

Hybrid Power BI: What is possible and what do you need?

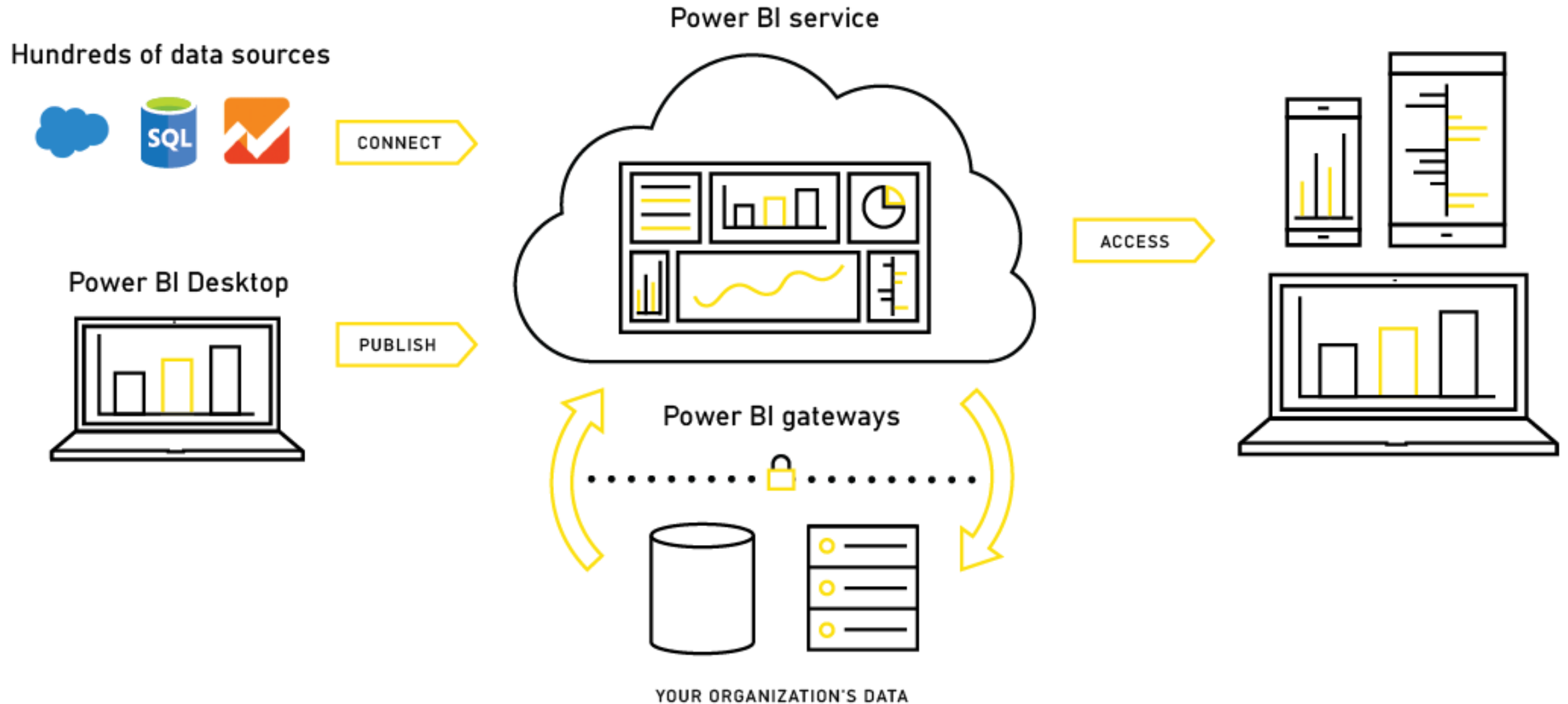
Wolfgang Strasser

Business Intelligence Consultant @ cubido

Data Platform MVP

Microsoft Business
Applications Summit

Power BI Architecture



Hybrid Power BI

Why?

Existing On-Premises **Infrastructure** (DWH)

Not allowed to move **data to the cloud**

Afraid of moving data to the cloud

Why not?

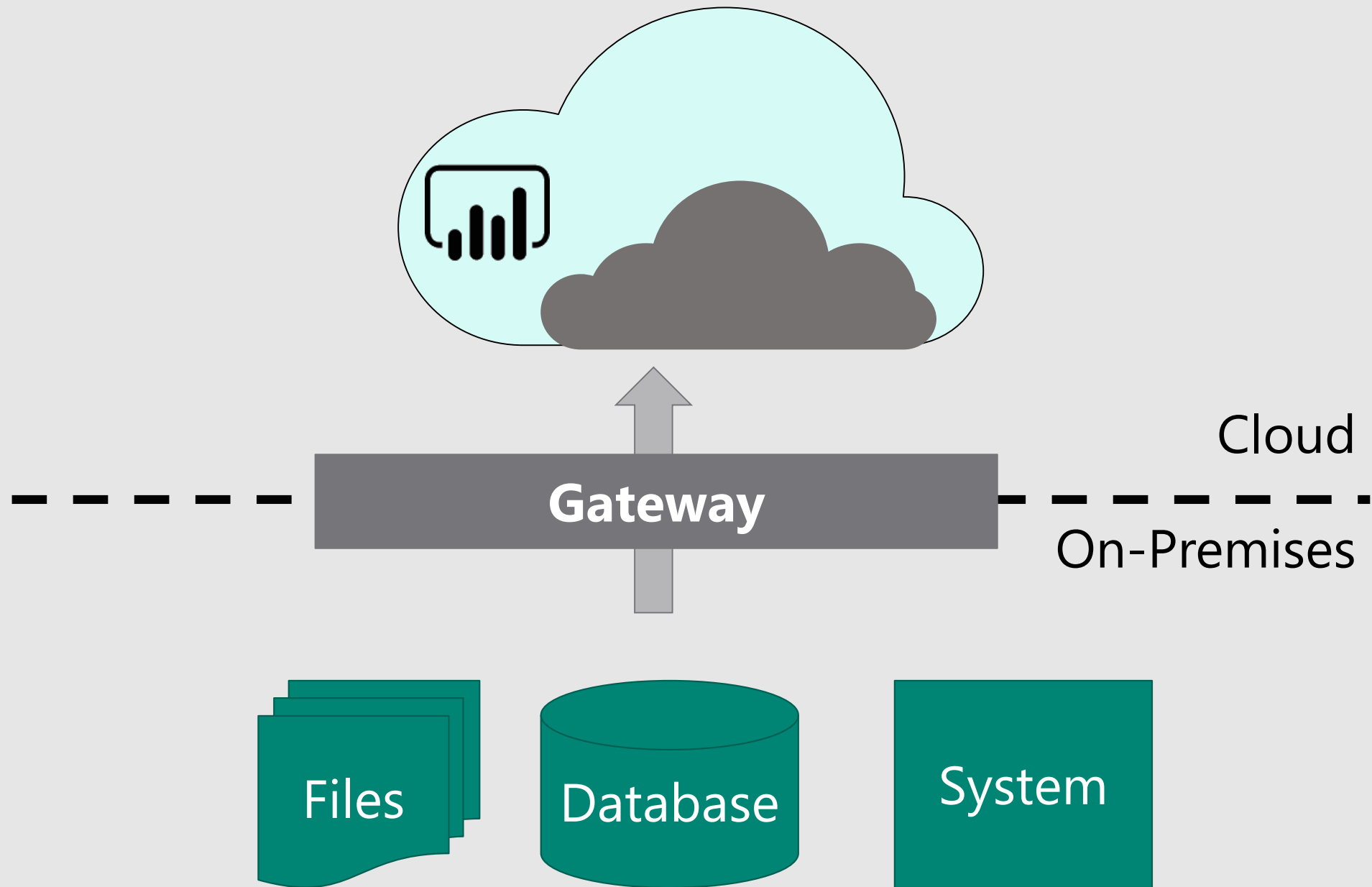
Take the **best approaches from both sides**
&
combine them!

