Usage Monitoring with the Power BI API – A Power BI Report for Tenant Usage Data

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Over the past few weeks, I've been putting together a series of posts on how to connect to the Power BI Rest API programmatically to extract inventory and usage data from the service.

Most of those posts (listed at the bottom of this page) are fairly long and technical — as, initially getting started using a program to read Power BI data via the API can be a bit much.

This post is going to be a bit different. Short and sweet. The payoff for all that hard work authenticating to Power BI, requesting data, downloading that data, and storing it in an easy to use SQL table.

With all of the hard work out of the way, its time to build a Power BI report to explore that great Activity Log usage data.

The Data

The report assumes you've followed the procedures in my previous post to download Power BI Activity Log data to a local SQL server (into a table named it.PBIActivityLog) as well as created a few other database objects.

While you don't have to use the method/application described in the post to acquire the Activity data (feel free to put something together with the PowerShell cmdlet), you will want the SQL objects that store the data to ultimately end up formatted like that in the post to use this report for the queries to line up.

Scripts to create the database objects used by the Power BI queries are located here.

The Power BI Queries

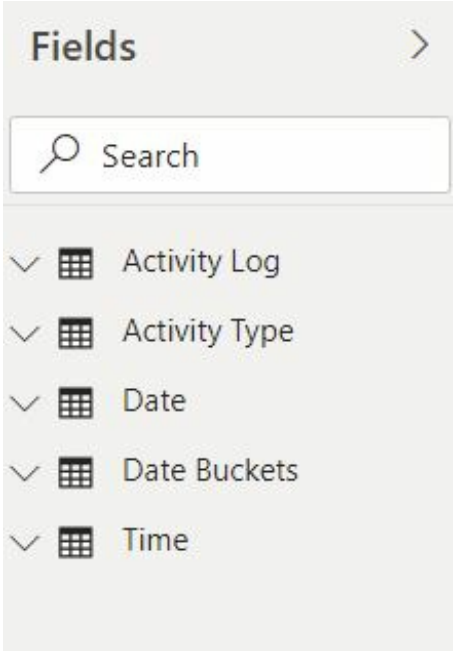
It's overkill for this report, but as a best practice in Power BI reports, I don't typically query tables directly, but instead, query a view which then queries the table. This allows you to have a layer of flexibility in between the data and Power BI for simple data manipulation or controlling column names.

In these queries, I store objects in two database schemas — “dbo” is for general-use things that may apply to many things, like date and time. “it” is more specific to the IT department, which in this case is Power BI Activity Log data. In a small or empty database, the separation isn’t needed, but its helpful when more projects are stored in the same database. The Views/Queries:

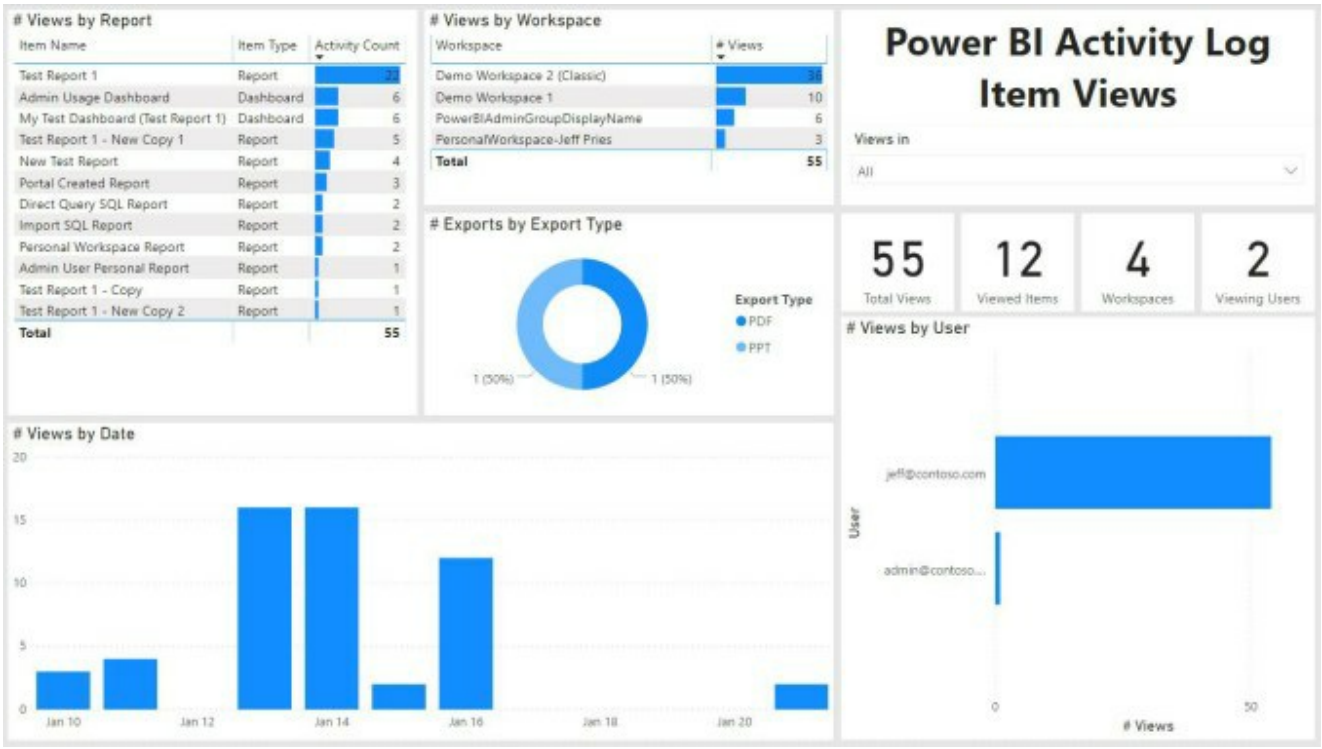
- “Activity Log” – queries the it.vPBIActivityLog view, which refers to the it.PBIActivityLog table. This table is the storage for all of the Activity data received from the API. Some columns are the results of case statements in the transform and load stored pocedures and some columns, such as CreateDateKey, CreateTimeKey, and ActivityTypeKey are references to the tables below.
- “Activity Type” – queries the it.vPBIActivityLogActivityType view, which refers to the it.PBIActivityLogType table. This is a table I made based on the Microsoft listing of all activity types so I could intelligently group different types together into “view,” “delete,” etc. operations.
- “Date” – queries the dbo.vDimDate view, which refers to the dbo.DimDate table. This is a generic date dimension for calendar dates.
- “Date Buckets” – queries the dbo.ufnDateBuckets table value function, which generates a result set of dates with different tags (such as the dates that are the “Last 7 days,” the dates that are the “Last 30 days,” etc. I frequently use this as a slicer for allowing simple switching of time periods within a report.
- “Time” – queries the dbo.vDimTime view, which refers to the dbo.DimTime table. This is a generic time dimension for all times of day.

The Report

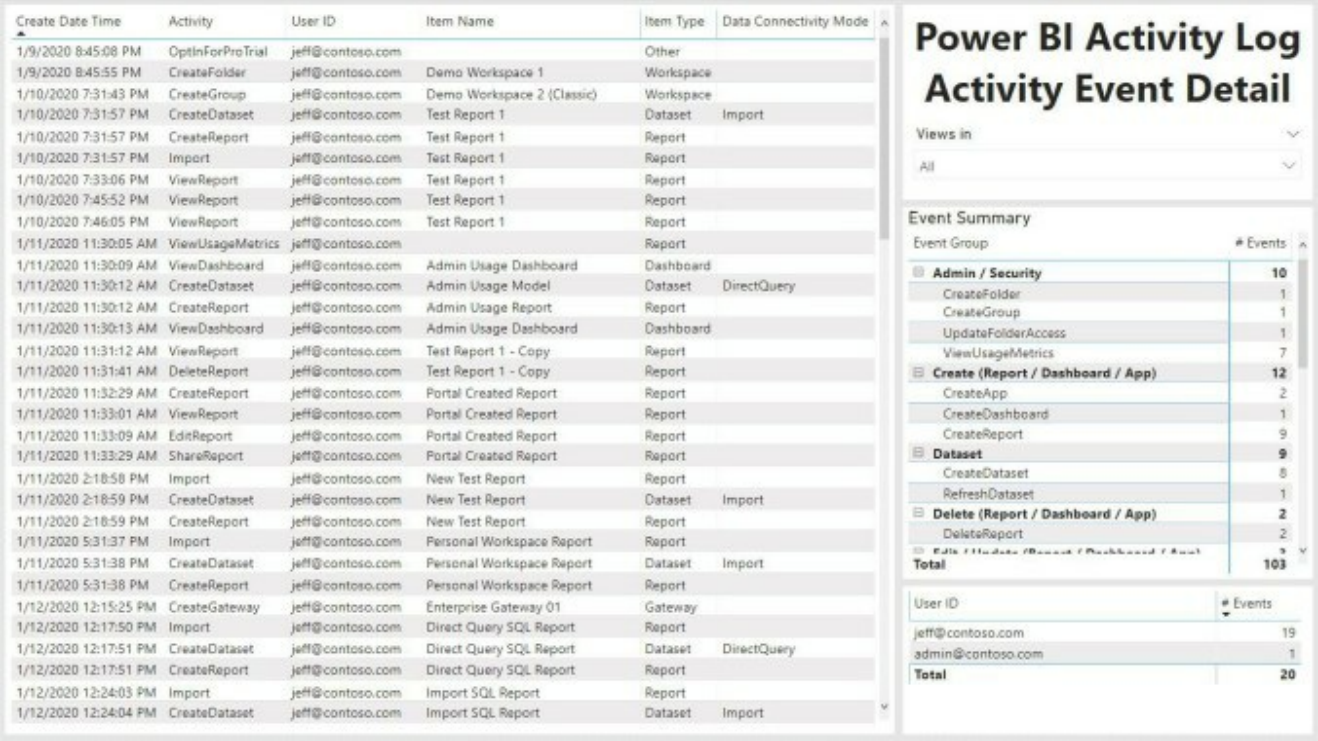
A picture is worth a thousand words, so let’s just dive into the report. This report isn’t complicated — no bookmarks or interactive buttons or drill-throughs. Just two pages, a summary and detail, to give an idea of what is possible when you start aggregating the usage data.



