# DP500: Create a dataflow

## Overview

The estimated time to complete the lab is 45 minutes

In this lab, you will create a dataflow to deliver date dimension data sourced from the Azure Synapse Adventure Works data warehouse. The dataflow will provide a consistent definition of date-related data for use by the organization’s business analysts.

In this lab, you learn how to:

* Use Power Query Online to develop a dataflow.
* Use Power BI Desktop to consume a dataflow.

## Get started

In this exercise, prepare your environment.

### Set up Power BI Desktop

In this task, you will set up Power BI Desktop.

1. To open File Explorer, on the taskbar, select the File Explorer shortcut.

Icon

Description automatically generated

1. Go to the D:\DP500\Create a dataflow\Starter folder.
2. To open a pre-developed Power BI Desktop file, double-click the Sales Analysis - Create a dataflow.pbix file.
3. If you’re not already signed in, at the top-right corner of Power BI Desktop, select Sign In. Use the lab credentials to complete the sign in process.

Graphical user interface, application

Description automatically generated

You will update the Power BI Desktop solution to use a dataflow to source date dimension data.

### Sign in to the Power BI service

In this task, you will sign in to the Power BI service, start a trial license, and create a workspace.

Important: If you have already setup Power BI in your VM environment, continue to the next task.

1. In a web browser, go to <https://powerbi.com>.
2. Use the lab credentials to complete the sign in process.

Important: You must use the same credentials used to sign in from Power BI Desktop.

1. At the top-right, select the profile icon, and then select Start trial.

Graphical user interface, text, application

Description automatically generated

1. When prompted, select Start trial.

A picture containing shape

Description automatically generated

1. Do any remaining tasks to complete the trial setup.

Tip: The Power BI web browser experience is known as the Power BI service.

### Create a workspace

In this task, you will create a workspace.

1. In the Power BI service, to create a workspace, in the Navigation pane (located at the left), select Workspaces, and then select Create workspace.

Graphical user interface, text, application, chat or text message

Description automatically generated

1. In the Create a workspace pane (located at the right), in the Workspace name box, enter a name for the workspace.

The workspace name must be unique within the tenant.

Graphical user interface, application

Description automatically generated

1. Select Save.

A picture containing logo

Description automatically generated

Once created, the workspace is opened. In a later exercise, you will create a dataflow for this workspace.

### Start the SQL pool

In this task, you will start the SQL pool.

1. In a web browser, go to <https://portal.azure.com>.
2. Use the lab credentials to complete the sign in process.
3. Locate the SQL pool.
4. Resume the SQL pool.

TODO: Provide an image

Important: The SQL pool is a costly resource. Please limit the use of this resource when working on this lab. The final task in this lab will instruct you to pause the resource.

## Develop a dataflow

In this exercise, you will develop a dataflow to support Power BI model development. It will provide a consistent representation of the data warehouse date dimension table.

### Review the data model

In this task, you will review the data model developed in Power BI Desktop.

1. Switch to the Power BI Desktop solution.
2. At the left, switch to Model view.



1. In the model diagram, notice the Date table.

Graphical user interface, application

Description automatically generated

The Date table was created by the business analyst. It doesn’t represent a consistent definition of date-related data, and it does not include helpful offset columns to support relative date filters. In a later exercise, you will replace this table with a new table sourced from a dataflow.

### Create a dataflow

In this task, you will create a dataflow that represents a consistent definition of date-related data.

1. In the Power BI service, located at the bottom-left of the Navigation pane, select Get data.

Graphical user interface

Description automatically generated with low confidence

1. To create a dataflow, select the Dataflows tile.

Graphical user interface, application

Description automatically generated

1. In the Define new tables tile, select Add new tables.

Graphical user interface, text, application

Description automatically generated

Adding new tables involves using Power Query Online to define queries.

1. To choose a data source, select Azure Synapse Analytics (SQL DW).



Tip: You can use the Search box (located at the top-right) to help find the data source.