Paths to Hybrid Power BI

#1

Use On-Premises Datasources

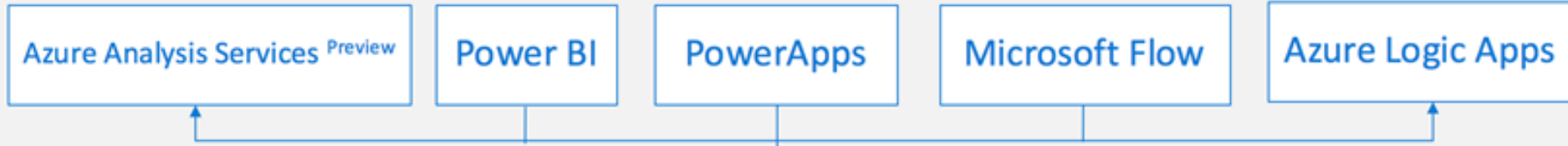
On-Premises Data Gateway



On-premises data gateway

One gateway for multiple cloud services and experiences

Cloud services



Gateway Cloud Service

Data source connection credentials are encrypted



Azure Service Bus



Application Gateway

Data source connection credentials can only be decrypted by the gateway

On-premises data sources



SQL Server



SQL Server
Analysis Services



Other
data sources



Files, SharePoint

Welcome to the "Hybrid Power BI" Dashboard!

Visit <http://workingondata.wordpress.com> for more info!
Or tweet [@wstrasser](#) // mail: wolfgang@powerofbi.at



Hybrid Power BI - Power BI

https://app.powerbi.com/groups/66d11d44-edf5-45a6-9593-c347d3095508/dashboards/985a5921-7b2a-4395-b74e-6efdcfff48ec

Power BI

HybridPowerBI > Hybrid Power BI

+

Add tile

💬

Comments

📊

Usage metrics

🔗

View related

🚫

Disable featured

★

Unfav

↗️


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😊



Power BI Desktop

Data Gateway

Paginated Report Builder

Power BI for Mobile

Analyze in Excel updates

🖥️

Web view

⋮

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↗️


Welcome to the "Hybrid Power BI" Dashboard!

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Or tweet [@wstrasser](#) // mail: wolfgang@powerofbi.at

Microsoft Business Applications Summit

June 10 - 11, 2019 | Atlanta, GA







On-premises data gateway installer



Choose the type of gateway you need.

- ☒ On-premises data gateway (recommended)
- Can be shared and reused by multiple users
 - Can be used by Power BI, PowerApps, Logic Apps, and Microsoft Flow
 - Supports schedule refresh and live query for Power BI
- [Learn more](#)
- ☐ On-premises data gateway (personal mode)
- Can only be used by you
 - Can only be used in Power BI
 - Only schedule refresh is supported
- [Learn more](#)

Next

Cancel



On-premises data gateway



Almost done.

Installation was successful!

Email address to use with this gateway:

wolfgang@powerofbi.at

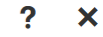
Next, you need to sign in to register your gateway.

Sign in

Cancel



On-premises data gateway



Status

Service Settings

Diagnostics

Network

Connectors

Your gateway is all set up.

Sign in for more information on your gateway.

Gateway version number: 3000.5.185 (May 2019(Release 2))

A new version is available.

[Download](#)

☒ Help us improve the on-premises data gateway by sending usage information to Microsoft.

[Read the privacy statement online](#)

Sign in

Close

DEMO: On-Premises Data Gateway

Installation, Configuration
Sample Report

Configuration

Gateway Cluster Configuration

Administrators (*"Who is allowed to configure this gateway?"*)

