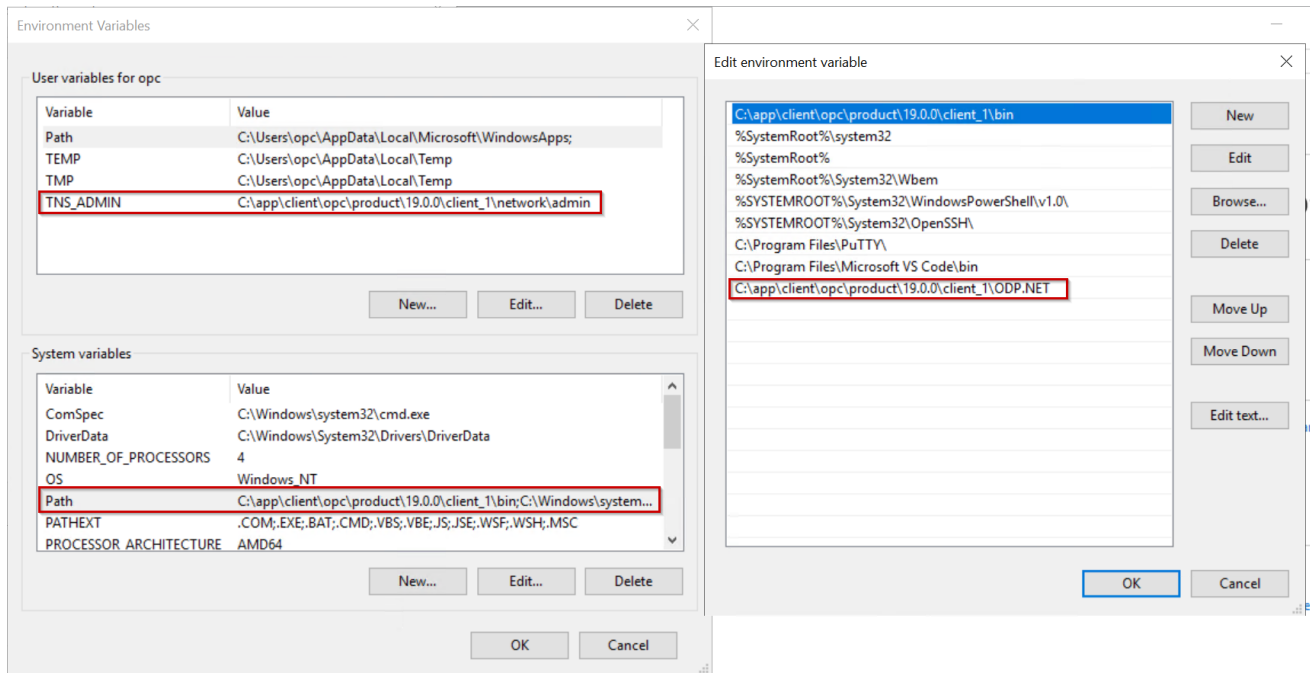
To ensure this directory path setting has precedence over existing Oracle Homes, move the setting up to the highest possible level in the directory order with the "Move Up" button.

10. Navigate to where you downloaded the Oracle ADB credentials on your Windows machine from step 1. Unzip the contents to a directory.
