Power BI Development on Steroids

2021-09

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+ 15 years "playing" with data

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Power BI Dev on Steroids

- Tools
- {Dev} Techniques
- Fast Paced ☺

Focus on the possibilities not details…

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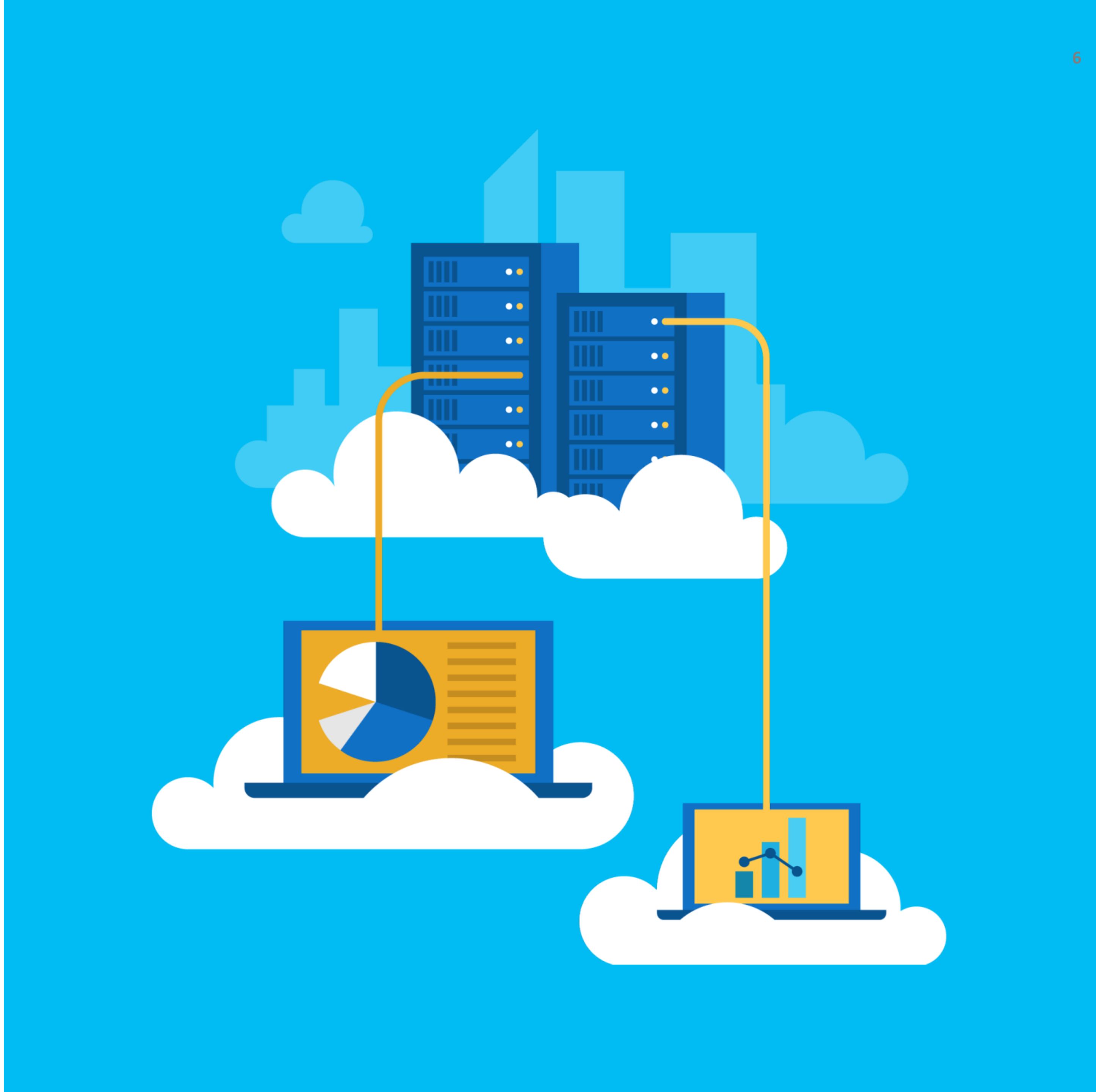
Tools

My personal perspective on:

- DAX Studio
- Tabular Editor
- ALM Toolkit



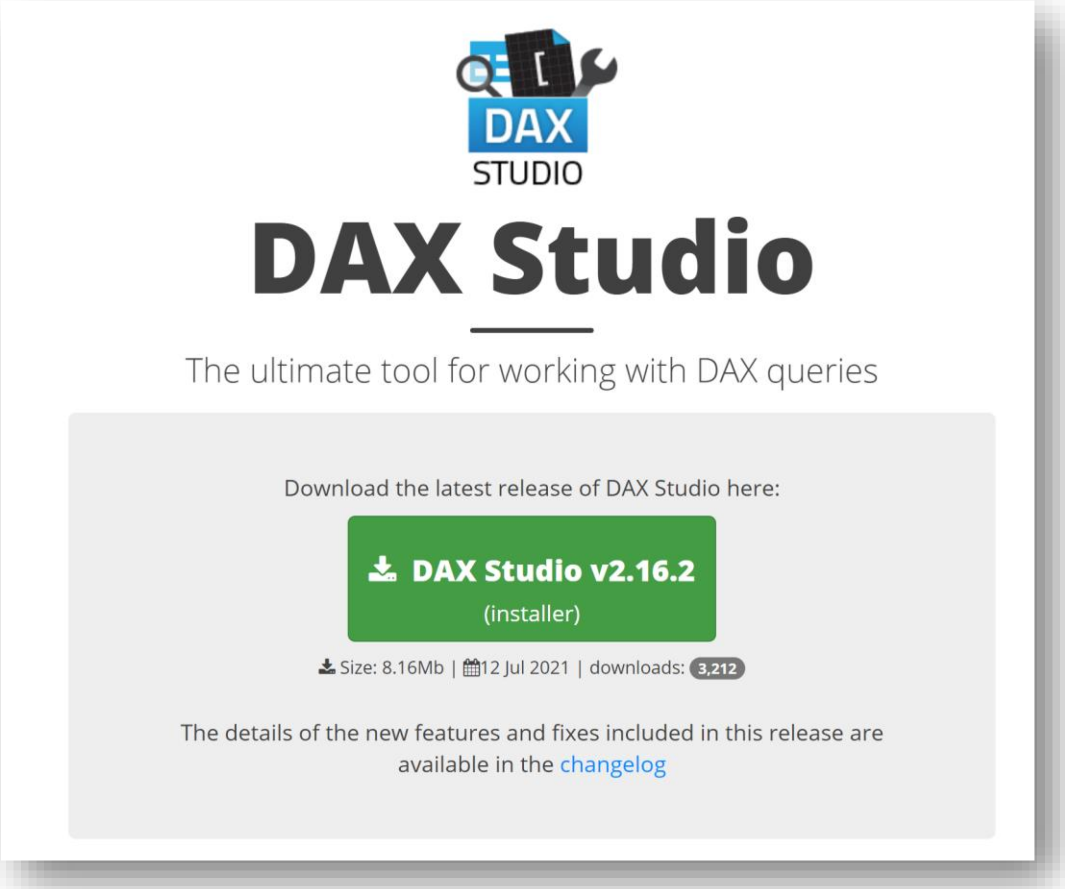
DAX Studio

https://daxstudio.org/ by Darren Gosbell

DAX Query Editor

Main Use Cases:

