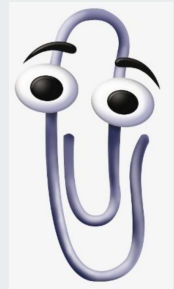




From Frustration to Fun: Mastering Power BI Errors with a Smile

Martine Pieck




Introduction

Martine Pieck


<https://www.linkedin.com/in/martinepieck/>

Experience


**IT Consultant**
European Commission - Contract
Apr 2021 - Present · 2 yrs 3 mos
Brussels, Brussels Region, Belgium

- Created compelling high visibility Power BI reports and dashboards for Commissioners and liaised successfully with various stakeholders to ensure a swift deployment of the required solutions
- Built an internal Power BI community and shared knowledge and expertise on Power BI with colleagues, blogs, presentations and internal social media
- Developed and provided Power BI training for both beginners and advanced Power BI users
- Provided support and recommendations to and shared expertise with Power BI administrators (e.g. to tenant and capacity administration, activity logs, backup/restore)
- Deployed Azure services and solutions (e.g. Azure Chat Bots, Azure Cognitive Services, Azure Web using Docker containers)
- Created data pipelines with Azure, Fabric / Power BI and Power Automate
- Provided support, guidance and expertise to data scientists on NLP projects using Python, Dash and knowledge graphs
- Worked in agile projects using Scrum and Kanban, and used project management tools like JIRA and Confluence, and version control tools like Gitlab and Github


Skills: Microsoft Power Automate · Docker Products · Microsoft Azure · Microsoft Power BI · Python (Programming Language)

**IT Consultant**
Freelancer
Oct 2009 - Apr 2021 · 11 yrs 7 mos
Amsterdam, North Holland, Netherlands


Search Engine Optimisation Analyst for various small and medium-sized returning clients, including an international travel website, a nutritional specialist, a car manufacturer, a dating site and numerous others...see more


**IT Consultant**
Royal Bank of Scotland Business - Contract
Jun 2009 - Sep 2009 · 4 mos
Amsterdam

- Established Project Management Office, including governance, processes, tooling and reporting.
- Provided direction, scope and vision to all business functions and regions involved in order to ensure successful project delivery...see more


**IT Consultant**
Telfort - Contract
Jun 2008 - Dec 2008 · 7 mos
Amsterdam

- Renegotiated and agreed large backlog of expired contracts between IT suppliers and internal clients
- Renegotiated Governance and Service Management sections of key outsourcing partner contracts...see more

**ABN AMRO Bank N.V.**
Full-time · 9 yrs 2 mos
Amsterdam

**IT Consultant**
Aug 2007 - Jun 2008 · 11 mos


- Delivered improvement proposal for Demand Management in a multi-vendor outsourcing model and detailed plan for pilots and organisational readiness as part of the Shared Services Utility proposal...see more


**Global Change and Configuration Manager**
Nov 2005 - Jul 2007 · 1 yr 9 mos


- Designed, negotiated and implemented Global IT SOX project successfully to extremely tight deadline.





CERTIFICATION


**Microsoft Certified: Azure Associate**
Expires on December 12, 2024 at 12:59 AM (UTC -0-1:00) • Earned on January 19, 2021
[View certification details](#)

**Microsoft Certified: Power BI Data Analyst Associate**
Expires on January 20, 2024 at 12:59 AM (UTC -0-1:00) • Earned on January 19, 2021
[View certification details](#)

**Microsoft Certified: Azure Enterprise Data Analyst Associate**
Expires on April 2, 2024 at 1:59 AM (UTC -0-2:00) • Earned on June 29, 2022
[View certification details](#)

**Microsoft Certified: Azure Enterprise Data Analyst Associate**
Expires on June 30, 2024 at 1:59 AM (UTC -0-2:00) • Earned on June 29, 2022
[View certification details](#)

**Microsoft Certified: Azure AI Fundamentals**
Earned on February 6, 2022
[View certification details](#)

**Microsoft Certified: Azure Fundamentals**
Earned on December 7, 2020
[View certification details](#)

CERTIFICATIONS

**Microsoft Certified: Power BI Data Analyst Associate**
PL-300

CERTIFICATIONS

**Microsoft Certified: Azure Enterprise Data Analyst Associate**
DP-500

Agenda

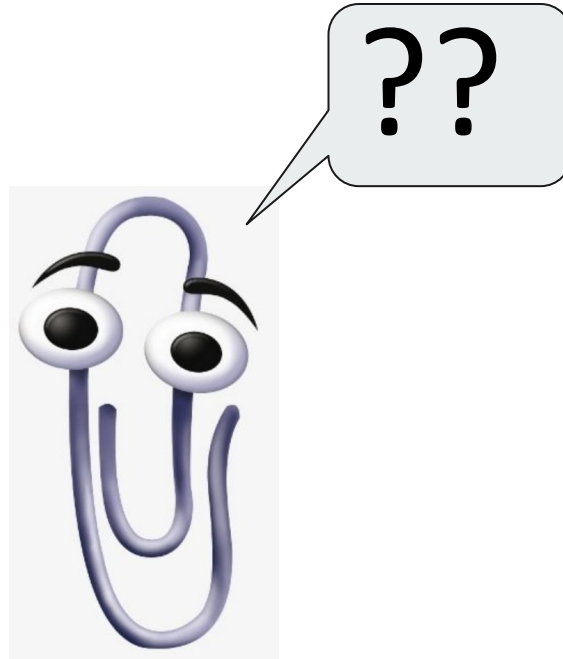


- Some context: what are errors & Power BI error types
- 8 common Power BI errors:
 - Analyze the error message
 - Find the cause
 - How to fix it
- Error resolution strategies
- Avoiding errors before they happen
- Q & A

skill level:
200 - intermediate

Questions?

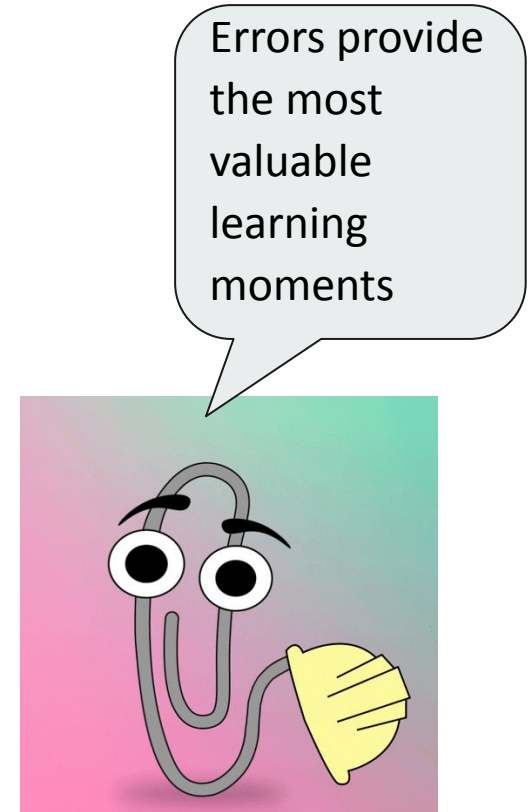
- Please ask during the Q & A



Some context

What is an error?

- **Errors** stop the report from working and show up both during report development and after deployment
- **Bugs** do not stop the report from working but cause unpredictable behaviour
- In this session we will only focus on errors
- Error fixing is part of the job when you are building and maintaining Power BI reports and dashboards



Power BI error types (& examples)



- **Power BI Desktop application errors:** *application not launching or crashing, sign-in issues*
- **Data source errors:** *incorrect login credentials, proxy errors, missing data source*
- **Power Query errors:** errors that appear when loading, cleaning, transforming and refreshing your data in the Power Query editor
 - step-level errors: *column not found*
 - cell-level errors: *value in cell doesn't match data type*
- **Data modeling errors:** *incorrect cardinality, incorrect filter directions, DAX errors*
- **Visualization errors:** *visuals that time out during loading, visuals that are not displayed*
- **Power BI Service errors:** *refresh errors, gateway errors*

