

Manage semantic models in Power BI

1. Introduction

<https://learn.microsoft.com/en-us/training/modules/manage-datasets-power-bi/1-introduction>

Introduction

Completed

When your semantic models are published to your organization's workspace in Microsoft Power BI service, everyone who needs access to those semantic models can find them in a central location, which provides opportunities for collaboration between teams. It also reduces the duplication of effort because one semantic model can be used by multiple users for different business reasons. For instance, one semantic model can be used to create multiple Power BI reports. Because preparing and cleaning data can be time-consuming, sharing semantic models can be a productivity boost for report authors.

Effective management of semantic models is crucial for organizational performance. Automating refresh processes ensures users always have up-to-date data, while promoting key models helps users identify the best options. Parameters can enhance decision-making by enabling tasks like configuring incremental refreshes or running "what-if" scenarios. Additionally, maintaining a reliable gateway for accessing on-premises data from the cloud is essential, as connectivity issues can disrupt productivity and decision-making. Proactive preparation for such issues is vital to minimize their impact.

2. Use a Power BI gateway to connect to on-premises data sources

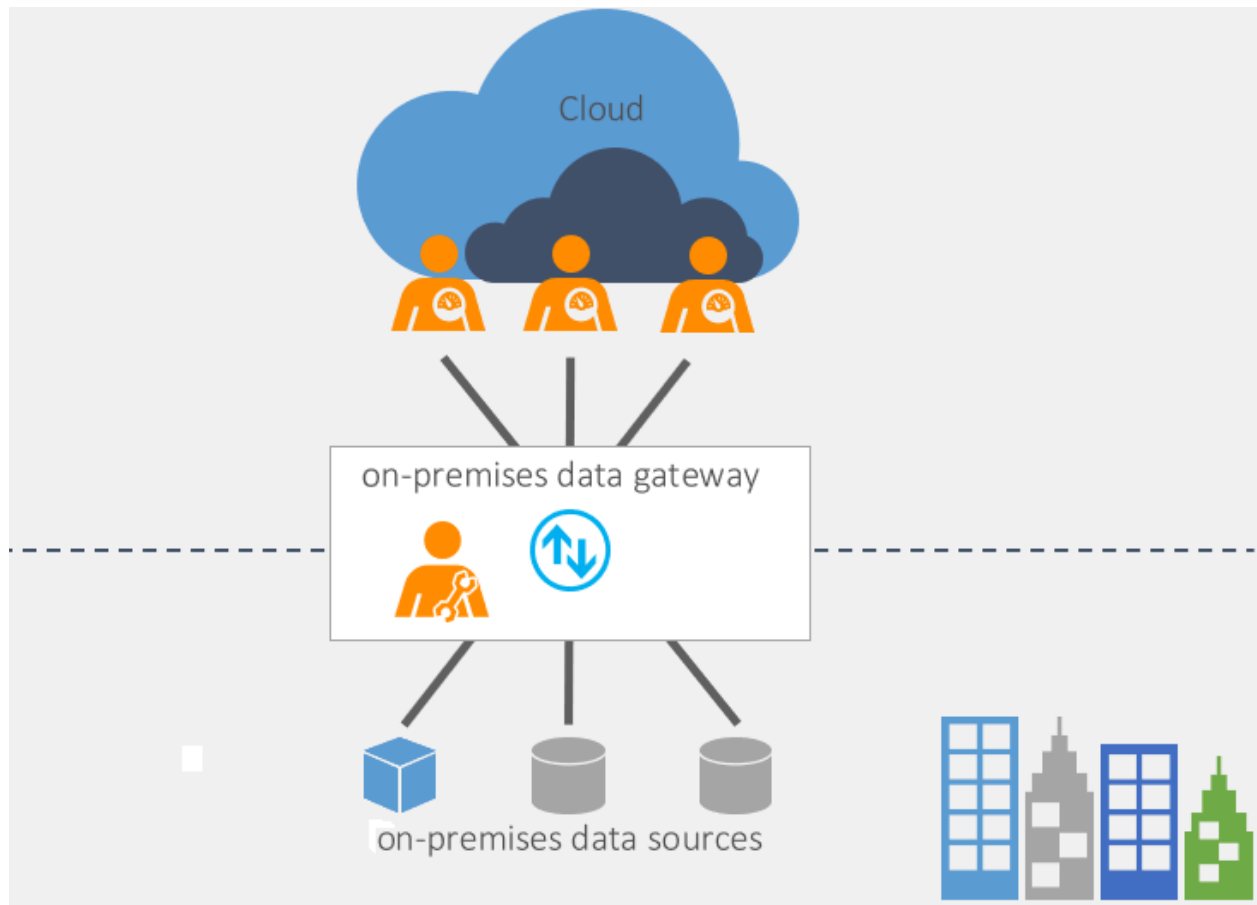
<https://learn.microsoft.com/en-us/training/modules/manage-datasets-power-bi/4-power-bi-gateway>

Use a Power BI gateway to connect to on-

premises data sources

Completed

A Power BI Gateway is a bridge that connects on-premises data sources to Power BI, Power Automate, Power Apps, and other Microsoft cloud services. On-premises data sources are those that aren't stored in the cloud. It enables secure data transfer between on-premises systems and Microsoft cloud services without moving the data to the cloud.



Two types of on-premises gateways are:

- **Standard mode** - Allows multiple users to connect to multiple on-premises data sources and is suitable for complex scenarios.
- **Personal mode** - Allows one user to connect to data sources. This type of gateway can only be used with Power BI. It can't be shared with other users, making it suitable for situations where you're the sole report creator in your organization. You'll install the gateway on your local computer, which needs to stay online for the gateway to work.