- DAX Query Editor / Builder / Formatter
- DAX Performance Tuning & Debugging
- Quick Inspect Model w/ "View Metrics"
- Export Data: Folder / SQL Server ♡



DAX STUDIO

DAX Studio

The ultimate tool for working with DAX queries

Download the latest release of DAX Studio here:

Size: 8.16Mb | 12 Jul 2021 | downloads: 3,212

The details of the new features and fixes included in this release are available in the changelog

Learn more: Tool Intro

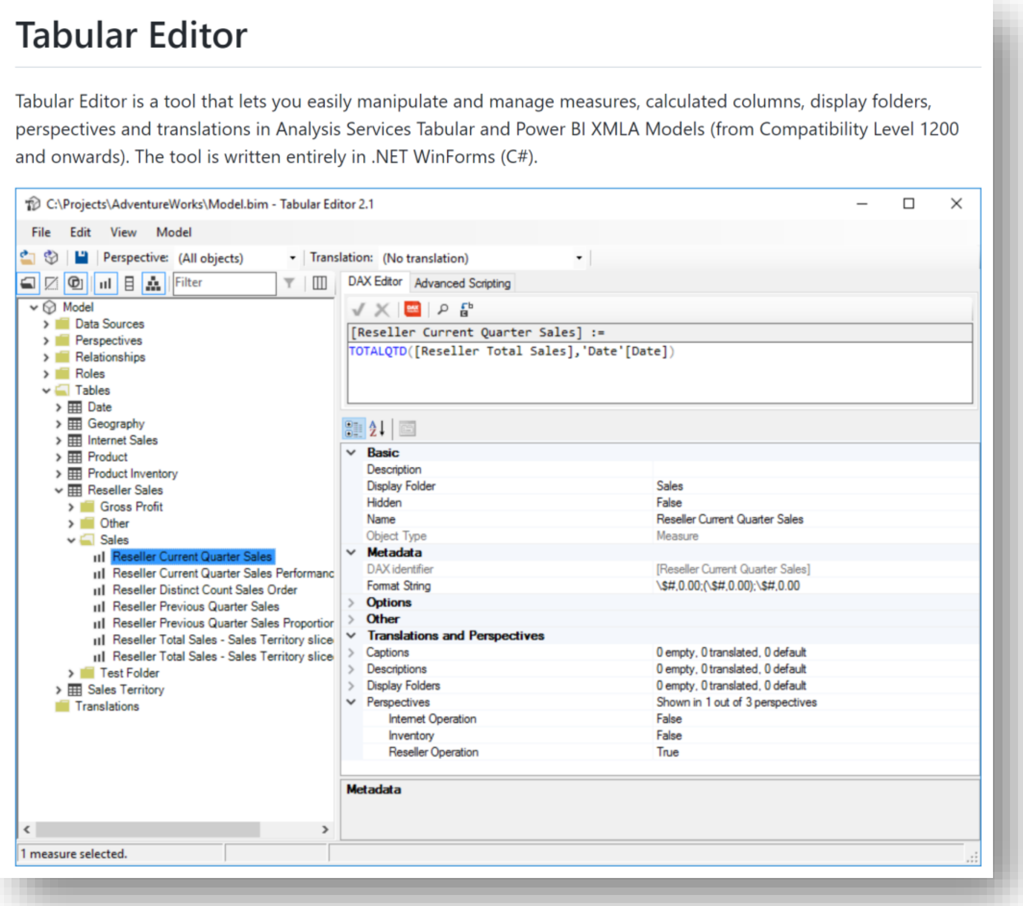
Tabular Editor

https://tabulareditor.com/ by Daniel Otykier

Massive productivity boost!

Main use cases:

- Model Development – Efficiently & Faster
- Copy items between PBIX files
- Automation with Scripting
- Best Practices Analyzer
- Deployment with options (ex: only schema) 💎
- Restore a PBIX from powerbi.com 💎



Tabular Editor

Tabular Editor is a tool that lets you easily manipulate and manage measures, calculated columns, display folders, perspectives and translations in Analysis Services Tabular and Power BI XMLA Models (from Compatibility Level 1200 and onwards). The tool is written entirely in .NET WinForms (C#).

C:\Projects\AdventureWorks\Model.bim - Tabular Editor 2.1

Perspective: (All objects)

Translation: (No translation)

```
[Reseller Current Quarter Sales] :=
TOTALQTD([Reseller Total Sales],'Date'[Date])
```

Basic	
Description	
Display Folder	Sales
Hidden	False
Name	Reseller Current Quarter Sales
Object Type	Measure
Metadata	
DAX identifier	[Reseller Current Quarter Sales]
Format String	\$#,0.00;(\$#,0.00);\$#,0.00
Options	
Other	
Translations and Perspectives	
Captions	0 empty, 0 translated, 0 default
Descriptions	0 empty, 0 translated, 0 default
Display Folders	0 empty, 0 translated, 0 default
Perspectives	Shown in 1 out of 3 perspectives
Internet Operation	False
Inventory	False
Reseller Operation	True

Metadata

1 measure selected.