Power BI error - top 8

1. Could not find file

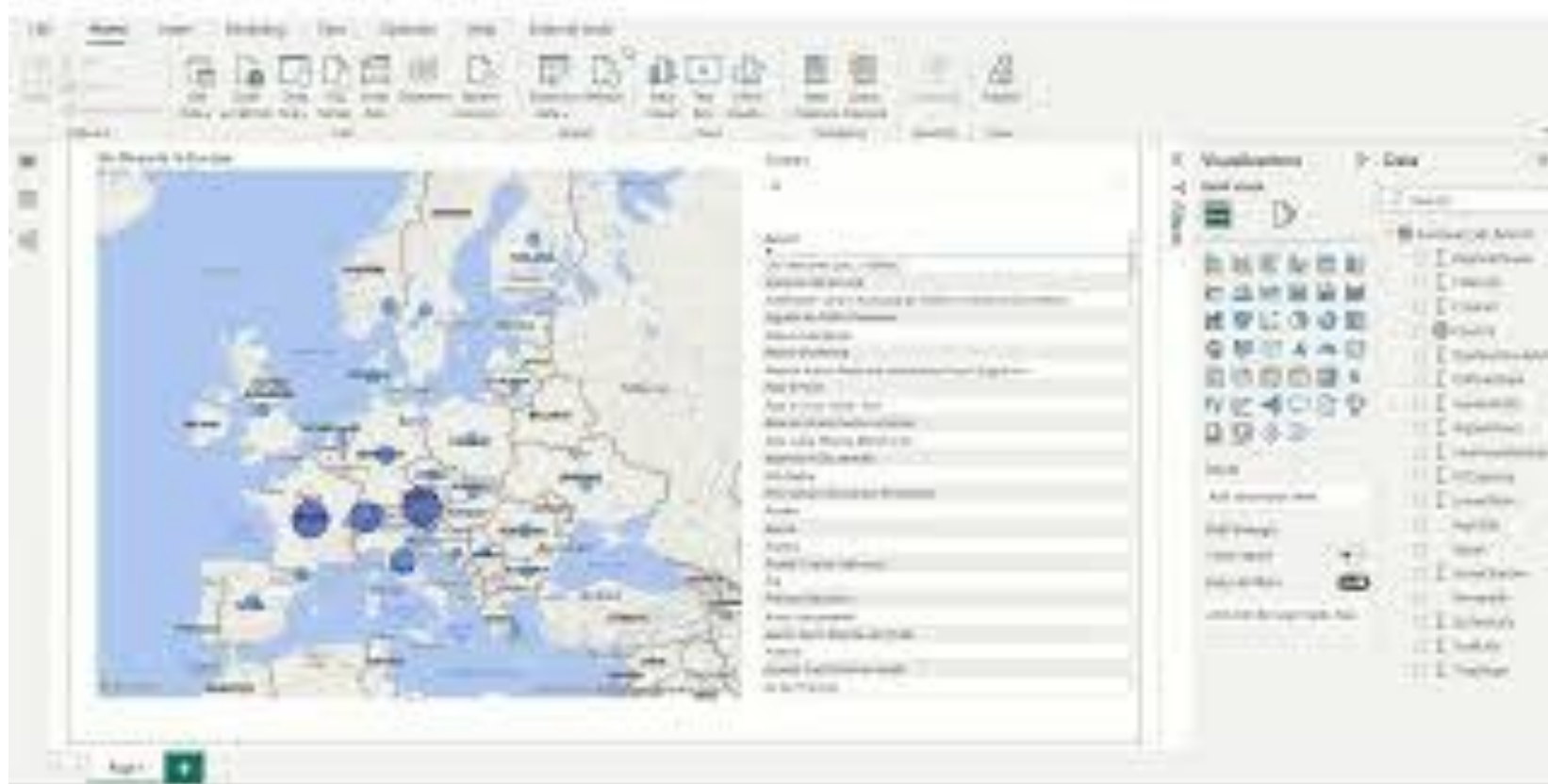
1. Could not find file

Description

- When refreshing your dataset in Power BI Desktop, you get the error 'Could not find file'.
- Error type: Data source error



1. Could not find file



1. Could not find file

Cause

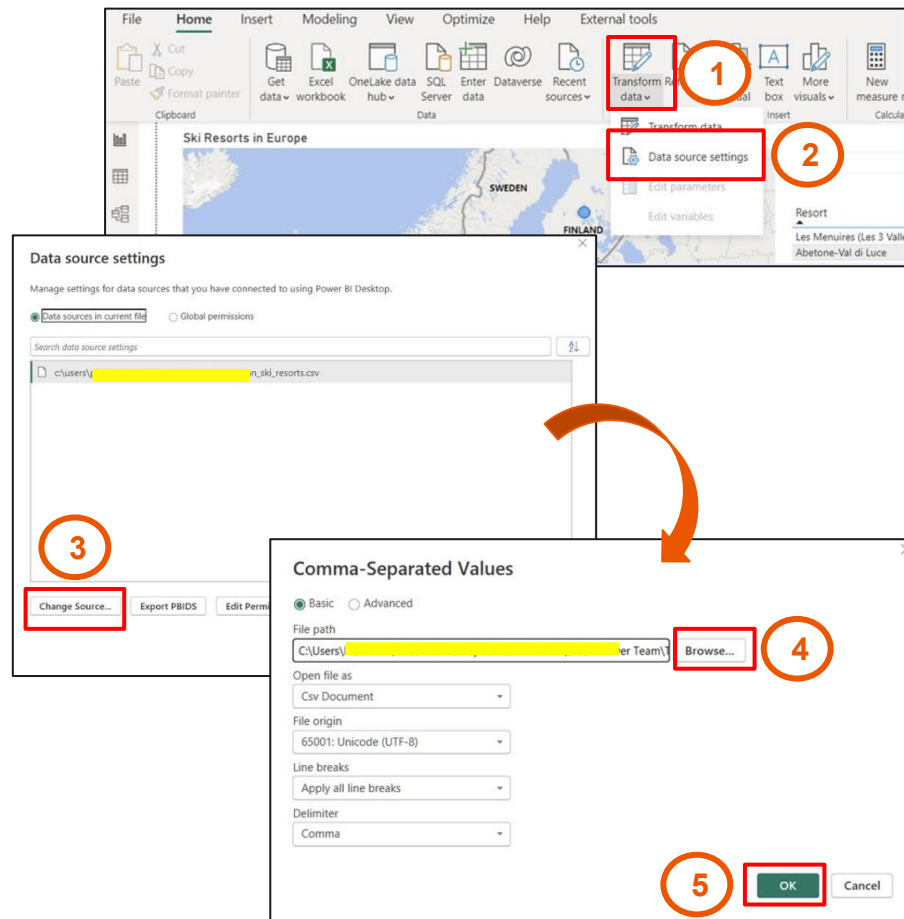


- **Data source** that is connected to your Power BI report has been **renamed, moved or deleted**.
- To refresh a Power BI report in Power BI Desktop or Power BI Service, the underlying data source always needs to be present in the location where you connected it to when you built the report.

1. Could not find file

Solution

- Verify your data source is in the location where Power BI expects it to be.
- If it has moved, click Transform Data > Data source settings, then select the data source and click on the button 'Change Source'. Now select the correct file path and then click OK.