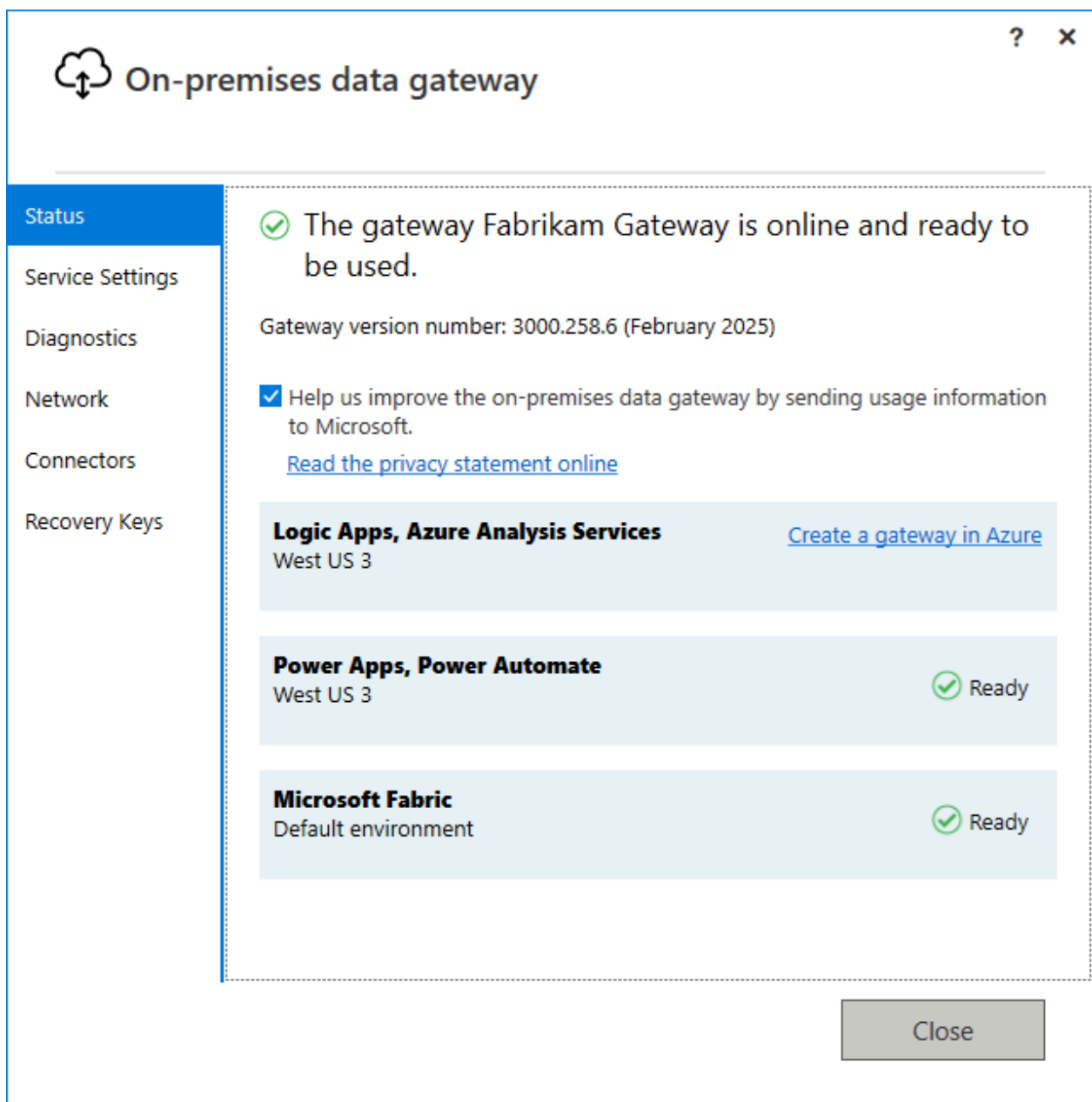
Note

We won't cover virtual network (VNet) data gateways in this module. VNet data gateways are used to connect to Azure Virtual Networks and are typically used in more complex scenarios.

Use an on-premises gateway

Before you can connect to your on-premises data source, you need to [install the on-premises data gateway](#), and then configure it to suit your organizational needs. An admin in your organization usually completes this task.

When the on-premises gateway is installed and configured on a server, the admin starts the gateway and then signs in using a Microsoft 365 organization account.

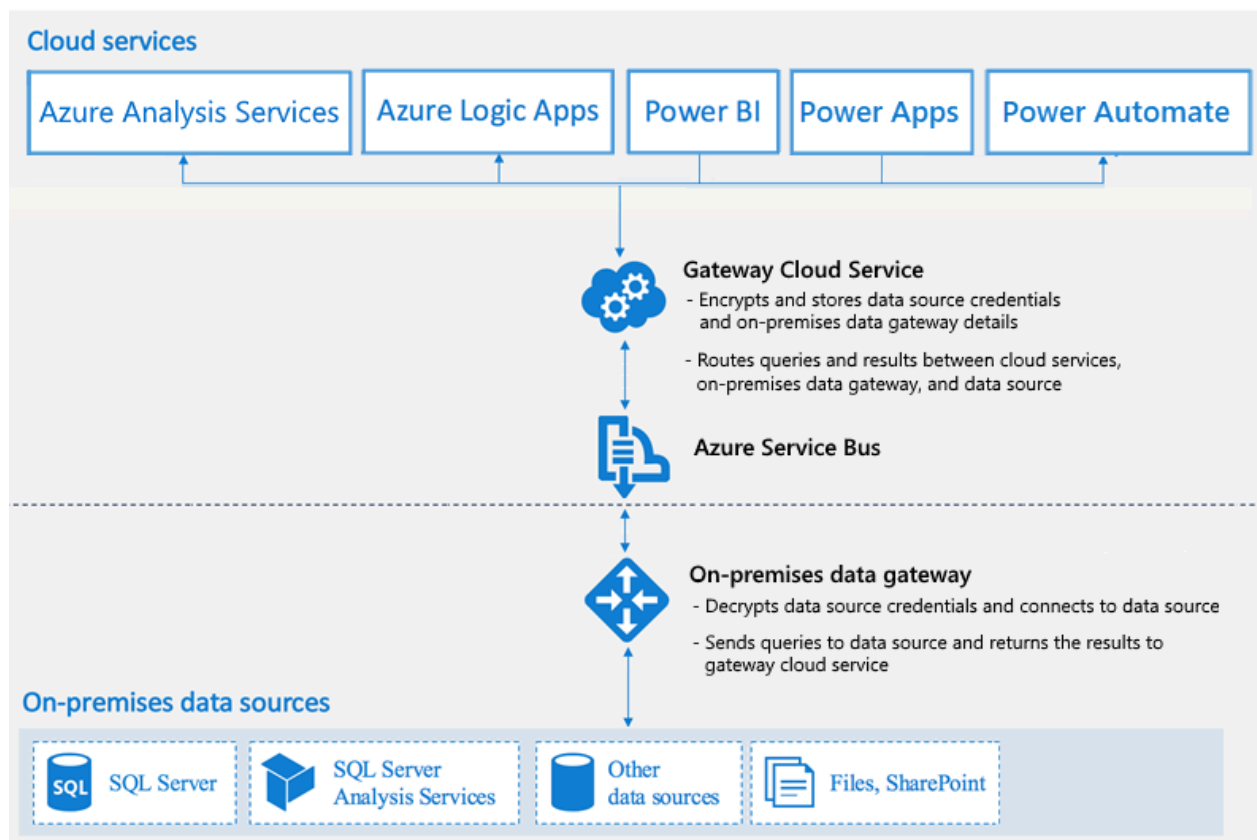


When you're working in the cloud and interacting with an element that is connected to an on-premises data source, the following actions occur:

1. The cloud service creates a query and the encrypted credentials for the on-premises data source. The query and credentials are sent to the gateway queue for processing.
2. The gateway cloud service analyzes the query and pushes the request to Microsoft Azure Service Bus.
3. Service Bus sends the pending requests to the gateway.
4. The gateway gets the query, decrypts the credentials, and then connects to one or more data sources with those credentials.
5. The gateway sends the query to the data source to be run.
6. The results are sent from the data source back to the gateway and then to the cloud service. The service then uses the results.

On-premises data gateway

One gateway for multiple cloud services and experiences



Add a data source to a gateway

Before you can set up scheduled refreshes for your reports which require access to on-premises data sources, you need to add the data source to the gateway. This is usually done by the admin in your

organization.

In the Power BI Service, select the **Settings**  icon, and then select **Manage connections and gateways**.

Resources and extensions

[Manage personal storage](#) →

[Power BI settings](#) →

[Manage connections and gateways](#) →

[Manage embed codes](#) →

[Azure Analysis Services migrations](#) →

Then, you can create a new data source or edit an existing one. Provide the name of the **gateway cluster**, a name for the **connection** and a **connection type** (for example: SQL Server). You'll also need to provide the **server name** and **database name**, and the **authentication method**. The authentication method can be either Basic, Windows, OAuth 2.0, or Service Principal.

New connection ✕


On-premises


Virtual network


Cloud

Gateway cluster name *

Fabrikam Gateway

Connection name *

AdventureWorks

Connection type *

SQL Server

Server * 

Ex: test.corp.contoso.com

Database * 

Ex: ContosoDB

Authentication 
Authentication method *

☐ Skip test connection

Troubleshoot service connectivity

Cloud services, such as SharePoint, do not require a gateway because the data is already in the cloud. You only need to provide your authorization credentials to set up a data source connection.