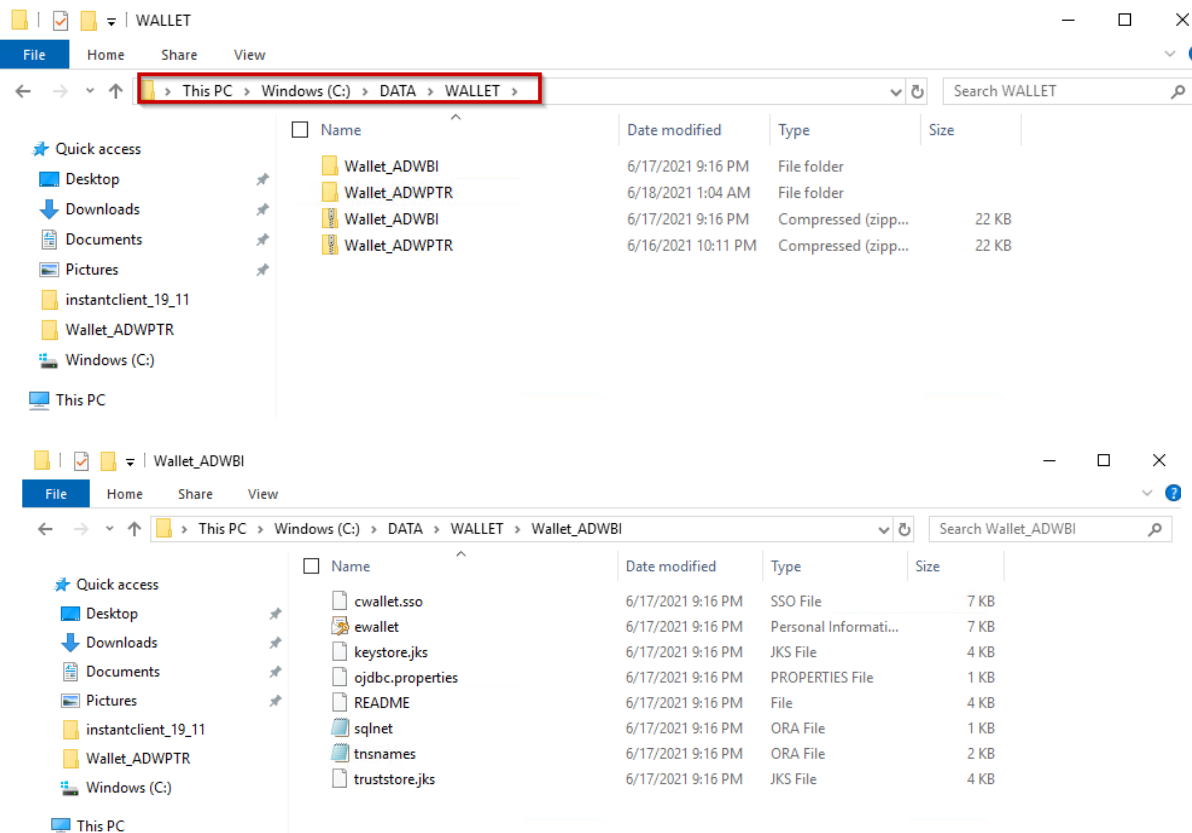

*Note: The tnsnames.ora net service names will be used to connect to ADB's.

If you are connecting to multiple ADBs from the same machine with a different wallet for each one, add the parameter MY_WALLET_DIRECTORY to the connect descriptor with each descriptor's specific wallet location. For example:

adwptr_high = (description= (retry_count=20)(retry_delay=3)(address=(protocol=tcps)(port=1522)(host=adb.us-phoenix-1.oraclecloud.com))(connect_data=(service_name=bk8ui2h_adwptr_high.adwc.oraclecloud.com))(security=(ssl _server_cert_dn="CN=adwc.uscom-east-1.oraclecloud.com, OU=Oracle BMCS US, O=Oracle Corporation, L=Redwood City, ST=California, C=US")(MY_WALLET_DIRECTORY=C:\DATA\WALLET\Wallet_ADWPTR)))

adwbi_low = (description= (retry_count=20)(retry_delay=3)(address=(protocol=tcps)(port=1522)(host=adb.us-phoenix-1.oraclecloud.com))(connect_data=(service_name=bk8uqvi2h_adwbi_low.adb.oraclecloud.com))(security=(ssl _server_cert_dn="CN=adwc.uscom-east-1.oraclecloud.com, OU=Oracle BMCS US, O=Oracle Corporation, L=Redwood City, ST=California, C=US")(MY_WALLET_DIRECTORY=C:\DATA\WALLET\Wallet_ADWBI)))

11. Open the TNSNAMES.ora file in the wallet directory to see which ADB net service names are available to connect to. Below you see three different ones: adwptr_high, adwptr_low, and adwptr_medium. Your ADB net service names will likely be named differently.