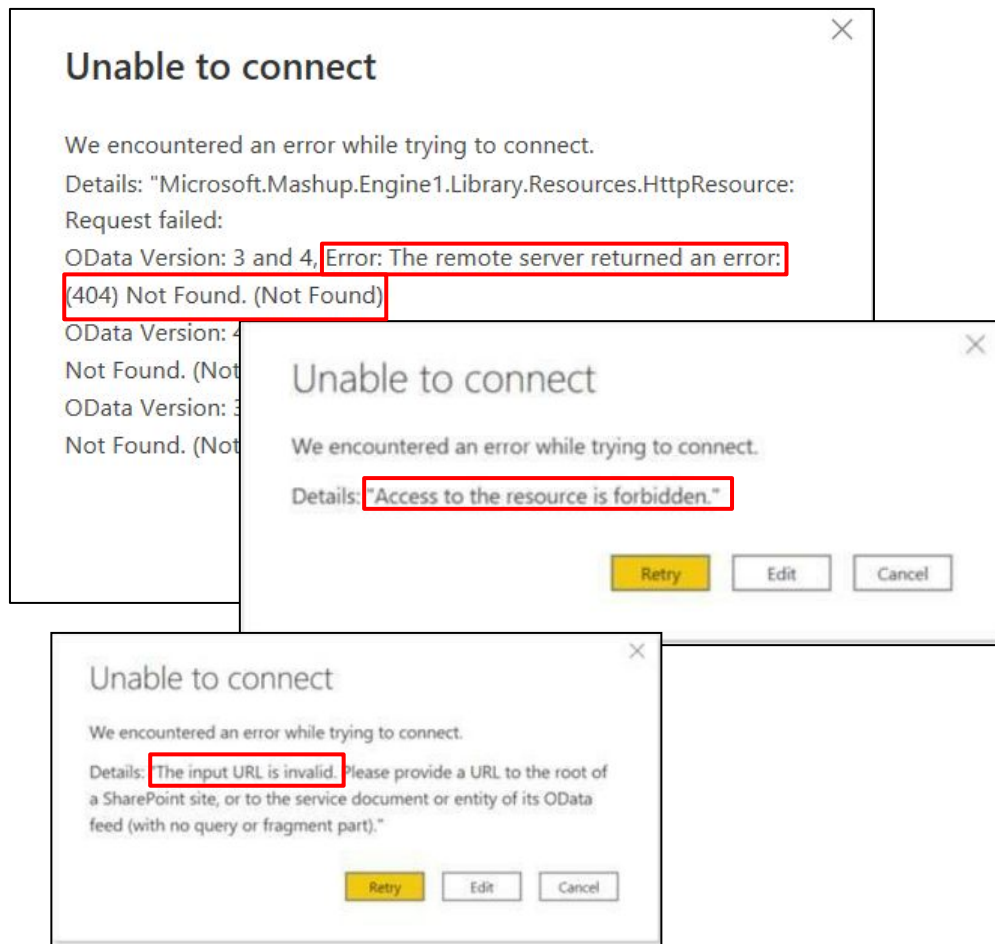


2. Can't connect to SharePoint data source

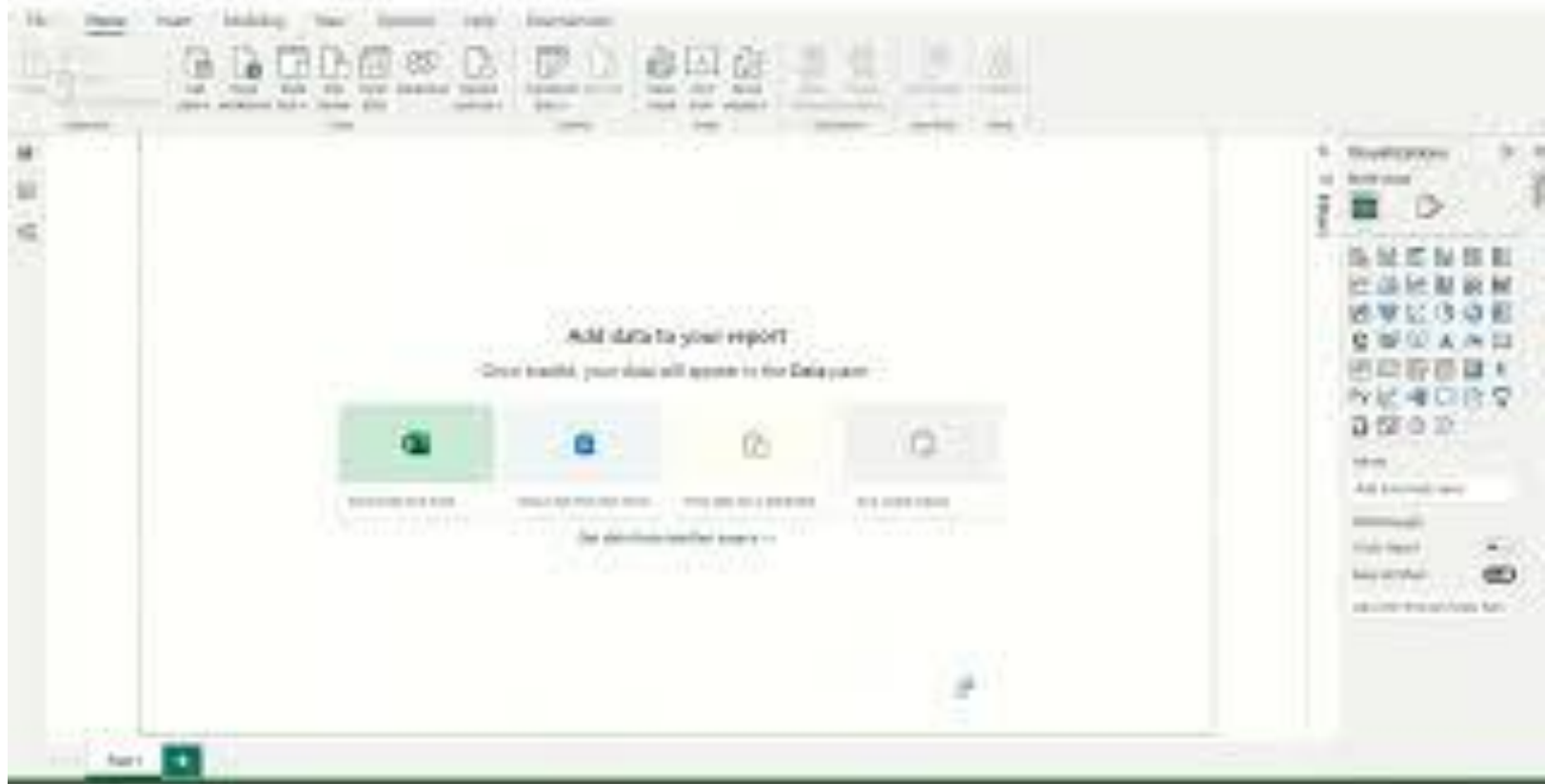
2. Can't connect to SharePoint data source

Description

- Power BI and SharePoint are seamlessly integrated
- Nevertheless, when you try to connect or refresh, errors may occur like:
 - 'Access to the source is forbidden'
 - 'The input URL is invalid'
 - 'The remote server returned an error: (404) Not Found'
- Error type: Data source error



2. Can't connect to SharePoint data source



2. Can't connect to SharePoint data source

Cause

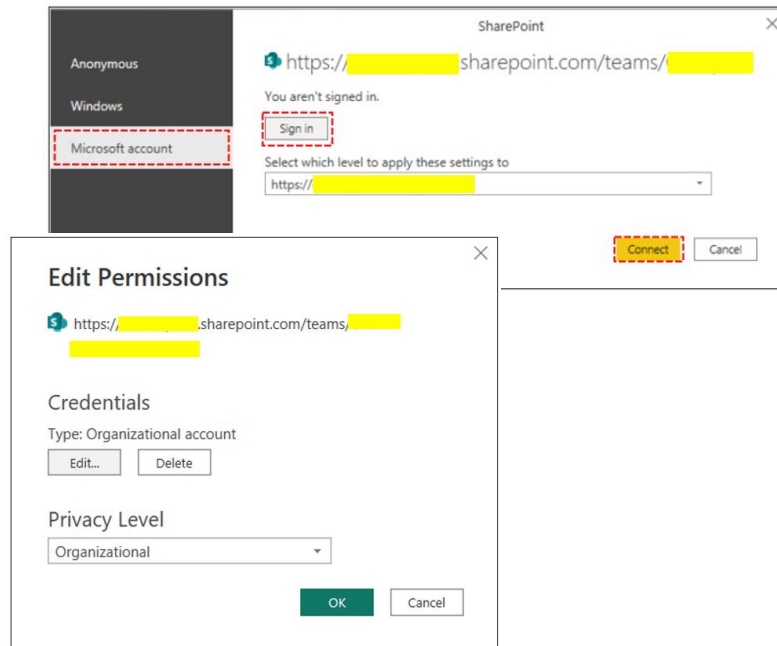


- Incorrect URL
- Incorrect [authentication method](#)
- Incorrect [privacy level](#)
- Outdated or incorrect credentials that are already stored in your Power BI report

2. Can't connect to SharePoint data source

Solution

- First **verify that you have access** to the SharePoint channel you want to connect to. Test by putting the URL of the site in the URL-bar of your browser and then see if you can open it.
- Ensure you copy the **correct URL**, which should be the root path only, e.g.
`https://YOURORG.sharepoint.com/sites/YOURSITE`
- When asked to provide credentials, ensure that you select 'Microsoft account' as [authentication method](#) and 'Organizational' as [privacy level](#)

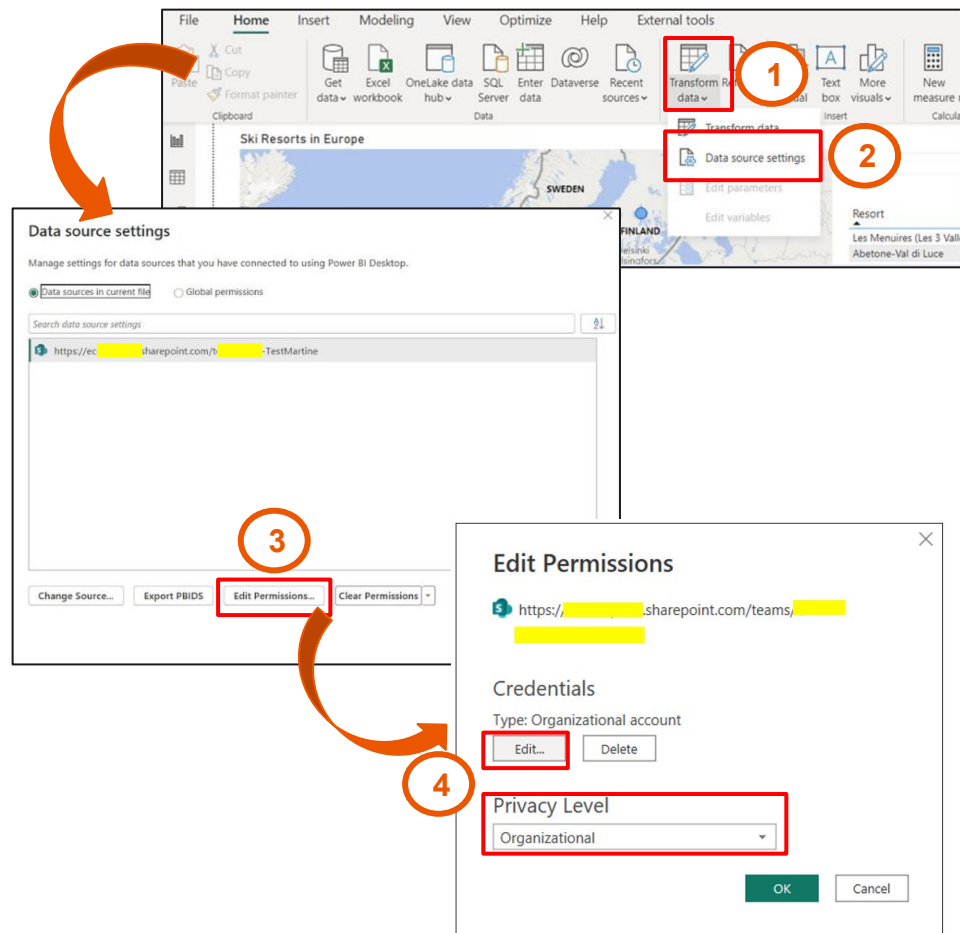


2. Can't connect to SharePoint data source

Solution

Still can't connect?

- Most likely cause: **(invalid) credentials that are already stored in the data source settings.**
- Remove these by going to the Data Source Settings. Then, select the SharePoint data source and click on 'Edit Permissions'. Then, select the correct privacy level and click on 'Edit' to update the credentials.