File
Edit
View
Model
Filter
DAX Editor
Advanced Scripting
Model
Data Sources
Perspectives
Relationships
Roles
Tables
Date
Geography
Internet Sales
Product
Product Inventory
Reseller Sales
Gross Profit
Other
Sales
Reseller Current Quarter Sales
Reseller Current Quarter Sales Performanc
Reseller Distinct Count Sales Order
Reseller Previous Quarter Sales
Reseller Previous Quarter Sales Proportior
Reseller Total Sales - Sales Territory slice
Reseller Total Sales - Sales Territory slice
Test Folder
Sales Territory
Translations

Learn more: Tool Intro

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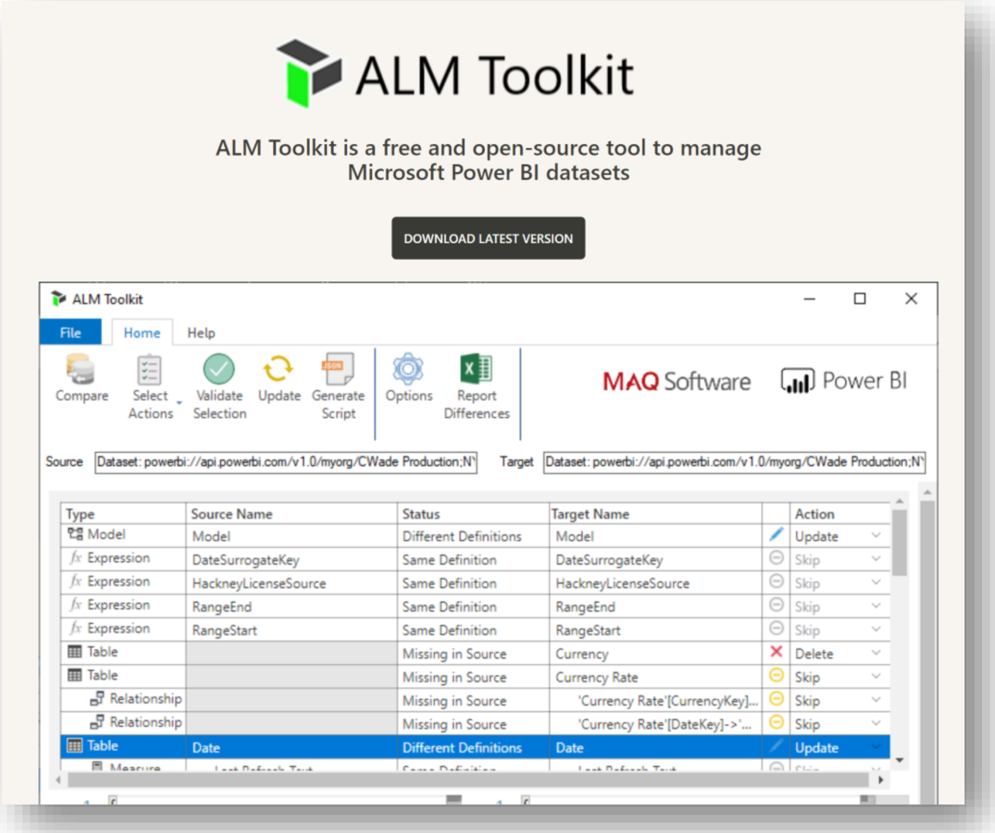
ALM Toolkit

http://alm-toolkit.com/ by Christian Wade

Schema diff tool for Tabular Datasets

Main Use Cases:

- Compare between PBIX Files
- Compare local to published 💎
- Merge models => Multiple Developers!



ALM Toolkit

ALM Toolkit is a free and open-source tool to manage Microsoft Power BI datasets

Source: Dataset: powerbi://api.powerbi.com/v1.0/myorg/CWade Production;N

Target: Dataset: powerbi://api.powerbi.com/v1.0/myorg/CWade Production;N

Type	Source Name	Status	Target Name		Action
Model	Model	Different Definitions	Model		Update
Expression	DateSurrogateKey	Same Definition	DateSurrogateKey		Skip
Expression	HackneyLicenseSource	Same Definition	HackneyLicenseSource		Skip
Expression	RangeEnd	Same Definition	RangeEnd		Skip
Expression	RangeStart	Same Definition	RangeStart		Skip
Table		Missing in Source	Currency	✗	Delete
Table		Missing in Source	Currency Rate		Skip
Relationship		Missing in Source	'Currency Rate'[CurrencyKey]...		Skip
Relationship		Missing in Source	'Currency Rate'[DateKey]->'...		Skip
Table	Date	Different Definitions	Date		Update
Measure	Last Refresh Text	Same Definition	Last Refresh Text		Skip

Learn more: Tool Intro

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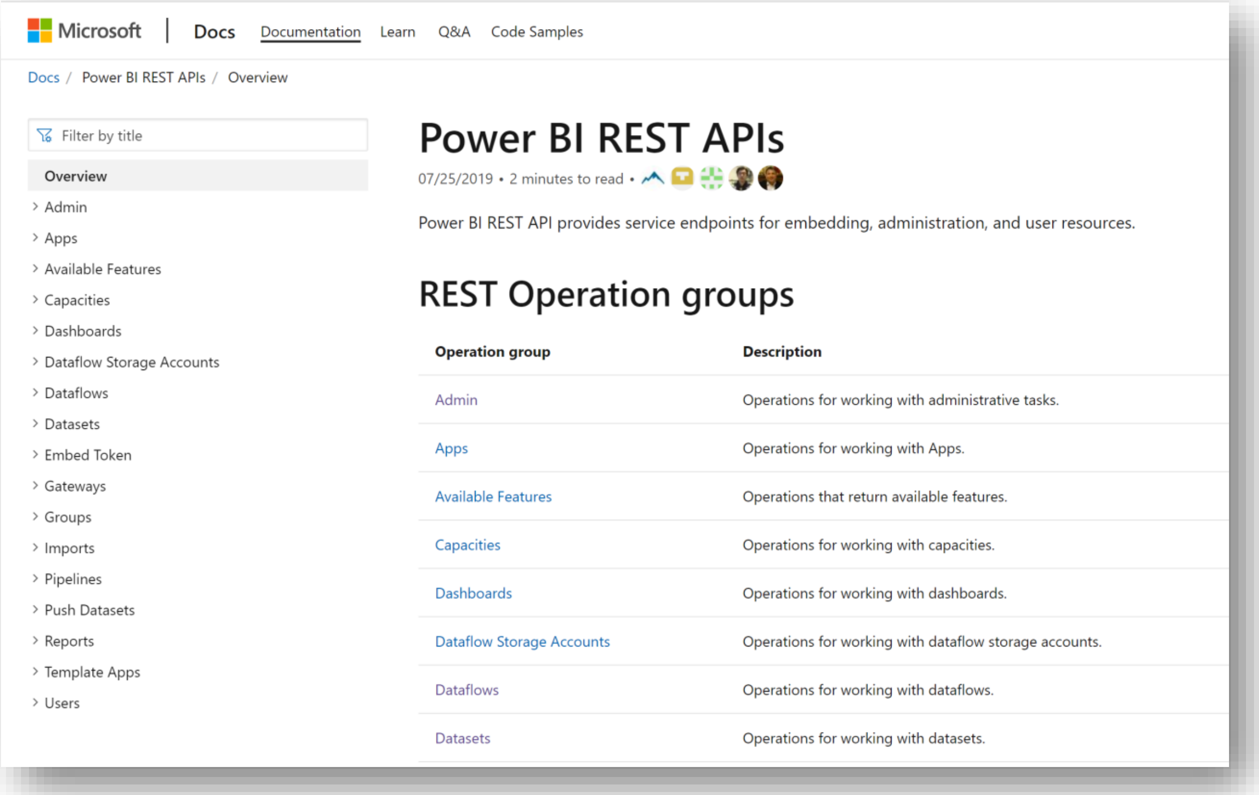
Development Techniques