1. TODO
2. At the bottom-right, select Next.



1. In the Power Query navigation pane, select (do not check) the DimDate table.

Graphical user interface, table

Description automatically generated with medium confidence

1. Notice the preview of table data.
2. To create a query, check the DimDate table.

A picture containing application

Description automatically generated

1. At the bottom-right, select Transform data.



Power Query Online will now be used to apply transformations to the table. It provides an almost-identical experience to the Power Query Editor in Power BI Desktop.

1. In the Query Settings pane (located at the right), to rename the query, in the Name box, replace the text with Date, and then press Enter.

Graphical user interface, text, application

Description automatically generated

1. To remove unnecessary columns, on the Home ribbon tab, from inside the Manage Columns group, select the Choose Columns icon.

Graphical user interface, application, Word

Description automatically generated

1. In the Choose Columns window, to uncheck all checkboxes, uncheck the first checkbox.

Graphical user interface, text, application, email

Description automatically generated

1. Check the following five columns.

* DateKey
* FullDateAlternateKey
* MonthNumberOfYear
* FiscalQuarter
* FiscalYear

Graphical user interface, text, application

Description automatically generated

1. Select OK.

Shape

Description automatically generated with low confidence

1. In the Query Settings pane, in the Applied Steps list, notice that a step was added to remove other columns.

Graphical user interface, application

Description automatically generated

Power Query defines steps to achieve the desired structure and data. Each transformation is a step in the query logic.

1. To rename the FullDateAlternateKey column, double-click the FullDateAlternateKey column header.
2. Replace the text with Date, and then press Enter.

Table

Description automatically generated

1. To add a calculated column, on the Add Column ribbon tab, from inside the General group, select Custom Column.

Graphical user interface, application, Word

Description automatically generated

1. In the Custom column window, in the New column name box, replace the text with Year.
2. In the Data type dropdown list, select Text.

Text

Description automatically generated with low confidence

1. In the Custom column formula box, enter the following formula:

Tip: All formulas are available to copy and paste from the D:\DP500\Create a dataflow\Assets\Snippets.txt.

* 1. Power Query (M)
  2. "FY" & Number.ToText([FiscalYear])

1. Select OK.

You will now add four more custom columns.

1. Add another custom column named Quarter with the Text data type, using the following formula:
   1. Power Query (M)
   2. [Year] & " Q" & Number.ToText([FiscalQuarter])
2. Add another custom column named Month with the Text data type, using the following formula:
   1. Power Query (M)

Date.ToText([Date], "yyyy-MM")

1. Add another custom column named Month Offset (include a space between the words) with the Whole number data type, using the following formula:
   1. Power Query (M)

((Date.Year([Date]) \* 12) + Date.Month([Date])) - ((Date.Year(DateTime.LocalNow()) \* 12) + Date.Month(DateTime.LocalNow()))

This formula determines the number of months from the current month. The current month is zero, past months are negative, and future months are positive. For example, last month has a value of -1.

1. Add another custom column named Month Offset Filter (include spaces between the words) with the Text data type, using the following formula:
   1. Power Query (M)
   2. if [Month Offset] > 0 then "Future month"
   3. else if [Month Offset] = 0 then "Current month"
   4. else Number.ToText(-[Month Offset]) & " month(s) ago"

This formula transposes the numeric offset to a friendly text format.

1. To remove unnecessary columns, on the Home ribbon tab, from inside the Manage Columns group, select the Choose Columns icon.

Graphical user interface, application, Word

Description automatically generated

1. In the Choose Columns window, to uncheck the following columns:

* MonthNumberOfYear
* FiscalQuarter
* FiscalYear

Graphical user interface, text, application

Description automatically generated

1. Select OK.
2. At the bottom-right, select Save & close.



1. In the Save your dataflow window, in the Name box, enter Corporate Date.
2. In the Description box, enter: Consistent date definition for use in all Adventure Works datasets
3. Tip: The description is available to copy and paste from the D:\DP500\Create a dataflow\Assets\Snippets.txt.

Graphical user interface, application

Description automatically generated

1. Select Save.

A picture containing shape

Description automatically generated

1. In the Power BI service, in the Navigation pane, select your workspace name.

This action opens the landing page for the workspace.

