

Blackbaud CRM + Microsoft Power Bl

blackbaud DEVELOPERS' CONFERENCE

June 15–17, 2021

BEST PRACTICES IN MERGING CAPABILITIES OF MICROSOFT POWER BI WITH BLACKBAUD CRM

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blackbaud

Hello! I'm Rebecca Sundquist

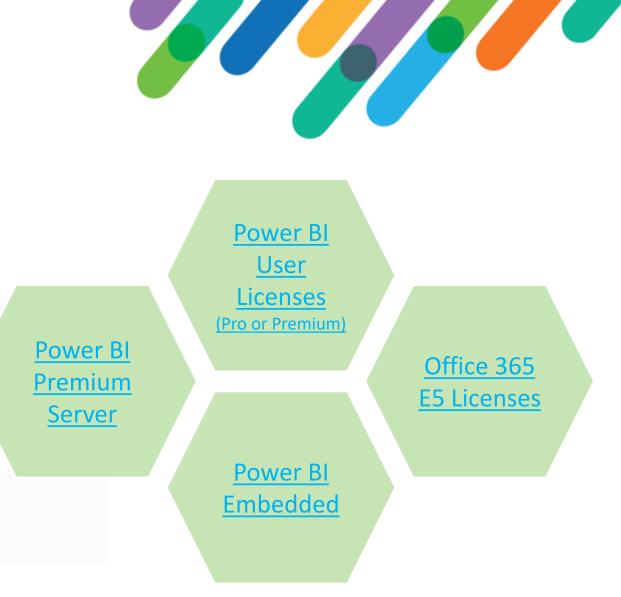
Pronouns: She/Her/Hers

HOMETOWN: KANSAS CITY, MISSOURI AT BLACKBAUD: 17 YEARS

Passionate about literacy, I volunteer as a reading mentor in my neighborhood school. I am also passionate about data literacy, consulting with clients to turn data into information. This session is for BBCRM organizations who are

Current Power BI Users

Interested in Power BI



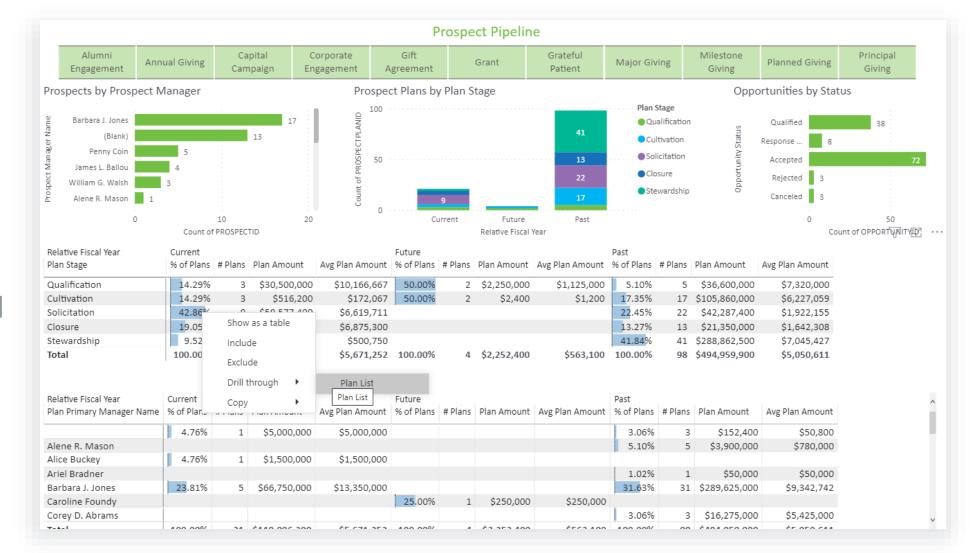


Agenda

| Demo | Demonstrate embedded Power BI report in Blackbaud CRM |
|----------|---|
| Connect | Connect Power BI to BBCRM Data Sources |
| Create | Create Power BI Dataset and Report |
| Embed | Embed Power BI Reports into BBCRM Pages |
| Maintain | Maintain Power BI Reports on Power BI Service with a Data Gateway |

Demo: Prospect Pipeline

Prospects, Plans, and Opportunities cross-filterable and with drill-through to record detail



Connect to BBCRM

CONNECT POWER BI DESKTOP TO BBCRM DATA SOURCE

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Connect Power Bl Desktop to Blackbaud CRM

On-premise and Hosted environments have connection options

> Mashup CRM data source(s) with your own source(s)

On-premise SQL Server / Read-only access (Azure)

Connecting to your on-premise SQL Server or Azure hosted read-only access is the **recommended connection** due to easy maintenance across reports and most thorough access to objects in OLTP and BBDW databases. Requires data gateway.