REST APIs
XMLA Endpoint Scripting
Smart Calculation Groups
File Proxy
Copy Layout

Power BI REST API's ?

Collection of REST API's for:

- Administration
- Monitoring
- Productivity / DevOps
- Real-Time
- Embedding



- Overview
- Admin
- Apps
- Available Features
- Capacities
- Dashboards
- Dataflow Storage Accounts
- Dataflows
- Datasets
- Embed Token
- Gateways
- Groups
- Imports
- Pipelines
- Push Datasets
- Reports
- Template Apps
- Users

Power BI REST APIs

07/25/2019 • 2 minutes to read •

Power BI REST API provides service endpoints for embedding, administration, and user resources.

REST Operation groups

Operation group	Description
Admin	Operations for working with administrative tasks.
Apps	Operations for working with Apps.
Available Features	Operations that return available features.
Capacities	Operations for working with capacities.
Dashboards	Operations for working with dashboards.
Dataflow Storage Accounts	Operations for working with dataflow storage accounts.
Dataflows	Operations for working with dataflows.
Datasets	Operations for working with datasets.

[Power BI REST APIs - Power BI REST API | Microsoft Docs]

Links: [PBI API Session]

REST API - Rebind Reports

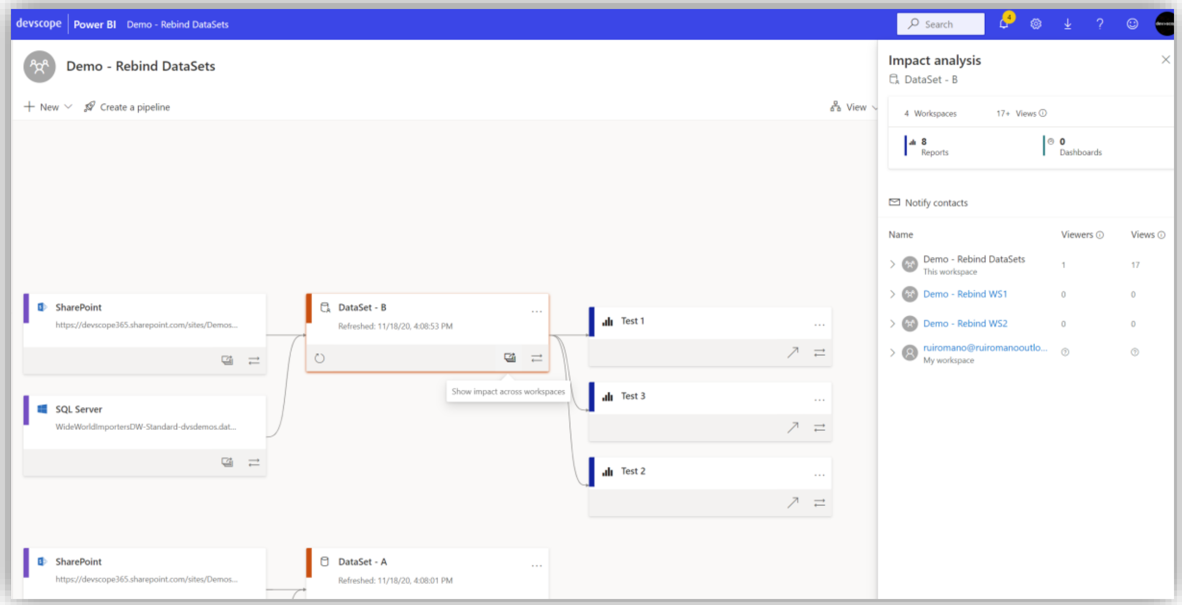
Why?

Dataset issue/corruption

Minimize user impact on a dataset change / refresh

Azure AS to Premium Migrations

…


devscope
Power BI
Demo - Rebind DataSets
Search
Demo - Rebind DataSets
New
Create a pipeline
View
SharePoint
https://devscope365.sharepoint.com/sites/Demos...
SQL Server
WideWorldImportersDW-Standard-dvsdemos.dat...
DataSet - B
Refreshed: 11/18/20, 4:08:53 PM
Show impact across workspaces
Test 1
Test 3
Test 2
SharePoint
https://devscope365.sharepoint.com/sites/Demos...
DataSet - A
Refreshed: 11/18/20, 4:08:01 PM

Impact analysis

DataSet - B

4 Workspaces 17+ Views

8 Reports

0 Dashboards

Notify contacts

Name	Viewers	Views
Demo - Rebind DataSets This workspace	1	17
Demo - Rebind WS1	0	0
Demo - Rebind WS2	0	0
ruiromano@ruiromanooutlo... My workspace	ⓘ	ⓘ

Two Approaches:

- Manual - By specifying the reports & datasets to rebind
- Automatic - From one dataset to the other