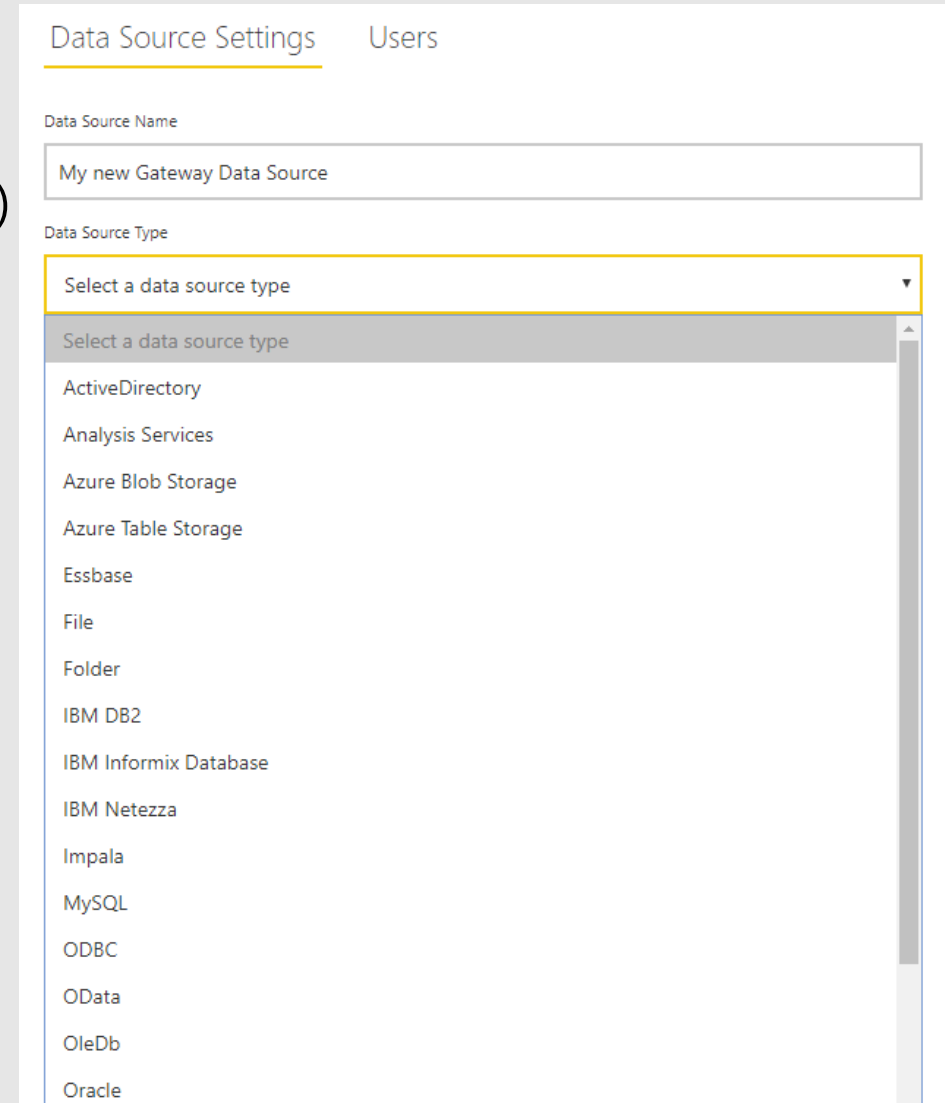
Contact Details

Data Source Configuration

Access Configuration

Users (*"Who is allowed to use this data source?"*)

For SSAS: Map Users



The screenshot shows the 'Data Source Settings' tab in a configuration window. At the top, there are two tabs: 'Data Source Settings' (selected) and 'Users'. Below the tabs, there is a 'Data Source Name' field containing the text 'My new Gateway Data Source'. Underneath this is a 'Data Source Type' dropdown menu. The dropdown is open, showing a list of data source types. The first two items, 'Select a data source type' and 'Select a data source type', are highlighted in grey. The rest of the list includes: ActiveDirectory, Analysis Services, Azure Blob Storage, Azure Table Storage, Essbase, File, Folder, IBM DB2, IBM Informix Database, IBM Netezza, Impala, MySQL, ODBC, OData, OleDb, and Oracle.

Data Source Settings Users

Data Source Name

My new Gateway Data Source

Data Source Type

Select a data source type

Select a data source type

ActiveDirectory

Analysis Services

Azure Blob Storage

Azure Table Storage

Essbase

File

Folder

IBM DB2

IBM Informix Database

IBM Netezza

Impala

MySQL

ODBC

OData

OleDb

Oracle



Choose your Access Type:

**Direct / Live connect
Import**

DEMO: On-Premises Data Gateway

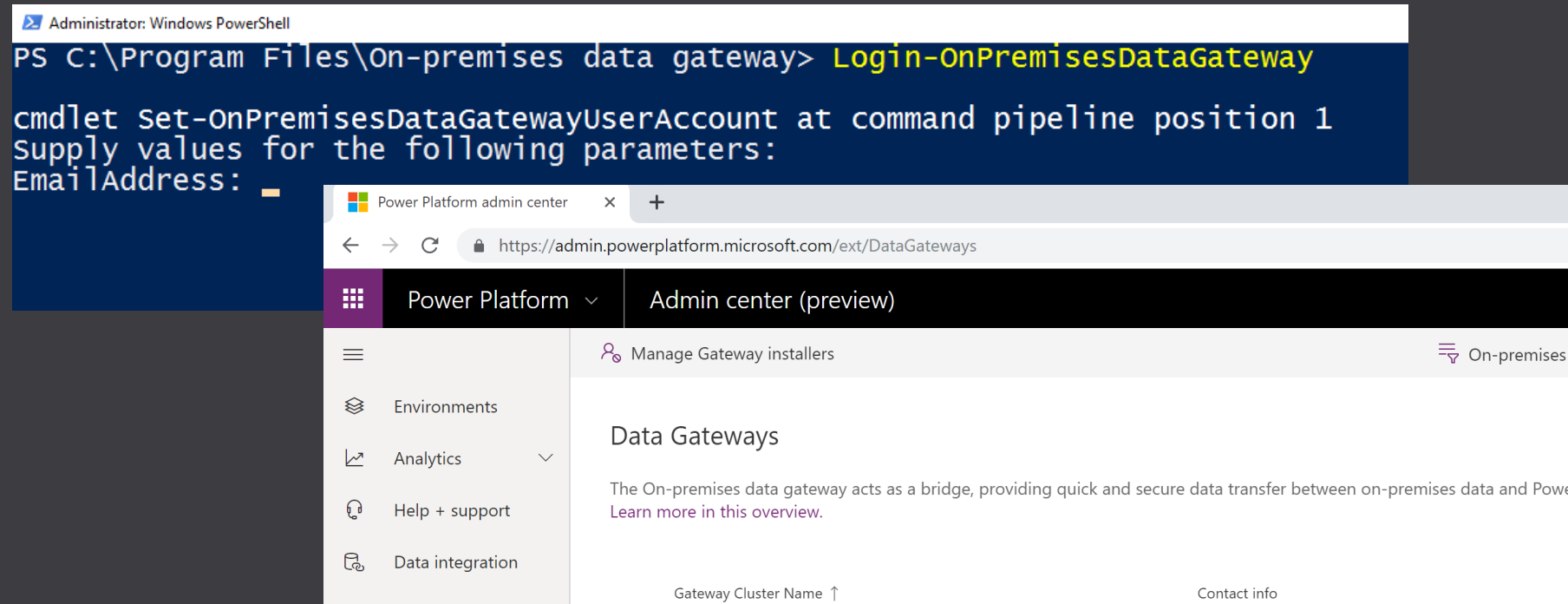
Scheduled Refresh

Architectures



https://blogs.msdn.microsoft.com/microsoft_press/2016/06/16/free-ebook-introducing-microsoft-power-bi/