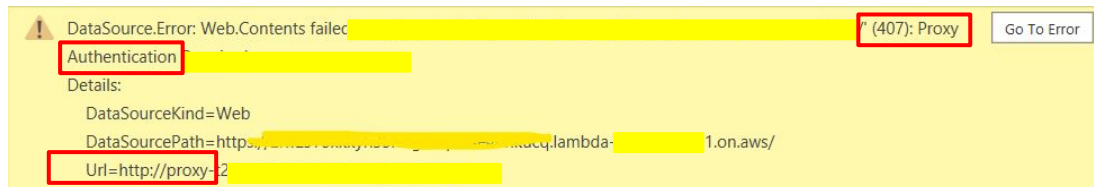
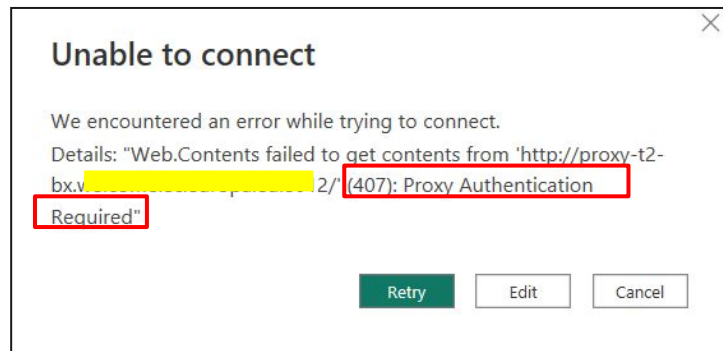


3. Proxy authentication error

3. Proxy authentication error

Description

- Proxy authentication error (407) occurs when you want to connect to a (data) source on the web
- Error type: Data source error



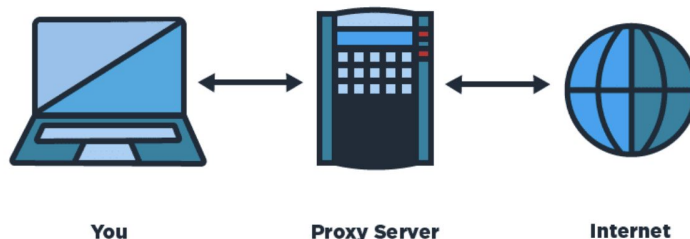
3. Proxy authentication error



3. Proxy authentication error

Cause

- Occurs when your computer is connected via a virtual network that requires you to use a proxy authentication server to access the Internet
- Proxy server: intermediary between your device and the internet to help improve security, performance, and privacy by handling requests and responses on behalf of the user.
- The **proxy server is blocking the web requests issued by Power BI Desktop**
- Power BI Desktop is not “proxy-aware”: no built-in support or functionality to directly communicate with or utilize proxy servers.



3. Proxy authentication error

Solution



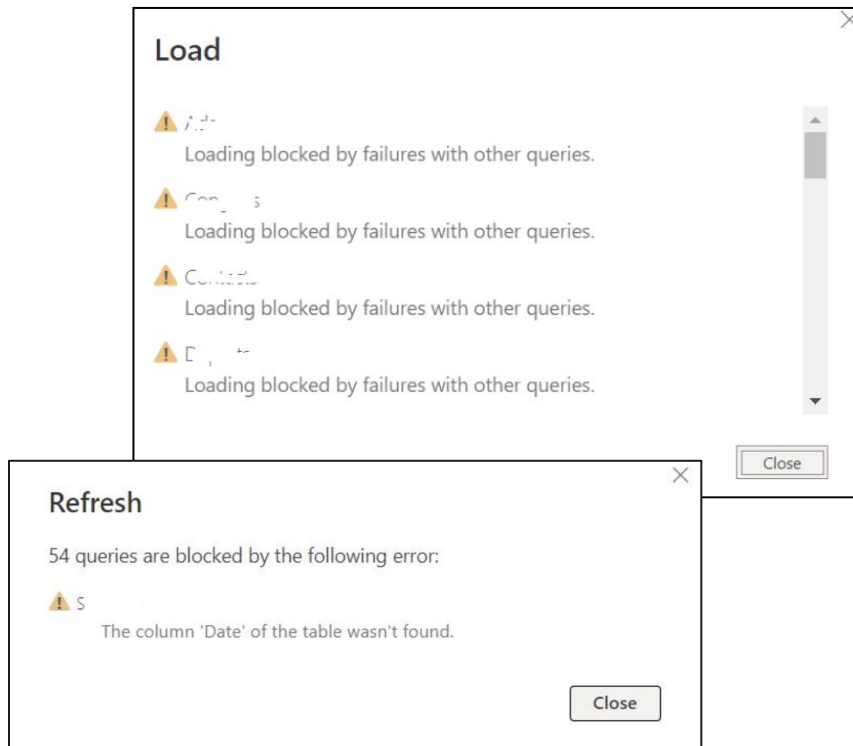
- Since Power BI Desktop is not “proxy-aware”, commonly used mechanisms to solve these kind of proxy issues, like Azure Application Proxy and other proxy services, won't work properly with Power BI Desktop.
- **Not recommended:** disconnect the VPN
- **Not an option:** white-list all URLs (except for those listed in Microsoft's [Service URL reference guide](#))
- **Recommended:** connect to the data source with a [Power BI dataflow](#), and then connect your Power BI Desktop report to the dataflow

4. Loading blocked by failures with other queries

4. Loading blocked by failures with other queries

Description

- You refresh your report in Power BI Desktop, and see one or multiple messages saying 'Loading blocked by failures with other queries' or 'Queries are blocked by the following error(s)'
- **Error type: Power Query error**



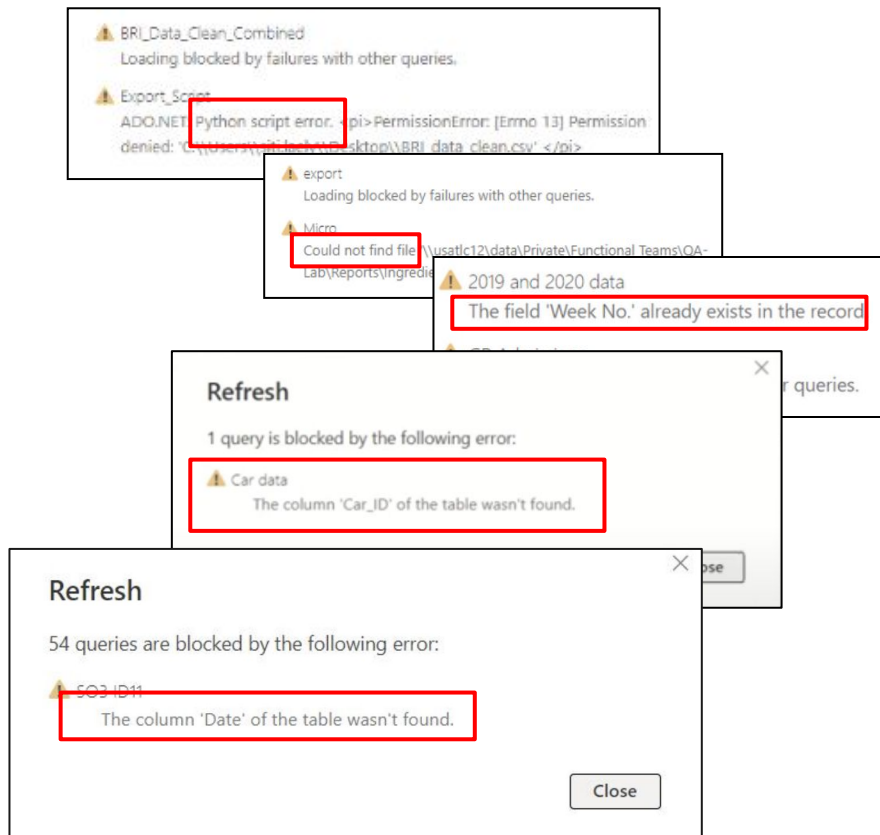
4. Loading blocked by failures with other queries



4. Loading blocked by failures with other queries

Cause

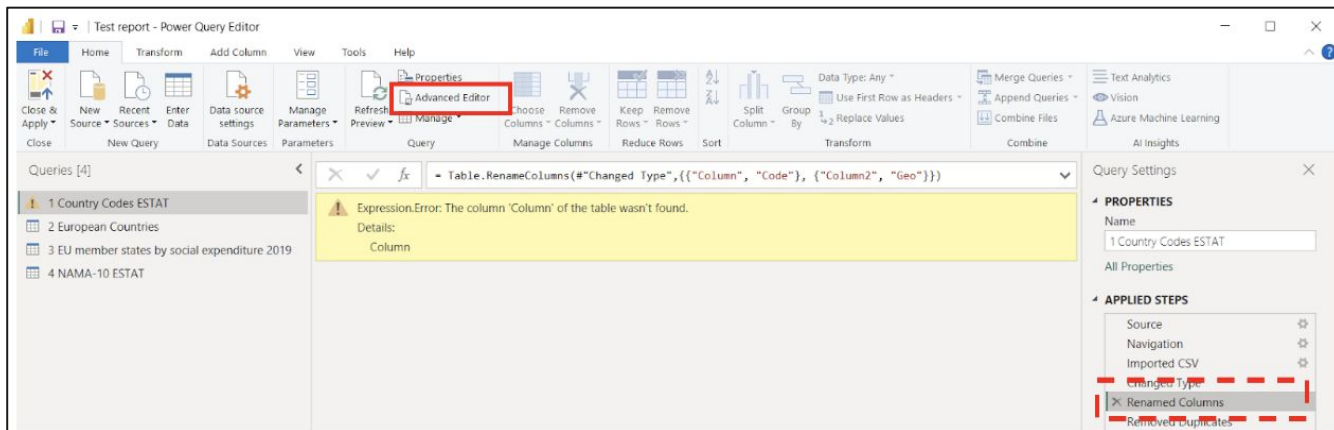
- Scroll down in the window with all error messages to see which query is throwing an error
- Read the error message(s) displayed, it will tell you in which query the error occurs