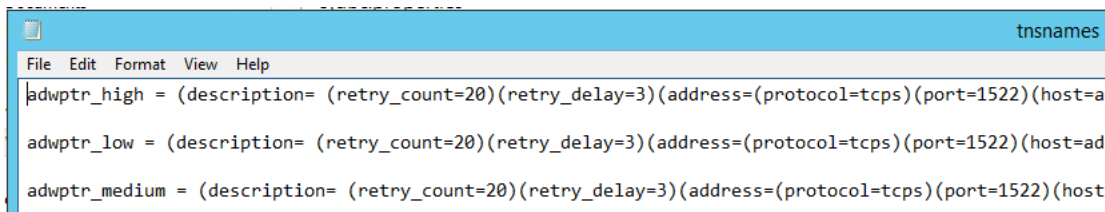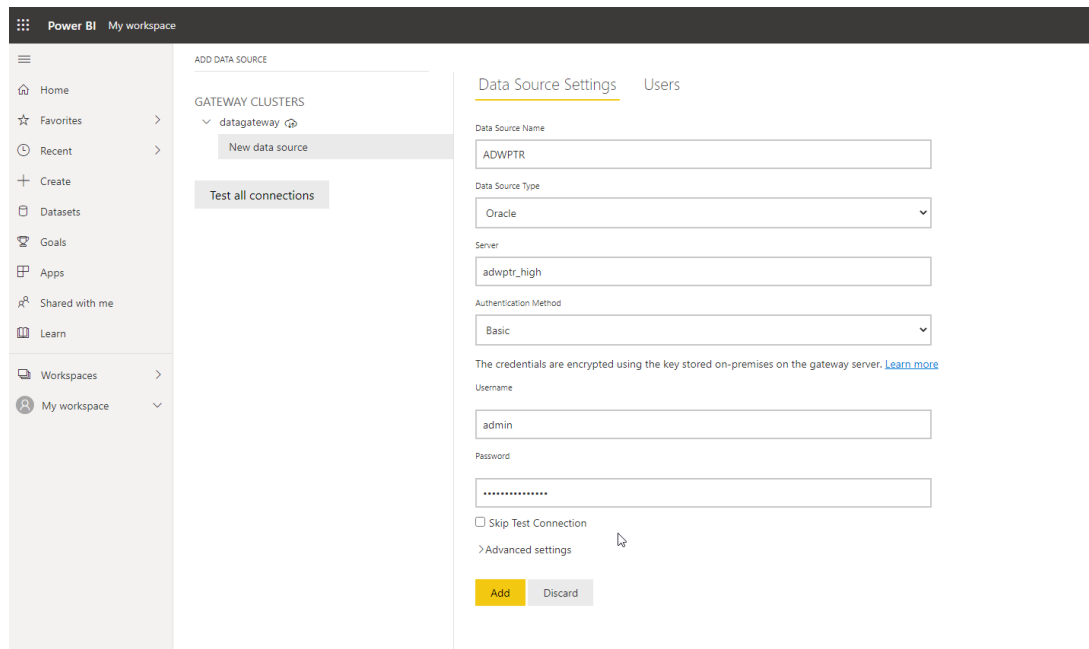

12. Enable the Data Gateway in the Power BI by selecting "Manage Gateways" from