On-Premises Data Gateway: Administration



The image shows a PowerShell terminal window and the Power Platform admin center web interface. The PowerShell window is titled "Administrator: Windows PowerShell" and shows the command `Login-OnPremisesDataGateway` being executed in the directory `C:\Program Files\On-premises data gateway`. Below the command, it says "cmdlet Set-OnPremisesDataGatewayUserAccount at command pipeline position 1" and "Supply values for the following parameters: EmailAddress:". The web interface is the "Power Platform admin center" at <https://admin.powerplatform.microsoft.com/ext/DataGateways>. The left sidebar shows navigation options: Environments, Analytics, Help + support, and Data integration. The main content area is titled "Data Gateways" and includes a description: "The On-premises data gateway acts as a bridge, providing quick and secure data transfer between on-premises data and Power Platform." and a link to "Learn more in this overview." The top right of the interface shows "Manage Gateway installers" and "On-premises data gateway".

```
Administrator: Windows PowerShell
PS C:\Program Files\On-premises data gateway> Login-OnPremisesDataGateway

cmdlet Set-OnPremisesDataGatewayUserAccount at command pipeline position 1
Supply values for the following parameters:
EmailAddress: 
```

Power Platform admin center x +

← → ↻ <https://admin.powerplatform.microsoft.com/ext/DataGateways>

Power Platform Admin center (preview)

Manage Gateway installers On-premises data gateway

Data Gateways

The On-premises data gateway acts as a bridge, providing quick and secure data transfer between on-premises data and Power Platform. [Learn more in this overview.](#)

Gateway Cluster Name ↑ Contact info

Power BI REST API

<https://docs.microsoft.com/en-us/rest/api/power-bi/gateways>

Gateways - Get Gateways

Service: Power BI REST APIs

API Version: v1.0

Returns a list of gateways for which the user is an admin.

Required scope: Dataset.ReadWrite.All or Dataset.Read.All

To set the permissions scope, see [Register an app](#).

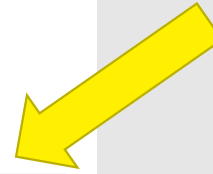
HTTP

 Copy

 Try It

GET <https://api.powerbi.com/v1.0/myorg/gateways>

<https://powerbi.microsoft.com/en-us/blog/power-bi-developer-community-april-may-update/#try-it>



On-Premises Gateway – Administration 1/2

What if you...

.. need to **size the Gateway Server**?

Sizing Recommendations (by Kasper de Jonge)

<https://www.kasperonbi.com/enterprise-gateway-sizing-recommendations/>

.. need to **monitor** the Gateway?

<https://docs.microsoft.com/en-us/power-bi/service-gateway-onprem-tshoot#performance>

.. want to **automate** Gateway work?

<https://docs.microsoft.com/en-us/power-bi/service-gateway-high-availability-clusters#powershell-support-for-gateway-clusters>

.. need to **restart** the Gateway service?

<https://docs.microsoft.com/en-us/power-bi/service-gateway-onprem-tshoot#configuration>

.. need to **map usernames** for SSAS?

<https://docs.microsoft.com/en-us/power-bi/service-gateway-enterprise-manage-ssas#map-user-names>

On-Premises Gateway – Administration 2/2

What if you...

.. need **logging** information?

<https://docs.microsoft.com/en-us/power-bi/service-gateway-onprem-tshoot#tools-for-troubleshooting>

.. **inspect the queries** sent via the gateway?

<https://docs.microsoft.com/en-us/power-bi/service-gateway-onprem-tshoot#reviewing-slow-performing-queries>

.. are looking for the **Gateway FAQ** site?

<https://docs.microsoft.com/en-us/power-bi/service-gateway-onprem-faq>

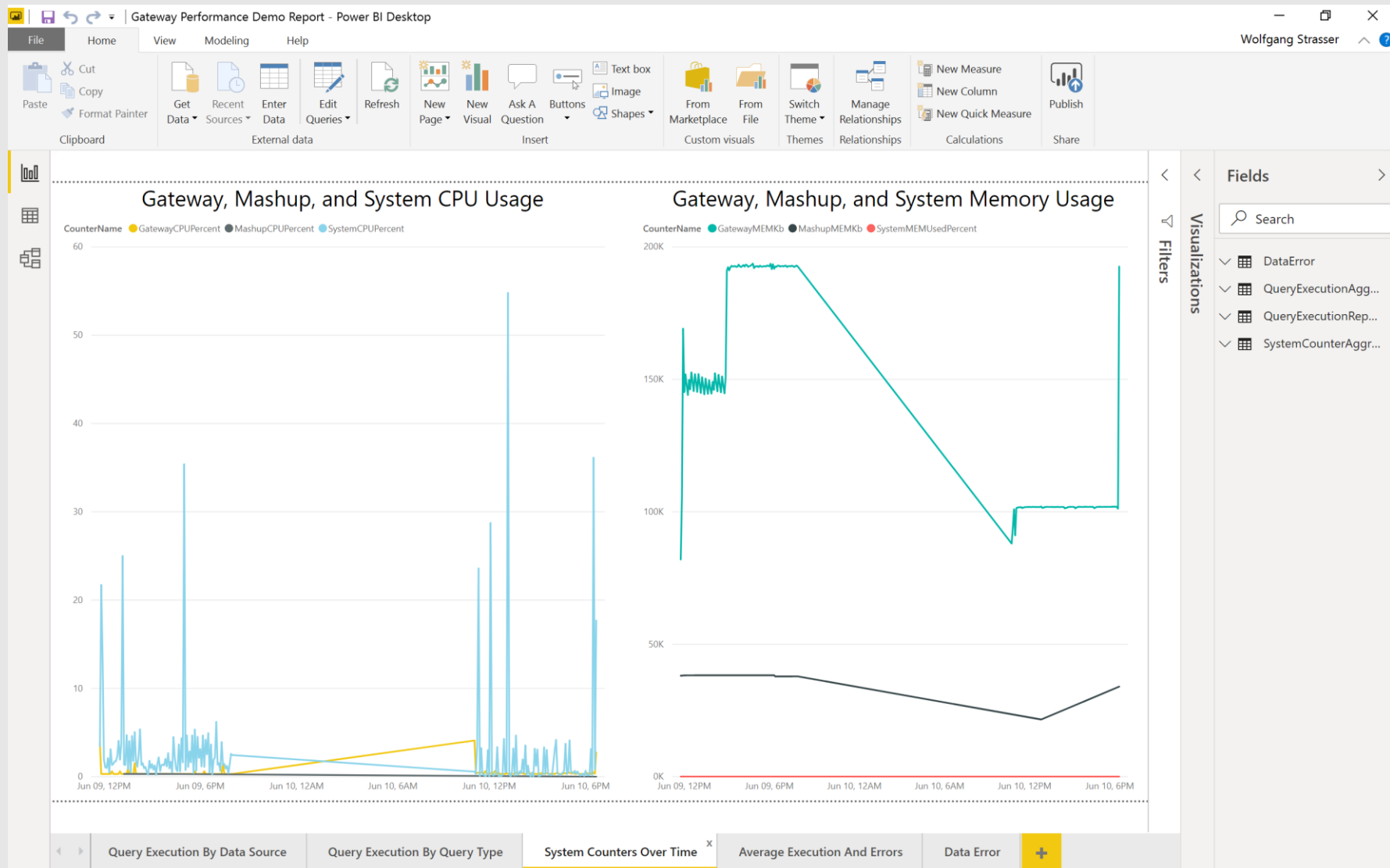
.. need a list of **supported data sources**?