If your report fails to refresh, ensure that your data source credentials are up to date.

Settings for [redacted]

[Refresh history](#)

▸ Gateway connection

▾ Data source credentials

⊗ Your data source can't be refreshed because the credentials are invalid. Please update your credentials and try again.

SharePoint⊗ [Edit credentials](#)

▸ Parameters

▸ Scheduled refresh

▸ Featured Q&A questions

▸ Endorsement

If your data source credentials are not up to date, you'll need to take further action to investigate and resolve the issue.

For more information, see [Troubleshooting refresh scenarios](#).

To find the current data center region that you're in, see [Set the data center region](#).

3. Configure a semantic model scheduled refresh

<https://learn.microsoft.com/en-us/training/modules/manage-datasets-power-bi/5-dataset-refresh>

Configure a semantic model scheduled refresh

Completed

The **Scheduled refresh** feature in Power BI allows you to define the frequency and time slots to refresh a particular dataset. Scheduling the refresh of your data will save you time because you don't have to manually refresh the data. It also ensures that users can access the most up-to-date data.

In this example, you are creating a report, but then realize that the version of the employee data that you're using isn't the most up to date. You check the refresh status and notice that it was last refreshed some time ago, and no refresh is scheduled to take place.

	Name	Type	Task	Owner	Refreshed	Next refresh
	Employee Report	Report	—	Sales Contoso	3/17/2025, 1:32:...	—
	Employee Report	Semantic m...	—	Sales Contoso	3/17/2025, 1:3...	N/A

Considering how important it is to have accurate data, you need to find a solution. Usually, the data is updated weekly, but you don't want to return to the report every week to manually refresh the semantic model, and you know that you occasionally forget to do so. Therefore, you decide to use the **Scheduled refresh** functionality in Power BI Service to solve this problem.

Set up a refresh schedule

Before you can set up a refresh schedule, you need to have created a gateway connection.

To set up a refresh schedule for your semantic model, follow these steps:

1. Go to the workspace where the report and semantic model are located.
2. Hover over the semantic model for which you want to set up the schedule and then select the **Schedule refresh** icon.

	Name	Type	Task	Owner	Refreshed	Next refresh
	Employee Report	Report	—	Sales Conto...	3/17/2025, 1:32:05 PM	—
	Employee Report	Semantic model	—	Sales Conto...	3/17/2025, 1:32:05 PM	3/17/2025, 2:00:00 PM

3. On the **Settings** page, turn on the **Scheduled refresh** feature.
4. Select the **Refresh frequency** and ensure that the correct time zone is selected.
5. Add the time(s) that you want the refresh to occur. You can configure up to eight daily time slots, if your semantic model is on shared capacity, or 48 time slots on Power BI Premium.
6. When you have finished configuring the scheduled refresh, select **Apply**.

Note

While you can set a time for the refresh, be aware that the refresh might not take place at that exact time. Power BI starts scheduled refreshes on a best effort basis. The goal is to initiate the refresh within 15 minutes of the scheduled time slot, but a delay of up to one hour can occur if the service can't allocate the required resources sooner.

In this example, you want the system to refresh the employee data on a daily basis, at 8:00 AM, 11:00 AM, 1:00 PM, and 4:00 PM, as illustrated in the following image.

Refresh

Time zone

① Time zone configuration is applied not only to determine the schedule refresh time but also to establish the current date and time for incremental refresh models during on-demand and API refreshes. [Learn more](#)

(UTC) Coordinated Universal Time ▼

Configure a refresh schedule

Define a data refresh schedule to import data from the data source into the semantic model. [Learn more](#)

☒ On

Refresh frequency

Daily ▼

Time

8 ▼ 00 ▼ AM ▼ ×

11 ▼ 00 ▼ AM ▼ ×

1 ▼ 00 ▼ PM ▼ ×

4 ▼ 00 ▼ PM ▼ ×

[Add another time](#)

Send refresh failure notifications to

☒ Semantic model owner

☐ These contacts:

Enter email addresses

Apply

Discard

Perform an on-demand refresh

In addition to the scheduled refreshes, you can refresh a semantic model at any time by performing an on-demand refresh. This type of refresh doesn't affect the next scheduled refresh time.

For example, you might want to refresh now because you need to view the most recent data and can't wait for the next refresh time, or you might want to test your gateway and data source configuration.

To perform an on-demand refresh, hover over the semantic model that you want to refresh and then select the **Refresh now** icon.

	Name	Type	Task	Owner	Refreshed	Next refresh
	Employee Report	Report	—	Sales Conto...	3/17/2025, 1:32:05 PM	—
	Employee Report	  ... Semantic model	—	Sales Conto...	3/17/2025, 1:32:05 PM	3/17/2025, 2:00:00 PM

Check the refresh status and history

You can check the refresh status and history at any time. This feature is useful if you want to find out when the last refresh occurred and when the next one is scheduled. It is also good practice to check the status of your semantic models occasionally to check if refresh errors have occurred.

A quick way to check the refresh status is to view the list of semantic models in a workspace.

	Name	Type	Task	Owner	Refreshed	Next refresh
	Employee Report	Report	—	Sales Conto...	3/17/2025, 1:32:05 PM	—
	Employee Report	Semantic model	—	Sales Conto...	3/17/2025, 1:32:05 PM	3/17/2025, 2:00:00 PM

If a semantic model displays a small warning icon, you'll know that the semantic model is currently experiencing an issue. Select the warning icon to get more information.

	Name	Type	Task	Owner	Refreshed	Next refresh
	Employee Report	Report	—	Sales Contoso	3/17/2025, 1:28:10 PM	—
	Employee Report	Semantic m...	—	Sales Contoso	3/17/2025, 1:28:10 PM 	3/17/2025, 2:00:00 PM

You should also check the refresh history occasionally to review the success or failure status of past synchronization cycles. To view the refresh history, open the semantic model's settings page and then select **Refresh history**.

Refresh history						
<u>Scheduled</u> OneDrive Direct Lake OneLake Integration						
Details	Type	Start	End	Status	Message	
Show	On demand	3/17/2025, 12:31:39 PM	3/17/2025, 12:31:53 PM	Completed		
Show	Scheduled	2/24/2025, 8:13:00 PM	2/24/2025, 8:13:00 PM	Failed	Exceeded the refresh request limit for this dataset within the last 24 hours.	
Show	Scheduled	2/24/2025, 5:10:00 PM	2/24/2025, 5:10:00 PM	Failed	Exceeded the refresh request limit for this dataset within the last 24 hours.	
Show	On demand	2/24/2025, 4:08:53 PM	2/24/2025, 4:09:02 PM	Completed		
Show	On demand	2/24/2025, 4:07:20 PM	2/24/2025, 4:07:29 PM	Completed		
Show	On demand	2/24/2025, 4:05:19 PM	2/24/2025, 4:05:29 PM	Completed		
						Close

Note

If no user visits the report or any dashboard built on the semantic model, Power BI disables the refresh schedule after two months of inactivity. The refresh schedule is also disabled after four

consecutive failures or when the service detects an unrecoverable error that requires a configuration update, such as invalid or expired credentials. It is not possible to change the consecutive failures threshold.