The core tables in the Power BI report. The Activity Log table is our fact table and the others are supporting dimensions.



Summary Power BI report showing Power BI Activity data, primarily focused on the top viewed reports/dashboards, workspaces, and users. The top right dropdown allows for narrowing down the time range displayed.



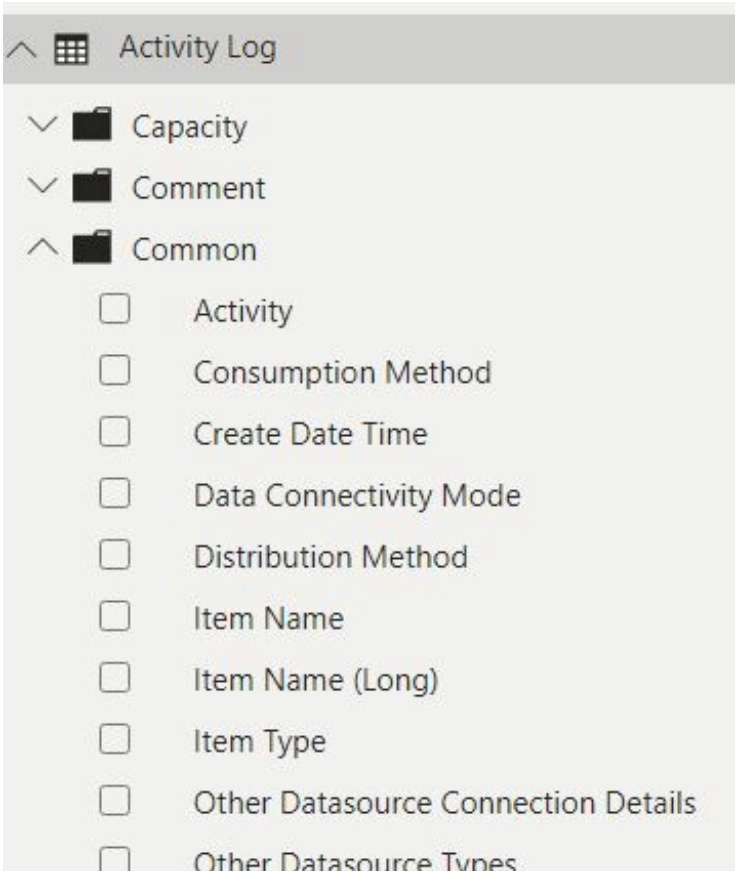
Create Date Time	Activity	User ID	Item Name	Item Type	Data Connectivity Mode
1/9/2020 8:45:08 PM	OptInForProTrial	jeff@contoso.com		Other	
1/9/2020 8:45:55 PM	CreateFolder	jeff@contoso.com	Demo Workspace 1	Workspace	
1/10/2020 7:31:43 PM	CreateGroup	jeff@contoso.com	Demo Workspace 2 (Classic)	Workspace	
1/10/2020 7:31:57 PM	CreateDataset	jeff@contoso.com	Test Report 1	Dataset	Import
1/10/2020 7:31:57 PM	CreateReport	jeff@contoso.com	Test Report 1	Report	
1/10/2020 7:31:57 PM	Import	jeff@contoso.com	Test Report 1	Report	
1/10/2020 7:33:06 PM	ViewReport	jeff@contoso.com	Test Report 1	Report	
1/10/2020 7:45:52 PM	ViewReport	jeff@contoso.com	Test Report 1	Report	
1/10/2020 7:46:05 PM	ViewReport	jeff@contoso.com	Test Report 1	Report	
1/11/2020 11:30:05 AM	ViewUsageMetrics	jeff@contoso.com		Report	
1/11/2020 11:30:09 AM	ViewDashboard	jeff@contoso.com	Admin Usage Dashboard	Dashboard	
1/11/2020 11:30:12 AM	CreateDataset	jeff@contoso.com	Admin Usage Model	Dataset	DirectQuery
1/11/2020 11:30:12 AM	CreateReport	jeff@contoso.com	Admin Usage Report	Report	
1/11/2020 11:30:13 AM	ViewDashboard	jeff@contoso.com	Admin Usage Dashboard	Dashboard	
1/11/2020 11:31:12 AM	ViewReport	jeff@contoso.com	Test Report 1 - Copy	Report	
1/11/2020 11:31:41 AM	DeleteReport	jeff@contoso.com	Test Report 1 - Copy	Report	
1/11/2020 11:32:29 AM	CreateReport	jeff@contoso.com	Portal Created Report	Report	
1/11/2020 11:33:01 AM	ViewReport	jeff@contoso.com	Portal Created Report	Report	
1/11/2020 11:33:09 AM	EditReport	jeff@contoso.com	Portal Created Report	Report	
1/11/2020 11:33:29 AM	ShareReport	jeff@contoso.com	Portal Created Report	Report	
1/11/2020 2:18:58 PM	Import	jeff@contoso.com	New Test Report	Report	
1/11/2020 2:18:59 PM	CreateDataset	jeff@contoso.com	New Test Report	Dataset	Import
1/11/2020 2:18:59 PM	CreateReport	jeff@contoso.com	New Test Report	Report	
1/11/2020 5:31:37 PM	Import	jeff@contoso.com	Personal Workspace Report	Report	
1/11/2020 5:31:38 PM	CreateDataset	jeff@contoso.com	Personal Workspace Report	Dataset	Import
1/11/2020 5:31:38 PM	CreateReport	jeff@contoso.com	Personal Workspace Report	Report	
1/12/2020 12:15:25 PM	CreateGateway	jeff@contoso.com	Enterprise Gateway 01	Gateway	
1/12/2020 12:17:50 PM	Import	jeff@contoso.com	Direct Query SQL Report	Report	
1/12/2020 12:17:51 PM	CreateDataset	jeff@contoso.com	Direct Query SQL Report	Dataset	DirectQuery
1/12/2020 12:17:51 PM	CreateReport	jeff@contoso.com	Direct Query SQL Report	Report	
1/12/2020 12:24:03 PM	Import	jeff@contoso.com	Import SQL Report	Report	
1/12/2020 12:24:04 PM	CreateDataset	jeff@contoso.com	Import SQL Report	Dataset	Import