<https://docs.microsoft.com/en-us/power-bi/service-gateway-onprem#list-of-available-data-source-types>

... want to **administer all gateways in your tenant**?

<https://admin.powerplatform.microsoft.com/>

Hot of the press – Performance Logging



<https://docs.microsoft.com/en-us/power-bi/service-gateway-performance-monitoring>

#2

SQL Server Reporting Services & Power BI



Report Server Configuration Manager

Connect

WOLFGANGPBIRS01\PBIRS

Service Account

Web Service URL

Database

Web Portal URL

E-mail Settings

Execution Account

Encryption Keys

Subscription Settings

Scale-out Deployment

Power BI Service (cloud)

Power BI Integration



Register this report server with the Power BI service in the cloud to enable "hybrid cloud" features across the two. When this report server is registered with the Power BI service, users can sign into their Power BI accounts and pin paginated report items to their Power BI dashboards. (Note: Publishing Power BI reports to this report server is not a hybrid cloud feature and does not require this registration.)

Power BI Registration

Report server is registered with Power BI.

PowerBIRegistration: Registered

Unregister with Power BI

Your registration is up to date.

UpdateRegistration

Power BI service (cloud) Registration Details

Tenant Name (ID): powerofbiat
4bafec85-89b3-447b-9ab3-cf16448906a0

Redirect URLs: http://wolfgangpbirs01:80/reportserver/pages/LoginComplete.aspx

Results

17:10:45.7471 | Stopping report server "PowerBIReportServer" on WOLFGANGPBIRS01.

17:10:46.3877 | Starting report server "PowerBIReportServer" on WOLFGANGPBIRS01.

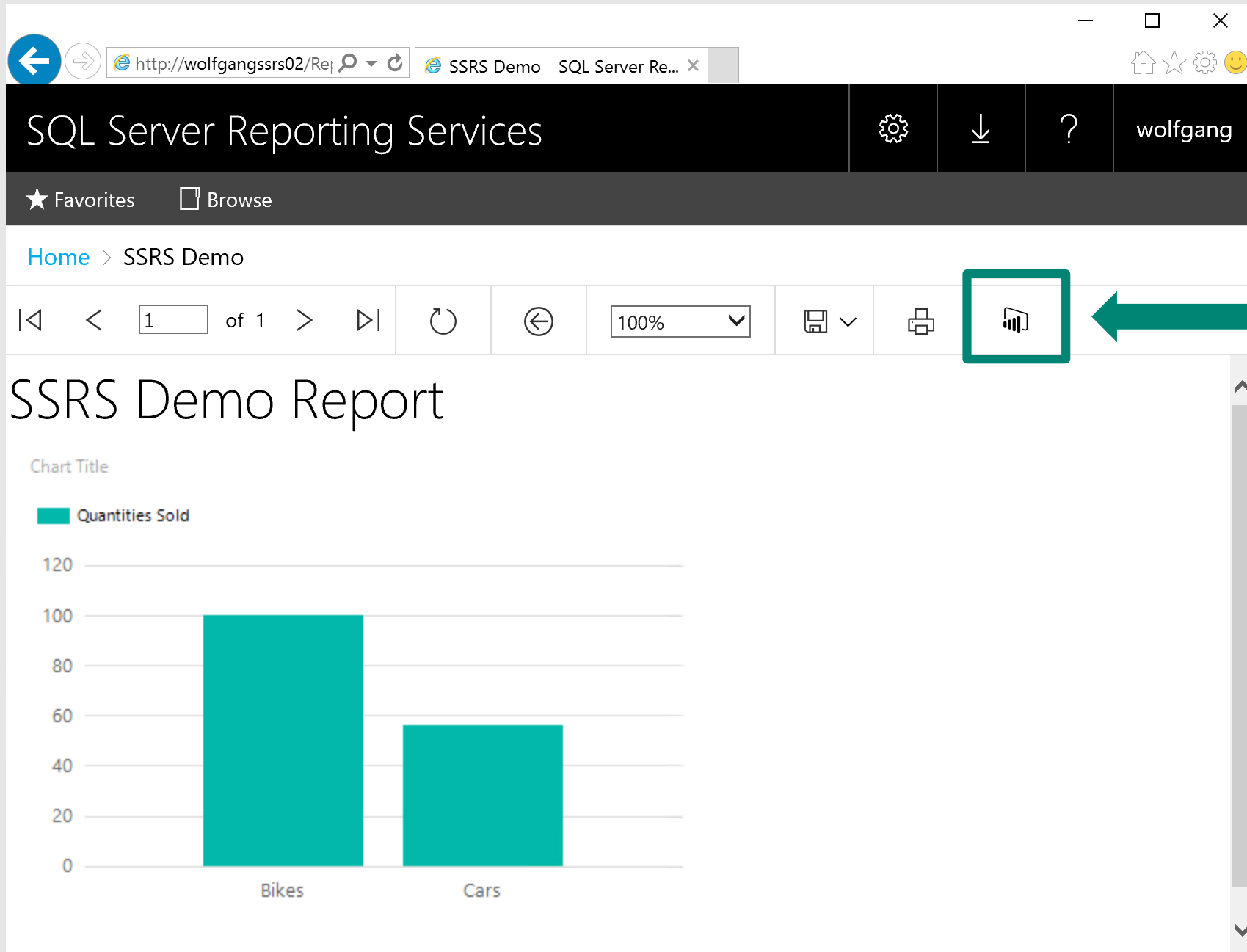
The task completed successfully.