the Power Bi service menu.
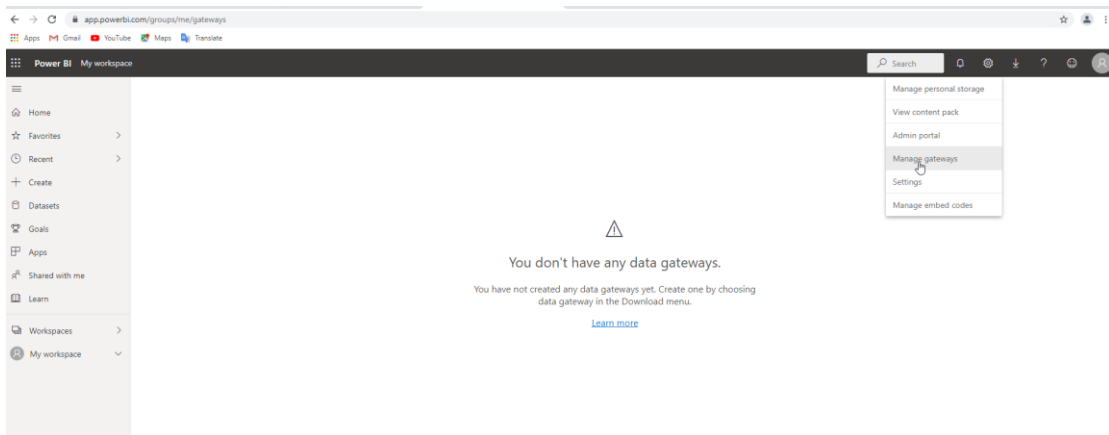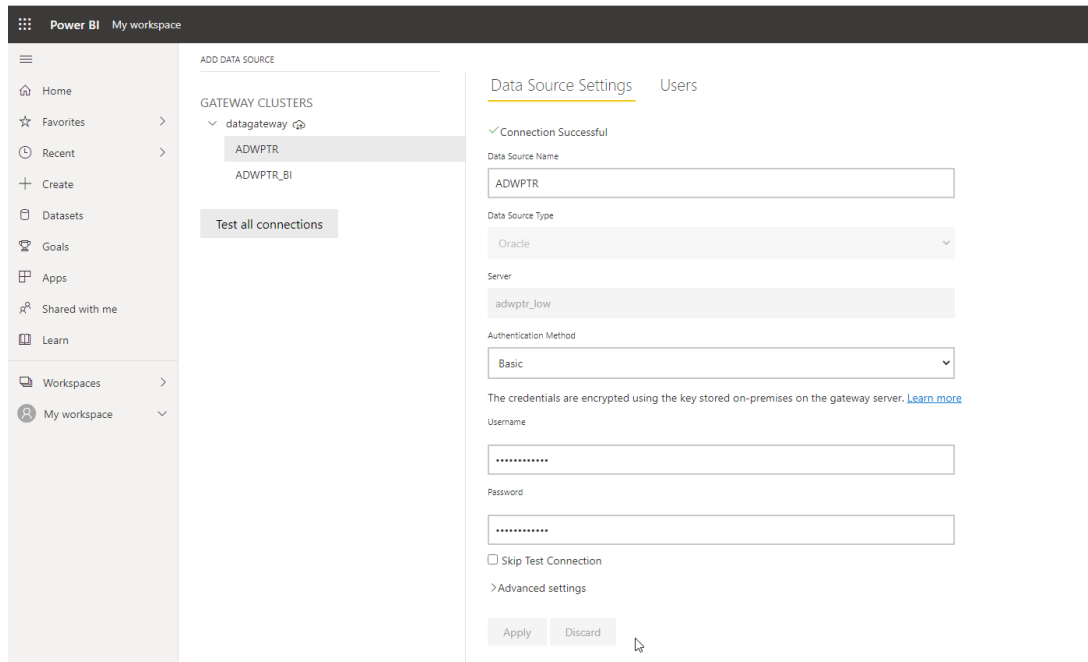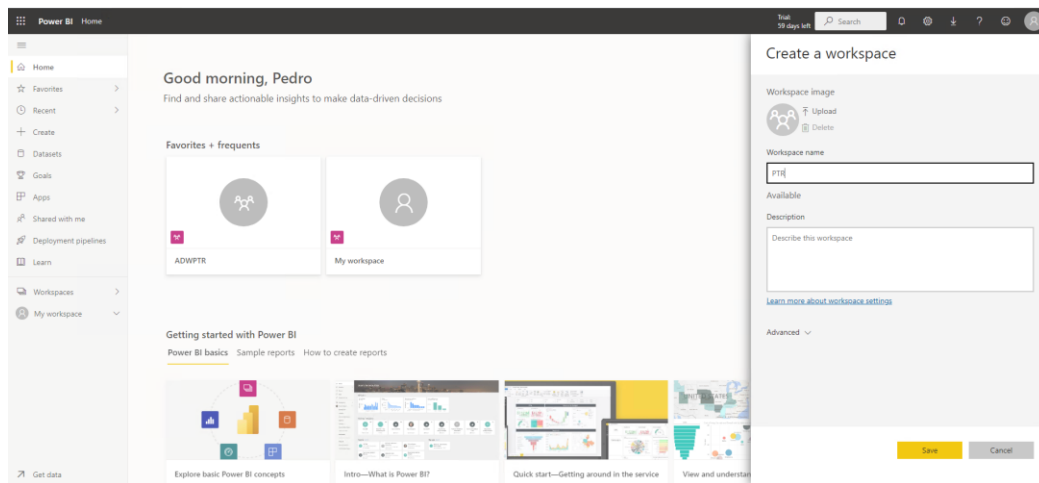