4. Configure incremental refresh settings

<https://learn.microsoft.com/en-us/training/modules/manage-datasets-power-bi/6-incremental-refresh>

Configure incremental refresh settings

Completed

The **Incremental refresh** feature in Power BI is a popular feature because it allows you to refresh large semantic models quickly and as often as you need, without having to reload historical data each time.

Traditionally, complex code was required for running incremental refreshes, but you can now define a refresh policy within Power BI Desktop. The refresh policy is applied when you publish to Power BI service, which then does the work of managing partitions for optimized data loads, resulting in the following benefits:

- **Quicker refreshes** - Only data that needs to be changed gets refreshed. For example, if you have five years' worth of data, and you only need to refresh the last 10 days because that is the only data that has changed, the incremental refresh will refresh only those 10 days of data. Undoubtedly, the time it takes to refresh 10 days of data is much shorter than five years of data.
- **More reliable refreshes** - You no longer need to keep your long-running data connections open to schedule a refresh.
- **Reduced resource consumption** - Because you only need to refresh the smaller the amount of data, the overall consumption of memory and other resources is reduced.

Warning

Incremental refresh should only be used on data sources and queries that support query folding. Query folding is the process where Power Query translates data transformations (eg filters) into native queries that are executed directly by the data source during import. If query folding isn't supported, incremental refresh could lead to a bad user experience because it will still pull all data, potentially multiple times.

In this example, the Sales team has come to you with a dilemma. The data in their report is already out-of-date. It isn't feasible for you to manually refresh the data by adding a new file because the refreshes need to happen regularly to match the frequency of the sales transactions that are occurring. Also, the manual refresh task is becoming more difficult because the semantic models have millions of rows. Consequently, you need to implement a better data refresh solution.

You can define an incremental refresh policy to solve this business problem. This process involves the following steps:

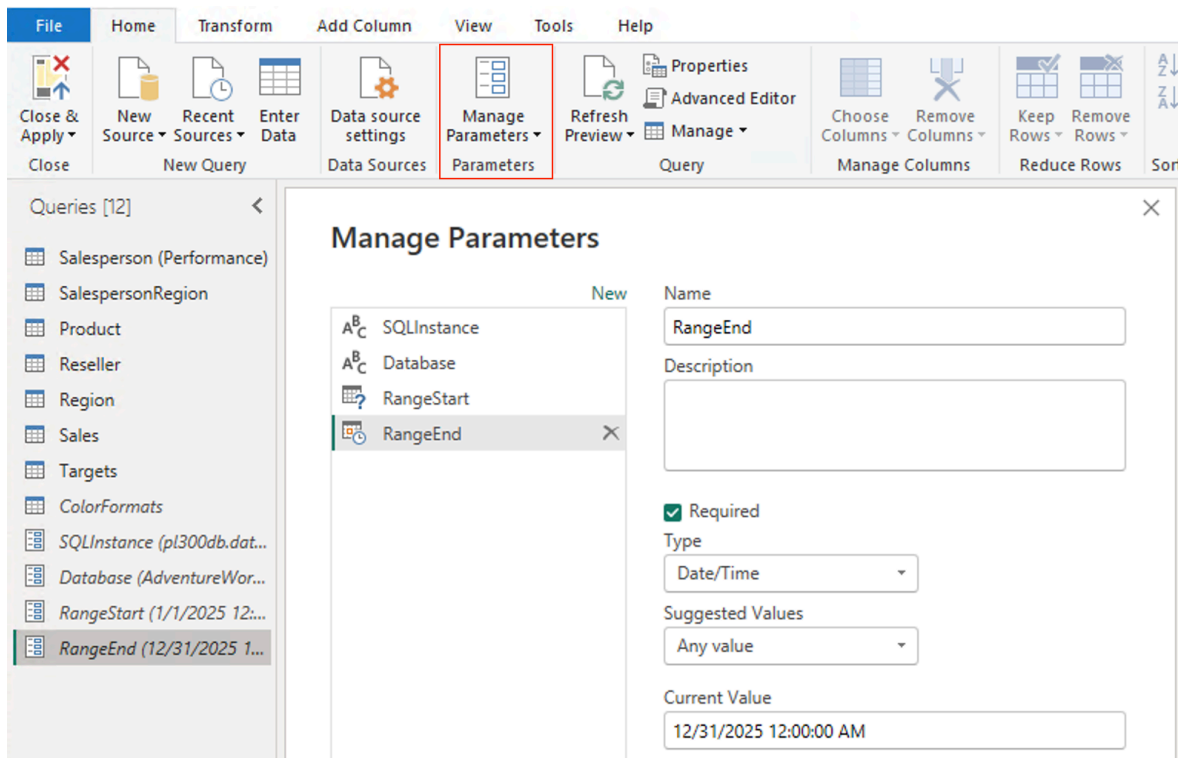
1. Define the filter parameters.
2. Use the parameters to apply a filter.
3. Define the incremental refresh policy.
4. Publish changes to Power BI service.

Define filter parameters

Whether you are using incremental refresh or not, large semantic models are commonly filtered when they are imported into Power BI Desktop because the PBIX file is limited by the memory resources that are available on the desktop computer. For incremental refresh, the semantic models are filtered by two date/time parameters: **RangeStart** and **RangeEnd**. These parameters have a dual purpose. In Power BI Desktop, they are the filtering window because they restrict the used data to the range that is listed in the start and end dates. After they have been published to the service, the parameters are taken over to be the sliding window to determine what data to pull in.

To define the parameters for the incremental refresh, follow these steps:

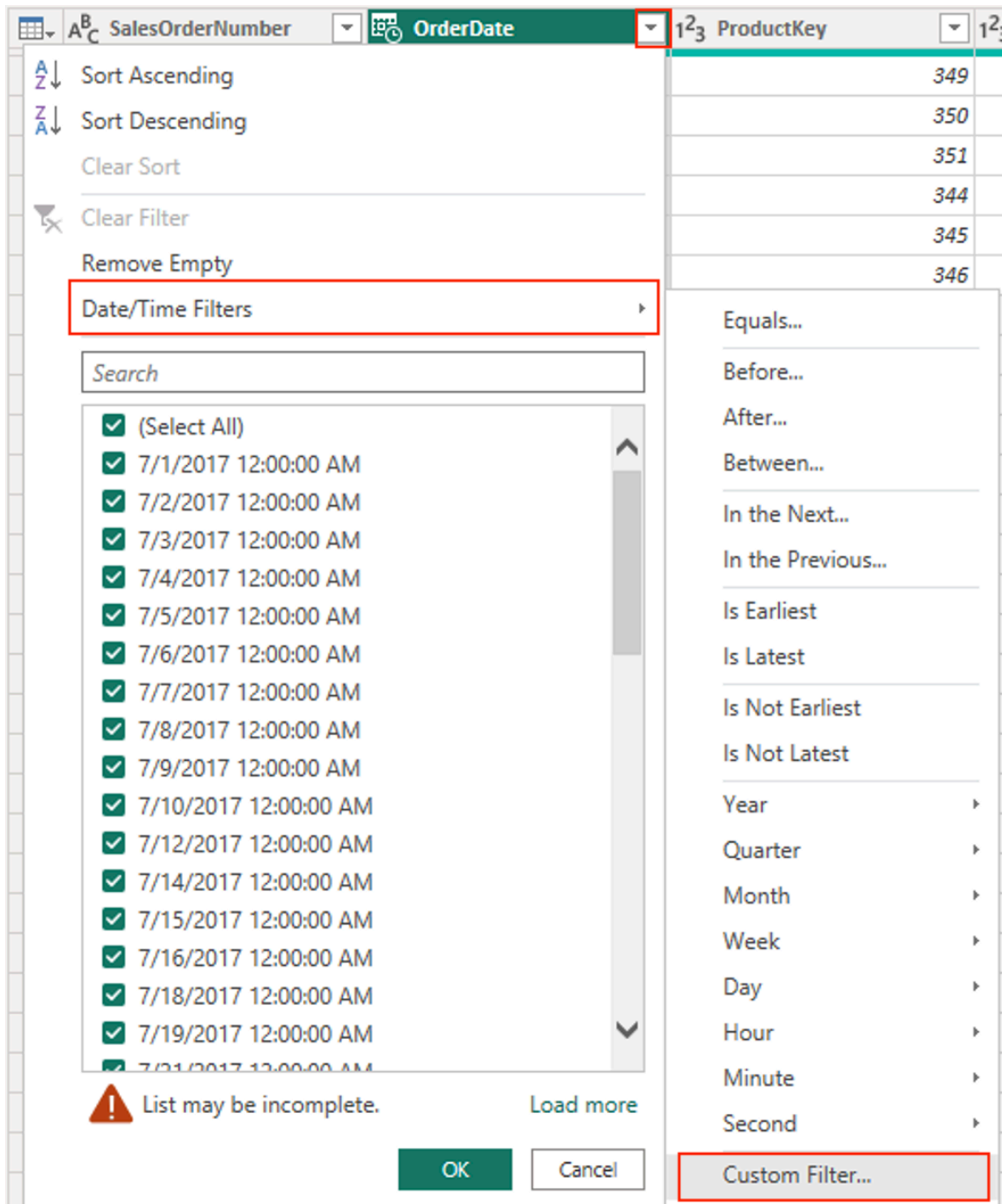
1. Open your semantic model in Power Query Editor.
2. On the **Home** tab, select **Manage Parameters**.
3. On the **Parameters** window that displays, add two new parameters, **RangeStart** and **RangeEnd**, ensuring that for both parameters, the **Type** is set to **Date/Time** and the **Suggested Value** is set to **Any value**.
4. Regarding the **Current Value**, for the **RangeStart** parameter, enter the date on which you want to begin the import, and for the **RangeEnd** parameter, enter the date on which you want the import to end. Think of it like this: you are importing data on your desktop computer, and you want to import a limited range of data, but not all of it.



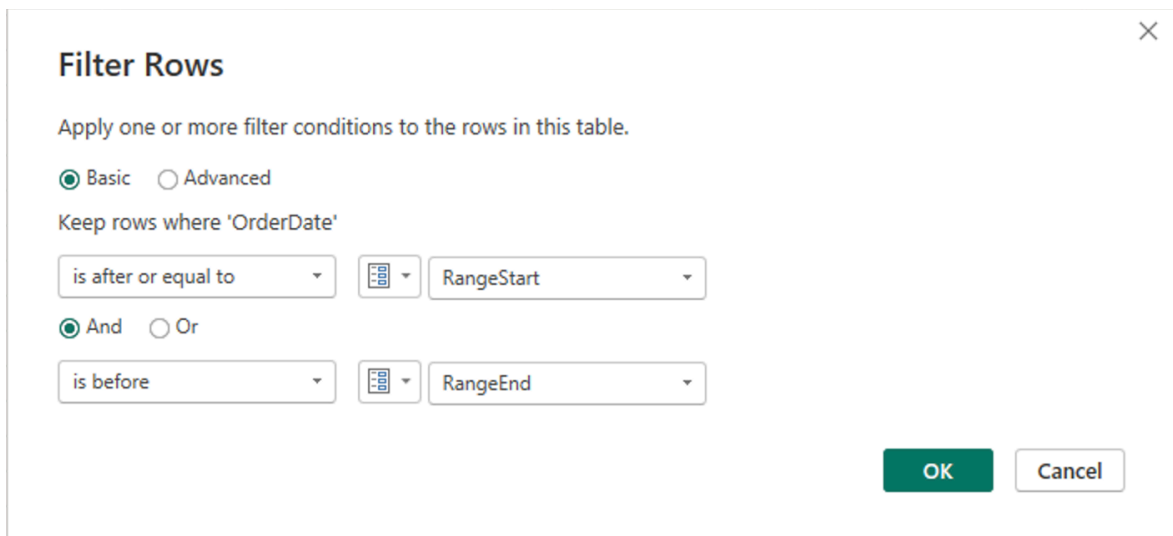
Apply the filter

When you have defined the new parameters, you can apply the filter by following these steps:

1. Go to the applicable **Date** column and then right-click that column and select **Custom Filter**.



2. In the **Filter Rows** window that displays, to avoid the double counting of rows, make sure that you keep rows where **OrderDate** is after or equal to the **RangeStart** parameter and before the **RangeEnd** parameter.

The image shows a 'Filter Rows' dialog box with a close button (X) in the top right corner. The title 'Filter Rows' is at the top left. Below the title is the instruction 'Apply one or more filter conditions to the rows in this table.' There are two radio buttons: 'Basic' (selected) and 'Advanced'. Below this is the text 'Keep rows where 'OrderDate''. The first filter condition is 'is after or equal to' (selected from a dropdown), followed by a range icon (two overlapping squares) and a dropdown menu showing 'RangeStart'. Below this is another set of radio buttons: 'And' (selected) and 'Or'. The second filter condition is 'is before' (selected from a dropdown), followed by a range icon and a dropdown menu showing 'RangeEnd'. At the bottom right are two buttons: 'OK' (green) and 'Cancel' (white with a grey border).

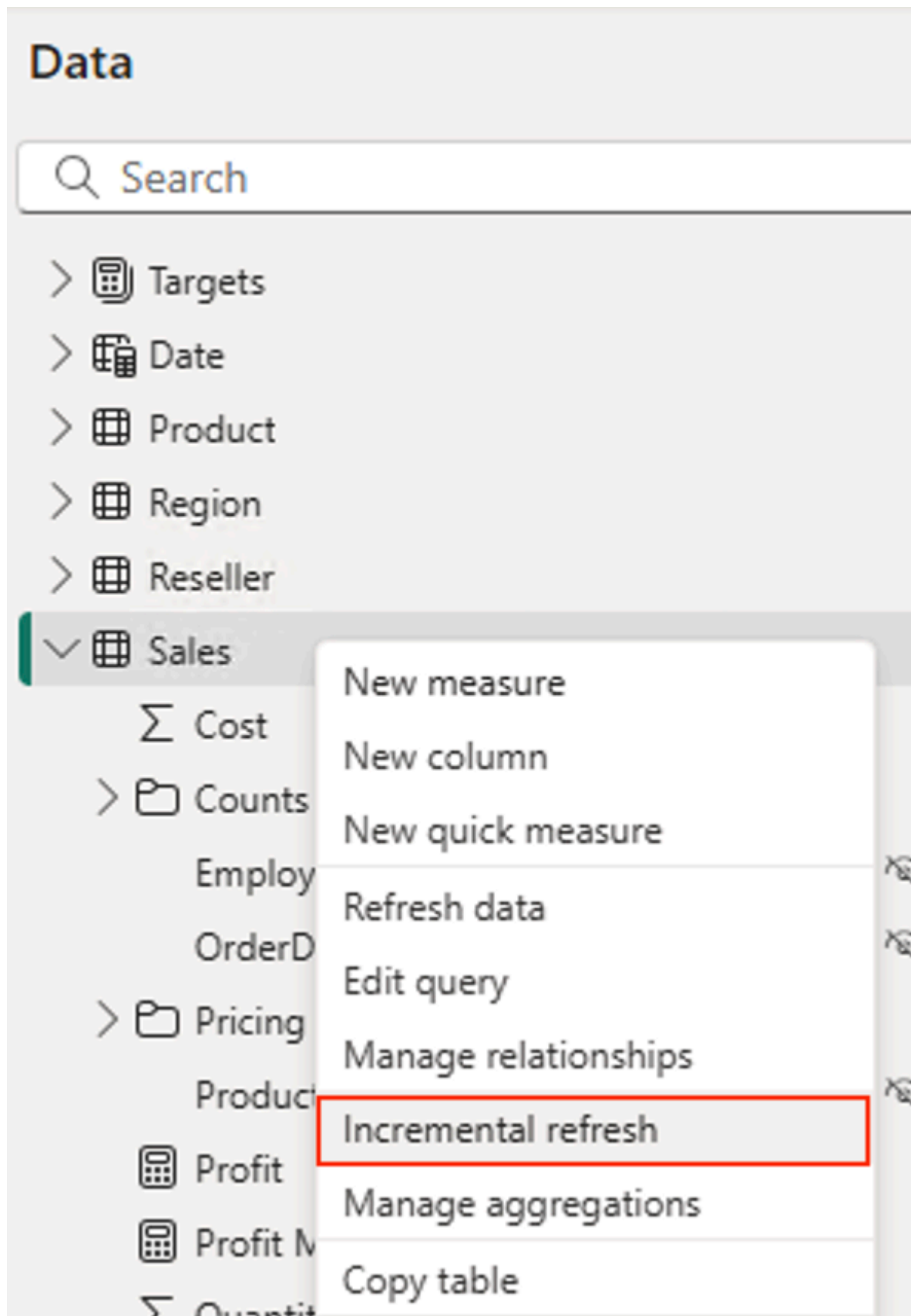
3. Select **Close and Apply** from the Power Query Editor.