Copy



Apply

Exit



SQL Server Reporting Services

⚙️

⬇️

?

wolfgang

★ Favorites

📁 Browse

Home

 > SSRS Demo

🖱️

Click a report item to pin it to a Power BI Dashboard

×

SSRS Demo Report

Chart Title

Quantities Sold

120

100

80

60

40

20

0

Bikes

Cars

←

→

http://wolfgangssrs02/Rej

SSRS Demo - SQL Server Re...

⌵

⌵

⌵

⌵

⌵

⌵

⌵

⌵

SQL Server Reporting Services

⚙️

⬇️

?

wolfgang

★ Favorites

📁 Browse

Home > SSRS Demo

📊

Click a report item to pin it to a Power BI Dashboard

Chart Title

Quantities Sold

120

100

80

60

40

20

0

Pin to Power BI Dashboard

×

Select a dashboard to pin this report item as a tile.

Group

HybridPowerBI

⌵

Dashboard

Hybrid Power BI

⌵

Hourly

Daily

Weekly

Pin

Cancel

SSRS Integration into PowerBI.com (Pinning)

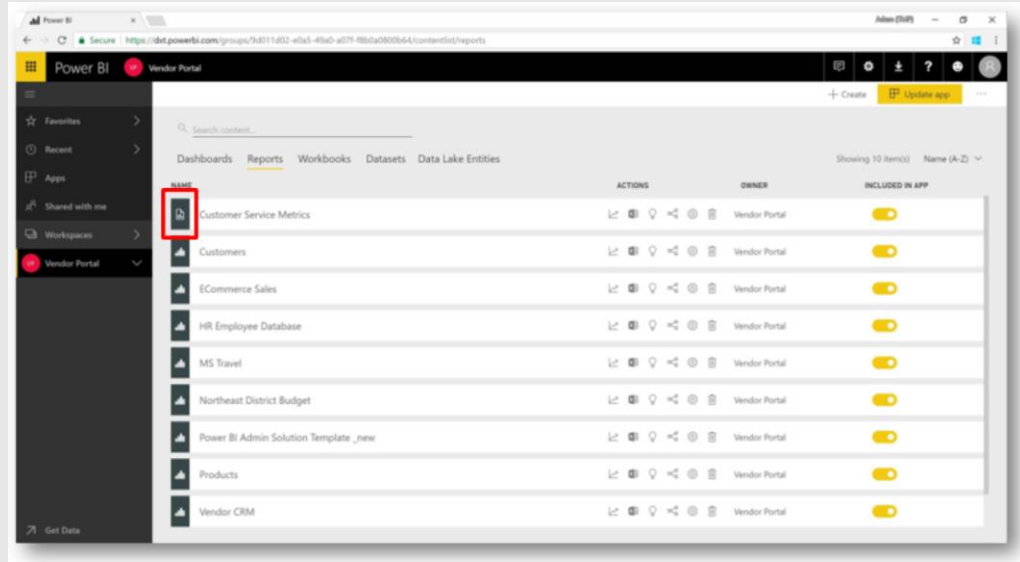
Question: “What are the required permissions to configure the Power BI Integration?”

- Answer: “The user performing the Power BI integration needs to be a member of the Azure AD tenant, a Reporting Services system administrator and a system administrator for the ReportServer catalog database.”
- Source: <https://docs.microsoft.com/en-us/sql/reporting-services/install-windows/power-bi-report-server-integration-configuration-manager?view=sql-server-2017>

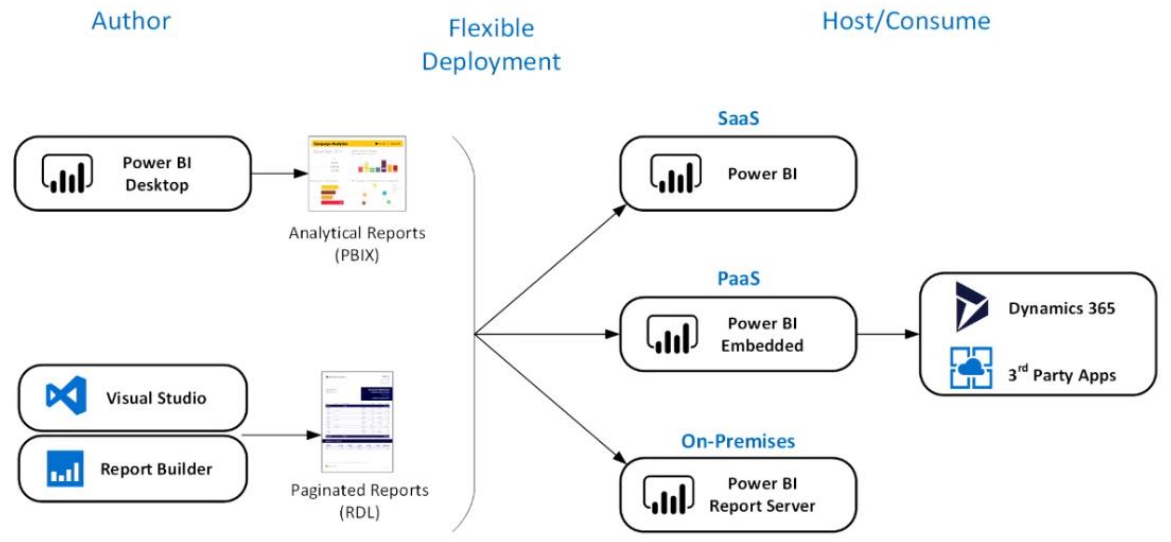
Question: Minimum SSRS Version (in order that pinning works)?