13. Add the Data Gateway and new name
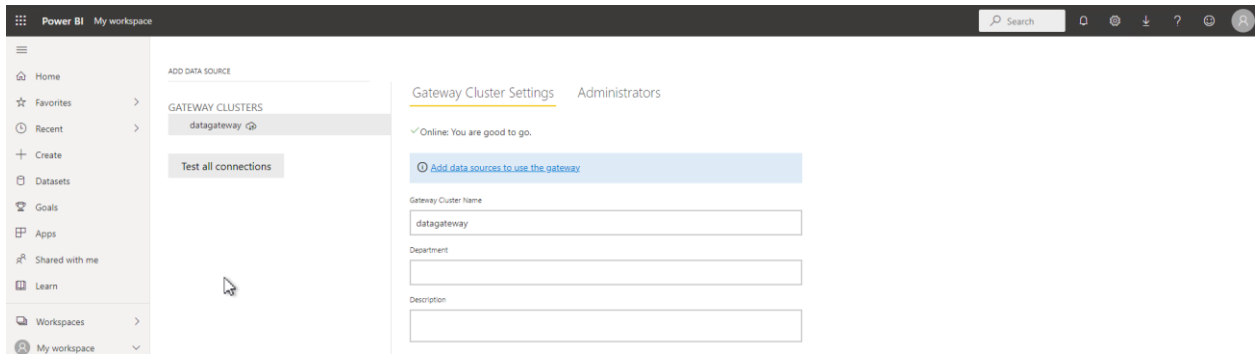
14. Add the Data Source according to your database credentials information.
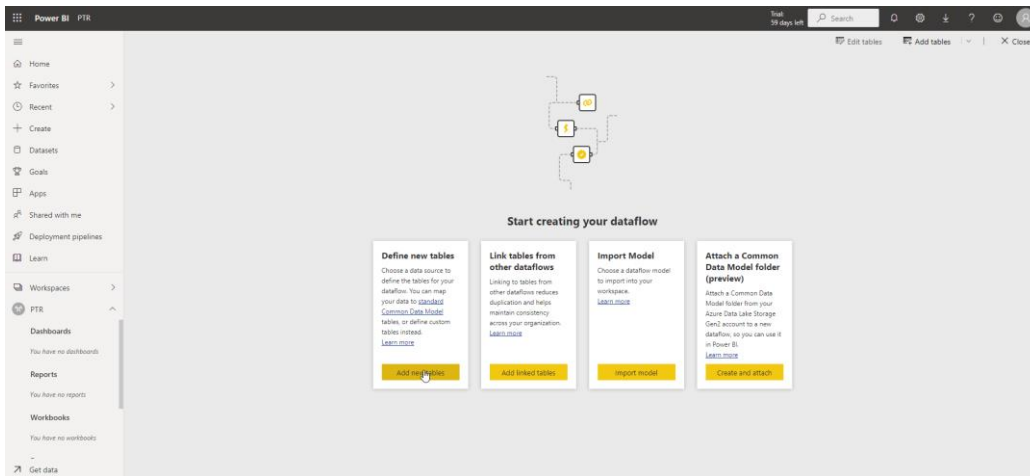