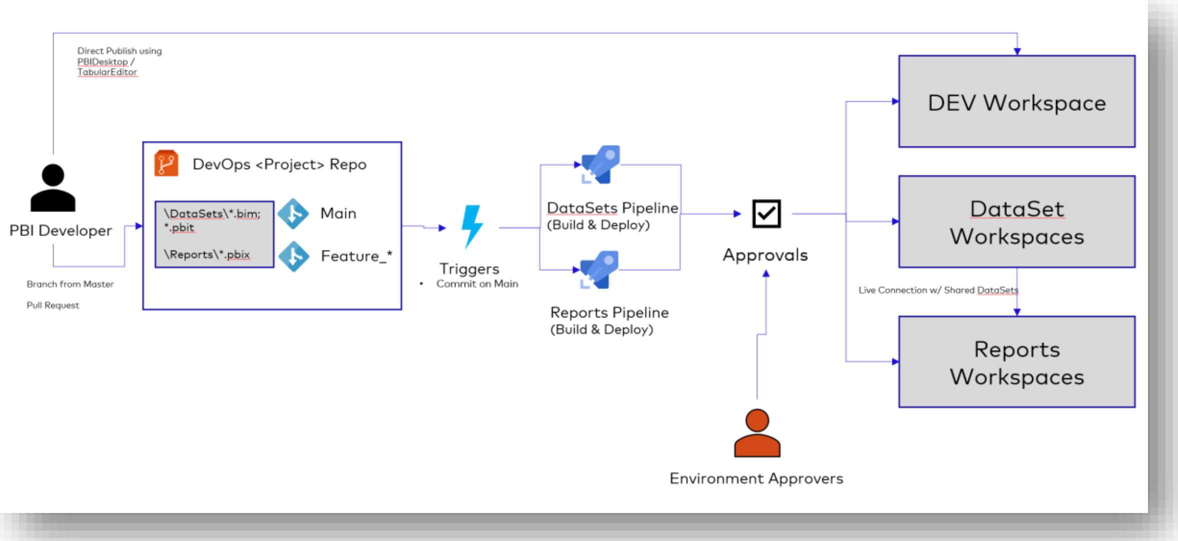
REST API: Rebind API

Links: Automatic Rebind Script

REST API – Power BI DevOps

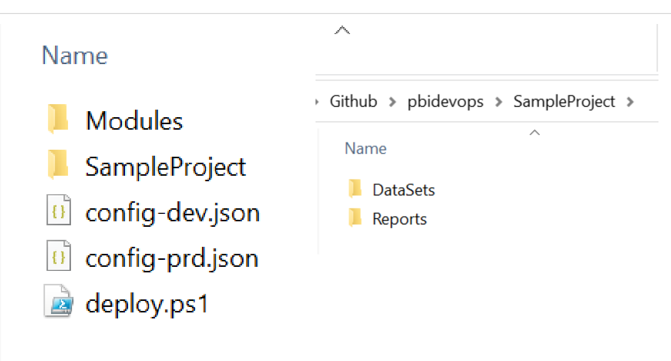
If you have Premium 💎

- Must Watch: [Daniel Otykier Session]()
- Azure DevOps
- Tabular Editor
- REST API’s
- Deployment Pipelines



If you don’t have Premium

- REST API’s & PowerShell to the rescue



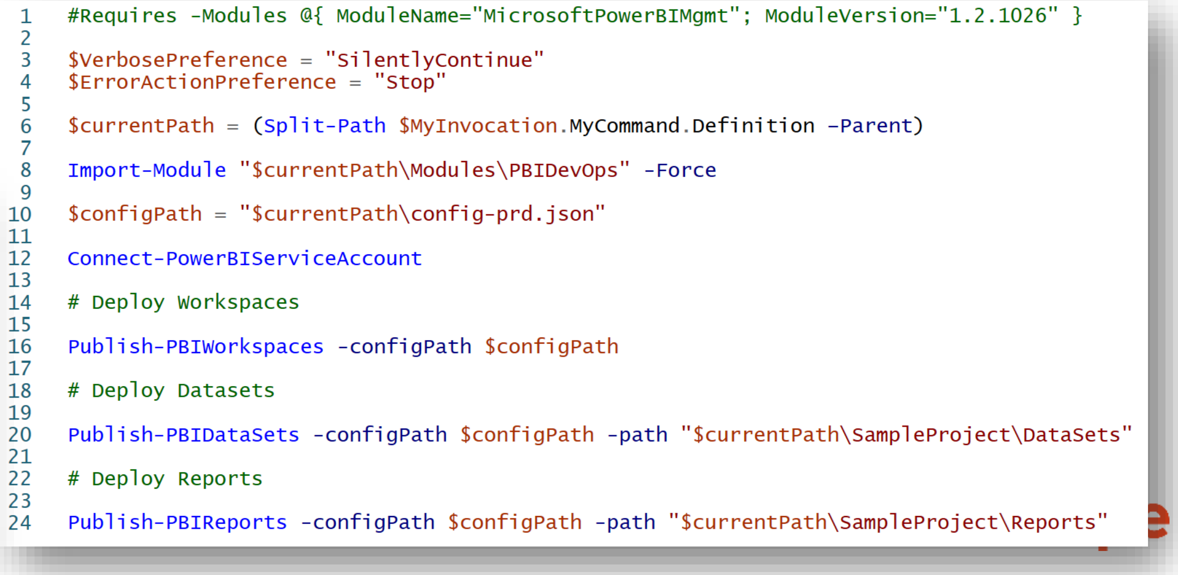
Name

- Modules
- SampleProject
- config-dev.json
- config-prd.json
- deploy.ps1

Github › pbidevops › SampleProject ›

Name

- DataSets
- Reports



```
#Requires -Modules @{ ModuleName="MicrosoftPowerBIMgmt"; ModuleVersion="1.2.1026" }

$VerbosePreference = "SilentlyContinue"
$ErrorActionPreference = "Stop"

$currentPath = (Split-Path $MyInvocation.MyCommand.Definition -Parent)

Import-Module "$currentPath\Modules\PBIDevOps" -Force

$configPath = "$currentPath\config-prd.json"

Connect-PowerBIServiceAccount

# Deploy Workspaces

Publish-PBIWorkspaces -configPath $configPath

# Deploy Datasets

Publish-PBIDataSets -configPath $configPath -path "$currentPath\SampleProject\DataSets"

# Deploy Reports

Publish-PBIReports -configPath $configPath -path "$currentPath\SampleProject\Reports"
```