- Answer: SQL Server 2016 and newer
- <https://docs.microsoft.com/en-us/sql/reporting-services/install-windows/power-bi-report-server-integration-configuration-manager>

RDL Reports are coming to PowerBI.com



Paginated reports: Medium term vision



<https://docs.microsoft.com/en-us/business-applications-release-notes/April18/power-bi/service/sql-server-reporting-services-ssrs-reports-power-bi-premium>

<https://www.microsoft.com/en-us/businessapplicationssummit/video/BAS2018-2118>

Announcing Paginated Reports in Power BI general availability



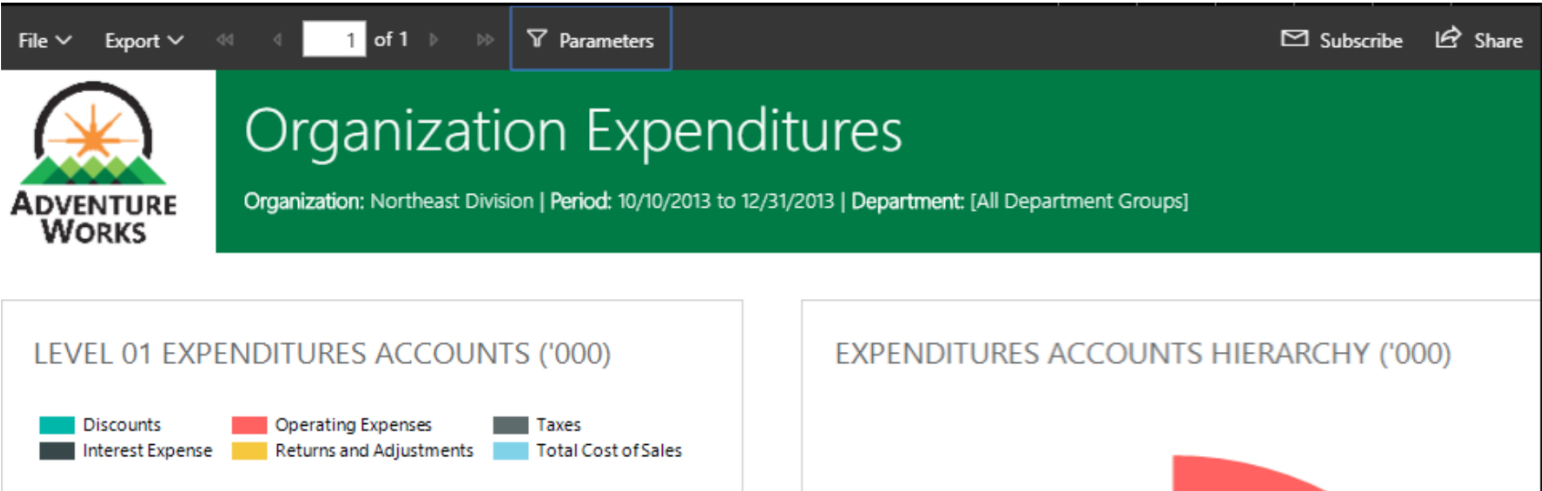
Christopher Finlan
Senior Program Manager

June 9, 2019

in Share

Tweet

Like

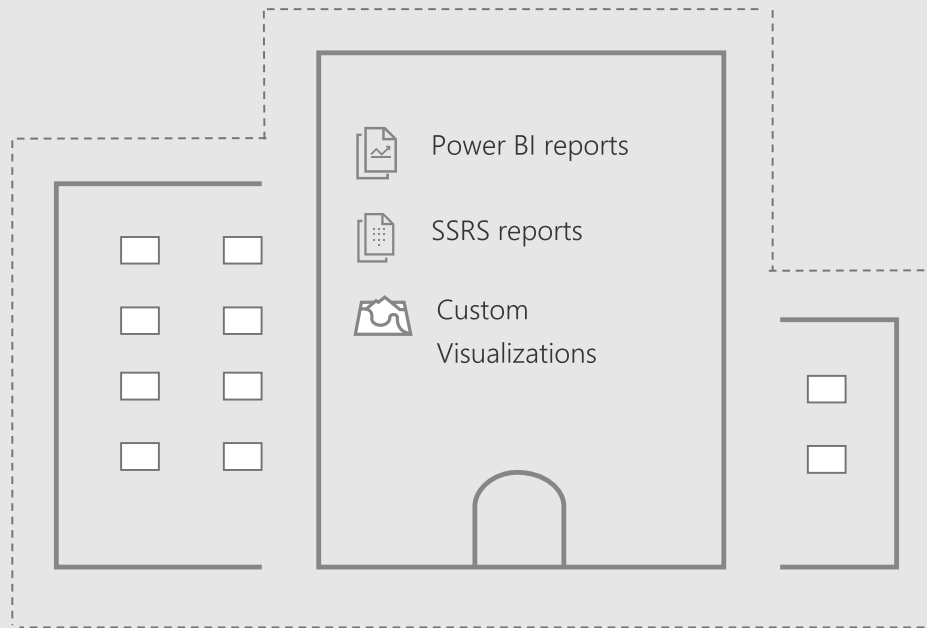


Today: Premium only
If you want it in PRO:
<https://ideas.powerbi.com/forums/265200-power-bi-ideas/suggestions/35959420-paginated-reports-please-make-it-available-in-pr>