OData

Built-in feature allows access to ad-hoc query results. Requires data gateway when using Basic authentication.

Data list end point

Built-in feature allows access to ad-hoc query results with parameterization and provides data type definitions to Power Query. Does not refresh on Power BI Service when SSO is enabled.

Replicated data store / Scheduled backups

This offering requires offline maintenance of SQL Server backup restorations. Then connect Power BI to your on-premise backup server via data gateway.



Import into Power BI Desktop

Use the Import connectivity mode to take advantage of Power BI's advanced features.

Note that refreshes on Power BI Service of imported SQL Server datasets (such as an on-prem SQL database or the read-only access connection) must route through a <u>data gateway</u>, where credentials for the CRM connection are stored centrally.

| SQL Server database | |
|--------------------------------------|--|
| Server ① | |
| Database (optional) | |
| Data Connectivity mode ⊙ ● Import | |
| O DirectQuery | |
| Advanced options | |

Import vs Direct Query



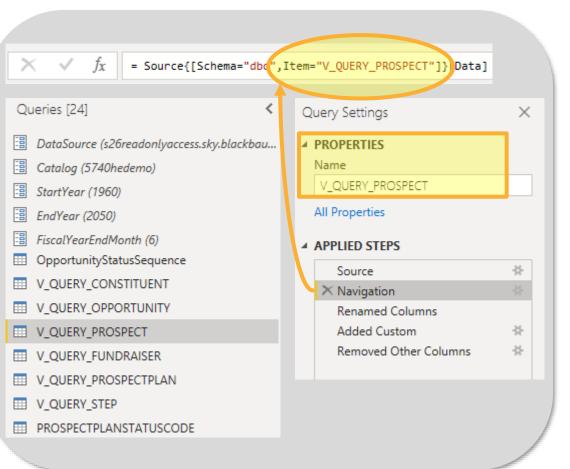
Trick: Connecting to Query Views

Challenge:

You will often want to use query views that are already optimized for ad-hoc query. Power BI displays top 10,000 objects from SQL Server database in Navigator window. "V_Query..." views do not show up within the top 10,000.

Solution:

- 1. Select any table from the SQL Server data source in the Navigator window.
- 2. Open **Power Query** by clicking the "Transform Data" icon on the "Queries" menu bar.
- 3. Select the query you need to update from the "Queries" list. Update the name of the query under "Properties."
- 4. Under "Applied Steps," click on the "Navigation" step.
- 5. Alter the "Item" value in the M Query.



Create Dataset and Report

CREATE DATASET IN POWER BI DESKTOP AND PREPARE A REPORT TO PUBLISH

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Create Power BI Model

Power Bl's Model is a Tabular Relationship – not "flattening" data via joins

Example: Connect Prospect Plans and Plan Steps without duplicating Prospect Plan records.

Create custom dimensions

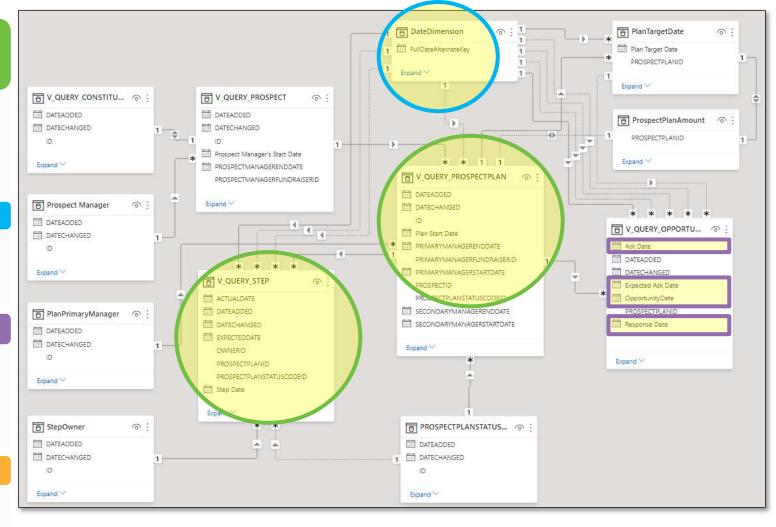
Example: Custom fiscal periods in custom DateDimension

Role-playing dimensions

Example: Ask Amount summed by Ask Date, while Accepted Amount summed by Date Received

Time Period Comparisons built-in

Example: Compare to same period prior year.