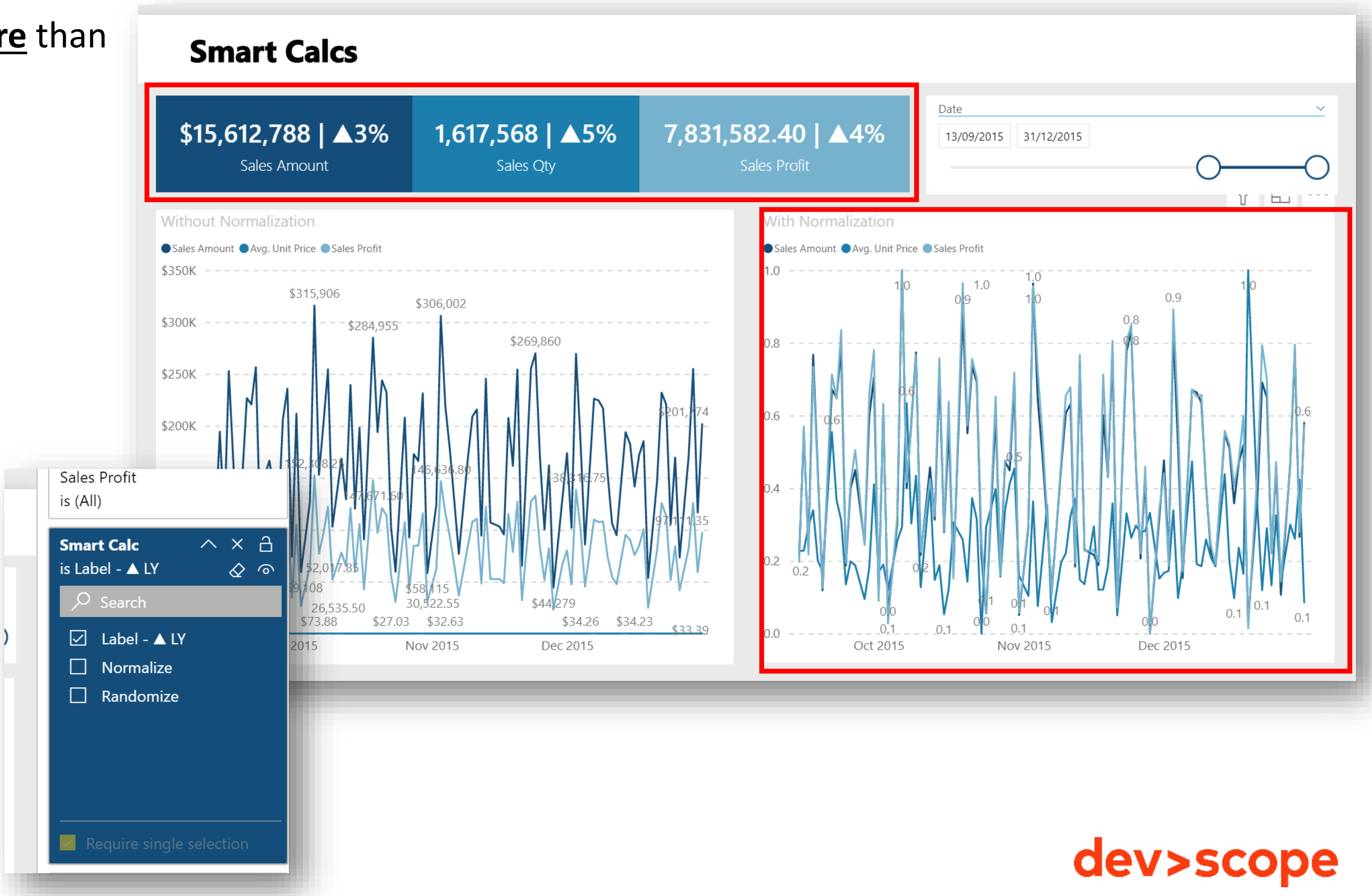
Links: [scripts]()

“Smart” Calculation Groups

Calculation Groups can do **much more** than just Time Aggregations / Variations

Other very useful use cases:

- Auto Time Variation on Cards
- Normalization
- Randomize



Smart Calcs

$15,612,788 | ▲3%
Sales Amount

1,617,568 | ▲5%
Sales Qty

7,831,582.40 | ▲4%
Sales Profit

Date
13/09/2015 31/12/2015

Sales Profit
is (All)

Smart Calc
is Label - ▲ LY

☑ Label - ▲ LY
☐ Normalize
☐ Randomize

☑ Require single selection

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⚠ Not Supported!

Copy Report Layout from PowerBI.com

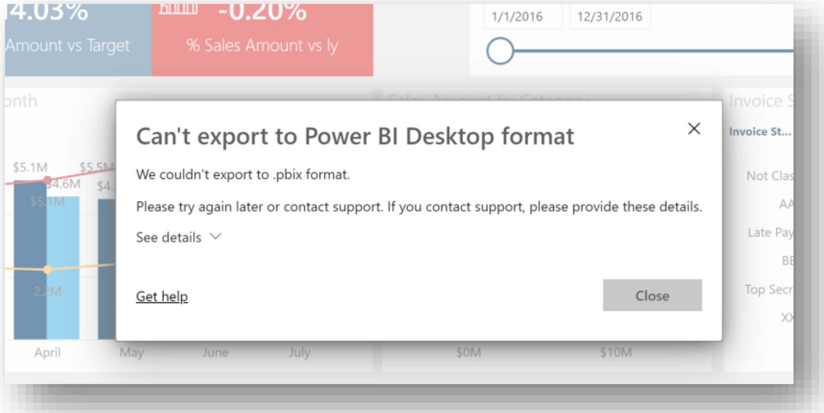
Copy the report layout from a report online to PBI Desktop

Useful when “Download PBIX” doesn’t work

Steps:

1. Open Report
2. Network Trace & Save JSON of “*exploration” request
3. Unzip PBIX and replace “\Report\Layout” content
4. Delete “\SecurityBindings” and zip as .pbix
5. Theme file can also be download from API Call: “*resourcePackageItem”