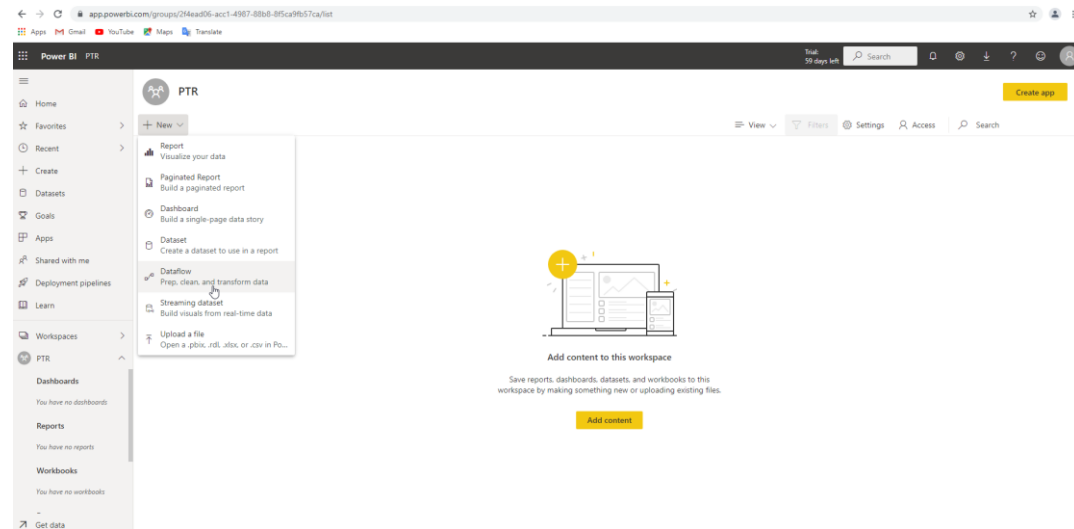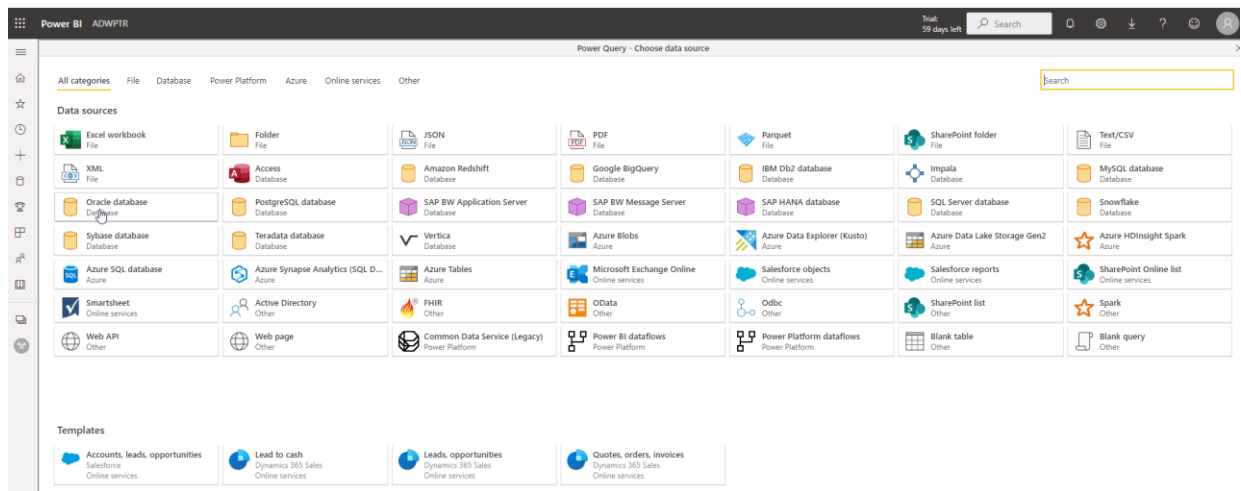
15. Validate the connection.

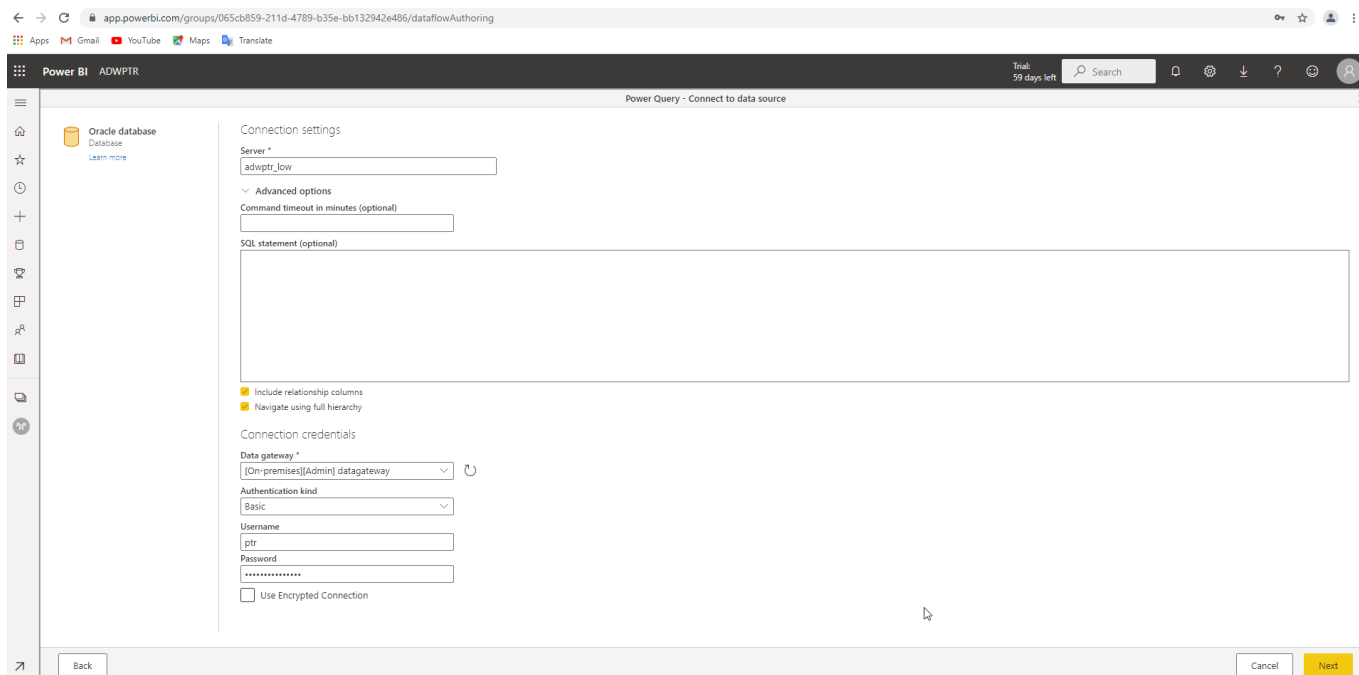16. Connect to the Power BI service and create a Workspace.