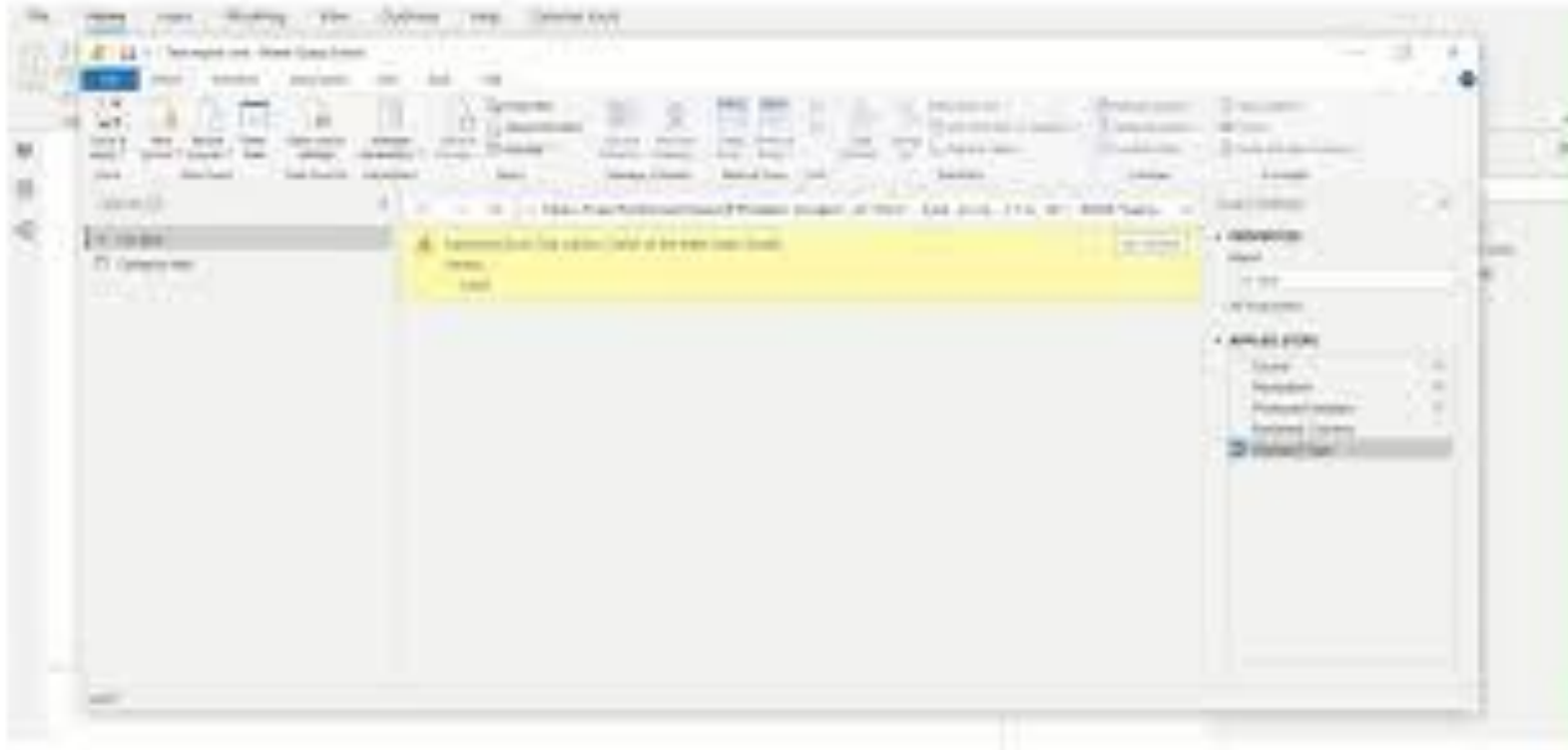
4. Loading blocked by failures with other queries

Solution

- Open the Power Query Editor, select the query and walk through the 'Applied steps' step-by-step from top to bottom, until you find the step where the error occurs. Fix or rebuild from here.



4. Loading blocked by failures with other queries

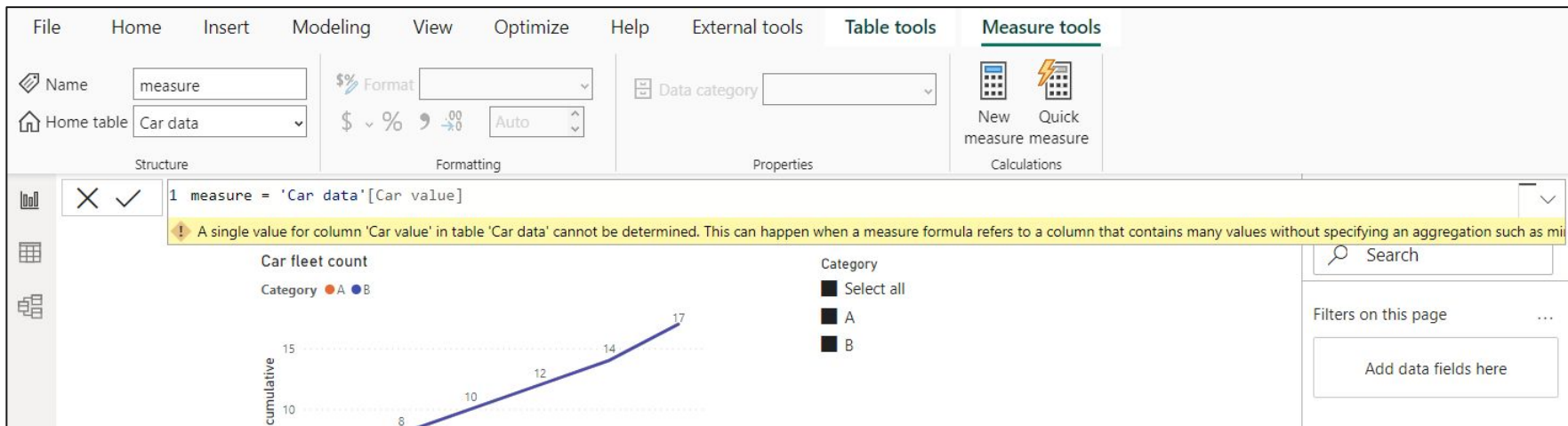


5. A single value cannot be determined

5. A single value cannot be determined

Description

- When creating a DAX measure, you get the error: 'A single value for column '<column name>' in table '<table name>' cannot be determined.
- **Error type: Data modeling error**



5. A single value cannot be determined

Cause

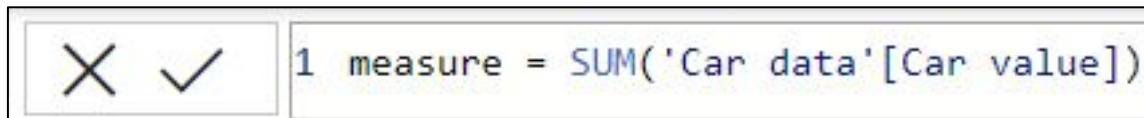


- A single value can't be determined when a DAX measure refers to a column that contains many values without specifying an aggregation
- When creating a **DAX measure**, the outcome must always be a **single (scalar) value**
- Most likely scenario: (the use of) DAX measures and DAX calculated columns are mixed up

5. A single value cannot be determined

Solution

- When creating DAX calculations:
 - first define what you'd wish to calculate
 - then determine which DAX calculation type (DAX measure or DAX calculated column) is the most suitable
- Calculated columns are useful for creating new dimensions, while measures are the most efficient for aggregations and calculations



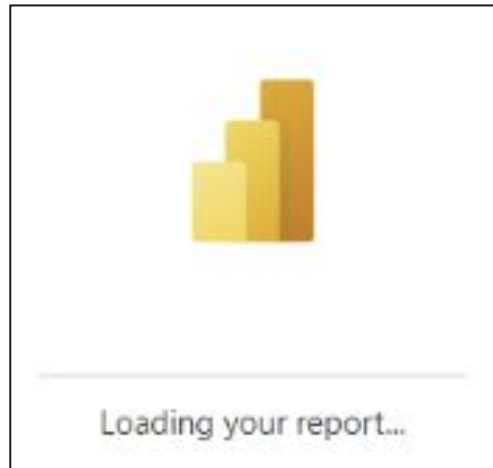
[Most common DAX errors](#) (SQLBI)

6. Visuals take ages to load

6. Visuals take ages to load

Description

- After opening your report in Power BI Desktop or Power BI Service, the visuals in your report take ages to load
- Error type: Visualization error



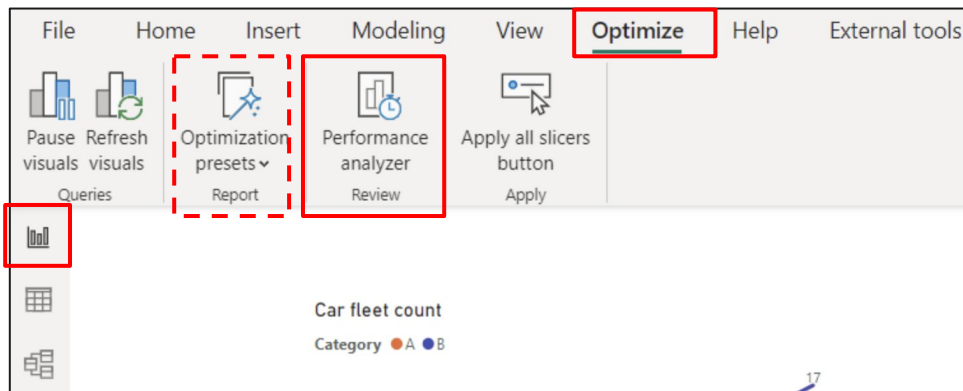
6. Visuals take ages to load



6. Visuals take ages to load

Cause

- In most cases, poor report performance is a direct result of:
 - bad data model and/or
 - inefficient DAX expressions
- To find out what is causing your report a long time to load, use the [Performance Analyzer tool of Power BI Desktop](#)