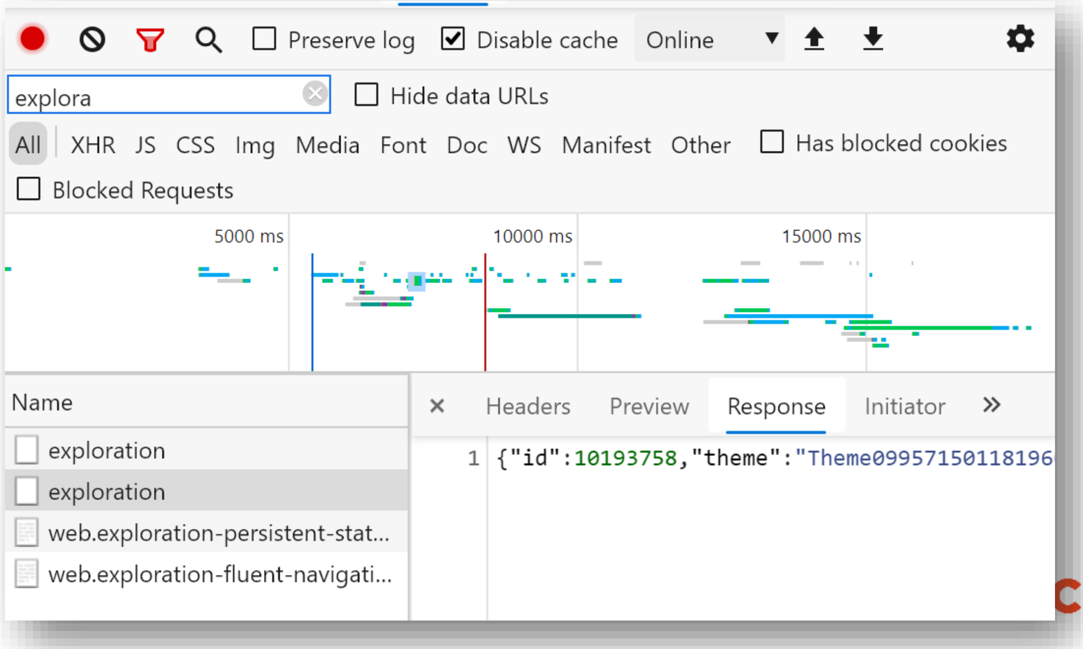
Note: Always use Notepad++ to edit files



Can't export to Power BI Desktop format

We couldn't export to .pbix format.

Please try again later or contact support. If you contact support, please provide these details.



explora

- exploration
- exploration
- web.exploration-persistent-stat...
- web.exploration-fluent-navigati...

```
{"id":10193758,"theme":"Theme09957150118196
```

Power BI Partitioning

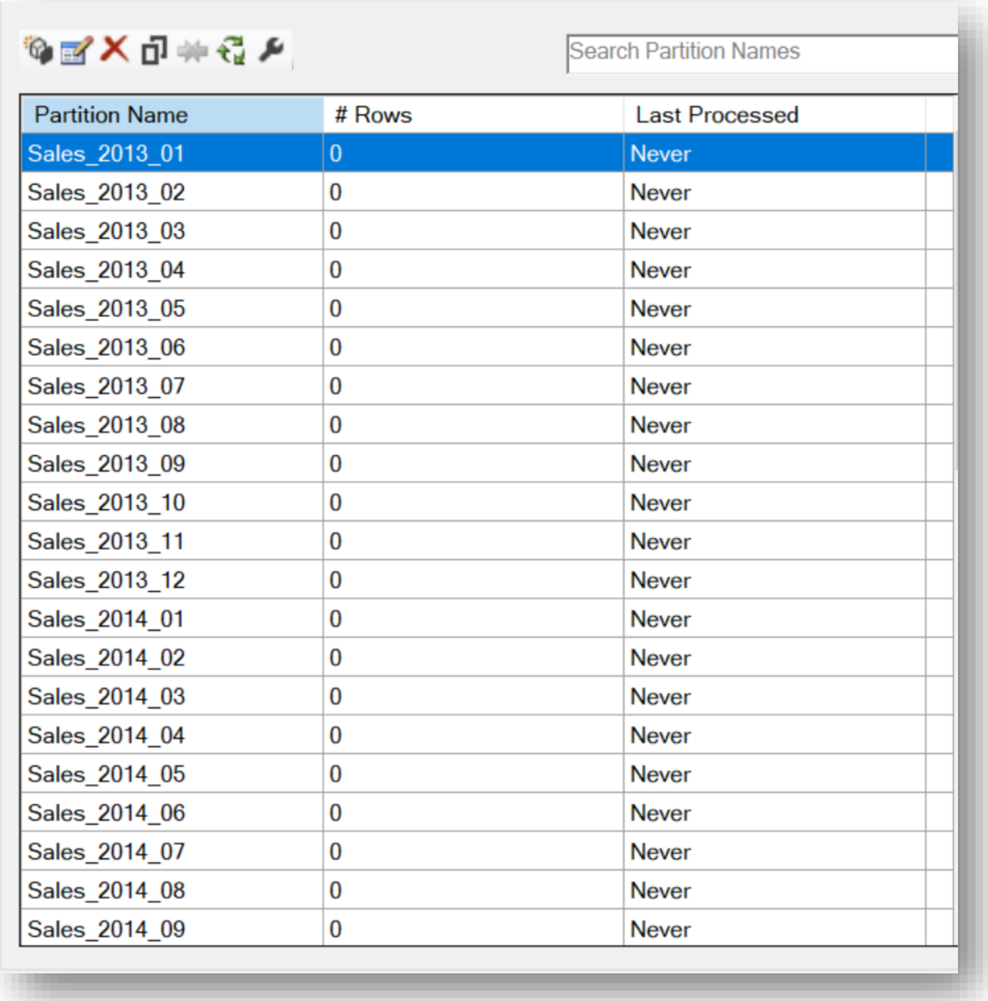
⚠ If out of the box Incremental Refresh works remember the KISS principal ☺

Requires Premium Capacity (XMLA) 💎 (incremental refresh don't)

Consider it for:

- Complex partitioning & refresh strategies (ex: by date & company, only fact tables)
- Near-realtime import datasets (hourly partitions?)
- Big enterprise datasets, full/incremental refresh is not an option

⚠ Refresh needs to be automated: azure functions, powershell, azure devops…



Partition Name	# Rows	Last Processed
Sales_2013_01	0	Never
Sales_2013_02	0	Never
Sales_2013_03	0	Never
Sales_2013_04	0	Never
Sales_2013_05	0	Never
Sales_2013_06	0	Never
Sales_2013_07	0	Never
Sales_2013_08	0	Never
Sales_2013_09	0	Never
Sales_2013_10	0	Never
Sales_2013_11	0	Never
Sales_2013_12	0	Never
Sales_2014_01	0	Never
Sales_2014_02	0	Never
Sales_2014_03	0	Never
Sales_2014_04	0	Never
Sales_2014_05	0	Never
Sales_2014_06	0	Never
Sales_2014_07	0	Never
Sales_2014_08	0	Never
Sales_2014_09	0	Never