17. Add a new Data Flow from menu and define "New Tables".

18. Select the correct Data Source, in this case "Oracle Database"

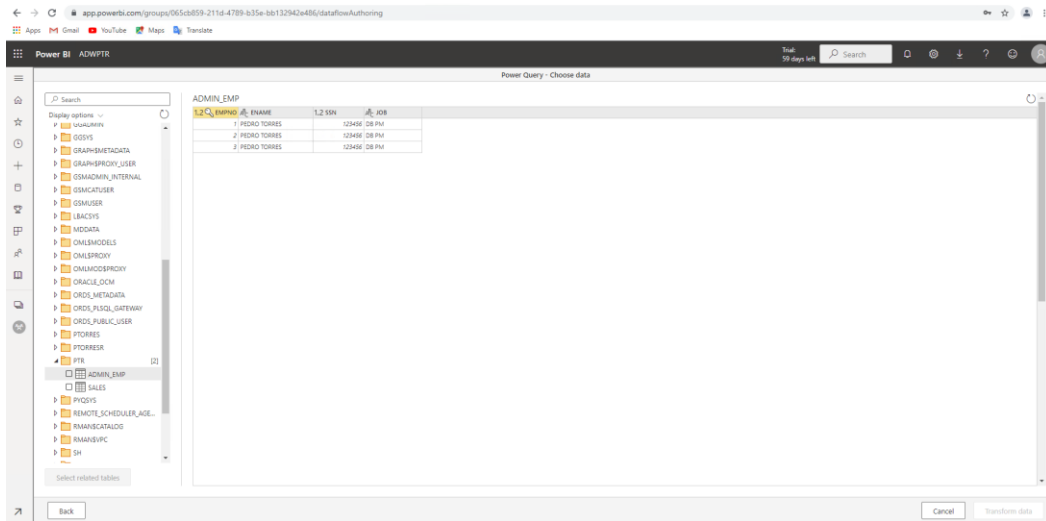19. Set the Connection String settings and Data Gateway just created. Then, select Next.

20. Congratulations! Your Power BI service instance should now connect to ADB. Open in Navigator the tables that you need data to create your own Microsoft Power BI Service Document (.pbix) and load the data.