6. Visuals take ages to load

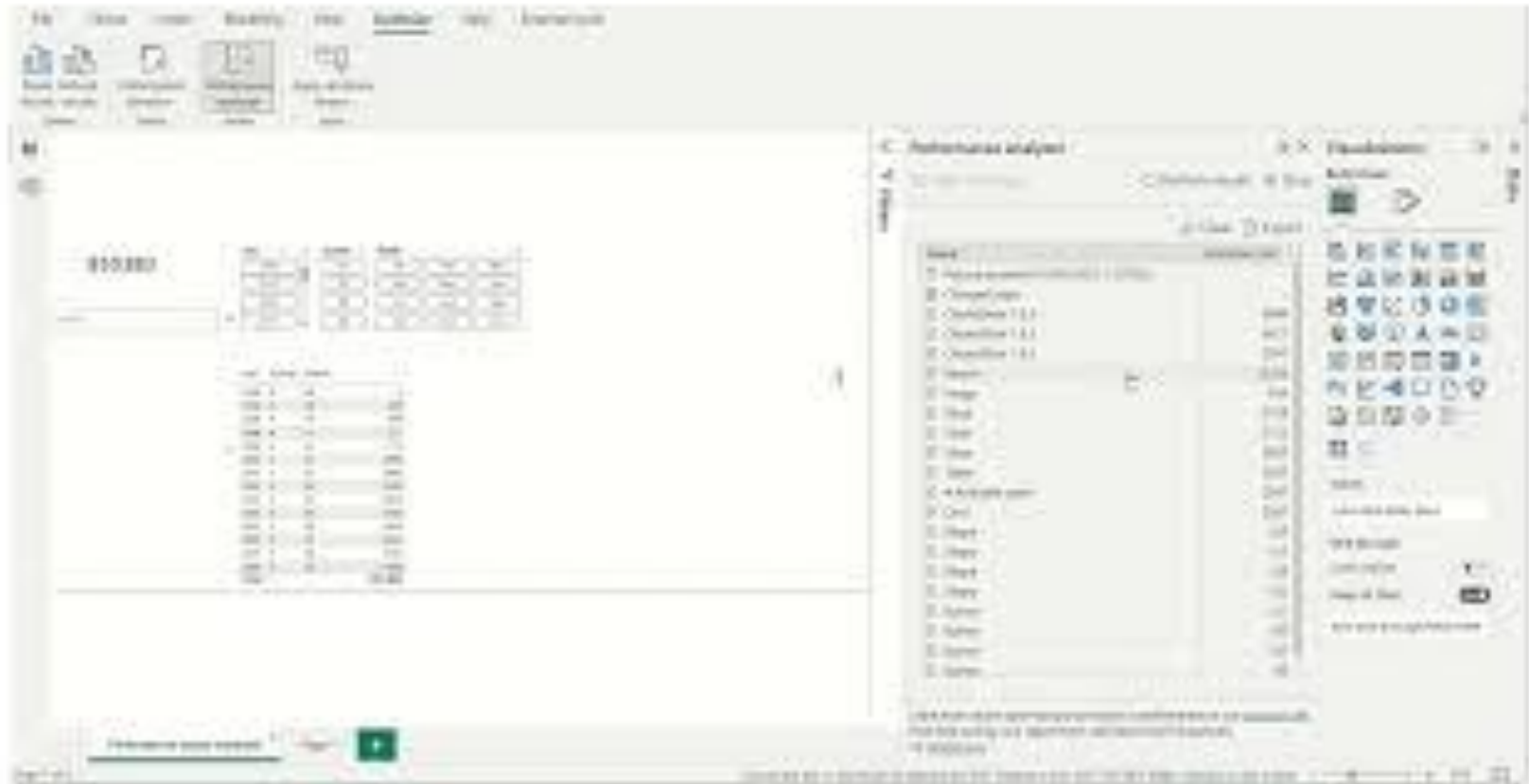
Performance Analyzer demo



Before you start:

- Open your Power BI report in Power BI Desktop
- **Clear visual cache:** add blank page to your report and then save the report on the blank page
- **Clear engine cache:** close the report and restart Power BI Desktop

6. Visuals take ages to load



6. Visuals take ages to load

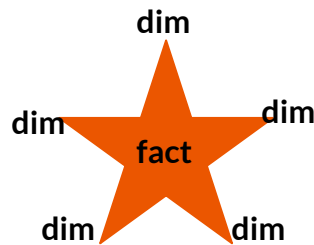
Solution

- Any DAX query that runs longer than 120 milliseconds is considered to have poor performance

- Optimize your **data model** ([star schema](#)!)

- Optimize **DAX calculations** - avoid:

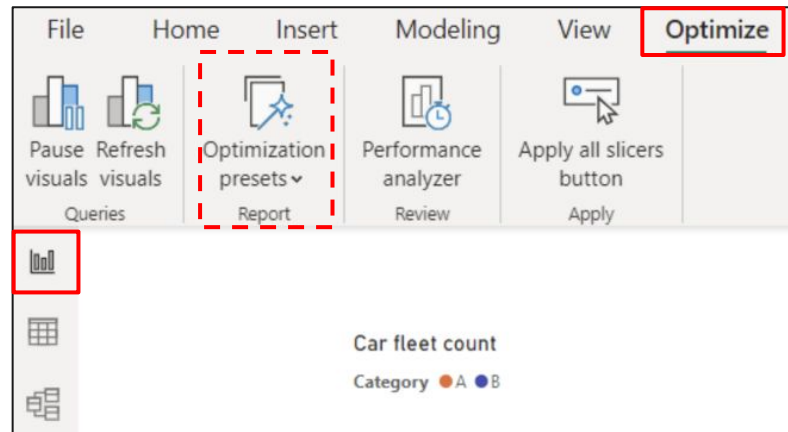
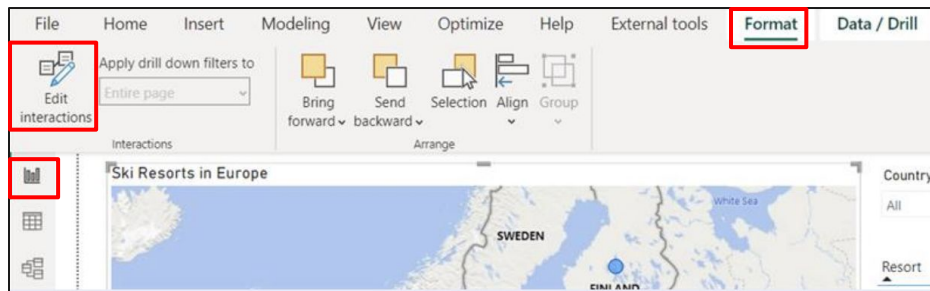
- complex logic
- FILTER
- (nested) IF
- nested iterators (SUMX, etc)
- EARLIER/EARLIEST
- VALUE/VALUES
- ISERROR/IFERROR
- Date functions (LASTDATE)
- ROUND
- FLOOR
- implicit measures
- calculated columns
- ...



6. Visuals take ages to load

Solution

- Reduce the **number of visuals** on a page and/or [interactivity](#) between the visuals
- Replace **nested matrix visual(s)** by other visual type
- Apply **Query Reduction** (turn off cross-highlighting/cross-filtering & add Apply button to the filter pane - see [Optimization presets](#))
- Apply [Query Caching](#) (Premium/Embedded only, see Settings in Power BI Service)

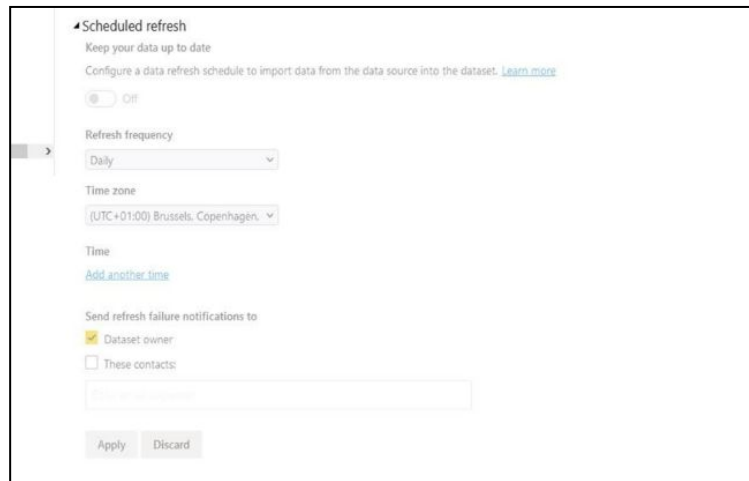
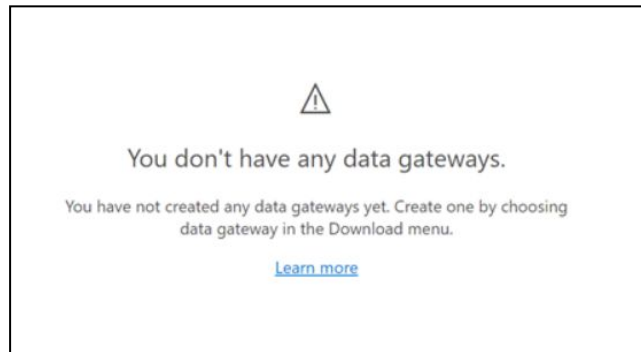


7. Missing gateway

7. Missing gateway

Description

- After you have published your report to Power BI Service and want to refresh your dataset, you get the message 'You don't have any data gateways' or 'missing credentials'.
- Or, when you want to schedule a refresh, the refresh option is greyed out (not accessible) in the Settings.
- **Error type: Power BI Service error**