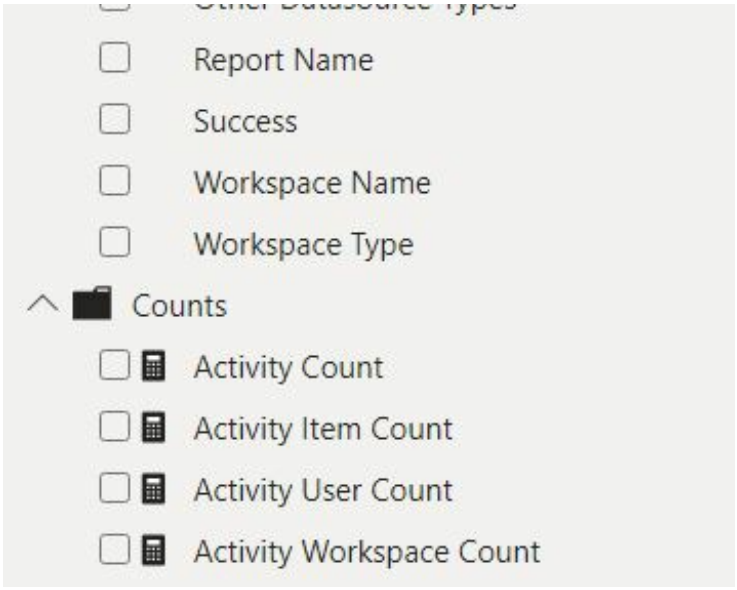
2nd page of the Power BI Activity Log report showing detail level data for one or more users in a given time range.

This report is intended to be simple and to help answer some of first questions that tend to come up about Power BI ("What reports are being used most and by whom?"). Feel free to use it as a template or inspiration for your own reporting to answer your specific questions about Power BI usage. More specific questions could easily create a need for a more complex report, which the data is there to support.

For information about how this data was gathered, see the earlier posts in this series.

Posts in Series


Activity Log
Capacity
Comment
Common
Activity
Consumption Method
Create Date Time
Data Connectivity Mode
Distribution Method
Item Name
Item Name (Long)
Item Type
Other Datasource Connection Details
Other Datasource Types



The Activity Log table in the Power BI Activity Log report. The most used fields are in the Common folder and the most used measure is the Activity Count measure in the Counts folder.