You should now see a subset of the semantic model in Power BI Desktop.

Define the incremental refresh policy

When you have filtered the data, you can define the incremental refresh policy for the data table, which sets up the refresh process.

Right-click the applicable table and then select **Incremental refresh**.



On the **Incremental refresh** window that displays, turn on the **Incremental refresh** option. Then, configure the refresh as required. In this example, you will define a refresh policy to store data for

five full calendar years, plus data for the current year up to the current date, and incrementally refresh 10 days of data.

Incremental refresh and real-time data

Refresh large tables faster with incremental refresh. Plus, get the latest data in real time with DirectQuery (Premium only). [Learn more](#)

i These settings will apply when you publish the dataset to the Power BI service. Once you do that, you won't be able to download it back to Power BI Desktop. [Learn more](#)

1. Select table

Orders

2. Set import and refresh ranges

☒ Incrementally refresh this table

Archive data starting

5

Years

 before refresh date

Data imported from 1/1/2017 to 11/17/2022 (inclusive)

Incrementally refresh data starting

3

Days

 before refresh date

Data will be incrementally refreshed from 11/18/2022 to 11/20/2022 (inclusive)

3. Choose optional settings

☐ Get the latest data in real time with DirectQuery (Premium only) [Learn more](#)

Selected table cannot be folded for DirectQuery.

☐ Only refresh complete days [Learn more](#)

☐ Detect data changes [Learn more](#)

4. Review and apply

Archived

Incremental Refresh

The first refresh operation in Power BI service will load the historical data for the last five years. The subsequent refresh operations are incremental, and they will refresh the data that was changed in the last 10 days up to the current date. The incremental refreshes will also remove calendar years that are older than five years prior to the current date.

Publish to Power BI service

17 / 26

When you have defined the incremental refresh policy in Power BI Desktop, to apply that refresh policy, you need to publish the report to Power BI service.

For more information, see [Incremental refresh on Power BI](#).

5. Manage and promote semantic models

<https://learn.microsoft.com/en-us/training/modules/manage-datasets-power-bi/7-manage-datasets>

Manage and promote semantic models

Completed

Business intelligence involves collaboration, and sharing semantic models across workspaces is a powerful way to collaborate within your organization. However, if your organization has many different semantic models that can be accessed by many users, you might want to take measures to manage those semantic models. For instance, you might want to direct your users to the most up-to-date and highest-quality semantic models in your workspaces, or you might want to restrict the reuse of semantic models across your workspaces.

To ensure that your organization has consistent data for making decisions and a healthy data culture, it's important to create and share optimized semantic models and then endorse those semantic models as the *one source of truth*. Report creators can then reuse those endorsed semantic models to build accurate, standardized reports.

Power BI provides three ways to endorse your semantic models:

- **Promotion** - Enables you to highlight content that you think is valuable, worthwhile, and ready for others to use. It encourages the collaborative spread of content within the organization.
- **Certification** - Request certification for a promoted semantic model. Certification can be a highly selective process, so only the truly reliable and authoritative semantic models are used across the organization.
- **Master data** - Being labeled as master data means that the data item is regarded by the organization as being core, single-source-of-truth data, such as customer lists or product codes. This is a feature from Microsoft Fabric, which we won't further discuss in this module.

In this example, you and the other teams are using a workspace in Power BI service to organize all your reports and dashboards. However, you begin to receive emails from confused users who expected to see a sales report and are now looking at a product report instead. You need to make

some changes to direct your users to the semantic models that they should be accessing, and you can accomplish this task with the endorsing capability in Power BI.

In this example, the certification type of endorsement is best suited for the Sales team because it will require users to have special access before they can view the Sales dashboards. By implementing the certification, you'll lead your users to the most appropriate reports and dashboards, avoiding the inevitable confusion that might arise with building and sharing a diversity of reports.

Though you'll soon learn how to certify the semantic model, you'll first learn how to promote a semantic model, in case you prefer to use that method.

Promote a semantic model

To promote content, you must have write permissions on the workspace where the content you want to promote is located.

To promote a semantic model, go to the workspace in Power BI service, and then open the settings page for the semantic model that you want to promote. In this example, you want to promote the Sales semantic model.

Select the **Endorsement** setting.

The screenshot shows the 'Settings for Sales Semantic Model' page in the Power BI service. The navigation tabs at the top are General, Dashboards, Semantic models (selected), Workbooks, Reports, Dataflows, and App. On the left, a sidebar lists 'Sales Semantic Model'. The main content area displays the following settings:

- [View semantic model](#)
- This semantic model has been configured by [admin@xxxx.onmicrosoft.com](#).
- Last refresh succeeded: 3/17/2025, 1:32:05 PM
- [Refresh history](#)
- ▷ Semantic model description
- ▷ Gateway and cloud connections
- ▷ Data source credentials
- ▷ Parameters
- ▷ Refresh
- ▷ Data connections
- ▷ Q&A
- ▷ Featured Q&A questions
- ▷ Endorsement and discovery** (highlighted with a red box)
- ▷ Request access

In the **Endorsement** settings, select the **Promoted** option, and then select **Apply**.

4 Endorsement and discovery

Help coworkers find your quality content by endorsing this semantic model and making it discoverable. [Learn more](#)

☐ None

This semantic model will appear in search results but isn't endorsed.

☒ Promoted

When you're ready to distribute the semantic model to your coworkers, promote it to let them know.