1. To refresh the dataflow, hover the cursor over the Corporate Date dataflow, and then select the Refresh now icon.

Graphical user interface, application

Description automatically generated

1. To go to the dataflow settings, hover the cursor over the Corporate Date dataflow, select the ellipsis, and then select Settings.

Graphical user interface, text, application, email

Description automatically generated

1. Notice the configuration options.

Graphical user interface, text, application, chat or text message

Description automatically generated

There are two settings that should be configured. First, scheduled refresh should be configured to update the dataflow data every day. That way, the month offsets will be calculated using the current date. Second, the dataflow should be endorsed as certified (by an authorized reviewer). A certified dataflow declares to others that it meets quality standards and can be regarded as reliable and authoritative.

In addition to configuring settings, permission should be granted to all content creators to consume the dataflow.

## Consume a dataflow

In this exercise, in the Power BI Desktop solution, you will replace the existing Date table with a new table that sources its data from the dataflow.

### Remove the original Date table

In this task, you will remove the original Date table.

1. Switch to the Power BI Desktop solution.
2. In the model diagram, right-click the Date table, and then select Delete from model.

Graphical user interface, application

Description automatically generated

1. When prompted to delete the table, select OK.

A picture containing icon

Description automatically generated

### Add a new Date table

In this task, you will add a new Date table that sources its data from the dataflow.

1. On the Home ribbon, from inside the Data group, select the Get data icon.

Diagram

Description automatically generated with low confidence

1. In the Get Data window, at the left, select Power Platform, and then select Power BI dataflows.

Graphical user interface, application, Teams

Description automatically generated

1. Select Connect.

A picture containing diagram

Description automatically generated

1. In the Power BI dataflows window, select Sign in.

Graphical user interface, application, Word

Description automatically generated

1. Use the lab credentials to complete the sign in process.

Important: You must use the same credentials used to sign in to the Power BI service.

1. Select Connect.

A picture containing diagram

Description automatically generated

1. In the Navigator window, in the left pane, expand your workspace folder, and then expand the Corporate Date dataflow folder.

Graphical user interface, application

Description automatically generated

1. Check the Date table.

Graphical user interface, application

Description automatically generated

1. Select Load.

Graphical user interface, application

Description automatically generated

It is possible to transform the data using the Power Query Editor.

1. When the new table is added to the model, create a relationship by dragging the DateKey column from the Date table to the OrderDateKey column of the Sales table.

Graphical user interface, application

Description automatically generated

There are many other model configurations, like hiding columns or creating a hierarchy, that can be done.

### Validate the model

In this task, you will test the model by creating a simple report layout.

1. At the left, switch to Report view.



1. To add a visual to the page, in the Visualizations pane, select the stack bar chart visual.

Diagram, icon

Description automatically generated

1. Resize the visual to fill the report page.
2. In the Fields pane, expand the Date table, and then drag the Month Offset Filter field into the bar chart visual.

Graphical user interface

Description automatically generated with medium confidence

1. In the Fields pane, expand the Sales table, and then drag the Sales Amount field into the bar chart visual.

Table

Description automatically generated with low confidence

1. To sort the vertical axis, at the top-right of the visual, select the ellipsis, and then select Sort axis > Month Offset Filter.

Graphical user interface, application, Word

Description automatically generated

1. To ensure the month offset filter values sort chronologically, in the Fields pane, select the Month Offset Filter field.
2. On the Column Tools ribbon tab, from inside the Sort group, select Sort, and then select Month Offset.

Graphical user interface, application, Word

Description automatically generated

1. Review the updated bar chart visual that now sorts chronologically.

The main benefit of using date offset columns is that reports can filter by relative dates in a customized way. (Slicers and filters and also filter by relative date and time periods, but this behavior cannot be customized. They also don’t allow filtering by quarters.)

1. Optionally, to save the solution, at the top-left, select the disk icon.
2. In the Save As window, go to the D:\DP500\Create a dataflow\Solution folder.
3. Select Save.
4. Close Power BI Desktop.

### Stop the SQL pool

In this task, you will stop the SQL pool.

1. In a web browser, go to <https://portal.azure.com>.
2. Locate the SQL pool.
3. Stop the SQL pool.

TODO: Provide an image