#3

Bring Power BI (Reports) On-Premises

Power BI Report Server



Keep Power BI reports on-premises



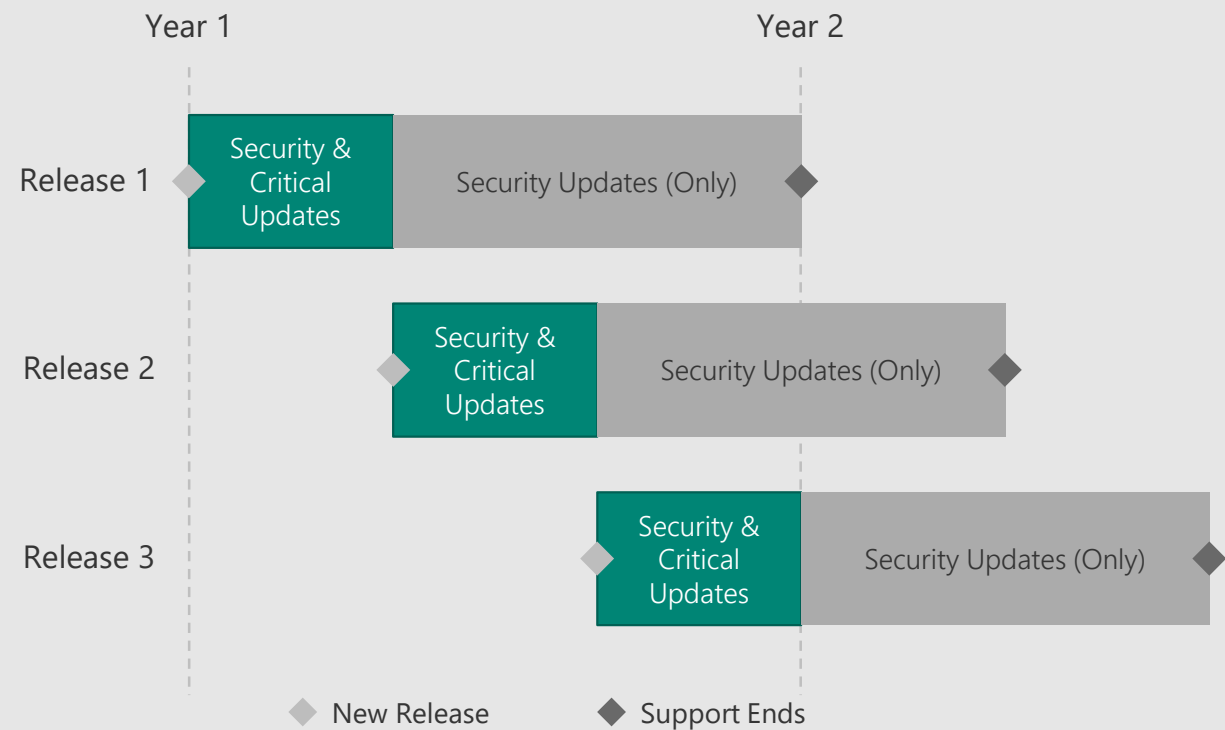
Includes all SSRS functionality



Move to the cloud on your terms

PBIRS = SSRS + Power BI Reports

Modern Lifecycle Policy



Frequent releases
(planning ~3/4 per year)

Security & critical updates
until next release

Security updates continue
for remainder of 12 months

DEMO: Power BI Report Server

What is it?

Report Development

#4

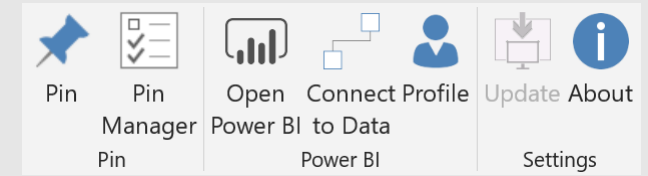
Excel and Power BI

DEMO: Excel and Power BI

Analyze in Excel

Power BI Publisher for Excel

Power BI Publisher for Excel



Pin Excel items to Power BI dashboards

Table ranges

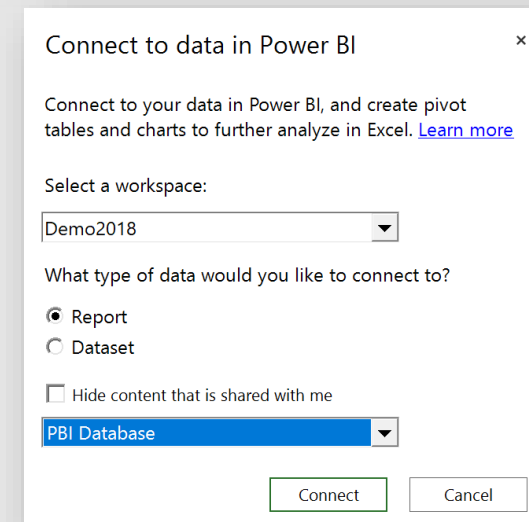
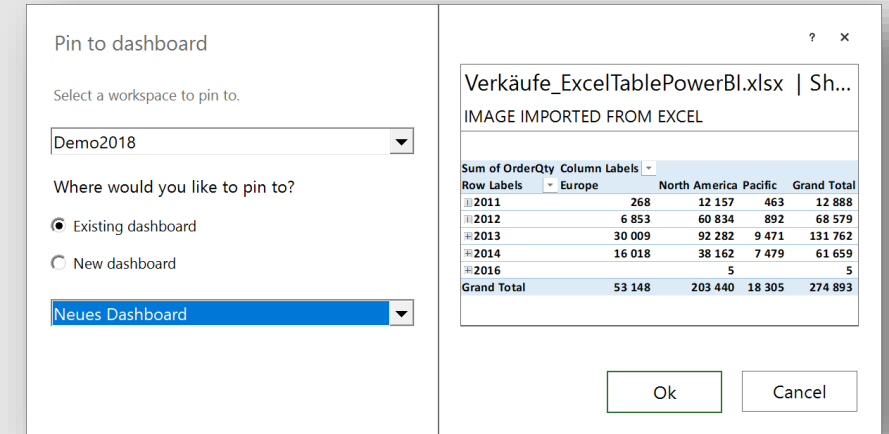
Charts

Connect to Power BI data in Excel

PBI Reports

PBI Datasets

-> Pivot analysis



Costs and Licensing

PowerBI.com – On-Premises Sources

Per-user license type comparison

Here is a list of features supported by per-user license type.

	Free	Pro
Connect to 70+ data sources	✓	✓
Publish to Web	✓	✓
Export to PowerPoint, Excel, CSV	✓	✓
Enterprise distribution		
Apps	✗	✓
Email subscriptions	✗	✓
Embed APIs and controls	✗	✓
Collaboration		
Peer-to-peer sharing	✗	✓
App workspaces	✗	✓
Analyze in Excel, analyze in Power BI Desktop	✗	✓

Power BI Report Server

Power BI Premium



SQL Server Enterprise
+ Software Assurance



Power BI Pro license required to publish Power BI reports to Power BI Report Server

SSRS // RDL in Power BI Premium // Excel and Power BI

SSRS (Pin to Power BI)

Either SSRS (SQL 2016+) OR Power BI Report Server

RDL in Power BI

Power BI Premium (Don't forget about ideas.powerbi.com)

Excel

Power BI Publisher for Excel -> Free

Analyze in Excel -> Power BI PRO

Pin to Power BI

Hybrid Power BI

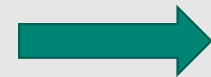
Hybrid Power BI – Choose your way(s)

On-Premises to Power BI



On-Premises **Data Gateway**

Power BI to On-Premises



Power BI **Report Server**

Connect On-Premises with Power BI



SSRS & Excel **Integration**

About me – Wolfgang Strasser

Consultant

Business Intelligence and DWH @  UBIDO

Power BI, SQL Server, SSIS, Azure Data Services, ADF, ..

Power BI UG Leader Austria, SQL Pass Austria


SQL Saturday Austria Organizer

Speaker, Community Guy



@wstrasser 

wolfgang@powerofbi.at 

workingondata.wordpress.com 

Hybrid Power BI: What is possible and what do you need?

Wolfgang Strasser

Business Intelligence Consultant @ cubido

Data Platform MVP

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Applications Summit