Tip: Turn off Time Intelligence

Turn off Time intelligence under <u>Global</u> and <u>Current File</u> "Data Load" menu.

| Options | |
|--------------------|---|
| GLOBAL | Background Data |
| Data Load | O Always allow data previews to download in the background |
| Power Query Editor | O Allow data previews to download in the background according to each |
| DirectQuery | file's setting |
| R scripting | Never allow data previews to download in the background |
| Python scripting | Time intelligence |
| Security | Auto date/time for new files () Learn more |
| Privacy | |





Trick: Year-to-Date comparison Year over Year

4/23/2021

ThroughDate

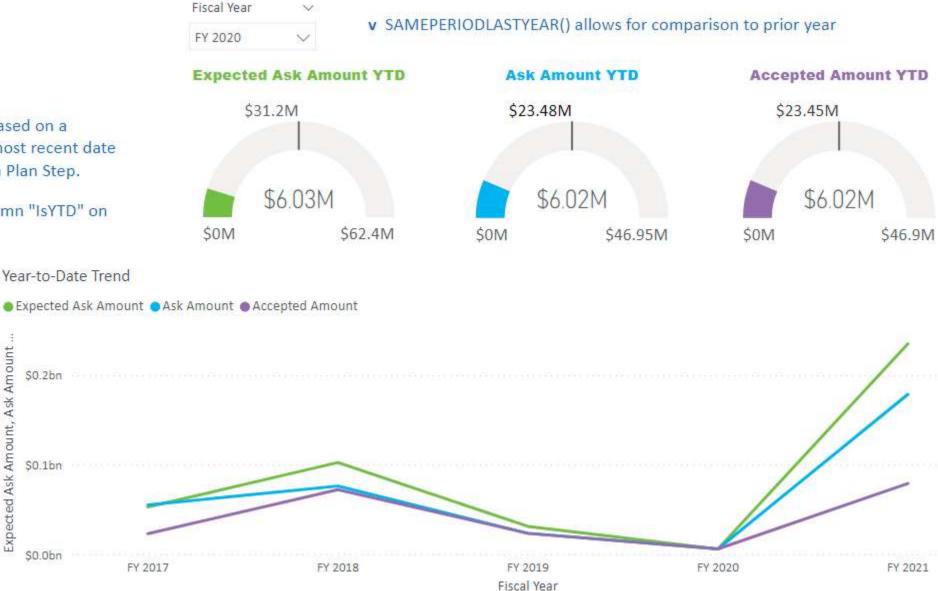
 Year-to-Date comparisons are based on a "Through Date" calculated from most recent date any CRM user added or updated a Plan Step.

Use this date to calculate the column "IsYTD" on the date dimension.

>

Apply the date dimension's calculated column "IsYTD" as a page filter to view the year-todate trend across years.

Roll-playing dimensions allow one date dimension to filter three metrics, each on a different date field: Expected Ask Date, Ask Date, Response Date





Trick: Apply Artificial Intelligence

Key Influencers view is pre-built in Power BI, ready to analyze your CRM data source.

| ~ ? | |
|--|---|
| | |
| the likelihood of Opportunity Status being Accepted increases by | Opportunity Status is more likely to be Accepted when Plan Primary Manager First Name is Barbara than otherwise (on average). |
| - 3126x | 70% |
| > 23.44x | 50% T |
| + 20.80x | Pad 50% |
| + 18.69x | |
| + 18.48x | Ar 30% ar 20% |
| + 18.28x | 10% Average contraction at the fill (109 |
| + 18,19x | Barbara cortel Halen John William Permi Jacob John Jaren Mara |
| | Accepted increases by 3125r + 23.44x + 20.80x + 18.69x + 18.48x + 18.28x |