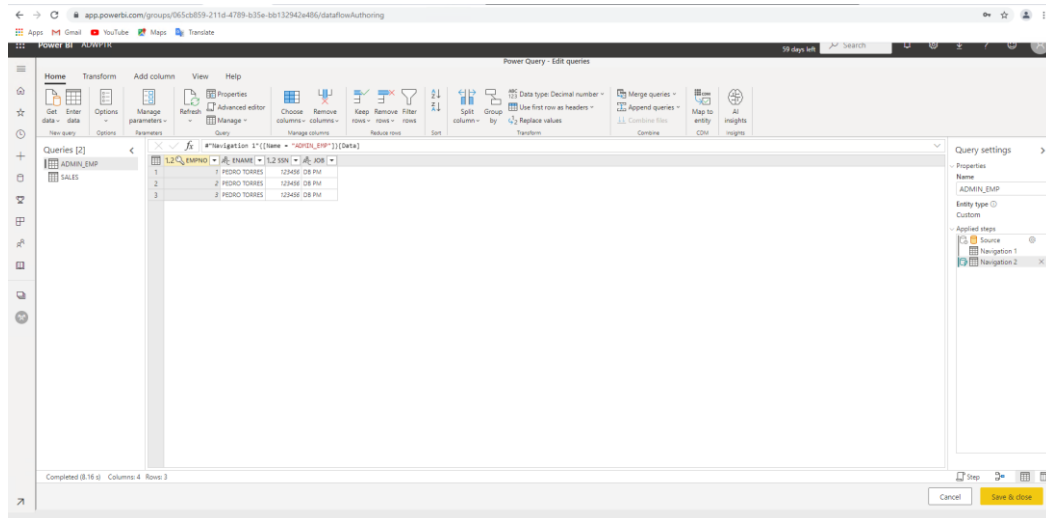
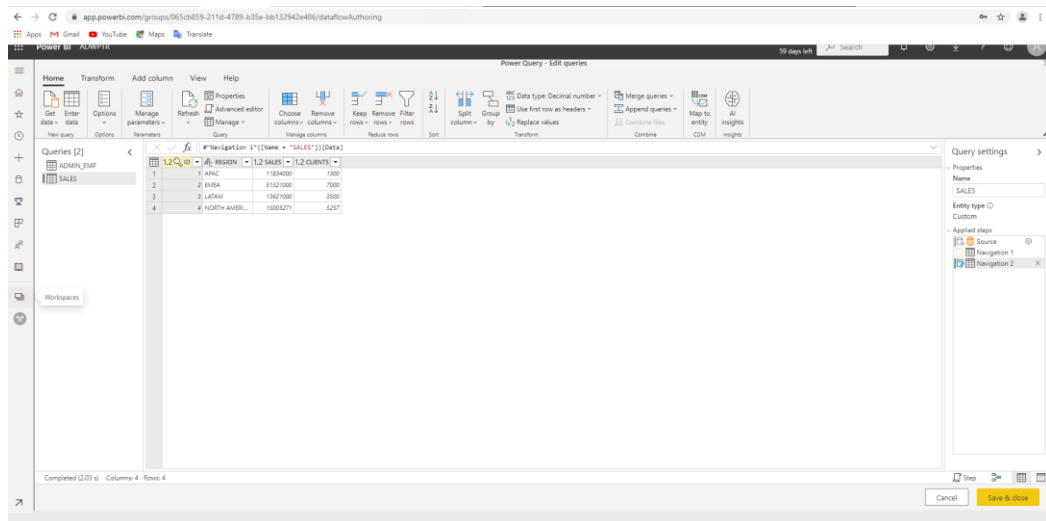Select the tables that you need to use
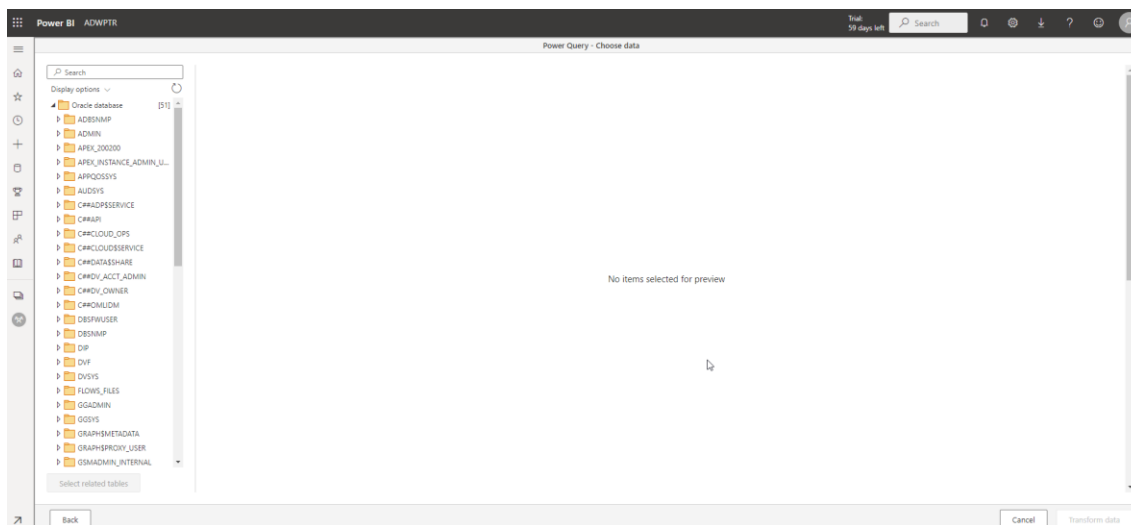
21. Validate the data into the tables