Links: scripts

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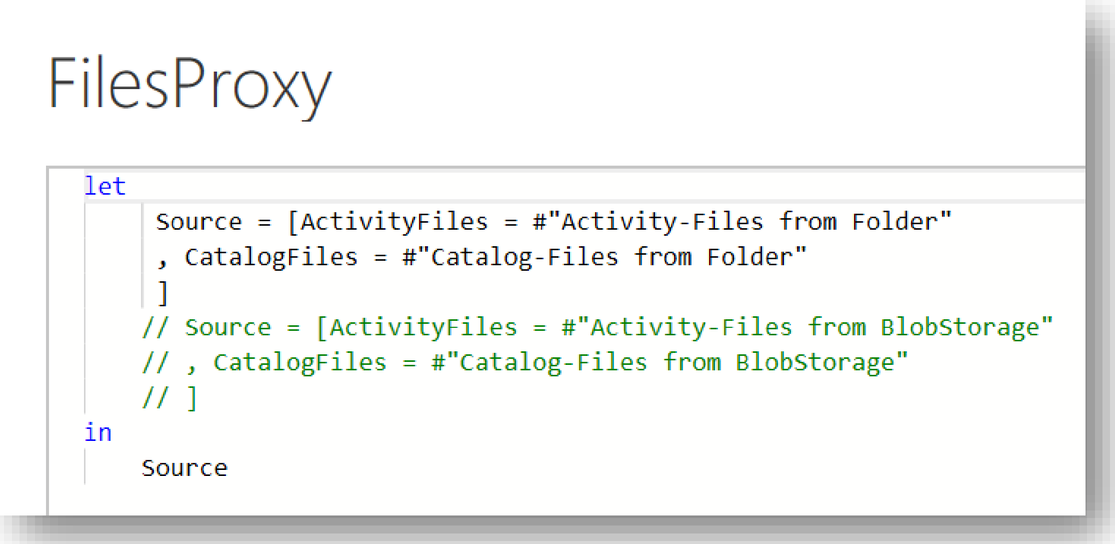
The “File Proxy” Technique

Create a “Files” proxy query to be referenced by other queries

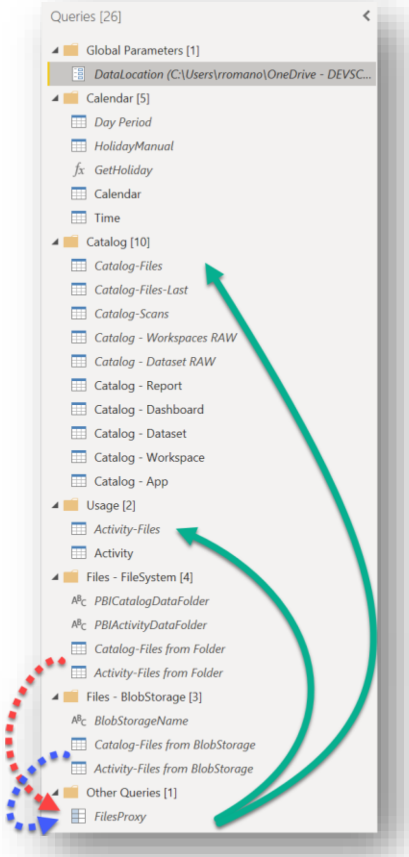
Abstract your Power BI development from the file source

Productivity boost, ex: stage data locally for DEV



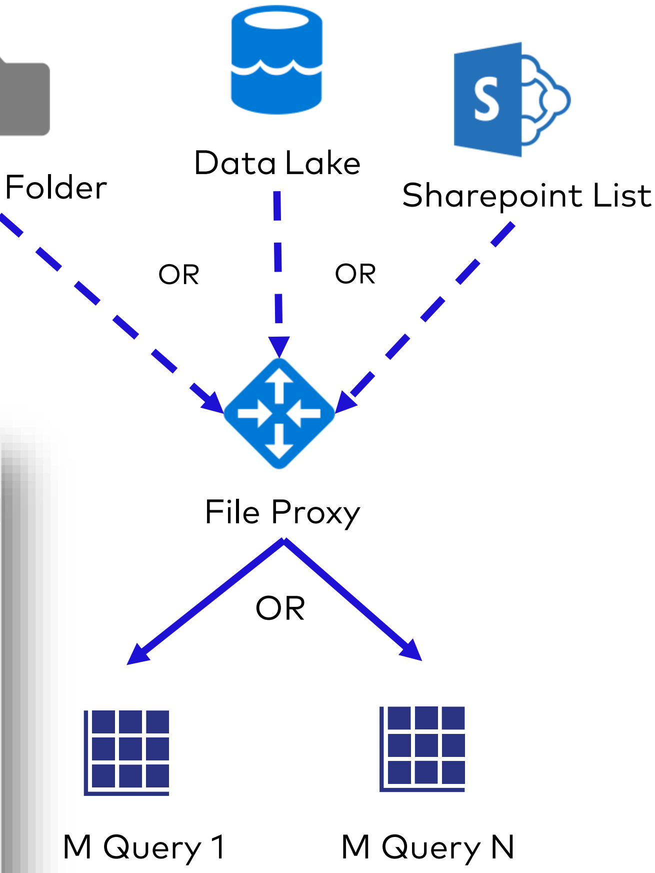
FilesProxy

```
let
     Source = [ActivityFiles = #"Activity-Files from Folder"
     , CatalogFiles = #"Catalog-Files from Folder"
     ]
    // Source = [ActivityFiles = #"Activity-Files from BlobStorage"
    // , CatalogFiles = #"Catalog-Files from BlobStorage"
    // ]
in
    Source
```



Queries [26]

- Global Parameters [1]
  - *DataLocation (C:\Users\rromano\OneDrive - DEVSC...*
- Calendar [5]
  - *Day Period*
  - *HolidayManual*
  - *GetHoliday*
  - Calendar
  - Time
- Catalog [10]
  - *Catalog-Files*
  - *Catalog-Files-Last*
  - *Catalog-Scans*
  - *Catalog - Workspaces RAW*
  - *Catalog - Dataset RAW*
  - Catalog - Report
  - Catalog - Dashboard
  - Catalog - Dataset
  - Catalog - Workspace
  - Catalog - App
- Usage [2]
  - *Activity-Files*
  - Activity
- Files - FileSystem [4]
  - *PBICatalogDataFolder*
  - *PBIActivityDataFolder*
  - *Catalog-Files from Folder*
  - *Activity-Files from Folder*
- Files - BlobStorage [3]
  - *BlobStorageName*
  - *Catalog-Files from BlobStorage*
  - *Activity-Files from BlobStorage*
- Other Queries [1]
  - *FilesProxy*



Links: demo, pbimonitor

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- @ruiromano
- https://ruiromanoblog.wordpress.com
- https://github.com/RuiRomano

Thanks!

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