Embed in BBCRM

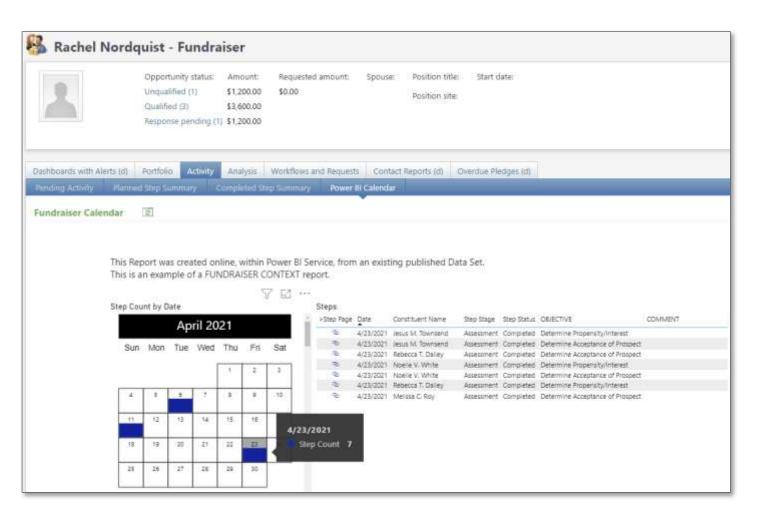
EMBED POWER BI REPORT IN BLACKBAUD CRM

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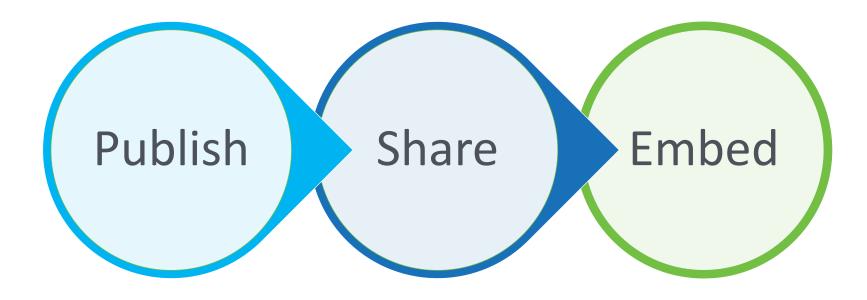
Trick: Apply Page Context for Personalization

Interactive visualizations for your fundraisers





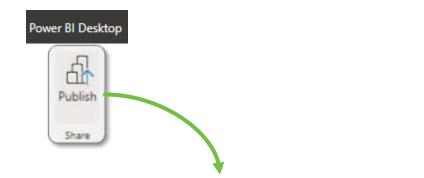
Steps to Embed





Power BI datasets are created and maintained in Power BI Desktop. User may create a report in this .pbix file too.

- When a .pbix file is published to the Power BI Service, the dataset and report are *both* added to the Power BI Service content.
- The dataset can be shared with other users to allow report creation online (in browser) from the published dataset. This ensures that all report developers are sharing the same data model for each functional area.





Tip: Build additional reports from central dataset



Now that you have a robust data model built in Power BI Desktop and published to Power BI Service, build additional reports refencing the published dataset.

| Gateway | Dataset | Reports |
|--|---|---------------------------------|
| SQL Server 5740hedemo-s26readonlyaccess.sky.blackbaud.co Gateway: sundquist_gw | Prospects_Plans_and_Steps_HEDe Refreshed: 5/19/21, 9:44:08 AM | Prospects_Plans_and_Steps_HEDe |
| | | |
| | | III Fundraiser Calendar |
| | | \nearrow |
| | | Key Influencers |
| | | \nearrow \rightleftharpoons |





Licensing

Blackbaud does not provide Power BI licenses or hosting. Microsoft requires viewers to have Power BI Pro or Premium user licenses, unless the report is hosted under Premium Capacity or an Embedded license.

Authentication

Power BI Service requires each user to be logged into their Microsoft account, as the sharing of Power BI Content is managed by Microsoft. Exception: Power BI Embedded license provides access to viewers with no Microsoft login.

Recommendation: Publish to Microsoft Workspaces where access is managed at the workspace level, not per artifact.