☐ Certified

Certify your semantic model to show coworkers that it's been reviewed and meets your org's certification criteria. [How do I get my semantic model certified?](#)

☐ Master data

This Semantic model is a core source of organizational data records. [How do I get my semantic model endorsed as master data?](#)

☒ Make discoverable

Allow users without access to this semantic model to discover it and request permissions to access the data [Learn more](#)

ⓘ This semantic model will be made discoverable. Others in your org will be able to find it by such details as name, tables, columns, etc. [Learn more](#)

Apply

Discard

When you return to your workspace, a badge in the **Endorsement** column for that semantic model will appear, indicating that it's ready for viewing by all of your users.

Name	Type ↓	Task	Owner	Refreshed	Next refresh	Endorsement	Sensitivity	Included in app
 Sales Semantic Model	Semantic mo...	—	Sales Contoso	3/17/2025, 1:32...	N/A		—	

Certify a semantic model

Content certification is a big responsibility, and only authorized users can certify content. Other users can request content certification.

To request certification for a semantic model, you start the same way as you did to promote the semantic model in **Endorsement** section. If it is greyed out, your admins will provide details in a link titled, "*How do I get my semantic model certified?*" in the **Certified** section.

4 Endorsement and discovery

Help coworkers find your quality content by endorsing this semantic model and making it discoverable. [Learn more](#)

☐ None

This semantic model will appear in search results but isn't endorsed.

☐ Promoted

When you're ready to distribute the semantic model to your coworkers, promote it to let them know.

☒ Certified

Certify your semantic model to show coworkers that it's been reviewed and meets your org's certification criteria. [How do I get my semantic model certified?](#)

☐ Master data

This Semantic model is a core source of organizational data records. [How do I get my semantic model endorsed as master data?](#)

☒ Make discoverable

Allow users without access to this semantic model to discover it and request permissions to access the data [Learn more](#)

ⓘ This semantic model will be made discoverable. Others in your org will be able to find it by such details as name, tables, columns, etc. [Learn more](#)

Apply

Discard

For more information, see [Promote your semantic model](#) or [Certify semantic models](#).

6. Use lineage and impact analysis

<https://learn.microsoft.com/en-us/training/modules/manage-datasets-power-bi/9a-lineage>

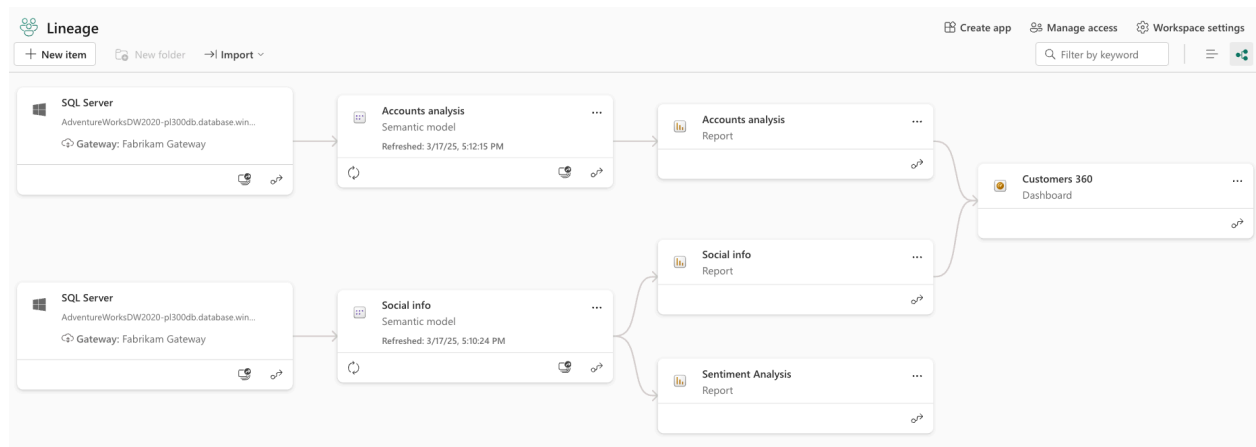
Use lineage and impact analysis

Completed

Understanding the flow of data from the data source to its destination can be a challenge. Questions like "What happens if I move this data?" or "Why isn't this report up to date?" can be hard to answer. They might require a team of experts or deep investigation to understand. Power BI's data lineage view helps you answer these questions.

Explore lineage view

In lineage view, you see the lineage relationships between all the artifacts in a workspace



Every workspace automatically has a lineage view. You need at least a Contributor role in the workspace to view it. In this view, you see all the workspace artifacts and how the data flows from one artifact to another.

You see the data sources from which the semantic models get their data. If a data source is connected via an on-premises gateway, the gateway information is added to the data source card.

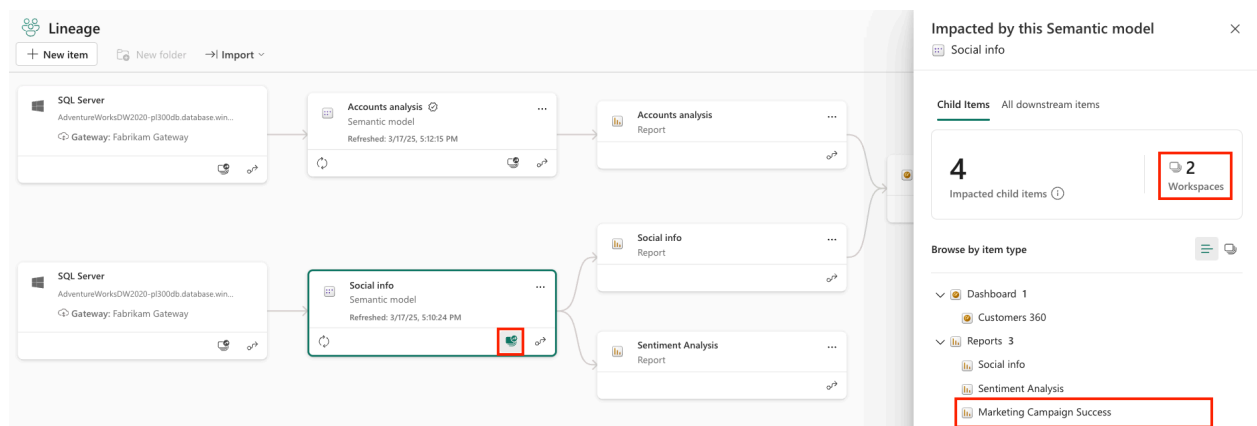
On semantic models, you see the last refresh time, and if the semantic model is certified or promoted.

Perform semantic model impact analysis

When you make changes to a semantic model, or are considering making changes, it's important to be able to assess the potential impact of those changes on downstream reports and dashboards that depend on that semantic model

Performing this impact analysis is useful for semantic models that are shared across workspaces, where it's complicated to get a clear picture of downstream dependencies.

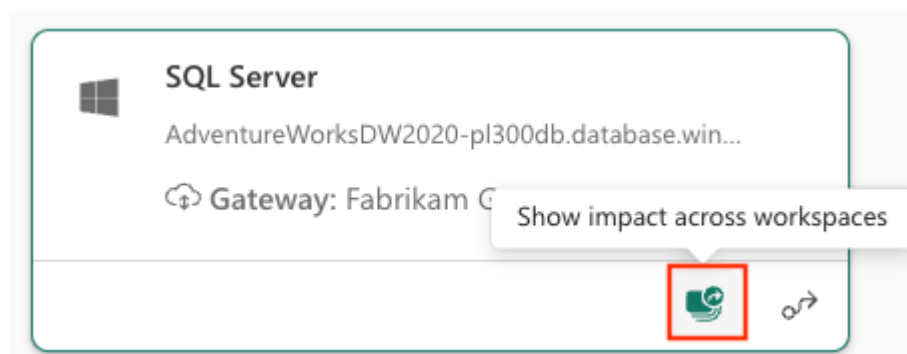
To perform semantic model impact analysis, select the impact analysis button on the semantic model card. The following screenshot demonstrates there's an additional report that depends on the semantic model. The report is in a different workspace, and the semantic model is shared with that workspace.