7. Missing gateway



My workspace

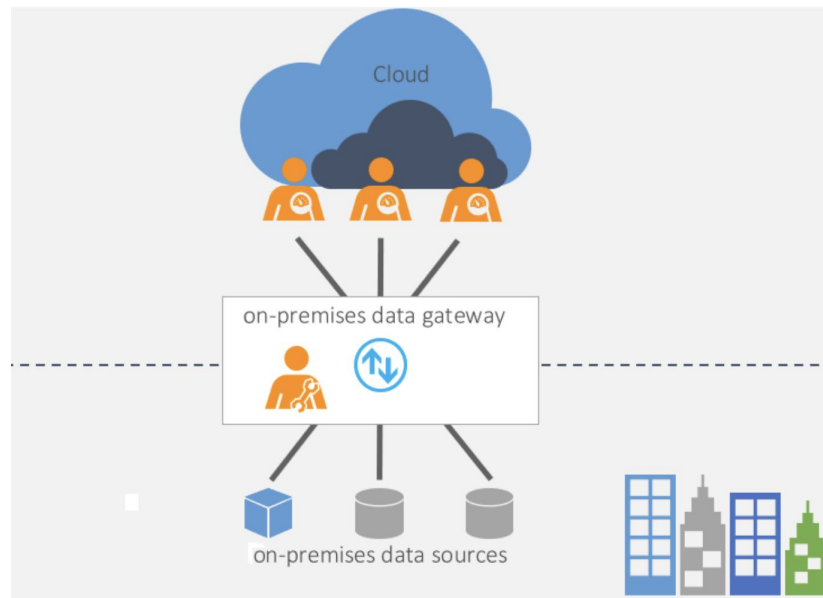
→ Home → Search → BPMN diagram

| ID | Name | Type | Start | End | Activity | Start event | End event | Activity |
|----|---------|---------|-------|-----|----------|-------------|-----------|----------|
| 1 | Start | Event | Start | End | Start | Start | End | Start |
| 2 | Task | Task | Start | End | Task | Start | End | Task |
| 3 | Gateway | Gateway | Start | End | Gateway | Start | End | Gateway |
| 4 | Task | Task | Start | End | Task | Start | End | Task |
| 5 | End | Event | Start | End | End | Start | End | End |

7. Missing gateway

Cause

- Occurs when a **gateway** is **required** to refresh
- **Secure communication channel** between Power BI Service and on-premises or web data sources
- Ensures **on-prem data is not exposed** to the cloud
- **Protects data during transmission** (encryption, authentication)



7. Missing gateway

Cause



- An On-Premises Data Gateway is required if you want to refresh your data in Power BI Service and your data are located on a:
 - On-premises network,
 - Cloud-based virtual machine
 - Cloud-based VNET
- Or when you want to use specific functionality:
 - Web scraping functions like `Web.Page()` or `Web.BrowserContents()`
 - A single M query that combines cloud and on-prem data

7. Missing gateway

Solution



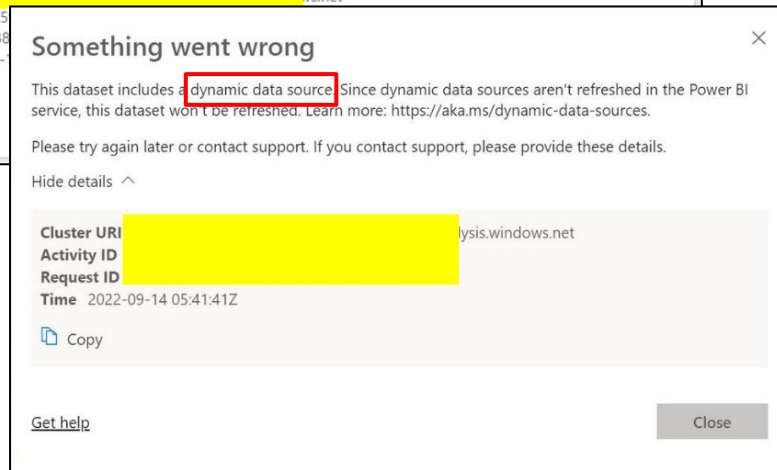
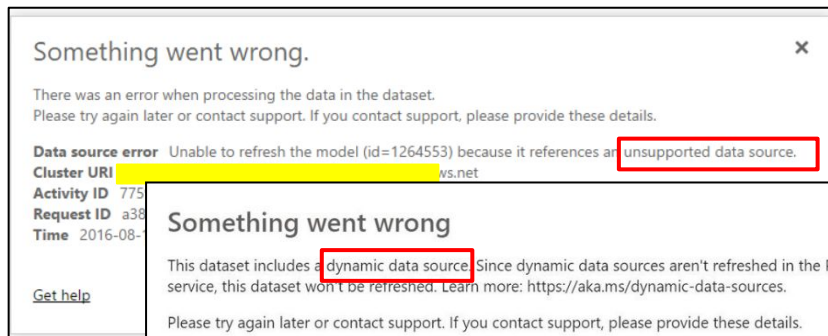
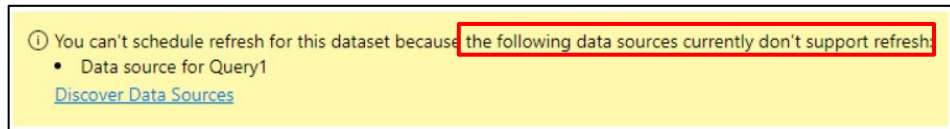
- **Install Power BI Gateway** (Standard mode / Personal mode)
- **Manually refresh in Power BI Desktop** and re-publish the report to Power BI Service (not recommended)
- For web sources, **use the Web.Contents() function** instead of the Web.Page() or Web.BrowserContents() function - if possible
- **Configure a scheduled export of your on-prem data to SharePoint** and then connect your Power BI report to the data in SharePoint
- **Migrate your on-prem data or schedule an export of a dump to Azure** and then connect your Power BI report to the Azure data source
- **Use other cloud tools/platforms** with their own gateway or that act as a gateway, that you can connect to or that can push data to Power BI, like KNIME

8. Data source doesn't support refresh

8. Data source doesn't support refresh

Description

- Power Query M code works well in Power BI Desktop, but causes errors when you try to refresh your dataset after it has been published to Power BI Service.
- **Error type: Power BI Service error**



8. Data source doesn't support refresh



The screenshot shows a web application titled "My workspace". On the left is a vertical toolbar with icons for various actions. The main area displays a table with columns: Name, Type, Status, Refreshed At, Description, Downloaded, and Deleted. The table lists several data sources, including "Google Analytics", "Facebook Analytics", "Twitter Analytics", "LinkedIn Analytics", "YouTube Analytics", "Instagram Analytics", "Pinterest Analytics", "TikTok Analytics", "Snapchat Analytics", "WhatsApp Analytics", "Telegram Analytics", "Viber Analytics", "WeChat Analytics", "Line Analytics", "Kakao Analytics", "Naver Analytics", "Daum Analytics", "NHN Analytics", "Kakao Analytics", "Naver Analytics", "Daum Analytics", "NHN Analytics", "Kakao Analytics", "Naver Analytics", "Daum Analytics", "NHN Analytics".

| Name | Type | Status | Refreshed At | Description | Downloaded | Deleted |
|---------------------|-----------|--------|------------------|---------------------|------------|---------|
| Google Analytics | Analytics | Active | 2023-10-26 10:00 | Google Analytics | Yes | No |
| Facebook Analytics | Analytics | Active | 2023-10-26 10:00 | Facebook Analytics | Yes | No |
| Twitter Analytics | Analytics | Active | 2023-10-26 10:00 | Twitter Analytics | Yes | No |
| LinkedIn Analytics | Analytics | Active | 2023-10-26 10:00 | LinkedIn Analytics | Yes | No |
| YouTube Analytics | Analytics | Active | 2023-10-26 10:00 | YouTube Analytics | Yes | No |
| Instagram Analytics | Analytics | Active | 2023-10-26 10:00 | Instagram Analytics | Yes | No |
| Pinterest Analytics | Analytics | Active | 2023-10-26 10:00 | Pinterest Analytics | Yes | No |
| TikTok Analytics | Analytics | Active | 2023-10-26 10:00 | TikTok Analytics | Yes | No |
| Snapchat Analytics | Analytics | Active | 2023-10-26 10:00 | Snapchat Analytics | Yes | No |
| WhatsApp Analytics | Analytics | Active | 2023-10-26 10:00 | WhatsApp Analytics | Yes | No |
| Telegram Analytics | Analytics | Active | 2023-10-26 10:00 | Telegram Analytics | Yes | No |
| Viber Analytics | Analytics | Active | 2023-10-26 10:00 | Viber Analytics | Yes | No |
| WeChat Analytics | Analytics | Active | 2023-10-26 10:00 | WeChat Analytics | Yes | No |
| Line Analytics | Analytics | Active | 2023-10-26 10:00 | Line Analytics | Yes | No |
| Kakao Analytics | Analytics | Active | 2023-10-26 10:00 | Kakao Analytics | Yes | No |
| Naver Analytics | Analytics | Active | 2023-10-26 10:00 | Naver Analytics | Yes | No |
| Daum Analytics | Analytics | Active | 2023-10-26 10:00 | Daum Analytics | Yes | No |
| NHN Analytics | Analytics | Active | 2023-10-26 10:00 | NHN Analytics | Yes | No |

8. Data source doesn't support refresh

Cause



- When a published dataset is refreshed, **Power BI Service validates the data sources and the supplied credentials**. However, when you use a dynamic data source, this validation fails.
- The result is that the dataset does not refresh, because some or all of the **information required to connect can't be determined until Power Query runs its query**.
- Examples of scenarios with a dynamic data source:
 - get data from all URLs stored in a SharePoint online list
 - the path of a CSV file or the URL of a web service contains parameters and/or parts that are part of a relative path