Embed

- In Power BI Service, grab the Embed code from the report's File Menu
- File > Embed Report > Website or Portal
- Use the embed link (URL) to embed in a custom component in CRM. <recommended
- Or use the HTML to configure an iframe display.

| \square File \lor \mapsto Export \lor | 🖻 Share 🛛 🕅 C | hat in Teams 🛛 🖇 |
|---|-----------------|---------------------------|
| 🖫 Save a copy | | |
| ↓ Download the .pbix file | Annual Giving | Capital |
| 🔒 Print this page | | Campaign |
| Embed report > | SharePoint of | nline |
| 👷 Generate a QR code | 📑 Website or p | ortal |
| 🔅 Settings | 🗖 Publish to we | eb (public) ^{.3} |

| Secure embed code | | |
|--|--|--|
| Here's a link you can use to embed this content. | | |
| https://app.powerbi.com/reportEmbed?reportId=feabffa9-df59-4d39-93c1-4f69e67e04288 | | |
| HTML you can paste into a website | | |
| | | |

Embed

BBCRM Custom Component URLSection

Create a section with SectionType = "Custom Component"

| - | Appearance | | |
|-----|---|-------------------------------------|-----------|
| | Caption | Power BI Example w Context | |
| | CaptionResourceKey | | |
| | HideCaption | False | |
| , | Visible | True | |
| | НеІрКеу | | |
| | SectionType | CustomComponent | |
| : | SectionDisplayStyle | Block | × |
| | Collapsible | False | v |
| | Collapsed | False | × |
| | HideRefresh | False | Y |
| - (| Custom component | | |
| | CustomComponent | Blackbaud.AppFx.Platform.UrlSec | tionCli |
| | ContextType | PageContext | Y |
| | Parameters | (Empty) | |
| 1 | ShowBorder | False | ¥ . |
| | tomComponent tyifies the custom user con | nponent to call. Use assemblyname,c | lassname. |

CustomComponent =

Blackbaud.AppFx.Platform.UrlSectionClient.dll,Blackbaud.AppFx.Platform.UrlSectionClient.UrlSection

Embed

Pass context from the BBCRM page to the Power E

Paramete

Use the Parameters within the CustomComponent to reference the Power BI embed code (URL)

Append filters to the embed code (URL) to pass context. For Power BI the format is:

&filter=**TableName/FieldName** eq '@@PAGECONTEXTRECORDID@@'

TableName/FieldName is the Power BI Query table and field



| | Caption | |
|--|---|---|
| | HideCaption | False |
| Bl report | Visible | True |
| | HelpKey | |
| | SectionType | CustomComponent 🗸 |
| nt | SectionDisplayStyle | Block |
| | Collapsible | False |
| | Collapsed | False |
| | HideRefresh | False |
| | G Custom component | |
| | CustomComponent | Blackbaud.AppFx.Platform. <mark>UrlSectionCl</mark> |
| | ContextType | PageContext 🗸 |
| | Parameters | (1-item) |
| ter value | | G |
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| | | |
| | | |
| | | ^ |
| URL | | |
| D URL | filter=Opportunities/ <u>FundraiserID</u> 6 | |
| D URL alue <u>4e431246-c42d</u> &d | filter=Opportunities/ <u>FundraiserID</u> e | t <mark>g '@@PAGECONTEXTRECORDID@@</mark> ↓ |
| D URL /alue <u>4e431246-c42d</u> 8d | filter=Opportunities/ <u>FundraiserID</u> | g '@@PAGECONTEXTRECORDID@@ |
| | filter=Opportunities/ <u>FundraiserID</u> | a '@@PAGECONTEXTRECORDID@@ |
| D URL /alue <u>4e431246-c42d</u> 8d | filter=Opportunities/ <u>FundraiserID</u> | g '@@PAGECONTEXTRECORDID@@ |



PUBLISH TO POWER BI SERVICE AND MAINTAIN DATA SOURCE CONNECTION THROUGH DATA GATEWAY

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What is a Data Gateway?

A Data Gateway supports the online refreshes of the imported datasets on Power BI.

A Data Gateway is required to connect Power BI Service to an on-premise SQL Server or any time it is necessary to store a centralized set of credentials for the scheduled refresh.

The user requesting data from CRM is the Power BI Service, not an individual viewing the report. A Data Gateway manages the CRM access credentials.

Installing Power BI Data Gateway

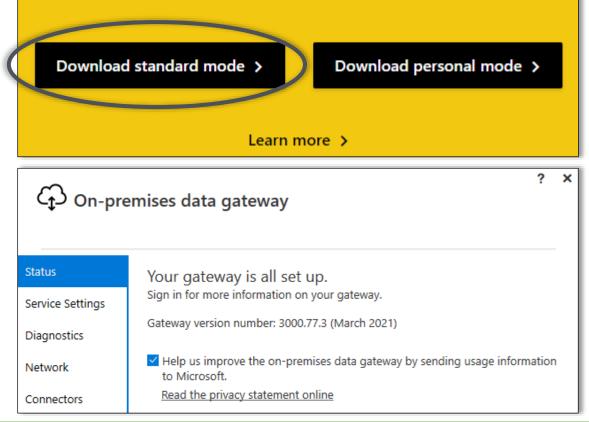
Download "standard mode" from Microsoft's page: <u>https://powerbi.microsoft.com/en-</u> <u>us/gateway/</u>