Perform data source impact analysis

Data source impact analysis helps you see where your data source is being used throughout your organization. This can be useful when the data source is temporarily or permanently taken offline, and you want to get an idea about who is impacted.

Similar to semantic model impact analysis, you can select the impact analysis button on the data source card.



7. Boost performance with query caching (Fabric or Premium capacity)

Boost performance with query caching (Fabric or Premium capacity)

Completed

With the **Query Caching** feature, you can use the local caching services of Power BI to process query results. Instead of relying on the semantic model to calculate queries, you use cloud resources on your Fabric or Premium capacities in the Power BI service to load your report. Query caching ensures constant performance instead of overloading the semantic model resources.

Building on the scenario, you notice that some of your semantic models are causing the reports to load more slowly than before, an issue that is starting to annoy your users. The Sales team wants to know how they can improve performance and make these reports load faster. You decide to use **Query Caching** to solve this problem.

Query caching

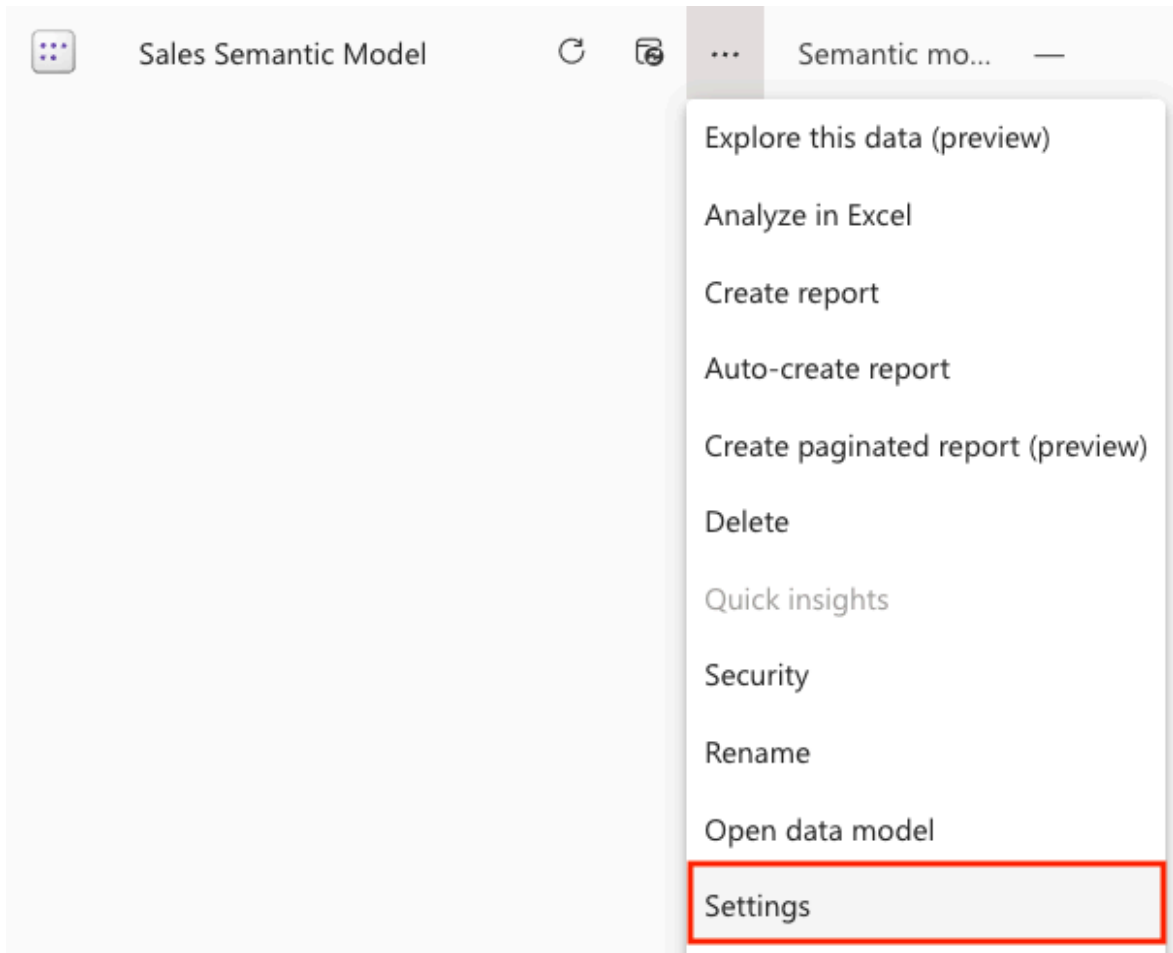
Query Caching is a feature that maintains cache results on a user and report basis. Query caching reduces load time and increases query speed, especially for semantic models that aren't refreshed often and are accessed frequently. This service is only available to users with Microsoft Fabric, Power BI Premium or Power BI Embedded.

The caching is performed the first time a user opens the report. The service only does query caching for the initial page that they land on. In other words, queries aren't cached when you interact with the report. Several benefits to using query caching include:

- Improvement of the performance of reports, dashboards, and dashboard tiles.
- It respects bookmarks and default filters.
- Cached query results are specific to the user.
- All security labels are followed.
- It reduces the load on your dedicated capacity.

To access and configure query caching, follow these steps:

1. Go to a semantic model in your workspace and open its **Settings** page. In this example, you enable query caching for **SalesModel**.



2. Select the **semantic models** tab and expand the **Query Caching** options, as shown in the following image.

▾ Query Caching

- ☐ Capacity default: query caching Off
- ☐ Off: Do not cache query results for this semantic model
- ☒ On: Speed up reports by using previously saved query results. [Learn more](#)

Apply

Discard

3. On the **Query Caching** page, choose one of the available options. The default option is that query caching is turned off; however, you can also select **Off**, which turns off query caching for the specific semantic model in question. If you select **On**, query caching is turned on for this specific semantic model only. For this example, you'll select **On** for your semantic model because you want to apply query caching to your specific semantic model.

Note

Switching from **On** to **Off** clears all previously saved query results. When turning off query caching (either through the default or the **Off** option), a small delay occurs in query loading because the report queries are running against the semantic model and it does not have saved queries to fall back on.

Warning

If many semantic models have query caching enabled, and a refresh occurs, a reduction in performance might occur because a large number of queries are being processed at once.

For more information, see [Query Caching in Power BI](#).

8. Check your knowledge

<https://learn.microsoft.com/en-us/training/modules/manage-datasets-power-bi/10-check>

Check your knowledge

Completed

9. Summary

<https://learn.microsoft.com/en-us/training/modules/manage-datasets-power-bi/11-summary>

Summary

Completed

This module allowed you to take advantage of the following features of Power BI to help you manage your semantic models:

- Two data refresh options to help you automate the refresh process and make it more efficient.
- Endorsement features for your most critical semantic models to help your users identify the semantic models that they should use.

- The on-premises gateway and ideas on how to troubleshoot potential connectivity issues.

These semantic model management techniques will help you to increase the ease of access and up-to-date nature of your semantic models, and will help you build high-quality reports and dashboards so that your users can make real-time decisions.