8. Data source doesn't support refresh

Cause

Advanced Editor

GetTime

Display Options ?

```
let functionName = (param as text) =>
let
  Source = Json.Document(
    Web.Contents(
      "https://worldtimeapi.org/api/timezone/" & param))
in
  Source
in functionName
```

relative path

parameter

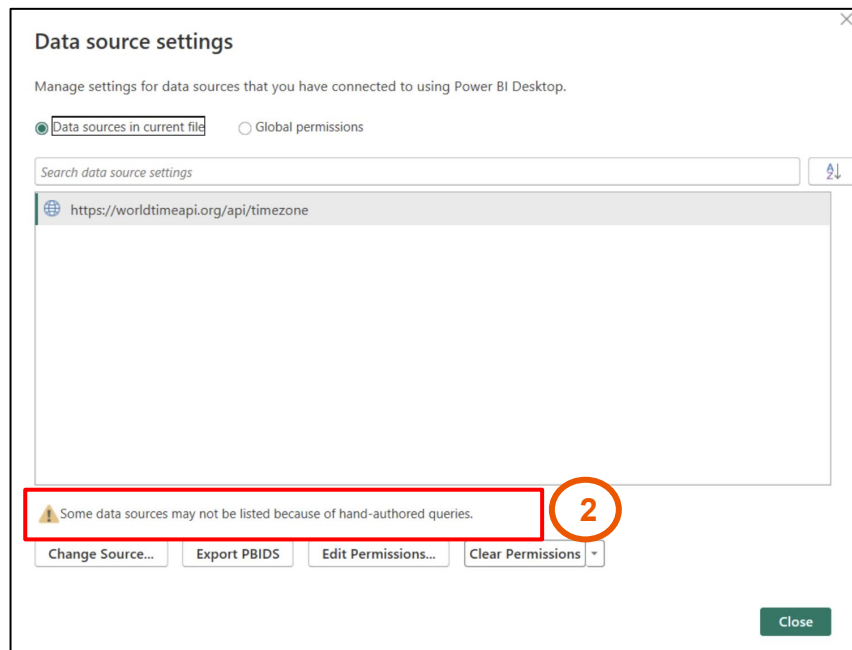
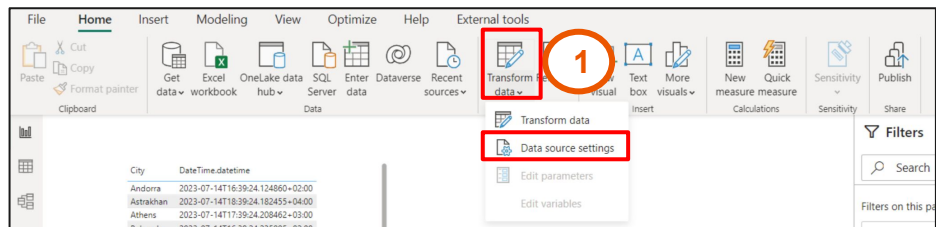
✓ No syntax errors have been detected.

Done Cancel

8. Data source doesn't support refresh

Solution

- To determine whether your dynamic data source can be refreshed, open your report in Power BI Desktop, and check the data sources by going to Transform data > Data source settings (1)
- If the data source is not listed because of hand-authored queries you will see a warning (2)



8. Data source doesn't support refresh

Solution

- If you use the **Web.Contents()** function in your query: [use the RelativePath and query options.](#)

The image shows two side-by-side screenshots of the 'Advanced Editor' window, illustrating the correct usage of the `Web.Contents()` function when the data source does not support refresh.

Left Screenshot: The function is called with a full URL: `Web.Contents("https://worldtimeapi.org/api/timezone/" & param))`. A red dashed box highlights this line. Below the editor, a green checkmark indicates 'No syntax errors have been detected.'

Right Screenshot: The function is called with a base URL and options: `Web.Contents("https://worldtimeapi.org/api/", [RelativePath="timezone/"¶m, Query = []])`. A red dashed box highlights this line. An orange arrow points from a text box to this line. Below the editor, a green checkmark indicates 'No syntax errors have been detected.'

Text Box: This only works if the base URL passed to the first parameter of `Web.Contents()` is valid in itself (is accessible and does not return an error) -> test in browser

Buttons: The right screenshot includes 'Done' and 'Cancel' buttons at the bottom right.

8. Data source doesn't support refresh

Solution



- In case of error with RelativePath:
 - configure the refresh in Power BI Service to '[skip test connection](#)', or
 - [override parts of the URL supplied in the first parameter when you specify the Query option](#).
- If you are not using **Web.Contents()** function in your query, you need to change your code or choose a different solution to connect to the data source, to ensure you are not using a dynamic data source.

Error resolution strategies

Error resolution strategies



Error resolution strategies

3 tips for efficient and effective error resolution



- Read and analyse the error message*
- Search your error message online
 - [Microsoft Power BI Community](#)
 - [Stackoverflow](#)
 - [ChatGPT](#) / [New Bing](#) / [Bard](#) / [Copilot](#)
- Ask a colleague

* [click here for HTTP status codes](#)

Avoiding errors before they happen

Avoid errors before they happen

6 tips for reducing the risk of errors

- **Ensure that your data sources are reliable** and consistently available in the agreed location, format and structure.
- **Use data transformation and cleaning techniques that anticipate** to missing values, duplicates, anomalies and inconsistencies in data (e.g. do not promote headers but rename all, remove other columns, remove rows with errors, etc.)
- **Implement error handling and validation mechanisms**
 - DAX `Error = IFERROR([YTD Sales Growth],9999)` (caution: performance!)
 - Power Query M

```
let
    x = try "A"
in
    if x[HasError] then x[Error] else x[Value]
```

Avoid errors before they happen

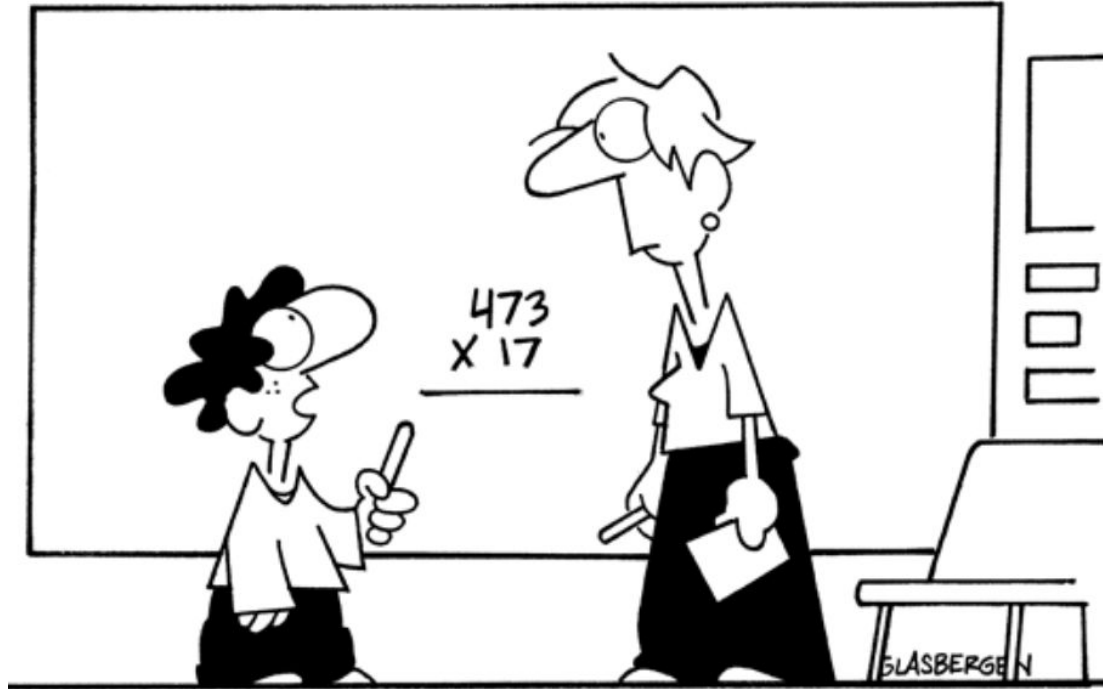
6 tips for reducing the risk of errors



- **Optimize the performance** of your Power BI reports and dashboards: avoid complex and inefficient calculations, limit the number of visuals and data points, use appropriate filters and slicers, and leverage data modeling best practices (for more tips see common error 6).
- **Thoroughly test your Power BI report before deploying it:** click on all pages, visuals and buttons, publish the report to Power BI Service, test the report once more and refresh (manually and scheduled).
- **Document** your data sources, transformations, calculations, and report logic to facilitate troubleshooting and future maintenance.

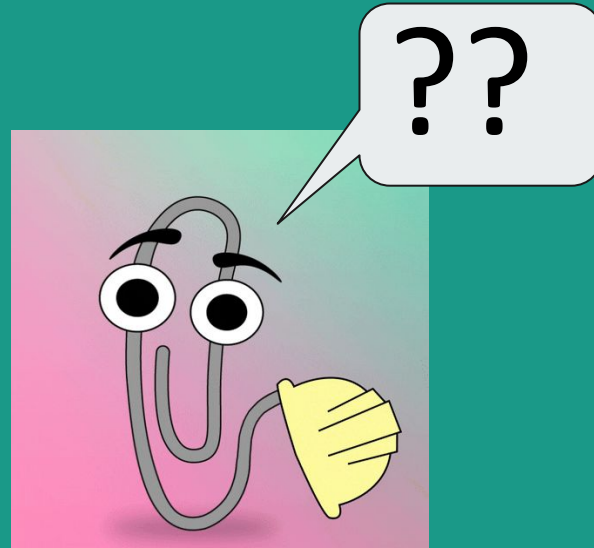
Avoid errors before they happen

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**“If we learn from our mistakes, shouldn’t
I make as many mistakes as possible?”**

Questions?





**Thank you and have fun
resolving Power BI errors!**