Where to install:

- Client's Azure or on-prem location
- Read-only requires whitelisted IP for gateway
- Must be online/accessible during scheduled dataset refreshes

Connect to on-premises data sources with a Power BI gateway

Keep your dashboards and reports up to date by connecting to your on-premises data sources without the need to move the data. Query large datasets and take advantage of your existing investments. Get the flexibility you need to meet individual needs, and the needs of your organization.



Configuring Power BI Data Gateway

From the Settings wheel in the Power BI Service tool bar, select "Manage Gateways"

<u>Define</u>

- 1. Gateway Cluster Settings
- 2. Administrators

| D Search D (@) Manage personal storage | |
|--|---|
| View content pack | Gateway Cluster Settings Administrators |
| Admin portal | Galeway Cluster Settings Administrators |
| Manage gateways | ✓Online: You are good to go. |
| Settings | Gateway Cluster Name |
| Manage embed codes | sundquist_gw |
| | Department |
| | |
| | Description |
| | |
| | Contact Information |
| | Rebecca.Sundquist@blackbaud.me |
| Allow user's cloud data sources to refresh through this gateway cluster. These cloud sources do not need to be configured under this gateway cluster. Learn more | |
| | Allow user's custom data connectors to refresh through this gateway cluster (preview). <u>Learn</u> more |
| | Distribute requests across all active gateways in this cluster. Learn more |
| | Apply Discard |

Add a data source to Power BI Data Gateway

ADD DATA SOUR

GATEWAY C

Click "Add Data Source"

OR expand the gateway to view data sources already created

Define

Data Source Settings 1.

Always "Skip Test Connection"

2. Users: define who can publish reports that use this data source

| D DATA SOURCE | |
|--|--|
| ATEWAY CLUSTERS | Data Source Settings Users |
| sundquist_gw 命 HeDemo BBDW | ✓ Connection Successful Data Source Name |
| odata - Revenue basic example odata - Fundraiser Analysis | HeDemo OLTP |
| HeDemo OLTP | Data Source Type |
| odata - Campaign Goals + Revenue Ro | SQL Server |
| Test all connections | s26readonlyaccess.sky.blackbaud.com,50101 |
| | Database |
| | 5740hedemo |
| | Authentication Method |
| | Basic |
| | The credentials are encrypted using the key stored on-premises on the gateway server. <u>Learn</u> more Username |
| | |
| | Password |
| | |
| | Skip Test Connection |
| | > Advanced settings |
| | Apply Discard |

Gateway Connection for Report Dataset

Navigate to "Settings" for the dataset uploaded from .pbix

- Turn on "Use a data gateway or Vnet"
- 2. Select the Gateway
- 3. Select the data source that you previously configured under the gateway in the "Maps to:" drop down.

"Settings" is also where you schedule the refresh

Settings for HEDemo_ReadOnly_OLTP_referencing_query_views Last refresh succeeded: Mon Mar 29 2021 14:07:23 GMT-0500 (Central Daylight Time) Next refresh: Mon Apr 05 2021 05:00:00 GMT-0500 (Central Daylight Time) Refresh history Gateway connection To use a data gateway, make sure the computer is online and the data source is added in Manage Gateways. If you're using an On-premises data gateway (standard mode), please select the corresponding data sources and then click apply. Use a data gateway or VNet Department Contact information Status Actions Gateway Running on ۲ G sundquist_gw Rebecca.Sundquist@bl... ŝ chs6rebeccsun01 Data sources included in this dataset: SqlServer{"server": "s26readonlyaccess.sky.blackbaud.com,5010 Maps to: 3 HeDemo OLTP 1"."database":"5740hedemo" Apply Discard Data source credentials Only users defined with the data Parameters source can add the gateway's data source to a dataset. Scheduled refresh ▶0&A ▶ Featured Q&A guestions Endorsement Dataset Image

Microsoft Learn: Power BI

Power BI Licenses Explained

Power BI Gateway

Blackbaud Infinity Technical Reference

Blackbaud Community Developer Discussions

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